

LIANSHI

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AF302 GNSS Auto-Steering System

Ideal solution for precision agriculture

Overview

The LianShi AF302 Auto-Steering System is an automatic steering system which uses high-torque motor control steering wheel. It integrates the advantages of convenient 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 transplanters and other agricultural models.

The system consists of a base station and a vehicle control part. The vehicle control part includes a control tablet integrated with a high-precision GNSS board, 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

Non-contact angle sensor

10.1" touch screen control tablet

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

Without modification of the hydraulic system

Dual antennas receive signals

Fast installation in 30 minutes

Calibration in 15 minutes



Note: If users want to customize the product portfolio, please contact globalsales@allynav.cn by email.

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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 pixels |

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 |



GNSS

| | |
|------------------------------------------|------------------------------------------------------------------------------------|
| Signal Tracking: | GPS L1, L2; GLONASS L1, L2; BeiDou B1, B2; GALILEO L1, L2; QZSS L1, L2; SBAS L1 |
| GNSS Channels: | 432 |
| Single Point Positioning Accuracy (RMS): | – Horizontal: 1.5m – Vertical: 2.5m |
| Real Time Kinematic, RTK (RMS): | – Horizontal: 10mm+1ppm – Vertical: 15mm+1ppm |
| Heading Accuracy: | – 1m Baseline (RMS): 0.1° |
| Timing Accuracy (RMS): | 20ns |
| Velocity Accuracy (RMS): | 0.03m/s |
| Correction: | RTCM 2.3/3.0/3.2 |
| Heading and RTK update rate: | 20Hz |
| Network Protocol: | NTRIP, TCP/IP |

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 °C ~ +70 °C |
| Storage Temperature: | -40 °C ~ +85 °C |

Website | www.allynav.com

Sales Inquiry | globalsales@allynav.cn

Technical Support | yaokaibin@allynav.cn

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Technical Specifications - GPS500 Antenna

Performance

| | |
|-----------------------|----------------------------------------------|
| Frequencies: | GPS L1,L2; GLONASS L1, L2; BeiDou B1, B2, B3 |
| Impedance: | 50Ω |
| Polarization: | RHCP |
| Axial Ratio: | ≤3dB |
| Azimuth Coverage: | 360° |
| Output VSWR: | ≤2.0 |
| Peak Gain: | 5.5dBi |
| Phase Center Offsets: | ±2mm |

Environmental

| | |
|------------------------|--------------------|
| Operating Temperature: | -45°C ~ +85°C |
| Storage Temperature: | -45°C ~ +85°C |
| Humidity: | 95% not condensing |

LNA

| | |
|--------------------|-------------|
| LNA Gain: | 40±2dB |
| Noise Figure: | ≤2.0dB |
| Output VSWR: | ≤2.0 |
| Operation Voltage: | 3.3V~12V DC |
| Operation Current: | ≤45mA |
| Ripple: | ±2dB |

Mechanical

| | |
|--------------------------|--------------------|
| Dimension: | φ 152x62.2mm |
| Connector: | TNC Female |
| Screw Hole for assembly: | 5/8"×11 UNC Female |
| Weight: | 374g |



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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°C ~ +105°C (motor) |
| Storage Temperature: | -45°C ~ +150°C (motor) |

