ICP DAS

Industrial Automation Technology
Innovator and Enhancer.

Digital Smart Campus

Diverse Sensors | *Device Networking Technologies* | *Big Data Applications*

Human Occupancy
iSN-301H

Environmental Monitoring
CL-203-E

Electrical Safety
iSN-811C-MTCP

Real-time Message Display
iKAN-116-IP65

Vol.CSA.F.1.26.02_EN

Application Features

Leading the Smart Campus

- √ **Digital Technologies for Campus Affairs**
- √ **Enhance Campus Experience and Safety**
- √ **Big Data Assists Energy Saving and Carbon Reduction**

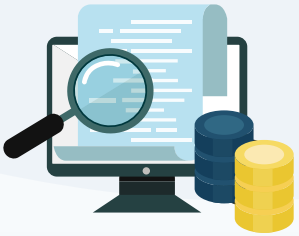
A smart campus fully digitizes the campus environment by leveraging big data, IoT, and cloud technologies across teaching, management, administration, community engagement, green energy, and security. This approach enhances both campus operational efficiency and user interaction.

Infrastructure

- Environmental quality monitoring.
- People and Vehicle Tracking.
- Power monitoring and device control.
- Emergency call system.

Data Networking

- Wired/wireless communication solutions.
- Data concentrators for efficient communication and simplified wiring.
- Edge computing ensures uninterrupted monitoring.



Big Data Analysis

- Centralized data management and analysis.
- Alerting and control of abnormal conditions.
- Provide energy saving and carbon data, enabling visualized carbon emissions.

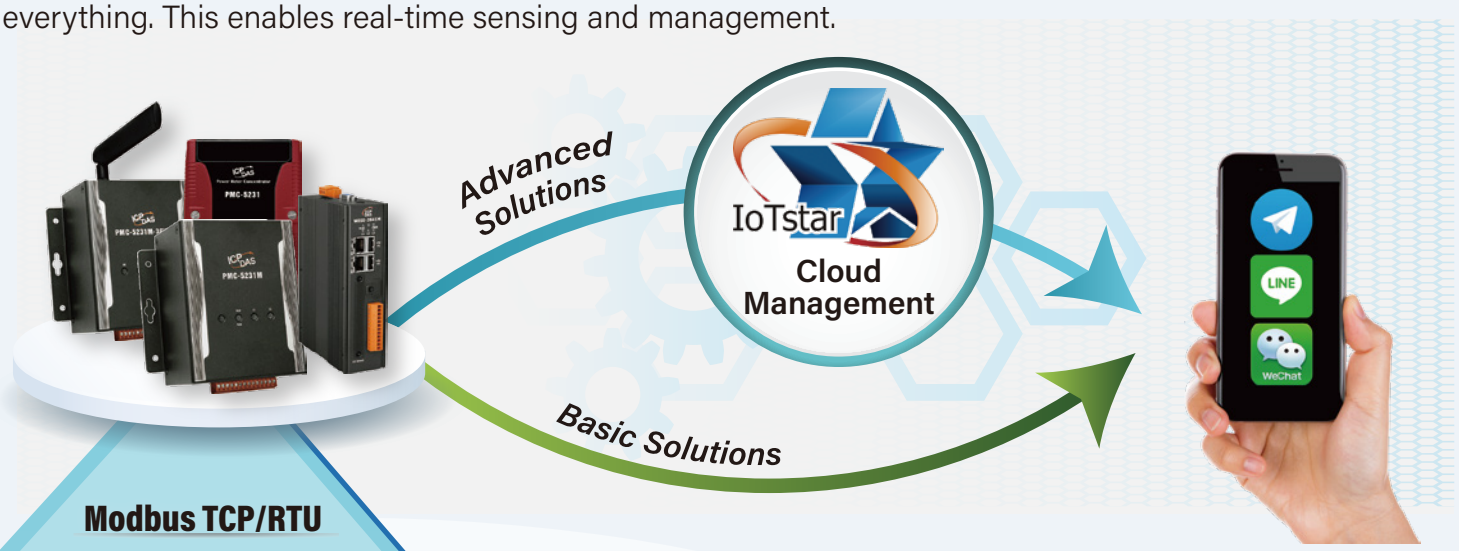
Traditional Campus vs Smart Campus Management

Item	Traditional Campus	Smart Campus
School Administration	Scheduled manpower patrols increase faculty/staff workload.	Digitized campus data allows for equipment management by actual conditions, reducing manpower needs.
Analyzability	Manual or scheduled control cannot adapt to climate conditions, load variations, or usage pattern.	24/7 continuous data recording allows automatic optimization based on climate, time, and equipment utilization.
Response Speed to Anomalies	Unable to respond to emergencies or environmental anomalies.	Real-time alerts notify relevant personnel immediately for rapid response.

Diverse Application Scenarios

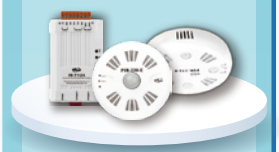
New Model for Smart Campuses – Sensing, Control, Connectivity, All in One Hand

From sensors to the cloud, and from campus sites to mobile devices, our edge controllers connect everything. This enables real-time sensing and management.



Modbus TCP/RTU

Smart Classroom & Venue Management



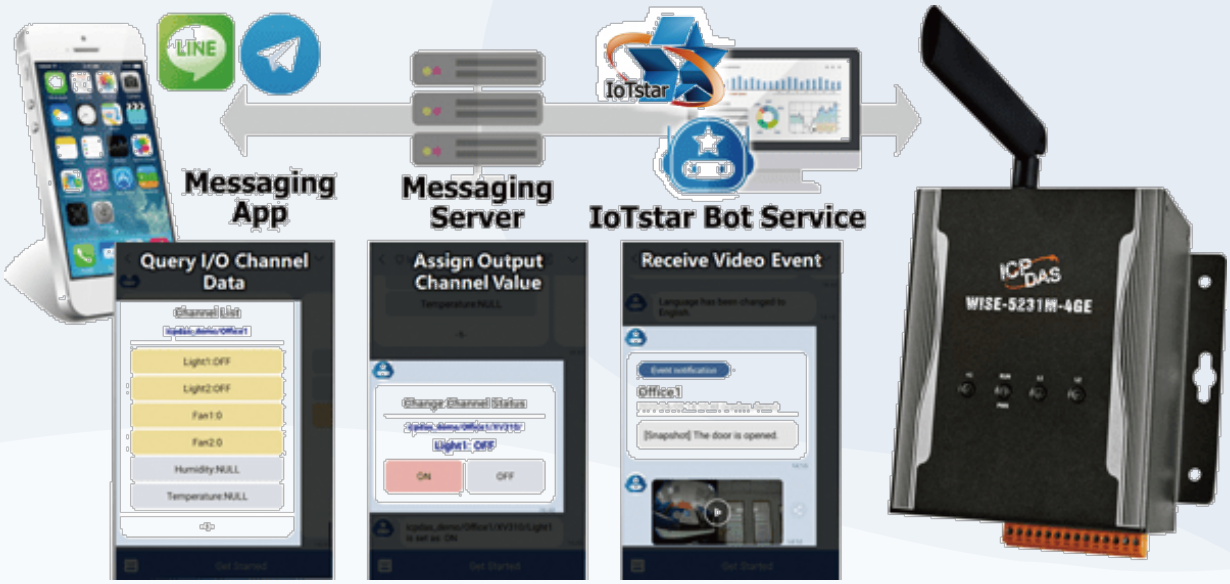
Energy Saving & Carbon Reduction

Environmental Safety Protection

Personal Safety Protection

Building a Secure, Reliable, No Programming Smart Campus

The WISE-2841M Edge Controller, paired with the IoTstar cloud platform, features an intuitive web-based interface. Users can complete all configuration and management through a browser without programming. System deployment is rapid, management is straightforward, and safety is assured through built-in multi-layered security.



IoTstar Cloud Management Software

Data Report Service

- Built-in editor allows diverse reports.
- Export reports in PDF or Excel format.

Data Visualization Service

- Support trend charts for real-time or historical queries.
- Offers a dashboard editor and various widgets.

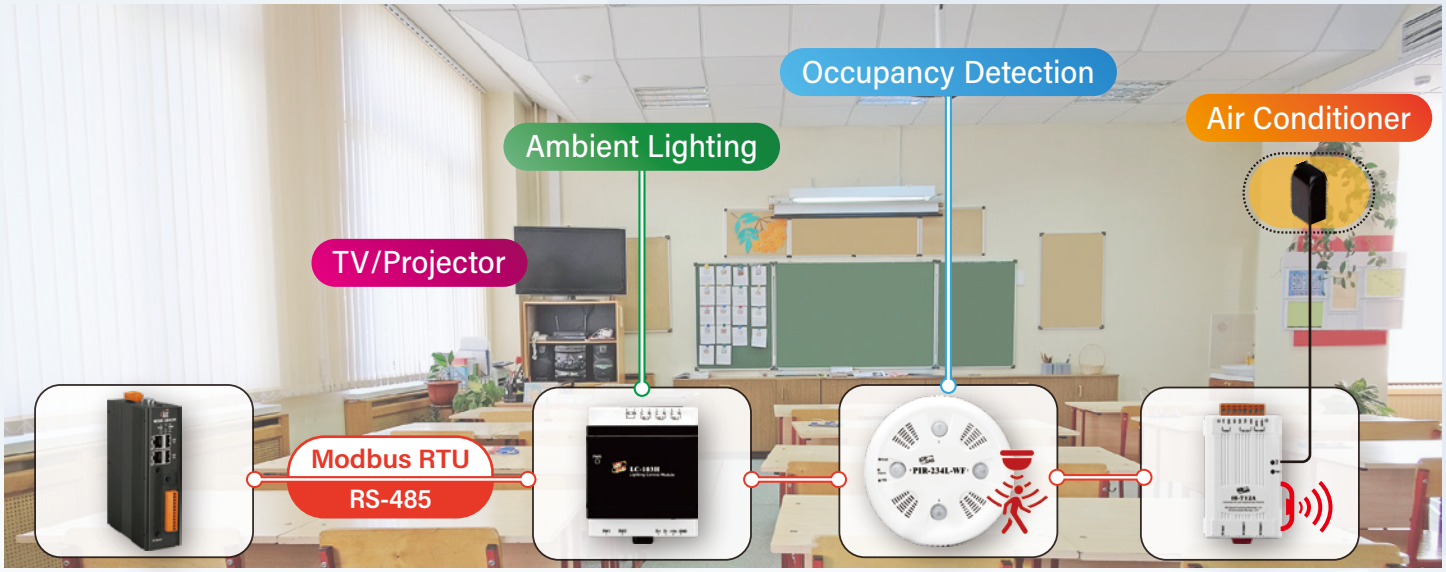
Comprehensive information security services

HTTPS VPN SNMPv3 SFTP FTPS LISTING

- **Network Security:** VPN communication prevents external threats.
- **System Security:** SNMP V3 communication encrypted and authenticated.
- **Data Security:** File transfers are protected by TLS encryption.
- **Identity Security:** Passwords are managed securely.

Smart Classroom Management

ICP DAS's sensing and control system helps schools use energy more efficiently and reduce costs. The system uses sensors to monitor conditions in real time, and adjusts equipment accordingly. It can also detect when the classroom is empty, and turn off power to save energy and money. This improves management and helps campuses to become smarter.



WISE-2841M
Edge Controller

LC-103H
Lighting Control Module

PIR-234L
PIR Motion Sensor

IR-712A
Universal IR Learning Module

Environmental Monitoring Device Control

IR-712A-5

- Integrates traditional remote controllers.
- One-touch remote IR device on/off.
- Adjusts AC by ambient temperature.

PIR-234-E

- Detects personnel presence/absence.
- Multiple sensors boost sensitivity/range.

LC-103H

- Traditional/digital switch compatible, flawless lighting control.
- Checks light status/faults instantly.

Energy-saving & Security Upgrades

WISE-2841M

- Built-in logic engine enables full edge computing.
- Auto-shuts lights, AC, electronics on departure.
- Night intrusion detection/alerts.

System Benefits

- Prevents energy waste after class and boosts safety.
- Reduces inspection workload for facility staff.
- Optimizes air conditioning for energy savings.

Smart Auditorium Management

With the trend toward carbon reduction and the development of smart buildings, automated control systems for campus multi-purpose auditoriums are advancing toward energy saving. The solution optimizes lighting, HVAC control, and remote management. Through the WISE series and IoTstar platform, venues integrate seamlessly into campus-wide systems, enabling smart space management.

CL-213-E
Air Quality Sensor

LC-103H
Lighting Control Module

SC-6104-W5
Fan Coil Unit Controller

PM-3114-160
Smart Power Meter

Power Meter Concentrator

CL-213-E

- Measures temperature, humidity, CO, CO_2, and PM2.5.
- Supports zoned monitoring with multiple modules for real-time HVAC control.

LC-103H

- Supports high-power, multi-circuit lighting on/off control.
- Maintains traditional wall switches and pre-set circuit switching sequences.

SC-6104-W5

- Adjusts temperature settings or fan coil unit airflow.

PM-3114-160

- Collects energy consumption data to monitor power equipment status.
- Analyzes historical power usage with abnormal alerts and maintenance insights.

PMC-2841M Power Meter Concentrator

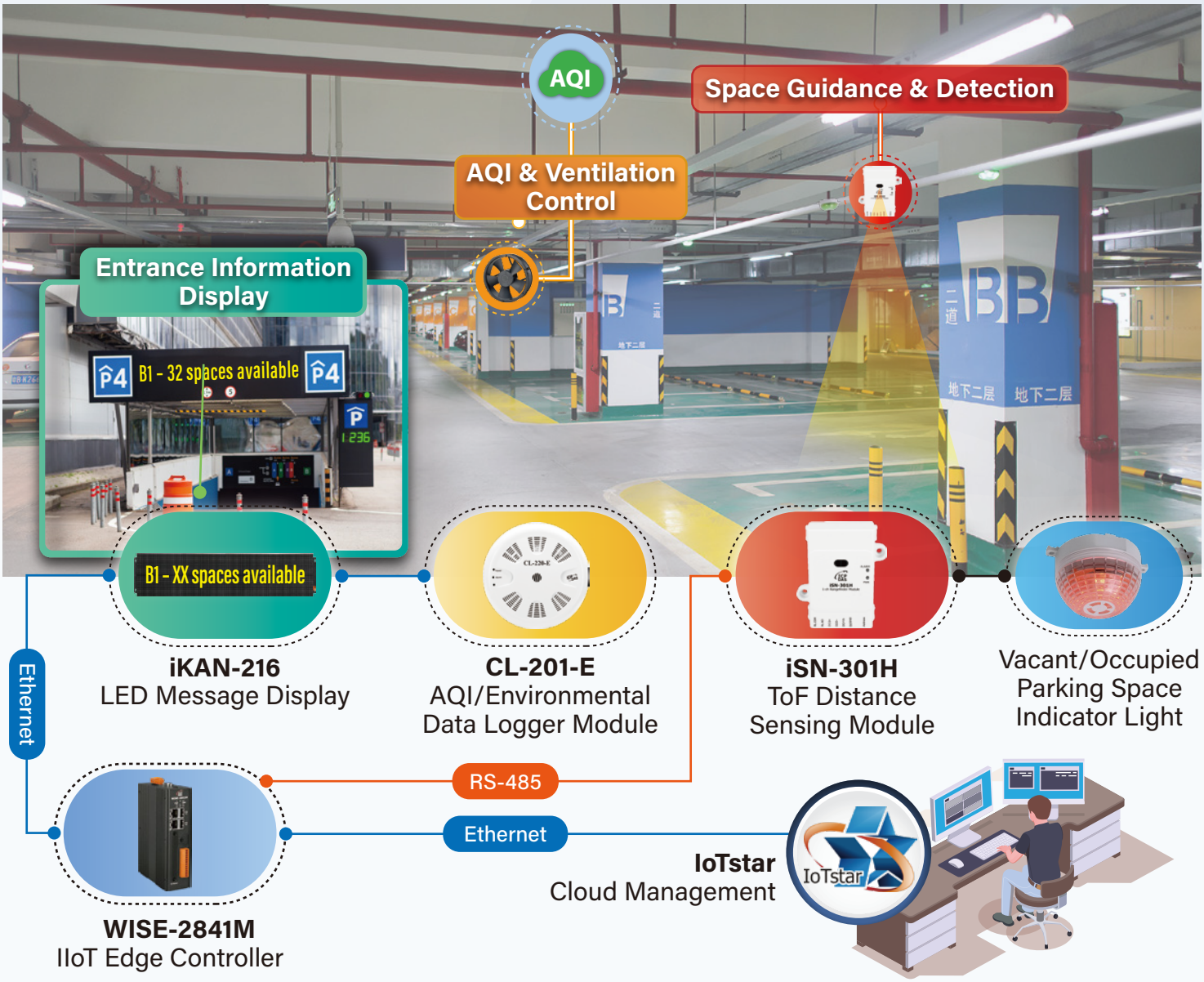
- Edge computing with a built-in logic engine.
- Integrates with IoTstar for visual monitoring and remote mobile control.

System Benefits

- Real-time temperature and CO_2 sensing for smart HVAC optimization.
- One-click remote shutdown to reduce operational workload.
- Instant power anomaly detection and alerts.

Smart Parking Garage Management

A smart parking system manages vacant spaces, bay identification, and space guidance. For enclosed indoor garages, it also monitors CO/CO_2 risks and optimizes ventilation for both safety and energy savings. With a modular design and centralized edge control, real-time data is transmitted to the control center to improve utilization and enhance overall safety.



Application Descriptions

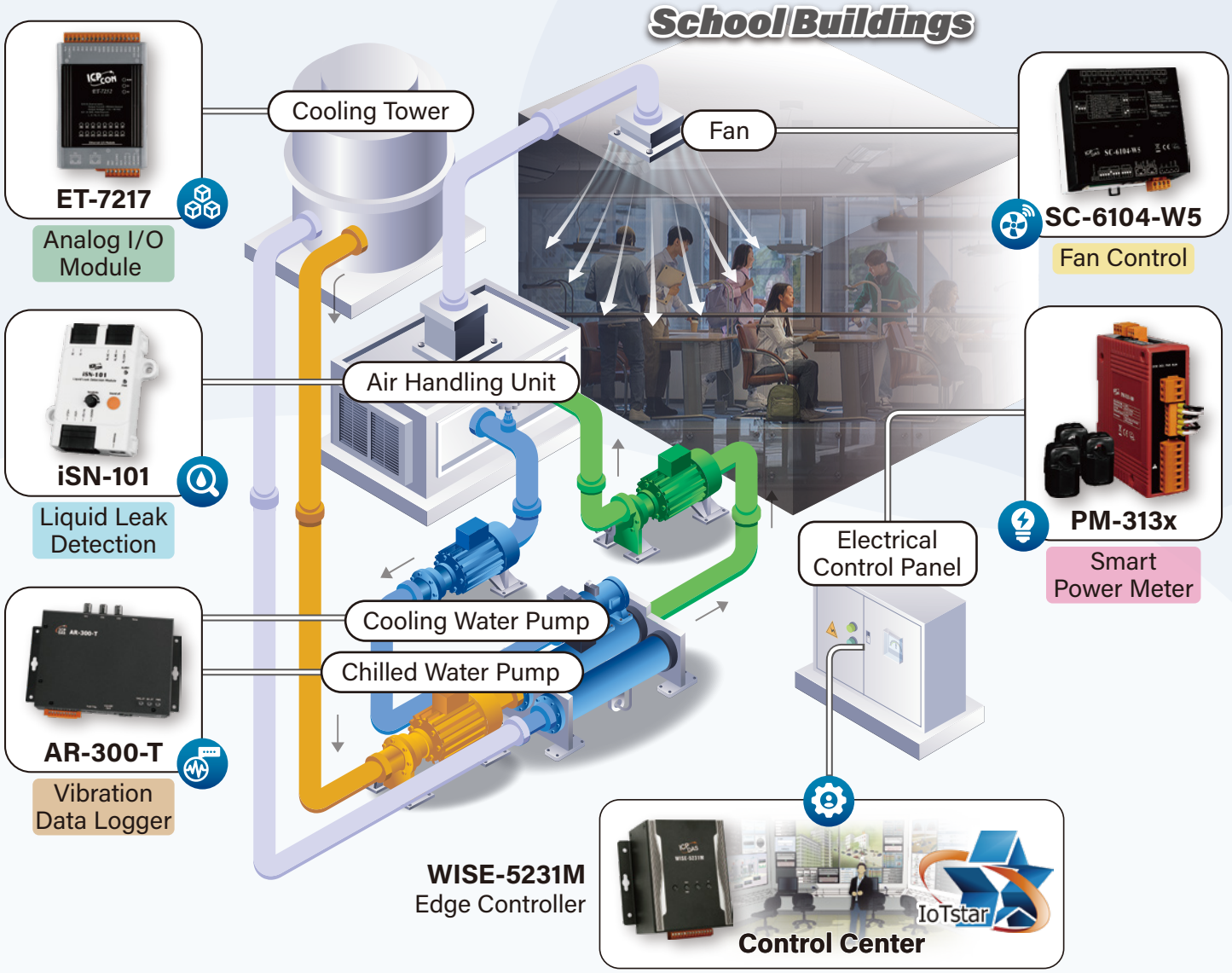
- Display parking information such as available spaces, indoor air quality status, and reserved/guest bay numbers.
- Continuously monitor environmental conditions (e.g., temperature, CO, CO_2), and automatically start ventilation/exhaust fans when thresholds are exceeded.
- The iSN-301H uses Time-of-Flight (ToF) ranging to detect bay occupancy and provides relay outputs to drive the occupied indicator.
- Over each parking bay, the system updates vacant/occupied indicator lights to help drivers quickly find an available space.

System Benefits

- Provides clear space guidance and demand-based ventilation control to meet facility management and safety requirements.
- Integrates the edge controller with IoTstar to enable remote, visualized management, plus real-time alarm notifications and streamlined maintenance.

HVAC System Management

Enable centralized, intelligent control of HVAC assets—pumps, AHUs, fans, cooling towers, and control panels—to cut energy use across campuses. Automation adjusts fresh-air AHUs according to seasonal conditions, maintaining classroom comfort while reducing energy consumption and carbon emissions.



Application Descriptions

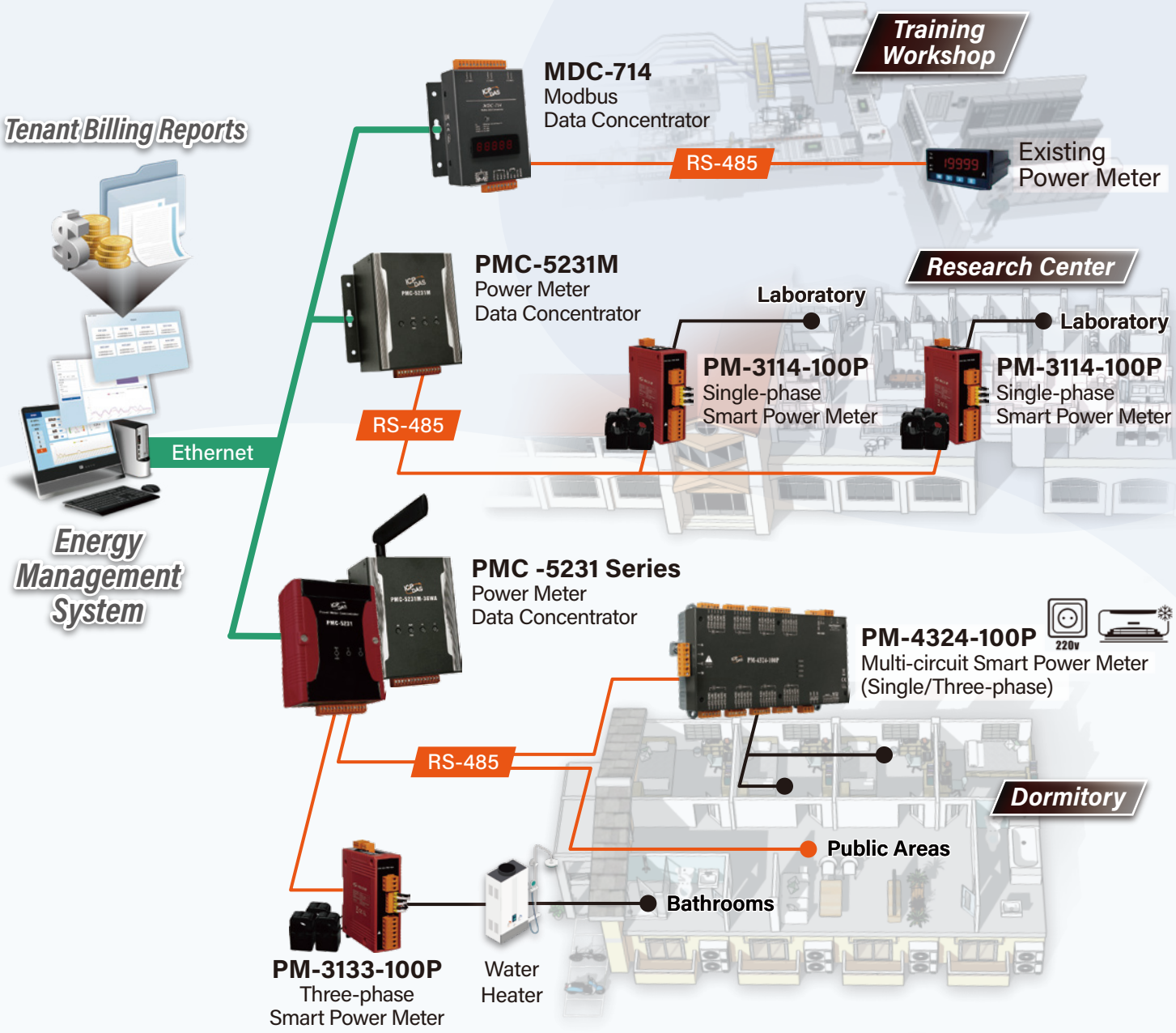
- **ET-7217:** Measures pH, conductivity, turbidity, residual chlorine, and more.
- **iSN-101:** Detects AHU leakage and water pooling issues.
- **AR-300-T:** Monitors pump/motor vibration for condition analysis.
- **SC-6104-W5:** Remotely controls fans based on system environmental data.
- **PM-313x:** Captures circuit-level energy use to assess consumption and equipment health.

System Benefits

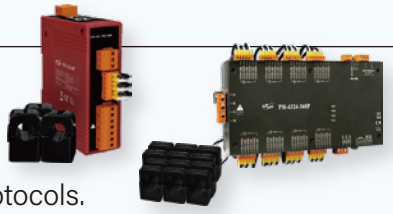
- Integrates WISE edge controllers with IoTstar for remote visual monitoring, reports, and real-time alarms.
- Enables central HVAC status diagnostics to prevent energy waste and unplanned downtime.
- Reduces energy use, extends equipment life, and improves workforce efficiency to lower costs.

Smart Power Meter Upgrade & Zone-based Management

As campuses adopt smart energy management to boost efficiency and sustainability, this university upgraded metering across dorms, academic buildings, research centers, and offices. PM-3000 Series smart meters and the PMC-5231 concentrator deliver real-time consumption data to the central platform.



PM-3133/4324 Smart Power Meter



- **Distributed Architecture:** Accurately records energy usage in each zone.
- **Industrial Communication Interfaces:** Supports Modbus RTU/Modbus TCP protocols.

PMC-5231M Power Meter Concentrator

- **Centralized Data Management:** Aggregates smart meter data and transmits it to the central Energy Management System.

System Benefits

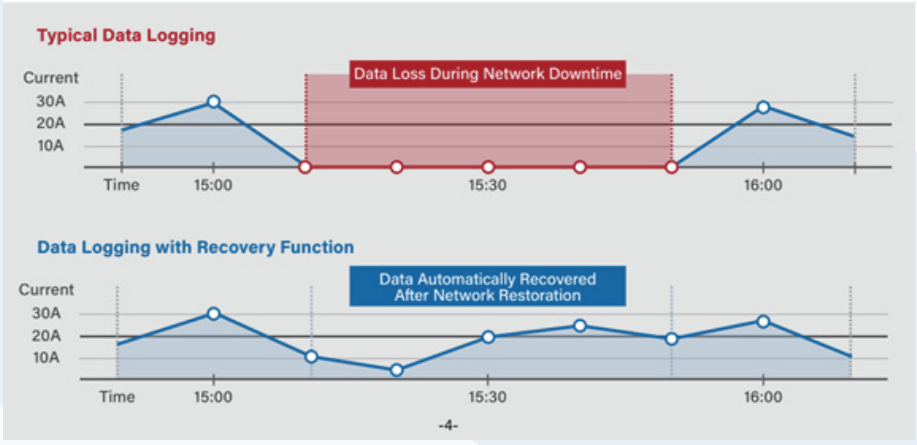
- Reduces manual meter-reading costs.
- Minimizes energy waste caused by inaccurate data.
- Enables precise control of power usage for both users and managers.

ESG-Driven Energy Management

Start building a green campus with a carbon audit. With consulting and engineering support, institutions receive a report containing carbon-reduction recommendations. Smart Sensor Automation integrates multi-sensor data—including indoor activity and outdoor conditions—to track energy consumption across departments accurately and efficiently.

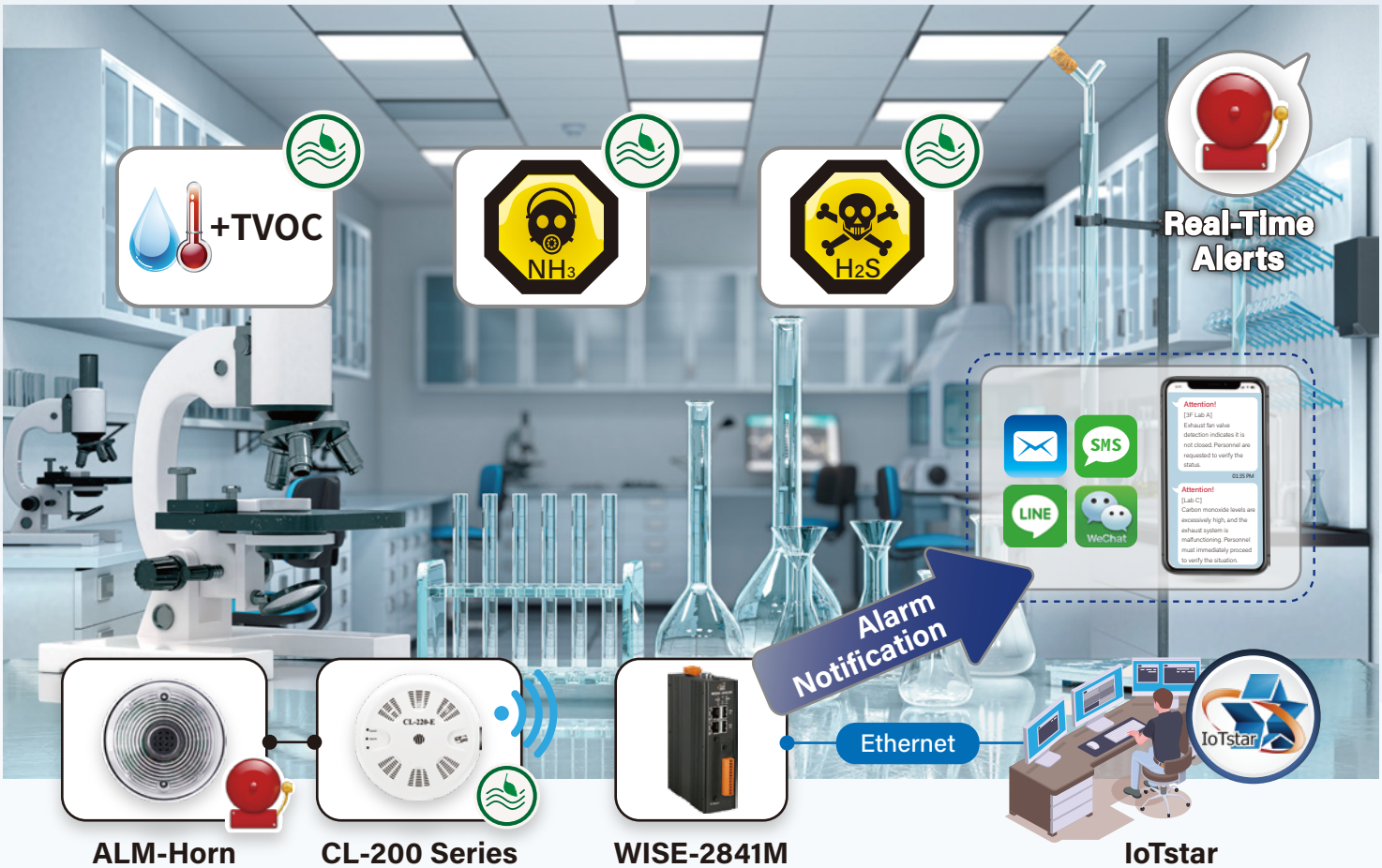
Smart Campus vs. Traditional Campus Management

- **Built-in web browser** for real-time and historical data viewing, queries, and report generation.
- Power data can be logged locally or uploaded to the control center; with historical file backfill supported to ensure **continuous records**.
- **Edge logic enables** demand management and abnormal event alarms.
- Supports **Power Usage Effectiveness** (**PUE**) calculation.



Hazardous Gas Monitoring for Chemical Labs

Campus labs may release hazardous gases such as VOCs, NH_3, and H_2S. To protect staff and comply with regulations, automated gas monitoring provides real-time detection with instant alarms. Data is sent to a central platform for early warning and ventilation control, supporting rapid response.



ALM-Horn
Acousto-optic Alarm

CL-200 Series
Gas Sensor

WISE-2841M
Edge Computing Controller

IoTstar
Cloud Management Platform

CL-200 Environmental Gas Sensors

- Multiple Air-Quality Indicators: Depending on the selected model, it can measure T&RH, CO, HCHO), CH_3, H_2S, TVOC, and more.
- Wireless Connectivity: Built-in Wi-Fi for easy installation and flexible deployment.
- Alarm Output for Interlocking: Equipped with an onboard relay to trigger devices such as the ALM-Horn-BR audible/visual alarm or to control exhaust fans and ventilation dampers/valves when abnormal conditions occur.

IoTstar - Cloud Management

- Remote Access: Web-based interface for PCs, tablets, and smartphones.
- Real-Time Response: Collects lab sensor data in real time; when abnormalities occur, WISE or IoTstar can trigger alarms, ventilation, and other I/O actions.
- Traceability & Reporting: Logs historical data for event tracking and report generation, supporting data analysis and long-term management.

System Benefits

- Remote Access: Web-based interface for PCs, tablets, and smartphones.
- Real-Time Response: Collects lab sensor data in real time; when abnormalities occur, WISE or IoTstar can trigger alarms, ventilation, and other I/O actions.
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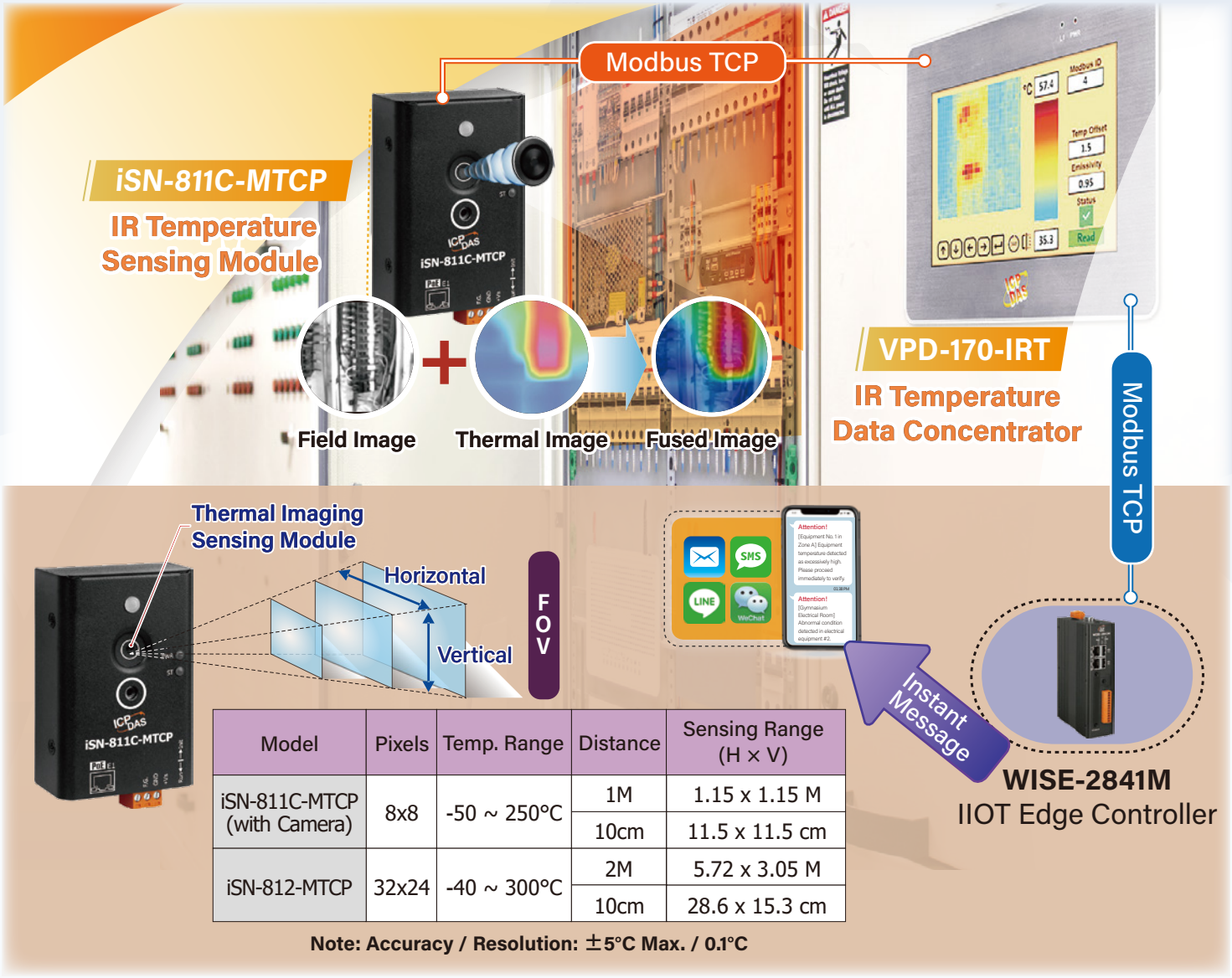
Electrical Room Distribution Panel Overheating Warning

As campus electricity demand increases, prolonged high loads can cause busbar overheating and fire risks. Traditional manual inspections often fail to detect electrical abnormalities promptly. ICP DAS IR thermal imaging provides real-time monitoring and alarm functions to prevent failures and enhance campus electrical safety.



Model	Pixels	Temp. Range	Distance	Sensing Range (H × V)
iSN-811C-MTCP (with Camera)	8x8	-50 ~ 250°C	1M	1.15 x 1.15 M
			10cm	11.5 x 11.5 cm
iSN-812-MTCP	32x24	-40 ~ 300°C	2M	5.72 x 3.05 M
			10cm	28.6 x 15.3 cm

Note: Accuracy / Resolution: ±5°C Max. / 0.1°C

iSN-800 Series

- **Thermal Imaging:** Non-contact IR temperature sensing.
- **Multi-point Monitoring:** Large-area measurement of nodes or temperatures.
- **Protocols:** Supports Modbus TCP/RTU, RESTful, and MQTT.

VPD-170-IRT

- **Centralized Management:** Manages multiple iSN-800 series sensors.
- **Temperature Alerts:** Threshold settings with built-in relay output for alarms.
- **Module Integration:** Data concentration via Modbus TCP.

WISE-2841M

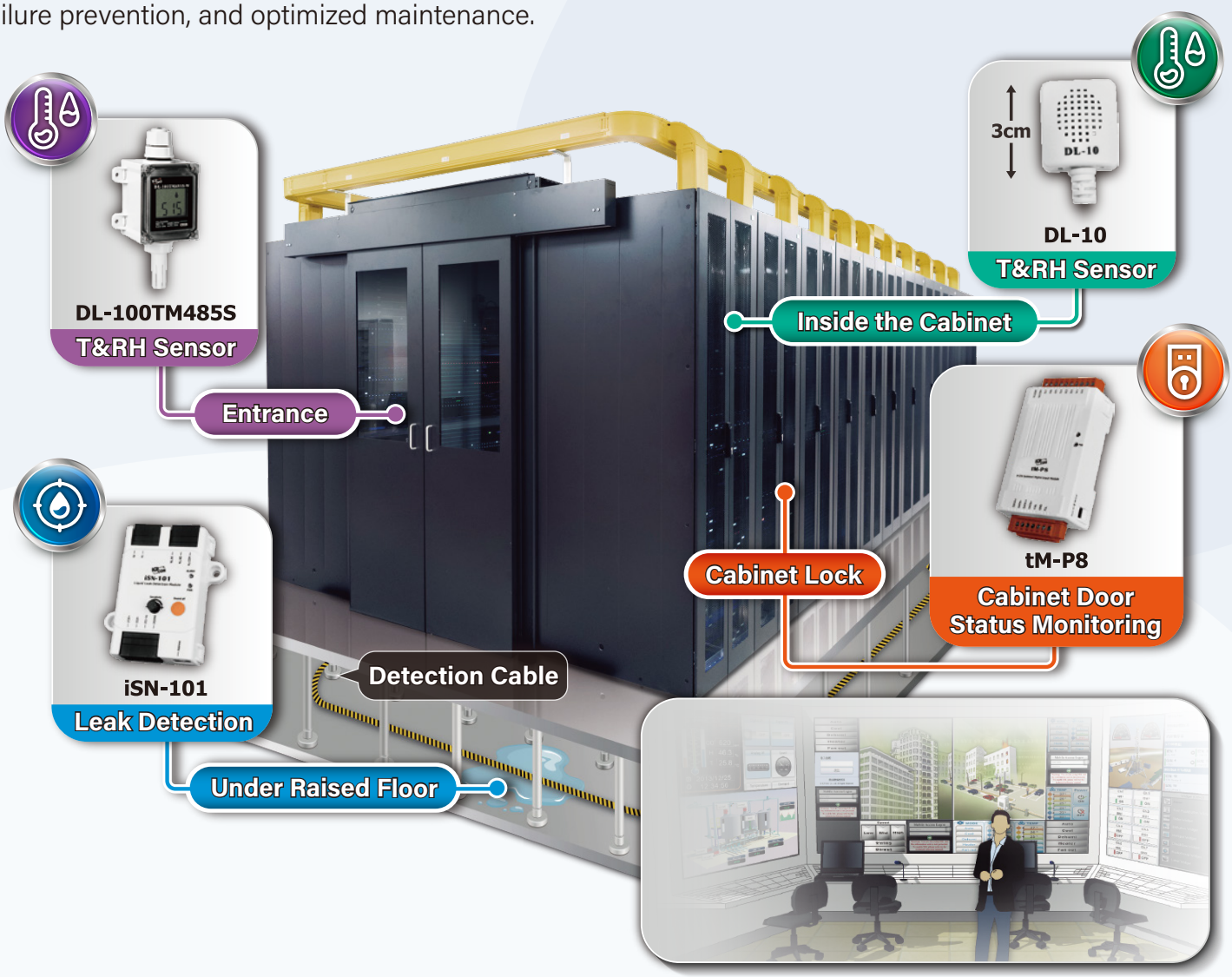
- **Edge Computing:** Logic control and anomaly alerts.
- **Instant Message:** Real-time alerts via LINE, WeChat, Email, Telegram, etc.

System Benefits

- **Enhanced Safety:** Prevent fires caused by overheating.
- **Increased Reliability:** Early detection to prevent downtime and extend equipment life.

Data Center Monitoring & Alarms

As campus digitization accelerates, monitoring data center environments and equipment has become critical to campus information operations. Educational institutions are increasingly prioritizing the stability and security of data center operations. Data center monitoring systems enable real-time status visibility, failure prevention, and optimized maintenance.



DL-10/DL-100TM485S

- **Environmental Monitoring:** Tracks temperature and humidity of data center and equipment.
- **Industrial Interface:** Supports Modbus protocol.

iSN-101

- **Leak Detection:** Detection cable up to 500 meters, covering large areas.
- **Real-Time Alarms:** Relay output alerts to notify on-site personnel.

tM-P8 (8 x DI Contact)

- **Cabinet Door Monitoring:** Status detection to ensure cabinet security.

AVEVA Edge (SCADA)

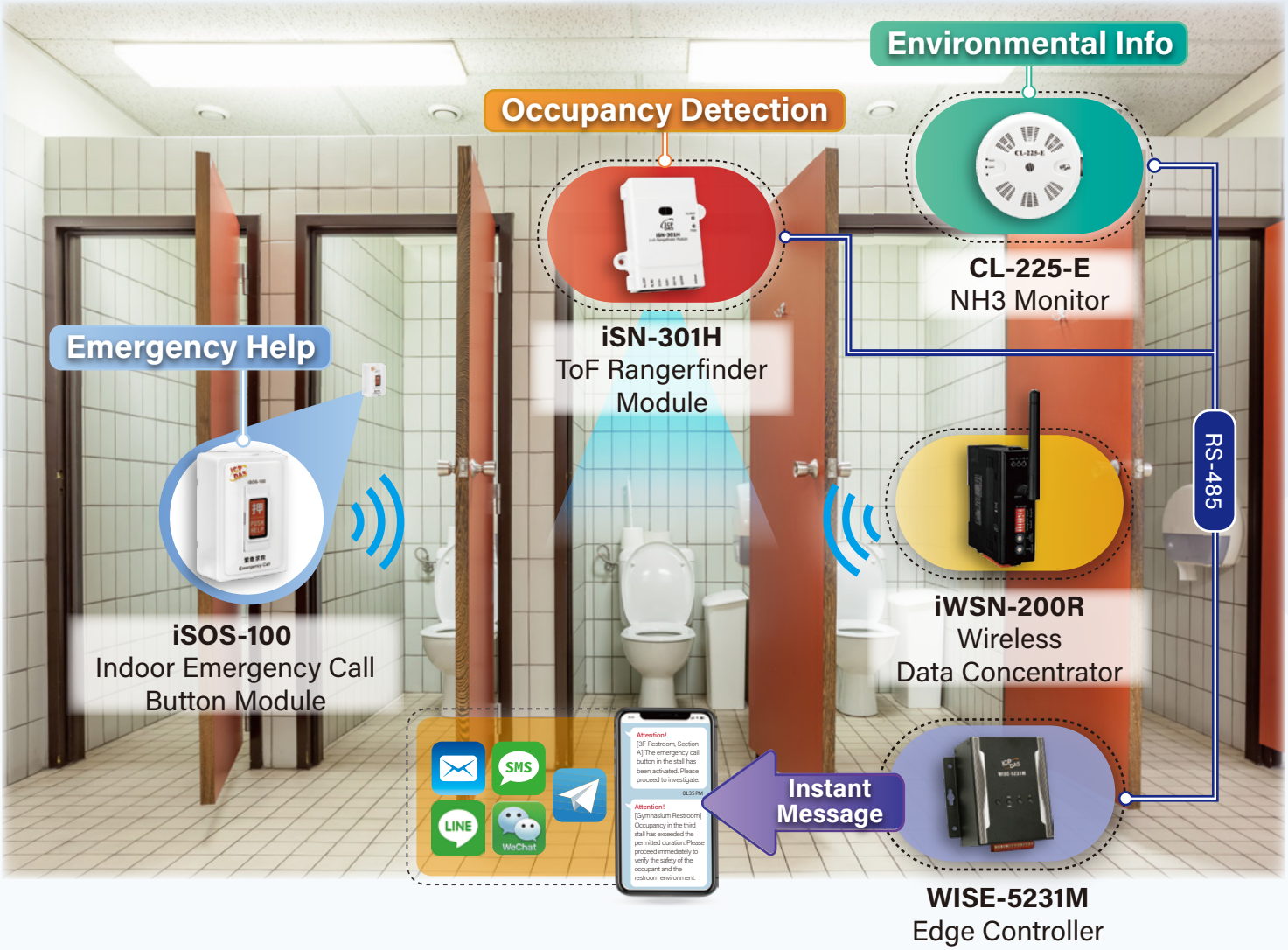
- **Centralized Management:** Centralized environmental data monitoring.
- **Trend Alerts:** Trend analysis with early warnings for safety.

System Benefits

- **Uninterrupted Services:** Reduce equipment risks and ensure stable operations.
- **Reduced Maintenance Costs:** Automated inspections enable faster response and higher efficiency.
- **Enhanced Security Management:** Provides audit reports for SOPs and traceability.

Restroom Personal Safety Monitoring System

Campus restrooms are often safety blind spots, but ICP DAS provides a smart solution. By integrating sensors for occupancy, ammonia levels, and emergency buttons, WISE controllers monitor stalls in real time to detect accidents or loitering. Instant alerts are sent via LINE or SMS to security for immediate response. This system enhances safety and operational efficiency for a smarter campus.



iSN-301H

- Uses ToF technology to detect occupancy status within restroom stalls.
- Alerts for overtime usage or nighttime loitering.

CL-225-E

- Monitors temperature, humidity, and ammonia for air quality and safety.

iSOS-100

- Indoor emergency help button module.
- Uses Sub-G wireless and battery power for easy installation.

WISE-5231M

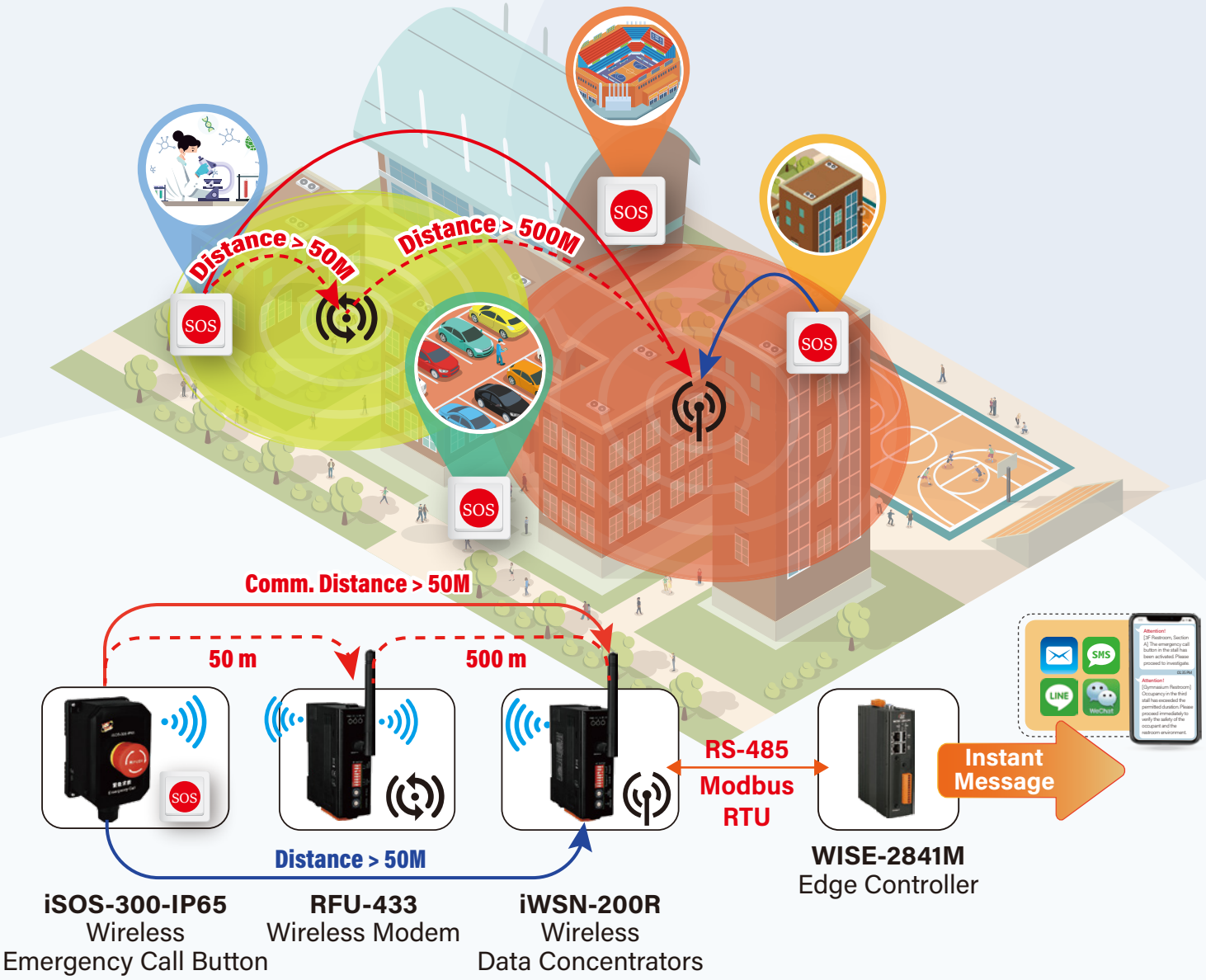
- Built-in logic engine with full edge computing capabilities.
- Real-time alerts via LINE or Email.

System Benefits

- Alerts for high ammonia levels or emergency triggers ensure air quality and safety.
- Prevents hazards from accidental falls or unauthorized loitering.
- Effectively provides safety protection for secluded environments.

Campus Safety Reporting

The Wireless Emergency SOS System is a safety solution that uses wireless communication and real-time response technology. It's widely used in campuses, hospitals, and communities. When the emergency button is pressed, a wireless distress signal is transmitted to designated receivers (e.g., security center, guard room, or administrator's phone) for rapid response.



iSOS-300-IP65

- **Instant Alerts:** Automatically controls relay output to trigger buzzers.
- **Low-Frequency Wireless:** Supports 433 MHz wireless.
- **Industrial Interface:** Supports Modbus RTU.

WISE-2841M

- **Edge Computing:** Built-in logic engine for data processing and anomaly alerts.
- **Instant Message Service:** Supports real-time alerts via LINE, Telegram, WeChat, Email, etc.

iWSN-200E

- **Instant Alerts:** Automatically controls relay output to trigger buzzers.
- **Low-Frequency Wireless:** Supports 433 MHz wireless.
- **Industrial Interface:** Supports Modbus RTU.

System Benefits

- **Enhanced Security:** Enables fast, immediate help requests during emergencies.
- **Campus Incident Management:** Features event logging and reporting mechanisms to assist with follow-up audits and tracking.

Smart Campus Application Selection Guide

WISE-2841M: Edge Controller

- No programming required for logic editing.
- Browser-based, no installation needed.
- Data logger for information recording.
- Supports timers and scheduling.

WISE-2841M

PMC-2841M: Power Meter Concentrator

- Real-time and historical power display.
- Electricity usage statistics report.
- Logic engine for power management.
- Supports real-time messages via LINE and Email.

PMC-2841M

iSOS: Emergency Call Button

- Emergency messages for help reporting function.
- Powered by built-in disposable lithium batteries.
- 433 MHz wireless communication (50m range)

iSOS

iSN-301H: Distance Measurement

- Time-of-flight (ToF) technology (5cm – 4m), unaffected by temperature (unlike PIR); can detect static objects.
- Programmable region-of-interest (ROI)
- 1-channel relay.

iSN-301H

iSN-811C: IR Thermal Imaging

- Non-contact temperature measurement.
- Temperature threshold alarms.
- Web-based interface.
- Support protocols: Modbus TCP, RESTful & MQTT

iSN-811C

PIR-234: PIR Motion Sensor

- High sensitivity/sensing range.
- Built-in T&RH sensing.
- Dual-channel relay.
- Supports Modbus/MQTT protocols.

PIR-234

PM-3133/4324: Smart Power Meter

- Bi-directional energy.
- Clip-on CT for easy installation.
- Free power meter tool software.
- Supports various industrial protocols.

PM-3133/4324

IR-712: IR Remote Control

- Multiple IR output channels.
- IR learning channel.
- IR command capacity: 512
- Modbus TCP/UDP protocol.

IR-712

CL-200: Environmental Air Quality Sensing

- Up to 450,000 data can be stored.
- IAQ alarm relay output.
- Supports wired network and wireless Wi-Fi.

Temperature (°C)	Formaldehyde (HCHO)
Humidity % (RH)	Volatile Organic Compounds (TVOC)
CO	Ammonia (NH_3)
CO_2	PM 2.5

CL-200

ICP DAS Industrial Automation Technology
Innovator and Enhancer.

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