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# Precision Agriculture & Machine Control

## PRODUCT BROCHURE



- GNSS Receiver Manufacturer
- Professional OEM&ODM
- Over 15-years experience in R&D and manufacturing

# ABOUT US

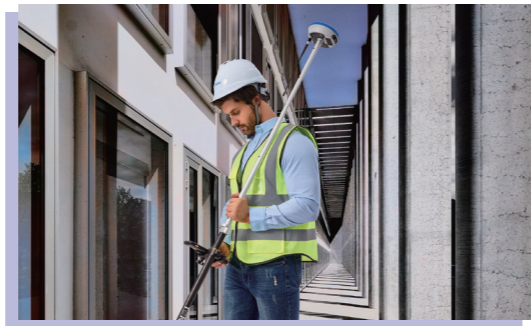
## Company Introduction

Guangzhou Toksurvey Information Technology Co., Ltd. was founded in 2019 by a team of R&D engineers. The company team has nearly 15 years of R&D background. At present, the company has nearly 2,500 square meters of office and factory, complete set of research equipment, and strong technical background.



Our company is committed to the R&D, production and sales of high-precision satellite positioning terminal products. More than 60% of the employees are engineers. Driven by technological innovation, the company maintains a steady growth rate of 60% every year.

At present, the company has successfully launched high-precision GNSS RTK (T5 series, T10 series, T20 series, T30 series, T40 series and T50 series), portable RTK receiver (P8 series), high-precision CORS station (NET660 series), data controller, GNSS antenna, precision agriculture, mechanical control, marking robot, USV and SLAM to the market. We not only provide trainings about our products, but also provide a series of relevant solutions.



## Our Targets



Make positioning more precise and easier.

**Mission**



Working together to improve global surveying quality.

**Vision**



To become a leader in the global surveying and mapping service.

**Value**



Your reliable supplier in positioning!

**Slogan**

## Fields of Application

TOKNAV products can be widely used in precision surveying & mapping, mining operations, deformation monitoring, autonomous driving and other fields. We currently have a number of mature GNSS application solutions, such as deformation monitoring, CORS network, marking robots, precision agriculture, mechanical control and digital construction field. TOKNAV products have passed CE, FCC, KC, NGS, IGS and other certifications, and are exported to more than 100 countries and regions around the world. Our products are well received in the global market, and now we have become a system integration supplier in the global market.



**Construction**



**Monitoring**



**Mapping & GIS**



**Surveying**



**Agriculture**



**Marine**

## Certifications

Antenna Calibrations

Home | About NG5 | Data & Imagery | Tools | Surveys | Science & Education

Browse Antenna Information by Company Brand and Model | Access Calibrations for All Antennas | Help Links

Antenna Code	Model	Company	Calibration Method	Calibration Results	Additional Photos	PCV Files
TNVT10PRO	NONE	Toknav	None			
TNVT20	NONE	Toknav	None			
TNVT20PRO	NONE	Toknav	None			
TNVT5	NONE	Toknav	None			
TNVT5LITE	NONE	Toknav	None			

# TAG66

## Electric Steering Wheel Autonomous Driving System



TAG66 is an electric steering wheel autonomous driving system. It obtains centimeter-level vehicle positioning through BeiDou high-precision positioning and adjusts the vehicle's direction through an advanced DC servo motor solution. This autonomous steering system uses an integrated controller that combines a 4G module, IMU sensor, UHF radio, and BeiDou positioning module to achieve high-precision autonomous driving. It is suitable for agricultural activities such as sowing, harvesting, spraying, mulching, plowing, and ridge making. It can effectively improve work efficiency and yield while saving fuel, seed, and labor costs.



Sowing



Transplanter



Apply Medicine



Film Covering



Plow Furrow



Ridge Formation

## CHARACTERISTIC

### Integrated Controller Design

This autonomous steering system uses an integrated controller that combines a 4G, IMU sensor, UHF radio, and BeiDou positioning modules, making it easy to install and transfer between vehicles. There is no need to install additional wheel angle sensors, making installation even easier.

### High Precision

The system provides industry-standard RTK precision, combining BeiDou positioning with INS terrain compensation to ensure a pass precision of 2.5cm even in difficult agricultural terrains. This level of precision and accuracy is valuable for various agricultural activities such as plowing, sowing, and harvesting. By eliminating overlaps and skips, it can increase yield while saving fuel, seeds, and time.

### Excellent Performance

The system easily maintains a precision of  $\pm 2.5\text{cm}$  within a speed range of 0.15 to 25 kilometers per hour. With high-precision algorithms, it is very suitable for sowing, planting, spraying, plowing, and other ground operations.

### All-in-One Features

Compatible with various operating modes, including AB line, A+ line, custom curves, and angle harrowing. It supports work area statistics, work trajectory recording, data upload and download, and shared operation modes among multiple vehicles.

### Easy to Use

Users can activate common functions in just a few steps, allowing them to get started quickly and learn on the go.

## System composition



Intelligent Display Screen

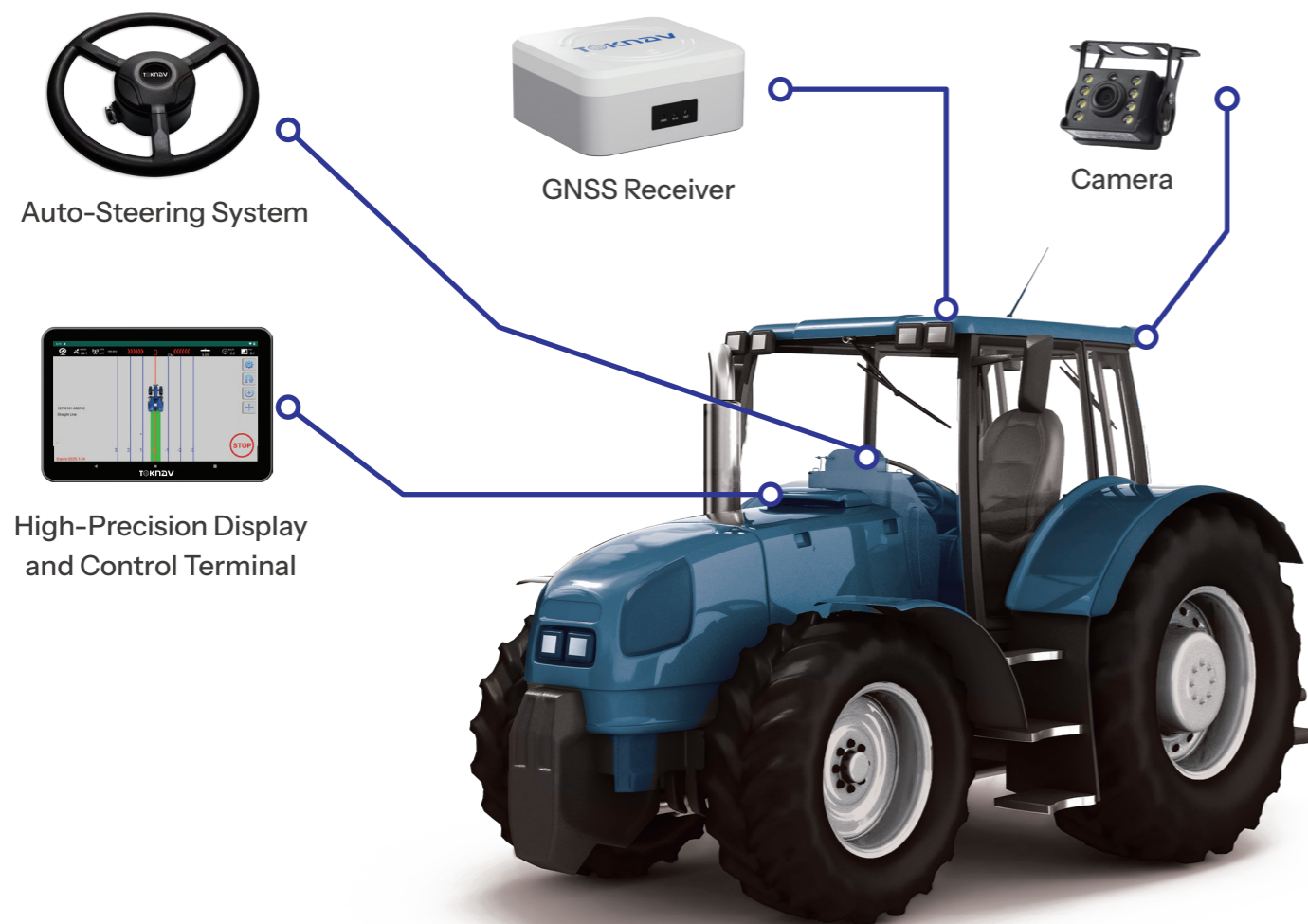


Electric steering wheel



# TAG66

## Electric Steering Wheel Autonomous Driving System



- Supports receiving external RTK corrections via UHF radio.
- Supports wheel angle sensor mode required for specific farm operations.
- Supports secondary development for tighter integration of components.

# SPECIFICATION

RECEIVER	
GPS	L1, L2, L5
GLONASS	L1, L2
GALILEO	E1, E5a, E5b
BDS	B1, B2, B3
Accuracy (RTK)	Horizontal: $\pm 8\text{mm} + 1\text{ppm RMS}$ Vertical: $\pm 15\text{mm} + 1\text{ppm RMS}$
Working Temperature	$-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$
Storage Temperature	$-40^{\circ}\text{C} \sim +80^{\circ}\text{C}$
Size	159*56 mm
Network	2G/3G/4G
Dust and Waterproof	IP69K

VEHICLE MOUNTED COMPUTER	
Display Screen	12-inch, Support 5-point capacitive touch
Dual system	Android 11.0 Linux 5.10, Qt 5.15.7
Brightness	750cd/m <sup>2</sup>
Resolution	1280*800px
I/O	DC_OUTPUT 12V output *2 IO_INPUT input *2 100Mbps Ethernet *1 RS232*2 RS485*1 CAN*2 4G
Communication	WiFi 2.4G/5G BT 4.2, BLE USB 3.0*1
Operating Temperature	$-30^{\circ}\text{C} \sim +70^{\circ}\text{C}$
Storage Temperature	$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Protection Level	IP65
Work Humidity	0%-90%RH
Vibration standard (Operational)	MIL-STD-810
Impact standard (Operational)	ISO16750
Power	9-36V DC Input ACC, State detection for ignition

AUTO-STEERING SYSTEM	
Rated Torque	7.5 Nm
Max RPM	180 RPM
Rated Current	15A
I/O	1 x CAN
Power	(9-32) VDC
Motor Dimensions	165mm x 80.5mm
Steering Wheel Diameter	D: 410mm
Operating Temperature	$-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$
Storage Temperature	$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
Dust & Waterproof Rating	IP65

CAMERA	
Power Supply	DC12V $\pm 5\%$
Viewing Angle	120°
Resolution	1280(H) x 720(V)
Dust & Waterproof Rating	IP65
Operating Temperature	$-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$
Storage Temperature	$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

ACCESSORIES	
Receiver	1 PCS
Tablet	1 PCS
Steering Wheel	1 PCS
Motor and Driver	1 PCS
Main Cable	1 PCS
Tablet Power Cable	1 PCS
Screw Accessories Pack	1 PCS
Mount	1 PCS
Camera (Optional)	1 PCS

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Manufacturers may update parameters at any time, please refer to the latest product information.

# TAG88

## Automated GNSS Land Leveling System



TAG88 Automated GNSS Land Leveling System is a satellite positioning-based, fully automated control system for high-precision land leveling with agricultural machinery. It features 24-hour operation, a 30-kilometer coverage radius, and eliminates the need for frequent base station relocation. The system supports simultaneous operation of multiple units. Through real-time display of fill and cut volumes and automatic adjustment of the land leveler's position and attitude, it enables construction without prior staking, ensuring rapid and accurate task completion even in complex terrains, thereby enhancing efficiency, reducing rework, and increasing economic benefits.



Road Construction



Site Preparation for Buildings



Agricultural Field Leveling



Airport Runway Construction



Mining Operations



Landscape Grading

## CHARACTERISTIC

### Full Network Signal Coverage

The system integrates Beidou satellite, compatible with GPS, BDS, GALILEO, and GLONASS signals. The base station covers a maximum radius of 30 km, reducing the hassle of base station relocation and enabling simultaneous operation of multiple devices.

### Intelligent Display Screen

12-inch high-definition display with instant five-finger touch response. Protection against contamination and dust, as well as resistance to shock, magnetism, and electromagnetic interference, ensuring stable performance.

### Multitasking: Adaptable to Various Grading Tools

The system includes tractor navigation, compatible with telescopic, ripper, paddy leveling blades, scrapers, and graders for tasks like ridging, slope scraping, and farmland leveling.

### 24-Hour Continuous Operation

The system supports 24-hour continuous operation, capable of working in various adverse weather conditions, including daytime, nighttime, strong winds, sandstorms, and smog.

### Real-time Map Visualization

Users can monitor operation trajectories and terrain elevations via the software, design operation routes, and achieve an intuitive understanding of the work process.

### Automatic Terrain Recognition and Adjustment

The system automatically identifies terrain variations and adjusts the plot datum, achieving an operation accuracy of  $\pm 2.5$  cm. It can level both flat and sloped surfaces, increasing operation efficiency by 20%.

## System composition



Intelligent Display Screen



Electronic Control Unit



# TAG88

## Automated GNSS Land Leveling System



- The system automatically identifies terrain variations and adjusts the plot datum.
- Achieving an operation accuracy of  $\pm 2.5$  cm.
- 24-Hour Continuous Operation.

# SPECIFICATION

### SATELLITE SYSTEM

BDS	B1I, B2I, B3I, B1C, B2a, B2b*
GPS	L1, L2, L5
GLONASS	L1, L2, L3
GALILEO	E1, E5a, E5b, E6
QZSS	L1, L2, L5, L6
IRNSS	L5
L-Band	

### WORKING ENVIRONMENT

Environment	Operating Temperature: -40°C ~ +85°C Storage Temperature: -55°C ~ +85°C
Vibration Standards	Complies with national standards GBT-3871, GBT-2423, and GBT-28046 for vehicle vibration standards

### VEHICLE MOUNTED COMPUTER

Display Screen	12-inch, Support 5-point capacitive touch
Dual system	Android 11.0 Linux 5.10, Qt 5.15.7
Brightness	750cd/m2
Resolution	1280*800px
I/O	DC_OUTPUT 12V output *2 IO_INPUT input *2 100Mbps Ethernet *1 RS232*2 RS485*1 CAN*2
Communication	4G WiFi 2.4G/5G BT 4.2, BLE USB 3.0*1
Operating Temperature	-30°C ~ +70°C
Storage Temperature	-40°C ~ +85°C
Protection Level	IP65
Work Humidity	0%-90%RH

Vibration standard (Operational)	MIL-STD-810
Impact standard (Operational)	ISO16750
Power	9-36V DC Input ACC, State detection for ignition

### ECU CONTROLLER

Dimensions(L*W*H)	16cm* 10.8cm*4.5cm
Input Voltage	9-36V
Hydraulic Output Voltage	12V

**Description**

A highly integrated leveling control unit and radio communication unit. The leveling control unit is equipped with an on-board ARM processor and industrial-grade communication chip, ensuring stable performance and robust anti-interference capability. The radio communication unit incorporates mainstream measurement-grade communication modules, compatible with domestic and international standard measurement base stations.

### ACCESSORIES

Tablet	1PCS
ECU	1PCS
Gnss antenna	1PCS
Hydraulic control valve	1PCS
Tablet Holder	1PCS
Power cable	1PCS
Hydraulic valve cable	1PCS
Gnss antenna cable	1PCS

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# TMC10

## Dozer 3D Guidance System



TMC10 Dozer 3D Guidance System pairs high-precision BeiDou GNSS technology with construction machinery. It precisely tracks the blade's position and orientation, aligning with 3D digital plans to guide users via digital readouts or indicators. Utilizing global navigation and embedded technology, the system offers real-time control over dozing tasks, boosting accuracy, efficiency, and safety. It's ideal for road and rail grading, dam construction, riverbed leveling, and land preparation in large-scale projects and agriculture.



Road Grading



Farmland Leveling



Riverbed Leveling



Land Preparation



Nighttime Operations



Construction Operations

## CHARACTERISTIC

### High Precision

The system leverages GNSS positioning and sensor fusion, integrated with modeling algorithms and electro-hydraulic controls, for centimeter-accurate control, enhancing performance.

### 24-Hour Continuous Operation

The system supports 24-hour continuous operation and allows reliable operation at night.

### Real-time Monitoring and Control

The system uses cutting-edge sensors to track the blade's status and the worksite environment continuously. This data feeds into the control system for precise blade management, keeping operations at peak efficiency.

### Stakeless Operation with Increased Efficiency

The system integrates algorithms with 3D plans for digital guidance, removing the need for professional surveyors. It enables quick bulldozer leveling, saving labor costs and boosting efficiency by over 50%.

### Easy Installation and Operation

Featuring straightforward installation and intuitive operation, it's easy for users can quickly become proficient.

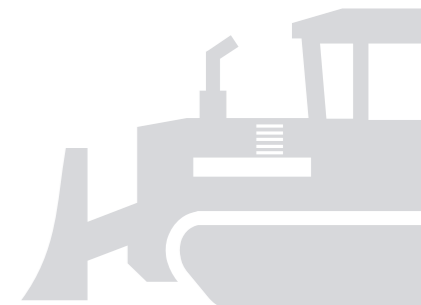
## System composition



Intelligent Display Screen

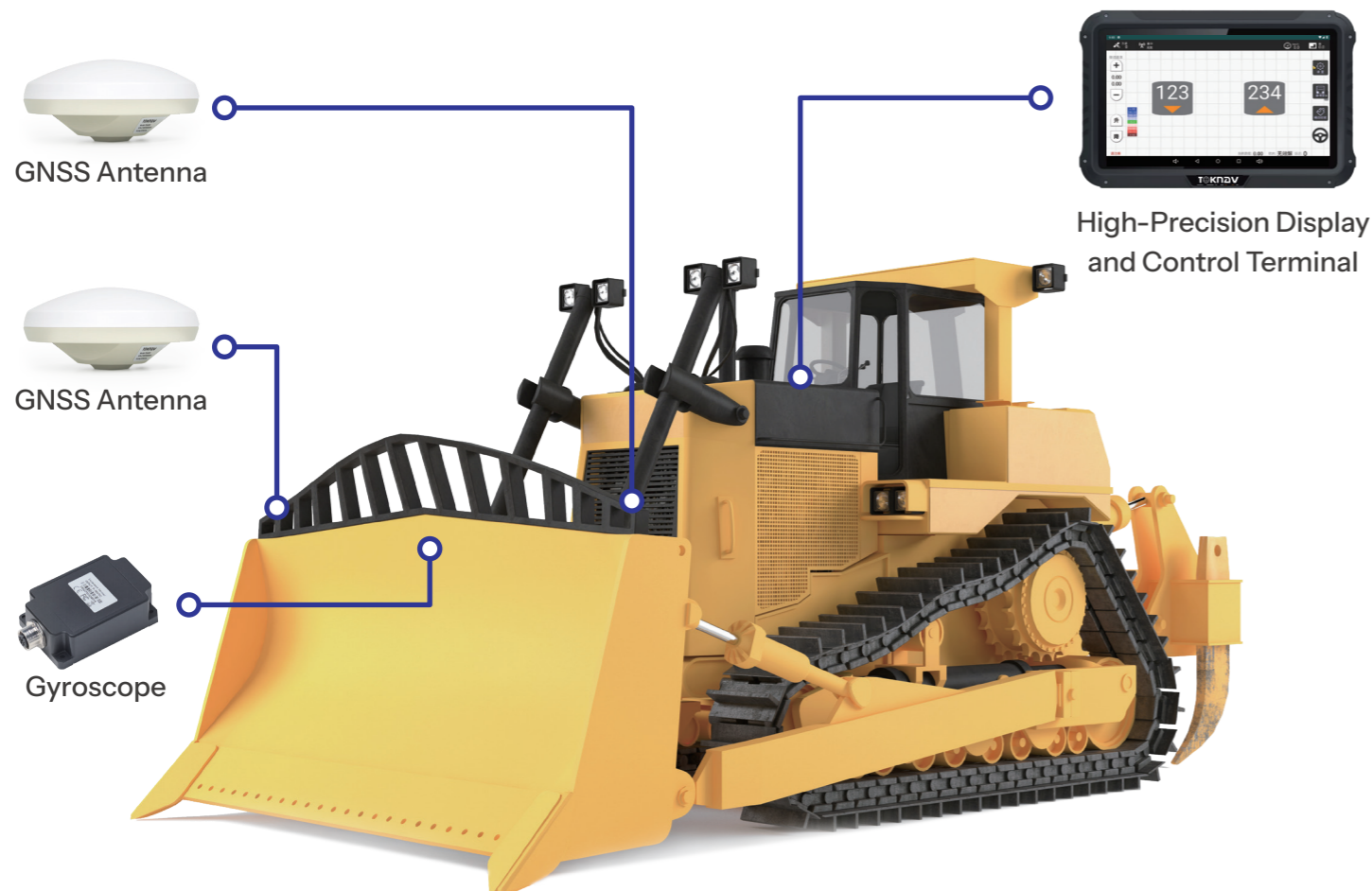


Gyroscope



# TMC10

## Dozer 3D Guidance System



- Manages blade lift with solenoid valves guided by navigation data.
- Achieves 2 cm accuracy in positioning.
- Facilitates the conversion and import of design specifications.

# SPECIFICATION

## SATELLITE SYSTEM

BDS	B1I, B2I, B3I, B1C, B2a, B2b*
GPS	L1, L2, L5
GLONASS	L1, L2, L3
GALILEO	E1, E5a, E5b, E6
QZSS	L1, L2, L5, L6
IRNSS	L5
L-Band	

## WORKING ENVIRONMENT

Environment	Operating Temperature: -40°C ~ +85°C Storage Temperature: -55°C ~ +85°C
Vibration Standards	Complies with national standards GBT-3871, GBT-2423, and GBT-28046 for vehicle vibration standards

## VEHICLE MOUNTED COMPUTER

Display Screen	10.1-inch, Support 5-point capacitive touch
Brightness	750cd/m <sup>2</sup>
Resolution	1024*600px
I/O	RS232*2 RS485*1 CAN*1/2
Communication	4G WiFi 2.4G BT 4.2, BLE USB 2.0*1
Operating Temperature	-30°C ~ +70°C
Storage Temperature	-40°C ~ +85°C
Protection Level	IP65
Work Humidity	Humidity 95%, non-condensing
Vibration standard (Operational)	MIL-STD-810
Impact standard (Operational)	ISO16750
Power	5-36V DC Input ACC, State detection for ignition

## GYROSCOPE

Range	±400°/s
LSB	0.000055(°/s)/(LSB) Condition: ±400°/s

Zero-drift at Rest	±1°/s Condition: Horizontal Placement
Temperature Drift	±5 (°/s)/°C Condition: -40°C~+85°C
10s Smoothing (Zero Bias Stability)	2.03°/h Condition: Horizontal Static Placement
Allan Variance (Zero Bias Instability)	1.80°/h Condition: Horizontal Static Placement

## HEADING ANGLE

Range	Z: ±180°
Heading Accuracy	0.1°
LSB	0.0055° Condition: Horizontal Placement

## MODULE

Communication Interface	4800bps ~ 230400bps Condition: UART Default: 115200bps
Output Content	Angular Velocity, Angle
Output Rate	0.2Hz ~ 500Hz Default: 10Hz
Stratup Time	1000ms (Max Value)
Operating Temperature	-40°C~85°C
Storage Temperature	-40°C~100°C

## ELECTRICAL PARAMETERS

Supply Voltage	3.3V~5.5V Typical: 5V
Operating Current	9.5mA (Typical) Condition: Operating (5V)

## ACCESSORIES

Tablet	1PCS
ECU	1PCS
Gyroscope	1PCS
GNSS Antenna	2PCS
Main Cable	1PCS
Data Cable	1PCS
Tablet Power Cable	1PCS
Antenna harness	2PCS
Mount	1PCS
Screw Accessories Pack	1PCS
Support Rod Kit	1PCS

# TMC20

## Excavator Guidance System



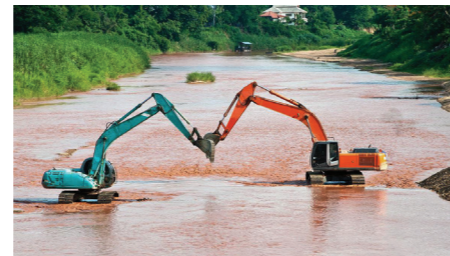
TMC20 is an efficient excavator guidance system. It utilizes BeiDou satellite positioning to provide construction workers with intuitive real-time graphical and numerical information, enabling more precise and efficient construction. This system is suitable for various engineering scenarios, such as underwater riverbed excavation, riverbed dredging, riverbank slope trimming, and high-speed track construction at test sites. It can significantly reduce the number of on-site auxiliary personnel, achieve one-person-one-machine construction, and lower labor costs. It is a powerful tool for improving construction quality and efficiency.



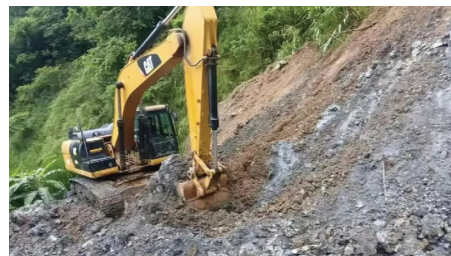
Trench Excavation



Construction Operations



River Channel Excavation



Slope Trimming



Nighttime Operations



Slope Leveling

## CHARACTERISTIC

### High-Precision Intelligent Display Screen

This industrial-grade vehicle-mounted computer is designed for rugged durability. It features an integrated high-precision GNSS module for accurate positioning and orientation. With an IP65 protection rating and superior shock resistance, it's built to withstand tough conditions. The device supports multiple communication methods, including dual-SIM full-network connectivity. Its high-resolution, high-brightness screen ensures clear visibility, making it ideal for a range of demanding work environments.

### Dynamic IMU Sensor

This dynamic IMU sensor offers high precision and consistency in motion sensing, along with an ultra-wide temperature range. It's designed to meet the stringent environmental demands of engineering applications.

### High Precision

TMC20 has a planar accuracy of up to 2cm, and a high accuracy of 3cm for fill and dig volumes. The high-precision guidance system reduces the risk of rework due to under-digging or over-digging. It meets various construction requirements (such as underwater riverbed excavation, riverbed dredging, riverbank slope trimming, high-speed track construction at test sites, etc.), and the construction quality is further enhanced.

### Multi-Scenario Application

Through inertial navigation and tilt sensing technology, combined with centimeter-level high-precision positioning, it obtains the three-dimensional coordinates of the boom, arm, and bucket to achieve precise construction guidance in all-weather and all-scenario conditions, such as ditch digging, slope trimming, riverbed excavation, night, rain, snow, and heavy fog.

## System composition



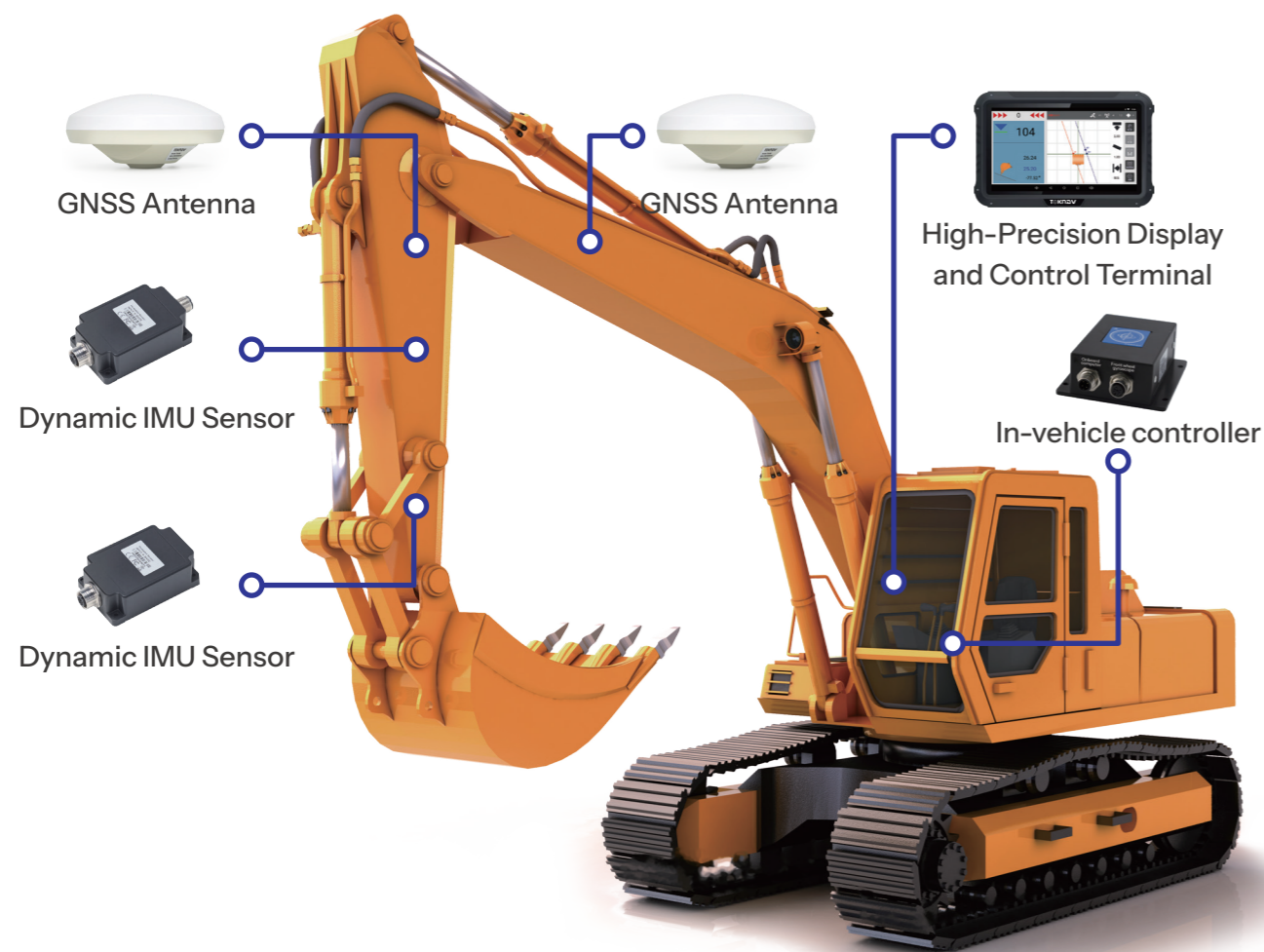
Intelligent Display Screen



Dynamic IMU Sensor

# TMC20

## Excavator Guidance System



- Reduce rework costs due to over-digging and under-digging, save fuel, and reduce costs.
- Construction is possible 24 hours a day, day and night.
- Automatically calculates the area, making the working area clear at a glance.

# SPECIFICATION

### SATELLITE SYSTEM

BDS	B1I, B2I, B3I, B1C, B2a, B2b*
GPS	L1, L2, L5
GLONASS	L1, L2, L3
GALILEO	E1, E5a, E5b, E6
QZSS	L1, L2, L5, L6
IRNSS	L5
L-Band	

### WORKING ENVIRONMENT

Environment	Operating Temperature: -40°C ~ +85°C Storage Temperature: -55°C ~ +85°C
Vibration Standards	Complies with national standards GBT-3871, GBT-2423, and GBT-28046 for vehicle vibration standards

### VEHICLE MOUNTED COMPUTER

Display Screen	10.1-inch, Support 5-point capacitive touch
Brightness	750cd/m <sup>2</sup>
Resolution	1024*600px
I/O	RS232*2 RS485*1 CAN*1/2
Communication	4G WiFi 2.4G BT 4.2, BLE USB 2.0*1
Operating Temperature	-30°C ~ +70°C
Storage Temperature	-40°C ~ +85°C
Protection Level	IP65
Work Humidity	Humidity 95%, non-condensing
Vibration standard (Operational)	MIL-STD-810
Impact standard (Operational)	ISO16750
Power	5-36V DC Input ACC, State detection for ignition

### SENSOR PERFORMANCE

Angle Measurement Range	Pitch Angle: ±80° Roll Angle: ±180°
Angle Repeatability	<0.05°
Angular Velocity Measurement Range	±450°/s
LSB	0.01°
Dynamic Accuracy	0.7°
Acceleration Measurement Range	±6g
Update Rate	100Hz
Voltage Input	9-36 V
Power Consumption	0.1-0.24W
Interfaces	CAN/RS-485/RS-232/TTL
Connector Model	GX12 - 4 Pin (Male)
Product Dimensions	37.65524mm
Waterproof Rating	IP68
Operating Temperature	-40-85°C
Storage Temperature	-40-85°C

### ACCESSORIES

Tablet	1 Unit
Gnss Antenna	2 PCS
Dynamic IMU Sensor	2 PCS
In-vehicle controller	1 PCS
Satellite Antenna Cable	2 PCS
Satellite Antenna Extension	1 PCS
Main Cable	1 PCS
Gyro Cable	1 PCS
Mounting Pack	1 PCS
Tablet bracket	1 PCS
Radio Antenna(Optional)	1 PCS

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