

## SOLUTIONS SAIJAITECH

Innovative IoT for the Future

#### **Answer every need All work on the IoT system**

Innovative technology with high efficiency This allows us to develop the solution's working system efficiently. To meet the needs of the industrial sector.







Saijai Tech







5 years of IoT experience, delivering innovative solutions.

# **Company**Overview

#### **Business Overview and Company Expertise**

The company's core service is centered around designing effective solutions for clients using IoT innovations. Emphasizing both high performance and quality, Saijai Tech is dedicated to crafting tailored solutions that meet clients' specific needs. The company continually strives to improve and enhance its services to ensure that they remain cost-effective and aligned with customer expectations. By consistently refining its capabilities, Saijai Tech aims to deliver genuine customer satisfaction and meet evolving market demands.

#### **Key Technology, Products, or Core Services**

Saijai Tech is a company committed to driving Thailand into the Thailand 4.0 era by creating innovative solutions that support both the public and private sectors. The company specializes in offering customer-centric solutions through IoT innovation, focusing on developing and solving customer challenges with creativity and efficiency. Saijai Tech provides consultancy services with integrity and expertise in various sectors such as agriculture, industry, transportation, and clean energy.

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## Selar

#### Efficient Solar Rooftop System and Platform with IoT Devices.

Selar is a solar rooftop system developed using IoT devices and a software platform to monitor and display the performance of the solar cell system.



### **Key Features**



#### **Efficiency**

Solar panels with advanced convert sunlight into electricity with maximum efficiency, ensuring optimal energy generation.



#### **Customization and flexibility**

Panels and systems can be customized to fit various roof sizes and orientations. accommodating different energy needs and architectural constraints.



#### Easy to use

Has a clear information show on display screen and status lights.



#### Strong and durable

It is an aluminum enclosure with a lid and roof, dustproof, waterproof, and unbreakable.

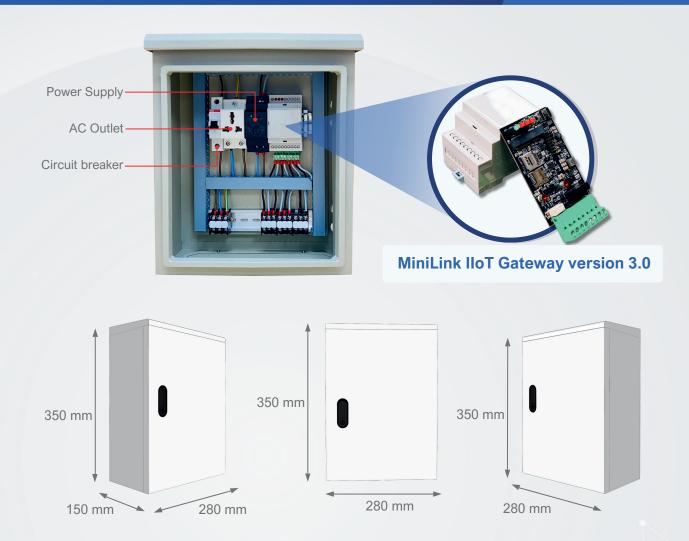


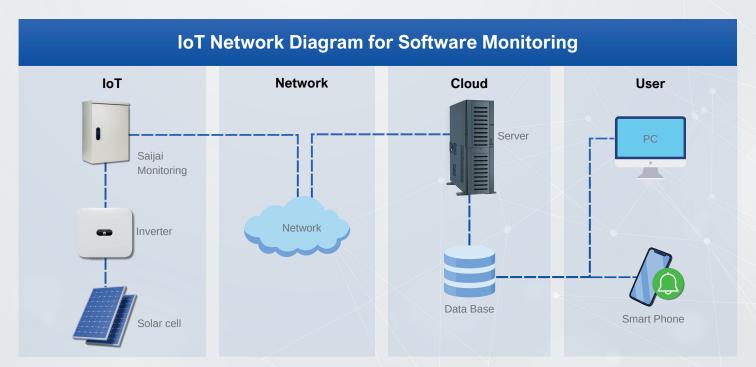
#### Easy installation and compatibility

Designed for straightforward setup with user-friendly mounting systems, reducing installation time and labor costs.











| MCU             | ARM Cortex-M 32- bit RISC ARM Processor cores   |
|-----------------|---|
| Interface port  | RS485 or RS232 isolation with auto-direction (Software mode selection) Rs485 or I2C with auto-direction |
| WiFi            | 802.11 b/g/n with a speed of 54 megabits per second when connected via 802.11g                          |
| Indicator lamp  | Includes 2 status indicator LEDs  |
| Memory          | 512 kilobytes   |
| USB type C port | Program Upload  |
| Case            | Aluminium   |
| Clock speed     | 240 MHz   |
| Bluetooth       | Bluetooth 4.0   |
| User switch     | 1 button  |
| loT size box    | H: 350 x W: 280 x D: 150 mm   |
| Weight          | 5 kg  |

## **Supports expansion boards**



#### **LoRaWAN Network Server**

Supports expansion boards for low-power long-range communication modules operating at 920 - 925 MHz (LoRaWAN)



#### **NB-IoT** extension

Supports expansion boards with Narrowband Internet of Things (NB-IoT) communication modules



## SolNia

#### SolNia is an IoT platform for solar monitoring systems.

SolNia developed from Selar, which replaces MiniLink with a mini industrial PC to support backup data functions. SolNia has real-time data monitoring is possible via a dashboard on the software platform and a real-time notification system and approved by the subcommittee for consideration and screening as an economic innovation project necessary for national development no. 6/2024.



## **Key Features**

- Easy to Install and Use SolNia is a Zero Touch and Plug-and-Play product.
- Versatile Application
  The device is compatible with various sensors, such as air quality sensors, temperature, and humidity sensors.
- Operation
  Consumes low power and generates low heat, allowing continuous operation when working 24/7.
- Capable of storing data locally without need for cloud storage.
- Linux Operating System
  Runs on Linux Ubuntu 20.04.

**⊘** Supports

Works with both Modbus TCP and Modbus RTU (RS485, RS232) protocols, can connect to WiFi, and has a LAN port and SIM slot for connecting to the internet.

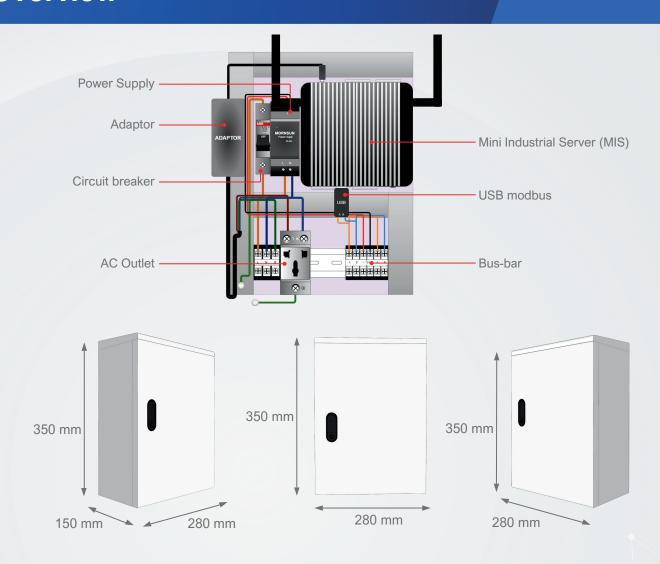
Ourable and Strong
Enclosure is a steel cabinet with a cover and

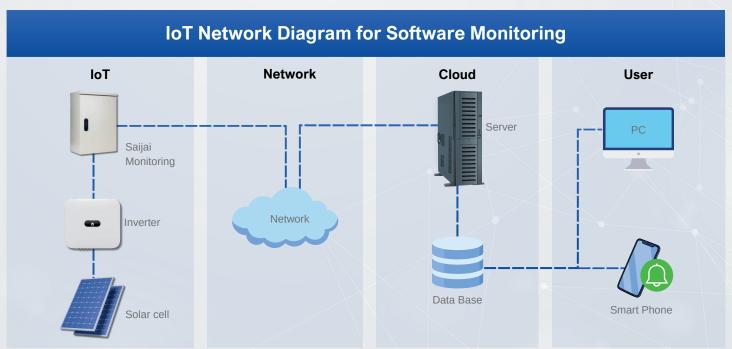
roof, offering protection against dust and water.

User-Friendly Interface Features an easy-to-understand dashboard, notification system, reporting, and historical data

tracking, available in the Thai language.









| CPU                  | Intel Celeron J4125 (4 core 4 threads, 4M Cache, 2.00GHz, up to 2.70GHz, TDP: 10W)   |
|----------------------|--|
| Graphics Card        | Intel UHD Graphics 600   |
| Memory(RAM)          | 8GB DDR4   |
| Storage              | 128GB M2 NGFF SSD  |
| Dual Display         | Support 4K @60Hz 2* HDMI on external interface + 1 * LVDS on internal connectors   |
| Support System       | Linux Ubuntu   |
| External Interface   | 1 x DC-IN 2 x HDMI 5 x USB3.2 GEN1(5Gbps)+ 3 x USB2.0 2 x LAN 1 x MIC-IN + 1 xHP-OUT 1 x REC (Ghost button (one-key system restore) 1 x RST (Reset button & CLR_CMOS button) 2 x LED 1 x HDD LED(Red), 1 x WIFI & 4G module states(Green) 1 x PWR BT |
| Internal Connectors  | 1 x Debug 1 x LVDS 1 x SATA PWR + 1 X SATA 1 x COM_CONN (4*COM232, support RS232 / RS485 set on COM1) 1 x JFP (auto power on set up jumper) 1 x GPIO 1 x AUDIO + 1 x Speaker 1 x F USB2.0  |
| Audio                | Realtek ALC662/ALC887; Integrated power amplifier NS4251 3W@4Q max   |
| Ethernet port        | 2 x Realtek Gigabit Ethernet (RTL8111H/8111G)  |
| WIFI                 | Half-Height Mini PCle, Support WiFi  |
| Other                | Wake UP on LAN, S5 RTC Wake Settings, PXE Boot, Restore AC power loss (Auto Power On)  |
| Power<br>Consumption | DC 12V-3A/ 36W or DC 12V-5A/ 60W (AC TO DC, 100~ 240V)   |



| Mounted               | Wall-mounted/Desktop                             |
|-----------------------|--|
| Chassis Material      | Aluminum alloy                                   |
| Operating Temperature | - 20°C - 60°C                                    |
| Storage Temperature   | -30°C - 70°C (15°C - 35°C recommended)           |
| Relative Humidity     | 10%~90% @30°C,Relative humidity, No condensation |
| Dimension             | 136 x 126 x 46 mm                                |
| Bluetooth             | Bluetooth 4.0                                    |
| Case                  | Steel  |
| IoT size box          | H: 350 x W: 280 x D: 150 mm                      |
| Weight                | 5 kg   |

## Mini Industrial Server (MIS) Features







RS232/RS485





GPIO 10P



8x USB



DDR4 RAM



M.2 SSD





2x HDMI 1x LVDS



expansion wide voltage













## HighDO (EC)

A system that measures water quality using software platforms and IoT devices.

HighDO is a water quality measurement solution developed with high-quality IoT devices and a real-time software platform for monitoring and analysis. It can also be customized or adapted to specific needs without affecting the existing system.



### **Key Features**



#### **Efficiency**

Can measure various values related to water quality such as electrical conductivity, temperature etc.



#### **Customization and flexibility**

Support customization or additions according to specific requirements such as Phosphorus sensor, Turbidity Sensor, Biological Oxygen Demand (BOD) Sensor, Chemical Oxygen Demand (COD) Sensor, dissolved oxygen (DO) sensor etc.





#### Easy installation and compatibility

Adopts Plug and Play principle which makes it easy to integrate with existing systems.



#### Easy to use

Has a clear information show on display screen and status lights.



#### Strong and durable

It is an aluminum enclosure with a lid and roof, dustproof, waterproof, and unbreakable.













**Microchip ATECC608A** 

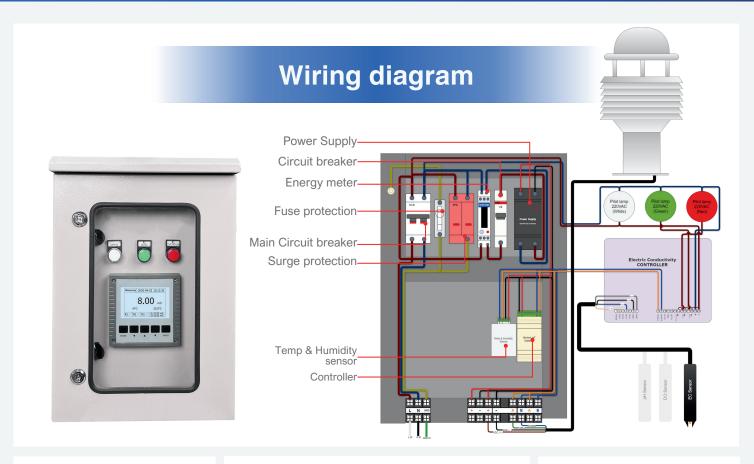
Micro SD card

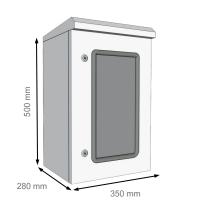
**USB type C port** 

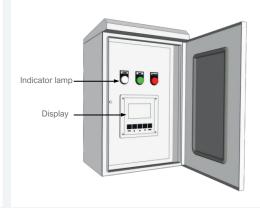
ARM Cortex-M 32-bit

RS485 / RS232

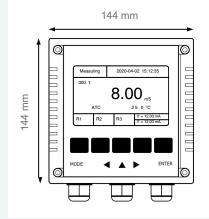


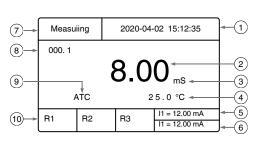










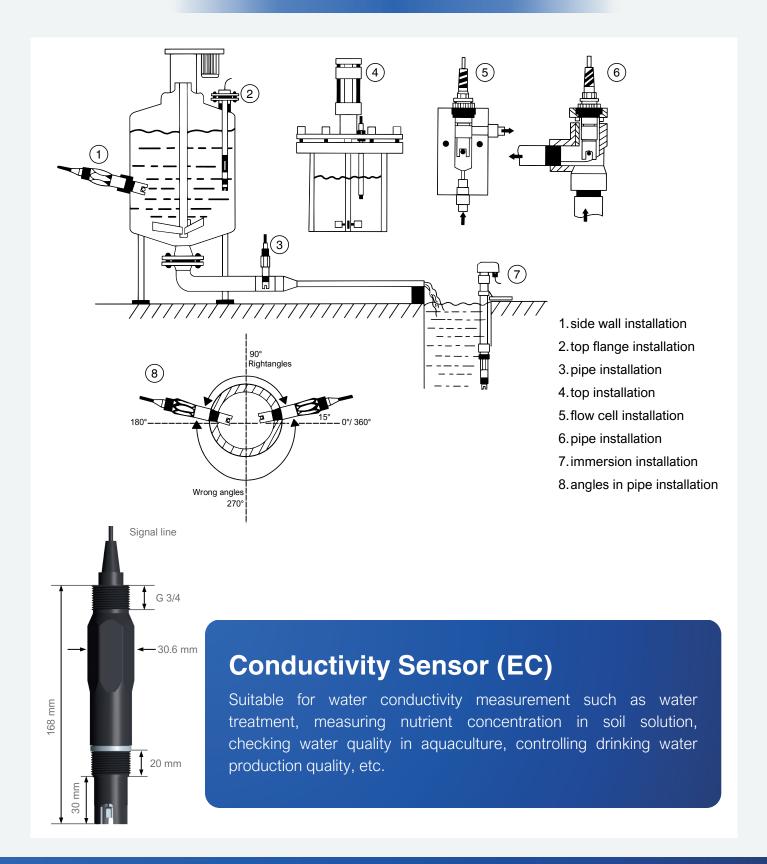


Display

- 1. Date and time
- 2. Main display
- 3.Unit
- 4. Temperature and unit
- 5. First current output
- 6. Second current output
- 7. Measurement status and Error indicator
- 8. Count down timer
- 9. Temp. compensation: auto(ATC) or manual(MTC)
- 10. Relay indicator



## **Electrode Installation**





| MCU             | ARM Cortex-M 32- bit RISC ARM Processor cores   |
|-----------------|---|
| Interface port  | RS485 or RS232 isolation with auto-direction (Software mode selection) RS485 or I2C with auto-direction   |
| Indicator lamp  | LED Open LED Run LED Overdue  |
| Power supply    | 24 Vdc  |
| Display         | LCD   |
| USB type C port | Program Upload  |
| Case            | Aluminium   |
| EC sensor       | Technical data  Support measuring: Conductivity / TDS / Salinity  Measuring range: 0 - 2000μS/cm  Accuracy: <2%  Resolution: ±1 μS/cm  Temp. measure range: 0.0 - 60.0 °C  Temp. compensation: Automatic/Manual  Output signal: RS485;4 - 20mA  Power supply: DC9-30 VDC Recommend 24 VDC  Shell material: PPS,ABS  Pipe thread: M39*1.5,3/4  Cable length: 5m or customized  Protection grade: Ip68  |
| EC Controller   | Specifications  • Measuring range: 0.00 to 20.00/0.00 to 2.00 µS/cm  • Resolution: 0.01/0.001 µS/cm  • Accuracy: ±0.01ppm / ±0.001 µS/cm  • Temp. compensation: -10.0 to +130.0°C  • Temp. range: -10.0 to +130.0°C  • Temp. compensation range: -10.0 to +130.0°C  • Storage temp: -20 to +70°C  • Display: Back light, dot matrix LCD display  • Current output accuracy: ±0.05 mA  • Baud rate: 9600/19200/38400  • Relay delay: 0-120 seconds  • Data logging capacity: 500,000  • Waterproof grade: IP65 |
| IoT Box Size    | H: 500 x W: 350 x D: 280 mm   |
| Weight          | 18 kg   |



## HighDO (DO)

A system that measures water quality using software platforms and IoT devices.

HighDO is a water quality measurement solution developed with high-quality IoT devices and a real-time software platform for monitoring and analysis. It can also be customized or adapted to specific needs without affecting the existing system.



### **Key Features**



#### **Efficiency**

Can measure various values related to water quality such as electrical conductivity, temperature etc.



#### **Customization and flexibility**

Support customization or additions according to specific requirements such as Phosphorus sensor, Turbidity Sensor, Biological Oxygen Demand (BOD) Sensor, Chemical Oxygen Demand (COD) Sensor, dissolved oxygen (DO) sensor etc.





#### Easy installation and compatibility

Adopts Plug and Play principle which makes it easy to integrate with existing systems.



#### Easy to use

Has a clear information show on display screen and status lights.



#### Strong and durable

It is an aluminum enclosure with a lid and roof, dustproof, waterproof, and unbreakable.













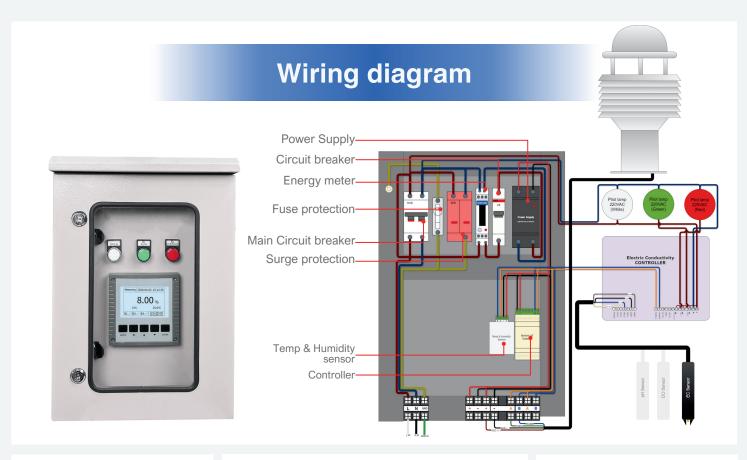
Micro SD card

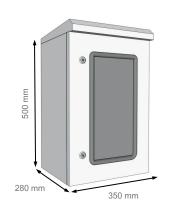
**USB type C port** 

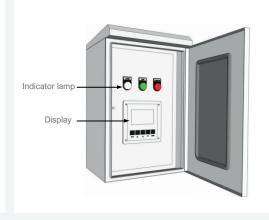
ARM Cortex-M 32-bit

RS485 / RS232

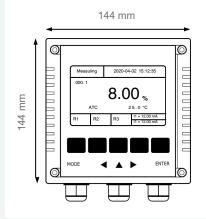


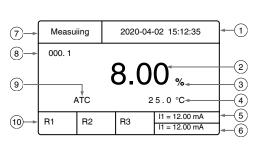










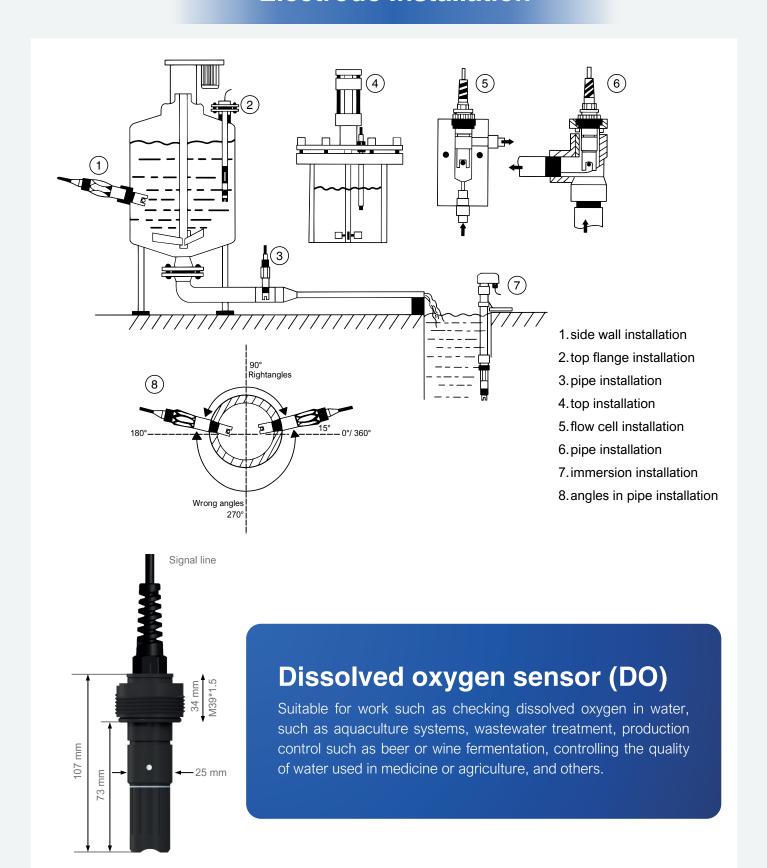


Display

- 1. Date and time
- 2. Main display
- 3.Unit
- 4. Temperature and unit
- 5. First current output
- 6. Second current output
- 7. Measurement status and Error indicator
- 8. Count down timer
- 9. Temp. compensation: auto(ATC) or manual(MTC)
- 10. Relay indicator



## **Electrode Installation**





| MCU             | ARM Cortex-M 32- bit RISC ARM Processor cores  |
|-----------------|--|
| Interface port  | RS485 or RS232 isolation with auto - direction (Software mode selection) RS485 or I2C with auto-direction  |
| Indicator lamp  | LED Open LED Run LED Overdue   |
| Power supply    | 24 Vdc   |
| Display         | LCD  |
| USB type C port | Program Upload   |
| Case            | Aluminium  |
| Do sensor       | <ul> <li>Measuring range: 0.00 - 20.00 mg/L(ppm)</li> <li>Accuracy: +2%FS</li> <li>Temperature range: 0.0 - 60.0°C</li> <li>Temperature sensor: NTC22K</li> <li>Response time: 90% &lt; 90 seconds</li> <li>Medium flow rate: &gt; 0.02 m/s</li> <li>Calibration interval: Once every 1 month</li> <li>Shell material: ABS</li> <li>Pressure range: 0 - 2bar</li> <li>Polarization voltage: 675mV</li> <li>Process connection thread: M39 * 1.5</li> <li>Cable length: 5m or customize</li> <li>Electrical connection: Pin type or BNC connector</li> <li>Protection grade: IP68</li> </ul>                                  |
| Do Controller   | Specifications • Measuring range : $0.00 - 400.00$ • Resolution : $0.1$ • Accuracy : $\pm 0.2$ • Temp. compensation : Pt-1000 / NTC22K • Temp. range : $-10.0$ to $+130.0^{\circ}$ C • Temp. compensation range : $-10.0$ to $+130.0^{\circ}$ C • Sensor current measurement range : $-2.0$ to $+400$ nA • Sensor current measurement accuracy : $\pm 0.005$ nA • Polarrization voltage range : $-0.675$ V • Pressure range : $500$ to $9999$ mBar • Salinity compensation range : $0.00 - 50.00$ ppt • Ambient temperature range : $0 - 70$ °C • DO current output1 : isolated $4 - 20$ mA output, max. load $500$ $\Omega$ |
| IoT Box Size    | H: 500 x W: 350 x D: 280 mm  |
| Weight          | 18 kg  |
|                 |  |



## pHixIt

pHixIt is a pH monitoring systems through the development of software platforms and IoT devices, that will enable accurate and not complicated measurement of pH. Have transmits data in real-time. And There is also a notification to users via LINE Notify when the pH value changes abnormally, or when summarizing daily information.



## **Key Features**

- **Ability:** There is a software platform that can monitor the operation of the device in real time, such as measuring pH, temperature, and relative humidity.
- Easy to use: User manuals and display screens of the platform software have been prepared to be easy to understand and in Thai language.
- Easy installation and compatibility: The solution has been developed in a plug-andplay format. allowing easy connection to other devices or sensors, such as in food and beverage production systems. or in the chemical industry.
- Customization and flexibility: Supports customization or additions according to specific requirements such as a weather station sensor, measure the amount of rain, Chlorine sensor, Nitrate sensor, Phosphorus sensor, and Potassium sensor.
- **Strength and durability:** The cabinet material is made of steel. Has a cover and roof for dustproof and waterproof protection.
- Data Security: It has an industrial-grade Industrial IoT eSIM (MFF2) chip designed to
  operate in industrial environments. and can connect to the internet with service provider
  networks in Thailand It also has an encrypted hardware chip. (CryptoAuthentication)
  makes data transmission using IoT technology extremely secure and reliable.



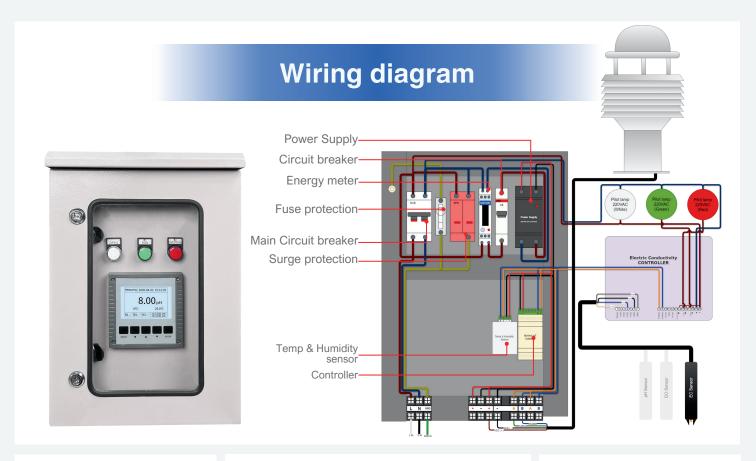




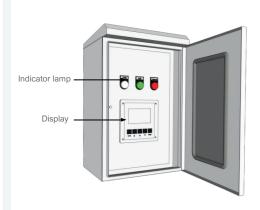




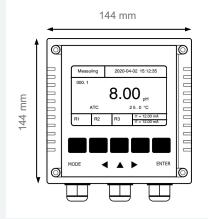


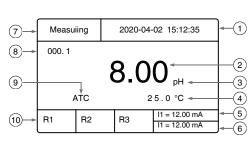










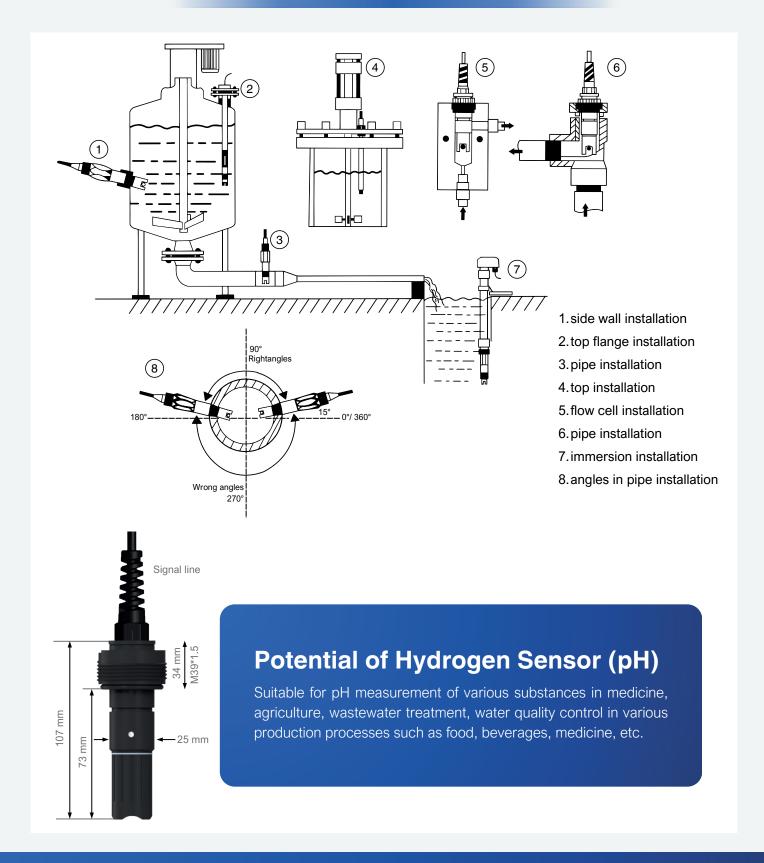


Display

- 1. Date and time
- 2. Main display
- 3.Unit
- 4. Temperature and unit
- 5. First current output
- 6. Second current output
- 7. Measurement status and Error indicator
- 8. Count down timer
- 9. Temp. compensation: auto(ATC) or manual(MTC)
- 10. Relay indicator



## **Electrode Installation**





| MCU             | ARM Cortex-M 32- bit RISC ARM Processor cores  |
|-----------------|--|
| Interface port  | RS485 or RS232 isolation with auto-direction (Software mode selection) RS485 or I2C with auto-direction  |
| Indicator lamp  | LED Open LED Run LED Overdue   |
| Power supply    | 24 V   |
| Display         | LCD  |
| USB type C port | Program Upload   |
| Case            | Aluminium  |
| pH sensor       | Technical data  PH range: 0 - 14pH (Resolution: 0.01 pH, Accuracy: ±0.01 pH)  PH balance: 7.00 ± 0.25  Temperature range: 0.0 - 60°C (Resolution: 0.1°C Accuracy: ±0.3°C)  Temperature compensation: Automatic  Output: RS485;4 - 20mA  Power supply: DC9 - 30V (Recommend 12V)  Pressure range: 0 - 3bar  Shell material: PPS, ABS  Liquid junction: PTFE  Pipe thread: 3/4, M39* 1.5  Cable length: 5m or customized  Protection grade: IP68   |
| pH Controller   | Specifications  • Measuring range : 0.00 - 20.00/0.00 - 2.00 μS/cm  • Resolution : 0.01/0.001 μS/cm  • Accuracy : ±0.01ppm / ±0.001 μS/cm  • Temp. compensation : -10.0 - +130.0°C  • Temp. range : -10.0 - 130.0°C  • Temp. compensation range : -10.0 - 130.0°C  • Storage temp : -20 - 70°C  • Display : Back light, dot matrix LCD display  • Current output accuracy : ±0.05 mA  • Baud rate : 9600/19200/38400  • Relay delay: 0-120 seconds  • Data logging capacity : 500,000  • Waterproof grade : IP65 |
| IoT Box Size    | H: 500 x W: 350 x D: 280 mm  |
| Weight          | 18 kg  |



## AquaDuo Set A

AquaDuo Set A is a solution that will simplify water quality measurement. and more efficient can be used in the food, beverage, and agricultural production industries. By monitoring pH (positive potential of the hydrogen ions) and DO (Dissolved oxygen) values from IoT devices through a dashboard on the software platform in real time. and notification system via LINE Notify.



### **Key Features**



#### **Ability**

There is a software platform that can monitor the operation of the device in real time, such as measuring pH, dissolved oxygen, temperature and relative humidity.



#### **Easy installation and compatibility**

The solution has been developed in a plug and play format. allowing easy connection to other devices or sensors, such as in the food, beverage, and agricultural production industries.



#### Easy to use

User manuals and display screens of the platform software have been prepared to be easy to understand and in Thai language.



#### Strength and durability

The cabinet material is made of steel. Has a cover and roof for dustproof and waterproof protection.



#### **Customization and flexibility**

Supports customization or additions according to specific requirements such as adding an Airlar solution, adding an electrical conductivity sensor, adding a weather station, adding a rain sensor, adding a Chlorine sensor, adding a Nitrate sensor, adding a Phosphorus Sensor, and adding a Potassium sensor.



#### **Data Security**

It has an industrial-grade Industrial IoT eSIM (MFF2) chip designed to operate in industrial environments. and can connect to the internet with service provider networks in Thailand It also has an encrypted hardware chip. (CryptoAuthentication) makes data transmission using IoT technology extremely secure and reliable.











Microchip ATECC608A

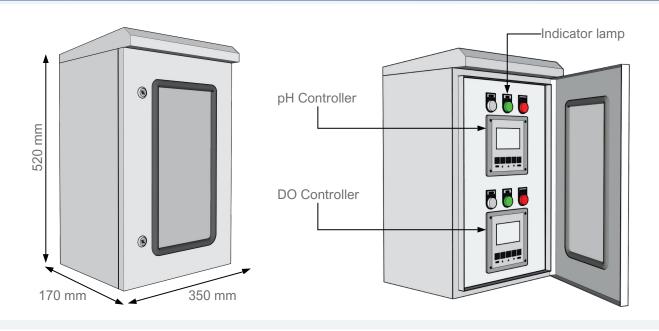
Micro SD card

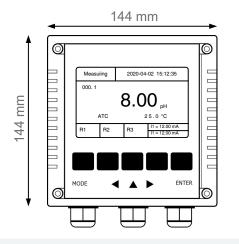
**USB** type C port

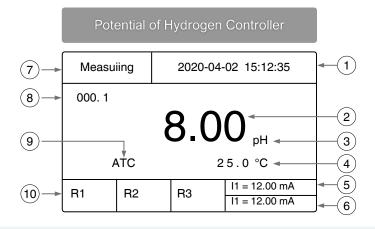
ARM Cortex-M 32-bit

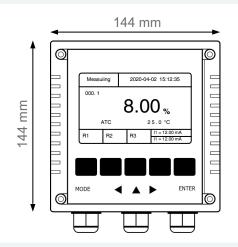
RS485 / RS232











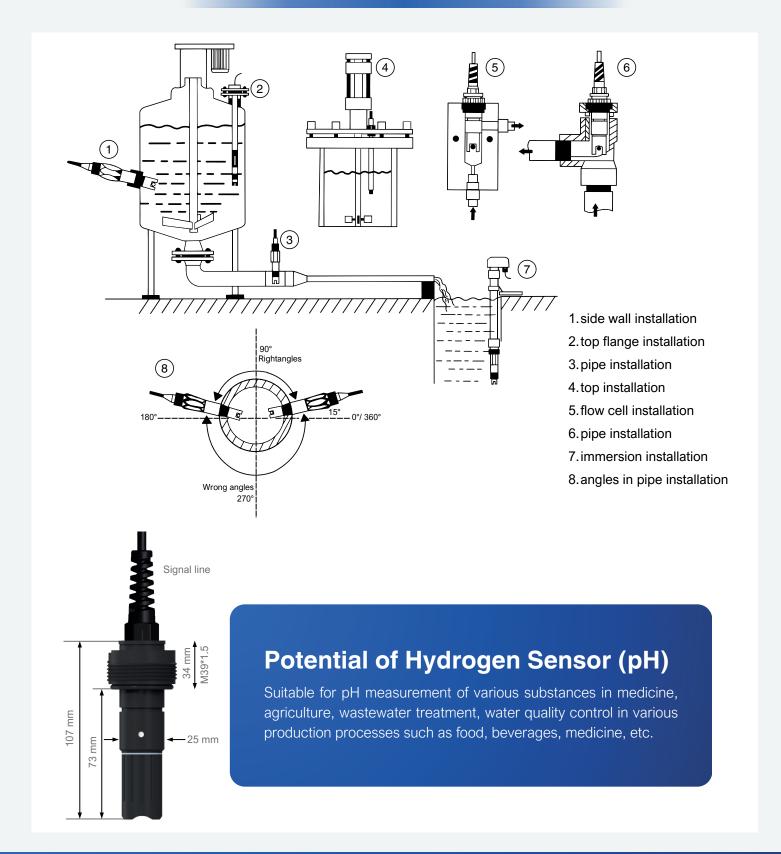
#### -(1)Measuiing 2020-04-02 15:12:35 000.1 (8) (9) 3 AŤC 25.0 °C ← 4) (5) I1 = 12.00 mA (10)R1 R2 R3 I1 = 12.00 mA

- 1. Date and time
- 2. Main display
- 3. Unit
- 4. Temperature and unit
- 5. First current output

- 6. Second current output
- 7. Measurement status and Error indicator
- 8. Count down timer
- 9. Temp. compensation: auto(ATC) or manual(MTC)
- 10. Relay indicator



## **Electrode Installation**







## Dissolved oxygen sensor (DO)

Suitable for work such as checking dissolved oxygen in water, such as aquaculture systems, wastewater treatment, production control such as beer or wine fermentation, controlling the quality of water used in medicine or agriculture, and others.

| MCU             | ARM Cortex-M 32- bit RISC ARM Processor cores   |
|-----------------|---|
| Interface port  | RS485 or RS232 isolation with auto-direction (Software mode selection) RS485 or I2C with auto - direction   |
| Indicator lamp  | LED Open LED Run LED Overdue  |
| Power supply    | 24 Vdc  |
| Display         | LCD   |
| USB type C port | Program Upload  |
| Case            | Aluminium   |
| pH sensor       | Technical data  • pH range : 0 - 14 pH (Resolution : 0.01 pH, Accuracy : ±0.01 pH)  • pH balance : 7.00±0.25  • Temperature range : 0.0 - 60°C (Resolution : 0.1°C Accuracy : ±0.3 °C)  • Temperature compensation : Automatic  • Output : RS485;4 - 20mA  • Power supply : DC9 - 30V(Recommend 12V)  • Pressure range : 0 - 3bar  • Shell material : PPS, ABS  • Liquid junction : PTFE  • Pipe thread : 3/4, M39* 1.5  • Cable length : 5m or customized  • Protection grade : IP68 |



| pH Controller | Specifications  • Measuring range : 0.00 - 20.00/0.00 - 2.00 μS/cm  • Resolution : 0.01/0.001 μS/cm  • Accuracy : ±0.01ppm / ±0.001 μS/cm  • Temp. compensation : -10.0 - 130.0°C  • Temp. range : -10.0 - 130.0°C  • Temp. compensation range : -10.0 - 130.0°C  • Storage temp : -20 - 70°C  • Display : Back light, dot matrix LCD display  • Current output accuracy : ±0.05 mA  • Baud rate : 9600/19200/38400  • Relay delay: 0 - 120 seconds  • Data logging capacity : 500,000  • Waterproof grade : IP65   |
|---------------|---|
| Do sensor     | <ul> <li>Measuring range: 0.00 - 20.00 mg/L(ppm)</li> <li>Accuracy: +2% FS</li> <li>Temperature range: 0.0 - 60.0°C</li> <li>Temperature sensor: NTC22K</li> <li>Response time: 90% &lt; 90 seconds</li> <li>Medium flow rate: &gt; 0.02 m/s</li> <li>Calibration interval: Once every 1 month</li> <li>Shell material: ABS</li> <li>Pressure range: 0 - 2bar</li> <li>Polarization voltage: 675mV</li> <li>Process connection thread: M39* 1.5</li> <li>Cable length: 5m or customize</li> <li>Electrical connection: Pin type or BNC connector</li> <li>Protection grade: IP68</li> </ul>   |
| Do Controller | <ul> <li>Specifications</li> <li>Measuring range: 0.00 - 400.00</li> <li>Resolution: 0.1</li> <li>Accuracy: ±0.2</li> <li>Temp. compensation: Pt - 1000 / NTC22K</li> <li>Temp. range: -10.0 to +130.0°C</li> <li>Temp. compensation range: -10.0 - 130.0°C</li> <li>Sensor current measurement range: -2.0 - 400 nA</li> <li>Sensor current measurement accuracy: ±0.005 nA</li> <li>Polarrization voltage range: -0.675 V</li> <li>Pressure range: 500 - 9999 mBar</li> <li>Salinity compensation range: 0.00 to 50.00 ppt</li> <li>Ambient temperature range: 0 - 70 °C</li> <li>DO current output1: isolated 4-20 mA output, max. load 500 Ω</li> </ul> |
| IoT Box Size  | H: 500 x W: 350 x D: 280 mm   |
| Weight        | 20 kg   |



## AquaDuo Set B

AquaDuo Set B is a solution that will simplify water quality measurement. and more efficiently can be used in the food, beverage, and agricultural production industries. By monitoring pH (positive potential of the hydrogen ions) and EC (Electrical Conductivity) values from IoT devices through a dashboard on the software platform in real time. and notification system via LINE Notify.



### **Key Features**



#### **Ability**

There is a software platform that can monitor the operation of the device in real time, such as measuring pH, electrical conductivity, temperature and relative humidity.



#### Easy installation and compatibility

The solution has been developed in a plug and play format. allowing easy connection to other devices or sensors, such as in the food, beverage, and agricultural production industries.



#### Easy to use

User manuals and display screens of the platform software have been prepared to be easy to understand and in Thai language.



#### Strength and durability

The cabinet material is made of steel. Has a cover and roof for dustproof and waterproof protection.



#### **Customization and flexibility**

Supports customization or additions according to specific requirements such as a Airlar solution, dissolved oxygen sensor, weather station sensor, measure the amount of rain, Chlorine sensor, Nitrate sensor, Phosphorus Sensor, and Potassium sensor.



#### **Data Security**

It has an industrial-grade Industrial IoT eSIM (MFF2) chip designed to operate in industrial environments. and can connect to the internet with service provider networks in Thailand It also has an encrypted hardware chip. (CryptoAuthentication) makes data transmission using IoT technology extremely secure and reliable.











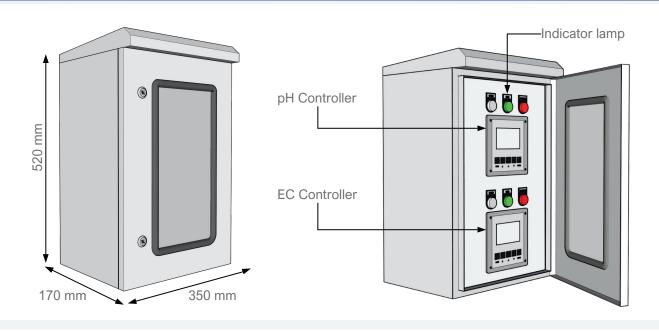
Microchip ATECC608A

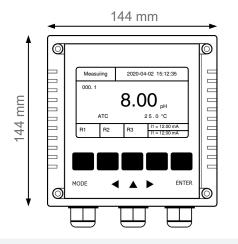
Micro SD card

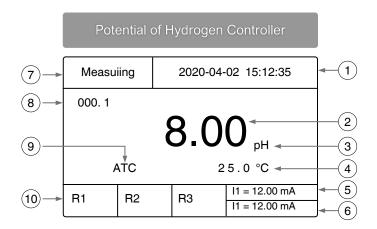
USB type C port ARM Cortex-M 32-bit

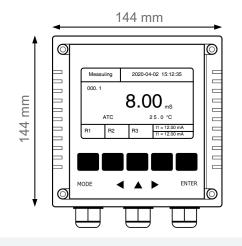
RS485 / RS232

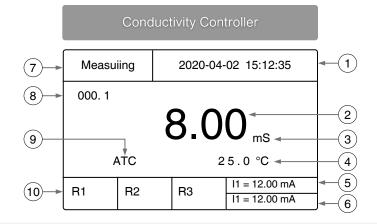










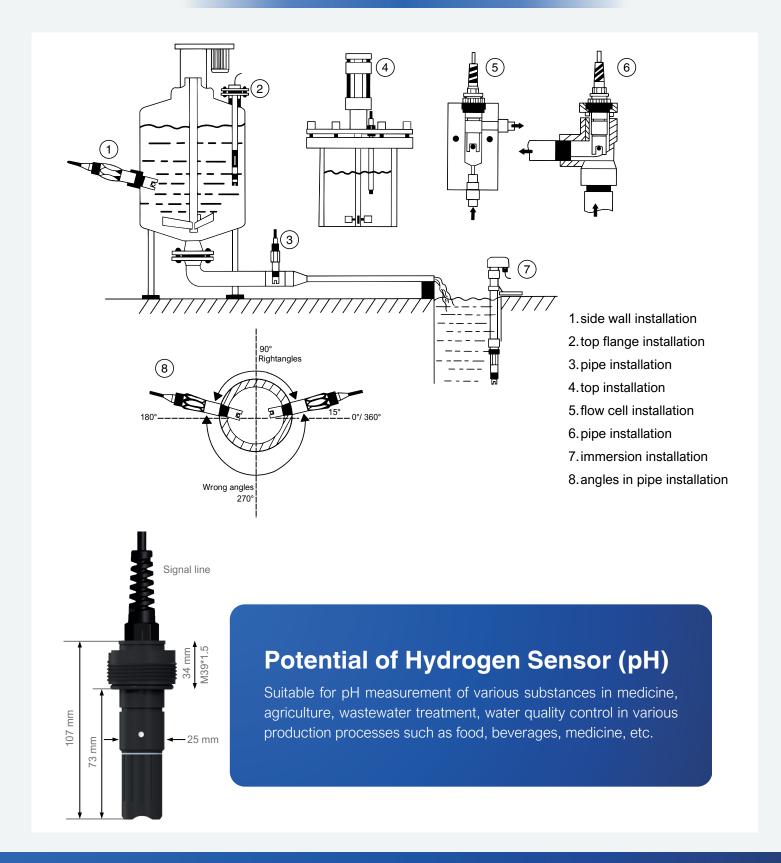


- 1. Date and time
- 2. Main display
- 3. Unit
- 4. Temperature and unit
- 5. First current output

- 6. Second current output
- 7. Measurement status and Error indicator
- 8. Count down timer
- 9. Temp. compensation: auto(ATC) or manual(MTC)
- 10. Relay indicator



## **Electrode Installation**







## **Conductivity Sensor (EC)**

Suitable for water conductivity measurement such as water treatment, measuring nutrient concentration in soil solution, checking water quality in aquaculture, controlling drinking water production quality, etc.

| MCU             | ARM Cortex-M 32- bit RISC ARM Processor cores   |
|-----------------|---|
| Interface port  | RS485 or RS232 isolation with auto-direction (Software mode selection) RS485 or I2C with auto - direction   |
| Indicator lamp  | LED Open LED Run LED Overdue  |
| Power supply    | 24 Vdc  |
| Display         | LCD   |
| USB type C port | Program Upload  |
| Case            | Aluminium   |
| pH sensor       | Technical data  PH range: 0 - 14pH (Resolution: 0.01 pH, Accuracy: ±0.01 pH)  PH balance: 7.00 ± 0.25  Temperature range: 0.0 - 60°C (Resolution: 0.1°C Accuracy: ±0.3°C)  Temperature compensation: Automatic  Output: RS485;4 - 20mA  Power supply: DC9-30V(Recommend 12V)  Pressure range: 0 - 3bar  Shell material: PPS, ABS  Liquid junction: PTFE  Pipe thread: 3/4, M39* 1.5  Cable length: 5m or customized  Protection grade: IP68 |



| pH Controller  | Specifications  • Measuring range : 0.00 - 20.00/0.00 - 2.00 μS/cm  • Resolution : 0.01/0.001 μS/cm  • Accuracy : ±0.01ppm / ±0.001 μS/cm  • Temp. compensation : -10.0 - 130.0°C  • Temp. range : -10.0 - 130.0°C  • Temp. compensation range : -10.0 - 130.0°C  • Storage temp : -20 - 70°C  • Display : Back light, dot matrix LCD display  • Current output accuracy : ±0.05 mA  • Baud rate : 9600/19200/38400  • Relay delay: 0 - 120 seconds  • Data logging capacity : 500,000  • Waterproof grade : IP65 |
|----------------|---|
| EC sensor      | Technical data  • Support measuring : Conductivity / TDS / Salinity  • Measuring range : 02000μS/cm  • Accuracy : <2%  • Resolution : ±1 μS/cm  • Temp. measure range : 0.0 - 60.0 °C  • Temp. compensation : Automatic/Manual  • Output signal : RS485;4 - 20mA  • Power supply : DC9 - 30 VDC Recommend 24 VDC  • Shell material : PPS, ABS  • Pipe thread : M39* 1.5, 3/4  • Cable length : 5m or customized  • Protection grade : IP68  |
| EC Controller  | Specifications  • Measuring range : 0.00 - 20.00/0.00 - 2.00 μS/cm  • Resolution : 0.01/0.001 μS/cm  • Accuracy : ±0.01ppm / ±0.001 μS/cm  • Temp. compensation : -10.0 - 130.0°C  • Temp. range : -10.0 - 130.0°C  • Temp. compensation range : -10.0 - 130.0°C  • Storage temp : -20 - 70°C  • Display : Back light, dot matrix LCD display  • Current output accuracy : ±0.05 mA  • Baud rate : 9600/19200/38400  • Relay delay: 0 - 120 seconds  • Data logging capacity : 500,000  • Waterproof grade : IP65 |
| Enclosure size | H: 500 x W: 350 x D: 280 mm   |
| Weight         | 20 kg.  |



## Chill Chill

Temperature tracking system through IoT devices and software platforms.

Chill Chill It is a system that will make temperature monitoring easier, more accurate, and more efficient through IoT devices and software platforms. The data is stored on the cloud to be displayed on the web application in real time. and sending notification messages when daily results are summarized or when the temperature changes abnormally via LINE Notify.



## **Key Features**



#### **Ability**

There is a software platform that can monitor the operation of the device in real time, such as temperature readings. and relative humidity.



#### Easy installation and compatibility

The solution has been developed in a plug and play format. allowing easy connection to other devices or sensors, such as in food freezers, medicines, or in rooms. Keep cool in transportation systems.



#### Easy to use

User manuals and display screens of the platform software have been prepared to be easy to understand and in Thai language.



#### Strength and durability

The cabinet material is made of steel. Has a cover and roof for dustproof and waterproof protection.



#### **Customization and flexibility**

Supports customization or additions according to specific needs such as Add a pH sensor. Add a relative humidity sensor or add a nitrogen sensor.



#### **Data Security**

It has an industrial-grade Industrial IoT eSIM (MFF2) chip designed to operate in industrial environments. and can connect to the internet with service provider networks in Thailand It also has an encrypted hardware chip. (CryptoAuthentication) makes data transmission using IoT technology extremely secure and reliable.







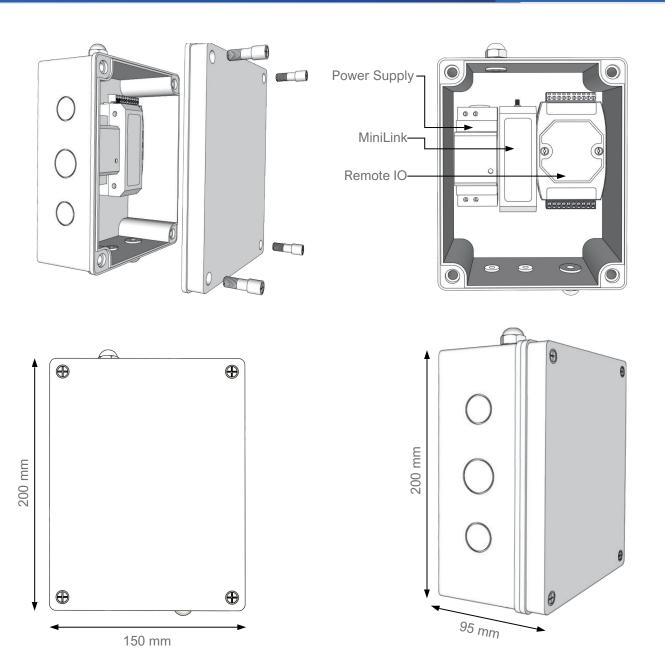




USB type C port ARM Cortex-M 32-bit

RS485 / RS232







## **Temperature Sensor**

Suitable for work that measures temperature or humidity, such as measuring the temperature inside refrigerators, freezers, systems for maintaining the quality of raw materials, food, drugs, or chemicals and temperature maintenance systems for transportation refrigeration systems, etc.



| MCU                | ARM Cortex-M 32- bit RISC ARM Processor cores   |
|--------------------|---|
| Interface port     | RS485 or RS232 isolation with auto-direction (Software mode selection) RS485 or I2C with auto - direction   |
| Indicator lamp     | LED Open LED Run LED Overdue  |
| Power supply       | 24 V  |
| Display            | LCD   |
| USB type C port    | Program Upload  |
| loT control box    | Waterproof  |
| Temperature sensor | Specifications  • Usable with 3.0V - 5.5V power/ data Resolution  • ±0.5°C Accuracy from -10°C - 85°C Accuracy  • Usable temperature range: -55 - 125°C (-67°F to +257°F)  • 9 to 12 bit selectable resolution  • Uses 1-Wire interface- requires only one digital pin for communication  • Unique 64 bit ID burned into chip  • Multiple sensors can share one pin  • Temperature-limit alarm system  • Query time is less than 750 ms  • 3 wires interface: Red wire - VCC, Black wire - GND, Yellow wire - DATA  • Stainless steel tube 6 mm diameter by 35 mm long  • Cable diameter: 4 mm  • Length: 90 cm |
| IoT size box       | H: 200 x W: 150 x D: 95 mm  |
| Weight             | 500 g   |



## Radar

Efficient Weather Measurement System and Platform with IoT Devices

Radar is a detailed weather measurement system developed using IoT devices and a software platform to monitor and analyze control or monitoring systems to suit specific needs without affecting the system.



## **Key Features**



#### **Efficiency**

Can measure various values related to weather conditions such as temperature, humidity, air pressure, etc.



#### **Customization and flexibility**

Supports customization or addition of specific requirements such as dust, wind, rainfall, PM 2.5 etc.



#### Easy installation and compatibility

Adopts Plug and Play principle which makes it easy to integrate with existing systems.



#### Easy to use

Has a clear information show on display screen and status lights.



#### Strong and durable

It is an aluminum enclosure with a lid and roof, dustproof, waterproof, and unbreakable.

**Solar Panal** 



**Weather Station** 



#### **ARM Cortex-M 32-bit**

32-bit dual-core processor.



#### 4G

Support 4G connection.



#### Memory

Built-in memory of 512 KB.



#### **RS485**

Communicates via RS485.



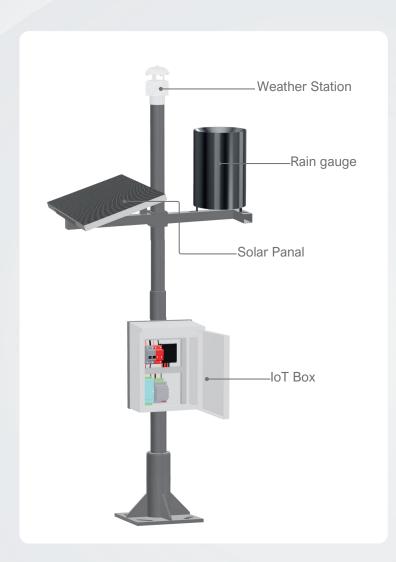
Accessories

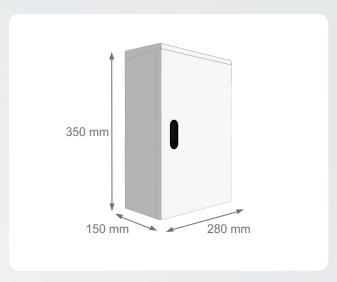


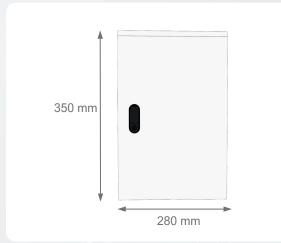


## **Overview**

## **Solution Components**









#### **Weather Station**

A Weather Station collects and records data on temperature, humidity, wind speed and direction, atmospheric pressure, and rainfall. This information is essential for weather forecasting and climate studies. Automatic stations can transmit real-time data via the internet or other systems.



| MCU             | 32-bit dual-core processor  |
|-----------------|---|
| Interface port  | RS485 or RS232 isolation with auto - direction (Software mode selection) Rs485 or I2C with auto-direction |
| Indicator lamp  | Includes 2 status indicator LEDs  |
| Memory          | 512 KB  |
| USB type C port | Program Upload  |
| loT control box | Waterproof  |
| Clock speed     | 240 MHz   |
| User switch     | 1 button  |

| Sensor Temperature Humidity Light |                             |                          |
|-----------------------------------|-----------------------------|--------------------------|
| Parameter                         | Measurement Range           | Accuracy                 |
| Humidity                          | -20 %RH ~ 95 %RH            | ±3 %RH (60 %RH, 25 °C)   |
| Temperature                       | -40 °C ~ +120 °C            | ±0.5 °C (25 °C)          |
| Brightness                        | 0 ~ 200 kLux                | ±7% (25 °C)              |
| Noise                             | 30 dB ~ 130 dB              | ±3 db                    |
| PM10 PM2.5                        | 0 ~ 1000 μg/m3              | ±10% (25 °C)             |
| Rainfall                          | 0.5 mm                      | ≤±2%                     |
| Wind Level                        | 0 ~ 30 m/s                  | ±(0.3 + 0.03V) M/S ± 1°  |
| Wind Direction                    | 0 ~ 360°                    | ±(0.3 + 0.03V) M/S ± 1 ° |
| IoT size box                      | H: 500 x W: 350 x D: 280 mm |                          |
| Weight                            | 6 kg.                       |                          |



# Airlar

Efficient Air Quality Measurement System and Platform with IoT Devices.

Airlar is a detailed air quality measurement system developed with IoT devices and a software platform to monitor and analyze control systems or monitoring systems to suit specific needs without affecting the system.













Micro SD card

RS485 / RS232

#### **Key Features**



#### **Efficiency**

Can measure various values related to air quality, such as sulfur dioxide, nitrogen dioxide and PM 2.5 etc.



#### **Customization and Flexibility**

Support customization or additions to specific requirements, such as dust, sulfur dioxide, nitrogen dioxide, carbon monoxide, etc.



#### Easy installation and compatibility

Adopts Plug and Play principle which makes it easy to integrate with existing systems.



#### Easy to use

Has a clear information show on display screen and status lights.



#### Strong and durable

It is an aluminum enclosure with a lid and roof, dustproof, waterproof, and unbreakable.

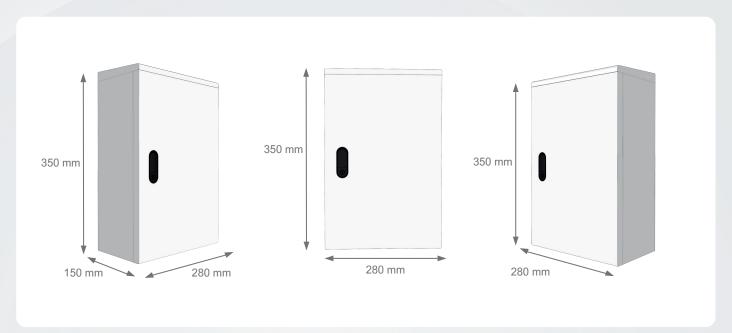


**Weather Station** 



## **Overview**

## Structure of the IoT box





## **Weather Station**

A Weather Station collects and records data on temperature, humidity, wind speed and direction, atmospheric pressure, and rainfall. This information is essential for weather forecasting and climate studies. Automatic stations can transmit real-time data via the internet or other systems.

| Technical Information |                   |                        |  |
|-----------------------|-------------------|------------------------|--|
| Parameter             | Measurement Range | Accuracy               |  |
| Humidity              | -20 %RH ~ 95 %RH  | ±3 %RH (60 %RH, 25 °C) |  |
| Temperature           | -40 °C ~ +120 °C  | ±0.5 °C (25 °C)        |  |
| Brightness            | 0 ~ 200 kLux      | ±7% (25 °C)            |  |
| Noise                 | 30 dB ~ 130 dB    | ±3 db                  |  |
| PM10 PM2.5            | 0 ~ 1000 μg/m3    | ±10% (25 °C)           |  |

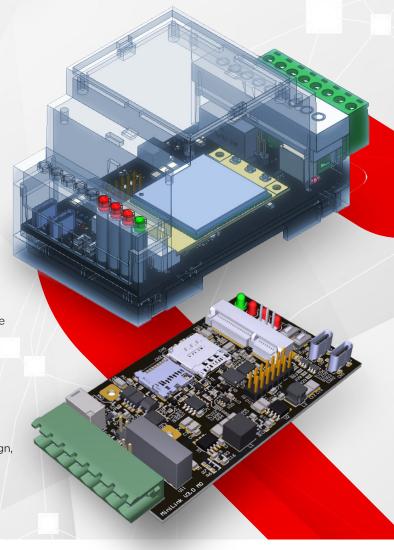


| MCU             | ARM Cortex-M 32- bit RISC ARM Processor cores   |
|-----------------|---|
| Interface port  | RS485 or RS232 isolation with auto-direction (Software mode selection) Rs485 or I2C with auto - direction |
| Indicator lamp  | Includes 2 status indicator LEDs  |
| Memory          | 512 KB  |
| Power supply    | 24 V  |
| USB type C port | Program Upload  |
| IoT control box | Waterproof  |
| Clock speed     | 240 MHz   |
| IoT size box    | H: 500 x W: 350 x D: 280 mm   |
| Weight          | 6 kg  |

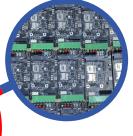
# MiniLink IIoT Gateway version 3.0

In the past, industrial agriculture, smart greenhouses or various smart projects use the Programmable Logic Controller (PLC) as the central controlling unit to manage the operation of machines and electromechanically processes. For example, SCADA systems are designed to collect the information from various sensors and devices, monitor the status of systems and processes, and analyze real-time data using OPC server to establish an interface between SCADA and PLC. This system works very well. It is a stable and reliable. However, Remote Video Surveillance for industrial SCADA requires a high investment and complex maintenance which requiring specialists to develop the system.

The advent of IoT and the Cloud are a trend that has quickly gained attention because users can access the system remotely via a smartphone or a web application. Moreover, users can export data to analyze behavioral trends (data analytics) and set up notifications on a mobile app or a social media. The dashboard has a beautiful design, easy to implement and very low development cost. For these reasons, there are many applications of IoT for industrial agriculture, smart greenhouses or various smart projects





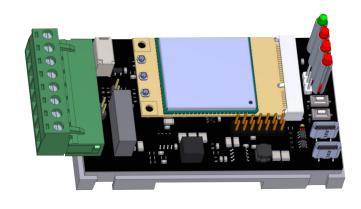


However, the applications of IoT for industrial agriculture, smart greenhouses or various smart projects initially had many obstacles because they were not designed with a serial communication system such as RS485 to interface between other devices. Communication with external devices has few options and not compatible with 24Vdc power supply systems. For these issues, SaiJai-Tech has developed a controller with a built-in communication unit called "MiniLink IIoT Gateway."

# What is MiniLink IIoT Gateway?

MiniLink is an affordable IIoT gateway node that has an ability to connect and control the operation network and has a built-in communication module. Version 3.0 model designs with ARM Cortex-M 32-bit RISC ARM processor cores. It supports Arduino IDE, MPLAB X IDE, Atmel Studio 7 IDE and CircuitPython.

The MiniLink IIoT Gateway comes with mPCIE / SD card / SIM card slot and CryptoAuthentcation chip. There are two interface ports RS485 and RS232 with isolation port on board. The case is a Din-rail mount box with LED indicators. A compact antenna is included in the box. The antenna connector can be removed for convenient to connect to sensors and power supplies.

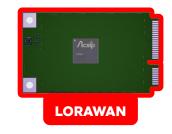




| MCU  | ARM Cortex-M 32-bit RISC ARM processor cores.  |
|--|--|
| Interface port                                 | RS485 or RS232 isolation with auto - direction (so tware mode selection). RS485 or I2C with auto-direction (so tware mode selection). External UART (Serial2). |
| Mini PCIe support<br>(software mode selection) | QUECTEL EC21 / EC25 Series SIMCOM 7600 Series NEOWAY N58 Series SAIJAI LoRaWAN SAIJAI NB-IoT   |
| Crypto Authentication chip                     | Microchip ATECC608A  |
| SD card slot                                   | Micro SD card  |
| Crypto Authentication chip                     | Microchip ATECC608A  |
| SD card slot                                   | Micro SD card  |
| SIM card slot                                  | Plastic sim / eSIM   |
| USB type C port                                | Direct to Mini PCIe<br>Program upload  |
| On board swtich                                | Reset switch User swtich   |
| Indicator lamp                                 | LED power on LED built-in LED user program LED WWAN status   |
| Power supply                                   | 12/24 Vdc  |
| Working temperature and humidity range         | temperature:<br>-30°C~+80°C,<br>Humidity < 95%   |
| Plastic case                                   | Din-rail mount box   |

# **Mini PCIe card support**









# Mini Industrial Server (MIS)

#### By SaiJai Tech

The Mini Industrial Server (MIS) is a cutting-edge computing solution that combines high performance with low power consumption. Designed to the industrial internet of things (IIoT) in data computing, remote monitoring, and seamless integration of hardware and software technologies, the MIS is the perfect choice for environments with limited space. Its compact form factor and multiple I/O options make it an ideal computing solution for tight spaces.

#### **Key Features**

- 1. Maintenance-friendly: The MIS operates without fans, eliminating the need for regular maintenance and significantly reducing maintenance costs. With a fanless design, it minimizes downtime and ensures smooth, uninterrupted operation.
- 2. Sealed for robustness: Built to withstand harsh environments, the MIS is sealed to resist dust, debris, and fluids. This rugged construction ensures reliable performance even in challenging conditions, making it suitable for a wide range of industrial applications.
- 3. Whisper-quiet operation: Unlike traditional servers that rely on noisy fans for cooling, the MIS utilizes a passive cooling system. This design choice results in a noiseless operation, creating a quieter work environment without compromising performance.

The Mini Industrial Server offers unparalleled reliability, efficiency, and versatility in a compact package. Whether you need a powerful computing solution for data processing or a robust system for remote monitoring, the MIS is your trusted partner for seamless operations in demanding industrial environments.





# How to set up COM1 RS232/485 Jumper Pins Model 3 1 1-2 (Default) RS232 4 2 3-4 RS485

#### **Features**



















2X GbF I AN GPIO 10P

COM 3: RS232 COM 4: RS232

RS232/RS485

8x USB

DDR4 RAM

M.2 SSD

2x HDMI 1x LVDS

mini PCI-E expansion

12V-19V wide volatge













| CPU                   | Intel Celeron J4125 (4 core 5 threads, 4M Cache, 2.00GHz, up to 2.70GHz, TDP: 10W)  |
|-----------------------|---|
| Graphics Card         | In-tel UHD Graphics 600   |
| Memory(RAM)           | 8GB DDR4  |
| Storage               | 128GB M2 NGFF SSD   |
| Dual Display          | Support 4K @60Hz<br>2 x H-DMI on external interface + 1 xLVDS on internal   |
| Support System        | Linux Ubuntu  |
| External Interface    | 1 DC-IN 2 x HDMI 5 x USB3.2 GEN1(5Gbps)+ 3 x USB2.0 2 x LAN 1 x MIC-IN + 1 x HP-OUT 1 x REC (Ghost button (one-key system restore) 1 x RST (Reset button & CLR_CMOS button) 2 x LED 1 x HDD LED(Red), 1 x WIFI & 4G module states(Green) 1 x PWR BT |
| Internal Connectors   | 1 x Debug 1 x LVDS 1 x SATA PWR + 1 x SATA 1 x COM_CONN (4* COM232, support RS232 / RS485 set on COM1) 1 x JFP (auto power on set up jumper) 1 x GPIO 1 x AUDIO + 1 x Speaker 1 x F USB2.0  |
| Audio                 | Realtek ALC662/ALC887 ; Integrated power amplifier NS4251 3W@4Q max   |
| Ethernet port         | 2 x Realtek Gb Ethernet (RTL8111H/8111G)  |
| WIFI                  | Half-Height Mini PCle, Support WiFi   |
| Other                 | Wake UP on LAN, S5 RTC Wake Settings, PXE Boot, Restore AC power loss(Auto Power On)  |
| Power<br>Consumption  | DC 12V-3A/ 36W or DC 12V-5A/ 60W (AC TO DC, 100~ 240V)  |
| Mounted               | Wall-mounted/Desktop  |
| Chassis Material      | Aluminum alloy  |
| Operating Temperature | -20°C - 60°C  |
| Storage Temperature   | -30°C - 70°C (15°C - 35°C recommended)  |
| Relative Humidity     | 10%~90% @30°C,Relative humidity, No condensation  |
| Dimension             | 136 x 126 x 46 mm   |

# MiniLink DTU (S93-DTU)



#### MiniLink DTU (S93-DTU)

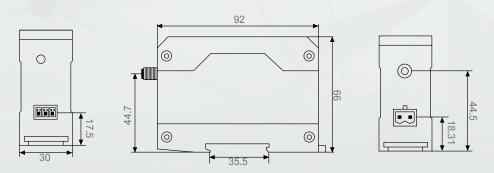
Requires no coding or configuration and is ready for immediate use. It communicates data from the RS485 port and transmits signals via LoRa PtP, with a transmission range of up to 500 m.

The working principle of the LoRa PtP bridge is to replace cable signals with wireless communication. It also supports the Modbus RTU protocol, reducing the need for cable installations and significantly lowering costs. The device is easy to install and can be mounted directly on a DIN rail. With a data transmission range of over 500 m, even when the EIRP is set to just 14 dBm and using an antenna with a gain of only 1.5 dBi.

#### **Key Features**

- ✓ LoRa AS923 module
- RS485 port with Modbus RTU protocol
- External antenna connector, Female SMA
- Can be mounted on a DIN rail

- Supports long-distance communication via LoRa bridge
- Made from heat-resistant, fire-retardant plastic



Dimensions of MiniLink DTU (Unit: mm)





| Model:                 | S93-DTU           |
|------------------------|-------------------|
| Frequency:             | 920 - 925 MHz     |
| Transmit Power:        | 14 dBm            |
| Communication port:    | RS485, Modbus RTU |
| Power Supply:          | DC 12V - 24V      |
| Antenna connector:     | Female SMA        |
| Operating temperature: | -40°C ~ 85°C      |
| Dimension:             | 30 x 66 x 92 mm   |

#### **Built in Watchdog**

A built-in mechanism for monitoring the operational status of the device. In case of a power failure, the device resumes normal operation immediately once power is restored. The device is stable and designed to meet industrial-grade standards.











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SaiJai Tech



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