AIS Class B & Chart Plotter

Quick Reference V1.2

INTRODUCTION

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STATEMENTS

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NOTES: This unit is not used for direct navigation. When in actual use, please compare with all available navigation sources, including the information from other navigation aids and actual sea conditions, such as: official chart, visual sightings, radar, tides, hydrology, weather and so on.

NOTES:

【】: Menu title, such as【Main Menu】means the basis menu called by the system.

〖〗: The symbol on the Keyboard buttons, such as〖Menu〗means the menu button on the keyboard.

This product manual (Quick Reference) is for reference only. Please refer to the actual product for details. This product manual (Quick Reference) is applicable to the following devices:

☐ HM-5812

☐ HM-5912

☐ HM-5912W

CAUTIONS

Before turn on the unit, 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 this product with any other power adapters or the navigator may not work properly; its performance will be affected or even the equipment will be damage because of the different circuit designs. The voltage requirement for this product is DC 24V. Do not exceed this voltage range.
3. Do not disassemble the unit by any means or no warranty will be extended.
4. When in use or cleaning, be sure to avoid any liquid or other objects falling into the unit, or this might cause damage or short circuit.
5. Do not place the unit and its accessories in a damp environment or 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 turn off the system.
7. If the unit cannot position for a long time, check the following: Whether the antenna is installed properly; the connection; any forms of interference around the 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 unit may not function properly, stop using the equipment.
9. Avoid direct sunlight to the LCD screen. You can adjust the angle of the screen anytime to get the best visual effects.
10. 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.
11. 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.

Contents

1 Product Introduction

The Class B AIS&Chart Plotter supports GPS and BDS dual mode positioning system which can provide more accurate location data, SOG, COG, etc. It is built-in Class B AIS module to offer safe navigation information for reference . At the same time, it is built-in global chart and can upgrade software regularly. In addition, it supports multi-language display and multiple alarm mechanisms, such as AIS CPA, ship type alarm, ship speed alarm, etc.

2 Standard Configuration

ID	Name	Quantity
1	Display	1
2	Stand	1
3	Power Cable (2m)	1
4	8-Pin Data Line (1.2m)	1
5	ST4.8*20 Screw	4
6	M8 Fixed Knob	2
7	M6 Fixed Knob	2
8	Large Rubber Gasket	4
9	Small Rubber Gasket	4
10	Remote Control	1
11	Remote Control Stand	1
12	GNSS Antenna (8 m)	1
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3 System Connection Diagram and Serial Port Definition

3-1 Serial Port Setting Instruction

Operation:

(1) Press 〚Menu〛 twice -- 【I/0 Settings】 -- 【Signal Detection】, view the input and output sentences.

(2) NMEA0183 default output are RMC, GGA, GLL, VTG, APA, APB, BWC, XTE, RMB, BOD.

The baud rate is 38400 of AIS input/output port , others are 4800.

3-2 System Connection Diagram and Serial Port Definition
（1) HM-5812

GNSS

BNC

GX16-6 GX16-8 GX16-4 GX16-2

DC12V-36V

Cable Length: 8m

Cable Length: 1.2m

Cable Length: 2m

Cable Length: 1.2m

1.Brown NMEA0183_TX5- (0183 Output 3)
2.Yellow NMEA0183_TX5+
3.Blue   NMEA0183_RX7- (0183 Input 2)
4.White NMEA0183_RX7+
5.Black   AUDIO+
6.Red   AUDIO-

1.Brown   NMEA0183-TX2- (0183 Output 1)
2.Qrange NMEA0183-TX2+
3.Yellow NMEA0183-TX4- (0183 Output 2)
4.Green   NMEA0183-TX4+
5.Blue   NMEA0183-RX6- (0183 Input 1)
6.White   NMEA0183-RX6+
7.Black   NMEA0183-RX1- (AIS Input)
8.Red   NMEA0183-RX1+

(2) HM-5912/HM-5912W

AIS Antenna

GNSS

BNC   SL16

GX16-6 GX16-8 GX16-4 GX16-2

POWER

DC12V-36V

Cable Length: 8m

Cable Length: 1.2m

Cable Length: 2m

Cable Length: 1.2m

1.Brown NMEA0183_TX5- (0183 Output 2)
2.Yellow NMEA0183_TX5+
3.Blue   NMEA0183_RX7- (0183 Input 3)
4.White NMEA0183_RX7+
5.Black AUDIO+
6.Red   AUDIO-

1.Brown   NMEA0183-TX1- (AIS Output)
2.Qrange NMEA0183-TX1+
3.Yellow   NMEA0183-TX4- (0183 Output 1)
4.Green   NMEA0183-TX4+
5.Blue   NMEA0183-RX6- (0183 Input 2)
6.White   NMEA0183-RX6+
7.Black   NMEA0183-RX2- (0183 Input 1)
8.Red   NMEA0183-RX2+

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4 Installation Instructions

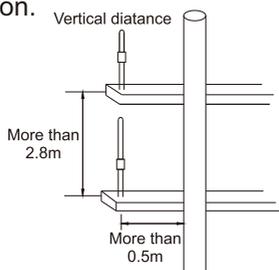### 4-1 Antenna Installation

4-1-1 VHF Antenna Installation

Method 1: Horizontal installation

[1] VHF antenna should be installed in the level 360º without any obstacles.

[2] VHF antenna should be kept more than 2m away from conductor structure in horizontal position. It also should be kept more than 3m away from the transmitted beam of radar and high power source antenna.

[3] VHF antenna should be kept more than 10m away from ship's other VHF in horizontal position, if it must be in a same horizontal plane.

Horizontal distance   Other VHF high frequency antenna
AIS antenna (GPS/VHF)
More than 10 m
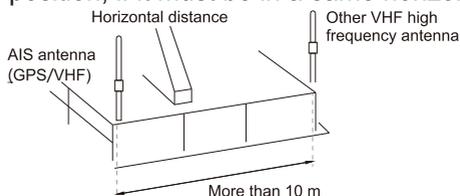
Method 2: Vertical installation

VHF antenna must be kept more than 2m away from ship's other VHF antenna in vertical position.

Vertical diatance
More than 2.8m
More than 0.5m

4-1-2 GNSS Antenna Installation

GNSS antenna should be without continuous obstacles in the level 360º, elevation 5°-90°. Apart from more than 3m from the s-band radar and INMARSAT system and other high power antenna beam. Measure A/B/C/D distance data to set up the ship's static parameter.

C   Antenna
Stern   B   A   Bow
D

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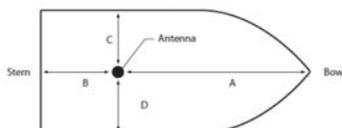
4-2 Machine Installation

HM-5812&HM-5912&HM-5912W Counter mounting [unit:mm]
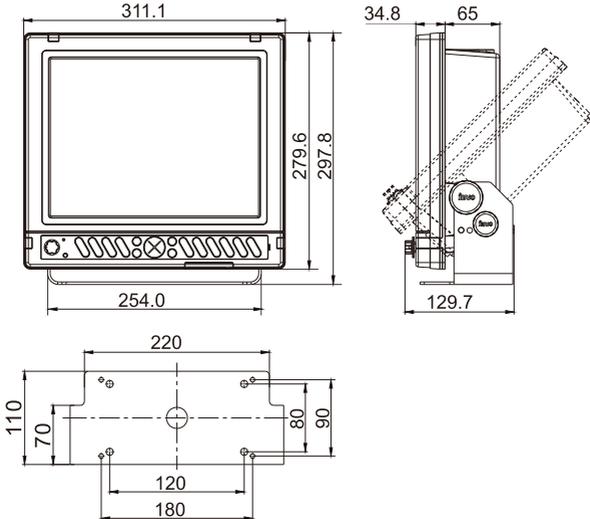
Flush mounting [unit:mm]

Screw 4-3×20

4-3 Remote Control Installation

5 Key Description

5-1 HM-5812&HM-5912&HM-5912W Key Definition

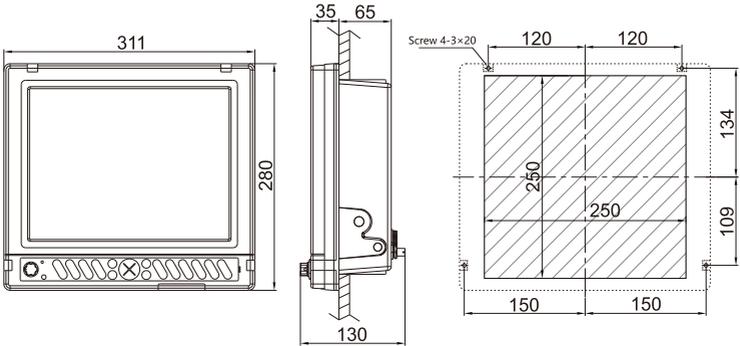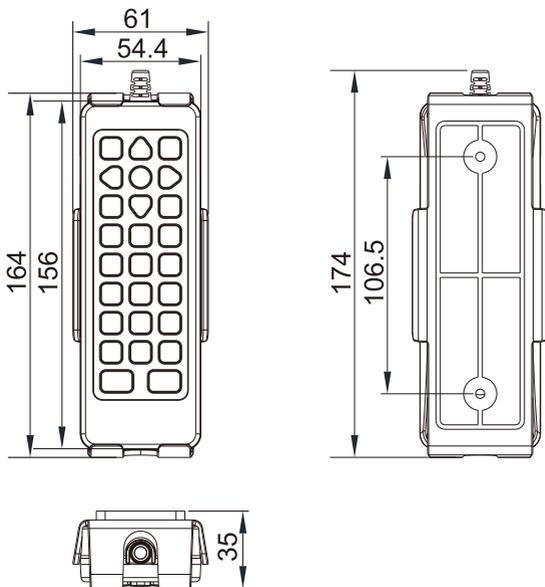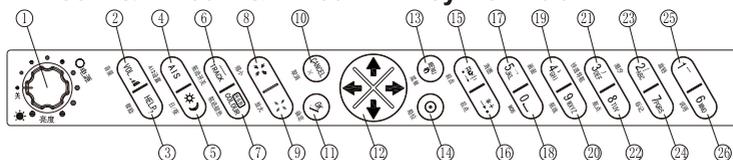| Key	Function Description
〖POWER/ BRIGHTNERR〗	(1) Rotate to turn on/off; (2) When the device is turned on, rotate to adjust brightness.
〖VOLUME〗	Adjust the volume of key.
〖HELP〗	Pop-up help menu.
〖DAY/NIGHT〗	Fast switching display mode: day/night.
〖AIS〗	Quickly access to the AIS list.
〖TRACKS〗	(1) Short press to turn on/off track record. (2) When the track is opened, long press 2s to modify track .
〖COLOR〗	Quickly change the current track color.
〖ZOOM OUT〗	Zoom out charts and view large-scale chart.
〖ZOOM IN〗	Zoom in chart scale to see a more detailed chart.
〖CLR〗	Cancel an operation and exit the current operation status.
〖ENTER〗	Confirm to carry out operation.
〖 ↑ ↓ ←→〗	(1) Moving chart positions. (2) When choosing menu item, it is used for page turning.
〖MENU〗	Open the main menu.
〖◎〗	Center the ship to the screen.
〖●→〗	(1) When it is on navigation, it is to navigate the previous waypoint (2) When it is not on navigation, it is used for quickly measure distance. (3) When editing, it is used to switch input methods.

Key	Function Description
〖→●〗	(1) When it is on navigation, it is to navigate to next waypoint. (2) When it is not on navigation, it is to set the display mode: Auto/Normal/Day/Gray/Night/Recovery. (3) When editing, it is used to switch input symbols and characters.
〖CHART/5〗	(1) Quickly to view chart; (2) When editing, enter the number 5.
〖MOB/0〗	(1) Quickly to add MOB; (2) When editing, enter the number 0.
〖PAGE/4〗	(1) Select the page to display; (2) When editing, enter the number 4.
〖ROUTE/9〗	(1) Quickly to create a route; (2) When editing, enter the number 9.
〖QUICK NAVIGATION/3〗	(1) Call the quick navigation window; (2) When editing, enter the number 3.
〖WPT/8〗	(1) Move the cursor to add WPT; (2) When editing, enter the number 8.
〖TIDE/2〗	(1) Quickly open tidal page; (2) When editing, enter the number 2.
〖MARK/7〗	(1) Move the cursor to add mark; (2) When editing, enter the number 7.
〖ROTATE/1〗	(1) Rotate the chart direction, rotating 90° each time. (2) When editing, enter the number 1.
〖CALL/6〗	(1) Quickly to select WPT, route to navigation; (2) When editing, enter the number 6.

5-2 Remote Control Definition
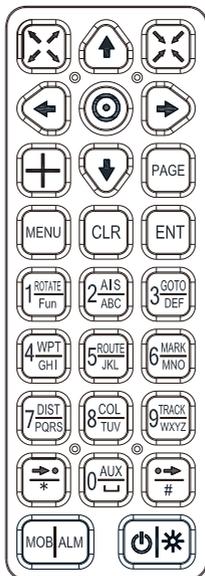
Key	Function Description
〖ZOOM IN〗 ⊠	Zoom in chart scale to see a more detailed chart.
〖ZOOM OUT〗 ⊠	Zoom out chart scale to see a wide range of chart.
〖CENTER〗 ◎	Center the ship to the screen.
〖ARROW〗	(1) Moving chart positions; (2) When choosing menu item, it is used for page turning.
〖CURSOR〗 ⊞	Quickly to open/close the cursor.
〖PAGE〗 PAGE	Select the page to display.
〖MENU〗 MENU	Enter the main menu.
〖CLR〗 CLR	Cancel an operation and exit the current operation status.
〖ENT〗 ENT	Confirm that an operation is performed.

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Key	Function Description
〖ROTATE〗	Rotate the chart direction, rotating 90° each time.
〖AIS〗	Quickly access to the AIS list.
〖GOTO〗	Quickly to select WPT, Route to navigation.
〖WPT〗	Move the cursor to add WPT.
〖ROUTE〗	Quickly to create a route.
〖MARK〗	Move the cursor to add mark.
〖DIST〗	Move the cursor to the specified position, press the 〖DIST〗 button, set the starting point, move the cursor to the target position, and the distance measurement can be realized.
〖COL〗	Quickly change the current track color.
〖TRACK〗	Turn on/off track record.
〖NEXT WAYPOINT〗	(1) When it is on navigation, it is to navigate to next waypoint. (2) When it is not on navigation, it is to set the display mode: Auto/Normal/Day/Night/Recovery. (3) When editing, it is used to switch input symbols and characters.
〖AUX〗	Quickly to open auxiliary.
〖PREVIOUS WAYPOINT〗	(1) When it is on navigation, it is to navigate the previous waypoint. (2) When it is not on navigation, it is used for quickly measuring distance. (3) When editing, it is used to switch input methods.
〖MOB\ALM〗	Quickly to add MOB.

6 Operation Instructions

6-1 Track Operation

Track record	Press the 〖Track〗 to open the track record. The track number, track color and track capacity are displayed on the lower right corner of the chart . Press again to close the track record.
Track color	Press 〖Color〗 to set the color of the current recording track. There are 8 colors to choose from, the recording color is displayed on the lower right corner of the chart.
Delete track	Press 〖Menu〗 to enter【Main Menu】, select【Track List】, press 〖ENT〗 to enter the【Track List】, select the track that want to delete, press 〖ENT〗 to pop up the track operation menu, select【Delete Track】, pop up the prompt box, select【Yes】to delete the track.

6-2 WPT Operation

Add WPT	On the chart, press the arrow keys to move the cursor, and then press the 〖WPT〗 to add the waypoint directly at the selected position.
Delete WPT	On the chart , press the arrow keys to move the cursor, select the waypoint that wants to delete. Press 〖Enter〗 to enter the operation interface, and then select【Delete Waypoint】.

6-3 Navigation Operation

WPT navigation	(1) After moving the cursor by the arrow key, select the waypoint that want to navigate, press the 〖ENT〗 button to enter the waypoint operation interface, select【Call Waypoint】, and then press the 〖ENT〗 button. (2) Press 〖GOTO〗 to enter the【Call Navi Data】 menu interface, press the arrow keys to enter the input box, input the WPT number that want to be called, and press the 〖ENT〗.

Route navigation	Press 〖GOTO〗 to enter the 【Call Navi Data】, press arrow keys to select 【Forward Call Navigation】/ 【Reverse Call Navigation】, enter the input box, input the route number to be called, and press 〖ENT〗.

6-4 Route Operation

Add route	Press 〖Route〗 to enter the route creation state. Move the cursor to the specified location, and then press 〖WPT〗 to quickly add waypoint. Press 〖Route〗 to save the route data, press 〖CLR〗 to quit route editing.
Delete route	Press 〖Menu〗 to enter the 【Main Menu】, enter the 【Route List】, select the route that want to be deleted, then press the 〖ENT〗 button, pop up 【Route Operation】, select 【Delete track】, pop-up confirmation box, select 【Yes】, and finally press the 〖ENT〗 button to delete.

6-5 Mark Operation

Add mark	On the chart, press the arrow keys to move the cursor, and press the 〖Mark〗 button to add the marker at the selected position.
Delete mark	Move the cursor to select the marker point that want to be deleted, and then press the 〖ENT〗 key. Select 【Delete Marker】 in the 【Marker Operation】 menu, then press the 〖ENT〗 key to delete.

6-6 Display Mode and Brightness Setting

Display mode	Under the chart interface, when it is not on navigation, press 〖→•〗 to set the display mode, use the arrow key to adjust the mode.
Brightness setting	Press 〖Power〗 to adjust the brightness.

6-7 AIS List

AIS ship operation on chart	On the chart, the AIS information pops up when the cursor is moved to the AIS vessel. Press the 〖ENT〗 button to pop up the AIS menu option, and then can select【Show Track／Details／Add Monitor／Send/Start Tracking】.
AIS list sort	Press 〖Menu〗to pop up the main menu, select【AIS Function】and press〖ENT〗to pop up the AIS function menu, and then select【AIS Vessel Information】. Press〖ENT〗to open the AIS list, and then press〖ENT〗to pop up the AIS operation item. Select【Sort】and press〖ENT〗to select MMSI / Distance / SOG / COG/Name, then press〖ENT〗and the list will sort by the selected item.
View ship details in the list	Press 〖Menu〗to pop up the main menu, select【AIS Function】and press 〖ENT〗to pop up the AIS function menu, and then select【AIS Vessel Information】to open the AIS list. When the AIS target is selected, the ship's details are displayed on the right.
View AIS vessel chart location	Press 〖Menu〗to pop up the main menu and select【AIS Function】. Press 〖ENT〗to pop up the AIS function menu, select【AIS Vessel Information】and press〖ENT〗to open the AIS list. Then select an AIS target, press〖ENT〗to pop up the AIS operation, select【View】and press the〖ENT〗key to automatically jump to the chart position of the ship.
Correct chinese ship name	Press 〖Menu〗to pop up the main menu, select【AIS Function】. Press〖ENT〗to pop up the AIS function menu, select【AIS Vessel Information】and press〖ENT〗to open the AIS list, Select an AIS target, press〖ENT〗to pop up the AIS operation, select【Correct Ship Name】and press〖ENT〗to pop up the edit window, save the text after editing.

6-8 AIS Fleet Management

Join monitoring	Press 〚Menu〛 to pop up the main menu, select 【AIS Function】, and press 〚ENT〛 to pop up the AIS function menu. Select 【AIS Vessel Information】, press 〚ENT〛 to open the AIS list, select an AIS target and press 〚ENT〛 to pop up the AIS operation. Select 【Join Guard】 and press the 〚ENT〛 button to add the target vessel to the monitoring.
Modify group settings	Press 〚Menu〛 to pop up the main menu, select 【AIS Function】 and press 〚ENT〛 to pop up the AIS function menu, and then select 【AIS Guard】. Press 〚ENT〛 to pop up the AIS monitor window. Press 〚ENT〛 to pop up 【Group Operation】 , then select 【Modify Group Settings】 and press 〚ENT〛 to pop up the 【Modify Group】 to edit box.
Modification group membership	Press 〚Menu〛 to pop up the main menu, select 【AIS Function】 and press 〚ENT〛 to pop up the AIS function menu. Then select 【AIS Guard】 and press 〚ENT〛 to pop up the AIS monitor window . Press 〚→〛 to enter the member list, and then press 〚ENT〛 to pop up the member setting item.

6-9 Network Management

WiFi connection	Press the 〚Menu〛 key twice to enter the parameter setting. Select 【WiFi Management】 to Enter WiFi management page. Enter WiFi password for network connection.

7 Upgrade Instructions

7.1 Local Upgrade

Use the USB to upgrade the software, it can retain the original data, such as: track, route and other data. You can upgrade the software by following steps.

(1) Format the USB disk to FAT32 format.

(2) Download upgrade package.

You can find the upgrade link of the corresponding equipment model on the official website of Xinuo Information Technology (Xiamen) Corporation Limited or the Wechat Public Number (or from the dealer). Click the download link.

http://www.xinuo.com/downloads/XINUO/HM5912AIS-512M.rar

to download update file.

(3) Unzip Files.

(4) Upgrade software.

① Turn off the device.

② Insert the USB disk into the USB port.

③ Restart the device, the upgrade process and information will be displayed automatically on the screen, indicating that the device is upgrading the program.

④ After the upgrade is completed, upgrade successfully will be reminded on the screen. Please unplug the USB disk and restart the device again.

After completing these steps, you are successfully to upgrade the software.

7.2 Online Upgrade

(1) Connect to WiFi on the WiFi management page.

(2) Each time it is turned on or exceeds 24 hours, it will automatically detect whether there is a new version. When a new version can be updated, a prompt window will be popped up. Press the 〖ENT〗 to update it.

(3) You can also press the 〖Menu〗 twice to enter the parameter setting, select 【About Device】, and then select 【Online Upgrade】 to manually check and update.

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8 Parameter Configuration

Display Unit	HM-5912	HM-5912W	HM-5812
Display Type	Color TFT LCD		
Display Size	12.1 inch	12.1 inch	12.1 inch
Display Resolution	800 × 600pixels	800 × 600pixels	800 × 600pixels
Display Brightness	400cd/m^2	400cd/m^2	400cd/m^2
Language	English, Simplified Chinese, Traditional Chinese , Vietnamese		
Display Modes	Standard Chart, GPS data, AIS data, Navigation Chart, Full Chart, 3D Navigation, 3D+Chart , Compass , GNSS		
Memory Capacity	50,000 waypoints, 50,000 marker points, 500 routes, one route indicate 200 WPT,1000 tracks		
Interface	AIS Output 1 Ports, NMEA 0183 Output 2 Ports, NMEA 0183 Input 3 Ports(Mutual independent, Baud rate can be set indenpently)		NMEA 0183 Output 3 Ports, NMEA 0183 Input 3 Ports (Mutual independent, Baud rate can be set indenpently)
Chart	XINUO-MAP		
WiFi	802.11b/g/n		
Power Supply	DC12V~36V		
Power Consumption	13.2W or less (24 VDC)		
Enviromental			
Working Temperature	-15℃~+55℃		
Storage Temperature	-20℃~+60℃		
Waterproofing	IP65		
GNSS			
GNSS Receiver	72 Channels		
Receive Frequency	GPS L1 1575.42MHz, BDS B1 1561.098MHz		
Accuracy	GPS&BDS	2.5m (CEP50% open sky)	
	GPS	5m (CEP50% open sky)	
	BDS	5m (CEP50% open sky)	
Speed Accuracy	0.1m/s (50%@10m/s)		
Time to First Fix	Cold Start<30s, Hot Start<1s		
AIS Class B (HM-5912/HM-5912W)			
Frequency	156.025 ~ 162.025MHz		
Bandwidth	25KHz		
Modulation	GMSK/FM		
Data Rate	9600bps		
Number of AIS transmitter	1		
Number of AIS Receiver	2 (Contains A and B channels)		
AIS Channel A	161.975 MHz		
AIS Channel B	162.025 MHZ		
TX Power Output	2 W		
RX Sensivity	< -107 dBm @ 20% PER		
Standards (HM-5912/5912W)	IEC 62287-1, IEC 61108-1, IEC 61162-1, IEC 60945, ITU-R M.1371-5, IMO.A.694(17)		
Standards (HM-5812)	IMO A.694(17), IMO MSC 112(73), IEC 61108-1, IEC 61162-1, IEC 60945		

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