

# AIS Receiver AIS-RN02

## User Manual

AvionixTech

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## 1. Introduction

AIS-RN02 is a portable and professional compact AIS receiver. The AIS-RN02 is a dual-channel AIS receiver integrated with a low-noise amplifier (LNA), featuring compact size, light weight, and low power consumption.

The device supports data output via Ethernet, with Ethernet communication protocols supporting both TCP and UDP. At the same time, the device also retains the capability of data transmission through the USB interface.



### Packing List:

No.	Item	Quantity	Remarks
1	AIS-RN02	1 unit	Standard
2	USB Cable (1.5m)	1 piece	Standard
3	Power Adapter	1 piece	Standard
4	Ethernet Cable (1.5m)	1 piece	Standard
5	AIS Antenna	1 piece	Standard
6	Antenna Cable (5m)	1 piece	Standard

## 2. Features

- Compact size, light weight, and low power consumption; can be powered by a power bank for convenient portable use
- Outputs standard AIVDM message format
- Supports AIS message types 1-27
- Supports dual AIS channels
- Highly configurable for various application scenarios
- Optional output of AIS signal strength
- Optional reception of “Long-Range AIS” signals
- Supports TCP/UDP output, allowing one receiver to simultaneously deliver data to multiple client terminals
- Supports USB output, with a single USB cable used for both power supply and data transmission

## 3. Specifications

AIS-RN02:

No.	Specification	
1	Power Supply	5V 2A (USB-powered) Other power supply options can be customized according to requirements
2	Power Consumption	70mA
3	Reception Frequencies	161.975 MHz, 162.025 MHz 156.775 MHz (Optional) 156.825 MHz (Optional)
4	Data Format	AIVDM
5	AIS Channels	2
6	Sensitivity	-115dBm
7	Bandpass Filter Range	156.3~162.025MHz
8	Input Impedance	50Ω

9	Output interface 1	RJ45
10	Output interface 2	USB
11	Data Output Protocol	TCP / UDP (Default)
12	Dimensions	100x75.8x34.8 mm (not including antenna connector)
13	Weight	190g
14	Antenna Connector	SMA

## AIS Antenna (Long Type):

No.	Specification	
1	Frequency Range	156-166MHz
2	Antenna Gain	5dBi
3	Protection Level	IP67
4	VSWR	≤1.5
5	Polarization	Vertical
6	Radiation Pattern	Omnidirectional
7	Input Impedance	50Ω
8	Power Capacity	50W
9	Interface Type	N-J
10	Antenna Size	Length 120 cm, Diameter 2 cm
11	Antenna Material	Fiberglass
12	Total Weight	364g
13	Operating Humidity	5% ~ 95%
14	Operating Temperature	-40°C ~ +85°C
15	Storage Temperature	-40°C ~ +85°C

## AIS Antenna (Short Type):

No.	Specification	
1	Frequency Range	149-189MHz
2	Antenna Gain	3dBi
3	Protection Rating	IP67
4	VSWR	≤ 1.5

5	Polarization	Vertical
6	Radiation Pattern	Omnidirectional
7	Input Impedance	50 $\Omega$
8	Power Capacity	20 W
9	Connector Type	SMA-J
10	Antenna Dimensions	Length: 20 cm
11	Antenna Material	TPEE
12	Operating Humidity	5% ~ 95%
13	Operating Temperature	-30°C ~ +75°C
14	Storage Temperature	-30°C ~ +75°C

Additional antenna sizes are available as options and can be selected according to actual application requirements.

#### 4. Interface



AIS-RN02 Interfaces:

No.	Interface Name	Function
1	USB	Power supply for the main unit, data transmission
2	PWR	Power indicator light for the main unit
3	DATA	Data transmission indicator light
4	ANT	Antenna interface
5	ETH	Data Transmission Interface, RJ45

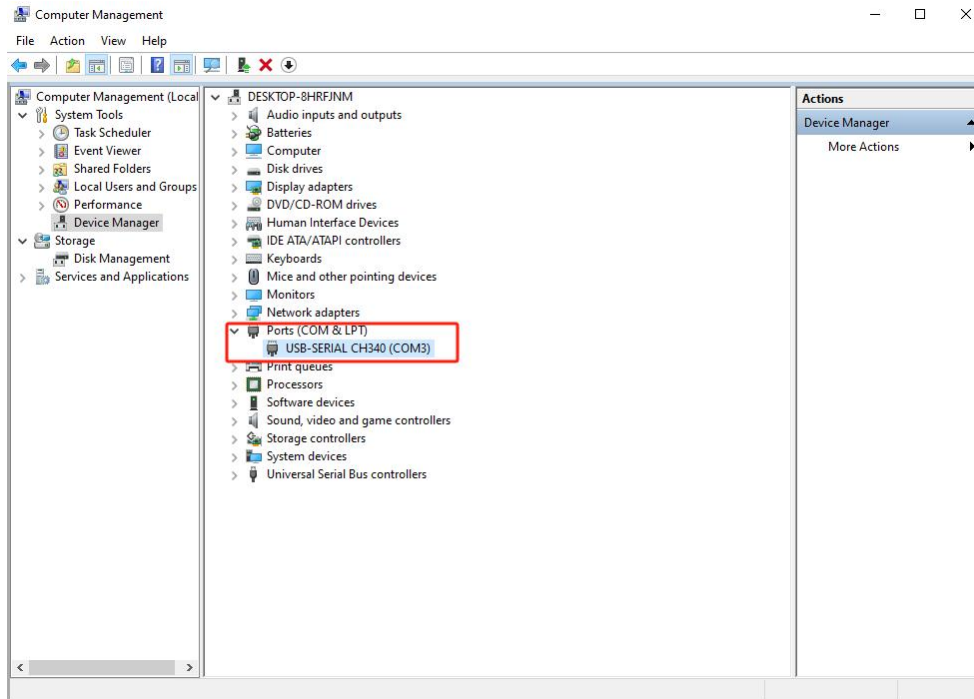
Serial Port Configuration (when using USB data transmission):

No.	Name	Configuration
1	Baud Rate	38400
2	Data Bits	8
3	Parity	none
4	Stop Bits	1

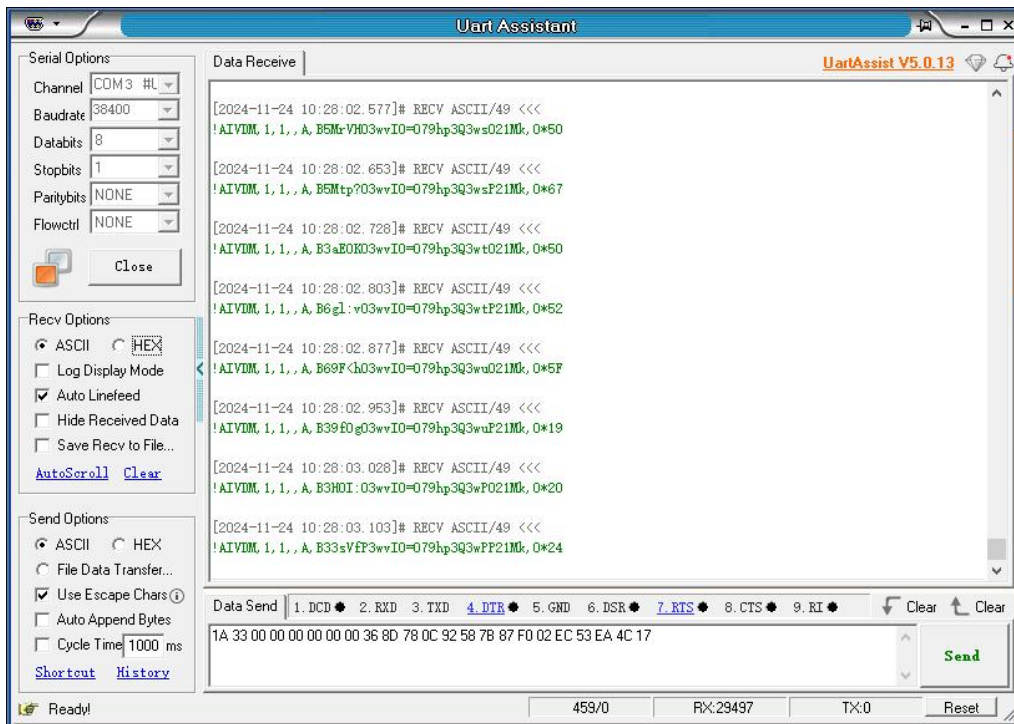
## 5. Device Connection

### 1.USB data transmission

By using a USB-TypeB cable, the AIS-RN02 can be connected to a computer. The computer's device manager will recognize a new COM port.



Enter the connection information for the COM port in the serial port debugger, and once connected, data can be received.



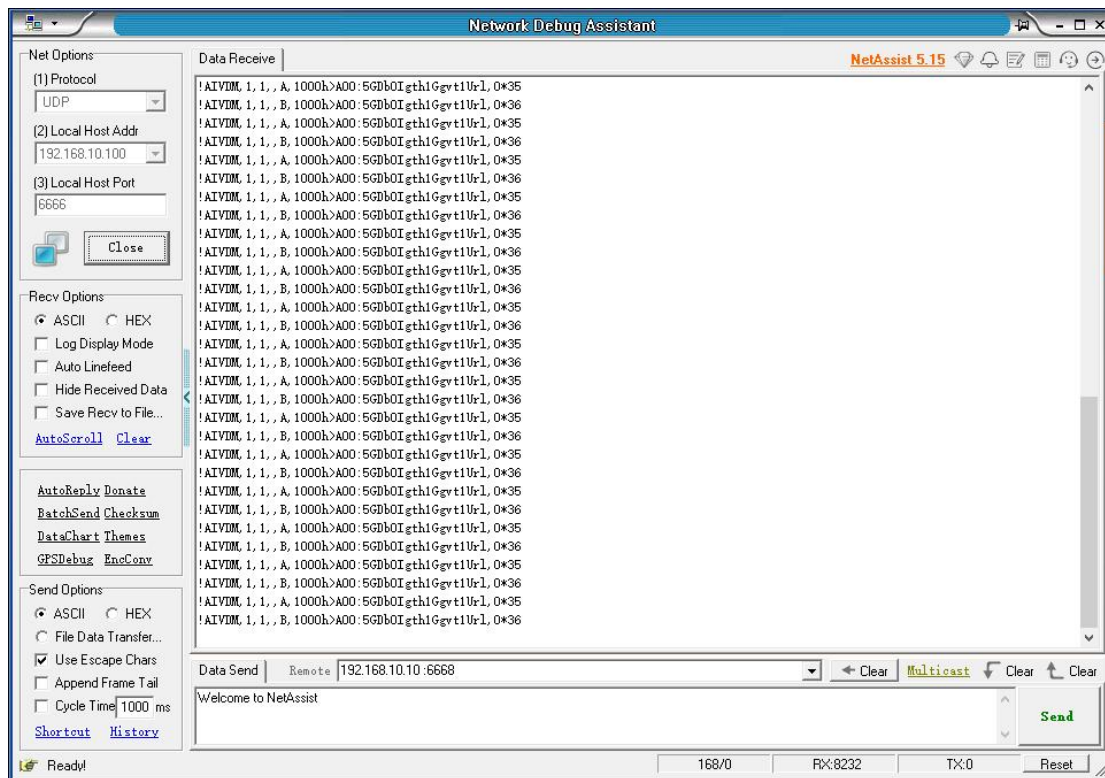
## 2. Ethernet data transmission

Use an independent 220V-to-5V 2A power module to supply power to the AIS-RN02.

(Note: When using network connection, the AIS-RN02 must not be powered via the computer.) Then connect the AIS-RN02 to the computer using an Ethernet cable.

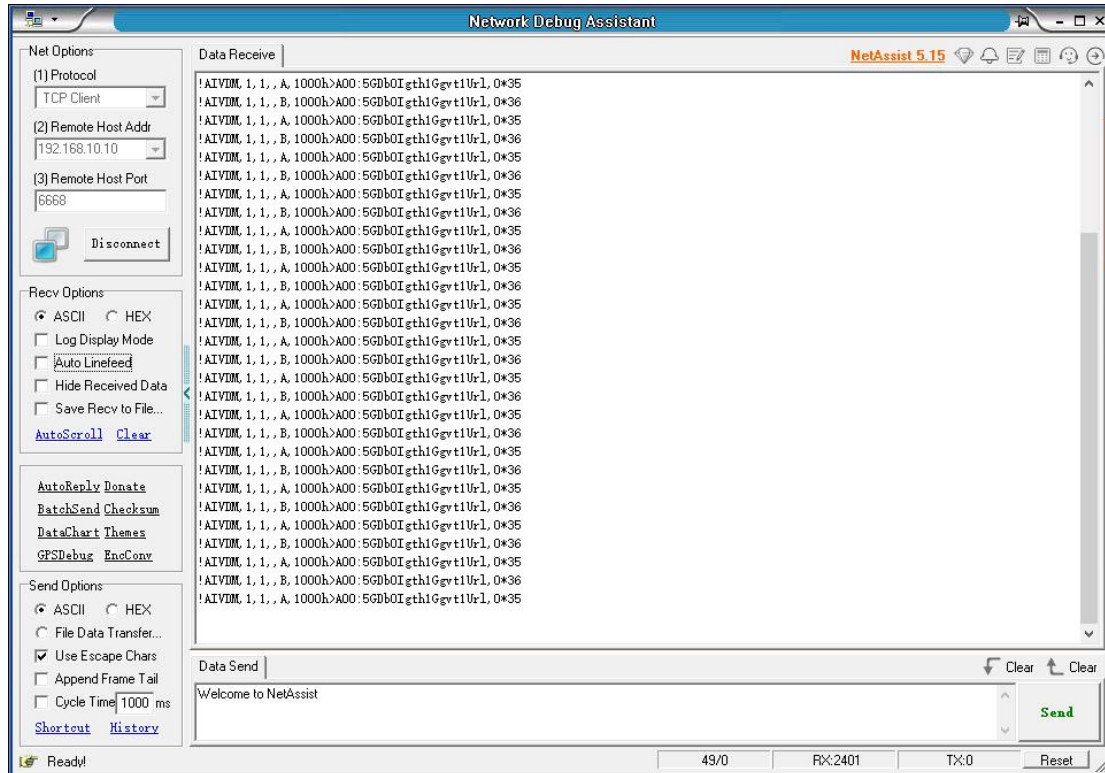
The default IP address of the AIS-RN02 is 192.168.10.10. The IP address of the computer receiving the data should be set to 192.168.10.\*.

The default data output protocol of the AIS-RN02 is UDP. In the network debugging software, select UDP as the protocol type. Set the local IP address to the computer's IP address (for example, 192.168.10.100 as shown in the figure). Set the port to 6666, then click "Open."



The AIS-RN02 also supports the TCP protocol (manual configuration required; see Chapter 6 of the manual).

For TCP communication, select TCP Client as the protocol type in the network debugging software. Set the remote host address to the IP address of the AIS receiver (for example, 192.168.10.10). Set the port to 6668, then click "Open."



The received messages are AIS raw data messages.

Example message:

```
!AIVDM,1,1,,A,1000h>A00:5GDb0Igth1Ggvt1UrI,0*35
!AIVDM,1,1,,B,1000h>A00:5GDb0Igth1Ggvt1UrI,0*36
!AIVDM,1,1,,A,1000h>A00:5GDb0Igth1Ggvt1UrI,0*35
!AIVDM,1,1,,B,1000h>A00:5GDb0Igth1Ggvt1UrI,0*36
!AIVDM,1,1,,A,1000h>A00:5GDb0Igth1Ggvt1UrI,0*35
!AIVDM,1,1,,B,1000h>A00:5GDb0Igth1Ggvt1UrI,0*36
!AIVDM,1,1,,A,1000h>A00:5GDb0Igth1Ggvt1UrI,0*35
!AIVDM,1,1,,B,1000h>A00:5GDb0Igth1Ggvt1UrI,0*36
!AIVDM,1,1,,A,1000h>A00:5GDb0Igth1Ggvt1UrI,0*35
!AIVDM,1,1,,B,1000h>A00:5GDb0Igth1Ggvt1UrI,0*36
```

## 6. Device Configuration

The AIS-RN02 supports data transmission via both TCP and UDP protocols. The default output protocol is UDP, which can be changed to TCP through configuration. Connect the device to the local network according to the connection instructions provided in Chapter 5.

Using a Chrome or Edge browser, enter <http://192.168.10.10> and press Enter. A login window will appear. Enter admin as the username and 88888 as the password, then click the “Login” button.

### Modify Device IP Address:

Click the “Ethernet” option on the left side. In the network settings panel on the right, modify the IP address, Gateway, Netmask, DNS server 1, and other parameters as required, then click the “Apply” button.

Then, click the “OK” button in the pop-up window. After the device restarts, the settings will take effect immediately.

### Configure TCP/UDP Output:

Target address (ONLY "TCP CLIENT" & "UDP" & "Httpd Client" MODE)		
NO.	Target(Domain or IP address)	Port
1	192.168.10.100	6666
2	192.168.0.1	6002
3	192.168.0.1	6003
4	192.168.0.1	6004

The device's default output is UDP. The above settings correspond to the UDP configuration. The destination address should be set to the local computer's IP address. After completing the configuration, click the "Apply" button and confirm the restart.

**Note: Do not modify other parameters, otherwise data reception may fail.**

Network			
Operation mode	<input type="text" value="TCP Server"/>	Modbus Conversion	<input type="text" value="off"/>
TCP heartbeat(0~60000;s)	<input type="text" value="20"/>	TCP Password	<input type="radio"/> Verify <input checked="" type="radio"/> No
Inactive time(0~65535;10ms)	<input type="text" value="0"/>	Info to Send When TCP Connected	<input type="text" value="None"/>
TCP Connections(1~4)	<input type="text" value="4"/>	String to send(max:15,byte)	<input type="text" value="Connected"/>
Local port	<input type="text" value="6668"/>	Multicast	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
TCP When cable break	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	Multicast address	<input type="text" value="224.0.0.3"/>
		Multicast port	<input type="text" value="10000"/>

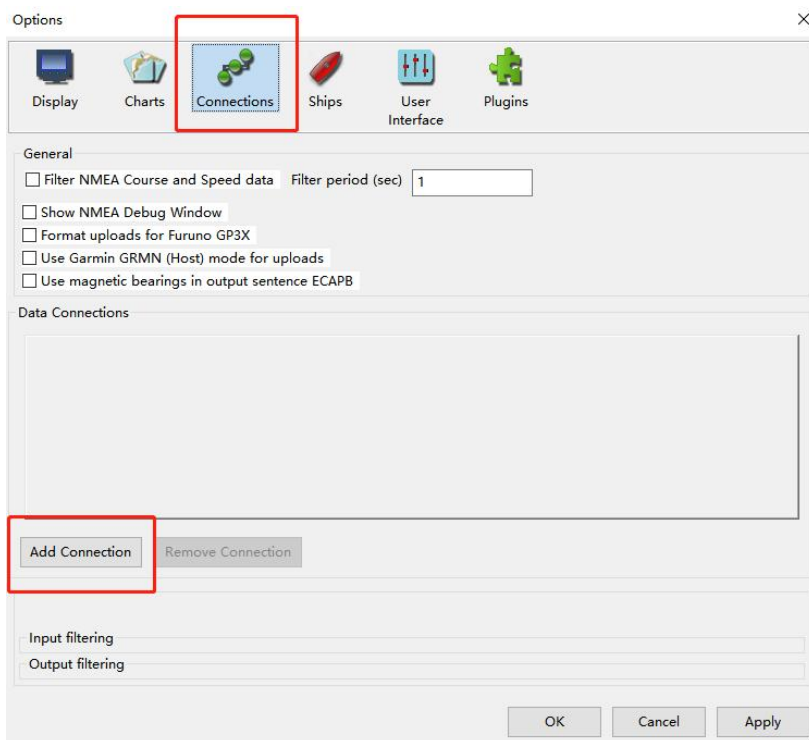
If TCP output is required, select TCP Server in the "Operation mode" section of the network configuration area. Ensure that the local port is set to 6668, then click the "Apply" button and confirm the restart.

## 7. Display Software

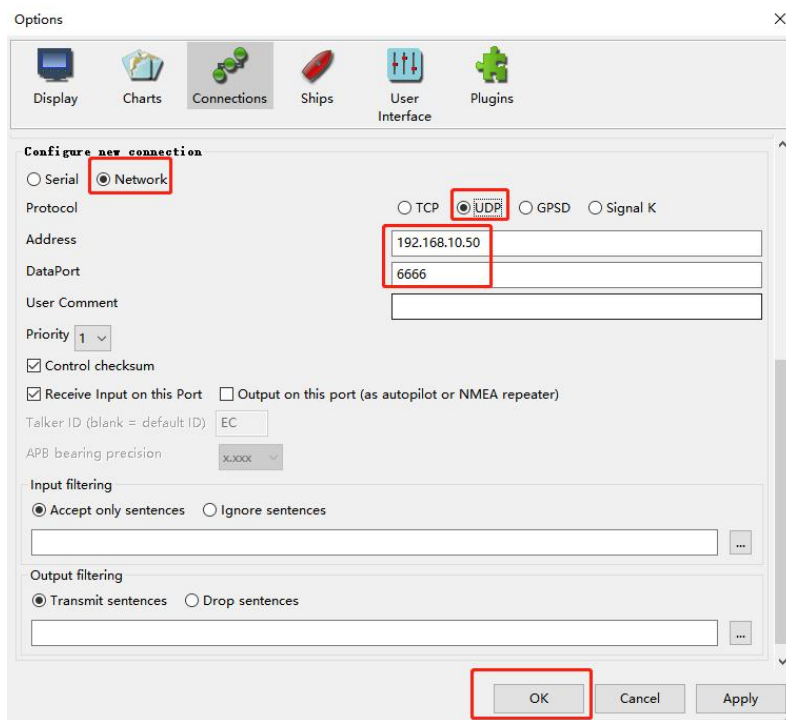
You can use the accompanying display software to show the received AIS data. Open the OpenCPN software and click the options button in the top-left corner.



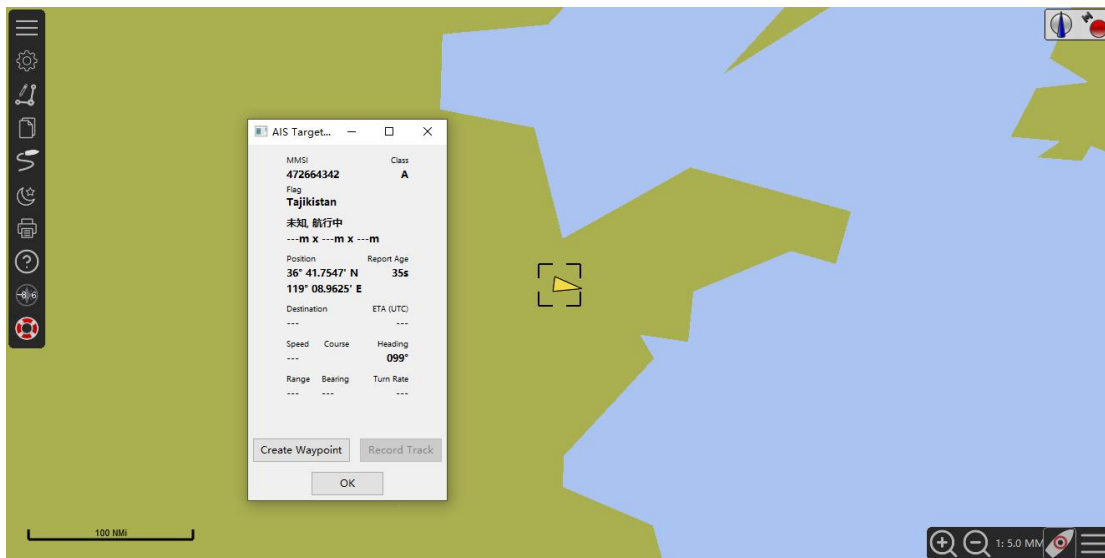
In the options window, click the "Connect" button, then click the "Add New Connection" button.



In the "Add Connection" window, select Network. Set Protocol to UDP. Enter the IP address used for AIS-RN02 message output (i.e., the computer's IP address) in the Address field. Enter the AIS-RN02 data output port in the DataPort field (in this manual example, it is 6666). Then click the "OK" button.



Successful Reception.



## 8. Customization

All our products can be supplied tailored to your specific needs and customized with your brand and logo. We tailor designs, enclosures, features, and data formats to meet your specifications. Our OEM services empower you to launch unique products swiftly and risk-free.