EPIRB3

Category 2 406MHz EPIRB (With AIS and RLS)

DOWNLOAD THE FULL USER MANUAL
oceansignal.com/products/epirb3

OWNER DETAILS

Name

Vessel

CONTACT

Tel.

Email

BEACON REGISTRATION

It is the owner's responsibility to register this beacon with the appropriate National Authority before operation.

Documentation is provided within the packaging with information regarding registration with the relevant body to comply with the required configuration of the beacon.

ATTACH YOUR BEACON DETAILS HERE

GET THE MOBILE APP. TO SEE YOUR BEACON'S TEST INFORMATION

Android iOS

912S-03969 v01.01 14/11/2022

6. Specifications

406MHz Transmitter

Transmit Power (EIRP)	12W
Frequency	406.031 MHz ±1KHz
Modulation	Phase ±1.1 Radians (16K0G1D)
Encoding	Biphase L
Rate	400 bps

AIS Transmitter

Transmit Power (EIRP)	1Watt±3dB
Frequency	161.975/162.025MHz ±500Hz
Baud rate	9600baud
Synchronisation	UTC
Messages	Message 1 (Position), Message 14 (Status)
Repetition interval	8 messages/minute Message 14 sent twice every 4 minutes

121.5MHz Transmitter

Transmit Power (PERP)	50mW±3dB
Frequency	121.5 MHz
Modulation Duty Cycle	>35%
Modulation Factor	0.85 to1.00
Frequency Stability	±50ppm
Duty Cycle	>98%

Strobe and Night Vision Lights

Light Type	High Intensity LED & Infrared (IR)
Light Colour	White and IR
Average Intensity Visible	>1 candela
Average Intensity Night Vision Light	15mW/sr
Flash Rate	24 per minute (nom.)

Battery

Type	Lithium Iron Disulphide (LiFeS2)
Operating Time	>48Hours @ -20°C
Battery Replacement Period	10 years

GNSS Receiver

Satellite Channels	72 acquisition
Sensitivity	-167dBm
Cold Start / Re-acquisition	-148dBm / -160dBm
GNSS Antenna	Microstrip Patch

General

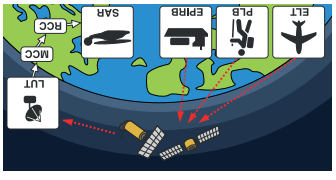
Dimensions of EPIRB (Inc. antenna)	410mm x 90mm x 101mm (16.1 x 3.5 x 3.9 in.)
Weight (EPIRB Only)	422grams (0.92lbs)
IEC60945 Category	Portable
Operating Temperature	Class 2 -20C to +55C
Storage Temperature	Class 2 -30C to +70C
Waterproof (EPIRB)	10m depth for 1 hour
Expected Life (EPIRB and Bracket)	In excess of 10 years

1. ABOUT YOUR AIS EPIRB

1.1 COSPAS/SARSAT System

The basic Cospas-Sarsat concept is illustrated in the adjacent figure. The System is composed of:

- distress radio beacons (ELTs for aviation use, EPIRBs for maritime use, and PLBs for personal use) which transmit signals during distress situations
- instruments on board satellites in geostationary and low-altitude Earth orbits which detect the signals transmitted by distress radio beacons
- ground receiving stations, referred to as Local Users Terminals (LUTs), which receive and process the satellite downlink signal to generate distress alerts
- Mission Control Centers (MCCs) which receive alerts produced by LUTs and forward them to Rescue Coordination Centers (RCCs), Search and Rescue Points Of Contacts (SPOCs) or other MCCs



The Cospas-Sarsat System includes two types of satellites:

- satellites in low-altitude Earth orbit (LEO) which form the LEOSAR System
- satellites in geostationary Earth orbit (GEO) which form the GEOSAR System

The future Cospas-Sarsat System will include a new type of satellite in the medium-altitude Earth orbit (MEO) which will form the MEOSAR System.

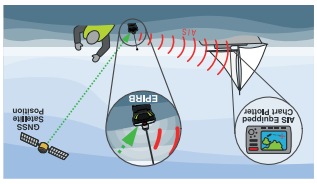
1.2 Return Link Service

The Galileo Return Link Service (RLS) is a free-of-charge global service available to Cospas-Sarsat RLS compatible beacons. The new functionality, currently offered uniquely by Galileo, enables a communication link that relays Return Link Messages (RLM) back to the originating beacon through the Galileo Navigation Signal in Space.

The RLS feature is an indication on the EPIRB3 that confirms to the User that the distress signal from the EPIRB3 has been localised by the Cospas-Sarsat system and is being sent to the SAR authorities. It does NOT mean that a search and rescue mission has been launched, but only confirms that the distress alert has been received by the Cospas-Sarsat system and is being routed to the appropriate SAR agencies. The RLS aims to send an acknowledgment to the beacon within 30 minutes following activation (the response may not be received by the beacon for significantly longer). RLS is an optional function and may not be permitted in all countries. The full RLS specification can be found here: https://gsc-europa.eu/sites/default/files/sites/all/files/Galileo-SAR-SDD.pdf

1.3 AIS System

AIS systems operate on VHF radio bands and transceivers are fitted to all commercial shipping and an ever growing number of recreational vessels globally. On activation an AIS EPIRB device will activate an alarm on all AIS equipped vessels within VHF range alerting them to the fact that a person is in the water needing assistance. Often it is a vessel in the close vicinity of an incident that is able to react and effect a rescue quicker than the emergency services.



Emergency service craft are fitted with AIS receivers allowing them to pinpoint a casualty in the water more precisely than any other systems. Emergency service craft are fitted with AIS receivers allowing them to pinpoint a casualty in the water more precisely than any other system.

IN CASE OF EMERGENCY

USE ONLY IN SITUATIONS OF GRAVE AND IMMINENT DANGER

MANUAL ACTIVATION

1. Remove from the bracket
2. Fully extend the antenna
3. Break off the tab
3. Lift the flap
4. Press the button

NOTE: Remove the rubber lanyard cover and tie the lanyard to the life raft or your person to prevent loss. DO NOT tie to a vessel in that is in danger of sinking.

NOTE: Once removed from the bracket the EPIRB3 will automatically activate when placed in the water. To deactivate remove from the water.

2. OPERATION

WARNING: Use only in situations of grave and imminent danger. Deliberate misuse may result in a severe penalty.

Ensure that your beacon 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 9 of the User Manual.

Category 2 beacons are designed to be manually deployed from the Category 2 Manual Bracket and then activated manually or placed in the water to activate automatically. Category 2 beacons can also be manually activated when still in the bracket.

To prevent loss, secure the beacon to your person or life raft using the attached lanyard.

Never secure the lanyard to the vessel, this will cause the EPIRB to sink with the vessel.

When active the beacon is designed to operate while floating in the water. For best operation do not take the beacon into a life raft or obstruct the upper case.

2.1 Optical Indications on activation

- The LED will illuminate green (blue if RLS is enabled) for 1 second.
- The strobe light will start flashing.
- Within 1 minute of activation, the indicator LED will flash a quick burst of 5 indicating 406MHz transmission*.
- AIS transmission will be indicated by the LED flashing 8 times at 2 second intervals (green if a GNSS fix has been acquired or red if there is no fix). This will not happen until after the first 406MHz transmission,

2.2 Deactivation

To deactivate your beacon after use or if it is accidentally activated, press and hold the ON/OFF Key until the LED flashes red twice, then release.

2.3 Automatic Activation (Ensure the Antenna is manually extended)

The beacon requires removal from the Manual Bracket to allow automatic activation. As the beacon is released from the bracket the water contacts are enabled. Place the EPIRB3 in the water to activate. Only manual activation is possible while the EPIRB remains in the bracket.

For full installation details see the User Manual:
www.oceansignal.com/products/epirb3

* The first 406MHz transmission is made between 48 and 52 seconds following activation.

2.4 LED Indications with RLS Enabled

LED	When	Transmit	GNSS	RLS
(x1)	Every 5 s		Searching	
(x3)	Once each cycle		Fix acquired	
(x5)	At transmit	406MHz	No Fix	RLS Request sent
(x5)	At transmit	406MHz	Fix acquired	RLS Request sent
(x8)	At transmit*	AIS	No Fix	
(x8)	At transmit*	AIS	Fix acquired	
(x1)	Every 2.5 s**	121MHz		RLS Reply not received
(x1)	Every 2.5 s**	121MHz		RLS Reply received
(x1)	Every 2.5 s			

2.5 LED Indications for units configured with non-RLS Protocol

LED	When	Transmit	GNSS
(x1)	Every 5 s		Searching
(x3)	Once		Fix acquired
(x5)	At transmit	406MHz	No Fix
(x5)	At transmit	406MHz	Fix acquired
(x8)	At transmit*	AIS	No Fix
(x8)	At transmit*	AIS	Fix acquired
(x1)	Every 2.5 s**	121MHz	
(x1)	Every 2.5 s		

NOTE:
Non-RLS Protocol is usually country specific and is not a user changeable function.

* The AIS transmissions will show as 8 flashes (1 every 2 seconds) as a sequence repeated once every minute

** The 121MHz Homer will not transmit until after the second 406MHz transmission.

3. INSPECTION

During the monthly EPIRB self test it is advised that the following inspection is performed.

- Inspect the EPIRB for obvious signs of damage including the state of the antenna. Any creases in the antenna may cause the operation of the EPIRB to be impaired.
- Confirm that the EPIRB is securely mounted on the Manual Bracket.
- Inspect the lanyard and ensure it is not attached to any structures.
- Confirm the battery is within the specified expiry date.
- Clean the EPIRB and mounting. It is recommended that the EPIRB is cleaned only using a damp cloth.

There are no user serviceable parts inside the EPIRB3.

DO NOT OPEN THE EPIRB3, DOING SO WILL INVALIDATE THE WARRANTY AND MAY CAUSE FALSE ALERTS

4. TESTING

Routine testing of your beacon once a month is highly recommended to ensure it is in good working order. Follow the guidance notes in the User Manual for the frequency that tests should be carried out. Each test reduces operation time of your beacon in an emergency.

4.1 Functional test

To test your beacon is functioning correctly, press and hold the TEST key for 1 to 2 seconds. The LED will illuminate red to indicate the key has been pressed, then start flashing. Release the TEST Key when flashing. After a short pause the strobe will flash and the indicator LED will produce a flash sequence.

A passed test flash sequence indicates the total number of hours that the battery has already been in use, up to the time that the test was initiated.

4.2 LED Indications with RLS Enabled

No. of Flashes	Functional Test Pass	Fail
1	0 to 1hr 59min	121.5MHz homer
2	2hrs to 3hrs 59min	406MHz power
3	4hrs to 5hrs 59min	
4	6hrs to 7hrs 59min	
5	8hrs to 9hrs 59min	Battery failure
6	10hrs +	No GNSS

4.3 LED Indications for units configured with non-RLS Protocol

No. of Flashes	Functional Test Pass	Fail
1	0 to 1hr 59min	121.5MHz homer
2	2hrs to 3hrs 59min	406MHz power
3	4hrs to 5hrs 59min	
4	6hrs to 7hrs 59min	
5	8hrs to 9hrs 59min	Battery failure
6	10hrs +	No GNSS

Because this test transmits a short burst on the aircraft distress frequency of 121.5MHz, please only carry out this test in the first 5 minutes of each hour.

The battery must be replaced either prior to the expiry date shown on the rear label or after the EPIRB3 has been activated.

If, during a self test, the LED flashes magenta or amber the EPIRB3 may not have sufficient energy to operate for the specified 48-hour period. Battery replacement is recommended.

NOTE: More information regarding test results is available using the Mobile App.

4.4 GNSS Test

This test should only be performed where the EPIRB3 has a clear and unobstructed view of the sky. This is required to allow the GNSS receiver to acquire a signal from sufficient satellites to allow it to determine a position. Ensure the area marked "GNSS Antenna" is not obstructed.

It is recommended that a GNSS test is carried out at least once every six months to ensure correct operation of the EPIRB3.

Press and hold the TEST key for 5 seconds. The LED will illuminate red to indicate the key has been pressed, then start flashing. Shortly after, the LED will cease flashing and become a steady red light. Release the TEST key when the LED is steady red.

During the GNSS test the LED will repeat a long red flash followed by a short green flash until either a position fix is obtained or the GNSS test fails.

A successful test will be indicated by a number of green LED flashes and an unsuccessful test will be indicated by a number of red LED flashes. The number of flashes indicates the number of GNSS tests remaining (e.g. 7 flashes = 7 tests remaining).

The test result flashes will be repeated after 2 seconds.

If there are 10 or more tests remaining then the LED will flash 10 times only (repeated).

The EPIRB3 has the capacity to carry out 60 GNSS tests within the lifetime of the battery.

If there are no tests remaining immediately after the current test, the LED will flash green or red rapidly for three seconds (not repeated) depending on whether the GNSS test was successful or not, respectively.

When there are no tests remaining, the LED will flash red rapidly for three seconds on key release (not repeated).

The test can be ended at any time by holding the TEST key for 1 to 2 seconds.

For further information regarding Self Test and Self Test history use the Ocean Signal App to connect to your EPIRB3 using Near Field Communication (NFC).

5. APPROVALS

In addition to Cospas Sarsat Type Acceptance, the EPIRB3 complies with the following National Approvals:

5.1 European Union
Complies with the requirements of the EU Marine Equipment Directive (MED)

5.2 UK
Complies with MSN 1874 as amended

5.3 USA
Complies with FCC 47 CFR Part 80 and US Coast Guard requirements

5.4 Canada
Compliance with ISED RSS GEN and RSS182

5.5 Australia/New Zealand
Complies with AZ/NZS 4280.1-2017

See "www.oceansignal.com/approvals-documents" for documentation.