



S05-R User's Manual (ZigBee HA Profile) Ver. 1.11

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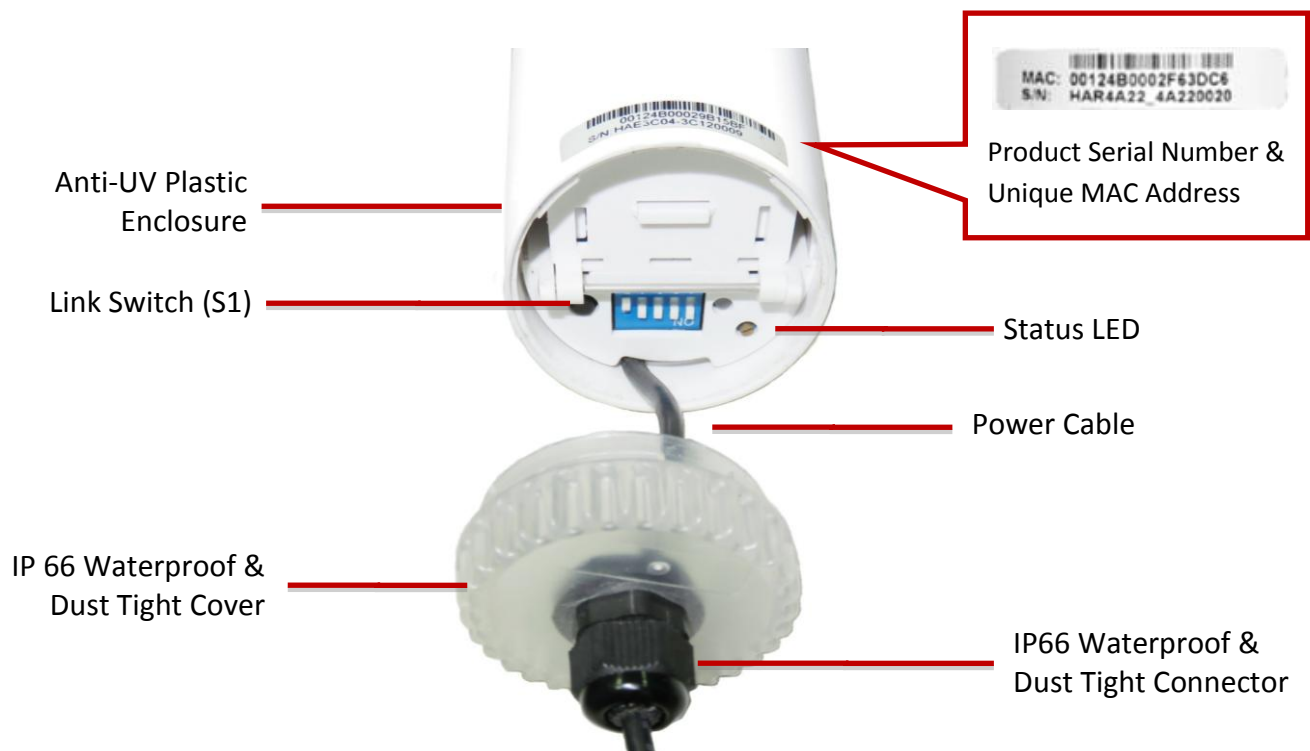
Congratulations for choosing a world-class ZigBee range extender. This manual is designed to help set up and get the most from the sensor in a few short minutes.

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 S05-R View

NHR S05-R range extender	Power adaptor	Mounting fixtures (mounting cradle; 2 wall plugs; 2 screws)
		



Important: To ensure IP66 waterproof and dust tight operations, both cover and connector **must** be fully tightened (clockwise).

2 Installing Mounting for S05-R and Initial Power On

Requirements:

- Mounting fixtures
 - Drill with 5mm (approx. 0.2 inches) drill bit size (if using wall plugs) or 3.5mm (approx. 0.14 inches) drill bit size (if not using wall plugs)
 - Size 1 Phillips screwdriver
- a) Locate S05-R 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 – 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 S05-R by placing it into and lifting it out of the cradle.

Install -



Remove -



Note: For optimal wireless performance, ensure S05-R is installed with antenna straight up.

- e) Connect S05-R's USB connector to USB power adaptor and plug into a live AC mains socket. The status LED on S05-R (through translucent cover) should start flashing to indicate its current state:

Green LED	Status
1 flash every 5 seconds	Ready to join a parent device
1 flash every 2 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

3 Joining S05-R 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)

- a) Ensure parent device is powered on (see relevant device's manual).
- b) Power on S05-R (see “**Installing Mounting for S05-R and Initial Power On**” section) ensuring it is in **Ready to Join** status (green LED flash once every 5 seconds).
- c) Enable **Permit Join** status on parent device (see relevant device's manual) and check S05-R joined the parent device.
- d) If S05-R has successfully joined the parent device, S05-R will show **Successfully Joined** status (green LED flash 3 times) then **Normal Operations** status (green LED flash once every 2 seconds).

If S05-R does not show **Normal Operations** status (green LED flash once every 2 seconds), then it has not successfully joined. Repeat above steps until S05-R has joined successfully. If S05-R has still not joined after a few attempts, check it is within the operational range of 500m (line of sight) from the parent device and away from other 2.4GHz devices that might interfere with its operations.

If S05-R has joined successfully, but shows **Disconnected** status (green LED flashes twice every 5 seconds), then check parent device is correctly powered on. If the parent device is functioning correctly, S05-R may be out of range or experiencing interference, additional extender(s) may need to be added to ensure good connections.

4 Removing S05-R from the Parent's Network

Requirements:

- Sharp pointed tool

- a) Ensure parent device is powered on (see relevant device's manual).
- b) Ensure S05-R is powered on (see “**Installing Mounting for S05-R and Initial Power On**” section) and has already joined the parent's network (green LED flash once every 2 seconds).
- c) Twist the base counterclockwise to gain internal access to the transmitter, being careful when separating the base to ensure the power cable connector stays connected.
- d) Use a sharp pointed tool to apply 3 quick presses to the S1 link switch, S05-R will show **Removing** status (red LED rapid flash for up to 30 seconds) or until successful removal (green LED flash once).
- e) If S05-R has been successfully removed, S05-R will show **Ready to Join** status (green LED flash once every 5 seconds).

5 Testing Communication Quality and Joining an End Device Using S05-R

Requirements:

- Sharp pointed tool
- a) Ensure S05-R is powered on (see “**Installing Mounting for S05-R and Initial Power On**” section) and has already joined the parent’s network (green LED flash once every 2 seconds).
 - b) Twist the base counterclockwise to gain internal access to the transmitter, being careful when separating the base to ensure the power cable connector stays connected.
 - c) Use a sharp pointed tool to apply 1 quick press to the S1 link switch on S05-R to initiate Nearest Router Communication Quality (NRCQ), the status is indicated below:

S05-R LED	Status
Green LED for 5 seconds	Good NRCQ – No additional extender required
Green & Red LED alternating for 5 seconds	Fair NRCQ – Additional extender(s) recommended
Red LED for 5 seconds	Poor NRCQ – Additional extender(s) required

- d) After 10 seconds of NRCQ, S05-R will enter **Permit Join** status for 60 seconds (green LED flash twice every 3 seconds), other devices may join the network via S05-R during this period.
- e) If a device joined the network, S05-R’s will show **Device Joined** status (red LED flash twice).
- f) After 60 seconds of **Permit Join** status, S05-R will revert to **Normal Operations** status (green LED flash once every 2 seconds).

6 Removing an End Device from the Parent’s Network

Initiate end device remove (see relevant device’s manual), if the end device was successfully removed, S05-R will show **Device Removed** (red LED flash 3 times).

7 ZigBee Reset

In the case where the parent devices (coordinator, gateway, or router) for S05-R are no longer available or have been reset, S05-R will need to be reset by applying a 5-second press to the S1 link switch, the green & red LEDs will both come ON during the reset, then S05-R should show **Ready to Join** status (green LED flash once every 5 seconds).

Recommendation: It is strongly recommended to disconnect S05-R from the power source if it is not in use to reduce wireless traffic & interference and unintended joining to a network.

8 S05-R LED Status and S1 Link Switch Actions

The S05-R LED status can be seen through the translucent cover and is summarized below:

S05-R LED	Status
Green LED: 1 flash every 5 seconds	Ready to Join – ready to join network of parent device (coordinator, gateway, or router)
Green LED: 3 flashes (one time)	Successfully Joined – joined network of parent device
Green LED: 1 flash every 2 seconds	Normal Operations – joined network of parent device and functioning normally
Green LED: 2 flashes every 5 seconds	Disconnected – joined network, but unable to find any parent device of the network
Green LED: ON for 5 seconds	Good NRCQ – no additional extender required
Green & RED LED: Alternate for 5 seconds	Fair NRCQ – additional extender(s) recommended
Red LED: ON for 5 seconds	Poor NRCQ – additional extender(s) required
Green LED: 2 flashes every 3 seconds	Permit Join – permit requests from other devices (routers / end devices) to join the network
Red LED: 2 flashes (one time)	Device Joined – device (router / end device) joined the network
Red LED: 3 flashes (one time)	Device Removed – device (router / end device) successfully removed from the network
Red LED: Rapid flashing up to 30 seconds	Removing – being removed from the network of the parent device
Green & Red LED: ON	ZigBee Reset – reset to factory default, remove all ZigBee network linkages

The S05-R S1 link switch actions are summarized below:

Operation	S1 Link Switch Actions
NRCQ (first 10 seconds) Permit Join (next 60 seconds)	Press once
Remove from Network	Press 3 times within 1.5 seconds
ZigBee Reset	Press and hold for 5 seconds

**9 Product Specifications**

Wireless Protocol	Compliant IEEE 802.15.4 ZigBee2007/PRO HA Profile
Operating Frequency	2.4GHz ISM Band
Transmission Range	500m (1640ft) line of sight
RF Output Power	18dBm
Receiver Sensitivity	-92dBm
Power Consumption	0.3W
Power Supply	DC5V
Network Topology	Star / Tree / Mesh
Operating Environment	-10°C to 50°C (14°F to 121°F), 0-95% RH
Dimensions	130(H) x 50(ψ)mm (5.1(H) x 1.9(ψ) inches)
Weight	265 g (9.34 oz)
Certifications	CE / FCC / NCC, IP66 grade waterproof & dust tight protection

Thank you for choosing the S05-R. We are looking forward to working with you!