



## STH-03ZB User's Manual (ZigBee HA Profile)

Ver. 1.03

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Congratulations for choosing a world-class digital temperature and humidity sensor using ZigBee wireless transmission technology. This manual is designed to help set up and get the most from the sensor in a few short minutes.



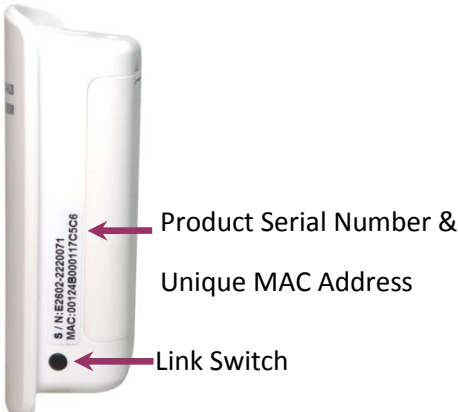
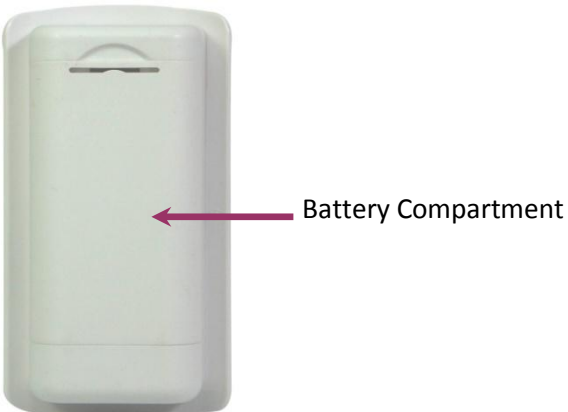
**Safety notice:** Please read and follow the instructions before using this product

- To prevent electrical shock or fire, do not disassemble or expose the unit to liquids of any kind
- Only use attachments and / or accessories specified by the manufacturer

**1 Package Content and STH-03ZB Views**

NHR STH-03ZB digital temperature and humidity sensor	Mounting fixtures (mounting cradle, 2 wall plugs, 2 screws)	2 x AA batteries
		

If any of the above is missing please contact your supplier.

<p style="text-align: center;">Front</p> 	<p style="text-align: center;">Bottom</p> 
<p style="text-align: center;">Side</p> 	<p style="text-align: center;">Back</p> 

## **2 Installing Mounting for STH-03ZB**

### Requirements:

- Mounting fixtures
  - Drill with 5mm (0.2 inches) drill bit size (if using wall plugs) or 3.5mm (0.14 inches) drill bit size (if not using wall plugs)
  - Size 1 Phillips screwdriver
- a) Locate STH-03ZB with at least 15cm (approx.. 6 inches) spacing on each side (except on mounting side) avoiding the following sources of interference: direct sunlight, air flow from vents, fans, doors, windows, heaters, sources of steam, oil vapor, etc.
- b) If necessary, pre-drill mounting holes using mounting cradle for alignment, then use appropriate drill bit to drill the holes – 5mm (approx. 0.2 inches) if using wall plugs or 3.5mm (approx. 0.14 inches) if not using wall plugs.
- c) If necessary, insert wall plugs into the 2 holes and use size 1 Phillips screwdriver to fasten the screws securing the mounting cradle. Note: pay careful attention to the orientation of the mounting cradle.
- d) Install and remove STH-03ZB using the following 2-step action to ensure the mounting cradle has been correctly and securely installed and STH-03ZB can be installed and removed.

Install -



Remove -



Initial hardware installation for STH-03ZB has been successfully completed.

### 3 Installing and Replacing Batteries in STH-03ZB

Requirements:

- 2 x AA batteries

a) Open the battery compartment using the following two-step action:



b) If necessary, remove existing batteries.

c) Install 2 x AA batteries into the battery compartment ensuring correct polarity.

d) The status LED on STH-03ZB should start flashing to indicate its current state:

Green LED	Status
1 flash per second	Ready to join a parent device
1 flash every 60 seconds	Already joined a parent device and functioning normally
2 flashes every 5 seconds	Already joined but unable find a parent device in the same network

e) Replace battery compartment door by first slotting base into STH-03ZB then clicking close the compartment.

New batteries have been successfully installed.

**Recommendation:** It is strongly recommended to install batteries into STH-03ZB **just before** joining to parent device as this will greatly improve battery life. Also, it is recommended to set the DIP Switch time interval to 5 minutes for longer battery life. For proper functioning of STH-03ZB and longer battery life, please install alkaline or lithium batteries from reputable suppliers.

Low battery power is indicated by the red LED flashing once every 15 seconds. Replace batteries immediately to prevent potential damage and ensure proper functioning of STH-03ZB.

#### 4 Setting Transmission Interval for STH-03ZB

- If necessary, remove the STH-03ZB from mounting cradle (see “**Installing Mounting for STH-03ZB**” section).
- Set the transmission interval based on the following DIP switch positions:

Transmit Interval	DIP Switch Setting	Transmit Interval	DIP Switch Setting
1 Second		1 Minute	
5 Seconds		5 Minutes	
10 Seconds		10 Minutes	
15 Seconds		15 Minutes	
20 Seconds		20 Minutes	
25 Seconds		25 Minutes	
30 Seconds		30 Minutes	
35 Seconds		35 Minutes	
40 Seconds		40 Minutes	
45 Seconds		45 Minutes	
50 Seconds		50 Minutes	
55 Seconds		55 Minutes	
60 Seconds		60 Minutes	
65 Seconds		65 Minutes	
70 Seconds		70 Minutes	
75 Seconds		75 Minutes	

- Ensure STH-03ZB is joined to a parent device (see “**Adding STH-03ZB to the Network**” section).
- Use software for reading information from coordinator or gateway device (see relevant device’s manual) to confirm STH-03ZB transmissions are being received at the correct interval.

- e) If necessary, replace STH-03ZB into mounting cradle (see “**Installing mounting for STH-03ZB**” section).

Transmission interval setting has been successfully configured.

**Note:** Transmission interval is read at power on, a power cycle is required to effect interval change.

## **5 Joining STH-03ZB to the Network**

Requirements:

- Parent device, such as coordinator (eg. WZB-01USBC, WZB-02485C), gateway (eg. G07-W, WZB-05ET), or router (eg. WZB-01USBR, WZB-02485R)
  - Sharp pointed tool
- a) Ensure parent device is powered on (see relevant device's manual).
- b) Power on STH-03ZB (see “**Installing and Replacing Batteries in STH-03ZB**” section) ensuring it is in **ready to join** status (green LED flash once every second).
- c) Enable **permit join** status on parent device (see relevant device's manual) and check STH-03ZB joined the parent device.
- d) If STH-03ZB has successfully joined the parent device, the green LED should flash 3 times, then once every 60 seconds.

If STH-03ZB's green LED does not flash once every 60 seconds, then it has not successfully joined. Repeat above steps until STH-03ZB has joined successfully. If STH-03ZB has still not joined after a few attempts, check it is within the operational range of 100m (line of sight) from the parent device and away from other 2.4GHz devices that might interfere with its operations.

If STH-03ZB has joined successfully, but is showing **disconnected** status (green LED flashes twice every 5 seconds), then check parent device is correctly powered on. If the parent device is functioning correctly, STH-03ZB may be out of range or experiencing interference, additional router(s) may need to be added to ensure good connections.

## 6 Removing STH-03ZB from the Parent's Network

Requirements:

- Sharp pointed tool
- a) Ensure parent device (coordinator, gateway, or router) is powered on (see relevant device's manual).
  - b) Ensure STH-03ZB is powered on (see "**Installing and Replacing Batteries in STH-03ZB**" section) and has already joined the parent's network (green LED flash once every 60 seconds).
  - c) Use a sharp pointed tool to apply 3 quick presses to the link switch on STH-03ZB, the red LED will flash rapidly for up to 30 seconds or until successful removal.
  - d) If STH-03ZB has been successfully removed, the green LED should show **ready to join** status (flash once every second).

**Recommendation:** It is strongly recommended to remove the batteries immediately from STH-03ZB once it has been removed from the parent's network as this will prevent damage and greatly improve battery life.

## 7 STH-03ZB LED Status

The table below shows the LED status for STH-03ZB:

STH-03ZB LED	Status
Green LED: 1 flash every second	<b>Ready to join</b> – ready to join network of parent device (coordinator, gateway, or router)
Green LED: 3 flashes (one time)	<b>Successfully joined</b> – joined network of parent device
Green LED: 1 flash every 60 seconds	<b>Normal Operations</b> – joined network of parent device and functioning normally
Green LED: 2 flashes every 5 seconds	<b>Disconnected</b> – joined network, but unable to find any parent device of the network
Red LED: Rapid Flashing up to 30 seconds to be consistent	<b>Removing</b> – being removed from the network of the parent device
Red LED: 1 flash every 15 seconds	<b>Low Power</b> – low battery power, replace batteries immediately
Green & Red LED: ON	<b>ZigBee Reset</b> – reset to factory default, remove all ZigBee network linkages

## 8 ZigBee Reset

In the case where the parent devices (coordinator, gateway, or router) for STH-03ZB are no longer available or have been reset, STH-03ZB will need to be reset by applying a 5-second press to the link switch, the green & red LEDs will both come on during the reset, then the green LED should show **ready to join** status (flash once every second).

**Recommendation:** It is strongly recommended to remove the batteries immediately from STH-03ZB once it has been reset as this will prevent damage and greatly improve battery life.

## 9 Product Specifications

Measuring Element	Built-in combined temperature and humidity sensor	
Wireless Protocol	Compliant IEEE 802.15.4, ZigBee2007 / PRO HA Profile	
Operating Frequency	2.4GHz ISM band	
Transmission Range	100m (328ft) line of sight	
RF Output Power	1mW / 0dBm	
Power Supply	3V 2 x AA alkaline batteries	
Operating Environment	'-10°C ~ 45°C/ -14°F ~ 113°F...0-95% RH	
Power Consumption	TX: 35mA, Sleep: 1.3µA	
Measurement Accuracy	Temperature: ±0.5°C, Humidity: ±5%	
Network Topology	Star / Tree / Mesh	
Transmit Interval	1 second to 75 minutes, based on DIP switch setting	
Battery Life	> 1 year @ 5-minute transmission interval (dependent on battery quality)	
Enabling Devices	Coordinator	WZB-01USBC / WZB-02485C
	Gateway	G07-W / WZB-05ET
	Router	S05-R / WZB-01USBR / WZB-02485R
Dimensions	92(L) x 50(W) x 23(H) mm	
Weight	37.6g / 1.33oz (Excluding batteries)	
Supported Systems	Windows NT ~ Win 8	
Certifications	CE / FCC	