

XINUO



XA-201 AIS (B) Shipborne Automatic Identification System CSTDMA

Quick Reference V1.1

Instructions:

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If there are updates to the information in this manual, no notice will be given. You can visit the XINUO website: www.xinuo.com to learn about the latest updates and the operation information of this product and other products.

Warning: Please read the precautions in this manual to understand the product's safety statements and other important information. This device is not intended for direct navigation. When using this device, please refer to other available navigation sources, including information from other aids to navigation and actual sea conditions, such as: official nautical charts, visual observations, radar, tides, hydrography, weather, etc.

Statement: The term "XINUO" or "XINUO TECH" mentioned in this document refers to "Xinuo Information Technology (Xiamen) Corporation Limited"

Note: This is a precision electronic device. During installation, avoid strong vibrations and external impacts, and do not place anything on top of the device.

Declaration: Other product and company names mentioned in this manual are for identification purposes only. These names may be registered trademarks or copyrights of other companies.

This user manual is for reference only. Please refer to the actual product for specific operations. This user manual applies to the following device:

XA-201

Cautions :

Before turn on the equipment, please be sure to read the following cautions to avoid product failure caused by inappropriate operation.

1. Avoid fall down cases damage the product, firmly install your product is necessary.
2. Do not use any power adapter that is not equipped with this product, otherwise the equipment may not work due to different circuit design, or the performance may be affected or even damage the machine. The rated voltage of this product is DC 12V/24V. Pay attention to the voltage range.
3. Do not disassemble this product. A maintenance engineer not authorized by the company will lose the right of free warranty during the warranty period.
4. When in use or cleaning, be sure to avoid any liquid or other objects falling into the equipment, or this might cause damage or short circuit.
5. Do not place the equipment and its accessories in a damp environment the direct sunlight. Keep the machine in a dry environment.
6. Power supply should be grounded to avoid static and lightning. If not in use, please tum off the system.
7. If the equipment cannot position for a long time, check the following: Whether the antenna is installed properly; the connection; any forms of interference around the antenna. GNSS antenna is active antenna, Before the starting of the AIS system, make sure that the antenna cable joints are intact; there is no short-circuit or open circuit; and follow the correct procedure. During the start-up stage, do not arbitrarily remove the antenna in order to avoid damages to the equipment.
8. When external temperature is too high the equipment may not function properly, stop using the equipment.
9. When hardware failure occurs (e.g. power lines burned, machine damage or foreign bodies fall into the equipment,etc.), shut down the power immediately and contact with the distributor immediately.
10. Virtually, all data sources contain some inaccurate or incomplete data, the data only for your reference and we cannot guarantee any accident, minor injury or properly damage. All legal responsibility and other obligation will not be taken by XINUO.

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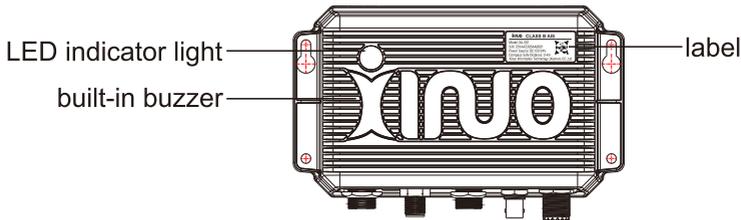
1 Product instruction

XA-201 is an AIS (B) ship automatic identification system equipment, which supports carrier monitoring time-sharing multiple access (CSTDMA) technology. This product is small in size, easy for installation, very suitable for small vessels.

XA-201 supports NMEA 2000 and NMEA 0183 communication, and its output complies with the IEC 62287 and associated standards. XA-201 was certified by CE /BSH.With Wi-Fi and Bluetooth, you can connect to a mobile phone or PAD .

The combination of the built-in buzzer and LED indicator light indicates the actual operating status of the equipment.

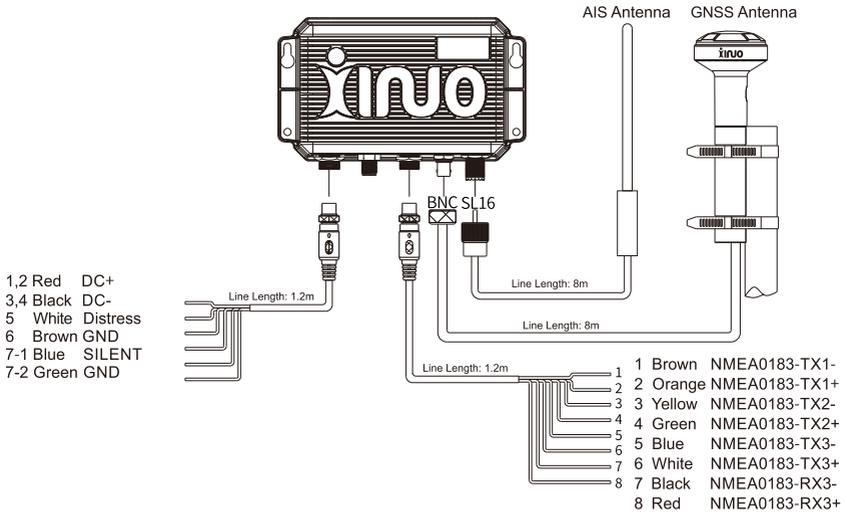
The optional switch box enables the "silent"mode, allowing the user to stop broadcasting static and dynamic information when privacy or security is required. An external switch can be connected to the system to enable the 'alarm mode' and transmit SOS messages.



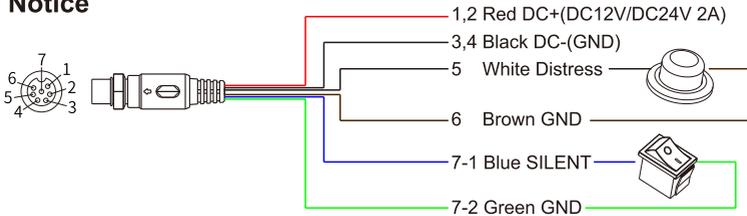
2 Standard package

No.	Item	Qty
1	Main unit	1
2	Power cable (2m)	1
3	Data cable (1.2m)	1
4	GNSS antenna (8m)	1
5	NMEA2000 dust cap	1
6	Self-tapping screw (TA4.8*20)	4
7	User manual	1

3 Connection diagram



Notice



The XA-201 has 3 NMEA 0183 output ports with a default port rate of 38400 bps, Supports the output AIS, GNSS.

The 5-core port is the output port of the NMEA2000:

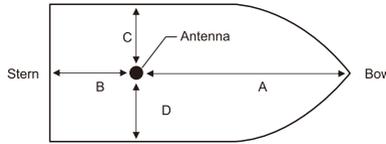
Terminal position	Description
1	Shield-GND
2	VCC+
3	VCC-
4	NET-L/CAN-H
5	NET-L/CAN-L

4 Installation instructions

4-1 Equipment installation

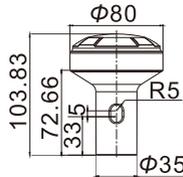
4-2 GNSS antenna installation

Selection of positioning antenna installation position: there should be no continuous obstacles in level 360 elevation 5-90. 3m away from the high-power antenna transmitting beam such as S-band radar and INMARSAT system. Measure the distance data of A, B, C and D to set the static parameters of the vessel.

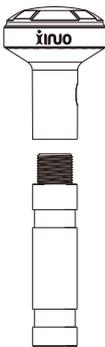


Installation diagram of GNSS antenna installation

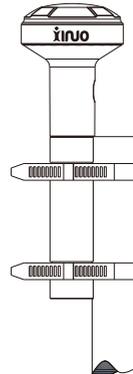
Installation and fixing of the positioning antenna: First, the antenna is fixed to the antenna fixing rod through the thread, select the appropriate laryngeal hoop (the recommended width is between 10-14MM), and the antenna rod is fixed on the fixed column of the ship, and the feeder is fixed on the fixed column with a tie belt.



Dimension figure of GNSS antenna

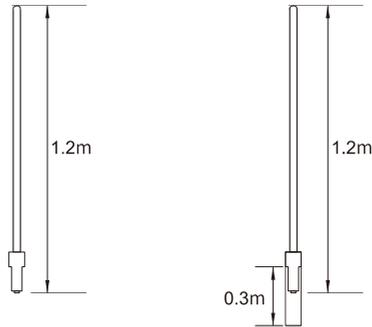


Antenna fixed on the antenna pole



Fix to the fixation post with a hoop

4-3 VHF antenna installation

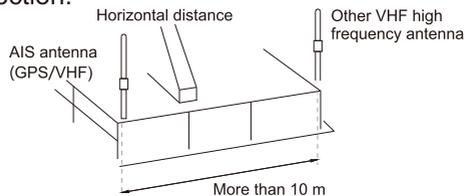


VHF Antenna figure

VHF Antenna base fixed

4-3-1 Horizontal installation

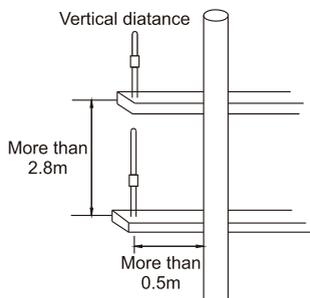
- (1) The VHF antenna of AIS shall be as free as possible in level 360.
- (2) The VHF antenna of AIS should be above 2m from the conductor structure in the horizontal direction, The radar and high power source antenna (such as INMARSAT system) should be 10m away from the transmitting beam.
- (3) If the VHF antenna of the AIS and the ship VHF antenna must be on the same horizontal plane, they shall be at least 10m apart in the horizontal direction.



Horizontal mounting position diagram

4-3-2 Vertical installation

The VHF antenna of AIS is at least 2.8m apart in the vertical direction.

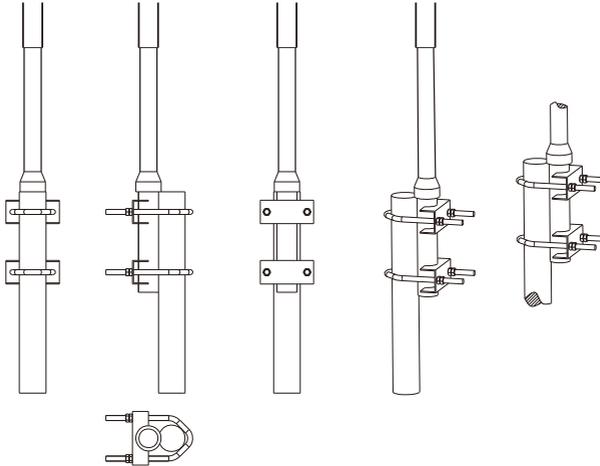


Vertical installation position diagram

VHF Antenna installation.

- (1) First push the antenna to the fixed casing, then connect the feeder connector to the VHF antenna connector and tighten it.
- (2) Tighten the fixing casing and VHF antenna with screws, then the antenna is fixed to the fixed rod of the ship with its own accessories, and the feeder is fixed on the fixed column of the ship with tie belt.

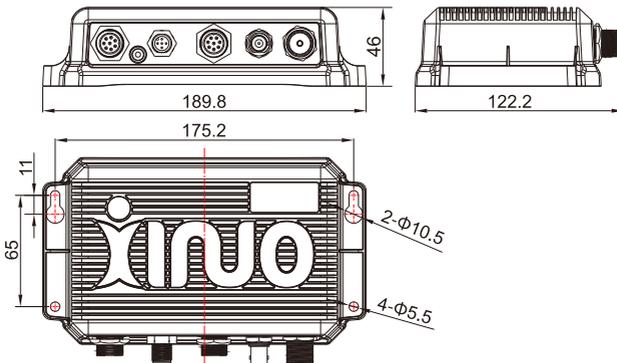
Note, the hexagon nut should be locked tightly.



VHF Antenna installation of fixed columns on board

The antenna installation position can be adjusted according to the actual situation of the ship, and the AIS actual test should be conducted to ensure the equipment utility is normal and does not affect the use.

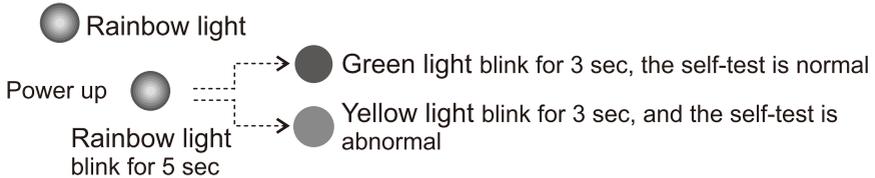
4-4 Equipment installation



5 Equipment self-inspection

5-1 LED light

This product contains one LED light. In the actual use of the product, there are four rainbow colors, green, red and yellow colors. The functions they represent in the four color states are described below.



Self-test after power-on, rainbow light cycle change color for 5 seconds, if then green flicker for 3 second, the self-test is successful, if yellow light, the equipment is abnormal.

● Yellow light

- Often bright, No AIS data were received for 6 minutes or more
- Blink for 10 sec, Wi-Fi or Bluetooth disconnected
- Blink for 3 sec, if the self-check is abnormal, please check whether the VHF or GNSS antenna is normally connected

● Red light

- Blink for 1 min, broadcast the SOS alarm
- Blink for 1 sec, launch an AIS message

● Green light

- Blink for 1 sec, receive an AIS message
- Blink for 3 sec, the Wi-Fi /Bluetooth connect successfully
- Blink for 3 sec, Self-test is successful

5-2 Buzzer

- Short-frequency ringing for 1 min(Bi-Bi-Bi... ..), Broadcast the SOS alarm
- 3 sounds in the medium frequency(Bi---Bi---Bi)(3 sec), Wi-Fi/ Bluetooth connect successfully
- Long ringing for 1 sec, Self-inspection success
- Long ringing for 3 sec, Self-inspection abnormal

6 Device configuration

6-1 APP MMSI programming

We provide two static parameter configuration methods, mobile phone APP connection device configuration and PC tool connection device configuration, preferred recommended APP configuration.

Method 1: APP Configuration

Scan the QR code below to get the download address.

Recommended referred Bluetooth search connection configuration.
(Currently, only the Android system is available for download.)



[1] Bluetooth Connection Configuration

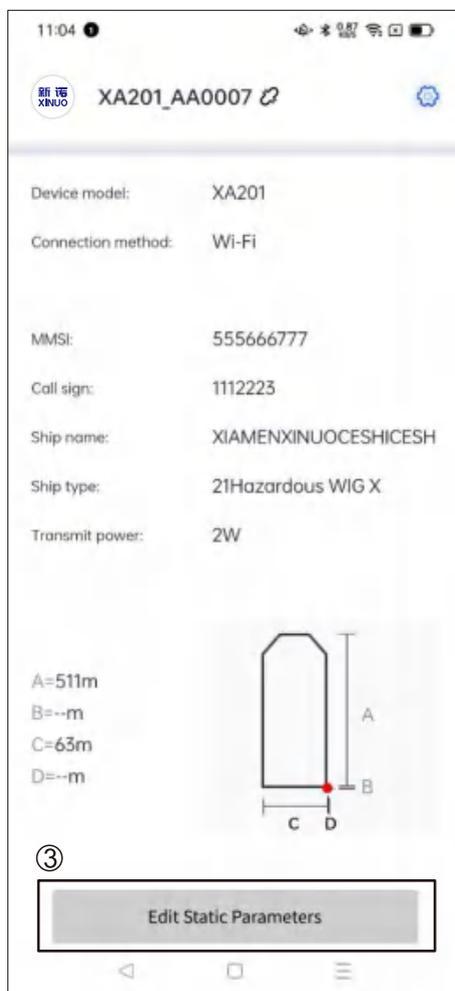
Step 1: Click [Connect device] to automatically search for nearby Bluetooth devices. Find the device named "XA201_AAXXXX" and click [Go to connect] to enter the parameter configuration interface.



Home Page

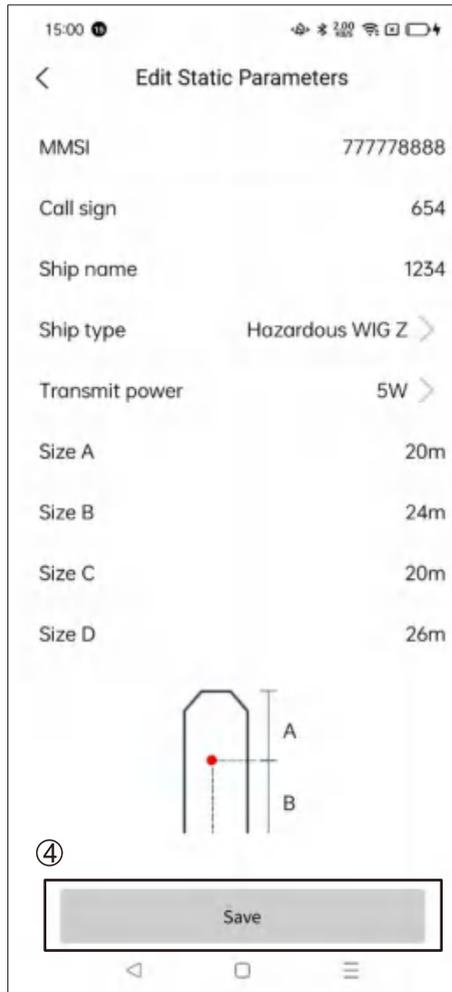


Bluetooth Search



Device Information Page

Step 2: Click [Edit Static Parameters] to enter the static parameter editing interface, and click [Save] after editing.

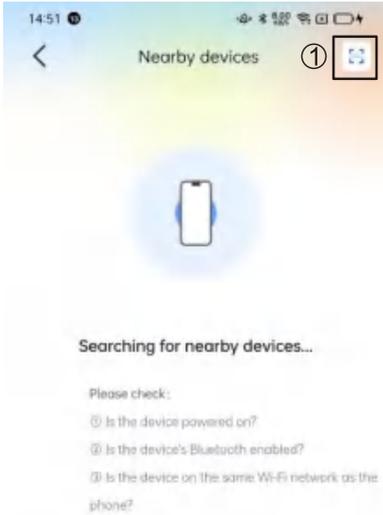


Edit Static Parameters

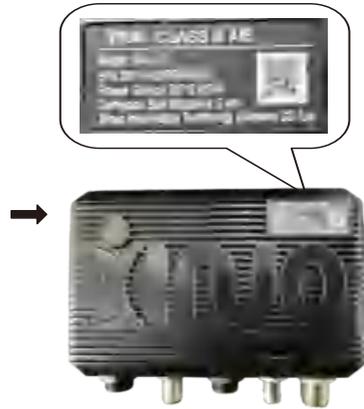
[2] Scan to connect configuration

Step 1: Click [Connect device], and click the "Scan" icon in the upper right corner, and scan the QR code on the device.

Step 2: Select Bluetooth connect or Wi-Fi connect. (Select Bluetooth connection when without public network.)



Home Page



Code of Device



Select Method

1. When you select Bluetooth connect, the phone will identify and connect the Bluetooth of the device automatically. If your mobile phone cannot use the Bluetooth, please select the Wi-Fi connection.
2. When you select the Wi-Fi connect, it will enter the device distribution network interface. connect whichever one on work and click on [Next]. Click [Copy], get into your mobile WLAN list, select the XA-201 network, paste or type the Wi-Fi password to get it connected. After the successful connection, return to the mobile application.

Please select the 2.4GHz wireless network and enter the password



②

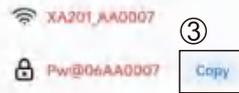


Select Network

Use your phone to connect to the device's wireless network



The device has emitted a wireless network signal. Please connect to this wireless network in the phone's system settings

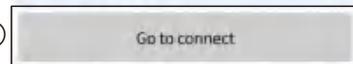


③

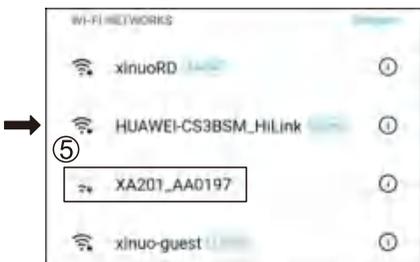
2Return to this page after connecting to the device's wireless network.

Cannot find the device's wireless network

④



Connect Device Network



⑤

Device Network



⑥

Return APP

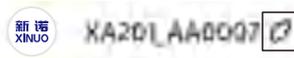
Notice: After connecting, the mobile phone may prompt: "XA201_XXXXXX" can not access the Internet, whether to switch to other better network?(The mobile phone system is different, the prompt method is different) Please ignore this prompt and keep connected to the XA201_XXXXXX network, otherwise the pairing will fail. After successful connection, enter the editing static parameter interface.



Device Information Page

[3] Switch Device

Click the connection icon next to the device name to exit the current device and reconnect to other devices.



Switch Device

Method 2: PC Tool

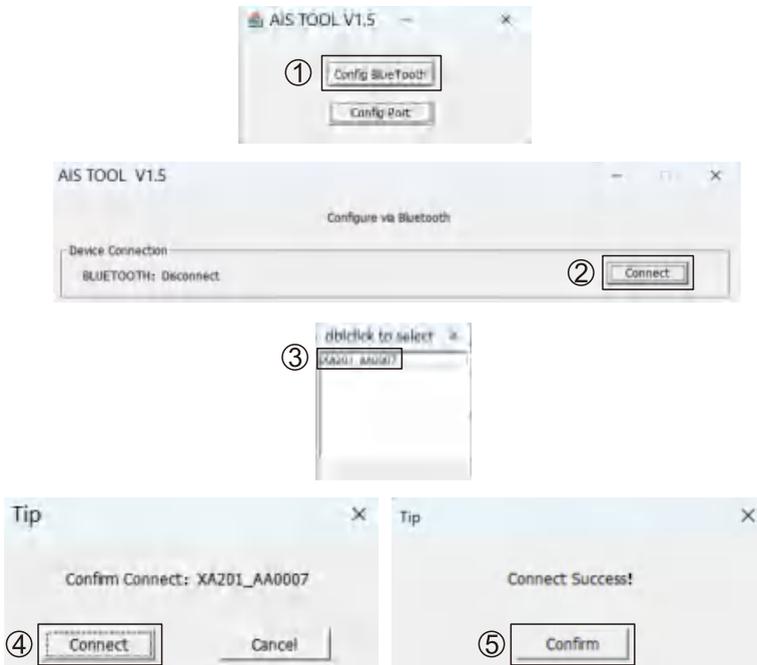
Go to http://d.xinuo.com:3/XINUO/XA-201_EN.rar to download the PC tool installation kit. PC tool supports Bluetooth connection configuration and serial connection configuration. Bluetooth connection configuration is preferred.

[1] Blue Tooth

Step 1: Turn on the computer Bluetooth, if the computer has no Bluetooth, please through the serial port configuration.

Step 2: Double-click Run software AIS TOOL_EN.exe

Step 3: Select [Config Blue Tooth], click [Connect], the Bluetooth search list appears, double-click the device name to connect in the list, click [Confirm], the connection is successful.



[2] Port Configuration

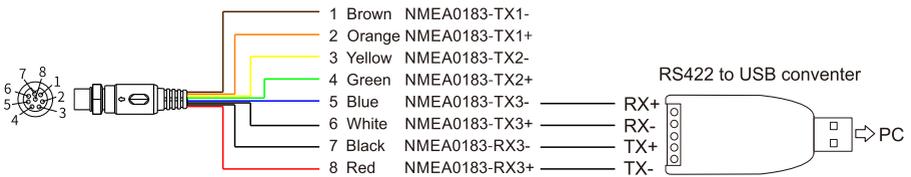
If you have configured successfully via Bluetooth connection, ignore this configuration method. Skip to "[3] Configuration Introduction"

Step 1: Double-click Run software AIS TOOL_EN.exe

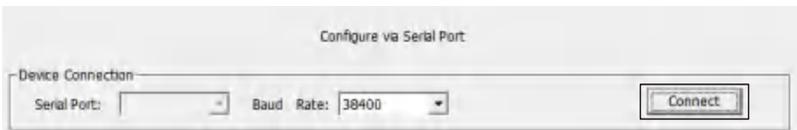
Step 2: Select [Config Port]



Step 3: Connect the serial port of the NMEA0183 and the USB-RS422 converter by data cable, then insert the USB end into the computer. The connection mode is as follows;



Step 4: Select the corresponding string slogan, set the baud rate to 38400, click connect. If the connection fails, check that the data cable is correctly connected.



[3] Configuration Introduction

1. Parameter Configuration

Fill in the static parameters according to the ship information. Click [Config Device], you can configure successfully.

The screenshot shows the 'AIS TOOL V1.5' software window with the title 'Configure via Bluetooth'. The interface is divided into several sections:

- Device Connection:** Shows 'Connect BlueTooth: XINUO-XA201' and a 'Disconnect' button.
- Static Data:** Contains input fields for 'MMSI: 799555333', 'Call Sign: 1231444', and 'Ship Name: xinuocesh555@@@@@'. The 'Ship Type' is set to 'WIG' with a value of '20'. To the right is a diagram of a ship's hull with dimensions A, B, C, and D. A table next to it lists:

A:	4	(0-511m)
B:	4	(0-511m)
C:	4	(0-63m)
D:	4	(0-63m)
- Parameter configuration:** Includes 'Transmit Power: 2W' and 'Position Mode: GPS+BDS'.
- Serial port output configuration:** Lists three NMEA0183 ports (1, 2, 3) with 'Serial baud rate' set to '38400' and 'Output' checkboxes for 'GNSS' and 'AIS'.
- Function:** Contains three buttons: 'Config Device', 'Read Device', and 'Initial Device'.

2. Read Device

Click [Read Device] to obtain the static parameter information of the currently connected XA-201 device.

This close-up shows the 'Function' section with three buttons: 'Config Device', 'Read Device', and 'Initial Device'. The 'Read Device' button is highlighted with a blue border, indicating it is the active selection.

3. Initial Device

Click [Initial Device] to restore the static parameters of the currently connected XA-201 device to the factory default value.

This close-up shows the 'Function' section with three buttons: 'Config Device', 'Read Device', and 'Initial Device'. The 'Initial Device' button is highlighted with a blue border, indicating it is the active selection.

6-2 Other parameter configuration

- **Transmit Power:**

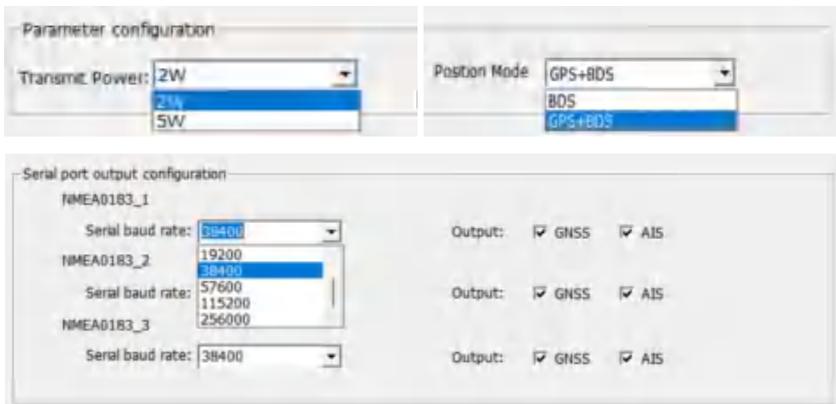
Pull down to select the transmission power to be set, support 2W/5W transmit power.

- **Position mode:**

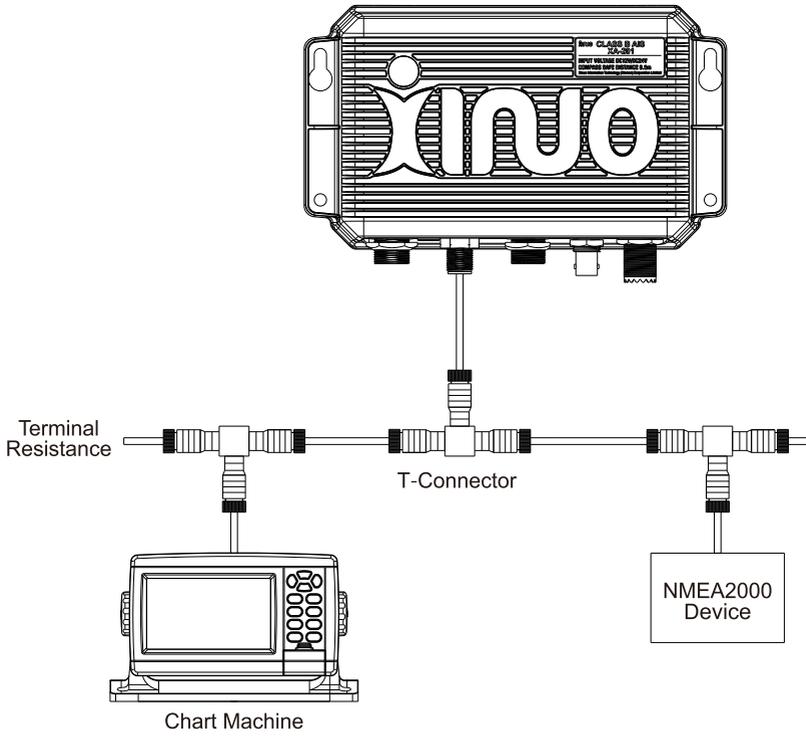
Pull down to select the positioning mode to be set, support BDS and GPS + BDS positioning mode.

- **Paud rate:**

Support for modify serial port baud rate and output statement type. Where NMEA0183_1, NMEA0183_2 can support configuration 4800 / 9600 / 19200 / 38400 / 57600 / 115200 / 256000bps, NMEA0183_3 default to 38400bps, non-modifiable port rate. When the baud rate of the serial port is less than or equal to 9600bps, only GNSS is supported. When the baud rate is greater than 9600bps and less than 38400, only GNSS or AIS can be output. When the baud rate is greater than or equal to 38400, you can output GNSS and AIS at the same time.



7 NMEA2000 connection method



8 Hardware configuration

Environment	
Working temperature	-15°C~+55°C
IP rate	IP67
Power	
Power supply	DC12V/DC24V
Power consumption	<10W
Network connection mode	
Bluetooth	BT4.0
Wi-Fi	802.11 b/g/n
Data port	
GNSS antenna port	BNC
VHF antenna port	SI16 (Female)
NMEA0183 port	4 data ports, There are 3 input ports and 1 output port
NMEA2000 port	Support for GNSS and AIS data transmission
Power port	Support external power supply, external alarm button
Class B AIS transceiver	
Frequency range	156.025~162.025MHz
Channel bandwidth	25KHz
Modulation mode	GMSK/FM
Commissioning rate	9600bps
Number of AIS transmitter	1
Number of AIS receiver	2 (AIS1,AIS2)
AIS1 channel (default)	CH87B(161.975MHz)
AIS2 channel(default)	CH88B(162.025MHz)
TX output power	2W/5W
Carrier sense	CSTDMA
RX sensitivity	< -107dBm @ Error rate<20%

GNSS		
GNSS receiver		72 channels
Receive frequency		GPS L1 1575.42MHz, BDS B1 1561.098MHz
Accuracy	GPS&BDS	2.5 m (CEP50%, Open sky)
	GPS	5 m (CEP50%, Open sky)
	BDS	5 m (CEP50%, Open sky)
Rate accuracy		0.1M/S (50%@10M/S)
First positioning time		Cold start<30s; Hot start<1s
Coordinated system		WGS-84 (or other)
Specification		
Size		189.8 x 122.2 x 46mm
Weight		0.5kg
Standard		
		IEC 62287-1, IEC 61108-1, IEC 61162-1, IEC 60945, ITU-R M.1371-5, IMO.A.694(17)

YS01EB0002

XINUO
www.xinuo.com

Xinuo Information Technology (Xiamen) Corporation Limited

Address: Unit 2001, 1 Chengyi North Street (B04), Software Park III, Xiamen, China

Tel: +86-592-3300300 Fax: +86-592-3300310 Hotline: 400-8868-592

Web: <http://www.xinuo.com> Email: info@xinuo.com

