# MERTANI-Automatic Water Logger

## Sistem Pemantauan Kualitas Lahan Gambut



# Regulasi :

- **Peraturan Badan Nasional Penanggulangan Bencana Republik Nomor 04 Tahun 2018**
- **Keputusan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor SK.246/Menlhk/Setjen/KUM.1/6/2020**
- **Peraturan Pemerintah Nomor 71 tahun 2014**
- **Peraturan Direktur Jenderal Pengendalian Pencemaran dan Kerusakan Lingkungan Nomor: P.3/PPKL/PKG/PKL. 0/4/2019**

## GET YOUR BETTER SOLUTION

# MERTANI-Automatic Water Logger
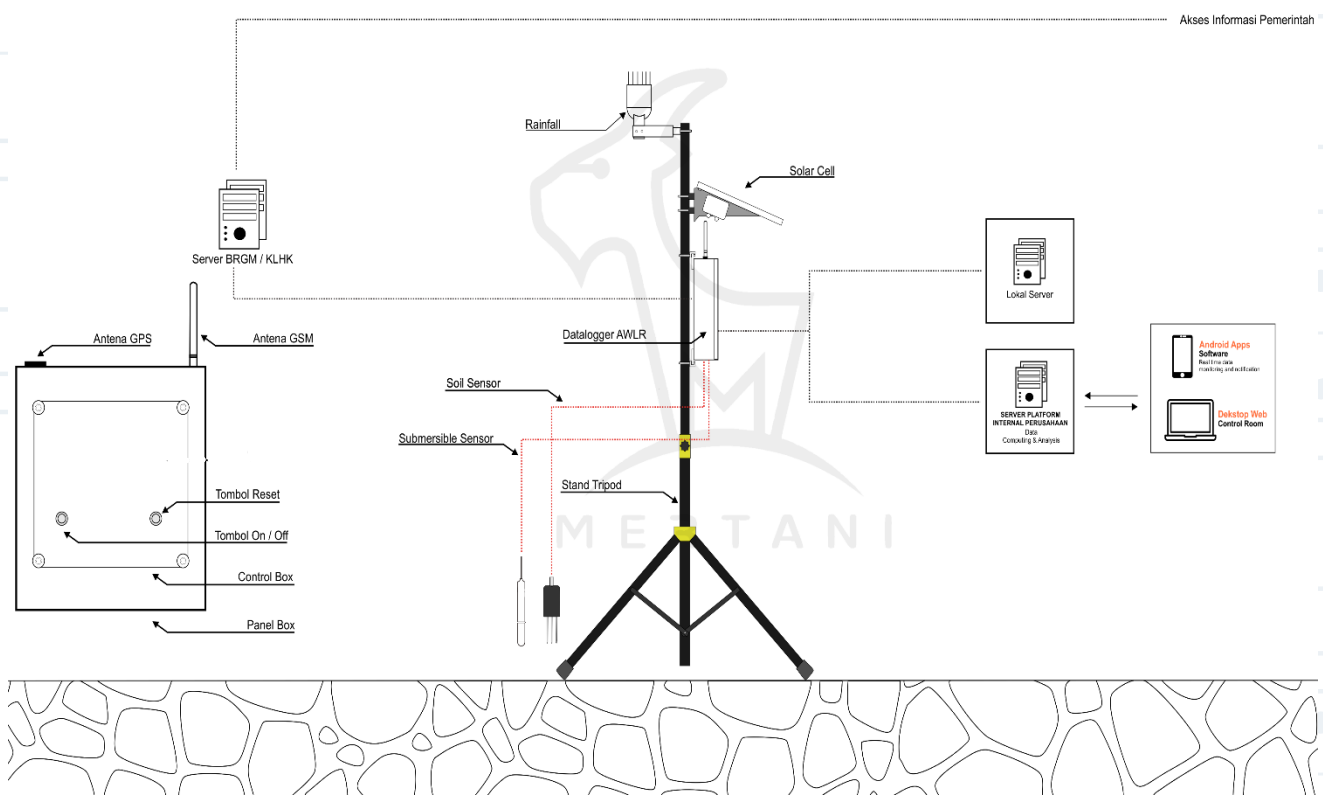## PEMANTAUAN KUALITAS LAHAN GAMBUT

Merupakan alat yang berguna untuk melakukan monitoring terhadap tinggi muka air dan curah hujan secara online (dalam jaringan), realtime (terus-menerus), ketinggian AWLR hingga 5 m dan akurasi ARR dengan resolusi 02 mm. Garansi selama 1 tahun dan jaminan ketersediaan suku cadang selama 5 tahun.

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

- Rainfall sensor single spoon 0,2 mm
- Water level sensor submersible 5 m
- Soil temperature & soil moisture

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 tinggi muka air dan curah hujan secara online dan terus-menerus
- Pemantauan tinggi muka air dan curah hujan sudah meliputi pengambilan data, pembacaan data, pengiriman data ke server secara otomatis, penampil data, dan fitur pengunduhan data
- Pemantauan tinggi muka air dan curah hujan dapat dilakukan dimanapun dan kapanpun

# SPESIFIKASI

## Data Logger



- Automatic data transmission using internet connection (2G/4G, WiFi, BLE, LoRa, etc), Connected to Monitoring System and displayed via PC and Smartphone
- Build in Global Positioning System (GPS)/Global Navigation Satellite System (GNSS) Module
- Support HTTP REST API and MQTT TCP/IP
- Using MCU Arm Cortex-M4 based Ultra Low Power, Clock Speed 120 MHz, RAM 2-MB, Flash Memory 1-MB full SMD single on-board using Industrial PCB 6 layer, Processor 16 bit
- Sensor input up to 10 sensors, input voltage 4.1V
- Operating voltage 2.7 – 5.5 VDC, logging current 250 mA average, and set up device using USB serial
- Bulit in DC regulator output 5 VDC and 5 VDC for power supply
- Integrated web server for data management and data display
- Average operating temperature -40 to +85°C
- Dimensions 120 x 120 x 61 mm weatherproof
- Communication port 3x 7-pins content of serial data RS485, RS232, I2C, digital pulse sensor, and one wire (Connect up to 12 Sensor Input)
- Optional baud rates 9600 - 115200 bps
- Data measurement format output imported to Excel and CSV
- HMI LCD Display Colored TFT Industrial with Touchscreen
- Using industrial SD Card up to 32 GB for data backup storage
- Built-in 10.000 mAH battery and dedicated LSE-Crystal Real Time Clock (RTC)
- Fixed interval measurements sampling and can be programmed from 10 minute to 1 day (normally per hour), remote by software dashboard
- Include 1x External GSM Antenna and 1x GPS Antenna, Simcard
- Input Voltage (from solar panel) 4.1VDC (SCH 21V)
- IP68 Panel Box Enclosure (PxLxT) 500x400x200 (mm), Outdoor use and extended period use to prevent dew condensation water
- Weather-Resistant Enclosure, Cable glands, Ventilation Louver, Plastic Mounting Plate, Good heat resistance -4°F (-20° C) to 176° F (80° C)
- Embedded system firmware for water level and rainfall measurement with tipping bucket sensor
- On site monitoring
- Interval and calibration setting

# SPESIFIKASI
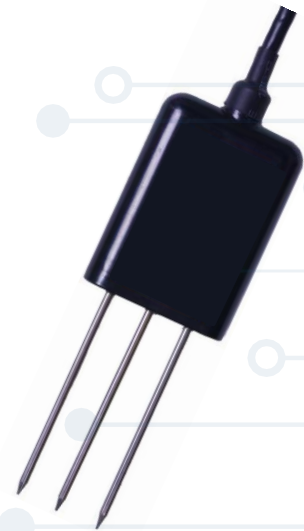
## Rainfall Sensor

**Rainfall Single Spoon 0,2 mm**

- Tipping bucket, bucket made in POM, which is a more dismissive material and therefore makes dust and dirt not stick so easily on the spoon and maximize water release, waterproof to IP68.
- The rain gauge made in molded thermoplastic, also known as ASA, which has high outdoor weather ability
- Collecting area 200cm² (φ159.60±0.6mm), Resolution 0,2 mm, Accuracy: +/- 2%
- Measuring range Rain intensity: 0~6mm/min; Operating temperature range 0 - 80 °C
- Accessories: Standard pole bracket item, 2 m binder cable mounted on the sensor, bird spikes, leaf grid, waterpass
- Output mode RS485,
- Can be widely used in areas of meteorology, hydrology, agriculture and forestry

## Soil Sensor

**Soil Moisture, EC and Temperature Sensor**

- Soil Moisture Measurement , Waterproof to IP68, RS48 Modbus-RTU, 10-30VDC .
- Range: 0-100% , Resolution:0-50%:0.03%,50-100%:1% , Accuracy:0-50%:2%,50-100%:3%
- EC Measurement , Moisture by FDR and EC by AC excitation
- Range: 0-5000us/cm, 10000us/cm, 20000us/cm , Resolution: 0-10000us/cm, 10us/cm; 100000-20000us/cm, 50us/cm
- Accuracy: ±0.5%; 0-10000us/cm, ±3%; 10000-20000us/cm, ±5% , EC temperature compensation: 0-50
- Temperature Measurement Range: -10 ~ +60 ° C, Resolution:0.1,
- Material PVC and Stainless steel

## Water Level Sensor

**Water Level Sensor Submersible tipe MTI0002SB (5 Meter)**

- Measuring Range up to 5 meter
- Sensor Material titanium all-welded stainless steel body (316L)
- Accuracy ≤ 0.25% F.S, Operating temperature -5 ~ 80 °C
- Hourly, daily, monthly, and yearly
- Blind zone 0.25~0.8m
- Long-term Stability ≤ ±0.5% FS / < 4 mbar of span/year
- Output: Modbus RS485
- Power Supply: 3.6V – 12V
- Certificate: TUV RoHS and CE Certificate
- EMC Standard:
- EN 61326-1:2013; EN 61326-2-3:2013
- EN 61000-6-2:2005; EN61000-6-4:2007+A1
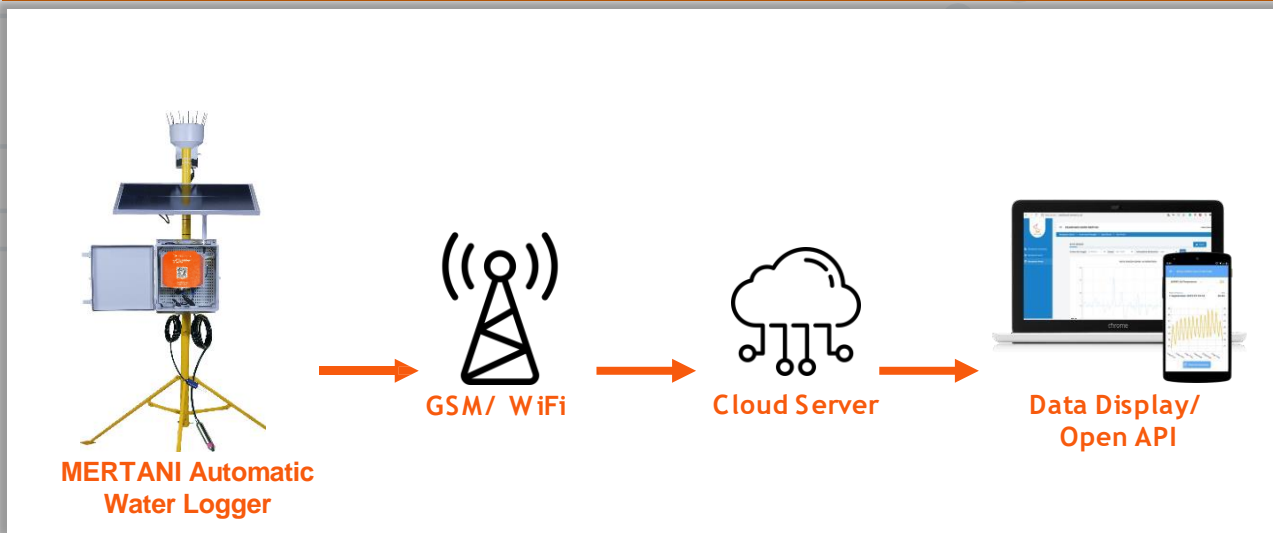
# SPESIFIKASI

## Solar Panel

- Solar panel 20 WP~30WP/ 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 and Switch regulator

## Battery

- Up to 50.000 mAH

## Data Collection Method



MERTANI Automatic Water Logger → GSM/ WiFi → Cloud Server → Data Display/ Open API

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