

Advantech Industrial LoRaWAN Solution

IIoT LoRaWAN Sensors, I/O Modules and Gateways

- ✓ Cloud Integration Architecture of LoRaWAN
- ✓ Factory Industrial IoT
- ✓ Smart Agriculture
- ✓ Oil & Gas
- ✓ Energy Management
- ✓ Selection Guide

LoRaWAN™



ADVANTECH

Enabling an Intelligent Planet

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Cloud Integration Architecture of LoRaWAN

About LoRaWAN

Advantech LoRaWAN solutions provide a device-to-cloud solution by simply sending collected data through the LoRa gateway to the cloud. With Edgeline inside the gateway, users simply plug-and-play without worrying about data parsing processes.

ESRP-ACT-UN02484



LoRaWAN
3rd Party GW

EVA-2310

EVA-2311

EVA-2510

EVA-2210

EVA-2210

3-Phase Current Meter with 3 x 75A Clamp-On CT

- 3 x 75A Clamp-On CT
- Battery life up till 3.5 years@25 °C, 60mins interval setting

EVA-2510

Water Leakage Sensor

- 3.5mm water line diameter
- Battery life up till 5 years@25 °C, 15mins interval setting

EVA-2310

Temperature and Humidity Sensor

- -20 °C to 55 °C temperature detection range
- 0%RH to 100%RH humidity detection range
- Battery life up till 5 years@25 °C, 15mins interval setting

EVA-2311

Temperature PT1000 Round Head Probe Sensor

- -70°C to 200°C temperature detection range
- IP67 for PT1000 Round Head Probe Sensor
- Battery life up till 5 years@25°C, 15mins interval setting



ADVANTECH
WISE-PaaS



WISE-EdgeLink

**LoRaWAN
WISE-6610**



ESRP-ACT-UN02484

Intelligent Platform with ThingPark Enterprise

- Supports 2000 LoRaWAN device connections
- Build a multi-gateway, geo-redundant, high-availability LoRaWAN® network with a user-friendly interface and real-time monitoring
- Extend cloud intelligence and analytics to edge devices, with end-to-end infrastructure security, trusted by major telecommunication operators
- Enjoy carrier-grade support and maintenance including 24/7 monitoring of smart IoT platforms
- Seamless inter-operability among smart things

WISE-6610

LoRaWAN Gateway

- LoRaWAN protocol for private and public system applications
- Enhanced memory and build-in Node-Red for hosting custom software applications
- Ethernet and I/O connections for wide array of field assets
- Support Modbus/TCP and MQTT protocol



WISE-2410 Vibration Sensor

- Built-in 3-axis accelerometer and temperature sensor
- Total 8 vibration characteristic values on board
- Compliant with ISO 10816

WISE-2410X Explosion Proof Vibration Sensor

- IECEx Zone 2, Zone 21, ATEX2 certified
- Built-in 3-axis accelerometer and temperature sensor
- Total 8 vibration characteristic values on board

WISE-4610 I/O Module

- Supports LoRaWAN wireless frequency with external detachable antenna
- Application-ready I/O communication with optional M12 connectors, IP65

WISE-2200-M I/O Module

- Less interference with high penetration capability
- Supports Modbus/RTU communication protocol
- Supports max. 128 address and 30 rule settings

BB-WSW I/O Node

- Rugged, IP66-rated, fiber-reinforced polyester PBT enclosure
- Provides connectivity to industry-standard analog or digital sensors
- Support 2AI, 2DI, 1DO channels

Factory Industrial IoT

In Factory Industrial IoT, the core objective is deploying diverse sensors to gather extensive data for analysis at a control center. Users set system thresholds and receive timely alerts for safety and productivity. The Advantech WISE-4610 LoRa/LoRaWAN I/O node, along with WISE-2410 vibration sensors, ensures strong signal penetration without complex wiring. Integrating the EVA-2311 LoRaWAN Temperature PT1000 Round Head Probe Sensor enhances this network. Together, they monitor warehouses using vibration, humidity, and temperature sensors, providing an efficient alternative to manual inspections. With WISE-2410 vibration sensor, EVA-2000 PT1000 sensor, and other sensors paired with a WISE-4610 analog input I/O board, alerts can be triggered when pressure levels (water pressure, oil pressure, gas pressures etc.) are abnormal. This increases safety and improves production quality by controlling resources in the manufacturing process.

- **Higher Penetration**
- **Lower Power Consumption**
- **No Wiring Needed**
- **Increased Productivity**
- **Enhances Factory Safety**
- **Control Factory Resources**
- **Automatic Alerts**



Smart Agriculture

Advantech LoRaWAN solution used in smart agriculture connects WISE-2410 vibration sensor, EVA-2310 temperature and humidity sensor, and other sensors with the WISE-4610 outdoor LoRa/LoRaWAN I/O node. Together they send data through a WISE-610 LoRaWAN gateway to the cloud. In this case, the application collects temperature, humidity, vibration and soil PH data to better understand the environmental situation. WISE-4610 is designed with an IP65 enclosure and M12 connectors to offer an optimal fit for outdoor applications. WISE-2410 is a LoRaWAN wireless vibration sensor integrated with ARM Cortex-M4 Processor, LoRa transceiver, 3-axis accelerometer and temperature sensor. EVA-2310 comes with a temperature detection range of 20 °C to 55 °C and a humidity detection range of 0%RH to 100%RH. The WISE-6610 is a high-performance LoRaWAN gateway with reliable connectivity options for industrial environments and LoRaWAN protocol support for building LoRaWAN private and public networks.

- **Flexibility of deployment without worrying about signal coverage**
- **No monthly payment by using LoRa network**
- **Solar powered or solar rechargeable battery to make the device more independent**
- **Allows farmers to minimize resources such as water and fertilizers**
- **Upgraded data collection process helps with wireless monitoring and control**
- **Cost effective**



Oil & Gas

Oil refineries are very large industrial complexes that involve many different processing units and auxiliary facilities. These facilities are dispersed over a vast industrial complex, and some of them are in hazardous environments or nearly inaccessible locations, making maintenance extremely difficult. The WISE-2410X, an ATEX2 and IECEx (Zone 2 and Zone 21) certified vibration and temperature sensor, can be installed in hazardous environments to monitor the conditions of rotating equipment like fans and pumps. By integrating with Activity's ThingPark Enterprise IoT platform and AWS IoT SiteWise, Advantech's LoRaWAN vibration sensing device can automatically and remotely monitor systems, making them a perfect facility monitoring solution for refining systems.

- **Explosion proof certified to withstand harsh environments**
- **Long distance transmission and low power consumption**
- **Allows remote inspection and predictive maintenance**
 - **Improve productivity**
 - **Enhance safety**
 - **Cost effective**



Energy Management

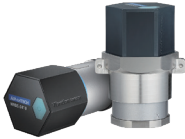
Advantech LoRaWAN solution enables smart campus energy management, which collects energy data and monitors power consumption in real-time. The LoRaWAN technology not only provides long-range wireless communication but also provides deep indoor coverage to easily cover multi-floor buildings. Advantech builds the LoRaWAN network with its EVA-2210 3-phase current meter with 3 x 75A clamp-on CT, WISE-2200-M I/O modules and WISE-6610 LoRaWAN gateways to transmit the data from power meters to the cloud. EVA-2210 measures diverse equipment currents like pumps, compressors, and more. WISE-2200-M is a LoRaWAN Modbus read/write communication device, which supports a maximum 128 addresses and a 30 rule setting and can easily connect to Modbus sensors and meters for different kinds of applications. Because of its plug-and-play functionality, EVA-2210 and WISE-2200-M can be quickly and flexibly installed to facilitate network construction.

- **Plug-and-play applications**
- **Less interference with high penetration**
- **Network can be quickly deployed with fewer gateways**
- **No wiring required**
- **Save energy costs**




WISE-2410(X) Series (LoRaWAN Intelligent Vibration Sensor)



	Model Name		WISE-2410	WISE-2410X-A02	WISE-2410X-E21	WISE-2410X-C12
	Frequency Range		WISE-2410X-A02EA for EU868, RU868 only WISE-2410X-A02NA / WISE-2410X-E21NA for other frequency US 902-928 (MHz) / EU 863-870 (MHz) / RU 864-870 MHz / AU 915-928 MHz / TW 920-923 MHz / AS 919-924 MHz / TH 920-925 MHz / JP 920-928 MHz			
	3-axis Accelerometer	Amplitude Range	± 2 / 4 / 8 / 16 g			
		Freq. Range	10 Hz ~ 1 kHz			
		Sampling Rate	6600Hz			
	Temperature Sensor	Range	-20°C ~ 85°C			
	Dimension (H x D)		84.7 x 48.3 mm	94.7 x 48.3 mm		
	Battery type		2 x 3.6V AA lithium battery (not included) (WISE-2410, WISE-2410X-A02, WISE-2410X-C12) 1 x 3.6V AA lithium battery (not included) (WISE-2410X-E21)			
	Operating Temperature		0°C ~ 70°C (Depends on Battery Spec)			
	IP Rate		IP66	IP65		
Explosion-proof certification		N/A	IECEx Zone2, ATEX2	IECEx Zone 21	C1D2	


EVA-2000 Series (LoRaWAN Sensors)



	Model Name		EVA-2210	EVA-2310	EVA-2311	EVA-2510
	Frequency Range		EU 863-870 (MHz) / US 902-928 (MHz) / AU 915-928 (MHz) / AS 919-924 (MHz)			
	Sensor	Type	Current Transformer	Temperature & humidity	PT1000	Leakage Detector
		Q'ty	3	1	1	1
		Spec	100mA to 75A (<±1%@300mA to 75A)	-20°C ~ 50°C (±1°C@25°C)	±0.8°C	3.5mm Water Line Diameter (max)
	Battery Type		2 x 3.6V AA lithium battery (not included)			
	Environment	Operating Temperature	-20°C to 55°C			


ESRP-ACT-UN02484 (Intelligent Platform with ThingPark Enterprise Software)



	Model Name	ESRP-ACT-UN02484
	Operating System	Linux OS
	Application Software	Actility ThingPark Enterprise with 2000 LoRaWAN end-devices connection
	Control Software	ThingPark 3 months evaluation license
	CPU	Intel® Core™ i3-7100U (2.4GHz)
	Memory	16 GB DDR4
	Display Size/Type	1 x HDMI, supports 1920x1080 @ 60Hz
		1 x DP, supports 3840x2160 @ 30Hz
	Storage	2 x 256 GB SSD
	Expansion Slots	1 x Full-size mPCIe slot
	Network (LAN)	4 x RJ45
		10/100/1000 Mbps IEEE 802.3u 1000Base-T Fast Ethernet
	I/O	4 x RS-232/422/485
		4 x USB 3.0
	Power Input (Voltage)	10 ~ 36 V _{dc}
Operating Temperature	-20 ~ 60°C (-4 ~ 140°F)	
Storage Temperature	40 ~ 85°C (-40 ~ 185°F)	
Dimensions (W x D x H)	200 x 140 x 40 mm (7.8" x 5.6" x 1.6" in)	
Certification	CE, FCC Class A, UL, CCC, BSMI	


WISE-6610 Series (LoRaWAN Gateway)



	Model Name	WISE-6610	WISE-6610-EL	WISE-6610-BTO
	Wireless Communication	LoRaWAN		LoRaWAN + LTE
	Frequency	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)		
	Software Packages	Node-RED, Advantech LoRaWAN Network Server, LoRa Packet Forwarder, Modbus/TCP, Backnet/IP, MQTT	Node-RED, Advantech LoRaWAN Network Server, LoRa Packet Forwarder, Modbus/TCP, Backnet/IP, MQTT, WISE-Edgelinek	
	Antenna Number	1	1~3 depends on configurations.	
	Operating Temperature	-40 ~ 75°C (-40 ~ 167°F)		
	Mounting	Wall, Din-rail		
	Power Input	9 ~ 36 Vdc		
	Power Connector	2pin phoenix connector		
	Power Consumption	2W		

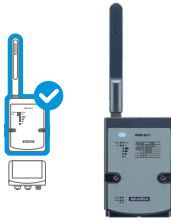
WISE-2200-M Series (LoRaWAN Single RS-485 I/O Module)



	Model Name	WISE-2200-MNA	WISE-2200-MEA	WISE-2200-M-BTO
	Frequency Range	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)		
	Spec	1RS-485		
	Power Input	5~50 Vdc		
	Configuration Input	Micro-B USB		

WISE-4610 Series (Advanced Industrial LoRaWAN I/O Module)



	Model Name	WISE-4610	WISE-4610P	WISE-4610-BTO
	Frequency Range	US 902~923 MHz / EU 863~870 MHz / AU 915-928 (MHz) / AS 919-924 (MHz) / TH 920-925 (MHz) / JP 920-928 (MHz)		
	Positioning	N/A	GPS / Galileo / BeiDou / GLONASS	N/A
	Power Input	10~50Vdc External Power	4100 Lithium Rechargeable Battery 10~50 Vdc External Power 17-21.6 Vdc Solar Panel	10~50 Vdc External Power
	Configuration Interface	Micro-B USB		

IP 65 I/O Module

	Model Name	WISE-S614-A	WISE-S615-A	WISE-S617-A	WISE-S672-A
	Spec	4AI & 4DI	4 RTD	2AI, 2DI, 1DO, 2 Power Output & 1RS-485	6DI, 1RS-485 & 1RS-485/232

BB-WSW Series (Industrial LoRaWAN I/O Node)



	Model	BB-WSW
	Communication Interface	2AI, 2DI, 1DO
	Temp	-40~75°C
	Power Input	9~36 Vdc / 2*3.6V AA Batteries
	Dimensions (W x H x D)	95 x 116 x 65 mm

Regional Service & Customization Centers

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