ICP DAS
www.icpdas.com

Smart Building
Smart Home Automation

Smart Home
Living Facilities Assistance
Management Service
Asset Location Management

http://www.icpdas.com/root/product/solutions/ba_ha/ba-ha.html

Table of Contents

Application Field

System Solutions

Product Series

ICP DAS BA & HA Solutions

Smart Building, Smart Home

Introduction

With a variety of embedded applications and applications of **I**nternet **o**f **T**hings getting involved, the Smart Building / Smart Home is getting more and more popular. ICP DAS, as a pioneer in the field of embedded control, has accumulated a broad range of experiences from embedded industrial control to applications in all areas. Thus can provide total solutions for a variety of embedded applications for the BA & HA Systems.

The BA & HA applications include the overall system and the subsystems for many application fields.

Overall

The aim of the system is to establish an intelligent community.

Subsystems and Applications

For Smart Building, Smart Home projects, ICP DAS can provide several subsystem solutions in many application fields, such as center control, video intercom, door access, lighting, HVAC, security, environmental, power monitoring, electrical devices... monitor & control systems.

Advantages of ICP DAS Smart System	
ICP DAS Smart System	Traditional System
• Reliable, long warranty • Shareable data • Shared hardware, low operational costs • Avoid duplication, reduce investment costs • Integrated wiring, reduce maintenance costs • Single system, consistent management • Standardization, high expandability	• Cheap quality, hard to maintain • System mashups • Management inconvenience • Time-consuming • Duplicate investment costs • High construction costs • High maintenance costs
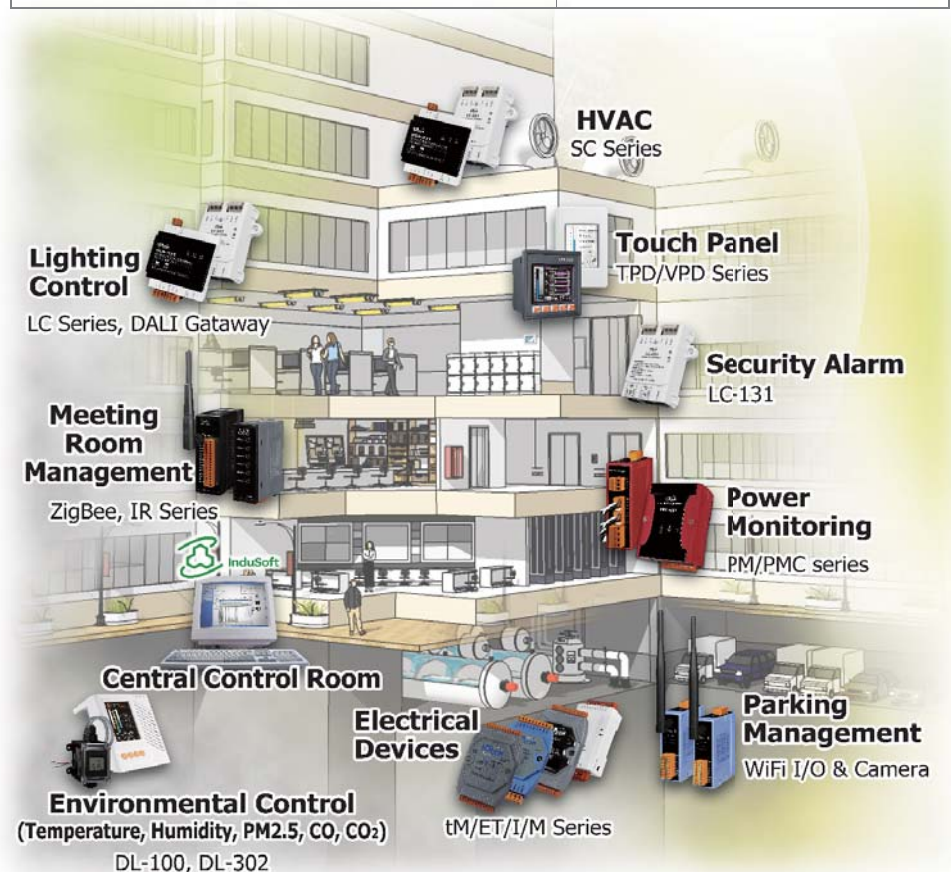
Chapter 1. Application Field

1-1 Central Monitoring (Based-on InduSoft SCADA)

The central monitoring/control system of ICP DAS building automation provides more than 200 commonly used protocols for communication and interfaces for data exchange. InduSoft SCADA software provides total solutions and sample references to simplify operations such as: read/ write interfaces (UART, TCP, UDP) from the lower-layered communication ports commonly used in industrial/power control, support plug and play to external devices (.Net components, Dynamic-link library...), able to access the database (MS SQL Server, Oracle, etc.), moreover, web service data exchange. The system integrators can implement projects without any effort.
(InduSoft Web Studio Software: http://www.icpdas.com/products/Software/InduSoft/indusoft.htm)

● Recommend Products:

InduSoft Software	IWS Development Package for Windows IWS Runtime Package for Windows / Windows Embedded CE
BA/HA All Series	All BA/HA Series in the Smart Building/Home Solutions

1-2 Video Intercom (Building Management with IoT)

In BA & HA applications, the system aims to build an intelligent community system platform. Clients can reduce costs with our system because of its high compatibility and able to sharing devices. The HA series, SI series and ACS series of products provide an intelligent host solution for indoor and outdoor Smart Building and Smart Home applications. Combining these series together with IoT technologies, an entire intelligent system platform can be created to enhance the efficiency of building management.

● Recommend Products:

HA Series	Security Situation Control Intercom Host	HA-401
	IP PBX	HA-5231M
SI Series	Video Intercom Door Station	SI-002
ACS Series	Access Control Reader with Proximity Card	ACS-10V-MF, ACS-10VP-MF
	Access Control Reader with Proximity Card and Keypad	ACS-11-MF, ACS-11P-MF

1-3 Lighting (Automation and traditional switches can coexist)

LC lighting control series targeted at load control which is different from the twisted-pair lighting control system (loop control). For the cost to build and modify a traditional twisted-pair lighting system is pricey and complicated; therefore, the LC-101 in LC lighting control system is a perfect solution to incorporate traditional switches into advanced automation control. Also, we provide DALI Gateway series, wireless ZigBee series, SC smart control series and TouchPAD HMI devices to build up various HMI lighting control system and provides flexible system expansion.

Application Field
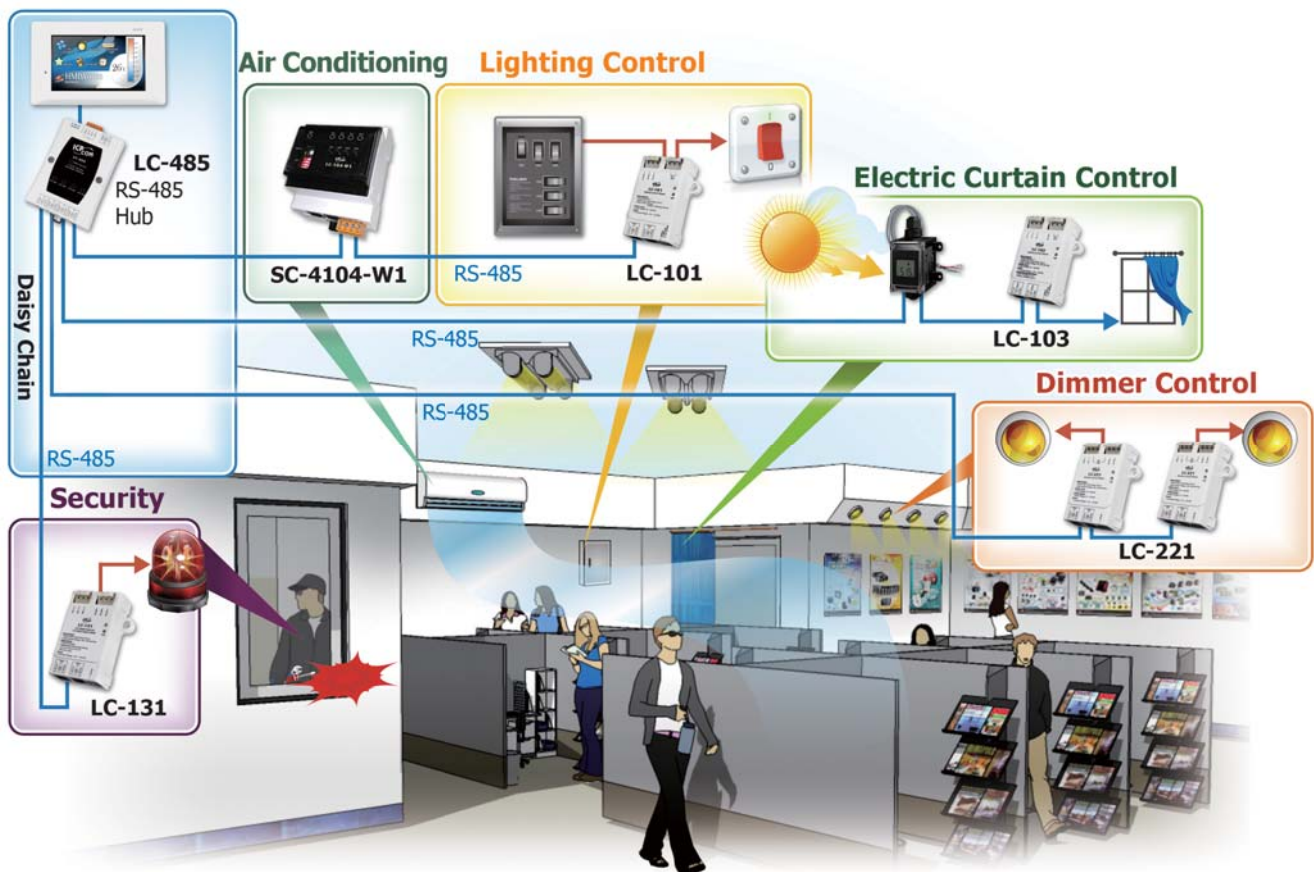
● Recommend Products:

TouchPAD Series	TPD 2.8" / 4.3" / 7" HMI Device	TPD-280-H/283-H, TPD-430/433, TPD-703 ...
	VPD 3.5" / 4.3" / 7" HMI Device	VPD-130/132/133, VPD-142/143, VPD-173N...
LC Series	Lighting Control Module	LC-101, LC-103, LC-305
	Dimmer Control Module	LC-221, LC-223
	RS-485 Active Hub	LC-485
SC Series	Smart Control Module	SC-4102-W5, SC-4104-W1, SC-6104-W5 (FCU)
DALI Series	RS-232/RS-485/USB to DALI Gateway	DGW-521
ZigBee Series	Wireless ZigBee Converter	ZT-2550, ZT-2570, ZT-USBC, ZT-CHK...
	Wireless ZigBee I/O Module	ZT-2042, ZT-2053, ZT-2060, ZT-2055 ...
	Wireless ZigBee Pair-connection	ZT-2053-IOG, ZT-2055-IOG, ZT-2060-IOG ...

● **Application Architectures:**

▲ LC-101 Module:
Auto-control and traditional real switches can coexist

▲ DALI Gateway:
Quick build DALI lighting systems & flexible expansion

Application Field

▲ SC Series:
SC-4104-W1 support 4-way lighting control system. And, there is one channel temperature sensor can detect 40℃ ~ 80℃ and it can be read by DCON and Modbus RTU communication protocol to control small fan control unit.

▲ LC-103 Module:
LC-103 has a 3-loop 3-stage switching function with lighting memory feature, that will turn on the light in the previous status when the light turned on again.

▲ ZigBee Street Light Monitoring System Architecture of National Sun Yat-sen University (PACTECH_45)

1-4 HVAC

The HVAC (Heating, Ventilation, and Air Conditioning) systems are slightly different from its appearance and structure. A full functioned HVAC system requires both software and hardware, air-cooled chillers, steam boilers or other large equipment, as well as cold or hot pumps to send in/out water, and the air-handling unit for regulation & circulate air. The widely used intelligent air conditioning software usually provides soft logic development kit that is IEC 61131 compliance. In addition, the back-end SCADA software also uses in various HVAC systems.
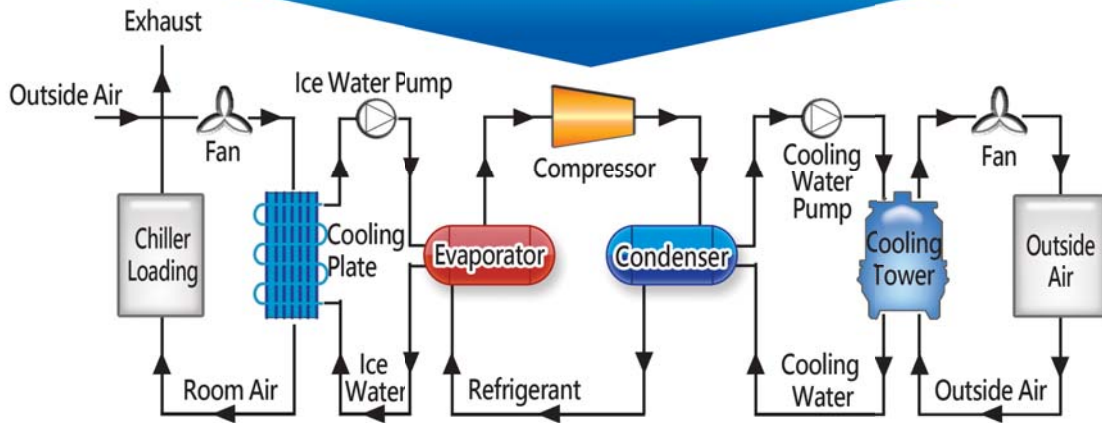
● Recommend Products:

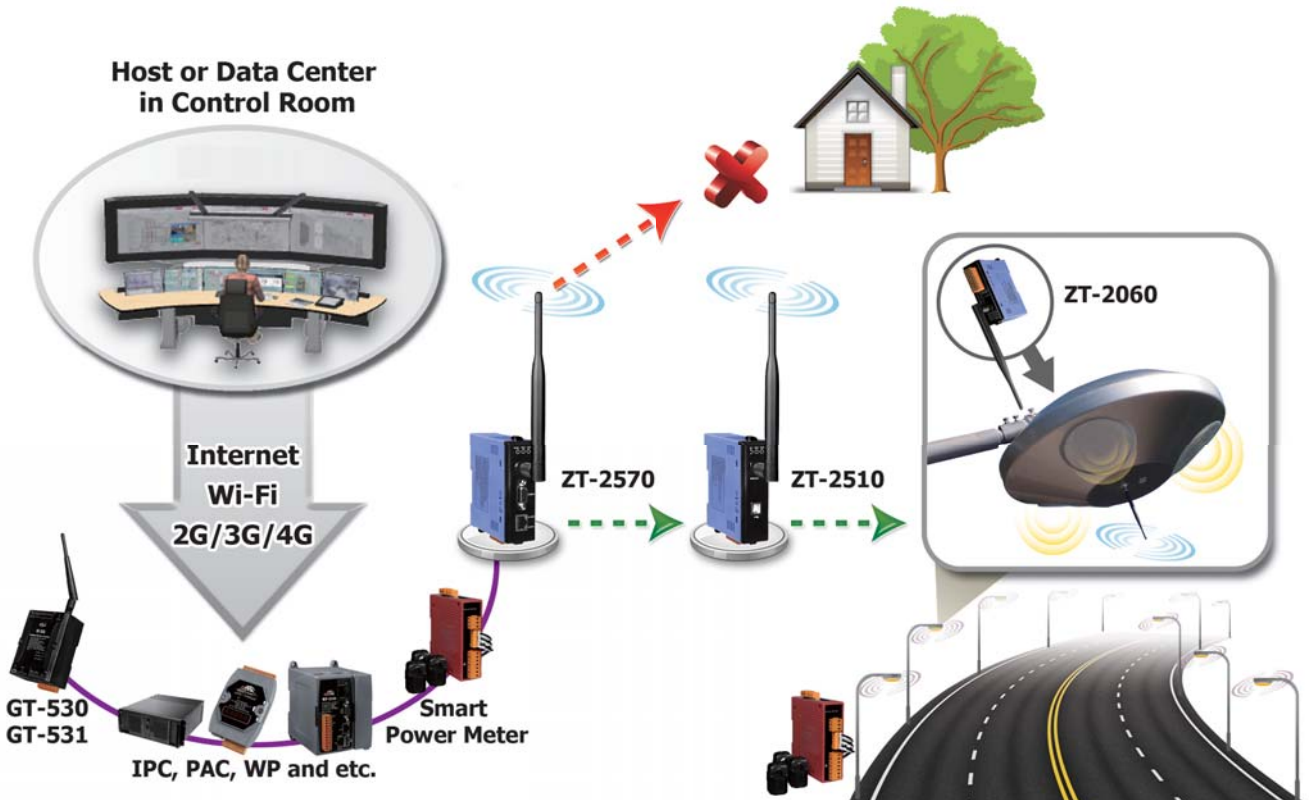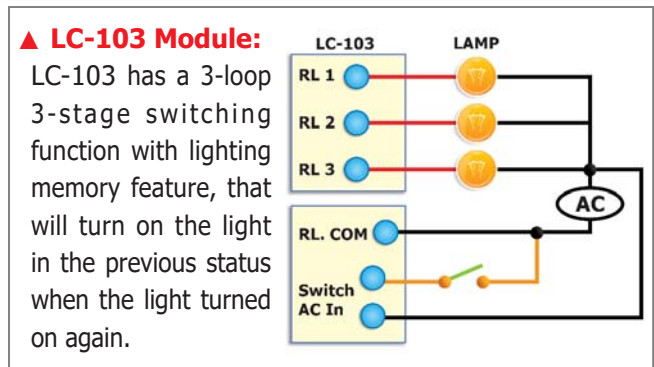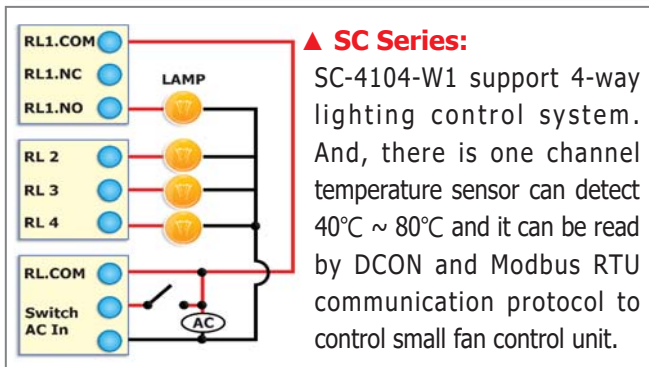| DL Series	Temperature/Humidity Data Logger	DL-100T485(-W), DL-100TM485(-W) ...
	CO/CO2/Temp./Hum./HCHO Data Logger	DL-301, DL-302, DL-303, DL-307
CL Series	Environmental Sensor	CL-207/209/211/212/213
SC Series	Smart Control Module	SC-4102-W5, SC-4104-W1, SC-6104-W5 (FCU)
PIR Series	PIR Motion, Temperature Module	PIR-130
IR Series	IR Learning Remote Module	IR-210, IR-712A, IR-712-MTCP
	IR Controlled Power Relay Module	IR-310-RM
TouchPAD Series	TPD 2.8" / 4.3" / 7" HMI Device	TPD-280-H/283-H, TPD-430/433, TPD-703 ...
	VPD 3.5" / 4.3" HMI Device	VPD-130/132/133, VPD-142/143, XV-board

● HVAC Application:
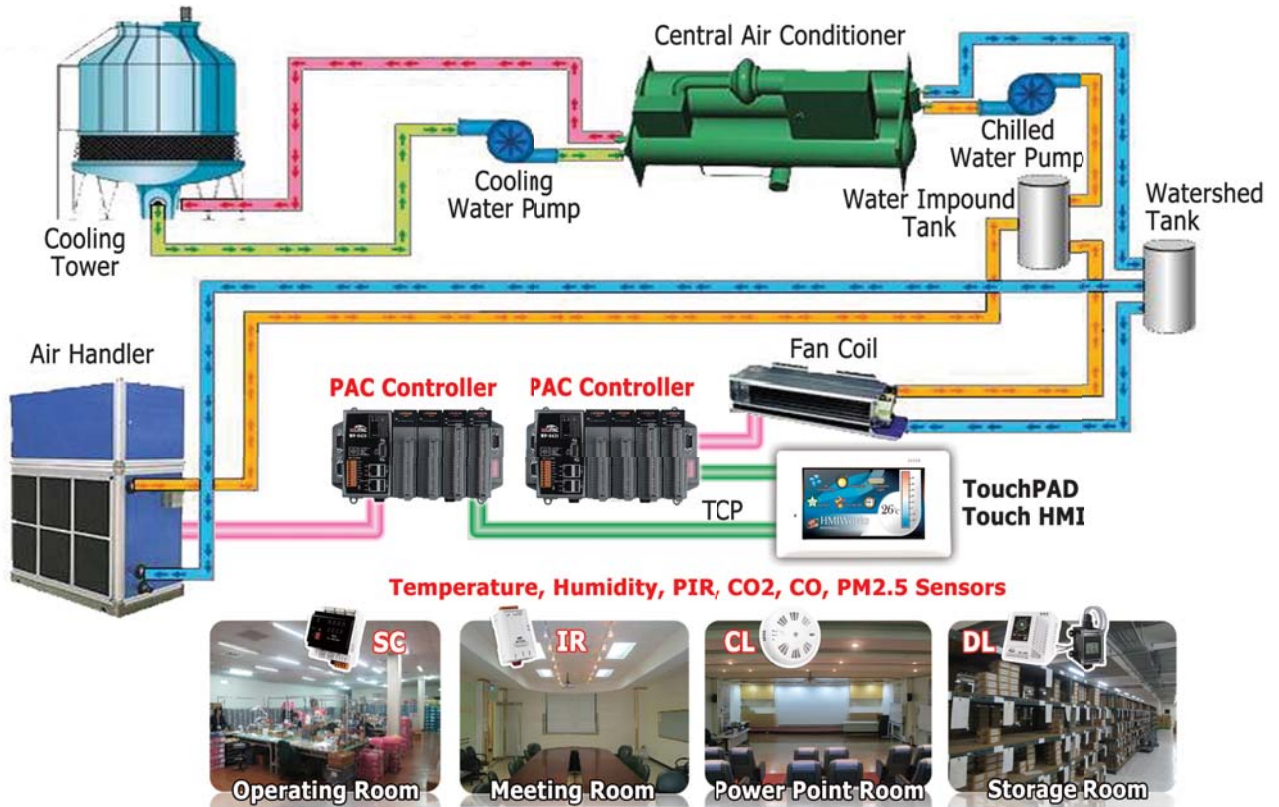
● FCU (Fan Coil Unit) Control System:

FCU system widely use in commercial building, with SC series relay board and TPD series thermostat, it allows you set up the indoor temperature. The SC series focus on controlling air flow of FCU, and the flow rate of the 2-way valve or 3-way valve for the chilled-water and hot-water in FCU. Moreover, the TPD series provides users interface for easy set-up of the temperature and air flow.

Application Field
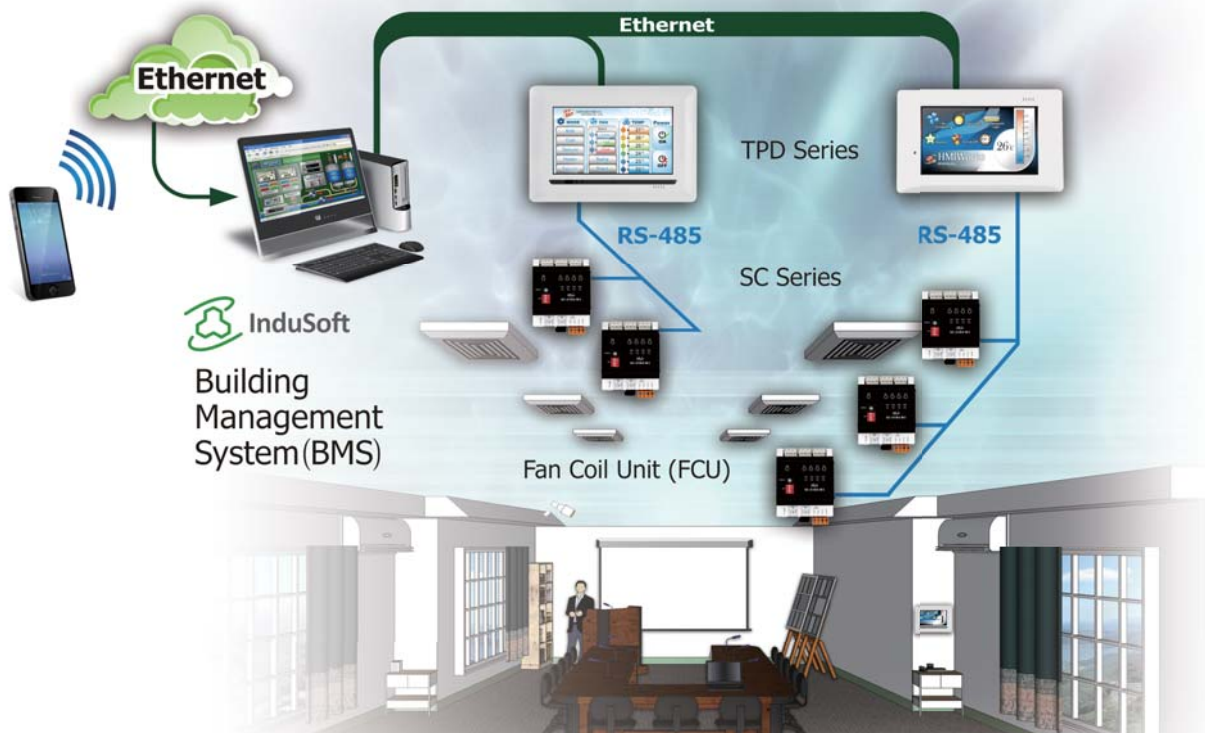
1-5 Environmental Monitoring

The environmental safety should be built-in when constructing. But for the old building, it can be solved by adding new technology products, such as installing the devices to monitor/detect CO, CO2, PM2.5, formaldehyde (HCHO), temperature, humidity, body temperature, infrared, motion detection, etc. ICP DAS environmental sensor series not only detect the environment and trigger the alarm but also to achieve the device linkage reaction, notify the control center and follow-up processing immediately. Such as the ZigBee wireless series, when detecting the smoke, it can immediately trigger the alarms, directly linked to smoke dampers, enable the escape indicator, and notify the control center, evacuates people with the instructions and reduces the disaster.

Sensor Series Modules
CO, CO2, PM2.5, CH2O, Temperature, Humidity, Dew Point

DL-302   DL-100T485   CL-212   PIR-130
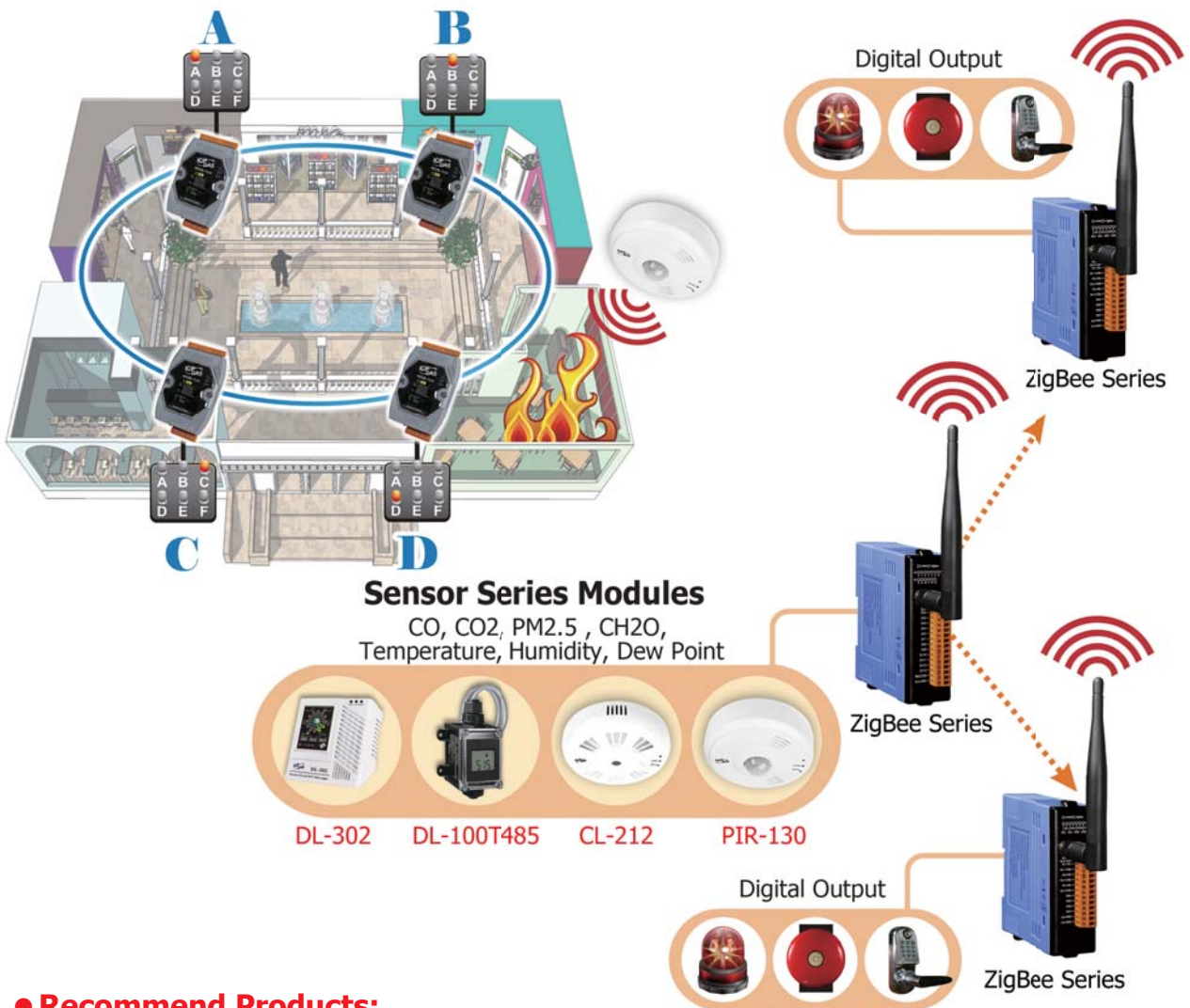
● Recommend Products:

ZigBee Series	Wireless ZigBee Converter	ZT-2550, ZT-2570, ZT-USBC, ZT-CHK...
	Wireless ZigBee I/O Module	ZT-2042, ZT-2053, ZT-2060, ZT-2055 ...
	Wireless ZigBee Pair-connection	ZT-2053-IOG, ZT-2055-IOG, ZT-2060-IOG ...
DL Series	Temperature/Humidity Data Logger	DL-100T485(-W), DL-100TM485(-W) ...
	CO/CO2/Temp./Hum./HCHO Data Logger	DL-301, DL-302, DL-303, DL-307
CL Series	Environmental Sensor	CL-207/209/211/212/213
PIR Series	PIR Motion, Temperature Module	PIR-130

1-6 Security

ICP DAS BA security solution integrates monitoring system and access control system that can connect to the central monitoring system via open interface network. Combine the LC-131 for door/window intrusion detection sensors and the PIR module Pyroelectric Infrared sensors can easily simplify the complexity of the BA monitoring system and access control deployment; also, reduce the cost of maintenance.
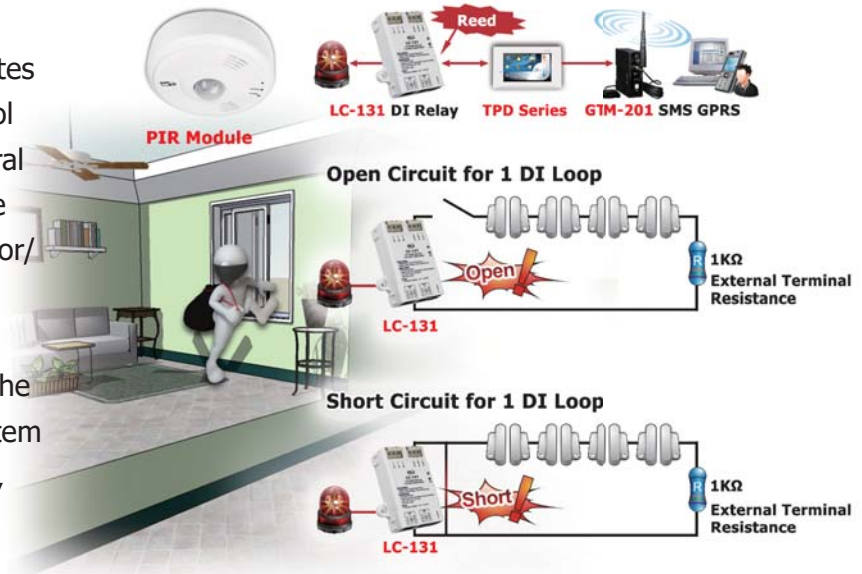
● **Recommend Products:**

TouchPAD Series	TPD 2.8" / 4.3" / 7" HMI Device	TPD-280-H/283-H, TPD-430/433, TPD-703 ...
	VPD 3.5" / 4.3" / 7" HMI Device	VPD-130/132/133, VPD-142/143, VPD-173N...
LC Series	Security Module	LC-131
PIR Series	PIR Motion, Temperature Module	PIR-130
ACS Series	Access Control Reader with Proximity Card	ACS-10V-MF, ACS-10VP-MF
	Access Control Reader with Proximity Card & Keypad	ACS-11-MF, ACS-11P-MF

1-7 Electrical Devices

The electrical devices in a building includes HVAC, power monitoring, lighting, water supply & wastewater disposal, fire monitoring and access control, etc.. Usually firefighting system may require an authorized license for control operations monitoring signal, while for other electrical devices, the control/monitoring operations can be done easily after the control sequences being clarified or verified by professional technicians. With the help of remote I/O and TPD series, the schedule operations, linkage actions, on-site monitoring/control, troubleshooting operations and maintenance can be easy, and reduce your expenditure.
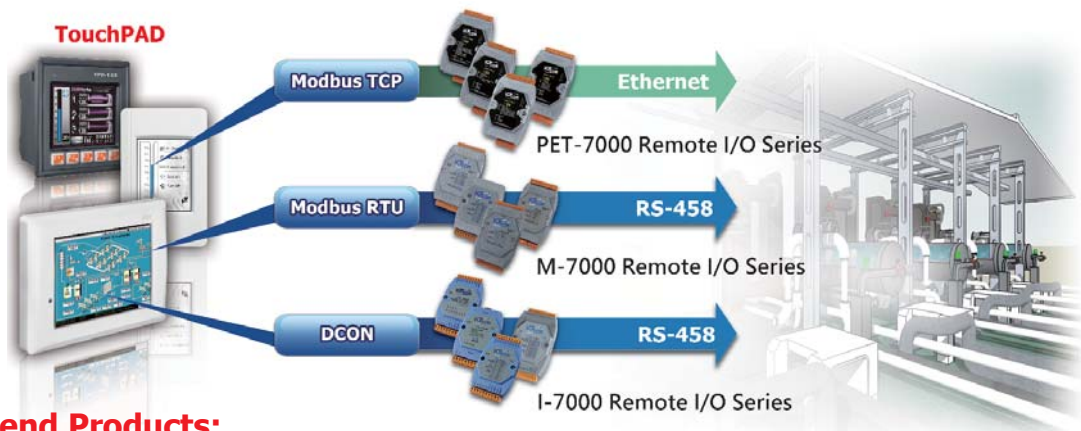
● **Recommend Products:**

TouchPAD Series	TPD 2.8"/ 4.3"/ 7" HMI Device	TPD-280-H/283-H, TPD-430/433, TPD-703 ...
	VPD 3.5"/ 4.3"/ 7" HMI Device	VPD-130/132/133, VPD-142/143, VPD-173N...
I/O Series	Remote I/O Modules	RS-485, Ethernet, CAN Bus ...
	Remote I/O Expansion Unit	RS-485/USB/Ethernet/CAN/PROFIBUS Bus...

Application Field

1-8 Power Monitoring

ICP DAS provides an innovative total solution for energy saving; it can measure and monitor the power consumption of the devices, machines, lighting, air conditioning or other electricity equipment to achieve more efficient use of energy and reduce resources consumption. This innovative total solution includes front-end Smart Power Meter, PMC/PMD Power Meter Concentrator, back-end software tool for database import operation (PMC Data Server) and InduSoft SCADA software. ICP DAS also provides the solution that could easily view power data by Industrial Multi-power-meter Display, or their mobile phones or PC; the administrator could set up the system quickly and the data can be recorded in time.

● Recommend Products:

Power Series	PMC: Power Meter Concentrator	PMC-5151, PMC-5231
	PMD: PMC with Touch Panel	PMD-6201 (15"), PMD-4201 (10.4"), PMD-2201 (7")
	PM Smart Power Meter	PM-3033, PM-3133, PM-4324 Series (Single-Phase) PM-3112, PM-3114 Series (3-Phase)
Power Related Device	True RMS Input Module	M-7017RMS
	Industrial Multi-power-meter Display	VPD-173-PM, VPD-143N-PM TPD-1003-PM, TPD-703-PM, TPD-433-PM

Chapter 2. System Solutions

2-1 Office Automation System

Product Series:

- LC Series
- SC Series
- IR Series

- PIR Sensors
- ACS/SI Series
- TPD Series

- DL Sensors
- PM Series

Lighting Control
LC-101

Control
Projection Screen
Electric Curtains
LC-103

FCU Control
SC-4104-W1

Motion Detector
PIR-130-DC

Projector/Air-conditioning
IR-712A

Access Control Reader
ACS-11-MF

Touch HMI Device
TPD-703

CO/CO2 Detection
DL-302

Power Meter
PM-3133
PM-3033
PM-3114

Power Meter Concentrator
PMC-5231

System
Solutions

2-2 Community Automation Overall System

Air Conditioning Control

Product Series:
- SC Series
- IR Series
- LC Series

Energy Saving System

Product Series:
- PM Series
- PMC Series

Vehicle Plate Recognition Parking Lot Management

Product Series:
- Wi-Fi Series
- Camera Series
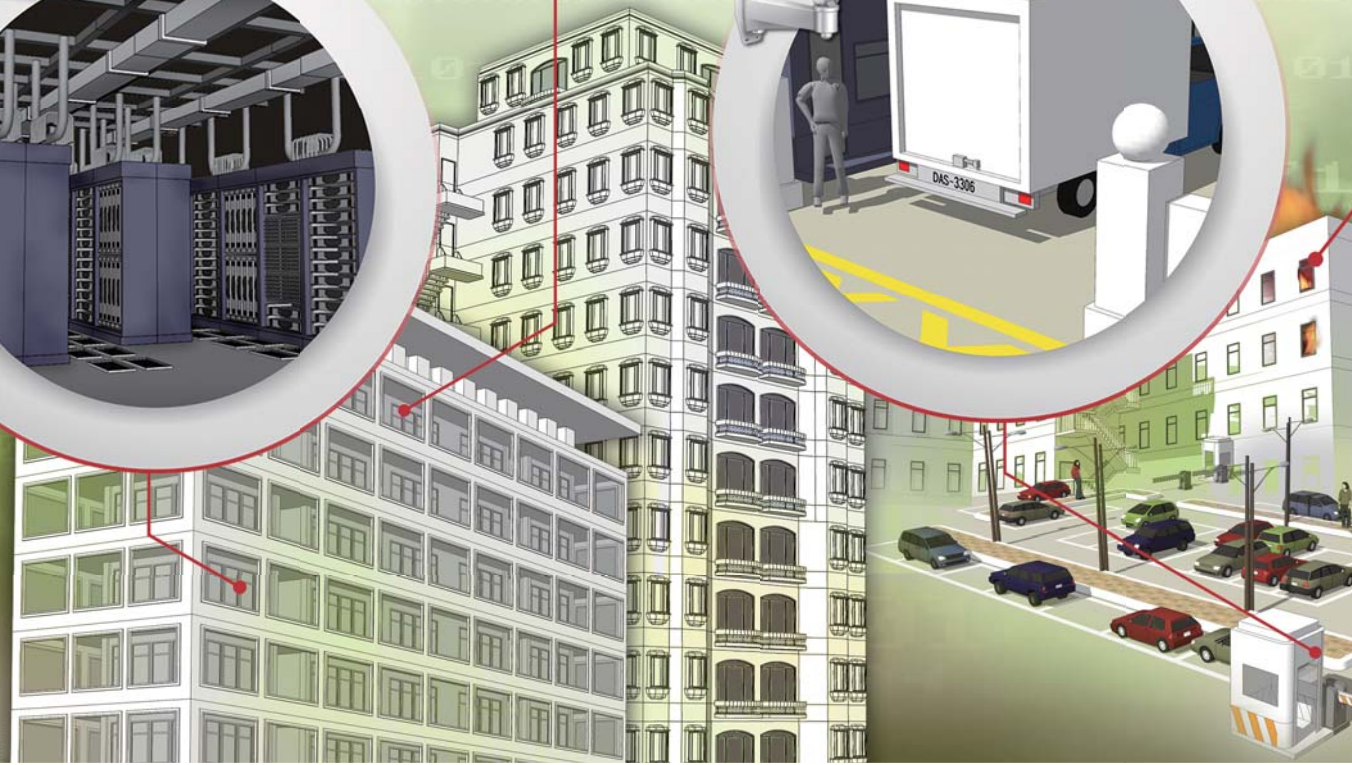
Environmental Monitoring/Security
Product Series:
- LC Series
- ZigBee Series
- DL/CL Series

Lighting/Scenario Control
Product Series:
- LC Series
- DALI Series
- TPD HMI Series

System Solutions

2-3 Home Automation System

Product Series:
- Wi-Fi Series
- IR Series
- PM Series
- PAC Controller
- ZigBee Series
- LC Series
- TPD HMI Series

Features

- TouchPAD provides scenarios control (Lighting, Dimmer, Air Conditioning, Multimedia, etc.) to replace the traditional mechanical switches.
- Lighting control with TouchPAD HMI and ZigBee wireless forms an easy controlling network.
- The three-phase meter can show the power consumption of different scenarios immediately.
- Smart Phone via Wi-Fi can link the PAC controller to enable the HA automation.

LED Control

Wifi

ZigBee

WEB Server

RS-232

RS-485

RS-485

TPD-280U

LC-103

RS-485

RS-485

IR-210/IR-712

TPD-430

PM-3133

Smart Phone Control

By ICP DAS PAC controller (built-in Web Server & Web DLL), Smart Phone can connect via Wi-Fi to the PAC controller for simultaneously remote-controlling what TouchPAD locally does.

Wifi

TouchPAD (Support Multi-language)

Smart Phone

2-4 Leakage Monitoring System

Product Series:

●ZigBee Series ●GRP Series ●M-7000 I/O Series ●TPD Series

GRP-530M

Cloud

SMS

3G / GPRS / SMS

Ethernet

Device Leakage Detection

System Solutions

TPD-703

ZT-2550

Water Tank System

RS-485

Wired Solution

Wireless Solution

ZigBee

Fire Fighting System

【Light】
Red: Detect leakage

Red + Yellow: Detect short circuit

Yellow: Detect broken circuit

Normal: Short & Brocken circuit simulation

Water Discharge System

M-7026

ZT-2026

Elderly Care
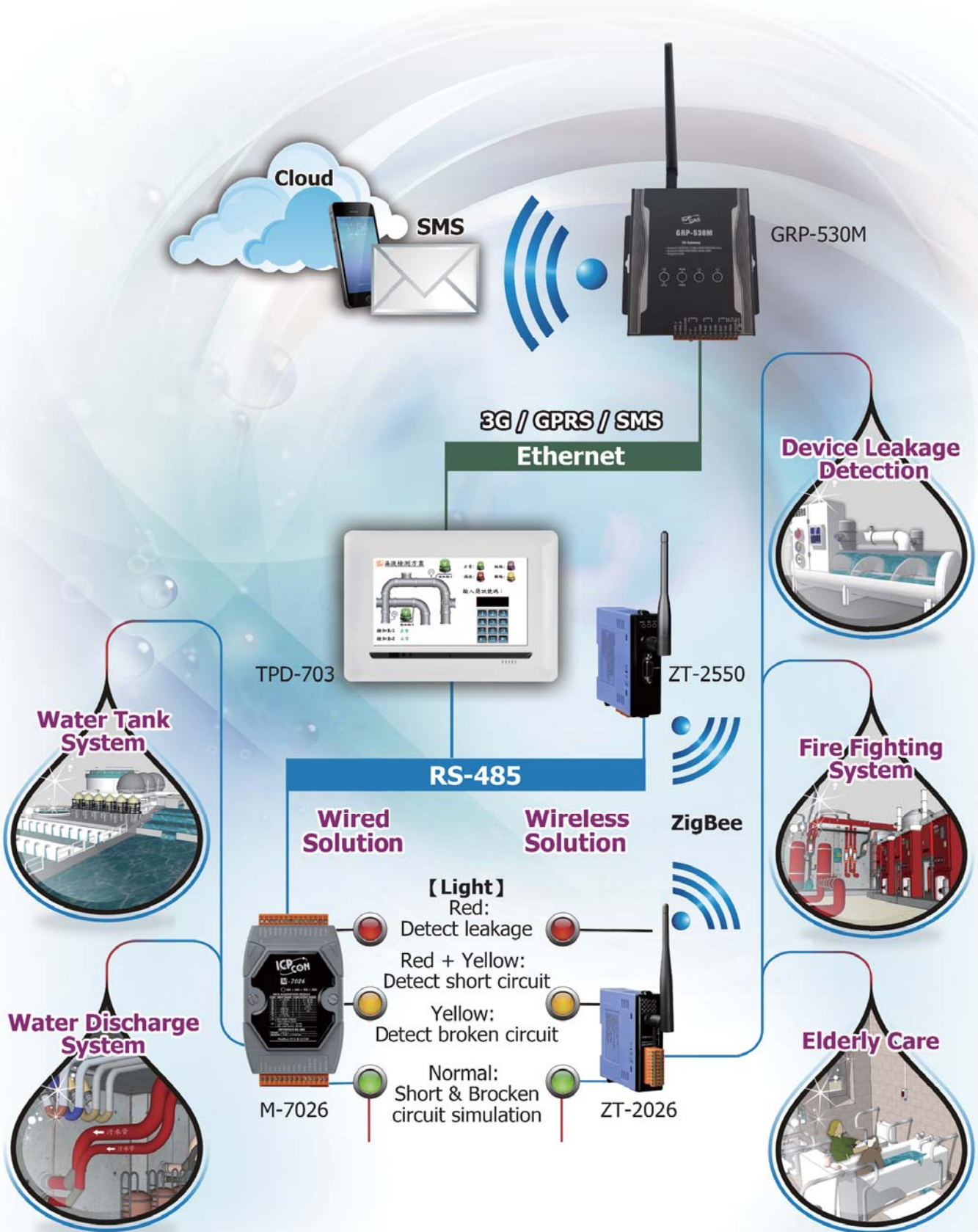
2-5 Intelligent Lighting Control System

Management layer
Product Series:
- InduSoft Software

Control layer
Product Series:
- WISE Series
- TPD HMI Series

Perception layer
Product Series:
- LC Series
- PIR Series

((•)) Remote Control ↻ Loop Control 📝 Scheduling 🏠 Scenario Control

LAN

InduSoft

TPD-703

Dimming LED Lamp

WISE-5231

Microsoft Azure
Certified

RS-485

LC-101/103   LC-221

PIR-130 Motion Detector

Application

Parking Space

Warehouse

Meeting Room

Corridor

Internet Data Center

Lab

System Solutions

Chapter 3. Product Series

3-1 Video Intercom & Access Control Series

This series, mainly for the smart community & building systems, include HA series (Intercom host), SI series (Intercom door station) and ACS series (access control card reader).

HA Series is an intercom host that supports security situation control, integrating functions related to the message notifications, security alarms, community bulletins, interior environment control, visitor intercom, and push advertising.

SI Series is video intercom door station that supports VoIP technology and SIP communication protocol. With HA-401 product, households can see visitor's images and have a video conversation.
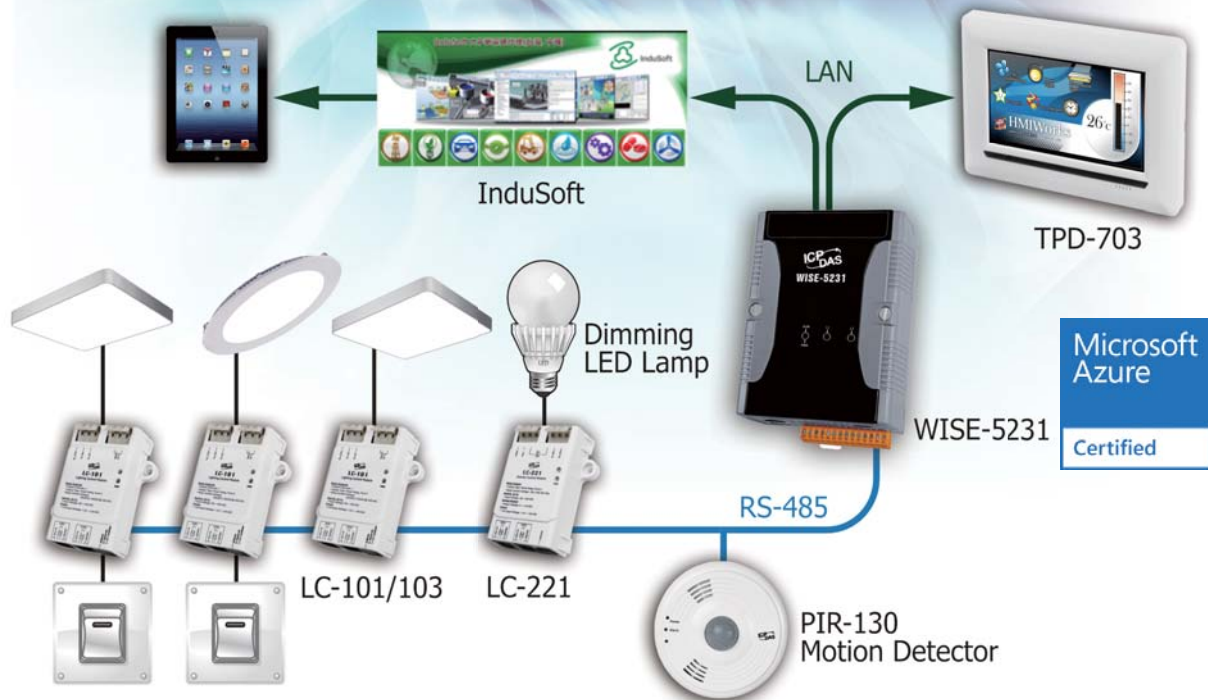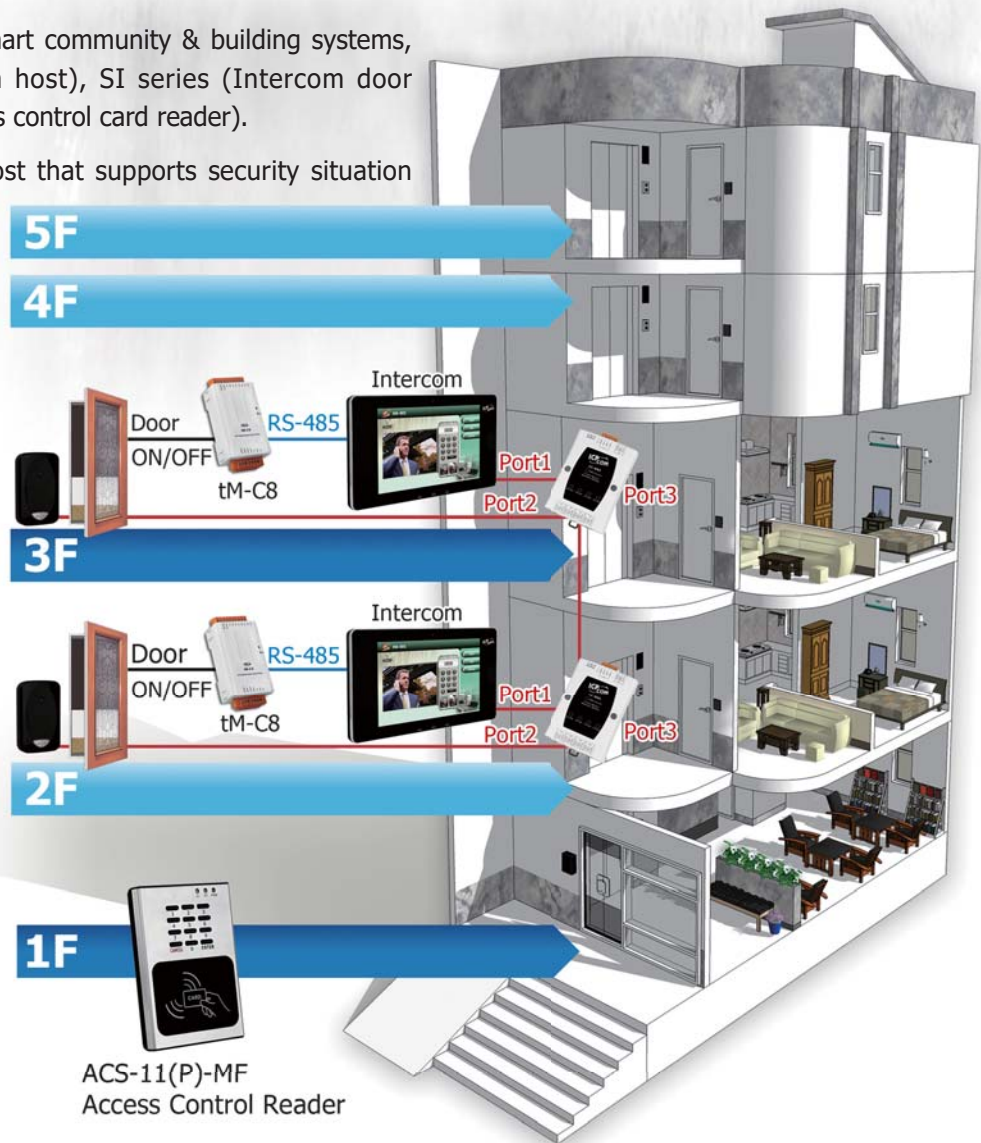
ACS Series is an access control reader that supports keypad and RFID induction of access control. It integrates three functions of door access control, voice guidance and floor control all in one.

ACS-11(P)-MF
Access Control Reader

Selection Guide

Video Intercom & Access Control Series	
HA-401	Security Situation Control Intercom Host
HA-5231M	IP PBX
SI-002	Video Intercom Door Station
ACS-10V-MF-TC	Access Control Reader with Proximity Card (Chinese version of voice)
ACS-10VP-MF-TC	PoE Access Control Reader with Proximity Card (Chinese version of voice)
ACS-10V-MF	Access Control Reader with Proximity Card (English version of voice)
ACS-10VP-MF	PPoE Access Control Reader with Proximity Card (English version of voice)
ACS-11-MF-TC	Access Control Reader with Proximity Card and Keypad (Chinese version of voice)
ACS-11P-MF-TC	PoE Access Control Reader with Proximity Card and Keypad (Chinese version of voice)
ACS-11-MF	Access Control Reader with Proximity Card and Keypad (English version of voice)
ACS-11P-MF	PPoE Access Control Reader with Proximity Card and Keypad (English version of voice)

Product Series

3-1-1 HA Series: Security Situation Control Intercom Host

HA-401

Features

CE FC RoHS

- Full-duplex voice and video intercom (Support SIP)
- 10.1" WXGA color TFT-LCD touch screen
- Full HD Front-facing camera (1080p)
- Display for the date, time, T&H, PM2.5, noise levels...
- Smart home control (lighting, TV, air conditioning...)
- Energy monitoring and management capabilities
- Community announcements and publish advertising
- Interactive M2M transmission technology: MQTT

Introduction

HA-401 is an intercom host that supports security situation control, integrating functions related to message notifications, security alarms, community bulletins, interior environment control, visitor intercom, and publish advertising. The HA-401 uses advanced automatic control, database software, computer network communication technology, and building message management, combined with a Smart Home system, to achieve intelligent indoor control.

- Video Conversation
- Environmental Monitoring
- Security Alarm
- Information Notice

Specifications

Controller	
CPU	32-bit, 1000 MHz
DDR3 SDRAM	512 MB
NAND Flash	4 Gb
EEPROM	128 KB; Data Retention: 40 years; 1,000,000 erase/write cycles
RTC	Provide second, minute, hour, date, day of week, month, year
Communication Interface	
Ethernet	RJ-45 x 1, 10/100 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED indicators)
USB 1.1	1 (Client/Mini-USB)
COM Port	COM1: RS-485 x1 (TB and RJ-11) COM2: RS-232/485 x1 (TB)
Digital Input	
Channels	2
Input Type	Dry contact (Source)
Dry Contact Level	Off Voltage Level: Open / On Voltage Level: Close to GND
Relay Output	
Channels	2

Output Type	1 Form A	1 Form C
Contact Capacity	5 A @ 250 V_{AC}; 5 A @ 30 V_{DC}	0.6 A @ 125 V_{AC}; 2 A @ 30 V_{DC}
Endurance	Mechanical: 2 x 10^7 ops. Electrical: 1 × 10^5 ops.	Mechanical: 1 x 10^8 ops. Electrical: 5 × 10^5 ops.

HMI	
LCD	10.1" TFT (Resolution 1280 x 800)
Backlight Life	20,000 hours
Brightness	350 cd/m2
Camera	1080P (1920 x 1080), CMOS Sensor
Touch Screen	5-wire, analog resistive; Light Transmission: 80%
Audio	AMP 2.5 W; Digital microphone
Power Supply	
Input Range	12 V ~ 48 VDC
Consumption	4.0W
Protection	Reverse Polarity Protection
Power Switch	Yes
Mechanical	
Installation	Wall Mounting (Suitable for the European 86 mm x 86 mm outlet box)
Dimensions	311 mm x 36 mm x 181 mm (W x L x H)
Environment	
Operating Temperature	-10℃ ~ +60℃
Storage Temperature	-20℃ ~ +70℃
Humidity	10% ~ 90% RH, non-condensing

Product Series

HA Series: IP PBX

HA-5231M

Features

- VoIP Protocol : SIP (Session Initiation Protocol)
- Audio Codec: PCMU, PCMA, GSM, G.722
- Video Codec: H.263p, VP8, H.264
- Support pass through video call
- Up to 256 extensions
- Up to 8 SIP trunk
- Call Detail Records
- Flexible Extension manager
- Provide network firewall functionality
- Operating Temperature: -25 ~ +75°C

Introduction

HA-5231M is a IP PBX that is built over IP-based architecture for delivering and managing voice and video communication services. It allows the phones to talk to each other by voice and video. These phones can be a SIP phone, Software Phone, the ICP DAS HA-401, SI-002 and so forth. In addition, we also provide the utility software for users to configure the HA-5231M. By using this module, users can manage their SIP phone easier and more flexible.

- VoIP Phone System

- Free International Calling

Specifications

System Software	
OS	Linux Kernel 3.2.14
Embedded Service	SIP, SSH
CPU Module	
CPU	AM3354, 1 GHz
DDR3 SDRAM	512 MB
Flash	512 MB
EEPROM	64 KB
Expansion Flash Memory	microSD socket with one 4 GB microSD card (support up to 32 GB microSDHC card)
RTC (Real Time Clock)	Provide second, minute, hour, date, day of week, month, year
64-bit Hardware Serial Number	Yes, for Software Copy Protection
LED Indicator	4 LED (PWR, RUN, L1, L2)
Rotary Switch	Yes (0 ~ 9)

Communication Ports	
Ethernet	RJ-45 x 1, 10/100 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED Indicators)
USB 2.0 (Host)	1
Console Port	RS-232 (RxD, TxD and GND); Non-isolated
ttyO2	RS-485 (Data+, Data-); Non-isolated
ttyO4	RS-232 (RxD, TxD and GND); Non-isolated
ttyO5	RS-485 (Data+, Data-); 2500 VDC Isolated
Power	
Input Range	12 V ~ 48 VDC
Consumption	4.8 W
Mechanism	
Installation	DIN-Rail
Dimensions	72 mm x 33 mm x 119 mm (W x L x H)
Environment	
Temperature	Operating Temperature: -25°C ~ +75°C Storage Temperature: -30°C ~ +80°C
Humidity	10% ~ 90% RH, non-condensing

Product Series

3-1-2 SI Series: Video Intercom Door Station

SI-002

Features

- Full-duplex voice and video intercom (Support SIP)
- Using high-resolution camera 1080P (1920 x 1080)
- Advanced echo cancellation technology
- Built-in high sensitivity microphone and speaker
- Built-in call button
- Built-in Relay output channel (door control or alarms output)
- Built-in Digital input channel (door magnetic switch detection or external emergency button)

Introduction

SI-002 is video intercom door station that supports VoIP technology and SIP communication protocol. With HA-401 product, households can see visitor's images and have a video conversation with them when the door bell ringing, after identity confirmation, they can open the door remotely. Using high-resolution CMOS camera and advanced echo cancellation technology can show a clearer picture and excellent audio residential.

Applications

- Voice Conversation
- Remote Door Control
- One-touch Calling
- Video Surveillance
- Door Position Detection

Specifications

Communication Interface	
Ethernet	RJ-45 x 1, 10/100 Base-T (Auto-negotiating, Auto MDI/MDI-X, LED indicators)
Digital Input	
Channels	2
Input Type	Dry contact (Source)
Dry Contact Level	Off Voltage Level: Open / On Voltage Level: Close to GND
Relay Output	
Channels	1
Output Type	Form C (N.O./COM./N.C.)
Contact Capacity	0.6 A @ 125 VAC; 2 A @ 30 VDC
Endurance	Mechanical: 2×10^8 ops. / Electrical: 1×10^5 ops.

HMI	
Camera	1080P (1920 x 1080), CMOS Sensor
Audio	AMP 2.5 W; Digital microphone
Power Supply	
Input Range	12 V ~ 48 VDC
Consumption	1.68 W (70 mA @ 24 VDC)
Protection	Reverse Polarity Protection
Mechanical	
Installation	Wall Mounting (Suitable for the European 86 mm x 86 mm outlet box)
Dimensions	102 mm x 161 mm x 41 mm (W x L x H)
Environment	
Temperature	Operating: -10℃ ~ +60℃ Storage: -20℃ ~ +70℃
Humidity	10% ~ 90% RH, non-condensing

3-1-3 ACS Series: Access Control Reader with Proximity Card

ACS-10V-MF
ACS-10VP-MF

ACS-11-MF
ACS-11P-MF

Features

- Supports RFID induction control
- Supports Card Type: Mifare Classic, Ultralight, DESFire
- Built-in Voice Message Function
- Supports Ethernet/RS-485/CAN Bus Interface
- Built-in RTC and WDT
- Electric Door Lock Control and Door Position Detection
- Provides Access Records
- Max Card Capacity: 8192 Cards
- Supports Elevator Floor Control (Max. 16 F)

Introduction

ACS Series is an access control reader that supports keypad and RFID induction of access control. It integrates three functions of door access control, voice guidance and floor control all in one, suitable for use in community door access and elevator control.

Specifications

Model	ACS-10V-MF ACS-11-MF	ACS-10VP-MF ACS-11P-MF
CAN Bus		
Baud rate	1M (bps)	-
Specification	ISO-11898-2, CAN 2.0A/B	-
UART		
COM	RS-485 (D+, D-)	
Baud rate	9600 (bps)	
Format	N, 8, 1	
Ethernet		
Controller	10/100Base-TX Ethernet Controller (Auto-negotiating, Auto MDIX)	
Connector	RJ-45 with LED indicator	
Digital Input		
Channels	4	2
Input Type	Dry contact (Source), Wet Contact (Sink, Source)	
Relay Output		
Channels	2	
Output Type	Form C	
Contact Capacity	0.5A 120 VAC / 2A 30 VDC	

Model	ACS-10V-MF ACS-11-MF	ACS-10VP-MF ACS-11P-MF
RFID		
Supported Card	Mifare Classic, Ultralight, DESFire	
Standard	ISO 14443 A	
Keypad		
Supported	ACS-11-MF/ACS-11P-MF: Yes ACS-10V-MF/ACS-10VP-MF: No	
Power		
Protection	Yes, Reverse Polarity Protection	
Input Power	From CN1 Connector, 10 V ~ 30 V	PoE, IEEE 802.3af, Class1
Consumption	2.0 W	1.7 W
Mechanical		
Installation	Wall Mounting (Suitable for the outlet box in United States)	
Dimensions	83 mm x 120 mm x 28 mm (W x L x H)	
Environment		
Temperature	Operating: -20℃ ~ +60℃ Storage: -30℃ ~ +80℃	
Humidity	10% ~ 90% RH, non-condensing	

Product Series

3-2 TouchPAD Series: Touch HMI Devices

ICP DAS provides two types of touch HMI devices, the TPD series and the VPD series. The TPD series designed for home/building automation applications and the VPD series designed for factory/machine automation applications. Both have many similarities, such as a high-color high-resolution touch screen, RTC, and a variety of communication interfaces, including RS-232/RS-485 and Ethernet. However, each still has its specific features for its respective target applications. For the TPD series, users can use an external wall box to help smoothly blend the TPD series device into decoration. For the VPD series, the rubber keypad, IP-65 waterproof front panel and DIN-Rail/panel mounting design for harsh environment, especially for factories.
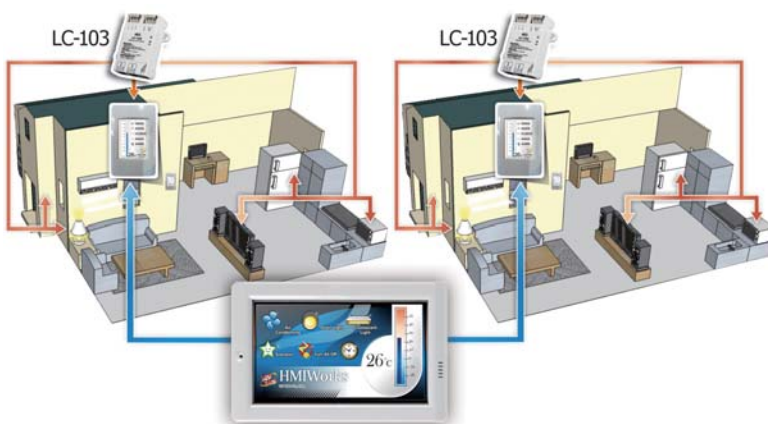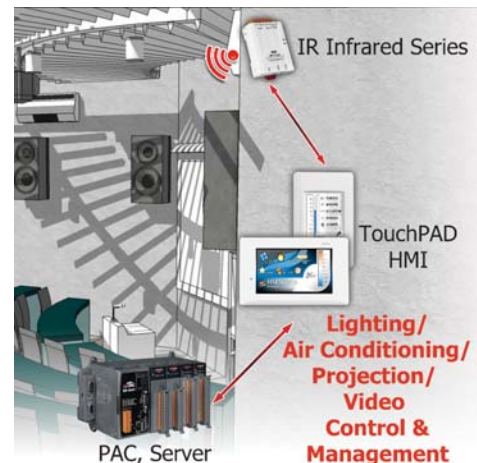

HMIWorks is a free development tool that can be used to design SoftPLC logic ladder diagrams for TouchPAD, meaning that a single TouchPAD becomes a touch HMI device running ladder logic.

Applications

Smart Home Automation

Meeting Room Auto-management

3-2-1 TPD Series: High Speed Touch HMI Devices

2.8" High Speed

TPD-280-H **TPD-283-H** **TPD-283U-H**

TPD-280-M1 **TPD-280-M2** **TPD-280-M3**
TPD-283-M1 **TPD-283-M2** **TPD-283-M3**
TPD-283U-M1 **TPD-283U-M2** **TPD-283U-M3**

The **TPD Series** is a family of tiny touch HMI devices, that designed for building and home automation. The TPD 2.8" Series provides a high-color, high-resolution TFT touch screen, which matches a regular electrical wall-mount outlet. It seamlessly integrates with a wide range of I/O modules and provided an attractive, flexible and customizable picture frame.

Features

- Excellent Cost/Performance Ratio
- High-color, High-resolution Touch Screen
- PoE (Power over Ethernet)
- RS-485 (Including Self-Tuner)
- RTC (Real Time Clock)
- GUI Design
- Free HMIWorks Development Tool
- Supports C Language and Ladder Designer
- Supports User-defined Third-party Protocols (C)
- Modbus TCP/RTU Protocol
- ESD Protection: 4 kV
- Operating Temperature: -20 to +70°C
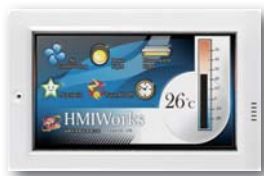
Applications

2.8" Selection Guide

TPD Model	Extra Flash	Image Storage Capacity (1)	Comm. Interface (2)	LCD Resolution	RTC	Installation	Power Input (3)
TPD-280-H **TPD-280-Mx**	-	4	RS-485	2.8" TFT (240 × 320)	-	Outlet Box: OB120 External Wall Box: EWB-T28	+12 ~ 48 VDC
TPD-283-H **TPD-283-Mx**	-	4	Ethernet		-		PoE (48 V)
TPD-283U-H **TPD-283U-Mx**	16 MB	108	RS-485 Ethernet		Yes		+12 ~ 48 VDC or PoE (48 V)

(1) The Image Storage Capacity greatly depends on the content and the size of the images. The value indicated illustrates the maximum number of full-screen resolution images that can store on the device.
(2) Communication Interface: RS-485 (Including Self-Tuner), Ethernet (10/100 Mbps)
(3) Power Input: PoE (Power over Ethernet, IEEE 802.3af, Class 1, 48 V)

Product Series

3-2-2 TPD Series: Touch HMI Devices

4.3"

TPD-430   **TPD-433**

TPD-430-EU   **TPD-433-EU**

TPD-432F   **TPD-433F**

7" High Speed

TPD-703/TPD-703-64

Features

- High-color high-resolution touch screen
- Power over Ethernet (PoE)
- RS-485/RS-232
- RTC
- Buzzer
- Graphical user interface designer
- Support Modbus RTU/TCP protocol
- Support DCON protocol
- Free development tool: HMIWorks
- Support the C language and Ladder Designer
- Support user-defined third party protocol
- 7" Operating temperature: -10 ~ +60℃
- 4.3" Operating temperature: -20 ~ 50℃

7" & 4.3" Selection Guide

TPD Model	Extra Flash	Image Storage Capacity (1)	Comm. Interface (2)	LCD Resolution	RTC	Installation	Power Input (3)
TPD-430(-EU)	8 MB	32	RS-485	4.3" TFT (480 × 272)	Yes	F Model: OB140F, OB140FP EU Model: European 86 × 86 mm Others: OB120	+10 ~ 30 VDC
TPD-432F			RS-485 × 2				
TPD-433(-EU)			RS-485, Ethernet				+10 ~ 30 VDC or PoE (48 V)
TPD-433F			RS-485/RS-232, Ethernet				
TPD-703	16 MB	18	RS-485/RS-232, Ethernet	7" TFT (800 × 480)		Outlet Box: OB170 External Wall Box: EWB-T70	+12 ~ 48 VDC or PoE (48 V)
TPD-703-64	64 MB	84					

(1) The Image Storage Capacity greatly depends on the content and the size of the images. The value indicated illustrates the maximum number of full-screen resolution images that can store on the device.
(2) Communication Interface: RS-485 (Including Self-Tuner), RS-232 (3-pin), Ethernet (10/100 Mbps)
(3) Power Input: PoE (Power over Ethernet, IEEE 802.3af, Class 1, 48 V)

Product Series

3-2-3 VPD Series: Industrial Touch HMI Devices

3.5"

VPD-130/VPD-130N
VPD-132/VPD-132N
VPD-133/VPD-133N

4.3"

VPD-142/VPD-142N
VPD-143/VPD-143N

7" High Speed

VPD-173N
VPD-173N-64

Features

- High-color, High-resolution Touch Screen
- RTC (Real Time Clock)
- Serial/Ethernet Comm. Ports
- Support Modbus RTU/TCP protocol
- Rubber Keypad: 3.5"/4.3" N Model
- Graphical user interface designer
- Free development tool: HMIWorks
- Support the C language and Ladder Designer
- Support Modbus RTU/TCP protocol
- Support DCON protocol
- Support user-defined third party protocol
- Waterproof Front Panel: IP65
- I/O Expansion Boards (XV-Boards)
- Operating temperature: -20 ~ +50℃

The **VPD Series** is a series of industrial touch HMI devices with high-resolution color touch screen LCD. With touchscreen capability, it is easy to deploy into all kinds of automation systems and make them more intuitive and efficient. VPD series stands out for its wide variety of communication methods. Besides, the built-in non-volatile storage makes VPD series more reliable in rugged environments.

3.5", 4.3" & 7" Selection Guide

| VPD Model	Extra Flash	Image Storage Capacity (1)	COM Port (2)	Ethernet	LCD Resolution	RTC	Expansion I/O Boards	Rubber Keypad	Ingress Protection	Power Input (3)
VPD-130(N)	8 MB	54	COM1: RS-232 RS-485	-	3.5" TFT (320 × 240)	Yes	-	Yes, except the N model	Front Panel: IP65	+12 ~ 48 VDC
VPD-132(N)			COM1: RS-485 or RS-232 COM2: RS-485	-			Yes			
VPD-133(N)				Yes						+12 ~ 48 VDC or PoE (48 V)
VPD-142(N)	8 MB	32	COM1: RS-485 or RS-232 COM2: RS-485 or RS-232	-	4.3" TFT (480 × 272)	Yes	Yes			+12 ~ 48 VDC
VPD-143(N)				Yes						+12 ~ 48 VDC or PoE (48 V)
VPD-173N	16 MB	18	COM1: RS-232 or RS-485 COM2: RS-232 or RS-485	Yes	7" TFT (800 × 480)	Yes	-	-		+12 ~ 48 VDC or PoE (48 V)
VPD-173N-64	64 MB	84								

(1) The Image Storage Capacity greatly depends on the content and the size of the images. The value indicated illustrates the maximum number of full-screen resolution images that can store on the device.
(2) Communication Interface: RS-485 (Including Self-Tuner), RS-232 (3-pin), Ethernet (10/100 Mbps)
(3) Power Input: PoE (Power over Ethernet, IEEE 802.3af, Class 1, 48 V)

Product Series

# 3-3 LC/SC/DALI Series: Smart Lighting Control
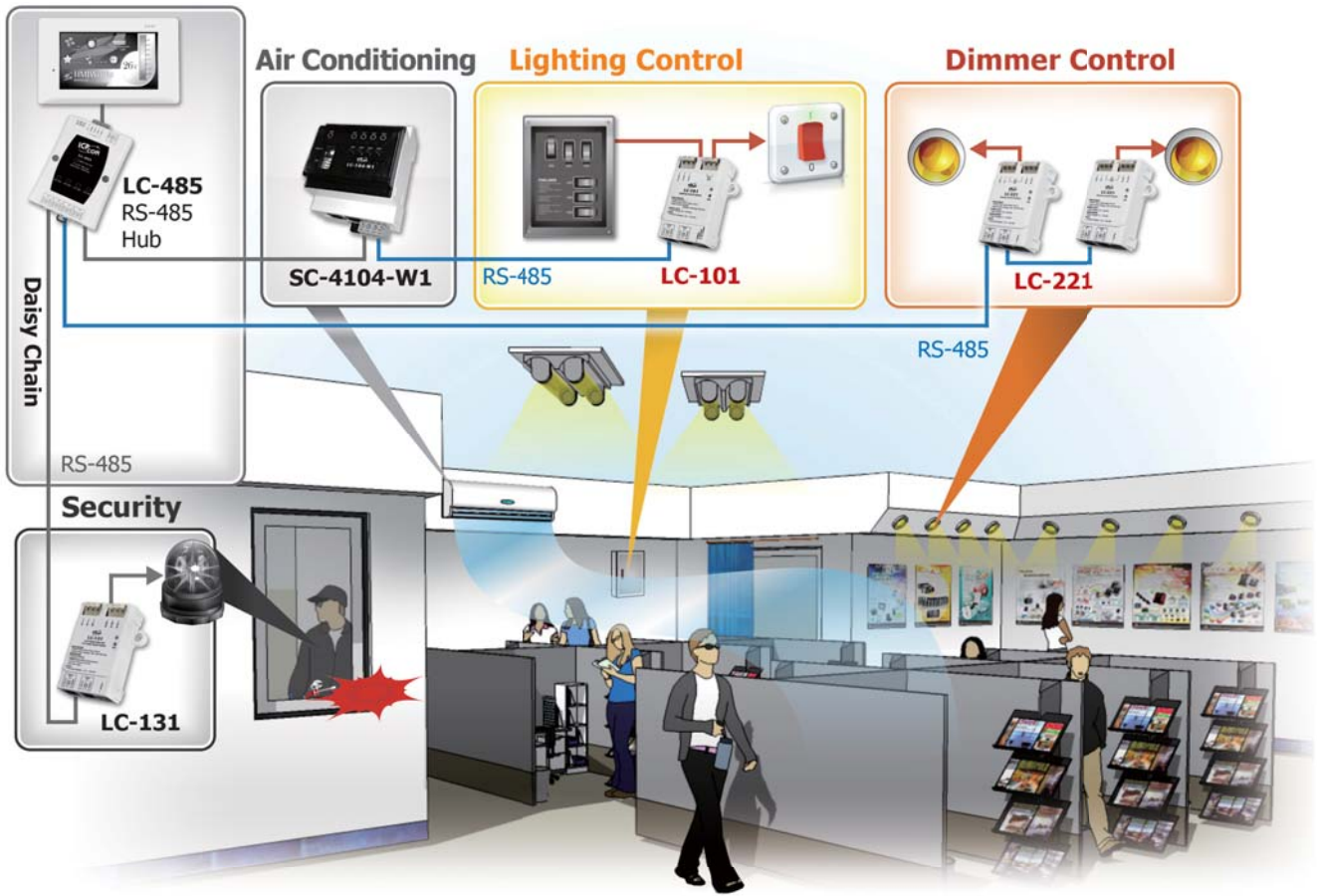
The smart lighting products, are generally designed for building automation, easy cabling, installation and setup. The LC and SC series support Modbus and DCON protocols; the DALI series is a DALI converter. According to the demands, user can control lighting with digital input directly or via RS-485 communication. The main applications are the group lighting control, dimmer scenes, electric curtains, HVAC, windows security and other automation controls. Customers can build a smart home/building automation system combine with the Hub and TouchPAD module.

Features

▶ Easy Installation

With RJ-11 connector, it's easy to deploy power and data to every LC device.
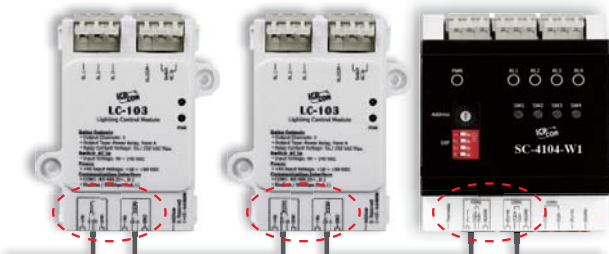
RS-485 and Power Input Daisy Chain using an RJ-11 Connector

▶ Support Modbus RTU and DCON communication protocols

Support the industry standard Modbus protocol and the DCON string protocol for easy integrating the third-party devices.

▶ Control via digital input and RS-485 communication

Provide two methods to control the Relay output: directly from the digital input, or via the RS-485 communication, or both.

▶ Easy Configuration

The configuration can be done by communication via the RS-485 or easily done by DIP and Rotary switches.

DIP Switch (Rear View)

Rotary Switch (Bottom View)

Selection Guide

Lighting Control

Model	Relay Output			AC Digital Input			
	Ch.	Type	Max. Load Current	Ch.	Type	On Voltage Level	Off Voltage Level
LC-101	1	Power Relay, Form C	NO: 10 A; NC: 6 A	1	90 ~ 240 VAC	85 VAC	60 VAC
LC-103	3	Power Relay, Form A	5 A	1	90 ~ 240 VAC	85 VAC	60 VAC

Lighting Control: Load Current Feedback Measurement

Model	Relay Output with Load Current Feedback			Current/Digital/Thermistor Input	
	Ch.	Type	Range	Ch.	Range
LC-305	-	-	-	5	Load Current Input: 0 ~ 5A
SC-4102-W5	2	Power Relay, Form A	Load Current Feedback, Range: 0 ~ 20A	2	AC Digital Input, Type: 90 ~ 240 VAC
				1	Thermistor Input, Temperature: -40°C ~ +80°C

Lighting Control: Analog Dimmer

Model	Relay Output			Analog Output			Digital Input		
	Ch.	Type	Load Current	Ch.	Type	Resolution	Ch.	Type	Voltage Level
LC-221	1	Power Relay, Form A	Max. 16 A	1	0 ~ 20 mA, 4 ~ 20 mA, 0 ~ 10 V, 1 ~ 10 V	12-bit	1	90 ~ 240 VAC	ON:85 / OFF:45 VAC
LC-223	1	Power Relay, Form A	Max. 16 A	1	0 ~ 20 mA, 4 ~ 20 mA, 0 ~ 10 V, 1 ~ 10 V	12-bit	1	90 ~ 240 VAC	ON:85 / OFF:45 VAC
							2	Dry Contact	ON: Close to AGND OFF: Open

Lighting Control: Digital Dimmer (DALI Gateway)

Model	Input Channel	Output Channel	Connector	Other
DGW-521	1 X RS-485/RS-232 1 X USB (Virtual COM)	1 X DALI	2-pin Terminal Block	Built-in DALI power (DC 16 VDC ± 5%, max. current 250 mA)

Security

Model	Relay Output			Digital Input			
	Ch.	Type	Max. Load Current	Ch.	Type	On Voltage Level	Off Voltage Level
LC-131	1	Power Relay, Form A	16 A	3	Dry Contact	Close to DI.COM	Open

RS-485 Hub

Model	Input Channel	Output Channel	Connector	Speed
LC-485	1 X RS-485	4 X RS-485	RJ-11	1200 ~ 115200 bps

Smart Control: FCU, Lighting, Temperature

Model	Relay Output			AC Digital Input		Thermistor Input	
	Ch.	Type	Load Current	Ch.	Type	Ch.	Temperature Range
SC-4104-W1	4	Power Relay, 1 Form C, 3 Form A	Form C: NO: 7 A, NC: 5 A, Form A: 7 A	1	90 ~ 240 VAC	1	-40°C ~ +80°C
SC-6104-W5	4	Power Relay, 4 Form C	NO: 20 A, NC: 16 A	1	90 ~ 240 VAC	1	-40°C ~ +80°C

Product Series

3-3-1 LC Series: Lighting Control Module

**Lighting Control
Dimmer Control
Security / Hub**

LC-101/LC-103 is a easy-to-use lighting module, and control relay output without any software.

LC-221 provides two methods of controlling the brightness of fluorescent lamps via a dimmer, either through DI or controller.

LC-131 is a DI control module equip with 3-channel short circuit digital input and 1-channel relay output.

LC-485 is a 4-ch star topology hub and power supplier, equip with RS-485 short circuit function, shut down faulty channel automatically, and protect the whole communication system.
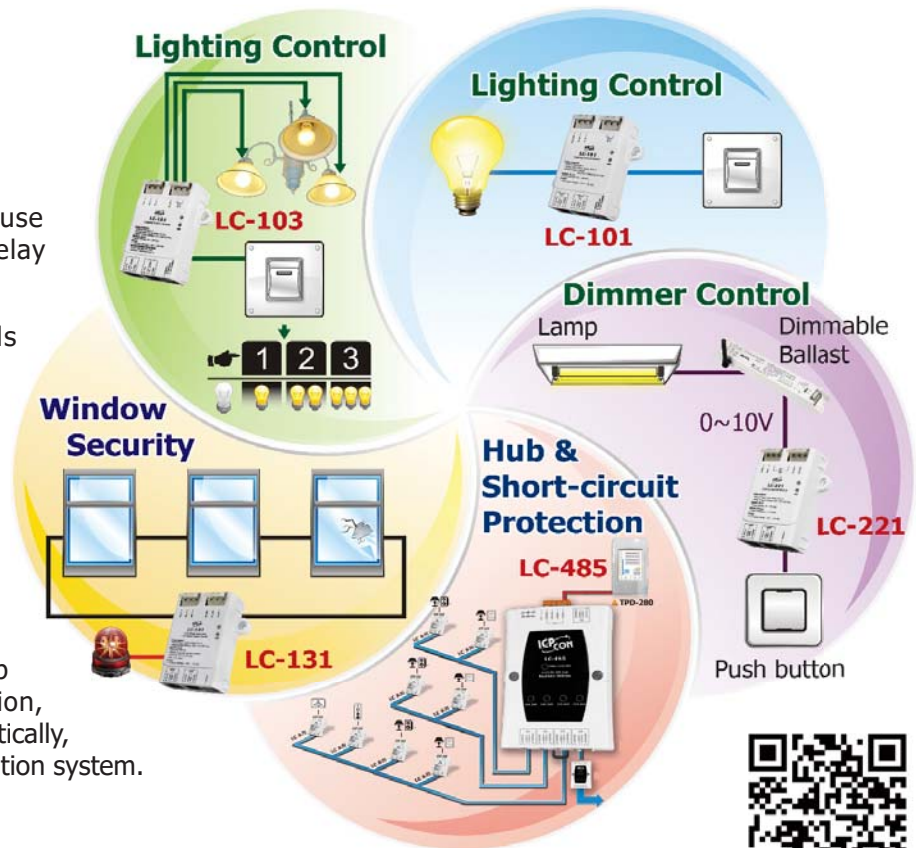
LC-223 provides the two-stage function for dimmer control.
When no people enter the detection range, the lamp will stay in 10% brightness.
When the people enter the detection range, the lights will transfer to the preset brightness (20% ~ 100%).
When the people leave the detection range, the fixture will return to 10% brightness after the setting lighting time and keep the brightness until the ambient is bright.

Product Series
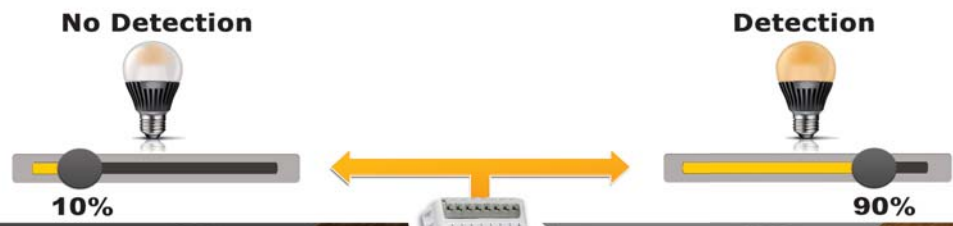
LC-305 is a 5-ch load current measurement module that can measure the load current of each lamp to confirm whether each lamp is normal or fail.

When the load current of channel 1 is I1 = I1, it means that the lamp of channel 1 is working normally.
When the load current of channel 2 is I2 = 1.5 X I2, it means that it needs to make sure the brightness is sufficient and replace the lamp of channel 2 or not.
When the load current of channel 3 is I3 = 2 X I3, it means that the lamp of channel 2 is working normally.
When the load current of channel 5 is I5 = 0A, it means that the lamp of channel 5 have been broken and need to replace.
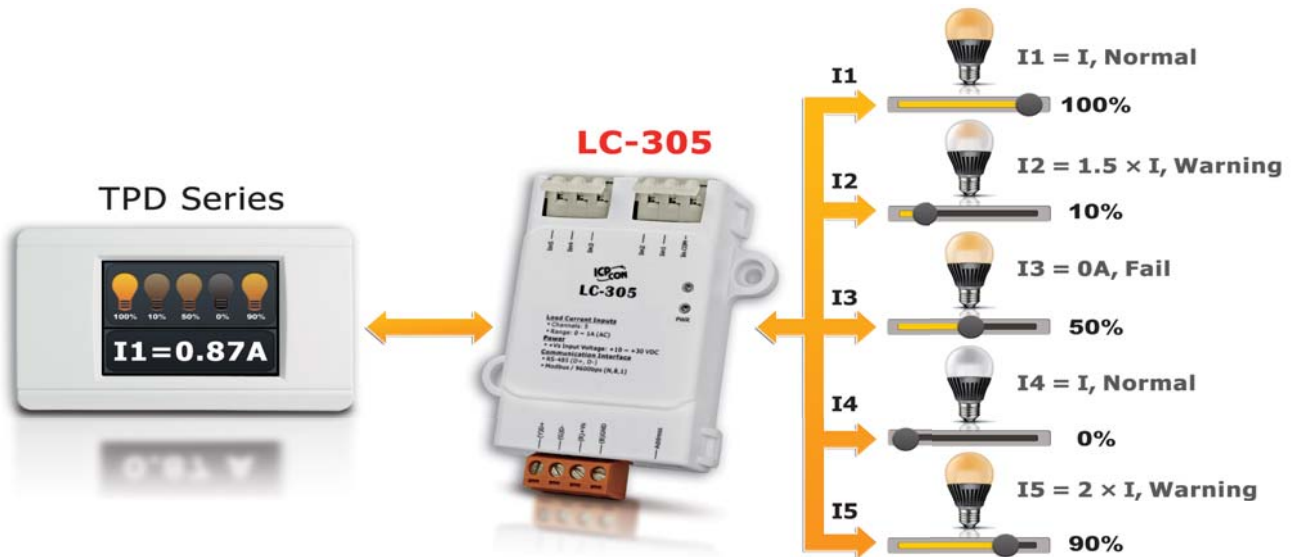
3-3-2 DALI Series

DALI Gateway

DGW-521

💡 Features

- Conversion between RS-485/RS-232/USB and DALI Interfaces
- Easy Deployment: ID Code can be written by the RS-485 Interface
- Simplified Wiring Process
- Built-in DALI Power can be enabled or disabled using a Switch
- 1500 VDC Isolation
- ±4 ESD Protection for the RS-232/485/USB Data Line
- ±4 kV EFT Protection and ±2 kV Surge Protection for Power Line
- DIN-Rail Mounting
- Wide Operating Temperature Range: -25 °C ~ +75 °C

Product Series
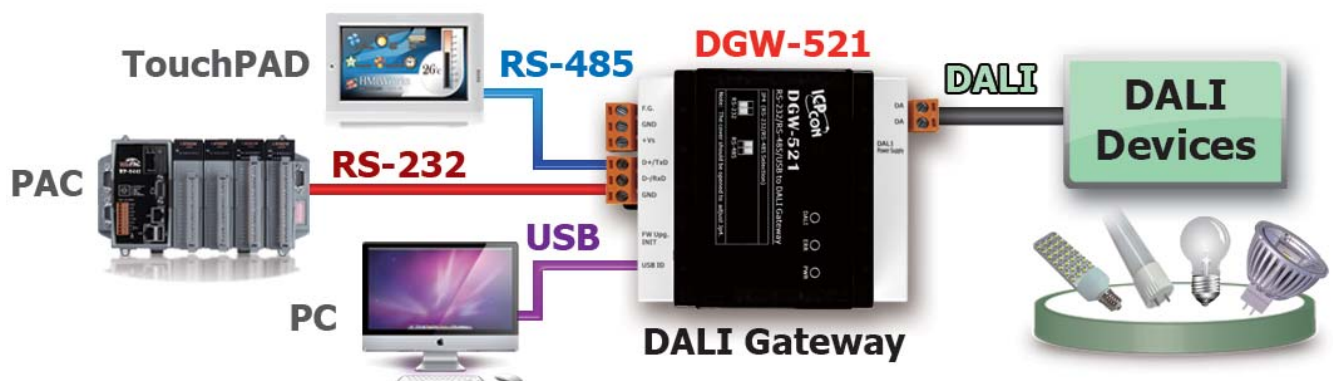
3-3-3 SC Series: Smart Control Multi-function Module

FCU Control / Lighting Control
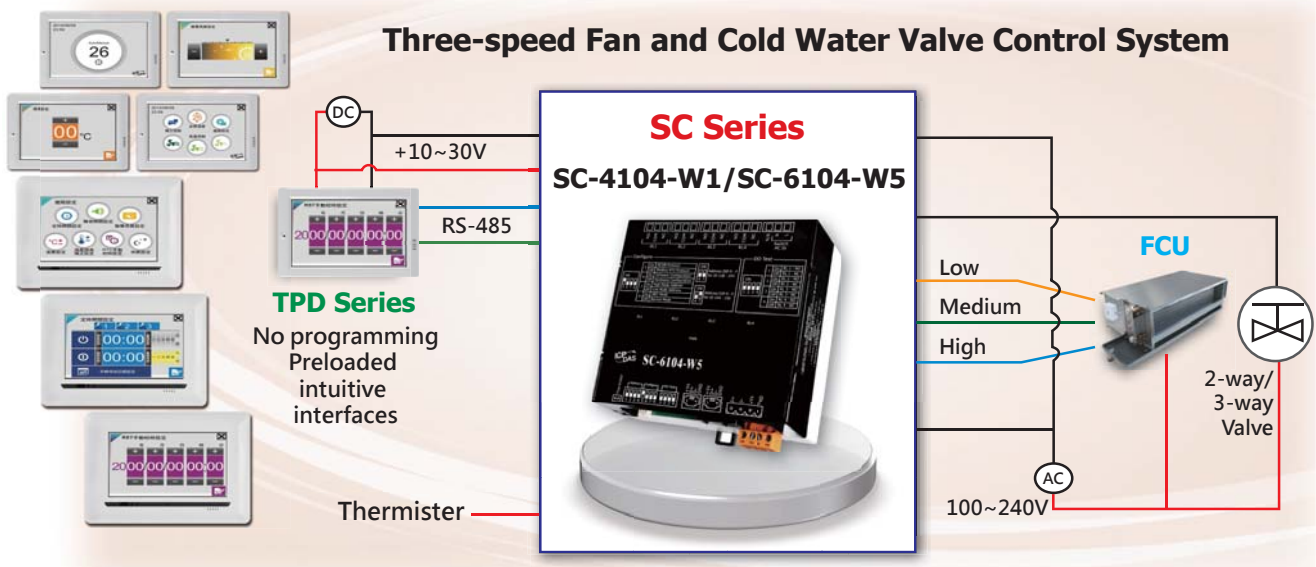## Temperature Sensing
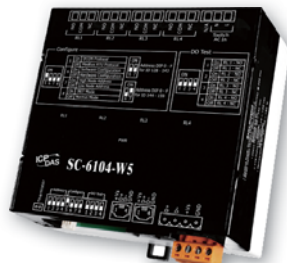
**SC-4104-W1**
SC-4102-W5

SC-6104-W5

Features

- Cost-effective for lighting/FCU control
- Power Relay Outputs
- Isolated AC Digital Input
- -40°C ~ +80°C Temperature Detector
- Support DCON and Modbus RTU Protocol
- 7 Kinds DI/DO coordinated functions

SC-4104-W1/SC-6104-W5 are 1-ch FCU (Fan Control Unit) modules. Combine SC and TPD series together, no programming is required to set up operations such adjusting temperature or start/stop the FCU. Also, the preloaded intuitive interfaces make it easy for operations in schedule setting, temperature compensation and remote control.

Three-speed Fan and Cold Water Valve Control System

DC
+10~30V

RS-485

SC Series
SC-4104-W1/SC-6104-W5

TPD Series
No programming
Preloaded
intuitive
interfaces

Thermister

Low
Medium
High

FCU

2-way/
3-way
Valve

AC
100~240V

SC-4102-W5 is a 2-ch relay output loop with load current measurement module that provides the total current of all lamps on the control loop circuit and can use the relay to turn ON/OFF the current loop. In the lighting control application, the value of the load current feedback can help to know whether the equipment on the loop circuit is working well or fail, whether the ageing equipment needs to replace a new one, whether the relay is still sticky on, and so on.

SC-4102-W5

TPD Series
I1=7.87A
I2=5.27A

$$I1 = I1A + I1B + I1C + I1D + I1E$$

$$I2 = I2A + I2B + I2C + I2D$$
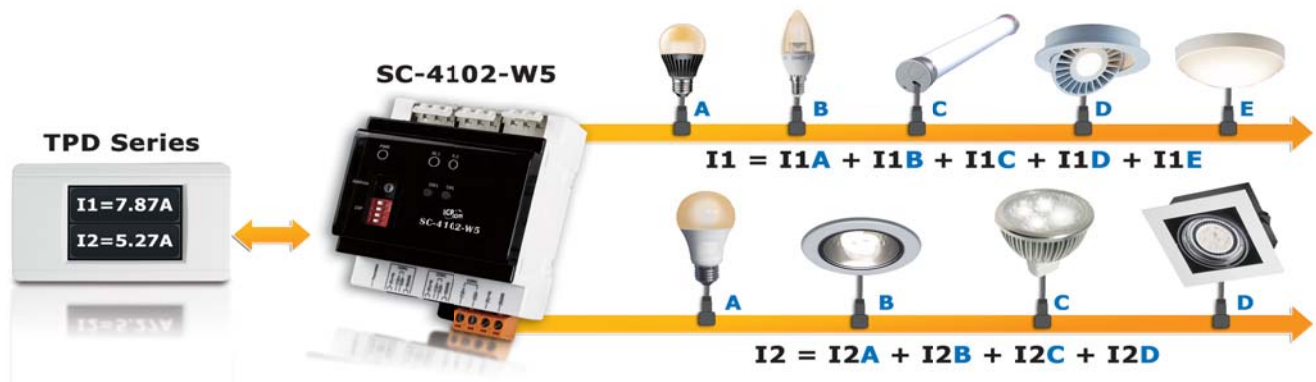
Product
Series

3-4 PM/PMC Series: Energy Saving

■ Power Meter Concentrator

PMC Series

PMD Series
With Display

PMC-5151
PMC-5231

PMD-2201 (7")
PMD-4201 (10.4")
PMD-6201 (15")

- No extra software tool is required, using browsers to operate system
- Built-in IF-THEN-ELSE logic Engine: Timer, Schedule, SSL Email sending, Power demand, Alarm notification...
- Protocol: Modbus TCP/RTU, SNMP V2c, SNMP Trap, MQTT
- DDNS communication mechanism
- Display Real-time or historical power data trends and statistics reports
- Data logger operation, FTP Server/Client and data recovery mechanism
- Support ICP DAS Smart Power Meters (RS-485/Ethernet), remote I/O modules

■ Smart Power Meter

PM Series

- Provide multi-phase multi-circuit power measurement function
- Clip on CT for easy installation
- With CT for Better W Accuracy
- Support multiple communication interfaces:
  RS-485, Ethernet, CANopen
- Support multiple standard communication protocols:
  Modbus RTU, Modbus TCP, CANopen
- Support 2 built-in Power Relay Output

PM-3033
1 Three Phase Circuit

PM-3133
1 Three Phase Circuit

PM-3112
2 Single Phase Circuits

PM-3114
4 Single Phase Circuits

PM-4324
8 Three Phase Circuits/ 24 Single Phase Circuits

PM-3133-RCT1000P
1 Three Phase Circuit Rogowski Coil CT

It is an easy-to-install, rope-style current transformer for high current measurement (500 ~ 2000 A)

■ Industrial Multi-power-meter Display

4.3" Series

7" Series

VPD-143N-PM
TPD-433-PM

VPD-173-PM
TPD-703-PM

- Built-in HMI for Information Display of Power Meters
- IP40/IP65 Ingress Protection for Front Panel
- Support Modbus TCP/RTU Protocols
- Support Max. of 8 Single-phase/3-phase Power Meters (PM-3xxx series) or One PM-4324 Series
- Support Max. of 4 Modbus TCP Connections for SCADA Software
- Support Phase Sequence Detection
- Support Fine Tune of Voltage and Current Ratio

■ True RMS Input Module

M-7017RMS

- 8-channel True RMS Input
- ±0.15% Factory Calibrated Accuracy
- Support Modbus RTU, DCON Protocols
- RMS Input Range: +150 mVrms ~ +10 Vrms
- Standard Operation with Frequencies:
  45 Hz ~ 10 KHz
- Individual Channel Configurable
- 4 kV ESD & ±35 VDC Overvoltage Protection
- 2500 VDC Intra-module Isolation

Product Series

3-5 DL Series: Smart Environmental Monitoring

CO / CO2 / HCHO / Temperature / Humidity / Dew Point

Greenhouse Automation

RS-485, (1.2 km)

DL-100   **DL-300**
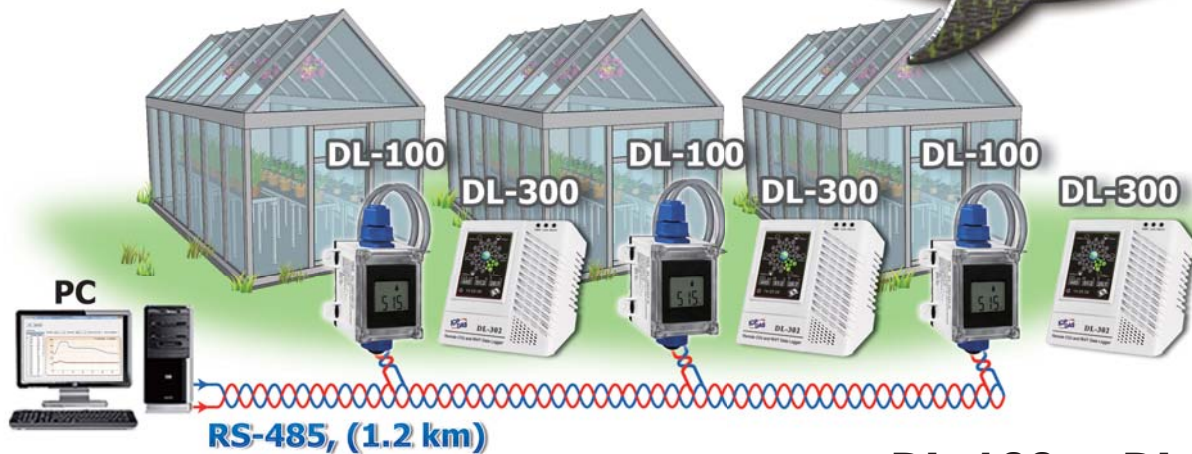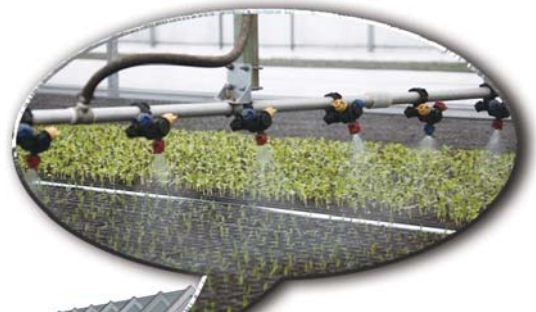
The **DL series** of Data Logger devices can be used to record CO, CO2, HCHO, Temperature, Humidity and Dew Point information. A free Utility is included to allow configuration and display of data in a powerful chart format that can export to Excel. The Sensing Solutions suitable for the villa, public area, commercial space, green building, smart buildings, etc.

Selection Guide

DL-100 Series (Temperature/Humidity)			
Model	Accuracy	Protocol	Color
DL-100T485 DL-100T485-W	Standard Version	DCON	Black Cover
			White Cover
DL-100TM485 DL-100TM485-W		Modbus RTU	Black Cover
			White Cover
DL-100T485P DL-100T485P-W	P Version (High Accuracy)	DCON	Black Cover
			White Cover
DL-100TM485P DL-100TM485P-W		Modbus RTU	Black Cover
			White Cover
DL-100TMZT	Standard Version (ZigBee Wireless)	Modbus RTU	Black Cover
DL-10	Standard Version	Modbus RTU	White Cover

DL-300 Series (CO/CO2/HCHO/Temperature/Humidity)							
Model	Sensor					Interface	
	CO	CO2	HCHO	Temperature	Humidity	RS-485	Ethernet/PoE
DL-301	Yes	-	-	Yes	Yes	1	1
DL-302	-	Yes	-				
DL-303	Yes						
DL-307	-	-	Yes				

DL Series: Industrial Data Logger

DL-100

**Temperature Humidity**

DL-10

DL-300

DL-300-IP65

**CO / CO2 HCHO Temperature Humidity**

DL Series supports for popular industrial protocols such as DCON, Modbus RTU, and Modbus TCP, as well as the emerging machine-to-machine (M2M) / IoT (Internet of Things) connectivity protocol – MQTT. The DL-300 Data Logger can connect by communication interfaces including RS-485, Ethernet and PoE, meaning that the device can integrate easily into existing HMI or SCADA systems, and easy to maintain in a distributed control system.

■ DL-300: 2.8" LCD Touch Screen & clear Color Chart

■ DL-300: App "iAir" Access Data at Any Time & Place
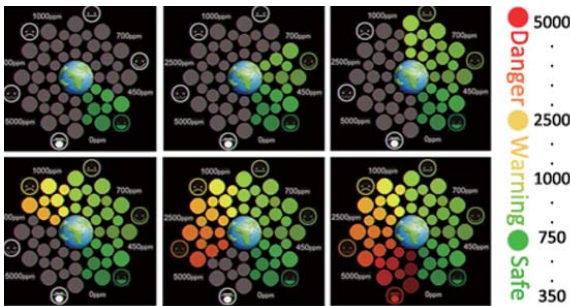
■ DL-100: Tiny, Waterproof (IP66), LCD Display

Temperature (°C)　Temperature (°F)　Humidity (RH)　Module ID
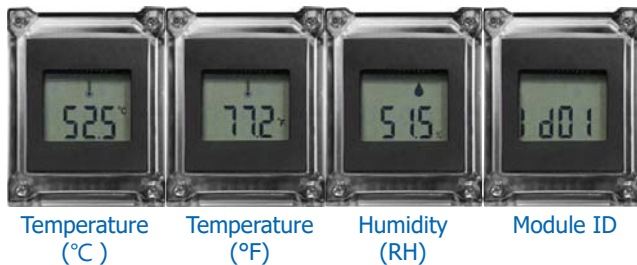
■ DL-300: Support MQTT Protocol for IoT Applications
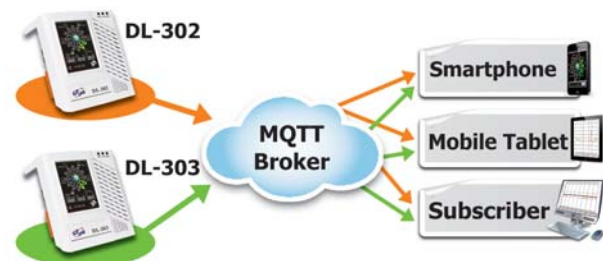
Models	DL-10	DL-100	DL-301	DL-302	DL-303	DL-307
Sensor Type	-	-	CO	CO2	CO / CO2	HCHO
	Temperature / Relative Humidity		Temperature / Relative Humidity			
CO	-	-	0 ~ 1000 ppm	-	0 ~ 1000 ppm	-
CO2	-	-	-	0 to 9999 ppm (NDIR)		-
HCHO	-	-	-	-		0 ~ 5 ppm
Temperature Range/Accuracy	R: -20℃ ~ +60℃ A: ±0.4℃	R: -20℃ ~ +60℃ A: max. ±0.3℃	Range: -10℃ ~ 50℃ Accuracy: ±0.6℃ / Resolution: 0.1℃			
Humidity Range/Accuracy	R: 10 ~ 95% RH A: ±3% RH	R: 0 ~ 100% RH A: max. ±1.8% RH	Range: 0 ~ 100 % RH Accuracy: ±5% RH / Resolution: 0.1% RH			
Dew Point	-	Range: Calculated using temperature and relative humidity / Resolution: 0.1° C				
Data Logger	-	4088 Records	450,000 Records			
Communication	Modbus RTU	RS-485 / ZigBee DCON or Modbus RTU	RS-485 / Ethernet / PoE DCON, Modbus RTU, Modbus TCP and MQTT			
Display	-	Monochrome LCD	2.8" TFT Color LCD Touch Screen (Resolution 240 × 320 × 16)			
Advantage	Tiny	Tiny, Waterproof Level IP66	Support MQTT, Mobile APP, Alarm Functions			

Product Series

3-6 CL Series: Smart Environmental Monitoring

Fine particulate matter (PM2.5), gas (CH4), HCHO, and CO affect human's health and safety. Monitoring the concentration of CH4, PM2.5 and CO can let people stay away from danger, enjoy a healthy life, reduce medical costs. CO2 is a reference for indoor air quality, the high concentrations of CO2 increase possibility to harm people's health. According to the report, controlling the concentration of CO2 in air conditioning equipment can save up to 50% of energy. The **CL-200 series** can detect CH4, HCHO, PM2.5, CO, CO2, Temperature, Humidity and Dew Point information. The Sensing Solutions suitable for the villa, public area, commercial space, green building, smart buildings, etc. A free Utility is included to allow configuration and display of data in a powerful chart format that can be exported to Excel. The CL series can be connected via various communication interfaces, meaning that the device can be easily integrated into existing HMI or SCADA systems, and easily maintain in a distributed control system.

- Transportation of Food or Pharmaceuticals
- Food and Beverage Industry (HACCP)
- Blood Stations and Pharmacies
- Building and Energy Management
- Warehouse Management
- Museums, Archives and Galleries

Selection Guide

Model	Sensor							Interface
	HCHO	CH4	PM2.5	CO	CO2	Temperature	Humidity	
CL-211	-	-	Yes	Yes	-	Yes	Yes	RS-485
CL-212				-	Yes			
CL-213				Yes				
CL-211-E				Yes	-			Ethernet, PoE
CL-212-E				-	Yes			
CL-213-E				Yes				
CL-211-BLE				Yes	-			Ethernet + Bluetooth
CL-212-BLE				-	Yes			
CL-213-BLE				Yes				
CL-211-WF				Yes	-			Ethernet + Wi-Fi
CL-212-WF				-	Yes			
CL-213-WF				Yes				
CL-207-WF	Yes	-	-	-	-	Yes	Yes	
CL-209-ZB	-	Yes	-	-	-	-	-	CAN + ZigBee

🏠 CL Series: Industrial Environmental Sensor

CL-207/211/212/213   CL-209

HCHO
PM2.5
CO/CO2
Temperature
Humidity
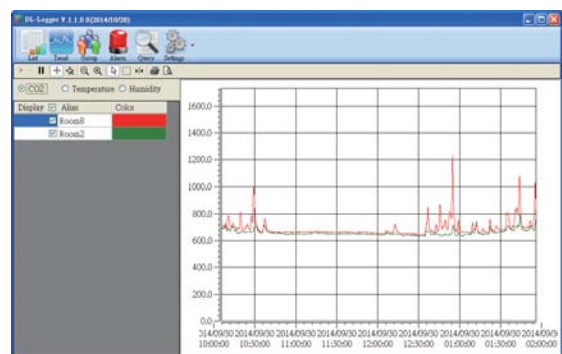## Dew Point

CH4 Methane Gas Detector

The **CL-200 series** can be used to record HCHO, CH4, PM2.5, CO, CO2, Temperature, Humidity and Dew Point information, including date and time stamps, and can store up to 450,000 downloadable records. Real-time data can be accessed from the free Utility from anywhere and anytime using the free Windows software.

The CH4 methane (the main element of natural gas, different from the liquid petroleum gas) gas detector provides an early residential warning of the presence of explosive methane and is factory calibrated to sound an alarm that meets UL1484 standard.

Formaldehyde (HCHO) is one of the volatile organic compounds (VOCs) that widely used in household materials, be a binder precursor, which associated with many health risk factors. At concentrations above 0.1 ppm in air formaldehyde can irritate the eyes, resulting in watery eyes. The HCHO detector also provides an instantaneously warning of toxic formaldehyde.

📊 Free and Power Utility Software

| Models	CL-211	CL-212	CL-213	CL-207-WF	CL-209-ZB
Sensor Type	PM2.5/CO	PM2.5/CO2	PM2.5/CO/CO2	HCHO	CH4 (Gas)
	Temperature / Relative Humidity / Dew Point				-
PM2.5	Range: 0 ~ 400 µg/m3; Resolution: 1µg/m3; Response Time: <= 1 min.			-	-
CO	0 ~ 1000 ppm	-	0 ~ 1000 ppm	-	-
CO2	-	0 to 9999 ppm (NDIR)		-	-
HCHO	-			0 ~ 5 ppm	-
CH4	-				500 ~ 7000 PPM
Temperature	Range: -10℃ ~ 50℃ / Accuracy: ±0.6℃ / Resolution: 0.1℃				-
Humidity	Range: 0 ~ 100 % RH / Accuracy: ±5% RH / Resolution: 0.1% RH				-
Dew Point	Range: Calculated using temperature and relative humidity / Resolution: 0.1° C				-
Data Logger	Up to 450,000 records				-
Communication	RS-485 (DCON and Modbus RTU)			Ethernet + Wi-Fi	CAN + ZigBee
Advantage	Support HCHO, CH4, PM2.5, CO, CO2, Temperature & Humidity Alarm Functions				

Product Series

Installation: CL-207/211/212/213

Ceiling Mounting

1	2

Wall Mounting (+ External Wall Box EWB-C150)

1	2
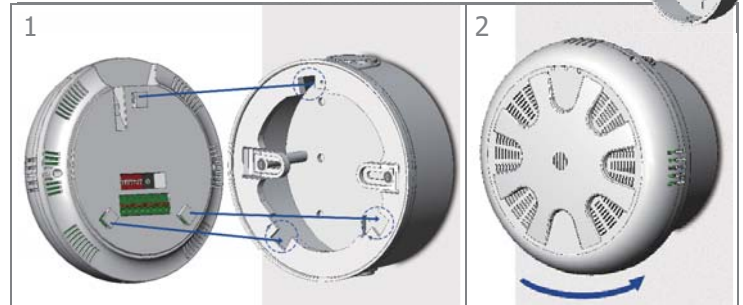
Installation: CL-209

Ceiling Mounting

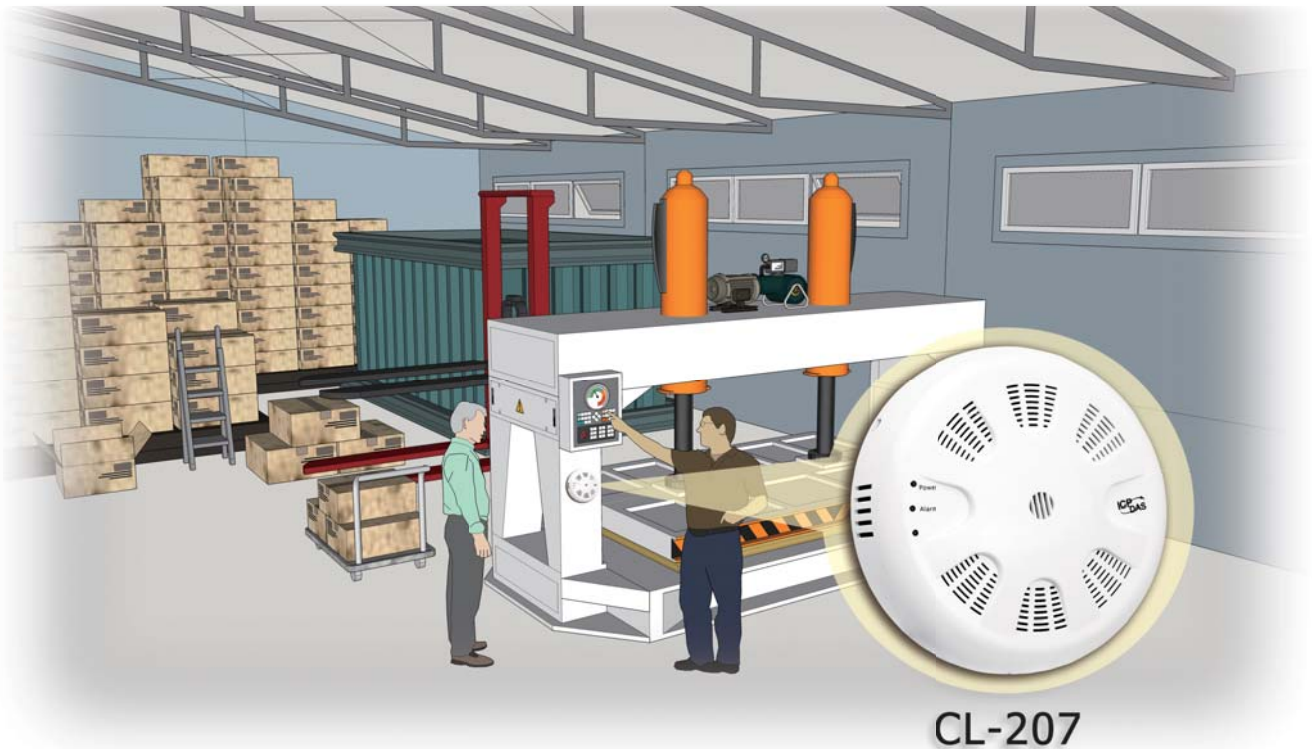| 1	2
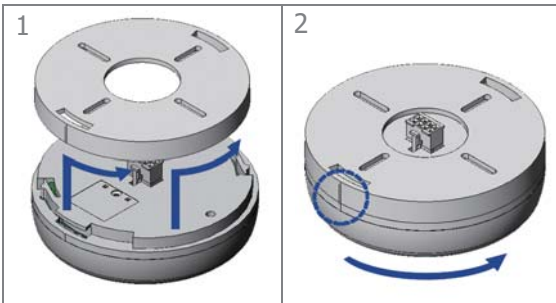
Wall Mounting (+ 86 Cartridge)

1	2
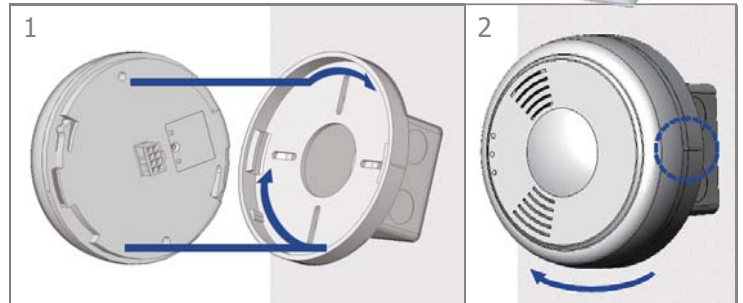
Applications

HCHO (Formaldehyde) Detector Automatic Solution

The **HCHO** detector provides an instantaneously warning of toxic formaldehyde, which can be found in a plywood factory, furniture factory and new interior remodelling house commonly.

CL-207

Product Series

▪ Indoor or Underground Parking Lot Automatic Monitoring Solution

The air quality automation system for indoor or underground parking lot can use the CL-200 series modules to monitor the health and safity information, such as PM2.5, CO, CO2, temperature, humiditym, dew point, and more...

▪ Gas Meter and Gas Detector Automatic Control Solution

The gas company can install the XPAC and I-8120W (CAN bus module) in the control center of the community building. With the Indusoft HMI software and Ethernet on the XPAC, the gas company can do the local or remote gas meter and gas detector (CL-209) monitoring. On the one hand, converted CAN message into 433 MHz wireless message or other cable interface through the RF module to monitor the gas meter. On the other hand, through the two communication interfaces, CAN bus and ZigBee, at the same time monitoring the status of the gas detector to avoid one of the communication interfaces failure. When the gas detector detects the gas leak will promptly notify XPAC and then XPAC can be closed the gas meter through the RF Module. After the user removed the gas leakage, the gas company to open the gas meter again to achieve safely control.
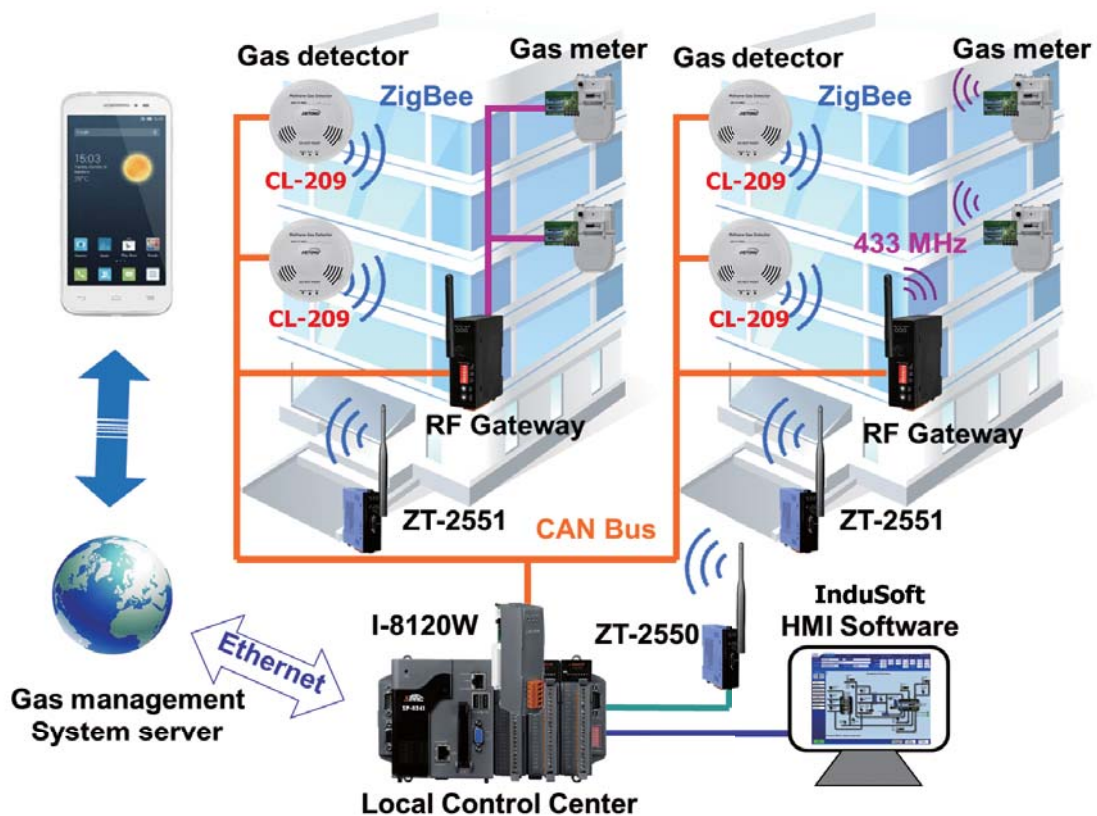
3-7 PIR/RPIR Series: Motion Detector

PIR or RPIR Module

PIR or RPIR Module
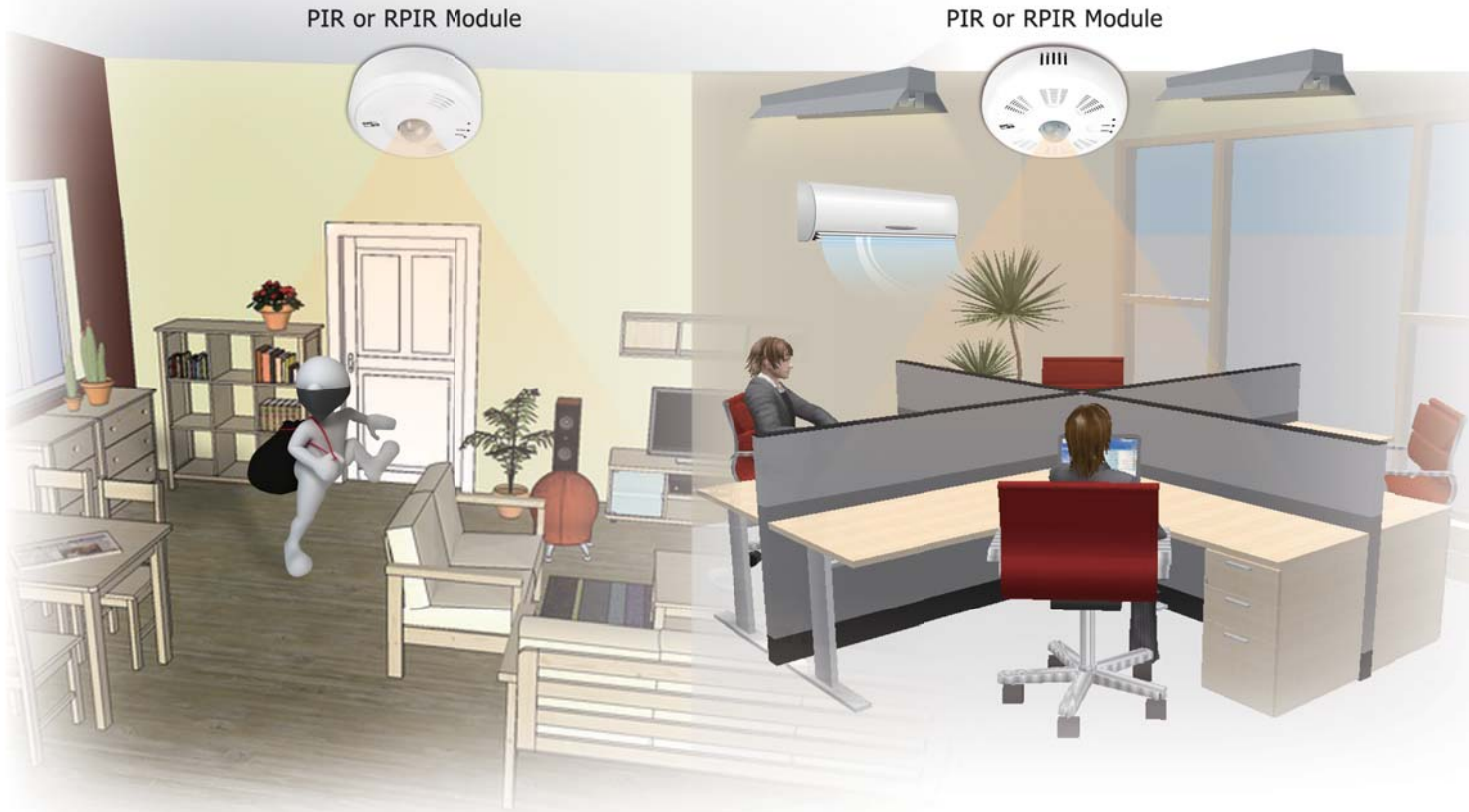
PIR series, the Passive Infrared series, provides human motion detection and temperature measurement; and **RPIR series** provides human motion detection, human presence detection, temperature and humidity and other environmental measurements. For the indoor human body sensing, anti-theft security, home quality of life, green energy and environmental protection and energy efficiency enhancement are very helpful. A free Utility is included to allow configuration and display of data in a powerful chart format that can be exported to Excel. The screw-free quick-connect connector, DIP switch and rotary switch make it easy to install, repair and maintain the product. White minimalist exterior design, easy to match with interior decoration. Considering the fireproof requirements, the casing is made of UL94-V2 rated material.

Selection Guide

Model	Motion Sensor	T&R Sensor	Protocol	Interface	Dimensions
PIR-130-AC	PIR	Temperature	DCON/Modbus RTU	RS-485	Ø 121 mm x 52 mm
PIR-130-DC	PIR	Temperature	DCON/Modbus RTU	RS-485	Ø 121 mm x 52 mm
RAD-130-AC	Microwave	Temperature	DCON/Modbus RTU	RS-485	Ø 121 mm x 52 mm
RAD-130-DC	Microwave	Temperature	DCON/Modbus RTU	RS-485	Ø 121 mm x 52 mm
PIR-130-ZT	PIR	Temperature	DCON/Modbus RTU	ZigBee	Ø 121 mm x 52 mm
PIR-230-E	PIR	Temperature + Humidity	Modbus TCP, MQTT	Ethernet, PoE	Ø 150 mm x 53 mm
PIR-230-BLE	PIR	Temperature + Humidity	Modbus RTU	Bluetooth	Ø 150 mm x 53 mm
PIR-230-WF	PIR	Temperature + Humidity	Modbus TCP	Wi-Fi	Ø 150 mm x 53 mm
RPIR-230-E	Microwave + PIR	Temperature + Humidity	Modbus TCP, MQTT	Ethernet, PoE	Ø 150 mm x 53 mm
RPIR-230-BLE	Microwave + PIR	Temperature + Humidity	Modbus RTU	Bluetooth	Ø 150 mm x 53 mm
RPIR-230-WF	Microwave + PIR	Temperature + Humidity	Modbus TCP	Wi-Fi	Ø 150 mm x 53 mm

Product Series

PIR-230/RPIR-230 Series

Microwave Motion Sensor
PIR Motion Sensor
Temperature/Humidity Sensor

Features

- Time-Delay / Lux. / Sensitivity Adjustable
- Photo Sensor Inside for Smart Switch-on Control
- LED Indicator for PIR/Temperater Sensor
- The Temperature Sensor for Measuring Room Temperature or Fire Alarm
- Relay Output Can be Used to Control the Light Via the PIR/Temperature Sensor
- Up to 1500 W Incandescent and 300 W Fluorescent (T8) Loading Capability
- Multiple Communication Interfaces and Protocols
- Ceiling Surface Mount Design

The **PIR series** can detect infrared waves generated by human within a range of approximately 8 meters in diameter with a 360° coverage area for indoor motion detection, and can be configured to auto-switch on a light if the motion is detected. It also has a temperature sensor for measuring room temperature or can be set up to activate a fire alarm. The **RPIR series** added the microwave detection technology is especially suitable for BA applications. There are RS-485/ZigBee/Ethernet/Bluetooth/Wi-Fi models can be selected. Different models support DCON, Modbus RTU/TCP or MQTT protocol, and can integrate HMI/SCADA/central control system.

| Models	PIR-230-E	PIR-230-BLE	PIR-230-WF	RPIR-230-E	RPIR-230-BLE	RPIR-230-WF
Sensor Type	PIR Motion Sensor Temperature / Humidity			Microwave/PIR Motion Sensor Temperature / Humidity		
Passive Infrared (PIR) Motion Sensor / Microwave Motion Sensor						
Time-delay	Hardware: 8-step Switch-selectable (sec) Software: 16-step (sec)			Hardware: 8-step Switch-selectable (sec) Software: 0 ~ 65535 (sec)		
LUX Control	Hardware: 2 mode (Dawn and dust) / Software: 5-step					
Detection Range	4 meters max.			PIR : 4 meters; Microwave: 2 meters		
Detection Field of View	PIR: 360º; Diameter 8 meters Max.			PIR: 360º; Diameter 8 meters Max.		
	Microwave: -			Microwave: -360º; Diameter 4 meters Max.		
Temperature Sensor						
Range	-40℃ ~ +125℃					
Fire Alarm	65℃ (Programmable)					
Measurement	Resolution: 0.1℃ / Accuracy: ±0.6℃					
Relative Humidity Measurement						
Range	0 ~ 100 % RH					
Measurement	Resolution: 0.1% RH / Accuracy: ±5% RH					
I/O Channel						
AC Digital Input	-			2		
Relay Output	1			1		
Communication						
Protocol	DCON, Modbus RTU, Modbus TCP, MQTT					
Wired Interface	Yes, RS-485 X 1 and Ethernet/PoE X1					
Wireless Interface	-	Bluetooth	Wi-Fi	-	Bluetooth	Wi-Fi

3-8 WF Series: Wi-Fi Modules

Nowadays, Wireless LAN applications are very popular. They're not only faster than traditional industrial transmissions, i.e. RS-232, RS-485, RS-422 etc, but are also able to minimize the need for troublesome wiring tasks and have a higher mobility than an Ethernet network.

Classified Index		Model Name
WLAN Remote Maintenance Device		M2M-711D
CAN to Wi-Fi Converter		I-7540D-WF
Ethernet to Wi-Fi Bridge		WF-2571
WLAN Gateway		RMV-760D-MTCP
Wi-Fi Access Point		APW77BAM-P01
Ethernet/UART to Wi-Fi Converter		IOP760AM-07CR1
Wi-Fi I/O Modules	Thermocouple, Voltage & Current Input Module	WF-2017, WF-2019
	RTD Input Module	WF-2015
	Digital I/O Module	WF-2042, WF-2051, WF-2055
	Relay Output & Digital Input Module	WF-2060, WFM-R14
	Multifunction I/O Module	WF-2026

▼WLAN Remote Maintenance Device
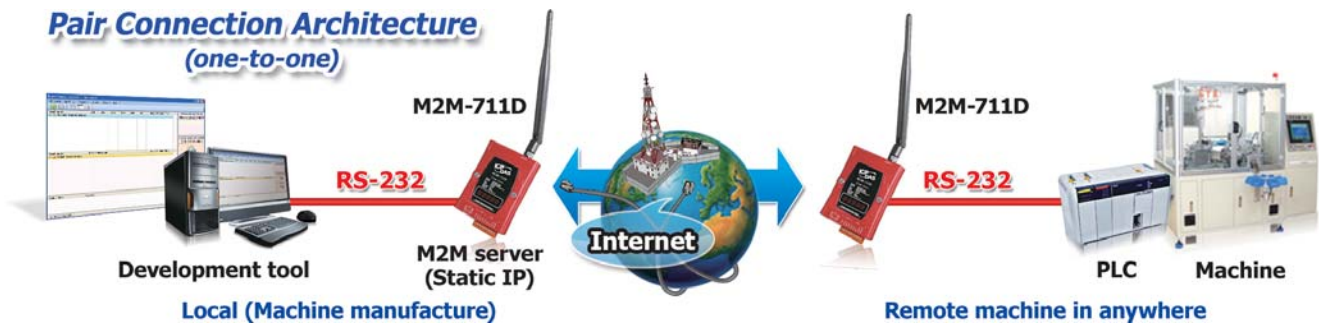
▼CAN to Wi-Fi Converter

▼Ethernet to Wi-Fi Bridge
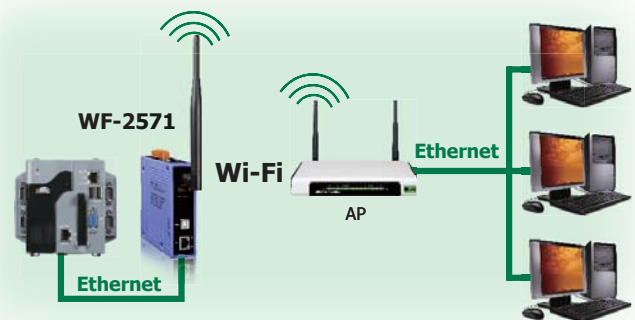
▼WLAN Gateway
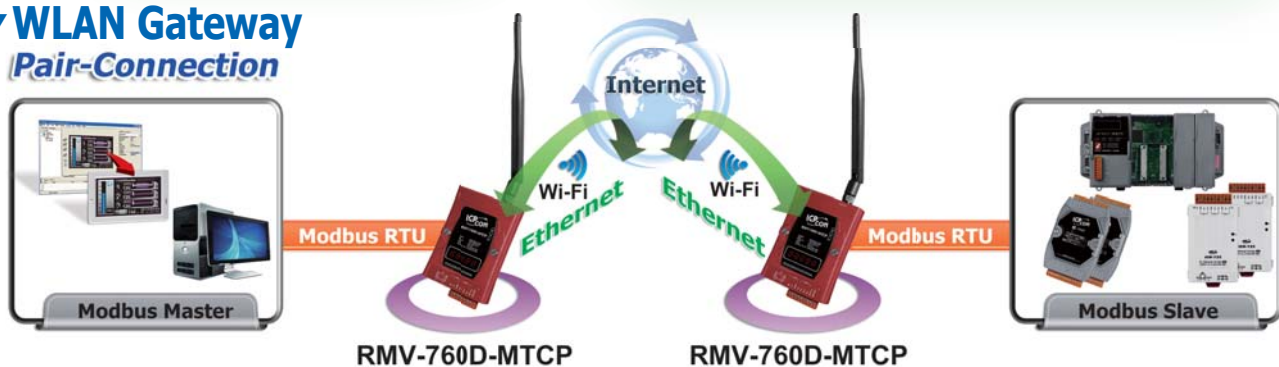
Product Series

WF-2000 Wi-Fi I/O Modules

WF-2000 I/O Series is a series of Wi-Fi wireless remote I/O modules. With the popularity of 802.11 network infrastructure, the WF-2000 makes an easy way to incorporate wireless connectivity into monitoring and control systems.

Application architecture
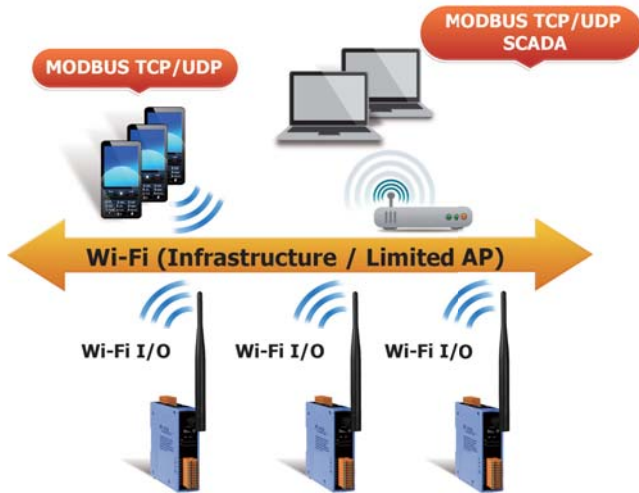
Features

- Compatible with IEEE 802.11 b/g/n standards
- Support infrastructure and Limited AP modes
- Support WEP/WPA/WPA2 wireless encryption
- Support Modbus TCP/UDP protocols
- Support DHCP network configuration

RTD, Thermocouple, Voltage & Current Input Module

Model Name	AI		
	Channel	Voltage and Current Input	Sensor Input
WF-2015	6	-	RTD: Pt100, Pt1000, Ni120, Cu100, Cu1000
WF-2017	8/16 (DIFF/SE)	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, 0 ~ +20 mA, +4 ~ +20 mA, ±20 mA	-
WF-2019	10	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±5 V, ±10 V, ±20 mA	Thermocouple: J, K, T, E, R, S, B, N, C

Digital I/O Module

Model Name	DI/Counter			DO			
	Channel	Contact	Sink/Source	Channel	Type	Sink/Source	Max. Load Current @ 25°C
WF-2042	-	-	-	16	Open Collector	Sink	700 mA/channel
WF-2051	16	Dry, Wet	Dry: Source Wet: Sink/Source	-	-	-	-
WF-2055	8	Dry, Wet	Dry: Source Wet: Sink/Source	8	Open Collector	Sink	700 mA/channel

Relay Output & Digital Input Module

Model Name	DI/Counter			Relay Output		
	Channel	Contact	Sink/Source	Channel	Relay (Type)	Max. Load Current @ 25°C
WF-2060	6	Dry, Wet	Dry: Source Wet: Sink/Source	6	Power Relay (Form A)	5.0 A/channel
WFM-R14	-	-	-	14	2 Power Relays (Form A) 12 Power Relays (Form C)	5.0 A/channel (Form A) 6.0 A/channel (Form C)

Multifunction Module

| Model Name	AI		AO		DI/Counter		DO	
	Channel	Voltage and Current Input	Channel	Voltage and Current Output	Channel	Contact	Channel	Type
WF-2026	5	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, 0 ~ 20 mA, 4 ~ 20 mA, ±20 mA	2	0 ~ 5 V, 0 ~ 10 V, ±5 V, ±10 V, 0 ~ 20 mA, 4 ~ 20 mA	2	Dry (Source)	3	Open Collector (Sink)

Product Series

# 3-9 IR Series: Infrared Wireless Modules
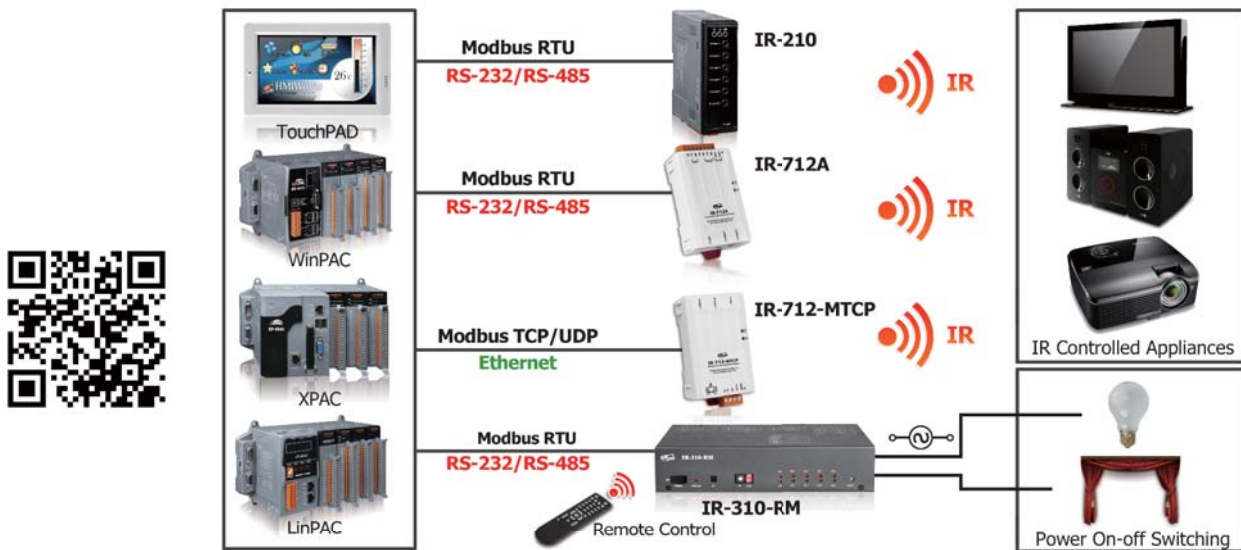
IR (infrared) technology is now used for controlling home devices including television, air conditioner and etc. ICP DAS has developed various IR products to apply in home automation. Theses IR products can help users to control and integrate these IR devices into a control system. Therefore, by integrating the PAC and others series of ICP DAS, users can easily to establish the home automation system. **IR Series** includes "IR learning remote modules" and "IR controlled power relay module". The former are used to collect and transmit a variety of devices infrared remote commands, while the latter is a strong relay module with the electric remote control function.

IR Smart Home Application
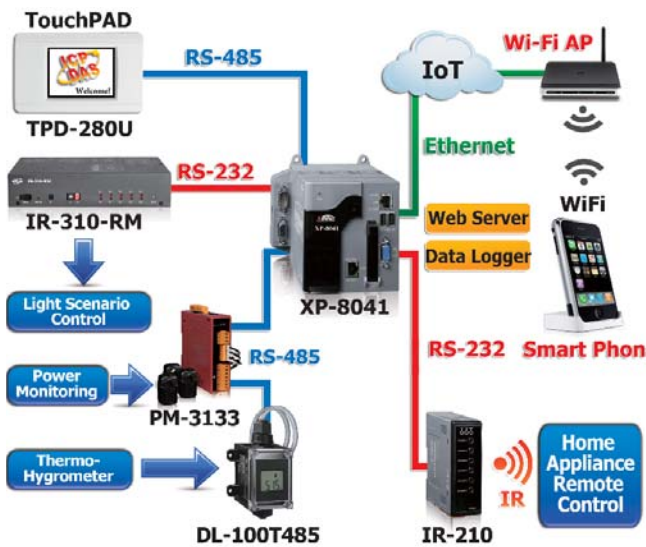
IR + Wi-Fi Wireless Control Application
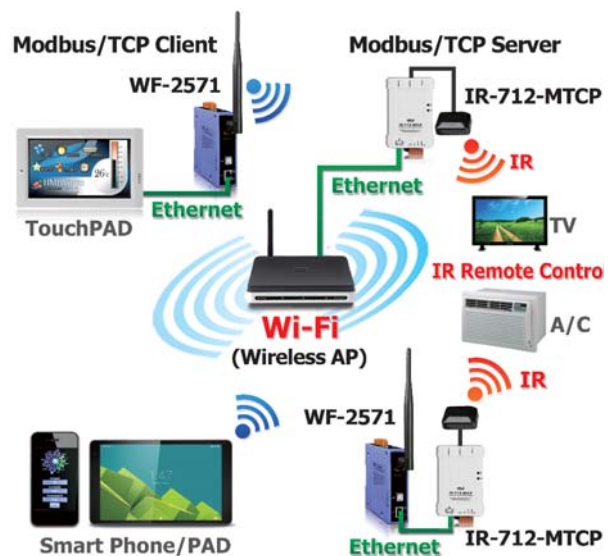
Selection Guide

Type	IR Learning Remote Modules			IR Controlled Power Relay Module
Model	IR-210	IR-712A	IR-712-MTCP	IR-310-RM
Output	IR Output x 6	IR Output x 2	IR Output x 2 Modbus TCP	Relay Output x 10
Included Cable	Two CA-IR-SH2251 (-5 model with -5 model cable) and one CA-0910		Two CA-IR-SH2251 (-5 model with -5 model cable)	One CA-IR-SH2251-5, one CA-IR-001, one CA-0910 and one remote control L108E

Product Series

3-9-1 Universal IR Learning Remote Module

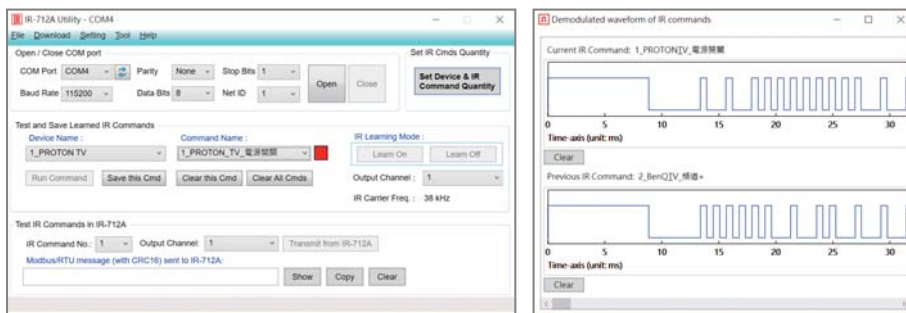## IR-210   IR-712A   IR-712-MTCP

Features

- IR Output: channels for remote controlling multiple devices
- IR Input: can learn and store IR Commands
- Supports 6 learning IR carrier frequencies
- Built-in Watchdog
- Provide LEDs: Transmitting / Learning / Power
- RoHS Compliance

ICP DAS universal IR learning remote module can learn IR remote commands of diverse electronic devices, and store the commands in the module or saved to a file. The RS-232/485/Ethernet interfaces provide flexible expansion and control the module. The software utility provides users with easy configuration, learning, test and storage of IR commands. It is well-designed for smart home and building automation.

IR Utility: configuration, IR learning and waveform display

Universal IR Learning Remote Module
IR-210
(Input: 1, Output: 6)

IR-712A
(Input: 1, Output: 2)

Modbus RTU (RS-232/RS-485)
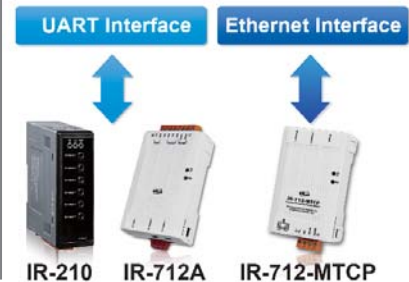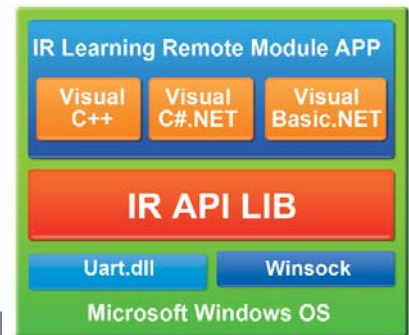
ICP DAS PAC

WinCE PAC
- XPAC
- WinPAC
- ViewPAC

Linux PAC / MiniOS PAC
- LinPAC
- µPAC
- iPAC
- ViewPAC
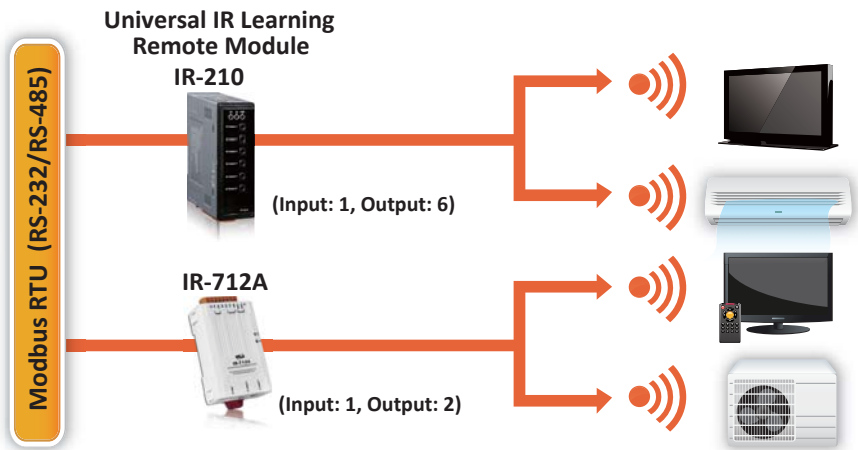
Model	IR-210	IR-712A	IR-712-MTCP
IR Output Channels	6	2	
IR Commands Storage	224	224	512
Support IR Carrier Freq.	33、36、37、38、40、56 kHz		
Serial Comm. Interface	RS-232 × 1 and RS-485 × 1		Ethernet × 1
Protocol	Modbus RTU (Slave)		Modbus TCP/UDP (Server)
Size (W x H x L) (mm)	33 × 107 × 78	52 × 93 × 27	52 × 85 × 27

Product Series

3-9-2 IR Controlled Power Relay Module

IR-310-RM

💡 **Features** CE FC RoHS

■ 10 channels high power relays

■ Supports IR commands for relay control

■ NO & NC terminals for each channel

■ Protection circuit for each channel

■ Sequential relay control

■ Support max. 5 sets of interlocked relay pairs

■ Power-on values and power failure memory

IR-310-RM is a 10-channel high power relay module designed for the power control of various appliances. The application field can be manual/automatic power switch, light scenario control and energy saving etc.

Model	IR-310-RM
Relay Output	10 outputs (Form C)
Contact Rating	5 A @ 220 VAC × 6; 10 A @ 220 VAC × 4 (Operating temperature: 25℃)
Protocol Interface	Modbus RTU RS-232, RS-485
IR Commands	Self-defined: 64; built-in 32
IR Input	On-board IR receiver / Audio jack

Infrared Application

🏠 IR Accessories & Usages

IR series modules need to equip with an IR signal cable in order to transmit or receive infrared remote control signals. ICP DAS provides single-headed, dual-headed and semi-sphere-headed first-class IR cables to meet different wiring requirements. IR cable can be extended the distance according to the actual wiring situation.
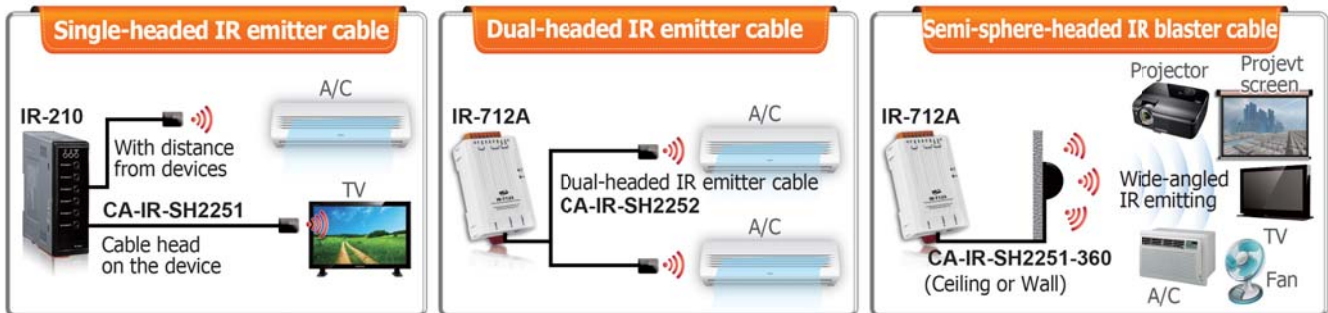
Model	Description		Model	Description
CA-IR-SH2251	Single-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)		CA-IR-SH2251-360	Semi-sphere-headed IR blaster cable (with adhesive pad, 2.5 m)
CA-IR-SH2252	Dual-headed IR emitter cable (with adhesive pad, Ø 3 mm IRED, 2.5 m)		CA-IR-SH1251-360	Semi-sphere-headed IR receiver cable (with adhesive pad, 2.5 m)
CA-IR-SH2251-5	Single-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)		CA-IR-001	IR receiver cable, 3 m
CA-IR-SH2252-5	Dual-headed IR emitter cable (with adhesive pad, Ø 5 mm IRED, 2.5 m)		L108E	IR learning remote control

Product Series

3-10 ZT Series: ZigBee Wireless Modules

Features

CE FC RoHS

- ISM 2.4 GHz Operating Frequency and Fully Compliant with 2.4G IEEE 802.15.4 / ZigBee PRO (2007)
- Support 3 topologies defined in the ZigBee standard: Mesh, Star and Cluster Tree
- Support the 128-bit AES (Advanced Encryption Standard) encryption
- GUI Configuration Software (Windows Version)
- ZigBee Node Supports Active Routing
- Supports Topology Utility for Network Monitoring and Improvement
- Wireless Transmission Range up to 700 m (Default)
- Provide Signal Strength LED Indicator
- Wide Operating Temperature (-25 ~ 75 °C)

ZigBee is a specification based on the IEEE 802.15.4 standard for wireless personal area networks (WPANs). ZigBee operates in the ISM radio bands, and it defines a general-purpose, inexpensive, self-organizing, mesh network for industrial control, medical data collection, smoke and intruder warning, building automation and home automation, etc.

ZigBee Converter

Every network must have one host (coordinator) device for initializing, maintaining, and controlling the network; one or more slave devices (full function devices) are responsible for routing messages.
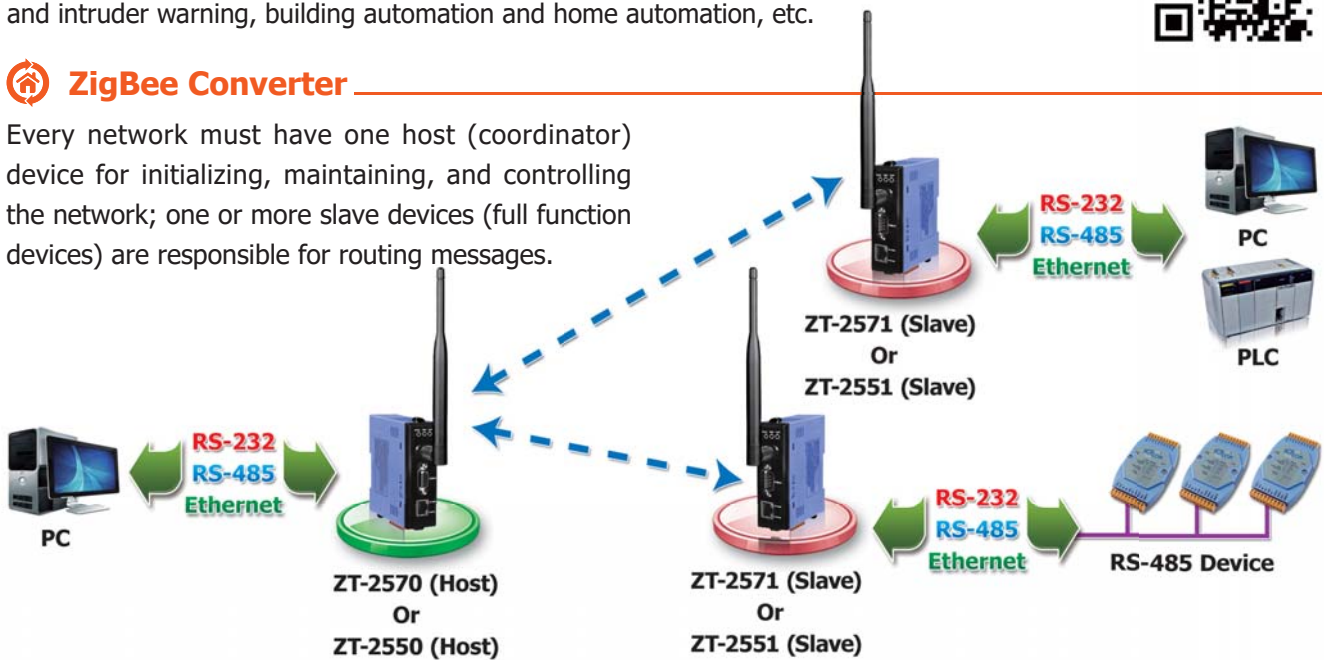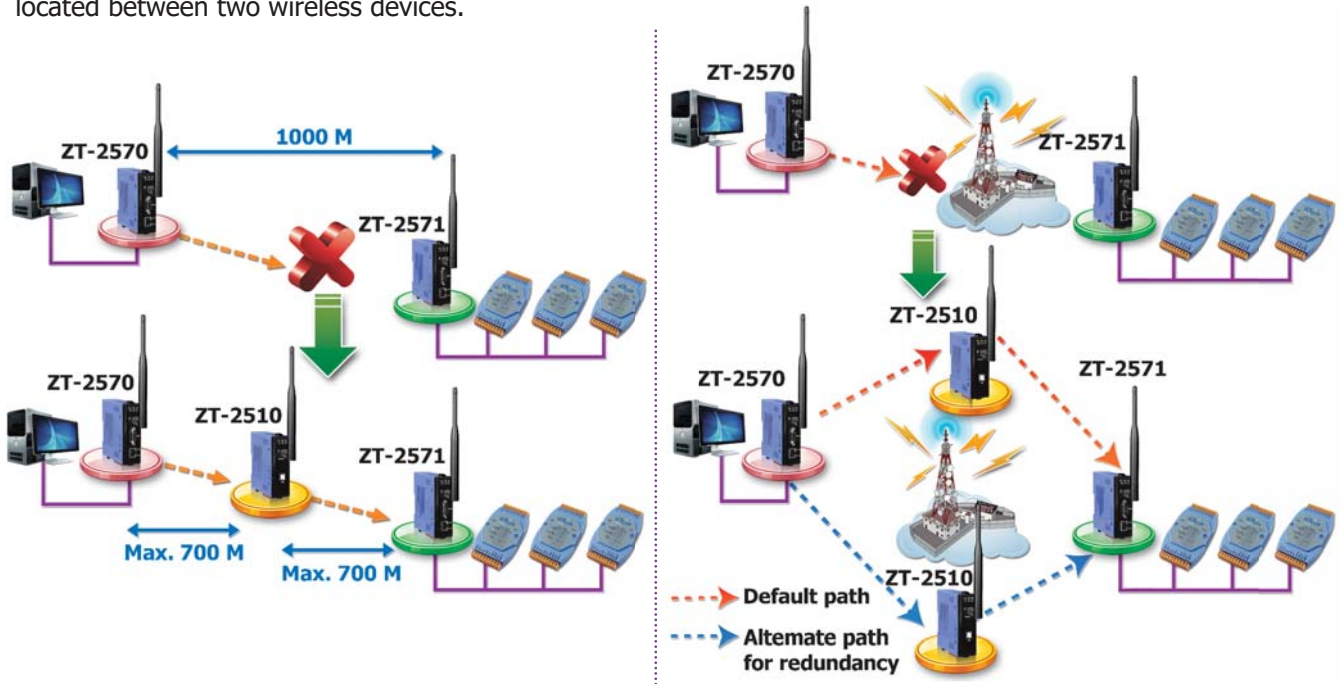
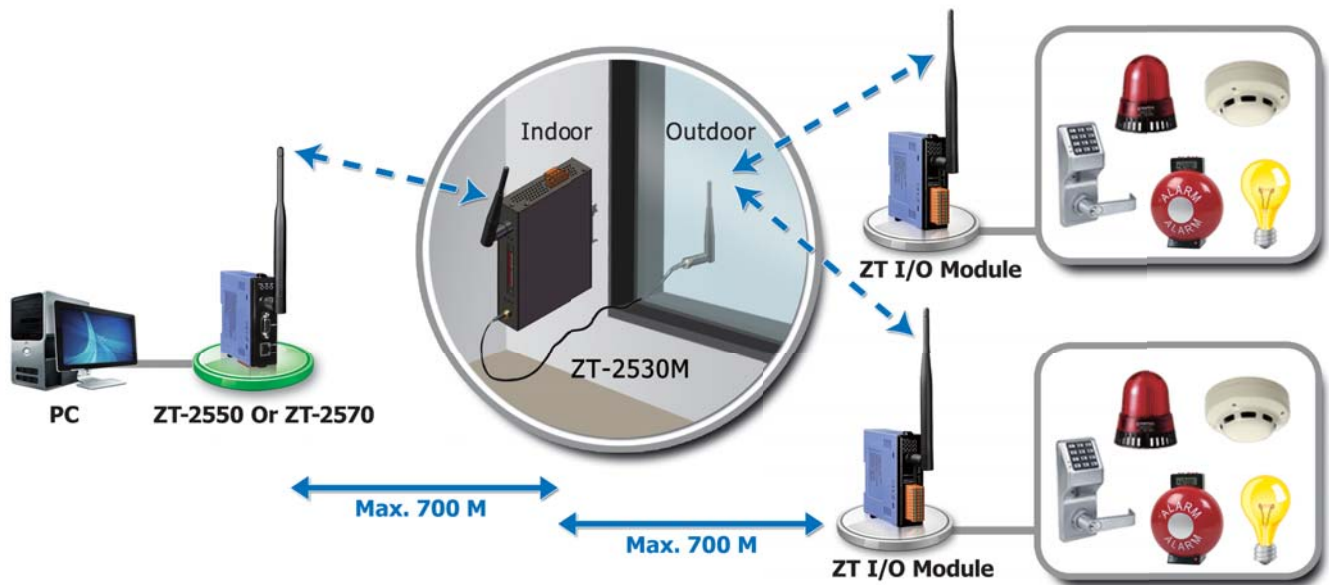| Model	Interface	Module Type	Transmit Power	Antenna	Distance (LOS)
ZT-2550	1 × RS-232、1 × RS-485	Host (Coordinator)	11 dBm	2.4 GHz, 5 dBi Omni-Directional antenna	700 m
ZT-2551	1 × RS-232、1 × RS-485	Slave (Router)	11 dBm	2.4 GHz, 5 dBi Omni-Directional antenna	700 m
ZT-2570	1 × RS-232、1 × RS-485 1 × Ethernet	Host (Coordinator)	11 dBm	2.4 GHz, 5 dBi Omni-Directional antenna	700 m
ZT-2571	1 × RS-232、1 × RS-485 1 × Ethernet	Slave (Router)	11 dBm	2.4 GHz, 5 dBi Omni-Directional antenna	700 m
ZT-USBC	1 × USB	Full Function (Coordinator/Router)	3 dBm	2.4 GHz, PCBantenna	60 m

Product Series

🏠 ZigBee Repeater

The ZT-2510 is a ZigBee repeater to extend the distance of ZigBee network or avoid an obstacle that may be located between two wireless devices.

Model	Interface	Module Type	Transmit Power	Antenna	Distance (LOS)
ZT-2510	ZigBee	Slave (Router)	11 dBm	2.4 GHz, 5 dBi Omni-Directional antenna	700 m

🏠 ZigBee Bridge

The ZT-2530M is a ZigBee bridge operating as a bridge between two ZigBee networks. It is full hardware configuration, used to communicate indoor and outdoor units or divide complex network to enhance efficiency.

Model	Interface	Module Type	Transmit Power	Antenna	Distance (LOS)
ZT-2530M	ZigBee	Slave (Router) + Host (Coordinator)	11 dBm	2.4 GHz, 5 dBi Omni-Directional antenna	700 m

Product Series

🏠 ZigBee I/O Group Module (Full Function)

The ZT-20xx-IOG module is a series of wireless ZigBee I/O module built-in the IOG (I/O Pair-connection Group) function. With ZigBee wireless communication and remote active I/O features, the ZT-IOG module can manage devices' DIO states in the buildings to exchange and update the I/O channels actively.

The ZT-20xx-IOG provides Ethernet, RS-232 or RS-485 communication interface. It is a data concentrator that no programming and no dealing with the wireless communication interference needs, but can quickly establish, monitor and manage the I/O pair-connection with the decentralized DIO channels. It suits the multi-host monitoring and I/O Pair-connection wireless applications for the environment of needing many I/O points, large communication range and not easy wiring.

| Model	Channel	Type	Channel	Type
ZT-2043-IOG	DO: 14	Open Collector (700mA, Sink)		
ZT-2053-IOG	DI: 14	Dry/Wet (Sink/Source)		
ZT-2055-IOG	DI: 8	Dry/Wet (Sink/Source)	DO: 8	Open Collector(650 mA, Sink)
ZT-2060-IOG	DI: 6	Wet (Sink/Source)	DO: 4	Power Relay (5 A @ 250 VAC/30 VDC)

🏠 ZigBee I/O Module (Router)

Model	Channel	Type	Channel	Type
ZT-2005-C8	AI: 8	10 K Thermistor (Measuring Temperature Range: -40℃ ~ 105℃)		
ZT-2015	AI: 6	Pt100, Pt1000, Ni120, Cu100, Cu1000		
ZT-2017	AI: 8	±10 V, ±5 V, ±1V, ±500 mV, ±150 mV or -20 mA ~ +20 mA (Requires External 125 Ω Resistor)		
ZT-2017C	AI: 8	20 mA ~ +20 mA, 0 mA ~ +20 mA or +4 mA ~ +20 mA		
ZT-2018	AI: 8	±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1V, ±2.5V, ±20 mA, 0 ~ 20 mA or 4 ~ 20 mA Thermocouple (J, K, T, E. R. S, B, N, C, L, M, LDIN43710)(Requires Optional External 125 Ω Resistor for current input)		
ZT-2024	AO: 4	0 ~ +10 VDC, -10 VDC ~ +10 VDC, 0 ~ +5 VDC, -5 VDC ~ +5 VDC, 0 ~ +20 mA, +4 mA ~ +20 mA		
ZT-2026	AI: 4	±10 V, ±5 V, ±1 V, ±500 mV, ±150 mV or -20 mA ~ +20 mA	AO: 2	±10 VDC, ±5 VDC, 0 ~ 10 VDC or 0 ~ 5 VDC
	DI: 2	Wet (Sink)	DO: 2	Open Collector (700 mA, Sink)
ZT-2042	DO: 8	4*PhotoMOS Relay (1 A, Sink/Source) / 4*Open Collector (700 mA, Sink)		
ZT-2043	DO: 14	Open Collector (700mA, Sink)		
ZT-2052	DI: 8	Wet (Sink/Source)		
ZT-2053	DI: 14	Dry/Wet (Sink/Source)		
ZT-2055	DI: 8	Dry/Wet (Sink/Source)	DO: 8	Open Collector (650 mA, Sink)
ZT-2060	DI: 6	Wet (Sink/Source)	DO: 4	Power Relay (5 A @ 250 VAC/30 VDC)

🏠 ZigBee Accessories: External Antenna/Cable

Optional Accessories	Description and Website
External Antenna	2.4 GHz External Antenna, RP SMA Male (Plug)
External Antenna: http://www.icpdas.com/root/product/solutions/industrial_wireless_communication/wlan_products/external_antenna.html	
External Cable	3S00×-1, RG58A/U × Meter Long RP-SMA male to RP-SMA Female
Extension Cable: http://www.icpdas.com/root/product/solutions/accessories/cable/cable_selection.html	

Product Series

3-11 IIoT Communication Server & Concentrator
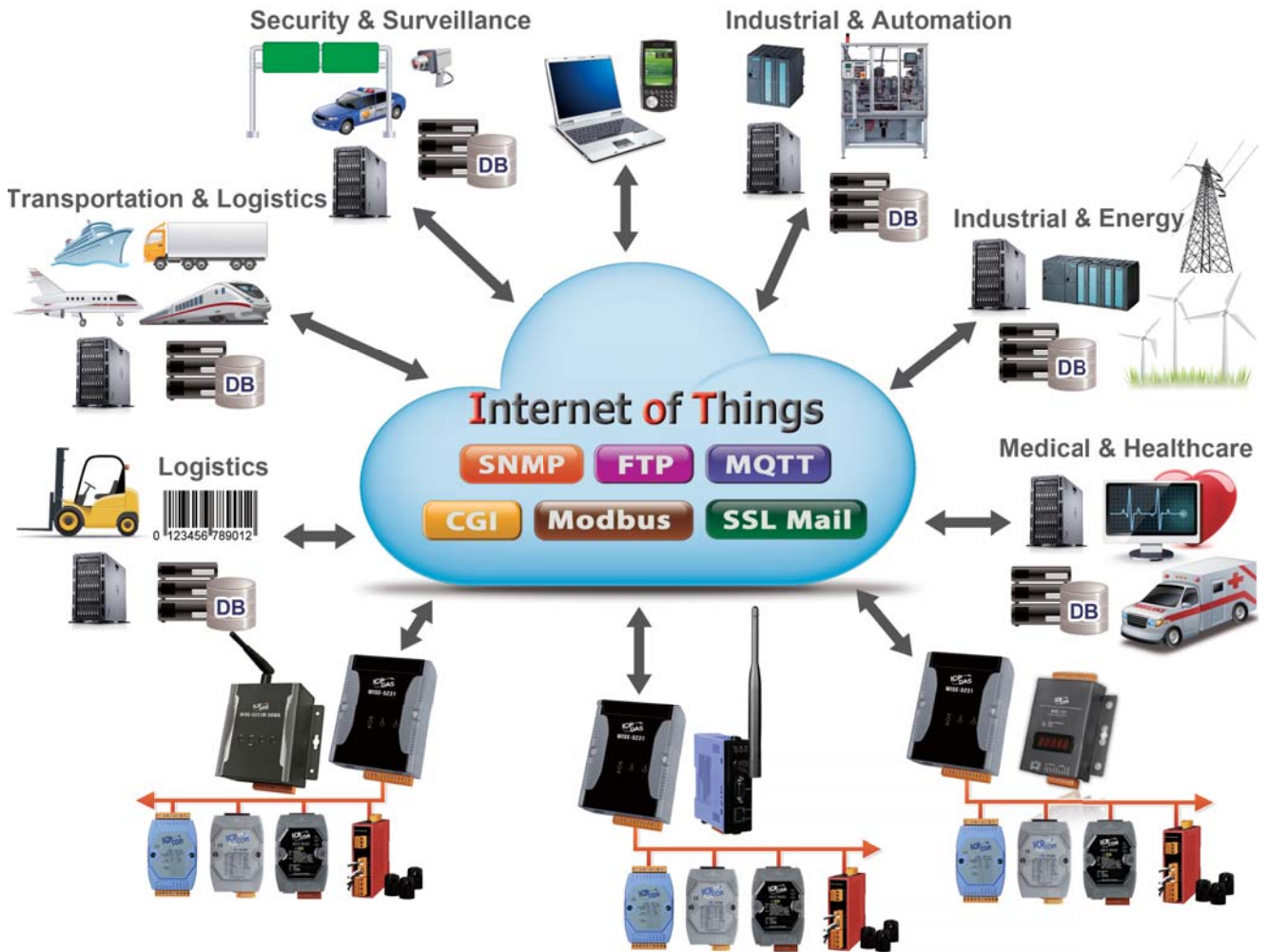
Industrial Internet of Things (IIoT) is the new Cloud trend, and the IoT technology which makes all the devices communicate with each other is the first jigsaw puzzle of the entire Cloud vision. However, when various devices are connected to the cloud, but many of them lacking management become unnecessary data. This makes the IoT management more importance. ICP DAS develops a variety of smart IIoT Concentrators for managing the data of the devices and will be the best IoT manager.

Advantage 1 : Grouping for high stability

Concentrator monitors the front-end devices by grouping that can check errors quickly and affect one group only to ensure the entire system stability.

Advantage 2 : Layering for high performance

Concentrator manages the groups by layering that can share the works of the central system to improve the system performance.

Selection Guide

Series	UA Series	WISE Series	ZT Series	MDC Series
Type	IIoT Communication Server	Intelligent IIoT Concentrator	ZigBee Data Concentrator	Modbus Data Concentrator
Appearance				

Product Series

⌂ UA-5231 : IIoT Communication Server

The UA-5200 is an IIoT communication server and a data acquisition controller, built-in OPC UA Server and MQTT Client Service, supports common industrial communication protocols, small size, low power consumption, and often placed in the equipment rooms and case fields. Applying the OPC UA can integrate the I/O products and the third-party devices, import their data to the back-end SCADA management system or the analysis system. Reach to the Industrial 4.0 or IIoT through the MQTT.

- ■ OPC UA Server and MQTT Client Service
- ■ MQTT Broker Inside
- ■ Cortex-A8, 1 GHz
- ■ Linux kernel 3.2.14 OS
- ■ Real-Time Capability
- ■ 64-bit Hardware Serial Number for Software Protection
- ■ Support Redundancy and PID
- ■ 10/100/1000 Mbit/s Ethernet Port
- ■ 4 Serial Ports (RS-232/RS-485)
- ■ Operating Temperature Range: -25℃ ~ +75℃
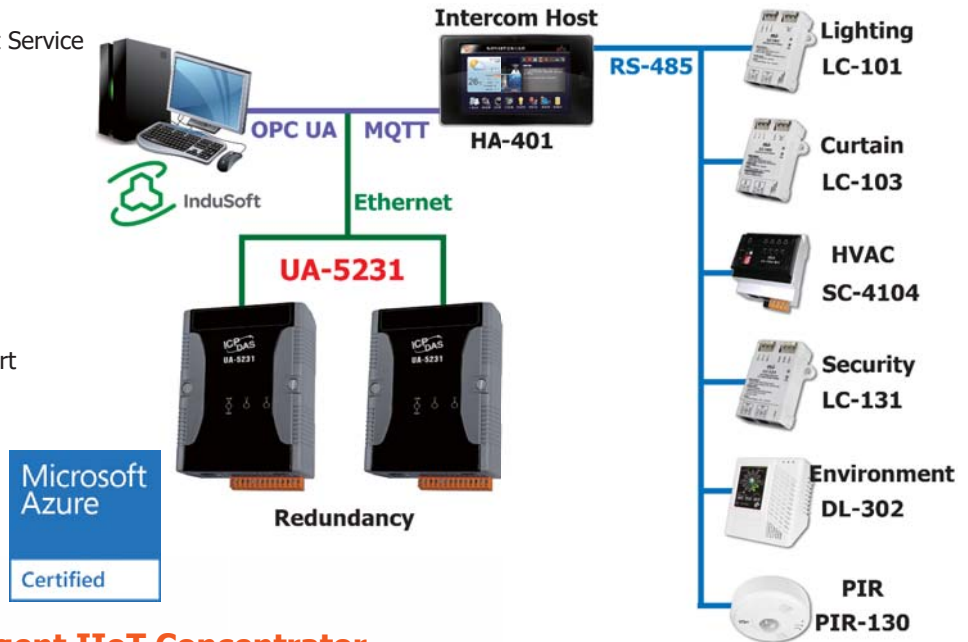
⌂ WISE-5231 : Intelligent IIoT Concentrator

WISE-5231 is an intelligent IIoT Concentrator (**W**eb **I**nside, **S**mart **E**ngine) that functions as control units for use in remote logic control and monitoring in various industrial applications. WISE-5231 supports SNMP, SNMP Trap, MQTT and DDNS protocols and services. The flexible integration ability with the SCADA/IT/IoT systems makes WISE-5231 a perfect concentrator of sensor and I/O modules in the IoT age.
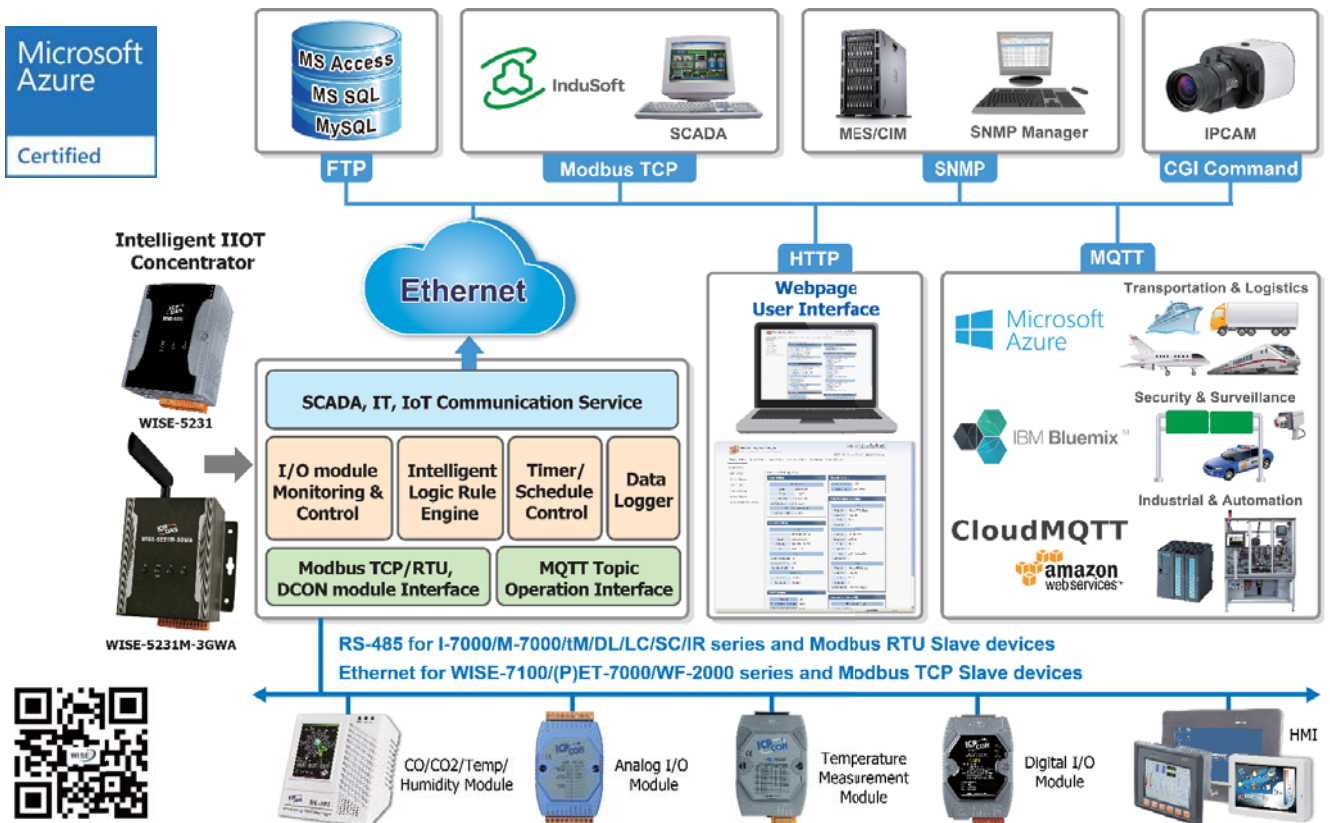
## ⌂ ZT-2570/ZT-2571 : ZigBee Data Concentrator (Wireless)

The ZT-257x module is a series of data concentrator built-in the I/O Pair-connection Group (IOG) function. With ZigBee wireless communication and remote active I/O features, the ZT-257x module can manage devices' DIO states in the buildings to exchange and update the I/O channels actively. In addition, the ZT-257x also provides Ethernet, RS-232 or RS-485 communication interface, so that the multiple monitoring hosts in different locations can read/write the DIO states of the devices that dispersed over many places through the nearby ZT-257x via the Modbus protocol. It is a data concentrator that no need to programming and no dealing with the wireless communication interference, but can quickly establish, monitor and manage the I/O pair-connection with the decentralized DIO channels. It suits the multi-host monitoring and I/O Pair-connection wireless applications for the environment of needing many I/O points, wide communication range and not easy wiring.
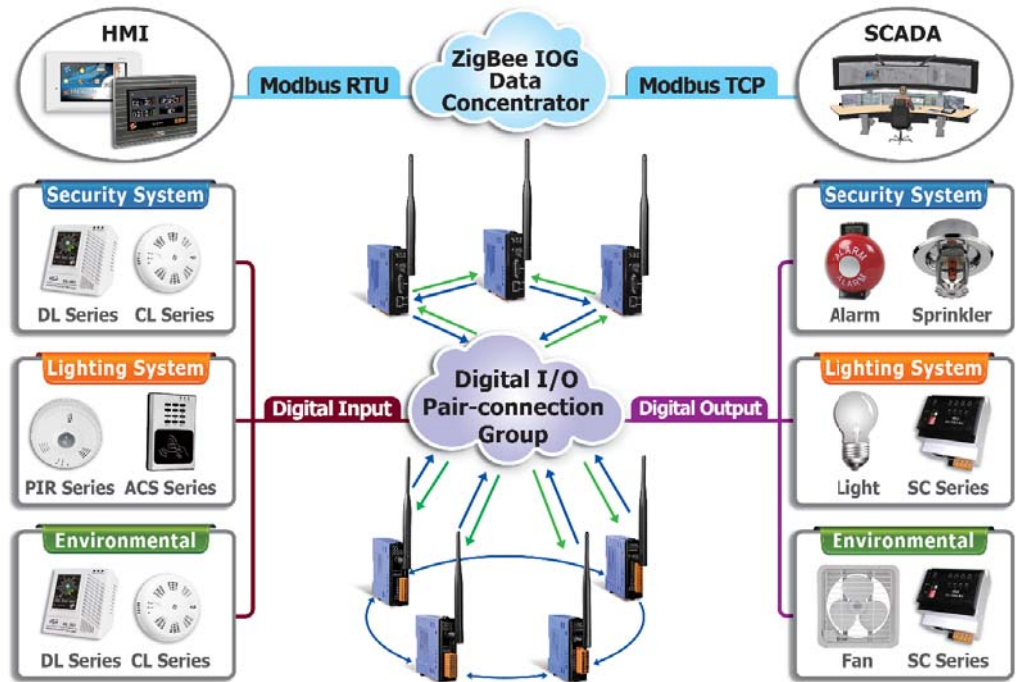
⌂ MDC-700 : Modbus Data Concentrator (with IoT Service, MQTT Client)

MDC-700 series is a Modbus Data Concentrator used to access data from disparate Modbus slave devices with a contiguous Modbus address table ranged by the concentrator. The Modbus TCP masters directly read/write the data in the MDC-700 instead of polling each Modbus RTU slave device one by one. This way makes the data on the RS-232/485 shareable to multiple Modbus TCP master and also shorten the time to read/write data from/to multiple Modbus RTU slave devices. Editing the Modbus RTU commands for accessing the Modbus RTU slaves is simple and convenient with Comma Separated Values (CSV) format. In addition, a web-based user interface is provided to configure the concentrator and remotely monitor the state of the connection of Modbus RTU slaves.

- ■ Web-based User Interface
- ■ Easy Configuration with .CSV File
- ■ Support for up to 8 Modbus TCP Masters
- ■ Great Capability of Shared Memory
- ■ Communication Protocols:
  Modbus RTU/TCP Slave
  Modbus RTU Master
  MQTT v3.1 Client (Available soon)

- ■ Accelerate Reading Time from Multiple Devices
- ■ Upgrade Devices with Ethernet Communication
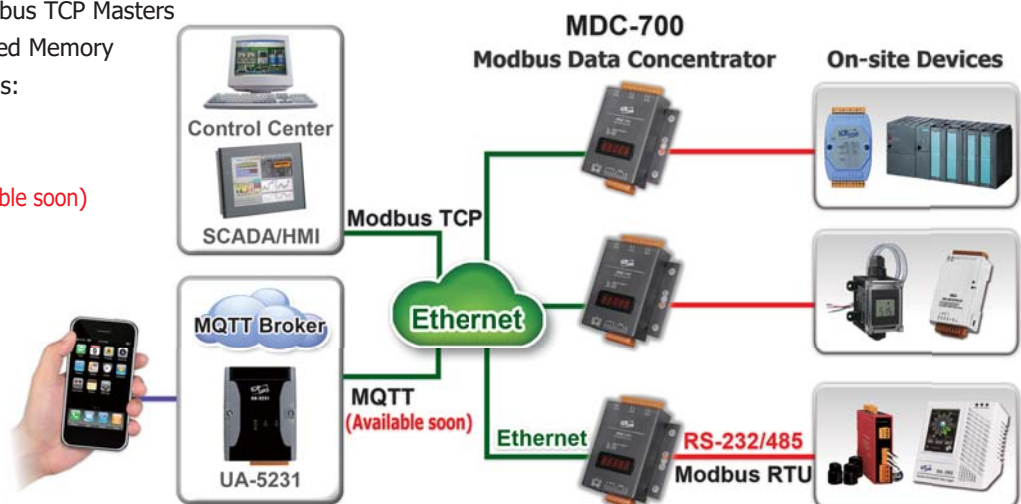
3-12 WISE Surveillance Solution

A general surveillance system on current market usually features separated systems: the camera DVR/NVR as a system, and the I/O monitoring as another system; each system operates independently. For now the DVR/NVR system of the camera usually records video for 24H/7Day without interruption, it requires huge storage space and sufficient network bandwidth; therefore the system implementation fee is usually high. In addition, when playback a certain video, it does not allow to search the suspicious activities of related I/O (temperature, doors and windows switch, water level, etc.) at the same time.

ICP DAS WISE surveillance solution integrates logic control, I/O, camera and data log in one single WISE controller. WISE allows two-way interactions between the I/O and the camera; it enables to record a piece of video or to take images when there is an event triggered by either I/O condition or ROI (Region of Interest) by camera. In this way, the storage size can be reduced significantly and the connection between I/O event and Video/Image can be built for easy query.

ICP DAS WISE Surveillance Solution	Regular Surveillance Solution
1. One WISE controller to integrate camera and I/O	1. Two independent systems: SCADA & DVR/NVR
2. Records key video and image, only needs a few storage memory.	2. Record video 24H/7Days, needs huge storage memory.
3. Two-way interaction between I/O and Video/Image	3. I/O and Video/Image are independent
4. Can work stand along or be integrated into a SCADA system	4. Needs a host PC to run the SCADA
5. One stop shopping/service for ● Controller: WISE Series ● I/O Modules: Various options for RS-485, Ethernet interfaces ● Camera: Bullet, Fisheye, Dual Lens ● SCADA: InduSoft	5. Buy from different venders for SCADA, I/O Modules, DVR/NVR
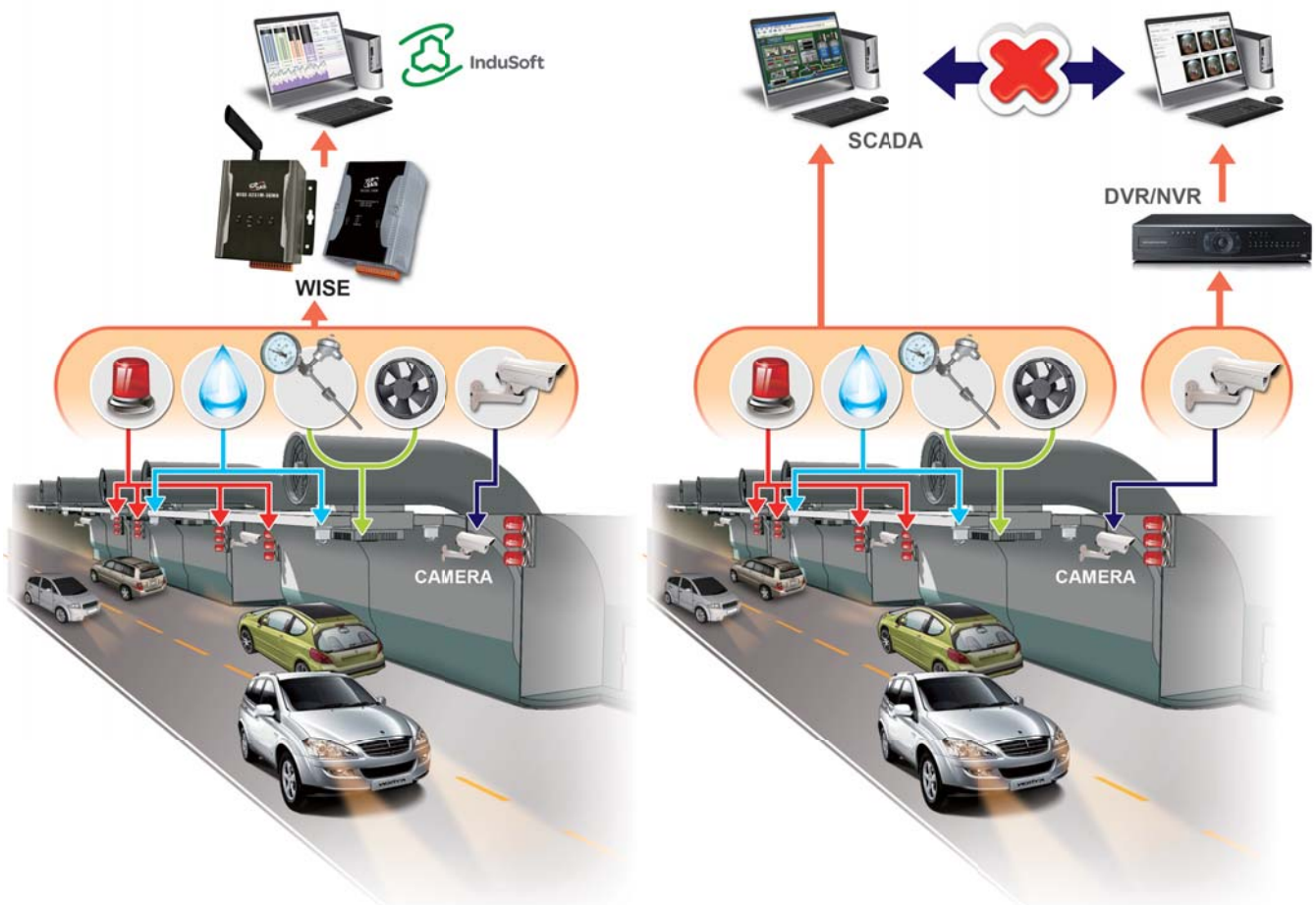
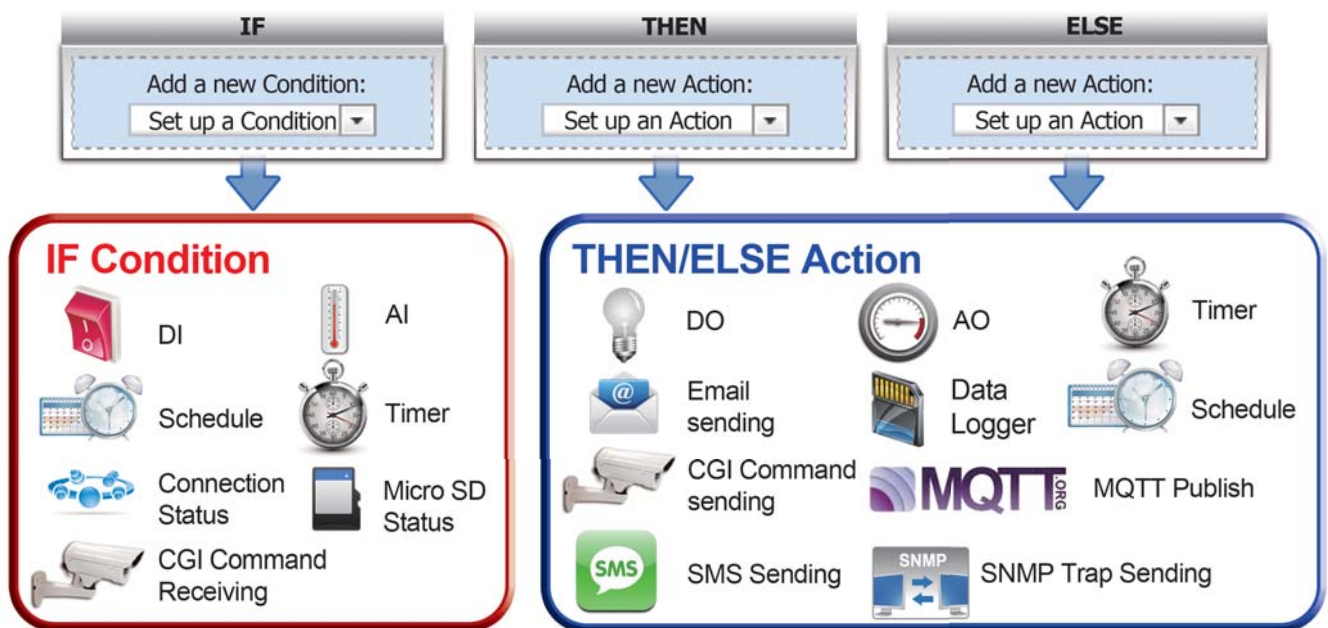
Product Series

WISE Introduction

WISE (**W**eb **I**nside, **S**mart **E**ngine) is a product series developed by ICP DAS that functions as control units for use in remote logic control and monitoring in various industrial applications. WISE offers a user-friendly and intuitive web site interface that allows users to implement IF-THEN-ELSE control logic on controllers just a few clicks away; no programming is required. With its powerful and easy-to-use features, it will minimize the learning curve, shorten time to market and dramatically reduce the labor and cost spent on system development.

WISE System Architecture

▪️ IF-THEN-ELSE logic rules execution ability

WISE controller features an IF-THEN-ELSE logic rule engine; it offers IF-THEN-ELSE rules for users to set up the logic content. After completing rule edition and downloading rules to the WISE, the rule engine will loop execute the rules in accordance with the execution order under specific conditions.

Product Series

Offer various options for I/O channel settings

WISE offers various options for I/O channel settings; for example: noise filter for DI signals, Deadband setting for AI signals, linear scale setting, temperature degree in Celsius or Fahrenheit setting, power on value setting for DO channel, pulse output setting and DI/DO counter setting, etc.

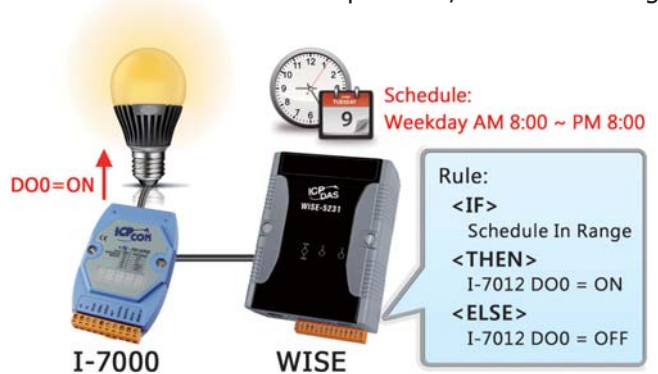▲ AI Channel Setting Page

▲ DO Channel Setting Page

Provide Timer and Schedule operation

WISE features Timer and Schedule functions: It allows user to schedule specific date or time for control logic execution, or perform specific tasks such as time delay. With calendar user interface provided, Schedule setting can be more efficient and flexible.

▲ Schedule Function

Well-thought-out CGI command operation with IP Camera

WISE supports full CGI command operations - CGI command sending and CGI command receiving. The CGI command sending action can be added to the logic edition as part of logic control in response to specific events. The CGI command receiving function enables WISE to receive the CGI commands from others network devices. The content of CGI command received can be used in IF condition statements to trigger the THEN/ELSE actions.
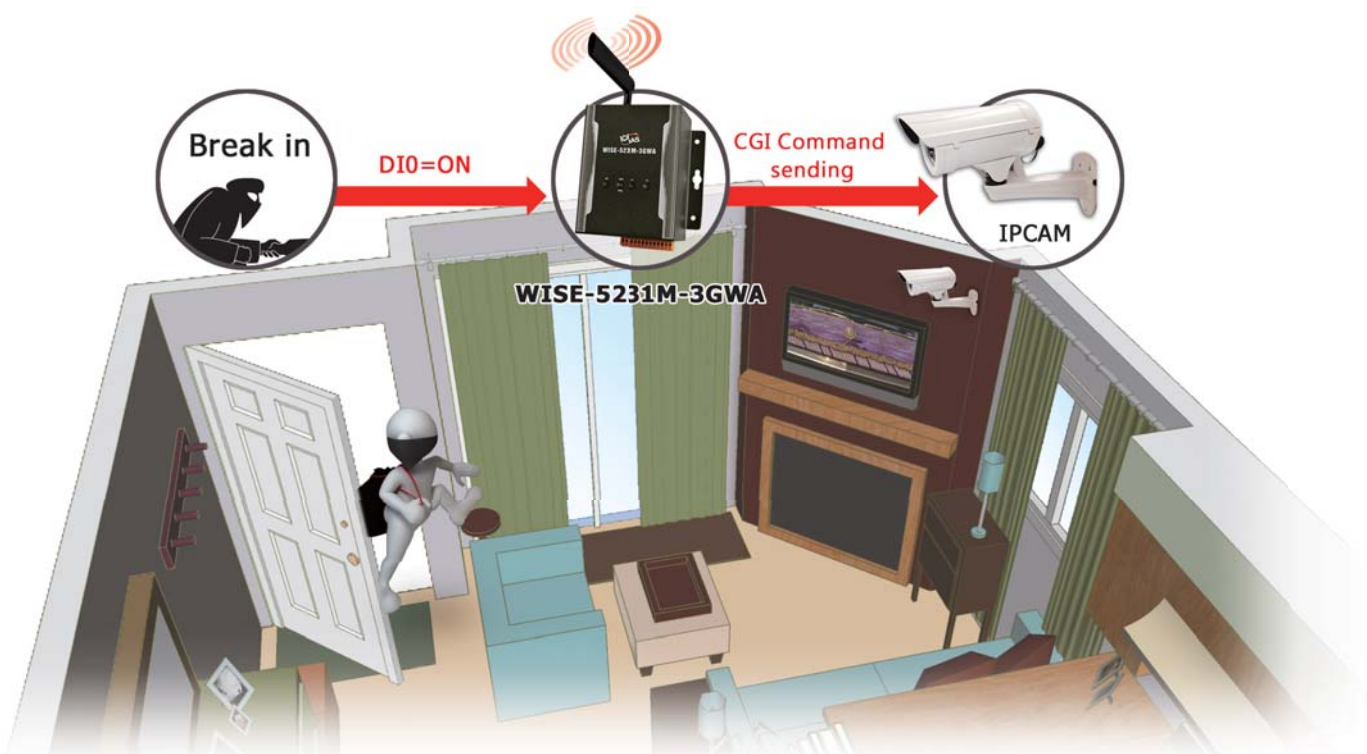
Bullet Network Camera

iCAM-721F

🏠 Introduction

iCAM-721F is a professional bullet camera offering 1080p Full HD resolution with super image quality up to 30 fps. Featuring 3-Megapixel resolution and high-performance H.264/MPEG-4/MJPEG compression technology, the iCAM-721F offers extra-smooth video and wide coverage.

iCAM-721F employs many advanced features to allow users to fully utilize the high definition video. Focus on a region of interest (ROI) in the camera view to enhance image quality. It also saves the cost of network and backend storage without network bandwidth of video streaming.

Aimed at outdoor surveillance, iCAM-721F is furnished with an auto-iris lens, a removable IR-cut filter, 15-meter IR illuminators, Wide Dynamic Range (WDR), and multi-functional environment profile image settings for superior image quality around the clock. Moreover, the IP67-rated housing protects against rain and dust and ensures functional operation in all types of weather conditions.

With other advanced features such as tamper detection, 802.3af compliant PoE, ONVIF Compliant for interoperability, built-in SD/SDHC/SDXC card slot for storage, two-way audio, and digital input / output for alarm, the iCAM-721F is an all-in-one bullet network camera for detailed surveillance in outdoor environments.

| 3MP | 1080P Full HD | IR LED | WDR | Low Lux | Day/Night | IP67 | 2 Way Audio | SD Card HC/XC 64GB | ROI | ONVIF | PoE 802.3at |

IR Fisheye Network Camera

iCAM-771

360° Panoramic View   *180° Panoramic View*

🏠 Introduction

iCAM-771 is the Fish-eye IR Network Camera, featuring a detailed 5-Megapixel resolution sensor with clear image quality. Equipped with a fish-eye lens for 360°/180° panoramic view without blind spots, certified ImmerVision Enables 2.0, the cameras are able to provide coverage of wide, open areas, such as airports, shopping malls, factories, parking lots, retail stores, offices and more.

| 5MP | 1080P Full HD | 360° | 180° | IR LED | WDR | Low Lux | Day/Night | IP66 | 2 Way Audio | SD Card HC/XC 64GB | ROI | ONVIF | PoE 802.3at |

Product Series

Dual Lens Panoramic Dome Network Camera

iCAM-760D

iCAM-760D
with outdoor
6" dome housing

Features

- 2 x 5 Megapixel Progressive CMOS Sensor
- Smooth 15 fps@High 7.3 Megapixels Resolution (3840 x 1920)
- H.264/MJPEG Dual Codec
- 1.05 mm non-liner Fisheye Lens + 6/8/12/16 mm Fixed-focal Lens
- Removable IR Cut, Day & Night Function for Both Sensors
- eWDR Image Enhancement for Extreme Lighting Condition (too Bright/Dark)
- Various Display Modes Selectable for Different Applications
- ePTZ, Auto Pan, Auto Patrol Function on Fisheye Lens
- Two-way Audio
- Built-in microSD / microSDHC / microSDXC Card Slot for On Board Storage
- Weather-proof IP66-rated Outdoor Housing
- Built-in 802.3af Compliant PoE
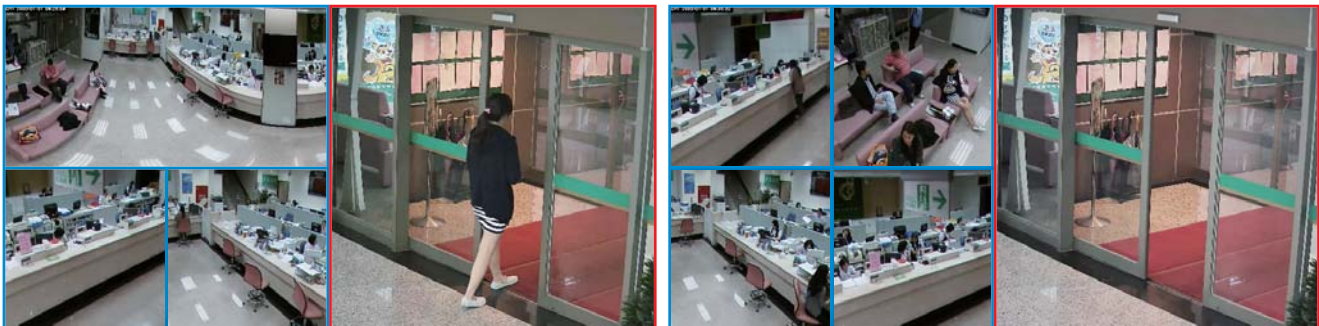- ONVIF 2.2 Compliant for interoperability

Introduction

Panorama and detail, iCAM-760D dual lens camera provides a professional single camera solution. Integrated with Dual 5-Megapixel sensors, one equipped with f 1.05mm non-linear fisheye lens offers 180/360 degree de-warped image (single or multiple), for the other sensor, lens is 6, 8, 12, 16mm optional. Dual sensors gimbals work independently and can be configured to almost any direction, and de-warping algorithms are 180/360 degree selectable depends on fisheye lens configuration. Wide Dynamic Range and IR cut removable are available for both sensors. iCAM-760D offers a professional and efficient solution for commercial, industrial, and public areas.
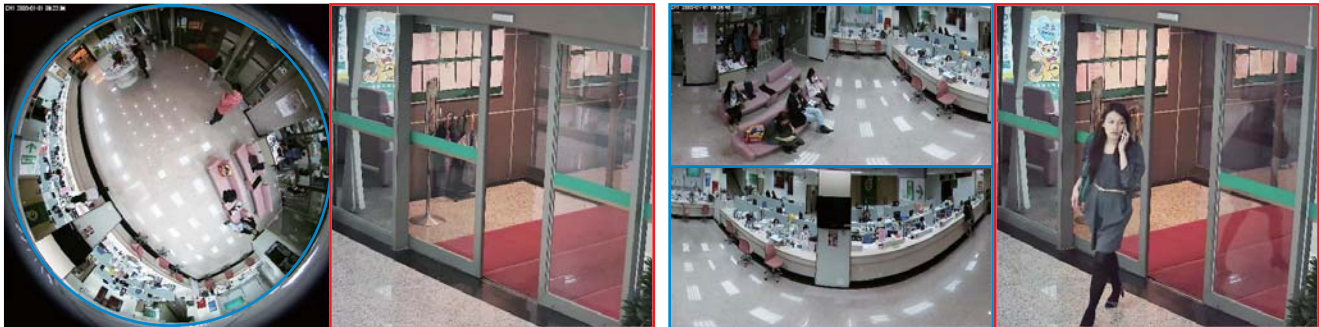
360° Panoramic View + *Fixed-focal View*

180° Panoramic View + *Fixed-focal View*

180° Triple View + *Fixed-focal View*

Quad View + *Fixed-focal View*

Max. Res. 7.3MP | 1080P Full HD | Dual Lens | 360° | 180° | Auto Pan Patrol | WDR | Low Lux | Day/Night | IP66 | 2 Way Audio | SD Card HC/XC 64GB | ONVIF | PoE 802.3at

Product Series

3-13 iDaSer Series- Data Server Modules

iDaSer-9000


🔆 Features CE FC RoHS

- ■ Support SSH, FTP, SMB
- ■ Support SNMP (Read-only), SYS log
- ■ Support Data Backup
- ■ Support EXT 3, EXT 4, XFS, JFS File System
- ■ Support Web Management Tool
- ■ Support Scheduled Jobs Function
- ■ Support Multi-language
- ■ Support RSync
- ■ Support MQTT Broker

iDaSer provides front-end device storage service, remote maintenance management service and public cloud data forwarding service, and supports front-end serial communication device data, MQTT communication data and RTSP video streaming data storage. The iDaSer can remote configure, monitor, control, manage and maintain the devices and storage data through the intuitive web-based user interface, and also ensure the data safety and stability with the SSL transmission encryption and disk backup services.

Product Series
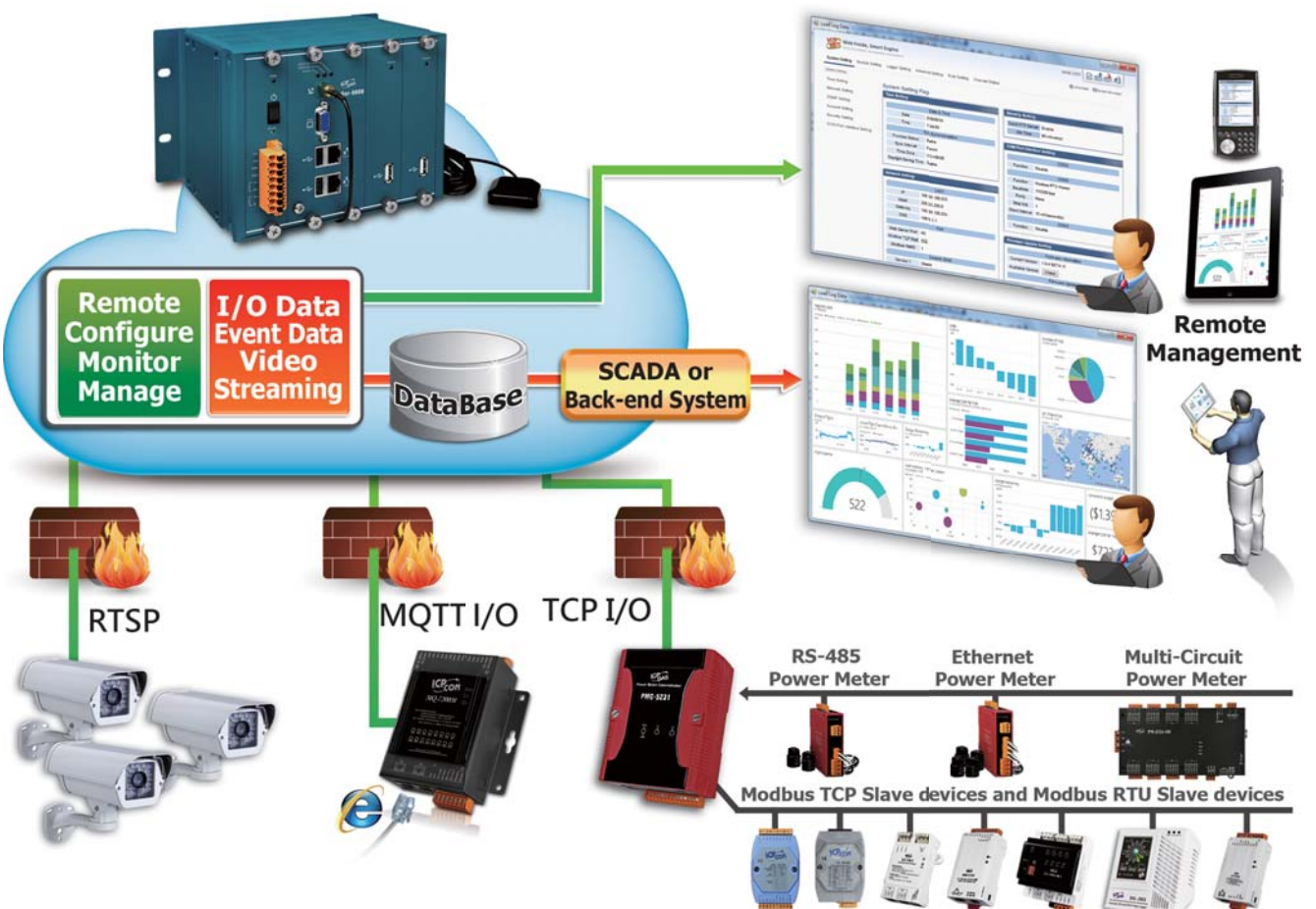
Video Monitoring and Security System Application

iDaSer links the back-end building management system (BMS, InduSoft) with wired and wireless IPCAM to monitor the camera devices to build a multi-channel security monitoring system. The ICP DAS BMS (InduSoft) can also link DVR/NVR and CAM/IPCAM to build a safe and monitored living environment for the homes, offices, shopping malls, communities and even villages, using the dynamic detection of video equipment, the intrusive alarm of system and the alert notification of mobile phones.
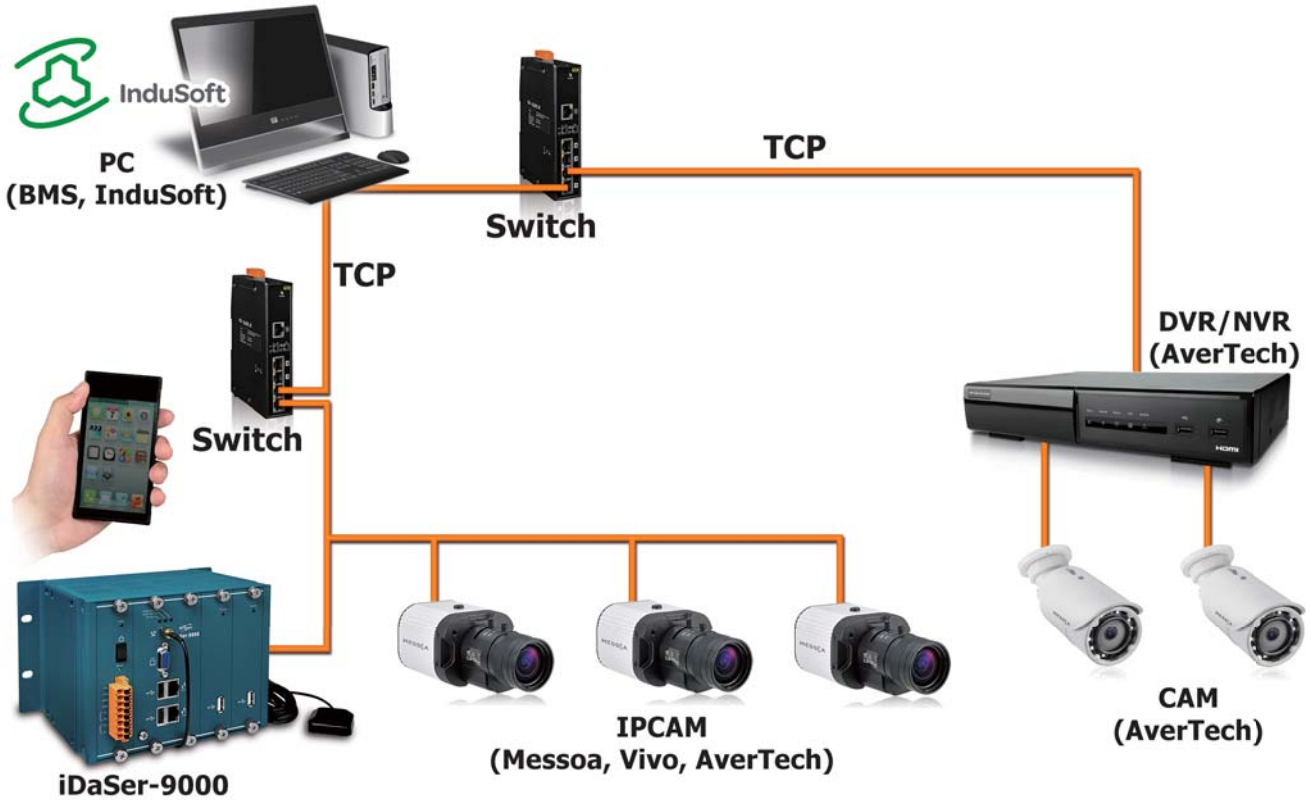

Specification

Model	iDaSer-9000
CPU	Dual Core , 1 GHz
Memory	DDRIII 1600/2 GB
Display	VGA 1920 × 1440 @ 60 Hz
USB Host	USB 2.0 HS / 500mA × 4 (Keyboard, Mouse, Flash Disk.. through USB Hub)
Ethernet	1000 base-T × 1, 10/100 × 1
SATA HDD Slot	USB to SATA HDD/SSD x 2
UART	RS-232 × 1, RS-485 × 1
LED	Power x 1, System x 1, SATA Access x 2, SATA Error x 2
Switch	Power x 1, Reset to Default x 1
System Buzzer	Buzzer x 1
Storage (Choose one)	HDD: 2.5"SATA 500 G/1 T (Seagate, WD, HGST, Toshiba) Or SSD: 2.5"SATA 128 G/256 G (INNODISK,…TBD)
Power Supply	12~48V/12W,(12V/1A) W/O USB device
Operating Temperature	0 ~ 55℃ (HDD) / -20 ~ 70℃ (SSD)
Humidity	10% ~ 90% RH, Non-condensing

3-14 iKAN Series: Industrial Modbus LED Display

## iKAN-116/iKAN-124
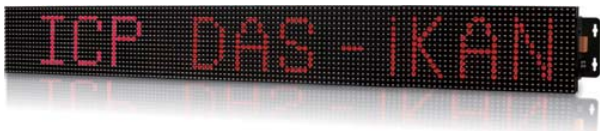
iKAN-216/iKAN-224

Features

- Support multiple languages with a text height of 16 cm
- 7 colors: red, blue, yellow, green, light blue, purple and white
- Store up to 64 common messages and 10 instant messages
- Integrate both text and variables in a single message
- Supports Modbus TCP/RTU Slave protocols
- Built-in RTC (Real Time Clock)
- Web-based User Interface
- Remotely controlled using a smart phone or mobile device

Introduction

The iKAN series is a family of industrial Modbus LED display devices that deliver industrial-grade anti-noise capabilities as well as reliability and stability. ASCII characters and Unicode characters, which can be used to display multiple languages, are supported for presenting formatted messages. Support for the popular Modbus industrial protocol is provided meaning that iKAN display devices can easily integrate into existing PLC and SCADA environments. The iKAN series allows data written from a PC or a PLC to display on a formatted message in real-time. Seven colors are available for the text, which can be used to indicate different degrees of importance of the message, as well as significantly increase the readability of the message in an industrial arena.
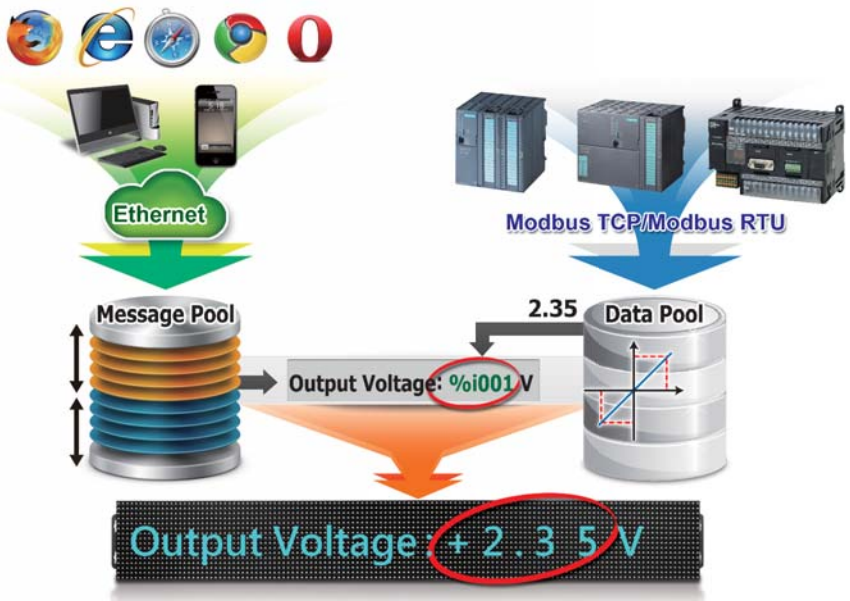
Built-in RTC

Date and time, 24 hour format including second, minute, hour, date, day of the week, month, year.

Smart Phone Controllable

Messages can be edited using a standard web browser, such as Google Chrome, Firefox, or IE, etc., on a PC, mobile device, or smartphone without any limitations related to specific control tools or programs.

Support Modbus TCP/RTU protocols

The popular Modbus industrial protocols are provided. iKAN can be easily integrated into PLC/SCADA.

Indoor Air Quality Display

iKAN can be used to read indoor air quality monitoring data from an external DL-302 module, including the carbon dioxide level, temperature and humidity, and then display the information in real-time, making it suitable for commercial and public buildings, such as schools and museums, as well as for retail, leisure and healthcare facilities.

Web-based User Interface

A message can be pre-configured, or the variables can be edited, via a standard web browser, meaning that no utility software needs to be installed, and no specific programming knowledge or skills are required.

Message Editing

A maximum of 64 common messages and 10 instant messages can be pre-configured from the first moment that the iKAN display is switched on. When the display is in operation, the focus needs only be on message management rather than the need to frequently update the messages.

Message Priority

Instant messages have a higher priority than common messages. Once an instant message is enabled, the common message currently being displayed will be suspended until the instant message is disabled. This feature allows the most important information to be displayed in an emergency situation.

Specification

Model		iKAN-116	iKAN-124	iKAN-216	iKAN-224
Display					
Color		Red, Blue, Yellow, Green, Light Blue, Purple or White			
Character Sets		16-bit Unicode or 7-bit ASCII			
Display Size	ASCII	1 line x 16 Characters	1 line x 24 Characters	2 line x 16 Characters	2 line x 24 Characters
	Unicode	1 line x 8 Characters	1 line x 12 Characters	2 line x 8 Characters	2 line x 12 Characters
Message Pool		64 common messages and 10 instant messages Up to 40 Unicode characters or 100 ASCII characters each			
Data Pool		40 Coil values, 64 Float values, and 64 Integer values			
Communication Interface					
Ethernet		1 × RJ-45, 10/100 Base-TX; Modbus TCP Slave, Max. 8 connections, Web-based User Interface			
COM Port		RS-232 or RS-485, each time select one only (Modbus RTU); Modbus RTU Master Protocol			
Mechanical					
Dimensions (W x H x D)		1346 x 160 x 49 (mm)	1986 x 160 x 49 (mm)	1346 x 320 x 49 (mm)	1986 x 320 x 49 (mm)

Product Series

3-15 Accessories

Enclosures and Mounting Kit

I-3625-ENC   I-25091-ENC   I-25140-ENC   I-25166-ENC

Specifications:

Models		I-3625-ENC	I-25091-ENC	I-25140-ENC	I-25166-ENC
Includes					
		Case Accessory			
		2 × Polyamide cable glands	2 × cable glands: 4PASO-0028 (Cable Range Φ9 ~ 14 mm)		
			1 × cable glands: 4SASO-0007 (Cable Range Φ7 ~ 4 mm)		
		6 × captive lid screws	4 × captive lid screws		
		1 × DIN-Rail (35.8 cm)	1 × DIN-Rail (20 cm)		
Mechanical					
Casing		Plastic			
Dimensions (W × H × D)		360 × 254 × 165 mm	255 × 181 × 91 mm	255 × 181 × 140 mm	255 x 181 x 166 mm
Environmental					
Temperature		0 ~ +50°C for Protection rating IP66			

19" Rack Mounting Kit, 3U

RK-3UD-R

Specifications:

Mechanical	
Dimensions (W × H × D)	481 × 132 × 125 mm

Product Series

ICP DAS Smart Building/Home Automation Solutions

Case Study & Application Stories
ICP DAS CO., LTD.

ICP DAS Solutions in Building Automation and Smart Homes

In recent years, the development of a variety of Internet of Things applications has promoted much technology that, once upon a time, was only a dream. ICP DAS follows its people-oriented philosophy to create innovative solutions for smart buildings, shaping the concept and design of the smart home.

(Details: http://www.icpdas.com/root/support/case_study/pdf/BAHA-ICPDAS_BAHA_auto-201508.pdf)

ICP DAS Building Automation Products : Particulars and Applications

Using the ICP DAS TPD master controller in conjunction with members of the LC family results in a well-connected system that matches the standards that could be required for any building. Using the HMIWorks WYSIWYG philosophy, you can spend more time doing things, instead of worrying about how things should be done. Discard the pesky menial stage, and focus instead on pure design, and observe as a result polishes itself.

(Details: http://www.icpdas.com/root/support/case_study/pdf/BAHA-ICPDAS_BA_auto-LC_TPD-201508.pdf)

System Application in Taipei 101 Building

The generator management system provides a full range of control and management of the generators; the SCADA system with user-friendly interface designed for easy operations. The system architecture adopted coherent communication, therefore when new features are added in the future, as long as the module or hardware uses the same communication, the new features can be seamlessly added without affecting the existing architecture.

(Details: http://www.icpdas.com/root/support/case_study/pdf/BAHA-Taipei101-201508.pdf)

Application in International Trade Center

The Taichung office of ICP DAS moved to the International Trade Center, the benchmark building in Taichung. ICP DAS assists to improve its access control system and upgrade the hardware and software. The supporting projects include the building automation control, access control, intercom control systems, etc. ICP DAS hopes to help customers with more Smart Building Automation examples.

All Case Studies: http://www.icpdas.com/root/product/solutions/ba_ha/baha_app.html
Case Study List: http://www.icpdas.com/root/support/case_study/ba_ha.php

Local Distributor