e-survey

V1.0

eME10 USER GUIDE

Intelligent Excavator Guidance System

Shanghai eSurvey GNSS Co., Ltd.

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1 Before You Start

Dear customers,

Thank you for purchasing our product. Before starting your work, please carefully read the following:

- This user guide is for your product only. If the actual situation does not match with the situation in the user guide, the actual situation shall prevail.
- Improper use of the product can lead to death or injury to persons, damage to property and/or malfunction of the product. For safety and instructions on how to use this product, please carefully read the precautions for safe operation, disclaimers and instructions in the user guide and at all times comply with the same. **Remember that YOU are the key to safety.**
- The information in this user guide is subject to change without notice. We reserve the right to change or improve the product as well the content in the user guide without any obligation to notify you. For any questions, please contact us.

1.1 Precautions for Safe Operation

Precautions in this part are intended to minimize the risk of personal injury and/or damage to property, and all indicate **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

Precautions can be divided into the following types according to the degree of loss or injury in case of negligence or omission:

	Indicates a potentially hazardous situation that, if not avoided, may result in INJURY OR PROPORTY DAMAGE OR IRRETRIEVABLE DATA LOSS.
	Indicates a potentially hazardous situation that, if not avoided, could result in SERIOUS INJURY OR EVEN DEATH.
	Indicates an imminently hazardous situation that, if not avoided, will result in VERY SERIOUS INJURY OR EVEN DEATH.

1.1.1 Caution

The following outlines the cautions that you must avoid when operating the **eME10** and any of its components.

Transport

	When transporting, please try your best to lighten libration on the system.
	Please do not arbitrarily stand or seat on the carrying case, or turn over it. Otherwise, the system may be damaged.

Installation / Maintenance

	To avoid accidental damage, please only use original supplied parts. Otherwise, damage to the system may occur.
	Please turn off the power supply before installation or maintenance. If you would like to do welding, please disconnect the negative battery hitch wire of the whole vehicle.
	Please find a suitable site with enough working space for installation.
	When performing any drilling, cutting or fastening actions, please make sure that no other mechanical parts are present to avoid damage to the wire. Failure to follow this warning may result in bodily injury or damage to the vehicle.
	Please make sure all screws, bolts, nuts and cables are tightly connected before using the system to prevent the equipment from shaking and falling.

Data

	Please be careful when deleting data because this operation is permanent, and you cannot undo the deletion or restore the data.
	Please do not remove the USB drive from the socket while the application is copying data. Otherwise, it will corrupt the data.

GNSS Interference

	The GNSS antenna may experience interference if you operate the vehicle within 100 m (300 ft) of any power line, radar dish or cell phone tower. Please be careful.

Touch Screen

	Please do not apply glass cleaner directly to the touch screen.
	Please do not press on the screen with a sharp object such as a pencil. This could damage the surface of the screen.

1.1.2 Warning

The following outlines the warnings that you must avoid when operating the **eME10** and any of its components.

Operating Safety

	Please avoid fatigue driving, and always observe the obstacles ahead and judge the potential danger. Sleeping is forbidden.
	Please keep alert and aware of the surroundings at all times. **eME10** cannot avoid obstacles.
	Please do not drink alcohol or drugs which can affect your alertness or coordination. If you are on prescription or over-the-counter drugs, please seek medical advice on whether or not you can properly operate the vehicle.
	Please do not leave the cab while operating. It is your responsibility to safely operate the vehicle and control it in time to avoid people, animals, trees, ditches, buildings, power lines, other machines, etc.
	Please make sure driving at a safe speed and avoid rolling over or losing control. Because the system cannot control the vehicle speed.

Electrical Safety

	Incorrectly connected power can cause severe injury and damage to people or the equipment. Therefore, while working with electrical components, please prior to doing any welding on the vehicle, make sure the negative terminal of the battery is disconnected, and check that all power cables to system components are connected to the correct polarity as marked.

1.1.3 Danger

The following outlines the danger that you must avoid when operating **eME10** and any of its components.

Operating Safety

	Please make sure you are adequately trained and qualified to operate the GNSS intelligent excavator guidance system, and remain in complete control of the vehicle at all times. **eME10** is not a safety aid nor a replacement for a skilled operator.

1.2 Disclaimer

As the operator of the vehicle, it is your responsibility to exercise common sense and navigational judgment while using the **eMP10**, and keep it operating safely. The system is *NOT A SUBSTITUDE* for the operator of the vehicle.

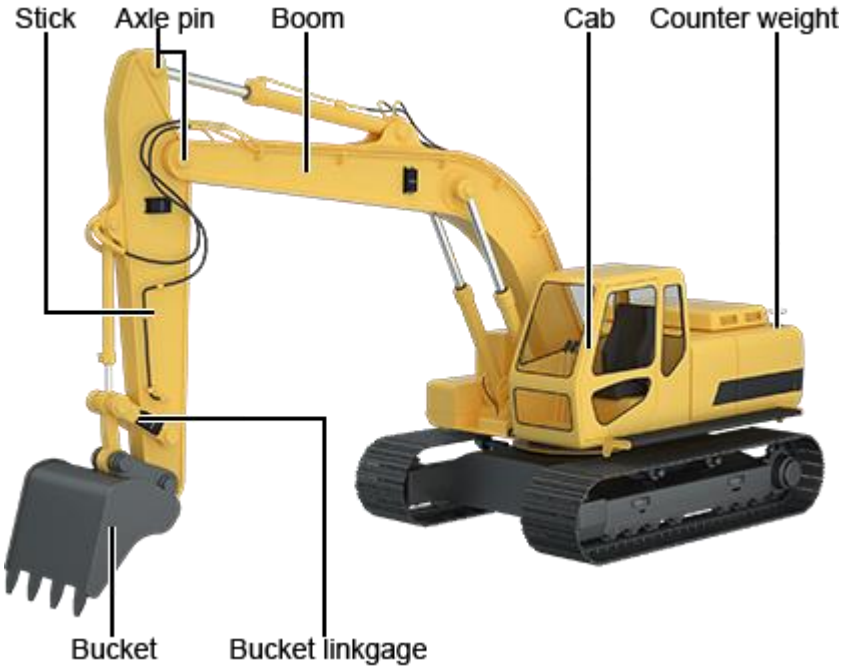
We assume no responsibility or liability for any damages to property, personal injuries or death caused by the following conditions, including **eME10** and any of its components:

- Damage caused by both physical and mental conditions of the operator, including alcohol, drugs, drug anesthesia, dizziness, weakness, nausea and other physical or mental conditions.
- Personal injuries or property loss caused by the operator's subjective intention, and any compensation related to moral damage followed by such condition.
- Damage caused by refitting or replacing the original accessories or parts with that not produced by eSurvey so as to make the excavator operate badly.
- Damages caused by the operator's operation error or subjective judgment error.
- Damage caused by collision, capsizing, fire, explosion, lightning, storm, tornado, heavy rain, flood, tsunami, land subsidence, ice subsidence, avalanche, hailstorm, mudslide, landslide, earthquake, etc.
- Damage or losses resulting from installation or operation not in accordance with the precautions and instructions in this user guide or from intentional destruction or damage to the product.
- A change of data, loss of data etc.
- Wrong transport.
- Usage not explained in the user guide.
- Any purpose other than the intended purpose.
- Accuracy, integrity, continuity, or availability of the GNSS signal.

2 Hardware

2.1 Overview

The structure of the excavator involved in this user guide is as follows:



The hardware of **eME10 Excavator 3D Intelligent Guidance System** (hereinafter referred to as **UES300**) consists of the following:

Hardware		Where to install
MR1 GNSS receiver		It should be installed in the cab. See MR1 GNSS Receiver for details.
Positioning antenna		See Positioning and Heading Antennas for details.
Heading antenna		It should be installed on two ends of the counter weight. See Positioning and Heading Antennas for details.
Dual-axis tilt sensor (excavator body) **588**		It should be installed on the body of the excavator. See Dual-axis Tilt Sensor (Excavator Body) for details.
Single-axis tilt sensor (boom) **587**		It should be installed on the boom of the excavator. See Single-axis Tilt Sensor (Boom) for details.
Single-axis tilt sensor (stick) **586**		It should be installed on the stick of the excavator. See Single-axis Tilt Sensor (Stick) for details.
Single-axis tilt sensor (bucket) **585**		It should be installed on the bucket linkage. See Single-axis Tilt Sensor (Bucket) for details.

Hardware		Where to install
Display terminal		It should be installed in the cab where is easy to view and operate for the driver. See Display Terminal for details.

Before installation, please prepare the following:

- A GNSS receiver (rover station)
- A total station
- A wire stripper
- Cable ties
- An Allen wrench
- An adjustable wrench
- Six-point sockets
- A screwdriver
- A tape measure

2.2 Positioning and Heading Antennas

2.2.1 Packing List

Parts involved in installing positioning and heading antennas are as follows:

Name	Quantity	Picture
Positioning antenna	1	
Heading antenna	1	
Antenna mask	2	
TNC cable	2	

2.2.2 Installation

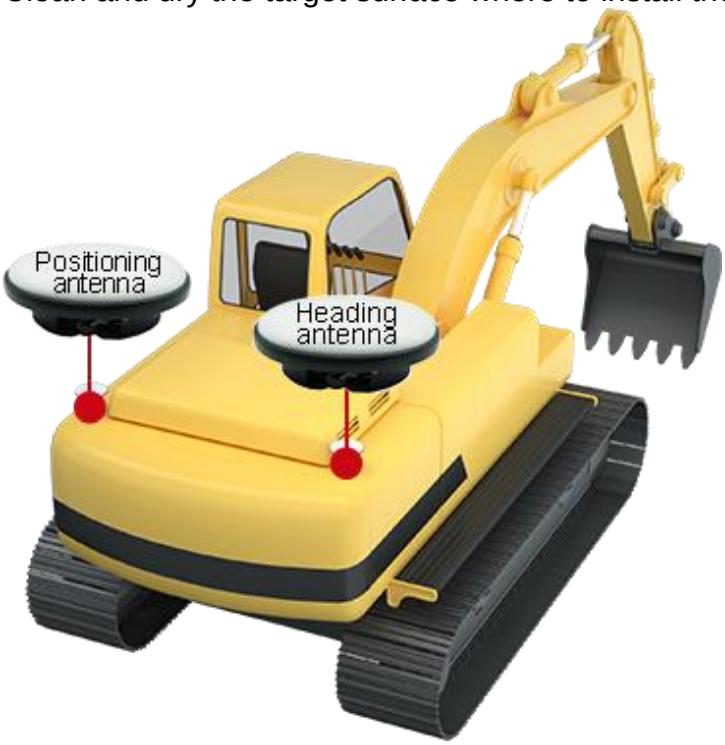
The heading and positioning antennas should be installed on two ends of the counter weight, among which the connection line of the heading antenna and the positioning antenna is as vertical as possible to the boom. And facing the vehicle cab, the left end is the heading antenna, the right side is the positioning antenna.

The connection line connecting the positioning antenna and the heading antenna is the baseline.

The installation of the heading antenna is totally the same with that of the positioning antenna. Here takes the installation of the positioning antenna as an example.

To install the positioning antenna, do the following:

1. Clean and dry the target surface where to install the antenna:



   It is suggested to install the antenna in the place where the baseline is longer, for longer baseline gets better accuracy and more stability.

2. Weld the antenna mask into the target surface.

CAUTION	Please make sure that the TNC cable is long enough to connect the antenna and **MR1** before welding.

3. Tighten screws on the antenna mask.
4. Place the positioning antenna to the antenna mask.
5. Directly place the antenna mounting base on the mounting plate and tighten it.
6. Connect the positioning antenna and **Prim Ant** port of **MR1** GNSS receiver via the TNC cable.

   For the heading antenna, please connect the heading antenna and **Sec Ant** port of **MR1** GNSS receiver via the TNC cable.

2.3 MR1 GNSS Receiver

2.3.1 Packing List

Parts involved in installing **MR1** GNSS receiver are as follows:

Name	Quantity	Picture
MR1	1	
Screw	4	

2.3.2 Installation

It should be installed in the cab.

To install the MR1, do the following:

1. Find a place in the cab.
2. Clean and dry the target surface where to install **MR1** GNSS receiver.
3. Tighten screws.

2.4 Display Terminal

2.4.1 Packing List

Parts involved in installing the display terminal are as follows:

Name	Quantity	Picture
Display	1	
RAM bracket kit	1	
Bolt	4	

RAM bracket kit includes the following:

2.4.2 Installation

The display should be installed in the cab where is easy for you to view and operate. Typically, this is the armrest on the right door.

WARNING	Please do not install the display in a location where it interferes with seeing other information, controls or the filed, and do not look at the screen for too long while operating the vehicle to avoid a crash.

To install the display terminal, do the following:

1. Attach the bar mount base with U-bolts / nuts to your preferred location in the cab.
2. Attach the round base to the back of the display with 4 bolts.
3. Place one end of the double socket arm mount over the ball of the bar mount base, and tighten the knob of the double socket arm mount enough to make sure the double socket arm mount stays attached.
4. Position the display to make the round base fit in the open end of the double socket arm mount, and securely tighten the knob of the double socket arm mount.
5. Adjust the display to your preferred viewing and operating angle.

2.5 Dual-axis Tilt Sensor (Excavator Body)

2.5.1 Packing List

Name	Quantity	Picture
Dual-axis tilt sensor **588**	1	
Plate for welding	1	
Screws	4	

2.5.2 Installation

The dual-axis tilt sensor is used to measure the roll value and pitch value that separately reflect the change in the roll and pitch of the excavator body and directly affects the solution accuracy. Y-axis of the tilt sensor reflects pitch, and X-axis reflects roll.

To install the dual-axis tilt sensor (excavator body), do the following:

1. Clean and dry the target surface where to install the tilt sensor:

2. Weld the plate onto the target surface.
3. Tighten the tilt sensor (**588**) to the plate with four screws with the cable direction as above.

   It is recommended to install the tilt sensor with the sensor cable facing the **Rear** direction.

2.6 Single-axis Tilt Sensor (Boom)

2.6.1 Packing List

Parts involved in installing the tilt sensor (boom) are as follows:

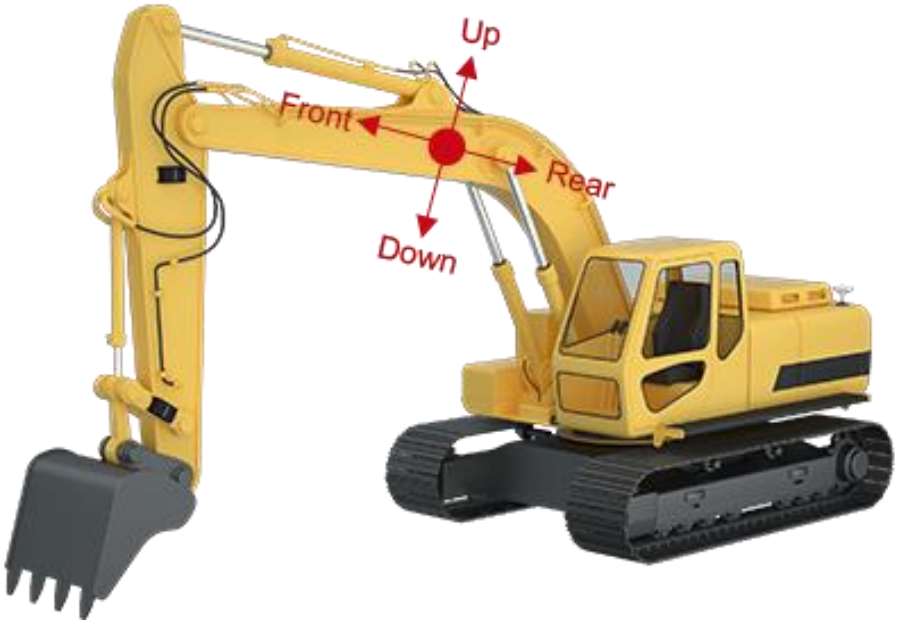
Name	Quantity	Picture
Single-axis tilt sensor (**587**)	1	
Plate for welding	1	
Screws	4	

2.6.2 Installation

The tilt sensor for the boom should be installed on the boom on the same side as the cab and as close to the axle pin of the boom as possible.

To install the tilt sensor (boom), do the following:

1. Clean and dry the target surface where to install the tilt sensor:



2. Weld the plate onto the target surface.
3. Tighten the tilt sensor (**587**) to the plate with four screws with the cable direction as above.

   It is recommended to install the tilt sensor with the sensor cable facing the **Down** direction.

2.7 Single-axis Tilt Sensor (Stick)

2.7.1 Packing List

Parts involved in installing the tilt sensor (stick) are as follows:

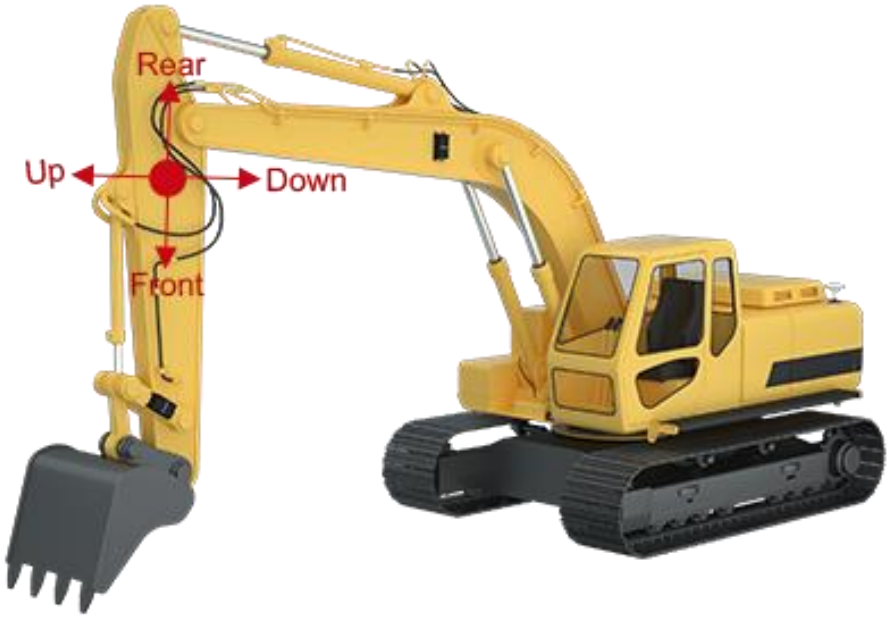
Name	Quantity	Picture
Single-axis tilt sensor (**586**)	1	
Plate for welding	1	
Screws	4	

2.7.2 Installation

The tilt sensor for the stick should be installed on the stick as close to the axle pin of the boom and the stick as possible.

To install the tilt sensor (stick), do the following:

1. Clean and dry the target surface where to install the tilt sensor:



2. Weld the plate onto the target surface.
3. Tighten the tilt sensor (**586**) to the plate with four screws with the cable direction as above.

   It is recommended to install the tilt sensor with the sensor cable facing the **Down** direction.

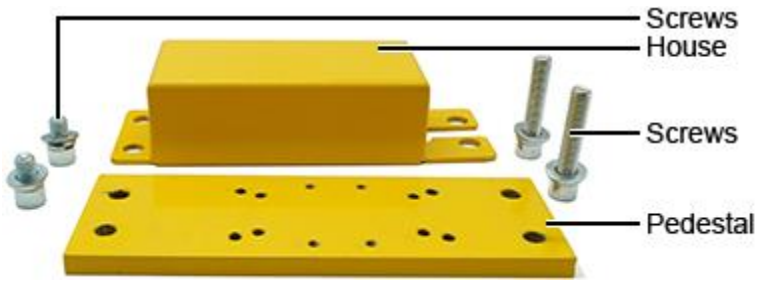
2.8 Single-axis Tilt Sensor (Bucket)

2.8.1 Packing List

Parts involved in installing the tilt sensor (bucket) are as follows:

Name	Quantity	Picture
Single-axis tilt sensor (**585**)	1	
Protective box	1	
Screws	4	

The protective box includes the following:

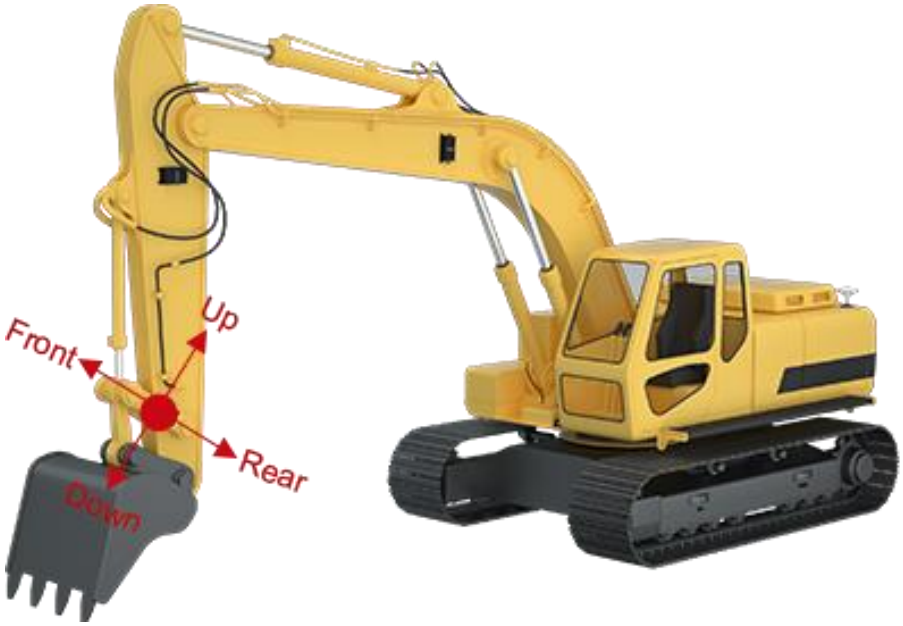


2.8.2 Installation

The tilt sensor for the bucket should be installed on the bucket linkage on the same side as the cab.

To install the tilt sensor (bucket), do the following:

1. Clean and dry the target surface where to install the tilt sensor:



2. Unscrew the protective box, and weld the pedestal into the target surface.
3. Tighten the single-axis tilt sensor (**585**) to the pedestal with four screws with the cable direction as above.

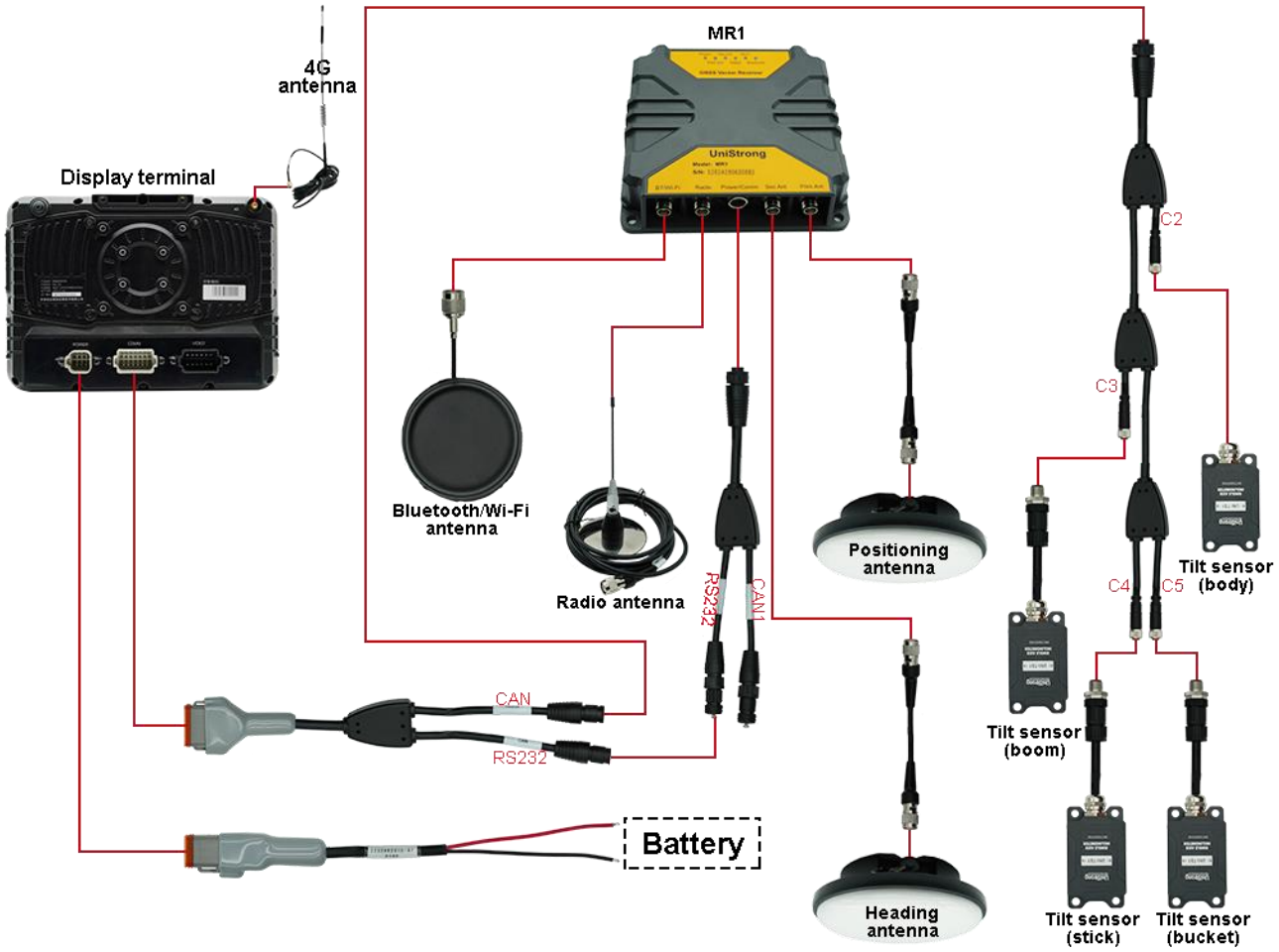
   It is recommended to install the tilt sensor with the sensor cable facing the **Rear** direction.
4. Put the house of the protective box into the pedestal and tighten it with screws.

2.9 Wiring

The system is applicable to 12 V power supply.

Before wiring, please make sure power is off.

The whole wiring diagram is as follows:



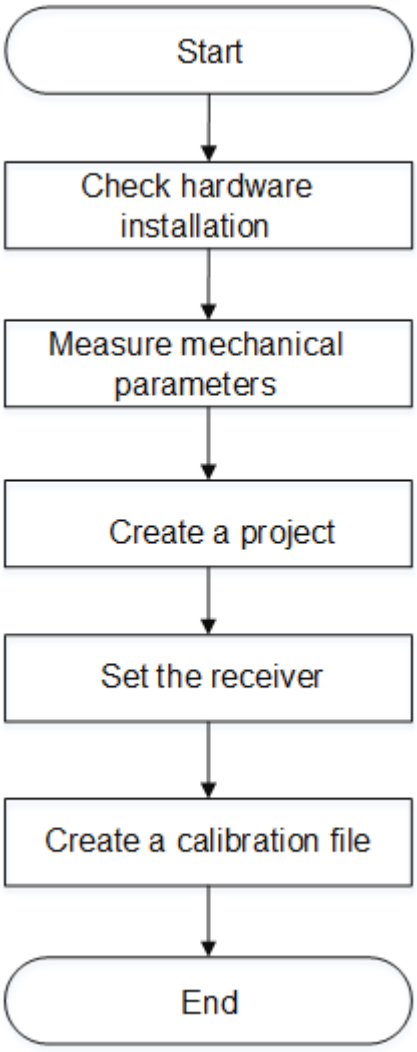
WARNING Not doing wiring according to the wiring diagram is prohibited.

During wiring, please note the following:

- The cable should be arranged along the frame, body, bracket and other entities to avoid overhanging wiring.
- The cable should avoid the engine or high temperature area, movement area, water immersion area, and oil contamination area.

3 Calibration

The basic process of calibration is as follows:



3.1 Check Hardware Installation

It is used to check if the hardware is correctly and securely installed after each hardware part has been installed.

To check hardware installation, make sure the following:

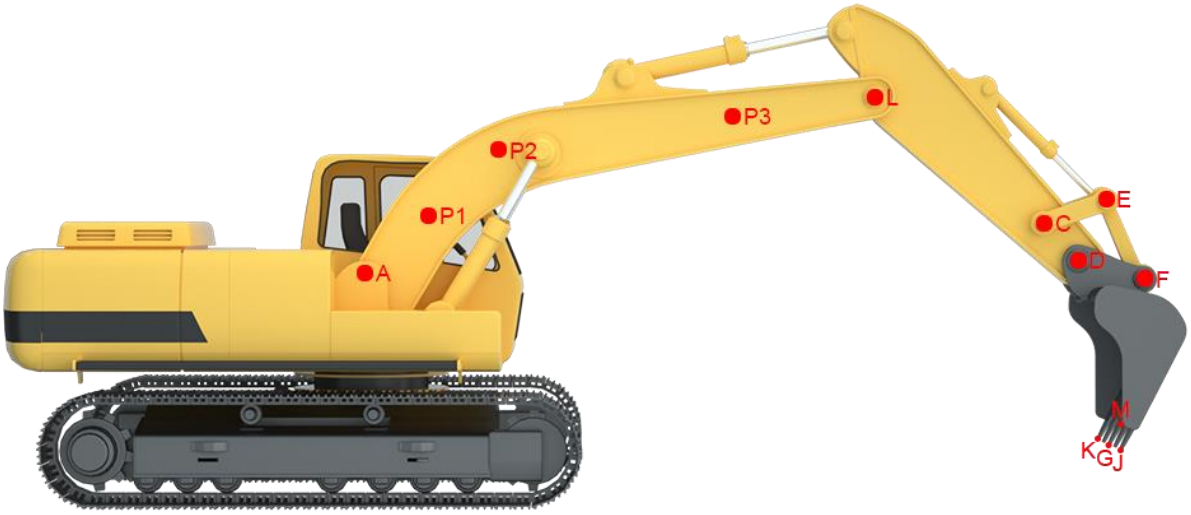
- All hardware parts are installed in accordance with the installation instructions and they are properly installed.
- The wiring is proper.
- The power cable of the display terminal is tightly connected to the battery.
- The cable length of tilt sensors is enough and each cable does not interfere with each other by starting the excavator, and operate the boom, stick and bucket.

3.2 Measure Mechanical Parameters

Before measuring mechanical parameters, prepare and install application **Machine control assistant tool-V2.1.apk** on your Android mobile phone.

To measure mechanical parameters, do the following:

1. To stretch the excavator, control the excavator to stretch boom, stick and bucket as flat as possible:



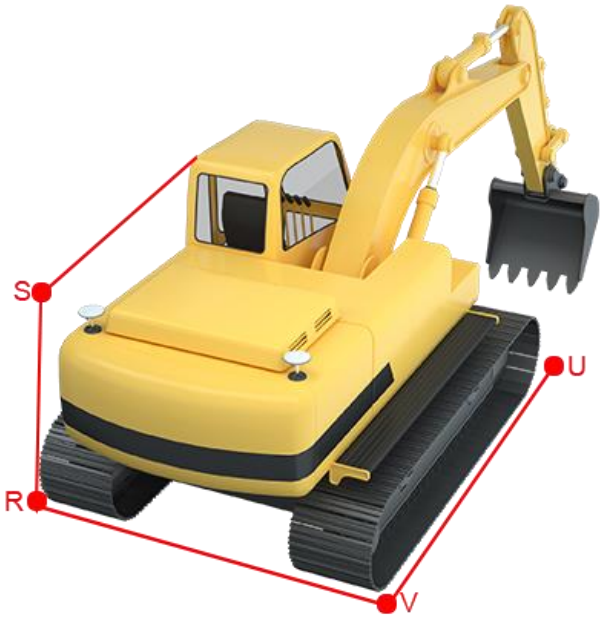
2. Measure the coordinates of point A, L, C, E, D, F, G, M, P1, P2 and P3 with a total station:

   Among them:

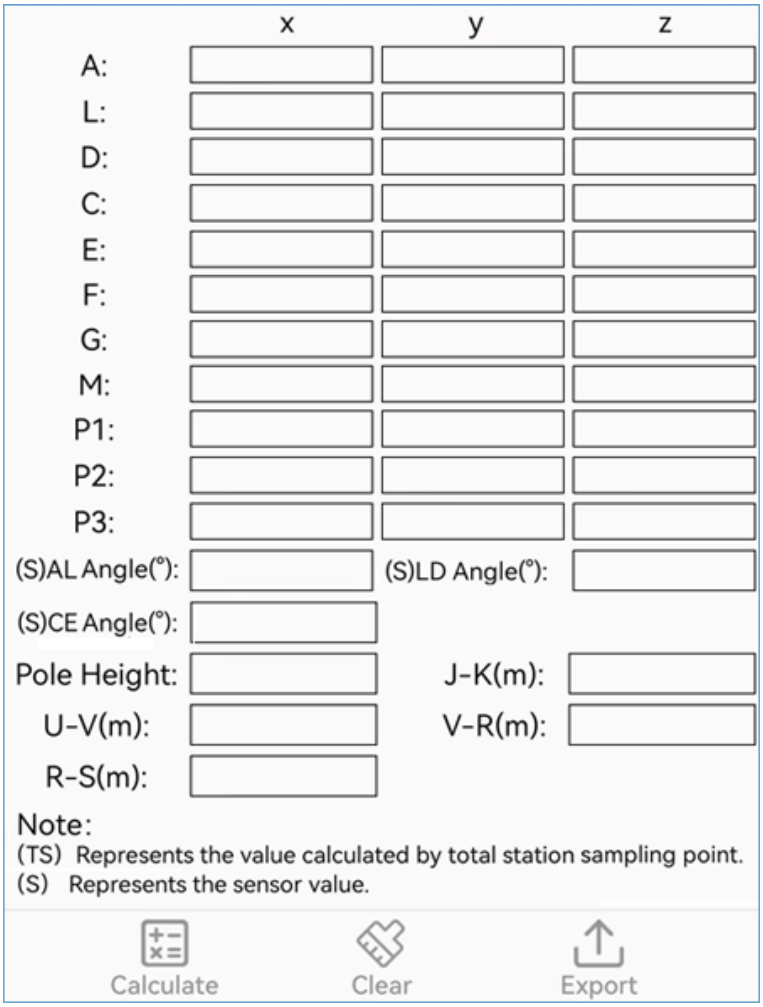
   - Point A, L, C, E, D, F are axle pins.
   - Point P1, P2 and P3 are points on the boom that are not in the same line.
   - Point K and J are edges of the bucket teeth, and point G is the middle of the bucket teeth.
   - Line GM is the length of the bucket teeth.

3. To check related angles, run **eME10 System**, press in the homepage of the software, and press **Sensor** switch to **Sensor** page, and check the boom angle, stick angle and angle of the bucket linkage:

4. To measure related mechanical size, do the following:
   a. Measure the radius of point A with the steel square.
   b. Measure line KJ, UV, VR and RS with the tape.



5. Run application **Machine control assistant tool-V2.1.apk** on your mobile phone (Android platform), and input the measurement data into the following page:

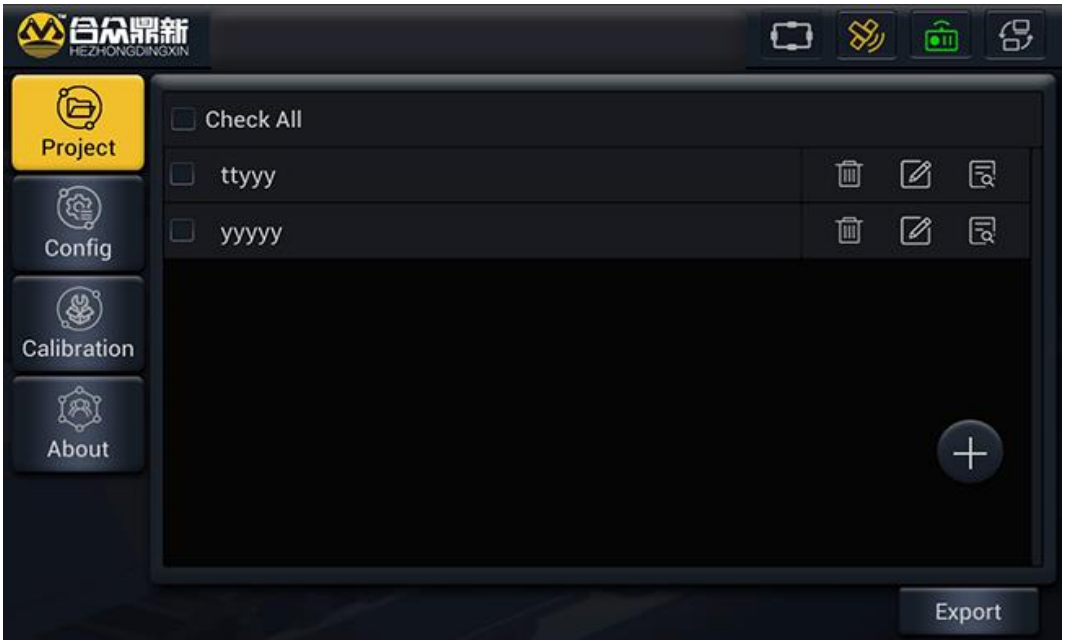


6. To calculate the measurement data, press **Calculate**. The results automatically show.
7. To export the measurement result, press **Export**, and select the target path.

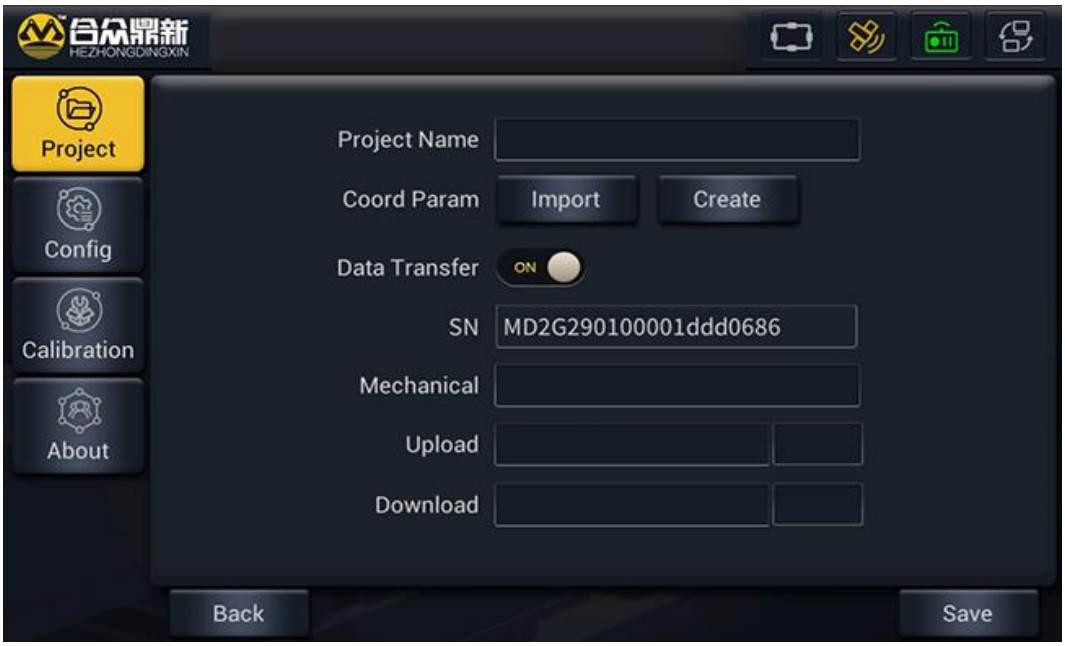
3.3 Create a Project

To create a project, do the following:

1. Press :



2. To create a new project, press :



3. Input the project name.
4. Do one of the following:
   - Press **Import** to directly import coordinate parameters.
     See Import Coordinate Parameters for details.
   - Press **Create** to create a coordinate system.
     See Create a Coordinate system for details.

5. Select whether data transfer is allowed, and input mechanical model, upload IP and download IP if data transfer is allowed.

   It is suggested to disable data transfer.
6. Press **Save**.

3.4 Set the Receiver

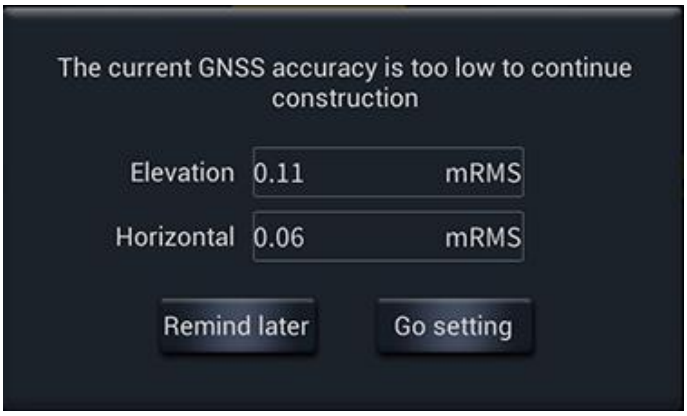
To set the receiver, do the following:

1. Press .
2. Press

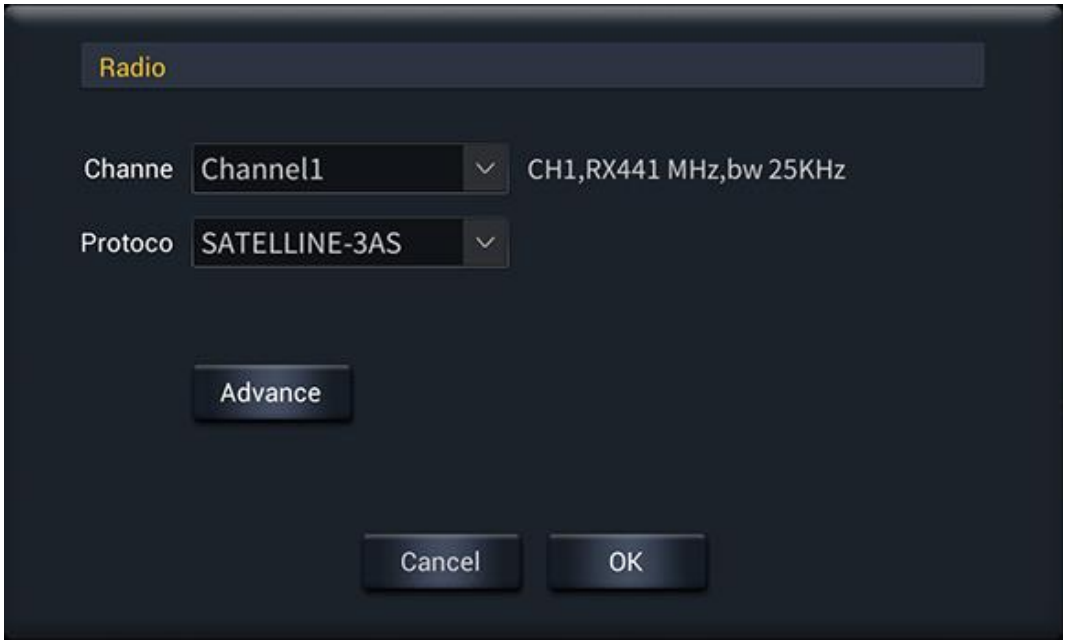
to switch to the homepage of **Configuration**:

3. Select the receiver type as **Split Type**.
4. Set the frequency for the following data type:
   - GGA data
   - HPD data
   - VTG data

5. Set the elevation and horizontal accuracy.
   Once the actual accuracy is out of the set range, the following dialog box shows:



6. Set the differential:
   - Select **Radio**, and set the baud rate, channel and protocol:



If you need to customize the frequency of each channel, press **Advanced**, press the target input box, and set the frequency:

- Select **NtripClient**, set IP address, port number, user name and password, press **Update mount points** to update mount points, select the target mount point, and press **Connect Ntrip** to get the status:

- Select **TCP**, set IP address and port number, and press **Connect TCP** to get the status:

- Select **UDP**.

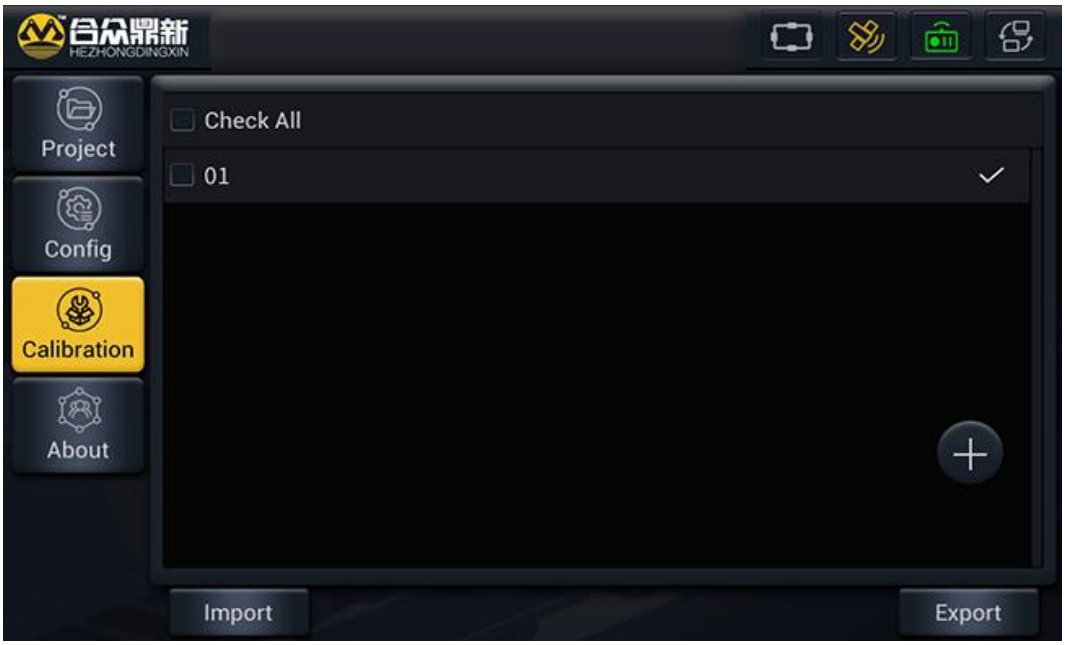
  This function is coming soon.

3.5 Create a Calibration File

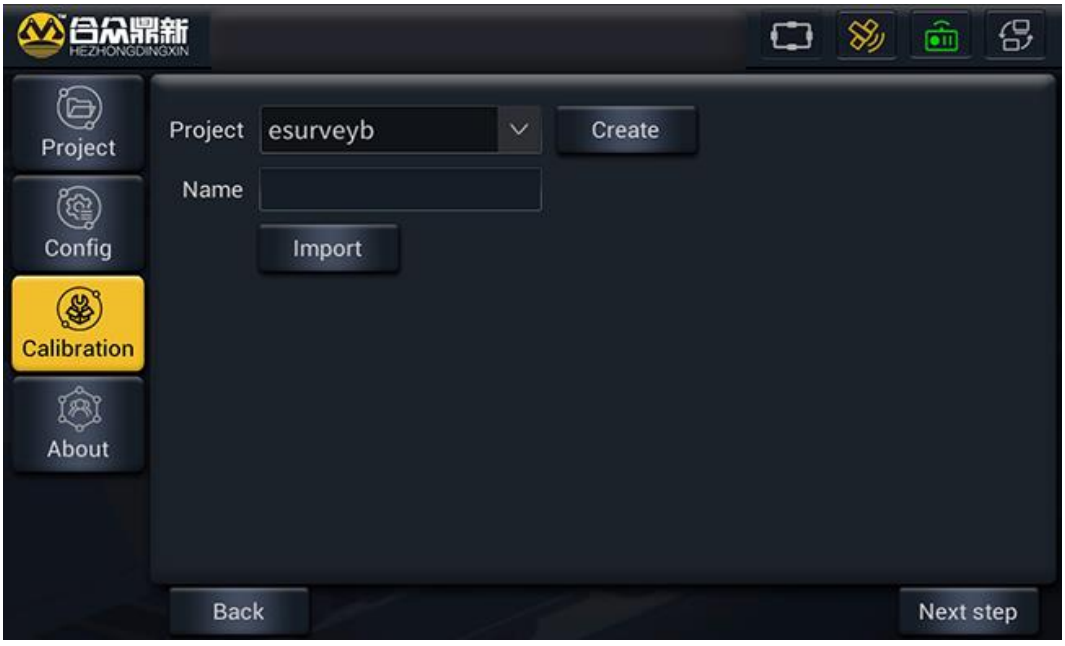
To create a calibration file, do the following:

1. Press .
2. Press

to switch to the homepage of **Calibration**:



3. Press :

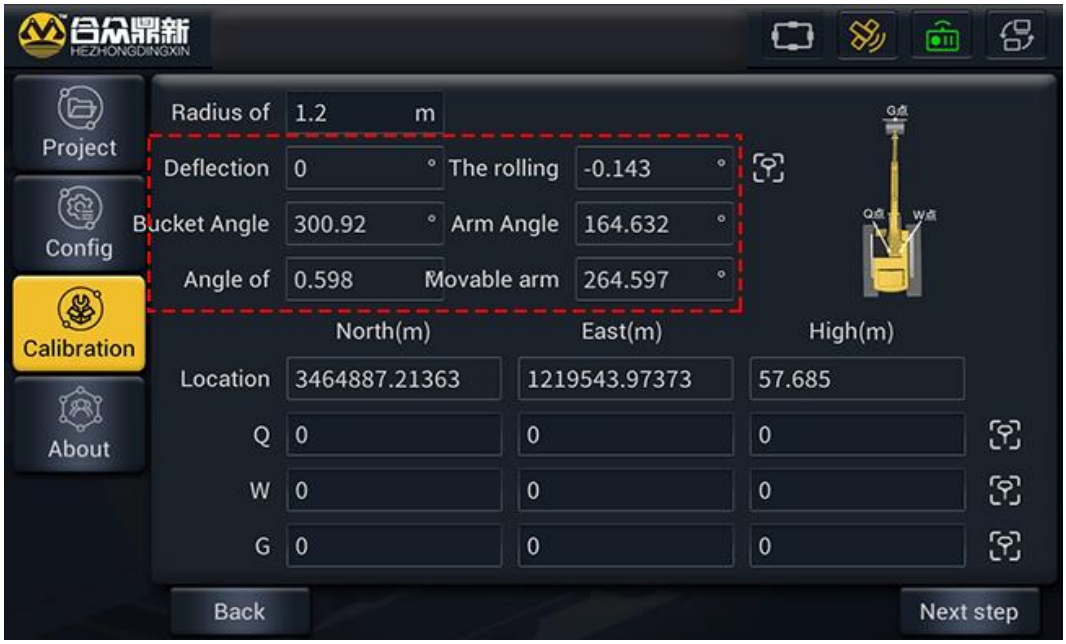


4. Select the target project, and input the name for the calibration file.
   If you need to create a new project, press **Create** and see Create a Project for details.

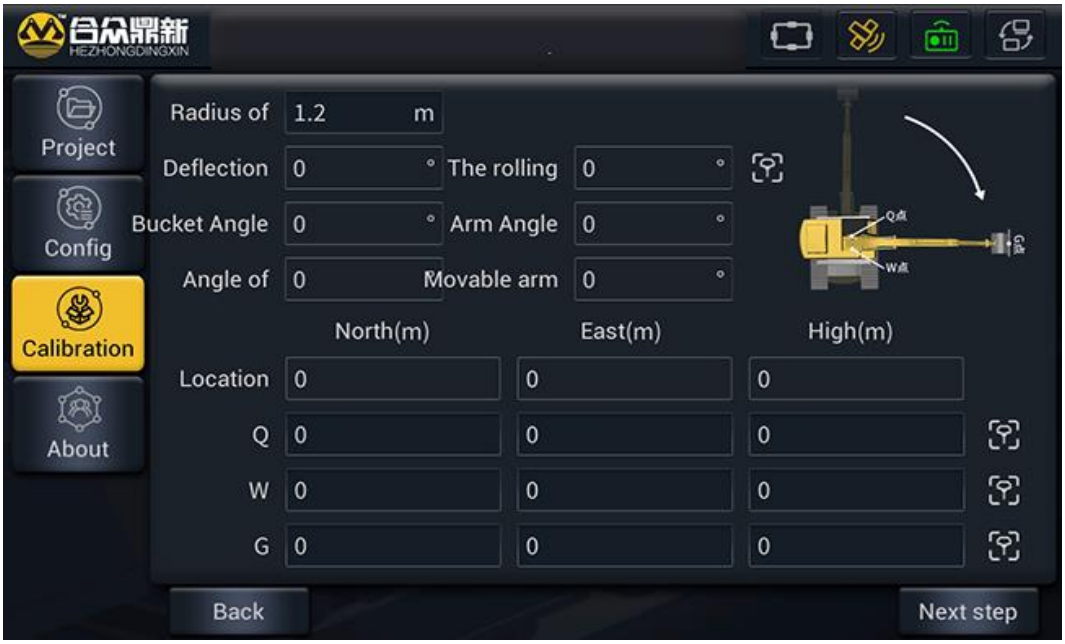
5. To import the measurement result exported by application **Machine control assistant tool-V2.1.apk**, do the following:
    a. Press **Import**.
    b. Select **Yes** in the prompt **Are you sure to import all parameters**.
    c. Select the target path and file, and press **OK**. The measurement result shows:

6. Check if the following data is correct:
    - Length info
    - Angle info
7. Press **Next**, and select **Yes** in prompt **Are your sure to apply the license file?**:

8. Control the excavator to pose as above, and do the following:
   a. Input the radius of the axle pin of the boom.
   b. Press . The following data automatically fills in:



   c. To separately acquire location of point **G**, **Q** and **W**, collect their coordinates with a rover station, and do one of the following:
      - To automatically fill in location, establish communication between **UES300** and the rover station via Bluetooth, and press .
      - To manually input location, press the input box and input data.
9. Press **Next**:

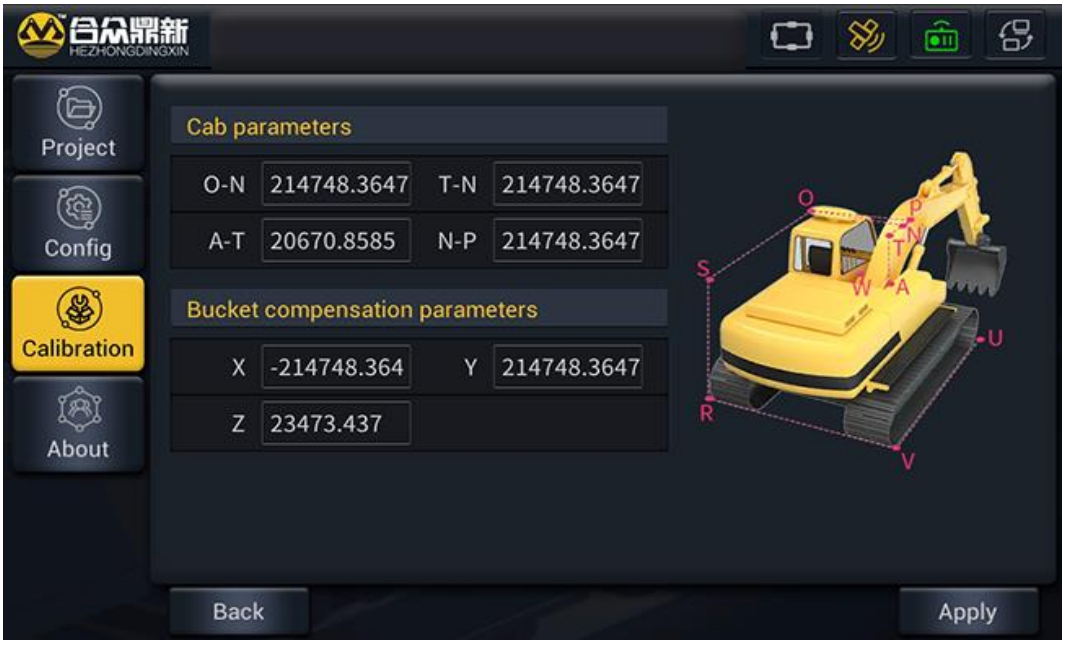


10. Repeat step **6**.

11. Press **Next**:

12. Repeat step **6**.
13. Press **Next**:

14. Press **Next**:



15. Press **Apply** and check the following calibration data:

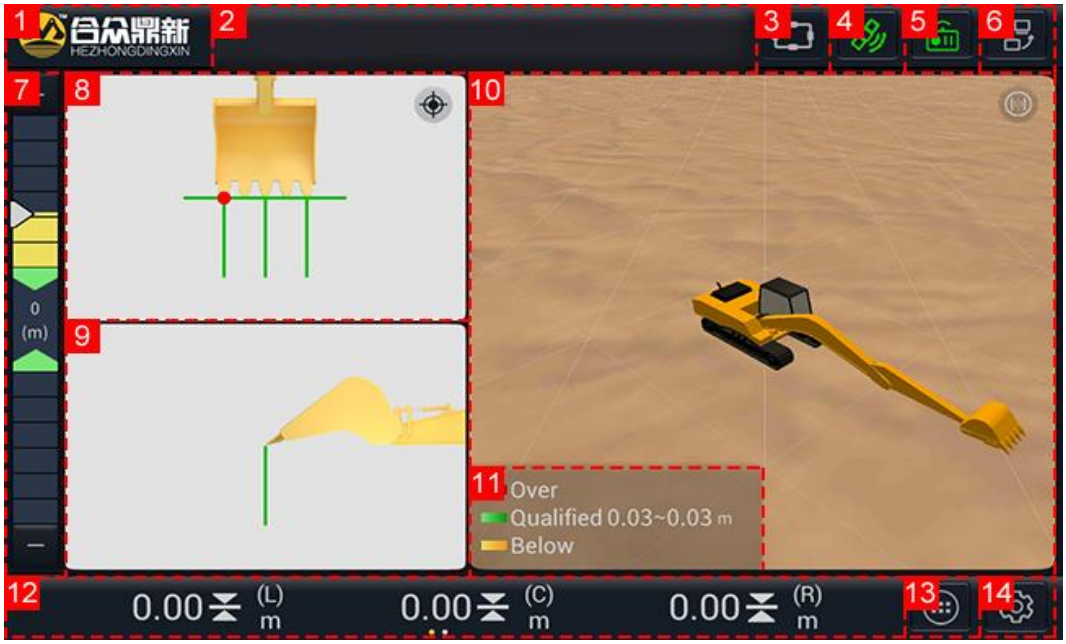
- Machine size
- Machine angle
- Bucket size
- Cab
- Cab parameters
- GNSS compensation
- Angle compensation
- Bucket compensation

16. **Optional:** If the calibration data is incorrect, press the target input box, and input the correct data.
17. To use the calibration file, press **Apply**.

4 Software

4.1 Overview

The homepage of the software is as follows:



Item	Meaning	Item	Meaning
1	Logo	2	Information bar
3	E-fence	4	GNSS info
5	Sensor	6	Synchronization bar
7	Elevation bar	8	Front view of teeth working
9	Side view of teeth working	10	View of excavator working
11	Color setting bar	12	Distance bar / base point bar
13	Task selection	14	Settings

4.1.1 Logo

To return to the homepage.

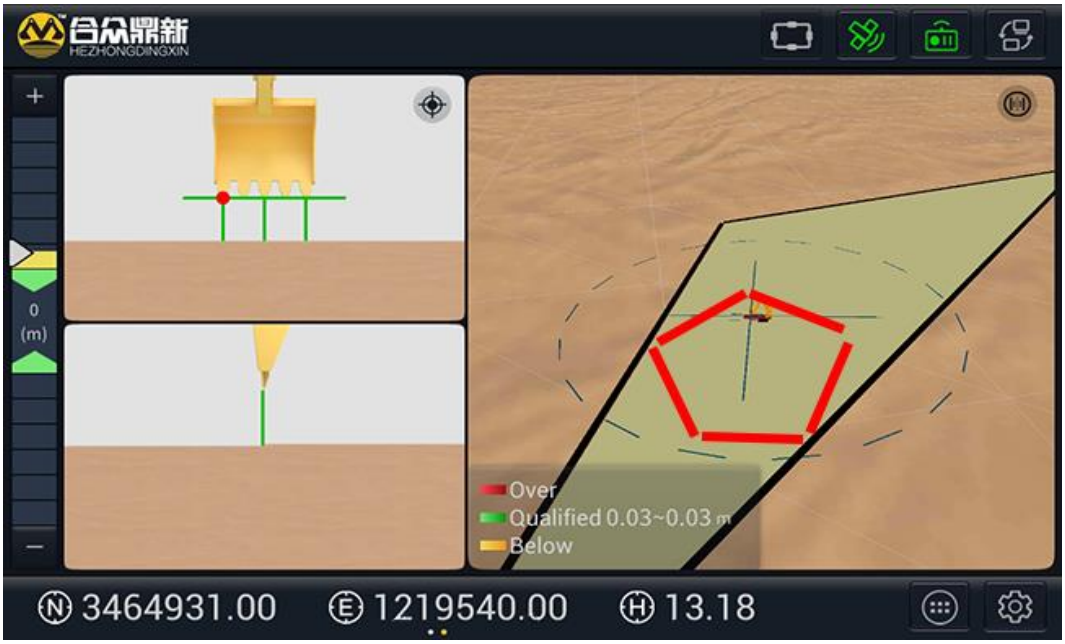
4.1.2 Information Bar

It shows the system errors. And you can check logs in this area in **About** page (See Export the System Logs for details).

4.1.3 E-fence

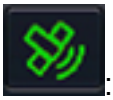
It is used to enable / disable e-fence function:

- : e-fence function is disabled.
- : e-fence function is enabled:



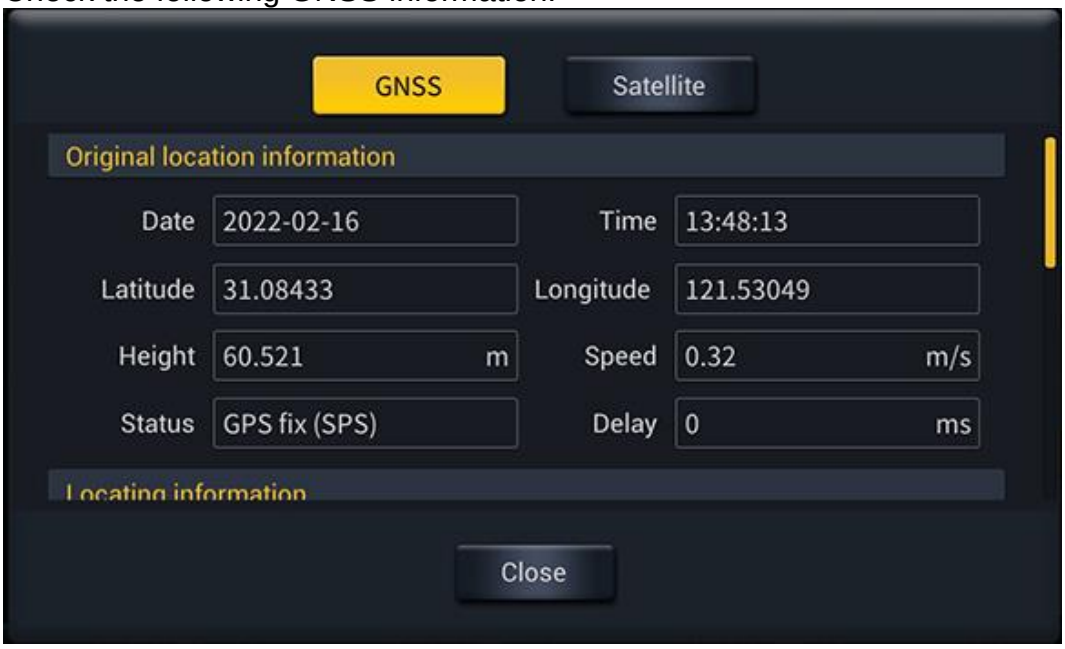
4.1.4 GNSS Info

It shows the GNSS and satellite signal. And its color indicates different solution status:

- : unable to receiver data of the positioning sensor.
- : data of the positioning sensor has been received but it is not in fixed solution.
-  : data of the positioning sensor has been received and it is in fixed solution.

By pressing the icon, you can do the following:

- Check the following GNSS information:



  - Original location information
  - Locating information
  - Directional information: it shows the azimuth of the excavator.
  - Frequency: it shows the frequency of positioning data updating.
  - Radio difference: it shows the information about differential mode.
- Check the satellite signal:

4.1.5 Sensor

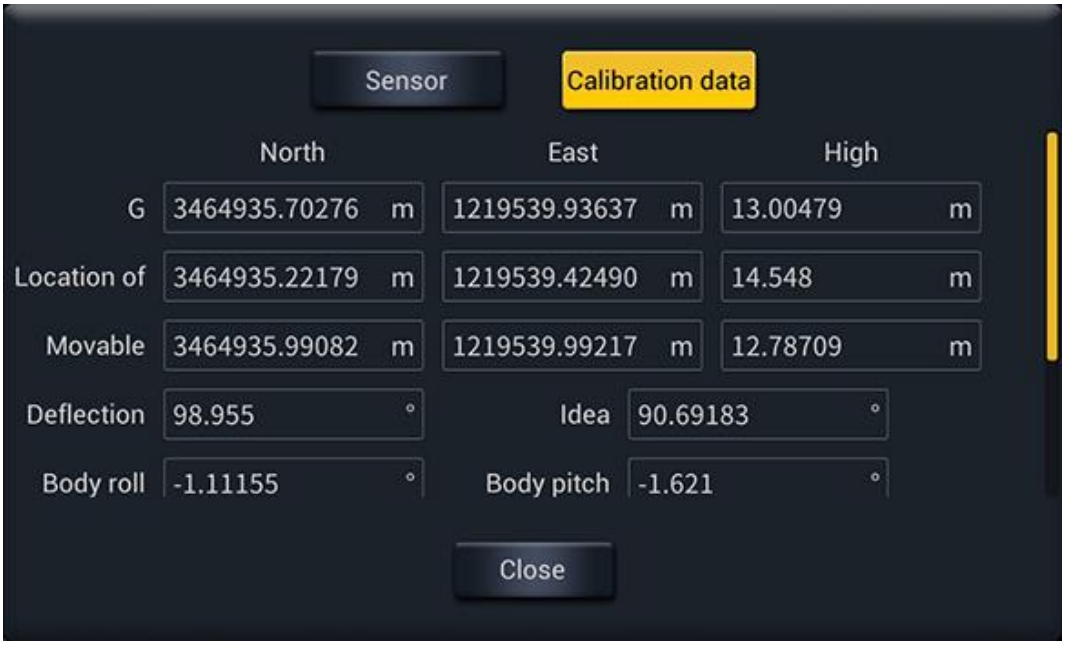
Its color indicates different working status of the inertial sensor:

- : unable to receive data of the sensor.
- : data of the sensor has been received.

By pressing the icon, you can do the following:

- Check the information of tilt sensor, including tilt sensors installed on the excavator body, boom, stick and bucket:

- Check the calibration data:



4.1.6 Network Status

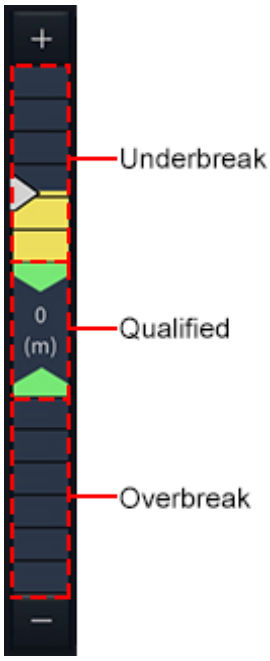
Its color indicates different network status:

- : the default color.
- : unable to access to the external network.
- : the external network is accessible, but the connection to the background server fails (possibly due to the background server).
- : the external network is accessible and the connection to the background server is successful.

By pressing the icon, you can check the status of data synchronization:

4.1.7 Elevation Bar

It shows the elevation status:



In this area, you can set the elevation offset by pressing the qualified area:

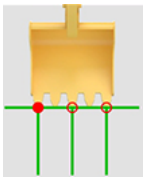
4.1.8 Front View of Teeth Working

It shows the front view of the working condition of the bucket and the base point of the bucket.

Base point refers to the point coordinate collected in conditions, such as construction design.

In this area, you can change the base point of the bucket:

1. Press :

2. To select the target position as the base point, press the far left, middle, or far right of the teeth.

3. Press .

4.1.9 Side View of Teeth Working

It shows the side view of the working condition of the bucket.

4.1.10 View of Excavator Working

In this area, you can do the following:

- Switch views:
  - To only switch views, press and hold the view.
  - To switch views and zoom in or out views, zoom in or out the view.
- Set guidance lines:
  a. Press :

  b. Select to set a guidance line or multiple guidance lines.
  c. **Optional:** If **Multiple** is selected, press or to set the interval of guidance lines.

4.1.11 Color Setting Bar

It shows the working condition of the excavator and the completion of the design:

- : any excavation beyond the upper limits.
- : any excavation within the limits.
- : any excavation beyond the lower limits.

In this area, you can customize the color and allowed range of the excavation elevation:

1. Press on the color setting bar:

2. Press the color, and select the target color in the color box:

The color with a check mark indicates that the color has been occupied.

3. Press the input box after character **Qualified**, and input the lower limit and upper limit.

   The value within the lower limit and upper limit indicates any excavation within the limits (qualified).

   You can input a negative limit which indicates that the actual elevation is lower than the designed elevation.

4.1.12 Distance Bar / Base Point Bar

By sliding the bar, you can do the following:

- Check the distance between the teeth and design:

  - **L**: it indicates the distance between the far left of the teeth and design.
  - **C**: it indicates the distance between the middle of the teeth and design.
  - **R**: it indicates the distance between the far right of the teeth and design.
- Check the coordinates of the base point:

  - **N**: the northing coordinates of the base point of the bucket teeth.
  - **E**: the easting coordinates of the base point of the bucket teeth.
  - **H**: the elevation coordinates of the base point of the bucket teeth.

4.1.13 Task Selection

By pressing , you can apply the task under the condition that you have created or imported at least a design file in advance.

About how to apply the task, see Apply the Task for detail.

About how to create a design file, see Project for details.

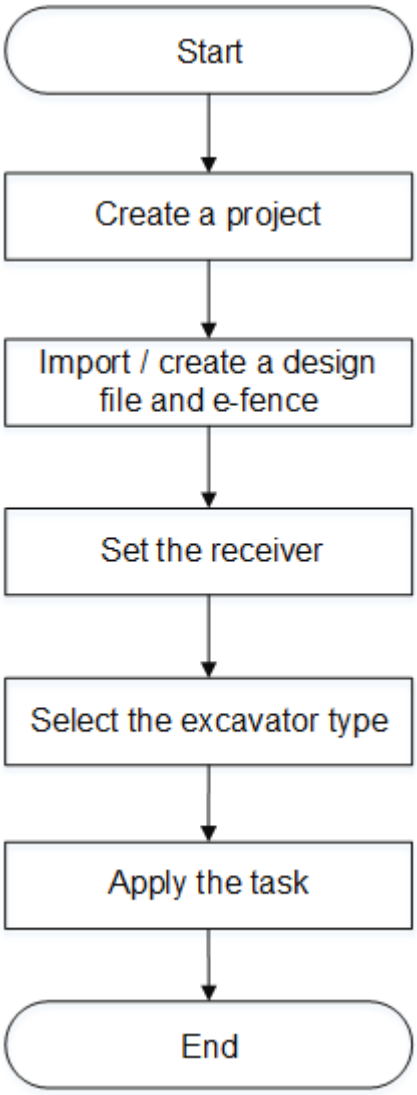
4.1.14 Settings

By pressing , you can go to the homepage of settings.

See Settings for details.

4.2 Quick Start

The basic process of quick start is as follows:



4.2.1 Create a Project

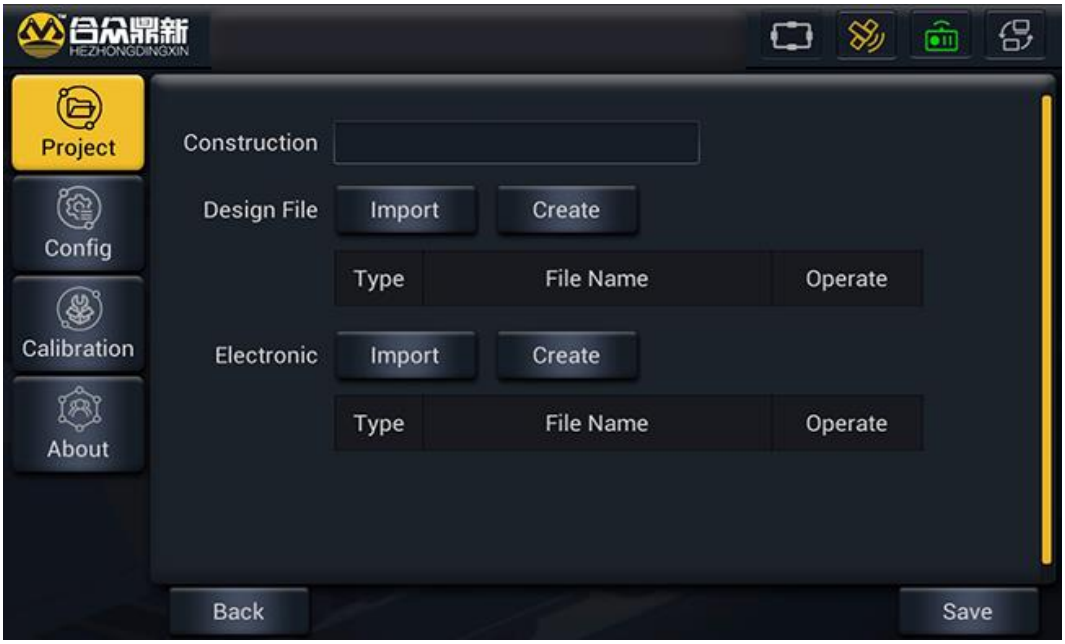
To create a project, see Create a Project for details.

4.2.2 Import / Create a Design File and E-fence File

E-fence is a virtual electronic fence, which display a predefined work area to avoid hazards such as underground facilities. It uses data from the positioning sensor to automatically send a voice alert when the base point of the bucket reaches the defined boundaries.

To create a design file and e-fence, do the following:

1. In the project list, press the target project, and press :

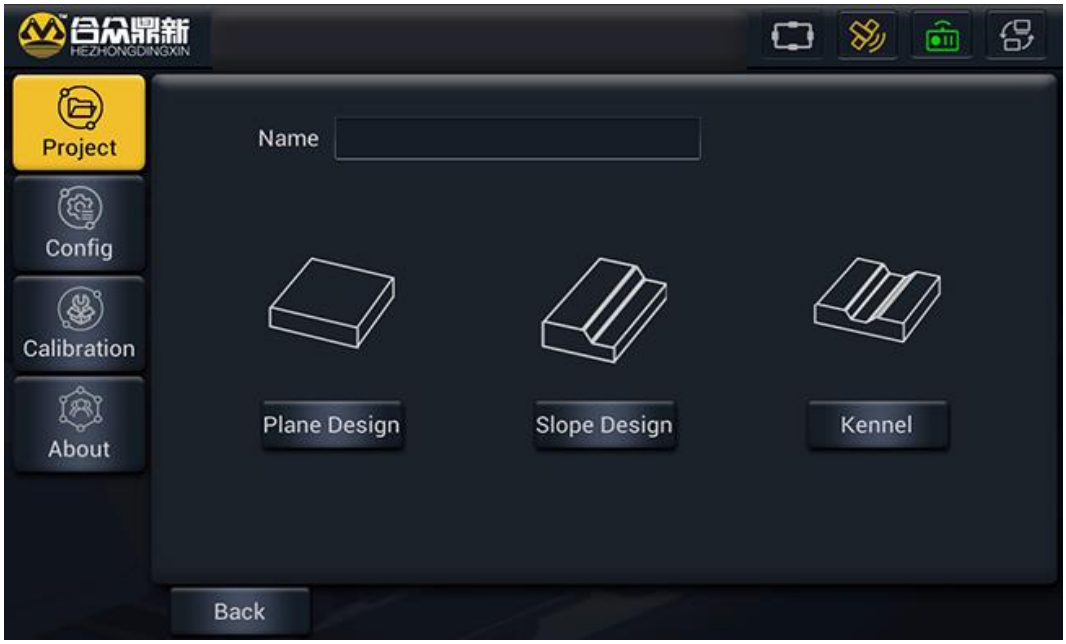


2. Set the construction name.
3. To import / create a design file, see Import / Create a Design File for details.
4. To import / create an e-fence file, see Import / Create an E-fence File for details.

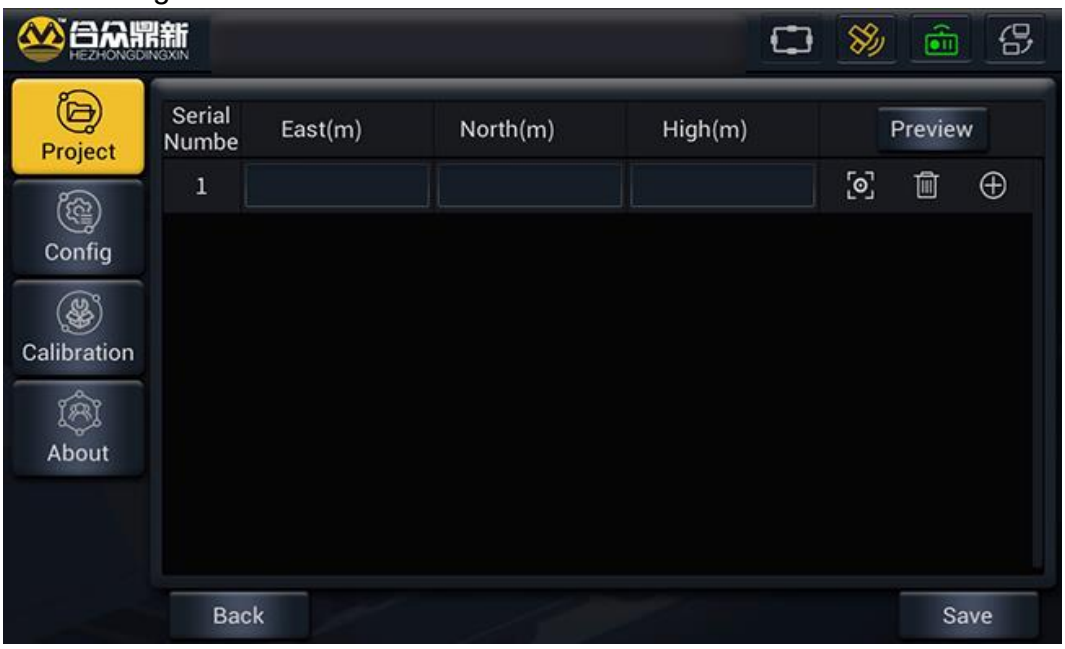
4.2.2.1 Import / Create a Design File

To import / create a design file, do one of the following:

- To import a design file, do the following:
  a. Press **Import**.
  b. Select **Yes** in the prompt **Are you sure to import design file?**.
  c. Select the target path and file.
- To create a design file, do the following:
  a. Press **Create**:



  b. Set a name for the design file.
  c. Select one of the following types of the design file:
     - Plane design



- Slope design

- Trench

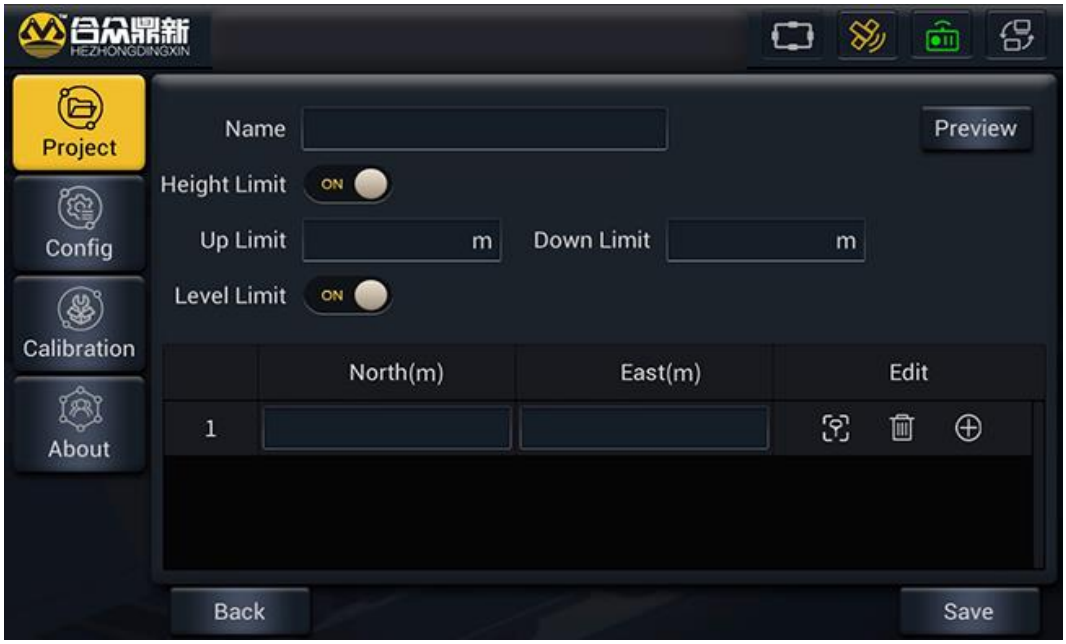
d. To set related points, do one of the following:
   - To manually input data, press the target input box and input data.
   - To automatically fill in the current position, press . The system automatically fills in the coordinates of the base point of the bucket.

e. Press **Save**.

4.2.2.2 Import / Create an E-fence File

To import / create an e-fence file, do one of the following:

- To import an e-fence file, do the following:
  a. Press **Import**.
  b. Select **Yes** in the prompt **Are you sure to import electronic fence?**.
  c. Select the target path and file.
- To create an e-fence file, do the following:
  a. Press **Create**:



  b. Set a name for the e-fence file.
  c. Enable height limit and set the height limit.
  d. Enable level limit and do one of the following to set the coordinates:
     - To manually input data, press the target input box and input data.
     - To automatically fill in the current position, press . The system automatically fills in the coordinates of the rover station.
  e. Press **Save**.

4.2.3 Set the Receiver

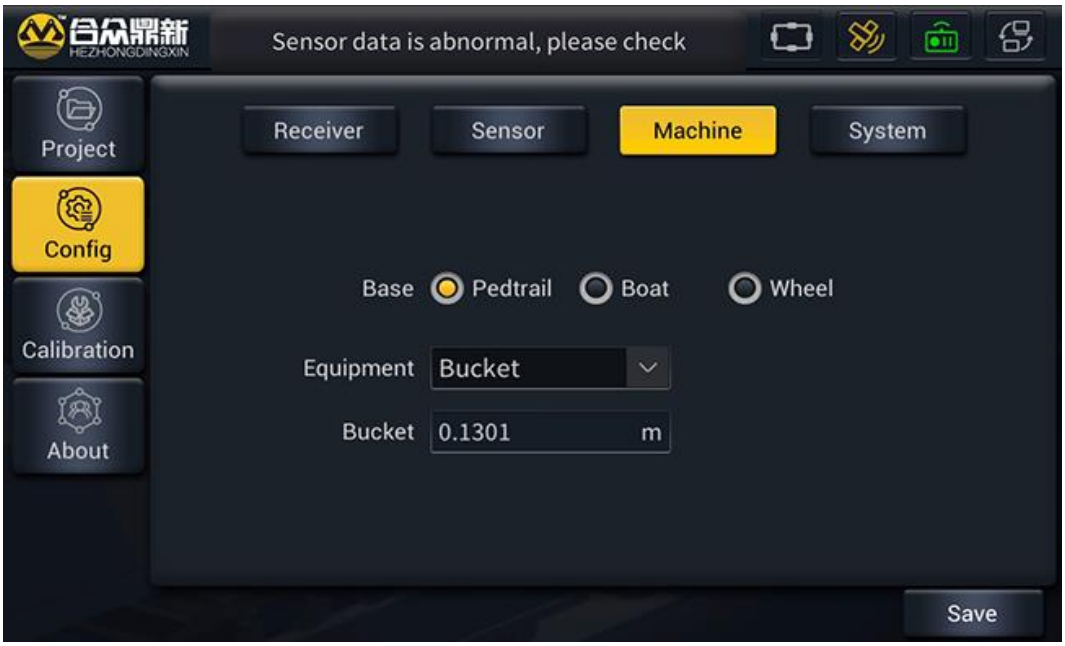
To set the receiver, see Set the Receiver for details.

4.2.4 Select the Excavator Type

It is used to select the excavator type.

To select the excavator type, do the following:

1. Press **Machine** to switch to **Machine** page:

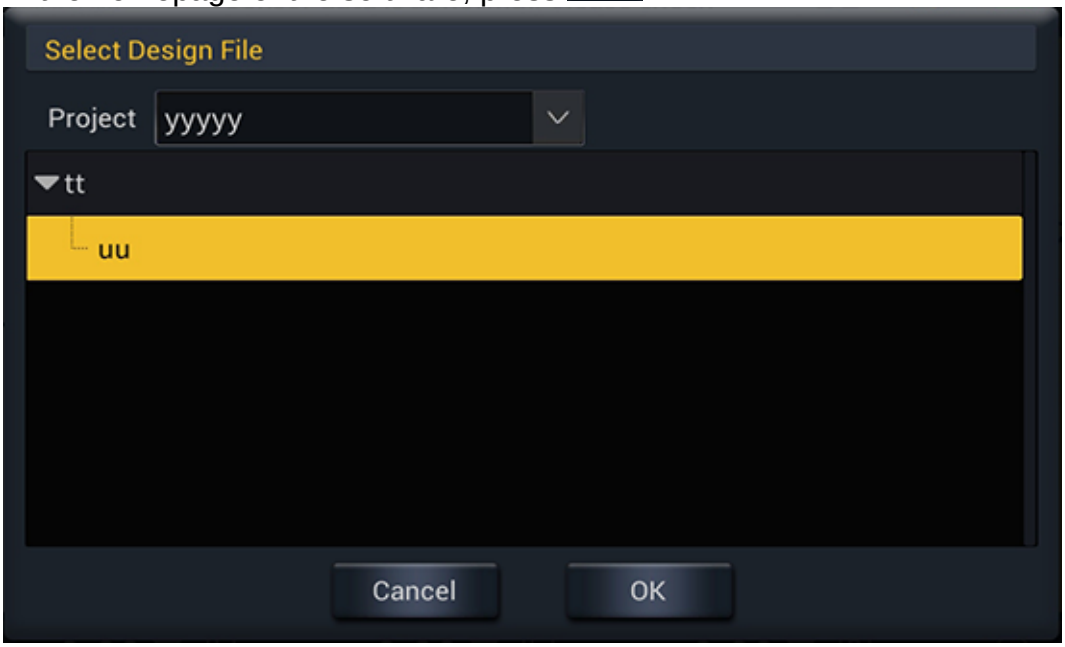


2. Select the base:
   - Crawler
   - Boat
   - Wheeled
3. Select the attachment:
   - Backhoe
   - Shovel
   - Breaking hammer
   - Milling head
4. **Optional:** If the bucket teeth are worn down, modify the length of bucket teeth to adjust the accuracy of excavation elevation.

4.2.5 Apply the Task

To apply the task, do the following:

1. In the homepage of the software, press :

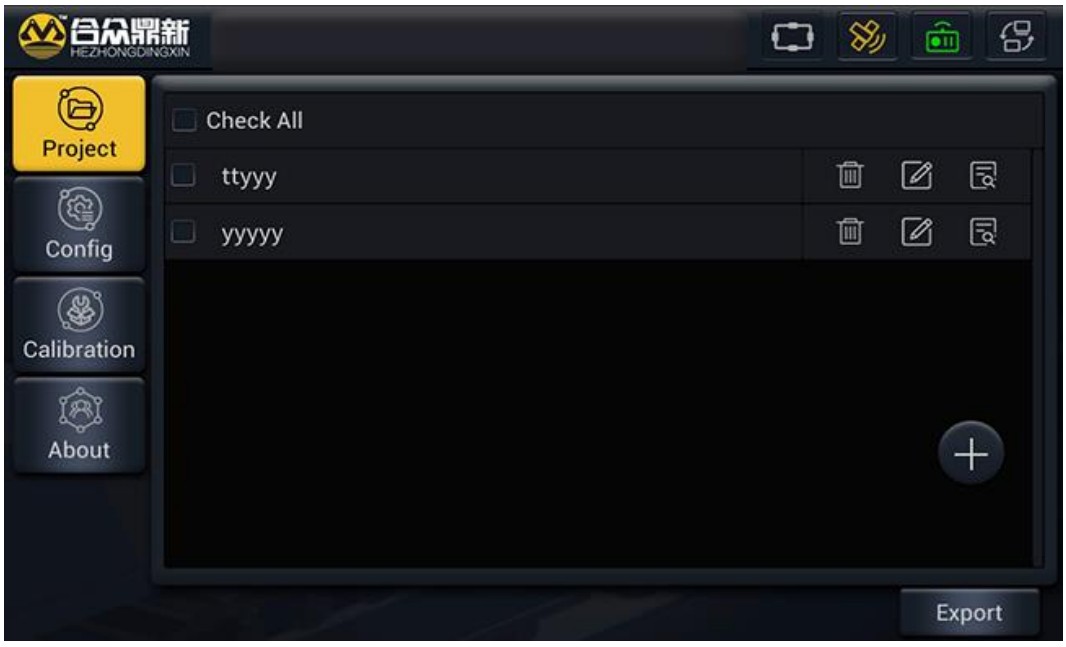


2. Select the target project.
3. Select the target design file.

4.3 Settings

4.3.1 Project

The homepage of **Project** is as follows:



In this page, you can do the following:

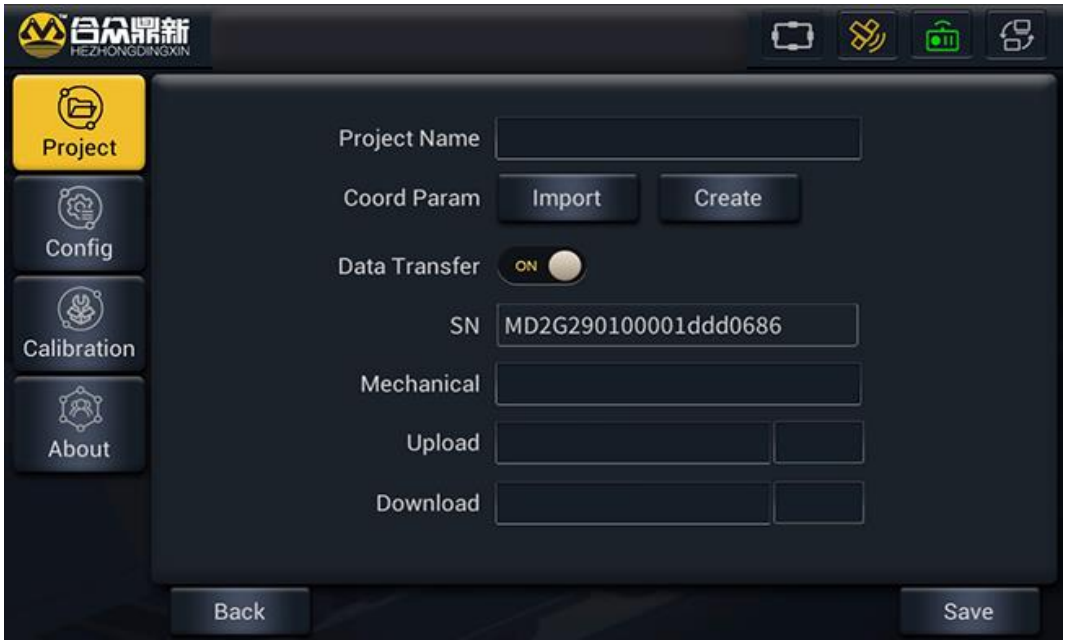
- Create a project
- Import coordinate parameters
- Create a coordinate system
- Import / create a design file and e-fence file
- Delete the target project
- Edit the target project
- View the target project
- Export the target project(s)

4.3.1.1 Create a Project

To create a project, see Create a Project for details.

4.3.1.2 Import Coordinate Parameters

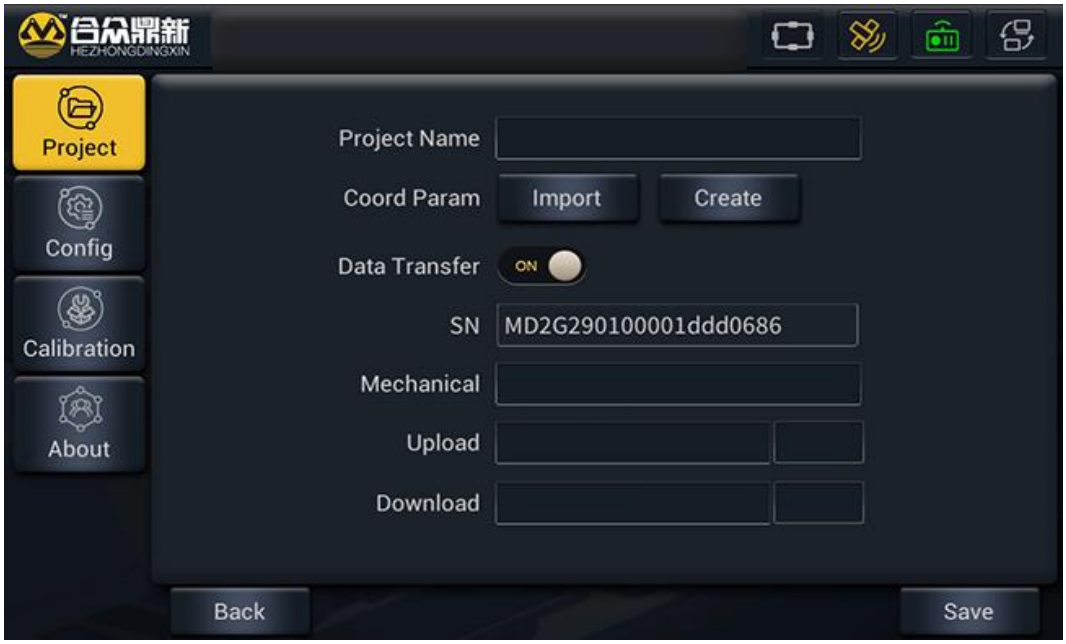
To import coordinate parameters, do the following:



1. Press **Import**.
2. Select **Yes** in prompt **Import all parameters?**.
3. Select the target path.

4.3.1.3 Create a Coordinate system

To create a coordinate system, do the following:



1. Press **Create**:

2. Switch to one of the following pages:
   - **Ellipsoid** page

   - **Projection** page

- **Seven** page

- **Four** page

- **Elevation** page

3. Set related parameters.
4. Press **Save**.

4.3.1.4 Import / Create a Design File and E-fence File

To import / create a design file and e-fence file, see Import / Create a Design File and E-fence File for details.

4.3.1.5 Delete the Target Project

You can find and restore the deleted project within 30 days in the recycle bin. See Manage the Recycle Bin for details.

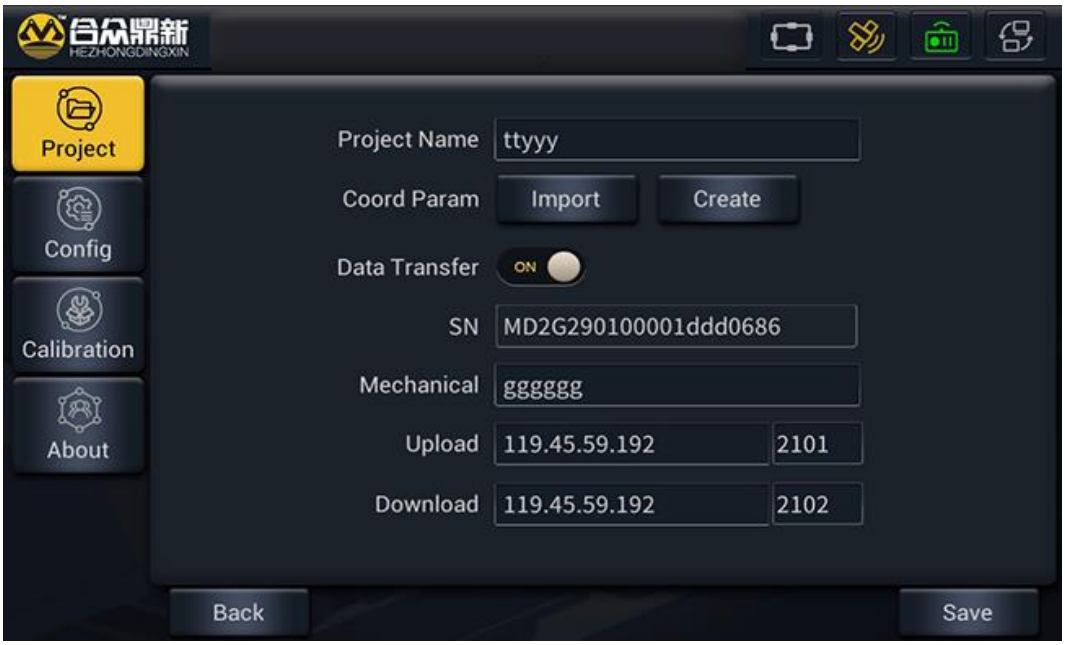
To delete the target project, do the following:

1. Press after the target project.
2. Press **Yes** in prompt **Are you sure to delete the current project**.

4.3.1.6 Edit the Target Project

To edit the target project, do the following:

1. Press after the target project:



2. Press the target input box and input the new information.
3. **Optional:** To modify coordinate parameters, see Import Coordinate Parameters or Create a Coordinate system for details.

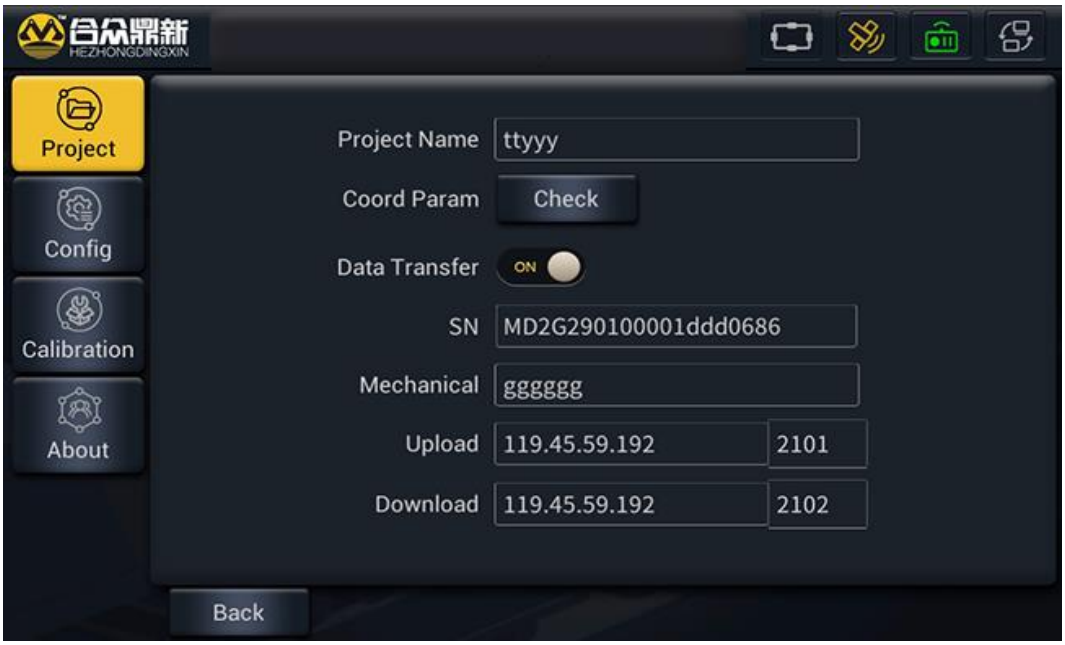
CAUTION	Once the project with construction data begins, this step is not allowed.

4. **Optional:** Select whether data transfer is allowed, and modify the mechanical model, upload IP and download IP if data transfer is allowed.

4.3.1.7 View the Target Project

To view the target project, do the following:

1. Press after the target project.



2. View the project details.
3. **Optional:** To check coordinate parameters, press **Check**, and switch to the target parameter page:

Including ellipsoid parameters, projection parameters, seven parameters, four parameters and elevation parameters.

4.3.1.8 Export the Target Project(s)

To export the target project(s), do the following:

1. To select the target project(s), do one of the following:
   - To select a project, check the check box in front of the target project.
   - To select all projects, check the check box **Check All**.
2. Press **Export**, and select the target path.

4.3.2 Configuration

The homepage of **Configuration** is as follows:

In this page, you can do the following:

- Set the receiver
- Set the direction of tilt sensors
- Select the excavator type
- Set the system

4.3.2.1 Set the Receiver

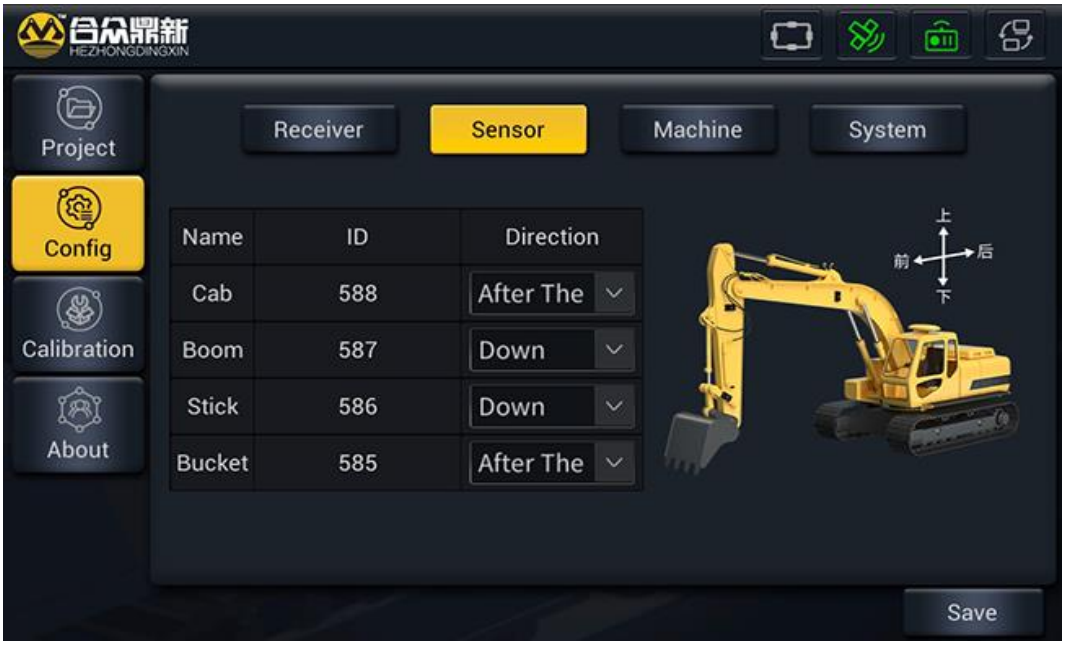
To set the receiver, see Set the Receiver for details.

4.3.2.2 Select the Direction of Tilt Sensors

To select the direction of tilt sensors, do the following:

1. Press

.
2. Press **Sensor** to switch to **Sensor** page:



3. Set the direction of the tilt sensors according to the actual installation:
   - Cab
   - Boom
   - Stick
   - Bucket

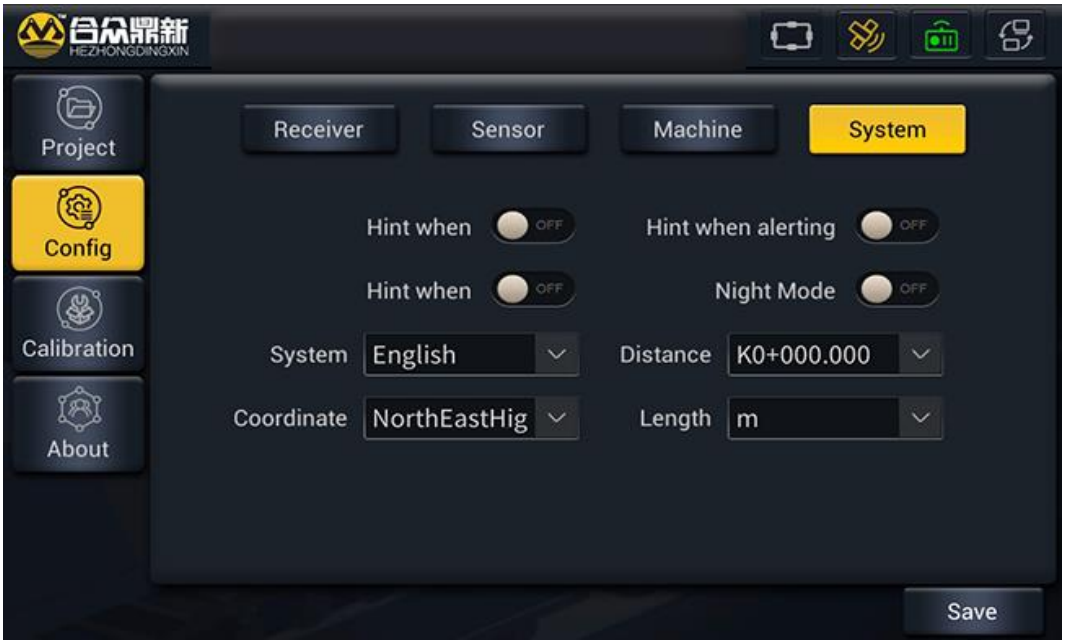
4.3.2.3 Select the Excavator Type

To select the excavator type, see Select the Excavator Type for details.

4.3.2.4 Set the System

To set the system, do the following:

1. Press **System** to switch to **System** page:



2. Select whether to enable voice alert when the boundary set by e-fence function is going to reach.

3. Select whether to enable voice alert for popups.
4. Select whether to enable voice alert when the design surface is going to reach.
5. Select whether to switch to night mode:

Day Night

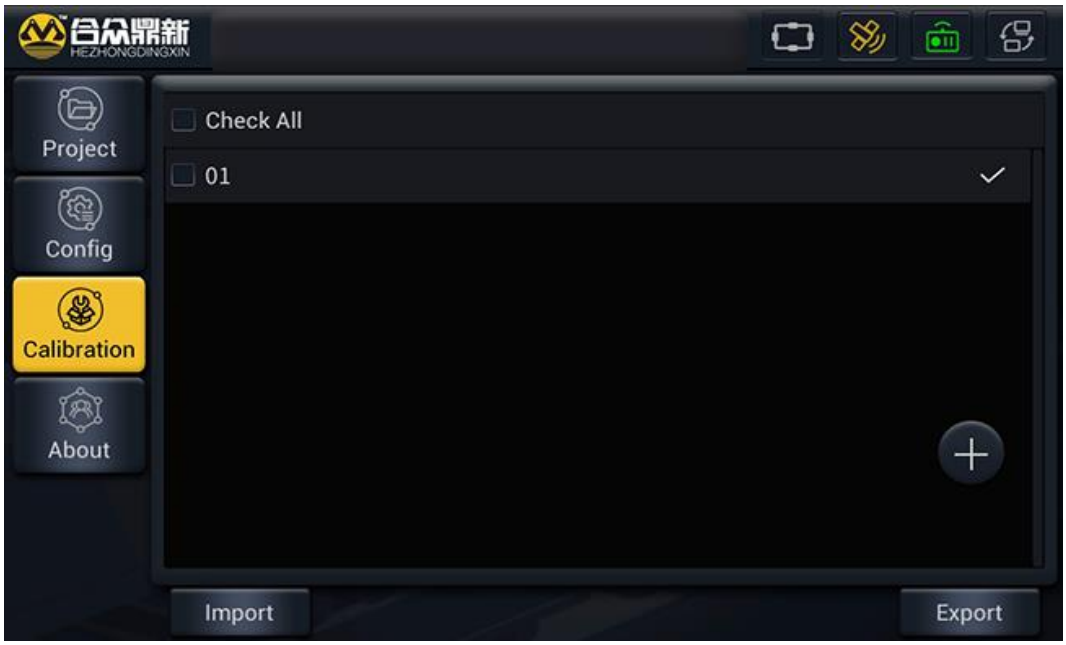
6. Select the system language.

   At present, both Chinese and English are supported.
7. Select the road station expression:
   - K0+000.000
   - DK0+000.000
   - 0.000
   - 0+00.000
   - 0+000.000
8. Set the coordinate expression:
   - North-east-elevation
   - East-north-elevation

   The modification will take effect in the distance bar / base point bar in the homepage of the software.
9. Set the length unit:
   - m
   - cm
   - mm
   - ft
10. Press **Save**.

4.3.3 Calibration

The homepage of **Calibration** is as follows:



In this page, you can do the following:

- Create a calibration file
- Apply a calibration file
- Import a calibration file
- Export the target calibration file(s)

4.3.3.1 Create a Calibration File

To create a calibration file, see Create a Calibration File for details.

4.3.3.2 Apply a Calibration File

To apply a calibration file, do the following:

1. Press the target calibration file in the calibration list:

2. Check the all calibration data.
3. **Optional:** If the calibration data is incorrect, press the target input box, and input the correct data.
4. Press **Apply**.

4.3.3.3 Import a Calibration File

To import a calibration file, do the following:

1. Press **Import**.
2. Select **Yes** in prompt **Is it possible to import calibration configuration with one click?**.
3. Select the target path.

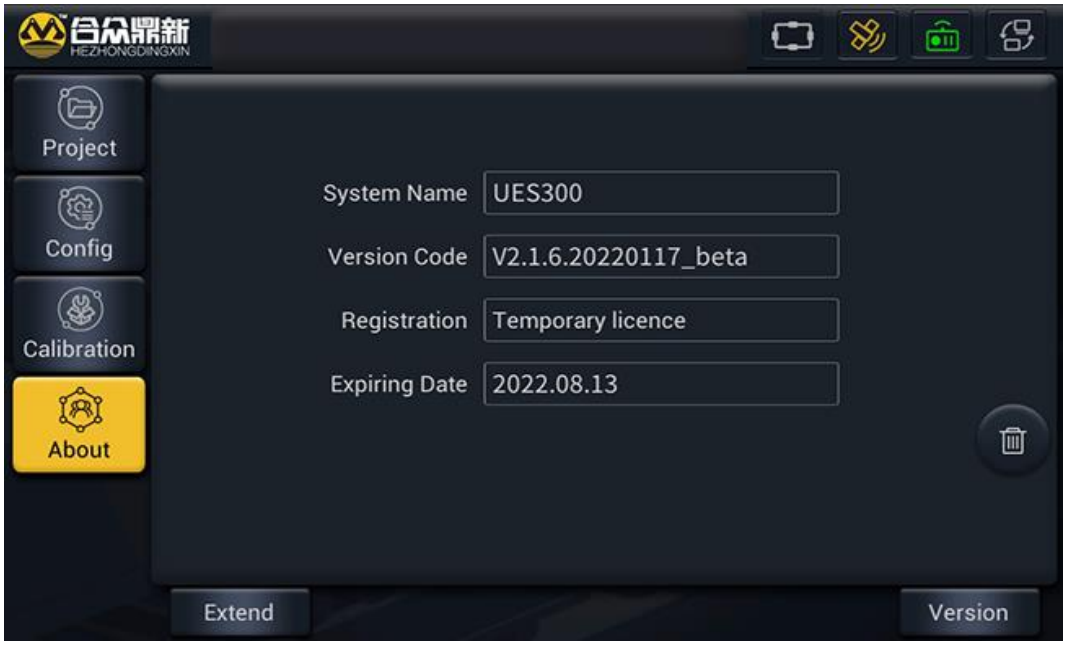
4.3.3.4 Export the Target Calibration File(s)

To export the target calibration file(s), do the following:

1. To select the target calibration file(s), do one of the following:
   - To select a calibration file, check the check box in front of the target calibration file.
   - To select all calibration files, check the check box **Check All**.
2. Press **Export**, and select the target path.

4.3.4 About

The homepage of **About** is as follows:



In this page, you can do the following:

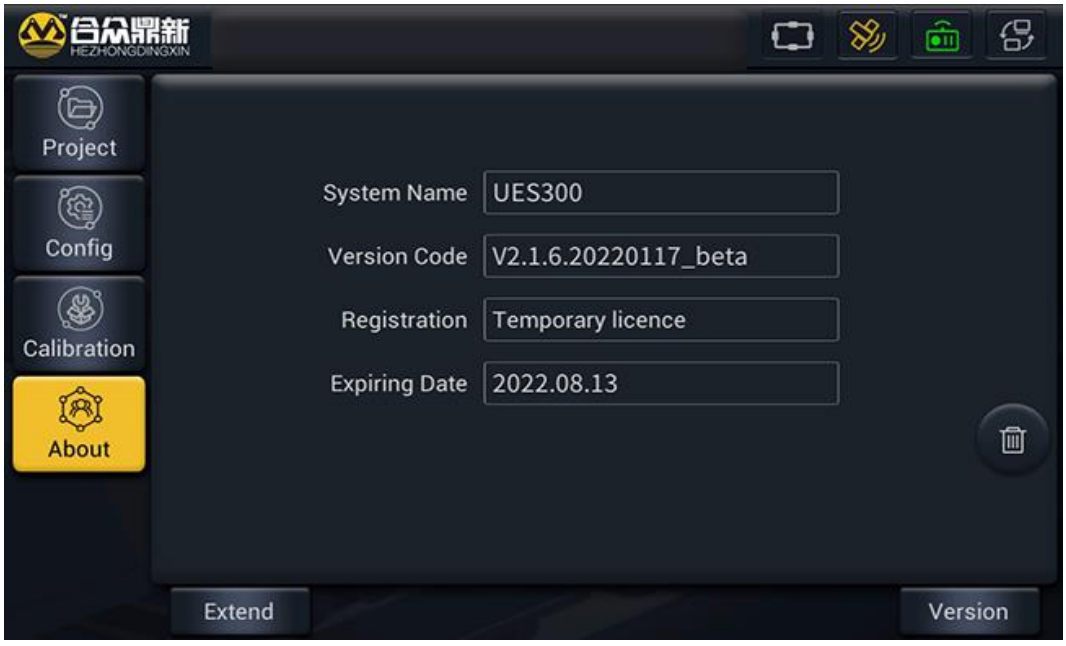
- Check the system information
- Register the system
- Check the system version
- Export the system logs
- Manage the recycle bin

4.3.4.1 Check the System Information

It is used to check the system name, the current system version, the registration status and the expired date.

To check the system information, press

:



4.3.4.2 Register the System

You can choose to register **UES300** with network or without network.

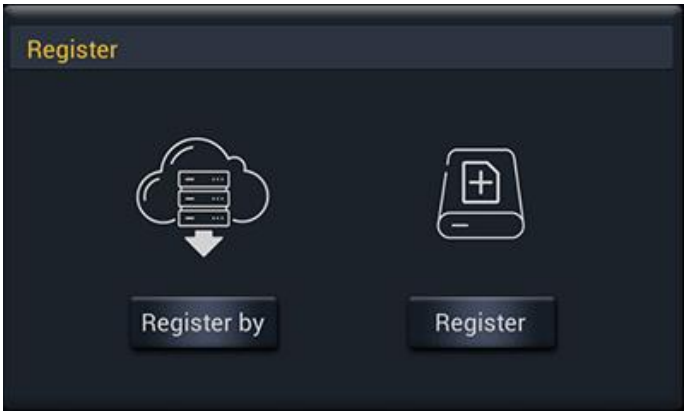
Before registering **UES300**, do the following:

- If you register **UES300** with network, connect **UES300** to the internet.
- If you register **UES300** without network, prepare **.SN** registration file.

To register **UES300**, do the following:

1. Press

.
2. Press **Extend**. **Register** dialog box pops up:



3. Do one of the following:
   - To register by internet, select **Register by**.
     The license has already been authorized before registration.
   - Select **Register**, and do the following:

i. Press input box of **Registration**.
ii. Select the target registration file.
iii. Press **OK**.

4.3.4.3 Check the System Version

It is used to check the current system version is the latest one.

To check the system version, do the following:

1. Press

.
2. To check if the current version is the latest one, press **Version**.

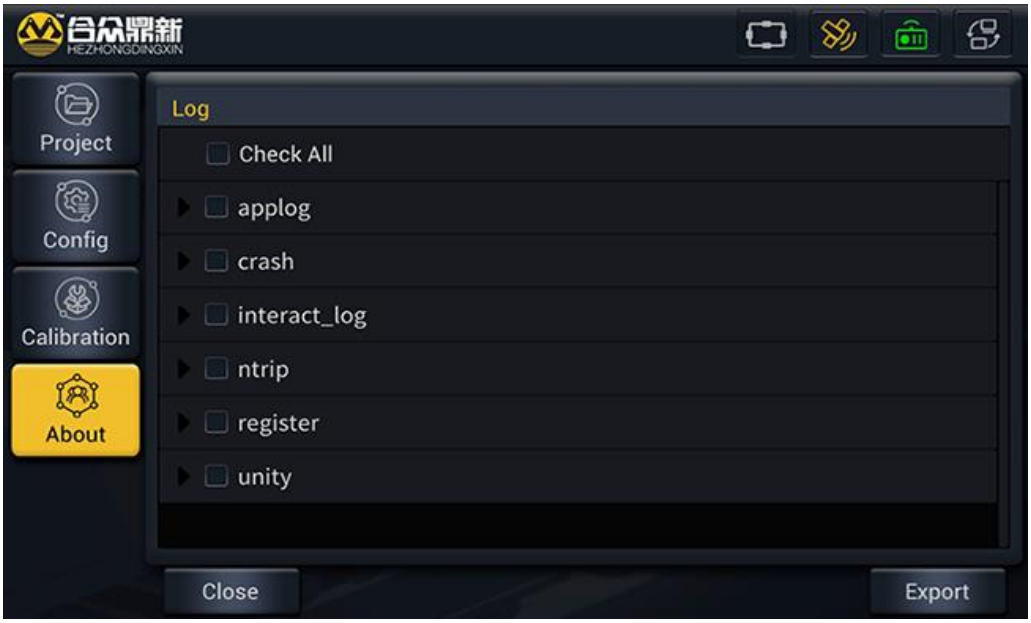
4.3.4.4 Export the System Logs

It is used to check all type of logs and export logs for troubleshooting.

To check the system logs, do the following:

1. Press

.
2. Long press the top:



3. Select the target logs.
4. Press **Export** and select the target path.

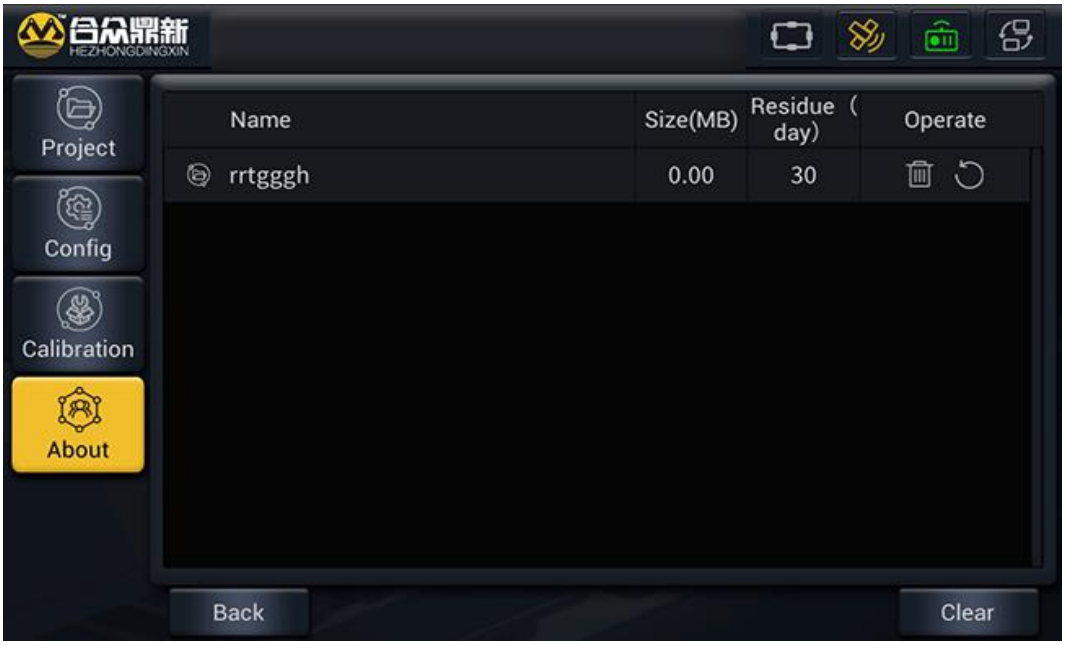
4.3.4.5 Manage the Recycle Bin

The recycle bin is the temporary storage place on **UES300** where deleted files are transferred and remain with 30 days until files are manually emptied or permanently deleted.

To manage the recycle bin, do the following:

1. Press

and press
:



2. Do one of the following:
   - To permanently delete the target file, press
   - To restore the target file, press
   - To empty the recycle bin, press **Clear**.

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