PB01 -- LoRaWAN Button User Manual

last modified by Xiaoling on 2024/07/05 09:53

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1. Introduction

1.1 What is PB01 LoRaWAN Push Button

PB01 LoRaWAN Button is a LoRaWAN wireless device with one **push button**. Once user push the button, PB01 will transfer the signal to IoT server via Long Range LoRaWAN wireless protocol. PB01 also senses the **environment temperature & humidity** and will also uplink these data to IoT Server.

PB01 supports 2 x AAA batteries and works for a long time up to several years*. User can replace the batteries easily after they are finished.

PB01 has a built-in speaker, it can pronouns different sound when press button and get reply from server. The speaker can by disable if user want it.

PB01 is fully compatible with LoRaWAN v1.0.3 protocol, it can work with standard LoRaWAN gateway.

*Battery life depends how often to send data, please see battery analyzer.

1.2 Features

- Wall Attachable.
- LoRaWAN v1.0.3 Class A protocol.
- 1 x push button. Different Color available.
- · Built-in Temperature & Humidity sensor
- Built-in speaker
- Frequency Bands: CN470/EU433/KR920/US915/EU868/AS923/AU915
- AT Commands to change parameters
- Remote configure parameters via LoRaWAN Downlink
- · Firmware upgradable via program port
- Support 2 x AAA LR03 batteries.
- IP Rating: IP52

1.3 Specification

Built-in Temperature Sensor:

- Resolution: 0.01 °C
- Accuracy Tolerance: Typ ±0.2 °C
- Long Term Drift: < 0.03 °C/yr

• Operating Range: -10 ~ 50 °C or -40 ~ 60 °C (depends on battery type, see FAQ)

Built-in Humidity Sensor:

- Resolution: 0.01 %RH
- Accuracy Tolerance: Typ ±1.8 %RH
- Long Term Drift: < 0.2% RH/yr
- Operating Range: 0 ~ 99.0 %RH(no Dew)

1.4 Power Consumption

PB01 : Idle: 5uA, Transmit: max 110mA

1.5 Storage & Operation Temperature

-10 ~ 50 °C or -40 ~ 60 °C (depends on battery type, see FAQ)

1.6 Applications

- Smart Buildings & Home Automation
- Logistics and Supply Chain Management
- Smart Metering
- Smart Agriculture
- Smart Cities
- Smart Factory

2. Operation Mode

2.1 How it work?

Each PB01 is shipped with a worldwide unique set of LoRaWAN OTAA keys. To use PB01 in a LoRaWAN network, user needs to input the OTAA keys in LoRaWAN network server. After this, if PB01 is under this LoRaWAN network coverage, PB01 can join the LoRaWAN network and start to transmit sensor data. The default period for each uplink is **20 minutes**.

2.2 How to Activate PB01?

1. Open enclosure from below position.



2. Insert 2 x AAA LR03 batteries and the node is activated.



3. Under the above conditions, users can also reactivate the node by long pressing the ACT button.



User can check LED Status to know the working state of PB01.

2.3 Example to join LoRaWAN network

This section shows an example for how to join the <u>TheThingsNetwork</u> LoRaWAN IoT server. Usages with other LoRaWAN IoT servers are of similar procedure.

Assume the LPS8v2 is already set to connect to <u>TTN V3 network</u>. We need to add the PB01 device in TTN V3 portal.



Each PB01 is shipped with a sticker with the default DEV EUI as below:



Enter these keys in the LoRaWAN Server portal. Below is TTN V3 screen shot:

Create application.

choose to create the device manually.

Add JoinEUI(AppEUI), DevEUI, AppKey.

THE THINGS NET WORK	THE THINGS STACK	Cverview	Applications	🔀 EU1 Sandbox No support plan 🕥
			Create application Within applications, you can register and manage and devices and their network data. After setting up your device fleet, use one of our many integration options to pass relevant data to your external services. Learn more in our guide on 📓 dating deplications (5 ,	
			Application ID * my-new-application	
			Application name Ny new application	
			Description Description for my new application	
			Ø Optional application description; can also be used to save notes about the application	
			Create application	

THE THINGS NETWORK	THE THINGS STACK	Overview Applica	ions 🚔 Gateways 🏦 Organizat	ions		🕀 EUI, Sandhox Fair use policy applies 🕅			
111 zero			Applications > zero	splications > zero					
Overvie Covervie	ew		Last activity 3 minutes ago ③			🙏 23 End devices 🛛 🚉 2 Collaborators 🛛 🗣 0 API keys			
■ Live dat <> Payload	ta d formatters v tions v		General information Application ID Created at	zero Aug 21, 2023 17:03:32	• Live data ↑ 14:18:20 eu1-fa2345 Fo ↑ 14:15:36 eu1-003586 Fo	See allactivity zwazd uplink data message zwazd uplink data message			
Collabo	orators /s		Last updated at	Aug 21, 2023 17:03:32	↑ 14:12:26 eui-a84641. Fo ↑ 14:10:26 eui-a84641. Fo ↑ 14:10:17 eui-fa2345. Fo ↑ 14:08:26 eui-a84641. Fo	mward uplink data mesage rmard uplink data mesage rmard uplink data mesage rmard uplink data mesage			
🔅 General	al settings		End devices (23)	Name Ф	Q Search DexCUI JaiefUI	Be Import end devices + Register end device. Last activity: 0			
			eui-fa2345555555555555	PB01	FA 23 45 55 55 55 55 51	13 45 42 42 41 11 ago •			
			eui-003586ec8db99eaa	RS485LB	00 35 86 EC 80 B9 9E 01 🐐 F1 B8 F	18 D9 FC 68 F1 00 🖥 7 days ago 🇯			
			eui-a840414a818519ae	CPL01新固件	AB 40 41 4A 81 85 19 AE	1 00 00 00 01 01 🐐 9 min. ago 🔹			
			eui-70b3d57ed0066ff4		70 83 D5 7E D0 06 6F F4 🐐 00 25 6	ic 00 00 01 00 00 🐞 yesterday •			

THE THINGS NETWORK	THE THINGS STACK	Cverview	Applications	📸 Gateways 🎎 Organizations
zero				Applications > zero > End devices
0v	erview			Register end device
🙏 En	d devices			Does your end device have a LoRaWAN® Device Identification QR Code? Scan it to speed up onboarding.
💷 Liv	e data			Scan end device QR code
<> Pag	yload formatters 🗸 🗸			End device type
犬 Int	egrations 🗸			Input method ®
🚜 Co	llaborators		C	Select the end device in the LoRaWAN Device Repository Enter end device specifics manually
Ov AP	l keys			Frequency plan () *
🔅 Ge	neral settings			Europe 863-870 MHz (SF12 for RX2)
				LoRaWAN version () *
				LoRaWAN Specification 1.0.3
				Regional Parameters version () *
				RP001 Regional Parameters 1.0.3 revision A
				Show advanced activation_LoRaWAN class and cluster settings v
				Provisioning information
				JoinEUI () *
				00 00 00 00 00 00 00 00 Confirm
				To continue, please enter the JoinEUI of the end device so we can determine onboarding options
< Hide si	debar			

			Select the end device in the LoRaWAN Device Repository
ш	zero		Enter end device specifics manually
			Frequency plan (2) *
	Overview		Europe 863-870 MHz (SF12 for RX2)
x	End devices		LoRaWAN version ⑦ *
	Live data		LoRaWAN Specification 1.0.3
_			Regional Parameters version ③ *
$\langle \rangle$	Payload formatters	*	RP001 Regional Parameters 1.0.3 revision A
¢	Integrations	~	
*	Collaborators		Show advanced activation, LoRaWAN class and cluster settings 🗸
	101		
04	API keys		Provisioning information
\$	General settings		JoinEUI () *
			00 00 00 00 00 00 00 Reset
			This end device can be registered on the network
			DevEUI 🗇 *
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			АррКеу 🔿 *
			••••••• Ø Generate
			End device ID (2) *
			my-new-device
			This value is automatically prefilled using the DevEUI
			After registration
			View registered end device
			 Register another end device of this type
< Hi	de sidebar		Register end device

Default mode OTAA

Step 2: Use ACT button to activate PB01 and it will auto join to the TTN V3 network. After join success, it will start to upload sensor data to TTN V3 and user can see in the panel.

		THE THINGS STACK SANDBOX	Applications 🛓 Gateways 🔉 Organizations 🗳 BII Souther No SLA spelicable ()	aopao 👻
nt		4	Applications > zero > End devices > P801 > Live data	
## .X		1	PB01 Ib: ex 462245555555555	
۲			↑105 ↓ n a ① • Last activity 1 minute ago ①	
\diamond			Overview Live data Messaging Location Payload formatters General settings	
t	Time	Туре	Data prevlew Verboe stream 🍞 🛓 Export as JSON 🔢 Pause	i Clear
	↓ 14:29:31	Schedule data downlink for transmissi.	_ Devkddr: 26 00 F8 E3 O 🙀 Rti Delay: 6	
*	↑ 14:29:31	Forward uplink data message	Devkádz: 26 86 F8 E3 🗢 🐞 Peyled: { Alazz: "FALSE", Batk: 3.366, Hum_SMT41: 67.6, Sound_ACK: "OFEX", Sound_key: "OFEX", Temp5_SMT41: 26.8 } 😢 26 48 30 80 21 C0 22 A3 🕫 🐞 FF0:t: 2 Data zate: SF12BM125 SM	R: 9.2 RSSI
07	↑ 14:29:31	Successfully processed data message	Dev/ddir1 26 06 78 53 00 🚯	
٥	↑ 14:29:25	Forward join-accept message	Devkdiri 24 08 78 83 O 🐞 JointUri (FF AA 23 46 42 42 41 1 O 🐞 DevKUII (FA 23 46 85 85 85 1 O 🐐	
	↑ 14:29:24	Successfully processed join-request	DevAdstr: 24.09.01.92 O 🚳 Joinfuit: [FF AA 23.45.42.42.41.1 O 🐞 DevEUI. [FA 23.45.55.55.55.55 O 🐐	
	@ 14:29:23	Accept join-request	Devidetr: 26 06 FB E3 💿 🍓 JoinEur: FF AA 23 45 42 42 41 1 🕫 🍓 DeviEur: FA 23 45 85 55 55 51 💿 🐞	
	↓ 14:18:20	Schedule data downlink for transmissi.	_ Dev/ddfr: 26 08 81 92 ↔ 🍓 Rx1 Delay: 6	

2.4 Uplink Payload

Uplink payloads include two types: Valid Sensor Value and other status / control command.

- Valid Sensor Value: Use FPORT=2
- Other control command: Use FPORT other than 2.

2.4.1 Uplink FPORT=5, Device Status

Users can get the Device Status uplink through the downlink command:

Downlink: 0x2601

Uplink the device configures with FPORT=5.

Size(bytes)	1	2	1	1	2
Value	Sensor Model	Firmware Version	Frequency Band	Sub-band	BAT

Der to Net V		THE THINGS STACK	Overview	Applications	🝶 Gateways	A Organizations	EU1 Sandbox pport plan (?)	g pao	ipao 🕶
ш				Applications >	zero > End devices	> PB01 > Live data			
-									
x				ID: eu	1 i-fa234555555555555555555555555555555555555				
				↑2 🔸 n/a 🗇	Last activity 9 s	conds ago 💿			
$^{\circ}$				Overview	Live data Messa	ing Location Payload formatters General settings			
t	Time	Туре		Data preview	,	Verbose stream 🔿 🗴	👲 Export as JSON	II Pause	🗑 Clear
~	↓ 15:20:40	Schedule data downli	nk for transmiss	i_ DevAddr:	26 08 74 11 💠 🖣	k Rx1 Delay: 5			
	↑ 15:20:40	Forward uplink data	nessage	DevAddr:	26 0B 74 11 💠 🕴) Payload: { BAT: 3.294, FIRMWARE_VERSION: "1.0.0", FREQUENCY_BAND: "EU860", SENSOR_MODEL: "P801-L", SUB_BAND: "NULL" } 35 01 00 01 FF 0C DE 💿 🐞 FPor	t: 6 Data rate:	SF7BW125 SNR:	13.8 RSS
07	↑ 15:20:40	Successfully process	ed data message	DevAddr:	26 0B 74 11 🗢 🕅		_		
۰	↓ 15:20:34	Schedule data downli	nk for transmiss	i. DevAddr:	26 0B 74 11 💠 🎙	FPort: 1 MAC payload: 1A DC o 🙀 Rxi Delay: 5			
	↑ 15:20:34	Forward uplink data	nessage	DevAddr:	26 0B 74 11 🔿 🕅) Payload: { Alarm: "TRUE", BatV: 3.306, Hum_SHT41: 68, Sound_ACK: "OPEN", Sound_key: "OPEN", TempC_SHT41: 27.3 } @C EA 03 01 01 11 02 A8 🛛 🐞 FPort:	Data rate: SF7E	8W125 SNR: 11.0	5 RSSI: •
	↑ 15:20:34	Successfully process	ed data message	DevAddr:	26 08 74 11 💠 🕴				
	↓ 15:20:29	Receive downlink dat	a message	26 01 🗘	FPort: 1				
	↓ 15:20:10	Schedule data downli	nk for transmiss	1_ DevAddr:	26 0B 74 11 🔿 🕅	Rx1 Delay: 5			
				· · · · · ·					

Example Payload (FPort=5): 35 01 00 01 FF 0C DE

Sensor Model: For PB01, this value is 0x35.

Firmware Version: 0x0100, Means: v1.0.0 version.

Frequency Band:

*0x01: EU868

*0x02: US915

*0x03: IN865

*0x04: AU915

- *0x05: KZ865
- *0x06: RU864

*0x07: AS923

*0x08: AS923-1

*0x09: AS923-2

*0x0a: AS923-3

Sub-Band: value 0x00 ~ 0x08(only for CN470, AU915,US915. Others are0x00)

BAT: shows the battery voltage for PB01.

Ex1: 0x0C DE = 3294mV

2.4.2 Uplink FPORT=2, Real time sensor value

PB01 will send this uplink after Device Status uplink once join LoRaWAN network successfully. And it will periodically send this uplink. Default interval is 20 minutes and <u>can be changed</u>.

Uplink uses FPORT=2 and every 20 minutes send one uplink by default.

Size(bytes)	2	1	1	2	2
Value	Battery	Sound_ACK	Alarm	Temperature	Humidity
		&Sound_key			

Example in TTN.

u		Applications >	zero > End devices > P801 > Live data
88 人		PB D: e	101 Nu1 for2x4555555555
۲		↑5 √n/a ()) • Last activity I0 minutes ago (0
\diamond		Overview	Live data Messaging Location Payload formatters General settings
t	Time Type	Data previe	rev Verboesstraam 🍞 速 Exportas JSON II Passa 👔 Clear
	↑ 14:10:17 Forward uplink data me	DevAddr:	26 08 81 92 oo 🐐 Payload: { Alare: "TRUE", BatV: 3.348, Hum_SHT41: 66.4, Sound_ACK: "OFEN", Sound_key: "OFEN", TempC_SHT41: 25.5] 00 14 03 01 00 FF 02 98 oo 🐐 FPort: 2 Data rate: SF75H125 SHR: 14 RSSI: -
-	↑ 14:10:17 Successfully processed	d data message — DevAddr:	26 68 55 92 🔿 🐚
07	ψ 13:48:09 Schedule data downlink	k for transmissi_	
¢	↑ 13:48:09 Forward uplink data me	essage	
	↑ 13:48:09 Successfully processed	d data message	
	ψ 13:48:00 Schedule data downlink	k for transmissi.	
	↑ 13:48:00 Forward uplink data me	essage	
	↑ 13:48:00 Successfully processed	d data message	
	ψ 09:19:47 Schedule data downlink	k for transmissi. DevAddr:	26 08 51 52 O
	↑ 09:19:47 Forward uplink data me	essage DevAddr:	26 68 51 92 🔿 🐐 Phyloid: { Alaza: 'FALSE', Batty: 3,474, Hum_SHT41: 72,6, Sound_AK: 'OFEN', Sound_Aky: 'OFEN', TempC_SHT41: 25.3 } E0 92 61 00 00 70 02 55 🖓 🐐 Phyloid: { Alaza: 'FALSE', Batty: 3,474, Hum_SHT41: 72,6, Sound_AK: 'OFEN', Sound_Aky: 'OFEN', TempC_SHT41: 25.3 }
	↑ 09:19:47 Successfully processed	d data message DevAddr:	24 08 51 52 0 6
	ψ 08:59:47 Schedule data downlink	k for transmissi. DevAddr:	24 06 25 92 0 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	↑ 08:59:47 Forward uplink data me	essage DevAddr:	26 08 51 52 🕢 🐐 Paylood: { Alzze: 'FALSE', BatY: 3,474, Nem_BHT41: 71.6, Sound_AKX: 'OFEN', Sound_Key: 'OFEN', TempC_BHT41: 25.6] 60 92 03 00 02 00 00 02 00 00 00 00 00 00 00 00
L '	↑ 08:59:47 Successfully processed	d data message DevAddr:	26 (68 51 92) 07 🚯
	ψ 08:39:48 Schedule data downlink	k for transmissi.	
	↑ 08:39:47 Forward uplink data me	essade	

Example Payload (FPort=2): 0C EA 03 01 01 11 02 A8

Battery:

Check the battery voltage.

- Ex1: 0x0CEA = 3306mV
- Ex2: 0x0D08 = 3336mV

Sound_ACK & Sound_key:

Key sound and ACK sound are enabled by default.

• Example1: 0x03

Sound_ACK: (03>>1) & 0x01=1, OPEN.

Sound_key: 03 & 0x01=1, OPEN.

• Example2: 0x01

Sound_ACK: (01>>1) & 0x01=0, CLOSE.

Sound_key: 01 & 0x01=1, OPEN.

Alarm:

Key alarm.

- Ex1: 0x01 & 0x01=1, TRUE.
- Ex2: 0x00 & 0x01=0, FALSE.

Temperature:

- Example1: 0x0111/10=27.3℃
- Example2: (0xFF0D-65536)/10=-24.3°C

If payload is: FF0D: (FF0D & 8000 == 1), temp = (FF0D - 65536)/100 =-24.3°C

(FF0D & 8000: Judge whether the highest bit is 1, when the highest bit is 1, it is negative)

Humidity:

• Humidity: 0x02A8/10=68.0%

2.4.3 Uplink FPORT=3, Datalog sensor value

PB01 stores sensor value and user can retrieve these history value via downlink command. The Datalog sensor value are sent via FPORT=3.

THE THINGS NET WORK	THE THINGS STACK	Overview	Applications 🚘 Gateways 🟛	1. Organizations	EU1 Sandbox Fair use policy applies ①	1
111 zero				Applications > zero > End devices > PR01 > Live data		
Overvi	iew			PB01 It: es=frs245555555555		
🙏 End de	evices			↑ 26 ↓ n/a ① • Last activity 36 seconds ago ①		
🗐 Live da	iata			Overview Live data Messaging Location Payload formatters General settings		
<> Payloa	ad formatters ~	Time	Туре	Data preview Verbose stream (🗴 🛓 Export as JSON	II Pause
犬 Integra	ations ~	↑ 14:45:35	Forward uplink data message	DevAdd:: 20 66 60 92 9 9 9 9 9 9 10 10 00 27.0, False, 2024-05-19 94:44:13), (9, 63.0, 27.0, False, 2024-05-19 95:04:13), (9, 64.3, 27.0, False, 2024-05-19 95:24:13), (9, 64.3, 27.0, False, 2024-05-19), (9, 64.3, 27.0, False, 2024-05-19)	.27.8,False,2024-05-10 05	:44:13].[
🔐 Collab	porators	↑ 14:45:35	Successfully processed data message	Dev/Addr: 26 08 66 62 🗘 🚯		
On API ke		↓ 14:45:28	Schedule data downlink for transmissi.	Devidór: 26 08 66 02 🕫 📓 FPort: 1 MAC payload: 08 01 03 29 A1 00 AB FE 70 71 0 📳 Rd. Delay: 5		
VY APING	iya.	↑ 14:45:28	Forward uplink data message	Devidór: 26 66 66 62 🕫 🚯 Paylond: 🕻 Alaza: "TRUE", BatV: 3.432, Hum_SMT21: 67.7, Sound_ACX: "CLOSE", Sound_key: "CLOSE", TempC_SMT21: 26.3 3 00 68 00 01 01 07 02 45 🕫 🚳	FPort: 2 Data rate: SF7BW	4125 SNR:
🛱 Genera	al settings	↑ 14:45:28	Successfully processed data message	Dev/kdx: 26 06 66 02 4		
		↓ 14:45:3	Receive downlink data message	31 66 3D AS CF 66 3D C1 EF 05 O		
		↑ 14:44:09	Forward uplink data message	DevAddr: 26 08 66 02 🔿 🚯 Paylond: { Alaxm: "FALSE", BatV: 3.438, Hum_SHT41: 57.5, Sound_ACK: "CLOSE", Sound_key: "CLOSE", TempC_SHT41: 26.3 } 00 6E 00 00 01 07 02 3F 🕫 🚳	FPort: 2 Data rate: SF78	9 %125 SNR
		↑ 14:44:09	Successfully processed data message	Dev/kds:: 26 66 66 92 🗘 🚯		
		↑ 14:24:09	Forward uplink data message	Devekder: 26 66 66 62 🛛 🕼 Payload: { Alarm: "FALSE", BatV: 3.438, Hum_SHT41: 57.6, Sound_ACK: "CLOSE", Sound_key: "CLOSE", TempC_SHT41: 28.8 } 00 6E 00 00 01 0C 02 40 🖓 🐐	FPort: 2 Data rate: SF78	3 #125 SNR
		↑ 14:24:89	Successfully processed data message	Devikds:: 26 66 66 62 🗘 🚯		
		↓ 14:20:00	Schedule data downlink for transmissi.	DevAddr: 26 08 66 02 🗘 🚯 Rxi. Delsy: 5		
		↑ 14:19:59	Forward uplink data message	Devikódz: 26 08 66 02 🔿 🐞 Payload: { Alazm: "TRUE", BatY: 3.438, Hum_SHT21: 57.7, Sound_ACK: "CLOSE", Sound_key: "CLOSE", TempC_SHT21: 26.9 } 00 66 00 01 01 00 02 41 💠 🐞	FPort: 2 Data rate: SF7BW	(125 SNR:
		↑ 14:19:59	Successfully processed data message	Dev/kddr: 26 66 66 02 🗠 🐞		

• Each data entry is 11 bytes, to save airtime and battery, PB01 will send max bytes according to the current DR and Frequency bands.

For example, in US915 band, the max payload for different DR is:

- 1. DRO: max is 11 bytes so one entry of data
- 2. DR1: max is 53 bytes so devices will upload 4 entries of data (total 44 bytes)
- 3. **DR2**: total payload includes 11 entries of data
- 4. DR3: total payload includes 22 entries of data.

Notice: PB01 will save 178 set of history data, If device doesn't have any data in the polling time. Device will uplink 11 bytes of 0.

See more info about the **Datalog feature**.

2.4.4 Decoder in TTN V3

In LoRaWAN protocol, the uplink payload is HEX format, user need to add a payload formatter/decoder in LoRaWAN Server to get human friendly string.

In TTN , add formatter as below:

THE THINGS STACK	Toverview Applications 🗳 Gateways 🚉 Organizations						
nt zero	Applications > zero > End devices > PB01 > Payload formatters > Uplink						
Overview	PB01 ID: eui-fa2345555555555						
Lend devices	↑ 18 ↓ n/a ③ • Last activity 12 minutes ago ③						
📃 Live data	Overview Live data Messaging Location Payload formatters General settings						
<> Payload formatters ~	Uplink Downlink						
, megations •							
Collaborators	Setup	Test					
Ov API keys	Custom Javascript formatter	Byte paytoad					
🔅 General settings	Formatter code *	Decoded test payload					
	<pre>1 function datalog(1,bytes){ 2</pre>	Complete uplink data					
< Hide sidebar	Save changes						

Please check the decoder from this link: <u>https://github.com/dragino/dragino-end-node-decoder</u>

2.5 Show data on Datacake

Datacake IoT platform provides a human friendly interface to show the sensor data in charts, once we have sensor data in TTN V3, we can use Datacake to connect to TTN V3 and see the data in Datacake. Below are the steps:

Step 1: Be sure that your device is programmed and properly connected to the LoRaWAN network.

Step 2: Configure your Application to forward data to Datacake you will need to add integration. Go to TTN V3 Console --> Applications --> Integrations --> Add Integrations.

- 1. Add Datacake:
- 2. Select default key as Access Key:
- 3. In Datacake console (<u>https://datacake.co/</u>) , add PB01:

Please refer to the figure below.



Log in to DATACAKE, copy the API under the account.

	Point Settings Point Person of the thy your API token gives access to your whole account, so treat it with caution! API token Winning Please note that your API token gives access to your whole account, so treat it with caution! Datacake offers both a RESTUI API for simple tasks as well as a feature-rich GraphQL API. For both, you need an API token.	
C Support Documentation Changelog Status G-Logout		

THE THINGS STACK	E Overview Applications
111 zero	Applications > zero > Webhooks > Add > Datacake
Cverview	Setup webhook for Datacake Send data to Datacake via TTI adapter About Datacake @ @
📩 End devices	
📰 Live data	Webhook ID*
<> Payload formatters ~	Pb01-I Paste the API here
1 Integrations	Token *
🇯 мотт	Datacake API Token
🗭 Webhooks	
Storage Integration	Create Datacake webhook
AWS IOT	
Azure IoT	
🏇 LoRa Cloud	
Collaborators	
Or API keys	
General settings	

D A	ΤΑ Ϲ Α Κ Ε						
Fleet > D Devices ∷≣ List	evices				Q, Search C	olumns 🗸	+ Add Device
							Actions 🗸
	DEVICE	PRIMARY	SECONDARY	DEVICE SIGNAL	DEVICE BATTERY		
•	LSPH01	N/A	N/A	N/A	N/A	•	
	DDS75	N/A	N/A	N/A	N/A	•	

DATACAKE		
Fleet > Devices		
Devices	Add Device ×	
i≘ List	ChawAN Choose from 16 LoRaWAN networks	
DEVICE	Particle Connect your Particle devices	
LSPH01	API Generic API device with support for MQTT and HTTP connectivity	
• \$31C	Pincode Claiming Claim an existing device by pincode	
Showing 1 to 3 of 3 results	IoT Creators NB-IoT and LTE-M connectivity by Deutsche Telekom	
	Dragino NB-IoT Connect Dragino NB-IoT devices	
	Connect INCE devices	
	Next	

Product	Network Ser	ver Devices	STEP 4 Plan	
Datacake Produ	ct			
You can add devices	to an existing product on [atacake, create a new empty produc	t or start with one of the templates. Products	
allow you to share th	e same configuration (neid	s, dashboard and more) between dev	nces.	
New Product fro	m template	Existing Product	New Product	
Create new prod template	uct from a	Add devices to an existing product	Create new empty product	
4				
New Product				
If your device is not a	available as a template, you	can start with an empty device. You	will have to create the device definition (field	s,
dashboard) and prov	ide the payload decoder in	the device's configuration.		
Product Name				

dd LoRaWAN	N Device			
TEP 1 roduct	STEP 2 Network Server	STEP 3 Devices	STEP 4 Plan	
letwork Serve	er e LoRaWAN Network Server that your devi	ces are connected to.		
ୖ	Datacake LNS AUTOMATIC SETUP Start and scale easily with a managed	LNS	Uplinks	Downlinks
O IIIII	The Things Stack V3 TTN V3 / Things Industries		Uplinks	Downlinks
🔵 ø helium	Helium Use your own console		Uplinks	Downlinks
lorio t	LORIOT		Uplinks	Downlinks
ChirpStack	ChirpStack		Uplinks	Downlinks
🔿 🥂 Actility	Actility		Uplinks	Downlinks
	E of 1E roculto		Previous	Next

STEP 1 Product	STEP 2 Network Server	r D	TEP 3 evices	STEP 4 Plan	
Add Devices					
Manual Import from	The Things Stack				
Please provide one or multi	iple LoRaWAN device E	UIs along with the co	rresponding names they	should have on Datacake.	
information on how to form	nat the file, please refer	to our documentatio	1.	, and a cot of tagor of more	-
	() Drag a	nd drop a .csv file he	re or click to choose one		
DEVEUI	() Drag a	nd drop a .csv file he NAME	re or click to choose one LOCATION	TAGS	
DEVEUI ⑦ FA 23 45 55 55	① Drag a 55 55 51 8 bytes	NAME	re or click to choose one LOCATION	TAGS Add tag	

DATACA	KΕ												
Fleet > PB01													
PB01													
Serial Number FA2345555555555	Last update Never												
Dashboard	History Downlinks	Onfiguration	n Debug 🧖 Rules	es Permission	ns								
Debug Log													
Time	Title		Details										
15:38:22	Recorded measurements	s from payload decoder	Decoder returned:	{"Alarm": "TRUE",	"BatV": 3.408,	"Hum_SHT41":	57.2, "S	ď	(C) Log	: null	ď	Recorded measurements:	{"ALARM": '
15:38:22	Recorded measurements	s from payload decoder	Decoder returned:	{"Alarm": "TRUE",	"BatV": 3.408,	"Hum_SHT41":	57.2, "S.	ß	🗘 Log	: null	ø	Recorded measurements:	{"ALARM": '
15:38:22	Recorded measurements	s from payload decoder	Decoder returned:	{"Alarm": "TRUE",	"BatV": 3.408,	"Hum_SHT41":	57.2, "S	ß	() Log	: null	ď	Recorded measurements:	{"ALARM":
15:38:22	Received webhook data	from tti	{"end_device_id	s":{"device_id":"e	ui-fa234555555	55555", 🖄	¢						

Ø DATACAKE	
Fleet > PB01	
PB01	
Serial Number Last update FA2345555555551 Never	
El Dashboard 👔 History 🚋 Downlinks 🥥 Configuration	
General Configuration	
Device name	
P801	
lcon	
No icon selected 🐱	
You can override the default product icon for this device	
Location description	Ontional

Copy and paste the <u>TTN decoder</u> here and save.

Payload Decoder	Product-wide setting
<pre>When your devices sends data, the payload will be passed to the payload decoder, alongside the event's name. The payload decoder then transforms it to measurements. * function detailag(i_pyres){ ver be partial ((tyres[i=1]<<3>)if byres[i=1]/10).tofixed(i)); ver be partial ((tyres[i=1]<<3>)if byres[i=1]/10).tofixed(i)); ver det (byres[i=1]((tyres[i=1](byres[i=1]/10).tofixed(i)); ver det(byres[i=1](tyres[i=1](bers[i=1]/10).tofixed(i)); ver det(byres[i=1](tyres[i=1](bers[i=1]/10).tofixed(i)); ver det(byres[i=1]</pre>	Ĵ
<pre>2</pre>	

Visual widgets please read the DATACAKE documentation.

2.6 Datalog Feature

When user want to retrieve sensor value, he can send a poll command from the IoT platform to ask sensor to send value in the required time slot.

2.6.1 Unix TimeStamp

Unix TimeStamp shows the sampling time of uplink payload. format base on

Size (bytes)	4	1	
DeviceTimeAns	32-bit unsigned integer : Seconds 8bits unsigned integer: frac		
Payload	since epoch*	second	
		in 1/2^8 second steps	
	Figure 40 · Device Time Area would add		

Figure 10 : DeviceTimeAns payload format

User can get this time from link: <u>https://www.epochconverter.com/</u> :

For example: if the Unix Timestamp we got is hex 0x60137afd, we can convert it to Decimal: 1611889405. and then convert to the time: 2021 – Jan -- 29 Friday 03:03:25 (GMT)



2.6.2 Poll sensor value

User can poll sensor value based on timestamps from the server. Below is the downlink command.

Timestamp start and Timestamp end use Unix TimeStamp format as mentioned above. Devices will reply with all data log during this time period, use the uplink interval.

For example, downlink command

31 5FC5F350 5FC6 0160 05

Is to check 2020/12/1 07:40:00 to 2020/12/1 08:40:00's data

Uplink Internal =5s, means PB01 will send one packet every 5s. range 5~255s.

2.6.3 Datalog Uplink payload

See Uplink FPORT=3, Datalog sensor value

2.7 Button

ACT button

Long press this button PB01 will reset and join network again.



Alarm button

Press the button PB01 will immediately uplink data, and alarm is "TRUE".



2.8 LED Indicator

The PB01 has a triple color LED which for easy showing different stage.

Hold the ACT green light to rest, then the green flashing node restarts, the blue flashing once upon request for network access, and the green constant light for 5 seconds after successful network access

In a normal working state:

- When the node is restarted, hold the ACT GREEN lights up, then the GREEN flashing node restarts. The BLUE flashing once upon request for network access, and the GREEN constant light for 5 seconds after successful network access.
- · During OTAA Join:
 - · For each Join Request uplink: the GREEN LED will blink once.
 - Once Join Successful: the GREEN LED will be solid on for 5 seconds.
- After joined, for each uplink, the **BLUE LED** or **GREEN LED** will blink once.
- Press the alarm button, The RED flashes until the node receives the ACK from the platform and the BLUE light stays 5s.

2.9 Buzzer

The PB01 has button sound and ACK sound and users can turn on or off both sounds by using AT+SOUND.

• Button sound is the music produced by the node after the alarm button is pressed.

Users can use<u>AT+OPTION</u> to set different button sounds.

• ACK sound is the notification tone that the node receives ACK.

3. Configure PB01 via AT command or LoRaWAN downlink

Users can configure PB01 via AT Command or LoRaWAN Downlink.

- AT Command Connection: See FAQ.
- LoRaWAN Downlink instruction for different platforms: IoT LoRaWAN Server

There are two kinds of commands to configure PB01, they are:

General Commands:

These commands are to configure:

• General system settings like: uplink interval.

• LoRaWAN protocol & radio-related commands.

They are the same for all Dragino Devices which supports DLWS-005 LoRaWAN Stack(Note**). These commands can be found on the wiki: <u>End Device Downlink Command</u>

Commands special design for PB01

These commands are only valid for PB01, as below:

3.1 Downlink Command Set

Command Example	Function	Response	Downlink
AT+TDC=?	View current TDC time	1200000 OK	Default 1200000(ms)
AT+TDC=300000	Set TDC time	ОК	0X0100012C: 01: fixed command 00012C: 0X00012C=
			300(seconds)
ATZ	Reset node		0x04FF
AT+FDR	Restore factory settings		0X04FE
AT+CFM=?	View the current confirmation mode	0,7,0	Default 0,7,0
	Status	ОК	
AT+CFM=1,7,1	Confirmed uplink mode, the maximum	ОК	05010701
	increase by 1 for each retry		05: fixed command
			01:confirmed uplink
			07: retry 7 times
			01: fcnt count plus 1
AT+NJM=?	Check the current network connection method	1 OK	Default 1
AT+NJM=0	Change the network connection method to ABP	Attention:Take effect after ATZ OK	0X2000: ABP 0x2001: OTAA 20: fixed command
AT+RPL=?	View current RPL settings	0 OK	Default 0
AT+RPL=1	set RPL=1	ОК	0x2101: 21: fixed command 01: for details, check wiki
AT+ADR=?	View current ADR status	1 ОК	Default 0
AT+ADR=0	Set the ADR state to off	ОК	0x2200: close 0x2201: open 22: fixed command
AT+DR=?	View the current DR settings	OK	
AT+DR=1	set DR to 1 It takes effect only when ADR=0	ОК	0X22000101: 00: ADR=0 01: DR=1 01: TXP=1 22: fixed command
AT+TXP=?	View the current TXP	OK	

AT+TXP=1	set TXP to 1 It takes effect only when ADR=0	ОК	0X22000101: 00: ADR=0 01: DR=1 01: TXP=1 22: fixed command
AT+RJTDC=10	Set RJTDC time interval	ОК	0X26000A: 26: fixed command 000A: 0X000A=10(min) for details, check wiki
	Retrieve stored data for a specified period of time		0X3161DE7C7061DE8A800A: 31: fixed command 61DE7C70:0X61DE7C70=2022/1/12 15 61DE8A80:0X61DE8A80=2022/1/12 16: 0A: 0X0A=10(second) View details 2.6.2
AT+DDETECT=?	View the current DDETECT setting status and time	1,1440,2880 OK	Default 1,1440,2880(min)
AT+DDETECT= 1,1440,2880	Set DDETECT setting status and time (When the node does not receive the downlink packet within the set time, it will re-enter the network)	OK	0X320005A0: close 0X320105A0: open 32: fixed command 05A0: 0X05A0=1440(min)

3.2 Set Password

Feature: Set device password, max 9 digits.

AT Command: AT+PWORD

Command Example	Function	Response
AT+PWORD=?	Show password	123456 OK
AT+PWORD=999999	Set password	ОК

Downlink Command:

No downlink command for this feature.

3.3 Set button sound and ACK sound

Feature: Turn on/off button sound and ACK alarm.

AT Command: AT+SOUND

Command Example	Function	Response
AT+SOUND=?	Get the current status of button sound and ACK sound	1,1 OK
AT+SOUND=0,1	Turn off the button sound and turn on ACK sound	ОК

Downlink Command: 0xA1

Format: Command Code (0xA1) followed by 2 bytes mode value.

The first byte after 0XA1 sets the button sound, and the second byte after 0XA1 sets the ACK sound. (0: off, 1: on)

• Example: Downlink Payload: A10001 // Set AT+SOUND=0,1 Turn off the button sound and turn on ACK sound.

3.4 Set buzzer music type(0~4)

Feature: Set different alarm key response sounds. There are five different types of button music.

AT Command: AT+OPTION

Command Example	Function	Response
AT+OPTION=?	Get the buzzer music type	3
		OK
AT+OPTION=1	Set the buzzer music to type 1	ОК

Downlink Command: 0xA3

Format: Command Code (0xA3) followed by 1 byte mode value.

• Example: Downlink Payload: A300 // Set AT+OPTION=0 Set the buzzer music to type 0.

3.5 Set Valid Push Time

Feature: Set the holding time for pressing the alarm button to avoid miscontact. Values range from 0 ~1000ms.

AT Command: AT+STIME

Command Example	Function	Response
AT+STIME=?	Get the button sound time	0 OK
AT+STIME=1000	Set the button sound time to 1000 ms	ОК

Downlink Command: 0xA2

Format: Command Code (0xA2) followed by 2 bytes mode value.

Example: Downlink Payload: A203E8 // Set AT+STIME=1000

Explain: Hold the alarm button for 10 seconds before the node will send the alarm packet.

4. Battery & How to replace

4.1 Battery Type and replace

PB01 uses 2 x AAA LR03(1.5v) batteries. If the batteries running low (shows 2.1v in the platform). Users can buy generic AAA battery and replace it.

Note:

1. The PB01 doesn't have any screw, users can use nail to open it by the middle.



2. Make sure the direction is correct when install the AAA batteries.


4.2 Power Consumption Analyze

Dragino battery powered product are all runs in Low Power mode. We have an update battery calculator which base on the measurement of the real device. User can use this calculator to check the battery life and calculate the battery life if want to use different transmit interval.

Instruction to use as below:

Step 1: Downlink the up-to-date DRAGINO_Battery_Life_Prediction_Table.xlsx from:

battery calculator

Step 2: Open it and choose

- · Product Model
- · Uplink Interval
- Working Mode

And the Life expectation in difference case will be shown on the right.

S		How to use: 1.Please do not modify the 2.After selecting the pro- 3.Explanation of abbrevia	ne formula in the table duct number and model, then s ations : WD>Watchdog TX	select the TDC unit, and fi >Transimt RX>Rece	inally enter the TDC, yo	u can get the predicted	battery life			
battery the	Product	battery capacity(mah)		t i		г				
	LHT52_LoRaWAN_Temperature _Humidity_Sensor	1000		curren	\$	R X	R X			
	UNIT	TDC (Uplink Interval)	Work Mode		v Plin	1	2 W			
	min	20	EXT=1	∎A) ⊥ti	o sleep 🍕		D	sleep		
		Sleep power (mA*ms)	Sampling power (mA*ms)	TX power (mA*ms)	RX1 power (mA*ms)	RX2 power (mA*ms)	Watchdog power (mA*r	Average power (mA)	Detect power (mA*ms)	Life expectancy (yr)
EU868	DR5_SF7_125K_14dB	8400	787.31488	7367.8544	880.58488	4097.083	757.1706667	0.018567657	C	5.5
	DR4_SF8_125K_14dB	8400	787.31488	13210.2528	950.0943	4097.083	757.1706667	0.023491202	C	4.4
	DR3_SF9_125K_14dB	8400	787.31488	23652.608	1068.0336	4097.083	757.1706667	0.032284892	C	3.3
	DR2_SF10_125K_14dB	8400	787.31488	42244.125	1461.4876	4097.083	757.1706667	0.048089509	C	2.3
	DR1_SF11_125K_14dB	8400	787.31488	94013.4	2230.4828	4097.083	757.1706667	0.091803712	C	1.2
	DR0_SF12_125K_14dB	8400	787.31488	168081	4097.083	4097.083	757.1706667	0.1549162	C	0.7
US915	DR3_SF7_125K_20dB	8400	787.31488	8441.476	681.61989	1587.135	757.1706667	0.01720746	c	5.9
	DR2_SF8_125K_20dB	8400	787.31488	15170.785	913.6491	1587.135	757.1706667	0.02300594	C	4.5
	DR1_SF9_125K_20dB	8400	787.31488	27254.383	941.388	1587.135	757.1706667	0.033092867	C	3.2
	DR0_SF10_125K_20dB	8400	787.31488	48745.32	995.2243	1587.135	757.1706667	0.051032452	c	2.1

5. Accessories

Program Converter (AS-02)

AS-02 is an optional accessory, it is USB Type-C converter. AS-02 provide below feature:

1. Access AT console of PB01 when used with USB-TTL adapter. See this link.

AS-02 USB Type-C Converter



6. FAQ

6.1 How to use AT Command to configure PB01

PB01 supports AT Command set. Users can use a USB to TTL adapter plus the Program Cable to connect to PB01 for using AT command, as below.



Connection:

- USB to TTL GND <--> Program Converter GND pin
- USB to TTL RXD <--> Program Converter D+ pin
- USB to TTL TXD <--> Program Converter A11 pin

In PC, User needs to set **serial tool**(such as <u>putty</u>, SecureCRT) baud rate to **9600** to access to access serial console for PB01. The AT commands are disable by default and need to enter password (default:**123456**) to active it. Timeout to input AT Command is 5 min, after 5-minute, user need to input password again.

Input password and ATZ to activate PB01, as shown below:

Serial Port Utility - Personal Edit	ion		_	
<u>File Edit View Tools Control</u>	<u>H</u> elp			
	+- 🛅 🕸			
Serial Port Setting Port COM3(Sil	[Tx][17:44:05.496] [Rx][17:44:05.513] [Tx][17:44:17.438]	123456 Correct Password ATZ		-
Baudrate 9600 💌 Data Bits 8 💌	[Rx][17:44:17.653] [Rx][17:44:17.653] [Rx][17:44:17.653] [Rx][17:44:19.994]	Dragino OTA bootloader EU868 v1.3		
Parity None 💌 Stop Bits 1 💌	[Rx][17:44:20.004] [Rx][17:44:20.024] [Rx][17:44:20.054]	Dragino PB01-LB Device Image Version: v1.0.0 LoRaWan Stack: DB-LWS-007		
Flow Type None	[Rx][17:44:20.074] [Rx][17:44:20.104]	Frequency Band: EU868 DevEui= 00 00 22 33 44 55 66 71		
■ Receive Setting ■ Text ○ Hex	[Rx][17:44:20.134] [Rx][17:44:20.173] [Rx][17:44:20.173]	Enter Password to Active AT Command	s	
□ Auto Feed Line	[Rx][17:44:20.213] [Rx][17:44:20.263]			
I⊽ Display Time	[Rx][17:44:20.263] [Rx][17:44:20.303] [Rx][17:44:20.343]	***** UpLinkCounter= 0 ***** TX on freq 868.100 MHz at DR 5 txDone		
Send Setting	1 DV1117.44.95 3941	DY on free 868 100 MHz at DD 5		•
● Text ○ Hex □ Loop 1000 ÷ ms			_	Send
□ Line by Line	ATZ			•
COM3 OPENED, 9600, 8, NONE,	1, OFF Rx: 619 Bytes	Tx: 13 Bytes		

6.2 AT Command and Downlink

Sending ATZ will reboot the node

Sending AT+FDR will restore the node to factory settings

Get the node's AT command setting by sending AT+CFG

Example:

AT+DEUI=FA 23 45 55 55 55 55 51

AT+APPEUI=FF AA 23 45 42 42 41 11

AT+APPKEY=AC D7 35 81 63 3C B6 05 F5 69 44 99 C1 12 BA 95

```
AT+DADDR=FFFFFFF
```

AT+ADR=1 AT+TXP=7 AT+DR=5 AT+DCS=0 AT+PNM=1 AT+RX2FQ=869525000 AT+RX2DR=0 AT+RX1DL=5000 AT+RX2DL=6000 AT+JN1DL=5000 AT+JN2DL=6000 AT+NJM=1 AT+NWKID=00 00 00 13 AT+FCU=61 AT+FCD=11 AT+CLASS=A AT+NJS=1 AT+RECVB=0: AT+RECV= AT+VER=EU868 v1.0.0 AT+CFM=0,7,0 AT+SNR=0 AT+RSSI=0 AT+TDC=1200000 AT+PORT=2 AT+PWORD=123456 AT+CHS=0 AT+RX1WTO=24 AT+RX2WTO=6 AT+DECRYPT=0 AT+RJTDC=20 AT+RPL=0 AT+TIMESTAMP=systime= 2024/5/11 01:10:58 (1715389858) AT+LEAPSEC=18

AT+SYNCMOD=1

AT+SYNCTDC=10

AT+SLEEP=0

AT+ATDC=1

AT+UUID=003C0C53013259E0

AT+DDETECT=1,1440,2880

AT+SETMAXNBTRANS=1,0

AT+DISFCNTCHECK=0

AT+DISMACANS=0

AT+PNACKMD=0

AT+SOUND=0,0

AT+STIME=0

AT+OPTION=3

Example:

Serial Port Utility - Personal Edition -		×
<u>File Edit View Tools Control H</u> elp		
Serial Port Setting TX on freq 868.300 MHz at DR 5 Port COM3(Sil TX on freq 868.300 MHz at DR 5 Baudrate 9600 Image: Comparison of the system of the sys		•
Image: Display Send AT+SOUND=1,1 Image: Display Time OK		
Send Setting		•
Image: Text O Hex Image: Loop 1000 Image: Text →	Sen	d
Line by Line AT+SOUND=1,1		•
COM3 OPENED, 9600, 8, NONE, 1, OFF Rx: 1,266 Bytes Tx: 74 Bytes		,

6.3 How to upgrade the firmware?

PB01 requires a program converter to upload images to PB01, which is used to upload image to PB01 for:

- Support new features
- For bug fix
- Change LoRaWAN bands.

PB01 internal program is divided into bootloader and work program, shipping is included bootloader, the user can choose to directly update the work program.

If the bootloader is erased for some reason, users will need to download the boot program and the work program.

6.3.1 Update firmware (Assume device have bootloader)

Step 1: Connect UART as per FAQ 6.1

Step 2: Update follow Instruction for update via DraginoSensorManagerUtility.exe.

6.3.2 Update firmware (Assume device doesn't have bootloader)

Download both the boot program and the worker program . After update , device will have bootloader so can use above 6.3.1 method to update woke program.

Step 1: Install <u>TremoProgrammer</u> first.



Step 2: Hardware Connection

Connect PC and PB01 via USB-TTL adapter .

Note: To download firmware in this way, you need to pull the boot pin(Program Converter D- pin) high to enter the burn mode. After burning, disconnect the boot pin of the node and the 3V3 pin of the USB-TTL adapter, and reset the node to exit the burning mode.

Connection:

- USB-TTL GND <--> Program Converter GND pin
- USB-TTL RXD <--> Program Converter D+ pin
- USB-TTL TXD <--> Program Converter A11 pin
- USB-TTL 3V3 <--> Program Converter D- pin

Step 3: Select the device port to be connected, baud rate and bin file to be downloaded.

Tremo Programmer	_		×
Flash			
Serial Setting Port COM6 ~ Baudra [.] 921600 ~			
Download Files			
 :/LoRa_OTA_Bootloader_v1.3.bin io/Desktop/send/PB01 AS923.bin 	@ @)x08000000)x0800D000	
	@		•
	@		
	@		
	@		
Download Start Erase All		0%	

Users need to reset the node to start downloading the program. 1. Reinstall the battery to reset the node 2. Hold down the ACT button to reset the node (see 2.7).

When this interface appears, it indicates that the download has been completed.

Tremo Programmer	-		×
Flash			
Serial Setting Port COM6 ~ Baudra [.] 921600 ~			
Download Files			
/LoRa_OTA_Bootloader_v1.3.bin	@)x080000	00
o/Desktop/send/PB01 AS923.bin	@) x0800D0	00
	@	2	
	@	2	
	@	2	
	@	2	
Download			
Start Erase All			
			100%
DK Download files successfully			

Finally, Disconnect Program Converter D- pin, reset the node again , and the node exits burning mode.

6.4 How to change the LoRa Frequency Bands/Region?

User can follow the introduction for how to upgrade image. When download the images, choose the required image file for download.

6.5 Why i see different working temperature for the device?

The working temperature range of device depends on the battery user choose.

- Normal AAA Battery can support -10 ~ 50 °C working range.
- Special AAA battery can support -40 ~ 60 °C working range. For example: Energizer L92

7. Order Info

7.1 Main Device

Part Number: PB01-LW-XX (white button) / PB01-LR-XX(Red Button)

XX : The default frequency band

- AS923: LoRaWAN AS923 band
- AU915: LoRaWAN AU915 band
- EU433: LoRaWAN EU433 band
- EU868: LoRaWAN EU868 band
- KR920: LoRaWAN KR920 band
- US915: LoRaWAN US915 band
- IN865: LoRaWAN IN865 band
- CN470: LoRaWAN CN470 band

7. Packing Info

Package Includes:

• PB01 LoRaWAN Push Button x 1

8. Support

- Support is provided Monday to Friday, from 09:00 to 18:00 GMT+8. Due to different timezones we cannot offer live support. However, your questions will be answered as soon as possible in the before-mentioned schedule.
- Provide as much information as possible regarding your enquiry (product models, accurately describe your problem and steps to replicate it etc) and send a mail to support@dragino.com.

9. Reference material

• Datasheet, photos, decoder, firmware

10. FCC Warning

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;

(2) this device must accept any interference received, including interference that may cause undesired operation.







LHT52 senses environment temperature and humidity and uplink sensor value to IoT server via LoRaWAN wireless



Dash Board in Application Server

Use LHT52 in TTN and Datacake

THE THINGS 5 NETWORK TTN LoRaWAN Server LoRaWAN Internet DLOS8 LoRaWAN Gateway mmmmmmmm Dash Board in Datacake @ EU1 Co THE THENOS STACK SE Overview C Appl -i 6. UHTS2_TES INT LHT52_TEST LHT52_TEST 55 Ox L End devices No recent activity () 25.10 20 Live data Application ID 2. Integral Dec 50, 2021 15:56:25 21. Collaborator Dec 30, 2021 13:56:29 ast updated at Ov API keys Ceneral settings End devices (0) 10 A

NETWORK						
	Applications > 1HT52 TEST > End devices	> Register manually				
LHT52_TEST	пррисация у спазе_теат у силиениев у нарижи начновну					
	Register end device					
Cverview						
3 End devices	From The LoRaWAN Device Repository	lanually				
Live data						
<> Payload formatters ~	Frequency plan () *					
え Integrations 🗸	LoRaWAN version ()*					
** Collaboratore	MAC V1.0.3					
Consudiators	Regional Parameters version ⑦*					
Ov API keys	PHY V1.0.3 REV A					
🏩 General settings	Channel and a share to De WAN also and					
	Show advanced activation, LoRaWAN class and	cluster settings ~				
	DevEUI®*					
	25 32 12 45 65 26 12 35	0/50 used				
	25 32 12 45 65 26 32 16 Fill wit	h zeros				
	АррКеу 🕲 *					
	25 32 12 45 65 26 32 16 89 48 8	5 65 45 87 89 55 🗘 Generate				
	End device ID () *					
	Iht52test01					
	This value is automatically prefilled using the D	evEUI				
	View registered end device					
	 Register another end device of this type 					
< Hide sidebar	Register end device					
EpochConverter	Code Beautify	JSON Formatter Hi				
O .	All Numbers Converter	De sine al ta Ulare				
Epoch & Unix Timestamp Conversion To	Numbers to Words Converter	Decimal to Hex				
	Decimal to Binary Converter	Enter the Decimal number to decode Sample				
	Decimal to Hex Converter					
The current Unix epoch time is 1611889418	Decimal to Octal Converter					
	Binary to Decimal Converter					
Convert epoch to human-readable date and vice ver	Binary to Hex Converter					
1611889090 Timestamp to Human date [batch convert]	Binary to Octal Converter					
Supports Unix timestamps in seconds, milliseconds, microseconds and nanoseconds.	Binary to Text Converter					
Assuming that this timestamp is in seconds: GMT: 2021年1月29日Friday 02:58:10	Text to Binary Converter	Auto Convert File Co				
Your time zone: 2021年1月29日星期五 10:58:10 GMT+08:00 Relative: 3 minutes ago	Hex to Binary Converter	The number in hex (base 16) representation:				
	Hex to Octal Converter	60127afd				
Mon Day Yr Hr Min Sec	Octal to Decimal Converter	00137810				
The second secon						

Performance















LHT65N in a LoRaWAN Network









.



2. Enter registration data

Select The frequency plan used by the end device	×
The frequency plan used by the end device	
the mapping pair area of the end dence	
AppEUI 🗇 *	

The AppEUI uniquely identifies the owner of the end device. If no AppEUI is provided by the device manufacturer (usually for development), it can be filled with zeros.

DevEUI 🗇 *

The DevEUI is the unique identifier for this end device

.

AppKey 🕲 *

2. Enter registration data

Frequency plan 🗇 *

Europe 863-870 MHz (SF12 for RX2)

The frequency plan used by the end device

AppEUI ③*

..

The AppEUI uniquely identifies the owner of the end device. If no AppEUI is provided by the device manufacturer (usually for device)

 \sim

DevEUI 🗇 *

The DevEUI is the unique identifier for this end device

AppKey ⊗*

The root key to derive session keys to secure communication between the end device and the application

End device ID*

my-new-device		
---------------	--	--

After registration

User Manual for LoRaWAN /NB -IoT End Nodes - PB01 -- LoRaWAN Button User Manual

	 Last seen 3 seconds ag 	jo ↑ 573 ↓ 34 Created 8 days ago
	Overview Live dat	a Messaging Location Payload formatters Claiming General settings
~	Time Type	Data preview II Pause 🥤 Clear
~	↑ 10:09:42 Forward data message t	o Applic_ DevAddr: 26 08 B5 9A MAC payload: 79 41 62 C5 18 2A 89 99 5A E2 A7 FPort: 2 SNR: -6.2 RSSI: -126 Bandwidth: 125000
	10:09:42 Store upstream data me	ssage DevAddr: 26 08 B5 9A
	↑ 10:09:42 Forward uplink data me	ssage *mperature Sensor", Hum_SHT: 56.1, TempC_DS: 327.67, TempC_SHT: 30.28 CB F4 08 D4 02 31 01 7F FF 7F FF FPort: 2 SNR: -6.2 RSSI: -126 Ban
	↑ 10:09:42 Receive uplink data me	ssage DevAddr: 26 08 B5 9A
	↑ 10:09:42 Successfully processed	data me. DevAddr: 26 08 B5 9A FCnt: 573 FPort: 2 MAC payload: 79 41 62 C5 18 2A B9 99 5A E2 A7 Bandwidth: 125000 SNR: -6.2 RSSI: -126 Raw payload:
	↑ 10:09:42 Drop data message	Uplink is a duplicate
	\uparrow 10:09:42 Receive data message	DevAddr: 26 08 B5 9A FCnt: 573 FPort: 2 MAC payload: 79 41 62 C5 18 2A B9 99 5A E2 A7 Bandwidth: 125000 SNR: 7.5 RSSI: -46 Raw paylor
		Overview Live data Messaging Location Psyload formatters Claiming General settings
i.	S Overview	
	🙏 End devices	Uplink Downlink
	Uve data	
	O Payload formatters ~	These payload formatters are executed on uplink messages from this end device and take precedence over application level payload formatters.
	∴ Integrations 👻	
	A Collaborators	Formatter type Use application payload formatter None Japancrist GRPC service Cavervise IP Denovitory
	On Afrikana	Formatter parameter *
	• · · · · · · · · ·	1 function decodedplink(input)
	Q General settings	3 dets: [4 bytes: input.bytes
		s b. saminga: ().
		a 32
	A MARINA W	Save changes
	< Horstondar	
	Overview	Overview Live data Messaging Location Payload formatters Claiming General settings
	🙏 End devices	United - Description
	Live data	
	() Davload formatters	
	rayload formatters	rinese playtoad formatters are executed on uplink messages from this end device and take precedence over application level payload formatters.
	入 Integrations V	Formatter type
	2 Collaborators	Use application payload formatter None Javascript GRPC service CayenneLPP Repository
	🗛 API keys	Formatter parameter*
'	General settings	2 xeturn i 3 data: [
		<pre>4 bytes: input.bytes 5 },</pre>
		6 warnings: [], 7 errors: []
		9 H
	< Hide sidebar	Save changes



	error	ack	activation	downlink	uplink	Filters
			port	counter	time	
3 F6 0B 0D 03 76 01 0A DD 7F FF	payload: CB		2	375	:38:57	^ 08
D F5 C6 02 2E 01 F5 4F 7F FF	vload: CBBE	ра	2	1559	54	 10:02:



Applications > lgt92test > Webhooks > Add > Datacake

Add custom webhook

Template information



Datacake Send data to Datacake via TTI adapter

About Datacake 🖾 | Documentation 🖾

Template settings

Webhook ID*

my-new-datacake-webhook

Token*

Datacake API Token

Create datacake webhook

ACAKE	complex configuration and setup.	
ACARL	Search	۹ All Manufacturers
DEVICE	• Dragino LSE01 Dragino	earch
ldds75-test Ids01	Oragino LT-22222-L Dragino	
lgt92	Dragino LWL01 Dragino	S DRAGINO
lht65	C ESP32-Paxcounter cyberman54	SPRESSIF
lht65-test Ise01	C Elsys ELT-2 Elsys.se	C ELSYS.se
lse01-v3	Showing 26 to 30 of 79 results	Previous Next
lsn50		
lt		Next
Size /h	utos)	1
DeviceTime	eAns 32-bit unsigned integer	: Seconds 8bits unsigned integer: fractional-

0120 (0) (0)		l •
viceTimeAns	32-bit unsigned integer : Seconds	8bits unsigned integer: fractional-
Payload	since epoch*	second
-		in 1/2^8 second steps
		In 72°° second steps

Figure 10 : DeviceTimeAns payload format





Behavior on ACT	Function	Action
Pressing ACT between 1s < time < 3s	Test uplink status	If LHT65N is already Joined to the LoRaWAN network, LHT65N will send an uplink packet, if LHT65N has an external sensor connected, blue led will blink once. If LHT65N has no external sensor, red led will blink once.
Pressing ACT for more than 3s	Active Device	green led will fast blink 5 times, LHT65N will enter working mode and start to JOIN LoRaWAN network. green led will solid turn on for 5 seconds after join in network.
Fast press ACT 5 times	Deactivate Device	red led will solid on for 5 seconds. This means LHT65N is in Deep Sleep Mode.



Flash Addr	Unix Time	Ext	BAT voltage	Value
80196E0	21/1/19 04:27:03	1	3145	sht_temp=22.00 sht_hum=32.6 ds_temp=327.67
80196F0	21/1/19 04:28:57	1	3145	sht_temp=21.90 sht_hum=33.1 ds_temp=327.67
8019700	21/1/19 04:30:30	1	3145	sht_temp=21.81 sht_hum=33.4 ds_temp=327.67
8019710	21/1/19 04:40:30	1	3145	sht_temp=21.65 sht_hum=33.7 ds_temp=327.67
8019720	21/1/19 04:50:30	1	3147	sht_temp=21.55 sht_hum=34.1 ds_temp=327.67
8019730	21/1/19 05:00:30	1	3149	sht_temp=21.50 sht_hum=34.1 ds_temp=327.67
8019740	21/1/19 05:10:30	1	3149	sht_temp=21.43 sht_hum=34.6 ds_temp=327.67
8019750	21/1/19 05:20:30	1	3151	sht_temp=21.35 sht_hum=34.9 ds_temp=327.67

Command Example	Function	Response
AT+TDC?	Show current transmit Interval	30000 OK the interval is 30000ms = 30s
AT+TDC=60000	Set Transmit Interval	OK Set transmit interval to 60000ms = 60 seconds

Command Example	Function	Response
AT+EXT?	Get current external sensor mode	1 OK External Sensor mode =1
AT+EXT=1	Set external sensor mode to 1	
AT+EXT=9	Set to external DS18B20 with timestamp	

Command Example	Function	Response
AT+PID=1	Enable PID uplink	ОК

Command Example	Function	Response
AT+PWORD=?	Show password	123456
		ок
AT+PWORD=999999	Set password	ОК

Command Example	Function	Response
AT+DISAT	Quit AT Commands mode	ОК

Command Example	Function	Response
AT+SLEEP	Set to sleep mode	Clear all stored sensor data OK

Command Example	Function
AT+TIMESTAMP=1611104352	ок
	Set System time to 2021-01-20 00:59:12

Command Example	Function
AT+SYNCMOD=1	Enable Sync system time via LoRaWAN MAC Command (DeviceTimeReq)

Command Example	Function
AT+SYNCTDC=0x0A	Set SYNCTDC to 10 (0x0A), so the sync time is 10 days.
Command Example	Response
-------------------	--
AT+PDTA=1,3	8019500 19/6/26 16:48 1 2992 sht_temp=28.21 sht_hum=71.5 ds_temp=27.31
	8019510 19/6/26 16:53 1 2994 sht_temp=27.64 sht_hum=69.3 ds_temp=26.93
	8019520 19/6/26 16:58 1 2996 sht_temp=28.39 sht_hum=72.0 ds_temp=27.06
Print page 1 to 3	8019530 19/6/26 17:03 1 2996 sht_temp=27.97 sht_hum=70.4 ds_temp=27.12
	8019540 19/6/26 17:08 1 2996 sht_temp=27.80 sht_hum=72.9 ds_temp=27.06
	8019550 19/6/26 17:13 1 2998 sht_temp=27.30 sht_hum=72.4 ds_temp=26.68
	8019560 19/6/26 17:22 1 2992 sht_temp=26.27 sht_hum=62.3 ds_temp=26.56
	8019570
	8019580
	8019590
	80195A0
	80195B0
	80195C0
	80195D0
	80195E0
	80195F0
	ок

Command Example	Response
AT+PLDTA=5	Stop Tx and RTP events when read sensor data
	1 19/6/26 13:59 1 3005 sht_temp=27.09 sht_hum=79.5 ds_temp=26.75
	2 19/6/26 14:04 1 3007 sht_temp=26.65 sht_hum=74.8 ds_temp=26.43
Print last 5 entries	3 19/6/26 14:09 1 3007 sht_temp=26.91 sht_hum=77.9 ds_temp=26.56
	4 19/6/26 14:15 1 3007 sht_temp=26.93 sht_hum=76.7 ds_temp=26.75
	5 19/6/26 14:20 1 3007 sht_temp=26.78 sht_hum=76.6 ds_temp=26.43
	Start Tx and RTP events
	ОК

Command Example		Function		Response			
AT+CLRDTA		Clear date record		Clear all stored sensor data OK			
Bits	7	6	5		4	[3:0]	
Status & Ext	Not Defined	Poll Message Flag	Sync ti	ime OK	Unix TimeRequest	Ext:0b(1001)	

1byte	4bytes	4bytes	1byte
31	Timestamp start	Timestamp end	Uplink Interval

Bits	7	6	5	4	[3:0]
Status & Ext	Not Defined	Poll Message Flag	Sync time OK	Unix Time Request	Ext:0b(1001)

EXT # Value	External Sensor Type
0x01	Sensor E3, Temperature Sensor
0x09	Sensor E3, Temperature Sensor, Datalog Mod

Bit(bit)	[15:14]	[13:0]
Value	BAT Status 00(b): Ultra Low (BAT <= 2.50v) 01(b): Low (2.50v <=BAT <= 2.55v) 10(b): OK (2.55v <= BAT <=2.65v) 11(b): Good (BAT >= 2.65v)	Actually BAT voltage

Behavior on ACT	Function	Action		
Pressing ACT between 1s < time < 3s	Test uplink status	If LHT65N is already Joined to the LoRaWAN network, LHT65N will send an uplink packet, if LHT65N has an external sensor connected, blue led will blink once. If LHT65N has no external sensor, red led will blink once.		
Pressing ACT for more than 3s	Active Device	green led will fast blink 5 times, LHT65N will enter working mode and start to JOIN LoRaWAN network. green led will solid turn on for 5 seconds after join in network.		
Fast press ACT 5 times	Deactivate Device	red led will solid on for 5 seconds. This means LHT65N is in Deep Sleep Mode.		
Behavior on ACT	Function	Action		
Pressing ACT between 1s < time < 3s	Test uplink status	If LHT65N is already Joined to the LoRaWAN network, LHT65N will send an uplink packet, if LHT65N has an external sensor connected, blue led will blink once. If LHT65N has no external sensor, red led will blink once.		
Pressing ACT for more than 3s	Active Device	green led will fast blink 5 times, LHT65N will enter working mode and start to JOIN LoRaWAN network. green led will solid turn on for 5 seconds after join in network.		
Fast press ACT 5 times	Deactivate Device	red led will solid on for 5 seconds. This means LHT65N is in Deep Sleep Mode.		
Behavior on ACT	Function	Action		
Pressing ACT between 1s < time < 3s	Test uplink status	If LHT65N is already Joined to the LoRaWAN network, LHT65N will send an uplink packet, if LHT65N has an external sensor connected, blue led will blink once. If LHT65N has no external sensor, red led will blink once.		
Pressing ACT for more than 3s	Active Device	green led will fast blink 5 times, LHT65N will enter working mode and start to JOIN LoRaWAN network. green led will solid turn on for 5 seconds after join in network.		
Fast press ACT 5 times	Deactivate Device	e red led will solid on for 5 seconds. This means LHT65N is in Deep Sleep Mode.		

Command Example	Function	Response
AT+PNACKMD=1	Poll None-ACK message	ОК



TYPE-CBeta(Male)

🔤 友善串口调试助手	- D X
文件(E) 编辑(E) 视图(V) 工具(I] 帮助(H)
📷 🍋 🔚 🚥 🕂 —	
串口设置	ATZ
串口 USB-SER(COM6) 🔻	Durging LUTETH Dourse
波特率 9600 ▼	Image V
数据位 8 ▼	ersion: v1.0 LoBawan Stack: DB-LWS-007
校验位 None ▼	Frequency Band: AS923
停止位 1 🔹	DevEui= 70 B3 D5 7E D0 05 13 8C Enter Password to Active AT Commands
流控 None 🔻	
接收设置	Use AT+DEBUG to see more debug info
ASCII O Hex	***** UpLinkCounter= 0 ***** TX on freq 923.200 MHz at DR 2
☑ 自动换行	txDone
🔽 显示发送	
🗌 显示时间	
发送设置	
O ASCII 🔿 Hex	ATZ
□ 重复发送 1000 👤 ms	发送
	A117
COM6 OPENED, 9600, 8, NONE, 1,	OFF Rx: 269 Bytes Tx: 5 Bytes



Page 77 / 142 - last modified by Xiaoling on 2024/07/05 09:53

🔤 友善串口调试助手 - 试用版			—		×
文件(E) 编辑(E) 视图(V) 工具(T) 控制(C)	帮助(<u>H</u>)				
	- 🔁 🕸				
串口设置	ATZ				•
端 ロ COM5(USB-SERIAL CI▼	ATZ				
波特率 9600 🔹	AT7				
数据位 8 ▼					
校验位 None	ATZ				
	WSC1-L LoRaWAN Sensor				
	Image Version: v1.0.1				
流控 None ▼	LoRaWan Stack: DR-LWS-00	17			
	Frequency Band: US915				
┌ 接收设置 ————————————————————————————————————	DevEui= 00 35 86 EC 8D E	9 9E BD			
• ASCII C Hex	RX on freq 923.300 MHz a	t DR 0			
□ 自动换行					
▼ 显示发送	JoinRequest NbTrials= 72	1			
□ 显示时间	Please use AT+DEBUG to s	ee debug info			
	***** UpLinkCounter= 0 *	****			
反应设 面	TX on freq 904.100 MHz a	t DR Ø			
ASCII C Hex	RX on freq 923.300 MHz a	t DR 8			
□ 自动重发 1000 · □ mc	txDone				
	RX on freq 923.900 MHz a	t DR 10			
	RX on freq 923.300 MHz a	t DR 8			
	rxTimeOut				
					•
	AT+ADC=60000		•		
				发进	ξ
			-		
	ATZ				•
COM5 OPENED, 9600, 8, NONE, 1, OFF	Rx: 410 Bytes	Tx: 133 Bytes		Alithon	

Applicatior	s > lht111 >	End devices >	eui-a84041ff	ff1234dd		
	eui-a8404 ID: eui-a84041fff	1ffff1234d f1234dd	ld			
↑156 \	🖌 156 💿 Last a	ctivity 13 days a	go 🗇			
Overviev	v Live data	Messaging	Location	Payload formatters	General settings	
Uplink	Downlink					
Schedul	e downlink					
Insert Mod	e					
Replace	e downlink queu	e				
O Push to	o downlink queu	e (append)				
FPort*						
1						
Pavload tv	pe					
 Bytes 	озго					
Payload						
The desired	l payload bytes o	of the downlink	message			
Confirm	ned downlink					

My Devices		
All Devices	((+))	
lht65		Delete Device
DEVICE DETAILS		PACKETS TRANSFERRED DC USED
Name ID Device EUI App EUI App Key Ø Activation Method Profile	1165 2 155a3d7-62be-4ced-85a8-a28522299006 2589752451871256 2589752451871256 01AA None	All Time Last 7 Days 345 0 Last 30 Days Last 24 Hours 262 0
0 LABELS ATTACHED		+ Add Lubol
aws itt serve Q Search for se	Two Hows exist for this of any control to Hows exist for this of the second sec	🖓 🗘 🖉 Northern Virginia 🔹 edukin teles 🔹
Test Device Advisor	Device traffic	Clicking the "Refresh" button will incur a charge C
manage	The gateway to which it was last connected DevEUI a840411e96744159 003586ec8db99ebb	RSSI (dBm) SNR (dB) frequency Data rate -79 13.25 916800000 3
▼ All devices goods	Configuration file	
item groups Item type Queue metrics	Device profiles	Service configuration file
 Greengrass devices LPWAN appliances Network Analyzer gateway equipment 	Downlink message queue (0) information	Clear the downlink queue Delete Downlink messages are queued < 1 > 🐵
Multicast groups FUOTA tasks Configuration file destination Remote operation	The message ID timestamp No d No downili Downlink	FPort TransmitMode downlink message nk messages are queued
Reserved messages	label	Manage tags
▶ Queue Hub	key	value and
Device software Billing groups Set up	You don't have an	y tags attached to this resource.
Losso Losso	▼ Jane 3 Man san da an in ika ann I IsiEnt Catilant [7] End is	18 1993 Amerika Utak Carriera has ar be allitatan arturan, katida Kastia andarana

Арр	lications /	kazk / Devices / v	vsc1
	DETAILS	CONFIGURATION	KEY
De Applica	etails ations / ka	zk / Devices / wsc	1
D	ETAILS	CONFIGURATION	KEYS (OTAA)
Deta	ils	Mouse	drop
Nam	е	down	





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文件(E) 编辑(E) 视图(V) 工具(T) 控制(C) 帮助			
□ 串口设置	123456		_
端口 COM9(USB-SERIAL CH340) 🗸	Correct Password		
波特率 9600 🔹			
数据位 8	Dragino LHT65N Device		
校验位 None	Image Version: v1.0		
停止位 1 ▼	Frequency Band: US915		
流 控 None ▼	DevEui= 70 B3 D5 7E D0 05 00 0F		
	Enter Password to Active AT Commands		
接收设置			
● ASCII ● Hex	Use AT+DEBUG to see more debug info		
□ 自动换行	Joinequest NDIFIAIS= /2		
▶ 显示发送	***** UpLinkCounter= 0 ***** TX on freq 904 300 MHz at DR 0		
□ 显示时间	txDone		
发送设置			
□ 自动重发 1000 ms			
			_
		▲	ŧ
			·
	ATZ		•
COM9 OPENED, 9600, 8, NONE, 1, OFF Rx: 32	23 Bytes Tx: 12 Bytes	Alithon	
TremoProgr ammer_v0.8. 			
TremoProgr			
ammer_v0.8.			

exe

Tremo Programmer		—		>
Serial Setting Port COM5 ~ Baudrate 921600 ~				
Download Files				
C:/Users/18457/Desktop/US915.bin	@	0x08000	0000	
	\@			
	@			
	@			
	@			
	@			
Download Start Erase All			06	









LHT65N_E2 Cable Pin Mapping



🧧 友善串口调试助手 - 试用版		_		×
文件(F) 编辑(E) 视图(V) 工具(T) 控制(C) 帮助(F	D			
申口设置 端 □ COM6(USB-SERIAL CH340) • 波特率 9600 • 数据位 8 校验位 None 停止位 1 流 控 修 ASCII ● 由动换行 ▽ 显示发送 □ 显示时间 ● 发送设置 ● ASCII ● Hex □ 自动重发 1000 ÷	Dragino LHT65N Device Image Version: v1.0.1 LoRaWan Stack: DR-LWS-007 Frequency Band: EU868 DevEui= 00 00 22 33 44 55 66 77 Enter Password to Active AT Commands Use AT+DEBUG to see more debug info ***** UpLinkCounter= 0 ***** TX on freq 868.500 MHz at DR 5 txDone RX on freq 868.500 MHz at DR 5 rxTimeout RX on freq 869.525 MHz at DR 0 rxTimeout ***** UpLinkCounter= 0 ***** TX on freq 868.500 MHz at DR 5 txDone RX on freq 868.500 MHz at DR 5 txDone RX on freq 868.500 MHz at DR 5 rxDone RSsi= -20 JOINED ***** UpLinkCounter= 0 ***** TX on freq 867.700 MHz at DR 4 txDone RX on freq 867.700 MHz at DR 4 Sync time ok rxDone RSsi= -21		发	▲ ▼ 送
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User Manual for LoRaWAN /NB -IoT End Nodes - PB01 -- LoRaWAN Button User Manual



User Manual for LoRaWAN /NB -IoT End Nodes - PB01 -- LoRaWAN Button User Manual





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Network Server

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STEP 1 Product	STEP 2 Network S	Server	STEP 3 Devices		<mark>STEP 4</mark> Plan	
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User Manual for LoRaWAN /NB -IoT End Nodes - PB01 -- LoRaWAN Button User Manual

Time	Туре	Data preview Verbose stream
↓ 14:16:35	Schedule data downlink for transmi	si_ FPort: 1 Confirmed downlink MAC payload: 07 FE 92 51 2C Rx1 Delay: 5
↑ 14:16:35	Forward uplink data message	Payload: { Ext: 1, Hum_SHT: 60.8, Systimestamp: 1641968194, TempC_DS: 327.67, TempC_SHT: 21.62 } 08 68 01 FC 7F FF 01 61_ FPort: 2 Data rate: SF7BM125 SNR: -3 RSS
↑ 14:16:35	Successfully processed data messag	DevAddr: 26 08 6A 14 FCnt: 6 FPort: 2 Data rate: SF78W125 SNR: -3 RSSI: -120
14:16:20	Console: Stream reconnected	The stream connection has been re-established
↓ 14:16:19	Forward downlink data message	FPort: 1 Payload: A7 00 0F 00 32 Set normal temperature range
9 14:16:15	Console: Network error	The stream connection was lost due to a network error
↓ 14:16:08	Forward downlink data message	FPort: 1 Payload: A7 00 0F 00 32
() 14:14:35	Fail to send webhook	Error:undefined
↓ 14:14:35	Schedule data downlink for transmi	si_ FPort: 1 Confirmed downlink MAC payload: F1744A Rx1 Delay: 5
↑ 14:14:35	Forward uplink data message	Payload: { Ext: 1, Hum_SHT: 51.2, Systimestamp: 1641968074, TempC_DS: 327.67, TempC_SHT: 21.47 } 08 63 02 00 7F FF 01 61 _ FPort: 2 Data rate: SF7BM125 SNR: -1.5 R
↑ 14:14:35	Successfully processed data messag	DevAddr: 26 08 6A 14 FOnt: 5 FPort: 2 Data rate: SF78W125 SNR: -1.5 RSSI: -120
↓ 14:13:09	Forward downlink data message	FPort: 1 Payload: A6 00 02
0 14:12:35	Fail to send webhook	Error:undefined
↓ 14:12:35	Schedule data downlink for transmi	si_ FPort: 1 Confirmed downlink MAC payload: 93 FD Rx1 Delay: 5
↑ 14:12:35	Forward uplink data message	Payload: { Ext: 1, Hum_SHT: 49.9, Systimestamp: 1641967964, TempC_DS: 327.67, TempC_SHT: 21.43 } 08 5F 01 F3 7F FF 01 61 FPort: 2 Data rate: SF78M125 SNR: 9.5 RS
↑ 14:12:35	Successfully processed data messag	DevAddr: 26 08 6A 14 FCnt: 4 FPort: 2 Data rate: SF78W125 SNR: 9.5 RSSI: -36
↓ 14:11:08	Forward downlink data message	FPort: 1 Payload: A5 01 Enable alarm mode
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AS-02 USB Type-C Converter











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					<pre>1 function datalog(i,bytes){</pre>	
					<pre>var va= parseFloat(((bytes[v+1]<<2*>16 bytes[3+1])/10).toFixed(1)); var bb= parseFloat(((bytes[2+1]<<2*>16 bytes[3+1])/10).toFixed(1)); var cc= parseFloat(((bytes[2+1]<<2*>16 bytes[3+1])/10).toFixed(1));</pre>	
					<pre>var dd= (bytes[6+1]&0x01) ? "Tue": False"; // war dd= (bytes[6+1]&0x01) ? "Tue": False";</pre>	
					7 var string='['+aa+', '+bb+', '+cc+', '+dd+', '+ee+']'+','; 8	
					<pre>9 return string; 10 }</pre>	
					11 12 function getzf(c_num){	
					13	Complete uplink data
					15 16 <i>xetuzn</i> c_num;	
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					19 Function gethyuate(str){ 20 var c_Date; 21 df(t= + 000000000)	
					<pre>21 If(str > 999999999) 22 c_Date = new Date(parseInt(str)); 23 also</pre>	
					<pre>24 c_Date = new Date(parseInt(str) * 1000); 25</pre>	
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🗄 Integr	rations	Datacake offers bo	th a RESTful API fo	or simple tasks as	s well as a feature-rich GraphQL API. For both	ı, you need an API token.			_
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Product	Network Serv	er Devices	STEP 4 Plan
Datacake Produc	ct		
You can add devices	to an existing product on D	atacake, create a new empty product or	start with one of the templates. Products
	e same configuration (fields	, dashboard and more) between device:	s.
New Product from	n template	Existing Product	New Product
Create new produ template	ict from a	Add devices to an existing product	Create new empty product
4			
New Product			
f your device is not a	vailable as a template, you	can start with an empty device. You will	have to create the device definition (fields,
dashboard) and provi	de the payload decoder in t	he device's configuration.	
Product Name			



r

Add LoRaWAN Device					×
STEP 1 Product	STEP 2 Network Server	STE	P 3 rices	STEP 4 Plan	
Add Devices Manual Import from The	Things Stack				
Please provide one or multiple	LoRaWAN device EUIs a	long with the corre	esponding names they s	should have on Datacak	е.
Alternatively, you can choose to information on how to format the) upload a CSV file that o he file, please refer to ou	contains the DevEl Ir documentation.	II, device Name, locatio	n, and a set of tags. For	more
/	Qu Drag and d	ron a cev file here	or click to choose one		
DEVEUI		NAME	LOCATION	TAGS	
谕 FA 23 45 55 55 55	55 51 8 bytes	🛍 PB01	Location	Add tag	
+ Add another device					
				Back	Next
ad Decoder	he navioad decoder alongside the event's	name. The navload decoder ther	transforms it to measurements		Product-wide setting
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ĵ */					

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Fleet > PB01	
PB01	
Serial Number Last update FA234555555555 Never	
I Dashboard 11 History 🔆 Downlinks 🖉 Configuration	
General Configuration	
Device name	
PB01	
Icon	
No icon selected •	
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Payload Decoder	wide cetting
Product	wide setting
<pre>interview devices devices and and any the parameter of the parameter devices and parameter of the param</pre>	Î
/ Van String: [-aar, +80+, +ee+]+,; 9 return string; 10 }	
12 - function getzf(c_nm){ 13 : f(c_nm=/i0 - c_nm) 14 : c_nm= -10 - c_nm; 15 : return c_nm;	
<pre>17 } 18 19 * function getWpOate(str){ 20 var <_Date; 21 if(str > 59999999) 22 cDate = new Date(parseint(str)); 23 cDate = new Date(parseint(str)); 24 cDate</pre>	
22 clse 23 c_Date = new Date(parseInt(str) * 1000); 24 c_Date = new Date(parseInt(str) * 1000); 25 var c_Year = c_Date.getFullWar(), 27 c_Venth = c_Date.getFullWar(),	
<pre>28DayC_Dat_getDate(), 29HowDats_getDate(), 30SenDats_getScons(); 31SenC_Dats_getScons(); 32varLineVera -** getzf(c_Mont) **.** getzf(c_How) *':* getzf(c_Hin) *':*getzf(c_Sen);</pre>	
33 34 return c_Time; 35 }	
n Davlaad Dort	
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Fleet > P801	
PB01	- 1
Serial Number Last update FA234555555555 Never	
III Dashboard 11 History 🚋 Downlinks 🐵 Configuration 🔊 Debug 🦚 Rules 🎳 Permissions	
Debug Log	
Time Title Details	
1538-22 Recorded measurements from payload decoder Decoder returned: {"Allarm": "TRUE", "BatV": 3.488, "Hum_SHT41": 57.2, "S., 🖒 🖒 Log. null 🖒 🖗 Recorded measurements {"Allarm": "TRUE", "BatV": 3.488, "Hum_SHT41": 57.2, "S., 🖒	.ARM": '
1538-22 Recorded measurements from payload decoder Decoder returned: {"Alarm": "TRUE", "BatV": 3.488, "Hum_SHT41": 57.2, "S., 🖒 🕑 Log. null 🖒 🕑 Recorded measurements {"A	.ARM": '
1538:22 Recorded measurements from payload decoder Decoder returned: ("Alarm": "TRUE", "BatV": 3.408, "Hum_SHT41": 57.2, "S., <table-cell> 🖒 Log, null 🖒 🖉 Recorded measurements ("A</table-cell>	.ARM": '
153822 Received webhook data from tti ("end_device_ids":{"device_id":"eui-fa234555555555 <table-cell> 🖒</table-cell>	

SOS							
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↓ 15:47:24	Schedule data downlink for transmissi…	DevAddx: 26 08 80 EC ↔ 1	Rxi Delay: 5				
↑ 15:47:24	Forward uplink data message	DevAddr: 26 08 80 EC 🗘 🖣	Payload: Alazm: "TRUE", BatV: 3.488, Hum_SHT41: 61.2, Sound_ACK: "CLOSE", Sound_key: "CLOSE", TempC_SHT41: 26.6 } 60 50 60 61 61 64 62 64				
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↑ 15:39:51	Forward uplink data message	DevAddx: 26 0B 80 EC ↔ [Payload: { Alarm: "FALSE", BatV: 3.488, Hum_SHT41: 67.4, Sound_ACK: "CLOSE", Sound_key: "CLOSE", TempC_SHT41: 26.2 } 80 50 80 80 81 86 82 3E				
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	+- 🗖 🕸				
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Baudrate 9600 💌 Data Bits 8 💌	[Rx][17:44:17.653] [Rx][17:44:17.653] Dragir [Rx][17:44:19.994]	o OTA bootloader EU8	68 v1.3		
Parity None 💌 Stop Bits 1 💌	[Rx][17:44:20.004] Dragir [Rx][17:44:20.024] Image	o PB01-LB Device Version: v1.0.0			
Flow Type None 💌	[Rx][17:44:20.034] Lokawa [Rx][17:44:20.074] Freque [Rx][17:44:20.104] DevEui	ncy Band: EU868 = 00 00 22 33 44 55	66 71		
Receive Setting • Text • Hex	[Rx][17:44:20.134] Enter [Rx][17:44:20.173] [Rx][17:44:20.173] Use AT	Password to Active A +DEBUG to see more d	T Commands ebug info		
□ Auto Feed Line ☑ Display Send	[Rx][17:44:20.213] [Rx][17:44:20.263]		**		
<pre> Display Time </pre>	[Rx][17:44:20.263] TX on [Rx][17:44:20.303] TX on [Rx][17:44:20.343] txDone	freq 868.100 MHz at	DR 5		-1
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COM3 OPENED, 9600, 8, NONE,	1, OFF Rx: 619 Bytes T>	: 13 Bytes			



Serial Port Utility - Personal Edition -		×
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Flow Type None rxDone(ACK)		
Receive Setting AT+TDC=1200000		
• Text O Hex OK		
At+SQUND=1 1		
Display Send		
Sand Setting		•
• Text C Hex AT+SOUND=1,1	-	
□ Loop 1000 ÷ ms	Sen	a
Line by Line AT+SOUND=1,1		•
COM3 OPENED, 9600, 8, NONE, 1, OFF Rx: 1,266 Bytes Tx: 74 Bytes		

Tremo Programmer	_		×
Flash			
Serial Setting			
Port COM6 🗸			
Baudra 921600 V			
Download Files			
✓ :/LoRa_OTA_Bootloader_v1.3.bin	@)x08000000	
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Dash Board

