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CYPHO-150WS

[ AIS Receiver ]

# User's Manual





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Version 1.00

## WARNING

The equipment said in this manual must only be used to which it was designed. Improper operation or installation may cause damages to the equipment or personal injury. AMEC will not incur any liability of equipment damage or personal injury due to improper use or installation of the equipment. It is strongly recommended to read this manual and the following safety instructions before proceeding to installation or operation.

## SAFETY INSTRUCTIONS

### WARNING



**ELECTRICAL SHOCK HAZARD**  
Do not disassemble equipment. Only qualified personnel could work inside the equipment.

Improper disassemble or modification could cause electrical shocks, fire, or personal injury.

**TURN OFF THE POWER IMMEDIATELY IF WATER LEAKS INTO THE EQUIPMENT OR OBJECT DROPS INTO THE EQUIPMENT.**

Continue operating the equipment could cause electrical shock or fire. Contact your nearest distributor for service.

**AVOID OPERATING THE EQUIPMENT WITH WET HANDS.**

Electrical shocks could be resulted if operating with wet hands.

**PLEASE USE THE PROPER FUSE.**

Damage to the equipment or fire could be resulted if using the wrong fuse.

**MAKE SURE THE POWER SOURCE AND THE POWER INPUT OF THE EQUIPMENT ARE COMPATIBLE.**

Damage to the equipment and fire could be resulted if the power sources are not correct. Please check the correct power input on the adaptor.

### WARNING

**TURN OFF THE POWER BEFORE PROCEEDING WITH INSTALLATION.**

Proceeding with installation with the power on could cause electrical shock or fire.

**EVEN THOUGH THE EQUIPMENT IS WATERPROOF, PLEASE AVOID DIRECT CONTACT WITH RAIN OR SPLASHING WATER.**

Electrical shock or fire could be resulted if water leaks into the equipment.



### WARNING

**Warning Label**

A warning label (Figure 2-1-1) is attached underneath the equipment. Warranty of the equipment will be invalid if this label is detached or broken. AMEC and your local agent/dealer will not bare any responsibility of any damage to the equipment, or damage in related to the equipment, personnel injury, and etc. Reject the equipment if this label is detached or broken. Please contact your local agent/dealer if this label is missing.

**Warning**



Name: Warning Label  
No Warranty if this label is detached or broken.  
保固撕毀无效



## **FOREWORD**

ALLTEK MARINE ELECTRONICS (hereinafter called “AMEC”) thank you for choosing our CYPHO-150 Series Automatic Identification System Receiver. No matter where you sail, you can enjoy your voyage journey more having a better control on your surrounding sea with CYPHO-150 AIS receiver series onboard.

The equipment you have purchased is designed with precision performance and quality. Each of AMEC’s equipment has been strictly tested to meet the rigorous demands of the marine environment. Unless improper use or false installation or maintenance, the equipment should function at its best.

**Thank you again for choosing AMEC product and wish you bon voyage!**



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# 1 INTRODUCTION

## 1.1 CYPHO-150X Series Overview

The AMEC CYPHO-150X (any CYPHO-150 model) is an AIS receiver. It receives AIS navigation data from AIS-equipped vessels nearby and the data is utilized to improve navigation safety. CYPHO-150X is designed to inter-operate with AIS Class A or Class B transponders, or any other AIS station operating on the AIS VHF data link.



CYPHO-150X is built with two parallel AIS receivers in one box. The default frequencies are standard marine VHF AIS channels, i.e. 161.975 and 162.025 MHz. Having CYPHO-150X AIS receiver on board, not only can you monitor the status of the vessels in the surrounding area, but also receive the dynamic information (position, speed, SOG, etc.), static information (ship name, MMSI, call sign, etc.), and voyage related information (cargo type, destination, etc.) from any vessels nearby that are equipped with AIS transponders.

Equipped with standard USB and NMEA0183, CYPHO-150X allows connectivities to most available peripherals in the market. Through USB, users are able to view AIS information on their preferred navigation chart software on their PCs or notebooks.

CYPHO-150X is IPX2 water resistant providing acceptable protection against water. It complies with international IEC 60945 standard and has gained CE/FCC conformity. You have made a smart choice to ensure a happy and safety journey.

## 1.2 Comparison of CYPHO-150 models

Description	CYPHO-150	CYPHO-150WS
Number of AIS channels	2	2
USB port	1	1
NMEA 0183	Independent 1 input, 1 output	Independent 1 input, 1 output
NMEA 2000		Yes
WiFi		Yes
Built-in AIS splitter		Yes



### 1.3 Type of AIS

There are different types of AIS device as described below. The CYPHO-150X is an AIS receiver.

**Table 1-2 Type of AIS**

<b>Class A AIS Transponder</b>	<ul style="list-style-type: none"><li>• Transmits and receives AIS signal.</li><li>• Intended for vessels meeting the requirements of IMO AIS carriage requirement.</li><li>• It is mandatory for all commercial vessels that exceed 300 tons to be equipped with Class A AIS.</li></ul>
<b>Class B AIS Transponder</b>	<ul style="list-style-type: none"><li>• Transmits and receives AIS signal.</li><li>• Not necessarily in full accord with IMO AIS carriage requirements.</li><li>• It is not mandatory for vessels to be equipped with Class B AIS.</li><li>• Suitable for recreational vessel, in enhancing its safety at sea.</li></ul>
<b>AIS Receiver</b>	<ul style="list-style-type: none"><li>• Only receives AIS signal.</li><li>• Does not have transmitter to send out AIS signal.</li><li>• Suitable for recreational vessel that does not want to send out its vessel information.</li></ul>

### 1.4 AIS Message Type

The CYPHO-150X can receive AIS messages from both class A and class B AIS transponders. The message types are listed as below table. The messages in gray color are transmitted only from class A AIS device.





**Table 1-3 AIS Message Type**

Type of Message	Data Details
<b>Static Data</b>	Maritime Mobile Service Identity (hereinafter called "MMSI") number IMO number Call sign and name Type of ship Length and beam GPS Antenna location
<b>Voyage Related Data</b>	Draught of the ship Cargo information Destination Estimate Time of Arrival (hereinafter called "ETA")
<b>Dynamic Data</b>	Position of the vessel Coordinated Universal Time (hereinafter called "Time in UTC".) Course Over Ground (hereinafter called "COG") Speed Over Ground (hereinafter called "SOG") Heading Rate of turn Navigational status
<b>Dynamic Reports</b>	Speed of the ship Status of the ship
<b>SRM</b>	Alarm Safety

### 1.5 About This Manual

The manual contains installation instructions and operating information for different CYPHO-150 models. While most of the installation can be performed by the owner or the crew, a final commissioning can be done by your local agent/dealer when needed or required. AMEC and the local agent/dealer will not bear any responsibilities over any damages resulted in improper installation by unauthorized agent/dealer.



## 1.6 Important Notice



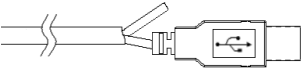



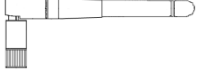
The intended use of the AMEC CYPHO-150 Series Automatic Identification System Receiver is to enhance the safety of vessels at sea. However, a few points must be addressed:

- Under certain regulations, some specified vessels are compulsory to be installed with AIS. However, this does **NOT** mean that all vessels will be equipped with ones. Any AIS will **NOT** guarantee to monitor and to receive signals from every ship in the surroundings.
  
- AIS acts as aids to navigation in the purpose of decreasing or preventing the possibility of vessel collision. It is not the absolute navigational equipment and does not replace any navigational system installed on board.
  
- Please keep the device at least 3.3 ft (1 m) away from the ship's navigation compass.
  
- This product is a marine AIS receiver intended for worldwide use on NON SOLAS vessels.

## 2 GETTING STARTED

### 2.1 Items in the Package

Please contact your supplier immediately if there is any item missing.

No.		Description	Qty
1	 150	CYPHO-150X AIS Receiver	1
	 150WS		
2		Power/USB/NMEA0183 Cable, 1m (Wired to the unit)	1
3		User's Manual	1
4		CD-ROM (User's manual in digital format, Configuration Utility, USB driver )	1
5		Mounting screws 4 M4x20	4
6	 150WS only	WiFi antenna	1

### 2.2 Power ON / OFF

All CYPHO-150 models are designed having no physical On/Off switch. Thus, the vessel's operation determines the unit's power status.

### 2.3 CYPHO-150 LED Indicators

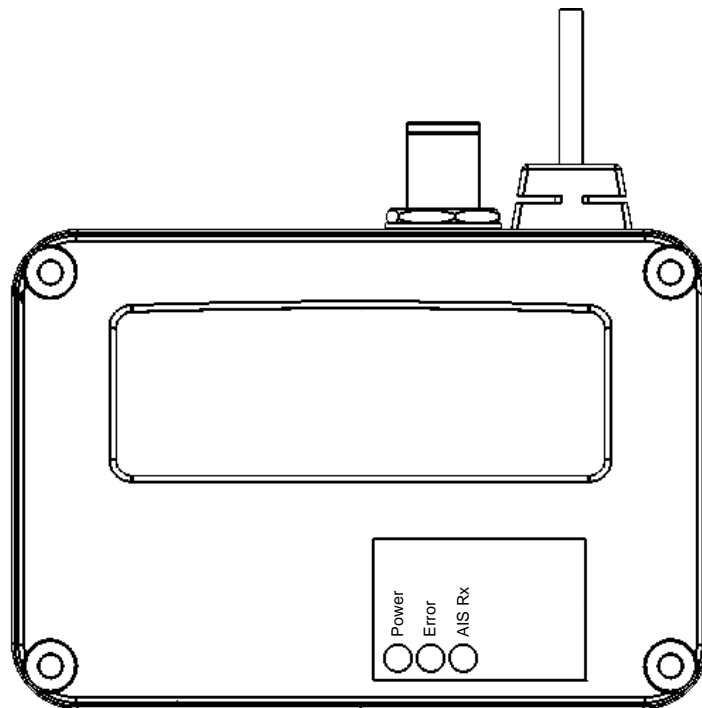


Figure 3-2-1 CYPHO-150 LED Indicators

Table 3-2 Power/Receiving Status Indicator

LED INDICATIONS		
Indicator	Indication	Description
Power	Normal Steady Green	Device in normal operation
Error	Flashing Red	Error is detected by the onboard system
AIS Rx	Flashing Green	Receiving of AIS message in either AIS Channel 1 or Channel 2

## 2.4 CYPHO-150WS LED Indicators

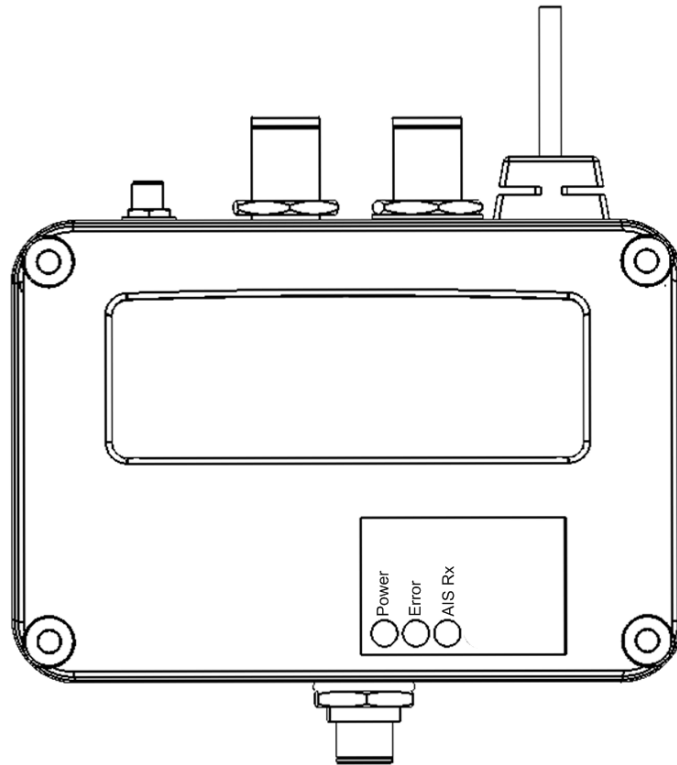


Figure 3-2-1 CYPHO-150WS LED Indicators

Table 3-2 Power/Receiving Status Indicator

LED INDICATIONS		
Indicator	Indication	Description
Power	Normal Steady Green	Device in normal operation
Error	Flashing Red	Error is detected by the onboard system
AIS Rx	Flashing Green	Receiving of AIS message in either AIS Channel 1 or Channel 2

### 3 INSTALLATION

#### 3.1 CYPHO-150 Connection Interface

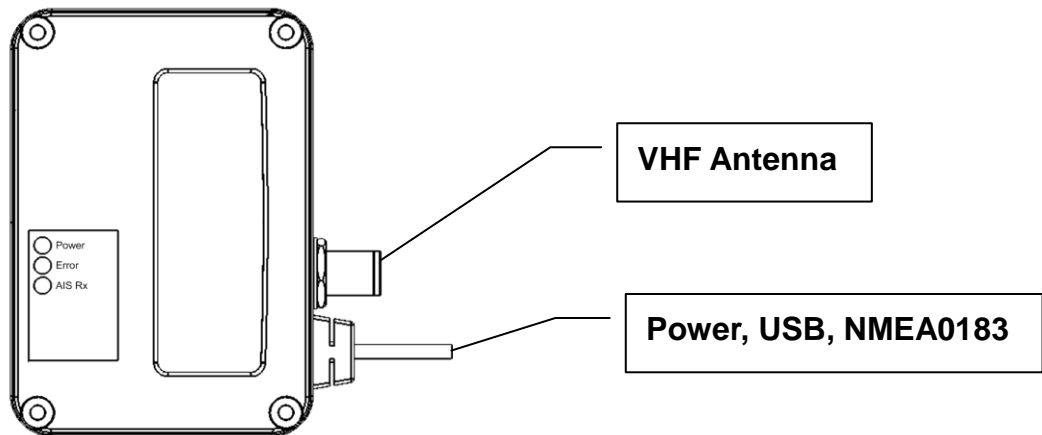


Figure 2-2-1 CYPHO-150 Connectors

#### 3.2 CYPHO-150 WS Connection Interface

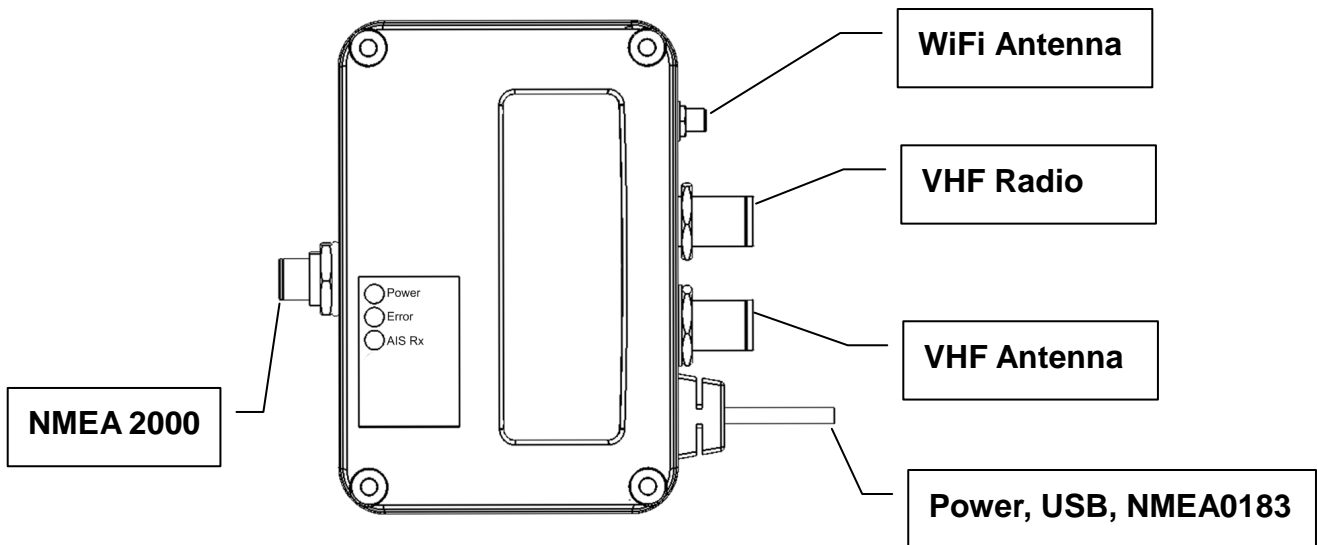


Figure 2-2-1 CYPHO-150WS Connectors

### 3.3 Installation Precautions

CYPHO-150 requires a protected installation environment away from water. Find a proper location prior to the installation process. If drilling holes are necessary, always wear eye goggle for protection.

### 3.4 Mounting Instructions

AMEC CYPHO-150X can be installed and mounted on either flat surface or wall.

Note: the mounting instructions apply to both CYPHO-150 and CYPHO-150WS models.

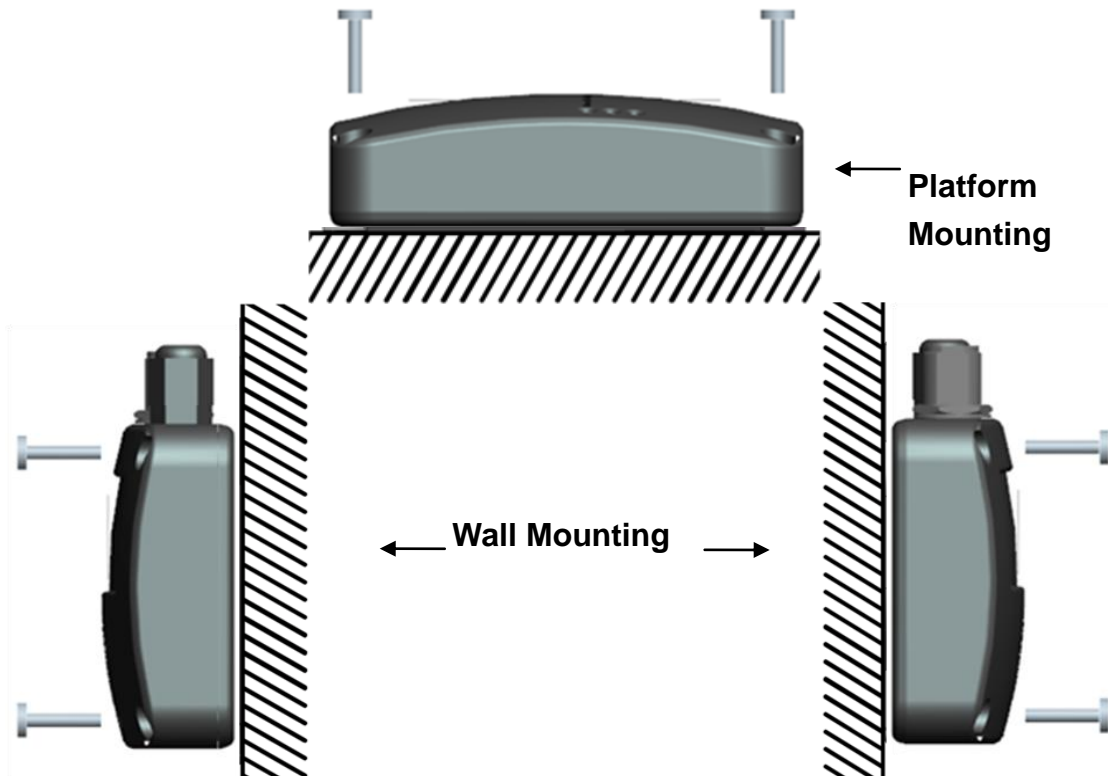


Figure 2-2-4-1 Installation



**Step 1:**

Place the Receiver on the desired location for installing.  
(Refer to figure 2-2-2-2)

**Step 2:**

Use the provided M4x20 screws to mount.  
(Refer to figure 2-2-2-2)

Figure 2-2-4-2 Installation Instruction

### 3.5 Wiring Instructions

Applicable to all CYPHO 150 models.

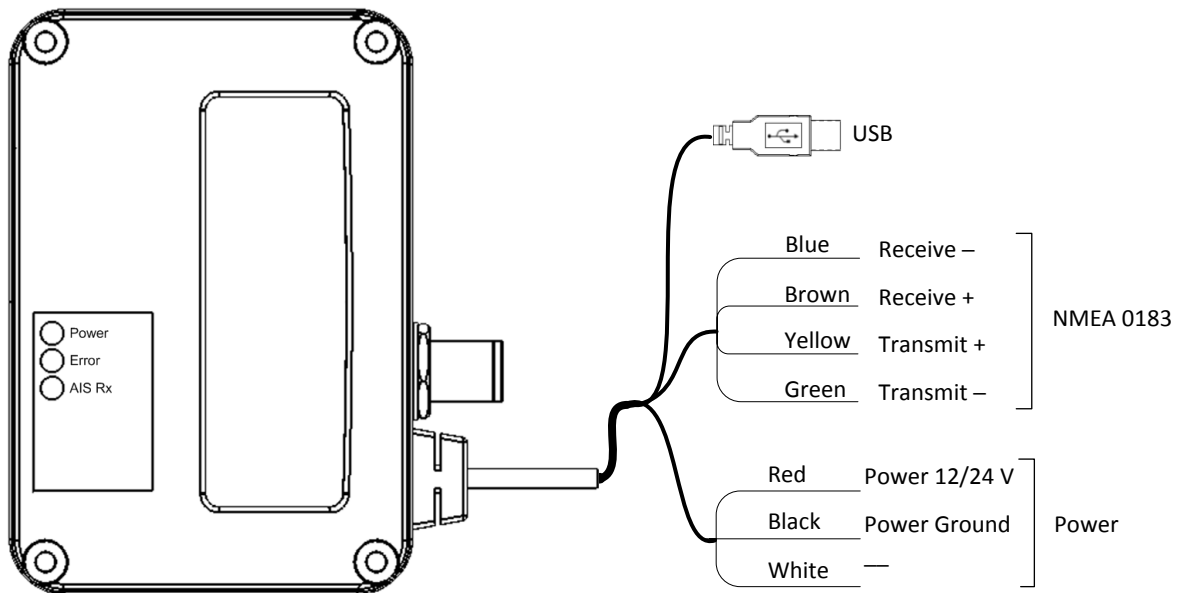


Figure 2-2-5 Wiring Instruction

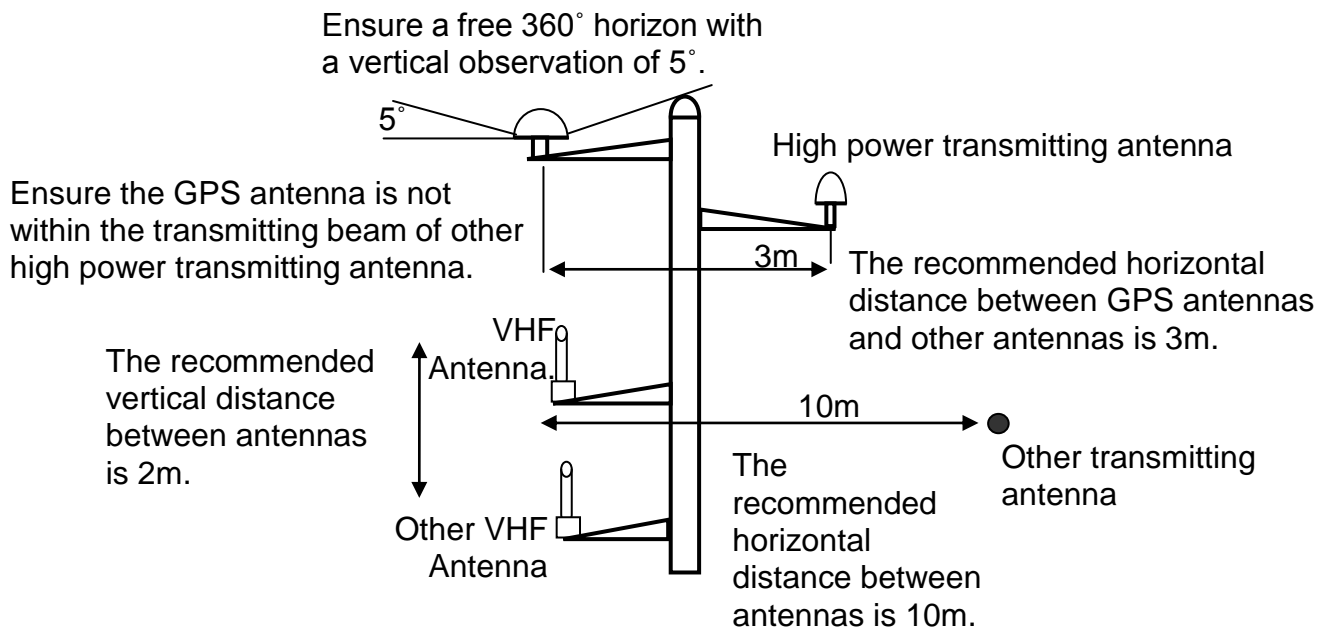
When wiring NMEA0183 to your AIS-ready equipment, please refer to your equipment manual first. CYPHO-150 supports three different baud rates: 4800, 9600, and 38400. The default baud rate is 38400. To change to other baud rates, requires configuration through the provided configuration utility.



### 3.6 VHF Antenna Installation

The quality and positioning of the antenna is the most important factor dictating AIS performance. It is recommended that a VHF antenna with omni directional vertical polarization be specifically tuned for AIS operation band. Since the range of VHF signals is largely decided by line of sight distance, AIS antenna should be placed as high as possible and at least 5 meters away from any constructions made of conductive materials.

To avoid interference, the VHF antenna location should be placed in accordance to Figure 2-2-6.

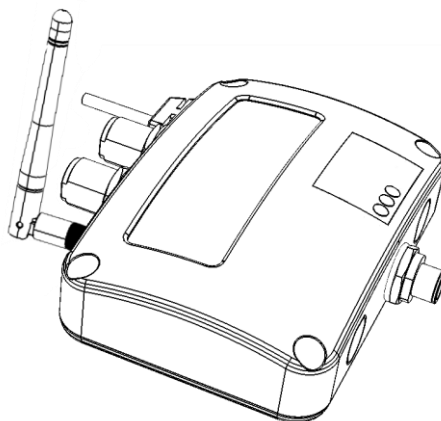


**Figure 2-2-6 VHF/GPS Antenna Location**

We recommend you choose AMEC AIS VHF antenna.




### 3.7 WiFi Antenna Installation (CYPHO-150WS model only)

Installation of WiFi antenna is straight forward. Screw on the antenna firmly and then raise up the antenna.



### 3.8 Antenna Cabling

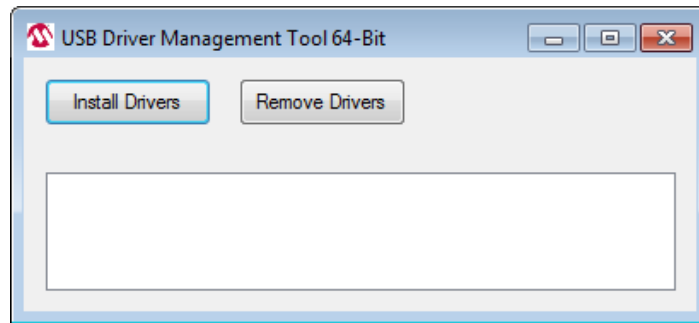
When connecting the cable(s) with the CYPHO-150, take note of the following precautions.

<b>NOTICE</b>	
	<b>DO NOT BEND CABLES</b> Bending cables may cause damages to the inner wires and impair overall the performances.
	<b>USES OF CABLE TUBE</b> Each coaxial cable should be set up separately and can only be set up in a single cable tube.
	<b>INSULATION ON CONNECTING PORT</b> Connecting port of the coaxial cable should be insulated.

### 3.9 USB Driver Installation

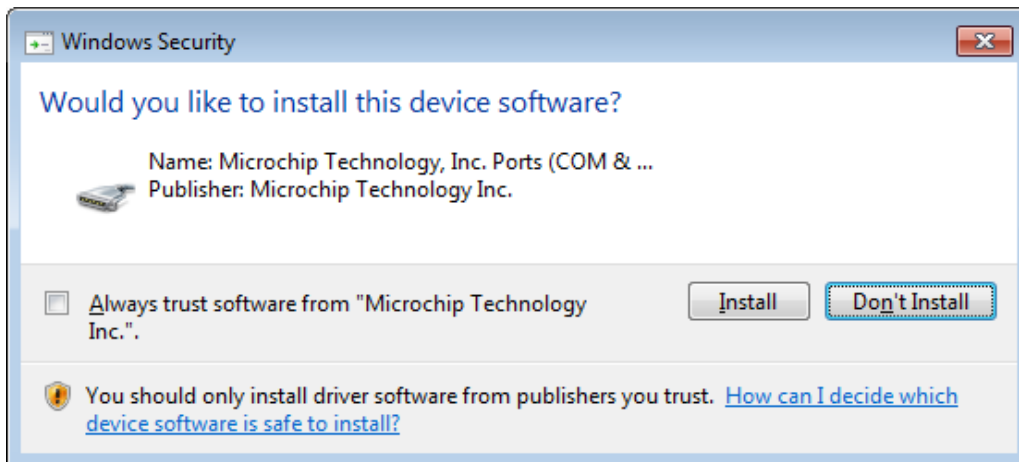
Your PC needs to install the USB driver in able to connect the AIS receiver. Locate the USB driver in the CD-ROM. Follow the instructions below to finish the installation.

**Step 1:** Open the USB Driver file and double click on **USBDriverInstaller.exe** to install the driver. Please click on **Install Drivers** to continue.



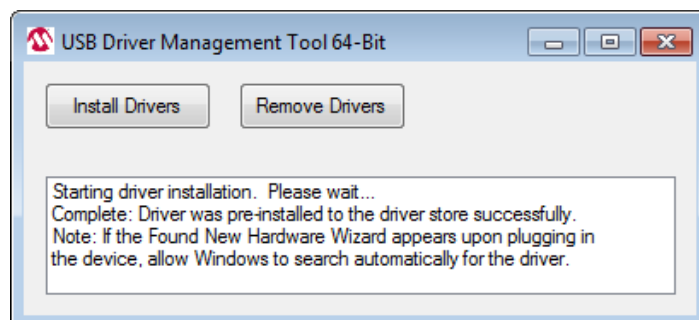
**Figure 2-3-1 USB Driver Installation**

**Step 2:** A security reminder appears and asks for your confirmation. Click **Install** to proceed.



**Figure 2-3-2 USB Driver Installation**

**Step 3:** Driver installation is completed. Close the window directly using the close window icon.



**Figure 2-3-3 USB Driver Installation**



### 3.10 CYPHO Configuration Software Installation

The AMEC CYPHO Configuration Software (**AmecCypko\_Config.exe**) configures the onboard NMEA0183 output rate.

**Step1:** Double click on **AmecCypko\_Config.exe**

**Step2:** You may either connect the receiver automatically or manually by using the determined USB serial port number assigned by the PC.

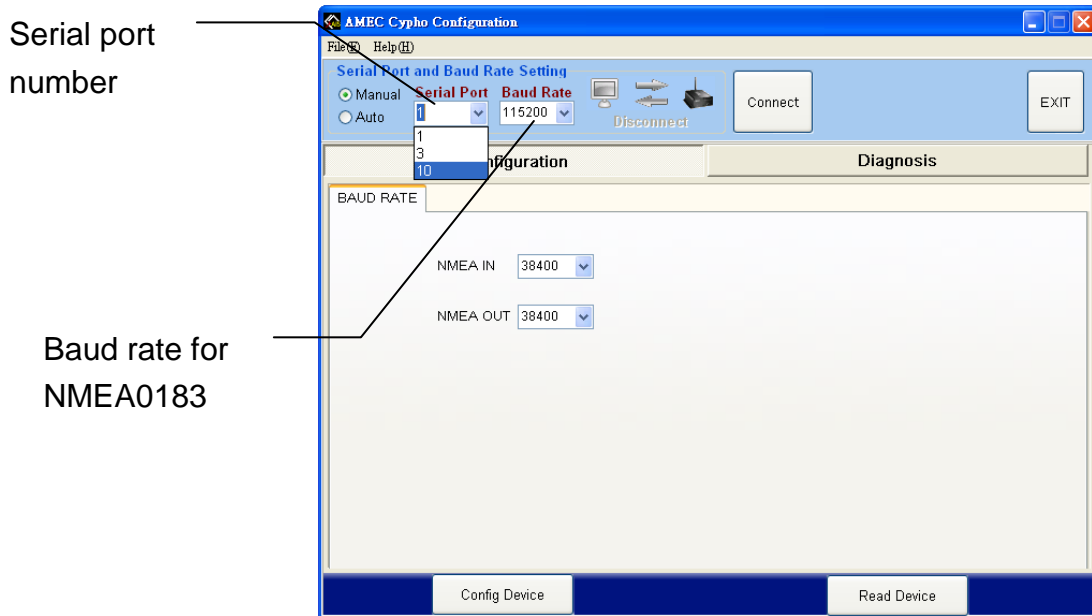
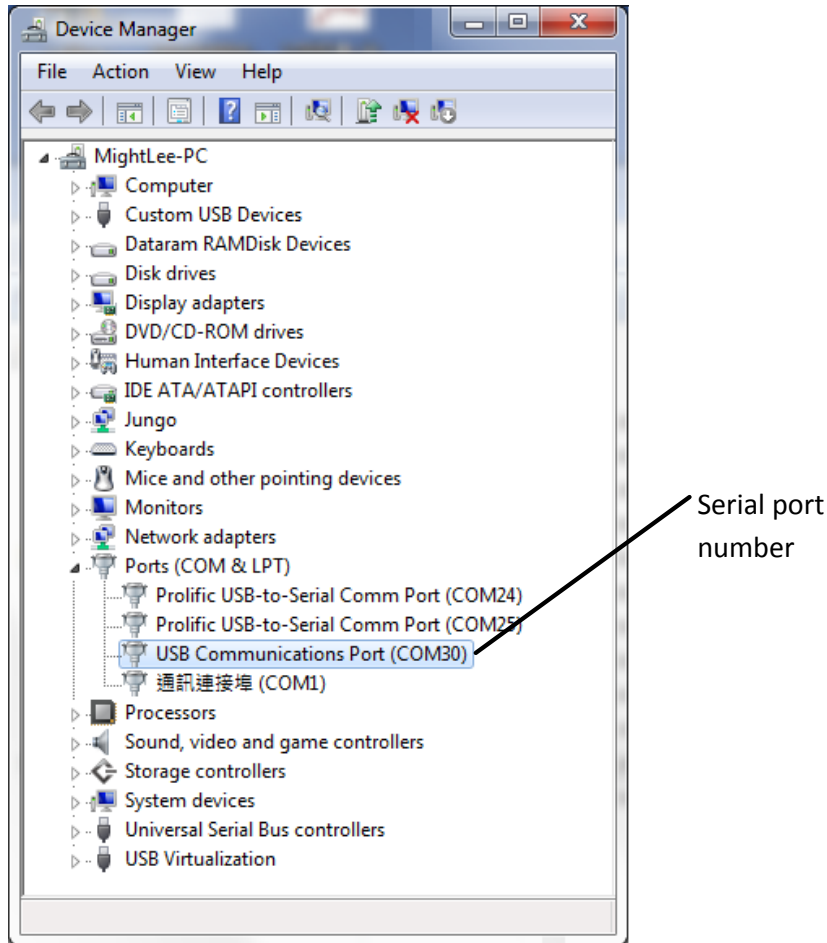


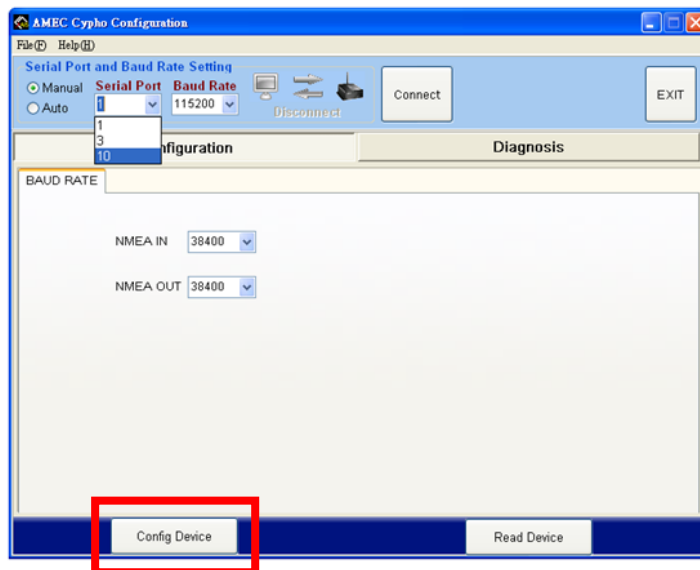
Figure 2-4-1 Configuration Software Installation

To find the serial port number, click **Start** → **Control Panel** → **Device Manager**. Expand the Ports section and look for **USB Communications Port**. In the sample picture below, the serial port number is 30.



**Figure 2-4-2 Configuration Software Installation**

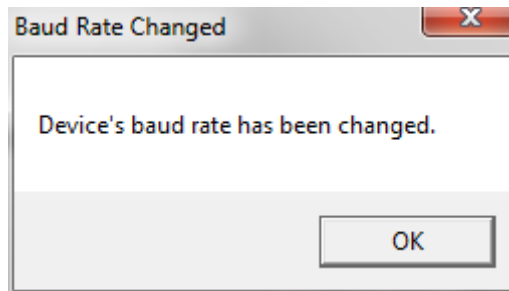
Enter the value and hit “Connect Device”. This will link the computer to the receiver.



**Figure 2-4-3 Configuration Software Installation**

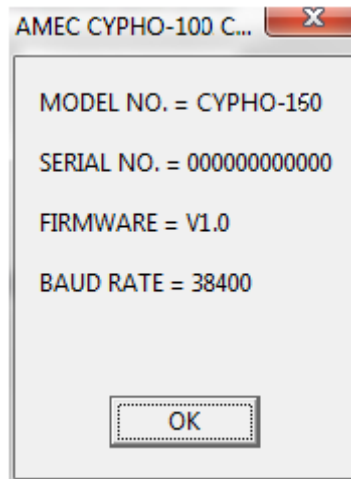


**Step 3:** Change to the desired NMEA0183 baud rate and click “**CONFIG**” to save the setting. The following prompt window appears.



**Figure 2-4-5 CYPHO-150 Configuration Software Installation**

**Step 4:** To verify the new settings, on the “**READ**” button to view current values.



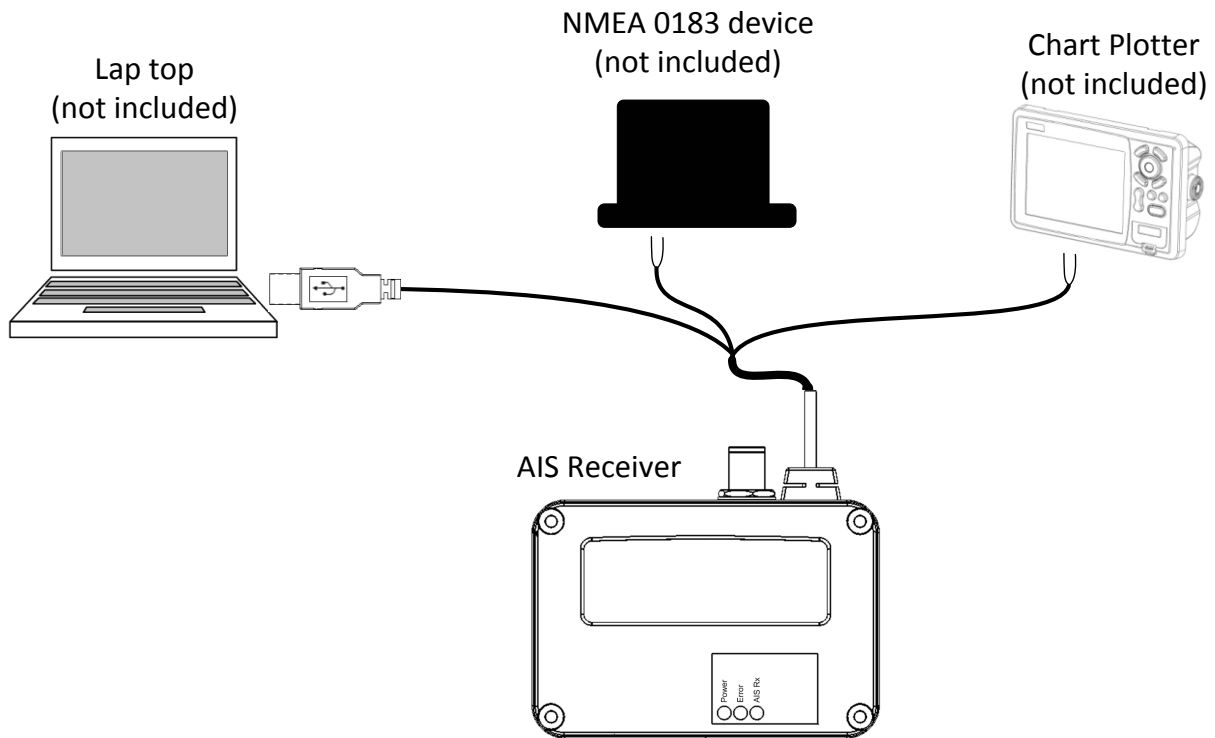
**Figure 2-4-6 Configuration Software Installation**

**Step 5:** Repeat step 3 to change to another baud rate.

**Step 6:** Click on “**EXIT**” to leave this configuration utility.

### 3.11 NMEA 0183 Multiplexer

All CYPHO-150 models are designed with both NMEA 0183 input and output wiring. Thus, the input and output ports support independent baud rates. For the advanced multiplexing configuration, CYPHO 150X gets input from one NMEA0138 device and pass to another NMEA0183 device together with AIS. See the illustration below.

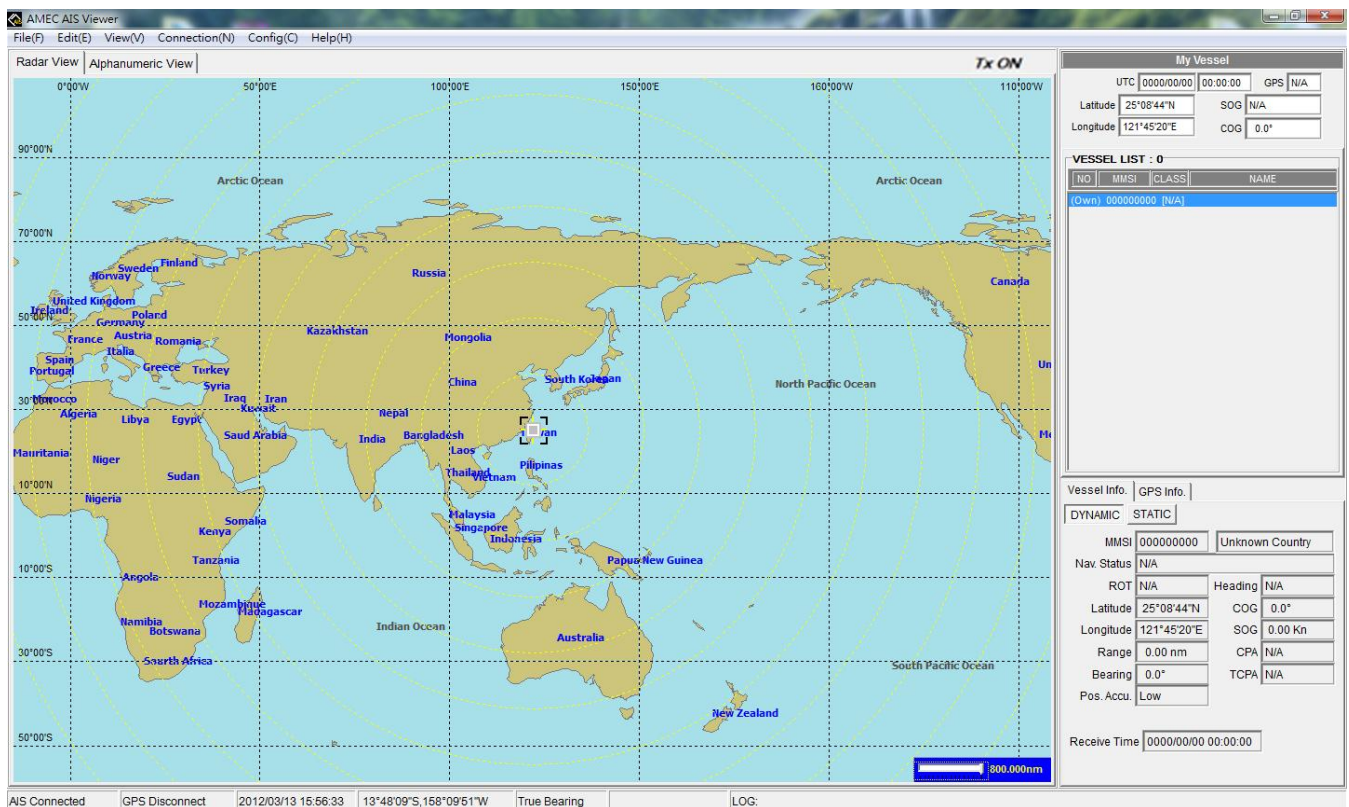




### 3.12 AMEC AIS Viewer Software Installation

AIS Viewer is a supplementary application that provides a simple access for user to view AIS information on PC. The application provides basic features to browse the relative positions of surrounding vessels and the dynamic and static information regulated by IMO. For professional uses, we recommend connecting AMEC CYPHO-150 Series with other marine electronic products such as ECS or Radar for better performances.

The program (AMEC AIS Viewer.exe) and its operation manual are included in the CD-ROM.







## 4 APPENDIX

### 4.1 Product Specifications

#### APPLICABLE STANDARDS

---

IEC 62287-1 (applicable parts)  
ITU-R M.1371 (applicable parts)  
IEC 60945 (applicable parts)  
IEC 61162 (applicable parts)

#### VHF RECEIVER

---

Number of AIS Receivers	2 channels
CH-1	Default CH 87B (161.975MHz)
CH-2	Default CH 88B (162.025MHz)
Channel Bandwidth	25KHz
Message Format	AIS Class A & B messages
Data Rate	9,600bps / per channel
Max. Usable Sensitivity	PER ≤ 20% @ -110 dBm

#### POWER SUPPLY

---

Supply Voltage	12 / 24V DC
Power Consumption	<1.50 Watt

#### LED INDICATION

---

CYPHO-150	Power, Error, AIS Rx
CYPHO-150WS	Power, Error, AIS Rx



### INTERFACE (CYPHO-150WS)

---

VHF Antenna Connector	Female Type M (PL 259)
NMEA 0183	38400 (default), 9600, 4800 bps
USB 2.0	Supported
NMEA 2000	Supported
WiFi	IEEE 802.11 b/g/n
VHF Radio	Supported

### ENVIRONMENTAL

---

Operating Temperature	-15°C~55°C
Storage Temperature	-25°C~70°C
Humidity Operation	0~95% RH at 40°C
Vibration	IEC 60945
Waterproof	IPX2

### PHYSICAL

---

Size in mm (w)	128mm
Size in mm (h)	36mm
Size in mm (d)	88mm
Weight	250g (with cables)

### WiFi (CYPHO-150WS model only)

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IEEE 802.11b/g/n

### RF PERFORMANCE (CYPHO-150WS model only)

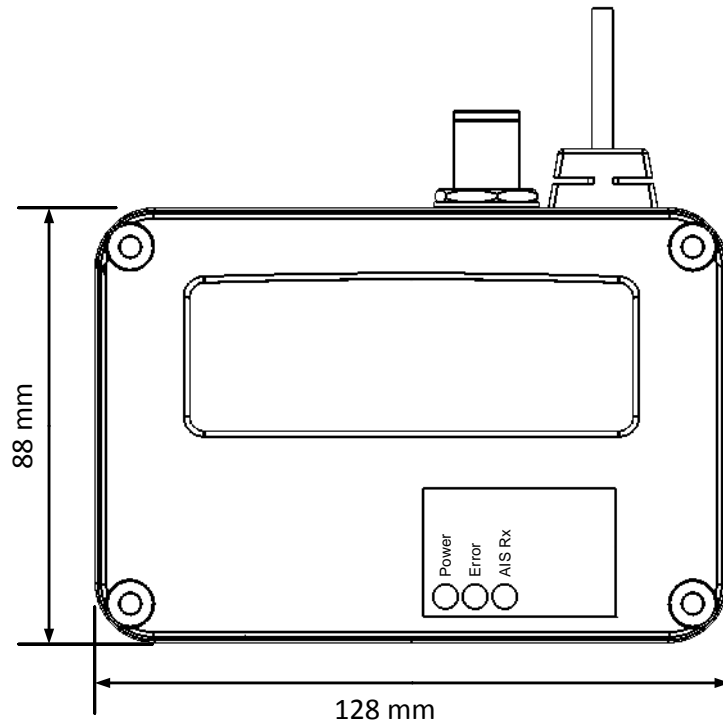
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AIS & VHF Radio Frequency Range	156.025 ~ 162.025
VHF port insertion loss:	
Receiver path	-3.5dB
Transmit path	-1.8dB

## 4.2 Dimensions

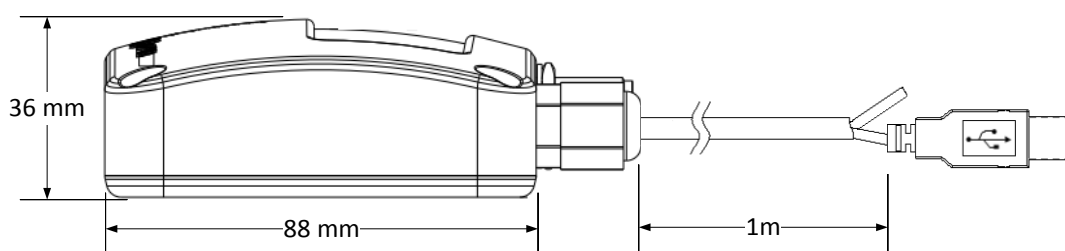
Applicable to all CYPHO-150 models.

### Front View



**Figure 5-2-1 CYPHO-150 Front View**

### Side View



**Figure 5-2-2 CYPHO-150 Side View**



### 4.3 Accessories (Optional)

The following accessories are available from AMEC. Contact our local dealer/agent for more details.

**Table 5-3 Available Accessories**

Item	Description	Product Code	Remark
1	VHF Antenna	TENTA-11	Length: 1,200 mm



#### 4.4 NMEA 2000 PGN Information (150WS Model only)

Transmit	
PGN	Description
59392	ISO Acknowledgment
59904	ISO Request
60928	ISO Address Claim
126464	PGN List - Transmit PGN's group function
126996	Product Information
129038	AIS Class A Position Report
129039	AIS Class B Position Report
129040	AIS Class B Extended Position Report
129041	AIS Aids to Navigation (AtoN) Report
129792	AIS DGNSS Broadcast Binary Message
129793	AIS UTC and Date Report
129794	AIS Class A Static and Voyage Related Data
129795	AIS Addressed Binary Message
129796	AIS Acknowledge
129797	AIS Binary Broadcast Message
129800	AIS UTC/Date Inquiry
129801	AIS Addressed Safety Related Message
129802	AIS Safety Related Broadcast Message
129803	AIS Interrogation
129804	AIS Assignment Mode Command
129805	AIS Data Link Management Message
129806	AIS Class A Position Report
129807	AIS Group Assignment
129808	DSC Call Information
129809	AIS Class B "CS" Static Data Report, Part A
129810	AIS Class B "CS" Static Data Report, Part B

Receive	
PGN	Description
59392	ISO Acknowledgment
59904	ISO Request
60928	ISO Address Claim



## 5 AMEC WORLDWIDE WARRANTY

### Limited warranty

Subject to the terms, conditions and limitations set forth in this Worldwide Limited Warranty (hereinafter the “Warranty”), AMEC warrants that its products, when properly installed and used, will be free from defects in material and workmanship for a period of twelve (12) months, from the date of first purchase (the ‘Warranty Period’)

For the purposes of this warranty, ‘date of first purchase’ means the date that the product was purchased by the first retail customer, or by the institutional customer, or in the case of a product installed on a new vessel or any other marine related platform by a certified AMEC original equipment manufacturer (a ‘AMEC OEM’), the date that such vessel was purchased by the first retail customer.

AMEC will, at its sole option, repair or replace any defective products or components returned during the Warranty Period in accordance with the terms, conditions and limitations set forth below. **Such repairs or replacement will be the sole remedy of the customer under this Warranty.**

### Standard Warranty Service

To qualify for standard warranty service the product must be returned to a AMEC-certified service agent (i) within the Warranty Period, and (ii) within thirty (30) days of the alleged product failure. Any products returned must be securely packaged and sent pre-paid and insured to AMEC or to a AMEC-certified service agent. All products returned must be accompanied by a copy of the original sales receipt to be eligible for standard warranty service.

### Obtaining Warranty Service

A list of AMEC-certified service agents is available from AMEC Technical Support at [www.alltekmarine.com](http://www.alltekmarine.com)

### Other conditions

This Warranty is fully transferable provided that you furnish the original proof of purchase to the AMEC -certified service agent. This Warranty is void if the label bearing the serial number has been removed or defaced.

### Limitation and Exclusions

In addition to any other limitations and exclusions set forth herein, AMEC is not responsible for, and this Warranty does not cover:

- Failure due to abuse, misuse, accident, unauthorized alteration, modification or repair,



- improper installation or operation (whether or not by a AMEC-certified service agent) or improper storage, shipping damage or corrosion;
- Costs associated with routine system checkouts, alignment/calibration, sea trials or commissioning;
  - Defects or damage that result from the use of non-AMEC branded or certified products, accessories or other peripheral equipment, including without limitation housings, parts, or software;
  - Aftermarket software (i.e. all software other than the original operating software sold with the products);
  - Products that have been refurbished, reconditioned, or remanufactured (The foregoing does not apply to products repaired or replaced pursuant to the terms of this Warranty).
  - Products that have been dismantled resulting in the broken label on the Products;
  - Costs associated with overtime or premium labor costs;
  - Differences in material, coloring or size that may exist between actual products and the pictures or descriptions of such products in our advertising, advertising literature or on the Internet;

**TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE FOREGOING WARRANTY IS AMEC'S SOLE WARRANTY AND IS APPLICABLE ONLY TO NEW PRODUCTS PURCHASED WORLDWIDE. THE PROVISIONS OF THIS WARRANTY ARE IN LIEU OF ANY OTHER WRITTEN WARRANTY, WHETHER EXPRESSED OR IMPLIED, WRITTEN OR ORAL, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

THE LIABILITY OF AMEC TO A CUSTOMER UNDER THIS WARRANTY, WHETHER FOR BREACH OF CONTRACT, TORT, BREACH OF STATUTORY DUTY OR OTHERWISE SHALL IN NO EVENT EXCEED AN AMOUNT EQUAL TO THE TOTAL PURCHASE PRICE OF THE PRODUCT GIVING RISE TO SUCH LIABILITY AND IN NO EVENT SHALL AMEC BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL OR INDIRECT DAMAGES OR LOSS OF GOODWILL, REPUTATION, LOSS OF OPPORTUNITY OR INFORMATION, DATA, SOFTWARE OR APPLICATIONS.

SOME JURISDICTIONS DO NOT ALLOW EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM JURISDICTION TO JURISDICTION.

This Warranty supersedes and replaces all previous Warranties.

In the event that any term or provision contained in this Warranty is found to be invalid, illegal or unenforceable by a court of competent jurisdiction, then such provision shall be deemed



modified to the extent necessary to make such provision enforceable by such court, taking into account the intent of the parties.

No oral or written representations made by AMEC or any seller, reseller or distributor of the products, including employees and agents thereof, shall create any additional warranty obligations, increase the scope, or otherwise modify in any manner the terms of this Warranty.

All AMEC products sold or provided hereunder are merely aids to navigation. It is the responsibility of the user to exercise discretion and proper navigational skill independent of any AMEC product.

## **6 FCC INTERFERENCE STATEMENT**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: **1)** This device may not cause harmful interference, and **2)** this device must accept any interference received, including interference that may cause undesired operation.





## 7 DECLARATION OF CONFORMITY

Hereby, Alltek Marine Electronics Corp. (AMEC) declares that this CYPHO-150/150WS is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

## 8 ACRONYMS

AIS	Automatic Identification System
COG	Course Over Ground
CPA	Distance to Closest Point of Approach
CSTDMA	Carrier-sense time division multiple access
DSC	Digital Selective Calling
ECS	Electronic Chart System
ETA	Estimated Time of Arrival
GPS	Global Positioning System
IMO	International Maritime Organization
MMSI	Maritime Mobile Service Identity
SOG	Speed Over Ground
SRM	Safety Related Message
TCPA	Time to Closest Point of Approach
TDMA	Time Division Multiple Access
UTC	Coordinated Universal Time
VHF	Very High Frequency
VTS	Vessel Traffic Service