GREENOK

WIRELESS THERMO-HYGRO MONITOR

User's Manual
Rev 2.0

dadam MICRO INC.

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Technical Support

If a problem arises with GreenOK and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor.
Visit the Dadam Micro web site for more information - **www.dadamMicro.com**.

LABELLING REQUIREMENTS (FCC Part 15.19 (a)(3))

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operations.

INFORMATION TO THE USER (Part 15.105(b))

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one more of the following measures:
-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver
 is connected.
-Consult the dealer or an experienced radio/TV technician for help.

WARNING (Part 15.21)

The manufacturer is not responsible for any Radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

DOCUMENT HISTORY

REVISION	DATE	COMMENTS
1.0	2003.12.22	1ST revision created
1.1	2004.01.06	
2.0	2005.07.26	GMS-120 REV.B1

Table of Contents

Safety Instructions

Congratulations on your purchase of the GreenOK, wireless thermo-hygro monitor.
This system provides the most efficient and professional solution to meet your needs.
Please read this user's manual and warranty before using your new wireless thermo-hygro monitor and keep the warranty for future reference.

Cautions

- Warning
  Refer all service to qualified service personnel. Servicing your own monitor will void the warranty. Contact the service contact information.
  Do not break up or disjoint.
- Out of order
  If a problem arises with this product, please contact your place of purchase or local distributor.
  Alternatively, please try the following help resources for further guidance.

| **Important Operating Considerations** |
| --- |

- Do not place near water or expose this product to moisture.
- Be especially careful not to drop it and also electronic shock that could damage.
- Do not leave this equipment in an environment unconditioned.

1. Instructions

- 'GreenOK - Wireless thermo-hygro monitor' monitors temperature and humidity in digital display.
- Temperature operating range is: in case of using external temperature and humidity sensor, -20℃ to 80℃ and 1% to 99%. And in case of using external temperature only sensor, temperature operating range is -40℃ to 120℃
- You can set temperature high limit and temperature low limit to allow you monitor the temperature condition.
- GreenOK can be applicable as below.
  - Green House
  - Warehouse for fresh foods, refrigerator, cold storage warehouse
  - Museum, Library, Gallery.
  - Any Temperature and Humidity controls goods
 - Building and Homes.

2. Systems Configuration

- GreenOK has 'Wireless Sensing Unit' for monitoring temperature and humidity and 'Local Monitoring Unit' for displaying and receiving from sensing unit.
- Maximum 16 Wireless Sensing Units can be monitored simultaneously from a single Local Monitoring Unit.
- Wireless sensing unit uses 2 AA alkaline batteries for solving any difficult cable-presence problem.
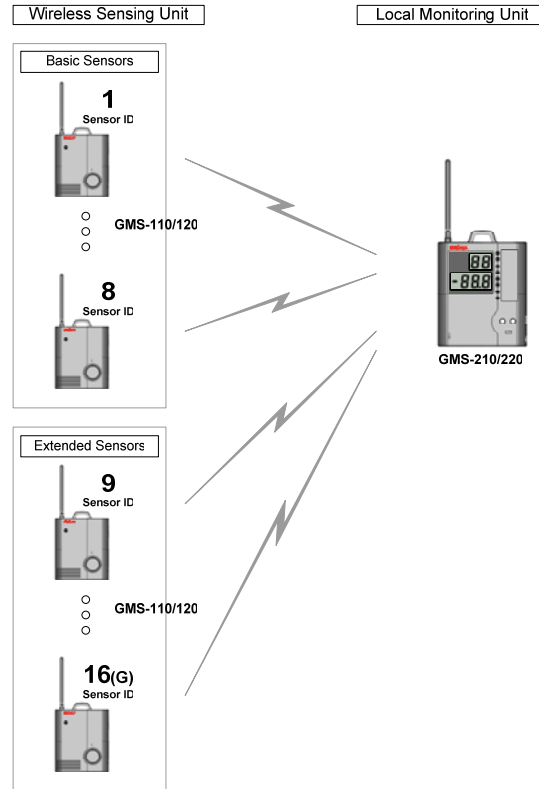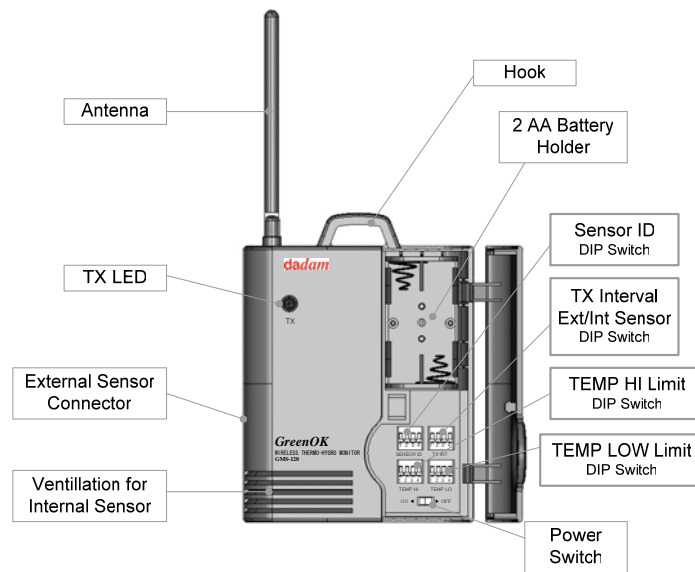

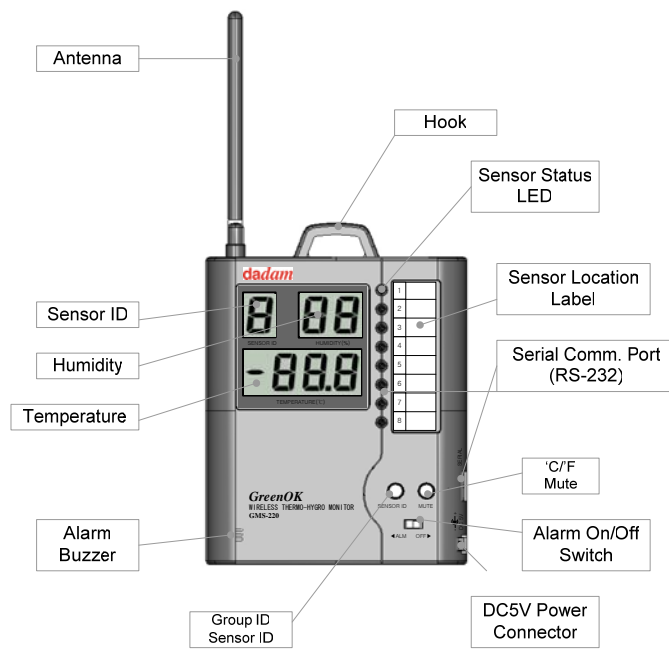**<Figure 1> Basic Systems Configuration**

3. Major Features

3.1 Wireless Sensing Unit (Battery cover closed)
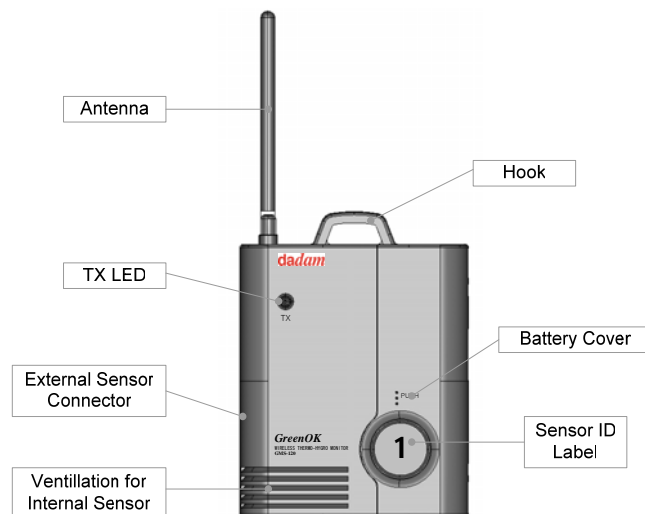
**3.2 Wireless Sensing Unit (Battery cover opened)**
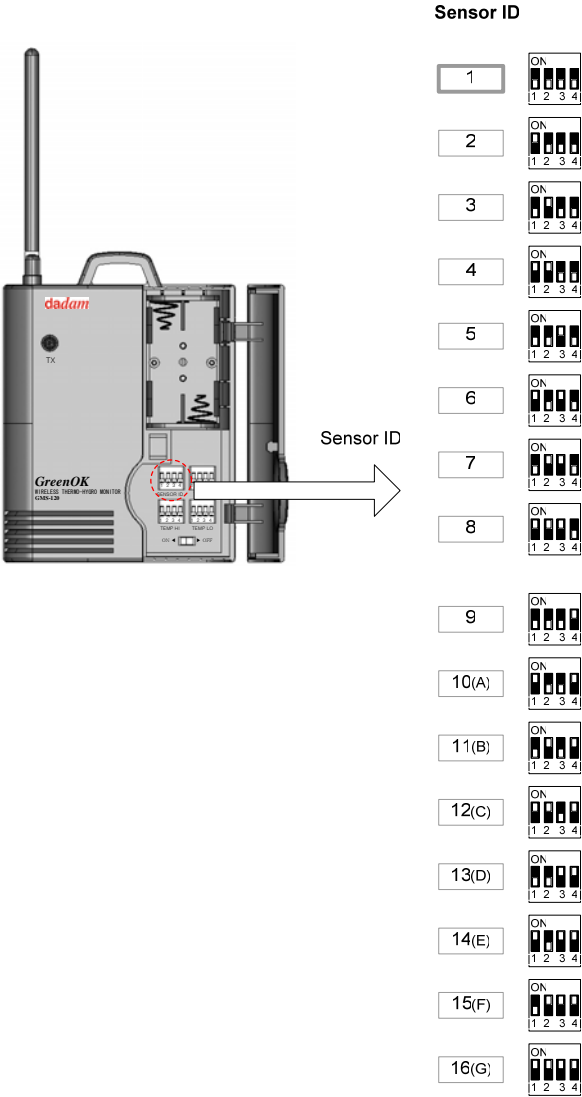
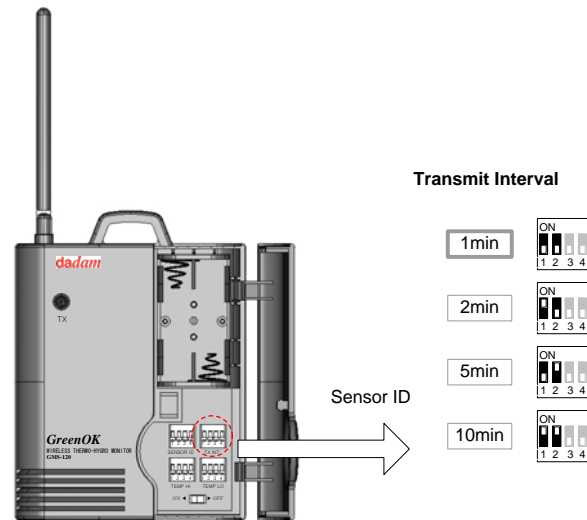### 3.3 Local Monitoring Unit

4. Wireless Sensing Unit

1) Setting up the Sensing Unit
   - Turn on the power button and sensing unit transmits measuring temperature and humidity to monitoring unit 3 times while initializing.
2) Transmitting LED
   - Green LED blinks about 0.1 seconds whenever it transmit.
   - Symptoms of low battery charge, LED lights off.
3) Sensor number
   - Sensor numbers are or location of an ID. Please avoid duplication with the same sensor number.
   - You can set up to 16 sensor number as like 1, 2, 3, 4, 5, 6, 7, 8, 9, 10(A), 11(B), 12(C), 13(D), 14(E), 15(F), 16(G).
   - Factory default sensor number is '1'.
4) Transmission Interval
   - It is an interval that measuring results (temperature, humidity) are transmitted.
   - Programmable transmission intervals are 1min, 2min, 5min, 10min.
   - Factory default transmission interval is 1 min.
5) Setting the Upper limit of Temperature
   - The values of temperature more than the upper limit cause alarm1.
   - Programmable temperatures for the upper limit of temperature are 10℃, 12℃, 14℃, 16℃, 18℃, 20℃, 22℃, 24℃, 26℃, 28℃, 30℃, 32℃, 34℃, 36℃, 38℃, 40℃. You can set among 16 values.
   - Factory default for upper limit of temperature is 40℃.
6) Setting the lower limit of temperature
   - The values of temperature less than the lower limit cause alarm1.
   - Programmable temperatures for the lower limit of temperature are -10℃, -8℃, -6℃, -4℃, -2℃, 0℃, 2℃, 4℃, 6℃, 8℃, 10℃, 12℃, 14℃, 16℃, 18℃, 20℃. You can set among 16 values.
   - Factory default for lower limit of temperature is 0℃.
7) Power switch
   - Turn on or off power.
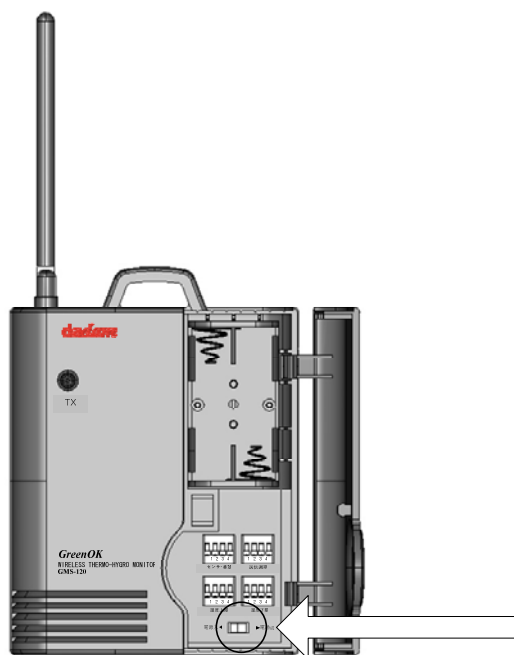
<Figure 2> Using the Power Switch
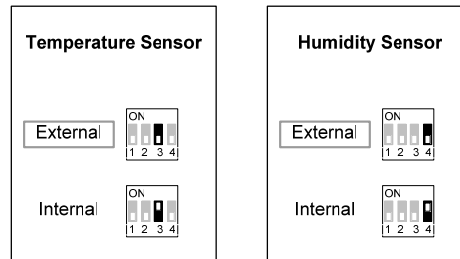
Sensor ID

<Figure 3> Setting the Sensor ID

Transmit Interval

Sensor ID

1min

2min

5min

10min

<Figure 4> Setting the Transmission Interval

Ext/Int Sensor
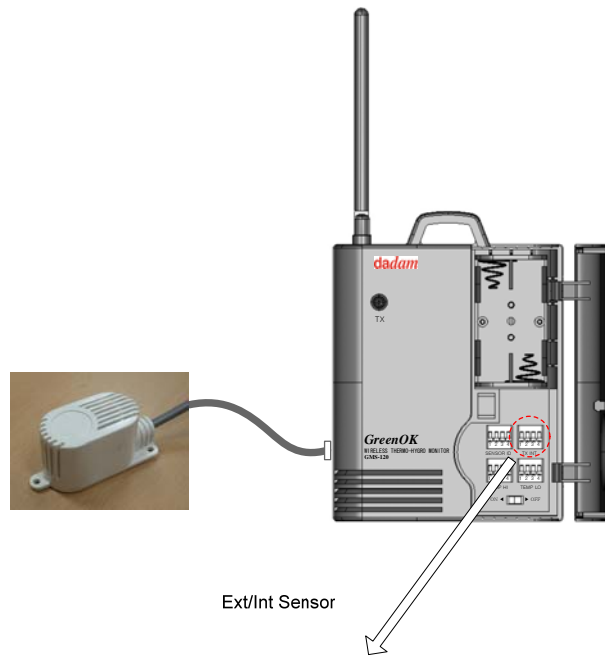
<Figure 5> Selecting the External & Internal Sensor

Centigrade		Fahrenheit
40℃		104.0F
38℃		100.4F
36℃		96.8F
34℃		93.2F
32℃		89.6F
30℃		86.0F
28℃		82.4F
26℃		78.8F
24℃		75.2F
22℃		71.6F
20℃		68.0F
18℃		64.4F
16℃		60.8F
14℃		57.2F
12℃		53.6F
10℃		50.0F

TEMP HI

<Figure 6> Setting the Temperature High Limit

Centigrade		Fahrenheit
20℃		68.0F
18℃		64.4F
16℃		60.8F
14℃		57.2F
12℃		53.6F
10℃		50.0F
8℃		46.4F
6℃		42.8F
4℃		39.2F
2℃		35.6F
0℃		32.0F
-2℃		28.4F
-4℃		24.8F
-6℃		21.2F
-8℃		17.6F
-10℃		14.0F

TEMP LO
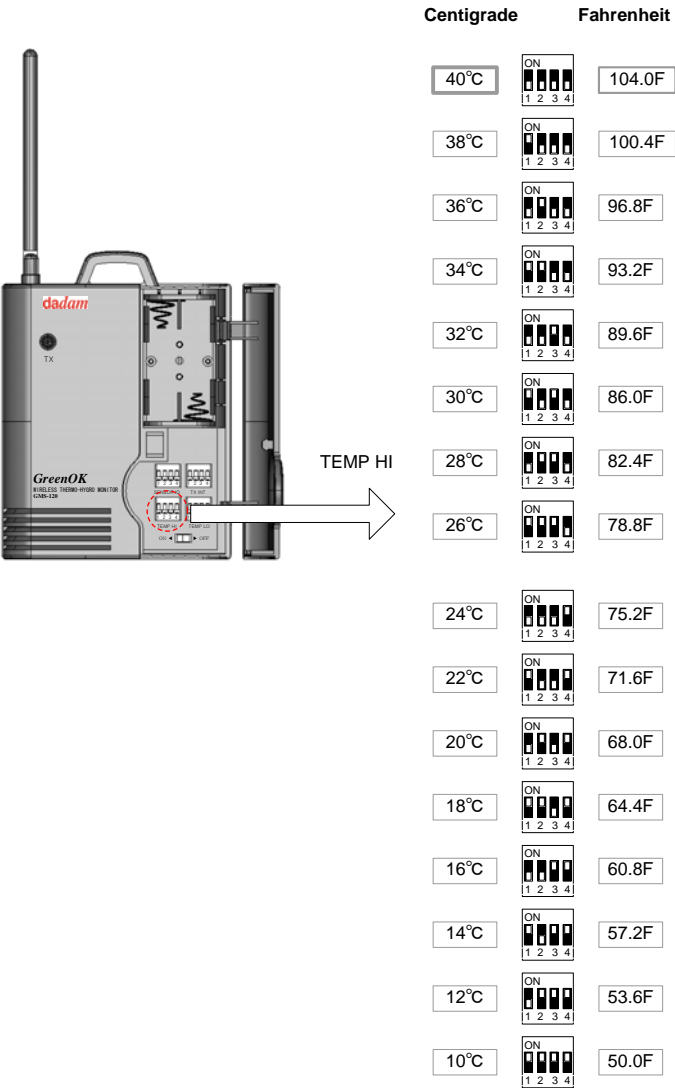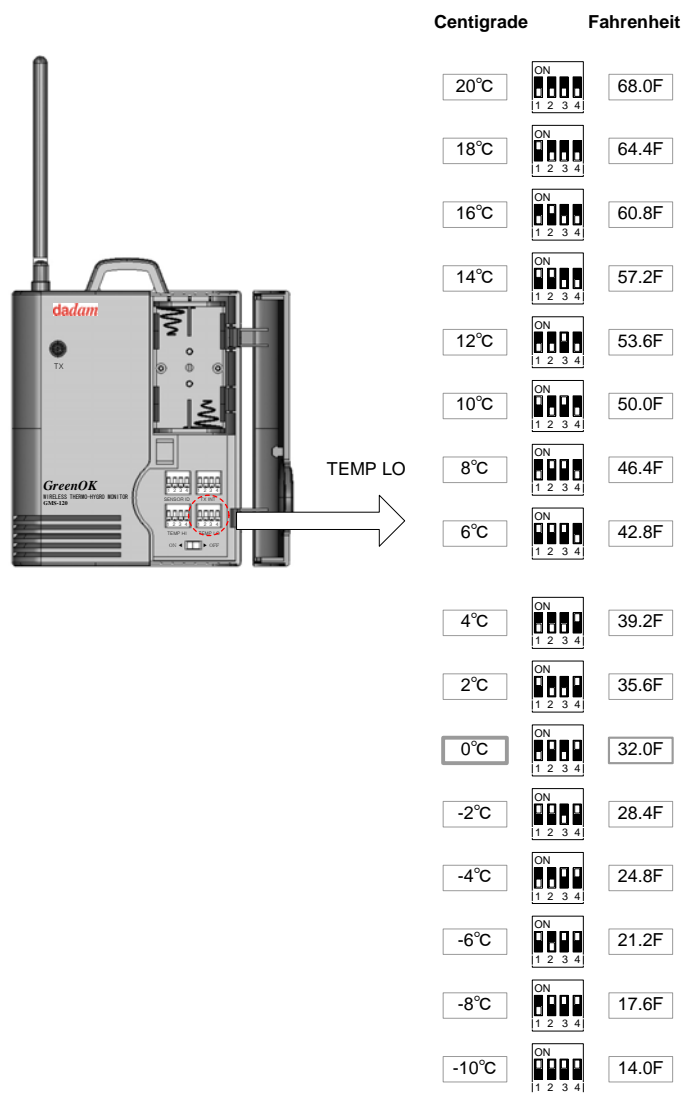
<Figure 7> Setting the Temperature Low Limit

5. Local Monitoring Unit

1) Setting up the monitoring unit
   - Power up the monitoring unit and operate like the followings.
     ・ The LED for Sensor number/temperature/humidity displays 1 to G(16) in order.
     ・ All o transmitting LED lights on green and red each just one time.
     ・ Alarm 1 and alarm 2 sounds for a few times.
   - After initializing, the LED of monitoring unit is all out and the LED for sensor number/temperature/humidity displays "_ _ _ _".
2) Sensor No. LED
   - Each monitoring unit has its own sensor number.
   - Sensor number automatically rotates 1,2,3,4,5,6,7,8, 9, A, B, C, D, E, F, G and displays temperature/humidity for each of them.   Each sensor displays at 4 seconds intervals.
3) Temperature LED
   - Each sensing unit has its own sensor number and displays temperature "℃".
4) Humidity LED
   - Each sensing unit has it's own sensor number and displays humidity "%"
5) Transmitting signal LED
   - When sensing units normally transmits, LED lights green.
   - If sensing unit has a temperature lower than the lower limit or more than the upper limit, the LED of monitoring unit blinks on red at 0.5 seconds intervals.
   - When monitoring unit can't receive any results from sensing unit over presented interval, LED turns on red.
   - 2 hours after alarm occurred and if it is not all clear, LED of alarm relevant to sensing unit is out.
   - The LED of not existed sensing unit is not light on.
6) Sensor No. rotate button
   - If you want to check next sensor No., press this button.
7) Mute
   - If alarm occurred, you can press the button to mute the sound.
   - After 10 minutes of mute, if it is still in warning condition, alarm will be occurred again.
8) Alarm off
   - Alarm is let you know in abnormal temperature and situation of sensing unit. You can slide this switch to right to do not sound alarm at all.
   - Factory default (and for general use) the switch is alarm-on.
   - If the button sets up alarm off, it has no sound but LED displays still in warning.
9) Buzzer/Alarm operation
   - If sensing unit has a temperature lower than the lower limit or more than the upper limit, Alarm1 will be occurred every 0.3 seconds.
   - If transmitting is abnormal, alarm2 will be occurred every 2 seconds.
   - Alarm will be occurred until press the mute button or slide the alarm-off switch.
10) Power Adapter

6. Setting up the GreenOK

1) Antenna
   - Before setting it up, the antennas of sensing unit and monitoring unit move to adjust the vertical position.
2) Sensing unit and monitoring unit can be on the table or on the wall using a loop.
   - For desk or table: stand up the body on a flat part.
   - For wall: Hang this product using by loop on the wall.
3) Setting up the sensing unit
   - Restricting the air flow can cause it to take an accurate measurement.
   - Avoid leaving the wire less thermo-hygro monitor in direct sunlight or shock, gale.
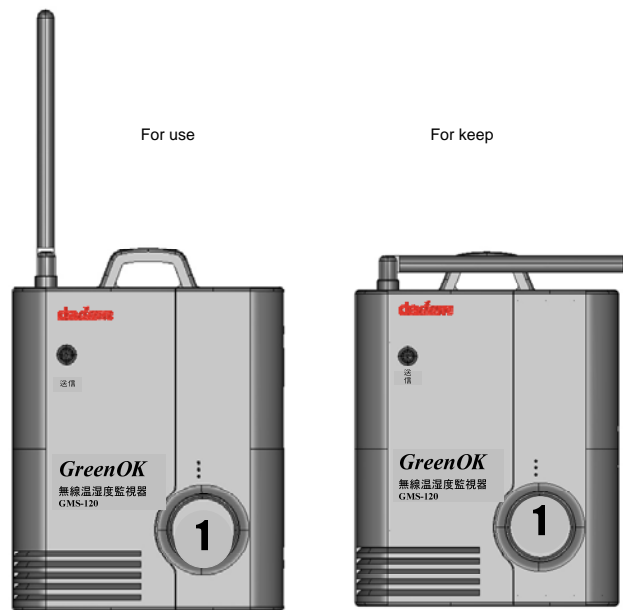
<Figure 8> Using the Antenna

7. Replacing the Batteries

1) Factory default doesn't power on. Before using, place the batteries in battery holder and power the switch on.
2) This product uses two AA alkaline batteries. If the LED of sensing unit doesn't blinking for several minutes, follow these steps to replace the batteries;
   ▪ Once push the tab on the battery cover and lift the door off.
   ▪ Remove the old batteries.
   ▪ Make sure you install into the correct direction.
   ▪ Press the tab to re-cover the door.
3) If you put batteries (+/-) up in the opposite direction, it could be not work or cause damage.
4) Caution
   ▪ Must use the specified alkaline batteries and replace two batteries at a time.
   ▪ Do not charge, short, break up the batteries that could Explosion and cause liquid inside out.
   ▪ Dispose of them in an environmentally proper manner.

8. Safety Instructions

1) Avoid leaving the monitor in direct sunlight, snow or rain.
2) Do not leave this equipment in an environment unconditioned, storage temperature under below zero, it is possible to decrease the communication distance by power of batteries.
3) GreenOK adopts fully qualified components to prevent radio field interference and network obstruction.
4) Don't take off the back label-radio certification label of wireless sensing unit. This label guarantees the approval of radio technical standards. Without this label or substituted label doesn't qualify you to get a full A/S for free.

9. Specification

9.1 Wireless Sensing Unit

1)	Model No.	GMS-120(E)
2)	Measurement range	Internal Temp & Humid Sensor(GMS-120)
		Temperature: -20℃ ~ 70℃
		Humidity: 10% ~ 90%RH
		External Temp & Humid Sensor(GMS-120E)
		Temperature: -20℃ ~ 80℃
		Humidity: 1% ~ 99%RH
		External Temperature Sensor(GMS-120E)
		Temperature: -40℃ ~ 120℃
3)	Resolution	Temperature: 0.1℃
		Humidity: 1%
4)	Accuracy	Temperature:
		±1℃(0℃ ~ 80℃), ±2℃(−20℃ ~ 0℃)
		Humidity: ±3%
5)	Setting DIP Switch	
	▪ Sensor number	1, 2, … 8, [9, 10(A) … 16(G)]
	▪ Transmission Interval	1min, 2min, 5min, 10min
	▪ Temperature High Limit	10℃, 12℃ … 38℃, 40℃
	▪ Temperature Low Limit	-10℃, -8℃ … 18℃, 20℃
6)	Radio Specification	
	▪ Frequency	426.075MHz
7)	Power Supply	2 AA Size Alkaline Battery
8)	Battery Life	6 Months
9)	Operating Range	-20℃ ~ 80℃
10)	Dimension	134mm(H) x 100mm(W) x 25mm(D)
11)	Weight	198gm（including batteries）

9.2 Local Monitoring Unit

1) Model No.   GMS-220
2) Max. Sensing unit number   Max 16
3) Measurement display range   Temperature: -40℃ ~ 120℃
   Humidity: 1% ~ 99%RH
4) Accuracy resolution   Temperature: 0.1℃
   Humidity: 1%
5) User interface
   - Sensor number LED
   - Temperature LED(℃/'F)
   - Humidity LED(%)
   - Alarm LED   Alarm 1 (Abnormal Temperature)
     Alarm 2 (Transmission Failure)
   - Sensor rotate switch
   - Mute button
   - Aalarm-Off Switch
6) Radio Specification
   - Frequency   426.075MHz
7) Power Supply   AC Power Adapter
   - Input   AC 110/220V, 50/60Hz
   - Output   DC 5 V, 0.5A
8) Operating Range   -20℃~80℃, 80%RH
9) Dimension   144mm(H) x 110mm(W) x 25mm(D)
10) weight   184gm