Instruction Manual for Agricultural Machinery Operation Quality Monitoring (Screenless Version)

1. Overview

This product is an agricultural machinery operation quality monitor, suitable for agricultural machinery cooperatives, large-scale farmers, and other users who have high-precision monitoring requirements for the operation status of agricultural machinery or vehicle status. By uploading high-precision, high-frequency positioning data, as well as real-time working data such as rear suspension, engine, and ECU data, and combined with back-end data processing, users can intuitively grasp the daily operation area and operation quality of agricultural machinery.

The product supports real-time monitoring and offline caching, and has multiple functions such as work area monitoring, which can help users improve the refined management level of agricultural machinery operations.

2. Packing List

Number	Name	Quantity
1	Roof Controller	1
2	Tilt Sensor	2
3	Waterproof Camera	2
4	OBD and Sensor Two-in-One Line	1
5	Sensor connection cable	1

III. Connection and Installation

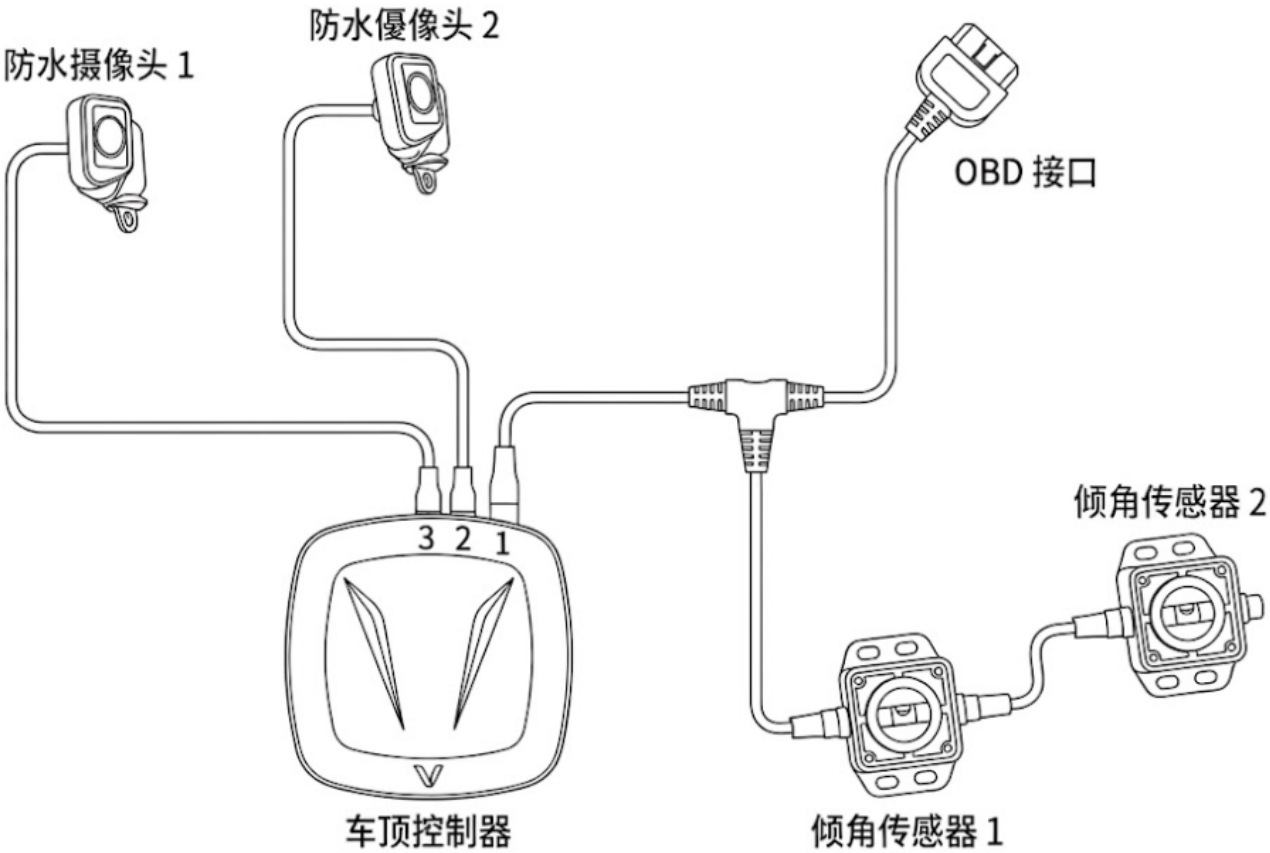
1. The connection diagram is as follows
2. Installation Precautions

a. Install the roof controller on the top of the agricultural machinery, ensuring it is firmly fixed and unobstructed.

b. Install the body angle sensor in a stable position inside the cab according to the arrow, and install the rear suspension angle sensor on the rear suspension arm.

c. Install the camera where it is needed for shooting according to personal needs.

d. Connect the OBD interface to the tractor's OBD interface, and connect all other wiring harnesses to the roof controller.

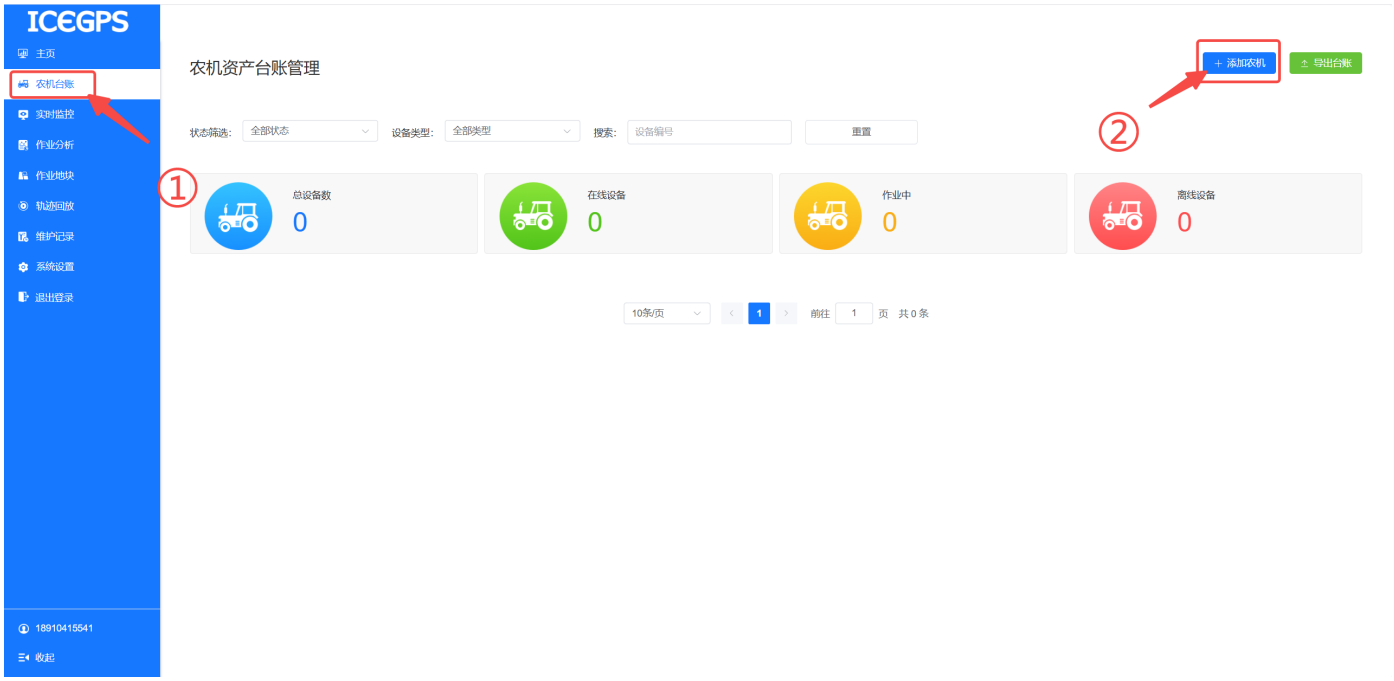


4. Operating Instructions

1. Backend device binding

a. Log in to the FARM backend https://farm.icegps.com .

b. Select the agricultural machinery ledger and click Add Agricultural Implement.



c. Enter the device SN number and set your login password.

2. Configure the device

a. Connect to the Wi-Fi network starting with the name ICEMONITOR_SoftAP (password: 12345678)

b. Enter the configuration URL192.168.100.1:8090(The page will automatically redirect after connecting to WIFI)

c. Enter the password set when adding a device in the background

d. Differential configuration, using PPP by default, with options to select Binghe CORS, Binghe Network Base Station, or Ntrip for RTK differential.

e. For sensor calibration, first lower the rear suspension to its lowest position, then click to collect the lowest angle; next, raise the rear suspension to its highest position, click to collect the highest height, then control the rear suspension to position the implement horizontally, click save to obtain the horizontal angle, and when the rear suspension is below the horizontal angle, it is determined to be in operation .

f. Set the implement parameters, accurately measure the length of the rear suspension arm and the width of the implement, and set the target depth range. The system will calculate the current depth based on the arm length and the rear suspension angle. When the current depth is within the set target depth range, it will be determined as qualified .

Differential Configuration	Sensor Calibration	Agricultural implement parameters



5. Technical Parameters

GNSS Performance	
Positioning System	Full system, all frequency points
Satellite Frequency	BDS： B1I、BIC、B2I、B2a、B2b、B3I GPS： LIC/A、LIC、L2、L5 GALILEO： E1、E5a、E5b、E6 GLONASS： G1、G2 QZSS： LIC/A、LIC、L2、L5 NavIC： L5 SBAS： LIC/A
RTK Accuracy	Plane: 0.7cm + 1ppm Elevation: 2cm + 1ppm
Time Accuracy	10ns
Speed measurement accuracy	0.05m/s
Time taken for first positioning	Cold start: <30s

RTK initialization time	<5s (typical)
RTK Initialization Reliability	>99.9%
Performance Specifications	
Data output update frequency	10Hz
Network Communication	4G Full Network Connectivity/WIFI
Camera pixel	PAL: 537 x 597 (300,000 pixels)
sensor	Angle Sensor
Physical Specifications	
Airframe Dimensions	152X152X65
Protection Level	IP67
Electrical Characteristics	
Input Voltage	9-36V
Power	4.8W
Working Environment	
Operating Temperature	-20°C~70°C
Storage Temperature	-40°C~85°C