

Operating Instructions (EN)



ISOBUS-Terminal CCI 50

ISOBUS implement control



CCI.Cam

Visual implement monitoring



CCI.Control

Documentation and task management



CCI.Tecu

Tractor data



CCI.Command

GPS track guiding and section control



CCI.GPS

GPS settings and tractor geometry



CCI 50

ISOBUS-Terminal

Operating instructions

Reference: Release 5.60

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About the CCI 50

The CCI 50 is a manufacturer-independent operating terminal for controlling *ISOBUS* implements. The range of functions offered by the terminal is expanded by CCI.Apps.

These operating instructions are an introduction to configuring and operating the terminal. It is only with knowledge of these operating instructions that accidental misuse of the terminal can be avoided and fault-free operation ensured.

These operating instructions must be read and understood prior to assembly and commissioning of the terminal to prevent problems during operation. No liability is accepted for damage resulting from the failure to observe these operating instructions!

Available software

The following CCI.apps are supplied with the terminal:



CCI.CAM

Visual implement monitoring

CCI.Calc

Pocket calculator



CCI.Convert

Control devices with LH5000, ASD or TUVR



CCI.File

File server

CCI.GPS

GPS settings and tractor geometry



CCI.TECU

Tractor data

ISOBUS UT

ISOBUS implement operation

The following CCI.Apps can only be used once released by your dealer or service partner:



CCI.Command

Parallel Tracking and Section Control



CCI.Control

Documentation and task management

1 Safety

These operating instructions contain basic instructions which must be observed during configuration, operation and service. As such, it is absolutely essential to read these operating instructions prior to configuration and operation.

Not only do the general safety indications listed in this "Safety" chapter have to be observed but also the special safety indications appearing in other chapters as well.

1.1 Identification of indications in the operating instructions

The safety indications in these operating instructions are specially identified:



Warning - General Hazards!

This occupational safety symbol identifies general safety indications the non-observance of which poses a danger for life and limb. Carefully observe the indications regarding occupational safety and exert particular caution in these cases.



Caution!

This caution symbol identifies all safety indications referring to regulations, directives or working procedures which must be observed. Non-observance can result in damage to or destruction of the terminal as well as malfunctions.



Note

The note symbol highlights operation tips and other particularly useful information.

1.2 Intended use

The terminal is intended exclusively for use with approved *ISO-BUS* implements and devices in agriculture. Any other installation or use of the terminal is not included within the manufacturer's area of responsibility.

The manufacturer accepts no liability for any resulting personal injury or material damage. Any risks for unintended use are borne solely by the user.

Observance of the operation and maintenance conditions stipulated by the manufacturer also form part of intended use.

The accident prevention regulations in force, as well as other generally recognised safety, industrial, medical and traffic laws must be observed. Unauthorised modifications to the device exclude the manufacturer's liability.

1.3 Safety indications for the operator / user

- Do not remove any safety mechanisms or signs.
- Disconnect the power supply to the terminal during maintenance work or when using a charging device on the battery of the towed/production implement.
- Never perform maintenance work or repairs when the device is switched on.
- Disconnect the power supply to the terminal beforehand when welding on the tractor or an attached implement.
- Only use a soft cloth moistened with clean water or a small amount of glass cleaning agent to clean the terminal.
- Use your fingertip to operate the buttons. Avoid using your finger nails.
- If, after having read these operating instructions there are sections which you still do not understand, contact your dealer for clarification before using the terminal.
- Carefully read and observe all safety information in the operating instructions and the safety labels on the terminal. Safety labels must always be in a proper legible condition. Replace missing or damaged labels. Ensure that new terminal parts are provided with the current safety labels. Spare labels can be obtained from your authorised dealer.
- Learn how to use the terminal in accordance with regulations.
- Keep the terminal and accessories in good condition.

1.4 Safety indications for the installation of electrical devices

Modern farming implements use electronic components and parts the operation of which can be compromised by electro-magnetic interference from other devices. Such effects can endanger people if the following safety indications are not observed.

In the event of retrofitting electric and electronic devices, and/or components, in an implement with connection to the on-board network, the user must independently verify whether the installation interferes with vehicle electronics or other components. This is, in particular, applicable to the electronic interference of:

- Electronic hoisting gear control
- Front hoisting gear
- Power take offs
- Engine and gears

It must be ensured in particular that the retrofitted electric and electronic components comply with the EMC Directive 89/336/EC in its respectively valid version and that they bear the CE marking.

In order to retrofit mobile communication systems (e.g. radio, telephone), it is important to meet the following requirements:

- Only devices may be installed that are approved in accordance with valid farming regulations (e.g. BZT (Federal Office for Approval in Telecommunications) approval in Germany).
- The device must be properly installed.
- The operation of portable or mobile devices inside the vehicle is only permitted using a connection to a properly installed external aerial.
- The transmitting part must be installed physically and separately from the vehicle electronics.
- When fitting the aerial it must be ensured that the installation is correctly executed with a good earth connection between the aerial and vehicle earth.
- The implement manufacturer's installation instructions must also be used for the wiring and installation as well as for the maximum permitted power consumption.

1.5 Safety indication for the stop switch

A safe condition for the connected implement can be established by pressing the stop-button. In order to do so, the implement must support the stop function.



Caution!

The stop switch has no effect on tractor functions. The power take off or hydraulic system cannot be placed in a safe state via the stop switch.

For further information, please see the operating instructions for your implement.

2 Structure and function

2.1 Overview



Front side

1. Operating elements and touchscreen
2. USB port

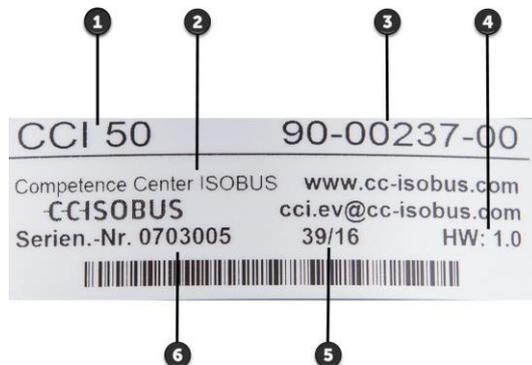


Rear side

3. Nameplate
4. Interface bar

2.2 Nameplate

The nameplate features all important terminal information.



- | | |
|--|--|
| 1. Terminal type | 4. Hardware version |
| 2. Manufacturer | 5. Date of manufacture (week and year) |
| 3. Manufacturer item number or material number | 6. Serial number |



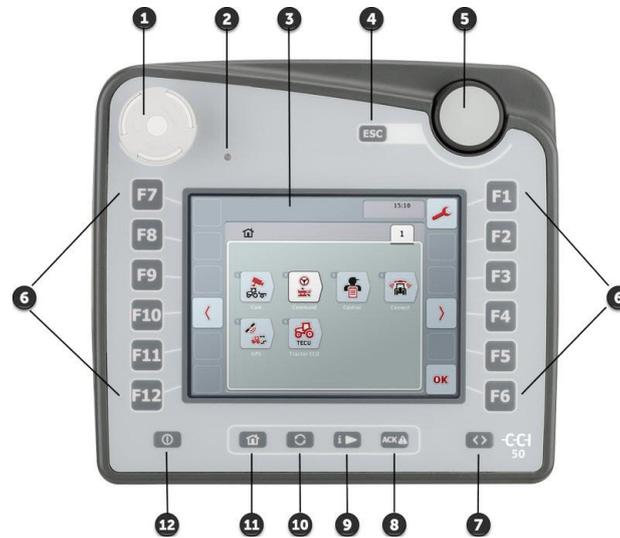
Note

The layout and content of nameplates varies from manufacturer to manufacturer. Nevertheless, the above information is always present.

Structure and function

2.3 Operating elements

The following operating elements are available on the terminal:



- | | |
|--|---------------------------|
| 1. Stop switch | 7. Softkey swap |
| 2. Brightness sensor | 8. Acknowledgement button |
| 3. Touchscreen with "Main menu" operating screen | 9. i button |
| 4. ESC button | 10. Toggle button |
| 5. Scroll wheel | 11. Home button |
| 6. Function keys | 12. ON/OFF |

2.3.1 Stop switch

The stop switch is a palm button switch. Press the stop switch until it locks in place.

Pressing the stop switch sends a stop command (ISO stop) to the *ISOBUS*. This command can be evaluated by a connected *ISOBUS* implement to initiate the necessary automatic measures in a dangerous situation.



Warning - Risk of injury due to operating implement!

Not all *ISOBUS* implements support the stop command. As a result, an implement may continue to operate after the stop switch has been pressed. This can lead to injuries.

Please refer to the operating instructions of the implement to verify whether the function is supported or not.

2.3.2 ESC button

The ESC button is pressed to abort inputs and functions. The modifications made are not applied and the previously valid value is retained.



Note

The hardkey ESC button can only be used if there is an ESC button present on the operating display.

The hardkey button and touchscreen button have the same function.

2.3.3 Scroll wheel

The scroll wheel is used for the direct and quick entry of target values, as well as for scrolling through list elements:

Rotation to the right:

- The value in an input dialogue for numerical values is increased.
- Switches to the next list element in a selection list.

Rotation to the left:

- The value in an input dialogue for numerical values is decreased.
- Switches to the next previous element in a selection list.

Press:

Pressing the scroll wheel triggers the same action as pressing an "OK" button.

- The changed value in an input dialogue is applied.
- A highlighted list element is selected.

Structure and function

2.3.4 Function keys

Six function keys (F1-F12) are arranged to the right and left of the touchscreen. Pressing a function key causes the function displayed directly alongside the function key on the operating screen to be performed.

Alternatively press the HMI button on the operating screen.



2.3.5 Softkey swap

The positions of both softkey bars on the left- and right-hand screen edge are swapped over by pressing the softkey swap button. This allows the terminal to be operated with just one hand.



Note

Swapping of the softkey bar positions is only available in the implement operation area.

2.3.6 Acknowledgement button

The acknowledgement button (ACK) is used to confirm error messages.

2.3.7 i button

The i button can be assigned to a frequently used app (see chapter 5.1).

2.3.8 Toggle button

Only one app is ever visible on the CCI 50 display. All other apps continue to run in the background.

The quickest way of toggling between apps in a defined sequence is using the toggle button.

A commonly occurring use, is swapping from CCI.Command to the *ISOBUS* implement and back.

- You specify the sequence in the user settings (see chapter 5.1.3).
- Repeated quick pressing of the toggle button switches sequentially between apps.



Note

With some implements, changing from an active implement will cause functions running on some implements to automatically switch off.

For further information on this point consult the implement operating instructions.

2.3.9 Home button

Pressing the home button takes you directly to the main menu.

Alternatively press the "Home" HMI button on the top edge of the operating screen.



Note

With some implements, changing from an active implement will cause functions running on some implements to automatically switch off.

For further information on this point consult the implement operating instructions.

2.3.10 ON/OFF

Switch the terminal on or off using the "ON/OFF" button.

- Press and hold the button for approx. 2 seconds.

Structure and function

2.3.11 Touchscreen

The terminal is equipped with a touchscreen for menu navigation and the easy input of values and texts directly in the operating screen.

By touching the screen functions can be requested directly and values changed.

2.4 Interfaces

The interface bar is located on the rear of the terminal.

The USB port is attached on the side of the terminal.



- | | |
|------------------------|----------|
| 1. CAN1-IN | 4. Video |
| 2. CAN1-OUT | 5. LIN |
| 3. 2x RS-232
signal | 6. USB |

3 Set-up for operation

3.1 Mounting the *terminal*

The terminal is supplied with a device holder. The terminal is installed in the tractor cabin using the device holder:



1. Assemble the device holder (Figures 1 and 2).
2. Mount the device holder on the frame and terminal (Figures 3 and 4).
3. Secure the terminal with the device holder in the tractor cab so that it is in the driver's field of view. (Figure 5 and 6).

Note

Ensure that the screws are tightened firmly.

Mount the terminal so that it

- Is easy to read and operate and
 - Does not impede the view of the tractor controls or the outside view.
-

Set-up for operation

3.2 Connecting the *terminal*

For connection to *ISOBUS* and the power supply a type A cable is necessary:



- Connect the "CAN1-IN" and "CAN1-OUT" on the terminal using the type A cable to the *In-cab* socket of the tractor.



4 Operation

The terminal combines operation with hardkey buttons, scroll wheel and touchscreen and in this way ensures extremely efficient working.

Working in the field can be disturbed by severe jolting. You can conveniently operate the terminal and *ISOBUS* implement with one hand thanks to the softkey swap. Benefit from jolt-secure entry via function keys and scroll wheel. Thanks to mechanical tactile feedback you do not need to look away from the direction of driving of the implement.

Make any settings when the tractor is stationary. Operate the terminal quickly via the touchscreen.

4.1 Navigation

During daily work with the terminal it must be possible to switch to and fro between various operating screens and apps. From guidance mode to the *ISOBUS* implement, from task and data management to internet connection settings.

The terminal supports you in quick navigation.

Back to the main menu

Use the home button or the home hardkey button to switch directly to the main menu:



Breadcrumbs

Each call of a submenu takes you to a deeper level in the menu tree. Breadcrumbs on the top edge of the screen improve orientation.

Return to a higher level by pressing the breadcrumb. Intermediate levels are skipped.

Operation

Toggleing between apps

Using the toggle button you call the apps in an invariable sequence. Each time the button is pressed you switch to the next app in the sequence.

Using the i button (free button) you always call the same app.

Tab view

Some apps are organised in tabs.

To open a tab,

- Press on the tab or
- Press on the buttons "Left" (F8) or "Right" (F2)



4.2 Entry of values

In day-to-day work, setpoints must be entered, implement data adjusted or terminal user settings changed.

Values are entered via a screen keyboard, with the scroll wheel or from a selection list.

Freely enter value

Names or designations are entered via the alphanumeric screen keyboard (4.2.1).

Numbers are entered via the number pad or changed with the scroll wheel (4.2.2).

Making a selection

Values specified by the terminal are shown in a selection list.

An element is selected from a selection list using the scroll wheel or with the buttons "Down" (F5) or "Up" (F4) (4.2.4).

Buttons in the input dialogue

Each entry, change or selection must be confirmed.



Confirm by pressing "OK"

Confirm the new value with "OK". The previous value is overwritten:

- Press the button "OK" or
- press on the scroll wheel.



Cancel with "ESC"

Cancel the entry of a new value by pressing "ESC". The previous value is retained:

- Press the button "ESC" or
- press the "ESC" button.

Sequence

1. Select the value to be changed in the operating screen.
 - An input dialogue or a selection list appears.
 - The operating screen is greyed out.
2. Enter the new value.
3. Confirm the entry with "OK".
 - The input dialogue is closed.
 - The operating screen is visible again.

Operation

4.2.1 Entering text

Enter text using the alphanumerical screen keyboard.



Change a text as follows:

1. In the operating screen select the value that is to be changed.
→ The screen keyboard opens.
2. Enter the new value.
3. Confirm your setting with "OK" or by pressing the scroll wheel.

4.2.2 Entering numerical values

The input dialogue for numeric values has three display formats:

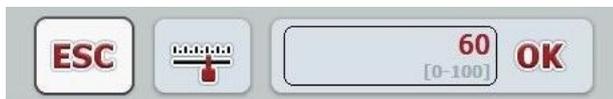
Number pad

- Enter the value via the number pad or rotate the scroll wheel.



Scroll wheel

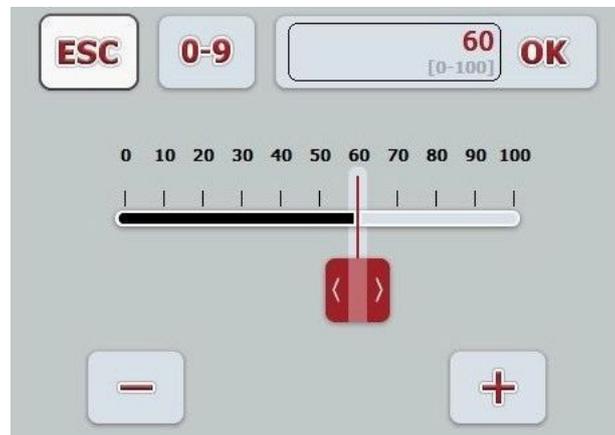
- Rotate the scroll wheel.



Operation

Slider

- Drag the slider or press the "+" and "-" buttons or rotate the scroll wheel.



The button for selecting the display format, is located between the buttons "OK" and "ESC":

Change a numerical value as follows:

1. In the operating screen select the value that is to be changed.
→ The input dialogue is opened.
2. Enter the new value.
3. Confirm your setting with "OK" or by pressing the scroll wheel.



Note

The next time the input dialogue for numerical values is requested the last selected display format is immediately displayed.



Note

The input field is highlighted in red if a value is entered outside the valid value range. In this case enter another value.

4.2.3 Entering a Boolean value

With a Boolean value it is only possible to select between true and false, on and off, yes and no.

- Display for false, off, no:



- Display for true, on, yes:



Change a Boolean value as follows:

1. In the operating screen select the value that is to be changed.
→ The input dialogue is opened.
2. Press on the checkbox in the input field.
3. Confirm your setting with "OK" or by pressing the scroll wheel.

4.2.4 Selecting a value from a selection list

Some values can be selected from a selection list.



Note

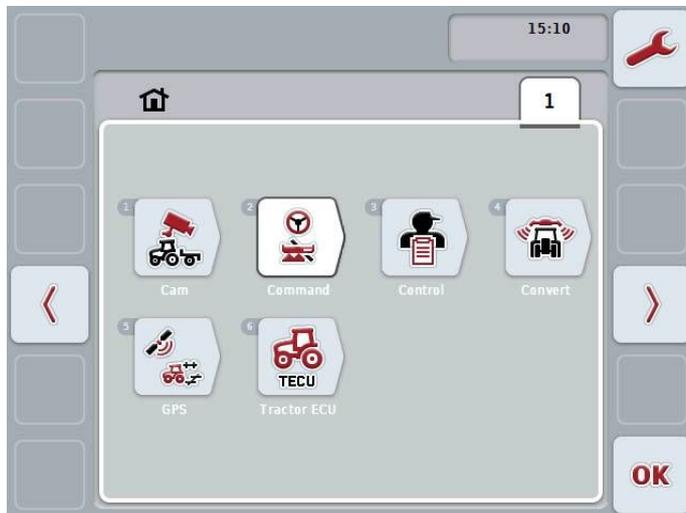
You can display the selection list as a single line by pressing: the selection field. The selection field is located between the buttons "OK" and "ESC".

Select a list value as follows:

1. In the operating screen select the value that is to be changed.
→ The selection list opens.
2. Select the new value from the selection list.
To do so press the button with the value or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
→ The new value is displayed in the selection field.
3. Confirm your entry with "OK" or by pressing the scroll wheel.

4.3 Main menu

- Press the home button.
→ The Main menu opens:



The main menu displays all the apps and connected *ISOBUS* implements available to you.

- To open an app or an *ISOBUS* implement press on the symbol in the icon in the main menu.
- To change to the settings press the "Settings" button (F1).

5 Settings

The settings are subdivided across 4 tabs: **User settings**, **Country settings**, **System settings** and **Info and Diagnostics**.



These are organised as follows:



User settings

- Set the display lighting, sound, app toggling, free button assignment and the button selection with the scroll wheel.



Country settings

- Set the language, keyboard, system of units and decimal symbol.



System settings

- Set the date and time, app management, CAN, interfaces, touchscreen calibration.
- Access to the service menu.
- Entry of licence data.



Info and diagnostics

- Display the terminal software and hardware, *network members*, internal memory, RAM and the error memory.
- Test the hardware.

5.1 User settings

The operating characteristics of the terminal are set under the tab "User settings".



Settings

The following settings can be made:



Display lighting

See chapter 5.1.1.



Sound

See chapter 5.1.2.



App toggling

See chapter 5.1.3.



i button assignment

Using the i button (free button) you always call the same app.

1. Press the button "Free button assignment"
 2. Select an app from the selection list.
 3. Confirm your entry with "OK".
 - Every time the i button is pressed, the selected app is called.
-



Button selection by scroll wheel

1. Press the button "Button selection by scroll wheel"
 2. Specify the Boolean value.
 3. Confirm your entry with "OK".
-

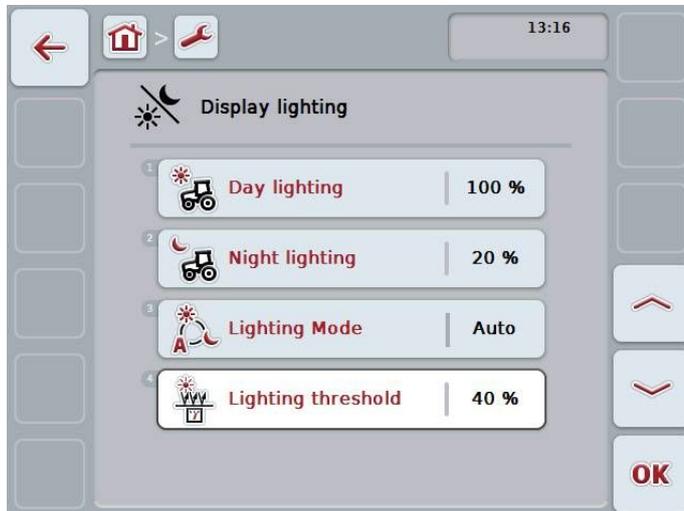


Note

The setting **Button selection by scroll wheel** only acts on implement operation.

5.1.1 Display lighting

- Press the "Display lighting" button in the tab "User settings".
→ The "Display lighting" operating screen opens:



The following settings can be made:



Day lighting

1. Press the button "Day lighting".
2. Enter the display brightness for daytime operation in %.
3. Confirm your entry with "OK".



Night lighting

1. Press the button "Night lighting".
2. Enter the display brightness for night-time operation in %.
3. Confirm your entry with "OK".



Lighting Mode

See section **Select Lighting Mode**.



Lighting threshold

See section **Enter Lighting threshold**



Note

The value for the Display lighting is given as a percentage and can be adjusted in steps of 10%.

Settings

Select Lighting Mode

The brightness of the display is regulated based on the lighting mode:

- In "Day" mode the value set in Day lighting is used.
- In "Night" mode the value set in Night lighting is used.
- In "Auto" mode, the display brightness switches from day mode to night mode at the lighting threshold.

1. Press the "Lighting Mode" button
2. Select the Lighting Mode from the selection list.
3. Confirm your entry with "OK".

Enter Lighting threshold

If "Auto" lighting mode is active, the lighting mode must be set.

The lighting threshold is the switching point at which the display brightness automatically switches between day and night mode.

The switching point can be freely selected. The value provided by the brightness sensor is the reference variable.

- If the switching point is exceeded, day lighting is activated.
- If the switching point is exceeded, night lighting is activated.

1. Press the "Lighting threshold" button
2. Enter the value for the switching point.
3. Confirm your entry with "OK".
4. Activate "Auto" lighting mode.

5.1.2 Sound

- Press the "Sound" button in the "User settings" operating screen.
→ The "Sound" screen opens:



The following settings can be made:



Beeper active

Acoustic feedback for the pressing of a button on the touchscreen or a function key.

1. Press the button "Beeper active".
2. Specify the Boolean value.
3. Confirm your entry with "OK".



Volume

1. Press the "Volume" button.
2. Enter the volume in %.
3. Confirm your entry with "OK".



Note

The value for the volume is given as a percentage and can be adjusted in steps of 5% in the range 25% to 100%.

Settings

5.1.3 App toggling

Using the toggle button you call the apps in an invariable sequence. Each time the button is pressed you switch to the next app in the sequence.



Specify the sequence:

1. Press the button "App toggling".
2. To select an app, set the Boolean value to "on".
3. To select further apps, repeat step 2.
4. As necessary, confirm your entry with "OK".

5.2 Country settings

There are approximately 25 languages available for the graphical user interface and the keyboard plus 3 systems of units and 3 decimal formats for selection.



The following settings can be made:



Language

1. Press the "Language" button.
 2. Select a language from the selection list.
 3. Confirm your entry with "OK".
-



Keyboard

1. Press the "Keyboard" button.
 2. Select the keyboard from the selection list.
 3. Confirm your entry with "OK".
-



Units

Change all of the units at once:

1. Press the "Units" button.
2. Press the "System of Units" button.
3. Select "Metric", "Imperial" or "US".
4. Confirm your entry with "OK".

Change a particular unit

1. Press the "Units" button.
 2. Press the "System of Units" button.
 3. Select "User specified".
 4. Confirm your entry with "OK".
 5. Press on the unit.
 6. Select "Metric", "Imperial" or "US".
 7. Confirm your entry with "OK".
-



Decimal symbol

Change the display of a decimal number.

1. Press the "Decimal symbol" button.
2. Select the decimal symbol from the selection list.
3. Confirm your entry with "OK".

5.3 System settings

In the "System settings" tab, you can configure the terminal hardware and software.



The following settings can be made:



Date and time

See chapter 5.3.1.

App management

See chapter 5.3.2.



CAN

See chapter 5.3.3.



Touch calibration

See chapter 5.3.4.



Call service area

See chapter 5.3.5.



Licence key

See chapter 5.3.6

5.3.1 Date and time

- 1. Press the "Date and time" button.
→ The "Date and time" screen opens.



The following settings can be made:



Date

1. Press the button "Day".
2. Enter the current day.
3. Confirm your entry with "OK".
4. Repeat steps 1 to 3 to enter the month and year.



Time

1. Press the button "Hour".
2. Enter the current hour.
3. Confirm your entry with "OK".
4. Repeat steps 1 to 3 to enter the minutes.



Date format

1. Press the button "Date format".
2. Select the date format from the selection list.
3. Confirm your entry with "OK".



Time format

1. Press the button "Time format".
2. Select the time format from the selection list.
3. Confirm your entry with "OK".

Settings



GPS update

If a GPS connection is available, the terminal date and time are automatically updated. Manual settings are overwritten:

1. Press the button "GPS update".
 2. Set the Boolean value to "On".
 3. Confirm your entry with "OK".
-



Time zone

There is a table with time difference values in the appendix.

1. Press the button "Timezone".
 2. Enter the the time difference in hours.
 3. Confirm your entry with "OK".
-



Automatic daylight saving

The change between summer and winter time takes place automatically.

1. Press the button "Summer/winter time".
 2. Set the Boolean value to "On".
 3. Confirm your entry with "OK".
-



Select am/pm

This selection is only available if "12h" has been selected for the Time format .

1. Press the button "am/pm".
2. Select "am" or "pm".
3. Confirm your entry with "OK".

5.3.2 App management

Apps that are not required can be permanently disabled. The remaining apps then have more available CPU power and memory.

To deactivate an app proceed as follows:

1. Press the button "App management".
→ The "App management" screen opens:



2. Press the button with the name of the app.
3. Set the Boolean value to "Off".
4. Repeat steps 2 and 3 for further apps.
5. Restart the terminal.

To activate an app proceed as described above. Set the Boolean value to "On".

5.3.3 CAN

The terminal priority must be set in the *ISOBUS* network, if more than one *ISOBUS* terminal is connected to the *ISOBUS*.

- The *object pool* of an implement is displayed at the primary terminal by default.
- An *ISOBUS auxiliary control (AUX)* is only displayed on the primary terminal.

The specific location of the terminal is required for diagnostic purposes. The setting has no effect on the *ISOBUS* - implement.

- Press the button "CAN".
→ The "CAN" operating screen opens:

Settings



The following settings can be made:



Set the terminal as the primary terminal

1. Press the button "Primary terminal".
2. Set the Boolean value to "On".
3. Confirm your entry with "OK".



Select the specific location of the terminal

Possible positions are specified and cannot be freely selected.

1. Press the button "Position of terminal".
2. Select the position from the selection list.
3. Confirm your entry with "OK".



Note

Only one primary terminal must exist on the *ISOBUS*. If another primary terminal is detected, an error message is displayed.

5.3.4 Touch calibration

The touchscreen must be calibrated once upon commissioning:

1. Press the button "Touch calibration".
 - The calibration view opens.
 - Five crosses are displayed on the screen one after the other.
2. Press the centre on these crosses.
3. To finalise the calibration, and to accept the values calculated, touch any part of the screen.



Note

If you do not touch the screen within 30 seconds, the calibration is aborted.

5.3.5 Call service area



Note

Settings in the service area can only be adjusted by the manufacturer or their sales and service partners.

Therefore access to the service area is password protected. The service area description is contained in the service manual.

5.3.6 Licence key

The terminal licence data must be re-entered under the following circumstances:

- Following a firmware update.
- After acquisition of the licence for a paid-for app.

Settings

- Press the "Licence key" button
→ The "Licence key" operating screen opens.



Manual entry

1. Press the "Manual entry" button (F3).
2. Request the new licence key either by phone or via the website.
3. Press the "Enter licence key" button.
4. Enter the new licence key.
5. Confirm your entry with "OK".

If you have purchased a licence for CCI.Command, perform the following steps:

1. Change to the tab CCI.Command.
2. Press the button "Parallel Tracking".
3. Enter the licence for the parallel tracking module.
4. Confirm your entry with "OK".
5. Repeat steps 2 to 4 for the section Control module.

Automatic entry

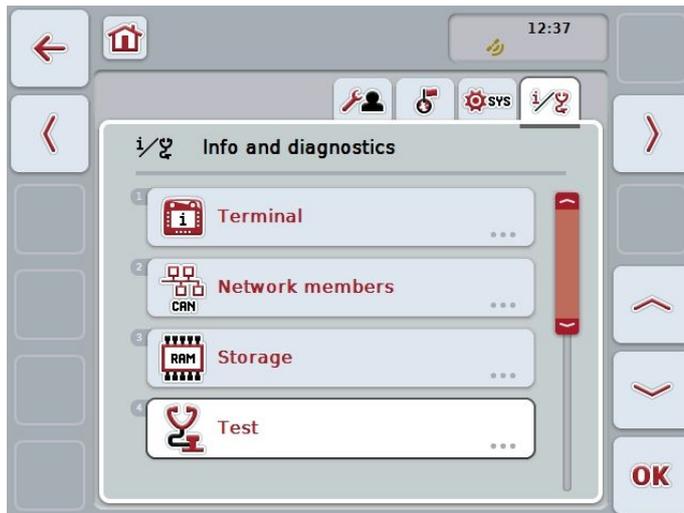
1. Connect a flash drive to the terminal.
2. Press the button "USB" (F4).
→ The file <Seriennummer-Terminal>.UT.liz is copied to the flash drive.
3. Connect the flash drive to your PC.
4. On your PC open the web page "<https://sdnord.net/PA>" and follow the instructions.
5. Connect the flash drive with the new licence data to the terminal.
6. Press the button "USB" (F4).

5.4 Info and diagnostics

Under the tab "Info and diagnostics" the function and status of the software and hardware components of the terminal can be checked.

You receive the version information for installed apps.

Call up detailed information about the implements connected to the *ISOBUS*.



The following information is available:



Terminal

See chapter 5.4.1.



Network members

See chapter 5.4.2.



Storage

See chapter 5.4.3.



Test

See chapter 5.4.4.



Error memory

See chapter 5.4.5.

Settings

5.4.1 Terminal

- Press the button "Terminal".
→ The following operating screen opens:



The following information can be displayed:



Software information

1. Press the button "Software".
→ The versions of the installed apps are displayed.
2. End the query with "OK".



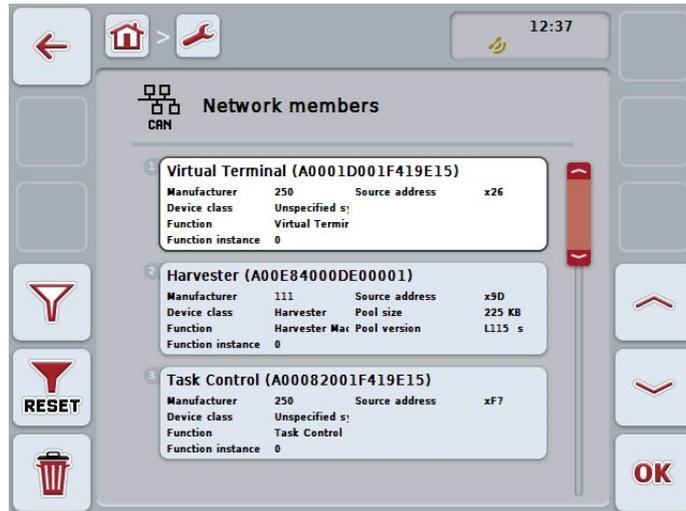
Show hardware information

1. Press the button "Hardware".
→ Device type, hardware version, serial number, manufacturer ID and manufacturer are displayed.
2. End the query with "OK".

5.4.2 Network members

Each *network member* connected to the *ISOBUS* provides basic information. This can for example be displayed for diagnostic purposes:

- Press the button "Network members".
→ The *Network members* are identified and displayed:



Note

The *object pool* of all implements that have been connected at least once is displayed. *ISOBUS* implements that are not currently connected are displayed greyed out.

You have the following operating options:

Show information

1. Select a network member from the selection list.
→ Manufacturer, device class, function, function instance and source address are displayed.
2. End the query with "OK".

Filter list

- Press the "Filter list" button (F10).
→ Only the connected and active *network members* are displayed.

Reset filter

- Press the "Reset filter" button (F11).
→ All *network members* are displayed.



Delete all object pools

1. Press the button "Delete *object pools*" (F12).
→ All saved *object pools* are deleted.
 2. Restart the terminal.
-

Delete actual *object pool*

See section **Delete actual object pool**.



Note

After a restart, all *object pools* are deleted. In the event that an implement is connected, the new *object pool* is loaded automatically.

Delete actual *object pool*

You can selectively delete individual *object pools*. If implement is malfunctioning, the deletion and re-loading of an *object pool* may be worthwhile:

1. Press the button with the name of the implement.
→ A context menu opens.
 2. Press the button "Delete a specific *object pool*".
 3. Restart the terminal.
-



Note

The *object pool* remains in the list after deleting, however it can no longer be operated via the context menu.

After restarting of the terminal, the *object pool* is reloaded if the implement is connected.

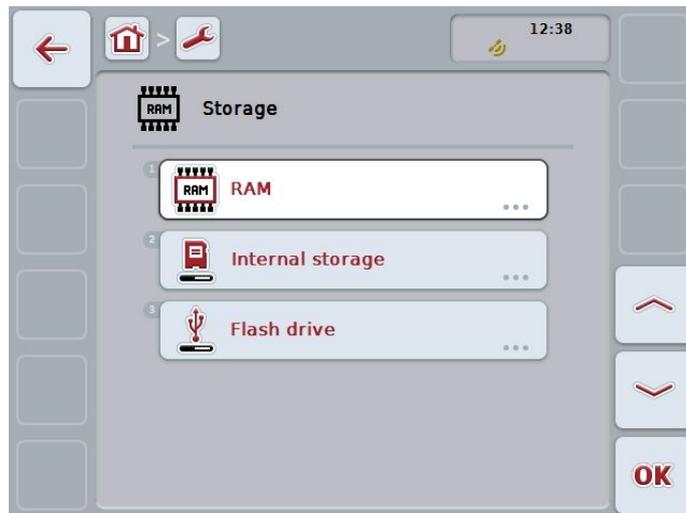
5.4.3 Storage

If it is no longer possible to store any more files on the terminal or a connected flash drive, it is likely that there is no longer any available memory on the storage.

If the terminal is slow responding to user inputs, it may be because most of the RAM is being used.

If such a scenario arises, check the memory usage:

- Press the button "Storage".
→ The following operating screen opens:



The following information can be displayed:



RAM

1. Press the button "RAM".
→ The capacity and usage of the RAM are displayed.
2. End the query with "OK".



Internal storage

1. Press the button "Internal storage".
→ The capacity and usage of the internal storage are displayed.
2. End the query with "OK".



Flash drive

1. Press on the "Flash drive" button.
→ The capacity and usage of the flash drive are displayed.
2. End the query with "OK".

5.4.4 Test

The terminal provides a wealth of information about its own state for troubleshooting purposes.

In the event of a malfunction, test individual hardware components on the terminal:

- Press the button "Test".
→ The following operating screen opens:



The following components can be tested:



Interfaces

1. Press the button "Check interfaces".
→ A selection list opens.
2. Select an interface.
→ Interface information is displayed.
3. End the query with "OK".



Power supply

1. Press the button "Power supply".
→ The value of the supply voltage is displayed.
2. End the query with "OK".



Function keys

1. Press the button "Function keys".
2. Press the function key F1.
→ The pressed key is displayed.
3. Repeat step 2 for the function keys F2-F12
4. End the Test with "OK".



Scroll wheel

1. Press the button "Scroll wheel".
→ An empty circle is displayed.
 2. Turn the scroll wheel clockwise.
→ The segments of the displayed circle are highlighted.
 3. Turn the scroll wheel anti-clockwise.
→ The segment highlighting is cleared.
 4. End the Test with "OK".
-



Buzzer

1. Press the button "Loudspeaker".
→ A sequence of sounds is played.
 2. End the Test with "OK".
-



Brightness sensor

1. Press the button "Brightness sensor".
→ The value measured by the brightness sensor is displayed.
 2. Cover the brightness sensor.
→ The displayed value decreases.
 3. Illuminate the brightness sensor with a bright light source.
→ The displayed value increases.
 4. End the Test with "OK".
-



Brightness

See section **Test brightness**.



Stop switch setting

1. Press the "Stop switch".
→ The switch setting is displayed.
 2. End the Test with "OK".
-



CAN trace

See section **CAN-Trace**.

Test brightness

1. Press the button "Brightness".
→ The operating screen for testing the brightness opens.
2. Test the brightness status (F9), manual brightness entry (F10 and F11) and perform the automatic brightness test (F12).

Settings

CAN trace

In the event of a complicated error pattern, the manufacturer's service department can help. Then a recording of data traffic on the *ISOBUS*, the CAN trace, can often prove helpful. The CAN trace contains important information about the system status.

Continue working as normal during recording of the CAN trace. The terminal is fully functional during this time.

The CAN trace is saved to the terminal internal storage and can only be read out via the service menu.

- Press the button "CAN trace".
→ The following operating screen opens:



You have the following operating options:



Enter the CAN trace recording duration

1. Press the button "Duration".
2. Enter the duration of the recording in seconds.
3. Confirm your entry with "OK".

Start recording

- Press the "Start recording" button (F12)



Note

The recording duration range is between 60 and 6000 seconds.

5.4.5 Show error memory

1. Press the button "Error memory".
→ A chronologically ordered list of error messages opens.

2. To obtain detailed information about an error message in the list, press the button with the error message.
→ Date and time, serial number, version number and text of the error message are displayed.

5.4.6 Create *screenshot*

A picture says more than a thousand words.

If you are having problems operating the terminal or *ISOBUS* implementation, you can capture an image of the screen content and send it to your contact:



Note

Screenshots can only be created if a flash drive is plugged in.

1. Connect a flash drive to the terminal.
2. Press on the freely assignable button until an acoustic signal sounds.
→ The *screenshot* is automatically saved in the \Screenshot directory on the flash drive.

6 ISOBUS auxiliary controls (AUX-Control)

Some functions of an ISOBUS implement can be better controlled using a joystick, a toggle switch strip or some other *auxiliary control* (AUX).

Assignment

The desired implement functions are assigned just once to the available operating elements on the operating unit. This assignment takes place via the "AUX Assignment" operating screen on the terminal:

1. Open the main menu.



2. Press the button "AUX".
 - The operating screen "AUX assignment" opens with a list of the available implement functions.
3. Select the implement function from the selection list.
 - The selection list "Available AUX inputs" appears.
4. From the selection list, select the required operating element of the *auxiliary control*.
 - The implement function can now be used with the operating element of the *auxiliary control*.
5. To assign other implement functions, repeat steps 3 and 4.

Remove assignment

1. Open the main menu.
2. Press the button "AUX".
 - The operating screen "AUX assignment" opens with a list of the available implement functions.
3. Select the implement function from the selection list.
 - The selection list "Available AUX inputs" appears.
4. Select the first element from the selection list.
 - The assignment of the implement function to the *auxiliary control* is now completed.

Multiple assignment

Some *ISOBUS* implements support a multiple assignment; in this case one operating element of an *auxiliary control* can be assigned to multiple implement functions:

1. Open the main menu.
2. Press the button "AUX".
 - The operating screen "AUX assignment" opens with a list of the available implement functions.
3. Select the implement function from the selection list.
 - The selection list "Available AUX inputs" appears.
4. Select the first element from the selection list.
5. Assign the operating element of the *auxiliary control* to all desired implement functions.
 - The implement functions can be used with the operating element of the *auxiliary control*.

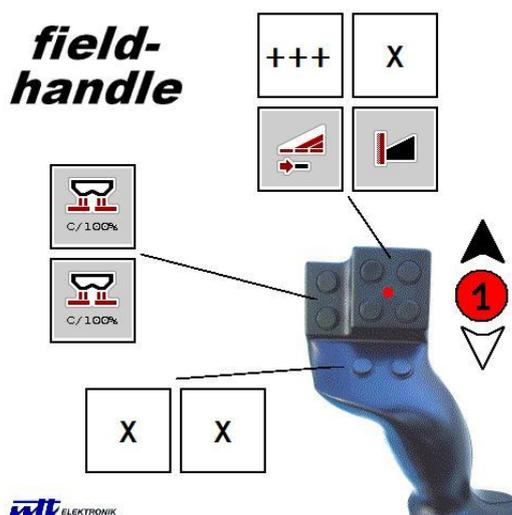
ISOBUS auxiliary controls (AUX-Control)

Checks

Upon completing the assignment, check the assignment of the *auxiliary control*:

1. Open the main menu.
2. Press the button "Implement0".

→ The *auxiliary control* with the assigned implement functions opens.



Note

No changes to the assignment can be made in this operating screen.

To make changes, change to the operating screen "AUX assignment".



Note

You can identify operating elements with multiple assignments by the symbol "+++".

To check the multiple assignment, press the button "+++".

The list of implement functions that are assigned to the operating element opens.

7 Troubleshooting

7.1 Terminal errors

The following overview shows possible *terminal* errors and how to solve them:

Error	Possible cause / remedy
The terminal does not switch on	<p><i>Terminal</i> is not correctly connected</p> <ol style="list-style-type: none">1 Check the <i>ISOBUS</i> connector <p>Ignition is not switched on.</p> <ol style="list-style-type: none">1 Start the tractor
The software of the connected implement is not displayed	<p>Bus terminator missing</p> <ol style="list-style-type: none">1 Check the resistance <p>Software is loaded, however is not displayed</p> <ol style="list-style-type: none">1 Check whether the software can be manually started from the terminal start menu <p>Connection error when uploading the software</p> <ol style="list-style-type: none">1 Check the physical connection2 Contact the implement manufacturer's customer service

8 Glossary

ACK	Acknowledge
Operating screen	The operating screen is comprised of the values and operating elements shown on the screen. The touchscreen can be used to directly select the elements shown.
Boolean value	A Boolean value is a value whereby it is only possible to choose between true/false, on/off, yes/no etc.
CAN	C ontroller A rea N etwork
CCI	C ompetence C enter I SOBUS e.V.
Input dialogue	Element of the graphical user interface. Enables the input or selection of values.
ESC	Escape = exit, here: cancel/interrupt a function
In-cab	From the standard ISO 11783. Describes the nine-pole ISOBUS plug in the cab.
ISOBUS	ISO 11783 International standard for data transfer between farming implements and devices.
Cable type A	Connects the "CAN1-IN" and "CAN1-OUT" interfaces on the terminal to the in-cab sockets of the tractor
Context menu	Element of the graphical user interface Facilitates editing, copying, deleting or adding of data.
Network members	A device that is connected to the ISOBUS and communicates via this system.
Object pool	Data record that is transferred from the ISOBUS implement to the terminal and contains the individual operating screens.
Button	Operating element in the operating screen that is activated by pressing the touchscreen.
Screenshot	Capture and saving of the screen content in a file.
Interface	Part of the terminal which is used to communicate with other devices.

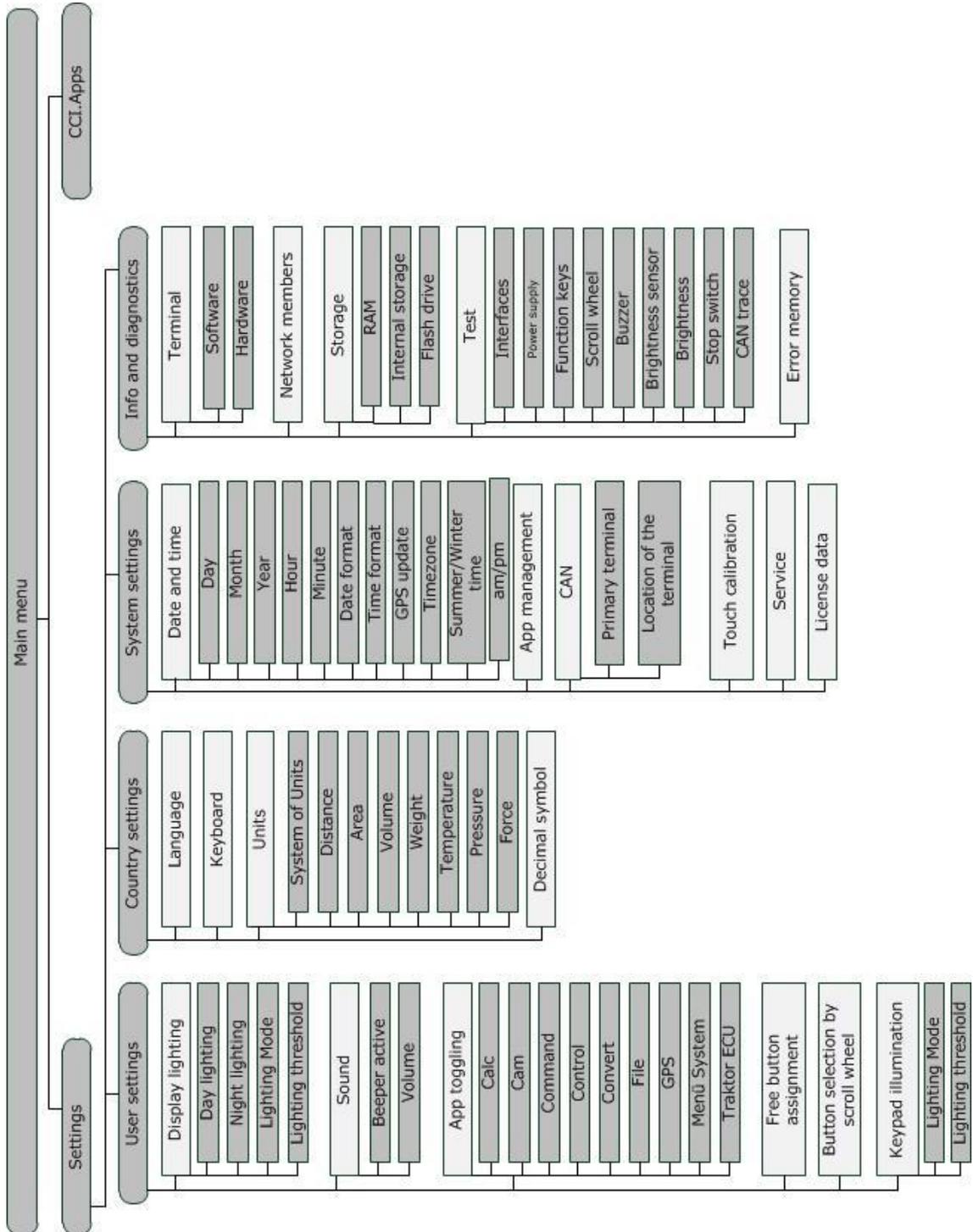
Signal connector	Seven pole outlet based on the ISO 11786 standard, at which signals for speed, PTO speed and 3-point hitch position can be read.
Button	Hardware operating element (hardkey), e.g. the function keys F1 - F12.
Terminal	The CCI 50 ISOBUS terminal
Touchscreen	Touch-sensitive screen for operation of the terminal.
USB	U niversal S erial B us: Serial bus system to connect the terminal to a storage medium.
Auxiliary control	Also: AUX-Control. Typical ISOBUS auxiliary controls are joysticks or toggle switch strips. An auxiliary control enables the comfortable and efficient operation of frequently used implement functions.

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A. Appendix Menu structure



Time zones

- (UTC -09:00) Alaska
- (UTC -08:00) Tijuana, Baja California (Mexico)
- (UTC -08:00) Los Angeles, Vancouver
- (UTC -07:00) Chihuahua, Mazatlan
- (UTC -07:00) Denver, Salt Lake City, Calgary
- (UTC -07:00) Dawson Creek, Hermosillo, Phoenix
- (UTC -06:00) Costa Rica, Guatemala, Managua
- (UTC -06:00) Chicago, Winnipeg
- (UTC -06:00) Cancun, Mexico City, Monterrey
- (UTC -05:00) Havana
- (UTC -05:00) Detroit, New York, Toronto
- (UTC -05:00) Bogota, Lima, Panama
- (UTC -04:30) Caracas
- (UTC -04:00) Bermuda, Halifax
- (UTC -04:00) Campo Grande, Cuiaba
- (UTC -04:00) Asuncion
- (UTC -04:00) Santiago
- (UTC -03:00) Montevideo
- (UTC -03:00) Sao Paulo
- (UTC -03:00) Buenos Aires, Cordoba
- (UTC -03:00) Mendoza, Recife, San Luis
- (UTC +00:00) Casablanca, Reykjavik
- (UTC +00:00) Dublin, Lisbon, London
- (UTC +01:00) Windhoek
- (UTC +01:00) Algiers, Porto Novo
- (UTC +01:00) Berlin, Oslo, Paris, Rome, Stockholm
- (UTC +01:00) Tunis
- (UTC +02:00) Cairo
- (UTC +02:00) Jerusalem, Tel Aviv
- (UTC +02:00) Kaliningrad, Minsk
- (UTC +02:00) Athens, Helsinki, Istanbul, Riga
- (UTC +02:00) Johannesburg, Tripoli
- (UTC +03:00) Moscow, Volgograd
- (UTC +04:00) Yerevan, Samara
- (UTC +05:00) Yekaterinburg
- (UTC +05:30) Calcutta, Colombo
- (UTC +05:45) Kathmandu
- (UTC +06:00) Novosibirsk, Omsk
- (UTC +07:00) Krasnoyarsk
- (UTC +08:00) Hong Kong, Perth, Singapore
- (UTC +08:00) Irkutsk
- (UTC +08:45) Eucla
- (UTC +09:00) Seoul, Tokyo
- (UTC +09:00) Yakutsk
- (UTC +09:30) Darwin
- (UTC +09:30) Adelaide
- (UTC +10:00) Vladivostok
- (UTC +10:00) Canberra, Melbourne, Sydney
- (UTC +11:00) Magadan
- (UTC +12:00) Kamchatka
- (UTC +12:00) Auckland



CCI.Cam

Visual implement monitoring

Operating instructions

Reference: CCI.Cam v5

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1 Introduction

1.1 About these operating instructions

These operating instructions are intended as an introduction to the operation and configuration of the CCI.Cam app. This app is pre-installed on your ISOBUS CCI 100/200 terminal and can only be run there. It is only with knowledge of these operating instructions that accidental misuse of the terminal can be avoided and fault-free operation ensured.

These operating instructions must be read and understood prior to setting up the software to avoid problems in the application.

1.2 Reference

These operating instructions describe the *CCI.Cam* Version *CCI.Cam v5*.

To query the version number of the *CCI.Cam* installed on your *terminal* proceed as follows:

1. Press the home key to enter the main menu.
2. Press the "Settings" button (F1) in the main menu.
3. Select the tab **Info and Diagnostics**.
4. In the Info and Diagnostics tab press the button "Terminal".
5. Press the "Software" button on the *touchscreen*.
 - The version of the *terminal* software component is indicated in the information field that is now displayed.

1.3 About CCI.Cam

CCI.Cam is used for visual implement monitoring by video camera. The app allows the driver to keep an overview of his implement with up to 8 cameras and supports the worker during complex working procedures.

Enhanced functions such as cyclical camera switching and flexible configuration of the camera connections facilitates day-to-day working. The *snapshot* function allows photos to be taken and stored on a flash drive.

2 Safety

2.1 Identification of indications in the operating instructions

The safety indications in these operating instructions are specially identified:



Warning - General Hazards!

This occupational safety symbol identifies general safety indications the non-observance of which poses a danger for life and limb. Carefully observe the indications regarding occupational safety and exert particular caution in these cases.



Caution!

This caution symbol identifies all safety indications referring to regulations, directives or working procedures which must be observed. Non-observance can entail damage to or destruction of the *terminal* and other malfunctions.



Note

The note symbol highlights operation tips and other particularly useful information.

3 Set-up for operation

3.1 Mounting the *terminal*

For information about installing the *terminal*, please refer to chapter **5.1 Mounting the terminal** in the **ISOBUS Terminal CCI 100/200** Operating Instructions.

3.2 Connecting the *Terminal*

3.2.1 Connecting to ISOBUS/power supply

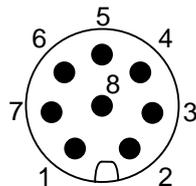
Please refer to the information in Section **5.2.1 (“Connecting to ISOBUS/power supply”)** of the operating instructions for the **ISOBUS CCI 100/200** terminal.

3.3 Connecting to a camera

A camera can be directly connected to the *terminal* via the "Video" interface.



Camera connection



The camera connection to the *terminal* is made via the "Video" interface.

Refer to the following set-up for the pin assignment:

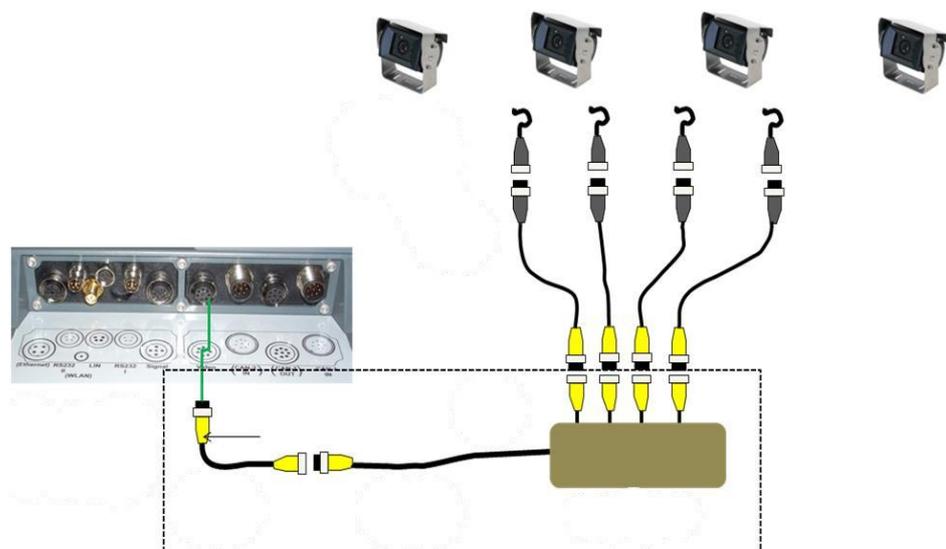
1. Video signal
2. RS485B
3. RS485A
4. +12V / +24 V
5. Mini Out
6. +12V / +24 V
7. GND
8. Shield

3.4 Connecting to multiple cameras

Multiple cameras can be connected via one *multiplexer* (up to eight cameras) or one *minimultiplexer* (up to two cameras).

3.4.1 With one *multiplexer*

Up to eight cameras can be connected to the *terminal* via one *multiplexer*. If more than 3 cameras are connected to the *terminal* via the *multiplexer*, the *multiplexer* requires an external power supply.

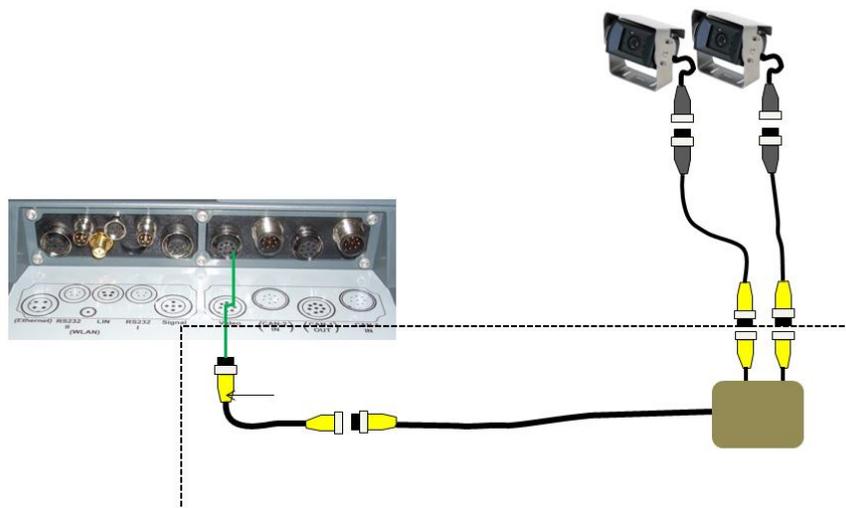


Multiplexer connection

Connection of the *multiplexer* to the *terminal* is similar to the connection of a camera via the "video" *interface* (see chapter 3.3).

3.4.2 With a *miniplexer*

Up to two cameras can be connected to the *terminal* via one *miniplexer*.



Miniplexer connection

Connection of the *miniplexer* to the *terminal* is similar to the connection of a camera via the "video" *interface* (see chapter 3.3).

3.5 Installing the software

CCI.Cam is included in the scope of delivery of the CCI ISOBUS *terminal*, i.e. installation is neither possible nor required.

4 Operation

4.1 Program start

CCI.Cam is activated automatically by switching on the *terminal*.

To switch to the main view of CCI.Cam, proceed as follows:

1. Press on the "Cam" button in the main menu of the *terminal* on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
→ The following main view opens:



CCI.Cam is subdivided into 3 areas:

4.1.1 Main view (one camera)

Shows the camera image of the only connected camera.

4.1.2 Main view (multiple cameras)

Shows the camera image of one of the connected cameras.

Facilitates switching between the images from different cameras.

4.1.3 Settings

Enables the assignment of a camera image to the function keys, activation of the camera images for automatic mode and setting of the time interval.

4.2 Main view (one camera)

This is the main view if only one camera is connected to the *terminal*. The image from this camera is displayed in the main view.



You have the following operating options:

-  **Select full-screen mode**
-  **Mirror image**
-  **Take a snapshot**
-  **Switch to settings**

4.2.1 Select *full-screen mode*

To select the *full-screen mode*, proceed as follows:

1. In the touchscreen press on the button "*Full screen mode*" (F8), directly on the camera image display or on the scroll wheel.
 - The view changes immediately to *full-screen mode*, the camera image takes up the entire monitor area.



Note

In *full-screen mode*, the "Mirror image" (F9) and "Snapshot" (F11) functions are only available via the corresponding function keys.



Note

To exit *full-screen mode*, touch any area in the touchscreen or press the F8 function key or the scroll wheel.

4.2.2 Mirror image

To mirror the image along the vertical axis, proceed as follows:

1. Press the "Mirror image" button (F9) on the *touchscreen*.
 - The image is displayed as a mirror image.

4.2.3 Take a *snapshot*

To take a *snapshot*, proceed as follows:

1. Connect a flash drive to the *terminal*.
2. Press the "Take a Snapshot" button (F11) on the *touchscreen*.
 - The *snapshot* will be automatically saved to the flash drive in the "CAMCAP" folder. The filenames follow the convention _<JJJJ_MM_TT>_<consecutive number>JPEG.

4.3 Main view (multiple cameras)

This is the main view when multiple cameras are connected to the *terminal*. The images from the selected cameras are displayed in the main view.



You have the following operating options:

-  **Select full-screen mode (see chapter 4.2.1)**
-  **Mirror image (see chapter 4.2.2)**
-  **Create a snapshot (see chapter 4.2.3)**
-  **Switch to the settings (see chapter 4.4)**
-  **Switch automatic camera switching on or off**
-  **Show camera image**
-  **Show additional cameras**

4.3.1 Activate/deactivate automatic mode

If you do not want to change the display of the camera images manually, you can activate automatic mode. The display will then automatically switch to the different camera images at regular intervals.

To switch the automatic camera switching on or off, proceed as follows:

1. Press the "Switch on automatic camera switching" button (F10) on the *touchscreen* or "Switch off automatic camera switching" (F10) if this is already switched on.



Note

If you are using a *multiplexer*, automatic camera switching can only be turned on if several camera images have been activated for automatic mode (see chapter 4.4.2.1).



Note

It is possible to select the camera images amongst which automatic switching takes place (see chapter 4.4.2.1) and to set the time interval for switching of the camera images (see chapter 4.4.1).

4.3.2 Show camera image

To show the image from a specific camera, proceed as follows:

1. In the *touchscreen*, press on the button or the function key, to which the desired camera image is assigned (see chapter 4.4.1.1).
→ The display switches to the camera image.



Note

You can then also manually change the camera image, if you use automatic mode. After the specified time interval, the display changes to the next camera image.

4.3.3 Show additional cameras



Note

Function keys 3, 4 and 5 (F3, F4, F5) can each be allocated to two cameras in *CCI.Cam*. Therefore when allocating cameras to function keys not only are function keys 1, 2, 3, 4 and 5 available for selection but also function keys 3 (2), 4 (2) and 5 (2) (see chapter 4.4.1).

The button "Show additional cameras" only appears if at least one camera has been allocated to one of the function keys 3 (2), 4 (2) or 5 (2).

To display additional cameras, proceed as follows:

1. Press the "Show Additional Cameras" button (F6) on the *touchscreen*.
→ The additional cameras are displayed on the buttons (F3 – F5).



Note

The buttons for the cameras, that are allocated to function keys 1 and 2, are always displayed. These buttons are the function keys for the images of the two most important cameras.

4.4 Settings

Use the "Settings" (F12) button in the main view to get to the **Settings** submenu.



You have the following operating options:



Change to function key assignment



Change to settings in automatic mode



Enter time interval



Activate / deactivate video miniplexer

Activate/deactivate MiniView



Reset all settings



Note

If you have activated the *miniplexer*, the buttons "Assignment" and "Automatic mode" are greyed out, as these setting options are then not necessary.

4.4.1 Assignment

This submenu facilitates the flexible assignment of cameras to the function keys independently of the connection assignment on the *multiplexer*. This makes it possible to set the two most important cameras to the function keys "Function key 1" and "Function key 2" which are always displayed without having to modify the connection on the *multiplexer*.

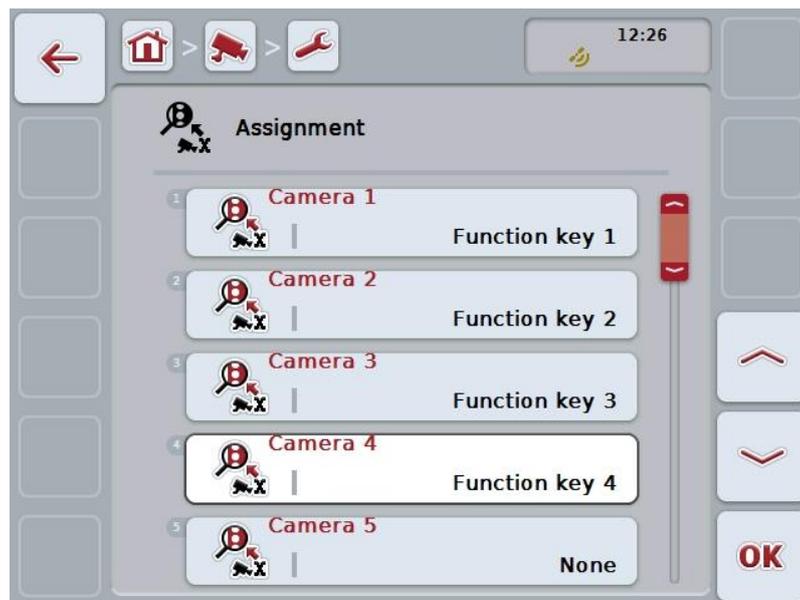


Note

If you are using a *multiplexer*, an assignment of cameras to function keys is essential to make it possible to activate the camera images for the automatic camera change (see chapter 4.4.2.1).

To change the function key assignments proceed as follows:

1. Press on the "Assignment" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
- The following screen opens:



You have the following operating options:



Assigning the function keys

4.4.1.1 Assigning the function keys

To assign a function key to a camera, proceed as follows:

1. Press on one of the "Camera 1-8" buttons on the *touchscreen* or turn the scroll wheel until the button in question is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ A list of available function keys opens.
2. Select a function key from the list. To do so, in the *touchscreen* press the button with the number of the function key.
3. Confirm your selection with "OK" or press on the button with the function key number again.



Note

It is recommended that the two most important cameras are assigned to function keys 1 and 2. You can always access the images of these two cameras directly in the main view.



Note

Function keys 3, 4 and 5 (F3, F4, F5) can each be allocated to two cameras in *CCI.Cam*. Therefore when allocating cameras to function keys not only are function keys 1, 2, 3, 4 and 5 available for selection but also function keys 3 (2), 4 (2) and 5 (2). To be able to access these other cameras via the function keys in the main view, press the button "Show other cameras" (F6) (see chapter 0).

4.4.2 Automatic mode

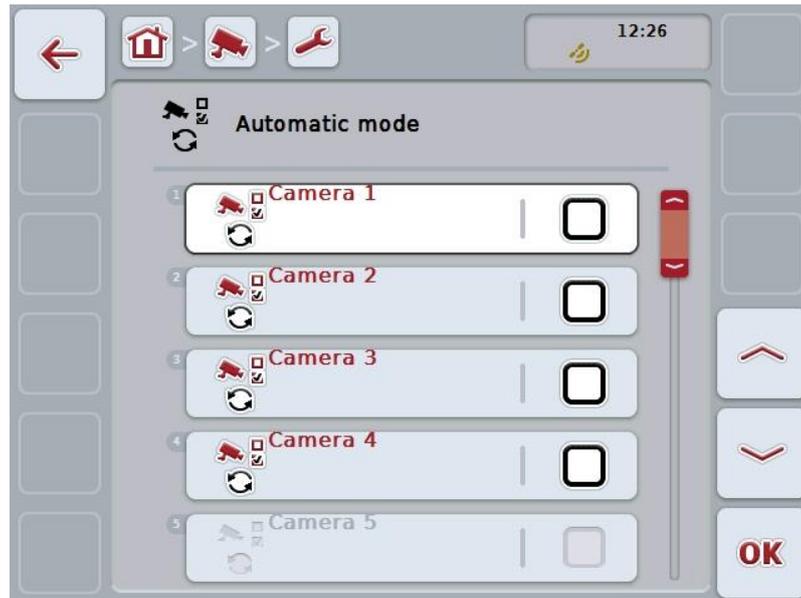
In automatic mode, automatic switching between the images of several cameras occurs.

To change automatic mode settings proceed as follows:

1. Press on the "Automatic mode" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.

Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.

→ The following screen opens:



You have the following operating options:



Activate/deactivate camera images for automatic mode

4.4.2.1 Activate/deactivate camera images for automatic mode

To activate/deactivate the individual camera images for automatic mode, proceed as follows:

1. Press on the "Camera 1-8" button on the touchscreen or turn the scroll wheel until the button in question is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the Boolean value.
3. Confirm your entry with "OK".



Note

In automatic mode, changing between the activated camera images takes place automatically.



Note

To be able to activate the camera images for automatic camera switching, an allocation of cameras to function keys is required (see chapter 4.4.1). Connected cameras that have no function key assigned to them, are not available for automatic camera change.

4.4.3 Enter time interval

To enter the time interval for the automatic camera switching, proceed as follows:

1. Press on the "Time interval" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the new value for the time interval on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".



Note

Values between 1 and 10 seconds are valid for the time interval value range.

4.4.4 Activate / deactivate *miniplexer*

If you have connected a *miniplexer* to be able to use two cameras, it must be activated.

To activate/deactivate the *miniplexer*, proceed as follows:

1. Press on the "Video *Miniplexer*" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the *Boolean* value.
3. Confirm your entry with "OK".

4.4.5 Activate/deactivate *MiniView*

The *MiniView* function makes it possible to show the camera image displayed in *CCI.Cam* in other HMIs on the *terminal*, e.g. in implement operation.



Note

MiniView is only available in hardware generations 2 and 3.

To activate/deactivate *MiniView*, proceed as follows:

1. Press on the "MiniView" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the *Boolean* value.
3. Confirm your entry with "OK".



Note

The camera image displayed in *MiniView* is the one that was last displayed in *CCI.Cam*. Automatic camera switching is not available in *MiniView*.



Note

You can only specify whether *CCI.Cam* should make the camera images available for other applications via the *MiniView* setting. All other settings must be made in the respective applications.

4.4.6 Reset all settings

To reset all settings, proceed as follows:

1. Press the "Reset" button (F1) on the *touchscreen*.
 - The settings are immediately reset to factory settings, there is no warning message.



Note

The factory setting for the time interval is 2 seconds.

5 Troubleshooting

5.1 Terminal errors

The following overview shows possible *terminal* errors and how to solve them:

Error	Possible cause	Rectification
The terminal does not switch on	<ul style="list-style-type: none"> • <i>Terminal</i> is not correctly connected • Ignition is not switched on. 	<ul style="list-style-type: none"> • Check ISOBUS connection • Start tractor.
The software of the connected implement is not displayed	<ul style="list-style-type: none"> • Bus terminator missing • Software is loaded, however is not displayed • Connection error when uploading the software 	<ul style="list-style-type: none"> • Check resistance • Check whether the software can be manually started from the <i>terminal</i> start menu • Check physical connection • Contact the implement manufacturer's customer service

5.2 Error messages

The following overview shows error messages in *CCI.Cam*, their possible cause and how to rectify them:

Error	Possible cause	Rectification
Video multiplexer could not be initialized.	Error at the cable connection	Check the cable connection, restart the <i>terminal</i> .
The required video source could not be opened. (202)	Connection to the camera lost/broken.	Check the cable connection, restart the <i>terminal</i> .
The required camera could not be mirrored.	Mirroring is not supported by the camera (only occurs when using the multiplexer).	Use a camera whose hardware supports mirroring.
Error when creating the snapshot. Please check whether a flash drive has been plugged in.	No flash drive plugged in.	Plug in flash drive.



Note

Other error messages may be displayed on the *terminal* that are dependent on the implement.

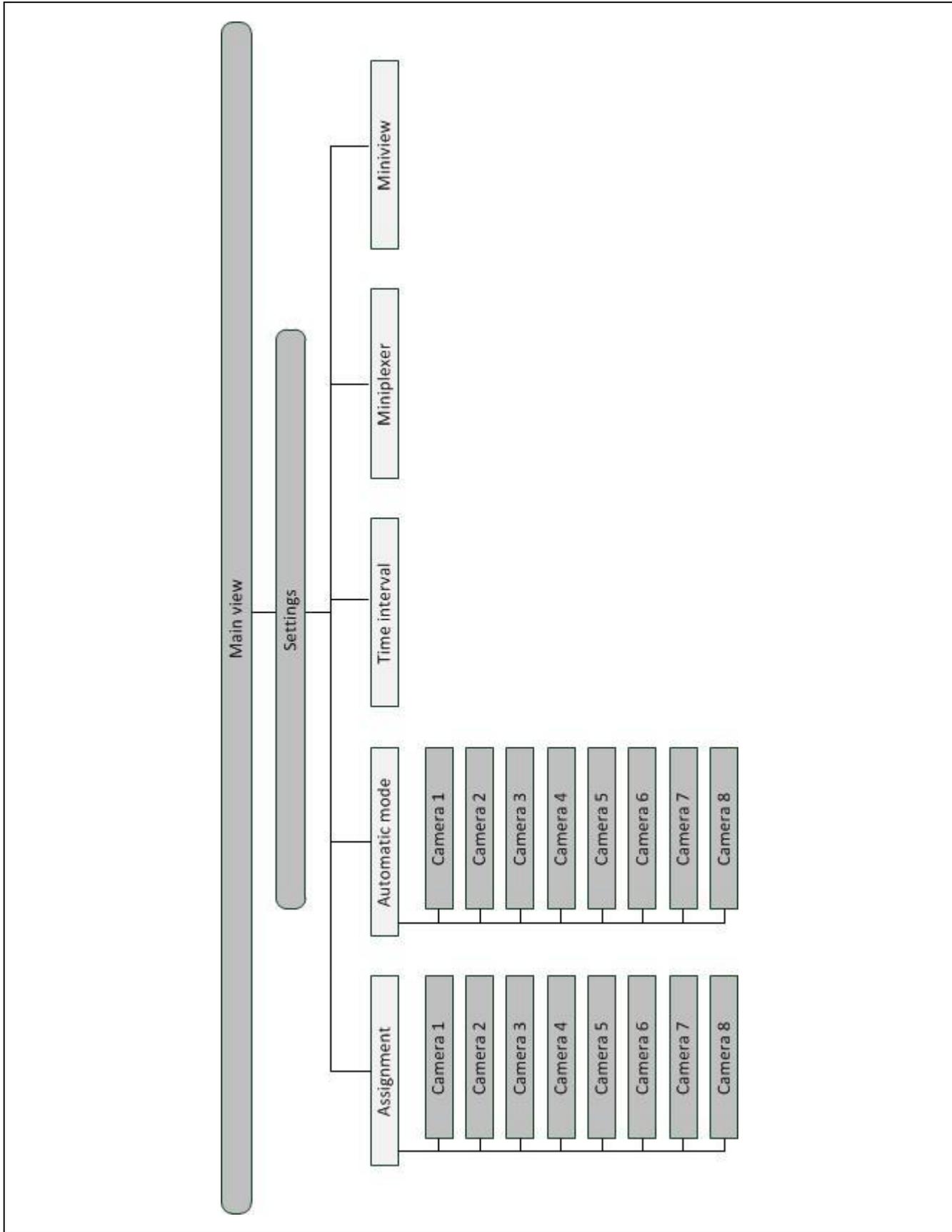
A detailed description of these possible error messages and troubleshooting can be found to in the implement operating instructions.



Note

If the implement cannot be operated, check whether the "stop switch" is pressed in. The implement cannot be operated until the button has been released.

6 Menu structure



7 Glossary

Boolean value	A Boolean value is a value whereby it is only possible to choose between true/false, on/off, yes/no etc.
CCI	Competence Center ISOBUS e.V.
CCI.Cam	Visual implement monitoring
ISOBUS	ISO 11783 International standard for data transfer between farming implements and devices.
Miniplexer	Device for switching between video signals which facilitates operating of two cameras via one video input (similar to a multiplexer, but with limited functions).
MiniView	Enables the display of individual data elements in other applications (e.g. implement values in CCI.Command or camera images in implement operation).
Multiplexer	Device for switching between video signals which facilitates operating multiple cameras over one video input.
Snapshot	Records the currently displayed image.
Interface	Part of the terminal which is used to communicate with other devices.
Terminal	ISOBUS CCI 100 or CCI 200 terminal
Touchscreen	Touch-sensitive screen for operation of the terminal.
Full-screen mode	The camera image fills the entire screen.

8 Buttons and icons



CCI.Cam



Snapshot



Switch automatic mode on/off



Show camera image



Time interval



Automatic mode settings



Select from a list

MiniView



Full-screen mode



Mirror image



Settings



Show additional cameras



Function key assignments



Reset



Video minipler

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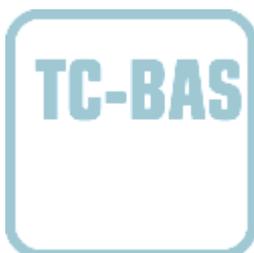


CCI.Control

*Documentation and task
management*

Operating instructions

Reference: CCI.Control v4



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1 Introduction

1.1 About these operating instructions

These operating instructions are intended as an introduction to the operation and configuration of the CCI.Control app. This app is preinstalled on your ISOBUS CCI 100/200 terminal and can only be run there. It is only with knowledge of these operating instructions that accidental misuse of the terminal can be avoided and fault-free operation ensured.

These operating instructions must be read and understood particularly prior to editing of tasks using the software, to prevent problems during operation.

1.2 Reference

These operating instructions apply to CCI.Control v4.

In order to check the version number of CCI.Control installed on your ISOBUS CCI terminal, proceed as follows:

1. Press the home key to enter the main menu.
2. Press the "Settings" button (F1) in the main menu.
3. Select the tab **Info and Diagnostics**.
4. In the **Info and Diagnostics** tab press the button "Terminal".
5. Press the "Software" button on the touchscreen.
 - The version of the terminal software component is indicated in the information field that is now displayed.

1.3 About CCI.Control

In accordance with the ISOBUS standard, CCI.Control is a task controller software package which, amongst others, fulfils the requirements of the AEF functionalities TC-BAS and TC-GEO (cf. Section 8).

1.3.1 Components

CCI.Control is used for documentation and task management:

Data interface	The ISO-XML format, defined for ISOBUS, is used for data exchange. Data are transferred using a flash drive or via online transfer.
Implement interface	Process data acquisition and implement control are achieved via the ISOBUS. The job computer for the implement must therefore be equipped with task controller software.

1.3.2 Section-specific processing

If a GPS receiver is connected, section-specific processing can be automated. Tasks planned on the PC using application maps can be processed in this way and documented with position information.

1.3.3 Standalone mode

In the simplest case, CCI.Control can be operated without a task file and without an ISOBUS implement.

Master data (driver, farm, product, etc.) and task are created directly at the terminal and CCI.Control is used purely for task data acquisition. The time and duration of the agricultural practice, the master data allocated to the task and, if a GPS receiver is available, the track are recorded.

1.3.4 Operation with implement

1.3.4.1 ISOBUS-compatible

Most modern ISOBUS implements are able to provide CCI.Control with a series of process data.

Process data refers to

- implement-specific information
- task-specific information (application data + yield data)

The process data provided via the counters depends on the implement and is specified by the implement manufacturer.

After a task is started, CCI.Control records this process data. Master data (field, customer, driver, product, etc.) are stored together with process data (working time, yield, time in the working position, etc.) through the importing of a task from the FMIS or through manual creation by drivers.

1.3.4.2 Non-ISOBUS-compatible

When operating an implement that is not ISOBUS-compatible, CCI.Control cannot record any implement data. The working time and the distance covered (if a GPS receiver is being used) are available, however.

1.3.5 Operation with an FMIS

This is the recommended operating mode.

CCI.Control takes over the exchange of task and process data between farm PC, terminal and implement. The ISO-XML format, defined for ISOBUS, is used for data exchange. It can be provided or processed by the FMIS of appropriate farming software providers.

You create a task data file on the PC in ISO-XML format which contains both master and task data. The data are read in using the import function of CCI.Control.

All task specific information are summarised under task data:

- Who?
- Where?
- What?
- When?
- How?

When planning a task at the PC, it is possible to specify which implement process data are to be recorded. It is, however, also possible to process a standard set of process data specified by the manufacturer. In general, any value available at the implement can be requested and displayed along with time and position information.

In addition, ISOBUS implements can react to instructions from CCI.Control. The ISOBUS implement sends a device description (DDD) to CCI.Control. CCI.Control uses this information to identify the functionality of the ISOBUS implement. Based on the application maps created on the PC, CCI.Control is thus able to control the ISOBUS implement according to position.

CCI.Control facilitates the inputting of new tasks or customers during the work in the field. The new master data are automatically imported and complemented in the FMIS.

After a task has been stopped, it can be exported to a flash drive and transferred to the PC or else exported via online transfer. The task data now include the counter readings of the connected implements, as well as the process data requested during the planning of the task. On the basis of the data gained, subsequent tasks can be planned with greater precision. Moreover, the data make it easier to document and invoice the work performed.

1.3.6 Examples

Example 1:

During the harvest, a yield map was created. Based on this, a fertilisation plan is drawn up on the PC. The FMIS creates a task based on recommended fertiliser and position data, taking into consideration the functions of the implement. This is saved on a flash drive and transferred to the driver, who then imports the data to CCI.Control. While the driver drives over the field, CCI.Control controls the fertiliser spreading based on the task and the current position information via the ISOBUS. The section-specific fertilizer quantities are automatically set using the application map created on the PC.

Example 2:

An easier case is that the CCI.Control documents, for example, the bale number of a press. This information, as well as the recorded position information, can be given to the customer in an invoice.

	FMIS not available		FMIS available	
	Non-ISOBUS-compatible implement	ISOBUS-compatible implement	Non-ISOBUS-compatible implement	ISOBUS-compatible implement
Logging of times	●	●	●	●
Logging of positions	●*	●*	●*	●*
Logging of counters	-	●	-	●
Logging of process data	-	-	-	●
Automatic control of the implement	-	-	-	●*

* with connected GPS receiver

● Function available

- Function not available

2 Safety

2.1 Identification of indications in the operating instructions

The safety indications in these operating instructions are specially identified:



Warning - General Hazards!

This occupational safety symbol identifies general safety indications the non-observance of which poses a danger for life and limb. Carefully observe the indications regarding occupational safety and exert particular caution in these cases.

**Caution!**

This caution symbol identifies all safety indications referring to regulations, directives or working procedures which must be observed. Non-observance can entail damage to, or the destruction of, the terminal as well as malfunctions.

**Note**

The note symbol highlights operation tips and other particularly useful information.

3 Set-up for operation

3.1 Connecting the Terminal

3.1.1 Connecting with a GPS receiver

The use of a GPS receiver is required in order to process a section-specific task. For information, please refer to the chapter **Connecting with a GPS receiver** in the **CCI.GPS** operating instructions.

3.1.1.1 GPS data requirements

The following NMEA message packages enable error-free operation with CCI.Control:

- GGA, VTG, ZDA, GSA
- GGA, RMC, ZDA, GSA
- GGA, VTG, RMC, GSA
- GGA, RMC, GSA
- RMC, GSA

3.1.2 Connecting with a GSM modem

As an alternative to importing and exporting task data using a flash drive, CCI.Control can use a mobile communications interface for online data transfer.



Note

The apps CCI.Courier or CCI.farmpilot must be enabled for online data transfer.

This requires a GSM modem.

To connect the GSM modem with the terminal, proceed as follows:

1. Connect the GSM modem to serial interface 2 (RS232-2) of the terminal.



Note

Serial interface 2 (RS232-2) of the terminal is factory set as follows: 115200 baud, 8N1. There is no need to change this setting.

3.2 Installing the software

CCI.Control is included in the scope of delivery of the ISOBUS CCI terminal and, as a consequence, installation is neither possible nor required.

In order to be able to operate the software installed ex works a licence must be acquired:

As an option when purchasing the terminal

The software is enabled ex works and can be used immediately.

Upgrade

In the event of an upgrade, the software is activated by our service partner.



Note

If you own a licensed version of CCI.Control the "Control" button is visible in the main menu of your terminal.

3.3 Operating modes

3.3.1 Standalone mode:

To place CCI.Control into operation, proceed as follows:

1. Switch on the terminal.
2. Start CCI.Control.
3. Add a new task (cf. Section 4.4.2.2).
4. Start the task (cf. Section 4.4.3.1).
5. Stop the task following completion (cf. Section 4.4.3.1).
6. Print out the task report if required.

3.3.2 Recommended operating mode with GPS receiver, ISOBUS implement and FMIS

To place CCI.Control into operation, proceed as follows:

1. Plan your tasks using an FMIS.
2. Export the task data as ISO-XML on a flash drive or via online transfer.
3. Connect an ISOBUS implement to the tractor.
4. Connect the GPS receiver to the tractor.
5. Switch on the terminal.
6. If necessary, connect the flash drive to the terminal.
7. Start CCI.Control (cf. Section 4.2).
8. Import the task data (cf. Section 4.5).
9. Select the required task (cf. Section 4.4.2.3).
10. Start the task (cf. Section 4.4.3.1).
11. Stop the task following completion (cf. Section 4.4.3.1).
12. Print out the task report if required.
13. Export the task data to the flash drive or via online transfer (cf. Section 4.6).
14. Import the compiled data to the FMIS and analyse it.

4 Operation

4.1 General instructions

4.1.1 Input fields

The length of the input fields for text is limited to 32 characters.

Only the email address can include 64 characters.

Numerical input fields are limited to 10 (e.g. the postcode) or 20 characters (e.g. telephone number).



Note

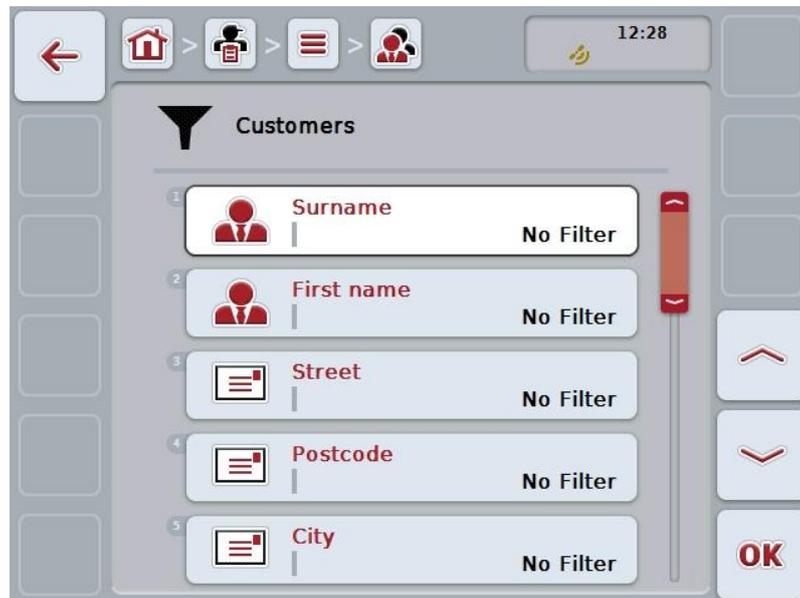
If the permitted length is exceeded the input dialogue changes colour and further keystrokes are ignored.

Delete the surplus characters and repeat the inputting process.

4.1.2 Filter

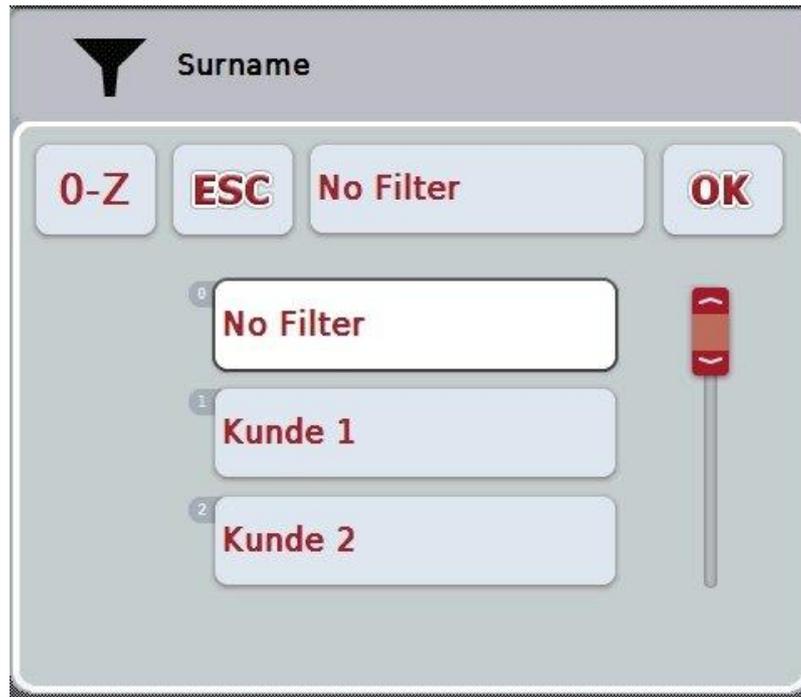
To filter a list of stored entries, proceed as follows:

1. Press the "Filter" button (F2) on the touchscreen.
→ The following operating screen opens:



2. Select the filtering criterion for the list. To do so, press the button with the required specification on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel or the "OK" button (F6).

→ The following selection list opens



3. From the list, select the required specification. To do so, press the button with the required specification on the touchscreen or turn the scroll wheel until this button is highlighted in white.
 - The selection appears in the selection window.
4. Confirm the selection with "OK"; alternatively, press the scroll wheel or press the button again with the required specification.
 - This will take you to the operating screen again. To filter the list according to additional criteria, proceed again as described above.
5. Press the "Back" button (F7) on the touchscreen.
 - You go back to the list with the saved entries, to which the selected filter was applied.

4.1.3 Reset filter

To reset the filter setting, proceed as follows:

1. Press the "Reset filter" button (F3) on the touchscreen.



Note

The filter will be reset without an additional request.

4.1.4 Sort

To sort a saved list in alphabetical or reverse alphabetical order, proceed as follows:

1. Press the "A-Z" or "Z-A" (F1) button on the touchscreen.



Note

The manner of sorting that will be used when the button is pressed is indicated on the button.

4.2 Program start

CCI.Control is started automatically by switching on the terminal. There is direct access to all functions via the start screen.

To switch to the CCI.Control start screen, proceed as follows:

1. Press the “Control” button in the main menu of the terminal on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.

→ The following start screen opens:



CCI.Control is organised into 5 areas:

4.2.1 Tasks

Task processing (Section 4.4).

4.2.2 Database

Inputting or modification of master data. If you plan and control your tasks using an FMIS system the master data are imported along with the task data. Thus, in general, the master data do not need to be entered manually and can be returned to the FMIS by exporting the task data.

4.2.3 Import task data

Change to the operating screen to import data. The imported data usually contain master and task data. Data is imported either via flash drive or via online transfer.



Caution!

All task and master data on the terminal are overwritten during import.

4.2.4 Export task data

The task data is exported either via a connected flash drive or via online transfer. Here the master and task data, as well as the recorded process and implement data, are exported.

4.2.5 Settings

Activate or deactivate auto-logging and notification functions and adjust advanced settings.

4.3 Database

The master data are requested via the **Database** menu item.

All data and information in relation to the task is summarised in the database:

- Customers
- Farms
- Fields
- Drivers
- Implements
- Products
- Agricultural practices
- Techniques
- Crop types
- Crop varieties



Note

Editing of this master data, as described in the following sections, is not possible if the data originate from a task file created on a PC.

4.3.1 Customers

A list of the saved customers can be found under the **Customers** menu item.



Note

A customer is usually the owner or tenant of the farm on which the task is executed.

A customer can be referred to from a task, a farm and a field.

Customer data include

- **Surname**,
- First name,
- Street,
- Postcode,
- Town,
- Phone number,
- Mobile phone number.



Note

Fields with bold text are **mandatory fields**, the other fields are optional fields.



You have the following operating options:

-  **Add customers**
-  **Edit/Display customers**
-  **Copy customers**
-  **Delete customers**

4.3.1.1 Add new customers

To add a new customer, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".

4.3.1.2 Edit/Display customers

To edit/display a saved customer, proceed as follows:

1. From the list of customers, select the customer whose information needs to be edited/displayed. To this end, press the button with the customer name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.1.3 Copy customers

To copy a customer, proceed as follows:

1. From the list of customers, select the customer that needs to be copied. To do so, press the button with the customer name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:

The screenshot shows a software interface for entering customer data. At the top, there is a navigation bar with icons for back, home, list, and a person icon, along with a clock showing 12:28. Below this is a header area with a person icon and the text 'Customer'. The main area contains five input fields, each with a red person icon and a number in the top left corner: 1. Surname: Kunde 1_#1; 2. First name: -; 3. Street: Straße; 4. Postcode: 12345; 5. City: Stadt. To the right of the input fields is a vertical scroll wheel and two arrow buttons (up and down). At the bottom right, there is a red 'OK' button.



Note

The copy is identified by "#1" (sequential numbering) after the name of the customer.

4.3.1.4 Delete customers

To delete a customer, proceed as follows:

1. From the list of customers, select the customer that needs to be deleted. To do so, press the button with the customer name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

A customer can only be deleted if not active in a task, farm or a field, and if not previously imported from the FMIS.

4.3.2 Farms

A list of the saved farms can be found under the **Farms** menu item.



Note

The farm is the holding of a customer. All the fields owned by the customer comprise the farm. A customer can have several farms. A farm can be referred to from a task and a field.

The farm data are comprised of

- **Farm name**,
- Street,
- Postcode,
- City,
- Customer.



Note

Fields with bold text are **mandatory fields**, the other fields are optional fields.



Note

The customer field is used to allocate a customer to the farm. The customer is usually also the farm owner.



You have the following operating options:

-  **Add farm**
-  **Edit/Display farm**
-  **Copy farm**
-  **Delete farm**

4.3.2.1 Add new farm

To add a new farm, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".

4.3.2.2 Edit/Display farm

To edit/display a saved farm, proceed as follows:

1. From the list of farms, select the farm for which the information needs to be edited/displayed. To do so, press the button with the farm name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.2.3 Copy farm

To copy a farm, proceed as follows:

1. From the list of farms, select the farm that needs to be copied. To do so, press the button with the farm name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



Note

The copy is identified by "#1" (sequential numbering) after the name of the farm.

4.3.2.4 Delete farm

To delete a farm, proceed as follows:

1. From the list of farms, select the farm that needs to be deleted. To do so, press the button with the farm name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

A farm can only be deleted if not active in a task or field, and if not previously imported from the FMIS.

4.3.3 Fields

A list of the saved fields can be found under the **Fields** menu item.



Note

A field is the area to which a task can be allocated.

The field data are comprised of

- **Field name**,
- **Area**,
- Customer,
- Farm,
- Crop type,
- Crop variety.



Note

Fields with bold text are **mandatory fields**, the other fields are optional fields.

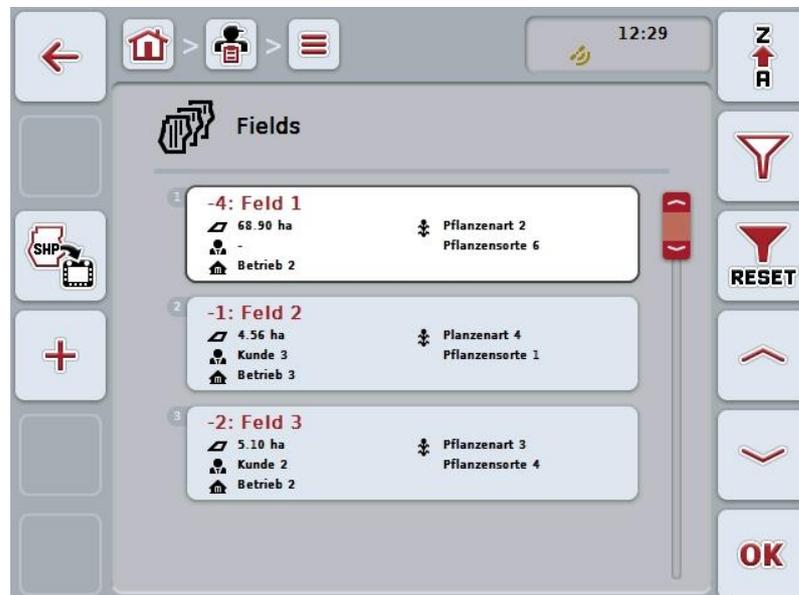


Note

The allocation of the customer to the field is realised via the customer. The customer is usually also the field owner.

The farm also enables allocating the area to a property.

Moreover, a crop type and crop variety can be allocated to the field.



You have the following operating options:



Import field boundary in shape format



Add field



Edit/Display field



Copy field



Delete field



Call up Map View preview

4.3.3.1 Import field boundary in shape format

You can import a field boundary in shape format from the flash drive or via an online connection.

In an online import, CCI.Courier receives the shape data and automatically makes it available to CCI.Control via the inbox of the terminal. When importing from the flash drive, CCI.Control reads the shape data directly from the connected storage medium.

4.3.3.1.1 Import from a flash drive

To import a field boundary from a flash drive, proceed as follows:

1. Save the shape data on a flash drive.
2. Connect the flash drive to the terminal.
3. Press the "Import field boundary in Shape-Format" button (F9) on the touchscreen.
4. Press on the "Flash drive" button.
5. Select the field boundary that is to be imported. To do so, press the button with the required field boundary on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the "OK" button (F6).
→ The field boundary is now imported.
6. If required, now perform optional step 2 and the remainder of chapter 4.3.3.2.

4.3.3.1.2 Online import

To import an online field boundary, proceed as follows:

1. Save the shape data on the FTP server or send it as an E-mail attachment to CCI.Courier.
2. Press the "Import field boundary in Shape-Format" button (F9) on the touchscreen.
3. Press on the "Online transfer" button.
4. Select the field boundary that is to be imported. To do so, press the button with the required field boundary on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the "OK" button (F6).
→ The field boundary is now imported.
5. If required, now perform optional step 2 and the remainder of chapter 4.3.3.2.

4.3.3.2 Add new field

To add a new field, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".

4.3.3.3 Edit/Display field

To edit/display a saved field, proceed as follows:

1. From the list of fields, select the field for which the information needs to be changed/displayed. To do so, press the button with the field name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.3.4 Copy field

To copy a field, proceed as follows:

1. From the list of fields, select the field that needs to be copied. To do so, press the button with the field name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



Note

The copy is identified by "#1" (sequential numbering) after the name of the field.

4.3.3.5 Delete field

To delete a field, proceed as follows:

1. From the list of fields, select the field that needs to be deleted. To do so, press the button with the field name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



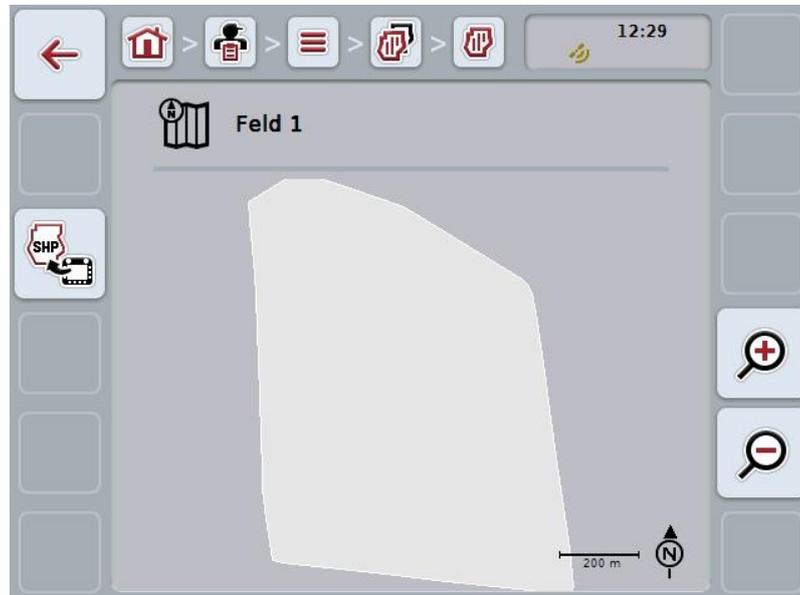
Note

A field can only be deleted if not active in a task and if not previously imported from the FMIS.

4.3.3.6 Call up Map View preview

To call up the Map View preview, proceed as follows:

1. Go to the operating screen of the field (cf. 4.3.3.3).
2. Press the "Map View" button (F3) on the touchscreen.
→ The Map View preview opens:



You have the following operating options:



Magnifying the map view

Press the "Zoom in" button (F4) on the touchscreen.



Shrinking the map view

Press the "Zoom out" button (F5) on the touchscreen.

4.3.3.7 Export field boundary in shape format

To export a field boundary, proceed as follows:

1. Go to the operating screen of the field (cf. 4.3.3.3).
2. Press the "Export field boundary in shape format" button (F9) on the touchscreen.

4.3.4 Drivers

A list of the saved drivers can be found under the **drivers** menu item.



Note

A driver executes the planned task and operates the implement.

The driver data are comprised of

- **Name**,
- First name,
- Street,
- Postcode,
- City,
- Phone number,
- Mobile phone number.



Note

Fields with bold text are **mandatory fields**, the other fields are optional fields.



You have the following operating options:



Add driver



Edit/show driver



Copy driver



Delete driver

4.3.4.1 Add new driver

To add a new driver, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".

4.3.4.2 Edit/show driver

To edit/display a saved driver, proceed as follows:

1. From the list of drivers, select the driver whose information needs to be edited/displayed. To do so, press the button with the driver name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:

The screenshot shows a mobile application interface for editing a worker's information. At the top, there is a navigation bar with a back arrow, a home icon, a person icon, a menu icon, and a person icon with a plus sign. The time 12:29 is displayed in the top right. Below the navigation bar, the title 'Worker' is shown next to a person icon. The main content area contains five input fields, each with a small person icon and a red number indicating its order: 1. Surname: Fahrer 1; 2. First name: -; 3. Street: Straße; 4. Postcode: 12345; 5. City: Stadt. A vertical scroll bar is on the right side of the form. At the bottom right, there is a red 'OK' button.

3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.4.3 Copy driver

To copy a driver, proceed as follows:

1. From the list of drivers, select the driver that needs to be copied. To do so, press the button with the driver name on the touchscreen or turn the scroll wheel until this button is highlighted and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:

The screenshot displays a mobile application interface for managing workers. At the top, there is a navigation bar with icons for back, home, list, and search, and a status bar showing the time 12:29. Below the navigation bar, the title 'Worker' is displayed next to a worker icon. The main content area contains a form with five fields, each with a numbered icon on the left and a corresponding value on the right:

Field	Value
1 Surname	Fahrer 1_#1
2 First name	-
3 Street	Straße
4 Postcode	12345
5 City	Stadt

On the right side of the form, there is a vertical scroll bar and three buttons: an upward arrow, a downward arrow, and an 'OK' button.

Note

The copy is identified by "#1" (sequential numbering) after the name of the driver.

4.3.4.4 Delete driver

To delete a driver, proceed as follows:

1. From the list of drivers, select the driver that needs to be deleted. To do so, press the button with the driver name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

A driver can only be deleted if not active in a task and if not previously imported from the FMIS.

4.3.5 Implement

A list of the saved implements can be found under the **Implements** menu item. The list contains implements which have been transferred from the FMIS in the transfer file, as well as the ISOBUS implements which have been connected to the terminal since the last import.

A task can be executed with an implement. An implement can be allocated to the task during the planning of a task using an FMIS. If no implement is allocated to a task, an allocation is carried out based on the task description and the implement characteristics.

The implement data consists of

- Implement name,
- ISOBUS name.



Note

Only the implement name can be edited.

The remaining data serve as information only and are automatically read from the implement if made available by it.



You have the following operating options:



Edit/Display implement



Delete implement



Note

An implement can only be edited or deleted if the data were not imported from the FMIS.

4.3.5.1 Edit/Display implement



Note

An implement can only be edited if the data were not imported from the FMIS.

To edit/display a saved implement, proceed as follows:

1. From the list of implements, select the implement for which the information needs to be edited/displayed. To do so, press the button with the implement name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.5.2 Delete implement

To delete an implement, proceed as follows:

1. From the list of implements, select the implement that needs to be deleted. To do so, press the button with the implement name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

An implement can only be deleted if not active in a task and if not previously imported from the FMIS.

4.3.6 Products

A list of the saved products can be found under the **Products** menu item.



Note

A product is applied to or removed from a field as part of an agricultural practice, e.g. fertiliser, pesticide or harvested product.

A product is indicated solely by the

- **Product name.**



Note

Fields with bold text are **mandatory fields**, the other fields are optional fields.



You have the following operating options:



Add product



Edit/Display product



Copy product



Delete product

4.3.6.1 Add new product

To add a new product, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".

4.3.6.2 Edit/Display product

To edit/display a saved product, proceed as follows:

1. From the list of products, select the product for which the information needs to be edited/displayed. To do so, press the button with the product name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.6.3 Copy product

To copy a product, proceed as follows:

1. From the list of products, select the product that needs to be copied. To do so, press the button with the product name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



Note

The copy is identified by "#1" (sequential numbering) after the product name.

4.3.6.4 Delete product

To delete a product, proceed as follows:

1. From the list of products, select the product that needs to be deleted. To do so, press the button with the product name on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

A product can only be deleted if not active in a task and if not previously imported from the FMIS.

4.3.7 Agricultural practices

A list of the saved agricultural practices can be found under the **Agricultural practices** menu item.

An agricultural practice can be allocated to a task during the planning of a task using an FMIS. An application technique such as tillage ("Plough", "Grubber", etc.) can also belong to an agricultural practice.



Note

Agricultural practices refer to the activities performed on the field such as fertilising or sowing.

An agricultural practice is indicated solely by the

- **Name.**



You have the following operating options:



Add agricultural practice



Edit/Display agricultural practice



Copy agricultural practice



Delete agricultural practice

4.3.7.1 Add new agricultural practice

To add a new agricultural practice, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".

4.3.7.2 Edit/Display agricultural practice

To edit/display a saved agricultural practice, proceed as follows:

1. From the list of agricultural practices, select the agricultural practice for which the information needs to be edited/displayed. To do so, press the button with the name of the agricultural practice on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.7.3 Copy agricultural practice

To copy an agricultural practice, proceed as follows:

1. From the list of agricultural practices, select the agricultural practice that needs to be copied. To do so, press the button with the name of the agricultural practice on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



Note

The copy is identified by "#1" (sequential numbering) after the agricultural practice name.

4.3.7.4 Delete agricultural practice

To delete an agricultural practice, proceed as follows:

1. From the list of agricultural practices, select the agricultural practice that needs to be deleted. To do so, press the button with the name of the agricultural practice on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

An agricultural practice can only be deleted if not active in a task and if not previously imported from the FMIS.

4.3.8 Techniques

A list of the saved techniques can be found under the **Techniques** menu item. The technique belongs to the agricultural practice that may be allocated to a task when planning the task with the FMIS. For example, the “Plough” and “Grubber” techniques belong to the agricultural practice of tillage.

A technique is indicated solely by the

- **Name.**



You have the following operating options:

-  **Add technique**
-  **Edit/Display technique**
-  **Copy technique**
-  **Delete technique**

4.3.8.1 Add new technique

To add a new technique, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the parameter is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".

4.3.8.2 Edit/Display technique

To edit/display a saved technique, proceed as follows:

1. From the list of techniques, select the technique for which the information needs to be edited/displayed. To do so, press the button with the name of the technique on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.8.3 Copy technique

To copy a technique, proceed as follows:

1. From the list of techniques, select the technique that needs to be copied. To do so, press the button with the name of the technique on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



Note

The copy is identified by "#1" (sequential numbering) after the name of the technique.

4.3.8.4 Delete technique

To delete a technique, proceed as follows:

1. From the list of techniques, select the technique that needs to be deleted. To do so, press the button with the name of the technique on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

A technique can only be deleted if not active in a task and if not previously imported from the FMIS.

4.3.9 Crop types

A list of the saved crop types can be found under the **Crop types** menu item.



Note

Crop type refers to the type of species or plant, such as corn or barley.

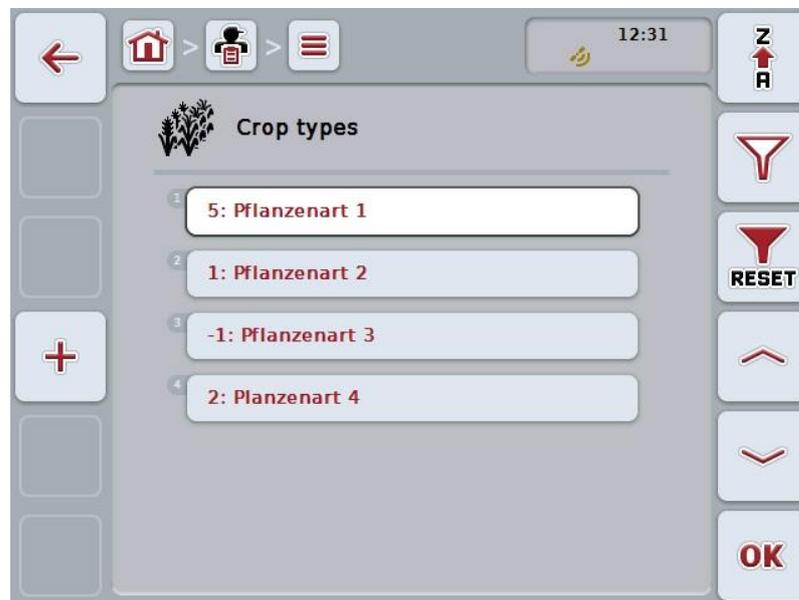
A crop type is indicated solely by the

- **Name.**



Note

Fields with bold text are **mandatory fields**, the other fields are optional fields.



You have the following operating options:



Add crop type



Edit/Display crop type



Copy crop type



Delete crop type

4.3.9.1 Add new crop type

To add a new crop type, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".

4.3.9.2 Edit/Display crop type

To edit/display a saved crop type, proceed as follows:

1. From the list of crop types, select the crop type for which the information needs to be edited/displayed. To do so, press the button with the name of the crop type on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit/Display" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.3.9.3 Copy crop type

To copy a crop type, proceed as follows:

1. From the list of crop types, select the crop type that needs to be copied. To do so, press the button with the name of the crop type on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The following operating screen opens:



Note

The copy is identified by "#1" (sequential numbering) after the crop type name.

4.3.9.4 Delete crop type

To delete a crop type, proceed as follows:

1. From the list of crop types, select the crop type that needs to be deleted. To do so, press the button with the name of the crop type on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

A crop type can only be deleted if not active in a field and if not previously imported from the FMIS.

4.3.9.5 Crop varieties

A list of the saved crop varieties can be found under the **Crop varieties** menu item.



Note

Crop variety refers to a special variety or breed of a crop type.

A crop variety is indicated solely by the

- **Name.**



Note

There are no adjustable settings under this menu item. The information about the crop varieties can only be imported.

4.4 Task data

The task data comprise all data and information in relation to the task:

- Name of the task,
- Customer,
- City,
- Farm,
- Field,
- Crop type,
- Crop variety,
- Worker,
- Agricultural practice,
- Technique,
- Product and
- Task status.

4.4.1 Task status

A task has one of several possible processing statuses at any given time.

Planned:	A new task which has not yet been processed.
Active:	The currently active task. Only one task can be active at any given time. To start another task, the active task must be paused or stopped.
Paused:	A task that has been paused. It can be resumed at any time.
Stopped:	A stopped task. It cannot be resumed, but remains in the list of saved tasks.



Note

There is no limit to the number of tasks with **Paused** status.

4.4.2 Tasks

The task list is brought up via the **Tasks** menu item.



You have the following operating options:

-  **Sort task list**
-  **Add task**
-  **Show task**
-  **Edit task**
-  **Copy task**
-  **Delete task**
-  **Import application map in shape format**

4.4.2.1 Sort task list

The task list can not only be sorted in alphabetical or reverse alphabetical order (cf. Section 4.1.4), but also according to the distance from the field assigned to the task.

To sort the list of saved tasks, proceed as follows:

1. Press the "Z-A" button (F1) on the touchscreen.
 - The symbol on the button automatically changes to the sorting symbol after removal.
2. Press the "Sort by distance" (F1) button on the touchscreen.
 - The list of saved tasks is sorted by distance of field assigned to task from current location. The closest field is shown first.



Note

The manner of sorting that will be used when the button is pressed is indicated on the button.

4.4.2.2 Add new task

To add a new task, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
→ The following operating screen opens:



2. In the operating screen, select all parameters one after the other.
3. To do so, press the relevant parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the task name via the keyboard on the touchscreen and select the remaining information from the respective lists.
5. Confirm your entry with "OK".



Note

The city is assigned via the customer and cannot be selected individually.



Note

The crop type and crop variety are assigned via the field and cannot be selected individually.



Note

The task status is automatically displayed.



Note

The technique is dependent on the agricultural practice and can only be selected if an agricultural practice has already been selected.

4.4.2.3 Show task

To display a task, proceed as follows:

1. On the touchscreen, press the button with the task or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "show" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ A detailed view of the task opens (cf. Section 4.4.3).

4.4.2.4 Edit task

To edit a task, proceed as follows:

1. On the touchscreen, press the button with the task or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ The tab **Edit task** opens.
3. In the operating screen, select the parameter for which the value needs to be changed. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Enter the new value on the touchscreen using the keyboard.
5. Confirm your entry with "OK".

4.4.2.5 Copy task

To copy a saved task, proceed as follows:

1. From the list of tasks, select the task that needs to be copied. To do so, press the button with the task on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.

Note

The detailed view of the copy is brought up immediately.

→ The following operating screen opens:



Note

The copy is identified by "#1" (sequential numbering) after the task name.

Note

All static task data plus all application maps belonging to the task are copied; process data generated during processing (counters, duration, etc.), however, are not copied. Tasks can be copied irrespective of their status. The task copy has "**Planned**" status in each case.

4.4.2.6 Delete task

To delete a task, proceed as follows:

1. From the list of tasks, select the task that needs to be deleted. To do so, press the button with the task on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.



Note

Tasks can only be deleted if they have "**Planned**" status.

4.4.2.7 Import application map in shape format

You can import an application map in shape format from the flash drive or via an online connection.

In an online import, CCI.Courier receives the shape data and automatically makes it available to CCI.Control via the inbox of the terminal. When importing from the flash drive, CCI.Control reads the shape data directly from the connected storage medium.

4.4.2.7.1 Import from a flash drive

To import an application map from a flash drive, proceed as follows:

1. Save the shape data on a flash drive.
2. Connect the flash drive to the terminal.
3. Press the "Import application map in shape format" button (F9) on the touchscreen.

→ The following operating screen opens:

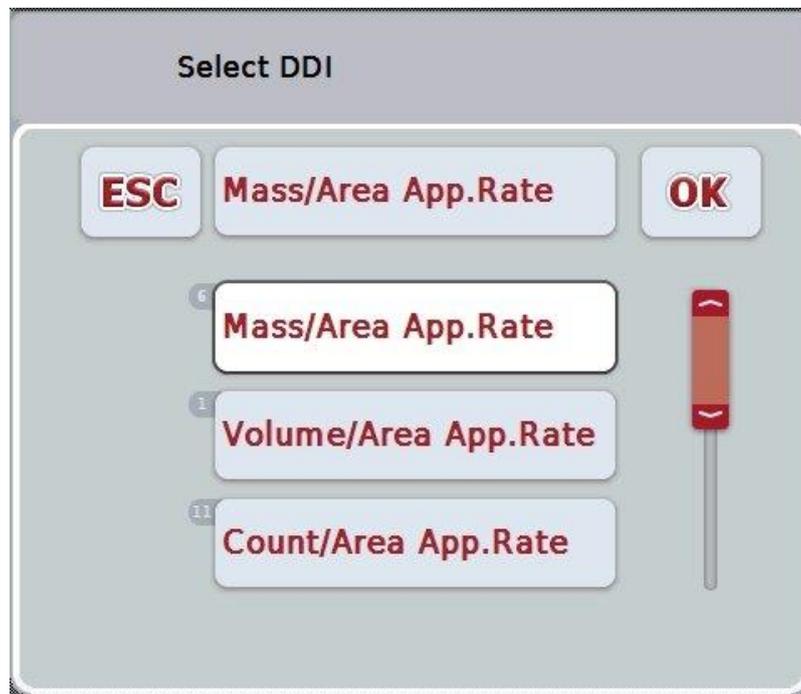


4. Press on the "Flash drive" button or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.

→ The following selection list opens:

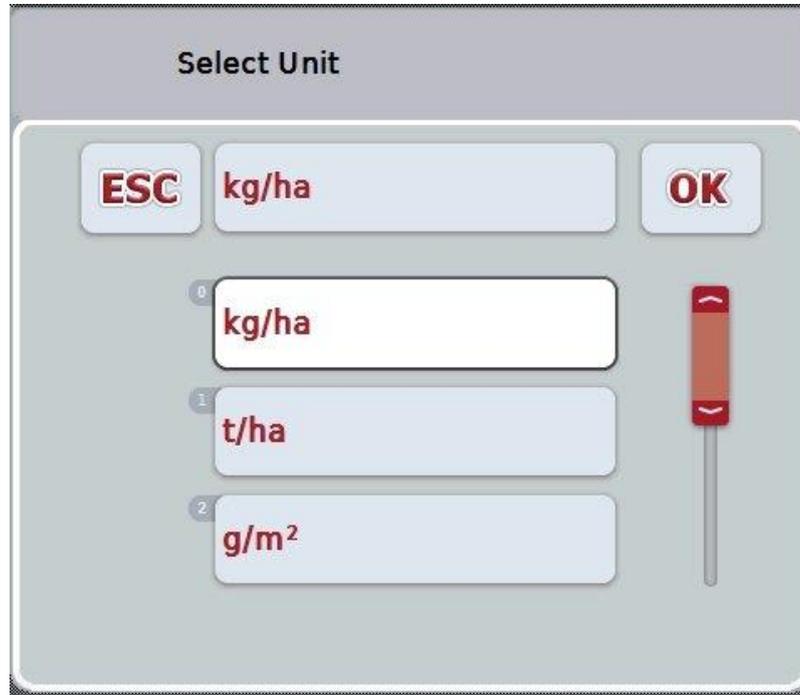


5. Select the application map that is to be imported. To do so, press the button with the required application map on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the "OK" button (F6).
6. Select the column with the data from the application map. To do so, on the touchscreen press on the button with the column or turn the scroll wheel until the button is highlighted in white.
7. Confirm your selection with "OK" or press once again on the column highlighted in white.
 - The following selection list opens:



8. Select the measuring unit. To do so, on the touchscreen press on the button with the measuring unit or turn the scroll wheel until the button is highlighted in white.

→ The following selection list opens:



9. Select the units. To do so, on the touchscreen press on the button with the unit or turn the scroll wheel until the button is highlighted in white.
 10. Confirm your selection with "OK" or press once again on the button highlighted in white.
- The application map is now imported.

4.4.2.7.2 Online import

To import an online application map, proceed as follows:

1. Save the shape data on the FTP server or send it as an E-mail attachment to CCI.Courier.
2. Press the "Import application map in shape format" button (F9) on the touchscreen.

→ The following operating screen opens:

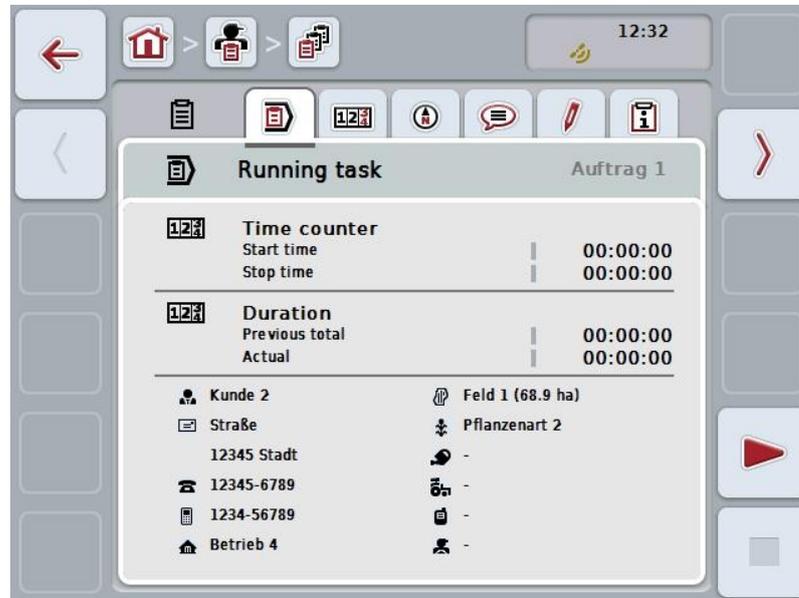


3. Press on the "Online transfer" button or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
4. Now perform step 5 and the remainder of chapter 4.4.2.7.

4.4.3 Detailed view

In the task list, press the task. Press the “show” button in the context menu. The detailed view of the task is brought up.

The detailed view of a task is divided into 6 tabs: **Active task**, **Counters**, **Map**, **Comments**, **Edit task**, and **Report**.



These are organised as follows:

Active task:	Display of the start and stop times as well as the total duration to date and current duration and the task-specific data. Starting, pausing and stopping of the task.
Counters:	Display of the total duration and the counter readings transferred from the implement.
Map:	Display and editing of the map assigned to the task as well as the corresponding application maps.
Comments:	Display and editing of comments including date and time.
Edit task:	Display and editing of the saved data of the task.
Report:	Display and editing of the task data compiled in the report.

To switch between tabs, proceed as follows:

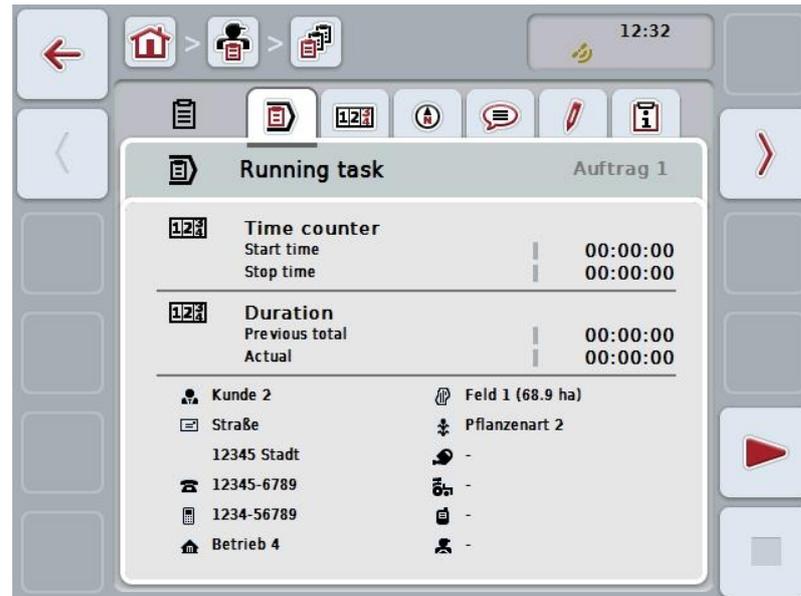
1. Press the corresponding tab on the touchscreen or select it using the arrow keys (F8, F2).

4.4.3.1 Active task

This tab displays the task times and task-specific data and information.

Time counter: This shows the time at which the task started, stopped or paused.

Duration: This shows the previous total time and the current duration of the task.



You have the following operating options:



Start task:

Press the "Start" button (F5) on the touchscreen.
Task process is started
The display indicates the current duration.



Pause active task:

Press the "Pause" button (F5) on the touchscreen.
From the selection list, select the reason for pausing.
The current duration is added to the total duration to date.



Resume task:

Press the "Resume" button (F5) on the touchscreen.
Task process is started
The display indicates the total duration to date and the current duration.



Finish task:

Press the "Stop" button (F6) on the touchscreen.



Note

A stopped task cannot be continued.

A stopped task remains in the list of saved tasks and cannot be deleted.



Note

If the terminal has been switched off without pausing or stopping the active task, a message indicating that the task was paused will appear on the terminal, the next time it is started up.

Press the "OK" button on the touchscreen to resume the task.

Press the "ESC" button on the touchscreen to pause the task.

The **Active task** tab opens automatically.



Note

Only one task can be running at any one time. If you start or resume a task while another task is running, a message appears that the active tasks must first be paused.

Press the "OK" button on the touchscreen to pause the active task.

Press the "ESC" button on the touchscreen to retain the active task.

4.4.3.2 Counters

The total duration and the counter readings transferred from the implement are indicated under this tab.



You have the following operating options:



Switch to the counter readings of a different implement

Press the "Switch Counter Readings" button (F6) on the touchscreen.

→ The counter readings of the other connected implement are displayed



Note

This function is only available if more than one ISOBUS implement is connected.

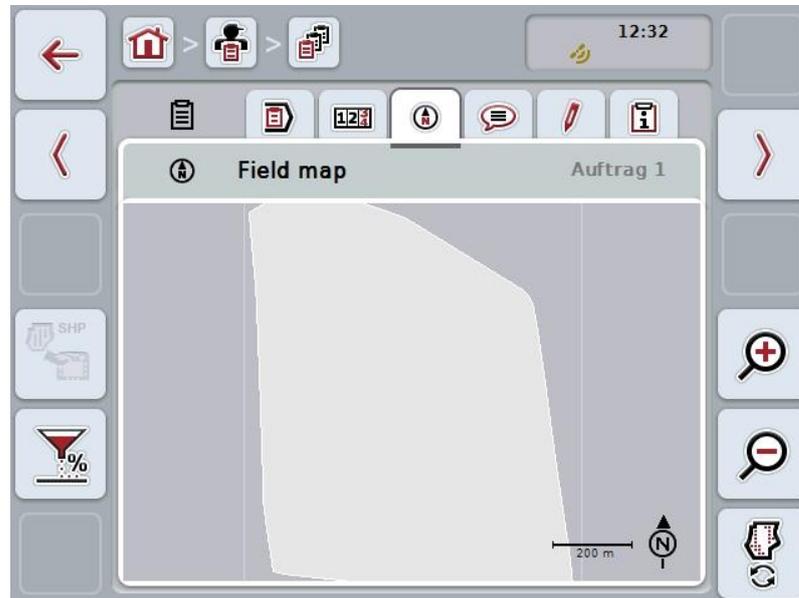


Note

The implement name is shown in the second row. If you change to the counter readings of another implement, the name changes.

4.4.3.3 Map

A map of the field assigned to the task is displayed in this tab.



You have the following operating options:



Magnifying the map view

Press the "Zoom in" button (F4) on the touchscreen.



Shrinking the map view

Press the "Zoom out" button (F5) on the touchscreen.



Show application maps

Export implement data

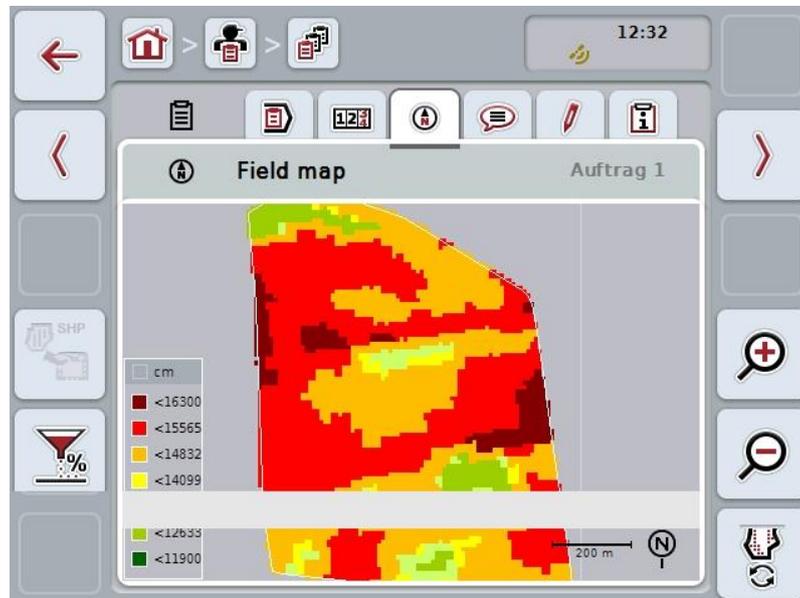


Adjust setpoint

4.4.3.3.1 Show application maps

To show the application maps, proceed as follows:

1. Press the “Show application maps” button (F6) on the touchscreen.
→ The application maps are displayed in the map view:



4.4.3.3.2 Adjust setpoint

In order to adjust the setpoint of the application map proceed as follows:

1. Press the "Adjust setpoint" button (F11) on the touchscreen.
2. Enter the percentage value by which the setpoint is to be adjusted via either the number pad in the touchscreen, the scroll wheel or the slider.
3. Confirm your entry with "OK".



Note

The setpoint adjustment can take any value between -95 and 200 %.



Note

The selected percentage value is added to the output value or subtracted from it. Example: The output value is approximately 200 kg/ha. If you select a setpoint adjustment of 100%, the setpoint after the adjustment is 400 kg/ha.

4.4.3.4 Comments

A list of your saved comments can be found under this tab:



To add a new comment, proceed as follows:

1. On the touchscreen press on the "Add new" button (F10).
2. Enter the new comment on the touchscreen using the keyboard.
3. Confirm your entry with "OK".



Note

Saved comments cannot be deleted.

4.4.3.5 Edit task

The following operating screen can be accessed under this tab:



You have the following operating options:



Edit task

To see which operating options you have, please refer to chapter 4.4.2.4.



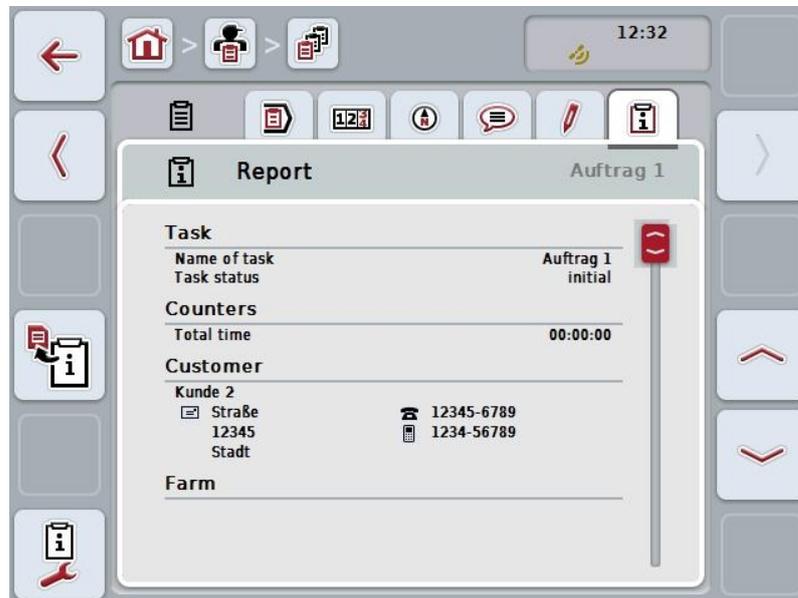
Call up database

Press on the "Database" button (F3).

To see which operating options you have in the database, please refer to Section 4.3.

4.4.3.6 Report

This tab contains a summary of the task data.



You have the following operating options:



Generate report

Press the "Generate Report" button (F10) on the touchscreen.
→ The report is exported as PDF with the task.



Configure report

4.4.3.6.1 Configure report

To configure a task report, proceed as follows:

1. Press the "Configure Report" button (F12) on the touchscreen.
→ The following operating screen opens:



2. Select the parameters which need to be displayed in the task report. To do so, press the parameter on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
3. Enter the Boolean value.
4. Confirm your entry with "OK".

4.5 Import task data

To import task data, proceed as follows:

1. Export the required task data to the FMIS in ISO-XML format on a flash drive in the \Taskdata folder. If multiple task files are saved on the flash drive they can be organised in subfolders.
2. Connect the flash drive to the terminal.
3. Press the “Import task data” button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.

→ The following operating screen opens:



4. Select the task data that needs to be imported. To do so, press the button with the task data on the touchscreen; alternatively, switch between the different sets of task data using the “Up” (F10) and “Down” (F11) buttons or turn the scroll wheel until the required button is highlighted in white and press the “OK” button (F6).



Caution!

All task and master data on the terminal are overwritten during import.



Note

The process can take a few minutes. CCI.Control will restart automatically after the data has been imported.



Note

If the task data are primarily imported via online transfer, the “Delete task data after import” function should be activated (cf. Section 4.7.3.3).

4.6 Export task data

There are two ways to export the task data:

- On a flash drive:** For this purpose, a flash drive has to be plugged into the terminal.
- For online transfer:** For this purpose, an app such as CCI.Courier or CCI.farmpilot, which enables task data to be transferred online, is required,.

To export task data, proceed as follows:

1. Press the “Export task data” button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.



Note

If no app allowing the online transfer of task data is enabled, the task data are transferred directly to the flash drive.

→ The following operating screen opens:



2. Select either “Flash drive” or “Online transfer”. To do so, press the button on the touchscreen with the required transfer path or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" button.
3. Confirm the selection with "OK".
4. The task data are exported.



Note

The task data are saved on the flash drive in the TASKDATA folder and the \TASKDATA\TC_YYYYMMDD_HHMM\ sub-folder. The subfolder name contains the date and time of the export procedure. This means that several export processes can be performed on a flash drive without overwriting data.

4.7 Settings

Here, you can activate and deactivate Auto-logging and Notification functions and call up Advanced settings.



You have the following operating options:



Activate/deactivate Auto-logging



Activate/deactivate Notifications



Bring up screen for Advanced settings

4.7.1 Activate/deactivate Auto-logging

Auto-logging is used to automatically and permanently document task data. This guarantees documentation even if the driver has not created or started any task himself.

Auto-logging documents all the work carried out in one day in a task. These task data can be calculated and evaluated at a PC if an FMIS is used that is capable of assigning data to individual tasks.

To activate/deactivate the auto-logging function, proceed as follows:

1. Press the "Auto-Logging" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the Boolean value.
3. Confirm your entry with "OK".



Note

If a task is started while the auto-logging function is activated, automatic documenting is paused. If this task is stopped, automatic recording is started again.



Note

The task data documented via the auto-logging function must be exported (see Section 4.6). Tasks that are older than 7 days are automatically deleted.

4.7.2 Activate/deactivate Notifications

If the terminal is switched off during an active task, an audible signal can sound in addition to a warning message being issued when the terminal is switched back on.

Notifications can be displayed if a reason for the pausing of a task needs to be entered or a field is reached or left.

To activate or deactivate notifications and signals, proceed as follows:

1. Press the button on the touchscreen with the required display or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the Boolean value.
3. Confirm your entry with "OK".

4.7.3 Advanced settings

To bring up the screen for advanced settings, proceed as follows:

1. Press the “Advanced settings” button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.

→ The following screen opens:



You have the following operating options:



Enter function instance



Enter time delay



Delete task data after import

4.7.3.1 Enter function instance

The function instance is the address of the task controller with which the ISOBUS implement can select a task controller, in case there are several task controllers.



Note

The ISOBUS implement selects the task controller with the lowest function instance.

To enter the function instance, proceed as follows:

1. Press the "Function instance button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".



Note

The function instance can take any value between 1 and 32.



Note

Default setting for the function instance is 1.



Note

The terminal must be restarted after changing the settings.

4.7.3.2 Enter time delay

To enter the time delay for the notification upon leaving the fields (cf. Section 4.7.2), proceed as follows:

1. Press the "Time delay" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".

4.7.3.3 Delete task data after import



Note

This function is only relevant if the task data are imported via online transfer.

The task data that are imported via online transfer are saved to an internal hard disk. When importing task data to CCI.Control (cf. Section 4.5), these data are not deleted. To prevent the storage becoming completely full over the course of time, the task data can be automatically deleted from the internal hard disk after importing.

To activate/deactivate this function, proceed as follows:

1. Press the “Delete task data after import” button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the Boolean value.
3. Confirm your entry with "OK".

5 Troubleshooting

5.1 Terminal errors

The following overview shows possible terminal errors and how to solve them:

Error	Possible cause	Rectification
The terminal does not switch on	<ul style="list-style-type: none"> • Terminal is not correctly connected • Ignition is not switched on. 	<ul style="list-style-type: none"> • Check ISOBUS connection • Start tractor.
The software of the connected implement is not displayed	<ul style="list-style-type: none"> • Bus terminator missing • Software is loaded, however is not displayed • Connection error when uploading the software 	<ul style="list-style-type: none"> • Check resistance • Check whether the software can be manually started from the terminal start menu • Check physical connection • Contact the implement manufacturer's customer service

5.2 Error messages

The following overview shows error messages in CCI.Control, their possible cause and how to rectify them:

Error	Possible cause	Rectification
Export is aborted, since no flash drive found.	No flash drive plugged in.	Plug in flash drive.
Preview cannot be created.	ISO-XML file corrupted or too large to create a preview.	-
Import was interrupted because no flash drive was found.	No flash drive plugged in.	Plug in flash drive.
No active implement. No active implement found by the control. Do you want to start the task anyway?	No implement with task controller functionality is connected.	Activate or connect a task-controller-compatible implement.
Map is being used by another task.	A task is already running with an application map.	Pause the active task and call up map view again.
No map information.	No application map was allocated to the current task.	Create an application map using an FMIS and allocate it to the task.
The task report could not be generated.	Error during exporting. Documentation or master data is corrupted.	-
Cannot delete.	The element to be deleted cannot be deleted.	-
Entry cannot be deleted because it has not been created on the terminal.	Data records imported from an FIMS cannot be deleted at a terminal.	-
Entry cannot be deleted because of existing database references.	The data record is being used by another data record.	Allocate another entry in the referencing data record.
Control cannot find any counters. A few control functions cannot be used. Do you want to start the task anyway?	The connected implement does not support all the required counters.	Connect an implement with complete function scope.
GPS Signal has been lost.	Poor reception.	Drive to a clear area and wait until the GPS receiver has reception again.

Control has not received any valid GPS Signal.	Incorrect GPS receiver configuration.	Check the GPS receiver configuration.
End active task? Once ended, a task cannot be resumed.	If documentation has been stopped, a task cannot be resumed.	Pause task.
Available storage space insufficient. Import was cancelled because there is insufficient available storage.	Task data for import are too large or the required storage space is not available.	Reduce the task data from the FMIS.
Database error Database can not be opened. The database is corrupt. Contact service.	Corrupt database.	Reimport task data. CAUTION: Unsaved (not exported) data may be lost in the process!
Export was cancelled because there is insufficient available storage.	Task data for export are too large or the required storage space is not available.	Use another storage medium or delete unwanted data from the storage medium being used.
Impl. disconnected. The implement being used in the active task was logged off.	The ISOBUS plug of the implement was pulled out.	Reconnect the implement's plug.
Storage space low. The available storage space is low. Please stop the active task and export the data.	The available internal storage space is low.	Finish active task and export data to an external storage medium.
Storage space insufficient. The available storage space is insufficient. The task that was running has been stopped. Please export the data.	The available internal storage space is insufficient to continue data recording.	Export data to an external storage medium.
Field left. The field of the current task was left. Do you want to pause the task?	The GPS position is outside the field belonging to the task.	-
The application map is not supported. This task cannot be performed.		
More than one value is defined for at least one treatment zone without implement functions being assigned. See the user manual for more information.		
GPS not active		
GPS not available. Do you want to start this task without GPS?		
Another task is active.		
Data export failed. Check the		

storage volume and try again.		
Create directory failed:		
Import of application map failed.		
Import of field boundary failed.		
Error while trying to open shape file.		
Error while trying to open database file.		
Unsupported type of shape file.		
Shape file contains invalid data.		
The shape file contains more than 254 treatment zones.		
The shape file contains more than 1024 points.		
The shape file contains no data.		



Note

Other error messages may be displayed on the terminal that are dependent on the implement.

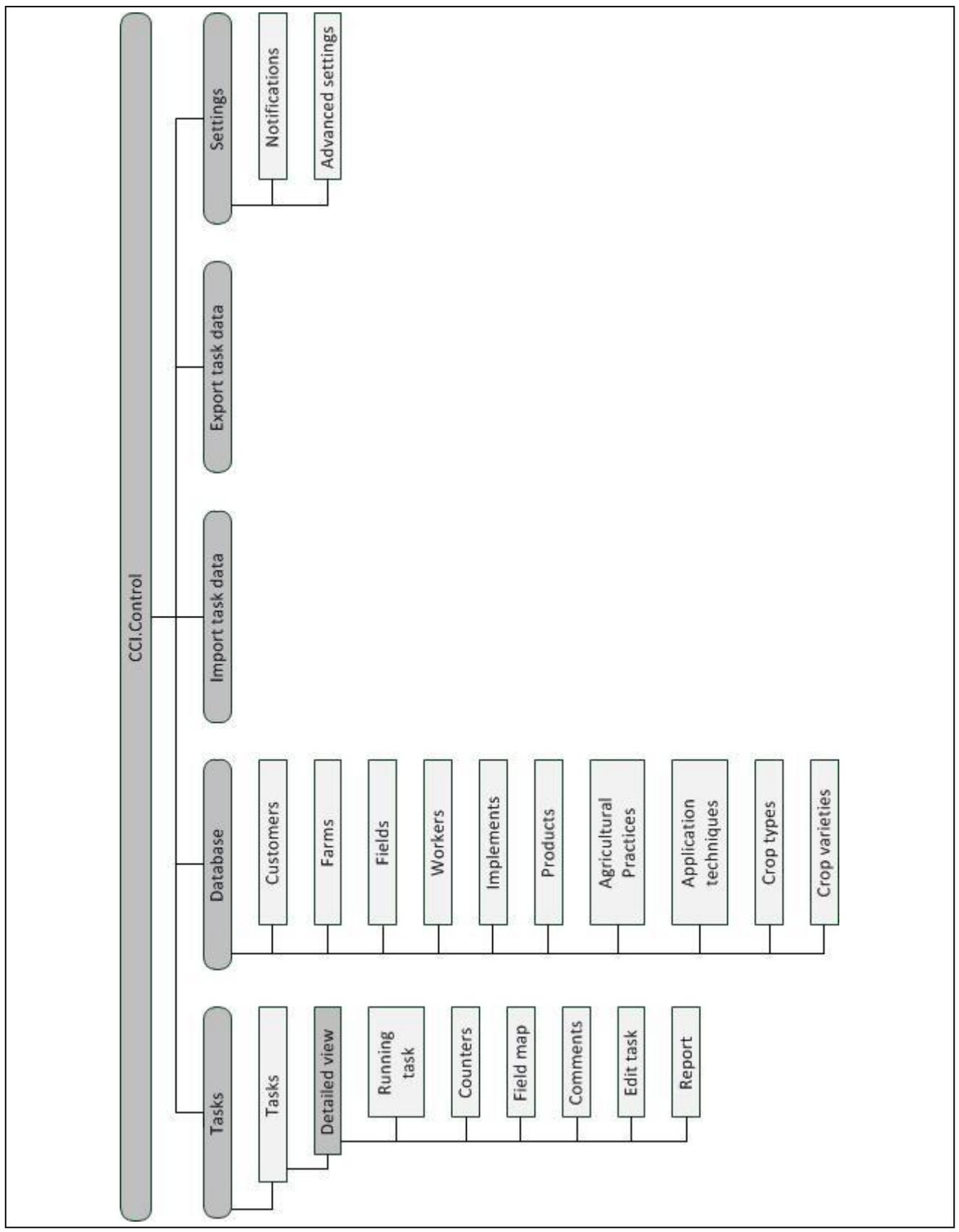
A detailed description of these possible error messages and troubleshooting can be found to in the implement operating instructions.



Note

If the implement cannot be operated, check whether the “Stop switch” has been pressed. The implement cannot be operated until the button has been released.

6 Menu structure



7 Glossary

FMIS	Field mapping system, software for yield data processing and the creation of application maps. (Farm Management Information System)
Technique	The technique with which the agricultural practice is performed, e.g. tillage with a plough or grubber.
Application map	<p>Section-specific setpoint map on which the quantity of product to be applied for each section in a field is specified, e.g. in the case of fertilising. It is transferred as a file to the terminal which processes it according to position on the field during work.</p> <p>Usually during the planning of application maps, in addition to the yield maps, lots of other information is entered such as weather information, results of the variety tests as well as the results of the location analysis such as soil tests, soil maps or aerial views.</p>
Task data file	A file in ISO-XML format which contains the master data and the task data. It can also contain application maps. The task data file is created in the FMIS, imported to CCI.Control and exported for evaluation of the process data after task processing.
Operating screen	The operating screen is comprised of the values and operating elements shown on the screen. The touchscreen can be used to directly select the elements shown.
Farm	Also known as a holding. All fields which are in possession of the customer belong to a farm. A customer can have multiple farms.
Boolean value	A Boolean value is a value whereby it is only possible to choose between true/false, on/off, yes/no etc.
CCI	Competence Center ISOBUS e.V.
CCI.Control	ISOBUS task processing
Data interface	Describes the type and the path of the data exchange (e.g. by a flash drive).
DDD	<p>Device Description Data</p> <p>Electronic data sheet of the implement.</p>
Yield mapping	<p>Yield maps show how much has been harvested at what point of the field. This information provides the basis for a targeted cause study in low yielding zones and provide a decision making basis for future cultivation measures.</p> <p>If the farmer identifies, when evaluating the yield map, that within one application the yields regularly differ considerably within one field, a section-specific cultivation approach can make sense.</p> <p>A system for yield mapping is comprised of</p> <ul style="list-style-type: none"> • Yield recording and • Yield data processing.
Drivers	A driver executes the planned task and operates the implement.
Field	A field is the area to which a task can be allocated.
GPS	<p>Global Positioning System.</p> <p>GPS is a system for satellite-supported position determination.</p>

GSM	Global System for Mobile Communication Standard for fully digital mobile phone networks, that is primarily used for telephony and text messaging such as SMS.
ISO-XML	ISOBUS-specific format for task data files based on XML.
ISOBUS	ISO11783 International standard for data transfer between farming implements and devices.
Context menu	Graphical user interface Facilitates editing, copying, deleting or adding of data.
Customer	The owner or tenant of the operation on which the task is executed.
Duration	The time in which a task is executed.
Agricultural practice	Crop cultivation measure Action performed on a field such as tillage or fertilising.
Implement	Towed or attached implement. An implement with which a task can be executed.
Implement interface	Communication channel from the terminal to the implement.
PDF	Portable Document Format File format for documents
Crop type	Types or species of a crop such as corn or barley.
Crop variety	Special sort or breed of a crop type.
Product	A product is applied to or removed from a field as part of an agricultural practice, e.g. fertiliser, pesticide or harvested product.
Process data	Parameters which an implement can make available to CCI.Control during the work (working state, consumption, etc.). These are then adopted in the task data file for later evaluation.
Interface	Part of the terminal which is used to communicate with other devices
Serial interface	The terminal has two serial interfaces, RS232-1 and RS232-2. Via these interfaces, external expansion devices such as GPS receivers, modems or printers can be connected.
Master data	Master data are fixed data records that do not change during the work (e.g. <i>driver, farm, etc.</i>).
Standalone mode	Operation of CCI.Control without task data file.
Section	Using yield maps and other methods of location analysis such as ground or contour maps, aerial photographs or multi-spectral images, it is possible, based on individual experience, to define zones within the field, if these significantly differ over periods of four to five years. If these zones have a sufficient size and, for example with winter wheat a difference in yield potential of approximately 1.5 t/ha, it makes sense to , match the cultivation and agricultural practices in these zones to the yield potential. Such areas are then designated as sections.

Section-specific processing	Satellite support use of an application map.
Terminal	ISOBUS CCI 100 or CCI 200 terminal
Touchscreen	Touch-sensitive screen for operation of the terminal.
Wi-Fi (WLAN)	Wireless Local Area Network Wireless local network.
XML	Extended Markup Language Logical markup language and both successor and enhancement of HTML. XML permits the specification of its own language elements so that other markup languages such as HTML or WML can be defined by using XML.

8 ISOBUS in functionalities



Task-controller basic (totals)

Takes over the documentation of cumulative values that are worthwhile when looking at the work carried out. In this respect, the device makes the values available. Here the data exchange between the FMIS and the task controller is realised in ISO-XML data format. Hence tasks can be conveniently imported into the task controller and / or the finished documentation can then be exported again.



Task controller geo-based (variables)

Additionally offers the possibility of also collecting position-related data or the planning of position-related tasks, for example using application maps.

9 Buttons and icons

	CCI.Control		Database
	List of customers		Customer
	List of farms		Farm
	List of fields		Field
	List of drivers		Drivers
	List of implements		Implement
	List of products		Product
	List of agricultural practices		Agricultural practice
	List of crop types		Crop type
	List of tasks		Active task
	Counters		Comment
	Edit task		Map
	Start or resume task processing		Report
	Stop task processing		Pause task processing
	Switch counter readings		Show application maps
	Configure		Call up database
	Import task data		Export task data.
	Flash drive		NAND Flash
	Map view preview		Generate report



Zoom in



Delete



Add



Change to the right



Change up



Confirm selection or entry



Phone number



Filter



Sort from A – Z



Select from a list



Adjust setpoint



Zoom out



Edit/Display



Copy



Change to the left



Change down



Address



Mobile phone number



Reset filter



Sort from Z – A



Import application map or field boundary in shape format

Export application map or field boundary in shape format

10 Notes

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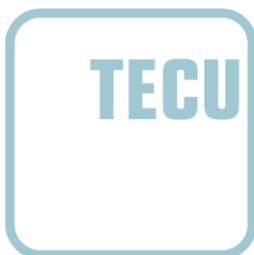


CCI.TECU

Tractor data

Operating instructions

Reference: CCI.TECU v6



CCI-SOBUS

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1 Introduction

1.1 About these operating instructions

These Operating Instructions are intended as an introduction to the operation and configuration of the CCI.TECU app. This app is preinstalled on your ISOBUS CCI 100/200 terminal and can only be run there. It is only with knowledge of these operating instructions that accidental misuse of the terminal can be avoided and fault-free operation ensured.

These operating instructions must be read and understood prior to setting up the software to avoid problems in the application.

1.2 Reference

These operating instructions describe the CCI.TECU version CCI.TECU v6. In order to query the version number of the CCI.TECU installed on your CCI ISOBUS terminal, proceed as follows:

1. Press the home key to enter the main menu.
2. Press the "Settings" button (F1) in the main menu.
3. Select the tab **Info and Diagnostics**.
4. In the tab **Info and Diagnostics** press the button "Terminal".
5. Press the "Software" button on the touchscreen.
 - The version of the terminal software component is indicated in the information field that is now displayed.

1.3 About CCI.TECU

A vast range of electronic components are used in modern tractors. In addition to sensors for the capture of operating data these are, above all, comprised of electronic control units (ECUs) for the control of various tractor functions. The electronic components are, as a rule, interconnected via a so-called bus system and use this to exchange tractor information such as driving speed or power take off speed.

The tractor ECU (TECU) is required so that information such as driving speed, power take off speed or the current position of the 3-point hitch can also be made available to an ISOBUS implement.

On an ISOBUS tractor, the TECU establishes the connection between the tractor bus system and the ISOBUS and thus provides the implement with the aforementioned information.

New tractors are often already ISOBUS-compatible ex works and fitted with a TECU. Such TECUs are hereinafter identified as primary TECUs.

The vast majority of tractors in use are, however, not ISOBUS-compatible but can be retrofitted using an upgrade cable set. However these cable sets do not usually include a TECU, i.e. the connection from ISOBUS implements is possible but access to tractor information is not.

The CCI.TECU described in these operating instructions closes this loophole. The app concerned is an upgrade solution.

Using CCI.TECU, tractor information is read out via the signal connector and transferred to the ISOBUS implement.

1.3.1 Active/passive mode

If only CCI.TECU is available on the tractor, it works automatically in active mode. In active mode

1. CCI.TECU reads out the signal connector signals,
2. CCI.TECU calculates values for speed, power take off speed and 3-point hitch position and
3. CCI.TECU sends the calculated values for speed, power take off speed and 3-point hitch position to all ISOBUS implements.

If the tractor has a Primary TECU or a TECU of higher priority is available that provides the tractor information via the ISOBUS, CCI.TECU automatically switches to passive mode.

In passive mode information which is available via the ISOBUS is shown, a connection to the signal connector is only necessary if not all tractor information is provided via the ISOBUS (see chapter 4.4)

1.3.2 Hectare counter / documentation

CCI.TECU offers a hectare counter as an additional function.

The hectare counter is used to display ground coverage, working time and distance travelled. Recording of ground coverage is performed by measuring the working route and multiplying the adjustable working width.

The documentation function of CCI.TECU supplements the hectare counter with a logging of process data. The process data are saved by CCI.Control in the active task.

1.3.3 Delayed switch off

If the (ISOBUS) tractor is switched off by turning off of the ignition switch, ISOBUS implements can automatically cause a delayed switching off of the (electrical)

power supply. Typically the implement makes use of this to save configuration parameters or to adopt a defined state.

CCI.TECU offers the delayed switch off as an additional function for all tractors that are equipped with the ISOBUS IRB upgrade cable set of the CCI.



Note

The delayed switch off is available for all terminals from hardware generation 2.

2 Safety

2.1 Identification of indications in the operating instructions

The safety indications in these operating instructions are specially identified:



Warning - General Hazards!

This occupational safety symbol identifies general safety indications the non-observance of which poses a danger for life and limb. Carefully observe the indications regarding occupational safety and exert particular caution in these cases.

**Caution!**

This caution symbol identifies all safety indications referring to regulations, directives or working procedures which must be observed. Non-observance can entail damage to, or the destruction of, the terminal as well as malfunctions.

**Note**

The note symbol highlights operation tips and other particularly useful information.

3 Set-up for operation

Information on the installation and power supply as well as the connection to ISOBUS can be found in the operating instructions of your terminal.

3.1 Connecting to the signal connector

CCI.TECU evaluates the existing tractor information on the signal connector of the tractor (speed, power take off speed, etc.) and transmits this information to all ISOBUS implements.

A signal cable is required for connecting the terminal to the signal connector.



Signal cable

To connect the terminal to the signal connector of the tractor, proceed as follows:

1. Connect the "Signal" interface on the terminal to the signal connector using the signal cable.



In accordance with ISO 11786, the signal connector is assigned the following sensor data:

Wheel speed sensor:	It emits a specific number of electrical signals in proportion to the wheel rotation. As such, the theoretical speed of the tractor can be calculated.
Ground speed sensor:	It emits a specific number of electrical pulses in proportion to the distance already covered. As such, the real speed can be calculated.
PTO sensor:	It emits a specific number of electrical pulses in proportion to the power take off speed. As such, the power take off speed can be calculated.
3-point hitch sensor:	It provides an output voltage which is proportional to the current position of the 3-point hitch.



Note

On a hardware generation 1 type terminal, CCI.TECU in this version can only evaluate the signals of one of the two speed sensors.

With a terminal of hardware generation 2 or higher both speed signals can be used simultaneously (see chapter 4.3.3.3).

3.2 Connecting with IRB upgrade cable set

For connection to ISOBUS and the power supply a type B cable is necessary.



Cable type B

Proceed as follows to connect the *terminal* to the *ISOBUS* and the power supply:

1. Connect interfaces "CAN1-IN" and "CAN1OUT" on the terminal with the M12 connectors on the IRB upgrade cable set via the type B cable.

3.3 Installing the software

CCI.TECU is included in the scope of delivery of the CCI ISOBUS terminal, i.e. installation is neither possible nor required.

4 Operation

4.1 Program start

CCI.TECU is activated automatically by switching on the terminal. There is direct access to all functions via the main view.

To switch to the main view of CCI.TECU, proceed as follows:

1. Press on the "TECU" button in the main menu of the terminal on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
→ The following main view opens:



CCI.TECU is subdivided into 4 areas:

4.1.1 Main view

The main view is used to show the speed, power take off speed and 3-point hitch and enables direct access to all TECU functions.

4.1.2 List of tractors

Input or modification of tractor data.

4.1.3 Hectare counter

The hectare counter allows you to measure and display the actual working time, distance travelled distance and ground coverage, see also chapter 4.5.

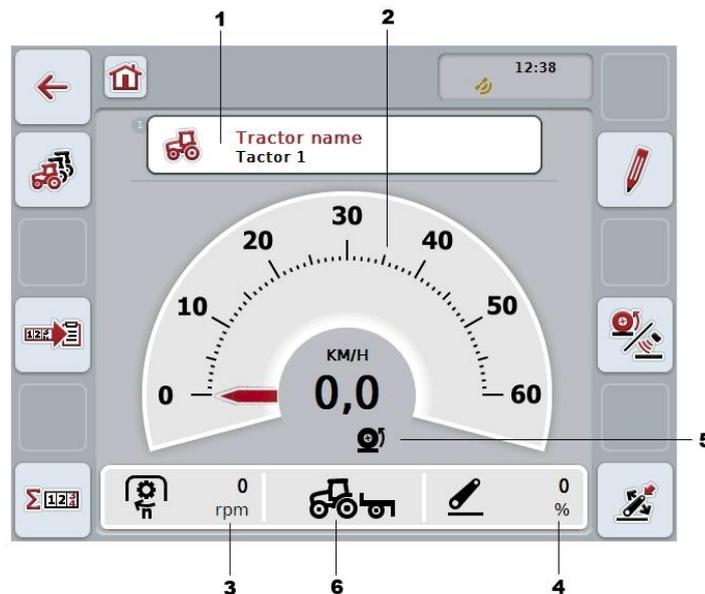
4.1.4 Documentation

The documentation function allows you to perform task-related logging of process data, see also chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** . CCI.Control saves this process data in the active task.

4.2 Main view

The CCI.TECU main view provides the following information:

1. Name of the current tractor,
2. Speed display,
3. Power take off speed display,
4. 3-point hitch position display,
5. Display for the selected speed sensor and
6. Display for the working or transport position and the direction of travel.



Note

The speed display of CCI.TECU does not replace the tachometer of the tractor. This speed control may not be used when driving on routes where road traffic regulations apply.

You have the following operating options:



Change to the list of tractors:

Press the "List of Tractors" button (F8) on the touchscreen. More detailed information about the list of tractors can be found in chapter 4.3.



Change to the hectare counter:

Press the "Hectare counter" button (F12) on the touchscreen. More detailed information on the hectare counter can be consulted in chapter 4.4.



Select tractor



Edit the selected tractor



Select the speed sensor



Set working position



Activate documentation

4.2.1 Select tractor

To select a tractor proceed as follows:

1. On the touchscreen press the button with the name of the current tractor. If the button with the tractor name is highlighted in white you can press on the scroll wheel instead.
→ A list of the saved tractors is opened.
2. Select a tractor from the list. To do so, on the touchscreen press the button with the tractor name or turn the scroll wheel until the button is highlighted in white.
3. Confirm your selection by pressing "OK" or pressing the button with the tractor name again.

4.2.2 Edit the selected tractor

To edit the data of the selected tractor, proceed as follows:

1. Press the "Edit" button (F2) on the touchscreen
→ A detailed view of the selected tractor is opened.
2. Select all tabs to be modified in the detailed view. To do so, press on the tab icon on the touchscreen or change using the buttons "To the left" (F8) and "To the right" (F2) between the tabs.
3. Enter the new value and execute the new setting.

The processing options for the individual tabs can be consulted in chapter 4.3.3.

4.2.3 Select the speed sensor

The speed display only evaluates one of either possible sensors. You can select between the following sensors:

- Wheel speed sensor
- Ground speed sensor

To select the speed sensor, proceed as follows:

1. Press the "Select Speed Sensor" button (F4) on the touchscreen.
→ The symbol beneath the speed display indicates which sensor is selected:



Ground speed sensor is selected



Wheel speed sensor is selected

2. Select the desired setting.

Note

With a terminal of hardware generation 1 match the selection to the signal cable used.

4.2.4 Set working position

In order to establish the current position of the 3-point hitch as the working position proceed as follows:

1. Position the 3-point hitch in the desired working position.
2. Press the "Set Working Position" button (F6) on the touchscreen.
 - The new value for the working position is accepted without acknowledgement.
 - The main view displays whether the implement is in the working or transport position.



Implement in working position.



Implement in transport position.



Note

For example, when replacing an electronic hoisting gear control, the display of the 3-point hitch between working and transport position may fluctuate. To prevent this from happening, we recommend pressing the "Set working position" button (F4) several centimetres before the 3-point hitch in the working position.



Note

The working position must be set at the start of the activity to ensure the correct function of the hectare counter.

4.2.5 Activate documentation

To add the process data of CCI.TECU to the task-related documentation, proceed as follows:

1. Press the "Activate documentation" button (F10) on the touchscreen.
 - This activates the documentation. The symbol of the button changes. Deactivate the function by pressing the button again.

4.3 List of tractors

You will find a list of the saved tractors under the **List of Tractors** menu item.

The tractor data consists of

- the tractor name,
- a comment and
- the tractor settings.



Note

The current tractor is identified with a small red tractor symbol in the bottom right corner of the button.



You have the following operating options:

-  **Add tractor**
-  **Edit tractor**
-  **Copy tractor**
-  **Delete tractor**

4.3.1 Add tractor

To add a tractor proceed as follows:

1. Press the "Add Tractor" button (F10) on the touchscreen.
→ A detailed view of a new tractor is opened.
2. In the detailed view, select the desired tab. To do so, press on the tab icon on the touchscreen or change using the buttons "To the left" (F8) and "To the right" (F2) between the tabs.
3. Enter the new values and execute the new settings.

The processing options for the individual tabs can be consulted in chapter 4.3.3.



Note

Upon delivery there is already an unnamed tractor in the list with some default settings. Please modify the settings (see chapter 4.3.3).

4.3.2 Edit tractor

To edit a saved tractor proceed as follows:

1. In the list of tractors select the tractor whose information is to be changed. To do so, on the touchscreen press the button with the tractor name or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Edit" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ A detailed view of the tractor is opened.
3. Select all tabs to be modified in the detailed view. To do so, press on the tab icon on the touchscreen or change using the buttons "To the left" (F8) and "To the right" (F2) between the tabs.
4. Enter the new value and execute the new setting.

The processing options for the individual tabs can be consulted in chapter 4.3.3.

4.3.2.1 Copy tractor

To copy a tractor proceed as follows:

1. In the list of tractors select the tractor whose information is to be copied. To do so, on the touchscreen press the button with the tractor name or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens
2. Press the "Copy" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ A detailed view of the copied tractor is opened.



Note

The copy is identified by "Copy" after the tractor name.

4.3.2.2 Delete tractor

To delete a tractor proceed as follows:

1. In the list of tractors select the tractor whose information is to be deleted. To do so, on the touchscreen press the button with the tractor name or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The context menu opens.
2. Press the "Delete" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
→ A warning opens.
3. Press the "OK" button on the touchscreen.



Note

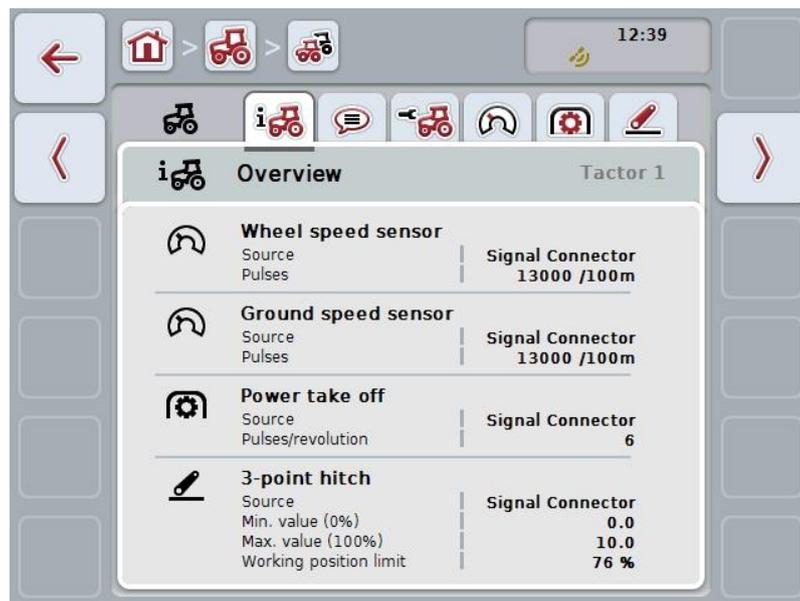
The currently selected tractor (see chapter 4.2.1) cannot be deleted.

4.3.3 Detailed view

The detailed view of a tractor is divided into 6 tabs: Overview, Comment, Tractor Settings, Speed, Power take off and 3-point hitch.

The tabs Speed, Power take off and 3-point hitch are not always available:

- The speed tab is only available if, in the tractor settings, the signal connector has been selected as the signal source for the wheel or ground speed sensor.
- The Power take off tab is only available if the signal connector has been selected as the signal source for the power take off speed in the tractor settings.
- The 3-point hitch tab is only available if, in the tractor settings, the signal connector has been selected as the signal source for the 3-point hitch.



These are organised as follows:

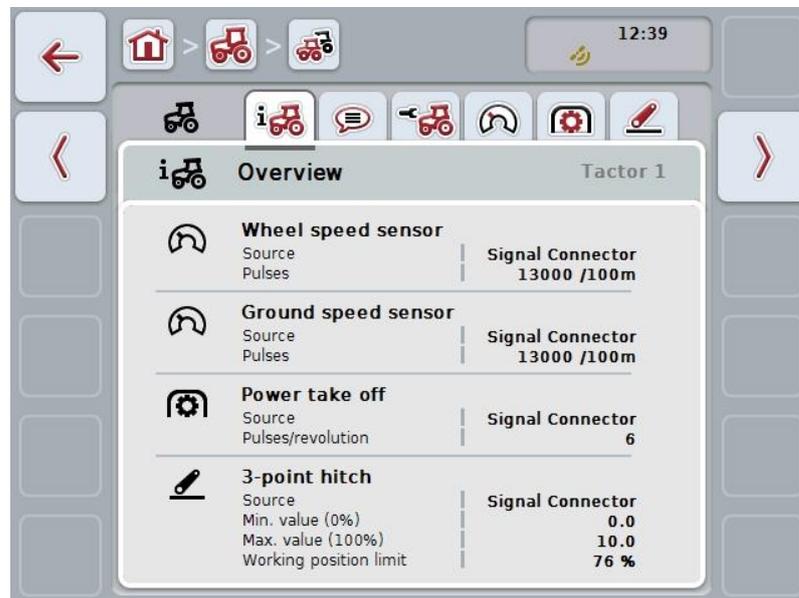
- Overview:** This shows the speed settings, PTO settings and the 3-point hitch settings.
- Comment:** This shows a comment with a maximum of 160 characters.
- Tractor settings:** This shows the tractor name and the settings for wheel speed sensor, ground speed sensor, PTO sensor and 3-point hitch sensor.
- Speed:** Shows how many pulses per 100 metres are output by the sensor.
- Power take off:** This shows how many pulses are emitted by the sensor per power take off revolution.
- 3-point hitch:** This shows the voltage values for the maximum and minimum position.

To switch between tabs, proceed as follows:

1. Press the corresponding tab on the touchscreen or select it using the arrow keys (F8, F2).

4.3.3.1 Overview

This tab shows the settings for speed, the power take off and the 3-point hitch.



4.3.3.2 Comment

This tab shows a comment field in which notes or explanations can be inserted regarding the tractor.



Note

A comment is comprised of a maximum of 160 characters. If you exceed the text field limit the text field turns red and the input cannot be saved.



You have the following operating options:



Add comment

Edit comment

4.3.3.2.1 Add comment

To add a comment proceed as follows:

1. Press on the empty button on the touchscreen or on the scroll wheel or on the "OK" button (F6).
2. Enter the comment on the touchscreen using the keyboard.
3. Confirm your entry with "OK".

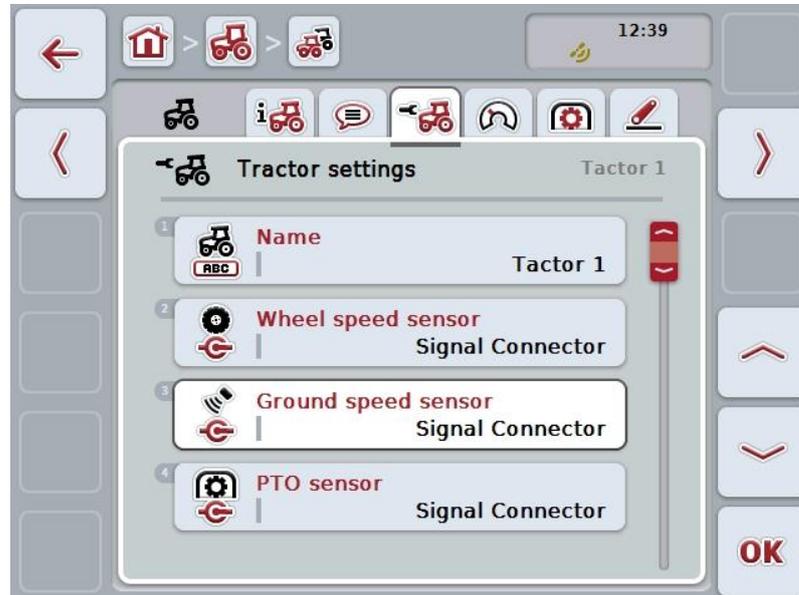
4.3.3.2.2 Edit comment

To edit a comment proceed as follows:

1. Press on the button on the touchscreen with the comment or on the scroll wheel or on the "OK" button (F6).
2. Change the comment on the touchscreen using the keyboard.
3. Confirm your entry with "OK".

4.3.3.3 Tractor settings

This tab shows the tractor name and the settings for wheel speed sensor, ground speed sensor, PTO sensor and 3-point hitch sensor.



You have the following operating options:



Edit name

Select signal source

Select between:

- n/a
- Signal connector (ISO 11786)
- CAN 1 and
- GPS (only for the ground speed sensor).

Activate power management

Enter the switch off delay value

Unlock X-Sensor



Note

With a terminal of hardware generation 1, you can either select wheel or ground speed sensor as the signal source. The other sensor is automatically shown as **n/a**. The selection is mutually exclusive.

With a terminal of hardware generation 2 or higher both speed signals can be used simultaneously.



Note

If CCI.TECU is in passive mode (see chapter 4.4), it is not possible to edit the parameters of the active tractor, that are sent from the other TECU. In this case, the relevant buttons are greyed-out and "CAN 1" is indicated as the selection.

4.3.3.3.1 Edit name

To edit the tractor name proceed as follows:

1. press on the button with the tractor name on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the new name on the touchscreen using the keyboard.
3. Confirm your entry with "OK".



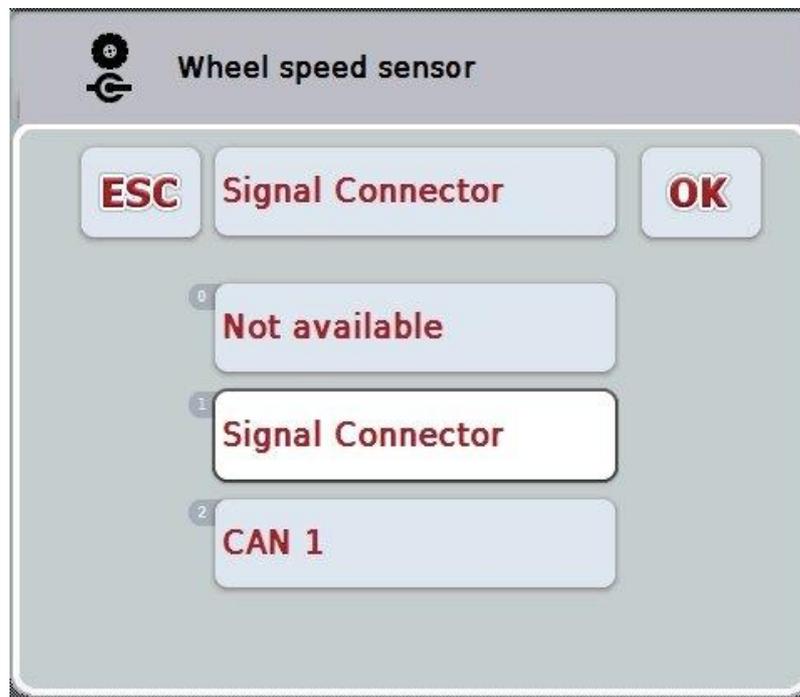
Note

The length of the name input field is limited to 16 characters.

4.3.3.3.2 Select signal source

To select the signal source for wheel speed sensor, ground speed sensor, PTO sensor and 3-point hitch sensor, proceed as follows:

1. on the touchscreen press the button with the sensor or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The following selection list opens:



2. Select the desired signal source. To do so, on the touchscreen press the button with the signal source or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
3. Confirm the selection with "OK".

**Note**

If you select the signal connector as the signal source for the wheel speed sensor or the ground speed sensor you must calibrate the speed or manually enter the pulses per 100 metres.

More detailed information on speed calibration can be consulted in chapter 0.

**Note**

If you select the signal connector as the signal source for the 3-point hitch sensor you must calibrate the 3-point hitch.

More detailed information on the 3-point hitch calibration can be consulted in chapter 4.3.3.6.

**Note**

If you select the signal connector as the signal source for the PTO sensor you must enter the pulses per revolution.

4.3.3.3 Activate power management

To activate the switch off delay, proceed as follows:

1. Press the "Power management" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the Boolean value.
3. Confirm your entry with "OK".

**Note**

The delayed switch off is available for all terminals from hardware generation 2.

**Note**

This function can only be used if the tractor is equipped with the CCI ISOBUS IRB upgrade cable set.

4.3.3.4 Enter the switch off delay value

Proceed as follows to enter the maximum switch off delay value:

1. Press on the "Max. switch off delay" button on the touchscreen or press on the scroll wheel or on the "OK" button (F6).
2. Enter the new value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".

**Note**

The Max. switch off delay can take any value between 0 and 250 min.

4.3.3.3.5 Unlock X-Sensor

If you want to operate an X-Sensor at the terminal, the terminal's input circuit must be configured.

To configure the terminal's input circuit, proceed as follows:

1. Press the "X-Sensor" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the Boolean value.
3. Confirm your entry with "OK".

4.3.3.4 Speed

This tab shows the number of pulses emitted by the speed sensor over a distance of 100 metres.

The default setting for the new addition of a tractor shows a value of 13000 Pul/100m.

If the value for the number of pulses per 100 metres is known (e.g. from the sensor data sheet), this can be entered directly.

In order to obtain information which is as accurate as possible, the value should actually be obtained using a calibration.



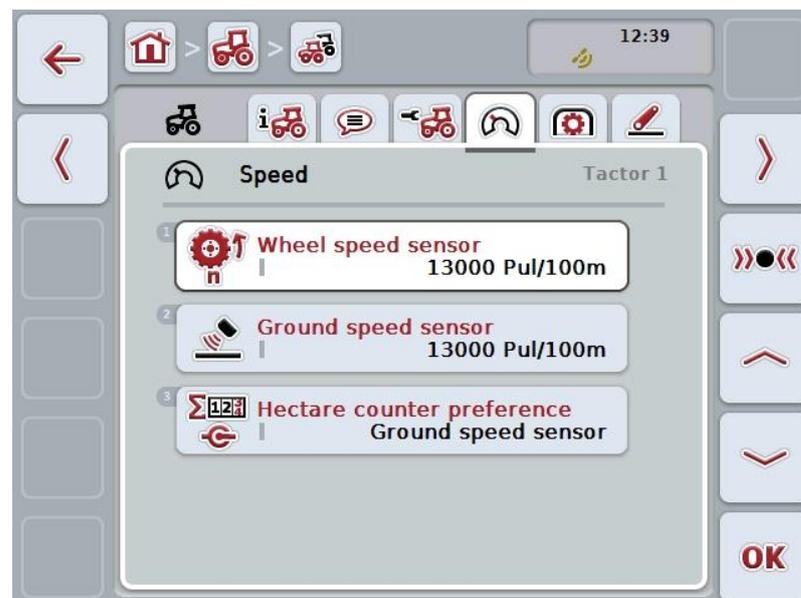
Note

The valid value range for the number of pulses is between 200 and 30000 Pul/100m.



Note

The more accurate the value is, the more precise the speed indication.



You have the following operating options:



Enter the wheel speed sensor value



Enter the ground speed sensor value



Select the hectare counter source



Calibrate



Note

Calibration is only possible for the active tractor. For all other tractors, the button "Calibrate" (F3) is greyed-out.

4.3.3.4.1 Enter the wheel speed sensor value

Proceed as follows to enter the value for the pulses per 100 metres for the wheel speed sensor:

1. Press on the "Wheel speed sensor" button on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the new value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".



Note

The valid value range for the number of pulses is between 200 and 30000 Pul/100m.

4.3.3.4.2 Enter the ground speed sensor value

Proceed as follows to enter the value for the pulses per 100 metres for the ground speed sensor:

1. Press on the "Ground speed sensor" button on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the new value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".



Note

The valid value range for the number of pulses is between 200 and 30000 Pul/100m.

4.3.3.4.3 Select the hectare counter source



Note

The hectare counter source can only be selected if both speed sensors are used simultaneously (see chapter 4.3.3.3). In all other cases the "Hectare counter preference" is greyed-out.

To select the source for the speed displayed by the hectare counter, proceed as follows:

1. Press the "Hectare counter preference" button on the touchscreen or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ A selection list opens.
2. For the hectare counter source select between wheel speed sensor and ground speed sensor. To do this, press the button with the corresponding sensor.
3. Confirm your entry with "OK".

4.3.3.4.4 Calibrate



Note

Where possible the speed calibration should not be carried out on smooth surfaces (e.g. asphalt), rather directly on the field.

In order to calibrate the speed proceed as follows:

1. Set out a distance of 100 metres.
2. Press the "Calibrate" button (F3) on the touchscreen.
→ A selection list opens.
3. For the calibration select between the wheel and ground speed sensors. To do this press on the touchscreen button for the sensor whose speed is to be calibrated or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.



Note

The selection between wheel and ground speed sensor for the calibration is only necessary for a terminal of hardware generation 2 (version 2.x) when both speed sensors are being used simultaneously (see chapter 4.3.3.3).

→ The calibration menu opens.

4. Go to the starting point and press the "Start Flag" button (F3) on the touchscreen.
5. Drive 100 metres and then press the "Target Flag" button (F9) on the touchscreen.
6. Confirm the values with "OK".



Note

The valid value range for the number of pulses is between 200 and 30000 Pul/100m.

4.3.3.5 Power take off

This tab shows the number of pulses emitted by the sensor per power take off revolution.

**Note**

Refer to your tractor's technical information to consult the value to be entered.

**Note**

The valid value range for the number of pulses is between 1 and 40 Pulses/revolution.

A frequent value in practice is 6 Pulses/revolution.



You have the following operating options:



Enter Pulses/revolution value

4.3.3.5.1 Enter Pulses/revolution value

Proceed as follows to enter the value for the pulses per revolution:

4. Press on the "Pulses/revolution" button on the touchscreen or press on the scroll wheel or on the "OK" button (F6).
5. Enter the new value on the touchscreen using the number pad or the slider.
6. Confirm your entry with "OK".

4.3.3.6 3-point hitch

This tab shows the voltage values for the maximum and minimum 3-point hitch position.



You have the following operating options:



Calibrate



Note

Calibration is only possible for the active tractor. For all other tractors, the button "Calibrate" (F3) is greyed-out.

4.3.3.6.1 Calibrate

Proceed as follows to calibrate the voltage values for the 3-point hitch:

1. Press the "Calibrate" button (F3) on the touchscreen.
→ The calibration menu opens.
2. Lift the 3-point hitch to the maximum position and then press on the "MAX" (F3) button on the touchscreen.
3. Lower the 3-point hitch to the minimum position and then press on the "MIN" (F4) button on the touchscreen.
4. Confirm the values with "OK"



Note

A plausibility check is performed. An error message is given if, for example, the minimum value exceeds the maximum value.

4.4 Passive mode

If there is a Primary TECU or a TECU of higher priority is available in the tractor, the terminal TECU changes to passive mode automatically. In passive mode the values made available by the other TECUs are identified by a blue frame and a blue "i":



If all signals are read and made available via the ISOBUS, a connection with the signal connector is not necessary

If not all signals are transmitted, then missing information can be made available via CCI.TECU. In this case a connection with the signal connector and, as necessary, a calibration (see chapter 4.3.3.4.3, 4.3.3.5.1 and 0) are necessary.

4.5 Hectare counter and documentation

4.5.1 General

In general ISOBUS implements offer comprehensive options for the display and documentation of process data. Often the display and documentation of the underlying process data is however also worthwhile for implements that are not operated via the ISOBUS.

Both the additional functions Hectare counter and Documentation of CCI.TECU offer you this possibility.



Caution!

Only use Hectare counter and Documentation, if you are actually working with an implement that is not being operated via the ISOBUS.

4.5.2 Hectare counter

In the **Hectare counter** screen there is information on

- Working width of the active implement
- Speed source for hectare counter,
- Working time,
- Distance travelled and
- Worked area.

You can reset the counters individually at any time. Thus you can use the hectare counter to record the actual working time, the distance travelled and ground coverage.

A total value and a value in the working position are given for the time, distance and area respectively.

Total: This shows the time, the distance covered and the worked area since the last reset of the individual counters.

In the working position: This shows the time, the distance covered and the worked area in working position since the last reset of the individual counters.



You have the following operating options:



Reset time:

Press the "Reset Time" button (F4) on the touchscreen.



Reset distance:

Press the "Reset Distance" button (F5) on the touchscreen.



Reset area:

Press the "Reset Area" button (F6) on the touchscreen.



Enter working width

4.5.2.1 Enter working width

Proceed as follows to enter the working width of the active implement:

1. Press on the button "Working Width" on the touchscreen or press on the scroll wheel.
2. Enter the new value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".



Note

The valid range for the working width lies between 0.0 and 99.0 metres. The value entered for the working width must be as accurate as possible to enable an exact calculation of the worked area.



Note

The value entered for the working width must be as accurate as possible to enable an exact calculation of the worked area.

4.5.3 Documentation

With CCI.Control the CCI100/200 ISOBUS Terminal provides an app for task management and documentation. In the running task it is mainly the process data of ISOBUS implements that is documented.

CCI.TECU makes the following information available to CCI.Control:

- Working position
- Working width
- Total area
- Effective time
- Time
- Effective total distance
- Total distance



Note

The scope and frequency of logging cannot be configured.

The process data made available by CCI.TECU is adequate for many applications. However to determine the working position, CCI.TECU can only evaluate the position of the 3-point hitch:

Working position:	User input The working position of an implement can only be determined based on the position of the 3-point hitch, see also chapter 4.2.4. Possible other factors for the working position such as the state of hydraulics or power take off cannot be evaluated by CCI.TECU.
Working width:	User input The working width entered by you, see also chapter 4.5.2.1; the input should be as accurate as possible.)
Total area:	Calculated value The calculation of the total area (ground coverage) is performed by multiplication of the effective total distance by the working width of the implement.
Effective time:	Measured value The time since the start of a task, in which the implement is located in the working position.
Time:	Measured value The total time since the start of a task.
Effective total distance:	Calculated value The distance since the start of a task, during which the implement is in the working position.
Total distance:	Calculated value The total distance since the start of a task.

5 Troubleshooting

5.1 Terminal errors

The following overview shows possible terminal errors and how to solve them:

Error	Possible cause	Rectification
The terminal does not switch on	<ul style="list-style-type: none"> Terminal is not correctly connected Ignition is not switched on. 	<ul style="list-style-type: none"> Check ISOBUS connection Start tractor.
The software of the connected implement is not displayed	<ul style="list-style-type: none"> Bus terminator missing Software is loaded, however is not displayed Connection error when uploading the software 	<ul style="list-style-type: none"> Check resistance Check whether the software can be manually started from the terminal start menu Check physical connection Contact the implement manufacturer's customer service

5.2 Error messages

The following overview shows error messages in CCI.TECU, their possible cause and how to rectify them:

Error	Possible cause	Rectification
Cannot delete tractor! There is only one tractor or you are trying to delete the active tractor.	<ul style="list-style-type: none"> There is only one tractor in the list of tractors The selected tractor is currently active in the TECU main view. 	<ul style="list-style-type: none"> If you want to delete the last tractor in the list, it is not possible. Activate another tractor in the TECU main view.
Invalid value! Measured position exceeds max. value.	The maximum position was not measured during the 3-point hitch calibration.	Carry out the 3-point hitch calibration again.
Invalid value! Measured position below min. value.	The minimum position was not measured during the 3-point hitch calibration.	Carry out the 3-point hitch calibration again.

Invalid value! PTO speed exceeds 3000 rpm.	<ul style="list-style-type: none"> • Number of pulses per rotation incorrect • PTO sensor defective 	<ul style="list-style-type: none"> • Set the number of pulses in the Power Take Off tab • Replace PTO sensor
Invalid value! Speed (ground speed sensor) exceeds 85 km/h.	<ul style="list-style-type: none"> • Number of pulses per 100 m incorrect • Ground speed sensor defective 	<ul style="list-style-type: none"> • Set the number of pulses in the setting menu • Replace ground speed sensor
Invalid value! Speed (wheel speed sensor) exceeds 85 km/h.	<ul style="list-style-type: none"> • Number of pulses per 100 m incorrect • Wheel speed sensor defective 	<ul style="list-style-type: none"> • Set the number of pulses in the setting menu • Replace wheel speed sensor
Calibration error Invalid min. value! New min. position is the same or higher than the saved max. position. Ensure that the min. position is reached and the saved max. position is valid.	Calibration sequence was not observed.	Ensure that you have carried out the calibration in the correct sequence. If the problem occurs again, please contact your specialist dealer.
TECU changes to display mode because another TECU of higher priority was detected. Please check the tractor settings.	Another TECU is connected to the BUS. It is present in another terminal or in your tractor.	If the other TECU makes the necessary information available, then it is correct that CCI.TECU changes into passive mode. If you want to make the information available with CCI.TECU, then you must deactivate the other TECU. You can find more information about this in the relevant instruction manual.
Connection to Control could not be established.	Data transfer has been activated, but CCI.TECU could not connect to the Task Controller.	Check the status of the Task Controller being used (normally CCI.Control),



Note

Other error messages may be displayed on the terminal that are dependent on the implement.

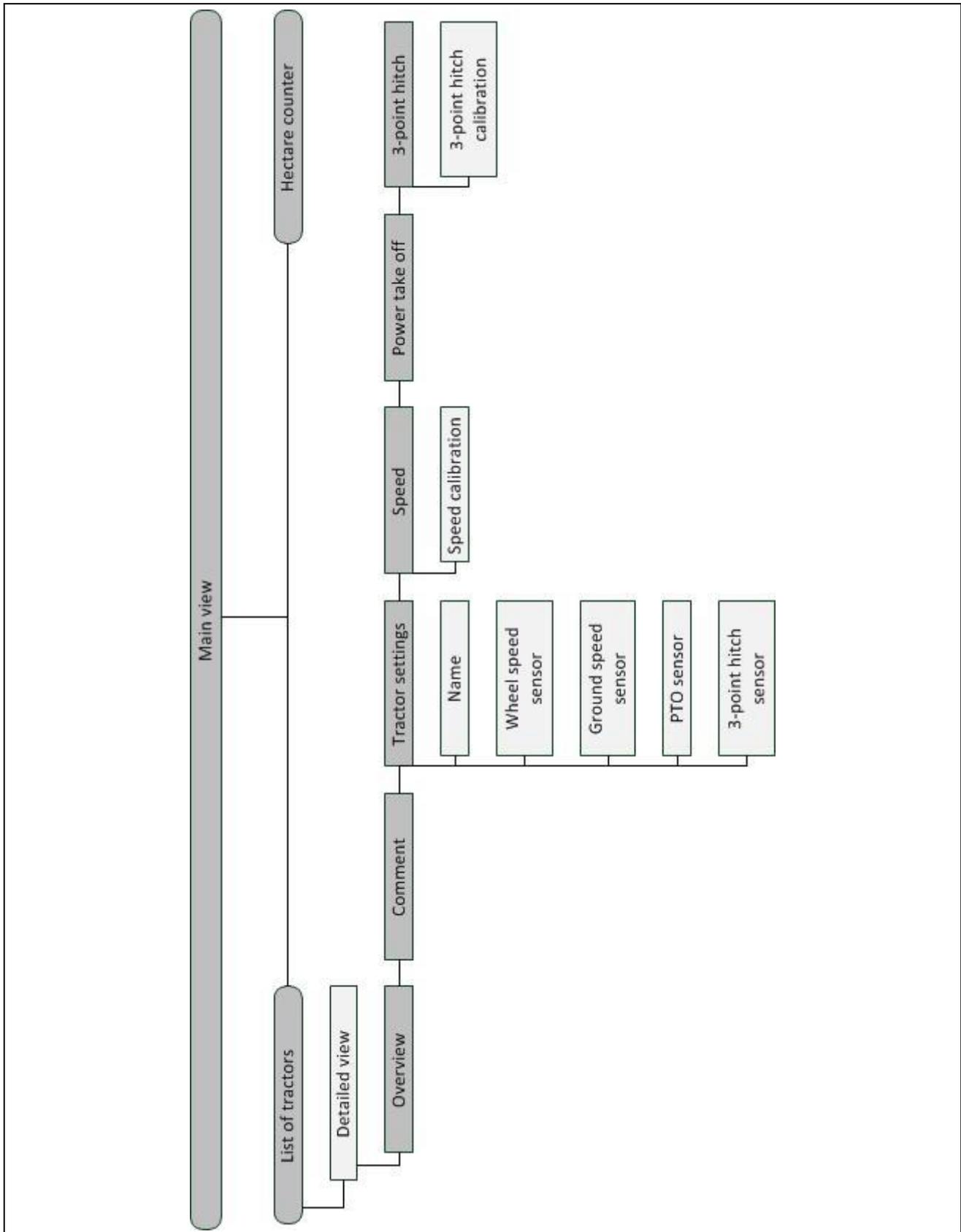
A detailed description of the possible error messages and troubleshooting can be referred to in the implement operating instructions.



Note

If the implement cannot be operated, check whether the "stop switch" is pressed in. The implement cannot be operated until the button has been released.

6 Menu structure



7 Glossary

3-point	3-point hitch, rear hoisting gear
3-point hitch sensor	Used for detecting the current position of the <i>3-point hitch</i> . It provides an output voltage to the <i>Signal connector</i> which is proportional to the current position of the 3-point hitch.
Operating screen	The operating screen is comprised of the values and operating elements shown on the screen. The touchscreen can be used to directly select the elements shown.
Bus system	Electronic system for the communication between control units.
CCI	Competence Center ISOBUS e.V.
CCI.TECU	Tractor data
ECU	Electronic Control Unit Control unit, job computer
Electronic hoisting gear control	Electronic Hoisting Gear Control
Speed sensor	(wheel or ground) speed sensor for detecting the tractor speed.
GPS	Global Positioning System. GPS is a system for satellite-supported position determination.
ISOBUS	ISO11783 International standard for data transfer between farming implements and devices.
Context menu	Graphical user interface Facilitates editing, copying, deleting or adding of data.
Implement	Towed or attached implement. An implement with which a task can be executed.
Passive mode	If there is a Primary TECU in the tractor the terminal TECU changes to the passive mode automatically.
Primary TECU	TECUs are already installed in tractors at the factory
Ground speed sensor	It emits a specific number of electrical pulses in proportion to the distance already covered. As such, the real speed can be calculated. Note that under certain circumstances, ground speed sensors may supply inaccurate speed values dependent on the background, e.g. due to high grass or puddles.
Wheel speed sensor	It emits a specific number of electrical signals in proportion to the wheel rotation. As such, the theoretical speed of the tractor can be calculated. Wheel speed sensors may supply inaccurate speed values when slip occurs.
Signal cable	Cable for connecting the CCI 100/200 terminal to the signal connector in the tractor.
Signal source	Source of the sensor values such as the speed read from the terminal.
Signal connector	Sensor connection in the tractor according to ISO 11786

TECU	Tractor ECU On an ISOBUS tractor, the TECU establishes the connection between the tractor bus system and the ISOBUS and thus provides the implement with the tractor information such as the driving speed or the power take off speed.
Terminal	ISOBUS CCI 100 or CCI 200 terminal
Touchscreen	Touch-sensitive screen for operation of the terminal.
PTO sensor	Serves for detecting the speed of the power take off. It emits a specific number of electrical pulses in proportion to the power take off speed.

8 Buttons and icons

	CCI.TECU		Tractor list
	Hectare counter		Set working position
	Change between wheel and ground speed sensor		Power take off speed
	3-point hitch position		Ground speed sensor is selected
	Implement in transport position		Implement in working position
	Wheel speed sensor is selected.		Overview
	Comment		Tractor settings
	Speed		Power take off
	3-point hitch		Wheel speed sensor Ground speed sensor
	PTO sensor		3-point hitch sensor
	Wheel speed sensor		PTO settings
	Ground speed sensor		Hectare counter source
	Start flag		Target flag
	Calibrate		Establish maximum 3-point hitch position
	Establish minimum 3-point hitch position		Time
	Distance		Area
	Working width		Reset time
	Reset distance		Reset area
	Edit		Copy
	Delete		Add



Change to the right



Change up



Confirm selection or entry



Activate data transfer to the task controller



Change to the left



Change down



Select from a list



Deactivate data transfer to the task controller

9 Service and development

TECU class	Class 1
TC client	<p>The TC client of CCI.TECU provides the following information:</p> <ul style="list-style-type: none"> • Actual working width (DDI 67) • Total Area (DDI 116) • Effective Total Distance (DDI 117) • Ineffective Total Distance: (DDI 118) • Effective Total Time (DDI 119) • Ineffective Total Time (DDI 120) • Work State (DDI 141)
PGNs	<p>CCI.TECU uses the following PGNs:</p> <ul style="list-style-type: none"> • PGN 00FE43₁₆ (in) • PGN 00FE43₁₆ (in/out) • PGN 00FE45₁₆ (in/out) • PGN 00FE09₁₆ (out) • PGN 00FE49₁₆ (in/out) • PGN 00FE48₁₆ (in/out)

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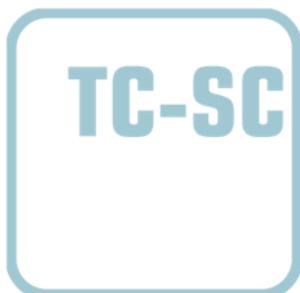


CCI.Command

GPS track guiding and section control

Operating instructions

Reference: CCI.Command v4



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1 Introduction

1.1 About these operating instructions

These Operating Instructions are intended as an introduction to the operation and configuration of *CCI.Command*. This app is preinstalled on your *ISOBUS terminal* CCI 100/200 and can only be run from there. It is only with knowledge of these operating instructions that accidental misuse of the terminal can be avoided and fault-free operation ensured.

These operating instructions must be read and understood prior to setting up the software to avoid problems in the application. They must always be stored so that any employee may access them

1.2 Reference

These operating instructions describe the app in its version *CCI.Command v4* with the modules *CCI.Command/Parallel Tracking* and *CCI.Command/Section Control*. In order to query the version number of the *CCI.Command* installed on your *CCI ISOBUS terminal*, proceed as follows:

1. Press the home key to enter the main menu.
2. Press the "Settings" button (F1) in the main menu.
3. Select the tab **Info and Diagnostics**.
4. In the tab **Info and Diagnostics** press the button "Terminal".
5. Press the "Software" button on the *touchscreen*.
 - The version of the *terminal* software component is indicated In the information field that is now displayed.

1.3 About CCI.Command

CCI.Command comprises 3 modules:



CCI.Command/Parallel Tracking



CCI.Command/Section Control



CCI.Command/Headland Mode

CCI.Command/Parallel Tracking and *CCI.Command/Section Control* can be procured and used separately from each other.

CCI.Command/Headland Mode is automatically available if *CCI.Command/Section Control* is enabled.

1.3.1 CCI.Command/Parallel Tracking

This module improves, for example, orientation during pesticide and fertilizer application on fields without any tramlines. More accurate linking driving helps to avoid *overlaps* and *missed areas*.

The module relates to a parallel guidance aid, which under consideration of the actual working width indicates the position of parallel tracks and using a lightbar suggests the necessary steering corrections. The tracks can be recorded as straight A-B lines or as curves.

1.3.2 CCI.Command/Section Control

Using GPS, the module automatically switches off the sections of a pesticide sprayer / a fertilizer upon passing over field boundaries and already treated areas and switches them back on upon leaving them. Possible *overlaps* (double treatments) are thus reduced to a minimum and the driver's work load reduced. From version 2.0 the module also automatically switches the sections of seed drills, single grain and potato planters, as well as mowers provided the implement fulfils the requirements for *ISOBUS* section switching. Additionally it is possible to plot obstacles. Before an obstacle is reached, a warning message is displayed.

The safe operation of the automatic *Section Control* is only possible using a *Section Control*-enabled *ISOBUS* implement.

The operating mode *Section Control* is only available in map view once all implement data has been transferred.

1.3.3 CCI.Command/Headland Mode

This module makes it possible to firstly work the inner field and then the headland to conclude. Additionally it offers a virtual headland function. There are two options for creating the headland. Together with a field boundary it is possible to plot a headland area within a width defined by the driver around the field. Likewise it is possible to plot a headland area without a field boundary. Upon reaching these areas, the implement sections are automatically switched off. For the final working of the headland, the virtual headland is simply deactivated.

This functionality is primarily used with planting devices and seed drill implements, but also when using certain crop protection products there are advantages through final working of the headland. In this way travel through the freshly worked crop when turning on the headland is avoided.

1.3.4 Operation with implement

1.3.4.1 Non-ISOBUS-compatible

When operating with a non-*ISOBUS* enabled implement, the following functions are available to you:

- *Parallel Tracking* after manual entry of the working width
- Manual labelling of the worked area

1.3.4.2 ISOBUS enabled and task controller enabled

When operating with an *ISOBUS* and task controller enabled implement, the following functions are available to you:

- *Parallel Tracking* (working width is automatically transferred)
- Automatic identification of the worked area (working state of the implement is transferred if an active task exists).

An *ISOBUS* and task controller enabled implement corresponds to the AEF functionalities TC-BAS and TC-GEO (see chapter 8).

1.3.4.3 ISOBUS enabled and Section Control enabled

When operating with an *ISOBUS* and *Section Control* enabled implement, the following functions are available to you:

1. *Parallel Tracking* (working width is automatically transferred)
2. Automatic identification of the worked area (working state of the implement is transferred if an active task exists).
3. Automatic *Section Control* (geometry is transferred from the implement).

An *ISOBUS* and *Section Control* enabled implement corresponds to the AEF functionality TC-SC (see chapter 8).

2 Safety

2.1 Identification of indications in the operating instructions

The safety indications in these operating instructions are specially identified:



Warning - General Hazards!

This occupational safety symbol identifies general safety indications the non-observance of which poses a danger for life and limb. Carefully observe the indications regarding occupational safety and exert particular caution in these cases.



Caution!

This caution symbol identifies all safety indications referring to regulations, directives or working procedures which must be observed. Non-observance can result in damage to, or the destruction of, the *terminal* as well as malfunctions.



Note

The note symbol highlights operation tips and other particularly useful information.



Information

The information symbol highlights background information and practical tips.

3 Set-up for operation

3.1 Connecting the Terminal

3.1.1 Connecting to a GPS receiver

Use of a *GPS* receiver is required for correct operation of the *CCI.Command*.
 For information, please refer to the chapter **Connecting with a GPS receiver** in the **CCI.GPS** operating instructions.

3.1.1.1 GPS data requirements

The following framework conditions must be adhered to for operation with Command:

Baud	19200
GGA + RMC + VTG	5 Hz
GSA	1 Hz
GSV (optional)	1 Hz

3.1.2 Connecting with the external lightbar CCI L10

CCI.Command provides the option of using the external lightbar CCI L10.
 Proceed as follows to connect the external lightbar to the *terminal*:

1. Connect the external lightbar CCI L10 to the *terminal's* LIN interface.

3.2 Installing the software

CCI.Command is included in the scope of delivery of the CCI *terminal*, i.e. installation is neither possible nor required.

In order to be able to operate the software installed ex works a licence must be acquired:

As an option when purchasing the *terminal* The software is enabled ex works and can be used immediately.

Upgrade In the event of an upgrade, the software is activated by our service partner.



Note

If you own a licensed version of *CCI.Command* the *CCI.Command* button is visible in the start menu of your *terminal*.

3.3 Operating modes

3.3.1 Section Control

To work with the *Section Control* module, proceed as follows:

1. Start *CCI.Command* (see chapter 4.2).
2. Make the geometry settings (see Chapter 0).
3. Make the settings for *Parallel Tracking* (see chapter 4.3.4).
4. Make the settings for *Section Control* (see chapter 4.3.5).
5. Activate *Section Control* operating mode and change to map view (see chapter 4.1).
6. Mark out the field boundary (see chapter 4.4.1).
7. Mark out a *reference track* (see chapter 4.4.8).
8. Process the field in operating modes *Parallel Tracking* and *Section Control*.

3.3.2 Parallel Tracking

To work with the *Parallel Tracking* module, proceed as follows:

1. Start *CCI.Command* (see chapter 4.2).
2. Make the settings for *Parallel Tracking* (see chapter 4.3.4).
3. Change to map view (see chapter 4.1).
4. Mark out a reference track (see chapter 4.4.8).
5. Process the field in the operating mode *Parallel Tracking*.

4 Operation

4.1 General instructions

CCI.Command is subdivided into 2 areas: the map view and the settings. When changing between the two areas, note the following:

If all implement data have been transferred, then upon calling up the map, operating mode *Section Control* is automatically activated. If your return to the settings, *Section Control* is automatically paused:



Call up the map

Activate operating mode *Section Control*



Switch to Settings

Pause operating mode *Section Control*

If no implement data was transferred, the upper area of the button is greyed out. *Section Control* is not available, however the map can be called up:



Call up the map



Switch to Settings

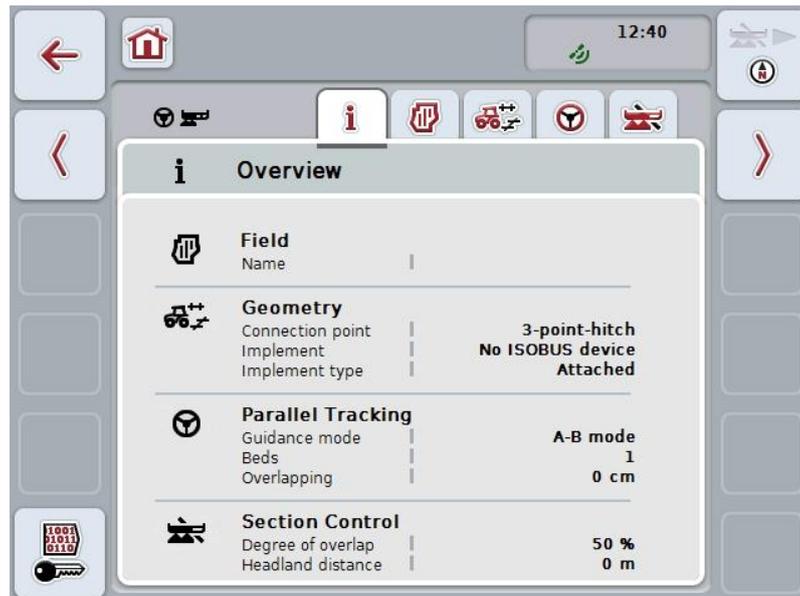
4.2 Program start

CCI.Command is activated automatically by switching on the *terminal*. There is direct access to all functions via the start screen.

To switch to the start screen from *CCI.Command*, proceed as follows:

1. Press on the "Command" button in the main menu of the *terminal* on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.

→ The following start screen opens:



CCI.Command is subdivided into 2 areas:

4.2.1 Settings

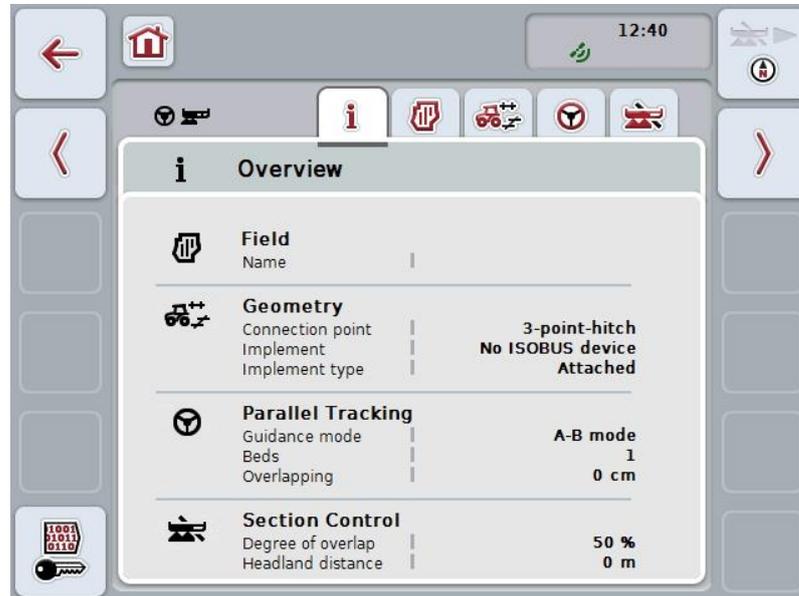
Selection of the *Field*, entry of the settings for geometry, *Parallel Tracking* and *Section Control*.

4.2.2 Map view

Parallel Tracking, Section Control, Obstacles and GPS correction.

4.3 Settings

Remain in the start screen. You are in the Settings area, of which the five tabs are displayed:

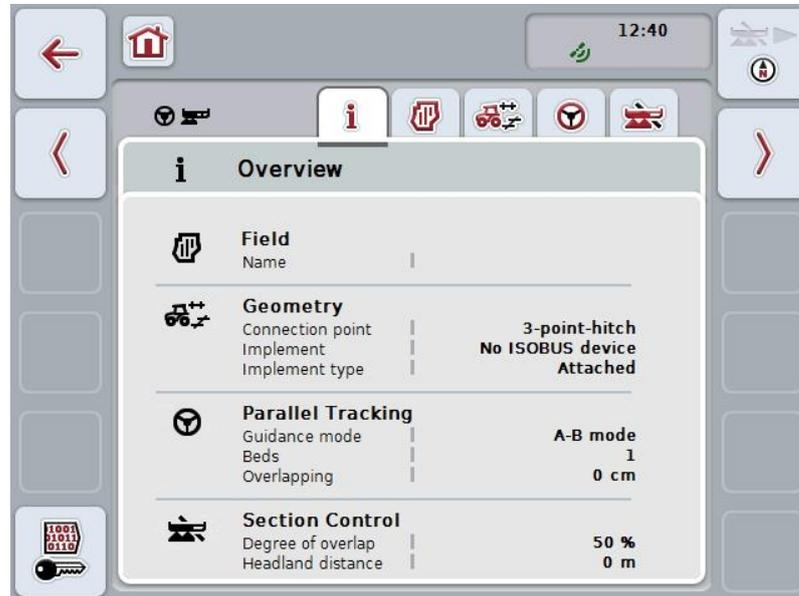


These are organised as follows:

- Overview:** Display of the settings for *Field*, geometry, *Parallel Tracking* and *Section Control*.
- Fields:** Display of the *Field* and the worked area and management of the saved *Fields*.
- Geometry:** Display and editing of the geometry settings.
- Parallel Tracking:** Display and editing of the settings for *Parallel Tracking*.
- Section Control** Display and editing of the settings for *Section Control*.

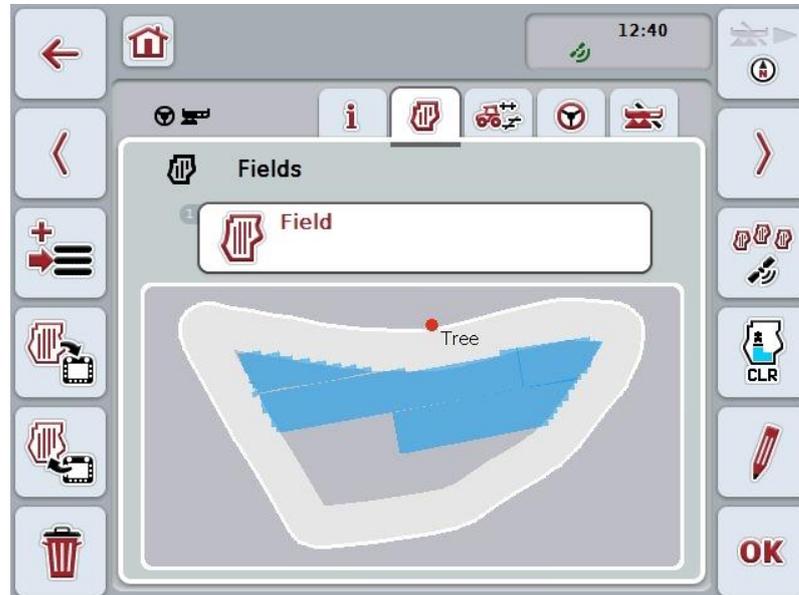
4.3.1 Overview

This tab shows a summary of the most important information for the *Field*, geometry, *Parallel Tracking* and *Section Control*.



4.3.2 Fields

This tab displays the field name, the field boundaries, the worked area and the obstacles.



You have the following operating options:



Select *Field*



Save *Field*



Import *Field(s)*



Export *Field(s)*



Delete the currently selected *Field*



Find *Field*



Delete worked area



Edit name

4.3.2.1 Select field

To re-work an already stored *Field* proceed as follows:

1. Press the "Field" button on the *touchscreen*. If the button with the field name is highlighted in white you can either press on the scroll wheel or on "OK".
→ A list of the stored *Fields* opens.
2. Select a *Field* from the list. To do so, press the button with the field name on the *touchscreen* or turn the scroll wheel until this button is highlighted in white and then press the scroll wheel.
3. Confirm your selection by pressing "OK", pressing the scroll wheel or pressing the button with the field name once more.



Note

After starting *CCI.Command*, you can immediately start work. The selection of a saved *Field* is not necessary.

4.3.2.2 Save field

To save the current state of working of the *field* proceed as follows:

1. Press the "Save field" (F9) button on the *touchscreen*.
→ A context menu opens
2. Press the "Save" button on the touchscreen
→ The "Fields" tab opens again. The *Field* remains selected.

To save the current state of working of the *field* and open a new, unprocessed field, proceed as follows:

1. Press the "Save field" (F9) button on the *touchscreen*.
→ A context menu opens
2. Press the "Save + create new field" button on the touchscreen
→ The "Fields" tab opens again. The new *field* is selected.

To copy the currently selected *field*, proceed as follows:

1. Press the "Save field" (F9) button on the *touchscreen*.
→ A context menu opens
2. Press the "Copy" button on the touchscreen
3. Enter the new value on the touchscreen using the keyboard.
4. Confirm your entry with "OK".
→ The "Fields" tab opens again. The copied *field* is selected.

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Importing/exporting fields

You have the following options for the importing and exporting of field data:

1. Import of field boundaries in shape format
2. Export of field data in shape format
3. Data backup or data exchange between *CCI terminals*. The data of an individual field or all fields can be imported and exported. The field data contain, in addition to the field boundaries, reference lines, worked areas, created headlands, obstacles and reference points.
 - a. The "Single field" option is used to interchange the data for a field: If two implements are working on the same field, then both implements work with the same field boundaries and the same headland.
 - b. Using the option "Field database" a backup can be created on a flash drive and then the data can be restored if they are unintentionally deleted. If an additional *CCI terminal* is procured, the field data can be copied to the new *terminal*.

4.3.2.3 Import field boundary(s) in shape format

To import a field boundary, proceed as follows:

1. On a flash drive create a folder with the name CCI.Command and a subfolder "GISImport".
2. Save the shape data in the "GISImport" subfolder.
3. Connect the flash drive to the *terminal*.
 - As soon as the flash drive has been identified, the import button is available.
4. Press the "Import field(s)" (F10) button on the *touchscreen*.
 - The "Import data" context menu opens.
5. Select the option "Field boundary". To do so, press on the "Field boundary" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
 - A selection list opens.
6. Select the desired file. To do so, press on the button with the desired selection or turn the scroll wheel until the button is highlighted in white.
7. Confirm your entry with "OK".
 - The selection list changes. The individual elements are now displayed that are located in the selected file.
8. Select the desired element for import. To do so, press on the button with the desired selection or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
 - The element is imported and used in the currently selected field as the field boundary.



Note

The name of the field boundary is not imported. It is possible to import other elements. Each other element is likewise plotted in the current *field* as a boundary. If this is not desired, then prior to import, the old *field* must be saved so that a new *field* is available.



Note

If the imported file has inner field boundaries, e.g. around ponds or pools, then these are likewise imported. The sections are also automatically switched at these boundaries during working. If a headland is created, then it is also plotted at these boundaries.

4.3.2.4 Import single field / field database

To import a single field or an entire field database, proceed as follows:

1. Copy a single field or a database to a flash drive.
2. Connect the flash drive to the *terminal*. As soon as the drive has been identified, the import button is available
3. Press the "Import field(s)" (F10) button on the *touchscreen*.
→ The "Import data" context menu opens.
4. Select the option "Single field" or "Field database". To do so, press on the button with the desired selection or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.



Note

By importing a single *field*, it is added to the field database on the *terminal*.



Caution!

The imported field database replaces the existing field database. All already existing *fields* are overwritten.

4.3.2.5 Exporting field(s) in shape format

To export the selected *field(s)*, proceed as follows:

1. Connect the flash drive to the *terminal*.
→ As soon as the flash drive has been identified, the export button is available.
2. Press the "Export field(s)" (F11) button on the *touchscreen*.
→ The "Export data" context menu opens.
3. Select between "Current field" and "All fields". To do so, press on the button with the desired selection or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.

**Note**

If there are lots of saved fields, the export may take some time if "All fields" is selected.

**Note**

The shape data contain, in addition to the field boundaries, reference lines, worked areas, created headlands, obstacles and reference points.

4.3.2.6 Export single field / field database

To export the current *field* or the entire field database, proceed as follows:

1. Connect the flash drive to the *terminal*.
→ As soon as the flash drive has been identified, the export button is available.
2. Press the "Export field(s)" (F11) button on the *touchscreen*.
→ The "Export data" context menu opens.
3. Select between "Current field" and "Field database". To do so, press on the button with the desired selection or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.

**Note**

All field data are retained on the terminal after export.

4.3.2.7 Delete field

To delete the current *field*, proceed as follows:

1. Press the "Delete" button (F12) on the *touchscreen*.
2. Confirm the query with "OK".

4.3.2.8 Find *Field*

To find saved *fields*, that are located within a radius of 7 km from your current location, proceed as follows:

1. Press the "Find field" (F3) button on the *touchscreen*.
→ A selection list opens with *fields* within a radius of 7 km.



Note

To use this function, you require *GPS* reception.

4.3.2.9 Delete worked area

If you want to re-work an already worked field, you must delete the worked area. The worked area can be identified by the blue marking.

To delete the worked area of the current field, proceed as follows:

1. Press the "Delete worked area" button (F4) on the *touchscreen*.
2. Confirm the prompt for confirmation with "OK".
→ The blue marking is removed.

4.3.2.10 Edit name

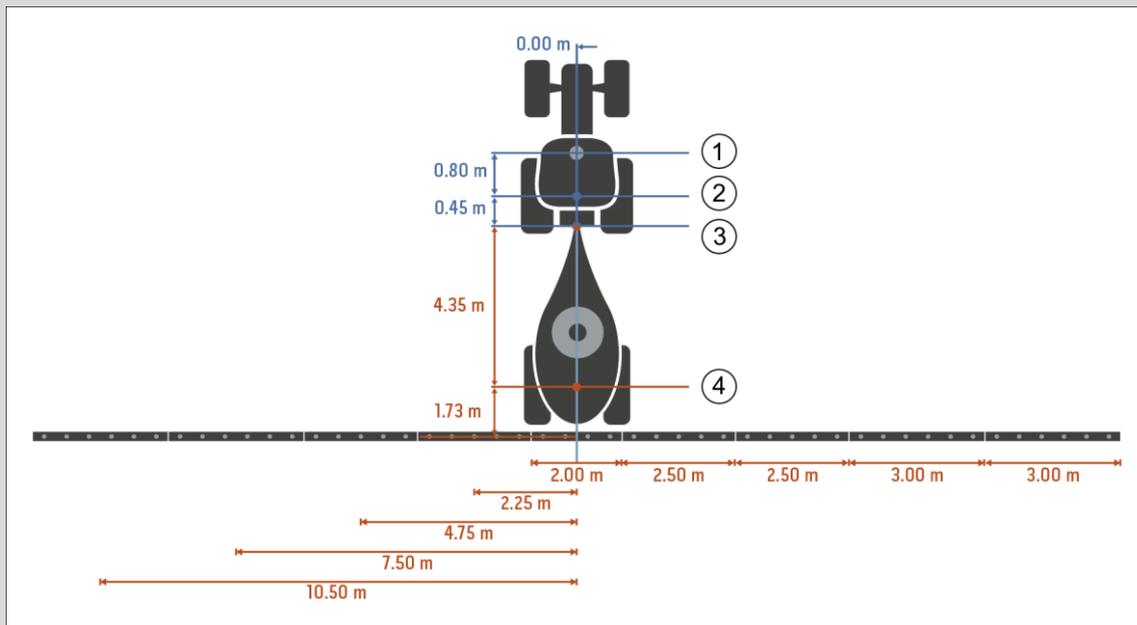
To edit the name of a saved *field* proceed as follows:

1. Press the "Edit" button (F3) on the *touchscreen*.
2. Enter the new value on the *touchscreen* using the keyboard.
3. Confirm your entry with "OK".

i**Geometry settings**

The automatic section status works more accurately, the more carefully you have positioned the GPS aerial on the tractor.

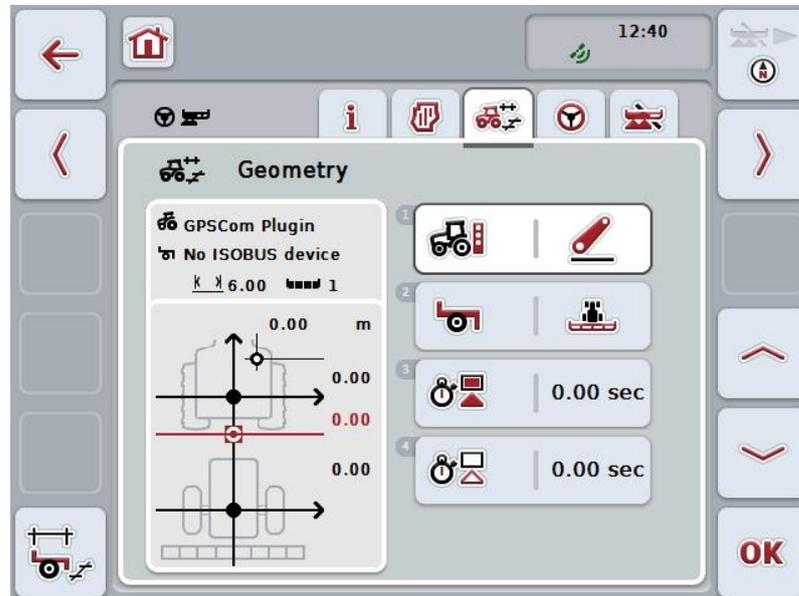
The tractor geometry settings must be made in the CCI.GPS app. To do so, take the information from the chapter **Geometry settings** of the **CCI.GPS** operating instructions.



1. GPS aerial
2. Tractor reference point
3. Connection point
4. Implement reference point

4.3.3 Geometry

In this tab, the position of the *GPS aerial*, the implement design, the distance between the navigation point and *Connection point*, the *delay times* and the number of sections are shown in the left display area.



You have the following operating options:



Show Section Geometry



Select *Connection point*



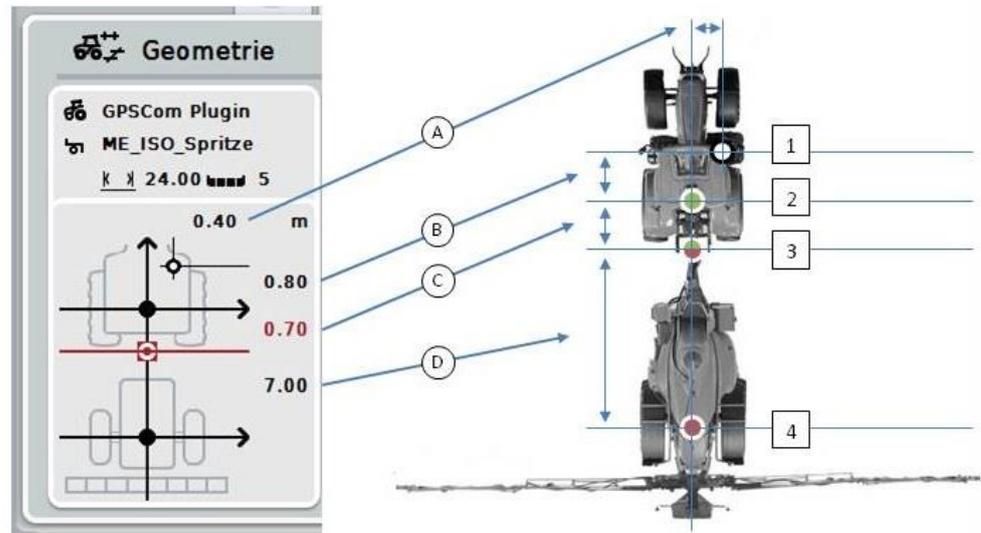
Selecting the implement type



Enter *delay times*



You are provided with the following geometry information in the display area:



Distances

- A: Distance between the tractor reference point and the *GPS* aerial perpendicular to the direction of travel.
- B: Distance between the tractor reference point and the *GPS* aerial in the direction of travel.
- C: Distance between the tractor reference point and the *Connection point* in the direction of travel.
- D: Distance between the *Connection point* and the implement reference point in the direction of travel.

Points

- 1: *GPS* aerial
- 2: Tractor reference point
- 3: *Connection point*
- 4: Implement reference point



Note

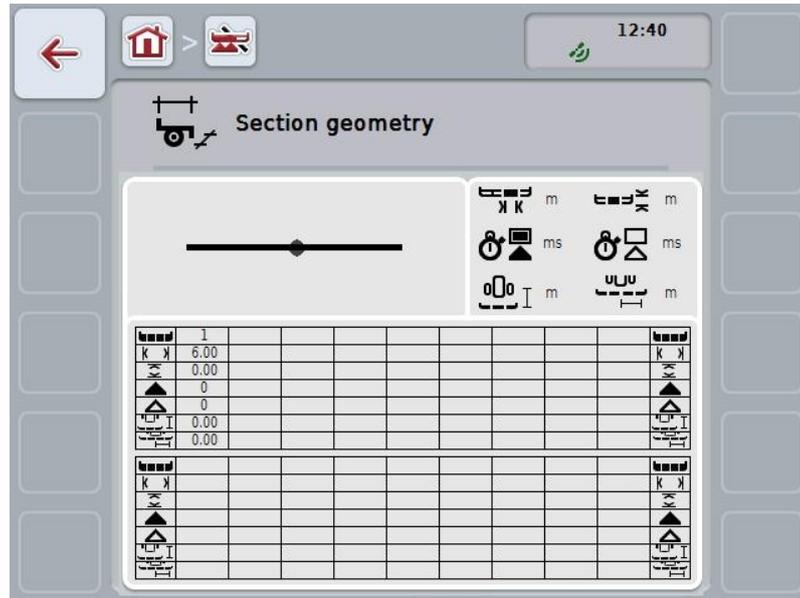
The implement reference point is at the mid-point of the first axle. If the implement does not have an axle, then the reference point is defined by the manufacturer.

4.3.3.1 Show Section geometry

In Section Geometry only those values are displayed that are transferred from the implement.

To display the Section Geometry, proceed as follows:

1. Press the "Show Section Geometry" button (F12) on the *touchscreen*.
→ The view for the Section Geometry opens:



The position of the sections relative to the implement reference point is shown schematically in the top left box. In this way it is possible to see at a glance, whether the sections all lie on a line, or whether different distances have been set in the direction of travel.

The units currently being used are shown in the top right box.

The values for the following details of the Section Geometry are shown in the bottom box:



Note

The symbols that are used in the bottom box, are simplified representations of the symbols in the top right box. Therefore the appropriate units for the value that is displayed in the bottom box are shown in the top right box.

Symbol: top right box	Symbol: bottom box	Meaning
		Number of section (in direction of travel counted from the left)
		Working width of the section
		Working depth of the section
		Switch-on delay
		Switch-off delay
		Distance between the implement reference point and the section in the direction of travel
		Distance between the implement reference point and the section perpendicular to the direction of travel

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Implement mountings

There are various implement mountings. Each mounting has its own *coupling point* offset.

In *CCI.GPS* the correct distance from the tractor reference point can be input for each implement mounting. The information is contained in the chapter **Geometry settings** of the **CCI.GPS** operating instructions.

Once you have made these settings, it is sufficient to select the currently to be used *Connection point* in *CCI.Command*.

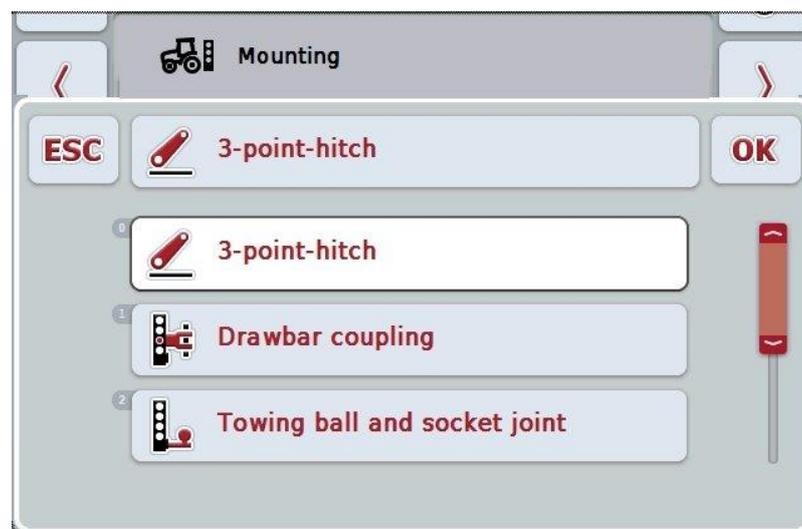
Repeated remeasuring is not necessary.

4.3.3.2 Select mounting

To select the currently used implement mounting, proceed as follows:

1. Press on the "Implement mounting" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.

→ The following selection list opens:



2. Select the actual implement mounting from the list. To do so, on the *touchscreen* press the button with the mounting or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
→ The mounting appears in the selection window.
3. Confirm your selection by pressing "OK" or pressing the button with the mounting again or by pressing the scroll wheel.



Note

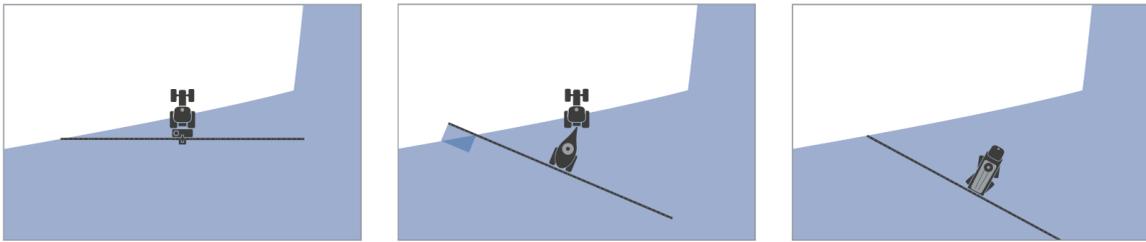
In the geometry overview, the saved value for the currently selected implement mounting is displayed (red number).

i**Implement types**

If trailed implements are being used, the position of the sections changes for curved tracks.

When using the setting "Trailed" and "Self-propelled", the position of the sections is calculated for curved tracks (middle and right image).

With attached implements, it remains fixed (left image).



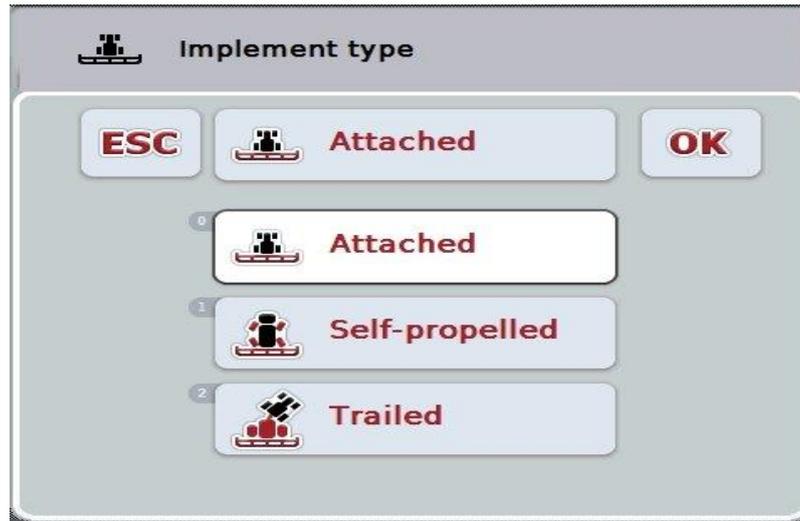
4.3.3.3 Selecting the implement type

To select the implement type proceed as follows:

1. Press on the "Implement type" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.

Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.

→ The following selection list opens:



2. Select the desired implement type from the list. To do so, on the *touchscreen* press the button with the implement type or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.

→ The implement type appears in the selection window.

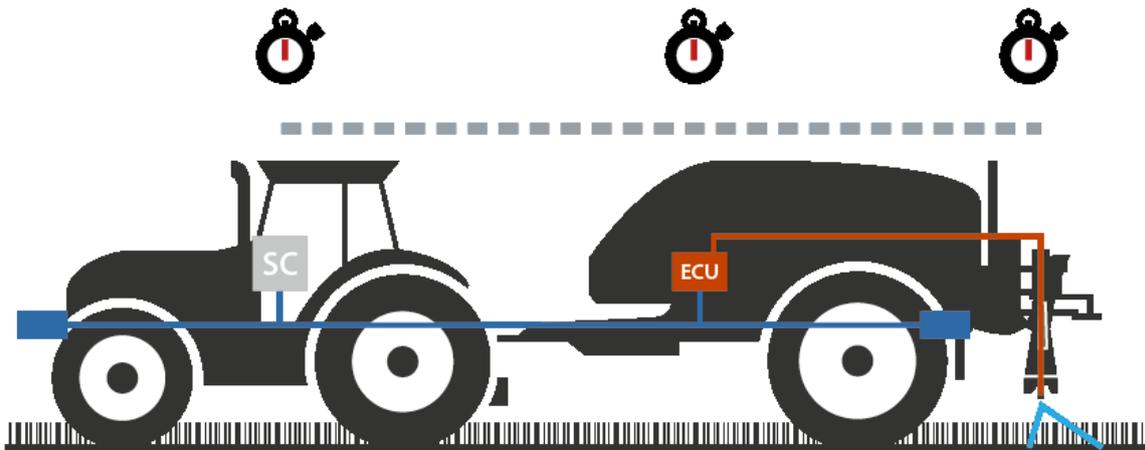
3. Confirm your selection by pressing "OK" or pressing the button with the implement type again or by pressing the scroll wheel.

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Delay times

The *delay times* describe the time delay between the command and the actual activation of a section (e.g. during spraying, the time from the command: "Switch on section", until when the agent is actually applied).

There is a *switch-on* and a *switch-off delay*.



4.3.3.4 Enter *delay times*



Note

If the *delay times* are transferred from the implement, the buttons are greyed out. Manual entry is not possible.

The implement *delay times* are displayed in the Section geometry view (see chapter 4.3.3.1).

To change the *delay times*, the implement operation must be called up. You can find more information in the operating instructions for your implement.

To enter the *delay times*, proceed as follows:

1. In the *touchscreen* press on the buttons "Switch-on delay" (button 3) and "Switch-off delay" (button 4) and enter the times that must be adhered to before individual selections are switched on or off.
2. Confirm your entry with "OK".

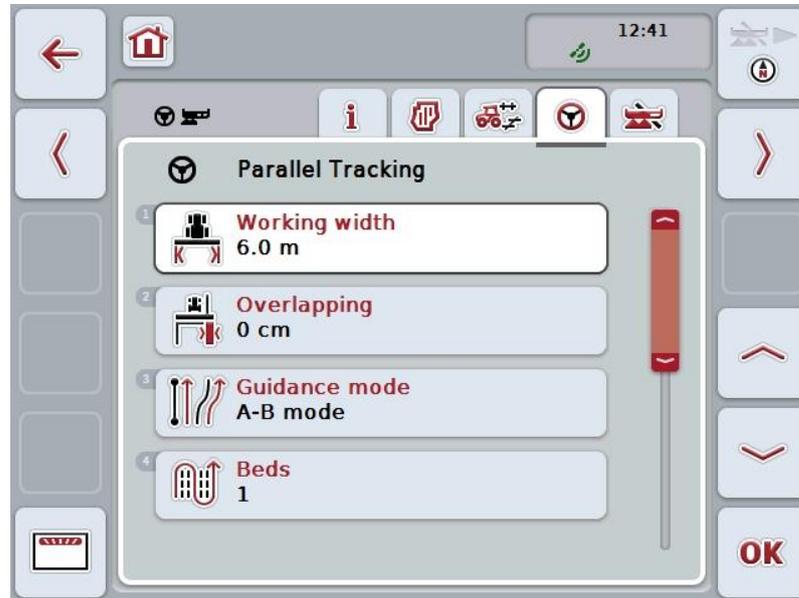


Note

Values between 0.00 and 10.00 seconds are valid for the *Delay times*.

4.3.4 Parallel Tracking

The necessary settings for *Parallel Tracking* are made in this tab.



You have the following operating options:



Enter working width



Enter the *overlap* value



Select Guidance Mode



Enter the Beds value



Headland track 2: activate/deactivate half width



Change to lightbar

4.3.4.1 Enter working width

To enter the working width, proceed as follows:

1. Press on the "Working width" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".



Note

The value entered for the working width must be as accurate as possible to enable an exact calculation of the worked area.

The valid range for the working width is between 0.0 and 99.0 metres.



Note

If the working width is transferred from the implement, the button is greyed out. Manual entry is not possible.

The implement working width is displayed in the Section geometry view (see chapter 4.3.3.1).

To change the working width, implement operation must be called. You can find more information in the operating instructions for your implement.



Overlapping

The *Overlap* setting is used to compensate for steering faults and *GPS* inaccuracies.

There are 2 possible applications:

1. *Missed areas* must be avoided.
In this case a positive value must be entered. This results in the distance between the *lead tracks* being reduced by the entered value. This reduces the effective working width, *missed areas* are avoided and *overlapping* can occur.
2. *Overlapping* must be avoided.
In this case a negative value must be entered. This results in the distance between the *lead tracks* being increased by the entered value. In this way *overlapping* is avoided and *missed areas* can occur.

4.3.4.2 Enter the overlap value

Proceed as follows to enter the *Overlap* value:

1. Press on the "Overlap" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".



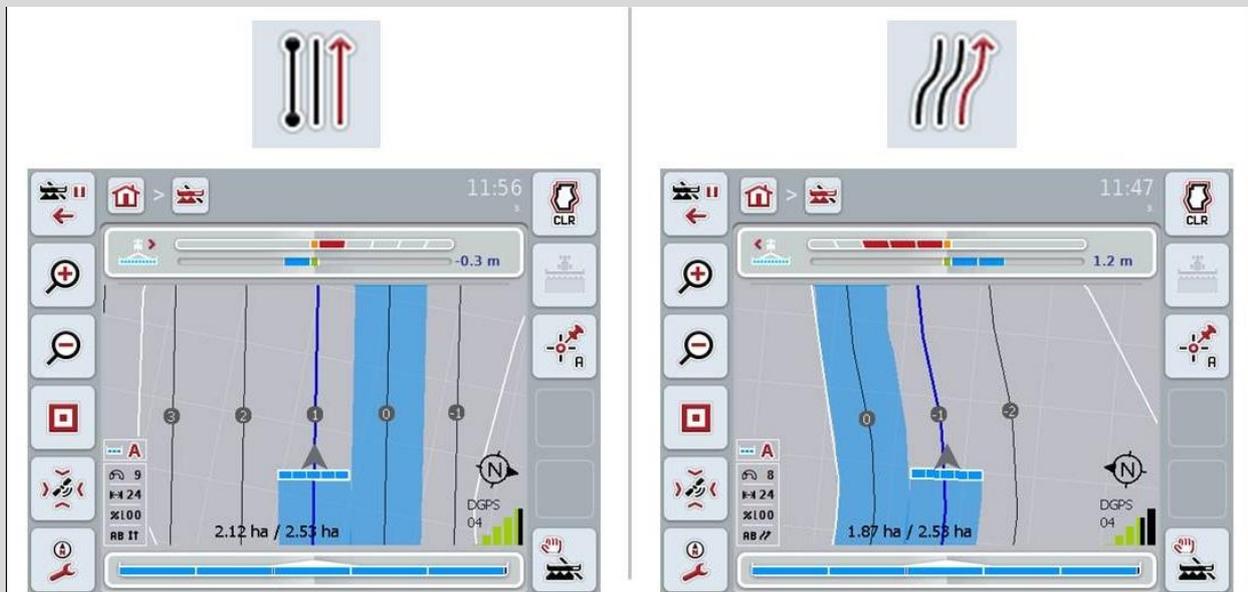
Note

Values between -100 and +100 cm are valid for the *overlap*.



Guidance modes

There are 2 different guidance modes:



A-B mode

The driver sets an A-point, drives further and sets a B-point. The system automatically draws a line between these two points and in addition creates parallel *lead tracks* at a distance equal to the working width

Curve mode

The driver sets an A-point, drives a desired distance that may also contain curves and sets a B-point. The system records the driven distance and in addition creates parallel tracks corresponding to the working width distance.

At the end of the recorded track, the line is extended with a straight line. This makes possible the reliable driving into the tracks in the headland area.

4.3.4.3 Select Guidance Mode

To select the guidance mode, proceed as follows:

1. Press on the "Guidance mode" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ A selection list opens.
2. Choose between "A-B mode" and "Curve mode". To do so, press on the button on the *touchscreen* with the desired mode or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
→ The mode appears in the selection window.
3. Confirm your selection by pressing "OK" or pressing the button with the mode again or by pressing the scroll wheel.



Beds mode

Beds mode offers the possibility of missing out tracks. For example this enables turning in a train with small working widths.

Setting "1" means that every *lead track* is used. Setting "2" means that every second *lead track* is highlighted in the portrayal (see screenshot), the remaining ones are greyed out. The lightbar display then relates to the highlighted *lead tracks*.



4.3.4.4 Enter the Beds value

Proceed as follows to enter the value for the beds:

1. Press on the "Beds" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".



Note

Values between 1 and 5 are valid for the Beds.

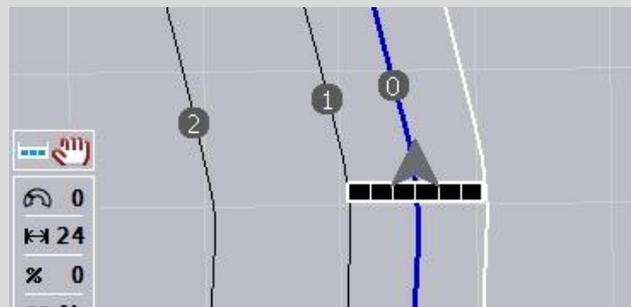


Headland track 2: half width

In the third headland mode (see infobox headland mode chapter 0) *lead tracks* are displayed in the headland area.

This function is useful if during working of the headland a half working width must be used. For example this can be during sowing with a particular tramline rhythm.

If the option is activated, the distance between guidelines 0 and 1 is taken as a half working width. The working of the second track in the headland must then be performed with the half working width.



4.3.4.5 Headland track 2: activate/deactivate half width

To activate/deactivate half width for track 2 in the headland proceed as follows:

1. Press on the "Headland track 2 half width" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the *Boolean* value.
3. Confirm your entry with "OK".

4.3.4.6 Lightbar

In order to change to the lightbar settings proceed as follows:

1. Press the "Lightbar" button (F12) on the *touchscreen*.
→ The following screen opens:



You have the following operating options:



Enter the *Look Ahead* time



Enter the *LED Distance* value

i

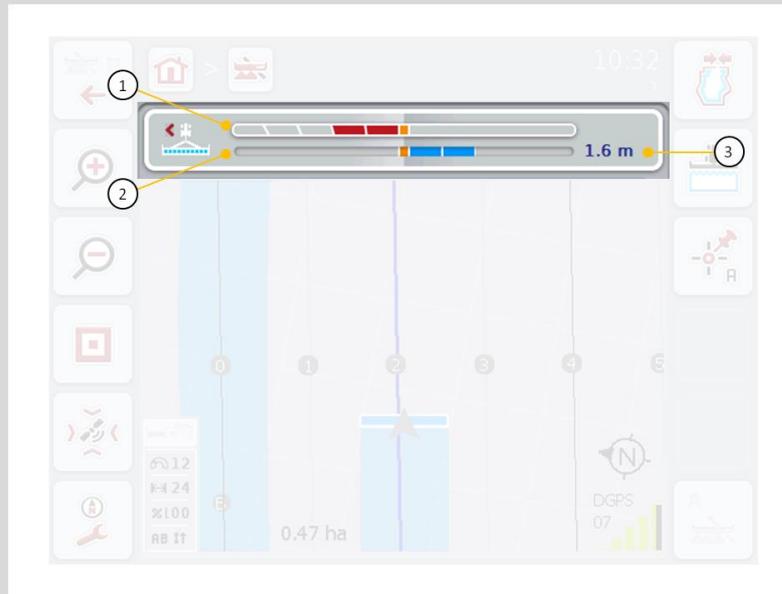
Lightbar

The lightbar comprises 2 rows of light segments.

The bottom segments (2) indicate the actual deviation from the *lead track*.

The top segments (1) indicate a steering suggestion and help the driver to return to the lead track.

The current deviation from the track is also shown as a number (3).



4.3.4.6.1 Enter the Look ahead time

Under *Look ahead*, you specify what time interval for calculating of steering suggestions is taken into consideration. The value should be matched to the actual driving speed and the geometry of the lead track.

Proceed as follows to enter the *Look ahead* time:

1. Press on the "Look ahead" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".



Note

Values between 1 and 10 are valid for the *Look ahead* time.

4.3.4.6.2 Enter the LED Distance value

You specify what deviation a segment of the lightbar represents.

To enter the value for the *LED Distance*, proceed as follows:

1. Press on the "*LED Distance*" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".

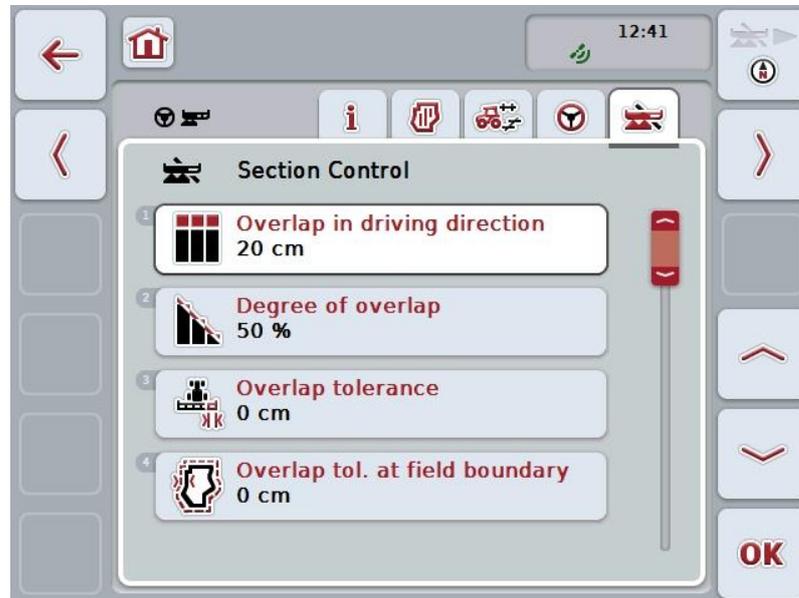


Note

Values between 10 and 100 cm are valid for the *LED Distance*.

4.3.5 Section Control

The *Section Control* settings are displayed in this tab.



You have the following operating options:



Overlap in driving direction



Select the degree of overlap



Enter the overlap tolerance



Enter the field boundary overlap tolerance



Enter the headland distance



Set reverse gear detection



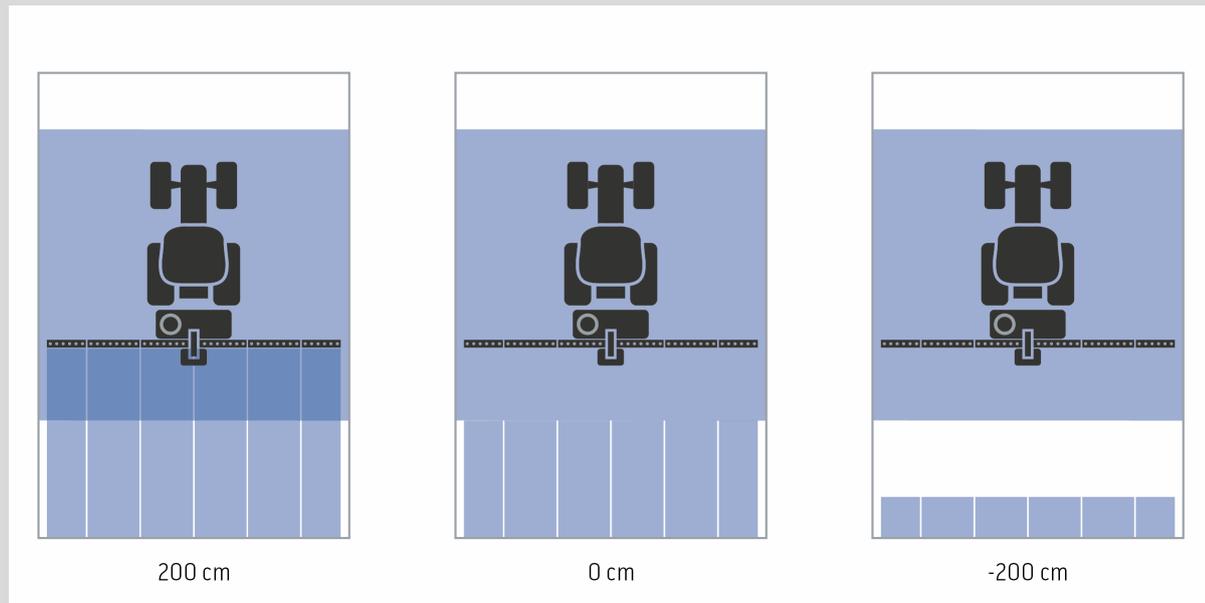
Only activate/deactivate *Section Control* in the headland



Overlap in driving direction

If even the smallest working gaps are to be avoided in the headland, e.g. during sowing or crop protection, the parameter "Overlap in driving direction" can be used.

Simply set an additional, desired overlap for one of the above named applications.



4.3.5.1 Overlap in driving direction

Proceed as follows to enter the overlap value:

1. Press on the "Overlap in driving direction" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".



Note

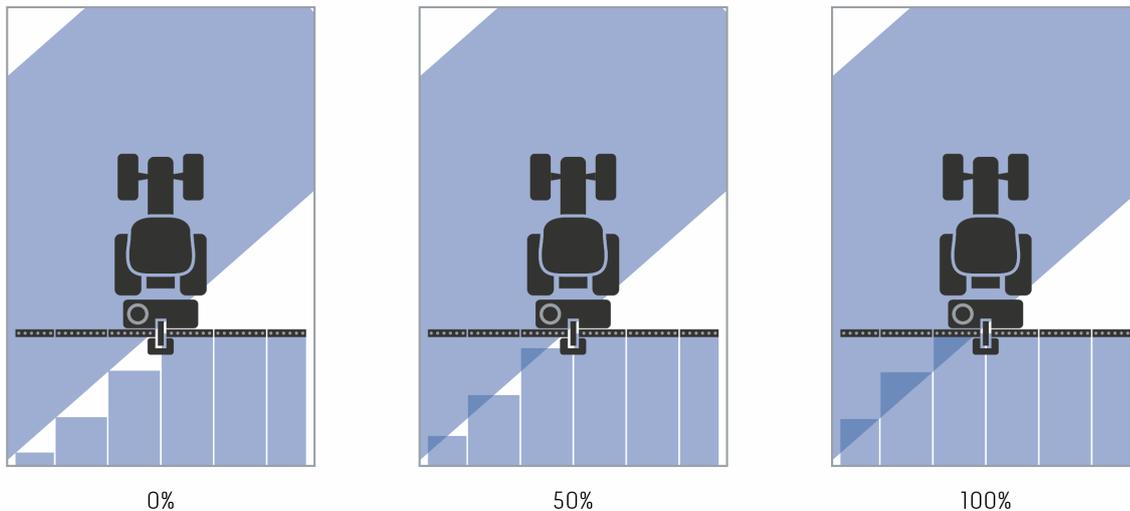
Overlap values between -2000cm and +2000cm are valid.

i

Degree of overlap

The degree of overlap specifies for what covering individual sections are to be switched off when they impact on an already worked area.

This setting depends on whether the priority is complete working or an avoidance of double treatments.



- 0 %** The section is switched off before an *overlap* occurs.
When working in this mode, no *missed areas* result (left graphic).
- 50 %** The section is switched off, if half of this section is located in the region of an already worked area (middle graphic).
- 100 %** The section is only switched off, if it is completely located in the region of an already worked area (right graphic).

4.3.5.2 Select the degree of overlap

To select the degree of overlap, proceed as follows:

1. Press on the "Degree of overlap" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ A selection list opens.
2. Select the desired setting from the list. To do so, on the *touchscreen* press the button with the degree of overlap or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
→ The degree of overlap appears in the selection window.
3. Confirm your selection by pressing "OK" or pressing the button with the degree of overlap again or by pressing the scroll wheel.



Caution!

At field boundaries, 0 % degree of overlap applies as a matter of course.

i**Overlap tolerance**

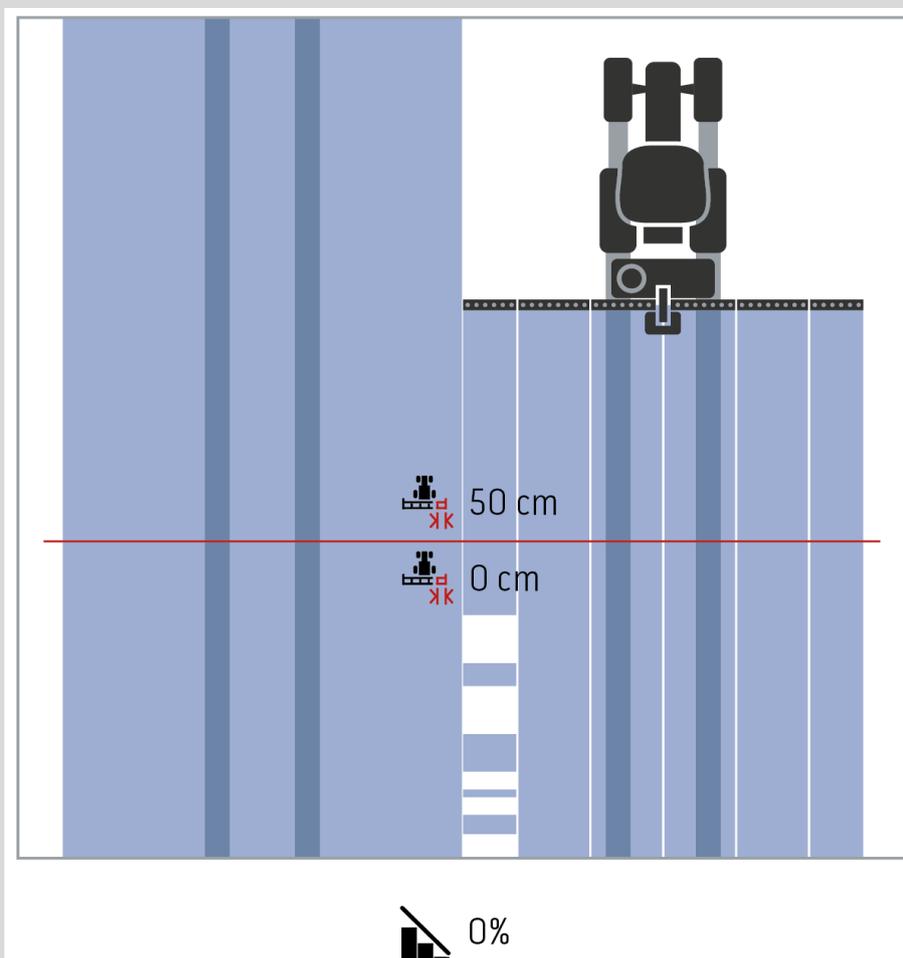
The overlap tolerance specifies with what tolerance the two outer sections (right and left) react to *overlaps*.

With parallel tracks in the field (e.g. with tramlines) it can occur, that the outer section is temporarily displayed over an already worked area, although actually no double treatment is occurring

In general the cause is *GPS drift*, see also the infobox on *GPS drift* page 67.

For a degree of overlap of 0%, the outer section is switched off in this case. A "fluttering" (continuous switching on and off) can occur.

This fluttering can be prevented by setting the overlap tolerance.



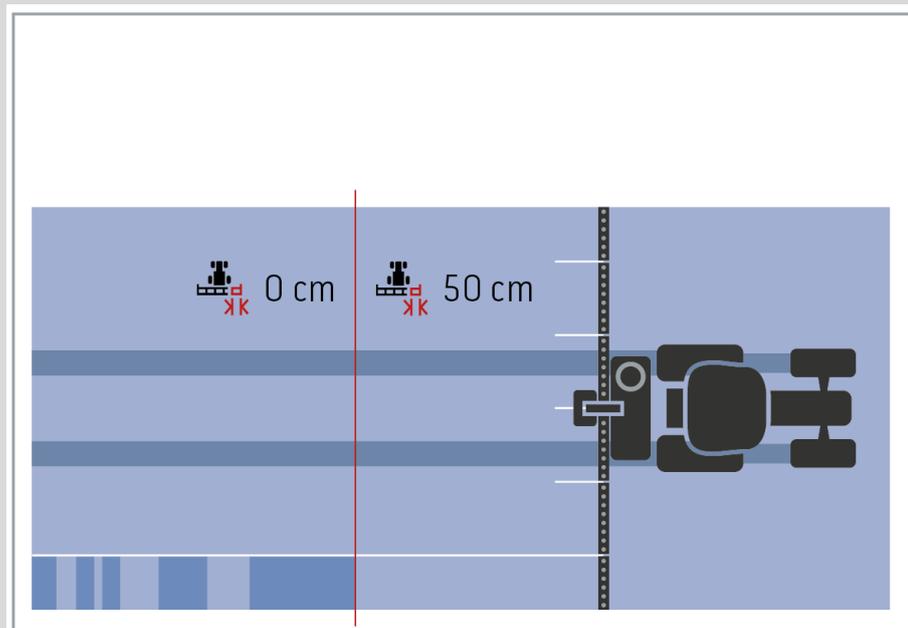
i

Overlap tolerance in already worked areas

The overlap tolerance acts in an opposing manner for a set overlap tolerance of 100%.

In runs over already worked areas (e.g. the headland) it may arise that the outer sections switch on in an undesired way. Causes for this are GPS drift or a track that has not been precisely followed.

The overlap tolerance can prevent the unwanted switching on of the sections.



 100%

4.3.5.3 Enter the overlap tolerance value

Proceed as follows to enter the overlap tolerance value:

4. Press on the "Overlap tolerance" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
5. Enter the value on the *touchscreen* using the number pad or the slider.
6. Confirm your entry with "OK".



Note

Values between 0 cm and half of the outer section are valid for the overlap tolerance.



Degree of overlap and tolerance at field boundaries

For safety reasons, a 0% degree of overlap always applies at the field boundary. Under your own responsibility, the overlap tolerance for the field boundary can be set separately.

GPS drift can cause switching on and off of the outer section at the field boundaries (see also the infobox about overlap tolerance on page 46). The user can minimise this switching on and off by entering an overlap tolerance at the field boundaries.

A setting greater than 0 cm can result in working beyond the field boundary. The recommended setting is 0 cm!

If you deviate from the recommended value, you must check whether working beyond the field boundary is acceptable.

4.3.5.4 Enter the overlap tolerance at field boundary



Caution!

Check carefully whether treatment beyond the field boundary is acceptable!
Once the work is carried out, the setting must be set back to 0 cm.

Proceed as follows to enter the overlap tolerance for the field boundaries:

1. Press on the "Overlap tolerance at field boundary" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".



Note

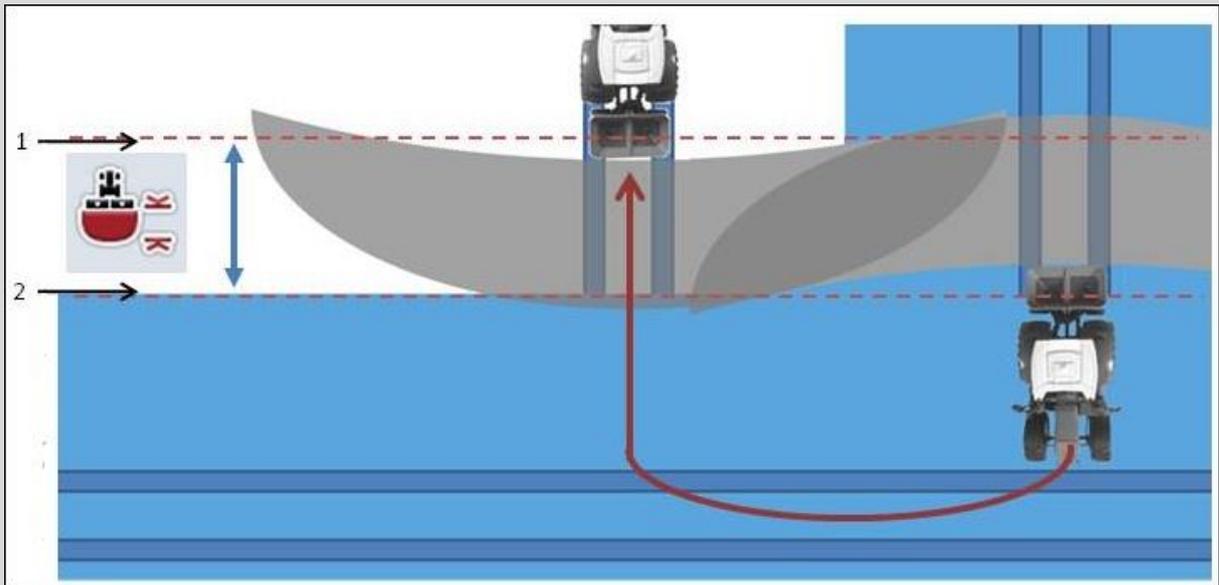
Values between 0 cm and half of the outer section are valid for the overlap tolerance.

i**Headland distance**

The headland distance is used to define the switching on point after leaving an already treated area (here: headland).

Consequently the fertilizer is switched on and off at different points.

The correct dimension for the headland distance is influenced by the implement's throwing characteristics and the working width of the fertilizer distributor.



1. *Switch-on point*
2. *Switch-off point*

4.3.5.5 Enter the headland distance value



Note

This setting is only possible for a class 5 implement (fertilizer).



Note

If the *ISOBUS* implement transfers a value for the working depth of the sections, this button is greyed out.

Manual entry is not necessary, because the implement specifications are automatically transferred.

To enter the value for the headland distance, proceed as follows:

1. Press on the "Headland distance" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".



Note

The valid range for the headland distance lies between 0 metres and 50 metres.

i**Reverse gear detection**

CCI.Command detects a change in the driving direction.

The implement symbol likewise moves backward during reversing. Additionally a red arrow in the map indicates reversing.



If the indicated driving direction does not correspond to the actual driving direction, you can correct the driving direction manually (see chapter 4.4.9).

This is required if backwards travel has started (after switching on of the terminal).

To detect the driving direction, CCI.Command evaluates the direction of travel signal of the tractor TECU. If this is not available, the position information of the GPS receiver is used.

4.3.5.6 Set reverse gear detection

To select reverse gear detection proceed as follows:

1. Press on the "Reverse gear detection" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Select the desired setting from the list. To do so, press on the desired button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
→ The desired setting appears in the selection window.
3. Confirm your entry with "OK".



Note

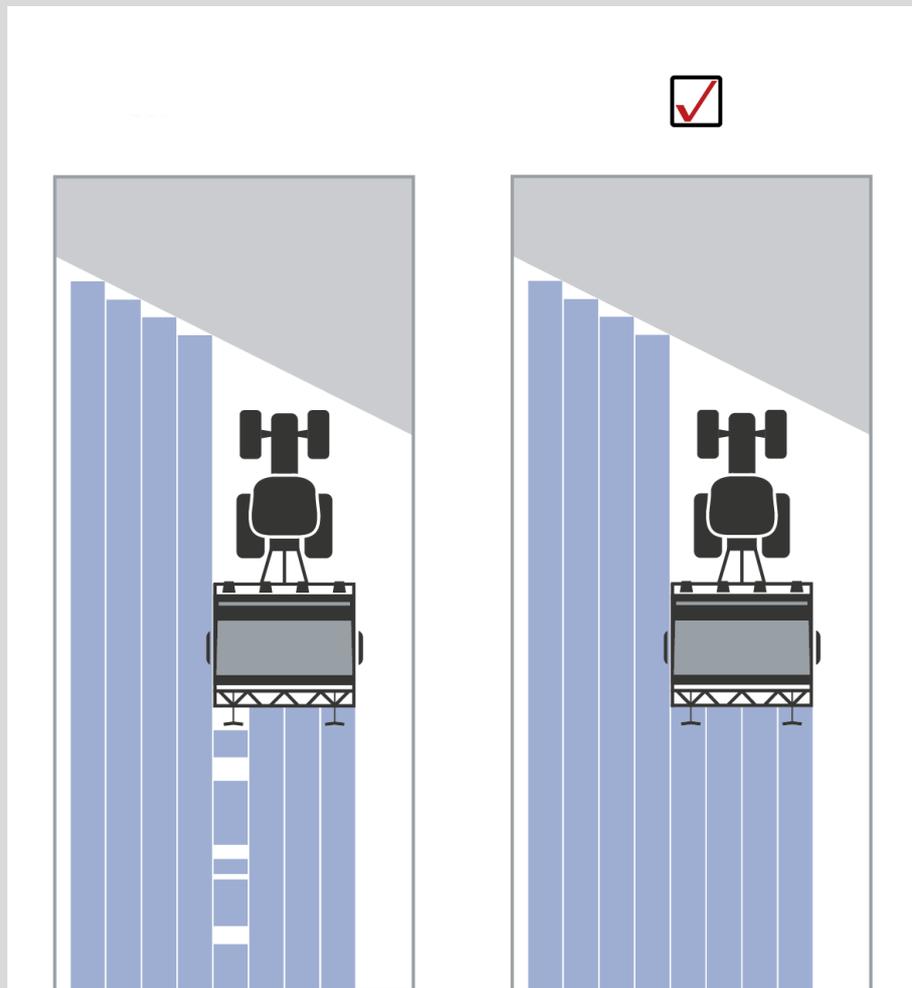
Dependent on the quality of the *GPS* receiver, incorrect detections can occur, e.g. in shadowed areas at forest edges. The direction of travel can be manually corrected at any time in the map view via button F5 (see chapter 4.4.9).

i**Section control only in the headland**

When using seed drills and planters with very small sections (e.g. less than a meter) then GPS drift with parallel tracks can result in undesired switching off of the outer sections.

If this cannot be avoided through adapting of the overlap tolerance (see overlap tolerance infobox).

In this case the function "Section control only in the headland" helps to avoid sowing windows. The automatic switching on and off of the section only takes place in the marked headland (marked grey) and not on the worked area (marked blue).



4.3.5.7 Activate/deactivate Section Control only in the headland

To activate/deactivate Section control only in the headland, proceed as follows:

1. Press on the "Section control only in the headland" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the *Boolean* value.
3. Confirm your entry with "OK".

i

Exiting the map view

There are two ways to exit map view.

Note the following important distance:

When changing out of map view in the setting using the F7 function key automatic *Section Control* is paused.!

When exiting map view via the home or toggle button, automatic *Section Control* continues operating in the background.

4.4 Map view

Pressing the button "Map" (F1) takes you out of the Settings tab back to the **map view**.

The **map view** is the *CCI.Command* working area. Automatic *Section Control* is activated here.



Note

Dependent on the implement used, different buttons are available.



You have the following operating options:



Switch to settings

Press the "Switch to Settings" button (F7) on the *touchscreen*.

More detailed information about Settings can be found in chapter 4.3.



Switch to headland management



Selecting headland mode



Call up Obstacles



Call GPS Correction



Call up Map Settings



Create / delete a field boundary



Set A point / record reference track



Correcting direction of travel



Change Section Control mode

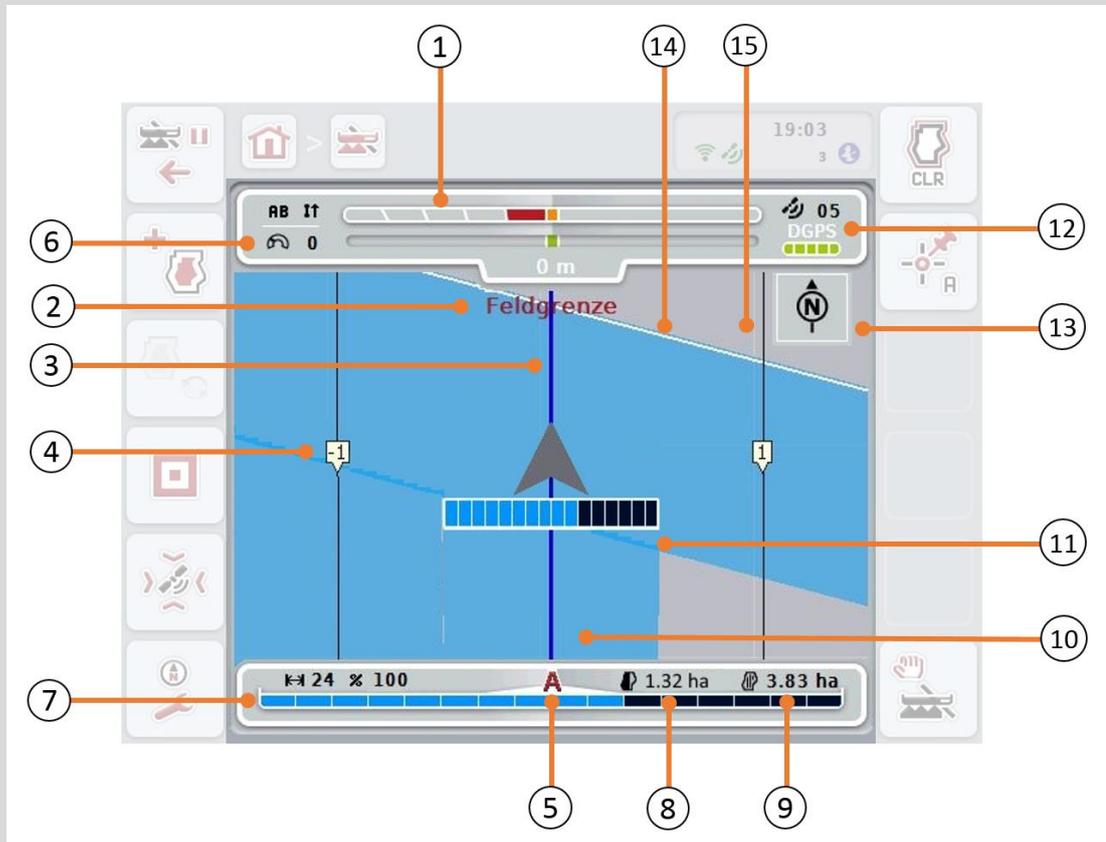


Switch on/off manual highlighting of the area travelled over



i

Map view elements

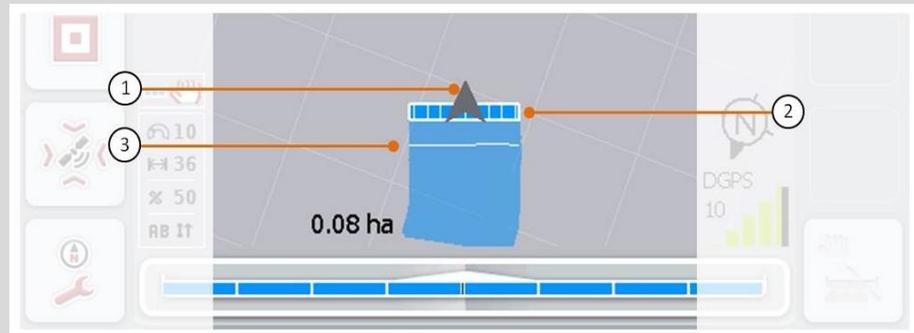


1. Lightbar
2. Message upon reaching the field boundary or an obstacle
3. *Lead tracks* (active *lead track* blue)
4. Lead track numbering
5. Display: *Section Control* Mode
6. Infobox (speed, working width, degree of overlap, guidance mode)
7. Section status display
8. Remaining area (not yet worked)
9. Field size (if no field boundary exists, the already worked area is indicated)
10. Worked area
11. Repeated worked area
12. *GPS-Info* (signal strength, number of satellites used, signal type)
13. North arrow
14. Field boundary
15. Grid (size = working width, alignment = North)

i

Depiction of the implement in map view

The implement depiction is fixed in the bottom third of the map. The map rotates about the implement.



The arrow (1) indicates the position of the tractor reference point (aerial position). According to the set geometries, the sections (2) are positioned behind it. The white line (3) appears if the working depth is set for the sections. This is, for example, supported by a number of fertilizers.

4.4.1 Headland management

To change the headland management proceed as follows:

1. Press the "Headland management" button (F3) on the *touchscreen*.
→ Headland management opens:



Note

The selection "Circular" is only available if a field boundary has already been created (see chapter 4.4.1).



Note

The selection "Delete headland" is only available if at least one saved headland exists.

You have the following operating options:



Change to individual headland recording

Press the "Individual" button on the *touchscreen*.

→ The **Headland recording** map view opens.

You can find more detailed information about headland recording in chapter 4.4.1.1.



Create circular headland



Delete headland

4.4.1.1 Create circular headland

To create a circular (peripheral) headland, proceed as follows:

1. Press on the "Circular" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the headland width on the *touchscreen* using the number pad or the slider.
3. Confirm your entry with "OK".
→ A headland with the entered width is created along the field boundary.



Note

To be able to add a headland, a field boundary must first be created (see chapter 4.4.1).

4.4.1.2 Delete headland

To delete a saved headland, proceed as follows:

1. Press on the "Delete headland" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Confirm the prompt for confirmation with "OK".
→ The headland is deleted.



Note

This function deletes all headlands saved for this field.
If a field boundary exists, a circular headland can quickly be recreated. An individual headland must be newly driven around.

i

Record headland

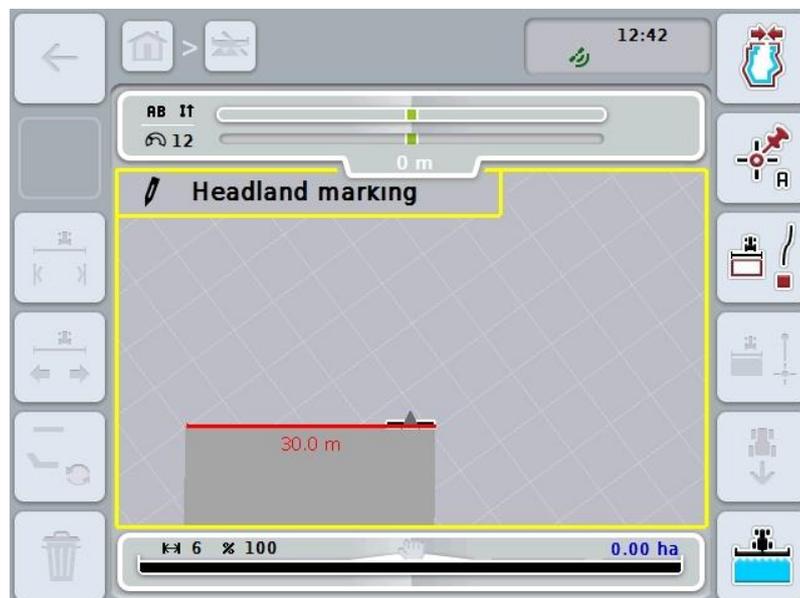
The headland can be recorded individually. For planters and seed drills the sections can also be automatically switched without a field boundary.

4.4.1.3 Headland recording

To switch to headland recording, proceed as follows:

1. Press on the "Individual" button on the *touchscreen* or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.

→ The following screen opens:



You have the following operating options:



Set A point / record reference track

(see chapter 4.4.8)



Mark curves



Mark line



Correcting direction of travel
(see chapter 4.4.9)



Change Section Control mode
(see chapter 4.4.10)



Enter the desired headland width



Change the position of the marker



Change headland mode



Delete headland

4.4.1.4 Mark curves

To mark curves when recording the headland, proceed as follows:

1. Press the "Mark curves" (F3) button on the *touchscreen*.
→ Recording of the headland along the precise driven route starts.
2. Drive along the route.
3. Press the "Mark curves" (F3) button on the *touchscreen* again.
→ Recording of the headland along the precise driven route starts.
→ The recorded headland is saved.

4.4.1.5 Mark line

To mark a line when recording the headland, proceed as follows:

1. Press the "Mark line" (F4) button on the *touchscreen*.
→ The start point is set.
2. Drive to the point that is to form the end of the line and on the *touchscreen* press the button "Mark line" (F4) again.
→ A line between the start and stop point is automatically drawn and a headland created along this.
→ The created headland is saved.

4.4.1.6 Enter the desired headland width

To enter the desired headland width, proceed as follows:

1. Press the "Headland width" button (F9) on the *touchscreen*.
2. Enter the value on the *touchscreen* using the number pad or the slider.
→ Confirm your entry with "OK".



Note

Values between 0 and 99 m are valid for the headland width.



Note

The default setting for the headland width is the working width of the implement.



Headland marker

The width of the headland marker is preset as the working width of the implement. The width of the headland and thus the headland marker, can be manually changed (see chapter 4.4.1.6). If the width of the marker is bigger than the working width, the position of the headland marker can be changed. The setting can be changed between central (default) and right or left outside of the implement. Selecting right or left outside edge as the setting makes it possible for example to drive with the implement directly along the field boundary and to mark the entire set width of the headland within the field boundary.

4.4.1.7 Change the position of the marker

To change the position of the marker, proceed as follows:

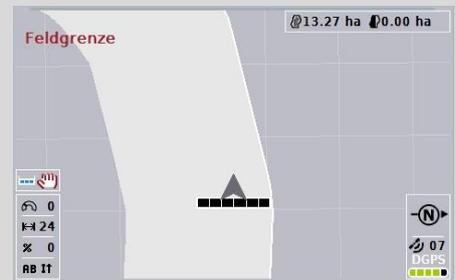
1. Press the "Marker position" button (F10) on the *touchscreen*.
→ The marker position changes automatically between central, right outside edge and left outside edge.

i

Headland mode

CCI.Command recognises three different headland modes:

Mode 1, headland locked:



The headland is plotted in light grey, the sections are automatically switched off in this area.

The inner field can be worked.

Mode 2, headland free:



The light grey area is not displayed.

The headland is available for working, the sections are not switched off here.

Mode 3: **Headland with lead tracks:**



Lead tracks are displayed in the headland. The reference for these lead tracks is the field boundary.

The headland can be worked.

4.4.2 Selecting headland mode

To switch between headland modes, proceed as follows:

1. Press the "Change headland mode" button (F9) on the *touchscreen*.
→ The headland mode changes.

4.4.3 Obstacles

To switch to the "Obstacles" screen proceed as follows:

2. Press the "Obstacles" button (F10) on the *touchscreen*.
 → The following screen opens:



You have the following operating options:

-  **Set obstacle**
- 
- 
- 
- 
-  **Delete all obstacles**

4.4.3.1 Set and position obstacle

To set a new obstacle, proceed as follows:

1. Press the "Set obstacle" button (F10) on the *touchscreen*.
2. In the *touchscreen* enter the name of the obstacle via the keyboard.
3. Confirm your entry with "OK".
 - The obstacle is first placed in the current position of the tractor and imaged in the map view by a flashing red spot.
4. In the *touchscreen* press on the buttons "Left" (F3), "Right" (F4), "Up" (F5) and "Down" (F6) to position the obstacle.



Note

Pressing the buttons causes the obstacle to be shifted 1 metre in the respective direction.

5. To save the obstacle in the current position, leave the view "Obstacles" and return to the normal map view.

4.4.3.2 Delete all obstacles

To delete the obstacles, proceed as follows:

1. Press the "Delete" button (F12) on the *touchscreen*.
2. Confirm with "OK".



Note

All obstacles of the currently used field are deleted. A selection is not possible.

i

GPS drift

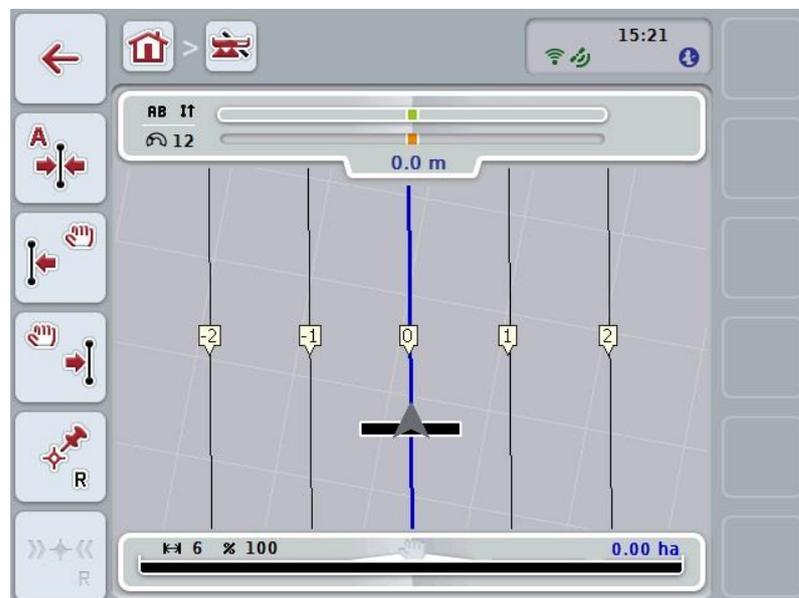
When using GPS signals without correction, the recorded data (e.g. field boundary, worked area) may include a shift relative to the current position.

Due to the Earth's rotation and the changing position of the satellites in the sky, the calculated position of a point moves over time. This is referred to as drift.

The GPS Correction makes it possible to compensate for this drift.

4.4.4 GPS correction

You can use the button "GPS Correction" (F11) in the map view to carry out the *GPS* correction, the buttons are assigned new functions.



You have the following operating options:



Move reference track



Manually move reference track



Set reference point



Calibrate reference point

4.4.4.1 Move reference track

To move the *Reference track* to the current position of the tractor, proceed as follows:

1. In the field drive to the desired track and press on the button "Move *reference track*" (F9) on the *touchscreen*.
→ The *reference track* is moved to its current position.



Note

This function is only available if a *reference track* has been recorded. Only the *reference track* is moved. If the entire *field* is to be corrected, a reference point must be set (see chapter 4.4.4.3).

4.4.4.2 Manually move reference track

To manually move an existing *reference track* left or right proceed as follows:

1. Press the "Manually correct reference track" button (F7 or F8) on the *touchscreen*.
→ The *reference track* is moved in the selected direction.



Note

This function is only available if a *reference track* has been recorded. Only the *reference track* is moved. If the entire *field* is to be corrected, a reference point must be set (see chapter 4.4.4.3).

4.4.4.3 Set reference point

In the first working, the reference point should be set close to a *field*.

Select a point which can subsequently be used for calibration by approaching it from exactly the same direction and which is in exactly the same position. It is recommended that a prominent point, e.g. a gully lid or a permanent marking in the entry to the field be selected.

The recorded data can no longer be used if you can no longer find the position of the recorded reference point.

To set a new reference point at the current position, proceed as follows:

1. Press the "Set reference point" button (F11) on the *touchscreen*.
→ The reference point is set and is shown in the map.



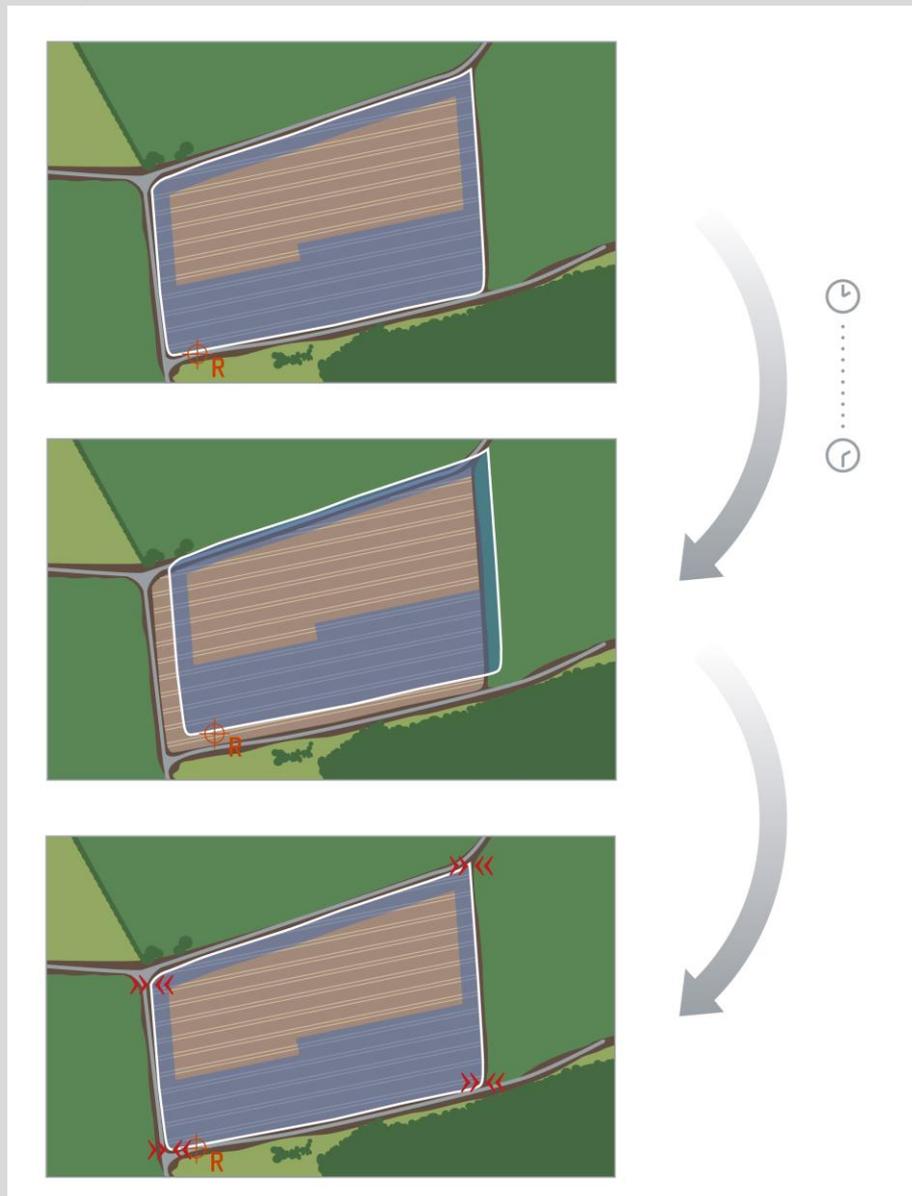
Note

The reference point is valid for the tractor combination with which it was set.

i**Calibrate reference point**

If for example you have detected a GPS drift after an interruption in working (e.g. filling of the spray), drive back precisely to the already set reference point.

Due to the shift caused by the GPS drift, the reference point in the map view will no longer lie below the actual position.

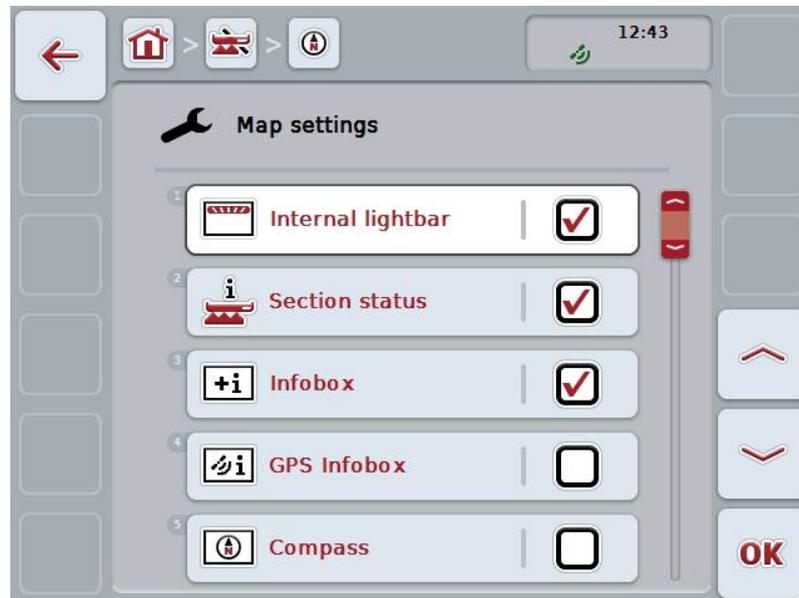
**4.4.4.4 Calibrate reference point**

To calibrate the reference point, proceed as follows:

1. Press the "Calibrate reference point" button (F12) on the *touchscreen*.
→ The reference point is moved to its current position.

4.4.5 Map Settings

Use the "Map Settings" (F12) button in the main view to get to **map settings**. These can be used to switch individual elements of the map view and audible warning signals on or off. The elements are displayed in the map and the warning signal can sound if the check mark is set.



You have the following operating options:



Switch the Internal Lightbar on or off



Switch the Section Status on or off



Switch the infobox on or off



Switch the GPS Infobox on or off



Switch the compass on or off



Switch the grid on or off



Switch MiniView on or off



Switch the Field boundary alert sound on or off



Switch the Obstacle alert sound on or off

4.4.5.1 Switch displays on/off

To switch the display of the Internal Lightbar, the Section Status, the infobox, the GPS Infobox of the compass, MiniView or grid on or off, proceed as follows:

1. Press the button on the *touchscreen* with the required display or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. In the input dialogue select the desired setting.
3. Confirm your setting with "OK" or by pressing the scroll wheel.

4.4.5.2 Switch an audible warning signal on/off

To switch the audible warning signal on or off upon reaching the field boundary or an obstacle, proceed as follows:

1. Press the button on the *touchscreen* with the required display or turn the scroll wheel until the button is highlighted in white and then press the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. In the input dialogue select the desired setting.
3. Confirm your setting with "OK" or by pressing the scroll wheel.

4.4.5.3 MiniView

Relevant implement data can be displayed in the MiniView, without having to exit the map view of CCI.Command.



Note

The implement data displayed in MiniView must be made available by the implement. However not all implements support this function. If the implement does not provide any data, the display remains empty.

4.4.6 Create field boundary

To create a field boundary, proceed as follows:

1. Drive around the *field* while treating the headland. The worked area is highlighted in blue; with field sprays, at this point in time, the *Section Control* auto-mode can be immediately activated.



Caution!

Sections are only automatically switched on, if an already treated area is reached. Switching off at the field edge to protect the adjoining areas is the responsibility of the user.



Note

For safety reasons, when operating with fertilizers the sections must be manually switched during the first circumferential run around the field without a field boundary.

2. Press the "Create field boundary" button (F1) on the *touchscreen*.
 - The field boundary is created and saved on the outside edge of the already worked area. Gaps are closed by a matched line. Nevertheless, it is worthwhile travelling around the full periphery of the *field*, as the calculations do not necessarily correspond to the actual course of the field boundary.
 - The button "Create field boundary" (F1) changes automatically to "Delete field boundary" (F1). This is indicated by another symbol.

4.4.7 Delete field boundary

To delete a saved field boundary, proceed as follows:

1. Press the "Delete field boundary" button (F1) on the *touchscreen*.
2. Confirm the prompt for confirmation with "OK".
 - The button "Delete field boundary" (F1) changes automatically to "Save field boundary" (F1). This is indicated by another symbol.

4.4.8 Set A point / record reference track

To record a *reference track* for *Parallel Tracking*, proceed as follows:

1. in the *touchscreen* press on the button "Set A point" (F2) to specify the start point for the *reference track*.
 - The button "Set A-point" (F2) changes to "Set B-point" (F2). This is indicated by another symbol.
2. Travel over the distance, that is to serve as the *reference track*.
3. In the *touchscreen* press on the button "Set B-point" (F2) to specify the end point for the *reference track*.
 - *Parallel tracking* is automatically started.



Note

One *reference track* is saved per *field*.

If you set a new A-point, the existing *reference track* is overwritten. Confirmation of the prompt for confirmation is necessary to do this.

4.4.9 Correcting direction of travel

If reverse gear detection is activated, see also chapter 4.3.5.6, CCI.Command automatically detects the direction of travel. To correct the detected direction of travel, proceed as follows:

1. Press the "Correct direction of travel" button (F5) on the *touchscreen*.
 - The direction of travel changes from "Forward travel" to "Reversing" or from "Reversing" to "Forward travel".
 - The correction is displayed through changing of the symbol on the button (F5).



Note

If *CCI.Command* detects reversing, a small red arrow is displayed.



Section Control: manual mode and auto mode

In manual mode, the sections must be switched on or off in implement operation or manually using the joystick.

The worked area is recorded.

After activation of auto mode, *CCI.Command* transfers commands for switching sections on and off to the implement.

For some implements, the *Section Control* functionality must also first still be started in implement operation. See the manufacturer's operating instructions for the procedure.

4.4.10 Change Section Control mode

The change into manual mode and auto mode takes place via the same button (F4). The system changes according to which mode is currently selected:



Switch *Section Control* into auto mode



Switch *Section Control* into manual mode

To change between manual mode and *Section Control* auto mode, proceed as follows:

1. Press the "Auto mode" or "Manual mode" button (F6) on the *touchscreen*.
→ The mode changes and the symbol on the F6 button changes.



Note

This function is only available if implement data is transferred.

4.4.11 Switch on/off manual highlighting of the area travelled over

If no ISOBUS implement is connected, then no information about the already worked area is available. The worked area can be highlighted manually.

To switch the manual marking of the travelled over area on or off, proceed as follows:

1. Press the "Marking on/marking off" button (F6) on the *touchscreen*.
 - The travelled over area is highlighted / no longer highlighted in blue on the map.
 - The button F2 changes from "Selection on" to "Selection off" and vice-versa, dependent on which function has just been chosen.

To change between manual mode and Section Control auto mode, proceed as follows:

1. Press the "Auto mode" or "Manual mode" button (F6) on the touchscreen.
 - The mode changes and the symbol on the F6 button changes.



Note

This function is only available if no implement data is transferred or Section Control has not been activated.



Note

It is necessary that the working width is already entered for a correct display of the worked area, (see chapter 4.3.4.1).

5 Troubleshooting

5.1 Terminal errors

The following overview shows possible *terminal* errors and how to solve them:

Error	Possible cause	Rectification
The <i>terminal</i> does not switch on	<i>Terminal</i> is not correctly connected	Check the <i>ISOBUS</i> connection
The software of the connected implement is not displayed	<ul style="list-style-type: none">• Bus terminator missing• Software is loaded, however is not displayed• Connection error when uploading the software	<ul style="list-style-type: none">• Check resistance• Check whether the software can be manually started from the <i>terminal</i> start menu• Check physical connection• Contact the implement manufacturer's customer service

5.2 Errors during operation

The following overview shows you possible errors when operating with *CCI.Command*, their possible cause and how to rectify them:

Error	Possible cause	Rectification/approach
Calculation of the field boundary takes a long time	Large distance between the blue highlighted areas, because: <ul style="list-style-type: none"> the implement was switched on briefly before the passage to the <i>field</i> Data from a second, not yet removed <i>field</i> has not yet been stored or deleted. 	Go to Settings, select the Fields tab, delete the field data (see 4.3.2.7) and re-process the <i>field</i> .
Depiction of the <i>field</i> in the Fields tab is very small and not centralised.	Alongside the working of the <i>field</i> , the implement was briefly switched on at another point.	Delete field data (see 4.3.2.7) and re-work the <i>field</i> .
The current <i>lead track</i> is not highlighted blue.	No sections are currently switched on for the implement.	If no sections are switched on, the track that was last used for working is highlighted in blue. This is to aid better re-finding of this track, e.g. after filling of the implement.
<i>Reference tracks</i> , field boundaries, and worked area are displaced.	<i>GPS drift</i>	Calibrate reference point and/or <i>reference track</i> (see chapters 4.4.4.1 and 4.4.4.3)
No <i>GPS</i> signal	<ul style="list-style-type: none"> Not receiving Not all necessary message signals are received. 	<ul style="list-style-type: none"> Check power supply Check whether the receiver is connected to the RS233-1 <i>interface</i> and this is selected Check whether the baud rate set at the receiver and the <i>terminal</i> agree. Change the receiver settings, consult the receiver operating instructions for this purpose.

Error	Possible cause	Rectification/approach
<p>In spite of calibration, the position of the field boundary is not correct.</p>	<ul style="list-style-type: none"> • Reference point is not correctly approached. • Position of the <i>GPS</i> aerial on the tractor is changed after setting. • Poor <i>GPS</i> signal quality. 	<ul style="list-style-type: none"> • Check the position of the tractor, approach the reference point again. • Check the position of the <i>GPS</i> aerial and, if necessary, enter again (see operating instructions CCI.GPS). • (see next point)
<p>The implement switches on and off too early/late.</p>	<ul style="list-style-type: none"> • Poor <i>GPS</i> signal quality • Incorrect geometry settings • Incorrect setting of the position of the <i>Connection point/aerial</i> • Incorrect <i>delay times</i> 	<ul style="list-style-type: none"> • Check the signal quality, drive out of any shadow region (if necessary recalibrate any reference point). • Refer to the implement operating instructions to see how these can be changed. • Re-measure and check the settings in <i>CCI.GPS</i>. • Check the selection of the <i>Connection point</i> in <i>CCI.Command</i>. • If these are transferred from the implement, consult the implement operating instructions • If these were set by you, verify the <i>delay times</i>. To do this work a strip and mark the outer worked edge e.g. with barrier tape. Drive over this strip at a 90° angle and measure how many cm the implement was switched off too early/too late. Divide this value (cm) by the average speed in the headland area (cm/ms) (e.g. 8 km/h corresponds to 0.22 cm/ms). This correction value must be added to the set value if switching off is too late and subtracted from it if switching off is too early.

Error	Possible cause	Rectification/approach
<i>Section Control</i> does not switch	The function "Section control only in the headland" is activated.	Deactivate the function "Section control only in the headland" (see chapter 4.3.5.7).

5.3 Buttons are greyed out

Button	Possible cause	Rectification
Multiple buttons in the map view (obstacles, set field boundary, manual marking, set A-point, auto mode)	Software was not activated	Check whether the licence key has been entered.
Tabs: Parallel Tracking Settings (all buttons)	Software was not activated	Check whether the licence key has been entered.
Tabs: Section Control Settings (all buttons)	Software was not activated	Check whether the licence key has been entered.
Enter <i>delay times</i>	<i>Delay times</i> are defined by the <i>ISOBUS</i> implement and are displayed automatically.	For a few implements, the <i>delay times</i> can be set in the menu. Refer to the operating instructions of your implement to find them.
Enter working width	Working width is transferred by the <i>ISOBUS</i> implement and automatically displayed.	see above
Enter value for headland distance (dashes appear in the field)	The connected implement does not correspond to class 5 (fertilizer)	The headland distance only fulfils its purpose with fertilizers. According to the ISO standard, fertilizers conform to class 5. Transferred. If the implement is of another class, then the headland distance is not available.
Enter value for headland distance ("ISO" appears in the field)	The connected implement transfers a value for the working depth of the individual sections.	The headland distance is not required. The implement determines via the working depth at which points the sections can be switched on and off.
Start <i>Section Control</i>	The connected implement is not <i>ISOBUS</i> and <i>Section Control</i> enabled.	

Button	Possible cause	Rectification
Switch the marking of the worked area on or off	The connected implement is <i>ISOBUS</i> and <i>Section Control</i> enabled.	Manual marking is not necessary, because the implement signals its working state and this is automatically recorded.
Switch into auto mode	The connected implement is not <i>ISOBUS</i> and <i>Section Control</i> enabled or still no field boundary has been created (when using a fertilizer).	
Add headland/ Delete headland	The value 0.00 m is entered for the headland distance.	Enter a value greater than 0.00 m for the headland distance (see chapter 4.3.5.5)
Import field boundary/ Export field	Flash drive is not plugged in or is not yet detected.	Plug in flash drive and wait until the <i>terminal</i> detects it.

5.4 Error messages



Note

The error messages shown on the *terminal* depend on the connected implement. A detailed description of the possible error messages and troubleshooting can be referred to in the implement operating instructions.



Note

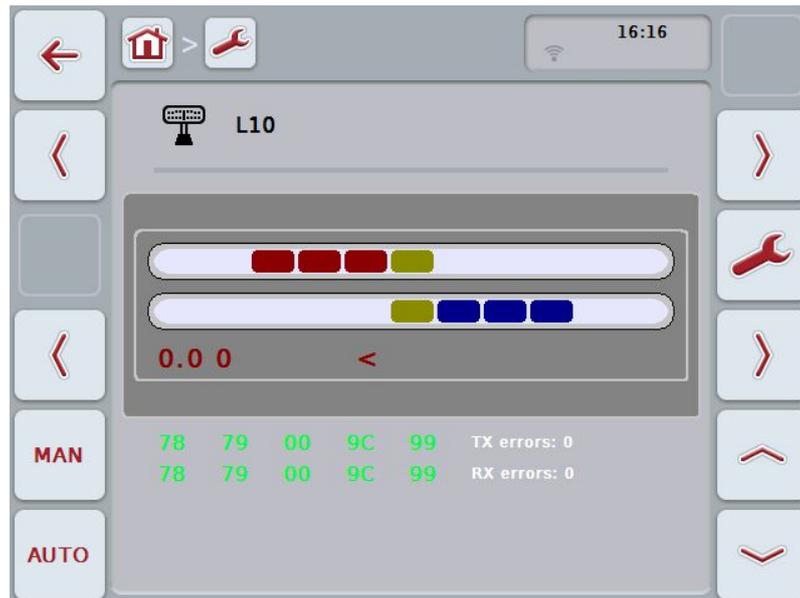
If the implement cannot be operated, check whether the "stop switch" is pressed in. The implement cannot be operated until the button has been released.

5.5 Diagnostics

5.5.1 Check external lightbar

To check the external lightbar, proceed as follows:

1. Press the home key to enter the main menu.
2. Press the "Settings" button (F1) in the main menu.
3. Select the tab **Info and Diagnostics**.
4. In the tab **Info and Diagnostics** press the button "L10".
→ The view for the L10 opens:



6 Menu structure



7 Glossary

A-B mode	A guidance mode in which the driver sets an A and a B-point, the system automatically draws a straight line between these two points and additionally creates parallel tracks at the distance of the working width.
Switch-off delay	The delay times describe the time delay between the command and the actual activation of a section (e.g. during spraying, the time from the command: "Switch on section", until when the agent is actually applied).
CCI	Competence Center ISOBUS e.V.
CCI.Command	GPS controlled section switching
CCI.GPS	App with tractor geometry settings.
Switch-on delay	The delay times describe the time delay between the command and the actual activation of a section (e.g. during spraying, the time from the command: "Switch on section", until when the agent is actually applied).
Missed areas	Missed areas are the result of omissions.
Field	A field can contain the following elements: the field boundary, the reference point, the reference track, the obstacles and the worked area.
GPS	Global Positioning System. GPS is a system for satellite-supported position determination.
GPS drift	Due to the Earth's rotation and the changing position of the satellites in the sky, the calculated position of a point moves. This is referred to as GPS-drift.
GSM	Global System for Mobile Communication Standard for fully digital mobile phone networks, that is primarily used for telephony and text messaging such as SMS.
Headland Control	Virtual headland
ISOBUS	ISO11783 International standard for data transfer between farming implements and devices.
Connection point	The point on the implement to which the tractor is coupled
Curve mode	A guidance mode in which the driver sets an A-point, drives a distance that can also contain curves and sets a B-point. The system records the distance and in addition creates parallel tracks corresponding to the working width distance.
LED Distance	The LED Distance can be used to specify how many cms of deviation an LED represents.
PT lanes/grid	Track created in parallel to the reference track, which is used as an orientation aid for correct linking driving
Parallel Tracking	Parallel guidance aid
Reference track	Track recorded by the driver, that is used for the calculation of other lead tracks created in parallel for track guidance
Interface	Part of the terminal which is used to communicate with other devices
Section Control	Automatic section control
Terminal	ISOBUS CCI 100 or CCI 200 terminal
Touchscreen	Touch-sensitive screen for operation of the terminal.
Overlapping	Double treatment

Delay times	The delay times describe the time delay between the command and the actual activation of a section (e.g. during spraying, the time from the command: "Switch on section", until when the agent is actually applied).
Look ahead	The look ahead time specifies the time interval for calculation of the steering suggestion. For example, a greater time for the look ahead time gives the driver more time to react to the steering suggestion.

8 ISOBUS functionalities



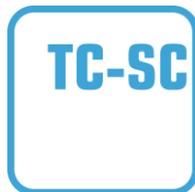
Task-controller basic (totals)

Takes over the documentation of cumulative values that are worthwhile when looking at the work carried out. In this respect, the device makes the values available. Here the data exchange between the FMIS and the task controller is realised in ISO-XML data format. Hence tasks can be conveniently imported into the task controller and / or the finished documentation can then be exported again.



Task controller geo-based (variables)

Additionally offers the possibility of also collecting position-related data – or the planning of position-related tasks, for example using application maps.



Task-Controller Section Control

Deals with the automatic switching of sections, as with pesticide spraying, dependent on the GPS positions and desired degree of overlap.

9 Buttons and icons

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	Call up the map		Switch to Settings
	Activate Section Control		Pause Section Control
	Call up the map		Switch to Settings
	Overview		Fields
	Geometry		Parallel Tracking
	Section Control		Enter licence and call up Service menu
	Select from a list		Delete
	Edit		OK
	Save field		Delete worked area
	Import field boundary		Export field
	Search fields		Headland track 2: half width
	Section geometry		Connection point
	Implement type		Switch-on delay
	Switch-off delay		Working width
	Omission/Overlapping		Guidance mode
	A-B mode		Curve mode
	Beds		Lightbar settings
	Look Ahead time		LED Distance Settings
	Degree of overlap		Overlap tolerance

	Overlap tolerance at field boundary		Headland distance
	Map section zoom out		Map section zoom in
	Obstacles		Set obstacle
	Position obstacle Move left		Position obstacle Move right
	Position obstacle Move forwards		Position obstacle Move rearwards
	GPS correction		Map Settings
	Grid		Infobox
	Section status		Field size infobox
	GPS Infobox		Alert GPS
	Alert field boundary		Alert obstacle
	Create Field boundary		Delete field boundary
	Create headland		Change headland mode
	Delete headland		Correcting direction of travel
	Switch on manual highlighting of the area travelled over		Switch off manual highlighting of the area travelled over
	Switch Section Control into auto mode		Switch Section Control into manual mode
	Set A point / record reference track		Move reference track
	Set reference point		Calibrate reference point
	Change to the right		Change to the left
	Change up		Change down
	Individual headland recording		Mark curves



Mark line



Change the position of the marker



Move reference track to the left



Move reference track to the right

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CCI.GPS

GPS settings and tractor geometry

Operating instructions

Reference: CCI.GPS v2

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Version number: v2.05

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1 Introduction

1.1 About these operating instructions

These Operating Instructions are intended as an introduction to the operation and configuration of the CCI.GPS app. This app is preinstalled on your ISOBUS CCI 100/200 terminal and can only be run there. It is only with knowledge of these operating instructions that accidental misuse of the terminal can be avoided and fault-free operation ensured.

1.2 Reference

These Operating Instructions describe the CCI.GPS Version CCI.GPS v2 . In order to check the version number of CCI.GPS installed on your ISOBUS CCI terminal, proceed as follows:

1. Press the home key to enter the main menu.
2. Press the "Settings" button (F1) in the main menu.
3. Select the tab **Info and Diagnostics**.
4. In the tab **Info and Diagnostics** press the button "Terminal".
5. Press the "Software" button on the touchscreen.
 - The version of the terminal software component is indicated in the information field that is now displayed.

1.3 About CCI.GPS

CCI.GPS is an app, that displays GPS information as well as tractor geometry, GPS source and baud-rate settings.

The app enables the entry at a central point of the position of the GPS aerial on the tractor, referenced to the centre-point of the tractor's rear axle.

CCI.GPS makes the position data available to other CCI.Apps.

2 Safety

2.1 Identification of indications in the operating instructions

The safety indications in these operating instructions are specially identified:



Warning - General Hazards!

This occupational safety symbol identifies general safety indications the non-observance of which poses a danger for life and limb. Carefully observe the indications regarding occupational safety and exert particular caution in these cases.



Caution!

This caution symbol identifies all safety indications referring to regulations, directives or working procedures which must be observed. Non-observance can entail damage to, or the destruction of, the terminal as well as malfunctions.



Note

The note symbol highlights operation tips and other particularly useful information.



Information

The information symbol highlights background information and practical tips.

3 Set-up for operation

3.1 Connecting the Terminal

3.1.1 Connecting to a GPS receiver

Depending on the model a GPS receiver is connected to the serial interface RS232-1 of the terminal or to the *ISOBUS*.



3.1.1.1 NMEA 0183 (serial)



Note

Serial interface 1 (RS232-1) of the terminal is factory set as follows: 4800 baud, 8N1. The baud-rate must be matched to the GPS receiver used.

3.1.1.2 NMEA 2000 (*ISOBUS*)

The GPS receiver is connected to the CAN-Bus, no configuration is necessary.

3.1.1.3 Compatible GPS receivers

The correct transfer of GPS messages to the terminal has been tested with the following GPS receivers:

Manufacturer	Model
Cabtronix	SmartGPS5
geo-concept	Geo-kombi 10 GSM
Hemisphere	A100 / A101
John Deere	StarFire 300
Novatel	Smart MR10
Trimble	AgGPS 162
Trimble	AgGPS 262



Note

You can find detailed and current information about GPS receivers and settings at <http://www.cc-isobus.com/produkte/gps>.



Note

The CCI.Apps place different demands on the quality and accuracy of the GPS messages. For navigation (FieldNav) and documentation (CCI.Control) simple data records are sufficient, as provided by inexpensive receivers. For lane guidance and section control (CCI.Command), receivers with Egnos correction and accuracies of 20 to 30 cm are required. From this, different minimum requirements result for the NMEA data records from the receiver. Determine the precise requirement from the respective apps operating instructions.

4 Operation

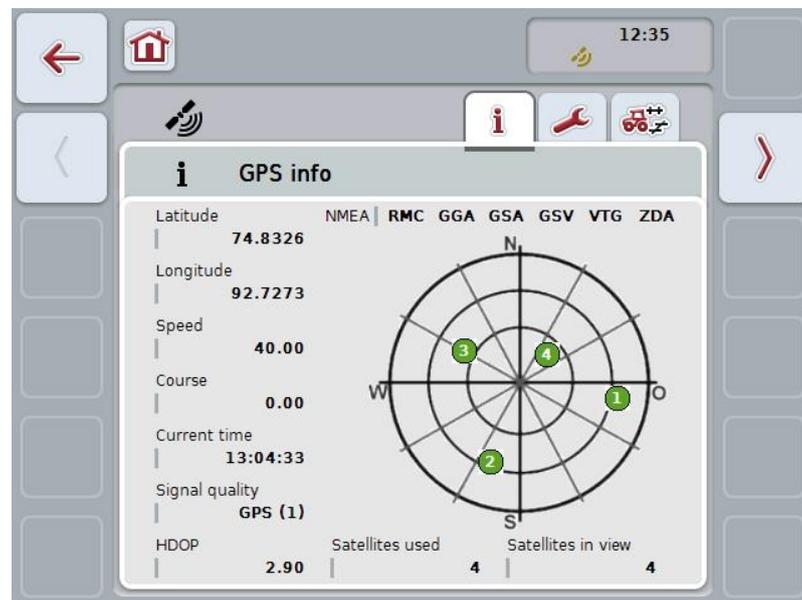
4.1 Program start

CCI.GPS is started automatically by switching on the terminal. There is direct access to all functions via the start screen.

To switch to the CCI.GPS start screen, proceed as follows:

1. Press on the "GPS" button in the main menu of the terminal on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.

→ The following start screen opens:

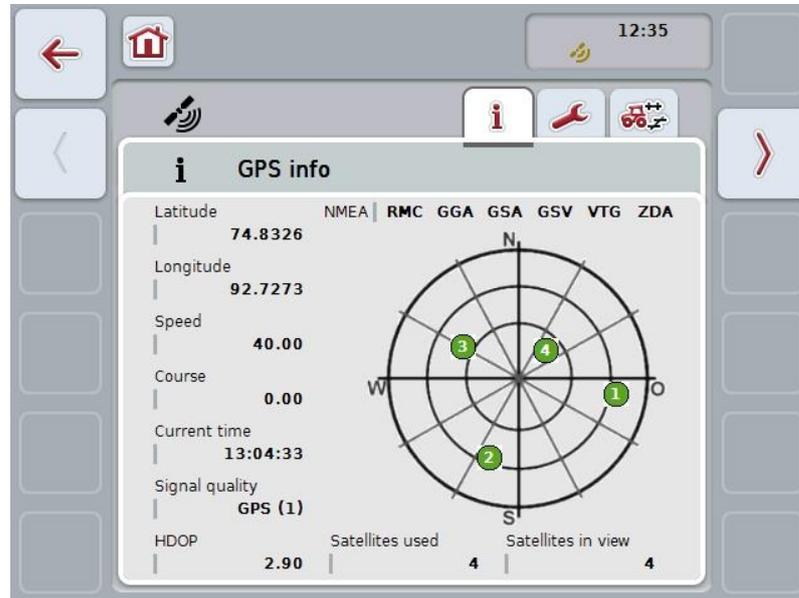


Three tabs are displayed in CCI.GPS. The following information and setting options are organised in these:

- | | |
|---------------------------|--|
| GPS info: | Display of the latest received GPS data. |
| GPS settings: | Display and setting of the GPS source and baud-rate. |
| Geometry settings: | Display and setting of the tractor geometry. |

4.2 GPS info

This tab gives an overview of the latest received GPS data.



The data are displayed if a GPS receiver is connected, the GPS source and baud-rate are correctly selected and the receiver is receiving GPS signals.

The current position with latitude and longitude is indicated in the left half. Below this values for speed, course, time, signal quality and *HDOP* are given. *HDOP* is a quality value for the current GPS signal. A smaller *HDOP* means better GPS quality.

At the top right there is an indication of which message packages the GPS receiver sends (black = sent / grey = not sent).



Note

If the GSV signal is not sent, then no satellites can be displayed on the graticule. This has no effect on functionality. The GSV signal is only used to display satellite positions. With many GPS receivers, the GSV signal is deactivated in the as-supplied state.

4.3 GPS settings

This tab displays the GPS source and the baud-rate.



You have the following operating options:



Select GPS source



Enter baud-rate

4.3.1 Select GPS source

To select the GPS source, proceed as follows:

1. Press on the "GPS source" button on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The following selection list opens:



2. Select the desired GPS source in the selection list. To do so, on the touchscreen press on the button with the GPS source or turn the scroll wheel until the button is highlighted in white. The GPS source then appears in the selection window.
3. Confirm your selection with "OK" or press once again on the GPS source highlighted in white.



Serial or CAN connection of a GPS receiver

There are two options for connection of a *GPS* receiver:

If the receiver has a serial output, then this is connected to the RS232-I input of the *terminal* and this input is selected as the source.

If the receiver has a CAN-Bus line connection option, then this is connected to the *ISOBUS* and in the CCI.GPS, CAN-Bus must be selected as the source.

4.3.2 Select baud-rate

1. To select the baud-rate, proceed as follows:
2. Press on the "Baud-Rate" button on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The following selection list opens:



3. Select the desired baud-rate in the selection list. To do so, on the touchscreen press on the button with the baud-rate or turn the scroll wheel until the button is highlighted in white. The baud-rate then appears in the selection window.
4. Confirm your selection with "OK" or press once again on the baud-rate highlighted in white.



Note

The baud-rate is automatically set if the CAN bus is selected as the GPS source. Manual alteration is not possible.



Note

To receive GPS data from the receiver the baud-rate of the terminal and the GPS receiver must match.

i

Geometry settings

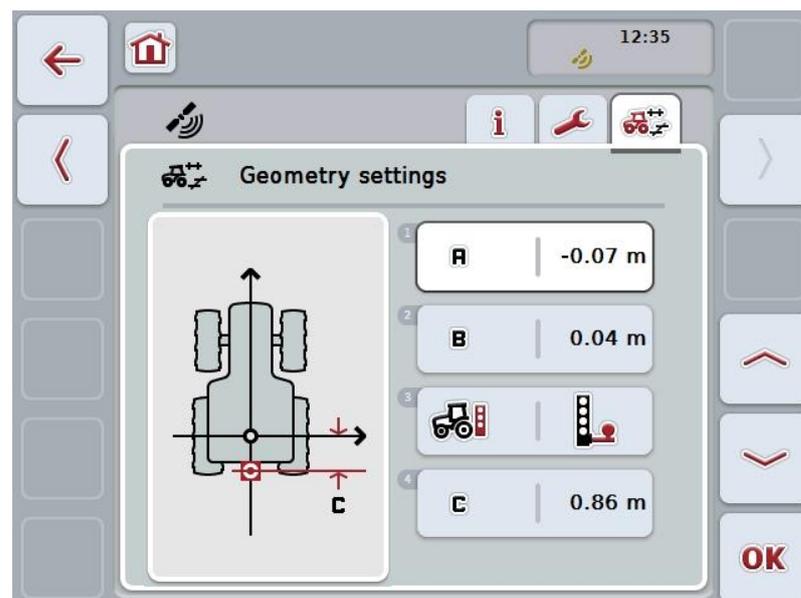
The position of the GPS aerial on the tractor is specified in CCI.GPS. It is very important that you make this entry as accurate as possible!

Only then is *CCI.GPS* able to transfer *GPS* position data referenced to the tractor's reference point (mid-point of the rear axle) to other CCI.Apps.

Most tractors have several mounting options at the rear. In *CCI.GPS*, the distance from the mid-point of the rear axle to the coupling point is entered separately for four different mountings. So that, for example, the correct distance is used in *CCI.Command*, after coupling up of an implement, only the currently used mounting must be selected. If the settings in CCI.GPS were made carefully, re-measuring is no longer necessary. (See also the chapter **Geometry** from the *CCI.Command* operating instructions).

4.4 Geometry settings

In this tab the position of the GPS aerial on the tractor and the distance to the mounting are displayed and their setting is also possible.



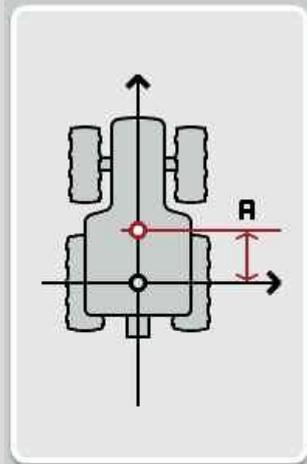
You have the following operating options:

- A** Enter distance A
- B** Enter distance B
-  Select mounting
- C** Enter distance C



Distance A

Distance A refers to the distance between the *GPS* aerial and the tractor reference point in the direction of travel:



Optimally you should mark the mid-point of the rear axle and the position of the aerial on the ground using chalk next to the tractor and then measure this distance.

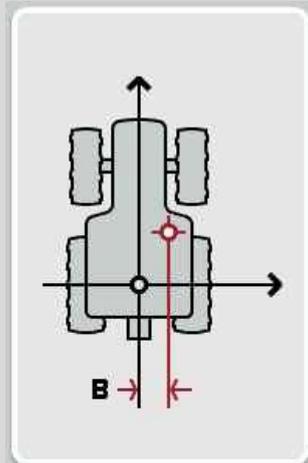
4.4.1 Enter distance A

Proceed as follows to enter distance A:

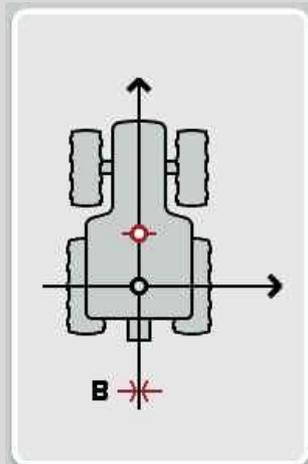
1. Press on the "A" button on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".

i**Distance B**

Distance B describes the distance perpendicular to the direction of travel between the tractor reference point and GPS aerial:



Optimally you should mark the mid-point of the rear axle and the position of the aerial on the ground using chalk next to the tractor and then measure this distance. Fit the aerial centrally (if possible):



In the case shown, distance B can be set equal to 0.00m.

4.4.2 Enter distance B

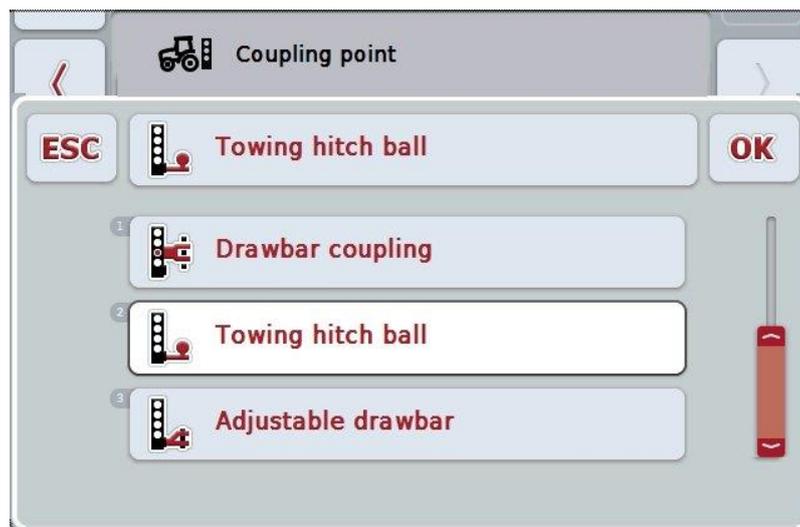
Proceed as follows to enter distance B:

1. Press on the "B" button on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".

4.4.3 Select mounting

To select the mounting, proceed as follows:

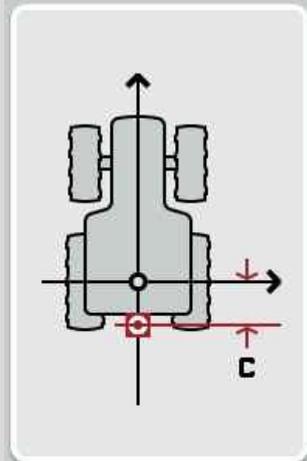
1. Press on the "Mounting" button on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel.
Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
→ The following selection list opens:



2. Select the desired mounting in the selection list. To do so, on the touchscreen press on the button with the mounting or turn the scroll wheel until the button is highlighted in white. The mounting then appears in the selection window.
3. Confirm your selection with "OK" or press once again on the mounting highlighted in white.

i**Distance C**

Distance C refers to the distance between the tractor reference point and the coupling point of the respective mounting in the direction of travel:



Optimally you should mark the mid-point of the rear axle and the coupling point on the ground using chalk next to the tractor and then measure this distance.

4.4.4 Enter distance C

Proceed as follows to enter distance C:

1. Press on the "C" button on the touchscreen or turn the scroll wheel until the button is highlighted in white and then press on the scroll wheel. Once the button is highlighted you can, alternatively, also press the "OK" (F6) button.
2. Enter the value on the touchscreen using the number pad or the slider.
3. Confirm your entry with "OK".

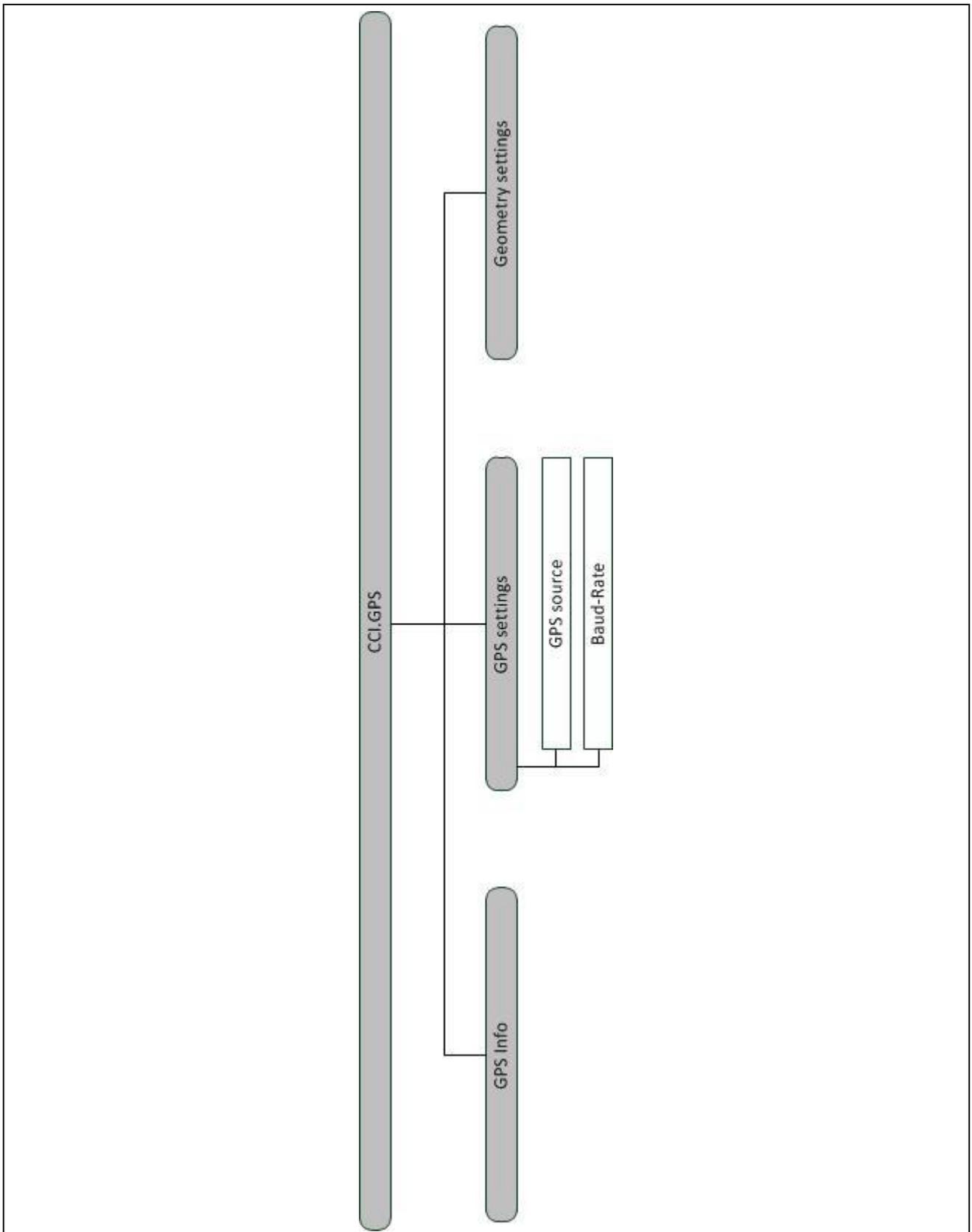
5 Troubleshooting

5.1 Errors during operation

The following overview shows you possible errors when operating with CCI.GPS, their possible cause and how to rectify them:

Error	Possible cause	Rectification/approach
<p>No GPS data are displayed in GPS info.</p>	<ul style="list-style-type: none"> • No power supply at the GPS receiver • GPS receiver not connected to the terminal • Incorrect GPS source selected • Incorrect baud-rate set • Incorrect configuration of the receiver • Incorrect assignment of the cable wiring 	<ul style="list-style-type: none"> • Check the power supply to the GPS receiver • Check the connection of the GPS receiver to the terminal. If serial data are to be used, the RS232-I interface must be used. If CAN data are to be used, the receiver must be connected to the CAN-Bus • Under GPS settings (see chapter 4.3) check whether the GPS source is selected that is currently being used. • When using serial data under GPS settings (see chapter 4.3), set the same baud-rate with which your receiver is configured. • Check which configuration is necessary for your application (see for example Chapter 3.2.2.1 of the CCI.Command operating instructions) and compare this with the current configuration of your receiver. To see how the receiver is calibrated, refer to the operating instructions of your GPS receiver. • Check that the wiring assignments of your cable match the assignments given in these instructions (see chapter 3.1.1.1).

6 Menu structure



7 Glossary

CCI	Competence Center ISOBUS e.V.
CCI.Command	GPS lane guidance and section control
CCI.GPS	GPS settings and tractor geometry
GPS	Global Positioning System. GPS is a system for satellite-supported position determination.
HDOP	Quality value for GPS signals
ISOBUS	ISO11783 International standard for data transfer between farming implements and devices.
Terminal	ISOBUS CCI 100 or CCI 200 terminal
Touchscreen	Touch-sensitive screen for operation of the terminal.

8 Buttons and icons



CCI.GPS



Select GPS source



Select mounting



Enter distance A



Enter distance C



GPS settings



Adjustable drawbar



Drawbar coupling



Change to the right



Change up



Enter baud-rate



Confirm selection or entry



Enter distance B



GPS info



Geometry settings



Towing hitch ball



3-point-hitch



Change to the left



Change down

