CHCNAV

# NX600 Series

## Automatic Steering System Installation and Quick Guide

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# Preface

## 1.1 Copyright

### 1.1.1 Copyright 2025-2026

CHCNAV and CHC Navigation are trademarks of Shanghai Huace Navigation Technology Ltd. All other trademarks are the property of their respective owners.

### 1.1.2 Trademarks

All product and brand names mentioned in this publication are trademarks of their respective holders.

## 1.2 Safety Warnings

When using the CHCNAV NX600 Series GNSS Automatic Steering System, please observe the following safety warnings:

Before using the system, carefully read and understand the operating instructions in the user manual to ensure proper use of the system.

During system operation, strictly follow local traffic regulations and safety standards to ensure safe operation in safe environments and conditions.

Regularly check the condition and performance of the system and equipment when using the system to ensure normal operation and high-precision navigation performance.

Maintain concentration and alertness during system operation, avoid fatigue and distraction, and prevent accidents.

Avoid using the system in hazardous areas such as steep or cliff edges, water puddles, or muddy ground to prevent personal injury or equipment damage.

Stop using the system immediately and contact the system manufacturer or supplier for technical support and maintenance services when the system experiences abnormality or failure.

Protect the equipment from physical damage or weather factors when operating the system to ensure long-term stability and reliability.

Observe the relevant maintenance and upkeep requirements of the system and equipment during operation to prolong the life of the equipment and ensure normal operation.

Pay attention to the safety of the surrounding environment and other personnel when using the system to avoid accidents and stop the machine promptly to handle any abnormal situations.

The above is for reference only, and specific safety warning content may vary slightly

depending on the device model and local regulations and standards. When using the CHCNAV NX600 Series GNSS Automatic Steering System, please carefully read and observe the relevant safety warnings and usage instructions to ensure the safety and normal operation of the system.

## 1.3 Introduction

The CHCNAV NX600 Series user manual describes how to install and use the CHCNAV® NX600 Series system. In this manual, “the system” refers to the NX600 Series agricultural system unless otherwise stated. Even if you have used other agricultural products before, CHCNAV recommends that you spend some time reading this manual to learn about the special features of this product.

## 1.4 Technical support

If you encounter a problem and cannot find the required information in this manual or on the CHCNAV website (www.chcnav.com), please contact your local CHCNAV dealer from whom you purchased the system.

If you need to contact CHCNAV technical support, please contact us by email support_ag@chcnav.com

## 1.5 Disclaimer

Before using the system, please make sure that you have read and understood this User Guide, as well as the safety information. CHCNAV holds no responsibility for the wrong operation by users and for the losses incurred by the wrong understanding about this User Guide. However, CHCNAV reserves the rights to update and optimize the contents in this guide regularly. Please contact your local CHCNAV dealer for new information.

## 1.6 Your comments

Your feedback about this user guide will help us to improve it in future revision. Please email your comments to support_ag@chcnav.com.

# 2 Product Overview

## 2.1 Introduction

The NX600 Series is an automatic steering system that can be easily retrofitted to many types of vehicles, providing a compact, modern, all-in-one solution at an affordable price. It delivers significant productivity gains, operates in all visibility conditions, and reduces operator fatigue.

## 2.2 Product package

All components are in one box.

| Device name | Model | Image | Quantity |
|---|---|---|---|
| Electric steering wheel | CES-T6 | | 1 |
| Receiver | PA-5 | | 1 |
| Tablet | CB-H12(T)<br>CB-H10 Pro(T) | | 1 |
| Camera | X-MC011A | | 1 |
| Ball holder | | | 2 |

| | | | |
|---|---|---|---|
| Double socket arm | | | 1 |
| Standard bracket | | | 1 |
| T-bracket | | | 1 |
| T mount kit (A&B) | | B A | 1 |
| Integrated main cable | | | 1 |
| Handle ball | | | 1 |
| Radio Antenna | | | 1 |

# 3 Installation

## 3.1 Overview

## 3.2 Steering system inspection

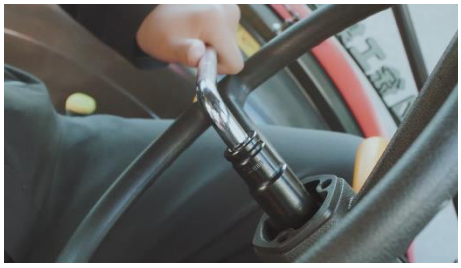
Before installation, please check whether the vehicle steering gear is normal, whether the dead zone (steering clearance) is appropriate.

| | |
|---|---|
| Dead zone < 20° | Available range |
| 20°<Dead zone < 70° | Available to install NX600 Series but necessary to modify the dead zone to 10~30 degrees. |
| Dead zone > 70° | Repair the vehicle first. |

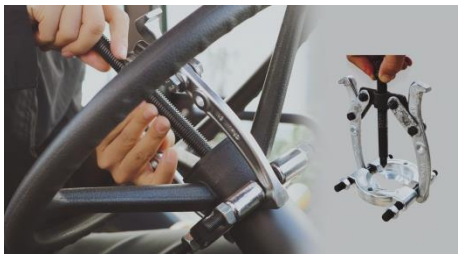
## 3.3 Original steering wheel removal

a) Remove the protective cover of the original steering wheel.

b) Stabilize the steering wheel, use the sleeve tool to loosen the original vehicle spline screws, and remove the original vehicle spline screws.

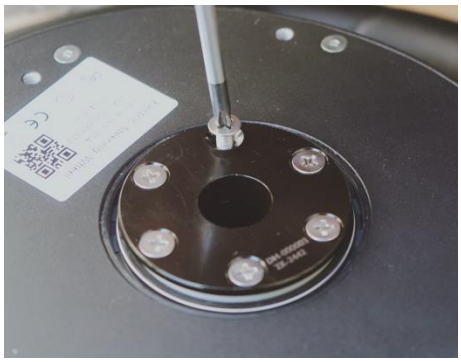


c) Pull out the steering wheel forcefully. If it is difficult to remove, it is necessary to strike the spline shaft to loosen it with a hammer and to be careful to avoid the steering wheel damage, or use of high-quality puller tool to avoid damage on original steering wheel and shaft.



## 3.4 Steering wheel installation

a) If the sleeve can fit the shaft, place the sleeve in electric steering wheel, and fix the sleeve with M5*11 Phillips screws (6 pcs).



b) Install T bracket or standard bracket on the motor with M5*16 hexagon screws (2 pcs).

c) Fix the T mount kit to the shaft with M8*60 hexagon screws (2 pcs).

d) Insert T bracket through T mount kits.

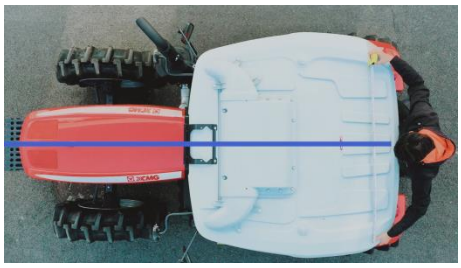
e) Hold the steering wheel and tighten the spline screws with tools.

f) Screw the T bracket to the T mount kit tightly with M10 nuts (2 pcs).

g) Finally shake the steering wheel, check whether it's tight, and check again whether the steering clearance is too large.

## 3.5 Receiver installation

a) The receiver needs to be installed on the central axis of the vehicle roof, and the installation direction should be parallel to the vehicle heading.



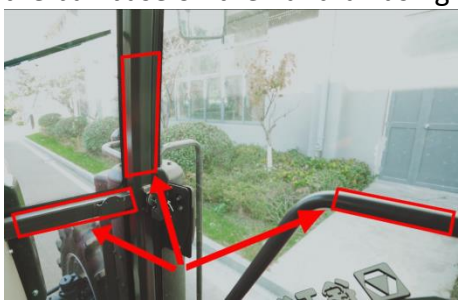
b) After confirming the installation position, wipe the roof clean and make sure the bracket installation is spotless.

c) Fix the receiver using 3M adhesive or self-tapping screws.

d) Adjust the receiver bracket to make sure the receiver is placed horizontally (the tilt angle must be less than 5°) and the receiver arrow must face forward.

## 3.6 Tablet installation

a) The tablet should be installed in a location convenient for user operation. It is recommended to mount the ball base on the handrail using the U-shaped brackets.



b) Secure the tablet using a rotating mount.

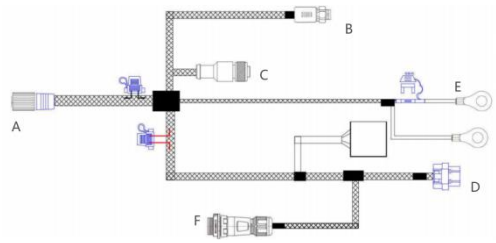
c) After completing the installation, it is available to adjust the tablet to a suitable position.

## 3.7 Camera installation

a) The camera can be mounted anywhere at the rear of the vehicle to monitor real-time working conditions.

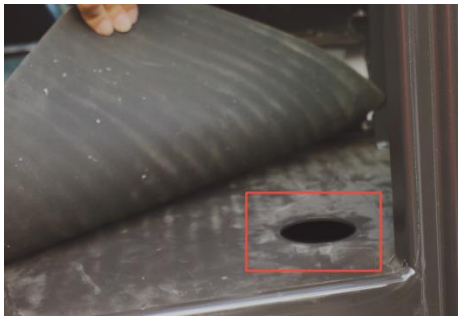
b) Fix the camera with 3M adhesive or self-tapping screws.

## 3.8 Wiring connection

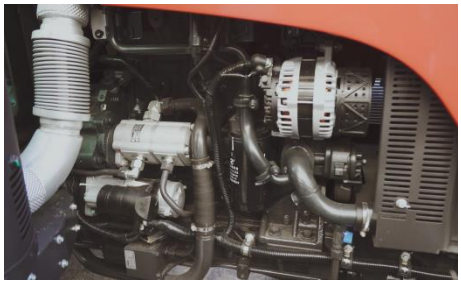
| Name | Cable diagram | Connection |
|---|---|---|
| Integrated main cable |  | A → Receiver<br>B → Electric steering wheel<br>C → Wheel angle sensor cable (Optional)<br>D → Tablet Port<br>E → Battery<br>F → Camera<br>G: Rocker switch |

**a) Wiring precautions**

• When wiring, first confirm the location of the threading holes, and thread the wiring harnesses outside through the threading holes in sequence.



• When wiring, pay attention to avoid high temperature, oily, sharp and abrasive areas, fans, exhaust pipes and other nearby areas.



- When wiring, keep a certain length to avoid over-tightening and loosening; the wiring harnesses layout should be smooth and cannot be twisted.

- When wiring, leave enough length in case of wheel turning to right/left all the way because the wheel angle sensor will rotate together with steer wheel.

- When wiring, first arrange the outer wiring harnesses, then arrange the wiring harnesses in the cab.

- After wiring, cut off the extra length of cable ties.

- After completing the installation, please store the original vehicle accessories properly and clean up the garbage.

**b) Electrical connection method and precautions**

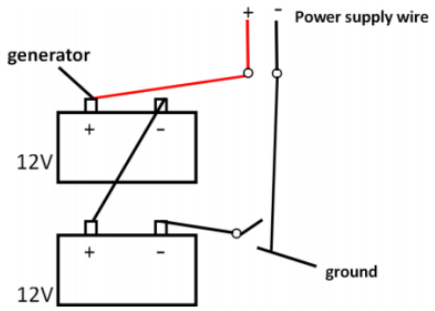
- Before connecting to receiver, display, and steering wheel connectors, please connect to battery first to avoid damage caused by direct power-on or multiple power-offs.

- In the process of connecting the power cord to the battery, first connect to the positive electrode then to the negative electrode.

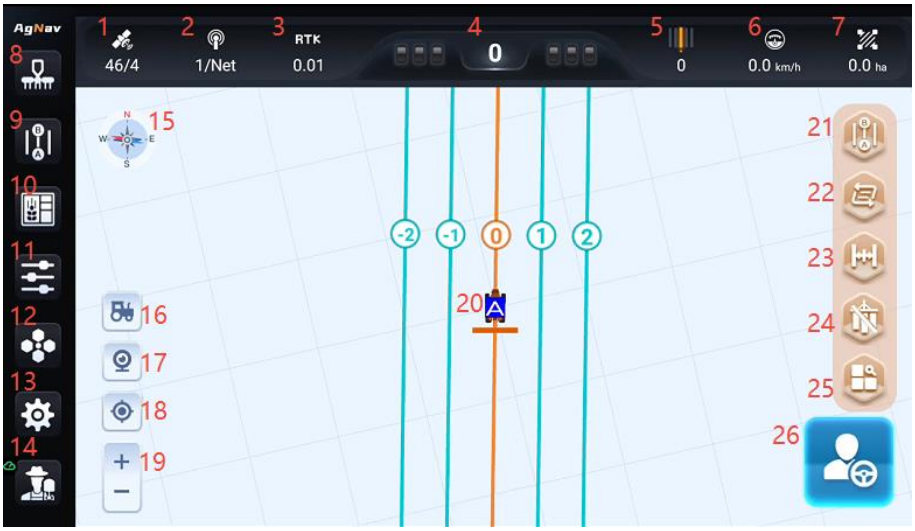
- Pay attention to the use of the wrench when connecting the positive electrode, and it is strictly forbidden to bond (when the wrench contacts the positive electrode of the battery, the other end of the wrench is strictly prohibited from touching any conductive items, especially the metal parts of the original vehicle).

- 12V / 24V battery, when using the original battery power supply, please connect the positive wire to the positive electrode and the negative wire to the negative electrode.

- 12V / 24V battery, when additional battery is connected in series, connect the positive wire to the positive electrode and the negative wire to the negative electrode of the other battery, as shown in the diagram below.



# 4 Main interface




1. Satellite status

There are two numbers displayed in the form of X / Y.

X represents the number of tracked satellites.

Y represents the RTK status:

1: Single/Autonomous 2: DGPS/SBAS 4: Fix 5: Float

2. Base station status

There are two numbers displayed in the form of X / Y.

X represents the signal latency. The smaller the X, the more stable the signal is, usually the recommended value is less than 10 in automatic steering mode for better performance.

Y is the current radio channel number if it's radio mode; Y will change to NET if it's network mode.

3. GNSS mode and position accuracy
4. Lateral deviation

The real-time deviation between the current vehicle location and the marked guideline.

5. Guideline number

The current guideline number where the vehicle is located (The original number is 0).

6. Vehicle speed

Real-time vehicle speed.

7. Worked area

Display real-time work area, ha is the default unit.

8. Implement

It consists of Implement parameter, Implement menu, Center offset and ISOBUS

switch.

9. Guideline

Click this button, then select the type of guideline to create.

10. Field managers

It is accessible to manage boundaries, guidelines, tasks, and landmarks quickly.

11. Parameter adjustment

**P Gain**: Motor Adjustment speed ratio. The smaller the value, the slower the adjustment.

**D Gain**: The higher the frequency, the more obvious the vibration of the motor movement; the smaller the frequency, the more stable the motor movement.

12. UI style

Includes Day/Night and 2D/3D mode switch.

13. Settings center

Includes three modules: Agriculture management, System settings and Data transfer.

14. About

Includes Help, Me and Equipment modules.

Help interface: Includes Remote assistant, One click log upload, Parameters and Reverse heading features.

Me interface: Cloud service login interface.

Equipment interface: It is possible to view the device's basic information and version information.

15. Compass

Click it once to check the basic information. Click it seven times continuously to show the debugging information.

16. Vehicle speed

Vehicle speed in demonstration mode. You can adjust the vehicle speed and direction in the demonstration mode.

17. Camera switch

Turn the camera on or off.

18. View switch

Switch between map orientation or vehicle orientation.

19. Zoom in/out

Click to zoom in/out on the screen.

20. Vehicle and guideline

Display vehicle and guideline positions.

21. Quick creation

Quickly create AB line, Free curve or Boundary.

22. Guideline switching button

Click the button to quickly switch guidelines when the field has multiple guidelines.

23. Line offset

Shift guidelines as needed.

24. Work coverage track

Turn on track recording.

25. All shortcuts

View all shortcuts or configure shortcuts.

26. Engage or Disengage

Automatic: Manual:

# 5 Quick guide

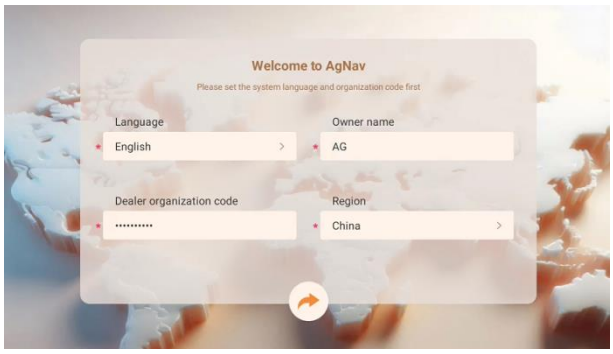
## 5.1 Power On

Press and hold the orange button for 3 seconds to power on the system.

Note: Please do not turn the steering wheel manually when turning on the system because the motor will initialize internally.

## 5.2 Boot guide

1. On this page, select the language and region, then enter the username and dealer organization code (obtained from the local dealer).




2. Select the correct automatic steering system: NX600.

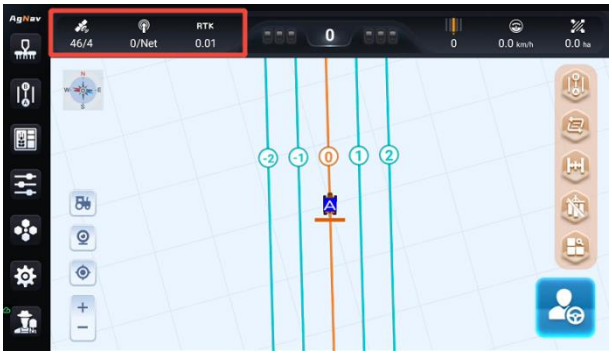
## 5.3 Software registration

Navigate to [Settings center - System settings - Register] to check whether the

software is registered. It is necessary to register for Software registration, RTK, and Auto steering at least. Please contact CHCNAV technicians when it shows that they are Not activated and provide the tablet SN to get the online registration. Advanced U-Turn, ISOBUS, PointSky and other features require a paid subscription.

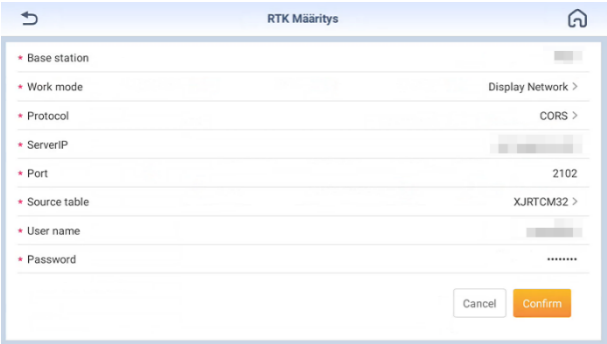
## 5.4 GNSS settings

1. Tap the satellite status icon on the main interface to enter the GNSS settings screen.

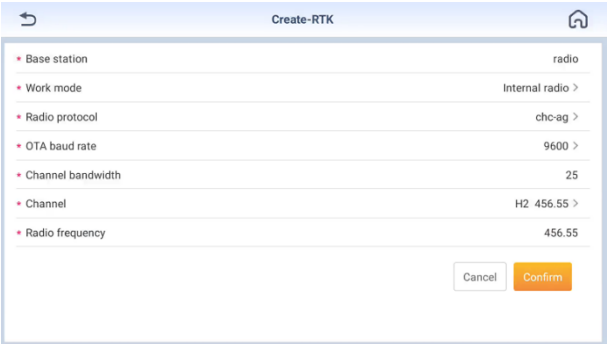



2. Select CORS, radio, PPP, or other positioning modes based on the actual working environment.

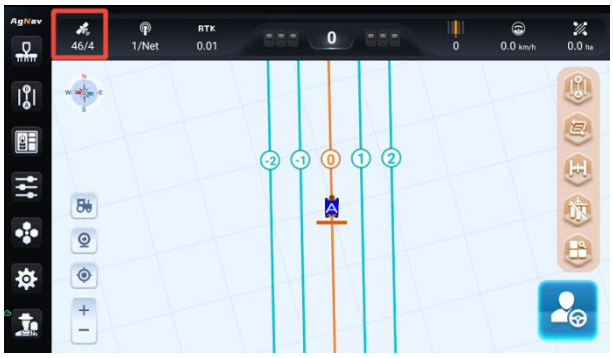
3. If the work area has network access and CORS coverage, click Add, select Tablet Network/Controller Network, then enter the CORS account information and log in.




4. If the work area has no network but there is a radio base station, click Add, select the Internal radio, then enter the same configuration information as the base station to complete the connection.

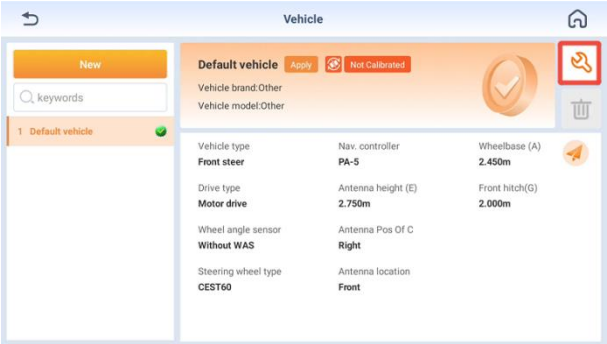



5. Return to the main interface to check the status bar. When the GNSS solution is getting Fix with number 4, the system is ready to use.

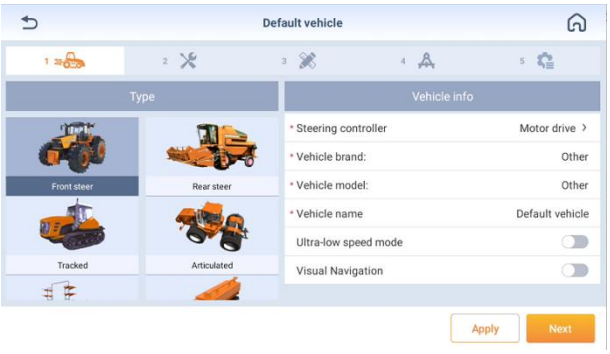



## 5.5 Vehicle settings

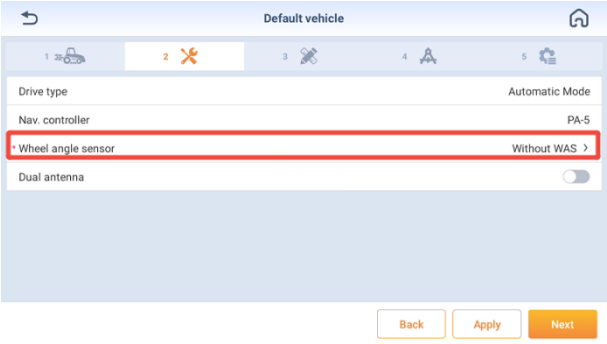
1. Navigate to [Settings center - Agriculture management - Mechanical calibration - Modify] to set the vehicle parameters.



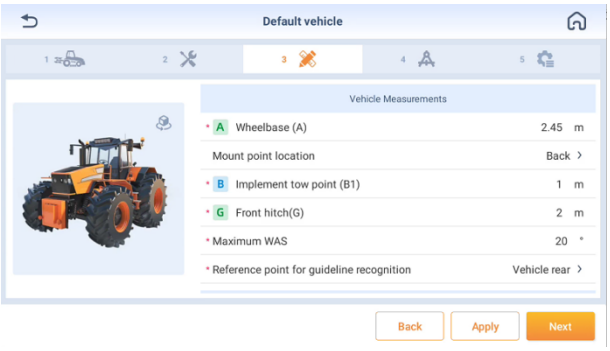

2. Select the vehicle type and input the vehicle information. (Note: If the working speed is between 0.1 and 1 km/h, ultra-low speed mode must be activated.)




3. Select sensor mode, default to WAS mode.




4. Measure and record vehicle parameters according to the diagram.




**Wheelbase(A)**: Measure the distance between front wheel rotation axis and rear

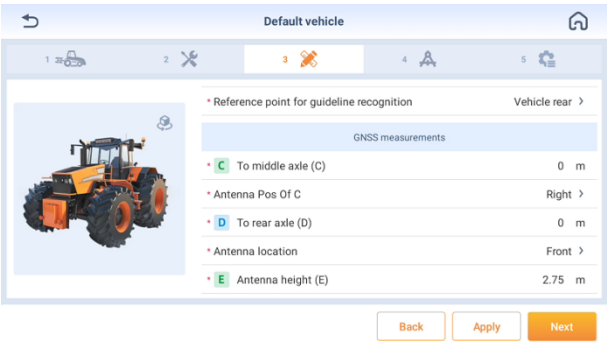
wheel rotation axis. Note that the tape measure needs to be parallel to the ground.

**Implement Tow Point(B)**: Use the default value of 0 and it will be used in the futural development.

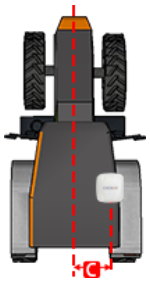
**Front hitch(G)**: Measure the distance between the two front wheels.

**Maximum WAS**: The default is 25, which represents the maximum angle the vehicle can turn.

Reference point for guideline recognition: You can select between Vehicle head and Vehicle rear.

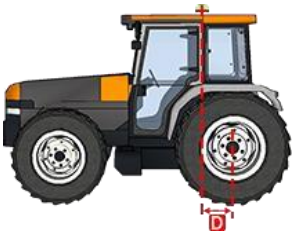



**To Middle Axle(C)**: If the receiver is not mounted on the central axis, measure the distance from the receiver to the central axis. If it is on the central axis, enter 0.




**Antenna Pos of C**: Fill in according to the receiver position.

**To Rear Axle(D)**: Measure the horizontal distance from the antenna center to the rear wheel center. (It is convenient and accurate to project the antenna center and the rear wheel center onto the ground, then measure it.)

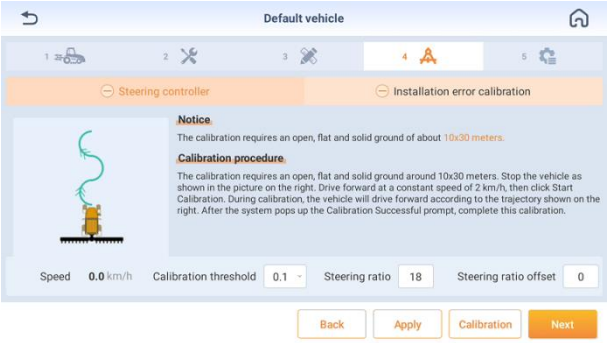



**Antenna location**: The relative position between the antenna center (the position of the antenna center should be referred to the blue indicator) and the rear axis. Select **Front** if the antenna is in front of the rear axis, select **Rear** if the antenna is behind the rear axis.

**Antenna height(E)**: Measure the vertical height from the antenna center to the ground.

## 5.6 Calibration

### 5.6.1 Steering calibration

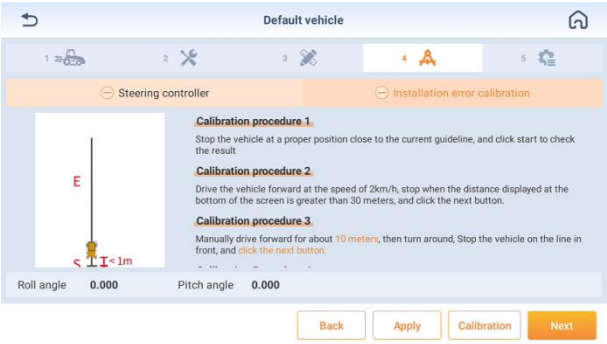



1. The calibration requires an open, flat and hard ground about 10*30 meters.

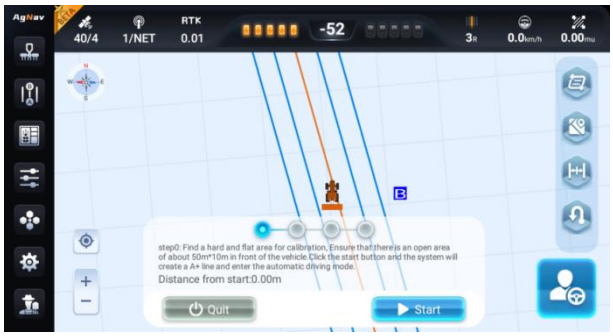
2. Keep the vehicle running at 2km/h and click [Start]. During the process, the steering wheel will turn automatically.

3. When the screen shows “Waiting for calibrating…”, around 2 minutes later, the calibration will be successful.

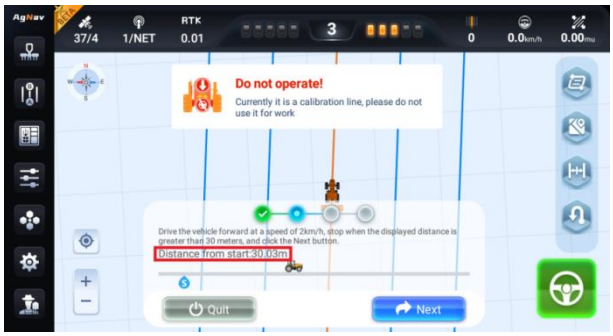
## 5.6.2 Installation error calibration



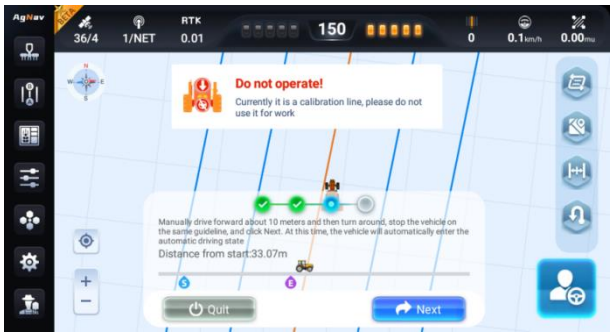

1. Stop the vehicle at a proper position close to the current guideline and click start.




2. Drive the vehicle forward at the speed of 2km/h, stop when the distance displayed at the bottom of the screen is more than 30 meters, and click the Next button.

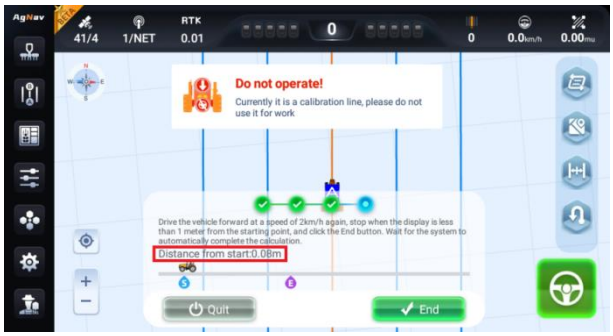



3. Manually drive forward for about 10 meters, then turn around, Stop the vehicle on the line in front, and click the Next button.



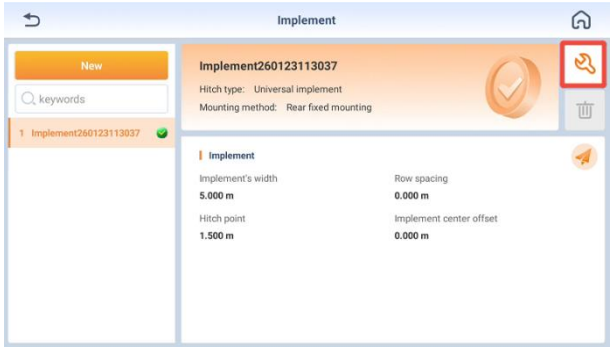

4. Drive the vehicle forward at the speed of 2km/h again, stop when the distance is less than 1 meter from the starting point, and click the End button. Wait for the

system to automatically complete the calculation.



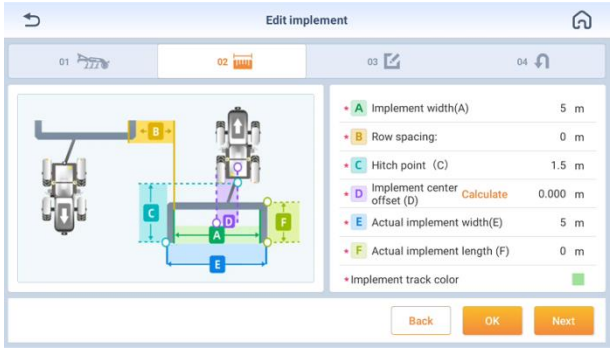

## 5.7 Implement settings

1. Go to [Setting center - Agricultural management - Implement - Modify] to the implement.




2. Selecting implement type and mounting method.

3. Input the implement parameters. The following 4 parameters must be entered correctly.




**Implement width**: The width of the implement, and the default value is 5m.

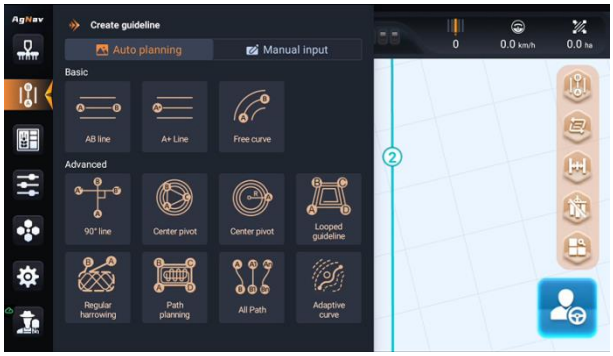
**Row Spacing**: The distance between two rows, and the default value is 0m.

**Hitch Point**: The distance from hitch point to implement, and the default value is 1.5m. The current algorithm does not use this value, so it has no practical significance.

**Implement center offset**: The offset from implement center to vehicle center.

## 5.8 Basic guidelines

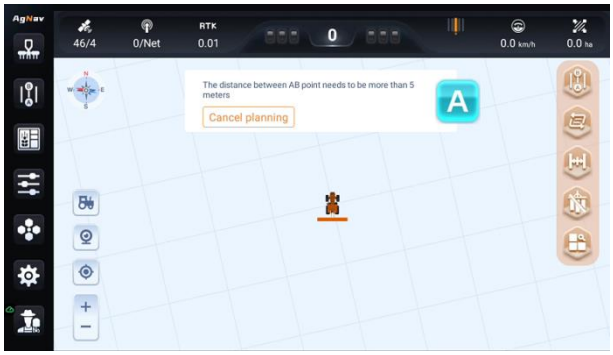
Click the Guideline button on the main interface and select the guideline to be created.



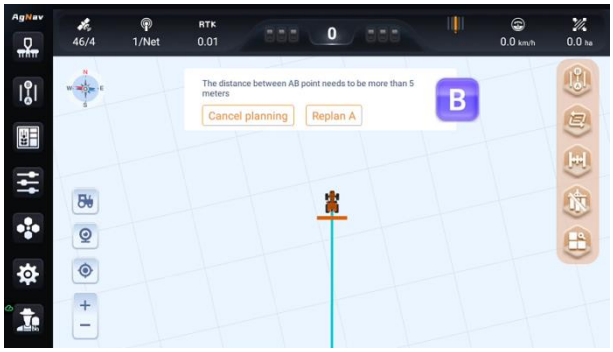

### 5.8.1 AB line

Create a straight line through two points.

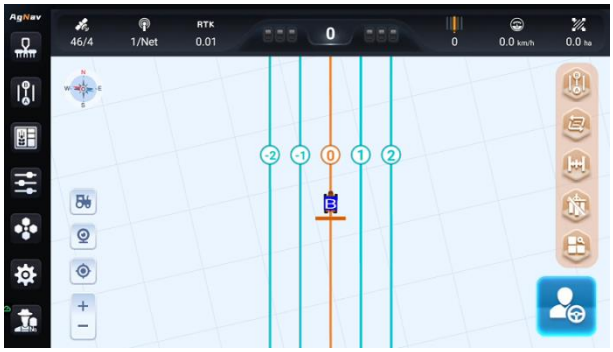
1. Click A in the current location.



2. Drive to another end of the field and click B.



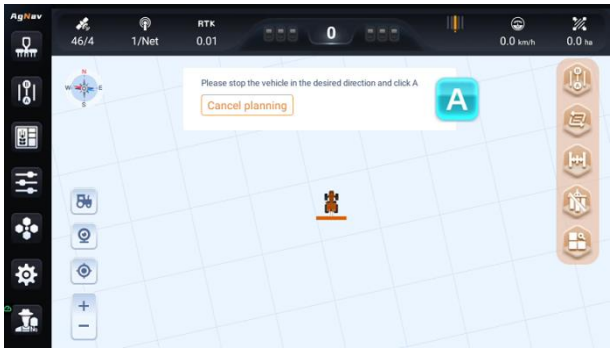

3. New AB line is created successfully.



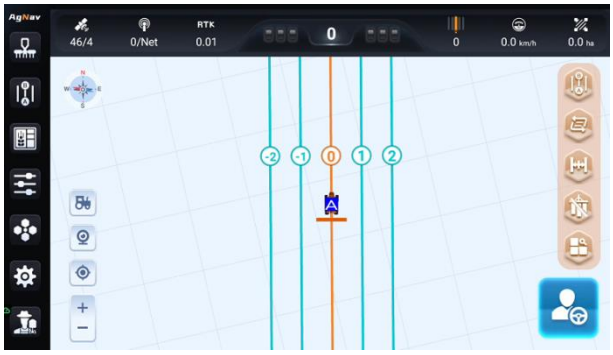

## 5.8.2 A+ line

Create a straight line through one point and the receiver's heading.

1. Click A in the current location.



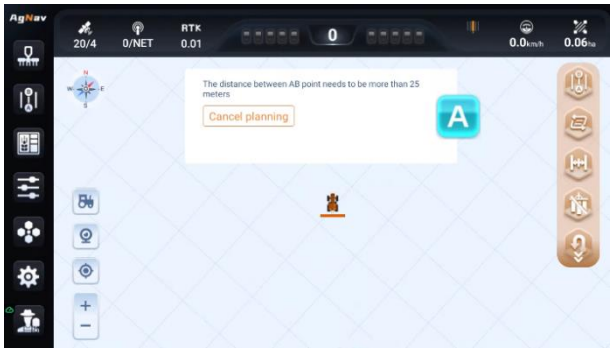

2. New A+ line is created successfully.



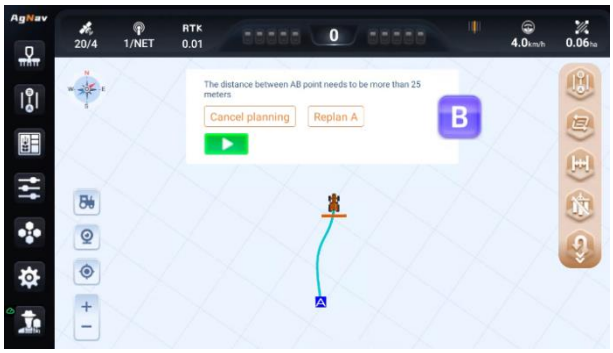

### 5.8.3 Free curve

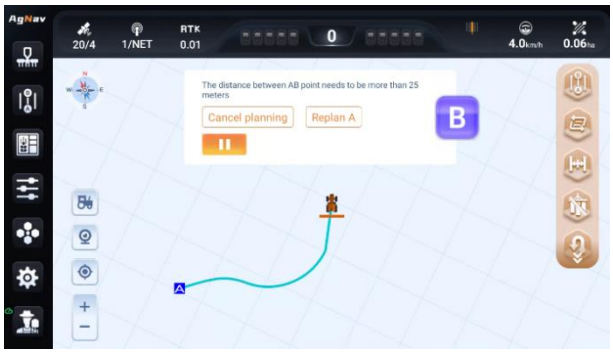
Create curves or combinations of curves and straight lines based on real-time paths.

1. Click A to start the curve.

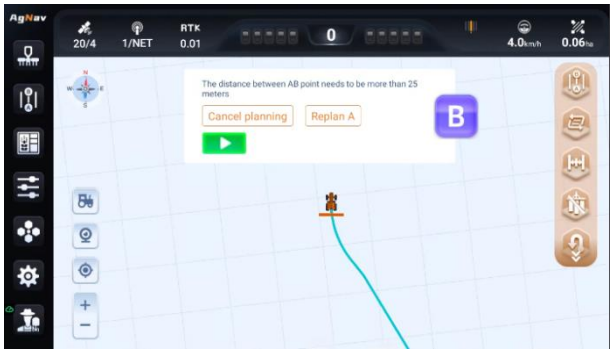



2. Click [Start] to create the straight line.

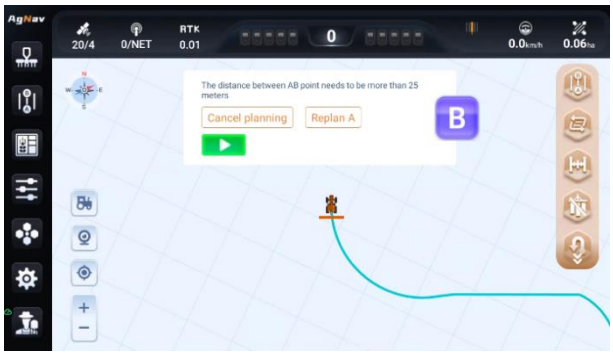


3. Click [Pause] to continue creating the curve line.




4. Click B to finish the Free curve creation.




5. New Free curve is created successfully.

## 5.9 Engage and disengage automatic steering

Click to start automatic steering after completing the above steps.

After completing the task, stop the vehicle first, then press to disengage automatic steering.

## 5.10 Power Off

Press and hold the orange button for 3 seconds to power on the system.

# 6 Maintenance

1. To ensure the normal operation and service life of the equipment, please maintain the equipment under the instruction of the manual.
2. Please do not disassemble the main components of the system. If necessary, please contact the CHCNAV after-sales service support_ag@chcnav.com.
3. Please use device under the instruction of user guide.
4. Regularly check each screw, wiring harness and connector of the system, such as controller fixing screws, angle sensor fixing screws, data cable connectors, etc.
5. Keep the motor clean.
6. Maintain the environment in which the motor is used. Please do not wrap materials such as cotton cloth and dustproof film on the motor.
7. Before starting the work, check whether the transmission device is flexible; whether the concentricity of the coupling is standard; the flexibility of the gear transmission.

**CHC Navigation**

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201702 Shanghai, China

Tel: +86 21 542 60 273 | Fax: +86 21 649 50 963

Email: support_ag@chcnav.com

Website: www.chcnav.com

FCC ID:SY4-A02078

**FCC Caution:**

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.

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception,which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different
from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC’s RF Exposure guidelines, This equipment should be installed and operated with minimum distance 20cm between the radiator and your body: Use only the supplied antenna.