ocean
S I G N A L

User Manual

safe SEA **E101V**

Emergency Position Indicating Radio Beacon
(Including Float Free VDR memory capsule)

English

www.**oceansignal**.com

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For ease of access please record details of your EPIRB here.

Owners Name: ....

Vessel Name: ....

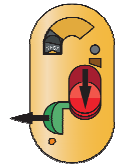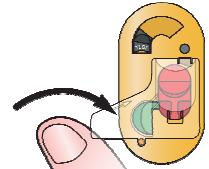Beacon HEX ID (UIN):...................................

IN CASE OF EMERGENCY

Use only in Situations of Grave or Imminent Danger

- **For Manual Activation**

- **Remove the EPIRB from the housing**

- **Make sure the antenna is folded out fully vertical**

- **Break off the protective cover**

- **Slide and hold the Green switch to the left, then slide the RED switch into the down position and release the Green switch**

- **The green led will flash to indicate activation**

- **The strobe light will start flashing to indicate it is activated**

- **Remove the lanyard cover**

- **Holding the free end of the lanyard, throw the EPIRB into the water.**

Refer to section 4.2 for deactivation instructions.

CONTENTS

1. GENERAL

1.1 Introduction

The SafeSea range of products provides the user with the latest technology specifically designed for compact size and ease of operation. The E101V is an Emergency Position Indicating Radio Beacon (EPIRB) with an integrated VDR memory capsule. It is intended as a float free memory capsule meeting the requirements of IMO Resolution MSC.333(90).

1.2 Exposure to RF Electromagnetic Energy

This product complies with EN62479 (EU) and RSS-102 (Canada).

1.3 Warnings

- It is a legal requirement to register your EPIRB with your National Authority.
- Only use your EPIRB in a situation of grave and imminent danger. Deliberately misusing your EPIRB or setting it off accidentally may result in prosecution and a fine.
- Your EPIRB contains lithium batteries. Please see section 6.2 for information on safe transportation.
- The battery in your EPIRB should be replaced immediately if it has been activated, or if the test indicator shows the battery as 'used', or if the expiry date marked on the unit has been exceeded.
- The E101V is supplied with an automatic release housing (ARH101V) with connection to the VDR. See the installation guidelines in section 2 for further information.
- Please read these instructions carefully. Failure to follow the guidance in this manual may result in loss of warranty.

1.4 Operating Mode

Your E101V may be operated in a variety of modes.

1.4.1 Floating in water (a)

This is the preferred method of operation. Ensure the EPIRB is firmly tied to the life raft or person before deployment.

1.4.2 On deck (b)

When deploying the EPIRB on a deck, ensure it is vertical and clear of obstructions that might impede a clear view of the sky.

1.4.3 In a safety raft (c)

The EPIRB may be deployed in a liferaft, where it should be held in a vertical position so that there is a clear view of the sky, preferably outside of the canopy.

a) EPIRB floating in water

b) EPIRB deployed on deck

c) EPIRB used in a liferaft.

1.5   COSPAS/SARSAT System

The COSPAS/SARSAT system utilises two satellite arrays to provide distress alert and location data to search and rescue authorities. The GEOSAR system can provide near immediate alerting within the coverage of the receiving satellite. The LEOSAR system provides coverage of the polar region beyond the range of the GEOSAR system. It can calculate the location of distress events using Doppler processing techniques and is less susceptible to obstructions which could block a signal in a given direction. The system is comprised of instruments on board the satellites which detect the signals from the distress beacons. Ground receiving stations, referred to as Local Users Terminals (LUTs) receive and process the satellite downlink signal to generate the distress alerts. The distress alerts, generated by the LUTs, are then received by Mission Control Centres (MCCs) which then forward the alert to Rescue Co-ordination Centres (RCCs), Search and Rescue Points of Contacts (SPOCs) and other MCCs.
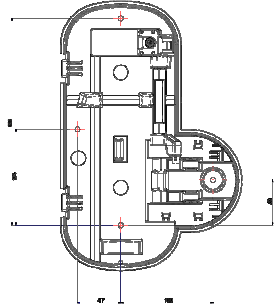
2.   Installation

The E101V should be mounted where it is easily accessible in an emergency.

Do not mount the EPIRB closer than 1 metre to any steering compass as this may affect the accuracy of the compass. Keep the EPIRB away from any strong magnetic sources such as loudspeakers, compass compensation magnets, etc., which might cause inadvertent activation.

2.1   VDR Installation

The E100V float free memory capsule should be mounted in an external position where it will not be impeded when the float free mechanism is automatically activated, irrespective of the orientation of the vessel when it is sinking. The position should be as high as possible on the vessel, but in a position where it can still be accessed to manually release and test the E101V. The ARH101 base should be mounted on a flat surface using the four screws provided at the positions shown in the dimensional drawing opposite.

2.1.1   VDR Connection

The E101V Float Free Capsule connects to the Main VDR system via a dedicated Ethernet connection. Please consult the VDR manufacturers User and Installation Manuals for further details of integration of the E101V with the VDR. The cable from the E101V housing should be connected as described below. The E101V memory capsule is completely isolated from the EPIRB battery and must be connected to either the ships supply (10.8-31.2Volts DC) or Power Over Ethernet (POE). Please follow the connection diagrams carefully to ensure correct operation.

- Feed the cable from the ARH101 housing through the gland of one half of the supplied waterproof cable housing and connect the RJ 45 connector as shown in the accompanying table and diagram.
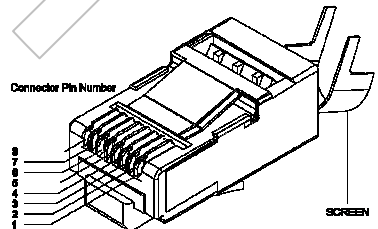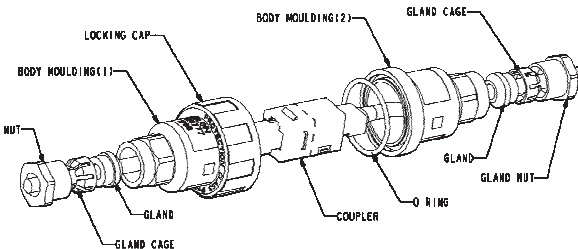
From Float Free		To VDR Network			
ARH101	RJ45	POE		Ships Supply	
Wire Colour	Pin	Wire Colour	Function	Wire Colour	Function
White/Orange	1	White/Orange	Rx+	White/Orange	Rx+
Orange	2	Orange	Rx-	Orange	Rx-
White/Green	3	White/Green	Tx+	White/Green	Tx+
Blue	4	Blue	DC+(POE)		Do not connect
	5		Do not connect		Do not connect
Green	6	Green	Tx-	Green	Tx-
	7		Do not connect		Do not connect
Brown	8	Brown	DC-(POE)		Do not connect
White/Blue	-		Do not connect	White/Blue	+ve (24V)
White/Brown	-		Do not connect	White/Brown	-ve (0V)
Screen	Ground				

- Pass the cable from the ship's network through the gland of the mating half and connect to the RJ45 connector as shown for POE or ship's supply options.

- Connect the two cables through the joiner and mate the waterproof cable housing together.

2.1.2 Ships Supply Connection

When connecting the E100V to the Ships supply, the included junction box must be used. This is fitted close to the VDR network switch and connected as shown in the diagram below, noting the polarity of the supply connections.
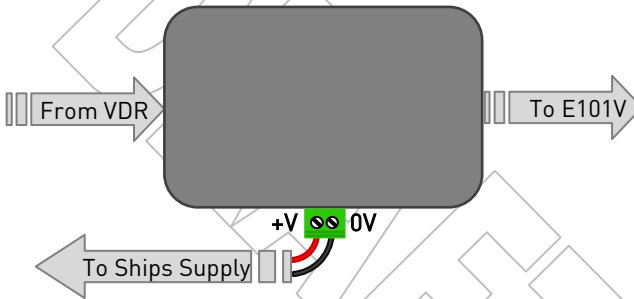
2.2 EPIRB Installation

- Take the HRU and locate the two retaining ridges at the bottom of the HRU onto the spring. Carefully push the HRU against the spring

- Push the HRU into position as shown. Push the locking pin with the retaining flange pointing down.

- Pull the HRU up and load the EPIRB into the housing, ensuring it locates into the upstand in the base. Gently release the HRU to lock the EPIRB in place.

- Plug the network cable from the E100V into the socket in the base, being careful to line the pins up correctly before pressing home.

- Replace the housing cover, making sure the cable and antenna are neatly stowed. Rotate the locking knob clockwise and insert the R-clip to lock it in place.
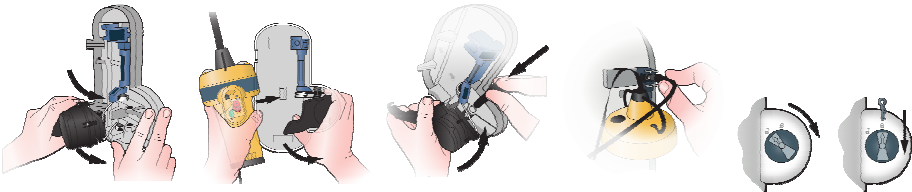
3. E101V OVERVIEW

1) Grappling loops

2) Strobe lights

3) Test switch

4) Break off protective tab

5) Interlock switch

6) Indicator LED

7) Activation switch
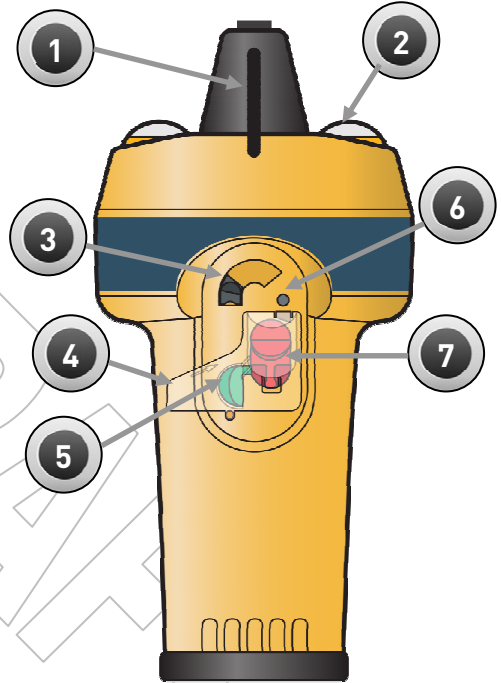
* The lanyard on the rear of the EPIRB is provided to attach the EPIRB to the life raft or your person, once it is activated. Do not use it to attach it to the ship, as this may result in the loss of the EPIRB if the vessel sinks.

It is important that the vessel details are marked on the EPIRB. The MMSI, Vessel Name and Call Sign are printed at the time of programming, where known. Cover this label with the clear protective label provided to protect the text from wear.

4. OPERATION

**WARNING: USE ONLY IN SITUATIONS OF
GRAVE AND IMMINENT DANGER.**

MISUSE MAY RESULT IN A SEVERE PENALTY

Ensure that your E101V is always fitted with an unused battery that is within the marked expiry date. Failure to do so may result in reduced operating time when used in a real emergency. Please observe the recommendations on testing in section 05.

4.1 Manual Release and Activation

⚠ Only activate your EPIRB in situations requiring emergency assistance from the rescue authorities. Deliberate misuse of your EPIRB may result in a fine.

- Remove the EPIRB by opening the auto release housing and remove the EPIRB. Release the housing by pulling the locking R-Clip out of knob pin. Press down and rotate the knob anti-clockwise to the

  unlock position.

- Remove the housing as shown
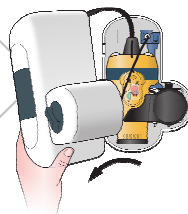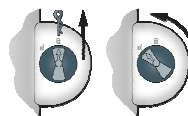
- Release the hydrostatic release unit by pressing down and removing the pin. Holding on to the EPIRB, pull the HRU away until the spring is fully released. This will also pull the network connector out of its socket. The EPIRB can now be activated.
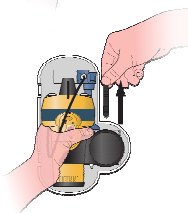
- To activate your EPIRB in an emergency, break off the clear protective tab.
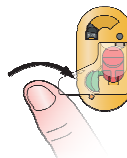
- Slide and hold the Green switch to the left, then slide the RED switch into the down position and release the Green switch
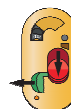
- During operation the green LED will flash once every five seconds while the GPS is turned on and obtaining a fix. Once a fix is obtained, the green LED will flash quickly three times.

- Each time a 406MHz transmission is made the LED will flash quickly five times; green for transmission with a GPS position and red for a transmission without a position.

- The Red LED will flash every 2.5 seconds while the 121.5MHz homing beacon is active.

- When operating the EPIRB in water, tether the beacon to your body or the liferaft.

- Hold your beacon with the antenna standing vertically. Keep the area marked 'GPS Antenna' free from obstruction, which would interfere with the GPS reception.

> The EPIRB does not transmit an alert until approximately 50seconds has elapsed. This allows time to deactivate the unit if accidentally turned on. The homing beacon is not activated until after the first alert is sent.

4.2   Deactivation

To deactivate your EPIRB after use or if it is accidentally activated, push the green switch to the left and slide the red switch fully upwards.

Should your EPIRB fail to deactivate using the red switch, fold up the antenna and completely wrap the EPIRB in several layers of aluminium foil, or place it in a metal container.

4.3   False Alerts

False alerts cause the rescue authorities unnecessary time and expense. To avoid false alerts make sure your EPIRB is safely stowed in the automatic release housing with the protective cover in place. Make sure that there is no excessive pressure applied to the protective cover. Ensure that anybody carrying the EPIRB is fully aware that this device is for emergencies and should only be used in situations of grave and imminent danger.

If you accidentally activate your beacon or otherwise set it off when a rescue is not required, contact your local emergency services as soon as possible and advise them of your beacon's 15 digit HEX code (UIN), your current location and the time the beacon was first activated.

For USA phone: 1-800-851-3051 (USAF Rescue Coordination Center)

For UK phone: +44 (0)1326 317575. (UKCG)

5.   TESTING

Routine testing of your EPIRB is recommended to ensure it is in good working order if needed, but please follow the guidance notes below on the frequency that tests should be carried out. Please remember that each test will reduce the battery capacity slightly and reduce the operation time of your EPIRB during an emergency.

5.1   Beacon test

To test your E101V is functioning correctly, Rotate and hold the grey test key for one second. The red LED will come on to indicate the switch is depressed, followed by the red LED flashing rapidly, indicating test mode is activated. The switch may now be released. The strobe light will flash once (indicating that the 406 and121.5MHz signal has been transmitted). The indicator LED will flash green or amber to show a pass or red to show fail status. The unit will automatically turn off. *Note: This status indication is repeated a second time after a short delay.*

The number of green/amber flashes in each group indicates the number of hours the battery has been used for as shown in the table below.

Self Test Result Indicator		
No of Flashes	**No of hours used**. Green/Amber Indicator*	**Type of Failure** Red indicator
1 Flash	0 to 1hr (Green)	121.5MHz homer
	1 to 2hrs (Amber)	
2 Flashes	2 to 4hrs (Amber)	406MHz generation
3 Flashes	4 to 6hrs (Amber)	406MHz power
4 Flashes	6 to 8hrs (Amber)	Faulty battery
5 Flashes	8 to 10hrs (Amber)	Other failure
6 Flashes	Over 10hrs (Amber)	

*Changes to Amber after 1 hour of use

Because the test transmits a short burst on the aircraft distress frequency of 121.5MHz, please only carry out this test in the first five minutes of each hour.

It is recommended to test your EPIRB once a month.

The amber test result indicates the battery has been used for over one hour or the allowed number of tests has been exceeded. The EPIRB will still operate normally in distress, but the battery should be replaced to ensure the full operating life when your EPIRB is needed.

5.2   GPS test

Warning: as testing the GPS receiver expends significant amounts of battery energy do not test the GPS operation more than once a year. Testing the GPS receiver is limited to 12 tests over the lifetime of the battery, after this the GPS test will fail to activate.

This test must only be performed where the EPIRB has a clear and unobstructed view of the sky. This is required to allow the GPS receiver to acquire a signal from sufficient satellites to allow it to determine a position. Make sure the area marked "GPS antenna" is not obstructed.

Rotate and hold the TEST key for ten seconds. The LED will illuminate red to indicate the key has been pressed then start flashing. Release the test key between 10 and 15 seconds.

🛈 If the TEST key is released before ten seconds, the EPIRB will enter the self test mode.

🛈 If the TEST key is inadvertently held for over 15 seconds, the LED will start flashing green. Release the TEST key and wait for 2 minutes before attempting another GPS test

After entering the GPS test mode the LED will change to a long red flash and a short green flash until either a position fix is obtained or the GPS test fails. A successful test will be indicated by the strobe flashing and the green LED flashing. The number of green flashes indicates the number of GPS tests remaining. The unit automatically turns off after the test indication.

If after five minutes the GPS receiver has not received a position, a failure will be indicated by the red LED flashing after which the unit will turn off.

The test can be ended at any time by rotating the TEST key for five seconds.

6.   APPENDIX

6.1   Maintenance and Troubleshooting

Your EPIRB will require little maintenance except periodic cleaning, if required. Always use a damp cloth to clean the case and dry thoroughly. Do not use solvents or other cleaning fluids as this may cause the plastics to deteriorate.

6.2   Batteries

The E101V contains Lithium batteries for long operating life. Your battery must be replaced either after the expiry date or after the EPIRB has been activated for over one hour. Battery replacement must be done at an Ocean Signal authorised battery replacement centre.

All Lithium batteries self discharge slowly over time at a rate that is related to temperature. Maximum performance of the battery is achieved with long term storage at an average temperature of no greater than 20°C.

6.3   Transport

When shipping your EPIRB the following guidance and regulations should be followed, but you are advised to contact your nearest battery replacement centre or Ocean Signal prior to shipping as regulations may have changed.

● Always pack your EPIRB securely in a stout cardboard carton. Ocean Signal advises that you keep the original packaging in case of return for service.

● For Road or Sea transport the E101V should be shipped as UN3091 packing instruction 903.

● For air transport the E101V should be shipped as category UN3091 and packed under IATA packing instruction 970 section 1.

6.4   Disposal

Care should be taken when disposing of your EPIRB when it is no longer required. It is recommended to remove the battery from the EPIRB by removing the case lid. The case screws are covered by the top labels. Dispose of the battery in accordance with local waste regulations. Please note that the E101V is not user serviceable and removing the lid will invalidate the warranty.

6.5 HRU Replacement

If you have an EPIRB mounted in a float free housing, this will also contain a HR1E Hydrostatic Release Unit (HRU). The HRU unit must be replaced two years after installation - the expiry date is marked on the HRU and on the front of the housing. If this date has been reached then the HRU must be replaced with an Ocean Signal HR1E, failure to do so may result in the HRU not operating correctly during an emergency situation.

1. Lift the release mechanism by pulling against the spring and remove the EPIRB from the housing.
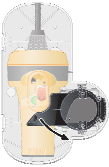
2. Push the HRU down against the spring and remove the locking pin. Carefully remove the HRU from the spring.
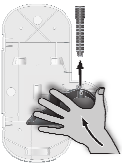
3. Using the new HRU, locate the two retaining ridges (at the bottom of the HRU) onto the spring. Carefully push the HRU against the spring.
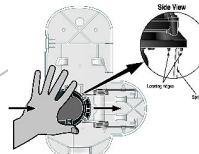
4. Push the HRU into position as shown. Push the locking pin home with the retaining flange pointing down. Load the EPIRB into the housing.
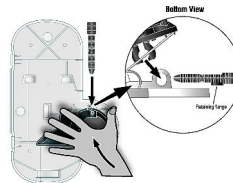
Mark the label on the HRU and the supplied label for fitting to the ARH101, with the expiry date using a UV resistant indelible pen. The expiry date should be two years after the date of installation, but no more than three years after the date of manufacture marked on the HRU.

6.6   Specifications

406MHz Transmitter

Frequency ....406.040 MHz ±1KHz
Output Power ....5W Typical
Modulation ....Phase ±1.1 Radians Pk (16K0G1D)
Encoding ....Biphase L
Rate..400 bps

121.5MHz Transmitter

Frequency .... 121.5 MHz
Output Power (PERP) .... 40mW±2dB
Modulation .... Swept Tone AM (3K20A3X)
Modulation Depth .... ~97%
Frequency Stability ....±50ppm
Duty Cycle .... ~35%

Low Duty Cycle Strobe

Light Type .... Dual High Intensity LED
Flash Rate ....20-30 per minute

Battery

Type.. Lithium Manganese Dioxide (LiMnO2)
Operating .... >168Hours @ -20°C
Battery Replacement Period 8years

GPS Receiver

Satellites Tracked ....66 Channel
Sensitivity .... -148dBm
Cold Start Re-acquisition .... -163dBm
GPS Antenna ....Microstrip Patch

General

Weight...1006grams

Environmental

IEC60945 Category .... Portable
Operating Temperature .... Class 2 -20C to +55C
Storage Temperature .... Class 2 -30C to +70C
Waterproof ....10m depth

Approvals

Cospas Sarsat standards T.001, T.007
Test standards.. IEC61097-2

6.7 Approvals

6.7.1 Marine Equipment Directive

The E101V is approved under the EU Marine Equipment Directive 96/98/EC as amended under Annex A.1/5.6.

6.7.2 Industry Canada Approval

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

6.8 Registration

It is a legal requirement to register your EPIRB with your national authority. Failure to do so may result in prosecution. Accurate registration will help the authorities if your EPIRB is activated and may speed up your rescue.

To register your beacon, contact your national registration authority via post, email or online. Provide your 15 digit HEX ID (UIN), 5 digit checksum if required, your contact details and emergency contact information. Some countries also require additional information such as boat type and identification or alternative emergency contacts.

For UK registrations go to: **For Australia go to:**

www.gov.uk/406beacon   www.amsa.gov.au/beacons

For USA registrations go to: **For New Zealand go to:**

 www.beaconregistration.noaa.gov/   www.beacons.org.nz

Details of other authorities may be found at www.406registration.com.

It is important to make sure that registration details are kept up to date and that the authority is advised of change of ownership or disposal of your EPIRB.

6.9   Limited Warranty

Your Ocean Signal E101V is warranted against manufacturing defects in materials and workmanship for a period of two years from the date of purchase and in accordance with the following conditions.

Ocean Signal will at its discretion, repair or replace faulty product free of charge excluding the cost of shipping. Proof of purchase shall be required in order for a warranty claim to be valid from the original purchaser. All claims shall be made in writing to Ocean Signal or an approved service dealer.

Ocean Signal shall not be liable to the buyer under the above warranty:

- for any repairs or modifications carried out on the EPIRB using parts that are not supplied or approved by the manufacture Ocean Signal including batteries and for work carried out other than by Ocean Signal or approved service dealers,

- for any part, material or accessory that is not manufactured by Ocean Signal the consumer will be covered by the guarantee / warranty offered to Ocean Signal by the manufacturer or supplier,

- for product which has not been fully paid for,

- for any product supplied by Ocean Signal to a customer under an alternative warranty agreement,

- for the cost of shipping product to and from the customer.

The battery is only warranted until the date of expiry and provided the unit is tested in accordance with the information in the user manual. This warranty does not apply to a used battery as indicated by the electronic witness (see page 8).

The following specific items are excluded from this warranty:

- break off cover,

- antenna,

- network connector.

This warranty does not affect your statutory rights.   This warranty is to be interpreted under English law.

For further assistance please contact our Technical Service Department.

Email: service@oceansignal.com

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