Advantech AE Technical Share Document

Date	2021/08/12	SR#	1-3775490501						
Category	□FAQ ■SOP	Related OS	N/A						
Abstract	How to connect WISE-4610 with WISE-6610?								
Keyword	WISE, LoRaWAN								
Related Product	WISE-4610 series, WISI	E-6610							

Problem Description:

This document shows that how to connect WISE-4610 with WISE-6610, and receive data result.



Figure 1. Topology of this scenario.

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■ Brief Solution - Step by Step:

Step 1. Enter the WISE-6610 gateway.

Default IP:192.168.1.1

Account: root

Password: root

S Router	× +		×	
\leftrightarrow \rightarrow C (▲ 不安全 https://192.168.1.1/I	☆ Ħ	:	
	Login			
	Username root Password			\bigcirc
	Login			

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Step 2. Go to "user mode".

S Router	× +								x
← → C △ ▲ 不安全	https://192.1	168.1.1/index.cgi	☆ ≵	R	۲	G	ç	H	:
SmartStart LAN	Route	r							
Status		-	General St	tatus					
StatusGeneralNetworkDHCPIPsecDynDNSSystem LogConfigurationLANVRPPPP0EBackup RoutesStatic RoutesStatic RoutesStatic RoutesGREL2TPPPTPServicesExpansion PortScriptsAutomatic UpdateCustomizationUsersChange PasswordSet Real Time ClockBackup ConfigurationUpdate FirmwareRebootLogout	IP Address IPv6 Address MAC Address Rx Data Tx Data More Inform Expansion Por Binary Input Binary Output Firmware Vers Serial Number Profile Supply Voltag Temperature Time Uptime » Licenses «	: 192.168.1.1 : Unassigned : 74:FE:48:33 : 119.7 KB : 60.0 KB nation «	Primary L Primary L 1 / 255.255 9:61:52 Peripheral I ystem Infor 7-06-12) 09:56:09 purs, 20 mi	AN AN 5.255.0 Ports mation					

Step 3. If you need to upgrade the "LoRaWAN Gateway" function, **DELETE first**, then upload new file.

	User Modules
LoRaWAN Ga	teway 1.0.14 (20190531T032334Z) Delete
Node-RED	1.0.1 alfa (2017-03-13) Delete
New Module	選擇檔案 未選擇任何檔案 Add or Update

Click "LoRaWAN Gateway" to enter the setting page. Step 4.

Make sure all of these parameters are matching with the "RF module" setting on WISE-4610-Sxxx.

			L	oRaWAN Gateway Sett	ings
				LoRaWAN Radio Setti	ng
Model Name	WISE-6610-N100-A				
Radio Enable	On •				
Radio 0 Main Frequency(KHz)	902700				
Radio 1 Main Frequency(KHz)	903400				
	Enable	Radio Select	Offset(KHz)		
Channel 00	On 🔻	Radio 0 🔹	-400]	
Channel 01	On 🔻	Radio 0 🔻	-200]	
Channel 02	On 🔻	Radio 0 🔹	0 \$]	
Channel 03	On •	Radio 0 🔹	200]	
Channel 04	On •	Radio 1 🔹	-300]	
Channel 05	On 🔻	Radio 1 🔹	-100]	
Channel 06	On 🔻	Radio 1 🔹	100]	
Channel 07	On 🔻	Radio 1 🔹	300]	
	Enable	Radio Select	Bandwidth	SF	Offset(KHz)
Channel STD	On 🔻	Radio 0 🔻	500Khz •	8 🔻	300
	Enable	Radio Select	Bandwidth	Datarate (bps)	Offset(KHz)
Channel FSK	Off •	Radio 0 🔻	125Khz 🔻	50000	0
Quick Setup Quick	setting LoRaWAN Radio.				
			I	LoRaWAN Gateway Set	ting
LoRaWAN Gateway Identifier	AA555A000000000				
	IP address	Upstream Port	Downstream Port	_	
Network server	127.0.0.1	1680	1680		
Backup server	127.0.0.1	1680	1680]	
Backup Enable	Off •				
Backup Database Interval	5				
Save					

Or click on "quick setup" for default setting.

Channel STD	On 🔻	Radio						
	Enable	Radio						
Channel FSK	Off 🔹	Radio						
Quick Setup Quick	Quick Setup Quick setting LoRaWAN Radio.							
LoRaWAN Gateway Identifier	AA555A000000000							

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1	LIS002.0(002.2Mbz.002.	
L t		
ш	US902-0(902.3Mhz-903.7Mhz std:903.0Mhz)	
US	US902-1(903.9Mhz-905.3Mhz std:904.6Mhz)	
ch	US902-2(905.5Mhz-906.9Mhz std:906.2Mhz)	
ch	US902-3(907.1Mhz-908.5Mhz std:907.8Mhz)	
ch	US902-4(908.7Mhz-910.1Mhz std:909.4Mhz)	
ch	US902-5(910.3Mhz-911.7Mhz std:911.0Mhz)	
C	US902-6(911.9Mhz-913.3Mhz std:912.6Mhz)	
	US902-7(913.5Mhz-914.9Mhz std:914.2Mhz)	
ch	AS923-1(922.0Mhz-923.4Mhz std:922.1Mhz)	
ch	AS923-2(923.2Mhz-924.6Mhz std:924.5Mhz)	SF 8
ch	AU915-0(915.2Mhz-916.6Mhz std:915.9Mhz)	
	AU915-1(916.8Mhz-918.2Mhz std:917.5Mhz)	
	AU915-2(918.4Mhz-919.8Mhz std:919.1Mhz)	
ch	AU915-3(920.0Mhz-921.4Mhz std:920.7Mhz)	
ch	AU915-4(921.6Mhz-923.0Mhz std:922.3Mhz)	
ch	AU915-5(923.2Mhz-924.6Mhz std:923.9Mhz)	
ch	AU915-6(924.8Mhz-926.2Mhz std:925.5Mhz)	
ch	AU915-7(926.4Mhz-927.8Mhz std:927.1Mhz)	
ch	KR920(922.1Mhz-923.3Mhz std:Disabled)	
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Step 5. Go to "Configuration" of WISE-4610 in WISE-Studio. Select RF Operation Mode as

"LoRaWAN", and Reboot WISE-4610.

WISE-4610-S672						
Information						
🖋 Configuration	🗲 Configuration					
<u>ulul</u> I/O Status	Information RF Module Data	Update Time & Date Conf	trol Firmware			
	Operation Region	05	Ť			
	RF Operation Mode	WISE Link v1 WISE Link v1 LoRaWAN	~	Device Class	Class A	~
	Data Rate (bps)	DR4-SF8/500KHz	~			

Step 6. Setup the LoRa frequency in WISE-6610, do the the "LoRaWAN Status" and copy-paste the frequency into the "RF" setting page of the WISE-4610.



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Step 7. A new tab will pop-up after click on "network server" > "enable" > "network server

(http)".

Account: root

Password: root

LoRaWAN Network Server Enable							
On 🔻	Enable LoRaWAN network server.						
LoRaWAN Server Listen	.oRaWAN Server Listen Port						
1680	The LoRa network server listen port number (1 - 65535).						
LoRaWAN Network Serv	/er HTTP Port						
8080	The LoRaWAN network server HTTP port number (1 - 65535).						
LoRaWAN Network Serv	ver HTTPS Port						
8443	The LoRaWAN network server HTTPS port number (1 - 65535).						
LoRaWAN Web Usernan] ···· - ···· (- ····)/						
root	The user name for the LoBaWAN network server						
LORAWAN WED Passwor	·d						
root	The password for the LoRaWAN network server.						
Auto ADR Count							
50	The count used to Auto ADR function.						
LoRaWAN Network Serv	ver HTTPS Enable						
Off 🔻	Enable HTTPS service.						
Save							
	LoRaWAN Network Serv On v LoRaWAN Server Listen 1680 LoRaWAN Network Serv 8080 LoRaWAN Network Serv 8443 LoRaWAN Web Usernan root LoRaWAN Web Usernan root LoRaWAN Web Passwor root LoRaWAN Web Passwor root LoRaWAN Network Serv Off v Save						

× 3	Server Admin	× +			
) 不安全 192.16	8.1.1:8080/admin#/dashboa	ird	☆ 🗱 💈	@ ©	(-)
登入 http://19 你與這個 使用者名 密碼	92.168.1.1:8080 網站之間的連線不是私人連線 稱	登入	取消		

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- Step 8. Create an end node device.
 - If select "commissioned", which means the node will use OTAA mode for connecting with a gateway.
 - If select "active nodes", which means the node will use ABP mode for connecting with a gateway.



LoRaWAN Gateway	×	🕄 Server Admin 🛛 🗙 🕂	MU, MU, March Lances (ML), MT, MR (1	to had protect that insure that		
← → C ☆ ③ ネ	安全 19	2.168.1.1:8080/admin#/devices/list				* 🗱 🔍 🖲 😌 😳 🗄
Server Admin						
A Infrastructure	>	Device a List				
& Devices	~	Devices List				Add filter →
Profiles		DevEUI	Profile	App Arguments	Last Join	Node
2 © Commissioned		74FE48FFFF389587	US902_WISE6610_Handler	WISE-S614	2019-06-04T15:49:09Z	0164ECA1
Activated (Nodes)						
Ø Ignored						1 - 1 of 1
Mackends	>					
Received Frames						
Transmission Frames						



9		r١	1		r	Δ		h	r	r	١	i	r	۱.	
0	-		v	-			"	ч	1	1		l			

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 ♣ Infrastructure ♥ Gateways ♠ Networks 	~	Crea General	te nev	v node	e
♥ Multicast Channels ▲ Events			A	DevAddr *	FF38958D
🗞 Devices	~		B	Profile *	US902_WISE6610_Handler
Profiles			C App A	Arguments	WISE-S672
Commissioned				\wkSKey *	000000000000000000000000000000000000000
 Activated (Nodes) Ignored 				AppSKey *	000000000000000000000000000000000000000
Backends	>			FCnt Up	
Received Frames			FC	nt Down *	0
Transmission Frames				P	✓ Submit

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

• Copy-pate from WISE-4610 "RF module" tab.

WISE-4610-S672	
Information	Configuration
	Information RE Module Data Update
	Positioning Firmware
	RF Module
	Operation US v
	RF LoRaWAN T
	Mode
	Activation ABP v Mode
	Device FF38958D

- 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-4610NA version.

	Navigation		
	Router		
•	LoRaWAN Radio	Model Name	WISE-6610-N100-A

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- C. App Arguments: the I/O board of the end node.
 - In this demo, the name: "WISE-S672" is used to connect with WISE-4610.
 - ONLY ALL BIG capital letter of name for "WISE-S672".

DO NOT fill WISE-4610-S672, WISE-4610, WISE-672 and not with small capital.

(*For example, please fill in "WISE-S617" as App Arguments if using

WISE-4610-S617TNA as node here.)



- D. NwkSKey: the network service key address of an end node.
 - Copy-pate from WISE-4610 "RF module" tab.

WISE-4610-S672		
Information	Device EUI	74FE48FFFF38958D
& Configuration	Network Session	000000000000000000000000000000000000000
🔟 I/O Status	Key	

- E. AppSKey: the application service key of an end node.
 - Copy-pate from WISE-4610 "RF module" tab.



F. Click on "save" to finish the setting.

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Step 9. Select "LoRaWAN" for RF operation mode setting on WISE-4610.



Step 10. Enable "profile ADR" as "auto-adjust".

Server Admin		
å Infrastructure	Edit profile	e #US902_WISE6610_Handler
Networks	General ADR	
≮ Multicast Channels	ADR Mode	Filter values
A Events	Sat Bower	Disabled
🗞 Devices	Set Fower	Auto-Adjust
C Profiles	Set Data Rate	Maintain
Commissioned	Max Data Rate	Filter values -
Activated (Nodes)	Set Channels	e.g. 0-2
Ø Ignored		
Backends	Set RX1 DR Offset	

Step 11. Create a "network server" gateway. Copy-paste the MAC address from "LoRaWAN radio" > "LoRaWAN Gateway Identifier".

Server Admin								^
A Infrastructure	~	Cotowova	Lio	+				vata
1 Sateways		Galeways	LIS	l.				ale
Networks					IP	Dwell		~
Multicast Channels		MAC	Group	Description	Address	[%]	Last Alive	Status

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	tion				
LoBaWAN Bad	io	Madal Name		1	
Packet Forward		Model Name	WISE-6610-N100-A]	
LoRaWAN State	15	Radio Enable	On 🔻	1	
Network Serve	<u>!r</u>	Radio 0 Main Frequency(KHz)	902700		
Application Se	rver	Radio 1 Main Frequency(KHz)	903400		
Licenses		channel 00	Enable	Radio Select	
Return to Rout	er_		Un •	Radio U	
		Channel 01	On 🔻	Radio 0	
		Channel 02	On 🔻	Radio 0	
		Channel 03	On 🔻	Radio 0	
		Channel 04	On 🔻	Radio 1	
		Channel 05	On 🔻	Radio 1	
		Channel 06	On •	Radio 1	
		Channel 07		Dadie 4	
			Enable	Radio Select	
		Channel STD	On T	Radio 0	
			Enable	Radio Select	
		Channel FSK	Off	Radio 0	
		Quick Setup Quick	setting LoRaWAN Radio.		
		LoBaWAN Catoway Identifier	A & 5 5 5 A 0000000000		
	L	LORGWAN Galeway Identifier	ID address	Unstream Por	
		Network server	127.0.0.1	1680	1
		De alver annue	127.0.0.1	1000	
		I BACKIIN SPEVAL			
		Buckup Sciver	127.0.0.1		
		Backup Enable	Off •		
		Backup Enable Backup Database Interval	0ff •		
		Backup Enable Backup Database Interval	Off •		
		Backup Schol Backup Enable Backup Database Interval Save	0ff • • • • • • • • • • • • • • • • • •		
reate new gate	eway	Backup Sarta Backup Database Interval Save	0ff •		
eate new gate	eway	Backup Schol Backup Database Interval Save	[127,00,1] [Off τ] [5]		
eate new gate	eg. 01234667	Backup Schol Backup Database Interval Save	[127,00,1] [Off τ] [5]		
eate new gate	eway eg. 01234067	Backup Sarta Backup Database Interval Save	0ff •		
ate new gate	eway eg. 01234067	Backup Sarta Backup Database Interval Save	[127,00,1] [Off •] [5		
ate new gate a Tx Chain * Antenna Gain (dB)	eg. 01234567 0 eg. 6	Backup Sarta Backup Database Interval Save	[127,00,1] [Off •] [5		
te new gate Mac - Group TX Chain * Antenna Gain (dB) Description	eway e.g. 012349677 0 e.g. 6	Backup Sarta Backup Database Interval Save	[127,00,1] [Off τ] [5]		
ate new gate	eg 01234967	RADICODEF	Defi • Off • 5 • 5 • 6 • 7 OK 7 OK 7 OK 9 • 10 • 11 • 12 • 13 • 14 • 15 •		C C

Step 12. Enable "time sync" for WISE-4610 RTC adjusting with WISE-6610 system time

Navigation	
Router	
LoRaWAN Radio_	Modbus TCP Server
Network Server_	On Enable the Modbus TCP Server.
MQTT_	Modbus TCP Server Port
<u>Storage</u>	502 The modbus TCP server port number (1 - 65535).
Application Server	Modbus Timeout
• Status	2 The modbus TCP Timeout number (2 - 30).
Modbus Mapping Table	Time Sync
• Payload Engine	On Eanble time sync for WISE-4610 and WISE-2410 series
Licenses_ Return to Router_	RESTful Server Setting

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Connection results:

 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	Statu	s				
LoRaWAN Radio	MQTT Stat Node numb	tus : Conne per : 2	ected									
Network Server					Advantech L	oRaWA	N No	le				
MQTT	Index D	evAddr	Description	Model	Received	Fcnt	Rssi	Action				
<u>Application Server</u> <u>Settings</u>	1 01	164ECA1		WISE4610-614	2019-06-04T15:52:58Z	44	-28	Delete	Detail	3		
• Status	2 FF	389587		WISE4610-614	2019-06-04T16:15:20Z	205	-31	Delete	Detail	-		
Modbus Mapping Lable Payload Engine Licenses	R	Refresh Clear log										

2. The gateway will help to pre-parsing the data payload if the "app arguments" input correctly.

												LoRaW	AN G	ateway Sett	ings			
												N	ode D	Oetail Data				
Devaddr																		
FF389587																		
Sensor	PowerS	rc	Battery L	evel	- -													
Device	1				J													
Sensor	Signal I Status	.ogic	Continue	put State	Output	Pulse	Increme Pulse Ou	ntai tput										
Digital Output	0		0		0		0											
Sensor	Counter	Value	Signal Lo Status	gic	Start Cou Status	inter	Get/Clea Counter Overflow	n Status	Get/Cl Latch S	ean L2H Status	C L	Get/Clean atch Stat	H2L US					
Digital input 0	0		1		1		0		0) (0]				
Digital input 1	0		0		1		0		0		ן ר	0		1				
Sensor	Range		Value		Event		MaxVal		MinVa		L	ow Alarn Status	n	High Alarm Status				
Analog input 0	0x0143		32767		0		32768		32767] [0		0				
Analog input 1	0x0143		32767		0 32768		32767		0									
Analog input Average	e 0x0103		0		0		0		0									
index (о С	1	2	3	4	5	6		7	8		9	10	11	12	13	14	15
Coli Status port 1	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0
Coli Value port 1	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0
index :	16	17	18	19	20	21	22		23	24		25	26	27	28	29	30	31
Coli Status port 1	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0
Coli Value port 1	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0
index (נ	1	2	3	4	5	6		7	8		9	10	11	12	13	14	15
Reg Status port 1	17	17	0	17	17	0	0		0	0		0	0	0	0	0	0	0
Reg Value port 1	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0
index :	16	17	18	19	20	21	22		23	24		25	26	27	28	29	30	31
Reg Status port 1	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0
Reg Value port 1	0	0	0	0	0	0	0		0	0		0	0	0	0	0	0	0
Return																		

3. 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, did not received.

S LoRaWAN Gateway	×	🖲 Server	r Admin	× +		A CALCULAR STOCK		A REAL PROPERTY.	-		-	-		
← → C 介 ▲ 不安全 192.168.1.1:8080/admin#/rxframes/list														
Server Admin														
A Infrastructure	>	D		ramaa										
🗞 Devices	>	R	Received Frames											
Mackends	>		A Received	Appli	cation	DevAddr	MAC		U/L RSSI	U/L SNR	FCnt	Confirm		
Received Frames			2019-06-11T11:32:062	WISE	6610_Handler	FF19D12F	AA555A0000000000		-69	9	211	1		
Transmission Frames			2019-06-11T11:32:042	WISE	5610_Handler	FF19D12F	AA555A0000000000		-67	6.5	210	1		
			2019-06-11T11:31:532	Z WISE	5610_Handler	FF19D12F	AA555A0000000000		-65	5.2	209	1		
			2019-06-11T11:30:382	WISE	5610_Handler	FF19D12F	AA555A0000000000		-71	7.2	204	×		
			2019-06-11T11:29:40Z	WISE	5610_Handler	FF19D12F	AA555A0000000000		-71	8.8	200	1		