Sveaverken

Sveaverken ISOBUS

User Manual

Mar, 2025 | V24.102.3

Copyright Notice:

Revisions:

Version	Software	Date	Description
2.0	V24.102.3	2025.03.01	Overall optimization of ISOBUS-related features

Read Before Use:

Operate in strict accordance with this software user manual.

If you have any questions during use, contact the service personnel.

Disclaimer:

- The purchased products, services, and features are stipulated by the contract. All or part of the products, services, and features described in this manual may not be within the scope of your purchase or usage. Unless otherwise specified in the contract, all the content in this manual is provided "AS IS" without warranties of any kind, express or implied.
- The content of this manual is subject to change due to product upgrades and other reasons. Sveaverken reserves the right to modify the content of this manual without notice.
- This manual only provides guidance for use of this product. Every effort has been made in the preparation of this manual to ensure accuracy of the content, but no information in this manual constitutes a warranty of any kind, express or implied.

Safety Instructions

Before using this product, ensure that you have read and understood all the operation instructions and precautions in the *Sveaverken Auto Steer System Software User Manual* and this manual.

Operator

1. People under eighteen or not meeting the age requirement of local laws and regulations are not allowed to operate this product.
2. Do not drive under the influence of medicines, alcohol, and drugs.
3. Do not drive when feeling tired.
4. Operators must hold the driving licenses as required by local laws and regulations.

Operating Environment

1. Drive in an open field far from the crowd and ensure that there are no irrelevant personnel or vehicles in the operation area.
2. Keep away from people, animals, obstacles, electric wires, tall buildings, airports, signal towers and other obstacles to protect operations from signal interference.
3. Do not operate the machine in extreme weather such as heavy rain, thick fog, snow, lightning, or strong wind.
4. Ensure that there are no people or obstacles around the machine's path during testing, calibration, adjustment, or automatic turning to prevent personal injuries or property damage.

Operation

1. Do not get on or off the vehicle during operation.
2. Stay in the vehicle and monitor the whole operation process to ensure timely intervention.
3. Drive the vehicle equipped with the system manually on public roads or in public areas.

Inspection

1. Ensure that the vehicle contains sufficient fuel and spray material.
2. Ensure that the parameters are calibrated in the control terminal before autosteering.
3. Ensure that the antennas and attitude sensor are installed properly. In case of any displacement, perform calibration before use.
4. Ensure that the cables are intact. Stop the operation and replace the cables in case of damage.

Others

1. Disassembling the product housing without authorization may invalidate the warranty.
2. Damage caused by force majeure events, such as lightning strikes, overvoltage, and collision, is not covered by the warranty.
3. Connect the devices strictly in accordance with this manual. When connecting cables such as data cables, hold the end of the plug and gently plug or unplug it. Do not pull the plug by force or twist it, which may break the pins.
4. Follow the power supply requirements for this product (system). The supply voltage for the control terminal and the electric steering wheel is 9 V–36 V.

Preface

Use of Manual

This manual describes how to use Sveaverken ISOBUS function through simple and clear operation processes, so that users can learn to perform each operation easily, quickly, and accurately.

Technical Support

Starting from the date of purchase, users will be provided with the technical support and upgrade services from Sveaverken.

Contact Sveaverken by any of the following methods:

-Official website: https://www.Sveaverken.com

Table of contents

1 Product Introduction

1.1 Overview

ISOBUS is a CAN-based communication protocol, also known as ISO 11783, an international, universal, and standardized communication protocol developed by the Agricultural Industry Electronics Foundation (AEF) for agricultural and forestry equipment. ISOBUS defines an equal protocol for all manufacturers of agricultural and forestry equipment to guarantee full compatibility between tractors, implements, and navigation equipment of all brands and models that are ISOBUS certified.

SVEA ISOBUS is an advanced feature launched by Sveaverken with the following advantages:

1. Uniform standard. Enables the easy connection between SVEA autosteering systems and ISOBUS certified implements from different brands.
2. Simplified device. Displays information and issues control instructions efficiently with no additional monitoring devices and cables except for those from SVEA ISOBUS module.
3. Reduced cost and improved efficiency. Automatically controls the implement based on task planning, reducing labor cost and material consumption, and improving work efficiency and quality.
4. Precision agriculture. Creates favorable conditions for crop growth at all stages according to the growth model, and provides system diagnosis, optimized prescription, and scientific management.

The hardware of SVEA ISOBUS function complies with the physical attributes of plugs and cables, network data formats, and interfaces defined in ISO 11783.

The software of the feature is embedded in the APP of SVEA Auto Steer system, and will be upgraded and maintained along with it.

1.2 Main Components

1.2.1 ISOBUS Standard

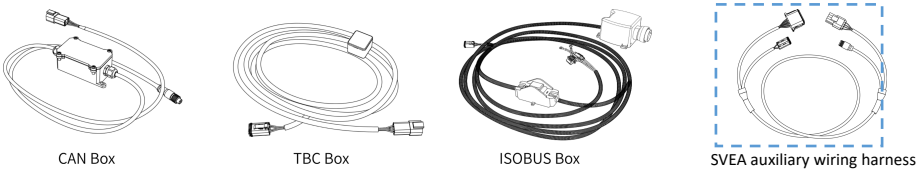


Figure 1 Main components

No.	Name	Purpose
1	CAN Box	Used to converts signals, with one end connected to the serial port of the control terminal of the SVEA Auto Steer system and the other end connected to the TBC Box.
2	TBC Box	Biases and terminates the bus when the implement ECU is disconnected. It connects the CAN Box and the ISOBUS Box.
3	ISOBUS Box	Communicates with and powers the implement ECU through an international standard 9-pin connector.
4	Svea auxiliary wiring harness	To connect the implement to the SVEA control terminal, connect the 12-pin connector of the CAN Box to the 12-pin connector of the SVEA auxiliary wiring harness.

1.2.2 ISOBUS Sync

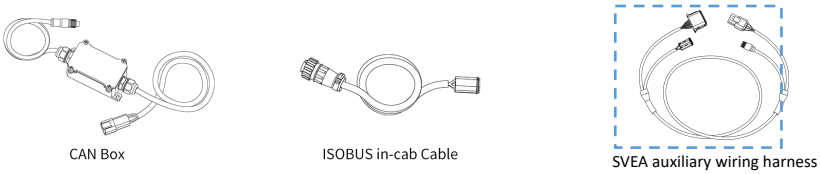


Figure 2 Main components

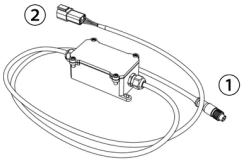
No.	Name	Purpose
1	CAN Box	Used to converts signals, with one end connected to the serial port of the control terminal of the SVEA Auto Steer system and the other end connected to the ISOBUS in-cab Cable.
2	ISOBUS in-cab Cable	Used to connect the CAN Box and the in-cab connector that is already embedded in a tractor cab or other components such as auxiliary inputs and ISOBUS ECUs.
3	SVEA auxiliary wiring harness	To connect the implement to the SVEA control terminal, connect the 12-pin connector of the CAN Box to the 12-pin connector of the SVEA auxiliary wiring harness.

1.3 Hardware Installation

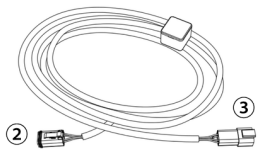
1.3.1 Sveaverken Auto Steer Kit

	Refer to the *Sveaverken Auto Steer Kit Installation Instruction*.

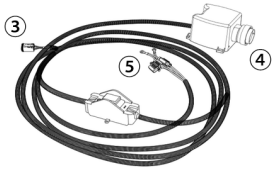
1.3.2 ISOBUS Wiring Harness



CAN Box



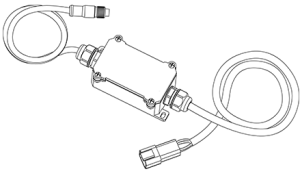
TBC Box



ISOBUS Box

1. Power off the SVEA Auto Steer system and the tractor battery before connecting the ISOBUS wiring harnesses.
2. Fix the ISOBUS wiring harnesses in place. Do not twist or hang them in the air.
3. Connect the power port ⑤ of the ISOBUS Box wiring harness to the battery of the tractor. Do not turn the battery on until all wiring harnesses are properly connected.
4. Connect the implement ECU to the ISOBUS implement connector ④ of the ISOBUS Box wiring harness.
5. Connect the TBC Box wiring harness, the ISOBUS Box wiring harness, and the CAN Box wiring harness together.
6. Connect the 12-pin connector (female) ① of the CAN Box wiring harness to the same 12-pin connector (male) from the auxiliary wiring harness of SVEA.
7. Turn on the battery and the main power switch for wiring harnesses to power on the SVEA Auto Steer System.

1.3.3 ISOBUS Ready Wiring Harness



CAN Box

ISOBUS in-cab Cable

1. Power off the SVEA Auto Steer system and the tractor battery before connecting the ISOBUS wiring harnesses.
2. Fix the ISOBUS ready wiring harnesses in place. Do not twist or hang them in the air.
3. Connect the in-cab connector ③ of the ISOBUS in-cab cable to the same connector in the tractor cab.
4. Connect the CAN Box wiring harness and the ISOBUS in-cab cable together.
5. Connect the 12-pin connector (female) ① of the CAN Box wiring harness to the same 12-pin connector (male) from the auxiliary wiring harness of SVEA.
6. Turn on the battery and the main power switch for wiring harnesses to power on the SVEA Auto Steer System.

2 Software Operation Instructions

2.1 Overview of Operation Processes

This chapter introduces the SVEA ISOBUS feature from a new user's perspective.

	For autosteering-related features, refer to the *Sveaverken Auto Steer System Software User Manual*.

Operation procedure for using the ISOBUS feature of the system:

Installation and commissioning of Sveaverken Auto Steer System → Installation of ISOBUS wiring harnesses → Enable ISOBUS function → Load object pool → Setup an ISOBUS implement → Set the material → Set the task → Set the speed source → Start operation

2.2 Setting the Auto Steer System

The installation and commissioning process of Sveaverken Auto Steer Kit is as follows.

Select a language → Sign up and log in → Enter the installation information → Connect to RTK → Obtain heading* → Set the vehicle parameters → Calibrate the angle sensor → Calibrate the vehicle → Calibrate the implement → Complete

* Drive the vehicle straight ahead for a while, and the heading is obtained automatically. If not, choose **MENU** > **SYSTEM** > **Heading calibration**.

	Refer to the *Sveaverken Auto Steer System Software User Manual* for details.

2.3 Function Enabling

Select **MENU** > **APPLICATIONS** > **ISOBUS** and enable the ISOBUS functions.

!	**Note:** Features such as the External Bluetooth RTK and external radio cannot be used together with ISOBUS.

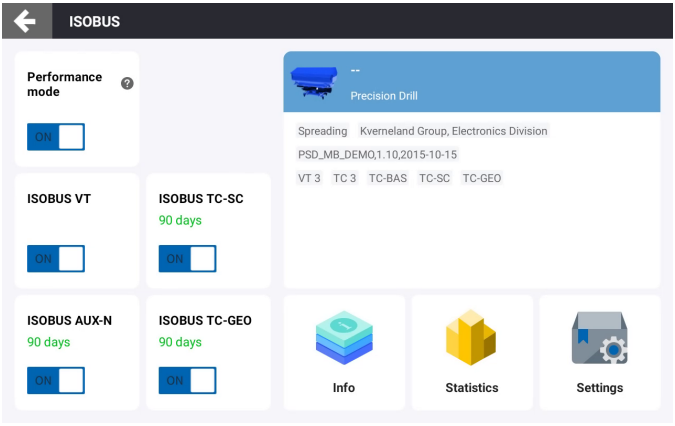


Figure 3 Enable ISOBUS functions

2.3.1 Enable VT

VT is a free feature. Turn on VT in the ISOBUS module and the VT window is shown on the main interface.

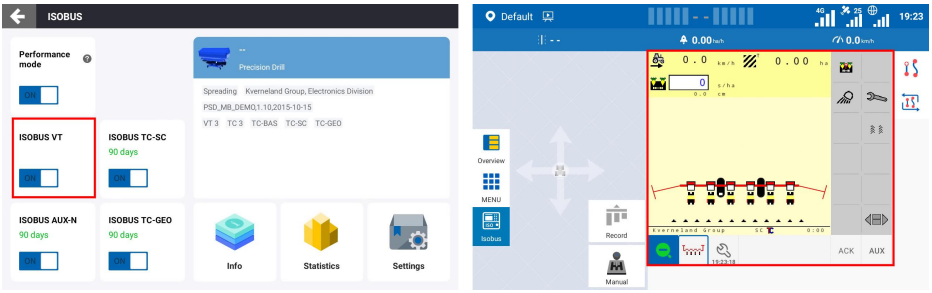


Figure 4 Enable VT

2.3.2 Activate and Enable TC-SC

Activation codes are needed to activate TC-SC, TC-GEO and AUX-N. To have a try-out of these functions, please turn to your dealer or FAE for help, they will apply for you. Enter the code in the pop-up window and check the activation information. Please remember that once the code is used, you may not activate the same function on another control terminal.

Turn on TC-SC in the ISOBUS module and the TC window is shown on the main interface.

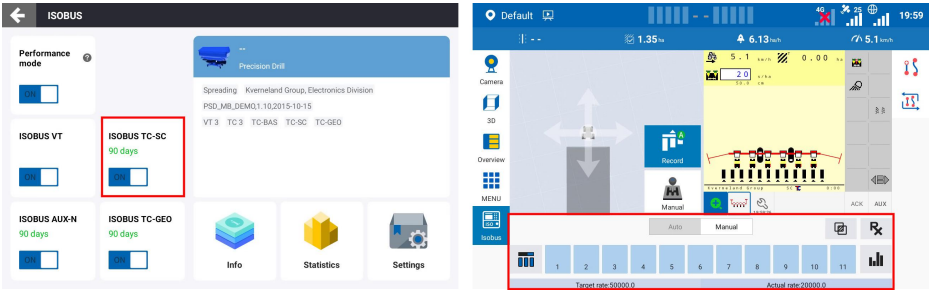


Figure 5 Enable TC-SC

2.3.3 Activate and Enable TC-GEO

TC-GEO shall be activated with the same procedure as TC-SC. Turn on TC-GEO, the "Rx" entrance for configuring the prescription map and a "Rx" button for applying variable rate will be displayed in the TC window.

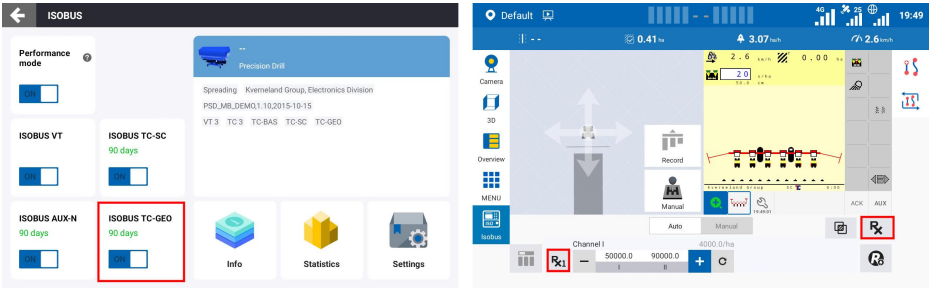


Figure 6 Enable TC-GEO

2.3.4 Activate and Enable AUX-N

AUX-N shall be activated with the same procedure as TC-SC. Turn on AUX-N and the "AUX" entrance for

configuring auxiliary assignments will be displayed in the VT window.

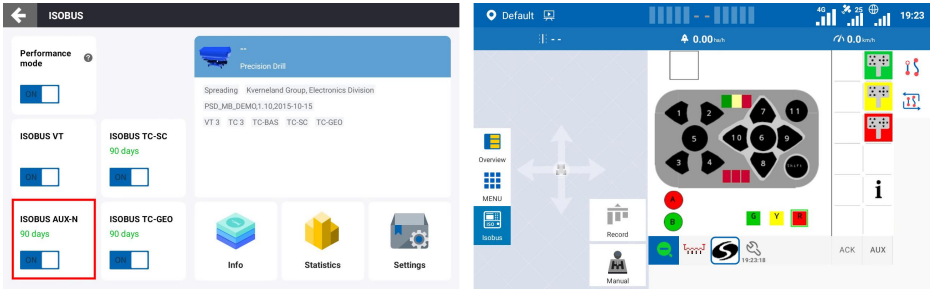


Figure 7 Enable AUX-N

2.4 Implement Connection

Once the implement is properly installed and connected to SVEA Auto Steer System, loading of VT and TC object pools will start instantly and you may check the loading progress in VT and TC windows.
Once the implement VT is connected, a tab with the VT address is displayed in the VT window on the left side. A description of the implement and its function is shown on the main interface in the VT window, followed by a main process bar, indicating the overall loading process. Another process bar shows the loading process of each object pool from the VT. When the main process bar reaches 100%, the VT interface
of the implement will appear in the VT window.

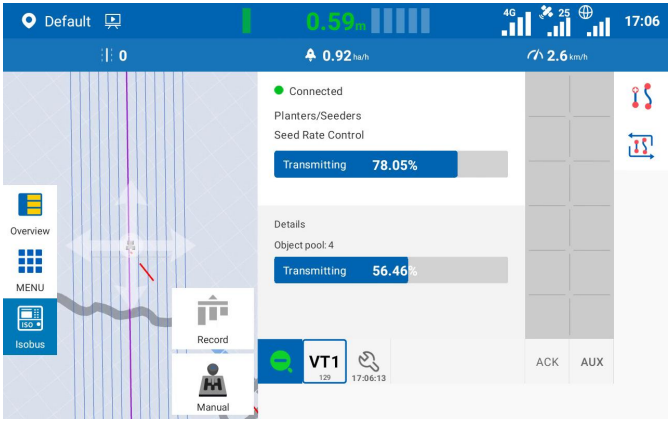


Figure 8 VT object pool loading

TC object pool loading process is shown by a process bar in the TC window. When it reaches 100%, a pop-up window with the basic information of the implement will appear. Since it may take longer for the VT object pool to be loaded for the first time, when the pop-up window appears, it means TC is loaded while VT may still remain in the loading process.

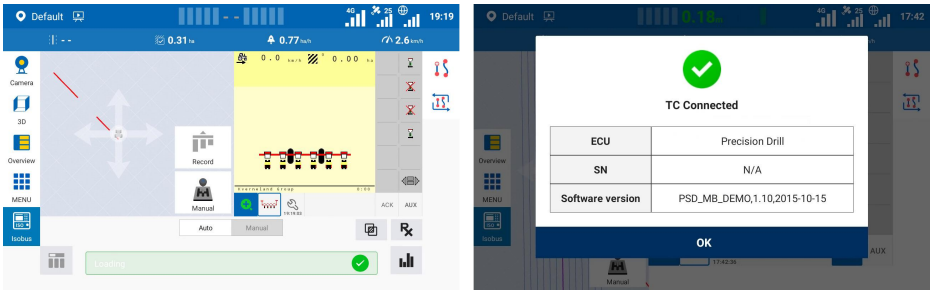


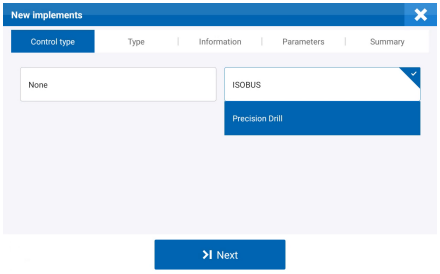
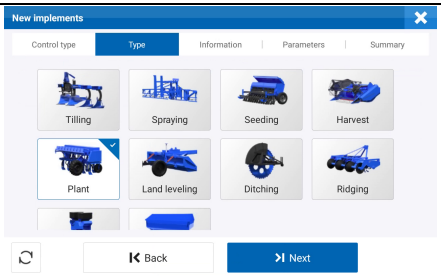
Figure 9 TC object pool loading

2.5 Preparation

2.5.1 Implement Setup

For each ISOBUS ECU, an ISOBUS implement needs to be created in Implement Library, and it will be the only implement bound up with the ISOBUS ECU. The next time when the ISOBUS implement is connected, the corresponding implement will be applied automatically.

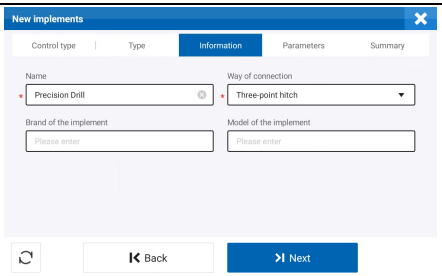
Please follow the procedure below to create a new ISOBUS implement in **MENU** > **DEVICE SETTINGS** > **Implement Library**.

Procedure	Interface
Control Type To create an ISOBUS implement, please select ISOBUS as the control type of the implement. The name of the implement ECU will be displayed underneath. There might be multiple choices if there is more than one ISOBUS device connected via CANBUS. Select the one that shares the same designator as your implement ECU and continue.	
Type The type of implement is chosen automatically if it is reported by the implement ECU. You may also edit it manually if it is not properly set. Press the "refresh" button in the bottom left corner, the chosed type will be refreshed to what is reported by the implement.	

Information

The name and way of connection is set automatically if they are reported by the implement ECU. You may also edit them manually if they are not properly set.

Press the "refresh" button in the bottom left corner, the name and way of connection will be refreshed to what is reported by the implement.



Parameters

1. **Skip/Overlap**: The spacing or overlapping between two adjacent rows.

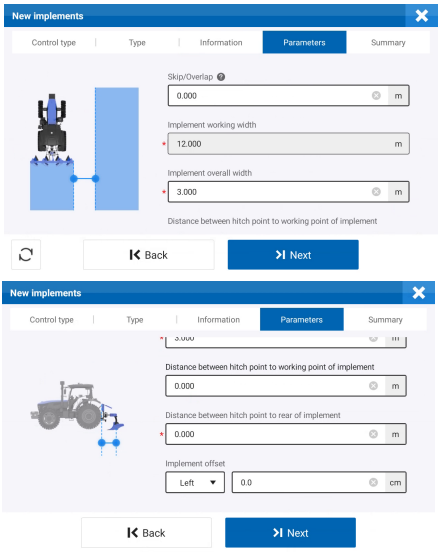
2. **Implement working width**: Total width of the implement sections will be automatically calculated and filled in. It cannot be edited manually for ISOBUS implements.

3. **Implement overall width**: The total width of the implement. It is used to reserve the safety distance during automatic path planning and should be edited manually.

4. **Distance between hitch point to working point of implement**: The value is automatically calculated and filled in. It can be edited to better fit in the real working scenario.

5. **Distance between hitch point to rear of implement**: The total length of the implement. It is used to reserve the safety distance during automatic path planning.

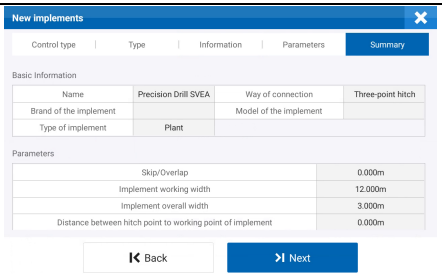
6. **Implement offset**: The value is automatically calculated and filled in. It can be edited to better fit in the real working scenario.



Summary

Basic information of an implement is summarized on this page.

Press "Next" button to continue setting up the parameters, especially required by ISOBUS implements.

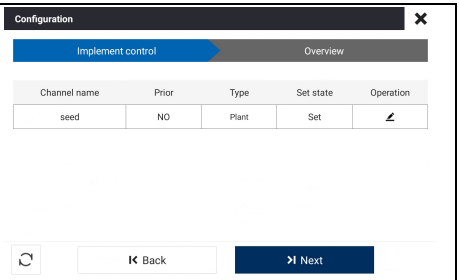


Channel

Each channel stands for a specific application scenario or a cultural practice.

Press the "refresh" button in the bottom left corner, some of the channel information will be refreshed all together to what is reported by the implement.

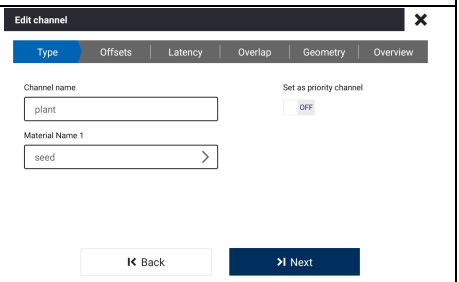
*Only one channel is supported at present.



Channel - Type

Enter the channel name and select a material for the channel.

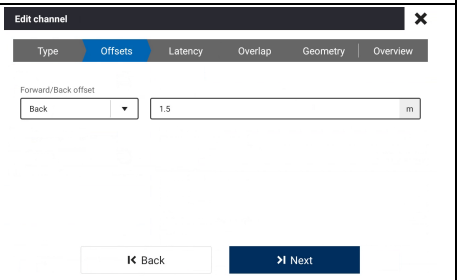
*Refer to the chapter "Material setup" for details.



Channel - Offsets

If the working units of the implement channel are not mounted on the center of the boom, there will be an offset of the channel.

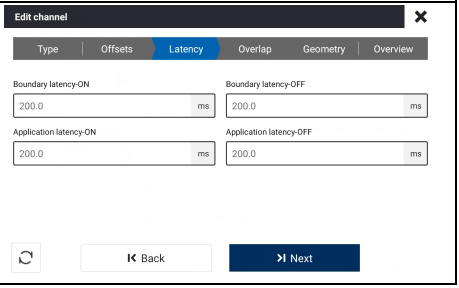
The offset of the channel is automatically synchronized from the implement ECU and cannot be edited.



Channel - Latency

It may take some time for the sections to respond to the instructions, thus the instructions will be issued ahead of time to deal with the delay.

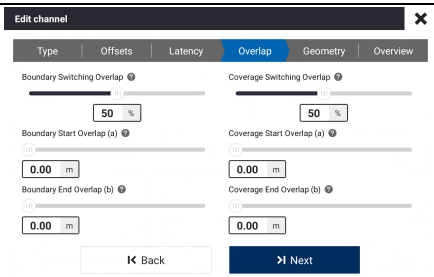
The latency of the channel is automatically synchronized from the implement ECU. However, if the implement fails to report the relevant parameters or does not support relevant settings, the required latency time can be manually set in the channel .



Channel - Overlap

To avoid waste of material and pollution, sections will be automatically closed when they are out of boundary or inside the worked area. The performance of overlapping control will be defined by the parameters on this page.

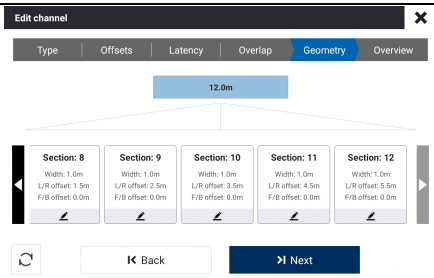
*Refer to the chapter "Overlapping settings" for details.



Channel - Geometry

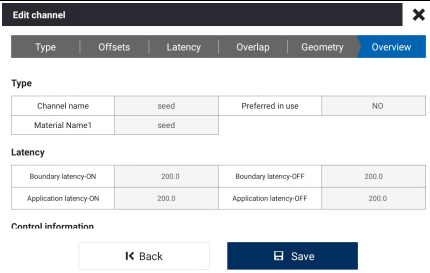
Number of sections and the width of each section will be automatically synchronized from the implement ECU. The total width of all sections is automatically calculated and displayed above.

*If the section width is not synchronized properly (the value is 0 in a few cases), it can be corrected manually by pressing the "edit" button.



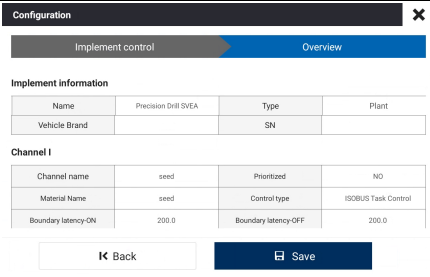
Channel - Overview

Summary of channel information.



Overview

Summary of information of all channels.



Refer to the *Sveaverken Auto Steer System Software User Manual* for details of implement settings.

2.5.2 TC Object Pool Update

It can be noticed from the last chapter that some of the parameters of the implement are synchronized directly from the implement ECU, for example the section width. If these parameters do not meet the working scenario, they can be edited in VT following the implement use manual. The implement ECU might update its TC object pool when these parameters are edited in VT. The task will be paused until the new TC

object pool finishes the transition.

Figure 10 TC object pool update

2.5.3 Material Setup

A material carries critical information of target rates. To set up a new material or edit an existing material, select **MENU** > **DEVICE SETTINGS** > **Material Library**, tab **New** or **Edit** and fill in all necessary parameters.

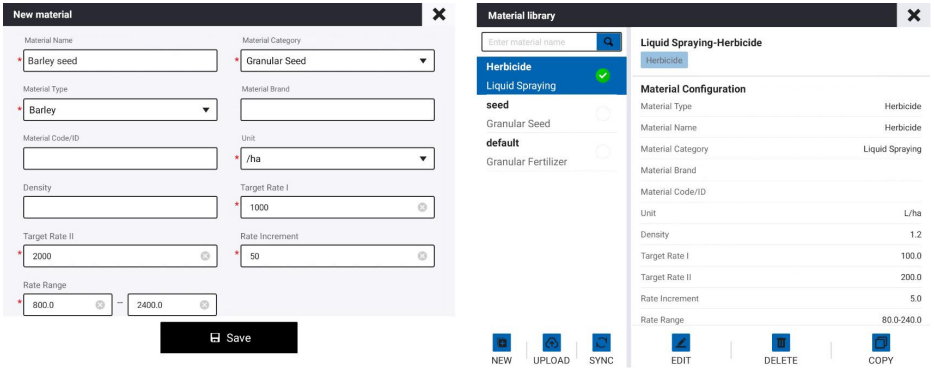


Figure 11 Material setup

Material Name	Enter the name of the material.
Material Category	Select the category of the material.
Material Type	Select the type of the material.
Unit	Select the unit for the material.
Target Rate I	Set the amount of materials intended to be applied.
Target Rate II	Optional target rate for fast switch during operation.
Rate Increment	Change in target rate with each adjustment.
Rate Range	Adjustable range of target rate.
Material ID	Enter the material ID.
Brand	Enter the brand of the material.
Density	For liquid material, enter the density from 0.8 to 1.2.

2.5.4 Import Task Files

Tasks created on FMS platform or other control terminals can be imported in the form of a standard TASKDATA.XML file via **Data Transfer**.

Enter the **Data Transfer** interface, select a TASKDATA.XML file or a folder that contains a TASKDATA.XML (which may also contain some external files that end with .xml). Click on the "Import" button and the task file will be imported and parsed. Please check the details of the imported task in **MENU** > **FIELD** > **Field**.

If the imported TASKDATA.XML does not contain information of Field, you have to select an exsiting field (you may also create a new field) to which the imported task belongs.

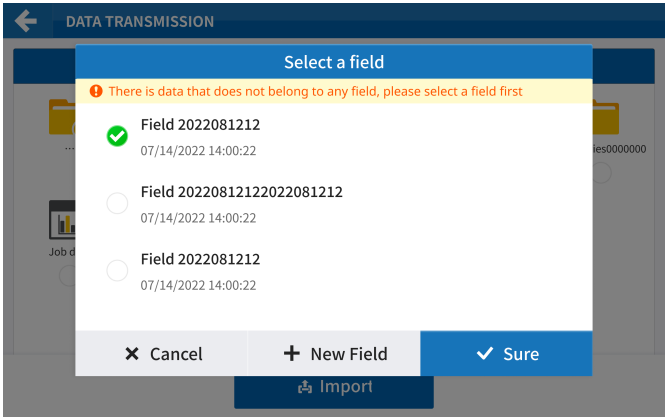


Figure 12 Import task files

Note:

1. The imported task file should be named exactly as "TASKDATA.XML" (all capitalized).
2. When switching Field, Boundary, Guidance line or Task when there is an ongoing task, the task will be paused and can only be started manually after switching.

2.5.5 Task Setup

For quick setup of a new task, please go to **Overview** and complete the configuration of Field, Guidance line, Boundary, and Task. The implement will be automatically configured once the implement ECU is connected.

Note: Only the tasks that fall under the group of "Incompleted" can be applied.

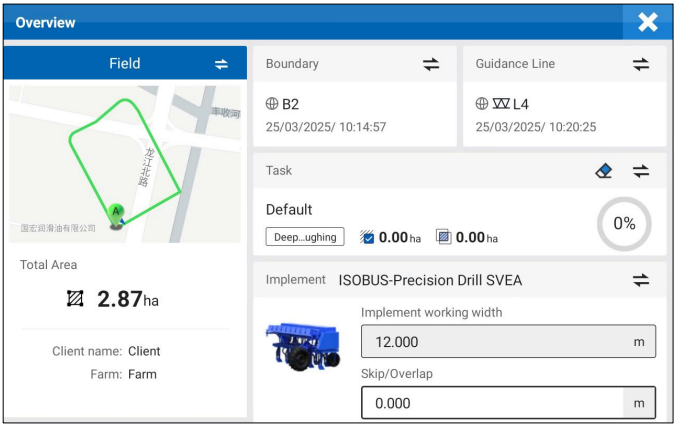


Figure 13 Task setup

2.5.6 Prescription Setup

Please prepare a prescription map in advance. Prescription maps in XML, SHP and TIF format from the Farm Management System or other third-party platforms are supported. Please note the following requirements when generating the prescription file.

XML(offline)	Import the XML file together with the bin file, or you may also import a zip file that contains the XML and bin file.
XML(online_FMS)	Online transmission of XML prescription map is supported with the Farm Management System. Choose **synchronize data** and the prescription map will be synchronized to the bonded terminal. Check the imported prescription map in **MENU** > **FIELD** > **Field** > FMS field > FMS task > **Prescription**.
SHP	For prescription maps in SHP format, please add "**prescription**" (case insensitive) into the name of each file, otherwise they might be parsed as boundaries.
TIF	It may take some time (up to several minutes, depending on the file size) to import a TIF file, please wait patiently. Check the imported prescription map in **MENU** > **FIELD** > **Field** > current field > current task > **Prescription**.

Import the prescription map via Data Transfer or via online data transfer from FMS. Once imported successfully, the prescription map will be classified into **Menu** > **FIELD** > **Field** > **Prescription**.

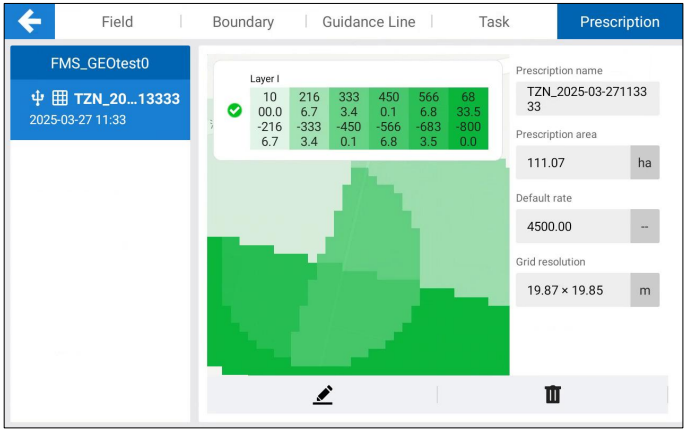


Figure 14 Prescription map

2.5.7 Check Record Mode

Once an ISOBUS implement is applied, the system will automatically enable the "Auto record-Section" mode, with which the record status of the worked area is determined by the ON/OFF status of each implement section. The record and rendering is started automatically when a section is ON.
Note: Other record modes may also be applied but the record of worked area and rendering of track will be less precise.

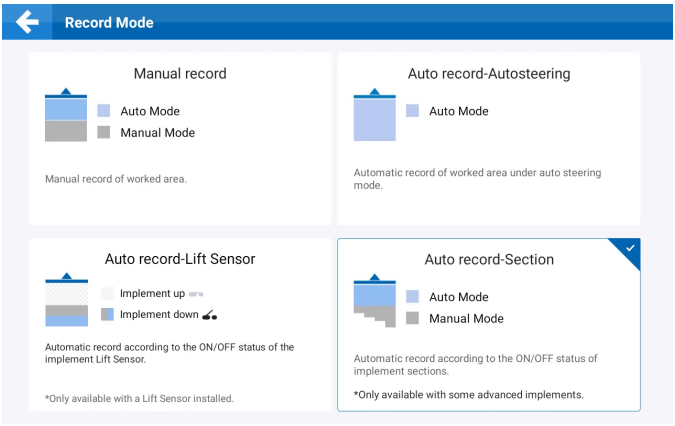


Figure 15 Recode mode

Manual record	The record status is consistent with the task status. The record starts when the task status is switched to "Work".
Auto record-Autosteering	When the task is ongoing, the record status is consistent with the status of driving mode. The record starts when in autopilot mode.
Auto record-Section	When the task is ongoing, the record status is consistent with the status of implement sections. The record starts when the implement sections are on. *Only available with ISOBUS implements
Auto record-Rate	When the task is ongoing, the record status is consistent with the status of implement sections and the real-time applied rate. The record starts when the implement sections are on and the applied rate is not 0. *Only available with ISOBUS implements when a prescription map is in use

2.5.8 Speed source setup

Speed source should be configured before starting the operation, otherwise TC might not function properly. Ensure that the selected speed source is the same as what is set in the implement VT. The frequency must meet the communication requirements of the implement.

Note: Different implement manufacturers may require different frequencies. Confirm the frequency with the implement dealer if necessary.

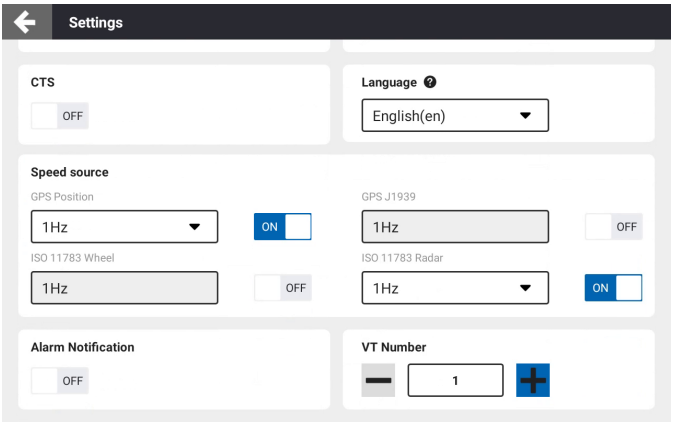


Figure 16 Speed source

2.6 Start Operation

2.6.1 Main Screen Elements

2.6.1.1VT Window

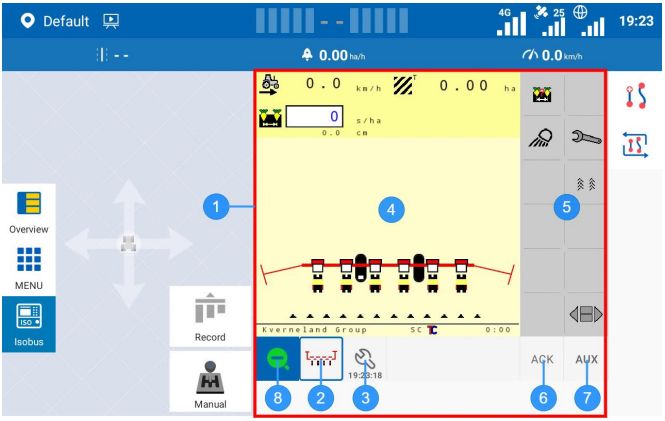


Figure 17 VT window

No.	Element	Description
①	**VT window**	Implement VT screen, consisting of the following elements.
②	**VT tab**	Tab to switch between and activate VTs.
③	**Settings**	Quick entry to ISOBUS settings.
④	**Data mask area**	Display the implement status, information, and alarm messages.
⑤	**Softkey area**	Screen buttons that allow for quick implement control.
⑥	**ACK**	Button to clear alarm pop-ups in VT.
⑦	**AUX**	Entrance to the assignment of auxiliary inputs and functions.
⑧	**Zoom button**	Button to zoom in and out of the VT window.

2.6.1.2TC Window

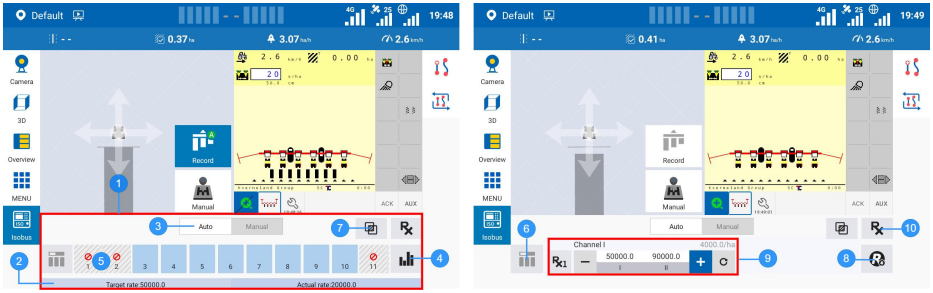


Figure 18 TC window

No.	Element	Description
①	**TC window**	Implement TC screen, consisting of the following elements.
②	**Rate info**	Display the value of issued target rate from the terminal and actual rate reported by the implement.
③	**Manual/Auto mode**	Button to switch between manual and auto section control mode.
④	**Section control**	Group of elements related to section control.
⑤	**Section status**	Display the status of each section (yellow-on, gray-off, forbidden sign-disabled).
⑥	**All sections ON/OFF**	Turn on/off all sections with one click under manual mode.
⑦	**Overlap control**	Quick entry to edit overlap settings.
⑧	**Rate control**	Group of elements related to rate control.
⑨	**Target & Rx rate switch**	Allow for target rate adjustment and quick switch between target rate and prescription rate (Rx button).
⑩	**Prescription rate control**	Quick entry to configure a prescription map for the current channel.

2.6.2 Start/Pause Task

Click on the Record button in the Menu Bar to start a task. Please note when the task is paused, VT is still operable while TC may not function properly. Only when the task is started, does the system start to record the worked area.

Figure 19 Record button

2.6.3 VT Operation

The control terminal of the implement is taken over and displayed in the VT window. Checking running status of the implement and changing implement settings are supported, as if using the original implement control terminal.

*When enabled together with TC, VT is minimized under the default layout. You may click on the VT button on the top left of the VT window to maximize it.

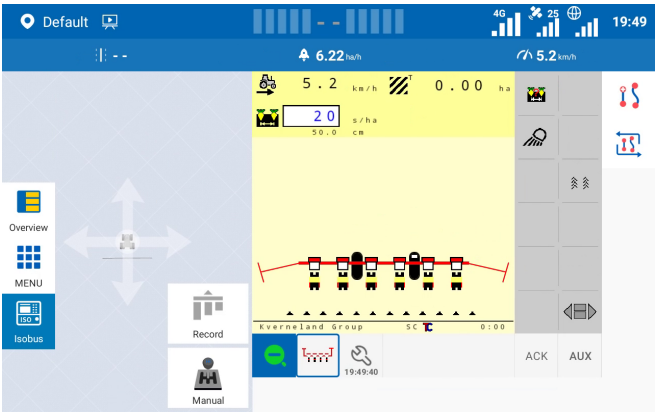


Figure 20 Implement VT

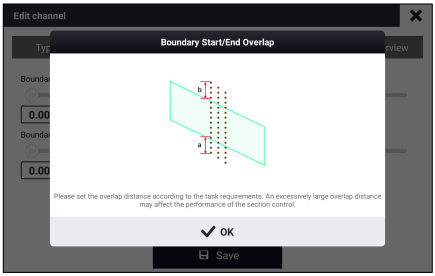
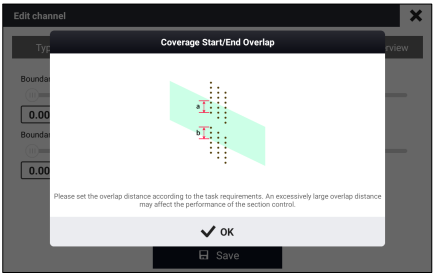
2.6.4 TC Operation

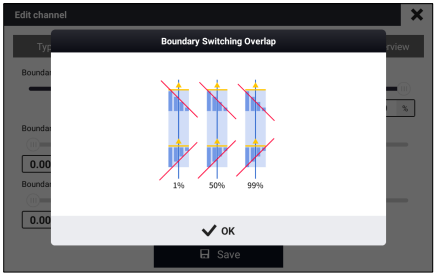
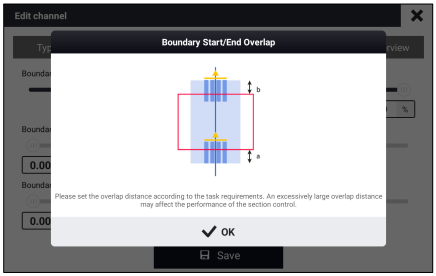
2.6.4.1Section control (TC-SC)

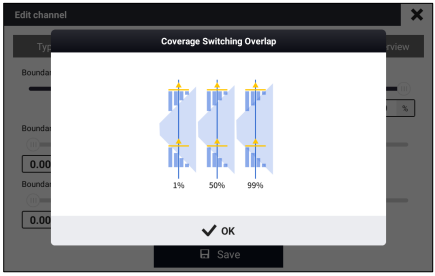
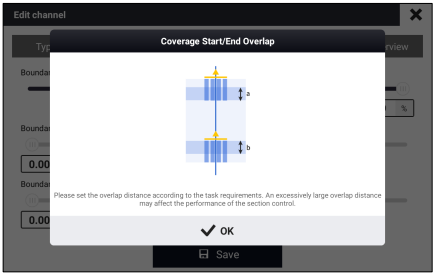
Sections will be turned on and off automatically under auto mode when passing the selected boundary and the worked area, in accordance with the settings of overlap. Sections can also be turned on and off manually under manual mode to better satisfy special control demand.

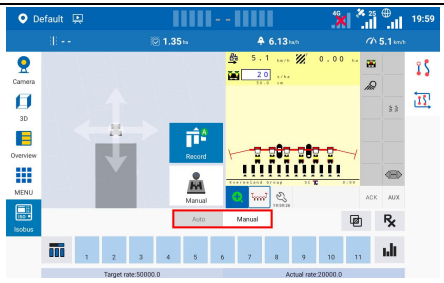
Figure 21 Section control

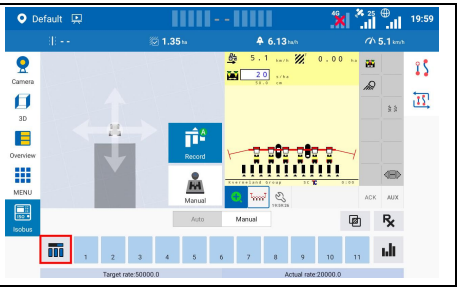
The overlap settings are slightly different between applied material that is "Granular Seed" and others.

Overlap settings for "Granular Seed"	Interface
Boundary Start Overlap (a) Seeding port will be opened a meters before it enters the field boundary. **Boundary End Overlap (b)** Seeding port will not be closed until b meters after it leaves the field boundary.	
Coverage Start Overlap (a) Seeding port will be opened a meters before it leaves the seeded area. **Coverage End Overlap (b)** Seeding port will not be closed until b meters after it enters the seeded area.	

Overlap settings for other materials	Interface
Boundary Switching Overlap 1%: Sections will be turned on until they completely enter the field boundary. 50%: Sections will be turned on when half of them enter the field boundary. 99%: Sections will be turned on once a tiny part of them just enters the field boundary.	
Boundary Start Overlap (a) Sections will be turned on a meters before it enters the field boundary. **Boundary End Overlap (b)** Sections will not be turned off until b meters after it leaves the field boundary.	

Coverage Switching Overlap 1%: Sections will be turned on once a tiny part of them just enters the worked area. 50%: Sections will be turned on when half of them enter the worked area. 99%: Sections will be turned on until they completely enter the worked area.	
Coverage Start Overlap (a) Sections will be turned on a meters before it leaves the worked area. **Coverage End Overlap (b)** Sections will not be turned off until b meters after it enters the worked area.	

Special section control strategy	Interface
Section disabling If some of the sections are not expected to be on under any circumstance, click on them under auto mode, they will be turned off and marked with a forbidden sign. Then the disabled sections will be kept off until they are released by another click.	
Switching mode When switching from auto section control mode to manual mode, all sections will be turned on except for disabled ones.	

All Sections ON/OFF With one click of the All Sections ON/OFF button, all sections will be turned on if there are some sections that are off, and all sections will be turned off if they are all on.	

2.6.4.2Rate control

Once material is configured, the implement will follow the target rate set with the selected material. Two target rates can be switched between by tabbing on the rate number.
Target rate can be adjusted by pressing the "+" and "-" button during operation. The adjustment step is determined by "Rate increment" and adjustment range by "Rate range".

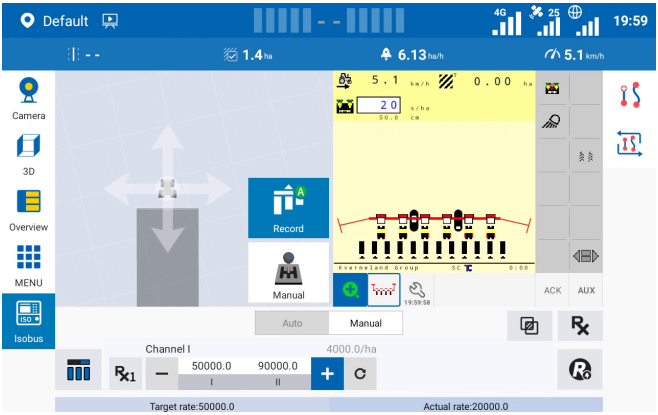


Figure 22 Rate control

2.6.4.3Variable rate control (TC-GEO)

Click on the Rx button and select a prescription map for the current channel. Configure the necessary parameters such as default rate and latency. When there is a prescription map selected, it can be applied by tabbing on the Rx button. If the implement does not support TC-GEO, the entry button is grayed out. The legend above the navigation map indicates the relationship between the rate and the rendering color.

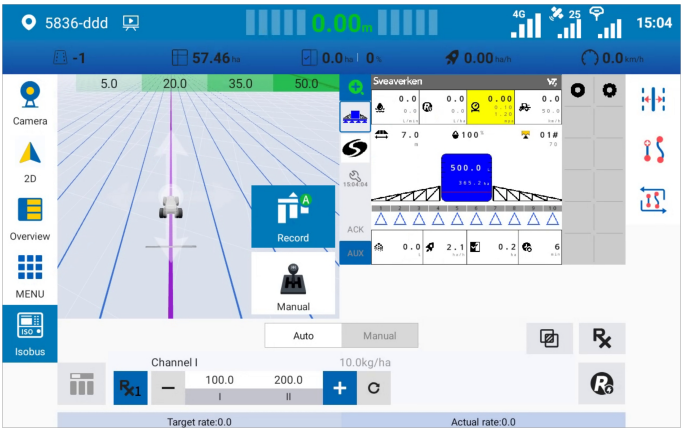


Figure 23 Variable rate control

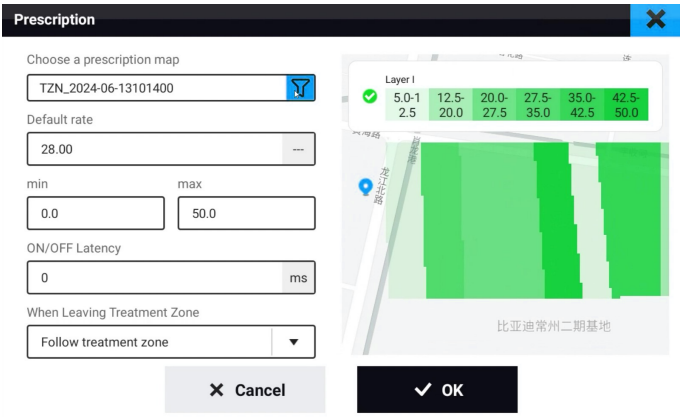


Figure 24 Prescription map configuration

Default rate	Rx rate will be replaced by default rate if it configued for "When Leaving Treatment Zone".
min & max	The minimum and maximum value out of all treatment zones.
ON/OFF Latency	Control signals will be issued ahead of time to deal with the delay of the implement's rate controller.
When Leaving Treatment Zone	The rate control strategy when leaving treatment zones.

2.6.5 Auxiliary control (AUX-N)

If the implement supports AUX-N and there is also a joystick/switch panel connected, then the AUX button will be highlighted, showing that the auxiliary assignment is supported.
The ISOBUS joystick or switch panel will also provide a VT that demonstrates its configuration state.

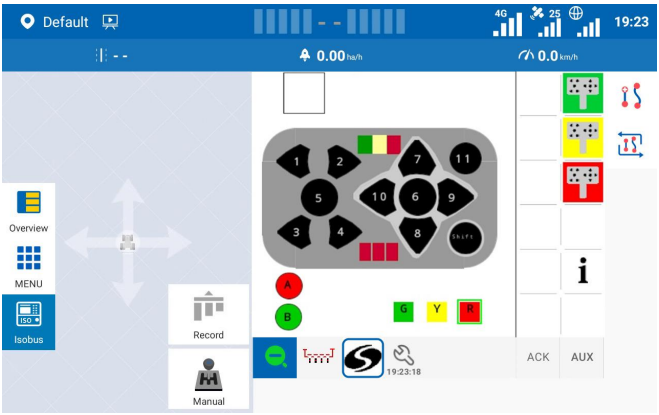


Figure 25 VT of joystick

Tab on the AUX button and assign the required auxiliary function from the implement to an auxiliary input from the joystick/switch panel in the pop-up window.
Turn to Learn mode and press the physical button on the joystick/switch will also complete the assignment without having to select an input button from a pull-down list.

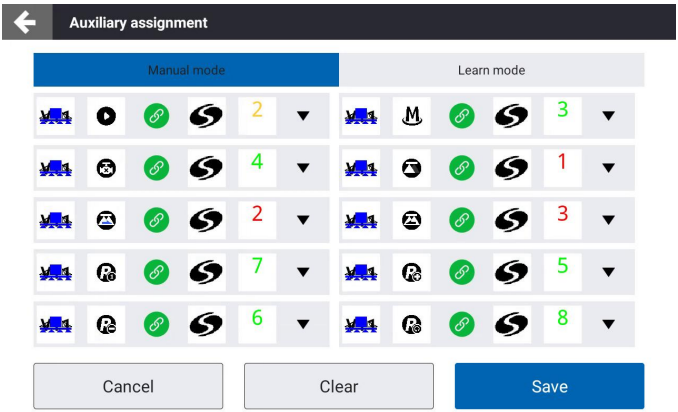


Figure 26 Auxiliary assignment window

2.7 ISOBUS Module

ISOBUS Module provides the buttons to activate and enable the ISOBUS sub-functions. Basic information of the implement ECU and the operating parameters is displayed at the top right. The main interface of the ISOBUS module also provides three other entrances, which are described in details below.

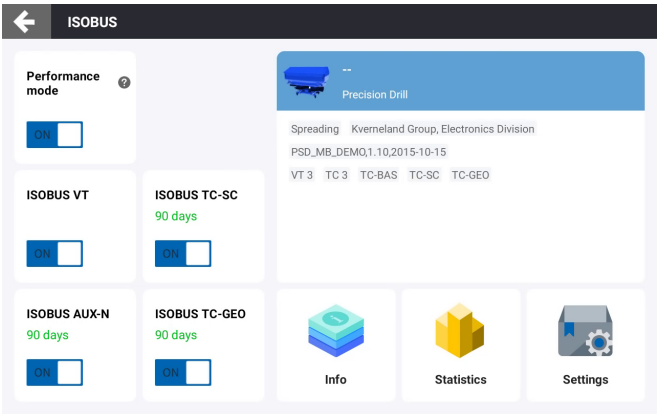


Figure 27 ISOBUS module

2.7.1 Implement Info

The Info sector is split into two parts. The left column contains VT information, such as the loading progress, object pool file and supported language of each VT. The right column shows the implement bound with implement TC and the material used for the channel. The arrow on the right is provided to quickly jump to the material library to switch to other materials.

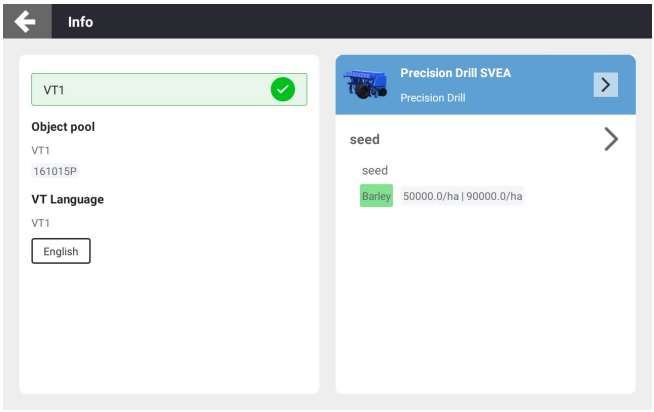


Figure 28 Implement info

2.7.2 Statistics

Statistics of the current task such as operation time and operation area can be checked in the Statistics sector.

You may check the statistics of the current task here. If the implement doesn't report task totals, the relative data will go blank.

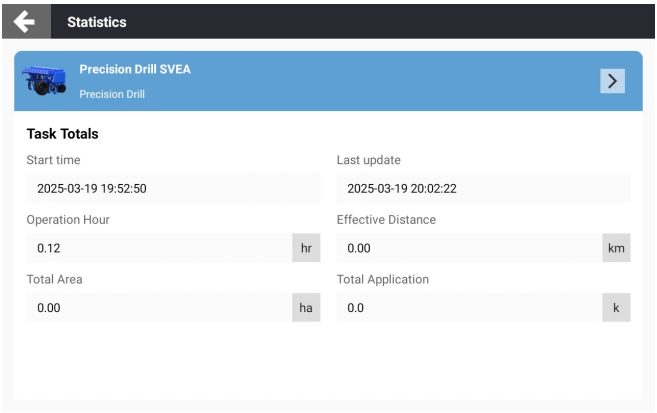


Figure 29 Statistics

2.7.3 Settings

ISOBUS related settings are displayed in the Settings sector. There is also a quick entry to these settings in the VT window, below all the VT tabs.

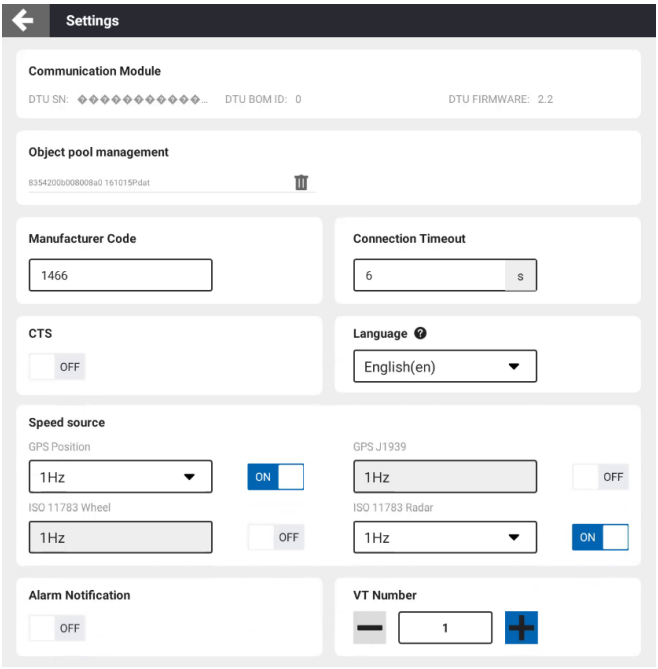


Figure 30 Settings

Elements	Description
Communication Module	Reporting of version information is supported by new DTUs with firmware version 2.2.0.0 and above.

Object pool management	Please be careful when deleting the VT object pool that is currently in use. Once deleting it, you need to wait for the VT object to be loaded next time you turn on the system.
Manufacturer Code	1466is the manufacturer code of Sveaverken. Please do not change it unless instructed by the dealers or service people.
Connection Timeout	If the heartbeat signal of the implement is not detected for a while, it is seen as disconnected. Please do not change it unless instructed by the dealers or service people.
CTS	Retransfer will be attempted when VT object pool transfer is interrupted by CTS mechanism.
Language	All language options supported by connected VTs are presented in the pull-down list. Select the intended language and it will take effect on all connected VTs. If the implement ECU does not support the selected language, the language setting will not take effect.
Speed source	Refer to the chapter "Speed source setup".
Alarm Notification	Once enabled, the terminal will produce an alarm sound when there is an alarm mask in VT.
VT Number	VT number is recommended to be set to 1. Please do not change it unless instructed by the dealers or service people.

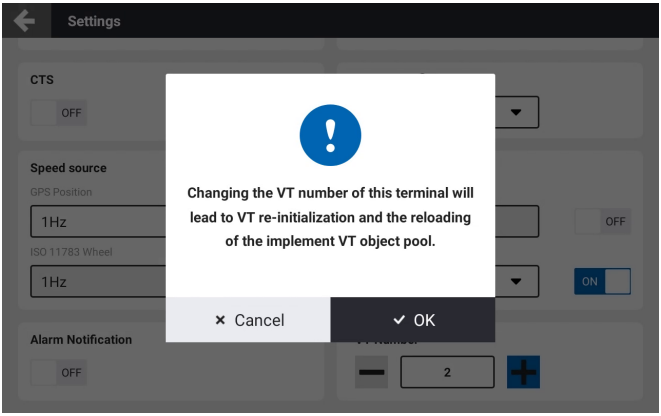


Figure 31 VT number verification

3 Hardware Specifications

3.1 Sveaverken Auto Steer Kit

For details, see "Main Hardware and its Specifications" of the *Sveaverken Auto Steer Kit Software User Manual*.

3.2 ISOBUS Standard

Component	Specifications
ISOBUS Standard	Operating voltage: 9-36 V Communication protocol: CAN CAN baud rate: 250 Kbps Operating temperature: -30ºC to 70ºC Operating humidity: 5% to 95% Storage temperature: -45ºC to 85ºC IP rating: IP66

3.3 ISOBUS Sync

Component	Specifications
ISOBUS Sync	Operating voltage: 9-36 V Communication protocol: CAN CAN baud rate: 250 Kbps Operating temperature: -20ºC to 70ºC (ISOBUS in-cab Cable needs to be placed in the tractor cab) Operating humidity: 5% to 95% Storage temperature: -45ºC to 85ºC IP rating: IP66