SKYCLD1-A

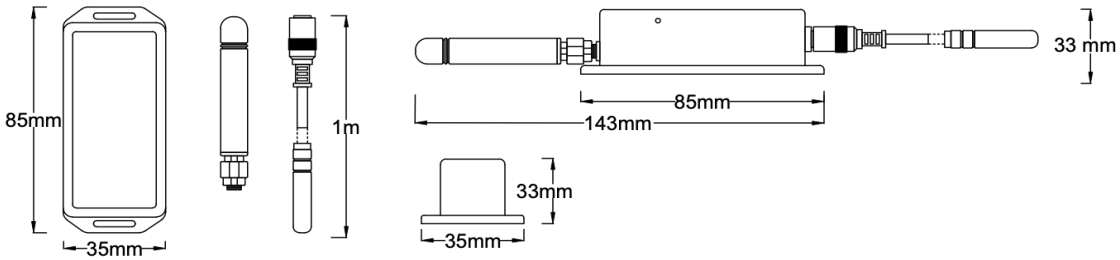
Temperature & Humidity Monitoring Device

Skysens SKYCLD1 is a LoRaWAN compatible, easy to use and cost-effective temperature and humidity monitoring device which can measure very high and very low temperatures with its addi-tional temperature probe.Equipped with MODBUS RTU interface.

- 12 bits thermometer between -55ºC and +125ºC.
- Precise humidity and temperature measurement.
- Excellent long-term stability.
- LED interface.
- Easy attachment with accessories.
- Adjustable sensor reading interval from network.
- Ready with end-to-end software application.
- 2 mode restart pin button.
- Up to 10 years of battery life.
- Optional IP65 casing.

Application Areas

Restaurants, warehouses, supply chains, hospitals, industries, production lines , etc.



Technical Features

Dimensions	35 x 85 x 33 mm	Measurement Range	-10 to +80 ºC 20% to 80% RH
Weight	120 gr (apprx)	Temperature Sensitivity	0.5 ºC
Available Frequencies	All	Humidity Sensitivity	1% RH
Antenna	+2 dBi or +3 dBi external	Operating Conditions	-40ºC to +80ºC & 0% RH to 100% RH
Expected Battery Life	Minimum 5 Years with 30 min Interval	Battery	3.6V Lithium AA (Changeable)

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PRODUCT IMAGES, BUTTONS AND PLUG-INS

Temperature
Probe

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DEVICE INTRODUCTION

- This device is designed to send temperature and humidity information regularly. When device start working, device sends temperature and humidity measurements to the server with specific period of time.
- SKYCLD1-A also has got an alarm function, which sends the measurements immediately whenever measured temperature or humidity value exceeds predefined threshold values.
- Alarm function is enabled as default, it can be disabled with a downlink message which is explained at downlink messages function.
- Threshold values can be set via a downlink message.
- Device goes into normal message period if the temperature and humidity values falls below threshold values.

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UPLINK STRUCTURE

Sample Payload: 0x00FC01DD0105000000000000000000000E1000

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Temperature MSB	Temperature LSB	Humidity MSB	Humidity LSB	Probe Temp MSB	Probe Temp LSB

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17
Reserved	Reserved	Reserved	Reserved	Battery MSB	Battery LSB

Byte 18
Reserved

- Note: Temperature and humidity information are given multiplied by 10 form. Divide them by 10 to find temperature and humidity information. Example (H00FC = 252, 252/10 = 25.2 ºC)

- Battery information is given in mV form and must be between 3600 mV and 3200 mV

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DOWNLINK STRUCTURE

Interval Change Downlink

Following message should be sent to the device to change message period of the device.

Interval Change Command	
Port	**Message**
0x0B	0x02$T_0T_0T_1T_1T_2T_2T_3T_3$

T values at the above table are time values in seconds and hexadecimal form. Must be sent in MSB first form. For example, 0x0200000384 message should be sent to the device in order to set message interval to 900 seconds. (0x384H = 900) These values can take from 1 minute to 6 hours.

Reset Downlink

Following message should be sent to the device in order to reset the device.

Reset Command	
Port	**Message**
0xFA	0x01

Alarm Activation & Deactivation Downlink

Following message should be sent to activate or deactivate alarm function of the device.

Alarm Activation & Deactivation Command	
Port	**Message**
0x10	0x05XX

XX : 01 => Activates alarm function, XX : 00 => Deactivates alarm function.

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DOWNLINK STRUCTURE

Set Threshold Values Downlink

Following message should be sent to set threshold values of temperature and humidity. Device sends immediate message to the server if these threshold values exceeded and alarm function is enabled.

Threshold Values Set Command	
Port	**Message**
0x11	0x06TTHH

TT values in the message represents temperature threshold and must be sent in hexadecimal integer form. HH values in the message represents humidity threshold and must be sent in hexadecimal form.

Set Alarm Message Period Downlink

Alarm messages are set to be sent once in every 3 minutes by default. Following message should be sent to change this period.

Alarm Period Change Command	
Port	**Message**
0x12	0x07SSSS

SSSS represents the period value in seconds and hexadecimal integer form. This value could be minimum 60 seconds and cannot be greater than regular message interval value.

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Reset Operation

Push the reset button and hold, red LED must light for a while and start blinking. When you see the blinking release the button. The device gets reset by this operation and after every reset operation, the device goes into sleep mode automatically by blinking red and greed LEDs once.

Wake Up

To exit sleep mode and take the device to the normal operation mode, push the reset button until you see the red LED light. When you see red light release the button and the device will go into normal operation mode by blinking LEDs in a sequence of green-red-green.

It is also possible to wake the device up by inserting the probe jack. After the probe is inserted the sequence above happens in the same order.

OTAA Mode

The device requests OTAA join to the server after the device wakes up and goes into the normal operation mode. OTAA requests are represented by the blinking green LED once per request. When the device successfully joins to OTAA mode green LED lights for a while.

Communication

The device indicates uplink communication by blinking green LED once and downlink communication by blinking red LED once.

ABP

For ABP please contact SKYSENS.

Error Behaviour

The first time device with a hardware problem is energized, it flashes the red led at the intervals of five hundred milliseconds, to indicate there is a hardware problem.