



USER MANUAL
(ENGLISH) (ORIGINAL)

Raven SmartBase 2.0

016-8000-011EN Rev. A



Performing perfection.



Preface

This operating manual is intended for those persons who are competent to operate the SBGuidance software. The operating manual contains important information and instructions that must be complied with when setting up, operating and servicing the SBGuidance system. This operating manual must therefore be read and understood by competent persons BEFORE the system is set up and must always be kept in the close vicinity of the machine.

The greatest possible care has been taken in the compilation of the manual. However, SBG Precision Farming accepts no liability for any errors or incomplete information contained in this document.

Remarks or queries can be submitted to: service-eu@ravenind.com.

Neither SBG Precision Farming nor any of its suppliers may be held liable for any injury or damage to property that may arise from the use of the system SBGuidance System.

The installed SBG systems produces less than 70 dBA.

In this manual several terms are used that are intended to draw attention to particular aspects of the SBGuidance System and its operation.



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.





Disclaimer


-  **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!**


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


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.
-  **Caution!**

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 with a special touch-screen stylus. Sharp objects may cause irreparable damage to the touch-screen.
-  **Please note!**

Only clean the screen using a damp cloth. Never use caustic or other aggressive substances.
-  **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.

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1. Home screen

The SmartBase will always start-up to its "Home screen". (Figure 1) At the home screen the following information is displayed:

1. The status of the SmartBase
2. GPS status
3. The current base location
4. Number of satellites tracked/used
5. Battery voltage

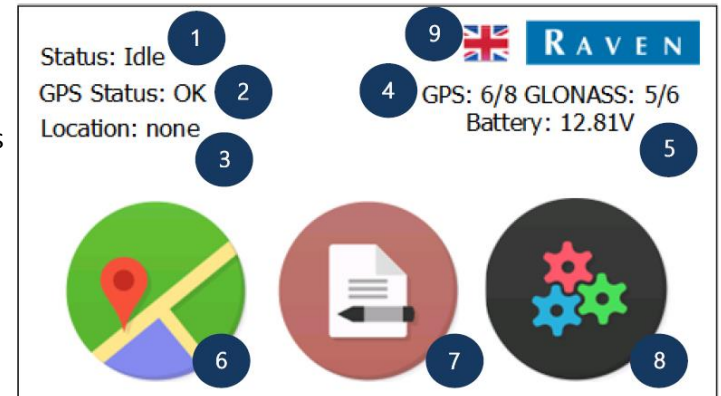


Figure 1 Home screen

With the buttons on the screen, it's possible to navigate through the settings of the SmartBase.

By pressing the button with the map displayed (6), it is possible to setup a base location. More about this in the chapter "Setup base location". By pressing the button with the document displayed (7), the screen, which makes it possible to manage the stored base locations, will appear. More about this in the chapter "Manage base locations". If the button with the gears displayed has been pressed (8), information about the station, and a configuration menu will appear. More about this in the chapter "Information and configuration". By pressing the English flag (9), the language can be changed to Dutch or German. (Figure 2)



Figure 2 Select language



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2. Setup base location

The SmartBase 2.0 can store up to 512 recorded base locations. In this screen you can add a new base location or select a recorded base station from the list (Figure 3)

The number of base locations that are stored yet and the minimum number of locations, is shown at the upper side of the screen (1). These locations can be created and sorted by pressing the "Add new location" button (2). Underneath this section the stored locations are displayed. Those will be ordered by their nearest position. By pressing the info button (3), the base location information will be displayed. Pressing the arrow (4) you will be redirected back to the home screen. By pressing on a base location name (5), the base location can be set.

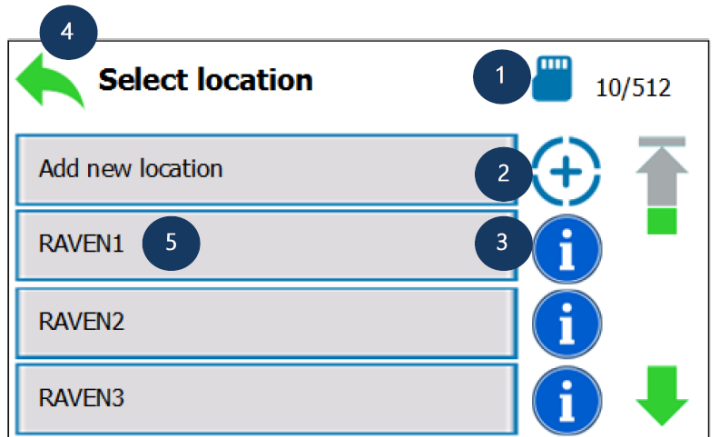


Figure 3 Select location



Setup base location

2.1. Add a position

By pressing the "Add new location" button at the "Select location" screen, the keyboard shown at Figure 4 will appear. By pressing the letters on the keyboard (1) it is possible to type a base location name. The maximum character amount is 38 which is shown at the upper side of the screen (2). With the backspace button (3) it is possible to delete and correct a wrong typed character. Confirming the name by pressing the green button (4), will bring you to the screen shown at Figure 5.

At the screen, you are able to pair a GPS position to the base location by pressing the "Automatic" button (5) the SmartBase will automatically determine its position. By pressing the "Manual" button (6) it is possible to configure a predetermined position.

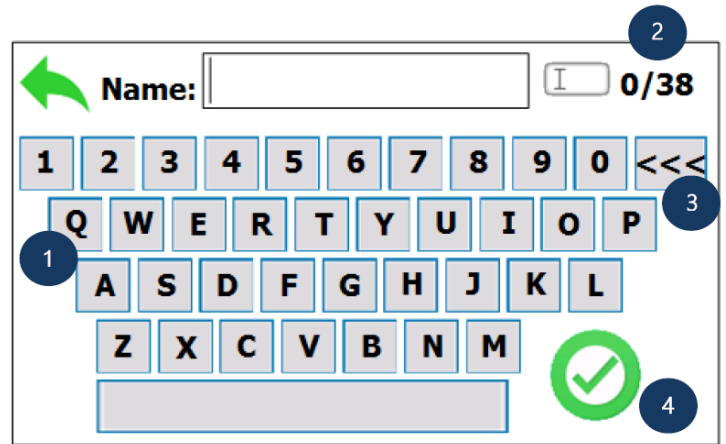


Figure 4 Type location name

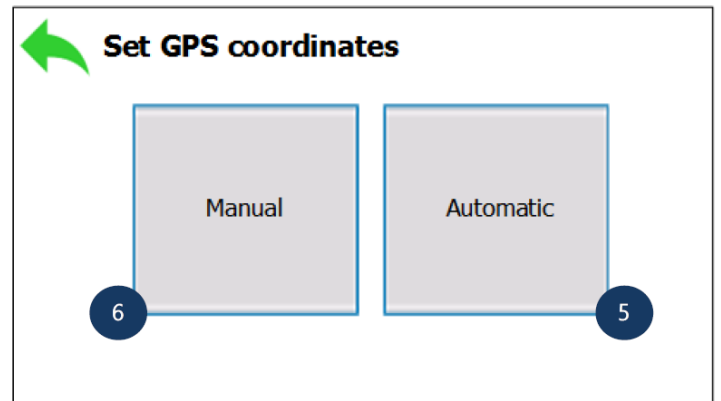


Figure 5 Manual or Automatic coordinates

2.2. Position information

By pressing the "Info" button at the "Select location" screen, a screen shown at Figure 6 will appear.

At this screen, the following information about the stored base location is shown: Base location name, GPS coordinates and the distance between the current location and the GPS coordinates of the base location. The name of the location can be changed by pressing the pencil (1). This location can be set from here by pressing the button "Select location" (2). By pressing the green arrow (3), the SmartBase will be redirected to the "Select location" screen.

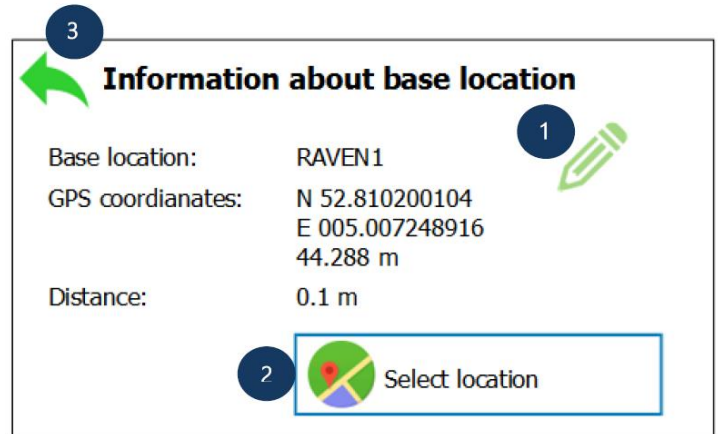


Figure 6 Information about base station

2.3. Setup base position

By pressing a base location name at the "Select location" screen, the screen at Figure 7 will appear.

A base location can be set by pressing "Accept". The SmartBase will go into broadcasting mode. When the GPS receiver is reconfigured, the SmartBase will be redirected to the home screen. The globe button is replaced for a stop button. By pressing the "Cancel" button, you will be redirected to the "Select location" screen.

Pay attention:

In broadcasting mode it isn't possible to change any other settings at the "Settings" tab.

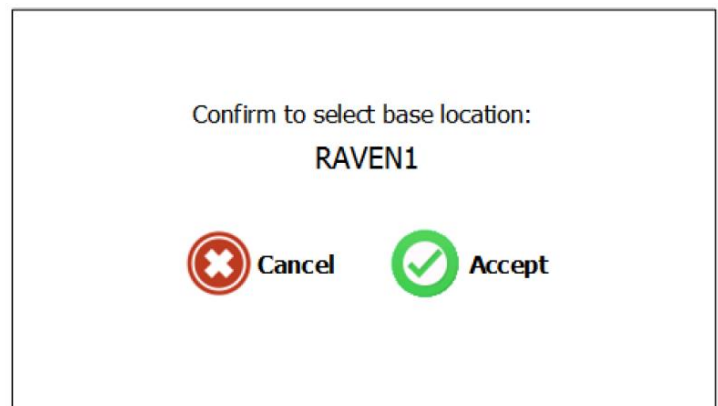


Figure 7 Confirm to select base station



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3. Stop broadcasting corrections

When the Smartbase is broadcasting corrections, the main screen displays a "STOP" button, shown at Figure 8.

When the stop button is pressed, and the confirmation screen is accepted, the SmartBase won't broadcast any corrections any more. It returns to the home screen and you are able to configure a new location or modify the broadcast configuration.

By pressing "Cancel" at the confirmation screen (Figure 9), broadcasting will continue.

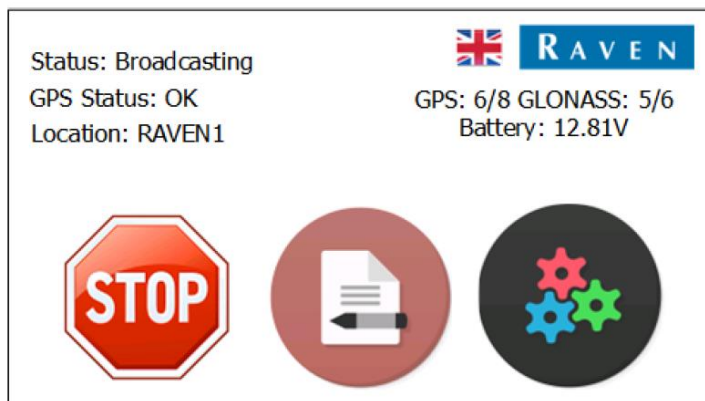


Figure 8 Main screen while broadcasting

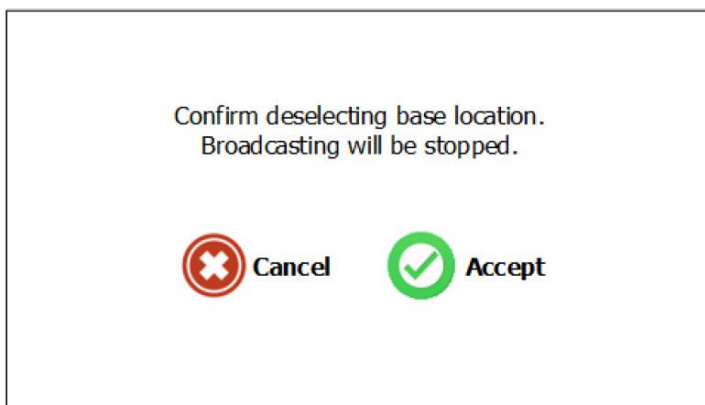


Figure 9 Confirm deselecting base station



4. Managing the stored base locations

By pressing the manage button (in the middle) at the home screen, the screen shown in Figure 10 will appear. At this screen, you are able to manage the stored base locations. By pressing the icon with the pencil (1), the name of the stored location can be changed. By pressing the trash bin (2), the location can be deleted after confirming this step. By pressing the information button (3), information about the location will be displayed like it is shown in Figure 11.

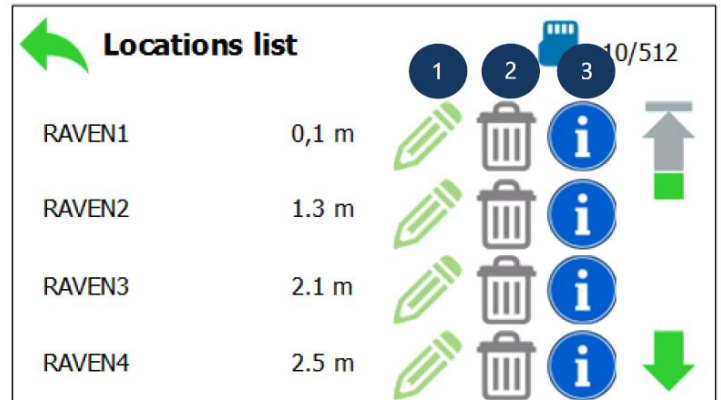


Figure 10 Locations list

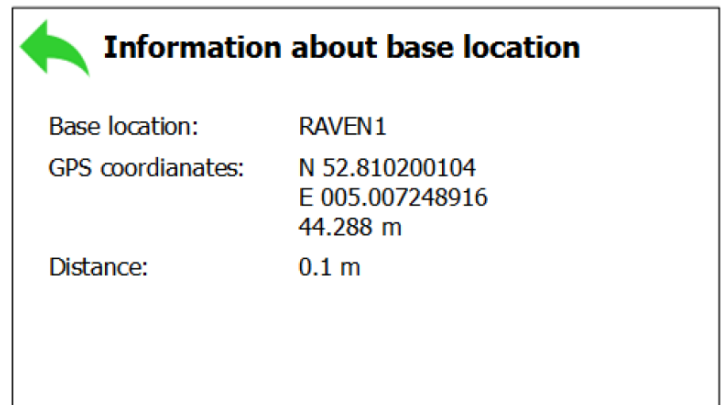


Figure 11 Information about base location

5. Information and settings

At the information and configuration menu it is possible to get some more information about the status of the SmartBase. By pressing the tabs at the top of the screen, it is possible to let the SmartBase show "General" (1) information, "Advanced" information and at the last tab "Settings", it is possible to adjust the configuration of the SmartBase (3).

5.1. General information tab

Just like the home screen, there is information shown about the satellite status at the "General" tab (Figure 12). Also the actual GPS coordinates and altitude are shown. The configuration of the GPS receiver is shown, this status will be "Static" in broadcasting mode, and "Rover" in idle mode. At the bottom, the battery voltage is shown.

5.2. Advanced information tab

More specific information is shown at the "Advanced" tab (Figure 13). The PDOP indicates the quality of the tracked down satellites. When GPS satellites are positioned really close to each other, the PDOP value will be bad (high PDOP). The further the satellites are positioned from each other, the better the quality of the calculated position will be (low PDOP). For example, a PDOP of nearly 1 is ideal. A PDOP value of 20 is really poor.

The CPU load, the duration that the SmartBase is online, GPS receiver type, Radio modem type and SmartBase version is also shown in this tab.

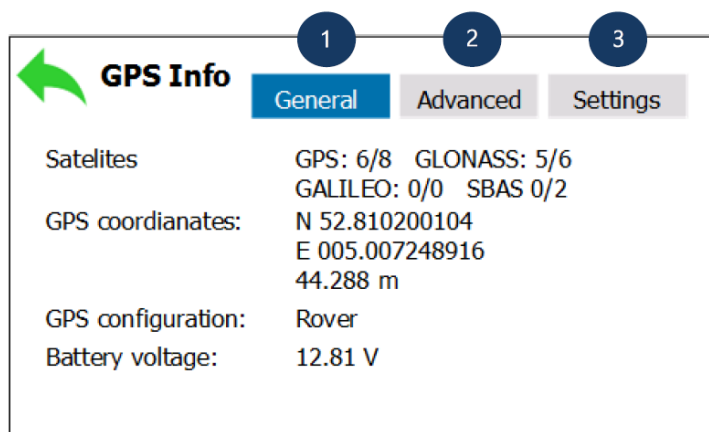


Figure 12 GPS Info: General

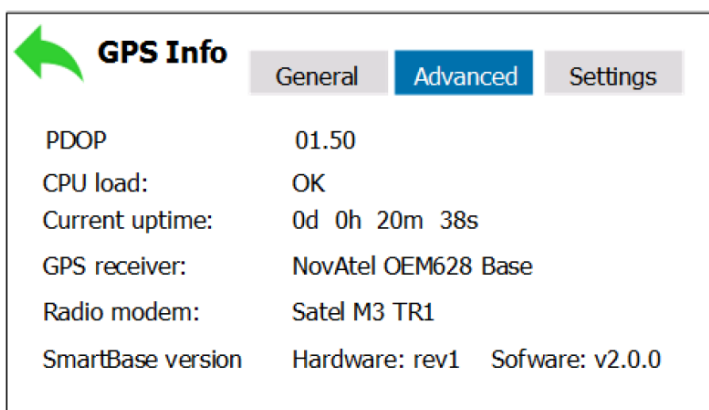


Figure 13 GPS Info: Advanced



5.3. Settings tab

At the "Settings" tab (Figure 14), the broadcast configuration can be changed. At the main tab, the current settings are shown. By pressing the "Change" buttons, it is possible to change the settings by each type of them.

Pay attention:

When the SmartBase is in broadcasting mode, the "Change" buttons will disappear. See Figure 15. First stop the broadcasting by deselecting the base location (Stop button at the home screen)

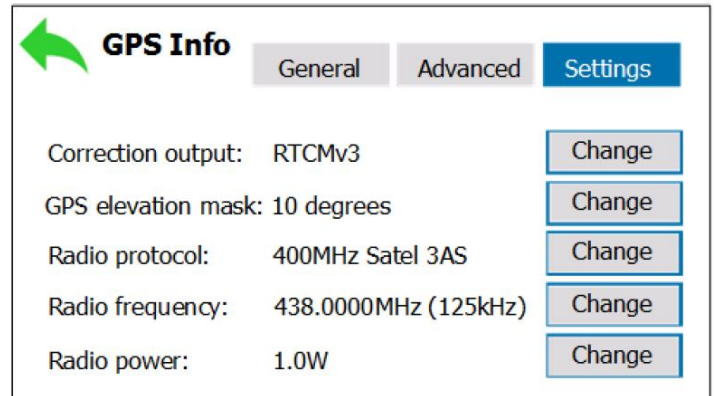


Figure 14 GPS Info: Settings

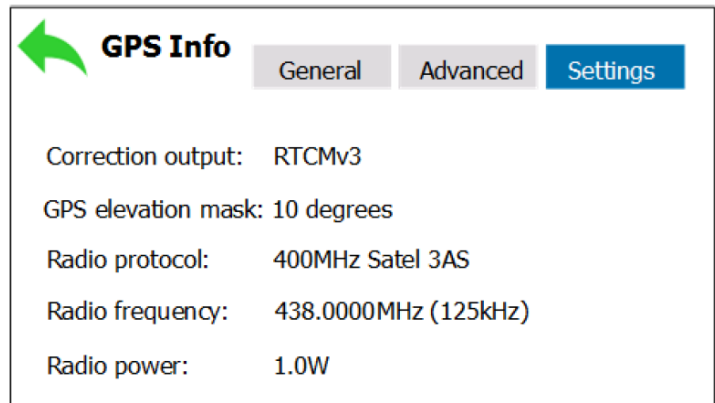


Figure 15 Settings while broadcasting



5.3.1. Correction output

The correction output is a type of the broadcasted string. It is like a language, it has to be the same on the one side and the other (receiver) side. The current supported correction types are: CMR v2 and RTCMv3. Normally the output type is set at RTCMv3.

5.3.2. GPS Elevation Mask

The "GPS elevation mask" controls the angle, relative to the horizon, at which the SmartBase will attempt to track a satellite. Satellites with an elevation below this angle will be tracked but will not be included in the position solution. By pressing the plus or the minus buttons it is possible to increase or decrease the elevation mask. By pressing the save button, the elevation mask is saved en set. Normally the elevation mask is set at an angle of 10 degrees.

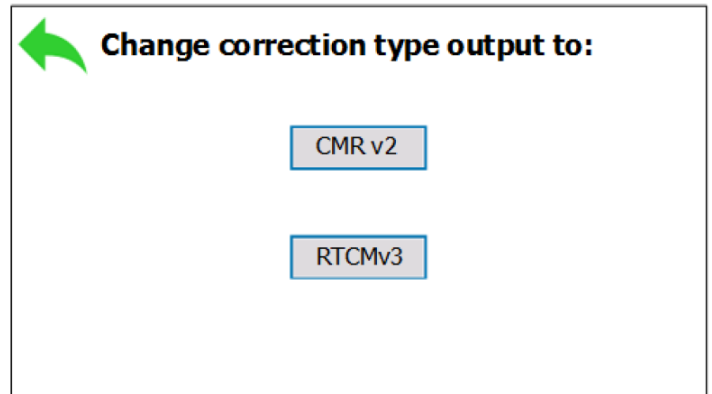


Figure 16 Change connection output

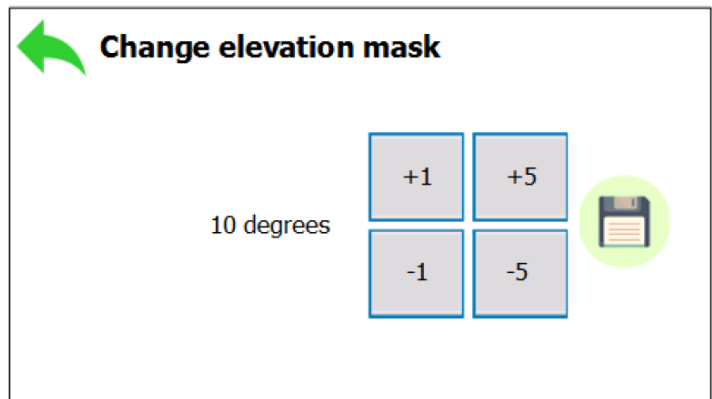


Figure 17 Change elevation mask



5.3.3. Radio protocol

Radio protocol is the protocol which will be broadcasted. It is some kind of an encryption of the broadcasted signal. If a Satel modem is used at the receiver side, the radio protocol must be set at "400MHz Satel 3AS". Please contract your dealer to figure out which radio modem is used at the receiver side. The best compatible protocol is the "400MHz Satel 3AS" protocol. This is because the SmartBase uses a Satel modem as well.

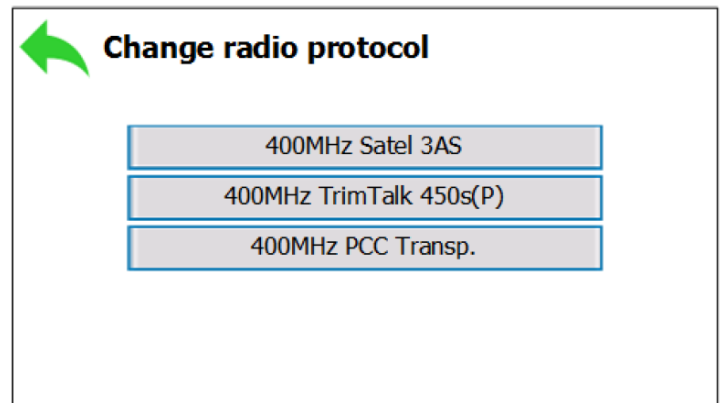


Figure 18 Change radio protocol

5.3.4. Radio frequency and channel spacing

Radio frequency and channel spacing is the broadcasting frequency and channel spacing where the radio modem will act at. These values has to be the same as the receivers side. By pressing the change button the following screen will appear. (Figure 19) Please notice that you only use settings that comply with the regulations set forth by local authorities.

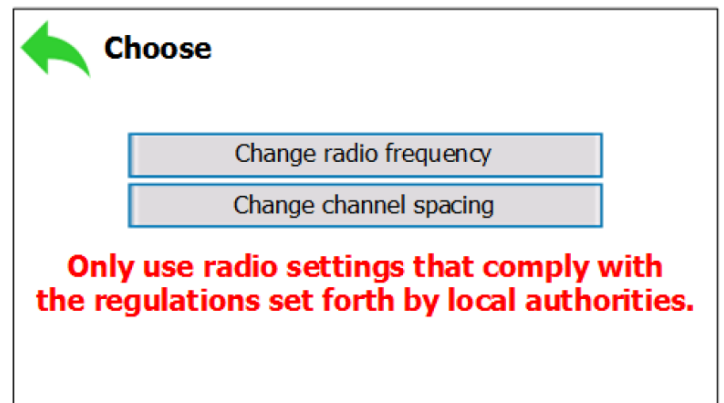


Figure 19 Choose to adjust frequency or channel spacing

5.3.5. Radio power

Radio power is the transmit power where the SmartBase will act at. The higher the power is set, the further the signal from the SmartBase can be received. Please notice that you only use settings that comply with the regulations set forth by local authorities.

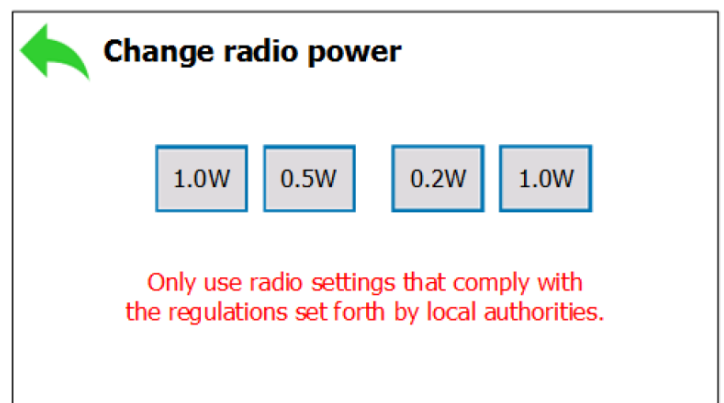
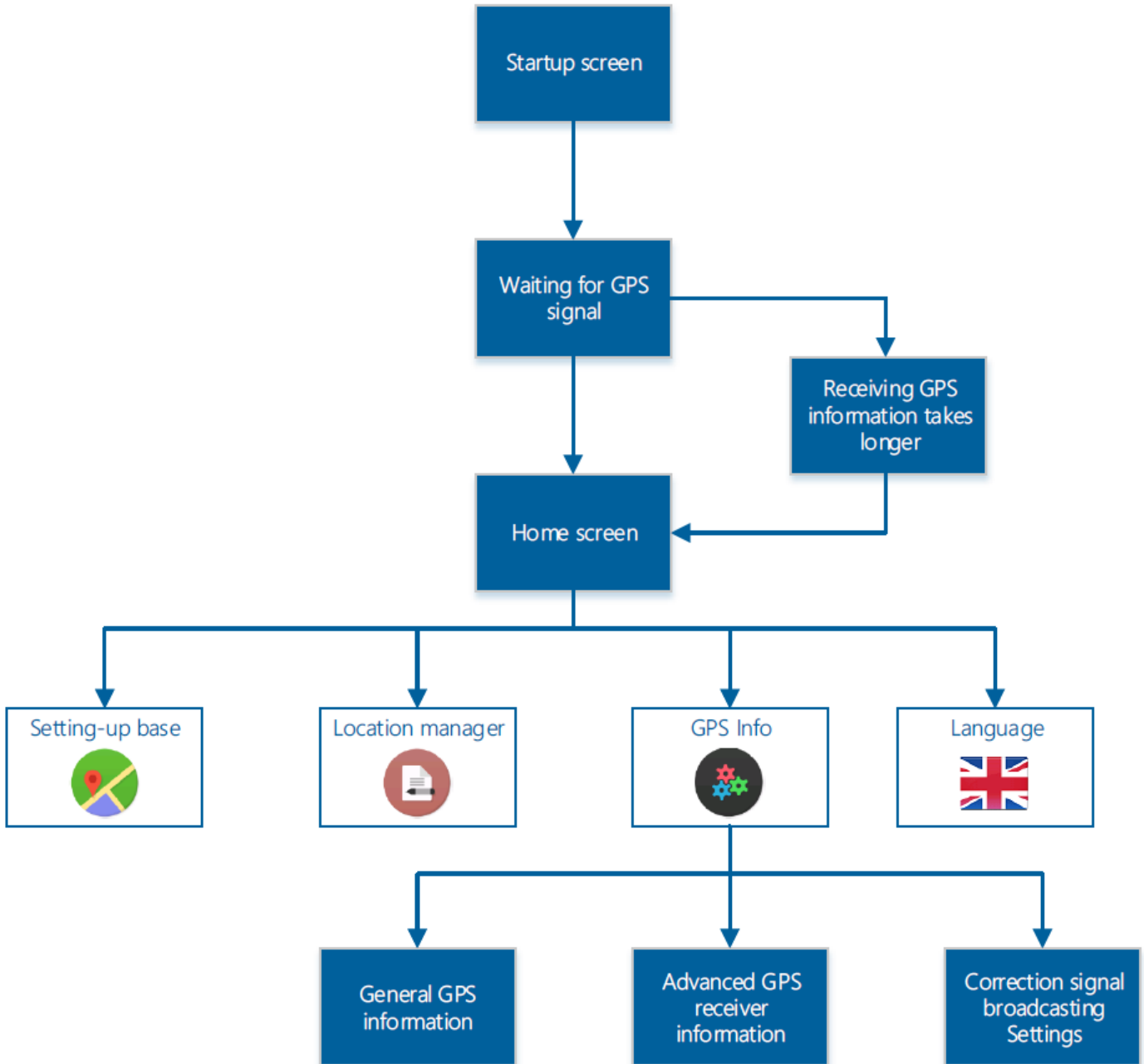


Figure 20 Change radio power

6. Menu Topology



The menu structure of the SmartBase is shown above. The SmartBase starts with receiving the current GPS position. When this takes longer than usual, a screen will appear with the mention: "Waiting for GPS information takes longer than usual...". This happens when the SmartBase is not in good range of the GPS satellites, this can be caused by objects like tree's, buildings, etc. Which can block the signal of the satellites. Place the SmartBase at a clear spot without big objects nearby.



SBG

PRECISION FARMING

Powered by **RAVEN**



SBG precision farming

Hoornseweg 22
1775 RB Middenmeer
Nederland

Email: info@sbg.nl

Web: www.sbg.nl

Tel: +31 (0)227 54 93 00

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