MKGW2-LW Configuration Guide





MOKO LoRaWAN Gateway (MKGW2-LW)

Configuration Guide

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Version 1.1

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1 About This Guide

This document provides a comprehensive guide on how to configure the MKGW2-LW gateways to suit the intended application in detail. It mainly introduces the MKGW2-LW functionality, including Ethernet, Wi-Fi, LoRa configurations, firmware upgrade, system backup and log download etc. It also provides instructions for setting up the gateway on a LoRa network server.

2 Product Introduction

2.1 Product Description

MOKO 8 channels gateway MKGW2 is based on LoRaWAN protocol, which is embedded with Semtech's high performance multi-channel transceiver SX1301/SX1257 and MTK platform. It is for indoor use and easy for installation.

MKGW2-LW includes 2 modes: AP and STA as router, offers 2.4Ghz Wi-Fi and wired Ethernet for connecting internet. The gateway built-in OpenWRT operating system, users can flexibly configure network parameters and LoRaWAN protocol parameters through the Web management platform. The MKGW2-LW Gateway can be connected to LoRaWAN terminals in various application nodes, collects useful information and sends the data to cloud server. And it supports POE, DC, Micro USB to provide power supply.

2.2 Main Specifications

Category	Feature	Specification
Chipset	LoRa®	Semtech SX1301/1257
	Wi-Fi	MTK MT7688 with 128M DDR and 32M flash
Wireless	Wi-Fi Frequencies	2.4GHz
Characteristics	LoRaWAN Regions	863 - 870 MHz (EU), 902 - 928 MHz (US), AU915 - 928 MHz (AU915 + AS923)
Interfaces	Wired	Ethernet - RJ45 Connector
	Wireless	LoRaWAN, Wi-Fi 2.4 GHz
Softwara	Operating System	Embedded Linux, 3.10 Kernel version
SUILWAIE	LoRa	Packet Network Forwarder with default support for

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Semtech UDP Packet forwarder		Semtech UDP Packet forwarder
	Configuration	Web-based interface via Wi-Fi
Wireless	WIFI	130M (Open Space)
coverage	LoRa	3km (City Environment)
Power Supply	DC Jack	DC 12V-1A
	POE	POE (IEEE 802.3af), 42~57VDC
	Micro USB	5V/2A
	Stand By Power Consumption	Stand By Average Current \leq 200mA@12V
	Communication Power Consumption	Communication Transmitting current≤220mA@12V Receiving current≤250mA@12V
	2.4G WIFI Transmission Power	Max 20dBm
Electrical Specification	2.4G WIFI Reception Sensitivity	270Mbps: -61dBm@10%PER 135Mbps: -65dBm@10%PER 108Mbps: -68dBm@8%PER 54Mbps: -68dBm@10%PER 11Mbps: -85dBm@8%PER 6Mbps: -88dBm@10%PER 1Mbps: -90dBm@8%PER
	LoRa Output Power	Max: 23dBm
	LoRa Sensitivity	-141dBm@SF12,BW=125kHz
LED	Power LED	 1.System operating normally: Solid green 2.System operating abnormally: Solid red 3. System upgrade: Blink green
	Network LED	 No network: Solid yellow ETH connection: Solid blue WIFI connection: Solid green
	Communication LED	 1.LoRa COMM √, Server COMM ×: Solid blue 2.LoRa COMM x, Server COMM √: Solid yellow 3.LoRa COMM √, Server COMM √ : Solid green 4.LoRa COMM x, Server COMM x: Solid red
Antenna	WIFI antenna	1.1dBi External antenna
	LoRa antenna	1.6dBi External antenna
Environmental	Environmental Operating Temp20° C to 55° C	

	Storage Temp.	-40° C to +85℃
Regulatory Approvals		Under Approval FCC/CE
	Dimensions	166*105*28.4mm
Dimensions Installation	Weight	215g
	Installation	On the desktop or Fixed on the wall
Enclosure	Standard	Moulded plastic housing
Warranty	1-Year warranty	

Table1 MKGW2-LW Main Specifications

2.3 Hardware Interfaces and Indicator





Figure1 MKGW2-LW Interface

No.	Туре	Function	Remark
1	Reset button	 Reset to factory setting Firmware upgrade 	1.Reset: Insert and press the button then keep 5s2.Update: Before firmware upgrade, insert USB Flash Drive and short press the button
2	USB Port	Plug a USB flash drive with upgrade file for firmware upgrade	The name of upgrade file is required to be: MKGW2-LW-Upgrade.bin
3	POE Port	1.POE power supply 2.Ethernet Access	POE (IEEE 802.3af)
4	Micro USB	USB power supply	5V/2A
5	DC Power Port	DC power supply	12V/1A
6	Power Button	ON/OFF	

7	WiFi Antenna	WiFi Antenna	1.1dBi
8	LoRa Antenna	LoRa Antenna	1.6dBi
9	Power LED	Indicate device operating status	 System operating normally: Solid green System operating abnormally: Solid red System upgrade: Blink green
10	Network LED	Indicate network status	 1.No network: Solid yellow 2.ETH connection: Solid blue 3. WIFI connection: Solid green
11	Communicatio n LED	Indicate Lora and server communicate status	 1.LoRa COMM √, Server COMM ×: Solid blue 2.LoRa COMM x, Server COMM √: Solid yellow 3.LoRa COMM √, Server COMM √ : Solid green 4.LoRa COMM x, Server COMM x: Solid red

Table2 MKGW2-LW Hardware Interfaces

2.4 Mechanical Size



Figure2 MKGW2-LW Mechanical Size

2.5 Package Information

2.5.1 Package List

Item	Qty	Remark
MKGW2-LW	1	Gateway
WiFi Antenna	1	
Lora Antenna	1	
Micro USB cable	1	
Positioning screws	2	Used for fixing on the wall
Expansion rubber plug	2	Used for fixing on the wall
PET localizer	1	

Table3 MKGW2-LW Package List

2.5.2 Package Information



Figure3 MKGW2-LW Package

3 Installation

Step 1: Use 5mm drill head, drill 2 holes on the wall according to the PET localizer following picture and then plug the screw anchors in the wall.



Figure4 MKGW2-LW Installation 1

Step 2: Install the screw into the wall and keep about 3 mm of clearance.



Figure5 MKGW2-LW Installation 2

Step 3: Insert the screw head into the hanging hole behind the equipment, then gently pull down to complete the installation



Figure6 MKGW2-LW Installation 3

4 Connecting the Hardware

4.1 Connect the Gateway

1. Follow the silk screen on the enclosure and connect WiFi and LoRa antennas. Refer to Antenna Configuration for additional information.



Figure7 MKGW2-LW Botton Silk

2. Connect the power supply (Refer to **Chapter 4.2** Power up and Turn ON/OFF for additional information.).

4.2 Power Up and Turn ON/OFF



Figure8 MKGW2-LW Side Silk

- Power Up: follow the silk on the enclosure you can select different power solution.
 - 1. Micro USB:5V/2A
 - 2. DC Power Port:12V/1A
 - 3. POE Port:POE (IEEE 802.3af)
- Turn ON/OFF: After power up the gateway, it needs to push-down the power ON/OFF button to start the gateway system.

5 Log into the Gateway

1. Turn On the gateway and waiting for about 60s.

2. Using your PC or phone connect the SSID of the gateway. The default SSID format is "MKGW2-LW-xxxx" such as " MKGW2-LW-91D8 ", "91D8" is the last two bytes of the gateway MAC address. verify the password (Default: Moko4321) and connect to the gateway.

MKGW2-LW-91D8

Figure9 Gateway SSID

3. After successful connection, the WEB management platform can be accessed through the IP address 192.168.22.1 of the gateway LAN interface.

Log on using the following default credentials,

Username: Admin

Password: admin

It is recommended that the default password is changed for security reasons. For details on changing the password, please refer to **Chapter 5.2 WiFi settings**.

Sign In		
User Name		
Admin		
Password		
Enter your password		
i		
	SIGN IN	

Figure10 Log in WEB

MOKO IOT GATEWAY			🕒 Sign out
		STATUS	C REFRESH
STATUS		Device Info	
Metwork		User Name:	Admin
		Geteway SSID:	MKGW2-LW-9BE0 🗭
O SYSTEM	~	MAC Address:	30.4A:26:3F:9B:E0
Device Setting Backup&Upgrade		Firmware Version:	V0.0.2
		Local Time:	2020-06-25 16:11:32 🖸
		Uptime:	0h 33min 36s
		CPU Usage:	3%
		Memory Usage:	22%

Figure11 Gateway Status

Noted: It is recommended to use the latest version of the mainstream browsers such as IE11, Chrome, Firefox, Safari, etc.

6 Internet setting

The gateway can access the Internet through Ethernet(ETH) or WiFi, and can access the network by Automatic IP or Static IP.

Static IP requires WAN IP, subnet mask, gateway IP, DNS, etc.

After the network configuration is completed, wait for the gateway to access the network. You can check the network status in gateway STATUS web page and also can check the network LED indicator.

- No network: Solid yellow
- ETH connection: Solid blue
- WIFI connection: Solid green

6.1 Ethernet to Internet

Use a network cable to connect to the PoE port of the gateway and connect the gateway to a Network Switch that is connected to the Internet.

GATEWAY	E Des	Sign out
	iit. NETWORK - Internet Setting	
🖼 STATUS	Internet Setting	
inetwork 🗸	Internet Connection Mode: ETH V ETH: Gateway accesses the Inlernet via ETH cable.	
Internet Setting WIFI Setting LAN Setting Diagnostics	WFE Gateway accesses the Internet through the router.	
	CANCEL SAVEANTLY	
ФЭ system с		
MOKO TECHNOLOGY LTD.		

Figure12 Ethernet / Automatic IP

GATEWAY				E+ Sign out
	iit NETWORK > Internet Setting			
🕮 STATUS	Internet Setting			
Internet Setting	Internet Connection Mode:	ETH 🗸	ETH:Gateway accesses the Internet via ETH cable. WIFI:Gateway accesses the Internet through the router.	
WIFI Setting	Connection Type:	Static IP 🗸		
Diagnostics	WAN IP • :	192.168.0.120		
	Subnet Mask * :	255.255.255.0		
🛱 SYSTEM	Gateway IP • :	192.168.0.110		
	Primary DNS • :	192.168.1.1		
	Secondary DNS:	192.168.0.110		
		CANCEL SAVE&APPLY		
MOKO TECHNOLOGY LTD				

Figure13 Ethernet / Static IP

6.2 WiFi to Internet

Connect to a Wireless Router via WLAN to access the Internet. Select a wireless router and connect to it. After the configuration is complete, the gateway will restart. And the network status can be check in the **STATUS** page

GATEWAY	E Sign out
	it NETWORK - Infernet Setting
🕮 STATUS	Internet Setting
Internet Setting	Internet Connection Mode: WIFI
WIFI Setting LAN Setting Diagnostics	WIFI SSID *: Q
FUNCTION C	Password *: 8-63 characters
System 🤇	Connection Type: Automatic IP
MOKO TECHNOLOGY LTD.	

Figure14 WiFi / Automatic IP

III GATEWAY							
		SSID	MAC Address	Encrypt	Signal(%)	Channel	
	it NETWORK	Landpower	ce:08:fb:1c:f6:e8	WPA1PSKWPA2PSK/TKIPAES	26	6/2.437 GHz	
STATUS	Internet Setting	MOKO-WUHAN2	48:0e:ec:8c:88:2d	WPA1PSKWPA2PSK/AES	63	6/2.437 GHz	
11-0		TP-LINK_95BE	cc:08:fb:5c:f6:e8	WPA1PSKWPA2PSK/TKIPAES	26	6/2.437 GHz	
NETWORK	I	MKGW2-LW-9DC4	30:4a:26:5f:9d:c4	WPA1PSKWPA2PSK/TKIPAES	57	1/2.412 GHz	
Internet Setting		MKGW2-LW-A1B4	30:4a:26:5f:a1:b4	WPA1PSKWPA2PSK/TKIPAES	50	1/2.412 GHz	
LAN Setting		MKGW2-LW-9F78	30:4a:26:5f:9f:78	WPA1PSKWPA2PSK/TKIPAES	78	1/2.412 GHz	
Diagnostics							
					CAN	CEL RESCAN	
						- and a second	
SYSTEM		Connection Typ	e: Automatic IP	~			
				SAVE&APPLY			
MOKO TECHNOLOGY							
www.mokosmart.co							

Figure15 WiFi / Automatic IP Select a Wireless Router

GATEWAY		🕞 Sign out
	NETWORK > Internet Setting	
STATUS	Internet Setting	
internet Setting	Internet Connection Mode:	WIFI Clateway accesses the Internet via ETH cable. WIFI Cateway accesses the Internet through the router.
WIFI Setting LAN Setting	WIFI \$SID * :	٩
Diagnostics	Encrypt:	WPA1PSKWPA2PSK/AES V
	Password * :	8-63 characters
🕼 SYSTEM <	Connection Type:	Static IP 🗸
	WAN IP • :	192.168.0.120
	Subnet Mask * :	255.255.255.0
	Gateway IP * :	192.168.0.110
	Primary DNS*:	192.168.1.1
	Secondary DNS:	192.168.0.110
		CANCEL SAVE&APPLY
MOKO TECHNOLOGY LTD.		

Figure16 WiFi / Static IP

MOKO IOT GATEWAY		🕒 Sign out
	STATUS	O REFRESH
🕮 STATUS	Device Info	
ill_network 🗸	User Name:	Admin
Internet Setting WIFI Setting	Geteway SSID:	MK0W2-LW-91D8 🖸
LAN Setting Diagnostics	MAC Address:	68:B9:D3:D1:91:D8
	Firmware Version:	V0.0.2
🛱 SYSTEM <	Local Time:	2020-08-24 15:49:15 🗭
	Uptime:	3h 4min 20s
	CPU Usage:	25%
	Memory Usage:	23%
	Network Info	
	Wireless Standard:	802.11b/g/n
	Internet Mode:	WIFI 🌑 🖸
	WAN IP:	NA
	LAN IP:	192.168.22.1
	Channel/Frequency:	11/2.462 GHz
MOKO TECHNOLOGY LTD.	Server Access:	UDP 🔴 🚱

Figure17 Network Status Check

7 WiFi Setting

You can modify the SSID of the gateway, whether to hide the SSID, encryption mode, and password. After the configuration is complete, the gateway will be restarted for the configuration to take effect.

GATEWAY				
	METWORK > WIFI Setting			
🖺 STATUS	WIFI Setting			
Internet Setting	Gateway \$SID * :	MKGW2-LW-91D8		
WIFI Setting	Hide SSID * :			
LAN Setting Diagnostics	Encrypt:	WPA1PSKWPA2PSK/TKIPAES	~	
	New Password * :	8-63 characters	۲	
SYSTEM K	Confirm Password * :		۲	
		CANCEL SAVE&APPLY		
MOKO TECHNOLOGY LTD.				

Figure18 Gateway WiFi Setting

Supported encryption **methods**:

- WPA1PSKWPA2PSK/TKIPAES (Default)
- WPA1PSKWPA2PSK/AES
- WPA2PSK/TKIPAES
- WPA2PSK/AES
- WPA2PSK/TKIP
- WPAPSK/TKIPAES
- WPAPSK/AES
- WPAPSK/TKIP
- WEP
- NONE(No encryption)

8 LAN Setting

You can modify the gateway LAN IP and subnet mask. After the configuration is complete, the gateway will be restarted for the configuration to take effect.

		E• Sign out
	II NETWORK > LAN Setting	
🖽 STATUS	LAN Setting	
Internet Setting WIFI Setting Diagnostics Internet Setting Diagnostics System	LAN IP + : LAN Mask + : DHCP Server:	192.168.22.1 255.255.0 YES ↓ CANCEL SAVE&APPLY
MOKO TECHNOLOGY LTD. www.mokosmarl.com		

Figure19 Gateway LAN Setting

9 Diagnostics

You can check the current network connection through the Diagnostics. Fill in the IP address and select the network type, and use ping to check the network, it will display ping result.



Figure20 Gateway Network Diagnostics

10 Server Access

MKGW2-LW LoRaWAN gateway only support Semtech UDP Packet Forwarder to access the LoRa server now.

You need to fill in the LoRa Server Address, Server Up Port, Server Down Port, and select the Frequency, Channel and HeartBeat.

After the LoRa server connect successfully, you can check the server access status in gateway STATUS web page and also can check the LoRa server communication LED indicator that should be solid green.

MOKO IOT GATEWAY		=			Đ
		FUNCTION > Server Access			
🖼 STATUS		Server Access			
ill_ NETWORK	<	Access Mode:	UDP	*	
	~	Protocol:	Semtech UDP Packet Forward 🗸		
Server Access		Server Address * :			
STOLEM		Server Up Port * :			
		Server Down Port * :			
		GateWay ID:	68B9D3FFFED191D8		
		Frequency:	915 🗸		
		Channel:	US915_CH00-07_64 ~		
		HeartBeat:	10S 🗸		
			CANCEL SAVE&APPLY		
MOKO TECHNOLOGY L	LTD.				

Figure21 Gateway Server configuration

GATEWAY	E	E Sign out
	STATUS	O REFRESH
🕮 STATUS	Device Info	
<u>ii</u> ™network <	User Name:	Admin
FUNCTION	Geteway SSID:	MKGW2-LW-91D8 🗹
Server Access	MAC Address:	68 B9:D3:D1:91:D8
& SYSTEM <	Firmware Version:	V0.0.2
	Local Time:	2020-08-24 19:37:57 🖸
	Uptime:	2h 34min 45s
	CPU Usage:	0%
	Memory Usage:	23%
	Network Info	
	Wireless Standard:	802.11b/g/n
	Internet Mode:	WIFI 🔮 🖸
	WAN IP:	192.168.0.120
	LAN IP:	192.168.22.1
	Channel/Frequency:	11/2.462 GHz
MOKO TECHNOLOGY LTD.	Server Access:	UDP 🔴 🖸

Figure22 Gateway Server Connection Check

11 System setting

11.1 Device setting

11.1.1 Modify Login Password

User can modify the password for logging in configuration web UI;

The login user name is"Admin" (unmodifiable);

The length of password is 1-64 characters and needs to be verified with the old password.

GATEWAY		=				🕞 Sign out
		SYSTEM > Device Setting				
🖾 STATUS		Admin Password				
過 NETWORK		User Name:	Admin			
FUNCTION		Old Password:	1-64 characters	۲		
SYSTEM	~	New Password:	1-64 characters	۲		
Device Setting Backup&Upgrade		Confirm Password:		۲		
			CANCEL SAVE&A	PPLY		

Figure23 Gateway Login Password Modify

11.1.2 Time Configuration

User selects the time zone, and then checks" Set Automatically". The NTP server follows the default settings and automatically updates to the current time in the time zone;

If the user needs to set the time to match the local browser time, close "Set Automatically" and click"Sync With Browser" to update to the current browser time.

Time Configuration		
Local Time:	2020-08-24 19:45:45 Sync With Browser	
Time Zone:	Asia/Shanghai 🗸	
Set Automatically:		
NTP Server Candidates * :	0.openwrt.pool.ntp.org	Θ
	1.openwrt.pool.ntp.org	Θ
	2.openwrt.pool.ntp.org	Θ
	3.openwrt.pool.ntp.org	$\odot \odot$
	CANCEL SAVE&APPLY	

Figure24 Gateway Time Configuration

11.1.3 Restart

Click "Restart" and the gateway will restart immediately;

The user can turn on the "Automatic Restart" function (Closed by default) and set the time for the gateway to automatically restart each day. This operation can free up system RAM and ensures that the system runs smoothly and steadily.

Restart			
Restart The Gateway:	Restart		
Automatic Restart:	□ TIME 00 ¥ 00	*	
	CANCEL SAVE&AP	PPLY	

Figure25 Gateway Restart Configuration

11.1.4 Log

Once the user finds the device abnormal during use, the system Log File and LoRa Packet Log file can be downloaded to the local. Please send the log file to MOKO to check the system error.

ogging			
Download Log File:	Generate Log		
Download LoRa Packet Log File:	Generate Log		

Figure26 Gateway Log File

11.1.5 LED Configuration

User can turn off the device LED. After saving, the operation takes effect immediately

In the state of turning off the LED, if the system is abnormal or the system is upgraded, the LED will still be enabled.

LED Configuration					
LED Indication:	Enable				
	CANCEL	SAVE&APPLY			

Figure27 Gateway LED Configuration

11.2 Backup & Upgrade

11.2.1 Backup

User can download the configured parameter file of the gateway to the local;

User can directly import the configured file into the current system. After the device is restarted, the configuration will take effect.

SYSTEM > Backup&Upgrade			
Backup			
Download Backup: Restore Backup: Reset To Defaults:	Generate Archive Choose File No file chosen Perform	Upload Archive	

Figure28 Gateway Configuration File Download and Upload

11.2.2 Upgrade

User can upgrade the system by uploading Upgrade File in WEB. You can check "Whether to save the configuration" to ensure that the upgraded system parameters are consistent with the current system configuration parameters.



Figure29 Gateway Firmware Upgrade On-line

USB upgrade method:

Step1. Copy the upgrade file named "MKGW2-LW-Upgrade.bin" to the USB flash drive; Step2. Insert the USB flash drive into the gateway USB Port, short press the RESET button, and power LED will blink green that indicate the device upgrading now. With USB upgrade, the gateway will automatically save the current system configuration parameters.

12 Restore Factory Settings

Press the reset button and hold on 5 seconds, then release, you can see the gateway restart again and all LED turn to yellow. The gateway will restore factory setting and all gateway information need to be configure again.

13 Configuration with TTN

Before setting up a gateway with TTN server, we need configure Server Address, Server Up Port, Server Down Port in the gateway configuration WEB, and get the gateway ID.We use EU868 as a examples in below instructions.

Other frequency band server address of TTN please refer to TTN website: https://www.thethingsnetwork.org/docs/gateways/packet-forwarder/semtech-udp.html

Examples gateway ID: 68B9D3FFFED191D8

GATEWAY			₽ se	gn ou
		FUNCTION > Server Access		
STATUS		Server Access		
Metwork	<	Access Mode:	UDP v	
	~	Protocol:	Semtech UDP Packet Forwarder	
Server Access		Server Address • :	Touter eu thethings network	
SYSTEM	<	Server Up Port - :	1700	
		Server Down Port - :	1700	
		GateWay ID:	6889D3FFFED191D8	
		Frequency:	866 ~	
		Channel:	EU888 V	
		HeartBeat:	105 🗸	
			CANCEL SAVE&APPLY	
MOKO TECHNOLOGY L	TD. 11			

Figure30 Gateway Server Address Configuration

13.1 Set up your account with TTN

TTN web link:<u>https://www.thethingsnetwork.org/</u> Create an account or log in to your existing TTN account:

HET WINGS			
		THE THINGS	
		Please log in	
	I	EMAIL OR USERNAME	
	र (irisli	
	I	PASSWORD	
	ि		
		Log in	
		Forgot your password? Create an account	

Figure31 TTN Login Page

13.2 Register your gateway with TTN

1. After login your TTN account, go into the CONSOLE page.And click the gateway.

	E THINGS		сом	NSC	DLE Y ED	TION																		Appli	cation	IS	Gate	ways	Su	ipport	~) iris	li	~
		TI	This	is wh	ere	the	magi	c hap	pens	. Hei	re you	u can	We worl	elcor k wit	me to T th your collab	he Ti data orato	li, i hing a. Reą ors a	iris Is Net giste and se	ii! twork er appl etting	k Cor Ilicati gs.	nsole. ions, d	evice	s and	d gate	ways	, man	age y	your in	tegr	ations,				
											3																0							
						A	PP	LIC	AT	10	NS													GA.	TEV	VA	rs							
Figure	32 T	Т	ĪN	С	01	าร	ol	e F	Pa	ge																								
	HETHINGS ETWORK	S K	CO	NS	OL	E	N																	А	pplica	tions	C	Gatewa	ys	Suppor	t	9	irisli	
	Gateway	ays																																
	GAT	TE	w	YS																										🕕 regis	ter ga	teway.]	

Figure33 Register gateway

Fill in the gateway ID obtain from gateway Web(Examples gateway ID:
 68B9D3FFFED191D8), forwarder: Semtech packet forwarder, and frequency plan.

teways > Register	
Gateway EUI The EUI of the gateway as read from the LoRa m	odule
68 B9 D3 FF FE D1 91 D8	
I'm using the legacy packet forward Select this if you are using the legacy <u>Serie</u>	er ch packet forwarder.
Description A human-readable description of the gateway	
MKGW2-LW-91D8	
Frequency Plan The <u>frequency plan</u> this gateway will use	
Europe 868MHz	
Router The router this gateway will connect to. To redu ttn-router-eu	ce latency, pick a router that is in a region which is close to the location of the gateway.
Location The exact location of you gateway. This will be u	sed If your gateway cannot determine its location by itself. Set a location by clicking on the map.
Location The exact location of you gateway. This will be u	sed If your gateway cannot determine its location by itself. Set a location by clicking on the map.
Location The exact location of you gateway. This will be u	sed If your gateway cannot determine its location by itself. Set a location by clicking on the map. lat 0.000 ing 0.000 R 1
Location The exact location of you gateway. This will be u	sed If your gateway cannot determine its location by itself. Set a location by clicking on the map. Iat 0.000 Ing 0.000 St 1
Location The exact location of you gateway. This will be u	sed If your gateway cannot determine its location by itself. Set a location by clicking on the map. Int 0.000 Ing 0.000 St 1
Location The exact location of you gateway. This will be u	sed If your gateway cannot determine its location by itself. Set a location by clicking on the map.
Location The exact location of you gateway. This will be u	sed If your gateway cannot determine its location by itself. Set a location by clicking on the map.

Figure34 Register gateway

3. After the gateway register successfully, you can check the status.

NETWORK COMM	ISOLE	ION				Applica	itions	Gateways	Support	A iris	li
iteways > 🏷 eui-68b9d3	fffed191d	3									
									Overview	Traffic	Setting
GATEWAY OVERVIE	w										O <u>setting</u>
Gateway ID Description Owner Status Frequency Plan	eui-68 MKGW2 MKGW2 irisl conne	o9d3fffed1 -LW-91D8 i <u>1 Tra</u> octed 868MHz	<u>nsfer own</u>	<u>ership</u>							
Router	ttn-route	r-eu									
Gateway Key	•				 					base64	Ë
	1 minute	ago									
Last Seen	10										

Figure35 Gateway Status Check

13.3 Create an Application with TTN

- 1. Click **Applications** in the top menu of TTN website and Add Application.
- 2. Fill in the application information and click Add application.

Application ID	
ne unique identifier of your application on the network	
Iw004panicbutton	
Description	
human readable description of your new app	
test gateway	
Jandlor registration	
elect the handler you want to register this application to	
the handler you want to register this application to the handler eu	
telect the handler you want to register this application to the handler-eu	
telect the handler you want to register this application to the handler-eu	
the handler you want to register this application to the handler eu	

Figure36 Add Application

13.4 Register Your End-device with TTN

1. After create the application, click the **register device** in the application screen.

THE THINGS CONSOLE N E T W O R K COMMUNITY EDITION		Applic	cations Gateway	s Support	A iris	li v
Applications > 😂 Iw004panicbutton						
	Overview	Devices	Payload Formats	Integrations	Data	Settings
APPLICATION OVERVIEW						
Application ID Iw004panicbutton Description test gateway Created 2 hours ago Handler ttn-handler-eu (current handler)					do	cumentation
APPLICATION EUIS					0 1	manag <u>e euis</u>
↔ 並 70 B3 D5 7E D0 03 3C 23 直						
DEVICES			[🏮 <u>register devic</u>	e o mar	iage devices
ą <u></u>)	0 registe	ered devices				

Figure37 Application Screen

2. Fill in the device ID and EUI in the **Register Device** page. We will use our end device LW004-PB as an example in below.

Noted: The end device frequency should be the same as the gateway.

		Overview	Devices	Payload Formats	Integrations	Data	Setting
EGISTER DEVICE						bulk im	port devic
Device ID	r the device in this app. The d	evice ID will be immutable.					
This is the unique identifier for							
This is the unique identifier for Iw004-pb-test Device EUI	lansifiar far this davice on the	n network. You can change th	Ellistor				0
This is the unique identifier for Iw004-pb-test Device EUI The device EUI is the unique id E0 80 EC FF FF CO App Key The App Key will be used to se	dentifier for this device on the 85 C5 cure the communication betw	e network. You can change th ween you device and the netv	e EUI later. vork.			•	© 8 bytes
This is the unique identifier for Iw004-pb-test Device EUI The device EUI is the unique id E0 80 EC FF FF CO App Key The App Key will be used to se	dentifier for this device on the 85 C5 cure the communication betw	e network. You can change the ween you device and the netw this field will be genera	e EUI later. vork. ted			•	© 8 bytes
This is the unique identifier for Iw004-pb-test Device EUI The device EUI is the unique id E0 80 EC FF FF CO App Key The App Key will be used to se App EUI	dentifier for this device on the 85 C5 cure the communication betw	e network. You can change the ween you device and the netw this field will be genera	e EUI later. vork.			•	8 bytes

Figure38 Register Device

3. TTN server will generate the Application EUI and App Key after register the device.We need to configure the end device and keep the same the Application EUI and App Key. For the end device parameter configuration please refer to our actual device user manual.

							Overview	Data	Settings
DEVICE OVERVIEW									
Application ID	lw004panicbutto	on							
Device ID	lw004-pb-test								
Activation Method	OTAA								
Activation Method	OTAA ↔ ≒ E0 80) EC FF FF CØ 85 C5	凿						
Activation Method Device EUI Application EUI	OTAA ↔ # E0 80 ↔ # 70 83	9 EC FF FF C0 85 C5 8 D5 7E D0 03 3C 23	出						
Activation Method Device EUI Application EUI App Key	OTAA ↔ ± E0 80 ↔ ± 70 83 ↔ ± 70 83	9 EC FF FF C0 85 C5 9 D5 7E D0 03 3C 23 95 81 D0 9D 2C 76 03	唐 唐 F4 79 10) B BE 59 15 6E 92	39 🖆]			

Figure39 TTN Device EUI, Application EUI, App Key

4. After device parameter configure to the same with TTN and connect the TTN server successfully, you can check the device status and data in the TTN device page.

													Overview	Data	Setting
DEVICE OVERVIEW															
Application ID	Iwoc)4par	icbut	on											
Device ID	w004-	-pb-te	est												
Activation Method	OTA	A													
Device EUI	\diamond	#	E0 8	0 EC FF F	F CØ 8	5 C5	Ë								
Application EUI	0	Ħ	70 8	3 D5 7E C	00 03 30	23	Ē								
Арр Кеу	0	#	0					 	•••••	•	ŧ.				
Device Address	0	÷	26 0	1 28 0B	Ē										
Network Session Key	0	÷	0					 	·· ·· ·	•	É				
App Session Key	$^{\circ}$	#	0					 	•• •• •	s	É				
Status	• 2 m	ninute	s ago	1											
				-											

Figure40 TTN Device Status Check

													Overview	Data	s
PPLICA	TION	DATA												II pau	<u>se</u> 1
Filters	uplink	downlink	activation	ack	error										
	time	counter	port												
▲ 15:00	0:28	1	222	рау	oad: 3F	00 00	00 00 0	0 00 00 0	0 00 DC 39	D3 E2 6E	88 00 1A I	F F8 03 E	E 00 01		

Figure41 TTN Device Uplink Data

14 Gateway Default Frequency

Frequency	Channel NO.	Uplink Frequency(MHZ)
EU868	0-7	868.1, 868.3, 868.5, 867.1, 867.3, 867.5, 867.7, 867.9
IN865	0-7	865.0625, 865.4025, 865.985, 865.2625, 865.6625, 866.185, 866.385, 866.585
US915	0-7,64	902.3, 902.5, 902.7, 902.9, 903.1, 903.3, 903.5, 903.7, 903.0
	8-15,65	903.9, 904.1, 904.3, 904.5, 904.7, 904.9, 905.1, 905.3,904.6
	16-23,66	905.5, 905.7, 905.9, 906.1, 906.3, 906.5, 906.7, 906.9, 906.2,
	24-31,67	907.1, 907.3, 907.5, 907.7, 907.9, 908.1, 908.3, 908.5, 907.8
	32-39,68	908.7, 908.9, 909.1, 909.3, 909.5, 909.7, 909.9, 910.1, 909.4
	40-47,69	910.3, 910.5, 910.7, 910.9, 911.1, 911.3, 911.5, 911.7, 911
	48-55,70	911.9, 912.1, 912.3, 912.5, 912.7, 912.9, 913.1, 913.3, 912.6
	55-63,71	913.5, 913.7, 913.9, 914.1, 914.3, 914.5, 914.7, 914.9, 914.2
AU915	0-7,64	915.2, 915.4, 915.6, 915.8, 916.0, 916.2, 916.4, 916.6, 915.9
	8-15,65	916.8, 917.0, 917.2, 917.4, 917.6, 917.8, 918.0, 918.2, 917.5
	16-23,66	918.4, 918.6, 918.8, 919.0, 919.2, 919.4, 919.6, 919.8, 919.1
	24-31,67	920.0, 920.2, 920.4, 920.6, 920.8, 921.0, 921.2, 921.4, 920.7
	32-39,68	921.6, 921.8, 922.0, 922.2, 922.4, 922.6, 922.8, 923.0, 922.3
	40-47,69	923.2, 923.4, 923.6, 923.8, 924.0, 924.2, 924.4, 924.6, 923.9
	48-55,70	924.8, 925.0, 925.2, 925.4, 925.6, 925.8, 926.0, 926.2, 925.5
	56-63,71	926.4, 926.6, 926.8, 927.0, 927.2, 927.4, 927.6, 927.8, 927.1
AS923	0-7	923.2, 923.4, 923.6, 923.8, 923.8, 924.0, 924.2, 924.4, 924.6,924.5

Table4 Default Frequency

15 Maintenance Instruction

• Do not use or store the device in dusty or dirty areas.

• Do not use or store the device in extremely hot temperatures. High temperatures may damage the device.

• Do not use or store the device in extremely cold temperatures .when the device warms to its

normal temperature, moisture can form inside the device and damage the device.

- Do not drop ,knock, or shake the device. Rough handing would break it.
- Do not use strong chemicals or washing to clean the device.
- Do not paint the device ,paint would cause improper operation
- Do not disassemble the device casually or use the tools for maintenance without permission

• Handle your device, and accessories with care. The suggestions above help you keep your device operational.

16 Revision

Version	Description	Editor	Date
1.0	Initial Version	Iris	2020/8/26
1.1	 Update document format Add TTN server address link Add gateway default frequency 	Iris	2020/12/10

The contents of this documents are subject to change without prior notice for further improvement.

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