

DF702_LoRa Configuration manual



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CNDingtek Technology Company



IOT Leading Brand

The purpose of Measurement, Instrumentation, and Sensors Handbook CNDingtek is to provide a

reference that is both concise and useful for engineers in industry, scientists, designers, managers, research personnel and protocol, as well as many others who have measurement problems.

We provide to our Customer Protocol,Installation , Operation and Configuration detailed of devices.

A Smart City Project of CNDingtek Technology Company

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1 Overview

In these documents information about of LoRa Module DF702 Trash Bin Sensor are given with detailed.

- The function of device
- Hardware interface
- How to set LoRa module parameters
- Equipment parameters (full height value, upload interval data etc)
- Equipment upgrades

For more information if you have any questions, please contact us first.

2 Device Function Descriptions

Note

Device will upload data when its power is activated it can send us data automatically to the user through LoRa Module.

Main Function of Device

LoRa Module DF702 Sensor can give detailed about the using place for example Trash Bin its full Detection, fire detection, fall Detection , Full ,Half and Empty Condition of Device and about the power Detection of Sensor.

Notes: the standard version does not have the fall detection, only the enhanced version has this function.

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Main Function	Functional Descriptio n	Default Alarm Threshold	Whether the data will be reported immediately when the alarm condition is reached	Remarks
Full	Check if the Trash bin is full	30cm (Can be modified)	No	The Device will detect the Distance between sensor and garbage if this Distance is more Then 30cm no alarm if less than 30 cm alarm will be activated.
Fire	Detect if a fire has been occurred	75℃ (Can be modified above 75℃ Fire alarm will be activated)	Yes	Detected temperature is less than 75°C above this Temperature sensor will activate the alarm.
Fall	Check whether the trash Bin can fallen any side			This feature is available in enhanced version not in slandered version.
Battery	Check if the battery is about to run out	20% (Can be modified)	No	It will detect the power of battery more than 20% no alarm less than 20% alarm will be activated.

Data Time Intervals

For example Test time data every 10 minutes, when a change of state is detected the data will be upload, the state remains unchanged in next intervals, and no data will be uploaded. The data will be uploaded periodically like as heartbeat the data interval default 4 hours can be modified, specific reference to the agreement.

State change means:

From full to not from Not from to full



For example:	Time	State	Upload data or no
	10:10	full	Yes (Battery Should be connected)
	10:20	full	No
	10:30	not full	Yes
	10:40	not full	No
	10:50	full	Yes

3 The Main LoRa Band Introduction

The main LoRa band are used given below CN470, EU868, US915, AU915, AS923.

Band	The default uplink frequency	The default downlink frequency(RXWIN1)	The default downlink frequency (RXWIN2)
CN470 (470-510MHz)	470.3,470.5,470.7,470.9, 471.1,471.3,471.5,471.7,	500.3,500.5,500.7,500. 9 501.1,501.3,501.5,501. 7	505.3
EU868 (863-870MHz)	868.1,868.3,868.5	868.1,868.3,868.5	869.525
US915 (902-928MHz)	902.3,902.5,902.7,902.9, 903.1,903.3,903.5,903.7	923.3,923.9,924.5,925. 1 925.7,926.3,926.9,927. 5	923.3
AU915 (915-928MHz)	915.2,915.4,915.6,915.8 916.0,916.2,916.4,916.6	923.3,923.9,924.5,925. 1 925.7,926.3,926.9,927. 5	923.3
AS923 (915-928MHz)	923.2,923.4	923.2,923.4	923.2

4 Device Interface Definition

In the given figure, the power interface, module configuration debugging, interface, device parameter configuration and upgrade interface are introduced respectively with detailed. In figure 4.1 PCB board is shown and all connecting parts are also shown which part where will be placed.

4.1 Connection of Hollow Sockets

- **Power socket**: connect the battery
- **Hollow positions**: Configure the LoRa module parameters or debug module the jumper cap should be placed in a hollow position.
- **Solid position**: The default position the device to transmit data/configure device parameters such as data upload interval and full height the jumper cap should be placed at right side a solid position.





• 4.2 Reverse side of picture of PCB board (open the Screws of PCB Board) as shown in figure 4.2.





Figure4.2

5 Configure LoRa parameters

LoRa can be configured according to the relevant parameters such as devaddr, deveui and nwkskey are helpful in configuration process.

• Required tools for configuration of LoRa Device

- TTL and its cable
- Serial software
- LoRa instruction manual
- Equipment
- TTL and cable for the goods accessories

Please check these two items when you receive package from company as shown in Figure 5.1 and Figure 5.2.





5.2 Connect TTL to sensor

Device Serial Port connection GND, TX, and RX locations have been marked on the diagram as shown in Figure 5.3.





Figure5.3

Connect TTL to device, as shown in Figure 5.4.



Steps

1 Change jumper cap to hollow position (default it is in the solid position) as shown in figure 5.5.

2 Connect the TTL to the device as shown in figure 5.4.

3 Connect the device's power supply, as shown in figure 5.6.







Figure5.6

5.3 Environment to Configuration of Device

1 Open the serial software when opening, the default information of serial port software is shown in figure 5.7.



••	Connllart	Assistant	(¥3.8))	×
COMSettings PortNum BaudR 9600 DPaity NONE DataB 8 StopB 1 COpen Receive to file Show timestamp Receive pause Save Save Sead Options Data from file Auto checksum Auto clear input Send as hex Send option	-COM port data rece	ive			
Interval 1000 ms j	http://www.cmsof	t. cn QQ:10865600)		Send
👉 Ready!		Se	end:0	Recv:0	Reset

Figure5.7

2 Select the serial of configuration of serial software

- Port number (you can select port Number from device manager of your system) •
- Set the baud rate: 115200, (DF702 is 115200 baud rate and D0100 is 9600) •
- Parity bit: NONE •
- Data bits: 8 •
- Stop bit: 1 •

As shown in figure 5.8 you can follow the given instruction.



· · ·	ConnUart Assistant (V3.8) - 🗆 🗙
COMSettings PortNum COM16 BaudR 115200 DPaity NONE DataB 8 StopB 1 Close	COM port data receive +ID: DevAddr, 01:7D:53:74 +ID: DevEui, 47:68:B2:69:00:2A:00:43 +ID: AppEui, 52:69:73:69:6E:67:48:46
Recv Options Receive to file Show timestamp Receive as hex Receive pause Save	
Send Options Data from file Auto checksum Auto clear input Send as hex Send cyclic Interval 500 ms	AT+ID command notes: please click enter ,then send the Send
F Ready!	Send: 11 Recv: 112 Reset

Figure 5.8

3 when you send as related commandos of configuration and related parameters to the serial software, such as devaddr, nwkskey, etc. (please refer to the specific instruction format LoRa instruction manual).

Sending First Command

send input command:AT+ID, (read all) as shown in figure5.8.

Response of Device

+ID: DevAddr, 01:7D:53:74 +ID: DevEui, 47:68:B2:69:00:2A:00:43 +ID: AppEui, 52:69:73:69:6E:67:48:46

Sending Second Command

AT+KEY=NWKSKEY,"6132f00ad1efd2d4af5e12f8ef745d8b" (set nwkskey),as shown in figure5.9.

Response of Device +KEY: NWKSKEY 6132F00AD1EFD2D4AF5E12F8EF745D8B As shown below:



	CommUart Assistant (V3.8)	<u> </u>
COMSettings	COM port data receive	
PortNum COM16	+KEY: NWKSKEY 6132F00AD1EFD2D4AF5E12F8EF745D8B	
BaudR 115200 -		
DPaity NONE -		
DataB 8 🚽		
StopB 1		
Close		
Recv Options	-	
TReceive to file		
🔲 Show timestamp		
🥅 Receive as hex		
🥅 Receive pause		
Save Clear		
Send Options		
🔲 Data from file		
🔲 Auto checksum		
🥅 Auto clear input		
🗌 Send as hex		
🗌 Send cyclic	AT+KEY=NWKSKEY, "6132f00ad1efd2d4af5e12f8ef745d8b"	_
Interval 500 ms		Send
Load Clear		0.0114

Figure5.9

Reference instruction:

Set DEVADDR:

AT+ID=DevAddr, "4 bytes length hex identifier" eg: AT+ID=DevAddr, "01234567"

Set DEVEUI:

AT+ID= DevEui, "8 bytes length hex identifier (64bits)" eg: AT+ID=DevEui, "0123456789ABCDEF"

Set NWKSKEY: AT+KEY=NWKSKEY, "16 bytes length key" eg: AT+KEY=NWKSKEY,"2B7E151628AED2A6ABF7158809CF4F3C"

Set APPSKEY AT+KEY=APPSKEY, "16 bytes length key" eg: AT+KEY=APPSKEY,"2B7E151628AED2A6ABF7158809CF4F3C" Detailed instructions, please refer to the [RHF-PS01509] LoRawan Class AC AT Command Specification - v4.3.pdf document

Note: If you are facing following problems you can overcome easy way.

• Make sure the position of the jumper cap is switched to the hollow position. If it is placed at solid position module configuration cannot be completed.

D

- Check if TTL and device RX, TX connection is correct, if the connection is wrong, there will be no reply sending instructions.
- Confirm the baud rate is the correct choice of baud rate, the correct should be 115200.

5.4 Video link

Configuration of Lora parameter DF702 Smart Trash Bin Sensor is shown with detailed you can follow these instructions as well as click at video link.

https://youtu.be/nklTd88SPXI

6 Configurations of Relevant Parameters of Device

Through the configuration, you can also modify the relevant parameters of the device such as alarm height value, temperature value, battery level and etc.

6.1 Required tools

- A TTL and cable
- Serial software
- Equipment
- Protocol manual









Serial software

6.2 Connect TTL to sensor

Device serial port GND, TX and RX positions have been marked on the diagram.Upper diagram the connection of RX,TX,and GND is given with detailed if you not connect properly then you cannot configure your device properly.





Figure6.3

TTL and Device ports connection are shown in the figure 6.4.



Steps:

1 Confirm that the jumper cap is at the solid position (jumper cap defaults to solid position) as shown in figure 6.5.



2 Connect TTL to sensor, as shown in figure6.4 and figure6.6





Figure6.6

6.3 Use serial software to configure

- Open the serial software
- Select the serial port number
- Set the baud rate: 115200
- Parity bit: NONE
- Data bits: 8
- Stop bit: 1
- Connect the device's power

When you see the serial port output sending instructions are in Hexadecimal then we will change the format of serial software sending option .

Data is sent in hexadecimal format (please refer to instruction format for details).



••	CommUart Assistant (V3.8) <u> ×</u>
COMSettings PortNum COM8 BaudR 115200 DPaity NONE DataB 8 StopB 1 Close Recev Options Receive to file Show timestamp Receive as hex Receive pause Save Clear Send Options	COM port data receive	
Data from file Auto checksum Auto clear input Send as hex Send cyclic Interval 500 ms Load Clear	Coult 0	Send
🕼 COMSettings	Send:0	Recv:1 Reset

Figure6.7

Note

Before sending the command, please first click the "enter" and then click Send .

Example 1: change upload time to an hour the instruction is: 99990101 as shown in Figure 6.8.



	CommUart Assistant (V3.8)	<u> :</u>
COMSettings PortNum COM8 BaudR 115200 DBaite NONE	COM port data receive	-
DataB 8 StopB 1 Close	timeout!! user program is running !! time is 9823 time is 9827 adc temp is 3.39	
Recv Options Receive to file Show timestamp Receive as hex Receive pause Save Clear	0 0 56 0 1 alarm AT+MODE=LWABP time is 9827 HEXTYPE is start report interval is 1 h	E
Send Options	reply	-
 Auto checksum Auto clear input ✓ Send as hex □ Send cyclic Interval 500 ms Load Clear 	99990101 Note:click on the line "enter", then click send	Send
🌮 Ready!	Send: 4 Recv: 500	Reset

Figure6.8

Note: For the format of the instruction, please refer to the protocol document of the corresponding equipment.

Notes:

- 1. When the device is at Sleep mode sending instructions will be invalid.
- 2. Before sending instructions please click enter, and then send.
- 3. The command is sent in hexadecimal format except for configuring APN for details refer to the protocol.
- 4. Check whether the RX and TX of the TTL and the device are correctly connected. If the connection is reversed no output is displayed on the serial port after the device is powered on, and the device cannot be configured.



6.4 Video link

Configuration of Lora parameter DF702 Smart Trash Bin Sensor is shown with detailed you can follow these instructions as well as click at video link.

https://youtu.be/99gA-TYWf8g

7 Upgrade devices

7.1 Instructions

Dear customer if you want to upgrade the files you need to contact us to gets information about new version and use our software to upgrade the files.

If device has special requirements or needs to be customized please contact sales department for confirmation. If there is no special features it is not recommended to upgrade the equipment.

7.2 Tools

- A TTL and cable
- Serial software
- HyperTerminal software
- Program files

7.3 Connect TTL to sensor

Device serial port definition: GND, TX and RX positions have been marked on the diagram as shown in figure7.2.







TTL and device connection as shown in figure 7.3:



• Confirm that the jumper cap is in the solid position (jumper cap defaults to solid position), as shown in figure 7.4.





3 Connect TTL to sensor, as shown in figure 7.3 and figure 7.5.





Figure7.5

7.4 Upgrade steps

7.4.1 Steps

Up gradation of device can be possible to following the steps

- Open the serial software
- select the desired serial port
- set the baud rate: 115200
- parity: None
- data bits: 8
- stop bit: 1



••/	ConnUart	Assistant	(V3. 8)		- □ ×
COMSettings PortNum COM16 BaudR 115200 DPaity NONE DataB 8 StopB 1 Compen Receive to file Show timestamp Receive as hex Receive pause Save Clear	COM port data rece	ive			
Send Options Data from file Auto checksum Auto clear input Send as hex Send cyclic Interval 500 ms Load Clear	\$				Send
💣 COMSettings		Sei	nd : 582	Recv: 0	Reset

Figure7.7

• 7.4.2 Step

Click the Open button, enter \$ in the input box click the Enter, as shown in the figure 7.7 set the time interval to 500mm or <500mm check the cycle to send options click send.



	ConnUart /	Assistant	(V3.8)	7-0
COMSettings	COM port data receiv	e		
PortNum				
BaudR 115200 -				
DPaity NONE -				
DataB 8 🖃				
StopB 1				
🤶 Close				
Recv Options				
TReceive to file				
🦳 Show timestamp				
TReceive as hex				
T Receive pause				
Save Clear				
Send Options				
🔲 Data from file				
TAuto checksum				
🦳 Auto clear input				
Send as hex				
✓ Send cyclic				
Interval 500 ms	5			
Load Clear				Send
10 1000 V				



••	CommUart Assistant (V3.8)	(×
COMSettings	COM port data receive	
PortNum COM16 -		
BaudR 115200 👻	= (C) COPYRIGHT 2017 Dingtek =	
DPaity NONE 🚽		8
DataB 8 💌		
StopB 1	0	
Close	Main Menu	0
	Download Image To the STM32F10x Internal Flash u	
Recv Options		
Receive to file	Execute The New Program e	
Show timestamp		
Receive as nex	Truslid Wombow 1> The number should be either u or a	
Save Clear	Invalid Number ! ==> The number should be either u or e	
Send Options	Invalid Number ! ==> The number should be either u or e	
☐ Data from file		
Auto checksum		
🦳 Auto clear input		
☐ Send as hex		
Send cyclic		
Interval 500 ms	\$	
Load Clear		Stop
👉 Sending data	Send : 735 Recv : 604	Reset

Figure7.6

7.4.3 Restart the device you can see as given Figure 7.6 .Next input is u click on the line and Click send you can gets output result: ccccccc

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	CommUart Assistant (V3.8)	2-0
COMSettings	COM port data receive	
PortNum COM16 -	THAGTIG WANDET :) THE HANDET FRONTE DE ELCHEL E OF E	
BaudR 115200 -	Invalid Number ! ==> The number should be either u or e	
DPaity NONE	Invalid Number ! ==> The number should be either u or e	
DataB 8 🗾	Invalid Number ! ==> The number should be either u or e	
StopB 1	Invalid Number ! ==> The number should be either u or e	
· Close	Invalid Number ! ==> The number should be either u or e	
Recv Options ┌─ Receive to file	Invalid Number ! ==> The number should be either u or e	
└── Show timestamp	Invalid Number ! ==> The number should be either u or e	
Receive as nex	Invalid Number ! ==> The number should be either u or e	r
Save Clear	Waiting for the file to be sent (press 'a' to abort)	
Send Options		
🔽 Data from file	CCC	-
🗌 Auto checksum	CCC	
🖵 Auto clear input	CCC	
🔽 Send as hex		_
Send cyclic	ccc	
Interval 500 ms	u l	
Load Clear		Stop
		4

7.4.4 When you receive Output result cccccc then click at close of this Serial port software.

7.4.5 Before open the Hyperterm exe file please close the Serial software it is necessary step.



文件(F) 編辑(E) 查看(V) I具(T) 帮助(H) 组织 ▼ 回 打开 共享 ▼ 新建文件夹 ★ 收藏夹	.v. •	
组织 ▼ 國 打开 共享 ▼ 新建文件夹		
 ▶ 下载 ● 新建文件夹 o当下使用, 小说明书∞. ● 新建文件夹 o当下使用, 小说明书∞. ● 5v-2017 0330.hex ● bticons.dll hypertrm. dll ● win exe ● v1./ ● 図片 ● 文档 ● 通 迅雷下载 ● 音乐 ● 許知 	dows 7 级终端 .01 绿色 版	更多精彩软 件下载。 html
hypertrm.exe 修改日期: 2016-11-21 9:07 创建日期: 2017-01-18 9:27 应用程序 大小 27.5 KB		



7.4.6 Open the software Hyperterm exe as shown in Figure 7.10 dialog box, enter 1 in the name bar, and click OK Figure7.11.

You can see Figure 7.12 dialog box, select the desired serial port, in Figure selected port is such as COM16, and then click OK.

The Figure 7.13 dialog box appears selects the following steps in dialog box.

- Select baud rate: 115200
- Parity: None •
- Data Bits: 8 •
- Stop Bits: 1 •
- Data Flow Control bits: 1 •

After selecting the dialog box then Click OK.



• 新建连接 - 超级终端		
文件(F) 編辑(E) 查看(V) 呼叫(C)	(专连(T) 帮助(H)	
	连接描述 ② ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●	
斯开自动检测 自动检测 igure7.10	SCROLL CAPS NUM 捕 打印	
新建连接 - 超级终端		C 0 0
(件(F) 編輯(E) 查看(V) 呼叫(C) (이 글 응 응 마 권) PP	专送(T) 帮助(H)	
	 注接描述 ● ■ ● ● ● ● ● ● <	

Figure7.11



 1 - 超級終端 文件(F) 編編(E) 査君(V) 呼叫(C) □ 協 留 3 = □ 協 	传送(T) 帮助(H)	
	连接到 ② 1 输入待拨电话的详细信息: 国家(地区)(C): 中国(96) ③	
新开 自动检测 自动检测 Figure7.12	SCROLL CAPS NUM 捕 打印	



Figure7.13

7.4.7 Click the connection option; you can receive output **cccc** on the screen.



Click at send option and select the file which you want to upgrade select the address of your file. Agreement selecting option you can select given modem Ymodem and Click Send.





Figure7.15

7.4.8 File will be transfer and procedure is completed, you can see on the screen promised to upgrade successfully (Programming Completed Successfully) as shown in Figure 7.16.

◆1 - 超级终端 文件(F) 编辑(E) 查看(V) 呼叫(C) 传送(T) 帮助(H)	
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	
Running the user code. CAlarm Height: 30 Test Times: 4h Ttimes is 14400 system is ok	
已连接 00:00:4 自动检测 115200 8-N-1 SCROLL CAPS NUM 捕 打印	ä
Figure7.16	

Notes:

1. If you cannot confirm the results of figure 7.6 on the serial port software please checks connection of RX, TX and TTL device.

7.5 Video link

The instruction of upgrading the device is given with detailed this link can help you to upgrade the device corresponding the different correct steps. DF702 Smart Trash Bin sensor Upgrade Instruction: https://youtu.be/zUQbWT6V414

Attachment

1 Network server

For the network Server in CNDingtek following plate form are used

- Dingtek Network Server
- TTN Network server
- Loriot Network server
- Actility Network server

User can connect devices to network server to send the data directly from device to network server.



1.1 Dingtek

CNDingtek has own server Dingtek if you want to use our network server you just need to configure your gateway to our network server.During the usage of CNDingtek Network Server you need no more settings just connect the device with power and use it easily. For network server you can contact to customer Services

E-mail: service@dingtek.com

1.2 TTN Network Server

After login:

- Register Gateway: Click "Gateway-> register gateway".
- Select "I'm using the legacy packet forwarder",
- fill in the registration information, click "Register-gateway" to complete the gateway registration.

unique, human-readable identifier for your gateway. It can be anything so be creative!	
I'm using the legacy packet forwarder Select this if you are using the legacy <u>Semtech packet forwarder</u> .	
Description A human-readable description of the gateway	
	•
Frequency Plan The <u>frequency plan</u> this gateway will use	
Frequency Plan The frequency plan this gateway will use no selection	0
Frequency Plan The frequency plan this gateway will use no selection Router	0
Frequency Plan The <u>frequency plan</u> this gateway will use <i>no selection</i> Router The router this gateway will connect to. To reduce latency, pick a router that is in a region which is close to the loc	≎ cation of the gateway.
Frequency Plan The <u>frequency plan</u> this gateway will use <i>no selection</i> Router The router this gateway will connect to. To reduce latency, pick a router that is in a region which is close to the loc Location	≎ cation of the gateway.
Frequency Plan The frequency plan this gateway will use no selection Router The router this gateway will connect to. To reduce latency, pick a router that is in a region which is close to the loc Location The exact location of you gateway. This will be used if your gateway cannot determine its location by itself. Set a l	≎ cation of the gateway. location by clicking on the map.

- Add a device on the TTN
- Click "Applications-> add application"
- Fill in the registration information, click "Add application"

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The unique identifier of your applic	ation on the network		
Description A human readable description of yo	our new app		
			0
Eg. My sensor network applicatio	n r The Things Network block for convenience, you ca	in add your own in the application settings page.	
Eg. My sensor network applicatio Application EUI An application EUI will be issued fo	on or The Things Network block for convenience, you ca EUI issued by The Th	in add your own in the application settings page. ings Network	
Eg. My sensor network application Application EUI An application EUI will be issued for Handler registration Select the handler you want to regi	n or The Things Network block for convenience, you ca EUI issued by The Th ister this application to	in add your own in the application settings page. ings Network	
Eg. My sensor network application Application EUI An application EUI will be issued for Handler registration Select the handler you want to regis mydevices-handler	n r The Things Network block for convenience, you ca EUI issued by The Th ister this application to	in add your own in the application settings page. ings Network	•

• Click "Devices-> register device" to input device information DevAddr, Deveui and APPKEY and click "Register".

	Overview Devices Payload Fo	ormats Integrations Data Sett
REGISTER DEVICE		bulk import de
Device ID This is the unique identifier for the dev	ce in this app. The device ID will be immutable.	
Device EUI The device EUI is the unique identifier	or this device on the network. You can change the EUI later.	
Device EUI The device EUI is the unique identifier	or this device on the network. You can change the EUI later.	0 bytes
Device EUI The device EUI is the unique identifier 2 App Key The App Key will be used to secure the	or this device on the network. You can change the EUI later.	O bytes
Device EUI The device EUI is the unique identifier 2 App Key The App Key will be used to secure the	or this device on the network. You can change the EUI later. communication between you device and the network. this field will be generated	0 bytes



1.3 Loriot



- login
- login interface:
- Log in China, please choose: CN1 Shenzhen, Chin

ks 47.90.40.197:8080	×	LORIO T			HOME TECHNOLOGY	PRODUCTS	NEWS C	AREER CONTACT	LOC
		0			3			3	
	EUR	OPE & AFRICA		ASIA	/ PACIFIC		AMERICAS		
	Server	Location		Server	Location		Server	Location	
	EU1	Frankfurt, Germany	C	AP1	Singapore		US1	California, USA	
-	EU2	New Amsterdam, Netherlands	*	AU1	Sydney, Australia		US2	New York, USA	A
	EU3	New Madrid, Spain	*1	CN1	Shenzhen, China		SA1	Sao Paulo, Brazil	
	AF1	Cape Town, South Africa	٠	AP2	New Tokyo, Japan				
			۲	AP3	New Mumbai, India				

Registration of a free community account is available on all servers.

• Enter the user name and password, click login;



Add Applications

- 1.3.2 Add application
- Login, you can see Gateways and Application information:
- Click Application + to add an application

in LORIO T		Community Network 🏼 jingqi.wang@dingtek.com					
🚳 Dashboard		Î					
🗮 Applications 🚺	account information tier COMMUNITY NETWORK COMMU	UNITY NETWORK features					
🗢 Gateways 🚺	Email jingqi.wang@dingtek.com Welcome to LORIOT.io Community Network! Image: Com	count expiration					
	Name Justin Wang You are now part of a world-wide ecosystem of LoRaWAN developers. Your devices can use any gateway	ning among all community					
	As a reward for sharing your gateway, we	i <u>LoRa Forum</u> support					
	provide you one Free Network Application.	ree Network Application					
A Support	News						
	28th March 2016 04:29 The server is provided in partnership with RisingHF						
	9th October 2017 15:00 Version of the back-end and front-ends (release notes) has been deployed. T features, but should remain in a working state until the end of the year.	The legacy UI does not include the new					
	We have a fresh new user interface ready for you. 10th July 2017 19:00 VPDATE You will need to login separately into this interface, but can use both the current interface will be sunset by October 2017. The release notes for the last update an	and the new in parallel. The old user e now also available.					
	Gateways only last 10 shown	last 0 shown 🕂					
	Location Model MAC Version Last data Name App	D Devices					
	☐ null Gemtek 10-49-78-FF-FF-D4-07-23 udp4.2 16 days ago 💉 DF702 BE-	7C-02-D5 2					
	Your account has capacity of 1 gateway.	ntly limited to one application per account.					

- 1.3.3 Add device
- Click Dashboard-> Applications-> DF702 (Added Applications) ->Manage Device to add devices
- There are two ways to add a device.





INTO T	Dashb	oard	> Ap	plicat	ions	> DF	702			Community Network	📤 jingqi.wang	g@dingt	ek.com
 back to applications 	De	Devices											
DF702 BE-7C-02-D5	¢.				Đ				e		⇒		
💩 Output	Generate new device				Enroll new device			Import existing OTAA		Import existing ABP		Р	
🔨 Join Server													
Security	De		s in ti	his se	арр	licati	ON [5]						SoaNo
K4 Log	\$									Device EUI * search EUIs	Devaddr \$	data \$	¢
🛓 Downloads										47-1A- C8-68-00-1D-00-37	01-85-B6-9A		0
\delta Devices													
+ Enroll device	-75		-25					80-00-00-00-00-00	-00-12	47-4A- C8-68-00-2F-00-18	49-E5-2E-79		-1
+ Import ABP								BE-7C-		BE-7A-	00-17-D3-BC		-1
+ Import OTAA								DE 70	0	DE 74			
🗏 Bulk import					N/A	ADR	A	00-00-00-00-02-D	5	00-00-00-00-06-11	01-15-D4-D4	never	-1

• The Loriot server automatically generates OTAA mode devices, so parameters such as Deveui, Appeui, Appkey are generated by the server. If the device is automatically generated by loriot you need to modify the corresponding parameters of the device.

 	 合 https 論 管常用限 	s://cn1. lori 址 厄 京东i	ot.io/home 商城	e/applica	tion.htm		··· ☆	± ⊫	N 🗊 🔊	1, ● Ξ □移动版书签			
ျင်း LORIO T	Dashbo	Dashboard > Applications > DF702 Community Network											tek.com
 back to applications 	Ποι	ica											
DF702 BE-7C-02-D5		vice.	مهم										_
💩 Output			0						~		(
🐁 Join Server		Gener	rate new	device				nroll new device	Import existing OTAA		Import ex	tisting ABF	`
Security	Dev	vices	in thi	s ap	plica	tion	[4]						
KM Log	RSSI ¢								Device EUI *	Devaddr \$	Last data \$		
📥 Downloads									search EUIs	search DevAddr	10 days		
🗞 Devices	-75							80-00-00-00-00-00-12					0
+ Enroll device								BE-7C-00-00-00-00-02- D5	BE-7A-00-00-00-00-05- E8				o
+ Import ABP								BE-7C-00-00-00-00-02- D5					о
+ Import OTAA							. \	BE-7C-00-00-00-00-02-		A4 AA AA AA			
😑 Bulk import					N/A	ADR	A	D5	<u>BE-7A-00-00-00-00-00-06-12</u>	01-88-80-CD	never	-1	0



← → C' 企 ☆ 最常访问 □ 火狐官方站点 ● 新手」	①	DD5#devices/device?dev=BE7A00000000612
er's LORIO T		Community Network 🎍 jingqi.wang@dingtek.com
 back to applications 	Gateways in range RSSI SNR Seen	Device BE-7A-00-00-00-00-06-12
♥ DF702 BE-7C-02-D5	No gateways in range	DevEUI BE7A00000000612 big enclian (use by default) 120600000007ABE little enclian (for LoRaWAN non-compliant devices)
Output	Last data (10 latest records) SeqNo Time Port Data	Remove device
🐁 Join Server	No data received yet	AppEUI BE7C000000002D5 big endian (use by default) D502000000007CBE little endian (for LoRaWAN non-compliant devices)
■ Security		DevAddr 018880CD big endian (use by default) CD808801 little endian (for LoRaWAN non-compliant devices)
🕅 Log		NOTE: Use big endian representation by default. Only use the little endian value when suspecting problems.
💩 Downloads		See the device guides for personalized, device specific configuration commands
🙈 Devices		
🗞 Device		LoRaWAN AES128 Keys
BE-7A-00-00-00-00-06-12		AppKey AppKey Show application key9B295E35 🗶 Remove APPKEY
Device guides		Application Key (Device Key) If you want to enable over-the-air join, add or derive the device's application key.
+ Enroll device		NwkSKey Show network session keyB3A76975
+ Import ABP		AppSKey Show application session keyDBD10196 🗶 Remove APPSKEY
+ Import OTAA		Application Session Key NOTE: When copy-pasting an AESt28 key, use it as it is. It is a cryptographic key without the notion of endianness

Import devices

- Import ABP-type devices:
- Need to add DevEUI, DevAddr, NwkSKey, AppSKey, FcntUp, FcntDn Label already contains DevEUI, DevAddr, NwkSKey, AppSKey information FcntUp, FcntDn, may be 0 number is possible.

ight LORIO T					Community Network 🍐 jingqi.wang@dingtek.com
← back to applications	Import existin	n ARD dav	ica		
🗇 DF702		g ADF UEV			
BE-7C-02-D5	Import existing Al	3P device			
💩 Output	Parameter	LoRaWAN name		Format	
🐁 Join Server	End-device address	DevAddr			End-device address
Security	Sequence number uplink	FCntUp			Sequence number, decimal
₩ Log	Sequence number	FCntDn		Decimal	Sequence number, decimal
🛓 Downloads				32 hex	
🚓 Devices	Network session key	NWKSKEY		digits	NWRSKEY
+ Enroll device	Application session key	APPSKEY		32 hex digits	APPSKEY
+ Import ABP	Device EUI (optional)	DevEUI		16 hex digits	EVI
+ Import OTAA					Import device
≡ Bulk import					
		If you want to import If your device doesn't h	existing dev nave a DevEl	ice with an AppKey JI assigned, one wil	rand AppEUI, please use the <u>import OTAA function</u> . Il be generated for it from a pool of private addresses

Import OTAA-type devices

• Fill in DevEui, AppEui and APPKey, and then click Import device. To add success.Device label are already contains DevEui, AppEui and APPKey information.



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ight LORIO T					twork 🖀 jingqi.wang@dingtek.com			
♦ back to applications	Import ovicting	n OTA A dovico						
	import existing	y OTAA UEVICE						
BE-7C-02-D5	Import existing O	TAA device						
🚳 Output	Parameter	LoRaWAN name						
🔦 Join Server	Device EUI	DevEUI	16 hex digits, can include dashes	DevEUI				
a Security	Application EUI	AppEUI	16 hex digits, can include	AppEUI				
K4 Log			dashes					
* Downloads	Application key	APPKEY	32 hex digits	APPKEY				
					Import device			
& Devices								
+ Enroll device		Other keys (NWKSKEY, APPSKEY)	and parameters (DevAddr) will be re-g		vork join.			
+ Import ABP		· · · · · ·						
+ Import OTAA	What is Over-the-	air activation (UTAA	.) {					
🗮 Bulk import	Over-the-air activation (OTA sending specific associatio	Over-the-air activation (OTAA, also known as join or over-the-air join) is a method of associating a device with an application and a network by sending specific association request (join request) over the air. This guarantees the highest possible level of security in LoRaWAN.						
	Note: you only need to use other cases, please use the	the import feature if you have standard enrollment procedu	e already deployed the device w <u>are</u> .	ith a specific APPKEY	that you cannot change. For all			

1.3.4 Add Gateway

② 最常访问 1 火銀官方站点 1 新手上調	〒常用阿址 10 東东商城		□ 移动级书:		
er lorio t			ommunity Network 🔒 jingqi.wang@dingtek.com		
🚳 Dashboard	Dashbuaru				
🗏 Applications 🚺	account information	tier COMMUNITY NETWORK	COMMUNITY NETWORK features		
🗢 Gateways 🚺	Email jingqi.wang@dingtek.com	Welcome to LORIOT.io Community Network!	No account expiration		
Documentation	Name Justin Wang	You are now part of a world-wide ecosystem of LoRaWAN developers. Your devices can use any community detoway to reach our potwork.	Roaming among all community gateways		
Ø FAQ		As a reward for sharing your gateway, we	<u>OpenLoRa Forum</u> support		
🛎 Account		provide you one Free Network Application.	One Free Network Application		
Support	News				
	28th March 2016 04:29 INFO The server is				
	9th October 2017 15:00 UPDATE New version features, but	of the back-end and front-ends (release notes) has bee t should remain in a working state until the end of the y	n deployed. The legacy UI does not include the new ear.		
	We have a fresh new user interface ready for you. 10th July 2017 19:00 UPDATE You will need to login separately into this interface, but can use both the current and the new in parallel. The old us interface will be sunset by October 2017. The release notes for the last update are now also available.				
		🕂 🔒 Applic	ations only last 10 shown		
	Location Model MAC	Version Last data Name	AppID Devices		
	null Gemtek 1C-49-7B-FF-FF-D4- 1C:49:7B:D4:07:23	-07-23 udp4.2 16 days ago 🇯 DF702	BE-7C-02-D5 5		
	Your account has capacity	of I gateway	ity tier is currently limited to one application per account.		

- Select the type of gateway used:
- Follow the prompts to add gateway information.

Note: loriot generates a gateway ID based on the MAC information of the added gateway.



← → C' 企 ☆ 最常访问 □ 火狐官方站点 ● 新手上	 ① ▲ https://cn1.loriot.io/home/gateway 路 管 常用网址 10 京东商城 	s.html#gateway/registration		※ … ☆	· <u> </u> III/ আ	 うねの 目移动版书签
မွင်း LORIO T	Dashboard > Gateways			Community Net	work 💄 jingqi.wang@@	dingtek.com
+ back to dashboard	For more information on the	gateway models, see ou	ır <u>gateway catalog</u>			
🗢 Gateways						
🛍 Мар		All months				
 Gateway capacity exhausted 	AUGTEK	· 0. 01			2	
My gateways	Austali	Cinere IVA41 DIMA	Cinese Instructural Deputers (D010)	Caratas Dava Carata		
1C:49:7B:D4:07:23	Augtek	CISCO IXM LPWA	Cisco Industrial Router IR910	Comtac Base Server	Embit EMB-GW1301	
1C-49-7B-FF-FF-04-07-23				6.6.5	8872	
	Everynet	ExpEmb Intel Atom	ExpEmb i.MX6	Gemtek 64	Gemtek Femto	
	Gemtek Indoor 16	Gemtek Outdoor 16	Haxiot HXG1000	Kerlink loT Station	Kerlink IBTS	
			Haxiot Hixdiooo			

• Take as an example:Need to enter the gateway MAC, and location, and then click register..

ျင်း LORIO T	Dashboard > Gateways Community Network & jingqi.wang@dingtek.com
🗧 back to dashboard	eth0 MAC address XX:XX:XX:XXXXXXX
🗢 Gateways	Upon successful registration, we will provide you with a setup guide for your gateway and a gateway binary with cryptographic keys tied to this
🛍 Мар	MAC address.
 Gateway capacity exhausted 	The keys are tied to the MAC address of the device, and cannot be moved to another device.
My gateways	Gateway location
1C:49:7B:D4:07:23	To provide all users with a reasonable view of the coverage of the network, please provide the address at which the gateway will be placed.
	When displayed to other users, the location will be offset by a random value to protect your privacy.
	Country Switzerland ~
	Address Street and house number
	ZIP Code ZIP Code
	City City
	That's it.
	Register Gemtek Femto gateway



(g) LORIO T	Dashboard	> Gateways			Comm	unity Network 🔒 j	ingqi.wan	g@dingt	ek.com
🗧 back to dashboard	Gate	Mave							
🗢 Gateways	Gater	ways							
🔰 Мар	Location \$	Title \$	MAC *	Model \$					Online \$
Gateway capacity Avbausted	i null	1C-49-7B-FF-FF-D4-07-23	1C:49:7B:D4:07:23	Gemtek Femto	US915_CH0_7	≓ 16 days ago	udp4.2	ø	#
My gateways									
1C:49:7B:D4:07:23									
1C-49-7B-FF-FF-D4-07-23									

• Click on the registered gateway, you can see the gateway information, and can choose the required band, such as US915_CH0.

HIL LORIO T	Dashboard > Gateways		Community N	etwork 🐣 jingqi.wang@dingtek.com
🗧 back to dashboard	Gateway/Gemtek Femt			
🗢 Gateways	dateway/ deniter renit	010.43.10.04.01.23		
🛍 Мар	Uptime this month	Gateway information		
 Gateway capacity exhausted 	Uptime (days) Downtime (days)			1C-49-7B-FF-FF-D4-07-23
My gateways				1C-49-7B-FF-FF-D4-07-23
1C:49:7B:D4:07:23	Uptime	007-	Base and model	Gemtek Femto
	95%		Concentrator	SPIO 915 MHz
			Frequency plan	US915_CH0_7 Change plan
	Actions		TX gain adjustment	no adjustment
	No actions available for offline gateways		lgnore data	not ignored 🕜 Toggle
	Status			0
	Connected EDisconnected			Remove gateway 10:49:78:D4:07:23

- In the gateway information interface you can also monitor the frequency of the selected band, as shown below.
- According to this frequency, check the frequency of the server, gateway and device frequency point three frequency is the same. If not, the data can not be uploaded correctly.



ut LORIO T	Dashboard > Gateways	10. M		c	Community Network	🔒 jingqi.v	wang@dingtek.com
🗧 back to dashboard							
🗢 Gateways							
関 Мар							
Gateway capacity exhausted		0 25/12					21/01 23/01
My gateways		Chann	alallocation	1			
1C:49:7B:D4:07:23		Radio	Center frequency [MHz]				
1C-49-7B-FF-FF-D4-07-23			902.300				MultiSF
			902.500				MultiSF
			902.700				MultiSF
			902.900				MultiSF
			903.100				MultiSF
			903.300				MultiSF
			903.500				MultiSF
			903.700				MultiSF
			903.000				SF8
			902.700				FSK

1.4 Actility

1.4.1 Add ABP mode device

• Enter the relevant information, as shown below.

Device name

Custom

Port Number 3

🕞 🕞 = 💽 - 🛃 https://d	dev1.thingpark.com/deviceManager/ 🔎 💽 🔒 🍫	🛃 Actility ThingPark Prod 🕅 Actility ThingPark Prod 🧖 ThingPark Partners by 🎆 Interop Detail 🔯 Beijing Ding
🧩 Beljing Dingtek Techn		New device X
IhingPark Wireless		🕈 Create 💟 Close
Devices Connectivity plans AS routing profiles Application servers Settings	Deviders Add devides Create Totate Second	Administrative data
	Location: Address, ZIP, City, Identifier: Name or Identifier	Administrative location: * Network location Change location Motion indicator: Near static
	Map List Name / Type = Identifie	Device solution Device solution Device solution Device solution Device solution AC:DE-49-23-45-67-48-CD <t< td=""></t<>
		Telesotic purposedor Connectivity plan: DEV Connectivity Supplier / Unlimited Dev (0) Application layer / family
		Appication server routing cayenne v profile: AppSKeys: AppSKe Port

1.4.2 Add OTAA Mode Device

Enter the relevant information, as shown below.



Constraine Deliveration			New device			X
IningPark Wireless					💠 Create 辽 Close	£
Devices	thevices		Administrative data			^
Connectivity plans AS routing profiles Application servers Settings	Add devices		Device name: Marker: * Administrative info:	Change marker		
	Search Location: Identifier:	Address, ZIP, City, Name or Identifier	Administrative location: * Motion indicator:	Network location Change location Near static	×	
	P Search		Device identification			ter.
	Map List		Device activation:	Over The Air Activation (OTAA)	*	
	Name / Type 🔺	Identifier	DevEUI: *	AC-DE-48-23-45-67-AB-CD		e packets Mean PER Aver
			AppEUI: *	AC-DE-48-23-45-67-AB-CD		
			Appres:	Eeld Test Device LoRaWAN 858 class A	10-	
			Industry parameters Connectivity plan: Deviddir: * Application server routing profile: ThingPark X configuration:	DEV Connectivity Supplier / Unlimited Dev (0) Allocated by the network server cayenne ThingPark X driver configuration	v v Part	~

1.4.2 Add a gateway

Note

Actility supports lrr mode gateways and does not support packet forwarding mode.Given picture you need to add these contents make sure of New Base Station.

🍰 Boijing Diligtek Technolog					
Base stations					
Settings	Add base stations				
	Location:	Address, ZIP, City,	Restrict search to visible map area	Version:	
	Identifier:	Name, LRR ID,		Software restart:	No filter.
				Min. remaining DC:	No filter.
	P Search			Alarm:	No filter.
6	New base station		×		
		💠 Creat	e 😳 Close art Pe	ower source Min, rem,	cap, up/down Average packets up/c
	Use this dialog box to add a approved by the connectivit	new base station. A new base station becomes active only after being y supplier.	reviewed or		
	Identification mode: *	LRR ID	¥		
	LRR ID: *				
	SMN:				
	Model: *	Ufispace gateway lamp v1.0	¥		
	Name:				

2 Common problem Facing by the Customers and theirs solutions



How to configure LoRawan gateway? -LoRa version

If you buy the Gateway from CNDingtek after your receiving Gateway , we have the gateway configuration, you only need to connect the gateway power supply, and network cable.

If you receive the gateway, then you want to change the gateway IP and port number, please refer to the relevant manuals provided by our company, or contact our technical staff.

Why User cannot See Device Data?

Considering shipping rules, devices are not connected to battery. So user should open cover and connect battery with the PCB board. For some version with magnetic part outside, please remove the magnetic part, then the battery will power to the sensor.

Check whether the frequency bands of the device and the gateway are the same. The gateway frequency should work with the LoRawan module band. please configure the sensor or gateway to make them match.

The LoRa server device data should be same as the sensor. For ABP mode, the devaddr/nwkskey/appskey should be same as the registration information on the server. For OTAA mode, the deveui, appeui should be same as the registration.

Shorten distance between sensor and gateway

Some LoRa server, like TTN (the things network) ask for special devaddr. Please use TTL UART to connect with sensor and change the parameter.

- Please check whether the gateway is correctly connected to the network server.
- Please check the position of the jumper cap, whether the jumper is on the solid position.

User receive data But is Garbled Form.

Nwkskey,appskey/port error If port, nwkskey, appskey is error. The data will be messed that user can not directly read the data.

Please contact with CNDingtek to receive the updated protocol which is disclosed after NDA signed.

How to Test and Install Devices?

Please refer to the relevant manual or we can provide you with the relevant video.

How to modify LoRa module parameters

Please refer to LoRa configuration section in "DF702 Configuration Manual.

How to modify the data upload time, full height alarm value parameters?

Please refer to the "Device Parameter Configuration" in the "DF702 Configuration Manual.

Where User can monitor Device Data?

For the LoRa version

Form gateway and the Network Server are required. The device sends the data to the gateway. The gateway forwards the data to the network server . The data can be seen on the network server and the data is forwarded to the application server . If necessary, we can provide the corresponding gateway the application server and application server or data





Why the measured height of the device has been 2000/0, and sometimes the measured data is not accurate?

Measuring distance is in the blind spot. The dead zone of the equipment is about 15cm. When the distance from the equipment to the garbage is less than 15cm, the equipment can not measure the data or measured data will not accurate. Beyond the measurement range, the device can only be measured as far as 2m.

Installation or testing is not correct the test or installation the equipment perpendicular to the garbage/object under test, the best test to ensure that the white probe is completely blocked.

Device have Fall Function?

The standard version will measure with full, fire and battery check features, and enhanced version will measure full, fire and battery check, and fall function.

Can I change my device data interval to 5 minutes or 1 minute?

Can be changed to 5 minutes, can not be changed to 1 minute, the device default 10 minutes test once, you can change it to 5 minutes, the operation method, please refer to "DF702 Configuration Manual" in the device parameter configuration section for special needs please advance and sales Personnel instructions.

How does the device work?

Currently, the device will upload data every time it is powered on again.

The main function.

Test once every 10 minutes, when a change of state is detected, the data upload, the state remains unchanged, do not upload data. And periodically send heartbeat data, the data interval default 4 hours can be modified, specific reference to the agreement.

State change means: from full to not from, or not from to full.

For example:



Time	State	Upload data or no
10:10	full	Yes (first data)
10:20	full	No
10:30	not full	Yes
10:40	not full	No

10:50 full Yes