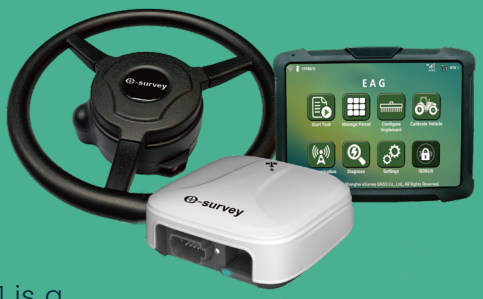
e-survey

Bestar 301

MULTI-FUNCTIONAL AUTO-STEERING SYSTEM



Independently developed by eSurvey GNSS, the eSurvey Bestar 301 is a multi-functional electric wheel-based auto-steering system.
The Bestar 301 could transfer farm work from fully manual driving to semi-automatic operation. It means high time efficiency and less operator fatigue. Based on the route planning algorithm, the vehicle could go through the same paths every time to seed, spray and harvest with ±2.5 cm accuracy, which increases crop yield and reduces chemical usage.

Agriculture

Powerful satellite based signal service:

Using PPP(L-Band) enables high-precision operation even when CORS and other base station services cannot be obtained.

Smart ECU: Easy configuration and upgrade

Bestar 301' s ECU is based on a Linux system, allowing users to view position status, set up working mode, and update firmware from the Web user interface with any smartphone, tablet, or PC.

All-purpose System: Suitable for Various Types of Agricultural Machinery

Apply it to multiple types of agricultural machinery, including tractors, transplanters, sprayers, harvesters, etc., to make your farm work more effectively.

High Control Accuracy with Ultra-low Speed

Enable ±2.5 cm control accuracy even when the vehicle speed is as low as 0.2 km/h, and no longer need to worry about fine planting vegetables and fruit crops.

Easy Installation: No Need to Change Hydraulic Circuit

Install or remove it from your agricultural machinery as fast as 15 minutes.

24-hour Uninterrupted Work

Continuously work even in the day with heavy UV lights or at night. Free RTK aid function could maintain centimeter accuracy for 600 seconds when the Bestar 301 lost correction data.

Rich Optional Functions

Users could choose upgradable functions like 20 Hz DB9 NEMA direct output, dual camera, and ISOBUS-VT.

Website & Social media

Bestar 301 System

Accuracy	Dry land: 2.5 cm（≤9 km/h）; Paddy land: 5 cm（≤9 km/h）
Line acquisition distance	<7 m
Vehicle velocity range	0.2 - 18 km/h
Correction data source	GSM, Radio, SBAS, ALTPPP
Data formats	RTCM3.X, ROX, CMR, CMR+

Specification

ST6 Display

System	
Processor	AllWINNER T507 8-core @1.5GHz
OS	Android 10.0
RAM	2 GB LPDDR4X
ROM	16 GB eMMC

Screen	
Size	10.1" LCD
Resolution	1280 x 800
Brightness	750 nits
Touch panel	Capacitive touch screen, multi-point anti-glare

Communication	
Bluetooth	BT4.0 @BLE
Wi-Fi	802.11 a/b/g/n 2.4 GHz
GSM	■ CAT1 LTE ■ LTE FDD: B1/B3/B5/B7/B8/B20 ■ TD-LTE: B38/B40/B41 ■ GSM: B2/B3/B5/B8
Port	■ Serial port (6-pin) x 1 ■ Serial port (12-pin) x 2 ■ USB type-A (USB host) x 1 ■ USB (Micro-USB, USB device) x 1 ■ SIM card (SDHC) x 1 ■ Micro SD card (256G max) x 1 ■ GSM (Fakra D) x 1

Power Supply	
Input voltage	6 - 36 V dc

Physical Specification	
Dimension	269 mm × 190 mm × 41 mm
Weight	1300 g
Button	Power button x 1
Battery	None
Humidity	0-95% RH, non-condensing
Operating temperature	-20°C - +70°C
Storage temperature	-40°C - +85°C
Water/dust proof	IP65
Vibration	ISO 16750/MIL-STD-810G

MC5 ECU (L-Band)

GNSS Performance	
Channels	1100
Satellites tracking	■ GPS: L1C/A, L1C, L1P, L2C,L2P,L5 ■ BDS: B1I, B2I, B3I, B1C, B2a, B2b, ACEBOC ■ GLONASS: G1, G2, G3 ■ GALILEO: E1, E5a, E5b, ALTBOC, E6 ■ QZSS: L1C/A, L1C, L2C, L5, LEX ■ SBAS, L-Band
Update rate	20Hz
Horizontal positioning accuracy	■ Single: < 1.2 m (RMS) ■ DGNSS: < 0.3 m (RMS) ■ RTK: 8 mm+1 ppm (RMS)
Heading accuracy	< 0.2° rms with 1.0 m baseline
Re-acquisition	< 1 second

Communication	
Bluetooth	4.2
Wi-Fi	IEEE 802.11 b/g/n
GSM	Global GSM/WCDMA/LTE
Port	■ 1 x serial port, 18-pin ■ 1 x SIM card ■ 1 x GNSS heading, TNC ■ 1 x UHF, TNC

Internal Radio	
Frequency range	410 - 470 MHz & Hopping 902.4 - 928 MHz
Channel spacing	12.5 KHz / 25 KHz
Protocol	HZSZ, TrimTalk 450S, PCC-GMSK, South

Environment	
Operating temperature	-40°C - +70°C
Storage temperature	-40°C - +85°C
Humidity	95%
Shock	EP 455 Section 5.14.1
Vibration	EP 455 Section 5.15.1 (Random)
Water/dust proof	IP67

Power	
Input voltage	9 – 28 V dc (ISO 16750 4.2 B-H)

Physical Specification	
Dimension	162.2 mm × 162.8 mm × 70.2 mm
Material	Magnesium alloy
Weight	1284±20 g

Specification

EW2 Electric Steering Wheel

Motor	
Working voltage	9 - 32 V dc
Nominal voltage	12 V dc
Output torque	≥6.5N•m
Maximum output torque	13 N·m
Maximum power	< 200 W
Maximum rotation speed	100 RPM
Load steering error	< ±5°
Response delay	20Hz

Working Environment	
Operating temperature	-20°C - +70°C (-68°F - +158°F)
Storage temperature	-40°C - +85°C (-104°F - +185°F)
Mechanical shock	EP455/5.14.1
Vibration characteristics	EP455/5.15.1& 5.15.2

Communication	
Interface	ALTW/1DC-06PMMS-LC7001
Communication protocol	ISO11783 CAN BUS

EMC / Safety / Environmental Protection	
Radiated interference	■ Broadband: IAW ISO14982-2009 /6.4 ■ Narrowband: IAW ISO14982-2009/ 6.5
Radiation immunity	IAW ISO14982-2009/6.6
Electrostatic discharge (ESD)	IAW ISO14982-2009/6.7
Environmental protection standard	2011/65/EU RoHS 2.0

Physical Specification	
Dimensions	Φ180 mm × 80 mm
Weight	4.6 kg

Rear Camera (Optional)

Performance	
Water/dust proof	IP67
Input voltaget	12 V dc
Port	Female, 4-pin aviation
LED	8 LED light
Resolution	720P, 1024 x 600

P300 GNSS Antenna(Optional)

Antenna Performance	
Frequency	■ GPS: L1, L2, L5 ■ BDS: B1, B2, B3 ■ GLONASS: G1, G2, G3 ■ GALILEO: E1, E5 ■ QZSS
Polarization	Right-handed circular
Axis ratio	≤2dB @Axial
Antenna gain	■ GPS L1: > 6 dBi ■ GPS L2: > 5 dBi
Phase center offset	±2 mm

Physical Specification	
Dimensions	Φ146 mm x 46 mm
Weight	500 g
Antenna interface	TNC-F
Radome material	ASA Plastic
Base material	Aluminum alloy
Mount	5/8-11UNC-2B

iMM1 Angle Sensor & iMM1 External IMU (Optional)

Performance	
Supply voltage	5.5 – 36 V
Supply current	30 mA/12 V
Power consumption	≤ 0.7 W
Water/dust proof	IP67
Measurement range	±90°
Measurement axis	X-Y
Resolution	0.002°
Accuracy	0.1°
Update rate	50 Hz
Initialization time	≤ 30 seconds

Working Environment	
Working temperature	-40°C - +70°C
Storage temperature	-40°C - +85°C
Shock	20000 g, 0.5 ms, 3 times/axis
Interface	CAN

Physical Specification	
Material	Aluminum alloy

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