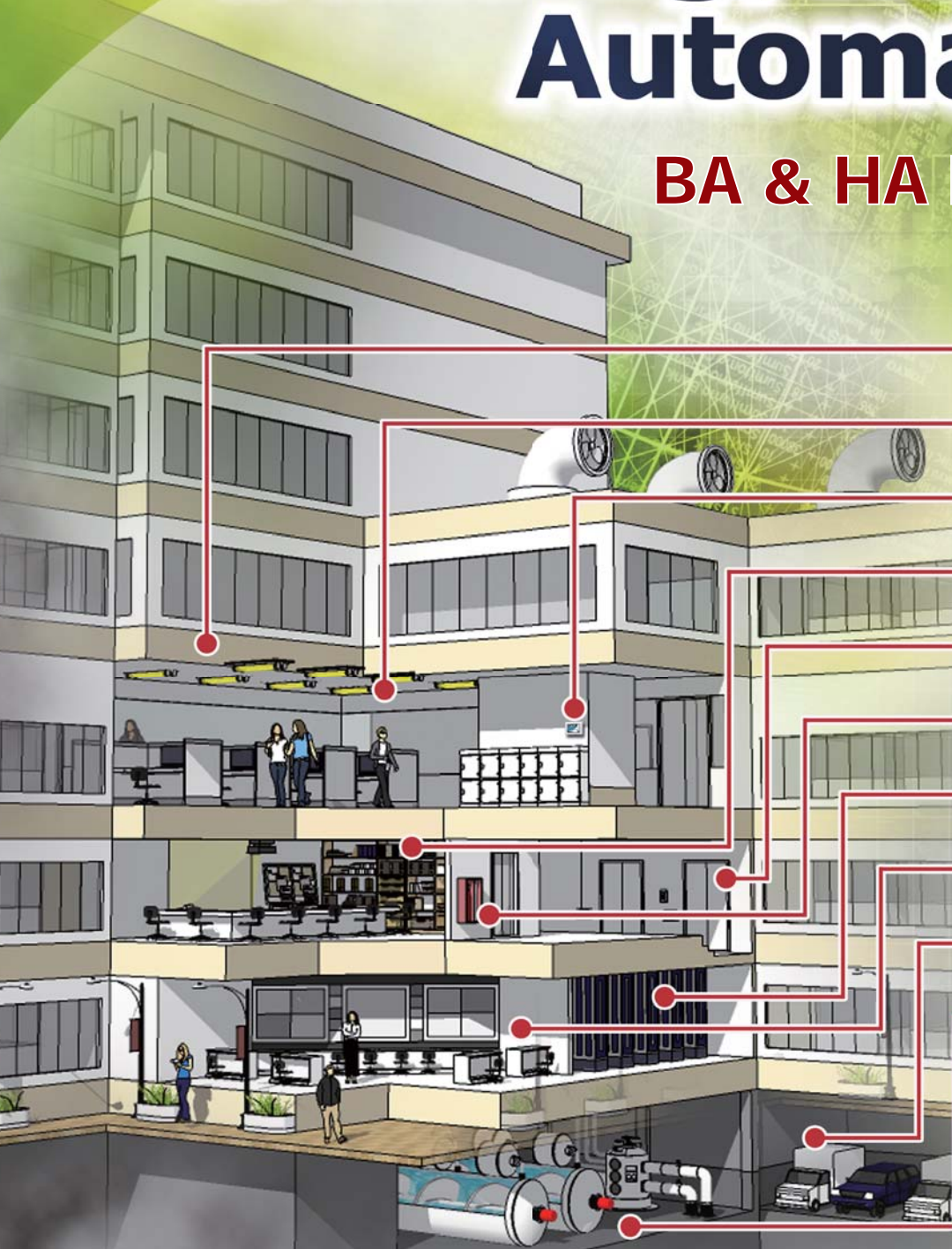# ICP DAS CO., LTD.

Smart Building/Home Automation

BA & HA Brochure

- Air-Handling Unit
- Lighting Control
- Touch Panel
- Meeting Room Management
- Security Alarm
- Fire Safety Device
- Power Monitoring
- Central Control Room — InduSoft
- Parking Management
- Electrical Devices

ICP DAS BA & HA Solutions

Smart Building, Smart Home

With the advance of the electronic technology and network communication technology, and with a variety of embedded applications and applications of Internet of Things 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 extended experiences from embedded industrial control to applications in all areas. Thus is able to provide total solutions for a variety of embedded applications. For Smart Building / Smart Home projects, they can be divided into several sub-systems such as: lighting, air conditioning, security, electricity, fire protection, mechanical & electrical devices and center control & monitoring systems.

🏛 Lighting Control

LC lighting control series targeted at load control which is different from the twisted-pair lighting control system (loop control). When lighting system is required to be modified due to alteration of the building space, it is required to adjust the deployments of the switches, software development and the control of lighting devices as well. For the cost incurred to build a twisted-pair lighting control system is pricy, and the modification of the control for the area is complicated, in addition, the traditional switches will require replacement, therefore, instead of using twisted-pair lighting control system, ICP DAS provides LC lighting control system as a better solution. The LC-101 in LC lighting control system is perfect solution to incorporate traditional switches into advanced automation control (the deployment is illustrated in the following figure). In addition, ICP DAS also provides DALI Gateway system for easily building up DALI lighting control system and provides flexible system expansion.

▲ LC light control:
Solve auto-control switches coexist with traditional problems

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

● Recommend Products:

TouchPAD Series	TPD 2.8" / 4.3" / 7" HMI Device	TPD-280/283, TPD-430/433, TPD-703 ...
	VPD 3.5" / 4.3" HMI Device	VPD-130/132/133, VPD-142/143, XV-board
LC Series	Lighting/Dimmer Control Module	LC-101, LC-103, LC-221
	RS-485 Active Hub	LC-485
SC Series	Smart Control Module	SC-4104-W1, SC-6104-W5
DALI Series	RS-232/RS-485/USB to DALI Gateway	DGW-521

🏛 HVAC

The HVAC (heating, ventilation, and air conditioning) systems are varied from appearance to structure. To provide a full-functioned HVAC system for used in intelligent control applications, it is necessary to provides total solution in both software and hardware in order to meet various requirements from wide-range applications such as: air-cooled chillers, steam boilers or other large equipment, as well as cold or hot pumps to send in/out water, and air-handling unit for regulation & circulate air. The commonly used intelligent air conditioning software usually provides soft logic development kit that is IEC 61131 compliance. In addition, the backend SCADA software are also used in various HVAC systems. Some complicated HVAC systems also provide integration with the DDC (Direct Digital Control) system in the Building Automation system to meet requirements in monitoring or control operations.
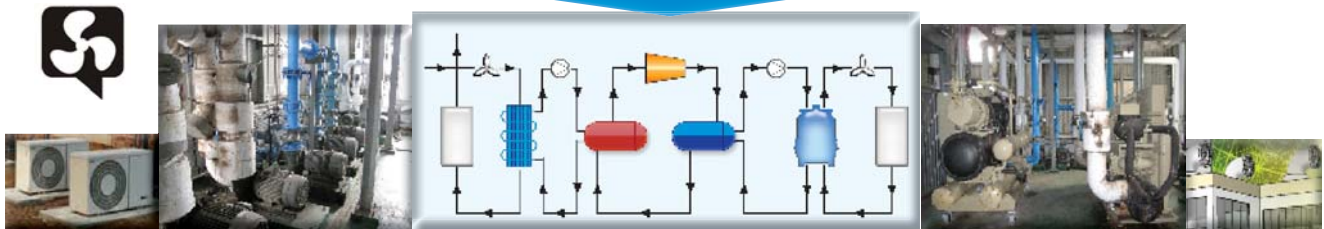
● Recommend Products:

DDC Series	DDC Controller	DDC-6170, DDC-6270-BNET
DL Series	Temperature/Humidity Data Logger	DL-100T485(-W), DL-100TM485(-W) ...
	CO/CO2/Temp./Hum. Data Logger	DL-301, DL-302, DL-303
SC Series	Smart Control Module	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-280/283, TPD-430/433, TPD-703 ...
	VPD 3.5" / 4.3" HMI Device	VPD-130/132/133, VPD-142/143, XV-board

🏛 Security

ICP DAS Building Automation security solution integrates monitoring system and access control system that can be connected to central monitoring system via open-interface network. With the help of LC-131 modules for door/window intrusion detection sensors and PIR Module Pyroelectric Infrared sensors, it is easy to simplify the complexity of the building automation monitoring system and access control deployment; in addition, reduce the cost for system maintenance and operation.
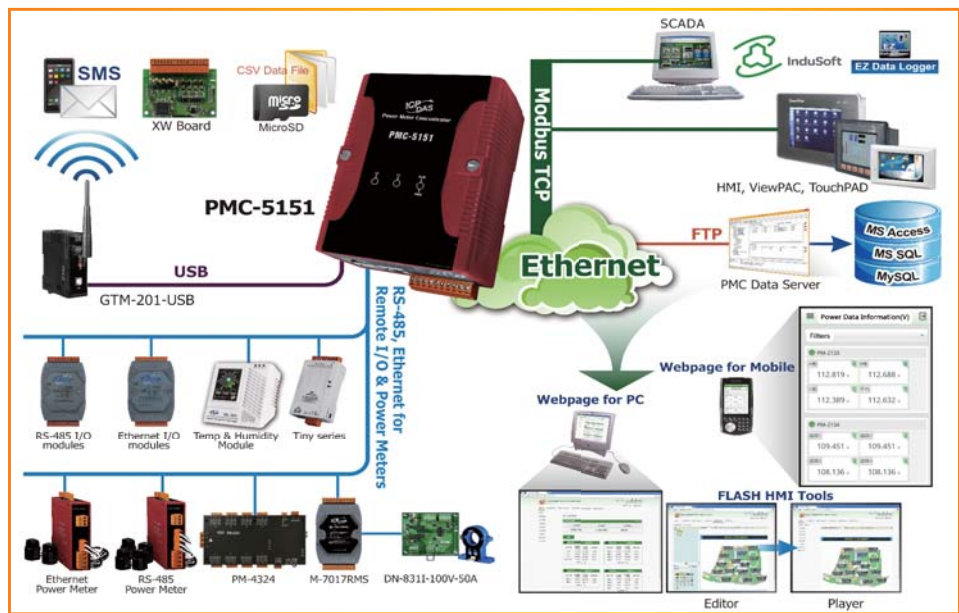

● Recommend Products:

TouchPAD Series	TPD 2.8" / 4.3" / 7" HMI Device	TPD-280/283, TPD-430/433, TPD-703 ...
	VPD 3.5" / 4.3" HMI Device	VPD-130/132/133, VPD-142/143, XV-board
LC Series	Security Module	LC-131
SC Series	Smart Control Module	SC-4104-W1, SC-6104-W5
PIR Series	PIR Motion, Temperature Module	PIR-130

⛫ Power Monitoring

ICP DAS PMMS (Power Monitoring and Management Solution) includes: front-end on-site Smart Power Meter, Power Meter Concentrator, and back-end software tool for data management that fit customers' needs. With these total solutions provided so that the user could easily check power data from their mobile phones or PC, and the administrator could set up the system quickly without complicated coding. Simply complete the settings through the web or software to perform power monitoring and data recording and then the user could fully understand the efficiency of the power usage and furthermore establish policies to achieve effective energy saving. During the early stage, if the scale is small, the user could simply use Smart Power Meter and PMC to set up a simple acquisition monitoring system, once the scale is expanded, the user could get the back-end software tool involved and build an easy-to-expand monitoring system via blocks stacked structure. By this way, the system will be highly flexible and could be implemented in phases to meet various requirements.
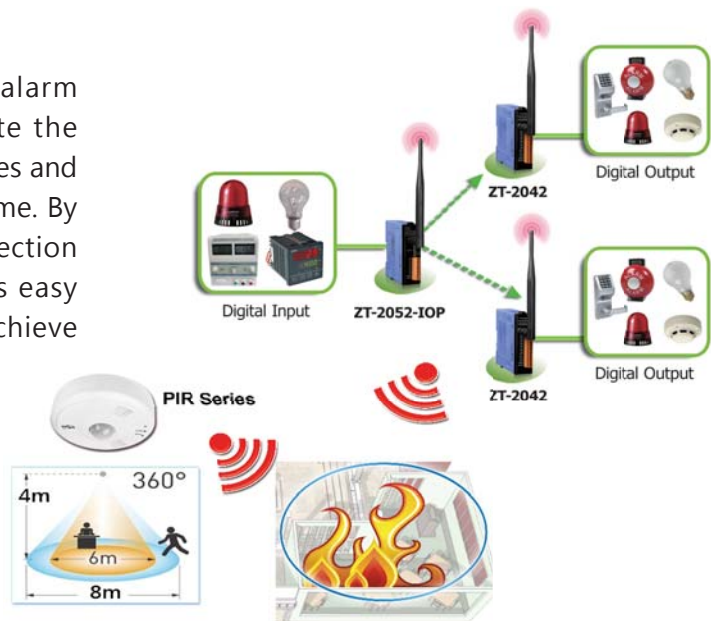

● Recommend Products:

Power Series	PMC Power Meter Concentrator	PMC-5151, PMC-5141
	PM Smart Power Meter (3 Phase)	PM-3133, PM-4324 Series
	PM Smart Power Meter (Single Phase)	PM-3112, PM-3114 Series

⛫ Fire Safety

Often a well-designed fire protection and alarm system must be able to perform and initiate the necessary actions in response to the emergencies and send notification to related personnel in real time. By using ICP DAS ZigBee wireless I/O pair-connection modules, when a fire signal is triggered, it is easy to build a fire alarm system that is able to achieve required linkage actions such as starting the exhaust equipment, turning on the escape route signs and notifying the related personnel, therefore is able to evacuate the building from the nearest exit immediately to reduce the effects of disasters.
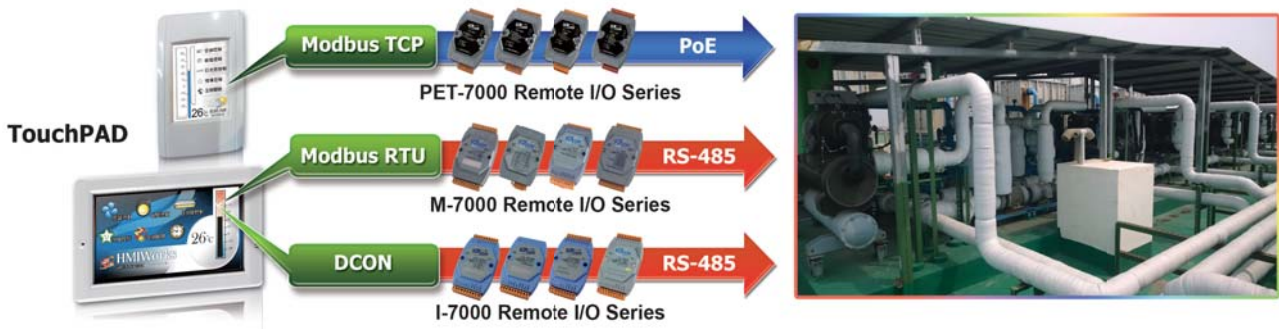

● Recommend Products:

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-2052-IOP, ZT-2060-IOP, ZT-2055-IOP ...
PIR Series	PIR Motion, Temperature Module	PIR-130

🏛 Electrical Devices

The electrical devices in a building includes: HVAC, power monitoring, lighting, water supply & wastewater disposal, fire safety and access control, etc.. Usually fire safety system may require authorized license for control operations(information monitoring is allowed), while for other electrical devices, the control and monitoring operations can be done easily after the control sequences being clarified or verified by professional technicians. With the help of remote I/O, schedule operations and linkage actions, the maintenance costs can be dramatically reduced. And by using TPD series products, the operation status of the electrical devices can be shown in graphic, and make it easy for on-site monitoring /control and trouble-shooting operations.

● Recommend Products:

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

🏛 Central Monitoring

The central monitoring/control system of ICP DAS building automation provides more than 200 commonly used protocols for communication and interfaces for data exchange. With the help of InduSoft IWS SCADA software, it 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, trigger the connected devices via interfaces (.Net components, Dynamic-link library...) to access data stored in general database (MS SQL Server, Oracle, etc.) and operations related to Web Service information exchange. The system integrators can implement projects with ease and flexibility. (InduSoft Web Studio: www.icpdas.com > product > solutions > software > InduSoft Introduction)

InduSoft Web Studio

● Recommend Products:

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

TouchPAD Series- Touch HMI Solutions
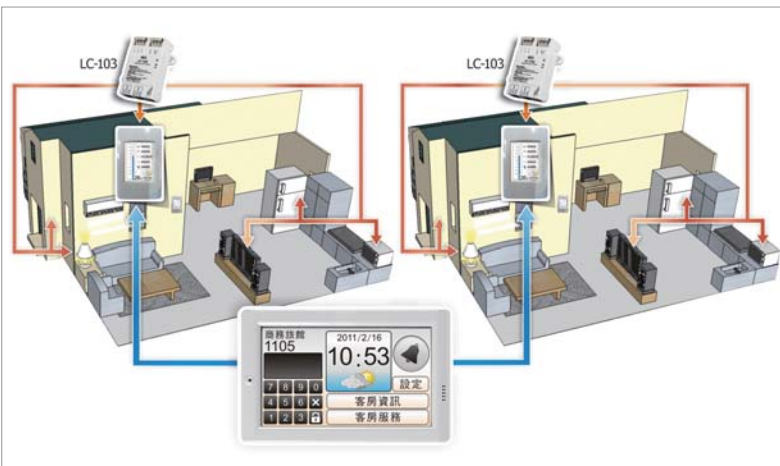

Introduction

The TouchPAD touch HMI devices of ICP DAS are designed for home/building automation applications with many features, e.g. a high-color high-resolution touch screen, RTC, and a variety of communication interfaces, including RS-232/RS-485 and Ethernet. Each is equipped with special features for the special applications, e.g. the buzzer making the life more lively for the home/building automation; the external wall box to help smoothly blend the TPD series device with existing décor; the IP-65 waterproof front panel and DIN-Rail/panel mounting of the VPD series for the building switchboard.
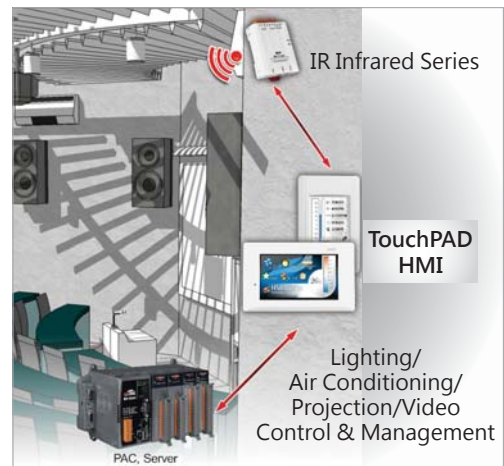

TouchPAD ≒ HMI + Ladder Diagram

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.
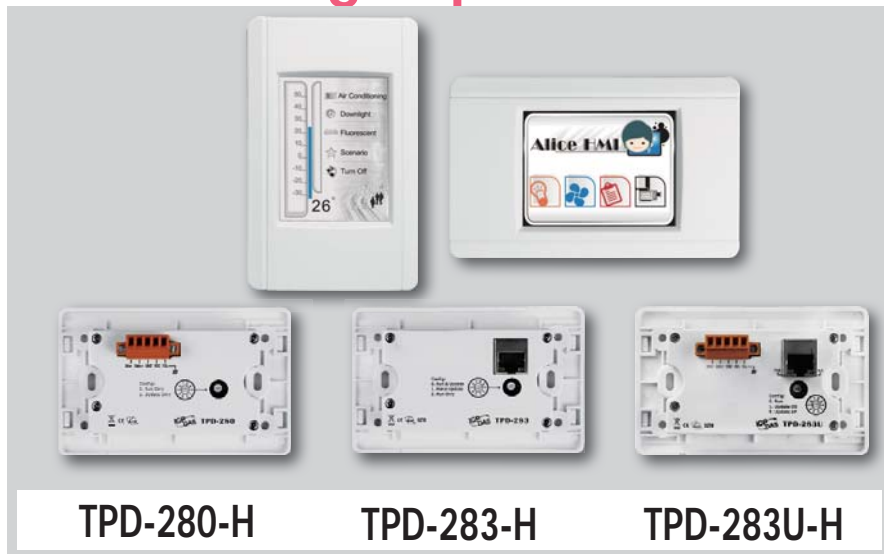
TPD Smart Building Applications
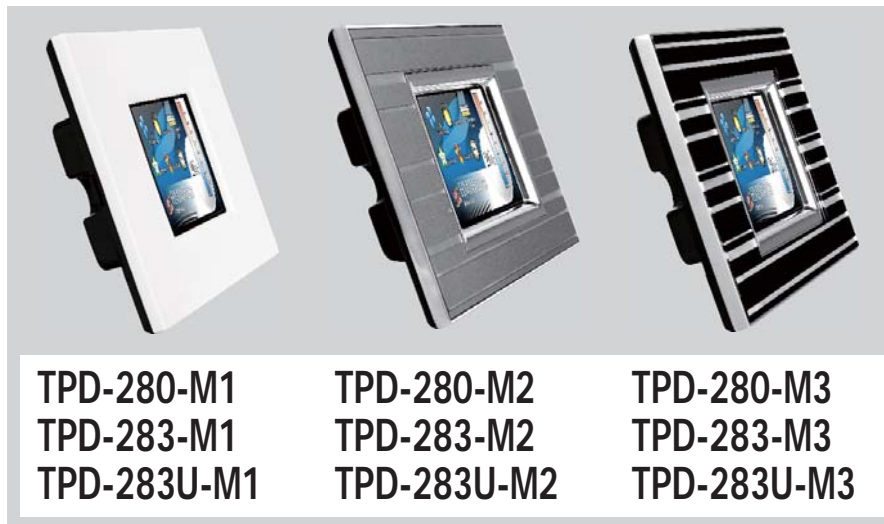
Smart Home Automation | Meeting Room Automation

IR Infrared Series

TouchPAD HMI

Lighting/Air Conditioning/Projection/Video Control & Management

TPD 2.8" High Speed Touch HMI

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

TPD Series 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
- Modbus RTU Protocol
- Modbus TCP Protocol
- DCON Protocol
- Free HMIWorks Development Tool
- Supports C Language and Ladder Designer
- Supports User-defined Third-party Protocols (C Language)
- ESD Protection: 4 kV
- Operating Temperature: 2.8" Series: -20 ~ 70° C
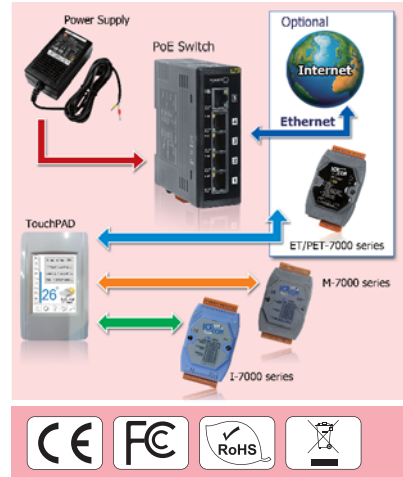
Selection Guide

TPD Model	Memory Expansion	Image Storage Capacity (1)	Communication Interface (2)	LCD	RTC	Wall Mounting	Power Input (3)
TPD-280-H TPD-280-Mx	-	4	RS-485	2.8" TFT (Resolution 240 x 320, 65536 colors)	-	H Version Support: 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 SDRAM 16 MB Flash	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 be stored on the device.
(2) Specifications for Communication Interface: RS-485 (Including Self-Tuner), Ethernet (10/100 Mbps)
(3) Specifications for Power Input: PoE (Power over Ethernet, IEEE 802.3af, Class 1, 48 V)

Ordering Information

TPD-280-H CR TPD-280-M1 CR TPD-280-M2 CR TPD-280-M3 CR	2.8" High Speed Touch HMI Device with RS-485 (RoHS) Mx: Front Casing Style
TPD-283-H CR TPD-283-M1 CR TPD-283-M2 CR TPD-283-M3 CR	2.8" High Speed Touch HMI Device with Ethernet, PoE (RoHS) Mx: Front Casing Style

TPD-283U-H CR TPD-283U-M1 CR TPD-283U-M2 CR TPD-283U-M3 CR	2.8" High Speed Touch HMI Device with Ethernet, RS-485, RTC, PoE, USB download (RoHS) Mx: Front Casing Style

TPD 4.3" Touch HMI

TPD-430   TPD-430-EU   TPD-432F

TPD-433   TPD-433-EU   TPD-433F

TPD 7" Touch HMI

TPD-703   TPD-703-64

TPD Series Features

- Excellent Cost/Performance Ratio
- High-color, High-resolution Touch Screen
- PoE (Power over Ethernet)
- RS-485 (Including Self-Tuner)
- RTC (Real Time Clock)
- Built-in Buzzer
- GUI Design
- Modbus RTU Protocol
- Modbus TCP Protocol
- DCON Protocol
- Free HMIWorks Development Tool
- Supports C Language and Ladder Designer
- Supports User-defined Third-party Protocols (C Language)
- ESD Protection: 4 kV
- Operating Temperature:
  4.3" Series: -20 ~ +50° C
  7.0" Series: -10 ~ +60° C

Selection Guide

TPD Model	Memory Expansion	Image Storage Capacity (1)	Communication Interface (1)	LCD	RTC	Wall Mounting	Power Input (2)
TPD-430(-EU)	16 MB SDRAM 8 MB Flash	32	RS-485	4.3" TFT (Resolution 480 x 272, 65536 colors)	Yes	F Ver.: OB140F, OB140FP EU Ver.: European 86 x 86 mm Others: United States (OB120)	+10 ~ 30 V$_{DC}$
TPD-432F			RS-485 x 2				
TPD-433(-EU)			RS-485, Ethernet				+10 ~ 30 V$_{DC}$ or PoE (48 V)
TPD-433F			RS-485/RS-232 Ethernet				
TPD-703	16 MB SDRAM 16 MB Flash	18	RS-485/RS-232 Ethernet	7" TFT (Resolution 800 × 480, 65536 colors)		Outlet Box: OB170 External Wall Box: EWB-T70	+12 ~ 48 V$_{DC}$ or PoE (48 V)
TPD-703-64	64 MB SDRAM 64 MB Flash	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 be stored on the device.
(2) Specifications for Communication Interface: RS-485 (Including Self-Tuner), RS-232 (3-pin), Ethernet (10/100 Mbps)
(3) Specifications for Power Input: PoE (Power over Ethernet, IEEE 802.3af, Class 1, 48 V)

Ordering Information

TPD-430 CR	4.3" Touch HMI Device with RS-485, USB, RTC, Suitable for the United States OB120 Outlet Box (RoHS)
TPD-430-EU CR	4.3" Touch HMI Device with RS-485, USB, RTC, Suitable for the European 86 x 86 mm Outlet Box (RoHS)
TPD-432F CR	4.3" Touch HMI Device with RS-485 x 2, USB, RTC (RoHS)
TPD-433 CR	4.3" Touch HMI Device with Ethernet, RS-485, USB, RTC, PoE, Suitable for the United States OB120 Outlet Box (RoHS)
TPD-433-EU CR	4.3" Touch HMI Device with Ethernet, RS-485, USB, RTC, PoE, Suitable for the European 86 x 86 mm Outlet Box (RoHS)
TPD-433F CR	4.3" Touch HMI Device with Ethernet, RS-485, RS-232, USB, RTC, PoE (RoHS)
TPD-703 CR	7" Touch HMI device with Ethernet, RS-485, RS-232, RTC, PoE (RoHS)
TPD-703-64 CR	7" Touch HMI device with Ethernet, RS-485, RS-232, RTC, PoE, large Memory Expansion (RoHS)

VPD 3.5" Touch HMI

**VPD-130
VPD-130N**

**VPD-132
VPD-132N**

**VPD-133
VPD-133N**

VPD 4.3" Touch HMI

VPD-142/VPD-142N

VPD-143/VPD-143N

VPD Series Features

- ■ Excellent Cost/Performance Ratio
- ■ High-color, High-resolution Touch Screen
- ■ RTC (Real Time Clock)
- ■ Serial/Ethernet Communication Ports
- ■ Rubber Keypad:
  3.5": VPD-130/VPD-132/VPD-133
  4.3": VPD-142/VPD-143
- ■ GUI Design
- ■ Free HMIWorks Development Tool
- ■ Supports C Language and Ladder Designer
- ■ Modbus RTU Protocol
- ■ Modbus TCP Protocol
- ■ DCON Protocol
- ■ Supports User-defined Third-party Protocols (C Language)
- ■ ESD Protection: 4 kV
- ■ Front Panel: IP65 Waterproof
- ■ I/O Expansion Board: XV-board
- ■ Operating Temperature: -20 to +50° C

Selection Guide

VPD Model	Memory Expansion	Image Storage Capacity (1)	COM Port (2)	Ethernet (2)	LCD	RTC	I/O Expansion Board	Rubber Keypad	Ingress Protection	Power Input (3)
VPD-130(N)	16 MB SDRAM/ 8 MB Flash	54	RS-232 RS-485	-	3.5" TFT (320 x 240, 65536 Colors)	Yes	-	Yes, except the N Model	Front Panel: IP65	+12 ~ 48 V$_{DC}$
VPD-132(N)			COM1: RS-485 or RS-232 COM2: RS-485	-			Yes			+12 ~ 48 V$_{DC}$
VPD-133(N)				Yes						+12 ~ 48 V$_{DC}$ or PoE (48 V)
VPD-142(N)	16 MB SDRAM/ 8 MB Flash	32	COM1: RS-485 or RS-232 COM2: RS-485 or RS-232	-	4.3" TFT (480 x 272, 65536 Colors)	Yes	Yes		Front Panel: IP65	+12 ~ 48 V$_{DC}$
VPD-143(N)				Yes						+12 ~ 48 V$_{DC}$ 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 be stored on the device.
(2) Specifications for Communication Interface: RS-485 (Including Self-Tuner), RS-232 (3-pin), Ethernet (10/100 Mbps)
(3) Specifications for Power Input: PoE (Power over Ethernet, IEEE 802.3af, Class 1, 48 V)

Ordering Information

|	
VPD-130 CR	3.5" Touch HMI Device with RS-232/RS-485, RTC, USB, Rubber Keypad (RoHS)
VPD-130N CR	3.5" Touch HMI Device with RS-232/RS-485, RTC, USB (RoHS)
VPD-132 CR	3.5" Touch HMI Device with RS-232/RS-485, RTC, USB, Rubber Keypad, Supports XV-board (RoHS)
VPD-132N CR	3.5" Touch HMI Device with RS-232/RS-485, RTC, USB, Supports XV-board (RoHS)
VPD-133 CR	3.5" Touch HMI Device with Ethernet, RS-232/RS-485, RTC, USB, Rubber Keypad, Supports XV-board (RoHS)
VPD-133N CR	3.5" Touch HMI Device with Ethernet, RS-232/RS-485, RTC, USB, Rubber Keypad, Supports XV-board (RoHS)
VPD-142 CR	4.3" Touch HMI Device with RS-232/RS-485, RTC, USB, Rubber Keypad, Supports XV-board (RoHS)
VPD-142N CR	4.3" Touch HMI Device with RS-232/RS-485, RTC, USB, Supports XV-board (RoHS)
VPD-143 CR	4.3" Touch HMI Device with Ethernet, RS-232/RS-485, RTC, USB, Rubber Keypad, Supports XV-board(RoHS)
VPD-143N CR	4.3" Touch HMI Device with Ethernet, RS-232/RS-485, RTC, USB, Supports XV-board (RoHS)

SC/LC Series - Smart Control Solutions
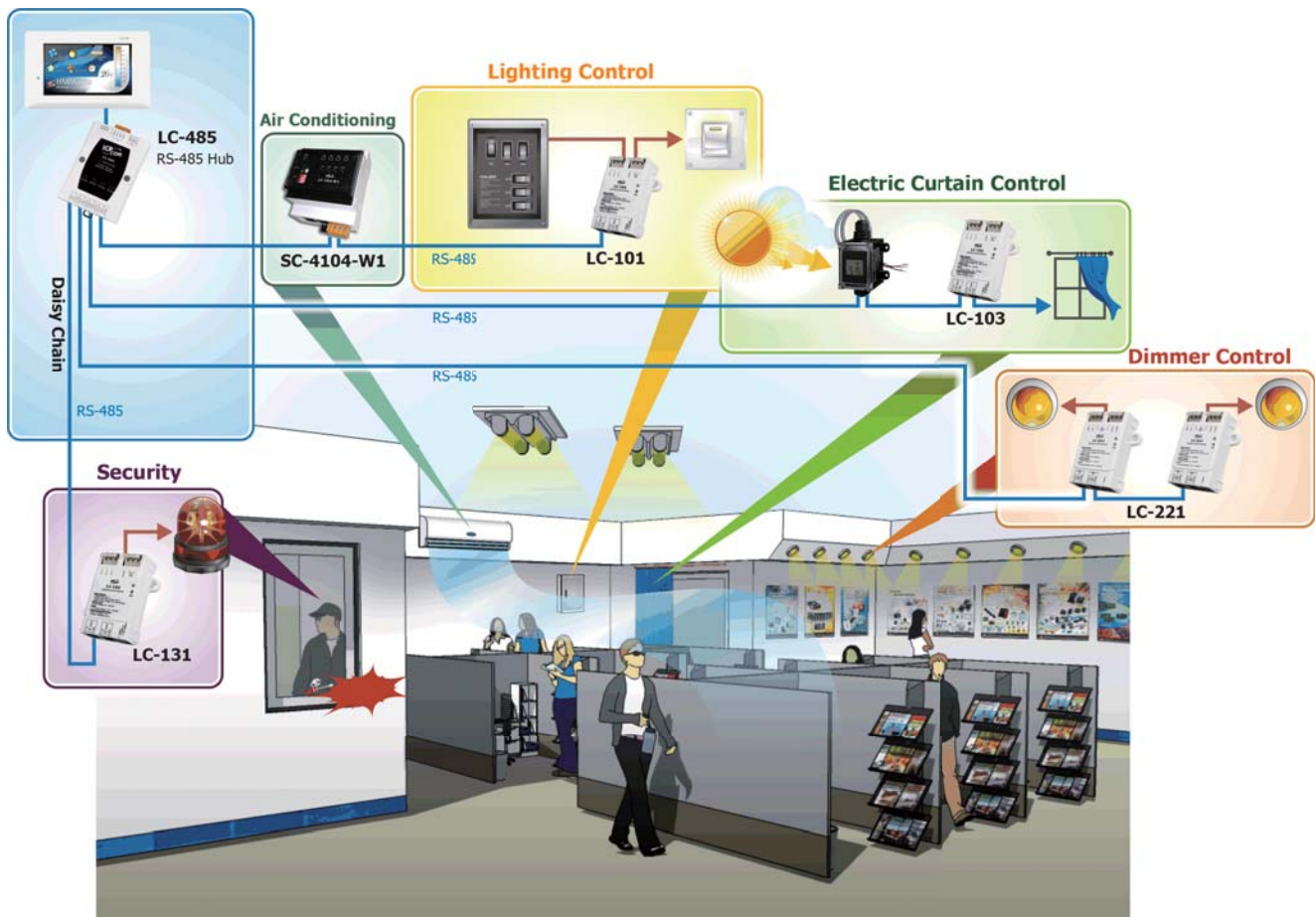
Introduction

The smart control solution products include LC and SC two series that are easy-to-use modules designed for building automation in fast wiring, installation, setup and supporting Modbus and DCON protocols. According to different demands, users can select to control directly by the digital input or via RS-485 communication. The main applications are the group lighting, dimmer scenes, electric curtains, air-condition fans of temperature & humidity, windows security and other automation controls. Combining with the Hub model and TouchPAD model of ICP DAS can easy-to-design a smart home/building automation system.

Features

▶ **Easy Installation**

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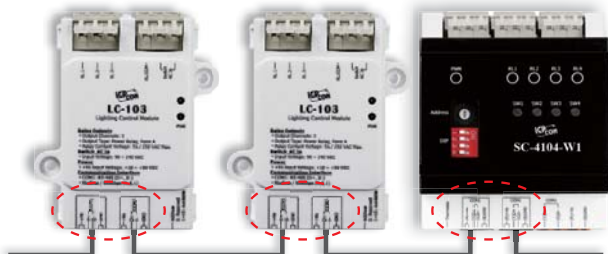
RS-485 and Power Input Daisy Chain using an RJ-11 Connector

▶ **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.

▶ **Controlled by Digital Input and Communication via the RS-485**

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.
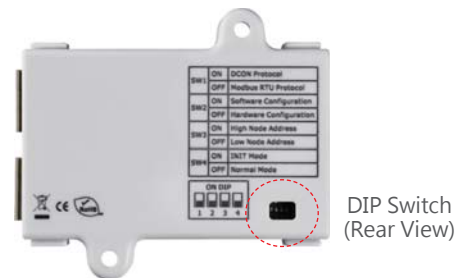
DIP Switch (Rear View)

Rotary Switch (Bottom View)

LC Series

Lighting Control Module

LC-101/LC-103
1-ch AC DI and 1/3-ch Relay DO Lighting Control Module

Dimmer Module

LC-221
1-ch Dimmer Control Module
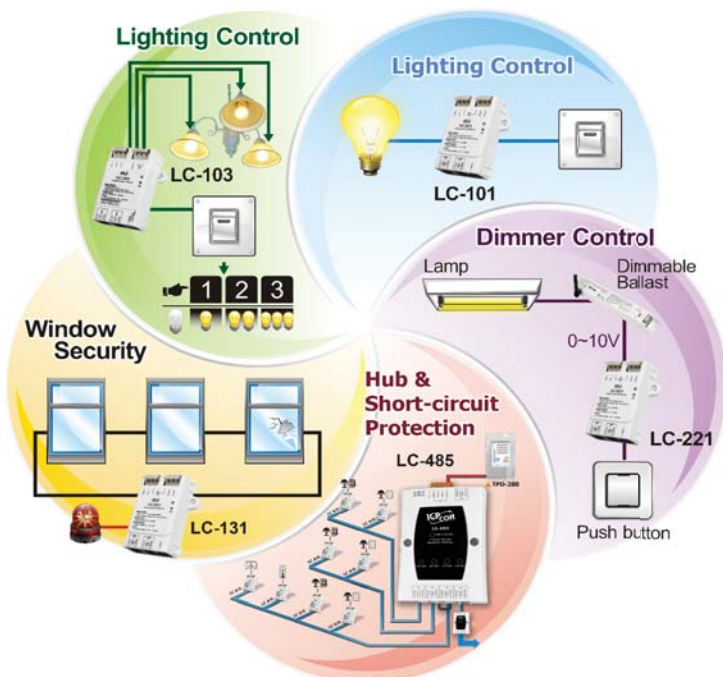
Security Module

LC-131
3-ch DI with Open/Short Circuit Detection & 1-ch Relay DO Module

RS-485 Hub Module

LC-485
4-ch RS-485 Active Hub

Features

- Cost-effective For Lighting Control
- Tiny Form-factor With Easy Screw Mounting
- Low Power Consumption
- Support Modbus and DCON Protocols
- Dual RJ-11 Connectors for Easy Wiring
- DI with Short-circuit Protection
- +/-4 kV ESD Protection
- Power Relay Output
- Isolated AC Digital Input
- LC-221 Isolated AO for Control Dimming Ballast
- LC-485 True RS-485 Star Wiring Hub with Power Supply
- LC-485 Independent RS-485 Driver for each Channel

SC Series

Multi-function Module
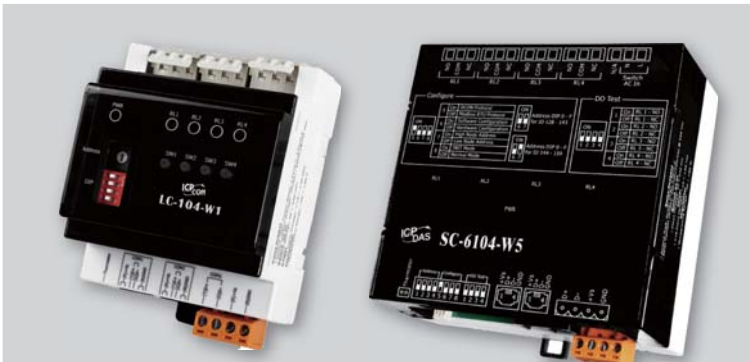
SC-4104-W1 / SC-6104-W5
FCU/Lighting Control and Temp. Sensor Multi-function Module

Features

- Cost-effective for FCU Control
- Power Relay Outputs
- Isolated AC Digital Input
- Thermistor temperature sensor
- Programmable Power-on and Safe Digital Output Value
- Support DCON and Modbus RTU Protocol
- Dual RJ-11 Connectors for Easy Wiring
- 7 Kinds DI DO coordinated functions
- -40° C ~ +80° C Temperature Detector

The **SC series** is an easy-to-use multi-function smart control module that can be used in a FCU, lighting control or temperature sensor, and no software is needed in order to control the DO channels.

The **SC series** equips 1-ch for DI (photo couple isolation) and 4-ch for relay output. The SC-4104-W1 provides 1 of the 4-ch outputs as form C type relay and the others as form A type relay, and the SC-6104-W5 provides 4-ch outputs as form C type relay; while the input channel is based on a sink-type using a wire connection. The input channel can directly control a 4-ch relay ON and OFF sequence without requiring a remote host controller. The SC series supports 7 kinds coordinated function for users select. In addition, there is 1-ch temperature sensor can detect -40℃ ~ +80℃ and it can be read by DCON and Modbus RTU communication protocol to control small fan control unit.

Warning: Do not use the SC series to connect to any device where the loading is greater than 160 W (1.4 A, 110 V) per channel for SC-4104-W1, and 550 W (5 A, 110 V) per channel for SC-6104-W5.

Ordering Information

SC-4104-W1 CR	1-channel AC Digital Input and 4-channel Relay Output Lighting Control Module (ROHS)
SC-6104-W5 CR	1-channel AC Digital Input and 4-channel Relay Output Lighting Control Module (ROHS)
LC-101 CR	1-channel AC Digital Input and 1-channel Relay Output Lighting Control Module (screw mount) (RoHS)
LC-101/DIN CR	1-channel AC Digital Input and 1-channel Relay Output Lighting Control Module (DIN Rail mount) (RoHS)
LC-103 CR	1-channel AC Digital Input and 3-channel Relay Output Lighting Control Module (RoHS)
LC-221 CR	1-channel Dimmer Control Module (RoHS)
LC-131 CR	3-channel Digital Input Module with Open/Short Detection and 1-channel Relay Output (RoHS)
LC-485 CR	4 Channels RS-485 Active Hub (RoHS)

DDC Series - Smart HVAC Solution

DDC Controller
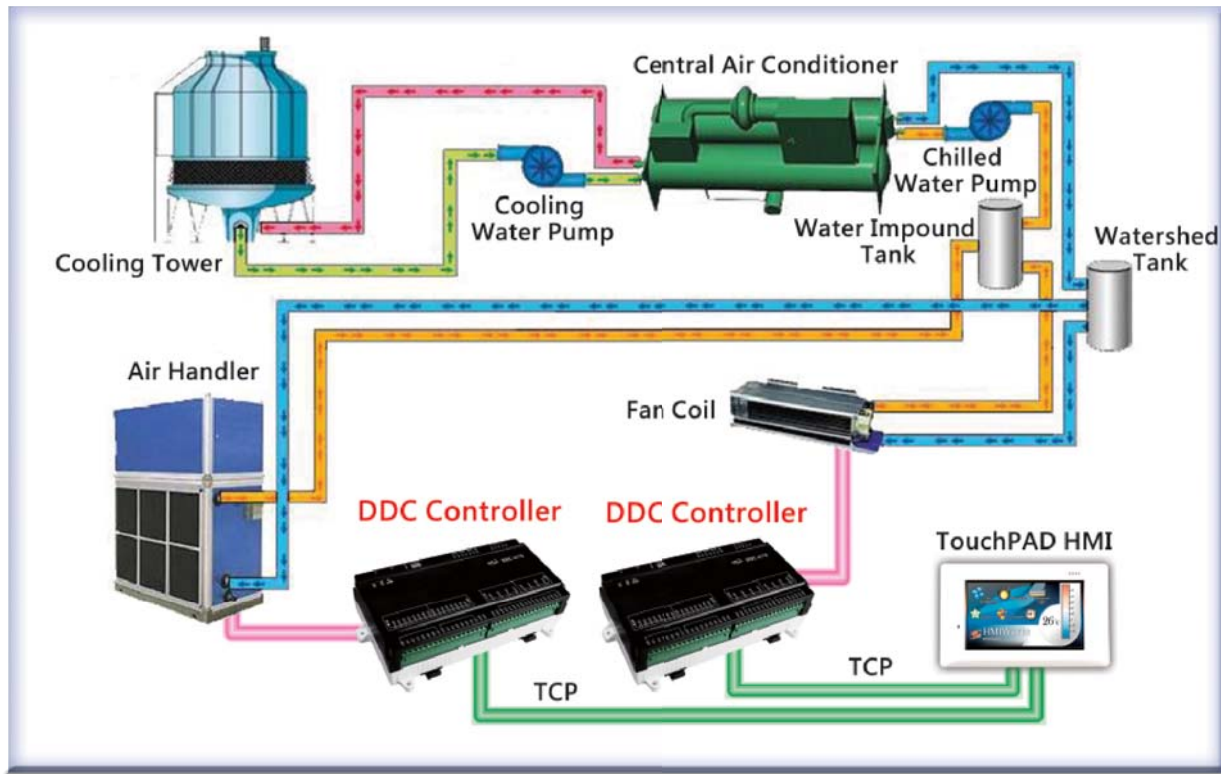
DDC-6170/DDC-6270-BNET
ISaGRAF based / BACnet/IP based DDC Controller

🄵 Features

- DDC-6170 built-in ISaGRAF Ver.3 SoftLogic
- DDC-6170 support IEC 61131-3 PLC Languages
- DDC-6270-BNET built-in DDC Editor SoftLogic (VB-like)
- DDC-6270-BNET support BACnet/IP (B-ASC, BACnet)
- Non-volatile Program Memory Device - Flash Memory
- Watchdog Timer (WDT) to increase System Stability
- Dual 10/100M Ethernet Port
- RS-485 Connection to Remote I/O Devices
- Support PID / Tempreture / Humidity Control
- Independent (Standalone) Direct Digital Controller
- Wide Operating Temperature Range: -25°C to +75°C

🏠 Selection Guide

DDC Model	CPU	Memory Expansion	I/O Expansion Bus	UI	UO	DI	DO	Ethernet	RS-485	Protocol
DDC-6170	80186 80M Hz	512 KB SRAM 512 KB Flash 512 KB MRAM	Yes	8	4	8	4	2 x 10/100 Base-TX	3	Modbus RTU Modbus TCP
DDC-6270-BNET	ARM Cortex-A8 720M Hz	512 MB DDR 256 MB Flash 512 KB MRAM								Modbus RTU BACnet/IP

🏠 Ordering Information

DDC-6170 CR	24-ch DDC Controller (Includes 8-ch Universal Input, 4-ch Universal Output, 8-ch Digital Input and 4-ch Digital Output) (RoHS)
DDC-6270-BNET CR	24-ch BACnet/IP DDC Controller (Includes 8-ch Universal Input, 4-ch Universal Output, 8-ch Digital Input and 4-ch Digital Output) (RoHS)

Wi-Fi Series - Wireless Solutions

Introduction

WLAN (Wireless Local Area Network) links devices using wireless distribution method (spread-spectrum or OFDM radio), and generally providing a connection through an access point to the Internet. WLAN gives users the mobility to move device around within a local coverage area and still be connected to the network. High-bandwidth allocation for wireless will make possible a relatively low-cost wiring.

Software Utility Features

WF-2000 I/O Utility provides a easy data monitoring way which allows to test all ICP DAS Wi-Fi I/O modules without programming, and provides real-time data collection capabilities:

- Auto-searching function
- Wi-Fi configuration setting
- Module pair connection setting
- DO power on / safe value setting

Application

Wi-Fi I/O Module

WF-2017 WF-2042 WF-2055   WF-2019
WF-2026 WF-2051 WF-2060

Features

- Compatible with IEEE 802.11b/g standards
- Support infrastructure and ad hoc modes for wireless networks
- Support Sink/Source type DI, Sink type DO
- Support Relay output, differential/single-ended AI
- Supports thermocouple devices with J, K, T, E, R, S, B, N, C types
- Support WEP, WPA and WPA2 wireless encryption
- Support Modbus/TCP and UDP protocols
- Support DHCP network configuration
- Built-in Watchdog
- Wide Operating Temperature Range
- 4 kV ESD Protection

Ordering Information

| WF-2017 CR	Wi-Fi I/O Module with 8-ch Differential/16-ch Single-Ended Analog Input (RoHS)
WF-2019/S CR	Wi-Fi I/O Module with 10-ch Universal Analog Input (with DB-1820 Daughter Board) (RoHS)
WF-2026 CR	Wi-Fi I/O Module with 5-ch AI, 2-ch AO, 2-ch DI and 3-ch DO (RoHS)
WF-2042 CR	Wi-Fi I/O Module with 16-ch Isolated Digital Output (RoHS)
WF-2051 CR	Wi-Fi I/O Module with 16-ch Isolated Digital Input (RoHS)
WF-2055 CR	Wi-Fi I/O Module with 8-ch Isolated DI and 8-ch Sink Type Isolated DO (RoHS)
WF-2060 CR	Wi-Fi I/O Module with 6-ch Isolated DI and 6-ch Relay Output (RoHS)

IR Series - Wireless Solutions
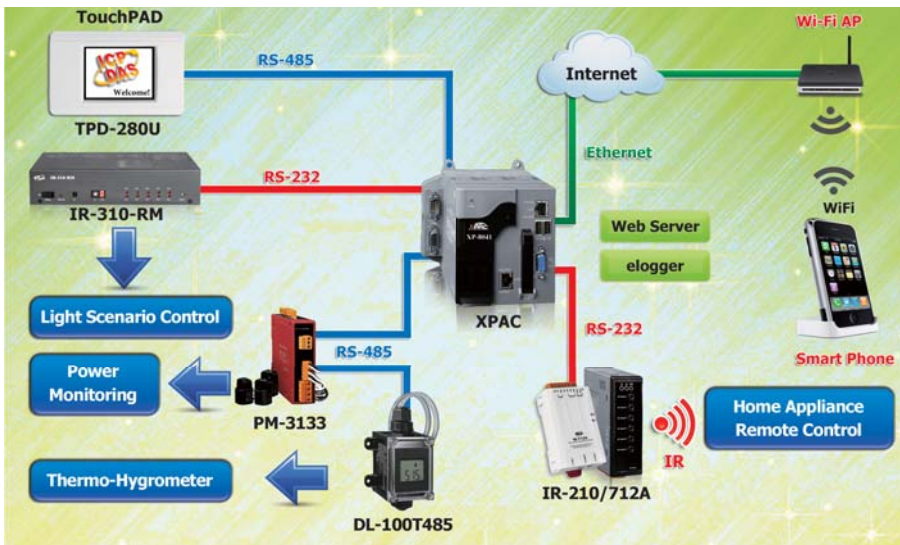
Introduction

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 will help users to control and integrate these IR devices into a control system. Therefore, by integrating the PAC and others a series of ICP DAS, users can easily establish the home/building automation system.

IR Learning Remote Module

IR-210   IR-712A   IR-712-MTCP
Universal IR Learning Remote Module
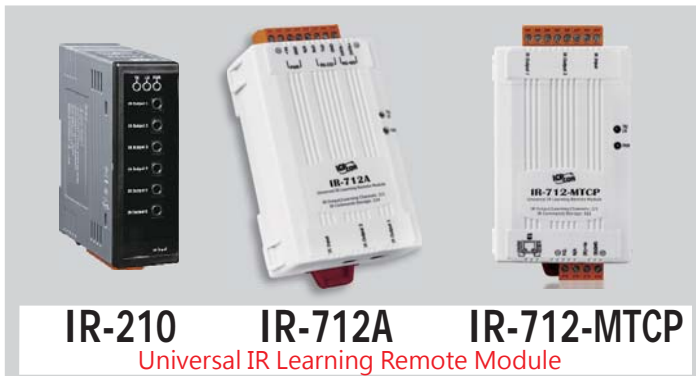
Features

- IR output channels: IR-210: 6; IR-712A/IR-712-MTCP: 2
- 1 IR learning input
- Supports 6 learning IR carrier frequencies
- Can learn and store IR commands:
  IR-210/IR-712A: 224 ; IR-712-MTCP: 512
- Communication Interface:
  IR-210/712A: RS-232/485, Modbus RTU (FC6/FC16)
  IR-712-MTCP: Ethernet, Modbus TCP/UDP (FC6/FC16)
- Provide transmitting/learning/power indication LEDs
- Built-in Watchdog, RoHS Compliance

IR Controlled Power Relay Module

IR-310-RM
IR Controlled 10-ch High Power Relay Module

Features

- 10 channels high power relays: 10A x 4, 5A x 6
- Supports IR commands (custom:64, built-in:32) for relay control
- NO & NC terminals for each channel
- Protection circuit for each channel
- Sequential relay control
- Supports maximum 5 sets of interlocked relay pairs
- Power-on values and power failure memory
- RS-232 and RS-485 serial interface
- Supports Modbus/RTU protocol (Slave)

Ordering Information

|	
IR-210 CR	Universal IR Learning Remote Module (6 IR outputs), including two CA-IR-SH2251 (RoHS)
IR-210-5 CR	Universal IR Learning Remote Module (6 IR outputs), including two CA-IR-SH2251-5 (RoHS)
IR-712A CR	Universal IR Learning Remote Module (2 IR outputs, 224 IR Cmds), with 2 CA-IR-SH2251 & 1 CA-0910 (RoHS)
IR-712A-5 CR	Universal IR Learning Remote Module (2 IR outputs, 224 IR Cmds), with 2 CA-IR-SH2251-5 & 1 CA-0910 (RoHS)
IR-712-MTCP CR	Universal IR Learning Remote Module (MBTCP, 2 IR outputs, 512 IR Cmds) with 2 CA-IR-SH2251 (RoHS)
IR-712-MTCP-5 CR	Universal IR Learning Remote Module (MBTCP, 2 IR outputs, 512 IR Cmd) with 2 CA-IR-SH2251-5 (RoHS)
IR-310-RM CR	IR Controlled 10-channel High Power Relay Module (RoHS)

ZigBee Series - Wireless Solutions

Introduction

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, embedded sensing, medical data collection, smoke and intruder warning, building automation and home automation, etc.

ZT-2000 series products are specification for a suite of high level communication protocols using small, low-power digital radios module, which are fitted the ZigBee 2007 (ZigBee Pro) of ZigBee Alliance. In the ZigBee network, it is only allowed one ZigBee Host and called "ZigBee Coordinator", such as ZT-2550, ZT-2570, and ZT-USBC, are used to initialize and manager the routing. In addition, One ZigBee network are able to manager 255 ZigBee routers and responsible for receiving or bypassing data from parent or child nodes.

Application
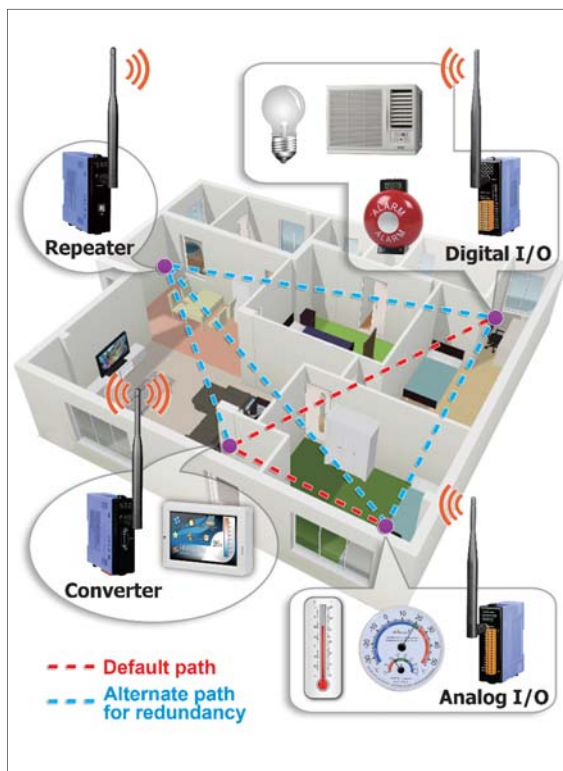
Ordering Information

ZT-2000 ZigBee Wireless Series for BA & HA	
ZigBee Wireless Converter	
ZT-2550 ZT-2551	RS-232/RS-485 to ZigBee Converter (Coordinator) RS-232/RS-485 to ZigBee Converter (Router)
ZT-2570 ZT-2571	Ethernet/RS-232/485 to ZigBee Converter (Coordinator) Ethernet/RS-232/485 to ZigBee Converter (Router)
ZT-USBC ZT-CHK	USB to ZigBee Converter (Coordinator/Router) USB ZigBee Sniffer
ZigBee Wireless I/O Module	
ZT-2042	4-ch PhotoMOS Relay Output and 4-ch Open Collector Output Module
ZT-2052	8-ch Isolated DI Module with 16-bit Counters
ZT-2053	14-ch Isolated DI Module
ZT-2055	8-ch Isolated DI and 8-ch Isolated DO Module
ZT-2060	6-ch Isolated DI and 4-ch Relay Output Module
ZT-2018	8-ch AI Module with High Voltage Protection
ZigBee Wireless I/O Pair-connection Module	
ZT-2052-IOP	Default Pair-connection to ZT-2042 (Software setting)
ZT-2055-IOP	Default Pair-connection to ZT-2055 (Software setting)
ZT-2060-IOP	Default Pair-connection to ZT-2060 (Software setting)

ZigBee Converter

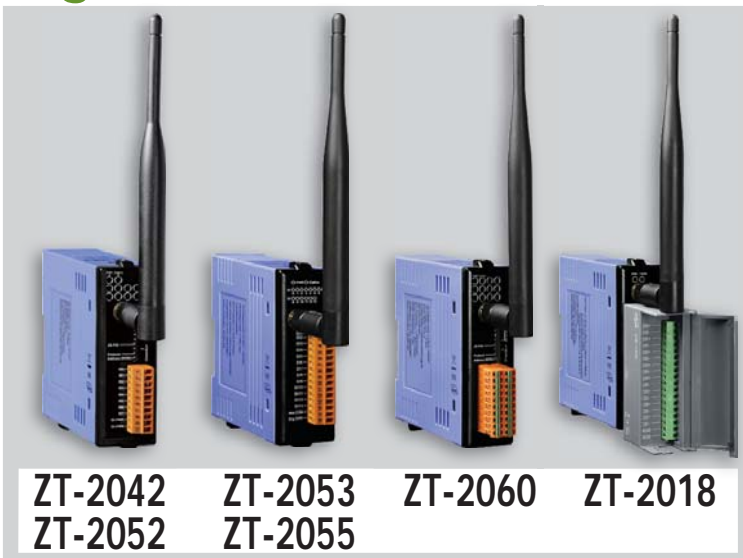| ZT-2550 | ZT-2570 | ZT-USBC |
| ZT-2551 | ZT-2571 | ZT-CHK |

Features

- Compliant with ZigBee Pro (ZigBee 2007)
- Compliant with IEEE802.15.4 Standard
- ISM 2.4 GHz Operating Frequency
- RS-232/RS-485/Ethernet Interface Supported
- Wireless Transmission Range up to 700 m
- Support Addressable (P to P) and Transparent Transmission Mode (Broadcast)
- Support Modbus TCP to Modbus RTU Messages
- Support VxComm Virtual COM Communication
- GUI Configuration Software (Windows Version)
- Provide ZigBee Signal Strength LED Indicator
- Operating Temperatures, -25 ° C ~ +75 ° C
- DIN-Rail Mountable

ZigBee Wireless I/O Module

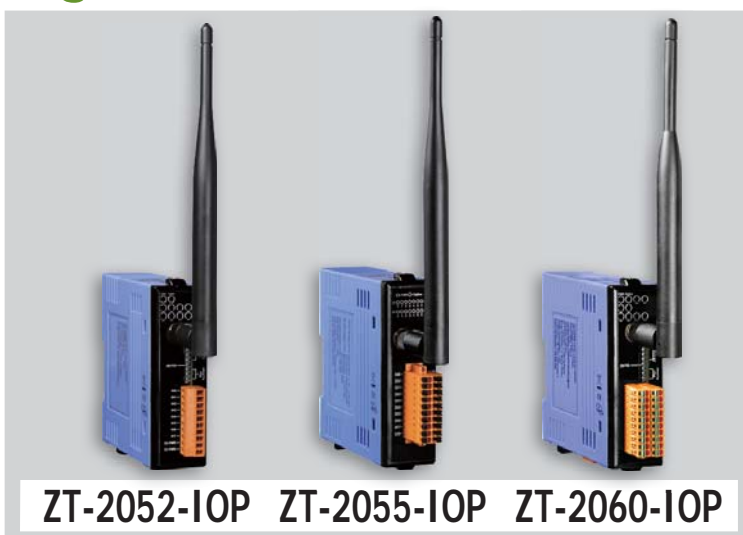| ZT-2042 | ZT-2053 | ZT-2060 | ZT-2018 |
| ZT-2052 | ZT-2055 | | |

Features

- ISM 2.4 GHz Operating Frequency
- Compliant with IEEE802.15.4 Standard
- Compliant with ZigBee Pro (ZigBee 2007)
- Wireless Transmission Range up to 700 m
- Easy Setting by Rotary and DIP Switches
- GUI Configuration Software (Windows Ver.)
- DIO Surge and ESD Protection
- AIO Overvoltage Protection up to 240 Vrms
- DIN-Rail Mountable

ZigBee Pair-connection Module

| ZT-2052-IOP | ZT-2055-IOP | ZT-2060-IOP |

Features

- Synchronizing Different Digital Channels to Different Devices
- ISM 2.4 GHz Operating Frequency
- Compliant with IEEE802.15.4 Standard
- Compliant with ZigBee Pro (ZigBee 2007)
- Wireless Transmission Range up to 700 m
- Easy Setting by Rotary and DIP Switches
- Surge and ESD Protection
- DIN-Rail Mountable

DL/PIR Series - Senser Solutions
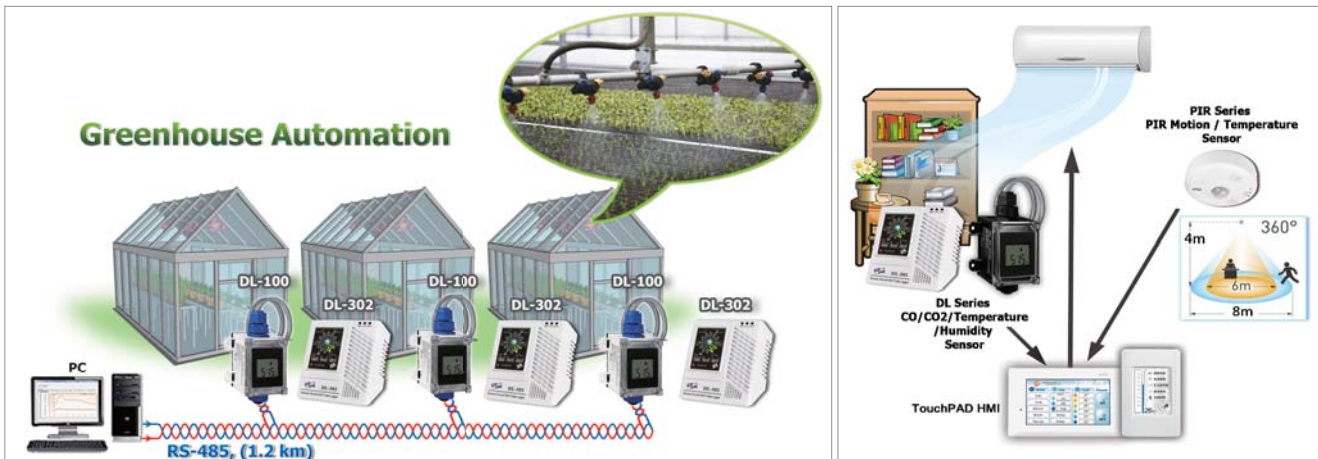
Introduction

The ICP DAS Sensor Solutions for BA & HA include DL Series (DL-100/DL-300) that is the industrial sensor and data logger for CO, CO2, temperature, humidity and dew point; and PIR Series (PIR-130) that is the PIR motion and temperature sensor module. A free Utility is included to allow configuration and display of data in a powerful chart format that can be exported to Excel. The Sensing Solution can be applied to the villa, public space, commercial space, green building, smart buildings, etc.

The **DL-100** Series is a temperature and humidity data logger module. It contains an RS-485 communication interface and an LCD display to show a variety of temperature, humidity and module ID data. The data storage memory can store up to 4088 records.

The **DL-300** Series is a data logger module designed to accurately measure CO, CO2, temperature and humidity. It contains RS-485, Ethernet and PoE communication interfaces together with a 2.8" LCD Touch Screen display that can be used to display a variety of CO, CO2, temperature, humidity and dew point data. The data storage memory can store up to 450,000 records.

The **PIR-130** module includes a 1-channel passive infrared (PIR) Sensor module and a 1-channel temperature sensor. The passive infrared sensor can detect infrared light that radiates from objects within its field of view. The PIR-130 is used for indoor motion detection, and has a range of approximately 8 meters in diameter with a 360° coverage area. It can turn on the light automatically when motion is detected. The temperature sensor can be used for measuring room temperature or fire alarm.

Ordering Information

Temperature/Humidity Sensor (DL-100 Series)	
DL-100T485 CR	DCON Protocol Based IP66 RS-485 Remote Temperature and Humidity Data Logger with LCD Display (Black Cover) (RoHS)
DL-100TM485 CR	Modbus RTU Protocol Based IP66 RS-485 Remote Temperature and Humidity Data Logger with LCD Display (Black Cover) (RoHS)
DL-100T485-W CR	DL-100T485 (White Cover) (RoHS)
DL-100T485P CR	DL-100T485 (High Accuracy)(Black Cover) (RoHS)
DL-100T485P-W CR	DL-100T485 (High Accuracy)(White Cover) (RoHS)
DL-100TM485-W CR	DL-100TM485 (White Cover) (RoHS)
DL-100TM485P CR	DL-100TM485 (High Accuracy)(Black Cover) (RoHS)
DL-100TM485P-W CR	DL-100TM485 (High Accuracy)(White Cover) (RoHS)
CO/CO2/Temperature/Humidity/Dew Point Sensor (DL-300 Series)	
DL-301 CR	Remote CO/Temperature/Humidity/Dew Point Data Logger with Safety Alarm (RoHS)
DL-302 CR	Remote CO2/Temperature/Humidity/Dew Point Data Logger with Safety Alarm (RoHS)
DL-303 CR	Remote CO/CO2/Temperature/Humidity/Dew Point Data Logger with Safety Alarm (RoHS)
PIR Motion/Temperature Sensor (PIR-130 Series)	
PIR-130-DC CR	PIR Motion Sensor and Temperature Sensor Module (10~30 V_{DC})(RoHS)
PIR-130-AC CR	PIR Motion Sensor and Temperature Sensor Module (110~220 V_{AC})(RoHS)

Temperature/Humidity Industrial Data Logger

DL-100T485
DL-100T485P
DL-100TM485
DL-100TM485P

DL-100T485-W
DL-100T485P-W
DL-100TM485-W
DL-100TM485P-W

DL-100 Series
IP66 Remote Temperature and Humidity Data Logger

Features
- Measurement Ranges: -20 ~ +60° C (-31 ~ +176° F) and 0 ~ 100% RH
- Accuracy: +/-0.4° C (±1° F) ; +/-3.0% RH
- Accuracy: +/-0.3° C (±1° F) ; +/-1.8% RH (For P-Version)
- LCD Display Shows Temperature, Humidity and Module ID
- 10 ~ 30 VDC Power Input
- IP66 Waterproof
- Data Logger Can Store Up to 4088 Records
- RS-485 Communication interface
- DCON or Modbus RTU Protocol
- Windows Software Included

CO/CO2/Temperature/Humidity/Dew Point Industrial Data Logger

DL-301
DL-302
DL-303

DL-300 Series
CO/CO2/Temperature/Humidity/Dew Point Data Logger

Features
- Simultaneous Display for CO, CO2, Temperature, Humidity and Dew Point
- NDIR Technology improves CO2 Measurement Accuracy and Stability
- CO2 Measurement Range: 0 to 9999 ppm
- CO Measurement Range: 0 to 999 ppm
- 2.8" LCD Touch Screen and RTC (Real Time Clock)
- Data Logger can store up to 450,000 Records
- RS-485/Ethernet/PoE Communication Interface
- DCON, Modbus RTU, Modbus TCP Protocols
- Relay Output for CO/CO2 Alarm Output
- Desktop, DIN-Rail or Wall Mounting
- Windows Software Included and Built-in Web Server

PIR Motion Sersor / Temperature Sensor

PIR-130-DC
PIR-130-AC

PIR-130 Series
PIR Motion and Temperature Sensor Module

Features
- 360° Motion Detection up to 4m Height & 8m Diameter Range
- 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 1500W Incandescent and 300W Fluorescent (T8) Loading Capability
- RS-485 Communication Interface
- DCON and Modbus RTU Protocols
- Ceiling Surface Mount Design

ICP DAS - Smart Building/Home Automation Solutions

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

🏠 SCADA System for Generator Management System in Taipei 101 Building

The generator management system provides protection and control functions to the generators. The SCADA system of the generator management system features user-friendly interface for users to easily perform various operations. The whole system architecture uses the same communication protocol, therefore if new functions or new hardware are going to be added to the system in the future, as long as they are using the same communication protocol, they can be added directly without modifying the current system. And the distributed modules with independent functions allow easy maintenance; when the status of hardware is sent and when any malfunction module is detected, the module can be replaced directly without affecting the operations of the whole system.

(For more detailed information, please refer to: www.icpdas.com > support > Case Study > BA & HA > SCADA System for Generator Management System in Taipei 101 Building. http://www.icpdas.com/root/support/case_study/ba_ha.php)

🏠 2 Cases – ICP DAS Smart Building/Smart Home Solutions

With decades of experiences in industrial automation, ICP DAS has been widely recognized as a leading provider of automation products with high performance and reliable quality. To meet the increasing demand, ICP DAS has developed various solutions for building automation applications. For example, in recent years in Taichung area, as several big city infrastructures such as MRT, BRT are currently under construction, accelerates the development of commercial and residential buildings. To meet the raising requirements, ICP DAS cooperated with builders to implement various building automation projects such as the **Chingjia International Center T3 Building** & **Asia-Pacific Intelligent Green Building** in Taichung area.

(For more detailed information, please refer to: www.icpdas.com > support > Case Study > BA & HA > ICP DAS-Smart Building/Smart Home Solutions. http://www.icpdas.com/root/support/case_study/ba_ha.php)

🏠 ICP DAS BA Products (SC series) Features and Applications

With the help of ICP DAS TPD HMI products and LC series products, it is easy to achieve general requirements for building automation applications. The software development tool HMIWorks provides intuitive WYSIWYG (What You See Is What You Get) operations for users to quickly implement projects without worrying tedious software development problems.

(For more detailed information, please refer to: www.icpdas.com > support > Case Study > BA & HA > ICP DAS BA Products (SC series) Features and Applications. http://www.icpdas.com/root/support/case_study/ba_ha.php)

🏠 ICP DAS' Solutions in Smart Building 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. With the advance of the electronic technology and network communication technology, a variety of embedded applications have made the smart buildings and smart home possible. The fulfillment of ideal Internet of Things world is getting closer and closer to us. ICP DAS, as a pioneer in the field of embedded control, has accumulated extended experiences from embedded industrial control to applications in all areas. Thus is able to provide total solutions for a variety of embedded applications.

(For more detailed information, please refer to: www.icpdas.com > support > Case Study > BA & HA > ICP DAS' Solutions in Smart Building and Smart Home. http://www.icpdas.com/root/support/case_study/ba_ha.php)