



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
- CGI Command sending and receiving function supported for IP Camera and Network device
- Support Modbus TCP/RTU protocol for SCADA software integration
- SNMP, SNMP Trap, MQTT and DDNS function supported



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 its powerful and easy-to-use features, it will minimize the learning curve, shorten time to market and dramatically reduce the labor and cost spent on system development.

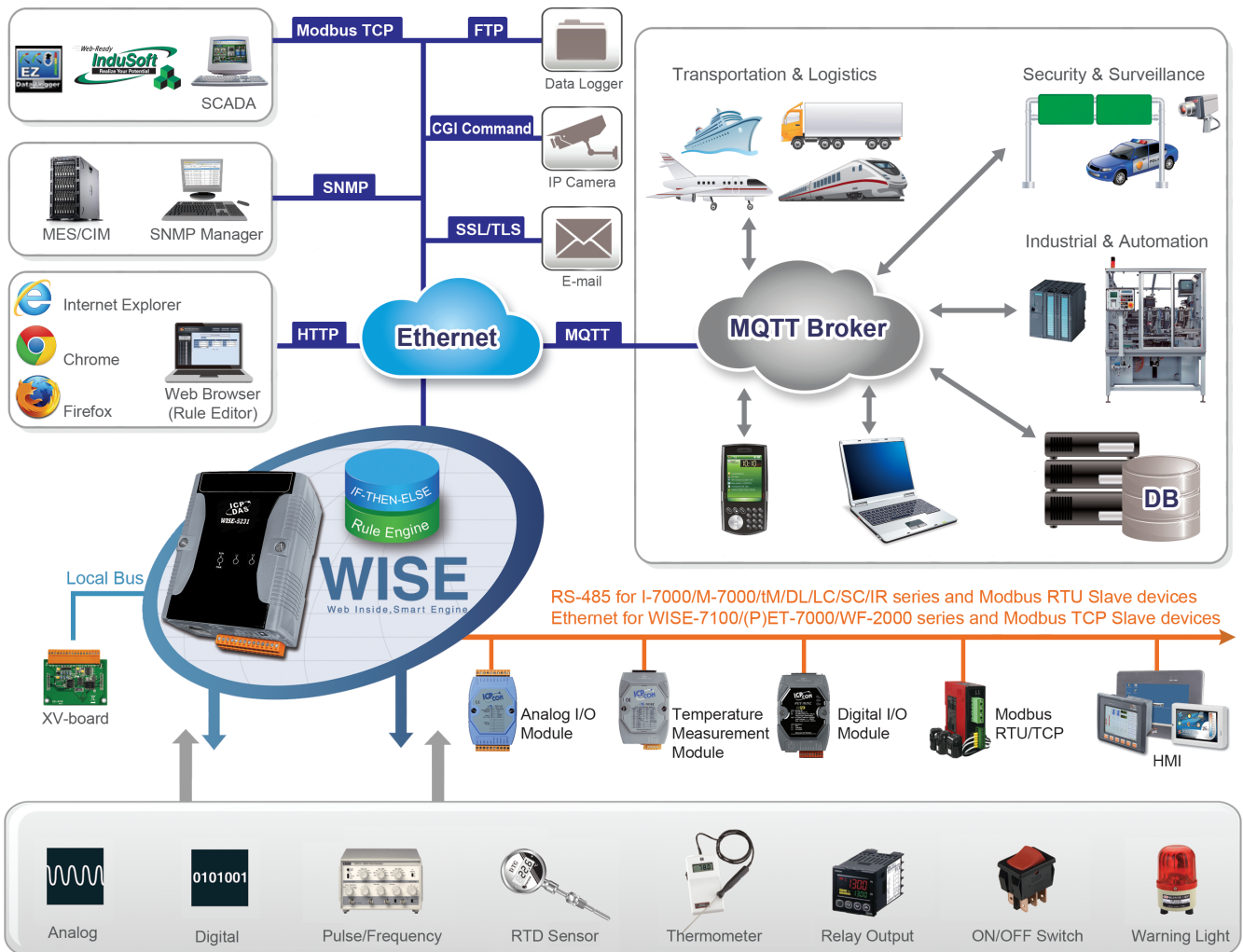
WISE-5231 provides more supports in I/O functions. It allows connections to XV-board; supports DCON I/O modules, Modbus RTU Slave modules and Modbus TCP Slave modules together. The wide range of selection options enables flexibility in I/O module integration to meet the requirements from various applications. WISE-5231 provides Data Logger function to record the I/O channel data by periodic cycle or event trigger. And it allows to send the data files by FTP to the control center. In addition to the CGI command sending function, WISE-5231 now supports the CGI command receiving function that allows the devices (such as IP camera) connected to the network to trigger the operation of IF-THEN-ELSE logic rule of WISE-5231. The well thought-out CGI command functions make WISE-5231 being able to interact with the devices flexibly in the network environment. WISE-5231 also supports SNMP, SNMP Trap, MQTT and DDNS protocols and services. The flexible integration ability with the SCADA and IT software or devices and the reliable ability of real-time I/O logic control and data logger make WISE-5231 the most cost-effective I/O controller in the IoT (Internet of Thing) Age.

System Specifications

Model	WISE-5231
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)
RTC (Real Time Clock)	Yes
VGA	Yes
Communication	
Ethernet	RJ-45 x 1, 10/100/1000 Base-TX (Auto-negotiating, Auto MDI/MDI-X)
COM 1	RS-232 (TxD, RxD, GND), non-isolated, Speed: 115200 bps max
COM 2	RS-232 (TxD, RxD, GND), non-isolated, Speed: 115200 bps max.
COM 3	RS-485 (Data+, Data-), non-isolated, Speed: 115200 bps max.
COM 4	RS-485 (Data+, Data-), 2500 VDC isolated, Speed: 115200 bps max.
LED Indicators	
Power LED	Yes (Red)
System LED	Yes (Red, Green)
I/O Module Support	
Local I/O Module	Yes, one XV-board
Remote I/O Module	DCON modules (up to 32) or Modbus RTU Slave modules (up to 32), Modbus TCP Slave modules (up to 16)
Power Requirements	
Input Range	12 to 48 VDC
Power Consumption	4.8 W
Mechanical	
Dimensions/Installation	91 mm x 132 mm x 52 mm (W x L x H) / DIN-Rail Installation
Environmental	
Temperature	Operating Temperature: -25 °C to +75 °C; Storage Temperature: -30 °C to +80 °C
Humidity	10 to 90% RH, Non-condensing

System Architecture

WISE-5231 System Architecture



WISE-5231 : A perfect concentrator of sensor and I/O modules in the IoT age

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.

- Support Modbus TCP/RTU Protocol
- Support SNMP (Simple Network Management Protocol)
- Support MQTT (MQ Telemetry Transport) for message publish/subscribe mechanism
- Support FTP Server/Client for the maintenance of data logger files
- Support SSL/TLS authentication Email sending for alarm notification
- Support full CGI command operations - CGI command sending and CGI command receiving
- Support DDNS (Dynamic DNS)

Software Specifications

Function		Description
User-friendly and intuitive web site interface	Browser	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Support XV-board
	Remote side	<ul style="list-style-type: none"> ● Support DCON or Modbus RTU Slave devices (Up to 32) ● Support Modbus TCP Slave devices (Up to 16)
Intelligent Logic operation and data logger ability at field sites	IF-THEN-ELSE Logic operation	<ul style="list-style-type: none"> ● Provide IF-THEN-ELSE logic rule editing, and the ability for IF-THEN-ELSE logic rules execution
	I/O channel monitoring and control	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Perform the timing function. The status of Timer can be included in IF condition statements to trigger the THEN/ELSE actions
	Schedule	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Execute Email message sending. The SSL/TLS authentication is provided
	CGI Command	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Perform Data Logger function to real-time record the I/O channel data of the controller by Period or Event Trigger operation
	Internal Register	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● DDNS (Dynamic DNS) service supported

Facility Room Monitoring Solution

- No more programming, Web pages for control logic editing
- Ability for IF-THEN-ELSE logic rules execution
- Modbus protocol supported for easy integration with I/O modules
 - Access and lighting status monitoring and control
 - Temperature and humidity monitoring
 - Air conditioning device monitoring and control
 - UPS monitoring for power status
- CGI command sending and receiving for interaction with IP camera
- Modbus, SNMP and MQTT protocols for integration with SCADA/MIS/MES/IT/Network Management systems.

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I/O Module Support

Local I/O Expansion (XV-board)

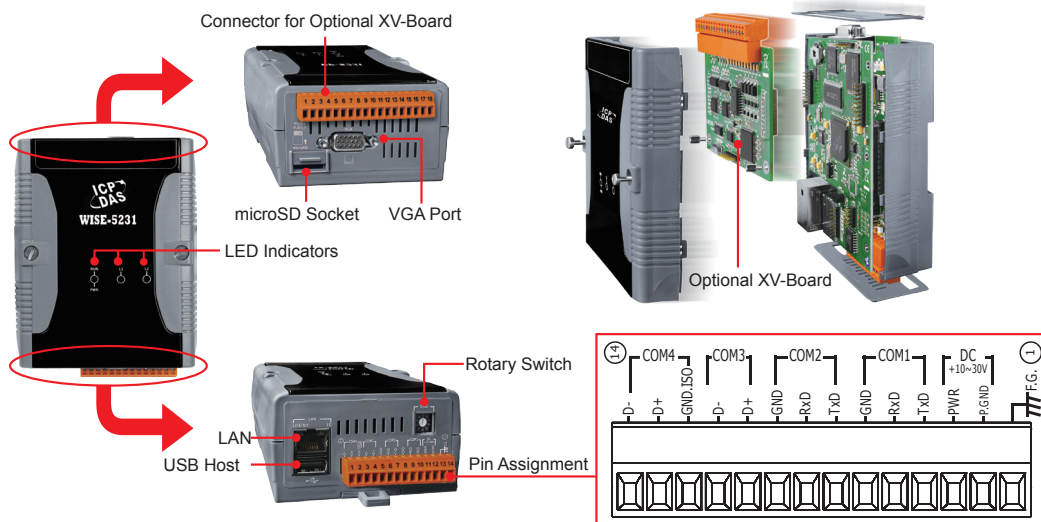
AI, AO, DI, DO XV-board

Model Name	DI	DO	AI (16-bit)		AO (12-bit)	
			Ch	Range	Ch	Range
XV107, XV107A	8	8	-	-	-	-
XV110	16	-	-	-	-	-
XV111, XV111A	-	16	-	-	-	-
XV116	5	2 Signal Relay 4 Power Relay	-	-	-	-
XV306	4	4(Relay)	4	$\pm 1\text{ V}, \pm 2.5\text{ V}, \pm 5\text{ V}, \pm 10\text{ V},$ $\pm 20\text{ mA}, 0 \sim 20\text{ mA}, 4 \sim 20\text{ mA}$	-	-
XV307	4	4(Relay)	-	-	2	$0\text{ V} \sim +5\text{ V}, \pm 5\text{ V}, 0\text{ V} \sim +10\text{ V}, \pm 10\text{ V},$ $0\text{ mA} \sim +20\text{ mA}, +4\text{ mA} \sim +20\text{ mA}$
XV308	DI+DO=8		8	$\pm 1\text{ V}, \pm 2.5\text{ V}, \pm 5\text{ V}, \pm 10\text{ V},$ $\pm 20\text{ mA}, 0 \sim 20\text{ mA}, 4 \sim 20\text{ mA}$	-	-
XV310	4	4	4	$\pm 1\text{ V}, \pm 2.5\text{ V}, \pm 5\text{ V}, \pm 10\text{ V},$ $\pm 20\text{ mA}, 0 \sim 20\text{ mA}, 4 \sim 20\text{ mA}$	2	$0\text{ V} \sim +5\text{ V}, \pm 5\text{ V}, 0\text{ V} \sim +10\text{ V}, \pm 10\text{ V},$ $0\text{ mA} \sim +20\text{ mA}, +4\text{ mA} \sim +20\text{ mA}$

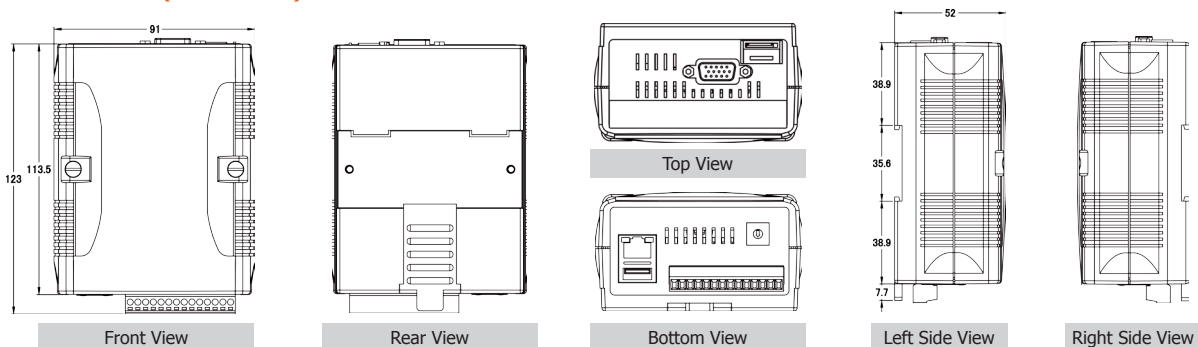
Remote I/O Expansion Modules

DCON Module	ICP DAS I-7000/DL series module
Modbus RTU Slave Module	ICP DAS M-7000/tM/DL/LC/SC/IR series module and Modbus RTU Slave module
Modbus TCP Slave Module	ICP DAS WISE-7100/(P)ET-7000/WF-2000 series module and Modbus TCP Slave module

Appearance



Dimensions (Unit:mm)



Ordering Information

WISE-5231	Intelligent Multifunction IoT Controller
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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)