



CONFIGURATION MANUAL

(ENGLISH) (ORIGINAL VERSION)

Raven 600S smart antenna

016-8000-025EN Rev. A





Table of contents

Table of contents.....	3
Preface.....	4
Disclaimer.....	5
1. Introduction.....	7
2. Hardware configuration.....	9
2.1. 600S cable overview.....	9
2.2. 600S SBAS tractor kit.....	10
2.2.1. In Cab Harness (Terminal) before 2017 SBAS.....	10
2.2.2. In Cab Harness (Terminal) VPR4 ISO after 2017 SBAS.....	11
2.3. 600S RTK tractor kit.....	12
2.3.1. In Cab Harness (Terminal) before 2017 RTK.....	12
2.3.2. In Cab Harness (Terminal) VPR4 ISO after 2017 RTK.....	13
2.4. NMEA output.....	14
3. Unlocks & subscriptions.....	15
3.1. Request unlock.....	15
3.2. Enter authorization code.....	16
3.3. Request Satellite GS subscription.....	17
4. Software configuration.....	19
4.1. Configurator system settings.....	19
4.2. Setup as PPP rover.....	19
4.3. Select GPS steer modus.....	20



Preface

This configuration manual is intended for persons responsible for configuring a Viper 4 field computer with Raven 600S smart antenna running SBGuidance software. The manual contains important instructions that should be complied with when commissioning, operating and servicing the SBGuidance system.

This manual has been compiled with the utmost care. SBG Precision Farming assumes no responsibility for any errors or omissions in this document.

Any comments or questions can be sent to service-eu@ravenind.com.

SBG Precision Farming or any of its suppliers will accept no liability for physical or material damage caused whilst using the SBGuidance system.

The installed SBG system produces less than 70dB (A) noise.

This user guide uses a number of concepts for extra attention to a few things:



Tip!:

Provides recommendations on how certain activities can be performed much easier.



Please note!:

Indicates certain problems that the user should take note of.



Caution!:

Indicates that the machine can be damaged.



Warning!:

Indicates a risk of injury.

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Disclaimer



Warning!

Always switch off the tractor before installing or repairing hydraulic and electrical components of the SBGuidance system.



Warning!

The safety instructions contained in the manuals of the tractor or implements must be complied with at all times.



Warning!

It is strictly prohibited to use the SBGuidance system on public roads.



Warning!

It is strictly prohibited to leave a driving vehicle unattended when the SBGuidance system is switched on. The driver is always responsible for the direction and course of the vehicle.



Warning!

To prevent injury or fire, replace defective fuses only with fuses of the same type and amperage.



Warning!

The SBGuidance the operating system is not able to detect and avoid obstacles. If there is an obstacle in your path, you will always need to take action for it to be avoided.



Warning!

Only allow authorized/qualified persons to operate the system. Authorized/qualified persons are defined as: persons who have read and understood the manual, have been given instructions by a product specialist, and who are both physically and mentally fit and able to operate the system.



Warning!

In case of system failure or breakdown switch of the tractor and disconnect the electrical power source to avoid further damage. Contact your dealer for further instructions on how to repair your system.



Warning!

The system contains moving parts! Make sure the immediate environment is clear of people before operating the system.



Warning!

Always wear personal protective equipment when operating/adjusting/repairing the system outside of the tractor cab.



Caution!

In order to prevent power surges from occurring, always start the machine first, before initiating the SBGuidance control system.



Caution!

Only touch the touch-screen with your finger or by using a special touch-screen stylus/pen. Operating the touch-screen with sharp objects may cause permanent damage to the screen.



Caution!

Always consult your supplier as to which products are best suited first before cleaning the touch-screen with chemicals or alcohol.



Please note!

If the terminal is not used for a long period, better remove the terminal from the tractor and store in a heated environment. This will extend the life span of the electronic components.



Please note!

To prevent theft, it is better to not let the terminal and GPS-antenna unattended in the tractor on the field.



1. Introduction

This configuration manual is intended for configuring a Viper 4 field computer with Raven 600S smart antenna (Figure 1). This configuration manual applies to SBGuidance version 4.0.x or later.

As a new alternative to the Viper 4 TWIN with internal dual antenna receiver we can offer the Viper 4 with the Raven 600S smart antenna. The Viper 4 field computer doesn't have a build-in GPS receiver, but uses the external 600S smart antenna. This 600S antenna is fully scalable which means you can order it with SBAS, Satellite GS or RTK accuracy. The 600S comes standard with a dual frequency receiver and antenna. And with that it is able to use the GLIDE technology and GLONASS in standard. SBAS + GLIDE has a standard accuracy of +/-20 cm (pass-to-pass) and is perfect for applications such as section control.

The antenna can be upgraded to Satellite GS accuracy. This correction requires a payed subscription. With that the antenna reaches +/- 3 cm accuracy pass-to-pass (initial warm-up time is at least 20 min). The correction signal is received through a geostatic satellite.

The Raven 600S can be upgraded to RTK (+/- 2 cm) as well. The corrections will be received through a Slingshot modem. An RTK subscription is needed.



Figure 1 Raven 600S smart antenna



The different possible accuracy levels of the Raven 600S are displayed in Table 1.

Table 1 Accuracy levels of Raven 600S

	Accuracy absolute	Accuracy pass to pass	Glonass included	Correction signal delivered by	Subscription required
SBAS	60 cm	20 cm (GLIDE)	Yes	Satellite	No
Slingshot GS	15 cm	10 cm	No	Slingshot field hub	No
Satellite GS	5 cm	3 cm	Yes	Satellite	Satellite GS
RTK	2 cm	2 cm	Yes	Slingshot field hub	Cellular provider + NTRIP/CORS network



2. Hardware configuration

For installing the components on the vehicle, follow the instructions in the general *Installation manual SBGuidance Auto*. In case of a 600S tractor kit, 600S antenna cabling needs to be installed instead of installing a coaxial cable.

2.1. 600S cable overview



Table 2 600S cables.

	Part number	Part name	Part of
1	11150172303	600S adapter cable	Terminal kit
2	11158000011	600S to Viper 4 cable	Tractor kit
3	11150171890	600S to Slingshot cable	Tractor kit



2.2. 600S SBAS tractor kit

For SBAS and Satellite GS accuracy a 600S SBAS tractor kit is required.



Please note!

There is a difference between a harness shipped in 2017 and shipped before 2017. Look at the part number on the harness to find out which configuration is recommended.

2.2.1. In-Cab Harness (Terminal) before 2017 SBAS

This chapter describes how to configure the system when using an In-Cab Harness (Terminal): **SBG13711-09**. This cable is shipped before 2017.

Port A of the 600S main cable needs to be connected to COM 3 of the Viper 4 terminal harness **using a Null modem** (Figure 2).

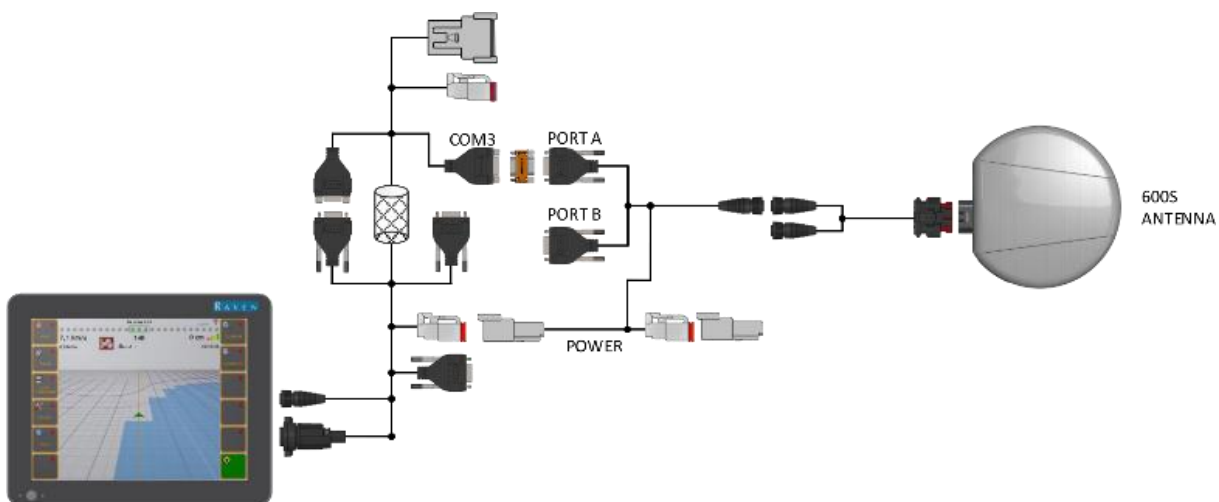


Figure 2 600S SBAS tractor kit cabling connections SBG13711-09.



2.2.2. In-Cab Harness (Terminal) VPR4 ISO after 2017 SBAS

This chapter describes how to configure the system when using an In-Cab Harness (Terminal)

11158000064. This cable is shipped from 2017.

Port A of the 600S main cable needs to be connected straight to COM 3 of the Viper 4 terminal harness **without using a Null modem** (Figure 3).

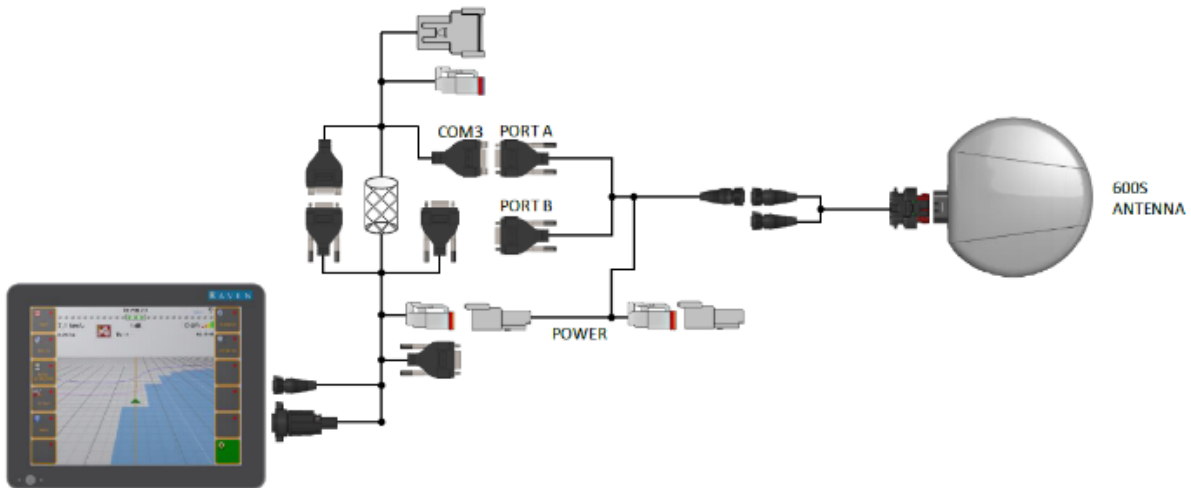


Figure 3 600S SBAS tractor kit cabling connections 11158000064.



2.3. 600S RTK tractor kit

For RTK and Slingshot GS accuracy a 600S RTK tractor kit is required.



Please note!

There is a difference between a harness shipped in 2017 and shipped before 2017. Look at the part number on the harness to find out which configuration is recommended.

2.3.1. In-Cab Harness (Terminal) before 2017 RTK

This chapter describes how to configure the system when using an In-Cab Harness (Terminal) **SBG13711-09**. This cable is shipped before 2017.

Port A of 600S main cable needs to be connected to COM 3 of the Viper 4 terminal harness **using a Null modem**. Port RTK corrections of the 600S RTK cable needs to be directly connected to the Slingshot field hub (Figure 4).

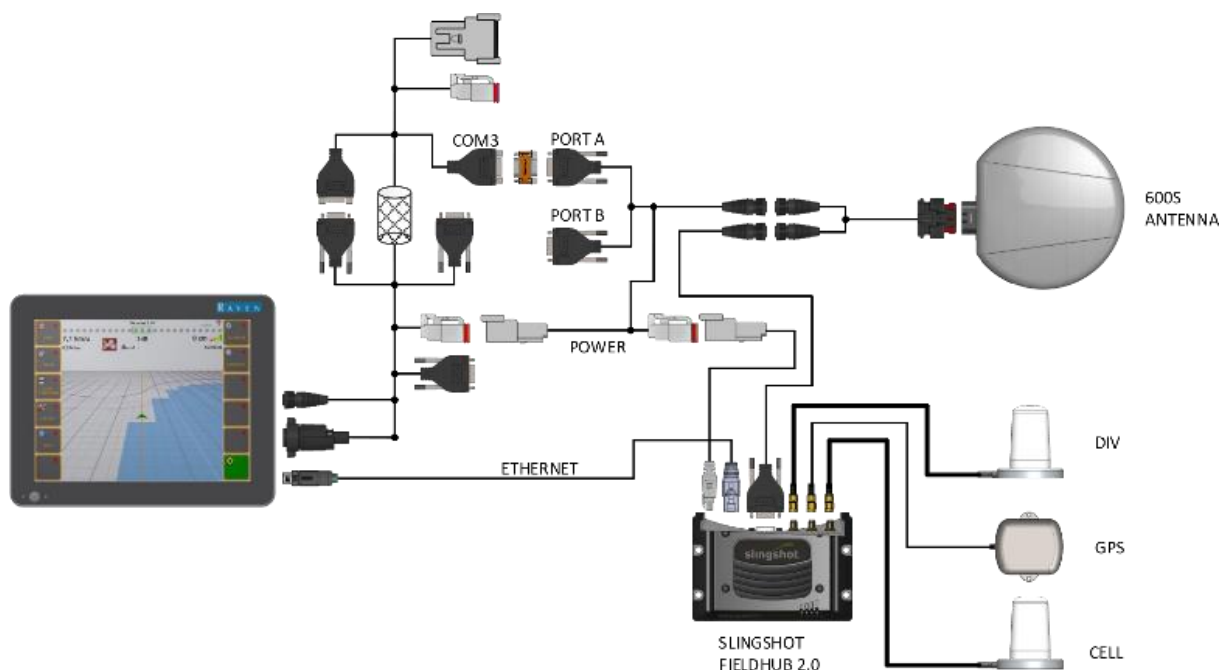


Figure 4 RTK tractor kit cabling connections SBG13711-09.



2.3.2. In-Cab Harness (Terminal) VPR4 ISO after 2017 RTK

This chapter describes how to configure the system when using an In Cab Harness (Terminal)

1115800064. This cable is shipped from 2017.

Port A of the 600S main cable needs to be connected straight to COM 3 of the Viper 4 terminal harness **without using a Null modem.** Port RTK corrections of the 600S RTK cable needs to be directly connected to the Slingshot field hub (Figure 5).

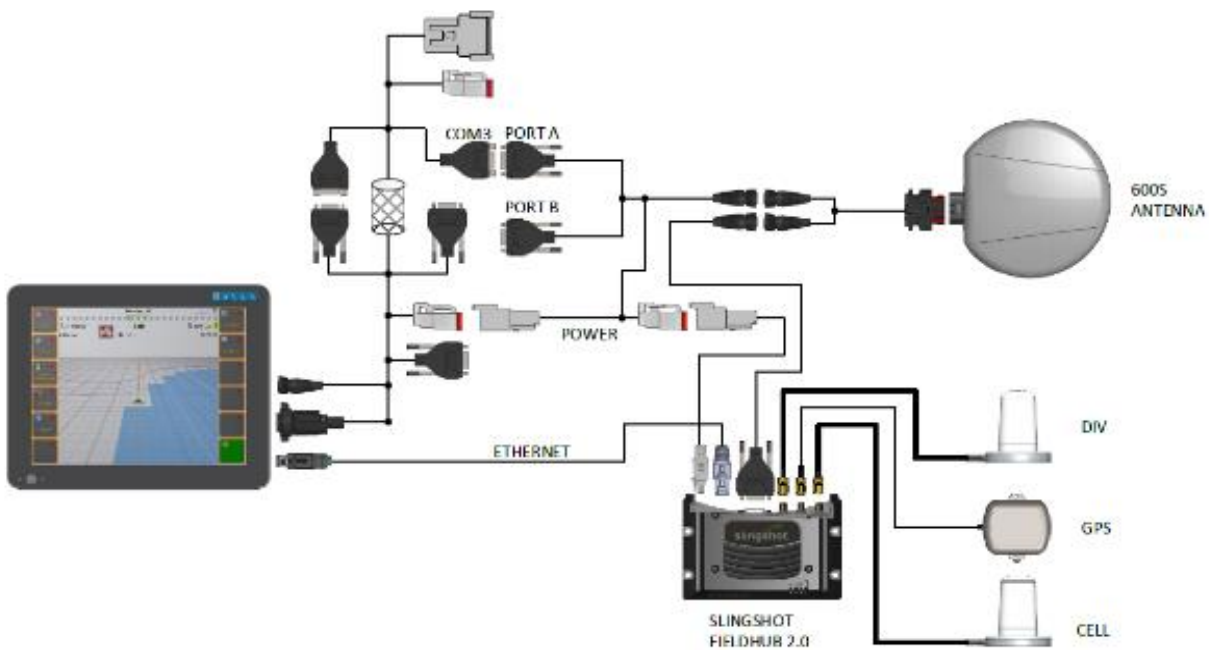


Figure 5 RTK tractor kit cabling connections 1115800064.



2.4. NMEA output

NMEA GPS data for third party devices can be outputted from Port B of the 600S main cable (NMEA directly from receiver) or from the VRA/NMEA 2 connector of the Viper 4 terminal harness (Roll compensated NMEA). The required baud rate, interval and messages can be configured in SBGuidance via Setup > GPS > NMEA. Use NMEA 1 for configuring NMEA messages directly from the receiver (Port B). Use NMEA 2 for configuring Roll compensated NMEA messages from SBGuidance (VRA/ NMEA 2 connector).



3. Unlocks & subscriptions

For Satellite GS, Slingshot GS and RTK are unlocks required. If the system needs to work on SBAS accuracy, this chapter can be skipped.

3.1. Request unlock

New ordered 600S smart antennas will be delivered with ordered unlocks. If you would like to upgrade the accuracy level of an existing 600S smart antenna, the serial number (S/N) and product number (P/N) needs to be provided for ordering. This information can be found on the serial number sticker on the bottom side of the smart antenna. The unlock is represented by an authorization code. Entering the authorization code is explained in paragraph 3.2.



Please note!:

A 600S unlock for GS or RTK can be requested by contacting SBG Precision Farming. The serial number (S/N) and product number (P/N) of the receiver needs to be provided.

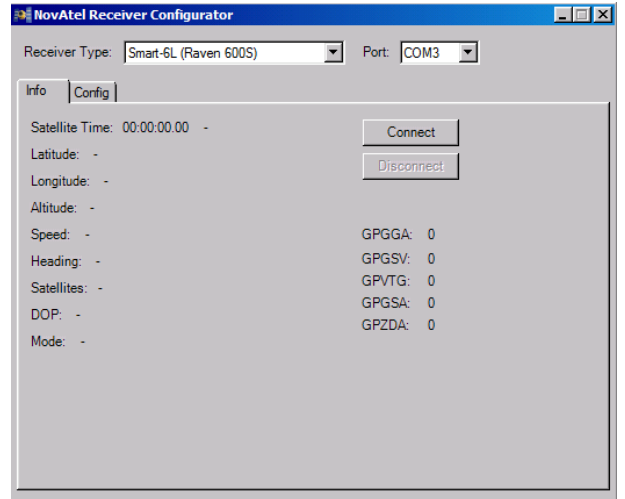


Figure 6 Configurator NovAtel receiver Info.



3.2. Enter authorization code

Open SBGuidance Configurator by pressing SHIFT + SBGuidance. Go to GPS > NovAtel receivers. Select Receiver Type *Smart-6L (Raven 600S)* and Port *COM3* to connect to the receiver (Figure 6).

Go to the Config tab to enter the received Authorization code. For example:

```
AUTH R48RDT,NH45MM,PBRCJ6,CZMKF4,
PWFC95,D2LRPGTTNA
```

After pressing *Send*, the following should be displayed in the main screen (Figure 7):

```
Success: connected to COM1!
>AUTH <code>
<OK
[COM1]Connection closed.
```

In case the connection to COM1 of the receiver fails, try to Setup the receiver again (paragraph 4.2).

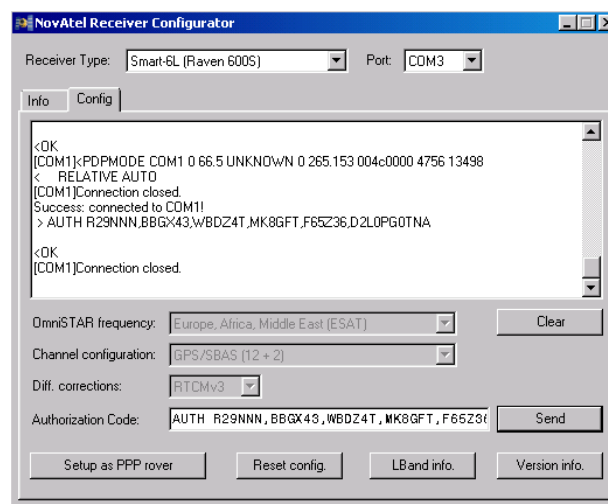


Figure 7 Configurator NovAtel Config Auth code.



3.3. Request Satellite GS subscription

If you like to work with Satellite GS accuracy, the receiver needs to be unlocked for GS and there needs to be an active Satellite GS subscription. For requesting a subscription, the serial number (BFN number) and the PAC code need to be provided.

Open SBGuidance Configurator by pressing SHIFT + SBGuidance. Go to GPS > NovAtel receivers. Select Receiver Type *Smart-6L (Raven 600S)* and Port *COM3* to connect to the receiver (Figure 6).

Go to the Config tab and choose *Version info.* to request the serial number (BFN number) of the receiver. In the main screen the result of the LOG VERSION ONCE command is displayed which includes the serial number (Figure 8). In case the connection to COM1 of the receiver fails, try to Setup the receiver again (paragraph 4.2).

Go to the Config tab and choose *LBand info.* to request the PAC code (Figure 9). In the main screen the result of the LOG TERRASTARINFO command is displayed which includes the PAC code. For example: QU326:6828:8973

Please note!
The subscription can be requested by contacting SBG Precision Farming. The receiver serial number (BFN number) and PAC code needs to be provided.

The Satellite GS subscription is active starting from the requested start date. After powering up the 600S smart antenna, it can take up to 3 hours before the Satellite GS subscription is activated in the receiver. This means that the receiver needs to be powered and have enough satellite view for up to 3 hours.

If the result of the LOG TERRASTARINFO command displays TERM the Satellite GS subscription is active. If the result displays UNASSIGNED, then there is not an active subscription.

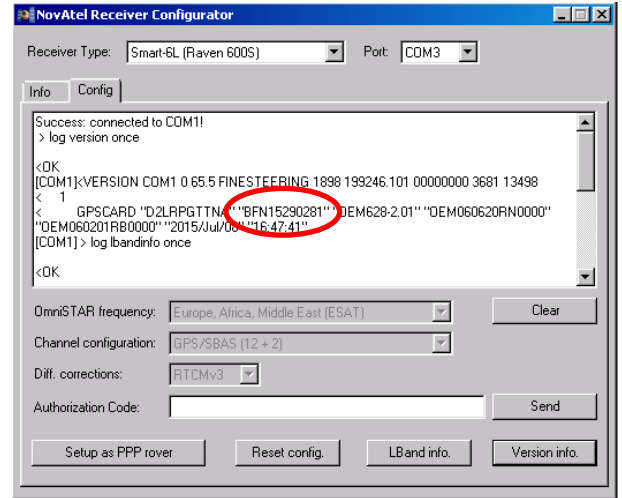


Figure 8 Configurator NovAtel receiver Config.

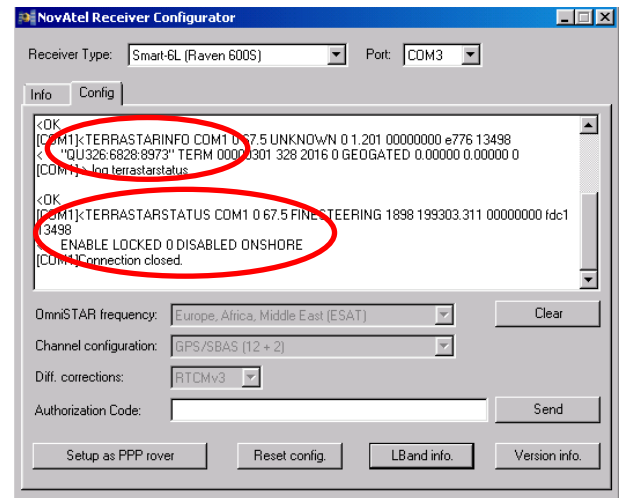


Figure 9 NovAtel Receiver Configurator Config TerraStar info.



The 600S smart antenna is receiving the Satellite GS correction signal when the result of the LOG TERRASTARSTATUS command displays: ENABLE LOCKED 0 DISABLED ONSHORE.



Please note!

A Satellite GS subscription needs to be active to be able to receive Satellite GS accuracy. After powering up the 600S receiver, it can take up to 3 hours before the Satellite GS subscription is activated in the receiver.



Please note!

Slingshot GS does not require a subscription. A GS unlock and a Slingshot modem are needed to be able to receive Slingshot GS accuracy.



4. Software configuration

4.1. Configurator system settings

The System Settings in the SBGuidance Configurator should already be setup correctly, but it is advised to check these settings.

Open SBGuidance Configurator by pressing SHIFT + SBGuidance. Go to Settings > System > tab GPS (Figure 10). Receiver should be Raven 600S.

4.2. Setup as PPP rover

Open SBGuidance Configurator by pressing SHIFT + SBGuidance. Go to GPS > NovAtel receivers. Select Receiver Type *Smart-6L (Raven 600S)* and Port *COM3* to connect to the receiver (Figure 11).

Go to the Config tab and choose *Setup as PPP rover*.

The receiver will automatically connect to the right baud rate. When successfully connected, the following should be displayed in the main screen:

Success: connected to COM1!
Write configuration...

A question will popup which asks if you are going to use Slingshot GS. Press No in case you are going to work on SBAS, Satellite GS or RTK accuracy (Figure 11).

The Raven 600S smart antenna should be ready to receive satellite signals and communicate with SBGuidance now.

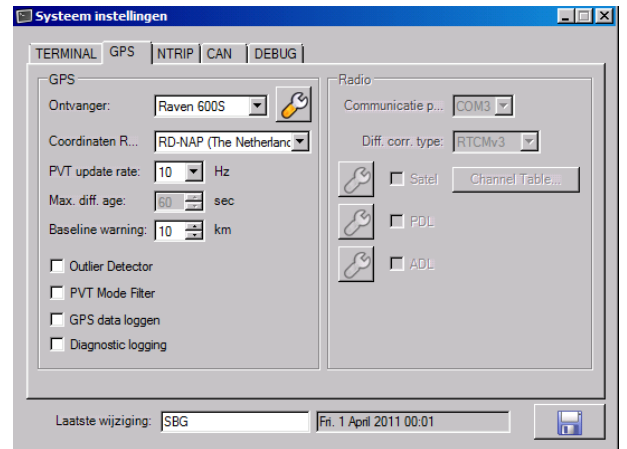


Figure 10 Configurator System Settings.

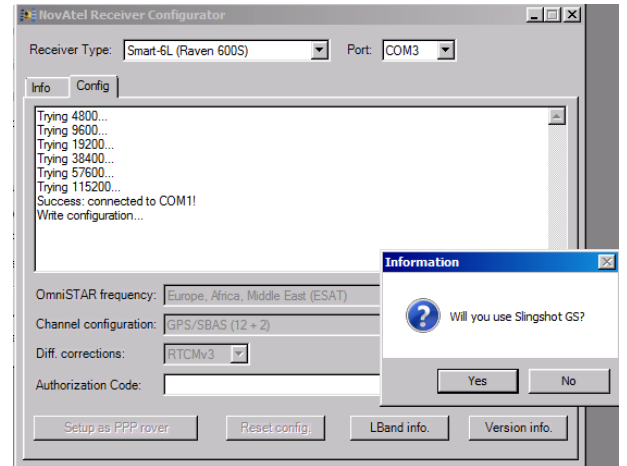


Figure 11 Setup as PPP rover.



4.3. Select GPS steer modus

Within SBGuidance, the GPS steer modus can be selected when you navigate to Setup > GPS (Figure 12). The GPS steer modus is determining in which GPS accuracy modus automatic steering is allowed.

When the 600S smart antenna is working without unlock on SBAS accuracy, the EGNOS / WAAS button should be activated. Autosteer will be allowed in SBAS and DGPS GPS accuracy mode (■ ■ ■ ■).

When the 600S smart antenna is unlocked for GS, the Satellite GS button should be activated. Autosteer will be allowed in PPP (■ ■ ■ ■) and DGPS (■ ■ ■ ■) GPS accuracy mode.

When the 600S smart antenna is unlocked for RTK, both buttons should stay red (not activated). Autosteer will only be allowed in RTK (■ ■ ■ ■) GPS accuracy mode.

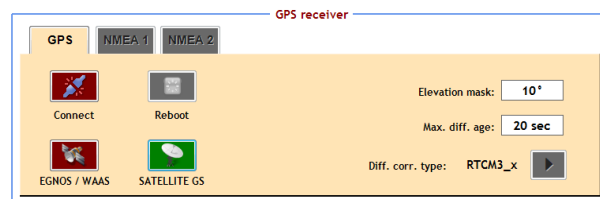


Figure 12 GPS steer modus.