

AeroLens



What is AeroLens?

AeroLens, or the Smart Water Level Monitoring Station, is a solution designed to simplify real-time water level monitoring and notification through the use of IoT technology and image processing.

Why install AeroLens?

Real-time water level monitoring and notification systems are crucial in preventing disasters such as flooding, which have severe impacts on both the economy and the livelihoods of people in at-risk areas. In the past, water level monitoring was often difficult and slow. Therefore, installing AeroLens is essential, as it provides continuous monitoring of water levels and real-time data analysis through image processing. And in the event of a risk situation or rising water levels, the system can trigger immediate alerts without waiting for field assessments by staff or personnel, which could be dangerous. Additionally, it enables real-time viewing of the surrounding environment at the installation site without the need for physical visits.

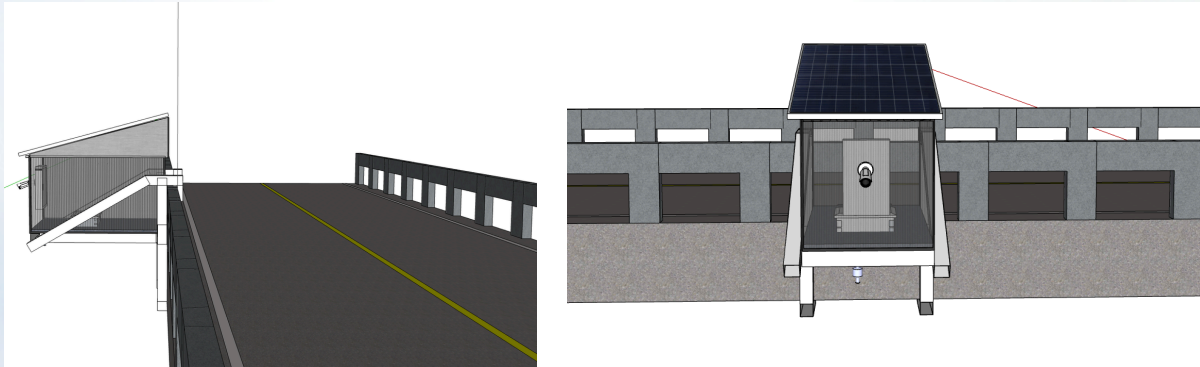
Which areas should be installed?

- Low-lying areas
- Areas near rivers and major water sources
- Urban or densely populated areas
- Regions with dams or reservoirs
- Communities with a history of frequent flooding
- Water sources that are difficult to access
- etc.

What are the **benefits** of installing with Saijai Tech?

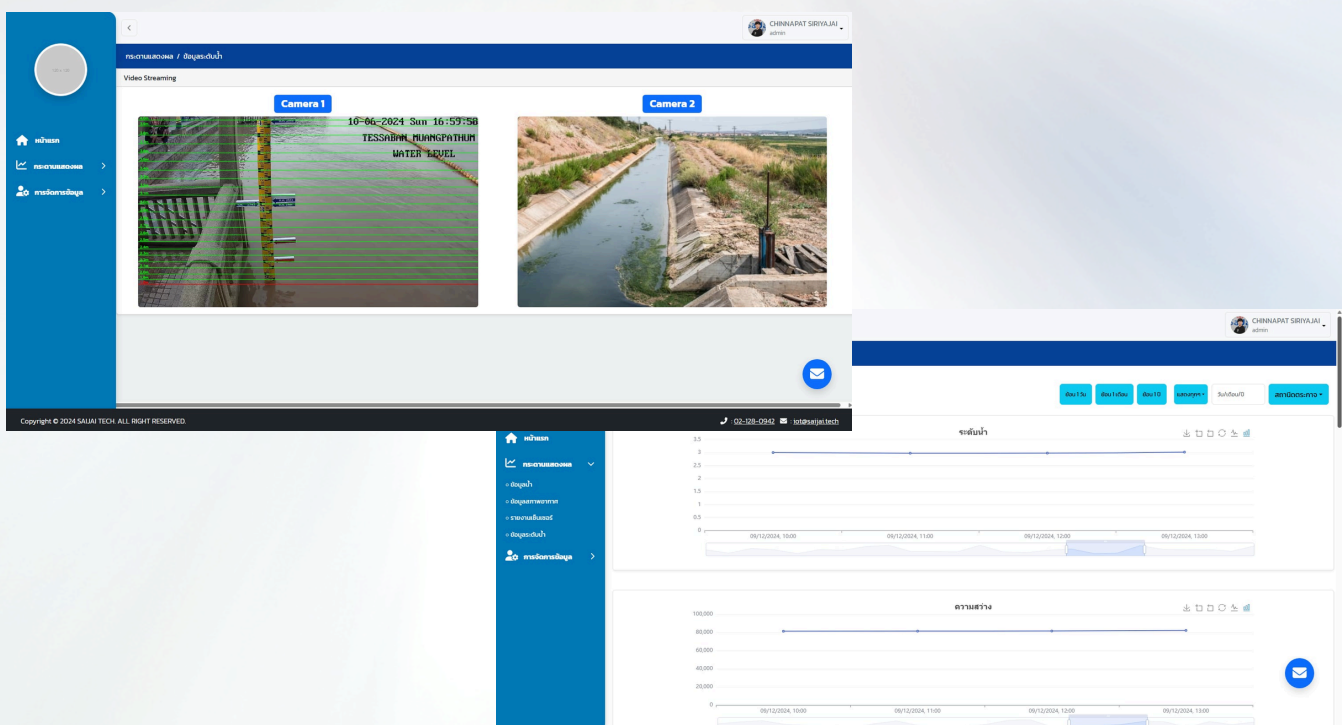
- Received the IoT control box that was funded for development by NIA
- Receive water level sensors
- Receive weather sensors (temperature, relative humidity, and solar radiation)
- Receive air quality sensors (PM2.5)
- Receive Wi-Fi router
- Receive IoT processing devices
- Receive solar power supply kit (Solar Panel, Battery, Solar Charger)
- Receive CCTV cameras and network video recorders
- Installation, pipe laying, and wiring according to the specified standards
- 4G LTE data communication kit for 2 years
- Cloud storage for 2 years
- 2-year warranty on equipment
- **Free** equipment inspection once per year for 2 years
- **Free** consultation and assistance in preparing project proposals

Examples of Installation Draft Design



may change depending on the installation location.

Example of Dashboard



AeroLens

The Water Level and Weather Monitoring System.

The Water Level and Weather Monitoring System is a solution designed to enable accurate real-time monitoring of water levels. It integrates image processing technology with water level sensors, providing precise measurements. Additionally, the system supports the installation of sensors to measure weather and air quality conditions such as temperature, relative humidity, rainfall, PM2.5 dust levels, and solar radiation. It also includes an alert system to ensure users receive timely and actionable information.



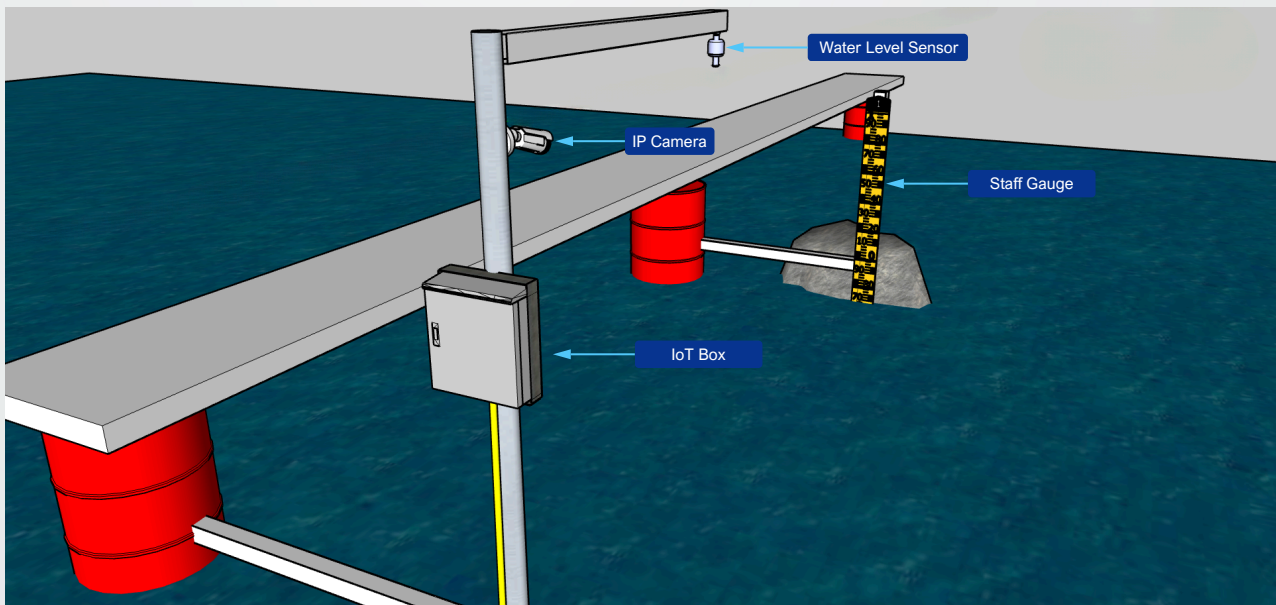
Key Features

- ✓ The Water Level Sensor is used to measure water levels in rivers, canals, or reservoirs. It provides real-time data with high accuracy, making it suitable for monitoring flood situations, water surges, and for effective water management in agricultural and industrial areas.
- ✓ The Air Environment and Quality Sensor is capable of measuring weather conditions such as temperature, helping to assess climate changes. It also measures solar radiation and PM2.5 fine particulate matter, enabling continuous monitoring of air quality and evaluating potential health risks in the area.
- ✓ The system includes a Uninterruptible Power Supply (UPS) to ensure continuous operation of all equipment, even in the event of a main power supply failure.
- ✓ The Rain Gauge Sensor is used to measure rainfall in a given area and stores the data in a real-time database. This enables users to utilize the information for rainfall forecasting or to assess potential flood situations in advance.
- ✓ The system is equipped with IP Cameras to monitor the surrounding environment in real time and measure water levels from a staff gauge using image processing technology. This enables convenient and accurate monitoring of water levels. Additionally, LED lights are installed to illuminate walkways or survey areas, enhancing safety for individuals passing through or working in the area during nighttime.
- ✓ The system comes with user-friendly software that supports the Thai language and offers a comprehensive set of features. These include real-time tracking of water levels and weather conditions, as well as an alert system for abnormal or critical water level changes. Additionally, it supports remote commands for capturing images or viewing live footage from IP Cameras, helping to reduce the risk of entering hazardous areas such as flood zones or high-risk environments.

DATASHEET

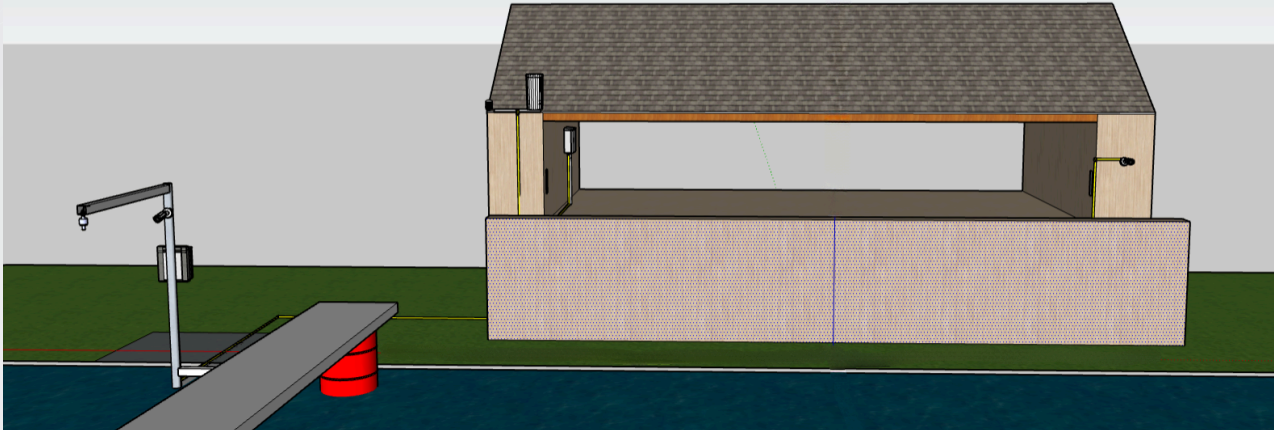
Water Level and Weather Monitoring Station and Air Quality Monitoring Station with IoT Monitoring System

Installation Draft

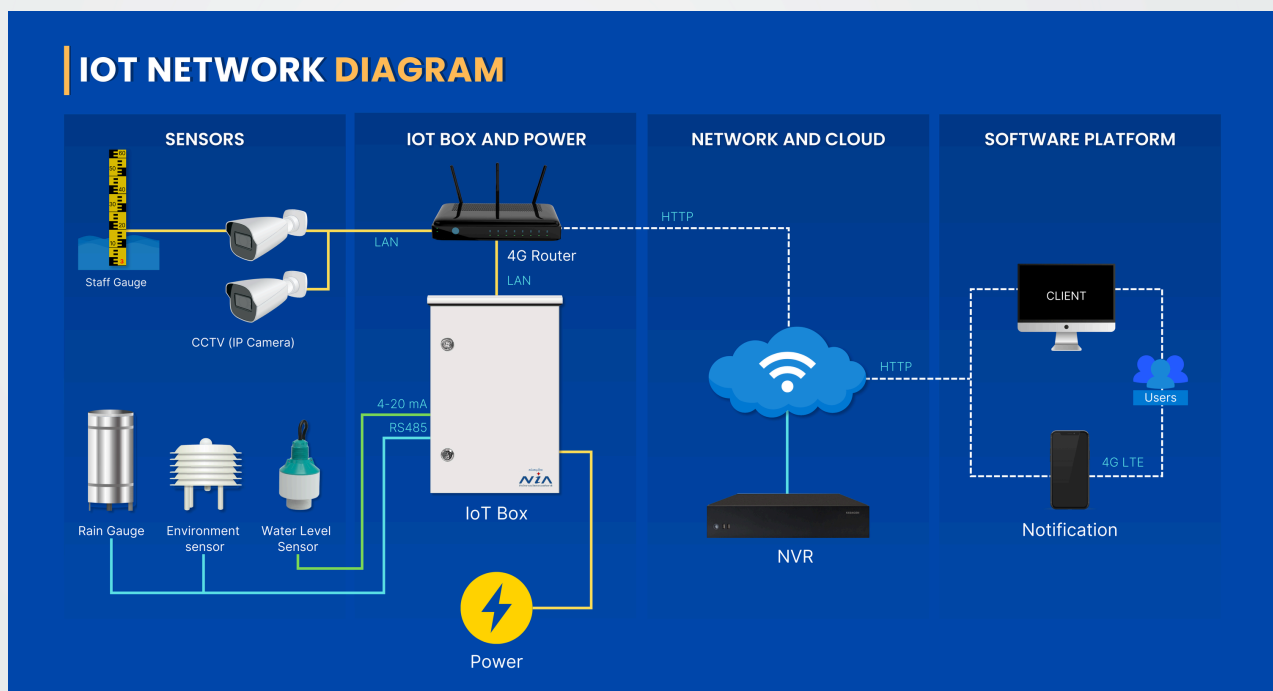


DATASHEET

Water Level and Weather Monitoring Station and Air Quality Monitoring Station with IoT Monitoring System



IoT Monitoring System Connection Diagram



Description of the Diagram

The Real-time Water Level, Weather, and Air Quality Monitoring Station with IoT Monitoring System consists of two IP Cameras. The first camera is used to capture images of the staff gauge, working alongside a water level sensor. The second camera captures images of the surrounding environment and works in conjunction with a rain gauge and environmental sensors, which measure light intensity, temperature, humidity, and PM2.5 dust levels.

Some of the data is transmitted to an NVR over a 4G/LTE network for real-time viewing. The remaining data is processed and stored in an IoT Box before being sent to the cloud for visualization and user alerts.

Description



Environmental and Air Quality Sensor

- Capable of measuring solar light intensity in the range of 0 – 200,000 lux
- High reading accuracy of $\pm 7\%$ at 25°C
- Equipped with a RS485 Modbus RTU communication port
- Supports DC voltage input from 10 to 30 volts
- Can measure temperature within the range of 0 to 50°C
- Can measure relative humidity in the range of 0 to 99%
- Capable of measuring PM2.5 in the range of 0 to 1000 $\mu\text{g}/\text{m}^3$



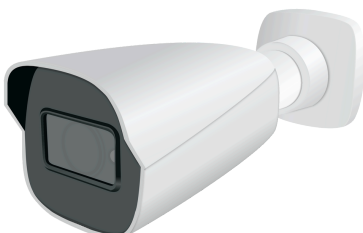
Water Level Sensor

- Corrosion-resistant and waterproof with an IP65 protection rating
- Capable of measuring water levels in the range of 0 to 8 meters
- Supports DC power supply from 12 to 35 volts
- Equipped with Analog or RS485 (Modbus Protocol) communication interface
- Operates within a temperature range of 0 to 60°C



Rain Gauge Sensor

- Supports 12 Vdc power supply
- Rain collector capacity: 200 mm
- Measures rainfall intensity in the range of 0–3 mm/min
- Accuracy: $\pm 5\%$
- Communication port: RS485 (Modbus RTU)
- Operating temperature: 0 to 50°C
- Relative humidity: <95% at 40°C



IP Camera

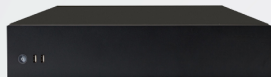
- Supports DC 12V power supply or Power over Ethernet (PoE)
- Video resolution: 1080P (1920x1080), 720P (1280x720)
- IP67 rated for water and dust resistance
- Operating temperature: 0 to 50°C
- Supports Micro SD card for local storage
- Compatible with RTSP and ONVIF protocols

Description



Wireless Access Point (WAP)

- Supports IEEE 802.11g and 802.11n wireless standards
- Equipped with LAN, LAN/WAN, and SIM Card Slot ports
- Supports 4G/LTE network connectivity
- Supports encryption methods: WPA/WPA2, WPA-PSK/WPA2-PSK



Network Video Recorder (NVR)

- Supports DC 48V / 2.5A power input
- Equipped with RJ45 interface (1000 Mbps)
- Video resolution: 720P
- Compatible with RTSP and ONVIF protocols
- Let me know if you'd like to organize this as part of a fu



Uninterruptible Power Supply (UPS)

- Output power capacity: 800 VA or 480 Watts



IoT Control Cabinet

- Dimensions: 63 cm (W) × 75 cm (H) × 25 cm (D)
- Protection rating: IP40
- Material: 1 mm thick steel

Description



Mini Industrial Server (MIS)

- Equipped with a Celeron CPU, 4 cores and 4 threads
- Clock speed: 2.0 GHz
- Cache memory: 4 MB
- Integrated graphics processor
- Main memory (RAM): 8 GB DDR4
- Storage: 128 GB Solid State Drive (SSD), 1 unit
- Network Interface: 10/100/1000 Base-T Ethernet
- Built-in Wi-Fi supporting IEEE 802.11b/g/n standards
- USB Interfaces:
 - 5 × USB 3.0 ports
 - 3 × USB 2.0 ports
- HDMI Ports: 2
- Serial Ports:
 - 3 × RS232
 - 1 × RS485
- Antenna Connectors: 2 × Female SMA external connectors
- Supports DC 12V power input
- Compatible with Linux operating system

Mini Industrial Server (MIS) Features



2X GbE LAN



RS232/RS485



GPIO 10P



8x USB



DDR4 RAM



M.2 SSD



2x HDMI
1x LVDS



mini PCI-E
expansion



12V-19V
wide voltage



JavaScript



ubuntu



Grafana



influxdb



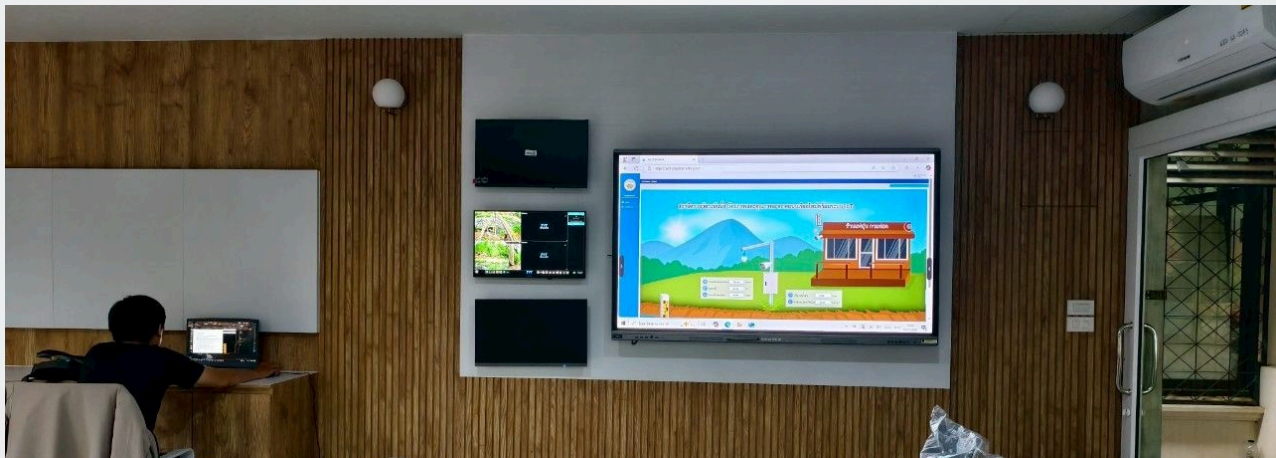
Node-RED

REFERENCE PROJECT

Installation area



Monitoring Room



Software Platform

