

PACTECH

Automation & Technology Life

Vol.82

ENHANCED EQUIPMENT SAFETY

Smart Temperature Management
Prevent Overheating
With Real-Time Remote Monitoring

Application Story

- ⚡ Enhances Workplace Safety – Protecting Workers' Health Through Oxygen Monitoring and Multi-Layer Alarm Systems
- ⚡ Uninterrupted Smart water supply: BRK-2841M Builds a Redundancy System
- ⚡ Accurately Locating Radiation Sources – Integrating Geiger Counters With LinPAC to Build a Health Protection Network
- ⚡ Rescue On-Site Communication Failure! tDS-715i Helps Resolve SCADA Serial Communication

Products Column

- ⚡ Remote Monitoring and Real-Time Management. IoTstar 2025 Creates a Simple and Easy-to-Use Intelligent Monitoring Platform
- ⚡ Upgrade Your Industrial Control System Easily — tGW-700 Series Gateway

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Data Security Without Compromise

BRK-2841M Creates a Completely New Security Layer for Data

- ▶ Data Distribution / Centralized Management
- ▶ Communication Redundancy
- ▶ Built-in Database
- ▶ Comprehensive Cybersecurity Protection Mechanism
- ▶ Device IP Node Health Check and Reporting
- ▶ Node-RED Dashboard: Built-in Node-RED Dashboard
- ▶ Provides EZ UAQ Remote Management Utility

Data Security Management

Performs automatic daily checks on device status and posts updates to a Telegram chat, with real-time push notifications for any anomalies or recoveries.



Telegram



Grafana

AVEVA Edge

Field-Level Data Transmission

Temperature, pressure, current status, operating speed, and more...

Management-Level Data Distribution

Production volume, downtime frequency, processing accuracy, and more...

Business-Level Data Aggregation

Capacity utilization, yield rates, total production, and more...



ICP DAS Energy Management Solutions Flexible and Stable Drive the Corporate Sustainability!

Translated by Eva Lee

From Manual to Smart Monitoring The Transform Key in Energy Management

Rising electricity prices present challenges for businesses. IT staff must effectively monitor electricity consumption in computer rooms and other equipment-intensive areas. Traditional manual meter readings and decentralized monitoring are difficult to integrate and often prone to errors, making it hard to support decision-making for energy saving, carbon reduction, and operational efficiency. A stable, easy-to-integrate energy management solution is key to digital transformation.

One-stop Power Solution at COMPUTEX

At COMPUTEX this year, ICP DAS presents a new power monitoring solution for server rooms and high-density power areas that integrates smart meters, meter concentrators, and cloud platforms. It helps enterprises visualize and manage energy consumption, monitor power usage, identify abnormal conditions, and analyze data across circuits. It includes PM-4324AP multi-circuit smart meters, which can support up to 24 single-phase or 8 three-phase circuits; PMC-2841M meter concentrator to integrate the field data with

alarm broadcasting, security encryption, etc.; and IoTstar 2025 cloud software to visualize all the power information. It integrates with a SQL database for analysis and further management.

Simplify Construction, Reduce Costs Integration Tools for Engineers

The PM4324AP supports Modbus RTU protocol for quick integration with existing systems. Its bidirectional kWh metering tracks both power consumption and energy feedback. It can be installed in existing distribution panels or near distribution boxes. It features two independent main voltage inputs for simplified wiring and construction. It supports 333 mV output current meters (CT), allowing users to select CTs based on on-site needs.

Smart Monitoring + Cybersecurity Building the Next-Gen Energy Management Core

The PMC-2841M features a built-in IF-THEN-ELSE logic engine that triggers alarms or adjusts equipment operation based on power data. Abnormal power data triggers alarms via LINE, WeChat, Telegram, or Email. This helps power demand monitoring and control to reduce costs. The built-in Micro SD card saves power data, uploading via FTP regularly. The "Recovery" mechanism retains and uploads

data files during network disconnection. It is ideal for data centers, smart factories, etc.

The PMC-2841M offers Security functions. It supports multiple encrypted protocols like HTTPS, SNMPv3, SFTP/FTPS; VPNs like OpenVPN and SoftEther; and IP filtering like whitelist/blocklist to enhance IT and OT communication security. The PMC-2841M, with excellent performance, smart logic, and security design, creates a stable, secure core for smart energy management.

From Energy Insight to Sustainability Data Support for Decision-Makers

ICP DAS energy management solutions offer both simplicity and flexibility. For engineers, the adaptable main voltage input design of PM-4324AP simplifies integration and reduces setup costs. For decision-makers,

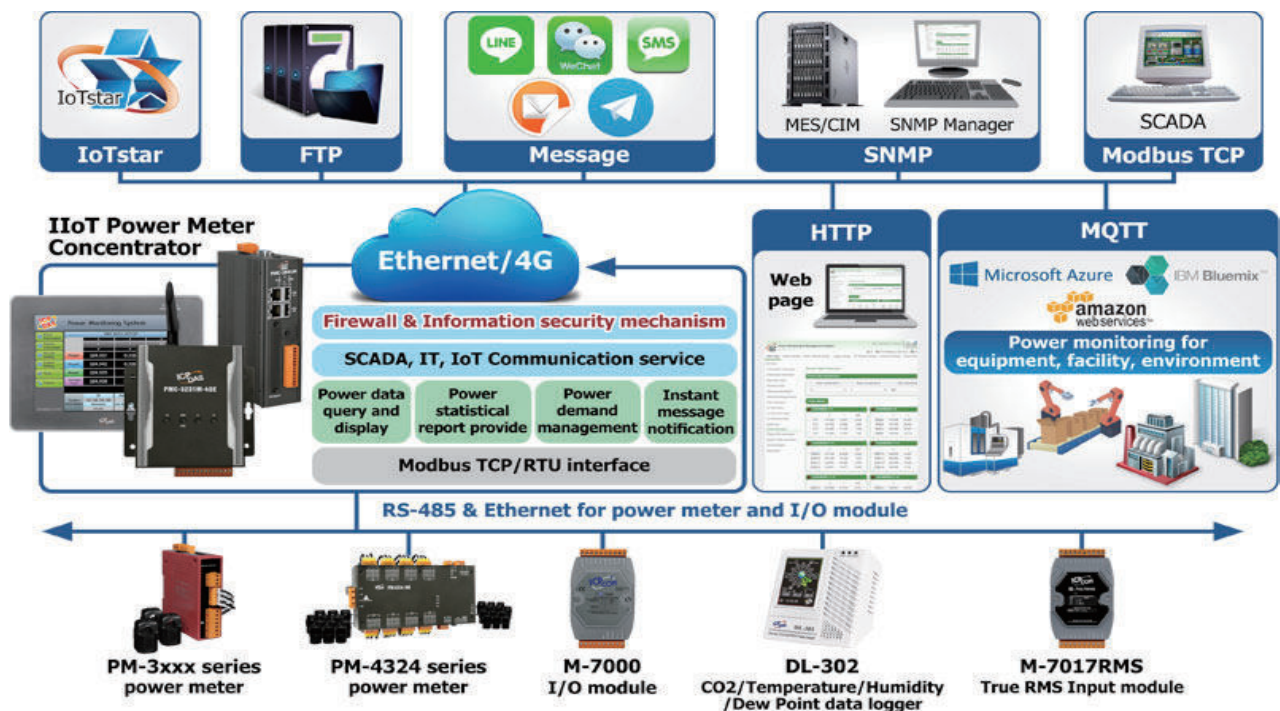
it provides accurate power usage and device status and reduces the on-site inspection needs. Energy data is integrated in the cloud, offering a valuable basis for operational analysis. With the ICP DAS energy solution, enterprises move toward smart power usage and sustainable growth to create a secure, data-supported, modern energy management center.

Exhibition Info

Event: COMPUTEX Taipei

Date: May 20–23, 2025

Booth: Nangang Exhibition Hall 1, 1F, K0415 ■



▲ ICP DAS energy management system architecture includes: Power Meter, Power Meter Concentrator, and Cloud Management Software



Enhanced Equipment Safety, Smart Temperature Management Prevent Overheating with Real-Time Remote Monitoring

ICP DAS infrared temperature monitoring system, based on WISE-2841M, with iSN module and IoTstar cloud platform, realizes real-time monitoring, alerting, displaying thermal images, and predicting equipment abnormality. Suitable for power, industrial, and medical applications, it prevents overheating and predicts failures to enhance safety.

Written by Michael Lai (Translated by Carol Hsu)

From Monitoring to Protection Temperature is the key to equipment safety

It is efficient to monitor the safety of equipment through temperature. Infrared sensing modules have the following advantages for electrical safety monitoring.

■ Detect abnormal temperature changes

Infrared monitoring modules detect the surface temperature of electrical equipment or panels and identify issues like short circuits, loose connections, or overloads.

■ Non-contact monitoring prevents safety risks

Traditional detection involves contact with equipment, risking electric shock or interfering

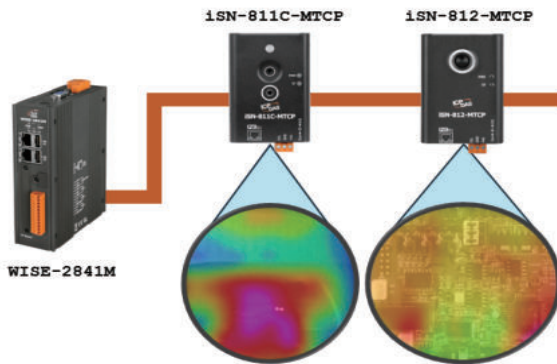
with equipment. Infrared technology enables remote monitoring, ensuring safety and suitability for high-voltage and precision electronics.

■ Provides real-time and remote monitoring

Connected to the monitoring system, infrared modules provide 24-hour monitoring and real-time alerts. With IoT-based remote monitoring and data analysis, enterprises can also predict equipment status and maintenance needs.

Full Visibility into Equipment Temperature! WISE-2841M Enhances Thermal Image Monitoring

The Advanced Edge Computing Controller WISE-2841M series modules, developed by ICP DAS, paired with the iSN-81x-MTCP infrared modules, offer a quick and easy solution for setting up infrared safety monitoring systems.

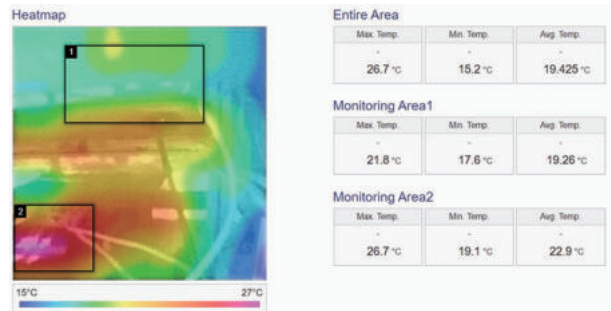


▲ WISE-2841M with iSN-81x-MTCP to monitor equipment temperature

The WISE-2841M connects up to 16 iSN-81x-MTCP IR temperature sensing modules via Modbus TCP. Users can monitor thermal images in real time through the WISE web interface and select specific image areas for focused monitoring.

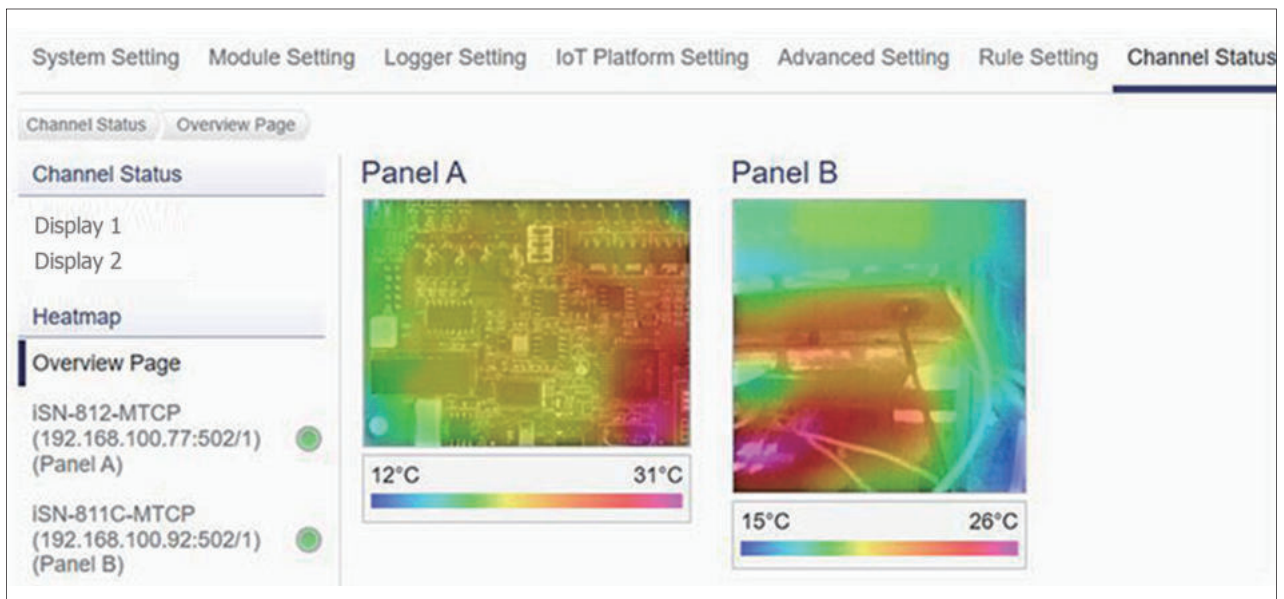
WISE compiles the highest, lowest, and average temperatures of monitored areas and

logs all data in CSV files. These data can trigger IF-THEN-ELSE logic for actions like motion control or image storage when temperatures cross set thresholds. Temperature data can be summarized in IoTstar 2025, ICP DAS's cloud management software. Trend charts help detect long-term temperature rises and assess device stability in advance.



▲ Users can define monitoring areas and obtain temperature data for each area.

The saved thermal image can be sent to administrators via instant messaging applications such as Telegram or WeChat, allowing them to quickly understand the equipment status. Alternatively, the images can be uploaded to IoTstar 2025 for event recording and storage, and displayed on the IoTstar dashboard.



▲ Overview of all equipment temperatures in real time via the WISE webpage



▲ Instant messaging notification with thermal image via Telegram

WISE with IR sensing modules prevents equipment risks before temperature changes

With infrared non-contact temperature sensing, WISE and iSN-81x-MTCP enable real-time thermal sensing while reducing the risk of manual inspection - ideal for high heat, high-pressure environments. Real-time alarms and remote

monitoring help users detect anomalies early and take immediate action. Through automated logic setting and long-term trend analysis, predictive maintenance is supported, increasing equipment's useful life and safety. This marks a critical step towards intelligent management, creating a stable and intelligent environment for all industries.

More information for ICP DAS WISE-2841M and iSN-81x-MTCP

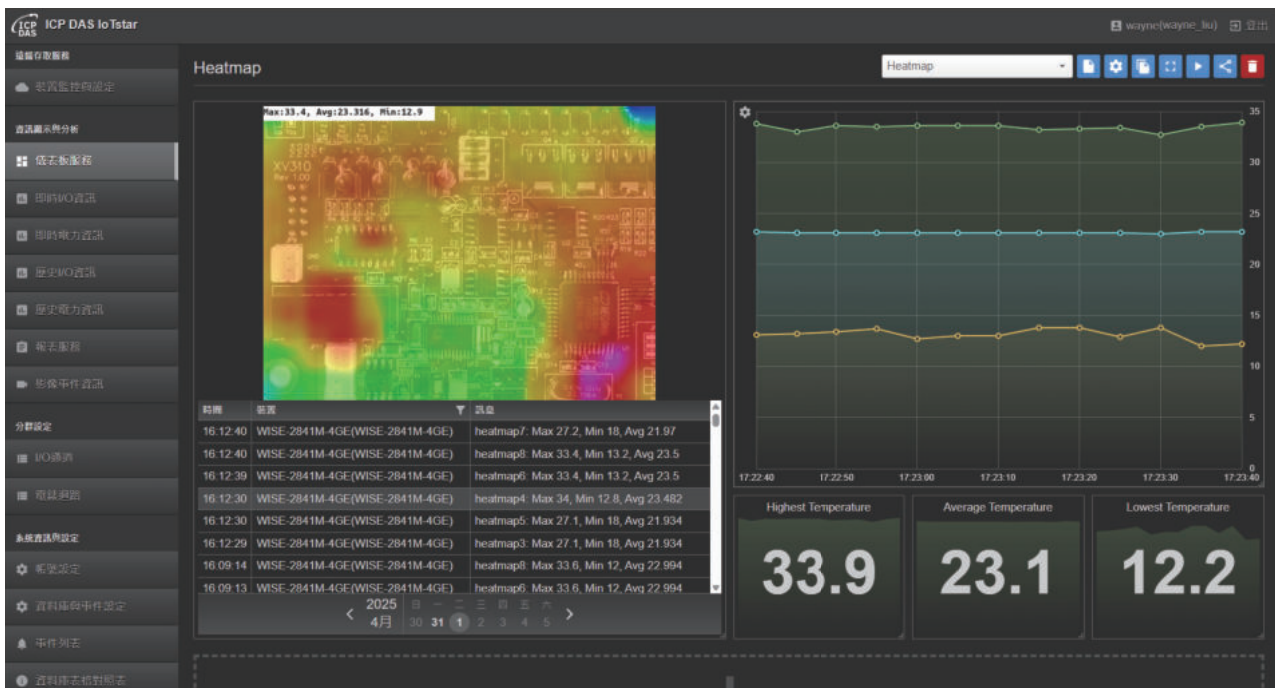
THE ICP DAS website provides detailed information for WISE-2841M and iSN-81x-MTCP, such as product specifications, catalogs, user manuals, etc. Please refer to the QR code below. ■



WISE-2841M



iSN-81x-MTCP



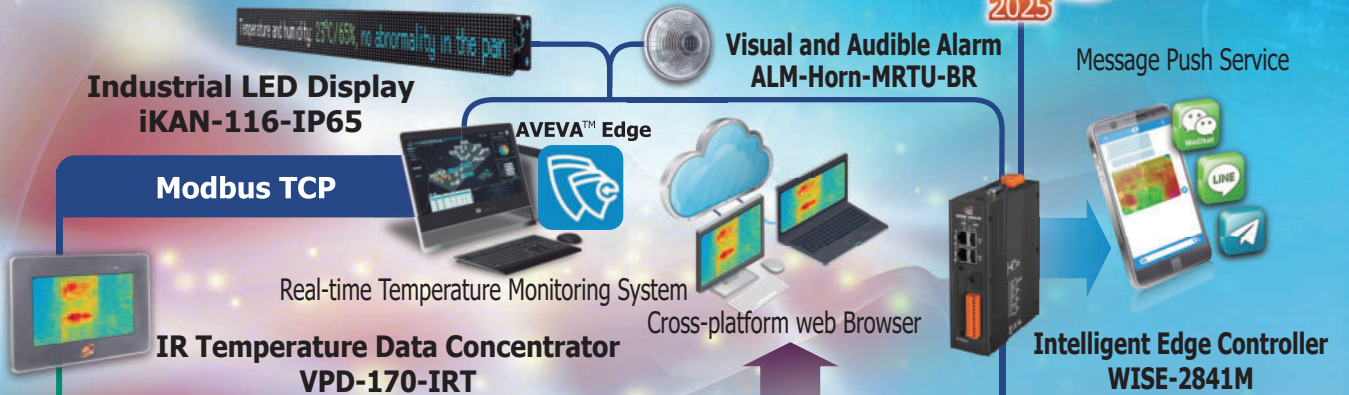
▲ Cloud Monitoring System with IoTstar 2025

Intelligent Safety Monitoring Solution

- Supports Modbus, MQTT, and Restful protocols for seamless integration with existing systems.
- Non-contact temperature monitoring minimizes process interference.
- Works with WISE-2841M and IoTstar 2025 for real-time smart monitoring, instant alerts, and cloud storage.
- Visual data analysis with predictive maintenance to reduce failure risks.
- Multiple installation options suitable for various industrial environments.



Message Push Service



iSN-812-MRTU



iSN-811C-MTCP



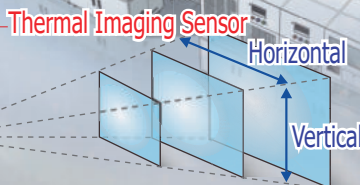
iSN-813-MTCP

IR Temperature Sensing Module

Machine Power Distribution Panel Safety Monitoring

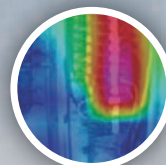
Control Room Panel Safety Monitoring

Measurement Angle

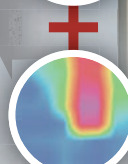


Model	Pixel	Object Distance	Measurement (Horizontal)	Measurement (Vertical)
iSN-811C-MTCP	8x8	1M	1.15M	1.15M
		10cm	11.5cm	11.5cm
iSN-812-MRTU iSN-812-MTCP	32x24	2M	5.72M	3.06M
		10cm	28.6cm	15.3cm
iSN-813-MTCP	60x80	6M	12M	7.92M
		10cm	20cm	13.2cm

Camera Image



Merged Image



Temperature Image



E-Catalog
IR Temperature Sensor iSN-81X Series



E-Catalog
熱顯像產品



Enhances Workplace Safety — Protecting Workers' Health through Oxygen Monitoring and Multi-Layer Alarm Systems

In solder paste welding processes, monitoring oxygen concentration is critical to ensure worker safety. ICP DAS introduces the CL-250-E oxygen detection module, integrated with buzzer, voice, and LED alarm systems. It enables real-time abnormality alerts, strengthening occupational safety management and helping enterprises establish a safer, more stable production environment.

Written by Evanna Lin (Translated by Carol Hsu)

In modern manufacturing, solder paste processes are crucial to product quality. However, they often involve high temperatures and the release of hazardous gases. This makes real-time oxygen monitoring a key safety measure for protecting workers and maintaining process integrity.

Continuous monitoring of oxygen levels is a key measure in occupational safety management. It effectively safeguards worker health and ensures a safe and stable production process.

This article explores, from an occupational safety perspective, why oxygen monitoring is essential during solder paste operations and introduces ICP DAS's oxygen detection module along with its alarm solutions to enhance workplace safety monitoring effectiveness.

The Importance of Oxygen Monitoring in Solder Paste Welding Lines

During the solder paste welding process, heated fumes and volatile organic compounds are released. In enclosed workspaces, these gases can accumulate and lead to a drop in oxygen levels. When oxygen falls below 19.5%, it enters a danger zone, posing serious health risks such as dizziness, shortness of breath, blurred vision, and even suffocation or death. Moreover, low oxygen environments can destabilize equipment performance, further affecting production efficiency and quality.

Therefore, real-time oxygen monitoring and maintaining safe oxygen levels in the environment

are critical to ensuring occupational safety and enhancing operational productivity.

CL-250-E Oxygen Detection Module – Protecting Human Health

The CL-250-E from ICP DAS is a highly stable oxygen monitoring device designed for industrial environments. It accurately measures oxygen concentration and instantly reports abnormalities. Key advantages of the CL-250-E include:



- **Accurate Oxygen Measurement:** Equipped with an advanced oxygen sensor module, the CL-250-E provides precise oxygen level readings, enabling early detection of low-oxygen risks.
- **Buzzer Alarm Function:** When oxygen levels fall below safe thresholds, the CL-250-E activates its built-in buzzer alarm, alerting workers to take immediate action and avoid hazards.
- **Easy Integration:** Designed for simplicity, the module integrates seamlessly with existing monitoring systems and supports compatibility with other alarm devices for comprehensive safety supervision.
- **Stability and Durability:** Built to withstand high temperatures and complex industrial conditions, the CL-250-E ensures long-term, reliable operation, securing production safety.

Enhancing Workplace Alarm Mechanisms

To further strengthen safety monitoring, ICP DAS offers a series of complementary alarm solutions. These systems provide multi-channel alerts across various factory zones in response to abnormal oxygen levels, ensuring workers can respond promptly and execute emergency

measures. The solutions are described below.

Buzzer Alarm ALM-Horn

- **High-Volume Audio Alert:** When oxygen concentration becomes abnormal, the ALM-Horn emits a loud beeping sound to alert workers for immediate action. This real-time response system minimizes reaction delays and ensures the alarm can be heard even in noisy environments.
- **High Adaptability:** The ALM-Horn is suitable for diverse industrial settings, operating reliably in both dry and humid conditions, as well as in extreme temperatures. It consistently delivers clear alerts even in harsh environments.



MP3 Voice Alarm Module ALM-04-MRTU

- **MP3 Voice Alerts:** The ALM-04 module can play custom MP3 voice files to clearly inform operators about specific conditions—such as low oxygen levels. This voice warning system helps prevent workers from overlooking alarms during busy operations.
- **Multilingual Support:** The ALM-04 supports multiple languages, making it ideal for multilingual production lines and improving safety in globalized workplaces.



Industrial LED Display iKAN-124



- **Visual Warning:** The iKAN-124 clearly displays alarm messages on an LED screen and uses different colors to indicate alert levels. This improves visual recognition and enhances

worker awareness of safety risks.

- **Long-Range Visibility:** Ideal for large-scale production areas or open environments, the iKAN-124 delivers clear visual alerts from a distance, ensuring even remote personnel can promptly identify safety issues.

Touch HMI Device TPD-703-64

- **Intuitive Display and Control:** The TPD-703-64 HMI provides operators with a clear, real-time interface to display environmental data and alarm status. It allows manual configuration and adjustments, improving operational efficiency and response time through its user-friendly design.



Comprehensive Benefits of Safety Monitoring

By adopting ICP DAS's oxygen detection and alarm solutions, enterprises can implement holistic safety monitoring and achieve the following benefits:

- **Real-Time Response for Emergency Management:**

From oxygen detection to alarm triggering, the entire process is immediate and efficient, greatly improving workers' reaction speed to potential hazards and reducing the chance of accidents.

- **Multi-Level Alarm System:** With sound, voice, and visual alerts, the system overcomes limitations of single-alert setups, ensuring all workers receive timely safety notifications.
- **Enhanced Worker Safety Awareness:** Through an integrated alarm system, workers can better understand their working environment and stay alert to risks, protecting both themselves and their colleagues.
- **Regulatory Compliance:** Many industrial standards require oxygen monitoring and alarm systems in enclosed environments. ICP DAS products help enterprises meet these legal obligations and avoid safety-related risks.

Installation Process

The solution involves installing oxygen monitoring modules on the production line, complemented by multi-channel alarm systems. ICP DAS's setup uses the DL-1052 and CL-250-E to detect environmental gases. If an abnormal condition is detected, alarms such as



▲ Production line equipped with oxygen monitoring modules to collect safety data, integrated with alarm systems for real-time response.

the ALM-04-MRTU and ALM-Horn are triggered.

Creating a Safe Production Line Starts with Real-Time Oxygen Monitoring

In conclusion, oxygen concentration monitoring is a vital measure to ensure worker safety, improve productivity, and maintain product quality in operations like solder paste welding. ICP DAS's detection modules and alarm solutions provide a complete, efficient workplace safety system. By combining buzzer alerts, voice prompts, and visual displays, the solution enhances alarm responsiveness and protects the working environment. Adopting these advanced safety technologies helps enterprises establish safer and more stable production lines while securing the health and lives of their employees.

More Information on ICP DAS Oxygen Monitoring Solutions

For complete details on oxygen monitoring products—including specifications, datasheets, user manuals, and application guides—please visit the ICP DAS website or scan the QR code below. ■



■ **DL-1052** Remote O₂/CO₂/Temperature/Humidity/Dew Point Data Logger Module (RS-485, Ethernet, PoE)



■ **CL-250-E** O₂/Temperature/Humidity/Dew Point Data Logger Module



■ **iKAN-124** Single-row, Industrial LED Display with Modbus protocol



▲ Aluminum rails and straps are used to secure the nitrogen pressurized lines next to the two soldering machines.



▲ The iKAN-124 displays on-site oxygen concentration.



▲ Integrated monitoring system with TPD and on-site alarms.



Uninterrupted Smart water supply: BRK-2841M Builds a Redundancy System

City water supply is facing problems such as water leakage, aging infrastructure, and unstable communication. ICP DAS BRK-2841M redundancy solutions ensure stable monitoring, provide uninterrupted data, JSON analysis, and file sync. It enhances SCADA efficiency and sets a new standard for Smart water management.

Written by Chris Yen (Translated by Carol Hsu)

A New Era of Water Supply: Traditional Management Faces Challenges, Smart Monitoring Becomes Essential

Due to urbanization and rising water demand, traditional management faces challenges like aging pipelines, poor leakage monitoring, and equipment integration issues.

Communication stability of field devices is a key concern, as traditional gateways often fail to ensure stable connections and real-time data in high-demand environments, requiring redundancy architectures for reliability.

The water supply system plays a vital role in modern society. Ensuring a safe and stable water

supply is an important issue for public health and urban development.

The water supply system requires stable, continuous monitoring of key data to enable real-time adjustments and prevent the following issues:

- Water Pressure: Too low causes shortages; too high may cause pipes to burst.
- Water Flow: Monitors supply and adjusts distribution.
- Water Quality: Monitor pH, heavy metals, and organic pollutants.
- Water Tower Level: Predicts the rate of water consumption.
- Water Leakage: Aging or broken pipes can lead to serious water wastage.

- Energy Consumption: Monitors energy needed for facility operation.

Redundancy in Place, No Data Loss! Key Technologies for Stable Water Supply System Operation

ICP DAS presents the BRK-2841M for communication redundancy, data analysis, and file sync. It enhances system stability and simplifies

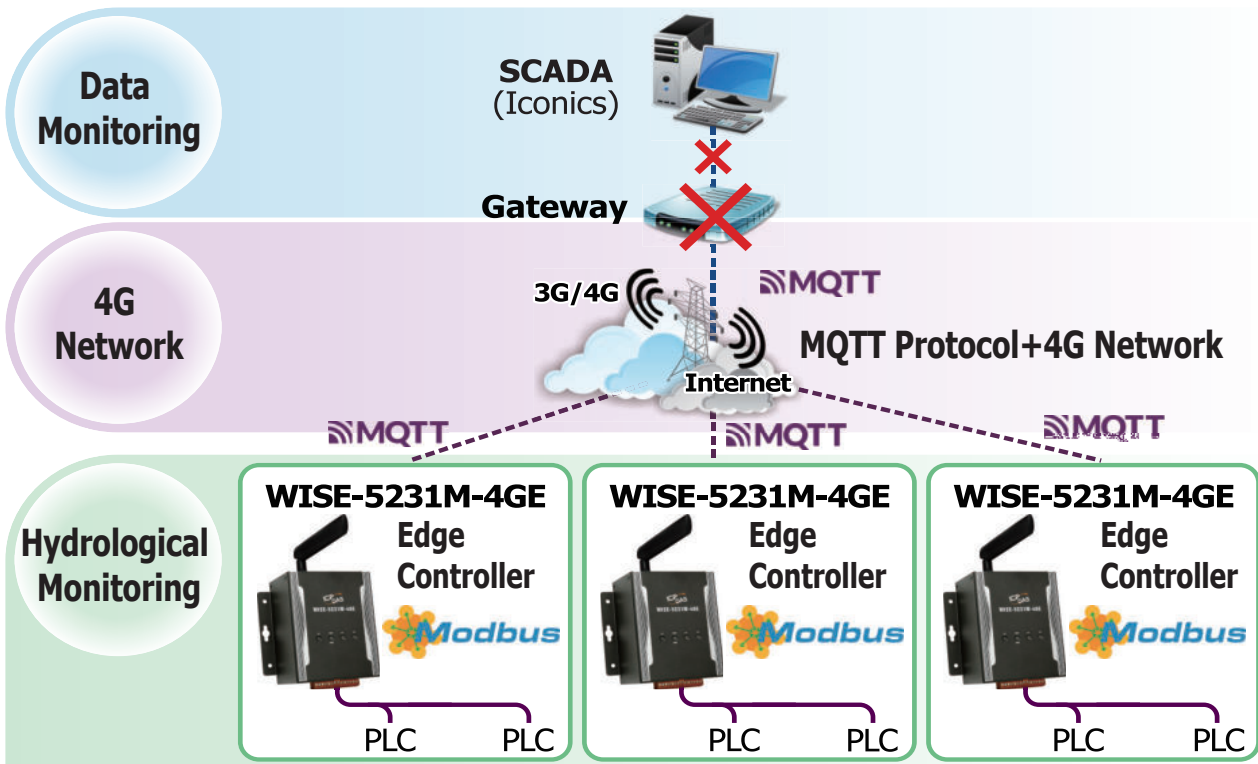
SCADA integration, thereby improving data collection and management. Redundancy systems offer the following advantages:

Redundancy architectures ensure system stability

The water supply system uses a single gateway for data acquisition and forwarding. If

	With Redundancy	Without Redundancy
System Resilience	If one device fails, the other keeps running .	A single failure can cause a total shutdown.
Data Integrity	If one device fails, the other continues running, avoiding data loss .	Device failure may cause data loss.
Maintenance Cost	Reduces emergency repair costs with automatic fault switching, less manual effort , better maintenance efficiency, and lower long-term costs.	A single failure can cause service downtime. Sudden failures require urgent repairs, which may increase maintenance costs.

▲ A redundancy system offers advantages in system resilience, data integrity, and maintenance costs



▲ With a single gateway, it will not be able to connect to the SCADA when it fails.

the gateway fails, all services are shut down, and the SCADA can not obtain the status of pumps, pressure sensors, and flow meters, resulting in data loss.

A redundancy architecture is built with BRK-2841 M. One acts as the master for data acquisition and transmission to the SCADA, while the other stands by as a backup. If the master fails, the backup seamlessly takes over, ensuring stable and continuous data monitoring.

JSON for Multi-Device Data Integration

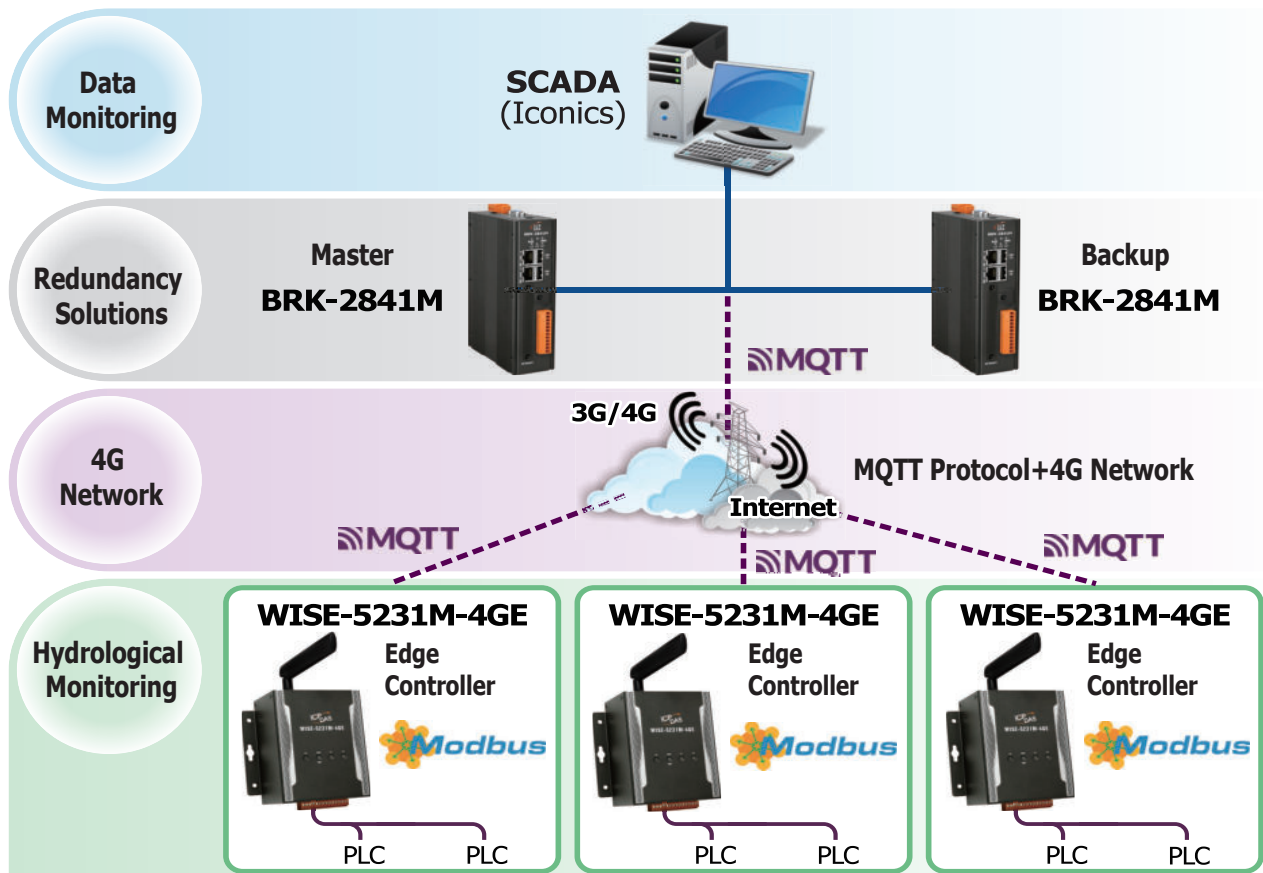
JSON is a widely used data format in Internet of Things (IoT) systems, responsible for exchanging, storing, and analyzing data between devices to ensure stable system operation.

The owner's water supply system includes water pressure, flow, and water quality sensors that regularly measure environmental data. WISE-5231 M-4GE collects PLC data, converts it into JSON, and sends it to BRK-2841M via MQTT. BRK-2841M analyzes the JSON, converts it to CSV as required, and uploads it to the owner's FTP Server for SCADA use.

File synchronization to enhance data continuity reliability

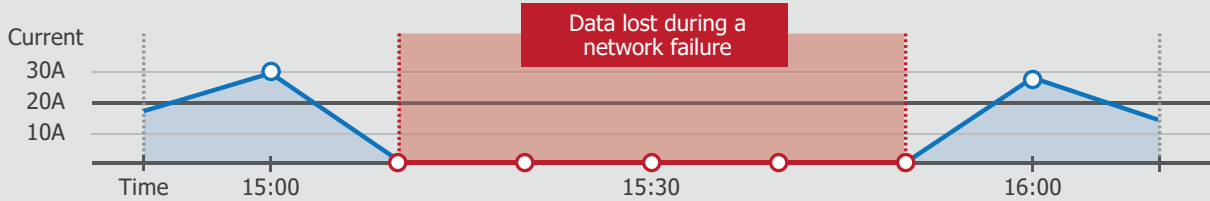
In modern data management, Data Continuity and Reliability are key to ensuring the stable operation of critical systems. It prevents data loss from equipment failure, network outages, or disasters, allowing systems to maintain service and operate efficiently.

In a water supply system, continuous monitoring

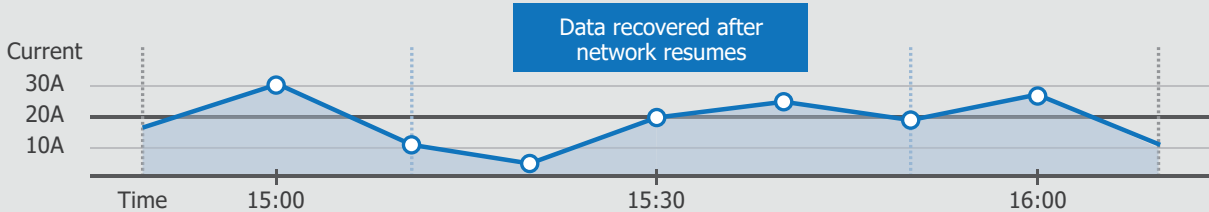


▲ BRK-2841M IIoT MQTT Communication Server, Communication Redundancy Architecture

Common Data Logging



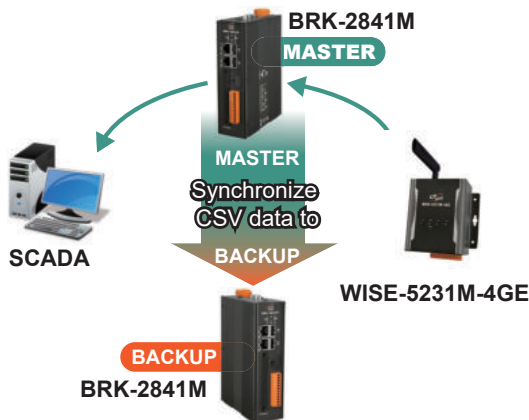
Data Logging with a Data Recovery Function



▲ The BRK-2841M features a data recovery function for CSV files, ensuring data integrity.

of water pressure, quality, and other data is crucial. With data continuity and reliability, monitoring nodes can stably synchronize data, ensuring the central system retains a complete record even if a station fails, preventing scheduling errors.

In the BRK-2841M redundancy architecture, the Master handles data receiving and file generation. If the communication is lost, data during that period would normally be unrecoverable. However, with file synchronization, the Backup stores the data during the outage and sends it to the Master once communication is restored, ensuring CSV file integrity.



▲ BRK-2841M supports file synchronization.

The Final Mile of Stable Water Supply Building an Uninterrupted Monitoring System

Water supply systems must continuously monitor data such as pressure, flow, quality, pipeline status, and energy consumption, making communication stability a top priority. ICP DAS's solution ensures complete data records for safe, stable operation. Redundancy architectures reduce emergency maintenance costs, enhance efficiency, lower long-term expenses, and enhance system reliability and maintainability.

More BRK-2841M Information

ICP DAS website provides detailed BRK-2841M product information, such as product specifications, catalogs, user manuals, etc. Please refer to the QR code on the right. ■





Accurately Locating Radiation Sources — Integrating Geiger Counters with LinPAC to Build a Health Protection Network

Nuclear radiation poses health risks from both natural and artificial sources. This article presents how Geiger counters, triangulation, and LinPAC work together to locate radiation sources, improve monitoring, and enable rapid response via real-time data transmission.

Written by Moki Liu (Translated by Lynn Tang)

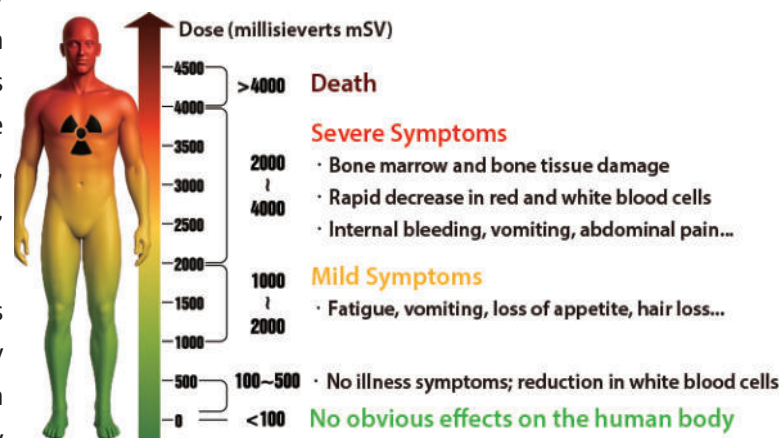
Origins and Impacts of Nuclear Radiation

Nuclear radiation involves high-energy particles or waves—alpha, beta, and gamma rays—emitted by unstable atomic nuclei. It exists both naturally, from cosmic rays and radioactive elements like uranium and radon, and artificially, through nuclear power, medical treatments, industrial testing, and weapons development.

Each radiation type affects organisms differently. Alpha particles have high energy but low penetration, blocked by skin or air. Beta particles penetrate skin but are stopped by aluminum. Gamma rays are highly penetrating

and need thick lead or concrete for shielding.

Radiation effects depend on exposure time, dose, and type. High doses can cause Acute



▲ Biological Effects of Radiation Exposure

Radiation Syndrome (ARS) with nausea, burns, or organ failure. Long-term low doses raise risks of cancer and genetic damage. Thus, accurate detection and localization—using Geiger counters and triangulation—are essential for safety and protection.

Principles and Applications of the Geiger Counter

The Geiger-Müller counter is a widely used radiation detection device designed to measure α , β , and γ radiation. Its core component is the Geiger-Müller tube, which is filled with inert gas (such as argon or neon) and maintained at high voltage. When a radiation particle enters the tube, it ionizes the gas, producing free electrons and ions. This triggers an avalanche effect, resulting in measurable pulse signals that are processed through electronic circuits and displayed as readable data.

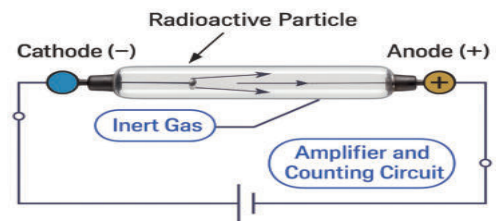


▲ Appearance of Geiger Counter

Radiation readings from a Geiger counter are typically measured in CPM (Counts Per Minute) or mSv/h (millisieverts per hour), indicating the intensity of radiation in the environment. Due to its compact size, low cost, and high sensitivity, the Geiger counter is widely used in environmental monitoring, nuclear power plant safety, medical radiation protection, academic research, and radiation contamination detection.



▲ Inner of Geiger Counter



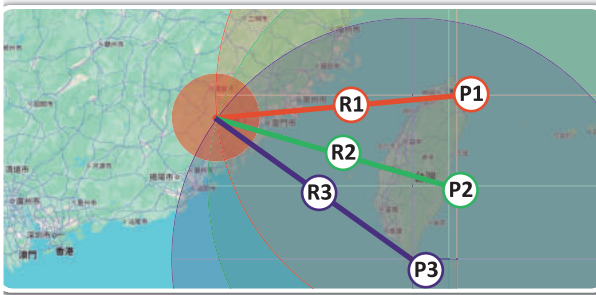
▲ Geiger Tube

Despite its advantages, the Geiger counter has limitations—it cannot differentiate between types of radiation and may fail in high-dose environments due to saturation effects. Nevertheless, its ease of use and portability make it a preferred tool for personal safety and field testing. When integrated with advanced data analytics, such as triangulation methods, it significantly enhances its application value for accurate source localization.

Applying Triangulation Technology to Radiation Monitoring

Triangulation is a method that calculates the position of an unknown target using multiple known measurement points. It is widely applied in navigation, communications, seismic monitoring, and environmental surveillance. In radiation detection, when Geiger counters at different locations register varying radiation levels, triangulation can be used to pinpoint the radiation source.

Since radiation intensity decreases with distance, analyzing multi-point measurement data helps determine the relative location of the source. In cases of mobile sources, such as



▲ Triangulation Used to Pinpoint the Radiation Source

radioactive cloud leaks, time-series data can track the movement. These techniques enable environmental monitoring agencies to quickly identify anomalies and take necessary actions—such as quarantining contaminated zones, tracing sources of pollution, or supporting emergency response decisions.

Using LinPAC to Build a Radiation Monitoring and Response Network

By integrating Geiger counters with LinPAC, radiation data can be recorded in real time and



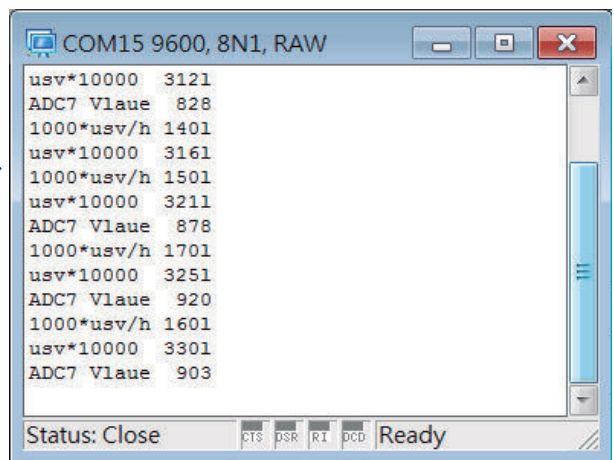
▲ Geiger counters integrated with ICP DAS LinPAC can record radiation data in real time and transmit the measurements to a central server.

transmitted wirelessly via Wi-Fi, LoRa, or 5G to a central server for analysis. If the monitoring equipment is equipped with a GPS module, location data can be synchronized, allowing triangulation methods to accurately compute the source's position. These systems can be deployed on drones, autonomous robots, or fixed stations, enabling wide-area radiation surveillance without being constrained by human mobility.

For example, in a nuclear power plant incident, drones equipped with Geiger counters can fly over affected areas and quickly generate radiation heatmaps, supporting decision-makers in defining safe zones and action plans. Upon detecting a radiation anomaly, the system can automatically calculate the pollution source's location and immediately issue alerts to relevant authorities for rapid response. The adoption of this technology greatly reduces human exposure to hazardous radiation environments and enhances the capacity for monitoring and emergency handling.

LinPAC: Opening a New Horizon in Radiation Monitoring

Integrating Geiger counters with triangulation, LinPAC enhances radiation anomaly detection in



both accuracy and efficiency. Embedded systems and drones enable flexible, real-time, and safe monitoring with reduced human exposure. This solution applies to nuclear safety, radiation control, border security, and environmental research. With AI and big data integration, smarter monitoring platforms can boost surveillance precision and responsiveness—supporting global safety and sustainability.

Learn More About ICP DAS LinPAC

The ICP DAS website provides comprehensive information about LinPAC (Linux-based Programmable Automation Controller), including product specifications, catalogs, user manuals, and application guides. Please refer to the QR code.



References

- [1] Geiger counter, https://en.wikipedia.org/wiki/Geiger_counter.
- [2] “Design of Indoor Positioning System Based on IEEE 802.15.4a Ultra-wideband Technology”, Jinkang Cen, June 2013.
- [3] “Robust Indoor Positioning Provided by Real-Time RSSI Values in Unmodified WLAN Networks”, IEEE JOURNAL OF SELECTED TOPICS IN SIGNAL PROCESSING, 2009.
- [4] “基於 2.4G 的無線定位系統方案”, Ives Shen, Johnny Hu, Jan 2017.
- [5] “無線定位技術應用於物品位置的搜尋系統”, Johnny Hu, March 2018.
- [6] “eHealth 智慧健康醫療與 Linux 應用”, Moki Liu (ICPDAS PACTECH Vol.49), Dec 2015. ■

LinPAC-5000 Family

Linux

Rich Development Tools

- LinPAC SDK for Windows & Linux Environment
- Support for GNU C Language
- Support for JAVA: JVM, JIOD (Java I/O Driver)
- Support for GUI: Using GTK + Library

Audio In/Out

Various Communications

- Ethernet
- RS-232/485
- USB host

microSD

Local I/O Expansion Board

More than 10 I/O XW-board are supported



Rescue On-Site Communication Failure! tDS-715i Helps Resolve SCADA Serial Communication

The abnormal communication on-site caused the SCADA system to fail. The client deployed the ICP DAS tDS-715i module and quickly completed the settings with the remote support of technical service. Featuring RS-485 to Ethernet conversion, PoE power, virtual COM port, web interface, and isolation protection, the tDS-715i ensured stable communication and compatibility, successfully restoring the system and gaining recognition on site.

Written by Ethan Lin (Translated by Eva Lee)

One day, a client asked if ICP DAS had a product to replace a converter from the M brand. I replied that the client could try the ICP DAS tDS-715i serial devices to connect to the Ethernet server, and the result

Unexpected Communication Failure on Site

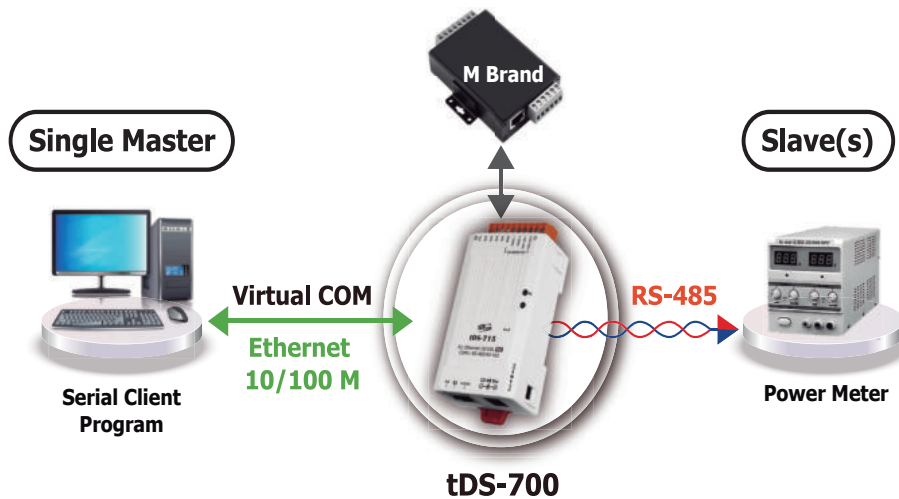
Communication Abnormality, the SCADA HMI Failure

The client works on project development and system maintenance. They have a case of

communication abnormality. The upper host is a PC running SCADA graphic control software. It reads the lower serial (slave) meter device via the network. One day, the SCADA could not show the real-time data of the meters, so the owner called our client.

Step-by-Step Troubleshooting: Testing Tools and Ethernet

The client traced the communication path on-site. It is a PC connected via Ethernet to RS-485 slave meters through a serial-to-Ethernet module. To identify the faulty component, they used a laptop and test software to simulate the



▲ Figure 1: The tDS-715i module replaces the M brand serial device server

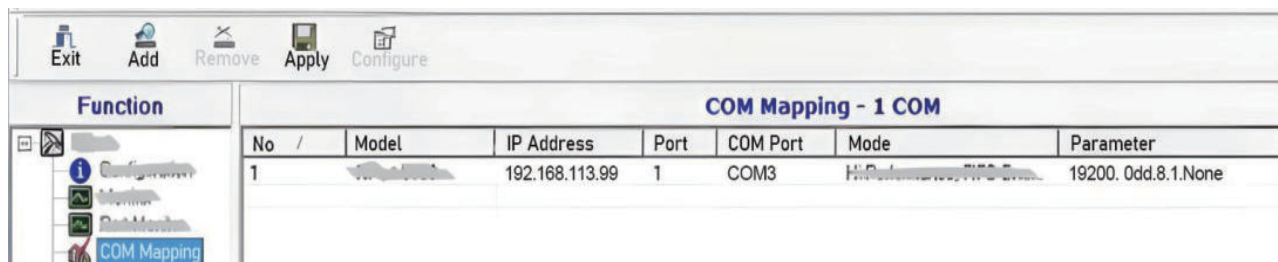
meter receiving SCADA commands, but no data was received. Next, testing the SCADA side, they sent commands via Ethernet to the meters, but still no response. This led them to conclude the serial-to-Ethernet module had failed. Having long trusted ICP DAS products (purchased converters, I/O modules, and controllers) and satisfied with our technical support, the client contacted sales for a replacement. The tDS-715i was promptly recommended.

Choosing the TDS-715i module for SCADA to read values successfully

The ICP DAS technical customer service team kindly taught clients how to use VxComm Utility and the pinout of the tDS-715i module over the phone, even though there are complete manuals for customers to download.

The client set up the tDS-715i module with the VxComm utility and confirmed that the RS-485 pins are wired correctly, but the host PC still can't read and display the lower meter's value. The client is a maintenance company that doesn't know the serial device's communication protocol, Baud Rate, Parity bit, Stop bit, and serial port number of the virtual communication port.

ICP DAS customer service connects remotely to the PC, finds the driver software for the virtual port of the serial device, sets the IP of the tDS-715i, and the serial parameters on VxComm Utility to match those virtual port parameters of the brand M and serial device with an Ethernet module. Next, remove the serial device with an Ethernet from its original setting and turn it off, then ask the client to reboot the computer. The SCADA can now read and display the lower device meter's value smoothly.



▲ Figure 2: The virtual port COM Mapping setting of the on-site serial device to the Ethernet module

Compact Serial Network Module tDS-700 Series - Resolve Communication Crisis

The tDS-700 series is a compact device server that can easily convert non-networked device communication to Ethernet, making it simple to connect to industrial systems. Here's how it resolves on-site communication crises.

Smart Management, Everything Under Control

Based on an amazing tiny form-factor, the tDS-700 achieves the maximum space savings that allows it to be easily installed anywhere, even directly attached to a serial device or embedded into a machine.

The tDS-700 features a powerful 32-bit MCU to enable efficient handling of network traffic. It also has a built-in web server that provides an intuitive web management interface to allow users to modify the module's settings, including DHCP/Static IP, gateway/mask and serial ports.

It can add Ethernet and Internet connectivity to RS-232 and RS-422/485 devices, and eliminate the cable length limitation of legacy serial communication. By using the VxComm Driver/Utility, the built-in COM port of the tDS-700 series can be virtualized to a standard PC COM port in Windows. Therefore, users can transparently access or monitor serial devices over the Internet/Ethernet without software modification.

TCP/IP Data High Speed Channel between Serial Devices

The tDS-700 device servers can be used to create a pair-connection application (as well as

serial-bridge or serial-tunnel), and can then route data over TCP/IP between two serial devices, which is useful when connecting mainframe computers, servers, or other serial devices that do not themselves have Ethernet capability. By its protocol independence and flexibility, the tDS-700 meets the demands of virtually any network-enabled application.

DHCP minimizes configuration errors caused by manual IP address configuration, such as address conflicts caused by the assignment of an IP address to more than one computer or device at the same time. The tDS-700 supports the DHCP client function, which allows the tDS-700 to easily obtain the necessary TCP/IP configuration information from a DHCP server. The tDS-700 also contains a UDP responder that transmits its IP address information in response to a UDP search from the VxComm Utility, making local management more efficient.

Dual Protection for Harsh Environments

The tDS-700 series also contains a built-in CPU watchdog, which automatically resets the CPU if the built-in firmware is operating abnormally, or if there is no communication between the tDS-700 and the host for a predefined period of time (system timeout). This is an important feature that ensures the tDS-700 operates continuously, even in harsh environments. In addition, the tDS-700 series (for i version) also adds 3000 VDC isolation and +/-4 kV ESD protection component that diverts the potentially damaging charge away from sensitive circuits to protect the module and equipment from the sudden and momentary electric current.

Green and energy-saving PoE power supply

The tDS-700(Non-T) offers true IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) functionality using a standard category 5 Ethernet cable to receive power from a PoE switch such as the NS-205PSE. The tDS-700 will also accept power input from a DC adapter. The tDS-700 is designed for ultra-low power consumption, reducing costs and electricity consumption.



tDS-715i Features

The tDS-715i is a tiny Serial-to-Ethernet Device Server. It has one isolated RS-422/485 serial port and Ethernet interface and supports PoE. The Features as following:

- Incorporates any RS-422/485 serial device in Ethernet
- Application Modes: Virtual COM, TCP Server, TCP Client
- VxComm Utility supports 32/64-bit Windows 7 SP1/10/2012/2016
- Max. Connections: 1 socket per serial port is suggested
- Supports pair-connection (serial-bridge, serial-tunnel) applications
- Supports UDP responder for device discovery (UDP Search)
- Tiny Web server for configuration (HTTP)
- Allows automatic RS-485 direction control
- Signal isolation

ICP DAS and tDS-715i Trusted from Device to Field

In this case, the client was satisfied with the product and service and praised ICP DAS as a reliable industrial automation partner. Known for the product quality and technical support, ICP DAS has always won the trust of the industrial automation and communication sectors. Whether in product reliability, expert support, or comprehensive product offerings, ICP DAS consistently demonstrates unmatched advantages.

ICP DAS has long been committed to industrial automation, offering a full range of controllers, communication modules, remote I/O, and embedded systems for smart factories, energy, and environmental monitoring. All products undergo strict testing to ensure long-term, stable performance in harsh environments. Beyond quality products, ICP DAS is known for its expert technical support, helping clients analyze field issues and deliver effective solutions.

This professional and proactive service helps clients overcome challenges and improve system stability. With reliable products and attentive support, ICP DAS continues to earn trust as a leading automation partner.

More ICP DAS tDS-715i Information

The ICP DAS website provides complete and detailed tDS715i product information, such as product specifications, catalogs, user manuals, etc. Please refer to the QR code.





Remote Monitoring & Real-Time Management IoTstar 2025 Creates a Simple and Easy-to-Use Intelligent Monitoring Platform

IoTstar 2025 is the all-new upgrade of ICP DAS's IoT cloud management platform. It integrates the original single purchasing Dashboard Service, Report Service, and Notification functions, making the system upgrade more powerful and efficient. It supports public cloud, private cloud, and PC deployments, and provides real-time access to data and alarm events from remote controllers and sensors. Users can inquire and receive notifications via LINE or Telegram, facilitating intelligent management and digital transformation for enterprises.

Written by Alan Jhu (Translated by Eva Lee)

Cloud Monitoring, Evolved IoTstar 2025: All-in-One Integrated Platform

IoTstar 2025 is the latest IoT cloud management software from ICP DAS, designed to provide organizations with efficient device monitoring and data management capabilities. With IoTstar 2025, users can effortlessly monitor and manage remote WISE/PMC/PMD controllers via the cloud, collect real-time data from sensors and power meters that connect to controllers, and store and analyze data to ensure stable and efficient device operation.

Compared to previous versions, IoTstar 2025 has further enhanced its feature integration. Previously, services such as Dashboard Service, Report Service, and Bot Service required separate purchases. Now, these services have been fully integrated into a single platform, providing a more intuitive and seamless

management experience. Users can monitor key data through a visual dashboard, utilize the reporting system for historical data analysis, and even receive real-time notifications and query sensor data from controllers via the LINE/Telegram app using the Bot Service, enhancing both real-time management and convenience.

IoTstar 2025 supports flexible cloud deployment options, whether on public cloud, private cloud (Virtual Machine), or personal PC environments, enabling rapid implementation across various industries. This newly released IoT platform not only makes device management smarter but also provides organizations with robust support for digital transformation.

In addition to integrating the previous version of IoTstar software and all function packages,

IoTstar 2025 also introduces several new features tailored to user needs and enhances the overall user experience.

IoTstar 2025 Upgrade Steps

For existing IoTstar users, upgrading to IoTstar 2025 requires only a few simple steps. Users can seamlessly retain their previously established cloud platform architecture, historical data records, and dashboard project settings. Below is the process for upgrading from IoTstar to IoTstar 2025. *(Note: IoTstar 2025 will adjust certain database table column types. If you use database data, please modify your program accordingly as needed. For more details, please refer to this document.)*

① Purchase IoTstar 2025

Please contact ICP DAS sales personnel or distributors to purchase IoTstar 2025. After receiving the package, confirm the product serial number on the inner lining of the box.

② Download the IoTstar 2025 Installation Program

Go to the "[Download IoTstar 2025](#)" webpage, fill in your personal information and the "serial number" of the purchased IoTstar 2025, then click the "Get Download Link" button. The system will send the download link to your email for user access.

③ Remove the Previous Version of IoTstar

Run the uninstallation program for the previous version of IoTstar and choose **not to remove configuration files** during the process.

④ Install IoTstar 2025

Run the IoTstar 2025 installation

program and follow the installation guide to complete the installation.

⑤ Register IoTstar 2025

Go to the "[Register IoTstar 2025](#)" webpage, fill in your personal information, the "serial number" of the purchased IoTstar 2025, and the "Hardware ID," then click the "Get License File" button. The system will send the License File to your email as an attachment.

⑥ Import License File

In the IoTstar 2025 License interface, click the "Browser" button and select the License File to import.

⑦ Start the Service

Click "Start Service" to activate the service.

✖For more detailed procedures, please refer to the user manual.



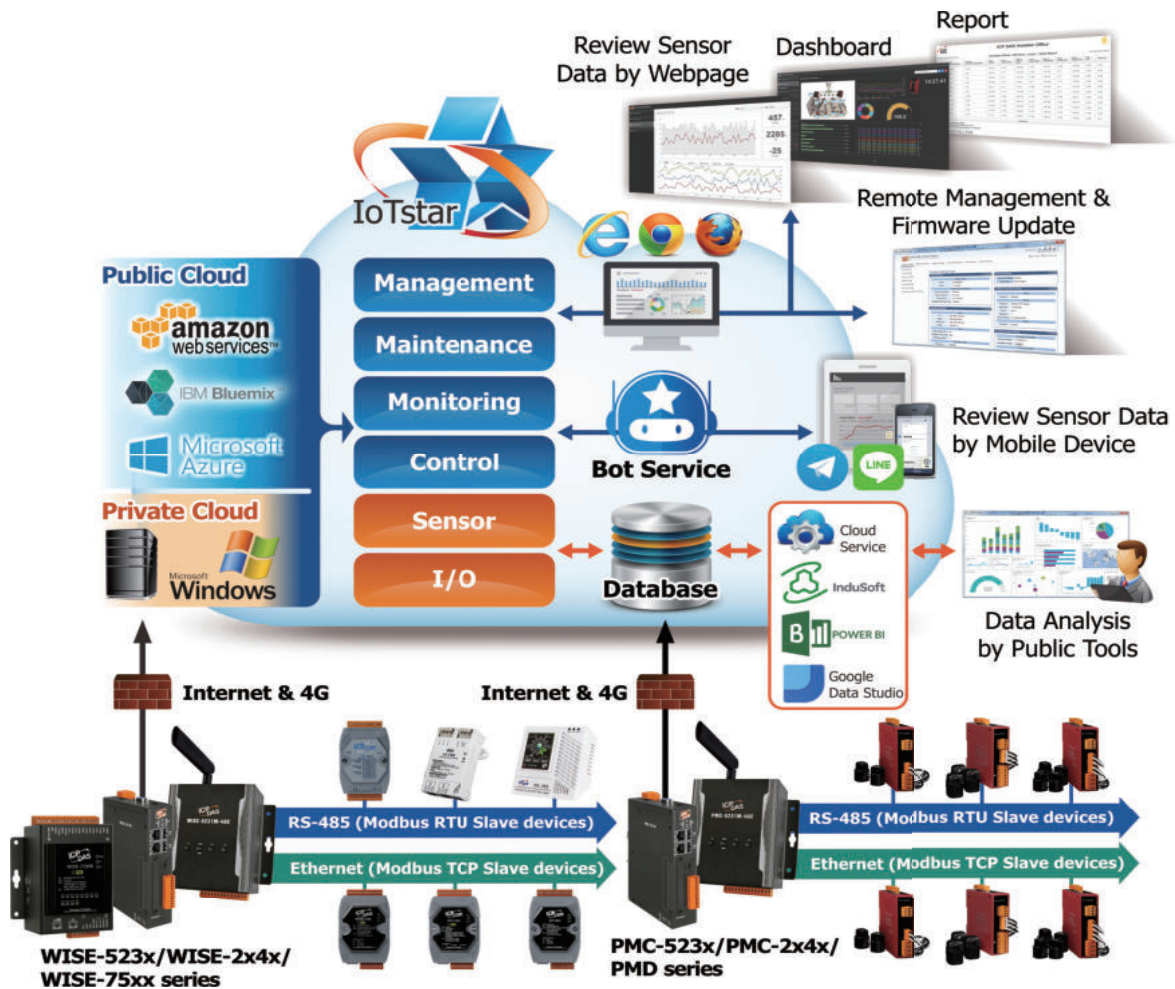
▲ The IoTstar 2025 integrates a suite of features that used to be purchased separately.

Differences between IoTstar 2025 and previous versions of IoTstar

Version	Function				
	Controller Remote Access Service	Sensor Data Collection Service	Sensor Data Visualization Service	Sensor Data Report Service	Bot Service with Mobile Phone
IoTstar 2025	Yes (Includes all features and introduces multiple high-value functions.)				
Old version IoTstar	Yes		Yes (*All require additional purchase)		

IoTstar 2025 New Features Overview

Function		Description
Dashboard	New "Alarm Event List" Widget	<ul style="list-style-type: none"> ● Displays real-time alarm events from controllers on the dashboard. ● Supports sound alerts, improving visibility and response time to abnormal conditions.
	Enhanced "Value Label Overlay" Widget	<ul style="list-style-type: none"> ● Users can now set different sizes for each label, providing more flexible display options. ● Labels can have a transparent background, making them blend seamlessly into the overall dashboard design. ● Added a value output function, allowing users to change values by clicking on labels.
Report	More Flexible Data Report provided	<ul style="list-style-type: none"> ● Data report now can display sensor and power data for multiple days/weeks/months/quarters/years at a time, rather than being limited to a fixed single time period. It can increase the flexibility of data analysis.
Historical Data Display	Automatic update for Historical data display page	<ul style="list-style-type: none"> ● The historical sensor and power data pages now automatically refresh every 5 minutes, ensuring users always have access to the latest historical data.
Event List	Alarm Event Support	<ul style="list-style-type: none"> ● Users can review alarm events sent from controllers to IoTstar, assisting in diagnosing abnormal events, identifying issues, and reducing troubleshooting time.
Data	64-bit Data Support	<ul style="list-style-type: none"> ● IoTstar 2025 now supports 64-bit data processing for WISE controllers, significantly improving data accuracy.



▲ IoTstar 2025 offers flexible cloud deployment options

IoTstar 2025 Product Series

Product Series	Description
IoTstar2025-RC050	IoTstar 2025 IoT Cloud Management Software (Max. 50 controllers can be connected.)
IoTstar2025-RC200	IoTstar 2025 IoT Cloud Management Software (Max. 200 controllers can be connected.)
IoTstar2025-RC500	IoTstar 2025 IoT Cloud Management Software (Max. 500 controllers can be connected.)

More IoTstar 2025 Information

The ICP DAS website provides complete and detailed IoTstar 2025 product information, such as product specifications, brochures, user manuals, etc. Please refer to the QR code below. ■



IoTstar 2025



IoTstar Related



Upgrade Your Industrial Control System Easily — tGW-700 Series Gateway

The tGW-700 series Modbus TCP to RTU/ASCII gateway features a built-in Virtual ID function for simplified configuration and enhanced communication efficiency. It offers an independent or shared TCP port for flexible integration of new and old devices, helping build a smart, efficient, and stable industrial control system widely used in smart manufacturing and IIoT applications.

Written by Albert Deng (Translated by Carol Hsu)

Modbus protocol breaks device barriers, simplifying industrial control integration

In the field of industrial control, the Modbus protocol is the leading standard for simplicity, efficiency, and compatibility. Its architecture allows for fast and stable data exchange over a variety of interfaces (serial (RS-232, RS-422, RS-485) and Ethernet), allowing different devices to work together seamlessly. This reduces integration complexity and cost, creating a flexible and efficient control environment.

With the rise of the Internet of Things

and IIoT, the need for device connectivity and data integration in industrial control systems is growing rapidly. From sensor data collection, device monitoring, to remote control, these functions are essential for automation, predictive maintenance, and intelligent management. ICP DAS tGW-700 Modbus Gateway plays a key role in fulfilling this demand. With high-speed and stable data conversion, tGW-700 integrates new and old devices seamlessly via Modbus TCP and Modbus RTU/ASCII. Whether it's a new installation or a system upgrade, it provides excellent flexibility for efficient and intelligent remote control.

Flexible tGW-700 Solutions for Diverse Needs

The tGW-700 provides two TCP connections for you to choose flexibly according to the scenarios, ensuring the perfect balance of system performance and convenience.

Mode	TCP connections	Maximum total number of slave devices	Processing efficiency	Send message
Independent TCP Port	more	more	faster	Need to select TCP port connection according to the COM Port of the slave device first
Shared TCP Port	less	less	slower	Transmitted directly to the slave device

▲ The tGW-700 provides two different TCP connection modes

Mode A

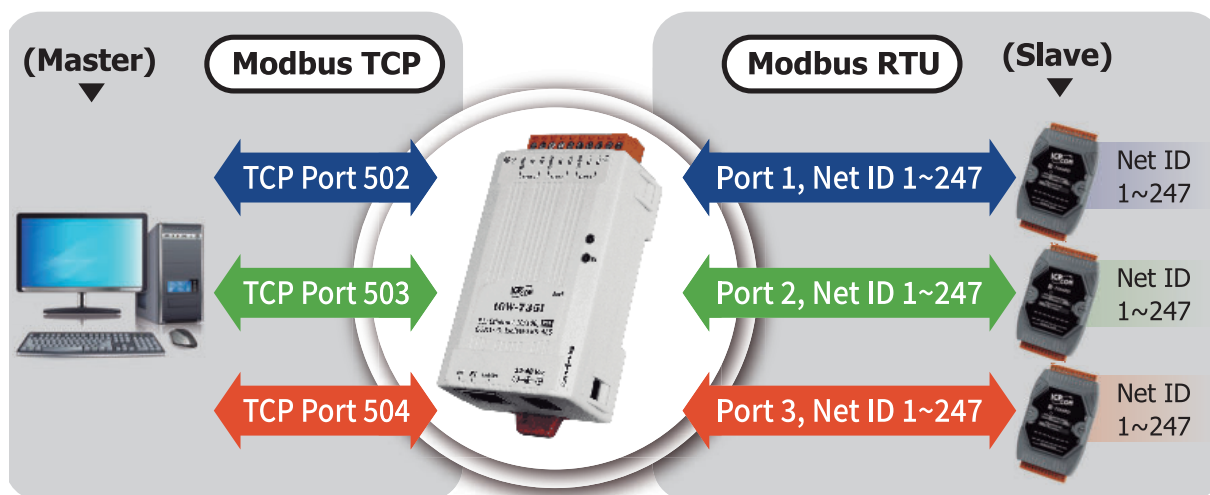
Independent TCP Port: Efficient Control, Ultimate Scalability

- Features: Each TCP port corresponds to an independent COM port. Supports more slave devices, enabling parallel processing of multiple COM ports.
- Advantages: Taking the 3 Port module as an example, it can be connected to $247 \times 3 = 741$ slave devices, enhancing large-scale equipment integration.
- Scenarios: Ideal for complex systems needing data processing from multiple devices, like chemical plants or energy monitoring networks.
- Highlights: Independent COM port operation ensures fast and stable data transfer.

Mode B

Shared TCP Port: Simplified configuration, flexible application

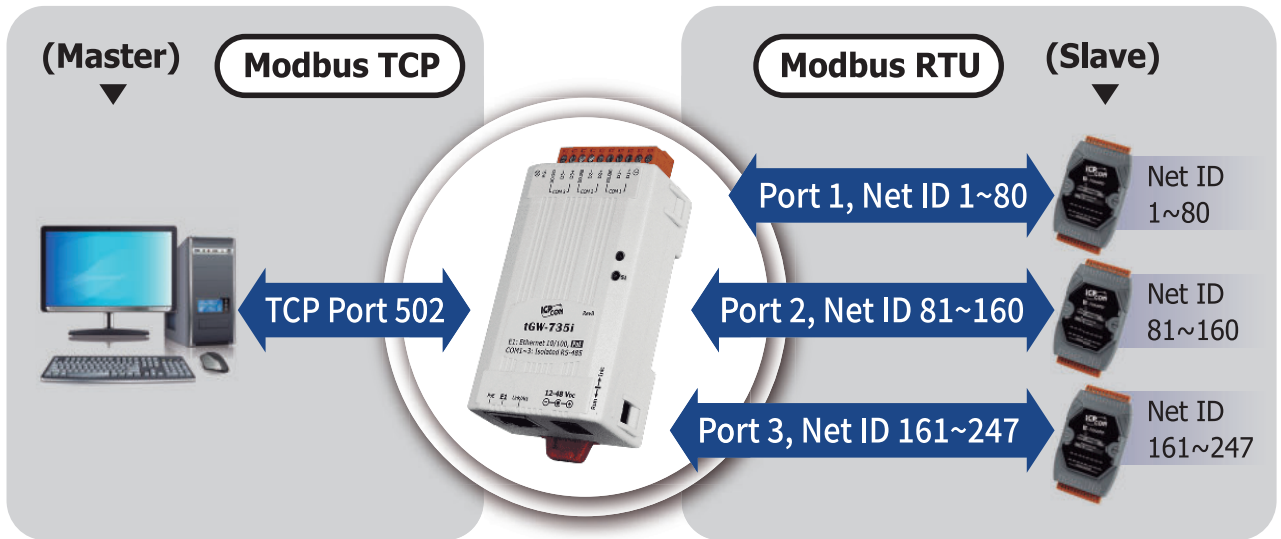
- Features: One TCP port corresponds to multiple COM ports, automatically selects the COM port by Net ID in the Modbus message. Simplifying network configuration.
- Advantages: The master device doesn't need to pay attention to the COM port configurations, making operation more intuitive and ideal for quick deployment.
- Scenarios: Ideal for small to medium-sized systems or flexible environments, such as smart buildings or regional devices.
- Highlights: Efficient communication with minimal TCP connections. Reduces network loading. Easy system management.



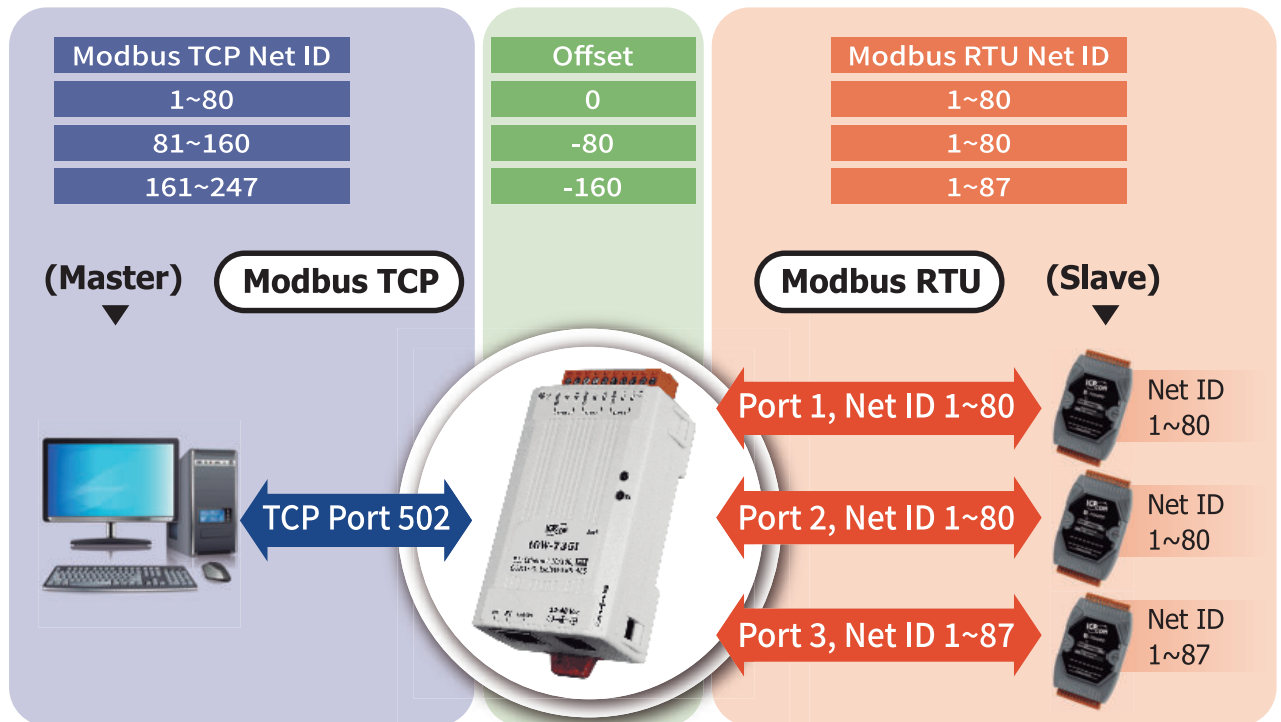
▲ In Mode A, each TCP port corresponds to a COM port and does not interfere with the other

In Mode A, more TCP connections are needed, but it supports more slave devices, and each COM port operates independently—ideal for high-performance systems. In mode B, because Modbus is one request and one response, only one command is processed at a time. Each COM

port needs to wait for the other, which is less efficient. However, it requires fewer TCP port connections and does not need to pay attention to the COM port connected to the slave device. Users can choose the mode according to their needs.



▲ One TCP port to multiple COM ports in Mode B simplifies network configuration



▲ tGW-700 in Mode B Simplifies complicated ID management

Break Through Limitations, Intelligent Upgrades Virtual ID Offset Function

The tGW-700 is a powerful tool for intelligent integration! When connecting multiple slave devices through COM ports, Modbus IDs may overlap. The tGW-700 features a Virtual ID Offset for station ID mapping, overcoming these challenges.

- Master: Use Virtual Modbus ID to communicate with the tGW-700.
- Slave: Automatically maps to physical Modbus ID compatible with old devices that cannot change Net ID.
- Benefits: Seamlessly integrates old and new systems without modifying existing settings—saves time and effort!

As shown in the previous diagram (Mode B), the tGW-700 simplifies ID management and ensures uninterrupted communication, making upgrades easier.

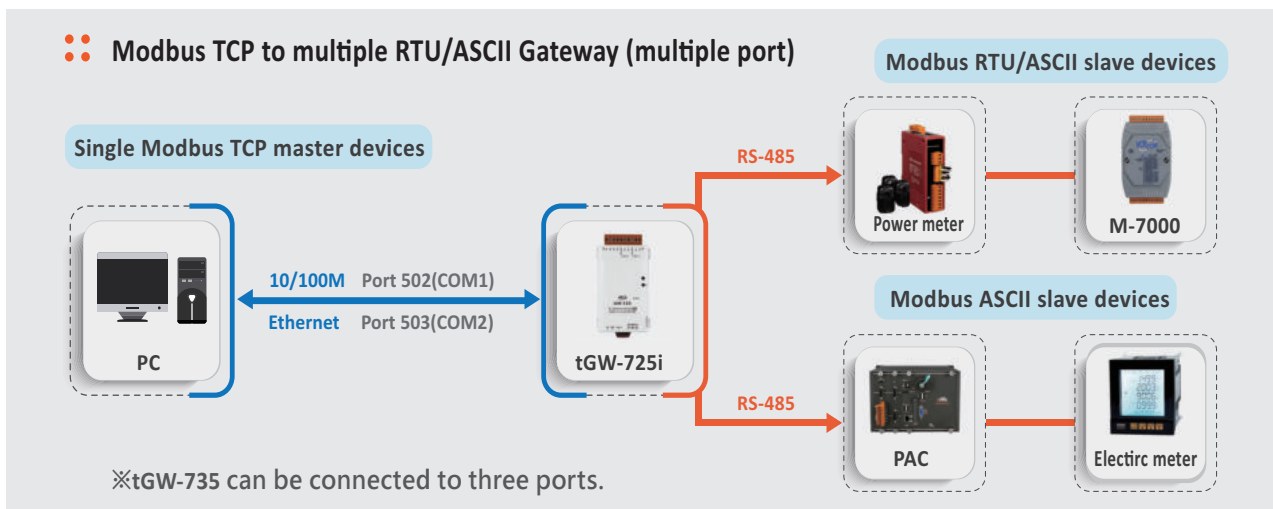
From Bottleneck to Breakthrough: tGW-700 Enables Seamless Integration

In the Industrial Internet of Things (IIoT) and smart manufacturing industries, the Modbus

protocol is essential for connecting devices and exchanging data due to its simplicity and openness. From oil and gas to energy and smart cities, Modbus is widely used. However, as systems grow, many old Modbus devices become bottlenecks for integration. Options such as splitting the system, adding COM ports, or rewriting program code are time-consuming, complex, and increase maintenance costs.

The tGW-700 from ICP DAS offers powerful data processing and flexible conversion capabilities, providing a one-stop solution to communication barriers between new and old devices.

- Integration: Seamlessly bridges Modbus TCP and RTU/ASCII protocols for plug-and-play connectivity.
- Flexibility: two TCP modes and Virtual ID Offset feature to meet the needs of small systems to large-scale networks.
- Stability: High-speed and stable data transfer ensures the system operates smoothly.
- Simplified Management: Intuitive configuration and automation features reduce deployment and maintenance costs.
- Global Trust: Providing stable support for thousands of industrial control systems worldwide. ■



iSN-811C-MTCP

IR temperature sensing module
(with camera, PoE Ethernet port)



The iSN-81x-MRTU and iSN-81x-MTCP series are temperature measurement modules developed for non-contact temperature measurement. With a diverse range of temperature pixels and temperature threshold detection functions, they can meet various temperature measurement needs. The iSN-811C-MTCP is equipped with a camera that provides images of the measured objects. Through the synthesis of infrared images and images of the measured objects, management personnel can intuitively inspect and analyze the temperature distribution of the measured objects, enabling accurate judgments and decisions.

The iSN-811C-MTCP supports Modbus TCP, RESTful, and MQTT communication protocols. The Modbus TCP communication protocol allows for easy integration into SCADA systems, providing real-time temperature measurements. It also supports sending measurement data to a remote database server using the RESTful method. When operating as an MQTT client, iSN-811C-MTCP sends measurement data to a Broker, allowing SCADA systems, management platforms, and IoT systems to easily subscribe to topics and access iSN-811C-MTCP measurement data. iSN-811C-MTCP is your reliable partner for equipment monitoring, data analysis, and anomaly detection in an industrial environment. Management personnel can assess whether the

equipment being monitored by iSN-811C-MTCP is experiencing anomalies through measurement data. This helps with early warning and rapid response, reducing production losses caused by sudden anomalies. The long-term storage of historical data can also be used for automated decision-making or artificial intelligence training to determine whether components of monitoring equipment need replacement, achieving the goal of predictive maintenance. Whether you require real-time monitoring or long-term data analysis, iSN-811C-MTCP can meet your needs.

Features:

- Non-contact temperature measurement
- Integrated thermal imaging and field image
- Support Modbus TCP, RESTful and MQTT protocols
- Web-based configuration and monitoring interface
- Temperature threshold detection function

Applications:

- Temperature monitoring
- Measuring the temperature of moving objects
- Measurement of the temperature distribution on the surface of an object
- Suitable for hazardous environments

More about iSN-811C-MTCP module, please refer to <https://www.icpdas.com/en/product/iSN-811C-MTCP> ■

PET-2242U-32

PoE I/O Module with 32-ch DO (Sink/Source)



PET-2242U-32 is a 32-channel digital output (Sink/Source-type) module. Each channel provides photocoupler isolation and short circuit protection, capable of driving a 300 mA load. The module includes a built-in 2-port Ethernet switch, facilitating a daisy-chain topology. This feature offers flexibility in device configuration, simplifies installation, and reduces infrastructure costs. Additionally, the module provides EMS (EFT/ESD/ Surge) protection and 3000 VDC I/O isolation to enhance noise protection capabilities in industrial environments. It also offers configurable DO power-on value and safe value settings.

Moreover, the module supports I/O Pair-Connection functionality, allowing the establishment of DI-to-DO pairing connections with the remote module via Ethernet. Once configured, remote DI data can be written to local DO channels in Pull mode via Modbus TCP.

PET-2242U-32 supports the MQTT protocol, serving as a publisher and subscriber of messages. When connected to an MQTT Broker Server, it can publish real-time statuses of I/O in the form of topics and receive messages from subscribed topics. If a disconnection occurs between the module and the broker during communication, its mechanism for reconnecting can automatically restore the connection. Additionally, its Keep-Alive Interval mechanism ensures a continuous

connection with the broker.

PET-2242U-32 supports the SNMP V2c specification, enabling it to transmit both module and I/O information to SNMP network management devices or software (SNMP Network Management Software). This allows administrators to monitor module status in real-time. Additionally, if the Trap function is enabled, the module can proactively send messages to administrators when there are changes in I/O statuses or during restarts, keeping them informed of channel statuses at all times.

Features:

- Web Server for Configuration
- Support Modbus TCP/UDP, MQTT, and SNMP V2c Protocols
- 2-port Ethernet Switch (LAN Bypass) for Daisy-Chain Wiring
- Supports Dual-watchdog
- I/O Pair Connection (Push and Pull)
- Built-in 32-ch DO (Sink/Source)
- LED Display to Indicate the I/O Status

More about PET-2242U-32 I/O module, please refer to:

<https://www.icpdas.com/en/product/PET-2242U-32>



Smart Sensing • Precise Monitoring

Industrial Environment

Sensor Guide

- ▶ Records 450,000 sensor data entries with timestamps for full traceability.
- ▶ Supports Modbus RTU/TCP and MQTT protocols with RS-485, Ethernet, and Wi-Fi interfaces for easy system integration.
- ▶ Supports remote monitoring to track air quality in real time and ensure environmental safety.
- ▶ Built-in relay output for connecting alarm lights, sirens, or HVAC systems to automatically regulate environmental conditions

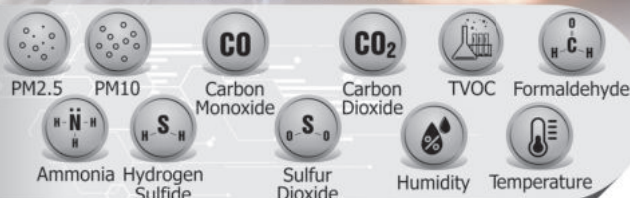
Industrial Environment Monitoring

DL-1029

DL-306-IP65

CL-229-E

Monitored Parameters



Indoor Air Quality Monitoring



CL-204-E



DL-303

Monitored Parameters



Fire Safety



CL-20A-C



CL-2S-E

Monitored Parameters



Smart Agriculture & Greenhouse Monitoring

DLW-1120

DL-111S-WF

DL-11

Monitored Parameters



Smart City & Outdoor Monitoring



DLW-2069-01

Monitored Parameters



E-Catalog

工業物聯網 IIoT :
環境感測、微型氣象站



E-Catalog

IIoT: Environmental Monitoring,
Mini Weather Station