



WISE - Intelligent IIoT Edge Controller & I/O Module



- WISE-523x/WISE-2x4xM IIoT Edge Controller
- WISE-75xxM Intelligent MQTT I/O Module
- WISE-71xx Intelligent I/O Module

Easy to use

No programming



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Ch1.WISE IIoT Edge Controller & I/O Module

The Industrial Internet of Things (IIoT) is one of the most important technology trends of Industry 4.0 application today. In addition to the Edge Computing mechanism for the field site sensors and devices, it also includes the technology of collection and sending sensor and device information to the back-end Cloud management platform. ICP DAS has developed a variety of IIoT Edge controllers, I/O modules, sensors, network equipment, and IIoT Cloud management software.

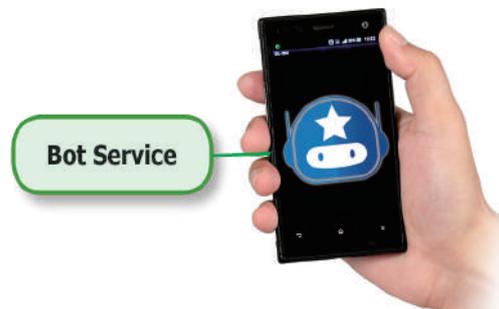
1 IoTstar

The IIoT cloud management software for the remote monitoring and management of the controller and sensor



IoTstar Bot Service

Using App on mobile phone to perform two-way monitoring and interaction with the controllers managed by IoTstar.



2 WISE Edge Controller

Built-in edge computing mechanism, Instant message notification, cloud system connection and other functions.



3 WISE I/O Module

Built-in intelligent logic operation and I/O Channel, appropriate I/O module can be selected according to application needs.



4 iCAM Series

The IP camera co-work with WISE to implement the Intelligent surveillance solution.



5 Sensor

Provide a variety of sensors to measure temperature, humidity, dew point, CH4 methane, CO, CO2, PM2.5, etc.



IIoT Edge Controller:



Hardware Specification

Model	WISE-284xM	WISE-224xM	WISE-523x	WISE-523xM
System				
CPU	Quad-core ARM CPU, 1.6 GHz/Core		ARM CPU, 1.0 GHz	
SDRAM/Flash	DDR3 2 GB / 8 GB		DDR3 512 MB / 256 MB	
microSD	Built-in one 4 GB microSD card (support up to 32 GB microSD card or 2 TB microSDXC card(WISE-284xM Only))			
Communication Interface & IO Module Expansion				
Ethernet	10/100/1000 Base-TX * 2		10/100/1000 Base-TX * 1	
Serial Port	2 x RS-232 / 2 x RS-485 (2 x isolated)		2 x RS-232 / 2 x RS-485 (1 x isolated)	
I/O Module Expansion	XV-board, RS-485, Ethernet			
Mechanical/Power/Environmental				
Casing	Metal	Metal	Plastic	Metal
Dimension (W x L x H; mm)	42 x 164 x 129	35 x 167 x 119	91 x 132 x 52	117 x 126 x 58
Installation	Wall/DIN-Rail mounting (optional)		DIN-Rail mounting	Wall/DIN-Rail mounting
Temperature/Humidity	Operating Temperature: -25°C to +75°C ; Storage Temperature: -40°C to +80°C ; 10 to 90% RH, Non-condensing			
Input Range/Consumption	+12 to +48 VDC (Ethernet: 4.8 W; -4GE/4GC/3GWA: 6.5 W)			
Wireless Communication (Applied to 3G/4G version WISE-523xM, WISE-224xM & WISE-284xM series controllers)				
3G System (-3GWA)	WCDMA: 850/900/1900/2100 MHz			
3G/4G System (-4GE)	FDD LTE: B1/B3/B5/B7/B8/B20 bands (Frequency Band for EMEA, Korea, Thailand, India and Taiwan) WCDMA: 850/900/2100 MHz			
3G/4G System (-4GC)	FDD LTE: B1/B3/B8 bands (Frequency Band for China) TDD LTE: B38/B39/B40/B41 bands (Frequency Band for China) WCDMA: 900/2100 MHz, TD-SCDMA 1900/2100 MHz, CDMA2000 (BC0) 800 MHz			

Software Function

Model	WISE-284xM Series	WISE-224xM Series	WISE-523x(M) Series
Web Page Interface	Yes		
IF-THEN-ELSE Logic Rule	Yes (Unlimited sets)		
I/O Channel Monitoring	Yes		
Timer Operation	Yes (Unlimited sets)		
Schedule Operation	Yes (Support Calendar and Weekly modes; Unlimited sets)		
Internal Register	Yes (Support "Retain Variable" operation)		
Data Logger	Yes		
Communication Protocol	Modbus TCP/RTU, FTP Client/ Server, CGI sending/receiving, SNMP & MQTT (non-SSL & SSL)		
Information Security Enhancement	Yes		-
Instant Message Sending	SSL/TLS Email, LINE Notify, WeChat(WISE-284xM, WISE-2246M/5236), Telegram(WISE-284xM), SMS (3G/4G version of WISE-523xM/224xM/284xM)		
Cloud System Connection	Yes (ICP DAS IoTstar, Microsoft Azure, IBM Bluemix, Amazon Web Service(WISE-284xM Only))		

Intelligent I/O Module:



Hardware Specification

Model	WISE-71xx	WISE-75xxM
System		
CPU	16 bits CPU (80MHz)	32 bits CPU (400MHz)
microSD	-	
Communication Interface & IO Module Expansion		
Ethernet	10/100 Base-TX * 1	10/100 Base-TX * 2 for Daisy-Chain Topology
Serial Port	-	
I/O Module Expansion	Built-in I/O module	
Mechanical/Power/Environmental		
Casing	Plastic	Metal
DIM. (W x L x H; mm)/Installation	72 x 123 x 35 ; Wall/DIN-Rail mounting	120 x 97 x 42; Wall Mounting
Temperature/Humidity	Operating Temperature: -25°C to +75°C; Storage Temperature: -30 °C to +80 °C; 10 to 90% RH, Non-condensing	Operating Temperature: -25°C to +75°C; Storage Temperature: -40°C to +80°C; 10 ~ 90% RH, Non-condensing
Input Range	+12 to +48 VDC	
Powered from PoE	Yes (IEEE 802.3af, Class1)	
Consumption	Depends on the I/O channels provided	

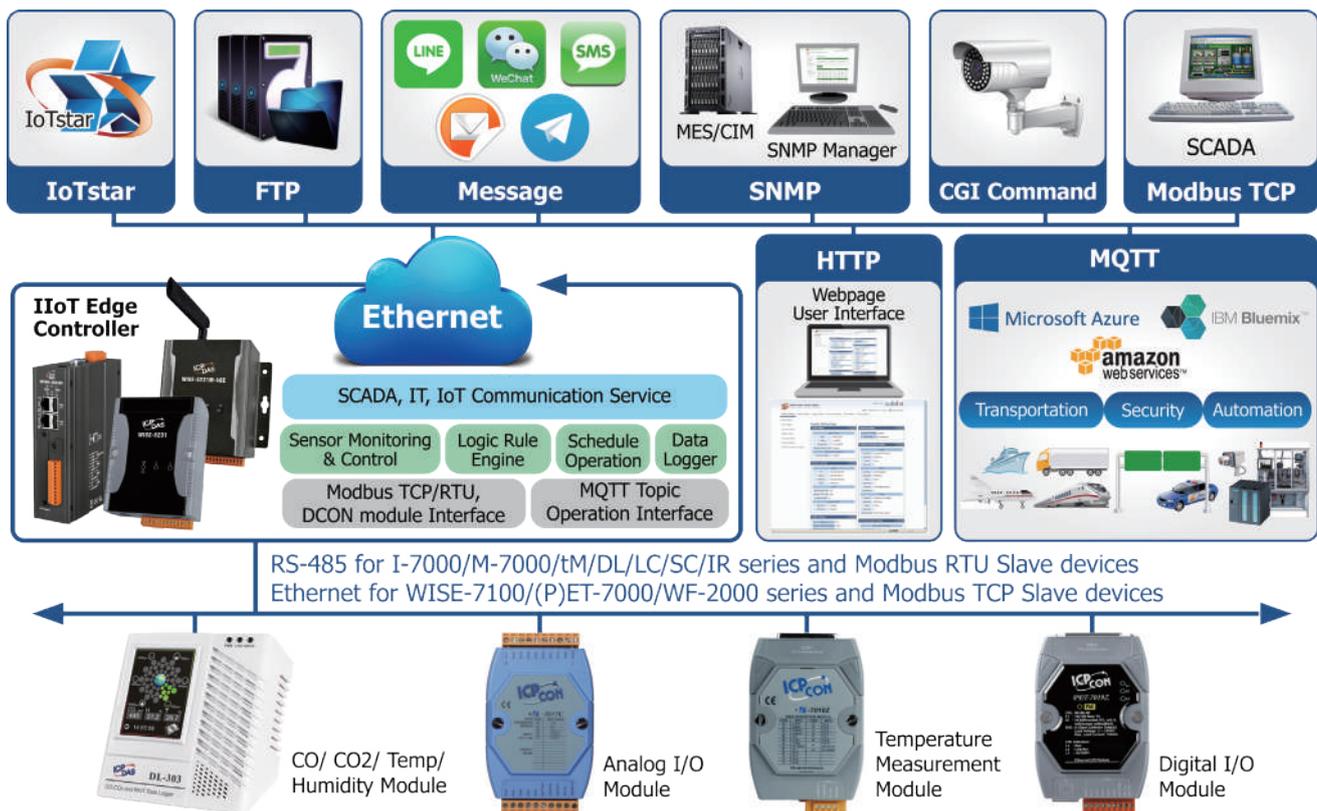
Software Function

Model	WISE-71xx	WISE-75xxM
Web Page Interface	Yes	
IF-THEN-ELSE Logic Rule	Yes(36 Sets)	Yes(72 Sets)
I/O Channel Monitoring	Yes	
Timer Operation	Yes(12 Sets)	Yes(24 Sets)
Schedule Operation	-	Yes(24 Sets)
Internal Register	Yes	
Data Logger	-	
Communication Protocol	Modbus TCP & CGI sending	Modbus TCP, CGI sending & MQTT(non-SSL)
Information Security Enhancement	-	
Instant Message Sending	Email (non-SSL)	
Cloud System Connection	-	Yes (ICP DAS IoTstar)

Introduction

WISE (Web Inside, Smart Engine) is a product series developed by ICP DAS. 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 IIoT system development.

WISE Architecture



Based on the built-in Edge Computing Engine WISE provide, users can access Web server on WISE through browser to perform the tasks such as logic rule edition, download and execution to meet the requirement of real-time Edge Computing operation at the field site.

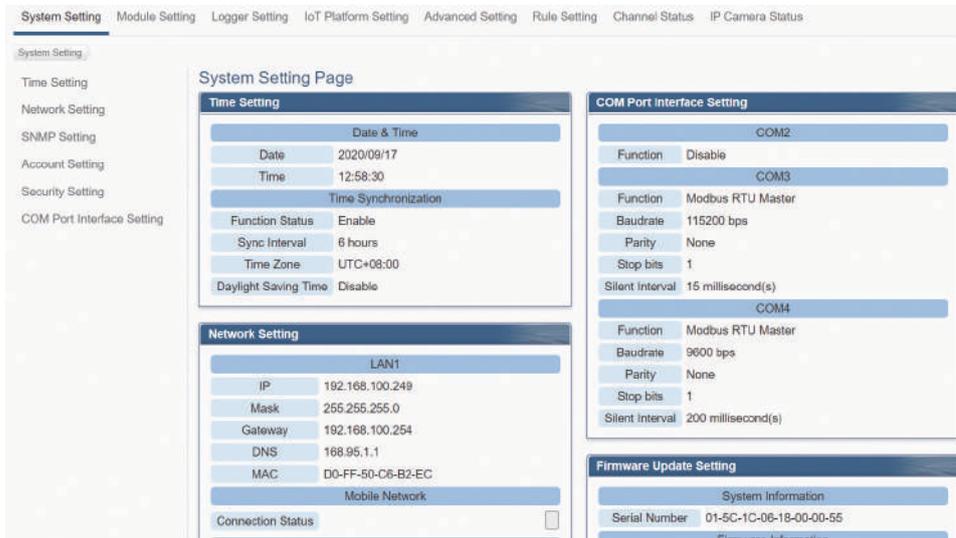
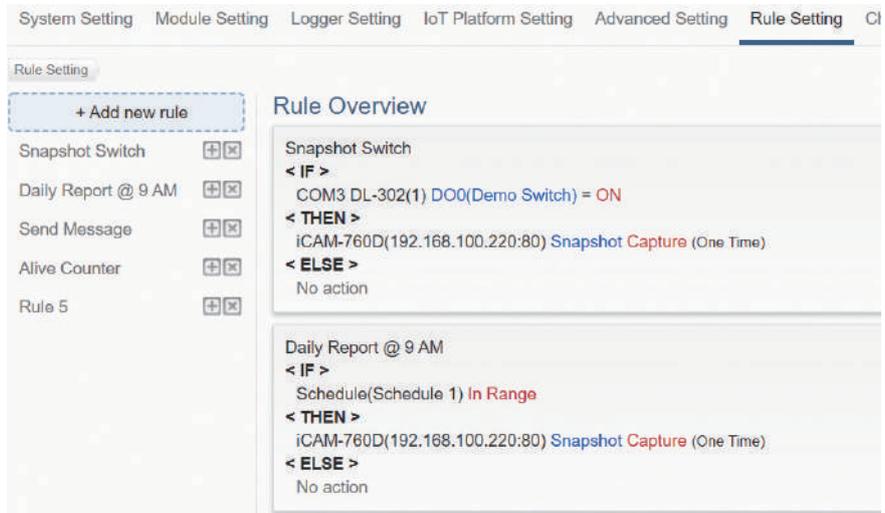
WISE-523x/WISE-2x4xM provides more supports in I/O functions. It allows to connect to a wide range of ICP DAS remote I/O modules and Modbus TCP/RTU slave modules; the users can freely choose the most suitable I/O modules for applications. With the microSD card, it provides Data Logger function to real-time record the I/O channel data of the controller and allows to send the data log files to the control center by FTP (or Email) for further administration management or data analysis.

WISE-523x/WISE-2x4xM supports a variety of IoT/SCADA communication protocols (Modbus, MQTT, SNMP, CGI, FTP), which can be quickly integrated with various IoT/IT/SCADA systems. WISE-523x/WISE-2x4xM also can connect to a public IoT Cloud platform (such as Microsoft Azure, IBM Bluemix, or Amazon Web Services) and ICP DAS IoTstar IoT cloud management software. Through the functions of "Well-thought-out sensor data collection", "Real-Time Edge Computing operation", and "Easy integration with IoT/SCADA system", WISE-523x/WISE-2x4xM is not only a controller of IIoT edge computing for the field-side sensors but also a IoT Gateway for uploading the sensor data to the IoT cloud system. It is definitely your best choice for building your IoT applications!

Features

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.



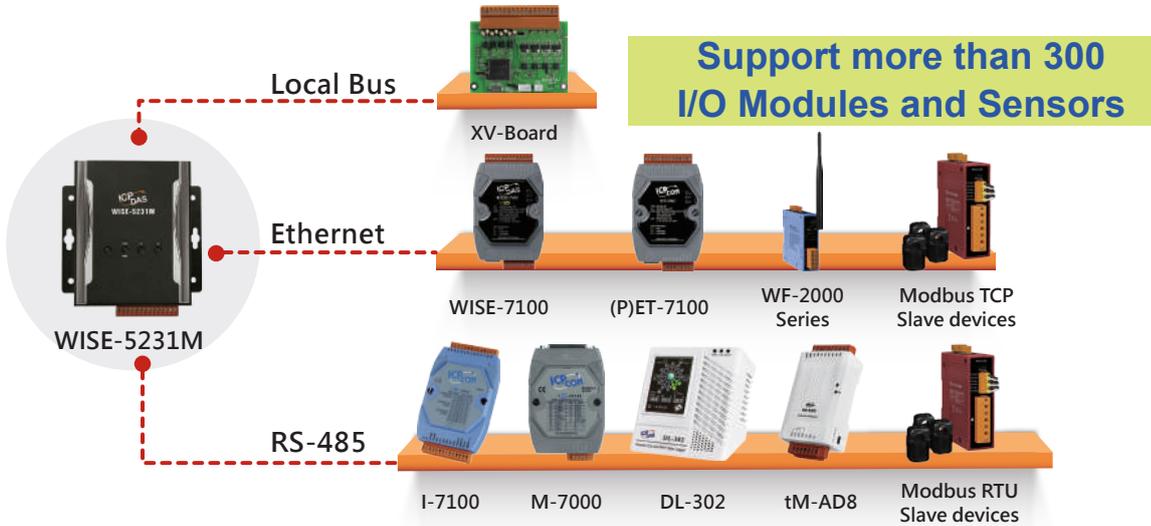
IF-THEN-ELSE logic rules execution ability

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.

IF Condition		THEN/ELSE Action	
Add a new condition: Set up a condition ▼		Add a new action: Set up an action ▼	
<input type="radio"/> AI Value	<input type="radio"/> Receive MQTT Message	<input type="radio"/> Assign AO Value	<input type="radio"/> Send Email
<input type="radio"/> DI Status	<input type="radio"/> Receive AWS/Azure/ Bluemix Message	<input type="radio"/> Assign DO Value	<input type="radio"/> Send SMS Message
<input type="radio"/> DI Counter Value	<input type="radio"/> Receive CGI Command	<input type="radio"/> Assign Internal Register Value	<input type="radio"/> Send MQTT Message
<input type="radio"/> Internal Register Value	<input type="radio"/> Mobile Network Signal of Camera Strength	<input type="radio"/> Change Timer Operation	<input type="radio"/> Send AWS/Azure/Bluemix Message
<input type="radio"/> Motion Detection Status		<input type="radio"/> Record Video/Snapshot by Camera	<input type="radio"/> Send CGI Command
<input type="radio"/> Timer Status		<input type="radio"/> Data Log	<input type="radio"/> Send SNMP Trap
<input type="radio"/> Schedule Status		<input type="radio"/> Reboot System	<input checked="" type="radio"/> Send LINE Message
<input type="radio"/> I/O Module Connection Status		<input type="radio"/> Assign Rule Status	<input type="radio"/> Send WeChat Message
<input type="radio"/> SD Card Status			<input type="radio"/> Send Telegram Message

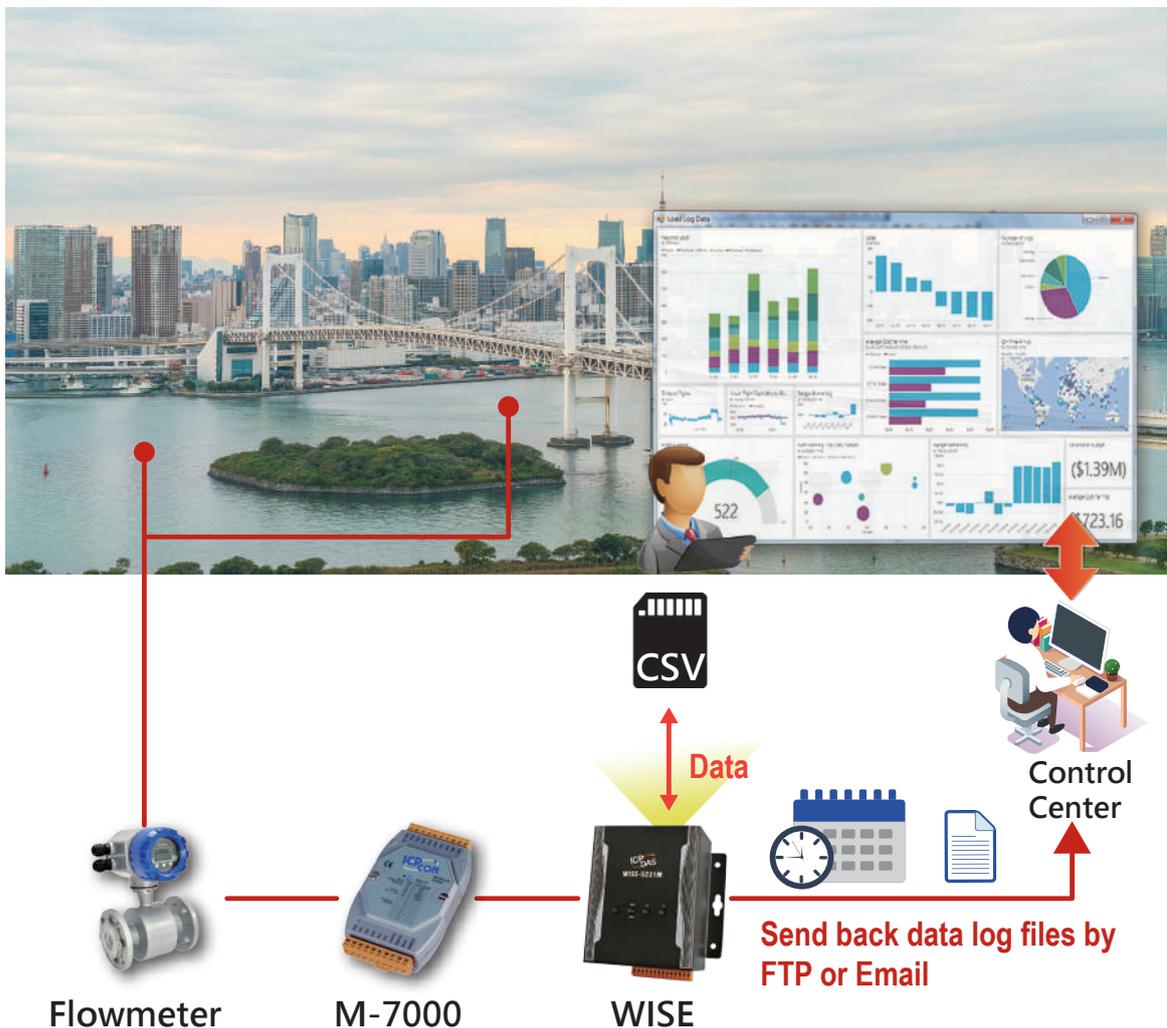
Connection ability to a variety of sensors and devices

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.



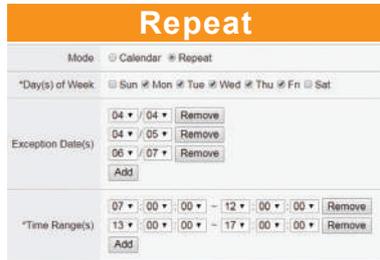
Data Logger operation

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 (or Email) to the control center for further administration management or data analysis.



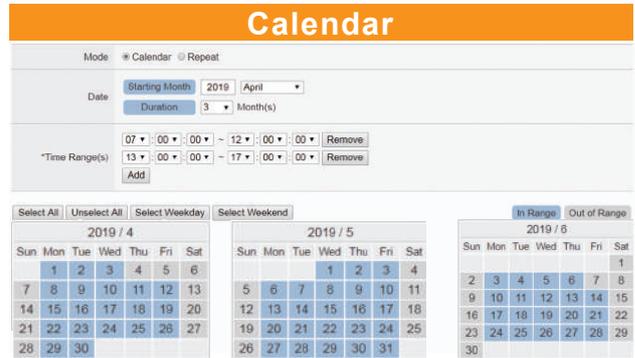
Provide Timer and Schedule operation

WISE features Timer function. It allows to perform the timing delay of the working logic rule. In addition, WISE also provides Schedule function to perform the prescheduled routine tasks. Through the two setting interfaces of the Calendar and Repeat (weekly) provided by the Schedule function, the administrator can quickly assign the weekly schedule operation, or flexibly arrange the annual schedule operation for the on-site equipment. The Schedule function will be helpful to user to handle the applications such as factories or schools that require specific equipment scheduling management mechanism.



Repeat Mode of Schedule

- Weekday: Mon. to Fri.
- Time Range: 07:00 - 12:00
13:00 - 17:00

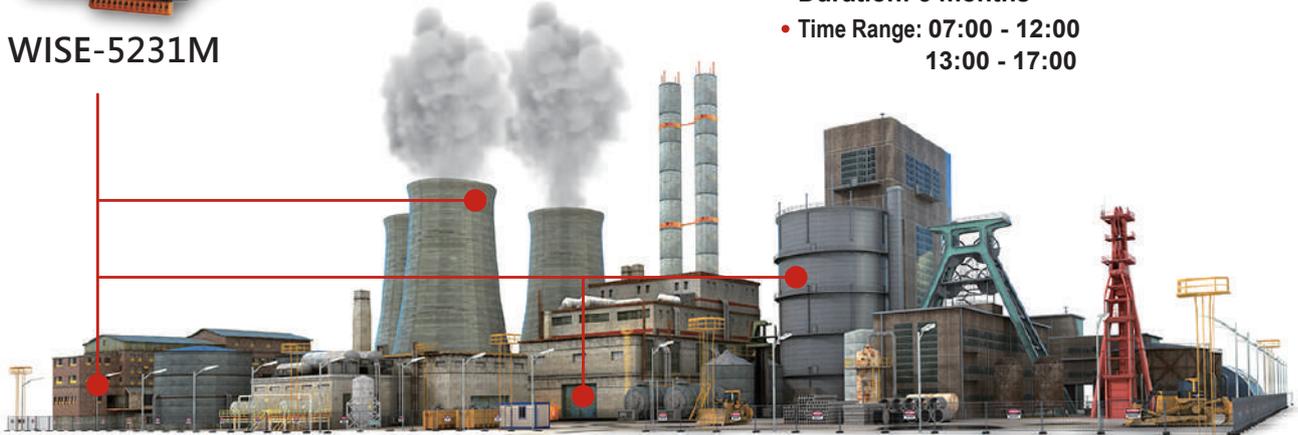


Calendar Mode of Schedule

- Starting Date: 2020/04
- Duration: 3 months
- Time Range: 07:00 - 12:00
13:00 - 17:00

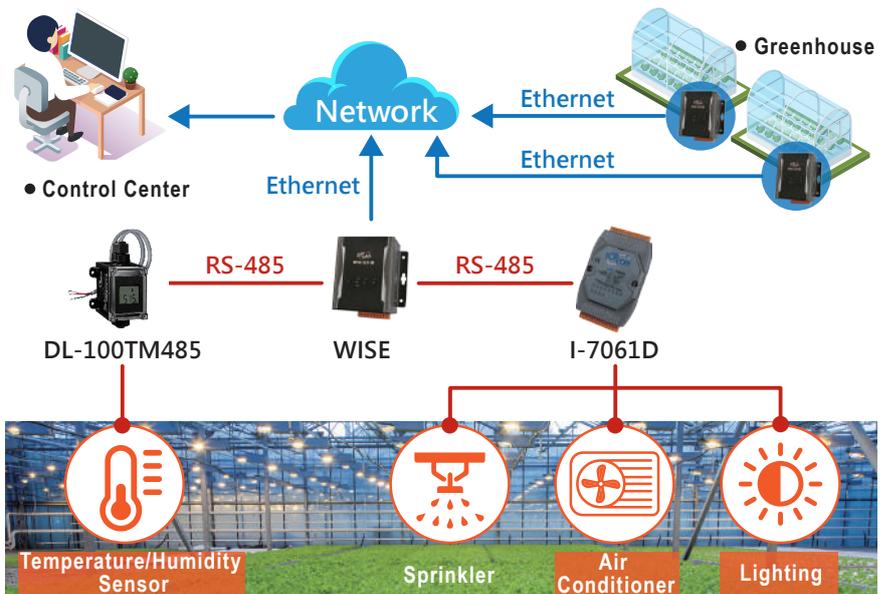


WISE-5231M



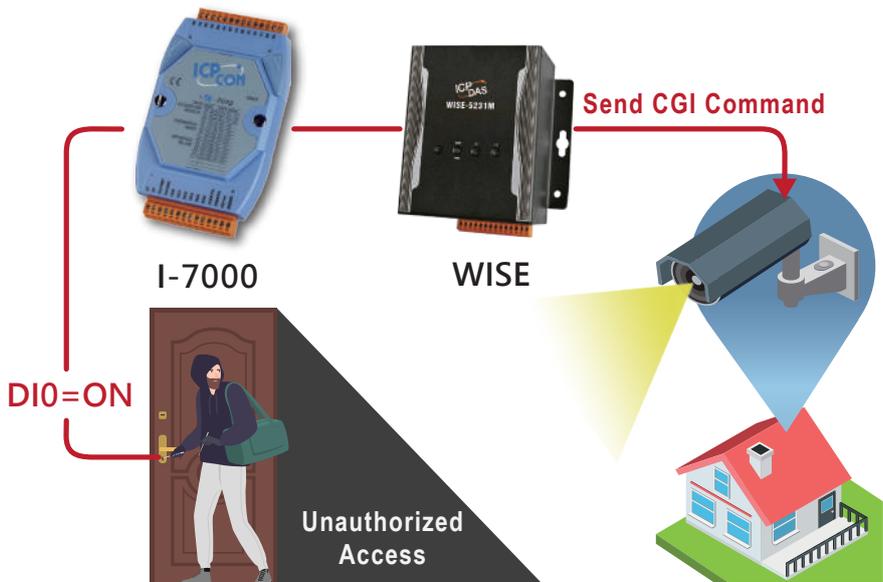
Active I/O sending mechanism

In addition to the Modbus TCP/RTU slave function that enables SCADA to poll the I/O data of the WISE, WISE also 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 data of the controller actively to SCADA/IT/IoT 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/IoT system.



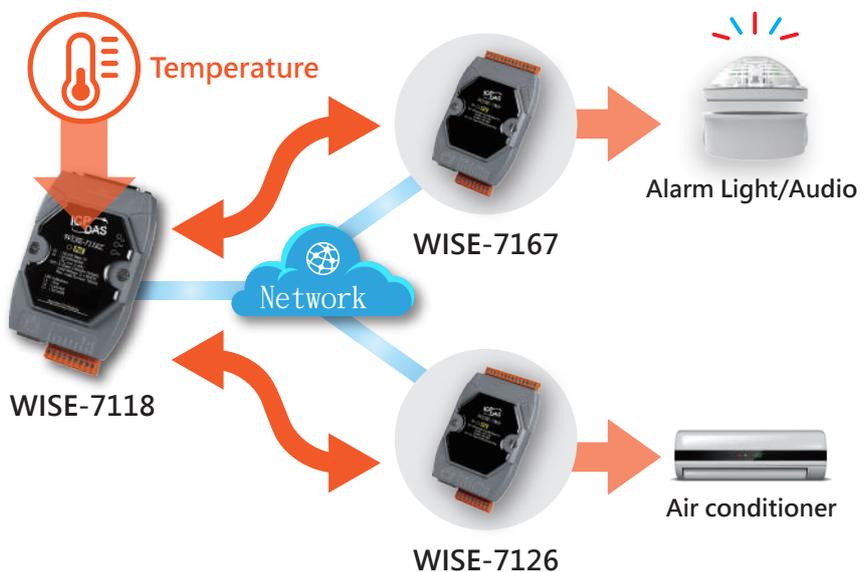
CGI Command sending & receiving for surveillance system integration

WISE supports full CGI command operations - CGI command sending and CGI command receiving. The CGI command sending action can be added to the logic rule 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.



Advanced P2P function between WISE I/O Modules

WISE-7xxx offers P2P function that enables WISE-7xxx modules to directly communicate with other remote WISE-7xxx modules on networks. The modules can freely share the information such as I/O channel value, DI/DO counter and Internal Register to each other. The P2P operations can be incorporated into WISE logic rules as condition statements or action statements for condition evaluation criteria or action executions.



Support math formula editing function

WISE-523x/WISE-2x4x support math formula editing function in Internal Register. This function supports to insert I/O channels to be the variables, and use the operators such as plus "+", minus "-", times "*", divide "/", power "^", left parenthesis "(" and right parenthesis ")" to complete the editing of formula. Users can edit different formula in each Internal Register. WISE will calculate the results of all formulas repeatedly, and save the results into the corresponding Internal Registers for IF-THEN-ELSE rule checking or data logging.

Formula Setting

Function Status: Enable

*Content of Formula: $1000 * [M-7024 AO0] + 100 * [M-7024 AO1] - 20 * [M-7024 AO2] / 10^{\wedge} [M-7024 AO3]$

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>No.1</td><td>No.2</td></tr> <tr><td>Internal Register 1</td><td>Internal Register 2</td></tr> <tr><td>0.000</td><td>0.000</td></tr> <tr><td>No.7</td><td>No.8</td></tr> <tr><td>Internal Register 7</td><td>Internal Register 8</td></tr> <tr><td>1199.994</td><td>0.000</td></tr> <tr><td>No.13</td><td>No.14</td></tr> <tr><td>Internal Register 13</td><td>Internal Register 14</td></tr> <tr><td>0.000</td><td>115086.700</td></tr> </table>	No.1	No.2	Internal Register 1	Internal Register 2	0.000	0.000	No.7	No.8	Internal Register 7	Internal Register 8	1199.994	0.000	No.13	No.14	Internal Register 13	Internal Register 14	0.000	115086.700	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>No.1</td><td>No.2</td></tr> <tr><td>Internal Register 1</td><td>Internal Register 2</td></tr> <tr><td>0.000</td><td>0.000</td></tr> <tr><td>No.7</td><td>No.8</td></tr> <tr><td>Internal Register 7</td><td>Internal Register 8</td></tr> <tr><td>1199.994</td><td>0.000</td></tr> <tr><td>No.13</td><td>No.14</td></tr> <tr><td>Internal Register 13</td><td>Internal Register 14</td></tr> <tr><td>0.000</td><td>115086.700</td></tr> </table>	No.1	No.2	Internal Register 1	Internal Register 2	0.000	0.000	No.7	No.8	Internal Register 7	Internal Register 8	1199.994	0.000	No.13	No.14	Internal Register 13	Internal Register 14	0.000	115086.700
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Support Instant Message sending functions

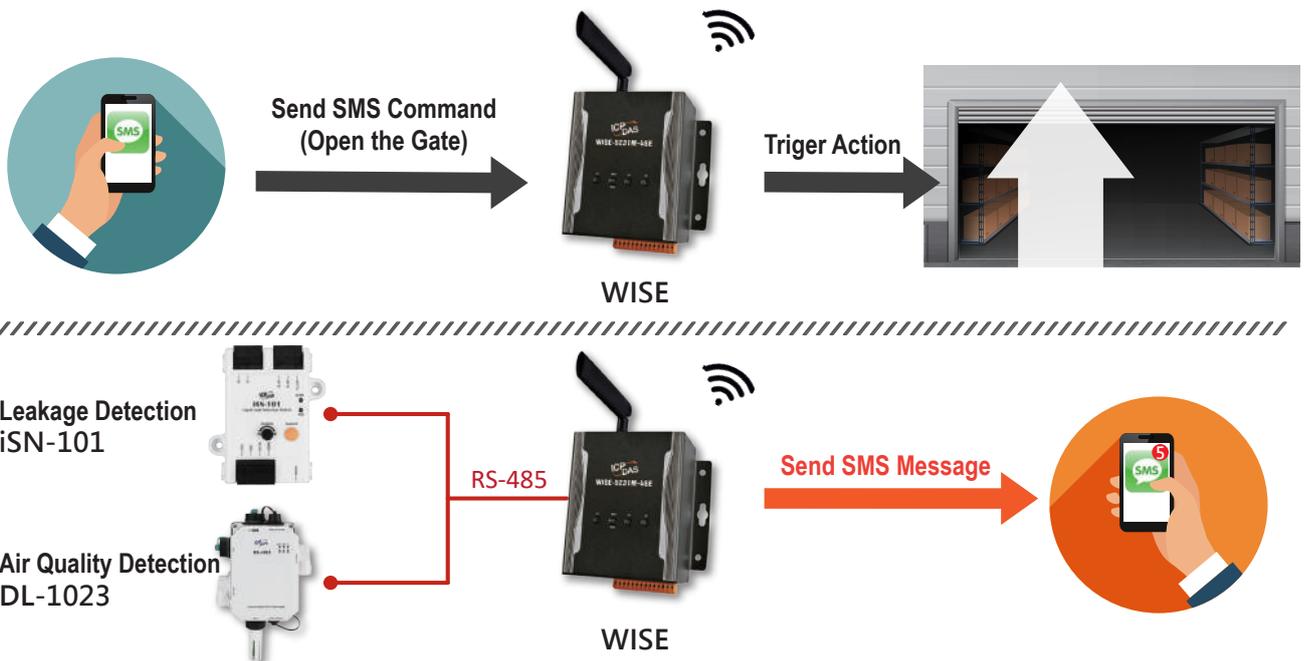
WISE supports LINE, WeChat, SMS, and Email sending function for real-time message notification. The message sending action can be added to the logic rule as part of logic control to provide real-time message notification to the related personnel when an event occurs. In addition, when WISE connects with ICP DAS iCAM series IP cameras, WISE can send the pictures and videos to the manager by LINE and WeChat.

Please note: WISE-284xM also supports Telegram.



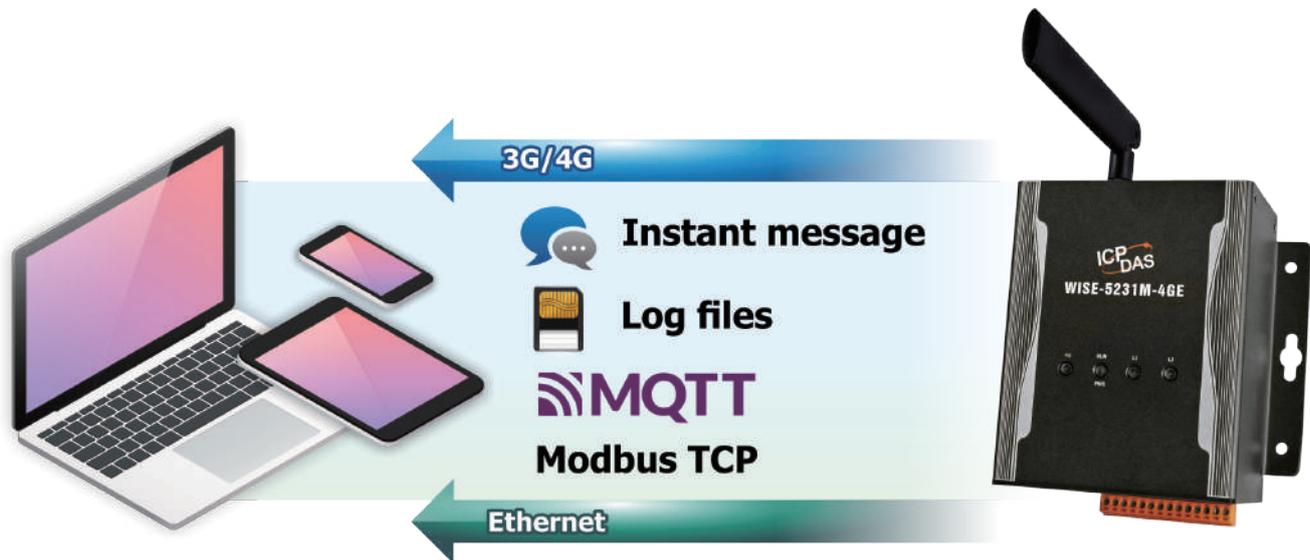
Support SMS command receiving function

The 3G/4G version of WISE-523x/WISE-2x4xM is equipped with SMS alarm message notification function. It allows to include SMS alarm sending action into logic rules to send a pre-set SMS message to related personnel when an event occurs. In addition, The WISE controller also allows to receive the SMS commands sending by specific phones numbers to perform tasks such as real-time I/O channel status monitoring, DO/AO channel value modification and logic rules execution (triggered by SMS), etc.



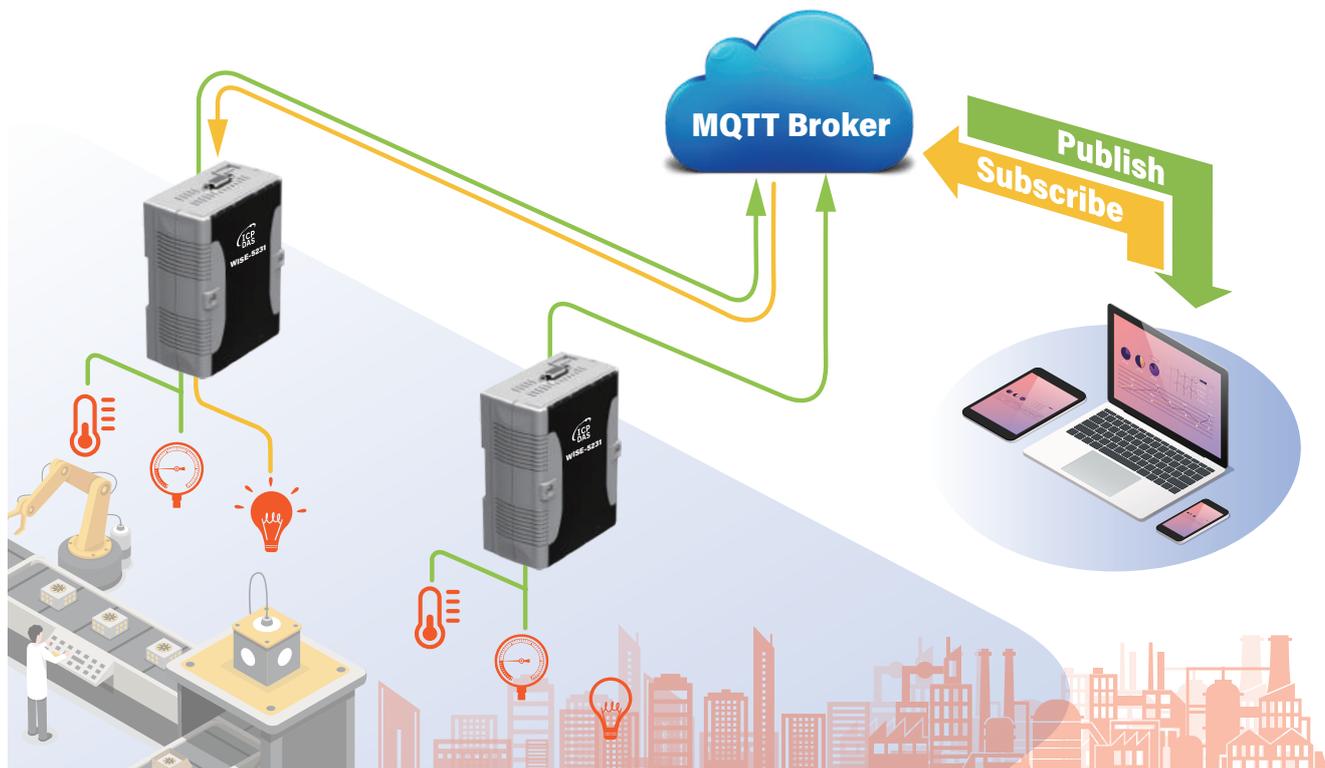
Support 4G/3G mobile network communication

In addition to Ethernet communication, WISE-523xM-3GWA/4GE/4GC & WISE-2x4xM(X)-4GE/4GC also supports 4G/3G mobile network communication. It can send the real-time I/O data of sensors and modules, data logger files and alarm messages back to the control center by 4G/3G mobile network.



MQTT Message Publish/Subscribe operation

WISE-523x/WISE-2x4xM supports the MQTT protocol. It can publish the I/O data of the I/O modules (connected to WISE-523x/WISE-2x4xM) to the MQTT broker, and it can also receive the message content of the Subscribe MQTT Topics published by others MQTT device for the data logging operation or use it in the IF-THEN-ELSE logic rule.



Provide image forwarding operation with Instant Message sending

WISE-523x/WISE-2x4xM supports the forwarding operation of image/video files captured by other devices, and send them with the text messages to the LINE/WeChat/Telegram apps. The image forwarding function enables WISE being a real-time message transmitter in a monitoring system. It can send text messages with the images/videos automatically to the LINE/WeChat/Telegram accounts. With the rich media like images & videos added, it will greatly enhance the alarm notification efficiency and user experience.



Sensor data upload operation with Security mechanism

In the era of IoT and Cloud computing, sensor data transmission between the Sensor and Cloud platform is a prerequisite for maintaining an effective operation of the IoT Cloud system. And how to make the operation of "Upload Sensor data to Cloud" to be protected by the Security mechanism is also the primary task of building a IoT Cloud system.

To ensure the operations of sensor data uploading from WISE to Cloud platform to meet the requirements of Security mechanism, WISE-523x/2x4xM supports Security mechanism such as "MQTT with SSL/TLS" to perform the encryption of real-time Sensor data during the data transmission operation. In addition, WISE-284xM also supports the Security mechanism such as VPN Client (Virtual Private Network), SNMP agent v3 (Enhanced security for SNMP protocol), SFTP(Secure File Transfer Protocol), FTPS(FTP over SSL) and HTTPS. With a variety of Security mechanism and protocols provided by WISE, it can meet the requirements of information Security when building an IoT Cloud system.

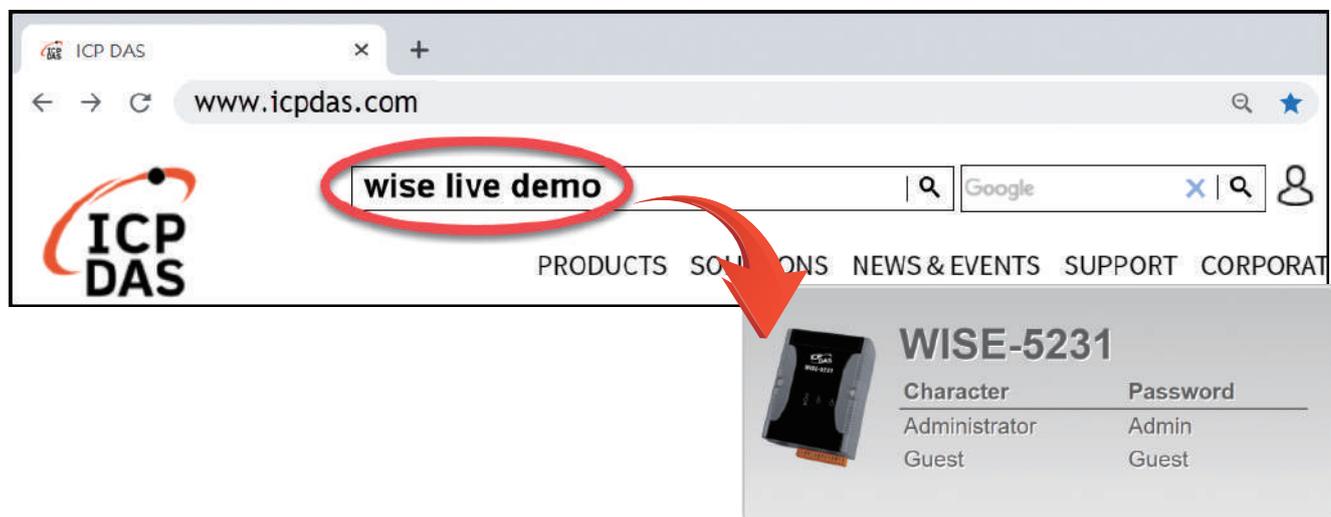


Connection with IoT Cloud Platform and ICP DAS IoTstar

WISE-523x/WISE-2x4xM supports the connection ability with the IoT Cloud Platform as Microsoft Azure, IBM Bluemix, etc. It work as the concentrator in the IoT application to connect with sensors, collect and transfer the sensor data to the cloud platform for future data analysis. WISE-523x/WISE-2x4xM/WISE-75xxM also can receive the message which is published from the cloud platform for the corresponding actions at the field side. And besides, WISE supports to connect with ICP DAS IoTstar cloud management software. IoTstar enables the Controller Remote Access Service, Sensor Data Collection Service, Sensor Data Visualization Service, Sensor Data Report Service, Bot Service with Mobile Phone on WISE.



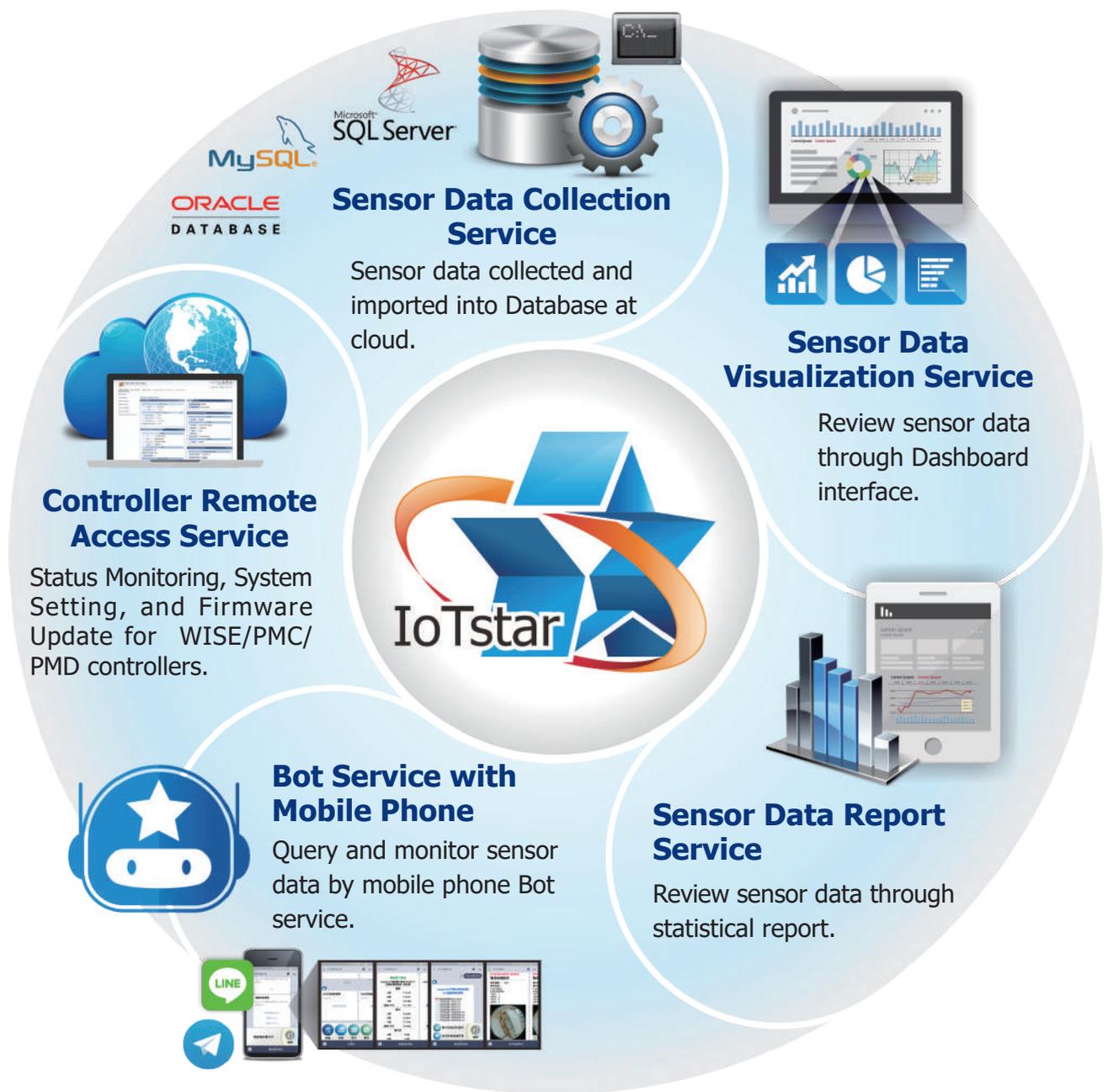
WISE Demo Site



Ch2. IIoT Cloud Management Software - IoTstar

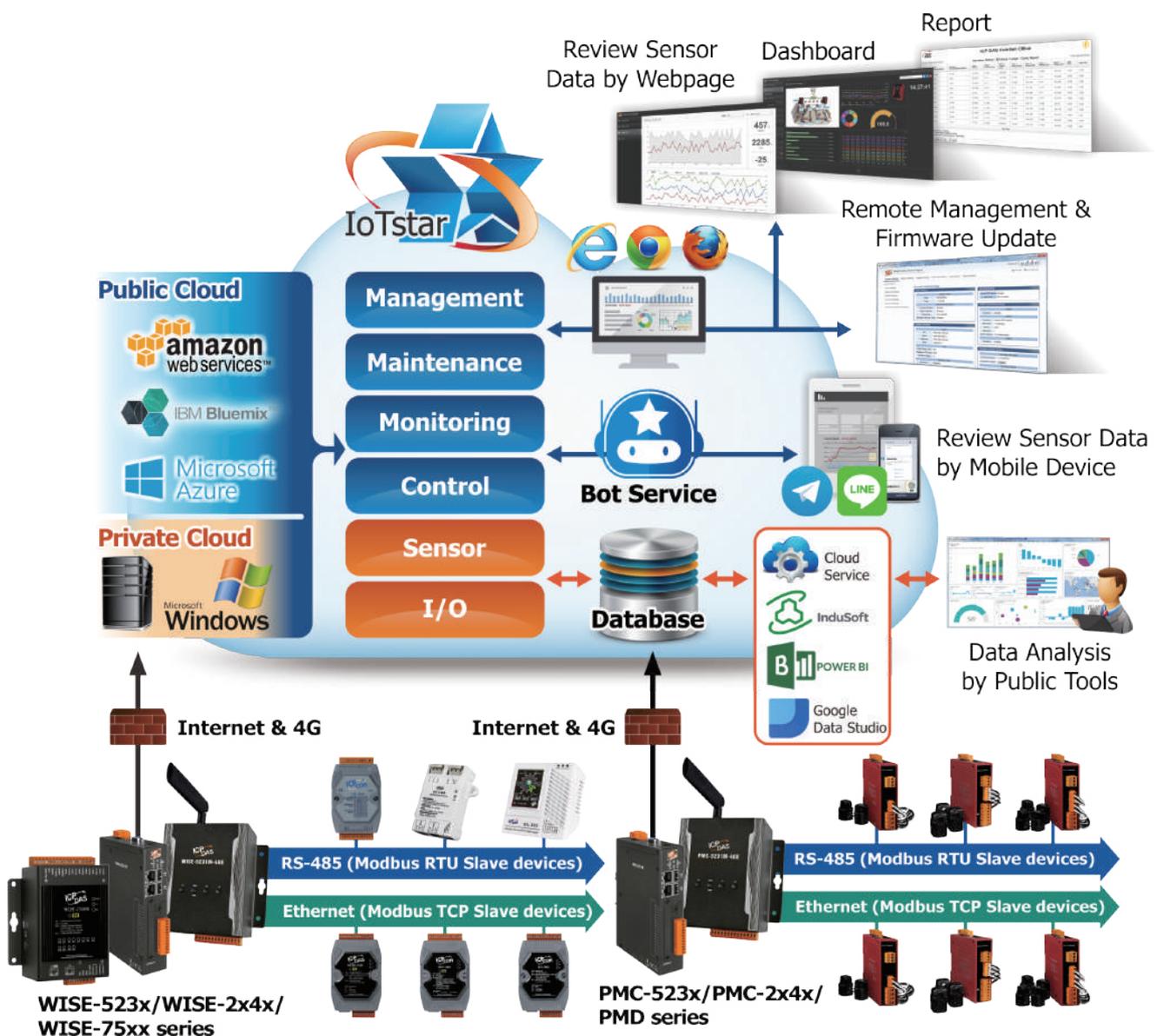
Introduction

IoTstar is a software developed by ICP DAS for WISE/PMC/PMD controllers in a variety of Industrial IoT applications. IoTstar can be installed on a general PC platform and works as a Private IoT Cloud system, or on the VM (Virtual Machine) platform of Microsoft Azure, IBM Bluemix, Google Cloud or Amazon AWS, etc. and works as a Public IoT Cloud system. Using IoTstar to build the IoT Cloud system, it can provide the following services:



During the IoT Cloud system development, there is no-programming-required, and the system setting can be completed through the web interface. In addition, through the SQL command, IoTstar can be quickly integrated with the Cloud platforms, data analysis tools (Power BI, Google Data Studio or SCADA system etc.) to help users quickly build the "IoT + Big Data" Cloud application and significantly reduce the time and cost in implementing the "IoT + Big Data" Cloud application.

System Architecture



Features

Support Flexible installation environment to quickly set up IoT Cloud system

According to the needs of the field site, the installation environment can be flexibly selected.

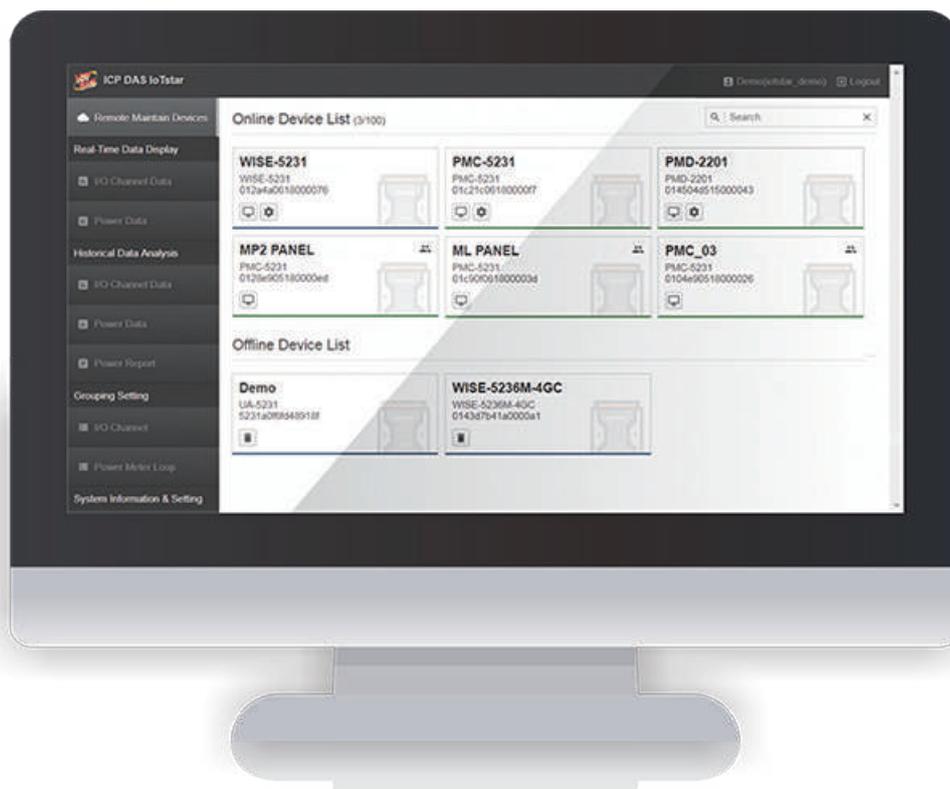
IoTstar can be installed on the VM (Virtual Machine) platform of the Public Cloud platform such as: Microsoft Azure, IBM Bluemix, Google Cloud or Amazon AWS to implement the Public IoT Cloud system on WISE/PMC/PMD controllers. It can reduce the loading for maintaining the IoT Cloud operating environment.



If the user concerns about the environment of the system operation or data storage, the IoTstar can also be installed on a private Windows PC (Windows 7/8/10, Windows Server) to implement the Private IoT Cloud solutions on the WISE/PMC/PMD controllers, and then the user can manage the environment by himself.

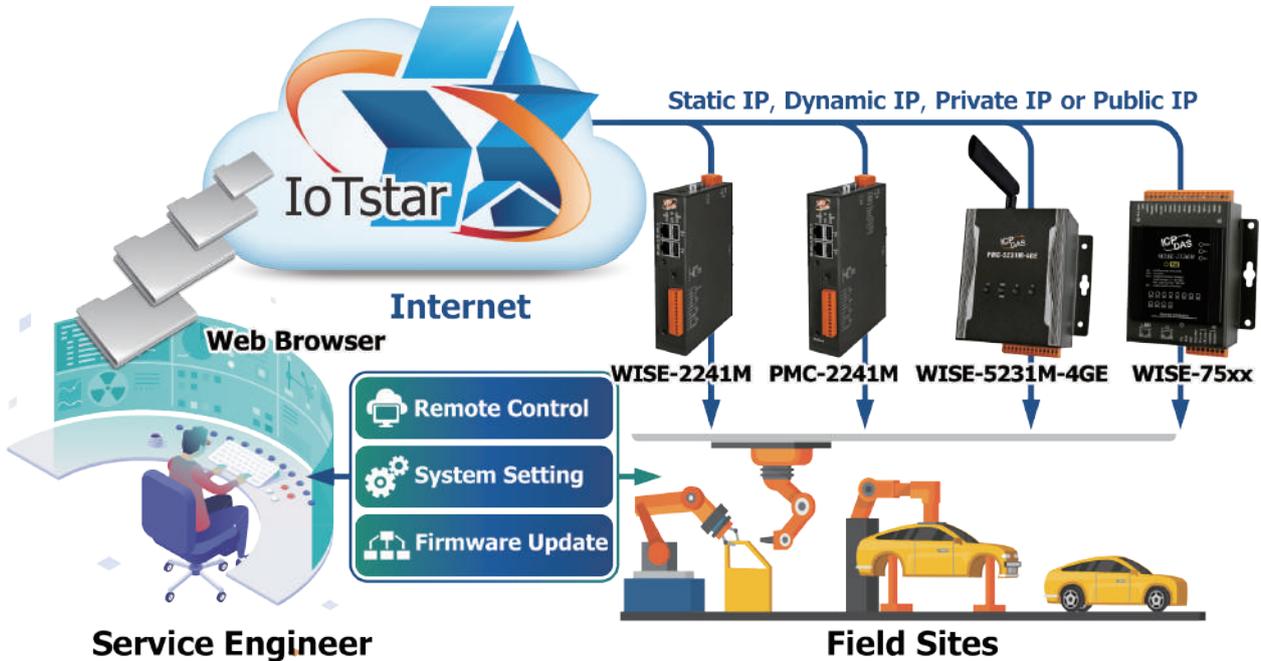
No more programming! Use a Browser to set up the IoT Cloud system

Only by a few clicks on Web page of IoTstar and WISE/PMC/PMD controller to complete the setting of IoT Cloud system.



■ Controller Remote Access/Maintenance Service

With IoTstar, users do not need to worry about the network environment of the WISE/PMC/PMD controller, whether the controller uses the static IP, dynamic IP, virtual IP or physical IP, the user can perform the status monitoring, system setting adjusting, and update the firmware of the controllers through the web interface provided by IoTstar. It can reduce the time and cost of personnel travel due to performing the maintenance operations of controllers.



- No need to worry the network environment
- No need to worry the controller's IP setting



FIRMWARE



■ Sensor Data Collection Service

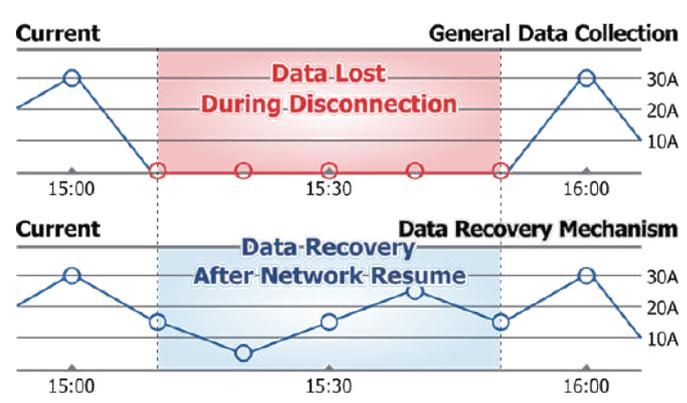
With IoTstar, the Sensor Data Collection Service can be performed to collect the Historical and Real-Time sensor data (and/or Power data) from the WISE/PMC/PMD controllers, and import the data to the Database in the Cloud. The users can quickly setup the Data Lake for the IoT and Big Data applications. The users can also modify the data in the database to change the status of the DO/AO channel of the sensor connected to controllers through the SQL command.



With the support of SQL command interface, the sensor data stored by IoTstar can be connected easily with the third-party data analysis tools (such as: Power BI, Google Data Studio, SCADA system), and ERP/MES systems. It can assist user to integrate the OT(Operational Technology) and IT(Information Technology) systems quickly and seamlessly, so that comprehensive and complete information regarding system operations can be collected with ease.

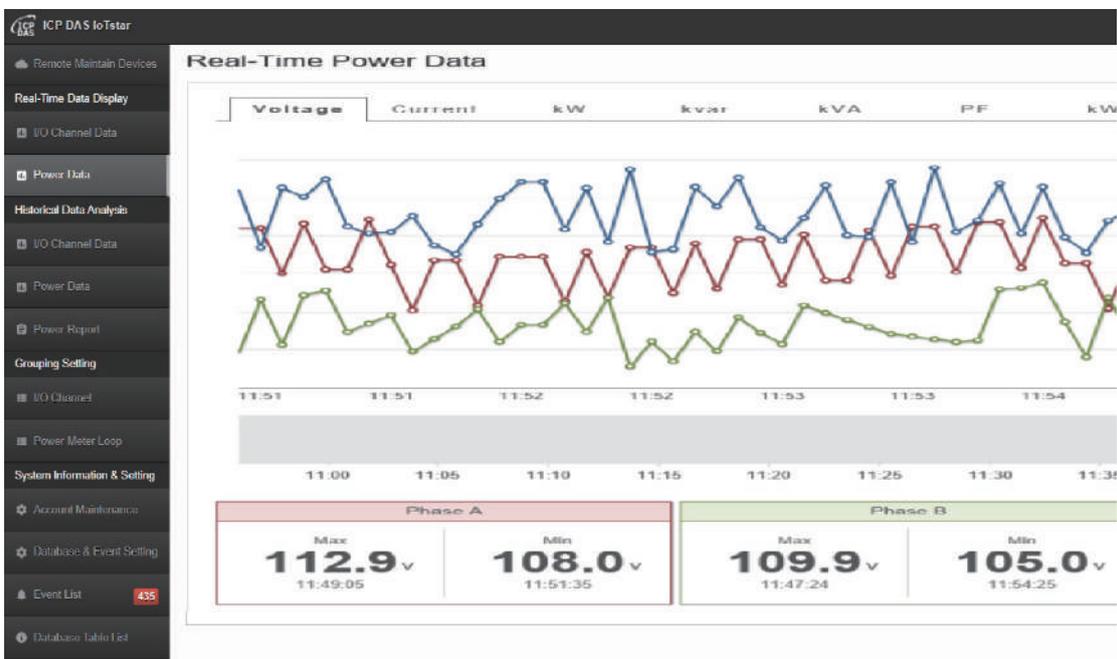
■ Sensor Data Recovery Mechanism

For general data collection, the sensor data will be sent to the control center and imported into the Database at cloud. But when the network experience a disconnection, the data transmitted during the disconnection period will be lost. "IoTstar (with WISE/PMC/PMD)" supports the Sensor Data Recovery Mechanism. When experiences network disconnection, all data will be stored in the SD cards in WISE/PMC/PMD. And when the network return to normal status, the data stored in SD card will be re-sent to IoTstar, and imported into Database to ensure the integrity of historical data.



■ Sensor Data Visualization Service

With the built-in standard web page of IoTstar, user can directly query and review the real-time or historical sensor data (and/or Power data) collected from the WISE/PMC/PMD controllers.



IoTstar also provides IoTstar Dashboard Service package. Through the Dashboard editor and a variety of Widget components provided by IoTstar, user can quickly setup the Dashboard page for the Real-Time sensor data (and Power data) collected from the WISE/PMC/PMD controllers according to their needs to review the operation status of the application system in real time.



■ Sensor Data Report Service

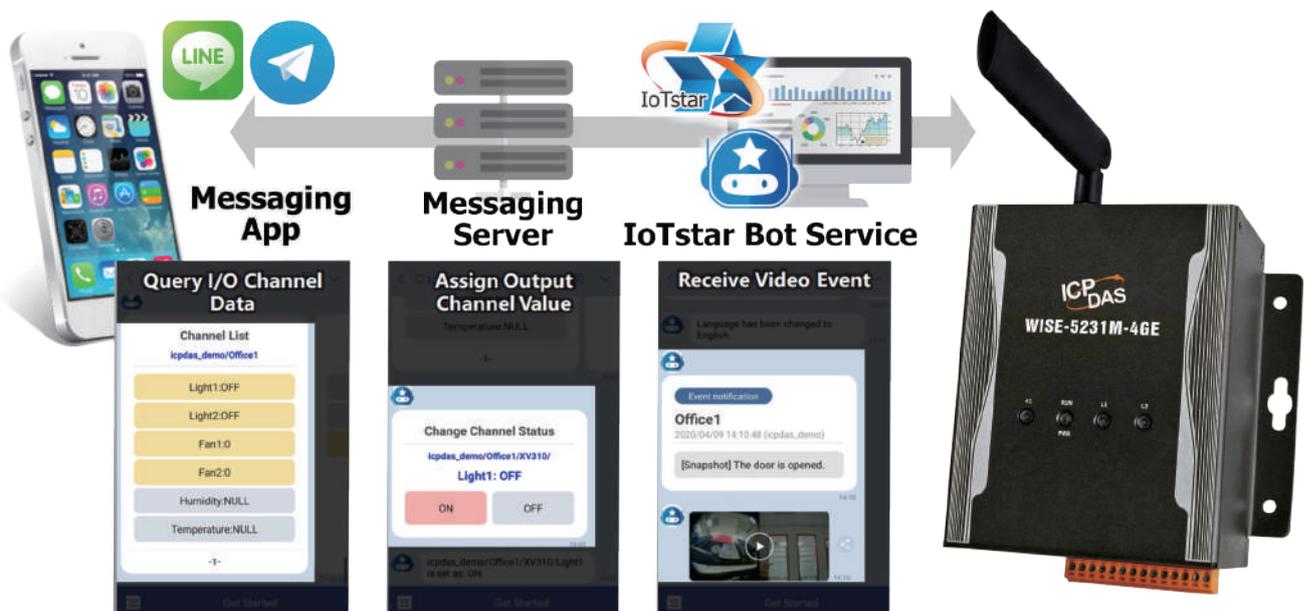
IoTstar features IoTstar Report Service which provides statistic report service for the sensors connected to WISE/PMC/PMD controllers. By using IoTstar Report Service, the data measured by the sensors can be converted into valuable statistical reports, so that the statistical reports of the operation status of the machines, equipment and facilities monitored by WISE/PMC/PMD controllers can be provided as the basis for making decisions, avoid biases and blind spots in decision-making.

Power meter loop report PMC-5231(Xindian office) / PM-4324-MTCP(Power meter of Area A) / Loop1(wall socket 1)

Day	Week	Month	Quarter	Year	>	Single Mode	>	Today	2021/10/19	>	Data Shown	Template Management	Download PDF	Download Excel
Time	Max. Demand(kW)	Energy Consumption(kWh)	Avg. PF(%)	Avg. I Phase A(A)	Avg. V Phase A(V)	Avg. I Phase B(A)	Avg. V Phase B(V)	Avg. I Phase C(A)	Avg. V Phase C(V)	Avg. kVA	Avg. kvar			
0	0.05	0.05	89.713	0.169	110.354	0.169	110.35	0.17	110.358	0.055	0.024			
1	0.05	0.05	89.566	0.169	110.557	0.168	110.553	0.169	110.562	0.056	0.025			
2	0.05	0.05	89.562	0.169	110.776	0.169	110.771	0.17	110.78	0.056	0.025			
3	0.05	0.05	89.628	0.17	110.975	0.17	110.972	0.17	110.982	0.056	0.025			
4	0.051	0.05	89.375	0.17	111.112	0.169	111.108	0.17	111.118	0.056	0.025			
Summary														
Daily Highest Usage: 0.051kW Occurrence Time: 2021-10-19 04:59:00 Daily Total Electricity Consumption: 0.41kWh														

■ Bot Service on Controller by using Mobile Device

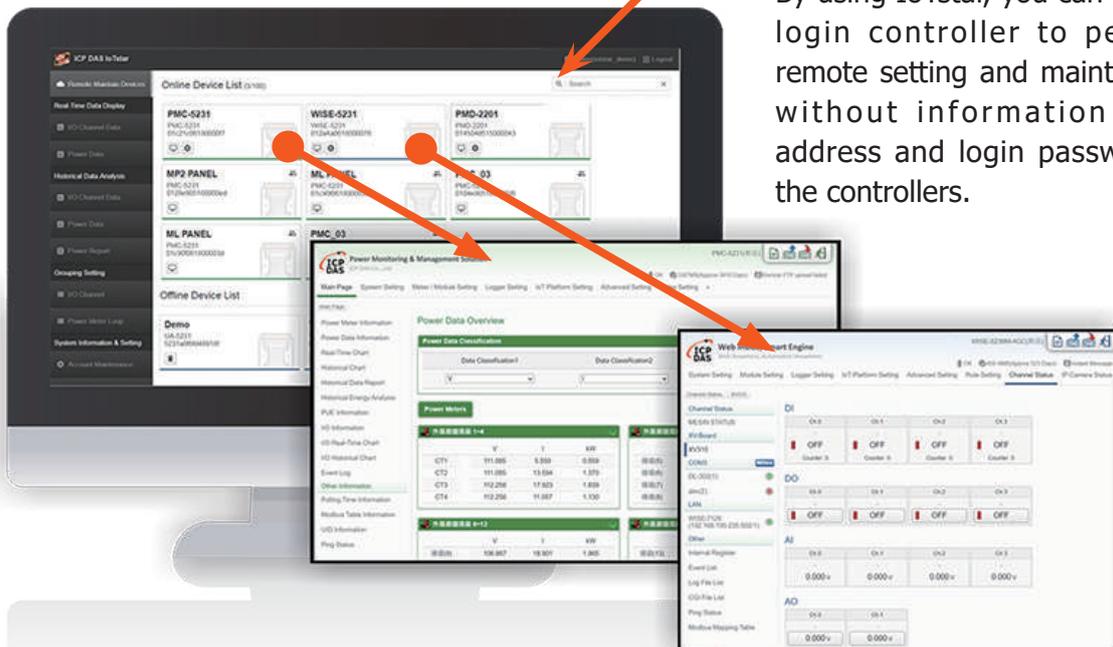
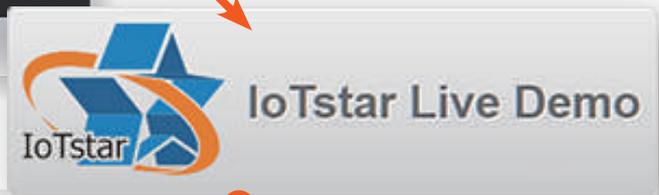
IoTstar provides IoTstar Bot Service package for two-way message interactions between the WISE/PMC/PMD controller managed by IoTstar and LINE/Telegram chat rooms. Users can query the real-time sensor data (and/or Power data) collected from the WISE/PMC/PMD controllers and be able to change the value of DO/AO output channels anytime and anywhere by LINE/Telegram App. In addition, with the ICP DAS iCAM IP Camera, it can also receive the video recording events on the application site, so that the users can review the operating status of the equipment through their mobile phones even they are not close by.



IoTstar Live Demo (iotstar.icpdas.com)

IoTstar Live Demo allows users to fully experience the function of IoTstar, such as:

- Provide Sensor data visualization dashboard.
- Real-Time and Historical sensor data query and display.
- Provide Sensor data Statistical report
- Query and display video/image event
- Remote setting and maintenance for controller.



By using IoTstar, you can directly login controller to perform remote setting and maintenance without information of IP address and login password of the controllers.

■ Software package support (Optional package for IoTstar, 90 days free trial)

■ IoTstar Dashboard Service

IoTstar Dashboard Service is an optional software package for IoTstar that provides users the Dashboard editor and a variety of Widget components. Based on the functions the IoTstar Dashboard Service provides, users can setup the Dashboard pages to review the real-time sensor data (or Power data) from the Sensor and Power Meter connected to WISE/PMC/PMD controllers, and it can also change the values of the DO/AO output channels of the Sensor (or power meters) connected to WISE/PMC/PMD controllers immediately.



Features

- Provide Dashboard editor for user to edit a specific Dashboard pages flexibly.
- Provide a variety of built-in Widgets to display the sensor data (or power data) in different formats.
- Display the sensor data (or power data) in real-time, and the status of output channels also can be changed.
- Support "Dark Mode" to turn the browser to dark for better visibility during night time.
- Receive on-site snapshots or video files sent by the controller. User can browse and review the snapshots or video files received by IoTstar (For the sending of on-site snapshots or video files, please use WISE with iCAM IP camera).
- Provide Rich Content Widget (WYSIWYG editor), and allow user to edit the content of the Widget by himself (Such as import HTML code, text, Webpage, image, video file, etc.).

Examples of Dashboard



Example of Air quality monitoring (Using Line Chart, Gauge, Plot Bar, Value Table, Value Label Overlay widgets).

Example of Power monitoring (Using Line Chart, Value, Value Output and Rich Content widgets).

Widget provided:



Line Chart



Bar Chart



Pie Chart



Gauge



Plot Bar



Value



Value Table



Value Label Overlay



Value Output (Slider)



Value Output (Button)



Video Event List



Time Clock



Countdown Timer



Map



Rich Content



Example of Environmental monitoring (Using Line Chart, Value, Value Output, Map and Video Event List widgets).

■ IoTstar Bot Service

IoTstar Bot Service is an optional software package for IoTstar that provides users two-way message interactions between the WISE/PMC/PMD controller managed by IoTstar and LINE/Telegram chat rooms. IoTstar Bot Service provides an easier and convenient mechanism for user to manage his/her remote controllers with LINE/Telegram App. It does not like the traditional Chatbot which get the information or service by entering the text message; it provides a friendly user interface that includes buttons and dialogue menu to perform the monitoring of remote controllers in an easy way.

With IoTstar Bot Service, users can query the real-time I/O Channel data (or power data) of the on-site I/O modules or power meters and be able to change the value of DO/AO output channels anytime and anywhere. IoTstar Bot Service also provides functions to receive, store, and query the event messages. The controllers can be triggered to send event messages to IoTstar Bot Service by IF-THEN-ELSE rules. After IoTstar Bot Service receive these event messages, it would process and send them to relative LINE/Telegram users for real-time alarm notification.



Features

- Monitor WISE/PMC/PMD controllers anytime and anywhere by LINE/Telegram App.
- Query real-time I/O channel (power meter) data and change output channels.
- Receive real-time event messages with text, pictures or videos (WISE can work with the iCAM IP camera to send the picture or video files).
- Review and query the historical event messages.
- Secure and reliable communication mechanism between LINE/Telegram and controllers.
- Easy to Maintain; only need the upgrade of LINE/Telegram App.

***The interface below displays using LINE App.



**Operation
User Interface**

**Query I/O channel
(or power) data**

**DO/AO channel
setting**

**Event notification
and query**

■ IoTstar Report Service

IoTstar Report Service is an optional software package for IoTstar that provides statistic report service for the sensors connected to WISE/PMC/PMD controllers. By using IoTstar Report Service, the data measured by the sensors can be converted into valuable statistical reports, so that the statistical reports of the operation status of the machines, equipment and facilities monitored by WISE/PMC/PMD can be provided as basis for making decisions, avoid biases and blind spots in decision-making.

Features

- Provide a variety types of statistical reports for sensors and power meters.
- In addition to the report for single I/O channel (or power meter loop), it also provides the report for group of I/O channels (or power meter loops).
- Support the query of the "Daily/Weekly/Monthly/Quarterly/Yearly" statistical report with customized date.
- Provide data comparison function for comparing values of I/O channel (or power meter loop).
- Built-in editor for users to flexibly edit the report content (header and footer) to create desired report format.
- PDF & Excel file format supported for report output.

Examples of the function provided:

Power meter loop report

PMC-5231(Xindian office) / PM-4324-MTCP(Power meter of Area A) / Loop1(wall socket 1)

Day	Week	Month	Quarter	Year	>	Single Mode	>	Today	2021/10/19	>	Data Shown	Template Management	Download PDF	Download Excel
Time	Max. Demand(kW)	Energy Consumption(kWh)	Avg. PF(%)	Avg. I Phase A(A)	Avg. V Phase A(V)	Avg. I Phase B(A)	Avg. V Phase B(V)	Avg. I Phase C(A)	Avg. V Phase C(V)	Avg. kVA	Avg. kvar			
0	0.05	0.05	89.713	0.169	110.354	0.169	110.35	0.17	110.358	0.055	0.024			
1	0.05	0.05	89.566	0.169	110.557	0.168	110.553	0.169	110.562	0.056	0.025			
2	0.05	0.05	89.562	0.169	110.776	0.169	110.771	0.17	110.78	0.056	0.025			
3	0.05	0.05	89.628	0.17	110.975	0.17	110.972	0.17	110.982	0.056	0.025			
4	0.051	0.05	89.375	0.17	111.112	0.169	111.108	0.17	111.118	0.056	0.025			
Summary														
Daily Highest Usage: 0.051kW														
Occurrence Time: 2021-10-19 04:59:00														
Daily Total Electricity Consumption: 0.41kW														

▲ Report for "Power Meter Loop"

Power meter loop group report

PM Group

Day	Week	Month	Quarter	Year	>	Today	2021/10/19	>	Loop Comparison	>	Max. Demand(kW)	Template Management	Download PDF	Download Excel
Time	Xindian office Power meter of Area B Loop1	Xindian office Power meter of Area A Loop2	Xindian office Power meter of Area A Loop3	Xindian office Power meter of Area A Loop5	Xindian office Power meter of Area A Loop6	Xindian office Power meter of Area A Loop7								
0	0	0	0	0	0	0								
1	0	0	0	0	0	0								
2	0	0	0	0	0	0								
3	0	0	0	0	0	0.051								
4	0	0	0	0	0	0.051								
Summary														
Daily electricity consumption of each loop	0	0	0	0	0	0.416								
Daily Total Electricity Consumption	0.416													

▲ Report for "Power Meter Loop Group (Loop Comparison mode)"

I/O Channel report

PMC-5231(Xindian office) / DL-1023(Air quality for factory) / AI2(PM2.5)

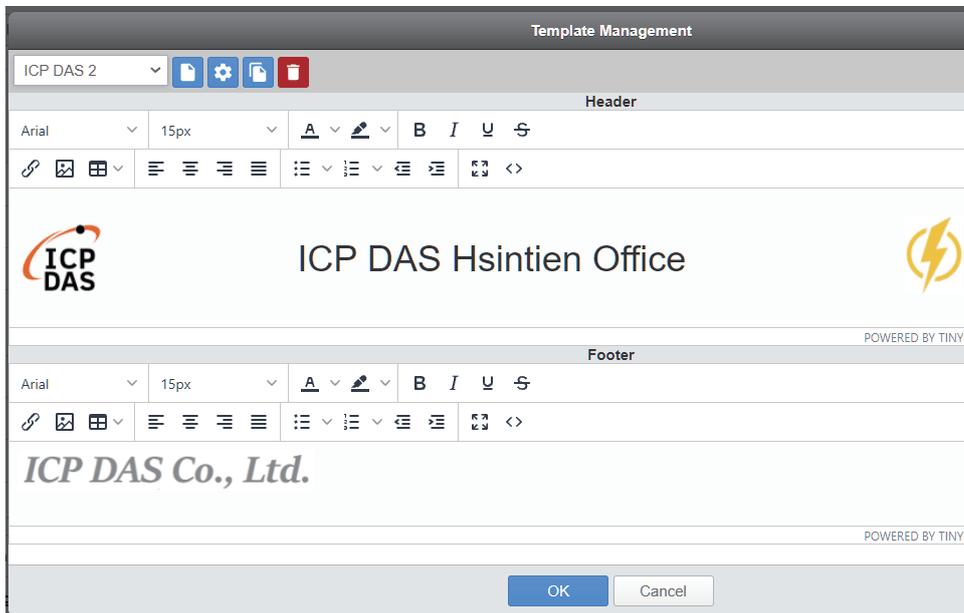
Day Week Month Quarter Year > Single Mode > Today 2021/10/19 > Data Shown > Template Management Download PDF Download Excel

Time	Maximum(ug/m3)	Minimum(ug/m3)	Average(ug/m3)	Final Value(ug/m3)	Total Value(ug/m3)
0	1	0	0.283	0	17
1	1	0	0.116	0	7
2	1	0	0.118	1	7
3	1	0	0.066	0	4
4	1	0	0.083	0	5

Summary

Daily maximum: 1 ug/m3 Daily minimum: 0 ug/m3 Daily average: 0.098 ug/m3
 Time of maximum daily value occurs: 2021-10-19 00:01:00 Time of minimum daily value occurs: 2021-10-19 00:00:00 Daily total value: 49 ug/m3

▲ Report for "I/O Channel"



▲ "Template Management (Editing for Report header and footer)" of Report



ICP DAS Hsintien Office



Report Date:2021/09/29

Hsintien Office / RD Area / Loop1 - Daily Report

Print Date:2021/09/29

Time	Max. Demand(kW)	Energy Consumption(kWh)	Avg. PF(%)	Avg. I Phase A(A)	Avg. V Phase A(V)	Avg. I Phase B(A)	Avg. V Phase B(V)	Avg. I Phase C(A)	Avg. V Phase C(V)	Avg. kVA	Avg. kvar
0	0.049	0.049	89.708	0.167	109.391	0.167	109.387	0.168	109.397	0.055	0.024
1	0.05	0.05	89.397	0.17	110.203	0.169	110.199	0.17	110.209	0.056	0.025
2	0.05	0.05	89.244	0.17	110.278	0.169	110.274	0.17	110.284	0.056	0.025
3	0.05	0.05	89.196	0.171	110.45	0.17	110.446	0.171	110.456	0.056	0.025

Summary

Daily Highest Usage: 0.05kW
 Occurrence Time: 2021-09-29 03:18:00
 Daily Total Electricity Consumption: 0.527kWh

ICP DAS Co., Ltd.

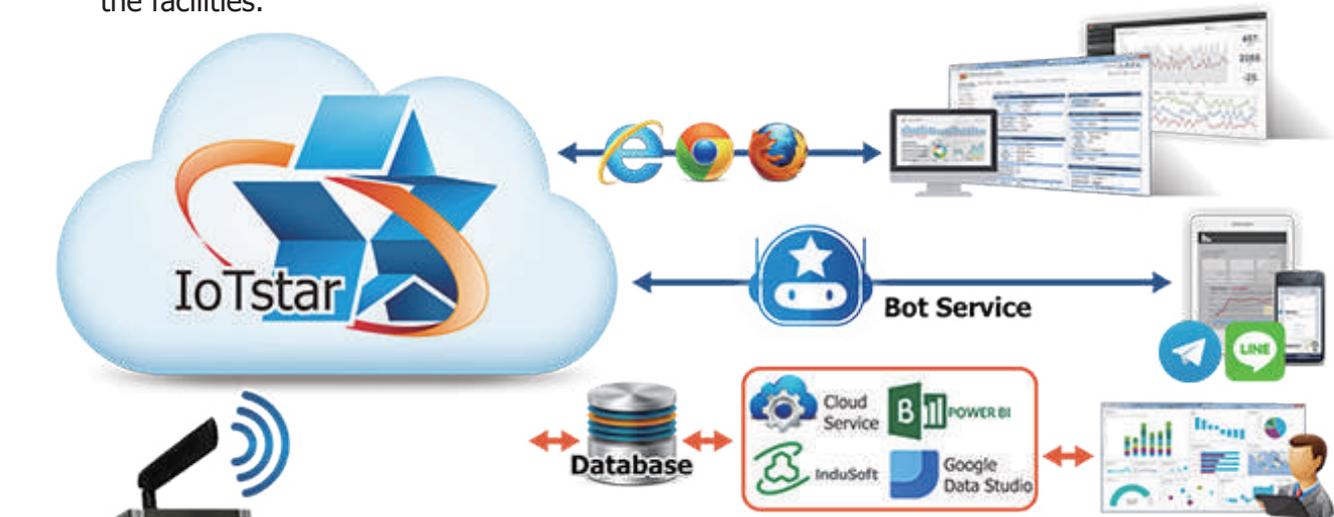
▲ Report Download (PDF file format)

■ Applications

■ Cloud-based Environment Monitoring Application

Using ICP DAS "IoTstar + WISE" solution, user can quickly build a Cloud-based environment monitoring system. In the solution, WISE IIoT edge controller can connect with the Modbus TCP/RTU sensors to collect, organize and record the information of the environment. In addition to sending the collected environment information back to IoTstar, WISE can also monitor the operation of environment facilities to perform the corresponding actions, and immediately send LINE/Telegram/WeChat/Email/SMS alarm message according to the pre-set edge computing mechanism (IF-THEN-ELSE logic rules). After IoTstar receives the environment information sent by WISE, it can provide services such as: "Controller Remote Access Service", "Sensor Data Collection Service", "Sensor Data Visualization Service", "Sensor Data Report Service" and "Bot Service with Mobile Phone" services, as well as the following benefits:

- No need to write programs in the whole process, environment information can be collected and stored in the cloud database automatically.
- Through SQL Database interface, quickly integrate the IT system to understand the trend and change of the environment status comprehensively.
- Perform remote monitoring and maintenance of the environment facilities, take corresponding actions proactively to ensure operational optimization.
- Provide status monitoring, system setting and firmware update for the WISE controllers from Cloud. It can reduce the time and cost of personnel travel due to performing maintenance of the facilities.



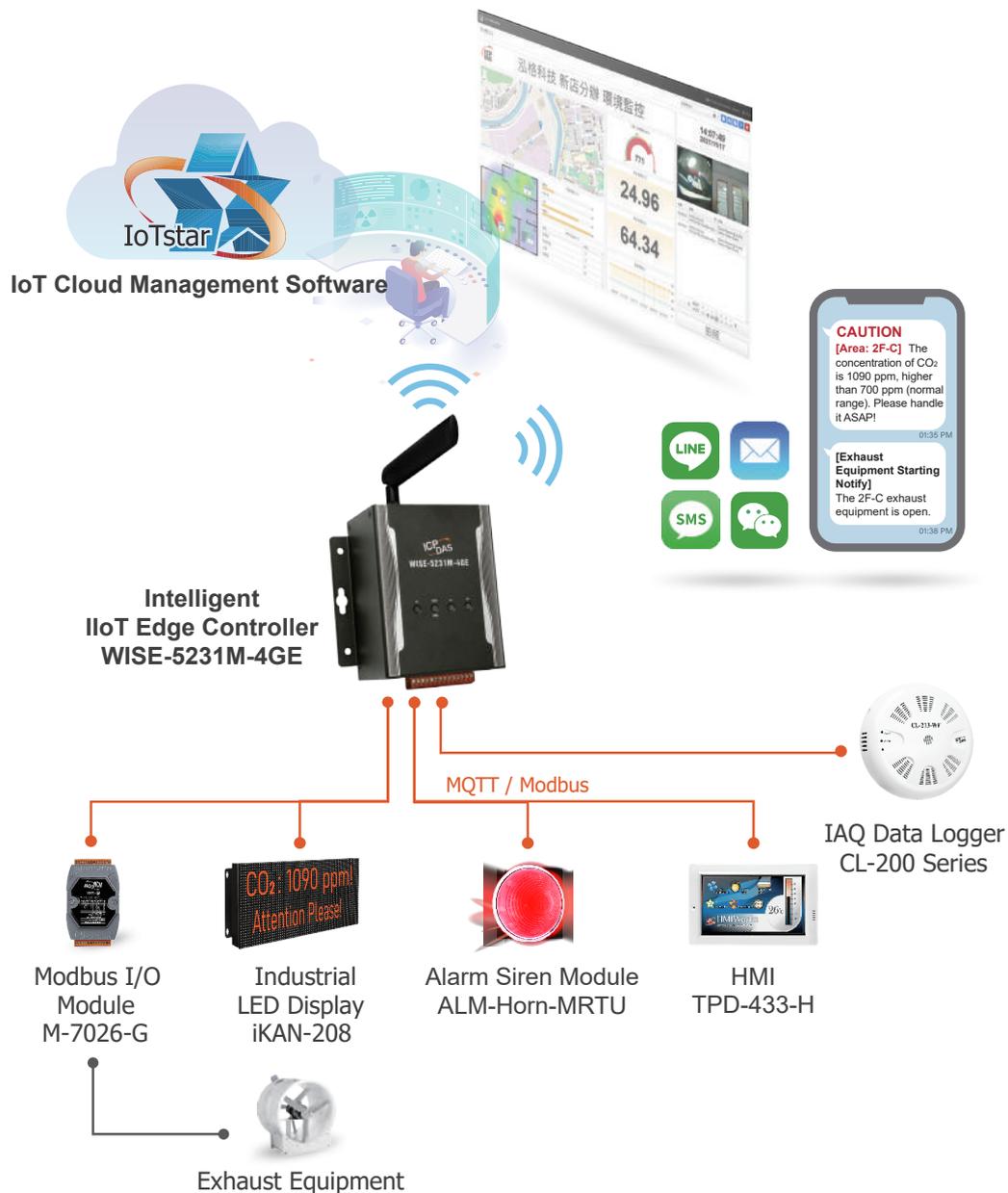
Urban Water Drainage System

WISE-5231M-4GE



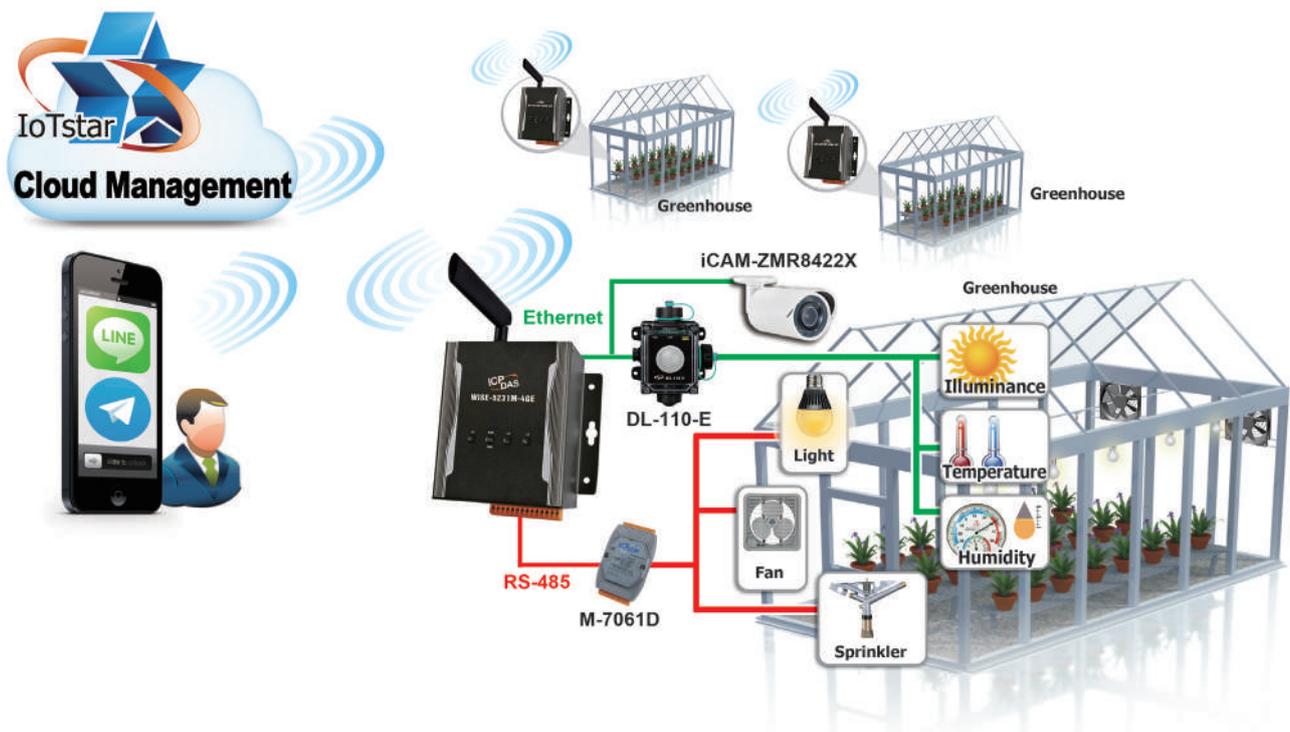
■ Cloud-based Indoor Air Quality Monitoring Application

Using ICP DAS "IoTstar+WISE+DL/CL module" solution, user can quickly build a Cloud-based air quality monitoring system. In the solution, DL/CL series modules can be used to measure the concentration of aerosols in the air (Such as: PM2.5, PM1, PM10 and the number of particles (0.3 μ m, 0.5 μ m, 1 μ m, 2.5 μ m, 5 μ m, 10 μ m), as well as the fume concentrations related to human health (Such as: CO/CO₂/HCHO/NH₃/H₂S/TVOC), and then transmit the measurement of air quality information to WISE IIoT edge controller. WISE is used to collect the air quality information from DL/CL modules and send back the information to the IoTstar. To response to any unusual situation and to maintain the safety of personnel in the field, WISE also can take the corresponding actions (Such as: turn on the exhaust fan and warning light, activate the access control equipment, send LINE/Telegram/WeChat/Email/SMS alarm messages, etc.) automatically in real time according to the status of the air quality by the pre-set edge computing mechanism (IF-THEN-ELSE logic rules). After IoTstar receives the air quality information sent by WISE, it can provide services such as: "Controller Remote Access Service", "Sensor Data Collection Service", "Sensor Data Visualization Service", "Sensor Data Report Service" and "Bot Service with Mobile Phone" services, and help users quickly build a Cloud-based air quality monitoring system.



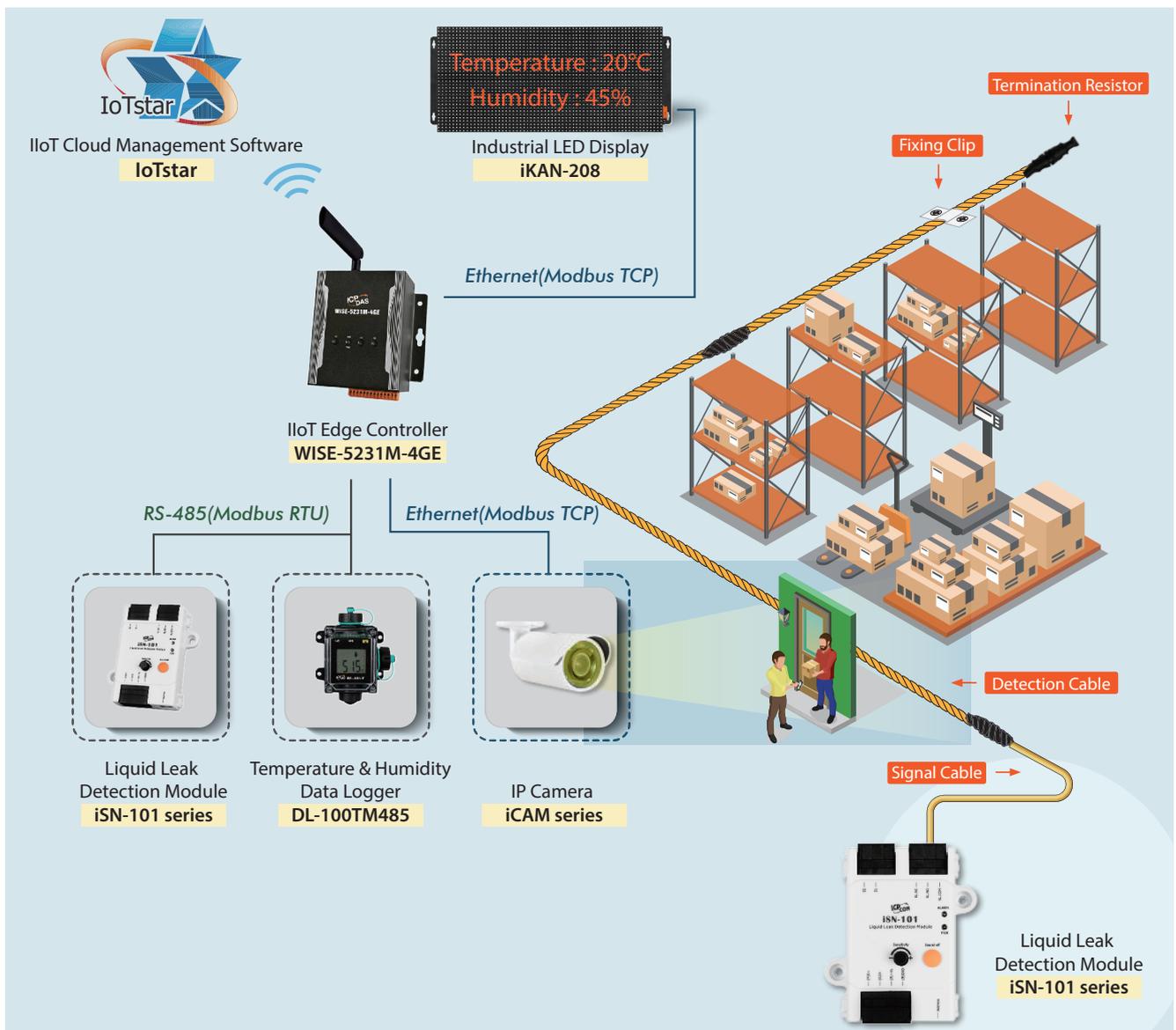
■ Cloud-based Greenhouse Monitoring Application

In the development trend of agricultural refinement and technology, intelligent greenhouse planting has always played an important role. The ICP DAS "IoTstar+WISE+DL module" solution work as an automated intelligent greenhouse monitoring system, it can perform real-time cloud monitoring of illuminance/temperature/humidity for the greenhouse, and automatically execute the corresponding scheduled tasks (such as: turning on the air conditioner, adjusting lighting, activating sprinklers, fertilizing etc.), or send LINE/Telegram/WeChat/Email/SMS alarm messages to related personnel to take immediate actions in response to abnormal status notification. WISE can also connect to ICP DAS iCAM series IP cameras to perform real-time video monitoring of the greenhouse. When an unusual intrusion is detected, WISE will automatically send text and video messages to the security personnel through LINE/Telegram/WeChat to take immediate actions. In addition, with the services provided by IoTstar such as "Controller Remote Access Service", "Sensor Data Collection Service", "Sensor Data Visualization Service", "Sensor Data Report Service" and "Bot Service with Mobile Phone", user can easily build a cloud-based greenhouse monitoring system to grasp the environmental status of each greenhouse anytime, anywhere and take actions accordingly, so as to move towards the era of intelligent agriculture with high efficiency, high productivity, safety and low operating risks.



■ Cloud-based Building, Warehouse, Factory Monitoring Application

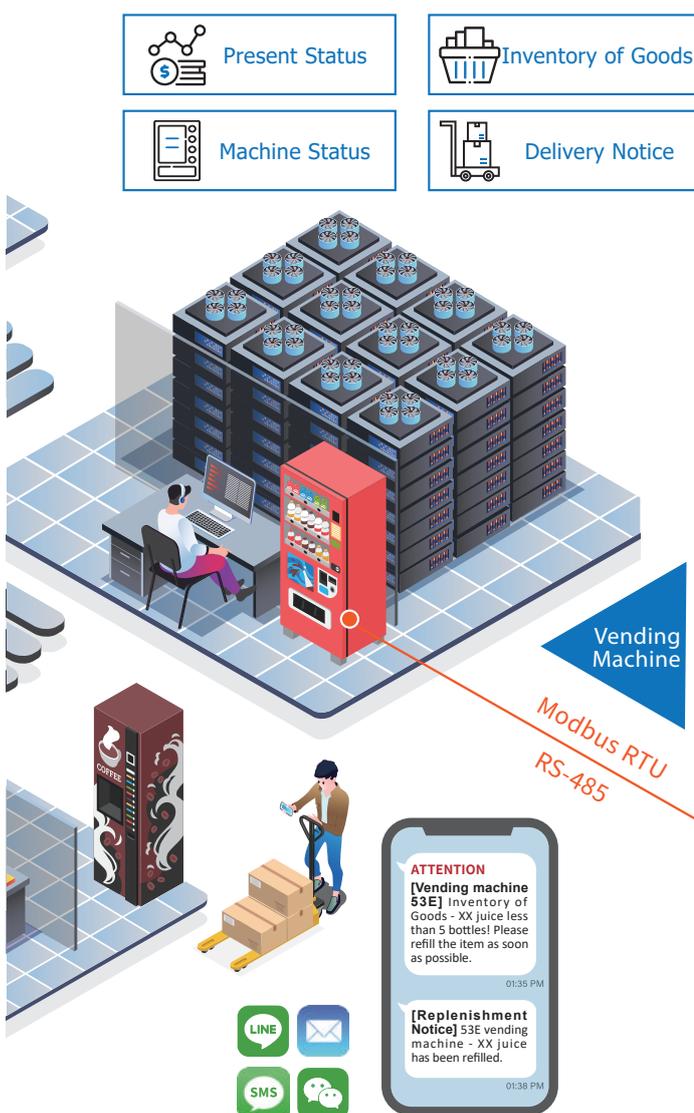
Using ICP DAS "IoTstar+WISE+iSN/DL/CL module" solution, it can help enterprises quickly establish a Cloud-based monitoring system for Building, Warehouse, and Factory facilities. The iSN modules can assist in the detection of liquid leakage, and the DL modules can measure the temperature and humidity data of the environment. After the iSN and DL modules transmit the measured data to the WISE IIoT edge controller for sorting and recording, WISE can transmit the collected data to IoTstar, and perform the preset edge computing mechanism (IF -THEN-ELSE logic rules), and then automatically take real-time actions in response to status of liquid leakage/temperature/humidity in the environment (such: turn on the exhaust fan, turn on the warning light). It can also send LINE/Telegram/WeChat/Email/SMS alarm messages to related personnel for the unusual status notification, and work as an automated intelligent warehouse monitoring system. WISE can also connect with ICP DAS iCAM series IP cameras to perform real-time video monitoring of the warehouse. When an unusual intrusion is detected, WISE will automatically send text and video messages to the security personnel through LINE/Telegram/WeChat, to take immediate actions. In addition, with the services provided by IoTstar such as "Controller Remote Access Service", "Sensor Data Collection Service", "Sensor Data Visualization Service", "Sensor Data Report Service" and "Bot Service with Mobile Phone", user can easily build a cloud-based warehouse monitoring system to grasp the environmental status of each warehouse anytime, anywhere and take actions accordingly.



■ Cloud-based Monitoring Application for Traditional Devices

Using ICP DAS "IoTstar+WISE+tGW module" solution, it can assist users to quickly build an Cloud-based IoT monitoring system for traditional devices that cannot connect to Network. Users can use tGW-700(Modbus RTU/ASCII to TCP converter) to connect to traditional devices via RS-485 interface, and convert the Modbus RTU/ASCII protocol on the traditional devices to Modbus TCP protocol, and the device status can be sent to WISE IIoT edge controller through Ethernet for data sorting and recording, and then send back to IoTstar to quickly build the cloud-based IoT monitoring system for the traditional equipment.

Take the traditional vending machines that are common on the street as an example, for these device lack the networking capability, the replenishment and equipment maintenance operations usually need to rely on inspection (replenishment) personnel to check regularly according to a fixed route. It is time-consuming, labor-intensive and causes additional cost. Through the solution provided by ICP DAS, information such as inventory and device status in the vending machine can be sent to the headquarter in real time for statistical analysis, and headquarter can timely dispatch the inspection (replenishment) personnel to the vending machine in need to adjust the device status of the vending machine so that the burden of inspection (replenishment) personnel can be reduced and then the manpower and transportation costs can be saved.



IIoT Cloud Management Software

- ◆ Cloud data visualization
- ◆ Work through the browser and does not require programming
- ◆ Can be installed on public/private cloud platforms

Vending Machine Headquarter

IIoT Edge Controller
WISE-5231M-4GE

tGW-700 series

■ Installation Platform Requirement

	Specification Suggestions
CPU	64-bit (x64); 3.0 GHz or higher GHz Processor
RAM	Minimum 8 GB for RAM. When the number of controllers or sensors, or the size of Database is increased, upgrade the RAM space as needed to ensure the best performance of the system.
Hard Disk	Minimum 64GB for Hard Disk space. When the number of controllers or sensors, or the size of Database is increased, upgrade the Hard Disk space as needed to ensure the best performance of the system.
OS System	Windows 7, Windows 8, Windows 10, Windows Server 2012 or later OS system (64-bit Windows required).
Notes	<ul style="list-style-type: none"> • Support WISE-523x/2x4x, PMC-523x/2x4x and PMD controllers. • Need to work with IIS Web Server. • Need to work with Database system such as Microsoft SQL Server, MySQL Server or Oracle Database. (For detailed version information, please refer to IoTstar user manual)

■ Ordering Information

■ IoTstar

Model	Description
IoTstar-RC050	IoTstar - IoT Cloud Management Software (Max. 50 controllers can be connected.)
IoTstar-RC200	IoTstar - IoT Cloud Management Software (Max. 200 controllers can be connected.)
IoTstar-RC500	IoTstar - IoT Cloud Management Software (Max. 500 controllers can be connected.)

■ IoTstar Upgrade Package (Optional package for IoTstar)

Model	Description
IoTstar-UC050-200	IoTstar Upgrade Package (Upgrade the maximum number of controllers connected to IoTstar from 50 to 200.)
IoTstar-UC200-500	IoTstar Upgrade Package (Upgrade the maximum number of controllers connected to IoTstar from 200 to 500.)

■ IoTstar Bot Service (Optional package for IoTstar; Support Bot Service)

Model	Description
IoTstar Bot Service-RC050-L	IoTstar Bot Service Package (Used with IoTstar-RC050; Support LINE App)
IoTstar Bot Service-RC200-L	IoTstar Bot Service Package (Used with IoTstar-RC200; Support LINE App)
IoTstar Bot Service-RC500-L	IoTstar Bot Service Package (Used with IoTstar-RC500; Support LINE App)
IoTstar Bot Service-RC050-T	IoTstar Bot Service Package (Used with IoTstar-RC050; Support Telegram App)
IoTstar Bot Service-RC200-T	IoTstar Bot Service Package (Used with IoTstar-RC200; Support Telegram App)
IoTstar Bot Service-RC500-T	IoTstar Bot Service Package (Used with IoTstar-RC500; Support Telegram App)

■ IoTstar Dashboard Service (Optional package for IoTstar; Support Dashboard service)

Model	Description
IoTstar Dashboard Service-RC050	IoTstar Dashboard Service (Used with IoTstar-RC050)
IoTstar Dashboard Service-RC200	IoTstar Dashboard Service (Used with IoTstar-RC200)
IoTstar Dashboard Service-RC500	IoTstar Dashboard Service (Used with IoTstar-RC500)

■ IoTstar Report Service (Optional package for IoTstar; Support Report service)

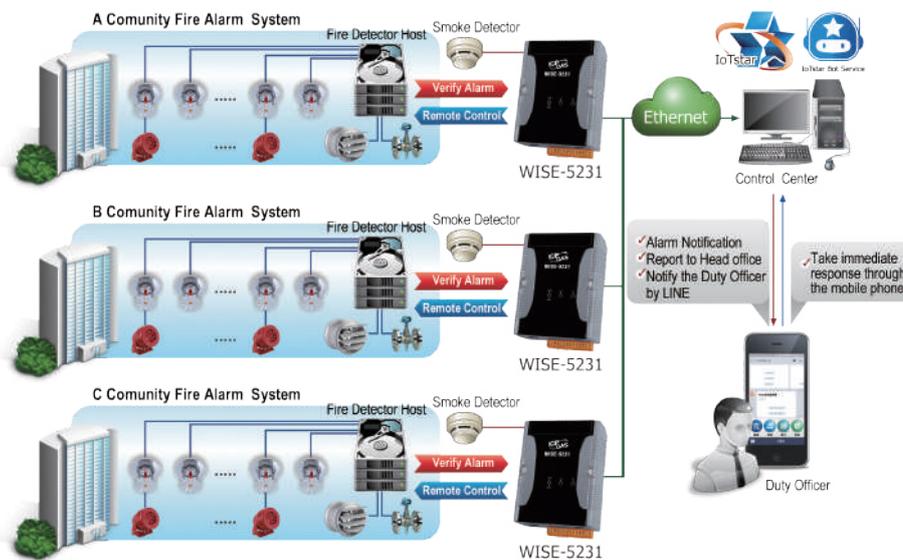
Model	Description
IoTstar Report Service-RC050	IoTstar Report Service (Used with IoTstar-RC050)
IoTstar Report Service-RC200	IoTstar Report Service (Used with IoTstar-RC200)
IoTstar Report Service-RC500	IoTstar Report Service (Used with IoTstar-RC500)

Ch3. Applications

Community Fire Alarm System

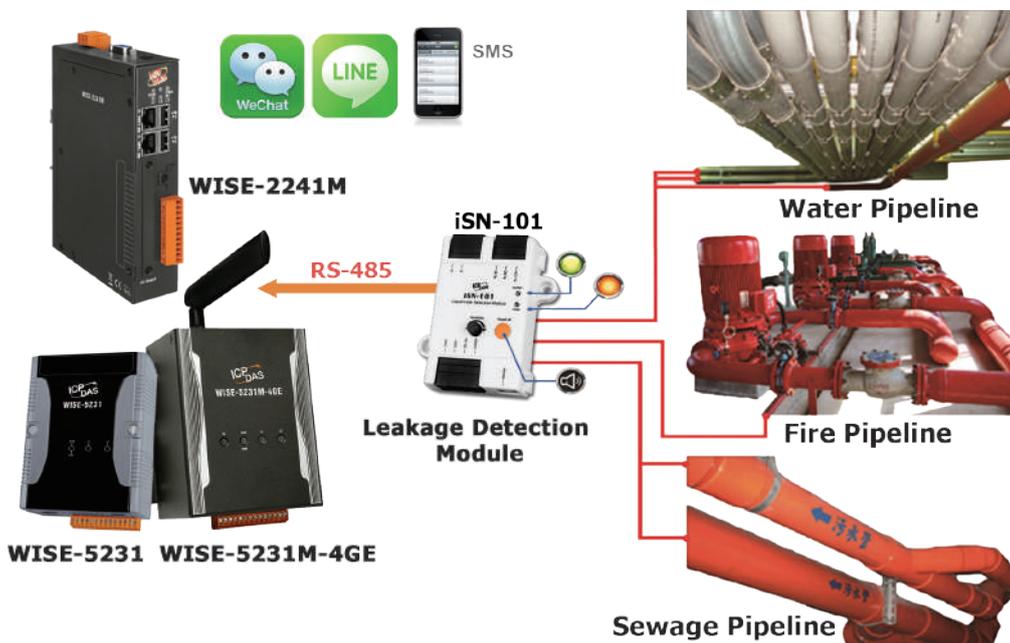
Hydrant equipment is an indispensable part of the Community/Home security system. However, most of the Hydrant equipment is old version and has no Internet connection capability. If we can improve the functionality of the Internet connection for these Hydrant equipment, then the real-time status of Hydrant equipment can be sent to the Cloud system, the manager of the Hydrant system can receive the real-time alarm notification through the mobile phone and take corresponding actions. It will increase the reliability of the Community/Home security system.

WISE-5231 supports the Modbus protocol, it can be connected to the Fire Detector to get the real-time status and perform the control operation of the Hydrant equipment, and it can also work with a smoke detector to enhance the fire detection capability. The WISE-5231 can transmit the status of Hydrant equipment to the IoTstar Cloud Management software for data collection and analysis. With the IoTstar Bot Service, when the abnormal event is detected, the Bot Service will send the alarm notification message to the mobile phone of the duty officer by LINE App for the corresponding actions in real time. The solution provides convenient and immediate community safety management mechanism.



Leakage Monitoring Application

ICP DAS "WISE-5231 + iSN-101" solution can be used to detect leakage on tap water pipes, fire pipes and sewage pipes of the buildings, as well as the domestic water, drainage and electric equipment. When there is unusual status happens on the pipelines or equipment, WISE will send the alert message immediately to the LINE App on manager's mobile phone through LINE Notify service, and notify the manager to take further action. It will effectively save the water and ensure the safety of the building.



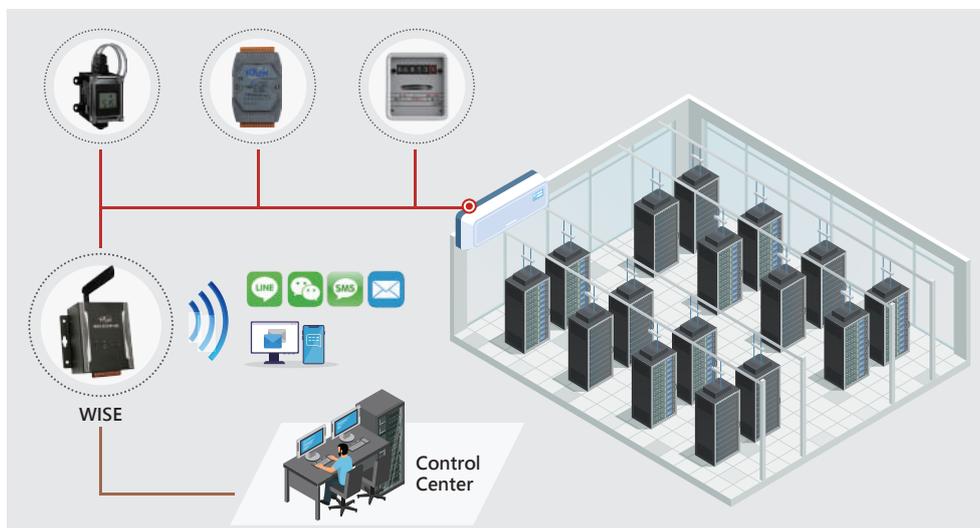
Emergency Alert Notification System

In the public spaces such as shopping malls, playgrounds, office buildings, or factories, the Alert Notification System is a must when emergency occurs. The emergency Alert notification system built by ICP DAS "WISE-5231 + iWSN-SOS-PB / iWSN-SOS-PB-IP65 with iWSN-2200" can meet the requirement. When an emergency event occurs, the person only needs to press the button on iWSN-SOS-PB, and the module will immediately send a high frequency signal to the iWSN-2200, and WISE will send the alert message immediately through LINE Notify service and SMS messages to the manager's mobile phone, so that the distress alert will be processed immediately, increasing the chance of successful rescue.



Unmanned Facility Room Monitoring System

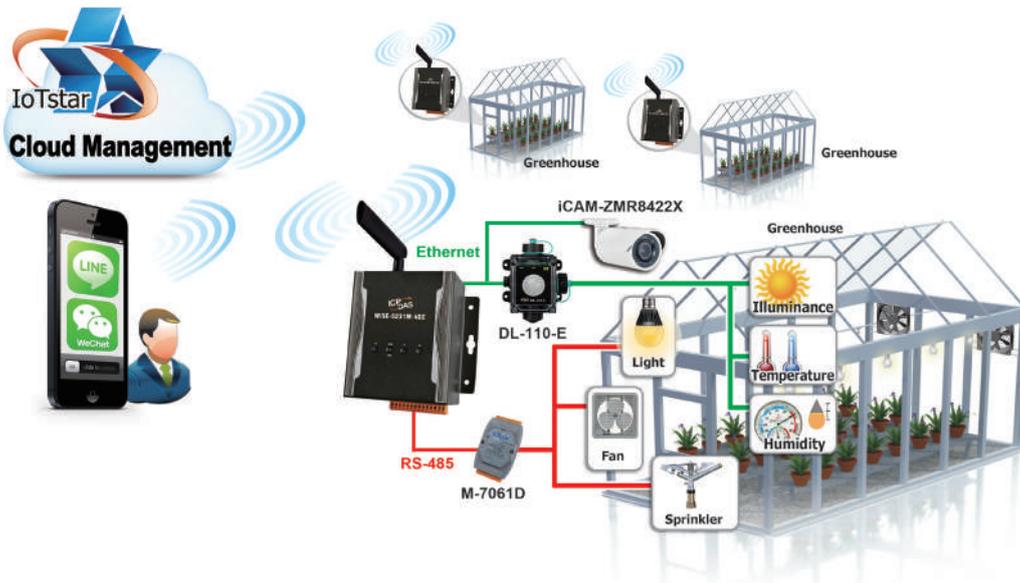
With the demand for stable operation of Power and Network systems, whether it is an office building, community, factory or suburb, a managed facility room needs to be set up to control the operation of the Power and Network equipment in the area. However, due to the increasing cost of manual management, the demand for Unmanned Facility Room Monitoring System is increasing. Through the ICP DAS WISE controllers, it can get the real-time sensor data such as temperature and humidity of the Facility Room and equipment status. When the abnormal event occurs, the corresponding actions can be triggered through WISE's IF-THEN-ELSE logic rule. In addition, WISE also work with ICP DAS iCAM cameras to perform the real-time image monitoring of the Facility Room. When an abnormal event occurs, WISE will automatically send alert messages with image to related personnel through LINE/WeChat to take corresponding actions. In addition, through the Modbus and IoT communication protocol, the back-end management system can work with WISE for the monitoring and data collection of the Facility Room environment.



Greenhouse Monitoring Solution

The greenhouse monitoring solution include WISE-5231M-4GE, DL-110-E and DL-300/DL-100 series. It provides environmental monitoring of illuminance, temperature and humidity. Based on the built-in edge computing engine of WISE, the solution can automatically control the operation of sprinkler, lamp and curtain to help the plants grow well, increase crop yield and improve quality.

Based on the functions provided by WISE-523xM-4GE with iCAM camera, it can perform the personnel access control operation for greenhouse, and send the alarm message by SMS, Email, LINE/WeChat to the related personnel for the emergency event notification. WISE can connect to the IoTstar cloud management software to help user to build the IoT cloud solutions in an easy way, and monitor the situation of the greenhouse remotely.



Mushroom Farming Solution

The growth process of Mushroom often requires long-term environmental monitoring (CO2, temperature and humidity). The operations usually needs to be performed under high humidity conditions, however, for most measurement equipment, they may not be able to function properly under this kind of environments. By using the "WISE-5231 + DL-302-IP65", it can perform the real-time data measurement and recording of CO2, temperature and humidity in the environment. In addition, WISE-5231 has the built-in IF-THEN-ELSE Edge computing engine and schedule function, which can help the administrator to set up the automatic operation logic of the farm equipment through the web interface. The process does not need to write a program at all, which also makes the operation and management of farm equipment more flexible and efficient.



Urban Air Quality Monitoring

Air quality monitoring system has always been a very important part in the construction of a smart city, and the key for the system is how to establish the air quality monitoring system in an easy way. Through the combination of ICP DAS "WISE-5231+DL-1000", it can be seamlessly integrated with street lights, and through the characteristics of high-density deployment of the street lights, the city's air quality monitoring system can be quickly established.

DL-1000 can perform the measurement of air quality (such as: O₃, PM_{2.5}, PM₁₀, CO, SO₂ and NO₂(TVOC, HCHO), and WISE-5231 can collect the sensor data from DL-1000 and the data will be also transmitted to the back-end management center. The pre-set IF-THEN-ELSE logic rules of WISE can automatically take different corresponding actions according to the air quality. When a special event occurs, WISE can also send an alarm message to notify the administrator for immediate actions.



Factory Air Quality Monitoring

In the factory, H₂S is one of a harmful gas, due to the characteristics of colorless and odorless, making it is difficult to detect. And once an industrial accident occurs, it may cause injuries to the personnel in the factory.

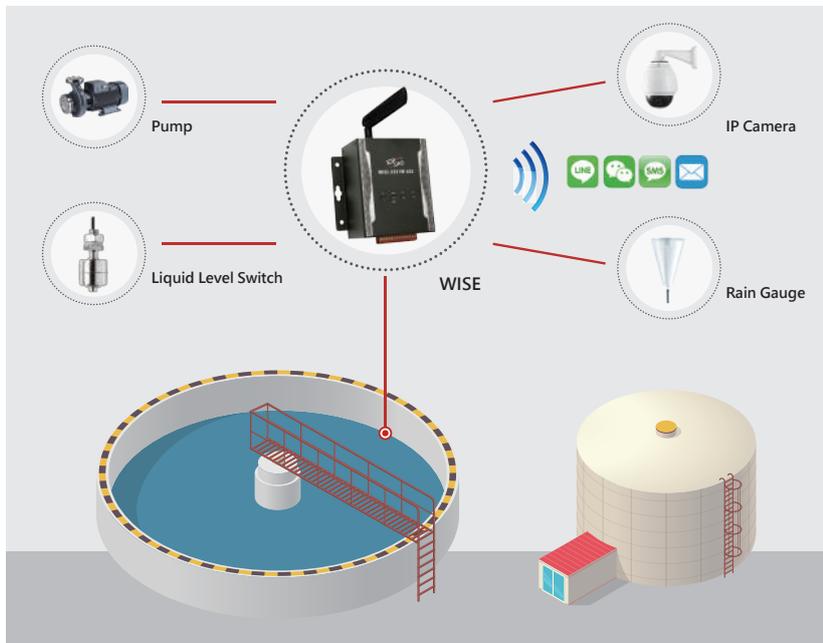
Through the combination of "WISE-5231+DL-1026", it can be installed on site for real-time detection of H₂S concentration, and the measured data can be transmitted to the back-end management center. The pre-set IF-THEN-ELSE logic rules of WISE can automatically take different actions according to the gas concentration detected. When an unusual event occurs, WISE will also send an alarm message to notify the administrator to avoid loss of life or property in the plant.



Wastewater Monitoring System

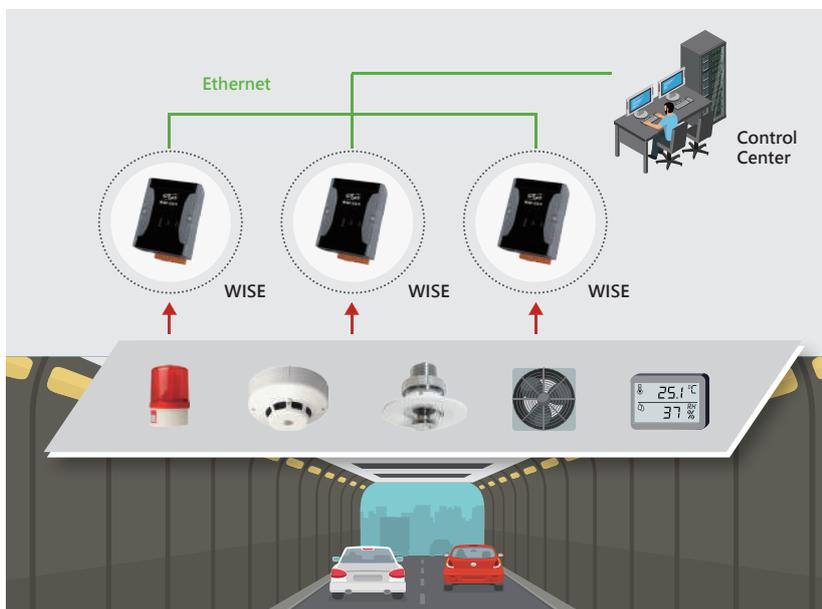
As the advance of civilization causing heavy industrial and commercial activities, there are growing concerns about environmental issues; among them, wastewater treatment is one of the most emphasized areas. In order to achieve reliable, high-performance and efficient result, automation approaches are essential to wastewater treatment solutions.

WISE features real-time monitoring and reliable Alarm notification function that is perfect for use in wastewater treatment applications. It takes only a few clicks to configure logic control that enables automation and optimization of wastewater treatment operations, such as: auto-detect the level of the sedimentation tank and perform the corresponding action immediately based on the wastewater level. In addition, WISE also allows sending alarm notification message regarding the abnormal event to the related personnel for immediate response.



Tunnel Monitoring System

The security maintenance in a tunnel is a tough work and it is time sensitive. For it always requires to monitor a wide range of areas in the tunnel, if all monitoring jobs only rely on manual operations when a disaster happens, it might cause delays and lead to huge losses. WISE allows to connect to various I/O modules and is able to response to the emergency in real-time. In this case, the WISE are installed in various segments in the tunnel and are connected to smoke/temperature sensors, warning lights, sprinklers, ventilation fans and other equipment. The logic rules that in response to emergency situations could be pre-set in WISE, and when smoke and high temperature are detected, the fire fighting procedures will be triggered; the sprinklers will be automatically turned on to put out the fire; the ventilation fans will be started to take away the smoke; and will turn on the warning lights and open the security doors to guide people in the tunnel away from the emergency scene. The related information will be gathered in back-end control center, and will send out notification to all controllers in all segments of the tunnel for traffic control and management.

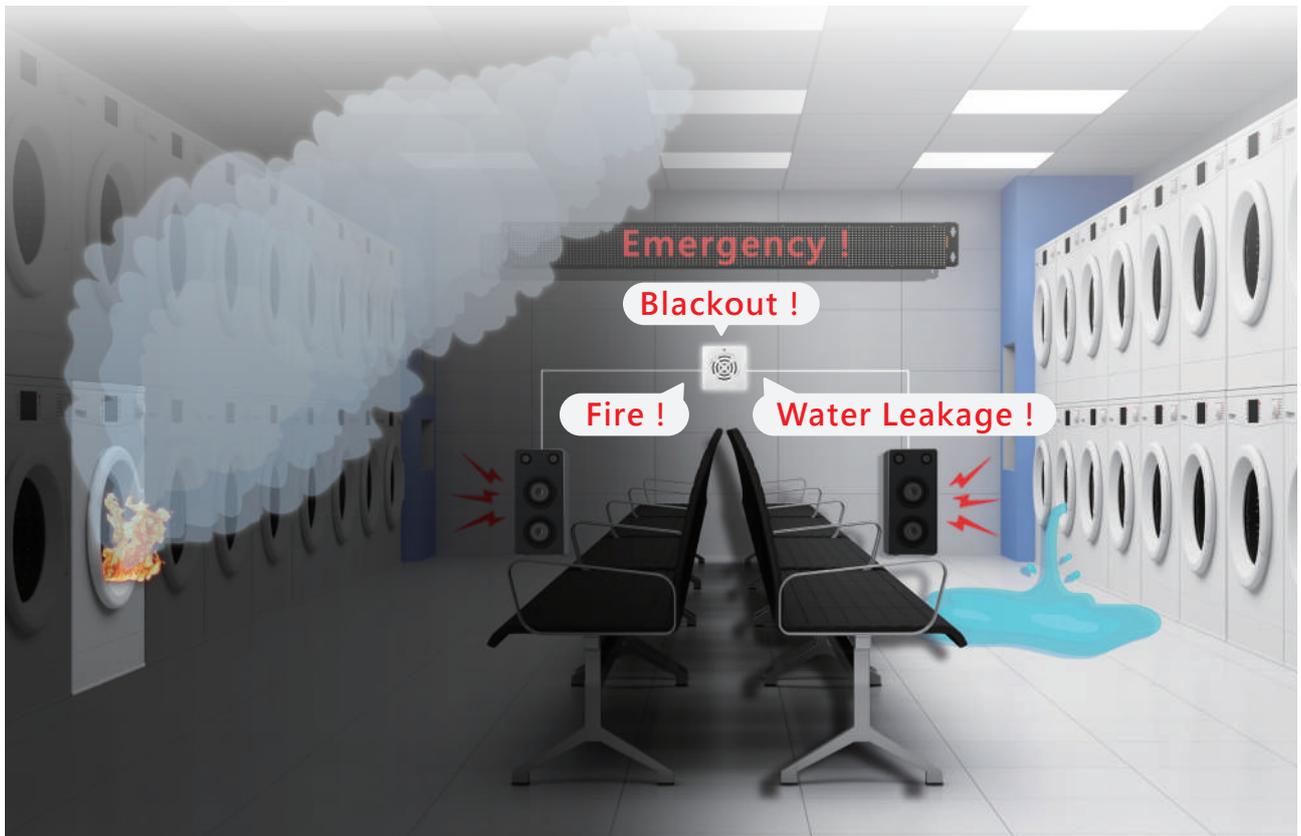
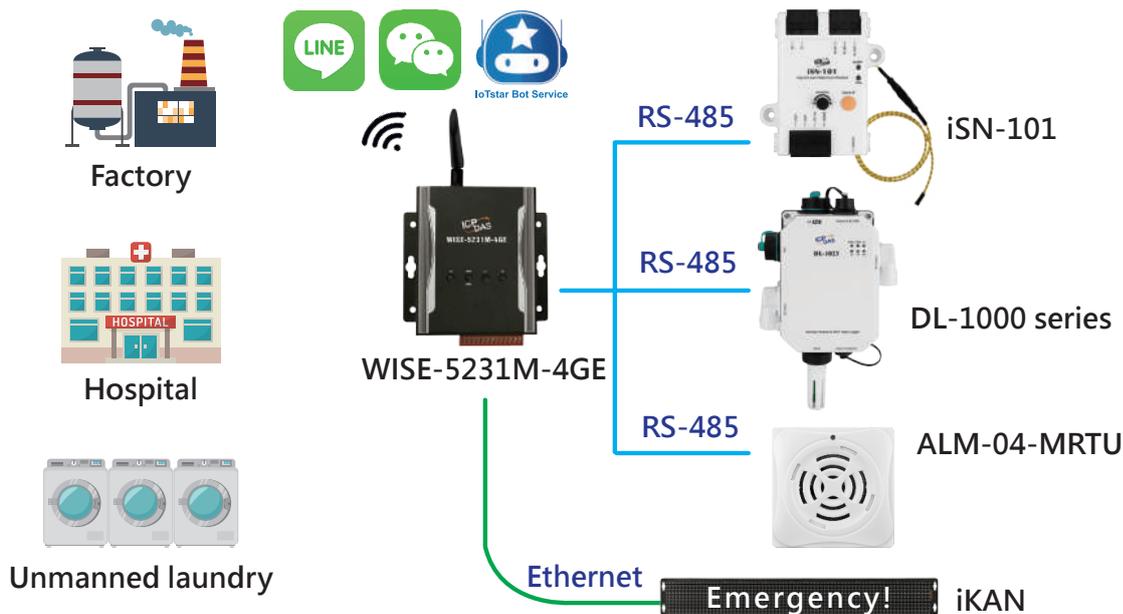


Environmental Alert Notification System for Public Area

When an emergency event occurs in the public area where people is moving, how to immediately warn these people in the area and notify the security personnel to deal with it immediately is an important issue for maintaining the safety of public areas. Using the solution of ICP DAS "WISE-5231 + ALM-06-WF/ALM-04-MRTU + iSN-101 + DL-1020" can implement the public area Environmental alert notification system in a easy way.

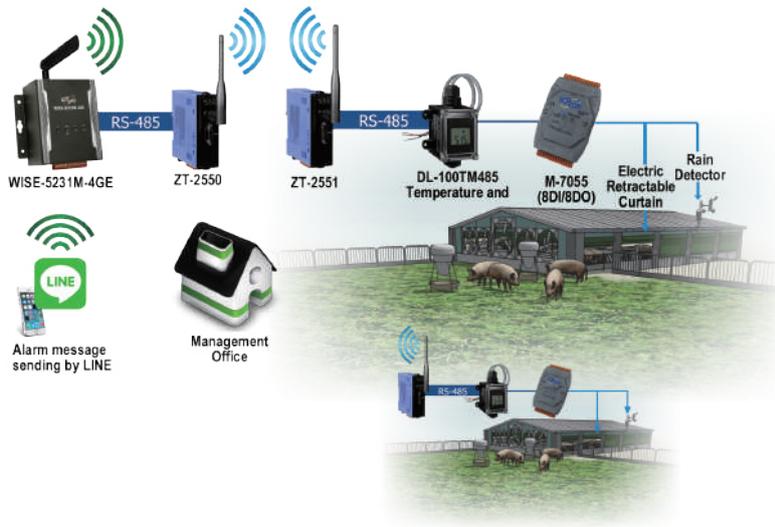
Based on the combination of "WISE-5231M-4GE + DL-1020 (temperature and humidity measurement module) + iSN-101 (pipeline leakage monitoring module)", it can be used to detect the status of temperature, and pipeline leakage, and according to the preset IF-THEN-ELSE logic rule of WISE to perform corresponding actions on abnormal events, and automatically send alarm messages to the security personnel's mobile phone via LINE / WeChat, and take corresponding actions in real time to protect the Life and property safety of the public area.

In addition, WISE-5231M-4GE can work with ALM-06-WF/ALM-04-MRTU (the intelligent buzzer module). Through the 99db high volume output and eight sound alarm output setting modes of ALM-06-WF/ALM-04-MRTU, a voice alarm will be issued immediately when the abnormal event occurs, even when it is in a noisy environment, it can still work effectively.



Ranch Monitoring System

In the environment of the ranch, due to the ranches generally consist of large areas, it is necessary to collect the sensor status from all over the ranch through wireless network, and it also requires to remotely control the equipment located everywhere of the ranch, so that the operator can adjust the suitable environment parameters according to the factors such as weather, temperature and humidity to help the growth of the livestock and the crop. WISE-5231M-4GE can work with the ZT-2550/ZT-2551 Zigbee module to collect the temperature and humidity data throughout the ranch and detect rain through the rain detector. If the rainfall intensity is too high or rainfall is too much, it can be covered by the electric retractable curtain automatically via the WISE-5231M-4GE. WISE also supports LINE message sending. It can be used to send the alarm notification message to the related personnel for immediate response when a special event occurs. Based on the function WISE-5231M-4GE provided, it can provide convenient and real-time management mechanisms for the ranch and reduce loading of the task.



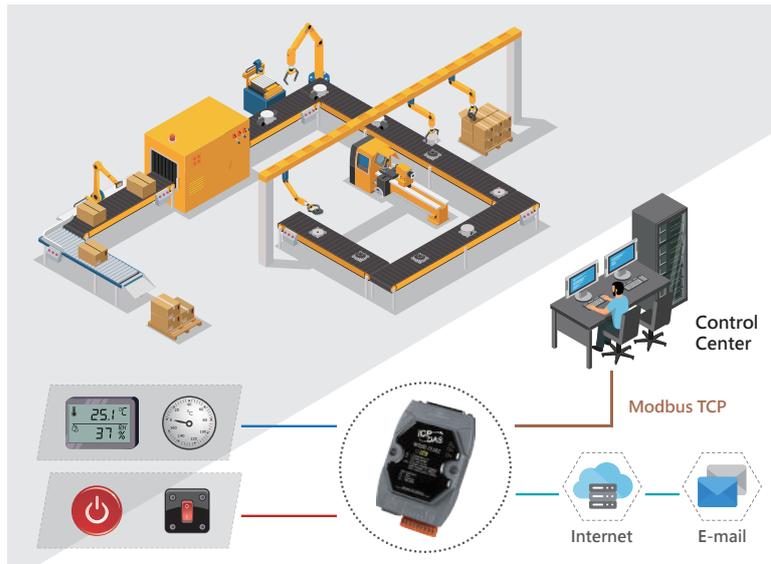
Pig Farming Solution

Ammonia (NH₃) and hydrogen sulfide (H₂S) are among the most significant pollutant gases in Pig Farming relating to animal. Large quantities of NH₃ and H₂S emissions can have negative impacts on growth and immunity of the animals. Therefore, it requires long term environmental monitoring. However, a general device on market may not function properly under such environment. By using "WISE-5231-4GE and DL-305-IP65", it can monitor/record the concentration of NH₃ & H₂S, temperature, and humidity information with date and timestamps. The WISE-5231-4GE features schedule functions. It allows user to schedule specific date or time for control logic execution of equipments. WISE also supports SMS message and LINE Notify message sending. It can be used to send messages to report the current status of the equipment and environment or to send the alarm notification message to the related personnel for immediate response when a special event occurs.



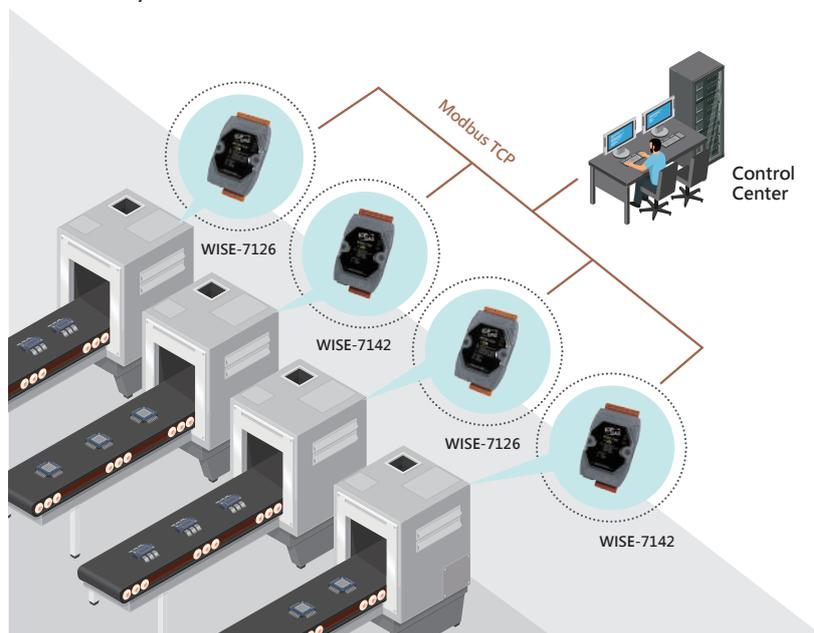
Disaster Prevention System

In factories, most facilities and devices involved are all subject to overheating damage. From improper site wiring, lightning strikes, to overrun motors, a wide variety of overheating issues threaten systems and peripherals constantly. To ensure the safety of personals/devices, eliminate unnecessary machine downtime and achieve maximum productivity, it is necessary to build an automated system that enables real-time monitoring and disaster prevention. WISE provides a total solution for disaster prevention/monitoring system that will detect temperature for various devices in the factory in real time. It also enables communication between devices that will initiate immediately actions in response to emergencies. For example, in response to pre-set critical temperature threshold, the system will take actions such as auto-stop the devices, turn on the temperature reduction devices, and send alarm notification to the related personnel. WISE also support Modbus and IoT protocols so that information can be instantly transmitted to the control center and makes response to emergencies and real time monitoring of the overall factory operation more efficiently.



Production Line Management

Eliminating unnecessary machine downtime and ensuring maximum productivity are keys to successful product line management. WISE features flexible logic functions for creating cutting edge applications that makes it easy to take full control of your product line management. ICP DAS offers full-range WISE series products that enables to connect with product line devices in various applications. The logic engine on WISE make it possible to set up different automation process by just a few clicks, for example: by connecting conveyer to WISE, it allows to hold the conveying of semi-finished product during the manufacturing process for further processing; measure productivities statistics, or notify the operators ready for next steps. In addition, WISE can also be set to detect and response immediately when an abnormal occurs during the manufacturing process to avoid the waste of raw materials or equipment damage. WISE also support Modbus and IoT protocols so that information can be instantly transmitted to the control center and makes real time monitoring the overall production line status more efficiently.



Ch4.Product Specification

4.1 IIoT Edge Controller : WISE-284xM/224xM/523x

Advanced IIoT Edge Controller: WISE-284xM



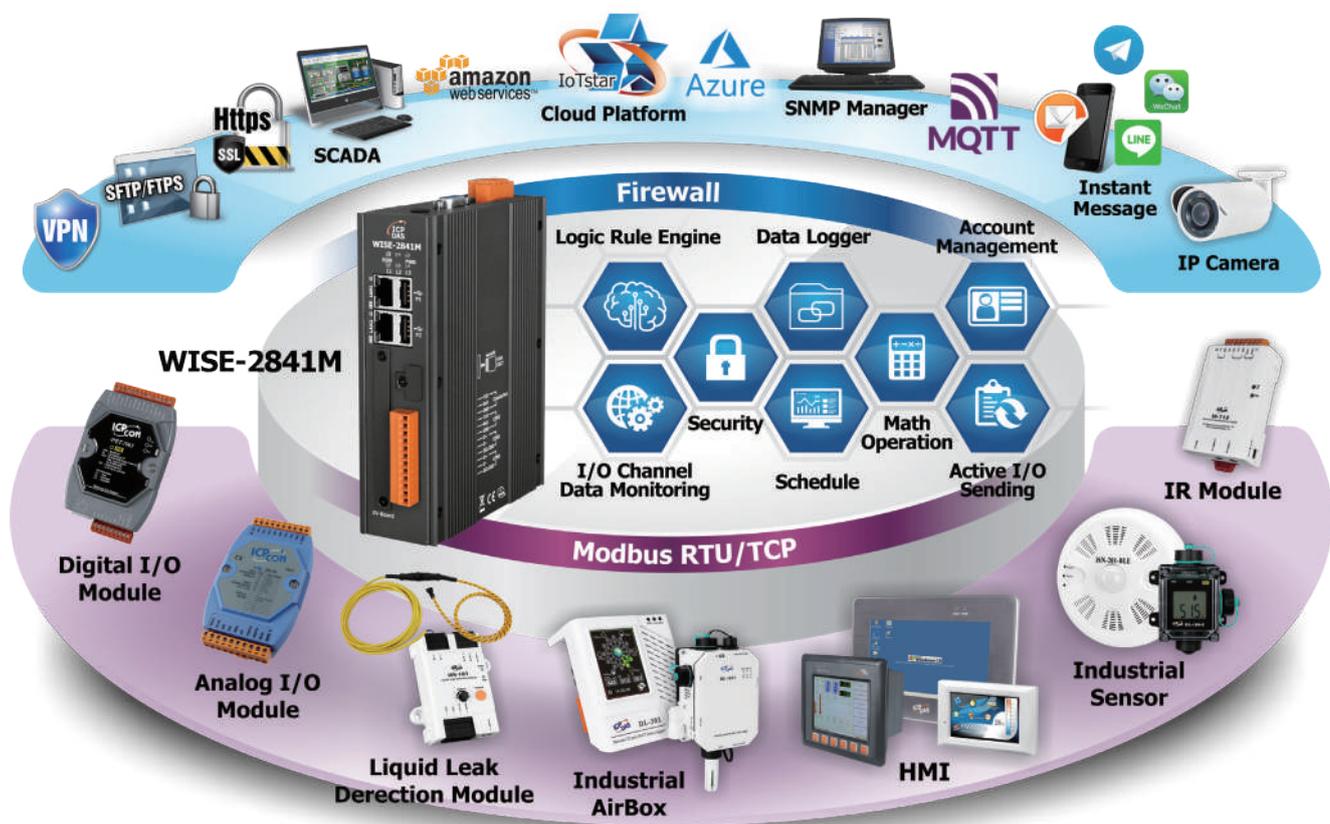
WISE-284xM

Features

- No more programming, Web pages provided for system and logic rule setting
- Support XV-board, DCON, & Modbus TCP/RTU Slave modules
- IF-THEN-ELSE logic rules execution ability
- Data logger and data files send back function supported
- Timer and Schedule functions supported
- Support Line, Telegram, WeChat, SMS and Email message notification
- Support Modbus TCP/RTU, SNMP, MQTT, FTP and CGI protocols
- Support connection with IoT Cloud Platform (Microsoft Azure, IBM Bluemix, Amazon Web Services) and IoTstar Cloud Management Software
- Support 4G wireless data communication
- Complete information security protection mechanism - HTTPS, VPN, SNMP v3, SFTP, FTPS, and Blacklist/Whitelist



System Architecture





Advanced IloT Edge Controller

A comprehensive upgrade of information security mechanism



HTTPS



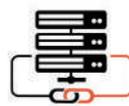
VPN



SNMPv3



SFTP



FTPS



LISTING



WISE-2841M

I/O Module



Industrial AirBox



Liquid Leak Detection Module



IP Camera

In the era of Internet of things, information security has become the key point of the IloT system that cannot be ignored. In the past, people frequently assume "Hackers will not target devices within industrial networks, they are only interested in attacking PCs and enterprise networks", "The industrial equipment is old, so it is relatively safe". However, with the increasing demand of networking connection capability for industrial equipment, old industrial equipment may be vulnerable once being connected to the network. When a hacker penetrates and takes over the industrial system, it may be subjected to a huge amount of extortion, or the system will be shut down and data will be destroyed. Therefore, improving the overall information security of the industrial system and strengthen the reliability of cloud connections are the core in building an industrial IoT system.

In order to meet the high level requirements of information security for the Industrial IoT system, ICP DAS has launched the Advanced IloT Edge Controller: WISE-284xM series. It supports a variety of information security functions and encrypted data communication protocols, and provides the following information security mechanism according to the different levels of protection requirements:

■ Network Security

WISE-284xM series features the VPN communication function (supports 4 VPN protocols : PPTP, L2TP, OpenVPN and SoftEther), which allows users to set up a secure communication tunnel between WISE and the internet, and the security of the network through VPN can also prevent the WISE and its connected I/O modules from being invaded by external threats.



■ System Security

WISE-284xM series uses web interface for system configuration and sensor monitoring, therefore the web interface is the entry point for the entire system operation, and its security needs to be strengthened. WISE-284xM supports the HTTPS encrypted communication protocol, which can encrypt the communication content between the browser and WISE to protect the settings and operations performed on WISE from being interpreted. SNMP v3 encryption communication protocol and the authentication mechanism of user management are also provided to ensure the security of connections between WISE and IT system to ensure the security.

■ Data Security

WISE-284xM is equipped with a microSD card, which can be used to perform the periodic or event-driven data log operations for the I/O modules connected to WISE. The data log files can be automatically sent back to back-office through the FTPS protocol, or actively downloaded by user through SFTP, FTPS or web protocols. The transmission of data log files is protected by TLS encryption to ensure the data log files not being captured or tampered during the transmission process.



Identity Authentication Security

WISE-284xM features the mechanism of password authentication for each communication connection interface. Administrator is required to enter accurate password before setting up the operations of WISE. In addition, WISE-284xM also supports the function of Blacklist/Whitelist, which allows users to filter and exclude the accessible domains. It can also perform the dynamic blacklist function to automatically add the IP address with too many wrong login attempts to WISE to blacklist to protect WISE from the brute force password attacks.



Cloud Backup Mechanism

However, no matter how robust the security mechanism is, the threat of being breached is always exist. Therefore, in addition to the security mechanism, the system recovery function is also indispensable, so that the original system setting can be quickly restored to WISE after being damaged by the network attack. WISE-284xM can connect to the IoT Cloud Management Software-IoTstar launched by ICP DAS. In addition to collecting the sensor data sent by WISE, and importing them to Database, IoTstar can also perform the system setting backup operation automatically for the WISE controllers connect to IoTstar. In this way, even if WISE-284xM is attacked and damaged, as long as a new WISE is replaced, the original system setting can be restored to the new WISE, so that the operations on WISE will return to normal immediately without worrying about the loss of downtime caused by system damage.



The Advanced IIoT Edge Controller - WISE-284xM inherits the features of the original WISE series controllers: perform system setting and monitoring by browser, powerful IF-THEN-ELSE logic operation capability, connection ability to a variety of I/O modules, support data computing and real-time message notification functions. Now it also features greatly improved information security mechanism. The WISE-284xM is perfect to serve as the operational core of the industrial IoT system.

Hardware Specifications

Model	WISE-284xM Series
System	
CPU	Quad-core ARM CPU, 1.6 GHz/Core
VGA port	Yes (Only for system diagnostic and recovery operations)
SDRAM/Flash	DDR3 2 GB / 8 GB
microSD	Built-in one 4 GB microSD card (support up to 32 GB microSDHC card or 2 TB microSDXC card)
Communication Interface	
Ethernet	RJ-45 x 2, 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. Support 2500 VDC isolation.
I/O Module Support	
Local Side	Support ICP DAS XV-board
Remote Side	* Support DCON or Modbus RTU Slave modules (Up to 32, COM3 and COM4 can connect to Max. 16 modules individually.) * Support Modbus TCP Slave modules (Up to 16)
iCAM IP Camera	up to 12
Power Requirements	
Input Range	12 to 48 VDC
Consumption	Ethernet version: 4.8 W; -4GE/4GC/3GWA version: 6.5 W
Mechanical	
Casing	Metal
Dimensions (W x L x H; mm)	42 x 164 x 129
Installation	Wall Mounting Installation or DIN-Rail Installation (Optional)
Environmental	
Temperature/ Humidity	Operating Temperature: -25 ° C to +75 ° C; Storage Temperature: -40 ° C to +80 ° C; 10 to 90% RH, Non-condensing
Mobile Network Communication	
WISE-284xM-4GE	FDD LTE: B1/B3/B5/B7/B8/B20 bands (Frequency Band for EMEA, Korea, Thailand, India and Taiwan) WCDMA: 850/900/2100 MHz
WISE-284xM-4GC	FDD LTE: B1/B3/B8 bands (Frequency Band for China) TDD LTE: B38/B39/B40/B41 bands (Frequency Band for China) WCDMA: 900/2100 MHz, TD-SCDMA 1900/2100 MHz, CDMA2000 (BC0) 800 MHz

Software Specifications

Function		Description
Easy to use	Web Page Interface	<ul style="list-style-type: none"> ● No more programming ! Runs on browsers for system and logic rule setting. (Supports HTTPS Protocol)
	Local Side	<ul style="list-style-type: none"> ● Support XV-board(XV107, XV107A, XV110, XV111, XV111A, XV116, XV306, XV307, XV308, XV310).
Options for Sensor Integration	Remote Side (RS-485)	<ul style="list-style-type: none"> ● Support ICP DAS I-7000/M-7000/tM/DL/LC/IR/iSN and Modbus RTU Slave module.
	Remote Side (Ethernet)	<ul style="list-style-type: none"> ● Support ICP DAS WISE-7100/(P)ET-7000/WF-2000 and Modbus TCP Slave module.
Edge Computing Ability at Field Sites	IF-THEN-ELSE Logic Operation	<ul style="list-style-type: none"> ● Built-in advanced IF-THEN-ELSE logic engine provides for the execution of logic rules.
	I/O Channel Monitoring & Control	<ul style="list-style-type: none"> ● Provides real-time monitoring and setting of I/O channel of sensor.
	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 tasks. The status of Schedule can be included in IF condition statements to trigger the THEN/ELSE actions. “Calendar” and “Weekly repeat” setting UI are provided.
	Instant Message Sending	<ul style="list-style-type: none"> ● Support LINE, WeChat, Telegram, SMS, and Email message sending function.
	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 sensor data by Period or Event Trigger operation.
Seamless Integration with SCADA/IT/loT Systems	Internal Register	<ul style="list-style-type: none"> ● Work as a variable to hold the temporary value, and provide the basic mathematical operation. (Supports "Retain Variable" function for all Internal Registers)
	Real-Time Sensor Data	<ul style="list-style-type: none"> ● Support Modbus TCP/RTU, CGI, SNMP(v1, v2c & v3) and MQTT protocols for the integration with SCADA/IT/loT systems. Active I/O sending mechanism supported.
	Historical Sensor Data Files	<ul style="list-style-type: none"> ● FTP, SFTP & FTPS protocols supported for the maintenance of data log files and the data files automatically send back & recovery when disconnected network is resumed. ● Provide alarm notification mechanism so that when microSD card is damaged, the data log file will be stored in WISE to prevent data loss.
	Communication Service	<ul style="list-style-type: none"> ● DDNS (Dynamic DNS) service supported. ● Supports VPN Client operation. ● 4G version WISE-284xM controller support 4G wireless data communication.
	IoT Gateway Capability	<ul style="list-style-type: none"> ● Support connection with IoT Cloud Platform (Microsoft Azure, IBM Bluemix & Amazon Web Services) and IoTstar Cloud Management Software.

WISE-284xM

mini PCIe slot (USB Communication, Support 4G network card)

SIM Card Socket

Antenna (Optional)

Frame Ground & Power Input

VGA Port

Rotary Switch

Ethernet port x 2 (LAN1, LAN2)

micro SD Card Slot

mini PCIe slot (PCIe 2.0 communication, support Wi-Fi network card)

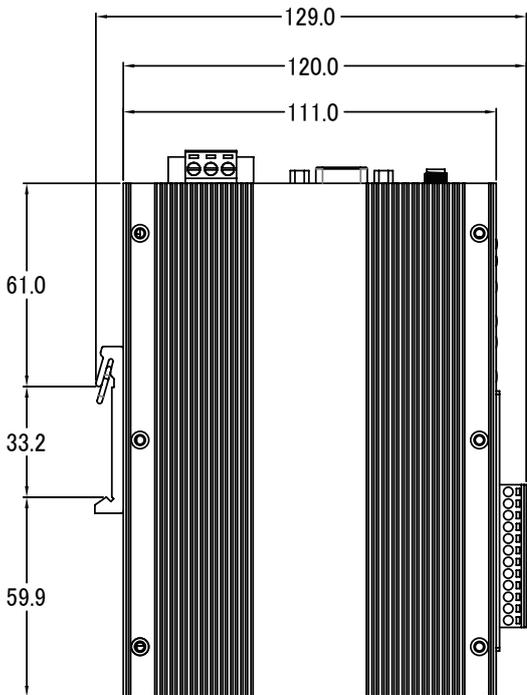
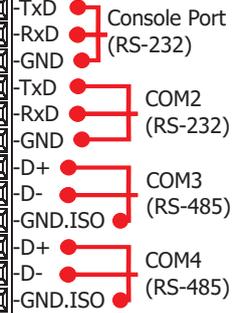
For 4G network card & Wi-Fi network card, you can only use one of them. (Because there is only one antenna connector)

LED Indicator

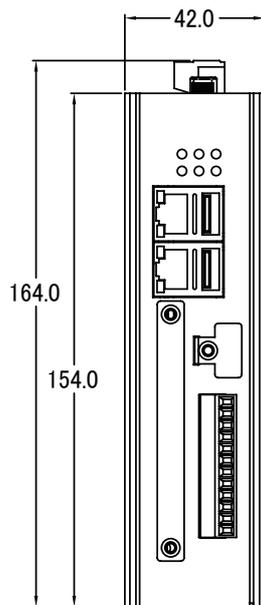
USB Port x 2 (P1 and P2)

Pin Assignment

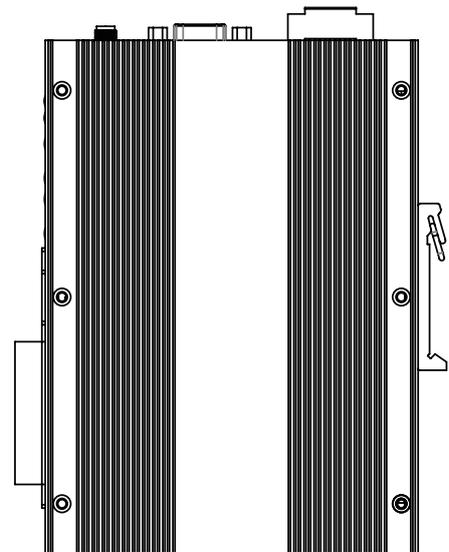
XV-board Expansion Slot



Left Side View



Front View



Right Side View

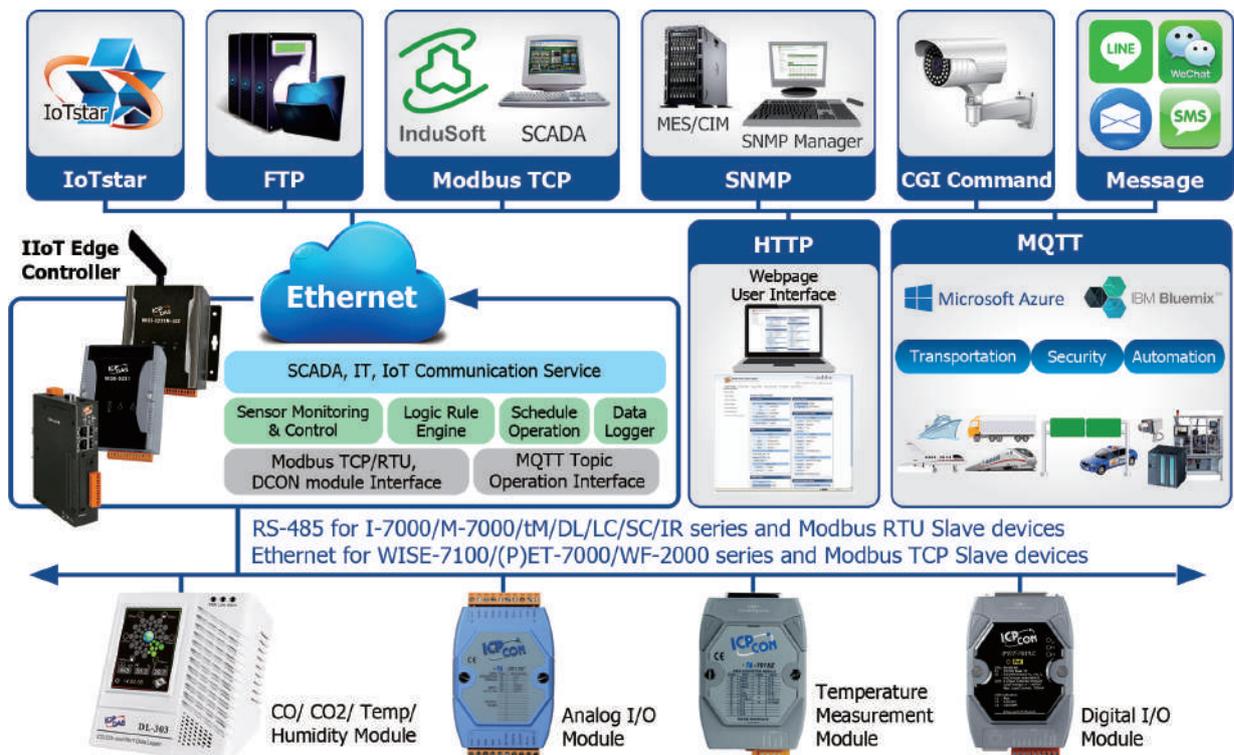
IIoT Edge Controller: WISE-224xM/WISE-523x



Features

- No more programming, Web pages provided for system and logic rule setting
- Support XV-board, DCON, & Modbus TCP/RTU Slave modules
- IF-THEN-ELSE logic rules execution ability
- Data logger and data files send back function support
- Timer and Schedule functions supported
- Support Line, WeChat, SMS and Email message notification
- Support Modbus TCP/RTU, SNMP, MQTT, FTP and CGI protocols
- Support connection with IoT Cloud Platform (Microsoft Azure, IBM Bluemix) and IoTstar Cloud Management Software
- Support 4G/3G wireless data communication

System Architecture



Hardware Specifications

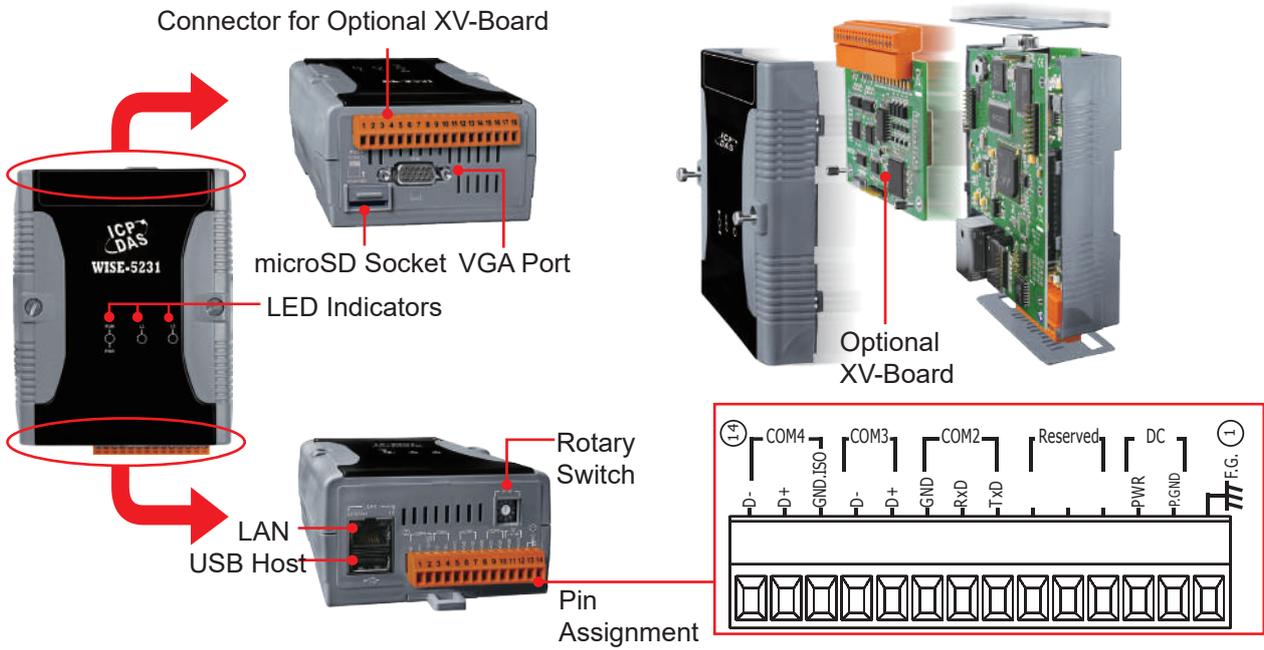
Model	WISE-224xM Series	WISE-523x Series	WISE-523xM Series
System			
CPU	ARM CPU, 1.0 GHz		
VGA port	Yes (Only for system diagnostic and recovery operations)		
SDRAM/Flash	DDR3 512 MB / 256 MB		
microSD	Built-in one 4 GB microSD card (support up to 32 GB microSDHC card)		
Communication Interface			
Ethernet	RJ-45 x 2, 10/100/1000 Base-TX (Auto-negotiating, Auto MDI/MDI-X)	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. Support 2500 VDC isolation.	RS-485 (Data+, Data-), Speed: 115200 bps max. COM 4 provides 2500 VDC isolation.	
I/O Module Support			
Local Side	Support ICP DAS XV-board		
Remote Side	* Support DCON or Modbus RTU Slave modules (Up to 32, COM3 and COM4 can connect to Max. 16 modules individually.) * Support Modbus TCP Slave modules (Up to 16)		
iCAM IP Camera	up to 4		
Power Requirements			
Input Range	12 to 48 VDC		
Consumption	Ethernet version: 4.8 W; -4GE/4GC/3GWA version: 6.5 W		
Mechanical			
Casing	Metal	Plastic	Metal
Dimensions (W x L x H; mm)	35 x 167 x 119	91 x 132 x 52	117 x 126 x 58
Installation	Wall Mounting Installation or DIN-Rail Installation (Optional)	DIN-Rail Installation	Wall Mounting/ DIN-Rail Installation
Environmental			
Temperature/ Humidity	Operating Temperature: -25 ° C to +75 ° C; Storage Temperature: -40 ° C to +80 ° C; 10 to 90% RH, Non-condensing		
Mobile Network Communication			
WISE-5231M-3GWA	WCDMA: 850/900/1900/2100 MHz		
WISE-523xM-4GE, WISE-224xM-4GE	FDD LTE: B1/B3/B5/B7/B8/B20 bands (Frequency Band for EMEA, Korea, Thailand, India and Taiwan) WCDMA: 850/900/2100 MHz		
WISE-523xM-4GC, WISE-224xM-4GC	FDD LTE: B1/B3/B8 bands (Frequency Band for China) TDD LTE: B38/B39/B40/B41 bands (Frequency Band for China) WCDMA: 900/2100 MHz, TD-SCDMA 1900/2100 MHz, CDMA2000 (BC0) 800 MHz		

Software Specifications

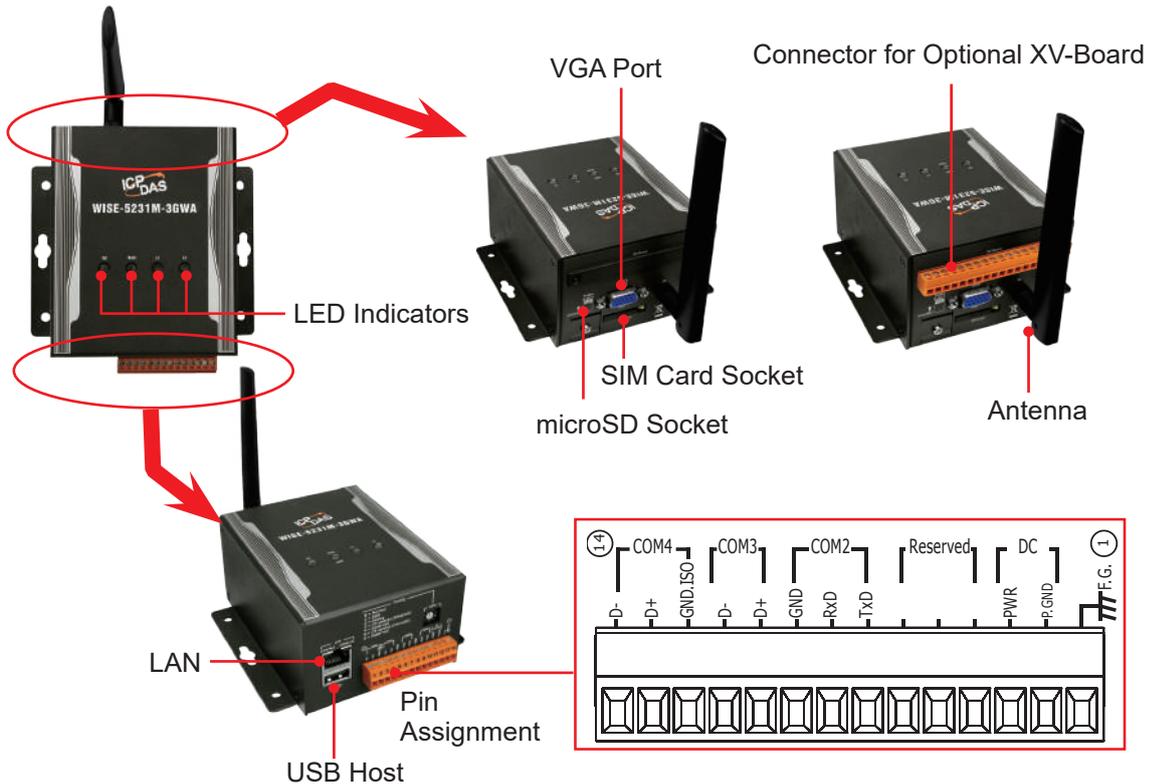
Function		Description
Easy to use	Web Page Interface	● No more programming ! Runs on browsers for system and logic rule setting.
	Local Side	● Support XV-board(XV107, XV107A, XV110, XV111, XV111A, XV116, XV306, XV307, XV308, XV310).
Options for Sensor Integration	Remote Side (RS-485)	● Support ICP DAS I-7000/M-7000/tM/DL/LC/IR and Modbus RTU Slave module.
	Remote Side (Ethernet)	● Support ICP DAS WISE-7100/(P)ET-7000/WF-2000 and Modbus TCP Slave module.
Edge Computing Ability at Field Sites	IF-THEN-ELSE Logic Operation	● Built-in advanced IF-THEN-ELSE logic engine provides for the execution of logic rules.
	I/O Channel Monitoring & Control	● Provides real-time monitoring and setting of I/O channel of sensor.
	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 tasks. The status of Schedule can be included in IF condition statements to trigger the THEN/ELSE actions. “Calendar” and “Weekly repeat” setting UI are provided.
	Instant Message Sending	● Support LINE, Email and SMS for instant message sending. (WISE-5236/WISE-2246M support WeChat message sending function.)
	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 sensor data by Period or Event Trigger operation.
Seamless Integration with SCADA/IT/loT Systems	Internal Register	● Work as a variable to hold the temporary value, and provide the basic mathematical operation.
	Real-Time Sensor Data	● Support Modbus TCP/RTU, CGI, SNMP(v1 & v2c) and MQTT protocols for the integration with SCADA/IT/loT systems. Active I/O sending mechanism supported.
	Historical Sensor Data Files	● FTP protocol supported for the maintenance of data log files and the data files automatically send back & recovery when disconnected network is resumed. ● Provide alarm notification mechanism so that when microSD card is damaged, the data log file will be stored in WISE to prevent data loss.
	Communication Service	● DDNS (Dynamic DNS) service supported. ● 3G/4G version WISE-523xM/224xM controller support 3G/4G wireless data communication.
	loT Gateway Capability	● Support connection with loT Cloud Platform (Microsoft Azure and IBM Bluemix) and loTstar Cloud Management Software.

Appearance

WISE-523x



WISE-523xM-4GE/4GC & WISE-5231M-3GWA



Supported I/O Module

Module Specification

I/O Module Specification		Description	Max. Connection Allowed
I/O Module for Local site	Local Bus	ICP DAS: XV-Board series module	1
I/O Module for Remote site	DCON by RS-485	ICP DAS : I-7000/DL series module	COM3 and COM4 can connect up to 16 modules individually.
	Modbus RTU by RS-485	ICP DAS : M-7000/tM/DL/LC/IR series module Others : modules that support Modbus RTU Slave Protocol	
	Modbus TCP by Ethernet	ICP DAS : WISE-7100/(P)ET-7000/DL/WF-2000 series module Others : modules that support Modbus TCP Slave Protocol	LAN interface can connect up to 16 modules.
IP Camera		ICP DAS : iCAM series module	LAN interface can connect up to 4 cameras (WISE-523x/224x) or 12 cameras (WISE-284x).

List of Supported Modules

Function		Model List
I-7000 Module		
AI/AO	Voltage & Current	I-7012, I-7012D, I-7012F, I-7012FD, I-7017, I-7017F, I-7017R, I-7017C, I-7017FC, I-7017RC, I-7017R-A5, I-7017Z
	Thermocouple	I-7011, I-7011D, I-7011P, I-7011PD, I-7018, I-7018P, I-7018R, I-7018Z, I-7019R
	RTD	I-7013, I-7013D, I-7015, I-7015P, I-7033, I-7033D
	Thermistor	I-7005
	Transmitter	I-7014D
	Strain Gauge	I-7016, I-7016D, I-7016P, I-7016PD
	Analog Output	I-7021, I-7021P, I-7022, I-7024, I-7024R
DI/DO	DC Digital Input	I-7041, I-7041D, I-7041P, I-7041PD, I-7051, I-7051D, I-7052, I-7052D, I-7053-FG, I-7053D-FG
	AC Digital Input	I-7058, I-7058D, I-7059, I-7059D
	DC Digital Output	I-7042, I-7042D, I-7043, I-7043D, I-7045, I-7045D, I-7045-NPN, I-7045D-NPN
	DC Digital Input & Output	I-7044, I-7044D, I-7050, I-7050D, I-7050A, I-7050AD, I-7055, I-7055D, I-7055-NPN, I-7055D-NPN
Relay Output	Power Relay Output	I-7060, I-7060D, I-7061, I-7061D, I-7063, I-7063D, I-7065, I-7065D, I-7067, I-7067D
	Solid State Relay Output	I-7063A, I-7063AD, I-7063B, I-7063BD, I-7065A, I-7065AD, I-7065B, I-7065BD
	Photomos Relay Output	I-7066, I-7066D
Others	Counter/Frequency	I-7080, I-7080D, I-7080B, I-7080BD, I-7088, I-7088D

Function		Model List
M-7000 Module		
AI/AO	Voltage & Current	M-7017, M-7017C, M-7017R, M-7017R-A5, M-7017RC, M-7017Z
	Thermocouple	M-7011, M-7011D, M-7018, M-7018R, M-7018Z, M-7019R, M-7019Z
	RTD	M-7015, M-7015P
	Thermistor	M-7005
	Strain Gauge	M-7016, M-7016D
	Analog Output	M-7022, M-7024, M-7024R, M-7024L, M-7028, M-7028D
	RMS Input	M-7017RMS
DI/DO	DC Digital Input	M-7041, M-7041D, M-7041P, M-7041PD, M-7041-A5, M-7041D-A5, M-7046, M-7046D, M-7051, M-7051D, M-7052, M-7052D, M-7053, M-7053D
	AC Digital Input	M-7058, M-7058D, M-7059, M-7059D
	DC Digital Output	M-7043, M-7043D, M-7045, M-7045D, M-7045-NPN, M-7045D-NPN
	DC Digital Input & Output	M-7050, M-7050D, M-7055, M-7055D, M-7055-NPN, M-7055D-NPN
Relay Output	Power Relay Output	M-7060, M-7060D, M-7060P, M-7060PD, M-7061, M-7061D, M-7064, M-7064D, M-7065, M-7065D, M-7067, M-7067D, M-7068, M-7068D, M-7069, M-7069D
	Solid State Relay Output	M-7065B, M-7065BD
	Photomos Relay Output	M-7066P, M-7066PD
Others	Counter/Frequency	M-7080, M-7080D, M-7080B, M-7080BD, M-7084, M-7088, M-7088D
	Multi-Function	M-7002, M-7003, M-7024U, M-7024UD, M-7026
tM Module		
AI/AO	Voltage & Current	tM-AD2, tM-AD5, tM-AD5C, tM-AD8, tM-AD8C
	Thermistor	tM-TH8
DI/DO	DC Digital Input	tM-P8
	DC Digital Output	tM-C8
	DC Digital Input & Output	tM-P4A4, tM-P4C4
Relay Output	Power Relay Output	tM-P3R3, tM-R5
	Photomos Relay Output	tM-P3POR3
Others	Multi-Function	tM-DA1P1R1, tM-AD4P2C2
(P)ET-7000 Module		
AI/AO	Voltage & Current	(P)ET-7017, (P)ET-7217, (P)ET-7017-10, (P)ET-7217-10, (P)ET-7217-A5
	Thermocouple	(P)ET-7018Z, (P)ET-7019Z, (P)ET-7218Z, (P)ET-7219Z
	RTD	(P)ET-7015, (P)ET-7215
	Thermistor	(P)ET-7005
DI/DO	DC Digital Input	(P)ET-7051, (P)ET-7053, (P)ET-7251, (P)ET-7253
	DC Digital Output	(P)ET-7042, (P)ET-7242
	DC Digital Input & Output	(P)ET-7044, (P)ET-7050, (P)ET-7052, (P)ET-7244, (P)ET-7250A, (P)ET-7252, (P)ET-7255
Relay Output	Power Relay Output	(P)ET-7060, (P)ET-7067, (P)ET-7260, (P)ET-7261, (P)ET-7267
	Photomos Relay Output	(P)ET-7065, (P)ET-7066
Others	Multi-Function	(P)ET-7002, (P)ET-7016, (P)ET-7024, (P)ET-7026, (P)ET-7202, (P)ET-7224, (P)ET-7226

Function		Module List
t(P)ET Module		
DI/DO	DC Digital Input	t(P)ET-P6, t(P)ET-PD6
	DC Digital Output	t(P)ET-C4, t(P)ET-A4
	DC Digital Input & Output	t(P)ET-P2C2, t(P)ET-P2A2
Digital Input & Relay Output	Digital Input & Power Relay Output	t(P)ET-P2R2, t(P)ET-PD2R1
	Digital Input & Photomos Relay Output	t(P)ET-P2POR2, t(P)ET-PD2POR2
WISE-7000 Module		
AI/AO	Voltage & Current	WISE-7117
	Thermocouple	WISE-7118Z
	RTD	WISE-7115
	Thermistor	WISE-7105
DI/DO	DC Digital Input	WISE-7151, WISE-7153
	DC Digital Output	WISE-7142
	DC Digital Input & Output	WISE-7144, WISE-7150, WISE-7152, WISE-7255
Relay Output	Power Relay Output	WISE-7160, WISE-7167
Others	Multi-Function	WISE-7102, WISE-7126
WF-2000 Module		
AI/AO	Voltage & Current, Thermocouple	WF-2017, WF-2019/S
DI/DO	DC Digital Input, DC Digital Output	WF-2051, WF-2042
	DC Digital Input & Output	WF-2055
Relay Output	Power Relay Output	WF-2060
Others	Multi-Function	WF-2026
iSN Module		
	Liquid Leakage Detection Module	iSN-101, iSN-104
LC Module		
DI/DO	AC Digital Input	LC-101H, LC-103H
	DC Digital Output	LC-131
DL Module		
	Temperature / Humidity	DL-10, DL-100
	CO / CO2 / Temperature / Humidity	DL-301, DL-302, DL-303
	PM1 / PM2.5 / PM10 / CO / CO2 / Temperature / Humidity	DL-1020, DL-1021, DL-1022, DL-1023, DL-1038, DL-1050
IR Module		
	IR Learning Remote Module	IR-210, IR-712A, IR-712-MTCP
XV-Board Module		
DI/DO	DC Digital Input	XV110
	DC Digital Output	XV111, XV111A
	DC Digital Input & Output	XV107, XV107A
Relay Output	Power Relay Output	XV116
Others	Multi-Function	XV306, XV307, XV308, XV310
Modbus RTU/TCP Slave Module		
Coil Output / Discrete Input / Input Register / Holding Register		

Ordering Information

IIoT Edge Controller

Module	Description
Standard Function	
WISE-5231 CR	IIoT Edge Controller(Plastic casing)
WISE-5231M CR	IIoT Edge Controller(Metal casing)
WISE-5231M-3GWA CR	IIoT Edge Controller (Metal casing; Built-in 3G Wireless module)
WISE-5231M-4GE CR	IIoT Edge Controller (Metal casing; Built-in 4G Wireless module; Frequency Band for EMEA, Korea, Thailand, India and Taiwan)
WISE-5231M-4GC CR	IIoT Edge Controller (Metal casing; Built-in 4G Wireless module; Frequency Band for China)
WISE-2241M CR	IIoT Edge Controller (Metal casing)
WISE-2241M-4GE CR	IIoT Edge Controller (Metal casing; Built-in 4G Wireless module; Frequency Band for EMEA, Korea, Thailand, India and Taiwan; Asia only)
WISE-2241M-4GC CR	IIoT Edge Controller (Metal casing; Built-in 4G Wireless module; Frequency Band for China; Asia only)
Standard Function + WeChat Message Sending	
WISE-5236 CR	IIoT Edge Controller (Plastic casing; China only)
WISE-5236M CR	IIoT Edge Controller (Metal casing; China only)
WISE-5236M-4GC CR	IIoT Edge Controller (Metal casing; Built-in 4G Wireless module; Frequency Band for China; China only)
WISE-2246M CR	IIoT Edge Controller (Metal casing; China only)
WISE-2246M-4GC CR	IIoT Edge Controller (Metal casing; Built-in 4G Wireless module; Frequency Band for China; China only)

Please note: An Enterprise WeChat account in China is required for WISE to send the messages to the members under the enterprise WeChat account.

Advanced IIoT Edge Controller

Module	Description
Standard Function + WeChat Message Sending + Information Security Protection Mechanism	
WISE-2841M CR	Advanced IIoT Edge Controller (Metal casing)
WISE-2841M-4GE CR	Advanced IIoT Edge Controller (Metal casing; Built-in 4G Wireless module;; Frequency Band for EMEA, Korea, Thailand, India and Taiwan; Asia only)
WISE-2841M-4GC CR	Advanced IIoT Edge Controller (Metal casing; Built-in 4G Wireless module; Frequency Band for China; Asia only)

Please note: An Enterprise WeChat account in China is required for WISE to send the messages to the members under the enterprise WeChat account.

Accessories

ANT-Base-01	5 dBi 4G External Antenna Base (1.5 Meter) 	3S001-2	RG58A/U (1 Meter; SMA male to SMA Female) 
EC25-E	4G IoT LTE Category 4 Module ; Frequency Band for EMEA, Korea, Thailand, India and Taiwan 	EC20-CE	4G IoT LTE Category 4 Module; Frequency Band for China 

4.2 Intelligent I/O Module : WISE-75xxM/71xx



WISE-75xxM

Features

- No more programming, Web pages provided for system and logic rule setting
- IF-THEN-ELSE logic rules execution ability
- Built-in I/O module
- Support I/O monitoring/control, non-SSL Email/CGI command sending
- Support Timer and Schedule operation
- Support PoE (Power over Ethernet) function and 2-port Ethernet Switch for Daisy-Chain Topology
- Support Modbus TCP Protocol for SCADA System
- Support non-SSL MQTT Protocol for IT & IoT (Internet of Things) System
- Support connection with IoTstar Cloud Management Software



Introduction

WISE-75xxM is a series of AIO & DIO WISE modules. Each module features specific built-in I/O combination, the user could select the module with most appropriate I/O combination according to the requirements of the applications. After connect to the built-in web page interface of WISE-75xxM through web browser, user can edit the system settings and IF-THEN-ELSE control logic rules of WISE efficiently. The process is easy and fast, and the total cost of control system development will be significantly reduced. WISE-75xxM also supports Modbus TCP and MQTT communication protocols and can connect with ICP DAS IoTstar IoT cloud management software to build a complete industrial IoT control system.

System Specifications

System	
CPU	32 bits CPU (400MHz)
Communication	
PoE Ethernet Port	2 x RJ-45, 10/100 Base-TX, Switch Ports for Daisy-Chain Topology
Isolation Protection	
I/O 2-Way Isolation	2500 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each terminal, ±8 kV Air for random point
EFT (IEC 61000-4-4)	±2 kV for Power
LED Indicators	
System Running	Yes
Ethernet Link/Act	Yes
I/O Channel Status	Yes
PoE Power	Yes
Power Requirements	
Reverse Polarity Protection	Yes
Powered from Terminal Block	Yes, 12 to 48 VDC
Powered from PoE	Yes, IEEE 802.3af, Class1
Mechanical	
Dimensions (L x W x H) / Installation	120mm x 97mm x 42mm / Wall Mounting Installation
Environment	
Temperature	Operating Temperature: -25 °C to +75 °C; Storage Temperature: -30 °C to +80 °C
Humidity	10 to 90% RH, Non-condensing

Software Functions

Function	Max. No.	Description
Web Operation Interface	Yes	Access built-in webpage on WISE to set up system parameters and logic rules through browser.
IF-THEN-ELSE Rules	72	<ul style="list-style-type: none"> Each rule supports 3 IF conditions that can be combined by AND or OR operators for evaluation. Each IF-THEN-ELSE rule supports 3 THEN actions and 3 ELSE actions.
Internal Register	48	As a variable to hold the temporary value. SCADA can Read/write the value via Modbus Protocol.
Timer	24	Perform the timing function. The status of Timer can be included in IF condition statements to trigger the THEN/ELSE actions.
Schedule	24	Perform the prescheduled routine tasks. The status of Schedule can be included in IF condition statements to trigger the THEN/ELSE actions.
Email	24	Execute non-SSL Email message sending. Each Email can be sent to up to 5 receivers.
CGI Command	24	Execute CGI command sending. Each CGI command can be sent to one receiver (web server).
Recipe	24	The evaluation result of IF condition can trigger the Recipe (contains a sequence of actions) in the THEN/ELSE actions.
P2P Controller	8	Enable local WISE to read/write I/O data of other remote WISE; the data can be used in the rules (Apply to WISE-7xxx)
Integration with SCADA/IT/IoT Systems	Yes	<ul style="list-style-type: none"> Support Modbus TCP and MQTT protocols for the integration with SCADA/IT/IoT systems. Support connection with ICP DAS IoTstar Cloud Management Software.

I/O Channel Specifications

Model	Local I/O Channel				Specifications
	DI	DO	AI	AO	
WISE-7502M	6	3	3	-	AI : +/- 150 mV, +/- 500 mV, +/- 1V, +/- 5 V, +/- 10 V, +0 ~ +20 mA, +/- 20 mA, 4 ~ 20mA DO : Power Relay (Form A); DI : Wet (Sink,Source)
WISE-7504M	4	-	4	4	AI : +/- 500 mV, +/- 1V, +/- 5 V, +/- 10 V, +0 ~ +20 mA, +/- 20 mA, 4 ~ 20mA AO : 0 ~ 5 V, +/- 5 V, 0 ~ 10 V, +/- 10 V, 0 ~ 20 mA, 4 ~ 20 mA DI : Dry (Source), Wet (Sink)
WISE-7515M	-	-	7	-	RTD (AI) : Pt100, Pt1000, Ni120, Cu100, Cu1000
WISE-7517M	-	4	8	-	AI : +/-150 mV, +/-500 mV, +/-1 V, +/-5 V, +/-10 V, +/-20 mA, 0 ~ 20 mA, 4 ~ 2 0mA DO : Open Collector (Sink)
WISE-7517M-10	-	-	10/20	-	AI : +/-150 mV, +/-500 mV, +/-1 V, +/-5 V, +/-10 V, +/-20 mA, 0 ~ 20 mA, 4 ~ 20 mA
WISE-7518ZM	-	3	10	-	AI : +/-15 mV, +/-50 mV, +/-100 mV, +/-500 mV, +/-1 V, +/-2.5 V, +/-20 mA, 0~20 mA, 4~20 mA, Thermocouple (J, K, T, E, R, S, B, N, C, L, M, LDIN43710) DO : Open Collector (Sink)
WISE-7519ZM	-	3	10	-	AI : +/-15 mV, +/-50 mV, +/-100 mV, +/-150 mV, +/-500 mV, +/-1 V, +/-5 V, +/-10 V, +/-20 mA, 0~20 mA, 4~20 mA, Thermocouple (J, K, T, E, R, S, B, N, C, L, M, LDIN43710) DO : Open Collector (Sink)
WISE-7524M	5	5	-	4	AO : 0 ~ 5 V, +/- 5 V, 0 ~ 10 V, +/- 10 V, 0 ~ 20 mA, 4 ~ 20 mA DI : Dry (Source), Wet (Sink,Source); DO : Open Collector (Sink)
WISE-7526M	2	2	6	2	AI : +/- 500 mV, +/- 1 V, +/- 5 V, +/-10 V, 0 ~ 20 mA, +/- 20 mA, 4~20mA AO : 0 ~ 5 V, +/- 5 V, 0 ~ 10 V, +/- 10 V, 0 ~ 20 mA, 4 ~ 20 mA DI : Dry (Source), Wet (Sink,Source); DO : Open Collector (Sink)
WISE-7528M	-	-	-	8	AO : 0 ~ 5 V, +/- 5 V, 0 ~ 10 V, +/- 10 V, 0 ~ 20 mA, 4 ~ 20 mA
WISE-7542M	-	16	-	-	DO : Open Collector (Sink)
WISE-7544M	8	8	-	-	DI : Wet (Sink,Source); DO : Open Collector (Sink)
WISE-7551M	16	-	-	-	DI : Wet (Sink,Source)
WISE-7552M	8	8	-	-	DI : Wet (Sink,Source); DO : Open Collector (Source)
WISE-7553M	16	-	-	-	DI : Dry (Source)
WISE-7555M	8	8	-	-	DI : Dry (Source), Wet (Sink,Source); DO : Open Collector (Source)
WISE-7560M	6	6	-	-	DI : Wet (Sink,Source); DO : Power Relay Form A (SPST N.O.)
WISE-7561M	-	11	-	-	DO : Power Relay Form A (SPST N.O.)
WISE-7567M	-	8	-	-	DO : Power Relay Form A (SPST N.O.)

Ordering Information

WISE-75xxM	WISE Intelligent MQTT I/O Module With PoE (Please refer to "I/O Channel Specifications" for the model number)
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WISE-71xx

Features

- No more programming, Web pages provided for system and logic rule setting
- IF-THEN-ELSE logic rules execution ability
- Built-in I/O module
- Support I/O monitoring/control, non-SSL Email/CGI command sending
- Timer function supported
- Support Modbus TCP Protocol for SCADA Software Integration
- Support PoE (Power over Ethernet) function



Introduction

WISE-71xx 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. WISE-71xx also features specific built-in I/O combination, the user could select the module with most appropriate I/O combination according to the requirements of the applications.

WISE-71xx follows IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) specification. It allows receiving power from PoE enabled network by Ethernet pairs (Category 5 Ethernet cable). This feature provides greater flexibility and higher efficiency therefore simplifying systems design, saving space, reducing cables and eliminating the requirement for dedicated electrical outlets. Meanwhile, in case under a non-PoE environment, WISE-71xx will still be able to receive power from auxiliary power sources like AC adapters or battery, etc. WISE-71xx also supports Modbus TCP protocol to make seamless integration with SCADA software.

System Specifications

Model	WISE-71xx
System	
CPU	16 bits CPU (80MHz)
I/O module Support	Built-in I/O Module
Communication Interface	
PoE Ethernet Port	10/100 Base-TX * 1
LED Indicators	
PoE Power	PoE On
Others	System Running; Ethernet Link/Act/Speed;
Power Requirements	
Powered from Terminal Block	Yes, 12 to 48 VDC
Powered from PoE	Yes, IEEE 802.3af, Class1
Consumption	Depend on the I/O function provided
Mechanical	
Dimensions (L x W x D)	72 mm x 123 mm x 35 mm
Installation	DIN-Rail or Wall Mounting Installation
Environment	
Temperature	Operating Temperature : -25 °C to +75 °C Storage Temperature : -30°C to +80°C
Humidity	10 to 90% RH, Non-condensing

Software Functions

Function	Max. No.	Description
Web Operation Interface	Yes	Access built-in webpage on WISE to set up system parameters and logic rules through browser.
IF-THEN-ELSE Rules	36	<ul style="list-style-type: none"> Each rule supports 3 IF conditions that can be combined by AND or OR operators for evaluation. Each IF-THEN-ELSE rule supports 3 THEN actions and 3 ELSE actions.
Internal Register	48	As a variable to hold the temporary value. SCADA can Read/write the value via Modbus Protocol.
Timer	12	Perform the timing function. The status of Timer can be included in IF condition statements to trigger the THEN/ELSE actions.
Email	12	Execute non-SSL Email message sending. Each Email can be sent to up to 5 receivers.
CGI Command	12	Execute CGI command sending. Each CGI command can be sent to one receiver (web server).
Recipe	12	The evaluation result of IF condition can trigger the Recipe (contains a sequence of actions) in the THEN/ELSE actions.
P2P Controller	8	Enable local WISE to read/write I/O data of other remote WISE; the data can be used in the rules (Apply to WISE-7xxx)
Modbus TCP Protocol	Yes	Perform control and monitoring of I/O channels and system status via SCADA.

I/O Channel Specifications

Model	Local I/O Channel				Specifications
	DI	DO	AI	AO	
WISE-7102	6	3	3	-	AI : +/- 150 mV, +/- 500 mV, +/- 1V, +/- 5 V, +/- 10 V, +0 ~ +20 mA, +/- 20 mA, 4 ~ 20mA DO : Power Relay (Form A); DI : Wet (Sink,Source)
WISE-7105	-	4	8	-	AI : Thermistor DO : Open Collector (Sink)
WISE-7115	-	-	7	-	RTD (AI) : Pt100, Pt1000, Ni120, Cu100, Cu1000
WISE-7117	-	4	8	-	AI : +/-150 mV, +/-500 mV, +/-1 V, +/-5 V, +/-10 V, +/-20 mA, 0 ~ 20 mA, 4 ~ 20mA DO : Open Collector (Sink)
WISE-7118Z	-	6	10	-	AI : +/-15 mV, +/-50 mV, +/-100 mV, +/-500 mV, +/-1 V, +/-2.5 V, +/-20 mA, 0~20 mA, 4~20 mA, Thermocouple (J, K, T, E, R, S, B, N, C, L, M, LDIN43710) DO : Open Collector (Sink)
WISE-7126	2	2	6	2	AI : +/- 500 mV, +/- 1 V, +/- 5 V, +/-10 V, 0 ~ 20 mA, +/- 20 mA, 4~20mA AO : 0 ~ 5 V, +/- 5 V, 0 ~ 10 V, +/- 10 V, 0 ~ 20 mA, 4 ~ 20 mA DI : Dry (Source), Wet (Sink,Source); DO : Open Collector (Sink)
WISE-7142	-	16	-	-	DO : Open Collector (Sink)
WISE-7144	8	8	-	-	DI : Wet (Sink,Source); DO : Open Collector (Sink)
WISE-7150	12	6	-	-	DI : Wet (Sink,Source); DO : Open Collector (Sink)
WISE-7151	16	-	-	-	DI : Wet (Sink,Source)
WISE-7152	8	8	-	-	DI : Wet (Sink,Source); DO : Open Collector (Source)
WISE-7153	16	-	-	-	DI : Dry (Source)
WISE-7160	6	6	-	-	DI : Wet (Sink,Source); DO : Power Relay Form A (SPST N.O.)
WISE-7167	-	8	-	-	DO : Power Relay Form A (SPST N.O.)

Ordering Information

WISE-71xx	WISE Intelligent I/O Module with PoE (Please refer to "I/O Channel Specifications" for the model number)
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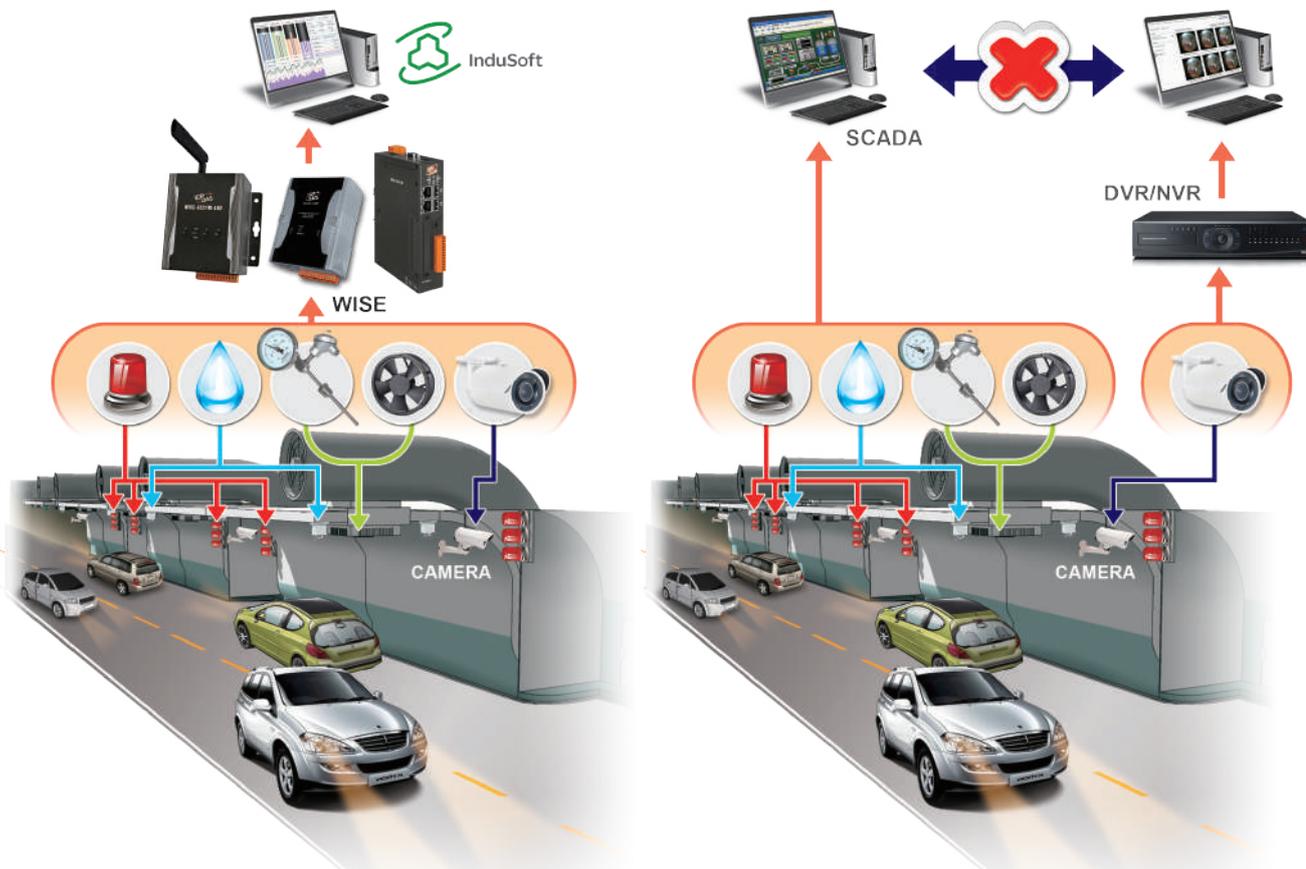
Ch5. Solution Integration

Intelligent Surveillance Solution: WISE + iCAM IP Camera

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

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

ICP DAS WISE Surveillance Solution	Regular Surveillance Solution
1. One WISE controller to integrate camera and I/O	1. Two independent systems: SCADA & DVR/NVR
2. Records key video and image, only needs a few storage memory.	2. Record video 24H/7Days, needs huge storage memory.
3. Two-way interaction between I/O and Video/Image	3. I/O and Video/Image are independent
4. Can work stand along or be integrated into a SCADA system	4. Needs a host PC to run the SCADA
5. One stop shopping/service for <ul style="list-style-type: none"> ● Controller: WISE Series ● I/O Modules: Various options for RS-485, Ethernet interfaces ● Camera: iCAM Series IP Camera ● SCADA: InduSoft 	5. Buy from different vendors for SCADA, I/O Modules, DVR/NVR



Perform Interlocking Operations of I/O & Video Recording by IP Camera

WISE-523x/WISE-2x4xM supports ICP DAS iCAM IP Camera series. Users can trigger the connected IP camera to perform snapshot or video recording with IF-THEN-ELSE logic rules. WISE-523x/WISE-2x4xM provides the IP Camera Status webpage to display the event list ordered by time, and you can just click and play the images or videos on the browser. In addition, WISE-523x/WISE-2x4xM provides remote backup mechanism to upload images and videos to the remote FTP server automatically.



OSD (On Screen Display)

WISE-523x/2x4xM can connect with iCAM series IP cameras. There are two methods to get images and videos:

- (1) If-Then-Else rule sends commands to trigger camera to take snapshots and/or a video.
- (2) Camera takes snapshots and/or a video when senses motion event. And then sends the snapshots and/or video to the WISE controller.



iCAM-ZMR8422X



iCAM-MR6422X



iCAM-MR6322

Camera Name on OSD	Yes
Time Stamp on OSD	Yes
Text Message on OSD	Yes, user defined (Chinese and English fonts)
No. of LINE Notification	2

OSD with camera name, time stamp and user's defined text message.

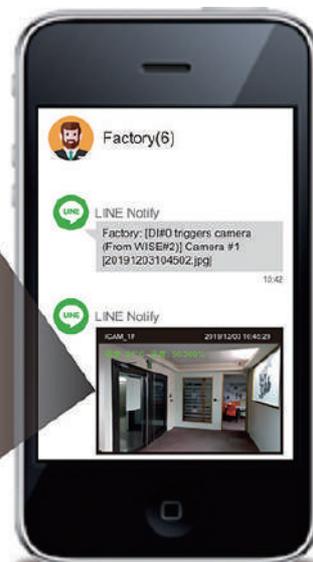
WISE controller has to send **2** LINE notifies to delivery completed information.

```

DI#0 triggers camera
From WISE#1
<IF>
XV-Board XV310 DI0=Status Change
<THEN>
iCAM-MR6322(192.168.255.2:80) Snapshot Capture(One Time)
<ELSE>
No action
    
```

◀ If-Then-Else rule

▼ LINE APP chat room



IP Camera : iCAM Series

Auto Focus IR IP Bullet Camera



iCAM-ZMR8422X

**Bullet Type/
Auto focus with zoom**



iCAM-ZMR8422X is a day & night 2MP auto-focused vandal resistant bullet IR IP camera. It features a full HD 2.0 megapixel CMOS image sensor. The camera has built-in IR-cut filter which allows clearer images at day and night operations even in the low lux condition.

The high efficiency IR LED radiant distance can extend up to 30 meters. Its auto-focus feature allows users to automatically focus the camera from a distant location. With motorized lens, all you need to do with zoom/focus adjustments is simply a click on browsers. Support with privacy mask, 3D noise reduction, 2D WDR function, and HDR function up to 100dB, it's easier implement iCAM-ZMR8422X into a range of environments such as retail, home, office, residential premises and hotel security.

Features

- Full HD 2.0 megapixel CMOS image sensor
- 1080P True H.264 AVC High Profile video compression
- H.264 and Motion JPEG multi-profile video streaming
- Auto focus with zoom / focus motorized lens
- 3D noise reduction (MCTF), 2D WDR function
- HDR function up to 100dB
- Digital PTZ and ROI (Region of Interest) supported
- Day and Night IR-cut removable LED, radiant distance up to 30m
- Built-in 4GB MicroSD Card
- ONVIF Profile S supported
- IP67-rated Housing

Vari-Focal IR IP Dome Camera



iCAM-MR6422X

Dome Type/Vari-Focal



iCAM-MR6322

Dome Type / Fixed



Features

- Full HD 2 megapixel CMOS image sensor
- 1080P High Profile video compression
- H.264/MJPEG multi-profile video streaming
- HDR function up to 100dB
- IR cut filter for day/night operations, radiant distance up to 30m
- Built-in 4GB MicroSD Memory Card
- ONVIF Profile S supported
- IP67-rated Housing
- Lens:

iCAM-MR6322	4mm
iCAM-MR6422X	2.8 – 12mm
- Aperture:

iCAM-MR6322	F1.4
iCAM-MR6422X	F2.0
- IR Angle:

iCAM-MR6322	60°
iCAM-MR6422X	60° /90°

iCAM-MR6422X/iCAM-MR6322 is an HD 30M-Rage IR Varifocal/Fixed Dome IP Camera in the M features 1080p at 30 frames per second, built-in Sense up+ technology to deliver stunning video in low-light conditions, and intelligent video surveillance (IVS) functions. Utilizing intelligent image signal processing, HDR, AGC control, and 3D Noise Reduction, the combination successfully delivers the ultimate low-light image without motion blur. The support of PoE, 4 privacy masking, white balance, as well as the minimum illumination 0.117 Lux at F1.4 for iCAM-MR6422X and the minimum illumination 0.13 Lux at F2.0 for iCAM-MR6322.

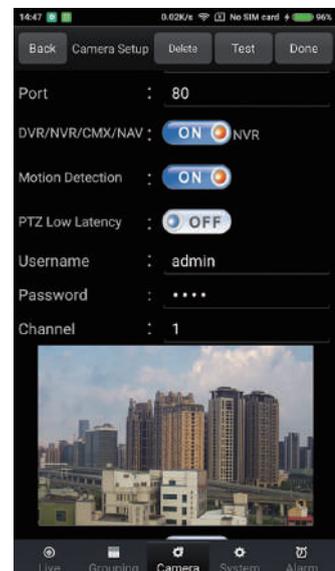


Model	iCAM-ZMR8422X	iCAM-MR6422X	iCAM-MR6322
Lens/Night vision (infrared LED)			
Focal Length	Vari-Focal: 2.8 to 8 mm	Vari-Focal: 2.8 – 8 mm	Fixed-Focal: 4 mm
Aperture	F1.6, Bullet	F1.4, Dome	F2.0, Dome
Angle of View	Horizontal: 102.3° W–51.6° T Vertical: 51.3° W–24.9° T Diagonal: 128.2° W–57.3° T	Horizontal: 102° W–34° T Vertical: 54° W–20° T Diagonal: 122° W–39° T	Horizontal: 90° Vertical: 45° Diagonal: 107°
Beam Spread	60°	60° , 90°	60°
Radiant Distance	30 M		
Infrared Cut Filter	Auto/Day(Color)/Night (Mono)/Schedule		
Image Sensor	1/2.7" CMOS image sensor		
Video Streaming			
Protocol/ Video Compression/ Number of streams	RTSP, RTCP, ONVIF Profile S, H2.64 & MJPEG, 4 configurable streams, configurable frame rate and bandwidth, multi-profile video streaming		
OSD (On Screen Display)	Text overlay for date, time, camera name and user defined text		
General			
IP Rating	IP67		
Certifications	CE, FCC(EMI CLASS B)		
Encryption	Base64 HTTP encryption, HTTPS encryption		
Dimension(mm)	68(W) × 69(H) × 214(D) mm	Ø 120 × 106(H) mm	Ø110 × 89(H) mm

Support Android & iOS Mobile APP: IPCAMPlus



iCAM-ZMR8422X/iCAM-MR6422X / iCAM-MR6322 provide smart phone APP for Android and iOS platform. Apps allow you to catch the firsthand notifications and to take over all event situations in real-time. Furthermore, using the App can also allow you to reward the recorded video remotely. While the alarm is triggered, App will send a notification message to the user immediately.



Smart Phone Integration Solution:

WISE + Sensor +



The **WISE-523x/WISE-2x4xM** series is the **IIoT Edge Controller** designed by ICP DAS for industrial IoT application. In addition to the simple, easy-to-use, flexible and full-featured features of the past, the new features of Instant Messaging (IM) technology with Mobile phone were also released. The I/O data and pictures taken by the WISE/Camera can be instantly pushed to the LINE/WeChat contacts and chat rooms on the smart phone. **Please note: WISE-284xM also supports Telegram.**



WISE message notification to smart phone

● SMS : Sends alert messages and receives commands

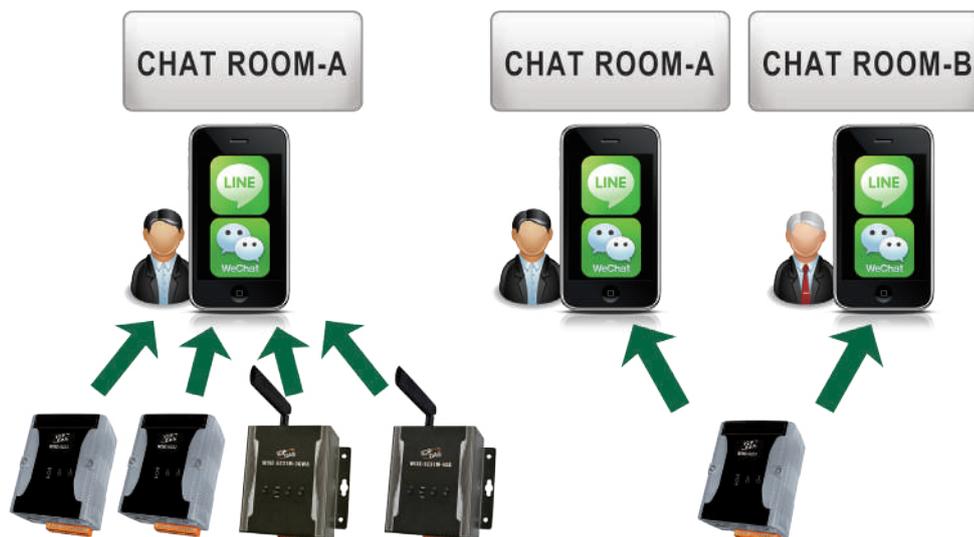
- ▶ The same SMS can be sent to multiple phone numbers
- ▶ The same SMS can include multiple variable values (SMS < 160 characters)
- ▶ Phone number must be authorized to send SMS commands



● LINE/WeChat/Telegram: Sends alert messages and picture

- ▶ Object: Contact, Chat Room
- ▶ Content:

	LINE	WeChat	Telegram
Text	1000 / hour	6000 / day, Expandable	20 / Minute
Picture	50 / hour		
Video	N/A		



▶ When:

- ▶ Triggered by **WISE** If-Then-Else rules
- ▶ Triggered by **camera** motion detection

[Rule 1] Warehouse temperature (35.2°C) is over the high limitation, fan is turned on.

[Rule 3] Camera motion detection for the front door.

[Rule 2] The door is opened.

☑ WeChat Function Using Note

An Enterprise WeChat account in China is required for WISE to send the messages to the members under the enterprise WeChat account.

Condition Monitoring Solution: ExoSense

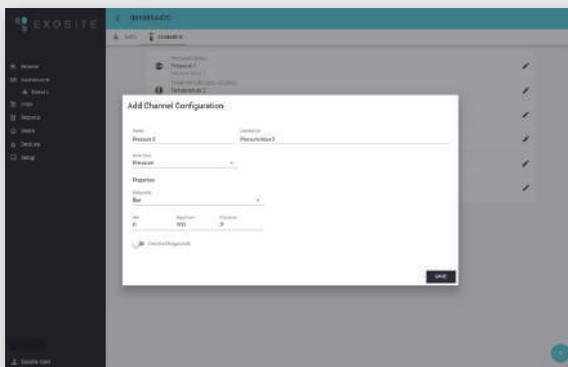


A ready-to-deploy condition-monitoring application that provides operational insight into high-value assets, systems, and equipment.

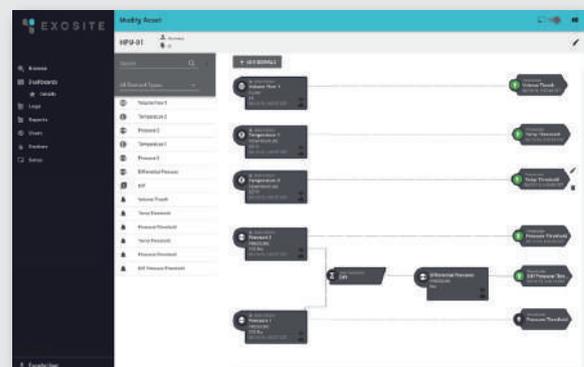
Customized and deployed without the need for a software developer, ExoSense enables you to monitor equipment status and performance, customize alerts and notifications, build tailored insights, manage user and asset groups, and build dashboard views specific to your needs.

Advanced features and functionality.

► Connected device configuration



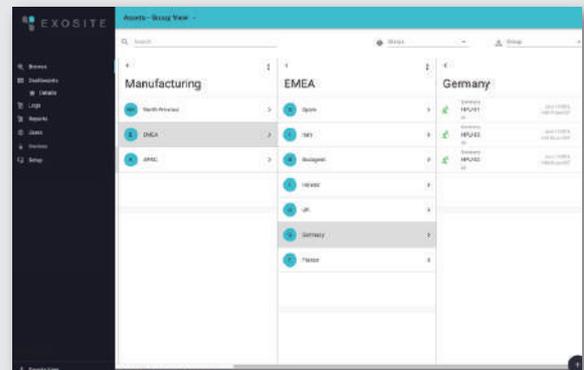
► Codeless asset builder



► Programmable insights



► Flexible hierarchies





Why choose ExoSense?

- **Zero coding to customize.**

A simple configuration environment lets you customize your solution without writing a line of code. Add your branding, change themes, define user hierarchies, assign roles, and more.

- **Deploys in an hour.**

Deploy the application in an hour, connect ready-made devices in a day, and have a solution in customers' hands within a week. Get feedback and get to production—in weeks rather than years.

- **Makes IoT accessible (and affordable).**

No huge up-front costs, lengthy development times, or in-house DevOps team required. We've already done that work for you, so you'll experience a more feasible and cost-efficient way to engage in IoT.

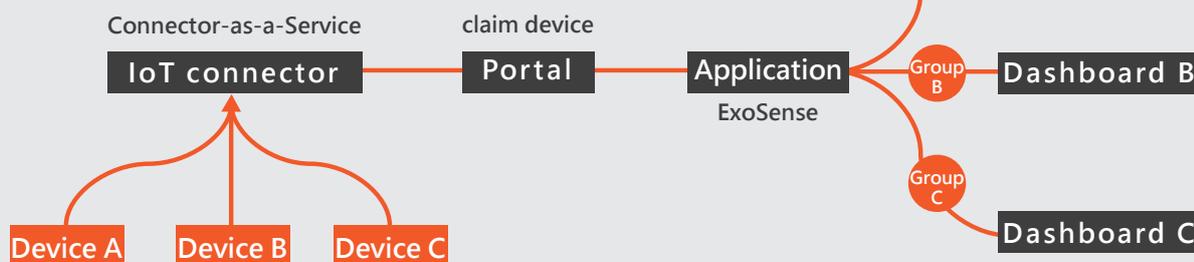
- **Backed by a powerful platform.**

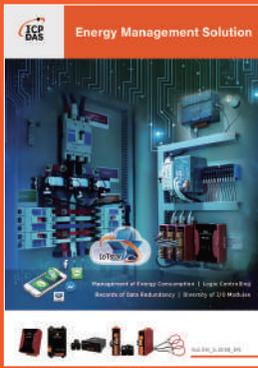
Built on Murano, an IoT platform that offers the security, scalability, and business-system integrations required for enterprise IoT solutions, ExoSense grows as you grow—guaranteed.

- **Integrate with WISE-5231 Series in few steps.**



- **Basic Concept**





Energy Management Solution

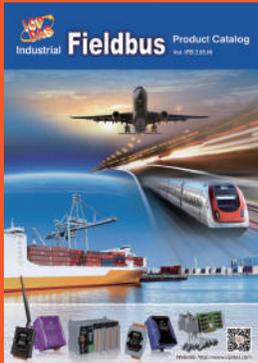
- InduSoft SCADA Software
- Smart Power Meter Concentrator
- Smart Power Meter
- True RMS Input Module
- TouchPAD Devices - VPD Series



Industrial IoT

IIoT Product

- IoTstar : cloud management software
- UA-5200 : communication server
- WISE series : IIoT host
- iCAM series : IP camera
- MQ-7200M series : MQTT I/O module
- Sensors : temperature, humidity, CO2, PM2.5,...



Industrial Fieldbus

- RS-485
- Industrial Ethernet
- Profinet
- CAN bus
- CANopen
- Devicenet
- J1939
- PROFIBUS
- HART
- Ethernet/IP
- BACnet



IIoT Cloud Solution - UA SERIES : IIoT Communication Server

- Built-in OPC UA Server Service
- Built-in MQTT Broker Service
- Support Logic Control IFTTT
- Support IoT Cloud Platforms Connection and IoTstar Cloud Management
- IIoT Factory Application of MES
- Pumping Station IoT Application
- BA Smart Building IoT Application
- Robotic Arm Co-operation Application



Machine Automation

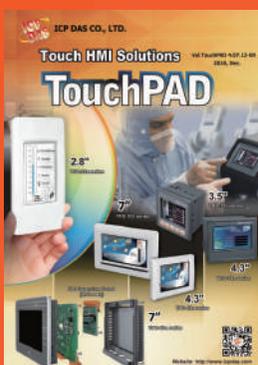
- Motionnet Solutions
- EtherCAT Motion Control Solutions
- Ethernet Motion Control Solutions
- Serial Communication Motion Control Solutions
- PC-based Motion Control Cards
- PAC Solutions - Motion Modules



Wireless Solution

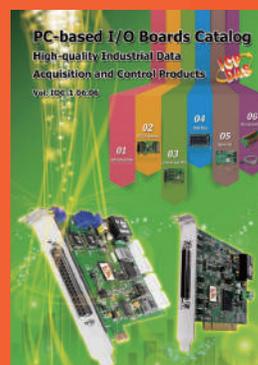
Wireless Solution

- WLAN Products
- Radio Modems
- 3G/4G Products
- GPS Products
- Bluetooth LE Converters
- ZigBee Products
- Wireless Modbus Data Concentrators
- Bluetooth LE Gauge Master for Mitutoyo Gauges



TouchPAD HMI Solutions

- Introduction
- TPD/VPD Products Series
- Video Intercom & Access Control Series
- TPD/VPD Application



PC-based I/O Boards

- PCI Express Bus Data Acquisition Boards
- PCI Bus Data Acquisition Boards
- ISA Bus Data Acquisition Boards

