PRECISE

PRECISE A2

Enjoy a PRECISE, RELIABLE, and EASY experience!

Autopilot Steering System with an Exceptional User Experience.

Super-high Fix Rate
99.9%

MATRIX
Enhanced by
the MATRIX ALGORITHM

Think PRECISE!

WWW.PRECISE-GEO.COM
SALES@precise-geo.com
@PRECISE-GEO

99.9%

Super-high Fix Rate

Our product achieves exceptional positioning accuracy.

On average,
only 1 out of every 1,000 positioning attempts,
This precision ensures unparalleled reliability for critical applications.

*Fix rate and accuracy can be affected by external conditions such as multipath, obstacles, satellite geometry, and atmospheric conditions.

Enhenced By

MATRIX

Algorithmic Magic to Enhance
'Precision, Reliability, and Ease',
for an Exceptional User Experience.

Magical Module

AI Data Correction Algorithm Module

Utilizing an XGBoost model, this module employs AI tools to comprehensively train and fine-tune large-scale pre-data sets, generating data correction functions. This process effectively enhances real-time fix verification success rates by at least 18%.

Magical Module

Partial Ambiguity Resolution Algorithm Module

Implementing the lambda algorithm for fix solutions, this module performs up to ten intelligent satellite exclusion operations based on actual signal conditions, further improving fix rates.

Steering Wheel with Electric Motor

Applicable Motor	12/24V DC
Rated Torque	10 N·m
Maximum Torque	16 N·m
Continuous Current	10A
Peak Current	15A
Operating Power Supply	DC +7V ~ 32V
Control Modes	Speed Mode, Position Mode
Encoder Resolution	1024 pulses per revolution

Built-in Display and Control Unit

Processor	ARM Cortex-A7, 1.5 GHz, Quad-core, with 2GB RAM and 16GB internal storage
Protection Level	IP67-rated
Positioning & Communication	Supports radio communication, dual-network 4G data transmission, built-in high-precision positioning and directional BeiDou module
Input/Output	8 DO outputs / 4 AI inputs
Power Supply	9-36V DC, with reverse polarity protection and power failure detection support
Operating Temperature	-40℃ to +70℃
Display	8.1", 1024×600 pixels, 750 cd/m² brightness

Satellite

Frequency Range	
BDS	B1/B2/B3
GPS	L1/L2/L5
GLONASS	L1/L2
Galileo	E1
LNA Gain	40 dB
Waterproof Rating	IP67
Antenna Dimensions	Φ100 × 36.5 mm

BeiDou Antenna

Supported System	
BeiDou	B1/B2/B3
GPS	L1/L2/L5
GLONASS	L1/L2
Galileo	E1/E5a/E5b

Wheel Steering Angle Gyroscope

Power Supply: 9-36V
Six-axis IMU
Supports High Dynamic Performance
Intelligent Full-Temperature Compensation
Designed for Harsh Operating Conditions

Steering Wheel Servo Drive

Applicable Motor	12/24V DC
Rated Torque	10 N·m
Maximum Torque	16 N·m
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Peak Current	15A
Operating Power Supply	DC +7V ~ 32V
Control Modes	Speed Mode, Position Mode

Encoder Resolution
1024 pulses per revolution Monitor

Full-Screen IPS Display, Readable in Bright Light
Industrial-Grade Design
Dust and Waterproof (IP67-rated)
Built-in 5G Network Communication
Operating System: Android 9.0
Supports 10-Point Multi-Touch
Screen Size: 8.1 inches

Navigation ECU (Electronic Control Unit)

Wide Voltage Power Supply	9-36V
High-Performance Processor	
Positioning	High-Precision Dual-Antenna Positioning Module
Positioning Accuracy	Less than 1 cm
Heading Accuracy	Less than 0.1°
High-Precision Gyroscope	Drift Accuracy <0.1°/h
Communication	4G Network, Built-in 433MHz Radio
Outputs	4-Channel DO (One Channel Up to 12A)
Inputs	4-Channel IA (0-24V Input)
Interfaces	4× RS232, 2× CAN

Vehicle System – Tractor

High Precision: Achieves an operational accuracy of up to 2.5 cm.

Easy Installation: The host unit features a high level of integration, a minimal number of components, and simple wiring connections.

User-Friendly Operation: Intuitive interface, logical layout, intelligent control, and one-click selection of differential signals.

Convenient Maintenance: Supports remote authorization, remote assistance, diagnostics, status checks, and fault alerts.

Simplified Management: Intelligent agricultural machinery monitoring platform enables real-time tracking, equipment status monitoring, and task assignments via computer.

High Reliability: Core components feature ultra-high protection levels, are robust and durable, and comply with international agricultural machinery seismic standards, electromagnetic compatibility standards, and wide-range voltage design.

Advanced Navigation & Positioning: Utilizes high-performance Chinese-made chips supporting all satellite constellations and frequencies, integrating positioning, inertial navigation, dual-network communication, and dual-radio reception.

Wide Adaptability: Suitable for tractors, harvesters, plant protection machines, rice transplanters, and various agricultural machinery brands and power levels.

Multiple Operating Modes: Supports multiple working modes, including straight-line, circular, curved, ultra-low-speed, and diagonal harrowing without human intervention.

Full-Process Application: Applicable across the entire agricultural cycle, including plowing, harrowing, seeding, film laying, trenching, transplanting, pesticide spraying, and harvesting.

Vehicle System – Rice Transplanter

High Precision: Achieves an operational accuracy of up to 2.5 cm.

Easy Installation: The host unit features high integration, a minimal number of components, and simple wiring connections.

User-Friendly Operation: Intuitive interface, logical layout, intelligent control, and one-click selection of differential signals.

Convenient Maintenance: Supports remote authorization, updates, remote assistance, diagnostics, and fault alerts.

Autonomous Operation: The vehicle can automatically plan its route.

Lifting Operation: Controls the lifting of the seedling platform.

Software Platform

Intuitive and Efficient Interface: User-friendly human-machine interaction screen for seamless operation.

Multiple Operating Modes: Supports straight-line and curved-path operations to meet various operational requirements.

Tailored for International Users: Features one-click automatic calibration and automatic pass line calculation.

Android-Based System: Easy to learn and operate, reducing post-sales service difficulties.

Clear and Concise Route Visualization: Ensures accurate operation paths with no omissions or overlaps, even in nighttime conditions.

PRECISE

MATRIX

Algorithmic Magic to Enhance ‘Precision, Reliability, and Ease’ for an Exceptional User Experience.

The MATRIX algorithm is driven by a “data-driven” philosophy, integrating mainstream spatial sensing technologies such as GNSS and IMU to build a comprehensive algorithm set and optimization platform with the core advantages of EFFICIENT (optimize iteration efficiency), COMPREHENSIVE (module parameter construction) and PRECISE (final results).

In dynamic mode/ scenario, it meets the continuous precise positioning needs of intelligent driving and drones;

In static mode/ scenario, it fulfills the real-time surveying and mapping, and post-processing monitoring requirements for single-point precise positioning.

The MATRIX algorithm comprises three main modules: the RTK Algorithm Module, the PVT Algorithm Module, and the Integrated Algorithm Module (GNSS+IMU).

PRECISE **EFFICIENT** **COMPREHENSIVE**

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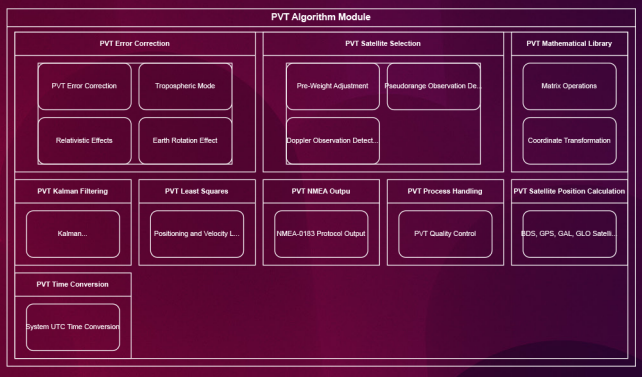
PRECISE | EFFICIENT | COMPREHENSIVE

500+ Algorithm Modules

3,000+ Algorithm Parameters

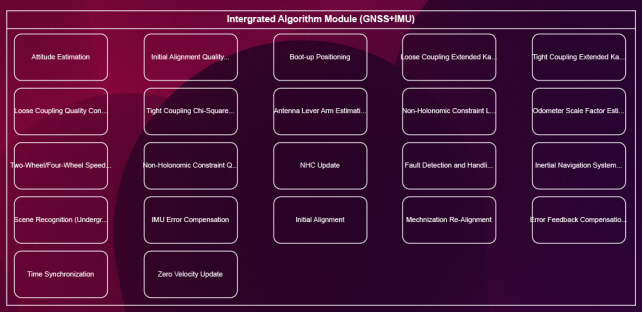
RTK Algorithm Module

The RTK algorithm employs machine learning algorithms to address traditional technical challenges, achieving scene-adaptive recognition, AI satellite selection, and ambiguity validation. It utilizes carrier phase observations from base stations and mobile stations to achieve high-precision position solutions.



PVT Algorithm Module

The PVT algorithm utilizes multi-frequency non-combined updates, combining prior and posterior information to maximize information utilization. It also employs INS multi-directional assistance for GNSS and achieves parameter adaptive optimization in different scenarios, providing strong support and assurance for subsequent RTK algorithms.



Integrated Algorithm Module

The integrated navigation algorithm employs a multi-level fusion positioning architecture, robust filter design, adaptive sensor fusion, and fault diagnosis mechanism to achieve precise estimation of position, velocity, and attitude.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