



FULL-SKY CLOUD MEASURING INSTRUMENT

Introduction

The full-sky cloud measuring instrument developed by Zhice Yunlian captures full-sky visible light and infrared (8~14 μ m) images through sky imaging. It automatically and continuously observes and records data around the clock. By adopting cloud detection algorithms, it converts images into full-sky cloud fraction, cloud shape and cloud base height data.

Features

- Integrated design for long-term unattended operation
- Real-time measurement of total full-sky cloud amount, output of sky condition and cloud distribution images
- Real-time measurement of full-sky cloud base height, output of cloud base altitude distribution images
- Real-time infrared radiation calibration function
- Measurement of environmental parameters: temperature, humidity and air pressure

Precautions

- The equipment shall be installed at open, unobstructed sites to avoid interference with imaging and observation accuracy.
- Regularly clean the lens and sensors to prevent adhesion of dust, stains and water vapor and guarantee accurate data. Cut off power supply and use special cleaning tools during maintenance.
- Connect to a stable power supply to avoid damage to electrical components caused by voltage fluctuation. Cut off power for long-term shutdown and store the device in a location meeting storage environmental requirements.
- Periodically inspect communication port connections to ensure smooth data transmission, troubleshoot communication faults in a timely manner and prevent data loss.





Structure



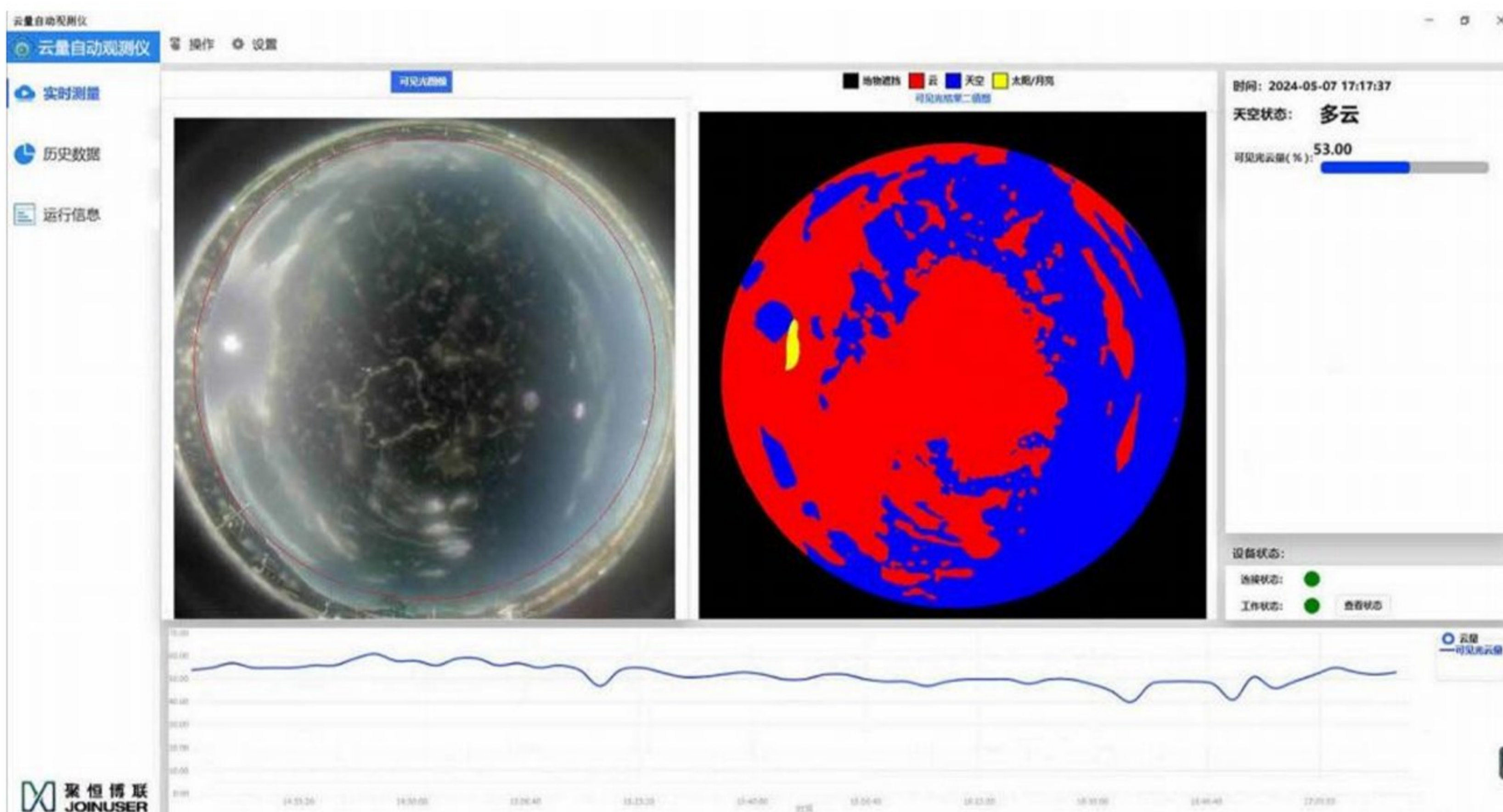
Specifications & Parameters

Category	Parameter Item	Specification Description
Measurement Performance	Output Data	Sky condition, cloud amount, cloud base height, cloud shape, cloud spatial distribution
	Cloud Amount Range	0–10 okta / 0–100%, configurable
	Cloud Amount Resolution	0.1 okta / 1%
	Allowable Cloud Amount Error	±1 okta / ±10%
	Cloud Base Height Range	100–10000m
	Cloud Base Height Resolution	10m
	Cloud Base Height Error	±500m (≤3000m); ±20% (>3000m)
	Recognizable Cloud Types	Clear sky, broken clouds, stratus, cumulus, cirrus and other complex sky conditions
	Cloud Shape Recognition Accuracy	No less than 70% of manual observation results
	Cloud Distribution Coverage	8 azimuths + zenith
	Cloud Distribution Resolution	0.5 azimuth
	Allowable Cloud Distribution Error	±0.5 azimuth
	Imaging Field of View	Visible light (H×V): 180°×180°Infrared (H×V): 155°×122°
	Data Output Interval	Adjustable 5–10 min (standard data terminal); adjustable 1–10 min (high-end data terminal)
Electrical Performance	Power Supply	AC 220V±15%, 50±2.5Hz
	Power Consumption	≤100W (main unit); ≤600W (data processing terminal)
	Communication Interface	10M/100M/1000M adaptive Ethernet port
Environmental Adaptability	Operating Environment	Temp: -45~55°C; Humidity: 0–100%RH
	Storage Environment	Temp: -50~60°C; Humidity: 0–100%RH
	Protection Grade	IP66 / IP67 optional





Software Interface



■ Real-time Monitoring Interface

Left panel: Real sky scene imaging to restore current cloud conditions.

Middle panel: Visual distribution map of cloud amount and cloud shape (red/blue/yellow areas distinguish different cloud zones).

Right panel: Displays core data such as sky condition and visibility, as well as real-time equipment operating status.

The trend curve at the bottom presents the variation of cloud amount, supporting real-time monitoring and historical data traceback. The operation bar allows quick switching of observation modes, meeting efficient data viewing and analysis demands for meteorological observation scenarios.

