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ICP DAS

Products Brochure

Vol. 1701

Automation can be Easy!

Introduction

ICP DAS provides wide range of panel products, such as iPPC series, ViewPAC series, SmartView series, IWS (InduSoft) series, TouchPAD, and ViewPAD series. The iPPC series is an industrial panel PC based on WES7 (Windows Embedded Standard 7) and equipped with X86 CPU. The ViewPAC series is a panel PAC based on Windows CE and equipped with ARM CPU. The SmartView series is a kind of ViewPAC including web HMI, OPC UA and MQtt. The IWS series is an InduSoft based ViewPAC. TouchPAD and ViewPAD are control panel and equipped with ARM CPU.

PAC family with LCD

	iPPC (Industrial Panel PC)	
Model Name	**iPPC-x831-WES7**	**iPPC-x801-WES7**
Pictures		
OS	WES7 (Windows Embedded Standard 7)	
Software Development Tool	DLL for Visual Studio .NET	
CPU	E3845 (1.91 GHz, 64-bit quad core)	
LCD	10.4" ~ 17"	
I/O Expansion	I/O Slots (for I-8K, I-87K modules), RS-232/485, Ethernet	RS-232/485, Ethernet

	ViewPAC			IWS
Model Name	**VP-25W1**	**VP-4131**	**VP-x201-CE7/VP-x231-CE7**	**IWS-x201-CE7**
Pictures				
OS	WinCE 5.0		WinCE 7.0	
Software Development Tool	VS .NET 2005/2008 ISaGRAF, Win-GRAF, InduSoft			InduSoft (SCADA)
CPU	Marvell PXA270 (520 MHz)		AM3352 (720 MHz) or AM3354 (1 GHz)	
LCD	5.7"/10.4" TFT LCD with Touch Panel		7" ~ 15" TFT with Touch Panel	
I/O Expansion	I/O Slots (for I-8K, I-87K modules), RS-232/485, Ethernet			RS-232/485, Ethernet

	TouchPAD			ViewPAD	
Model Name	**TPD-703 TPD-703-64**	**TPD-43x**	**TPD-280-H TPD-283-H**	**VPD-13x VPD-13xN**	**VPD-14x VPD-14xN**
Pictures					
OS	N/A				
Software Development Tool	HMIWorks (C language, Ladder)				
CPU	32-bit RISC CPU				
LCD	7" TFT LCD with Touch Panel	4.3" TFT LCD with Touch Panel	2.8" TFT LCD with Touch Panel	3.5" TFT LCD with Touch Panel	4.3" TFT LCD with Touch Panel
I/O Expansion	RS-232/485, Ethernet or XV-Board		RS-485 or Ethernet	RS-232/485, Ethernet or XV-Board	

iPPC
Industrial Panel PC

Features

■ LCD Size: 10.4", 12.1", 15", 17" with Touch Panel	■ 3 I/O Expansion Slots (optional)
■ E3845 (1.91 GHz) CPU	■ NEMA 4/IP65 Compliant Front Panel
■ WES7 (Windows Embedded Standard 7)	■ Ultra-Rugged Construction and Reliable Design
■ Support eLogger HMI (free)	■ Operating Temperature: -10°C ~ +60°C

Introduction

The iPPC series is WES7 based Panel PC that combine computing, I/O, and operator interface into a single unit, and provide the perfect solution for integrating HMI, data acquisition and control in an individual iPPC. It is equipped with an Intel Atom E3845 CPU, three I/O expansion slots option, TFT LCD and a variety of connectives including dual Gigabit Ethernet, USB port, RS-232 and RS-485 interface. The operating system is pre-installed in the built-in mSATA SSD, and the storage can be expanded from a Compact Flash slot. Local I/O slots are available to use our I-8K and I-87K series I/O modules and remote I/O expansion is available to use our Ethernet I/O modules and RS-485 I/O modules. Designed for panel mount installation, the front panel is NEMA 4/IP65 rated and can withstand sprayed water, humidity and extreme dust. Designed to operate over a wide -10°C ~ 60°C ambient temperature range, the fanless design offers the ultimate in reliability with no moving parts.

Since WES7 has the same Win32 API as Windows 7, most popular applications on desktop can run on WES7 based Panel PC.

• Selection Guide

iPPC - X X X 1 - XX

Display	CPU Type	I/O slot	Software	OS
4: 10.4" LCD	8: E3845	0: w/o slot	1: Standard	WES7
5: 12.1" LCD		3: 3 slot	(VC, VB, C#)	
6: 15" LCD				
7: 17" LCD				

Panel PC with x86 CPU and WES7 OS

Model Name	LCD	CPU	Flash	RAM	Memory Expansion	Ethernet	I/O slot	COM port
iPPC-4801-WES7	10.4" (800 x 600)	E3845 (1.91 GHz)	32 GB	2 GB	CF	1	-	2
iPPC-5801-WES7	12.1" (800 x 600)					1		3
iPPC-6801-WES7	15" (1024 x 768)					2		3
iPPC-7801-WES7	17" (1280 x 1024)					2		3

Model Name	LCD	CPU	Flash	RAM	Memory Expansion	Ethernet	I/O slot	COM port
iPPC-6831-WES7	15" (1024 x 768)	E3845 (1.91 GHz)	32 GB	2 GB	CF	2	3	3

• Introduction

ViewPAC is an ARM-based PAC that combines a display, an I/O module and control in a single unit, and provide the perfect solution for integrating HMI, data acquisition and control in an individual PAC. Normally, HMIs and controllers operate separately.

ViewPAC | **WinPAC/iPAC + Display** | **IPC + Display** | **PLC**

• Selection Guide

VP - X X X X - XX

Display
1: 5.7" LCD
2: 7" LCD
3: 8.4" LCD
4: 10.4" LCD
5: 12.1" LCD
6: 15" LCD

CPU Type
1: PXA270
2: Cortex-A8

I/O Slot
0: w/o slot
3: 3 slot

Software
1: Standard
7: ISaGRAF
8: Win-GRAF

OS
CE: WinCE7

Standard ViewPAC

Model Name	LCD	OS	CPU	Flash	RAM	Memory Expansion	Ethernet	RS-232/ RS-485	I/O slot
VP-1231-CE7	5.7" (640 x 480)	CE7	Cortex-A8 (720 MHz)	256 MB	512 MB	microSD	1	2	3
VP-2201-CE7	7" (800 x 480)							2	-
VP-3201-CE7	8.4" (800 x 600)		Cortex-A8 (1 GHz)			SD		2	-
VP-4231-CE7	10.4" (800 x 600)							2	3
VP-4201-CE7								3	-
VP-5201-CE7	12.1" (800 x 600)							3	-
VP-6231-CE7	15" (1024 x 768)							2	3
VP-6201-CE7								3	-

Win-GRAF Based ViewPAC

Model Name	LCD	OS	CPU	Flash	SDRAM	Ethernet Port	RS-232/RS-485	I/O Slot
VP-1238-CE7	5.7" (640 x 480)	CE7	Cortex-A8 (720 MHz)	256 MB	512 MB	1	2	3
VP-2208-CE7	7" (800 x 480)						2	-
VP-3208-CE7	8.4" (800 x 600)		Cortex-A8 (1 GHz)				2	-
VP-4238-CE7	10.4" (800 x 600)						2	3
VP-4208-CE7							3	-
VP-5208-CE7	12.1" (800 x 600)						3	-
VP-6238-CE7	15" (1024 x 768)						2	3
VP-6208-CE7							3	-

Standard ViewPAC

Model Name	LCD	OS	CPU	Flash	RAM	Dual Battery Backup SRAM	Ethernet Port	RS-232/ RS-485	I/O Slot
VP-25W1	5.7" (640 x 480)	CE5	PXA270 (520 MHz)	96 MB	128 MB	microSD	1	2	3
VP-4131	10.4" (800 x 600)			128 MB					

ISaGRAF Based ViewPAC

Model Name	LCD	OS	CPU	Flash	RAM	Dual Battery Backup SRAM	Ethernet Port	RS-232/ RS-485	I/O Slot
VP-25W7	5.7" (640 x 480)	CE 5.0	PXA270, 520 MHz	96 MB	128 MB	512 KB	1	2	3
VP-4137	10.4" (800 x 600)			128 MB					

TouchPAD, ViewPAD

The Best Choice for Building/Factory/Machine/Home Automation

Introduction

ICP DAS provides two types of touch HMI devices, the TPD series and the VPD series. The TPD series is designed for home/building automation applications and the VPD series is designed for factory/machine automation applications. Both have many common features, 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 own 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 are designed for harsh environment, and are especially suitable for factories.

HMIWorks is a free development tool that can be used to design ladder diagrams for softPLC logic for TouchPAD. A single TouchPAD becomes a touch HMI device which runs ladder logics.

Features

■ Excellent C/P ratio (cost/performance)	■ Free development tool: HMIWorks
■ High-color high-resolution touch screen	■ Support the C language and Ladder Designer
■ Power over Ethernet (PoE)	■ Support user-defined third party protocol(C language)
■ RS-485 (including SelfTuner)/RS-232 (3 pins)	■ Modbus protocol enables remote control of I/O modules and integration with SCADA software
■ RTC (Real Time Clock)	
■ Buzzer	■ ESD Protection: 4 kV
■ Rubber Keypad (Option for VPD Series)	■ Waterproof Front Panel (VPD: IP65)
■ Graphical user interface designer	■ Operating temperature: -20 ~50 °C (2.8" TPD: -20 ~ 70 °C)

Selection Guide

TPD-XX X(X) - XX

XX — LCD
- 28: 2.8″
- 43: 4.3″
- 70: 7.0″

X(X) — Communication Interface
- 0: 1 x RS-485
- 2: 2 x COM ports
- 3: Ethernet and COM port
- (U): with extra Flash

XX — EU: For European
- 86 x 86 mm Outlet Box

2.8″ (Resolution: 240 x 320)

Model Name	Extra Flash	Image Storage Capacity	Ethernet	COM port	RTC	Outlet Box	External Wall Box	Power Input
TPD-280-H	-	4	-	1x RS-485	-	OB120	EWB-T28	+10 ~ 30 VDC
TPD-283-H		4	Yes	-				PoE
TPD-280U-H	16 MB	108	-	1x RS-485	Yes			+12 ~ 48 VDC
TPD-283U-H			Yes	1x RS-485				+12 ~ 48 VDC or PoE

2.8″ (Resolution: 240 x 320)

M1 M2 M3

Model Name	Extra Flash	Image Storage Capacity	Ethernet	COM port	RTC	Outlet Box	External Wall Box	Power Input
TPD-280-M1/M2/M3	-	4	-	1x RS-485	-	OB120	-	+12 ~ 48 VDC
TPD-283-M1/M2/M3		4	Yes	-	-			PoE
TPD-283U-M1/M2/M3	16 MB	108	Yes	1x RS-485	Yes			+12 ~ 48 VDC or PoE

4.3″ (Resolution: 480 x 272)

M2

Model Name	Extra Flash	Image Storage Capacity	Ethernet	COM port	RTC	Outlet Box	External Wall Box	Power Input
TPD-430	8 MB	32	-	1x RS-485	Yes	OB120	EWB-T43	+10 ~ 30 VDC
TPD-432F			-	2x RS-485		OB140F OB140FP	EWB-T43F	+10 ~ 30 VDC
TPD-433F			Yes	1x RS-232 1x RS-485				+10 ~ 30 VDC or PoE
TPD-430-EU			-	1x RS-485		-	-	+10 ~ 30 VDC
TPD-433-EU			Yes	1x RS-485				+10 ~ 30 VDC or PoE
TPD-433-M2	16 MB	64	Yes	1x RS-232 1x RS-485				+12 ~ 48 VDC or PoE

7″ (Resolution: 800 x 480)

Model Name	Extra Flash	Image Storage Capacity	Ethernet	COM port	RTC	Outlet Box	External Wall Box	Power Input
TPD-703	16 MB	18	Yes	1x RS-232 1x RS-485	Yes	OB170	EWB-T70	+12~48 VDC or PoE
TPD-703-64	64 MB	84						

Note1: Image Storage Capacity depends on the content of program and the size of images. The number is counted by how many images in full screen size can be stored on the device.

Note2: PoE (Power over Ethernet) specification: IEEE 802.3af, Class 1, 48 V

UA-5200 IIoT Communication Server

Features

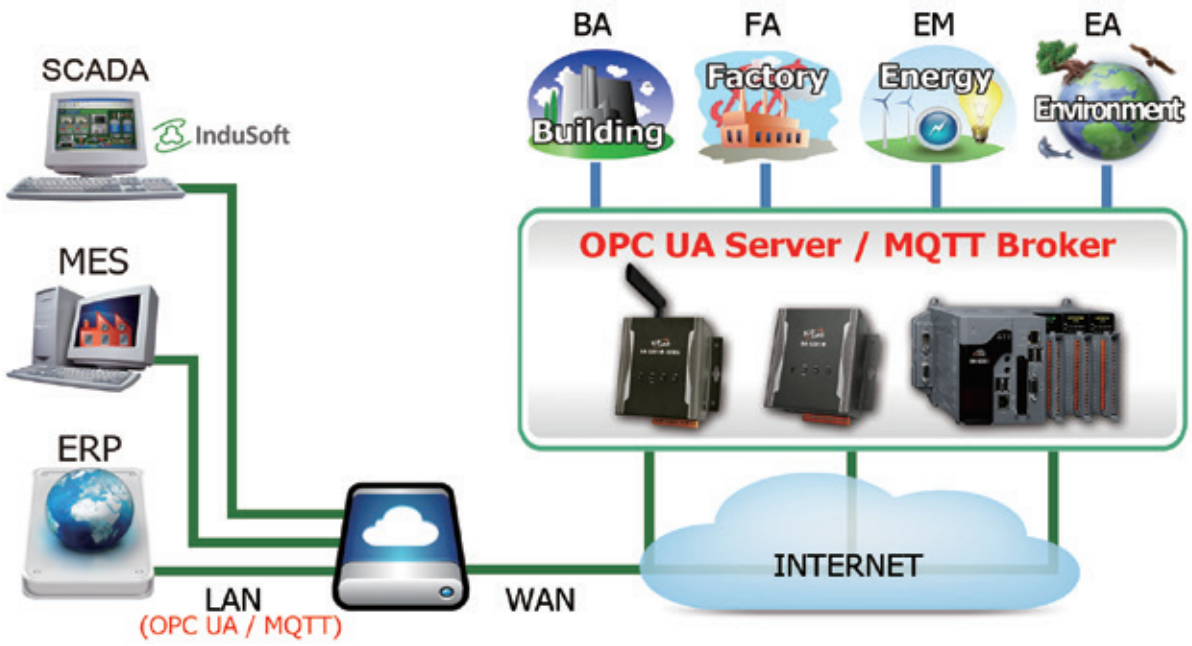
- OPC UA Server and MQTT Client Service
- MQTT Broker Inside
- AM3354, 1 GHz
- 512 MB RAM and 512 MB Flash
- Linux kernel 3.2.14 OS
- Real-Time Capability
- 64-bit Hardware Serial Number for Software Protection
- Support Redundancy and PID
- 10/100/1000 Mbit/s Ethernet Port
- 4 Serial Ports (RS-232/RS-485)
- Operating Temperature: -25 ~ +75°C

Introduction

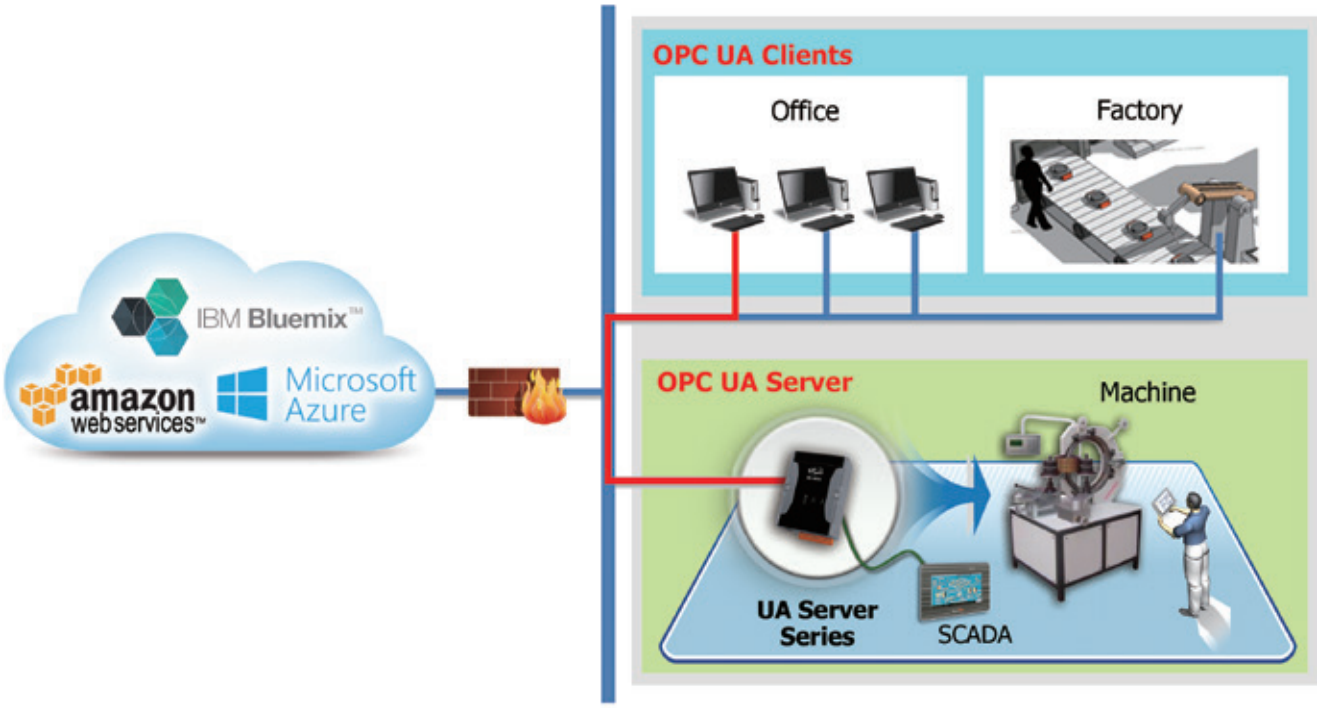
The UA-5200 is a series of data acquisition controller and also an IIoT communication server by ICP DAS (IIoT: Industrial Internet of Things). The UA-5200 built-in OPC UA Server and MQTT Client Service support a variety of common industrial communication protocols. Its RISC-based CPU architecture has the advantages of small size and low power consumption that lets this series can be placed in a small space to fit variety of rooms, equipment and case environment. In the hardware, it provides a variety of communication interfaces, such as Gigabit Ethernet, USB, RS-232 and RS-485… ports to connect diverse devices.

Applying the OPC UA, the UA-5200 can integrate the I/O products and the third-party devices, import their data to the back-end SCADA management system or the big-data analysis/decision system, to satisfy the reliability, interoperability and security needs of the Industrial 4.0 automation system. Using the MQTT active communications to bridge the Internet of Things (IoT) and transmit the statuses of various devices by the cloud-based interaction so that to meet the current trend of the IIoT and achieve the full smart automation system based on Industry 4.0.

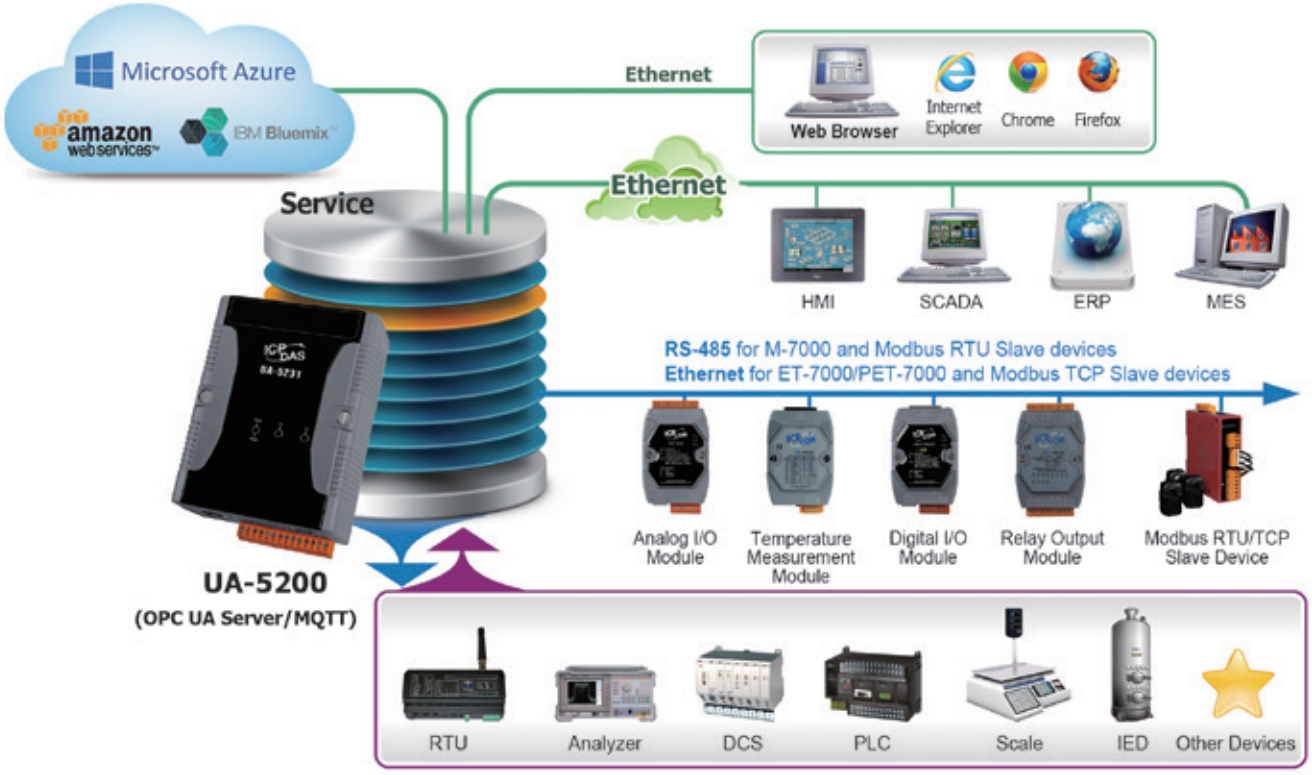
System Integration Main Architecture



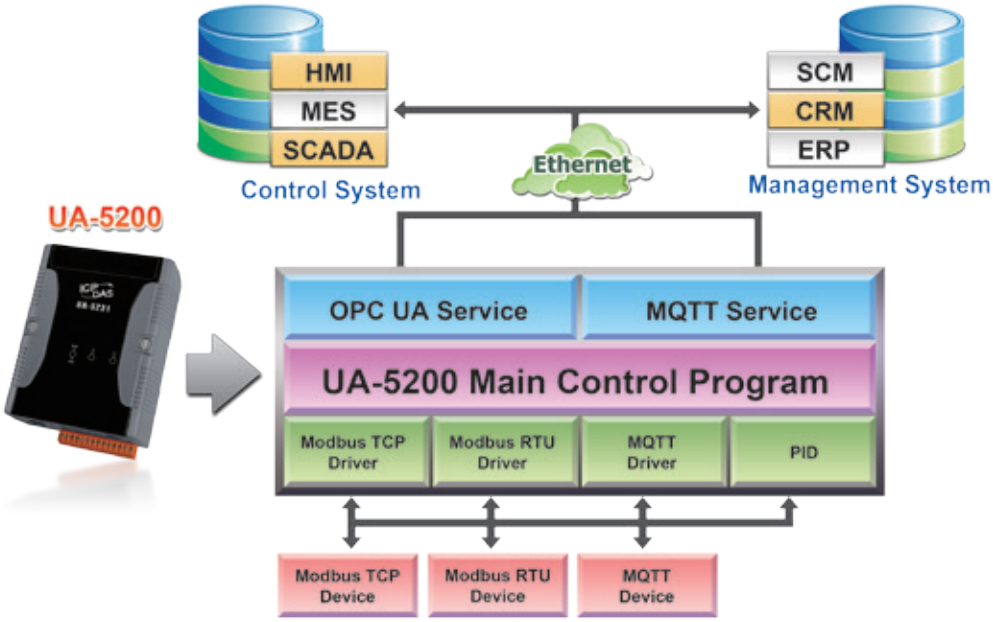
Cloud Integration Architecture



Device Integration Architecture



Functions



Web-based UI

With the Web-based User Interface, users can log in and configure the controller via a normal web browser that only need a mobile device or computer with web browsing capabilities.

OPC UA Server: IEC 62541 Standard

The OPC UA Server certified by the OPC Foundation can assist the integration for the local-end devices, actively upload data to the application system, and support to across the multiple platforms.

PID Logic Operation

The PID function can dynamically combine the remote I/O devices for the PID logic control to provide temperature control and case field solutions.

Support Modbus TCP/RTU Master

Through the controller's RS-485, RS-232 and Ethernet ports can connect to the Modbus TCP/RTU Slave devices. Build systems with scalability and flexibility to meet the diverse application needs and expansion at any time.

MQTT Broker Inside

Compliance with MQTT v3.1.1 protocol. Support MQTT message distribution management. Users do not need to build Broker system when using MQTT communications.

Support MQTT Protocol

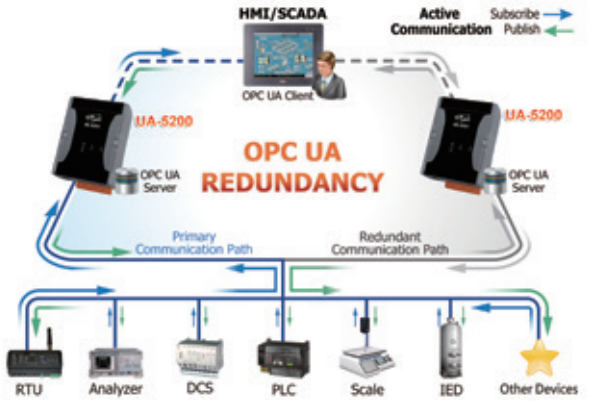
Support MQTT to allow the IoT devices communicating with the OPC UA system and the UA-5200 conducting the data acquisition and management; and also can convert and publish the devices' data under the UA-5200 to the IoT system.

UA-5200 Function Overview		
Web-based UI	Built-in Web-based User Interface	
Flexible System Configuration	Variable Table/Communication Task Dynamic Editor	
OPC UA	Compliance with IEC 62541 Standard Cross-platform Data Integration (DA/AE/HDA) Transmission Security SSL Encryption Active Transmission Support Redundancy Support Remote Function Call	
MQTT Broker Inside	Compliance with MQTT V.3.1.1 Protocol	
PID Logic Operation	Dynamic Combination of I/O Devices for PID Logic Control	
Service Up to Interact with the Host	Protocol	OPC UA Server MQTT
	Interface	Ethernet Data Transmission
Driver Down to Interact with the I/O Modules	Protocol	Modbus RTU/TCP MQTT
	Interface	RS-232/RS-485 Ethernet Data Transmission

OPC UA: New Generation Industrial Communication Standard

OPC UA is the interoperability standard based on **Industry 4.0** for security, reliable multi-vendor, multi-platform data exchange for Industrial Automation. It extends the classical OPC communication protocol, enabling data acquisition and information modeling and communication between the plant floor and the enterprise reliably and securely.

Key Features of OPC UA:

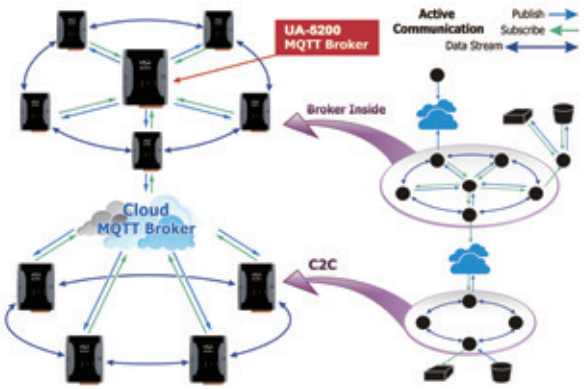


- **Platform Independent Data Communication**
  OPC UA is designed to be independent of the platform. Using SOAP/XML over HTTP, OPC UA can be deployed on Linux, Windows XP Embedded, Windows 7, and Classical Windows platforms.
- **Unified Access**
  OPC UA integrates existing OPC specifications DA, A&E, HDA, Commands, Complex data, and Object Types in one specification. This reduces system integration costs by providing a common architecture for accessing information.
- **Standardized Communication via Firewalls and Internet**
  OPC UA uses message based security which means messages can be relayed through HTTP, UA TCP port or any other single port available.
- **Reliability & Redundancy**
  OPC UA implements a configurable timeouts, error detection, and communication failure recovery. OPC UA allows redundancy between applications from different vendors to be deployed.
- **Security**
  OPC UA is Secure-by-default, encryption enabled, and uses advanced certificate handling which includes Authentication, Authorization, Confidentiality, and Integrity.

MQTT: Active M2M Transmission Mechanism

MQTT is a method of **M**achine to **M**achine (**M2M**) communication by writing and retrieving application-specific data (messages) to and from queues, without having a private, dedicated connection to link them. It simplifies and accelerates the cloud-based integration of diverse applications data between IIoT devices under assured, secure and reliable exchange of information circumstance. Using MQTT in IIoT devices not only dramatically simplifies the creation and maintenance of Industrial application but also makes connectivity for the "internet of things" and mobile devices easily, and achieve the smart automation based on **Industry 4.0**.

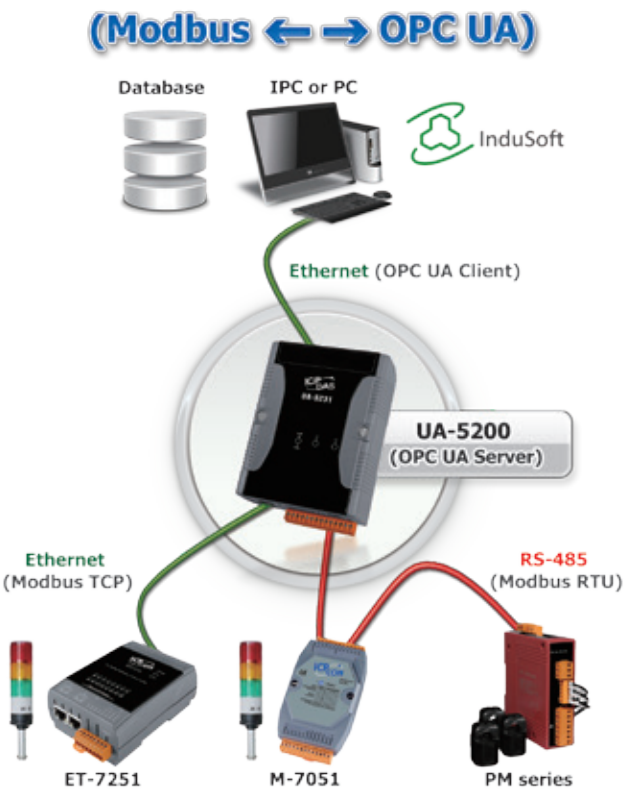
Key Features of MQTT:



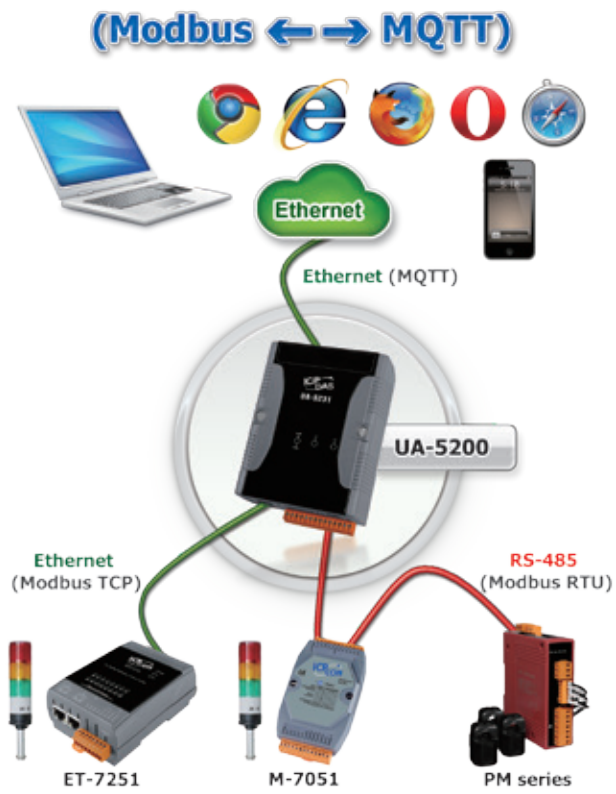
- **Rapid, Seamless Connectivity**
  Rapid, seamless connectivity of information with a single, robust and trusted messaging backbone for dynamic heterogeneous environments.
- **Secure, Reliable Message Delivery**
  Secure, reliable message delivery that preserves message integrity and minimizes risk of information loss.
- **High-performance Deployment**
  High-performance and scalable message transfer to meet the demands of today's enterprise and beyond.
- **Simplified Management and Control**
  Simplified management and control for better control and usability.
- **Cost Effective**
  Cost effective of ownership by reducing cost of integration and accelerating time to deployment.

Solutions

Solution 1



Solution 2



Solution 3

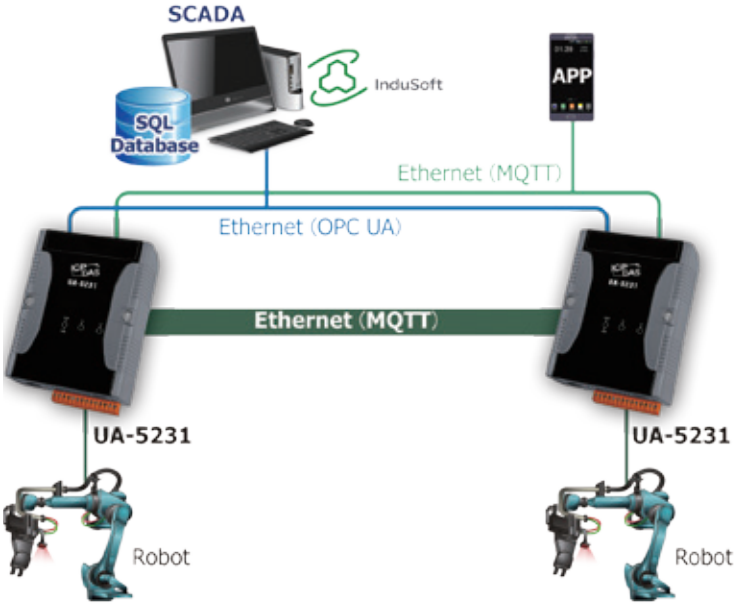
Solution 4

Applications

Robotic Arm Co-operation Application

This application allows two robotic arms interactive communication and coordinated operation through the MQTT, and do the data analysis and system monitor/control with the database of SQL, Big Data or SCADA through the OPC UA.

1. Use two UA-5231 to read/control two robotic arms.
2. The smart phone/tablet can read the data of robptic arms through MQTT.
3. Two UA-5231 read data of each other (Active Communication) through MQTT.
4. Two UA-5231 provide data to Database (SQL/ big data) or SCADA for application/analysis through OPC UA.

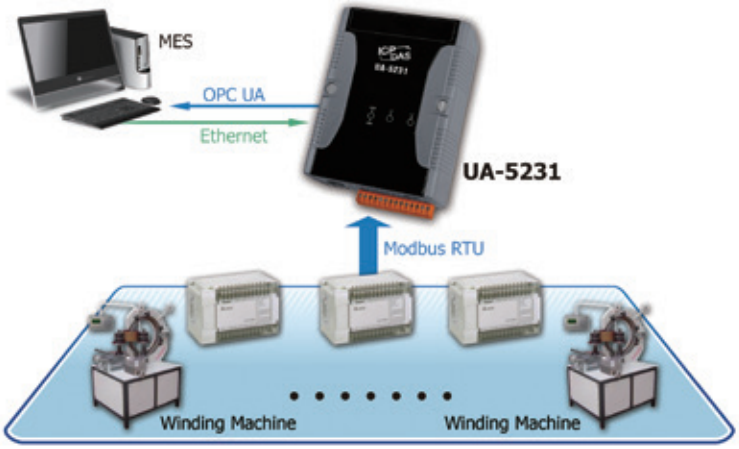


IoT Application of MES

The Manufacturing Execution System (MES) communicates the factory equipments via OPC UA Client, and the OPC UA Service of the UA-5200 series can seamlessly integrate the system and equipments.

1. The OPC UA Service of UA-5231 can perfect convergence up to the MES
2. The Modbus RTU Master Driver of UA-5231 has great ability to integrate the Modbus RTU Slave devices that happen to be the majority equipments in the market.

The MES is the main solution for today's factory system, and the UA-5200 series IIoT Communication Server is the best choice for the IIoT factory solution.



Pumping Station IoT Application

This application is mainly to manage the pumping device data from many stations. It uploads the data of all pumping stations to the control center using the UA-5231 IIoT Communication Server, and centrally manages/configurs with the IWS software.

1. Up: using UA-5231 OPC UA Service
2. Down: using UA-5231 ModbusTCP Client Driver.
3. The IWS configuration software directly supports OPC UA Client, it can easily integrate with the UA-5231 to collect data of the Modbus devices in the front end.

In this case, the UA-5231 shortens the configuring and adjusting time; without the complicated PC configuration, the UA-5231 directly connect the Modbus and OPC UA Server by clicking on the web to complete configuration easily, time-saving and efficiently.

Hardware Specifications

Model	UA-5231	UA-5231M	UA-5231M-3GWA
System Software			
OS	Linux Kernel 3.2.14		
Embedded Service	SFTP server, Web server, SSH		
CPU Module			
CPU	AM3354, 1 GHz		
DDR3 SDRAM	512 MB		
Flash	512 MB		
FRAM	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		
Dual Watchdog Timers	Yes		
LED Indicators	4 LEDs (Power, Running and 2 user defined LEDs)		
Rotary Switch	Yes (0 ~ 9)		
VGA & Communication Ports			
VGA & Communication Ports	Yes, resolution: 640 × 480, 800 × 600, 1024 × 768, 1280 x 720		
Ethernet	RJ-45 x 1; 10/100/1000 Based-TX (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		
Mechanical			
Dimensions (W x L x H)	91 mm x 132 mm x 52 mm	117 mm x 126 mm x 58 mm	
Installation	DIN-Rail Mounting		
Environmental			
Operating Temperature	-25 ~ +75°C		
Storage Temperature	-40 ~ +80°C		
Ambient Relative Humidity	10 ~ 90% RH (non-condensing)		
Power			
Input Range	+12 ~ +48 VDC		
Consumption	4.8 W		6.5 W
GSM System			
Frequency Band	-		GSM: 850/900/1800/1900 MHz
GPRS Connectivity	-		GPRS class 12/10; GPRS station class B
Data Transmission	-		Downlink transfer: Max. 85.6 kbps; Uplink transfer: Max 42.8 kbps
3G System			
Frequency Band	-		WCDMA 850/900/1900/2100 MHz
Data Transmission	-		WCDMA / HSPA+, Download: Max. 14.4 Mbps; Upload: Max 5.76 Mbps

Software Specifications

Model	UA-5200 Series
OPC UA	
OPC UA Server	• OPC Unified Architecture: 1.02 • Core Server Facet • Data Access Server Facet • Method Server Facet • Client Redundancy Facet • UA-TCP UA-SC UA Binary • User Token User Name Password & X509 Certificate • Security Policy ◦ None ◦ Basic128Rsa15 • Sign • Sign & Encrypt ◦ Basic256 • Sign • Sign & Encrypt
Modbus Master	
Modbus TCP	To read or control the devices that support standard Modbus TCP Slave protocol. Recommend to keep the maximum number of devices within 100 connections.
Modbus RTU	A max. of 3 ports: ttyO2, ttyO4, ttyO5 to connect other Modbus RTU Slave devices (e.g. M-7000). Recommend no more than 32 devices per port for better communication quality.
MQTT	
MQTT Client	Connect the MQTT Broker to read/control the devices supporting the MQTT protocol.
MQTT Service	Connect the MQTT Broker to externally read/control the devices supporting other protocols that linking with the UA-5200 series.
MQTT Broker	Compliance with MQTT v3.1.1 protocol. Support MQTT message distribution management. Recommend to keep the connection number of Client within 400.
Virtual Device	
PID Function	Combine the remote I/O devices for the PID logic control system.

Ordering Information

UA-5231 CR	**IIoT Communication Server (RoHS)**
UA-5231M CR	**IIoT Communication Server (Metal) (RoHS)**
UA-5231M-3GWA CR	**IIoT Communication Server (Metal) Support 3G Wireless Communication (RoHS)**

Option Accessories

DIN-KA52F	24 V/1.04 A, 25 W Power Supply with Din-Rail Mounting
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting

WISE-52xx

Intelligent IIoT Concentrator

Features

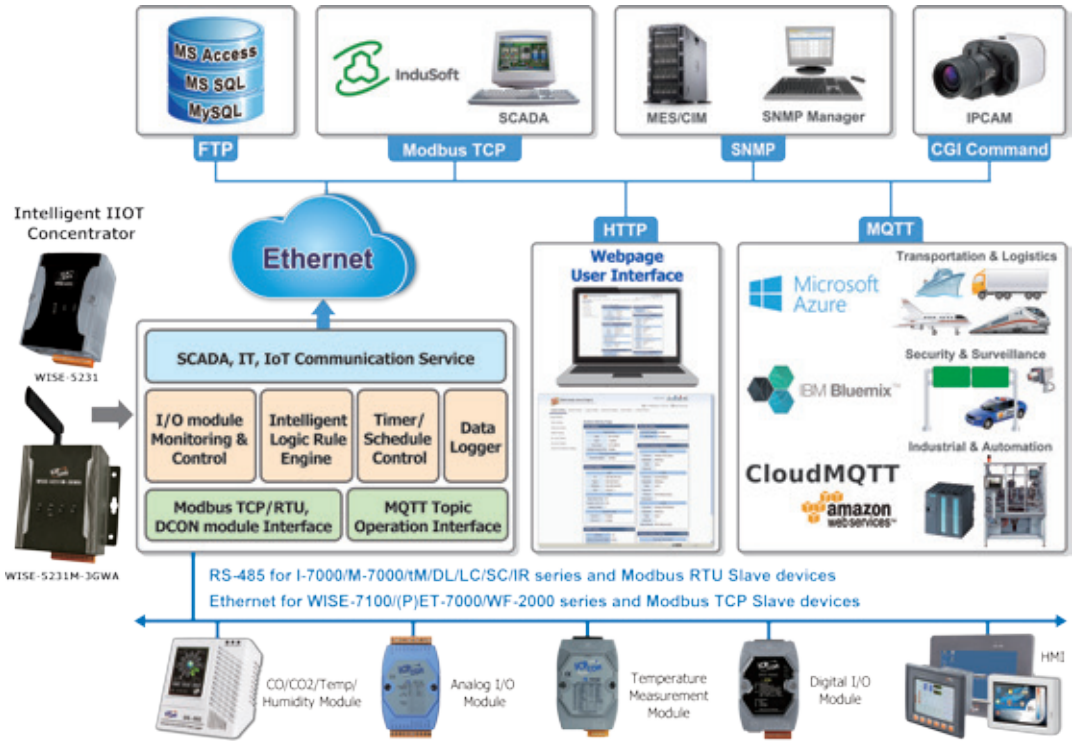
- Runs on browsers, no extra software tool is required
- No more programming, Web pages provided for control logic editing
- IF-THEN-ELSE logic rules execution ability
- Support XV-board
- Support DCON or Modbus RTU Slave devices (Up to 32)
- Support Modbus TCP Slave devices (Up to 16)
- SSL/TLS Email sending function supported
- Timer and Schedule functions supported
- Data logger and data files send back function supported
- Active I/O sending function for real-time data transfer
- Data logger and data files send back function supported and Network device
- Support Modbus TCP/RTU, SNMP, FTP and MQTT protocols
- WISE-5231M-3GWA support 3G Wireless data communication and SMS message sending/receiving

Introduction

WISE (Web Inside, Smart Engine) 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 the built-in IF-THEN-ELSE logic engine, WISE can execute the automation logic in a stable and efficient way, and it also provides mathematic operation, Schedule and Email alarm message sending functions.

WISE-5231 provides more supports in I/O module connection, I/O data logging and IoT platform integration. It allows connection to XV-board, DCON I/O modules, and Modbus TCP/RTU Slave modules all together. The wide range of selection options enables flexibility in I/O module integration to meet the requirements from various applications. WISE-5231 provides the MQTT client, it can directly connect to the major public IoT Cloud platform (such as: Microsoft Azure or IBM Bluemix) and MQTT Broker. WISE also provide well thought-out CGI command functions to integrate with IP camera for the Access Control applications. Based on the ability as I/O module connection ability, Intelligent logic control, Data logging, and various communication protocols supported (SNMP, MQTT and Modbus TCP/RTU), WISE can help the IT/MIS/MES/SCADA system to manage the field side I/O modules and sensors efficiently in the application such as Unmanned Facility Room Monitoring, Intelligent Factory and Environment Monitoring. WISE-5231 is not just a Concentrator of I/O modules and Sensors; it is also a Gateway to transfer the sensor data to IoT Cloud platform. All of these make WISE-5231 the best choice in the IoT Age.

System Architecture



Feathures

Simple, easy-to-use, no-programming-required for system development

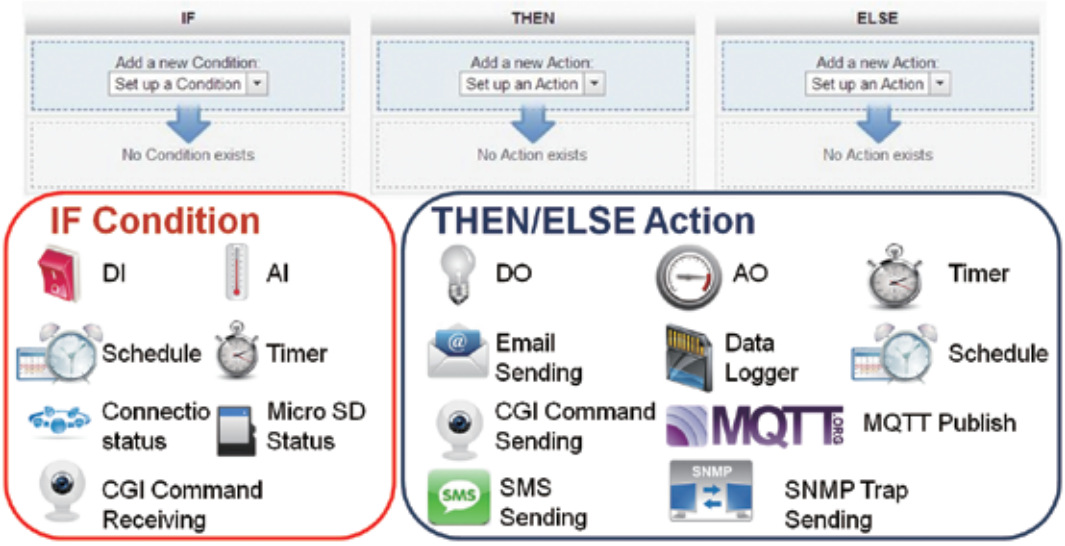
WISE provides user-friendly Web UI pages for editing control logic on the controllers. To edit control logic, it only requires a browser to connect to the Web server on WISE. No extra software tool installation is needed. WISE enables implementation of logic edition by a few clicks on the mouse to set up and deploy logic rules without writing a single line of code.

▲ WISE Web User Interface

▲ Click and get done!

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.



▲ The function overview of IF-THEN-ELSE rule engine

Connection ability to a variety of sensors and devices

WISE Controller allows to connect with sensors and devices that support Modbus TCP/RTU protocol for I/O monitoring. The ability to connect with Modbus TCP/RTU slave devices enables the flexibility and scalability for system implementation and allows to meet various requirements of the applications from the clients.

▲ Connect to a variety of sensors and devices

Real-time alarm notification via SSL Email

WISE supports SSL Email sending function for real-time message notification operation. The message sending action can be added to the logic edition as part of logic control to provide real-time message notification to the related personnel when an event occurs.

▲ SSL Email Sending function

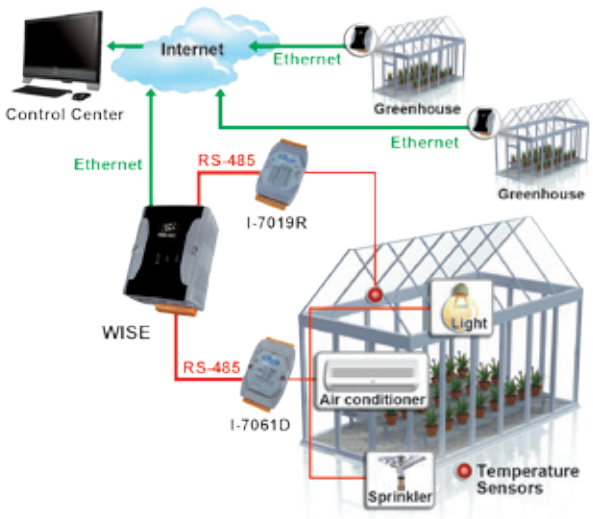
CGI Command sending & receiving for surveillance system integration

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.

▲ CGI Command Sending function

Active I/O sending mechanism

In addition to the Modbus TCP/RTU slave function that enables SCADA system to poll the I/O channel data of the WISE, now WISE provides "Active I/O sending" mechanism (Modbus TCP master, SNMP Trap and MQTT publish). Based on the "Active I/O sending", WISE allows to send the I/O channel data of the controller actively to SCADA/IT system by event trigger (change of the I/O channel data) or periodic cycle. This function will improve the efficiency of the data communication between WISE and SCADA/IT system.



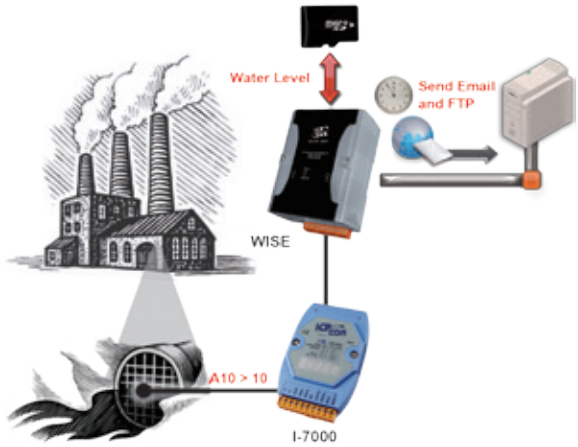
▲ Active I/O sending mechanism

Provide Timer and Schedule operation

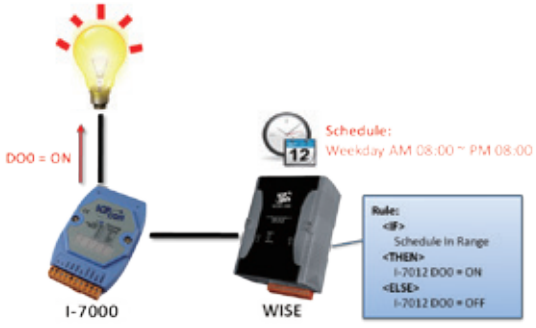
WISE features Timer and Schedule functions: It allows user to schedule specific date or time for control logic execution, or perform specific tasks such as time delay. With calendar user interface provided, Schedule setting can be more efficient and flexible.

Data Logger operation

With the microSD card, WISE provides Data Logger function to real-time record the I/O channel data of the controller and sends the data files automatically by FTP to the control center for further administration management or data analysis.



▲ Data Logger function



▲ Schedule function

Support 3G Wireless data communication, and SMS message sending/receiving (WISE-5231M-3GWA only)

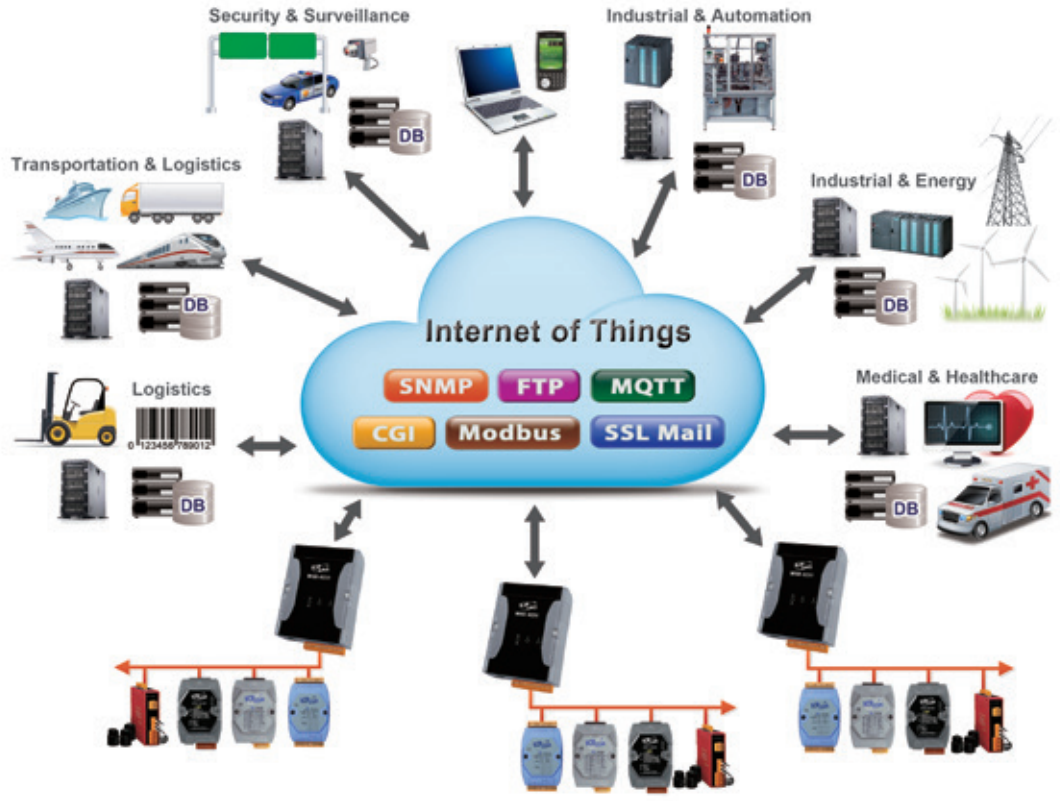
In addition to Ethernet interface, WISE-5231M-3GWA also provides 3G Wireless communication interface. It can send the real-time data of sensors and I/O modules, data logger files and Email alarm message back to the control center by 3G Wireless Network. WISE-5231M-3GWA also supports SMS message sending function for real-time message notification. The message sending action can be added to the logic edition as part of logic control to provide real-time message notification to the related personnel when an event occurs. WISE also is equipped with SMS command receiving function. It allows to receive the SMS commands sent by specific phone numbers to perform tasks such as real-time I/O channel value monitoring, I/O channel value modification and logic rules execution (triggered by SMS), etc.

▲ 3G Data Communication and SMS Message Notification

A variety of protocols supported for integration with SCADA/IT/IoT System

Industry 4.0 is based on Internet of Things (IoT) that incorporates the technological concept of communicating and exchanging information between all facilities which brought manufacturing industry to a new era. The WISE-5231 Intelligent IoT Controller developed by ICP DAS is a perfect start point to facilitate the vision of the Smart Factory.

WISE-5231 provides powerful and flexible integration with the I/O modules and sensors at the field side, and also supports various IoT protocols for seamless integration with the SCADA/MIS/MES/IT/Network Management systems to transfer the real-time I/O information from the front-end modules (or sensors) to the back-end management systems. It also features reliable real-time I/O logic control and data logger functions. All of these features make WISE-5231 a perfect concentrator of sensor and I/O modules in the IoT age.



▲ A variety of protocols supported for SCADA/IT/IoT System

IoTstar: IoT Cloud Management Software (Available Soon)

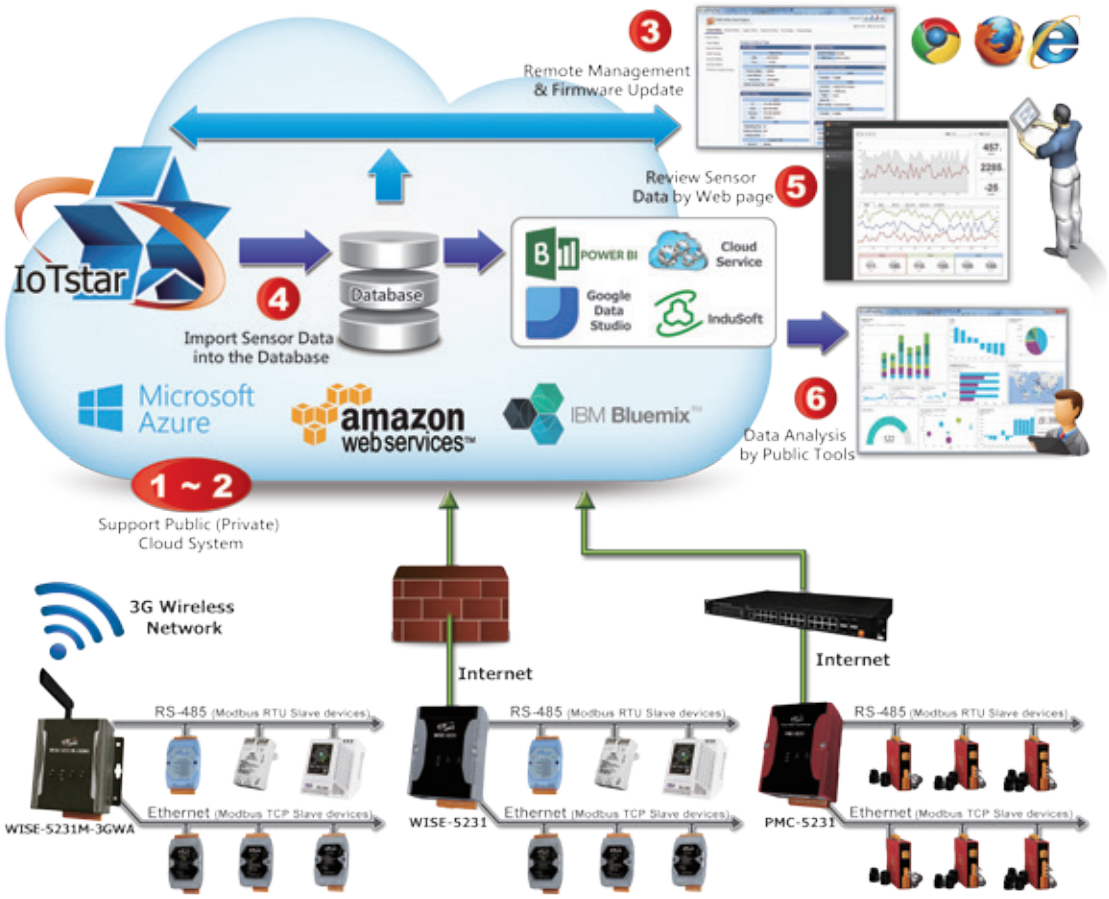
IoTstar is software developed by ICP DAS for use in remote monitoring and management of the controllers in a variety of industrial applications. IoTstar offers a user-friendly and intuitive Web interface that allows users to implement system settings and monitoring on the remote controllers by a few clicks; no programming is required.

After the Network connection is built between the remote controllers and the IoTstar via the Ethernet/3G Network, the IoTstar can then communicate with the remote controllers to implement the System Setting / Status Monitoring (it works even the controller is in a Private IP Domain configuration environment, for example : Locate behind the Firewall or use a Dynamic Virtual IP).

With the microSD card, the controller can provide the Data Logger function to real-time record data of the Sensors and I/O modules and send the data log files back to the IoTstar via FTP protocol. When the IoTstar receives the data log files from the remote controllers, it will import the content of these files into the Database. And then these recorded data can be directly retrieved from the Database for future information analysis by the SCADA software, Data analysis tool (for example: Microsoft Power BI, Google Data Studio) or Cloud Service.

IoTstar can be installed on a general PC platform as a Private Cloud system. It also can be installed on the Microsoft Azure, IBM Bluemix or Amazon AWS, etc. as a Public Cloud system. By using IoTstar, it is easy to build a Remote Monitoring and Management IoT Cloud system, and during the whole process of system development; no programming is required; just makes a few settings on the controller and IoTstar; the user could quickly integrate the sensor and I/O module data with the IoT Cloud system. It is an easy-to-use and easy-to-build IoT Cloud solution for the IoT and Industry 4.0 applications.

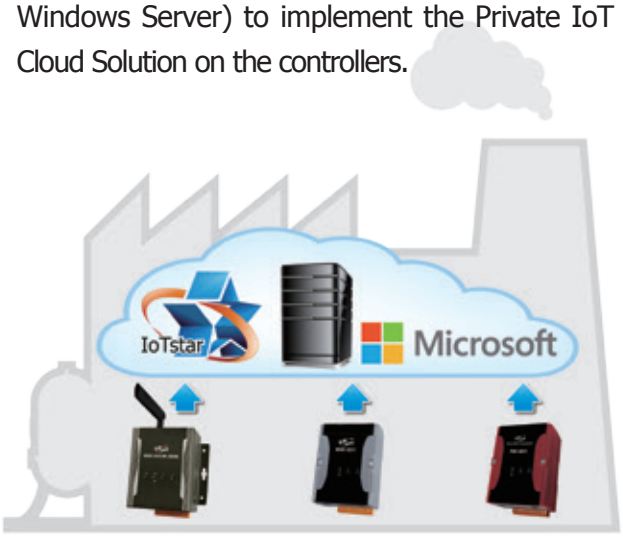
p.s. Currently support WISE-5231, WISE-5231M-3GWA, PMC-5231 , PMC-5231M-3GWA, PMD-2201 and PMD-4201.



Features:

1. Can be installed on Microsoft Azure, IBM Bluemix or Amazon AWS to implement the Public IoT Cloud Solution on the controllers.

2. Support Windows system (Windows 7/8/10, Windows Server) to implement the Private IoT Cloud Solution on the controllers.

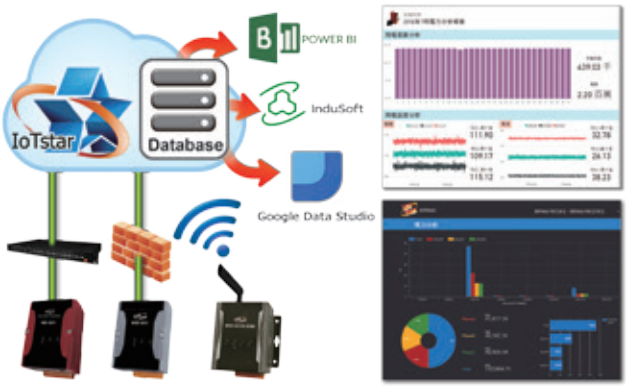


3. Enables the remote management and firmware update on the controllers via user-friendly and intuitive Web page interface.

4. Receive the data log file of the sensors from the remote controllers and import the content of the data log file into the Database (MySQL or MS SQL).

5. User can retrieve and review the data of the Sensors directly by the built-in Web page interface.

6. By Database interface, it is easy to integrate with SCADA, Microsoft Power BI, Google Data Studio or Cloud Service to retrieve the data of the Sensors directly from the Database for future data analysis.



Hardware Specifications

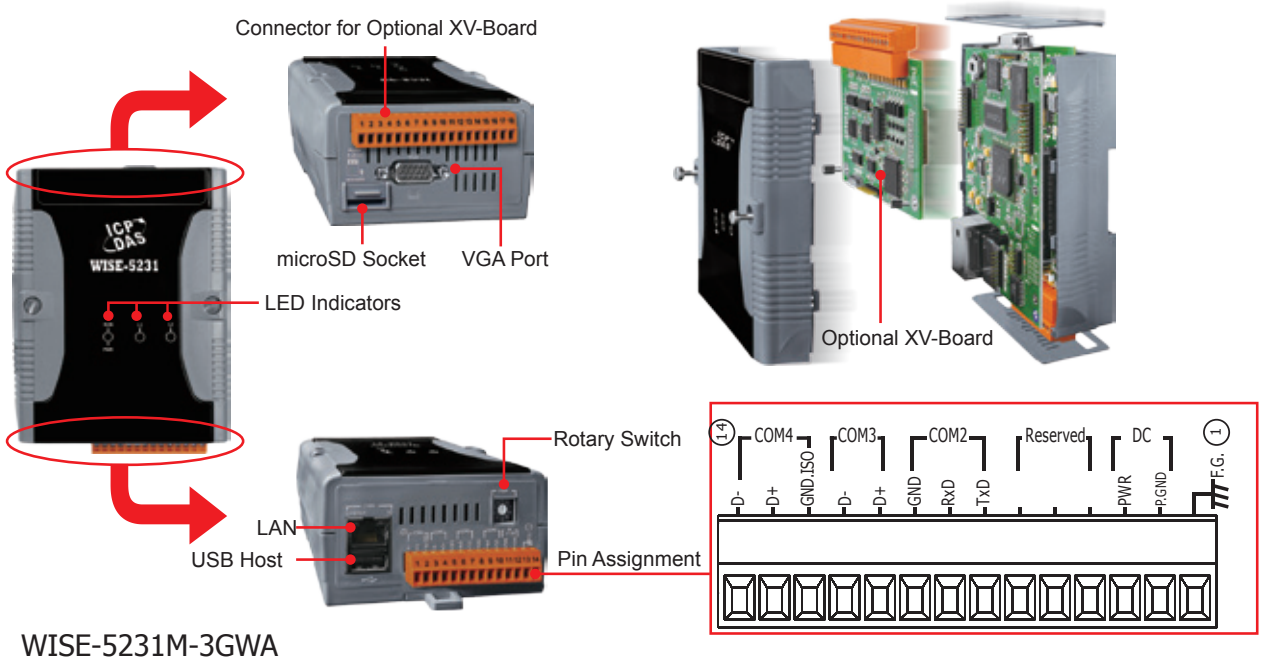
Model	WISE-5231	WISE-5231M-3GWA
System		
CPU	32-bit ARM CPU	
Software	Built-in WISE Firmware	
microSD Expansion	Built-in one 4 GB microSD card (support up to 32 GB microSDHC card)	
Communication		
Ethernet	RJ-45 x 1, 10/100/1000 Base-TX (Auto-negotiating, Auto MDI/MDI-X)	
COM 2	RS-232 (TxD, RxD, GND), non-isolated, Speed: 115200 bps max.	
COM 3/COM 4	RS-485 (Data+, Data-), Speed: 115200 bps max. COM 4 provides 2500 V_{DC} isolation	
LED Indicators		
Indicators	Power LED (Red), System LED (Red, Green)	
I/O Module Support		
Local I/O Module	Yes, one XV-board	
Remote I/O Module	COM3 can connect to Max.16 DCON or Modbus RTU Slave modules; COM4 can connect to Max.16 DCON or Modbus RTU Slave modules; LAN interface can connect to Max. 16 Modbus TCP Slave modules.	
Power Requirements		
Input Range	12 to 48 V_{DC}	
Power Consumption	4.8 W	6.5W
Mechanical		
Dimensions/Installation	91 mm x 132 mm x 52 mm (W x L x H) / DIN-Rail Installation	117 mm x 126 mm x 58 mm (W x L x H) / Wall Mounting Installation
Environmental		
Temperature	Operating Temperature: -25 °C to +75 °C; Storage Temperature: -40 °C to +80 °C	
Humidity	10 to 90% RH, Non-condensing	
GSM System		
Frequency Band	-	GSM : 850/900/1800/1900 MHz
GPRS Connectivity	-	GPRS class 12/10; GPRS station class B
Data Transmission	-	Downlink transfer: Max. 85.6 kbps; Uplink transfer: Max 42.8k bps
3G System		
Frequency Band	-	WCDMA 850/900/1900/2100 MHz
Data Transmission	-	WCDMA / HSPA+; Download: Max. 14.4Mbps; Upload: Max 5.76Mbps

Software Specifications

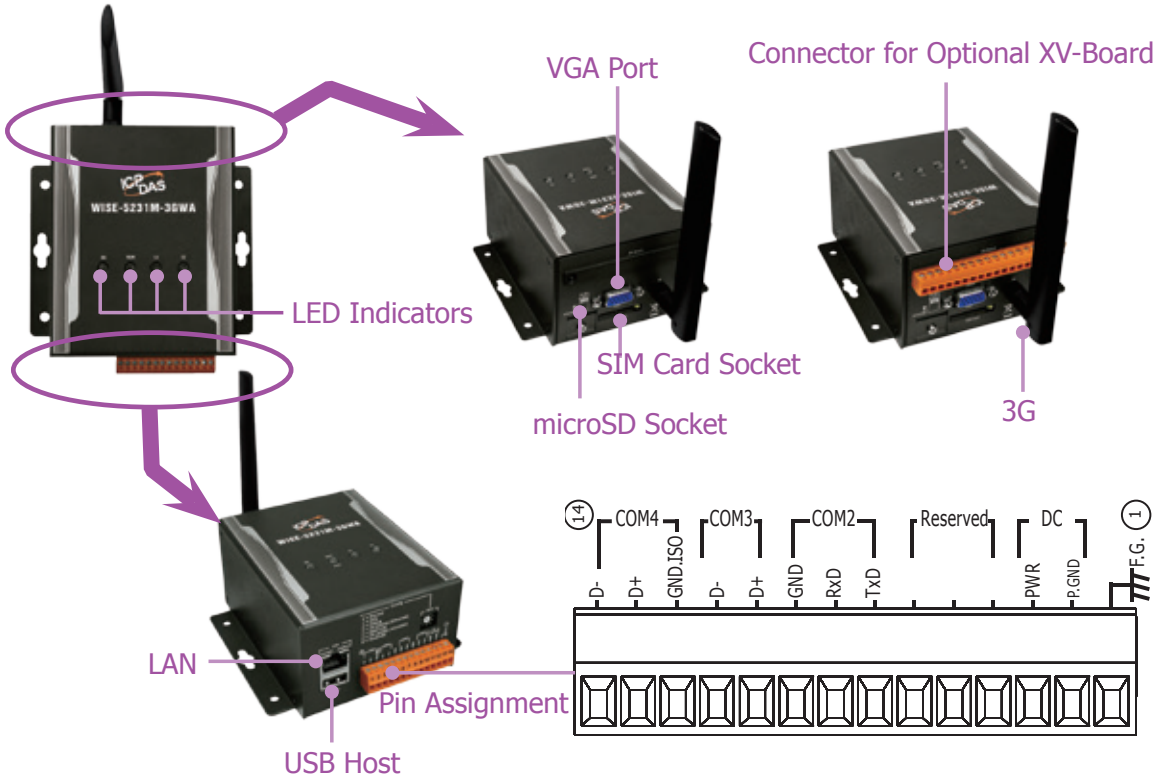
Function		Description
User-friendly and intuitive web site interface	Browser Interface	• Runs on browsers, no extra software tool is required • No more programming, Web pages provided for control logic editing and system parameters setting.
Various options for easy I/O module integration	Local side I/O Interface	• Support XV-board (XV107, XV107A, XV110, XV111, XV111A, XV116, XV306, XV307, XV308, XV310)
	Remote side I/O Interface (RS-485)	• Support ICP DAS I-7000/M-7000/tM/DL/LC/SC/IR series module • Support Modbus RTU Slave module
	Remote side I/O Interface (Ethernet)	• Support ICP DAS WISE-7100/(P)ET-7000/WF-2000 series module. • Support Modbus TCP Slave module.
Intelligent Logic operation and data logger ability at field sites	IF-THEN-ELSE Logic operation	• Provide IF-THEN-ELSE logic rule editing, and the ability for IF-THEN-ELSE logic rules execution.
	I/O channel monitoring and control	• Offers various options for I/O channel settings; for example: 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 counter setting, etc.
	Timer	• Perform the timing function. The status of Timer can be included in IF condition statements to trigger the THEN/ELSE actions.
	Schedule	• Perform the prescheduled routine tasks. The status of Schedule can be included in IF condition statements to trigger the THEN/ELSE actions. "Calendar" and "Weekly repeat" schedule setting UI are provided.
	Email	• Execute Email message sending. The SSL/TLS authentication is provided
	CGI Command	• Perform CGI command sending and receiving functions. The content of CGI command receiving can be used in IF condition statements to trigger the THEN/ELSE actions.
	Data Logger	• Perform Data Logger function to real-time record the I/O channel data of the controller by Period or Event Trigger operation.
	Internal Register	• Work as a variable to hold the temporary value, and provide the basic mathematical operation.
Various protocols for seamless integration with SCADA/MIS/ MES/IT/ Network Management systems	Real-Time I/O channel data	• Support Modbus TCP/RTU protocol for SCADA system. • Support SNMP and MQTT protocols for the integration with MIS/MES/IT/Network Management systems. • CGI Command sending and receiving function supported for the integration with IP Camera and Network devices. • Active I/O sending mechanism supported.
	Historical I/O channel data files	• FTP Server/Client ability for the maintenance of data logger files and the data logger files automatically send back operation. • Provide data recovery mechanism so that when experiences network disconnection, the data log files will be kept in WISE, and be recovered after the network is resumed. • Provide alarm notification mechanism so that when microSD card is damaged, the data log file will be stored in WISE to ensure zero data loss of the data logger.
	Communication Service	• DDNS (Dynamic DNS) service supported • Support 3G Wireless data communication, and SMS message sending/receiving (WISE-5231M-3GWA only)
	IoT Gateway Capability	•Connection with Microsoft Azure and IBM Bluemix IoT Cloud platform. •Connection with ICP DAS IoTstar IoT Cloud Management Software

Appearance

WISE-5231



WISE-5231M-3GWA



Ordering Information

WISE-5231 CR	Intelligent IIoT Concentrator
WISE-5231M-3GWA CR	Intelligent IIoT Concentrator (Support 3G Wireless data communication)

Option Accessories

NS-205 CR	Unmanaged 5-Port Industrial Ethernet Switch (RoHS)
MDR-20-24 CR	24V/1A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
DIN-KA52F CR	24V/1.04A, 25 W Power Supply with DIN-Rail Mounting (RoHS)

MDC-711/MDC-714/MDC-741

Modbus Data Concentrator with Ethernet, RS-232 and RS-485 interfaces

Features

- Modbus Data Concentrator
- Great Capability of Shared Memory
- Config.CSV to Ease Hard Work of Editing a lot of Definition
- Web Sever to Ease the Operating and Show Clear Information
- Supports the Modbus TCP Master and Modbus RTU Master

Introduction

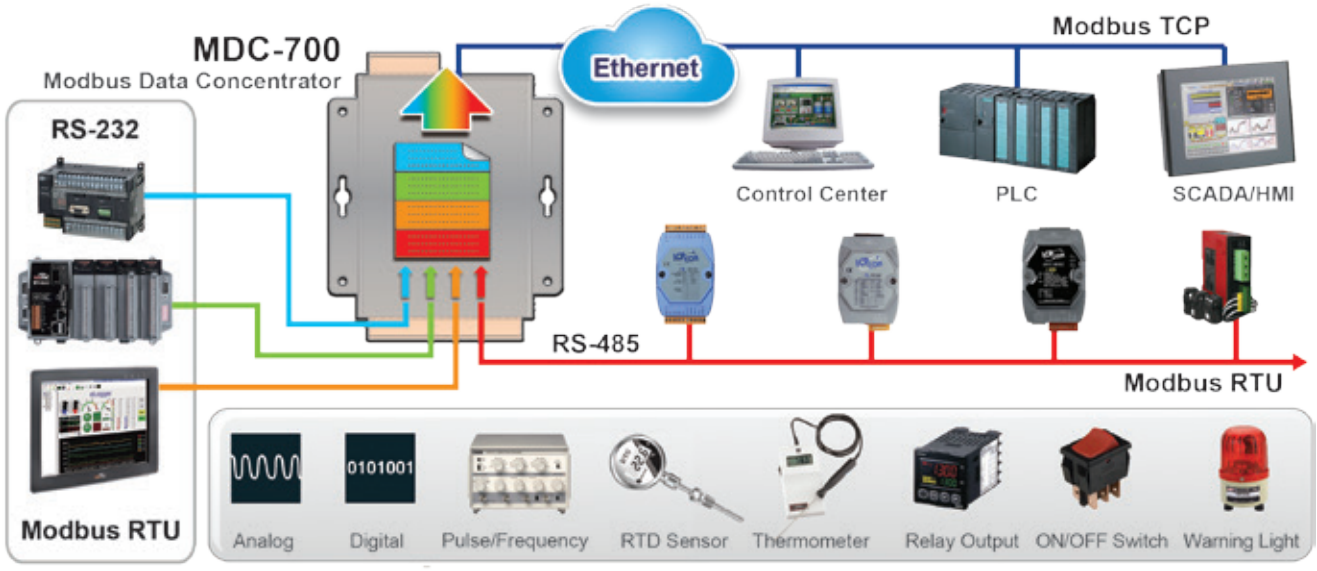
MDC-700 series is a Modbus Data Concentrator that has ability to perform up to 240 Modbus/RTU commands to read data from Modbus slave devices via RS-232/485, and allows up to 8 Modbus/TCP masters to get the polled data via the Ethernet.

MDC-700 series comes with a built-in web server to ease the configuration process and provide clear information for the communication status of each Modbus/RTU command on the RS-232/485.

Modbus Data Concentrator

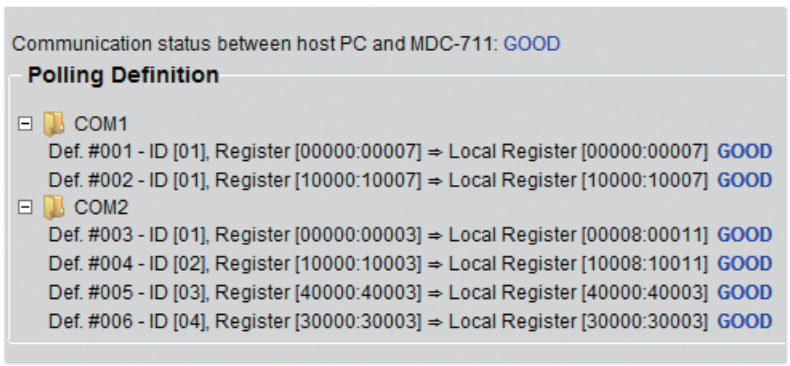
The MDC module performs the pre-defined Modbus/RTU commands to read data from the Modbus/RTU slave devices via the RS-232/485.It mirrors the data of the slave devices to its own shared memory. And it accepts up to 8 Modbus/TCP masters to directly read data form the shared memory instead of polling Modbus/RTU slave devices one by one.

This way not only makes the data on the RS-232/485 sharable to multiple Modbus/TCP master but also shorten the time to read data from multiple Modbus/RTU slave devices.



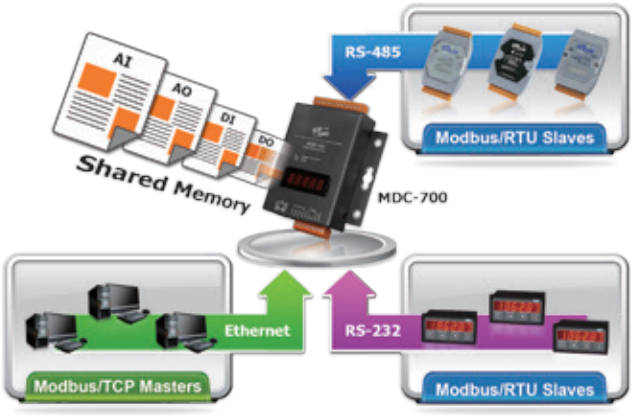
Web Sever to Ease the Operation and Show Clear Information

By using a regular web browser, users can set a MDC-700 module, get the necessary configuration information on the module, and get the status of each connection. It is helpful to debug which Modbus/RTU device has communication problem.



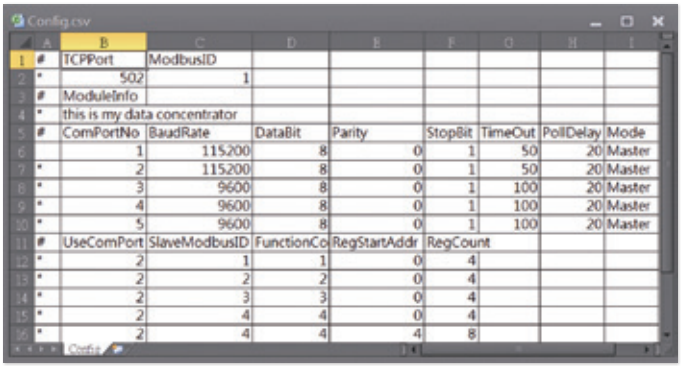
Great Capability of Shared Memory

The MDC module can perform up to 240 polling definitions. And the internal shared memory has four tables to store the polled AI, AO, DI and DO data. Each table can store up to 9600 registers.



Config.CSV to Ease Hard Work of Editing a lot of Definition

The Modbus polling definition is defined in a Config.CSV file. Editing/checking a lot of polling definitions is a hard work and it may be making mistakes. A CSV format file can ease the work by using Excel. Furthermore, the built-in web server allows users to import/export the Config.CSV via a simple mouse-click action.



Config.csv

	A	B	C	D	E	F	G	H	I
1	#	TCPPort	ModbusID						
2	*	502	1						
3	#	ModuleInfo							
4	*	this is my data concentrator							
5	#	ComPortNo	BaudRate	DataBit	Parity	StopBit	TimeOut	PollDelay	Mode
6		1	115200	8	0	1	50	20	Master
7	*	2	115200	8	0	1	50	20	Master
8	*	3	9600	8	0	1	100	20	Master
9	*	4	9600	8	0	1	100	20	Master
10	*	5	9600	8	0	1	100	20	Master
11	#	UseComPort	SlaveModbusID	FunctionCo	RegStartAddr	RegCount			
12	*	2	1	1	0	4			
13	*	2	2	2	0	4			
14	*	2	3	3	0	4			
15	*	2	4	4	0	4			
16	*	2	4	4	4	8			

Config

System Specifications

Model Name	MDC-711	MDC-714	MDC-741
Ethernet			
Port	x1, 10/100 Base-TX		
Protocol	Modbus/TCP Slave		
Max. connection	8		
COM port			
RS-232	x1, (TXD, RXD, RTS, CTS, GND)		x4, (TXD, RXD, RTS, CTS, GND)
RS-485	x1, (Data+, Data-)	x4, (Data+, Data-)	x1, (Data+, Data-)
Baudrate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 (bps)		
Data Format	N81, E81, O81		
Protocol	Modbus RTU Master/Modbus RTU Slave		
Max. Node	32 slaves for each RS-485 port		
Polling Definition	240 definitions for all RS-232/485 ports		
Shared Memory	9600 registers for each of AI, AO, DI and DO data		
System			
5-Digit 7 Segment LED Display	Yes, to display IP address		
System LED Indicator	Yes, to display heartbeat		
Mechanical			
Dimension (W x H x D)	102 mm x 125 mm x 28 mm		
Installation	Wall Mount		
Power			
Required Supply Voltage	+10 VDC ~ +30 VDC (non-regulated)		
Power Consumption	2.5 W		
Environment			
Operating Temperature	-25°C ~ +75°C		
Storage Temperature	-30°C ~ +80°C		
Humidity	10 ~ 90% RH, non-condensing		

Ordering Information

MDC-711 CR	Modbus data concentrator with 1 x Ethernet, 1 x RS-232 and 1 x RS-485 (RoHS)
MDC-714 CR	Modbus data concentrator with 1 x Ethernet, 1 x RS-232 and 4 x RS-485 (RoHS)
MDC-741 CR	Modbus data concentrator with 1 x Ethernet, 4 x RS-232 and 1 x RS-485 (RoHS)

Wi-Fi Modbus Data Concentrator

NEW

MDC-211-WF

Features

- Compatible with IEEE 802.11b / g / n standards
- Support Infrastructure and Limit-AP mode
- Support WEP, WPA and WPA2 encryption mechanism
- Support data logger (MicroSD) function
- Support the Modbus TCP/RTU protocol
- Support the MQTT v3.1 Client protocol
- Support for up to 8 Modbus TCP masters
- Support Ethernet, RS-232/485 and Wi-Fi interfaces

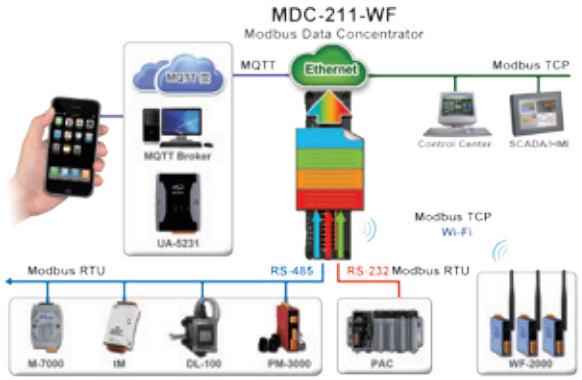
Introduction

MDC-211-WF is a Modbus Data Concentrator used to access data from disparate Modbus slave devices with a contiguous Modbus address table ranged by the concentrator. Up to 240 Modbus commands can be performed to read data from Modbus slave devices via Wi-Fi/RS-232/485, and up to 6 Modbus/TCP masters are allowed to get the polled data via the Ethernet. The Modbus/TCP masters directly read/write the data in the MDC-211-WF instead of polling each Modbus slave device one by one. This way not only makes the data on the Wi-Fi/RS-232/485 sharable to multiple Modbus/TCP master but also shorten the time to read/write data from/to multiple Modbus/RTU slave devices.

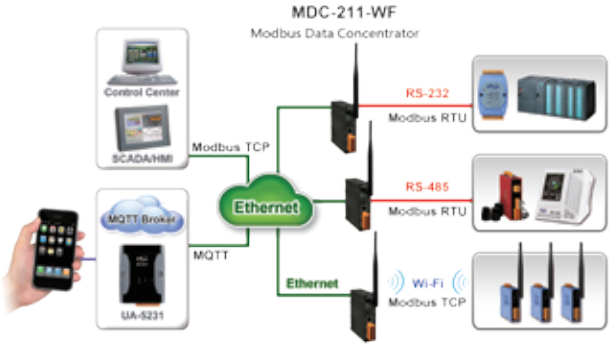
Specifications

Ethernet	
Port	x1, 10/100 Base-TX
Protocol	Modbus/TCP Slave
	MQTT v3.1
Max. Connection	8
COM Port	
RS-232	1(TXD, RXD, GND)
RS-485	1(Data+, Data-)
Baudrate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 (bps)
Data Format	N81, E81, O81
Protocol	Modbus RTU Master / Modbus RTU Slave
Max. Node	32 slaves for each RS-485 port
Wi-Fi Interface	
Antenna	5 dBi (Omni-Directional)
Output Power	14 dBm @ 11Mbps
Receive Sensitivity	-93 dBm @ 11Mbps
Standard Supported	IEEE 802.11b/g/n
Wireless Mode	Infrastructure & Limited AP
Encryption	WEP, WPA and WPA2
Transmission Range	50 meters (LOS)
Protocol	Modbus TCP Client
Max. Connection	6
Power	
Input Voltage Range	10 ~ 30 VDC
Power Consumption	1.6W
Mechanism	
Installation	DIN-Rail
Dimensions	33mm x116mm x 120mm (W x L x H)
Environment	
Operating Temperature	-25°C ~ +75°C
Storage Temperature	-30°C ~ +80°C
Humidity	10% ~ 90% RH, Non-condensing

System Structure



Applications



ZigBee Modbus Data Concentrator

NEW

MDC-211-ZT

Features

- Fully Compliant with 2.4 G (IEEE802.15.4/ ZigBee Specifications)
- Upgrade ZigBee I/O modules with Ethernet communication ability
- Support the Modbus TCP/RTU protocol
- Support the MQTT v3.1 Client protocol
- Support I/O data logger (MicroSD) function
- Data pool for up to 9600 registers
- Modbus polling commands for up to 240 definitions
- Speed up the time for reading from ZT-2000 series modules
- Support ZigBee, Ethernet and RS 232/485 interfaces

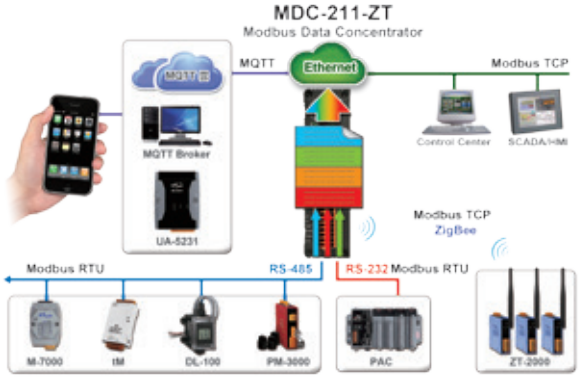
Introduction

MDC-211-ZT is a Modbus Data Concentrator used to centrally manage decentralized I/O data via the ZigBee wireless mesh network. It access data from disparate Modbus slave devices with a contiguous Modbus address table ranged by the concentrator. Up to 240 Modbus commands can be performed to read data from Modbus slave devices via ZigBee/RS-232/RS-485, and up to 8 Modbus/TCP masters are allowed to get the polled data via the Ethernet. This way not only makes the data on the ZigBee/RS-232/RS-485 sharable to multiple Modbus/TCP master but also reduce the flow of ZigBee/Ethernet traffic load to improve the system performance. It is the best solution for users quickly establishing a remote monitoring system.

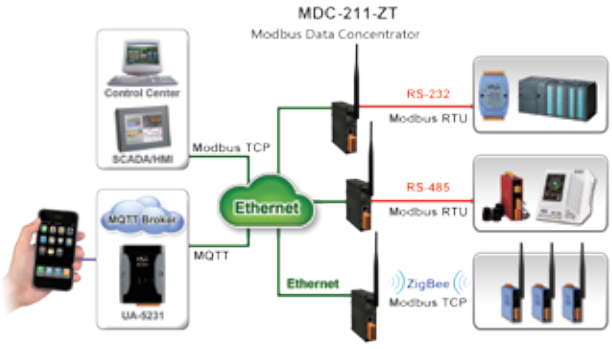
Specifications

Ethernet	
Port	x1, 10/100 Base-TX
Protocol	Modbus/TCP Slave
	MQTT v3.1
Max. Connection	8
COM Port	
RS-232	x1, (TXD, RXD, GND)
RS-485	x1, (Data+, Data-)
Baud Rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 (bps)
Data Format	N81, E81, O81
Protocol	Modbus RTU Master/Modbus RTU Slave
Max. Node	32 slaves for each RS-485/ZigBee port
Wireless Interface	
Wireless Standards	ZigBee 2007 Pro
RF Transmit Power	11 dBm (FCC Certificated) (Max. 19 dBm)
Antenna	5 dBi Omni-Directional antenna
Transmit Range (LOS)	700 meters (Typical)
EMI Certification	CE/FCC, FCC ID
Max. Slaves Supported	255
Power	
Input Voltage Range	10 ~ 30 VDC
Power Consumption	3W
Mechanical	
Dimension (W x H x D)	102 mm x 125 mm x 28 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25°C ~ +75°C
Storage Temperature	-30°C ~ +80°C
Humidity	10 ~ 90% RH, non-condensing

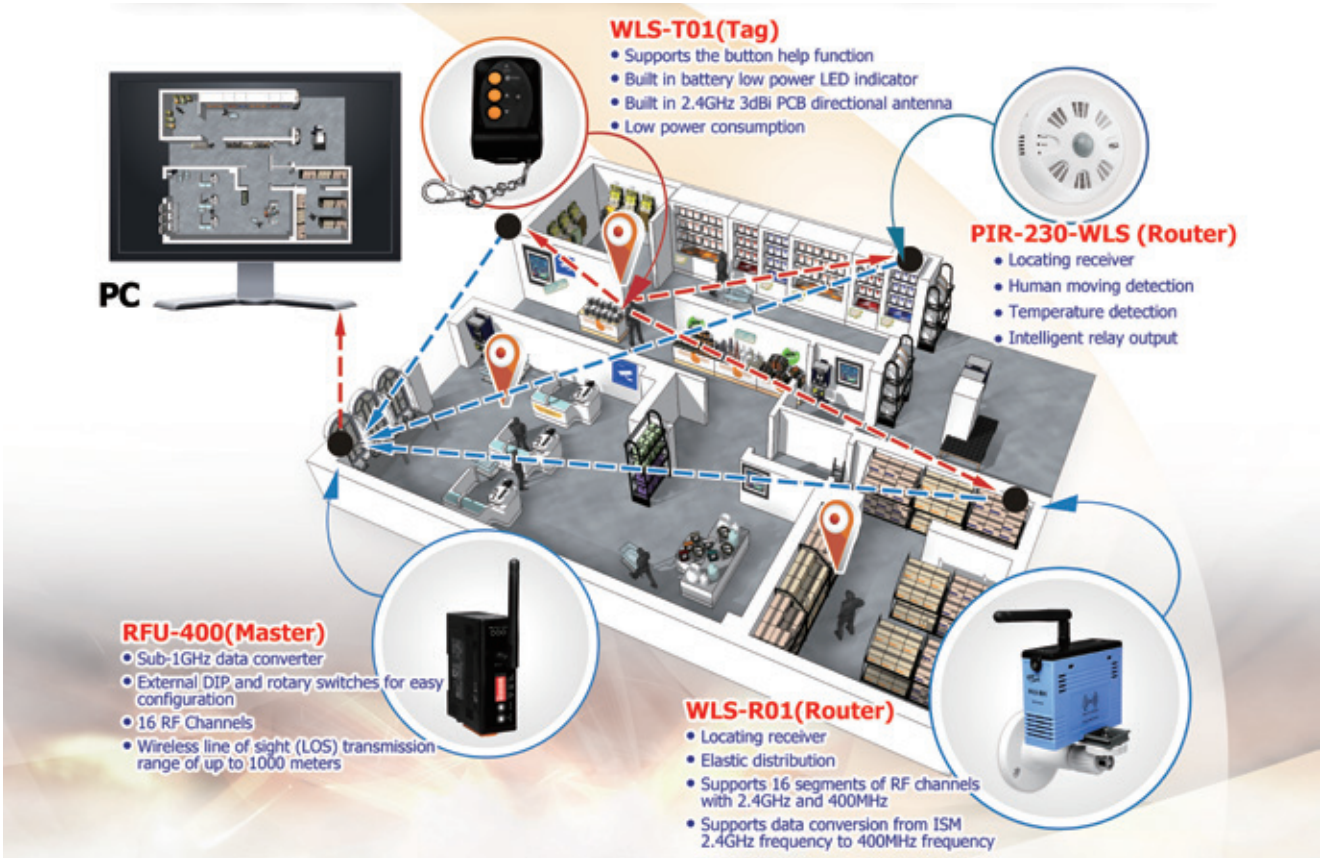
System Structure



Applications



WLS (Wireless Locating System)



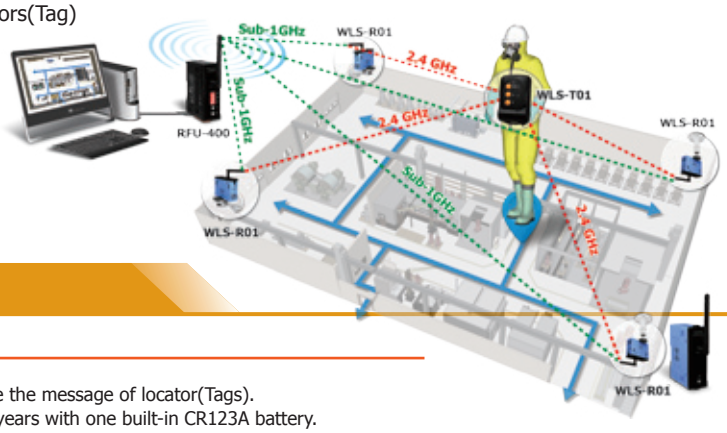
• Introduction

Wireless Locating System can be used in indoor and outdoor environments. It can monitor the exact location of certain objects or persons and integrate the location information into the back-end servers. In addition, it combines the emergency applications and makes those who call help can be found immediately. And then, the WLS becomes a safety-based locating system. The WLS can be used in industrial or commercial applications, such as: the large commercial offices, the shopping malls, the high-voltage electrical room, the toxic gas room, the ultra-high temperature processing factories, the hospitals or care centers and etc. The customers in the shopping mall probably are changing consumer behavior. Does the store supervisor grasp your opportunity yet? Maybe there are unscrupulous visitors to stroll inside offices or wrongdoing, do you find it? Someone is in danger and calling help in the hazardous working area, do you feel that? Patients who stay in the bathroom or toilet has exceeded the normal time, do you find the situation? These problems are difficult to detect and may cause harm to people or to the enterprise. The WLS could help to find out the problems and provide the efficient way to manage them.

Over twenty years, ICP DAS has developed various Zigbee, Wi-Fi, Sub-1G wireless products and good at various wireless technologies. Of course, we also has put into development of the wireless locating system (WLS) to resolve difficult locating problems. The WLS uses active-based 2.4GHz locator (Tag) with a built-in [help] button. By putting 2.4GHz receiver(Router) in the monitored area, the 2.4GHz locator (Tag) sends positioning signal in regular time or distress message immediately to the Router. The Router collects and transfers locating data and emergency message to the server PC which can record data in time and analysis useful and important information from the large data warehouse, such as to analyze the stay time or moving flow of the customers in the mall, or to find the popular regions where most customers like focus in the mall, to warn the visitors who are going to the private area in the offices or factories, to find out the persons who stayed motionless in the danger field for a long time or is sending distress signals, and etc. The meaningful information could help to control the persons in hazard area, to monitor their safety and to reduce the occurrence.

• Locating Principle

The WLS utilize the wireless of the active-base 2.4GHz locators(Tag) which transferred by the receivers(Router). The WLS retrieves the first three stronger signals of the Routers and use the triangulation algorithm to estimate the location of the Tag. In another words, the first three closer Routers could indicate where the Tag is. Here shows the illustration.



• Features

Hardware

1. Support locating function when only one receiver(Router) receive the message of locator(Tags).
2. The locator(Tag) use the ultra low power design and works two years with one built-in CR123A battery.
3. The locator(Tag) built-in one emergency button.
4. The locator(Tag) built-in battery low power indicator LED.
5. To avoid wireless data collision, the locator(Tag) has smart data collision algorithm.
6. The receiver(Router) or locator(Tag) supports 16 RF channels.
7. The receiver(Router) transfers data to server by the Sub-1GHz wireless signal.
8. The distance between receiver(Router) and locator(Tag) is up to 100 meters(line of sight,LoS).

Software

1. Supports Windows XP/ Win7 / Win10.
2. With graphical and friendly UI, the software indicates all real time locations.
3. Support changing indoor map and indicating the position of the Routers.
4. To receive data from all tags and indicate their positions.
5. The green icon is normal. The red icon shows the person is calling help. The yellow icon is the low power tag.
6. The software will save the emergency record and alert immediately.
7. The software will save the moved path to the files.

• Typical Applications

Large shopping mall

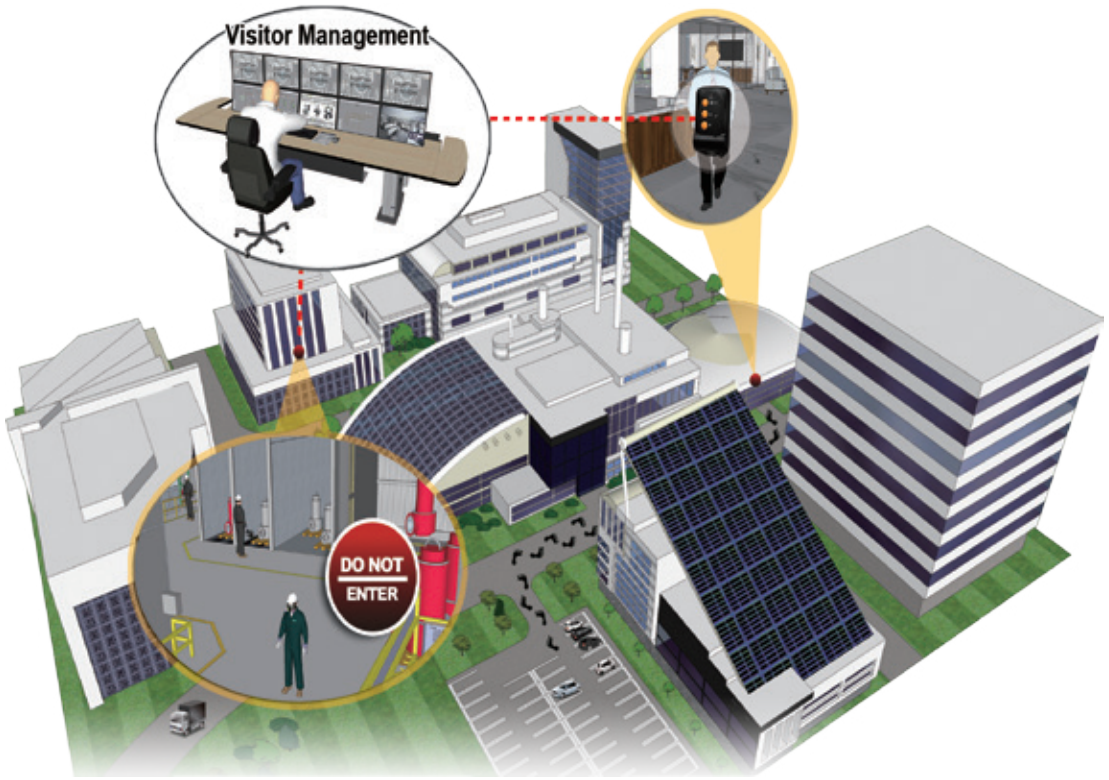
Shopping mall management or promotion are commodity-oriented, the customer's shopping behavior is not available. Such as monthly or quarterly promotions, whether the customer really has to go to the regions or the path line of design let customers can not find the activities. Or which hot items have been placed in the less popular areas of customers shopping, resulting in poor sales performance, such as sales of blind spots, through the positioning system to provide behavior of customer, decision-makers can easily detect these problems, and adjust decision.

- Locating trolleys, analyzing popular areas, and determine whether the sales strategy is successful.
- Analysis of a particular area of the stationed rate is particularly high or particularly low, consider whether to increase the trial area or hold promotional activities.
- According to the movement of customers, analysis of seasonal adjustment of the location of goods, or judge the customer preferences season.
- When customer checkout, the goods in the trolleys and locating information will import background information, it will become a large database, and then be analyzed more shopping behavior for decision makers to explore more reference data.

Factory or business (visitor management)

There are lots of visitors or technical survey in the factories or offices. Usually, the security make the visitors to wear identify card. But visitors may go to the danger zone or to the confidential area for illegal activity. Those headache problems are difficult to against or to alert in time. Here show the solutions of the WLS.

- The visitors can be worn the identify card and WLS tag. The real time position of the visitors could be shown and recorded.
- The employee which has received their visitor can also ware WLS tag. The manager could know whether the employee is in contact with the visitor by the position of the tag.
- When visitors moving into the hazardous area or sensitive areas, it can be found and be alerted immediately.
- When visitors feel illness or need help, they can press the emergency button to call help. It could reduce or avoid industrial accidents.



Hazardous Working Environment (Security Management)

The factories will always have dangerous working areas, such as: high voltage electric room, toxic gas zone, ultra-high temperature operation area and etc. The employees who are working in this area need to be monitored for their safety or for compliance with safety regulations. When the accident happening, the manager can deal with instantly or notify other persons immediately.

- When working in hazardous areas and wear the tag, the manager can know how many persons in the area and where the persons are.
- When the persons need to call help, they can push emergency button to notify others.
- Toxic materials or controlled materials can be tied the tag. After using those materials, the manager can know whether the material has been put back to its place.
- When the industrial security patrols the hazardous area, the manager can track whether the security has been to the area or not or whether the important place has been checked or not.

• The modules of system

RFU-400

429 MHz RS-232/RS-485 Wireless Modem

Features

- 429 MHz Radio Frequency
- 16 RF Channels
- 4 RF Baud Rates
- Includes a PA switch that can be used to enhance the RF power
- Wireless line of sight (LOS) transmission range of up to 1000 meters at an RF BaudRate of 9600 bps
- Transparent transmission mode
- Provides Baud Rates from 1200 to 115200 bps for both the RS-232 and RS-485 interfaces
- ESD Protection: Contact ±4 kV
- Isolation: 3000 VDC for DC-to-DC, 2500 Vrms using a photocoupler
- DIN-Rail Mountable
- Operating Temperatures, -25°C ~ +75°C

Introduction

The RFU-400 is an RS-232/RS-485 to 429 MHz radio modem that can be used to convert data from an RS-232/RS-485 device to an RF message that can then be transmitted in transparent mode via the 429 MHz ISM frequency band. The RFU-400 provides a maximum line of sight (LOS) transmission distance of 1000 meters (1 km) at an RF Baud Rate of 9600 bps. In order to overcome the interference that may be encountered in harsh environments, the RFU-400 allows the RF transmission Baud Rate to be configured to a minimum of 650 bps, enhancing the capability of the modem to resist noise and other interference. Additionally, the RF channels and Group IDs are adjustable, which is helpful when attempting to avoid interference encountered when two RFU-400 networks are adjacent. The 16 RF channels and 8 Group IDs can be configured in order to distinguish and control the different RFU-400 networks. The majority of these configuration parameters can be adjusted using a combination of the Rotary and DIP switches, thereby providing a simple method of maintaining the system if the RFU-400 modem needs to be replaced.

Specifications

RF Interface	
Radio Frequency	Channel 0 ~ 9 : 429.8125 MHz ~ 429.9250 MHz Channel A ~ F: 429.1750 MHz ~ 429.2375 MHz
Baud Rate	115200 bps, 38400 bps, 9600 bps, 650 bps
Transmission Power	PA Off : 10 dBm , PA On : 19 dBm
Transmission Distance (LoS)	1000 m (at 9600 bps RF Rate)
Group ID	0 ~ 7
Protocols	Transparent transmit
Temporary Buffer Size	512 Bytes
Configuration	Rotary and DIP switch
COM Port Interface	
COM Port	RS-232 × 1, RS-485 × 1
Baud Rate (bps)	1200 ~ 115200
LED Indicators	
RF_Tx / RF_Rx / PWR	Green / Yellow / Red
Isolation	
Intra-module Isolation	2500 Vrms for photocoupler (RS-485 / RS-232 side)
EMS Protection	
ESD	±4 kV Contact
EFT	±1 kV
Surge	±1 kV
Power	
Input Voltage Range	+10 VDC ~ +30 VDC
Power Consumption	1 W (Max.)
Mechanical	
Flammability	Fire Retardant Materials
Dimensions (L x W x H)	108 mm x 84 mm x 33 mm (not include antenna)
Antenna Dimensions (L x Ø)	108 mm x 10 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Relative Humidity	0 ~ 90% RH, Non-condensing

Router

WLS-R01

Features

- Supports data conversion from ISM 2.4GHz frequency to 400MHz frequency
- Supports 16 segments of RF channels with 2.4GHz and 400MHz
- Supports RSSI filtering function
- Built in 2.4GHz 3dBi PCB directional antenna
- 2.4GHz wireless transmission range up to 100 m (Line of Sight)
- 400MHz wireless transmission range up to 500 m (Line of Sight)
- Supports external DIP and rotary switches for easy configuration
- DIN-Rail mountable

Introduction

WLS-R01 is a 2.4GHz wireless receiver, it is mainly installed in fixed position to receive the 2.4GHz wireless Locating data of WLS-T01 broadcast. In the other hand, WLS-R01 is also a wireless converter (called Router) from 2.4GHz to 400MHz. it can effectively use 400MHz high transmittance characteristics to extend the wireless transmission distance, and don't need add wire between the communication paths. The WLS software in the PC can use transparent function of RFU-400 to poll the wireless Locating data of WLS-T01, and then calculate the relative position of WLS-T01 by the algorithm.

WLS-R01 include two wireless frequency, one is ISM 2.4GHz global common frequency band total have 16 channels, the range of 16 channels are 2.405GHz to 2.48GHz, it can separated into 5MHz segments, and the wireless transmission range (line of sight, LOS) is 100 meters; the other is 400MHz frequency band total have 16 channels, the range of 16 channels are 429.1750MHz to 429.2375MHz and 429.8125 MHz to 429.9250 MHz, and the wireless transmission range (line of sight, LOS) is 500 meters. In addition, the user can divide four groups ID in the each 400MHz channel to avoid adjacent channels affect each other.

The user can simply use the DIP switch and rotation switch to configure the parameter, and don't need to add wire between the communication paths, that can speed up to build the system, and reduce the cost, so it very suitable for use in item tracking, personnel movements, factory regional management and other applications.

Specifications

Wireless		
2.4GHz	Modulation	OQPSK (Offset Quadrature Phase-shift Keying)
	Spread Spectrum	DSSS (Direct-Sequence Spread Spectrum)
	RF Channels	16
	Transmission Power	16±1dBm (Default) / 17dBm (Max.)
	Wireless frequency	2.4GHz
	Antenna	2.4GHz - 3dBi PCB directional antenna
	Transmission Range (Line of Sight, LOS)	100m (Default)
	Number of tags supported	90 (Max., Tag Tx interval is 3 seconds)
400MHz	RF Channels	16
	Transmission Power	19dBm (Default / Max.)
	Wireless frequency	Channel 0~9: 429.8125 MHz ~ 429.9250 MHz / Channel A~F: 429.1750 MHz ~ 429.2375 MHz
	Antenna	429MHz – 0dBi Omni directional antenna
	Transmission Range (Line of Sight, LOS)	500m(Default)
	Range of address	1~255 (0x01~0xFF)
LED Indicators		
Power		1 LED, Red
400MHz Transmitted status		1 LED, Green
2.4GHz Received status		1 LED, Green
EMS Protection		
ESD (IEC 61000-4-2)		±4 kV Contact for Power Line, ±8 kV Air for Random Point
EFT (IEC 61000-4-4)		±4 kV for Power
Surge (IEC 61000-4-5)		±3 kV for Power
Power		
Required Supply Voltage		+10 V_{DC}~ +30 V_{DC}
Power Consumption		1 W Max.
Mechanical		
Dimensions (L × W × H)		110mm x 33mm x 83mm
Installation		DIN-Rail
Environment		
Operating Temperature		-25°C ~ +75°C
Storage Temperature		-30°C ~ +80°C
Relative Humidity		10 ~ 90% RH, Non-condensing

Tag

WLS-T01

Features

- Supports the button help function
- Supports 16 segments setting of RF channels
- Supports 16 segments setting of RF power
- Built in battery low power LED indicator
- Built in 2.4GHz 3dBi PCB directional antenna
- ISM 2.4GHz operating frequency
- Direct Sequence Spread Spectrum (DSSS) RF technology
- Wireless transmission range up to 100 m (Line of Sight)
- Low power consumption design
  (1 pcs CR123A battery, when operating temperature from +20°C~+60°C, it can be used 2 years)

Introduction

WLS-T01 is a 2.4GHz wireless transmitter (called Tag) by battery supported, it can broadcast automatically 2.4GHz wireless Locating packages to WLS-R01. WLS-T01's wireless frequency use ISM 2.4GHz global common frequency band total have 16 channels, the range of 16 channels are 2.405GHz to 2.48GHz, it can separated into 5MHz segments, and WLS-T01 supports 16 sectors of RF power setting. The user can use the button to adjust the above settings.

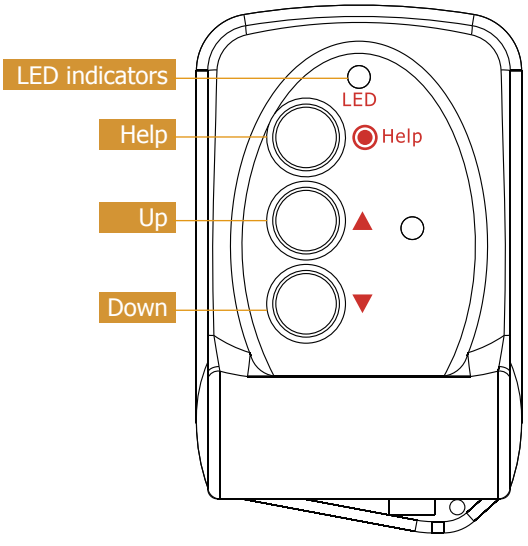
In addition, WLS-T01 supports help button, low battery power indicator, and built in Node ID, 3dBi directional PCB antenna and other user-friendly design can effectively reducing the size for the user to carry it. The user can also send a distress signal in an emergency situation, and let people know his relative position to support him.

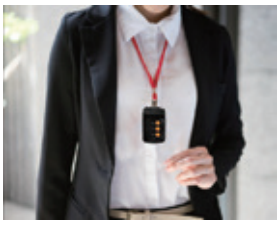
The wireless transmission range (line of sight, LOS) of WLS-T01 is 100 meters, and WLS-T01 uses low power consumption design architecture, when the user installs a CR-123A battery (3.0 VDC) and the wireless transmission interval is 3 seconds, operating temperature in +20°C to +60°C, the use of time can be up to 2 years, if battery will low power, the user can change the new battery by himself, so WLS-T01 very suitable for use in item tracking, personnel movements in hazardous areas, factory regional management and other applications.

Specifications

Wireless	
Modulation	OQPSK (Offset Quadrature Phase-shift Keying)
Spread Spectrum	DSSS (Direct-Sequence Spread Spectrum)
RF Channels	16
Transmission Power	16±1dBm (Default) / 17dBm (Max.)
Wireless frequency	2.4GHz
Antenna	2.4GHz-3dBi PCB Directional Antenna
Transmission Range (Line of Sight,LOS)	100 m (Typical)
LED Indicators	
Pressing the button	1 LED, Green
Help / Low battery power	1 LED, Red
EMS Protection	
ESD	±4 kV Contact for Screw
EFT (IEC 61000-4-4)	±4 kV for Power
Power	
Required Supply Voltage	+2.6 VDC ~ +3.6 V_{DC}
Battery Input	1 x CR123A (3.0 V_{DC})
Power Consumption	166uW@3VDC / 1.33mAh@1 Day (3 second Tx Interval)
Mechanical	
Dimensions (L x W x H, mm)	70mm x 43mm x 21mm
Installation	Hook
Environment	
Operating Temperature	-25 ~ +75°C (No battery included) -25 ~ +60°C (Battery included)
Storage Temperature	-30 ~ +80°C (No battery included) -20 ~ +45°C (Battery included)
Relative Humidity	10 ~ 90% RH (Non-condensing, No battery included) 20 ~ 65% RH (Non-condensing, Battery included)

Appearance





Win-GRAF

Make Your Application Intelligent

Win-GRAF is a powerful SoftLogic development software and PLC-like SoftLogic package that supports IEC 61131-3 Standard Open PLC Languages running on Windows 7 and Windows 8. The Win-GRAF Runtime application can run on any ICP DAS PAC (Programmable Automation Controller) that supports the Win-GRAF, such as the WinPAC series WP-8xx8, WP-5xx8-CE7 and WP-9xx8-CE7, or the touch panel ViewPAC series VP-x2x8-CE7, or the advanced CPU XPAC-CE6 series XP-8xx8-CE6. Using the Win-GRAF software with ICP DAS Win-GRAF PACs, the control/monitor systems can easily implement industrial level of data acquisition and logic control in various industry fields.

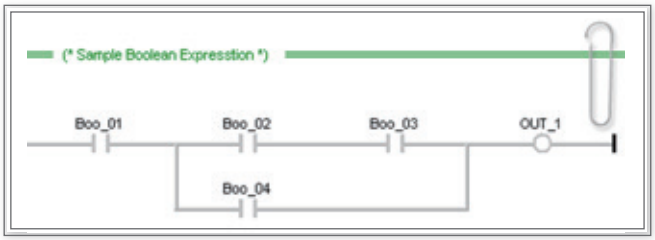
■ Applications:

- Data Acquisition System
- Factory Automation
- Building Automation
- Remote I/O system
- Wireless Monitor/Control System
- Motion Control System ...

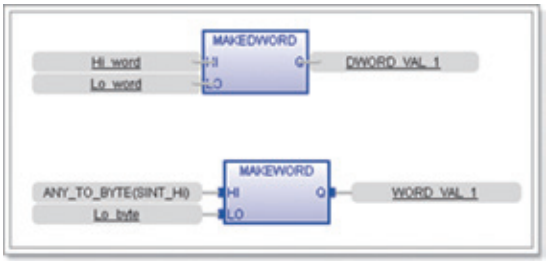
Win-GRAF Workbench Features

■ Support IEC 61131-3 Standard Open PLC Languages

1. Ladder Diagram (LD)
2. Function Block Diagram (FBD)
3. Sequential Function Chart (SFC)
4. Structured Text (ST)
5. Instruction List (IL)



(LD)



(FBD)

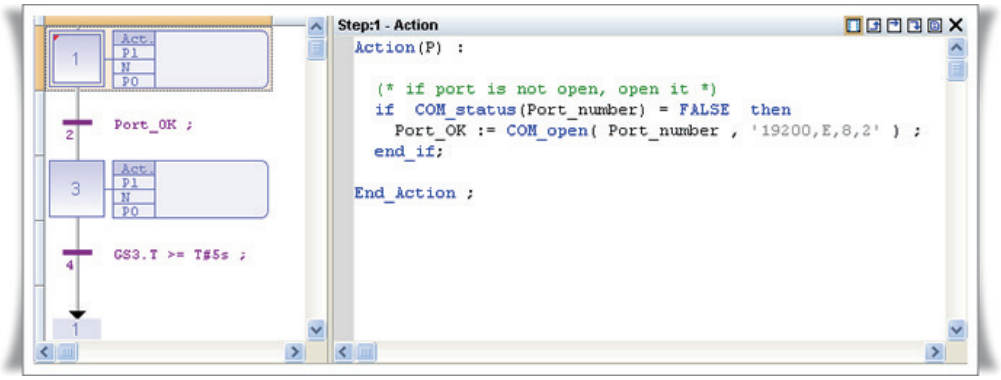
```
(* ii is declared as DINT
   Phy_V is declared as REAL array with Dim 8
   Eng_V is declared as REAL array with Dim 8
*)

for ii := 0 to 7 do

 (* Using conversion function 2 to convert an
    engineering value to a physical value *)
    Phy_V[ii] := Convert_to_Phy (2, Eng_V[ii]);

end_for;
```

(ST)



(SFC)

Win-GRAF Workbench Features

■ Using ST Syntax in the FBD or LD Program

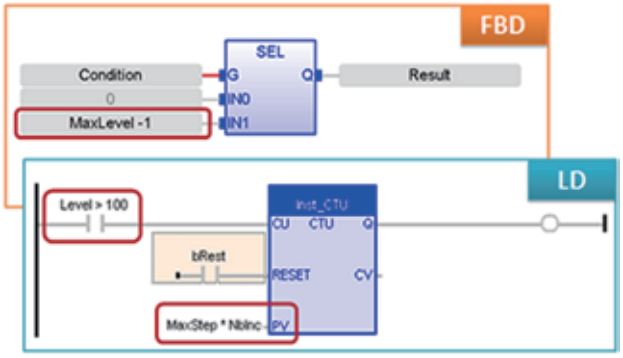
■ On Line Debug/Control/Monitor

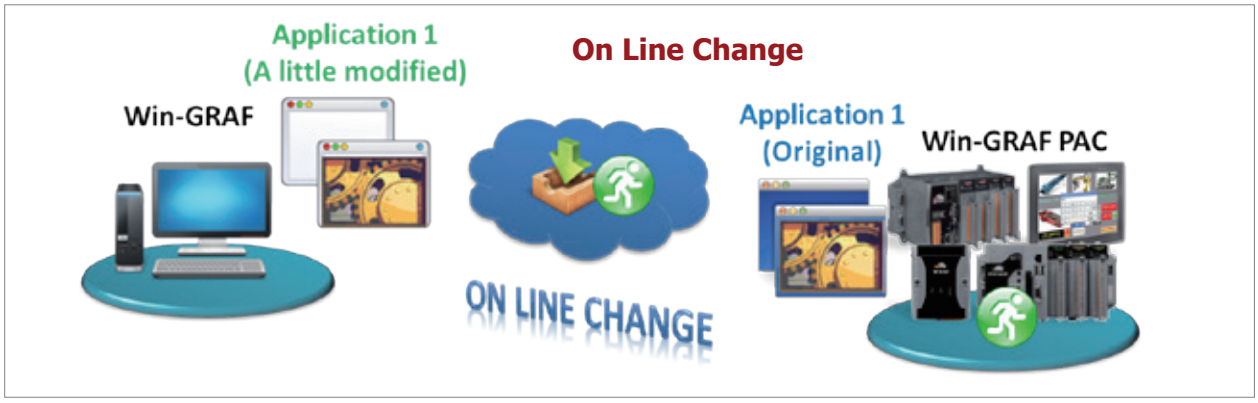
■ Off Line Simulation on PC

■ On Line Change

Replace the current running project to a new modified one without stopping the project.

Using ST syntax in the FBD or LD program





■ Upload Source Code From PAC to PC

■ Event Triggered Data Binding

Exchange data between PACs.

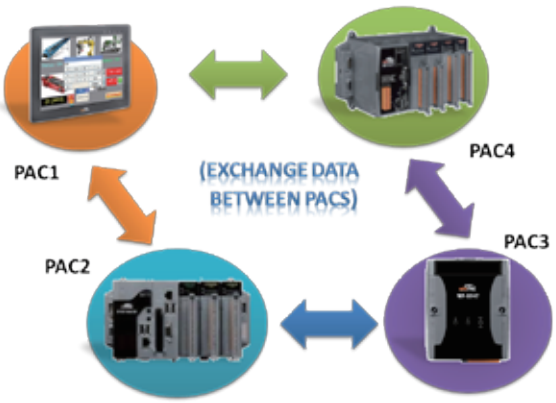
■ Recipe

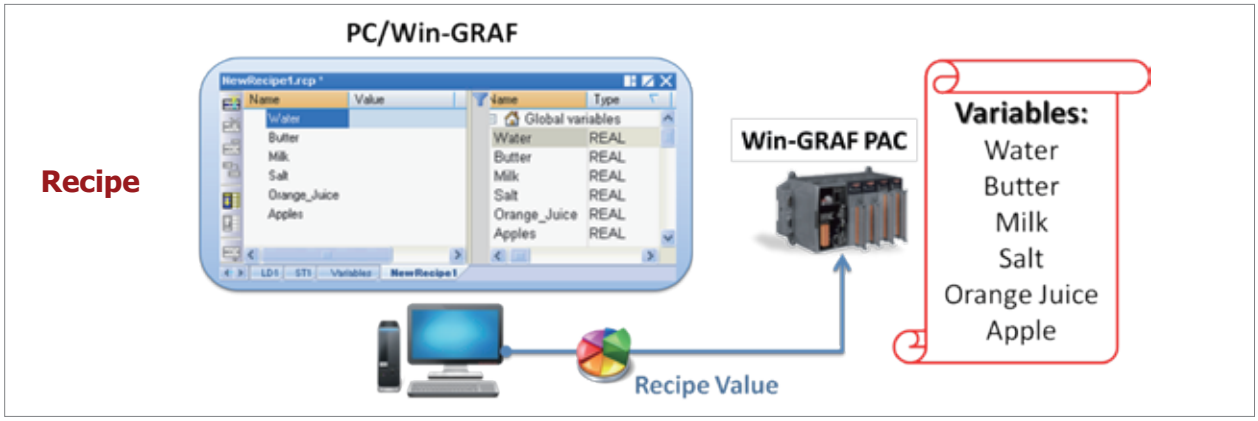
Apply multi-recipes pre-defined in PC/Win-GRAF to PAC.

■ Spy List

Show several selected variables in one Spy List window.

Event triggered Data Binding





Win-GRAF PAC Features

Support eLogger HMI

- eLogger is a free HMI software by ICP DAS.
- All WinCE Win-GRAF PACs support eLogger HMI, including: WP-5xx8-CE7, WP-8xx8, VP-x2x8-CE7, WP-8xx8-CE7, WP-9xx8-CE7 and XP-8xx8-CE6.
- Provides various HMI elements.

Modbus Master Protocol

- Multi-port Modbus RTU, ASCII Master, RS-232/485/422
- Modbus TCP Master (Multiple connections)
- Connect other Modbus PLC, Modbus Master, Modbus I/O and Modbus devices

Modbus Slave Protocol

- Multi-port Modbus RTU Slave, RS-232/485/422
- Modbus TCP Slave (Multiple connections)
- Connect PC/SCADA/HMI

Exchange Data Between PACs

Up to 32 Win-GRAF PACs can use Data Binding to exchange application data and control data to each other.

Support Retain Variables

Win-GRAF PACs support retain variables. Suitable to retain the data changed quickly and frequently.

Support DCON I/O

Support RS-485 Port to connect the ICP DAS I-7000 I/O modules, and I-87K4/5/8/9 Expansion Unit plus I-87xxxW I/O boards, and RU-87P4/8 Expansion Unit plus I-87xxxW I/O boards.

Support a Variety of I/O Boards

Support I-8xxxW and I-87xxxW I/O boards, such as: DI, DO, AI, AO, Relay, AC-IN, Thermistor, Thermo Couple, RTD, Strain Gauge, Encoder, PWM output, Counter, Frequency, etc.

Support File Access & Data Log

Support Temperature/Humidity Modules

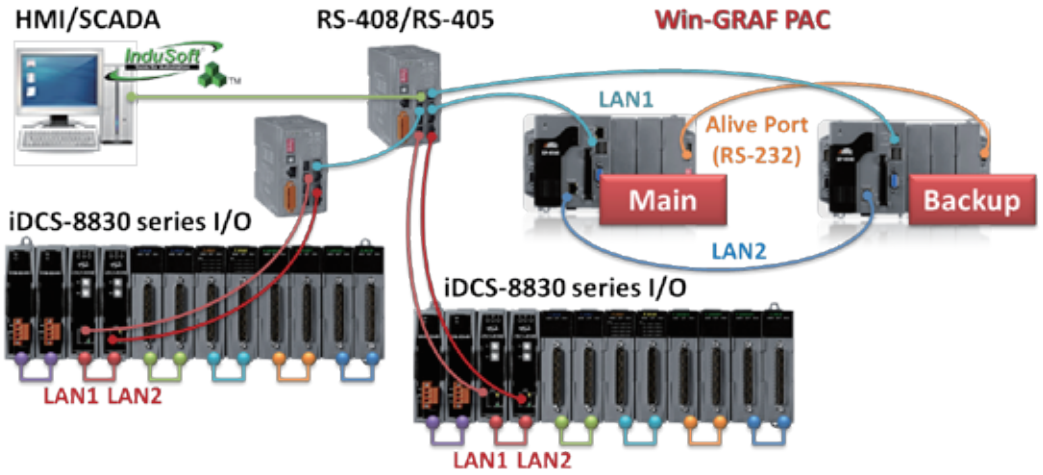
DL-100T485 and DL-100TM485.

Protect Application by Own Algorithm

Protect the Win-GRAF application by user-defined algorithm. Even others copy the application to the same model PAC, as long as he cannot get the source code, can not run the application correctly.

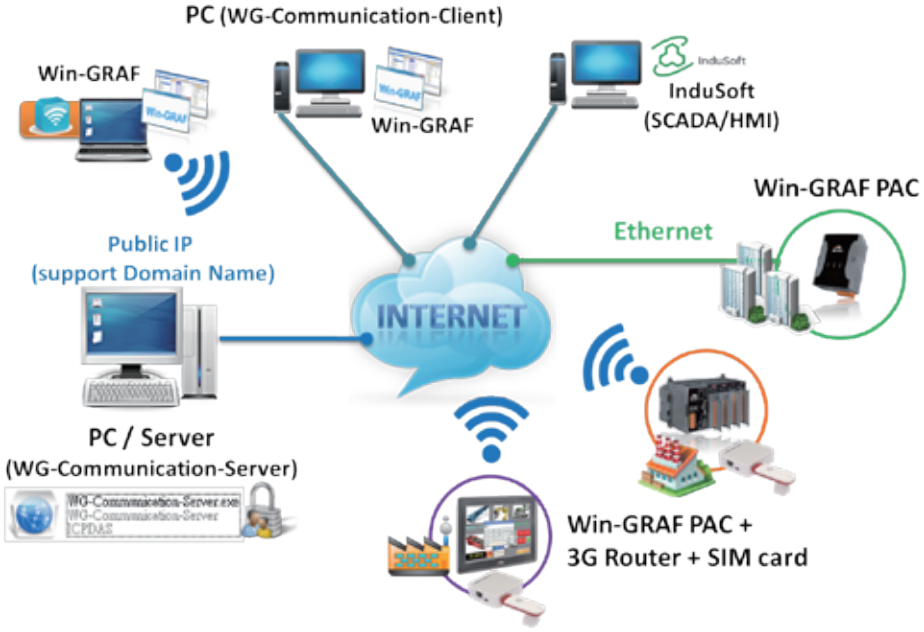
Redundant Solution

XP-8xx8-CE6 support the Win-GRAF redundant system to achieve the more secure engineering applications. (Both CPU and I/O Modules are Redundant ▼)



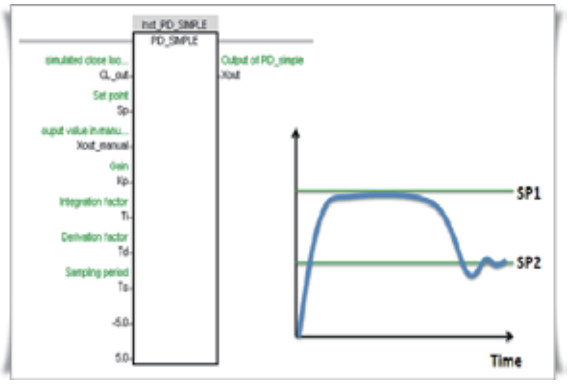
■ Intelligent Win-GRAF 3G Solution

- Only the WG-Communication Server (behavior like a Cloud Server) needs a public IP (support Domain Name). Other PACs and PCs that connect to this Server no need a public IP.
- The user can monitor the remote PAC by using a 3G wireless network or an intranet.
- The user can use the Win-GRAF Workbench to connect to a remote PAC to debug/update the Win-GRAF program or update the Win-GRAF PAC Driver.
- The PAC can actively send a Log File to a PC (WG-Communication-Server).

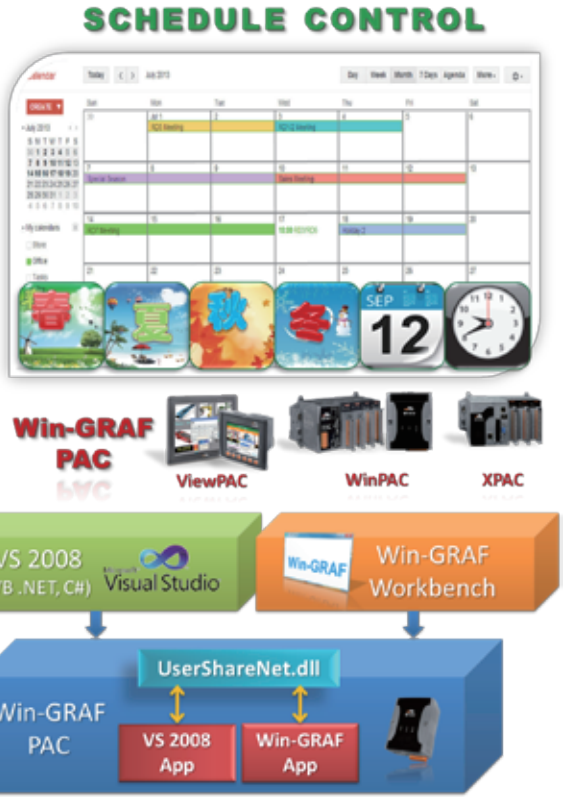


■ PID Control

- Can Control more than 200 PID in one PAC.



■ Schedule Control



■ Support VS 2008 Development

The Win-GRAF PACs support to use VS 2008 (VB.net, C#) to develop user own HMI and data management programs, and can exchange variables with the Win-GRAF control programs.

Software	Win-GRAF	C++	VS 2008
Programming	Easy	Hard	Middle hard
SoftLogic	Yes	No	No
Debug	Easy	Hard	Middle hard
Data Management	Win-GRAF integrated with VS 2008 to achieve data management. Powerful, Middle hard	Powerful, Hard	Powerful, Middle hard
Communication	Built-in Modbus TCP, RTU, ASCII, DCON, Data Binding	Hard coding	Hard coding
Program I/O	Easy	Hard	Hard

Win-GRAF vs. ISaGRAF Advantages

Development Software Advantages

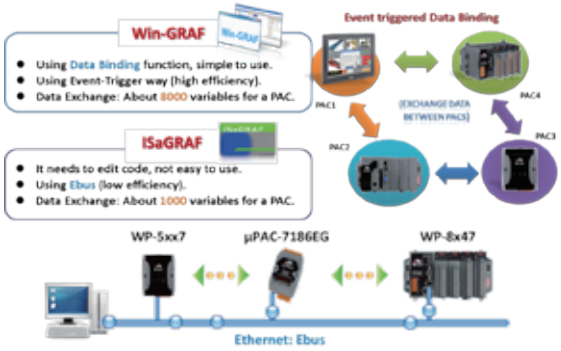
- **Win-GRAF** with **all-in-one design screen** is clear, easy and modern.
- **Fast** ! Compiling 100 or more programs needs about 1-5 minutes only.
- Win-GRAF for Window XP, 7, 8 (**32/64-bit**), ISaGRAF for Window XP (32-bit only) OS.

Number of I/O Tags - up to 10,000

- **Win-GRAF** Workbench can use up to **10,000** I/O tags.
- ISaGRAF Workbench has a limitation of 256 I/O Tags.

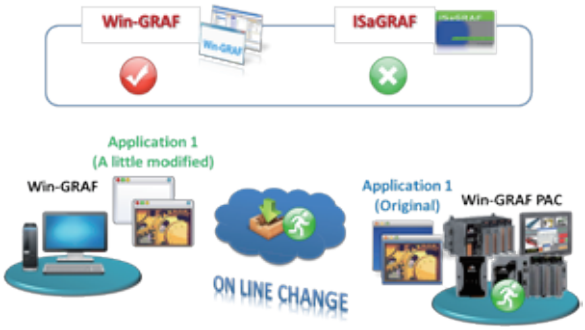
PAC to PAC Data Exchange Advantages

- **Win-GRAF** uses **Data Binding**, by Event-trigger (**Fast**); drag to set (**Easy**); exchange data about 8000 variables per PAC (**More**).
- ISaGRAF uses Ebus by Coding, exchange data about 1000 variables per PAC.



On Line Change Advantages

- **Win-GRAF** supports **On Line Change**, replace the current running project to a new modified one without stopping the project.
- ISaGRAF does not support.

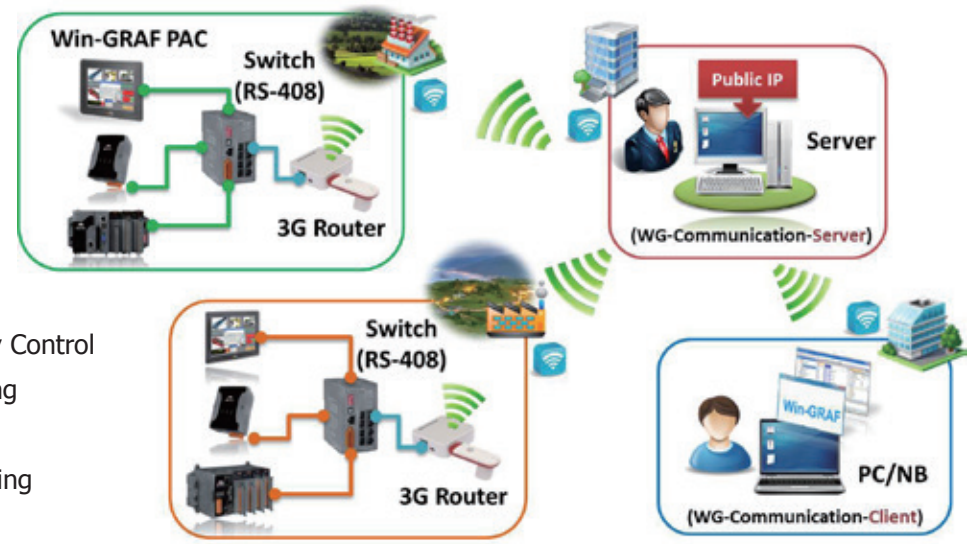


Win-GRAF More Other Advantages

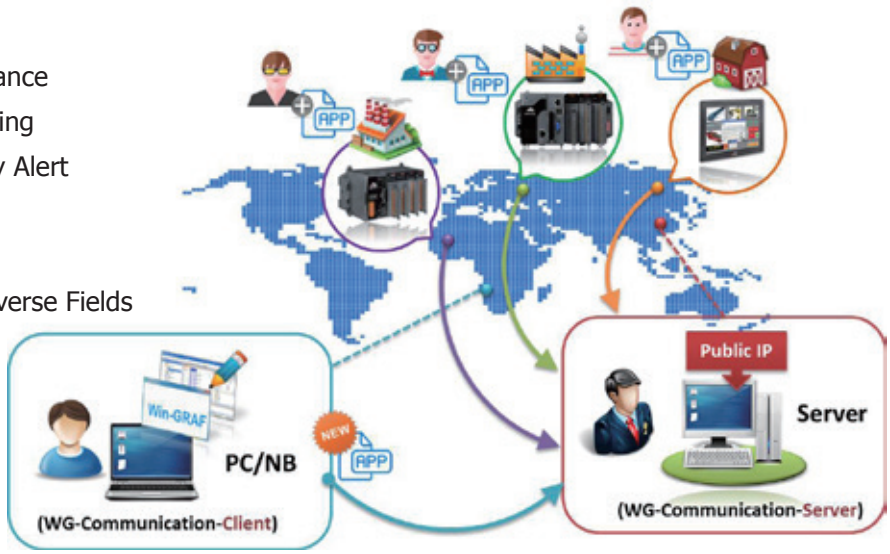
Item	Win-GRAF	ISaGRAF V. 3.55
ST Syntax	ST can be used in the FBD or LD	ST cannot be used in the FBD or LD
Recipe Tables	Yes, can apply to the PAC directly	-
Function/Function Block	• Large numbers • Extensibility: Good	• Max. 255 • Extensibility: Limited
3G Wireless	Intelligent 3G wireless solution	Normal 3G wireless transmission
Redundant System	• One public IP, easy to connect • Auto synchronize • Plug and play to replace	• Two public IPs, needs to check • Synchronize via coding • Install App before replacing
Protocols	**Supporting Types and the Max. Connections**	
DCON (RS-485)	16 ports	1 port
Modbus RTU	Master: 36 Slave: 16~32	Master: 12 Slave: 9
Modbus TCP	Slave: 64 Except Model WP-8xx8: 32	Slave: 32 Except Model XP-8xx7-CE6: 64
Modbus UDP	Support	-
Send String	Send String via Modbus	-

Win-GRAF Applications

Intelligent Win-GRAF 3G Solution



- Remote Factory Security Control
- Environmental Monitoring
- Fire Alarm & Prevention
- Building Energy Monitoring



- Multinational Offices Maintenance
- Remote 3G Application Updating
- Remote Conservation Security Alert
- Power Water Management
- Genius Shipping Monitoring
- Emergency Command and Diverse Fields

Ordering Information

Win-GRAF Development Software		
Win-GRAF Workbench		Win-GRAF Workbench Software (Large I/O Tags) with one USB Dongle

Win-GRAF PAC Series	PAC Model	Win-GRAF PAC Series	PAC Model
 **ViewPAC Series**	VP-4208-CE7 VP-2208-CE7 VP-1238-CE7	 **WinPAC Series**	WP-5238-CE7 WP-8128-CE7 WP-8428-CE7 WP-8828-CE7 WP-8148 WP-8448 WP-8848 WP-9xx8-CE7(Available soon)
 **XPAC Series**	XP-8048-CE6 XP-8348-CE6 XP-8748-CE6		

Industrial Management Switch

FSM-6228G-AC/FSM-6228G-DC Managed Ethernet/Fiber Switch

Total 28 Ports: 24 Ethernet 10/100/1000 Base-T + 4 Fiber SFP Gigabit

FSM-6228G is a Layer 2 Managed Switch that meets all IEEE 802.3ab/u/x/z Gigabit, Gigabit Ethernet and Ethernet specifications. It provides 24 gigabit Ethernet ports (10/100/1000 Mbps TP) 4 SFP ports. With functions: QoS (Quality of Service), Spanning Tree, VLAN, Port Trunking, Bandwidth Control, Port Security, SNMP/RMON.

- IEEE 802.3ab 1000BASE-T Gigabit Ethernet
- Network redundant Ring fail-over protection (< 20 ms)
- Provide better manageability, security, QoS and performance
- Multicast/Broadcast/Flooding Storm Control
- Multicasting support IGMP v1/v2/v3, proxy & snooping

FSM-6228G

MSM-6226G Managed Ethernet/Fiber Switch

Total 26 Ports: 20 Ethernet 10/100/1000 Base-T + 2 Fiber SFP Gigabit + 4 TP/SFP Combo

MSM-6226G is a Layer 2 Managed Switch that meets all IEEE 802.3ab/u/x/z Gigabit, Gigabit Ethernet and Ethernet specifications. It provides 20 gigabit Ethernet ports (10/100/1000 Mbps TP), 4 combo TP/SFP ports and 2 SFP ports.

- IEEE 802.3ab 1000BASE-T Gigabit Ethernet
- Provide better manageability, security, QoS and performance
- IPv6 and s-Flow supports
- Port Mirroring helps supervisor monitoring network
- IEEE 802.3z Gigabit Ethernet
- Dual speed SFPs for FE or GbE fiber uplink
- 802.3az Energy Efficient Ethernet standard
- Supports IGMPv3 snooping and IGMP Proxy

MSM-6226G

MSM-6226 Managed Ethernet/Fiber Switch

Total 26 Ports: 24 Ethernet 10/100 M & 1000 M + 2 TP/SFP Combo

MSM-6226 is a Layer 2 Managed Switch that meets all IEEE 802.3/u/x/z Gigabit, Fast Ethernet and Ethernet specifi cations. It provides 24 Fast Ethenret ports(10/100 Mbps TP) and 2 Gigabit dual media ports with TP/SFP(or GBIC).

- IEEE 802.3ab 1000BASE-T Gigabit Ethernet
- IEEE 802.3az Energy Efficient Ethernet standard
- Provide better manageability, security, QoS, and performance
- Port Mirroring helps supervisor monitoring network
- Dual speed SFPs for FE or GbE fiber uplink
- IPv6 and s-Flow supports
- Supports IGMPv3 snooping and IGMP Proxy

MSM-6226

FSM-510G-2F/FSM-510G-4F Managed Ethernet/Fiber Switch

Total 10 Ports: 8 Ethernet 10/100/1000 Base-T + 2 Fiber SFP (100M/1G)
Total 10 Ports: 6 Ethernet 10/100/1000 Base-T + 4 Fiber SFP (100M/1G)

FSM-510G-4F is a Layer 2 Managed Switch that meets all IEEE 802.3ab/u/x/z Gigabit, Gigabit Ethernet and Ethernet specifications. It provides 6 gigabit Ethernet ports (10/100/1000 Mbps TP) 4 SFP ports.

- IEEE 802.3ab 1000BASE-T Gigabit Ethernet
- Network redundant Ring fail-over protection (< 20 ms)
- Provide better manageability, security, QoS and performance
- Multicast/Broadcast/Flooding Storm Control
- Multicasting support IGMP v1/v2/v3, proxy & snooping

FSM-510G-4F

FSM-510G-2F

Accessories

SFP Cage Connector

SFP-1G85M-SX	Multi-mode 850 nm, 0.5 km SFP Module
SFP-1G13M-SX2	Multi-mode 1310 nm, 2 km SFP Module
SFP-1G13S-LX	Single-mode 1310 nm, 10 km SFP Module
SFP-1G13S-LX20	Single-mode 1310 nm, 20 km SFP Module
SFP-1G13S-LHX	Single-mode 1310 nm, 40 km SFP Module
SFP-1G15S-XD	Single-mode 1550 nm, 60 km SFP Module

ICP DAS CO., LTD.
TEL:+886-3-597-3366 FAX:+886-3-597-3733 Email:sales2@icpdas.com
http://www.icpdas.com