



Quick Start Guide

AG993

Auto-Steering System



Version 1.0

User Notice

1. *Avoid exposure to the sun/rain if tractors without a cab, and be careful not to drop the device on the ground or be hit hard by other objects;*
2. *Please connect your device strictly in accordance with the requirements in this guide;*
3. *The power supply must be cut off before disassembling or installing the cables. When the device is not used for a long time, please disconnect the power cord to prevent battery power loss;*
4. *When supplying power, pay attention to the power supply requirements of the device (DC12V, 24V);*
5. *It is forbidden to use hard objects when operating the display screen;*
6. *When the device is in automatic driving mode, the driver is strictly prohibited from leaving the cab;*
7. *Since the device does not have an obstacle avoidance system, the driver must promptly control the vehicle to avoid people, animals, trees, ditches, buildings, etc. The company is not responsible for problems caused by human operation during automatic driving;*
8. *The device cannot control the speed of the vehicle. The driver must manually adjust the speed of the vehicle to ensure safety and avoid the vehicle rolling over or losing control;*
9. *It is not allowed to use automatic driving on public roads. Make sure to turn off the power of the device before entering public roads or public areas;*
10. *Pay attention to taking appropriate lightning protection measures to prevent lightning strikes;*
11. *Equipment damaged due to force majeure (lightning, high voltage, collision, etc.) is not covered by our company's warranty;*
12. *It is forbidden to disassemble this product by yourself, otherwise the warranty will not be void;*
13. *This system should be used in an open area away from obstructions;*
14. *During the use of the equipment, please stay away from strong electric fields, magnetic fields, high-voltage lines, broadcast signal towers and other interference sources.*
15. *Transmitting under the control of the master station.*

Wireless Capabilities:

1、 4G:

It supports wireless communication with the CORS system by inserting a SIM card.

2、 WIFI/BT:

Via software configuration for flat and flat connections.

3、 GNSS:

GNSS module for satellite positioning.

This Quick Start Guide introduces how to start using AG993 Auto-Steering System quickly.

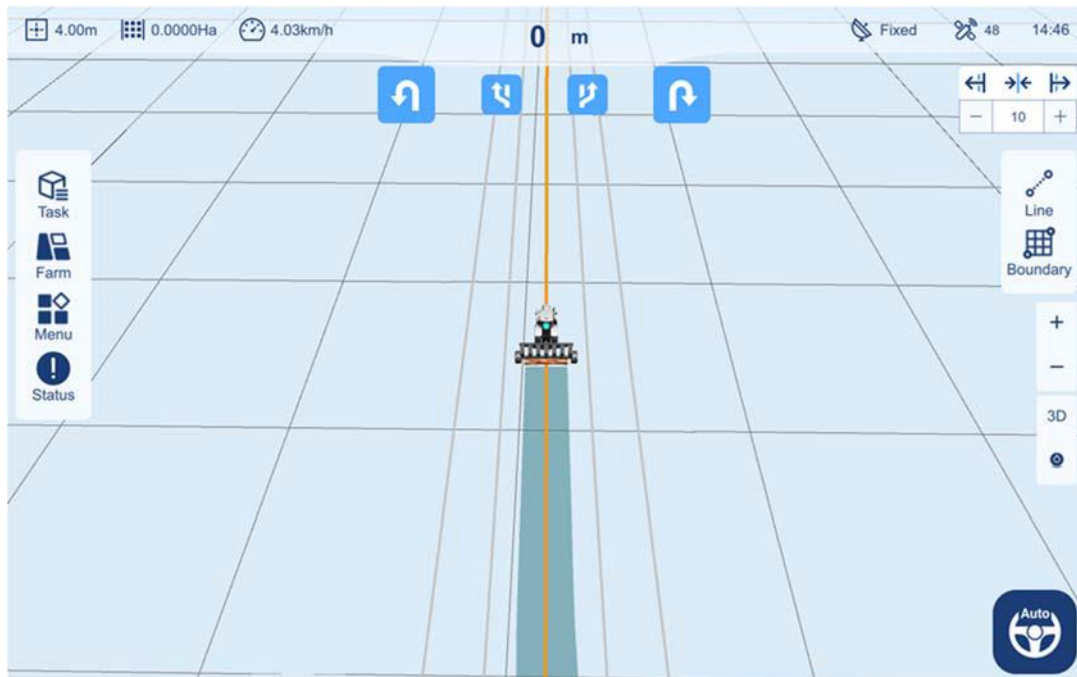


1.Item List

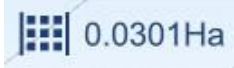
AG993 with Basic Accessories		
1	GC30 Guidance Controller	
2	TC120 Tablet	
3	TES30 Electric Motor	
4	Main Cable	
5	Wheel Angle Sensor	
6	Steering Wheel	

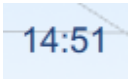
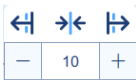
7	Camera	
8	Power Switch Mount	
9	Motor Bracket A	
10	Motor Bracket U	
11	Tablet Bracket	
12	Zip Tie	
13	Type-C to USB Converter	
14	Spline	
15	Screw Pack	
16	Warranty Card	
Optional Accessories		
17	Steering Wheel Knob	
/	/	/

2. Software Main Interface



Main interface icon introduction :

No.	Description	Icon
1	Working width	
2	Work area	
3	Device real-time speed	
4	Offset Error display	
5	GNSS signal status	
6	Satellite number	

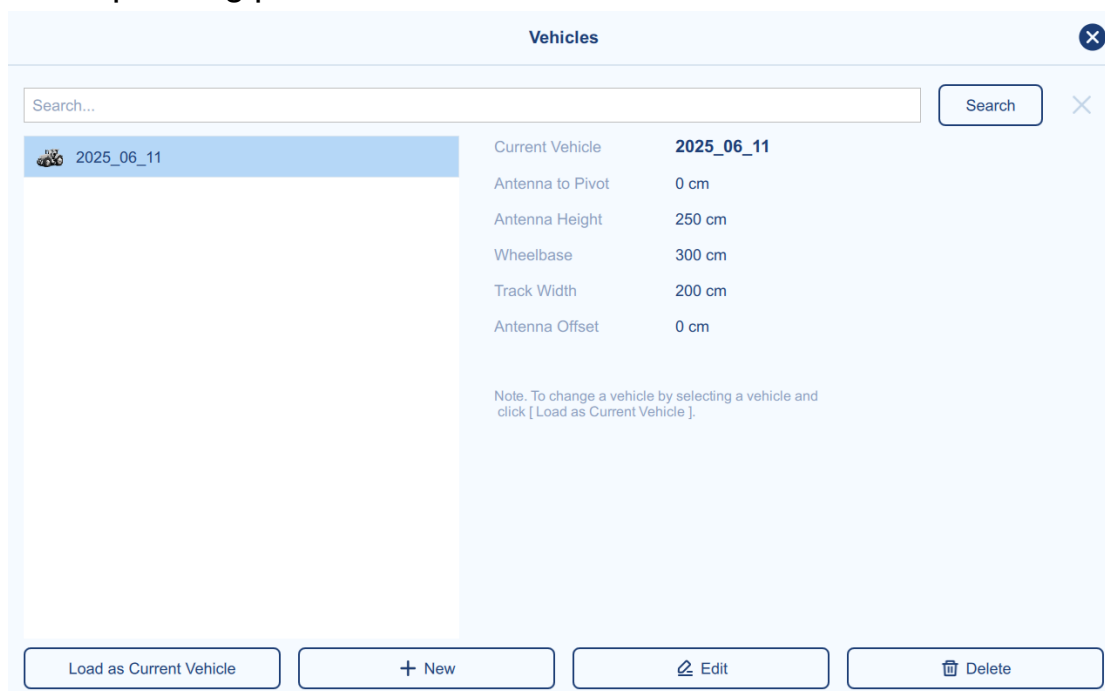
7	Time display	
8	Line centering/ shift	
9	AB line setting button	
10	Boundary setting button	
11	Zoom in / out button	
12	2D / 3D view switching button	
13	Camera switch button	
14	Auto-steering button	
15	Task management	
16	Farm management	
17	Menu	
18	System status	

3. Operation Guide

Vehicle Setting



Users can create, edit, delete multiple vehicles, configure the corresponding parameters for the current vehicle.



Create new vehicle: Enter vehicle name, select vehicle type.

New Vehicle ↩

Enter Vehicle Name:

+

+


Select Vehicle Type



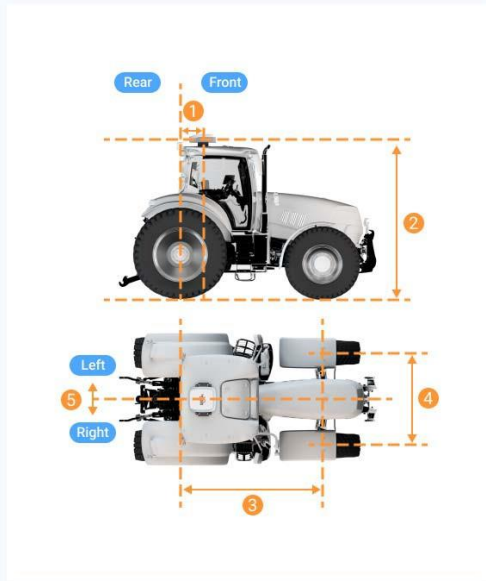


Next

Cancel

Measure and enter vehicle parameters.

Vehicle Setting ↩



Vehicle Name

TERSUS

Unit (cm)

① Distance from antenna to rear axle

Rear

Front

-

0

+

② Height from antenna to ground

-

250

+

③ The front and rear wheelbase

-

300

+

④ Front wheel track width

-

200

+

⑤ Horizontal offset of the antenna from the central axis

Left

Right

-

0

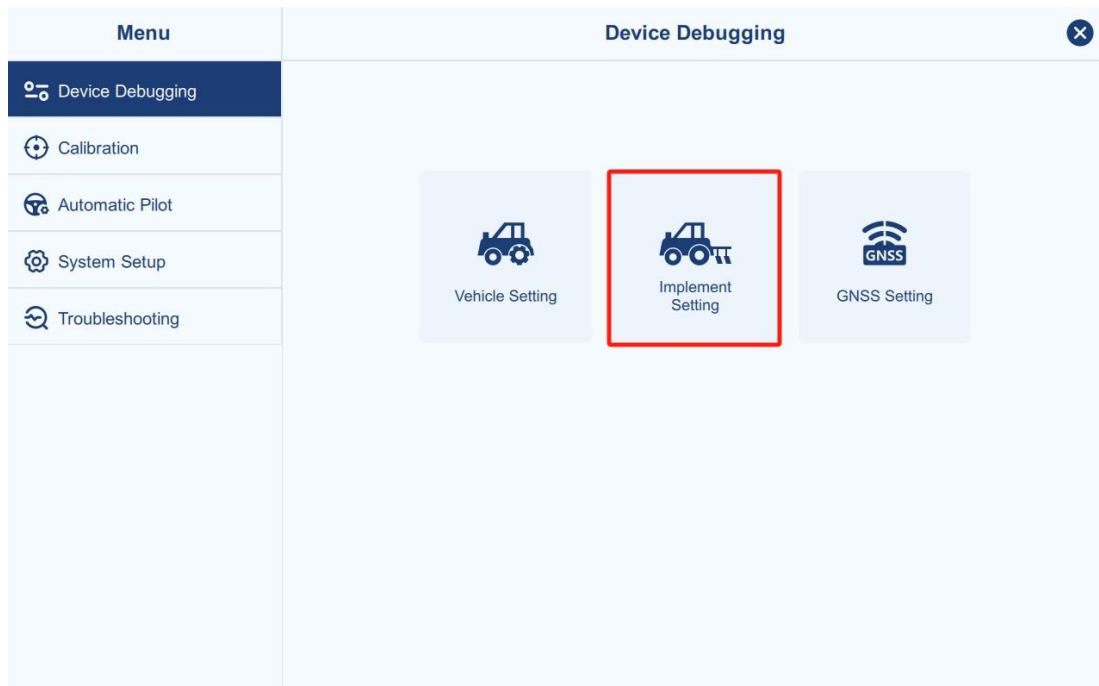
+

OK

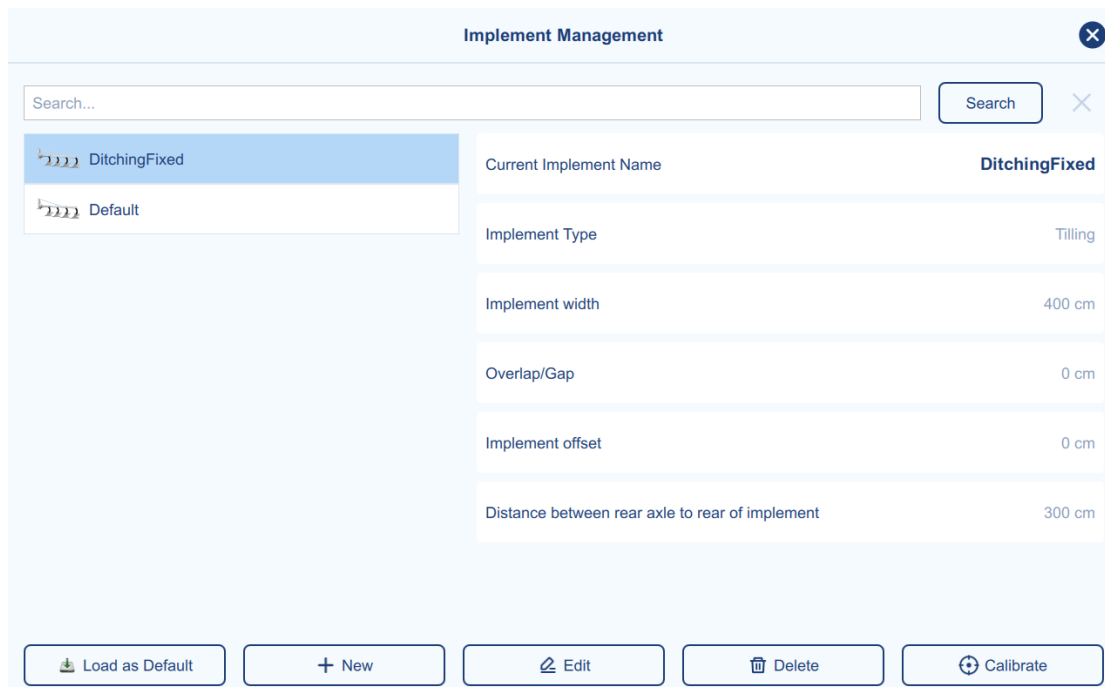
Cancel

9

Implement Setting



Users can add agricultural implements, configure corresponding parameters, and implement types to facilitate auto-steering.



Select implement type, select connection method, and enter name or use default name.

✕
New Implement

Select Implement type


Ditching


Harvest


Land leveling


Plant


Ridging


Seeding


Spraying


Tilling

Select a method of connection


Fixed Rear


Front


Trailing

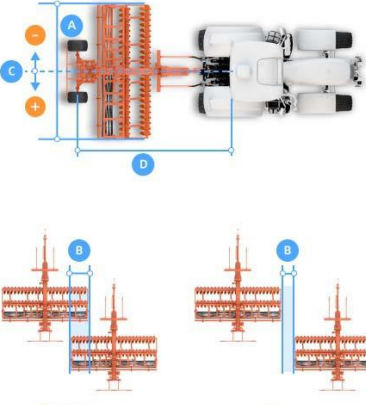
Name

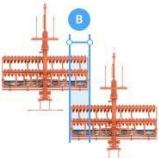
Next
Cancel

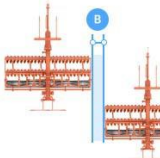
Measure and enter implement parameters.

↶
Implement Setting

DitchingFixed Rear
Ditching




Overlap


Gap

Unit (cm)

(A) Implement width - 400 +

(B) Overlap or Gap - 0 +

Gap
Overlap

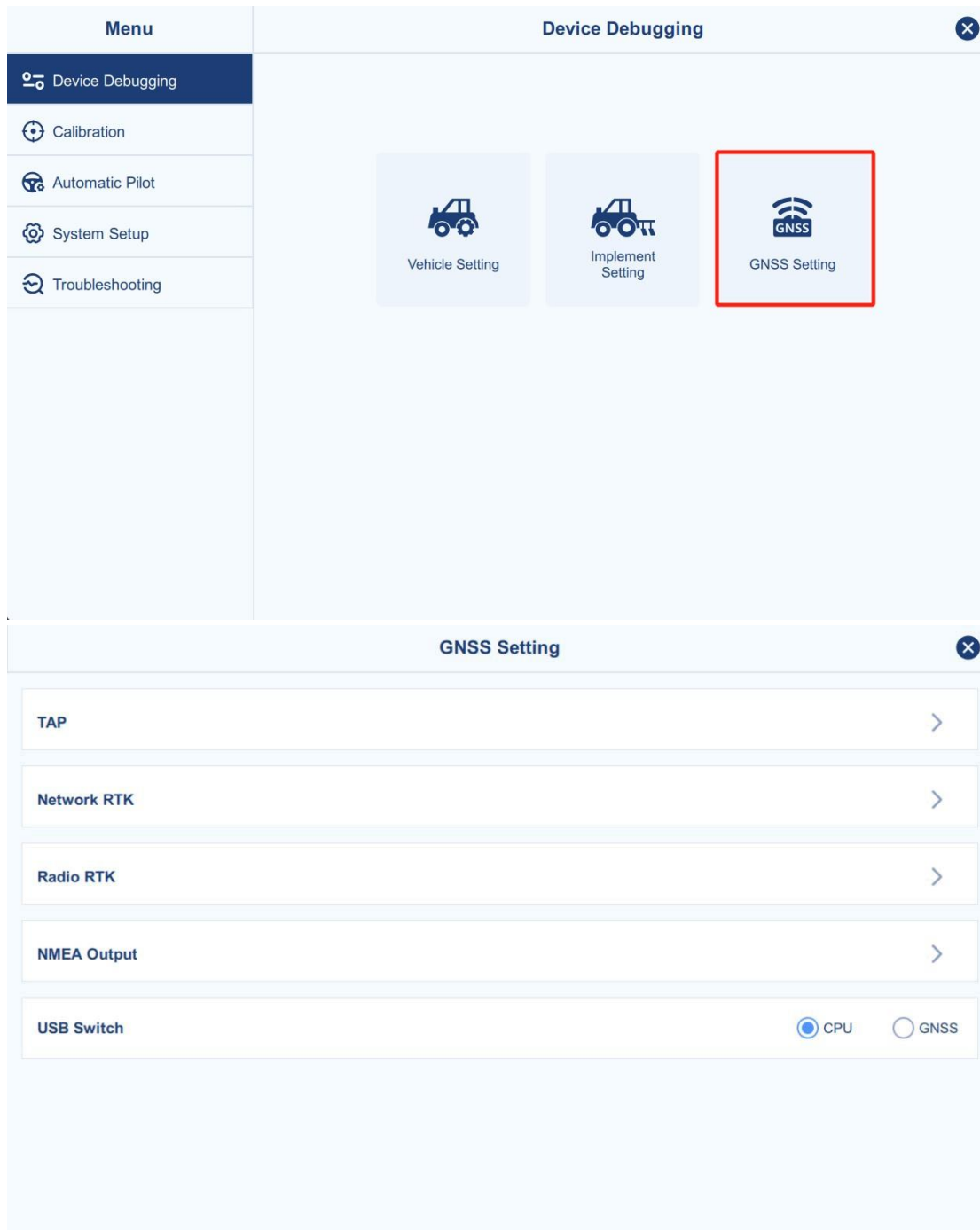
(C) Implement Offset - 0 +

Left
Right

(D) Distance between rear axle to rear of implement - 300 +

OK
Cancel

GNSS Setting



1. **TAP** : Turn on TAP service to use Tersus satellite-based positioning service.

TAP ↶

TAP

☒

SN

3523978

Expire Date

20220701

OK

2. Network RTK: Configure Ntrip, TCP or TCS to get RTK positioning.

Network RTK ↶

Select Network

Host Network

PAD Network

Protocol Type

Ntrip

TCP

TCS

Host IP

Port

Username

Password

Mount Point

↕

↺

Start

3. Radio RTK: Set radio connection as a rover, enter corresponding protocol, air baud rate, channel and frequency.

Radio RTK
↶

Name

Radio RTK 4800

Protocol

TRANSEOT ⬆ ⬇ ⬆

Modulation

Channel Bandwidth

Air Baud Rate

4800 ⬆ ⬇ ⬆

WorkChannel

0 ⬆ ⬇ ⬆

Channel Freq

457.5500

Start

4. NMEA Output: Output NMEA data via serial port, configure serial baud rate and output date rate as requirement.

NMEA Output
↶

Serial Port Output On

☒

Serial Baud Rate

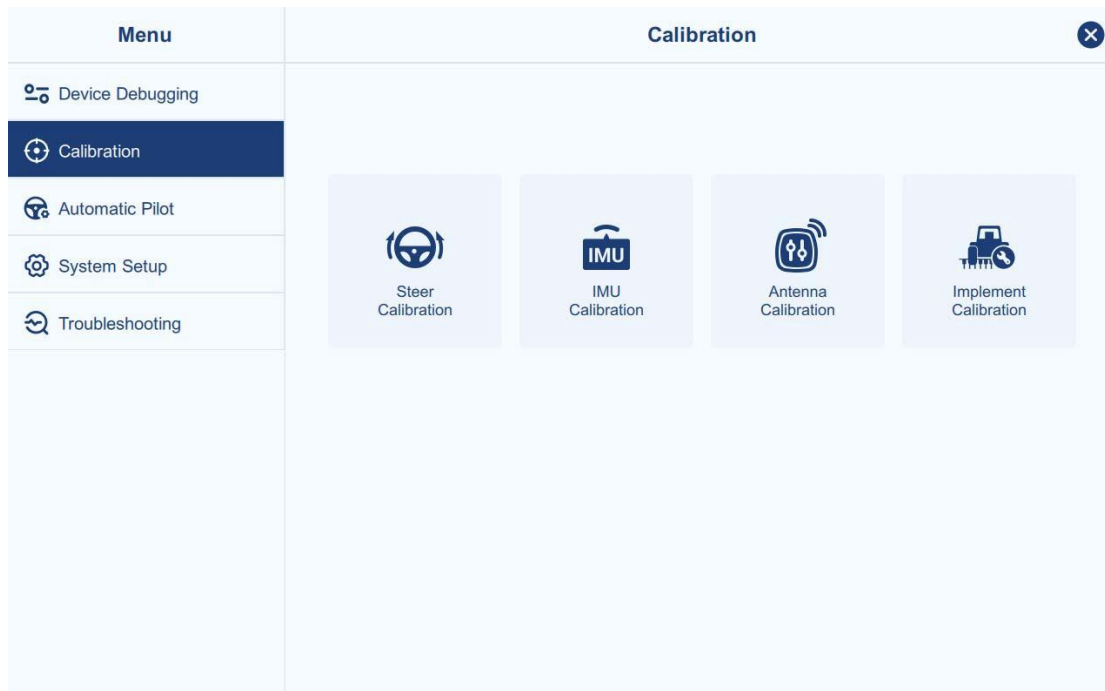
115200 ⬆ ⬇ ⬆

GPGGA	10 HZ ⬆ ⬇ ⬆
GPGSA	Close ⬆ ⬇ ⬆
GPGSV	Close ⬆ ⬇ ⬆
GPGST	Close ⬆ ⬇ ⬆
GPGLL	Close ⬆ ⬇ ⬆
GPRMC	Close ⬆ ⬇ ⬆
GPZDA	Close ⬆ ⬇ ⬆
GPVTG	Close ⬆ ⬇ ⬆
GPNTX	Close ⬆ ⬇ ⬆

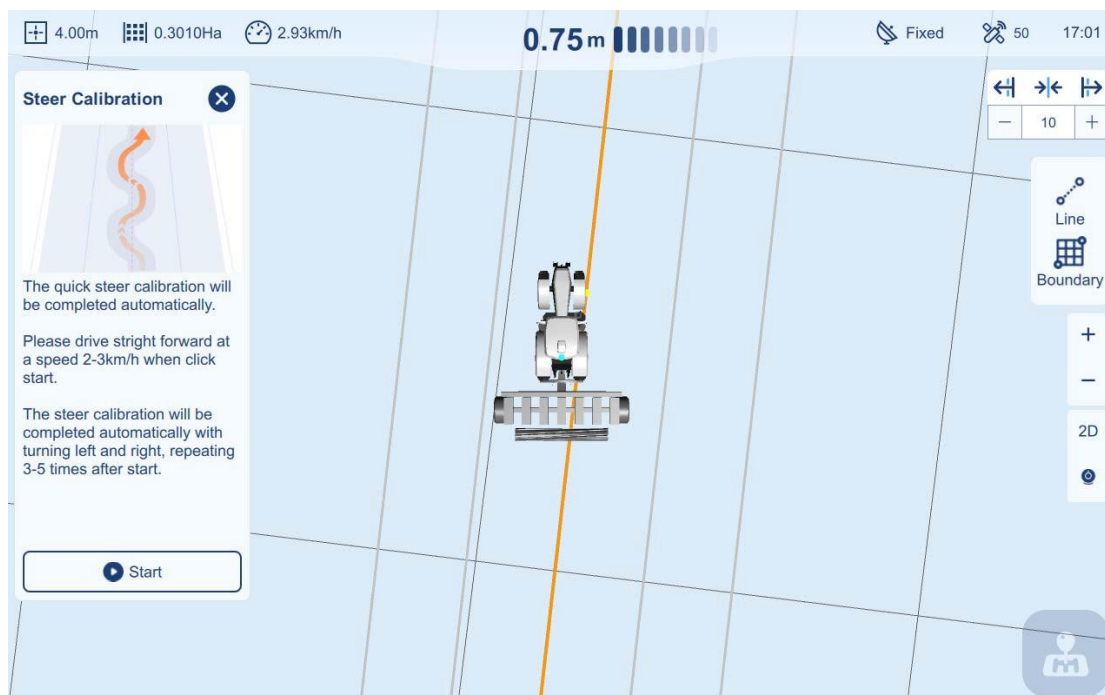
OK

5. USB Switch: Switch controller USB output from controller system CPU or GNSS board. Use it only if customer support engineers require related logs.

Calibration

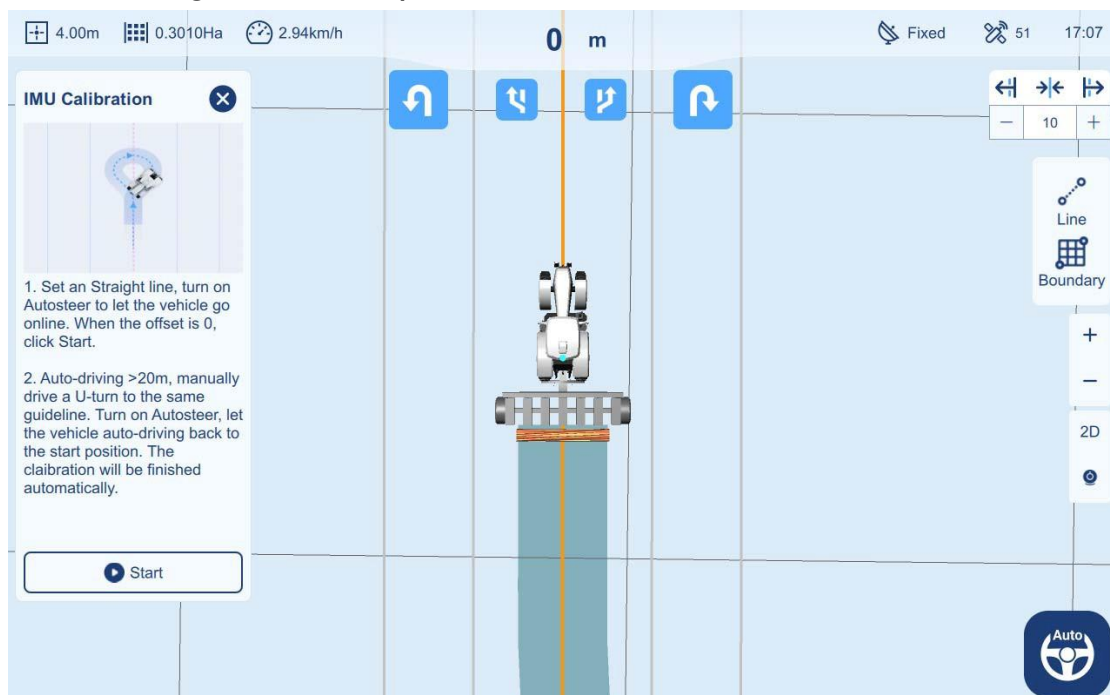


1. **Steer Calibration:** To calibrate the steer ratio and coefficient. Follow the guide, drive straight forward and click start, the calibration will be completed automatically.

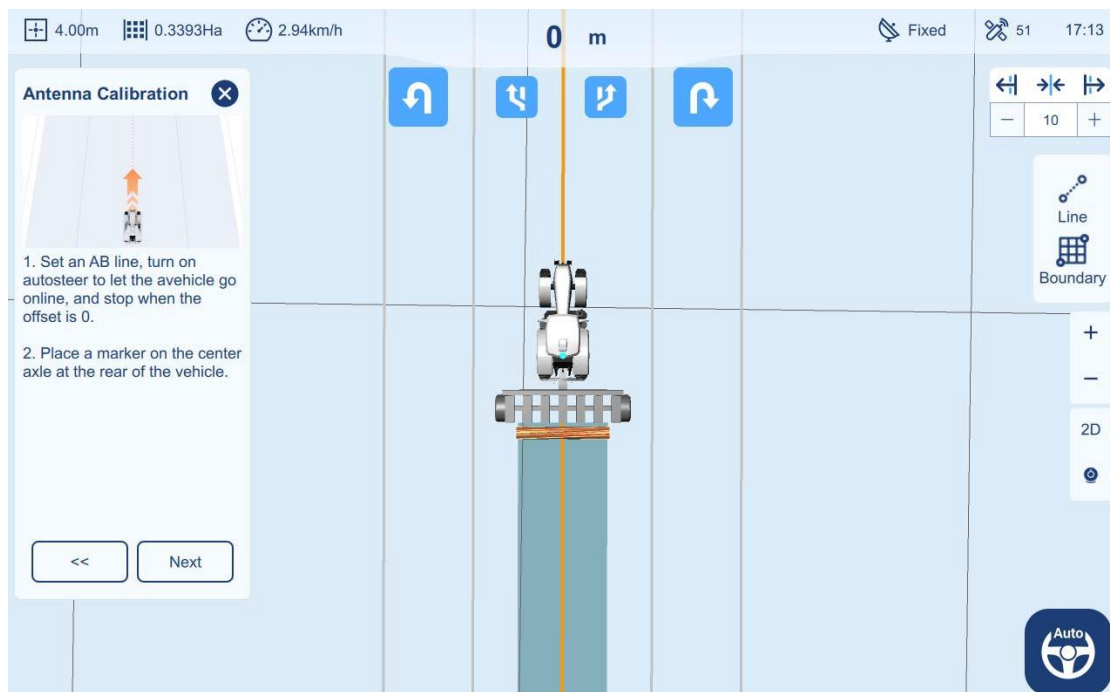


2. **IMU Calibration:** To reduce the roll angle error caused by guidance controller installation.

Follow the guide to complete the calibration.



3. **Antenna Calibration** : To calibrate the deviation caused by guidance controller installation. In principle, the center of the antenna and the center of the vehicle remain in line. Please accurately measure the horizontal offset of the antenna from the central axis, then this calibration is not required.



Follow the guide to complete the calibration.

Antenna Calibration ✕



1. Drive a certain distance (recommended >20m). Manually drive a U-turn and let the vehicle on the guideline, and stop at the mark.

2. If the parking error is not 0, you can go backwards and drive forward again to the marker to stop.

<<
Next

Antenna Calibration ✕



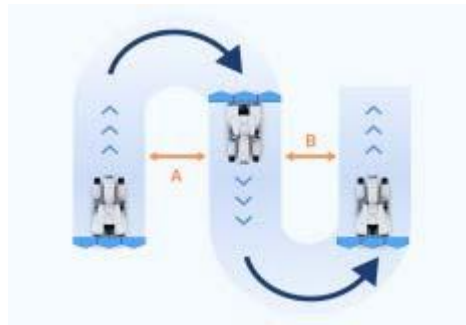
According to the actual situation, fill in the deviation value, Click Finish.

☒ Left ☐ Right

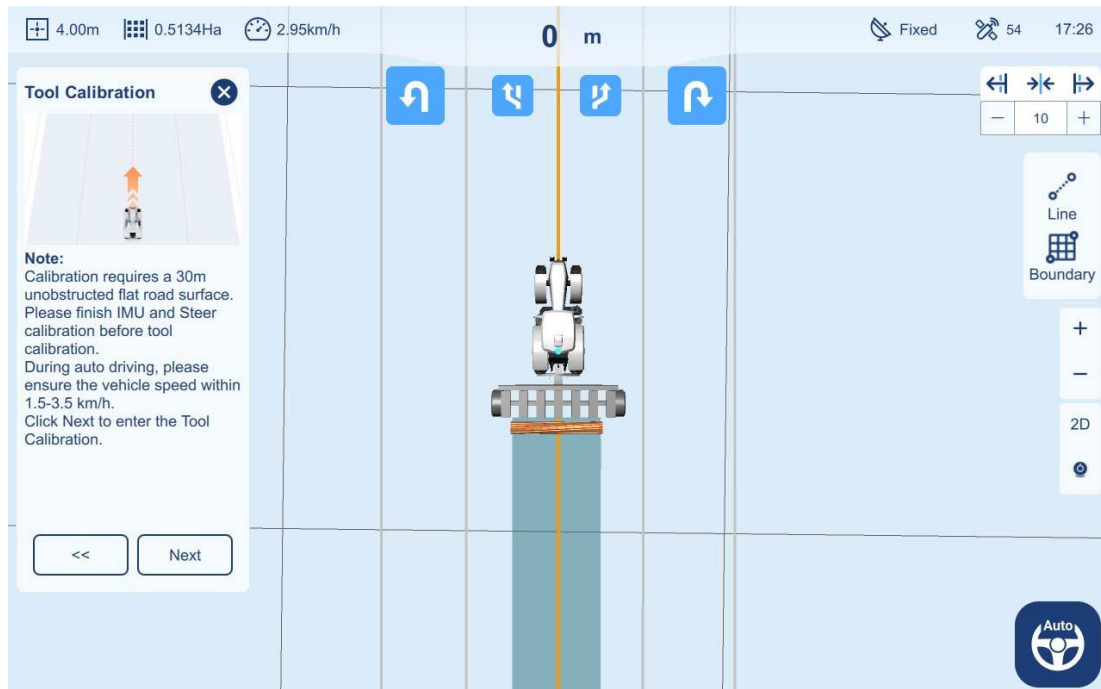
cm

<<
Finish

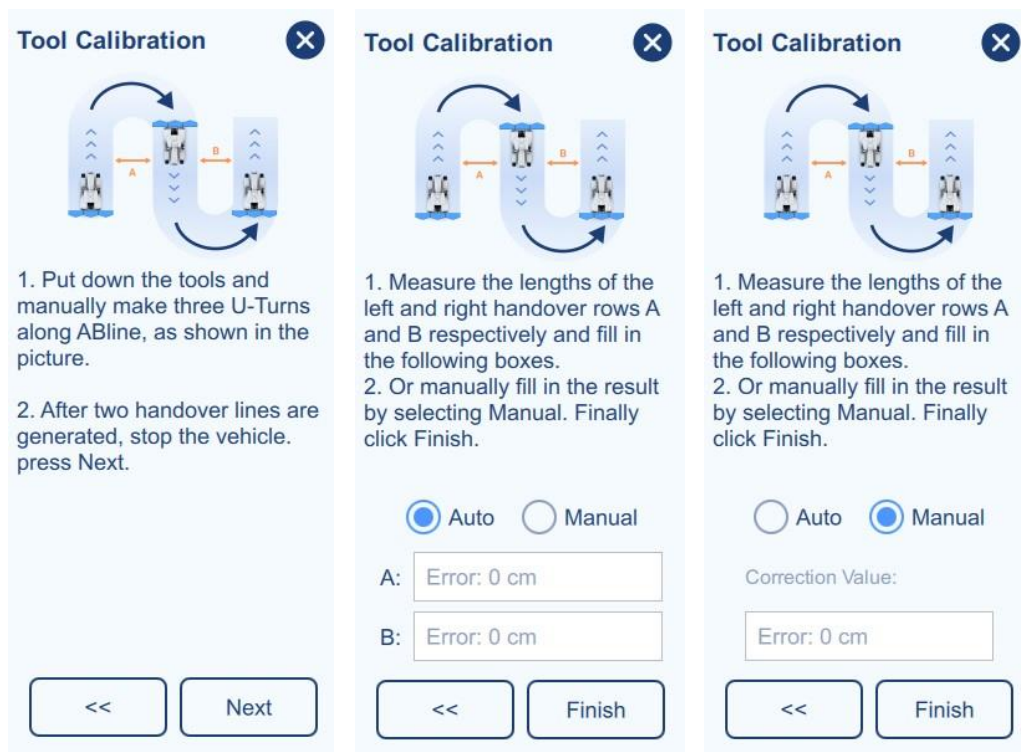
4. **Implement Calibration:** To correct the implement offset.



Automatic drive 3-line to get the A and B value, compare with the preset Overlap/Gap value (parameter “(B)” in implement setting).

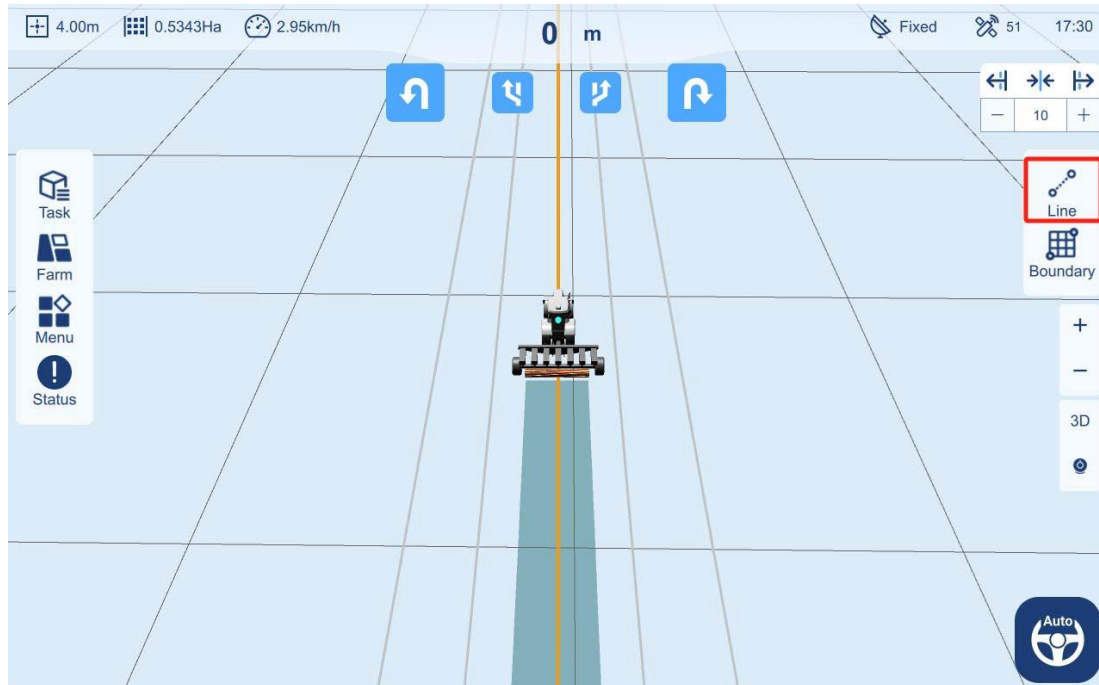


Follow the guide to complete the calibration.

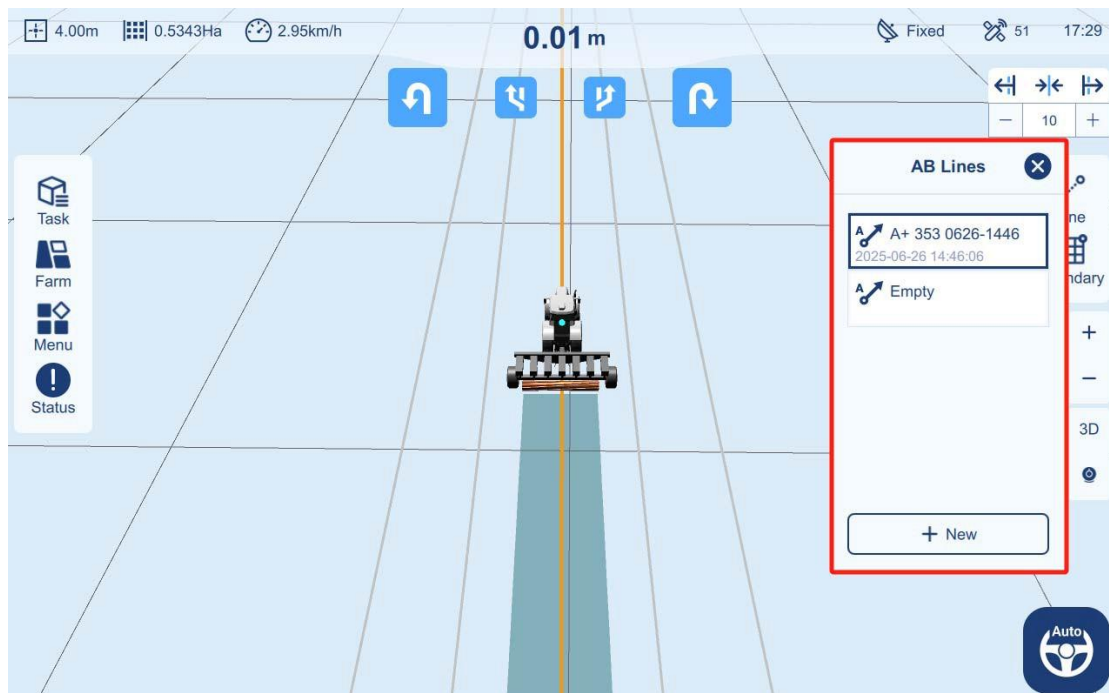


Guidance Line Setting

Click Line button from the main interface.



Select desired line from the list, or click New to create a new guidance line.



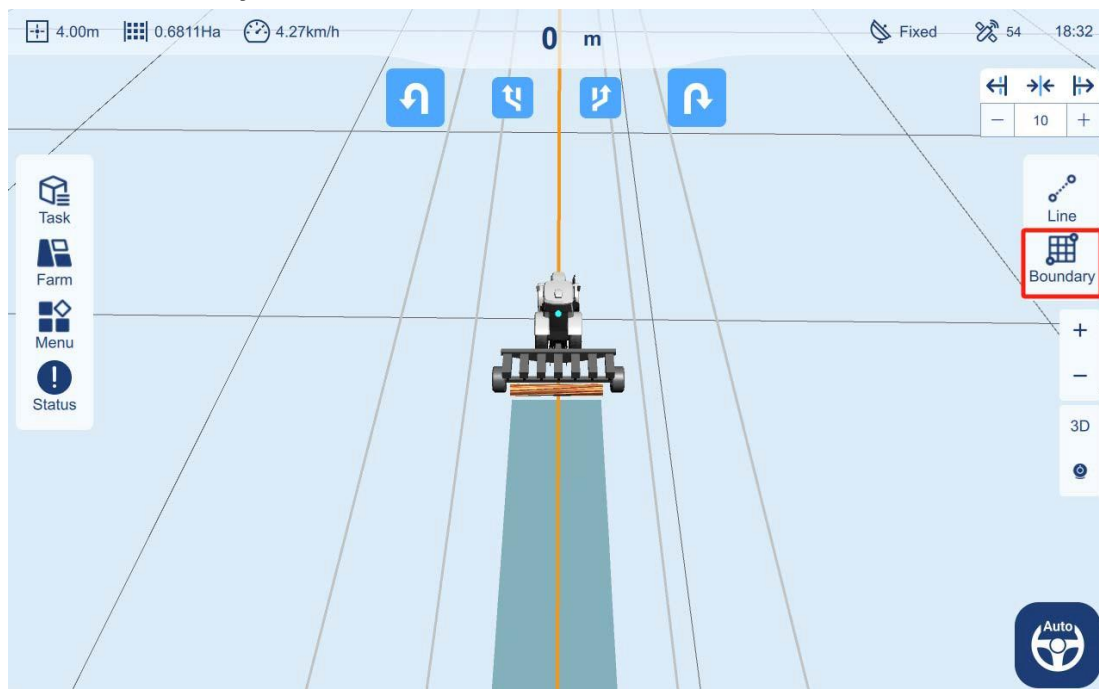
Select desired line type to create a new one. V1.0.0 version only



Import function will be released in later version.

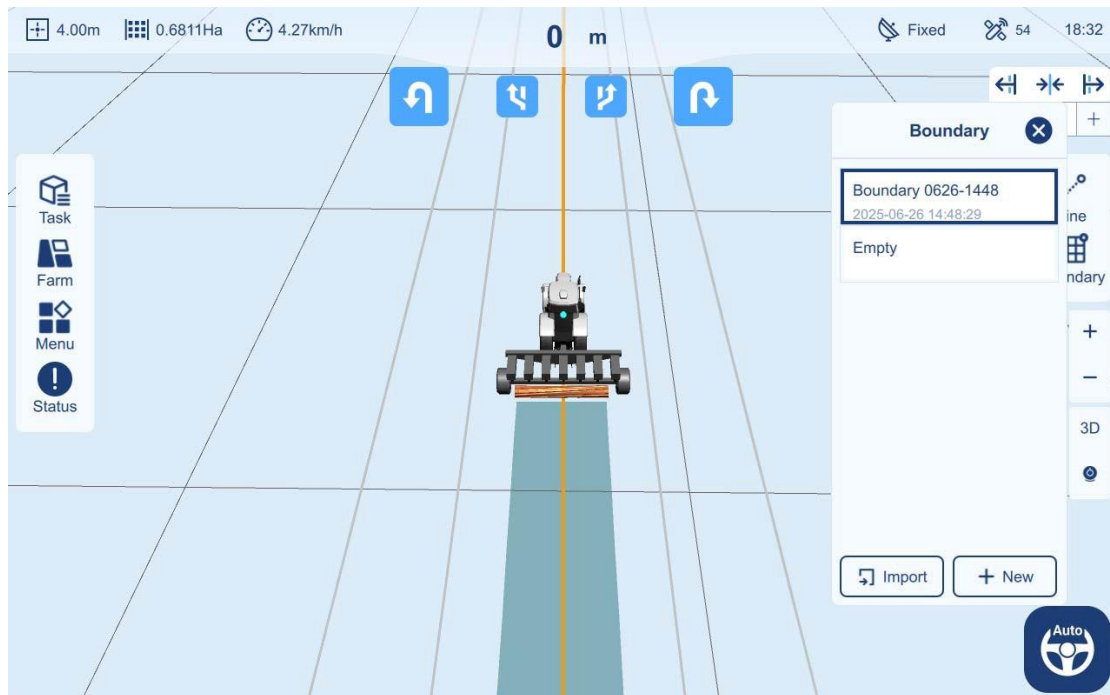
Boundary Setting

Click Boundary button from the main interface.



Select desired boundary from the list, or click New to create a new

boundary, or click Import to import KML/SHP file from USB or tablet local path.

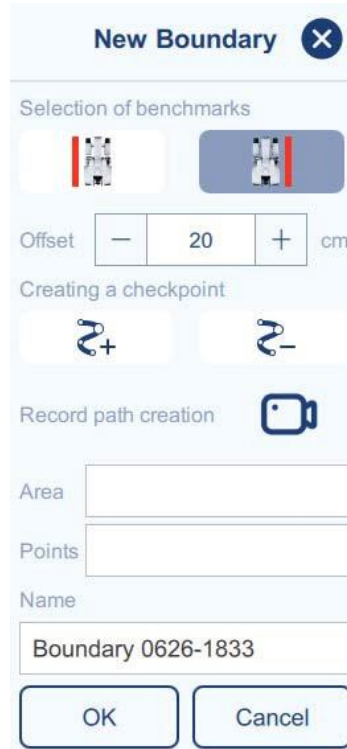


Select method of creating new boundary: Drive In or Pick Point.



Drive In: Select benchmark on left or right, and set the offset. Then there are

two methods to create new boundary. ① Manually click creating checkpoint to add or delete point during driving. ② Click recork path to automatically record the path during driving.



New Boundary [X]

Selection of benchmarks

Offset: [-] [20] [+] cm

Creating a checkpoint

Record path creation

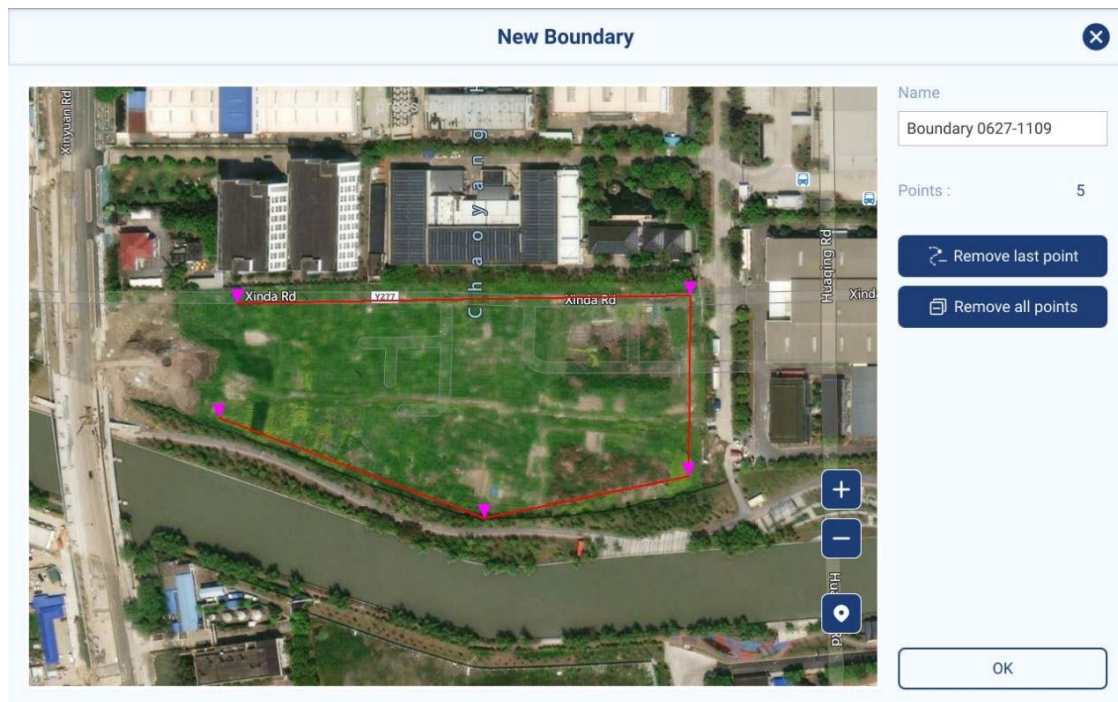
Area: []

Points: []

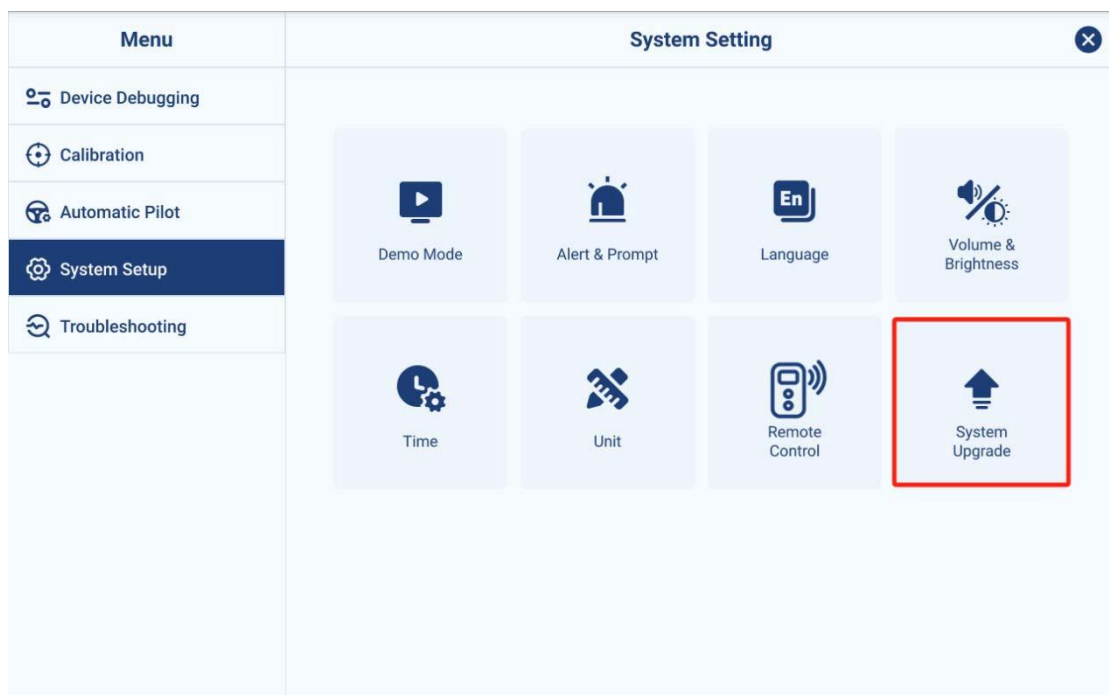
Name: [Boundary 0626-1833]

[OK] [Cancel]

Pick Point: Manually pick point from online map to draw a new boundary. The boundary will automatically close by connecting the last point to the first point.



System Upgrade



Online: If the TC120 tablet has internet connection, software will automatically check the current firmware and software version and compare to the latest released version on server. If there are new released versions on server, they

will be auto-downloaded, once download is finished there will be 'file is ready' notice and wait for upgrade. Now click Online button to start upgrade.

USB: Plug in USB drive or copy the firmware or software package to the tablet local path. Click USB, then manually select the corresponding package file to start upgrade.

Please be noticed, during the firmware upgrade the controller requires a reboot, please wait and do not do any operation.

System Upgrade

Firmware Upgrade

No need update.
Current version: 2025062414 Latest released version: 2025062414

USB

Software Upgrade

No need update.
Current version: 20250625 Latest released version: 20250625

USB

Firmware&Software Upgrade

Online

Controller connected.

6. Get More

This Quick Start Guide briefly introduces the setup and operation for AG993 Auto-Steering System and the operation of TersusAG software. More details please refer to *User Manual of AG993* and tutorial videos which are available through Tersus support team and our YouTube channel.

7. Exemption of Liability

Before using this product, please be sure to read the product manual carefully, which helps you to better use the product. Tersus is not liable for damages caused by failure to follow the instructions in the manual.

Tersus is committed to continually improving product features and performance, and the contents of subsequent product manuals are subject to change without notice. If the pictures and icons in the manual are different with actual product, please refer to the actual product.

8. Technical Support

Thank you for using Tersus products.

If you have any technical questions for the products, please contact us at support@tersus-gnss.com or log a ticket in our tracking system: <https://tersus.supportsystem.com/> and we will serve you promptly.

FCC Statement

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

Note:

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.