

# MERTANI-AAWS

Automatic Agroclimate Weather Station



## Regulasi :

- **Standard Operational Procedures (SOP)**  
**Nomor: SOP/26/KPNK/I/2019**

GET YOUR BETTER SOLUTION

# MERTANI-AAWS

## PEMANTAUAN CUACA

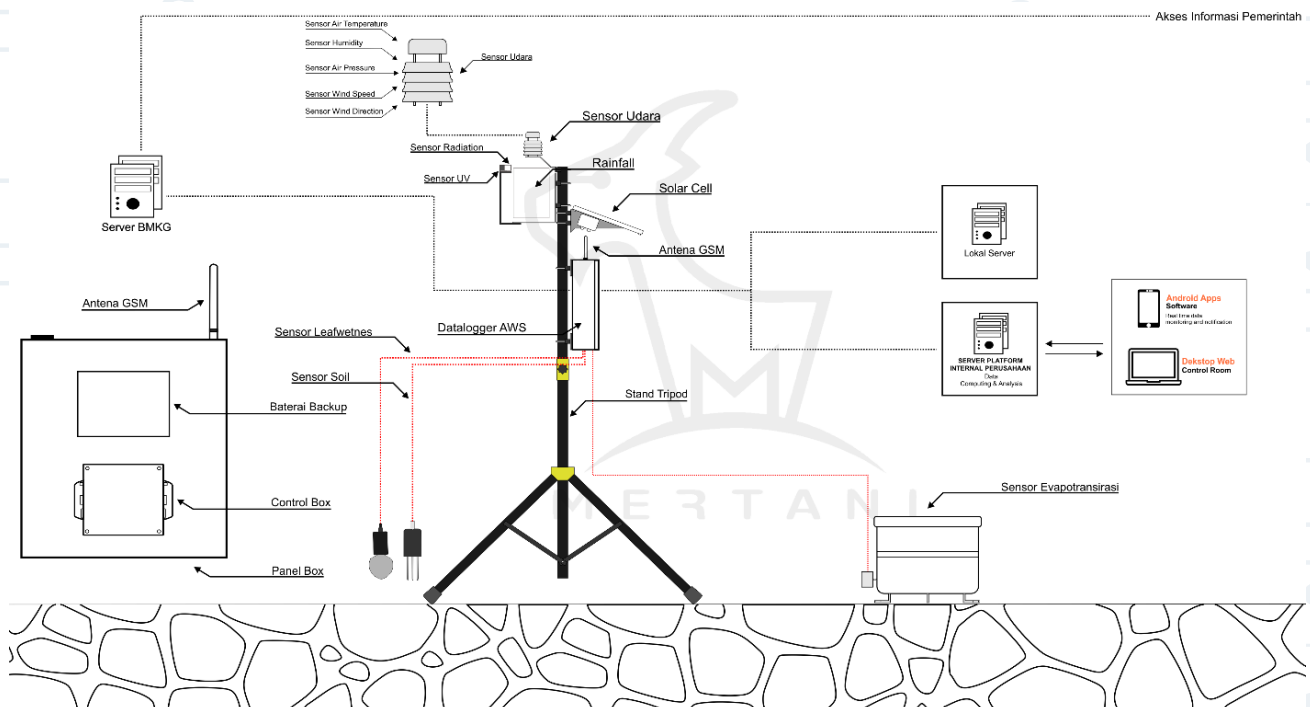
Merupakan alat untuk melakukan pemantauan terhadap cuaca secara online (dalam jaringan), realtime (terus-menerus), dan akurat. Garansi selama 1 tahun dan jaminan ketersediaan suku cadang selama 5 tahun.

AAWS terdiri dari Mertani Data Logger yang sudah berbasis Internet of Things (IoT) dan dapat terhubung dengan berbagai jenis sensor sekaligus. Kelengkapan sensor dari AAWS adalah sebagai berikut:

- Rainfall sensor ABS yang memiliki resolusi 0,2 mm,
- 5 in 1 climate sensor (air temperature, air humidity, air pressure, wind speed, wind direction)
- Solar radiation sensor,
- UV Index sensor
- Soil temperature & soil moisture
- Leaf wetness
- Evaporasi

Data akan terkirim secara otomatis ke sever BMKG untuk kemudian dilakukan pemantauan. Selain itu, data juga dikirim ke Dashboard PC and Android yang dapat digunakan untuk menampilkan data, melakukan analisis sederhana seperti mencari nilai maksimum, nilai minimum, mengurutkan berdasarkan waktu tertentu, menampilkan grafik visual, dan melakukan pengunduhan data.

### Skematik



### Penerapan

- Dapat diandalkan untuk melakukan pemantauan cuaca secara online dan terus-menerus, dimanapun, dan kapanpun
- Pemantauan cuaca sudah meliputi pengambilan data, pembacaan data, pengiriman data ke server secara otomatis, penampil data, dan fitur pengunduhan data

# SPESIFIKASI

## Data Logger

### Data Logger

- Ultra-Low Power MCU based on Cortex M4+
- Input digital sensor RS485 (Modbus), I2C, RS232, Serial TTL, one wire. Under development: SDI12
- Main material ABS
- Operates from 2.7 V up to 5.5V
- Operational temperature 0°C to +85°C
- Weight 2 kg
- Internal memory 16 MB
- Extended industrial memory up to 256 MB
- Weather-resistant

### Connectivity

- GSM (2G, 3G, and 4G)
- WiFi and Bluetooth Low Energy (BLE)
- LoRa 920-923 MHz
- GPS/ GLONASS/ GALILEO



### Power

- Internal battery up to 49.500 mAh
- Solar panel 20-50 WP
- External power supply DC 4.1 V

### Monitoring

- Realtime monitoring
- Data transmission interval (5 minutes, 10 minutes, 15 minutes, 30 minutes, 1 hour, 2 hours, and so on)

### Numbers of Sensor Port

- 3 sensors (default)
- 10 sensors (extended)

### LCD Touchscreen

- On site monitoring
- Interval and calibration setting
- Graphic or text display

## Rainfall Sensor ABS

### Rainfall ABS 0,2 mm

- Material ABS UV Stabilished plastic bucket
- Collecting  $\Phi 200+0.6\text{mm}$ , Resolution 0,2mm
- Measuring range Rain intensity: 0~4mm/min;
- Maximum tolerance  $\pm 0.4\text{mm}(\leq 10\text{mm})$  ; Accuracy  $\leq \pm 4\%$
- Operating temperature  $-10^{\circ}\text{C}\sim 50^{\circ}\text{C}$
- Output mode RS485,
- Include bull eye/ waterpass
- Dimensions Rain sensor: 310x310x460(mm)



# SPESIFIKASI

## 5 in 1 Weather Sensor

- Type sensor: ultrasonic, IP rating IP65, main material ABS+ aluminum alloy
- Air temperature: range measurement -40-+100°C, resolution 0.1°C, accuracy  $\pm 0.5^\circ\text{C}$
- Air humidity: range measurement 0-100%RH, resolution 0.1%RH, accuracy  $\pm 3\%$
- Air pressure: range measurement 10-1100hPa, resolution 0.1hpa, accuracy  $\pm 1.5\text{hPa}$
- Wind speed: range measurement 0-40m/s, resolution 0.01m/s, accuracy  $\pm 0.5+2\%\text{FS}$
- Wind direction: range measurement 0-359°, resolution 1°, accuracy  $\pm 3^\circ$
- Power supply 12VDC, Output RS485, Communication Protocol Modbus-rtu
- Operating temperature -40-+80°C



## UV INDEX / SOLAR RADIATION SENSOR



### Solar Radiation Sensor

- Type sensor: Pyranometer, Water proof to IP66 75\*55\*58mm
- Range:0-2000W/m2, Accuracy 5%, Resolution:1W/m2 Spectral range 400-1100nm
- Power supply 12-24VDC, Output interface with RS485, Communication
- Protocol Modbus Operating temperature -40-+80°C

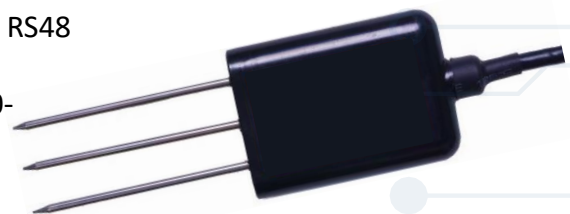
### UV Index Sensor

- Type sensor: UV intensity Highly sensitive to 290-390 nm. Precision  $\pm 10\% \text{FS}(60\% \text{RH}, 25^\circ\text{C})$
- Ultraviolet intensity range 0~15 mW/ cm2, Resolution 0.01 mW/ cm2, UV index range 0-15
- Linearity  $\pm 1\%$ , Annual stability  $\pm 3\%$ , Reaction time 0.2s
- Output signal 485 (Modbus-RTU protocol), DC power supply 10-30VDC

## Soil Sensor

### Soil Moisture and Temperature Sensor

- Soil Moisture Measurement , Water proof to IP68, RS48 Modbus-RTU, 10-30VDC .
- Range:0-50%,0-100% , Resolution:0-50%:0.03%,50-100%:1% , Accuracy:0-50%:2%,50-100%:3%
- Soil Temperature Measurement
- Range: -40~80, Resolution:0.1, Accuracy: $\pm 0.5$



# SPESIFIKASI

## Leaf Wetness Sensor

- Wetness Range : 0-100%,precision:±5%
- TEMP Range range : -40~80°C,resolution:0.1°C, precision : ±0.5°C
- Protection grade : IP65
- Operating environment : -40~85°C
- Default cable length : 2 meters, the cable length can be customized according to requirements
- Outline dimension : 65\*13\*145mm
- Signal output type: Voltage output 0-2V(output impedance 0 ohm),Current output 4-20mA(load resistance <500ohm),RS485 interfaceModbus Protocol



# SPESIFIKASI

## Solar Panel

- Solar panel 20 WP~50WP/ Maximum Power (Pmax) 20W, Current at Pmax (Imp) 1.11 A/sheet
- Type Cell Poly-crystalline/Mono-crystalline, Voltage at Pmax (Vmp) 18 V/sheet
- Short circuit current (Isc 1.24 A/sheet, Opencircuit voltage (Voc) 21.24 V/sheet, Solar cell mounting bracket included
- MPPT 600-kHz NMOS-NMOS Synchronous Buck Li-ion Chemistries 4.1V with Thermal Shutdown



## Battery

- Up to 50.000 mAh

## Data Collection Method

