kverneland group

IsoMatch GEOcontrol

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Overview of the application
Automatic section control 2
Variable rate application 4
Manual guidance 5
Headland Control 6
Task management and documentation 8
Compatibility 10
GEOcontrol for non-ISOBUS implements 11
IsoMatch Licenses 12
Overview of the screens
Main screen 15
Menu screens 16
Task tab 17
Field tab 19
Data management tab 21
Section control tab 29
System tab 33
Preparing for operation
License key GEOcontrol 37
Connect GPS antenna or external rate source 37
Implement configuration settings 43
Tractor offsets 45
Section control settings 45

see also continuation page

IsoMatch Inline lightbar settings 46
Headland and guidance settings 46
Starting a task
Create a new task 50
Continue task 55
Select task 55
During working
Section control ON/OFF 56
Rate control ON/OFF 58
Zoom level 59
Driving direction 59
Changing section control settings 60
Creating a field boundary 60
Replacing a field boundary 62
Creating a guidance line 63
Headland Control 65
Calibrate GPS position 68
Clearing coverage map and totals 70
Data management
Task data import 71
Exporting task data and html reports 73
Adding data to the lists 74
Clearing the database 75

see also previous page
see also continuation page

Section control settings
General explanation of the section control settings 76
General explanation of the implement settings 78
Recommended settings for Kverneland and Vicon implements 80
Finetuning the section control settings 81
How to calculate the Time ON/OFF 84
Overview of symbols

see also previous page

Overview of the application

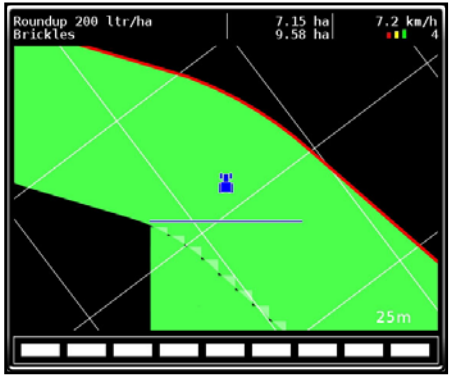
IsoMatch GEOcontrol is an application integrated in the IsoMatch Tellus terminal, providing

- Automatic section control
- Variable rate application
- Task management and documentation
- Manual guidance (in combination with IsoMatch Inline)

- GEOcontrol application

Automatic section control

Based on overlap



The application records current coverage of the implement and will automatically shut off the implement sections when overlapping.

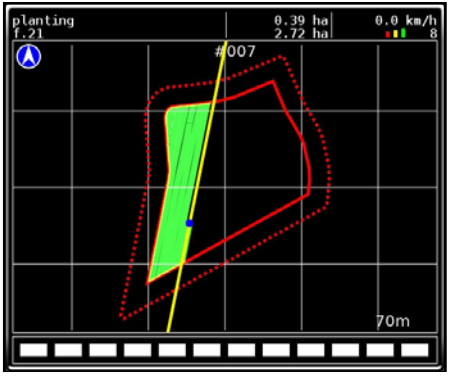
The allowed amount of overlap is settable (0 - 100%).

Automatic section control works irrespective of the overlapping area being a headland or a triangle.

Based on field boundary

The application uses field boundaries as imported from a Farm Management Information System (FMIS). Alternatively the application allows the user to record a field boundary during work. The application will automatically shut off the implement sections when crossing the field boundary. The allowed amount of overlap is settable (0 - 100%).

Based on headland boundary

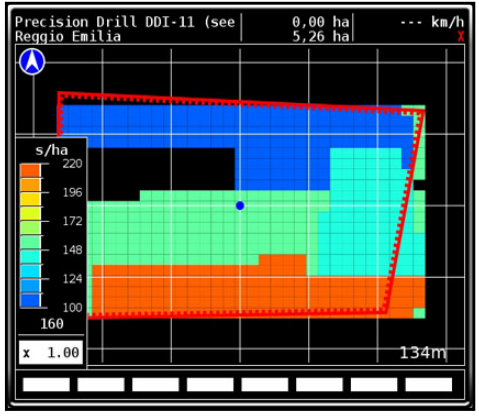


Once a field boundary is created or imported, a headland boundary can be created based on the field boundary. The width of the headland can be set by the user. The allowed amount of overlap is following the percentage used for section control based on overlap.

Be aware that....

- when standing still or reversing, all sections will be shut off.
- the recorded coverage and the field boundary are shown in the application main screen.
- automatic section control can at any time during work be disabled and enabled by the operator.
- automatic section control is available for one implement and one “boom”, with a maximum of 24 sections.
- the coverage of already executed tasks will be stored internally. If an earlier task has not been finished, it can later be re-selected and work can continue based on the stored coverage.
- recorded field boundaries are stored and can later be used again for subsequent operations on the field.

Variable rate application



Based on an application map

The application map can be imported from a FMIS in ISO-xml format. The application determines the required application rate for the current boom position and automatically sets the required rate to the device.

Based on an external sensor (e.g. crop sensor)

When an external sensor is connected, the application will forward the received application rate from the external sensor to the connected implement.

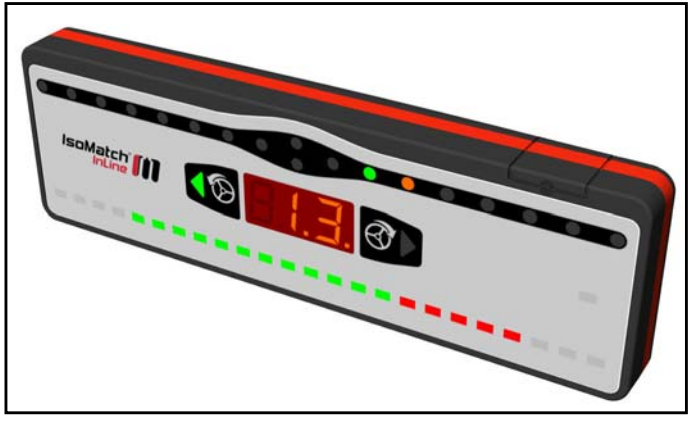
Be aware that

- Variable rate application is available for one implement and one "boom".
- Variable rate application can at any time during work be disabled and enabled by the operator.
- Application maps can be generated on a FMIS or by a crop consultancy company, using ISO-xml task-data.
- For precision seed drills which support variable rate, the application is done only in seeds/ha.

Multiplication factor

When applying a variable rate, either based on an application map or on an external sensor, there is a possibility to apply a multiplication factor. The set rate is multiplied with the number in the lower left corner of the GEOcontrol screen (see the screenshot on the previous page), here this number can also be altered. The new rate is directly applied on the implement and for logging.

Manual guidance

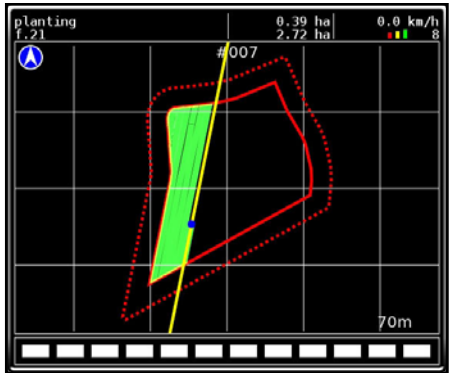


In combination with the IsoMatch InLine, the application provides manual guidance as a steering assist to navigate the tractor and implement across a specified path through the field.

The user can choose to record straight or curved lines while recording the line, which offers the possibility to record straight and curved segments on the same line.

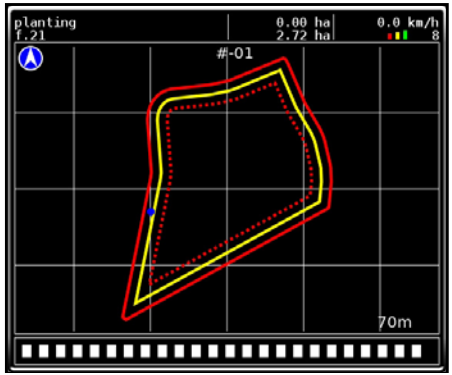
The guidance line is propagated to the left and the right with a user specified distance.

Headland Control



The application allows for headland specific behaviour for section control and manual guidance. With the headland control feature, it is possible to

- work the field interior before working the headland. The application will shut off the sections based on the automatically generated headland line



- get guidance while working the headland, on a guidance line parallel to the field boundary.

The distance of the headland guidance line to the field boundary is settable.

The Headland Control toggle button in the main screen appears as soon as a field boundary is available. It allows for toggling between 3 states to

- work the entire field, use the recorded guidance line.

In this state, the application works regularly and will make no difference between main field or headland.

- work the headland, use the headland guidance line.

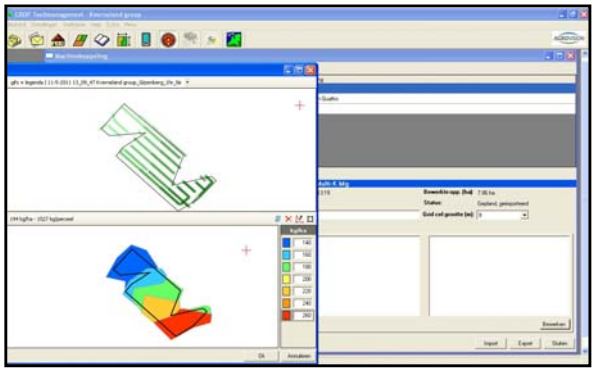
- work the main field only, use the recorded guidance line.

Task management and documentation

Registration of totals and as-applied data

During work, the application will automatically record task totals as received from the implement. For every new task that is started, the application records a new set of totals. By the same means, as-applied data will be recorded from the implement. The choice of recorded data depends on the availability in the implement.

Data exchange with Farm Management Information Systems (FMIS)



The application can import a set of task data from an FMIS. The imported task data may consist of

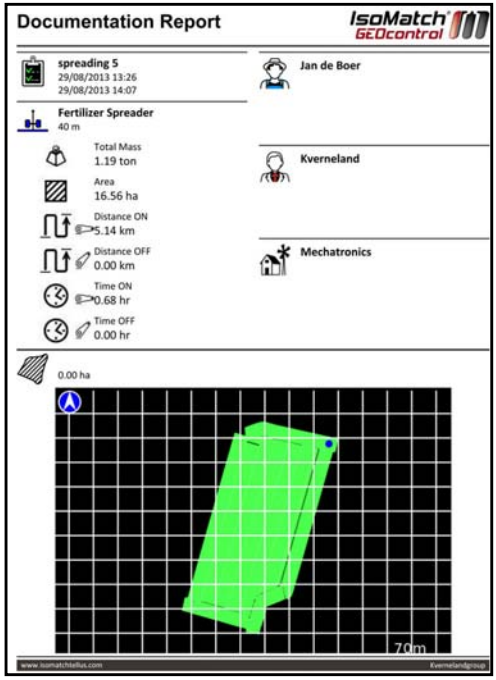
- lists of customers, farms, fields, workers and products,
- planned tasks,
- variable rate application maps,
- field boundaries,
- guidance lines.

In the application, the planned tasks can be selected for execution. Alternatively, new tasks can be generated based on the available lists of customers, farms, fields and products.

After the tasks are finished, these can be exported to a USB-stick. The exported data will consist of all task related data including totals, as-applied data, used devices and start and end time.

The exported data can be imported again in a FMIS for administration purposes.

Exporting taskdata will be done in parallel with exporting task reports in html (see below).



Creating of task reports in html

The application allows for exporting of finished tasks as html reports. The report will consist of a coverage map of the task, task totals and task information as customer, farm and field, and start and end time.

Managing the data

The application allows for editing, adding and deleting data. Unused entities as for example retired fields can be deleted from the system. The operator can also add meta-data, as for example contact details of customers.

Compatibility

Compatible devices

For the above mentioned functionality, the application uses the ISO11783-10 Task Controller protocol to communicate to connected implements. Not all ISOBUS implements support task control. A list of supported systems is available on **www.isomatchtellus.com**.

Compatible data exchange to FMIS

Task planning, variable rate application maps and data export is done using the ISO11783-10 ISO-xml Taskdata format. A list of supported systems is available on **www.isomatchtellus.com**.

Compatible GPS antennas

The application can obtain GPS positioning signal from most commercially available GPS antennas through the NMEA0183 serial protocol. A list of supported systems is available on **www.isomatchtellus.com**.

Compatible external rate sensors

The application can obtain an setpoint application rate from an external source, e.g. a crop sensor or a PDA through a serial protocol. A list of supported systems is available on **www.isomatchtellus.com**.

GEOcontrol for non-ISOBUS implements

When working with a non-ISOBUS implement, there is the possibility of configuring the Tractor ECU as a virtual implement, matching the actual implement that you are working with. This can be used to create a coverage map while not using an ISOBUS implement. In order to use this functionality, make sure that:

- Tractor ECU is activated
- Tractor ECU task controller is active
- Tractor ECU implement settings are set to match the actual implement
- No other ISOBUS implements are connected to the system

For further information refer to the Tractor ECU manual.

Variable rate application

When the implement you are working with uses an external rate signal, or you are working with an application map, it is also possible to use this rate for logging. As soon as a task is started and the supplied rate is shown in the lower left corner of the GEOcontrol screen, this rate is logged for later export.

IsoMatch Licenses

IsoMatch GEOcontrol is a licensed application in the Isomatch Tellus terminal. The terminal is delivered with a 25 hr demo-license, which will count down while using the licensed features of the application. After the 25 hr has expired, the application's functionality will be limited. The user must obtain and enter a valid license keys to enable functionalities.

GEOcontrol Limited

When no valid IsoMatch GEOcontrol license key is entered, the functionality of IsoMatch GEOcontrol is limited to:

- Registration of totals
- Importing and exporting tasks on a usb stick
- Variable rate application based on external sensor
- Manual guidance
- Coverage logging

IsoMatch Tellus

On IsoMatch Tellus full GEOcontrol functionality is unlocked by entering the IsoMatch GEOcontrol license. Please refer to the ➲IsoMatch Tellus user manual for instructions.

IsoMatch Tellus GO

The IsoMatch Tellus Go has two levels of licenses.

- **IsoMatch GEO-SC**

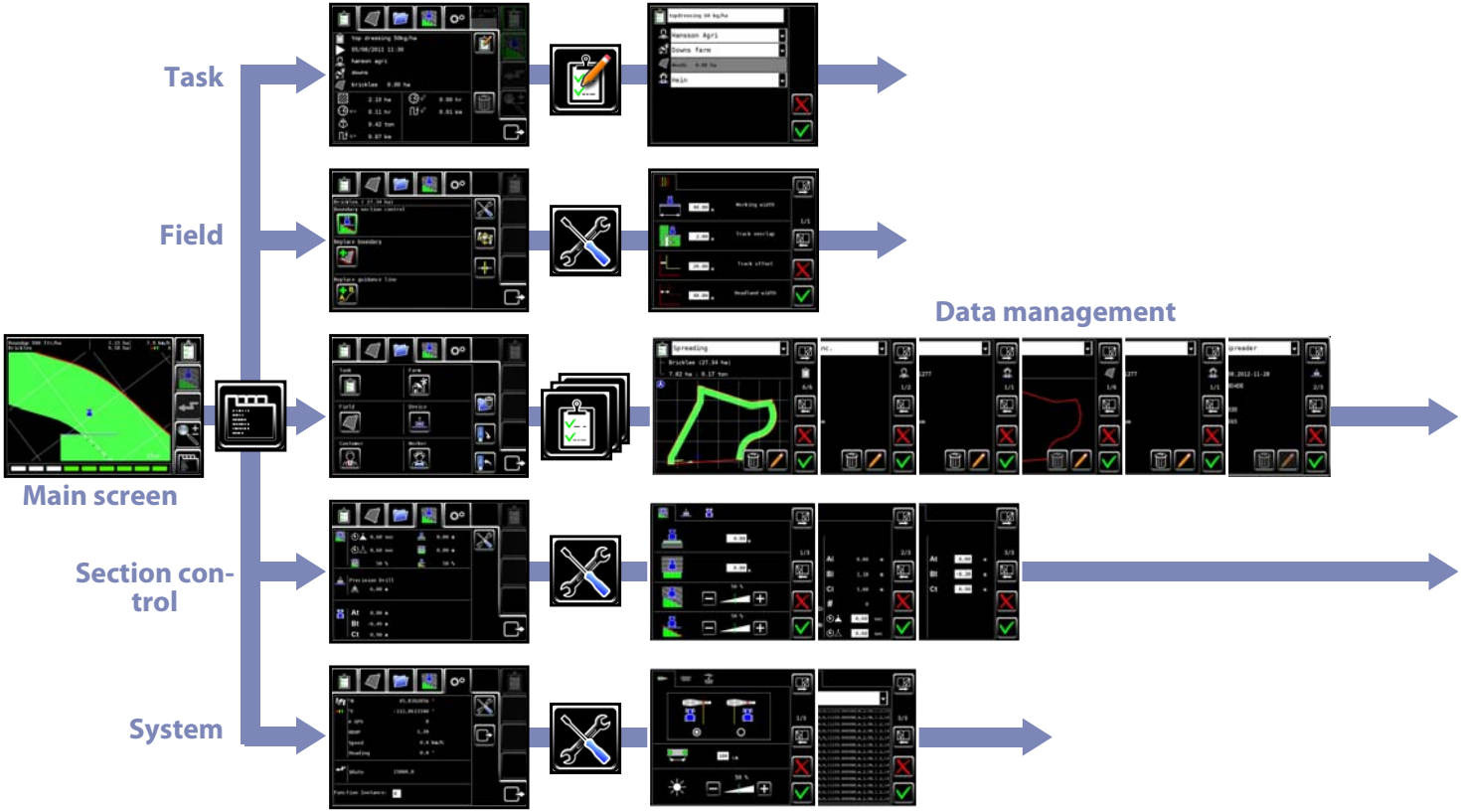
This license will enable Section control functionality, this functionality is used to shut down the sections of your device outside of the field boundary or in case of overlap.

- **IsoMatch GEO-VR**

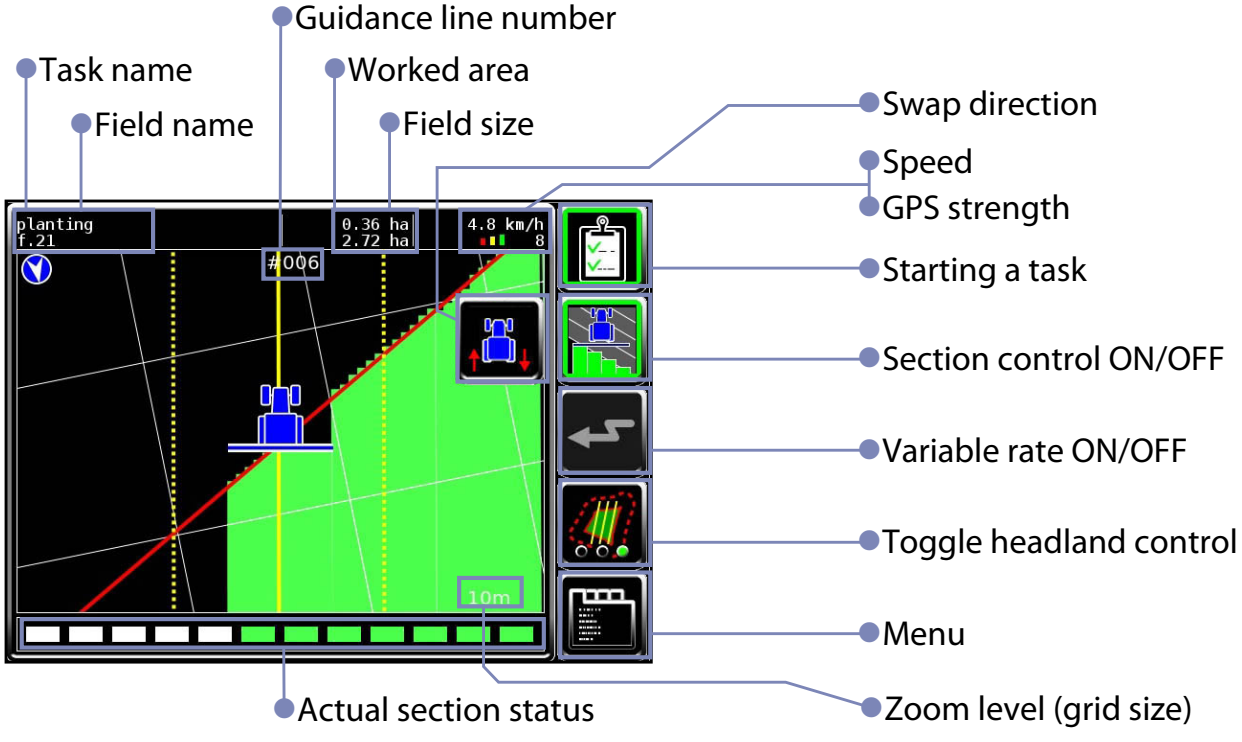
This license will enable variable rate functionality through application maps, this is required to apply a product based on application maps, which can be made by specialised companies or farm management information systems.

Please refer to ➲IsoMatch Tellus Go user manual for instructions on entering licenses.

Overview of the screens

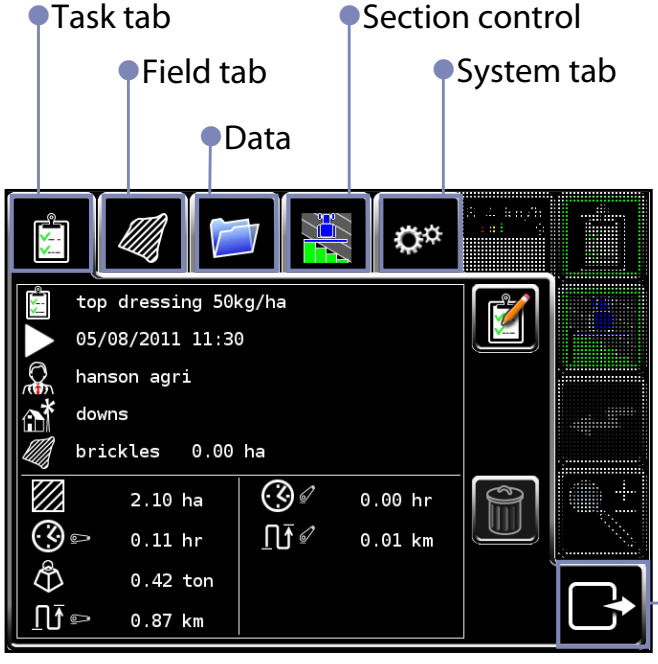


Main screen


Guidance line number
Task name
Worked area
Field name
Field size
Swap direction
Speed
GPS strength
Starting a task
Section control ON/OFF
Variable rate ON/OFF
Toggle headland control
Menu
Zoom level (grid size)
Actual section status
planting
f.21
#006
0.36 ha
2.72 ha
4.8 km/h
8
10m

Menu screens

▶To go to the menu, press the **Menu** button. The menu will appear, offering 5 tabs. These are explained in the following paragraphs.



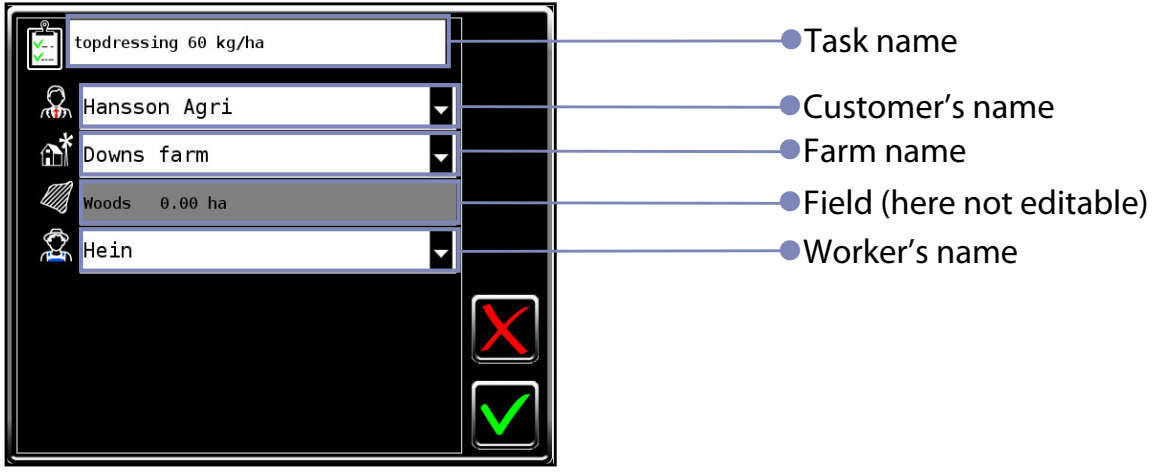
Task tab

- Task name
- Edit
- Local date and time
- Customer
- Farm
- Field area
- Clear task
- Field record totals

▶To edit task information, press the **Edit** button.

Info! The editing is available for locally created tasks only!

The edit task screen submits to edit task data settings.

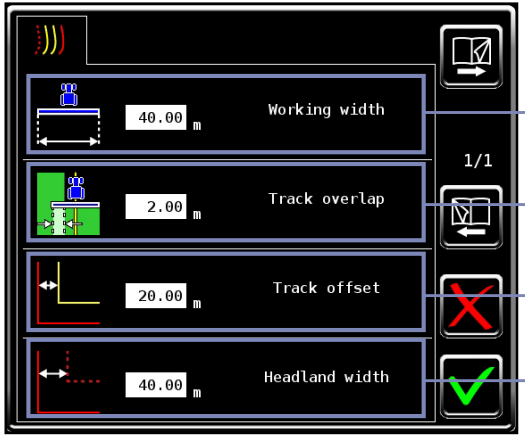


Field tab

- Field settings button
- Boundary section control ON/OFF
- Calibrate GPS button
- Create/replace boundary
- Shift guidance line button
- Create/replace guidance line

▶To edit the field settings, press the **Field settings** button.

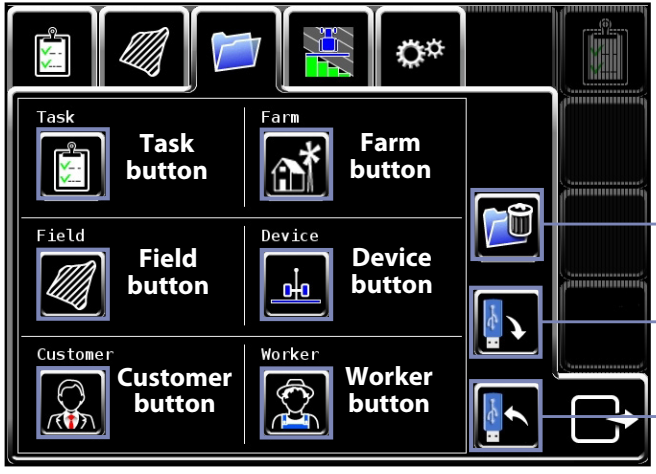
Field settings screen



- Width covered by the implement
- Overlap between two parallel cultivations (a negative overlap leaves a gap between cultivations)
- Offset from field boundary to the first headland guidance line
- Width of the headland

Important! The working width can be changed, but will be updated with the working width supplied by the implement, upon restart or when the implement geometry is changed. When an overlap between two consecutive cultivations is desired, use the 'track overlap' setting.

Data management tab

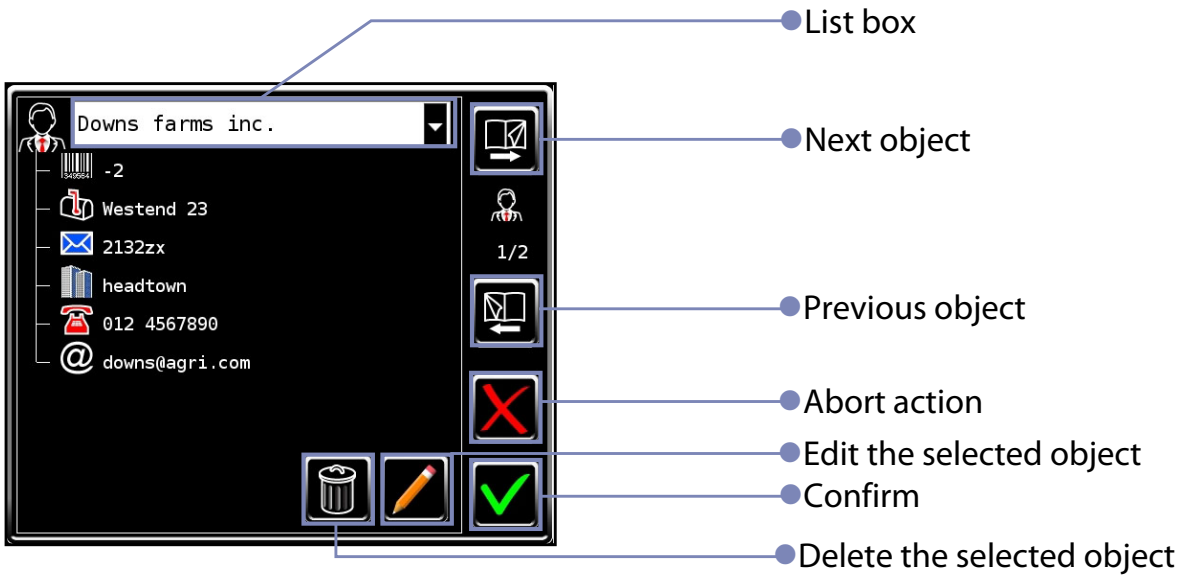


- Clear database button
- Import data from USB stick
- Export data to the USB stick

Info! The editing is available for locally created tasks only!

Info! Editing is only allowed if no task is running!

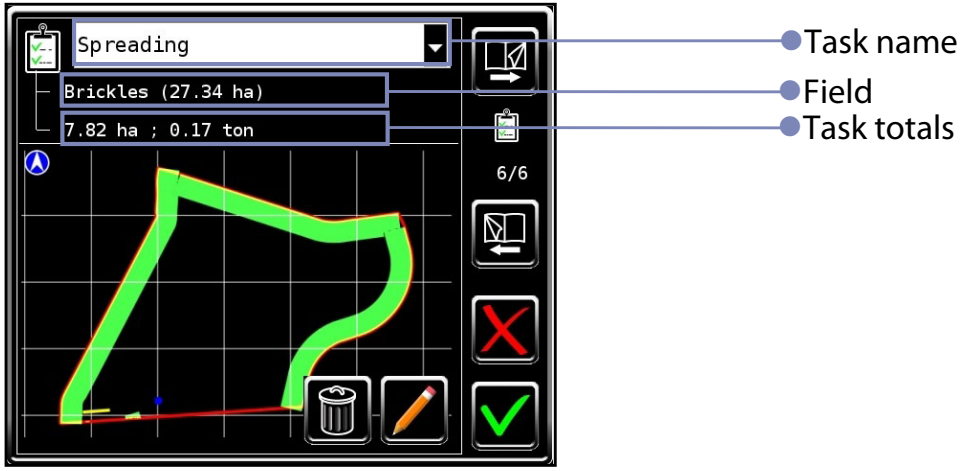
▶To edit data, press the corresponding **Edit** button.
This screen offers adding and editing data.



▶Press **<new>** in the list box to add a new object.

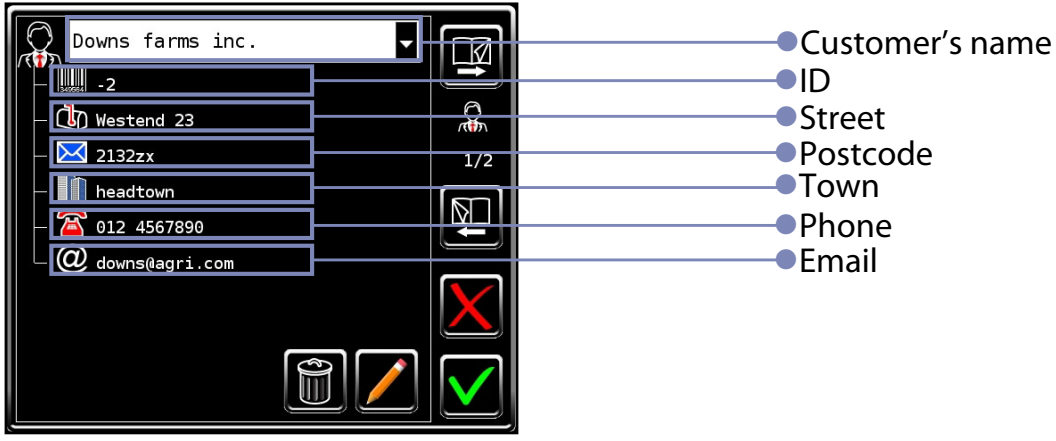
Task page

This page provides task information.



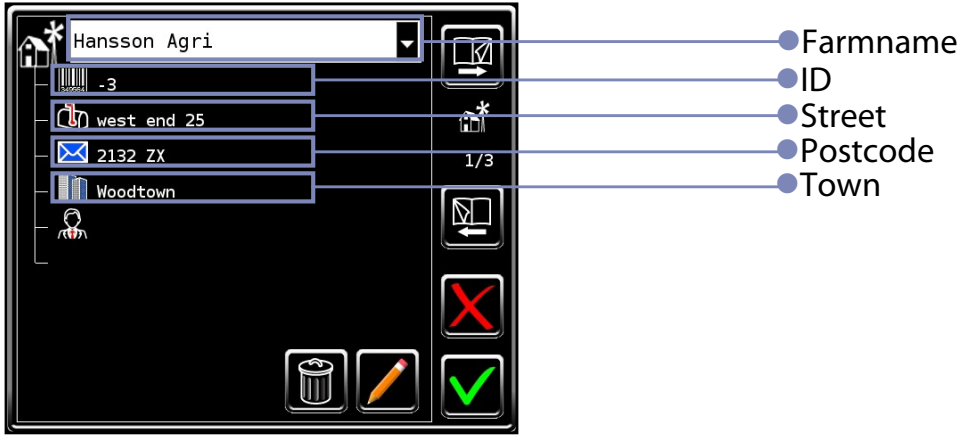
Customer page

This page provides customer information.



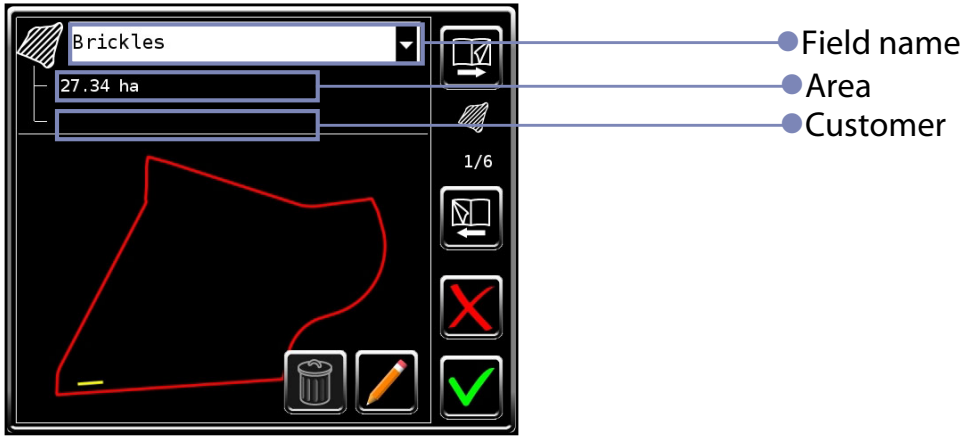
Farm page

This page provides farm information.



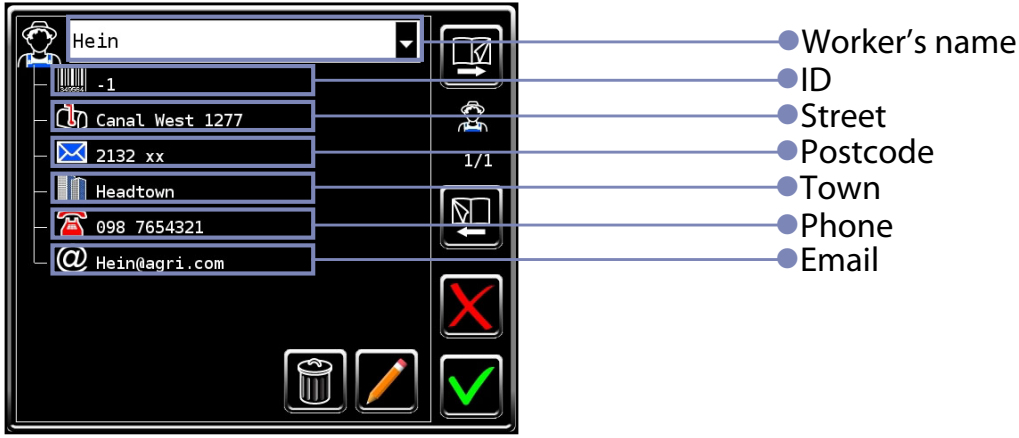
Field page

This page provides field information.



Worker page

This page provides worker information.



Implement page

This page provides implement information.

Section control tab

Section control settings button

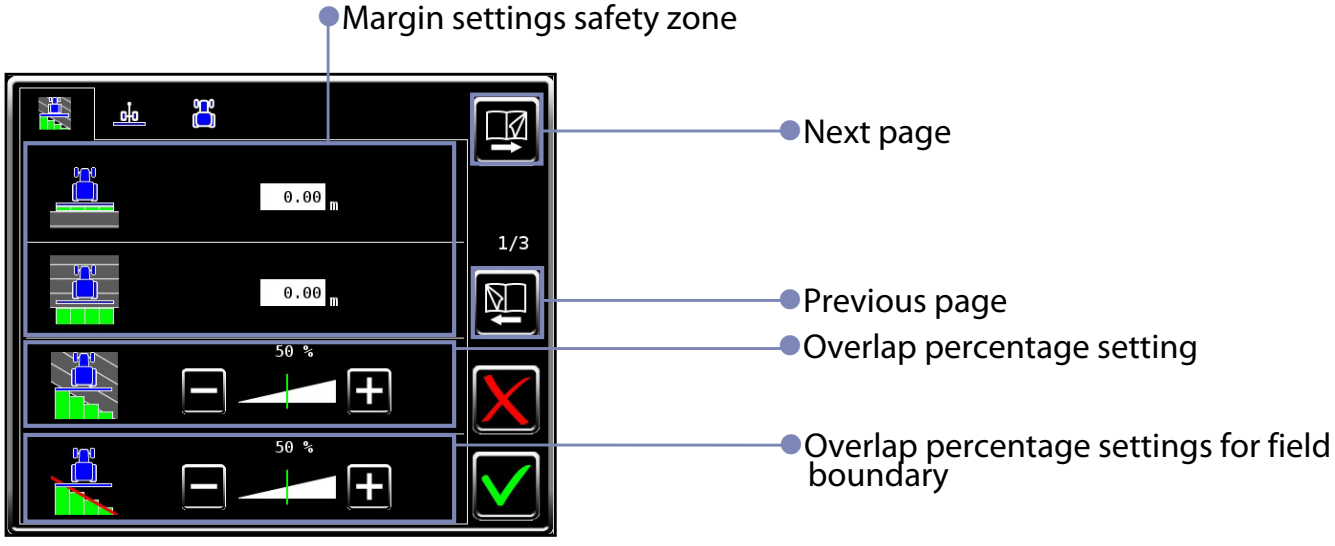
Overlap settings

Implement settings

Tractor settings

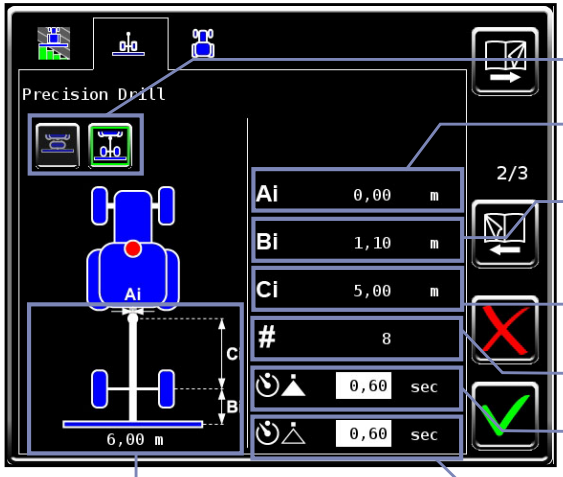
▶To edit the section control settings, press the **Section control settings** button.

Overlap settings screen



Info! For instruction on how to do the settings, refer to ➲Section control settings.

Implement settings screen

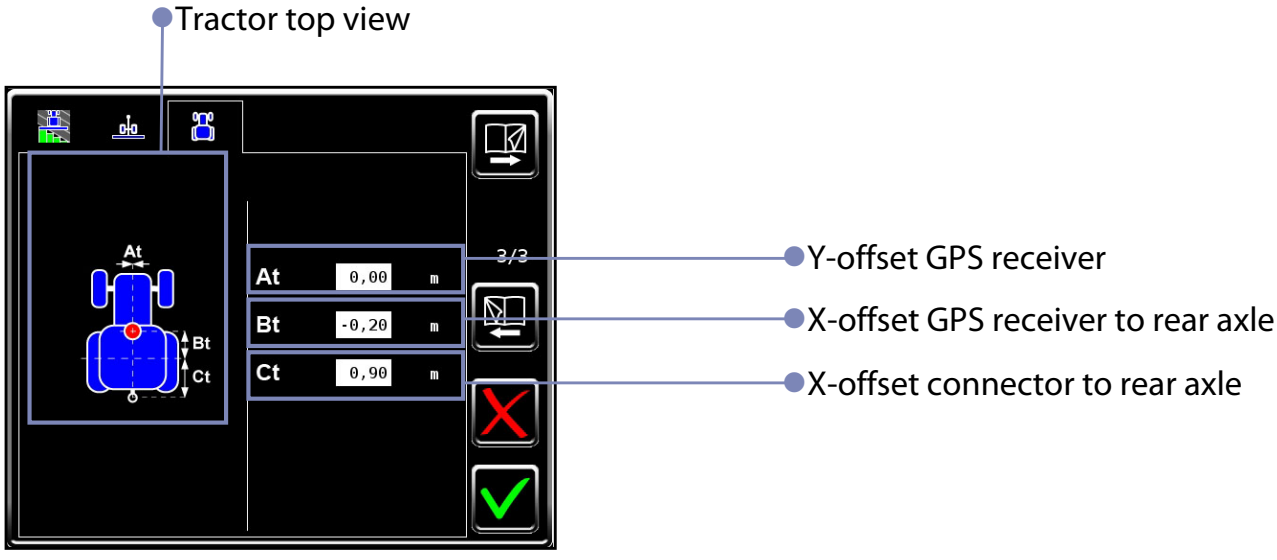


- Choose connection type
- Y-offset
- X-offset connection point to section (hitched implement)
- X-offset implement axle to section (trailed implement)
- X-offset connection point to implement axle (only trailed implement)
- Number of sections
- Time on
- Time off
- Implement top view

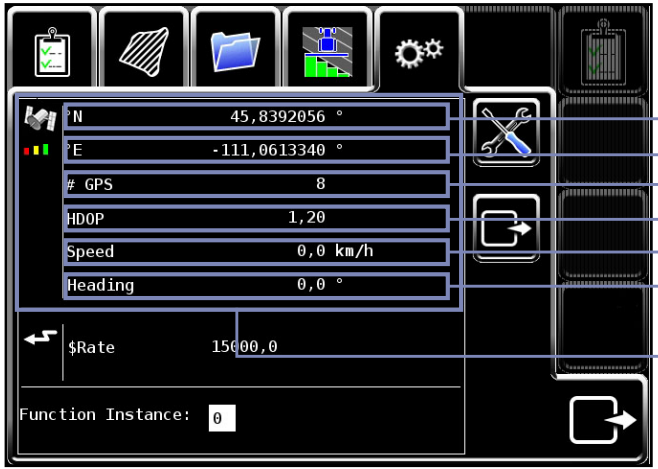
If the data cannot be edited here, refer to the ➲implement configuration screens.

Info! In case of multiple axles on the implement, use the front axle as reference.

Tractor settings screen

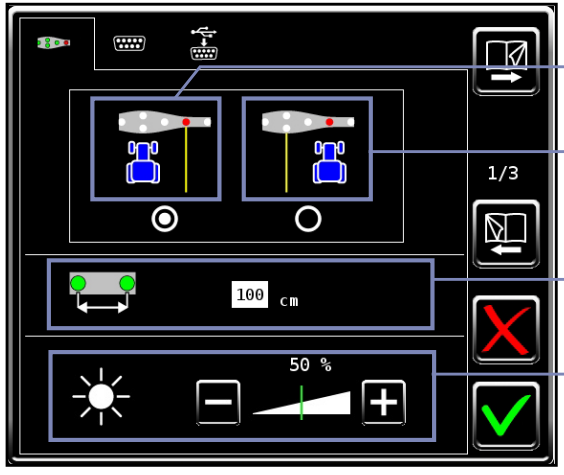


System tab



▶To edit system settings, press the **Settings** button.

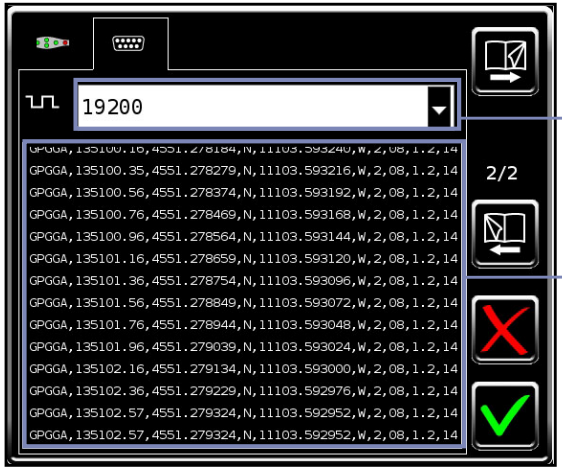
IsoMatch InLine settings screen



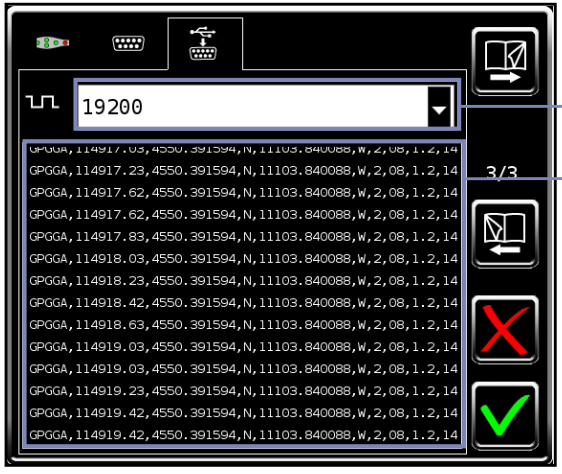
Guidance mode:

- Steer away from the LED indication
- Steer towards the LED indication
- Indication of offset from the line per LED
- Brightness of IsoMatch Inline

Serial port settings screen



USB-serial port settings screen



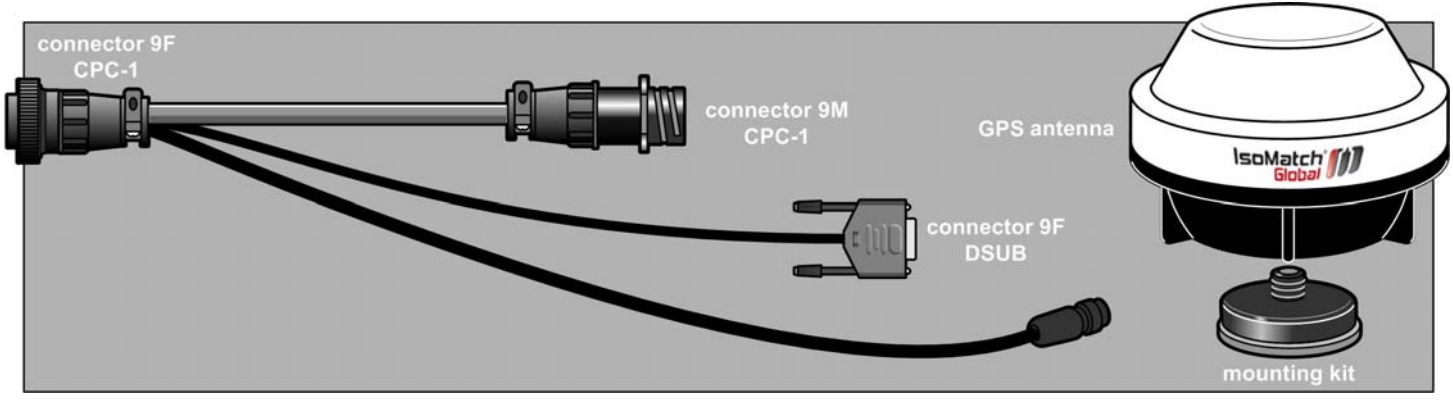
Preparing for operation

License key GEOcontrol

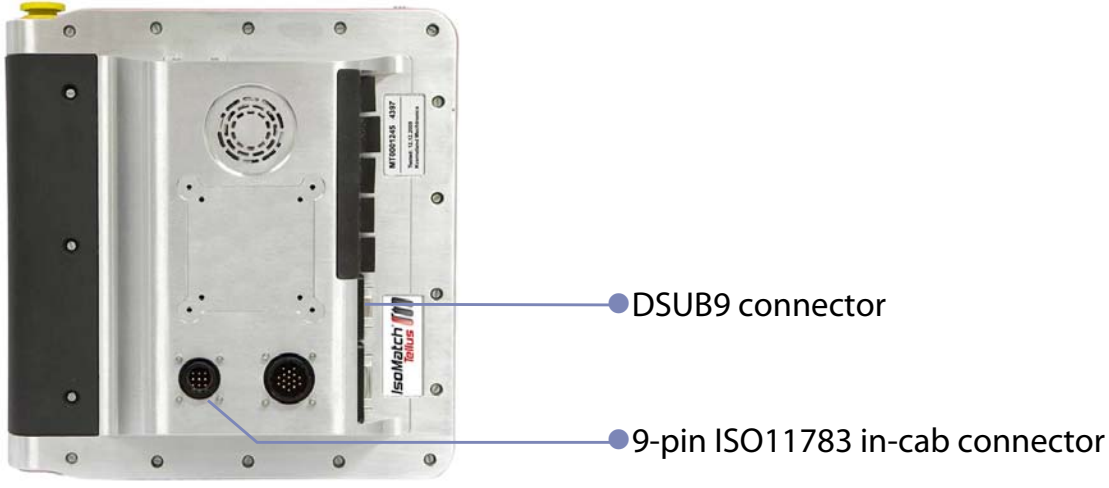
After the 36 hours demo license are spent, obtain a license key for GEOcontrol. Please refer to the ➲IsoMatch Tellus user manual for instructions.

Connect GPS antenna or external rate source

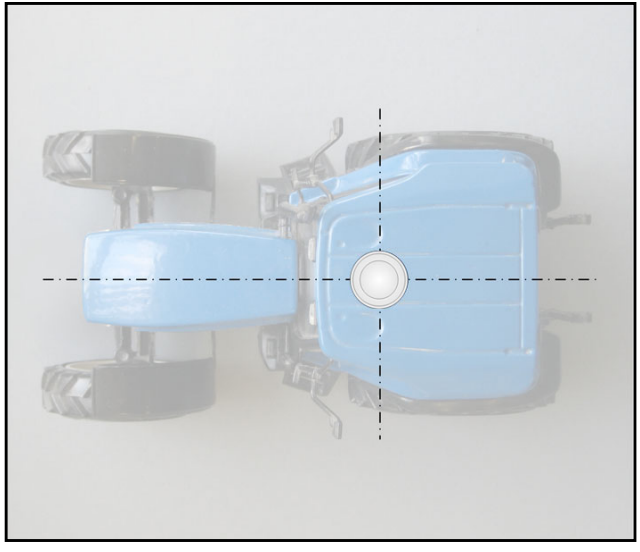
IsoMatch Global GPS antenna.



The IsoMatch Global GPS antenna can be connected to the IsoMatch Tellus.



- Connect the 9-pin in-cab connector of the IsoMatch Global GPS antenna to the back of the IsoMatch Tellus for power supply.
- Connect the DSUB9 connector of the IsoMatch Global GPS antenna to the DSUB9 connector for GPS messages on the side of the IsoMatch Tellus.



The recommended position for installing the IsoMatch Global GPS antenna is centered in long axis on top of the tractor cabin roof, as much as possible to the front.

3rd party GPS antenna

When using a 3rd party GPS antenna, connect this to the IsoMatch Tellus serial DSUB9 port.

Serial port specification	
Pin assignment	
●2	●Rx
●3	●Tx
●5	●Signal ground
●other	●Not used
Communication	
●protocol	●NMEAO183-$GPGGA message
●baudrate (kbps)	●4800, 9600, 19200, 38400, 59600, 115200
●update rate	●5 or 10 Hz

External rate source

When using an external rate source, connect this to the IsoMatch Tellus serial DSUB9 port.

Serial port specification	
Pin assignment	
●2	●Rx
●3	●Tx
●5	●Signal ground
●other	●Not used
Communication	
●protocol	●Kverneland Group $RATE message
●baudrate (kbps)	●4800, 9600, 19200, 38400, 59600, 115200
●update rate	●1 Hz (preferred)

Serial port settings

In ➲Menu ➲System tab ➲Serial port settings screen, set the baudrate according to the source.
You can verify if the data is correctly received by checking if the raw data is received.

USB-serial port settings

To connect an external rate source in parallel with a GPS antenna, use the optional USB-serial adapter cable to allow for a second serial input on the terminal.

The serial port specifications are identical to that of the IsoMatch Tellus serial DSUB9 port.

In ➲Menu ➲System tab ➲USB-serial port settings screen, set the baudrate according to the source.

You can verify if the data is correctly received by checking if the raw data is received.

Implement configuration settings

▶Connect the implement to the ISOBUS system.

For the implement it is required to:

▶enable task control support

▶set the right geometrical configuration

- offsets
- number of sections
- time on/time off
- section's widths

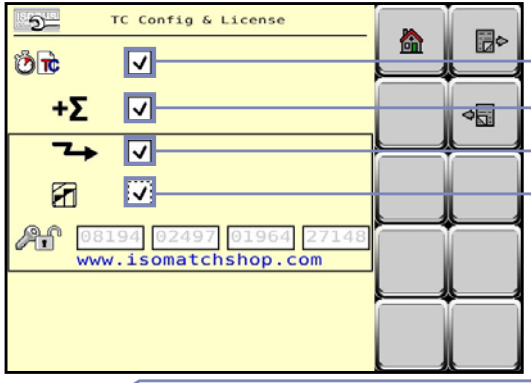
Important! The time latency has been replaced with separate Time ON and Time OFF values, if these cannot be changed in the implement configuration screen, edit these in the section control settings.

In ➲Menu ➲Section control tab, the implement geometry configuration can be reviewed.

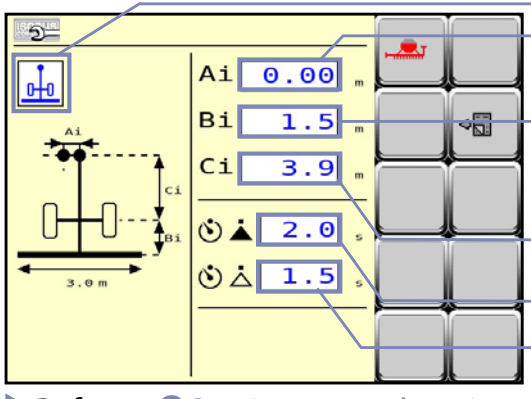
Info! If the data cannot be edited here, do this in the implement configuration settings.

Info! If the changes don't take effect immediately, restart the terminal (or reconnect the implement).

Implement setup screen for Kverneland and Vicon implements



- Enable task control support
- Enable totals reporting
- Enable rate commands
- Enable section control commands



- Choose connection type
- Y-offset. Positive values indicate offset to the right.
- X-offset for trailed implement: implement axle-application point.
- X-offset for hitched implement: connection point-application point.
- X-offset only for trailed implement: connection point- implement axle.
- Time on
- Time off

▶Refer to ➲Section control settings, to adjust the settings to your personal demands.

Tractor offsets

In ➲Menu ➲Section control tab, set the tractor geometrical offsets.

- Antenna offset
- Hitch offset

Section control settings

▶In ➲Menu ➲Section control tab, set the overlap settings

- Margin on
- Margin off
- Overlap percentage
- Boundary percentage

▶Refer to ➲Section control settings, to adjust the settings to your personal demands.

IsoMatch Inline lightbar settings

▶In ➲Menu ➲IsoMatch InLine settings screen, adjust the settings for the optional IsoMatch InLine lightbar.

- Lightbar mode:
  Steer towards the LED indication
  Steer away from the LED indication
- Indication of offset from the line per LED
- Brightness of the IsoMatch InLine

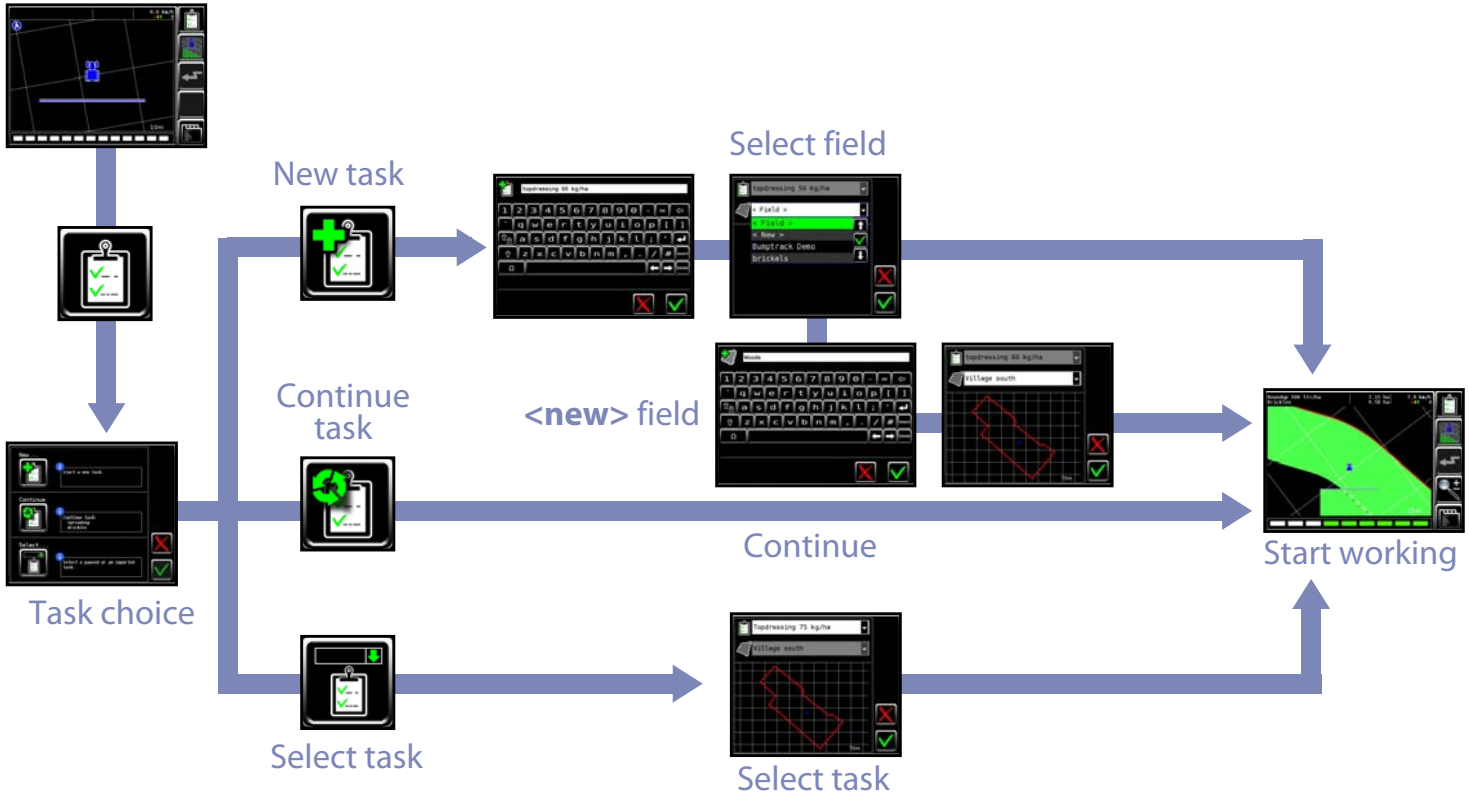
Headland and guidance settings

▶In ➲Menu ➲Field tab ➲Field settings screen, set the headland and guidance offsets.

- Width of headland
- Distance between guidance lines
- Offset from field boundary to the first headland guidance line

By default these values will be adapted to the connected machine, but these can at any time be adjusted to your preferences. The adjusted values will be stored per machine.

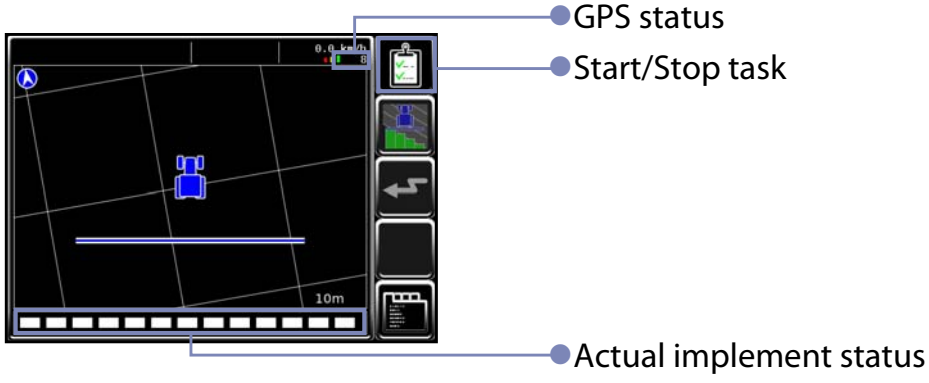
Starting a task



Important! Before starting a task, reassure that

- the GPS (➲GPS status) and
- the implement (➲Actual implement status) is connected.

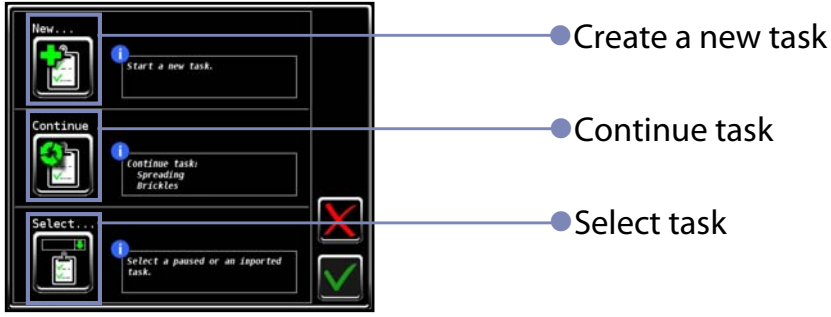
Do not start on the farm or on the road yet, but wait until you are in the field.



To start working with the application, you need to start a task. Proceed as follows:

▶Press the **Start Task** button.

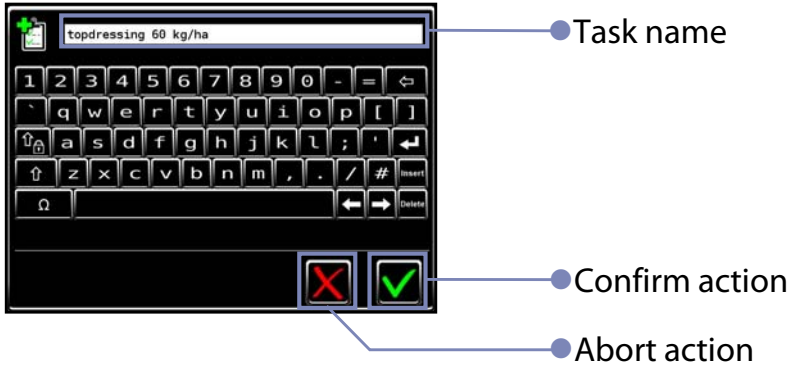
A popup window appears offering 3 choices



Create a new task

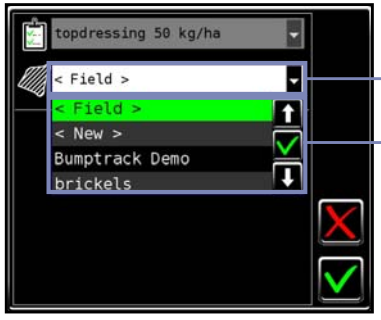
Select this option to start a new task. The task will start with a cleared coverage and totals.
Upon creating of a new task, a field can be selected or created.

▶Press the **New task button**..

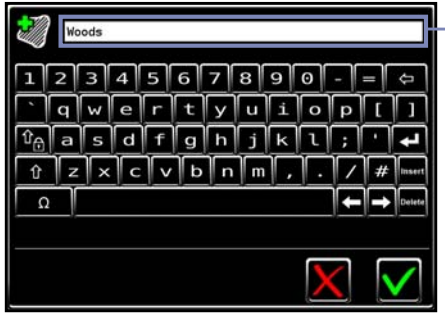


▶Enter a task name. For example "top dressing", or "herbicide".
▶Confirm.

▶Optionally select a field from the list, or create a new field



▶When selecting **<new>**, a screen will appear for entering a field name.



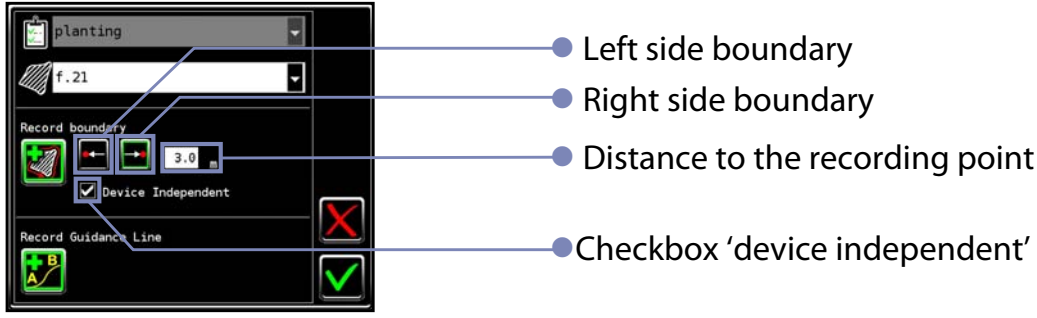
▶ Enter a new field name and confirm.

After creating a new field, you can choose to record a boundary and a guidance line for this field.

Create boundary button

Create guidance line button

▶Select to create a boundary for this field.



If a device is connected, you can allow recording dependent of the device. In this case the boundary will be recorded while the device is in work.

- ▶Uncheck the ‘device independent’.
- ▶Select if the boundary is at the right or left side of the boom.

To record a boundary independent of the device,

- ▶check the ‘device independent’.
- ▶Enter the distance from the tractor to the recording point.
- ▶Select if the boundary is at the right or left side of the tractor.

If no device is connected,

▶Enter the distance from the tractor to the recording point.

▶Select if the boundary is at the right or left side of the tractor.

The recording of boundary will commence during working.

Info! For more information about boundary recording, refer to ➲Creating a field boundary.

▶Select to create a guidance line for this field.

Info! For more information about creating a guidance line, refer to ➲Headland Control.

▶Confirm to start working.

Continue task

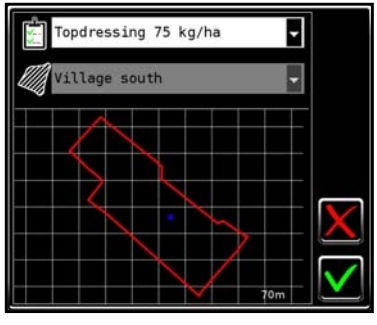
▶Select this choice to continue the previously executed task. The coverage and totals of that task will be reloaded.

The task will start immediately after this button is pressed.

Select task

▶Select this choice to select a task from the list.

The list of tasks will consist of all previously created tasks and/or planned tasks that are imported as taskdata from a FMIS. The list of tasks can not be edited, i.e. it is not possible to change the field that is selected for that task.



▶Confirm to start working.

During working

During work, the following functions are active....

- Automatic section control
- Variable rate application
- Documentation of totals
- Documenation of as applied data
- Manual guidance

Section control ON/OFF

As soon as a GPS signal is available and the implement has section control capabilities, automatic section control will by default be enabled. At any time during work, the operator can deactivate automatic section control.

▶Press the automatic section control toggle button to deactivate or activate.

The status of automatic section control is indicated by the button's border colour.

- No color indicates automatic section control is OFF.

- Green color indicates automatic section control is ON.

- Yellow color indicates that the implement did not accept section control commands.

▶Check the device configuration.

- Red color indicates that there is no license to do section control.

▶Please refer to ➲IsoMatch Licenses

⚠ The operator is responsible for the correct functioning of automatic section control. At all times, assure yourself of the correct functioning of the system. Possible error causes may be incorrect section control settings, or error in the GPS positioning signal.

If the automatic section control result is not as intended, refer to the chapter ➲Section control settings to change.

As soon as GPS signal is lost, automatic section control will toggle off. After GPS returns, the automatic section control toggle must be enabled again by the operator.

Boundary section control ON/OFF

Alternatively it is possible to de-activate boundary based section control only.

In ➲Menu ➲Field tab, ▶press the field boundary toggle.

When toggled off, the boundary wil appear grey in the map.

Rate control ON/OFF

As soon as a task starts and the task includes a prescribed application rate and the implement has VRA capabilities, variable rate application will by default be enabled. At any time during work, the operator can deactivate variable rate application.

▶Press the variable rate application toggle button to deactivate or activate.

The status of variable rate application is indicated by the button's border colour.

- No color indicates variable rate application is OFF.

- Green color indicates variable rate application is ON.

- Yellow color indicates that the connected device does not support variable rate application.

▶Refer to the connected ➲device manual.

- Red color indicates that there is no license for variable rate application.

▶ Please refer to ➲IsoMatch Licenses

When working with an application rate map, GPS is required to vary the rate based on position. If GPS signal is lost, a default rate (as defined in the FMIS) will be sent.

⚠ The operator is responsible for the correct functioning of variable rate application. At all times, assure yourself of the correct functioning of the system. Possible error causes may be an incorrectly created variable rate application map, or error in the GPS positioning signal.

Zoom level

▶ Tap on the map to zoom the map.

Zoom levels are 10, 25, 50 meter and a field view centered on the field

Driving direction

The application calculates based on GPS position if the tractor is driving forward or reverse. When reversing, the application will produce an audio signal.

When reversing, a **Swap direction** button will appear.

▶ Press the **Swap direction** button, if the calculated driving direction is accidentally wrong.

Changing section control settings

During work, the section control settings can be changed in the section control setup.

➲Menu ➲Section control tab.

A guideline on how to change the section control settings is provided in chapter ➲Section control settings.

Creating a field boundary

When during starting of the task, **New boundary** is selected, boundary recording will be activated as soon as the task starts. The following buttons are available:

- Auto recording
- Point recording
- Finish recording

Auto recording, device dependent

This applies when the checkbox 'device independent' was not checked at task starting.

This button will be toggled ON by default, which means, the boundary will automatically be generated while working.

To stop auto recording temporarily,

▶press the button and auto recording will now be toggled OFF. The green border will disappear.

▶Press the button again to continue recording. The green border will show up again.

Auto recording, device independent

This applies when the checkbox ‘device independent’ was checked at task starting.
This button will be toggled OFF by default.

To start recording the boundary

▶press the button again to toggle recording ON.
A green border will show up around the button.

Pause recording when you don’t want the boundary to be recorded the way you drive, for example while making a turn in the field corner, or when reversing.

To pause the recording

▶press the button again to toggle recording OFF.
The green border will disappear.

Point recording

▶Press this button to add an individual point to the boundary.
This option is useful when a field has exactly straight boundaries. In this case the operator can choose to add individual points in every corner of the field.

Info! When doing point recording, it is advised to disable **Auto recording** first.

Finishing recording

▶Press this button when the boundary is completed.

The application will automatically close the boundary by adding a straight line between the last recorded and the first recorded point of the boundary.

The application will compute the field size based on the recorded boundary.

Replacing a field boundary

When the recorded field boundary is not satisfying, it is possible to replace the boundary of that field.

▶Start a task with this field selected as normal.

➲In Menu ➲Field tab, ▶press the **Replace boundary** button.

The last used settings for recording (recording point and distance) will be reused.

▶Proceed as described above for boundary recording.

Info! This functionality is not available for fields that are imported from an FMIS.

Creating a guidance line

When during starting of the task, **New guidance line** is selected, guidance line recording will be activated as soon as the task starts. The following buttons are available

- Set A / Set B point
- Toggle straight / curved mode

Set A / Set B point

Use this button to set the start and end point of the recorded guidance line. It is recommended to drive forward while doing this.

Note! The minimum allowed distance between the A and B point is 20 meters.

After the A and B point are recorded, the application will extend the guidance line in a straight line beyond the recorded points.

Toggle straight / curved mode

Use this button to toggle between straight and curved recording mode. The button can be toggled while recording the line. This allows you to record a guidance line as a combination of straight and curved segments.

Changing manual guidance settings

During work, the manual guidance settings can be changed in the field setup ➲in Menu ➲Field tab.

Replacing a guidance line

When the recorded guidance line is not satisfying, or when the initial line needs to be moved to a new location when the working width changes, it is possible to replace the guidance line of that field.

- ▶Start a task with this field selected as normal.
- ▶Press the **Replace guidance line button** ➲in Menu ➲Field tab.
- ▶Proceed as described above for guidance line recording.

Replacing a guidance line

To use an existing guidance line on a different position, the guidance line can be shifted.

- ▶Start a task with the intended field and guidance line.
- ▶Position the tractor on the desired position on the field.
- ▶Press the **Shift guidance line button** ➲in Menu ➲Field tab.

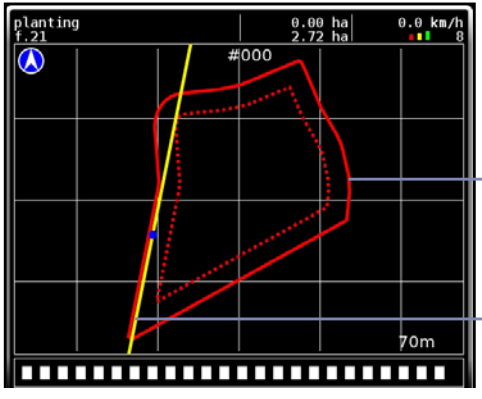
The guidance line will now be shifted to the current position of the tractor.

Headland Control

The **Headland Control toggle button** in the main screen appears as soon as a field boundary is available. It allows for toggling between 3 states:

- Work the entire field regularly
- Work the headland only
- Work the main field only

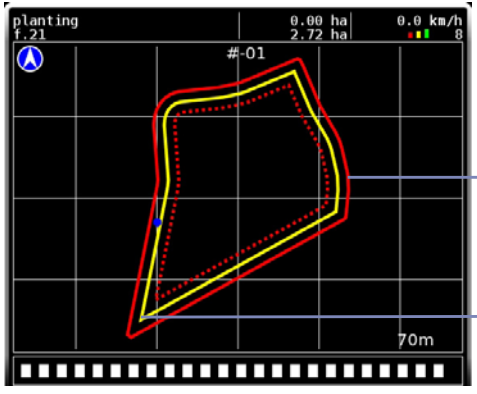
Entire field



Use this state to work regularly and make no difference between main field or headland.

- Boundary section shutoff: Field boundary
- Guidance lines: Recorded guidance line

Headland only



Use this state to get manual guidance parallel to the field boundary, while working the headland.

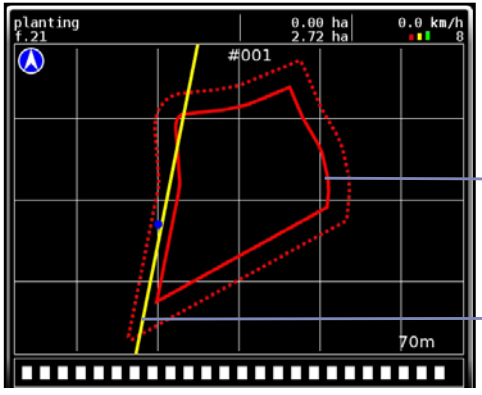
Boundary section shutoff: Field boundary

Guidance lines: Parallel to the field boundary

Note! In this state, the application uses the given offset from the field boundary to the first headland guidance line!

➲Menu ➲Field tab, ➲Field settings screen, ➲C (offset)

Main field only



Use this state to work first the interior of the field before working the headlands.

Boundary section shutoff: Headland boundary

Guidance lines: Recorded guidance line

Note! In this state, the application uses the given headland width!

➲Menu ➲Field tab, ➲Field settings screen, ➲A (headland)

Calibrate GPS position

This function is required if there is a deviation between earlier recorded guidance line or field boundary and the current position. The deviation can be caused by positioning inaccuracies inherent in the GPS signal. Whenever you start a task that includes an earlier recorded field boundary or a guidance line, verify the GPS deviation.

Proceed as follows if the field contains a field boundary:

- ▶ Start the task.
- ▶ Make sure, the guidance and headland settings match the distances and offsets on the field.
  ➲ Menu ➲ Field tab, ➲ Field settings screen
- ▶ Drive onto the first track in the field.
- ▶ Toggle to the Headland only mode. On the map, you will now see a guidance line parallel to the field boundary.

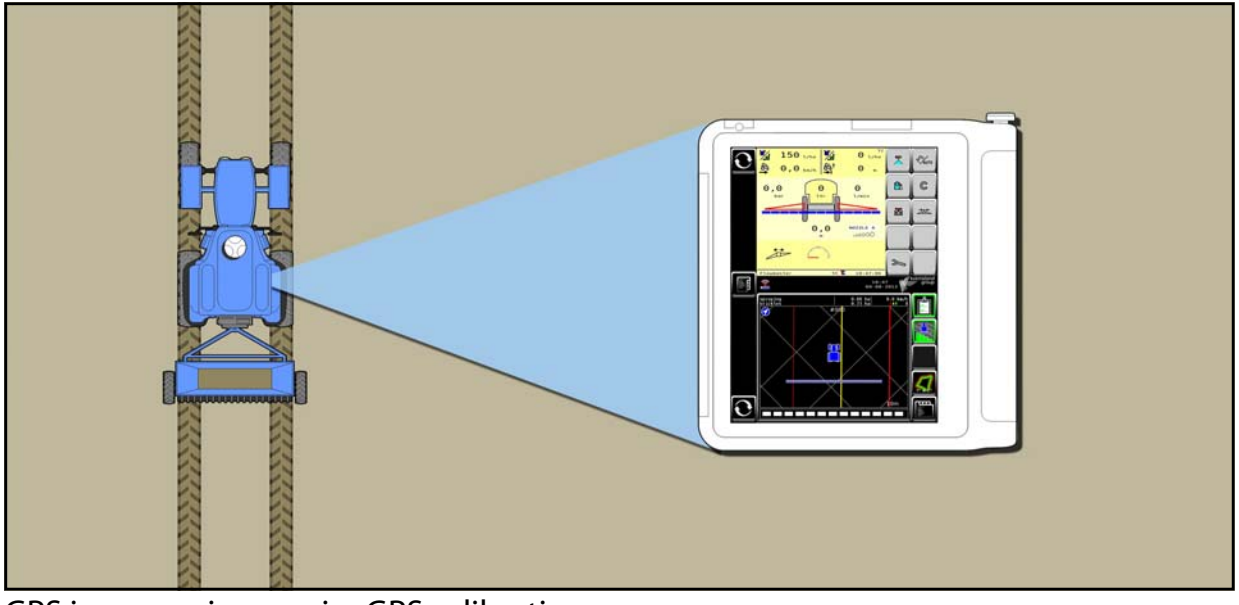
Now ideally the distance to the closest guidance line will be zero. If not, this will be caused by GPS deviation; hence the GPS position needs to be calibrated.

- ▶ In Menu ➲ Field tab, press the **Calibrate GPS button**.

The GPS position will now be shifted in a direction perpendicular to the guidance line.

You may need to repeat this procedure when standing on the perpendicular field side to also compensate for GPS deviation in that direction.

If the field does not contain a field boundary, but a guidance line, follow the same procedure but with using the guidance line instead of the field boundary.



GPS inaccuracies require GPS calibration.

Clearing coverage map and totals

In some cases it may be useful to clear the coverage map and the totals of a task. This can only be done while the task is stopped.

▶Stop the task that you want to clear.

▶In ➲Menu ➲Task tab, press the clear task button.

▶Restart the task by pressing continue in the start task pop-up.

Data management

Data management consists of importing and exporting task data, creating work reports and editing data.

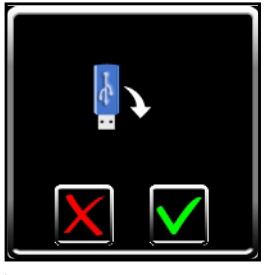
Data management is done in ➲Menu ➲Data management tab.

Task data import

▶Insert a USB stick with taskdata. Taskdata must be in the folder \TASKDATA on the USB stick.

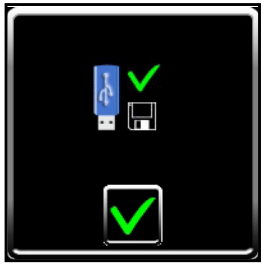
▶To import task data, press the **Import** button.

A pop-up window will appear asking for confirmation.



▶Press the **Confirm** button.

A second pop-up window will appear reporting download status.



▶Press the **Confirm** button.

When there is data available in the application, this will be exported to a folder **\TASKDATA-yy-mm-dd-hh-mm-ss** on the USB stick as a backup. If required, this data can be further handled on the home PC.

All taskdata and data that was earlier imported from FMIS will be removed from the application, before the new set of taskdata is imported. Fields and field boundaries that are created on the terminal will be kept.

After import, the imported data and tasks are directly ready for use.

Exporting task data and html reports

▶To export task data, press the **Export** button.
A pop-up window will appear asking for confirmation.

▶Press the **Confirm** button.
A second pop-up window will appear reporting download status .

▶Press the **Confirm** button.

When exporting, all data will be exported. Finished tasks will be deleted from the terminal. Tasks that have not been executed will not be deleted from the terminal, and can be selected for execution later on.

Taskdata will be exported to the folder \TASKDATA on the USB stick. If this folder was already available on the USB stick, the content of this folder will be deleted prior to exporting.

HTML data is exported to the USB stick on folder \IMT_REPORTS and can be reviewed with most internet browsers on the pc.

Adding data to the lists

Data can be added or edited in the application. This is useful for the content of exported task data or html reports.

▶Press the corresponding **Edit** button to view and edit data.

Info! The editing is available for locally created tasks only!

Clearing the database

If for some reason the database content is corrupted or, if you want to clean up the database, you can clear the entire database.

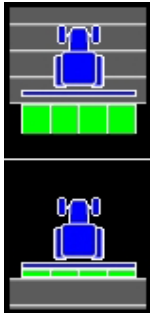
Warning! This will clean the entire content including all section control settings and recorded field boundaries

▶Press the **Clear database** button.

Section control settings

General explanation of the section control settings

Margin on /Margin off



This is the distance that the implement sections will start earlier or stop later, in order to create overlap on the headland. This is especially useful to compensate for errors in the (d) GPS signal or to guarantee field coverage. Separate margins for starting and stopping can specified.

For example when spraying against diseases, set this parameter to a higher value. When no overlap is allowed, for example during corn seeding, set the margin to 0 m. Apply a negative margin when a buffer area is required, for example due to a large spreader pattern.

Important! The value for the margin can be set between 2 m and -2 m.

Exception! For spreaders, the margin off can be set as low as -12 m. This margin can be used to shut down the spreader sections early upon approaching the headland.

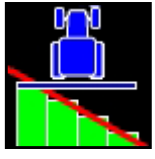
Overlap percentage

This is the amount of overlap that is allowed when working on the same area. For each section, if the amount of overlap is exceeded, this section will be shut off.

Important! Set this parameter to a higher value to avoid gaps. We recommend not setting the value to 100%, to avoid unwanted switching on of sections while driving on the already worked headland.

For precision drills, set this value to 50% for a theoretically well covered headland or triangle. Set to a higher value to add some more coverage on triangles.

Boundary percentage



This is the amount of coverage that is allowed outside of the field boundary. If the amount of coverage is exceeded, the sections will be shut off.

Important! To avoid spraying or spreading outside the boundary, set these settings to 0 %.

General explanation of the implement settings

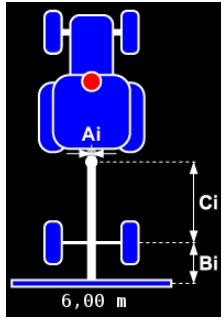
Connection type

Choose which attachment method was used to connect the implement to the tractor. The 'hitch' option implies the implement to be fixed to the tractor. If the 'trailed' option is selected, an extra pivot point is calculated between the tractor and the implement.

Important!

- For trailed implements, if the rotating movement is executed too slow, virtually move the implement axle forward by decreasing Ci and increasing Bi, make sure the sum of Bi and Ci does not change.
- When reversing, the implement is assumed to be straight behind the tractor.
- If the above functionality for trailed implements is not desired, select the option for hitched implements. In this case Bi is the total distance from hitch point to application point.

Implement distance settings



In this tab, set the distance to the application point of the implement. For hitched implements measure the distance from the hitch point. For trailed implements enter both the distance from the tow bar to the implement axle and from the implement axle to the application point.

Important! Check the table in the following page and measure/determine this distance for your implement.

For spreaders, this is the distance to the center point of the spreading pattern on the ground. This is in most common cases half of the working width. However, for practical reasons when needing to turn on the headland, the distance may be reduced to half the working width minus 7 meter.

Info! If the data cannot be edited here, refer to the ➲Implement settings screen.

Time on/Time off

This is the amount of time it takes for the implement to react on section control commands. The application will compensate for the reaction time of the implement by looking ahead this amount of time, regardless of the speed. Different time values for switching on and switching off can be entered. For example, for seeders, this is the time between the command given by the GEOcontrol and seeds dropping in the soil.

Important! For all types of machines, standard values/ranges are given in the table. However, check the applied values before working with them with the help of ➲Finetuning the section control settings.

Info! If the data cannot be edited here, refer to the ➲Implement settings screen.

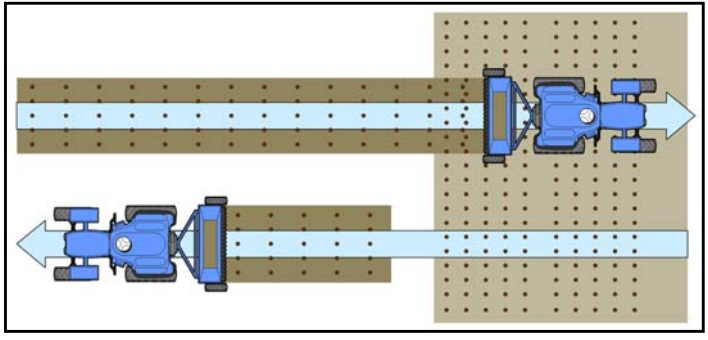
Recommended settings for Kverneland and Vicon implements

Type Platform	Sprayers FMA	Spreaders EDW/EDW2	Precision drills PSD	Seeders ESA
Margin on [m] Margin off [m]	personal preference	personal preference	personal preference	personal preference
Overlap [%]	80	80	50	90
Boundary [%]	0	80	50	50
Implemet distance [m]	1.2 - 6 (measure!)	refer to spreading table of your machine!	0.9 - .... (measure!)	2.0 - .... (measure!)
Time on [sec]	0.5 (air closed nozzles: 0.3)	1.0	0.1 - 0.5	1.5 - 3.0
Time off [sec]	0.5 (air closed nozzles: 0.2)	0.5	0.1 - 0.5	1.5 - 3.0

Finetuning the section control settings

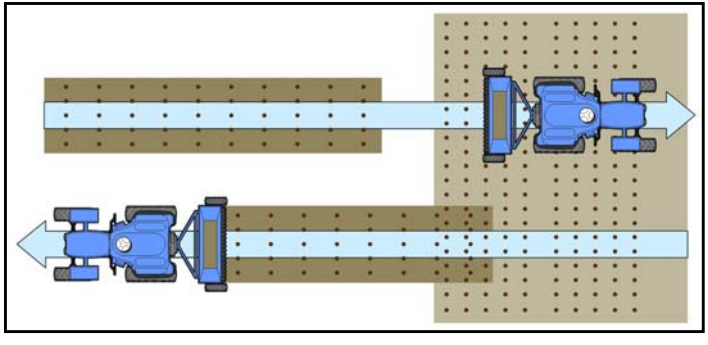
Step 1: Verifying the Time on/Time off of the implement

Important! Before doing this step, make sure the margins are set to 0 and the implement offsets are correct.



- The implement reacts too late.
  - ▶Increase Time off.

  - ▶Increase Time on.

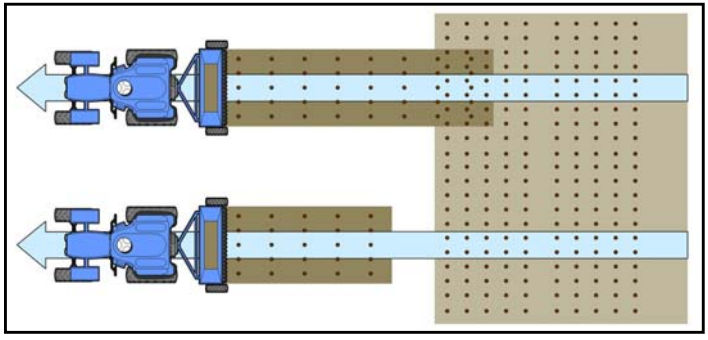


- The implement reacts too early.
  - ▶Decrease Time off.

  - ▶Decrease Time on.

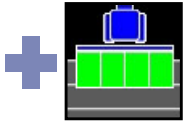
Step 2: Determine the desired margin

In this step the amount of desired overlap when starting and stopping can be specified. Set these to your own preferred value.

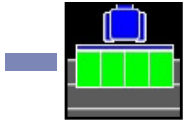


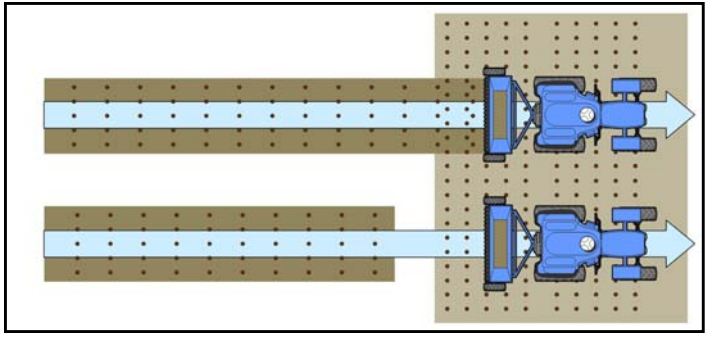
- Desired margin switching on the sections:

▶ Set a positive margin on.



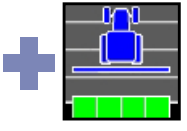
▶ Set a negative margin on.



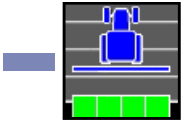


- Desired margin switching off the sections:

▶ Set a positive margin off.

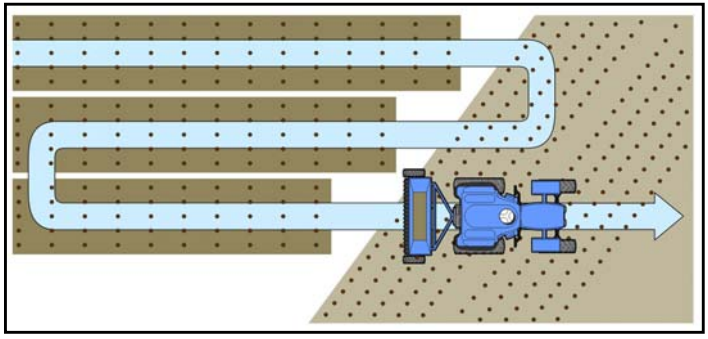


▶ Set a negative margin off.



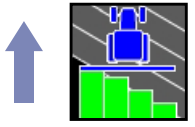
Step 3: Determine the desired overlap percentage

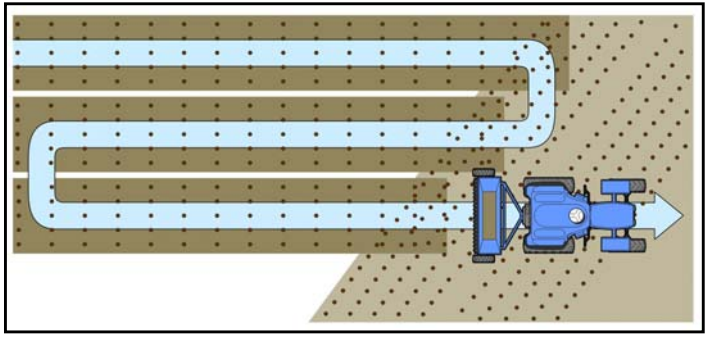
If the overlap on triangles is not correct, set the overlap percentage to compensate for this.



- Too little overlap.

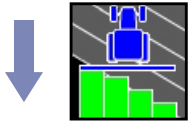
▶ Increase the overlap percentage.





- Too much overlap.

▶ Decrease the overlap percentage.



How to calculate the Time ON/OFF

Change of Time ON/Off [sec] = desired change [cm] x 0.036 / speed [km/h]

Example 1

When driving of an already cultivated headland, 40 cm has been cultivated twice, operating speed was 5km/h.

▶Decrease the Time ON with 40 x 0.036 / 5 = 0.29 seconds (round to 0.3 seconds).

Example 2

When driving on to an already cultivated headland, there is a 60 cm gap in between cultivations, driving speed was 10 km/h.

▶Increase the Time OFF with 60 x 0.036 / 10 = 0.22 seconds (round to 0.2 seconds).

Important! In order to check whether Time ON or Time OFF should be decreased or increased, refer to ➲Finetuning the section control settings.

Overview of symbols

Task

New task

Continue task

Select task

Section control/overlap percentage

Rate control

Menu

Customer

Farm

Field

Total Area

Effective time

Ineffective time

Total volume

Total mass

Effective distance

Ineffective distance

Edit

Edit task

Boundary section control

New boundary

Boundary add point

Boundary auto recording

Boundary finish recording

Data

Reset database

Import USB

Export USB

Implement/Device

Email

Phone

Street

Town

Postcode

Worker

Configuration

Margin on

Margin off

Implement width

Tractor

Time on

Time off

System settings

GPS

Lightbar settings

Serial port

USB to serial port

Number of sections

Delete

Swap direction

Baudrate

Abort

Confirm

Exit

New guidance line

Set guidance A-point

Set guidance B-point

Straight/curved guidance line

Calibrate GPS

Shift guidance line

Headland Control - entire field

Headland Control - headland field

Headland Control - main field only

Headland settings

Working width

Track overlap

Headland width

Track offset