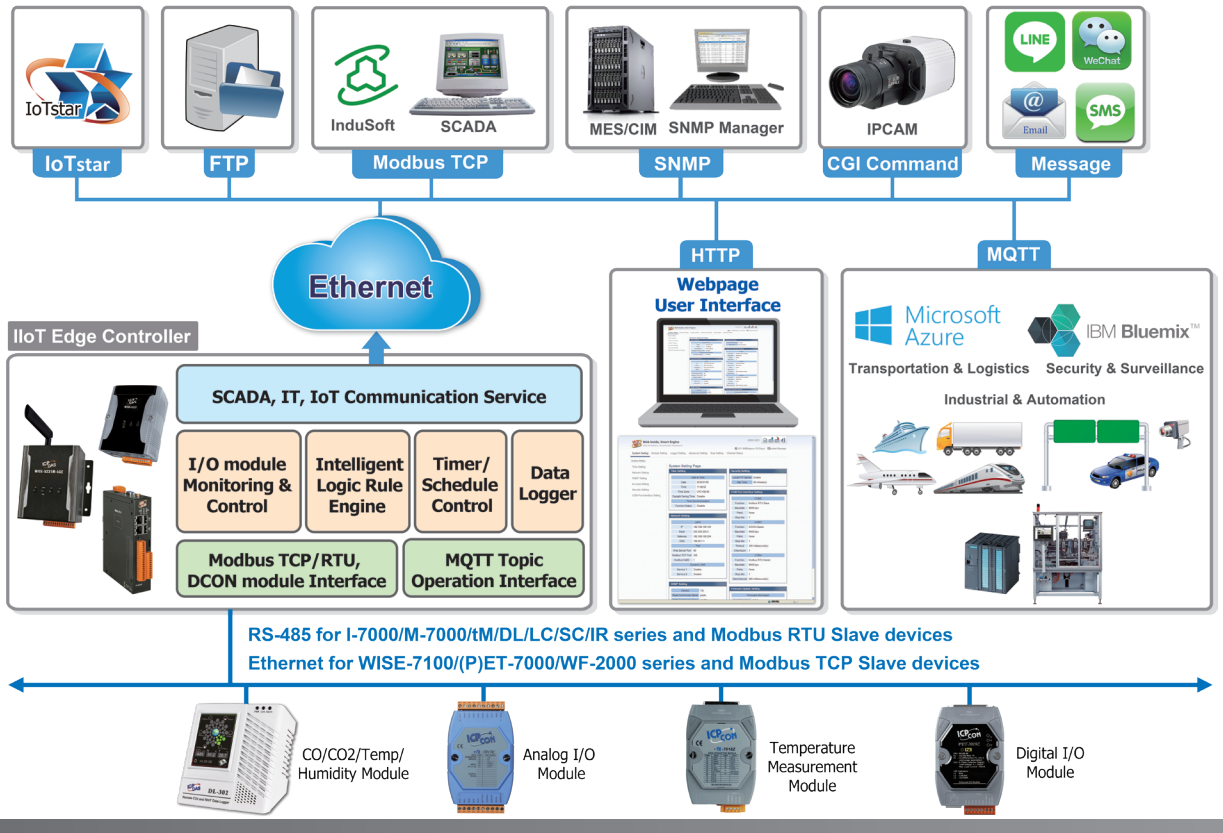


IIoT Edge Controller: WISE-523x & WISE-224xM Series

Features

- No more programming, Web pages provided for system and logic rule setting
- IF-THEN-ELSE logic rules execution ability
- Support XV-board, DCON, Modbus TCP/RTU Slave modules
- Timer and Schedule functions supported
- Data logger and data files send back function supported
- Active I/O sending function for real-time data transfer
- Support math formula editing function
- CGI Command sending and receiving function supported for IP Camera and Network device
- Support Modbus TCP/RTU, SNMP, FTP and MQTT protocols
- Support Line, WeChat, SMS and Email message notification
- Support connection with IoT Cloud Platform (Microsoft Azure and IBM Bluemix) and IoTstar Cloud Management Software
- Support 4G/3G wireless data communication

System Architecture



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Introduction

WISE (Web Inside, Smart Engine) is a product series developed by ICP DAS that functions as control units for use in remote logic control and monitoring in various industrial applications. WISE offers a user-friendly and intuitive web site interface that allows users to implement IF-THEN-ELSE control logic on controllers just a few clicks away; no programming is required. With the built-in IF-THEN-ELSE logic engine, WISE can execute the automation logic in a stable and efficient way, and it also provides mathematic operation, Schedule and Email alarm message sending functions.

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

Software Specifications

Function		Description
Easy to use	Web Page Interface	● No more programming/extra software tool ! Runs on browsers for system and logic rule setting.
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 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-2x46M 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.
	Internal Register	● Work as a variable to hold the temporary value, and provide the basic mathematical operation.
Seamless Integration with SCADA/ IT/IoT Systems	Real-Time Sensor Data	● Support Modbus TCP/RTU, CGI, SNMP and MQTT protocols for the integration with SCADA/IT/IoT systems. Active I/O sending mechanism supported.
	Historical Sensor Data Files	● FTP Server/Client ability 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. ● WISE-523xM-4GE/4GC for 4G Wireless data communication; WISE-5231M-3GWA for 3G Wireless data communication
	IoT Gateway Capability	● Support connection with IoT Cloud Platform (Microsoft Azure and IBM Bluemix) and IoTstar Cloud Management Software.

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Hardware Specifications

Model	WISE-224xM Series	WISE-523x Series	WISE-523xM Series
System			
CPU	ARM CPU, 1.0 GHz		
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) /Installation	35 × 167 × 119; DIN-Rail Installation	91 x 132 x 52 ; DIN-Rail Installation	117 x 126 x 58 ; 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 (apply to WISE-523xM-4GE/4GC/3GWA only)			
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		

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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/ 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.

► 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
	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

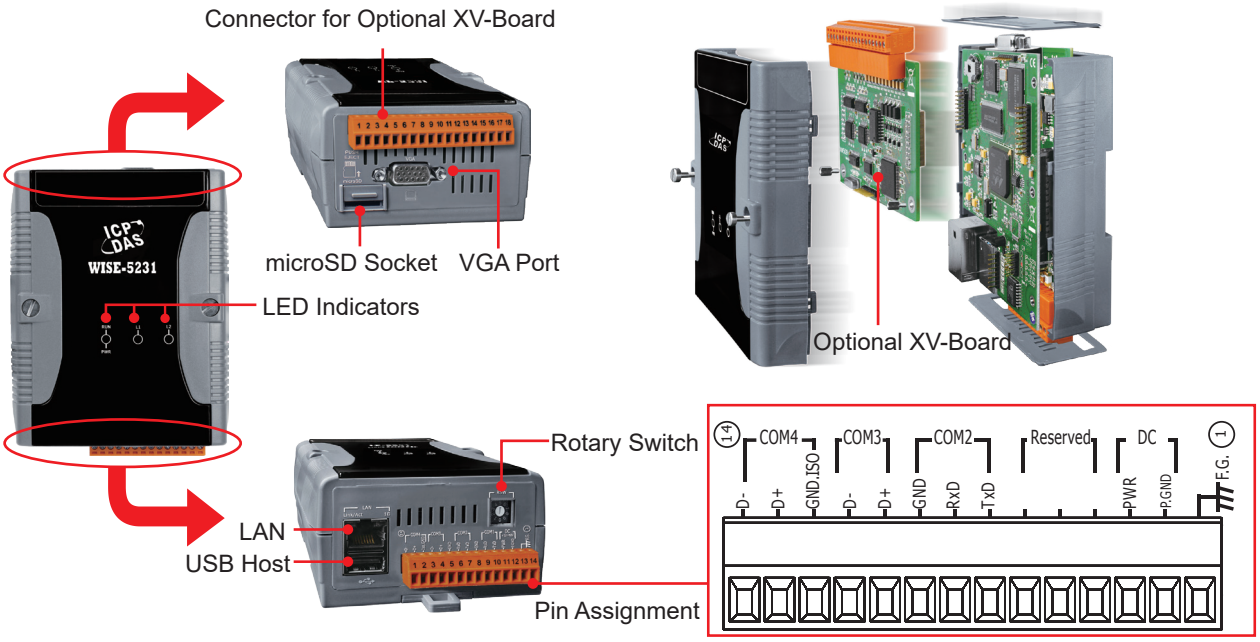
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Function		Model List
WISE-7000 Module		
AI/AO	Voltage & Current	WISE-7117
	Thermocouple	WISE-7118Z
	RTD	WISE-7115
	Thermistor	WISE-7105
DI/DO	DC Digital Input	WISE-7151, WISE-7153
	DC Digital Output	WISE-7142
	DC Digital Input & Output	WISE-7144, WISE-7150, 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	WF-2017
	Thermocouple	WF-2019/S
DI/DO	DC Digital Input	WF-2051
	DC Digital Output	WF-2042
	DC Digital Input & Output	WF-2055
Relay Output	Power Relay Output	WF-2060
Others	Multi-Function	WF-2026
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		

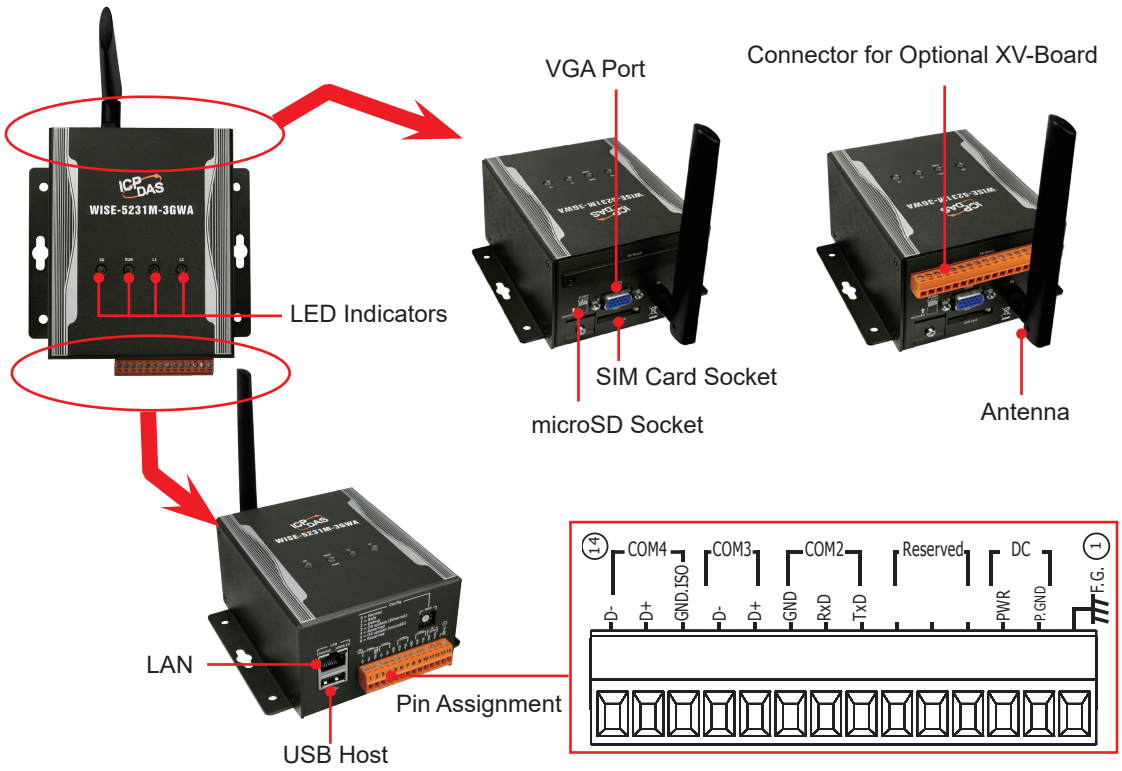
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Appearance

WISE-523x

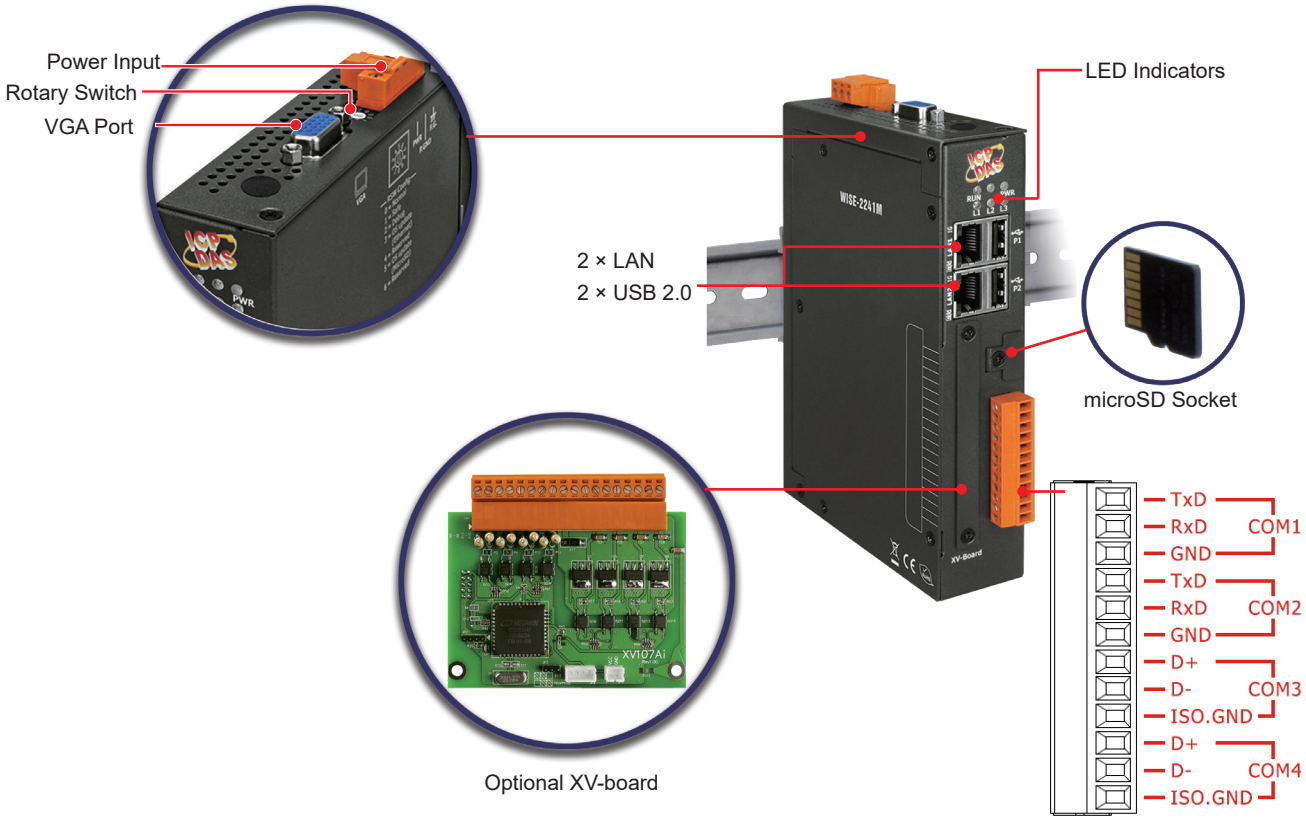


WISE-523xM-4GE/4GC & WISE-5231M-3GWA



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WISE-224xM



Ordering Information

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) (Support 3G Wireless data communication)
WISE-5231M-4GE CR	IIoT Edge Controller (Metal casing) (Support 4G Wireless data communication; Frequency Band for EMEA, Korea, Thailand, India and Taiwan)
WISE-5231M-4GC CR	IIoT Edge Controller (Metal casing) (Support 4G Wireless data communication; Frequency Band for China)
WISE-2241M CR	IIoT Edge Controller (Metal casing)

Module	Description
Standard Function + Support WeChat Message Sending	
WISE-5236 CR	IIoT Edge Controller (Plastic casing) (For China only)
WISE-5236M CR	IIoT Edge Controller (Metal casing) (For China only)
WISE-5236M-4GC CR	IIoT Edge Controller (Metal casing) (Support 4G Wireless data communication; For China only)
WISE-2246M CR	IIoT Edge Controller (Metal casing) (For 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.

Accessories

MDR-20-24 CR	24V/1A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
ANT-Base-01	5 dBi 4G External Antenna Base (1.5 Meter)
3S001-2	RG58A/U (1 Meter; SMA male to SMA Female)

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