

Network AIS Receiver NWD-01T with WiFi+decode+timestamp

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1. Introduction

NWD-01T is a high-performance, portable, and user-friendly AIS ground receiver, offering both network and WiFi connectivity options. Unlike other AIS receivers on the market, NWD-01T not only outputs standard AIS messages but also provides AIS messages with timestamp functionality thanks to its integrated GPS receiver. Additionally, the integrated AIS decoder allows NWD-01T to output decoded AIS data, significantly reducing the effort required for customers to decode AIS messages.





NWD-01T includes:

- ①、 NWD-01T unit *1
- ②、 Power *1
- ③、 GPS antenna *1
- ④、 WiFi antenna *1
- ⑤、 AIS antenna cable 10 meters *1 (please indicate if you need longer cable)
- ⑥、 AIS antenna with clamp *1

2. Functions

- NWD-01T offers connectivity options via both network cables and WiFi for data output.
- NWD-01T provides the convenience of outputting both standard AIS messages and decoded AIS data, eliminating the need for customers to decode AIS messages themselves.
- NWD-01T is capable of outputting standard AIS messages and decoded AIS data with timestamp accuracy up to 1 nanosecond resolution.
- Small in size and light in weight, NWD-01T is highly portable and can easily fit into a backpack. It can be powered by a 12V rechargeable battery, making it ideal for on-the-go use.
- NWD-01T's IP address can be configured to enable direct connection with a computer without the need for routers. However, it can also be configured to connect with a computer via routers, providing flexibility according to user preference.
- NWD-01T supports both static IP address assignment and DHCP configuration.
- Compatible with OpenCPN software, ensuring seamless integration and compatibility for users.

3. Optional

- Surge Protector: Provides protection against power surges to ensure the safety of

the device.

- IP67 Waterproof Version: We offer the NWD-01TP, equipped with a weather-resistant enclosure and IP67 waterproof rating, specifically designed for outdoor use.
- Dual Unit for High Reliability: Incorporates dual units to enhance reliability and ensure continuous operation.
- OEM/Customization. All our products can be supplied fully customized with your brand and logo. We can even do customized form factors, enclosures and packages on your requirement. This OEM/Customization service enables you to have your own unique product in minimal time with no risk.
- AIS IQ data output and storage. We provide the capability to output and store IQ data for analysis purposes. Please feel free to contact us with your specific requirements.
- Integration of AIS, ADS-B, and ACARS: We offer integration of AIS, ADS-B, and ACARS receivers, commonly referred to as a 3A receiver. We can accommodate this configuration.
- We welcome any additional requirements you may have, and we are eager to collaborate with you to meet your needs!

4. Specifications

- Frequency: 161.975/162.025 MHz
- Sensitivity: better than -112 dbm
- Dynamics: -112dbm to +10dbm
- Power Supply: DC 12V, 2A
- Power Consumption: less than 10W
- Physical Size: 24.1*15.3*6.5 cm (not include antenna connectors)
- Antenna Connector: N/F

5. Configuration

The default cable network IP address of NWD-01T is: 192.168.10.33 The default Wifi IP address is DHCP.

6.1 Log in and Start

6.1.1 Power on NWD-01T and connect NWD-01T to computer via network cable, and set the IP of the computer to the same network segment as the NWD-01T.

6.1.2 Enter the NWD-01T IP address 192.168.10.33 in browser

Login

Username

Password

[Sign In](#)

6.1.3 Enter user name and password:

User name: admin

Password: aaareceiver

6.1.4 Enter NWD-01T control page Dashboard

AIS Receiver NWD-01T

- Dashboard
- Network Setting
- Dataport Setting
- NTPD Status
- GNSS Status
- Clock Status
- Logout

Dashboard

Service	Process running
Cable	Manual(Static IP)
IP	192.168.10.33
Netmask	255.255.255.0
Default Gateway	192.168.10.1
WIFI	Automatic(DHCP)
Reboot System	Reboot Shutdown

The status of <Service> should be <Process running>, otherwise click <Process start> to start service.

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- Dashboard
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- Logout

Dashboard

Service	Process start
Cable	Manual(Static IP)
IP	192.168.10.33
Netmask	255.255.255.0
Default Gateway	192.168.10.1
WIFI	Automatic(DHCP)
Reboot System	Reboot Shutdown

6.2 Network configuration

Important note:

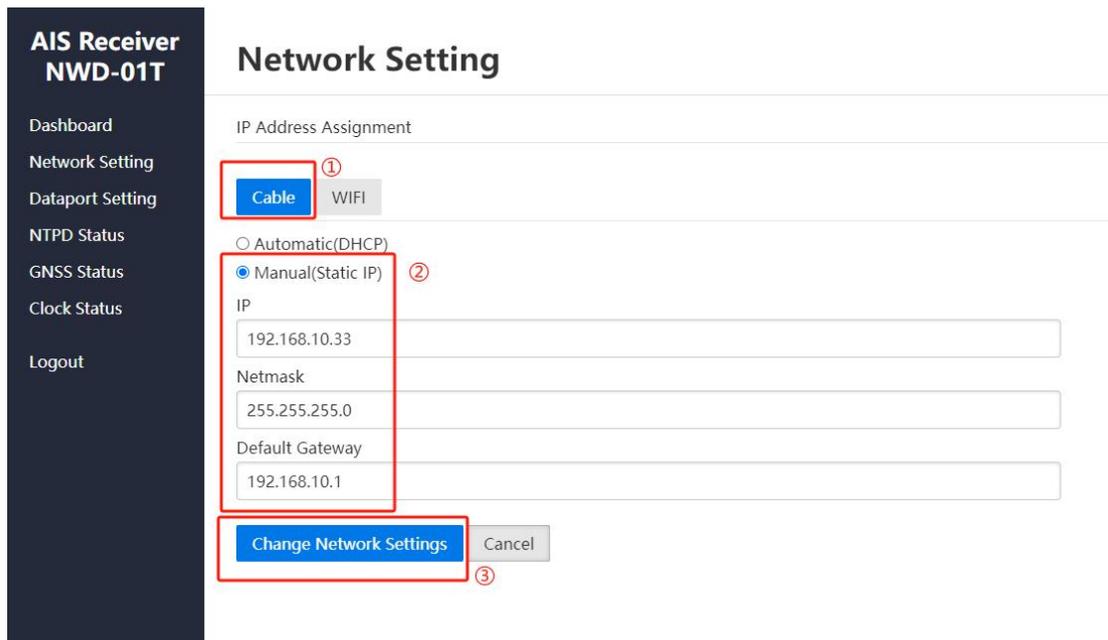
Please first use cable to login and set your WiFi, this might help if you forgot your static IP address.

Considering WiFi instability and complexity, WiFi is just for supplementary, not guaranteed and in warranty.

When you change NWD-01T to static IP, please make sure the IP address, subnet mask and gateway are correct. And make sure you remember all these configurations. Otherwise, you may not be able to access NWD-01T. Well, if you do forget and you did set WiFi the first place, WiFi DHCP might, might help you.

Cable and WiFi can't work at the same time. If you want to use WiFi, disconnect your RJ45 cable.

Click Network Settings:

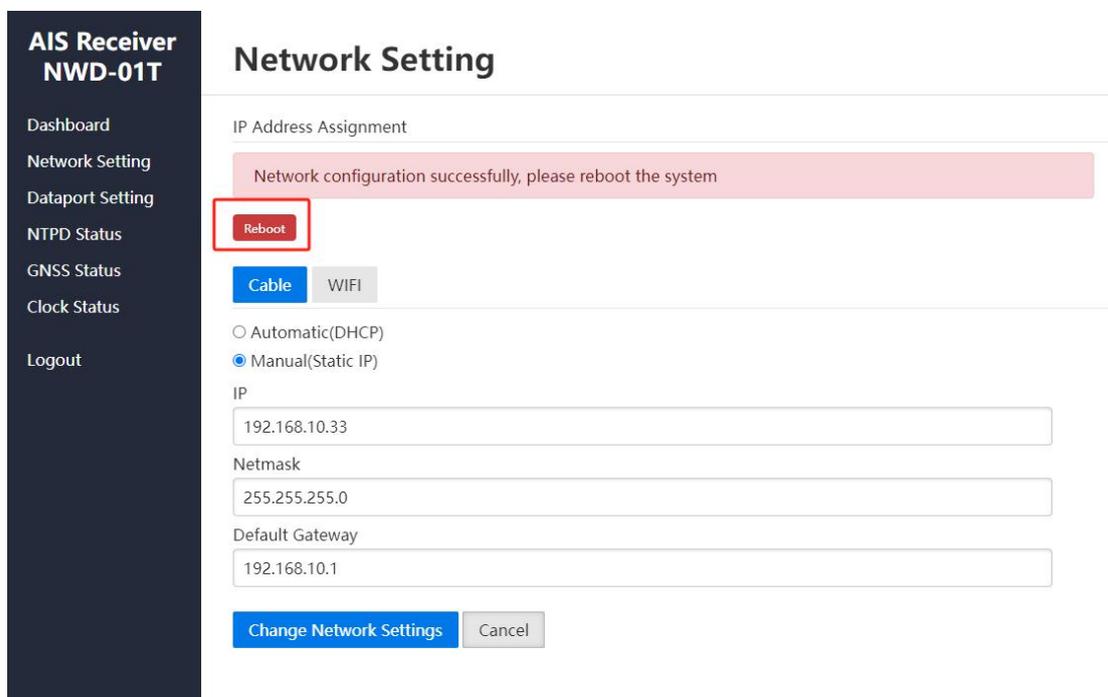


Click Cable to configure Cable network. Enter the IP address, subnet mask, gateway to configure. Click WiFi to configure WiFi network. Enter the SSID and PSK (password).

Click Change Network Settings:

(Please note, when you Click Change Network Settings, both cable and WiFi settings would be changed.)

Click Reboot:



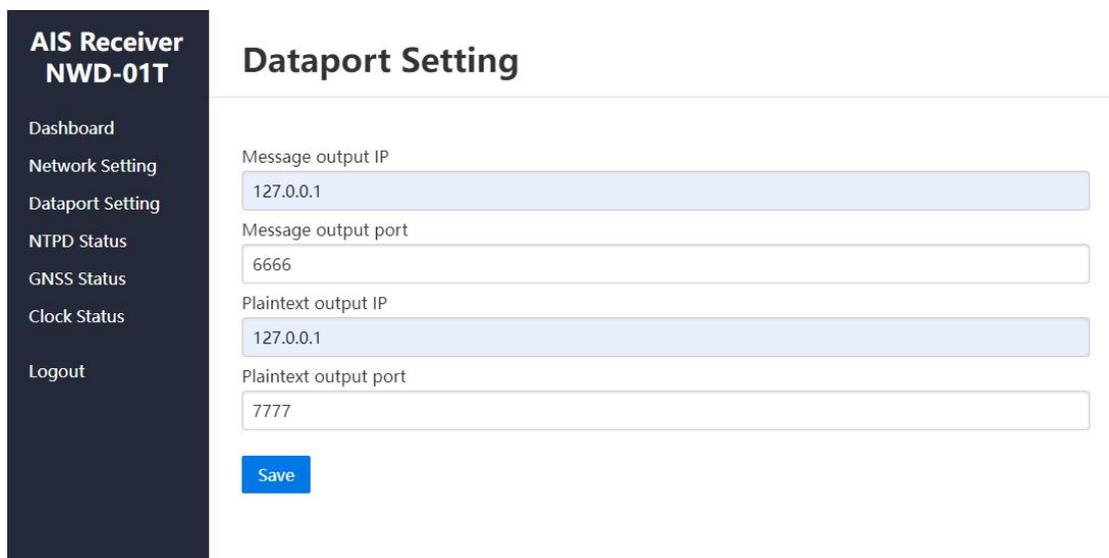
New IP address is valid after reboot.
It's the same for WiFi network configuration.

NWD-01T supports DHCP for cable and WiFi. Open the router configuration page DHCP client list, you can see the IP address of NWD-01T (host name: receiver). As long as the computer is in the same network with NWD-01T, you can access the IP address obtained by NWD-01T through DHCP.

It is recommended that at least one of cable and Wifi be reserved for DHCP to avoid forgetting your static IP.

6.3 Dataport configuration

Click Dataport Setup:



The screenshot shows the 'Dataport Setting' configuration page for the AIS Receiver NWD-01T. On the left is a dark sidebar with a menu containing: Dashboard, Network Setting, Dataport Setting (highlighted), NTPD Status, GNSS Status, Clock Status, and Logout. The main content area has the title 'Dataport Setting' and four input fields: 'Message output IP' (127.0.0.1), 'Message output port' (6666), 'Plaintext output IP' (127.0.0.1), and 'Plaintext output port' (7777). A blue 'Save' button is located at the bottom left of the form area.

NWD-01T would work as UDP client. Message means the standard AIS messages with timestamp. Plaintext means decoded AIS data with timestamp.

6.4 Timing Status

Click NTPD status, you can see the timing status. When the Service is running and Service Information shows information, this means the timing is OK.

**AIS Receiver
NWD-01T**

- Dashboard
- Network Setting
- Dataport Setting
- NTPD Status
- GNSS Status
- Clock Status
- Logout

NTPD Status

Service	running
Service Information	<pre>offset jitter remote refid st t when poll reach delay ===== SHM(0) .GPS. 01 - 16 0 0.000 0.000 0.000 203.107.6.88 10.137.55.181 2 u 64 64 7 21.684 -0.555 0.335</pre>

If service is not running, click “reboot ntp service” to start the service.

**AIS Receiver
NWD-01T**

- Dashboard
- Network Setting
- Dataport Setting
- NTPD Status
- GNSS Status
- Clock Status
- Logout

NTPD Status

reboot ntp service	
Service	stopped
Service Information	

6.5 GNSS Status

Click GNSS Status and you’ll see the GNSS status now.

AIS Receiver NWD-01T

- Dashboard
- Network Setting
- Dataport Setting
- NTPD Status
- GNSS Status**
- Clock Status
- Logout

GNSS Status

Service	running
Lat	36.694125263
Lng	119.148869275
Time	2023-11-02 12:56:20

If GNSS service is not running, click “Reboot GNSS Service” to start the service.

AIS Receiver NWD-01T

- Dashboard
- Network Setting
- Dataport Setting
- NTPD Status
- GNSS Status**
- Clock Status
- Logout

GNSS Status

Reboot GNSS Service

Service	stopped
Lat	
Lng	
Time	

6.6 Clock Status

Click Clock Status, you’ll see the system time. Click refresh, you’ll see the updated system time. If system time is wrong, you may input the right time in the UTC time area. The time you input don’t have to be precise, our system will calibrate. Then click submit, our system will calibrate system time to the precise UTC time.

**AIS Receiver
NWD-01T**

Dashboard

Network Setting

Dataport Setting

NTPD Status

GNSS Status

Clock Status

Logout

Clock Status

System Clock	2023-11-02 12:56:31		
UTC	2023	11	02
	year	month	day
	12	56	31
	hour	minute	second
<input type="button" value="refresh"/> <input type="button" value="submit"/>			

6. Timestamp

Below is an example of timestamped AIS data. Timestamp is at the beginning of messages and connect with standard AIS messages via `._`.

```
2023-08-17 13:37:34 512827136.0_!AIVDM,1,1,,A,B3aE0K03wpa<f0C81g3Q3wg021Mk,0*01
```

Below is an example of timestamped decoded AIS data. Timestamp is in the item “time”.

```
{"msg_type": 18, "repeat": 0, "mmsi": 249191000, "reserved_1": 0, "speed": 102.3, "accuracy": true, "lon": -108.0, "lat": -89.999813, "course": 360.0, "heading": 511, "second": 52, "reserved_2": 0, "cs": false, "display": false, "dsc": false, "band": false, "msg22": false, "assigned": false, "raim": false, "radio": 530291, "time": "2023-08-17 13:39:14 57386496.0"}
```

Timestamp is comprised of three parts and the three parts are separated by blank space.

First part: year-month-day

Second part: hour:minute:second

Third part: Nanoseconds to the second

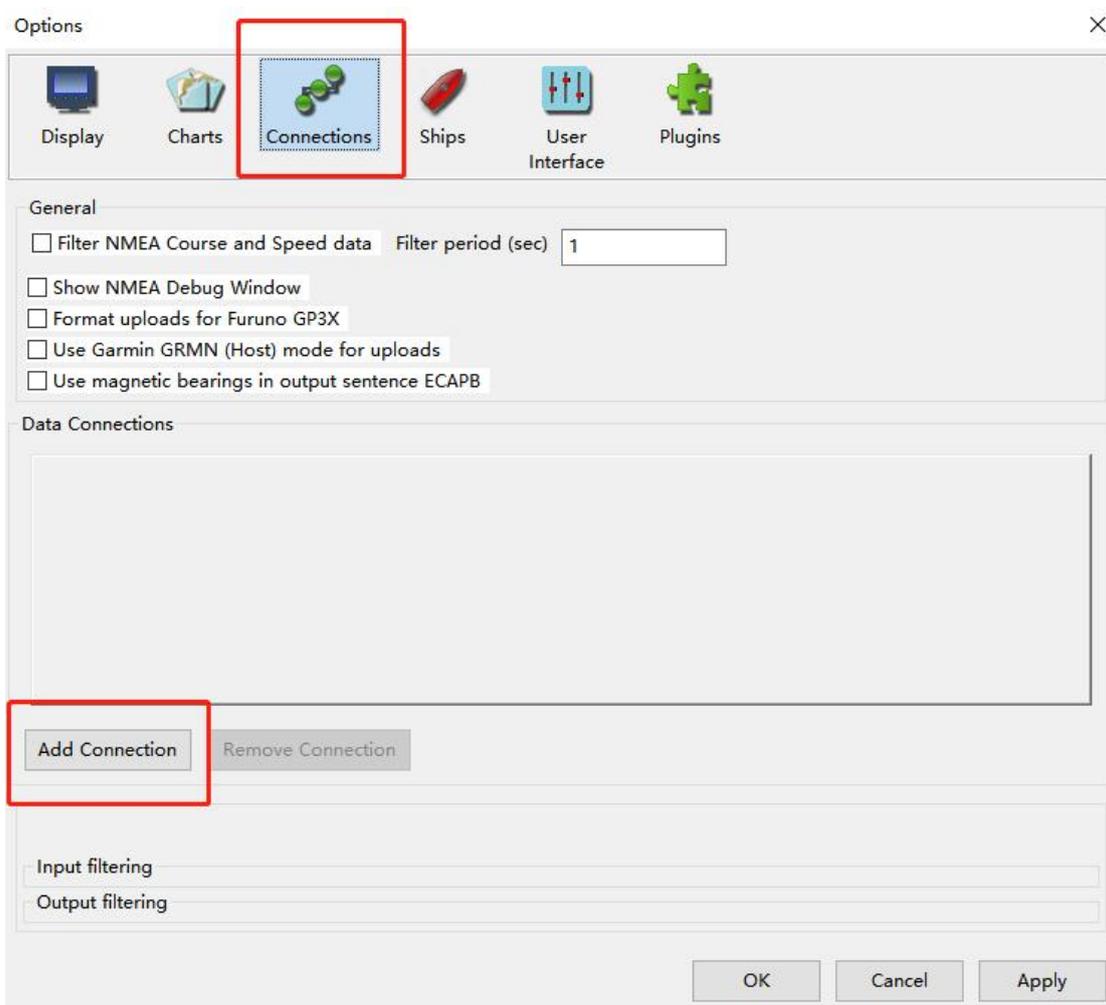
7. Works with OpenCPN

NWD-01T can work with OpenCPN

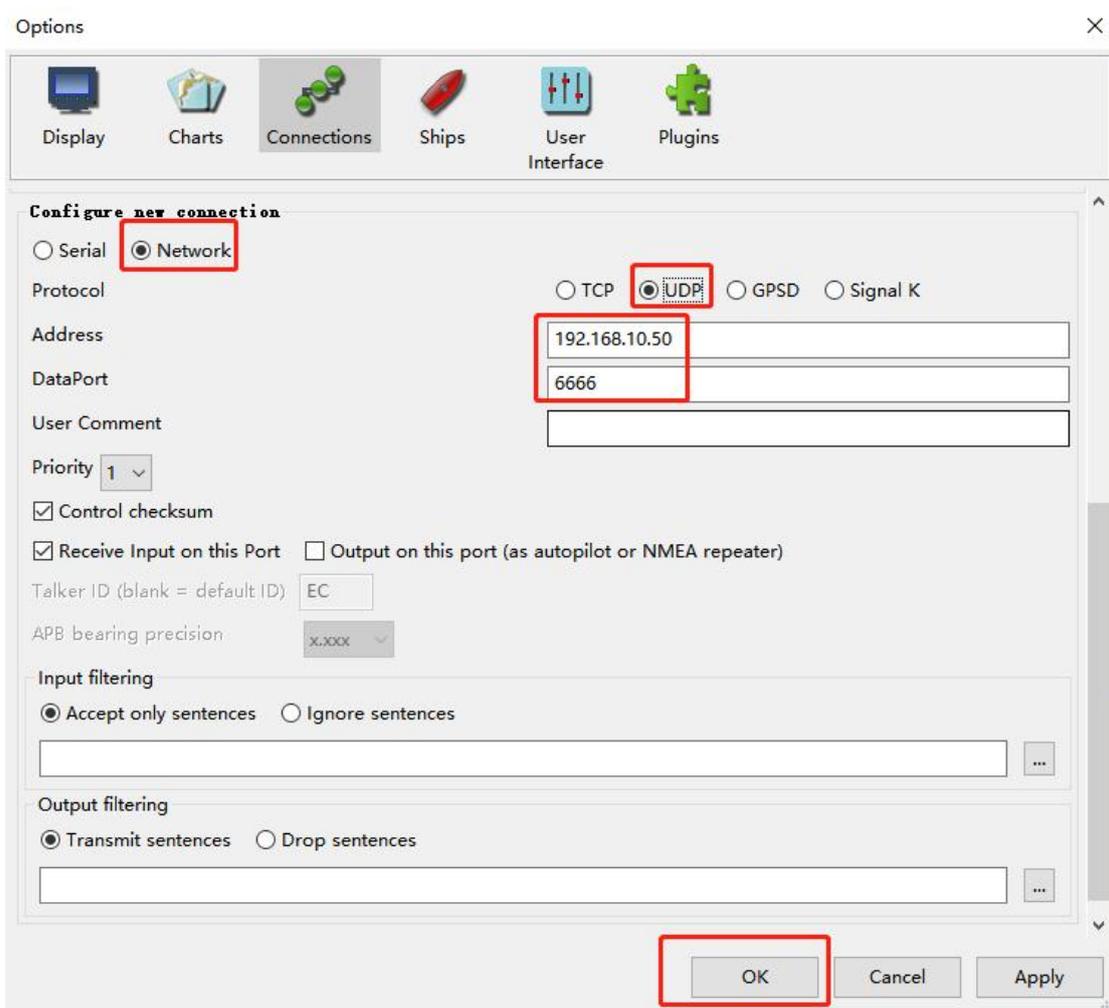
Open OpenCPN, click set



Click Connections, and then click Add Connection



Select Network, UDP. In the Address area, input the NWD-01T message output IP (usually this is your computer IP). In DataPort area, input the message output port (in this manual example it's 6666, in 5.3), click OK.



Done!

