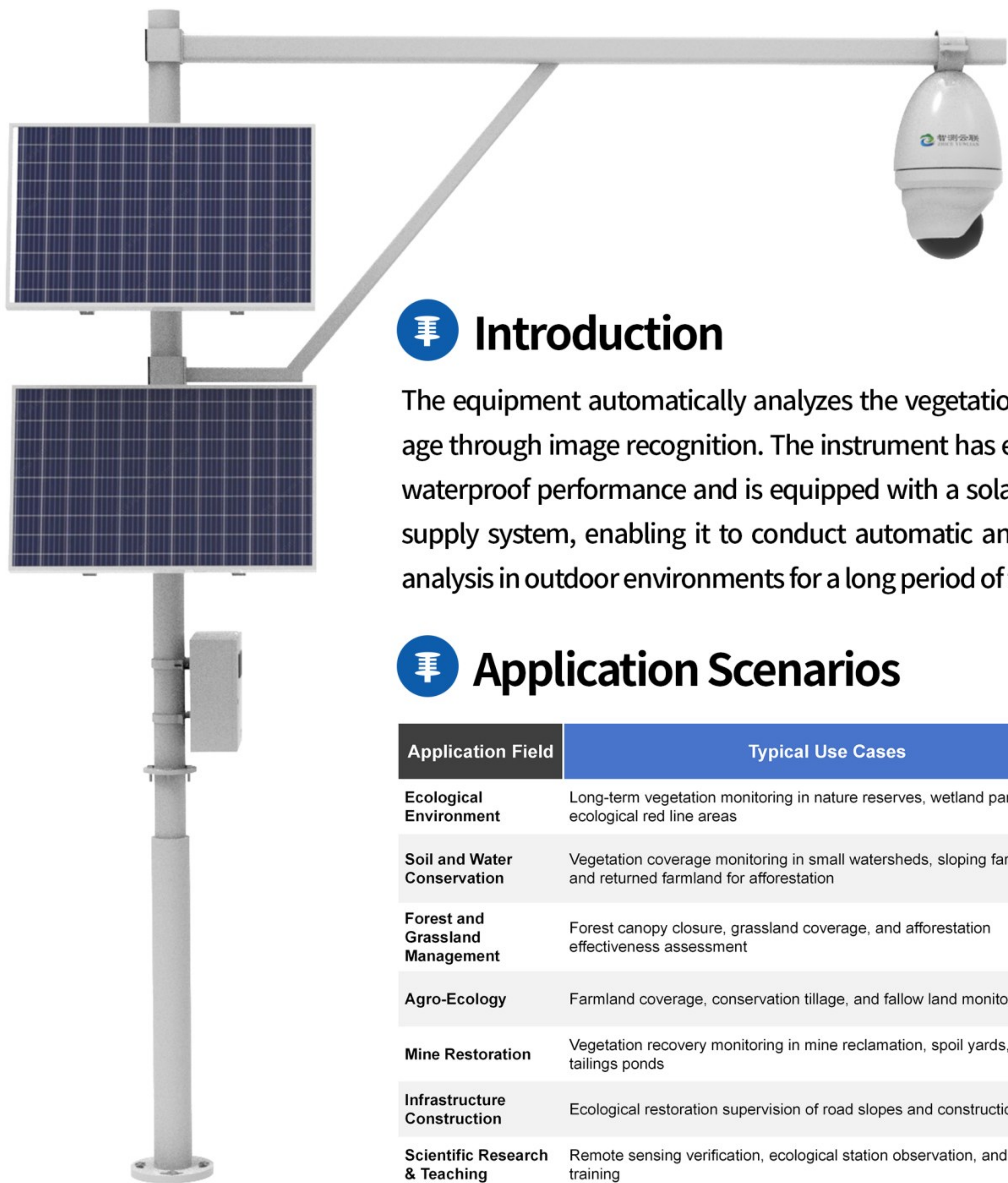




VEGETATION COVERAGE MONITORING STATION



Introduction

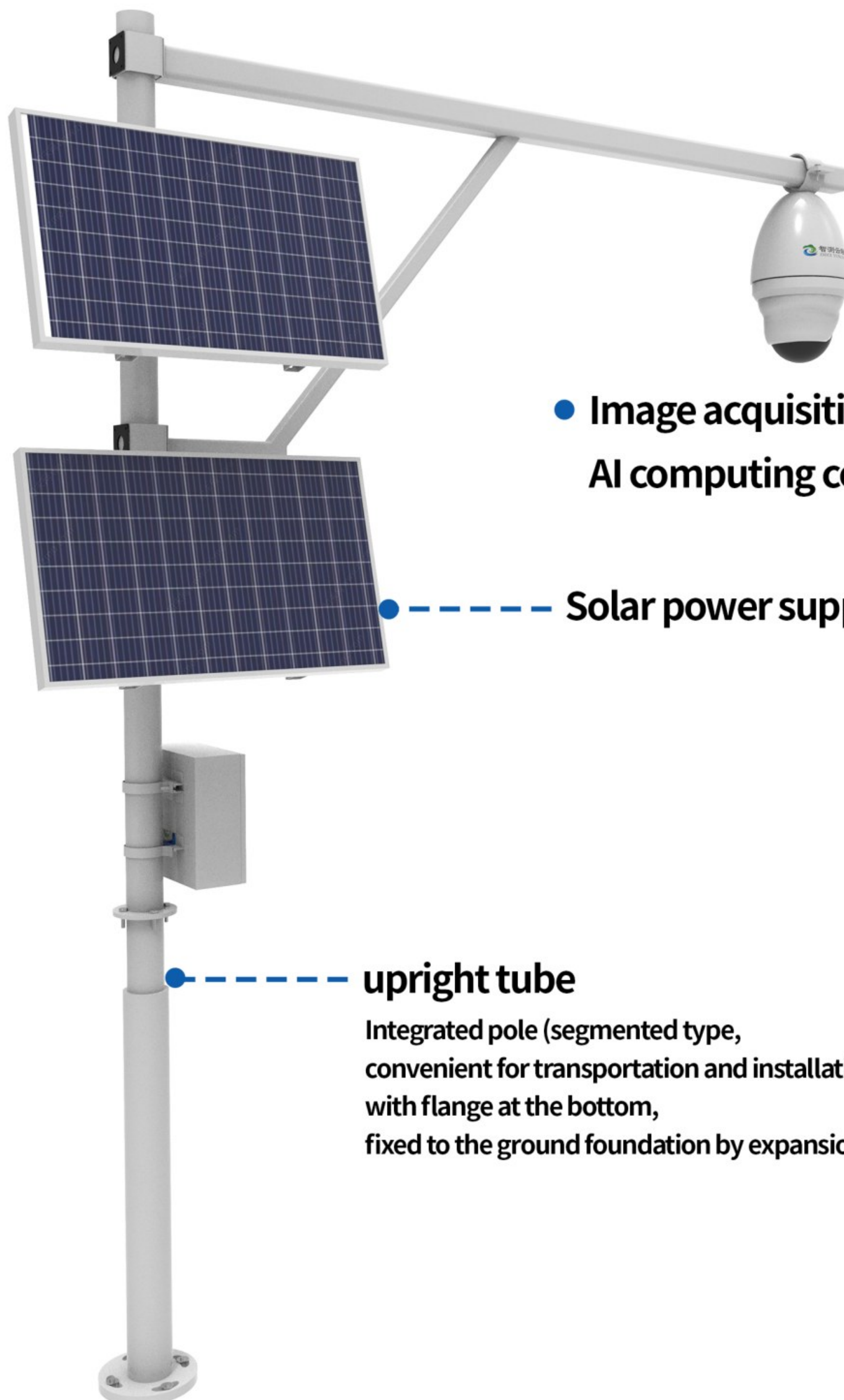
The equipment automatically analyzes the vegetation coverage through image recognition. The instrument has excellent waterproof performance and is equipped with a solar power supply system, enabling it to conduct automatic and timed analysis in outdoor environments for a long period of time.

Application Scenarios

Application Field	Typical Use Cases
Ecological Environment	Long-term vegetation monitoring in nature reserves, wetland parks, and ecological red line areas
Soil and Water Conservation	Vegetation coverage monitoring in small watersheds, sloping farmlands, and returned farmland for afforestation
Forest and Grassland Management	Forest canopy closure, grassland coverage, and afforestation effectiveness assessment
Agro-Ecology	Farmland coverage, conservation tillage, and fallow land monitoring
Mine Restoration	Vegetation recovery monitoring in mine reclamation, spoil yards, and tailings ponds
Infrastructure Construction	Ecological restoration supervision of road slopes and construction sites
Scientific Research & Teaching	Remote sensing verification, ecological station observation, and teaching training



Structure



- Image acquisition unit :
AI computing component

● ----- Solar power supply system

● ----- **upright tube**
Integrated pole (segmented type,
convenient for transportation and installation),
with flange at the bottom,
fixed to the ground foundation by expansion bolts.



Specifications

No.	Item	Detailed Specifications
1	Software Functions	Provides rich image segmentation modes, built-in vegetation and soil feature models, supporting vegetation coverage and canopy closure measurement and calculation for a wide range of regions
2	Measurement Performance	Measurement Range: 0-100%, Resolution: 0.01%; Supports HSV space segmentation, RGB image segmentation, multi-color selection segmentation, and soil-vegetation model segmentation
3	Camera Equipment	8-megapixel resolution, supports automatic optical focus, automatic exposure, 25x electric optical zoom, 2mm-125mm wide field of view; Lens supports 360° horizontal rotation and -15°~90° vertical rotation
4	Analysis Host	10-inch color touch display, supports automatic and manual threshold adjustment; Automatically distinguishes vegetation and non-vegetation areas; Supports lens direction adjustment and focus setting; Supports historical data viewing, export, and Chinese-English language switching
5	Automated Collection & Transmission	Can achieve automatic collection during the day and automatic suspension at night based on GPS positioning coordinates; Users can customize collection and transmission intervals, with a minimum of 30 minutes and a maximum of 72 hours
6	Data Storage & Transmission	20GB large-capacity local storage space; Data and images support USB export, 4G wireless transmission, and automatic upload to the cloud agricultural data center; Supports dedicated account access and data download in table format
7	Power Supply System	Standard solar power supply system, ensuring normal operation in continuous rainy weather; Also supports 220V AC power supply
8	Mounting Bracket	Standard fixed bracket (3m vertical pole + 2.5m crossbar), easy to install, bracket length customizable
9	Working Environment	Operating Temperature: -40°C~55°C; Operating Humidity: 0%~100% RH





Analysis by AI

1. Multi-Color & Single-Color Analysis

Supports simultaneous analysis of multiple colors or a single color. All captured images and output files are embedded with GPS location information.

2. Scheduled Data Capture

Supports timed image capture to automatically calculate vegetation coverage or canopy closure over time.

3. Image Generation & Format Support

Can generate black-and-white binary images and color contrast maps.

Supports popular image formats: PNG, JPEG, and BMP.

4. Data Storage & Export

Automatically saves all analysis results, including tolerance values, color values, coordinates (latitude/longitude), original images, binary maps, and analysis methods.

Easily exportable to a USB drive:

- Analysis image folders
- Binary images
- Excel spreadsheets containing analysis results

This ensures convenient data preservation and transfer.

5. Data Import & Re-analysis

Supports data import via a USB drive. Select a data source to 重现 (reproduce) previous analyses or conduct further research.

6. Custom Data Viewing

Features customizable data visualization (line graphs, trend curves).

Easily view key metrics: average value, maximum value, minimum value, number of measurements, and individual results.

7. Multiple Analysis Modes

Comprehensive analysis capabilities including:

- Automatic Analysis
- Manual RGB Threshold Segmentation
- Manual HSV Threshold Segmentation
- Color Picker Analysis
- Vegetation-Soil Model Analysis

8. Cloud Upload

After binding the device ID, analyzed data can be automatically saved to the cloud platform.

Supports real-time, on-demand viewing of images and data anytime, anywhere.





Introduction to the upper computer software

Function Category	Specific Description
Core Functions	Realize integrated management of data reception, storage, viewing and analysis in the PC standalone environment
Data Reception and Processing	1. Support data reception via serial port, as well as data processing and visual display 2. Compatible with communication methods such as JSON string and MODBUS485
Parameter Configuration	1. Allow independent setting of data storage time 2. Support custom collection time in MODBUS485 collection mode
Monitoring Parameter Management	Support users to independently add, delete and modify monitoring parameters, including information such as parameter protocols, names and icons
Data Processing Expansion	1. Equipped with data post-processing function 2. Support external running of JAVASCRIPT scripts



Introduction to Cloud Platform

Function Category	Specific Description
Architecture & Access Method	Adopts a CS architecture software platform, supporting direct access and observation via mobile phones and PC browsers without additional software installation
Account & Device Management	Supports multi-account and multi-device login, meeting the collaborative management needs of multiple users and terminals
Data Display Function	1. Provides dashboards for real-time data display and historical data display 2. Supports data curve analysis 3. Supports map display and device information viewing
Data Storage & Stability	Implements cloud data storage based on cloud servers, featuring stability, reliability, easy scalability and load balancing
Alarm & Threshold Management	Supports SMS alarm function, allowing custom alarm threshold settings to respond to abnormal data in a timely manner
Data Processing & Output	1. Supports data export in table format 2. Has data post-processing function 3. Supports external running of JAVASCRIPT scripts to enhance customization capabilities
Data Forwarding Function	Supports data forwarding via multiple protocols, including HJ-212 protocol, TCP forwarding, HTTP protocol, etc.

