

SENSO8 LoRa IAQ UART Configuration Guide

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1. Introduction

This guide aims to provide a quick reference for configuring the SENSO8 LoRa IAQ sensor through the on-board UART CONFIG port.

2. CONFIG Port Pin Assignment

Pin Number	Function
1	+3.0V voltage from SENSO8, the UART signal voltage level
2	RX pin, receive data from computer
3	TX pin, transmit data to computer
4	Ground

3. Equipment Required

- Computer with USB port and serial terminal program (e.g. putty)

Serial port settings: baud rate: 115200, format: N81, flow control: none

- USB-to-UART serial with external I/O voltage supported. The UART I/O voltage of the USB-to-UART should follow pin 1 on the CONFIG port on SENSO8.

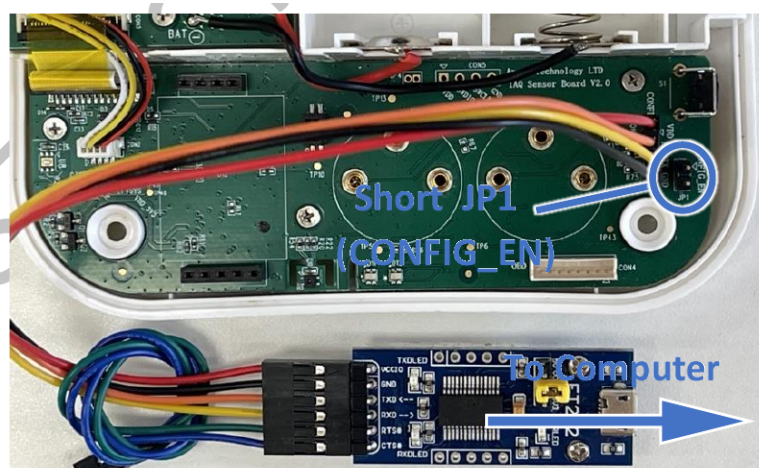
4. Configuring ADR on SENSO8 LoRa IAQ Sensor

By default, ADR is enabled on SENSO8 LoRa IAQ sensor. For flexibility, SENSO8 LoRa IAQ offers an option to disable ADR and select a fixed data rate manually.

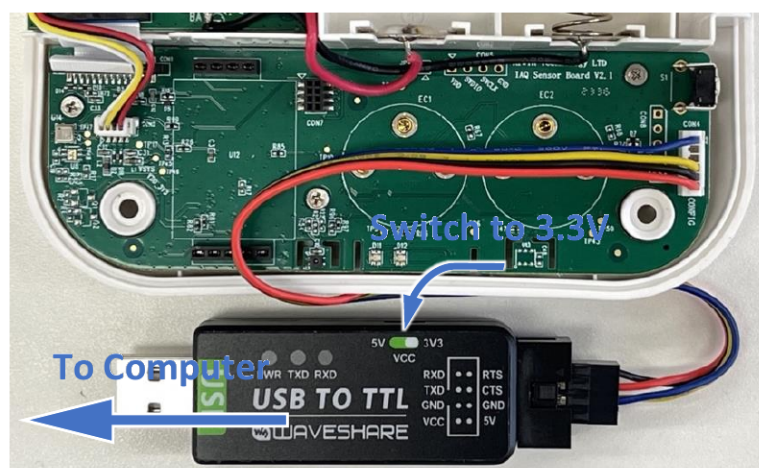
Instructions

1. Connect a USB-to-UART converter to CONFIG PORT (CON6).

For IAQ Hardware Version 2.0, short the CONFIG_EN header (JP1) with a jumper.



For IAQ Hardware Version 2.1 or above,



2. Open a serial terminal software on the computer and connect it to the USB-to-UART converter.
3. Insert an ER26500 batteries to the battery holder and press the user button or connect the sensor to DC power supply to power up the device.
4. Type the password when it prompts for it. Please contact your sales representative for the device password.

=====
Password: <input type="password"/>

5. Type '1' to select 'Network Settings'.

Main Menu
1. Network Settings
2. Device Settings
3. Sensor Settings
4. Advance Settings
5. Change Password
6. Test Hardware
7. ----
x. Exit

6. Type '4' to select 'ADR'.

Network Settings
1. Region
2. Activation Mode
3. Keys
4. ADR
5. Channel Frequency
6. Fixed Tx Power
x. Exit

7. Type 'n' to disable ADR.

ADR [Enable]
ADR Enable (y/n)

8. Type 0-7 to set the data rate to DR0 to DR7. e.g. to set the data rate to DR5, type '5'.

ADR [Enable]
ADR Enable (y/n)
Data Rate [DR2], new vale:

9. Type ‘y’ to confirm the change. After confirming the change, the sensor will update the settings and show a message “SUCCESS”.

ADR [Enable]
ADR Enable (y/n)
Data Rate [DR2], new vale: 5
Confirm the change (y/n)?
--- Success ---

10. After confirming the selection, the terminal will return to the Network Settings menu. Type ‘x’ to return to the main menu and type ‘x’ again to exit the configuration mode. Then remove the battery or DC power supply and USB-to-UART convert from the board.

5. Configuring Activation Mode on SENSO8 LoRa IAQ Sensor

5.1. Instructions

1. Short the CONFIG_EN header (JP1) with a jumper.
2. Connect a USB-to-UART converter to CONFIG PORT (CON6).
3. Open a serial terminal software on the computer and connect it to the USB-to-UART converter.
4. Insert an ER26500 batteries to the battery holder and press the user button or connect the sensor to DC power supply to power up the device.
5. Type the password when it prompts for it. Please contact sales representative for the device password.

=====
Password:

6. Type ‘1’ to select ‘Network Settings’.

Main Menu

Main Menu	
1. Network Settings	
2. Device Settings	
3. Sensor Settings	
4. Advance Settings	
5. Change Password	
6. Test Hardware	
7. ----	
x. Exit	

7. Type '2' to select 'Activation Mode'.

Network Settings	
1. Region	
2. Activation Mode	
3. Keys	
4. ADR	
5. Channel Frequency	
6. Fixed Tx Power	
x. Exit	

8. The terminal will show the current activation mode inside the []. To select 'ABP' as activation mode, type 1. To select 'OTAA' as activation mode, go to Step 10.

Activation Mode [ABP]	
1. ABP	
2. OTAA	
x. Exit	

9. To select 'y' to confirm the change and the terminal will show 'Success'. The terminal will go back to the Network Settings automatically. To discard the change, press 'n'. After confirming the change, set up the ABP address and keys following the steps on "Configuring Keys and IDs for ABP on SENSO8 LoRa IAQ Sensor".

Activation Mode [OTAA]
1. ABP
2. OTAA
x. Exit
ABP
Confirm the change (y/n)?
--- Success ---

10. To select OTAA' as activation mode, type 2.

Activation Mode [ABP]
1. ABP
2. OTAA
x. Exit

11. To select 'y' to confirm the change and the terminal will show 'Success'. The terminal will go back to the Network Settings automatically. To discard the change, press 'n'. After confirming the change, set up the OTAA EUIs and keys following the steps on "Configuring Keys and IDs for OTAA on SENSO8 LoRa IAQ Sensor".

Activation Mode [ABP]
1. ABP
2. OTAA
x. Exit
OTAA
Confirm the change (y/n)?
--- Success ---

6. Configuring Keys and IDs for ABP on SENSO8 LoRa IAQ Sensor

By default, SENSO8 LoRa IAQ has a preset device address, dev EUI and keys for ABP.

6.1. Instructions

1. Short the CONFIG_EN header (JP1) with a jumper.
2. Connect a USB-to-UART converter to CONFIG PORT (CON6).
3. Open a serial terminal software on the computer and connect it to the USB-to-UART converter.
4. Insert an ER26500 batteries to the battery holder and press the user button or connect the sensor to DC power supply to power up the device.
5. Type the password when it prompts for it. Please contact sales representative for the device password.

=====
Password:

6. Type '1' to select 'Network Settings'.

Main Menu
1. Network Settings
2. Device Settings
3. Sensor Settings
4. Advance Settings
5. Change Password
6. Test Hardware
7. ----
x. Exit

7. Type '3' to select 'Keys'.

Network Settings
1. Region
2. Activation Mode
3. Keys
4. ADR
5. Channel Frequency

Network Settings
6. Fixed Tx Power
x. Exit

8. The terminal will show the current activation mode. To change the Device Address (DevAddr), type '1'.

ABP
1. Device Address
2. NwkSKey
3. AppSkey
x. Exit

9. The terminal will show the current device address and prompt for new address. Then, type in the new device address. After entering 7 characters, the terminal will prompt for confirming the change automatically. Type 'y' to confirm the change and the terminal will show 'Success'. Otherwise, type 'n' to discard the change. If it does not need to change the keys, go to step 12 directly.

Device Address [90000109]
New value: 9000010A
Confirm the change (y/n)?
--- Success ---

10. To continue setting up the Network Session Key, press '2'. Then, type in the new network session key. After entering 32 characters, the terminal will prompt for confirming the change automatically. Type 'y' to confirm the change and the terminal will show 'Success'. Otherwise, type 'n' to discard the change.

NwkSKey New value: 123456789ABCDEF123456789ABCDEF12
Confirm the change (y/n)?
--- Success ---

11. To continue setting up the Application Session Key, press '3'. Then, type in the new application session key. After entering 32 characters, the terminal will prompt for confirming the change automatically. Type 'y' to confirm the change and the terminal will show 'Success'. Otherwise, type 'n' to discard the change.

AppSKey New value: 123456789ABCDEF123456789ABCDEF12
--

Confirm the change (y/n)?

--- Success ---

12. Type 'x' to back to main menu and type 'x' to exit the configuration mode. Then remove the battery and USB-to-UART convert from the SENSO8.

7. Configuring Keys and IDs for OTAA on SENSO8 LoRa IAQ Sensor

By default, SENSO8 LoRa IAQ has a preset dev EUI, join EUI and application key for OTAA.

7.1. Instructions

1. Short the CONFIG_EN header (JP1) with a jumper.
2. Connect a USB-to-UART converter to CONFIG PORT (CON6).
3. Open a serial terminal software on the computer and connect it to the USB-to-UART converter.
4. Insert an ER26500 batteries to the battery holder and press the user button or connect the sensor to DC power supply to power up the device.
5. Type the password when it prompts for it. Please contact sales representative for the device password.

=====

Password:

6. Type '1' to select 'Network Settings'.

Main Menu

1. Network Settings

2. Device Settings

3. Sensor Settings

4. Advance Settings

5. Change Password

6. Test Hardware

Main Menu

7. ----

x. Exit

7. Type '3' to select 'Keys'.

Network Settings

1. Region

2. Activation Mode

3. Keys

4. ADR

5. Channel Frequency

6. Fixed Tx Power

x. Exit

8. The terminal will show the current activation mode. To change the Join EUI, type '1'.

OTAA

1. Join EUI

2. App Key

x. Exit

9. Type in the new JOIN EUI address. After entering 16 characters, the terminal will prompt for confirming the change automatically. Type 'y' to confirm the change and the terminal will show 'Success'. Otherwise, type 'n' to discard the change.

JoinKey New value: 1234567899ABCDEF1

Confirm the change (y/n)?

--- Success ---

10. To continue setting up the Application Key, press '2'. Then, type in the new application key. After entering 32 characters, the terminal will prompt for confirming the change automatically. Type 'y' to confirm the change and the terminal will show 'Success'. Otherwise, type 'n' to discard the change.

AppKey New value: 123456789ABCDEF123456789ABCDEF12
Confirm the change (y/n)?
--- Success ---

11. Type 'x' to back to main menu and type 'x' to exit the configuration mode. Then remove the battery and USB-to-UART convert from the SENDO8.

8. Revision History

<i>Revision</i>	<i>Date</i>	<i>Description</i>
1.0	Feb 2021	Initial Release.
1.01	Mar 2024	Revise "7. Configuring Keys and IDs for OTAA..." Section Remove "Configuring MQTT Broker on..." Section.
1.02	Sep 2024	Added connection for the USB-to-UART converter on new version hardware.
2.0	Oct 2026	First release on docs.senso8.com