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

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.

PRECISE A2

Autopilot Steering System with an Exceptional User Experience.

Worry-free signal

Ensure stable, high-precision positioning with enhanced network availability.

Worry-free installation

Single antenna, no wheel angle, equipment Factory pre-installed

Worry-free slopes

Full compensation for tilt and pitch

Worry-free adaptation

Adaptable to a wide range of self-propelled agricultural machinery, including tractors, rice transplanters, and sprayers.

Worry-free speed

Operates seamlessly at speeds between 0.7 and 15 km/h

Worry-free after-sales

Remote assistance and efficient after-sales support; seamless remote upgrades bring new features anytime.

Worry-free path

Supports multiple operating modes including straight line, curve, circle, and return

Worry-free sharing

Historical AB lines can be reused and shared across multiple vehicles to maximize efficiency.

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°C to +70°C
Display	10", 1024×600 pixels, 750 cd/m² brightness

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

SINGLE ANTENNA INTEGRATED

·Equipped with a high-precision RTK positioning module supporting full-constellation and full-frequency systems (BDS/GPS/GLONASS/GALILEO/QZSS), ensuring positioning accuracy even in complex environments.
·Integrated design for easy installation with standard IP67-rated dustproof and waterproof protection.
·Compatible with various high-precision positioning and heading boards, supporting BeiDou-only solutions.
·Wide voltage power supply range of 9V–36V DC with positive/negative polarity reverse protection.
·Built-in high-precision gyroscope for accurate attitude measurement, ensuring precision across all terrains.

BDS	B1I/B2I/B3I
Angular Velocity Range	±500°/s
GPS	L1C/A/L2P(Y)/L2C/ L5
Acceleration Range	±6G
GLONASS	G1/G2
Power Consumption	≤6.0 W
GALILEO	E1/E5A/E5B
Power Supply	9–36V DC
QZSS	L1/L2/L5
Indicators	1 Power LED, 1 Satellite LED, 1 RTK LED
Cold Start Time	<30 s
Protection Rating	IP67 standard
Initialization Time	<5 s (typical)
RTK Initialization Reliability	>99.9%
Built-in Antenna	GNSS*1
Reacquisition Time	<1s
Data Interface	WEIPU aviation connector (3 × RS232)
Single Point Positioning Accuracy	Horizontal: 1.5 m; Vertical: 2.5 m
Dimensions	155 mm × 135 mm × 60 mm
RTK Accuracy	Horizontal: $\pm(8 + 1.0\times10^{-6}\times D)$ mm; Vertical: $\pm(15 + 1.0\times10^{-6}\times D)$ mm
Operating Temperature	-20 °C to +60 °C
Storage Temperature	-55 °C to +85 °C
Time Accuracy (RMS)	20 ns
Baud Rate	9600–115200
Velocity Accuracy	0.03 m/s
Data Update Rate	1–100 Hz (IMU), 1–20 Hz (GNSS)
IMU + GNSS Roll/Pitch Accuracy	0.4°
Differential Data	RTCM 3.X
IMU + GNSS Heading Accuracy	0.5°
Data Format	NMEA-0183, UNICORE

Satellite Receiving Antenna

All-in-one receiver, built-in ground compensation, easy to install dual-card network and radio communication mode, the signal is more secure IP67 level protection, no fear of sand, dust and rain

Motor steering wheel

The steering wheel is 410mm, ergonomic design, more comfortable to control, IP65 grade protection, no fear of sand, dust, rain. High torque, fast response, large angle into the line fast response, small angle adjustment is also sensitive.

All-in-One Display

10-inch touch screen display, easy to operate IP65 level of protection, no fear of sand, dust, rain physical keys, a key to switch on and off built-in Internet module, support for network communications

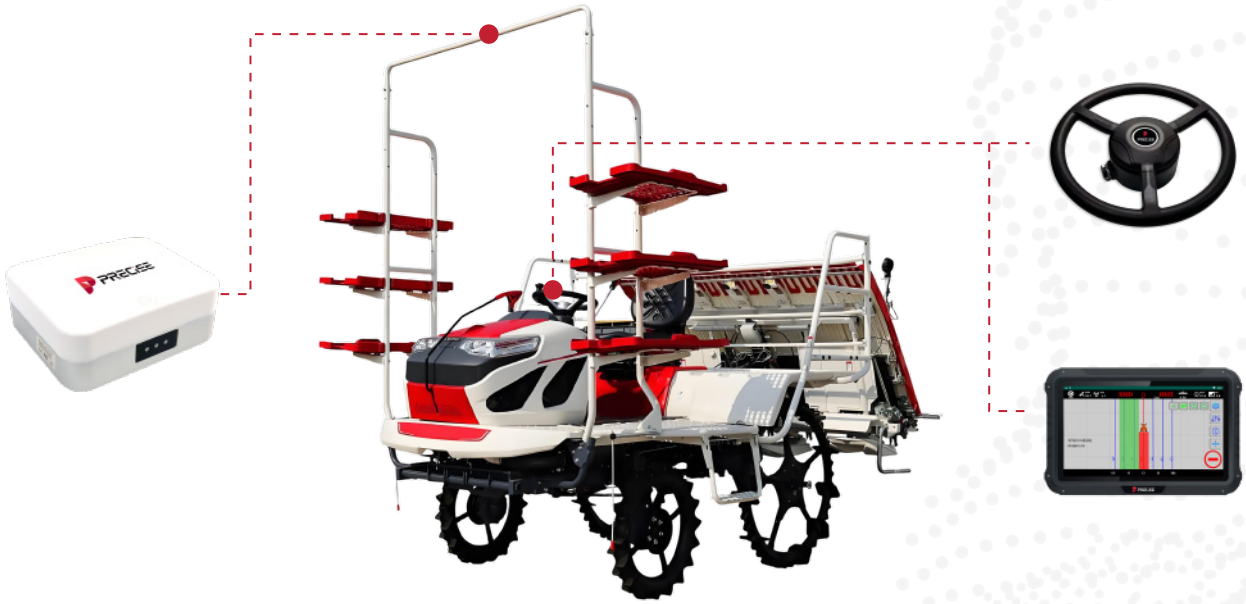
Vehicle System – Rice transplanter

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: Simple. Swift. Smart. Two-tier menus, farmer-friendly design, effortless access to functions.

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.

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

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

99.9%

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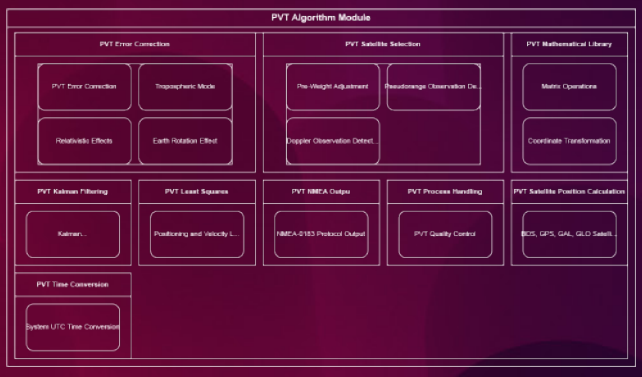
PRECISE | EFFICIENT | COMPREHENSIVE

500+ Algorithm Modules

3,000+ Algorithm Parameters

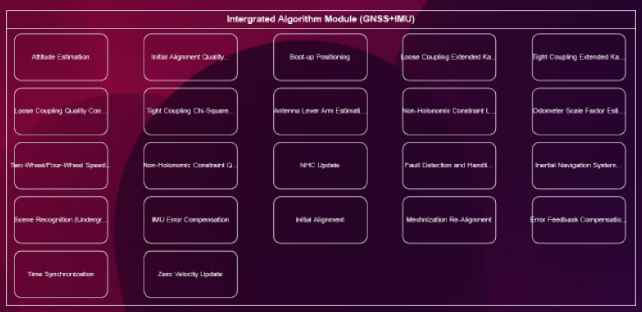
RTK Algorithm Module

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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