



REJEEE SL100 Temperature and Humidity Sensor User Manual

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REJEEE

REJEEE SL100 Temperature and Humidity Sensor



General Information

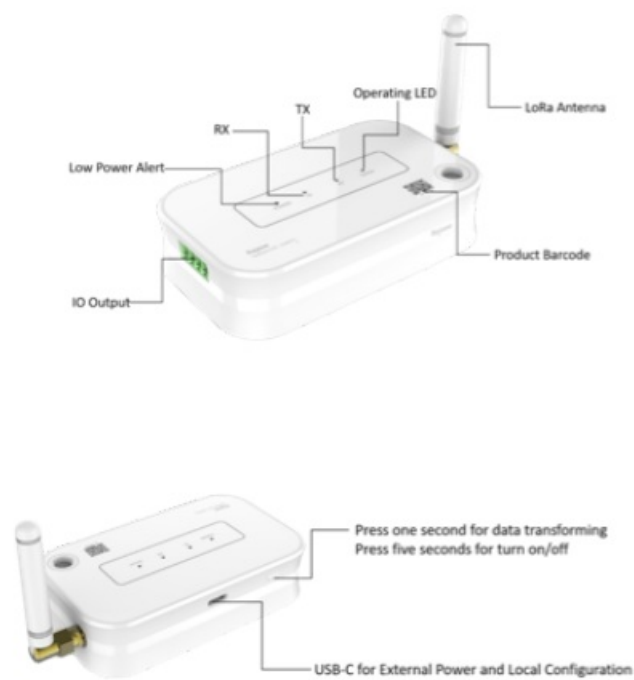
SL100 is a long-range low-power temperature and humidity sensor based on Semtech SX1262/SX1268.

Sensor Type	Product Number
Built-in SHT30	SL100CN, SL100EU,SL100US,SL100AS

Main features:

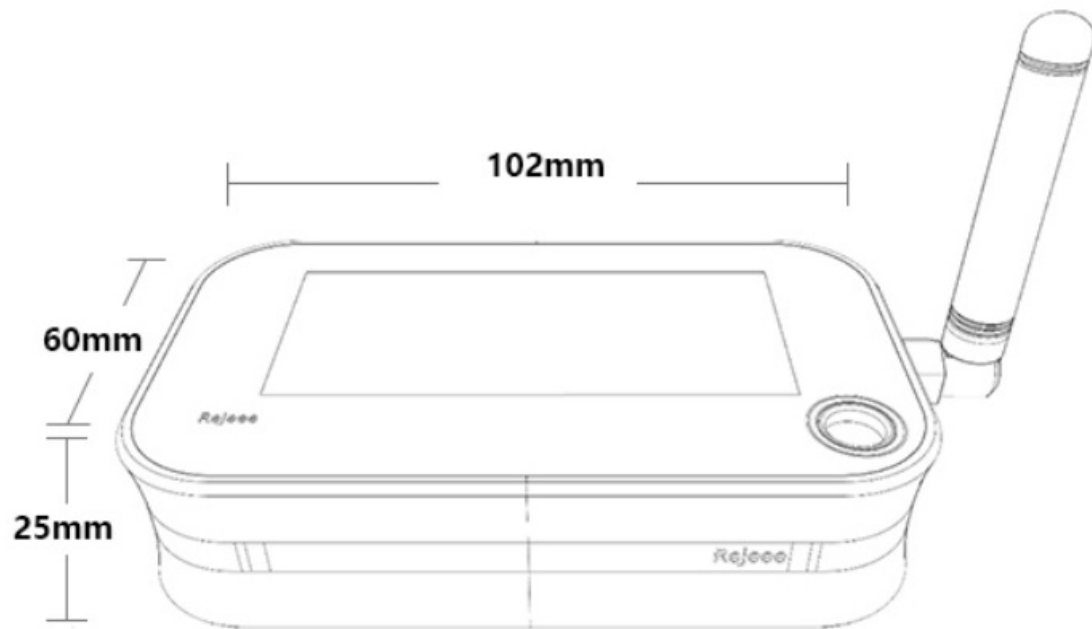
- Sensirion High Sensitivity Sensor
- Type-C for Local Configuration
- Internal Battery Up to 5 Years(LCP=5s LFT=600s @SF9)
- LoRa Long Range Low Power

Details



Parameters	Feature
CPU	STM32L151
Wireless	LoRaWAN(SX1262/SX1268)
Encryption	AES128
Battery	Built-in Li-battery (Changeable, and No Recharge)
Battery Capacity	5400mAh
Working Temperature	-45°C~+ 85°C
Working Humidity	0-100%RH
Communication	Half duplex
Accuracy	Temperature : ±0.3°C, Humidity ±3%RH
Lifespan	5 Years(Every 10 Minutes for data uploading @SF9)
Data Speed	300bps-62.5k bps
Size	102mm*60mm*25mm
TX Power	22dBm Max
RX Sensitivity	-140 dBm
Frequency	SX1268: CN470 SX1262: EU868 / US915 / AS923

Size: 102mm*60mm*25mm



Installation

- Lay the product flat on the table

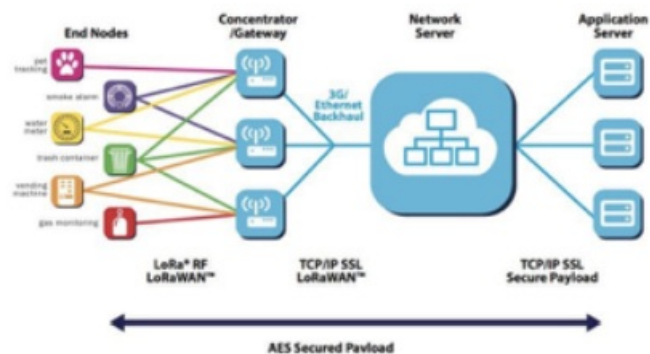


- Hang on the wall



Connect to LoRaWAN Network

LoRaWAN Network Structure



- SL100 temperature and humidity sensor is based on standard LoRaWAN Class A, so you can connect to any LoRaWAN network as below:
- SL100 sensor data uplink format with LoRaWAN OTAA, OTAA parameter as below:
- AppEUI: CACBB80000000001
- AppKey: 11223344556677889900AABBCCDDEEFF
- DevEUI: Customer can find DevEUI on the product, also you can read DevEUI through Rejeee SensorTool SensorTool

For example: Connecting to The Things Network, please make sure choose manually connect and OTAA as below:

Sensor	LoRaWAN
SL100CN	From The LoRaWAN Device Repository Manually Frequency plan ⓘ * China 470-510 MHz, FSB 11 LoRaWAN version ⓘ * MAC V1.0.3 Regional Parameters version ⓘ * PHY V1.0.3 REV A Show advanced activation, LoRaWAN class and cluster settings ^ Activation mode ⓘ * ☒ Over the air activation (OTAA)

Sensor	LoRaWAN
SL100EU	Frequency plan ⓘ * Europe 863-870 MHz (SF12 for RX2) ▾ LoRaWAN version ⓘ * MAC V1.0.3 ▾ Regional Parameters version ⓘ * PHY V1.0.3 REV A ▾ Show advanced activation, LoRaWAN class and cluster settings ^ Activation mode ⓘ * ☒ Over the air activation (OTAA)
SL100US	From The LoRaWAN Device Repository <u>Manually</u> Frequency plan ⓘ * United States 902-928 MHz, FSB 2 (used by TTN) ▾ LoRaWAN version ⓘ * MAC V1.0.3 ▾ Regional Parameters version ⓘ * PHY V1.0.3 REV A ▾ Show advanced activation, LoRaWAN class and cluster settings ^ Activation mode ⓘ * ☒ Over the air activation (OTAA)
SL100AS	From The LoRaWAN Device Repository <u>Manually</u> Frequency plan ⓘ * Asia 923 MHz with only default channels ▾ LoRaWAN version ⓘ * MAC V1.0.3 ▾ Regional Parameters version ⓘ * PHY V1.0.3 REV A ▾ Show advanced activation, LoRaWAN class and cluster settings ^ Activation mode ⓘ * ☒ Over the air activation (OTAA)

Set ID and Key

[Show advanced activation, LoRaWAN class and cluster settings](#) ▾

DevEUI ⓘ *

.. .. .



Generate

0/50 used

AppEUI ⓘ *

.. .. .

Fill with zeros

AppKey ⓘ *

.. .. .



Generate

End device ID ⓘ *

my-new-device

This value is automatically prefilled using the DevEUI

After registration

- ☒ View registered end device
- ☐ Register another end device of this type

Register end device

Data analysis example for JavaScript:

```
function decodeUplink(input) {
  var obj = {};
  var warnings = [];
  obj.battery = (input.bytes[1]&0x1F);
  obj.vol = (input.bytes[2]);
  obj.temperature = (((input.bytes[4] & 0x80 ? input.bytes[4] - 0x100 : input.bytes[4]) << 8)
+
input.bytes[5]) / 10;
  obj.humidity = input.bytes[7];
  if (obj.temperature < -10) {
    warnings.push("it's cold");
  }
  return {
    data: obj,
    warnings: warnings
  };
}
```

Wireless LoRaWAN Sensor Data Format

LoRaWAN Format:

Picture as below, FRMPayload is sensor data.

PHYPayload:

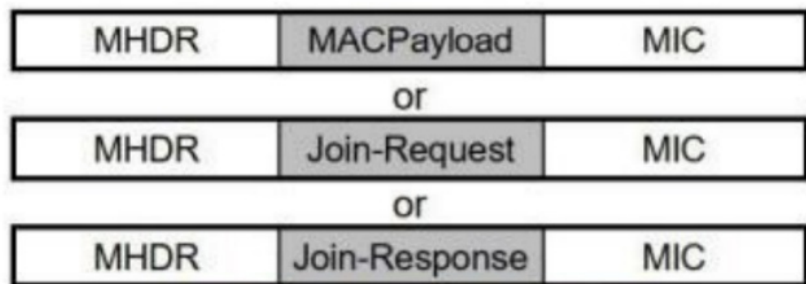


Figure 6: PHY payload structure

MACPayload:



Figure 7: MAC payload structure

MHDR	FHDR	FPort	FRMPayload=Sensor Data(Message)			MIC 4 Bytes
			Data 1	...	Data N	
			Type+Data N Bytes	Type+Data N Bytes	Type+Data N Bytes	

Sensor Data Definition

Device Information(0x00)

Type	Value	Value	Value
1 Byte	3 bit	5bit	1 Byte
0x00	Version	Battery Level	Reserve

Temperature(0x04)

Type 1 Byte	Value 2 Bytes	Comments
0x04	Temperature	2-byte signed integer with negative value below zero The default unit is 0.1 degrees, that is 201 means 20.1 degrees

e.g. 0xFF88 is -120 (-12°C), Network byte order mode is {04 FF 88}

Humidity(0x05)

Type 1 Byte	Value 1 Byte	Comments
0x05	Humidity	Unsigned integer of 1 byte. The default unit is 1%RH, that is 10 means 10%RH

FRMPayload Example: 00 3F 24 04 01 1C 05 3E 00 3F24 Device Information, Version is 0x01, level is 0x1F = 31
04 011C Temperature is 0x011C = 284 = 28.4 °C 05 3E Humidity is 0x3E = 62 = 62 %RH

Local Configuration

Note: Factory reset data uploading is every 10 mins, customers can change data uploading frequency as below:
Connect sensor with a USB-C cable to computer for local configuration, through local configuration, you can change the packet frequency. Refer SensorTool Manual.

Documents / Resources

	REJEEE SL100 Temperature and Humidity Sensor [pdf] User Manual SL100 Temperature and Humidity Sensor, Temperature and Humidity Sensor, Humidity Sensor
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References

- [!\[\]\(5fb5f50ebb30f08ba2dd43d2a52fd486_img.jpg\) _____](#)
- [!\[\]\(3bc0a01e81bd70d34131764138c9461f_img.jpg\) _____](#)
- [!\[\]\(83305b1e2b1ea3a604c7992adc0ee786_img.jpg\) _____](#)
- [!\[\]\(99c71d668ca9cd7b064bb92a8bb75d0a_img.jpg\) _____](#)
- [!\[\]\(b0f97732798f08bf3fea464e24e5d909_img.jpg\) rejee.com/](https://rejee.com/)
- [!\[\]\(4341040f775adb2af60c132f82c4fbbb_img.jpg\) sf9 · GitHub](#)