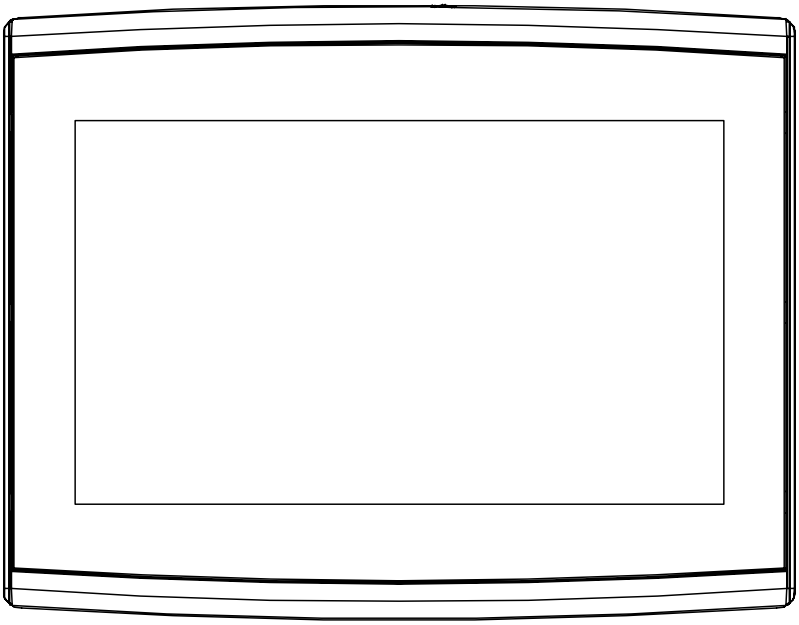
FARMNAVIGATOR



G7

USER MANUAL

Updated to 4.3.xR software version
(where x indicates all 4.3 software versions)

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1. Introduction

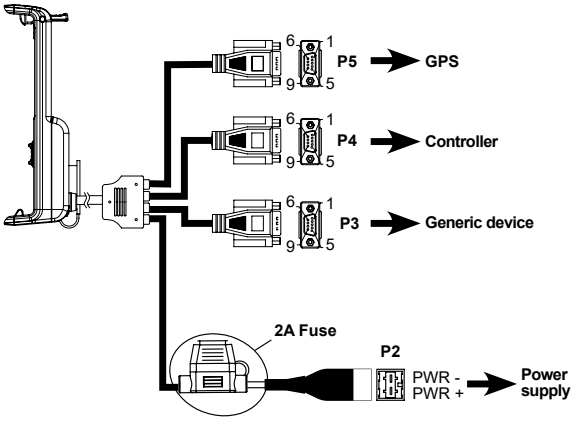
1.1 Ways of using G7

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

- Map your fields;
- Set up and save your implements;
- Create guidelines for your activities;
- Save all the activities done in the field;
- Configure the spray boom and have section control directly on the display during your treatments;
- Control sections automatically, when a compatible device is connected to G7;
- Import and export you jobs and see them on Google Earth™;
- Connect Auto-Steering Kit to take full advantage of driving capabilities;
- Save the position of obstacles on the work area;
- Connect a camera and control it from G7 display;
- Use Terrestrial Navigator (only for G7 Plus and G7 Iso);
- Receive RTK corrections via NTRIP Client (G7 Plus, G7 Iso and G7 Terminal);
- Use ground compensation function;
- Connect ISOBUS equipment (with Iso Kit).

1.2 Electrical connections

G7 is provided with a bracket and a wiring with connectors to ensure an easy and safe installation on your tractor.
Wiring harness consists of a 2A protection fuse.
The supply voltage must be within the range 10-35 Vdc.
Follow the instructions included in the package.



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

For ISOBUS systems (G7 Terminal, G7 ISO, Iso Kit) an additional cable is included for connecting the G7 Farmnavigator to the tractor's ISOBUS In-Cab socket.

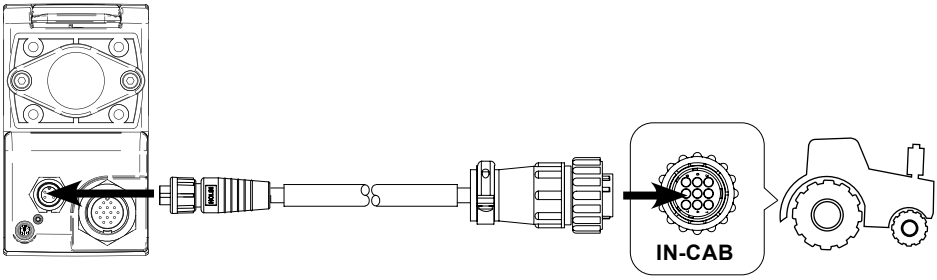


Figure 1.2.b - ISOBUS In-Cab connection diagram

1.3 How to install a FARMNAVIGATOR antenna

The procedure described below refers to the Turtle series and All in One series. (Please, contact the assistance if you need clarifications about the installation of third-party antennas).
The FARMNAVIGATOR antenna is provided with three magnets which ensure a quick installation on a ferromagnetic surface.

1.3.1 How to connect a FARMNAVIGATOR antenna to G7

The FARMNAVIGATOR antenna is provided with a 9-pin serial cable which transfers data and power supply between G7 and the antenna.
Turn off the device, and connect the 9-pin serial cable to the cable located on the bracket, marked with "GPS Antenna".

1.3.2 Antenna position – Transverse axis

The antenna must be located in the exact centre of the tractor. Carefully measure the exact centre of the tractor to determine the central axis.

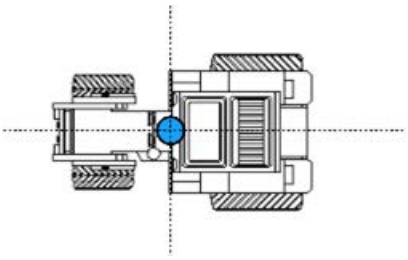
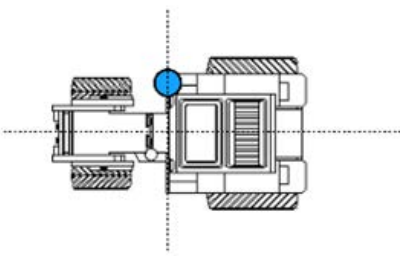
	
YES	NO

Table 1.3.2 - How to install the antenna - Transverse Axis

1.3.3 Antenna position - Longitudinal axis

It is advisable to locate the antenna as close as possible to the front steering axles.

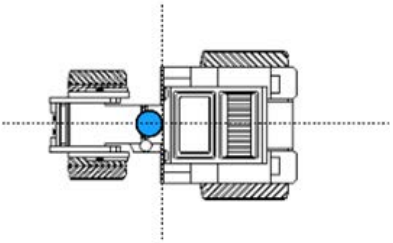
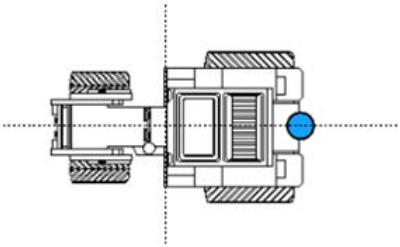
	
YES	NO

Table 1.3.3 - How to install the antenna – Longitudinal Axis

1.3.4 Antenna position – Height

The effects of antenna height have to be considered in case of jobs on steep sloping grounds. Inthese cases, it is recommended to install the antenna on the front of the tractor so as to reduce tilt and oscillation error.
In all other cases (jobs on the level ground), the antenna may be positioned on the top of the tractor.

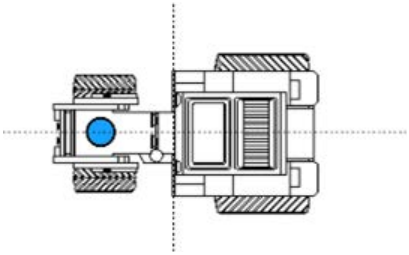
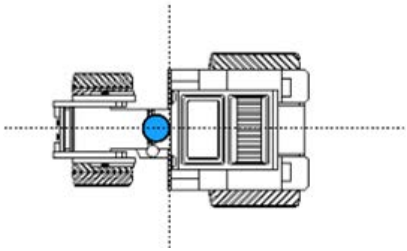
	
Slope	Flat

Table 1.3.4 - How to install the antenna – Height

1.3.5 Antenna position - Orientation

If you use an antenna with ground compensation, the orientation of the antenna relative to the direction of travel of the vehicle is key. For FARMNAVIGATOR products, the orientation is defined by the position of the antenna connector, and it must be opposite to the forward direction of the vehicle. Follow the instructions in the antenna package for more details.

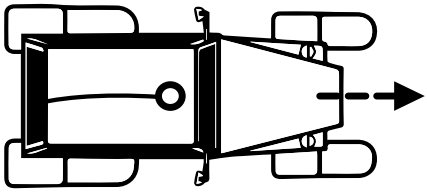


Figure 1.3.5.a How to install the antenna – Orientation

1.4 Turning the device on

Before turning G7 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.

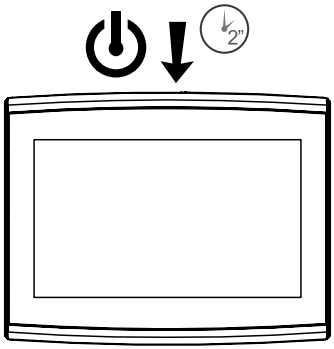


Figure 1.4.a - Turning on the display

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.

NOTE: when turning the device on for the first time, you must select the language.

To turn the display of:

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 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.

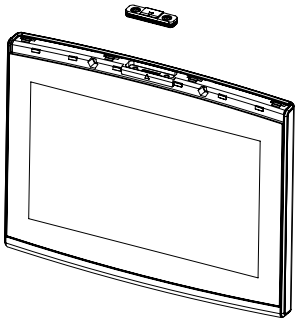


Figure 1.4.b - Reset the device

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.

1.5 How to use multi-touch display

G7 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 - Touch screen gestures and movements

2. Main menu and basic operations

The main menu shows the basic operations for the creation of a new job, system setup, the creation of a new implement, the connection to an ISOBUS implement and the connection to MyFarmnavigator cloud.

Figure 2.0 - Main menu

2.1 DATABASE

Figure 2.1 - DATABASE menu

G7 functions are designed to save and precisely organize all the information relating to each single job. It is advisable to enter data from the outset, in order to fully exploit all the advantages of this technology. Through DATABASE menu, it is possible to manage all your data (insertion, visualization, editing, elimination, exportation).

2.1.1 DRIVERS

It is possible to save all DRIVERS name.

1. Select “Add new”;
2. Enter the name, and select “OK”;
3. Tap the green arrow in the upper left corner of the screen to go back to the previous page.

Figure 2.1.1.a - Add a new driver

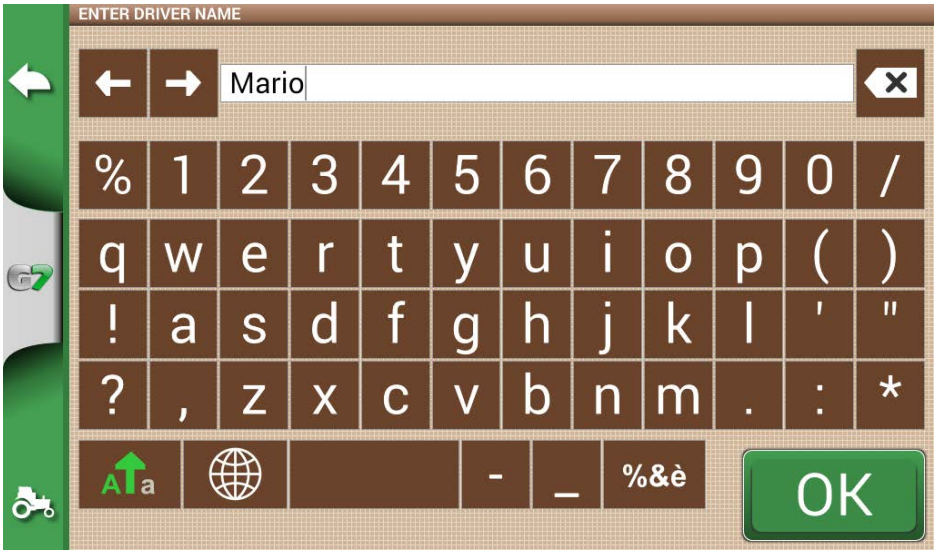


Figure 2.1.1.b - Driver name

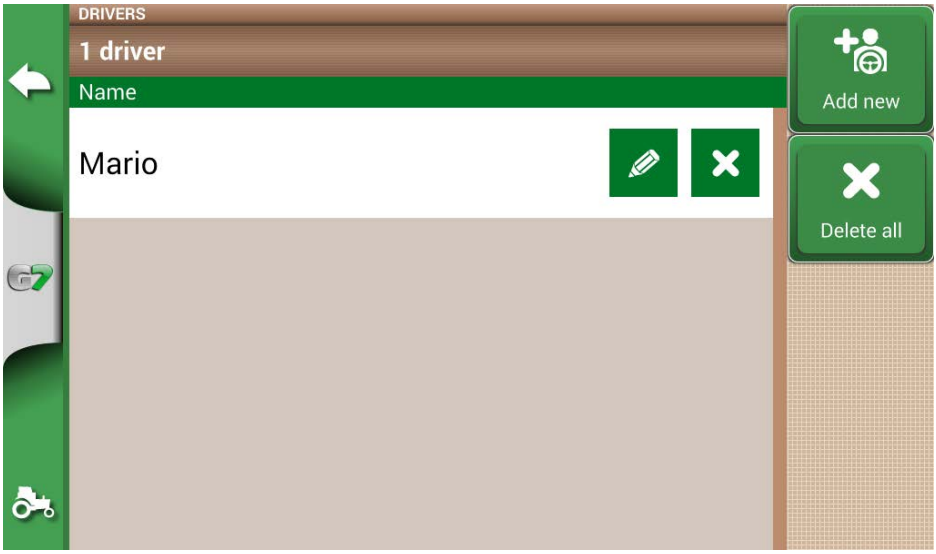


Figure 2.1.1.c - List of driver

2.1.2 FARMERS

It is essential to save FARMERS name. FARMERS refer to all customers or landowners. If a company has the ownership of all the worked lands, insert the name of the company in the FARMERS section:

1. Select “Add New”;
2. Insert the name, and select “OK”;
3. Tap the green arrow in the upper left corner of the screen to go back to the previous page.

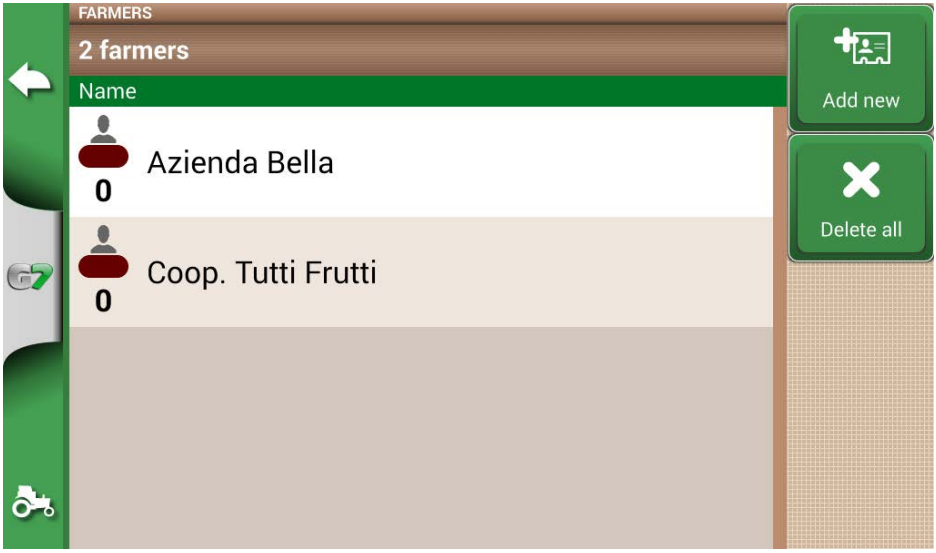


Figure 2.1.2 - List of farmers

2.1.3 FIELDS

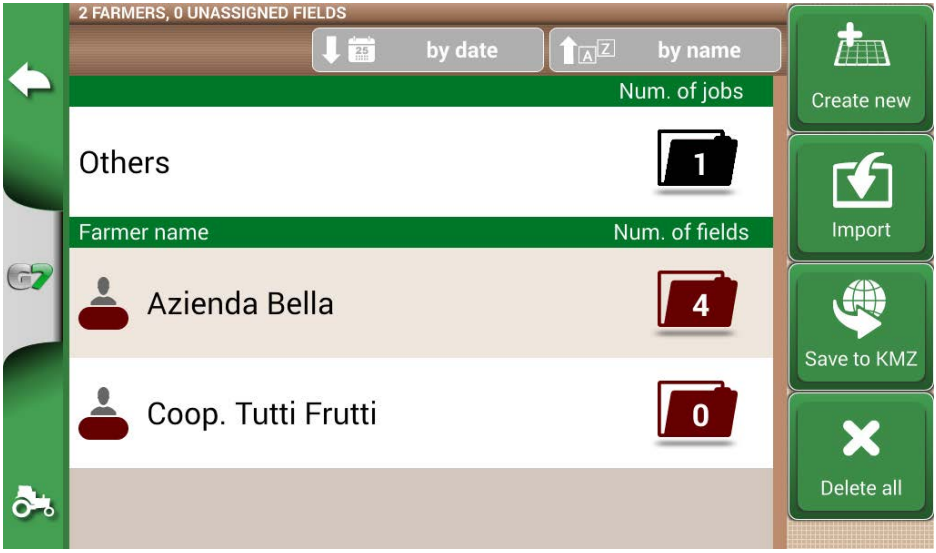


Figure 2.1.3 - List of fields associated with farmers or others

It is possible to collect and save all the parcels of land worked or that must be worked. “FIELD” means a portion of land. FIELD are associated with FARMERS:

1. Select farmer name;
2. Select “Add New”;
3. Insert the name, and select “OK”;
4. Tap the green arrow in the upper left corner of the screen to go back to the previous page.

2.1.4 PRODUCTS

G7 allows you to create a list of products and save their use after each activity.

1. Select “Add New”;
2. Insert the name, and select “OK”;
3. Tap the green arrow in the upper left corner of the screen to go back to the previous page.

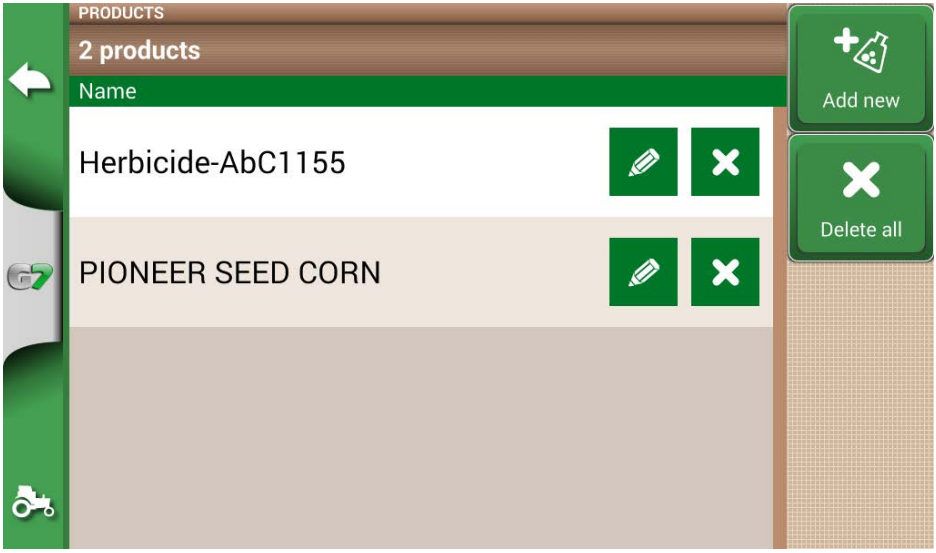


Figure 2.1.4 - List of products

2.1.5 JOBS

Jobs are created automatically through the procedures described below.

2.1.6 IMPLEMENTS

In the IMPLEMENTS page, it is possible to create and configure all the implements that will be used with G7.

1. Select “Add New”;
2. Insert the name, and select “OK”;

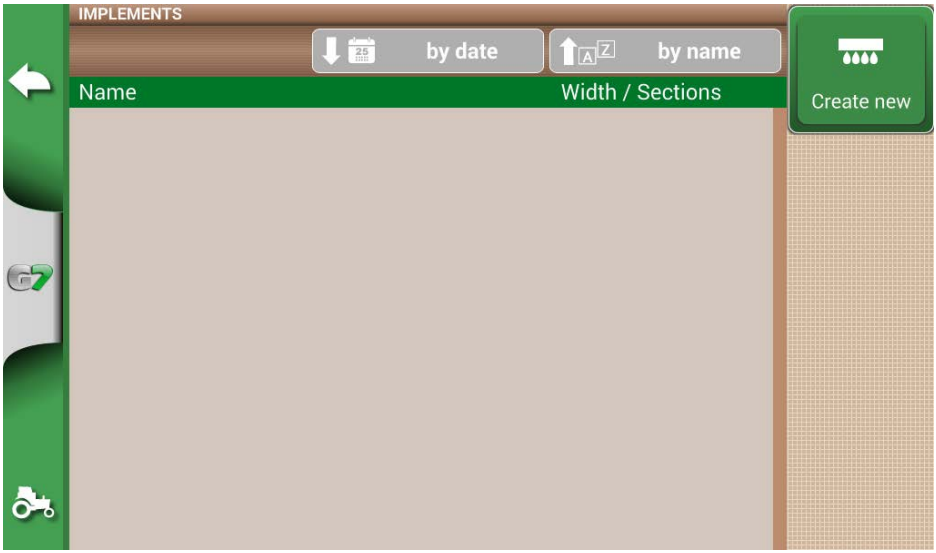


Figure 2.1.6.a - IMPLEMENTS menu

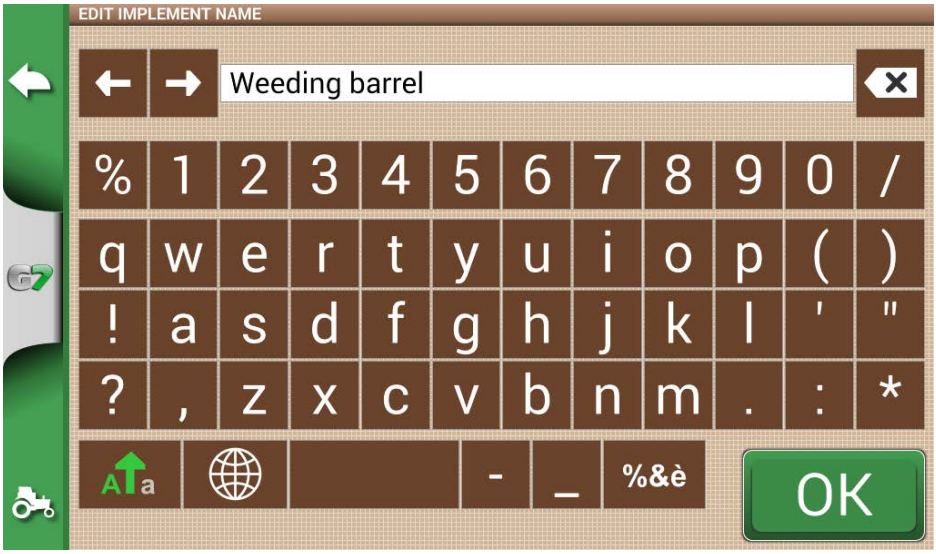


Figure 2.1.6.b - Implement name

3. If active, select the external controller type. Select “No section control” to use the implement without section control.

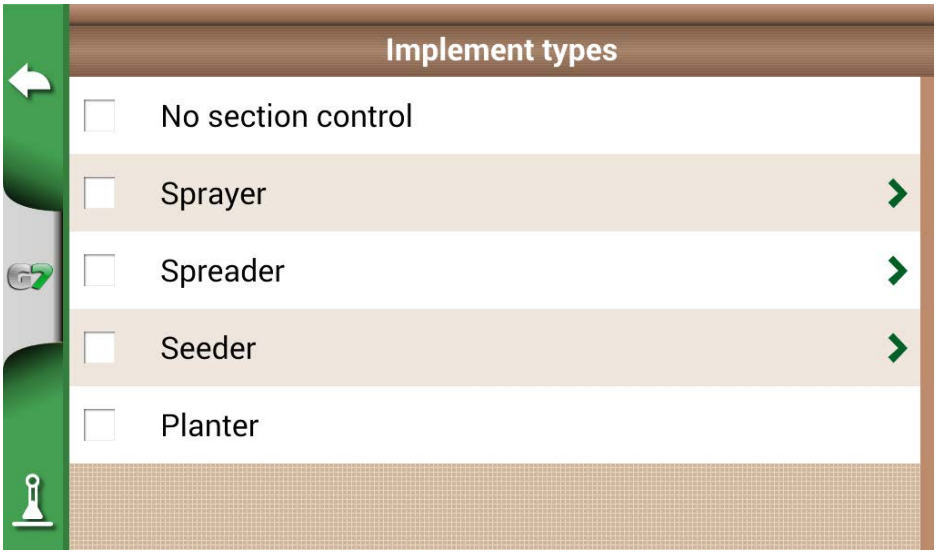


Figure 2.1.6.c - External control unit connection

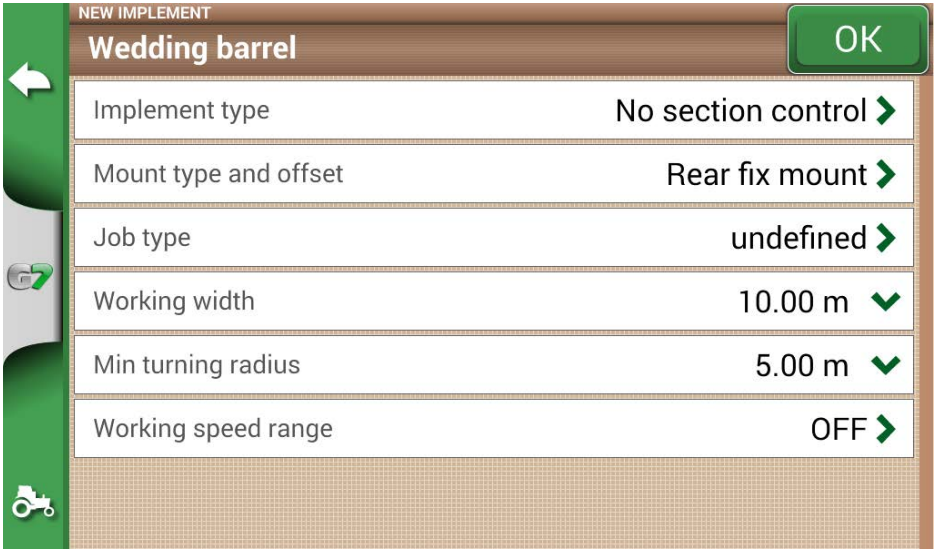


Figure 2.1.6.d - Implement setting

4. Select “Assembling type and offset”;
5. If the implement is mounted, tap “REAR FIX MOUNT”;

- Offset 1 refers to the distance between the posterior axle and the implement operating point;
- Offset 2 refers to an eventual misalignment between the implement and the centre of the tractor.

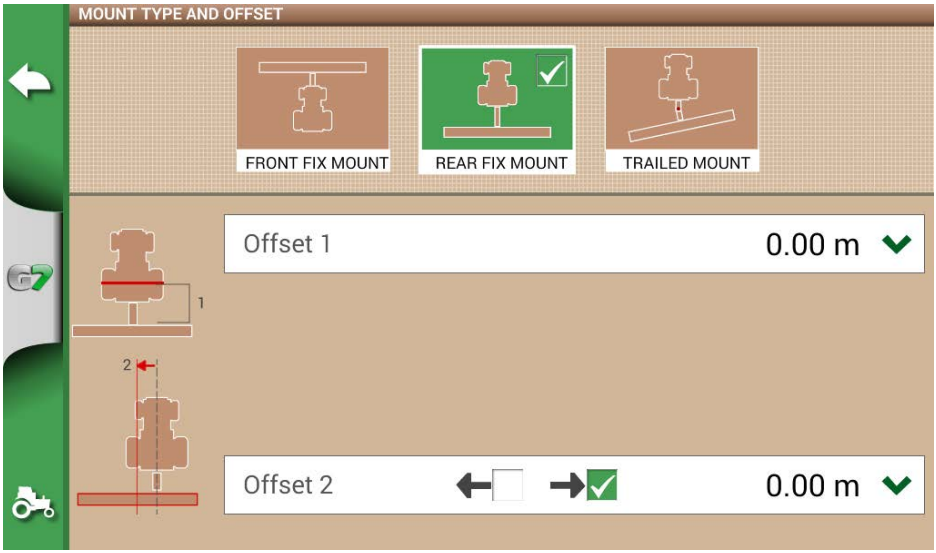


Figure 2.1.6.e - Rear fix mount implement

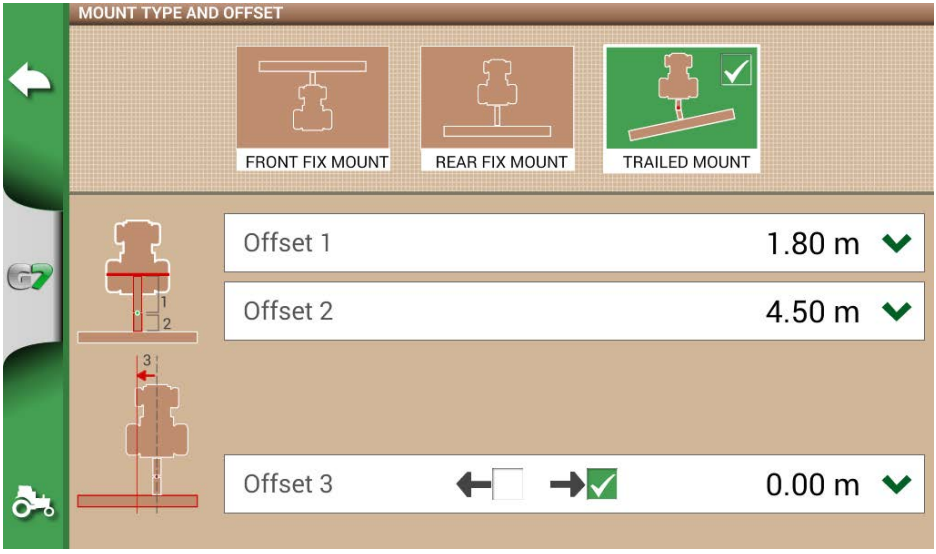


Figure 2.1.6.f - Trailed mount

6. In case of towed implement, select “TRAILED MOUNT”;

- Offset 1 is the distance between the posterior axle and the junction;
- Offset 2 is the distance between the junction and the implement operating point;
- Offset 3 refers to a possible misalignment between the implement and the centre of the tractor;

7. Tap the green arrow in the upper left corner of the screen to go back to the previous page;
8. Select “Job type” to enter the type of job performed by the implement, not to be confused with job name;

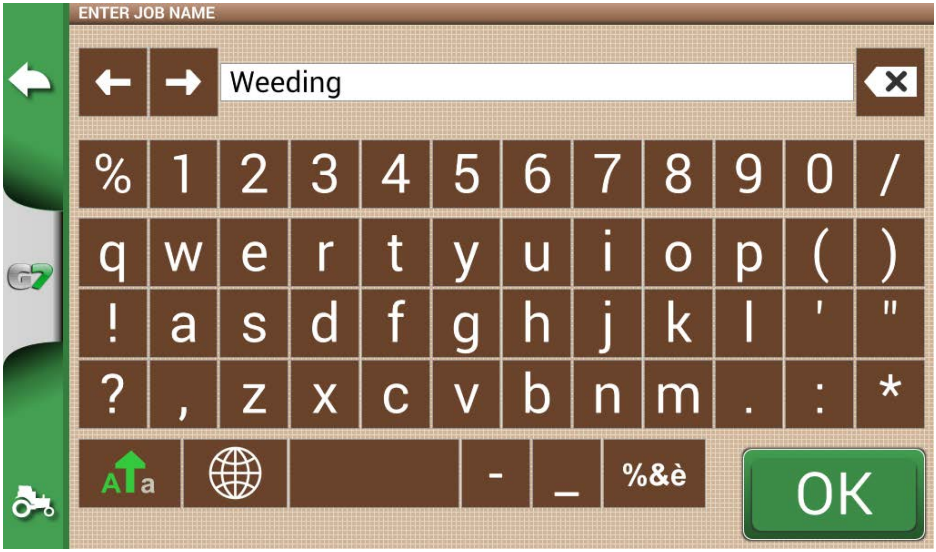


Figure 2.1.6.g - Implement main activity

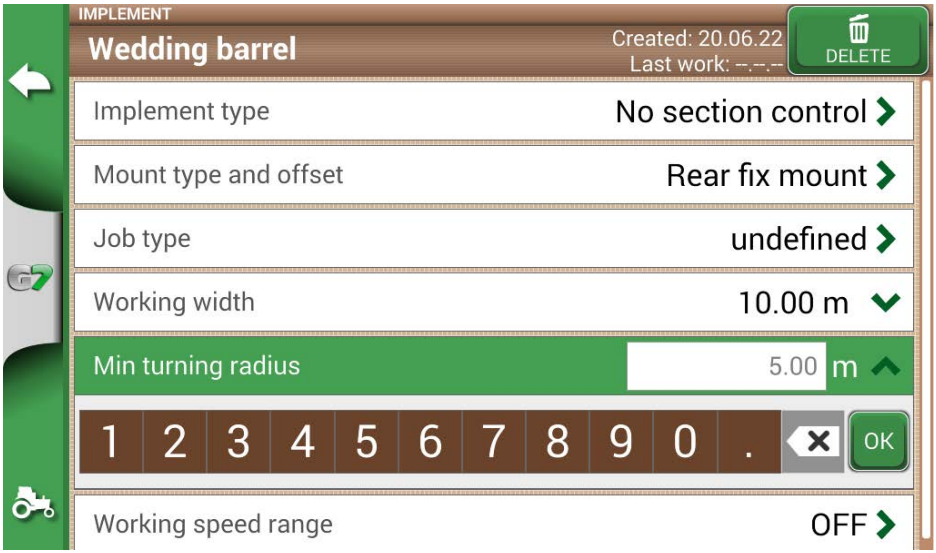


Figure 2.1.6.h - Working width setting

9. Tap “Working width”, insert implement width, and select “OK”;
10. Tap “Minimum turning radius” and insert the turning value indicated in the tractor registration certificate, and select “OK”;

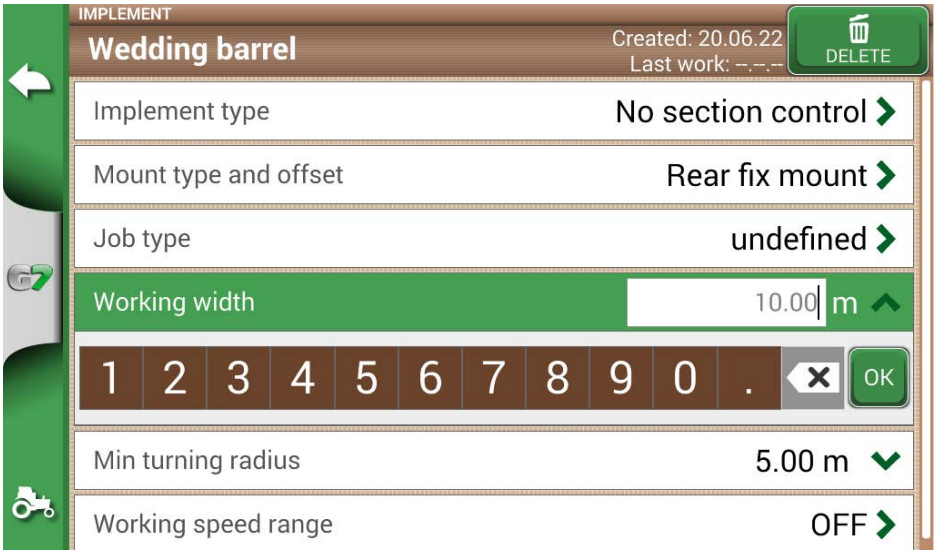


Figure 2.1.6.j - Tractor minimum turning radius setting

11. Touch “Working speed range” if you want to activate or not a variable color of the worked area according to the working speed. This option is very useful for checking the correct working speed range. To activate the function, touch on “ON” then define the lower and upper limit. Below the lower limit, the color of the area will be yellow instead of green. Above the upper limit, the color of the area will be blue instead of green.

Figure 2.1.6.k - Activation and definition of working speeds

12. Tap “OK” on the top right to confirm.

All the information needed are now entered. From the database menu, it is always possible to add, edit and delete the information entered.

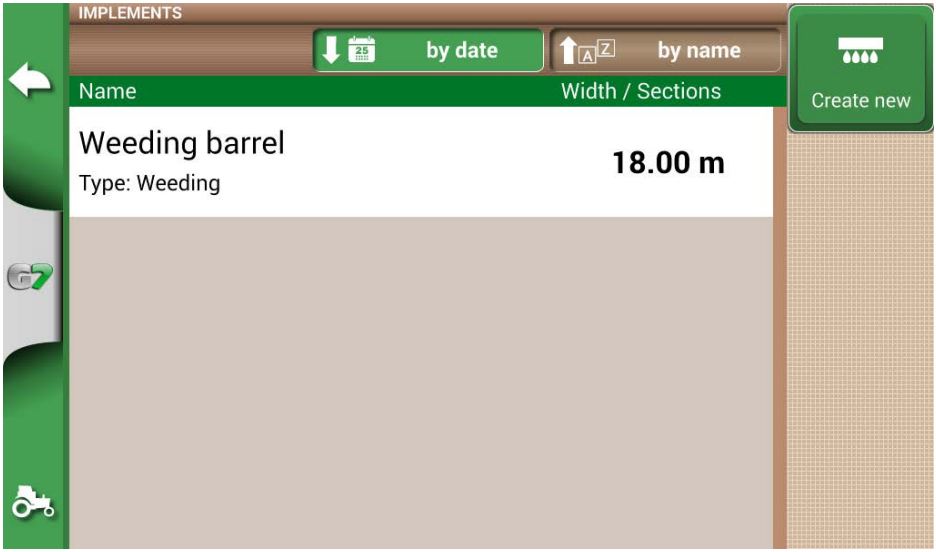


Figure 2.1.6.I - List of saved implements

2.1.7 TASKS ISOXML

The TASKS ISOXML section contains all the activities carried out with ISOBUS equipment. TASKS ISOXML contain information about the Field, Tool, Product and Variable Rate to apply. These activities can be created remotely and imported into G7 in the standard ISOXML format via USB (read chapter 5.4 ‘Importing a map in ISOXML format’).

Figure 2.1.7.a - DATABASE Menu

In the TASKS ISOXML menu you can activate or deactivate activities. By tapping on a single line, you can access the details of the activity to be carried out. It is then possible to activate the activity (i.e. make it available for the ISOBUS equipment) by pressing the “Activate” button. At this point the activity is enabled and all the details are visible.

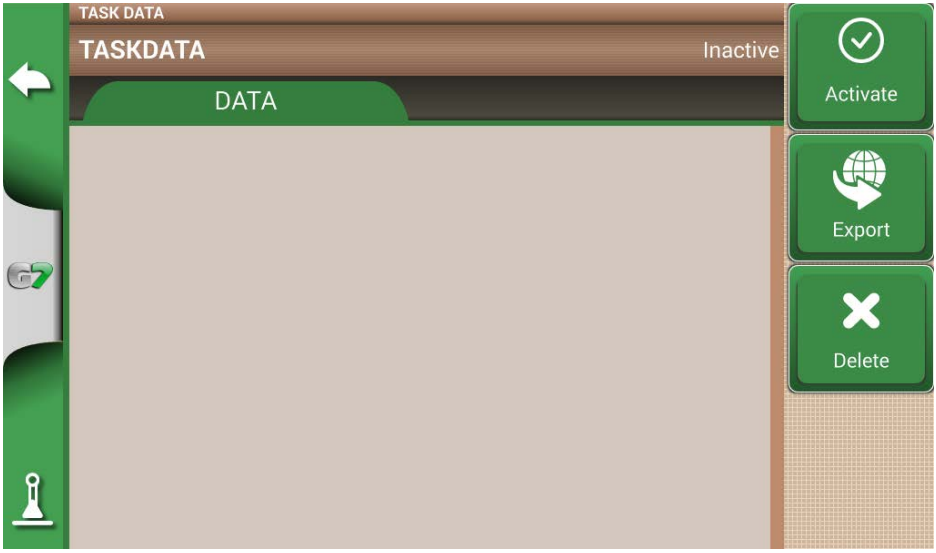


Figure 2.1.7.b - Task data page

It is possible to export the activities in ISOXML format by tapping on “Export” and delete them from memory by tapping on “Delete”.

2.2 New Job

To create a new job in fast mode, that is without entering all the working parameters and starting with your job:

1. Select “START NEW JOB”;

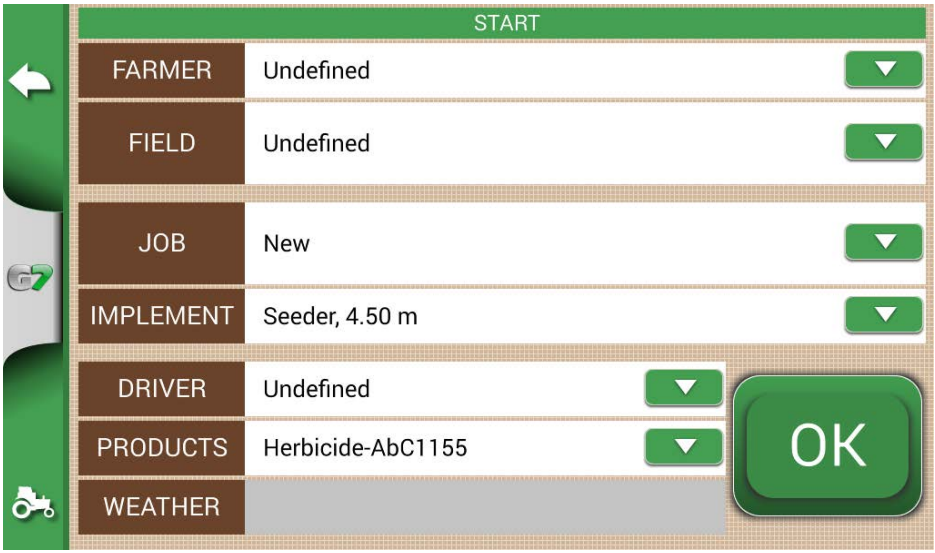


Figure 2.2.a - Start new job page

2. Select the implement from the “IMPLEMENT” line, tapping the downward green arrow;

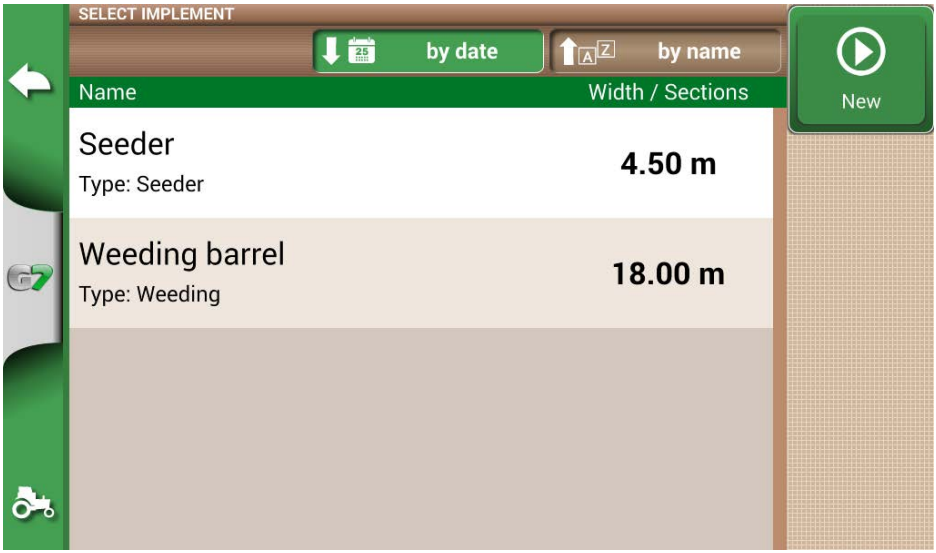


Figure 2.2.b - List of implements

3. Select the name of the implement;
4. Select “OK” to switch to the job page;

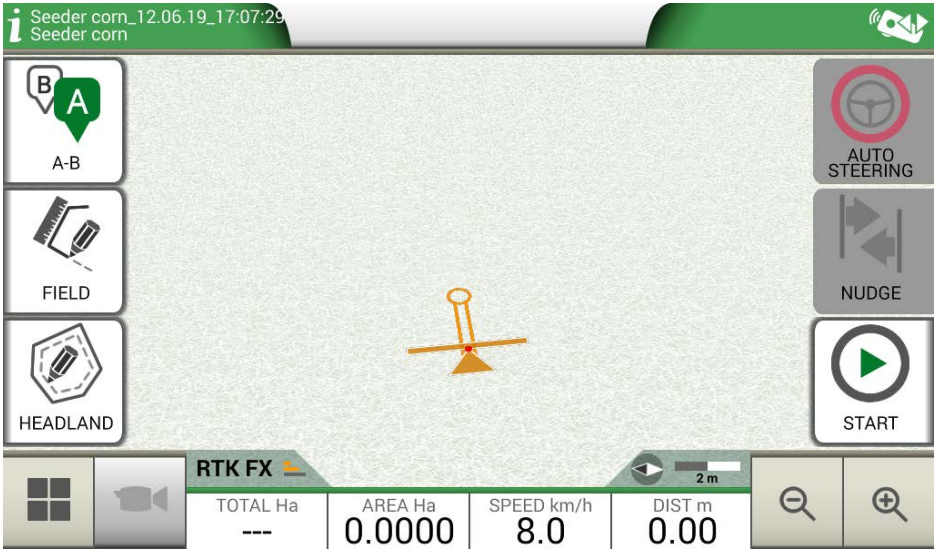


Figure 2.2.c - Job page

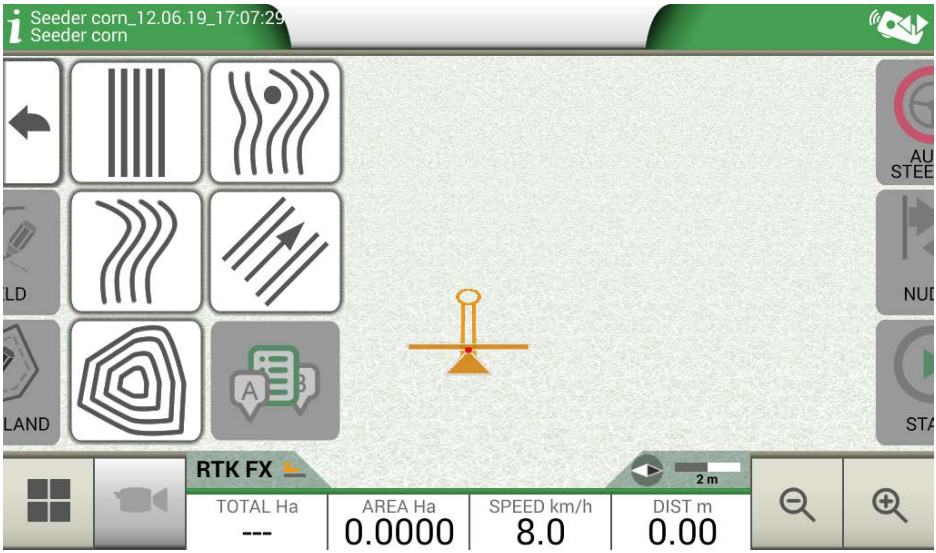


Figure 2.2.d - Job type selection

5. Select “A-B” to start the job;
6. Select the type of guidelines, for example A-B parallel guidelines;

	A-B parallel guidelines Tap this icon to work with A-B parallel guidelines.

Table 2.2.a - A-B straight lines

- Tap the icon to save point A;
- Proceed few metres straight ahead to save point B;

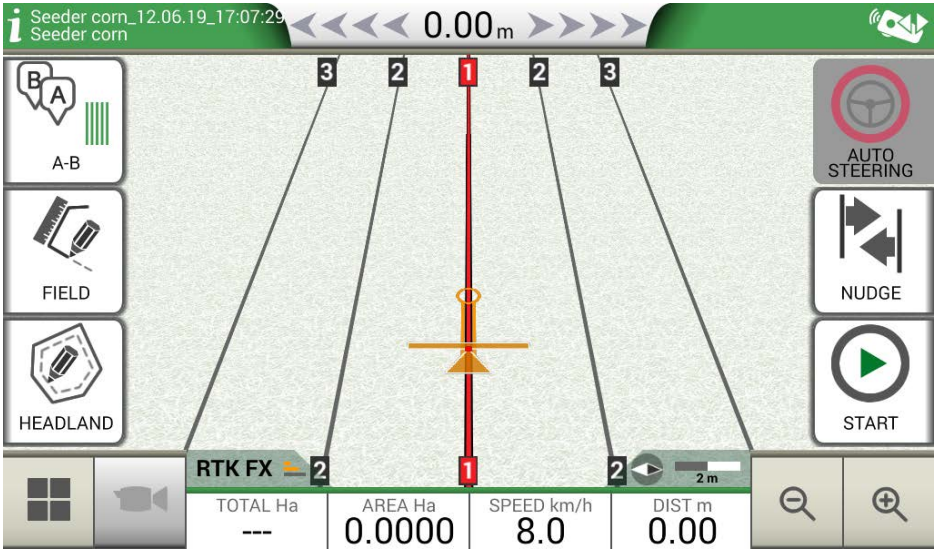


Figure 2.2.e - Parallel lines

7. A-B lines are now created;
8. Follow both the line direction displayed at the top of the page and the guidance cursor to maintain the correct trajectory of the vehicle.

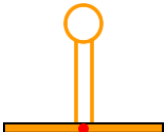
	Distance Distance between the tractor and the A-B guideline. The green cursor indicates how to turn the steering wheel so as to correct the trajectory.
	**Smart cursor** The smart cursor is provided with two lines. It helps user to maintain the tractor aligned with the direction of the A-B guideline.

Table 2.2.b - Distance from guideline and smart cursor

2.3 Continue / Close Last Job

G7 allows you to continue the last job, accessing it directly from the Main Menu:

1. Select “CONTINUE LAST JOB” from the main menu;
2. This page shows you all the information about your last job. Select “OK” to confirm;

Figure 2.3.a - Main menu – Continue Last Job

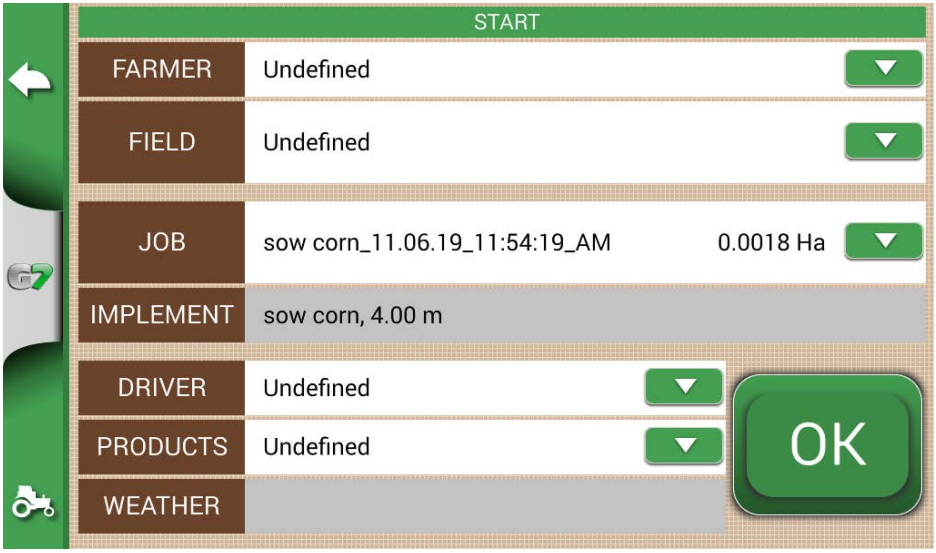


Figure 2.3.b - Last Job confirmation page

3. The project will be loaded. Now it is possible to continue the job.

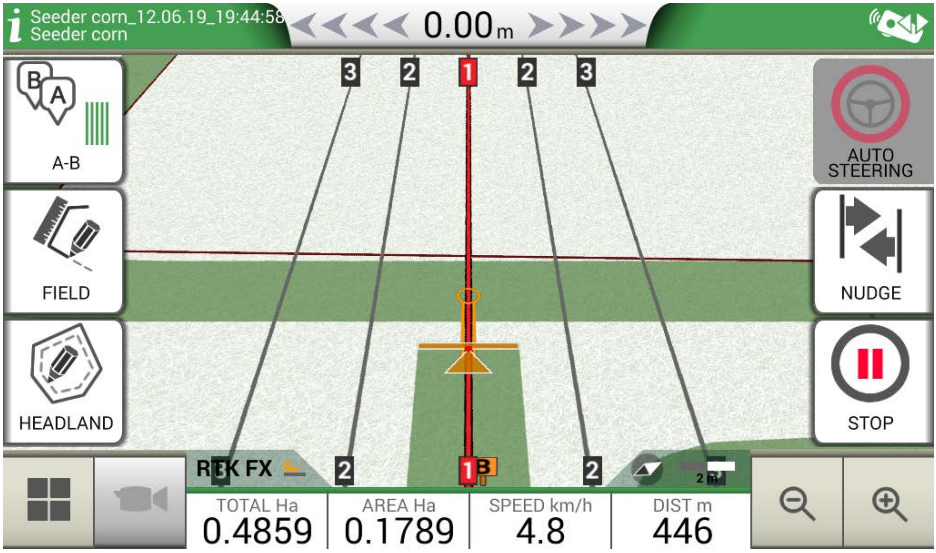


Figure 2.3.c - Last Job and latest position visualization

At the end of a job, it is possible to manually close the job in progress by touching the “CLOSE JOB” button.

Figure 2.3.d Main menu - Close Job

If the job is not closed manually, G7 allows you to continue the last job carried out as mentioned above.

2.4 Setup

From the “SETUP” menu, it is possible to access different settings, parameters and customization.

2.4.1 Satellites

This page allows you to check the satellites status and change the settings of the GNSS receiver. GNSS settings may vary depending on the type of GNNS, for this reason the menu may look differently from one type to another.

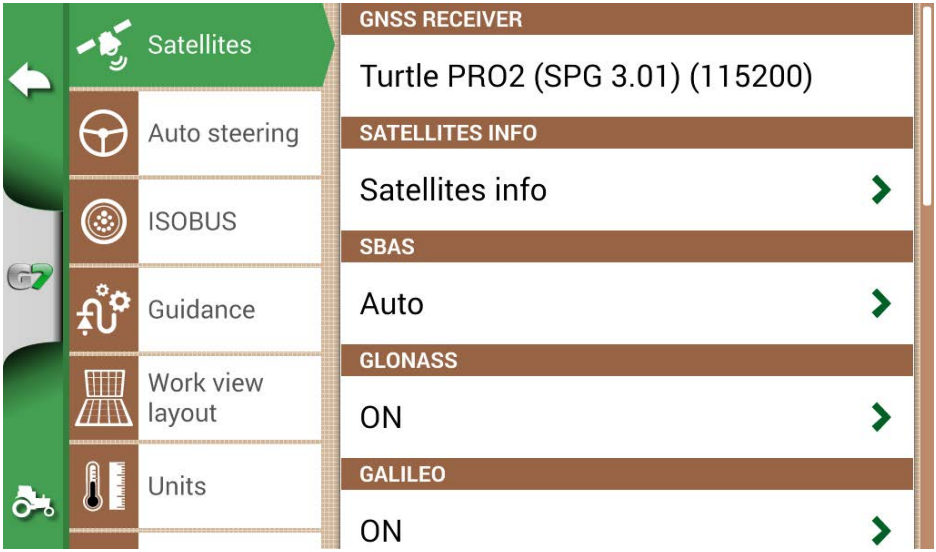


Figure 2.4.1.a - Satellite configuration page

You can find here the various settings for satellites:

1. GNSS RECEIVER
Find here the model and firmware version of the receiver connected to the “GPS Antenna” port.

2. SATELLITES INFORMATION
Find here the info calculated by the GNSS receiver, the map with the position of the satellites and, for RTK receivers, the Latency (delay compared to the last RTK correction), Base ID (identification number of the RTK base) and Estimated Err are highlighted (estimated error in the positioning in meters).

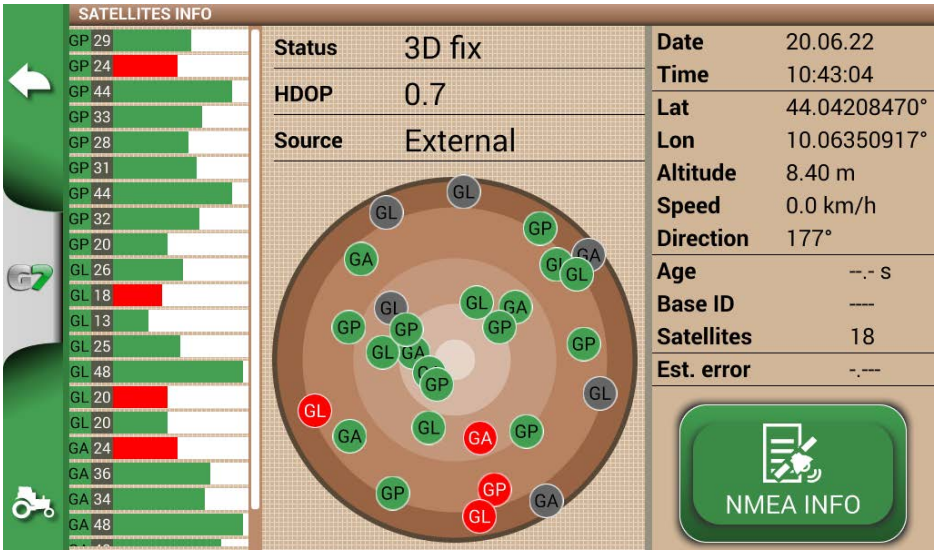


Figure 2.4.1.b - Detailed information on satellites

For proper operation, most satellites must be green in color. Otherwise, wait at least 20 minutes in an open field and clean the antenna from any dust with a wet cloth.

3. SBAS
Geostationary satellites that increase accuracy in non-RTK receivers. AUTO setting recommended.

4. GLONASS
Russian positioning satellites. ON setting recommended.

5. GALILEO
European positioning satellites. ON setting recommended.

6. BEIDOU
Chinese positioning satellites. OFF setting recommended.

7. MINIMUM SPEED
This value should be changed to lower values near 0 km / h only if RTK receivers are used.

ATTENTION: do not change this parameter unless after confirmation from technical support.

8. ANTENNA POSITION
Read paragraph 2.4.1.1

9. TERRAIN COMPENSATION

Ground compensation is an important function that allows you to eliminate the error due to the inclination of the tractor in the two axes (up / down, right / left).

This option is strongly recommended for hill work. Pay close attention to installation and settings, it is important to perform the following steps correctly:

- Correct orientation of the antenna during installation;
- Correct entry of the height from the ground in the settings.

At this time, the ground compensation can be turned from OFF to ON.

Real-time values for pitch (ascent / descent) and roll (right / left) are visible. The values are reported in degrees and in % of slope.

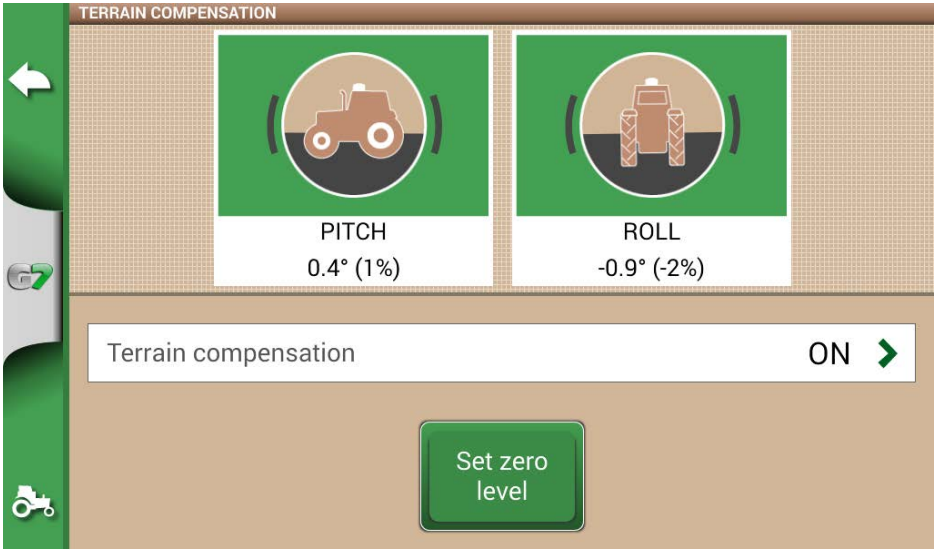


Figure 2.4.1.c - Terrain Compensation Activation, Pitch / Roll Display

It is always recommended to calibrate the tilt sensor. To do this, position the tractor on a perfectly flat surface. Then press the “Set zero level” button. At this point, any errors due to an installation that is not perfectly flat will be canceled and a new zero reference in pitch and roll will be re-established.

Perform this procedure every time the antenna is repositioned on the vehicle or the position is changed.

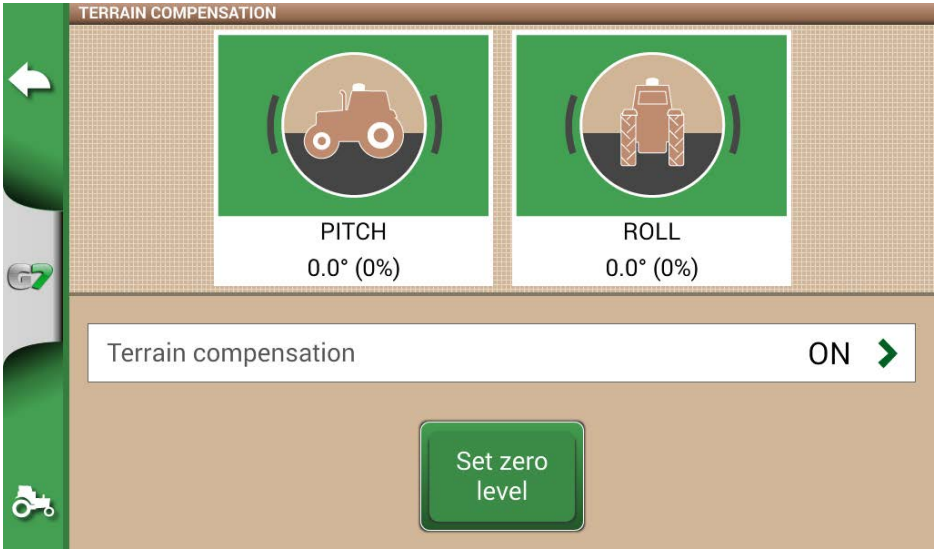


Figure 2.4.1.d - Zero calibration of the ground compensation

10. NTRIP CLIENT

NTRIP Client refers to the technology that allows you to download precision corrections for RTK antennas from the internet.

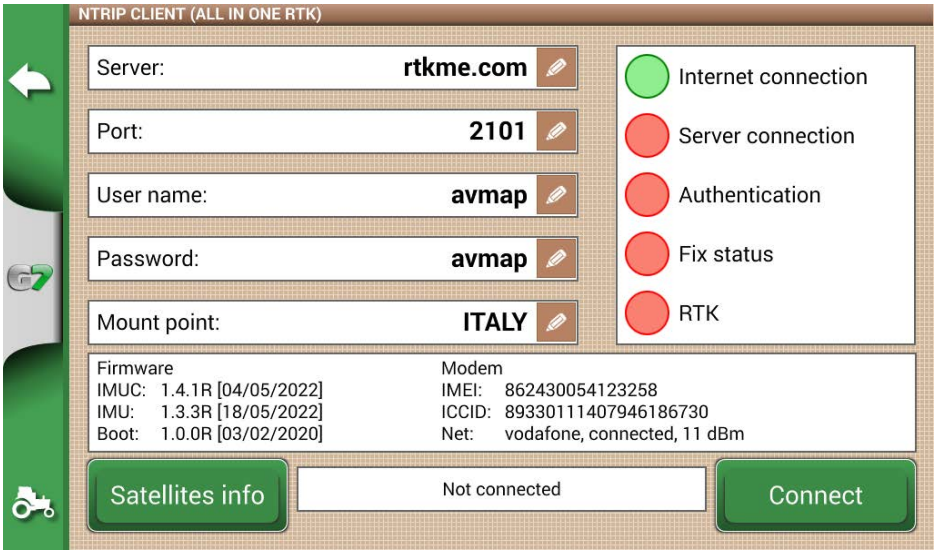


Figure 2.4.1.e - NTRIP Client access configuration

For correct functioning, you need:

- The RTK receiver connected to the “GPS Antenna” port;
- An active internet connection:
  - For Turtle RTK > use WiFi via G7 Plus, G7 Iso and G7 Terminal;
  - For All in One RTK > the internet connection is already integrated in the receiver;
- Access to a RTK corrections network (local, regional, private) Contact your dealer for more information;
- A valid position, the antenna must be in visibility conditions (outside).

Enter the server access data in the respective boxes, then press Connect.
When all conditions are valid and green, the RTK position is active and valid.
In case, any condition remains red:

- “Internet Connection”: check the WiFi connection;
- “Server connection”: check whether the server address is correct;
- “Authentication”: check the username and password, pay attention to uppercase;
- “Status Fix”: the antenna is not outside or in a position of sufficient signal reception;
- “RTK”: if all other points are green, wait a few minutes or move the antenna to an area with fewer obstacles (trees, buildings).

11. NMEA ON GENERIC PORT

By activating this function, the messages input on the “GPS ANTENNA” port are repeated on the “GENERIC PORT”. This feature is useful for transferring the position of the antenna to other third-party devices, using only one antenna on the tractor.

12. REVERSE DETECTION

This function allows you to assess whether the tractor is moving in the direction of travel or in reverse. In case the direction of travel is not detected correctly, touch on the screen “Run forward” to restore correct operation.

2.4.2 GPS antenna position on the tractor

This parameter refers to the position of the GPS antenna in relation to the posterior axel of the tractor.

1. Enter the distance value accurately and select “FORWARD” if the antenna is located in front of the axel; select “BACKWARD” if it is located behind the rear axle;
2. Enter the height of the antenna from the ground. The height is measured by placing the tractor on a flat surface. The reference on the antenna is the colored rubber edge.

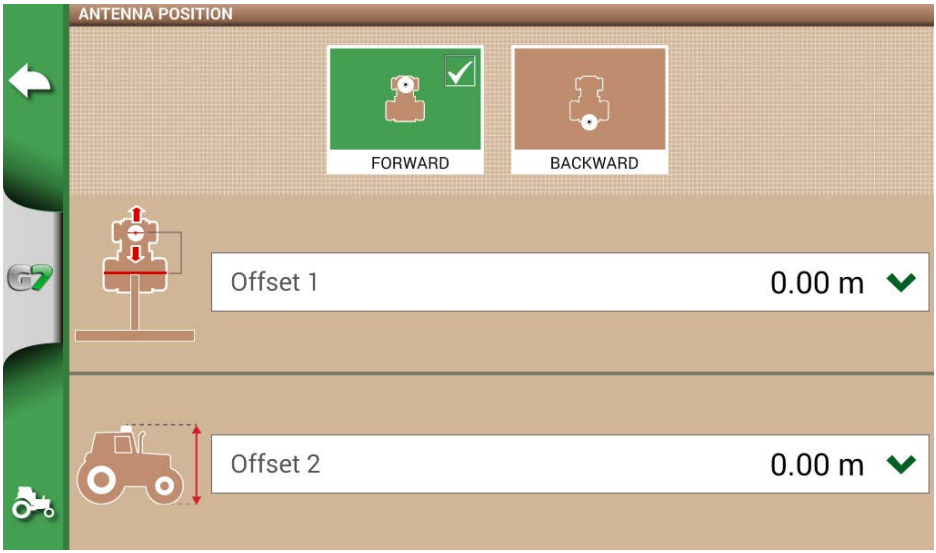


Figure 2.4.2 - Antenna position configuration page

2.4.3 Auto Steering (for G7 Plus and G7 Iso)

Auto Steering menu allows you to access G7 settings when it is connected to Auto Steering system.

1. Select “SETUP” > “Auto Steering”;

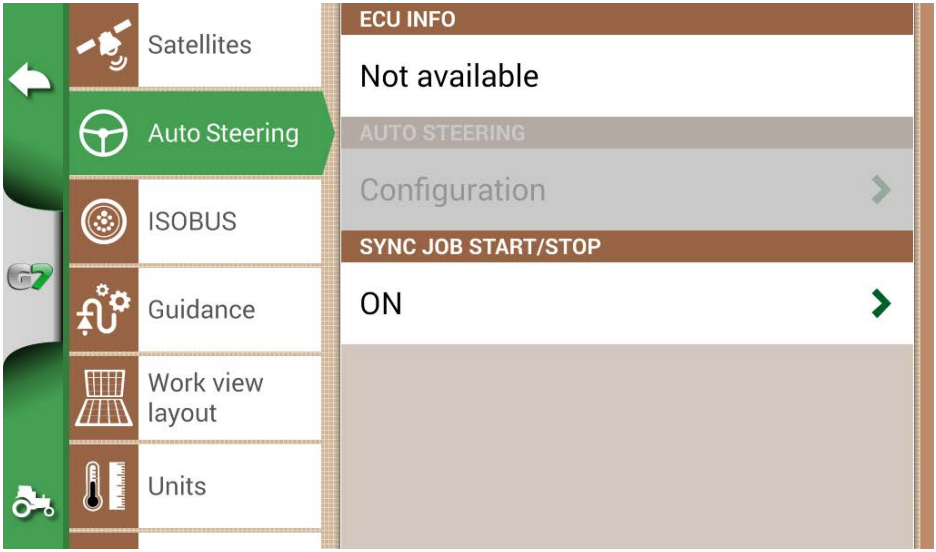


Figure 2.4.3 - Auto Steering configuration page

In this page you can find:

- ECU INFO: information about ECU-S1 steering controller connected to G7;
- AUTO STEERING: Auto Steering advanced settings.

ATTENTION: this feature is limited to expert users. An incorrect configuration leads to a malfunction of the Auto Steering system;

- NUDGE STEP: configure a default displacement value for the function “Move”;
- SYNC JOB START/STOP: set this function “ON” and select Auto Steering button to start colouring the worked area.

2.4.4 ISOBUS

From the ISOBUS menu you can access the ISOBUS features supported by G7: Virtual Terminal (VT) and Task Controller (TC).

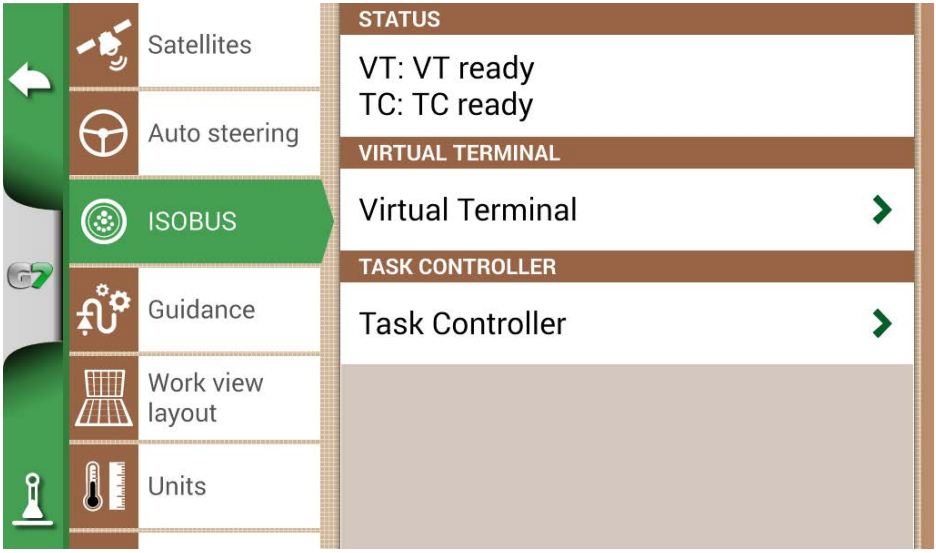


Figure 2.4.4 - ISOBUS functionality configuration page

The status shows whether VT and TC are disabled, not connected, or active (ready to use).

- “Disabled”: the functionality is not enabled in G7, license inactive or expired;
- “VT: VT client not connected”: VT functionality enabled but equipment not connected to the device;
- “TC: TC Client not connected”: TC functionality enabled but equipment not connected to the device or equipment that does not support TC;
- “VT ready”: the Virtual Terminal functionality is connected, active and ready to use;
- “TC ready”: the Task Controller functionality is connected, active and ready to use.

2.4.4.1 VIRTUAL TERMINAL configuration

In this section you can configure the Virtual Terminal.

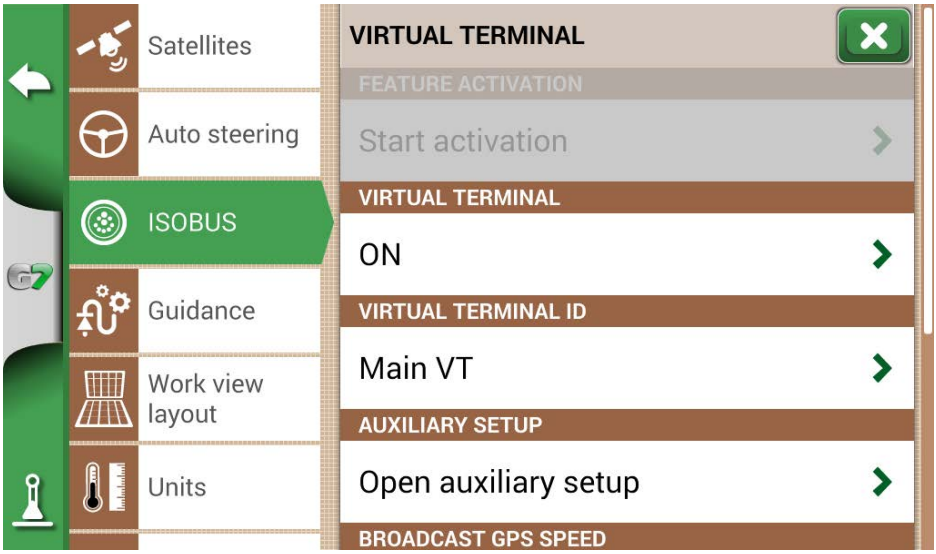


Figure 2.4.4.1 - VT configuration page

2.4.4.1.1 VIRTUAL TERMINAL

In this section you can enable/disable the Virtual Terminal:

- ON to enable the VT functionality;
- OFF to disable the VT functionality and communication with the implement.

2.4.4.1.2 VIRTUAL TERMINAL ID

In this section you can define the ID of the Virtual Terminal in the tractor's ISOBUS network. It is possible that there are more than one ISOBUS VT device in the network. At this point you can define a primary and a secondary device:

- Main VT: the implement communicates with G7 for the main functions, the ID is 1;
- Secondary VT: the implement communicates with G7 only for secondary functions (the display of the secondary VT depends on the equipment), the ID is 2.

2.4.4.1.3 AUX setting

In this section you can activate and select the functions to be combined with an external ISOBUS joystick/button panel (AUX-N compatible). It is possible to select the button and the function to be combined manually, or in "Learning mode", that is, by selecting the function and then physically pressing the button on the joystick/button panel where you want to associate the function. By pressing Save, the associations are saved.

2.4.4.1.4 Transmit GPS Speed

In this section you can enable the sending of the speed information read by the GPS antenna connected to the G7, to the ISOBUS equipment (if it is not equipped with other proprietary speed sensors).

- OFF: sending disabled;
- ISO RADAR: ISOBUS standard format, often also defined by other names (e.g. Ground Based Speed, ISO11786);
- J1939: SAE J1939 format prior to ISOBUS.

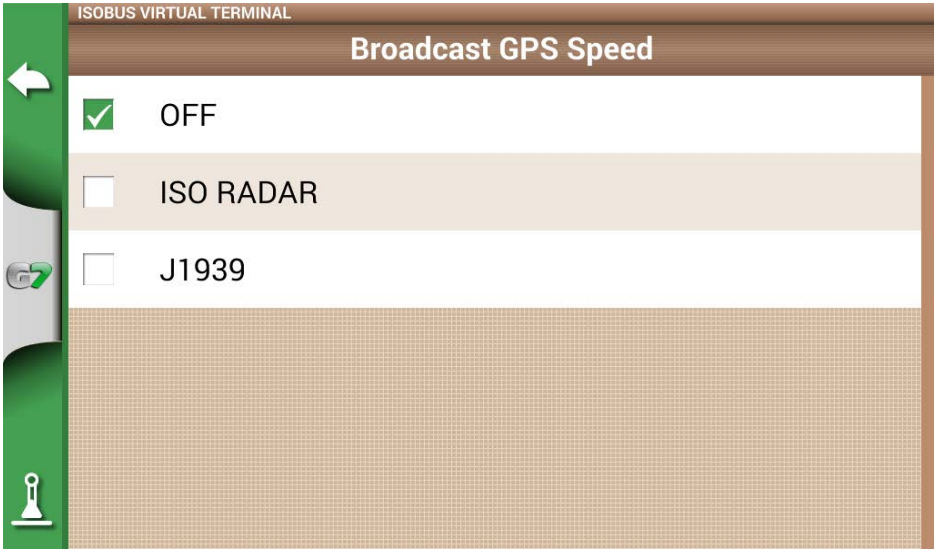


Figure 2.4.4.1.4 - VT configuration page - GPS speed

ATTENTION: you must select the same speed format both in the G7 and in the ISOBUS implement configuration (speed source settings). If the two formats do not match, there is no sharing of speed data.

2.4.4.1.5 Object pool

In this section you can delete the implement's object pool. This may be necessary following major changes in the configuration of the equipment, anomalies, updates.

2.4.4.1.6 Messages LOG

In this section you can find the error messages, anomalies and alarms reported by the Virtual Terminal, that can be useful for technical support.

2.4.4.2 TASK CONTROLLER configuration

In this section you can configure the Task Controller.

2.4.4.2.1 TASK CONTROLLER

In this section it is possible to enable/disable the Task Controller:

- ON to enable the TC functionality;
- OFF to disable the feature.

2.4.4.2.2 Total TASK CONTROLLER

In this section you can view the counters of the connected ISOBUS equipment.

2.4.4.2.3 TASK CONTROLLER LOG

In this section you can find the error messages, anomalies and alarms reported by the Task Controller.

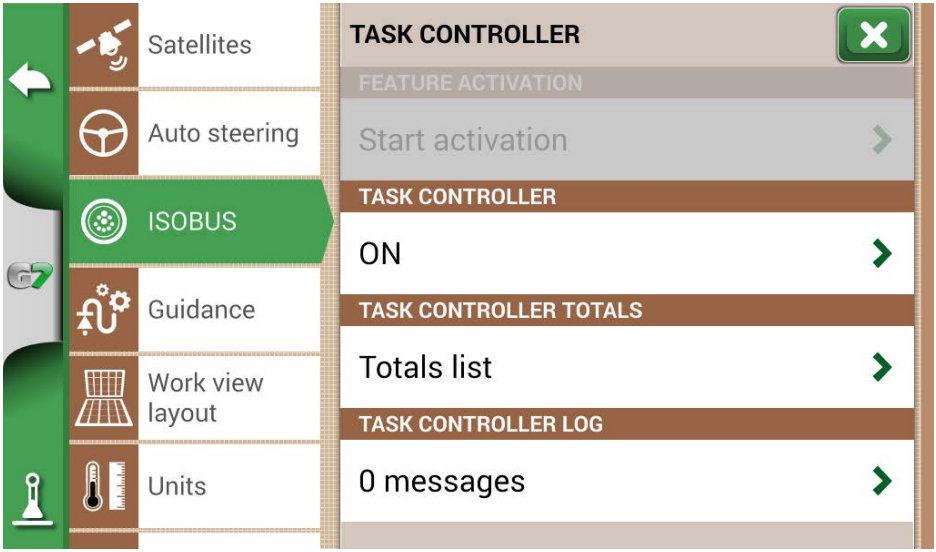


Figure 2.4.4.2.3 TC configuration page

2.4.5 Navigation activation (only for G7 Terminal)

On the G7 Terminal device it is possible to activate all navigation and database management functions. You can take advantage of a free trial period for navigation, after which it is necessary to activate the license (read par. 4.14).

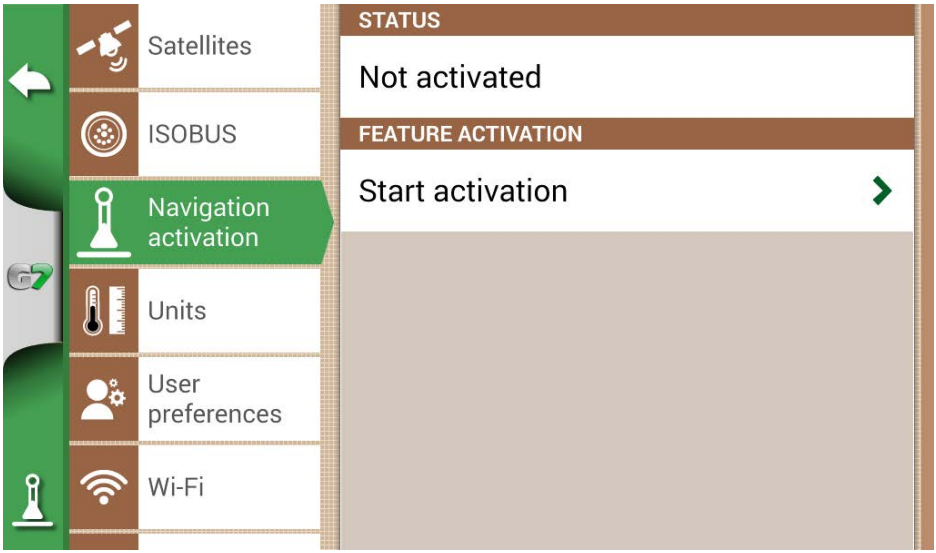


Figure 2.4.5 – Navigation activation Page (only for G7 Terminal)

2.4.6 Guidance

From the Guidance menu you can activate some features that interact while driving (manual or automatic).

1. Displacement amplitude
Defines the minimum displacement that is performed on the guideline when using the MOVE function.

2. Edge alarm
By activating this function, a visual and audible message is displayed while driving, as you approach the edge of the field. For this function to work correctly, it is essential to select the field or define the edge of the field when starting work.

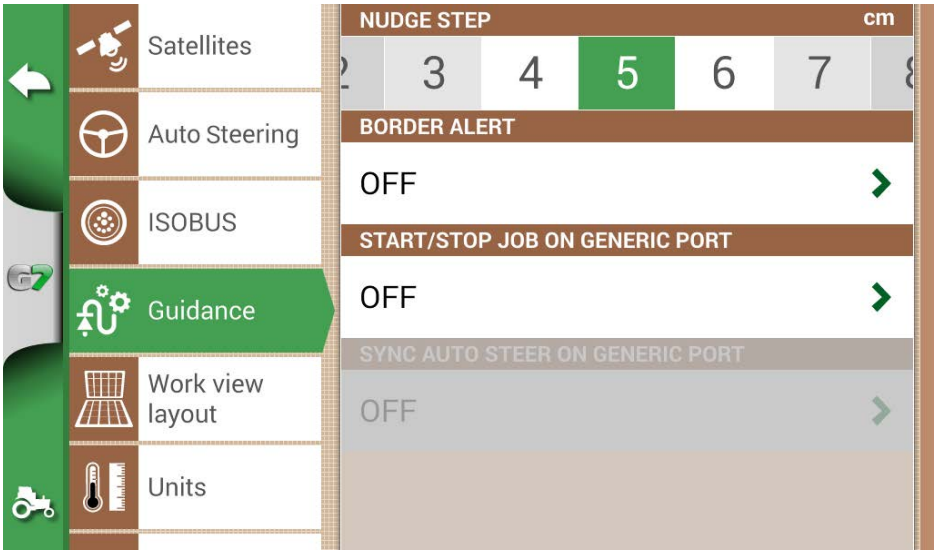


Figure 2.4.6 - Guidance

3. START / STOP ON GENERIC PORT

By activating this function, it is possible to connect to the implement / tractor to the G7 via the "GENERIC PORT". You can use pin 2 and pin 3 of the port as a two-state logic signal input, that is open / closed according to this scheme:

- Open circuit between pin2 and pin3 = open state = STOP state = coloring disabled;
- Closed circuit between pin2 and pin3 = closed state = START state = coloring activated.

Therefore, he color of the worked area varies as the state of the circuit changes.

4. SYNCH AUTOGUIDE WITH GENERIC PORT

As described in the previous point, this function, in addition to activating / deactivating the coloring, also allows you to activate and deactivate the autoguide. A practical example: by lowering the lifter with the seeder, the autoguide is automatically engaged. By raising the lifter at the headland, the autoguide is automatically disengaged.

2.4.7 Work view layout

Work view layout menu allows you to edit the map view.

1. Select > "SETUP" > "Work view Layout";
   - MAP VIEW: select 2D to have a view from above or 3D for a perspective view;
   - DAILY BACKGROUND: allows you to change the background colour of the map;
   - SCALE GRID: it allows you to create a grid on the background. It is possible to configure grid size manually.

NOTE: grid orientation always refers to geographical North.

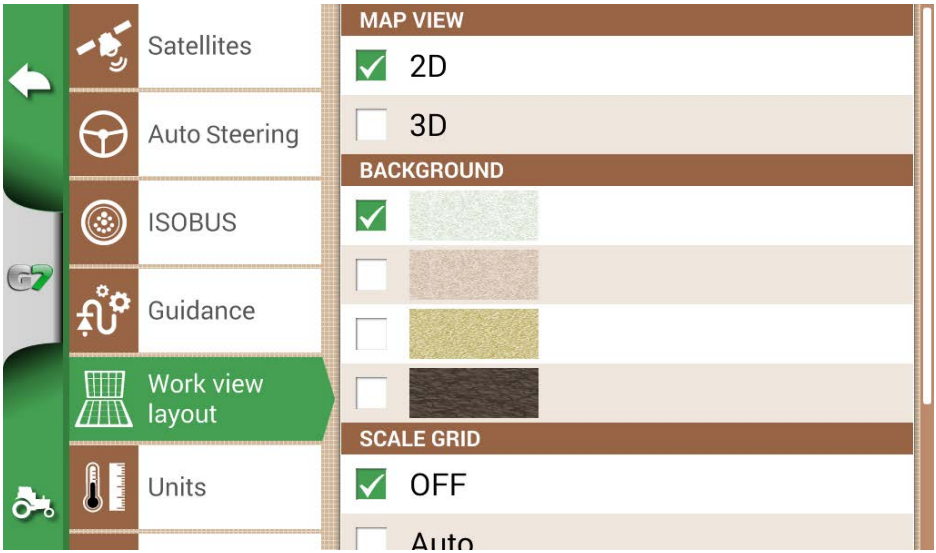


Figure 2.4.7 - Work view layout configuration page

2.4.8 Units

It is possible to configure units of measurement for area, speed and distance:

1. Tap on “SETUP” > “Units”;
2. Select the unit that you need to modify;
3. Select the required unit of measurement;

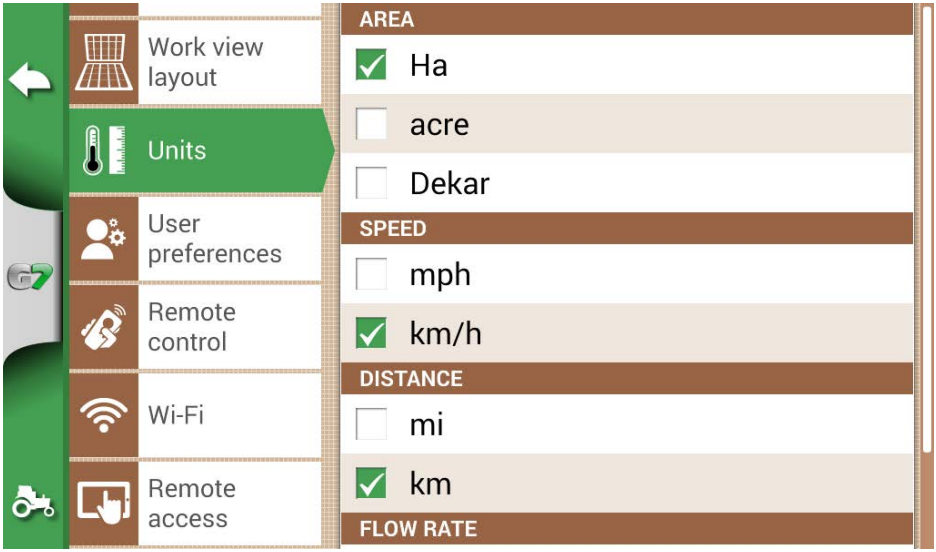


Figure 2.4.8 - Units of measurement

2.4.9 User preferences

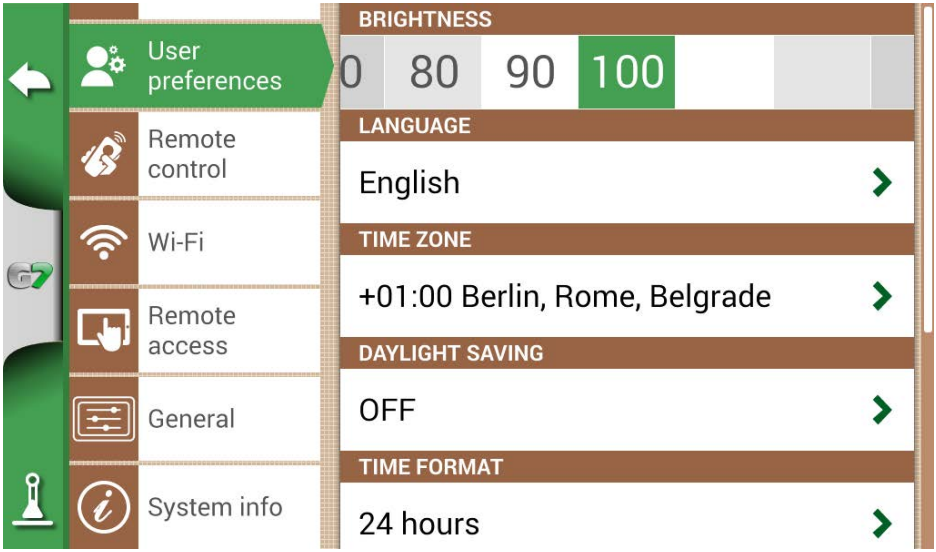


Figure 2.4.9 - User preferences page

It is possible to configure and edit user preferences:

1. Select “SETUP” > “User Preferences”;
2. Select the preference than has to be changed and tap the arrow to change it.

2.4.10 Remote control

Remote control menu allows you to configure the supplied remote control.

- Select “SETTINGS” > “Remote control”.

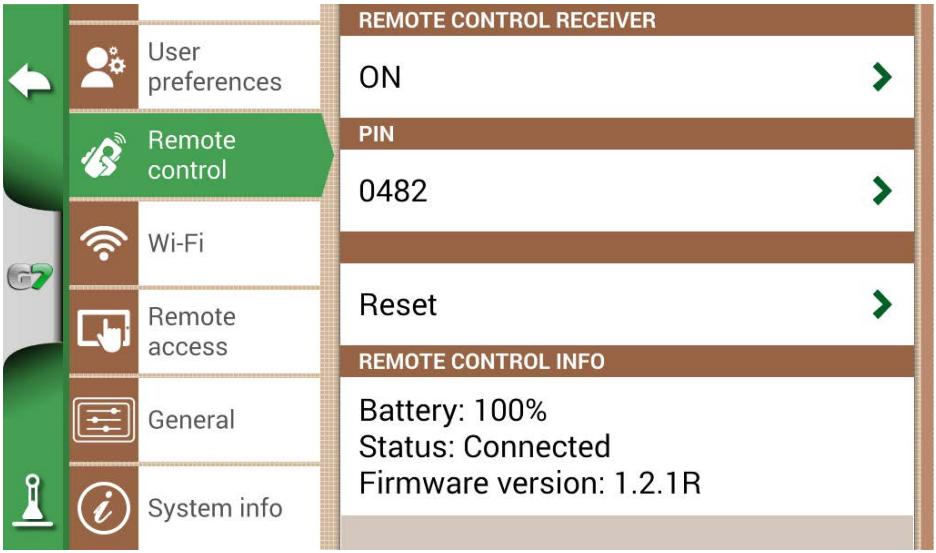


Figure 2.4.10.a - Remote control setting page

Remote control allows you to have a quick access to the main functions, such as opening the main menu, starting or pausing jobs, enabling or disabling Auto Steering system, placing a mark on the map (on obstacles, on specific points, etc.).

To connect the remote control, make sure that it is within a range of a few metres from G7 and insert batteries into the slot. Then:

1. Select “SETUP” > Remote control;
2. Select “REMOTE CONTROL RECEIVER” and Press “ON” to turn it on;
3. Select “PIN” and enter the PIN code given on the back of your remote control;

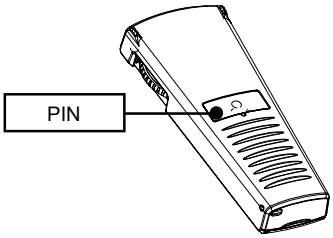
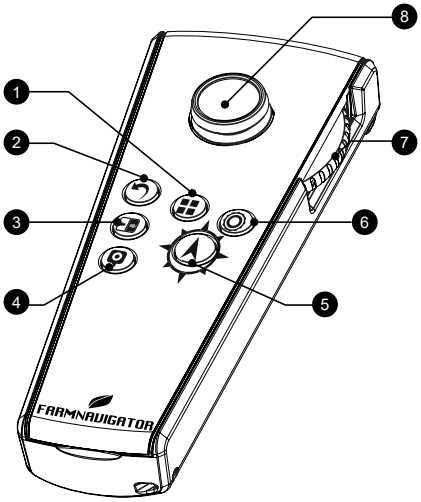


Figure 2.4.10.b - Remote control

4.Press the middle button (navigation arrow) of your remote control, to connect the display to the remote control. Once connected, select “REMOTE CONTROL INFO” to check connection status, battery status and firmware version.

The functions of the remote control buttons can only be used in job page.



1	**Menu** Press it to open the main Menu.	2	**Back** Press it to go back to the previous page.
3	**Cycle** If the camera is connected, select it to open the camera visualization.	4	**Mark** Press it to mark an obstacle on the map.
5	**Start/Stop** Press it to start/stop colouring the worked area on the map.	6	**Setting** Press it to open set up page.
7	**Zoom in/zoom out wheel** Use the lateral wheel to zoom in or out the map.	8	**Nudge control** It allows you to move the line to follow, moving the remote control to the right or to the left.

Table 2.4.10 - Remote control functions

2.4.11 Wireless connectivity (for G7 Plus, G7 Iso and G7 Terminal)

G7 is provided with wireless connectivity and it can be connected to a WiFi hotspot. A dedicated menu allows the configuration of a WiFi network.

1. Select “SET UP” > “WiFi”;
2. Select “ON” to start searching for available networks;
3. Select the network that you want to access;
4. Select “Password” to enter the PIN code;
5. Wait for a moment and confirm the connection. Tap the name of the network to check
6. Select “FORGET” to disable automatic WiFi connection.

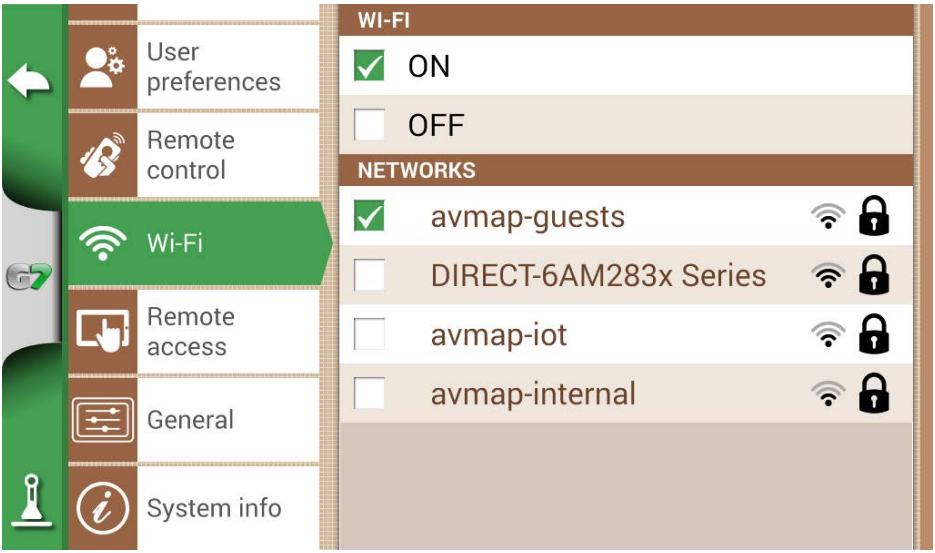


Figure 2.4.11 - WiFi configuration page

2.4.12 Remote access (for G7 Plus, G7 Iso and G7 Terminal)

Install the app Mirror Control to control G7 with your smartphone or tablet. This app allows you to use the display of your Android or Apple device as if it was G7 display.

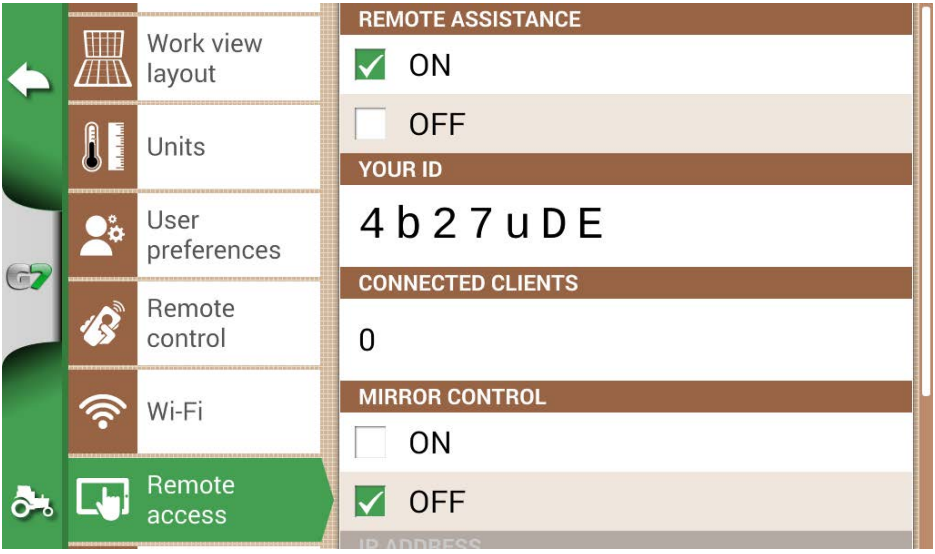


Figure 2.4.12 - Mirror Control configuration page

It is possible to connect G7 to a smartphone or tablet via WiFi network, only if G7 and the smartphone or tablet are connected to the same router.

1. Select “SETUP” > “Remote access” > Mirror Control > ON;

2.4.13 General Settings

This page contains the general features of the device. Specifically:

- Automatic check for updates, if the device is connected to a WiFi network, it will automatically search for available updates; - Search for updates, you can force the search for updates by tapping on “Search for updates”;
- Factory settings, restore settings by deleting all user data;
- Demo mode, enables a demonstration of the system while carrying out work in the field;
- Debug log, allows you to export debug data for advanced assistance.

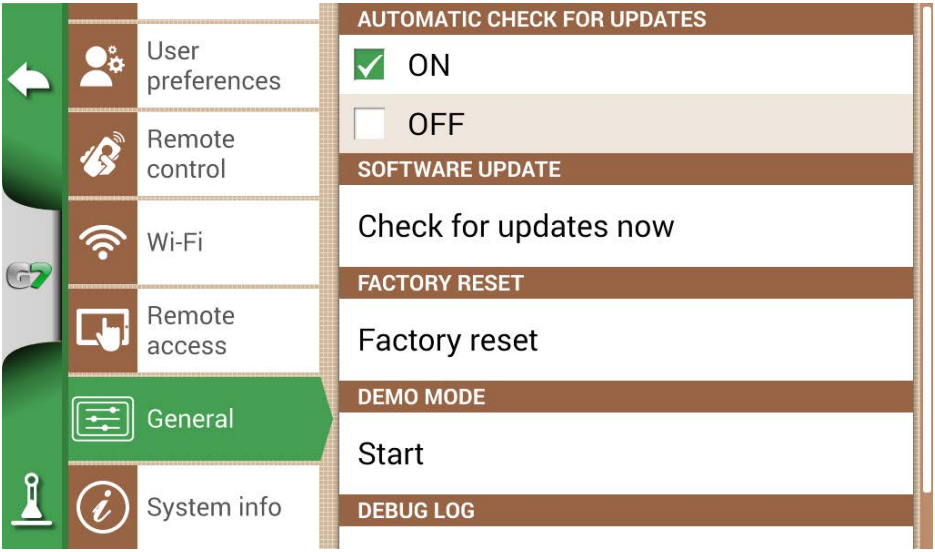


Figure 2.4.13 - General Settings page.

2.4.14 System Information

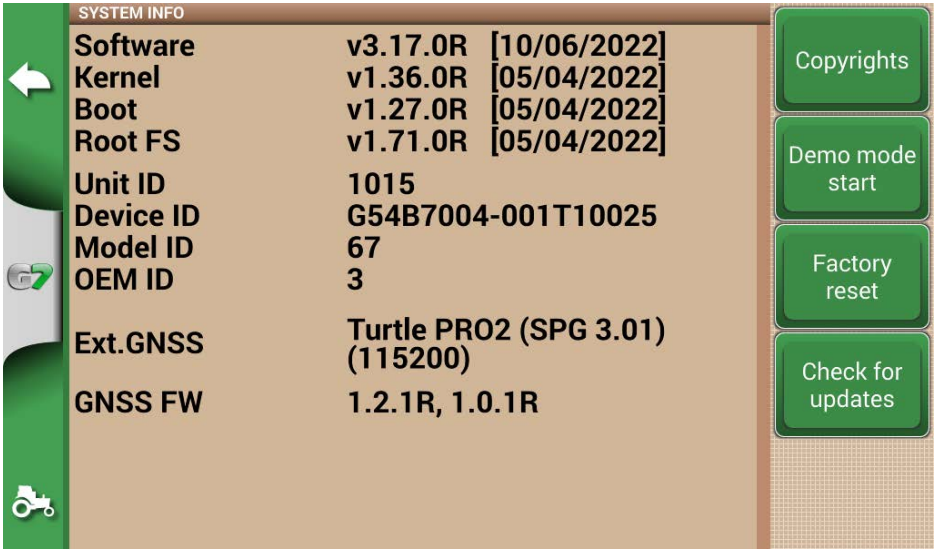


Figure 2.4.14 - System Info page

This page summarizes all the information about the device. On the right side of the page, there are four buttons.

WiFi models allow you to search for software updates automatically by selecting “Check for updates” button.

In order to check for updates, you need to connect the device to a WiFi network (read par 2.4.11).

- Select “SETUP” > “System Info”

2.4.15 VIRTUAL TERMINAL Menu

If the Virtual Terminal functionality is active, you can access VIRTUAL TERMINAL: a display of the menu and functionality of the ISOBUS equipment connected to the device. The Virtual Terminal screen is split into two parts.

For the G7 Terminal device, the Virtual Terminal (VT) is displayed automatically when turned on. The device is already active and enabled to view and interact with the ISOBUS equipment.

In the case of G7 Terminal, the display will be as follows:

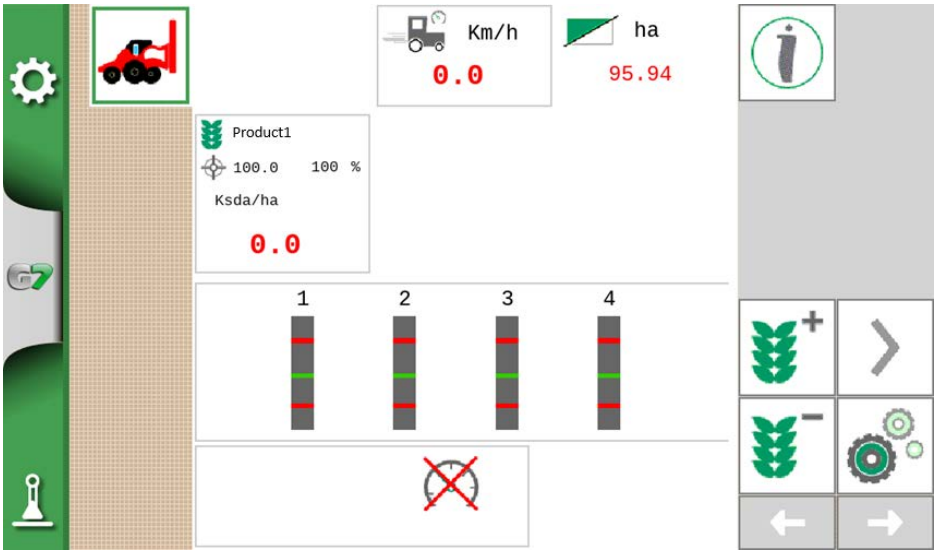


Figure 2.4.15.a – Virtual Terminal on G7 Terminal

In all other G7 devices, however, the Virtual Terminal screen is divided into two parts:

- A partial display is shown on the left of navigation, with the most important information: the line, the sections and the error on the line. By tapping inside the navigation area you can return to the complete display of the work menu.
- The right side shows the display of the Virtual Terminal with the related buttons. If there are multiple Virtual Terminals connected in the tractor's ISOBUS network, an icon for each individual Virtual Terminal is displayed in the lower part. By tapping on the single icon you can access the different Virtual Terminals. Finally, by tapping on the gear icon at the bottom right you can access the ISOBUS settings of the G7 Farmnavigator (not the equipment).

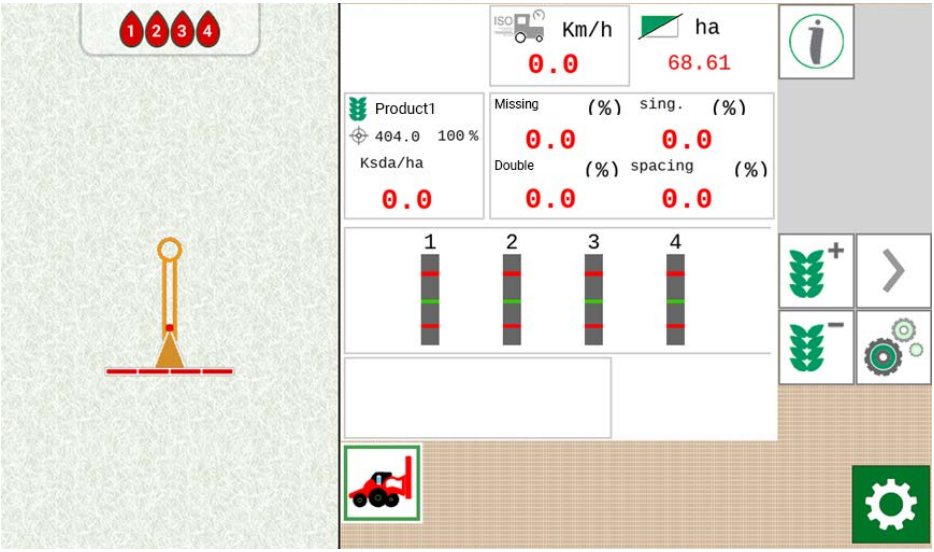


Figure 2.4.15.b – Split VT screen

2.5 MyFarmnavigator Menu

From the MyFarmnavigator menu you can access the interconnection and data exchange functions between the device and the MyFarmnavigator portal.

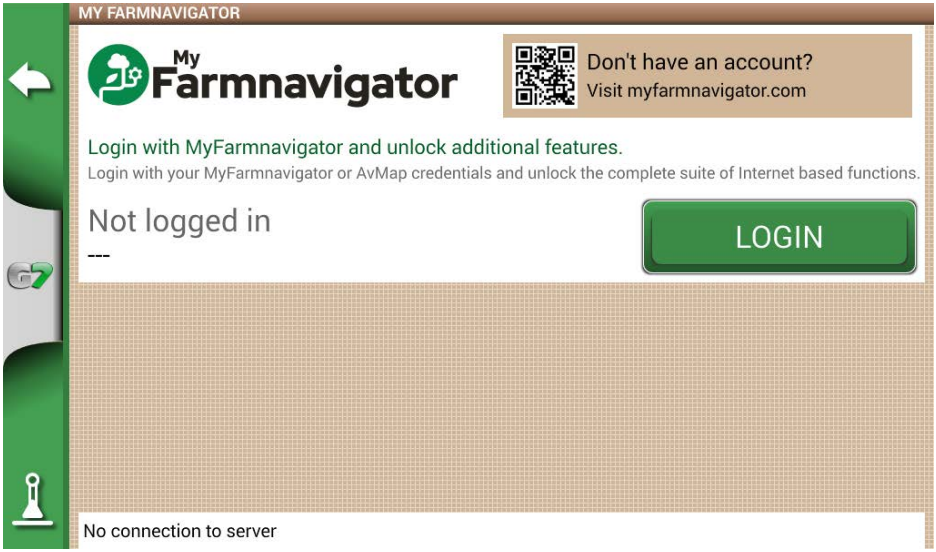


Figure 2.5.a - MyFarmnavigator access page

To access you need to:

1. Make sure the device is connected to a WiFi network;
2. Have a MyFarmnavigator account (to register: myfarmnavigator.com);
3. Tap on “LOGIN”;
4. Enter Email and Password, then tap “LOGIN”.

Figure 2.5.b - MyFarmnavigator Login

At this point, the device connects to the portal and synchronizes the information saved on the device with the MyFarmnavigator portal. Viceversa, from the portal it is possible to send information to the device. When the connection with the portal is active, MyFarmnavigator icon is shown on the work page.

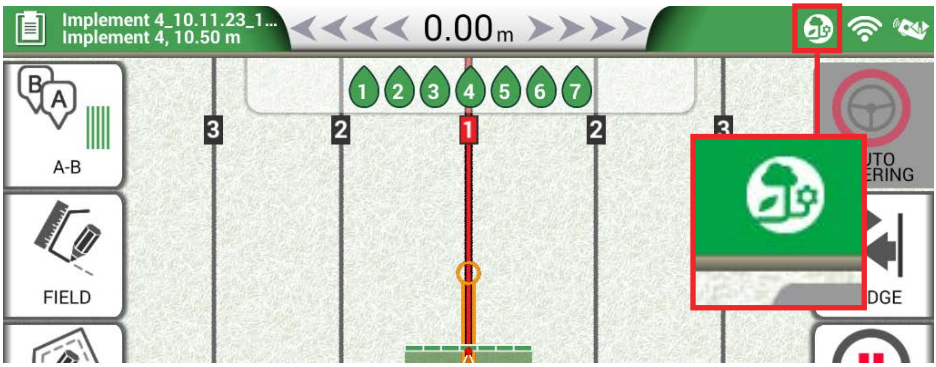


Figure 2.5.c - MyFarmnavigator Icon during connection with the cloud

3. Job page

The Job page shows all the information and functions needed during your work activity.

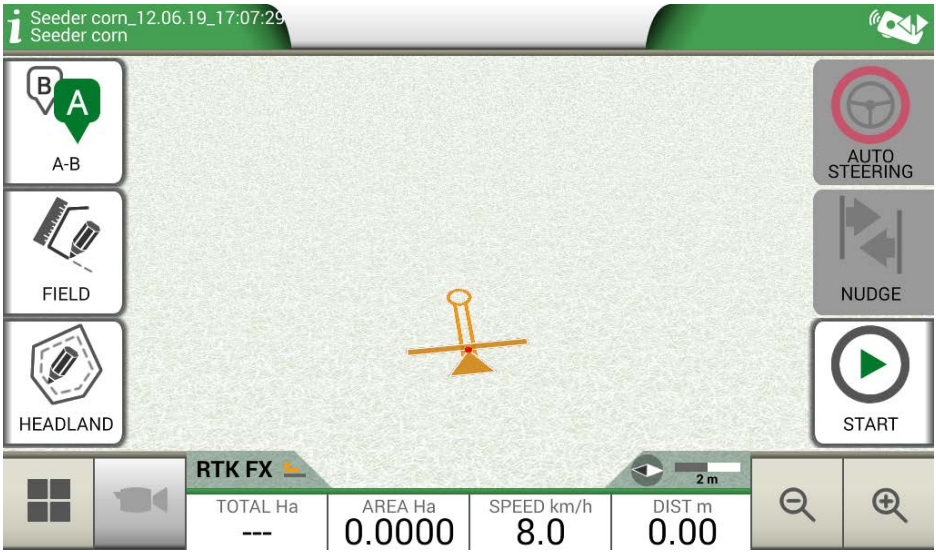


Figure 3. - Job main page

3.1 Current Job information

3.1.1 Job name

Job and implement names appear at the upper left corner of the page. Touch “i” to directly access detailed information about your job.

Diserbo 16.02.19_09:10:41 Botte diserbo	File and implement name description

Table 3.1.1 - Job name

3.1.2 Connected devices

At the upper right corner of the screen, there are the icons that identify the type of devices connected to G7.

	Devices connected to G7
	Connected and working remote control

	Connected and working WiFi
	External third-party device connected and enabled for automatic sections control
	Auto Steering system connected and enabled for the steering wheel control
	GNSS Receiver with active ground compensation. The position is corrected according to the slope

Table 3.1.2 - Connected devices

3.1.3 Antenna precision and reception

At the bottom left corner of the page, it is possible to see the reception and precision status of the antenna connected to G7.

	Description of antenna reception status and signal quality

Figure 3.1.3 - Antenna reception and precision status

There are different levels of accuracy of the antenna:

RTK FX	Centimetre accuracy, maximum level of precision possible.
RTK FT	Decimetre accuracy, very high precision level. It does not fit for those jobs which require 1-2 centimetres precision.
DGPS	Sub-meter accuracy, middle level of accuracy, perfect for the majority of job. It includes the correction provided by geostationary satellites SBAS (EGNOS, WAAS, etc.).
3D/SPS	Low accuracy, it is not suitable for any type of job.
NO GPS	No GPS signal, the antenna is disconnected or it is in a place where there is a total coverage of the signal (inside a building).

Table 3.1.3 - Antenna precision level

If the antenna icon (Figure 3.1.3.a) is green in all its parts, the receiving conditions are perfect. Otherwise, wait a few minutes, clean the antenna and get the device away from metal obstacles or dense vegetation.

3.1.4 Zoom Level and compass

At the bottom right corner of the screen, it is possible to see both zoom level and the compass that indicates the direction of the tractor.

	The compass is oriented according to tractor's progress. The black tip of the compass indicates the North. The scale bar indicates the zoom level applied to the map.

Table 3.1.4 - Zoom and compass

3.1.5 Area, speed, distance

At the bottom of the screen, it is possible to see all the information about distance, speed, worked area and total area.

	Information about area, speed and distance during work.

Table 3.1.5 - Area, speed, distance

The information displayed may vary if G7 is connected to third-party devices. Long tap area value icon (second box starting from the left) to open a selection menu and change the information displayed.

3.2 Operative functions during job

3.2.1 Start/Stop

START/STOP function enables you to draw or not a worked area.

- Press “START” to draw a green area of the same width as the implement and to count it in the worked area;
- Press “STOP” to interrupt colouring and suspend the counting of the area.

NOTE: START/STOP function can be also used in case of refuelling pauses during job.

	START Tap this icon to start working and colouring the worked area.
	STOP Tap this icon to interrupt colouring of the area.

Table 3.2.1 - Start/Stop functions

3.2.2 A-B lines

When you start a new job, tap A-B to have access to different types of guidelines. More specifically:

	A-B Parallel lines Tap this icon to work with A-B Parallel lines. Once you tap the icon, the point A will be saved. Proceed few metres straight ahead to save point B.
	A-B Contour guidelines Tap this icon to work with A-B Contour guidelines. Once you tap the icon, the point A will be saved. Proceed few metres straight ahead to save point B. It is essential to correctly set “Minimum Turning radius” in the implement settings page.
	Pivot Guidelines Tap this icon to work with pivot guidelines.

	A-B Adaptative contour Tap this icon to work with A-B Adaptative contour. Once you tap the icon, the point A will be saved. Proceed few metres straight ahead to save point B. With this type of guideline, the last track drawn will be copied. It always provides a 180° turn at the end of the field.
	Point A + Direction Tap the icon to save point A. In the end, the direction of the tractor will be displayed and it can be confirmed or edit.
	A-B lines list This icon is active when the field is selected and if there are A-B guidelines already associated to that field.

Table 3.2.2 - A-B line types

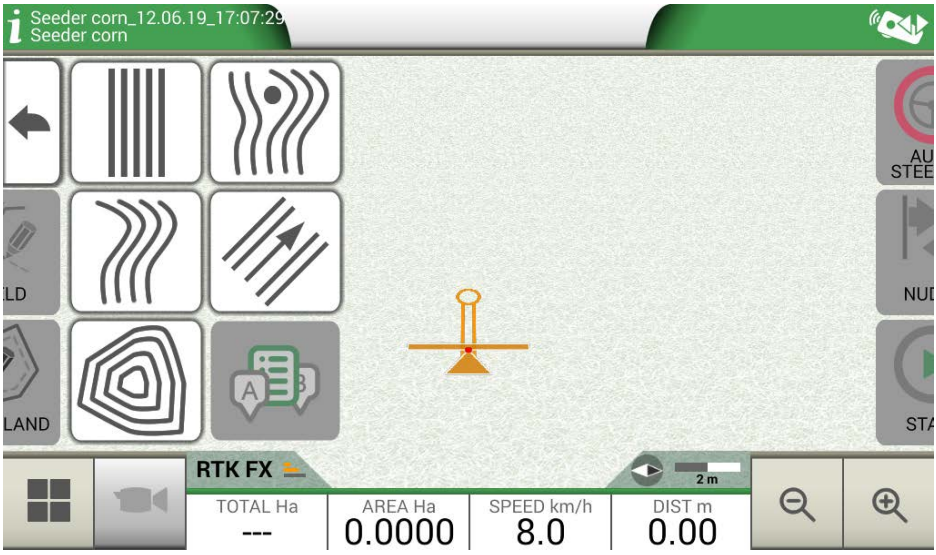


Figure 3.2.2.a - A-B guidelines

Once A-B lines are defined and created, the icon will indicate the type of guideline which is currently active during your job.

	A-B Parallel		A+ Heading

Table 3.2.2.b - Icon with A-B guideline type

During the job, tap A-B icon to access additional functions concerning A-B lines cancellation, change, or displacement.

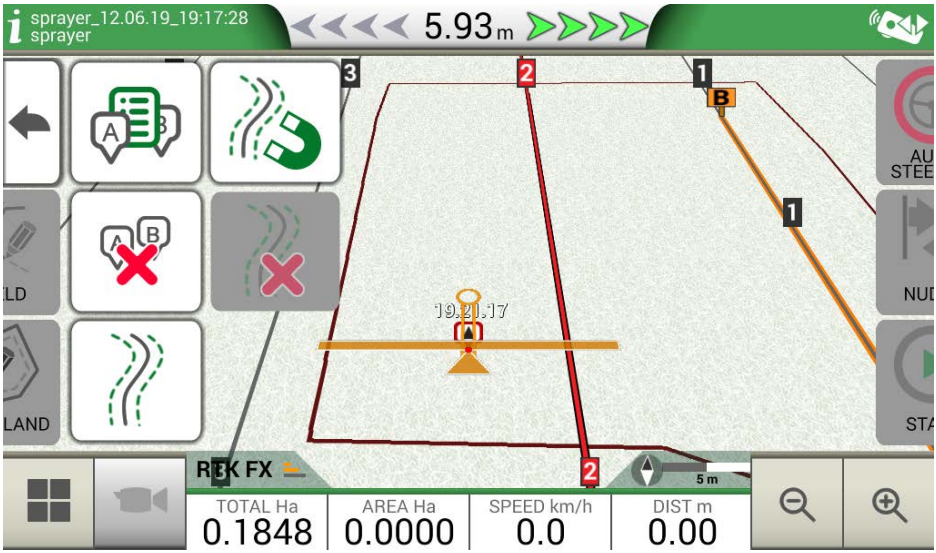


Figure 3.2.2.b - Operating functions during job activity

Below is a list of all the functions available:

	Magnet Move A-B lines according to the antenna position.
	Streets Move A-B guidelines some metres away from the antenna position. The maximum displacement permitted is equal to half of implement width.
	Shift cancellation Delete shift and reset original A-B guidelines.
	A-B guidelines list If active, it shows the list of A-B guidelines saved and used in the field.
	Delete A-B lines This feature allows you to delete the A-B guideline created in the field. The area already worked and coloured in green will not be deleted.

Table 3.2.2.c - Functions available in the A-B menu

3.2.3 Field

In order to define a field, go along the field perimeter and activate field registration mode.
The term field refers to the physical perimeter of the field. “FIELD” function allows you to save the position of the field. It is possible to carry on the activities even during the measurement of field boundaries. It is important to take into account that G7 calculates the position of the field boarders according to the width of the chosen implement.

- Move to the edge of the field;
- Select “START” if you are working the area during the registration of the field boundaries;
- Select “FIELD” and move along the field perimeters;

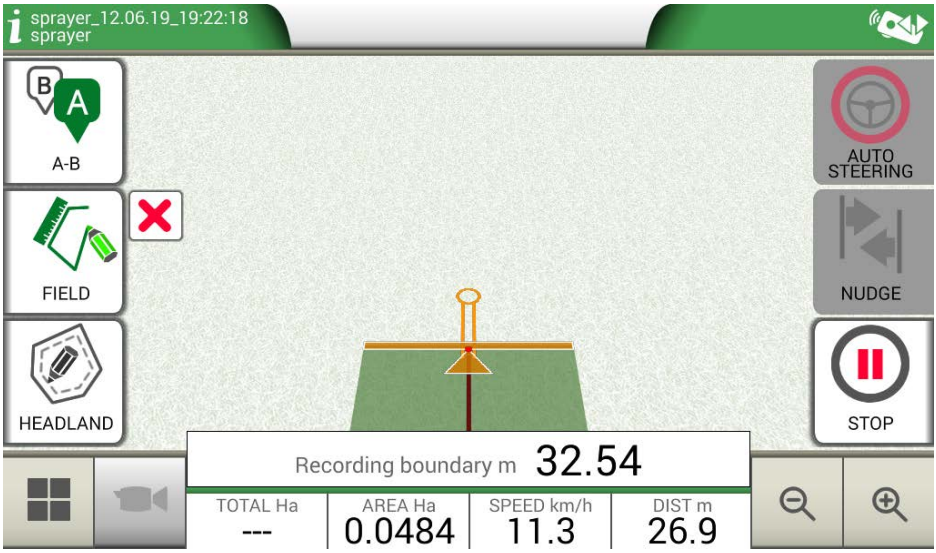


Figure 3.2.3.a - Creation of a new field

- Tap “FIELD” again, when you are in close proximity to the starting point so as to finish recording;

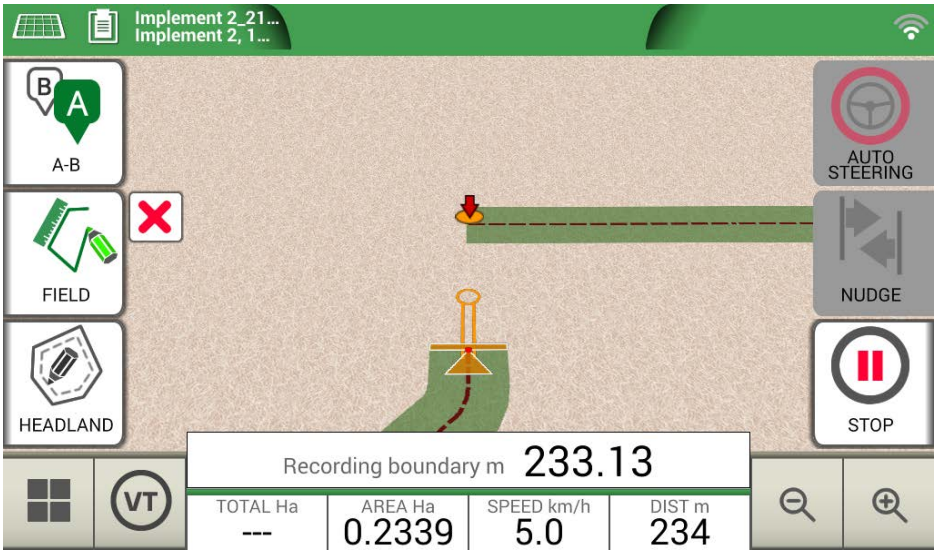


Figure 3.2.3.b - Closing the field perimeter

- The field takes the same name defined during the new job creation page. Tap “EDIT” if you want to modify it;

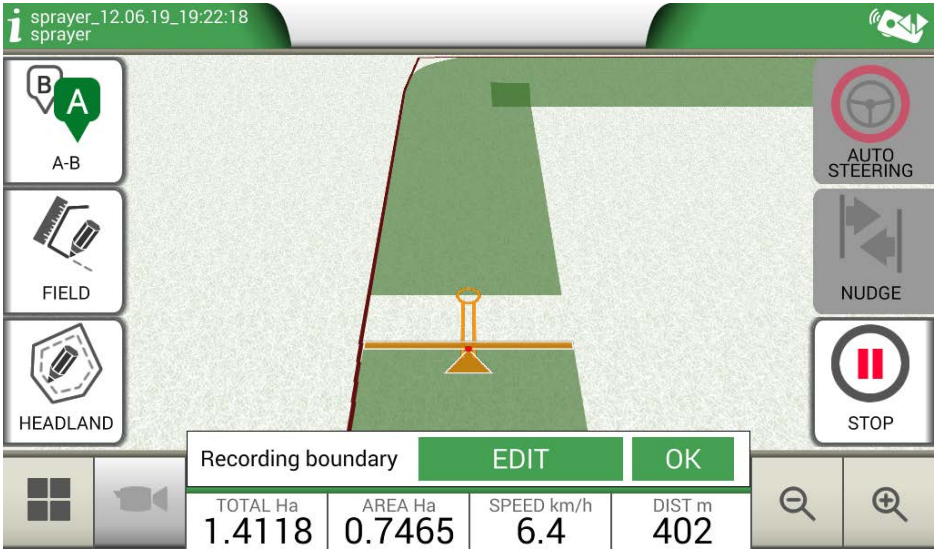


Figure 3.2.3.c - Field name modification

- Field boundaries are now saved and stored in memory

NOTE: it is possible to locate the field on the same perimeters next year only by using an RTK instrumentation.

Once the field is defined, there are other features which allow you to visualize, edit or delete field boundaries. Tap “FIELD” to access these features:

	Edit/continue field registration It allows you to modify field boundaries already defined by adding or modifying one of its part.
	Enable/disable field view Tap this icon to enable or disable the contour view of the field from the map.
	Delete field boundaries Delete field contour.

Table 3.2.3 - Field functions detail

3.2.4 Headland

This feature is very useful for determining the contour of the worked area. In order to use this function it is necessary to define a field.
To activate headland:

1. Select a field from the list and create a new job;
2. Move to the edge of the field;
3. Select “HEADLAND”, and set the width of the headland that must be a multiple of implement width. An area which corresponds to the headland will be displayed on the map.

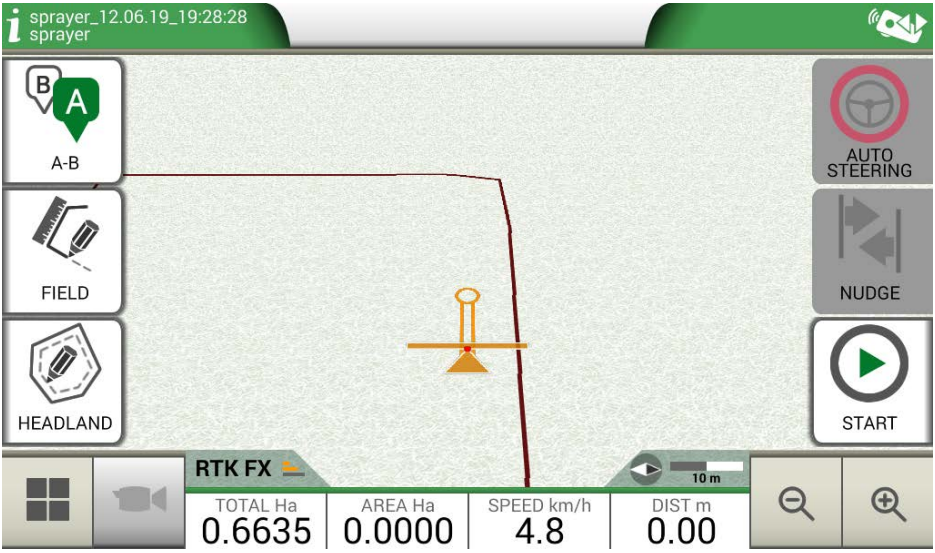


Figure 3.2.4.a - Headland, start a new row

4. Select headland key, named “HEADLAND”, and set the width of the headland that must be a multiple of implement width;
5. An area which corresponds to the headland will be displayed on the map.

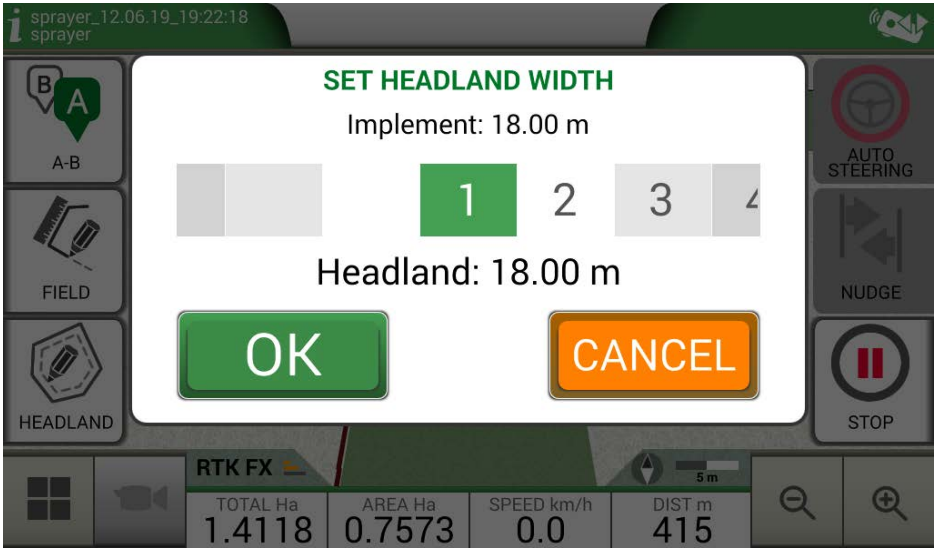


Figure 3.2.4.b - Headland width configuration

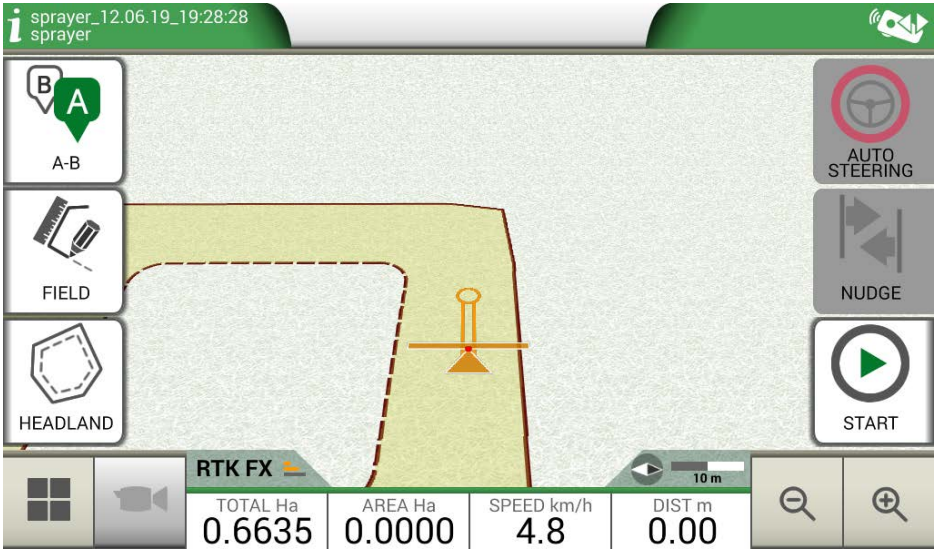


Figure 3.2.4.c - Headland, area

Headland has different functionalities:

- It allows to define the area of the contour to be worked or already worked;
- In case of automatic sections control, it avoids that the product will be sprayed on the headland;
- It allows you to activate Auto Steering system along the headland path (field contour).

Tap “HEADLAND” to enable all these functionalities. Four different icons will be displayed:

	Headland active It allows you to open sections automatically on the headland. It shows the path tracking for Auto Steering;
	Headland disabled It prevents the opening of the sections automatically inside the headland
	Headland inactive Headland is drawn on the screen, the opening of the sections is active and the path tracking for Auto Steering is not active;
	Delete Headland Allows you to delete headland and to restore initial field conditions.

Table 3.2.4 - Headland specific functions

3.2.5 Obstacles

G7 allows users to save and view the position of a specific point on the map (e.g. an obstacle).

- G7 Plus / G7 iso permits you to activate this option only with remote controller.
- G7 Ezy is provided with a specific button on the main menu.

To save the position on a specific point:

- Tap on “MARK”;

	Obstacle / Mark If pressed, it saves the position and it draws a marker on the map

Table 3.2.5 - Obstacle, point of interest

- On the map, it is possible to see a marker near the selected point.

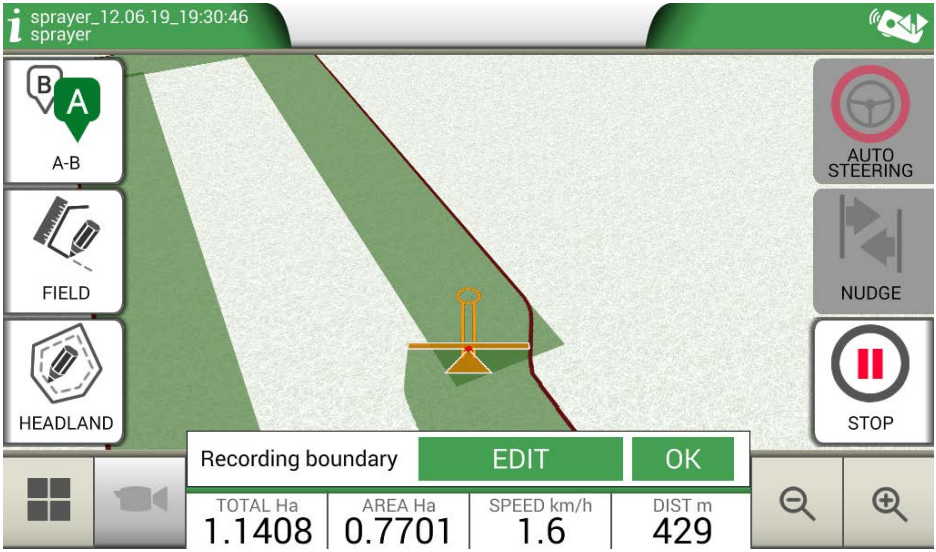


Figure 3.2.5 - Obstacle on the map

3.2.6 Auto Steering system (For G7 Plus and G7 Iso)

G7 is compatible with Auto Steering mode. Connect G7 to an external device which allows the steering wheel to be activated automatically and keep the tractor on the guideline.

In the Job page, the button marked as “AUTOMATIC STEERING” allows you to enable and disable automatic steering.

	Auto Steering not available G7 is enabled for Auto Steering but steering device is not installed or it is not active.
	Auto Steering active but not in use Touch the red button to enable Auto Steering.
	Auto Steering active and in use Touch the green button to disable Auto Steering.

Table 3.2.6 - Auto Steering buttons

For more detailed technical information about Auto Steering system, check its Installation and Maintenance Manual.

3.2.7 Nudge

From the Job page, it is possible to move the A-B lines position a few centimetres. In order to do so, tap “NUDGE”.

	Nudge It allows you to modify A-B line position.

Table 3.2.7.a - Work page, nudge button

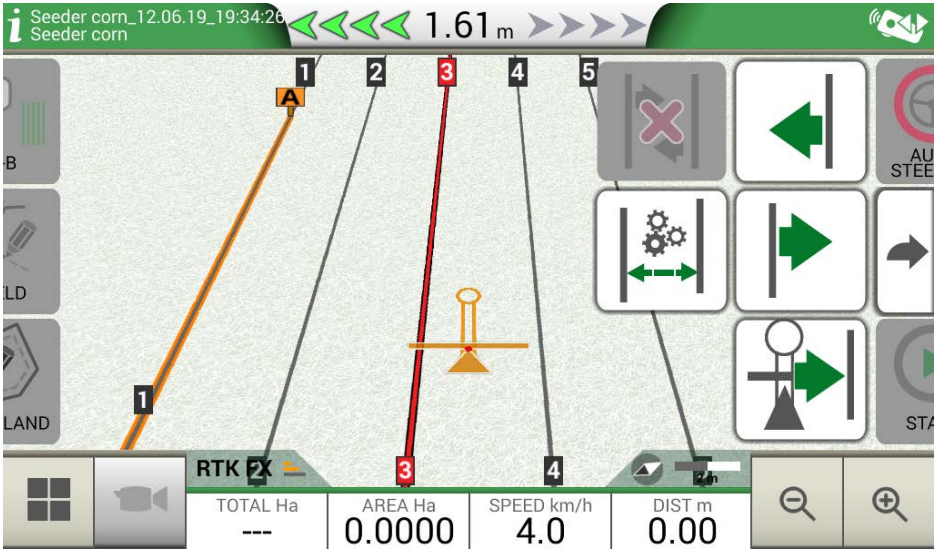


Figure 3.2.7 - Work page, A-B lines movement.

It is possible to insert nudge step, select movement direction or align the lines to the current position of the tractor.

	Set nudge step Tap this icon to set nudge step in centimetres, e.g. 5 cm.
	Move the line to the left Tap this icon to immediately move the line to the left, for example 5 cm (value set as nudge step).

	Move the line to the right Tap this icon to immediately move the line to the right, for example 5 cm (this is the value set as nudge step).
	Align the lines Tap this icon to move the line on the current position of the tractor.
	Delete movement Tap this icon to restore A-B line initial position and remove all the saved movements.
	Go back to the previous page Tap this icon to close the menu relative to nudge page. The menu will be closed automatically after 5 seconds of inactivity.

Table 3.2.7.b - Details of nudge functions

ATTENTION: the maximum allowed nudge step is equal to half of the implement width.

4. Advanced operating modes

This chapter describes advanced operative functions.

4.1 How to use G7 Terminal

G7 Terminal includes the Virtual Terminal license (VT + AUX-N) and is ideal for use with ISOBUS equipment.
Thanks to the flexible licensing system, you can purchase the Navigation license (to get all the GPS and parallel driving functions) and the Task Controller license (to get full ISOBUS functionality, including section control, variable rate and ISOXML prescription map management).

G7 Terminal does not include the main menu; in fact, upon startup, with ISOBUS instrumentation connected, the Virtual Terminal screen is displayed directly, with which you can interact via touch screen.

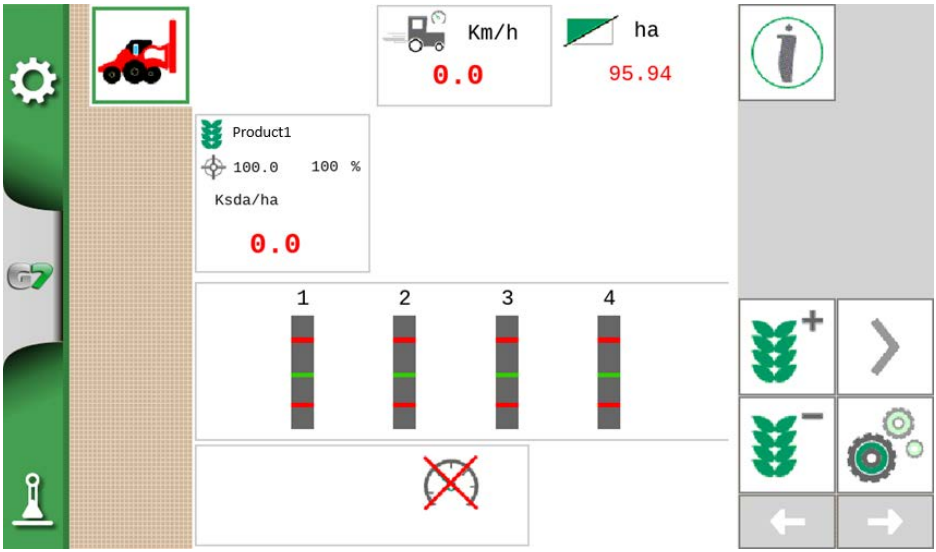


Figure 4.1 - Main screen in G7 Terminal

It is possible to access the SETUP menu by tapping the gear icon at the top left corner.

Navigation can also be activated from the setup menu, in free trial or lifetime license.

NOTE: sharing GPS speed from G7 Terminal to ISOBUS equipment is possible if a GNSS receiver is connected to the GPS port. Or by activating the internal GPS of the device from the Satellites menu.

4.2 Start new job, full mode

To start a new job in full mode, it is necessary to insert all the information required for a correct registration of a new job:

1. Select “START NEW JOB”;
2. At “FARMER” line, tap the downward green arrow and select the farmer’s name;
3. At “FIELD” line, tap the downward green arrow and select the field. In case of undefined field, tap on “Create New” and follow the procedure for inserting a new name;
4. At “IMPLEMENT” line, tap the downward green arrow and select implement’s name;
5. At “DRIVER” line, tap the downward green arrow and select driver’s name;
6. At “PRODUCTS” line, tap the downward green arrow and select the name of the product. It is possible to select more than just one product for every single job;
7. Select “OK” to go to work page;
8. Tap the “i” located at the upper left corner of the display to edit Job name:
    1. Tap the pen icon to modify the text;
    2. Select “OK”;
    3. Tap on the downward green arrow to go back to the previous page;
    4. Tap on “A-B” to start the job.

4.3 Define the field and create new A-B guidelines

During the definition of the field, it is possible to create A-B guidelines to work the area inside the field boundaries. This procedure is to be used the first time you define the field.
In this way an A-B line is created in conjunction with the passage of the tractor on that side of the field, avoiding unnecessary overlaps.

1. Create a new Job, preferably in full mode.
2. Move to the edge of the field;

NOTE: It is advisable to change the name of the job. In order to do so, tap on “i” located at the top left corner of the display.

3. Tap “START” if the area must be worked during the recording of the boundaries;
4. Tap “FIELD” and move along the perimeters of the field;
5. On the Job side, tap “A-B”;
6. Select the line type;
7. Proceed straight ahead to save point B;
8. Tap B and proceed straight ahead to close the contour;
9. Tap “FIELD” to complete registration, when you are in proximity to the starting point;
10. The field takes the name defined during the new job creation page. Tap “EDIT” if you want to modify it;
11. Field boundaries will be saved and stored.
12. It is possible to work within the perimeter following the defined A-B lines.

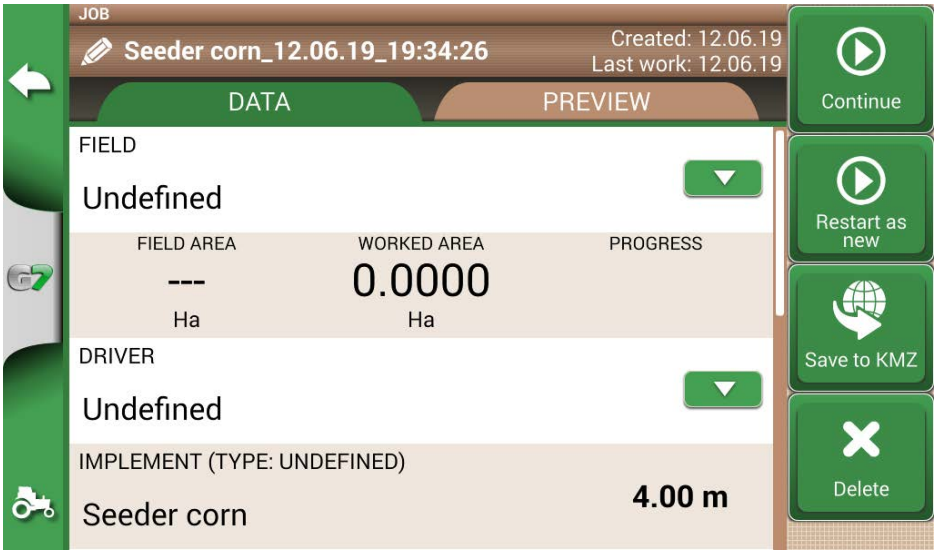


Figure 4.3 - Job name modification

NOTE: After one year, the replacement in the same position will be possible only with RTK instrumentation.

4.4 Working again on defined A-B lines using the same implement

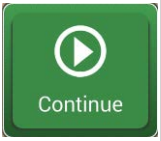
This procedure allows you to avoid redefining A-B lines every year. For example; if you need to seed the same field with the same seeder every year.

NOTE: this feature is available only with RTK instrumentation.

G7 allows you to reload a previous job and work it again, recalling the A-B lines used during the previous activity.

1. Tap “DATABASE”,
2. Tap “FIELD”;
3. Select farmer name;
4. Select field name;
5. Scroll to the “JOB” line and tap the downward green arrow;
6. Select the job that you want to recall;
7. Select “Start as new” to recall A-B lines saved during the previous activity.

In particular, there are two functions:

	**Continue** The job will be reloaded and the coloration of the worked area will be maintained.

	Restart as new This function offers you two possibilities: - start from an existing job. - create a new job. It is advisable to modify job name tapping “i” at the upper left corner of the screen.

Table 4.4 - ‘Continue’ and ‘Start as new’ detail

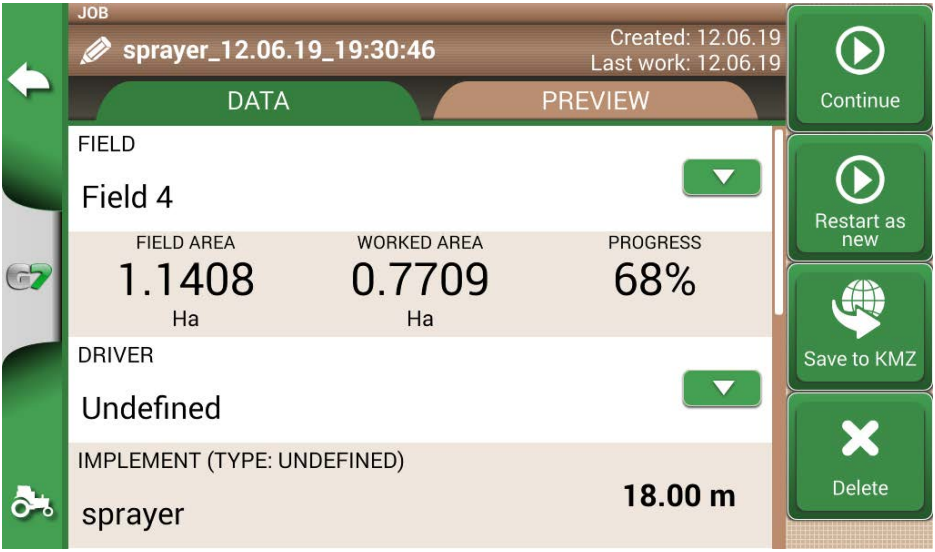


Figure 4.4 - ‘Restart as new’ function

4.5 Working on predefined A-B lines but with another implement

This procedure is useful to avoid redefining A-B lines every year. For example, if you have defined A-B guidelines during planting season and you need to recall them for your treatments next year. The procedure is the following:

1. Tap “START NEW JOB”;
2. Select the “FARMER”;
3. Select the “FIELD”. It is essential to select the name of the field used during the previous activity, so that to recall the A-B lines used in that field.

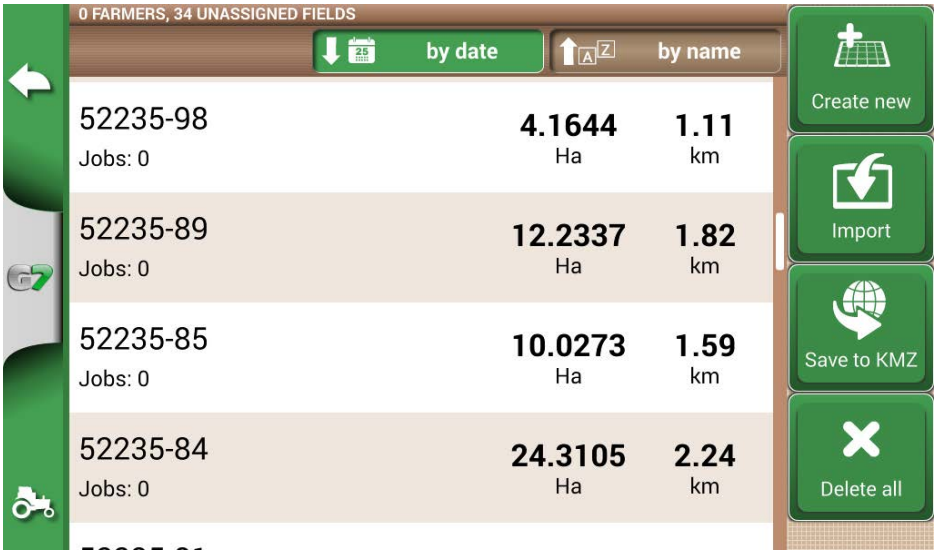


Figure 4.5 - Field selection page

4. Select the “IMPLEMENT” (it must be different from the implement used in the previous job);
5. Select the “DRIVER”;
6. Select the “PRODUCT”;
7. Tap “OK” to confirm the creation of a new job.

The last job will be reloaded and A-B lines width will be calculated according to the new implement width. It is necessary to put the tractor in the same position as for the previous job, by following this procedure:

1. Tap on “A-B”;
2. Tap on “Magnet” icon. The first line will be move to the real implement position;
3. In case of error in the positioning, repeat the operation;
4. Select “START”;
5. Proceed with the activity.

4.6 Create more than one A-B line during the same job session

NOTE: this function can be used only if the field is set.

G7 allows you to save more than one A-B lines and recall them for further activities. To save more than one A-B lines within the field, proceed as follows:

1. Create a new job, select a field from the list or create a new field;
2. Start the job and define an A-B line (e.g. A-B Parallel guidelines);
3. Tap again on “A-B” if you need to create another A-B line (e.g. adaptive guidelines);
4. Tap the “A-B” icon, marked with a red X, to cancel the lines from the display;
5. Tap “YES”. The line will be deleted only from the display, but it is stored in memory;
6. Move the tractor to the new job direction, inside the same field and the same job;

7. Tap “A-B” icon and select the lines type that must be defined (e.g. Contour guidelines);
8. Move to the point B;
9. At this point, a second A-B line is created.

4.7 Change A-B lines during the same job

ATTENTION: this function can be used only if the field is set.
If during your activity, there is a need to change A-B lines, proceed as follows:

1. Tap “A-B”;
2. Tap AB List icon.

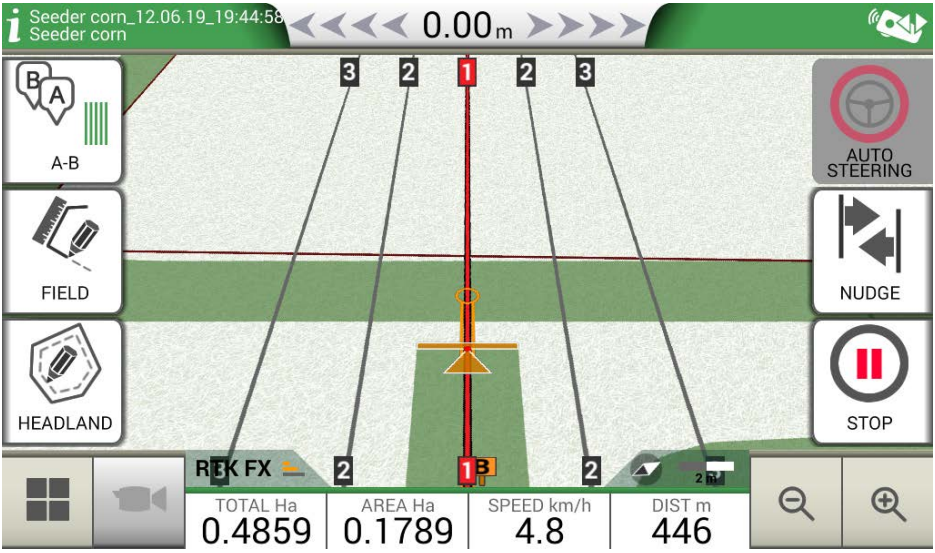


Figure 4.7.a - A-B line change during job

	AB list icon.

Table 4.7 - A-B list icon

3. Select the A-B line type that you need to display;

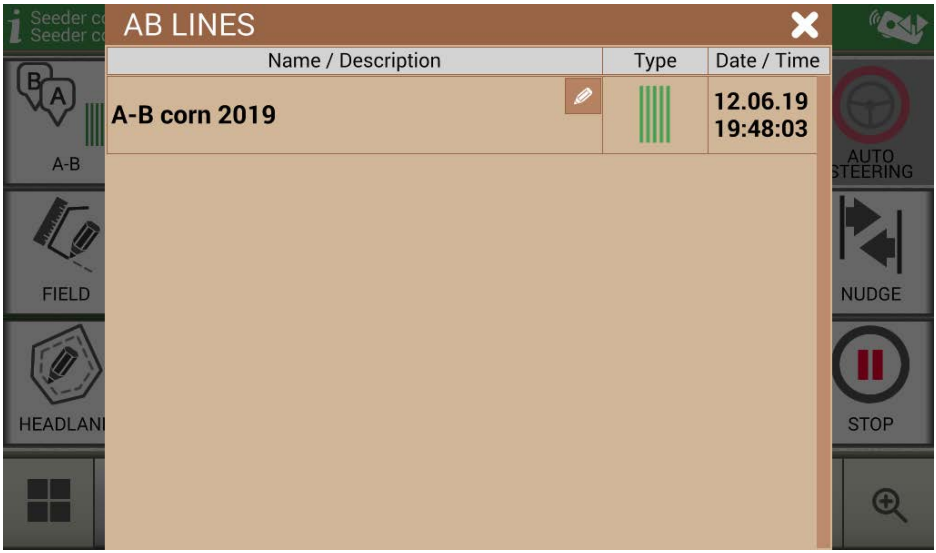


Figure 4.7.b - List of A-B lines used in a field

4. Delete A-B line, tap “YES”. The line will be deleted only from the display, but it is stored in memory;

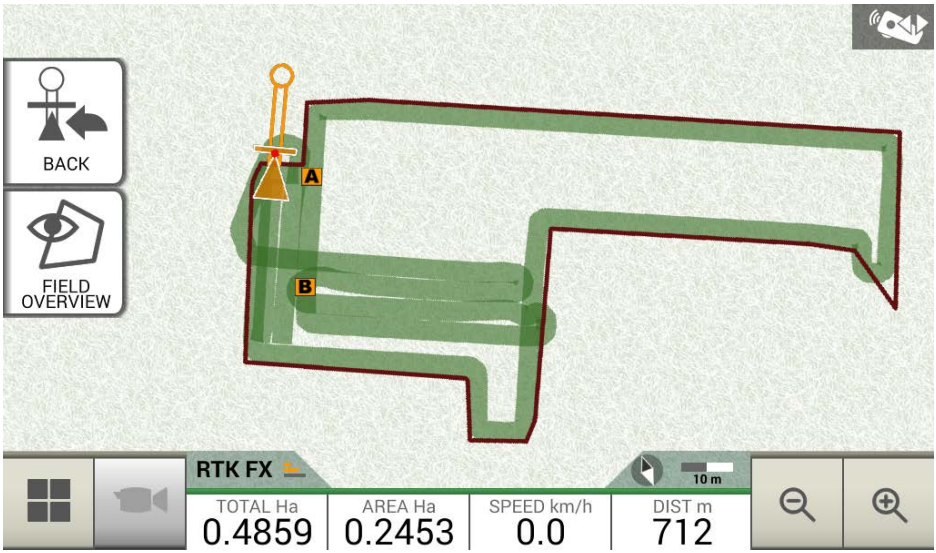


Figure 4.7.c - Example of a job with more than one A-B line saved

4.8 Move the line to a specific point, “Magnet” function

It is possible to use “Magnet” function to:

- Avoid an obstacle (moat, drain, street) and move to a new parcel of field without creating a new A-B line;
- Locate the line on your current position, maintaining A-B direction;
- Reuse A-B lines with an implement which has a different width: locate the implement at the starting point, use the “Magnet” function to move the origin of A-B lines on that point.

To use “Magnet” function:

1. Tap “A-B”;
2. Tap “Magnet”;

	Magnet Move the A-B lines to the antenna position.

Table 4.8 - “Magnet” function

3. A-B lines will be moved to the exact position of the tractor.

4.9 Move A-B line according a precise value, “Street” function

“Street” function allows you to move A-B line according to a precise metrical distance. The repositioning of the A-B lines starts from the tractor current position.

This function is essential when you need to:

- Leave a precise distance between one A-B line and the other;
- Create “Streets” in sowing area, usually used for irrigation;
- Split the parcel into precise portions.

In order to use “Streets” function:

1. Tap “A-B”;
2. Tap on “Street” icon;

	Streets Move A-B lines few meters away from the antenna position. The maximum allowed movement is equal to half the width of the implement.

Table 4.9 - ‘Streets’ Functions

3. Set the metrical distance according to which the row will be moved;

NOTE: the distance will be calculated starting from the antenna position (which corresponds to the position of the tractor);

4. Confirm to apply the movement.

4.10 Connect an external device to control sections

G7 allows you to connect third-party external devices to make an automatic control of the section. This feature can be used with implements such as:

- Weeding barrel

- Spreaders
- Planters

In the appendix, there is a list of supported devices.

The procedure to be performed for the correct configuration is as follows:

1. Connect the external device to the G7 bracket through 9-pin serial port marked as “CONTROLLER”;
2. Turn both G7 and the external device on. Any other settings concerning the external device are not part of this manual;
3. Select “DATABASE” > “IMPLEMENTS”;
4. Create a new implement;

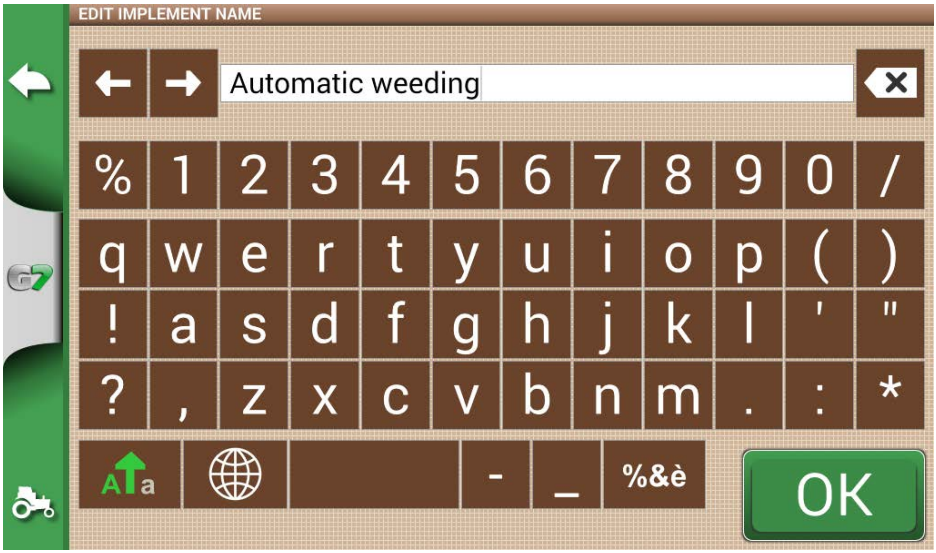


Figure 4.10.a - New implement page

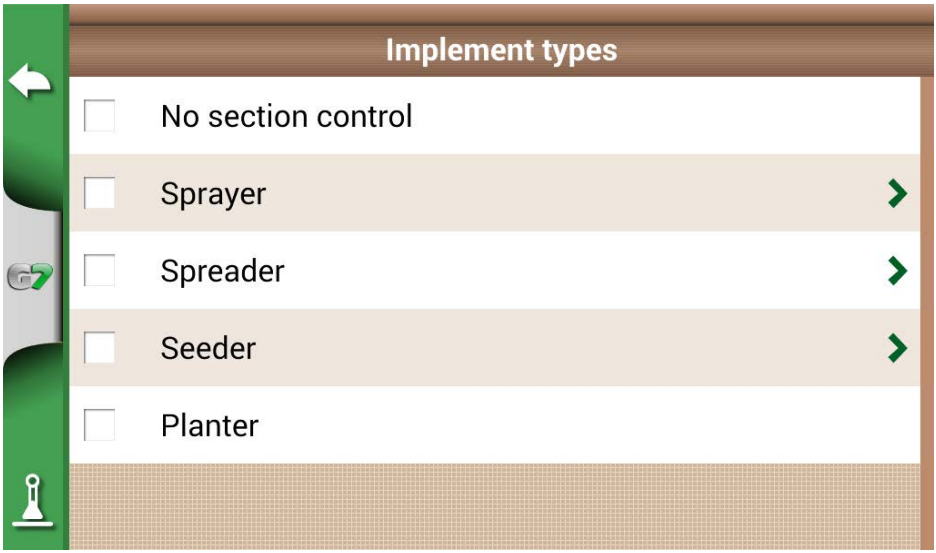


Figure 4.10.b - External implement type selection page

5. Select which type of external control is connected to G7;
6. Scroll through the list and select the connected device;

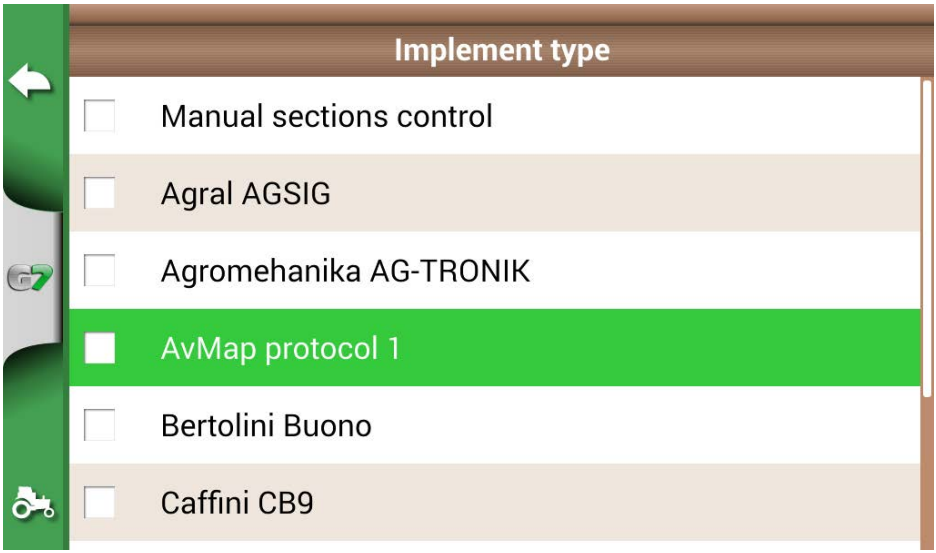


Figure 4.10.c - External device type

7. Wait for a connection between G7 and the device;

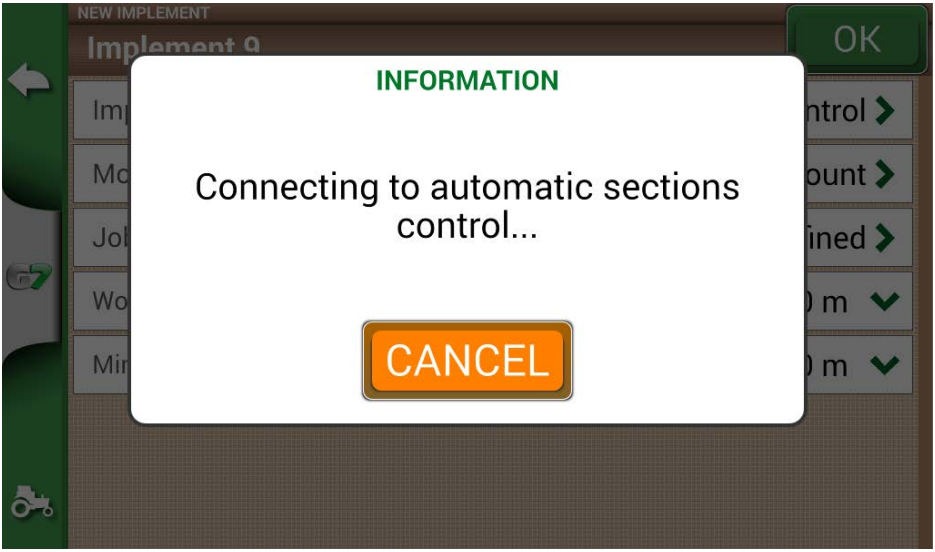


Figure 4.10.d - Connection between G7 and the external device

8. Set the total width divided into sections;

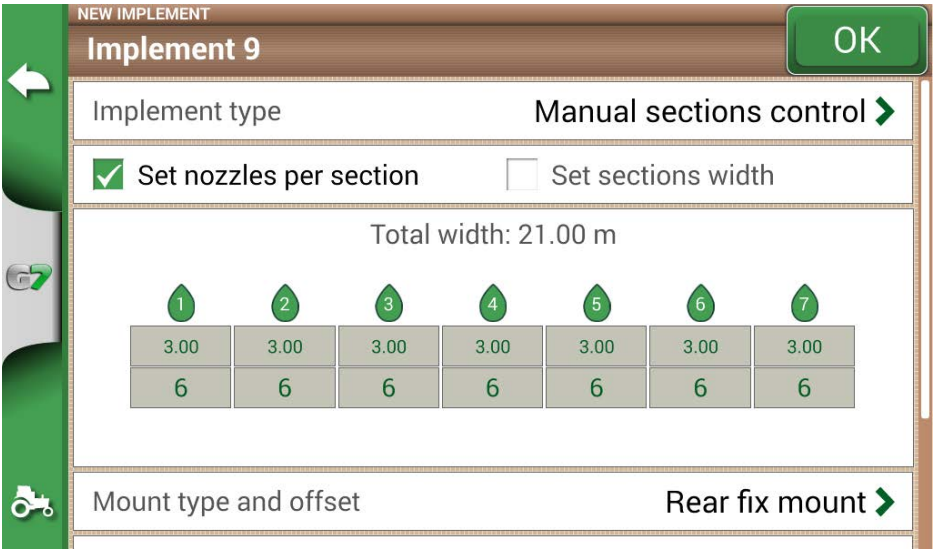


Figure 4.10.e - Section configuration: nozzle per section

9. It is possible to set the width of the spray boom either for the number of nozzles per single section or for the entire section width;

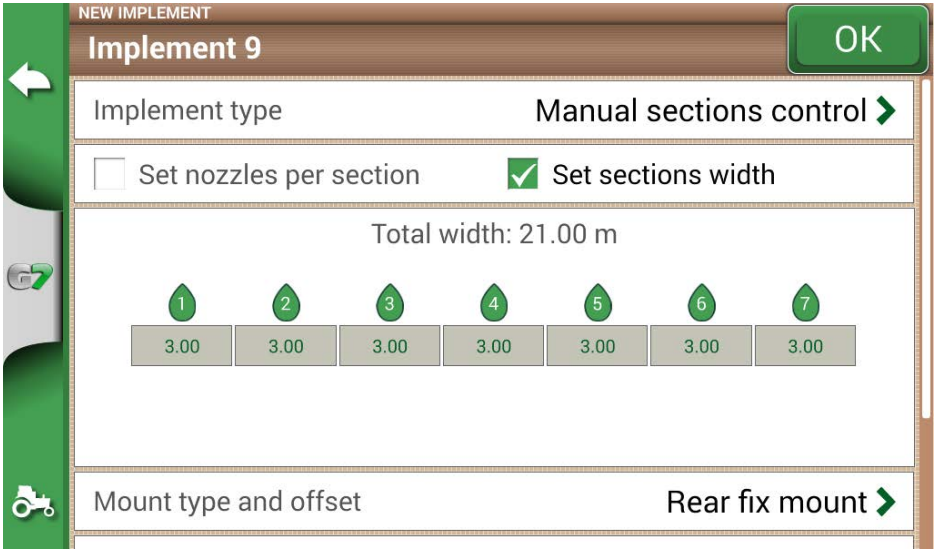


Figure 4.10.f - Sections configuration: section width

10. Enter the number of boom sections;

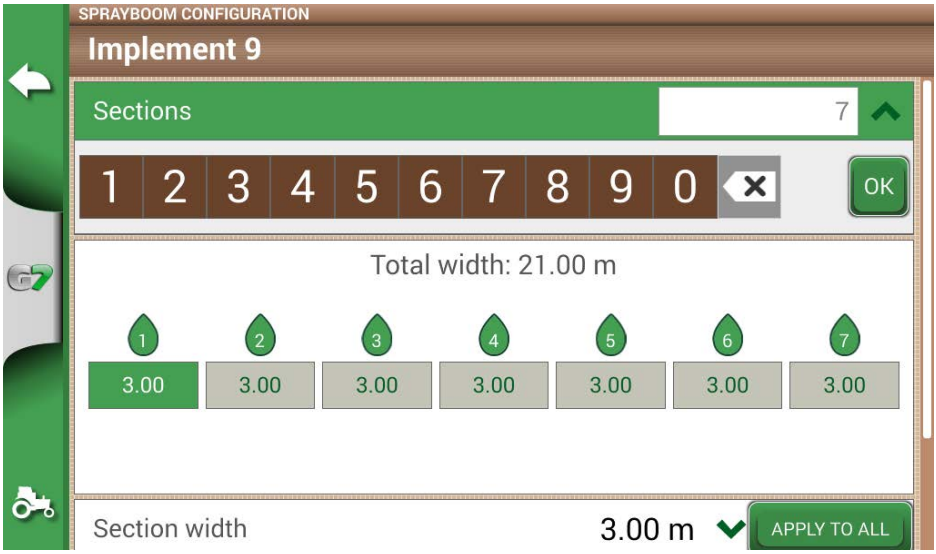


Figure 4.10.g. - Number of sections configuration

11. Insert the individual width of each section. Check the total width to avoid errors;

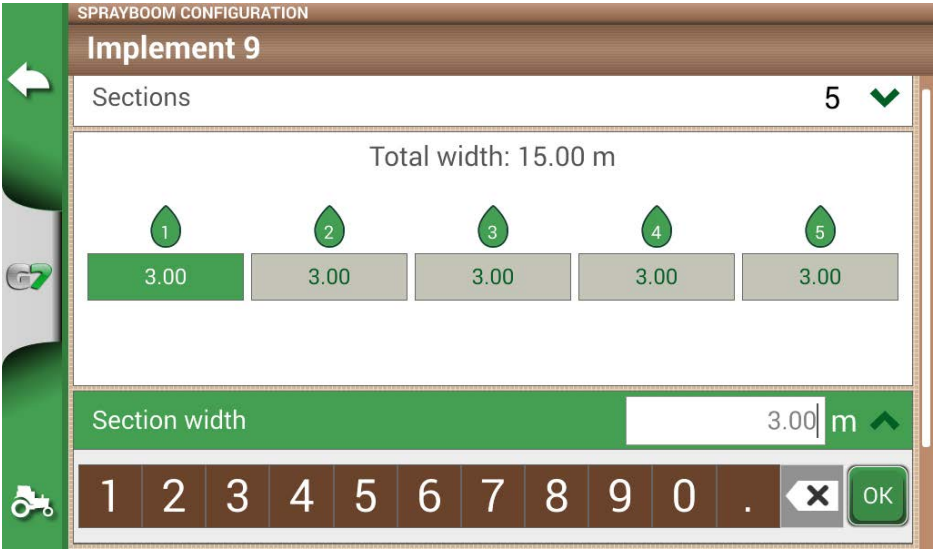


Figure 4.10.h - Single section width configuration

Below is an example of 18 metres boom with 5 sections;
G7 allows you to insert a time value to advance the opening and closing of the section so as to anticipate the command that must be send to the external device. This value, expressed in seconds, is equal to the time required by the device to order the opening of the sections and the actual release of product from the nozzles.

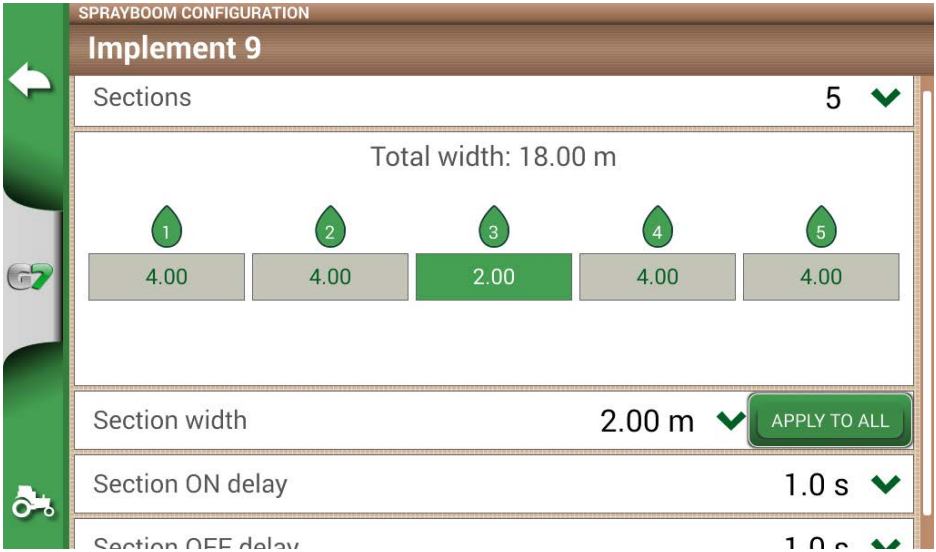


Figure 4.10.i - Example of 18 meters bar with 5 sections

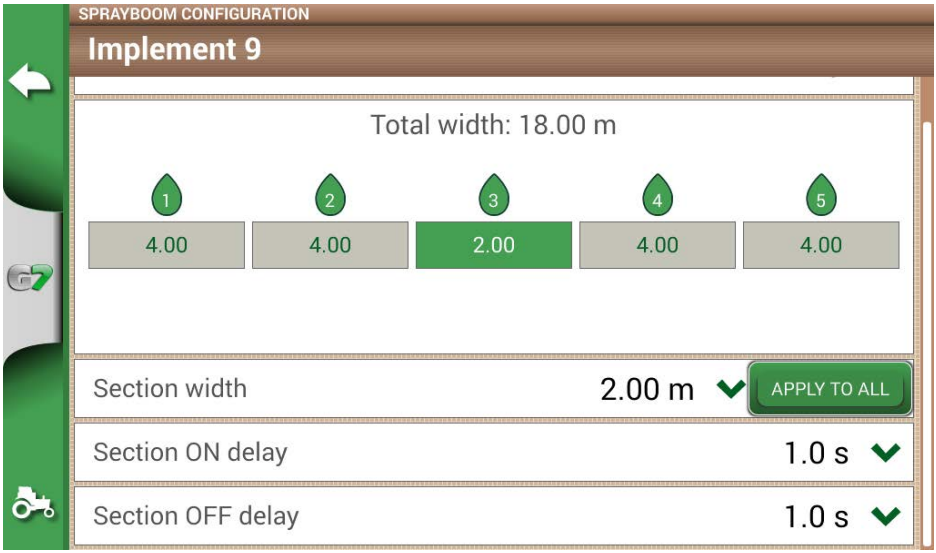


Figure 4.10.j - Configuration of opening and closing delays of the section

There are other settings, among which the spray boom overlap percentage.
For example, a value of 100% means that the section will be closed in case of total overlapping. A value of 50% means that the section will be closed when the boom overlaps the total section width by 50%.

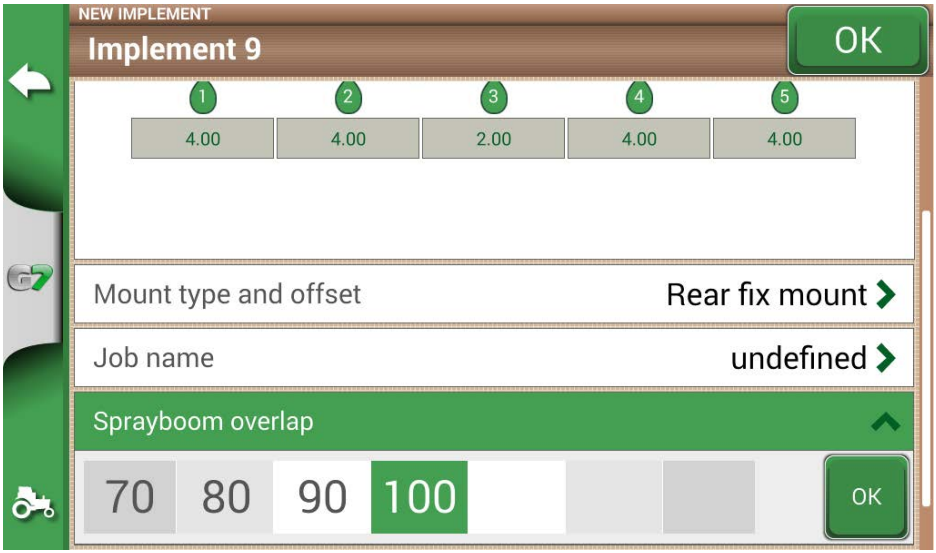


Figure 4.10.k - Spray boom overlap configuration

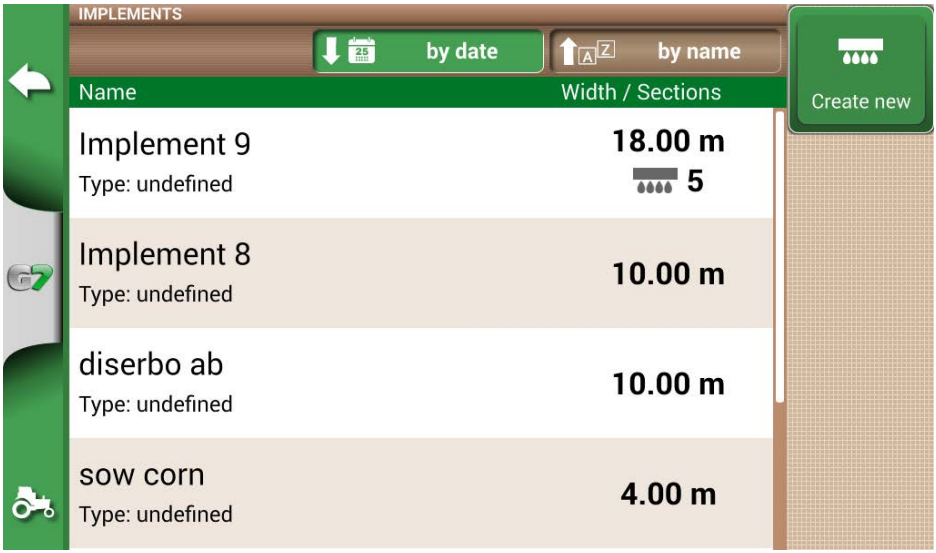


Figure 4.10.I - Implements with automatic section control

The implement is now set and displayed in the implement list. An icon identifies the implement with active section control. On the job page, there are icons that show the sections status.

	Boom sections status Green colour indicates that the section is active and operating. Red colour indicates that the section is active but turned off.

Table 4.10.a - Boom sections status

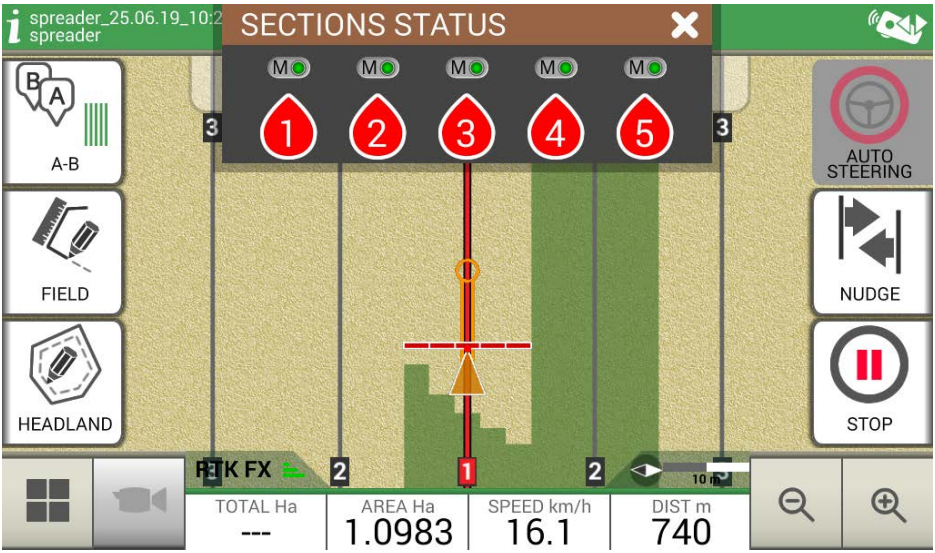


Figure 4.10.m - Boom sections status

G7 allows you to manually control a section, by tapping the boom sections status.
It is possible to control a section manually forcing the automatic section control. Manual section control can be configured to either be always active or inactive.

	Automatic Status The section will be turn on and off automatically.
	Manual status active The section is always active. In this case, the drop is green.
	Manual status inactive The section is always inactive. In this case, the drop is red.

Table 4.10.b - Section status: automatic and manual

4.11 How to activate the free VT and TC trial (G7 Iso, G7 Terminal, Iso Kit)

1. Position G7 on the ISOBUS bracket;
2. Connect the GNSS receiver to the ISOBUS bracket;
3. On G7 select: “SETUP” > “ISOBUS” and activate the trial period.

Once your free trial ends, you can purchase and activate your lifetime VT and/or TC license.

ATTENTION: to activate the trial period you must have a valid GPS position or an active WiFi connection.

4.12 How to connect an ISOBUS instrument

In the ISOBUS menu it is possible to activate or deactivate the interaction between G7 and ISOBUS equipment. For the correct use of this function you need:

1. ISOBUS implement correctly wired and connected to the tractor;
2. Connection between G7 and ISOBUS cable via In-Cab cable;
3. Active License to use the Virtual Terminal (free trial or lifetime license).

By activating the ISOBUS function and having respected all the points described above, communication between the G7 and the implement begins. The first connection to the new tool, i.e. the first connection, involves the download of all the graphic objects (object pool) contained in the tool.

4.13 How to activate the lifetime VT and TC license

To activate your lifetime VT and TC license:

1. Select: “SETUP” > “ISOBUS”;
2. Select “Virtual Terminal” or “Task Controller”
3. Follow the instructions on the G7 display or download the instructions from: https://farm.avmap.it/en/IntelligentAgriculture/G7iso/VTlicense

4.14 How to activate the lifetime Navigation license (only for G7 Terminal)

To activate your lifetime NAVI license (only for G7 Terminal):

1. Open the SETUP page by tapping the gear icon on the upper left corner of the display;
2. Select: “Navigation activation”; > “Start Activation”
3. Follow the instructions on the display.

4.15 Carry out a job with ISOBUS equipment, ISOXML map, variable rate and section control

To carry out work with ISOBUS equipment, variable rate prescription map and section control it is important to make sure you follow these simple steps:

1. Connect the correct equipment;
2. Select an ISOXML activity from the list of imported ISOXML files. The activity must be correctly created beforehand by setting the units of measurement for the variable rate in the correct unit of measurement for the seeder (e.g. kg/ha);
3. Select the product, which is normally included in the ISOXML file;
4. Confirm the start of work;
5. At this point, the work screen is opened and the field perimeter and the prescription map contained in the ISOXML file are displayed;
6. When passing over the various areas of the map, in addition to the normal section control in case of overlap, the rate towards the equipment is also varied. To end the activity, from the main menu press “CLOSE JOB”.

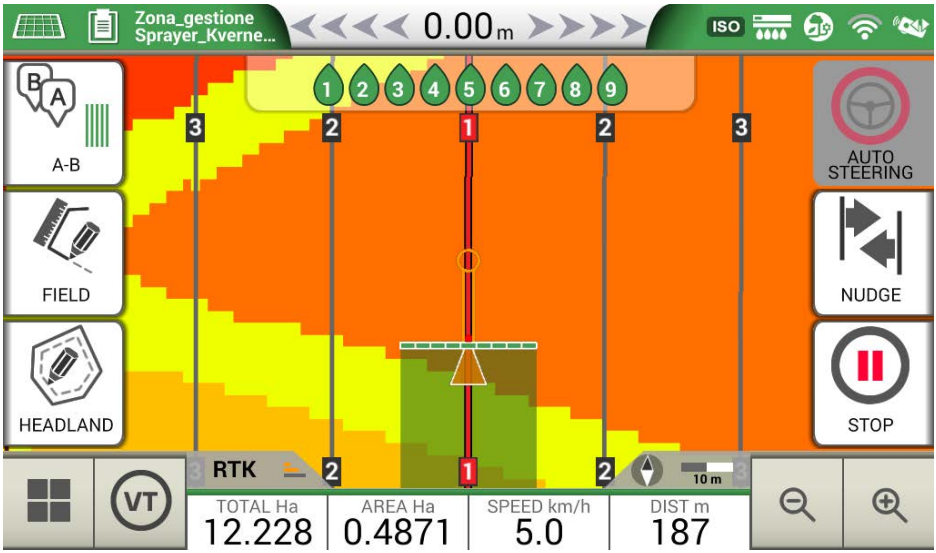


Figure 4.15 - Prescription map work screen

4.16 Using “Planter” to create fields planting layout

G7 allows you to design and realize planting layout of vines, fruit plants, cultivation and installation of poles.

In order to activate this feature, it is necessary to use a “Planter” implement.

1. Tap “SETUP” > “IMPLEMENTS”;
2. Create a new implement and insert the name;
3. In the implement type selection menu, select “Planter”;

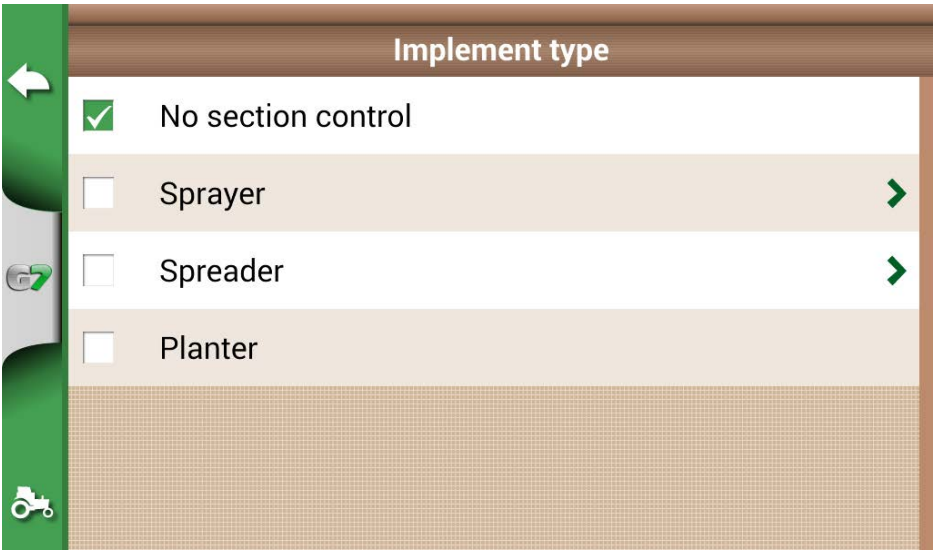


Figure 4.15.a - New implement: planter

4. Create a new job and select A-B parallel lines (or A + Direction). Point A will represent the position of the first plant;
5. Define the distance between rows and plants and tap OK to confirm;

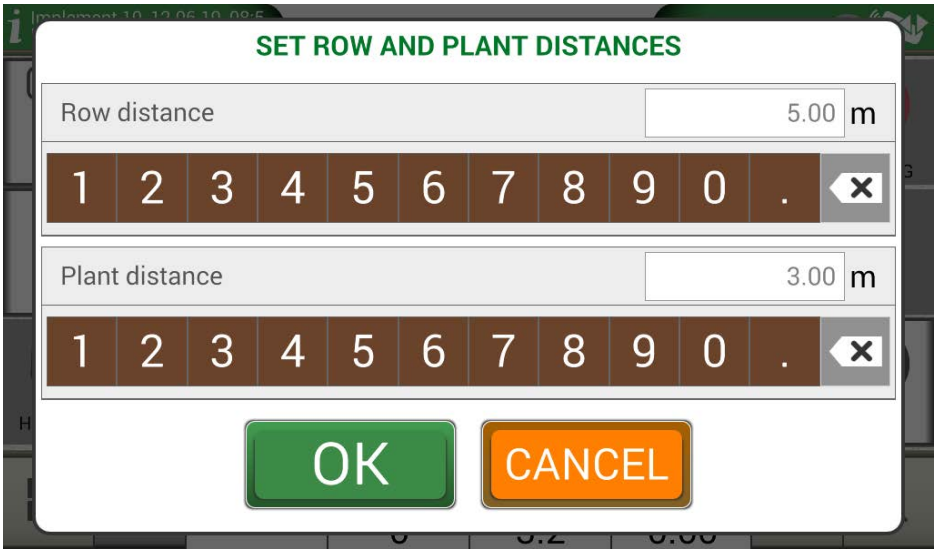


Figure 4.15.b - Distance between plants and rows configuration page

6. The position of point A and the position of the first plant are defined;

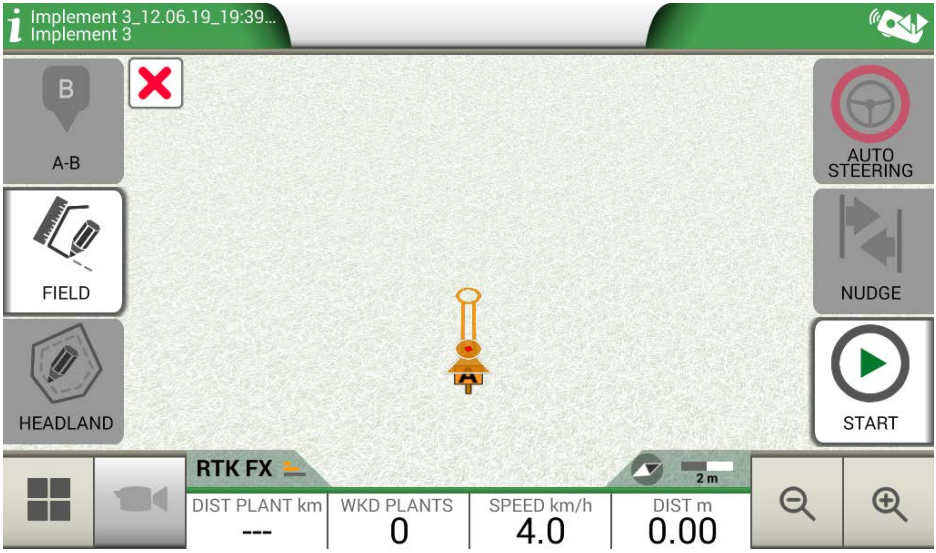


Figure 4.15.c - Field planting layout, point A

7. Proceed to point B and tap “B”. In this way the lines will be created and the plants position will be marked on the line.

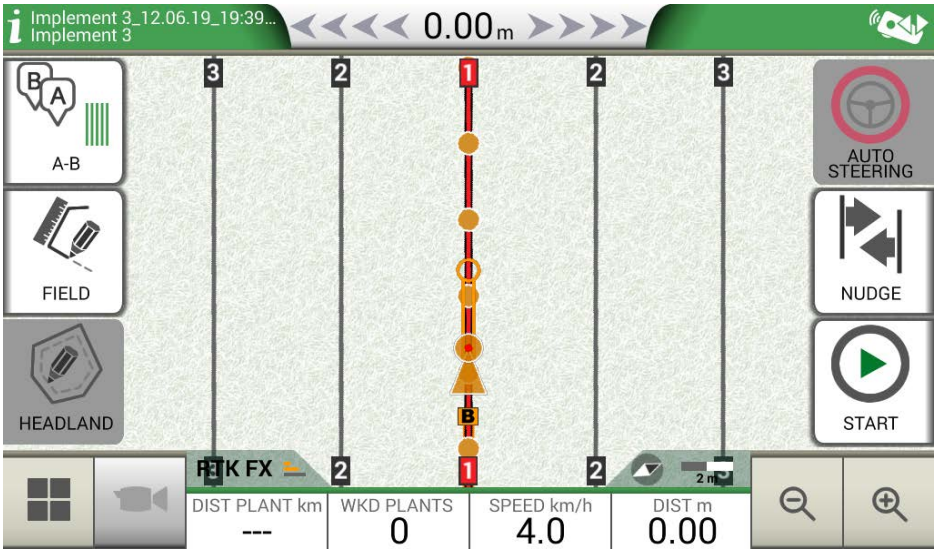


Figure 4.15.d - Plant distribution on A-B line

8. When the position of the antenna coincides with the position of the plant, the circle will change its colour from orange to green;

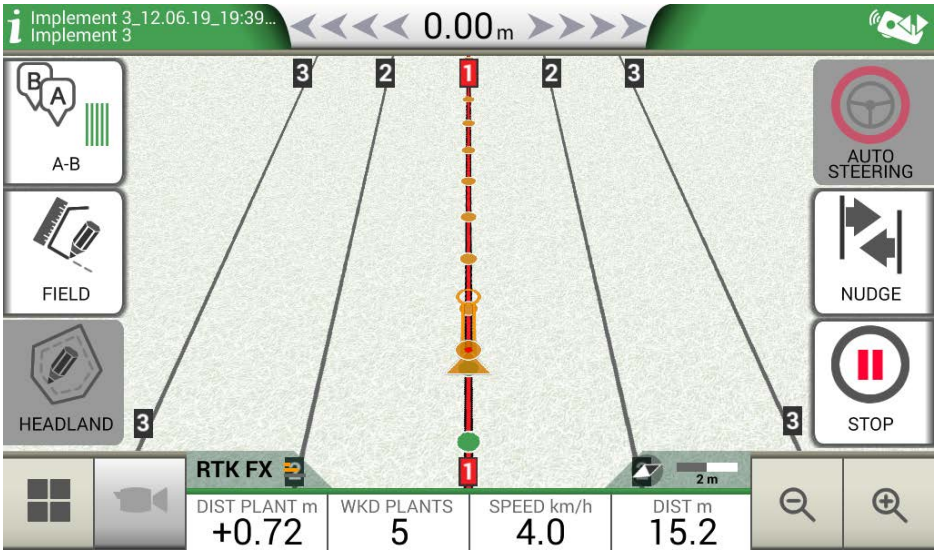


Figure 4.15.e - Plants worked in field planting layout

9. Further information are displayed at the bottom of job page;

DIST PIANT m +0.10	**Distance from the plant** This information allows user to know the exact distance between the antenna position and the next plant (if the sign is positive) or the distance from the previous plants (if the sign is negative).
PIANT LAV 27	**Number of worked plants** It allows user to know how many plants have actually been worked from the beginning of the work.

Table 4.15 - Information about "Planter"

NOTE: third-party accessories will be available for the motions of the tractor, both for Auto Steering and for planter automation.

5. Importing and exporting data

5.1 Download a job and view it in the office

G7 allows you to download a job in KMZ format and visualize it on your Personal Computer (PC).
NOTE: in order to use this function, Google Earth™ software must be installed on your PC.
To download the file, you need an USB stick, 'USB cable + Video in' (G7 Ezy, P/N: K2CYFS0600) or the 'USB cable + Video in + Ethernet' (G7 Plus, G7 Iso and G7 Terminal, P/N: K2CYFS1000).

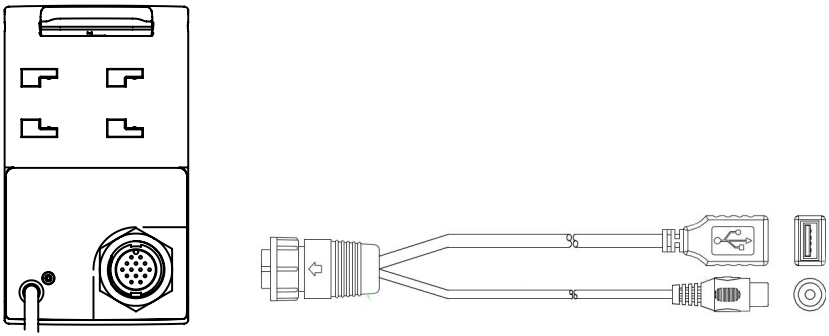


Figure 5.1.a - USB Cabe + Video in

1. Connect USB cable to the G7 bracket;
2. Insert USB stick in the supplied USB cable connector;
3. Tap "DATABASE" > "JOBS";
4. Select the job you want to export.

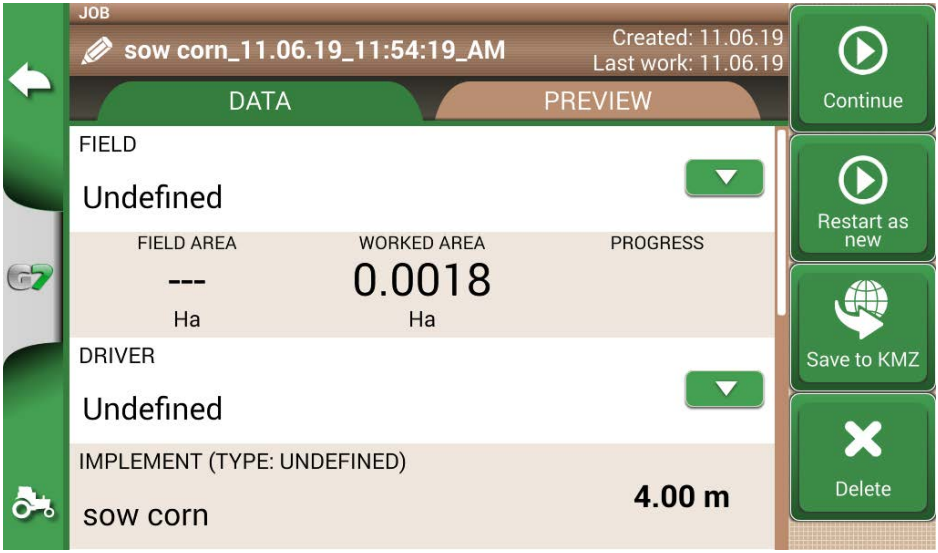


Figure 5.1.b - Saving data in KMZ

5. The file will be automatically saved in the USB stick;
6. Connect the USB stick to your PC;
7. Enter the “Export” folder to access the saved job;
8. Double click on the job name;
9. Google Earth™ will be opened (if previously installed).

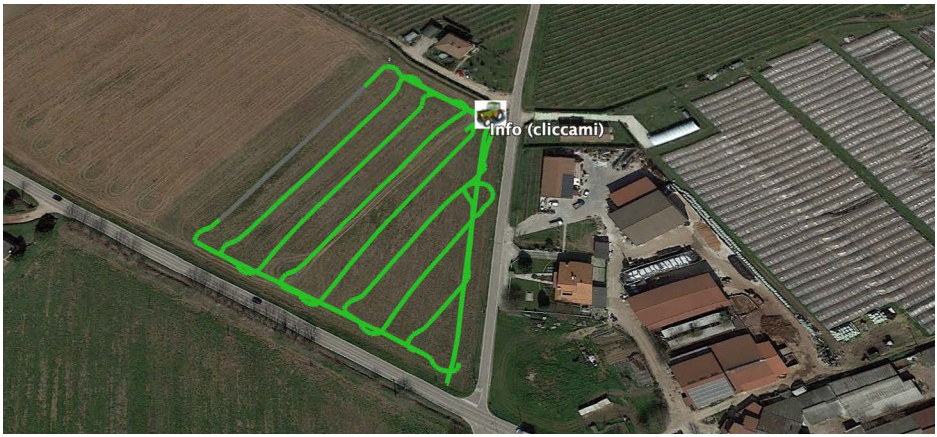


Figure 5.1.c - Job view with Google Earth™

Tap “Info” to see all job information available.

5.2 Import the field boundaries in KMZ format

G7 allows you to import field boundaries in KMZ format. This feature is useful when you want to move field registration from one G7 to another or if the field boundaries are drawn in your office using Google Heart™ software.
Create a new folder called “Import” and put it in the USB stick. Inside the folder “Import”, copy the KMZ files you want to import. Connect the USB stick to G7 using the supplied cable.

1. Tap “DATABASE” > “FIELD”> “Import”;
2. Select the file that you need to import;

Figure 5.2.a - KMZ file import access menu

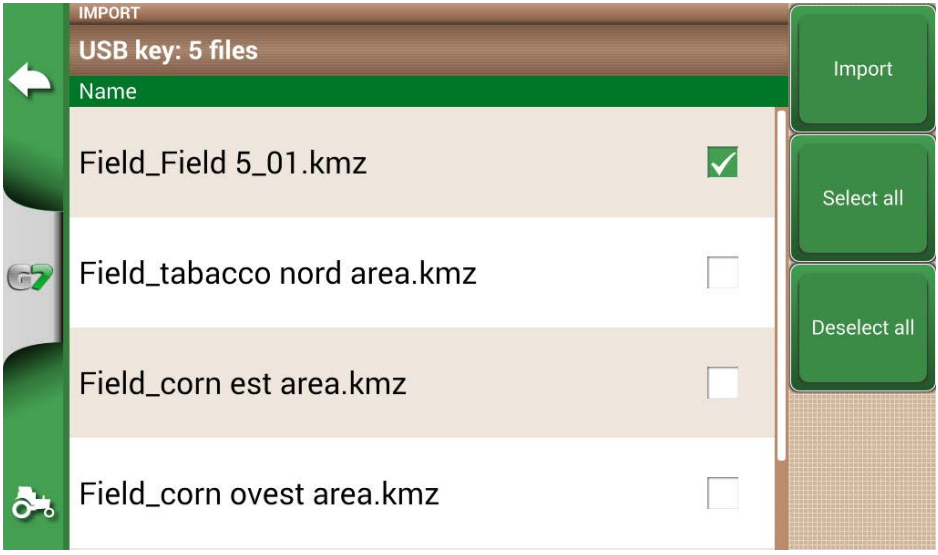


Figure 5.2.b - File KMZ selection

3. Tap “Import” and wait for the fields to be imported;

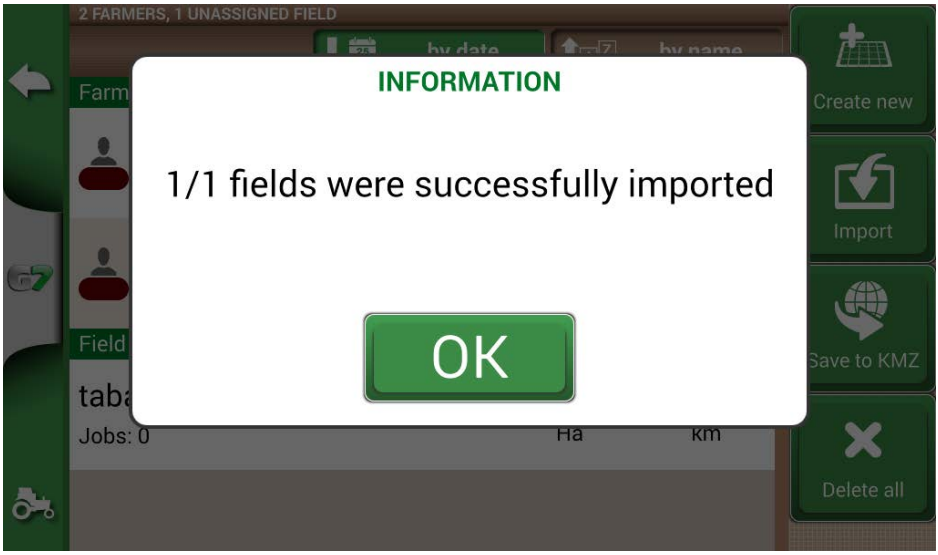


Figure 5.2.c - Importing fields from KMZ

4. In “FIELD” menu, there is a field for each imported KMZ file.

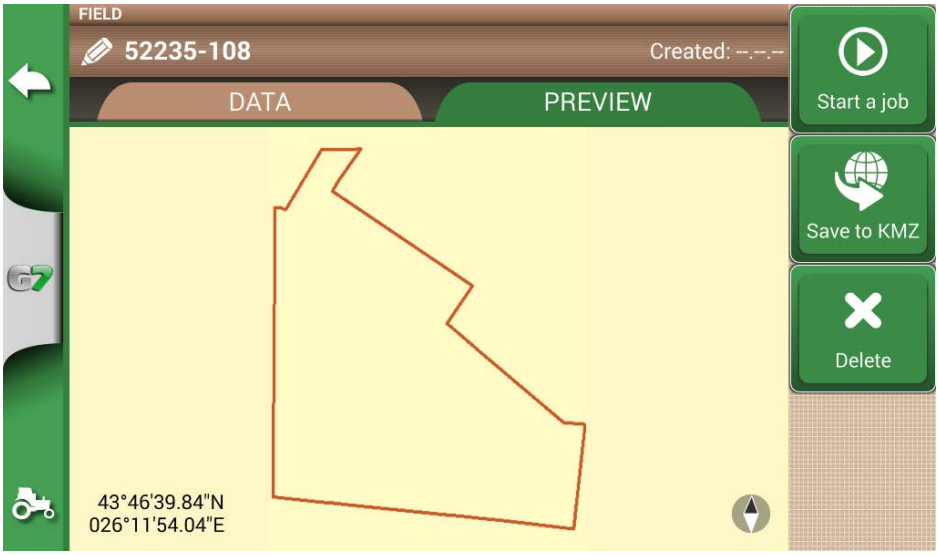


Figure 5.2.d - Preview of a field imported from KMZ

5.3 Importing a map in SHP file format

Create a new folder called “Import” and put it in the USB stick. Inside the folder “Import”, copy the KMZ files you want to import. Connect the USB stick to your G7 using the cable supplied.

- Tap “DATABASE” > “CAMPI” > “Import”;

Figure 5.3.a - File SHP import menu

- Select the file which you need to import;

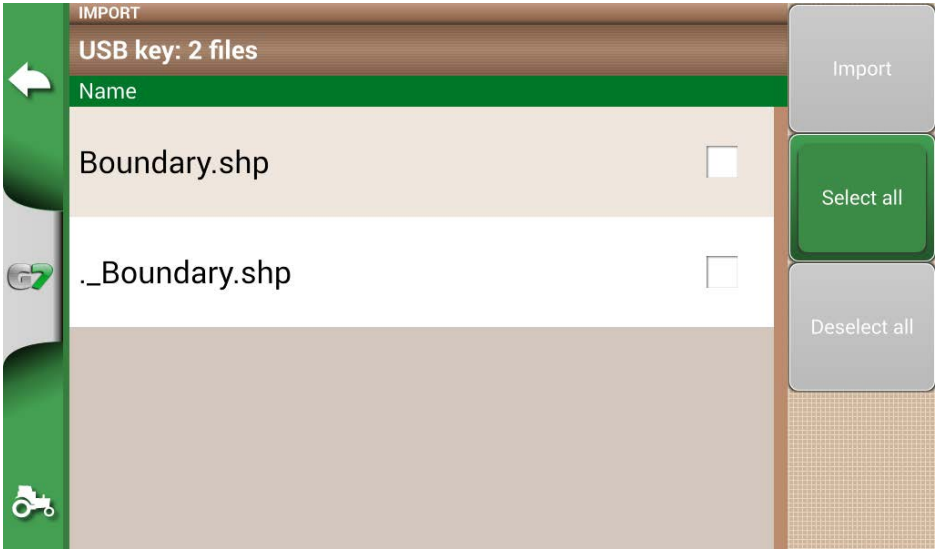


Figure 5.3.b - SHP file Import

- Tap “Import” and wait for boundaries to be imported;

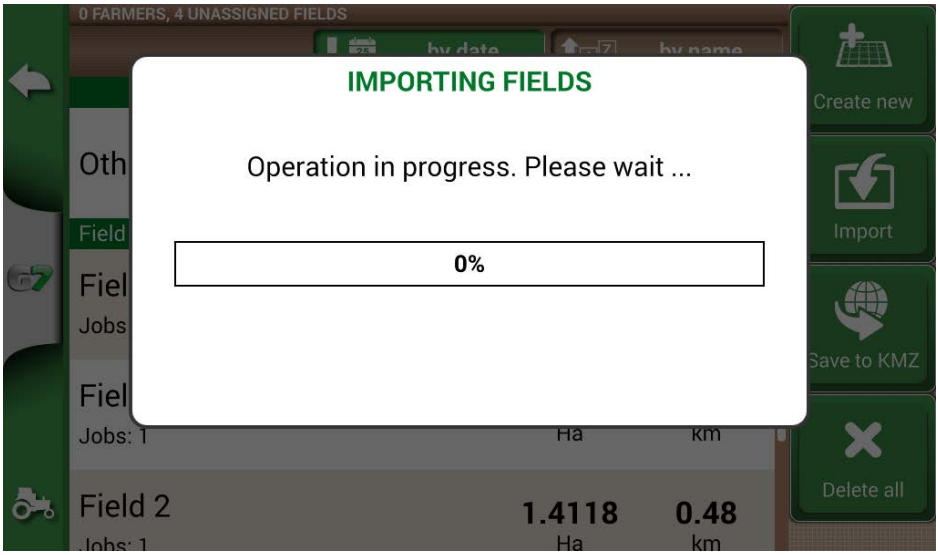


Figure 5.3.c - Import SHP file – work in progress

- All the field boundaries contained in the SHP file are now visible in “FIELD” menu;

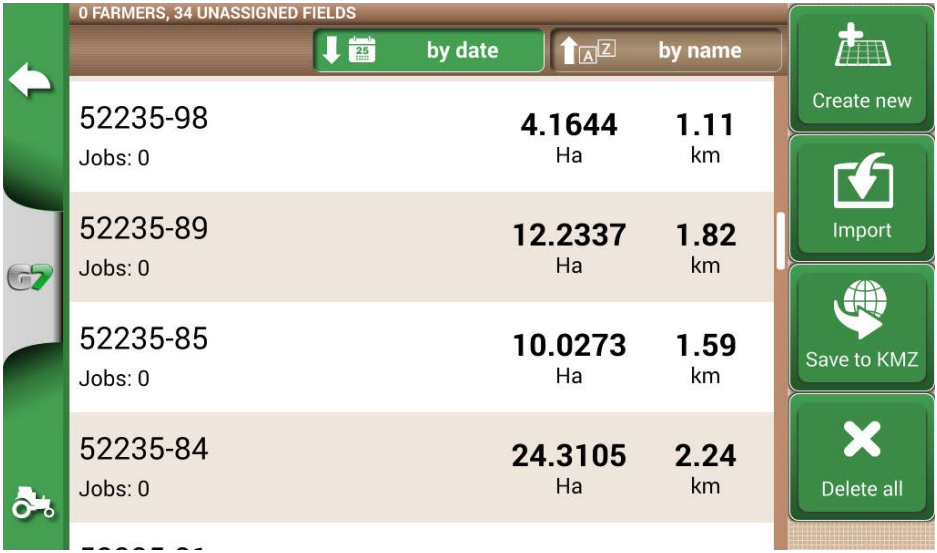


Figure 5.3.d - List of fields loaded from SHP file

- It is now possible to see a preview of each field;

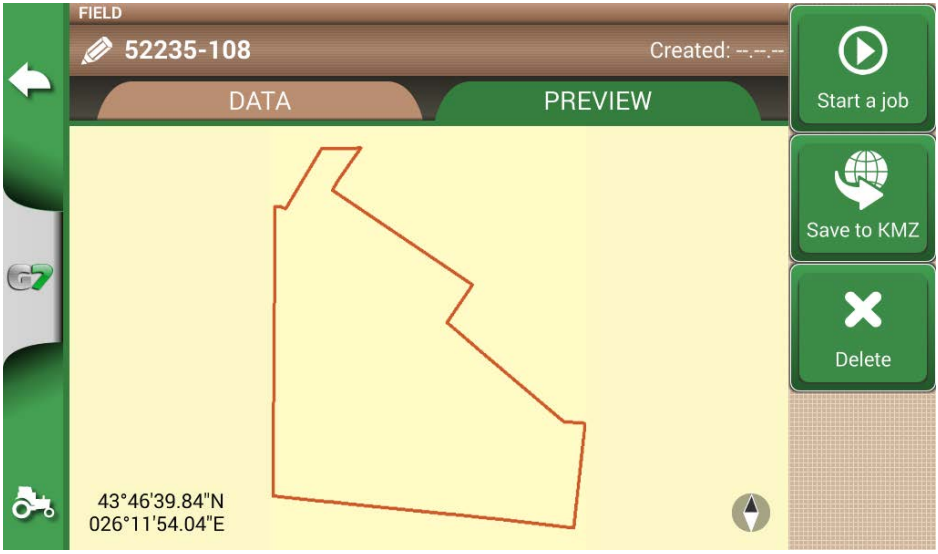


Figure 5.3.e - Example of a field loaded from SHP file

5.3.1 Create a boundary in SHP file format

There are various software available for creating boundaries and exporting them to SHP file format. Above is an example of saving field boundaries in SHP format starting from Google Heart™.

Figure 5.3.1.a - Example of a polygon drawn with Google Earth™

1. Draw a polygon in Google Earth™
2. Save the file with “Save place as..”;
3. Use one of the online software available to convert a KMZ file into a SHP format (for example; MyGeodata Cloud);
4. Import the SHP file into G7 following the import procedure (Par 5.2).

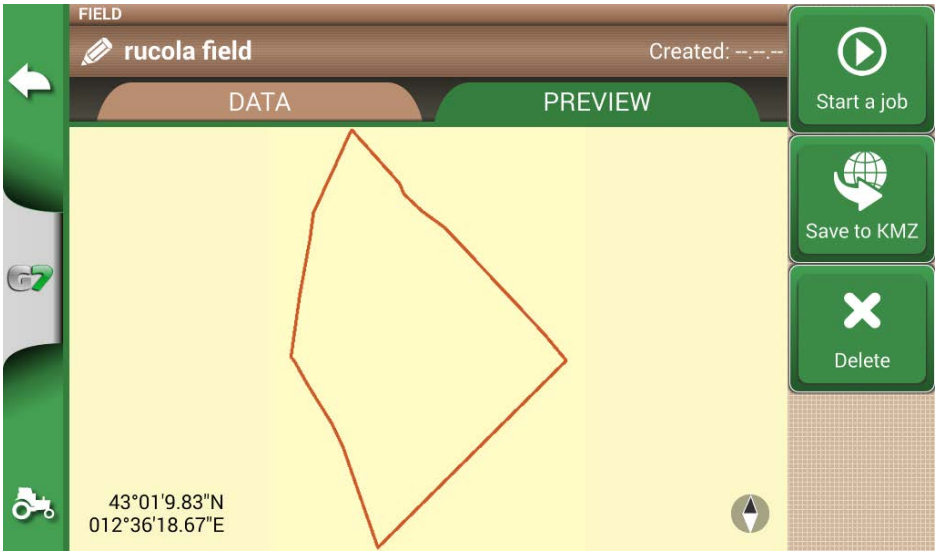


Figure 5.3.1.b - SHP file created with Google Earth™

5.4 Import a file in ISOXML format

To import a file in ISOXML format:

1. Obtain an ISOXML file, made of a folder named “TASKDATA” which includes all the files and maps;
2. Prepare a USB stick (USB 2.0, 2-4GB recommended);
3. Create an “Import” folder in the USB stick;
4. Copy the TASKDATA folder (you can rename it .e.g. TASKDATA_TEST) into the “Import” folder;
5. Connect the USB memory to the G7 ;
6. Select “DATABASE” > “TASKS ISOXML” > “Import” menu;
7. Select the TASKDATA folder (all the TASKDATA folders included in the Import folder will be displayed);
8. Wait for the import. At this point, the newly imported TASKDATA folder is not yet active, tap “Activate” to make it available for processing.

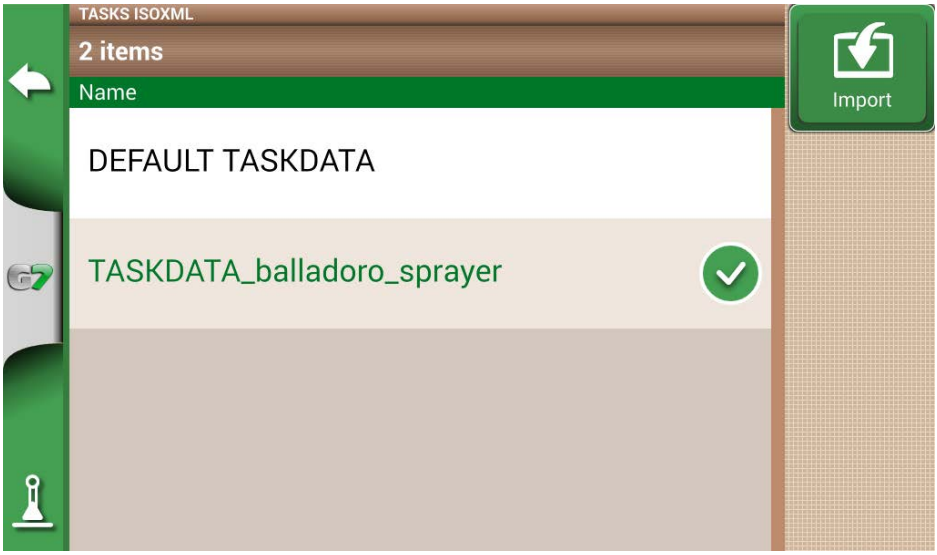


Figure 5.4 - ISOXML file import page

5.5 Exporting the task map to ISOXML

To export an ISOXML from G7:

1. Select “DATABASE” > “TASKS ISOXML” from the menu;
2. Select the folder to export. At this point the export option is available;
3. Make sure you have a USB stick connected to the G7;
4. Tap on “Export” and wait for the export to complete;

5. At this point the export is completed. The ISOXML will be available in the “Export” folder with the name “TASKDATA”.

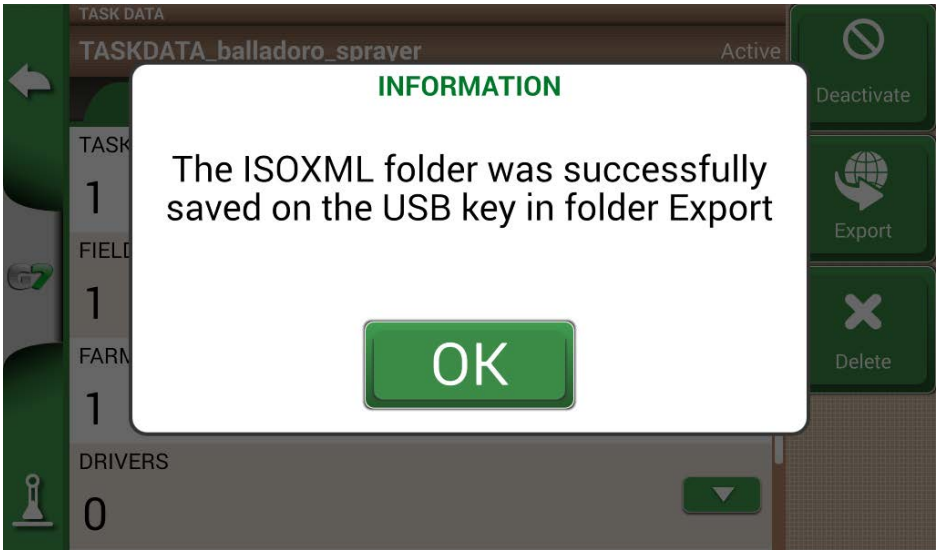


Figure 5.5 - Exporting ISOXML to USB stick

6. Other functions

NTRIP technology is a protocol that allows you to receive GPS corrections via Internet connection from dedicated base stations. By activating NTRIP the performance and accuracy of your RTK receiver will be improved.

6.1 NTRIP Configuration for All in One RTK

6.1.1 GPS fix check

1. In the Main Menu tap on “SETUP” (Figure 6.1.1.a)
2. Select “Satellites”: in the field “GNSS RECEIVER” the name “All in one RTK” shall appear (Figure 6.1.1.b)

Figure 6.1.1.a - SETUP button in the main menu

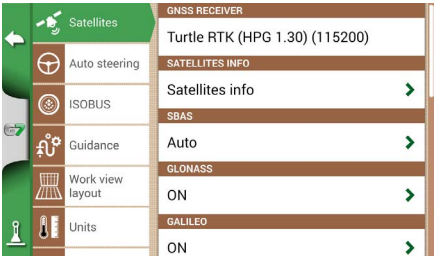


Figure 6.1.1.b - Satellites settings page

3. Tap on “Satellites info” and wait a valid positions status (3D or DGPS fix). See figure 6.1.1.c

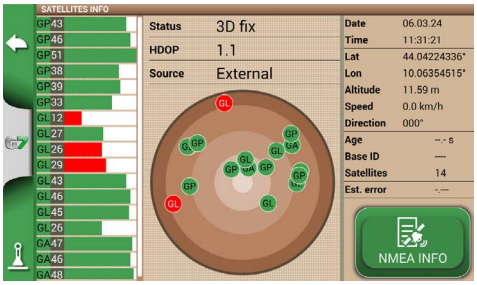


Figure 6.1.1.c - Detailed satellites info

6.1.2 NTRIP Configuration

1. In the Main Menu tap on “SETUP” and select “Satellites”
2. Tap on “NTRIP CLIENT (All in One RTK)”. See Figure 6.1.2.a

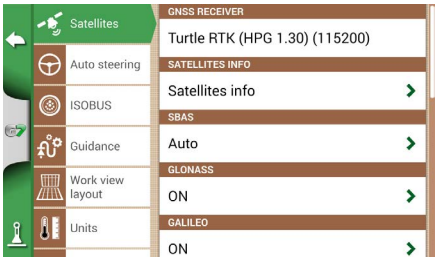


Figure 6.1.2.a - Satellites settings page

3. Fill the text fields shown in 6.1.2.b (data provided by your dealer or by your NTRIP provider)
   - Server
   - Port
   - User name
   - Password
   - Mount point

   then tap on “Connect”;
4. Wait about 3 minutes, then all icons shall be green (Figure 6.1.2.c) and all NTRIP services shall be active.

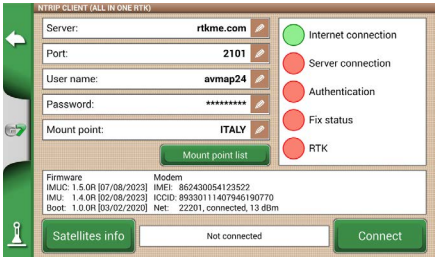


Figure 6.1.2.b - NTRIP Client configuration

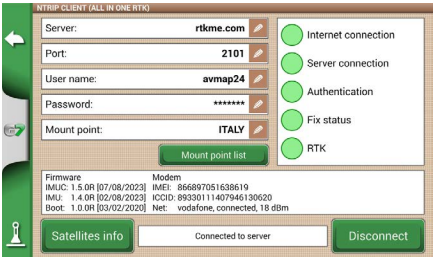


Figura 6.1.2.c - Active NTRIP services

Now your All in one RTK receiver is ready to use.

6.2 NTRIP Configuration for Turtle RTK or third-party receivers

NOTE: NTRIP can be used correctly if the receiver is enabled to accept corrections through the same communication port connected to the G7. in case of third-party receivers, make sure of the correct configuration.

6.2.1 GPS fix check

1. In the Main Menu tap on “SETUP”” (Figure 6.2.1.a);
2. Select “Satellites”: in the field “GNSS RECEIVER” the name of your GNSS receiver shall appear (Figure 6.2.1.b);

Figure 6.2.1.a - SETUP button in the main menu

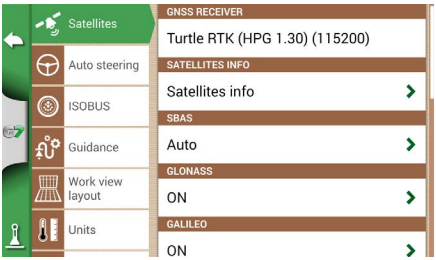


Figure 6.2.1.b - Satellites settings page

3. Tap on “Satellites info” and wait a valid positions status (3D or DGPS fix). See figure 6.2.1.c.

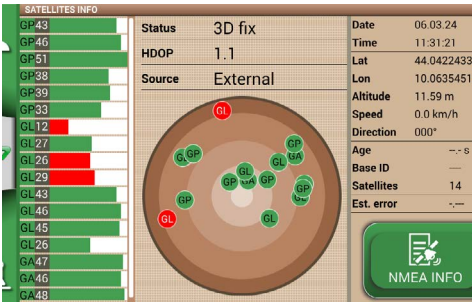


Figure 6.2.1.c - Detailed satellites info

6.2.2 NTRIP Configuration

1. Make sure the G7 is connected to a WiFi network (read to Chapter 2.4.10 for more details on how to connect the G7 to a WiFi network)
2. In the Main Menu tap on “SETUP” button and select “Satellites”

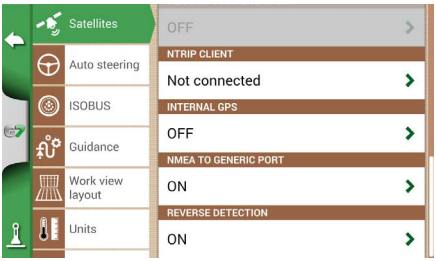


Figure 6.2.2.a - Satellites settings page

3. Fill the text fields shown in Figure 6.2.2.b (data provided by your dealer or by your NTRIP provider)
   - Server
   - Port
   - User name
   - Password

- Mount point

  then tap on “Connect”;

4. Wait about 3 minutes, then all icons shall be green (Figure 6.2.2.c) and all NTRIP services shall be active.

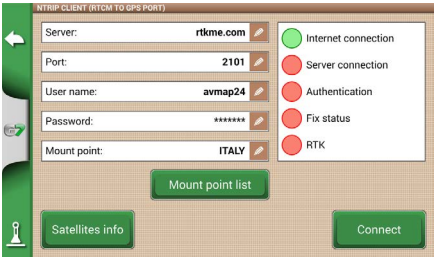


Figure 6.2.2.b - NTRIP Client configuration

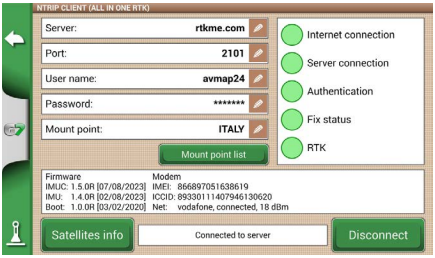


Figure 6.2.2.c - Active NTRIP services

Now your RTK receiver is ready to use.

6.3 G7 software updates

The updates for G7 are available every year. Follow the above procedure to update the software of your device.

6.3.1 Software Update via WiFi (G7 Plus, G7 Terminal and G7 Iso)

G7 is provided with an automatic search for available updates when the device is connected to a WiFi network. To search for software update:

1. Tap “SETUP”> “General” > “Check for updates now” and wait for the connection;

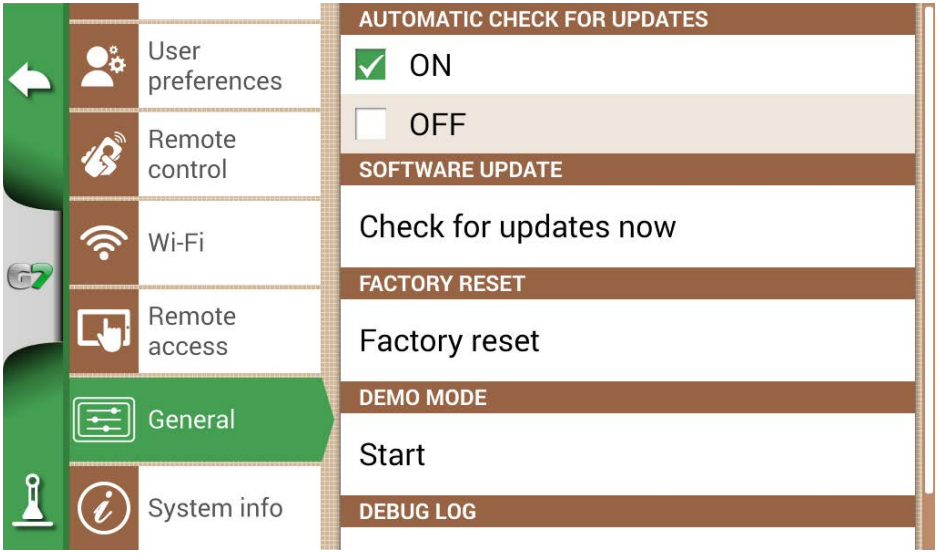


Figure 6.3.1 - Software update via WiFi

2. Tap “YES” to download the update;
3. The device restarts in update mode;
4. Tap “UPDATE NOW” to proceed with the installation;
5. Tap “CONTINUE” and wait for the restart;
6. The update is completed and the WiFi network can be turned off.

6.3.2 Software Update via USB

If it is not possible to update the software via WiFi due to the lack of connection or since you have a G7 Ezy, you have to update the software via USB.
To proceed with the update, you need:

- USB stick (at least 2GB);
- Update file (it is strongly suggested to contact the customer service);
- ‘USB Cable/ Video in’ (G7 Ezy, p/n: K2CYFS0600) or cable USB / Video in / Ethernet’ (G7 Plus, G7 Iso, G7 Terminal, P/N: K2CYFS1000).

Perform the following procedure:

1. Copy the update file from a PC to USB stick;
2. Connect USB cable to the G7 bracket;
3. Insert USB stick into the USB connector of the supplied cable;
4. Turn G7 on, the device starts in update mode;
5. Tap “UPDATE NOW” to install the update;
6. Tap “CONTINUE” and wait for the program to start;
7. The update is now completed and the USB stick can be dismissed.

6.4 Video camera

G7 allows you to connect an external, analogic video camera. There are no settings to be performed on the software.

6.4.1 Type of supported cameras

G7 supports analogic cameras with PAL o NTFS format.
The video camera must be provided with a male RCA connector. Power to the video camera must be supplied externally to G7. IP and USB camera are not supported. Power must be supplied externally.

6.4.2 Connect a video camera

It is possible to connect a video camera to G7 via the ‘USB cable/Video in’ (G7 Ezy, P/N: K2CYFS0600) or ‘USB cable / Video in /Ethernet’ (G7 Plus, G7 Iso, G7 Terminal, P/N: K2CYFS1000). The cable is provided with an analog RCA female video input.

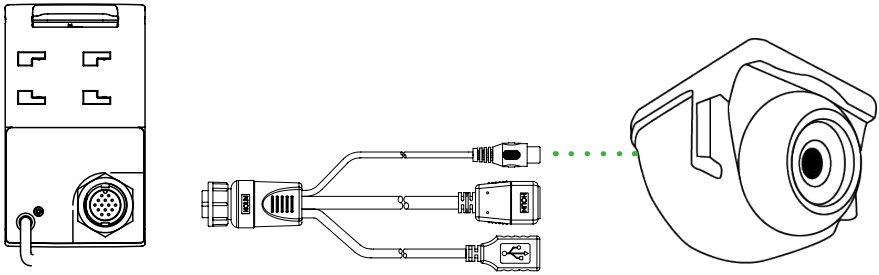


Figure 6.4.2 - How to connect a video camera to G7

6.4.3 Display mode for Video camera

When the camera is properly connected to G7, the video camera icon will be automatically activated on the main page of your job.

- Tap the camera icon displayed on the main page of your job 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 6.4.3 - Camera button

When ISOBUS communication is active, the camera icon is displayed only when the camera is connected and working.

6.5 Road navigation (optional)

G7Navi is an optional terrestrial navigation application that allows to use G7 as a satellite navigator.

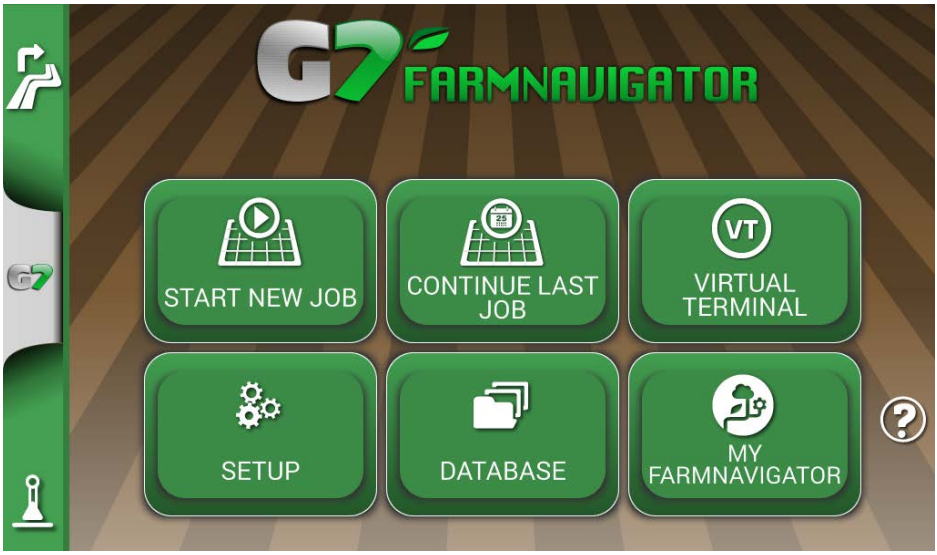


Figure 6.5.a - Access to G7 Navi

To use the navigation function, please insert the AvMap microSD with road maps. It is possible to enable street navigation on this device by purchasing an AvMap microSD with street maps. Contact support@avmap.it for more information.

To switch to this modality:

1. In the main page, tap the button located at the upper left side of the page;
2. Tap “YES”

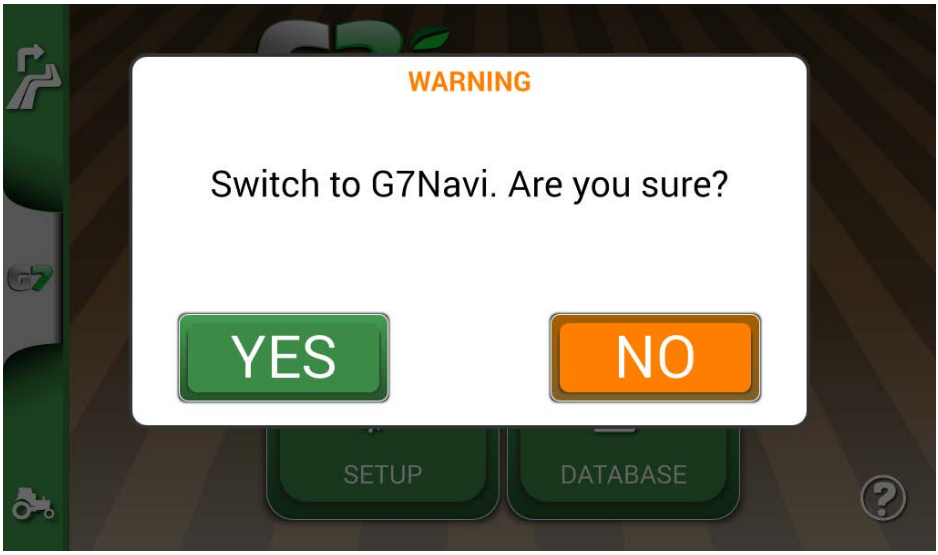


Figure 6.5.b - Switch to road navigation confirmation page

6.6 Activate a virtual NMEA output on the “Generic” port

Some third-party devices used on the tractor in complementary mode to G7, require the use of GPS antenna for a correct functioning.

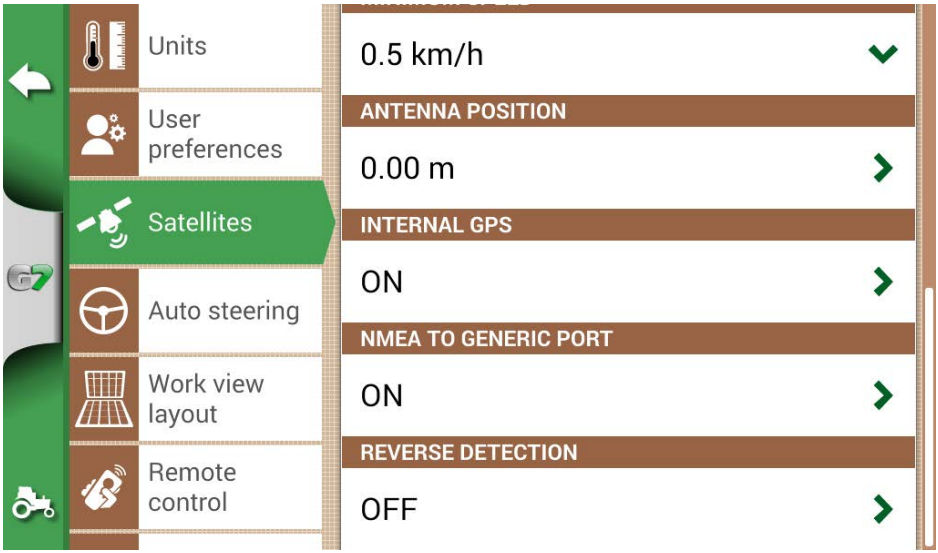


Figure 6.6 - Virtual GPS output on the ‘Generic’ port

G7 gives the possibility to generate and share a GPS code in NMEA format to be sent to a third-party device, without using a second GPS antenna.

1. Tap “SETUP” > “Satellites”
2. Tap “NMEA on Generic port” and select “ON”.

6.7 Activate the Demo mode

G7 is provided with a Demo mode, very useful for outdoor demonstrations without GPS.
To enable the demo mode:

1. Tap “SETUP” > “General”> Demo mode > Start;
2. Tap the tractor icon located in lower left corner of the page to switch to the job page.

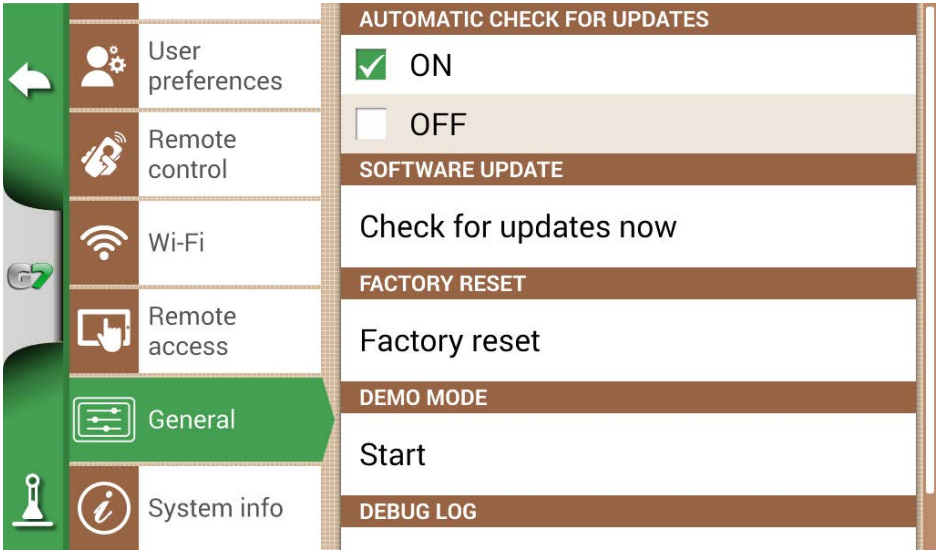


Figure 6.7.a - Start Demo mode

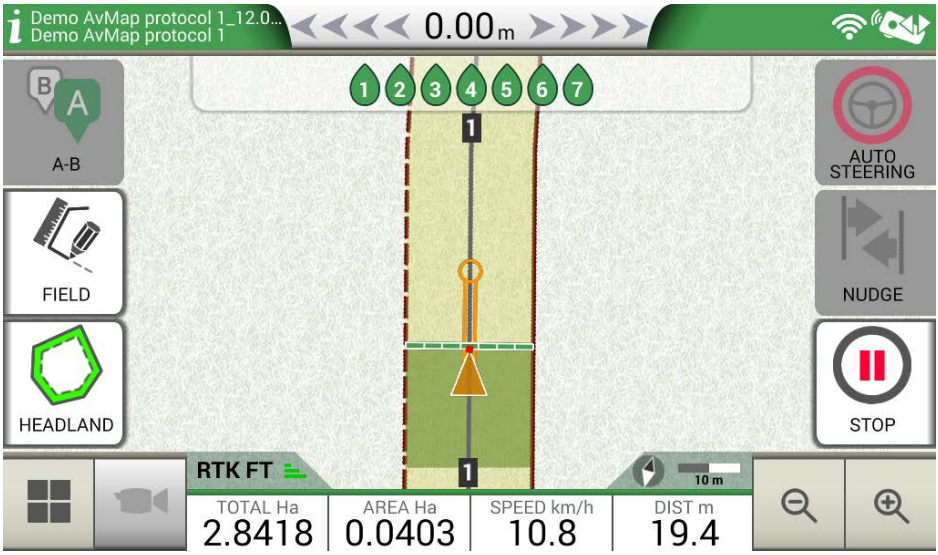


Figure 6.7.b - Demo mode

To disable Demo mode:

1. Tap “Stop”;

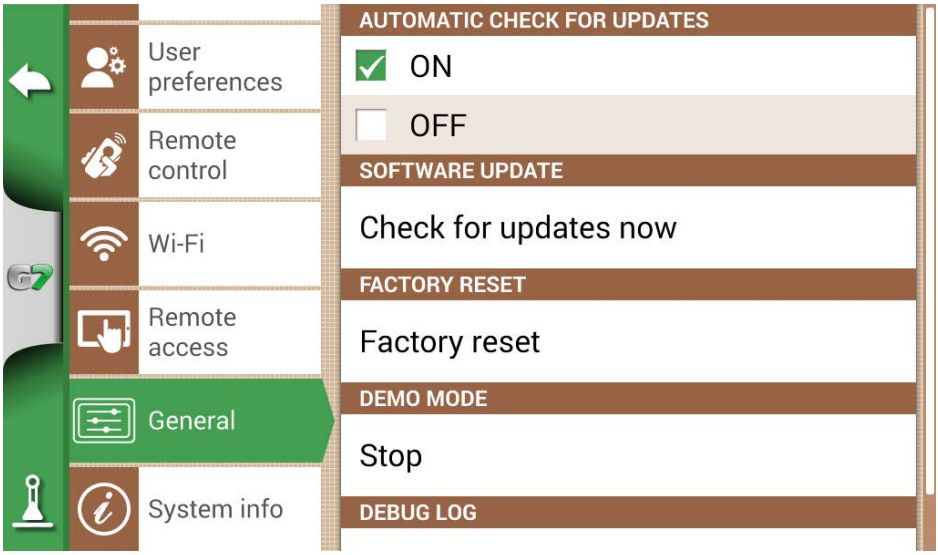


Figure 6.7.c - Demo mode stop

6.8 GNSS Receiver firmware update

The new software updates also include updates for FARMNAVIGATOR receivers connected to the G7. It is possible that, following the software update, a message will appear at the first start-up that warns about the availability of a new firmware for the receiver. It is always recommended to update it.

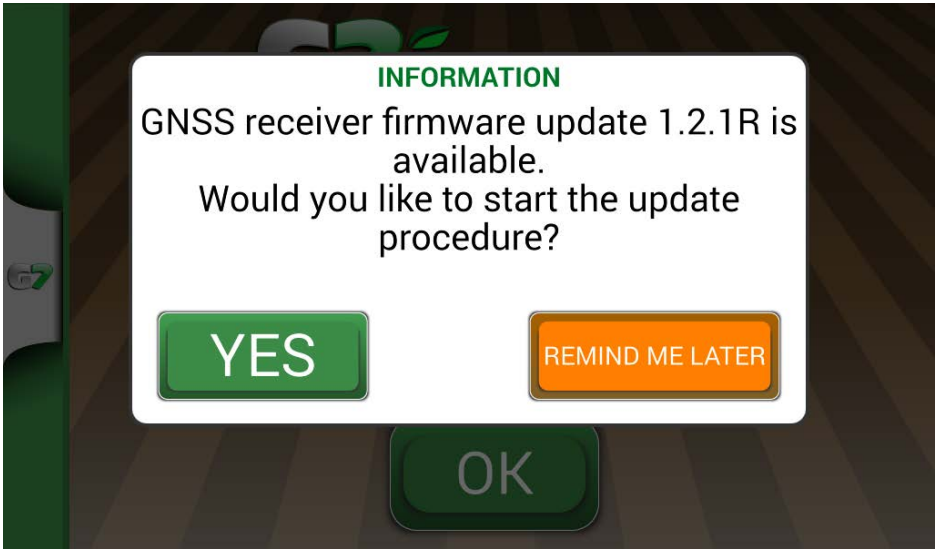


Figure 6.8.a - Update for GNSS receiver available

The update takes a few seconds to complete. During the update process, make sure not to disconnect and / or turn off the device.

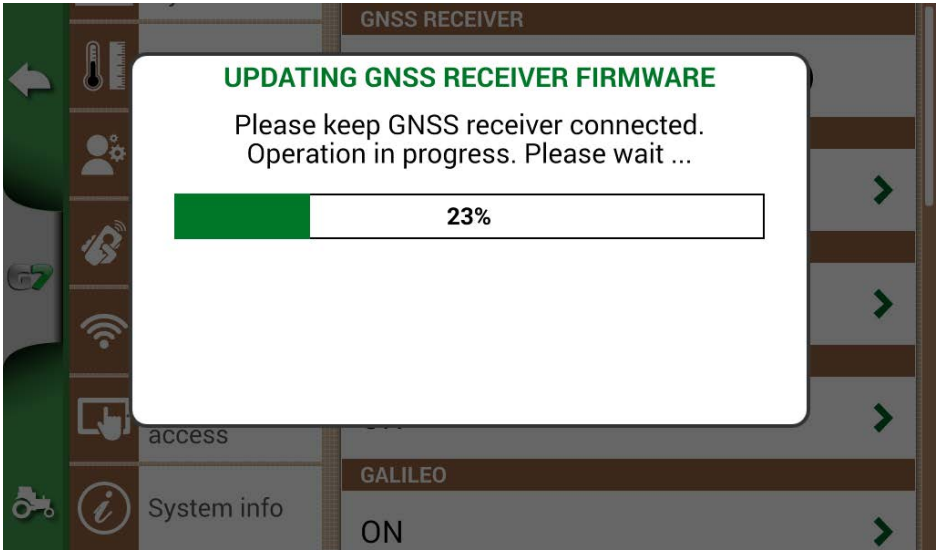


Figure 6.8.b - GNSS receiver update in progress

7. Contacts/Customer Support

To get first-level assistance regarding:

- User manual/quick guide
- Warranty
- Replacements, malfunctions
- Repairs
- Updates
- MyFarmnavigator.com web portal

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

To get second-level assistance regarding:

- Auto Steering
- RTK systems
- Settings

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

8. Appendix A

List of devices compatible with FARMNAVIGATOR G7:

Antenna

- FARMNAVIGATOR Turtle Pro
- FARMNAVIGATOR Turtle Pro2
- FARMNAVIGATOR Turtle RTK
- FARMNAVIGATOR All in One RTK
- NMEA0183, GxRMC 5-10Hz, GxVTG 5-10Hz, GxGSA 1Hz, GxGSV 1Hz, GxGST 1 Hz;

Sprayer

- Agral AGSIG
- Agridrive
- Agromehanika AG
- Tronik
- Arag Bravo 180s/300s
- Bertolini Buono
- BKL ASC
- BKL HYDRA
- Caffini CB9
- FarmscanAG UniPOD
- Geoline GeoSystem 260
- Hardi 5500/6500
- MC Elettronica Hydra 590

Spreader

- Agridrive
- Bogballe Icon
- Bogballe Totz
- Bogballe Zurf
- Rauch Quantron A

Planter

- Gpskit AgriDrive

Seeders

- Agridrive

9. Appendix B

Table of licenses present in the G7 product range

Comparison Table	G7 Ezy	G7 Plus	G7 Terminal	G7 Iso	G7 Iso VT	G7 Iso Full
Navigation License: • Parallel Guidance • Serial Section Control • Automatic Steering • Fields and Jobs Database	✔	✔	FREE TRIAL	✔	✔	✔
Virtual Terminal License: • UT • AUX-N (auxiliary • control)	FREE TRIAL ***Iso Kit needed**	FREE TRIAL ***Iso Kit needed**	✔	FREE TRIAL	✔	✔
Task Controller License: • TC-SC (Isobus section control) • TC-BAS (import jobs) • TC-GEO (application maps)	FREE TRIAL ***Iso Kit needed**	FREE TRIAL ***Iso Kit needed**	FREE TRIAL	FREE TRIAL	FREE TRIAL	✔

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