SMAJAYU JY305

SMAJAYU JY305 Tractor GPS Guidance and Autosteer System

INSTRUCTION MANUAL

1. INTRODUCTION

The SMAJAYU JY305 is an advanced GPS guidance and autosteer system designed to enhance precision and efficiency in agricultural operations. This system integrates a 10.1-inch waterproof tablet, a high-precision GNSS board, a steering wheel motor with a built-in controller, an angle sensor, and a high-precision GNSS GPS antenna. It is engineered to automate steering tasks, optimize resource allocation, and reduce labor costs across various farming scenarios.

Important Note: RTK functionality must be purchased separately. If your tractor is not a John-Deere model, please contact the seller to confirm compatibility or select the appropriate spline from the instruction manual's list.

2. PRODUCT LIST AND COMPONENTS

The JY305 system includes the following components:

Image: Overview of all components included in the SMAJAYU JY305 package, such as the tablet, GNSS receiver, electric

- 10.1-inch Waterproof Tablet
- GNSS Receiver R71
- Electric Motor
- Gyroscope Sensor Kit
- Steering Wheel
- Antenna Mount Plate
- Spline (Type A, compatible with New Holland and John Deere tractors; other splines available upon request)
- RAM Bracket
- Switch
- Tractor Main Cable
- Power Supply Extension Cable
- Camera Extension Cable
- Switch Cable
- Switch Button Cable
- R71 Power Cable
- Vehicle Radio Antenna
- Screw Pack
- 4G Antenna
- Motor Mounts
- Antenna

3. Key Features

- **High Precision GNSS:** Supports multiple constellations & frequencies including GPS L1, L2; GLONASS L1, L2; BeiDou B1, B2, B3 for accurate positioning.
- **10.1-inch Control Tablet:** Waterproof and dustproof Android 6.0 tablet with Quad-Core 1.5GHz CPU, 2GB RAM, 16GB ROM, 1.5KG/3.3lb weight, and equipped with 4G modem/BT/WIFI.
- **EMS2 Electric Motor:** Integrates electric motor and ECU for stable, high-torque output, enabling automatic steering.
- **Easy and Fast Installation:** Designed for convenient setup with online remote support and quick debugging.
- **Multiple Guidance Line Modes:** Supports Single Line, Straight Line, Curve, Concentric Circles, U-turn, U-shaped, Zigzag, and Ferrule for diverse field operations.
- **Precision Agriculture:** Achieves straight line accuracy of ±2.5cm with RTK (purchased separately) or CORS network, and 10cm with PPP mode.
- **Wide Application:** Suitable for sowing, cultivating, trenching, ridging, spraying pesticide, transplanting, land consolidation, and harvesting.
- **Compatibility:** Compatible with various JOHN-DEERE tractors, harvesting machines, plant protection machinery, and rice transplanters.

4. Installation Guide

Follow these steps for proper installation of your JY305 system. Refer to the 'Easy Installation' diagram and

the 'JY305 Install Video' for visual guidance.

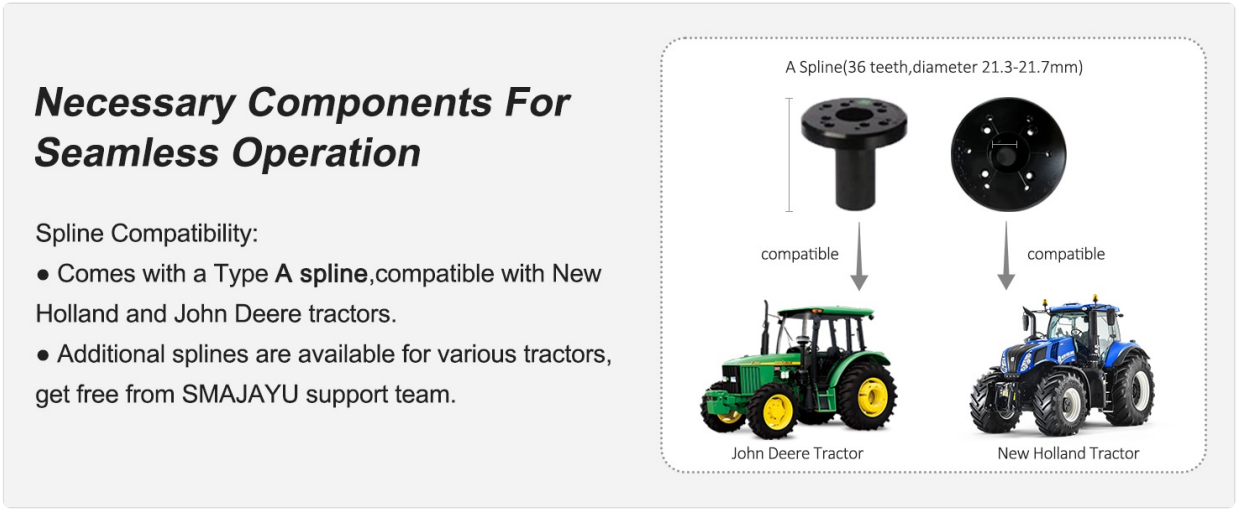

Image: Step-by-step diagram illustrating the installation process for the tablet, motor, antenna, camera, and wheel sensor components.

4.1. General Installation Steps

1. Mount the 10.1-inch tablet securely in the cabin using the provided RAM bracket.
2. Install the EMS2 electric motor onto the steering wheel. Ensure the correct spline is used for your tractor model.
3. Attach the GNSS antenna to the highest point of the tractor cabin using the antenna mount plate.
4. Connect all necessary cables: Tractor Main Cable, Power Supply Extension Cable, Camera Extension Cable, Switch Cable, Switch Button Cable, and R71 Power Cable.
5. Install the Gyroscope Sensor Kit and Vehicle Radio Antenna as per the diagram.
6. Secure all cables using the provided rolling strips (cable ties).

Video: A detailed installation guide for the JY305 system, demonstrating the physical setup of components on a tractor.

5. Operating Instructions

This section outlines the key operational procedures for the SMAJAYU JY305 system.

5.1. PPP Operation Process

The Precise Point Positioning (PPP) mode allows for 10cm accuracy without a base station or subscription. Follow these steps to activate PPP mode:

1. From the main interface, click 'Status' then 'Self-Check'.
2. Click 'Parameter view' to enter the parameter viewing interface. Verify the board type (UM982) and firmware version (11826). Return after checking.
3. Click 'System' then 'Connect'.
4. Select 'External Data' and then 'PPP RTK' to enable PPP mode.
5. Return to the main interface and wait for the signal to change to PPP. This may take several minutes.
6. Once the signal is received successfully, PPP mode is active.

Video: Demonstrates the step-by-step process of activating and using the PPP (Precise Point Positioning) operation mode on the JY305 system.

5.2. System Calibration

Accurate calibration is crucial for optimal performance. The JY305 system requires vehicle parameter measurement, gyro sensor calibration, and antenna roll value calibration.

5.2.1. Vehicle Parameter Measurement

Measure the following parameters on a flat ground and input them into the system:

1. Front wheel track.
2. Track width of front and back wheels.
3. Distance from antenna to ground.
4. Distance from antenna to front wheel.

5.2.2. Gyro Sensor Calibration

Calibrate the gyro sensor by turning the steering wheel left and right as prompted by the system.

5.2.3. Antenna Roll Value Calibration

Perform antenna roll value calibration to correct human error and ensure accurate navigation.

Video: A training video detailing the calibration process for the JY305 system, including vehicle parameter input, gyro sensor calibration, and antenna roll value adjustment.

5.3. Setting AB Line for Straight Navigation

To set an AB line for straight navigation and allow the system to automatically correct errors:

1. Drive the tractor to point A and mark it on the system.
2. Drive the tractor to point B and mark it.
3. Start navigation, and the system will automatically correct the error to ±0-1cm.

Video: Demonstrates how to create an AB line for straight navigation, allowing the system to automatically correct steering errors. (Note: This video is for SMA10, but the AB line creation principle is similar).

5.4. Concentric Circle Navigation

The JY305 supports concentric circle navigation, ideal for working around a central pivot or irregular field shapes.

Video: Shows the JY305 system performing concentric circle navigation in a field, demonstrating its ability to maintain precise circular paths.

6. Application Scenarios

The JY305 system is versatile and can be applied to a wide range of agricultural tasks, making farming more intelligent and efficient.

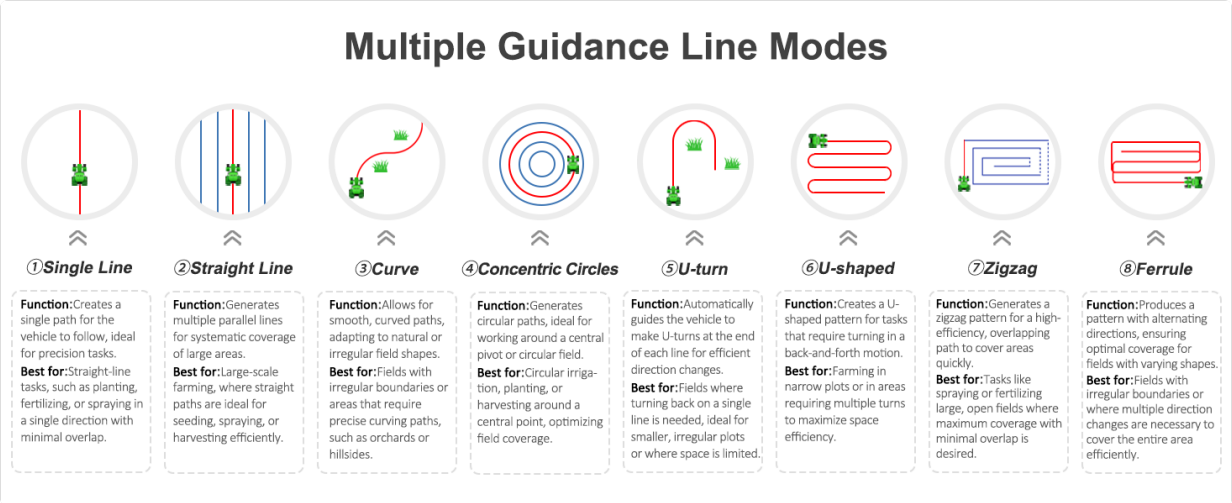

Image: Visual representation of the JY305 system being used in various agricultural applications such as spraying, harvesting, land leveling, and seeding.

- **Sowing and Seeding:** Ensures precise seed placement for optimal crop growth.
- **Cultivating and Tilling:** Maintains consistent depth and spacing for soil preparation.
- **Trenching and Ridging:** Creates accurate trenches and ridges for irrigation and crop support.
- **Spraying Pesticide:** Minimizes overlap and gaps, reducing chemical waste and environmental impact.
- **Transplanting:** Guides machinery for precise transplanting operations.
- **Land Consolidation and Leveling:** Achieves uniform land surfaces for improved water management.
- **Harvesting:** Maximizes efficiency and reduces crop loss during harvest.

Video: Customer footage showcasing the JY305 Tractor GPS Auto Steer System in various real-world agricultural work scenarios.

7. Specifications

Feature	Detail
Brand	SMAJAYU
Model Name	JY305
Vehicle Service Type	Tractor
Screen Size	10 Inches
Special Feature	Waterproof
Map Type	North America
Mounting Type	Dashboard Mount
Operating System	Android
Touch Screen Type	Capacitive
Display Type	LCD
Supported Satellite Navigation System	GPS (Supports multiple constellations & frequencies: GPS L1, L2; GLONASS L1, L2; BeiDou B1, B2, B3)

Control Method	Remote
Are Batteries Included	No

8. Troubleshooting

If you encounter any issues with your SMAJAYU JY305 system, please refer to the following common troubleshooting steps:

- **No GPS Signal:** Ensure the GNSS antenna is mounted in an open area with a clear view of the sky, free from obstructions. Check all antenna cable connections for security.
- **Steering Malfunction:** Verify that the electric motor and angle sensor cables are properly connected. Re-run the system calibration process, especially the gyro sensor and roll value calibration.
- **Inaccurate Positioning:** Confirm that the correct differential correction source (PPP, RTK, or CORS) is selected and active. Ensure the vehicle parameters (wheel track, antenna height, etc.) are accurately entered in the system settings.
- **Tablet Not Responding:** Restart the tablet. Check power connections. If the issue persists, contact customer support.
- **System Errors:** Perform a 'Self-Check' from the status menu to identify specific error messages. Address any indicated communication or sensor errors.

For further assistance, please refer to the detailed troubleshooting section in the full user manual or contact SMAJAYU customer support.

9. Warranty and Support

The SMAJAYU JY305 Tractor GPS Guidance System comes with a standard manufacturer's warranty covering defects in materials and workmanship. Please retain your proof of purchase for warranty claims.

- **Warranty Period:** Refer to your product packaging or purchase documentation for specific warranty duration.
- **Technical Support:** SMAJAYU offers online remote support and OTA (Over-The-Air) software updates. For technical assistance, visit the official SMAJAYU website or contact their support team directly.
- **Service & Repairs:** In case of product malfunction, do not attempt to repair the unit yourself. Contact SMAJAYU customer service for authorized service and repair options.

For the most up-to-date warranty information and support resources, please visit the official SMAJAYU website.