

# **A10 Universal Terminal**

U S E R   M A N U A L



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## CHAPTER 1 - BEFORE YOU START

Read the instructions carefully, especially the safety instructions, before using the device. Keep the instructions in a safe place for future use.

When passing on the device, supply the instructions in full.

### ABOUT THIS GUIDE

This manual contains information and instructions necessary for the safe and efficient use of the A10 Universal Terminal.

- Persons carrying out work on the device must have carefully read and understood these instructions before starting work.
- The basic prerequisite for safe working is compliance with all safety-related information and instructions in this manual.
- Keep these instructions in an easily accessible place so that they are always available for reference.
- If you have any questions or problems handling the device, contact the your dealer.

### SYMBOLS AND NOTICES

Safety-related information is used in these instructions to warn the user of residual risks in connection with personal injury or damage to property.

Safety instructions are listed in the "Safety" section of this manual. In order to warn of specific hazards in the context of an action or phase of life, warnings are used in the text, which are identified by a warning symbol in conjunction with a signal word. The signal words indicate the extent of the hazard.



#### **DANGER**

Failure to observe hazards will result in death or serious injury.



#### **WARNING**

Failure to observe warnings may result in death or serious injury.



#### **CAUTION**

Failure to observe these instructions may result in injury or damage to property.



#### **NOTICE**

Failure to observe these instructions can lead to faults in the device or in the environment or to data loss.



#### **TIP**

This information makes it possible to make optimum use of all functions.

## TERMS AND ABBREVIATIONS

| Abbreviation | Meaning                                                                                                                                                                                                                    |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UT           | Universal Terminal or virtual terminal                                                                                                                                                                                     |
| TC           | Task Controller                                                                                                                                                                                                            |
| GNSS         | Global Navigation Satellite System                                                                                                                                                                                         |
| FMIS         | Farm Management Information System                                                                                                                                                                                         |
| NTRIP        | Networked Transport of RTCM via Internet Protocol is a protocol that makes it possible to transmit GNSS correction data in real time over the internet, thereby significantly improving the accuracy of GNSS measurements. |

## INTENDED USE

- The A10 Universal Terminal is an operating device with pre-installed software for use in agricultural machinery, such as vehicles, implements or self-propelled vehicles.
- The device and its software provide functions that control connected agricultural machinery and subsystems using the ISOBUS communication protocol (ISO 11783).
- The software may only be installed, set up and run on operating devices intended by the manufacturer.
- The software may only be installed, set up or maintained by the manufacturer or TeeJet Technologies.
- Only the pre-installed software may be used.
- Only accessories approved by the manufacturer may be used.

### Foreseeable Misuse

- Independent maintenance / repair or disposal.
- Use of the device on public roads.
- Use of the device as a driver assistance system.
- Non-compliance with the applicable documents.
- Creating unsafe states on connected devices.
- Disassembling or modifying the device.
- Use of the device if it is damaged or faulty.
- Operating the device without mounting equipment on the opposite side.
- Use of the device if the power supply or other connections are damaged or faulty.
- Use of the device with a power supply not intended for this purpose or other connections.
- Use of the device outside the specified ambient conditions.
- Removing the pre-installed software. Unauthorised addition of additional software (system updates provided by your dealer are not affected).

### Operator Obligations

- The owner must ensure that all operators have read and understood the instructions, in particular the safety notices and instructions - including "Other applicable documents".
- The operator must ensure that the device can be operated safely and is regularly maintained (including software updates).
- In the event of faults, the operator must inform the owner / dealer.

## Applicable Documents

The following documents must be observed before and during use of the device:

- For control unit: "A10 Universal Terminal User Manual" from TeeJet Technologies.
- For use in combination with Autosteering systems from other companies, their documents must be observed before and during use of the products.



### WARNING

Contact your dealer for applicable documents in your language.

## RANGE OF FUNCTIONS AND FEATURES

The functional scope of the device depends on the activated licences and their features.

Sections in these instructions generally describe functions of the basic or standard licence. Extended functions that are included in other licences are highlighted accordingly in this documentation.

The overview of available or activated licences is displayed in the Licence menu. See "[Licence Overview](#)" on page 102.

## CHAPTER 2 - SAFETY

The following safety-related information describes possible hazards and residual risks that may occur when using the device. To avoid personal injury and damage to property, read the instructions listed here carefully and observe them when using the device.

Contact your dealer or TeeJet Technologies if anything is unclear.

### IMPORTANT SAFETY INFORMATION

All safety related and operating instructions should be read before the system is operated. Safe operation of machinery is the operators responsibility. Safety procedures must be posted close to the equipment and clearly visible to and legible by the operator. Safety procedures should meet all company and local regulations, as well as MSDS-requirements. For assistance, contact a local dealer.

#### Safety Alert Symbol Definitions:



**DANGER!** This symbol is reserved for the most extreme situations where serious personal injury or death is imminent.



**WARNING!** This symbol indicates a hazardous situation that could result in serious personal injury or death.



**CAUTION!** This symbol indicates a hazardous situation that could result in minor or moderate personal injury.



**NOTE:** This symbol addresses practices in which the operator should be aware.

### GENERAL WARNINGS AND PRECAUTIONS



#### **DANGER!**

- Read and follow instructions. If instructions are unclear after reading the manual, please contact a local dealer.
- Keep children away from equipment.
- Do not operate machinery under the influence of alcohol or any illegal substance.
- Some systems include a fan heater. Never cover the heater otherwise there will be a serious danger of fire!



## WARNING! ELECTRICAL / SHOCK HAZARDS

- Before working on any particular component, make sure that all power supplies have been switched OFF and cannot be accidentally switched ON.
- Disconnect power leads before using an arc welder on equipment or anything connected to the equipment.
- Systems including frequency drives have a risk of electric shock due to residual voltage. It is not permissible to open the equipment neither to disconnect the system or any quick connection until 5 minutes after the power has been removed.
- Only operate the system from the power source indicated in the manual. If you are not sure of the power source, consult qualified service personnel.
- Do not use a high pressure cleaner to clean electrical components. This could damage electrical components and subject the operator to risk of electrical shock.
- The electrical supply to the equipment must be properly routed and connected to the equipment. All connections must meet the specified requirements.



## WARNING! PRESSURISED HYDRAULIC SYSTEMS

- Always wear personal protective equipment (PPE) when performing work on hydraulic systems.
- Adhere to the machine manufacture's approved maintenance instructions when working on the hydraulic system.
- Always turn equipment OFF when working on the hydraulic system. Take appropriate precautions when opening systems that have been previously pressurised.
- Be aware that hydraulic oil may be extremely hot and under high pressure.



## WARNING! CHEMICAL HANDLING

- Always wear PPE when handling any chemical substance.
- Always follow safety labels and instructions provided by the chemical manufacturer or supplier.
- The operator should have full information on the nature and the quantity of the material to be distributed.
- **ADHERE TO FEDERAL, STATE AND LOCAL REGULATIONS REGARDING THE HANDLING, USE OR DISPOSAL OF AGRICULTURAL CHEMICALS.**



## WARNING! PRESSURISED SPRAY SYSTEM

- It is important to recognise proper safety precautions when using a pressurised spray system. Fluids under pressure can penetrate skin and cause serious personal injury.
- The system pressure should never exceed the lowest rated component. Always know your system and all component capabilities, maximum pressures and flow rates.
- Filters can only be opened when the manual valves in front of and behind the filter are in closed position. If any appliance has to be taken out of the piping, manual valves in front of and behind this appliance have to be in closed position. If they are reinstalled, make sure that this happens correctly, that this apparatus is well aligned, and that all connections are tight.
- The plumbing supply to the equipment should meet all company and local regulations and must be properly routed and connected to the equipment. All connections must meet the specified requirements.
- It is advised to drain and purge the liquid train when the equipment shall not be used for a longer period of time.



## WARNING! AUTO STEERING SAFETY

- To prevent serious personal injury or death from being run over by the vehicle or automated motion of the steering system, never leave the vehicles operator seat with the system engaged.
- To prevent serious personal injury or death from being run over by the vehicle or automated motion of the steering system, verify the area around the vehicle is clear of people or obstacles before startup, calibration, tuning or engaging the system.
- Make sure equipment is tightly secured to the proper components.
- Never drive on public roads with system engaged.





## CAUTION! EQUIPMENT SAFETY, MAINTENANCE, AND SERVICE

- The equipment should be operated only by properly trained, qualified personnel. They must have proven their skills in the operation of the equipment.
- Before using the equipment, the operator has to check if the equipment is in good condition and can be used safely. If not, the equipment cannot be used.
- All necessary PPE must be readily available to the operator at all times.
- Routinely check the system and components for wear and damage. Replace or repair when necessary.
- Only qualified authorised experts are allowed to repair or maintain the installation. The maintenance and operating instructions shall be rigidly observed and followed.
- A complete manual for the equipment must be available to the operator or maintenance technician at all times.
- Parts of the product can reach temperatures of >65 °C during operation. Allow the product to cool down before touching it.



## CAUTION! HARNESS CABLE AND HOSE SAFETY

- Routinely check all harness cables and hoses for damage or wear. Replace or repair when necessary.
- Do not route harness cables and hoses with sharp bends.
- Do not strap harness cables and hoses to lines with high vibration or spikes in pressure.
- Do not strap harness cables and hoses to lines transporting hot fluids.
- Protect harness cables and hoses from sharp objects, equipment debris, and material buildup.
- Allow sufficient length for harness cables and hoses to have free movement on sections that move during operation, and be sure that harness cables or hoses do not hang below the equipment.
- Allow sufficient clearance for harness cables and hoses from implement and machine operational zones.
- When cleaning equipment, protect harness cables from high pressure wash.



## CAUTION! PROXIMITY OF USAGE

- Only install the product at a sufficient distance from the intended operating position (especially the head). Observe the applicable national laws.
- Only operate the product at a minimum distance of 20 cm from other radio equipment. Observe the applicable national laws.
- Only operate the product at a sufficient distance from the body (especially the head). Observe the applicable national laws. A minimum distance of 40 cm from the head is recommended.
- Do not use in the vicinity of people with pacemakers or other medically necessary electrical devices.
- Do not use near small children or babies.
- Do not use in the vicinity of strong electromagnetic fields.
- To avoid hearing damage, do not use the product continuously at full volume.



## NOTE: TOUCH SCREEN CARE

- Keep sharp objects away from the touch screen device. Touching the screen with a sharp object could result in damage to the display.
- Do not use harsh chemicals to clean the console/display. The correct way to clean a console/display is to use a soft damp cloth or anti-static wipe, similar to cleaning a monitor on a computer.



## NOTE: RECOMMENDED REPLACEMENT PARTS

- The system has been designed with components that work together to provide the best system performance. When the system requires replacement parts, only TeeJet recommended components should be used to maintain proper system operation and safety.



## END USER LICENCE AGREEMENT

- ALWAYS READ AND FOLLOW THE CHEMICAL LABEL'S DIRECTIONS. Droplet size classification is in accordance with ISO 25358 at the date of publication. Classifications are subject to change. The chemical being sprayed, tank mixes, temperature, humidity, wind speed, vehicle speed, etc. can influence the actual drop size.

## SAFETY MECHANISMS

### WARNING – Deactivated Safety Mechanisms

- Disabling the safety mechanisms causes risks of serious bodily injury or property damage.
- Manufacturers or installers of agricultural sprayers have the option to disable certain safety mechanisms so that the sprayer will meet specific demands.
- TeeJet Technologies cannot assume modifications undertaken by a manufacturer or installer. The person and company who deactivate a security mechanism assume full and exclusive responsibility for it.

## MARKINGS AND INSTRUCTIONS ON THE DEVICE

The device and its accessories are marked with labels and information plates that provide further information on handling and use.



### WARNING

The markings and plates must be clearly legible for the entire service life of the device and must be replaced immediately if damaged or permanently soiled (contact your dealer).

| Labelling  | Meaning                                        |
|------------|------------------------------------------------|
| Type Plate | See " <a href="#">Type plate</a> " on page 111 |

## ALARMS AND MESSAGES

### Warnings and Alarm Messages

The device displays warning and alarm messages.

The speaker can also be switched ON / OFF and the volume can be set for defined messages.

Confirm all messages and follow the instructions.



### TIP

#### Avoid data loss

Data loss can have an impact on your collected data - for example, field data and meter values.

Follow the instructions as it cannot be undone.

## Guided Operation

There are input assistants (wizards), attention-drawing warning symbols, as well as alarms, to help prevent any incorrect entries from happening.



Warning symbol

For example:

- System faults
- Correct the input data
- Enter data
- Perform action (e.g. "Starting / stopping a task - Editing a field" on page 43)

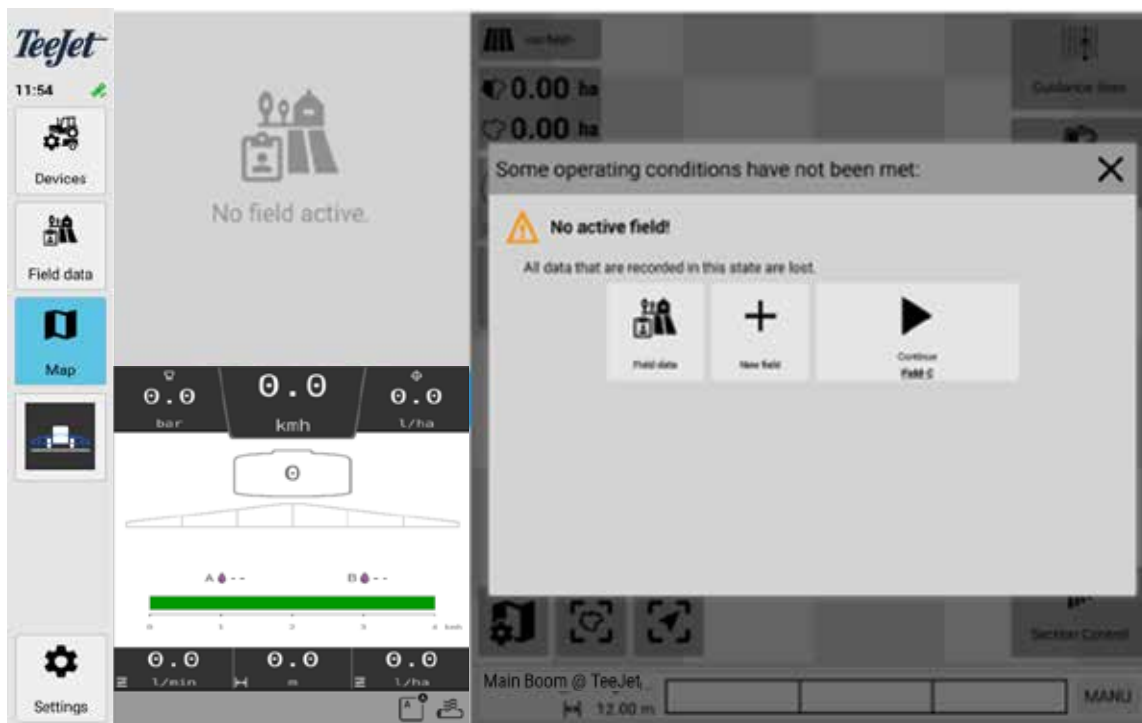


Figure 1: Warning Indicating User Action

## PHYSICAL INSTALLATION

If you are physically installing your device for the first time, see "[Chapter 9 - Installation and commissioning](#)" on page 112 before you move ahead to the next chapter, to make sure you are installing it correctly.

## CHAPTER 3 - FIRST STEPS

Welcome to the A10 Universal Terminal. In this chapter, you will learn how to use your A10 Universal Terminal and how to prepare for your first work assignment.

### OVERVIEW OF THE ISOBUS

#### What is the ISOBUS?

The ISOBUS (ISO 11783 standard) is an internationally recognized standard that makes it possible to connect agricultural machinery and equipment from different manufacturers and exchange data between them.

This standard was developed to improve interoperability and increase efficiency in agriculture. The ISOBUS uses a uniform hardware interface and a standardized protocol for communication between different agricultural implements.

#### Functions of the ISOBUS in Agriculture

- **Implement networking** - With ISOBUS, farmers can connect different machines such as vehicles, combine harvesters, planters, fertiliser spreaders and more. This allows them to work more efficiently as the devices can exchange information and commands.
- **Data management** - The ISOBUS enables the collection, storage and exchange of data generated during agricultural work. This includes information on field yields, fertiliser consumption, soil quality and more. This data can be used for decision-making and the optimisation of agricultural processes.
- **Automation** - ISOBUS allows the automation of agricultural tasks. This means that machines can work, for example, to plough in a specific pattern or spread seed in predefined quantities.

### HOW DOES THE A10 UNIVERSAL TERMINAL WORK?

The A10 Universal Terminal is a device for use in agricultural machinery, such as vehicles, implements or self-propelled vehicles. The device has functions that control connected agricultural machinery and subsystems using the ISOBUS communication protocol (ISO 11783).

This Universal Terminal, is usually permanently installed in the vehicle. The external devices are connected to the Universal Terminal via ISOBUS or other interfaces (e.g. GNSS devices, ISOBUS connectors).

## Typical Set-Up and Use of the A10 Universal Terminal

A typical procedure for setting up the A10 Universal Terminal is as follows:

- Familiarize yourself with the operation (see ["Operating Your Device" on page 20](#)).
- Carry out the initial set-up using the wizard (see ["Starting Your A10 Universal Terminal for the first time" on page 23](#)).
- Set up and adjust a vehicle:
  - Select the GNSS device (GNSS source) and set it up for the vehicle (see ["Setting Up the Vehicle's GNSS Module" on page 25](#)).
  - Set all necessary connectors (see ["Creating Connectors" on page 26](#)). The connectors are the physical coupling points of the connected agricultural devices.
- Then add the devices and assign them to the connectors (see ["Creating Connectors" on page 26](#)).
- Create and import master data (see ["Managing master data" on page 31](#)) and create suitable fields (see ["Creating A Field" on page 28](#)). It is possible to import field boundaries (e.g. as shape files), guidance lines and Application Maps.
- Create guidance lines for parallel driving (see ["Using guidance lines" on page 63](#)).
- Create the tramlines (see ["Using automatic tramlane control" on page 77](#)).

## TOUCH SCREEN



### NOTICE

Only touch the touch screen with clean fingers.

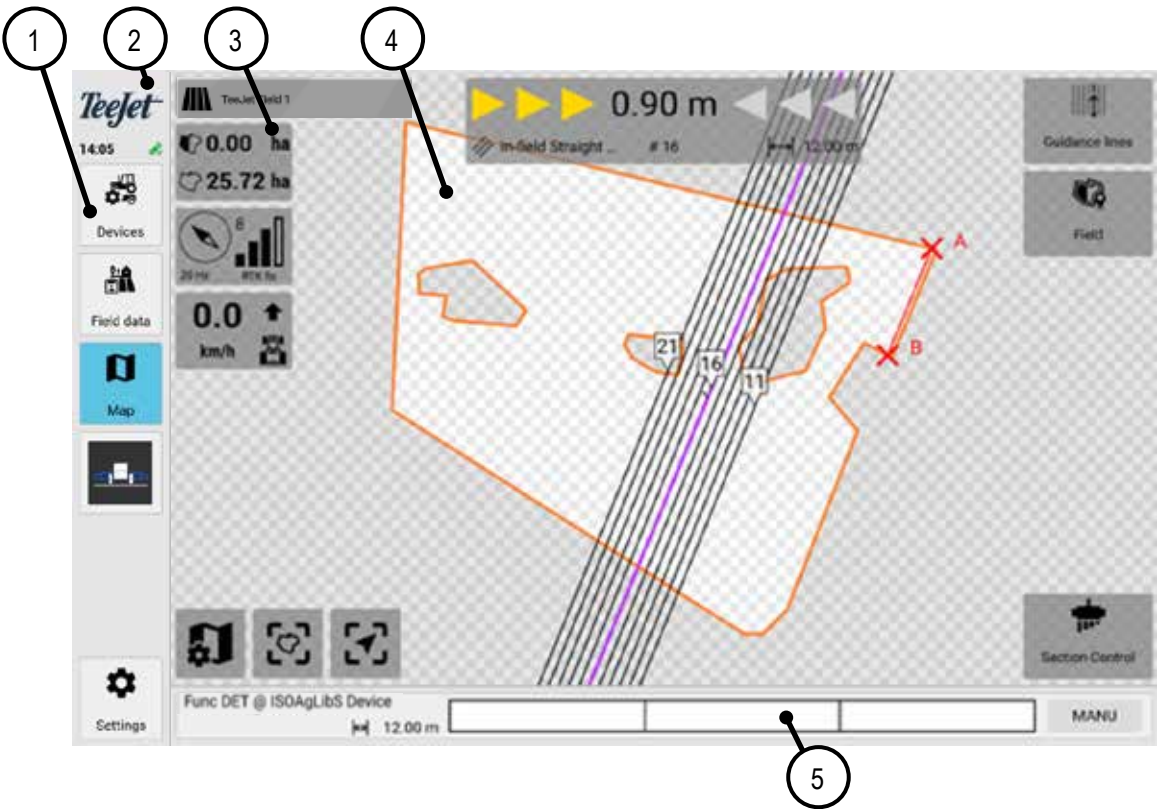
| Touch gesture | Function                                                                                                                                                                |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | Tap <ul style="list-style-type: none"> <li>• To trigger keys</li> <li>• To select in lists</li> <li>• To operate the virtual keyboard and other input fields</li> </ul> |
|               | Wipe <ul style="list-style-type: none"> <li>• To scroll</li> <li>• To change the display in the map view, e.g. scrolling, switching between 2D or 3D display</li> </ul> |
| <br>          | Swipe with two fingers <ul style="list-style-type: none"> <li>• To change the display in the map view, e.g. zoom, rotate</li> </ul>                                     |

## OPERATING YOUR DEVICE

### User Interface

The user interface is clearly divided into two parts:

- Menu - Navigation to all functions to make settings. Contains the status display.
- Main view - Shows the map view or settings dialogues.



- |   |                                                              |   |                                                                       |
|---|--------------------------------------------------------------|---|-----------------------------------------------------------------------|
| 1 | Menu                                                         | 2 | Status display, e.g. time, WLAN                                       |
| 3 | Quick buttons, e.g. for changing the display in the map view | 4 | Main view, e.g. map view with field boundaries, active guidance lines |
| 5 | Display for sections and booms                               |   |                                                                       |

### Input Options

Using the interface you can enter names / values and open additional editing windows or information.

The following input options are available:

| Icon                                                                                | Function             |
|-------------------------------------------------------------------------------------|----------------------|
|  | View / edit settings |
|  | Edit / Rename        |

| Icon                                                                                | Function                                                |
|-------------------------------------------------------------------------------------|---------------------------------------------------------|
|    | Edit<br>Opens a settings or information view            |
|    | Edit<br>Starts a guided assistant                       |
|    | Input via virtual keyboard                              |
|    | View information                                        |
|    |                                                         |
|   | Confirm input / action                                  |
|  | Close view or window<br>End / cancel action             |
|  | Abandon<br>Interrupts a connection (e.g. cloud service) |
|  | Delete                                                  |
|  | Start                                                   |
|  | Pause                                                   |
|  | Stop                                                    |

## SWITCHING ON AND OFF



### NOTICE

#### Data loss

To ensure trouble-free operation, stop all ongoing work. Only then switch OFF.

1. To switch the device ON or OFF, press and hold the **ON / OFF button** until you hear a beep.



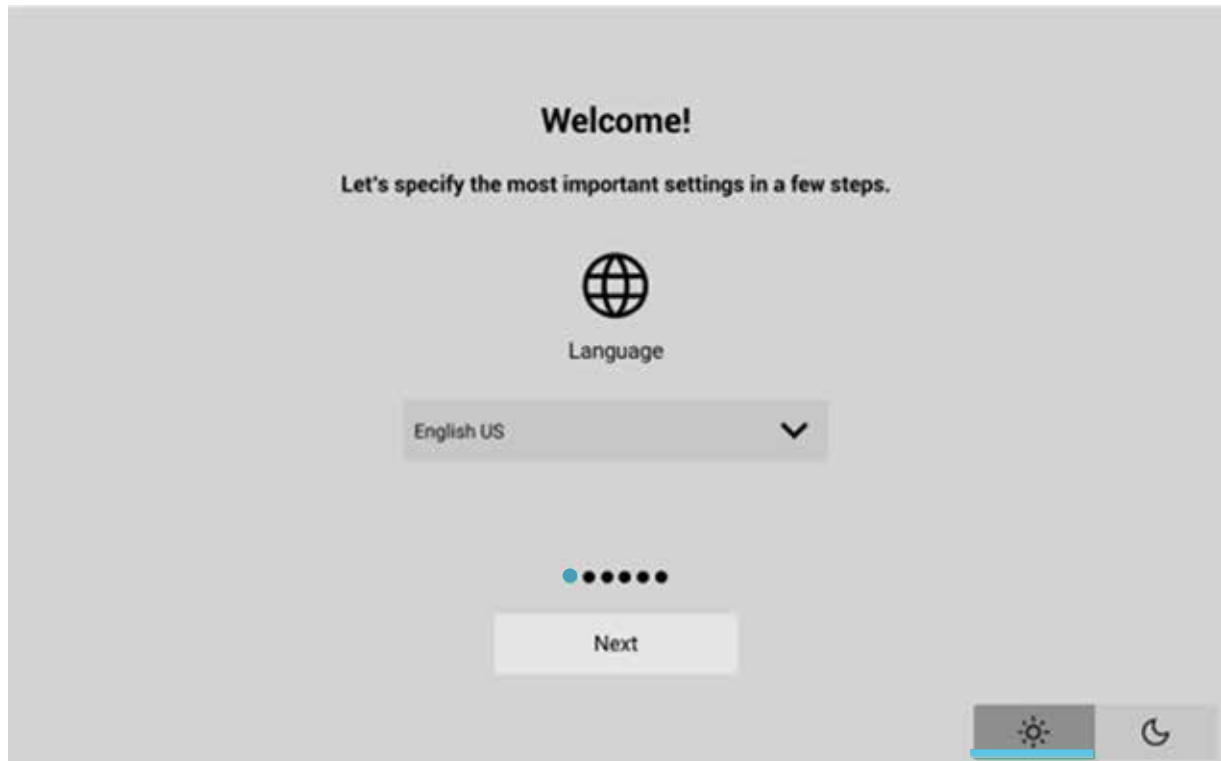
Figure 2: Side view (right)

- 1 ON / OFF button



## STARTING YOUR A10 UNIVERSAL TERMINAL FOR THE FIRST TIME

When you start your A10 Universal Terminal for the first time, you are automatically guided through some system settings.



### Setting the System

1. Select a language.
2. Select a date format.
3. Select a time format.
4. Select a time zone.



#### TIP

UTC is the Coordinated Universal Time and serves as a global reference time standard. All time zones are defined in relation to UTC. The reference point for UTC 0 is the prime meridian. For Germany, UTC+1 applies during winter time and UTC+2 during summer time.

5. Select a GNSS source.

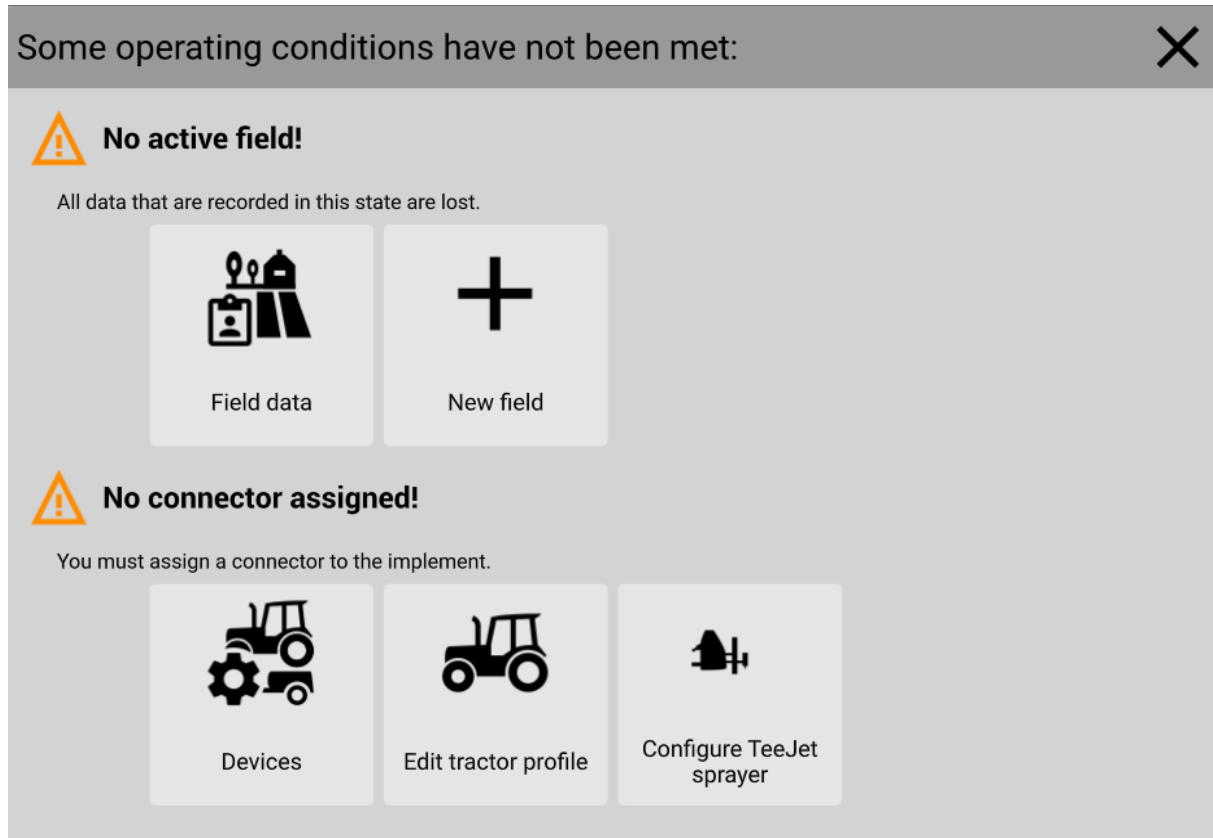
*As soon as the set-up wizard has been successfully completed, the **map view** is displayed.*

## PREPARING WORK ASSIGNMENT

In order to prepare and correctly record the work assignment, the following devices must be set up as standard after starting the device:

- Vehicle
- GNSS source
- Implements

The following window provides an overview of what needs to be set up:



### TIP

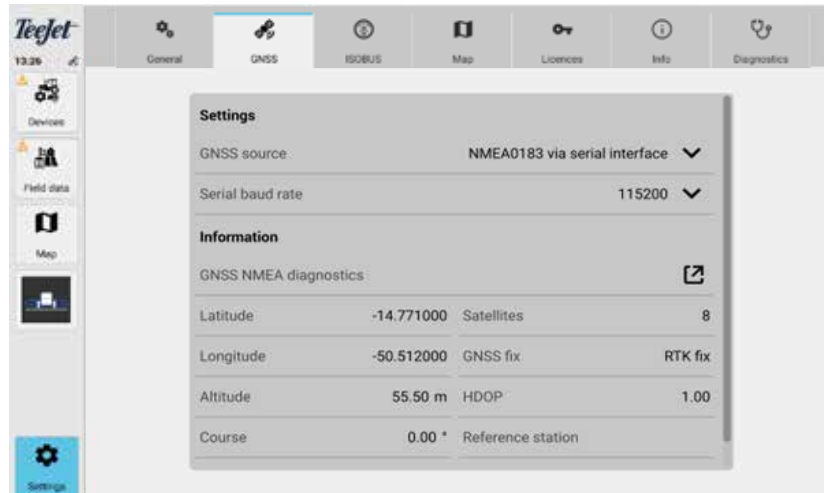
If the overview window is not displayed while the set-up is still being carried out, it can be called up again via Map > Field data > Field.

## Setting Up the Vehicle's GNSS Module

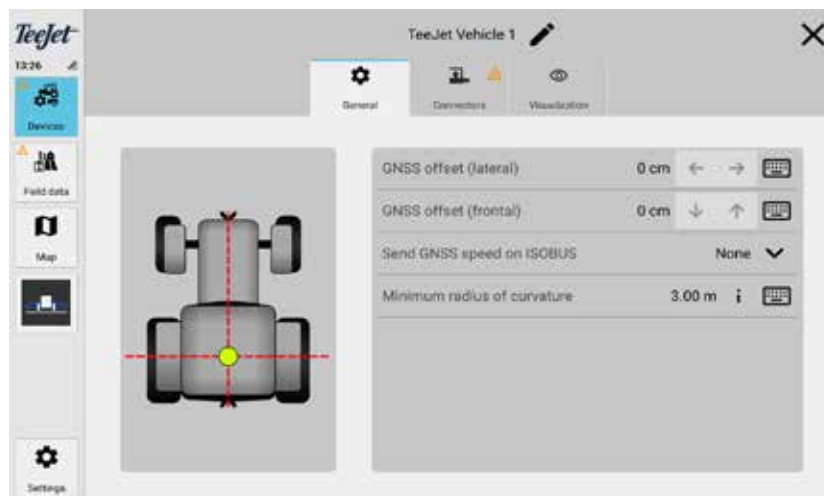
It is important to specify the position of the GNSS receiver so that the positions of the vehicle and the implement can be calculated correctly. The GNSS speed can optionally be provided via the ISOBUS if an implement requires this information and it is not already provided by another system on the ISOBUS.

First, the appropriate GNSS receiver (GNSS source) must be selected in the **Settings > GNSS source**.

See also "GNSS settings" on page 91



The position of the GNSS receiver is then set in relation to the vehicle's rear axle.



### NOTICE

#### Omitted or double-tracked field areas

If the offset value is not set correctly, this will result in an incorrect map display. Parts of the field could be covered twice or omitted.

The offset value must always be set correctly.



### TIP

The offset value is always in relation to the centre of the rear axle of the vehicle.

The following speed options are available:

- Wheel-based speed: Is measured at the wheel (e.g. with a magnetic sensor). Is less accurate due to slippage.
- Ground speed: Is usually measured using a radar sensor. Is more accurate, as slippage has no influence.

## Creating Connectors

All connectors must be created and set up for each vehicle on which implements are to be mounted. A connector is the physical coupling point via which the implement is mounted.

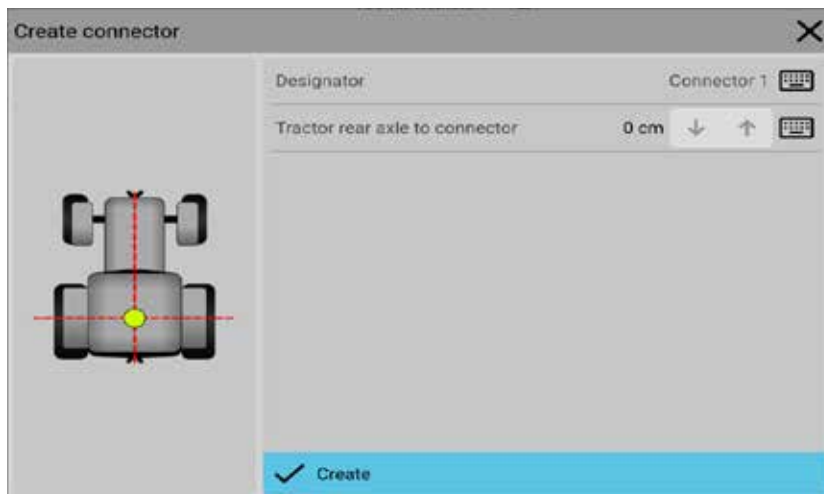
The position of a connector is specified in relation to the vehicle rear axle.



### TIP

When setting up for the first time, it can be helpful to create and set up all connectors straight away.

See also "Managing vehicles" on page 45.



## Showing or Hiding 3D Models

You can show or hide the 3D model of the vehicle in the visualization view.

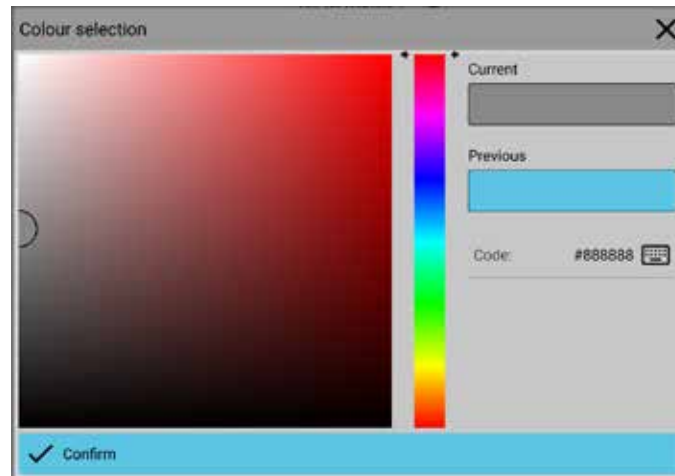
1. Navigate to **Devices > Vehicle > Visualization > Show tractor 3D model**

- To hide the 3D model, slide the controller to the left.
- To show the 3D model, slide the controller to the right.



## Customising the Representation of the Vehicle in the 3D Model

1. Navigate to **Devices > Vehicle > Visualization**
2. You can set the following:
  - Chassis colour of the vehicle
  - Rim colour of the vehicle



3. Select a colour:
  - You can individually select a colour in the selection area on the left. Use the slider in the middle to define the colour space displayed.
  - You can enter a colour code by opening the keypad.
4. In both cases, the change must be confirmed.

## Adding an Implement

ISOBUS-capable and non-ISOBUS-capable implements can be connected to the vehicle. To be able to record data for a non-ISOBUS-capable implement, its geometry must be set independently.

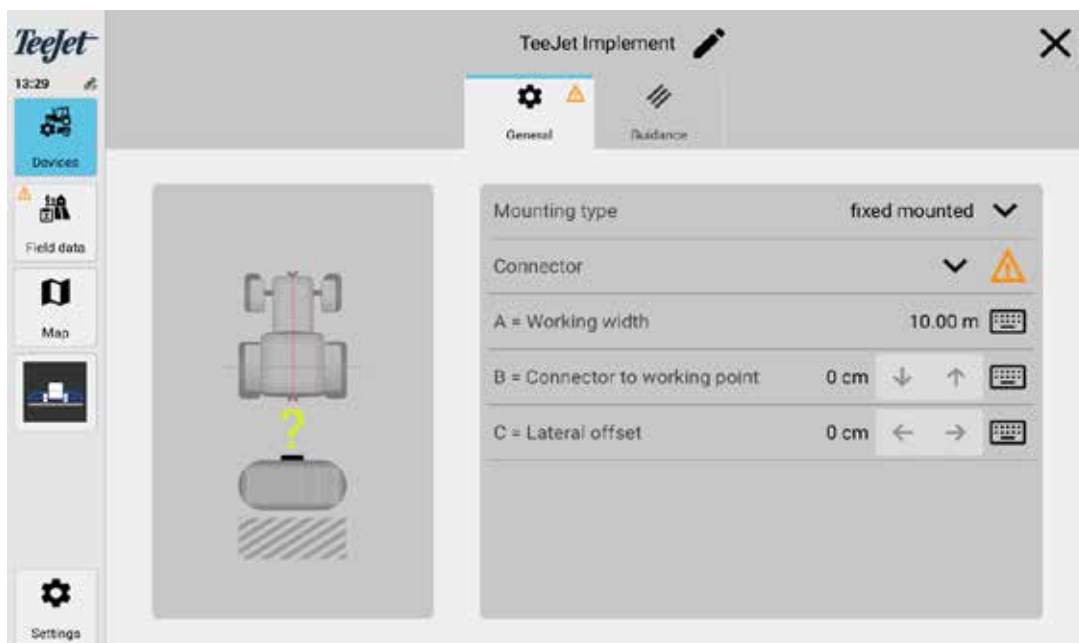


Figure 3: There is a schematic aid on the left side of the implement setup screen

See also "[Managing implements](#)" on page 47.

## Creating A Field



### NOTICE

#### Data loss

If no field or task is started during the work operation, no data is recorded.

Make sure that a field or task has been started.

In the last step, a new field must be created that is to be used. The data for the field boundaries can then be imported.

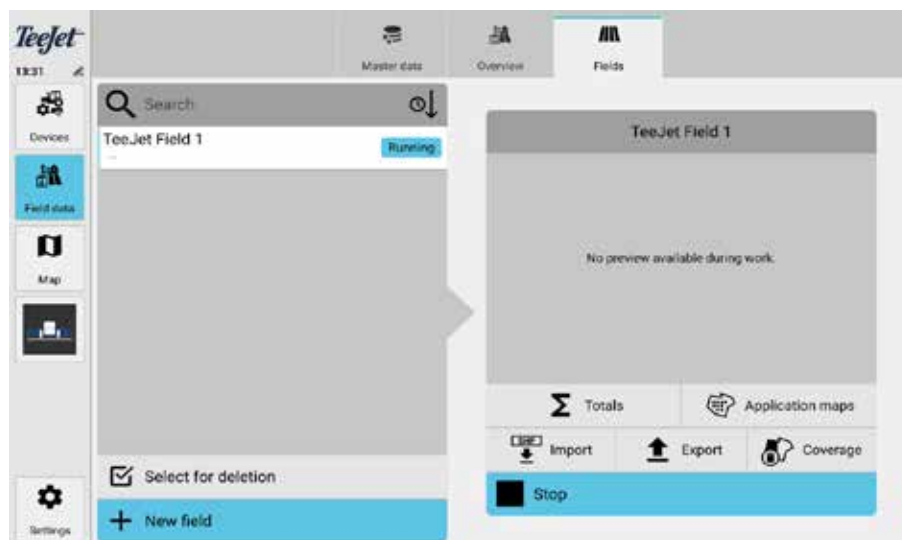
Before creating the field, master data can optionally be created and imported (e.g. from a Farm Management Information System). The master data can be linked to fields and contain additional data such as information on customers and companies (see "[Managing master data](#)" on page 31).



The following data can be uploaded using the import function via Field data > Fields:

- Field boundaries
- Guidance lines

The rough outline of the field or field boundaries are displayed on the right.



Recording starts as soon as the field is created in simple mode.

See also "[Chapter 4 - Tasks, fields And farms](#)" on page 30.

## MAP VIEW AND WORK ASSIGNMENT

The map view displays 3D representations of the vehicle, the active field and the connected implements. Depending on the settings made, additional information (e.g. field boundaries, application rates) or driving aids (e.g. guidance lines, light bars) are displayed.

The map view is helpful when navigating and correctly processing the field during work.

To display the map view, press **Map** in the menu.

The map view can be rotated, swivelled and moved using **touch gestures**. It offers additional options, such as automatic following of the vehicle.

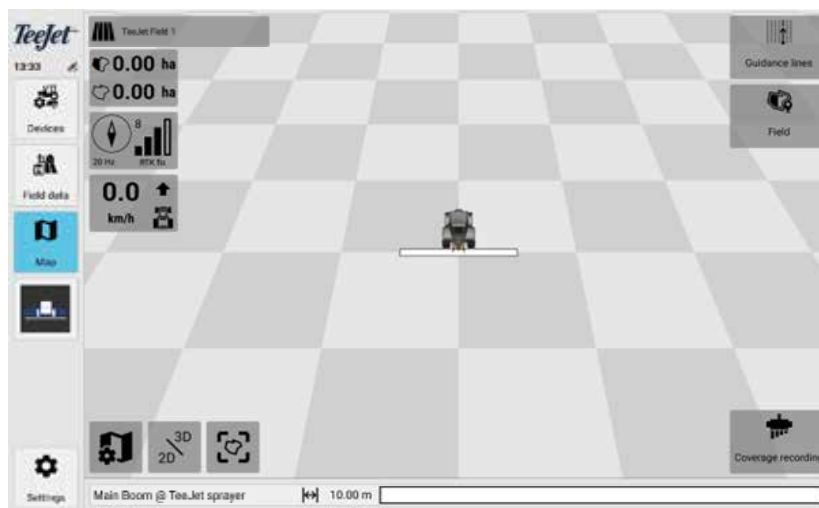


### NOTICE

#### Incorrect data recording

If the direction of travel of the vehicle in the map view does not correspond to the direction of travel of the real vehicle, the data will be recorded incorrectly.

Before starting work, always check that the driving directions match and correct them if necessary (see ["Before the work assignment" on page 29](#)).



## BEFORE THE WORK ASSIGNMENT

The GNSS source only provides a moving position, but not the orientation of the vehicle.

To ensure that all displays work correctly, the GPS (GNSS source) must be calibrated before each drive. This is particularly important after long breaks.



### NOTICE

Only carry out operations or calibrations with a good GNSS connection (see ["Displaying GNSS Information" on page 94](#)).

For a good GNSS connection, it is best to carry out work or calibration in the open air - not in the barn or workshop.

1. Stop ongoing field recordings. See ["Starting / stopping a task - Editing a field" on page 43](#).
2. Switch to the map view and focus on the vehicle.
3. Drive the vehicle 5 metres forwards. Check the vehicle display in the map view.
4. If necessary, activate the direction changer so that the direction of travel of the vehicle and the map view match.

| Icon | Function                                        |
|------|-------------------------------------------------|
|      | Changes the direction of travel in the map view |

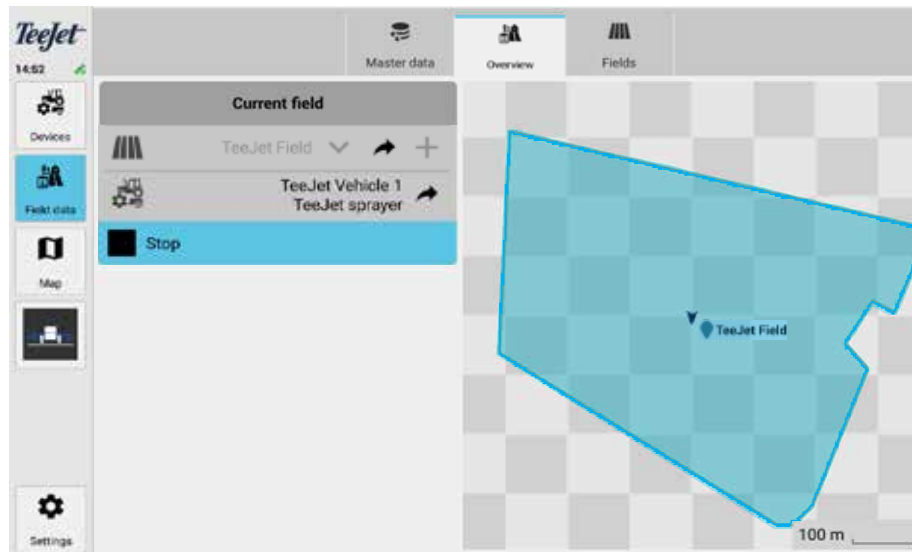
## CHAPTER 4 - TASKS, FIELDS AND FARMS

### OVERVIEW

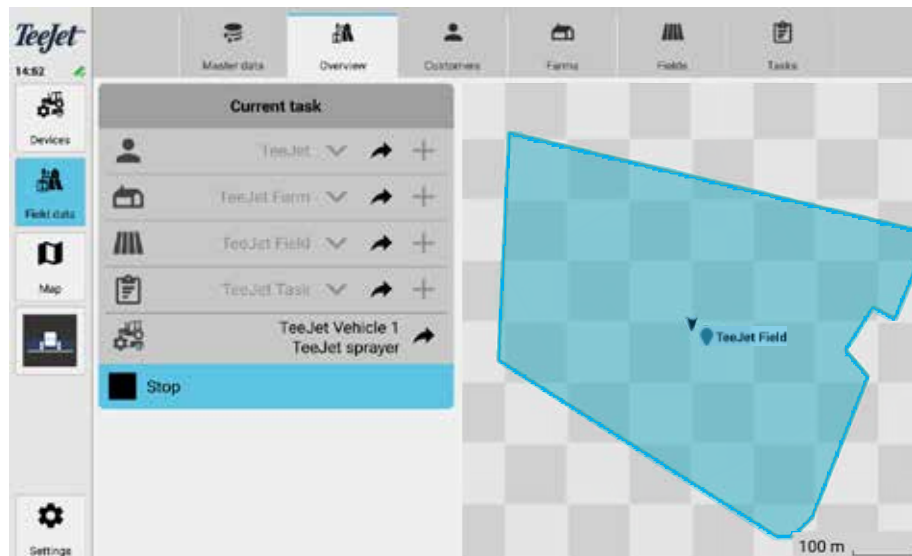
In the field data, you can choose between: Field mode and Extended field mode.

- Individual fields can be managed in **Field mode**.
- The **Extended field mode** offers additional options for customer, farm, field and task management. This data can also be imported from FMIS data records.

#### Field Mode



#### Extended Field Mode



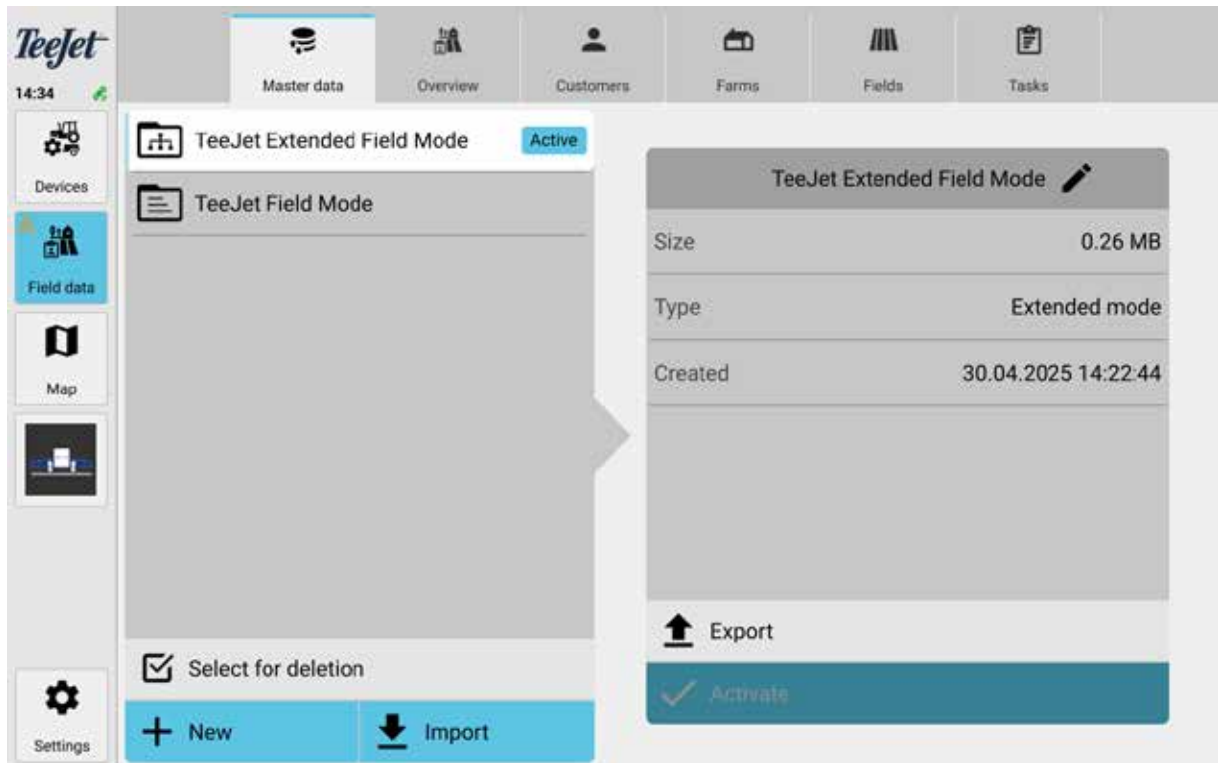


## MANAGING MASTER DATA

A master data record is an individual set of customer, farm, field or task data that can either be imported or created manually. The application can manage any number of master data records.

The following formats can be imported:

- ISOXML (TASKDATA.XML, standard ISO 11783) - e.g. from a Farm Management Information System (FMIS)
- Complete backup (ZIP archive) - e.g. all data from other A10 Universal Terminal software



### Creating Master Data

1. Navigate to **Field data > Master data**.
2. Press **New**.
3. You have the following options:
  - **Field mode**
  - **Extended mode**
4. Assign a name by opening the keyboard.
5. Create the master data record.

## Importing Master Data

1. Navigate to **Field data > Master data**.
2. Press **Import**.
3. Select the import file.
4. Assign a name by opening the keyboard.
5. Import the master data record.



### NOTICE

Restoring via backup import only works on the “A10 Universal Terminal “ operating devices of the same type.

## Converting Master Data to Extended Mode



### TIP

If you realise during your work that you also need options for customer, company or order management in addition to field management, you can also convert a master data record to extended mode. The conversion cannot be undone. However, you can create a new, empty data record at any time.

- [Requirement] The data record is available in field mode.

1. Navigate to **Field data > Master data**.
2. Select a data record for conversion.
3. Convert the data record.

*You now have access to customer, farm and task management.*

## Exporting Master Data

1. Navigate to **Field data > Master data**.
2. Select a master data record for conversion.
3. Press **Export**.
4. You have the following options:
  - **Backup** - All data is exported and can be restored 1:1 on an A10 Universal Terminal by importing.
  - **ISOXML** - Only ISOXML data is exported, including guidance lines of type “Straight AB” or “Curve”. Other data is lost, such as coverage, marker points, headlands, guidance lines (if not of the type “Straight AB” or “Curve”).
5. Select a storage location.
6. Export the master data record.



### NOTICE

Restoring via backup import only works on the “A10 Universal Terminal “ operating devices of the same type.

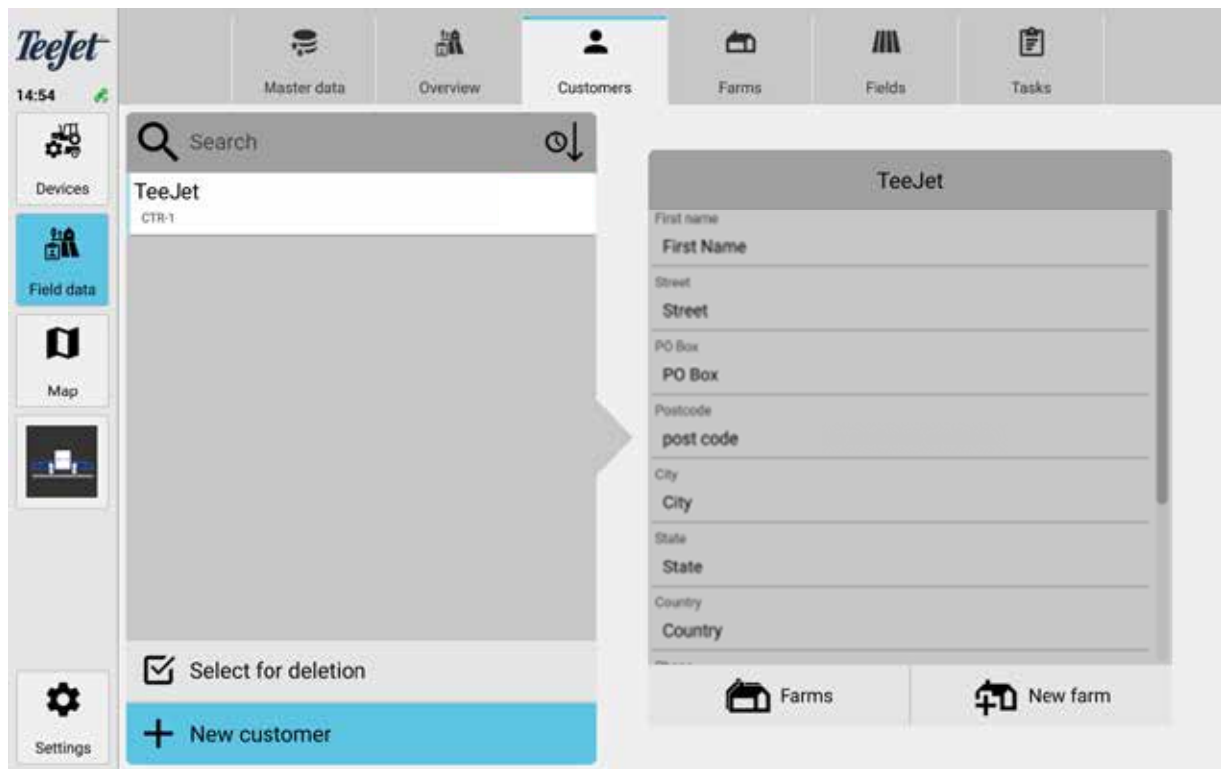
## Deleting Master Data

*NOTE: Active master data cannot be deleted.*

1. Navigate to **Field data > Master data**.
2. Press **Select for deletion**.
3. Select one or more data records.
4. Press **Delete**.
5. Confirm the process.

## MANAGING CUSTOMERS

In customer management, you can create new customers, delete customers and assign farms. If you have imported customers using FMIS, you can view additional information, such as telephone number or address - if stored.



### Creating A Customer

- [Requirement] You are in extended field mode.
1. Navigate to **Field data > Customers**.
  2. Press **New customer**.
  3. Assign a name.
  4. Confirm the entry.

### Assigning A Customer to A Farm

- [Requirement] You are in extended field mode.
  - [Requirement] A customer has been created.
1. Navigate to **Field data > Customers**.
  2. Select a customer.
  3. Press **New farm**.
  4. Assign a name.
  5. Confirm the entry.

*The newly created farm is assigned to the selected customer.*

## Deleting A Customer

- [Requirement] You are in extended field mode.

1. Navigate to **Field data > Customers**.
2. Press **Select for deletion**.
3. Select one or more customers.
4. Press **Delete**.



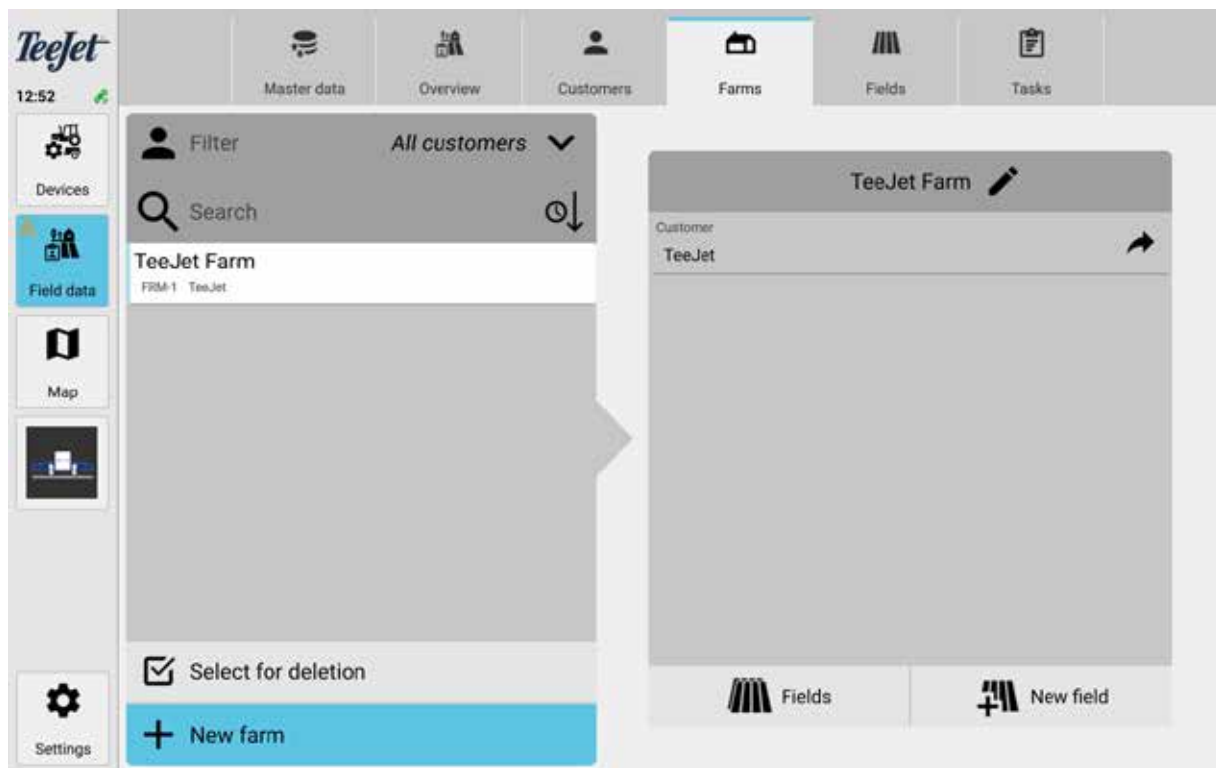
### TIP

If farms have been assigned to a customer, these are also deleted.

5. Confirm the process.

## MANAGING FARMS

You can create and delete new farms and assign fields in the farm administration.



## Creating A Farm

- [Requirement] You are in extended field mode.

6. Navigate to **Field data > Farms**.
7. Press **New farm**.
8. Assign a name.
9. Confirm the entry.

## Assigning A Field to A Farm

- [Requirement] You are in extended field mode.
- [Requirement] A farm has been created.

1. Navigate to **Field data > Farms**.
2. Select a farm.
3. Press **New field**.
4. Assign a name.
5. Confirm the entry.

*The newly created field is assigned to the selected farm.*

## Deleting Farms



### NOTICE

#### Data loss

If fields have already been assigned to the farm, these are also deleted.

This process cannot be undone.

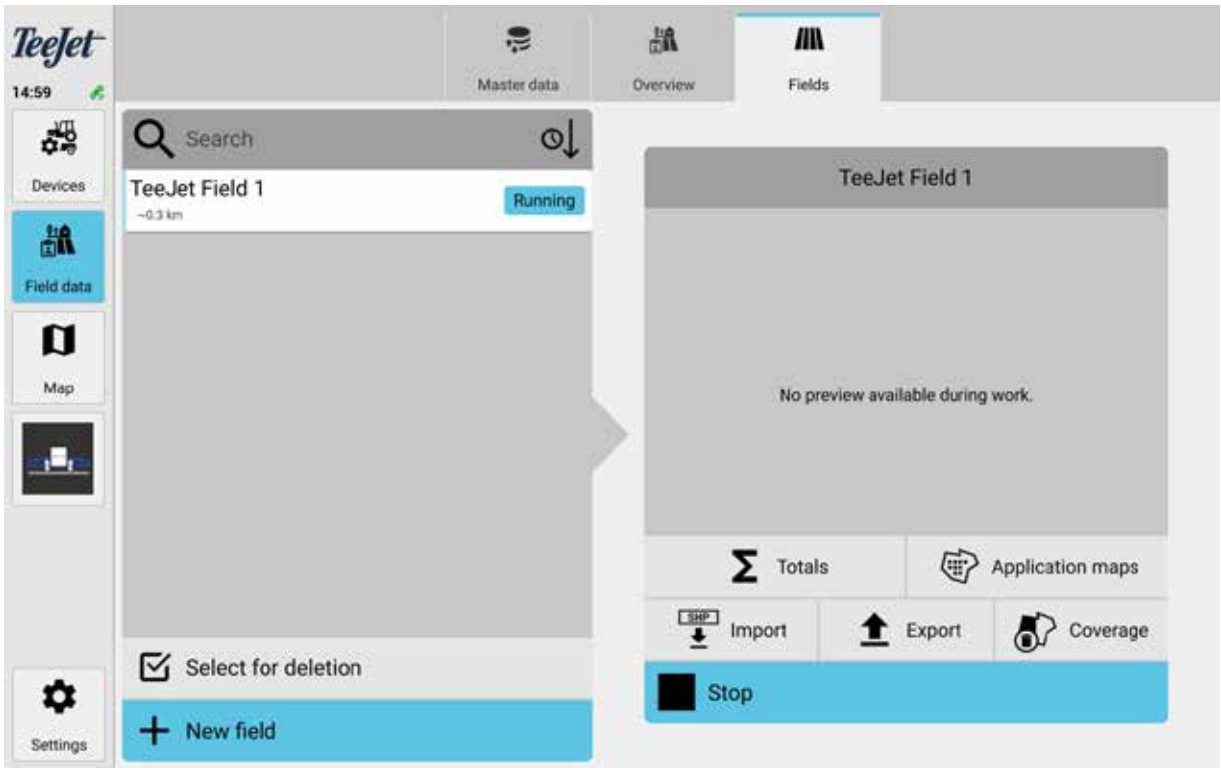
Create backup copies before deleting. For example, by exporting data.

- [Requirement] You are in extended field mode.
1. Navigate to **Field data > Farms**.
  2. Press **Select for deletion**.
  3. Select one or more farms.
  4. Press **Delete**.
  5. Confirm the process.

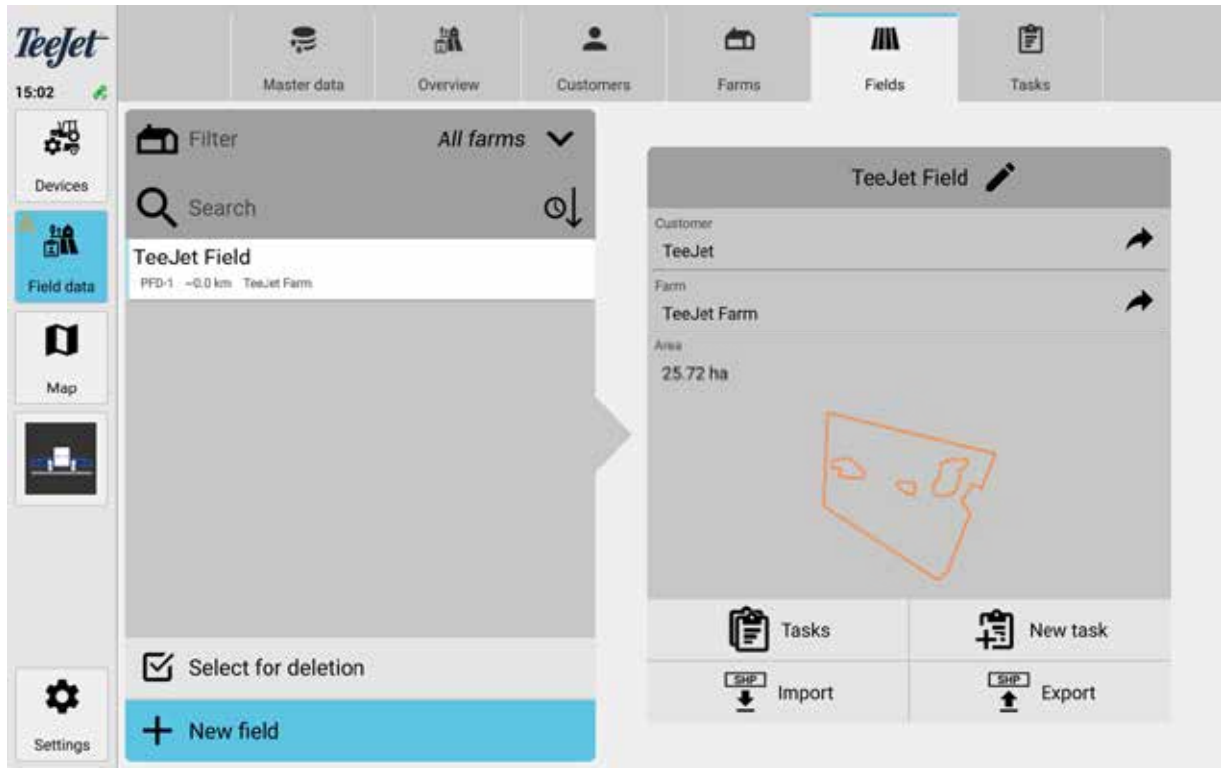
## MANAGING FIELDS

All fields can be managed in the field overview. As an additional option in extended field mode, you can assign tasks directly to fields.

### Field Mode



### Extended Field Mode



## Creating A Field

1. Navigate to **Field data > Fields**.
2. Press **New field**.
3. Assign a name.
4. Confirm the entry.

## Importing A Field or Field Boundaries

1. Navigate to **Field data > Fields**.
2. Press **Import**.
3. Select **Field boundaries**.
4. Select a file.
5. Select the object to import.
6. Import the field boundary.

## Assigning A Task to A Field

- [Requirement] You are in extended field mode.
- [Requirement] A field has been created.

1. Navigate to **Field data > Fields**.
2. Select a field.
3. Press **New task**.
4. Assign a name.
5. Confirm the entry.

*The newly created task is assigned to the selected field.*

## Exporting A Field

1. Navigate to **Field data > Fields**.
2. Select a field to export.
3. Press **Export**.
  - In **Field mode**, the options **Shapefile** and **PDF** are available.
  - In **Extended field mode**, the data is exported directly as a **shapefile**.
4. Select a storage location.
5. Export the field data.

## Deleting A Coverage / Coverage Map of A Field

The coverage map documents, where in the field, the implement has already been working.

- [Requirement] The field is stopped.

1. Navigate to **Field data > Fields**.



### TIP

In extended field mode, you can find this option under **Field data > Tasks**.

2. Press **Coverage**.
3. Confirm **Delete**.

## Deleting Fields

1. Navigate to **Field data > Fields**.
2. Press **Select for deletion**.
3. Select one or more fields.
4. Press **Delete**.



### NOTICE

#### Data loss

If tasks have already been assigned to the field, these are also deleted.

This process cannot be undone.

Create backup copies before deleting. For example, by exporting data.

5. Confirm the process.

## Importing Guidance Lines

1. Navigate to **Field data > Fields**.
2. Press **Import**.
3. Select **Guidance lines**.
4. Select a file.
5. You have the following options for the import:
  - **Guidance line(s) with propagation:** A base track is imported that can be used for the calculation of parallel tracks.
  - **Guidance line set without propagation:** Only one set of tracks is imported for travel.
6. Select the object to import.
7. Import the guidance lines.

## Importing Application Maps

1. Navigate to **Field data > Fields**.



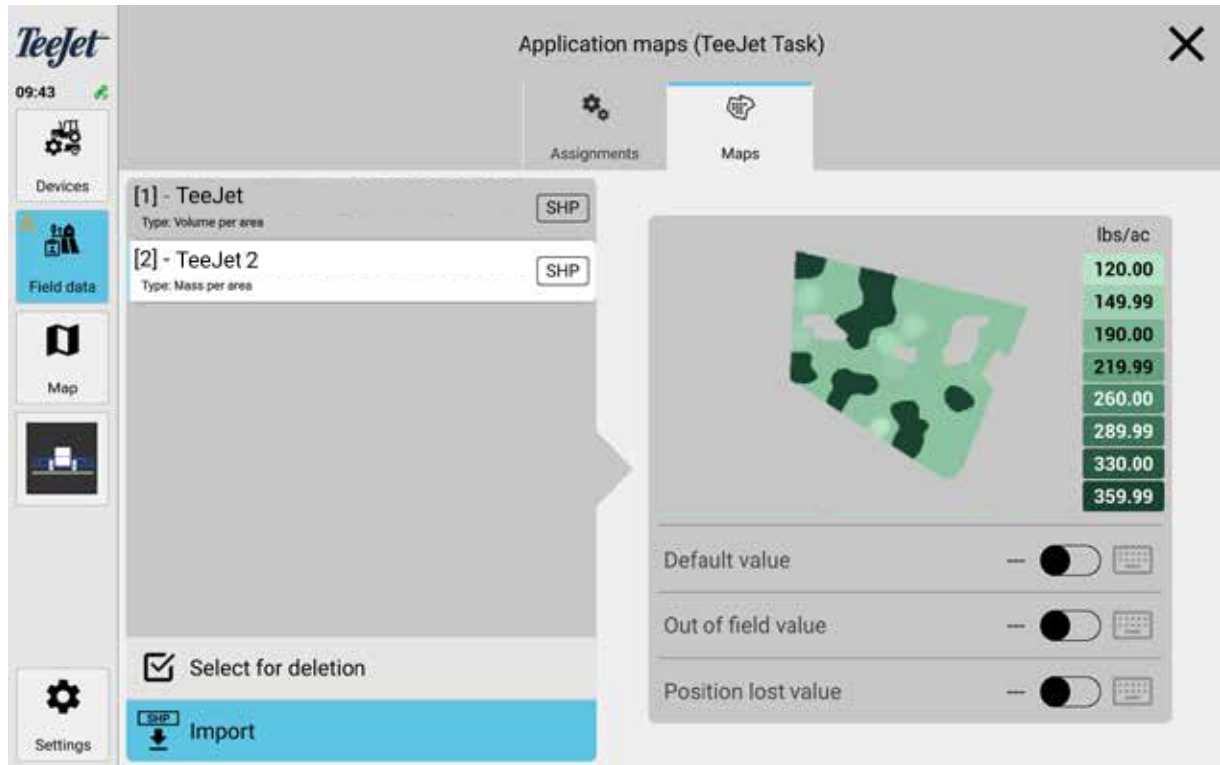
### TIP

In extended field mode, you can find this option under **Field data > Tasks**.

2. Press **Import**.
3. Select **Application Maps**.
4. Select a file.
5. Select a column.
6. Select a unit.
7. You can adjust the following values in the overview:
  - Default value
  - Not-in-the-field value
  - GNSS lost value
8. Import the Application Maps



## Editing Application Maps



1. Navigate to **Field data > Fields**.



### TIP

In extended field mode, you can find this option under **Field data > Tasks**.

2. Select a field or a task.

3. Press **Application Maps**.

4. Under **Assignments**, you can assign set values to the booms of an ISOBUS-enabled implement.

5. You can import maps under **Maps**.

## Displaying Total Values

- [Requirement] A field has been created and started.

1. Navigate to **Field data > Fields**.



### TIP

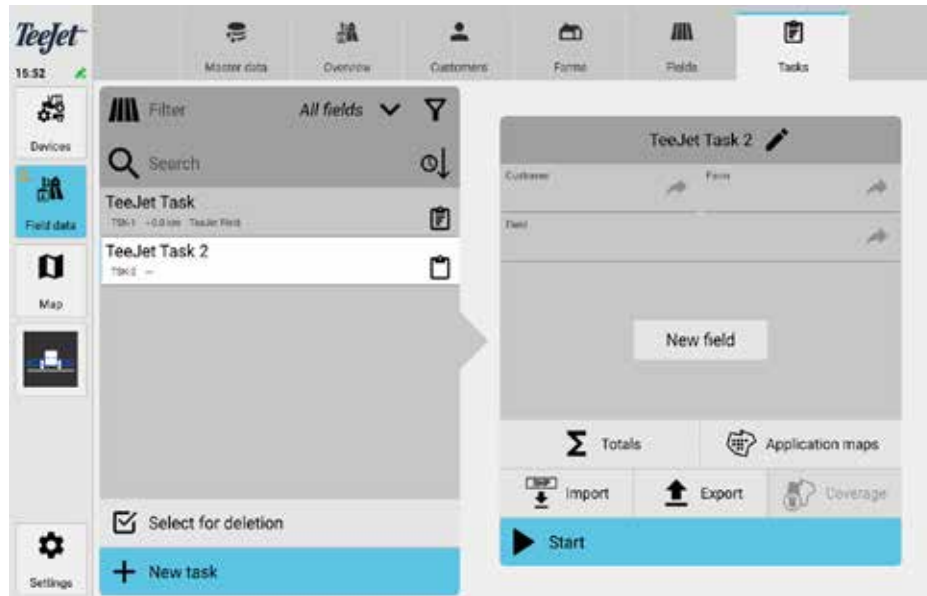
In extended field mode, you can find this option under **Field data > Tasks**.

2. Press **Totals**.

| Task counter totals            |    | × |
|--------------------------------|----|---|
| DET 0 Sprayer @ TeeJet Sprayer |    |   |
| Total volume                   | 0  |   |
| Total area                     | 0  |   |
| Total distance                 | 0  |   |
| Total time                     | 12 |   |
| Lifetime total area            | 0  |   |
| Lifetime total distance        | 0  |   |
| Lifetime total time            | 17 |   |
| Lifetime total volume          | 0  |   |

## MANAGING TASKS

In extended field mode, various recurring tasks can be defined for a field.



### Creating A Task

- [Requirement] You are in extended field mode.

1. Navigate to **Field data > Tasks**.
2. Press **New task**.
3. Assign a name.
4. Confirm the entry.

### Assigning A Task to A Field

- [Requirement] You are in extended field mode.
- [Requirement] A field has been created.
- [Requirement] A task has been created.

1. Navigate to **Field data > Tasks**.
2. Select a task
3. In the task details, press **Field**.
4. In the dialogue, select the field that you want to assign.
5. Press **Apply**.

*The task has been assigned to the newly created field.*

### Deleting Tasks

- [Requirement] You are in extended field mode.

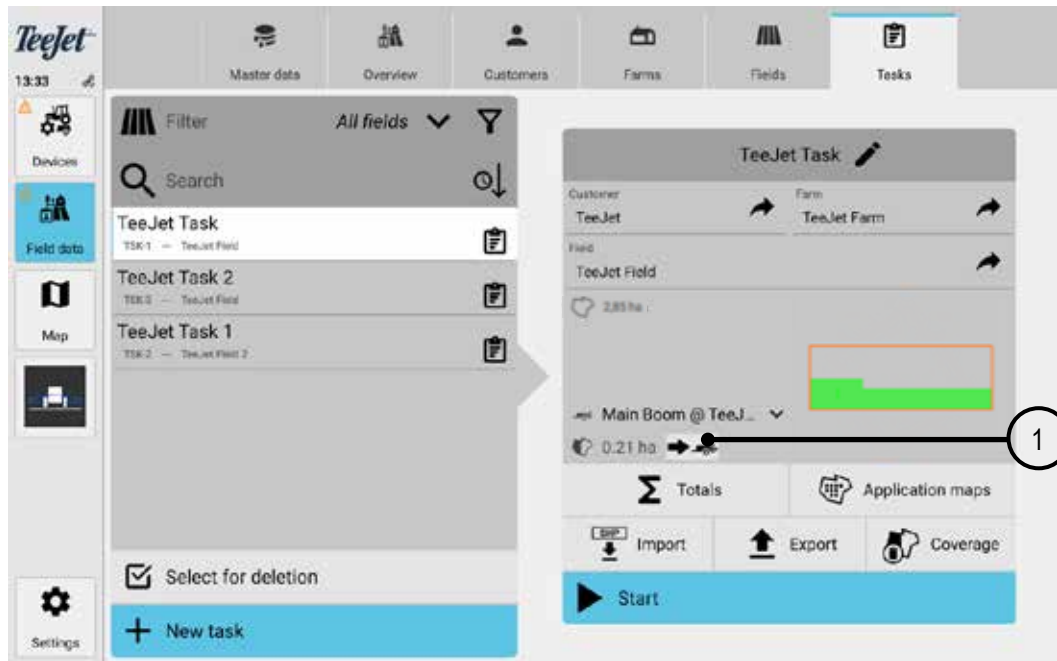
1. Navigate to **Field data > Tasks**.
2. Press **Select for deletion**.
3. Select one or more tasks.
4. Press **Delete**.
5. Confirm the process.

## Reassigning A Coverage to Another Implement

With this function, it is possible to transfer a recorded coverage from one implement to another implement.

This is helpful if an implement fails due to a fault or maintenance. The failed implement is replaced by the new implement.

- [Requirement] The implement to be replaced has a coverage recorded.
- [Requirement] The task or the field is stopped.
- [Requirement] A new ISOBUS-capable implement is available.
- [Requirement] The new ISOBUS-capable implement has not yet recorded any coverage for this task or field.



### 1 Assign coverage to new implement

1. Disconnect the implement to be detached from the vehicle.
2. Connect the new implement to the vehicle.
3. Navigate to **Field data > Fields or Tasks**
4. In the list, select the field or task whose coverage is to be reassigned.
5. Press **Assign new implement** (see illustration above).
6. The **Reassign coverage** dialogue for device selection is displayed.
7. In the list, select the boom of the implement to which the coverage is to be assigned.
8. Confirm with **Apply**.

## STARTING / STOPPING A TASK - EDITING A FIELD



### NOTICE

#### If the field is processed incorrectly

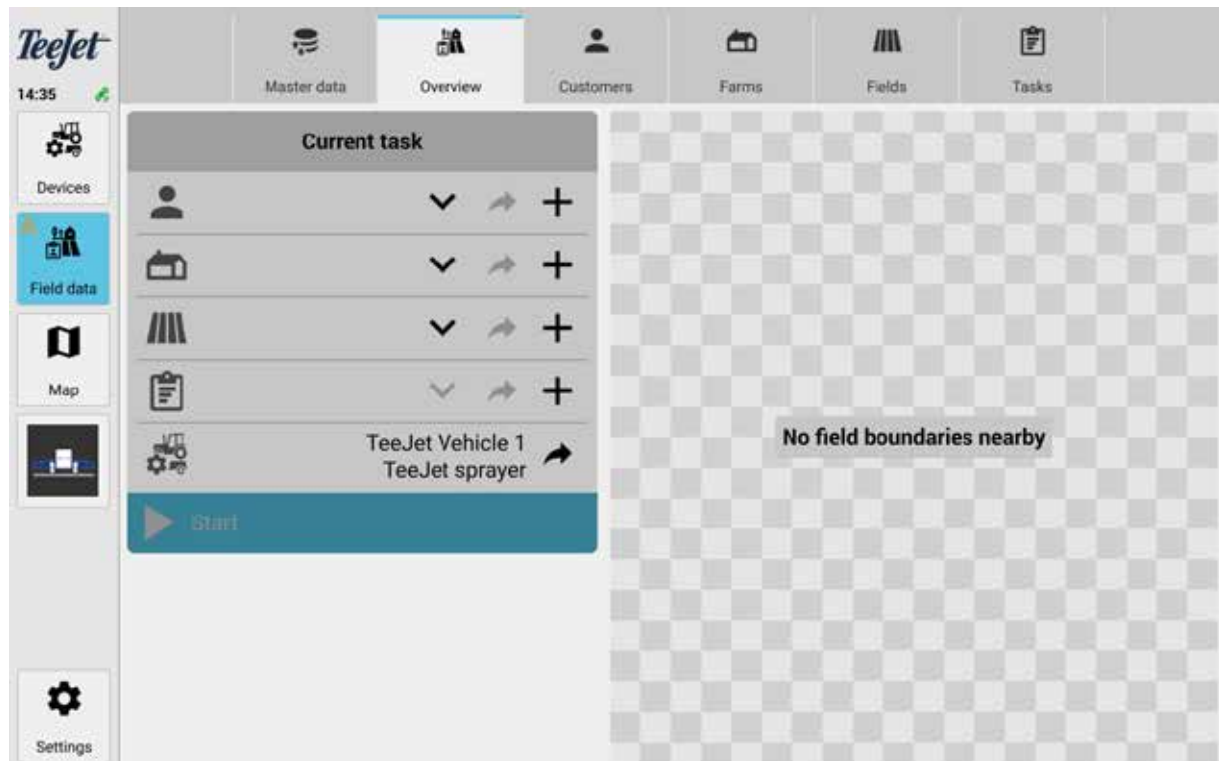
If the field is being worked incorrectly, it is highly likely that the implement is set up incorrectly.

Before starting, make sure that all implements are correctly connected and set up.

Before starting, make sure that all implements can actually carry out all desired field tasks.

As soon as a task is started, field recording also begins.

All set parameters are taken into account - for example, the set field or the work to be carried out (e.g. fertilising with a fertiliser implement). This enables precise connection work.



### Start Field Recording In Field Mode (Extended Field Mode)

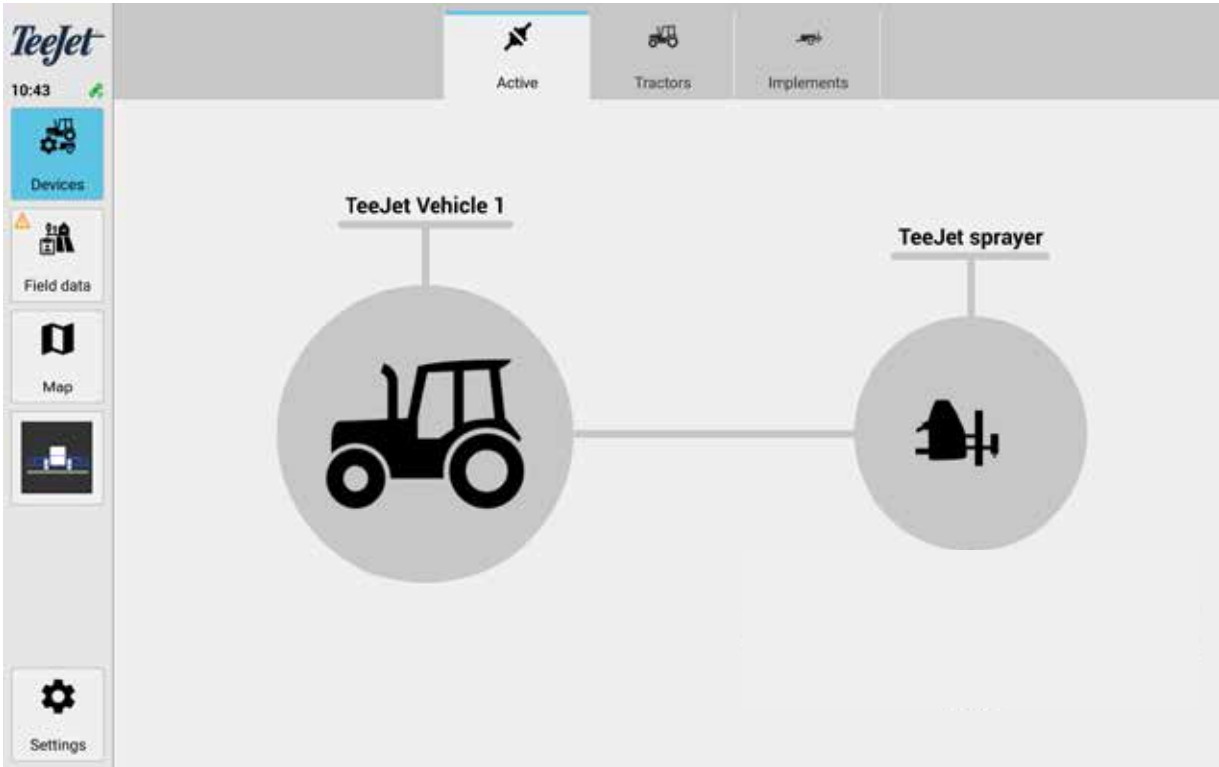
1. Navigate to **Field data > Overview**.
2. In the **Current field** (Extended: **Task**) list, select the field (Extended: Task) for which you want to record data (Extended: Carry out).
3. Press **Start**.

### Stop Field Recording

1. Navigate to **Field data > Overview**.
2. Press **Stop**.

## CHAPTER 5 - MANAGING DEVICES

You can see all active implements in the implement management. New vehicles and implements can also be configured. The **Active** tab displays an overview of the active vehicle and the connected, active implements.



Additional settings for ISOBUS-capable implements are made in the **Universal Terminal (UT)** (see "[Setting ISOBUS devices using the Universal Terminal \(UT\)](#)" on page 46).

## MANAGING VEHICLES

### Add Vehicles



#### TIP

Not only vehicles, but also other agricultural machinery can be managed.



#### TIP

If possible, use meaningful names for self-created devices.

1. Navigate to **Devices > Tractor**.
2. Press **New tractor**.
3. Assign a name.
4. Set up vehicle's GNSS module (See ["Setting Up the Vehicle's GNSS Module" on page 25](#))
5. Assign a connector or create a new connector (See ["Creating Connectors" on page 26](#))
6. Activate the vehicle.

### Delete Vehicles

*NOTE: Active vehicles cannot be deleted.*

1. Navigate to **Devices > Tractor**.
2. Press **Select for deletion**.
3. Select one or more vehicles
4. Press **Delete**.



#### NOTICE

##### Data loss

This process cannot be undone.

Restoring is not possible.

## SETTING ISOBUS DEVICES USING THE UNIVERSAL TERMINAL (UT)



### NOTICE

Possible changes to settings and parameters on ISOBUS-capable devices using the Universal Terminal (UT) are device-specific.

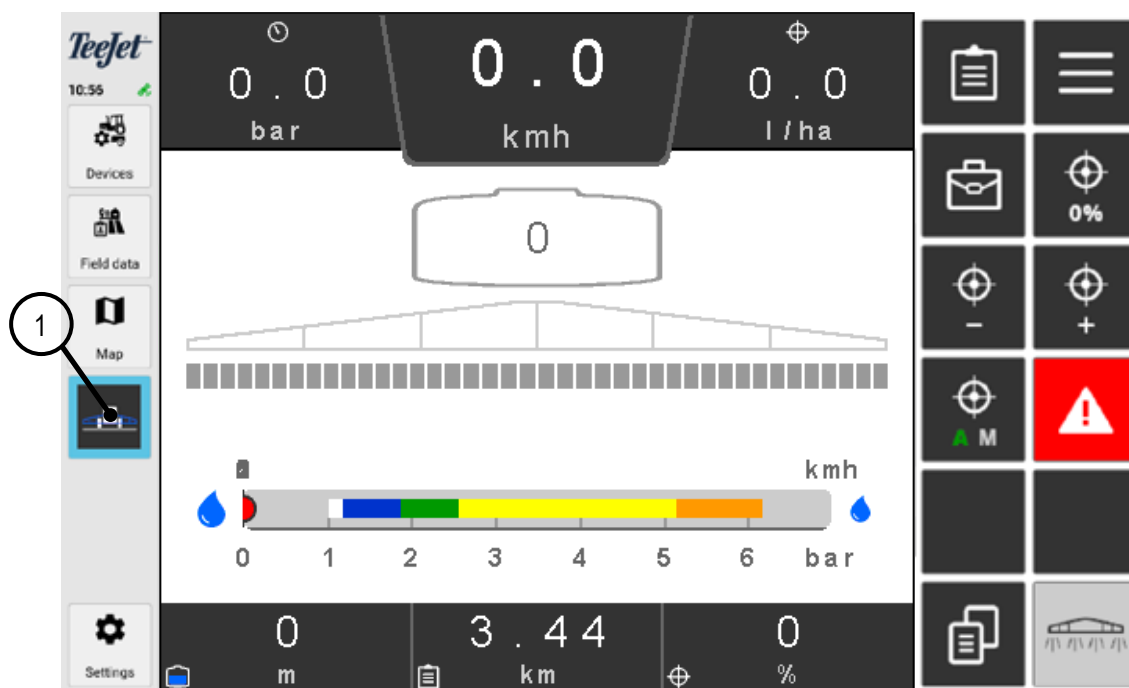
Observe the relevant device information and instructions (e.g. operating instructions).

1. Switch ON the **Universal Terminal (UT)**.
2. To display the **Universal Terminal (UT)**, press on the corresponding symbol (1 in illustration) in the menu below **Map**.



### TIP

The symbol used depends on the device used. The appearance may change accordingly.



- 1 Show Universal Terminal (UT)

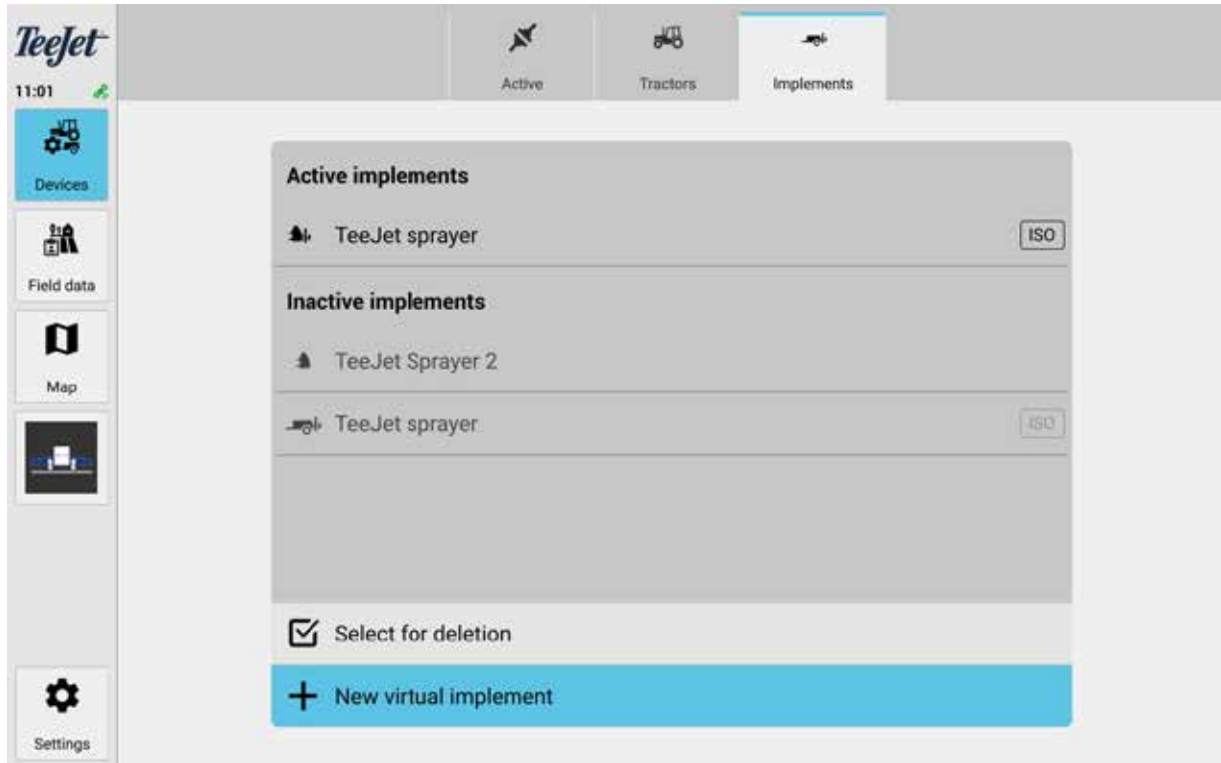


## MANAGING IMPLEMENTS

All configured implements are displayed in the list.

**ISOBUS-enabled implements** are recognised automatically after connection and displayed in the **Active implements** list.

**Non-ISOBUS-capable implements** are not recognised automatically. Such implements must be added and set up as so-called **Virtual implements**.



### Adding A Virtual Implement



#### NOTICE

##### Omitted or double-tracked field areas

If the offset value is not set correctly, this will result in an incorrect map display. Parts of the field could be covered twice or omitted.

The offset value must always be set correctly.



#### TIP

The offset value is always in relation to the centre of the rear axle of the implement. (See schematic on left side of implement screen)



#### TIP

Virtual implements and their purposes are not automatically recognised.

If possible, use meaningful names for self-created devices.

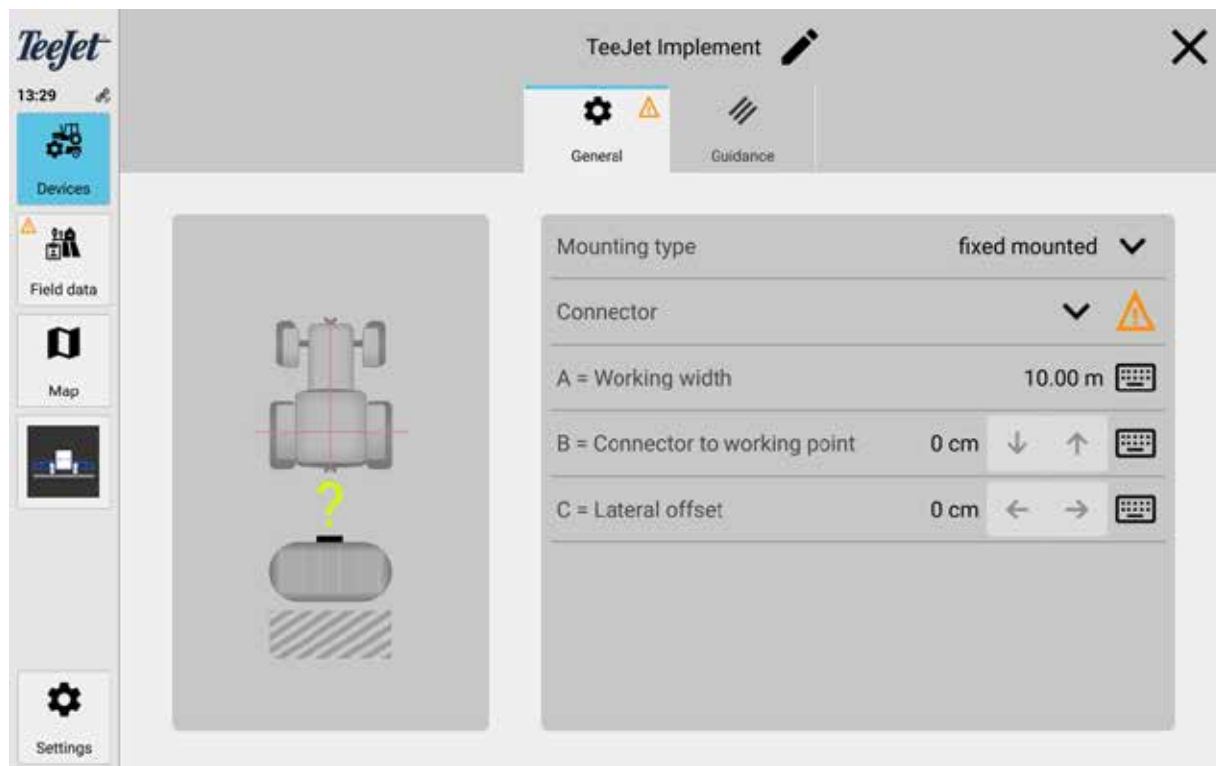


Figure 4: There is a schematic aid on the left side of the implement setup screen

1. Navigate to **Devices > Implements**.
2. Press **New virtual implement**.
3. Assign a name.
4. Select a **mounting type**. You have the following options:
  - Carried
  - Pulled / attached
  - Pulled and steered
  - Self-propelled (see "[Settings for Self-Propelled Implements](#)" on page 49)
5. Depending on the type of mounting selected, you can make additional settings.
6. In the **Guidance** tab, you can set the behaviour when **Guidance lines** are activated:
  - **Individual minimum curve radius** - This parameter defines the smallest curve radius for this individual implement that the combination cannot fall below. Curved guidance lines are corrected on this basis.
  - **Individual guidance line spacing** - By default, the guidance line spacing corresponds to the total working width of the implement. This parameter can be used to individually define the distance between the guidance lines for this implement, e.g. if overlapping processing is required.
7. Press **Start**.

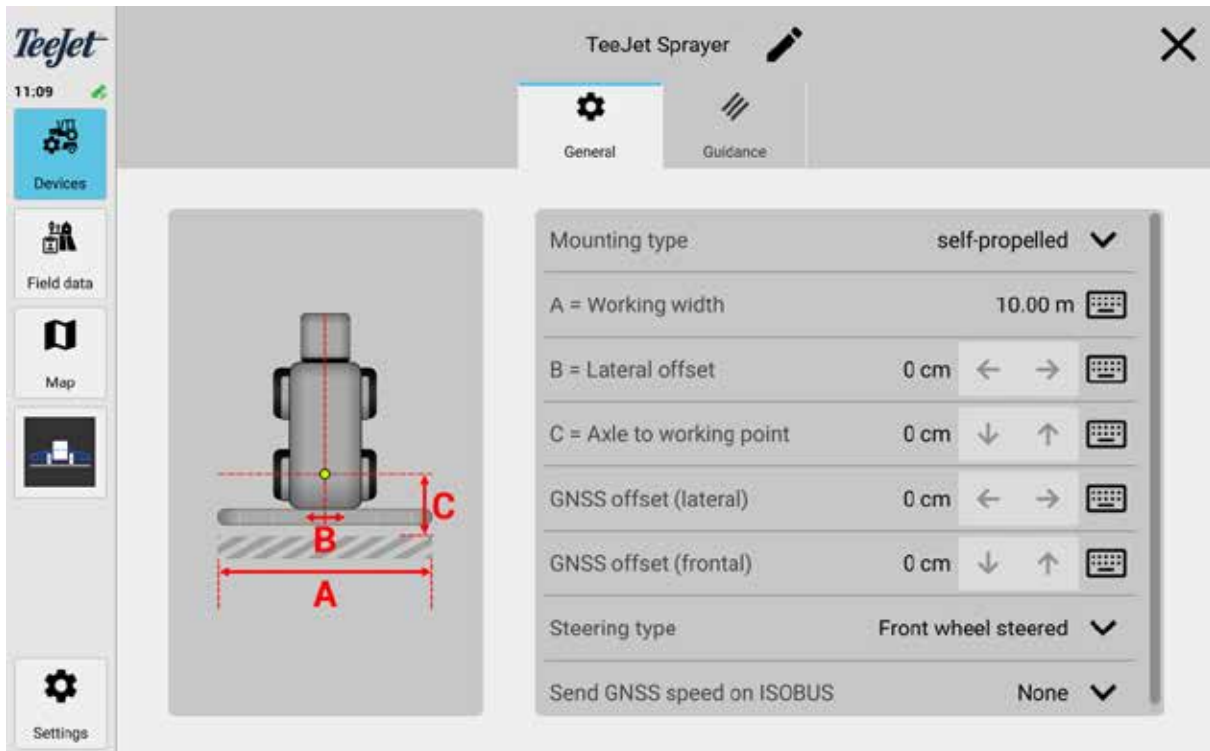
## Delete Implement

You can delete non-ISOBUS-capable implements (so-called virtual implements) and ISOBUS-capable implements if they are no longer being used.

1. Navigate to **Devices > Implements**.
2. Press **Select for deletion**.
3. Select one or more Implements
4. Press **Delete**.

## Settings for Self-Propelled Implements

Additional settings can be made when setting up self-propelled implements.



Settings

GNSS speed on ISOBUS

Function

- **Wheel-based speed:** is measured at the wheel (e.g. with a magnetic sensor). Is less accurate due to slippage.
- **Ground speed:** is usually measured using a radar sensor. Is more accurate, as slippage has no influence.

## Setting Up Automatic Steering System for Vehicles

The system supports functions for the automatic steering of vehicles.

- [Requirement] An authorised steering system is installed on/in the vehicle.

1. Navigate to **Devices > Tractor**.
2. In the list, select the vehicle for which you want to set up the automatic steering system.
3. Navigate to **Autosteering**.
4. To carry out the set-up, follow the instructions in the technical documentation for the automatic steering system (see Applicable documents in "[Intended use](#)" on page 11).

## SECTION CONTROL FOR IMPLEMENTS

Section Control (automatic section control) is a specific application of the ISOBUS standard and refers to the precise control of sections of agricultural implements such as seeders, sprayers or fertiliser spreaders. The aim is to use resources such as seeds, fertilisers or pesticides more efficiently by controlling their application in specific sections rather than continuously across the entire field.

Section Control can be used to automate the switching ON and OFF of different sections of the implements. This enables precise application of agents, for example by preventing areas that have already been treated from being treated again. This reduces costs, minimises environmental impact and improves the overall efficiency of agricultural processes.

The terms "sections" and "booms" are used in connection with section control.

- A section is the smallest unit of application elements such as spray nozzles or sowing rows that can be controlled independently via Section Control.
- A boom is the part of the implement that carries the spreading elements.

In addition to implements with only one boom, there are also implements with several booms. A modern ISOBUS seeder can, for example, include booms for spreading the seed and booms for spreading fertiliser.

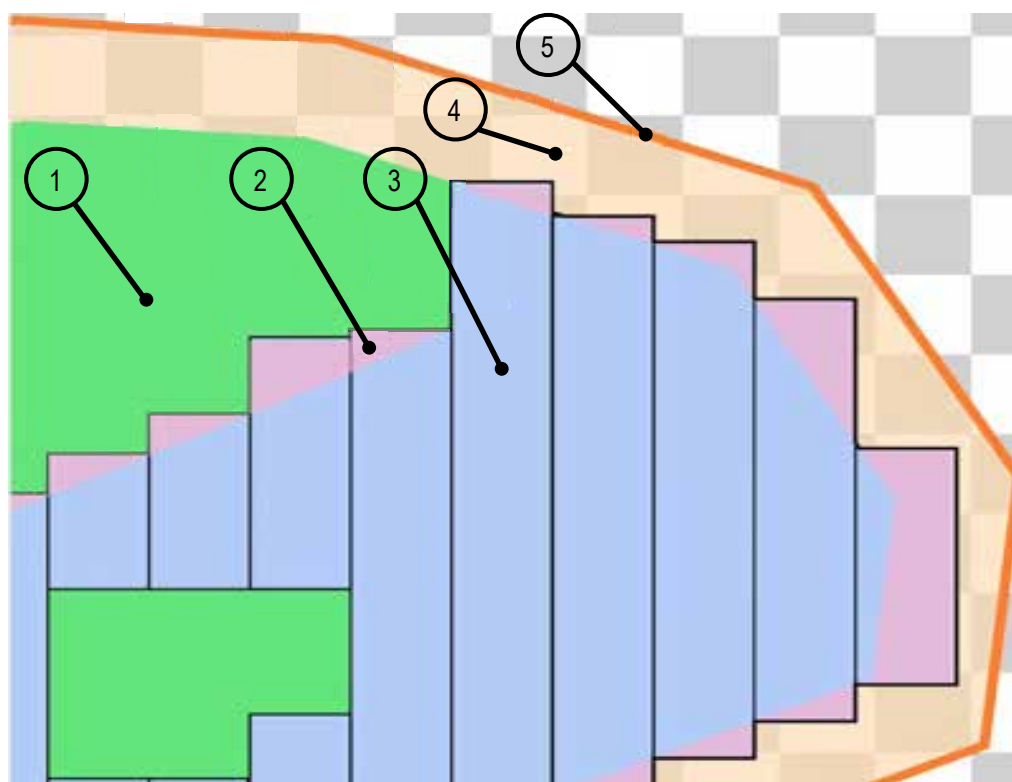
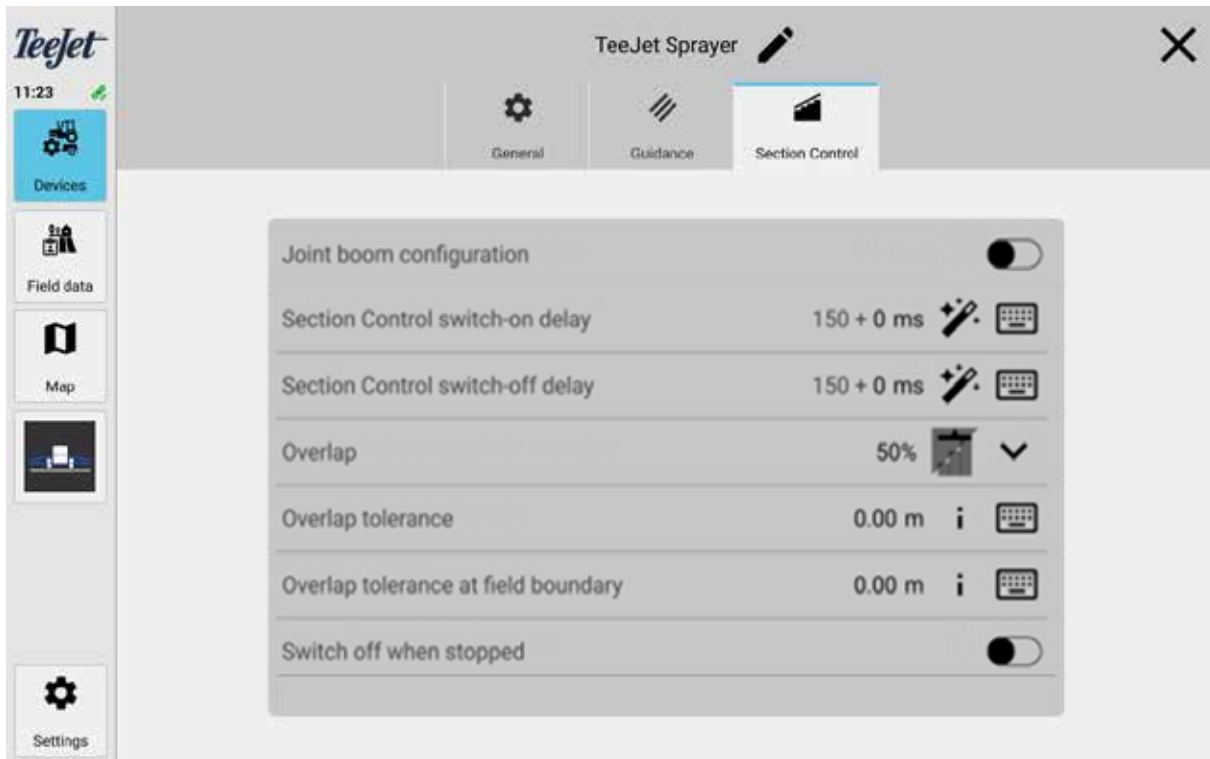


Figure 5: Schematic representation of Section Control

- |   |                                                             |   |          |
|---|-------------------------------------------------------------|---|----------|
| 1 | Already processed area                                      | 2 | Overlap  |
| 3 | Tramline with width of the boom, area still to be processed | 4 | Headland |
| 5 | Field boundary                                              |   |          |

## Configure Section Control



1. Navigate to **Devices > Implements**.
2. Select an implement with one or more booms.
3. Select whether you want to configure the booms together or separately. You have the following options for the import:
  - **Section Control switch-ON delay**
    - Edit (Magic wand) - Opens a guided wizard to calculate the switch-ON delay.
    - Edit (keypad) - Enter and confirm the switch-ON delay manually.
  - **Section Control switch-OFF delay**
    - Edit (Magic wand) - Opens a guided wizard to calculate the switch-OFF delay.
    - Edit (keypad) - Enter and confirm the switch-ON delay manually.
  - **Overlap:** 0% / 50% / 100%
  - Set **Overlap tolerances** - Depending on the selected overlap, information can be displayed or values can be set for:
    - Overlap tolerance
    - Overlap tolerance in the direction of travel
    - Overlap tolerance at field boundary
  - **Switch OFF when stopped:** ON / OFF
  - **Switch OFF when reversing:** ON / OFF
  - **Prevent overdosing in curves**
    - Show info
    - Switch ON / OFF

|                              |
|------------------------------|
| TABLE OF CONTENT             |
| BEFORE YOU START             |
| SAFETY                       |
| FIRST STEPS                  |
| TASKS, FIELDS AND FARMS      |
| MANAGING DEVICES             |
| MAP VIEW AND WORK ASSIGNMENT |

CHAPTER 6 - MAP VIEW AND WORK ASSIGNMENT

The map view displays 3D representations of the vehicle, the active field and the connected implements. Depending on the settings made, additional information (e.g. field boundaries, application rates) or driving aids (e.g. guidance lines, light bars) are displayed.

The map view is helpful when navigating and correctly processing the field during work.

To display the map view, press **Map** in the menu.

The map view can be rotated, swivelled and moved using **touch gestures**.

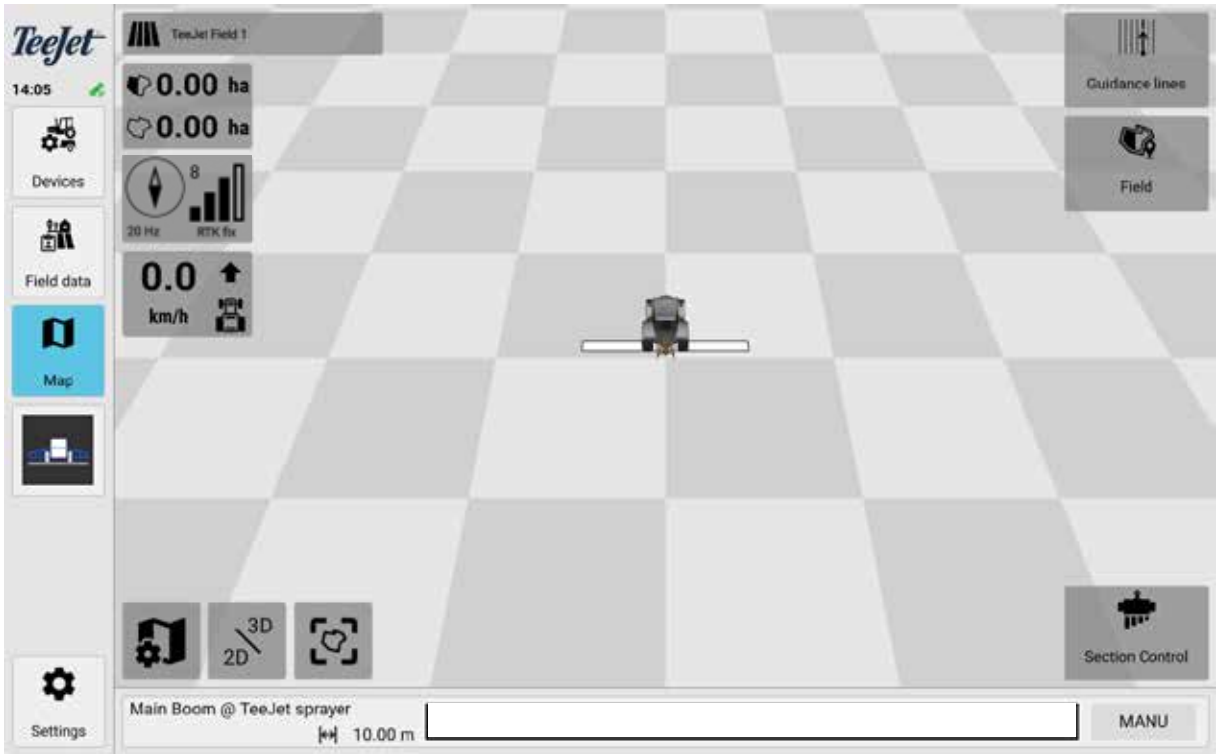
The map also offers additional options, such as automatic following of the vehicle. (See full list below)



NOTICE  
Incorrect data recording

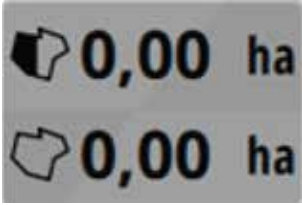
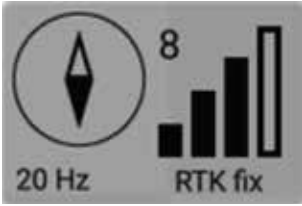
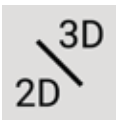
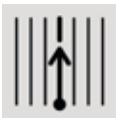
If the direction of travel of the vehicle in the map view does not correspond to the direction of travel of the real vehicle, the data will be recorded incorrectly.

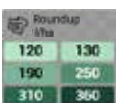
Before starting work, always check that the driving directions match and correct them if necessary (see ["Before the work assignment" on page 29](#)).



You have the following functions on the map:

| Icon                                                                                               | Function                                                                                                     |
|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|  TeeJet Field 1 | Displays the current field.<br>Pressing opens the field data (see <a href="#">"Field Mode" on page 30</a> ). |

| Icon                                                                                                                                                                       | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                           | <p>Displays additional information on the current field.</p> <p><b>Pressing displays the following information in sequence:</b></p> <ul style="list-style-type: none"> <li>• Total area</li> <li>• Processed area</li> <li>• Area still to be processed</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                           | <p>Displays the status and quality of the GNSS position.</p> <p>Press to open detailed information on the GNSS source.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                           | <p>Shows the driving speed and the determined direction of travel.</p> <p>Pressing changes the determined direction of travel (see <a href="#">"Before the work assignment" on page 29</a>).</p>                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                          | <p>Displays the map frontally from above (2D) or in 3D</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <br> | <p><b>Press to change the options:</b></p> <ul style="list-style-type: none"> <li>• <b>Arrow active:</b> Vehicle track is being followed</li> <li>• <b>Map active:</b> Field is displayed from above</li> </ul> <p>After free movement on the map, the focus returns to the vehicle when the arrow is pressed.</p>                                                                                                                                                                                                                                                                                                 |
|                                                                                         | <ul style="list-style-type: none"> <li>• Provides the option of showing or hiding each individual display and control elements above the map view as well as changing their positions.</li> <li>• Provides the option of individually adjusting the map focus position to the vehicle combination (implement).</li> </ul> <p>To set the map focus position on the vehicle-trailer combination, the vehicle must first be focussed (arrow active).</p> <p>This setting is helpful if the 3D view of the vehicle/trailer combination obscures important map information (e.g. guidance lines, field boundaries).</p> |
|                                                                                         | <p><b>Press to open the following options for guidance lines:</b></p> <ul style="list-style-type: none"> <li>• Add</li> <li>• Edit</li> <li>• Shift</li> <li>• Select</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Icon                                                                                                                                                                                                                                                      | Function                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                          | <p><b>Press to open the following options:</b></p> <ul style="list-style-type: none"> <li>Edit field boundaries</li> <li>Tilling the headland</li> <li>Edit marker points</li> </ul>                                                                                                                                                                                     |
|                                                                                                                                                                          | <p><b>Press to change the options:</b></p> <ul style="list-style-type: none"> <li><b>For ISOBUS-capable implements:</b> Switches the Section Control automatic mode ON / OFF.</li> <li><b>For non-ISOBUS-capable implements:</b> Starts/stops the coverage recording.</li> </ul> <p>This allows you to visualise the field areas that have already been driven over.</p> |
|                                                                                         | <p>Displays the status of the headland.</p> <p><b>Press to open the following options:</b></p> <ul style="list-style-type: none"> <li>Locking the headland</li> <li>Unlocking the headland</li> </ul>                                                                                                                                                                    |
|    | <p>Only available when the Application Map is active.</p> <p><b>Press to switch between the map views:</b></p> <ul style="list-style-type: none"> <li>Coverage - emphasises the total coverage or the already processed area</li> <li>Application - shows the quantitative application quantities (see <a href="#">"Using map layers" on page 55</a>)</li> </ul>         |
|                                                                                                                                                                        | <p><b>Press to open the following options for automatic tramline control:</b></p> <ul style="list-style-type: none"> <li>Switch ON / OFF</li> <li>Shift</li> <li>Invert</li> </ul>                                                                                                                                                                                       |
|                                                                                                                                                                        | <p>Press to switch the automatic steering ON / OFF.</p> <ul style="list-style-type: none"> <li><b>Switch ON</b> - Switch ON automatic steering</li> <li><b>Switch OFF</b> - Switch OFF automatic steering</li> </ul>                                                                                                                                                     |
|                                                                                                                                                                        | <p>Press to open the settings for the automatic steering system.</p>                                                                                                                                                                                                                                                                                                     |



## USING MAP LAYERS

Different levels can be displayed in the map view using map levels.

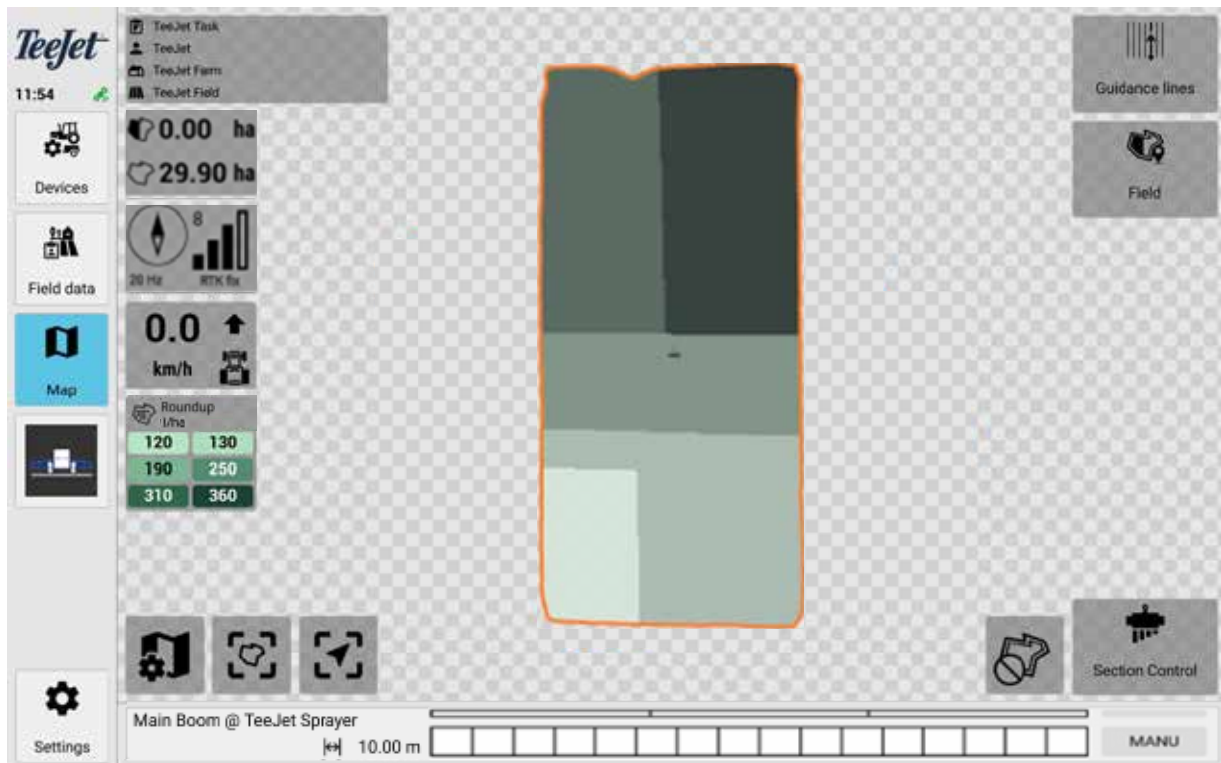
**For example:**

- Coverage
- Application Map
- Application Map and coverage

### Application Map Display

If a Application Map is applied to the active field and a suitable implement is active, this Application Map is displayed in colour in the map view.

The legend shows the application rates depending on the colour.



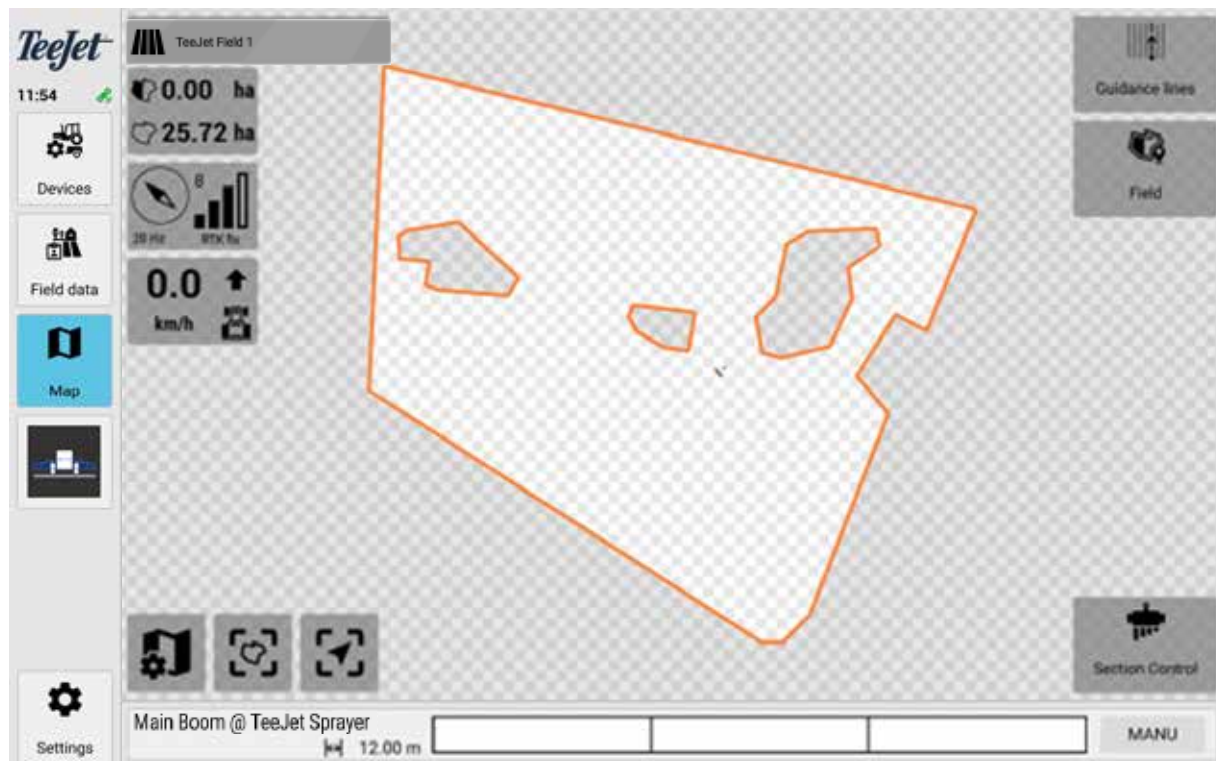
## USING FIELD BOUNDARIES

As soon as a field with field boundaries is activated, its field boundaries are displayed on the map as a thick outline.

Fields can have several **outer field boundaries** and several **inner field boundaries**.

The following options are available for creating field boundaries:

- To create field boundaries manually, the vehicle is driven along the planned field boundary and “recorded” (see ["Creating A Field Boundary By Driving Along it"](#) on page 57).
- Automatically calculate field boundaries based on the current coverage. A field boundary is automatically calculated and created around the existing coverage (see ["Creating A Field Boundary Using Coverage"](#) on page 58).
- Import field boundaries as an ISOXML or shape file (see ["Importing A Field or Field Boundaries"](#) on page 37).



## Creating A Field Boundary By Driving Along it

When creating field boundaries manually, the planned field boundary is recorded by driving the vehicle along the field. You can set whether it is to be created as an outer or inner field boundary.



### NOTICE

#### Recording accuracy and GNSS

This function uses coordinates from the GNSS source.

Make sure that the GNSS source is working properly.

Ensure that the correct direction of travel is set.

Drive or stop at the desired positions as precisely as possible.



### TIP

Start recording with the outer field boundaries. You can then draw the inner field boundaries.

- [Requirement] A field is active. [Optional] The field may already have field boundaries.

1. Drive the vehicle to the point in the field where you want to start recording the field boundary.
2. Navigate to **Map > Field > Field boundaries**.
3. Press **Record**.

4. Press **Inner** or **Outer** to define the type of field boundary.

5. Check on the map whether the correct recording point is set for the recording.

*The pick-up point is displayed flashing on the implement in the map.*

- ▶ To switch between different recording points, press **Switch recording point**.

6. Press **Start**.

*The recording begins.*

7. Drive the vehicle along the planned field boundary.

*The planned field boundary is displayed in colour on the map.*

8. Regularly check the planned field boundary on the map.

9. As soon as the planned field boundary is finished, stop the vehicle. Press **Finish**.

*A field boundary will be created.*

*Messages are displayed in the event of faults during or after installation. Follow the instructions.*



Figure 6: View during recording

## Creating A Field Boundary Using Coverage

When automatically calculating the field boundary using coverage, the outermost edges of the current coverage are created as the field boundary. The field boundary function automatically recognises gaps in the coverage and indicates them.

This function only creates outer field boundaries.

- [Requirement] A field is active.
- [Requirement] There are no field boundaries (e.g. "Deleting Field Boundaries" on page 59).
- [Requirement] There is at least one cover.

1. Navigate to **Map > Field > Field boundaries**.

2. Press **Calculate**.

*The field boundary automatically detects gaps in the coverage. Confirm the security enquiry.*

*A field boundary is generated.*

*Messages are displayed in the event of faults during or after installation. Follow the instructions.*

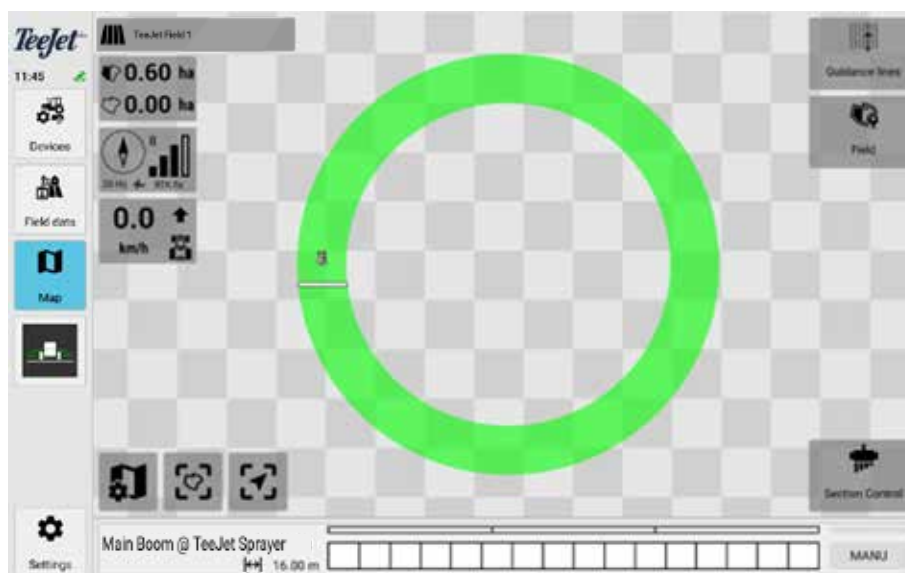


Figure 7: Field with coverage without field boundaries

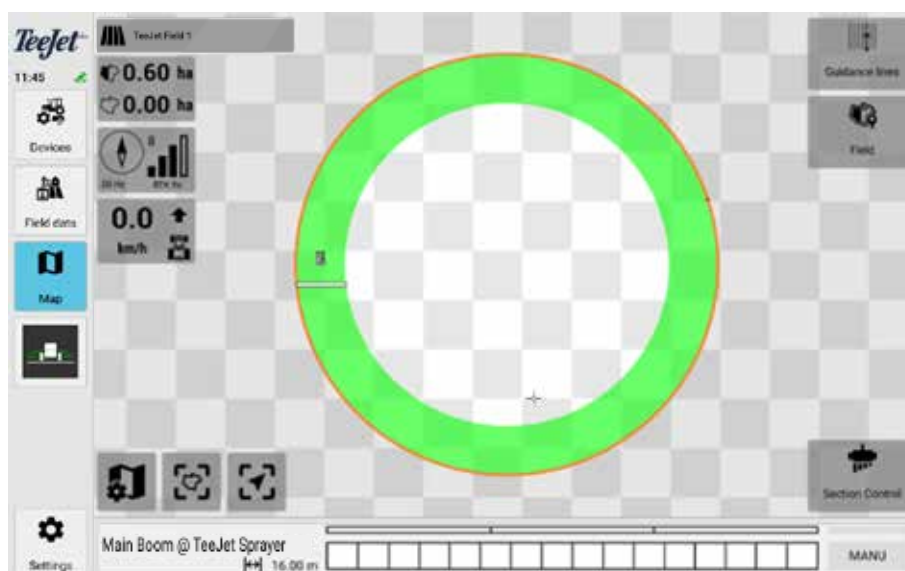


Figure 8: Calculated field boundary along the coverage

## Deleting Field Boundaries

### Delete All Field Boundaries



#### NOTICE

#### Data loss

This process cannot be reversed.

- [Requirement] A field with field boundaries is active.

1. Navigate to **Map > Field > Field boundaries**.
2. Press **Delete all**
3. Confirm the security enquiry.

### Delete an Individual Field Boundary



#### NOTICE

#### Data loss

This process cannot be reversed.

- [Requirement] A field with field boundaries is active.

1. Navigate to **Map > Field > Field boundaries**.
2. Select the field boundary to be deleted on the map. Then press **Delete** at the field boundary
3. Confirm the security enquiry.

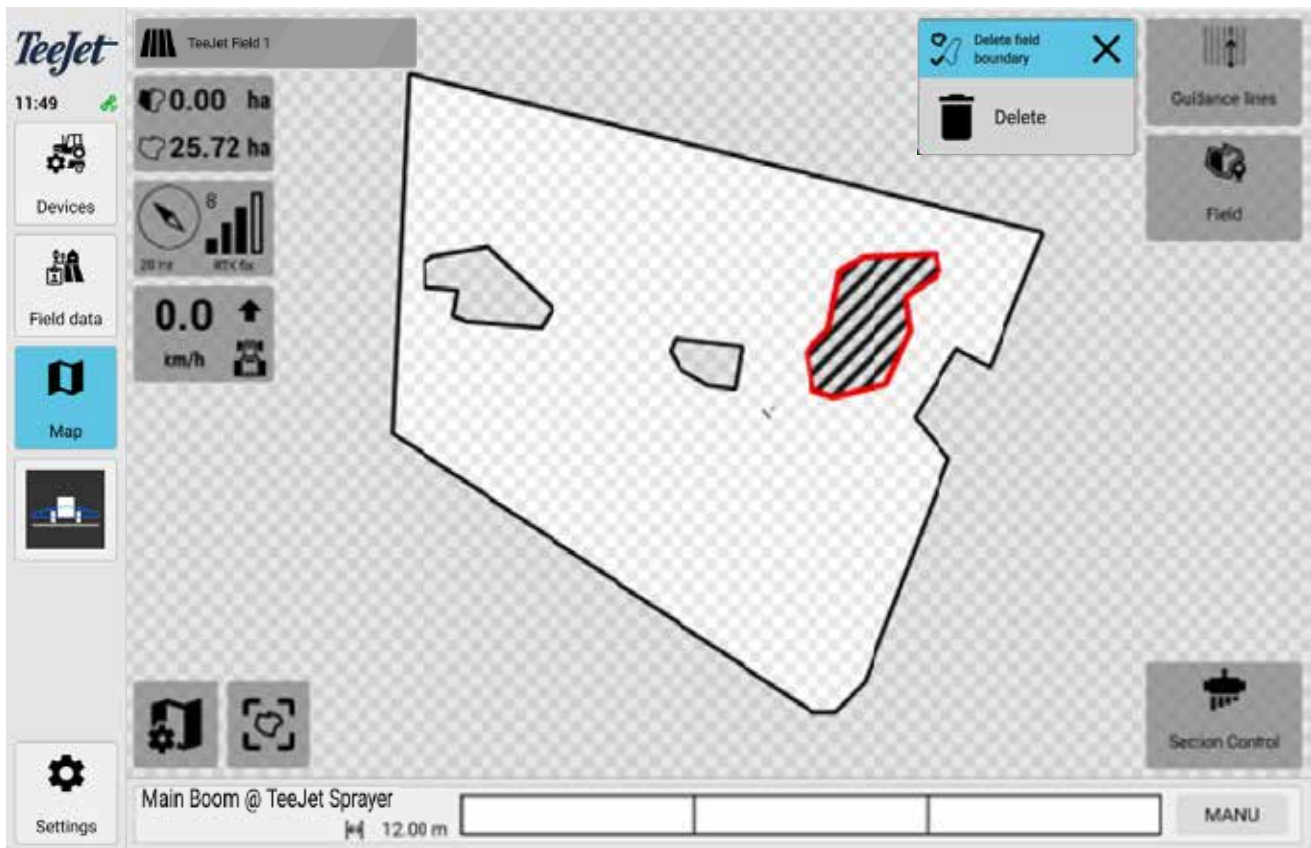


Figure 9: Selection of an field boundary



## USING HEADLANDS

Headlands are areas at the edge of a field used to carry out turning manoeuvres.

When working, headlands are only included automatically if Section Control is switched ON and headlands are locked at the same time.

Headlands are displayed as a semi-transparent, coloured area in the map view.

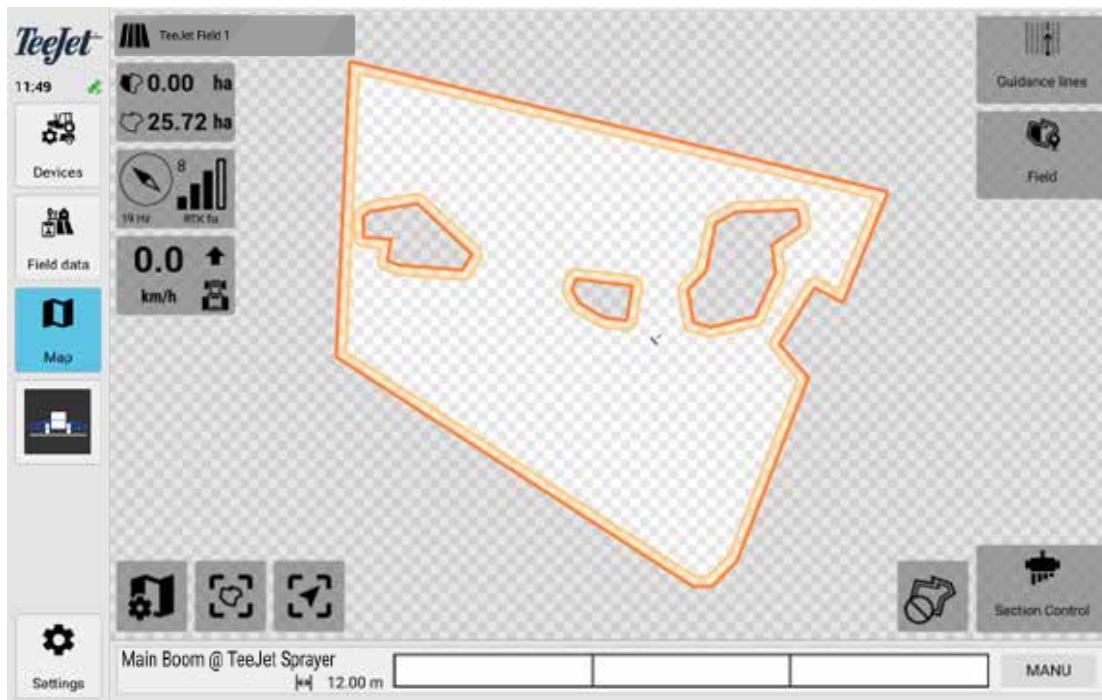


Figure 10: Field with locked headland

## Creating A Circular Headland

Circumferential headlands have the same width at every position.

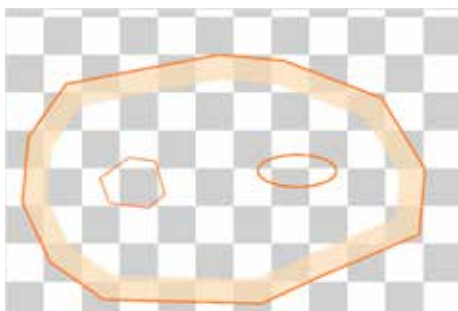


Figure 11: Headlands around outer field boundaries

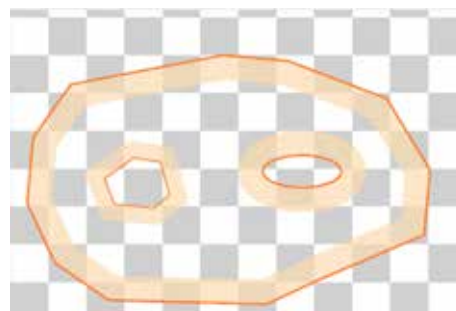


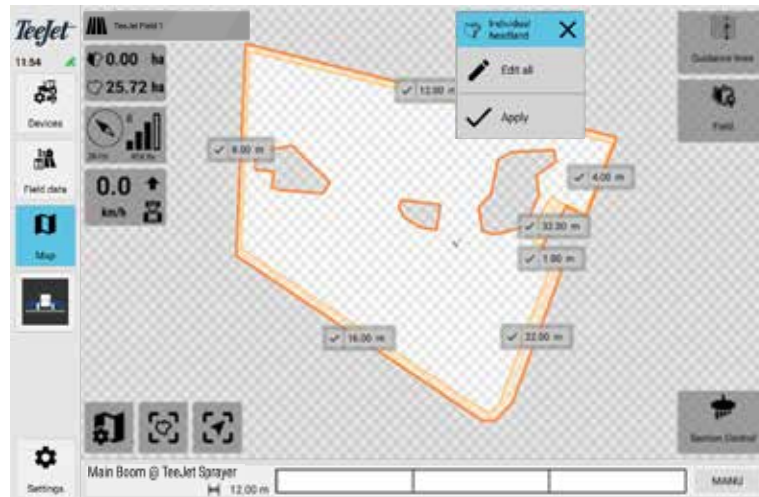
Figure 12: Headlands around outer and inner field boundaries

- [Requirement] A field with field boundaries is active.

1. Navigate to **Map > Field > Headland**.
2. Press **New (all around)**.
3. Edit the width of the headland in the dialogue.
4. In addition, the option **Create headland around inner field boundaries** can be switched ON / OFF.
  - Switched ON - Headlands are created along the outer field boundaries and outside the inner field boundaries.
  - Switched OFF - A headland is created along the outer field boundaries.
5. Press **Create**.

## Creating an Individual Headland

With individual headlands, specific widths can be set for each segment of the headland.



- [Requirement] A field with field boundaries is active.

1. Navigate to **Map > Field > Headland**.
2. Press **New (individual)**.

*The headland is displayed in editor mode in the map view.*

3. Edit the individual widths and confirm the entry.
4. Alternatively, you can also use the **Edit all** function.
5. Press **Apply**.

## Unlocking or Locking A Headland

If Section Control is switched ON during operation, headlands are included:

- Locked headlands are not processed. The headland area is highlighted in colour in the map view.
- Unlocked headlands are processed. In the map view, only the headland contour is highlighted in colour.

| Icon | Function                                              |
|------|-------------------------------------------------------|
|      | Headland is locked.<br>Pressing unlocks headland.     |
|      | Headland is unlocked.<br>Pressing locks the headland. |

## Deleting A Headland



### NOTICE

#### Data loss

This process cannot be reversed.

- [Requirement] A field with field boundaries is active.

1. Navigate to **Map > Field > Headland**.
2. Press **Delete all**.
3. Confirm the security enquiry.

## USING MARKING POINTS

Marking points are useful for highlighting prominent or important places in a field. Marking points are highlighted on the map with small symbols.

### Creating A Marking Point



#### NOTICE

##### Recording accuracy and GNSS

This function uses coordinates from the GNSS source.

Make sure that the GNSS source is working properly.

Ensure that the correct direction of travel is set.

Drive or stop at the desired positions as precisely as possible.

- [Requirement] A field is active.

1. Drive the vehicle to a prominent location.
2. Navigate to **Map > Field > Marking point**.
3. Press **New**.

*The marking point is displayed as an icon on the map.*

### Editing A Marking Point

- [Requirement] A field with marking points is active.
1. Navigate to **Map**.
  2. To rename a marking point, press the marking point. Then enter a suitable name and confirm.

### Deleting Marking Points

#### Delete A Single Marking Point



#### NOTICE

##### Data loss

This process cannot be reversed.

1. Navigate to **Map**.
2. Press the marking point on the map that you want to delete.
3. Press **Delete**.

#### Delete All Marking Points



#### NOTICE

##### Data loss

This process cannot be reversed.

1. Navigate to **Map > Field > Marking point**.
2. Press **Delete all**.
3. Confirm the security enquiry.



## USING GUIDANCE LINES

Guidance lines, also known as tracks, are special lines in the map view that provide guidance for working in the field.

The vehicle can be navigated very precisely using guidance lines. This helps you get the most out of your field., as overlaps and gaps can be minimised during processing.

Furthermore, guidance lines enable more efficient use of fertilisers and pesticides, as these can be applied with pinpoint accuracy.

Guidance lines can be created in different shapes and directions, for example:

- As straight lines
- As a circle
- As a curve

The A10 also helps to optimise the creation of guidance lines with field boundaries (inside and outside) and headlands taken into account.

While using various methods to create and edit guidance lines, most methods starts when a base track is created and all other guidance lines are aligned to it, with the same offset (parallel, concentric, etc.).

Different ways of creating guidance lines are:

- Create guidance lines automatically. Field boundaries or headlands serve as base tracks.
- Create guidance lines manually:
  - Driving with the vehicle.
  - Setting a starting point with the vehicle and then specify a direction (angle).
- Import guidance lines from another programme (e.g. FMIS). See ["Importing Guidance Lines" on page 38](#).

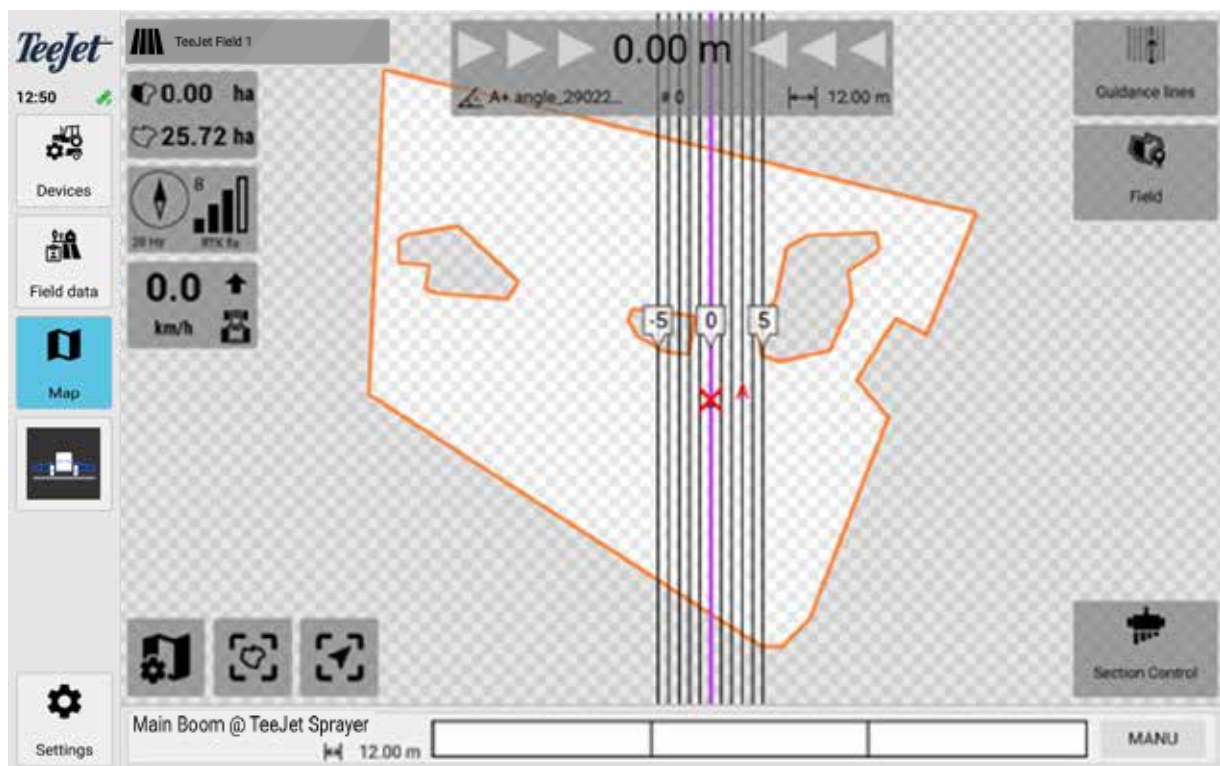


Figure 13: Field with guidance lines

## Additional Driving Aids When Driving Over the Field

The guidance lines are displayed on the map. They help to optimise the field with the least amount of overlap.

Guidance lines are numbered consecutively - number "0" corresponds to the original base track.

The guidance lines generated depend on the following factors:

- The working width of the implement
- The position of the implement in relation to the vehicle (offsets)

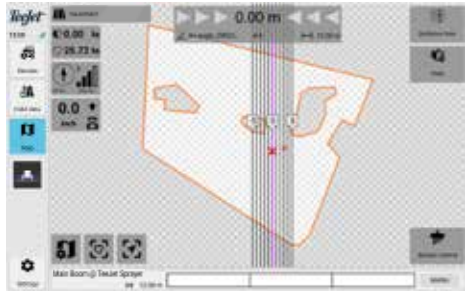
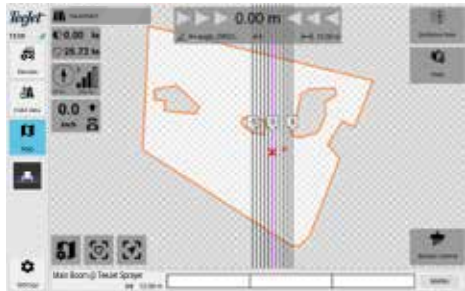
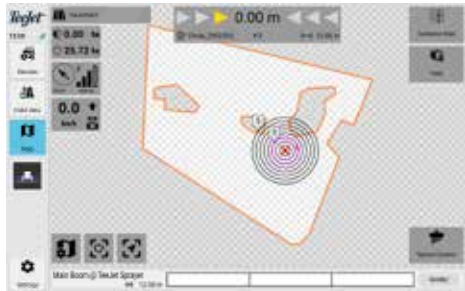
These factors are either determined automatically (ISOBUS-capable implement only) or set manually by the operator (non-ISOBUS-capable implement).

When Section Control is switched ON, the section control works fully automatically (only ISOBUS-capable implements).

When using a non-ISOBUS-capable implement (virtual implement), the operator must switch the implement ON or OFF independently and control the **coverage recording** (see ["Working with driving aids and automatic mode" on page 80](#)).

## Types of Guidance Lines

The type of guidance line used depends on the planned type of application, the nature and the cultivation method of the field.

| Guidance line type                                                                                                                                                                                                                                                                                                                                                                                                                          | Example:                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Straight AB</b><br>Suitable for: <ul style="list-style-type: none"> <li>• Large fields</li> <li>• Few obstacles (e.g. internal field boundaries)</li> </ul> See <a href="#">"Creating Guidance Lines Automatically Using Field Boundaries" on page 66</a> .<br>See <a href="#">"Creating Straight Guidance Lines Manually" on page 69</a> .<br>See <a href="#">"Creating Straight Guidance Lines Manually Using Angles" on page 71</a> . |  <p>Figure 14: Straight guidance line between A and B</p>  <p>Figure 15: Straight guidance line with A as the starting point and an angle</p> |
| <b>Circle</b><br>Suitable for: <ul style="list-style-type: none"> <li>• Complex fields</li> <li>• Where circular spreading is more optimal due to the nature or boundary of the field</li> <li>• Avoiding turning processes</li> </ul> See <a href="#">"Creating Circular Guidance Lines Manually" on page 72</a> .                                                                                                                         |                                                                                                                                                                                                                                  |

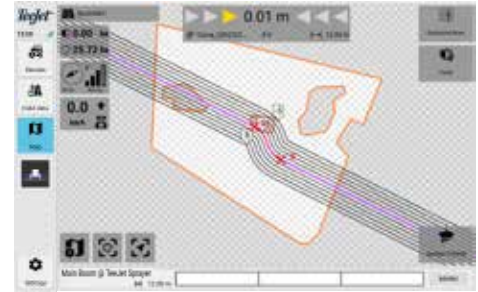
## Guidance line type

## Example:

**Curves or Curves and AB** (mixed guidance lines)

Suitable for:

- Large fields
- Fields with obstacles (e.g. internal field boundaries) that you want to avoid



## Basics for Creating Guidance Lines

Guidance lines are always defined using a **Base track**. The guidance lines are then aligned parallel to this base track.

A base track always consists of a starting point (A), an end point (B) and the path between them. The path between the start and end points determines the direction - similar to a vector.

When creating manually, all points or paths are recorded by driving the vehicle on the field.

| Straight AB | Circle | Curve |
|-------------|--------|-------|
|             |        |       |

## Creating Guidance Lines Automatically Using Field Boundaries



### NOTICE

#### Recording accuracy and GNSS

This function uses coordinates from the GNSS source.

Make sure that the GNSS source is working properly.

Ensure that the correct direction of travel is set.

Drive or stop at the desired positions as precisely as possible.



### NOTICE

#### Observe the minimum curve radius of the implements

When using Section Control and guidance lines, observe the minimum curve radius of the implements.

Areas with radii of curves or circles that are too small cannot be processed correctly.

Adjust the settings for non-ISOBUS-capable implements (virtual implements) (see ["Managing implements" on page 47](#) and ["Adding A Virtual Implement" on page 47](#)).

With this function, base tracks are automatically calculated based on the field boundaries and displayed in a list. A suitable base track can then be selected from the list, which in turn generates the final guidance lines.

- [Requirement] A field with field boundaries is active.

1. Navigate to **Map > Guidance lines**.

2. Press **New** and then **In-field lines from the field boundary**.

*Automatically calculates possible base tracks at the field boundaries.*

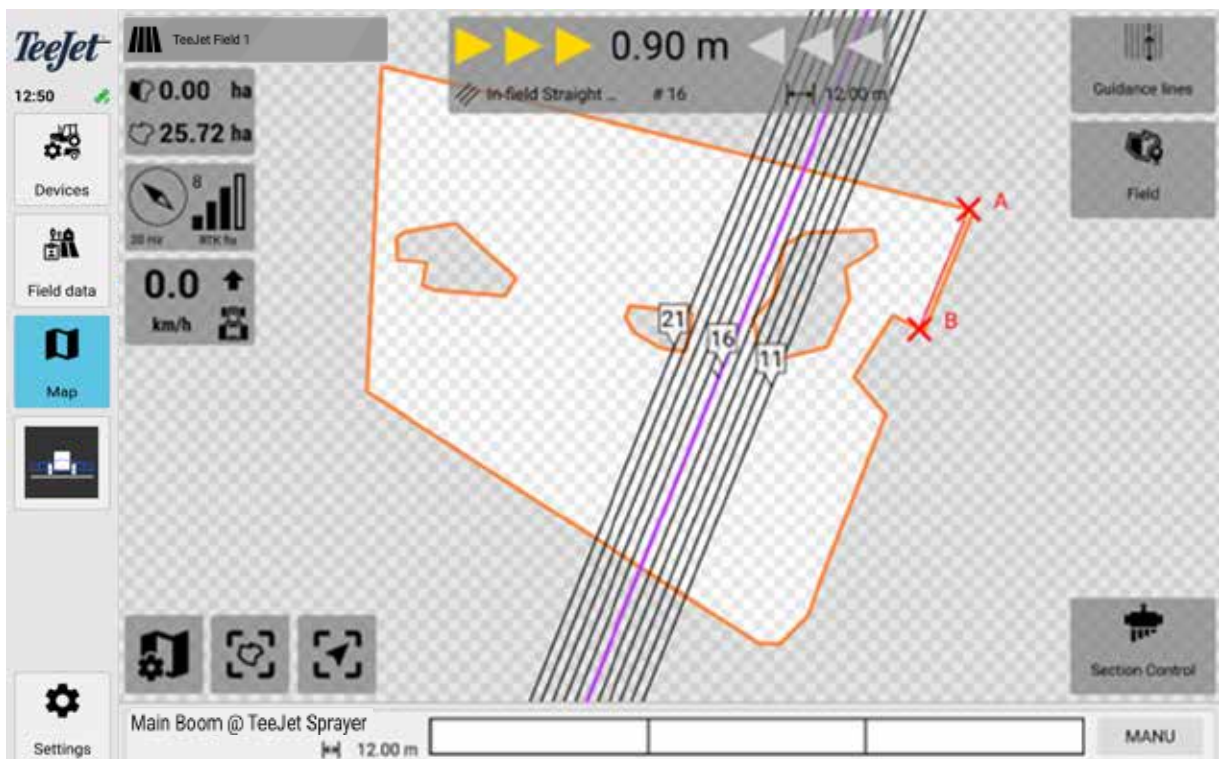
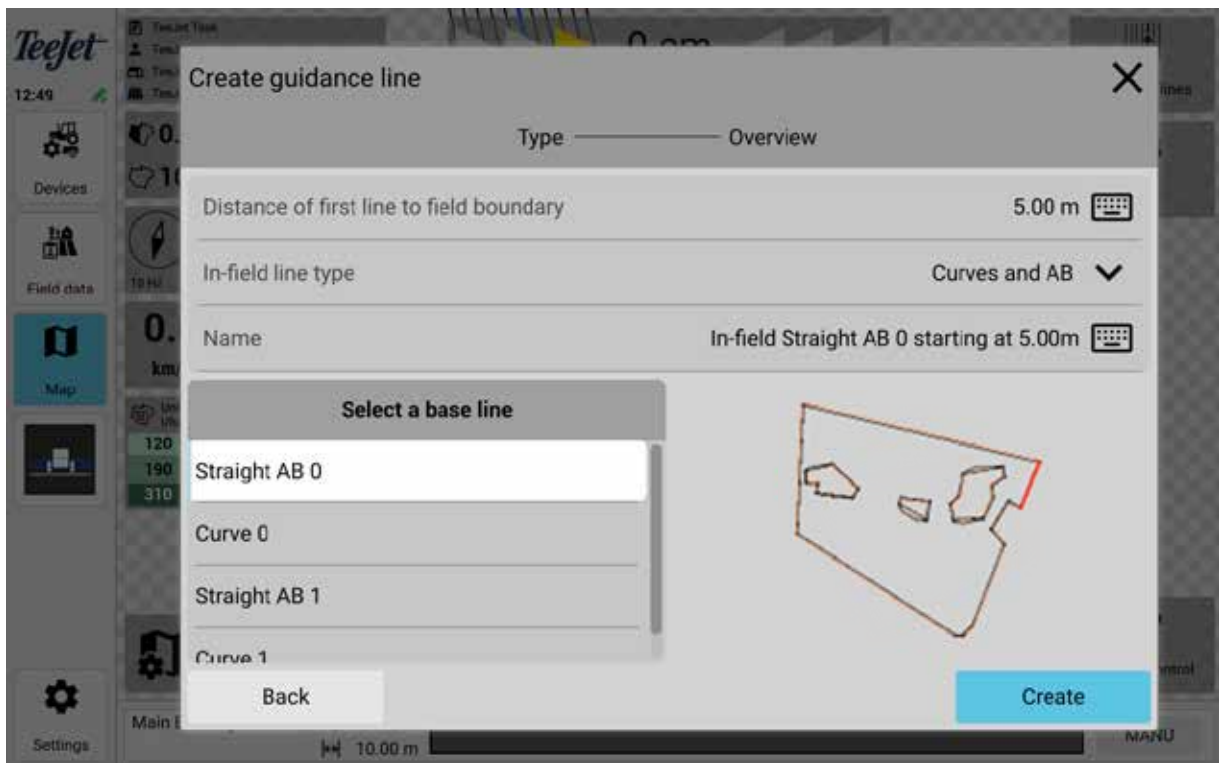
3. In the list, select the appropriate **Base track** that is to be used for the guidance lines. You can use the **In-field line type** option to filter which types are displayed in the list.

*The selected base track is highlighted in colour on the right in the preview.*

4. Enter the **Distance of first line to field boundary**. It serves as a safety distance between the generated guidance lines and the field boundaries (set to half of the chosen working width by default).

5. Press **Create**.

*Messages are displayed in the event of faults during or after programming. Follow the instructions.*





## Creating Guidance Lines Automatically for Headlands



### NOTICE

#### Recording accuracy and GNSS

This function uses coordinates from the GNSS source.

Make sure that the GNSS source is working properly.

Ensure that the correct direction of travel is set.

Drive or stop at the desired positions as precisely as possible.



### NOTICE

#### Observe the minimum curve radius of the implements

When using Section Control (automatic section control) and guidance lines, observe the minimum curve radius of the implements.

Areas with radii of curves or circles that are too small cannot be processed correctly.

Adjust the settings for non-ISOBUS-capable implements (virtual implements) (see ["Managing implements" on page 47](#) and ["Adding A Virtual Implement" on page 47](#)).

This function automatically calculates guidance lines based on the field boundary and creates them within the field boundaries.

- [Requirement] A field with field boundaries is active.

1. Navigate to **Map > Guidance lines**.

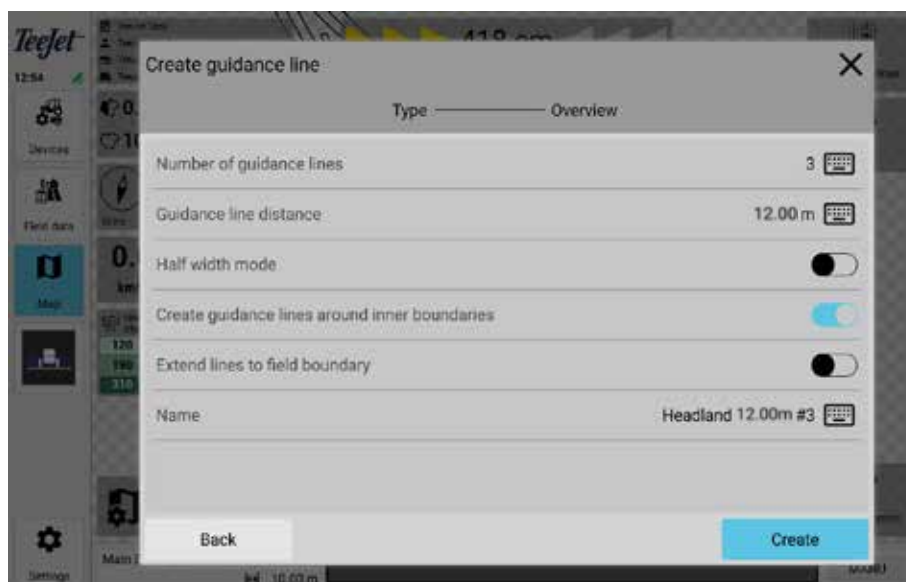
2. Press **New** and then **Headland guidance lines**.

3. You have the following options:

- Set the **number of guidance lines**.
- With several guidance lines: Set **guidance line spacing**.
- Switch **Guidance lines around inner field boundaries**.
- Switch **half width mode** ON / OFF.
- With several guidance lines: Switch extend **tracks to field boundary** ON / OFF.
- Assign name.

4. Press **Create**.

*Messages are displayed in the event of faults during or after installation. Follow the instructions.*



## Creating Straight Guidance Lines Manually



### NOTICE

#### Recording accuracy and GNSS

This function uses coordinates from the GNSS source.

Make sure that the GNSS source is working properly.

Ensure that the correct direction of travel is set.

Drive or stop at the desired positions as precisely as possible.

To use this function, a starting point is approached with the vehicle and then the planned guidance line is driven straight across the field. A suitable straight base track is then automatically calculated.

- [Requirement] A field is active.

1. Drive the vehicle to the point in the field where you want to start recording the guidance line (**starting point A**).

2. Navigate to **Map > Guidance lines**.

3. Press **New** and then **Straight AB**.

4. Press **Start**.

*The recording begins.*

5. Drive the vehicle in a straight line

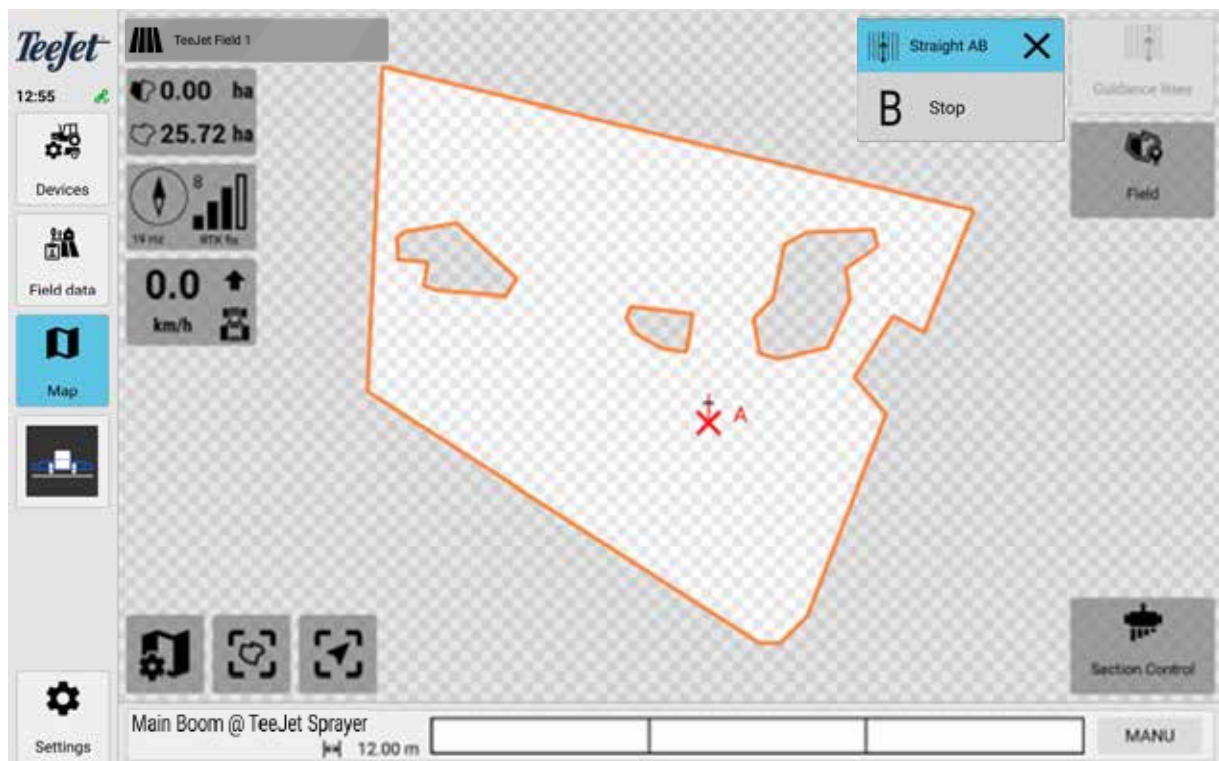
*The planned guidance line is displayed in colour on the map.*

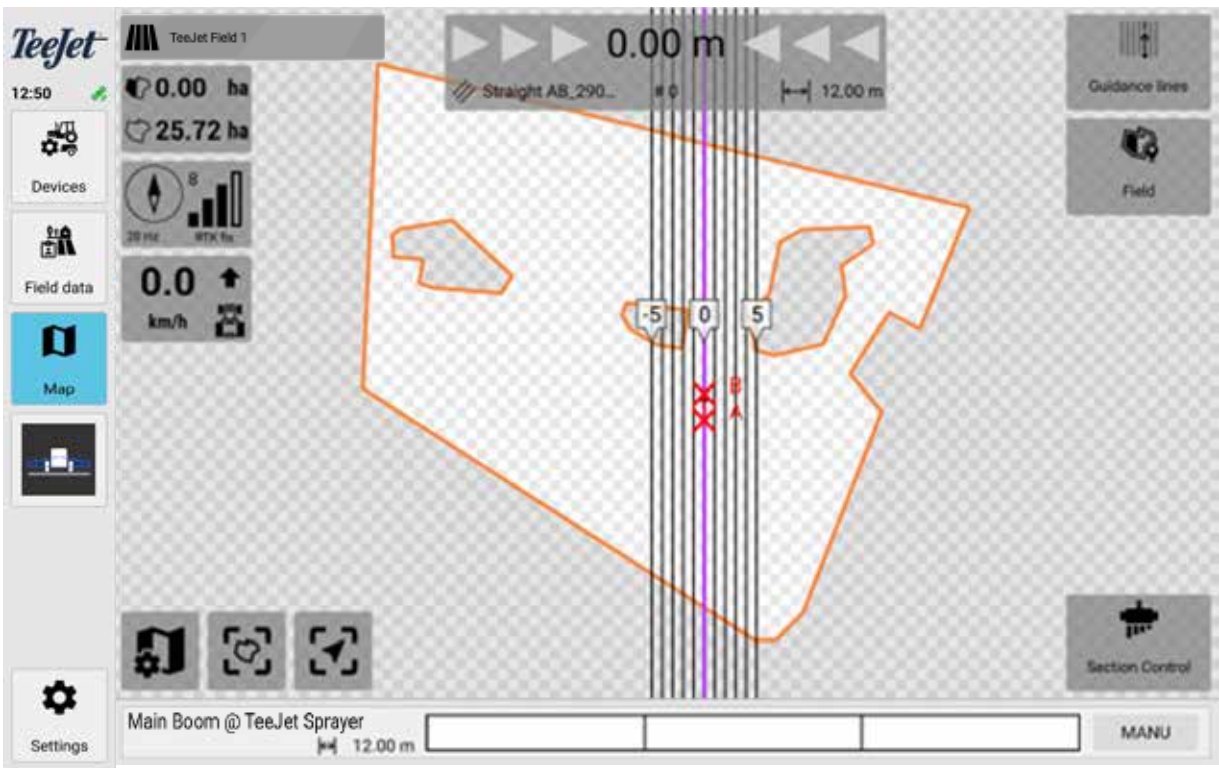
6. Regularly check the planned guidance line on the map.

7. As soon as the planned guidance line is finished, stop the vehicle. Press **Stop**.

*The guidance lines are created.*

*Messages are displayed in the event of faults during or after installation. Follow the instructions.*







## Creating Straight Guidance Lines Manually Using Angles



### NOTICE

#### Recording accuracy and GNSS

This function uses coordinates from the GNSS source.

Make sure that the GNSS source is working properly.

Ensure that the correct direction of travel is set.

Drive or stop at the desired positions as precisely as possible.



### TIP

#### Clockwise angle

Angles are indicated in a clockwise direction starting with 0°. For absolute angles, 0° is the imaginary north axis; for relative angles, 0° is the direction of forwards travel. For example, for absolute angles: 0° = North, 90° = East, 180° = South, 270° = West.

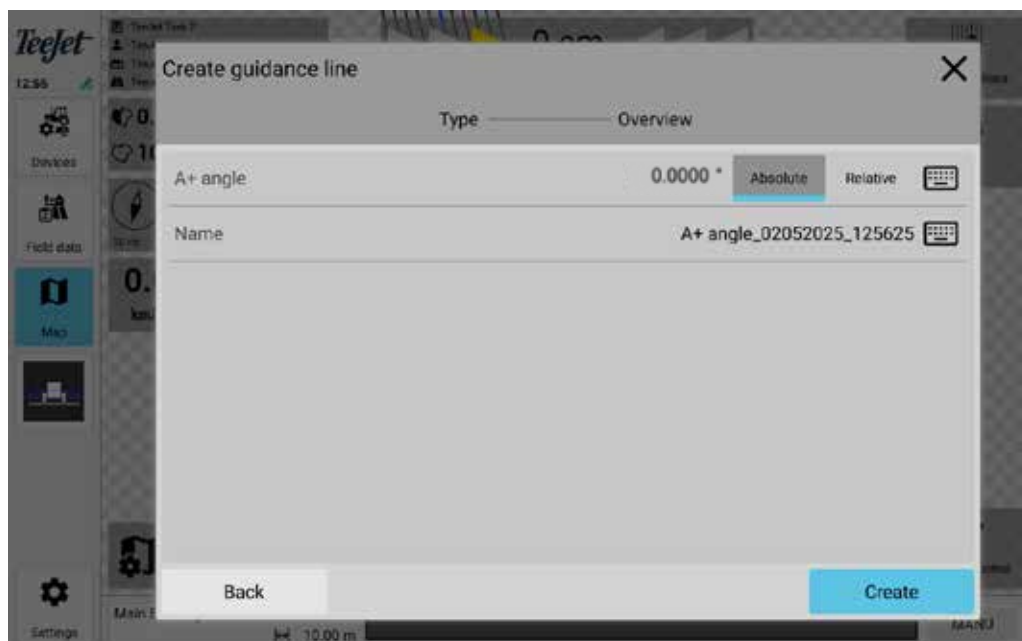
This function involves travelling to a starting point with the vehicle and then assigning an angle (absolute or relative) to create a guidance line.

This function creates a straight guidance line.

- [Requirement] A field with field boundaries is active.

1. Drive the vehicle to the point in the field where you want to start recording the guidance line (**starting point A**).
2. Navigate to **Map > Guidance lines**.
3. Press **New** and then **A+ Angle**.
4. Set the **angle**. Note the following options:
  - **Relative** - Sets the angle of the guidance lines in relation to the current direction of travel of the vehicle (front direction of travel = 0°).
  - **Absolute** - Sets the angle of the guidance lines in relation to global north (0°).
5. Enter the **Name** of the guidance line.
6. Press **Create**.

Messages are displayed in the event of faults during or after programming. Follow the instructions.



## Creating Circular Guidance Lines Manually



### NOTICE

#### Recording accuracy and GNSS

This function uses coordinates from the GNSS source.

Make sure that the GNSS source is working properly.

Ensure that the correct direction of travel is set.

Drive or stop at the desired positions as precisely as possible.



### NOTICE

#### Observe the minimum curve radius of the implements

When using Section Control (automatic section control) and guidance lines, observe the minimum curve radius of the implements.

Areas with radii of curves or circles that are too small cannot be processed correctly.

Adjust the settings for non-ISOBUS-capable implements (virtual implements) (see ["Managing implements" on page 47](#) and ["Adding A Virtual Implement" on page 47](#)).

For this function, a starting point is approached by vehicle and then the planned guidance line is followed in a circle across the field. The centre point is automatically calculated. The guidance lines are then generated based on the chosen working widths.

Once created, guidance lines can be moved (see ["Moving Guidance Lines" on page 76](#)).

- [Requirement] A field is active.

1. Drive the vehicle to the point in the field where you want to start recording the guidance line (**starting point A**).
2. Navigate to **Map > Guidance lines**.
3. Press **New** and then **Circle**.
4. Press **Start**.

*The recording begins.*

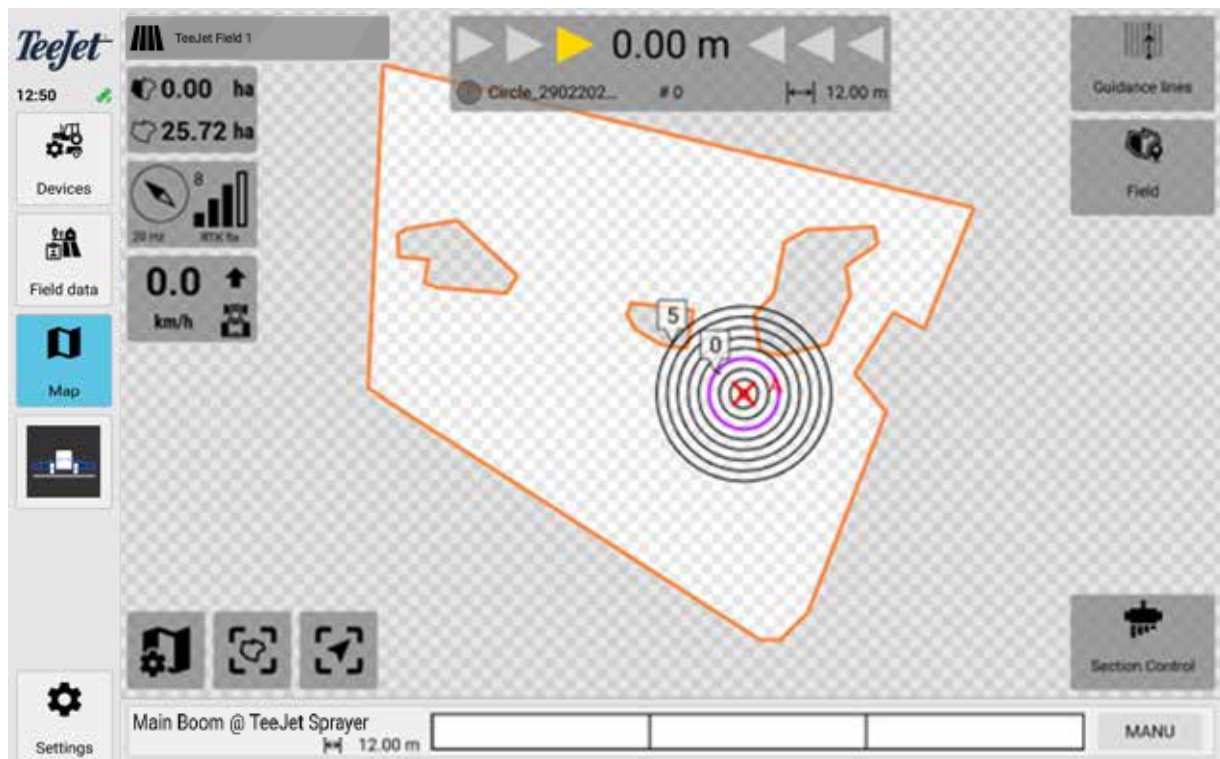
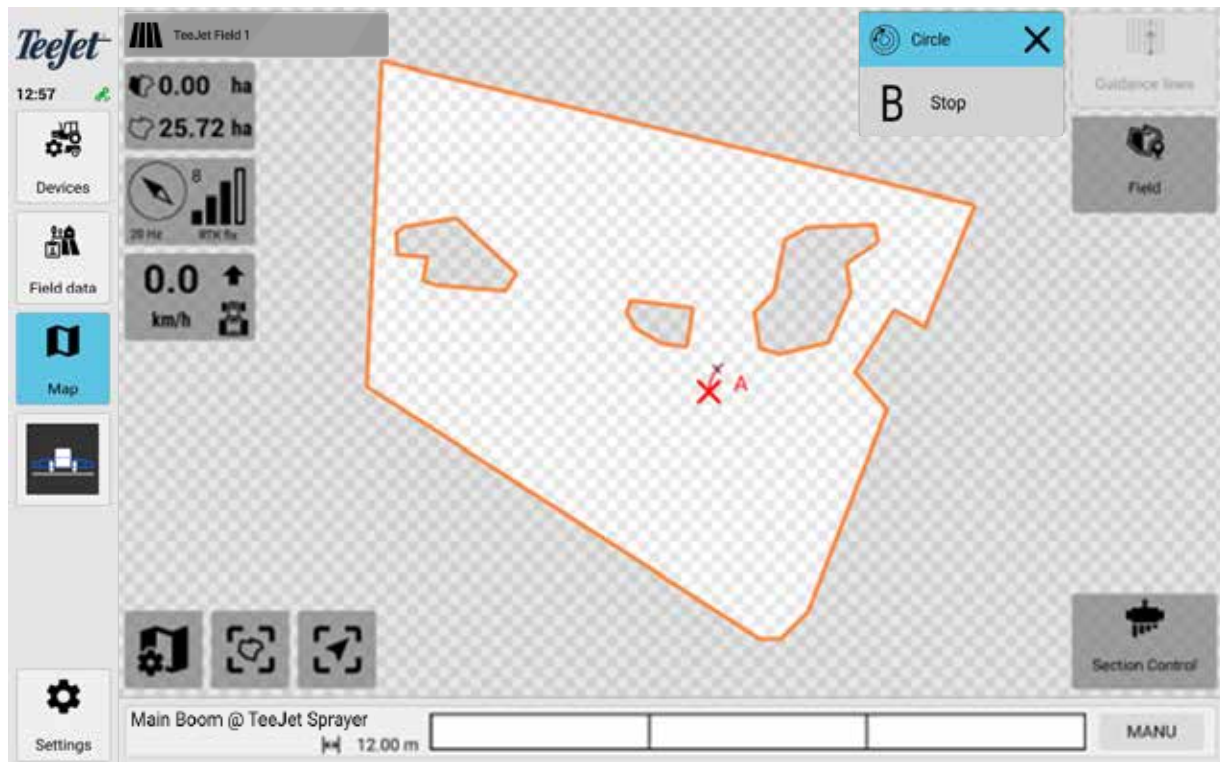
5. Drive a circular route with the vehicle.

*The planned guidance line is displayed in colour on the map.*

6. Regularly check the planned guidance line on the map.
7. As soon as the planned guidance line is finished, stop the vehicle. Press **Stop**.

The guidance lines are created.

Messages are displayed in the event of faults during or after programming. Follow the instructions.



## Creating Curved Guidance Lines Manually



### NOTICE

#### Recording accuracy and GNSS

This function uses coordinates from the GNSS source.

Make sure that the GNSS source is working properly.

Ensure that the correct direction of travel is set.

Drive or stop at the desired positions as precisely as possible.



### NOTICE

#### Observe the minimum curve radius of the implements

When using Section Control (automatic section control) and guidance lines, observe the minimum curve radius of the implements.

Areas with radii of curves or circles that are too small cannot be processed correctly.

Adjust the settings for non-ISOBUS-capable implements (virtual implements) (see ["Managing implements" on page 47](#) and ["Adding A Virtual Implement" on page 47](#)).

A starting point is approached by the vehicle and the planned guidance line is followed in a curve across the field. A suitable, curved base track is automatically calculated. The curve is automatically extended at the ends with straight base tracks.

- [Requirement] A field is active.

1. Drive the vehicle to the point in the field where you want to start recording the guidance line (**starting point A**).
2. Navigate to **Map > Guidance lines**.
3. Press **New** and then **Contour**.
4. Press **Start**.

*The recording begins.*

5. Drive a curved route with the vehicle.

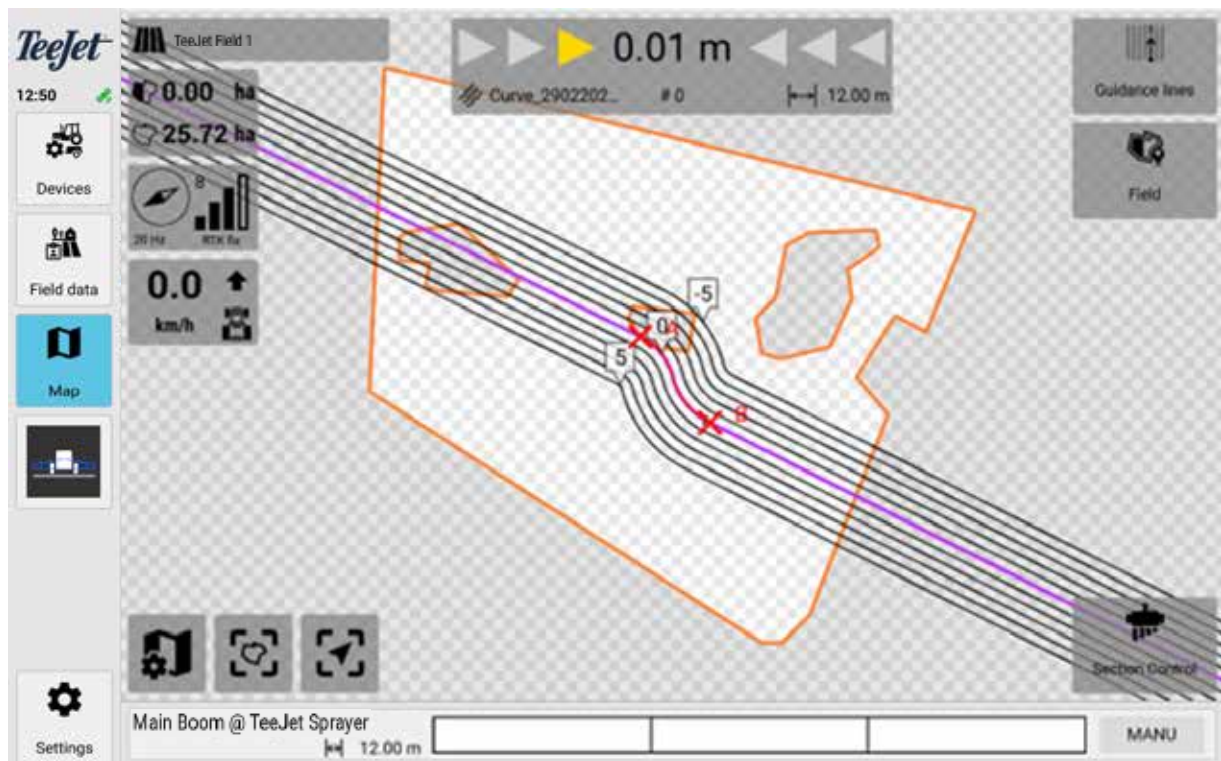
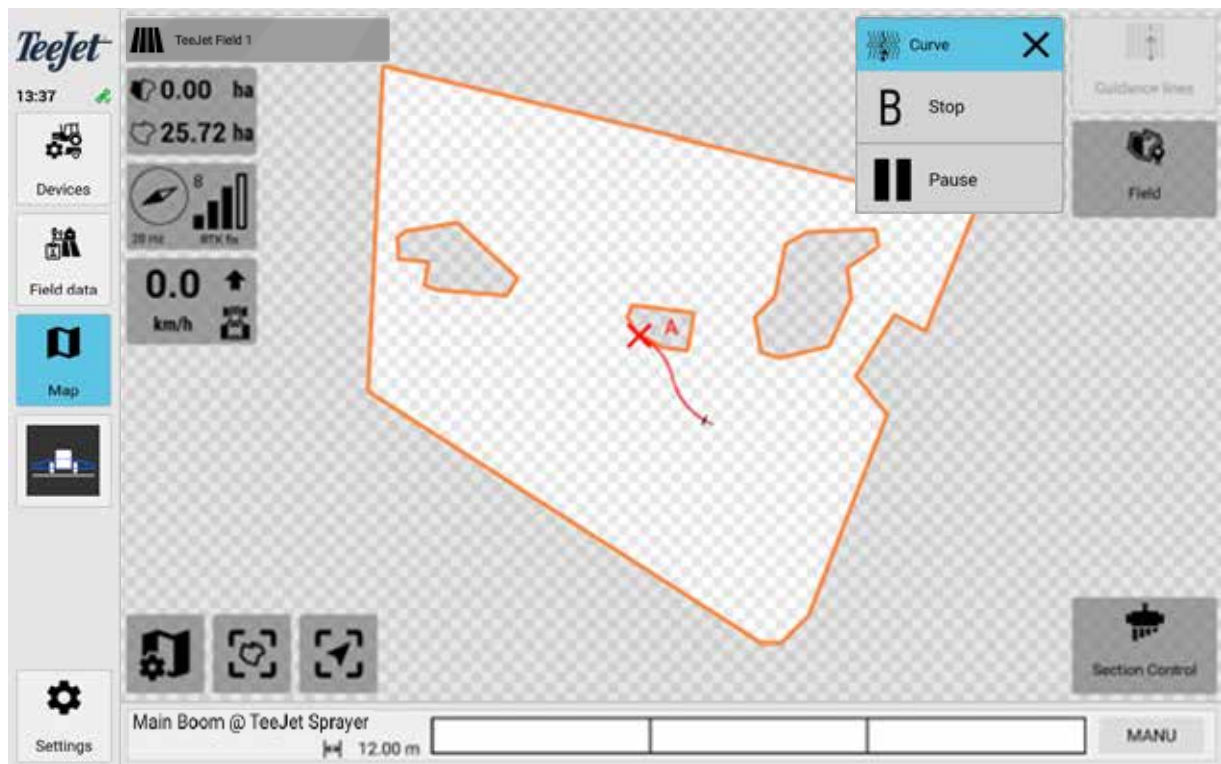
*The planned guidance line is displayed in colour on the map.*

6. Regularly check the planned guidance line on the map.
7. As soon as the planned guidance line is finished, stop the vehicle and press **Stop**.



The guidance lines are created.

Messages are displayed in the event of faults during or after programming. Follow the instructions.



## Switching Guidance Lines ON / OFF

- [Requirement] A field with guidance lines is active.

1. Navigate to **Map > Guidance lines**.
2. Choose one of the following options:
  - Select a guidance line that you would like to use.
  - Select **None** to not use guidance lines.

## Renaming Guidance Lines

- [Requirement] A field is active.

1. Navigate to **Map > Guidance lines**.
2. Press **Edit**.
3. Select the guidance line that you want to rename and press **Edit**.
4. Rename the guidance line and confirm the entry.

## Moving Guidance Lines

- [Requirement] A field with guidance lines is active.

1. Navigate to **Map > Guidance lines**.
2. Select the guidance line you want to move, from the list.
3. Press **Shift**.
4. Edit the lateral offset of the guidance line and confirm the entry.
5. Optionally, you can save the settings you have made as a new guidance line.
  - Switch ON the **Save as new guidance line** option.
  - Give the new guidance line a suitable name.
6. Press **Apply**.

The new guidance line is activated automatically.

## Deleting Guidance Lines



### NOTICE

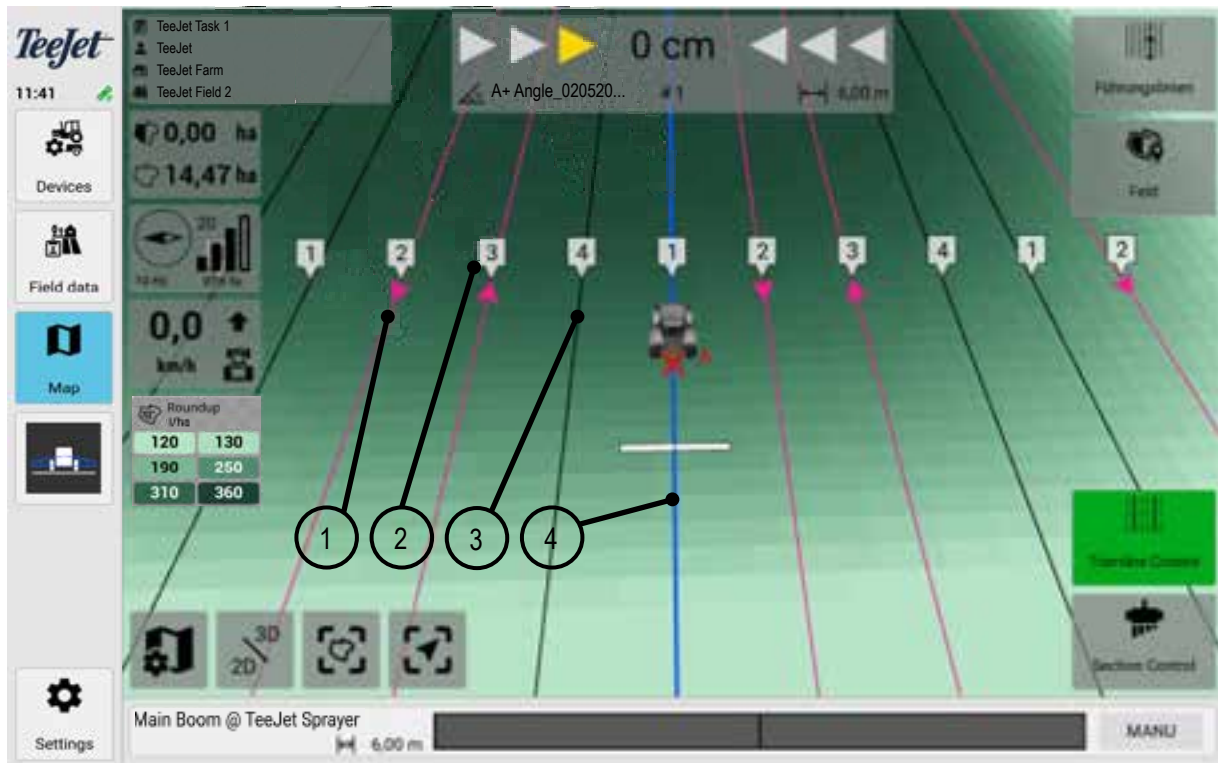
#### Data loss

This process cannot be reversed.

- [Requirement] A field with guidance lines is active.

1. Navigate to **Map > Field > Guidance lines**.
2. Press **Edit**.
3. Select one or more guidance lines that you want to delete.
4. Press **Delete**.
5. Confirm the security enquiry.

## USING AUTOMATIC TRAMLINE CONTROL



- |   |                                                                                               |   |                                                               |
|---|-----------------------------------------------------------------------------------------------|---|---------------------------------------------------------------|
| 1 | <b>Magenta guidance line</b> - Guidance line with tramline switching and predefined direction | 2 | Tramline number                                               |
| 3 | <b>Black guidance line</b> - Guidance line without tramline control                           | 4 | <b>Blue guidance line</b> - Currently specified guidance line |

### Necessary Licences

Tramline control only works with an activated "Tramline Control" licence (see "[Licence Overview](#)" on page 102) and only for implements with the corresponding feature.

## Setting Up and Create Tramlines

### Application Example

- [Requirement] ISOBUS seeder (with tramline feature) is used.
- [Requirement] A field is active.
- [Requirement] Guidance lines are active.

1. Set the necessary parameters on the seeder using the Universal Terminal (UT).

- ▶ Additional settings for ISOBUS-capable implements are made in the **Universal Terminal (UT)** (see "[Setting ISOBUS devices using the Universal Terminal \(UT\)](#)" on page 46).
- ▶ Input your chosen settings, e.g. parameters of the implement vehicle such as **working width**, **wheel spacing** and **tyre widths**.



#### NOTICE

Possible changes to settings and parameters on ISOBUS-capable devices using the Universal Terminal (UT) are device-specific.

Observe the relevant device information and instructions (e.g. operating instructions).

2. Drive the vehicle to the point in the field where you want to start recording the field boundary.

3. Navigate to **Map > Tramline Control**.

4. Press **Activate** to switch ON the automatic tramline control.

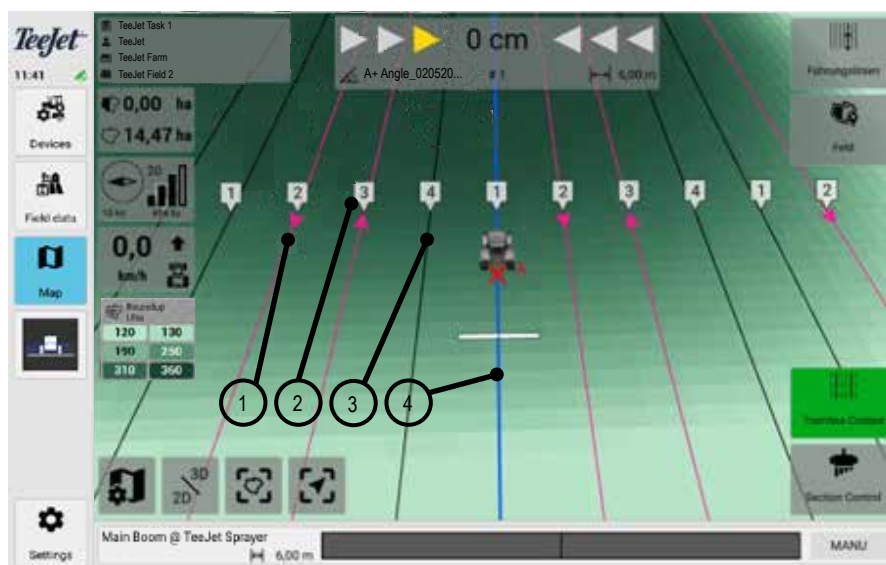
*Additional driving aids are displayed on the map (e.g. direction arrows, tramline rhythm).*

*Check the map to see whether the active guidance lines and driving aids (e.g. direction arrows, tramline rhythm) match the planned connection work.*

- ▶ Use the options for automatic tramline control and the driving aids (see "[Options for Automatic Tramline Control](#)" on page 79).

5. Drive over the field with the vehicle.

- ▶ Use the Section Control automatic mode for automatic coverage.
- ▶ Use the guidance lines.



- |   |                                                                                               |   |                                                               |
|---|-----------------------------------------------------------------------------------------------|---|---------------------------------------------------------------|
| 1 | <b>Magenta guidance line</b> - Guidance line with tramline switching and predefined direction | 2 | Tramline number                                               |
| 3 | <b>Black guidance line</b> - Guidance line without tramline control                           | 4 | <b>Blue guidance line</b> - Currently specified guidance line |

Messages are displayed in the event of faults during or after programming. Follow the instructions.



## Options for Automatic Tramline Control

### Invert Tramlines

You will receive warnings, in the form of a warning symbol if a guidance line is crossed in the wrong direction. The warning symbol is displayed on the map (see table).

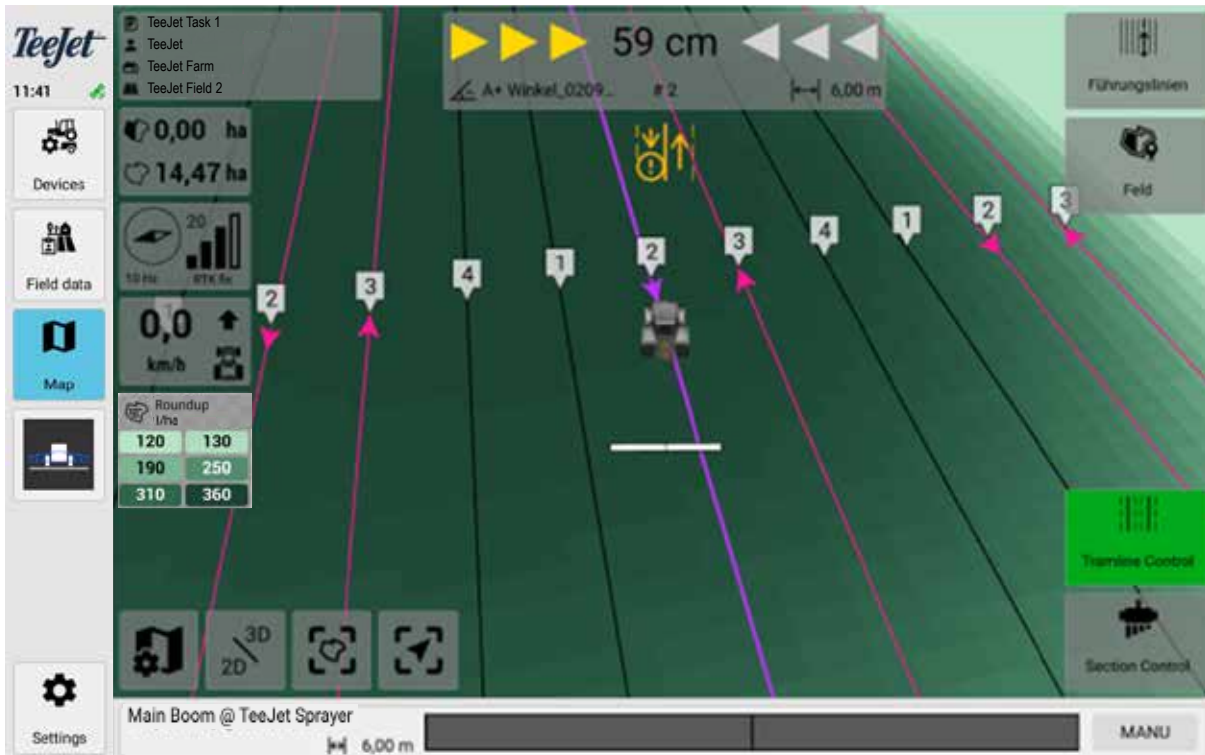


Figure 16: Display with warning symbol for crossing in the wrong direction

- [Requirement] A field with switched ON tramlines is active.

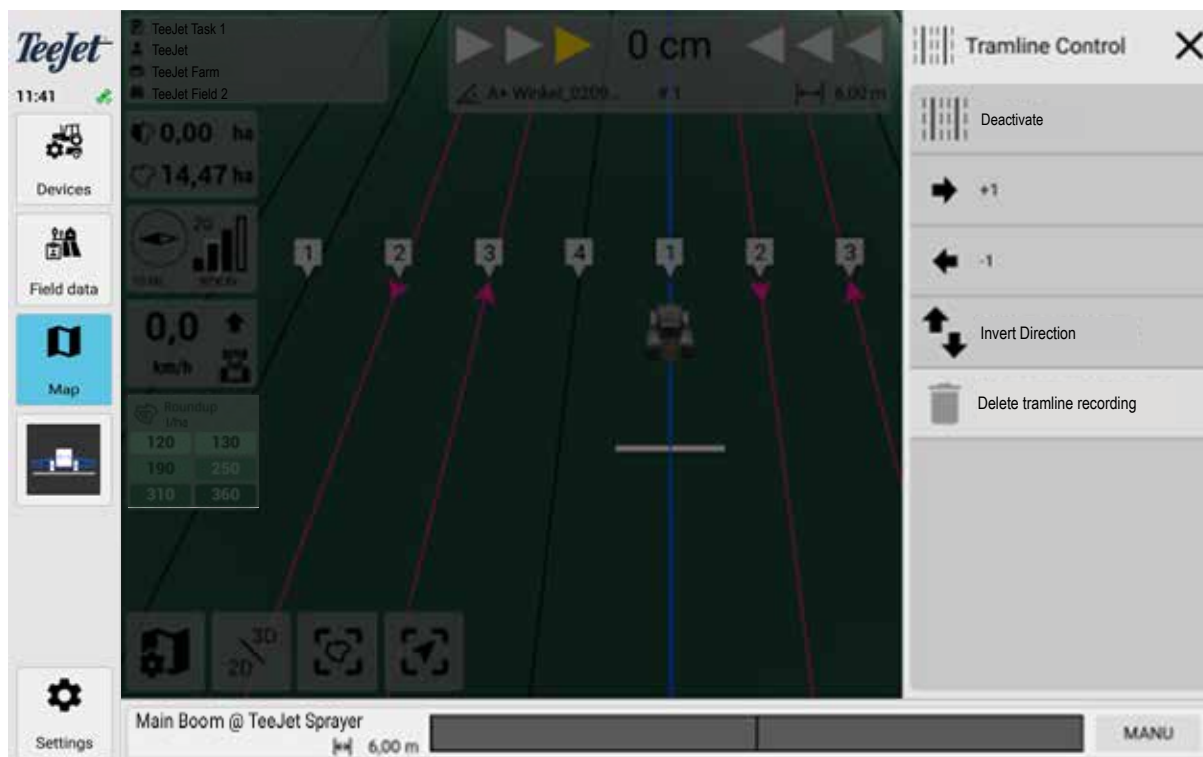
1. Navigate to **Map > Tramline Control**.
2. Press **Invert**.

| Icon | Function                                                                                                       |
|------|----------------------------------------------------------------------------------------------------------------|
|      | The planned direction of travel of the tramlines does not match the current direction of travel of the device. |

# A10 Universal Terminal

## Moving Tramlines to Other Tracks

### Change Tramline Rhythm



- [Requirement] A field with switched ON tramlines is active.

1. Navigate to **Map > Tramline Control**.

2. Select one of the following options:

- **+1 (to the right)**: Shift tramline rhythm to the right.
- **-1 (to the left)**: Shift tramline rhythm to the left.

## WORKING WITH DRIVING AIDS AND AUTOMATIC MODE

### Overlays During Work

During operation, overlays or warning symbols draw attention to any faults or provide additional information.

| Icon                                                                                | Function                                                                                                                                      |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"><li>• Vehicle approaches the field boundaries.</li><li>• Vehicle is outside the field boundaries.</li></ul> |
|  | Vehicle approaches marking point.                                                                                                             |

## Using Automatic Mode During Work

### Carry Out Work With an ISOBUS-Capable Implement

If you are using an ISOBUS-capable implement on an active field, you can switch the Section Control function ON or OFF in the **map**.

This **automatically switches ON or OFF** all affected functions and sections of the implement (e.g. nozzles). In addition, the processed area is automatically recorded depending on the degree of processing.

| Icon                                                                              | Function                                              |
|-----------------------------------------------------------------------------------|-------------------------------------------------------|
|  | Switches the Section Control automatic mode ON / OFF. |

### Carry Out Work With A Non-ISOBUS-Capable Implement (Virtual Implement)

If you are using a non-ISOBUS-capable implement on an active field, you must switch the **Coverage recording** function and the affected functions and sections of the implement (e.g. nozzles) **ON or OFF independently** in the **map**.

| Icon                                                                              | Function                                                    |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------|
|  | Starts/stops the coverage recording for virtual implements. |

## Using Driving Aids at Work

The following driving aids can be used during day-to-day work:

- Guidance lines - As explained in the previous pages.
- Light bar - Indicates when you deviate from the guidance line.
- Guidance indicator - Shows the direction of travel of the vehicle.

The light bars main function is to give you feedback in real time and inform you if you unintentionally leave the specified lane. It also shows you how to return safely to the right lane.

Display settings for driving aids can be made in the map settings (see ["Map settings" on page 100](#)).

To be able to use driving aids, guidance lines must be active (see ["Using guidance lines" on page 63](#)).

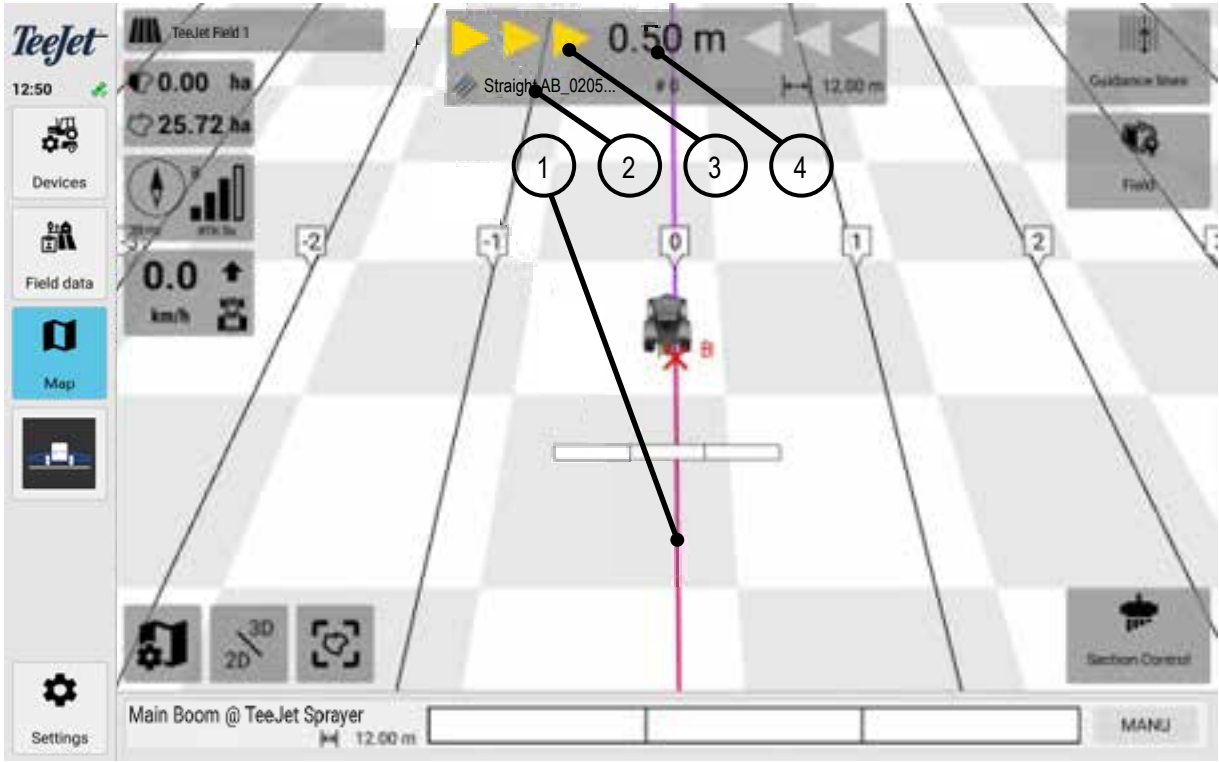


### WARNING

#### Safety instructions

The A10 cannot independently recognise obstacles or incorrect driving. Nor can it suggest appropriate measures.

The driver is responsible for safe driving.



- |   |                     |   |                                  |
|---|---------------------|---|----------------------------------|
| 1 | Guidance line       | 2 | Name of the active guidance line |
| 3 | Direction indicator | 4 | Deviation from the guidance line |

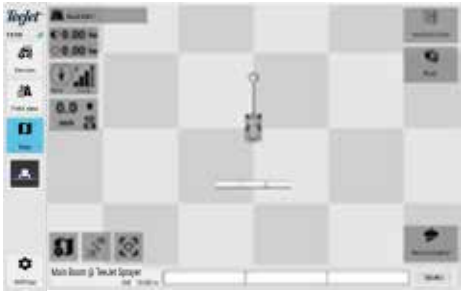


Figure 17: Detailed view of guidance indicator in 2D map view



Figure 18: Detailed view of guide indicator in 3D map view

## Using Driving Aids When Creating Tramlines

When creating tramlines, additional driving aids are displayed on the map:

- Guidance lines with direction arrows - indicate the optimum direction of travel.
- Tramline rhythm and tramline number - Indicate which track or guidance line is to be travelled in which direction.
- Coloured guidance line - The purple-coloured guidance line is the closest guidance line to the vehicle position.



### WARNING

#### Safety instructions

The A10 cannot independently recognise obstacles or incorrect driving. Nor can it suggest appropriate measures.

The driver is responsible for safe driving.

Light bars and guidance indicators assist with navigation.

There are also options for changing the planned direction of travel or changing the tramline rhythm during the journey (see "[Options for Automatic Tramline Control](#)" on page 79)

## Using Analogue Camera at Work

See "[Switching Analogue Camera ON / OFF](#)" on page 90.



### WARNING

#### Reversing

The distances appear different on the display than they are in reality.

The orientations appear differently on the display than they are in reality - depending on the camera settings (horizontal or vertical mirroring).

Always check by looking directly when reversing.



Figure 19: Camera view in the main window (right) and guidance lines in the Mini View (left)

## Options in the Camera View

| Option                                                                                                         | Description                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mirror horizontally                                                                                            | Switch horizontal mirroring of the image ON / OFF.                                                                                                                                                                                                                                                                              |
| Mirror vertically                                                                                              | Switch vertical mirroring of the image ON / OFF.                                                                                                                                                                                                                                                                                |
| View mode - Fitting<br>       | Press to adjust the camera image to the display size.                                                                                                                                                                                                                                                                           |
| View mode - Original size<br> | Press to adjust the camera image to the original size.                                                                                                                                                                                                                                                                          |
| Automatic activation when reversing                                                                            | Switch automatic activation when reversing ON / OFF.<br>If this function is switched ON: <ul style="list-style-type: none"><li>• When reversing, the image from the analogue camera is automatically shown on the display</li><li>• When driving forwards, the last view shown is automatically shown on the display.</li></ul> |

## Using Automatic Steering at Work

The automatic steering supports the driver when travelling along guidance lines.

The driver continues to accelerate and brake, while the steering system takes over steering once activated. The driver must always be able to intervene in dangerous situations.



### WARNING

#### Safety instructions

The A10 cannot independently recognise obstacles or incorrect driving. Nor can it suggest appropriate measures.

The driver is responsible for safe driving.



### NOTICE

#### Automatic steering and cornering

The behaviour of the automatic steering when cornering depends on the settings in the steering system.

Adjust the corresponding settings to optimise the steering for cornering individually (see documents of the automatic steering system manufacturer).

## Switching Automatic Steering ON / OFF

- [Requirement] The automatic steering system is set up (see documents of automatic steering system manufacturer).
- [Requirement] Guidance lines are set up and switched ON (see ["Using guidance lines" on page 63](#)).

1. Navigate to **Map**.
2. Switch automatic steering ON or OFF.

| Icon                                                                                | Function                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Press to switch the automatic steering ON / OFF. <ul style="list-style-type: none"><li>• <b>Engage</b> - Switch ON automatic steering</li><li>• <b>Disengage</b> - Switch OFF automatic steering</li></ul> |

3. With the steering system switched ON, accelerate the vehicle.

*The automatic steering function takes over the steering.*

## CHAPTER 7 - SYSTEM SETTINGS

The following chapter explains the basic system settings that can be used to set up the application.

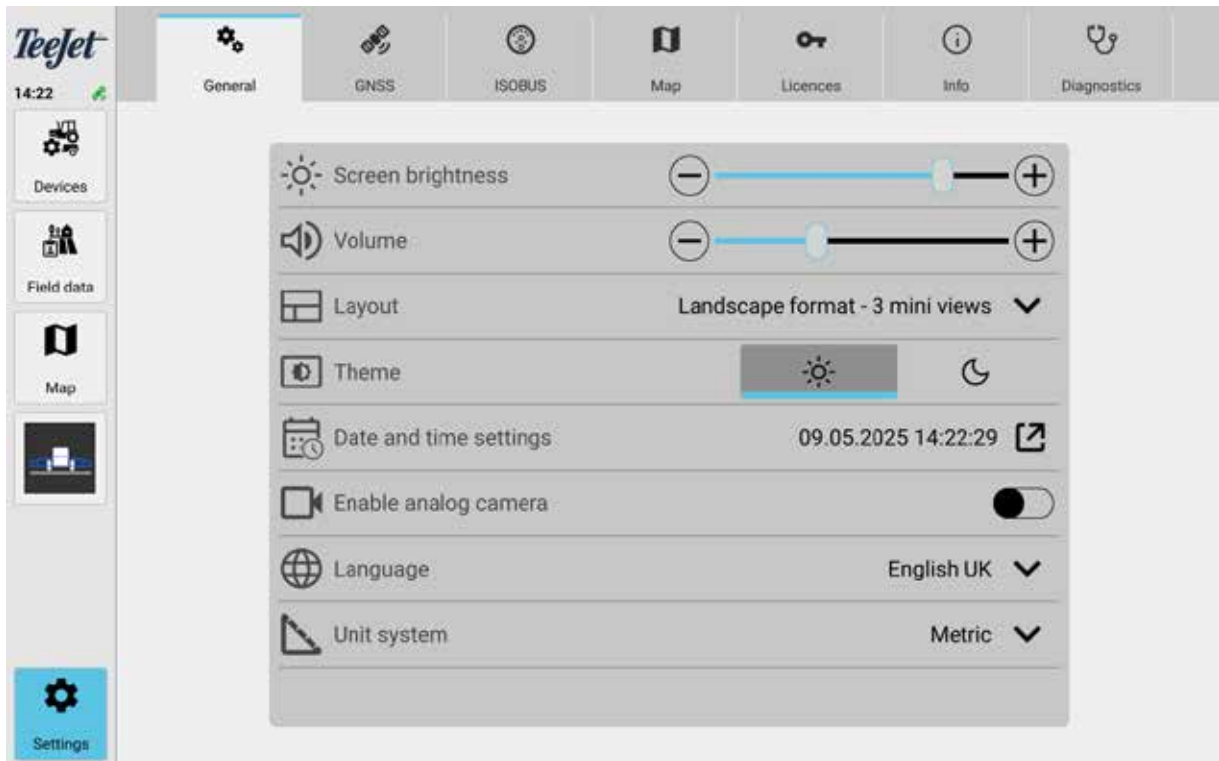


### TIP

If no confirmation is required, the settings made are transmitted to the system/control unit in real time and applied immediately.

## GENERAL SYSTEM SETTINGS

In the **General** tab, you can input/change basic settings for the screen, layout and system.





# A10 Universal Terminal

## Setting the Screen Brightness

You can adjust the screen brightness.

1. Navigate to **Settings > General > Screen brightness**.

| Icon                                                                              | Function |
|-----------------------------------------------------------------------------------|----------|
|  | Brighter |
|  | Darker   |

## Setting the Volume



### CAUTION

#### Hearing damage

The volume of the speaker can be set to a level that can lead to permanent hearing damage over a longer period of time.

To avoid hearing damage, set a medium volume.

1. Navigate to **Settings > General > Volume**.

| Icon                                                                                | Function |
|-------------------------------------------------------------------------------------|----------|
|  | Louder   |
|  | Quieter  |

## Customising the Layout

You can customise the layout of the map view, e.g. set the display in portrait or landscape format or how many view windows are displayed.

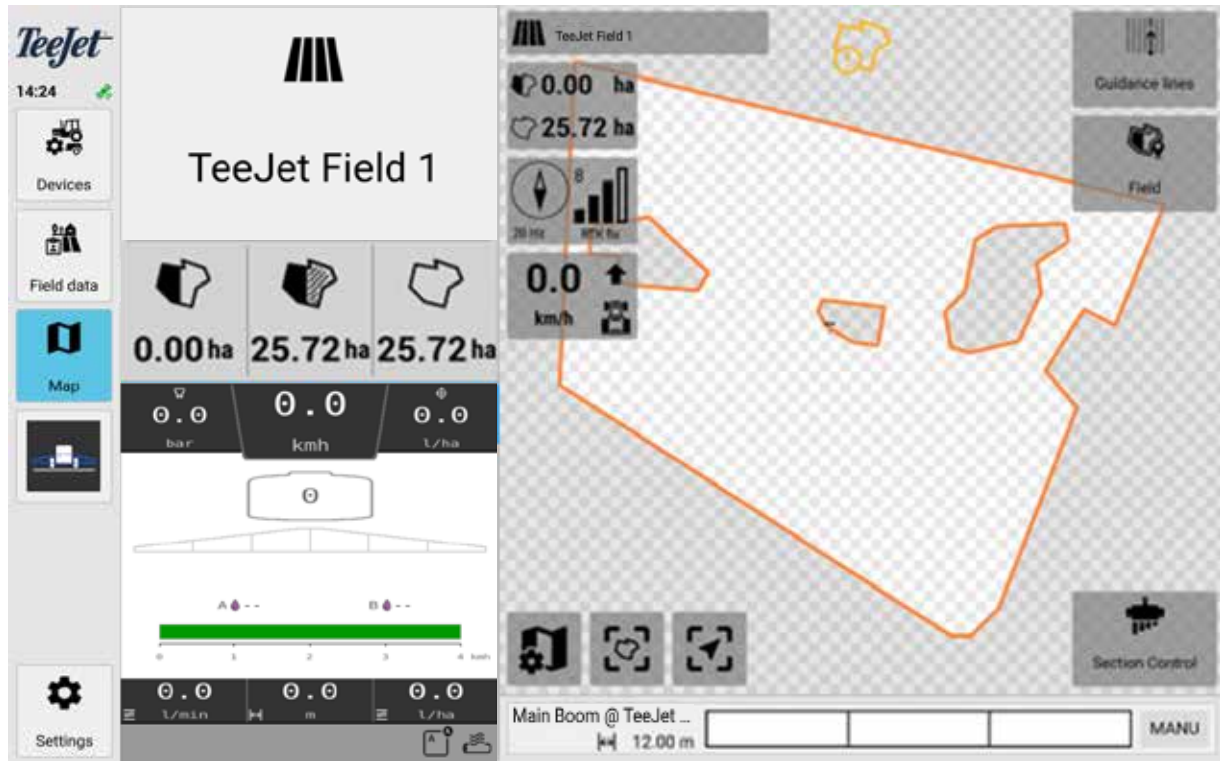


Figure 20: Map view in landscape format and 2 mini views (left)



### NOTICE

#### Restarting the software

The A10 is restarted when switching between landscape and portrait format. This leads to a loss of connection to the implement. It is no longer possible to operate the Universal Terminal.

No functions are available during the restart, e.g. navigation or driving aids.

To ensure trouble-free operation, stop all ongoing work.

1. To customise the layout, navigate to **Settings > General > Layout**.

- To set a landscape format with three small view windows, select **Landscape - 3 mini views**.
- To set a landscape format with two small view windows, select **Landscape - 2 mini views**.
- To set a portrait format, select **Portrait**.



### NOTICE

When selecting a landscape layout, you can quickly switch between full screen mode and mini view and full screen mode by pressing the map view or one of the ISOBUS UT buttons in the left-hand menu bar again.



### NOTICE

If the portrait format layout is selected, ISOBUS-UT selection keys are always displayed exclusively in the lower screen area, while all other A10 selection keys are displayed exclusively in the upper area.

## Selecting A Display Theme

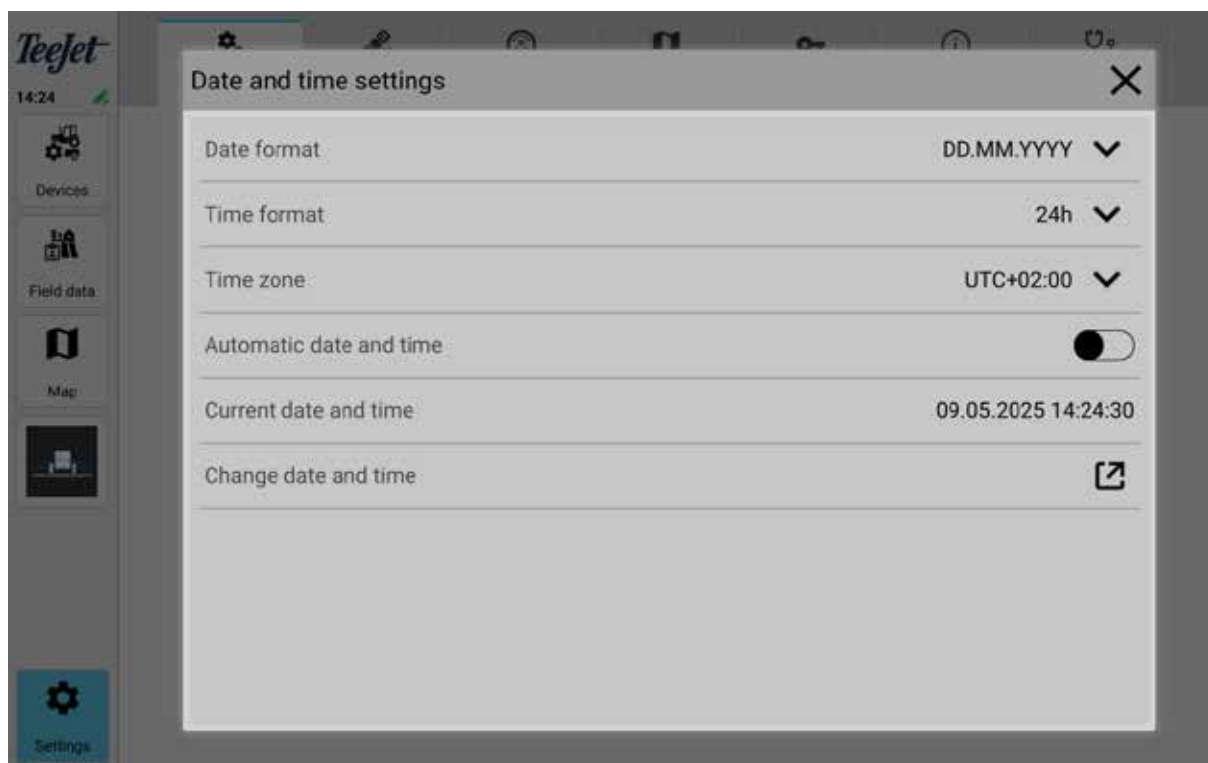
You can display the interface in a dark and a light version.

1. Navigate to **Settings > General > Theme**.

| Icon                                                                              | Function              |
|-----------------------------------------------------------------------------------|-----------------------|
|  | Bright display theme. |
|  | Dark display theme.   |

## Date and Time Settings

You can change the date and time settings, input when the A10 was first started.



### Set Date Format

1. Navigate to **Settings > General > Date and time settings**.
2. Press **Edit**.
3. Under **Date format**, select a date format from the drop-down menu.

### Set Time Format

1. Navigate to **Settings > General > Date and time settings**.
2. Press **Edit**.
3. Under **Date format**, select a time format from the drop-down menu.

## Set Time Zone

The time zone is set using UTC (Universal Time Coordinated). UTC, better known as Coordinated Universal Time, serves as a global reference time standard. All time zones are defined in relation to UTC. The reference point for UTC 0 is the prime meridian.

Use official and recognised sources for the correct setting of your UTC and time zone.



### NOTICE

#### Data loss / corrupted data

The internal clock (UTC format) uses summer time or winter time to determine the time zone.

An incorrectly set time zone can lead to distorted data recordings.

Remember to check whether summer/winter time has changed in your region and make sure the correct time zone is input.

1. Navigate to **Settings > General > Date and time settings**.
2. Press **Edit**.
3. Under **Time zone**, select a time format from the drop-down menu.

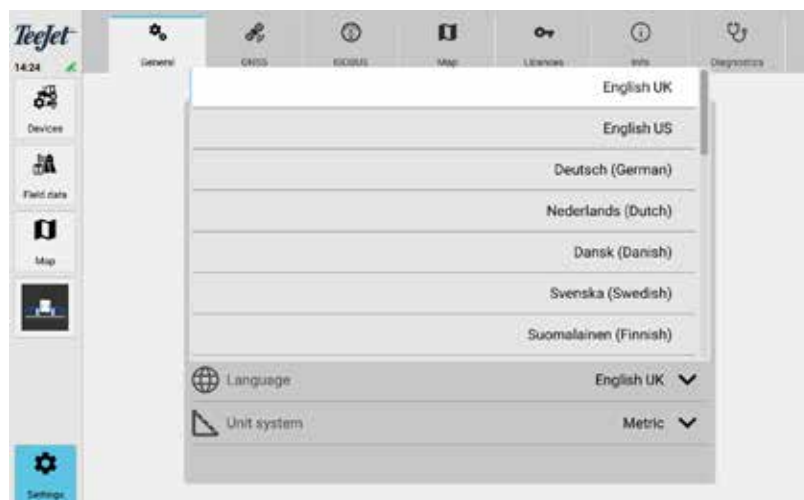
## Set Date and Time Automatically

1. Navigate to **Settings > General > Date and time settings**.
2. Press **Edit**.
3. To set the date and time automatically, press the toggle in the **Automatic date and time** line. This setting causes the system time to be synchronised with the time signal from the GNSS receiver.
4. Pressing the toggle when the setting is active, causes the function to be turned OFF.

## Manually Change Date and Time

1. Navigate to **Settings > General > Date and time settings**.
2. Press **Edit**.
3. Press the arrow under **Date and time**.
4. Enter the data manually.
5. Confirm with **OK**.

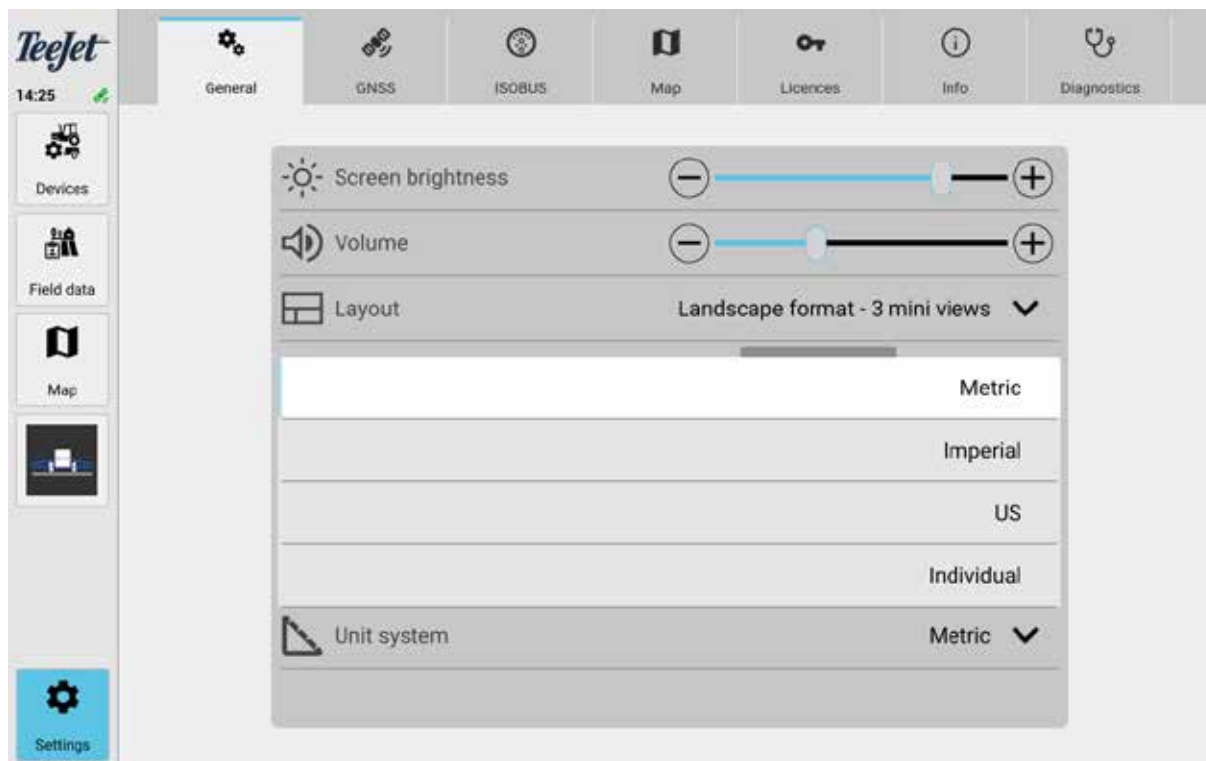
## Setting System Language



1. Navigate to **Settings > General > Language**.
2. Select a language from the drop-down menu.

## Setting the System of Units

You can select a unit system from predefined systems or create your own mixture of which system is used where.



### Set Fixed System of Units

1. Navigate to **Settings > General > System of units**.

- To use the metric system, select **Metric**.
- To use the imperial system, select **Imperial**.
- To use the US system, select **US**.

### Set Individual Unit System

1. Navigate to **Settings > General > System of units**.

2. Select **Individual units**.

- For each subcategory, select whether it is to be displayed according to the metric, imperial or US system of units.

3. Apply the settings.

## Switching Analogue Camera ON / OFF

1. Navigate to **Settings > General**

2. Press **Enable analogue camera**.

- To switch ON the analogue camera, press the toggle.
- Press the toggle again to switch the analogue camera OFF.

When the analogue camera is switched ON, the **Camera** function is available in the menu (["Using Analogue Camera at Work" on page 83](#)).

## GNSS SETTINGS

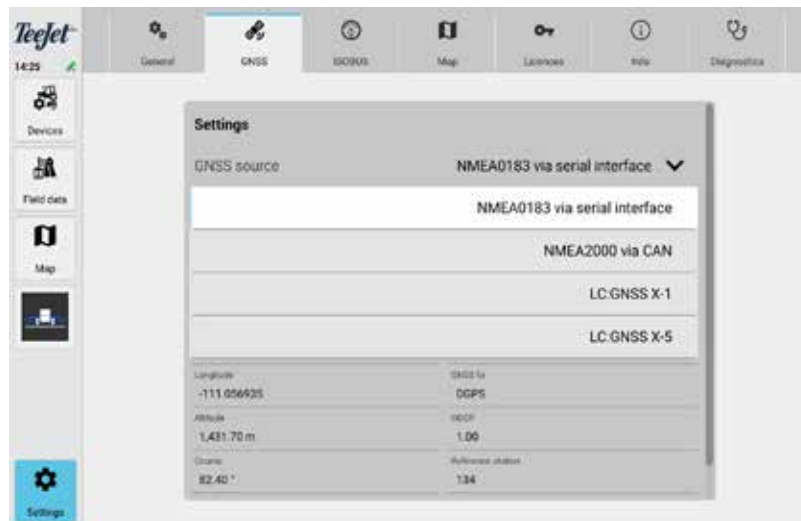
The settings for the GNSS connection can be edited in the **GNSS** tab.



### Setting up GNSS Source

GNSS can be implemented using **Various protocols**, e.g.:

- NMEA 0183
- NMEA 2000



1. Navigate to **Settings > GNSS > GNSS source**.
2. Use the drop-down menu to select a GNSS source. You have the following options:
  - NMEA0183 via serial interface
  - NMEA2000 via CAN

The status of the GNSS connection is shown as follows in the status display.

| Icon | Function                               |
|------|----------------------------------------|
|      | GNSS active and connected (green icon) |

## Accuracies



### TIP

Information in this document on the accuracy of the position calculation or update rates is for reference only.  
The actual values depend on the respective service provider.

## Autonomous

Stand-alone GNSS operation uses only radio signals from GNSS satellites. No other sources are used for amplification or correction when calculating the position.

- Standard position calculation
- Without signal amplification
- Without signal corrections
- Accuracy (vertical/horizontal): 8 m ... 15 m

## DGPS

Differential Global Positioning System (DGPS) improves the accuracy of GPS data by using corrections from fixed reference stations to minimise deviations caused by atmospheric disturbances and other sources of error.

- Precise position calculation
- Without signal amplification
- With signal corrections
- Accuracy (vertical/horizontal): 0.5 m ... 2,5 m

## DRS

DRS is a driver for centimetre-accurate position calculation without signal corrections.

- Precise position calculation
- Without signal amplification
- Without signal corrections
- Accuracy (vertical/horizontal): 0.01 m ... 1.0 m (depending on the duration of use)



### NOTICE

The accuracy of the position calculation decreases during use.

To obtain the best possible accuracy, restart the driver regularly every 20 minutes.

## H-PPP

High Precision Point Positioning (H-PPP) enables the highly accurate determination of positions by evaluating GNSS signals, using precise correction data to minimise sources of error such as satellite clocks and atmospheric effects.

- Highly accurate position calculation
- Without signal amplification
- With signal corrections
- Accuracy (vertical/horizontal): 0.05 m ... 0.1 m

## RTK

Real-time kinematics (RTK) enables high-precision GPS navigation by using real-time correction data to minimise deviations in the satellite signals and thus achieve positioning accuracies in the centimetre range.

- Highly accurate position calculation
- With signal amplification
- With signal corrections
- Accuracy (vertical/horizontal): 0.1 m ... 0.2 m (**Float mode**), 0.01 m ... 0.02 m (**Fixed mode**)

The GNSS-X system uses Fixed mode by default.



## RTK Settings

### RTK Basic Settings

| Setting                                                   | Description                                                                                 |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------|
| RTK licence                                               | Press to enter the RTK licence key.                                                         |
| Mobile network settings (settings for the mobile network) | Press to configure the settings for the mobile network. ( <a href="#">See table below</a> ) |

### Mobile Network Settings (Settings for the Mobile Network)

| Setting                 | Description                           |
|-------------------------|---------------------------------------|
| APN (Access Point Name) | Press to enter the access point name. |
| Dialling String         | Press to enter the dialling string.   |
| User name               | Press to enter the user name.         |
| Password                | Press to enter the dialling string.   |

### NTRIP

| Setting           | Description                                 |
|-------------------|---------------------------------------------|
| Server address    | Press to enter the NTRIP server address.    |
| Port              | Press to enter the NTRIP port.              |
| User name         | Press to enter the NTRIP user name.         |
| Password          | Press to enter the NTRIP password           |
| Reference station | Press to enter the NTRIP reference station. |

## Setting the Serial Baud Rate

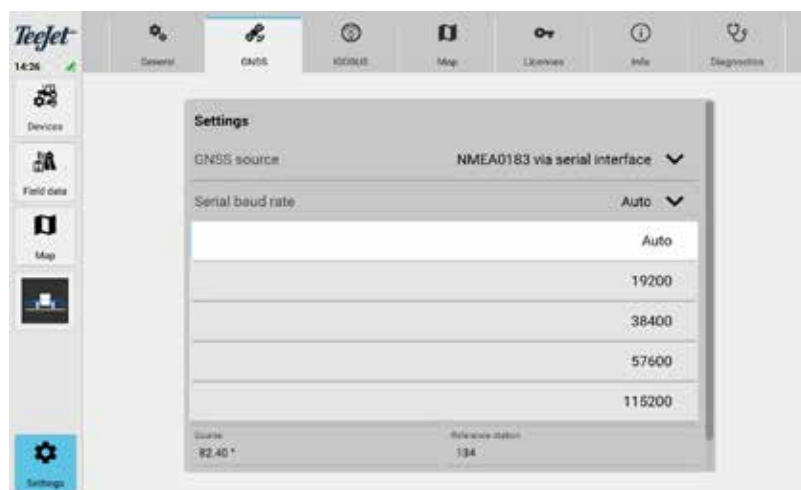
The baud rate indicates how quickly data is transmitted between the transmitter and receiver. The higher the baud rate, the faster data is transmitted.



#### NOTICE

The set baud rate must correspond to the baud rate of the GNSS receiver, otherwise no data exchange is possible.

Using the automatic (Auto) setting is preferable, unless you are completely sure of what baudrate is being used by your specific setup.. The baud rate can also be found in the GNSS receiver manual or can be obtained from the GNSS device manufacturer.



1. Navigate to **Settings > GNSS > Serial baud rate**.
2. Select a suitable baud rate from the drop-down menu.

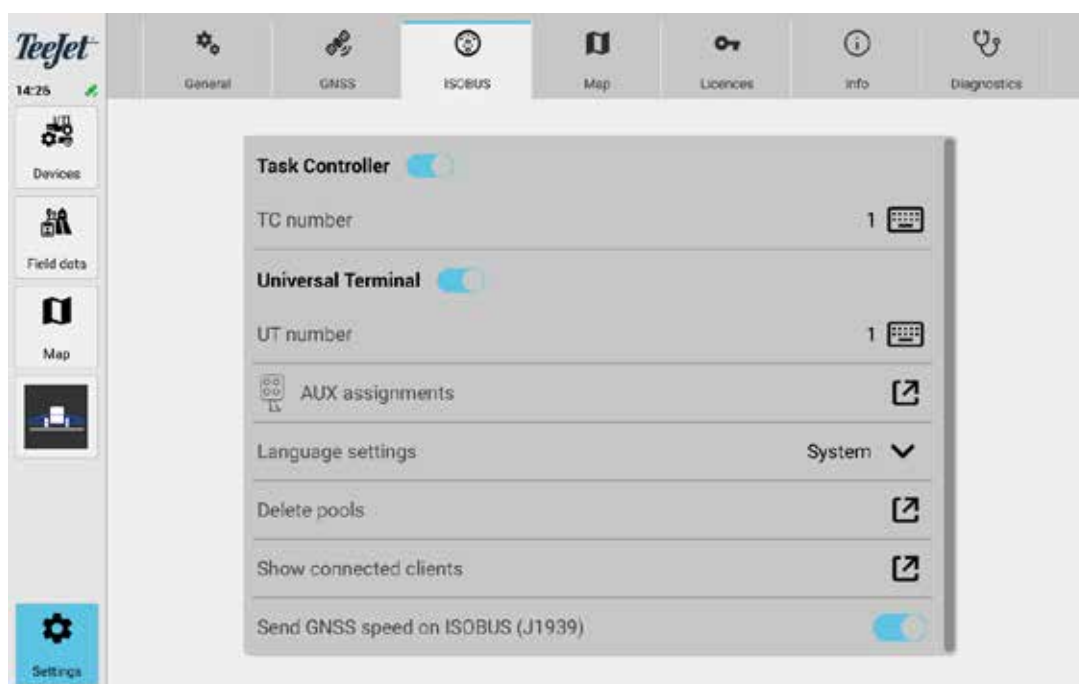
## Displaying GNSS Information

You can display information under **Settings > GNSS source**, e.g.:

- Latitude
- Longitude
- Height
- Course
- Update rate
- Satellites
- GNSS-Fix
- HDOP (Horizontal Dilution of Precision)
- Reference station

## ISOBUS SETTINGS

You can make settings for the ISOBUS interface in the **ISOBUS** tab.



## Switching the Task Controller ON / OFF

The Task Controller (TC) enables data recording and data exchange. The TC is a prerequisite for the documentation of job data with ISOBUS implements as well as Section Control, Variable Rate Control and other functions. It is switched ON by default.

1. Navigate to **Settings > ISOBUS > Task Controller**.

- To switch OFF the Task Controller, press the toggle.
- Press the toggle again to switch the Task Controller back ON.

## Changing the TC Number

The TC number is the number of the task controller.

1. Navigate to **Settings > ISOBUS > TC number**.

2. Open the keyboard.

3. Enter a number and confirm your entry.

## Switching the Universal Terminal ON / OFF

The Universal Terminal is an operating device that guarantees access to data from various ISOBUS devices (depending on your equipment setup). It is switched ON by default.



### NOTICE

#### Data loss

This action will result in a loss of connection to the implement. It is no longer possible to operate functions via the Universal Terminal.

To ensure trouble-free operation, stop all ongoing work.

1. Navigate to **Settings > ISOBUS > Universal Terminal**.
  - To switch OFF the Universal Terminal, press the toggle.
  - Press the toggle again, to switch the Universal Terminal back ON.

## Changing the UT Number

The UT number is by default, derived from the number of the task controller. When using several ISOBUS terminals with UT function, each of the terminals must have a unique UT number. Implements prefer to connect to the terminal with the lowest UT number. If several terminals have the same UT number, there will be a conflict and safe use of the UT functionality cannot be guaranteed.



### NOTICE

#### Data loss

This action will result in a loss of connection to the implement. It is no longer possible to operate functions via the Universal Terminal.

To ensure trouble-free operation, stop all ongoing work.

1. Navigate to **Settings > ISOBUS > UT number**.
2. Open the keyboard.
3. Enter a number and confirm your entry.

## Assigning an External Input Device (e.g. Joystick)

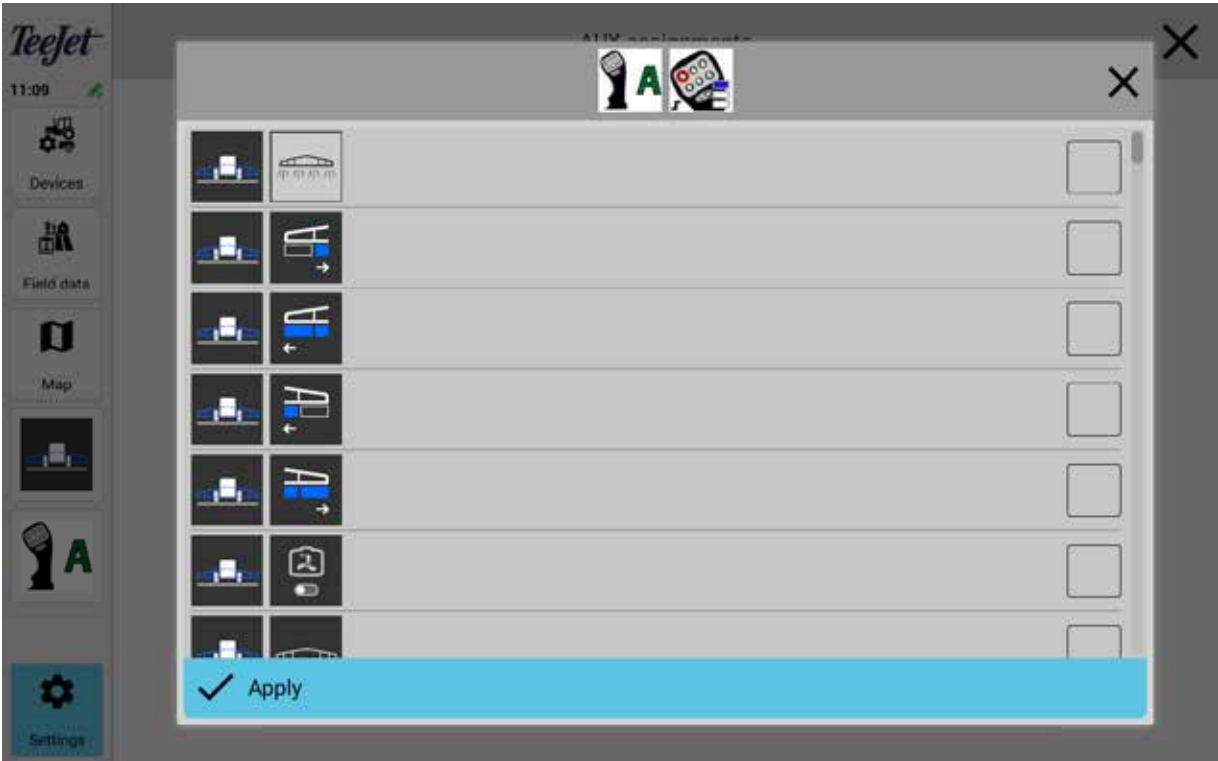
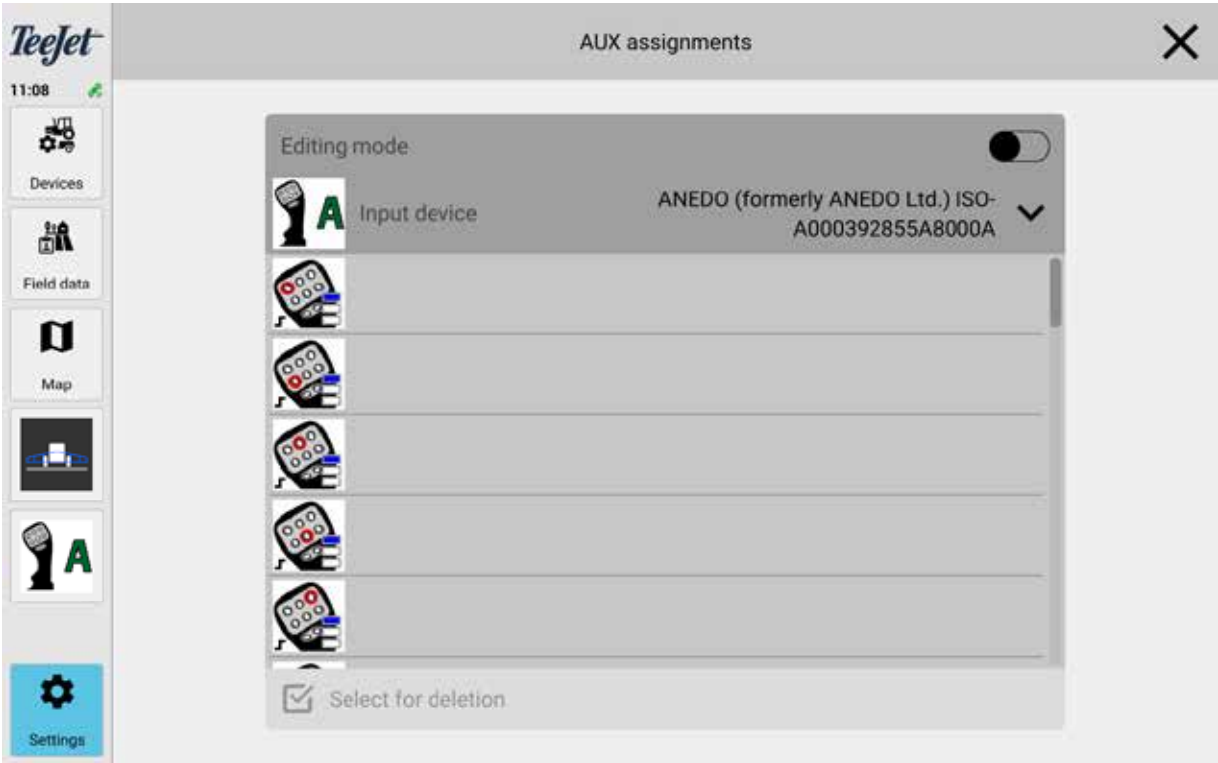
It can be difficult to enter commands via the touch screen while driving.

For better handling, various input devices can be connected via **Settings > ISOBUS > AUX assignment**, e.g. a joystick or switch boxes.

### Assign Input Device

4. Under **Settings > ISOBUS > UT number**, check whether the Universal Terminal is set up as a primary terminal with the UT number 1.
  - You can perform the AUX assignment in this screen.
5. Press **Edit AUX assignment**.
6. Switch ON the editing mode by pressing the toggle (see picture on next page).
7. Select the external input device (e.g. joystick).
8. Press a button on the external input device. Then assign one of the displayed functions to the button.
9. Confirm the assignment with **Apply**.

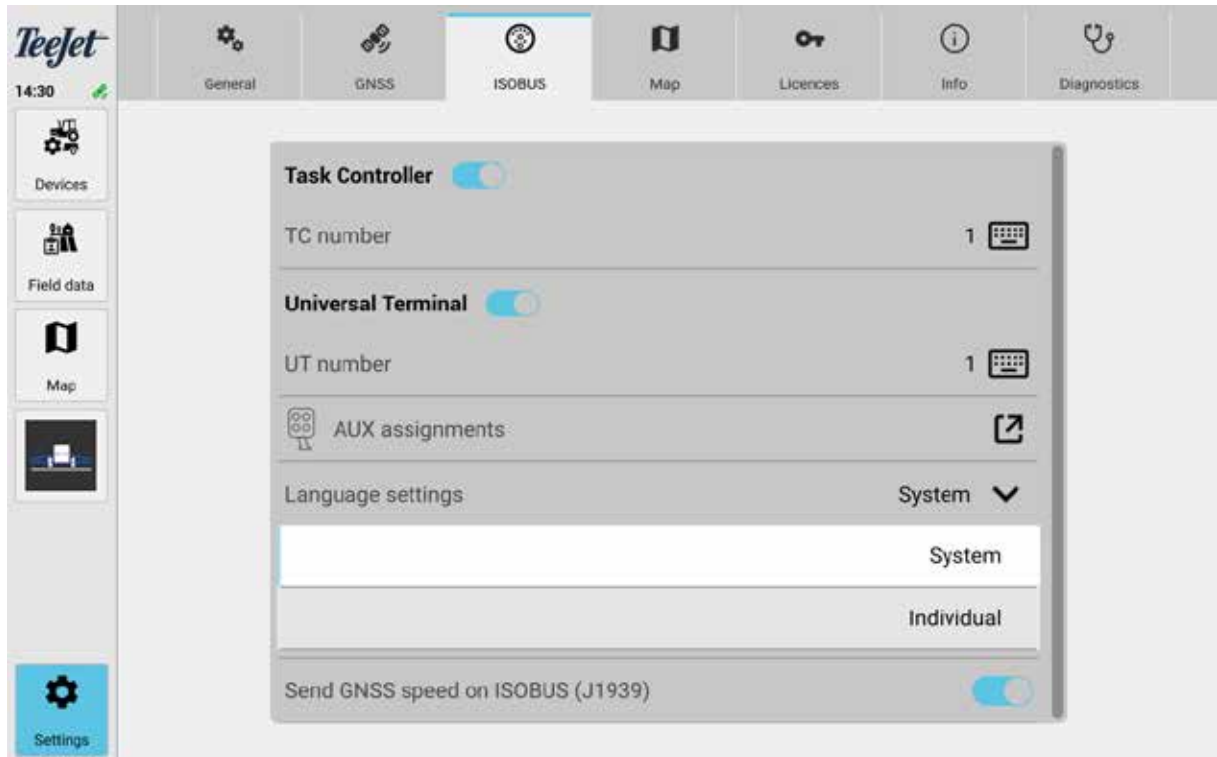




## Setting the ISOBUS UT System Language

### Set the System Language for ISOBUS UT

During this process, the language of the Universal Terminal (UT) is set to the language previously chosen on the A10 (see "[Setting System Language](#)" on page 89). Control elements and information in the UT are then displayed or formatted in this language.



1. Navigate to **Settings > ISOBUS > Language settings**.
2. Under **Language**, select **System** from the drop-down menu.

### Set Individual Language for ISOBUS UT

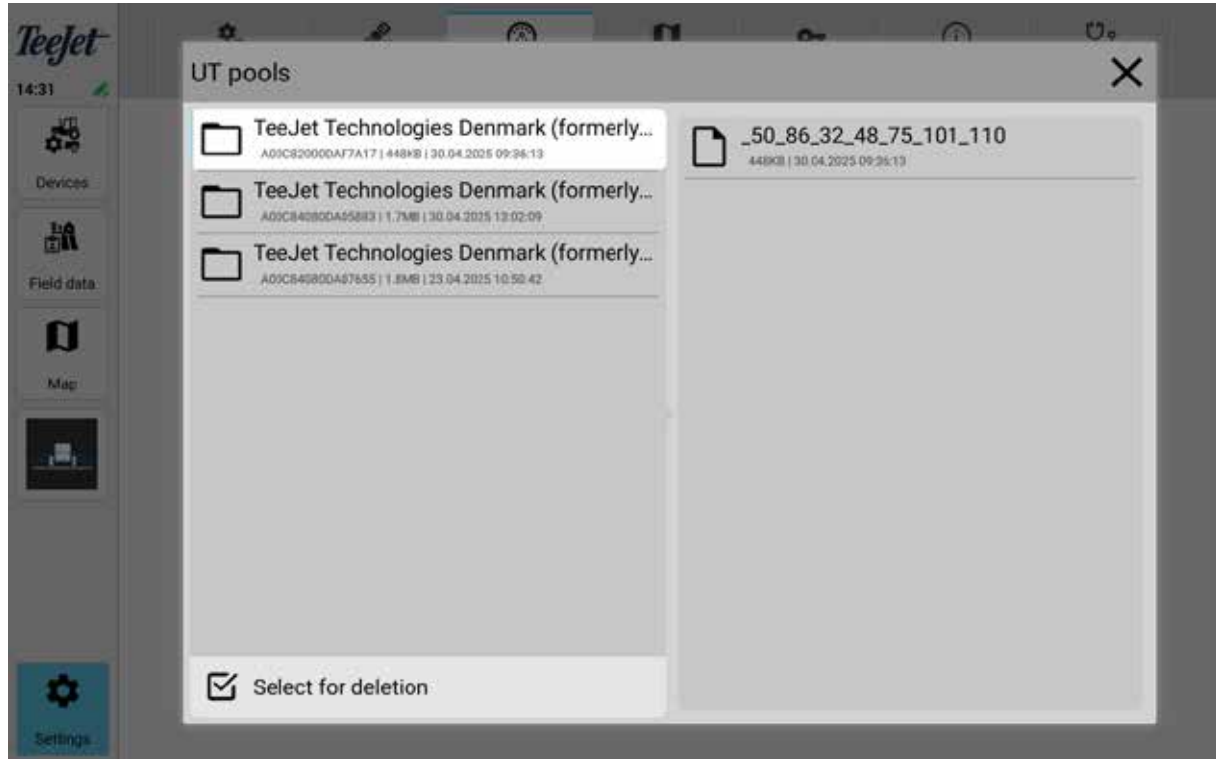
During this process, the language and localisable content (e.g. time format) of the Universal Terminal (UT) are set individually, independent of what was previously set up in the A10. Control elements and information in the UT are then displayed or formatted in this language.

1. Navigate to **Settings > ISOBUS > Language settings**.
2. Under **Language**, select **Custom** from the drop-down menu.
3. Select a language.
4. Select a time format.
5. Select a date format.
6. Select a display for decimal characters.
7. Select a unit system.

## Deleting ISOBUS UT Cache (UT Pool)

A UT pool contains the “cached” data of the UT operating screens of the connected devices (e.g. implements, AUX input devices). By deleting these UT pools, you force UT data to be re-uploaded. This can help, for example, if a change to the configuration of an implement or a software update did not show in the way, that you were expecting it to.

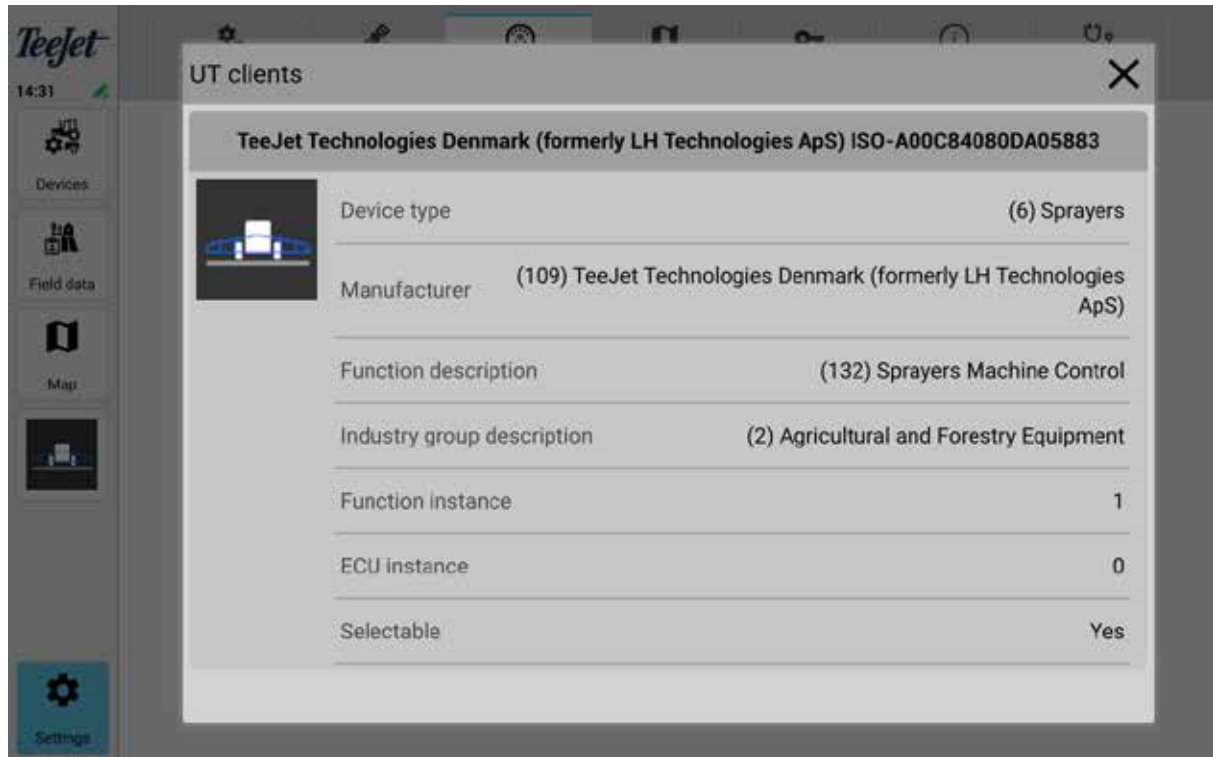
Sometimes, it can also simply be a good idea to do, so you know that all of your UT devices, are running with all the newest information, and no "old data" is interfering with your work.



1. Navigate to **Settings > ISOBUS > Delete pools**.
2. Press **Select for deletion**
3. Select a pool (or multiple) to delete.
4. Press **Delete**.

## Showing Connected ISOBUS Clients

1. Navigate to **Settings > ISOBUS > Show connected clients**.



## Switching the Sending of the GNSS-J1939 Message ON / OFF

The **GNSS-J1939 message** is used to provide **GNSS information** such as speed or vehicle heading to other network participants via the ISOBUS.

With some implement combinations (e.g. vehicle - implement, vehicle - steering system), it can happen that several network participants send the GNSS-J1939 message via the ISOBUS, resulting in a malfunction of the overall system.

- If the GNSS information from your own display is to be used, the third-party device that also sends the GNSS-J1939 message to the bus must be identified. Contact the manufacturer or dealer of the third-party device to check whether the transmission of the GNSS-J1939 message can be permanently switched OFF on the affected third-party device.
- One possible troubleshooting option is to switch OFF your own GNSS J1939 message.

### Switch the Sending of the GNSS-J1939 Message ON / OFF



#### NOTICE

This action only switches the transmission of GNSS J1939 messages from your own device ON or OFF. Other devices/ network participants are not affected by this and can continue to send the GNSS-J1939 message via the ISOBUS.

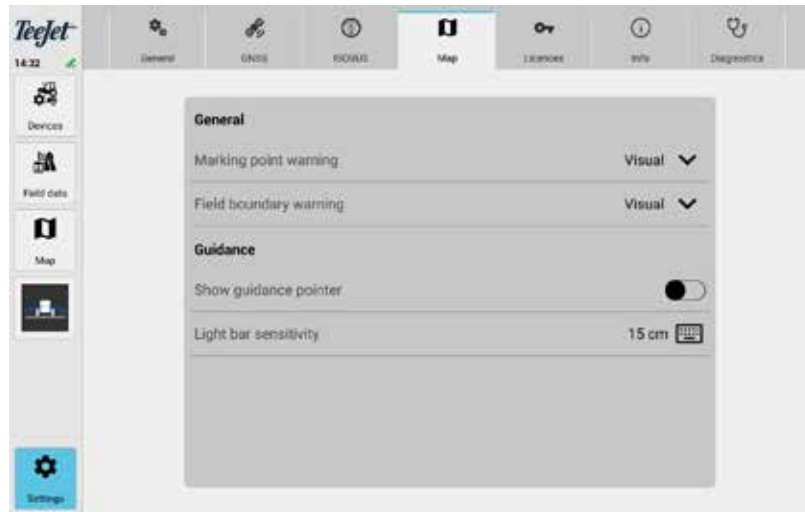
1. Navigate to **Settings > ISOBUS > Send GNSS speed to ISOBUS (J1939)**.

- To switch OFF the GNSS-J1939 message, press the toggle.
- Press the toggle again, to switch the GNSS-J1939 message back ON.



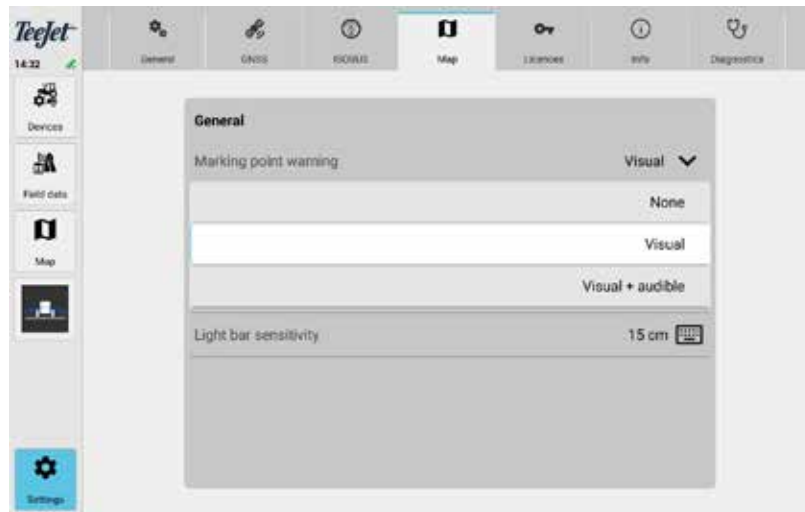
## MAP SETTINGS

You can customise the map display in the **Map** tab.



### Customising Warnings and Alarm Messages

It is possible to have the system issue warnings if you, for example, reach a field boundary.



1. Navigate to **Settings > Map > General**.
2. To customise the warnings for the marking point, open the drop-down menu under marking point warning.
3. To customise the warnings for the field boundaries, open the drop-down menu under field boundary warning.
4. You have the following options:
  - **Visual:** A visual warning is displayed in the map view.
  - **Acoustic + Visual:** A visual warning is displayed in the map view and a warning signal sounds at the same time.
  - **None:** No warning is issued.

## Showing or Hiding Guidance Pointer

The guidance pointer is a visual aid when working with guidance lines. It helps with aiming and tracking on a guidance line.

1. Navigate to **Settings > Map > General > Show guidance pointer**.

- To hide the guidance pointer, press the toggle.
- Press the toggle again to get the guidance pointer back.

## Setting the Length of the Guidance Pointer

- [Requirement] The guidance pointer is shown.

1. Navigate to **Settings > Map > General > Guidance pointer length**.

2. Open the keyboard.

3. Enter a value and confirm your entry.

## Setting the Sensitivity of the Light Bar

When using guidance lines on the map screen, there will be a light bar displayed at the top of the screen. This tells you if you have moved away from the ideal track of the current guidance line, as well as informs you, which way you will need to turn, to get back on the track.

The **light bar sensitivity setting**, changes how far away from the ideal guidance line you will need to move, before the system warns you and tries to get you back on the track.

1. Navigate to **Settings > Map > General > Light bar sensitivity**.

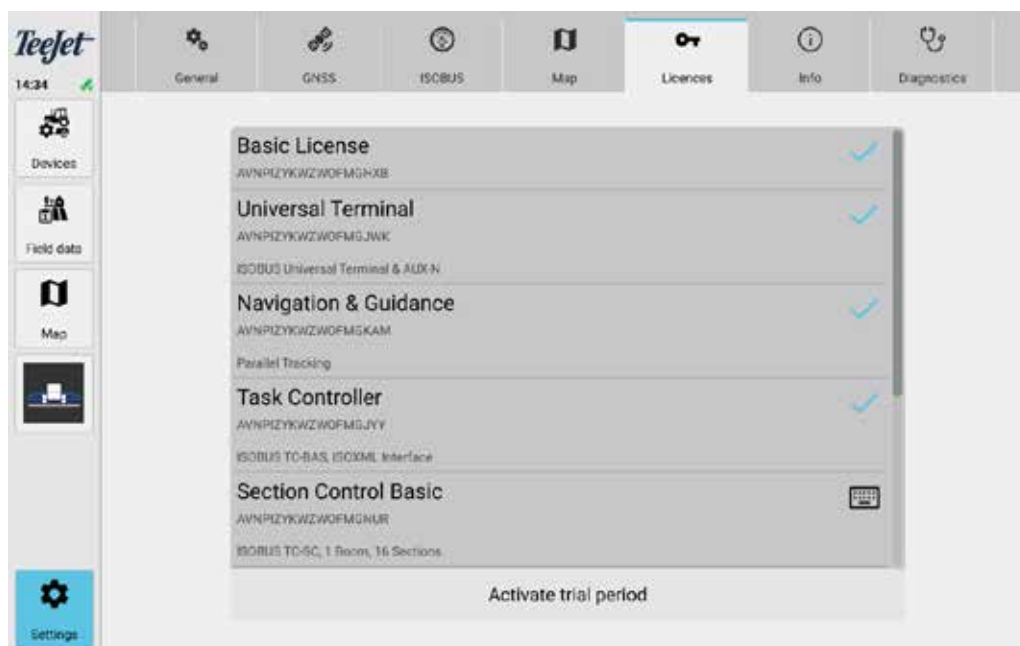
2. Open the keyboard.

3. Enter a value.

4. Confirm the entry.

## LICENCE OVERVIEW

You can manage the licences in the **Licences tab**.



## Licence Overview

| Licence                  | Prerequisite                   | Range of functions / features                                                                                                                                                                                                                                                             |
|--------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic licence            | -                              | Basic operation<br>3D map<br>GPS / GNSS<br>Manage virtual implements (non-ISOBUS-capable implements)<br>Manual coverage recording<br>Create field boundary, headland, markings<br>Import / export backups<br>Import field boundaries<br>PDF Reports<br>Remark:<br>No connection to ISOBUS |
| Universal Terminal       | Basic licence                  | Use Universal Terminal<br>Diagnosis / display of network subscribers<br>Display basic values from the vehicle job computer (TECU)<br>Basic communication with ISOBUS-capable implements<br>Support for external input devices (e.g. joystick)                                             |
| Navigation & Guidance    | Basic licence                  | Functions for parallel driving<br>Guidance lines                                                                                                                                                                                                                                          |
| Task Controller          | Basic licence                  | ISOXML import / export<br>Support for all ISOBUS functions                                                                                                                                                                                                                                |
| Section Control Basic    | Basic licence, Task Controller | Section Control automatic mode<br>Supports single boom and 16 sections                                                                                                                                                                                                                    |
| Section Control Medium   | Basic licence, Task Controller | Section Control automatic mode<br>Supports single boom and 120 sections                                                                                                                                                                                                                   |
| Section Control Advanced | Basic licence, Task Controller | Section Control automatic mode<br>Supports multi boom and 255 sections                                                                                                                                                                                                                    |
| Variable Rate Control    | Basic licence, Task Controller | Full support for ISOXML and shapefiles<br>Support for Application Maps (actual value maps for output quantities)<br>Support for the use of multi-boom and multi-product (use of several booms with Application Maps, e.g. application of different products)                              |
| Tramline Control         | Navigation & Guidance          | Allows for recording and exporting of tramlines.                                                                                                                                                                                                                                          |
| Autosteering             | Navigation & Guidance          | Allows the use of automatic steering for steering on guidance lines.                                                                                                                                                                                                                      |



### TIP

Some licences require the activation of one or more other licences. Note the requirements of the respective licence. Contact your dealer.

## Activating A Licence

To activate a licence, you need an **activation code** from your dealer.



### NOTICE

#### Data loss / loss of personal data

Keep system information (e.g. activation codes) in a safe place.

Only share device licence codes or numbers with your dealer.

- [Requirement] **Part number** (**Part number** can be found in **Settings > Info** or on the **device sticker**).
- [Requirement] **Serial number** (**Serial number** can be found in **Settings > Info** or on the **device sticker**).

1. Contact your dealer (e.g. telephone, e-mail).

- Your dealer may require additional information for activation. Have the **Part number** and the **Serial number** ready.
- Your dealer will send you the activation code.

2. Navigate to **Settings > Licences**

3. Select the licence to be activated and click **Edit**.

4. Enter the **activation code** provided by your dealer and confirm the entry.

*The licence and its features are activated.*

## Testing Your A10 Universal Terminal With Test Licence



### NOTICE

#### Data loss

The test licence can only be activated once. When it has been used, it cannot be used again.

The test licence is time-limited. Once the timer runs out, it cannot be activated again.

Ongoing work, recordings and device connections are interrupted when the test licence expires.

End ongoing work, recordings and device connections before the test licence expires.

### Activate Test Licence

1. To activate the test licence, navigate to **Settings > Licences**.

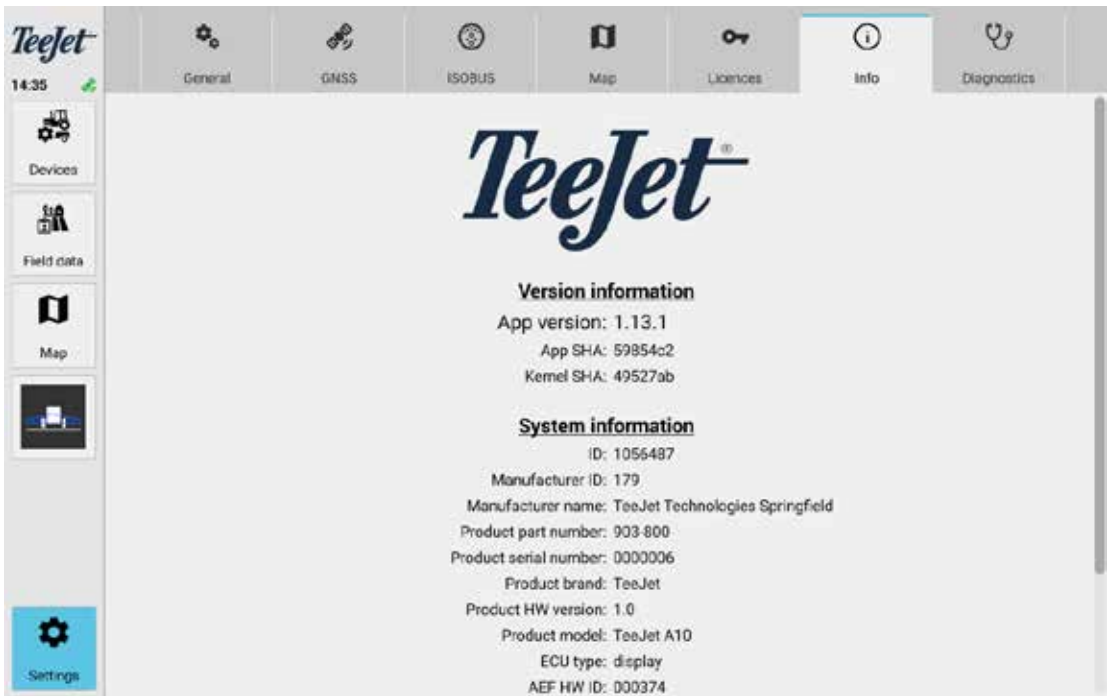
2. Press **Activate test licence**.

*Once the test licence is activated, the remaining available period is displayed on the individual licences.*

*Remember to check the remaining available time of the test licence in the licence overview (Settings > Licences).*

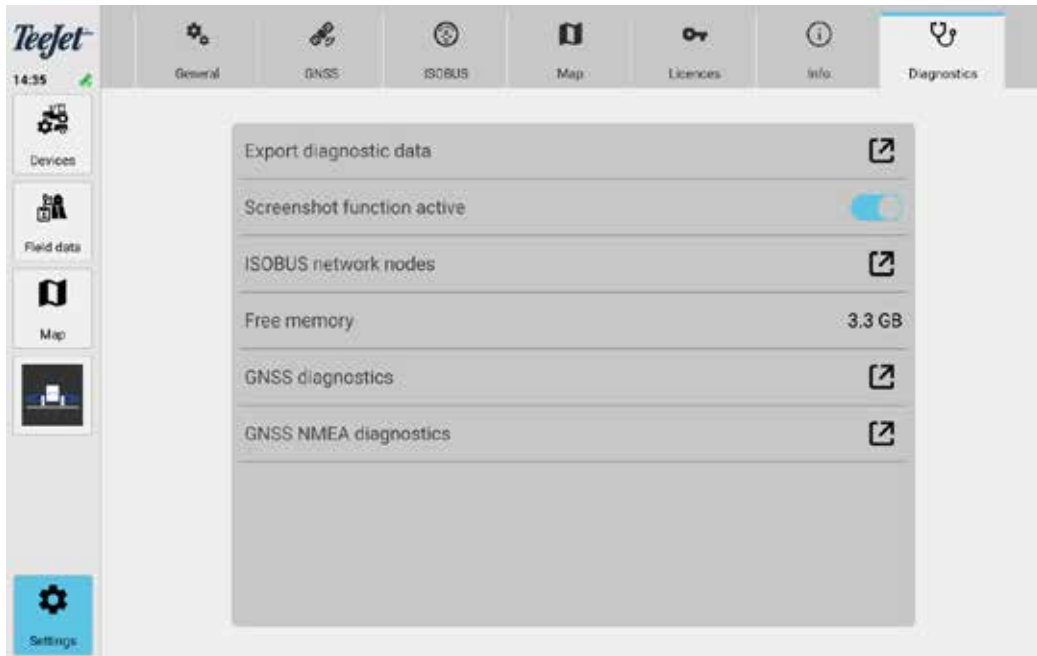
## SYSTEM INFORMATION

In the **Info** tab, you will find information about the current software version and the system in general. Third-party licences will also be displayed here.



## DIAGNOSTIC OPTIONS

In the **Diagnostics** tab, you can display and export diagnostic data as well as activate the screen shot function.



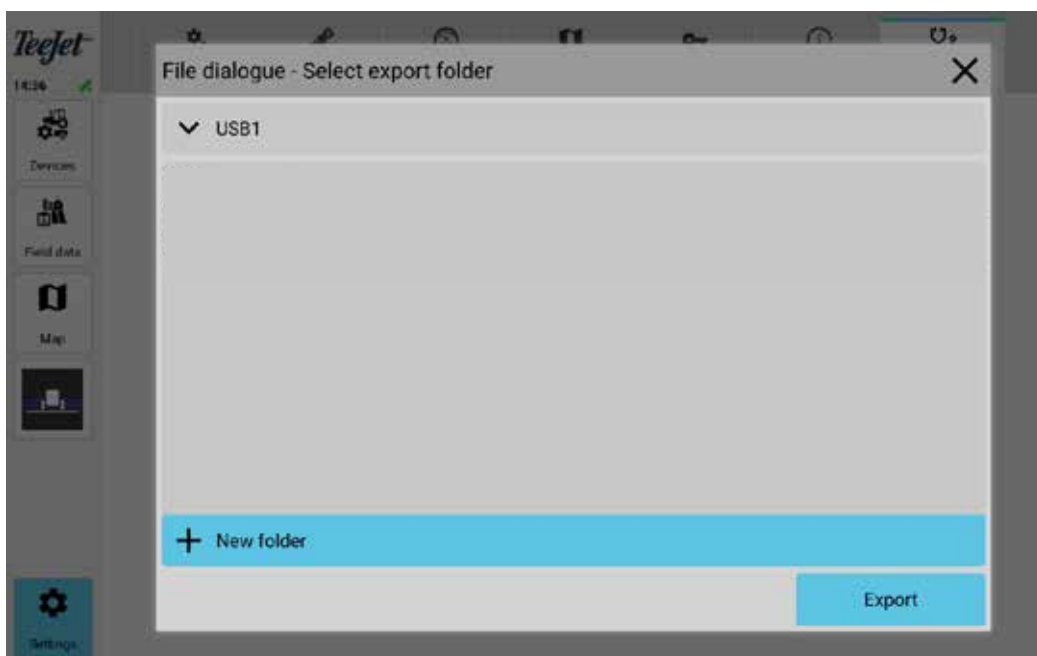
### Exporting Diagnostic Data

If you are having issues with your A10, it may be useful to export diagnostic data so that support can help you.



#### TIP

Only export the diagnostic data on the recommendation of the service technician.

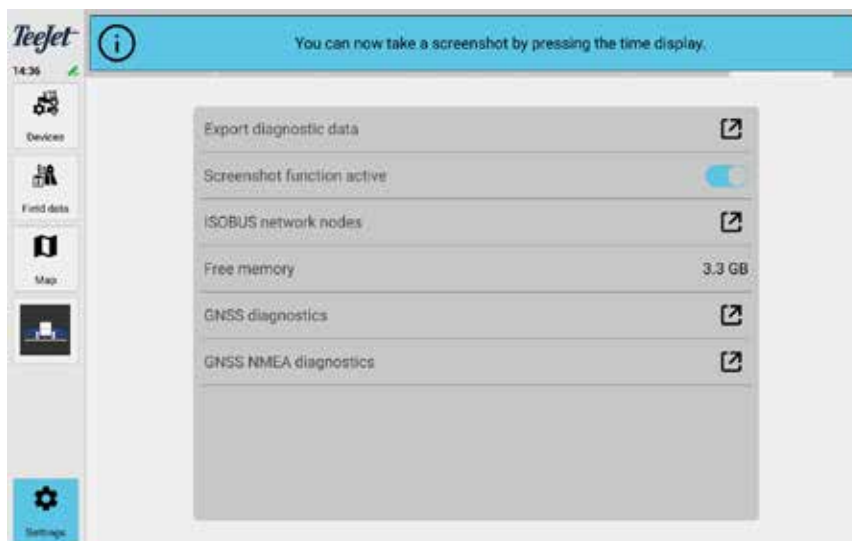


1. Navigate to **Settings > Diagnostics > Export diagnostic data**.
2. Select a storage location.
3. Export the data.

# A10 Universal Terminal

## Activating Screen Shot Function

A screen shot can help the support team to better identify the issues you are seeing.



- [Requirement] A USB flash drive is plugged into the A10

1. Navigate to **Settings > Diagnostics > Screenshot function active**.

- To activate the screen shot function, press the toggle.
- Press the toggle again, to deactivate the screen shot function.

2. You can trigger the screen shot by pressing the time display in the top left-hand corner of the application.

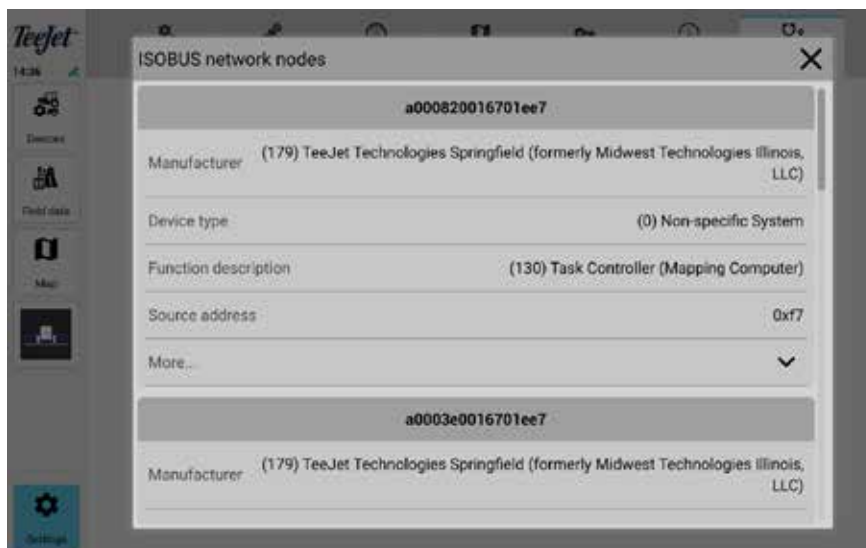
*A beep sounds.*

*The screenshot is saved in the created **Screenshots** folder on the connected USB flash drive.*

## Displaying ISOBUS Network Participants

In the overview of the ISOBUS network participants, you will find information on the manufacturer, function type and version information of the connected ISOBUS devices.

1. Navigate to **Settings > Diagnostics > ISOBUS network participants**.



## Viewing Free Storage Space

Under **Settings > Diagnostics > Free storage space** you can see the currently available storage space.



## UPDATING SYSTEM

The system should be updated at regular intervals. Make sure to check if a new version is available.

Your dealer provides the corresponding **update files**. Follow the instructions for handling the update file and follow the instructions below, in case no new instructions have been given, when receiving the update files..

Additional information may be required for a successful system update:

- **Hardware version** (see "[Type plate](#)" on page 111)
- **Part number** and other relevant system identifiers



### NOTICE

#### Restarting the software

This action restarts the A10. This leads to a loss of connection to the implement. It is no longer possible to operate the Universal Terminal.

No functions are available during the restart, e.g. navigation or driving aids.

To ensure trouble-free operation, stop all ongoing work.



### NOTICE

#### Data loss

The device must be restarted during system updates.

Do not switch OFF the device or disconnect it from the power supply during system updates.

Do not remove the USB flash drive during the system update.



### TIP

The operating language in the Service app is only available in English. If you need help, contact your dealer.

- [Requirement] Formatted USB flash drive (FAT32).

1. Create a folder named "**updates**" on the USB stick.

- Case sensitive.

2. Copy the **update file** into the folder.

3. Make sure the A10 is switched OFF.

4. Connect the USB flash drive.

5. Switch ON the device.

*After starting, the **Service App** is displayed.*

*Follow the instructions on the screen.*

6. Select the specified **update file from the list and confirm with Start update**.

*The system update may take a few minutes.*

7. If the update is successful, the device restarts automatically.

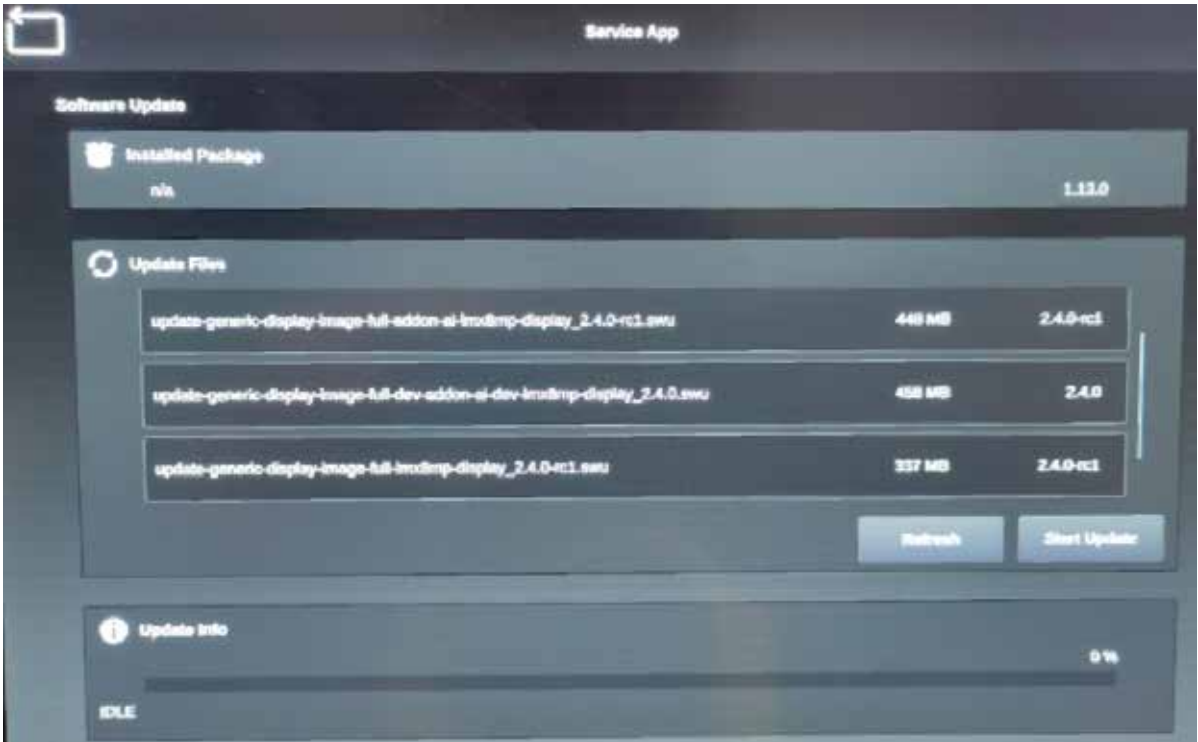
*After starting, the **Service App** will be displayed again.*

8. Exit the **Service app**, by pressing the **exit icon** in the top left-hand corner.

9. Remove the USB flash drive after the device has fully booted.

# A10 Universal Terminal

A system update has been carried out. The device can be operated.



## CHAPTER 8 - TECHNICAL DATA

### PRODUCT OVERVIEW



Figure 22: Operating Side

- 1 Touch Screen (Operation Side)



Figure 21: View of the Rear (Some models may have different connections than others)

- |                           |                              |
|---------------------------|------------------------------|
| 1 Recessed Grip           | 2 Loudspeaker                |
| 3 Heat Sink               | 4 Universal Plug Connector A |
| 5 Ethernet Connectors     | 6 Universal Plug Connector B |
| 7 4x Threaded Bushes (M6) | 8 Antenna Connector          |



Figure 23: Side View (Right)

1 ON/OFF Button

2 2x USB Type A Socket, with Protective Caps

## PRODUCT INFORMATION

### Dimensions and Mechanics

|                         |                                         |
|-------------------------|-----------------------------------------|
| Dimensions              | 251 x 170 x 79 mm                       |
| Weight                  | 1020 g                                  |
| Touch Screen            | 1280 x 800 pixels, projected capacitive |
| Material / Housing Type | PC-ABS plastic housing RAL 9005         |
| Fastening               | 4x M6 threaded bushes (VESA75)          |
| Protection Class        | IP6K5 according to ISO 20653            |

### Radio Radiation

#### WLAN 2.4 GHz

|                        |                   |
|------------------------|-------------------|
| Standard               | IEEE 802.11 b/g/n |
| Output power 802.11(b) | 16 dBm            |
| Output power 802.11(g) | 13 dBm            |
| Output power 802.11(n) | 11 dBm            |

#### WLAN 5 GHz

|                           |                    |
|---------------------------|--------------------|
| Standard                  | IEEE 802.11 n/a/ac |
| Output power 802.11(a)    | 15 dBm             |
| Output power 802.11(n/ac) | 13 dBm             |
| Output power 802.11(ac)   | 9.5 dBm            |

#### Antenna

|  |                                                       |
|--|-------------------------------------------------------|
|  | 2.4 GHz and 5 GHz; maximum gain 2 dBi; impedance 50 Ω |
|--|-------------------------------------------------------|

## Power Supply

|                             |                          |
|-----------------------------|--------------------------|
| Nominal Voltage             | 12 V DC                  |
| Operating Voltage           | 8 ... 36 V DC            |
| Reverse Polarity Protection | -36 V MAX                |
| Power Consumption           | 0.8 A at 13.8 V DC       |
| External Fuse               | Attach external 5 A fuse |

## Ambient Conditions

|                       |                                                     |
|-----------------------|-----------------------------------------------------|
| Operating Environment | -20 °C ... +70 °C, relative humidity: 10 % ... 90 % |
| Storage Environment   | -30 °C ... +80 °C, relative humidity: 10 % ... 90 % |

## Interfaces

| Interface | Assignment | Function       |
|-----------|------------|----------------|
| 2 x USB   |            | USB 2.0 Type-A |

### Universal Plug Connector A

Observe the Assignment Diagram (see Other Applicable Documents in "Intended use" on page 11).

|  |      |                                                  |
|--|------|--------------------------------------------------|
|  | CAN1 | First CAN bus, CAN-FD and CAN2.0B, max. 1 Mbit/s |
|  | COM1 | First RS232 interface, 4800-115200 baud          |

### Universal Plug Connector B

Observe the Assignment Diagram (see Other Applicable Documents in "Intended use" on page 11).

|  |      |                          |
|--|------|--------------------------|
|  | CAN2 | Second CAN bus, 500kbits |
|--|------|--------------------------|

## TYPE PLATE

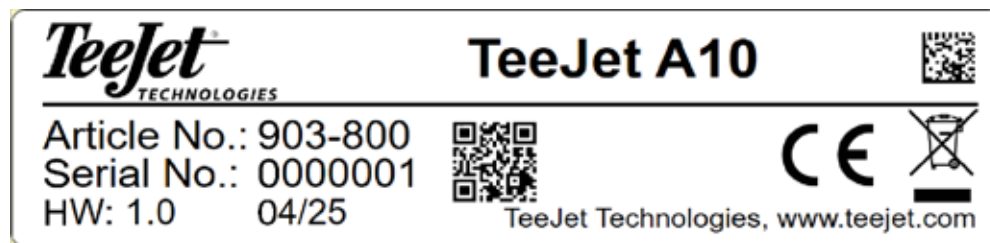


Figure 24: Example – Type Plate

## IN THE BOX UPON RECEIVING

- A10 Universal Terminal
- Touch Protection\* - VESA adapter (75 x 75 mm hole pattern, C-ball 1.5 inch / 38 mm)
- Connection Cable\*
- Analogue Camera (PAL)\*
- User Manual

Suitable Accessories. The inclusion of accessories depends on the product variant ordered.

If you have any questions, contact your dealer.



Figure 25: VESA Adapter with C-ball

## CHAPTER 9 - INSTALLATION AND COMMISSIONING

During installation, the device must be attached to a secure bracket.

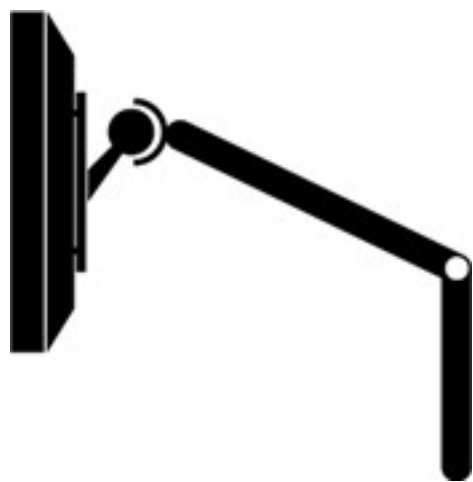


Figure 26: Example: Attach Mounting equipment (VESA Adapter) to the Mount

### FITTING MOUNTING EQUIPMENT

Mounting equipment can be installed using various methods. The methods depend on the installation conditions. The use of a suitable VESA adapter is recommended for easy installation.

#### Mounting Variants

| Installation conditions / prerequisites                                                                  | Remark                                                                                                                                                                         | Installation                             |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <ul style="list-style-type: none"><li>Bracket available and compatible with C-ball connection.</li></ul> | <ul style="list-style-type: none"><li>Only if VESA adapter is included in the scope of delivery.</li><li>Requires bracket with C-ball connection (1.5 inch / 38 mm).</li></ul> | Mount VESA adapter as mounting equipment |
| <ul style="list-style-type: none"><li>Bracket available with matching VESA adapter.</li></ul>            | <ul style="list-style-type: none"><li>Requires bracket with VESA adapter (75 x 75 mm hole pattern).</li></ul>                                                                  | Mount VESA adapter as mounting equipment |
| Individual mounting equipment                                                                            |                                                                                                                                                                                | Installing individual mounting equipment |

Missing accessories or tools can be obtained from your dealer.

## Mount VESA Adapter as Mounting equipment

- 4 x M6 fastening screws, maximum tightening torque 3 Nm
- VESA adapter (75 x 75 mm hole pattern)

1. Attach the VESA adapter to the back of the device.
2. Fasten the VESA adapter to the threaded sockets provided using the four fastening screws on the back of the device.
  - ▶ Do not exceed the maximum tightening torque of 3 Nm.
  - ▶ The maximum screw-in length must not exceed 7 mm.
  - ▶ If necessary, use suitable washers (only suitable for M6 threads).
3. Ensure that all connections are tight and that the device or the fastening screws do not come loose by themselves.
  - ▶ If necessary, use screw locking varnish.

## Installing Individual Mounting Equipment



### CAUTION

**Hazard due to combustion, hazard due to parts coming loose on their own**

The heat sink can reach temperatures of  $>65^{\circ}\text{C}$  during operation.

Ensure that the material and composition of the individual mounting equipment provides sufficient protection against heat.

Ensure that the material and composition of the individual mounting equipment can withstand the conditions of daily work and that it cannot come loose on its own (e.g. due to vibrations, heat).



### NOTICE

The air supply to the heat sink must be ensured for operation.

The individual mounting equipment must not completely cover the heat sink.

- Individual mounting equipment is prepared by means of a drill hole sketch for attaching the fastening screws

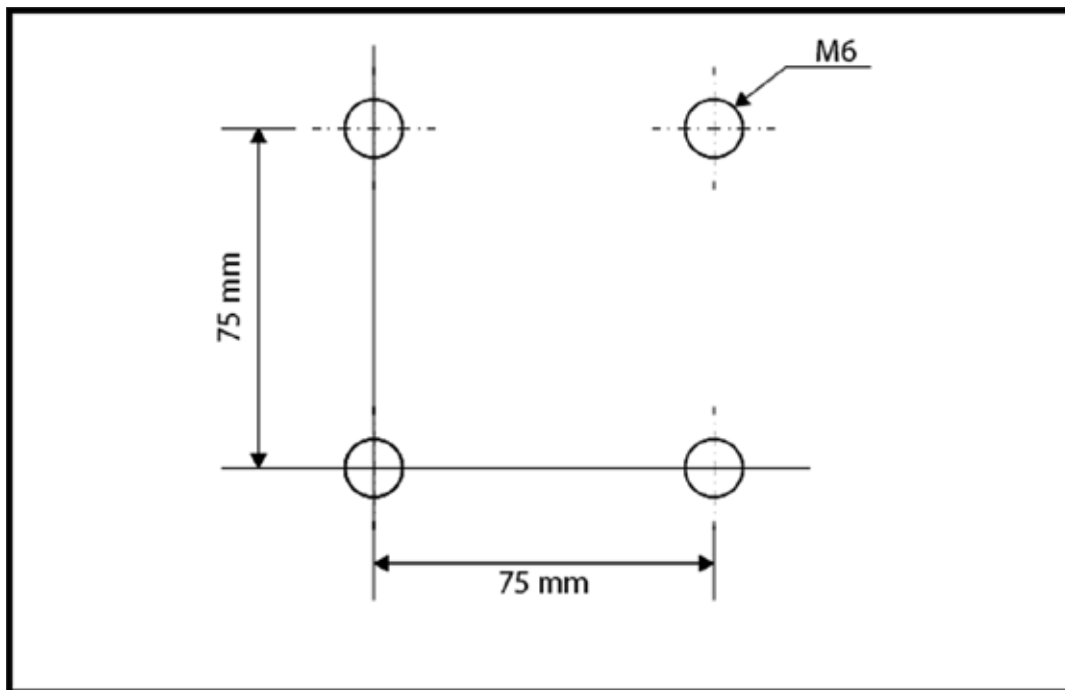


Figure 27: Drill hole sketch with hole pattern 75 x 75 mm

If using Individual Mounting Equipment, see "[Mount VESA Adapter as Mounting equipment](#)" on page 113 regarding attaching said mount to the device.

## MOUNTING AND CONNECTING AN ANALOGUE CAMERA

An analogue camera can be connected to the display using a pre-configured connection cable.



### NOTICE

#### Material damage

Only use accessories approved or provided by your dealer.



### TIP

The system has a function for automatically activating the analogue camera when reversing (see ["Using Analogue Camera at Work"](#) on page 83).

If you use this function, mount and align the analogue camera on the vehicle accordingly.

## Electrical Connection

- [Requirement] Connection cable
- [Requirement] Analogue camera (PAL)

1. Make sure that the display is switched OFF.
2. Connect the analogue camera to the connection cable.
3. Ensure that the connection cable is connected to the intended universal plug connector.



## CHAPTER 10 - TROUBLESHOOTING

In this section you can find solutions for faults that might occur.

### The Device Does Not Work

- The touch screen can no longer be operated or generates unwanted inputs.
- The device switches ON, but the display remains black or white.
- The speaker no longer works.

1. Contact your dealer in the event of faults.

### Direction of Travel is Displayed Incorrectly

1. Changes the direction of travel in the map view. See ["Before the work assignment" on page 29](#).
2. Make sure that the desired GNSS source is correctly set up and selected. See ["GNSS settings" on page 91](#).
3. Ensure that the GNSS device is working correctly. Contact the GNSS device dealer in the event of faults.

### Incorrect or Unusual Times are Displayed

The internal clock (UTC format) uses summer time or winter time to offset the time zone, to correctly display the time in your region.

1. Check whether summer/winter time has changed in your region and make sure that the correct time zone is set. See ["Date and Time Settings" on page 88](#).
2. Use official and recognised sources for the correct setting of your UTC and time zone.

### Incorrect Position in the Map View

If GNSS sources report faults or do not work, there may be several reasons for this:

#### Malfunctions on the GNSS Device

1. Check under **Settings > GNSS > GNSS source** whether the appropriate GNSS device has been selected and set up. See [Set "GNSS source" on page 24](#).
2. If the GNSS source is set correctly, it may be an issue with the GNSS device not working correctly. If possible, try using another GNSS device and see if this device works with the current settings.
3. Contact the GNSS device dealer in case the above didn't solve your issue. Have the part number and serial number of the device ready (**Settings > GNSS > GNSS source > Serial number**) (**Part number** is found on the device sticker or on your original invoice).

#### Serial Baud Rate Set Incorrectly

1. Under **Settings > GNSS > GNSS source**, make sure that the Serial baud rate matches the receiver serial baud rate.
2. Contact the GNSS device dealer in case the above didn't solve your issue. Have the part number and serial number of the device ready (**Settings > GNSS > GNSS source > Serial number**) (**Part number** is found on the device sticker or on your original invoice).

### Connectors are Not Displayed

1. Under **Devices > Tractors > Tractor properties > Connectors**, check whether connectors have been created.

## Fields / Farms are Not Displayed

1. Check under **Field data > Fields / Customers / Businesses** whether these have been created accordingly.
2. Check under **Field data > Master data** whether a data record has been activated.
3. Check whether a filter has been set. If it has, delete it.

## The USB Flash Drive is Not Recognised / Error When Saving Data to the USB Flash Drive

1. Make sure that there is sufficient storage space on the USB flash drive.
2. Make sure that write protection isn't activated on the USB flash drive.
3. Make sure that the format of the file system is FAT-based.

## Position of the Implement is Displayed Incorrectly

1. Check whether:
  - The distances of the implement are correct.
  - The distances between the GNSS receiver and the vehicle's rear axle are correct.
  - The distances between the connector and the vehicle rear axle are correct.
  - The correct connector is selected.

## Section Control Switches ON / OFF Too Early / Too Late / Incorrectly

1. Check whether:
  - The distances between the connector and the vehicle rear axle are correct. See also ["Managing vehicles" on page 45](#).
  - The correct connector is selected.
  - The distances of the implement are correct. See also ["Managing implements" on page 47](#).
  - The GNSS receiver is configured correctly. See ["GNSS settings" on page 91](#).
  - The distances between the GNSS receiver and the vehicle's rear axle are correct.
  - Whether the settings for overlap and switch-ON/switch-OFF delay are correct. Use the relevant wizard to set the delays correctly. See ["Section Control for implements" on page 50](#).

## Incorrect Application Rate / Application Map is Not Displayed / Taken Into Account

1. Check whether the set point assignment under **Field data > Fields > Application Maps > Assignments** has been made correctly. See ["Managing fields" on page 36](#).
2. Under **Field data > Fields > Application Maps > Maps**, check whether an Application Map suitable for the mounted implement has been imported.

## Field Data From the Shape File Cannot be Imported

1. Check whether the shapefile is complete. It must contain at least the following files:
  - .shp
  - .shx
  - .dbf

## Not Enough Storage Space

1. Create backup copies of the master data records using exports (see ["Exporting Master Data" on page 32](#)).
2. Delete complete master data records or just individual fields and tasks to clear up space.

## Warning Symbols are Displayed

1. Check under **Map > Field** whether all parameters for the start of the work assignment are fulfilled.
2. Check whether a field has been started without meaning to.

## Tramline Control is Not Displayed or Cannot be Used

1. Make sure that a licence with the "Tramline Control" feature is activated (see "[Licence Overview](#)" on page 102).
2. Ensure that implements are ISOBUS-capable and have the corresponding functions for tramline control. Observe the information and technical data for the respective implement (e.g. product operating instructions).
3. Check the settings and parameters of the ISOBUS-capable devices using the Universal Terminal (UT) (see "[Setting ISOBUS devices using the Universal Terminal \(UT\)](#)" on page 46).

## Analogue Camera Shows No Image / Shows Incorrect Image

1. Ensure that the analogue camera is correctly connected and the setting activating the camera function is switched ON (see "[Mounting and connecting an analogue camera](#)" on page 114).
2. Make sure that the analogue camera is not covered by objects.

## Automatic Steering System Reports Faults / Does Not Work

If the automatic steering system reports faults or does not work, there may be several reasons for this:

### Multiple Devices Send GNSS-J1939 Message to ISOBUS and Trigger Malfunctions

With some implement combinations (e.g. vehicle - implement, vehicle - steering system), it can happen that several network participants send the GNSS-J1939 message via the ISOBUS, resulting in a malfunction of the overall system.

1. Switch OFF the transmission of the GNSS J1939 message on your own device (see "[Switching the Sending of the GNSS-J1939 Message ON / OFF](#)" on page 99).
2. Contact the manufacturer or dealer of the third-party device to check whether the transmission of the GNSS-J1939 message can be permanently switched OFF on the affected third-party device.

### Malfunctions of the GNSS Device

1. Make sure that the **Controller Status** displays the value **Ready**.
2. Ensure that all necessary access data (e.g. for RTK support) is entered correctly.
3. Contact the GNSS device dealer in case the above didn't solve your issue. Have the part number and serial number of the device ready (**Settings > GNSS > GNSS source > Serial number**) (**Part number** is found on the device sticker or on your original invoice).

### Unknown Cause Triggers Faults

1. Observe the intended pin assignment and configuration of the device (see Applicable documents in "[Intended use](#)" on page 11). Ensure that all specifications are adhered to, during installation and connection.
2. Contact your dealer.

## Coverage Cannot be Assigned

If the assignment of coverages does not work, there may be several reasons for this.

### The New Implement Has Already Recorded A Coverage For the Field / Task

No other coverage can be assigned to an implement if the implement has already recorded coverages.

1. Contact your dealer.

## CHAPTER 11 - CARE / MAINTENANCE AND REPAIR

### CARE

The device must be maintained regularly, e.g. when dirty.

#### Carry Out Maintenance



##### CAUTION

###### Risk of burns

The heat sink and parts of the rear panel (incl. mounting equipment) can reach temperatures of >65 °C during operation. There is a risk of burns.

Allow the heat sinks to cool down before performing any maintenance on the device.



##### NOTICE

Avoid the use of abrasive, highly alkaline or corrosive cleaning agents and glass cleaners.

When cleaning connections and interfaces, observe the relevant product information.

- The device must be taken off any mounting equipment it is attached to, for complete cleaning (see ["Mount VESA Adapter as Mounting equipment"](#) on page 113 and follow the steps in reverse order).

1. Switch OFF the device.
2. Disconnect the device from the power supply.
3. Clean the touch screen and the housing.
4. Check the heat sink and the mounting equipment on the back for dirt and clean them.
5. Check connections and interfaces for soiling and clean them.
6. Only switch the device ON again when it is completely dry.

#### Care and Cleaning Instructions

- Dust and light soiling in hard-to-reach areas (e.g. heat sinks) may be cleaned using a commercially available compressed air spray (55 psi / 380 kPa MAX).
- Clean or dry the device with a dry, clean and oil-free cloth. For stubborn dirt, slightly dampen the cloth. Remember to dry afterwards.
- It is recommended to use only a lint-free and non-abrasive microfibre cloth (alternatively a cotton cloth).
- It is recommended that you only use care products that are specially designed for cleaning optical lenses.

### MAINTENANCE AND REPAIR

The device must be serviced at regular intervals.



##### NOTICE

###### Intended use

The device may only be serviced or repaired by the manufacturer.

Send the device and its accessories in the original packaging to the address, provided by your dealer.

## CHAPTER 12 - PACKAGING / STORAGE / WASTE DISPOSAL

### PACKAGING

1. Carefully insert the device into the **packaging film** and place it in the **packaging insert**.



- |   |                  |   |                               |
|---|------------------|---|-------------------------------|
| 1 | Packaging Insert | 2 | Secured Device/Packaging Film |
| 3 | Outer Packaging  |   |                               |

2. Carefully wrap the device with foil and inlay in the outer packaging.
  - If necessary, use additional inserts and insulating packaging material. The device must lie firmly and securely in the outer packaging.
3. Add the accessories supplied.

### STORAGE



#### NOTICE

##### Intended use

Only store the device in its original packaging.

Only store the device under the specified ambient conditions (see "[Product Information](#)" on page 110).

## WASTE DISPOSAL

The device and its accessories should not be disposed of with household waste at the end of their service life.

To prevent damage to the environment from uncontrolled waste disposal and to promote the sustainable reuse of material resources, please separate these items from other types of waste and recycle them responsibly.

### Proper Disposal

- Before planning to dispose of the device, check options for waste avoidance (e.g. sale of a functional device or repair).
- Before disposal, delete all personal or other “sensitive” data from the device (e.g. stored login data, user names, passwords or files).
- Observe the applicable national regulations / laws for disposal.

## NOTES

## A10 Universal Terminal

SYSTEM SETTINGS

## TECHNICAL DATA

## INSTALLATION AND COMMISSIONING

TROUBLESHOOTING

CARE / MAINTENANCE AND REPAIR

|   |                                      |
|---|--------------------------------------|
| D | PACKAGING / STORAGE / WASTE DISPOSAL |
|---|--------------------------------------|

NOTES





# A10 Universal Terminal

## U S E R M A N U A L

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