X25 Guidance and Auto Steering

Operator Manual

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For use with Software Version 3.18

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Preface

This manual provides information about operating and maintaining this Topcon Precision Agriculture product. Correct use and servicing is important for safe and reliable operation of the product.

It is very important that you take the time to read this manual before using the product.

Information in this manual is current at the time of publication. A system may vary slightly. The manufacturer reserves the right to redesign and change the system as necessary without notification.

Terms and Conditions

Note: Please read these Terms and Conditions carefully.

General

APPLICATION - You accept these Terms and Conditions by purchasing the product from Topcon Precision Agriculture (TPA) or from one of TPA's product dealers.

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Limited Warranty

ELECTRONIC AND MECHANICAL COMPONENTS -TPA warrants that the electronic components manufactured by TPA shall be free of defects in materials and workmanship for a period of one year from the original date of shipment to the dealer. TPA warrants that all valves, hoses, cables and mechanical parts manufactured by TPA shall be free of defects in materials and workmanship for a period of 90 days from the date of purchase.

RETURN AND REPAIR - During the respective warranty periods, any of the above items found defective may be shipped to TPA for repair. TPA will promptly repair or replace the

defective item at no charge, and ship it back to you. You must pay the shipping and handling charges in respect of the same. Calibration of components, labor and travel expenses incurred for in-field removal and replacement of components are not covered in this warranty policy. The foregoing warranty shall NOT apply to damage or defects resulting from:

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(ii) normal wear and tear

(iii) improper use and/or maintenance

(iv) unauthorized modifications of the product; and/or

(v) use of the product in combination with other products not supplied or specified by TPA.

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These Terms and Conditions may be amended, modified, superseded or cancelled, at any time by TPA. These Terms and Conditions will be governed by, and construed in accordance with:

- the laws of South Australia if the product is sold and supplied to you in Australia (in which case the courts of South Australia or the Federal Court of Australia (Adelaide Registry) have exclusive jurisdiction in respect of any claim or dispute) or
- the laws of the State of California if the product is sold and supplied to you outside of Australia
- the provisions of the United Nations Convention on Contracts for the International Sale of Goods shall not apply to these Terms and Conditions.

All information, illustrations, and applications contained herein are based on the latest available information at the time of publication. TPA reserves the right to make product changes at any time without notice.

If any part of these Terms and Conditions would be unenforceable, the provision must be read down to the extent necessary to avoid that result, and if the provision cannot be read down to that extent, it must be severed without affecting the validity and enforceability of the remainder of these Terms and Conditions.

Service Information

Service assistance can be provided by contacting your local TPA Authorized Dealer.

Communications Regulation Information

FCC Compliance Statement (USA)

This equipment has been tested and found to comply with the limits for a Class ‘A’ digital device, pursuant to Part 15 of the FCC Rules. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's expense.

15.19

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

15.21

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.105:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Compliance Statement (Canada)

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.

CE EMC Statement (European Community)

Warning: This is a class ‘A’ product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

EMC Statement (Australia & New Zealand)

This product meets the applicable requirements of the Australia and New Zealand EMC Framework.

Type Approval and Safety Regulations

Type approval may be required in some countries to license the use of transmitters on certain band frequencies. Check with local authorities and your dealer. Unauthorized modification of the equipment may void that approval, the warranty and the license to use the equipment.

The receiver contains an internal radio-modem. This can potentially send signals. Regulations vary between countries, so check with the dealer and local regulators for information on licensed and unlicensed frequencies. Some may involve subscriptions.

Radio and Television Interference

This computer equipment generates, uses, and can radiate radio-frequency energy. If it is not installed and used correctly in strict accordance with TOPCON Precision Agriculture instructions, it may cause interference with radio communication.

You can check if interference is being caused by this equipment by turning the Topcon equipment off to see if the interference stops. If the equipment is causing interference to a radio or other electronic device, try:

- Turning the radio antenna until the interference stops
- Moving the equipment to either side of the radio or other electronic device
- Moving the equipment farther away from the radio or other electronic device
- Connecting the equipment to another circuit that is not linked to the radio.

To reduce potential interference operate the equipment at the lowest gain level that will allow successful communication.

If necessary contact your nearest Topcon Precision Agriculture dealer for assistance.

Note: Changes or modifications to this product not authorized by TOPCON Precision Agriculture could void the EMC compliance and negate authority to operate the product.

This product was tested for EMC compliance using Topcon Precision Agriculture peripheral devices, shielded cables and connectors. It is important to use Topcon Precision Agriculture devices between system components to reduce the possibility of interference with other devices

General Safety

DANGER: It is essential that the following information and the product specific safety information is read and understood.

Most incidents arising during operation, maintenance and repair are caused by a failure to observe basic safety rules or precautions. Always be alert to potential hazards and hazardous situations.

Always follow the instructions that accompany a Warning or Caution. The information these provide aims to minimize risk of injury and/or damage to property.

In particular follow instructions presented as Safety Messages.

Safety Messages and Warnings

The safety symbol is used with the relevant word: DANGER, WARNING or CAUTION.

Messages marked in this way recommend safety precautions and practices. LEARN and apply them.

DANGER: Indicates an imminently hazardous situation that, if not avoided, could result in DEATH OR VERY SERIOUS INJURY.

WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in DEATH OR SERIOUS INJURY.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in MINOR INJURY.

Safety Signs

WARNING: DO NOT remove or obscure safety signs. Replace any safety signs that are not readable or are missing. Replacement signs are available from your dealer in the event of loss or damage.

If a used vehicle has been purchased, make sure all safety signs are in the correct location and can be read. Replace any safety signs that cannot be read or are missing. Replacement safety signs are available from your dealer.

Operator Safety

WARNING: It is YOUR responsibility to read and understand the safety sections in this book before operating this vehicle. Remember that YOU are the key to safety.

Good safety practices not only protect you, but also the people around you. Study this manual as part of your safety program. This safety information only relates to Topcon equipment and does not replace other usual safe work practices.

WARNING: In some of the illustrations or photos used in this manual, panels or guards may have been removed for demonstration purposes. Never operate the vehicle with any panels or guards removed. If the removal of panels or guards is necessary to make a repair, these MUST be replaced before operation.

WARNING: Always check that any suspended vehicle attachments are lowered to the ground before beginning repair or maintenance work on a vehicle.

WARNING: Vehicle and implement parts can become hot during operation and may be under pressure. Refer to vehicle manuals.

WARNING: Wear appropriate protective clothing for the task being undertaken and conditions.

WARNING: Do not operate equipment around explosive equipment or supplies.

WARNING: Topcon is committed to good environmental performance and minimizes the use of any potentially harmful substances in its products. However, it is always advisable not to handle damaged electronic equipment.

This Topcon product may contain a sealed lithium battery.

Always dispose of any electronic equipment thoughtfully and responsibly.

Exposure to Radio Frequency

Exposure to energy from radio frequencies is an important safety issue. Keep a distance of at least 20 cm (7.8 inches) between people and any radiating antenna. Keep a distance of at least 20 cm between transmitting antennas.

WARNING: Products using cellular modem or an RTK base station can transmit radio frequency energy. Check with your dealer.

This device is designed to operate with TPA approved antennas. Discuss with your dealer.

Preparation for Operation

- Read and understand this manual and learn all of the controls before you use the equipment.
- Keep the manual with the equipment.
- If the equipment is moved to another vehicle, move the manual as well.
- Read the manual for the vehicle with which the equipment will be used and check that the vehicle has the correct equipment required by local regulations.
- Make sure you understand the speed, brakes, steering, stability, and load characteristics of the vehicle before you start.

- Check all controls in an area clear of people and obstacles before starting work.
- Identify possible hazards.

WARNING: Topcon equipment must not be used by an operator affected by alcohol or drugs. Seek medical advice if using prescription or over-the-counter medication.

Disclaimer

Topcon accepts no responsibility or liability for damages to property, personal injuries, or death resulting from the misuse or abuse of any of its products.

Further, Topcon accepts no responsibility for the use of Topcon equipment or the GNSS signal for any purpose other than the intended purpose.

Topcon cannot guarantee the accuracy, integrity, continuity, or availability of the GNSS signal.

The operator must ensure that the equipment is correctly turned off when not in use.

Before operating any vehicle equipped with Topcon products, read and understand the following product specific safety precautions.

Important Safety Information

Operator Alertness and Responsibility

The console helps the operator to steer the vehicle, but the operator remains in charge and must be alert and in complete control of the vehicle at all times. The operator is ultimately responsible for safe operation of this equipment.

It is essential that safety requirements are met when operating the console and any of its components. All operators and other relevant personnel must be advised of safety requirements.

Electrical Safety

WARNING: Incorrectly connected power can cause severe injury and damage to people or the equipment.

When working with electrical components, you must do the following:

- Make sure the negative terminal of the battery is disconnected before doing any welding on the vehicle.
- Check that all power cables to system components are connected to the correct polarity as marked. Please refer to the vehicle manual for safety information.
- Check that equipment is grounded in accordance with installation instructions.

Operation and Risk of Obstacles

The following list is not exhaustive or limited. To use the console for assisted steering along a defined wayline, the operator must ensure that it is used:

- Away from people and obstacles
- Away from high voltage power lines or other overhead obstructions (identify any clearance problems before activating the console)
- On private property without public access
- Within cleared fields
- Off public roads or access ways.

Note that:

- The operator needs to know the vehicle's position and the field conditions at all times.
- The operator will need to respond if the GNSS satellite or differential correction signal is lost momentarily.
- The console cannot detect obstacles (people, livestock or other).
- Only use the console in areas that are clear of obstacles and keep a proper distance.
- Steering needs to be disengaged for manual control if an obstacle appears in the path or the vehicle moves away from the wayline.

On/Off and Manual Control

WARNING: Ensure the steering switch is Off to prevent unintentional engagement of the assisted steering. When repairing or maintaining the vehicle/implement, ensure the vehicle CANNOT be moved. Disengage steering, apply brakes and remove keys.

The operator must ensure that the steering switch is Off (*all* LED indicators are off) when assisted steering is not being used.

The operator must disengage assisted steering and use manual control if an obstacle is in the line of travel or moves into the line of travel, or if the vehicle steers away from the desired wayline.

To disengage assisted steering:

- Turn the steering wheel a few degrees OR
- Select the Disengage Auto Steering button on the console AND/OR
- If using an external steering switch, disengage using the switch if the above actions do not disengage assisted steering.

Vehicle Shut Down Safety

Before leaving the vehicle, disengage assisted steering, disengage external steering switch if this is being used, and remove the key from the key switch.

Using a Reference (Base) Station

WARNING: Do not move a reference station while in operation. Moving an operating reference station can interfere with the controlled steering of a system using the reference station. This could result in personal injury or damage to property.

Operators and other affected personnel must be advised of the following safety precautions.

- Do not erect the reference station under or within the vicinity of high voltage power lines.
- When using the portable reference station, make sure that the tripod is securely mounted.

To Get the Best Out of the Product

Back up data regularly. The console has large, but limited storage capacity. Use the Diagnostics Mini-view to view capacity available. A warning screen displays if storage is reaching its limit.

Be aware of file format compatibility. Discuss compatible formats with the dealer.

Topcon Agricultural Products are hardy and designed to work in tough conditions. However, if equipment is unused for a length of time, store away from water and direct heat sources.

Alert Symbols

In this manual two alert symbols are used:

Note: This offers additional information.

WARNING: A warning signal appears on safety signs and in this manual to show that this information is very important to your safety. LEARN these and APPLY them.

Table of contents

Chapter 1 – Console Overview

1.1. Introduction

The X25 is a vehicle-mounted electronic console with LCD display and touchscreen. The console allows operators to work with auto steering, guidance and other control functions from the console. The console is designed to interact with GPS and Electronic Control Units (ECUs), centralizing the ability to communicate, record, store and display data for agricultural uses.

Note: Before using guidance and auto steering, please read the safety instructions and learn about the controls by reading this manual carefully.

The console is a touchscreen. To select something on the screen, touch the area with the tip of a finger.

1.2. Icon descriptions

1.2.1. Guidance toolbar

Icon	Description	Page	Icon	Description	Page
	Field menu	121		Job menu	131
	Guideline menu	145		Steering options menu	153
	Nudge menu	163			

1.2.2. Menu icons

Field menu

Icon	Description	Page	Icon	Description	Page
	Field menu	121		Boundary recording offset	122
	Select field	121		Create boundary from shapefile	125
	New field	121		Clear field boundary	125
	Place flag point	126		Record field boundary	122
	Select exclusion map	128		Complete field boundary recording	122

Job menu

Icon	Description	Page	Icon	Description	Page
	Job menu	131		Record job details	136

Icon	Description	Page	Icon	Description	Page
	Select job	135		Data exchange	137
	Create new job	131		Clear job data	139
	Configure headland for this job	132		Configure VRC	140

Guideline menu

Icon	Description	Page	Icon	Description	Page
	Guideline menu	145		Change guidance mode	145
	Select guideline	150		Open manual AB line entry window	146
	Create new AB line	146		Set A point	146

Steering options menu

Icon	Description	Page	Icon	Description	Page
	Steering options menu	153		Auto steer status	153
	Auto steer calibration	109		Auto steer tuning parameters	157

Nudge menu

Icon	Description	Page	Icon	Description	Page
	Nudge menu	163		Nudge guideline to the vehicle's position	163
	Open nudge options	163		GPS drift compensation	164

Icon	Description	Page	Icon	Description	Page
	Nudge guideline to the right	163		Save nudged guideline	163
	Nudge guideline to the left	163			

1.2.3. Navigation bar icons

Icon	Description	Page	Icon	Description	Page
	System information	91		System diagnostics	99
	Guidance	92		Job information	101
	GPS information	97		Setup screen	11
	Inventory manager	171		Switch box	83
	Auto section control	167		ISOBUS universal terminal	168
	Sprayer			Spreader	

1.2.4. View controls

Icon	Description	Page	Icon	Description	Page
	Select visible map layers	93		Zoom out	96
	Toggle map view mode	95		Zoom in	96
	Re-center/pan	31			

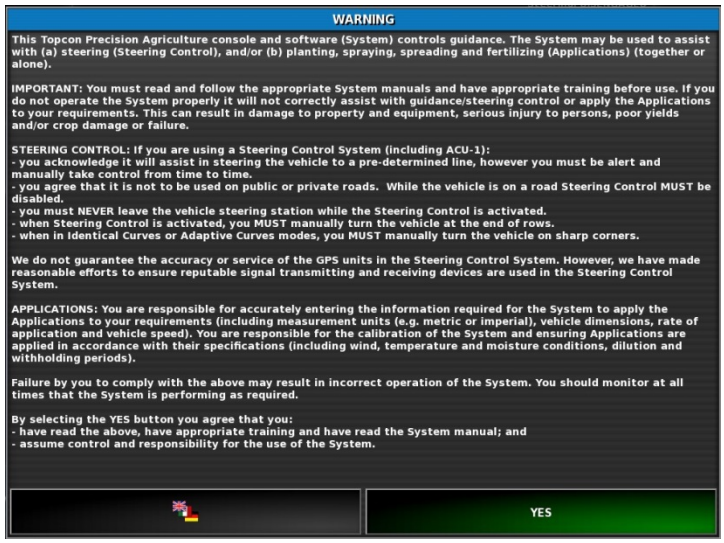
1.2.5. Other icons

Icon	Description	Page	Icon	Description	Page
	Inventory manager	171		Setup screen	11
	Master switch	84		Auto steer engage	153

1.3. Starting and resetting the console

1. Connect the console to a power supply. Ensure associated devices (such as GPS (Global Positioning System) and ECU (Electronic Control Unit)) are connected.
2. Press and hold the green ON/OFF button on the rear of the console for a few seconds to start the console.

3. To change the language on the console, select  .



4. Use the scroll bar, or slide a finger down the list, to see more languages. Confirm the selection  .

   The Warning Screen displays in the chosen language.

5. Read the Warning Screen, scroll to the base of the screen and if you agree select **YES**.

   Note: Selecting Yes confirms your understanding and accepts your responsibility for liabilities described in the Warning Screen.

The console may display the following warning.

6. To acknowledge the alarm, press the center of the alarm window.

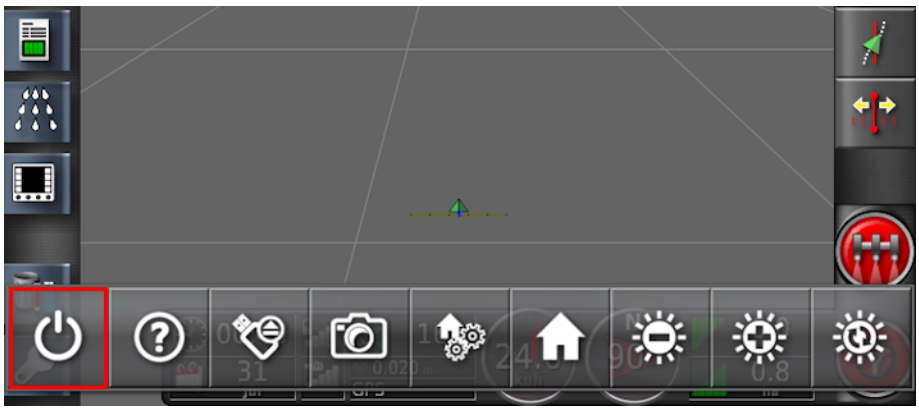
   Note that extra details may be displayed for some alarms by dragging the window downwards.

7. Confirm the GPS receiver is connected correctly and communicating.

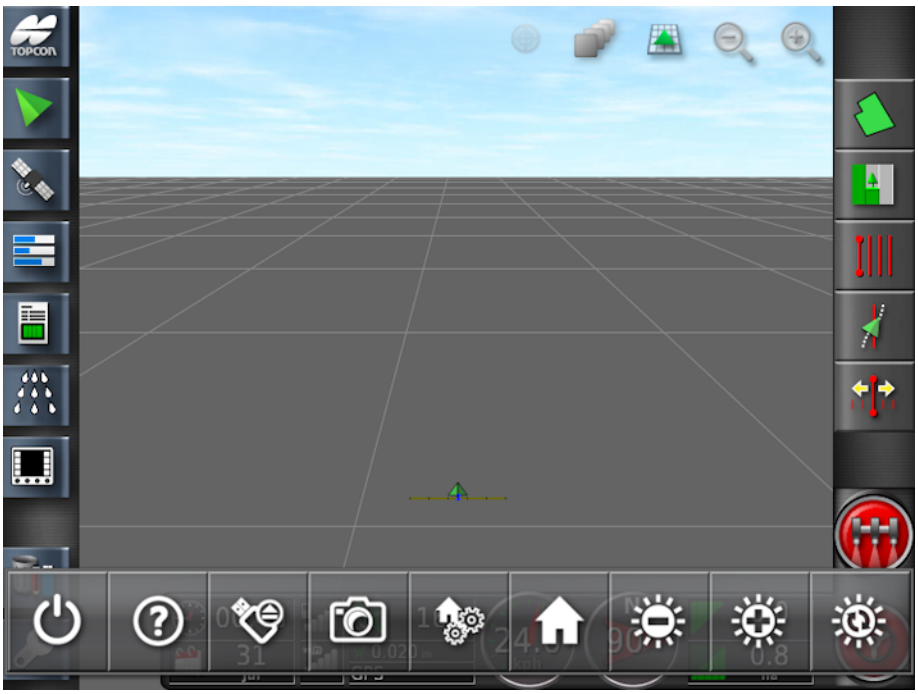
Note: If the warning appears again, this should be remedied during setup by referring to Setting up GPS, page 47.

1.4. Shutting down the console

To shut down the console, swipe up from the base of the screen to display the console toolbar and select the off icon. The system will ask if you want to power down. Select **Yes** to turn off or **No** to continue working.



1.4. Using the console toolbar



The console toolbar is displayed by swiping upwards from the base of the screen.

Power off button

The power off button may be used to shut down the console.

Help

The **Help hint** feature displays the names of the user interface elements on the screen.

Touch the Help icon on the base of the screen. Question marks appear on the screen next to the icons. Select the screen element showing a question mark to view the names.

USB eject

The **USB port** is on the rear of the console. This can be used to import data to and export data from the console.

Before removing the USB, always disconnect first by touching the **USB eject** icon. A message will display that it is safe to remove the USB.

Screenshots

Use the **screenshot** icon to take screenshots (which are stored on the USB). Press the USB eject icon before unplugging the USB.

Manage global home screens

Enables Operation screen layouts to be saved. This may be useful to de-clutter the Operation screen or quickly return to displaying required information.

Display/hide the required views on the Operation screen and select **Save Home Screen** to save the layout.

Go to Home Screen

Displays a list of saved global home screens or toggles between saved screens. Refer to Global home screen mode, page 29.

Brightness control

Brightness control adjusts the brightness of the display. Use plus or minus to adjust display.

Day/night mode

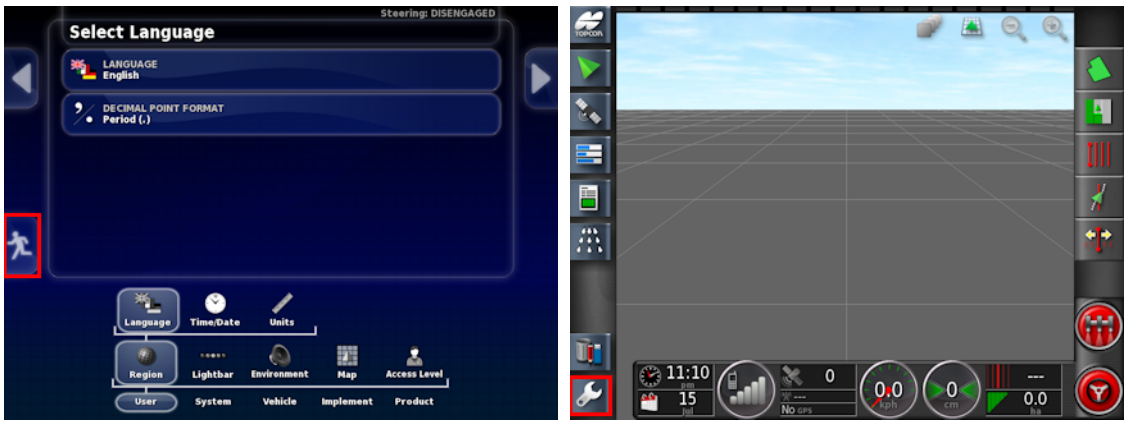
Day/night mode changes the brightness of the display.

Settings are Day, Night and Auto. Auto light mode will set the brightness automatically, depending on light conditions.

Chapter 2 – User Interface Description

2.1. Switching between setup and operation screen

The console has two main screens; the Setup screen and the Operation screen.



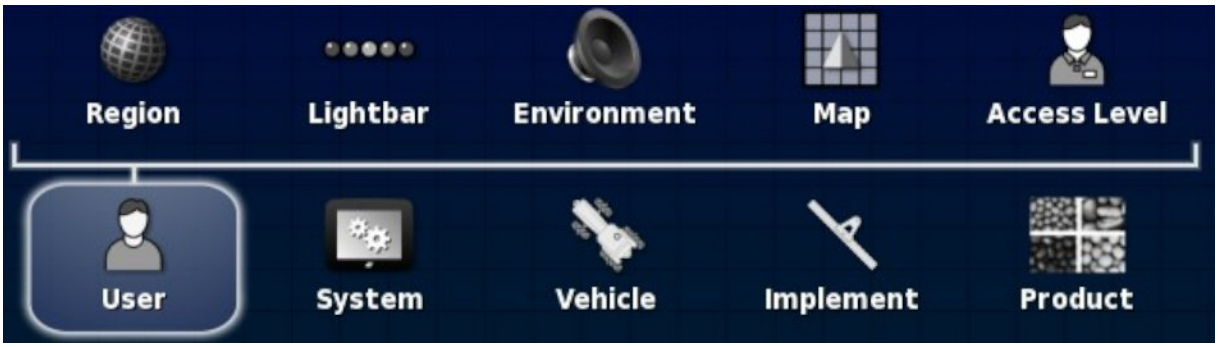
Use the highlighted buttons to switch between the screens.

2.2. Setup screen controls

This section describes the Setup screen controls.

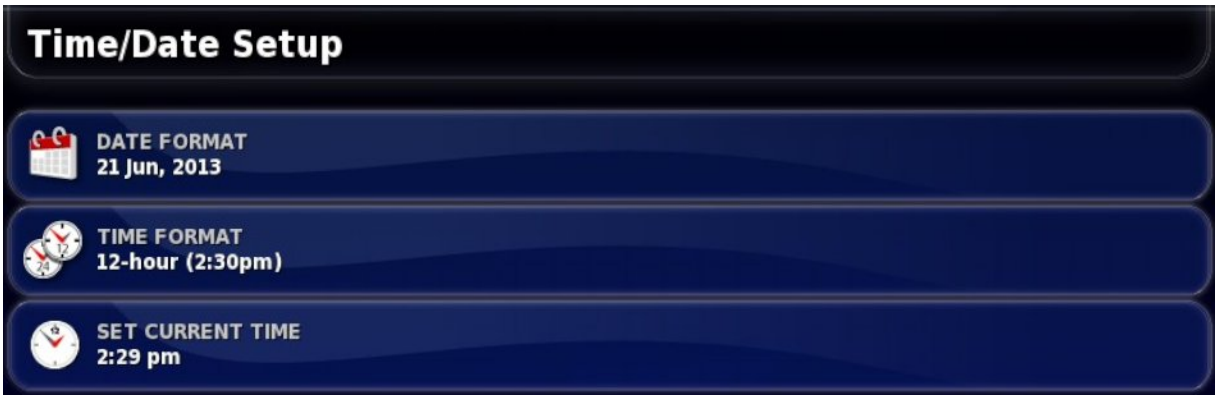
The Setup screen has the following types of controls:

Menus



Menu items are selected from the base of the screen to display the next level of sub-options. When features are enabled, more items may appear in the menus.

Option lists



Selecting menu items will typically display a list of options at the top of the screen. As features are enabled, more options may appear.

Selection lists

Selection lists are used to choose one or more items from a list. A message is displayed if too many items are selected in a multiple choice list. Selections must be confirmed using the tick button.

Cancel and confirm buttons

These buttons are used to cancel or confirm an entry or a selection. One of the buttons must be selected to progress from any screen displaying them.

Keyboard and number-pad

Letter and number keypads are used to enter alphanumeric characters or numeric characters. Entries must be confirmed.

Wizards

Wizards are used to guide the operator through a complex configuration of the system by answering a series of questions. The answers provided determine which questions will follow.

2.3. Operation screen controls

1 **Navigation bar**: Opens mini-views to access other parts of the system. Refer to Using mini-views, page 89.

2 **Inventory manager**: Enables management of vehicles, implements, fields, jobs, guidance lines and so on. Refer to Inventory Manager, page 171.

3 **Setup screen**: Switches to the Setup screen.

4 **View controls**: Allows the user to control what is displayed on the guidance map and how it displays. Refer to Using view controls, page 92.

5 **Guidance toolbar**: Provides tools used to control guidance.

6 **Master switch**: Turns product application on and off if 'virtual master switch' has been enabled during implement setup. Refer to Setting up the master switch, page 84.

7 **Auto steer engage**: Turns auto steer on and off.

8 **Dashboard**: Provides selected information from the system for monitoring. Refer to Monitoring on the dashboard, page 102.

2.3.1. Implement color indicators

 This indicates the position and direction of the vehicle and its implement. The implement color indicates product application status:

- **Red**: Section is off.
- **Blue**: Section is inhibited (on and not flowing, typically due to low speed or pressure).
- **Yellow**: Section is on and not flowing intentionally (typically due to auto-section control stopping the flow).
- **Green**: Section is on and flowing.
- **Orange**: Section is on and not flowing unintentionally or OFF but still flowing unintentionally (typically due to a delay in the time it takes for the flow to start up).

Chapter 3 – Quick Setup Guide

This chapter provides a quick overview to installing software onto the console, setting up the basics and operating the console.

WARNING: It is not recommended to operate the console for the first time without reading the complete manual to become familiar with all safety and operational issues.

3.1. Software update instructions

Note: This procedure should not be necessary when receiving a new console. It is only necessary if a software upgrade is required.

1. On a Windows machine, unzip the installation ZIP file into the root folder of a USB flash drive.
2. Safely eject the USB flash drive from the Windows machine.
3. Plug the USB flash drive into the powered-down console.
4. Power up the console by pressing and holding the green power button on the back of the console.
5. Go to the Setup screen (via the wrench button in lower left corner).
6. Select **User** / **Access Level** / **PROVISION USB FOR UPGRADE** and select **Yes**.
7. Power down the console by swiping up from the base of the screen to display the console toolbar and select the off icon.
8. The system will ask if you want to power down. Select **Yes** to turn off.
9. Leave the USB plugged into the console and restart by pressing and holding the green power button.
10. The installation procedure will start automatically and will take a few minutes.

11. The console will provide the option to restore all user data to the state it was before the upgrade. **WARNING**: Selecting **No** will delete all data saved on the console. The console will restart automatically.
12. After the console starts up, the software is ready for use.

3.2. Getting started

To configure the system:

1. Connect a GPS receiver to the console.
2. Go to the Setup screen (via the wrench button in lower left corner).
3. Select **System** / **GPS** and select:
   - The GPS receiver that is being used (see page 47).
   - The Correction Source required (see page 49).
4. Select **System** / **Serial Ports** and select the serial port on which the GPS receiver is connected (see page 55).
5. Once the system receives GPS data for the first time, it will prompt for configuration of the local time. Accept the current time or modify it to your local time.
6. Select **Vehicle** / **New** and create a new vehicle profile by selecting the appropriate model from the factory profile. Check and if needed modify the geometry of the vehicle (see page 67).
7. Select **Implement** / **New** and create a new implement profile by selecting the appropriate implement type. Check and if needed modify the geometry of the implement (see page 77).
8. If you select ASC-10 as your ECU type, you will be guided through the steps to connect and configure all ASC-10 ECUs on your implement.
9. Go to the Operation screen (via the Exit button in the Setup screen).
10. Go to Select Field (via the top button on the guidance toolbar at the right hand side) and create new Client, Farm and Field (see

page 121).

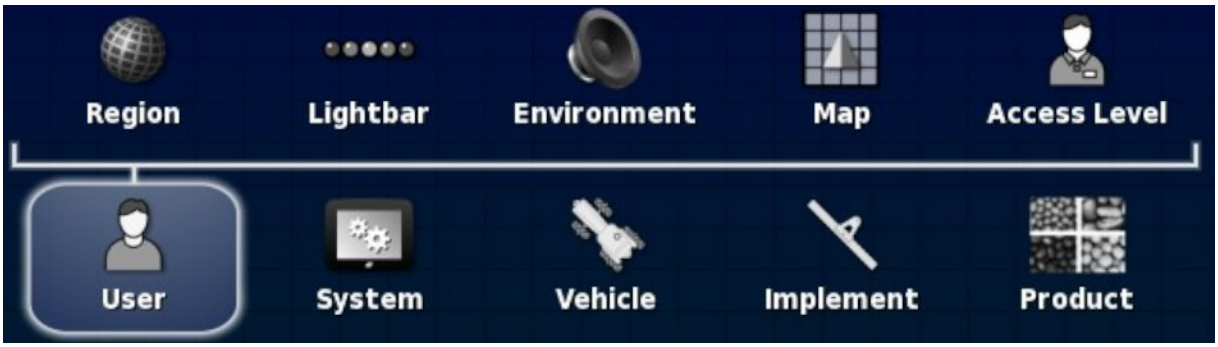
11. Go to New Job (via second button from the top on the guidance toolbar) and create a new job (see page 131). The system is now operational.
12. To enable Auto Steering, go to Setup screen, **System** / **Features** / **Guidance** / **AUTO STEER** (see page 153).
13. To enable Auto Section Control, go to Setup screen and:
    - Create or load an implement with ECU Type set to ASC-10.
    - In **Implement** / **Section Control** / **Sections** configure the number of sections and their width (see page 82).
    - If required, change the section timing in **Implement** / **Section Control** / **Timing** (see page 82).
    - If required, configure a physical or virtual switchbox in **Implement** / **Section Control** / **Section Switch** (see page 83).
    - Enable the Auto Section Control feature in **System** / **Features** / **Implement** / **AUTO SECTION CONTROL** (see page 42).

    The Spray Rate Controller is enabled automatically if the ECU type is set to ASC-10 and the implement function is sprayer.
14. To control any of the enabled features from the Operation screen, use the buttons on the Navigation bar down the left hand side of the screen. Those will open 'mini-views' of the features (see page 89).
15. To expand a mini-view to full screen (if the feature supports that), click on the 'maximize' button on the mini-view title bar. Alternatively, drag the mini-view to the right onto the main screen area.

Chapter 4 – Regional and User Settings

On the Setup screen, the **User** menu option provides the following menu items:

- **Region**: Selects the language, time/date and units.
- **Lightbar**: Sets operation of the LED bar for guidance use.
- **Environment**: Sets up console interaction.
- **Map**: Sets how maps work on the Operation screen.
- **Access Level**: Selects access level for technical staff (not for operator use).



4.1. Setting the region

4.1.1. Language setup

The language displayed on the console may be changed if required and decimal separators may be represented by a period or a comma.

To set the language or decimal point format:

1. Select **User** / **Region** / **Language**.

The following options are available:

Language

There is a choice of languages available.

Use the scroll bar, or slide a finger down the list, to see more languages. Confirm the selection. The console will restart.

Note: The language may also be changed on the warning screen at startup by selecting  .

Decimal point format

A decimal point may be represented by a period (.) or a comma (,).

4.1.2. Time/date setup

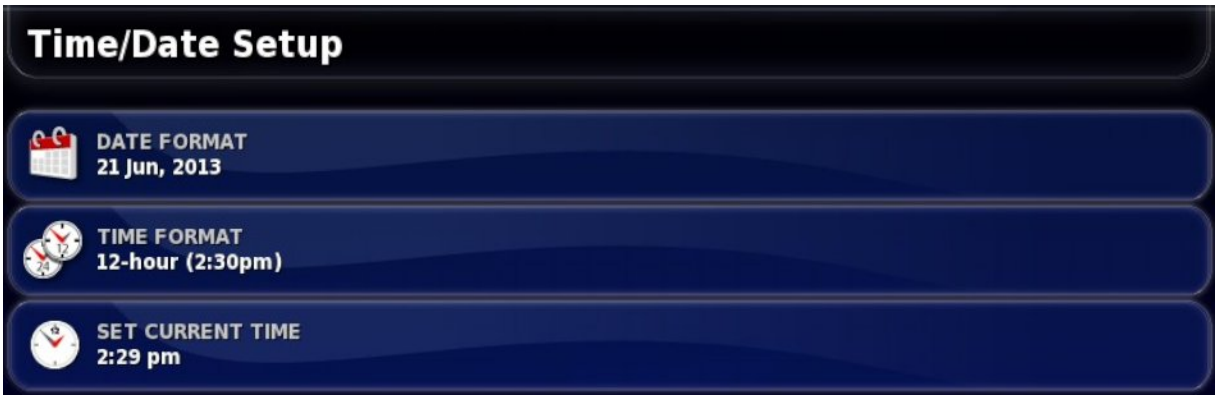
The time and date information is used on the console for job start and end dates, as shown on job reports and is also used for creating time stamps for files. The current date is supplied from the GPS signal.

Note: Both time and date will not work if there is no GPS signal.

The current date and time can be displayed on the Operation screen by selecting the Topcon icon in the top left of the display (or shown on the dashboard).

To set time and date information:

1. Select **User** / **Region** / **Time/Date**.



The following options are available:

Date format

- Day of the month first (12 August 2013)
- Month first (August 12 2013)

Time format

- Twelve hour time (2:30pm)
- Twenty four hour time (14:30)

Set current time

Current time (does not change automatically for daylight saving).

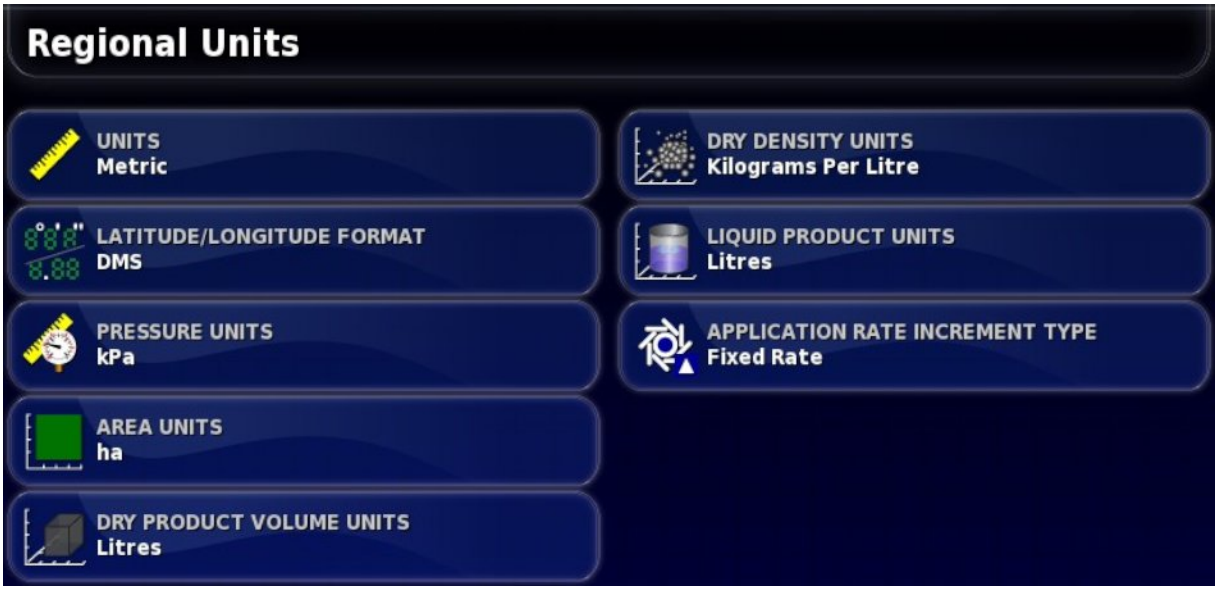
Note that -/+ will change time incrementally.

4.1.3. Units setup

The units options sets the displayed units of measurement (metric or imperial), units for pressure, area and products, the latitude/longitude format and the application rate increment type.

To set unit information:

1. Select **User** / **Region** / **Units**.



The following options are available:

Units

- Metric
- Imperial (US)
- Imperial (UK)

The United States (US) and United Kingdom (UK) imperial options are provided because gallons, fluid ounces and bushels have different measurements in the US and the UK.

Note: Changing this setting will not override the selection of individual units (Pressure, Area etc.) that have been changed.

Latitude/longitude format

- Standard (decimal degrees: 45.54)
- DMS (Degrees, Minutes, Seconds: 45º, 23’ 36”)

Pressure units

- kPa (kilopascal)
- psi (pounds per square inch)
- bar
- Default (kPa): Selects the default setting appropriate for the selected **Units**

Short distance units

- Meters
- Inches
- Feet
- Default (meters)

Area units

- ha (hectare)
- ac (acre)
- Default (ha)

Dry product volume units

- Litres
- Kilograms
- Cubic meters
- US bushels
- UK bushels
- Gallons
- Pounds
- Cubic feet
- Bushels

Dry density units

- Kilograms per litre
- Kilograms per cubic meter
- Kilograms per US bushel
- Kilograms per UK bushel
- Pounds per gallon
- Pounds per cubic foot
- Pounds per bushel

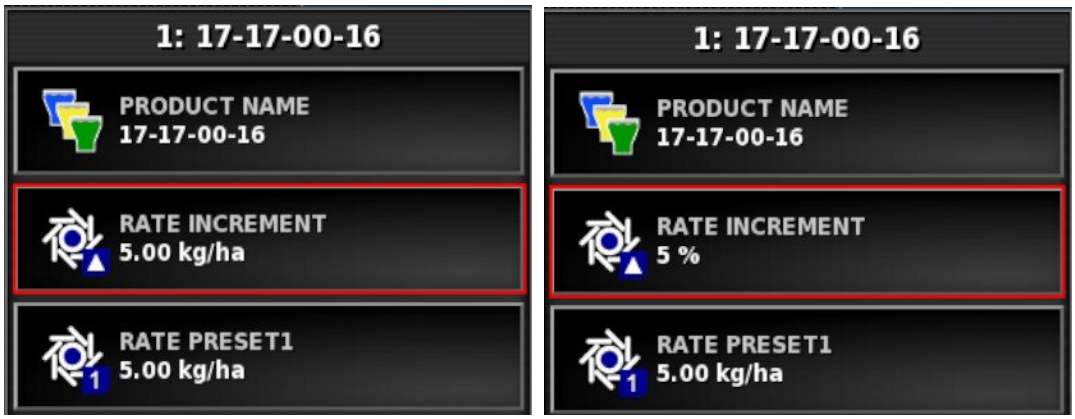
Liquid product units

- Litres
- Cubic meters
- Tonnes
- Gallons
- Cubic feet
- Pounds

Application rate increment type

- Fixed rate
- Percentage of Preset 1

This option changes the behavior when the operator presses the up/down buttons to change the requested product application rate. These can either change by a fixed rate or by a percentage of the rate set for **RATE PRESET1**.

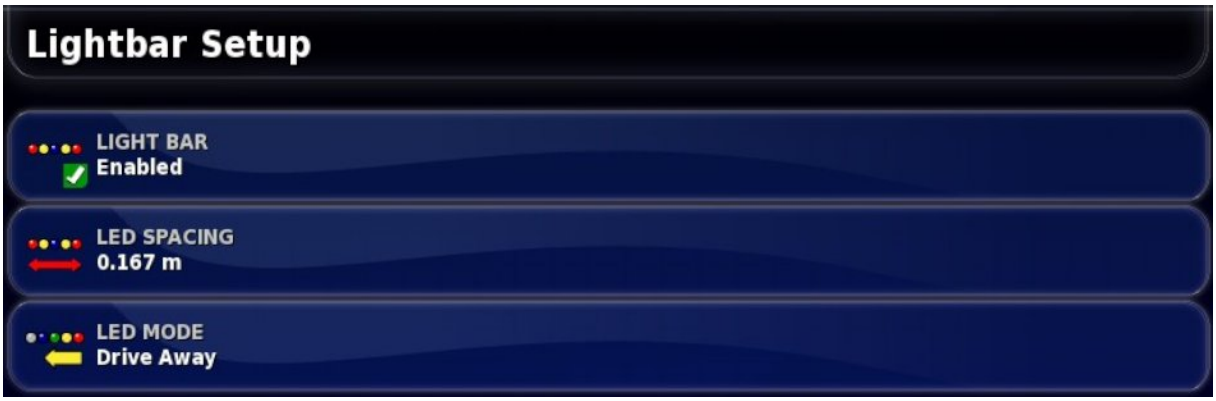


4.2. Setting up the lightbar

During operations, the virtual lightbar on the top of the guidance screen can show how far the vehicle is deviating from the set guideline.

To set up the lightbar:

1. Select **User** / **Lightbar**.



The following options are available:

Light bar

Enabled or disabled.

LED spacing

Sets the ground distance from the wayline (guideline) that each LED represents.

If the LED spacing is set to 10 cm (0.1 m), the following behavior is observed:

- The center LED is blue and will be illuminated all the time (unless the cross track error is 100 cm or more). When on the wayline by less than 10 cm (+ or -) that is the only LED that is illuminated.
- Once you reach a cross track error of 10 cm, the next LED (green) will also illuminate.
- At 20 cm another green LED illuminates.
- Yellow LEDs illuminate at 30, 40, 50 cm.
- Red LEDs illuminate at 60, 70, 80 and 90 cm.

- Once the cross track reaches 100 cm or more, all LEDs turn off except for one red LED on the far side of the console.

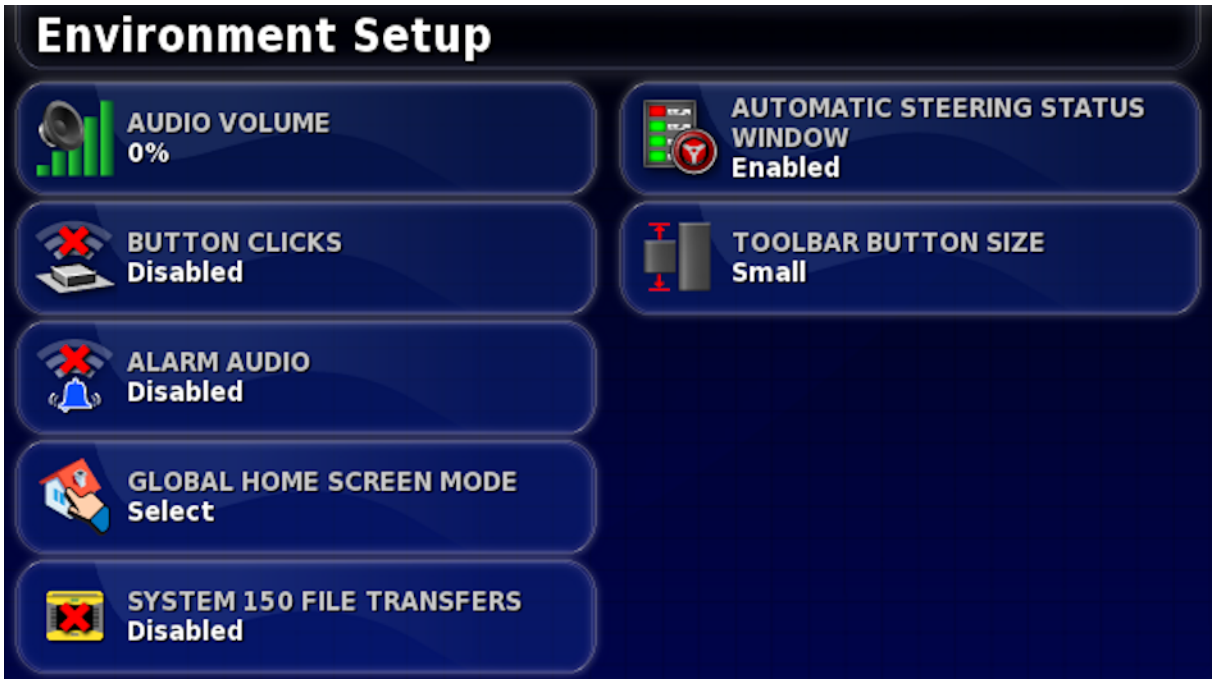
LED mode

- **Drive away**: Activates the LEDs on the side of the vehicle veering away from the guideline. Drive away from the lit LEDs to move back to the guideline.
- **Drive towards**: Activates the LEDs on the side of the vehicle veering towards the guideline. Drive toward the lit LEDs to move back to the guideline.

4.3. Setting up environment

Sets up console interactions.

1. Select **User** / **Environment**.



The following options are available:

Audio volume

Sets the volume of console sounds.

Button clicks

Enable or disable sounds when making a selection on the console.

Alarm audio

Enables sounds when an alarm is triggered.

Global home screen mode

Enables Operation screen layouts to be saved. This may be useful to de-clutter the Operation screen or quickly return to displaying required information.

- **Select**: Selecting the home icon displays a list of saved global home screens to select.

- **Toggle**: Selecting the home icon toggles between saved global home screens. Refer to Manage global home screens, page 9.

System 150 file transfers

Enables the following System 150 (GX-45) files to be imported and exported: AB lines, Pivots, Curves, Optimal lines, Project lines and Field boundaries.

System 150 file transfers allow the operator to export files in a format that matches Topcon's System 110/150 system and import files that were exported from System 110/150.

Enabling this option displays the System 150 icon  at the base of the Inventory Manager  on the Operation screen (refer to Inventory Manager, page 171).

Automatic steering status window

Displays a Steering Status window when the Auto Steer Engage button  is selected on the Operation screen if the steering is unable to engage. The Steering Status window displays issues that may be preventing the steering from engaging.

Note: The Steering Status window may still be displayed via the **Steering Options Menu** / **Auto Steer Status** (see page 153) if this setting is disabled.

Toolbar button size

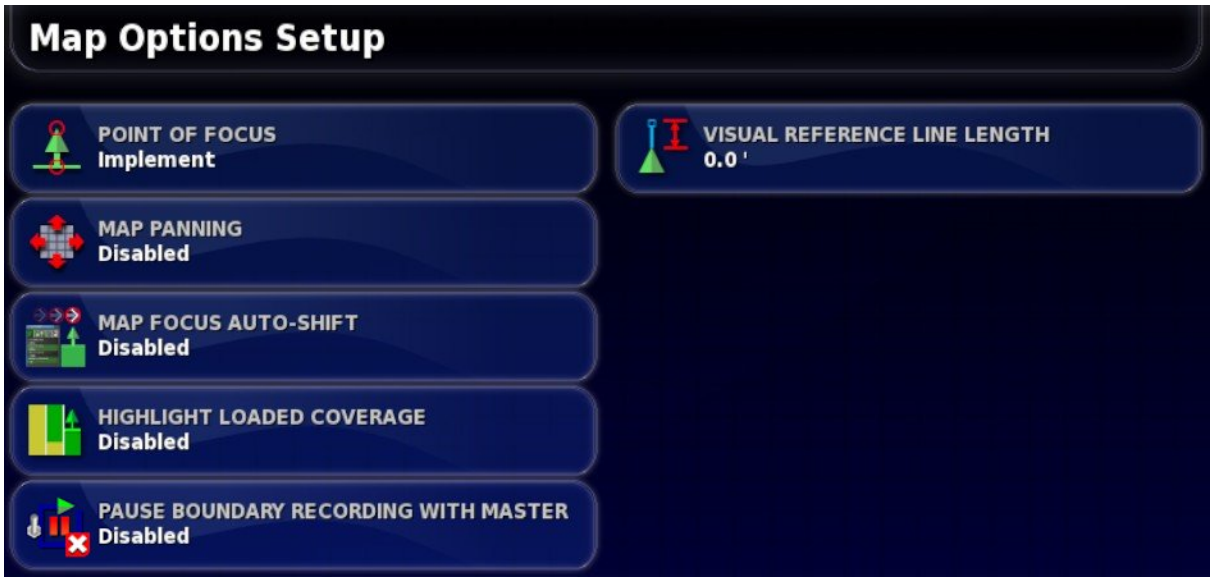
Changes the size of the buttons on the Operation screen.

4.4. Setting up map options

Sets how maps work on the Operation screen.

To set up the maps:

1. Select **User** / **Map**.



The following options are available:

Point of focus

- **Vehicle**: Places the vehicle at the center of the screen.
- **Implement**: Places the implement at the center of the screen.

Map panning

Allows the screen to move around in a map when the user slides a finger across the screen.

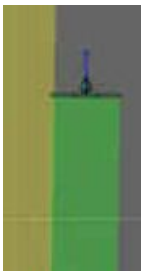
Enabling this option places the map panning icon beside the Toggle Map View and Map Layers at the top of the Operation screen. Touching this icon re-centers a panned map to the current location of the vehicle.

Map focus auto-shift

Sets the vehicle in the center of the available screen, when mini-views are open.

Highlight loaded coverage

After loading an existing job, shows previously completed and loaded coverage in a different color from the newly created coverage.



Previously covered areas are shaded yellow if this has been enabled and past job information has been recorded.

New coverage is shaded green. If this option is not enabled, both the previous coverage (from the loaded job) and the newly recorded coverage are shown in the same green color.

Pause boundary recording with master

If the master switch is turned off while a boundary is being recorded, the boundary recording is paused. Turning the master switch back on resumes the boundary recording.

This may be useful to automatically pause boundary recording if product application is paused to maneuver in a tight corner or deviate around an object.

Note that boundary recording may still be manually paused (refer to Setting a new boundary, page 123).

Visual reference line length

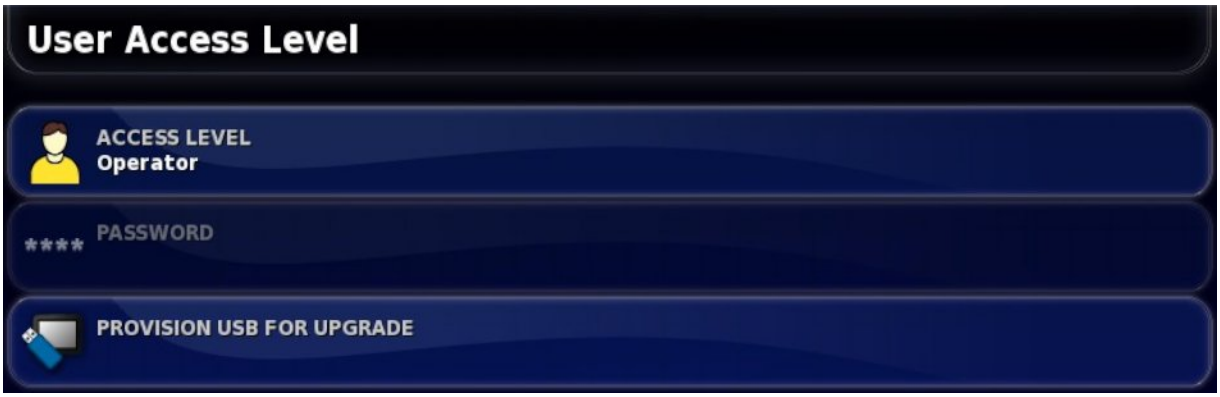
Provides a display marker at the user prescribed distance in front of the vehicle icon to help accurately acquire the wayline after a turn when using manual guidance.

4.5. Setting access level

Setting the access level is a restricted activity and Operator is the only available option for all operators and owners.

To view the access level:

1. Select **User** / **Access Level**.



Other levels of access are only used by qualified and fully trained technical and support staff. **DO NOT ATTEMPT TO CHANGE THE ACCESS LEVEL.**

Provision USB for upgrade

This option is used if the console software is being upgraded via a USB.

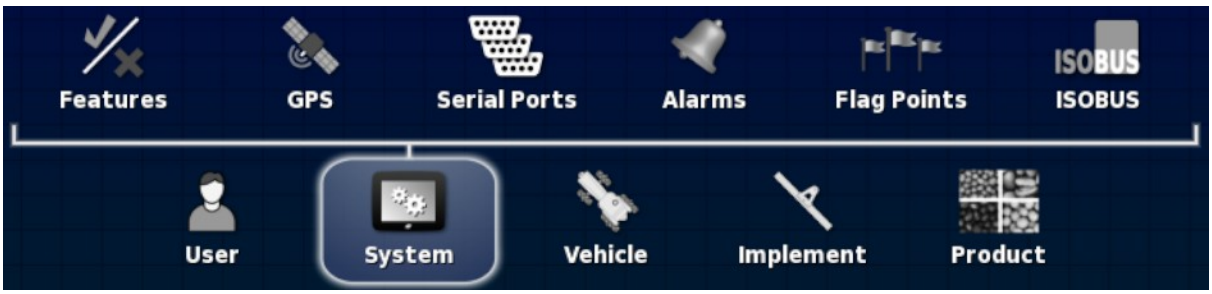
Insert the USB and select this option to run a script that enables the USB to perform an upgrade the next time it is plugged into a console and the console is turned on. Refer to Quick Setup Guide, page 17.

Chapter 5 – System Setup

This chapter explains how to set up system elements such as GPS connections, alarms and optional features.

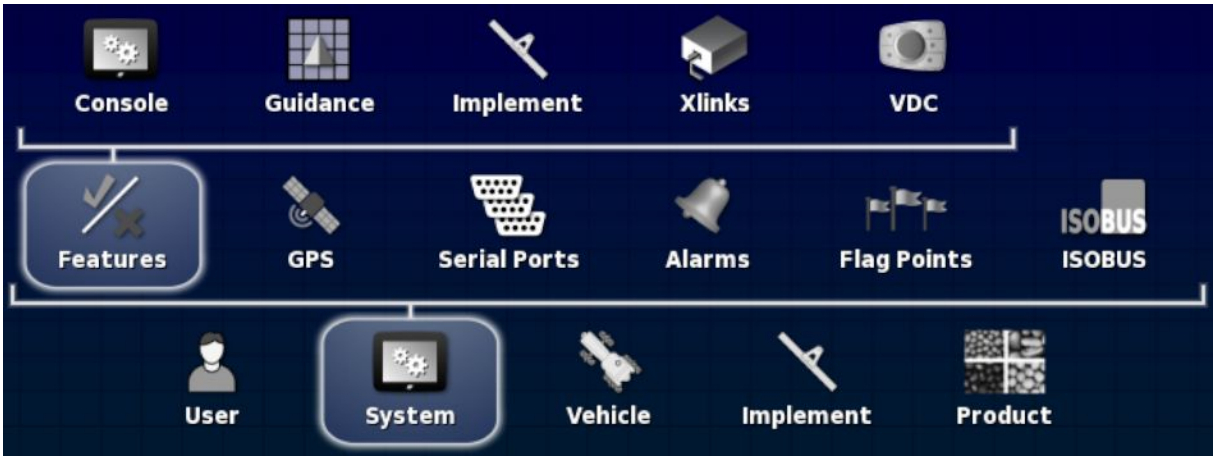
The **System** menu option provides the following menu items:

- **Features**: Enables or disables optional features.
- **GPS**: Sets up the functionality of the connected GPS receiver.
- **Serial Ports**: Selects the console serial port assigned to a particular function.
- **Alarms**: Sets alarm functionality.
- **Flag Points**: Selects icons and labels for flag points. Flag points show obstacles or other land features on a guidance map.
- **ISOBUS**: Allows interaction with ISOBUS compliant ECUs via the ISOBUS Universal Terminal.



5.1. Setting features

The **Features** menu option provides the following menu items:

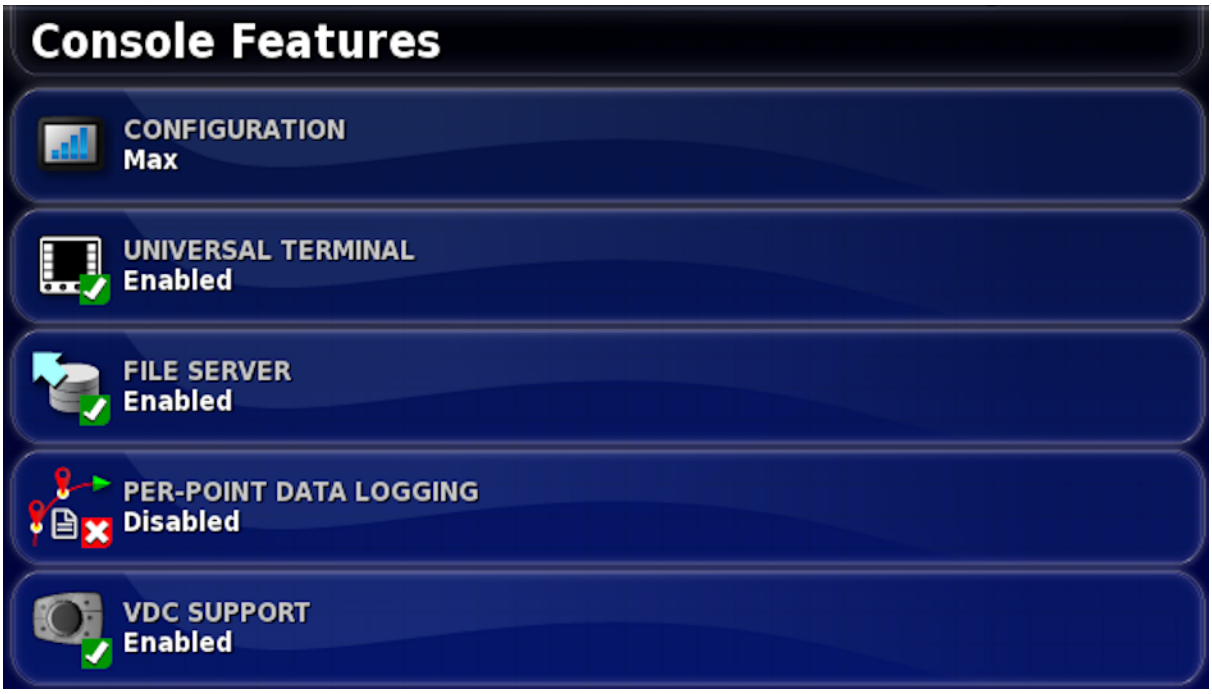


5.1.1. Console setup

Configure console features.

To set up features:

1. Select **System** / **Features** / **Console**.



Configuration

Enables the X25 to be upgraded to Max. (A registration code is required.) This provides variable rate control, increases the number of

products from one to four (four tank sprayer or spreader instead of a single tank) and increases the maximum number of sections to 30 (from 10).

Universal terminal

Enables the ISOBUS Universal Terminal server that allows interaction with ISOBUS compliant ECUs.

Enabling this option displays a new ISOBUS icon on the System menu.

1. Select **System** / **ISOBUS**.

The Universal Terminal Setup page is displayed.

- **Universal terminal**: Controls whether the UT server is actively receiving connections from other devices.

  This may be useful if there are multiple UTs on the bus and multiple UTs claim to be the primary UT (in which case the UT will go offline automatically and require the **UT Number** to be

changed before it will go online again), or to temporarily deactivate the UT on the console.

- **UT number**: Sets the UT number for the console. If there are multiple UTs on the bus, use this setting to assign a unique number to this UT to avoid conflicts. The UT with number 1 will be the default UT. If the UT client doesn't appear on the correct UT you may need to reconfigure its UT number appropriately. If there is a conflict, the following message will appear:

  'The UT Number of this UT conflicts with another UT on the bus, and this UT has been disabled. Please make sure that this UT has a unique UT Number.'

- **Soft keys per column**: Sets the number of available softkeys on the UT interface on the Operation screen.
- **Soft key location**: Sets the location of the softkeys on the UT interface and the number of columns (1 or 2).
- **Working set key location**: Sets the visibility and location of the keys that switch the interface between ECUs (if more than one ISOBUS compliant ECU is connected).

Refer to Using universal terminal (ISOBUS), page 168.

File server

Can store files for an ISOBUS ECU if the ECU has file server capability. It allows implement and other profiles to be moved between ECUs. Files can be exported and imported using the USB.

Per-point data logging

Records each GPS data point during the job and a number of associated data fields such as elevation, heading, GPS quality, section states, CropSpec readings. These are exported as a .csv file (refer to Exporting a job report, page 137).

VDC support

The VDC (Vehicle Display Controller) is an optional device that may be used to perform a selection of console functions. Refer to VDC setup, page 45.

5.1.2. Guidance setup

Sets the guidance system functionality.

To set up guidance features:

1. Select **System** / **Features** / **Guidance**.

Guidance

This is a standard feature of the console and cannot be disabled.

Auto steer

Enables auto steering and can only be used on vehicles fitted with an auto steering system such as the AES-25.

Controlled traffic

The Controlled Traffic feature adds two new guidance modes; Optimal Lines and Project Lines. When the feature is enabled, the operator is able to select either of these modes to use for guidance or auto-steering.

Optimal Lines mode allows multiple curves to be recorded in a single file and all recorded curves can be viewed on the screen at the same time. Any of the curves recorded in a set of optimal lines can be selected and used for guidance or auto-steering.

Project Lines mode is similar to Optimal Lines mode in that it allows multiple curves that can be used for guidance in the same file and to be viewed on the screen at the same time. The main difference between Project Lines and Optimal Lines is that waylines are not generated for

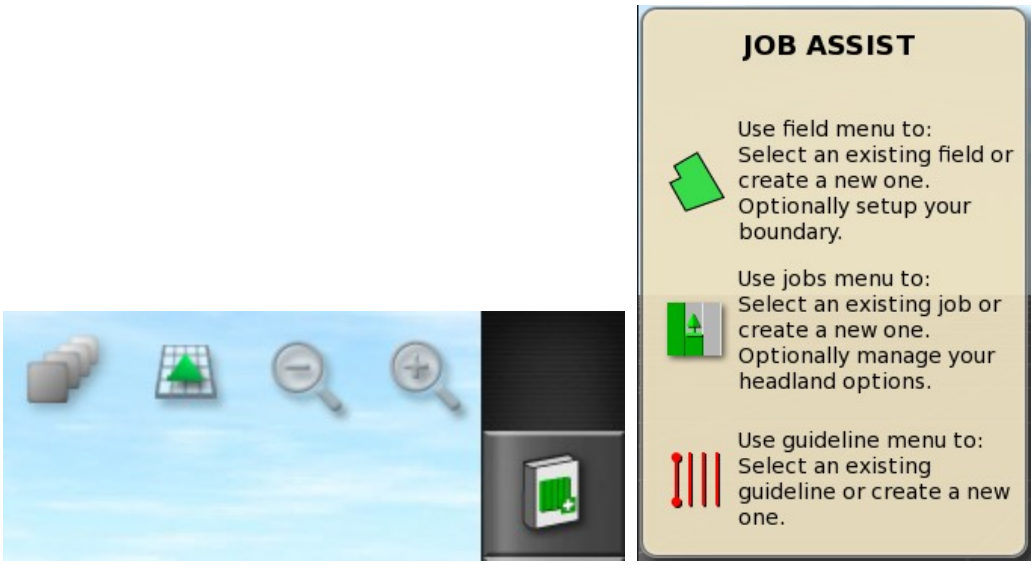
Project Lines. Only the path that each Project Line follows can be used for guidance or auto steering.

A registration code must be purchased to enable this functionality.

Refer to AGA5196 Controlled Traffic Operator's Manual for more information.

Job helper mode

- **Disabled**: No job helper modes are available.
- **Job Assist**: A help screen that may be used to step through the tasks in a typical job. This may be useful when learning to use the console. Enabling the option places a new icon at the top right of the Operation screen.



Selecting the icon displays the help screen. As options are selected, the Job Assist screen lists the next possible steps.

- **Quick Start**: Automatically steps through the tasks required to complete a typical job. This may be useful to speed up the performance of standard tasks. Enabling the option places a new menu item on the right hand side of the **Features** menu.

1. Select **System** / **Features** / **Quick Start**. The Quick Start Settings page is displayed. This page is used to select the tasks that quick start will automatically step through. Enable the required tasks.

- **Export job report for previous job**: Refer to page 137.
- **Change field**: Refer to page 121.
- **Record boundary**: Refer to page 123.
- **Change job**: Refer to page 131.
- **Set headland mode**: Refer to page 132.
- **Set guideline mode**: Refer to page 145.
- **Change guideline**: Refer to 145.

- **Load VRC map**: Refer to page 140. (X25 Max only.)
- **Auto-hide on success**: Closes the Quick Start window once all required tasks are completed.

2. To use Quick Start, select the button at the top right of the Operation screen.

Selecting the button opens the first task enabled in the Quick Start setup.

5.1.3. Implement setup

Sets up the functionality for the attached implement.

To set up implement functionality:

1. Select **System** / **Features** / **Implement**.

Auto section control

Permits the system to turn sections on for new areas to be covered and off for areas that have already been covered.

Variable rate control (X25 Max only)

Works with a prescription map to vary application rates over the mapped areas (refer to page 140).

Area counters

Area counters are used with spreaders, and sprayers to record data such as treated area, product used, operating time, average rate and productivity rate. Area counters are not available when using ISO implements or Xlinks.

Refer to the Spreader, Sprayer operator manuals for more information.

Enabling area counters displays the **Reset area counters** option:

- **Never**: The area counters must be reset manually, or they will continue to accumulate data.
- **Prompt**: When a job is erased you will be asked if area counters should be reset.
- **Auto**: Creating a new job or erasing a job will automatically reset the area counters.

Nitrogen sensing

Topcon CropSpec

A Topcon real-time integrated crop monitoring and application system. Used to monitor in-field variability, treat on-the-go, or keep data for future analysis or prescription applications.

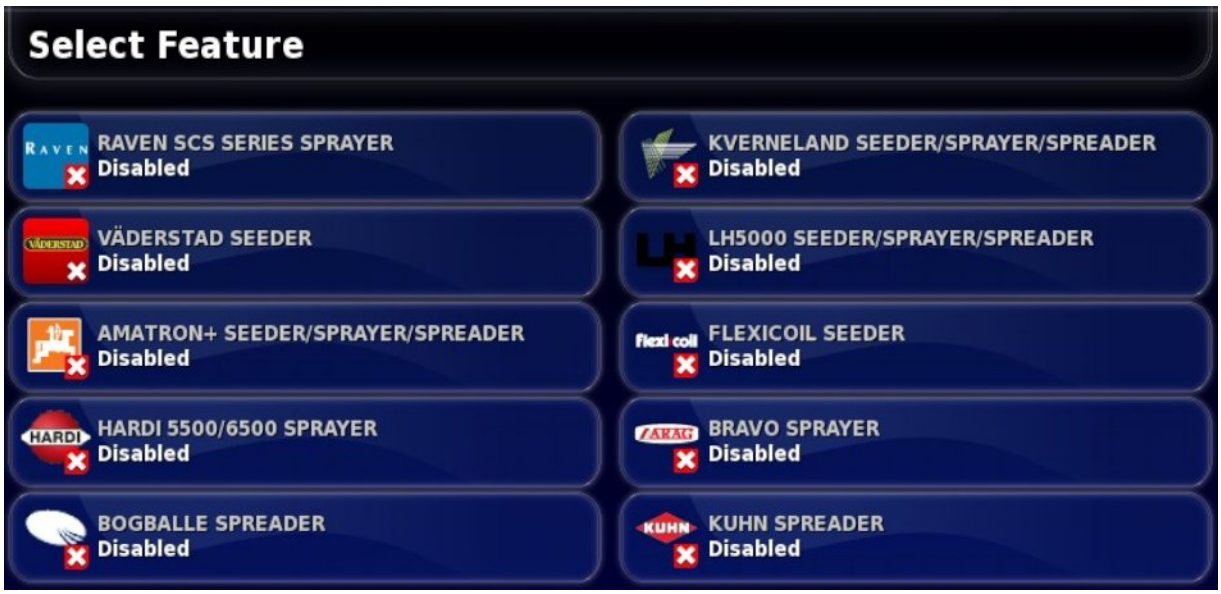
CropSpec is displayed via the Universal Terminal (refer to page 168), using a map overlay.

5.1.4. Xlinks setup

An Xlink is a software interface that allows the console to communicate with a third party controller using a non-ISOBUS serial interface. The third party controller may have its own console that can be externally controlled via the Xlink.

To set up Xlink functionality:

1. Select **System** / **Features** / **Xlinks**.



Each third party controller has its own proprietary serial interface specification that details what functionality it provides to the console via the Xlink.

Xlink interfaces are not standard like ISOBUS. The available features depend upon the third party controller's manufacturer. They will also vary depending on the third party controller's version.

A registration code must be purchased to enable this functionality.

Refer to AGA5332 Xlinks Operator's Manual for more information.

5.1.5. VDC setup

The VDC (Vehicle Display Controller) is an optional device that may be used to remotely perform a selection of console functions.

To set up VDC functionality:

1. Select **System** / **Features** / **Console**.
2. Select **VDC SUPPORT** to enable the VDC functionality.
3. Select **System** / **Features** / **VDC** to assign functions.

Can Port 2 is assigned to the VDC by default. This setting may be changed if required. The console must be restarted for the change to take effect.

Button 5 is always set as the Back button.

The following functions can be assigned to Button 1 - 4:

- **Place A and B points**: Refer to Setting AB lines manually, page 146.
- **Boundary recording**: Refer to Setting a new boundary, page 123.
- **Master switch**: Refer to Setting up the master switch, page 84.
- **Steering engage**: Refer to Engaging auto steer, page 159.
- **Add flag point**: Refer to Setting flag points, page 126.
- **Toggle guidance mode**: Refer to Guideline Menu, page 145.

- **Quick start**: Refer to Job helper mode, page 40.
- **Global home**: Refer to Setting up environment, page 29.

5.1.6. Setting up quick start

This option is available under **System** / **Features** / **Quick Start** if **Quick Start** is selected as the **Job Helper Mode** under **System** / **Features** / **Guidance**. Refer to Job helper mode, page 40.

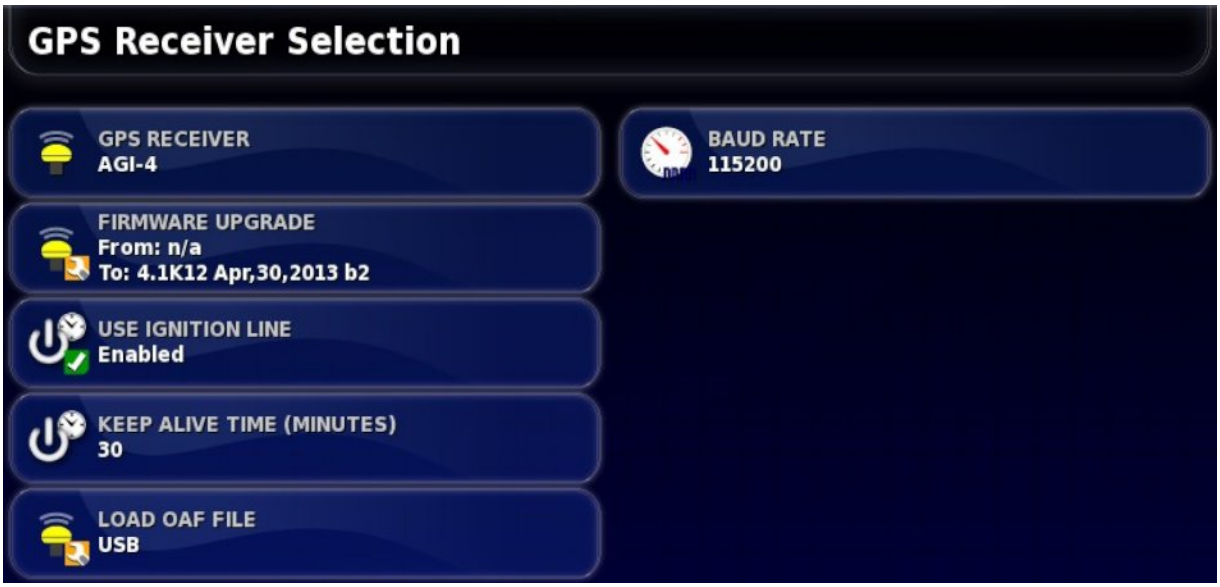
5.2. Setting up GPS

5.2.1. Receiver setup

Sets up GPS receiver capabilities.

To set up the GPS receiver:

1. Select **System** / **GPS** / **Receiver**.



GPS receiver

Select the GPS receiver type from the selection list.

The console can accept GPS input from a third party GPS receiver provided the receiver can be configured to output the data in the required correct format. Please consult the GPS receiver manufacturer to find out if your receiver can be set up in the correct way.

The console requires the following input if **Other** is selected under **GPS RECEIVER**:

- GGA 0.2 seconds (5Hz)
- VTG 0.2 sec (5Hz)
- ZDA 15 seconds

RS-232 communications

- 19200 baud rate (preferred) 8 data bits, No Parity, 1 Stop bit (19200, 8N1)

Firmware upgrade

Initiates a GPS receiver firmware upgrade via USB (if required) or via the package that comes bundled internally with the console software. The Firmware Upgrade button shows the version of the firmware that is currently in the GPS receiver and the version of the firmware to which it will be upgraded.

Use ignition line

Note: This feature should only be used **if the vehicle wiring and harnessing is compatible**.

(AGI-4 only) Separates the power supply to the AGI-4 receiver from the vehicle ignition. This enables the GPS receiver to remain powered after the vehicle is turned off. The **Keep Alive Time** determines how long the receiver remains powered.

Keep alive time

Note: This feature is only available if **Use Ignition Line** is set to **Enabled**.

(AGI-4 only) Keeps the GPS receiver active after the system has been shut down. This is useful to retain accurate positioning information (satellite convergence). For example: To keep the receiver on for 1 hour after the system is shut down, enter 60.

Load OAF file

Loads an Options Authorization File to the GPS receiver. This is normally done prior to receiver installation, but the file can be updated in the field via USB (if required).

Baud rate

The data transmission rate for modems. GPS receiver baud rate can be changed from the default value. This setting should not normally be altered. If the setting does need to be changed, refer to the manual supplied with the modem.

5.2.2. Correction setup

GPS correction sources are used to increase the accuracy of the GPS position.

To set up the GPS correction source:

1. Select **System** / **GPS** / **Correction**.

2. Select the required **CORRECTION SOURCE**.

Note: The available correction sources are defined below. The extra options that must be defined vary depending on the correction source selected, refer to Correction source options, page 51.

Correction sources

Correction Source	Description
Autonomous	Let the receiver find any free available satellites. Will not use any correction. Precision: 2 - 5 m.
Automatic	Let the receiver select the best available correction source.
WAAS	Use Wide Area Augmentation System. North America only. Precision: sub-meter.

Correction Source	Description
EGNOS	Use the European Geostationary Navigation Overlay Service. Europe only. Precision: sub-meter.
MSAS	Use Multi-functional Satellite Augmentation System. East Asia only. Precision: sub-meter.
OmniSTAR VBS	Use OmniSTAR Virtual Base Station (VBS) correction. Precision: sub-meter.
OmniSTAR XP	Use OmniSTAR XP correction. Precision: sub ½ meter.
OmniSTAR HP	Use OmniSTAR HP correction. Precision: 10 cm.
OmniSTAR G2	Uses OmniSTAR correction with both GPS and GLONASS satellites. Precision: 10 cm.
RTK	Use Real Time Kinematic navigation. Precision: 2 cm.
RTK (External Modem)	Use external modem connected to GPS receiver for RTK corrections. Precision: 2 cm.
RTK (NTRIP)	Use a cellular delivered RTK correction source from a network provider. Precision: 2 cm.
DGPS (External Modem)	Use an external modem to import DGPS corrections from a network provider. Precision: sub-meter.
DGPS (NTRIP)	Use a cellular delivered DGPS correction source from a network provider. Precision: sub-meter.

Note: The source selected here will affect the functioning of guidance and auto steering. It is important to be aware of the needs of the GPS equipment. Refer to the manual supplied with the GPS equipment.

Note: Precision figures depend on many variables (number of satellites, distance from the correction source, ionospheric conditions, receiver, antenna) and cannot be guaranteed.

Correction source options

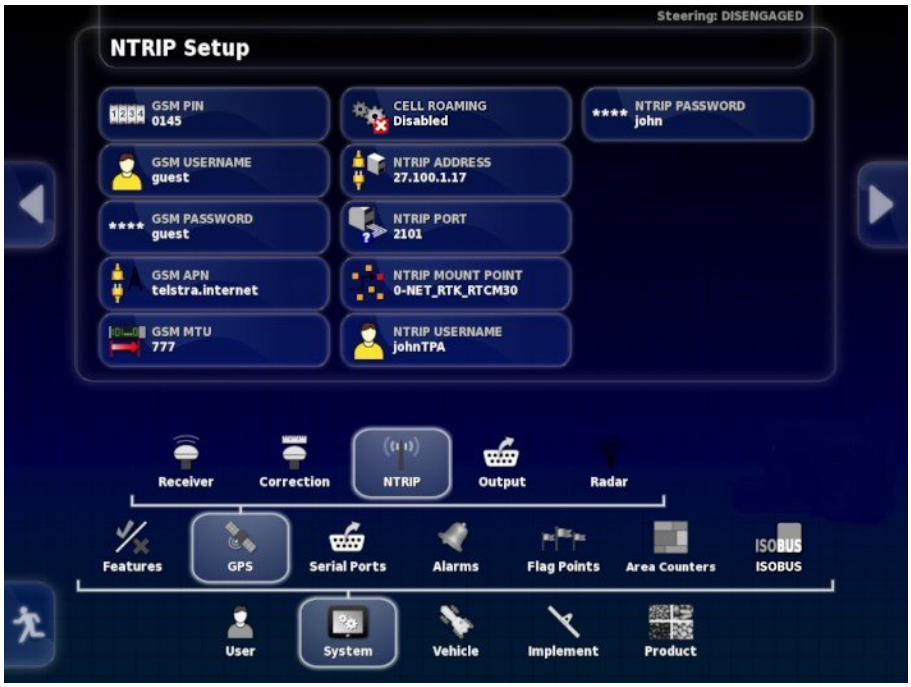
Note: The correction source options that must be defined vary depending on the correction source selected.

Option	Description
GLONASS	Allows the GPS receiver to use the Russian satellite navigation system GLONASS, in addition to GPS.
TRUPASS	Topcon's GPS drift compensation algorithm, used to provide better pass to pass performance. Available with the following correction sources: Autonomous, WAAS, EGNOS, MSAS, OmniSTAR VBS. Note: This option must be purchased separately.
RTK Protocol	Communication protocol for data transfer between the RTK base station and the rover (tractor). Must be set to same protocol as base station. Refer to base station setup information.
Region	The Region must be selected to determine the frequency used by OmniSTAR. The frequency for the region is set automatically.
Frequency	The frequency used by OmniSTAR. Selecting the Region sets the frequency automatically. This should not normally be altered.
Omni over IP	Delivers the OmniSTAR correction signal via IP (cellular) rather than satellite.

Option	Description
Fallback	If the system is not receiving enough data to compute the vehicle's position with the required accuracy, auto steering cannot be engaged. The fallback feature allows the system to reduce the position accuracy requirement so that auto steering can be engaged. This is useful in situations where a high degree of position accuracy is not required.
Baud Rate	The data transmission rate for modems. Refer to documentation supplied with modem.
GGA Output	Some network providers require a GGA (position) to be sent to them to allow them to identify the location of the rover (tractor).

NTRIP setup options

If RTK or DGPS NTRIP is selected, a wizard launches to detect the attached modem, then the following screen is displayed.



The GSM and CELL ROAMING settings can be obtained from your cellular network provider. The remaining settings are provided by your NTRIP service provider.

5.2.3. Output setup

GPS output refers to the console's ability to export various data strings in NMEA 0183 format. The most common of these is the GGA (Position) message and the VTG (Velocity and Heading) message.

This may be useful to connect to third party devices for position and speed outputs.

To set up the GPS output:

1. Select **System** / **GPS** / **Output**.

Refer to documentation provided with third party device for more information.

Note: Devices using GPS and plugged into the console may need information from the console. The information is contained in sentences based on NMEA.

5.2.4. Radar setup

The console can provide radar output to external devices. This may be useful to connect to a third party device to provide a ground speed signal.

To set up radar output:

1. Select **System** / **GPS** / **Radar**.

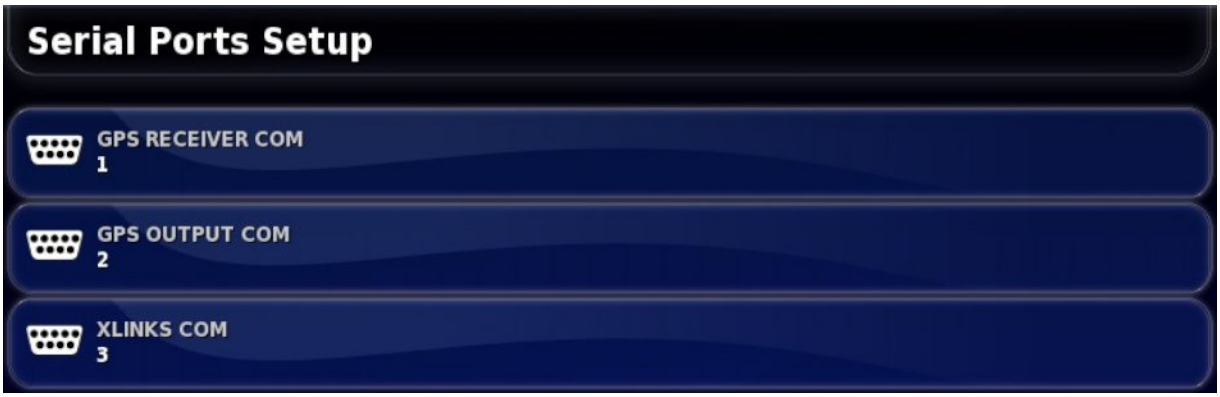
- **Calibration Factor**: Refer to the third party device for this figure if the radar speed signal is not accurate.

5.3. Setting up serial ports

Sets the console serial port assigned to a particular function.

To set the serial ports:

1. Select **System** / **Serial Ports**.



2. Select the required function and from the selection list, select the console serial port to which the device is connected.

   For example: SGR-1, AGI-3 or AGI-4 GPS Receiver is connected to serial port 1 with all Topcon harnesses.

   NMEA GPS Output is generally on serial port 2 if in use.

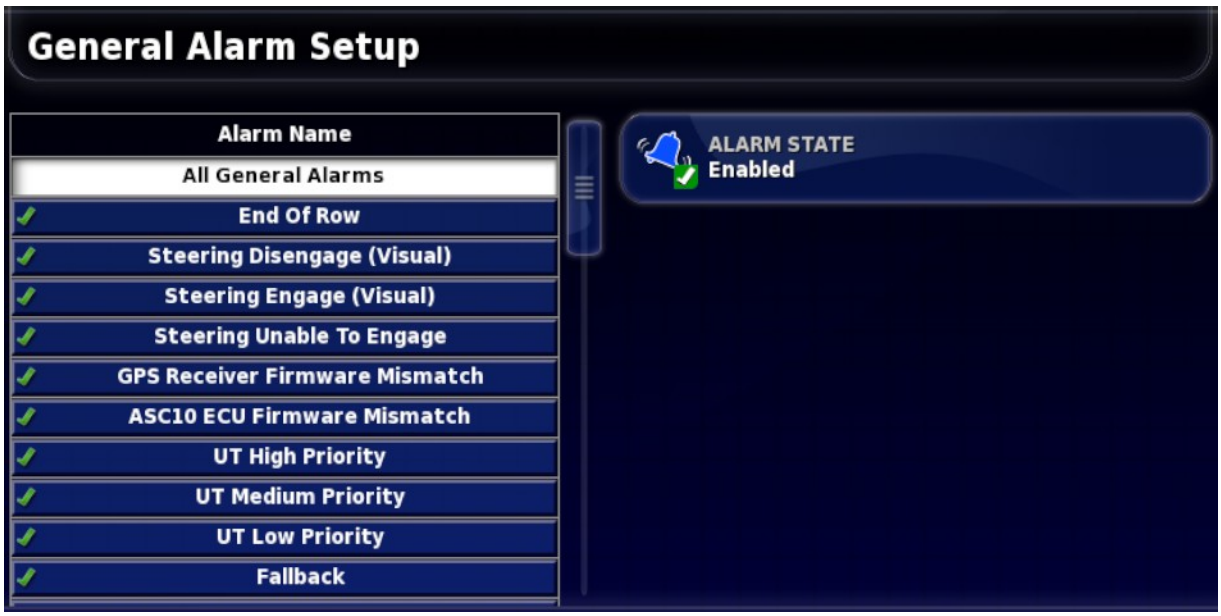
   Xlinks is on serial port 3 if in use, or on serial port 2 if NMEA GPS out is not in use.

5.4. Setting up alarms

If no implements have been set up in the system, only General alarms are available to set up. Implement specific alarms are available once an implement has been defined.

To set up general alarms:

1. Select **System** / **Alarms** / **General**.



The list of general alarms is displayed. All general alarms may be enabled or disabled by selecting **All General Alarms**.

Alternatively, each general alarm may be enabled or disabled independently.

Note that for safety reasons, the **Steering Engage/Disengage** audible alarm may not be disabled.

The **End of Row** alarm requires extra information. This alarm sounds and displays when the vehicle is approaching the boundary and the operator should slow down to prepare for manual control.

- **First Distance**: Distance from the boundary at which the alarm will first trigger. Distance is measured from the tractor to the boundary along the wayline (guideline).

- **Second Distance**: Distance from the boundary at which the second alarm will trigger, warning the operator to immediately take control of the vehicle.
- **Look Ahead Distance**: Sets how many meters in front of the vehicle that the system looks to respond with actions.

5.4.1. Alarm window description

To acknowledge an alarm, press the center of the alarm window.

The alarm window may be dragged down to display additional details about the alarm if **Drag down for details** is displayed at the top of the alarm window.

The speaker icon may be used to mute the alarm.

The spanner icon displays the appropriate alarm setup page to configure that alarm (or disable it if it's not relevant to your current setup). There are a few exceptions to this behavior:

- The GPS Receiver Firmware Mismatch spanner displays the setup screen to upgrade your GPS receiver firmware.
- The ASC-10 ECU Firmware Mismatch spanner displays the screen to upgrade your ASC-10 firmware.
- The No GPS Time alarm displays the time/date setup screen to enter the correct local time.

5.4.2. Alarms list

This is a list of all the alarms on the console and their descriptions.

Alarm	Description
ASC10 ECU firmware mismatch	Select the spanner to display the screen required to update the applicable firmware.
COM port fail	Triggered if the specified COM port cannot be opened.
End of row	Triggered when the vehicle is approaching the boundary and the operator should soon take control.
Exclusion map distant	Triggered when the exclusion map is too far from the current GPS position. The exclusion map is unloaded automatically.
Fallback	Triggered when the selected GPS correction source is not available and the system must use a less accurate correction source temporarily.
Firmware version mismatch/outdated	Select the spanner to display the screen required to update the applicable firmware.
GPS drift correction	Triggered on startup as an informational reminder that the GPS drift correct has been applied. Since GPS drift varies with time this is a reminder that GPS drift compensation may need to be recalculated.
GPS lost	Triggered when the GPS signal is lost but the receiver is still connected.
GPS receiver firmware mismatch	Select the spanner to display the screen required to update the applicable firmware.
Incorrect rate	The implement is in auto mode and the target application rate is not achieved.

Alarm	Description
Invalid/obsolete profile loaded	Triggered when an old implement or vehicle profile is active on the system. This can occur if upgrading from a very old version of the software to the latest version.
Liquid pressure high	Triggered if the tank pressure is greater than the maximum specified tank pressure.
Liquid pressure low	Triggered if the tank pressure is less than the minimum specified tank pressure.
Low resources	Triggered when the system resources (memory or space on the file system) are more than 90% full.
Max guideline length exceeded	Triggered when the length of the recorded line exceeds the maximum number of points (typically several kilometres, but will vary based on how complex the curve is).
No comms	Triggered if the console is unable to communicate with the implement ECU.
No GPS	Triggered if the GPS connection is lost.
No GPS time	Triggered if the GPS receiver is not configured to send time messages (ZDA NMEA messages).
No ground speed	Triggered if the auto steering is on and there is no ground speed present.
Parameters mismatch	Vehicle geometry parameters do not match the geometry configuration in the steering system. Re-select the vehicle on the Setup screen or ensure the vehicle geometry in the vehicle geometry screen is correct.

Alarm	Description
Path too far away	Triggered if the active guideline (AB line, curve or pivot) is too far away from the current GPS position.
Prescription map distant	Triggered if the active VRC map is too far away from the current GPS position.
Prescription map/guidance shapefile load fail	Triggered if the file being loaded is invalid or corrupted.
Pressure high	The high pressure alarm indicates that the pressure signal input has exceeded the alarm point setting. If correctly set, this usually indicates a blockage, booms off when they should be on, or sprayer speed too high.
Pressure low	The most common cause is an empty tank. With minimum flows set for nozzles, flow meter and pressure, this alarm will only display with pump or plumbing failures or an empty tank.
Project line too far	Triggered if the active set of project lines is too far away from the current GPS position.
Pump speed low	Triggered if pump speed sensing is enabled and the pump speed drops below the minimum RPM threshold setting for the alarm.
Pump speed high	Triggered if pump speed sensing is enabled and the pump speed exceeds the maximum RPM threshold setting for the alarm.
Receiver disconnected	The GPS receiver is not responding. Check the receiver connections.

Alarm	Description
Requested rate is zero	Triggered when auto rate control is enabled, tank is on, master switch is on and the requested rate is zero. If there is a switchbox, check that at least one switch is on.
Resources exhausted	Triggered if the system resources (memory or space on the file system) are more than 97% full.
Reverse station	Informational alarm triggered when the operator's seat is rotated by 180 degrees (only applicable for tractors with dual driving stations).
Steering disengage (visual)	Triggered when the steering has been disengaged. This may be due to losing satellites, losing the guideline or manually turning the steering wheel.
Steering engage (visual)	The Steering Engage/Disengage alarms cannot be silenced for safety reasons, however, the visual component of the alarm can be suppressed if desired.
Steering profile mismatch	The parameters in the selected vehicle profile do not match the vehicle configuration in the steering subsystem. Select the correct vehicle profile for this vehicle.
Steering restart needed	Triggered if the steering subsystem needs to be power cycled. Occurs for some types of steering subsystem after calibration.
Steering unable to engage	The steering status popup which appears when steering cannot be engaged as requested can be suppressed. If the engage button is pressed this auto clearing alarm is shown to indicate the requested could not be completed.

Alarm	Description
Tank active, no rate	Triggered if master switch is on, tank is enabled, tank is active, tank is not in manual, vehicle is moving and the set rate is zero.
Tank empty	This indicates that the calculated volume has reached zero. If there are still contents in the tank, the system will still operate showing the tank volume as a negative figure.
Tank low	This gives a warning that the tank is running low.
Tank off	Triggered if the tank is off while the master switch is on and the vehicle is moving with at least one section turned on.
Unregistered feature	Triggered if there is an enabled feature that is no longer registered (registration has expired). This is to inform the operator that the feature has been disabled.
UT high priority	Universal Terminal high priority alert. There is an urgent issue the user should address on the UT immediately.
UT medium priority	Universal Terminal medium priority alert. There is an important issue the user should address on the UT when possible.
UT low priority	Universal Terminal low priority alert. There is an issue the user should address on the UT when possible.

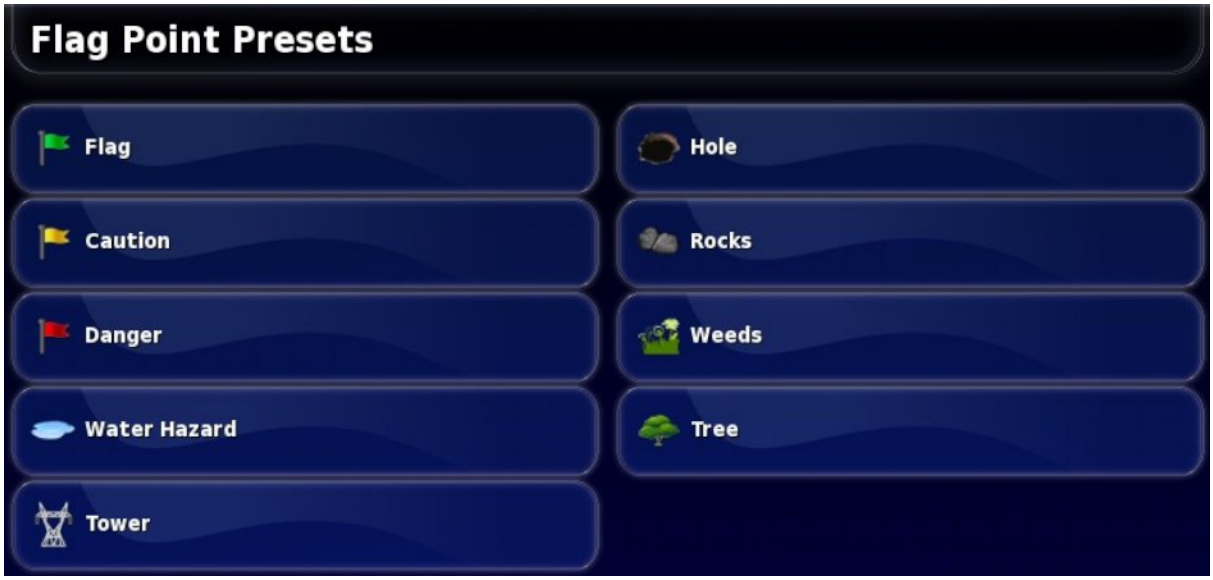
5.5. Setting up flag points

Flag points show obstacles or other land features for a field on the Operation screen. Flag points are set during operation by driving to the flag point location. Refer to Setting flag points, page 126.

Flag point symbols and names can be defined in the Setup screen.

To change flag point preset symbols and names:

1. Select **System** / **Flag Points**.



2. Select the flag having its symbol or name changed.
3. Select the new symbol or select **FLAG POINT NAME** and type in the new name for the flag, then confirm.

   Note that flags can be changed but new preset flags cannot be created.

5.6. Setting up ISOBUS / universal terminal

This option is available if **Universal Terminal** is enabled under **System** / **Features** / **Console**. Refer to Universal terminal, page 37.

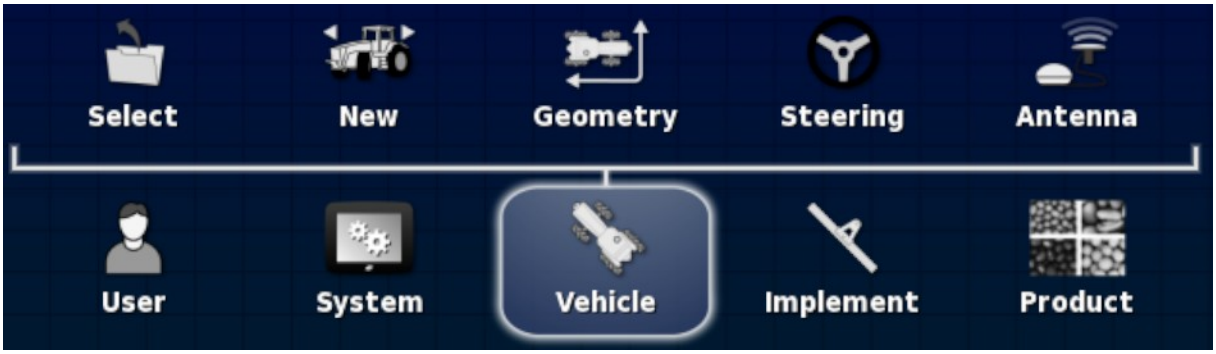
Chapter 6 – Vehicle Setup

This chapter explains how to set up and access profile information about the vehicle on which the console is mounted. If the console is to be used on more than one vehicle then more than one vehicle profile must be set.

The **Vehicle** menu option provides the following menu items:

- **Select**: Select a vehicle from the previously created profiles.
- **New**: Create a new vehicle profile.

  Note that **Select** and **New** are the only options available on this menu if no vehicles have been setup.
- **Geometry**: Sets the vehicle measurements so that guidance can work accurately.
- **Steering**: Controls how the vehicle will respond to guidance.
- **Antenna**: Sets whether the GPS receiver has an internal or external antenna.



6.1. Selecting a vehicle

Selects a vehicle from a previously defined list of vehicle profiles. This is blank when the console is first used.

To select a vehicle:

1. Select **Vehicle** / **Select**.

2. Highlight the required vehicle and confirm, or:

Select to import a vehicle profile from a USB.

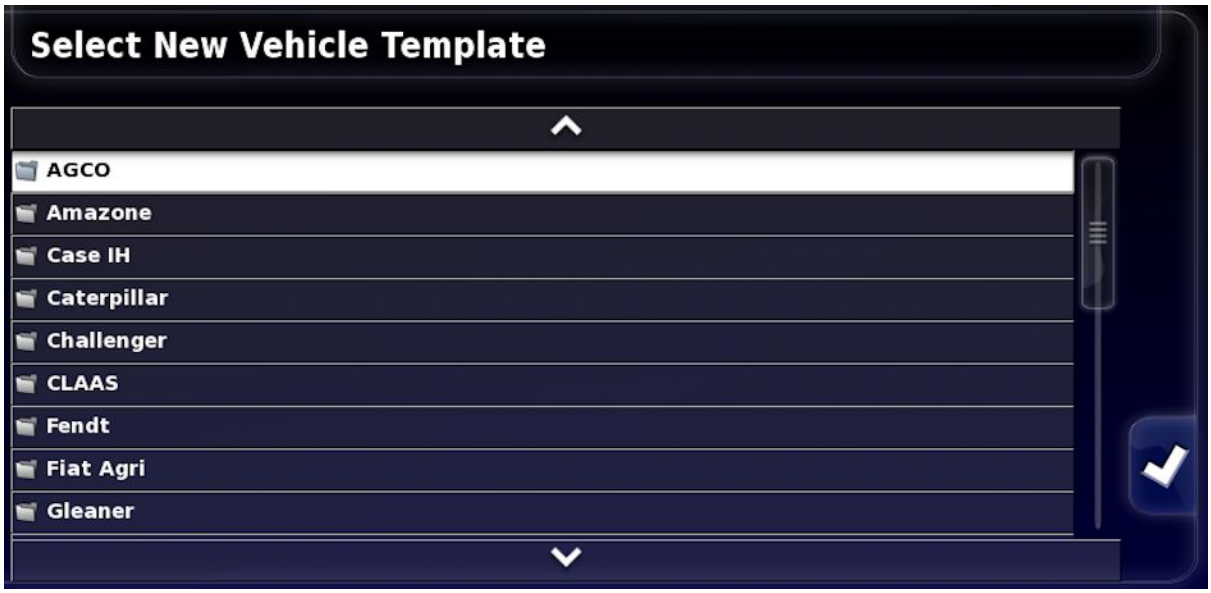
Select to create a copy of the highlighted vehicle. This profile may then be edited.

6.2. Creating a new vehicle

Creates a new vehicle profile for the vehicle on which the console is mounted.

To create a new vehicle profile:

1. Select **Vehicle** / **New**.



A list of pre-defined factory vehicle templates displays. Templates contain standard measurements and steering parameter information where this is available.

Measurements can be adjusted to correct for the particular vehicle, tire size and so on when geometry is confirmed in the following section.

Steering parameters control how the vehicle will respond to guidance and these can be fine-tuned later in the process in Auto Steering, page 153. If steering continues to be unsatisfactory once setup is complete and after tuning the auto steering, contact your dealer.

2. Select the vehicle manufacturer. Use the scroll bar to see the complete list. If the required manufacturer is not available, select one that is most like the vehicle being used. If none of the choices are appropriate, select **Other** and go to Customizing a vehicle, page 68.

Note: Select  to go up one level to the parent folder.

3. Select the vehicle model and confirm.
4. To change the name, select **VEHICLE NAME**, enter the name and confirm.

5. Confirm the new vehicle. The Vehicle Geometry screen displays.
6. Go to Setting the vehicle geometry, page 70.

6.2.1. Customizing a vehicle

When **Other** is chosen from the Vehicle Template screen, generic vehicle templates are displayed that hold basic vehicle information and steering parameters.

1. Select **Other**. A list of steering controllers displays:
   - **ACU-1**: Autosteering Control Unit
   - **AES-25**: Accurate Electric Steering
   - **AF**: AutoFarm® valve block
   - **RST**: Raven SmarTrax™ valve
   - **Other**: Any other steering controller
2. Select from the list and confirm. A range of generic vehicle templates displays.
3. Use the arrows to select the template shape most like your vehicle and confirm.
4. To change the name, select **VEHICLE NAME**, enter the name and confirm.

5. Confirm the new vehicle. The Vehicle Geometry screen displays.
6. Go to Setting the vehicle geometry, page 70.

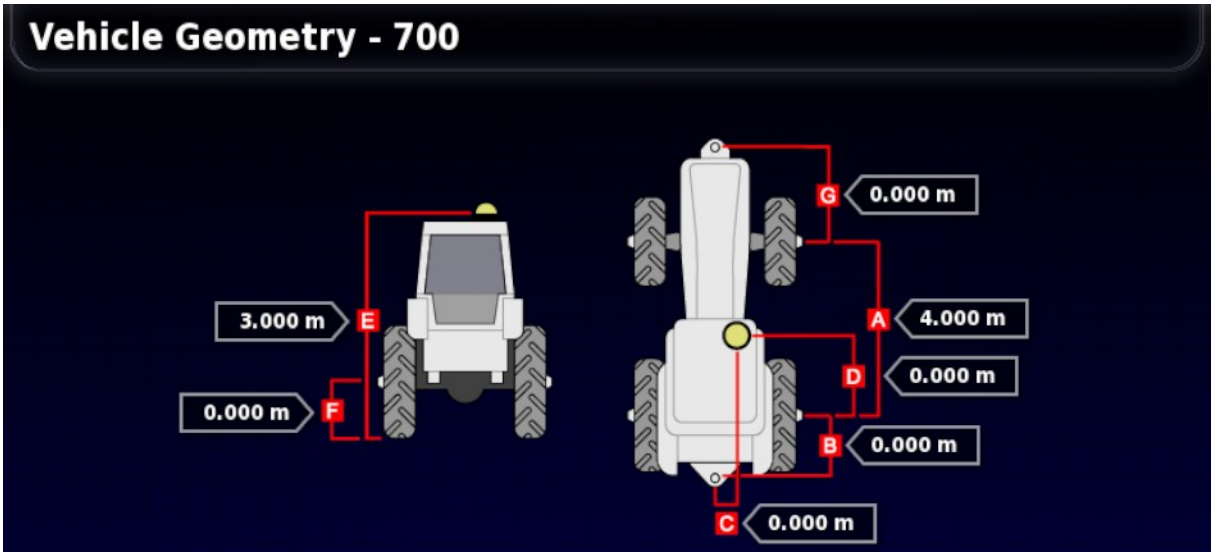
6.3. Setting the vehicle geometry

Sets the vehicle measurements so that guidance can work accurately.

Note: Measure the vehicle dimensions as accurately as possible. The recommended tolerance is +/- 5 cm.

To set the vehicle geometry:

1. Select **Vehicle** / **Geometry**. Alternatively, the Vehicle Geometry screen displays automatically when a vehicle is created or selected.



2. Select a vehicle dimension. The name of the dimension appears in the title bar.

   Dimensions requested vary according to the type of vehicle selected.

3. Add or adjust dimensions where needed and confirm.

The following lists key measurements commonly used in the system:

- **Wheelbase**: The distance from the center of the front axle to the center of the rear axle.
- **Implement Tow Point**: The distance from the center of the rear axle to the tow point.
- **GPS Steer**: The offset left or right from the middle of the axles to the GPS receiver. This is a positive number if the receiver is to

the right of the middle of the axle and negative if the receiver is to the left.

- **GPS Antenna**: The horizontal distance of the receiver from the center of the rear axle. The number is positive when the receiver is in front of the rear axle and negative if it is behind the rear axle.
- **Axle Height**: The height of the axle above ground.
- **GPS Height**: The height of the top of the GPS receiver above the ground.
- **Front Hitch**: The distance from the center of the front axle to the front hitch position.
- **Track Spacing**: This only applies to tracked vehicles and is the distance between the tracks.
- **Articulation Point**: This only applies to articulated vehicles and is the distance from the rear axle to the articulation (pivot) point of the vehicle.

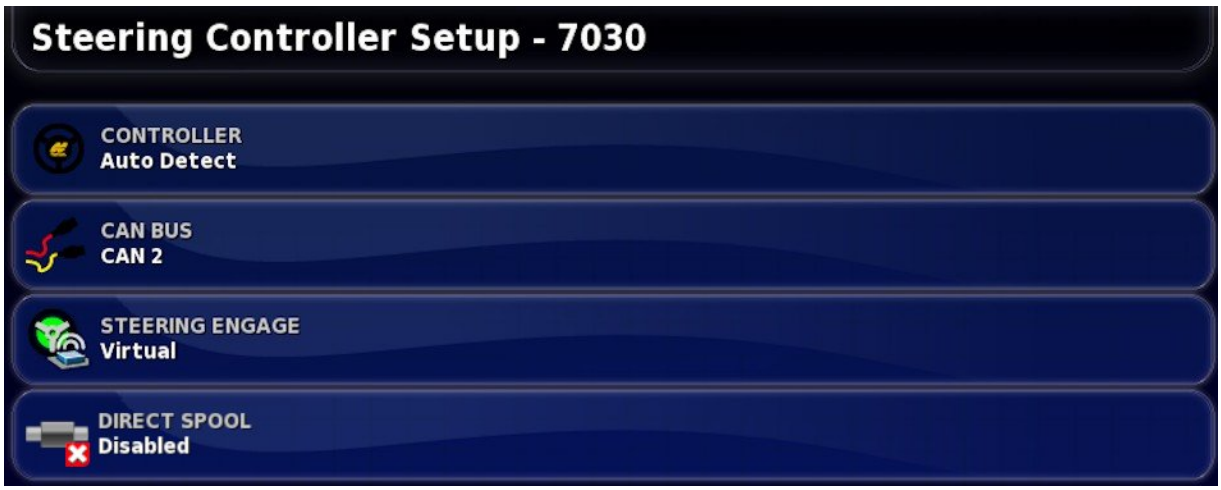
6.4. Setting up the steering controller

Controls how the vehicle will respond to guidance. Refer to Auto Steering, page 153.

This option is only visible if **AUTO STEER** is enabled on **System** / **Features** / **Guidance**.

To set up the steering controller:

1. Select **Vehicle** / **Steering**.



Controller

Note: It is important to select the specific steering controller, if it is listed, so that auto steering settings match the vehicle profile. Note that if the steering controller is changed later, it may be necessary to return to the vehicle geometry to confirm the dimensions (refresh them). Note that **Auto Detect** does not automatically detect the controller options that are available in the list, so the specific controller must be selected if it is an available option.

Selecting AES-25 as the controller adds extra options to the Steering Tuning screen, refer to Tuning auto steer, page 157.

CAN bus

Controller Area Network. Select the CAN bus being used. If unsure, look at the labeling on the connections to the GPS receiver.

- **CAN 1**: ISOBUS
- **CAN 2**: Primary steering BUS

Steering engage

Allows the operator to engage auto steering from the console.

- **Virtual**: Select if only the on-screen **Auto Steer Engage** button will be used  .
- **Virtual and External Console Input**: Select if you have an external Engage button connected directly to the console.

If you have an external Engage button connected to the CAN bus, you can select either of these two options.

Direct spool

This option is only available if **Other** is the selected Controller.

Direct spool is a special mode where the ACU-1 will operate without a wheel angle sensor.

This is designed for use with tracked sugar cane harvesters.

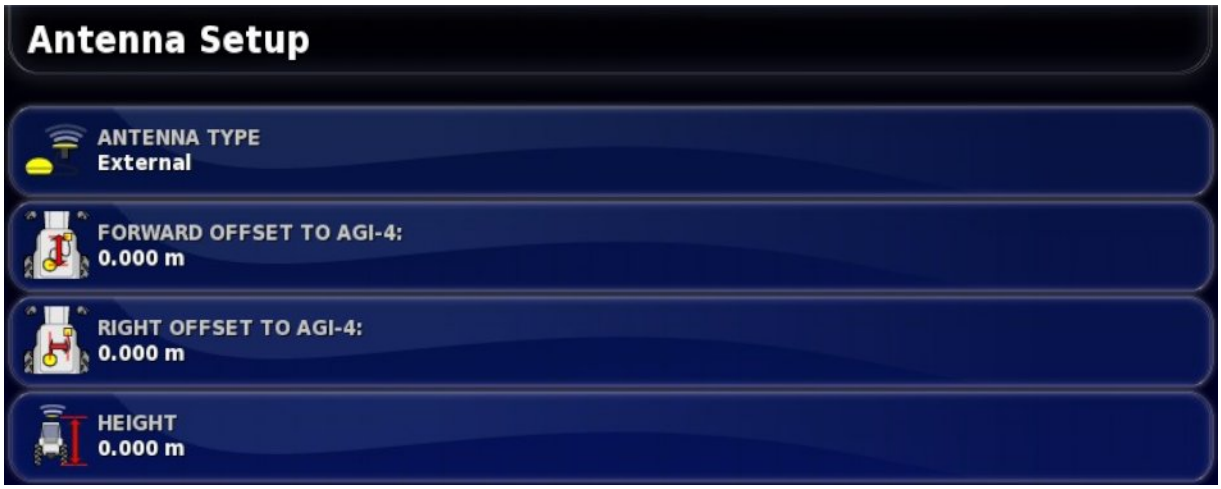
Enabling this adds two new options to the Steering Tuning screen, refer to Tuning auto steer, page 157.

6.5. Selecting the vehicle antenna

Sets whether the GPS receiver has an internal (built into the receiver) or external antenna. Internal antenna is set as default.

To set the antenna type:

1. Select **Vehicle** / **Antenna**.



If **External** is selected, the measurements for the location of this antenna must be entered:

Forward offset to AGI-4 (or AGI-3)

Enter the distance forward from the center of the AGI-4 to the center of the antenna (use a negative number if the antenna is behind).

Right offset to AGI-4 (or AGI-3)

Enter the distance to the right from center of AGI to center of antenna (use negative number if antenna is to the left of the AGI).

Height

Enter the height of the antenna above the ground.

Chapter 7 – Implement Setup

This chapter explains how to set up and access profile information about the implement being used. If the console is to be used with more than one implement, then more than one implement profile must be set up.

The following information details how to set up a non-controlled implement for correct swath paths or guidelines. This allows the creation of coverage maps and provides waylines for auto steering and guidance.

Refer to the Spreader / Sprayer operator manuals for detailed implement information. The following information sets up the implement for auto guidance and steering only.

Note: The options displayed on the Implement menu will vary depending on the implements created/selected.

The **Implement** menu option provides the following menu items when no implements have yet been created:

- **Select**: Select an implement from previously created profiles. (This list is blank if no implements have been created.)
- **New**: Create a new implement profile.
- **Speed**: Refer to Setting the vehicle speed, page 85.

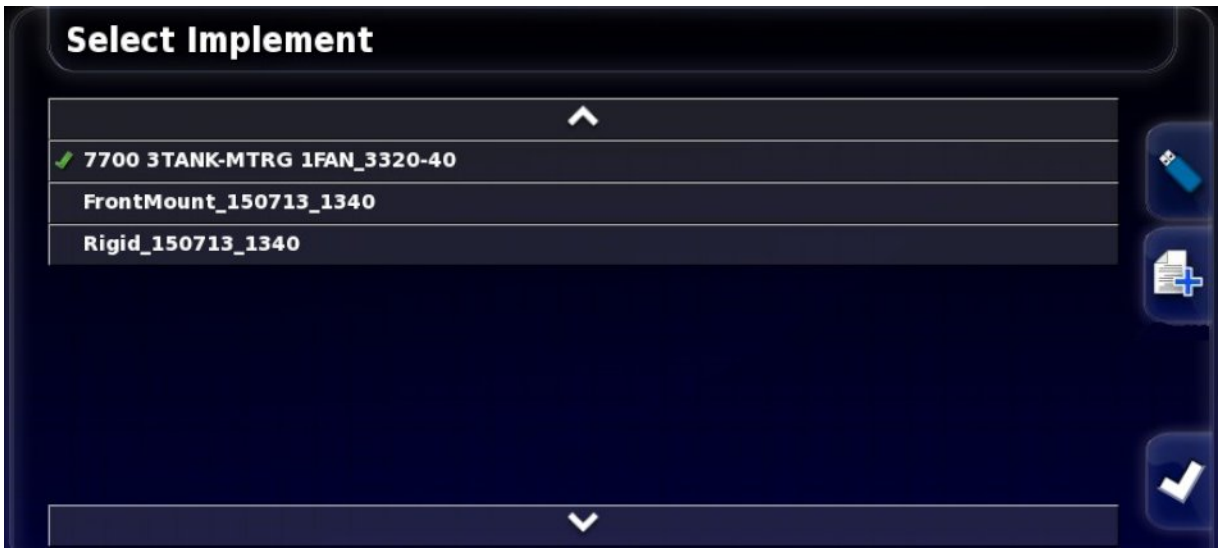
7.1. Selecting an implement

Selects an implement from a previously defined list of implement profiles. This is blank when the console is first used.

When changing implements the system will restart.

To select an existing implement:

1. Select **Implement** / **Select**.



2. Highlight the required implement and confirm, or:

Select to import an implement profile from a USB.

Select to create a copy of the highlighted implement. This profile may then be edited.