

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/WeChat/Telegram/SMS/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

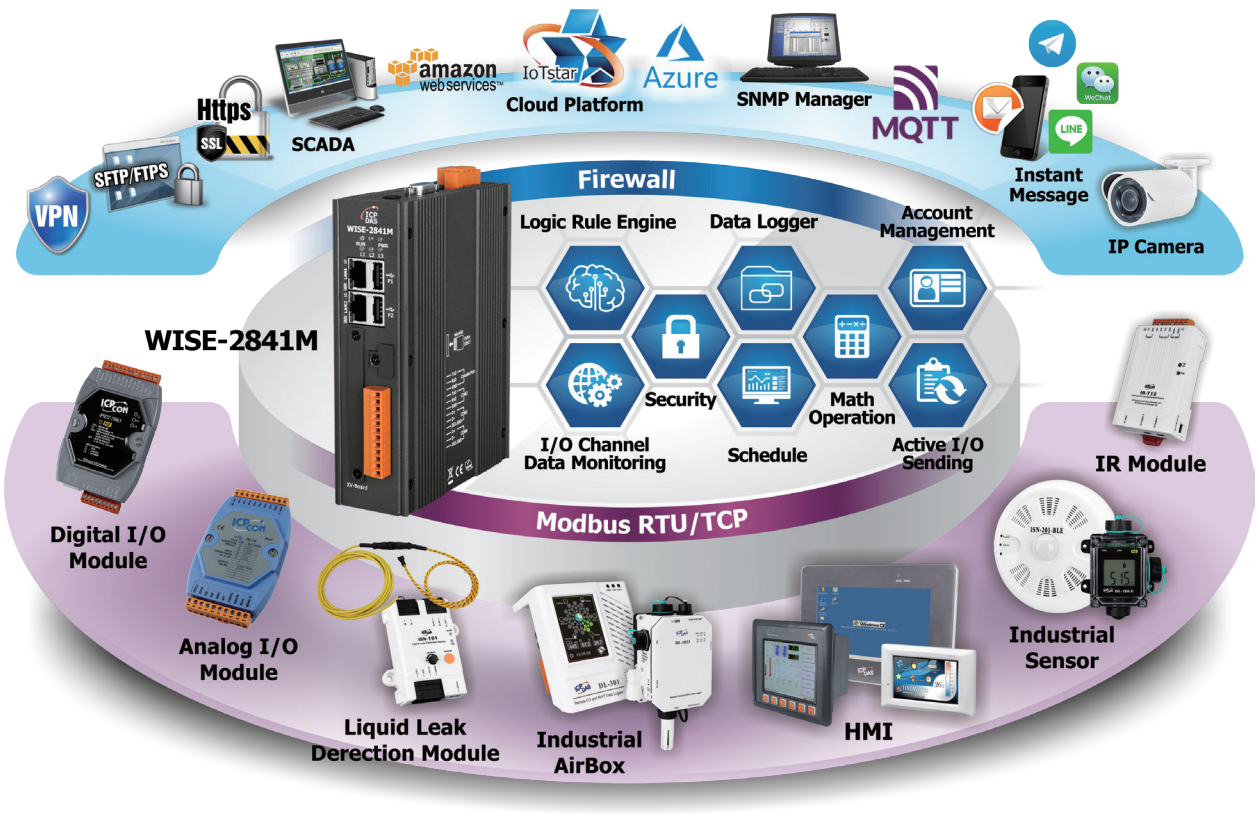
Introduction

The Advanced IIoT Edge Controller – WISE-284xM inherits the core features of the original WISE series controllers, including browser-based system setup and monitoring, powerful IF-THEN-ELSE logic operation, flexible I/O module integration, reliable data computing, and real-time message notification.

To meet modern IoT security demands, WISE-284xM supports a comprehensive set of encrypted communication protocols. HTTPS ensures secure web access, while SNMP v3 enables encrypted and authenticated integration with IT and network management systems. Data log files stored on WISE can be securely downloaded using SFTP and FTPS. Blacklist and whitelist settings allow users to manage domain access, and built-in VPN functionality allows WISE-284xM to operate within isolated, secure network environments.

For cloud integration, WISE-284xM connects with Amazon Web Services, Microsoft Azure, and IBM Bluemix. It also integrates with ICP DAS's IoTstar Cloud Management software, offering centralized configuration backup and device management. With strong IT/IoT integration and robust security, WISE-284xM is an ideal edge controller for the IIoT era.

System Architecture



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In the era of the Internet of Things (IoT), information security has become a critical concern for Industrial IoT (IIoT) systems—one that can no longer be ignored. In the past, it was often assumed that "hackers only target PCs or enterprise networks," or that "older industrial equipment is safe because it's not connected to the internet." These beliefs no longer hold true. As industrial systems become increasingly connected, even legacy equipment is exposed—frequently without sufficient protection—making them attractive and vulnerable targets for cyberattacks.

Once compromised, an industrial system may face serious and costly consequences: data breaches, system lockouts, financial extortion, or even full-scale shutdowns of operations. Strengthening cybersecurity and ensuring reliable and secure cloud connectivity are now essential components in building a modern, resilient IIoT infrastructure.

To meet these challenges, ICP DAS developed the WISE-284xM series—an advanced IIoT Edge Controller built with a comprehensive set of security features. It supports multiple layers of protection and encrypted communication protocols, offering flexible solutions to address various levels of cybersecurity needs.

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Network Security

The WISE-284xM series features VPN communication capabilities (supports 4 VPN protocols: PPTP, L2TP, OpenVPN, and SoftEther), allowing users to establish a secure communication tunnel between the WISE controller and external networks. The VPN ensures that WISE-284xM and its connected I/O modules are protected from unauthorized access and external threats. By leveraging VPN technology, WISE-284xM can be deployed within a closed and protected network domain, effectively shielding the device and its connected I/O modules from unauthorized access and external threats.



System Security

As the web interface serves as the main entry point for configuring the system and monitoring connected sensors, its protection is critical. WISE-284xM supports the HTTPS encrypted communication protocol to ensure that all data exchanged between the browser and the controller is secure, preventing sensitive settings and operational commands from being intercepted or tampered with. In addition, it implements SNMP v3 for secure communication and includes a user authentication mechanism to safeguard connections between the WISE-284xM and IT systems, reinforcing access control and system integrity.

Data Security

To support secure data handling, WISE-284xM is equipped with a microSD card that enables both periodic and event-driven data logging for connected I/O modules. Logged data can be automatically transmitted to the back-office via FTPS, or manually retrieved by users through SFTP, FTPS, or a standard web interface. All data transfers are safeguarded using TLS encryption, ensuring the log files remain protected from interception or tampering during transmission.



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Identity Authentication Security

To further enhance access security, WISE-284xM implements password authentication for each communication interface. Only administrators who enter the correct credentials can configure and operate the device. Additionally, WISE-284xM supports both blacklist and whitelist settings, allowing users to control which domains or IPs are permitted or denied access. A dynamic blacklist mechanism is also available, which automatically blocks IP addresses that exceed a predefined number of failed login attempts—providing effective defense against brute-force password attacks.



Cloud Backup Mechanism

Despite the robust security mechanisms in place, the possibility of a breach can never be completely eliminated. Therefore, system recovery plays a crucial role in ensuring operational resilience. WISE-284xM supports automatic backup and recovery by connecting to ICP DAS's IoTstar Cloud Management Software. In addition to collecting sensor data and uploading it to a database, IoTstar can also perform scheduled backups of the system settings for all connected WISE controllers. If a device is compromised or damaged due to a cyberattack, the original system configuration can be quickly restored to a replacement WISE controller. This minimizes downtime and ensures that system operations can return to normal with minimal disruption or data loss.



The Advanced IIoT Edge Controller – WISE-284xM builds upon the proven foundation of the WISE series, combining core control capabilities with significantly enhanced security features. Its comprehensive protection mechanisms, seamless cloud integration, and intelligent automation functions make it a powerful and reliable solution—well suited to serve as the secure and resilient core of today's Industrial IoT environments.

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Hardware Specifications

Model	WISE-284xM
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 V_{DC}
Consumption	WISE-2841M: 10 W, WISE-2841M-4GE/4GC: 15 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

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Software Specifications

Function		Description
Easy to use	Web Page Interface	• No more programming ! Runs on browsers for system and logic rule setting. (Supports HTTPS Protocol)
Options for Sensor Integration	Local Side	• Support XV-board(XV107, XV107A, XV110, XV111, XV111A, XV116, XV306, XV307, XV308, XV310).
	Remote Side (RS-485)	• Support ICP DAS I-7000/M-7000/tM/DL/LC/IR/iSN 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, WeChat, Telegram, SMS and Email 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.
	Internal Register	• Work as a variable to hold the temporary value, and provide the basic mathematical operation. (Supports "Retain Variable" function for all Internal Registers)
Seamless Integration with SCADA/ IT/IoT Systems	Real-Time Sensor Data	• Support Modbus TCP/RTU, CGI, SNMP(v1, v2c & v3) and MQTT protocols for the integration with SCADA/IT/IoT systems. Active I/O sending mechanism supported.
	Historical Sensor Data Files	• 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	• DDNS (Dynamic DNS) service supported. • Supports VPN Client operation. • 4G version WISE-284xM controller support 4G wireless data communication.
	IoT Gateway Capability	• Support connection with IoT Cloud Platform (Microsoft Azure, IBM Bluemix & Amazon Web Services) and IoTstar Cloud Management Software.

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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 12 cameras.

► 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

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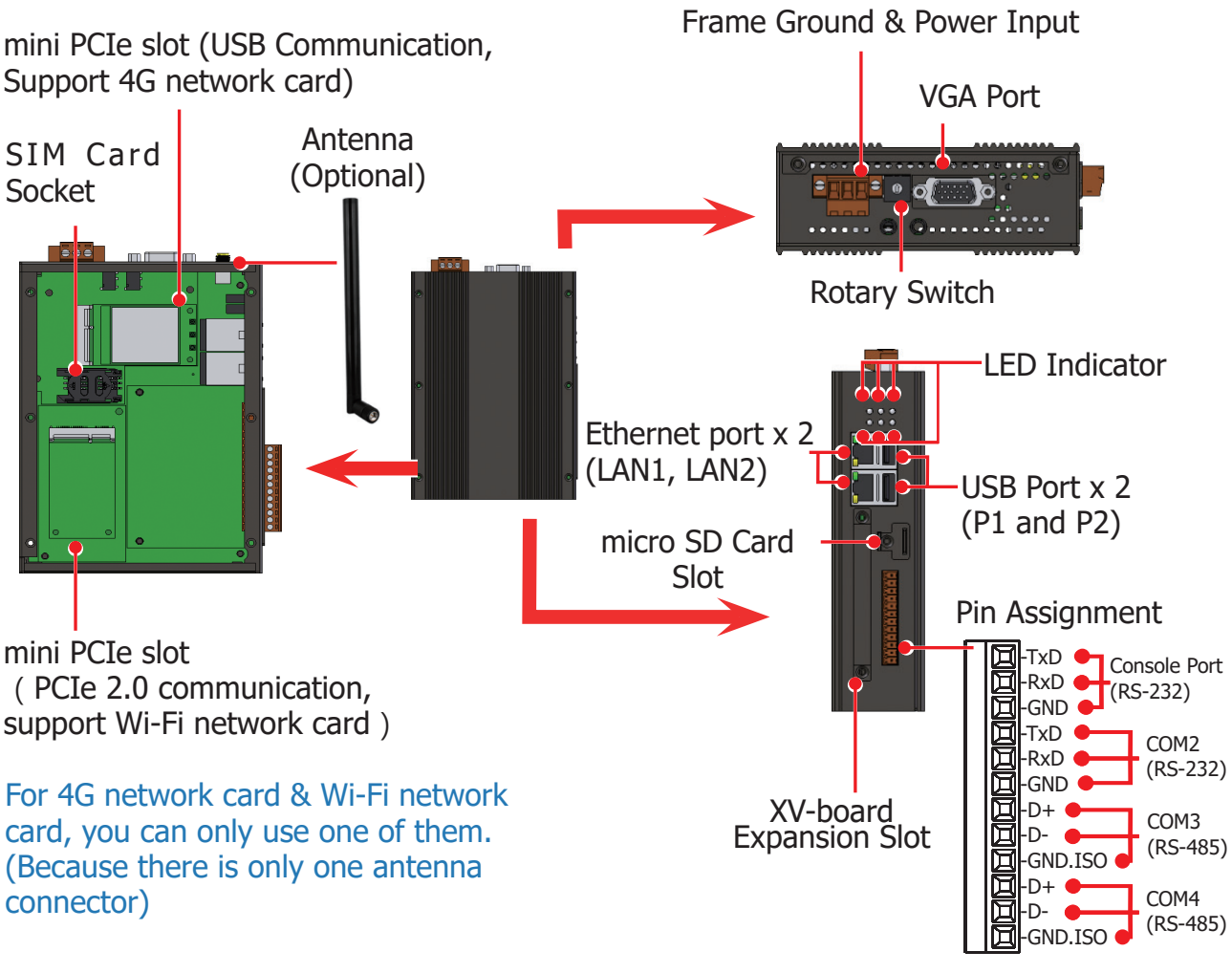
Function		Model List
M-7000 Module		
AI/AO	Voltage & Current	M-7017, M-7017C, M-7017R, M-7017R-A5,M-7017RC, M-7017Z
	Thermocouple	M-7011, M-7011D, M-7018, M-7018R, M-7018Z, M-7019R,M-7019Z
	RTD	M-7015, M-7015P
	Thermistor	M-7005
	Strain Gauge	M-7016, M-7016D
	Analog Output	M-7022, M-7024, M-7024R, M-7024L, 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

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Function		Model 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		

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Appearance



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

Ordering Information

Advanced IIoT Edge Controller

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**)

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 

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