

ALLISCOM

IoT LoRa Sensor/Receiver

Temperature/Humidity/PM2.5/PM10



Model : LHR10 (Receiver) ; LSS10 (Sensor)


- Features:**
- Low Power Consumption
 - Highly Reliability
 - Good Connectivity
 - Long Distance 1~10KM
 - Multiple of LoRa Compatibility
 - Battery Inside
 - Light & Compact Design
 - Ease of Installation
 - Use with Allis Communications 4G Wireless Router/
Gateway (MG700)

TOPOLOGY OF HARDWARE CONNECTION



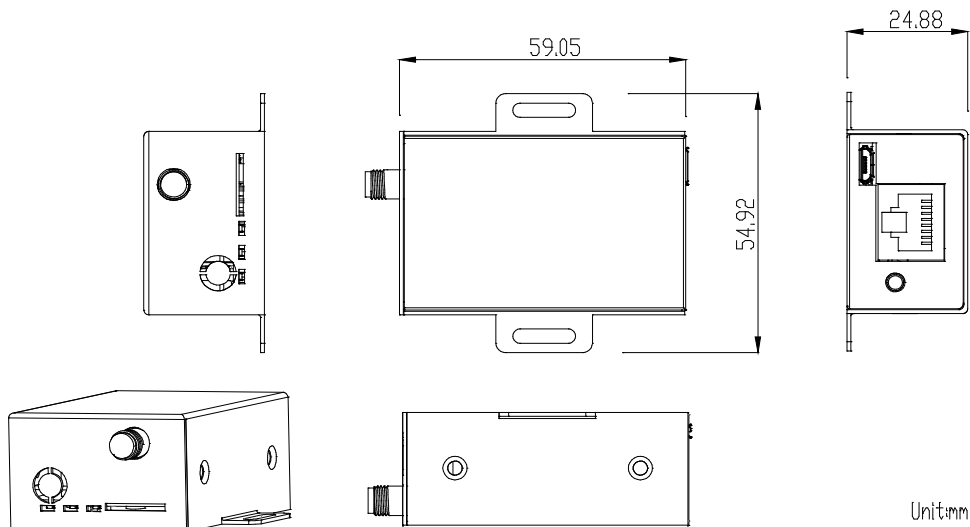
1. Electrical Specifications:

Device	Hardware Specifications	
LHR10 LSS10	Controller	ATmega328/P
	Operating Voltage	USB power In 4.5~5.2V--LHR10 12V cable in -- LSS10
	LoRa® Chipset	SX1276
	LoRa® MCU	STM32L151, 128 KB flash
	Frequency	902 - 928 MHz
	Transmitting Power	902-928 MHz @ 20 dBm
	Transmitting Distance	1 ~ 10 KM @ 0.81 Kbps
	Receiving Sensitivity	-132 dBm @ 0.81 Kbps
LSS10	PM2.5/ PM10 Sensor	
	Operating Principle	Laser Scattering
	Detection ^{1,2}	PM2.5 and PM10
	Output unit ^{1,2}	PM2.5 in $\mu\text{g}/\text{m}^3$ and PM10 in $\mu\text{g}/\text{m}^3$
	Concentration Range	0 $\mu\text{g}/\text{m}^3$ to 1,000 $\mu\text{g}/\text{m}^3$
	Accuracy (at 25°C±5°C)	0 $\mu\text{g}/\text{m}^3$ to 100 $\mu\text{g}/\text{m}^3$: ±15 $\mu\text{g}/\text{m}^3$ 100 $\mu\text{g}/\text{m}^3$ to 1000 $\mu\text{g}/\text{m}^3$: ±15 %
	Operating time	20,000 hrs
	Laser Class	Laser Class 1: IEC/EN 60825-1: 650 nm
	ESD	±4 kV contact, ±8 kV air per IEC 61000-4-2
	Fast Transient Burst	±0.5 kV per IEC61000-4-4
	Radiated Emissions	40 dB 30 MHz to 230 MHz 47 dB 230 MHz to 1000 MHz
	Conducted Emissions	0.15 MHz to 30 MHz in compliance with CISPR 14

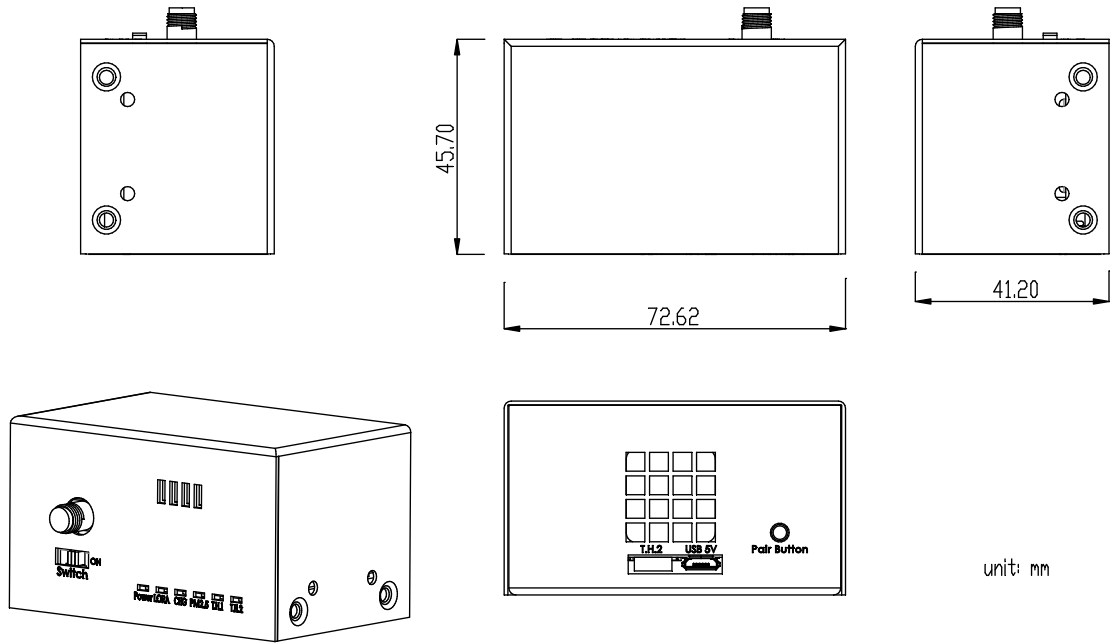
Humidity / Temperature Sensor		
Chipset	HDC1080 (Texas Instruments) 	
Accuracy	Relative Humidity Accuracy $\pm 2\%$ (typical) Temperature Accuracy $\pm 0.2^{\circ}\text{C}$ (typical)	
Recommended Operating Conditions	Temperature $-40 \sim 125^{\circ}\text{C}$ Humidity $-20 \sim 70^{\circ}\text{C}$	
LSS10	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001: $\pm 2000\text{V}$	
	Charged-device model (CDM), per JEDEC specification JESD22- V C101: $\pm 500\text{V}$	
	Operating Temperature	$-10 \sim 50^{\circ}\text{C}$
	Storage Temperature	-30 to 65°C
	Humidity	$5 \sim 95\%$ (Non-condensing)
	Power Consumption	0.6 Watt — Normal Operation 3 Watt — Battery Charging
	Battery	1000mA @ 4V (4Watt)
	Work Time @Battery only	8 Hours approx.

2. Mechanical Specifications:

LHR10 (LoRa Receiver)	
Item	Description
Dimension	59.05(L) \times 54.92(W) \times 24.88mm(H) (Metal Box with ear)
Connector	RJ45, Micro-USB, LoRa Antenna



LSS10 (LoRa Sensor)	
Item	Description
Dimension	72.62(L) × 45.7(W)x 41.2mm(H) (Metal Box)
Connector	Micro-USB, LoRa Antenna



3. Installation:

3.1 LED Indication



LHR10 (Receiver)

LSS10 (Sensor)

Device	Item	LED	Description
LHR10	1	Bluetooth (BT)	BT Module Normal
	2	LoRa	LoRa Module Normal
	3	Power	Power ON
LSS10	1	Power	Power ON
	2	LoRa	Send Data
	3	CHG	Battery Charging
	4	PM2.5/PM10	PM.2.5/PM10 Module Normal
	5	T.H.1	Temperature and Humidity Module Normal
	6	T.H.2	External Temperature and Humidity Module Normal

3.2 Physical Connection

- Step1. Plug the LAN cable to LHR10 (Receiver) Fig. 1 and switch on LSS10 (Receiver) Fig. 2
- Step2. Press the pair button of LHR10 and hold. The LoRa blue LED will blink. Fig.3
- Step3. Press the pair button of LSS10 and hold until the LHR10 blue LED solid on. Fig.4
- Step4. LHR10 and LSS10 pairing succeeded



Fig.1 LHR10 Cable plug-in



Fig. 2 LSS10 Switch On

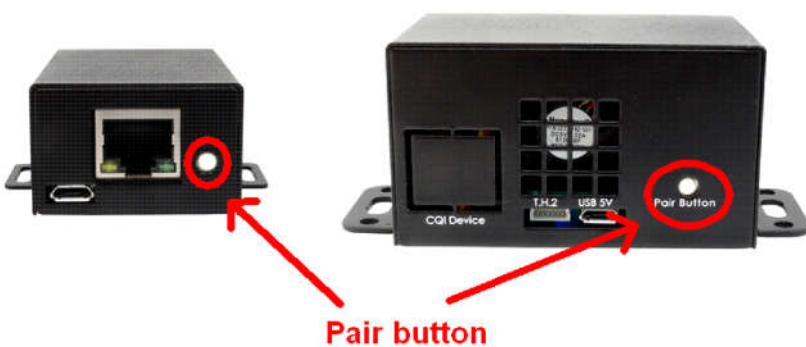


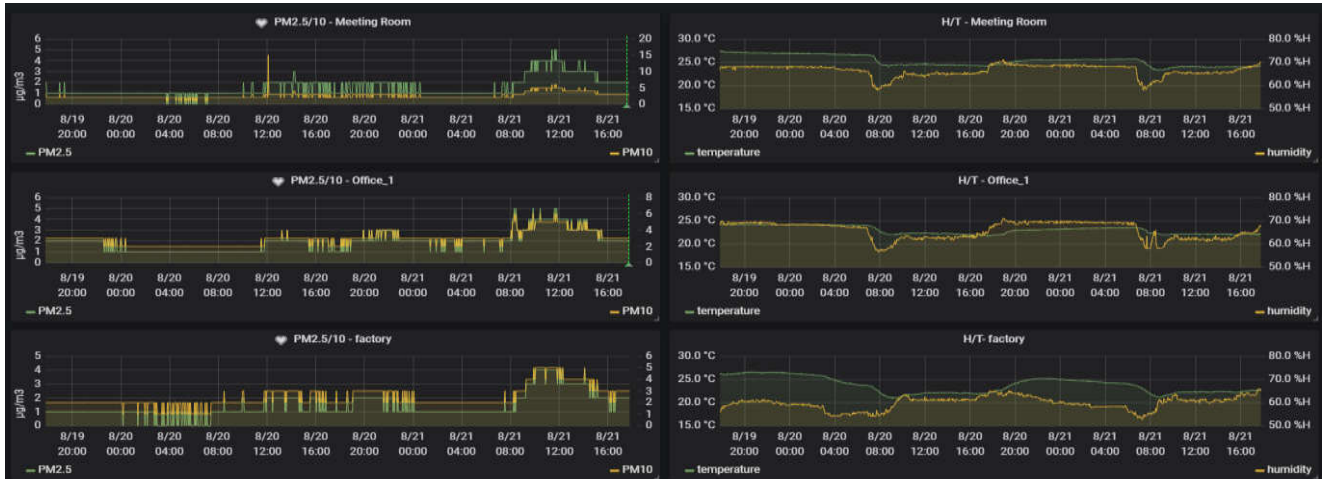
Fig.3 LHR10 and LSS10 Pair Button pressed



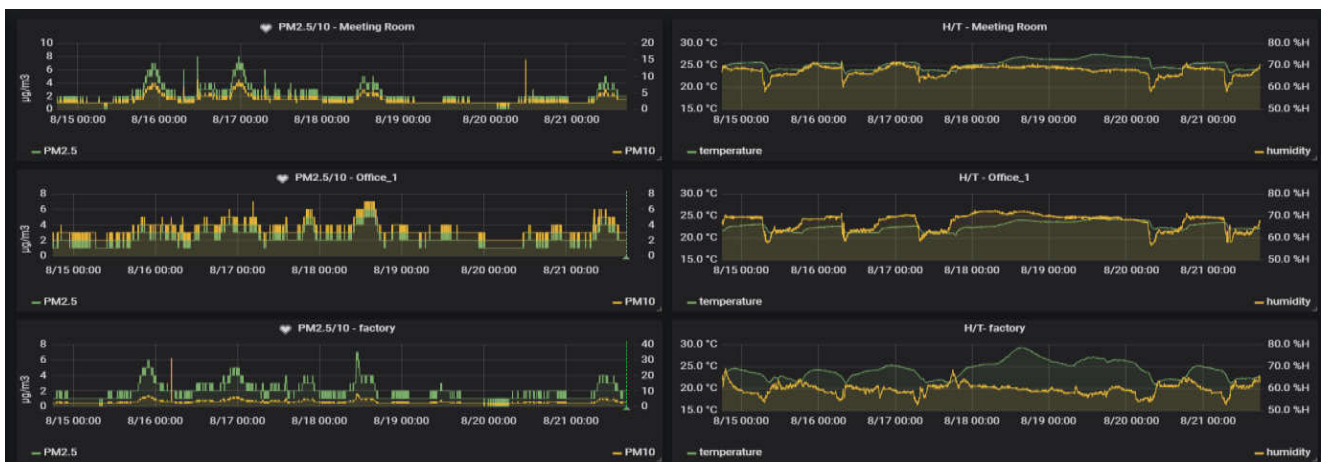
Fig.4 LHR10 LoRa Blue LED Solid On

4. Demonstration of LoRa Sensor Data on Web View (Example captured from Alliscom's Grafana Server)

(2) days of big data



(7) days of big data



(30) days of big data

