

AX3000 GNSS Auto-Steering System

Solution for precision agriculture

Overview

The AX3000 Auto-Steering System is an automatic steering system which uses high-torque motor control steering wheel. It integrates the advantages of fast and easy installation, large torque, high precision, low noise, low heat and quick debugging. It is suitable for various applications of tractors, harvesting machines, plant protection machinery, rice trans-planters and other agricultural machinery.

The system includes a control tablet integrated with a 4G modem, a steering wheel motor with a built-in controller, and an angle sensor. It can be widely used for sowing, cultivating, trenching, ridging, spraying pesticide, transplanting, land consolidation, harvesting and other work scenarios.

Key Features

Supports multiple constellations & frequencies:

- GPS L1, L2
- GLONASS L1, L2
- BeiDou B1, B2
- GALILEO E1, E5b
- QZSS L1, L2
- SBAS L1

Small high-torque motor

Highly integrated system

10.1" touch screen control tablet

High accuracy to $\pm 2.5\text{cm}$

Without modification of the hydraulic system

Fast installation in 30 minutes

Calibration in 15 minutes



Technical Specifications - T100 Control Tablet

System

| | |
|-------------------|-------------------------------|
| Operating System: | Android 6.0 |
| CPU: | Quad-Core 1.5GHz |
| Memory: | 2GB RAM + 16GB ROM |
| External Flash: | T-Flash, up to 64GB |
| LCD: | 10.1" Capacitive Touch Screen |
| Resolution: | 1024x600 pixel |



Communication

| | |
|------------|--|
| Wi-Fi: | 2.4GHz IEEE 802.11 b/g/n |
| Cellular: | FDD-LTE 800 / 1800 / 2100 / 2600MHz TD-LTE 1900 / 2300 / 2500 / 2600MHz WCDMA 850 / 900 / 1900 / 2100MHz GSM 850 / 900 / 1800 / 1900MHz |
| Bluetooth: | V4.0 |
| USB: | USB 2.0 (host & debug) x1 |
| Audio: | 3.5mm Audio Jack for Audio Serial |
| Port: | RS232 x2, RS485 x1 |
| CAN Port: | CAN x2 (J1939, CANOpen, ISO15765) |
| Ethernet: | RJ45 (100M Ethernet) x1 |



Electrical

| | |
|--------------------------|-----------|
| Power Input: | 9V~36V DC |
| Power failure detection: | supported |
| Power output: | 12V DC x2 |

Physical

| | |
|------------------------|------------------|
| Dustproof&Waterproof: | IP-65 |
| Dimension: | 281mmx181mmx42mm |
| Weight: | 1.5kg |
| Operating Temperature: | -20 ℃ ~ +70 ℃ |
| Storage Temperature: | -40 ℃ ~ +8 ℃ |

Technical Specifications

- EMS2 Motor Wheel

Motor Performance

| | |
|--|---------------------|
| Rated speed: | 100 rpm |
| Rated torque: | 10 N·m |
| Guaranteed continuous operation speed: | 100 rpm |
| Maximum freewheel error: | 0 (without reducer) |
| Supply voltage: | 8V~16V DC |
| Rated current: | 10A |
| Stall current: | 25A |
| Rated voltage: | 12V |



Communication

| | |
|-------------------------------|----------------------------------|
| Communication protocol: | ModBUS |
| Encoder resolution: | 1000 lines, 4000 pulses / circle |
| Encoder interface (protocol): | parallel, no protocol |
| Encoder maximum output rate: | 200KHz |
| Communication interface: | RS232 |

Physical

| | |
|------------|--|
| Dimension: | ϕ 187x100.2mm (motor) ϕ 410x32mm (steering wheel) |
| Weight: | 6.35kg (motor only) |
| Material: | Aluminum alloy |

Environmental

| | |
|------------------------|--|
| Operating Temperature: | -40 \square ~ +105 \square (motor) |
| Storage Temperature: | -45 \square ~ +150 \square (motor) |

Technical Specifications

IMU- R71 Smart Antenna



| | | | |
|--------------------------------|--|---|-----------------------------------|
| Operating Temperature | -30C ~+70C | | |
| Storage Temperature | -40C ~+85C | | |
| Physical Dimension | 179x179x69mm | | |
| Weight | 1-1 Kg | | |
| Protection Level | IP67 | | |
| Power Consumption | <6.0W | | |
| Supply Voltage | DC 9 ~36V | | |
| Signal | GPSL1/LZ BDS B1/B2, GLONASS L1/L2> Galileo E1/E5a/E5b, QZSS L1/L2/L5 | | |
| | Hot Start | <10S | |
| | Cold Start Time | <25s | |
| | Recapture | <1S | |
| | Initialization Time | <5S(Typical Value) | |
| | Initialization Reliability | Single point positioning | |
| | Differential Data | RTCM V3.0/3.2 | |
| | Data Format | NEMA0183, Unicore | |
| | Channel | 432 Channel. Based on NebulasII chip | |
| Single Point Positioning (RMS) | Horizontal | 1.5m | Observation data update rate 20HZ |
| | Elevation | 2.5m | |
| DGPS(RMS) | Horizontal | 0.4m | |
| | Elevation | 0.8m | |
| | Orientation Accuracy | 0.2 Degree/1m Baseline Positioning data update rate | 20HZ |
| RTK(RMS) | Horizontal | 1cm+1ppm | |
| | Elevation | 1.5cm+1ppm | |
| | Time Accuracy | 20ns | |
| | Speed Accuracy | 0.03m/s | |