

## **.SPECS OF LORAWAN DATA LOGGER RH**

### **SPECS.**

<b>Type</b>	<b>RH</b>
Memory/Storage	32k per channel
External Sensor	Temperature: Digital sensor Range: -29°C to +72°C / -20°F to +161°F Accuracy: $\pm 0.2^{\circ}\text{C}$ at 0° to 10°C, $\pm 1.0^{\circ}\text{C}$ at extremes / $\pm 0.3^{\circ}\text{F}$ at 32° to 50°F, $\pm 1.8^{\circ}\text{F}$ at extremes Temperature Resolution: $0.1^{\circ}\text{C}$ / $0.18^{\circ}\text{F}$ Humidity: Capacitive MEMs Range: 0% to 100% Accuracy: $\pm 2\%$ from 0% to 100% Humidity Resolution: 0.1%
Display	LCD screen 4.4cm(l) x 3.5cm(w)
Measurement Intervals	Programmable from 1 minutes
Transmission time Interval	Programmable from 30 minutes
Alarm Notifications	Alarm condition on-screen, via LoraWan.
Computer interface	USB
Power source	ER14505 x 3 (3.6V) 3 year continuous use battery life.
LoRaWAN Frequency Bands	US915
LoraWAN Transmit Power	Maximum 22dBm
Range	Up to 500m indoor/urban range.

## FORMAT DATA

### 1. Real time data.

#### ➤ *Packet 1 (53 bytes)*

Serial number	6 bytes
0xD0	1 byte
Package	2 bytes (low, high)
Data CH1 0	2 bytes (low, high)
Data CH2 0	2 bytes (low, high)
Data CH1 1	1 byte
Data CH2 1	1 byte
....	....
Data CH1 20	1 byte
Data CH2 20	1 byte

#### ➤ *Packet 2 (53 bytes)*

Serial number	6 bytes
0xD1	1 byte
Package	2 bytes (low, high)
Data CH1 0	2 bytes (low, high)
Data CH2 0	2 bytes (low, high)
Data CH1 1	1 byte
Data CH2 1	1 byte
....	....
Data CH1 20	1 byte
Data CH2 20	1 byte

➤ **Packet 3 (53 bytes)**

Serial number	6 bytes
0xD2	1 byte
Package	2 bytes (low, high)
Data CH1 0	2 bytes (low, high)
Data CH2 0	2 bytes (low, high)
Data CH1 1	1 byte
Data CH2 1	1 byte
....	....
Data CH1 20	1 byte
Data CH2 20	1 byte

**2. Send miss data.**

➤ **Packet 1 (53 bytes)**

Serial number	6 bytes
0xA0	1 byte
Package	2 bytes (low, high)
Data CH1 0	2 bytes (low, high)
Data CH2 0	2 bytes (low, high)
Data CH1 1	1 byte
Data CH2 1	1 byte
....	....
Data CH1 20	1 byte
Data CH2 20	1 byte

➤ **Packet 2 (53 bytes)**

Serial number	6 bytes
0xA1	1 byte

Package	2 bytes (low, high)
Data CH1 0	2 bytes (low, high)
Data CH2 0	2 bytes (low, high)
Data CH1 1	1 byte
Data CH2 1	1 byte
....	....
Data CH1 20	1 byte
Data CH2 20	1 byte

➤ **Packet 3 (53 bytes)**

Serial number	6 bytes
0xA2	1 byte
Package	2 bytes (low, high)
Data CH1 0	2 bytes (low, high)
Data CH2 0	2 bytes (low, high)
Data CH1 1	1 byte
Data CH2 1	1 byte
....	....
Data CH1 20	1 byte
Data CH2 20	1 byte

**3. Setting data (Send to gateway).**

Data logger send 3 packet data setting to Gateway. Data logger only send to gateway one time.

➤ **Packet 1 (52 bytes).**

Serial Number	6 bytes
“S1”	2 bytes

Device	0x11: Humidity, Room temperature	
	0x22: Humidity, LN2	
	0x33: Humidity, RTD2	
	0x44: LN2, Room Temperature	
	0x55: RTD2, Room temperature	
	0x66: Humidity, Thermal couple	
	0x77: Thermal couple, Room temperature	
Unit	1 byte	0xAC: °C
		0xAF: °F
Continue memory, stop key	1 byte	0x00: Continue disable, Stop key: enable
		0x01: Continue disable, Stop key: disable
		0x02: Continue enable, Stop key: enable
		0x03: Continue enable, Stop key: disable
Start time (s,mi,ho,date,mo,y)	6 bytes	
Stop time(s,mi,ho,date,mo,y)	6 bytes	
Run time (s, mi, ho, dayl,dayh)	5 bytes	
Status Logger	1 byte	0xFF: no setting & no run
		0x11: setting & no run
		0x44: running
		0xAA: stop
Setting time(s,mi,ho,date,mo,y)	6 bytes	
Start delay (min)	1 byte	
Duration day	2 bytes	Duration day (byte low)
		Duration day (byte high)
Duration hour	1 byte	Duration hour
Interval hour	1 byte	
Interval minute	1 byte	

Interval second	1 byte	
High alarm limit (temperature)	2 bytes	Byte low
		Byte high
Low alarm limit (temperature)	2 bytes	Byte low
		Byte high
High alarm limit (humidity)	2 bytes	Byte low
		Byte high
Low alarm limit (humidity)	2 bytes	Byte low
		Byte high
Firmware version	2 bytes	

➤ **Packet 2 (49 bytes)**

Serial Number	6 bytes
“S2”	2 bytes
Device	0x11: Humidity, Room temperature
	0x22: Humidity, LN2
	0x33: Humidity, RTD2
	0x44: LN2, Room Temperature
	0x55: RTD2, Room temperature
	0x66: Humidity, Thermal couple
	0x77: Thermal couple, Room temperature
Time zone	40 bytes

➤ **Packet 3 (32 bytes)**

Serial Number	6 bytes
“S3”	2 bytes

Device	0x11: Humidity, Room temperature
	0x22: Humidity, LN2
	0x33: Humidity, RTD2
	0x44: LN2, Room Temperature
	0x55: RTD2, Room temperature
	0x66: Humidity, Thermal couple
	0x77: Thermal couple, Room temperature
Description	20 bytes
Interval send lora day	1 byte
Interval send lora hour	1 byte
Interval send lora minute	1 byte

#### 4. Alarm data (50 bytes).

Serial Number	6 bytes
‘AL’	2 bytes
Device	0x11: Humidity, Room temperature
	0x22: Humidity, LN2
	0x33: Humidity, RTD2
	0x44: LN2, Room Temperature
	0x55: RTD2, Room temperature
	0x66: Humidity, Thermal couple
	0x77: Thermal couple, Room temperature
Start time (s,mi,ho,date,mo,y)	6 bytes
Stop time(s,mi,ho,date,mo,y)	6 bytes
Run time (s, mi, ho, dayl,dayh)	5 bytes
Total time alarm temperature (s,mi,ho,days)	5 bytes
Time low alarm temperature (s,mi,ho,days)	5 bytes

Total time alarm humidity (s,mi,ho,days)	5 bytes
Time low alarm humidity (s,mi,ho,days)	5 bytes
Room temperature alarm	2 bytes
Humidity/RTD alarm	2 bytes

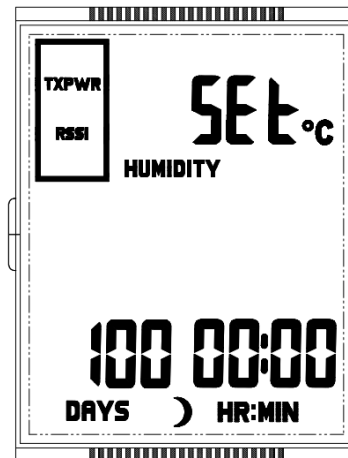
## 5. End logger (50 bytes).

Serial Number	6 bytes
‘EN’	2 bytes
Device	0x11: Humidity, Room temperature
	0x22: Humidity, LN2
	0x33: Humidity, RTD2
	0x44: LN2, Room Temperature
	0x55: RTD2, Room temperature
	0x66: Humidity, Thermal couple
	0x77: Thermal couple, Room temperature
Start time (s,mi,ho,date,mo,y)	6 bytes
Stop time(s,mi,ho,date,mo,y)	6 bytes
Run time (s, mi, ho, dayl,dayh)	5 bytes
Total time alarm temperature (s,mi,ho,days)	5 bytes
Time low alarm temperature (s,mi,ho,days)	5 bytes
Total time alarm humidity (s,mi,ho,days)	5 bytes
Time low alarm humidity (s,mi,ho,days)	5 bytes
Room temperature alarm	2 bytes
Humidity/RTD alarm	2 bytes

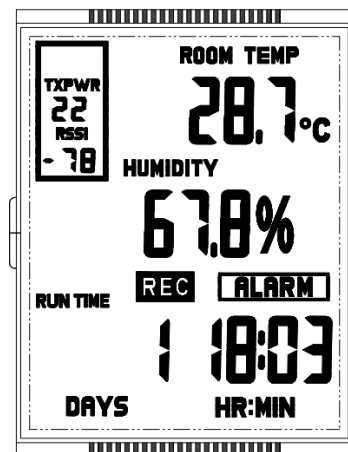


## LCD DISPLAY

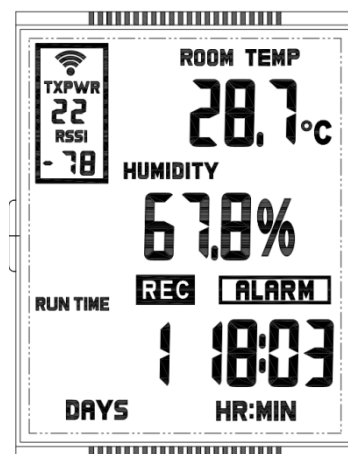
Display after setting.



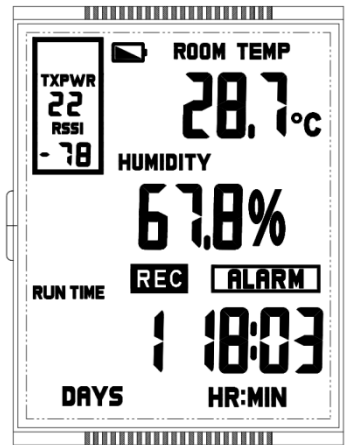
Display when logger is running.



Display when transmit data.



Low power display.



Display when logger is stopping.

