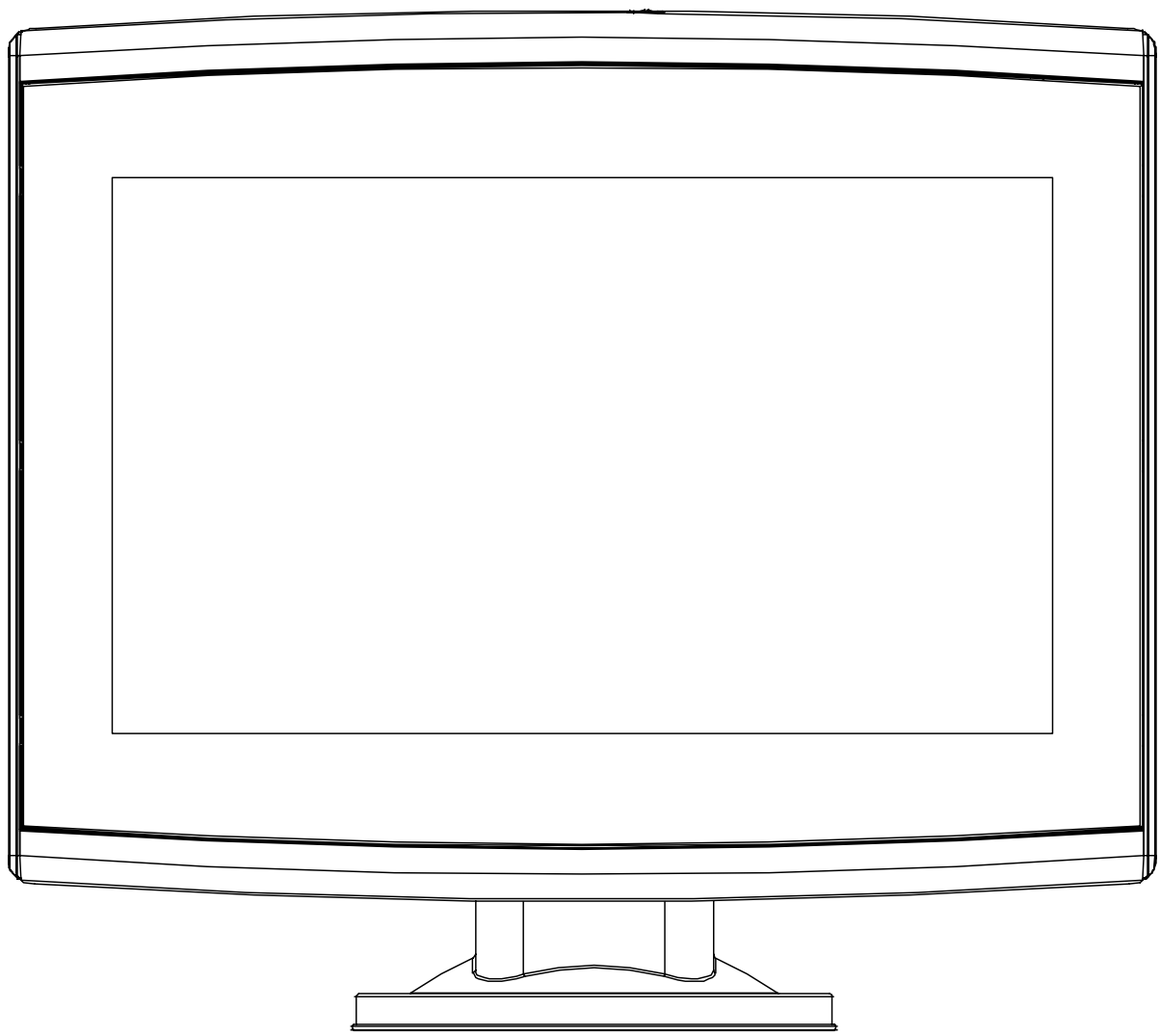
FARMNAVIGATOR



G7 Dataseed

USER MANUAL

Updated to 1.0.xR software version

(where x indicates all 1.0 software versions)

Index

1. Introduction

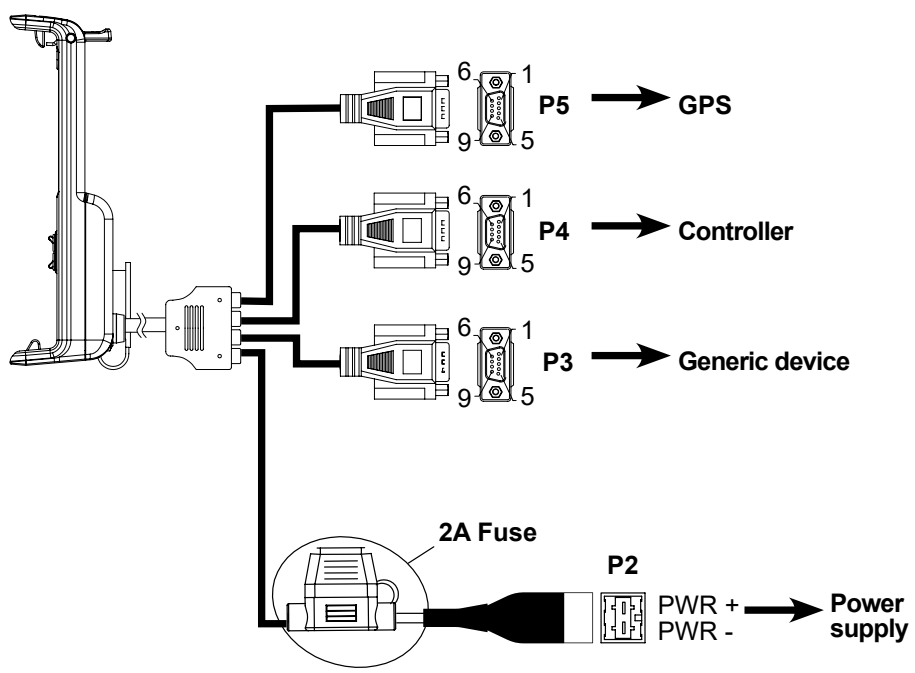
1.1 What you can do with G7 Dataseed

Thank you for choosing FARMNAVIGATOR G7 Dataseed!
Now you have the opportunity to:

-Record the exact sowing track;
-Command a weeder with translator in automatic mode;
-Export the recorded tracks with high density of dots.

1.2 Electrical connections

G7 Dataseed is equipped with a bracket and harness with connectors for easy and safe installation on the vehicle. The wiring includes a 2A protection fuse. The power supply voltage must be in the 10-35 Vdc range. Follow the installation instructions provided inside the box.
AvMap disclaims any liability deriving from an improper use or installation of the product in a way that may violate the regulations and safety.
It is highly recommended that the installation of the product will be performed by a qualified maintenance technician. Consult the Installation manual for a correct installation procedure.



P5 PIN-OUT	
PIN n°	**Function**
2	GPS TX
3	GPS RX
4	GPS VCC
5	GPS GND

P4 PIN-OUT	
PIN n°	**Function**
2	DEVICE 2 TX
3	DEVICE 2 RX
5	DEVICE 2 GND

P3 PIN-OUT	
PIN n°	**Function**
2	DEVICE 1 TX
3	DEVICE 1 RX
4	DEVICE 1 VCC
5	DEVICE 1 GND
9	EXTERNAL ALARM

Figure 1.2.a - Electrical connections

1.3 How to install the GNSS receiver

The installation procedure described refers to the FARMNAVIGATOR All in One RTK receiver. The receiver box includes all the accessories necessary for a correct and precise installation.

ATTENTION: the accurate positioning of the receiver on the equipment (seeder, weeder, etc.) is essential to achieve precise and effective mechanical weeding.
It is strongly recommended having the installation carried out by a specialized technician.

To configure the receiver at the end of the installation, read paragraph 2.3.1

1.3.1 How to connect the GNSS receiver to G7 Dataseed

The All in One RTK receiver is equipped with a cable with a 9-pin serial connector that transfers data and power between the G7 Dataseed and the receiver.
With the device off, connect the receiver cable to the harness connector labeled “GPS”.

1.3.2 Receiver position - orientation

The receiver includes a tilt sensor to measure every slight inclination of the tool, for this reason it is essential to orient the receiver very accurately, placing the connector on the side opposite to the direction of advancement of the vehicle. The supplied bracket helps the correct housing of the cable.

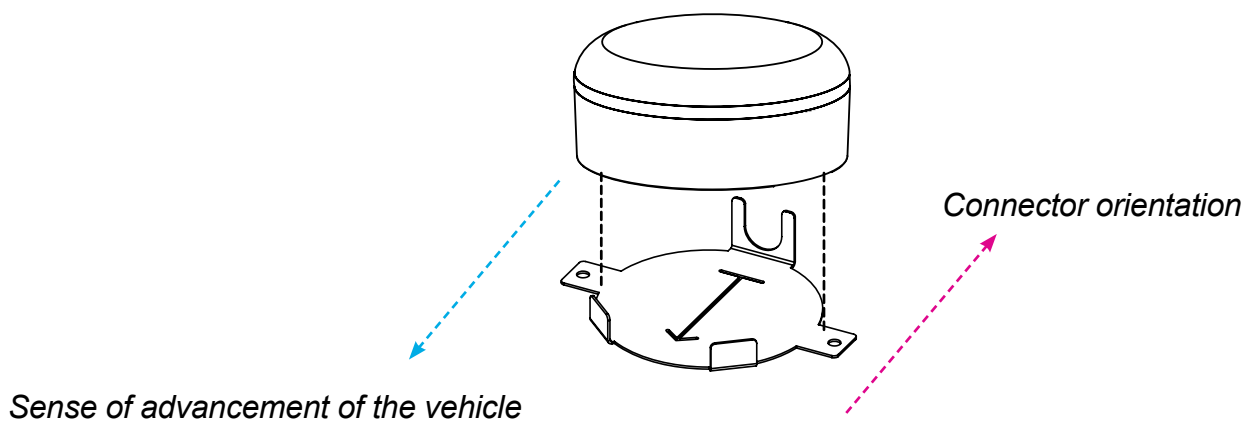


Figure 1.3.2.a - Example of installation with the supplied bracket

1.3.3 Receiver position – Transverse axis

The receiver must be positioned exactly in the center of the tool. The

center of the receiver itself is positioned on the exact half of the width of the tool.

1.3.3.1 Seeder / planter installation

Example of installation on a seeder / planter. The receiver must be positioned exactly in the center of the tool.

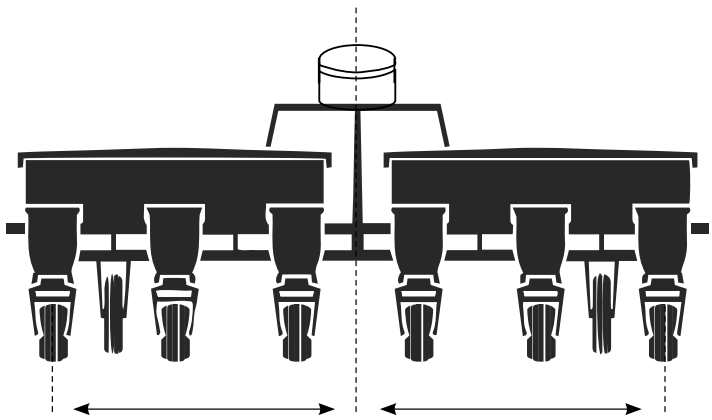


Figure 1.3.3.a - Receiver positioned in the center of the implement

Figure 1.3.3.b - Receiver installation in the center of the planter

1.3.3.2 Weeder installation

Example of installation on a weeder. The receiver must be positioned exactly in the center of the tool.

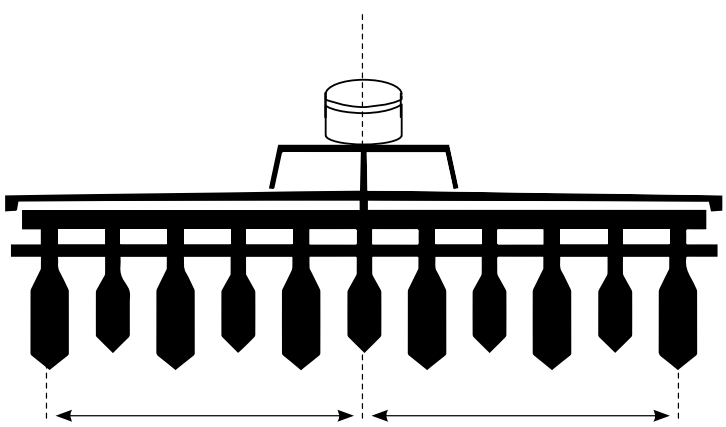


Figure 1.3.3.c - Receiver positioned in the center of the weeder

ATTENTION: for correct use, the working width of the weeder must be equal to or a multiple of the working width of the seeder!

Figure 1.3.3.d - Receiver installations in the center of the weeder

1.3.4 Receiver position - Height from the ground

The GNSS receiver includes a tilt sensor to measure every slight inclination of the implement, for this reason it is very important to position the receiver as far as possible from signal disturbing elements (metal covers, plastic items, etc.). Furthermore, it is very important at the end of installation to place the implement on a well-leveled surface and measure the height from the ground to the colored edge of the receiver itself. The measurement must be entered in the receiver configurations on the G7 Dataseed. To configure the receiver at the end of the installation, read paragraph 2.3.1

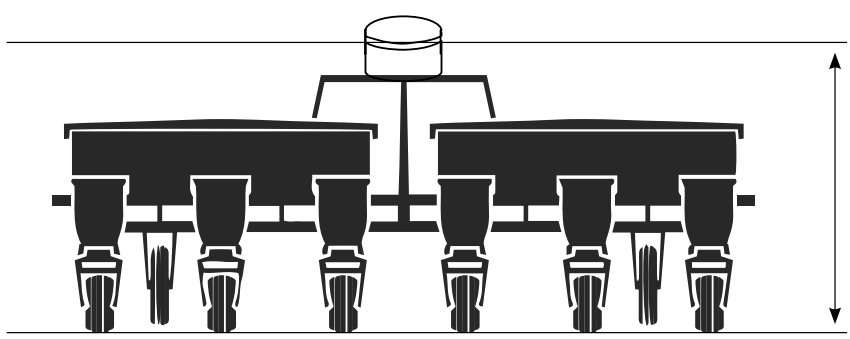


Figure 1.3.4.a - Measuring the height from the ground

1.4 Turning the G7 Dataseed on

Before turning G7 Dataseed on, make sure the display is connected to the bracket. Check that the bracket is firmly anchored to the tractor and that the power cable is plugged into 12V socket.

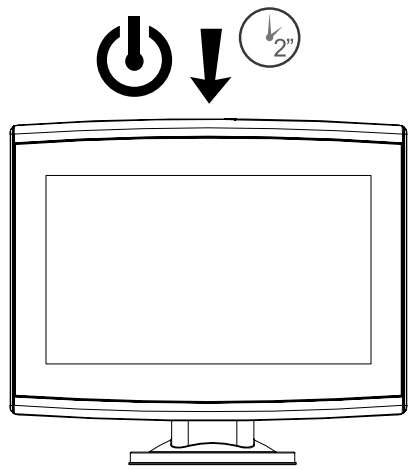


Figure 1.4.a - Turning on the display

1. Press and hold the button located in the upper right corner of the display for 2 to 3 seconds;
2. Once the device is on, the logo will be displayed on the screen;
3. Once loading is completed, a warning section will appear on the screen. Please, read it carefully and press OK to accept and continue, and open the main menu.

To turn the display off:

1. Press and hold the power button for 2 to 3 seconds;
2. Press “YES” to turn the device off.

It is possible to reset G7 Dataseed if the device cannot be normally turned on/off. The reset button is located at the left of the power button, below the plastic cover.

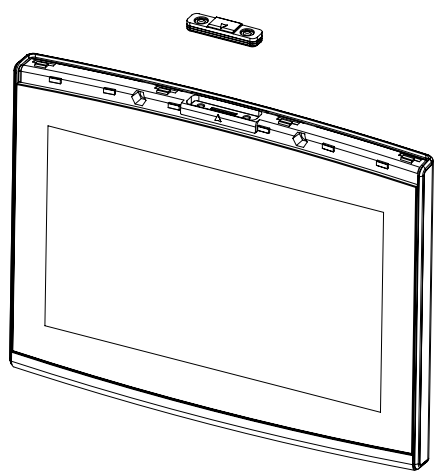


Figure 1.4.b - Location of reset button

How to reset the device:

1. Press the button;
2. Wait for the device to reset.

ATTENTION: a reset of the device might cause data loss. Export your data before starting the reset procedure.

1.5 How to use multi-touch display

G7 Dataseed is provided with a multi-touch display which allows you to perform specific actions with your fingers.

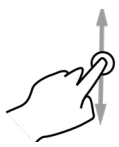
	Tap the screen to select a button from the menu.
	Move your finger to scroll through the menu or scroll through the pages.
	Slide the fingers closer together or further apart to zoom in or zoom out the field.
	Touch the screen with two fingers simultaneously to rotate the field.

Table 1.5.a - Touch screen gestures and movements

1.6 How to connect ECU Dataseed to the implement

The Dataseed system includes ECU Dataseed, the control unit for the weeding tool. ECU Dataseed is compatible with tools with the following characteristics:

-Implement (weeder) equipped with electro-hydraulic mobile shifting frame;
-On / Off or proportional solenoid valve supplied;
-Solenoid valve power supply + 12V;
-Maximum absorption allowed for 3.15A coil;

The connection scheme of ECU Dataseed is as follows:

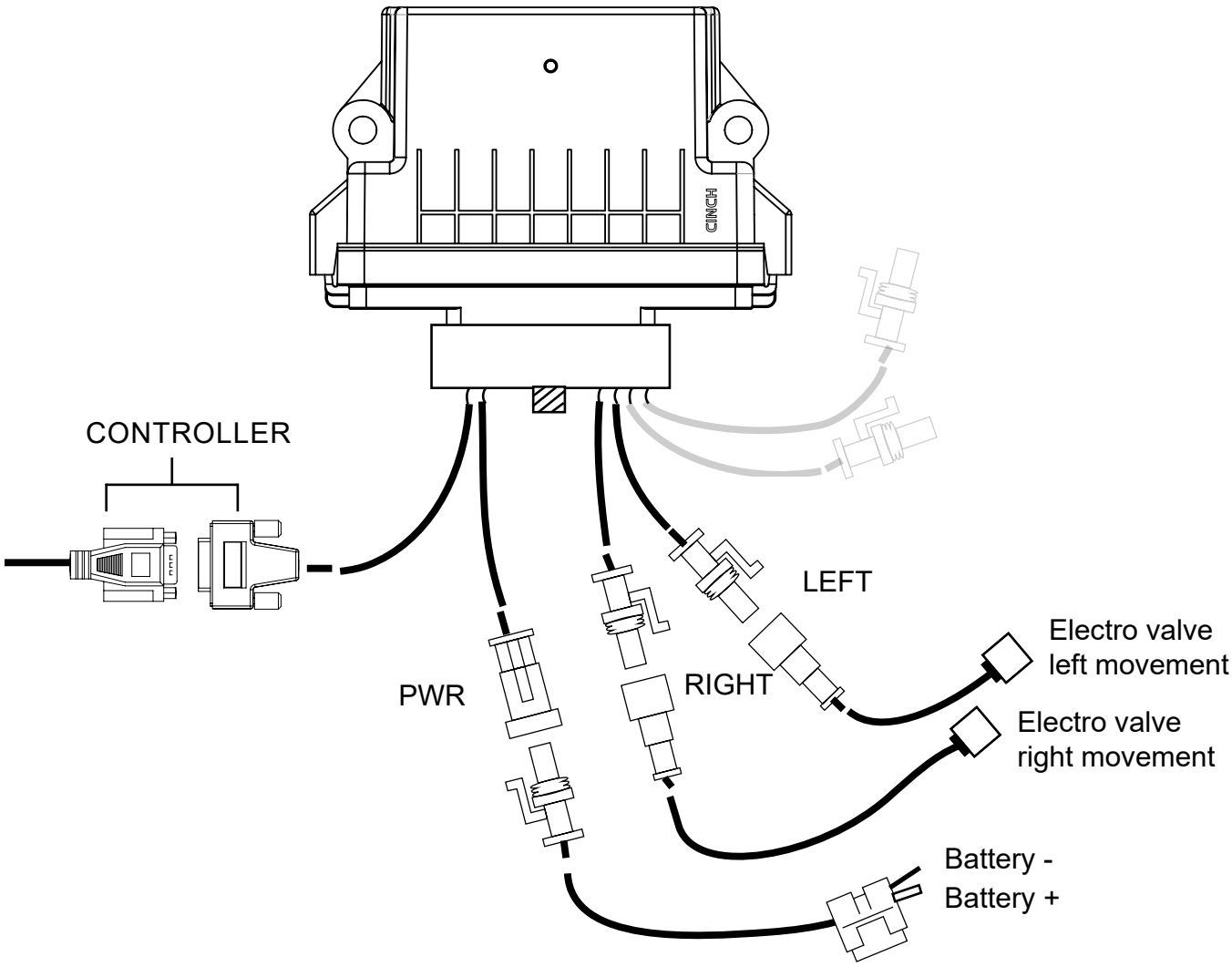


Figure 1.6.a - ECU Dataseed connection scheme

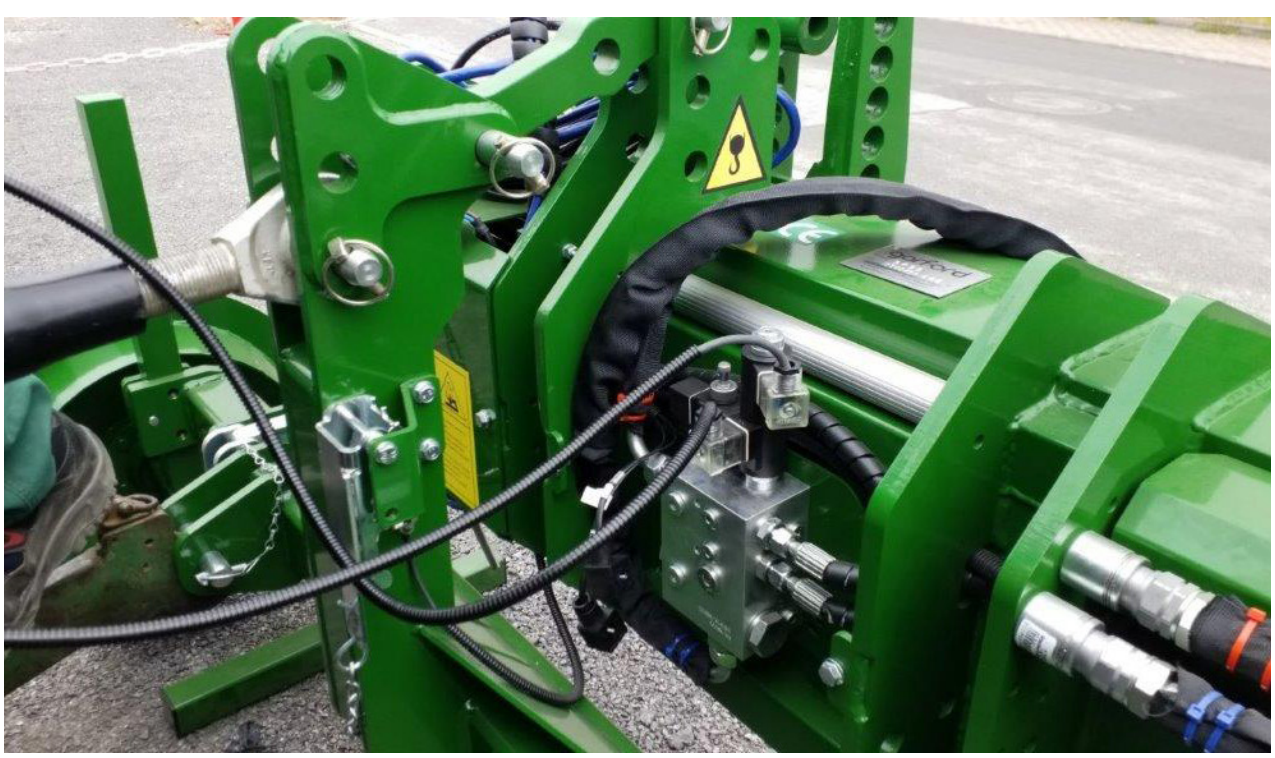


Figure 1.6.b - Example of connection of solenoid valve

Before starting work in the field it is necessary:
-To Check the correct installation of the solenoid valves and sense of work:

1. Read Par. 2.1 to start a trial recording;
2. With the RIGHT cable connected to the coil that generates the movement of the translator to the right, press the RIGHT button in the work page (the left of the operator sitting on the tractor seat);
3. With the LEFT cable connected to the coil that generates the movement of the translator to the left, press the LEFT button in the work page (the right of the operator sitting on the tractor seat);

-To bring the movement of the translator to the end of stroke to the left and to the right and check that the wiring is not an obstacle during handling

ATTENTION: always check the tool handling area.

1.6.1 ECU Dataseed troubleshooting

Any communication / connection errors are shown both on the display and through a LED positioned in the center of ECU Dataseed. Here are the errors and possible solutions:

Error	Error detail	Solution
 Display, ECU Error	There is no communication between the display and the ECU.	- Check that the 9-pin serial cable is correctly connected to the “Controller” port; - Check that the ECU Dataseed is correctly powered (LED on).
ECU Dataseed, Flashing Purple LED light	There is no communication between the display and the ECU.	- Check that the 9-pin serial cable is correctly connected to the “Controller” port; - Check that the ECU Dataseed is correctly powered (LED on); - Start a registration of a track / open and repeat a saved track.

ECU Dataseed, Steady Green LED light	No movement but correct communication between display and ECU.	- Control the movement with the LEFT and RIGHT buttons; - Open and repeat a saved track to switch to automatic control mode.
ECU Dataseed, Steady Blue LED light	No movement (both in manual mode and in automatic mode)	- The working speed must be greater than 0 km / h; - Check the connection of RIGHT and LEFT; - Check the correct hydraulic supply; - Check the correct functioning of the hydraulic part.

Table 1.6.1.a - ECU Dataseed troubleshooting

2. Main menu and basic operations

Below are shown the basic operations for the creation of a new track, repeating a saved track, setting the system and managing the database.

Figure 2.0 - Main menu

2.1 Recording a sowing track

Track logging is the basic functionality of the G7 Dataseed system. G7 Dataseed can store and organize with precision all the information relative to the sowing tracks recorded. Correct data entry, before starting recording, will be very useful during the weeding phase, when repeating the saved track.

Before starting the registration phase, make sure you have connected and configured the system as described in the previous chapter.

To record a track:

1. Tap “RECORD NEW TRACK”;
2. Under “Track name” enter the name of the track by tapping “Add track name”;
3. In the “Field name” row, select the field from the list;
4. In the row “Farmer name” select the name of the customer / farmer from the list;

5. In the “Driver Name” row, select the name of the driver;
6. Tap “OK” to switch to the work page;
7. Before starting with the recording of the track, check that the accuracy of the system is “GPS RTK”;
8. To start recording, tap “RECORDING”.

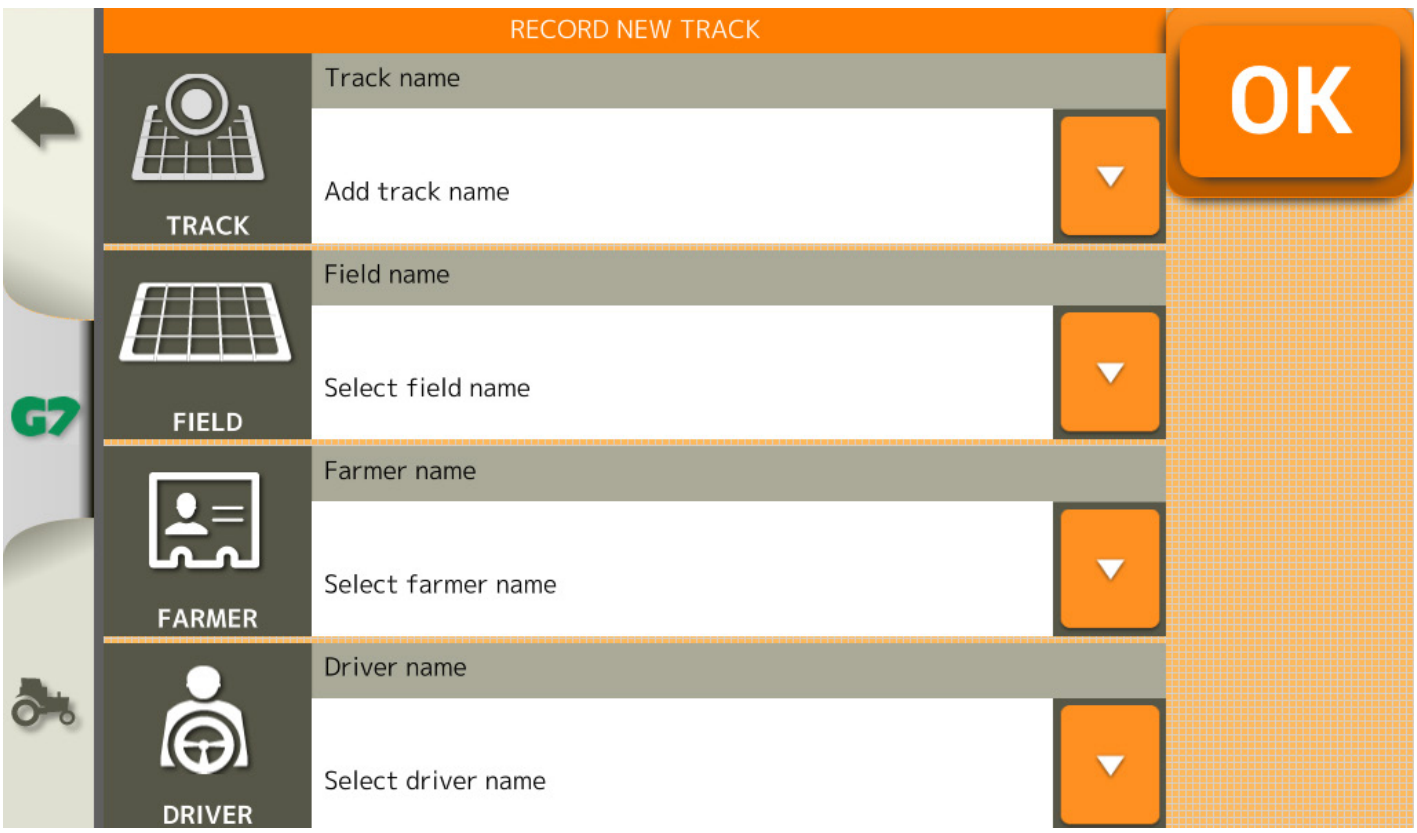


Figure 2.1.a - Track data entry

The work page (track registration) allows you:

- To record, pause and stop recording using the buttons on the left side of the screen;
- To manually move any tool connected to the ECU Dataseed by tapping the right and left arrow buttons, on the right side of the screen. While recording a track, it is not possible to switch to “Automatic” mode (the button becomes active only when a previously recorded track is selected);

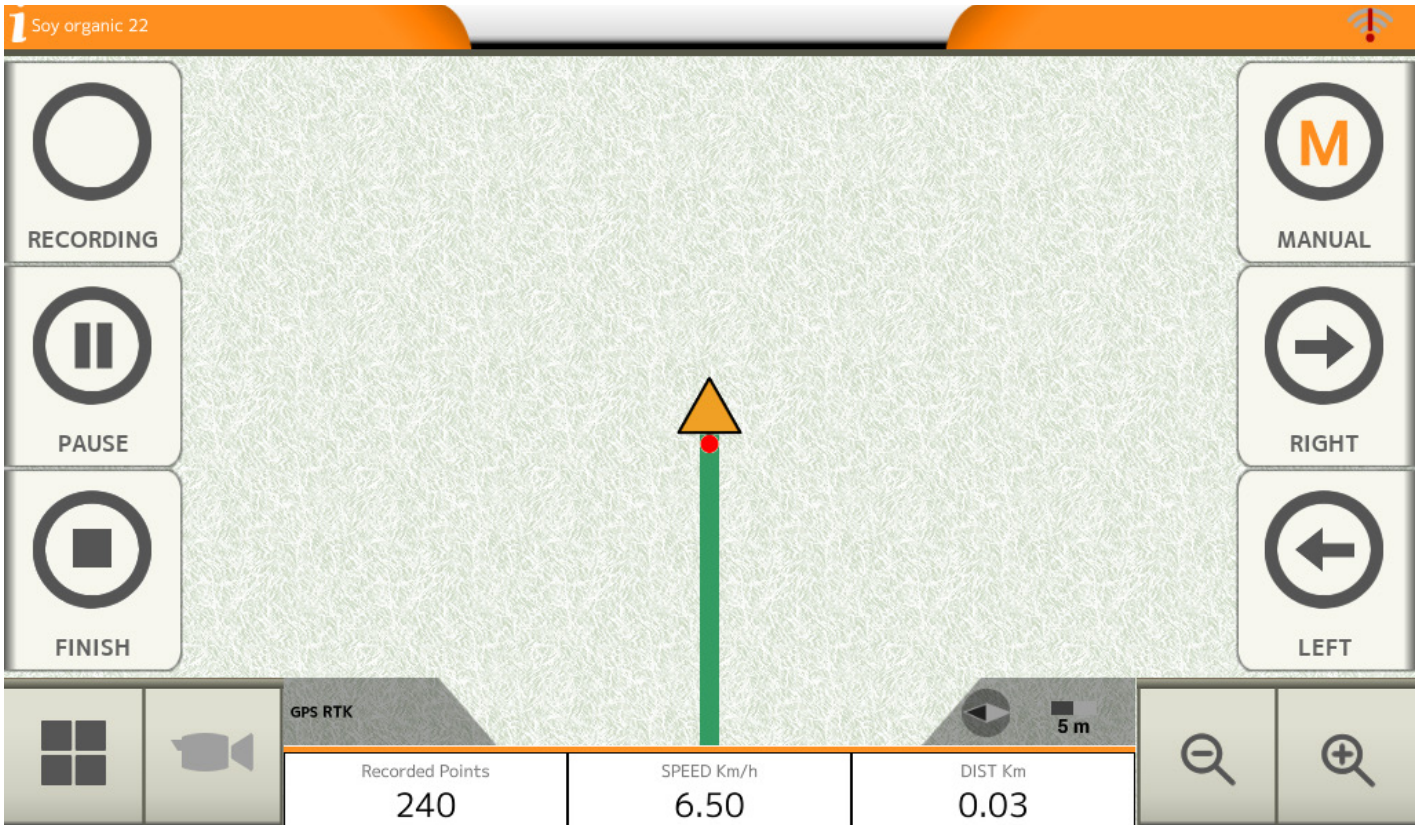


Figure 2.1.b - Work page - track recording

-While recording, the record button is flashing red. At the bottom of the screen the recorded points, the speed and the distance traveled are displayed.

During the recording it is possible to pause the recording of the points by tapping the “PAUSE” button;

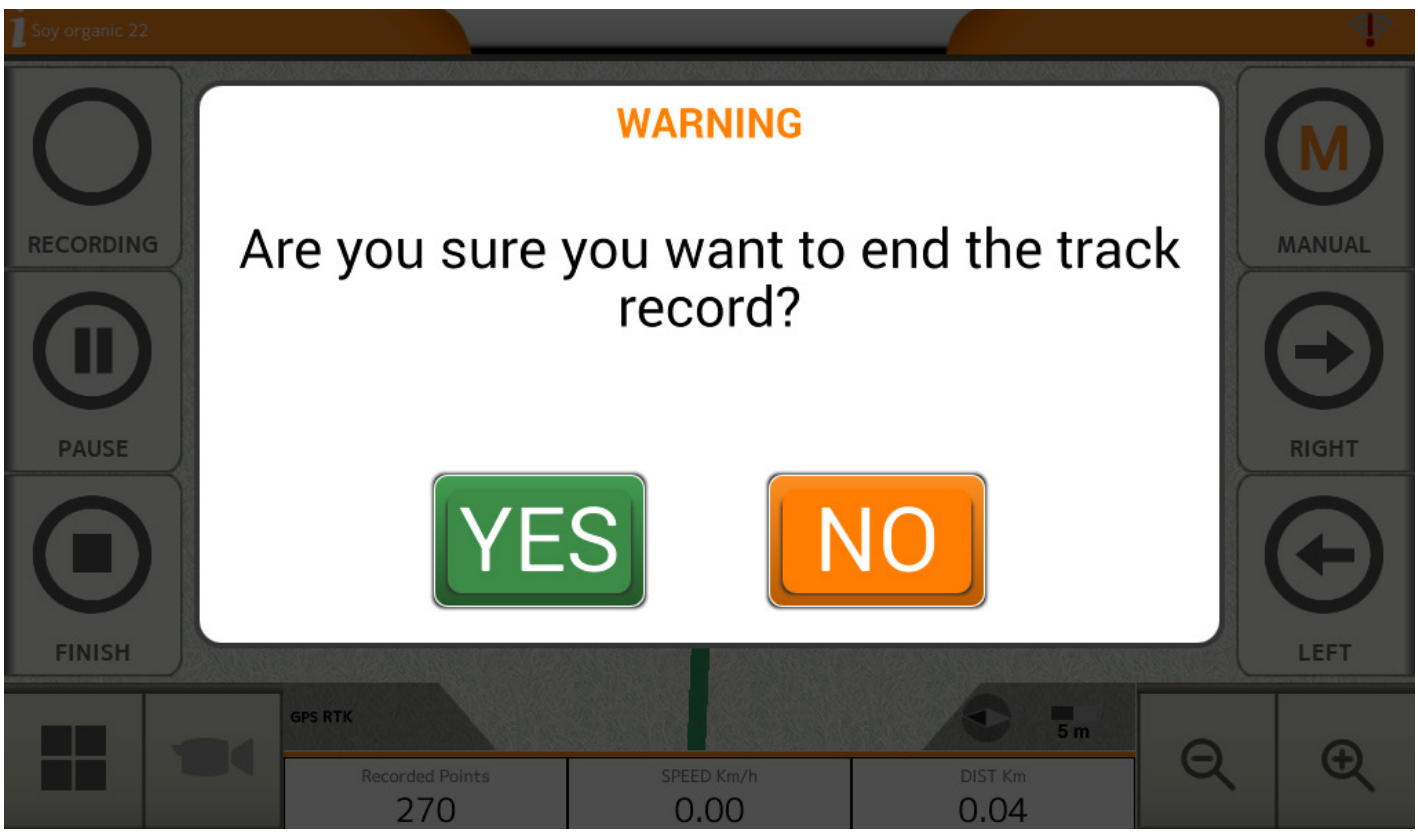


Figure 2.1.c - End track registration

-To end the recording, tap the “END” button. And confirm by tapping “YES”.

To record a new track, open the Main Menu tap “RECORD NEW TRACK” again and follow the steps described above.

2.2 Weeding phase: repeating the sowing track

One of the strengths of G7 Dataseed is the ability to repeat with extreme precision a previously recorded track and automatically control a weeder equipped with a shifting frame.

Before repeating the track it is suggested to double check:

-The correct installation of the receiver;

-The correct installation of the ECU Dataseed.

To repeat a track:

1. Tap on “REPEAT TRACK” in the main menu;
2. Select the track from the list;
3. Tap track name to select it;

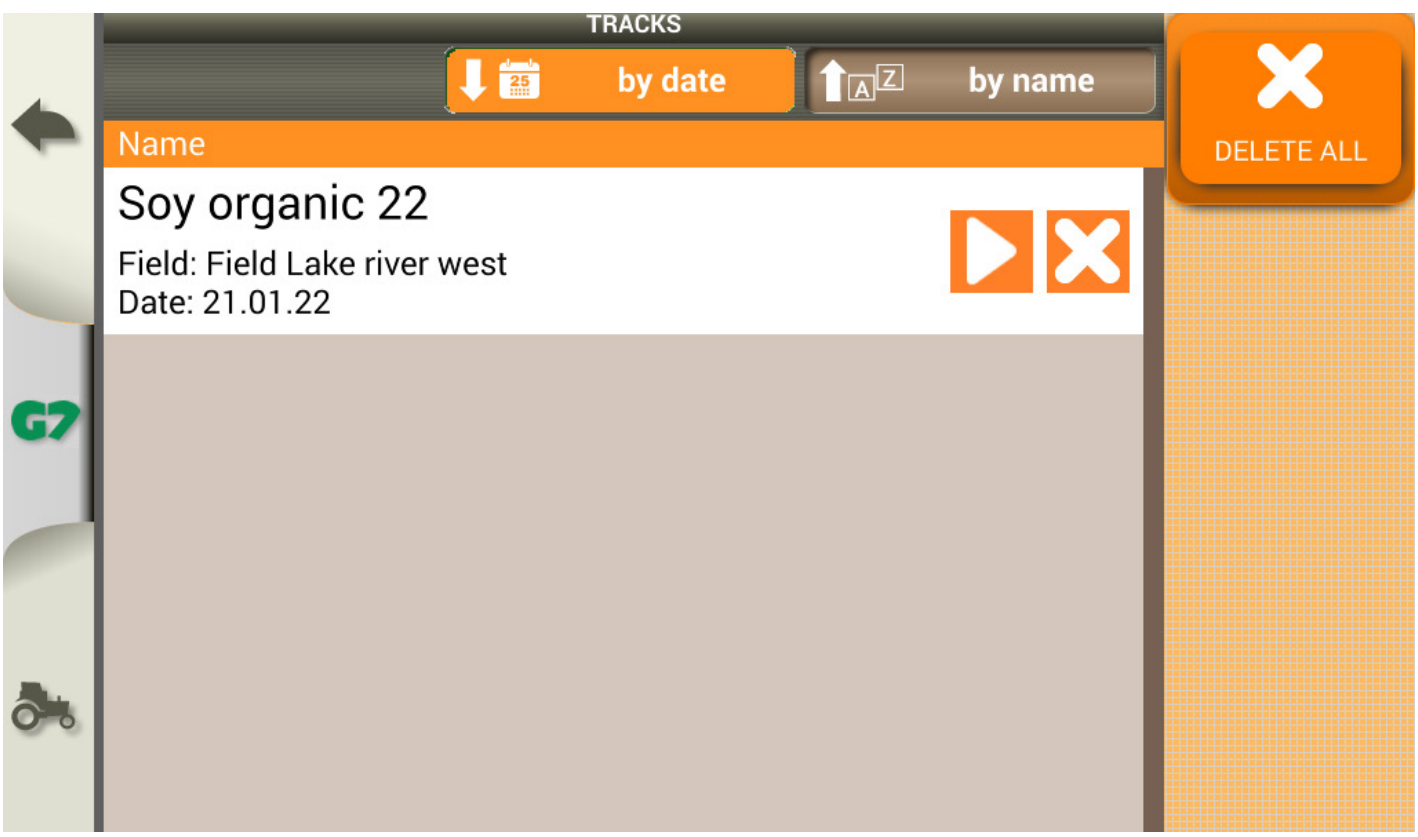


Figure 2.2.a - List of saved tracks

4. The track detail opens up; To work on the selected track, tap on “START”;

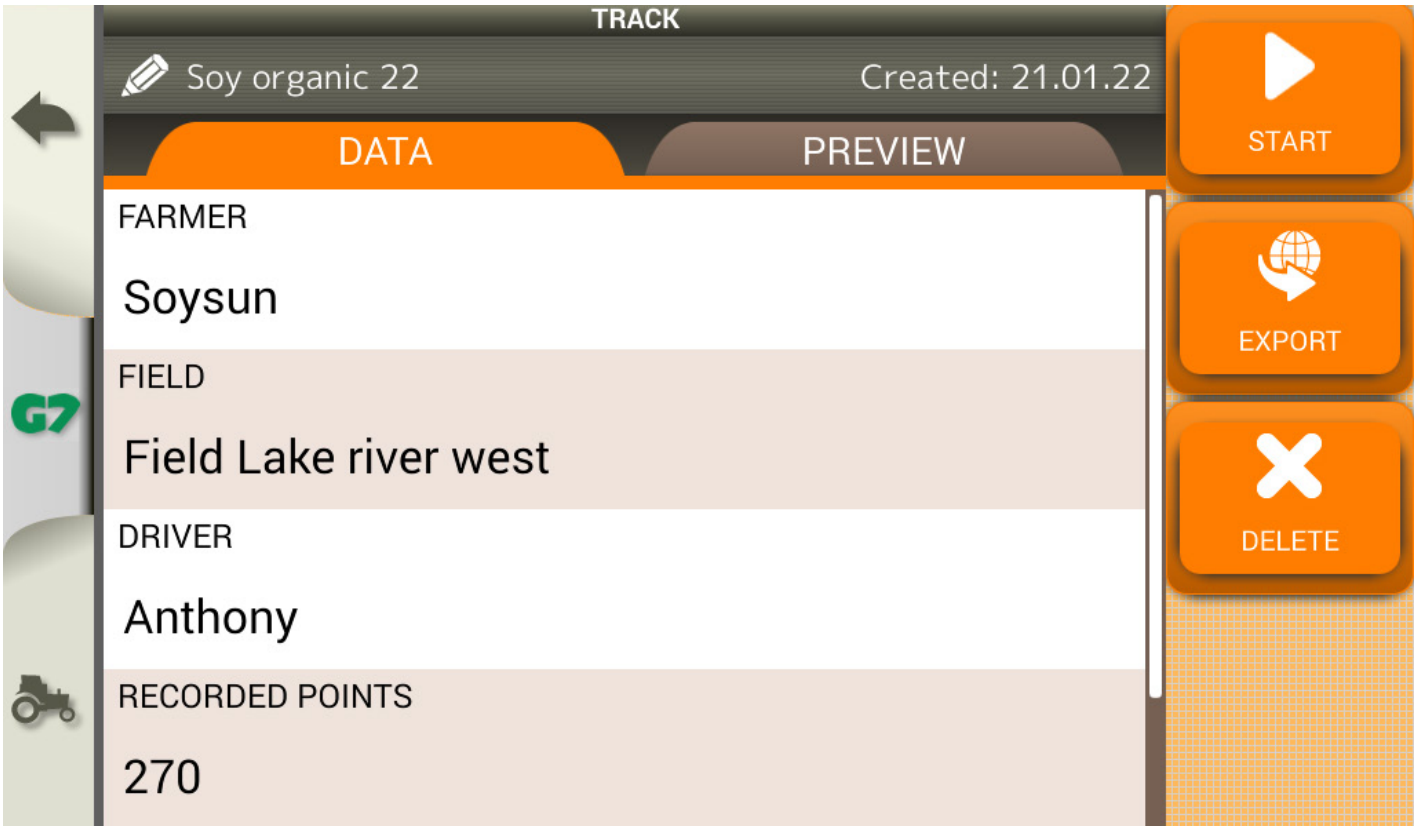


Figure 2.2.b - Preview of the recorded track

In the work page (repeating track mode), the saved track is shown in black, while the “RECORDING” button is disabled.

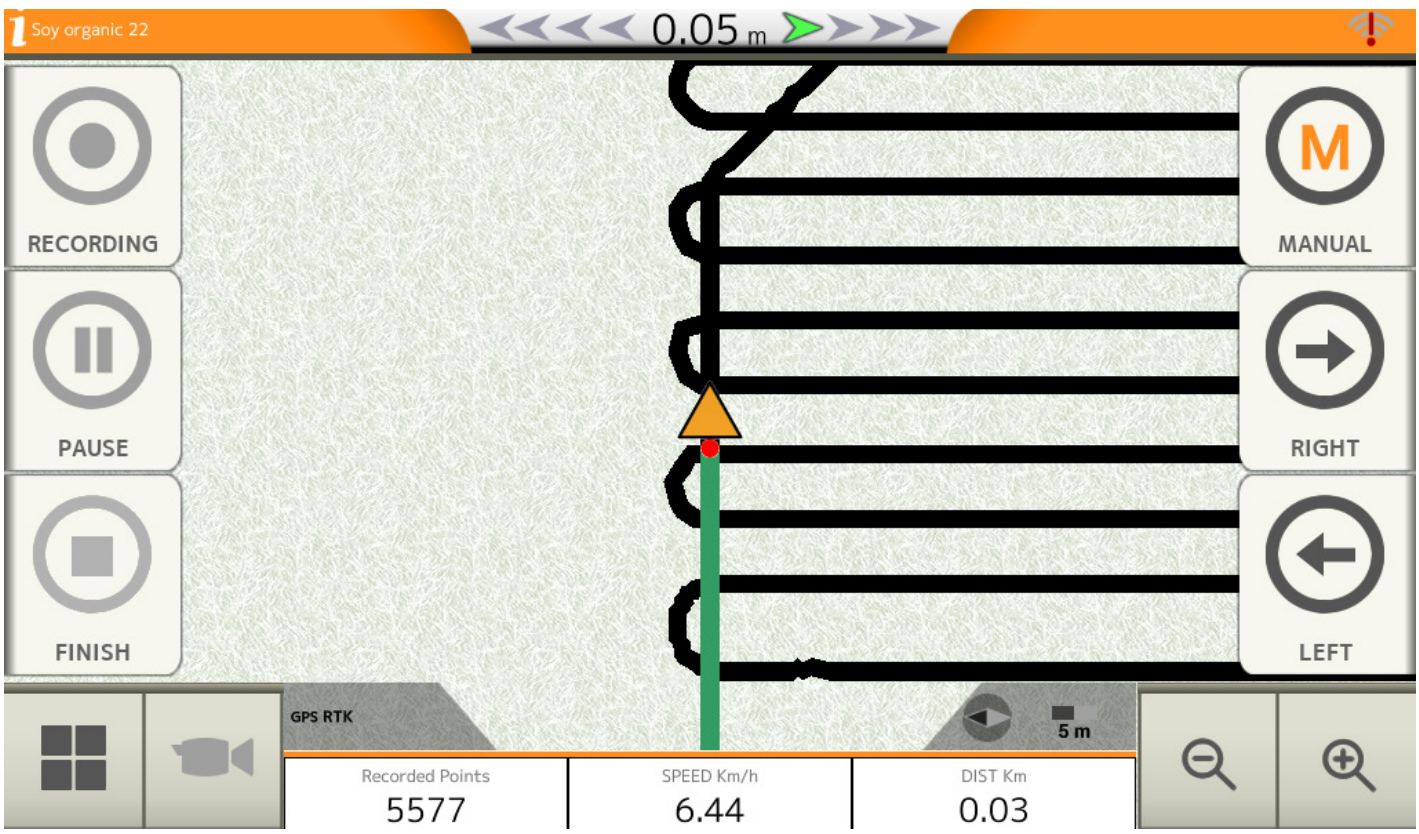


Figure 2.2.c - Track to be repeated in automatic mode

To start automatic weeding control:

-Position the weeding implement near the track to follow;

-Make sure that there is no obstacle and / or person in the proximity of the implement;
-Check the error displayed in the center of the top bar (it is recommended between +/- 0.10m);

At this point, if there are no connection errors with ECU Dataseed, it is possible to press the “Manual” button to switch to “Automatic” mode;

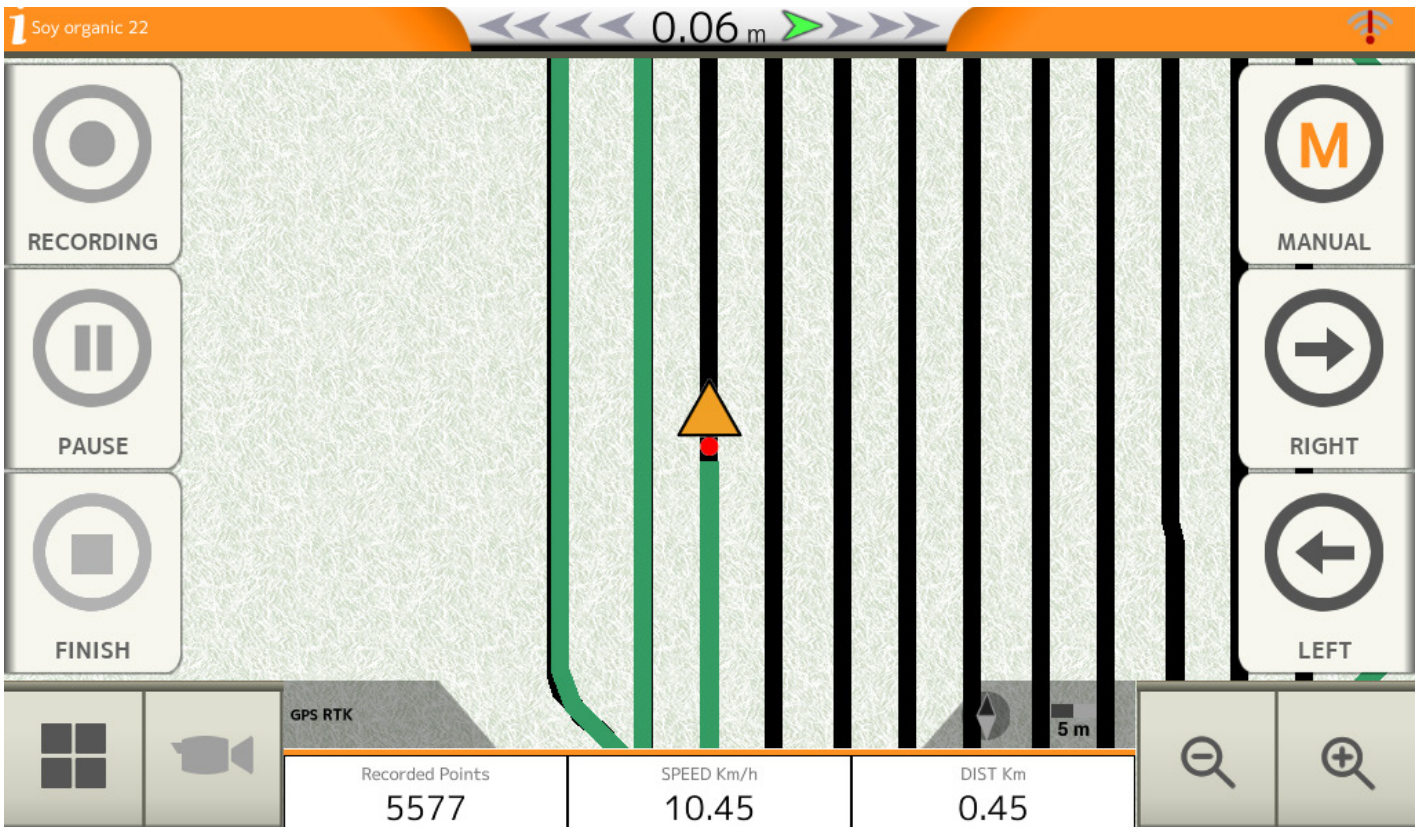


Figure 2.2.d - Automatic repeatig track mode during weeding

ATTENTION: the equipment will begin to move automatically, always pay attention to the area surrounding the equipment.

On the right side of the work page there some icons for interacting with the shifting frame control system. In detail:

	AUTO: In this mode, the translator moves in automatic mode precisely following the track saved previously.
	MANUAL: In this mode, there is no automation.

	LEFT: With the ECU connected, press and hold the button to move the tool to the left.
	RIGHT: With the ECU connected, press and hold the button to move the tool to the right
	ECU ERROR: There is no communication between G7 Dataseed and ECU Dataseed. Check the power supply and the connection on the “Controller” connector.

Table 2.2.f - Work page icons (repeating track mode)

2.3 Setup

The “SETUP” menu includes all the settings for the operation of the software and external devices, in particular the GNSS receiver.

2.3.1 Satellites

One of the most important settings is the GNSS receiver configuration in the “Satellites” menu.

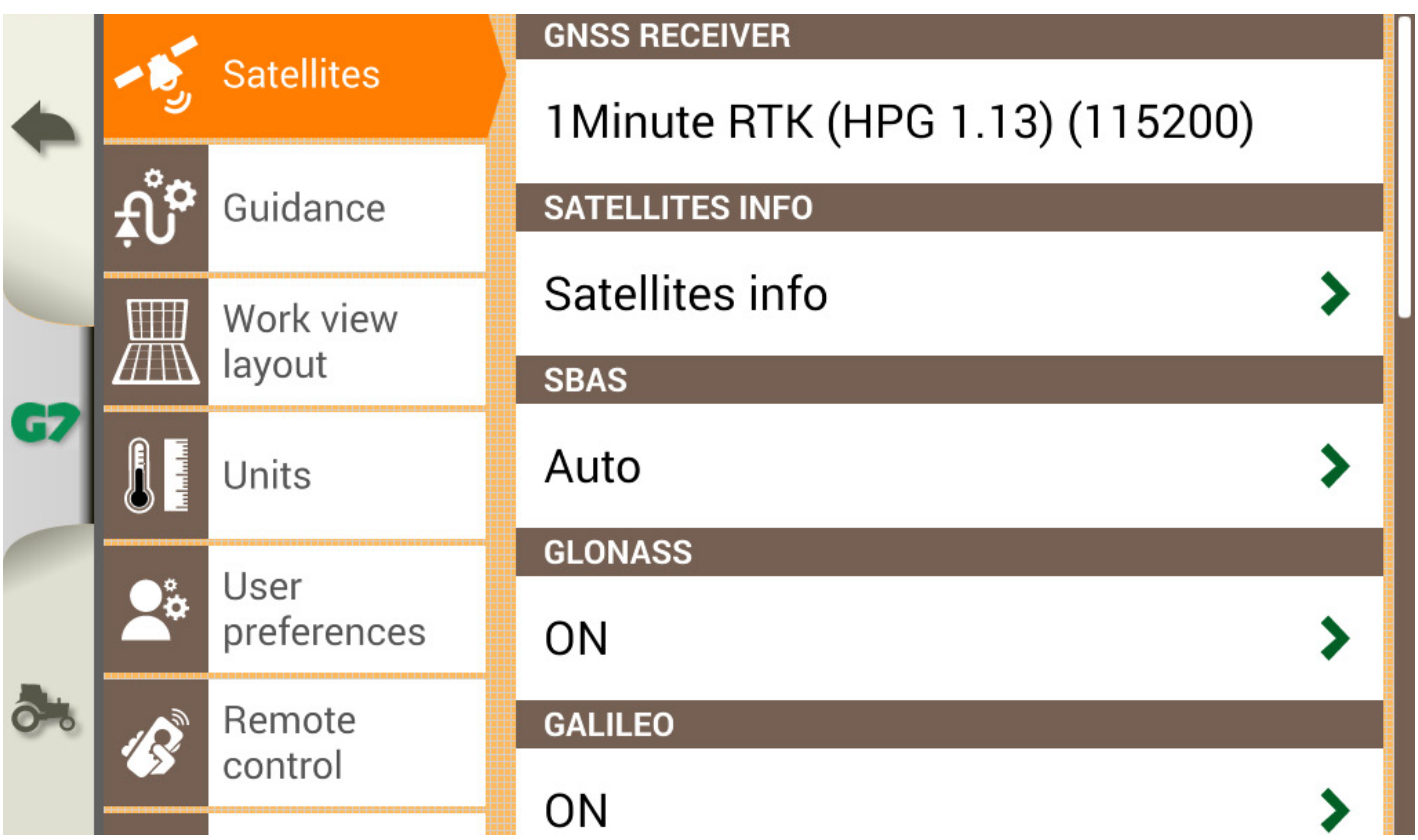


Figure 2.3.1.a - Satellites configurations

G7 Dataseed is compatible with the All in One RTK receiver.
The fundamental configurations for the correct use of the system are the following:

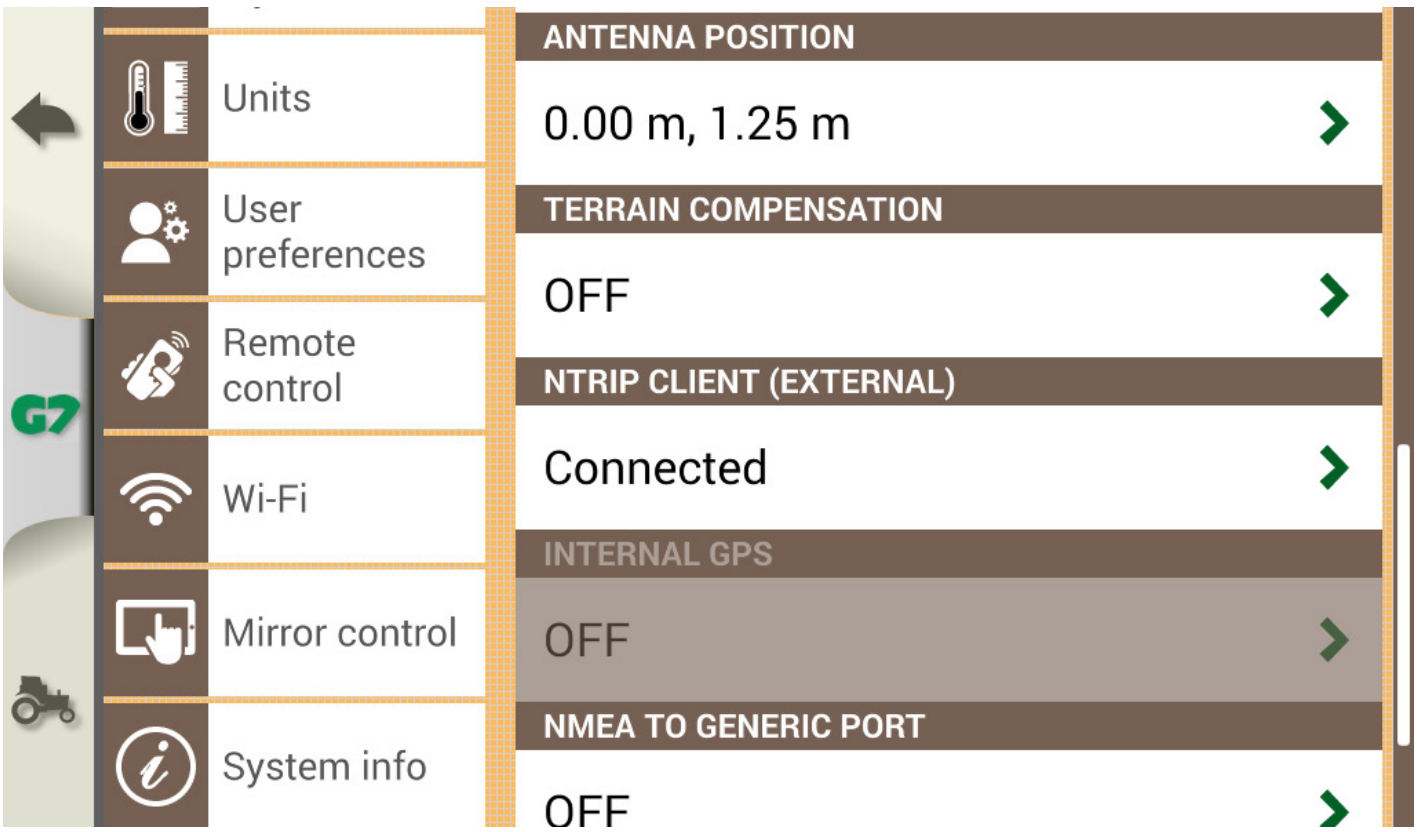


Figure 2.3.1.b - Satellites - Satellite fundamental configurations

Antenna position

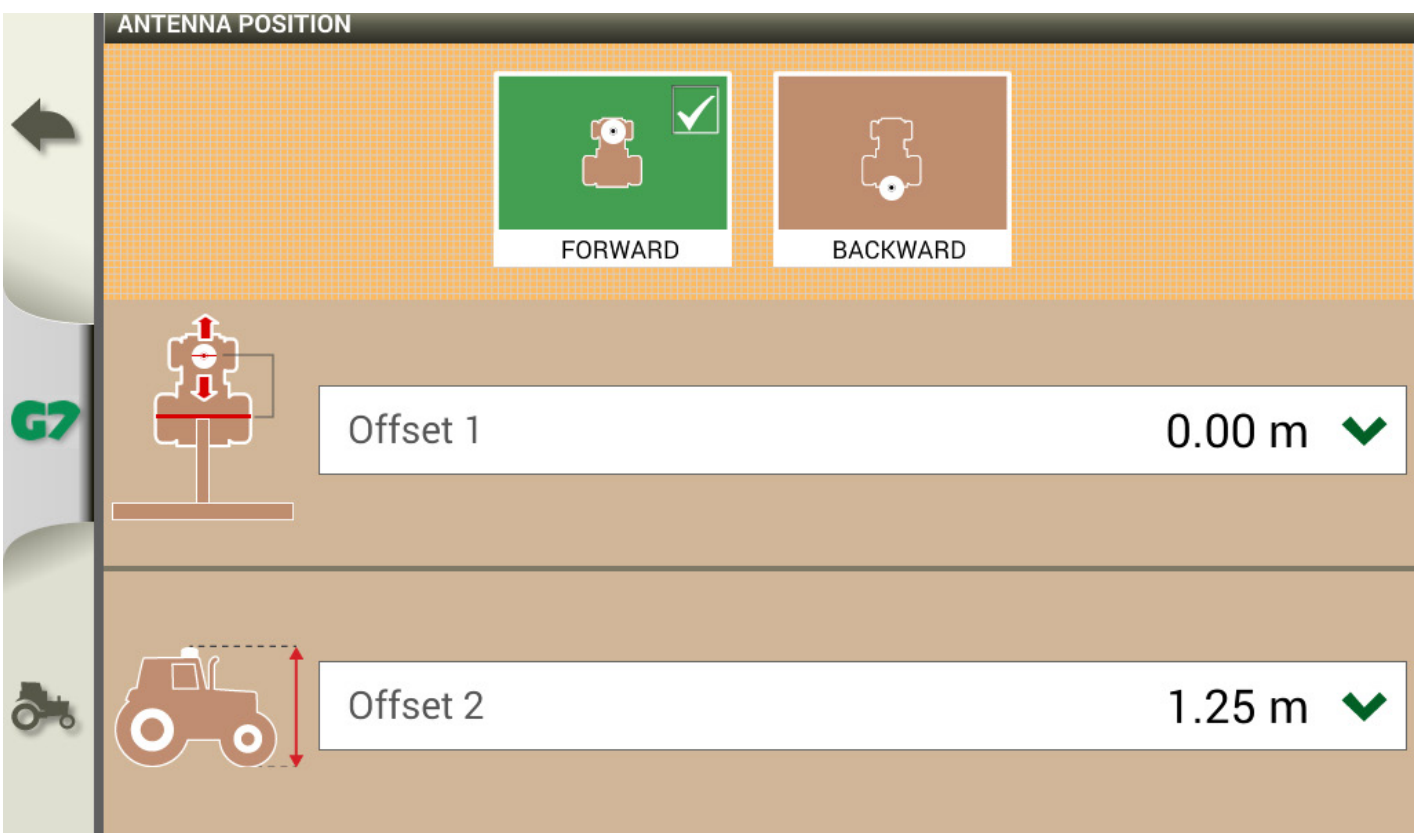


Figure 2.3.1.c - Antenna position settings

NOTE: FARMNAVIGATOR GNSS receivers include the receiver and the antenna in one housing. ‘Antenna position’ setting refers to the center of the outer case.

1. Tap “RECEIVER POSITION”; to set the offset and height of the receiver from the ground;
2. Enter the height of the receiver from the ground, measured during installation, in “Offset 2”.

Terrain compensation

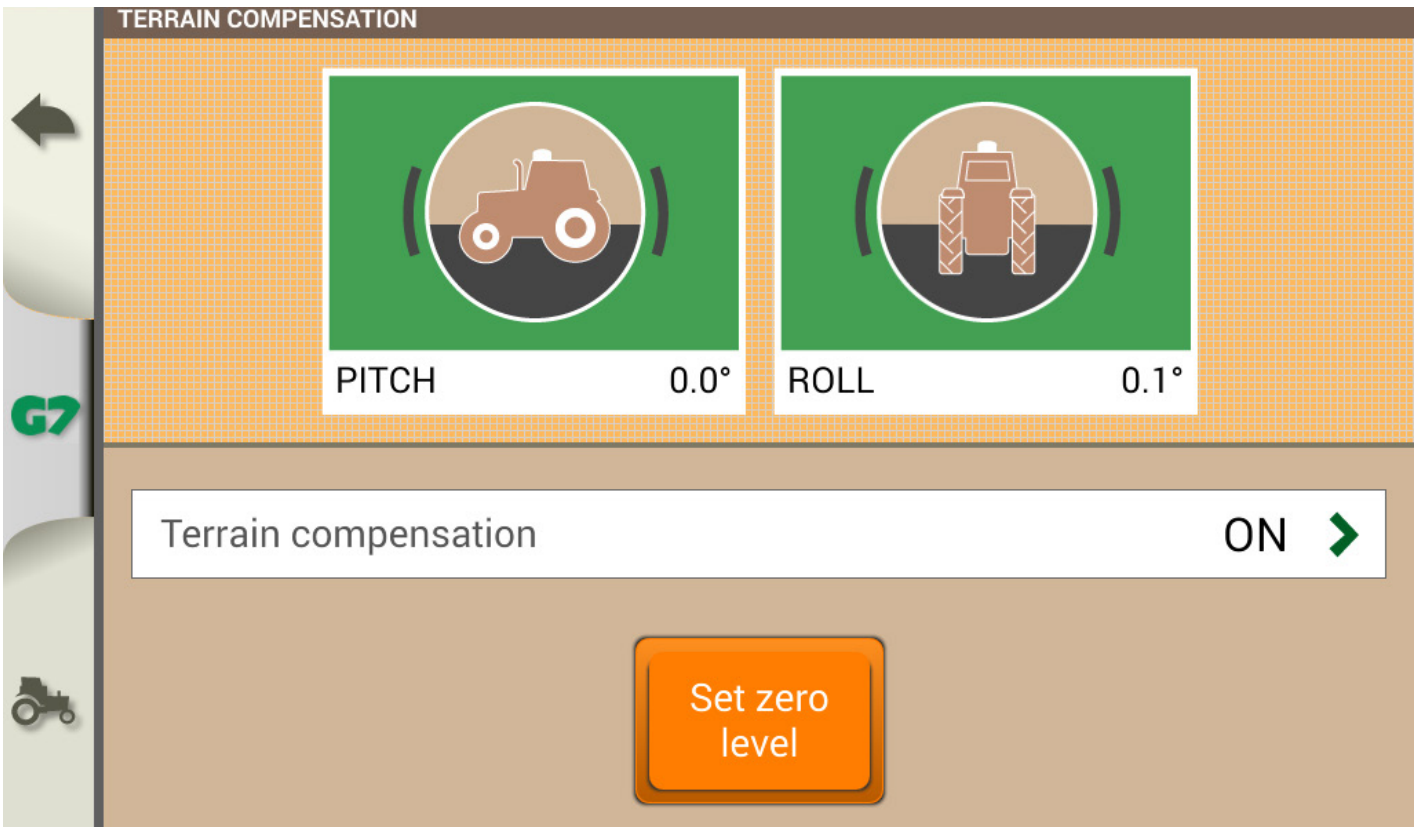


Figure 2.3.1.d - Set ground compensation zero level

1. After entering the height from the ground it is important to activate the ground compensation by tapping on “TERRAIN COMPENSATION”;
2. Here you can view the inclination of the implement on which the receiver is installed and at the same time calibrate the sensor. Calibration must be carried out during the installation phase, by tapping on “Set zero level”.

Figure 2.3.1.e - Set zero level

NTRIP client

Finally, to work with centimeter accuracy, the NTRIP settings must be correctly configured. In the menu, make sure that the “NTRIP CLIENT (EXTERNAL)” is set as “Connected”.

2.3.2 Guidance Options

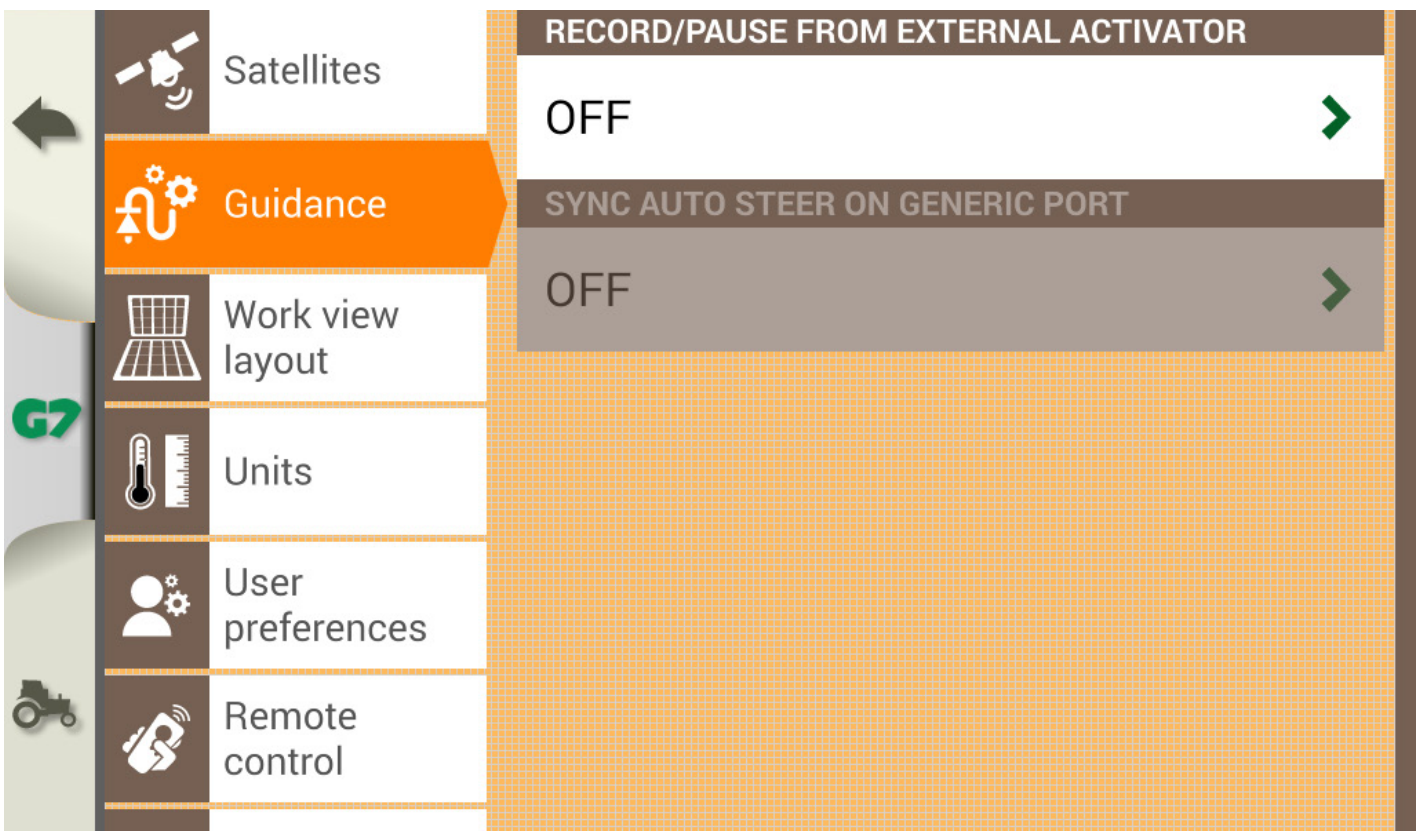


Figure 2.3.2.a - Guidance options

In the “Guidance options” menu it is possible to set “RECORD / PAUSE FROM EXTERNAL ACTIVATOR”. This option allows you to connect an external device to the “Generic Device” serial port through which to start or pause the recording of points without touching the buttons on the screen. Read Par 3.4 for more info on how to install an external activator.

2.3.3 Work view Layout

In the “Work view layout” menu it is possible to change the background of the work page.

2.3.4 Units

In the “Units” menu it is possible to change the units of measurement of area, speed, distance and range.

2.3.5 User preferences

In the “User preferences” menu, you can adjust the display brightness, language and other localization preferences.

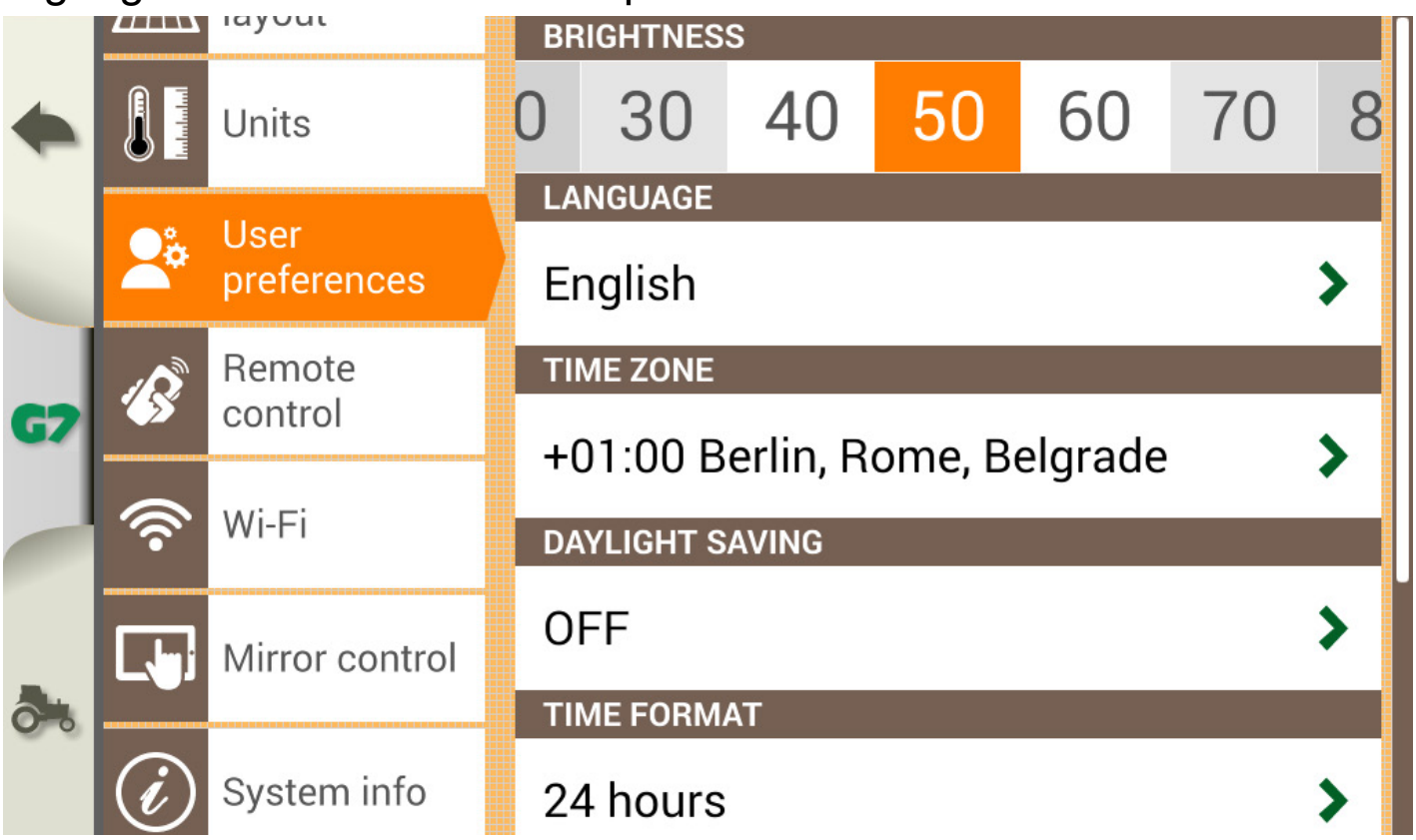


Figure 2.3.5.a - User preferences menu

2.3.6 Remote control

In the “Remote control” menu it is possible to pair the G7 Dataseed to the remote control (available as an accessory). To enable communication between the remote control and the G7 Dataseed:

1. Select “REMOTE CONTROL RECEIVER” and tap “ON” to turn it on;

2. Select “PIN” and enter the PIN code given on the back of your remote control;
3. Press the middle button (navigation arrow) of your remote control, to connect the display to the remote control;
4. Once connected, select “REMOTE CONTROL INFO” to check connection status, battery status and firmware version.

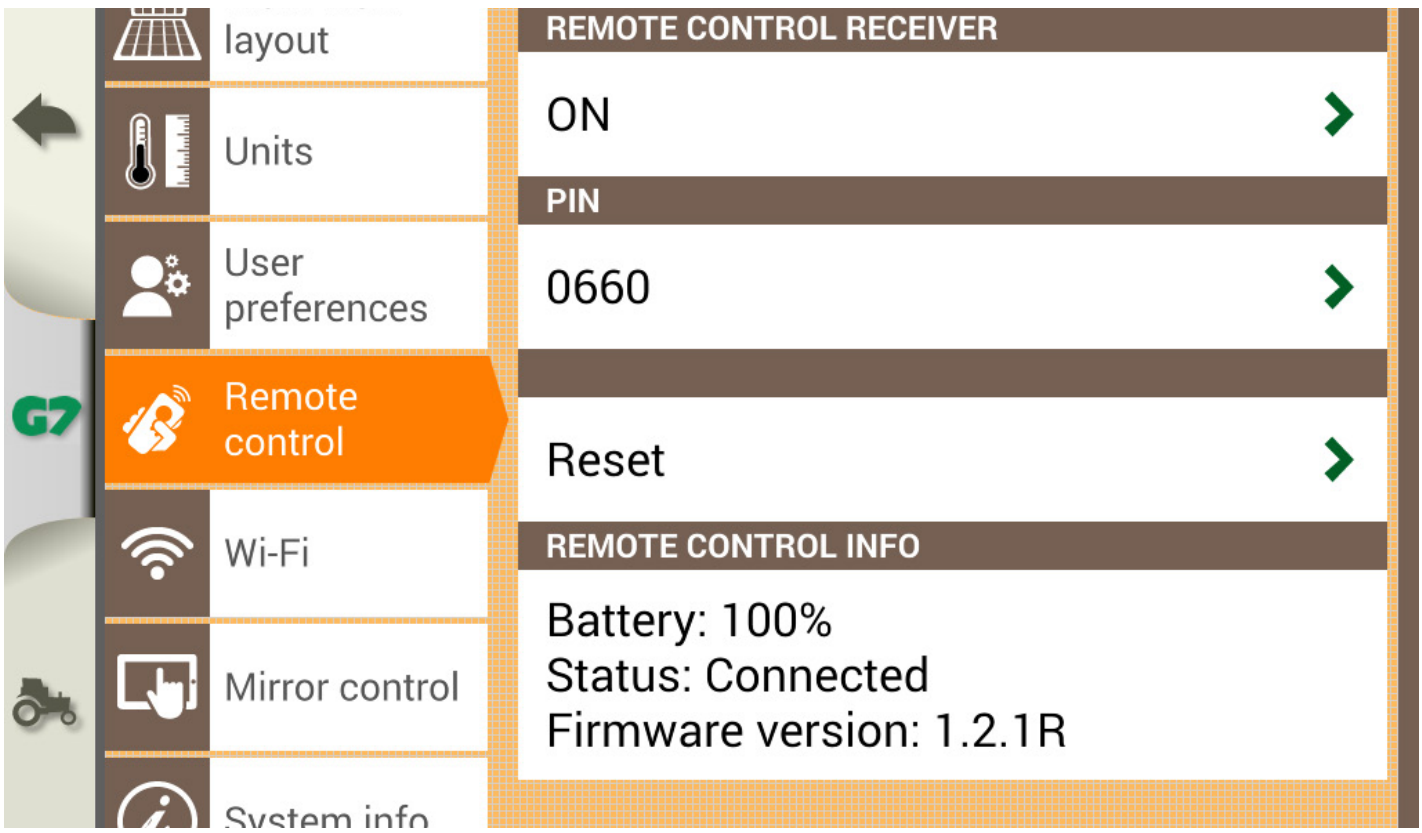


Figure 2.3.6.a - Remote control pairing

2.3.7 Wi-Fi

The “Wi-Fi” menu allows you to connect G7 Dataseed to a local Wi-Fi network.

2.3.8 Mirror control

Install the Mirror Control app to control G7 Dataseed with your smartphone or tablet (Android or Apple devices). It is possible to connect G7 Dataseed to a smartphone or tablet via wireless network, only if they are connected to the same router.

To enable Mirror control: Select “SETUP” > “Mirror control” > “ON”.

2.3.9 System info

In the “System info” menu it is possible to view the current software version. If the wireless connection is active, you can search for updates by tapping the “Check for updates” button.

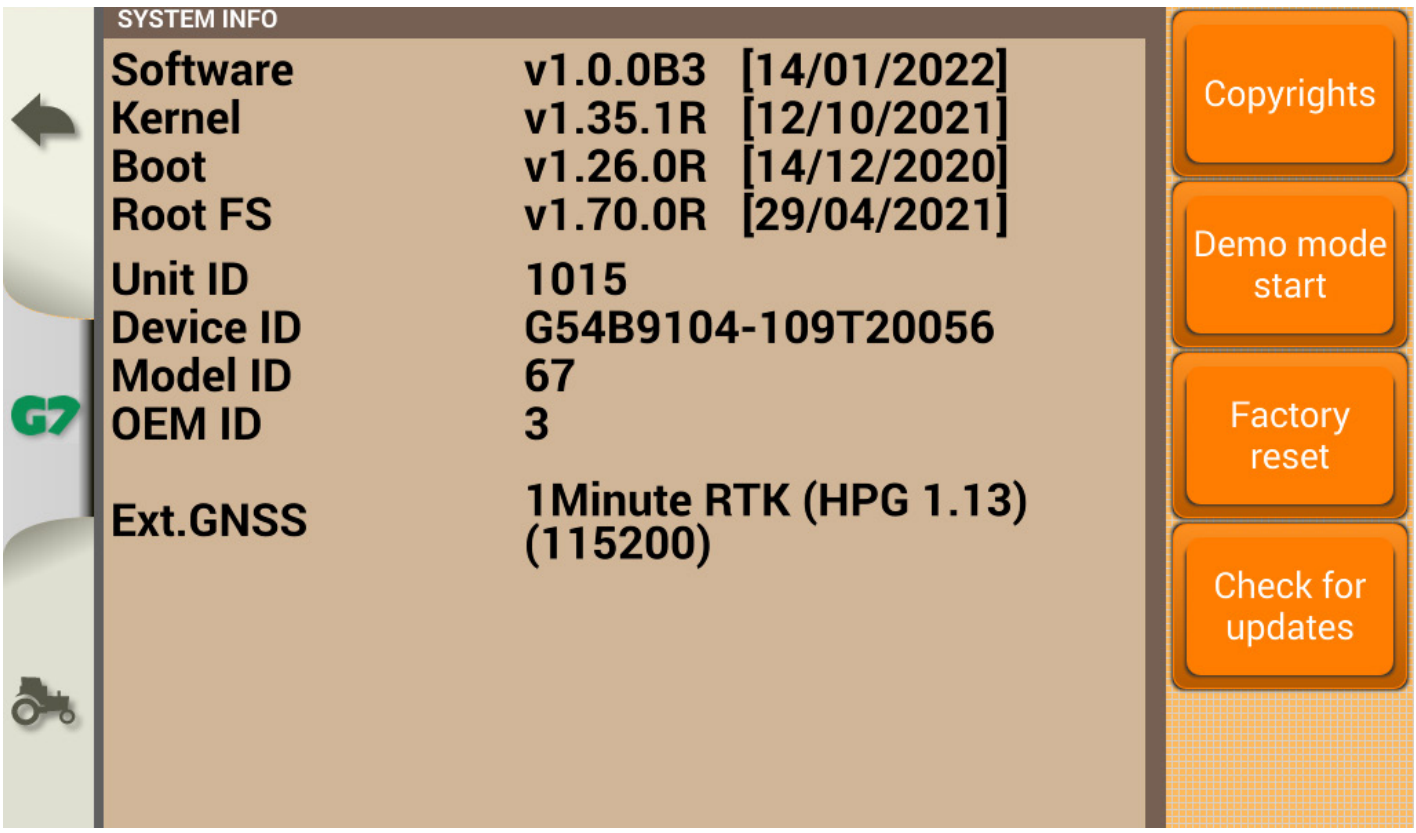


Figure 2.3.9.a - System info

2.4 Database

Figure 2.4 - Database Menu

The “DATABASE” menu contains information relating to tracks, fields, farmers and drivers.

2.4.1 Tracks

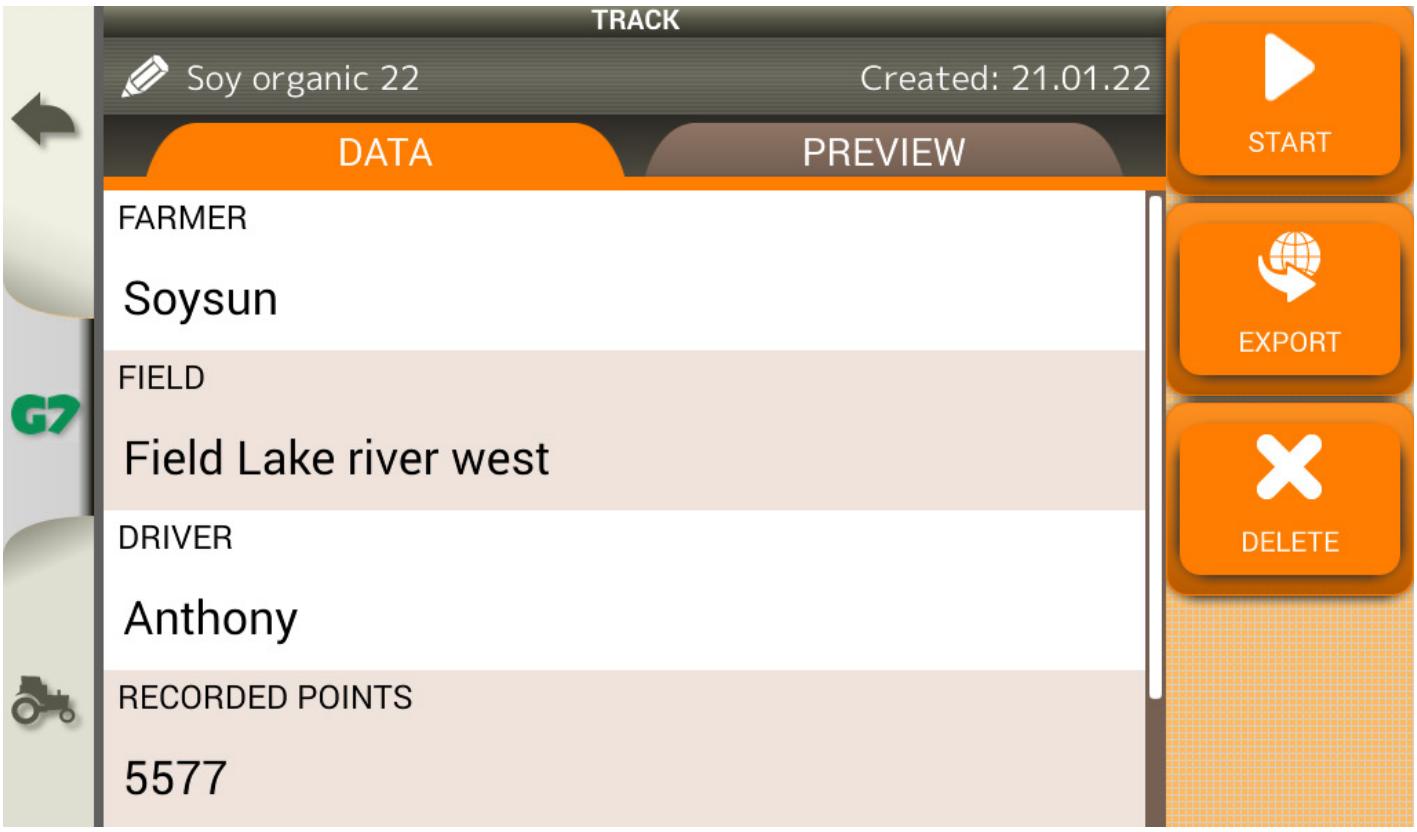


Figure 2.4.1.a - Track data

All recorded tracks are saved in the “TRACKS” menu:

-Tap on the name of the track to access all its information (“DATA” tab);

-Tap on the “PREVIEW” tab to view the track

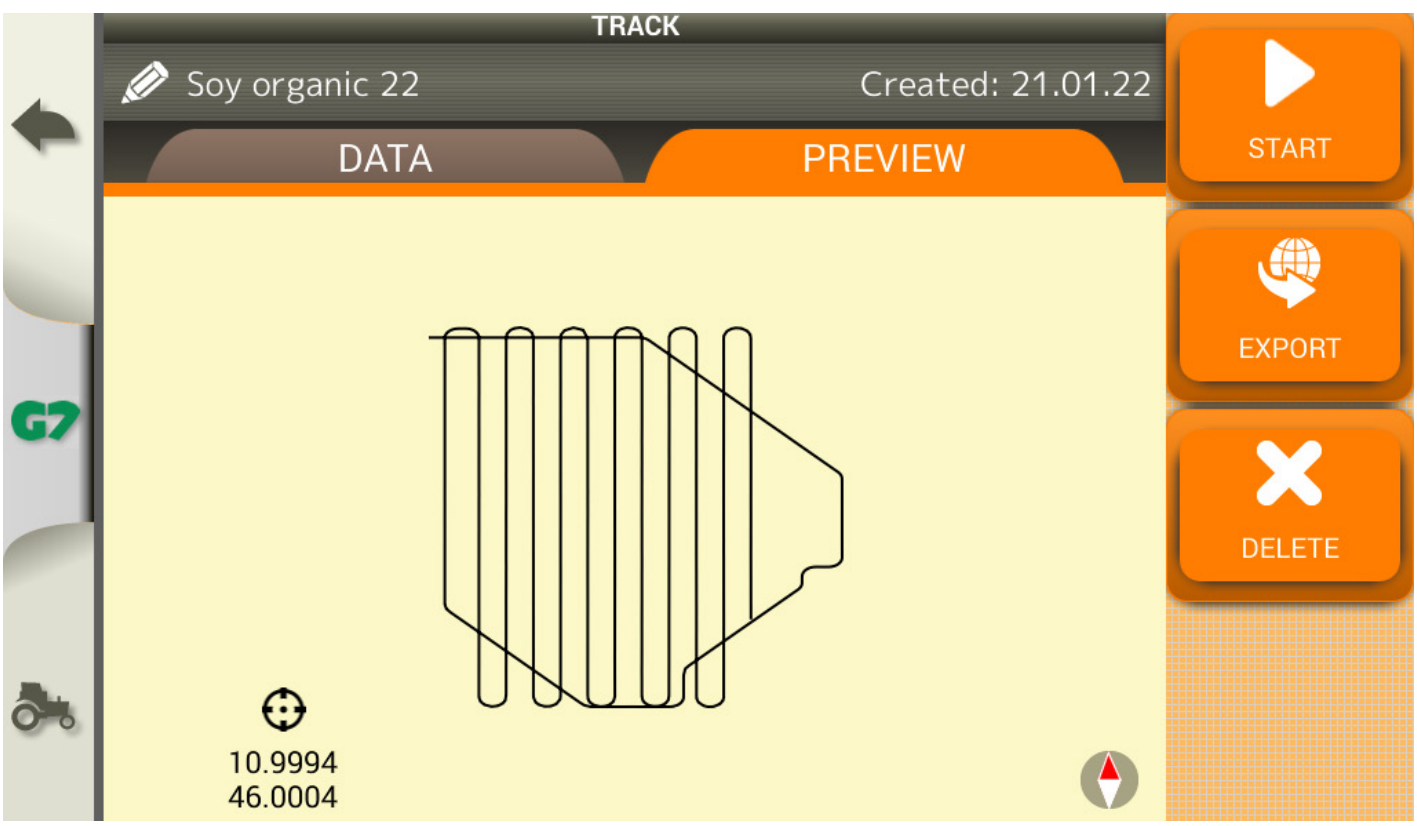


Figure 2.4.1.b - Track preview

2.4.1.1 Data export

Tap on the “EXPORT” key to export the track in three different formats: CSV, KMZ, SHP.
The file is saved on the MicroSD memory card or on USB memory if connected to the device.

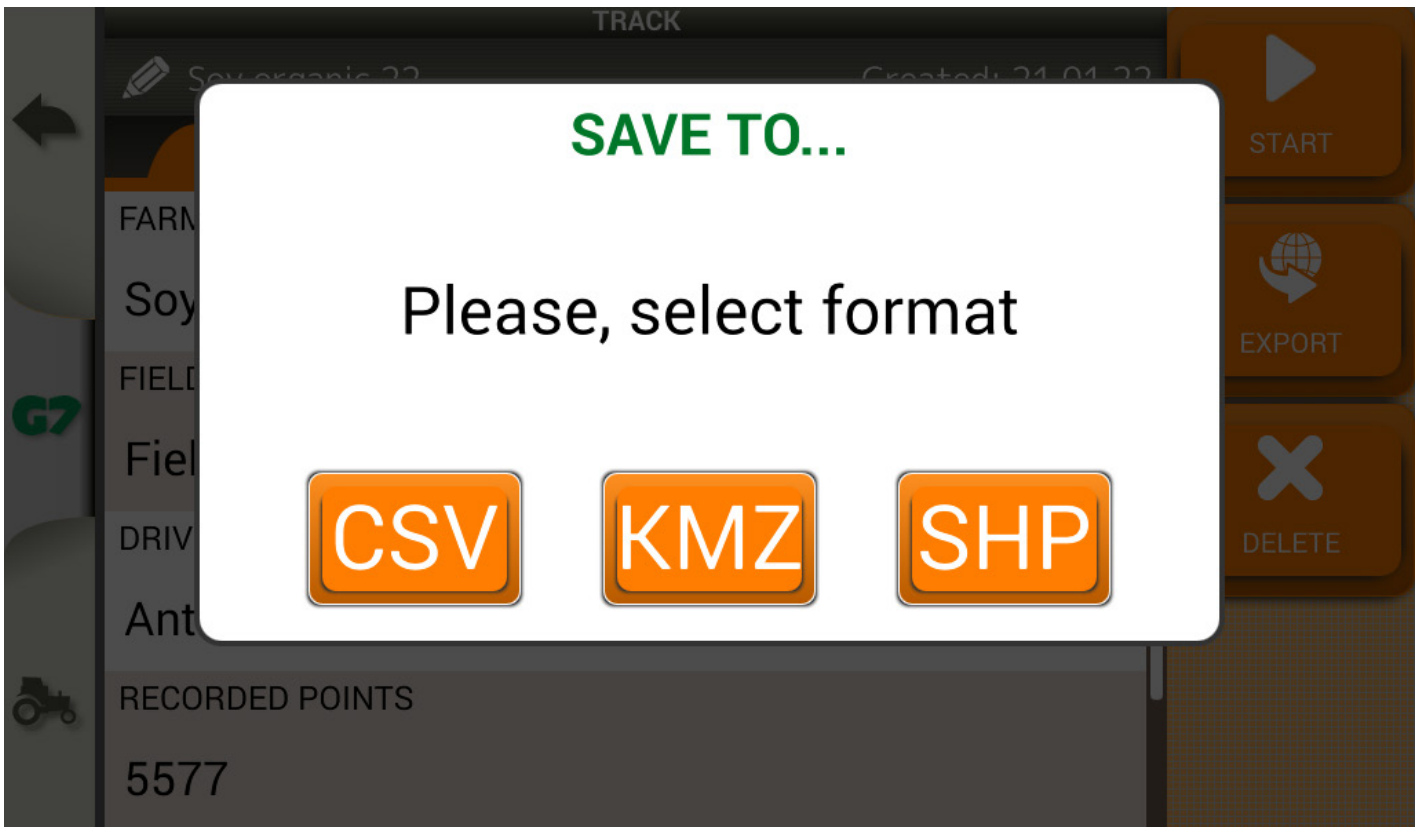


Figure 2.4.1.c - Track export in various formats

2.4.2 Fields

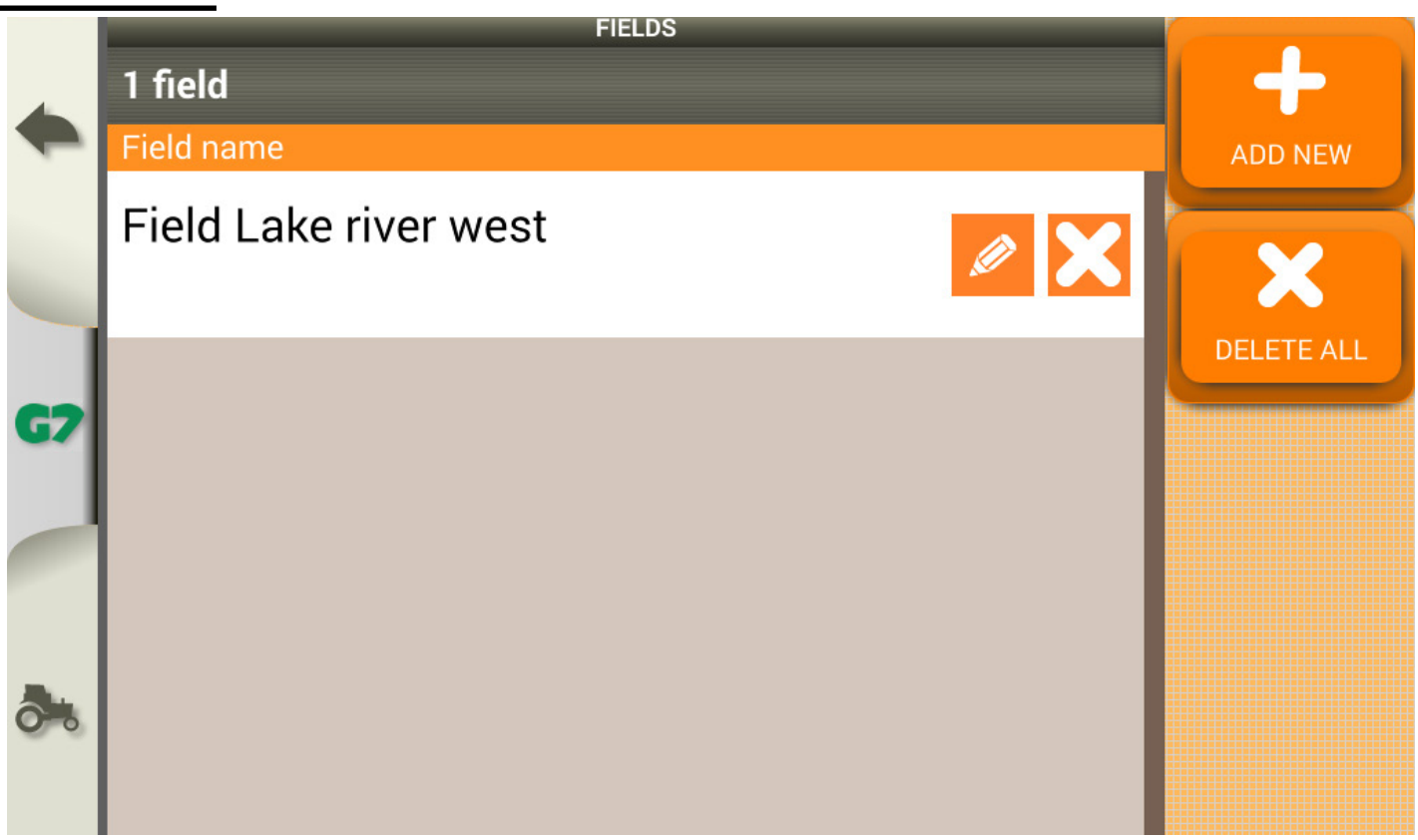


Figure 2.4.2.a - Fields database

In the “FIELDS” menu it is possible to add a new field, to rename it or delete it.

2.4.3 Farmers

In the “FARMERS” menu it is possible to add a new customer, to rename or delete it.

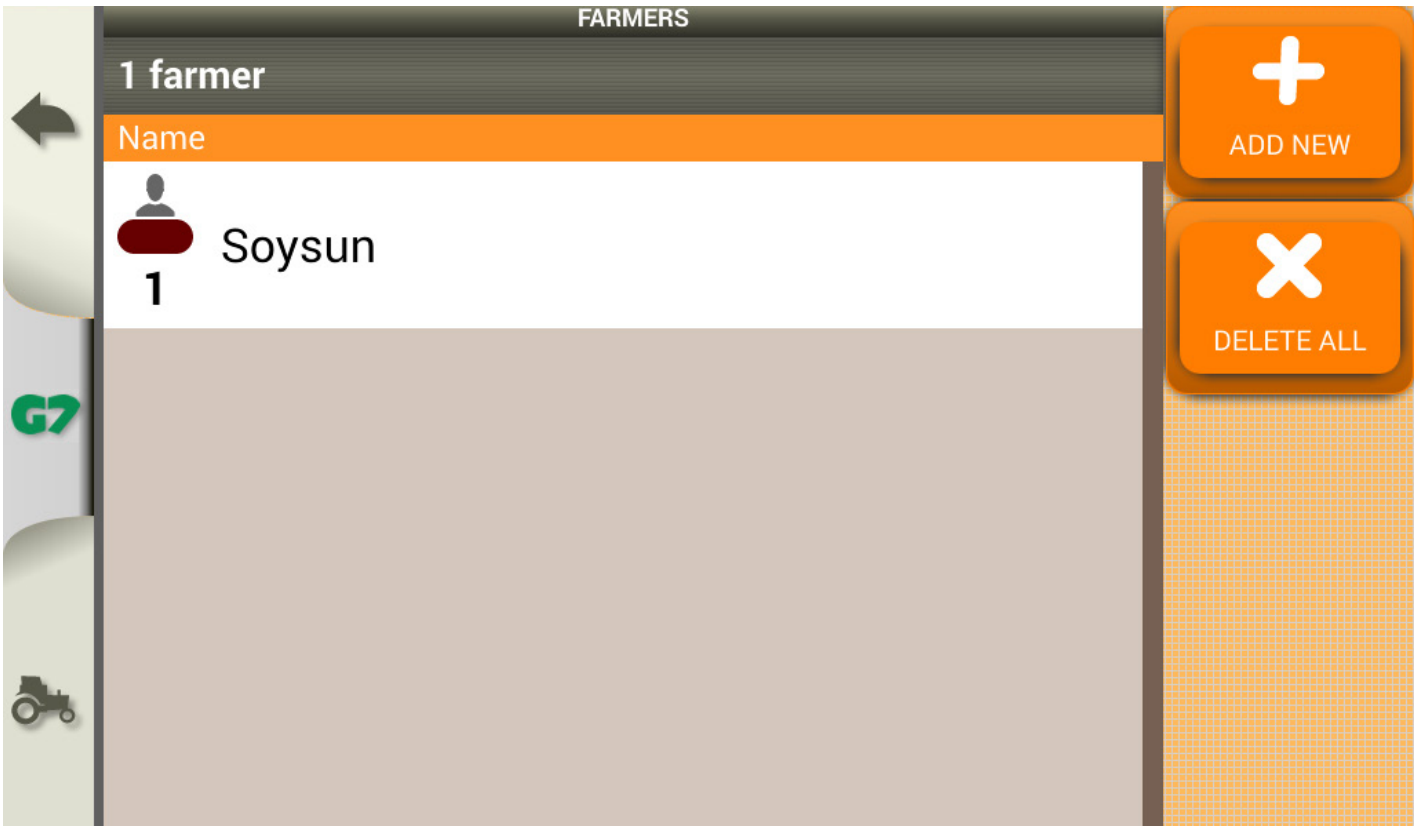


Figure 2.4.3.a - Farmers database

2.4.4 Drivers

In the “DRIVERS” menu it is possible to add a new driver, to rename or delete him.

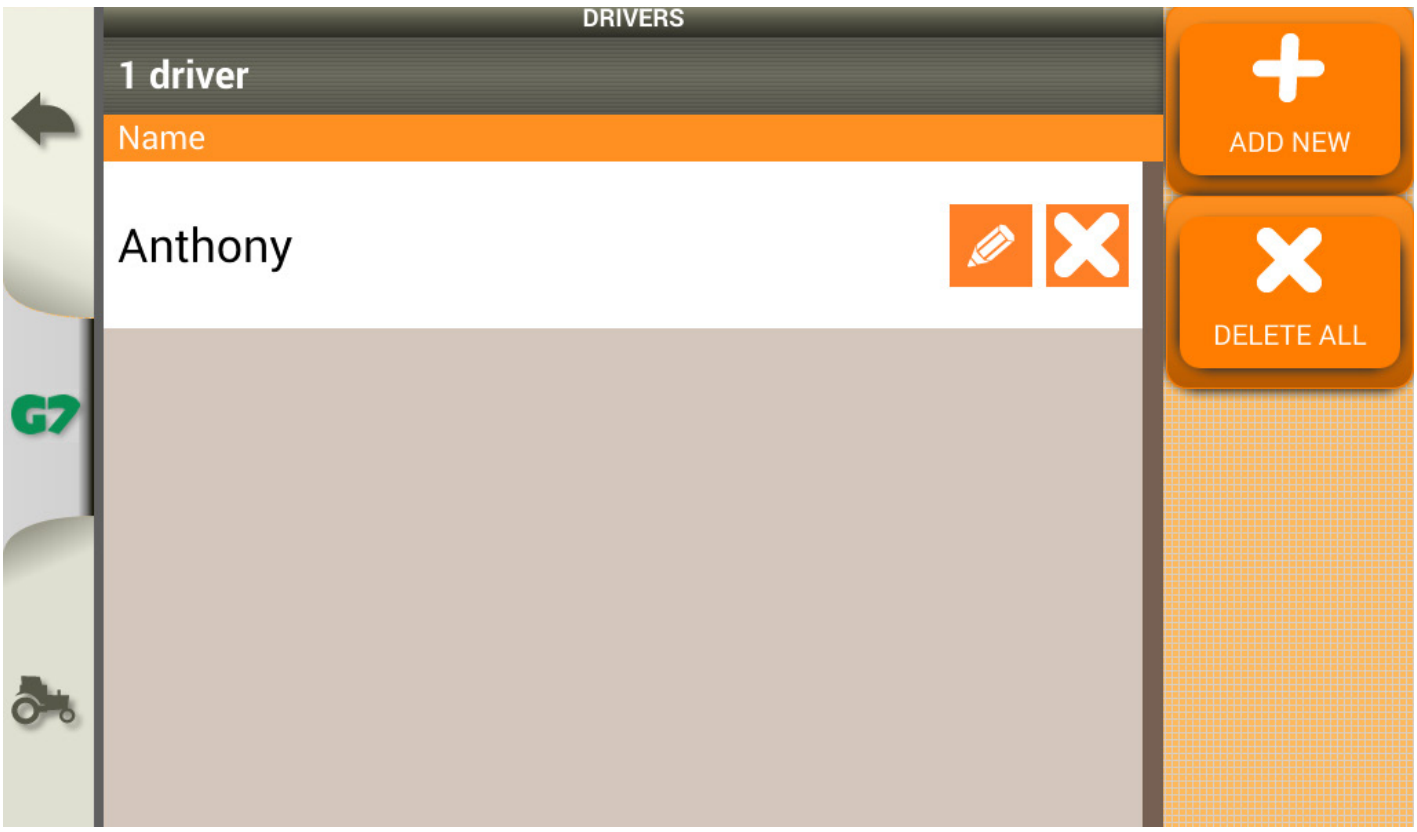


Figure 2.4.4.a - Drivers database

3. Other Functions

3.1 Software Update via Wi-Fi

G7 Dataseed can be updated by connecting the device to a Wi-Fi network (even from a smartphone via a Wi-Fi hotspot / router).
To search for and install available updates:

1. Connect G7 Dataseed to a Wi-Fi network;
2. Tap “SETUP”> “System info” > “Check for updates” and wait for the connection;
3. If there are new updates they will be downloaded; Follow the instructions on the monitor to proceed with the update;
4. When restarting, press the “UPDATE NOW” button and wait for the procedure to end.

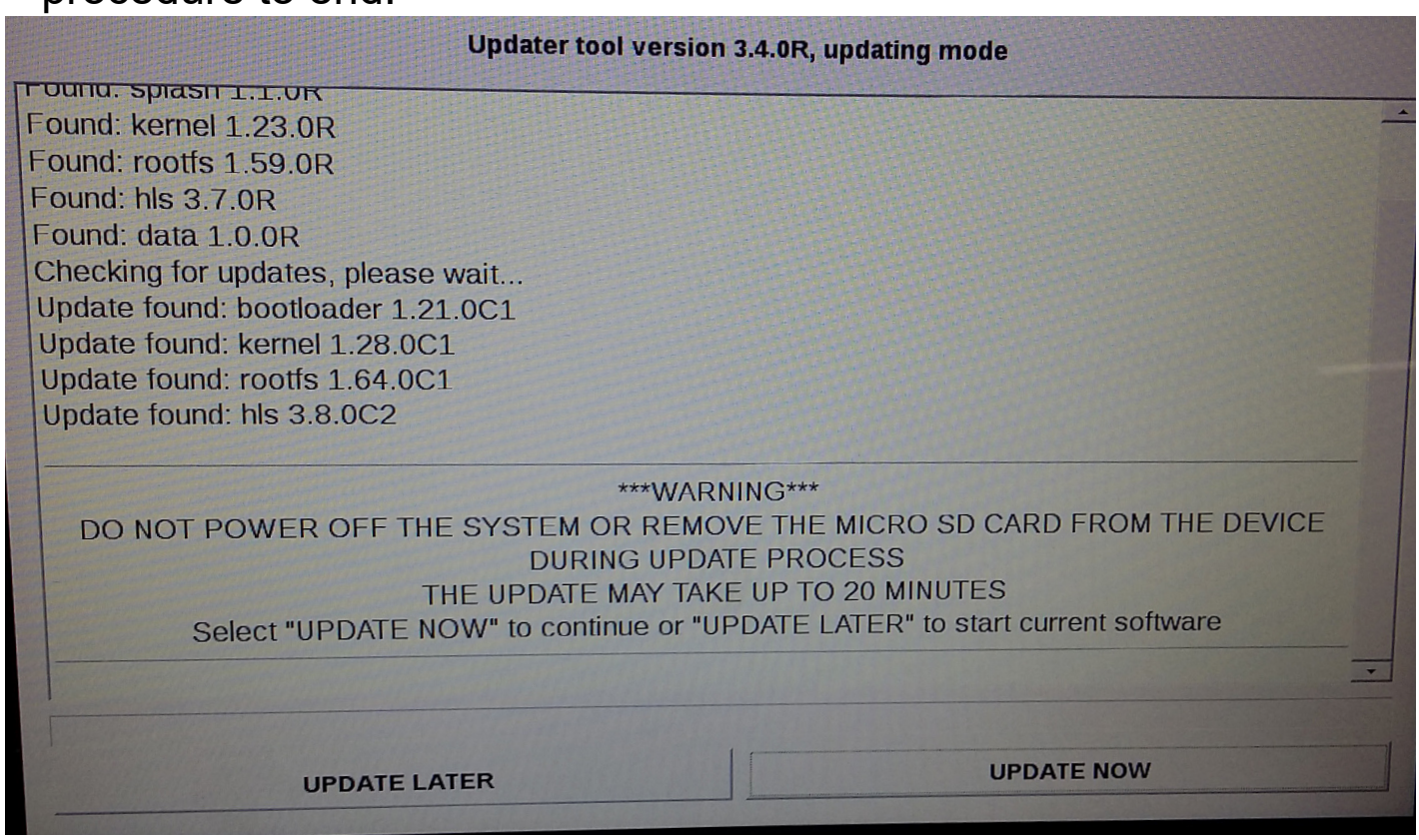


Figure 3.1.a - Software update screen

3.2 GNSS Receiver update

The All in One RTK receiver includes automatic update technology (Firmware Over the Air - FOTA). No user operations are required.

3.3 Videocamera

G7 Dataseed allows you to connect an external analog video camera. There are no actions to be performed on the software.

-G7 Dataseed supports analog video cameras with PAL or NTFS format.
-IP cameras and USB are not supported.
-The power for the camera must be supplied externally
-The camcorder must have a male RCA connector.

Connection of the video camera to G7 Dataseed is possible via the ‘USB / Video in / Ethernet’ (P/N AvMap: K2CYFS1000). The cable has a female RCA analog video input.

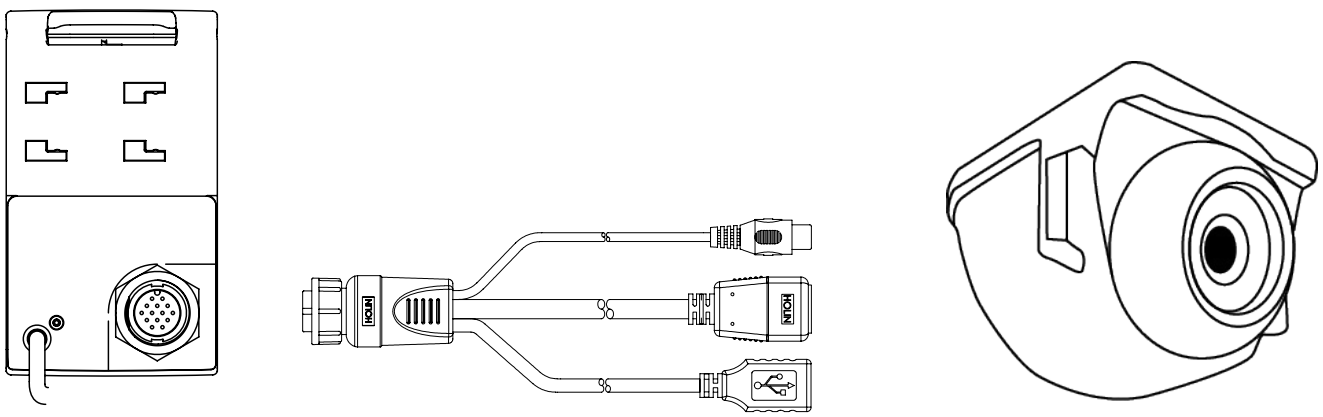


Figure 3.3.a - Connecting a Videocamera to G7 Dataseed

When the camera is correctly connected to G7 Dataseed, the video camera icon will be automatically activated in the work page.
-Tap the camera button on the work page to switch to video mode.

	Video camera available The video camera is recognized and connected.
	Video camera not available The video camera is not connected or not compatible.

Table 3.3.b - Video camera button

3.4 Connection to external activation device

It is possible to connect an external device, on the “GENERIC DEVICE” of the G7 Dataseed, which activates the recording / pause of the track automatically, without having to act on the G7 Dataseed screen.
The device can be a button, a magnetic, mechanical contact, etc.

The installation of the device requires you to prepare a DB9 connector compatible with the “GENERIC DEVICE” and to connect:

-Pin2: common, with reference voltage

-Pin3: normally open

ATTENTION: Do not connect any device that supplies power to pin2 and pin3. It is recommended to always use protective devices. The voltage from pin2 is for signal use only.

Once the device is connected, when the contact is closed, the G7 Dataseed activates the recording of the track. Conversely, when the contact is open, the recording is paused.

4. Contacts/Customer Support

To get first-level assistance regarding:

- User manual
- Warranty
- Replacements
- Malfunctions
- Repairs
- Updates

Telephone: +39 0585 784044
Mail: support@avmap.it

To get second-level assistance regarding:

- RTK Receiver settings
- ECU Dataseed settings

Telephone: +39 334 6033178
Mail: support.farm@avmap.it

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