



# USER GUIDE

## TB-520 AIS Man Overboard Beacon

Keeping You Safe and Sound

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**WARNING:** This device is authorized for use only in a true emergency. Deliberate misuse may cause expensive rescue disruption and incur penalty.

**WARNING:** Please carefully read the instructions and get familiar with the test and activation procedures before using the device.

**WARNING:** An AIS-MOB Man overboard device is only intended for short range signalling to an AIS receiver installed onboard your own vessel. It will not directly alert the emergency services or other vessels.

**WARNING:** This equipment is not intended for routine tracking of persons or property. This includes tracking of divers.

**WARNING:** If self-test is performed more frequently than once a month, then battery life may be reduced.

- 1 -

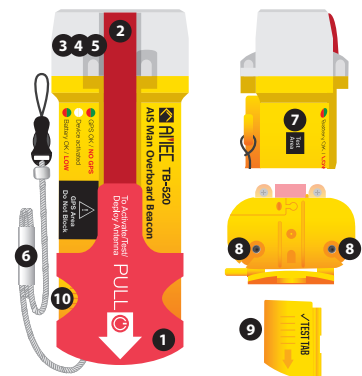
The AMEC TB-520 is a Man Overboard Beacon using AIS technology. It greatly enhances the chance of MOB retrieval by alerting nearby vessels equipped with AIS.

In emergency situations, the beacon can be activated either automatically by water sensor or manually and send out alert messages, GPS position information and a unique ID. Its high performance GPS receiver enables the beacon quickly obtaining GPS coordinates.

Built with state-of-the-art technology, TB-520 is small and lightweight, easy to use and totally reliable to keep your journey safe and sound.

### 1. TB-520 Overview

- 1) Antenna cap
- 2) Antenna
- 3) Battery LED (Green/Red)
- 4) Strobe LED
- 5) GPS LED (Green/Red)
- 6) Lanyard (to prevent loss of parts)
- 7) Test area
- 8) Water sensor
- 9) Test tab with magnet on back side
- 10) Activation tab



- 2 -

### 2. Equipments in the Box

- TB-520 AIS MOB x1
- Carrying pouch x1
- User guide x1
- Oral clip x1
- Test tab x1



### 3. Installing TB-520 on Lifejacket

#### 1) Strap Clip

The TB-520 is supplied as default with a clip to attach the device to lifejacket strap.



#### 2) Oral Tube Clip

The TB-520 is delivered with an alternative clip which can be attached to the lifejacket's oral tube. The Clip is designed to be installed on left or right side of the oral tube.



- 3 -

### 4. Activating your TB-520

#### Manual activation:

- 1) Pull off the red antenna cap to release the antenna.



- 2) Pull the activation tab off the TB-520 and the device will start transmitting alert messages immediately.



#### Water sensor activation:

- 1) Pull off the red antenna cap to release the antenna.



- 2) When the water sensor embedded at the bottom side of the device is immersed in water for more than 3 seconds, the device will be activated and starts transmission.



- 4 -

## Note:

- 1) When activated, the high beam LED on device will flash SOS signal in Morse code format every minute.
- 2) Upon activation the device will transmit MOB ACTIVE signal every minute with Lat/Lon position information. In case the GPS location cannot be updated due to weather conditions, the last obtained Lat/Log GPS position will be sent.
- 3) As AIS MOB is still new on the market, not all chart plotters with AIS show the correct ☒ icon as recommended by the IMO. As a minimum, they will show the same icon as used for other craft - normally an ✓. The MMSI number dedicated for AIS MOB begins always with 972 which will differentiate AIS MOB from normal AIS targets. Please contact with your plotter manufacturer how they display ☒ on screen when there are further questions.
- 4) When the device is mounted in lifejacket, ensure the TB-520 remains out of the water, as water will inhibit the GPS receiver and may cause difficulties obtaining GPS coordinates.
- 5) Ensure that the blue area marked "GPS Area" is not shielded or covered in any way and always has a clear view of the sky. It is recommended that the Short Test is performed monthly. Return the TB-520 to a service centre for battery replacement if battery level is low.
- 6) Confirm that the battery expiry date shown is in date for the duration of intended use.
- 7) This product emits low levels of radio frequency energy during operation. Avoid handling the antenna once activated.

- 5 -

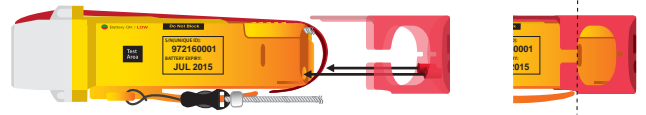
## 5. Turning off your TB-520

Insert the activation tab back in the unit and the transmission will be ceased. When the unit is activated by water sensor, pull the activation tab off and then reinsert the tab subsequently to turn off the transmission. Put the antenna back to its original position by wrapping around the unit, as well as, the antenna cap.



### 5.1 Closing the red antenna cap

Align the red antenna cap with the unit, longer side facing the front and the shorter side facing the back. Push the red antenna cap all the way until the antenna cap clip pass the wedge. The proper fitting of the red antenna cap ensures the water sensors are properly seal from the elements and thus prevent the unit from being activated when wet.



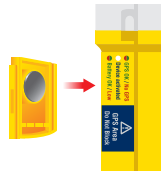
## 6. Testing your TB-520

The device is equipped with self test capability to perform 2 different tests to ensure the beacon is working perfectly. The first is a battery life test to check the beacon's battery power. The second test is a GPS self test that includes GPS activation and live test message transmission.

- 6 -

### 6.1 Battery Life Test

Start the battery life test by using the magnet found on the back side of the test tab to touch the Test Area for one full second.

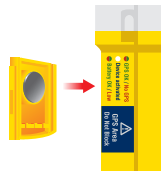


The high beam LED will flash once and the beeper will beep once signifying the device has entered into battery life test mode. The green flash indicates that the battery is ok. If your device flashes red light, this indicates low battery power and the battery needs to be replaced. The device will flash 3 times and beep once again to end the test.



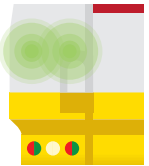
### 6.2 Full Function Test

As illustrated, start the full function test by using the magnet found on the back side of the test tab to touch the Test Area. Just like the Battery Test, the strobe LED will flash once and the device will beep once when the test magnet approaches the Test Area. Hold the magnet next to the Test Area for 3 additional seconds in which a second audible beep indicates the unit is in Full Function Test. The battery LED and GPS LED will commence to flash every 3 seconds to indicate the battery status and GPS locating status:



The green battery LED indicates that the battery is ok. If the battery LED flashes red light, this indicates low battery power and the battery needs to be replaced.

The green GPS LED next to the antenna indicates that GPS fix is achieved, the red GPS LED means that no GPS position is obtained.



As soon as GPS fix is achieved, the device will start sending MOB test messages, which will be displayed with a ☒ icon on all AIS systems within range. The Full Function Test will be completed with a beep, after 8 bursts of test messages are successfully sent. When no valid GPS data is obtained within 5 minutes, the Full Function Test is regarded as failed and will be ended with a beep as well.

In case of a failed Full Function Test, check and make sure that the antenna is pointing towards the sky and the "GPS Area" marked on the device is not obstructed by hand or other objects. When the Full Function Test fails a second time, return the device to your service center.

### Note:

- 1) You can interrupt the test mode any time by pull off the activation tab and then insert the tab subsequently. Please notice that under test mode, the device will not transmit distress message also when the activation tab is removed. Hence there is no risk of activating the alarm transmission when the user pulls the activation tab off to abort the test mode.
- 2) The MOB test message generated by a full function test will appear on all chart plotters with AIS within range in the form of a SRM (Safe Related Message). The message is "MOB TEST" with the device's MMSI number as sender's identity.

- 8 -

## 7. Specification

### APPLICABLE STANDARDS

IEC 60945	EN 303098 V2.2.1
IEC 61108-1	IEN 50385: 2002
EN 50383: 2010	EN 62311: 2008
EN 62368-1: 2014 + A11: 2017	

### GPS PERFORMANCE

Receiving Channels	72
Frequency	L1, 1575.42 MHz
Tracking Sensitivity	(-)163 dBm
Reacquisition	(-)159 dBm
Position Accuracy	< 2.0 m SBAS < 2.5 m Autonomous

### VHF PERFORMANCE

Frequency	AIS 1, 161.975MHz AIS 2, 162.025 MHz
Data Rate	9,600bps
Tx Power	2W (1W EIRP)
Bandwidth	25 KHz
Modulation	GMSK
Range	4nm typical with receiver antenna > 5m above sea level
AIS Message Type	Message 1 (UID, GPS position, SOG, COG) Message 14 (MOB ACTIVE or MOB TEST)

### BATTERY

Type	Primary Lithium (not rechargeable)
Operating Time	36 hours at -10°C, typical
Storage (battery life)	5 years, replacement due after emergency use

### ACTIVATION METHOD

Manual activating or automatic activating with water sensor by immersion

Note: Specifications are subject to change without prior notice.

- 9 -

### ENVIRONMENTAL

Operating Temperature	-20°C~55°C
Storage Temperature	-30°C~70°C
Waterproof	IP68
Immersion Depth (optional)	50m
Compass Safe Distance	0.8m
Explosion Proof (optional)	Ex ec mc IIC T6 Gc

### GENERAL/PHYSICAL

Model No.	TB-520
Size	129x52x40mm (L*W*D)
Weight	160 g (main unit only)

## EC Declaration of Conformity

Hereby Alltek Marine Electronics Co declares that this device is in compliance with the essential requirements R&TTE Directive. All materials, components and products supplied of the device are in full compliance with RoHS & Weee directives. A copy of the Declaration of Conformity can be obtained online from [http://www.alltekmarine.com/products\\_detail.php?bgid=8&gid=22](http://www.alltekmarine.com/products_detail.php?bgid=8&gid=22)

### RF Exposure warning

Warning: This device generates and radiates RF electromagnetic energy and requires a Maximum Permissible Exposure of 20cm by operation.

### Battery

- The lithium-ion battery in TB-520 should be replaced only by AMEC or an AMEC authorized service provider, and must be recycled or disposed of separately from household waste. Never attempt to replace the TB-520 battery yourself.
- Do not recharge, puncture, deform, short-circuit the lithium batteries contained in product or put it in fire.
- The small lithium metal batteries contained in the device can normally be carried on passenger aircraft in carry-on baggage as a personal item. Always check with air carrier for any additional restrictions.

### End of Life Statement



The symbol above means that your product and/or its battery shall be disposed of separately from household waste according to local laws and regulations.

- 10 -