

AWT100-LORA Debugging Guide

V1.1

Instruction Manual Revision Record

Date	Old Version	New Version	Modified Content
2025.7.14	V1.0	V1.1	1. Newly added descriptions of working frequency band range, voltage, and temperature 2. New Manual Frequency Configuration Instructions

This article applies to the following product models :

Series	Model	Communication Module	Number of Serial Ports	Number of network ports	Special Instructions
AWT100	AWT100-LoRa/AWT100-LoRaHW	Lora	Route 1	None	Divided into domestic and overseas frequency bands

1. Application Scenarios

Open area 150 meters can be stable communication, there are 1 to 2 wall occlusion case specific communication distance to be measured, by the material of the shield, electromagnetic interference, frequency, weather and other factors.

Recommended single communication rate:Recommended 2S or more

Recommended single-byte count:20-100 ByteDance

2.Applicable Models and Parameters

a) AWT100-LORA

Parameter Name	Description
Operating Frequency Band	433, 460 ~ 510MHz
Operating Voltage	DC12V/DC24V
Operating Temperature	-10°C ~ 55°C

Note 1: If AC220 power supply is required, the POW module needs to be purchased separately.

b) AWT100-LORAHW

Parameter Name	Description
Operating Frequency Band	860 ~ 935MHz
Operating Voltage	DC12V/DC24V
Operating Temperature	-10°C ~ 55°C

Note 1: If AC220 power supply is required, the POW module needs to be purchased separately.

3. Product Images



图 1 , AWT100-LoRa 带天线。

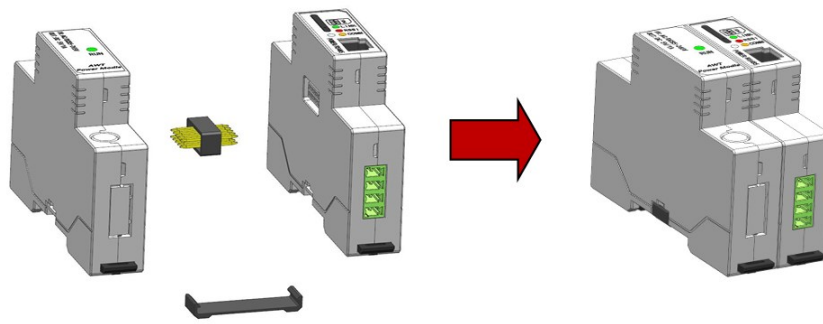


图 1 , AWT100-LoRa+AWT100-POW

4. Channel Allocation Recommendations

1. AWT100-LoRa (460-510M)

Configuration Suggestion1: Frequencysuggestion is to follow a 2Mhz interval, which can be divided into 20 channels, e.g., 460Mhz, 462Mhz....

Configuration Recommendation 2: Spreading Factor can be selected from 7, 8, 9, 10

Signal Bandwidth: 125Khz, 250Khz

Note 1: With the same frequency but different spreading factors, they can operate simultaneously without interfering with each other, so there are a total of $20 \times 4 = 80$ available channels

2. AWT100-LoRaHW (860-935M)

Configuration Recommendation 1: Frequency It is recommended to follow a 2Mhz interval, which can be divided into 35 channels, e.g., 862Mhz, 864Mhz....

Configuration Recommendation 2: Spreading Factor is optional 7, 8, 9, 10

Signal Bandwidth: 125Khz, 250Khz

Note 1: With the same frequency but different spreading factors, they can operate simultaneously without interfering with each other, so there are a total of $35 \times 4 = 140$ available channels

5. Debugging Steps

3. Step 1: Wiring (power and communication cables)

Connect the antenna.

Without the AWT100-POW module, a 12-24V DC power supply needs to be provided, and the wiring is as shown in Figure 2. Terminal 1 is connected to the positive pole of the power supply, Terminal 2 is connected to the negative pole of the power supply, Terminal 21 is connected to the A end of the 485 communication line, and Terminal 22 is connected to the B end of the 485 communication line.



图 2 AWT100-LORA 端子图

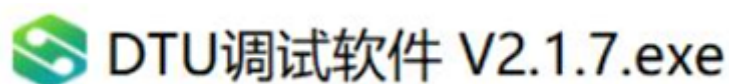
Equipped with the AWT100-POW module, it is directly connected to 220V AC, and the wiring is as shown in Figure 3. Terminal 1 (L) and Terminal 2 (N) are connected to the AC power line. On the other side, Terminal 21 is connected to the A end of the 485 communication line, and Terminal 22 is connected to the B end of the 485 communication line.



图 3 AWT100-POW 供电示意图

4. **Step 2: Connect the debugging software**

Open the "DTU Debugging Software" in the folder "2. Host Computer Debugging Software".



DTU 调试软件

Select the corresponding model and application scenario to enter, as shown in Figure

4. The LORA module can only select local debugging.



图 4

Select the corresponding COM port, then click "Open Serial Port". If "Device Online" is displayed, it indicates a successful connection, as shown in Figure 5

as shown.



图 5

5. Step 3: Configure LORA parameters (default channel configuration)



图 6

The LORA parameter configuration area is shown in Figure 6, including frequency, spreading factor, bandwidth, etc. In most usage scenarios, only the two parameters

outlined in Figure 6 need to be focused on. Configure the two AWT100-LORA module types to pass-through (default),

When the pass-through transmission frequencies are consistent, wireless communication can be established between the two. That is, data sent from the 485 port of one module can be received by the 485 port of the other module, and vice versa.

Pass-through Mode: As shown in Figure 7, both LORA modules operate in Band A (pass-through transmission frequency) and can communicate wirelessly with each other.



图 7

Relay Mode:

As shown in Figure 8, the two side modules operate in pass-through mode, while the middle module operates in relay mode. After being relayed by the LORA module in the middle, the communication distance between the two side modules can be extended. **Band B (pass-through transmission frequency) and Band C (relay transmission frequency)**

rate) must be different frequency bands , and the frequency band configuration is shown in Figure 9.



图 8

As shown in Figure 9, it is a schematic diagram of the parameter configuration of three LORA modules, with the middle module operating in relay mode.



图 9

6. Step 4: Configure LORA parameters (manual frequency configuration)

As shown in Figure 10, check "Enable Manual Frequency Input" to start configuration. After checking, all left-side LoRa settings will become invalid, and the right-side configuration will prevail.

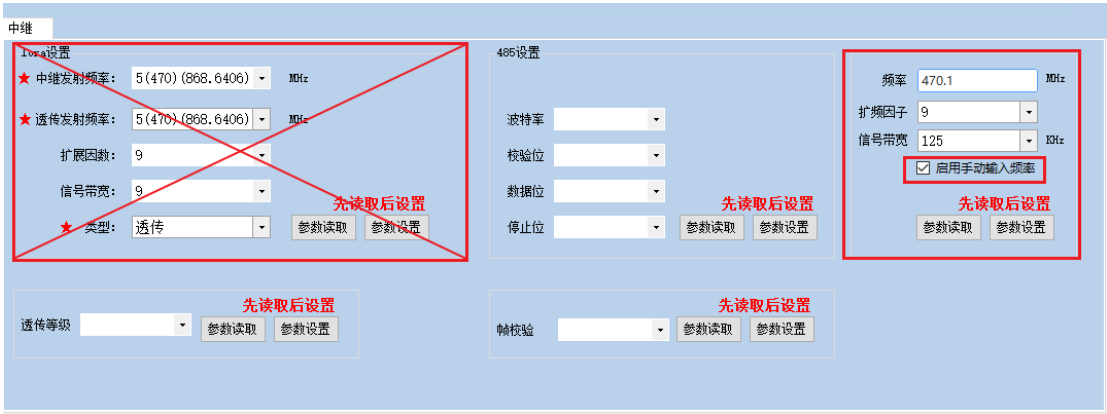


图 10

Parameter Configuration Instructions:

Parameter Name	Description
Frequency	LoRa communication frequency; Unit: MHz;

	Input value: See "Model and Parameters" for the range, and it is recommended to have at most 2 decimal places.
Spreading Factor	"Expand" the original signal onto a wider spectrum; The higher the spreading factor, the wider the spread, the stronger the ability of the signal to "hide" in noise (higher processing gain), the longer the transmission distance, but the longer the transmission time and the lower the data rate
Signal Bandwidth	The spectrum width occupied by the signal; Unit: kilohertz; The wider the bandwidth, the higher the data rate, the stronger the anti-noise interference, the weaker the anti-adjacent channel interference ability (prone to frequency crosstalk), and the receiver sensitivity slightly decreases

5. Common Networking Methods

