AMEC

[AIS SART]

PLOMO-500

USER MANUAL

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Version 1.32

WARNING!

The equipment said in this manual must only be used to which it was designed. Improper operation or installation may cause damage to the equipment or injury to personnel. 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	WARNING
 **ELECTRICAL SHOCK HAZARD.** Do not open the case of the equipment. Only qualified personnel could work on the interior of the equipment.	**TURN OFF THE POWER IMMEDIATELY IF THE EQUIPMENT IS EMMITTING SMOKE OR FIRE.** Continue operating the equipment could cause electrical shock or fire. Contact your nearest distributor for service.
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.	**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.
DO NOT DISASSEMBLE OR MODIFY THE EQUIPMENT. Improper disassemble or modification could cause electrical shocks, fire, or personal injury.	**DO NOT PLACE ANY LIQUID-FILLED CONTAINER ON TOP OF THE EQUIPMENT.** Electrical shocks could be resulted if the device is contaminated with liquid.
AVOID OPERATING THE EQUIPMENT WITH WET HANDS. Electrical shocks could be resulted if operating with wet hands.	**DO NOT CUT, SHORTEN OR LENGTHEN THE SUPPLIED CABLES BY AN APPROPRIATE SUPPLIER.** Improper change of cable length and connector could cause failure of transmitting signal.

Foreword

Congratulations on the purchase of PLOMO-500 AIS SART. PLOMO-500 is strictly tested to meet the rigorous demands of the marine environment. Unless improper use, installation**,** or maintenance, the equipment will function properly at its optimum.

The operation instructions contained in this manual is applied only to PLOMO-500. AMEC and the authorized local agent/dealer will not bear any responsibilities of damages resulted from improper installation by any unauthorized agent/dealer.

We thank you for choosing our product and we wish you a bon voyage.

Table of Contents

1 AMEC AIS SART PLOMO-500 Introduction

1.1 AIS SART Brief

AMEC's PLOMO-500 AIS SART is a self-contained radio transmitter used to locate a survival craft or distressed vessel by sending updated position reports using Automatic Identification System (AIS) class-A position report. Primary intended for use in a life raft or survival craft, an AIS SART can be deployed on board or in the water. GMDSS vessels from 300 to 500 GRT are required to carry one SART, and vessels over 500 GRT are required to carry two and since 2010.

AIS-SARTs have been a permissible alternative to radar SARTs under SOLAS regulations, however technically more superior over radar SART thanks to its accurate GPS positioning. The radar SART would appear only as a series of RADAR returns on the ships radar display leading to the SARTs location.

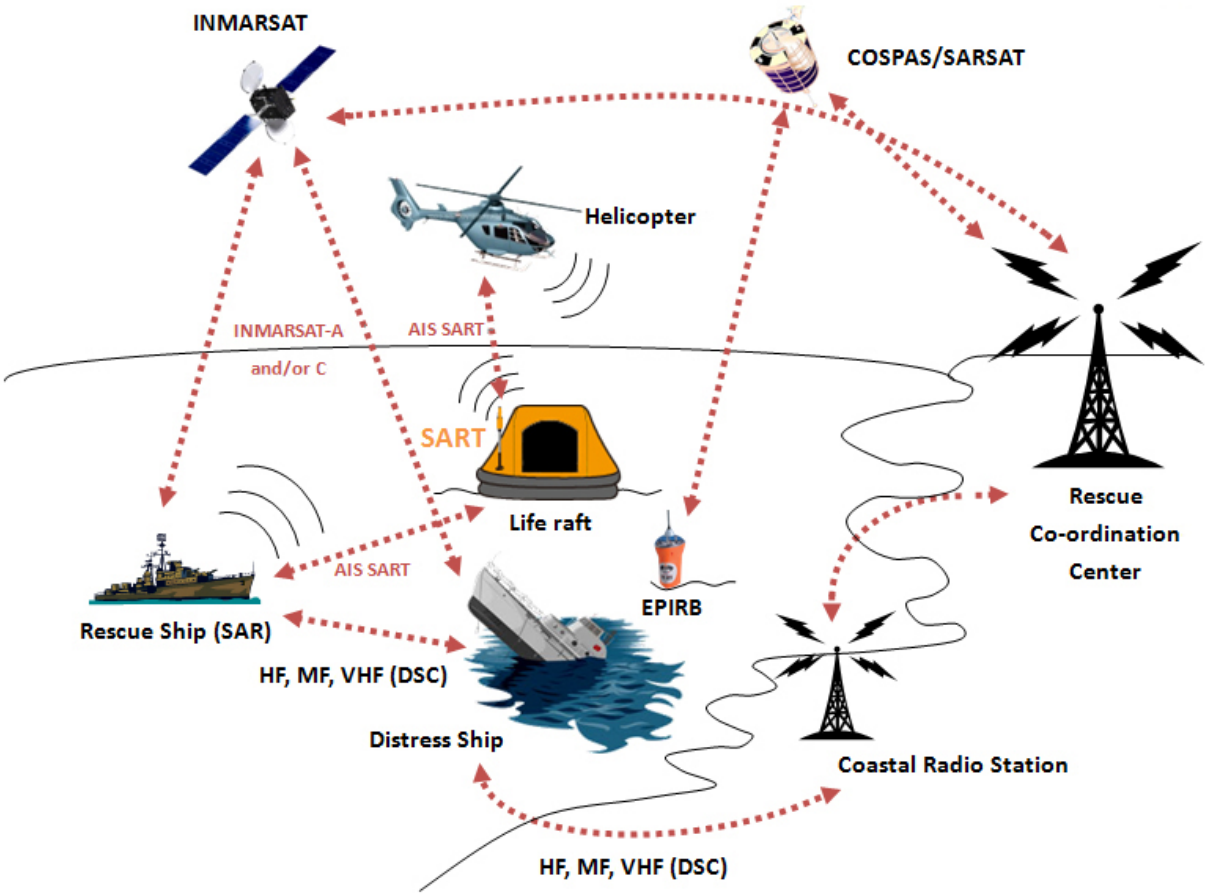


Figure 1 SART in Global Maritime Distress Safety System (GMDSS)

1.2 PLOMO-500 Overview

Only remove the RED anti-tamper Cap if you intend to operate the AIS SART in a real emergency. An AIS SART is a single use device, once activated and before returning it to storage a maintenance service battery replacement will be required.

The AIS SART is packed inside a buoyant carry bag with carry strap. The carry bag contains the AIS SART main unit, a 1-meter telescopic extension pole and 10 meters buoyant lanyard. The carry bag may be wall mounted using the wall-mount bracket provided.

The carry bag offers additional protection to the AIS SART both for storage and when carrying on to a survival craft. Once assembled and ready for deployment the main unit remains buoyant, waterproof and is tested to survive a 20m drop in to water without damage.

Figure 2 Carry bag of PLOMO-500

The control panel has florescent backlighting that increases its visibility in reduced lighting conditions. The ON button is protected from accidental activation under a single use anti-tamper cap. Once activated a dual color Red/Orange LED indicator provides real-time status induction and will flash the Morse Code “SOS” sequence.

Figure 3 AIS SART key features description

2 INSTALLATION

2.1 Items in the Package

The PLOMO-500 is typically delivered with standard package as shown in Table 2-1. It is also illustrated in Figure 2-1 (except manual).

Table 2-1 Standard equipment list

No.	Description		Qty
1	AMEC PLOMO-500 AIS SART		1
2	Manual		1
3	Installation Kit	Carry Bag	1
		1M Extension Pole	1
		Wall-Mount Bracket	1
		10M buoyant lanyard	1
		Screw M4x20	4

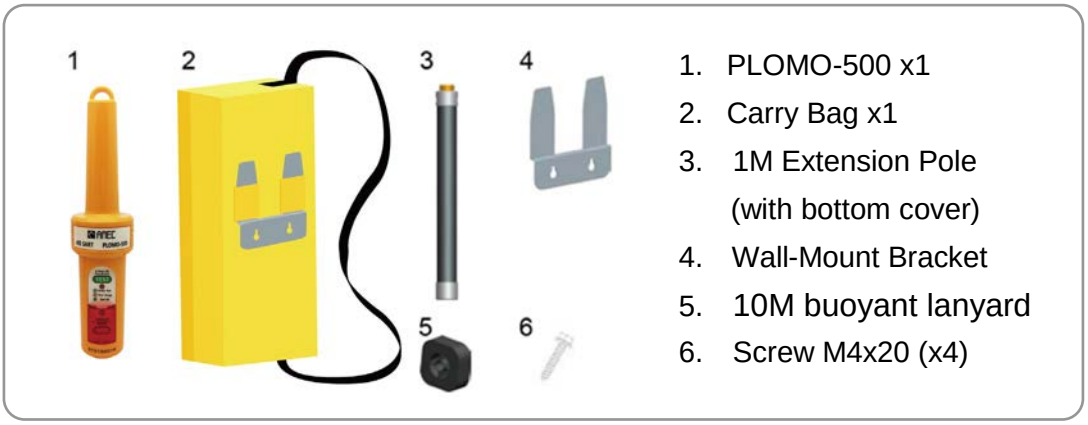


Figure 4 Standard package

2.2 Wall bracket installation

When selecting a suitable mounting position consider the following points:

1. Ease of access in an emergency, adjacent to the ship's bridge wing exits ready for easy access is recommended.
2. Position at least 1m from compass equipment.
3. Environmental protection, chose a protected location away from the extreme effects of the weather and protected from powerful vessel wash down hoses.
4. Allow clearance above so that the AIS SART can be easily removed from the bulkhead bracket.

Mounting procedure

Fix the mounting bracket to the ships wall using marine grade stainless steel screws or bolts; length is dependent upon application. Bolts should be secured with either stainless steel locking nuts or stainless-steel nuts with stainless steel shake proof washers.

The wall bracket is designed to mount on a flat surface using two fixing points. Two stainless steel screws 20mm in length are included. Check that the rear side of the mounting surface is clear and that the fixing screws will not penetrate something they should not. Offer the bracket into the chosen position and mark through the mounting slots using the bracket as a template.

Drop the AIS SART carry bag rear pockets over the bracket hook section and push the bag firmly into place.

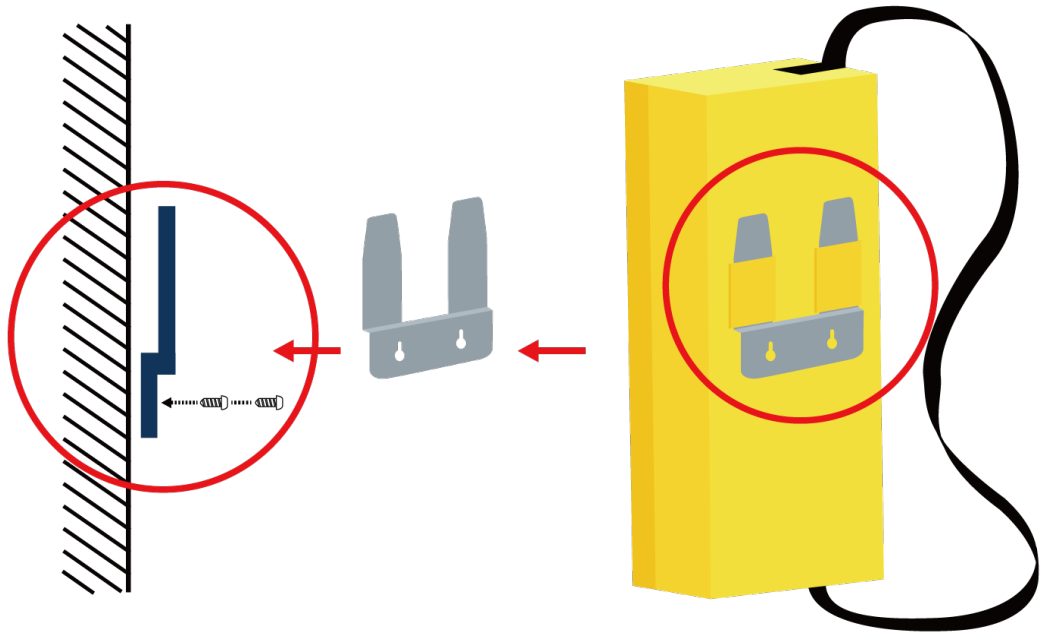


Figure 5 Wall mounting

3 EMERGENCY PROCEDURE

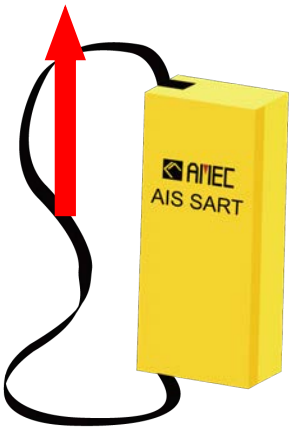
An AIS SART is a piece of life saving equipment. Its sole purpose is to help survivor location during SAR operations. It must only be used in situations of imminent danger.

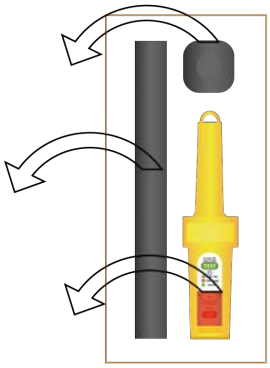
3.1 Abandon ship!

Step 1:
Lift Carry Bag out of bracket on the wall.

Step 2:
Bring Carry Bag and jump into a Life Boat.

Step 3:
Open Carry Bag and take AIS SART, Extension Pole and buoyant lanyard out





Step 4:
Connect and rotate extension pole into PLOMO-500.

Step 5:
Remove the bottom cover and extend pole up to 1 Meter

Figure 6 Deployment process

3.2 Activation Process

1. Pull and break the red Anti-tamper Cap to reveal the activation panel.

2. Press and hold the ON button for two seconds:

- The ON LED flashes Orange during GNSS acquisition
- The ON LED flashes Green once the GNSS fix is acquired.

WARNING: Do not cover or block the GNSS AREA while the device is active (see **Figure** 7)

Figure 7 GPS/GNSS AREA Location

NOTE 1: The GNSS receiver is activated (cold start) when ON is depressed and the Orange LED indicator will initially flash changing to a Green LED indication when a position fix has been resolved.

NOTE 2: The ON LED flashing sequence is the SOS Morse code flashed every 30 seconds.

NOTE 3: The red Anti-tamper Cap breaks once pulled out and cannot be re-installed by the user.

3.3 Deployment guidelines

The AIS SART will work best when the top section has an unobstructed view of the sky. If it is not possible to pick a location with a totally unobstructed view of the sky, do your best to maximize the sky view. The antenna datum marked on the pole section should be positioned more than one meter above sea level when the AIS SART is deployed.

Tie the securing lanyard to the survival craft to avoid loss of the AIS SART, activate and deploy the AIS SART.

Method 1

Step 1:
Release buoyant lanyard secured to top of the AIS SART

Step 2:
Hang the AIS SART inside the life raft at a height of at least 1 meter above water level

Method 2

Step 1:
Extend the pole up to 1 meter.

Step 2:
Pass the pole through the life raft canopy port hole and securer the pole in vertical position.

Tip.
Tie the lanyard cord between the AIS SART and the survival craft to prevent its loss.

Figure 8 deployment

3.4 Mounting outside a canopy life raft

1. Fully extend the telescopic mounting pole:

   Remove the rubber cover from the bottom of the mounting pole; allow the pole sections to drop. Lock each section together by twisting each section.

2. Release the lanyard spool and tether the free end of the lanyard to a securer fixing point within the survival craft.
3. Insert the AIS SART through the SART deployment port in the survival craft canopy. Position the bottom of the support pole within the locating pocket. Secure the pole to the canopy support.

Depending on the type of survival craft, the mounting pole can also be located on the outboard side of the survival craft at the doorway entrance on the boarding ramp side. The AIS SART is mounted in the same way except the pole is secured to the buoyancy support.

3.5 Mounting inside a canopy life raft

The SART should be switched ON and suspended at highest point of the survival craft; by its top loop using the lanyard provided.

Note: Operating the AIS SART inside a closed Survival Craft or under a canopy may reduce its performance.

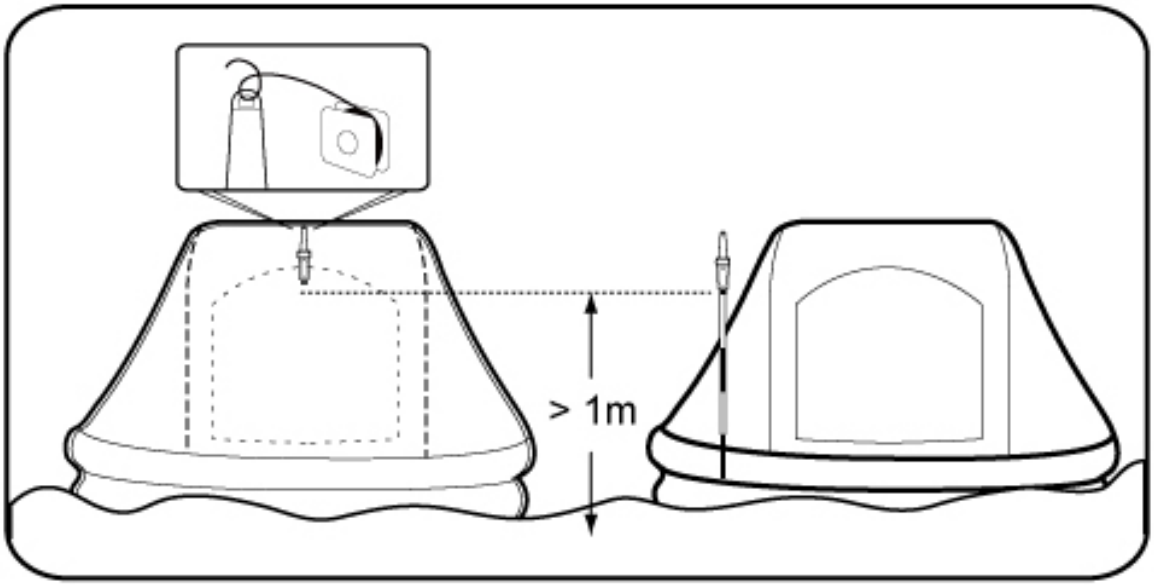


Figure 9 deployment options

3.6 Deactivation Process

1. Press and hold the TEST button for three seconds to initiate deactivation.
2. Keep pressing and holding the TEST button until the ON LED stops flashing:

   The AIS SART is deactivated.

Figure 10 Deactivation

NOTE: After de-activating, all LEDs shall be off. If any LED is still flashing, press the TEST button again for more than three seconds to de-activate the unit.

4 AIS SART TARGET VISUALIZATION

Under active or test mode, the AIS SART will transmit a message with a 9 digit TX ID number (MMSI) identity in the following format; 97016YYYY
The AIS SARTs GNSS derived position in latitude and longitude and the TX ID will be display on the vessels navigation display or AIS receiver equipment.

A SELF TEST mode generated message is displayed as “SART TEST”
The live emergency transmission is displayed as “SART ACTIVE”

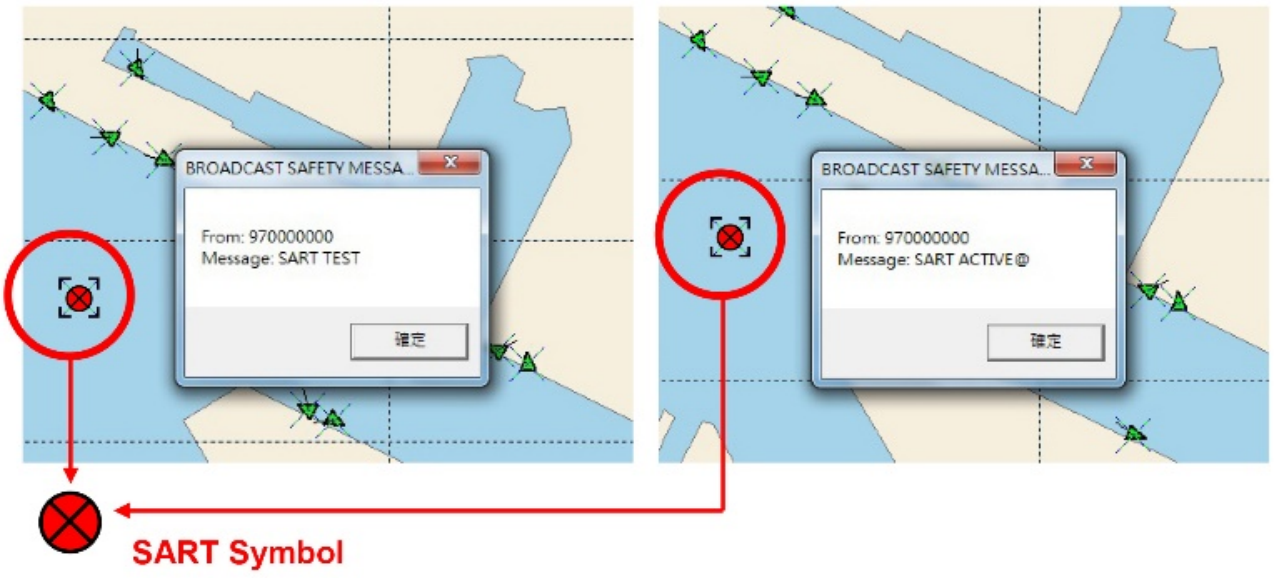


Figure 11 AIS SART Target Visualization

Some chart plotters may ignore the SART Test message for better integrity of normal AIS displays. Please check the user manual of your chart plotter / ECDIS to activate the AIS SART Test mode.

5 MAINTENANCE

5.1 Servicing schedule

As an important item of safety equipment, your AIS SART should be checked regularly according to the following schedule:

Service Interval		
1 month	**6 months**	**6 years**
Physical check	Physical check and Self-test	Dealer Battery replacement

All servicing should be carried out by an Approved Service Agent. Always call your nearest Approved Service Agent and talk to their customer service department before returning equipment. You can find your nearest Approved Service Agent from:

- The AMEC Group website: www.alltekmarine.com
- Contacting AMEC Group direct
- Contacting a distributor of AMEC products

If the AIS SART must be returned, the original packaging should be used if possible. Check your AIS SART for any damage or wear and tear according to the manufacturer's instructions (please refer to www.alltekmarine.com for further details).

5.2 Self-test & inspection

It is recommended to self-test the AIS SART every 6 months; more frequent self-testing can put unnecessary drain on the battery. When self-testing, a specially coded AIS test transmission is sent that will be visible to all AIS users in the locality. As a successful self-test result is dependent on GNSS position acquisition; testing must be carried out in the open and under an unobstructed sky.

5.3 Self-test procedure

Remove the AIS SART from its carry bag and assemble the top section onto the mounting pole. It is not necessary to fully extend the mounting pole. Take the AIS SART outside and hold it aloft under a clear view of the sky; this will then maximize the speed of the GNSS position fix.

1. Press and hold the "TEST" button for three seconds.

WARNING: Do not cover or block the GPS AREA while the device is active (see Figure 7)

2. The indicator will flash Green LED or Orange LED.

NOTE 1 – Normally the green flashing will happen in 2 mins right after the GPS/GNSS position is fixed. If it happens at the 5th minute, the SART message will be transmitted automatically, and GPS/GNSS position might not be fixed. Please move the AIS SART to a new location which has a clear view of the sky.

NOTE 2 – Orange flashing means the AIS SART has been previously activated or self-tested more than the maximum of 100 times.

Figure 12 Testing of AIS SART

Indicator	Meaning
Green	AIS SART is under testing without over usage warning
Orange	AIS SART is in under testing with over usage warning
1 long Green	AIS SART complete transmission and light-off after long green color flash automatically. Check your chart plotter/ECDIS if the SAR messages are received and whether the messages include valid GPS position.

NOTE 1 – "Over usage" is caused by the following three situations: battery is run down, unit has been tested over 100 times, unit has been activated before.

When the "Over usage" orange flashing appears, the AIS SART will still complete the test procedure. However, it's recommended to have the battery replaced and the electronic witness reset to ensure that your AIS SART has the battery power should the beacon requires it.

NOTE 2 – If the green or orange color is flashing over 3 minutes, GPS/GNSS position may not be acquired. Move the AIS SART to a different location with a clear view of the sky overhead.

5.4 Mechanical inspection

Inspection

It is recommended to physically check AIS SART routinely to verify:

- The battery expiry date has not been exceeded.
- Evidence of any damage to the main body, Wall mounted bracket, Carry bag, Extension Pole, Buoyant Lanyard.
- Evidence of dirt; to clean AIS SART only using fresh water then wipe dry.

WARNING – Do not use any chemical liquid on AIS SART or its accessories.

5.5 Anti-tamper Cap replacement

The AIS SART has a Red anti-tamper protection cap that will be broken during activation. An AIS SART is a single use device, once activated and before returning it to storage a maintenance service battery replacement will be required.

NOTE – To replace the anti-tamper cap and battery, please contact your local approved service agent.

5.6 Battery replacement

The battery pack should be replaced every 6 years or when it reaches its expiry date or if the AIS SART has been activated.

The battery pack expiry date is marked on the AIS SART main body label. The battery expiry date should be checked regularly.

Lithium batteries have special disposal requirements. Never incinerate a lithium battery. Never dispose of one at sea. Your approved service agent will be able to deal with battery disposal.

NOTE – It is recommended that battery change should be performed by an authorized service agent in order that a complete assessment and integrity check can be performed. To replace a battery pack, please contact your local approved service agent.

5.7 Transportation

This information is given in good faith and is believed to be accurate at the date of preparation. AMEC makes no warranty, either express or implied, with respect to this information, and disclaims all liability from reference on it.

Transport Information

Class: Class 9
UN Number: UN3091
UN Description: Lithium Metal Batteries Contained in Equipment
IATA Packing Instruction for Air: 970 Section II
Packing Instruction for Road & Sea: P903 Special Provision 188
For further information, please refer to the Alltek Marine website: www.alltekmarine.com .

5.8 GMDSS inspections

Vessel that are subject to GMDSS regulations can expect regular visits from ship surveyors enforcing national legislation. They might check the expiry dates and test the AIS SART to prove that it is operational.
Leisure vessels are not subject to these inspections. However, in some countries, passenger and fishing vessels are also subject to inspection.

6 APPENDIX

6.1 Product Specifications

APPLICABLE STANDARDS

IEC 61097-14 Ed.1 (2010)
IEC 60945 Ed. 4 (2002) incl. Corrigendum 1 (2008)
IMO Resolution MSC.246 (83)
ITU-R M.1371-5 (2014)

VHF

Operating Frequency	AIS 1, 161.975MHz AIS 2, 162.025MHz
Data Rate	9,600bps
Bandwidth	25 KHz
Power Output	1W EIRP
AIS Message Type	Message 1, Message
Modulation	14
Antenna	GMSK

GPS

Receiving Channels	72 channels
Reacquisition Sensitivity	(-)160 dBm
Tracking Sensitivity	(-)164 dBm
Position Accuracy	< 2.5 m Autonomous & SBAS

BATTERY

Type	Primary Lithium (not rechargeable)
Operating Life	96 hours minimum
Storage	6 years
Service	Replaceable *

*Please refer to Section 4.4 **Replacement**

CARRY & MOUNTING

Carry Bag
Wall

ENVIRONMENT

Operating Temperature	-20°C~55°C
Storage Temperature	-30°C~70°C
Waterproof	Immersion to 10m
Buoyancy	Floats
Exterior Finish	Highly Visible Yellow
Compass Safe Distance	Standard Magnetic – 0.60m
	Steering Magnetic – 0.40m

PHYSICAL

Max Diameter (Main Body)	70 mm
Length (Main Body)	300 mm
Weight (Main Body)	283g (Battery included)
Length (Pole)	1050mm (Extended)
Weight (Pole)	300g
Weight (Storage Package)	1.08kg

6.2 Dimensions

PLOMO-500 Front View

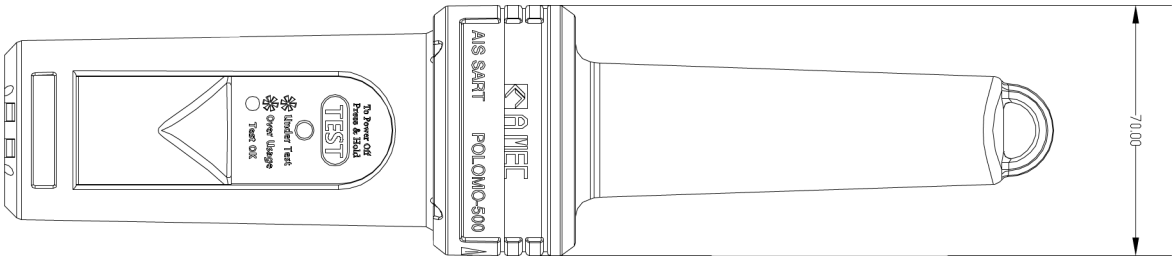


Figure 5-2-1 PLOMO-500 front view

PLOMO-500 Side View

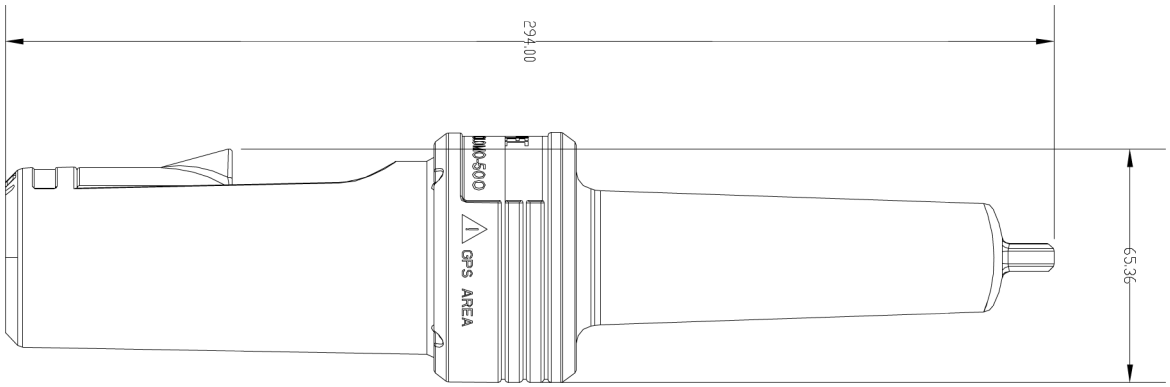


Figure 5-2-2 PLOMO-500 side view

Pole Front View

Figure 5-2-3 PLOMO-500 pole front view

Pole Side View

Figure 5-2-4 PLOMO-500 pole side view

Bag Front View

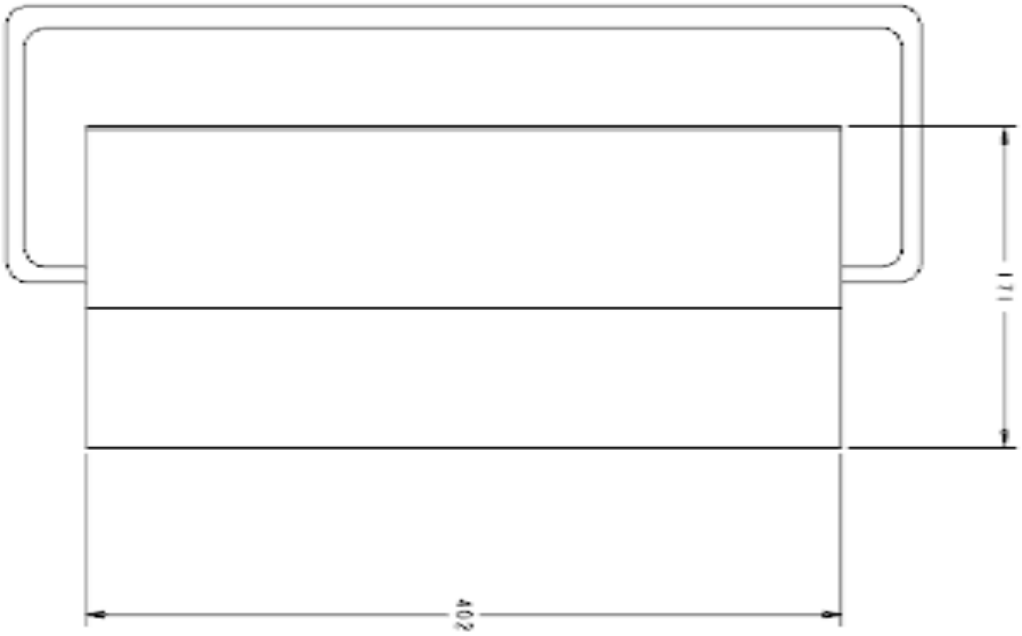


Figure 5-2-5 PLOMO-500 bag side view

Bag Side View

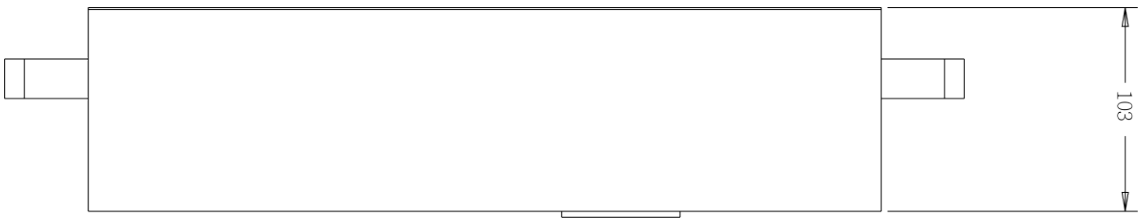


Figure 5-2-6 PLOMO-500 bag side view

7 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

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 PURCHAE 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 LOST 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 SPECIFICLEGAL 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.

8 DECLARATION OF CONFORMITY

Hereby, Alltek Marine Electronics Corp. (AMEC) declares that this PLOMO-500 is in compliance with the essential requirements and other relevant provisions of Directive 2014/90/EU.

A copy of the Declaration of Conformity can be obtained on-line from under “Download”:
http://www.alltekmarine.com/products_detail.php?bgid=7&gid=17

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