

AGRICULTURAL MONITORING / DATA SHEET

SS1000U-06

Accumulated Temperature & Light Weather Station

A field-ready weather station for accumulated temperature and light monitoring, with multi-parameter sensing, 4G or Ethernet upload, RS485 integration and optional solar or LED display modules.

Overview

- Collects air, wind, pressure, radiation and soil heat-flux data through one RS485 sensor bus.
- Calculates accumulated temperature, daily light integral and reference ET₀ from the measured data.
- Uploads measurements to a remote platform and exposes the data through a Modbus-RTU slave interface.
- Supports mains power, solar power or uninterrupted dual-source operation for unattended field use.



Upload 4G / Ethernet	Sensor Bus RS485 Master	System Output RS485 Slave	Display Optional LED
Key Functions • Configurable 20-65535 s upload interval; 300 s default. • Accumulated temperature and light calculations for crop growth stages. • Optional outdoor monochrome LED display, default 96 × 48 dots. • Unique 8-digit device address for multi-station management.		Applications • Open-field crop and horticultural monitoring. • Greenhouses, nurseries and research farms. • Irrigation, crop-stage and agronomic decision support. • Remote environmental monitoring with local display.	

SYSTEM DATA

Technical Specifications

Item	Specification
System Power Options	220 V AC external power, matched solar supply, or dual supply
Dual-Supply Operation	Mains power has priority; solar supply maintains operation after a mains outage
Host DC Input	DC 10-30 V via terminal or 5 mm DC socket
Wireless Upload	4G cellular communication; Ethernet upload available as an alternative
Upload Interval	20-65535 s configurable; 300 s default
Sensor Communication	1 × RS485 master; communication distance ≥1500 m
System Integration	1 × RS485 slave for a PLC, supervisory host, HMI or monitoring software
LED Display Interface	Optional 96 × 48 monochrome dot-matrix display; larger custom sizes supported
Relay Output	1 dry-contact relay standard; second relay optional
Relay Capacity	250 V AC / 30 V DC, 5 A
Device Address	Unique 8-digit station address

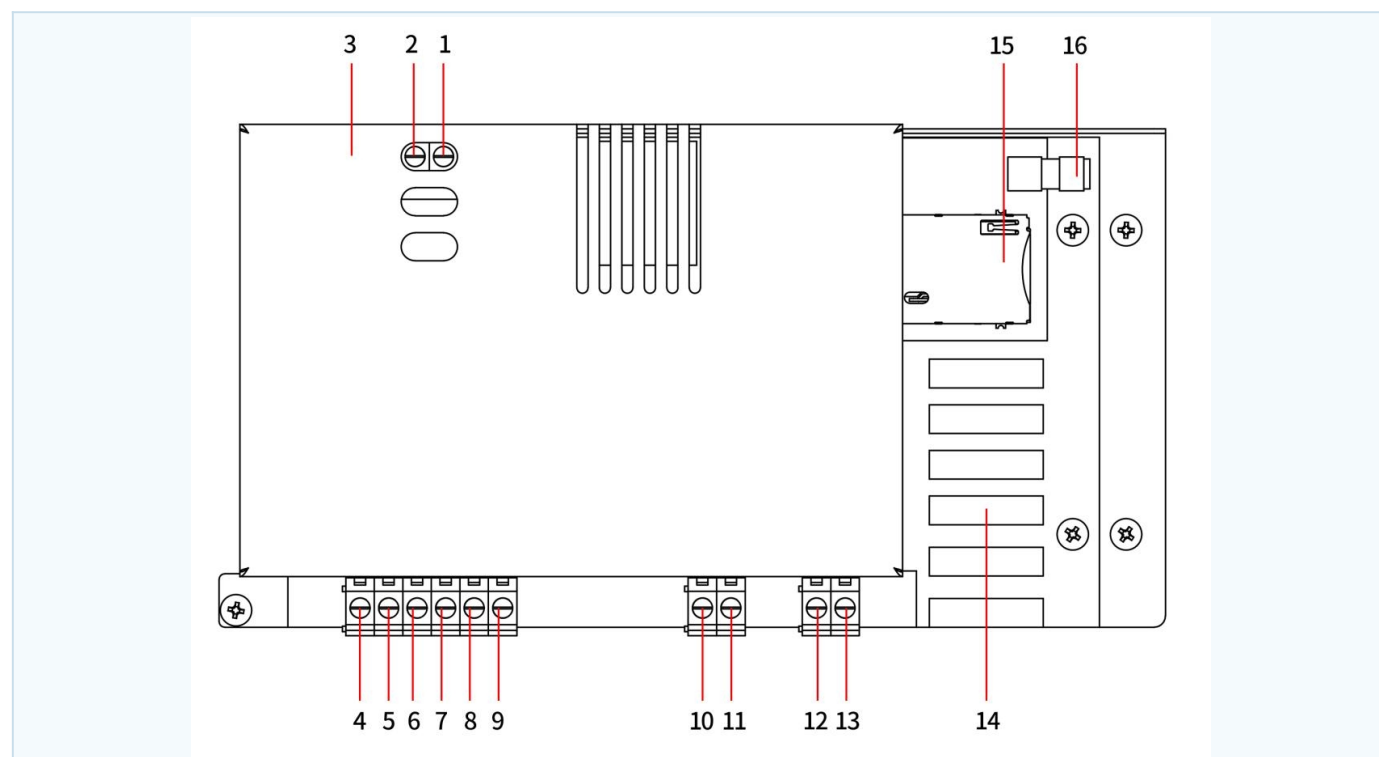
MONITORING PARAMETERS

Supported Measurement Channels

Parameter	Range	Data Factor	Unit
Air Temperature	-40 to +120 °C	0.1	°C
Air Humidity	0-99% RH	0.1	% RH
Atmospheric Pressure	0-120 kPa / 0-1200 hPa	0.1	kPa / hPa
Wind Speed	0-70 m/s	0.1	m/s
Wind Direction	0-7 compass sectors	1	sector
Wind Force	0-12 levels	1	level
Global Solar Radiation	0-1800 W/m ²	1	W/m ²
PAR	0-2500 μ mol/m ² ·s	1	μ mol/m ² ·s
Sunshine Duration	0-24 h daily accumulation	0.1	h
Daily Global Radiation	0-172 MJ/m ² daily accumulation	1	MJ/m ²
Soil Heat Flux	-2000 to 2000 W/m ²	1	W/m ²

HARDWARE

Device Interfaces



No.	Interface	Function
1-2	GND / VCC	Host DC 10-30 V power terminals
3	DC power socket	DC 10-30 V input through 5 mm socket
4-5	VCC / GND	Power connection for the downstream RS485 bus
6-7	RS485 master A / B	Connection for external meteorological sensors
8-9	Pulse input	Optional pulse-rain-gauge acquisition
10-11	Relay 1	Dry-contact output, 250 V AC / 30 V DC, 5 A
12-13	RS485 slave A / B	Connection to a PLC, host computer or monitoring system
14	LED ribbon connector	Connection for the optional monochrome display
15	SIM card slot	Cellular data card interface
16	4G antenna socket	Connection for the supplied cellular antenna

INSTALLATION

Field Installation



Collects meteorological elements such as wind speed and direction

Rainfall sensor
Accurately monitors precipitation in real time and has strong environmental adaptability.

Data acquisition and transmission unit
Collects and processes various sensor data, stores it locally, and transmits it to the cloud platform via 4G.

Pole structure
Made of galvanized steel with strong corrosion resistance, suitable for outdoor long-term use.

Base mounting plate
Fixed with expansion bolts, firm and stable, not easy to deform.

Solar power panel
35W high-efficiency solar panel with a conversion efficiency of over 20.4%, capable of continuous operation in low-light conditions.

Waterproof enclosure
Made of high-strength engineering plastic, it has excellent sealing performance, providing waterproof, dustproof, and UV-resistant protection for the internal equipment, ensuring long-term stable operation in harsh environments.

Installation Notes

- Mount the sensor cross-arm securely; align the wind-direction arrow with north.
- Place the solar panel toward the sun without shading; keep the lower edge clear of obstructions.
- Route sensor cables inside the pole or enclosure and use waterproof connectors.
- Install the control enclosure with the supplied pole clamps and M10 hardware.
- Keep the 4G antenna outside the metal enclosure to reduce signal shielding.

Typical solar-powered installation

COMMUNICATION

Modbus RTU Slave Interface

Serial Settings

- Data format: 8 data bits, no parity, 1 stop bit.
- Baud rate: 1200-115200 bit/s; 9600 bit/s default.
- Device address: 0x01 by default.
- Error check: 16-bit CRC.

Protocol

- Protocol: Modbus RTU; function codes 0x03 and 0x04.
- 16-bit values are transmitted high byte first.
- Measurements are queried through the upstream RS485 slave port.
- A unique 8-digit address supports multi-station polling.

Register	Measurement	Factor	Unit	Range
500	Wind speed	0.1	m/s	0-70
501	Wind force	1	level	0-12
502	Wind direction	1	sector	0-7
518	Sunshine duration	0.1	h/day	0-24
520	Air humidity	0.1	% RH	0-99
521	Air temperature	0.1	°C	-40 to 120
524	Atmospheric pressure	0.1	kPa / hPa	0-120 / 0-1200
529	Global radiation	1	W/m ²	0-1800
530	PAR	1	μ mol/m ² ·s	0-2500
557	Soil tension	0.1	kPa	sensor-dependent
558	Daily global radiation	1	MJ/m ²	0-172
561	Soil heat flux	1	W/m ²	-2000 to 2000

CONFIGURATION

Product Options and Data Services

Option	Description
Measurement Set	Accumulated temperature/light station; optional ETO calculation

Option	Description
Power	220 V AC, solar supply, or dual mains + solar operation
Upload	4G cellular or RJ45 Ethernet upload; choose one communication path
Local Display	Optional outdoor monochrome LED, default 96 × 48 dots
Integration	RS485 slave Modbus-RTU, relay output and optional HMI integration

Platform functions include real-time weather and radiation monitoring, accumulated-temperature and light records, historical curves, reports, alarm records and multi-station management.

DATA CHANNELS

Upload Node Reference

Node	Uploaded Data	Format
1	Air temperature and humidity	Temperature ×0.1 °C; humidity ×0.1% RH
2	Photosynthetically active radiation	×1 $\mu\text{mol}/\text{m}^2\cdot\text{s}$
3	Atmospheric pressure	×0.1 kPa
4	Wind speed	×0.1 m/s
5	Wind direction	×1 sector
6	Global solar radiation	×1 W/m^2
7	Sunshine duration	×0.1 h
8	Daily accumulated global radiation	×1 MJ/m^2
9	Soil heat flux	×1 W/m^2

CONTACT / SUPPORT

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