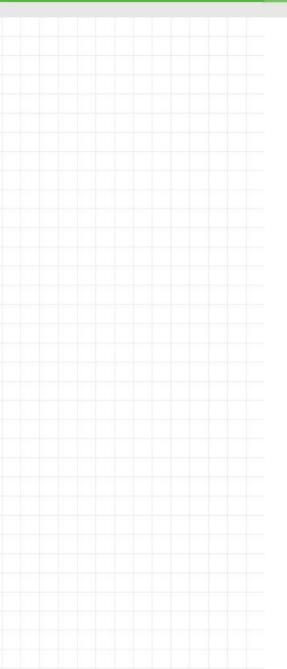


User Manual



WISE-2410X-E21

Explosion Proof LoRaWAN Smart Vibration Sensor



Copyright

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Specific Conditions of Use

- ➢ Rated ambient temperature range 0 °C ≤ Tamb ≤ +70 °C
- > Do not remove stainless buckle in hazardous location.
- Do not change battery in hazardous location. Battery use only one Vitzrocell Co., Ltd. SB-AA11, Li - SOCI2, 3.6V, 2.5 Ah, or one Tadiran, TL-5903, Li -SOCI2, 3.6V, 2.4 Ah.
- > No user serviceable part inside. Refer servicing to qualified personal.
- The equipment shall be adequately protected from direct light when installed indoor or outdoor.
- Operators should wear electrostatic wrist or heel straps when they touch WISE-2410X.
- The two fasteners (M3x0.5) between Cover-top & BKT-Bottom metal enclosure shall only be replaced with M3x0.5 14 mm long screws with the head of the screw in accordance with DIN 7991.
- Equipment is submitted to tests corresponding to the low risk of mechanical danger.

Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers are billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product is defective, follow the steps outlined below:

- 1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
- 2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
- 3. If your product is diagnosed as defective, obtain a return merchandize authorization (RMA) number from your dealer. This allows us to process your return more quickly.
- 4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and proof of the purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
- 5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Declaration of Conformity

Notice to OEM integrator

1. In the users manual of the end of product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated.

2. The antenna(s) used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter within a host device, except in accordance with FCC multi-transmitter product procedures.

3. Only those antennas with same type and lesser gain filed under this FCC ID number can be used with this device.

4. The regulatory label on the final system must include the statement: "Contains FCC ID: M82-WISE2410" or using electronic labeling method as documented in KDB 784748.

5. The final system integrator must ensure there is no instruction provided in the user manual or customer documentation indicating how to install or remove the transmitter module except such device has implemented two-ways authentication between module and the host system.

6. The final host manual shall include the following regulatory statement: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Technical Support and Assistance

- 1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
- 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Warnings, Cautions, and Notes

- **Warning!** The equipment should be adequately protected from direct light when installed indoor or outdoor!
- *Warning!* Operators should wear electrostatic wrist or heel straps when they touch WISE-2410X!
- **Warning!** Warnings indicate conditions that if not observed may cause personal injury!
- **Caution!** Cautions are included to help prevent hardware damage or data losses. For example, "Batteries are at risk of exploding if incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions." or "To prevent damages on the sensor, tensile stresses must be avoided under all driving conditions.
 - Note! Notes provide additional optional information.

Product Label

Product Label P/N. 2000033206, Aug, 2021.



Document Information & Feedback

User Manual P/N 2001241000, Aug, 2021. Rev 2. To assist us with improving this manual, we welcome all comments and constructive criticism. Please send all feedback in writing to support@advantech.com.

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

WISE-2410X

- 1 x WISE-2410X module
- 1 x Mounting stud (1/4-28 UNF x 9.4Lmm)
- 1 x Quick start manual
 - * 1 pcs AA 3.6VDC batteries should be ordered respectively
 - * Built-in Antenna

Safety Instructions

- 1. Read these safety instructions carefully.
- 2. Retain this user manual for future reference.
- 3. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
- 4. All cautions and warnings on the equipment should be noted.
- 5. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
- 6. Never pour liquid into an opening. This may cause fire or electrical shock.
- 7. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
- 8. If one of the following occurs, have the equipment checked by qualified service personnel:
- Liquid has penetrated the equipment.
- The equipment has been exposed to moisture.
- The equipment is malfunctioning, or does not operate according to the user manual.
- The equipment has been dropped and damaged.
- The equipment shows obvious signs of breakage.
- 9. Do not leave the equipment in an environment with a storage temperature of below -0 °C (0°F) or above 70 °C (122 °F).
- CAUTION: Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions. Please DO NOT replace batteries in hazardous area. Battery use only one Vitzrocell Co., Ltd. SB-AA11, Li - SOCI2, 3.6V, 2.5 Ah, or one Tadiran, TL-5903, Li - SOCI2, 3.6V, 2.4 Ah.
- 11. According to IEC 704-1:1982 standards, the sound pressure level at the operator's position does not exceed 70 dB (A). Operators should wear electrostatic wrist or heel straps when they touch WISE-2410X!

DISCLAIMER: These instructions are provided in accordance with IEC 60079-0, 7th Edition (2017-12) + Corr. 1 (2020-01) + I-SH 01 (2019-04) + I-SH 02 (2019-06) AND IEC 60079-31, 2nd Edition (2013-11)

NCC 警语

第十二條 經型式認證合格之低功率射頻電機,非經許可,公司、商號或使用者均不得 擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信, 經發現有干擾 現象時, 應立即停用, 並改善至無干擾時方得繼續使用。前項合法通信, 指依電信法 規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波 輻射性電機設備之干擾。

VCCI

この装置は、クラス B 機器です。この装置は、住宅環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

使用説明書に従って正しい取り扱いをして下さい。 VCCI-B

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4.2



Product Overview

1.1 Series Family and Specifications

Function	Model	Description
Explosion Proof LoRaWAN Smart Vibration Sensor	WISE-2410X	Built-in 3 axis vibration and temperature sensor; Built-in antenna, support LoRaWAN

1.2 Features

WISE-2410X

- Built-in 3 axis vibration and temperature sensor
- Provide 3 axis vibration features (Velocity RMS, acceleration peak, etc.)
- Compliant with ISO 10816: WISE-2410X can directly provide vibration features. By simple setting, user can monitor machine motor for evaluation of vibration severity.
- Built-in antenna, support LoRaWAN
- Powered by battery
- IP65 enclosure

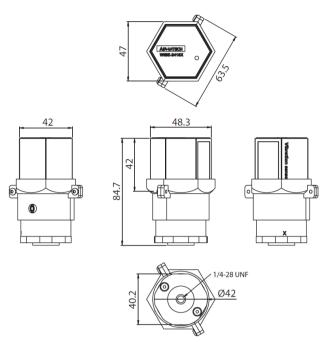
1.3 System Architecture

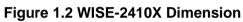
WISE-2410X transmits sensor data to WISE-6610 (via LoRaWAN) or 3rd party LoRaWAN gateway (via LoRaWAN). WISE-6610 provides Ethernet connectivity, and supports Modbus TCP, RESTful Web API for integration.



Figure 1.1 System Architecture

1.4 Mechanical Design and Dimensions





1.5 LED



Figure 1.3 LED

LED	Color	Indication	Behavior
			Turn on 2 sec when power on
Status	Green ON Turn on 1	Turn on 1 ms when RF transmission	
		OFF	Idle



Product Specification

2.1 Wireless Interface

- Operating Frequency: US 902-928 (MHz) EU 863-870 (MHz) JP 920-928 (MHz) TW 920-925 (MHz) (AS923)
- Data Rate: 50 kbps at FSK mode EU 21.9 kbps at SF7 mode US 5.47 kbps at SF7 mode JP 5.47 kbps at CCS mode TW
- Antenna Gain: 902~928 MHz: 1 dBi 863~870 MHz: 1 dBi
- 4. Transmit Power: Up to +20 dBm
- 5. Receiver Sensitivity: -136 dBm at 125 kHz bandwidth
- 6. Topology: Star
 - **Note!** The transmitting distance is subject to the environment of application site. Please perform site survey to determine the set up range of the wireless network.

2.2 General

- Enclosure: PC
- Mounting: Stud mount, mounting pad and adhesives, magnetic base
- Dimensions (Height x Diameter): 84.7 x 48.3 mm
- Operation temperature:
 Powered by batteries: 0~ 70 °C
- Operating humidity: 10 ~ 95% RH (non-condensing)
 - **Note!** Equipment will operate below 30% humidity. However, static electricity problems occur much more frequently at lower humidity levels. Make sure you take adequate precautions when you touch the equipment. Consider using ground straps, anti-static floor coverings, etc. If you use the equipment in low humidity environments.

2.3 Power

WISE-2410X is designed for one AA 3.6 VDC batteries as an power source. Press the power switch on the top of chassis (see the Figure 1.3 led) and turn on WISE-2410X.

Note! Battery needs to order separately 1760002647-01 3.6V/2500mAh AA Cylindrical Battery (nonrechargeable).

2.4 Software

Utility: WISE Studio

2.5 Configuration Interface

WISE-2410X

- Interface: COM port through Micro-B USB interface
- Connector: Micro-B USB
- USB chipset: Silicon Labs CP210x
- Driver: CP210x USB to UART Bridge VCP Drivers (https://support.advantech.com/support/DownloadSRDetail_New.aspx?SR_ID=1-13U9QTV&Doc_-Source=Download)

2.6 Sensor Specifications

Vibration Sensor

- Axis: X-Y-Z
- Frequency Range: 10 ~ 1000 Hz
- Amplitude Range: ±16 g
- Detection type: Velocity RMS, Acceleration (RMS & peak)
- Advanced: Kurtosis, Crest factor, Skewness, Standard deviation, Displacement
- Resolution: 10 bit
- Sensitivity: 31.2 mg/LSB (TYP.)
- Noise: ±40 mg (MAX. TA = 25 °C. 0 g)

Temperature Sensor

- Measurement Range (TA = 25 °C): -20 °C ~ 120 °C
- Resolution: 12 bit
- Accuracy: -2 °C with 85 °C; -5 °C with 120 °C

WISE-2410X User Manual

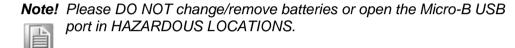


Mechanical and Hardware Installation

3.1 Interface Introduction



Figure 3.1 WISE-2410X Interface Introduction



3.2 Tighten two chassis

Turn clockwise the top chassis to locking point to tighten bottom chassis.

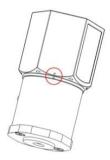
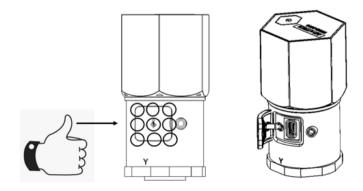


Figure 3.2 Tighten two chassis

Make sure the USB rubber is tighten and sealed.



3.3 Mounting

Applicable installation methods are briefly described in the following sections.

3.3.1 Installation Direction

WISE-2410X Builds-in 3-axis vibration sensor. Please follow the following installation guide to make sure the eigenvalues from your device are correct.

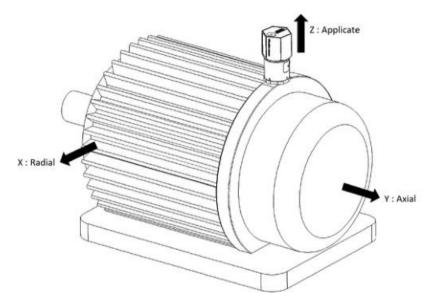


Figure 3.3 WISE-2410X Installation Direction on motor

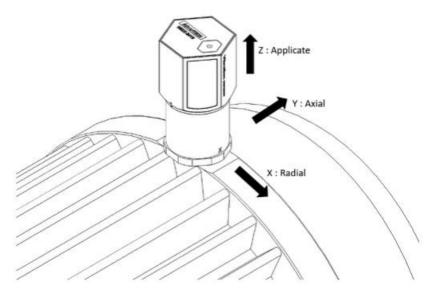


Figure 3.4 WISE-2410X Detail Installation Direction on motor

3.3.2 Stud mount

- 1. Dig a hole in motor surface (1/4-28).
- 2. Fasten WISE-2410X and stud (1/4-28 to 1/4-28).

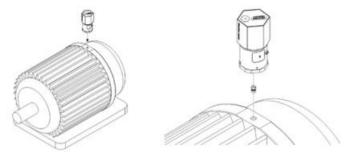


Figure 3.5 Stud mount

3. Fasten WISE-2410X (with stud) and hold of motor surface.



Please Wrench need to hold base steel (not contact chassis) when you use Wrench to fasten WISE-2410X(with stud) to hold of motor.



Figure 3.6 Stud mount

3.3.3 Magnetic bases

To avoid the sudden impact damage WISE-2410X, please follow the following steps.

- 1. First, fasten magnetic base on the motor.
- 2. Fasten WISE-2410X and magnetic base.

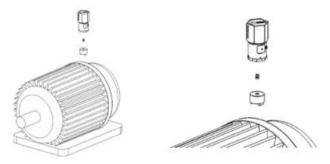


Figure 3.7 Magnetic bases

Chapter 3 Mechanical and Hardware Installation

3.3.4 Adhesive Mounting Pad

Fasten WISE-2410X and stud, use adhesive epoxy glue(24hours) to stick on the motor surface.

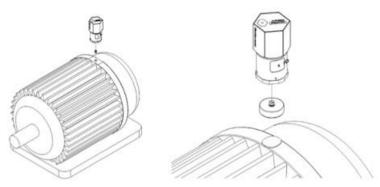


Figure 3.8 Adhesive Mounting Pad

3.4 Battery Replacement

Only qualified person can do the battery replacement process.

1. Slowly remove top chassis.



Figure 3.9 Battery Replacement Step 1

2. Grab the Mylar and disconnect the connection between battery holder and PCBA.



Figure 3.10 Battery Replacement Step 2

3. Take out the battery holder and plug in new batteries. Please beard and make sure the battery is in the right anode and cathode position.



Figure 3.11 Battery Replacement Step 3

4. Plug in the battery pack and make sure the cable is hidden between the PCBA and the battery pack as follow. Please be award that WISE-2410X only allows 1 battery, and the battery should be install on the side with battery shrapnel, left side as following image.



Figure 3.12 Battery Replacement Step 4

5. Make the connection between battery holder and PCBA. Please make sure the cable has cross by the dent which is on the right side PCBA.



Figure 3.13 Battery Replacement Step 5



Figure 3.14 Battery Replacement Step 6



System Configuration

4.1 Sensor and Gateway Connections

4.1.1 Sensor (WISE-2410X) configuration

- 1. Download and install WISE Studio through https://support.advantech.com/support/new_default.aspx.
- 2. Connect the module to your computer via the micro-USB port.
- 3. Execute WISE Studio.
- 4. Clicking **Go to Configuration** while it shows "available USB-Serial" in USB-Serial box, press **Go To Configuration**.

Advantech WISE Studio (W
Welcome, Alvin.Wu Intel(R) Core(TM) i3-6100U CPU @ 2.30GHz 7.87G RAM
C ().
USB-Serial Connect to WISE Module by USB Available USB-Serial: 1
Go To Configuration

5. Click **Connect** to link the WISE-2410X and the web configuration page will appear.

Advantech WISE Studio	(Win32) Version 1.01.00 (B14)
Welcome, Alvin.Wu Intel(R) Core(TM) i3-6100U CPU @ 2.30GHz 7.87G RAM	COM3 WEB UTILITY
S 0.	
USB-Serial Connect to WISE Module by USB Available USB Senat 1	
Intel(R) Dual Band Wireless-AC 8260 IP Address : 172.16.17.5 MAC Address : A434D9B6D92E Connect AP : Advantecher	
Go To Configuration	

- Chapter 4 System Configuration
- Use web configuration in WISE Utility or press Open In Browser to open the web configuration in any browser (Google Chrome is recommended). Note: Web in WISE Utility is using IE browser.

PC Browser	Chrome	Firefox	IE11	IE10	
Configuration	Y	Y	Y	Y	
File Upload	Y	Y	Y	Ν	
Data Log Chart	Y	Y	Y	Y	
Data Log Export	Y	Y	N	Ν	

Welcome, Alvin.Wu	Сомз		
Intel(R) Core(TM) i3-6100U CPU @ 2.30GHz	WEB UTILITY		
7.87G RAM	Reconnect G Open In Browser	层 Get Raw Data	
Ø ()·	WISE-2410-NA		
USB-Serial Connect to WISE Module by USB	Information		
Avadable USB-Senet 1		Information	
	Lat. VO Status	Module Information	
ntel(R) Dual Band Wireless-AC 8260 IP Address : 172.16.17.5	👍 Site Survey	Model Name	WISE-2410-NA
MAC Address : A434D9B6D92E Connect AP : Advantecher	Q ^e Advanced +	Customized Name	WISE-2410
Go To Configuration		UUD	WISE-2410_FFFFFFFF
		Location	
		Description	

- 7. Click **Information** to check the basic information of the module.
- 8. Click **Configuration** to use Information, RF Module, Time&Date, Scheduling, Control, Firmware settings.

ormation RF Modu	le Time & Date	Scheduling	Control	Firmware	
formation					
lodule Information					
				and which is a state of the second second	
Model Name	WISE-2410-EA			Customized Name	WISE-2410
Model Name UUID	WISE-2410-EA WISE-2410_FE4	42363		Customized Name	WISE-2410

9. Click **IO Status** to check vibration and temperature data.

Let IO Status							
in 10 Status							
Second							
		State				Configuration	
Status							
December 1							
			WALLST FAIL (MARK)	0.43	Channel		
			Adventuble Prost (g)	0.03	Rangel	Accessorielergy	
			Accession 1945 (p	0.02	Value	0 43 0 034 0 524 0 0 0 0 0	
			Chigden mereret (Lanc)	0.00			
			Ratural	0.00	High Alarm Status		
			Cred Balan	0.00			
			and the second second	0.00			
			Randed Inviden	0.00		de lans of furies	
Channel	Roma	Range		Value			See.
0	Enable	XAcothere	with r	0.37.0.036.0 020.0	0.0.0		mmix, g. g. um
1	Enable	Y Acteleise	veter	0.43,0.034,0.024,0	0,0,0,0		mma, g. g. um
2	Exate	ZAcceleror	neter	6.45.0.035.0 026.14	0.02.3 41.0 42.0 03		mma, g. g. um
0.1	CADD	Temperatur	t	25,625			10

4.1.2 LoRaWAN gateway (WISE-6610) configuration

- 1. Default IP of WISE-6610 is 192.168.1.1.
- 2. Login-
 - Username: root Password: root

	Login	
Username	root	
Password		
	Login	

You can see the main page of Router; you can change IP in LAN if needed.

Status						Primary LAN Configuration
General Network	DHCP Client	IPv4 disabled		IPv6 disabled	•	
DHCP	IP Address	192.168.1.1				
IPsec DynDNS	Subnet Mask / Prefix	255.255.255.0				
System Log	Default Gateway					
Configuration	DNS Server					
LAN	Bridged	no				
VRRP	Media Type	auto-negotiation	٠			
PPPoE	Enable dynamic DHC	P leases				
Backup Routes		IPv4		IPv6		
Static Routes Firewall	IP Pool Start	192.168.1.10				
NAT	IP Pool End	192.168.1.254				
OpenVPN	Lease Time	600		600		sec

3. LoRaWAN setting. Step1: Choose **User Modules** and **LoRaWAN Gateway**.

👖 應用程式 📑 Faceboo	-		99KUBO	CCN4	A	Advantech	Advantech	WISE-PaaS SSO
SmartStart L/ Status	AN Route				(m)			User Modules
General Network DHCP IPsec DynDNS System Log	Node-RED	1.0	14 (201906041 1 alfa (2017-0 未選擇任何檔案		Delete Delete Add o	or Update		
Configuration LAN VRRP PPPoE Backup Routes Static Routes Static Routes Firewall NAT OpenVPN IPsec GRE L2TP PPTP Services Expansion Port Scripts Automatic Update Customization User Modules								

You can see WISE-6610N100-A (Support NA frequency band), make sure all of these parameters are matching with the RF module setting on WISE-2410X.

			LoRaWA	N Gateway Settings			
			LoRaW	AN Radio Setting			
Model Name	WISE-6610-N100-A						
Kadio Enable	Ön .	•					
Radio 0 Main Frequency(KHz)	902700						
Radio 1 Main Frequency(KHz)	903400						
100 000 00 000 000 000 000 000 000 000	Enable	Radio S	ielect	Offset(KHz)			
Channel 00	Qn	 Radio 	• 0	-400			
Channel 01	On	· Rado	• •	-200			
Channel 02	On	· Radio	• •	0			
Channel 03	On	· Radio	• 0	200			
Channel 04	On	· Radio	1 *	-300			
Channel 05	(Ôn	· Radio	•	-100			
Channel 06	On	· Rado	1 •	100			
Channel 07	On	· Rado	1 *	300	Sec.		
	Enable	Radio 5	ielect	Bandwidth	SF		Offset(KHz)
Channel STD	On	 Rado 	• •	500Khz	•	•	300
	Enable	Radio 5	alect	Bandwidth	Datarate (bps)	Offset/KHz)
Channel FSK	Off	 Rado 	• 0	125Khz	* 50000		0
Quick Setup Quick se	etting LoRaWAN Radio.						
			LoRaWA	N Gateway Setting			
LoRaWAN Gateway Identifier	74FE48FFFE358C88						
	IP address	Upstrea	m Part	Downstream Port			
Network server	127 0.0 1	1680		1680			
Backup server	127.0.0.1	1680		1680			

	Frequency Set (MHz)	User Defin	ie	~	0				
		Select A		kiselect All					
LI/O Status		902.3	902.5	902.7	902.9	903.1	2 903.3	903 5	903.7
Advanced 👻	10	903.9	904.1	904.3	904.5	904.7	904.9	905.1	905.3
Data Logger		905.5	905.7	905.9	906.1	906.3	906.5	906.7	906.9
Diagnostician		907.1	907.3	907.5	907.7	907.9	908.1	908.3	908.5
		908.7	906.9	909.1	909.3	909.5	909.7	0 909.9	910.1
		910.3	910.5	910.7	910.9	911.1	911.3	911.5	911.7
		911.9	0912.1	912.3	912.5	912.7	912.9	0913.1	913.3
		913.5	913.7	913.9	914.1	914.3	914.5	0914.7	914.9
		903	904.6	906.2	907.8	909.4	911	912.6	914.2

If you want to know any items' description, you can refer WISE-6610 user manual. A new tab will pop-up after click on **Network Server (http)**.

Navigation
Router
LoRaWAN Radio
Network Server
Settings
Network Server(http)
 Network Server(https)
Upload Database
 Download Database
Factory Reset Database
MQTT
Application Server
Licenses
Return to Router

Account: root Password: root

室入 Hpp://12163115005 (110日前日二型加速時下高に、通道 使用着発電 root
an

4.1.3 Binding Process Between WISE-2410X and WISE-6610

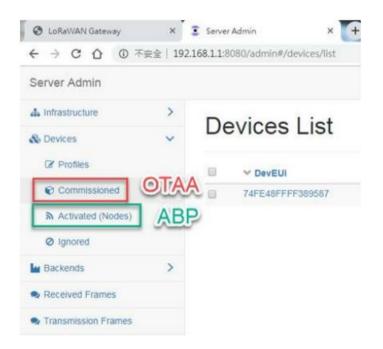
This section will guide you to setup the connection between WISE-2410X and WISE- 6610.

1. Enter the "Network Server (http)" in WISE-6610 gateway as follow.

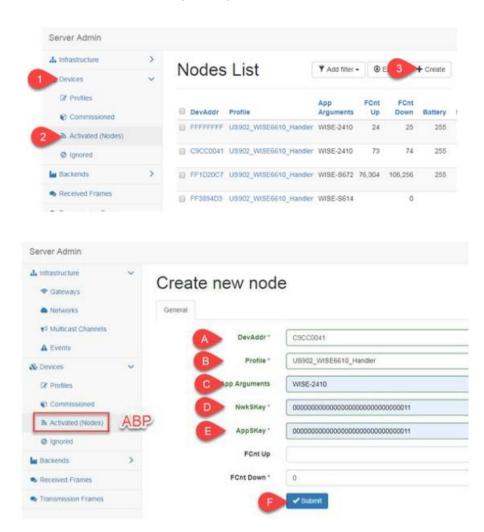
Navigation			
Router	1		
LoRaWAN Radio	LoRaWAN Ne	twork Serve	er Enable
Network Server 2	On	•	Enable LoRaWAN network server.
Settings	LoRaWAN Se	rver Listen I	Port
 Network Server(http) Network Server(https) 	1680		The LoRa network server listen port number (1 - 65535).
Upload Database	LoRaWAN Ne	twork Serve	er HTTP Port
Download Database	8080		The LoRaWAN network server HTTP port number (1 - 65535).
Factory Reset Database	LoRaWAN Ne	twork Serve	er HTTPS Port
MQTT.	8443		The LoRaWAN network server HTTPS port number (1 - 65535)
Application Server Licenses	LoRaWAN W	eb Usernam	
Return to Router	root		The user name for the LoRaWAN network server.
	LoRaWAN W	eb Password	1
	root		The password for the LoRaWAN network server.
	Auto ADR Co	unt	
	50	0430.0	The count used to Auto ADR function.
	LoRaWAN Ne	twork Serve	er HTTPS Enable
	Off	•	Enable HTTPS service.
	Save		

 Create an end node device according the OTAA or ABP method. The following flow will use ABP mode for description the binding process. Note: If select "Commissioned", which means the node will use OTAA mode for connecting with a gateway.

Note: If select "Active Nodes", which means the node will use ABP mode for connecting with a gateway.



3. Click "Device" > "Activated (Nodes)" > "+ Create".



A. DevAddr: the device address of an end node.

Copy-pate "Device Address" from WISE-2410X "RF module" tab.

B. Profile: select the model name of the WISE-6610 which used for Network Server role.

In this demo, a US version is used to connect with WISE-2410X NA version.

- C. App Arguments: the I/O board of the end node. In this demo, a WISE-2410X is used.
- D. NwkSKey: the network service key address of an end node. Copy-pate "Networks Session Key" from WISE-2410X "RF module" tab.
- E. AppSKey: the application service key of an end node. Copy-pate "Networks Session Key" from WISE-2410X "RF module" tab.
- F. Click on "save" to finish the setting.

📕 Configura	tion				
RF Module	-	cheduling Card	a Partwani		
Operation Region	TW				
RF Operation Mode	LORIBINAN		Device Class	Clims A	
Activation Mode	ABP	•			
Device Address	FF190129				
Device EUI	747548FFFF110128				
Network Session Key	000000000000000000000000000000000000000	0000000000011			
Application Informat	ion				
Application Session Key	000000000000000000000000000000000000000	000000000000011			
Application Port	1				
Message ACK	×				

4. Back to WISE-2410X configuration setting page. Click "Configuration" > "RF Module" and choose "LoRaWAN" for RF operation mode setting on WISE-2410X.

Information			
Configuration	Configuration	ı	
Left I/O Status	Inform 2 RF Module	Time & Date Scheduling	Control Firm
4. Site Survey	RF Module		
	iti modulo		
Ø6 Advanced ▼			
Q [®] Advanced ★	Operation Region	US	
©¢ Advanced ★	Operation Region RF Operation Mode	US	Y

 Create a "network server" gateway. Copy-paste the MAC address from "LoRaWAN radio" > "LoRaWAN Gateway Identifier". Then click on "submit".

~	Catalua	1 10	4		0		
	Gateways	5 LIS	st			2 + Cre	ate.
				ID	Duni		
	MAC MAC	10000	-	ile	[%]	Last Alive	Status
	~	Gateways	Gateways Lis	Gateways List	Gateways List	Gateways List	Gateways List

Navigation			
Router			
ORAWAN Radio	Model Name	WISE-6610-N100-A	
Packet Forward LoRawAN Status	Radio Enable	On	•
Retwork Server	Radio 0 Main Frequency(KHz)	902700	
MQTT.	Radio 1 Main Frequency(KHz)	903400	
Application Server.	Construction and an and the state of the	Enable	Radio
Icenses. Return to Router	Channel 00	On	* Radi
SAMULAN, CIGROSE,	Channel 01	On	* Rad
	Channel 02	On	• Rad
	Channel 03	On	• Rad
	Chennel 04	On	· Radi
	Channel 05	On	* Rad
	Channel 06	On	• Rad
	Channel 07	On	· Rad
		Enable	Radio
	Channel STD	On	• Rad
		Enable	Radio
	Channel FSK	Off	• Rad
	Quick Setup Quick	k setting LoRaWAN Radio.	
	LoRaWAN Gateway Identifier	74FE40FFFE396162	
	4	19 address	Upstre
	Network server	127.0.0.1	1680
	Backup server	127 0.0.1	1680
	Backup Enable	0#	•
	Backup Database Interval	6	
	Save		

Server Admin					
& intrastructure	~	Create pour gate			
♥ Gateways		Create new gate	way		
Networks		General			
#1 Multicast Channells		MAC*	TAPEAUPPPEZIMINE	-	
A Events		Group		+	
& Devices					
GF Protien		TX Chain *	0		
Commissioned		Antenna Gain (dBi)	4 (j. l)		
B. Activities (Notes)		Description			
@ ignored		Location *		1000	And the second se
lar flackents	>			100	Georgie This page carit load Google Maps correctly.
Flocenast Frankes Transmission Frankes				a strange	Dr poursei bis settate*
Nationassen Francs				Watant	of the new par entropy.
					· · ·····
			the Constantion		The threader on a Cost framelia for
					France County Server
					Tall Antes
				Perrugal manual Space	
			Grado	12	and the second second
		Althude			
		1000	Survey and		
			Sales		

- 6. Connection Verify.
- A. Click "Application Server" > "Status". Here shows the end nodes if packets are received by gateway from an end node.

Navigation		LoRaWAN Gateway Settings								
Router		Application Server Status								
WAN Radio	NQTT Stat	itus : Conne Der : 4	ected							
ark Server	T					A	fvantech	LoRaWAN Node		
I I	Index De	evAddr B	Sattery	Model	Received	Font	Rssi Acti	00		
cation Server 1	1 09	9000D41 U	Inknown	WISE2410	2020-05-14713:55:312	2	-44	Delete	Setting	Detail
e. 2	2 01	LF66EE5 U	Jakaowa	WISE2410	2020-05-12715:08:132	г	-40	Delete	Setting	Detail
xus Mapping Table. Xad Engine	3 69	ACC0010 U	Jinknown	WISE2410	2020-05-14T16:28:502	1	-77	Delete	Setting	Detail
25.	4 FF	FFFFFF U	Jinknown	WISE2410	2020-05-14709:45:502	26	-77	Delete	Setting	Detail
im to Router							Applic	ation Log		
	E F	Refresh		Clear	lot .					

B. Click "Detail". The gateway will help to pre-parsing the data payload if the "App Arguments" input correctly.

				LoRaWAN Ga		ць			
				Node De	etail Data				
Devaddr									
C9CC0D41									
Sensor	PowerSrc	Battery Voltage							
Device	1	0.000 V							
Sensor	Range	Status	Event	SenVal					
TempHumi	0	0	0	27.250 oC					
TempHumi Sensor	0 Log Index	0	0	27 250 oC					
	Log Index	0	0	27.250 oC					
Sensor	Log Index	0 Velocity RM5	0 Acceleration Peak	(Kurtosis	CrestFactor	Skewness	Deviation	Displacement
Sensor Accelerometer Sensor	Log Index 3776			(Kurtosis	CrestFactor	Skewness	Deviation	Displacement
Sensor Accelerometer	Log Index 3776 SenEvent	Velocity RMS	Acceleration Peak	Acceleration RMS					

C. Users can also access into "Network Server (http)". The "Received frames" page shows the received results. The "FCnt" shows the frame sequence. If this sequence is in-continuously, means some of the packets were lost.

Statuti General	×	X Ser	wAlter X 1			a state strengt	-	_	-	-
+ + C O A	R 1 190	116813	18080/admink/vahameufid							
Server Admin										
A intertructure	>	-	and the different							
de Deven	>	R	eceived Fran	nes						
la factorità	>	0	A Received	Application	Devildor	MAC	ULRSS	UL SNR	FCH	Confirm
 Received Frames 		10	2019-06-11711-32-062	WISE6610_Handler	FF19012F	A455542000000000	-65	9.	211	1
• Transmission Prames		0	2019-06-11711.32-042	WISE6610_Handler	FF11012F	A45554200000000	-47	6.5	210	1
		12	2019-06-11711 31:532	WISE6610_Handler	7#1012#	A45554200000000	-40	5.2	209	1
		- 10	2010-06-11111-00.062	WitiEdd10_Handler	FF13012F	AA525A0000000000	-71	72	204	1

4.2 WISE-2410X Configuration

System	Function Item	Functional Description
	Information	Display module name, Network status, Power status, Firmware version.
	Configuration	 Module Information RF related setting Date/time, time zone settings Schedule of when sensor should start measurement System restart or reset to default Firmware download
WISE Studio		 Display values which is measured by sensors. Include following types: X Accelerometer
	IO Status	 Y Accelerometer Z Accelerometer Temperature
	Site Survey	Sensor related settings Site Survey Tool for testing the communication quality between WISE-2410 wireless module with gateway.
	Data Logger	 Configurations of which channel, which type of sensor values to log data in module. Query log data stored in module.
	Diagnostician Get Raw Data	To display any errors detected by module. Query raw data which is measured by vibration sensor.

All functions of WISE Studio for WISE-2410X is below:

4.2.1 Information Page

Information page is displayed Module Information, Power Status, LoRa Information, Device Information.

E-2410-NA		
formation		
	nation	
D Stetus	formation	
te Survey	Model Name	WISE-2410-NA
dvanced +	Customized Name	WISE-2410
	UUID	WISE-2410_FE442382
	Location	
	Description	
Power Sta	atus	
	Power Source	Line Power
	malion	

4.2.2 Configuration

It shows general configuration of WISE-2410X modules, including Information, RF module, Time&Date, Scheduling, Control and Firmware.

- Information: Device identity and location settings
- RF Module: RF Related Settings Binding process between WISE-2410X and WISE-6610, please go to Section 4.1 for more details. For LoRaWAN parameter description, please check the docu- ment of "lorawan_regional_parameters" from LoRaWAN Alliance website.
 - Message ACK: Advantech implement retry solution when WISE-2410X does not receive the acknowledgment from WISE-6610 or other 3rd party LoRaWAN gateway.

Application Information	n	
Application Session Key	000000000000000000000000000000000000000	00000000011
Application Port	1	
Message ACK		
Frequency (KHz)	923200	Frequency Range: 920000 ~ 928000, 0: Disabled.
	923400	
	923600	
	923000	

- Time & Date: time zone settings
 - Local Time: WISE-2410X sync time with computer.
 - Daylight Saving Time: Range setting for daylight saving time period.
- Control: System restart or reset to default
- Firmware
 - Firmware Upload: To update the firmware, click "Firmware Upload" to update file. The latest official firmware releases are available on the Advantech support website (http://support.advantech.com/).
 - Configuration File Upload: User can upload their specific "Configuration File".
 - Configuration File Export: User can export their "Configuration File".

×	Configuration	
0	oornigaration	

Information RF-Module Time & Date Scheduling Control Firmware	
Files	
Firmware Upload	5
Configuration File Upload	5
Configuration File Export Export Configuration File	

- Scheduling: Data reports interval setting with optional weekly scheduling setting Based on application scenario, user can set scheduling of WISE-2410X.
 - Mode: Basic/Advance
 - Day: Mask for Sunday ~ Saturday
 - Start time: 00: 00 ~ 23: 59
 - End time: 00: 00 ~ 23: 59
 - Periodic interval: 10 ~ 86400 (sec)

Scenario A: Sensing target every minutes.

	Configuration	on		
F Configuration	Information RF Module	Time & Date	Scheduling	Contro
but I/O Status	Scheduling			-
	Schedule Mode	Basic 💌		
🕫 Advanced 👻				
Data Logger	Measurement Interval (sec)	60		
Diagnostician				

Scenario B: Sensing target on specific timing for better power saving application. In this example: Mon. 8:00am ~ Sun. 8:00 am.

Configuration		-					
Information RF Module Time & I	Date Schedulir	og Control	Firmware				
Scheduling		_					
Schedule Mode	Advanced	~					
Measurement Interval (sec)	60						
Day	Sunday Z Mo Saturday	inday 🗹 Tuesda	y 🗹 Wednesd	day 🗹 Thursd	lay 🗹 Friday 🗹		
Start Time	08:00	0					
End Time	08:00	0					
							- A Dataset
							Submit .

Configuration

4.2.3 IO Status

Click **IO Status** to check vibration and temperature data.

- 1. User can easily to see the detail data of all channels.
- 2. User can choose channel 0, 1, 2 which means x, y, z axis to see the detailed vibration features (Velocity RMS, Acceleration Peak, and total eight features).

IM IO Status						
_						
Berner .						
		Blatus			Contestant	
Status						
224042			2		2	
			In the second	8.42	Channel 1 /	
			Accession Post (g)	0.05	Range: Accommonwig)	
			And and a local division of the local divisi	0.02	VAN: 1 43.0.004.0.024.0.0.0.0.0	
			manmentate	0.08		
				0.00	Ngh Alarre Blakus:	
			Contractor	0.06		
			A Company No. 1	0.08		
1			The residence	0.00	2 January 24 Process	
Channel	Status	Range		Value		una
	Dratie	R Accessive	neter	8 37 0 096 0 025 0	10.0.8	Perch 0. 0. W1
	Enable	Y Accessor	netur	8410004.0024.00	2008	mmi g. g. am
1	Ecotor	Enceleru	wetter	8 45.0 005.0 020 14	47 12 3 41 10 42 0.03	mmos, g. g. um
	Drafter	Temperatur		25.628		10

- Vibration alarm (for Velocity RMS)
 - Please select the channel for correspondent settings with each axis. 0 means X-axis. 1 means Y-axis. 2 means Z-axis.
 - If the sensing target vibrate abnormally and pass through a threshold, it can send alarm to LoRa gateway.

Status		Configuration
onfiguration		
Channel	0 •	
Channel Mask	Disable Enable	
Range	Accelerometer(g)	
Kange	Accelerationelet(g)	
Enable High Alarm	Disable Enable	
High Alarm Value	0.000	
Feature Enable	🗖 Kurtosis 🗍 Creet factor 🗖 Skewne	ss 🥃 Standard deviation 📃 Displacement

- Temperature alarm
 - Please select Channel 3 for Temperature sensor configuration.
 - Sensor Offset Value: Offset setting between measurement temperature value and real temperature value.
 - Enable: WISE-2410X will upload an alarm message according to the userdefined threshold value. If WISE-2410X detected a higher temperature value than the threshold setting, WISE-2410X will send a temperature alarm mes- sage to a gateway. This function is not limited by the data uplink period. In another word, If customer enables this function, WISE-2410X will keep moni- toring the surface temperature every second.
 - Send Alarm Event:

Continuously means WISE-2410X will keep sending an alarm message to a gateway until the WISE-2410X detected temperature is lower than the thresh- old value set by a user.

Four-time means WISE-2410X will send an alarm message to a gateway. If the WISE-2410X does not receive acknowledgment from the gateway, WISE-2410X will retry the alarm message with maximum 3 times.

	Statu	6	Configuration
onfiguration			
	Channel Channel Mask Range Sensor Offset Value	3♥ ○ Disable ● Enable Temperature("C)♥ 0.000 °C	
	Enable High Alarm High Alarm Value Send Alarm Event	O Disable Enable 0.000 Continuously Four Times	

4.2.4 Data Logger

Configure or query logs stored in module.

1. Data Configuration

- Log Conditions Default setting is to record the Velocity RMS alarm message if user has set a threshold on Velocity RMS values.
 - By Period: Enable means the log function will run by period which includes the Velocity RMS alarm message.
- General
 - Clear Log when Power Up: Enable or Disable to reset the Built-in log when the system powers on.
 - Circular Log when Memory Full: Enable or Disable the Circular Operation for Built-in Memory.
- Log Data: User can choose the log by channel or by sensor
 - By Channel: 0 means X-axis. 1 means Y-axis, 2 means Z-axis, 3 means Temperature.
 - By Sensor: Data from sensors, including vibration features, alarm trigger, sensor status and raw data.

	I/O Configura	ation
og Conditions		
	= By Period	
leneral		
	^{III} Clear Log when Power Up	
	© Circular Log when Memory Full	
og Data		
1	By Channel	By Sensor
1	By Channel Sensor	
Channel		
	Sensor	
Channel	Sensor Log Enabled =	
Channel 0	Sensor Log Enabled = #	

Logger Configuration: Enable or Disable the I/O log function. Default setting on I/O Log is disable, on System Log is enable.

Data Logger		
Data Configuration Logger	Continguation Local Data Query	
Memory Storage		
NO Log	Tore	
System Log		
		✓ Submit

Local Data Query

- Push Data Query Format
 - UUID: Enable or Disable the UUID.
 - MAC ID: Enable or Disable the MAC ID.
 - Timestamp: Local date and time (GMT) or Coordinated universal time (UTC).
- Query Filter
 - Filter Mode: User can choose No Filter Enable, Time Filter or Amount of Latest Data.

	Pust	Data Query		
ush Data Query Format +				
ບບບ	© Enabled/Disabled		MAC ID III Enabled/Disabled	
Timestamp	Coordinated Universal Time(UTC)			
ouery Filter +				
Filter Mode	No Filter Enabled			
Current Total Amount	1			
Total Amount	1 1			
Timestamp of the Oldest				
Start Time	Click Me			
Timestamp of the Latest				
End Time	Click Me			

- Query result as follow:



Chart 🔻

how 10	 entries 				Search:		
.og Type	Timestamp	UUD	MAC	Słot	Channel	I/O-type	Value
54	2019-03-14T17:07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	з	43	0
54	2019-03-14717 07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	3	40	24.062
54	2019-03-14T17:07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	0	45	0.2
54	2019-03-14T17 07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	0	45	0.035
54	2019-03-14T17-07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	0	47	0.025
54	2019-03-14T17:07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	т.	45	0.23
54	2019-03-14T17:07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	1	45	0.032
54	2019-03-14T17:07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	5	47	0.022
54	2019-03-14T17:07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	2	45	0.35
54	2019-03-14717:07:38+08:00	WISE-2410_C9CC0023	00-00-00-D0-C9-CC-00-23	0	2	45	0.042
nowing 1 to	10 of 22 entries				Previou	1 2	3. Nex

4.2.5 Diagnostician

Display any errors detected by module.

양 Diagnostician		
Name	Description	Value
🖺 Data Logger	Event Status	Normal

4.2.6 Downlink Command

For better user experience, WISE-2410X supports to config time and update interval remotely. Please contact local FAE for more detail technical supports.



www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

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