

Wireless I/O & Sensors

Overview

Designed to be a complete IoT sensing solution, the WISE-4000 series goes beyond merely providing wireless communication for sensors—it also provides cloud connectivity for additional user applications. With support for IoT protocols such as MQTT, the WISE-4000 series can communicate with cloud services or other web services via secure web sockets. For wide area communication, WISE-4000 I/O modules and sensor nodes have been designed with LPWAN, LoRa, NB-IoT/LTE-M, 4G/LTE, and IP65-rated features, making them highly suitable for many kinds of industrial application. WISE-2000 sensor devices are all-in-one devices designed for specific applications and domain focused scenarios.

IoT wireless I/O module and sensor node with modularized high adaptability design

Low Power Wide Area Networks (LPWAN) are created for Machine-to-Machine (M2M) and Internet of Things (IoT) networks. They are not a single technology, but rather a variety of low-power, wide area network technologies. Compared with a traditional mobile network, LPWANs are known for offering low power efficiency and longer range transmission. To shorten the gap between field site data and the cloud, WISE-4000 series provides wireless I/O and sensor modules that can get and pass data directly to the cloud by utilizing a variety wireless communication technologies.

For more domain focussed applications, WISE-2000 series offers a wireless and sensing all-in-one solution to simplify and accelerate the implementation of IoT applications. Industrial BB-WSx wireless edge sensor starter kits and nodes create a low power, dynamic and scalable mesh network that does not disrupt existing networks. Starter kits provide Node-RED dashboards and Advantech WISE-PaaS cloud connectivity.



LoRaWAN I/O Modules



Category	Industrial LoRa/LoRaWAN Wireless Module			Industrial LoRa/LoRaWAN Wireless Module			Industrial LoRa/LoRaWAN Wireless Module			
Model	WISE-4610P-NA	WISE-4610P-EA	WISE-4610P-JA	WISE-4610-NA	WISE-4610-EA	WISE-4610-JA	WISE-2200-MNA WISE-2200-MEA			
Frequency Range	US 902~923 MHz	EU 863~870 MHz	AS 923~923.5 MHz	US 902~923 MHz	EU 863~870 MHz	AS 923~923.5 MHz	EU 863-870 (MHz) / RU 864-870 (MHz) US 902-928 (MHz) / AU 915-928 (MHz) AS 919-924 (MHz) / TH 920-925 (MHz) JP 920-928 (MHz)			
Function	Wireless board			Wireless board			Wireless board			
Positioning	GPS/Galileo/BeiDou/GLONASS			-			-			
Power Input	4100 mAh Lithium rechargeable battery			-			-			
	10~50V _{DC} external power			10~50V _{DC} external power			5-50V _{DC}			
	17~21V _{DC} solar panel			17~21V _{DC} solar panel			-			
Configuration Interface	Micro-B USB			Micro-B USB			Micro-B USB			
I/O Module							-			
Model	WISE-S614-A	WISE-S614T-A	WISE-S615-A	WISE-S615T-A	WISE-S617-A	WISE-S617T-A	WISE-S672-A	WISE-S600 / WISE-S600T	WISE-S100-A	-
Spec	4AI&4DI (M12)	4AI&4DI (terminal block)	4RTD (M12)	4RTD (terminal block)	2AI, 2DI, 1 DO & 1 RS-485 with 12V power output (M12)	2AI, 2DI, 1 DO & 1 RS-485 with 12V power output (M12)	6DI, 1 RS-485 & 1 RS-485/232	Customization upon request *MOQ required	Stack light monitoring sensor	1 RS-485
WISE-4610 Optional	1654011516-01 M12, A-code, 8-pin, male 1655005903-01 M12, A-code, 4-pin, female 1700028162-01 M12, A-code, 4-pin, female with 1m cable 1700028163-01 M12, A-code, 8-pin, male with 1m cable									

WiFi I/O Modules



Category	WiFi 2.4G Wireless Module					Built-in Temperature & Humidity Sensor*	Dual-band WiFi 2.4G/5G Wireless Module			Built-in Temperature & Humidity Sensor*
Model	WISE-4220-A					WISE-4220-S231A	WISE-4250AS-A			WISE-4250AS-S231-A
Standard	802.11 b/g/n						802.11 a/b/g/n			
Frequency	2.4GHz						2.4GHz/5GHz			
Function	Wireless board						Wireless board			
Power Input	10~50V _{DC} external power						10~50V _{DC} external power			
Configuration Interface	Micro-B USB						Micro-B USB			
Outdoor Range (LOS)	100m						-			
I/O Module										
Model	WISE-S214-A	WISE-S250-A	WISE-S251-A	WISE-S200-A	WISE-S100-A		WISE-S214-A	WISE-S250-A	WISE-S251-A	
Spec	4AI&4DI	6DI, 2DO&1RS-485	6DI & 1RS-485	Stack light monitoring sensor	Customization upon request *MOQ required	*Modularization does not effect WISE-4220-S231 series	4AI&4DI	6DI, 2DO & 1RS-485	6DI & 1RS-485	*Modularization does not effect WISE-4250AS-S231 series

✓: supported, -: not supported, Δ: optional

- 1 IoT Software Solutions
- 2 Intelligent Systems
- 3 SKY Servers
- 4 AI & Advanced Computer Vision
- 5 Intelligent HMI and Monitors
- 6 Automation Computers
- 7 Intelligent Transportation Platforms
- 8 Mission Critical CompactPCI Platforms
- 9 Utility and Energy Solutions
- 10 EtherCAT Solutions and Automation Controllers
- 11 Intelligent Motion Control Solutions
- 12 High Speed DAQ Solutions
- 13 Industrial Communication
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NB-IoT/LTE-M I/O Modules



Category	Advanced Industrial Cat.NB1/Cat.M1 Wireless Module								
Model	WISE-4671-UA								
Standard	3GPP release13								
Band	B2,3,4,5,8,12,13,20,28								
SIM Type	Nano SIM/4FF								
Function	Wireless board								
Positioning	GPS/Galileo/BeiDou/GLONASS								
Power Input	4100 mAh Lithium Rechargeable Battery 10~50V _{DC} External Power 17~21 V _{DC} Solar Panel								
Configuration Interface	Micro-B USB								
I/O Module									
Model	WISE-S614-A	WISE-S614T-A	WISE-S615-A	WISE-S615T-A	WISE-S617-A	WISE-S617T-A	WISE-S672-A	WISE-S600/ WISE-S600T	WISE-S100-A
Spec	4AI & 4DI (M12)	4AI & 4DI (Terminal Block)	4RTD (M12)	4RTD (Terminal Block)	2AI,2DI, 1DO & 1RS-485 (M12)	2AI,2DI, 1DO & 1RS-485 (Terminal Block)	6DI, 1RS-485 & 1RS-485/232	Upon Customization Request *MOQ required	Stack Light Monitoring Sensor
WISE-4671 Optional	1654011516-01 M12, A-code, 8-pin, male 1655005903-01 M12, A-code, 4-pin, female 1700028162-01 M12, A-code, 4-pin, female with 1m cable 1700028163-01 M12, A-code, 8-pin, male with 1m cable								



Category	Industrial Cat.NB1/Cat.M1 Wireless Module					
Model	WISE-4471-UA					
Standard	3GPP release 13					
Band	B2,3,4,5,8,12,13,20,28					
SIM Type	Micro SIM/3FF					
Function	Wireless board					
Power Input	10~50V _{DC} external power					
Configuration Interface	Micro-B USB					
I/O Module						
Model	WISE-S214-A	WISE-S250-A	WISE-S251-A	WISE-S472-A	WISE-S200-A	WISE-S100-A
Spec	4AI & 4DI	6DI, 2DO & 1RS-485	6DI & 1RS-485	1DI, 1RS-485 & 1RS-485 or 1RS-232	Customization upon request *MOQ required	Stack light monitoring sensor

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Proprietary LPWAN I/O Modules



Category	Proprietary LPWAN(SUB-G) Wireless Module		Proprietary LPWAN(SUB-G) Built-in Temperature & Humidity Sensor*	Proprietary LPWAN (SUB-G) Wireless CT Node	Proprietary LPWAN (SUB-G) Wireless Analog Input Modules
Function	AP	Node/Wireless Board	Sensor Node	Self-Powered Node	
Model	☞ WISE-4210AP-NA	☞ WISE-4210-NA	☞ WISE-4210-S231NA	☞ WISE-2210-NA	☞ WISE-2211-NA
Frequency	868MHz/ 923MHz	868MHz/ 923MHz	868MHz/ 923MHz	868MHz/ 923MHz	868MHz/ 923MHz
Standard	IEEE 802.15.4g FSK/GFSK modulation				
Data Rate	625 bps, 2.5k bps, 5k bps, 50k bps	625 bps, 50k bps		625 bps, 2.5k bps, 5k bps, 50k bps	
Power Input	10~50V _{DC} external power			Self powered	
Configuration Interface	Micro-B USB				
Network Capacity	64 clients				
Outdoor Range (LOS)	5KM@625bps				
I/O Module					
Model	WISE-S214-A	WISE-S250-A	WISE-S251-A	WISE-S200-A	WISE-S100-A
Spec	4AI&4DI	6DI, 2DO & 1RS-485	6DI & 1RS-485	Customization upon request *MOQ required	Stack light monitoring sensor

*Modularization doesn't effect WISE-4210-S231 and WISE-221x series

** WISE-S250 does not support power saving mode
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LoRaWAN Smart Vibration Sensor



Category		LoRaWAN Smart Vibration Sensor	Explosion Proof LoRaWAN Smart Vibration Sensor
Model		WISE-2410-NB WISE-2410-EB	WISE-2410X-E21NA WISE-2410X-A02NA WISE-2410X-A02EA
Wireless Communication	Topology	Star (LoRaWAN)	
	Frequency Band	EU 863-870 (MHz) / RU 864-870 (MHz) US 902-928 (MHz) / AU 915-928 (MHz) AS 919-924 (MHz) / TH 920-925 (MHz) JP 920-928 (MHz)	
	Spreading Factor	7-12	
	Transmit Power	Up to +18dBm	
	Data Rate	50 kbps at FSK mode EU868;21.9 kbps at SF7 mode US915;5.47 kbps at SF7 mode JP923	
Vibration Sensor	Axis	X-Y-Z	
	Frequency Range	10-1000Hz	
	Amplitude Range	±2/4/8/16g	
	Output Data Rate	6600Hz	
	Noise (MAX. TA = 25°C. 0g)	±40mg	
Temperature Sensor	Operating Range	-20°C ~ 85°C (USB powered); -20°C ~ 70°C (Battery powered)	-20°C ~ 85°C (USB powered); 0°C ~ 70°C (Battery powered)
	Resolution	12 bit	
	Accuracy	±2.0°C (±35.6°F) (vertical installation)	
Mechanical	Enclosure	IP66	IP65
	Mounting	Mounting stud; curved surface magnet; adhesives	
	Dimension (L x W x H)	42 x 40.2 x 84.7 mm	42 x 63.5 x 84.7 mm
General	Power Input	3.6V AA battery *2pcs (not included)	WISE-2410X-E21NA: 3.6V AA battery *1pcs (not included) WISE-2410X-A02NA/WISE-2410X-A02EA: 3.6V AA battery *2pcs (not included)
	Configuration Interface	Micro-B USB	
	Temperature (Operating)	-20°C ~ 85°C (USB powered); -20°C ~ 70°C (Battery powered)	-20°C ~ 85°C (USB powered); 0°C ~ 70°C (Battery powered)
	Temperature (Storage)	-25°C ~ 90°C	
	Humidity (Operating)	10% ~ 95% RH	
	Humidity (Storage)	5% ~ 95% RH	

Intelligent RFID Gateway

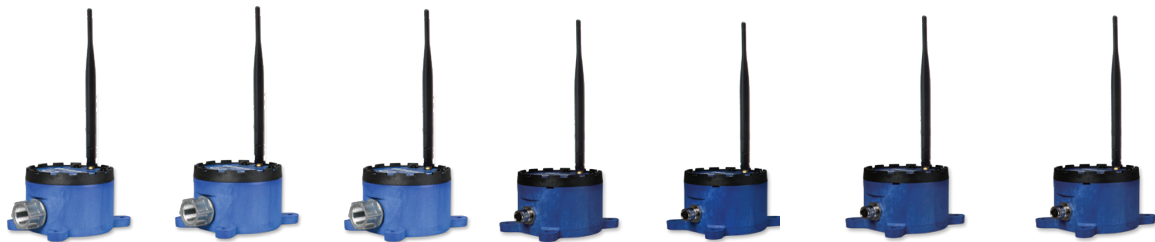


Model		WISE-2834-CA	
Wireless Communication	RFID Standard	EPC Global Class 1 Gen. 2 (ISO18000-6C)	
	Frequency Band	US 902.75MHz - 927.25MHz; EU 865.7MHz - 867.5MHz; TW 922.25MHz - 927.75MHz	
	Transmit Power	Available to adjust from +10dBm ~ +31.5dBm	
	Receiver Sensitivity	-82dBm	
	Antenna Connector	4 RP-TNC	
General	Chipset	ARM Cotex-A8, 300MHz for system; ARM Cortex-M0 32-Bit 32MHz for I/O	
	Memory	512MB DDR3L	
	Storage	NAND Flash 512MB	
	OS Support	Linux 3.12	
	LED Indicators	Status, Serial (Tx, Rx), Wi-Fi communication, RFID channel on/off, Wi-Fi signal strength	
	Power Input	10V ~ 30V DC; Power Consumption: 3W (TYP), 15W (Max.)	
	Slot	1 x Micro SD card	
	USB	1 x USB2.0 High Speed (Up to 480Mbps)	
	Communication Speed	1 x 10/100 Based-T RJ-45; 1 x RS-485: 50 ~ 115.2 kbps	
	Digital Input	4 dry/wet contact	
	Digital Output	4 sink type	
	Configuration Tool	WISE studio	
	Dimensions (L x W x H)	190mm x 120mm x 30.2mm	
	Mechanical	Mounting	DIN 35 rail, wall, pole
	Operating System	Temperature (Operating)	-25°C ~ 50°C
Temperature (Storage)		20% ~ 95% RH	
Humidity (Operating)		-40°C ~ 85°C	
Humidity (Storage)		0% ~ 95% RH	

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Wireless IoT Sensing Devices: Wzzard™ Mesh Sensor Nodes – for Industrial Application Sensors

BB-WSD2x industrial series



Model	BB-WSD2C21150	BB-WSD2C06010	BB-WSD2C31010	BB-WSD2M06010	BB-WSD2M31010	BB-WSD2M3101P2K	BB-WSD2M3101R100
Description	Industrial cooler, HVAC node	Industrial digital input node	Industrial power monitor node	Industrial digital input node	Industrial power monitor node	Industrial power monitor node	Industrial power monitor node
Wireless Technology	Low power 802.15.4e, SmartMesh IP (to SmartSwarm 342 gateway) via MQTT protocol						
Connector	Conduit (UL Type 3 outdoor approved) 12.7mm (0.5 in)	Conduit (UL Type 3 outdoor approved) 12.7mm (0.5 in)	Conduit (UL Type 3 outdoor approved) 12.7mm (0.5 in)	M12	M12	M12	M12
Includes	2 AI, 1 DI, 1 DO, 2 Thermocouples, 2 Thermistors, internal temperature, antenna, cable	6 DI, internal temperature, antenna, cable	3 AI, 1 DI, internal temperature, antenna, cable	6 DI, internal temperature, antenna, cable	3 AI, 1 DI, internal temperature, antenna, cable	2 AI, Vbat measurement, 1 DI, internal temperature, Switched Vbat Power Out (2 sec.), antenna, cable	12 AI, Vref measurement, 1 DI, internal temperature, Switched 3.3V Power Out (100 ms), antenna, cable
External Antenna (included)	RP-SMA, Omni-directional, 3.8 dBi, 2.4 GHz						
Power	Internal Power: (2) 3.6V 2400 mAh Lithium Thionyl Chloride AA Batteries Battery Life: >5 years – based on 1 min. sensor sampling and reporting external input voltage: 10-30 V _{DC} @ 40mA peak						
Sensor Power Out	Switched Vbat: Battery Power – Turned on at time of measurement (20 mA max.) Switched Vref: 3.3V (± 0.1%) – Turned on at time of measurement (20 mA max.)						
Sensors	Analog Input (0 -10 VDC, 0 - 20 mA, 4 - 20 mA) Digital Input (0 - 48 V _{DC}) Digital Input Frequency 1-1K Hz (accuracy ± 1 Hz) Digital input counter integrated temperature Thermocouple (J, K, N, R, S, T, B, E) Digital output, sinking, up to 100mA @ 30V _{DC}						
Wireless Security	Device authentication, 128-bit, AES-based wncryption with multiple keys, message integrity check (MIC), synchronized key changeovers, customized key rotation						
Temperature	-40 to +80 °C (operating)						
Enclosure	IP67 rated fiber reinforced polyester PBT						
Mounting Option	(4) Mounting ears, M5 (#10) screws (UL approved option)						
Mounting Option	Magnetic Mounting (via internal enclosure magnet) Pull Force 2.13 kg (4.7 lb) Note: Magnetic mounting models not rated for UL installations.						
Certifications	UL C1/D2, CE, FCC, EN62479 (lower power), shock, vibration	UL C1/D2, CE, FCC, EN62479 (lower power), shock, vibration	UL C1/D2, CE, FCC, EN62479 (lower power), shock, vibration	CE, FCC, EN62479 (lower power), shock, vibration	CE, FCC, EN62479 (lower power), shock, vibration	CE, FCC, EN62479 (lower power), shock, vibration	CE, FCC, EN62479 (lower power), shock, vibration
UL Listed C1/D2 Conditions	Yes. Indoor / Outdoor, w/ mounting ear installation	(pending)	Yes. Indoor / Outdoor, w/ mounting ear installation	No (M12 connector not UL)	No (M12 connector not UL)	No (M12 connector not UL)	No (M12 connector not UL)



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Wireless IoT Sensing Devices: Wzzard™ Mesh Starter Kits – for Industrial & Commercial Applications

BB-WSK-xxx-2 kit series



Model	BB-WSK-CBM-2	BB-WSK-HAC-2	BB-WSK-REF-2	BB-WSK-NRG-2
Description	Condition-based monitoring starter kit	Energy starter kit	Refrigeration monitoring starter kit	HVAC/Compressor / fan monitoring starter kit
Product Sensor & Format	Industrial low-power wireless sensing – temperature, vibration	Industrial low-power wireless sensing – current, differential temperature	Commercial low-power wireless sensing – temperature, humidity, current, door	Industrial low-power wireless sensing – current
Contents - Bundled Kits Include:	Wzzard Node, sensors & cables, gateway with cloud license and Node-RED starter flow with web server			

NOTE: Starter kits include everything to get started.

Wireless IoT Sensing Devices: Wzzard™ Mesh Sensor Nodes – for Commercial Application Sensors

BB-BB-WCD1Hx commercial series



Model	BB-WCD1H2102H	BB-WCD1H3001HP100
Description	HVAC/cooler node for temperature & humidity sensing	AI, vBAT Out temperature & humidity sensing node
Wireless Technology	Low power 802.15.4e, 2.4GHz SmartMesh IP (to SmartSwarm 342 gateway) via MQTT protocol	
Physical Connector	Molex 6-pin MicroClasp	
Sensors (industry standard type)	(2) Analog Inputs (1) DI (1) Thermistor	(3) AI
Integrated Sensors (within node)	(1) Temperature (1) Humidity	(1) Temperature (1) Humidity
Antenna	Internal, included.	
Power	Internal: 3.6V 1650 mAh Lithium Thionyl Chloride 2/3 AA battery. Battery Life: 5-year battery life, based on 1 minute sensor sampling interval	
Power Backup	–	vBat Out operating mode
LED Indication	Network Connectivity, Node Status	
Wireless Security	Device authentication, 128-bit, AES-based encryption with multiple keys, Message Integrity Check (MIC), Synchronized key changeovers, Customized key rotation	
Installation	Indoor	
Operating Temperature	-20 to +70 °C (-4 to +158 °F)	
Mounting	Mounting bracket (included) VHB adhesive strip (included) Zip tie (ties not included)	
Certifications	UL C1/D2, CE, FCC, Industry Canada (RSS210), shock, vibration, drop	
UL Listed C1/D2 Conditions	UL C1/D2 rating is voided when using non UL-specified batteries. Do not mix old and new batteries	

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