



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.

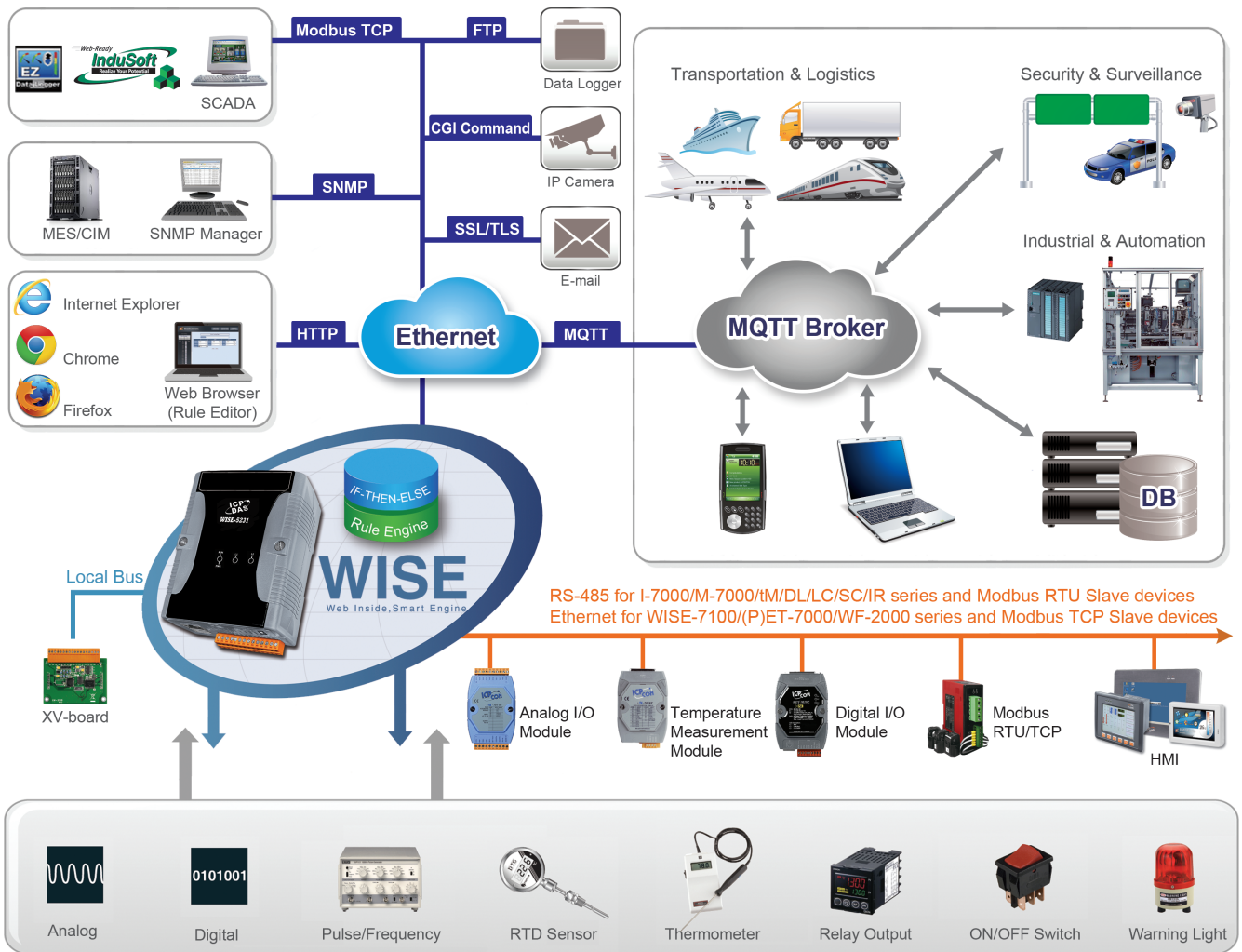
WISE-5231 provides more supports in I/O functions. It allows connections to XV-board; supports DCON I/O modules, Modbus RTU Slave modules and Modbus TCP Slave modules together. The wide range of selection options enables flexibility in I/O module integration to meet the requirements from various applications. 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)

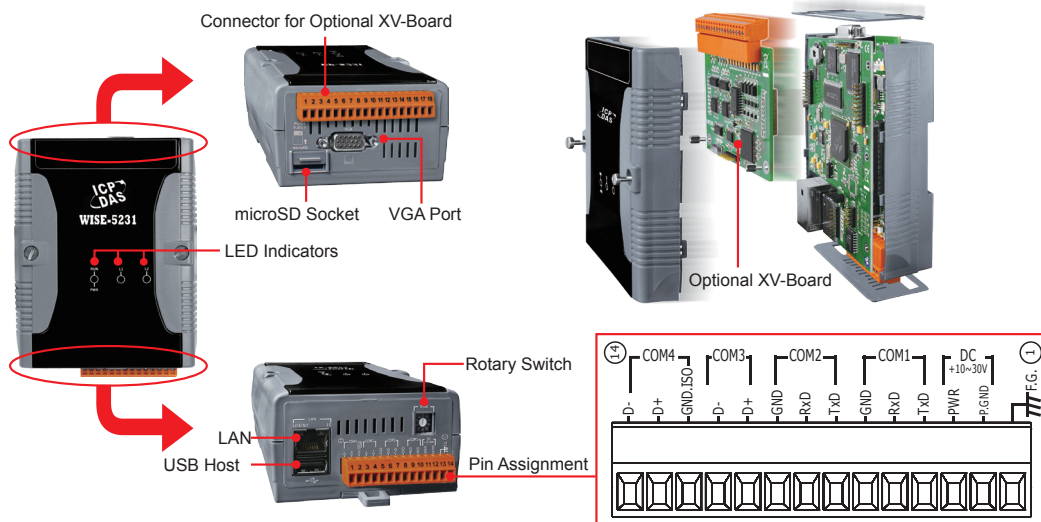
AI, AO, DI, DO XV-board

| 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 | $0\text{ V} \sim +5\text{ V}, \pm 5\text{ V}, 0\text{ V} \sim +10\text{ V}, \pm 10\text{ V},$ $0\text{ mA} \sim +20\text{ mA}, +4\text{ mA} \sim +20\text{ mA}$ |

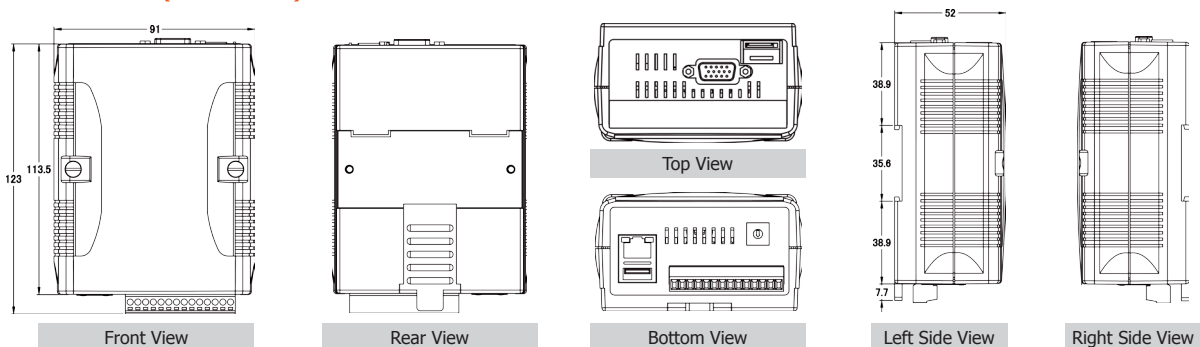
Remote I/O Expansion Modules

| | |
|--------------------------------|--|
| 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 |
|------------------|--|

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) |