S31-LB / S31B-LB LoRaWAN Outdoor Temperature & Humidity Sensor User Manual

Last modified by Xiaoling (/xwiki/bin/view/XWiki/Xiaoling) on 2023/05/27 11:17

Table of Contents：

1. Introduction

1.1 What is S31x-LB LoRaWAN Temperature & Humidity Sensor

The Dragino S31x-LB is a **LoRaWAN Temperature and Humidity Sensor** for Internet of Things solution. It is used to measure the **surrounding environment temperat and relative air humidity precisely**, and then upload to IoT server via LoRaWAN wireless protocol.

The temperature & humidity sensor used in S31x-LB is SHT31, which is fully calibrated, linearized, and temperature compensated digital output from Sensirion, it provide strong reliability and long-term stability. The SHT31 is fixed in a **waterproof anti-condensation casing** for long term use.

The LoRa wireless technology used in S31x-LB allows device to send data and reach extremely long ranges at low data-rates. It provides ultra-long range spread spectru communication and high interference immunity whilst minimizing current consumption.

S31x-LB supports **Temperature & Humdity alarm feature**, user can set temperature alarm for instant notice. S31x-LB supports Datalog feature, it can save the data whe there is no LoRaWAN network and uplink when network recover.

S31x-LB **supports BLE configure** and **wireless OTA update** which make user easy to use.

S31x-LB is powered by **8500mAh Li-SOCl2 battery**, it is designed for long term use up to 5 years.

Each S31x-LB is pre-load with a set of unique keys for LoRaWAN registrations, register these keys to local LoRaWAN server and it will auto connect after power on.

1.2 Features

- LoRaWAN 1.0.3 Class A
- Ultra-low power consumption
- External 3 meters SHT31 probe (For S31-LB)
- Measure range -55°C ~ 125°C
- Temperature & Humidity alarm
- Bands: CN470/EU433/KR920/US915/EU868/AS923/AU915/IN865
- Support Bluetooth v5.1 and LoRaWAN remote configure
- Support wireless OTA update firmware
- Uplink on periodically
- Downlink to change configure
- 8500mAh Battery for long term use

1.3 Specification

Common DC Characteristics:

- Supply Voltage: built in 8500mAh Li-SOCl2 battery , 2.5v ~ 3.6v
- Operating Temperature: -40 ~ 85°C

Temperature Sensor:

- Range: -40 to + 80°C
- Accuracy: ±0.2 @ 0-90 °C
- Resolution: 0.1°C
- Long Term Shift: <0.03 °C/yr

Humidity Sensor:

- Range: 0 ~ 99.9% RH
- Accuracy: ± 2%RH (0 ~ 100%RH)
- Resolution: 0.01% RH
- Long Term Shift: <0.25 %RH/yr

LoRa Spec:

- Frequency Range, Band 1 (HF): 862 ~ 1020 Mhz
- Max +22 dBm constant RF output vs.
- RX sensitivity: down to -139 dBm.
- Excellent blocking immunity

Battery:

- Li/SOCl2 un-chargeable battery

- Capacity: 8500mAh
- Self-Discharge: <1% / Year @ 25°C
- Max continuously current: 130mA
- Max boost current: 2A, 1 second
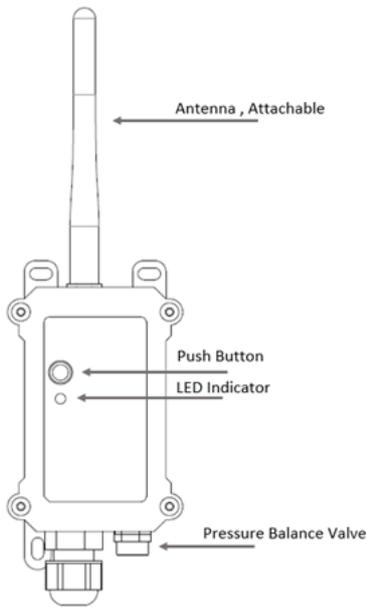
Power Consumption

- Sleep Mode: 5uA @ 3.3v
- LoRa Transmit Mode: 125mA @ 20dBm, 82mA @ 14dBm

1.4 Sleep mode and working mode

Deep Sleep Mode: Sensor doesn't have any LoRaWAN activate. This mode is used for storage and shipping to save battery life.

Working Mode: In this mode, Sensor will work as LoRaWAN Sensor to Join LoRaWAN network and send out sensor data to server. Between each sampling/tx/rx periodi sensor will be in IDLE mode), in IDLE mode, sensor has the same power consumption as Deep Sleep mode.

1.5 Button & LEDs

Behavior on ACT	Function	Action
Pressing ACT between 1s < time < 3s	Send an uplink	If sensor is already Joined to LoRaWAN network, sensor will send an uplink packet, **blue led** will blink once. Meanwhile, BLE module will be active and user can connect via BLE to configure device.
Pressing ACT for more than 3s	Active Device	**Green led** will fast blink 5 times, device will enter **OTA mode** for 3 seconds. And then start to JOIN LoRaWAN network. **Green led** will solidly turn on for 5 seconds after joined in network. Once sensor is active, BLE module will be active and user can connect via BLE to configure device, no matter if device join or not join LoRaWAN network.
Fast press ACT 5 times.	Deactivate Device	**Red led** will solid on for 5 seconds. Means device is in Deep Sleep Mode.

1.6 BLE connection

S31x-LB support BLE remote configure.

BLE can be used to configure the parameter of sensor or see the console output from sensor. BLE will be only activate on below case:

- Press button to send an uplink
- Press button to active device.
- Device Power on or reset.

If there is no activity connection on BLE in 60 seconds, sensor will shut down BLE module to enter low power mode.

1.7 Pin Definitions
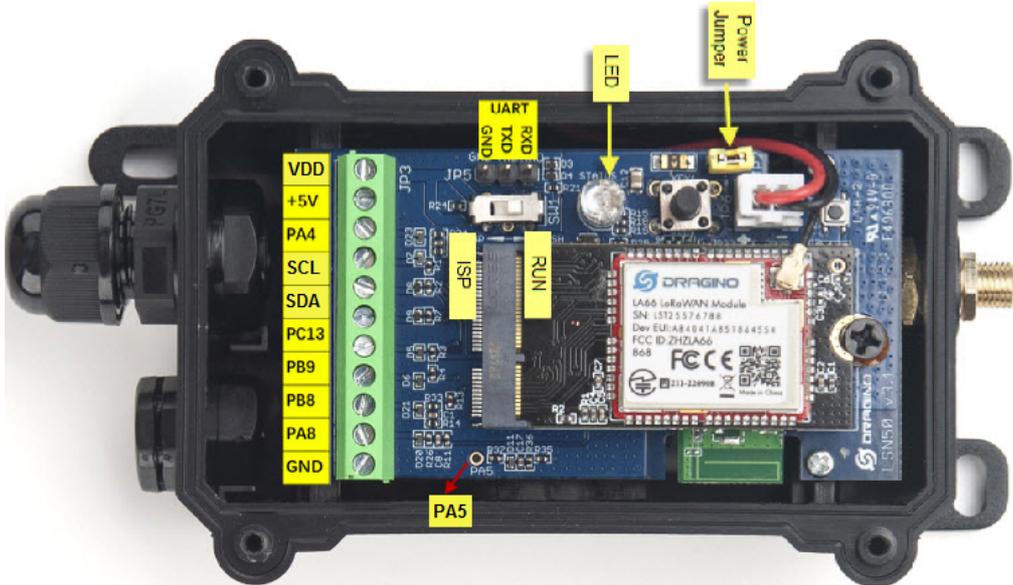
1.8 Hardware Variant

Model	Photo	Probe Info
S31-LB		1 x SHT31 Probe Cable Length : 2 meters
S31B-LB		1 x SHT31 Probe Installed in device.

1.9 Mechanical

2. Configure S31x-LB to connect to LoRaWAN network

2.1 How it works

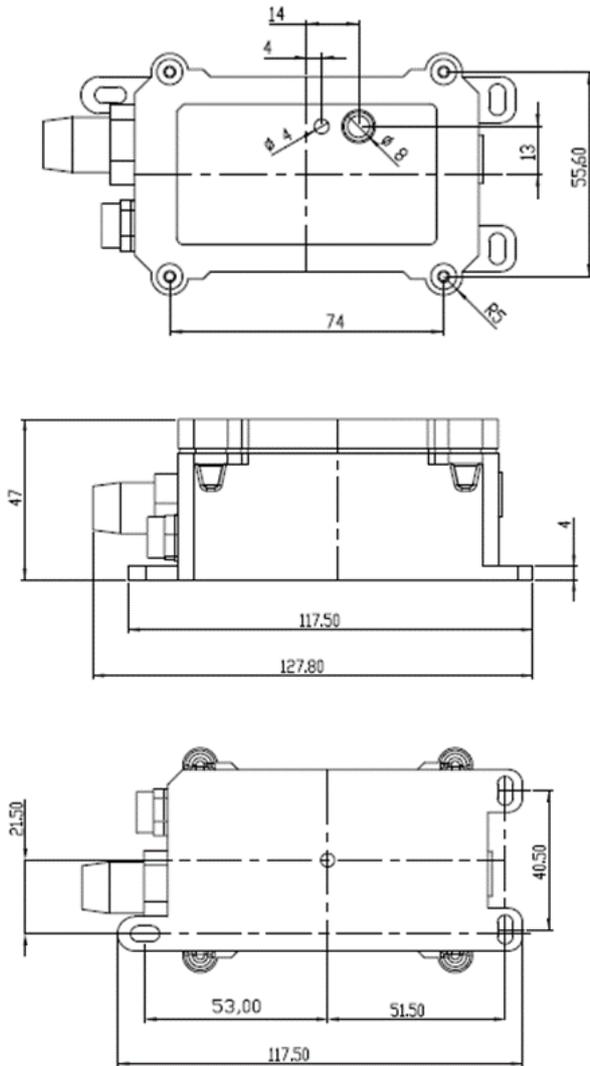The S31x-LB is configured as **LoRaWAN OTAA Class A** mode by default. It has OTAA keys to join LoRaWAN network. To connect a local LoRaWAN network, you need input the OTAA keys in the LoRaWAN IoT server and press the button to activate the S31x-LB. It will automatically join the network via OTAA and start to send the sensor value. The default uplink interval is 20 minutes.

2.2 Quick guide to connect to LoRaWAN server (OTAA)

Following is an example for how to join the TTN v3 LoRaWAN Network (https://console.cloud.thethings.network/)   . Below is the network structure; we use the LPS8v2 (https://www.dragino.com/products/lora-lorawan-gateway/item/228-lps8v2.html)   as a LoRaWAN gateway in this example.

The LPS8V2 is already set to connected to TTN network (https://console.cloud.thethings.network/)   , so what we need to now is configure the TTN server.

Step 1: Create a device in TTN with the OTAA keys from S31x-LB.

Each S31x-LB is shipped with a sticker with the default device EUI as below:
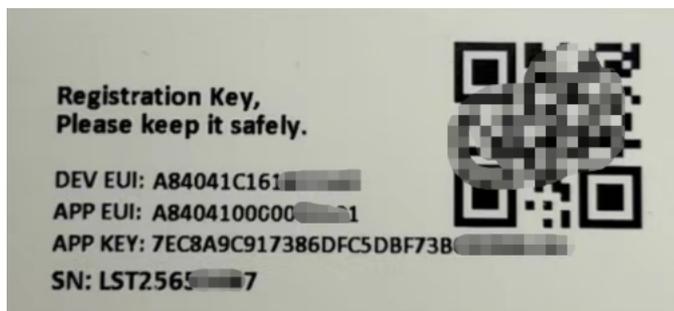
You can enter this key in the LoRaWAN Server portal. Below is TTN screen shot:

Register the device

Add APP EUI and DEV EUI

Add APP EUI in the application

Register end device

From The LoRaWAN Device Repository   Manually

✓ **Basic settings**
End device ID's, Name and
Description

2 **Network layer settings**
Frequency plan, regional
parameters, end device
class and session keys.

3 Join settings
Root keys, NetID and kek
labels.

Frequency plan ⓘ *

Europe 863-870 MHz (SF12 for RX2)   ∨

LoRaWAN version ⓘ *

MAC V1.0.3   ∨

Regional Parameters version ⓘ *

PHY V1.0.3 REV A   ∨

LoRaWAN class capabilities ⓘ

☐ Supports class B

☐ Supports class C

Advanced settings ∨

‹ Basic settings   Join settings ›

Add APP KEY

Register end device

From The LoRaWAN Device Repository   Manually

✓ **Basic settings**
End device ID's, Name and
Description

✓ **Network layer settings**
Frequency plan, regional
parameters, end device
class and session keys.

3 **Join settings**
Root keys, NetID and kek
labels.

Root keys

AppKey ⓘ *

BD 72 1D AC F3 CC AB 67 72 8D 7A F5 4D DF 30 8B   ↻

Advanced settings ∨

‹ Network layer settings   Add end device

Step 2: Activate on S31x-LB

Press the button for 5 seconds to activate the S31x-LB.

Green led will fast blink 5 times, device will enter **OTA mode** for 3 seconds. And then start to JOIN LoRaWAN network. **Green led** will solidly turn on for 5 seconds after j in network.

After join success, it will start to upload messages to TTN and you can see the messages in the panel.

2.3 Uplink Payload

2.3.1 Device Status, FPORT=5

Users can use the downlink command(**0x26 01**) to ask S31x-LB to send device configure detail, include device configure status. S31x-LB will uplink a payload via FPort= server.

The Payload format is as below.

Device Status (FPORT=5)					
Size (bytes)	**1**	**2**	**1**	**1**	**2**
Value	Sensor Model	Firmware Version	Frequency Band	Sub-band	BAT

Example parse in TTNv3

Sensor Model: For S31x-LB, this value is 0x0A

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

*0x0b: CN470

*0x0c: EU433

*0x0d: KR920

*0x0e: MA869

Sub-Band:

AU915 and US915:value 0x00 ~ 0x08

CN470: value 0x0B ~ 0x0C

Other Bands: Always 0x00

Battery Info:

Check the battery voltage.

Ex1: 0x0B45 = 2885mV

Ex2: 0x0B49 = 2889mV

2.3.2 Sensor Data. FPORT=2

Sensor Data is uplink via FPORT=2

Size(bytes)	2	4	1	2	2
Value	Battery	Unix TimeStamp	Alarm Flag & MOD& Level of PA8	Temperature	Humidity

↑1 ↓1 • Last activity 21 seconds ago ⑦

| Overview | Live data | Messaging | Location | Payload formatters | Claiming | General settings |

Time	Type	Data preview	Verbose stream ⊗	⬇ Export as JSON	‖ Pause	🗑
↓ 14:43:03	Schedule data downlink for t…	DevAddr: 26 0B 79 F2 ‹› 📋 Rx1 Delay: 5				
↑ 14:43:03	Forward uplink data message	{ BatV: 3.594, Data_time: "2023-05-24 06:43:02", Door_status: "OPEN", EXTI_Trigger: "FALSE", Hum_SHT31: 52.5, TempC_SHT31				

Battery

Sensor Battery Level.

Ex1: 0x0B45 = 2885mV

Ex2: 0x0B49 = 2889mV

Temperature

Example:

If payload is: 0105H: (0105 & 8000 == 0), temp = 0105H /10 = 26.1 degree

If payload is: FF3FH : (FF3F & 8000 == 1) , temp = (FF3FH - 65536)/10 = -19.3 degrees.

  (FF3F & 8000：Judge whether the highest bit is 1, when the highest bit is 1, it is negative)

Humidity

Read:0x(0197)=412   Value: 412 / 10=41.2, So 41.2%

Alarm Flag & MOD & Level of PA8

Example:

If payload & 0x01 = 0x01 **-->** This is an Alarm Message.It means that the temperature and humidity exceed the alarm value or trigger an interrupt.

If payload & 0x01 = 0x00 **-->** This is a normal uplink message, no alarm.

If payload & 0x80>>7 = 0x01 **-->** The PA8 is low level.

If payload & 0x80>>7 =0x00 **-->** The PA8 is high level.

If payload >> 2 = 0x00   **-->** means MOD=1, This is a sampling uplink message.

If payload >> 2 = 0x31   **-->** means MOD=31, this message is a reply message for polling, this message contains the alarm settings. see this link for detail.

2.4 Payload Decoder file

In TTN, use can add a custom payload so it shows friendly reading

In the page **Applications --> Payload Formats --> Custom --> decoder** to add the decoder from:

https://github.com/dragino/dragino-end-node-decoder/tree/main/S31-LB%26S31B-LB (https://github.com/dragino/dragino-end-node-decoder/tree/main/S31-LB%26S31B-

2.5 Datalog Feature

Datalog Feature is to ensure IoT Server can get all sampling data from Sensor even if the LoRaWAN network is down. For each sampling, S31x-LB will store the reading future retrieving purposes.

2.5.1 Ways to get datalog via LoRaWAN

Set PNACKMD=1, S31x-LB will wait for ACK for every uplink, when there is no LoRaWAN network,S31x-LB will mark these records with non-ack messages and store the sensor data, and it will send all messages (10s interval) after the network recovery.

- a) S31x-LB will do an ACK check for data records sending to make sure every data arrive server.

- b) S31x-LB will send data in **CONFIRMED Mode** when PNACKMD=1, but S31x-LB won't re-transmit the packet if it doesn't get ACK, it will just mark it as a NONE-
  message. In a future uplink if S31x-LB gets a ACK, S31x-LB will consider there is a network connection and resend all NONE-ACK messages.

Below is the typical case for the auto-update datalog feature (Set PNACKMD=1)

New Feature for ColdChain
solve network coverage issue & save cost
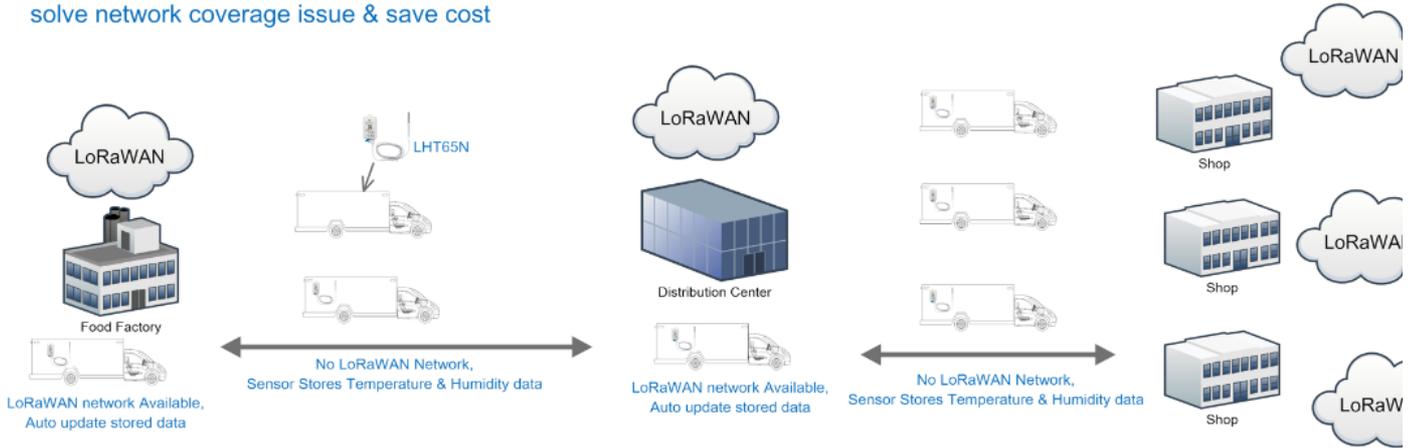
2.5.2 Unix TimeStamp

S31x-LB uses Unix TimeStamp format based on

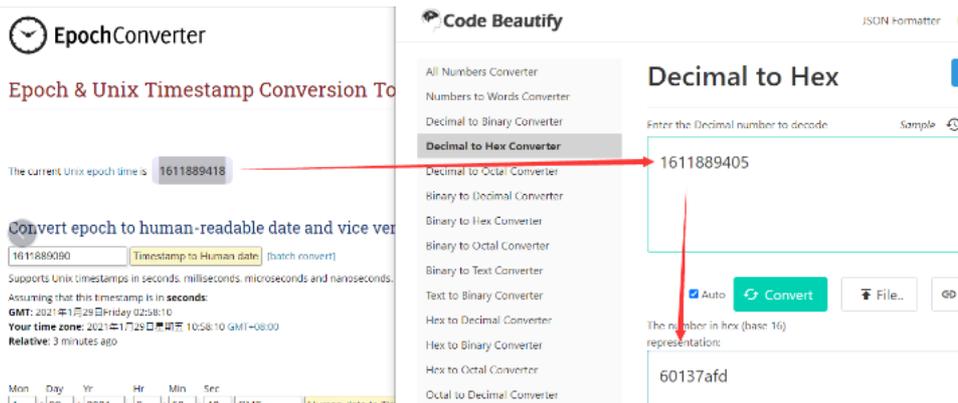| Size (bytes)	4	1
DeviceTimeAns Payload	32-bit unsigned integer : Seconds since epoch*	8bits unsigned integer: fractional-second in ½^8 second steps

Figure 10 : DeviceTimeAns payload format

User can get this time from link: https://www.epochconverter.com/ (https://www.epochconverter.com/) :

Below is the converter example

So, we can use AT+TIMESTAMP=1611889405 or downlink 3060137afd00 to set the current time 2021 – Jan -- 29 Friday 03:03:25

2.5.3 Set Device Time

User need to set **SYNCMOD=1** to enable sync time via MAC command.

Once S31x-LB Joined LoRaWAN network, it will send the MAC command (DeviceTimeReq) and the server will reply with (DeviceTimeAns) to send the current time to S3
If S31x-LB fails to get the time from the server, S31x-LB will use the internal time and wait for next time request (AT+SYNCTDC to set the time request period, default is 1
days).

**Note: LoRaWAN Server need to support LoRaWAN v1.0.3(MAC v1.0.3) or higher to support this MAC command feature, Chirpstack,TTN V3 v3 and loriot supp
TTN V3 v2 doesn't support. If server doesn't support this command, it will through away uplink packet with this command, so user will lose the packet with tir
request for TTN V3 v2 if SYNCMOD=1.**

2.5.4 Datalog Uplink payload (FPORT=3)

The Datalog uplinks will use below payload format.

Retrieval data payload:

Size(bytes)	2	2	2	1	4

Value	ignore	Humidity	Temperature	Poll message flag & Alarm Flag& Level of PA8	Unix Time Stamp

Poll message flag & Alarm Flag & Level of PA8:

Bits	7	6	[5:2]	1	0
mean	No ACK Message	Poll Message Flag	Reserved	Level of PA8	Alarm Flag

No ACK Message: 1: This message means this payload is fromn Uplink Message which doesn't get ACK from the server before (for **PNACKMD=1** feature)

Poll Message Flag: 1: This message is a poll message reply.

- Poll Message Flag is set to 1.

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

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

a) DR0: max is 11 bytes so one entry of data

b) DR1: max is 53 bytes so devices will upload 4 entries of data (total 44 bytes)

c) DR2: total payload includes 11 entries of data

d) DR3: total payload includes 22 entries of data.

If devise doesn't have any data in the polling time. Device will uplink 11 bytes of 0

Example:

If S31x-LB has below data inside Flash:

```
Stop Tx events when read sensor data
8031080 2023/5/24 03:30:41 3558 temp=27.2 hum=56.6 level:low status:false
8031090 2023/5/24 03:31:04 3564 temp=27.2 hum=56.7 level:low status:false
80310A0 2023/5/24 03:31:16 3564 temp=27.1 hum=56.7 level:low status:false
80310B0 2023/5/24 03:31:36 3564 temp=27.1 hum=57.0 level:low status:false
80310C0 2023/5/24 03:32:06 3558 temp=27.1 hum=57.2 level:low status:false

80310D0 2023/5/24 03:32:15 3558 temp=27.0 hum=57.3 level:low status:false
80310E0 2023/5/24 03:32:48 3558 temp=27.0 hum=57.5 level:low status:false
80310F0 2023/5/24 03:32:58 3564 temp=27.0 hum=57.6 level:low status:false
Start Tx events

OK
```

If user sends below downlink command: 31646D84E1646D856C05

Where : Start time: 646D84E1 = time 23/5/24 03:30:41

       Stop time: 646D856C= time 23/5/24 03:33:00

S31x-LB will uplink this payload.

00 00 02 36 01 10 40 64 6D 84 E1 00 00 02 37 01 10 40 64 6D 84 F8 00 00 02 37 01 0F 40 64 6D 85 04 00 00 02 3A 01 0F 40 64 6D 85 18 00 00 02 3C 01 0F 40 64 6D 00 00 02 3D 01 0E 40 64 6D 85 3F 00 00 02 3F 01 0E 40 64 6D 85 60 00 00 02 40 01 0E 40 64 6D 85 6A

Where the first 11 bytes is for the first entry:

00 00 02 36 01 10 40 64 6D 84 E1
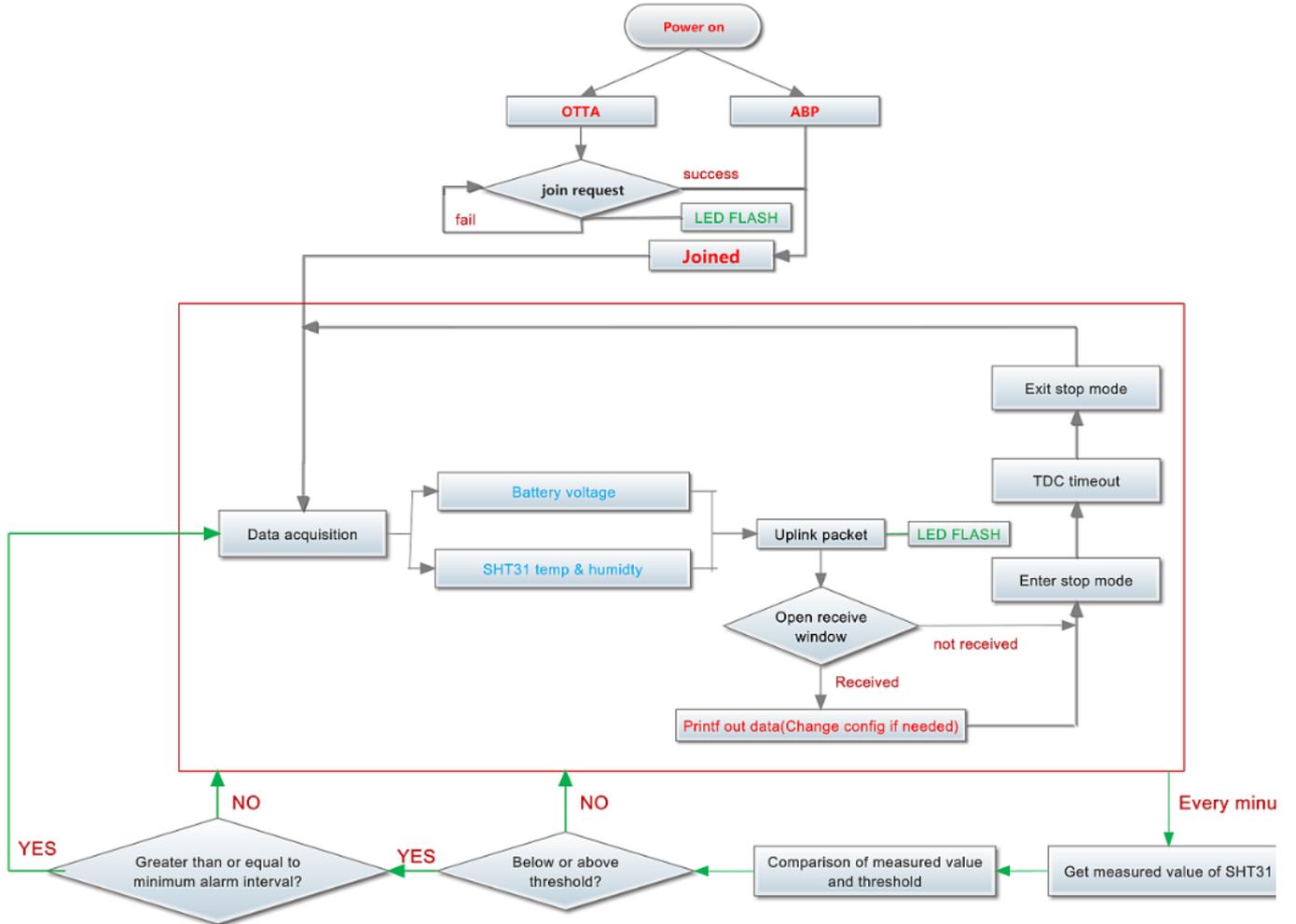
Hum=0x0236/10=56.6

Temp=0x0110/10=27.2

poll message flag & Alarm Flag & Level of PA8=0x40,means reply data,sampling uplink message,the PA8 is low level.

Unix time is 0x646D84E1=1684899041s=23/5/24 03:30:41

2.6 Temperature Alarm Feature

S31x-LB work flow with Alarm feature.

2.7 Frequency Plans

The S31x-LB uses OTAA mode and below frequency plans by default. If user want to use it with different frequency plan, please refer the AT command sets.

http://wiki.dragino.com/xwiki/bin/view/Main/End%20Device%20Frequency%20Band/ (http://wiki.dragino.com/xwiki/bin/view/Main/End%20Device%20Frequency%20Band

3. Configure S31x-LB

3.1 Configure Methods

S31x-LB supports below configure method:

- AT Command via Bluetooth Connection (**Recommended**): BLE Configure Instruction (http://wiki.dragino.com/xwiki/bin/view/Main/BLE%20Bluetooth%20Remote%20Configure/) .
- AT Command via UART Connection : See UART Connection (http://wiki.dragino.com/xwiki/bin/view/Main/UART%20Access%20for%20LoRa%20ST%20v4%20base%20model/#H2.3UARTConnectionforSN50v3basemotherbo
- LoRaWAN Downlink. Instruction for different platforms: See IoT LoRaWAN Server (http://wiki.dragino.com/xwiki/bin/view/Main/)   section.

3.2 General Commands

These commands are to configure:

- General system settings like: uplink interval.
- LoRaWAN protocol & radio related command.

They are same for all Dragino Devices which support DLWS-005 LoRaWAN Stack. These commands can be found on the wiki:

http://wiki.dragino.com/xwiki/bin/view/Main/End%20Device%20AT%20Commands%20and%20Downlink%20Command/
(http://wiki.dragino.com/xwiki/bin/view/Main/End%20Device%20AT%20Commands%20and%20Downlink%20Command/)

3.3 Commands special design for S31x-LB

These commands only valid for S31x-LB, as below:

3.3.1 Set Transmit Interval Time

Feature: Change LoRaWAN End Node Transmit Interval.

AT Command: AT+TDC

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

Downlink Command: 0x01

Format: Command Code (0x01) followed by 3 bytes time value.

If the downlink payload=0100003C, it means set the END Node's Transmit Interval to 0x00003C=60(S), while type code is 01.

- Example 1: Downlink Payload: 0100001E   // Set Transmit Interval (TDC) = 30 seconds
- Example 2: Downlink Payload: 0100003C   // Set Transmit Interval (TDC) = 60 seconds

3.3.2 Get Device Status

Send a LoRaWAN downlink to ask device send Alarm settings.

Downlink Payload: 0x26 01

Sensor will upload Device Status via FPORT=5. See payload section for detail.

3.3.3 Set Temperature Alarm Threshold

- **AT Command:**

AT+SHTEMP=min,max

- When min=0, and max≠0, Alarm higher than max
- When min≠0, and max=0, Alarm lower than min
- When min≠0 and max≠0, Alarm higher than max or lower than min

Example:

  AT+SHTEMP=0,30   // Alarm when temperature higher than 30.

- **Downlink Payload:**

0x(0C 01 00 1E)   // Set AT+SHTEMP=0,30

(note: 3rd byte= 0x00 for low limit(not set), 4th byte = 0x1E for high limit: 30)

3.3.4 Set Humidity Alarm Threshold

- **AT Command:**

AT+SHHUM=min,max

- When min=0, and max≠0, Alarm higher than max
- When min≠0, and max=0, Alarm lower than min
- When min≠0 and max≠0, Alarm higher than max or lower than min

Example:

  AT+SHHUM=70,0   // Alarm when humidity lower than 70%.

- **Downlink Payload:**

0x(0C 02 46 00)   // Set AT+SHTHUM=70,0

(note: 3rd byte= 0x46 for low limit (70%), 4th byte = 0x00 for high limit (not set))

3.3.5 Set Alarm Interval

The shortest time of two Alarm packet. (unit: min)

- **AT Command:**

AT+ATDC=30   // The shortest interval of two Alarm packets is 30 minutes, Means is there is an alarm packet uplink, there won't be another one in the next 30 minutes
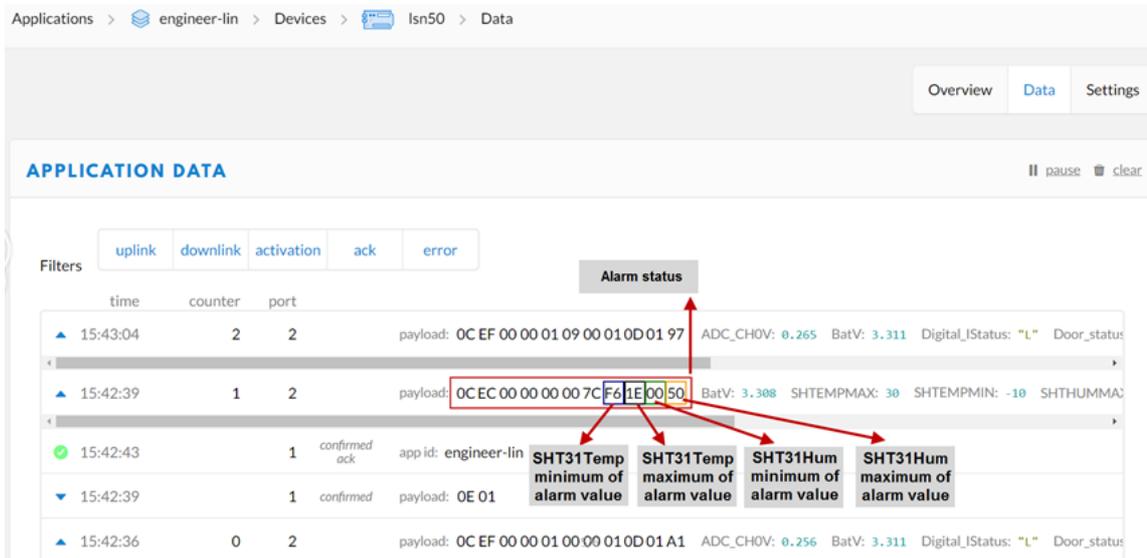
- **Downlink Payload:**

0x(0D 00 1E)   ---> Set AT+ATDC=0x 00 1E = 30 minutes

3.3.6 Get Alarm settings

Send a LoRaWAN downlink to ask device send Alarm settings.

- **Downlink Payload:** 0x0E 01

Example:

Explain:

- Alarm & MOD bit is 0x7C, 0x7C >> 2 = 0x31: Means this message is the Alarm settings message.

3.3.7 Set Interrupt Mode

Feature, Set Interrupt mode for PA8 of pin.

When AT+INTMOD=0 is set, PA8 is used as a digital input port.

AT Command: AT+INTMOD

Command Example	Function	Response
AT+INTMOD=?	Show current interrupt mode	0 OK the mode is 0 =Disable Interrupt
AT+INTMOD=2	Set Transmit Interval 0. (Disable Interrupt), 1. (Trigger by rising and falling edge) 2. (Trigger by falling edge) 3. (Trigger by rising edge)	OK

Downlink Command: 0x06

Format: Command Code (0x06) followed by 3 bytes.

This means that the interrupt mode of the end node is set to 0x000003=3 (rising edge trigger), and the type code is 06.

- Example 1: Downlink Payload: 06000000   //   Turn off interrupt mode
- Example 2: Downlink Payload: 06000003   //   Set the interrupt mode to rising edge trigger

3.3.8 Set Power Output Duration

Control the output duration 5V . Before each sampling, device will

1. first enable the power output to external sensor,

2. keep it on as per duration, read sensor value and construct uplink payload

3. final, close the power output.

AT Command: AT+5VT

Command Example	Function	Response
AT+5VT=?	Show 5V open time.	0 (default) OK
AT+5VT=500	Close after a delay of 1000 milliseconds.	OK

Downlink Command: 0x07

Format: Command Code (0x07) followed by 2 bytes.

The first and second bytes are the time to turn on.

- Example 1: Downlink Payload: 070000   --->   AT+5VT=0
- Example 2: Downlink Payload: 0701F4   --->   AT+5VT=500

4. Battery & Power Consumption

S31x-LB use ER26500 + SPC1520 battery pack. See below link for detail information about the battery info and how to replace.

Battery Info & Power Consumption Analyze
(http://wiki.dragino.com/xwiki/bin/view/Main/How%20to%20calculate%20the%20battery%20life%20of%20Dragino%20sensors%3F/)   .

5. OTA Firmware update

User can change firmware S31x-LB to:

- Change Frequency band/ region.
- Update with new features.
- Fix bugs.

Firmware and changelog can be downloaded from : **Firmware download link (https://www.dropbox.com/sh/kwqv57tp6pejias/AAAopYMATh1GM6fZ-VRCLrpDa?dl**

Methods to Update Firmware:

- (Recommanded way) OTA firmware update via wireless: http://wiki.dragino.com/xwiki/bin/view/Main/Firmware%20OTA%20Update%20for%20Sensors/ (http://wiki.dragino.com/xwiki/bin/view/Main/Firmware%20OTA%20Update%20for%20Sensors/)
- Update through UART TTL interface. **Instruction (http://wiki.dragino.com/xwiki/bin/view/Main/UART%20Access%20for%20LoRa%20ST%20v4%20base%20model/#H1.LoRaSTv4baseHardware)**   .

6. FAQ

7. Order Info

Part Number: **S31-LB-XX / S31B-LB-XX**

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

8. Packing Info

Package Includes:

- S31x-LB LoRaWAN Temperature & Humidity Sensor

Dimension and weight:

- Device Size: cm
- Device Weight: g
- Package Size / pcs : cm
- Weight / pcs : g

9. 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 answe 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.cc (mailto:Support@dragino.cc)   .

♥ 0   Tags: Created by Edwin Chen (/xwiki/bin/view/XWiki/Edwin) on 2023/04/16 12:46

No comments for this page