USER MANUAL

AIS EPIRB (COSPAS-SARSAT)

NEB-2000

NEB-2000 UM.E 20250428-08

SAFETY NOTICES

- ☑ Use this EPIRB only during situations of GRAVE and IMMINENT danger.
- ☑ Read this manual carefully before installation and use.
- ☑ NEW SUNRISE is devoted to publishing and maintaining this user manual. As we continue to improve our products to satisfy customers' needs, the information in this document is subject to change without prior notice.
- ☑ To prevent a FALSE ALERT, it is recommended that the user should be aware of and understand the basic use of this EPIRB. If any false alert occurs, SAR operations will be initiated, which may result in a penalty.
- ☑ Before using this product, you must register it with the appropriate national authority. You can visit the web page Beacon Registration Contacts to see where you can register your beacon (https://www.406registration.com/countriessupported.aspx).
- ☑ Lithium batteries are used in this product, which is not allowed to be modified, shorted or burned.
- ☑ This Product emits a radio signal which is not harmful to the human body. However, it is recommended not to touch the antenna of the EPIRB when it is activating.
- ☑ If the EPIRB is activated in a situation except an imminent danger, prompt action needs to be taken to deactivate it and inform the Local SAR Service to cancel the false alert.
- ☑ **Don't disassemble the equipment.** Access to the interior of the EPIRB should only be by an NSR certified technician.

MODIFY RECORD

No.	Modify by	Date	Paragraph	Version	Reason
1	Q/A	2022/3/3	1	01	First edition
2	Q/A	2022/5/12	3.1	02	Add a summary of the LED status in activation
3	Q/A	2022/7/5	1, 3, 4, 5	03	Add RLS function, etc.
4	Q/A	2022/11/17	1, Appendix	04	Update the drawings etc.
5	Q/A	2023/04/17	4.4	05	Some modifications
6	Q/A	2024/05/24	1.4, 2.1	06	Some modifications
7	Q/A	2025/01/18	All	07	Some modifications
8	Q/A	2025/04/28	All	08	Some modifications

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1. DESCRIPTION

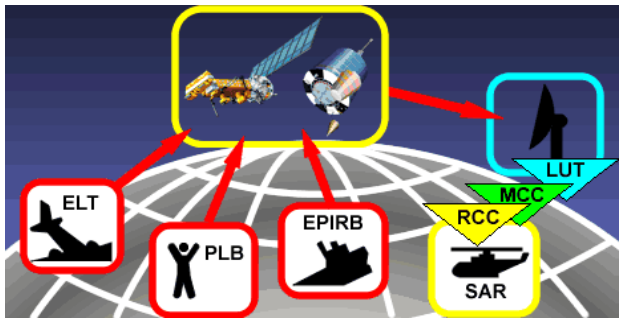
1.1 PRODUCT OVERVIEW

NEB-2000 AIS EPIRB (406MHz Satellite EPIRB) is used to transmit distress signals for alert search and rescue services at sea. This is designed to comply with IMO SOLAS requirements (GMDSS), Cospas-Sarsat technical standard (T.001) and IMO MSC.471 (101). This is a powerful self-contained distress transmitter.

NEB-2000 with a built-in GNSS receiver transmits a distress signal including a position with an accuracy of less than 10 meters. In distress, the signal is transferred to the Rescue Coordination Center (RCC) without delay through the Local User Terminal (LUT) so that Search and Rescue can be initiated immediately.

When the vessel sinks, the Hydrostatic Release Unit (NHR-100) releases the container cover automatically to eject the EPIRB to float to the surface. The EPIRB can also be manually operated while on board or in a life raft. The EPIRB transmits on 406MHz frequency with AIS signal on VHF and homing signal on 121.5MHz.

1.2 COSPAS-SARSAT SYSTEM OVERVIEW



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

- distress radiobeacons (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 radiobeacons;

- ground receiving stations, referred to as Local Users Terminals (LUTs), which receive and process the satellite downlink signal to generate distress alerts; and
- 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:

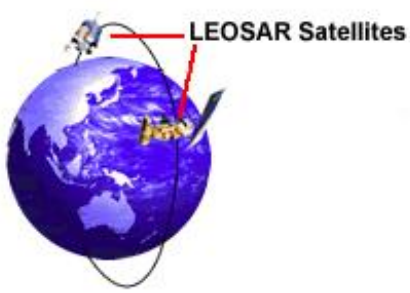
- satellites in low-altitude Earth orbit (LEO) which form the LEOSAR System
- satellites in geostationary Earth orbit (GEO) which form the GEOSAR System

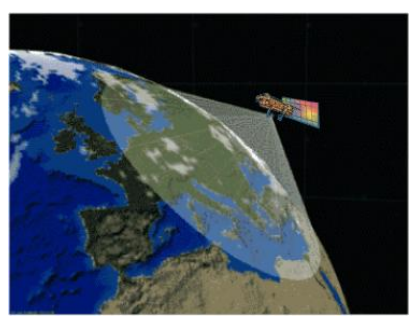
The future Cospas-Sarsat System will include a new type of satellite in the medium-altitude Earth orbit (MEO) which will form the MEOSAR System.

Additional information on the three satellite systems is provided below.

LEOSAR

Cospas-Sarsat has demonstrated that the detection and location of 406 MHz distress beacon signals can be greatly facilitated by global monitoring based on low-altitude spacecraft in near-polar orbits. Complete, yet non-continuous coverage of the Earth is achieved using simple emergency beacons operating on 406 MHz to signal a distress. The coverage is not continuous because polar orbiting satellites can only view a portion of the Earth at any given time (see the figures below). Consequently, the System cannot produce distress alerts until the satellite is in a position where it can "see" the distress beacon. However, since the satellite onboard 406 MHz processor includes a memory module, the satellite is able to store distress beacon information and rebroadcast it when the satellite comes within view of a LUT, thereby providing global coverage.





As described above, a single satellite, circling the Earth around the poles, eventually views the entire Earth surface. The "orbital plane", or path of the satellite, remains fixed, while the Earth rotates underneath it. At most, it takes only one-half rotation of the Earth (i.e. 12 hours) for any location to pass under the orbital plane. With a second satellite,

having an orbital plane at right angles to the first, only one-quarter of a rotation is required, or 6 hours maximum. Similarly, as more satellites orbit the Earth in different planes, the waiting time is further reduced. The Cospas-Sarsat System design constellation is four satellites which provide a typical waiting time of less than one hour at mid-latitudes.

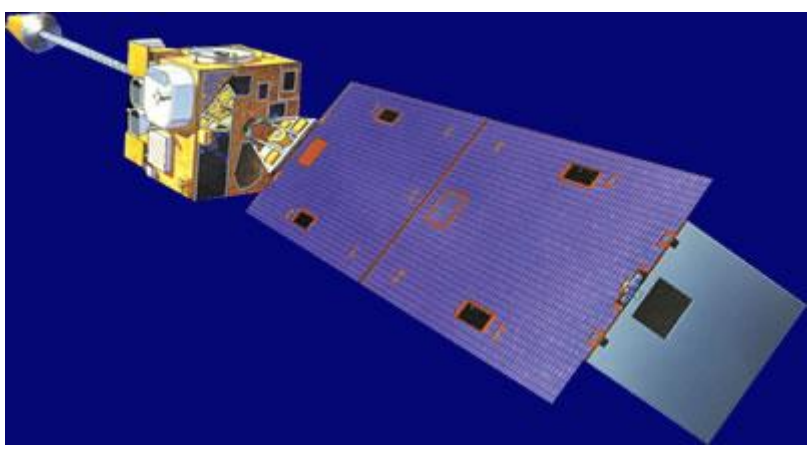
The LEOSAR system calculates the location of distress events using Doppler processing techniques. Doppler processing is based upon the principle that the frequency of the distress beacon, as "heard" by the satellite instrument, is affected by the relative velocity of the satellite with respect to the beacon. By monitoring the change of the beacon frequency of the received beacon signal and knowing the exact position of the satellite, the LUT is able to calculate the location of the beacon.

GEOSAR

The GEOSAR system consists of 406 MHz repeaters carried on board various geostationary satellites, and the associated ground facilities called GEOLUTs which process the satellite signal.

As a GEOSAR satellite remains fixed relative to the Earth, there is no Doppler effect on the received frequency and Doppler radio location positioning techniques cannot be used to locate distress beacons. To provide rescuers with beacon position information, such information must be either:

- acquired by the beacon through an internal or an external navigation receiver and encoded in the beacon message, or
- derived, with possible delays, from the LEOSAR System.



MEOSAR

Cospas-Sarsat is in the process of upgrading its satellite system by placing search-and-rescue receivers (i.e., repeaters or transponders) on new GPS satellites operated by the United States, navigation satellites of Russia (GLONASS) that began deployment last year, and European GALILEO navigation satellites that began launching 12 October 2012. Once qualified as operational, this system augmentation will dramatically improve both the speed and location-accuracy for detecting beacons.

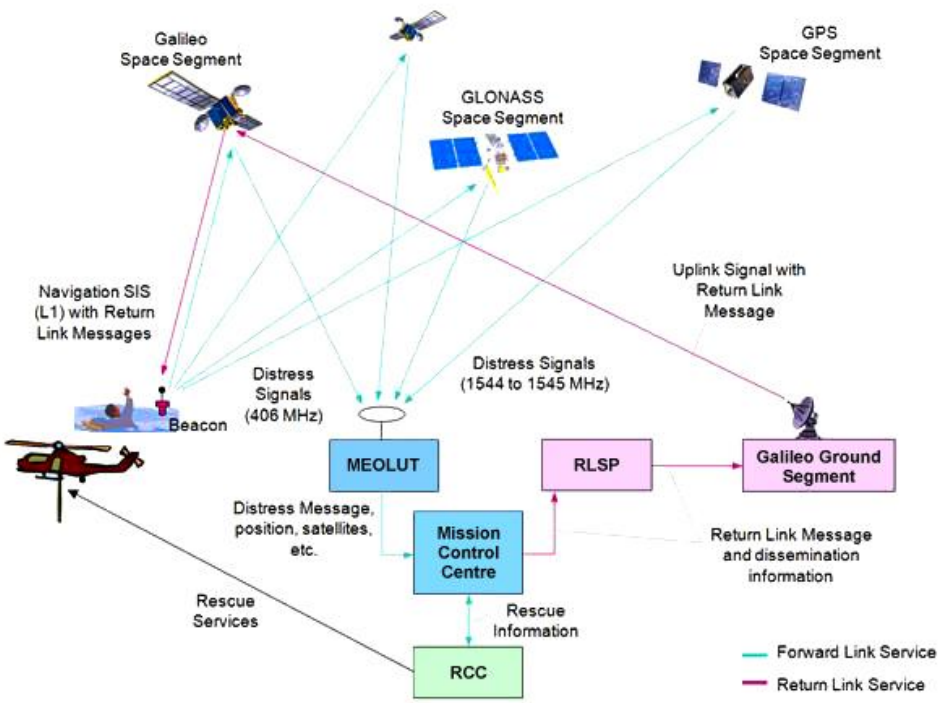
Those satellites orbit the Earth at an altitude between 19,000 and 24,000 km, a range considered as medium-altitude Earth orbit. Hence this component of Cospas-Sarsat is known as the Medium-altitude Earth Orbit Search and Rescue system or MEOSAR. It will complement the existing LEOSAR and GEOSAR systems.

The current LEOSAR and GEOSAR systems contribute respective advantages to the detection and location of distress beacons that have been activated. The GEOSAR system constantly covers the entire Earth except for the high-latitude (e.g., polar) regions. While the GEOSAR system can receive beacons distress messages across most of the globe, it cannot locate the beacon unless the location is encoded in the beacon's message from a local navigation receiver. The LEOSAR system can locate a beacon without the aid of a GPS or other navigation signal to the beacon, but the LEOSAR satellites have a view of only a small part of the Earth at any given time, so there may be a delay in receiving the distress signal over LEOSAR.

Once fully operational, the MEOSAR system will offer the advantages of both LEOSAR and GEOSAR systems without their current limitations by providing transmission of the distress message, and independent location of the beacon, with a near real-time worldwide coverage.

The MEOSAR system also will facilitate other planned enhancements for Cospas-Sarsat beacons, such as a return link transmission that will allow the beacon to provide the user a confirmation that the distress message has been received.

The large number of MEOSAR satellites that will be in orbit when the system is fully operational will allow each distress message to be relayed at the same time by several satellites to several ground antennas, improving the likelihood of detection and the accuracy of the location determination.



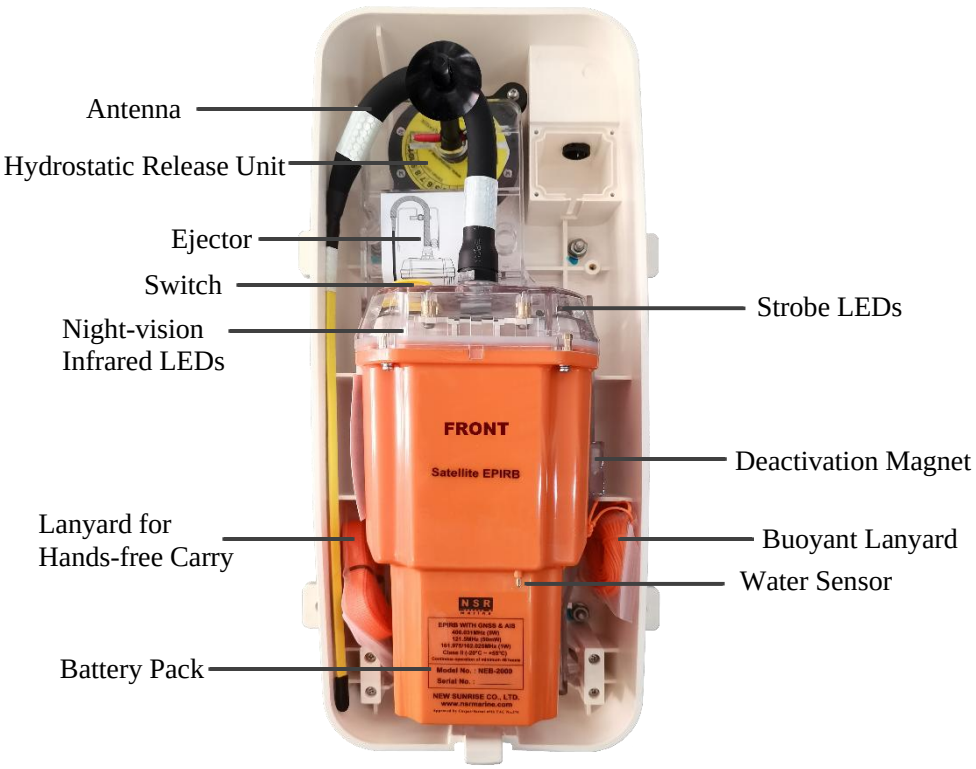
1.3 FEATURES AND COMPONENTS

FEATURES

- Built-in GNSS receiver.
- 406MHz transmission together with 121MHz homing & AIS transmitter.
- Highly efficient battery.
- Professional design, engineered, tested and built for years of abusive marine use.
- Self-protective device used to avoid possible false alerts.
- Self-test function applicable.
- Easily coding/reading user data with infrared communication.
- RLS function available.
- GMDSS compliant.
- Global distress alerting.
- Fully enclosed housing.
- Special lanyard for hands-free carry.
- New night-vision infrared LEDs.

COMPONENTS

Basically, NEB-2000 is composed of a container and an EPIRB. The main components are described as follows:



a) **Antenna**: The antenna is a flexible stick used to transmit signal. During operation, it must be stuck up vertically.

b) **Ejector**: The ejector is to push the EPIRB out of the container when NEB-2000 is released at about 4m underwater.

c) **Strobe LEDs**: There are four strong strobe LEDs. When the EPIRB is activated, the bright LEDs will flash every 3 seconds, which is visible through the clear lens dome.

d) **Night-vision Infrared LEDs**: There are four night-vision infrared LEDs (night-vision infrared emitting diodes). When activated, the EPIRB can be detected by all types of night vision devices for the operating lifetime of the EPIRB.

e) **Switch**: The slide switch is hidden under the yellow cover. When off, the switch is left in the middle position as READY. Press the TEST button to test the EPIRB. Slide to the **ON** position to manually activate the EPIRB.

f) **Water Sensor**: Two bare copper contacts form the water sensor. In water, the contacts will be conducted to automatically activate the EPIRB.

NOTE:

The WATER SENSOR only operates when the EPIRB has escaped from the container. In the container, the EPIRB will never be activated, even in water, as the deactivation magnet in the ejector will prevent the EPIRB from being activated.

g) **Buoyant Lanyard**: The 7-meter durable lanyard is used to tie the EPIRB when in the raft or in the sea. It can be used as a tether (to a life raft, lifeboat or person in the water but not to the ship).

h) **Lanyard for hands-free carry**: This lanyard is used as a hands-free carriage. (e.g., for transfer to a survival craft). It may be used to hang the EPIRB on the neck or around the shoulders, for example.

i) **Hydrostatic Release Unit (NHR-100)**: NHR-100 is used to close the bottom part and upper part (cover) of the container.
- When the EPIRB is immersed about 4 meters underwater, the NHR-100 pole will be automatically pulled out. Then the upper cover of the container is opened and the EPIRB will be ejected to float to the surface.
- The lock pin can also be pulled out manually and the EPIRB can be taken out. In this case, the EPIRB can be manually activated.

j) **Battery Pack**: The battery pack is included in the bottom case of the EPIRB.

k) **Deactivation Magnet**: The magnet in the ejector will prevent the EPIRB from being activated, no matter whether the EPIRB is in water or not.

Summary of EPIRB Control Functions

Control position		EPIRB condition		EPIRB-mount or release mechanism status		Transmitter status	
ON	READY	WET*	DRY	OUT	IN	ON	OFF
√		√		√		√	
√		√			√		√
√			√	√		√	
√			√		√		√
	√	√		√		√	
	√	√			√		√
	√		√	√			√
	√		√		√		√
* Floating or immersed in water.							

1.4 SPECIFICATIONS

General	Model	NEB-2000
	Material	ABS Plastic
	EPIRB Color	High visibility orange
	Watertight	At a depth of 10m for at least 5 min
	Buoyant	Yes
	Deployment	Automatic hydrostatic release, Manual switch control
	Accessories	Hydrostatic Release Unit Buoyant lanyard Lanyard for hands-free carry
	Controls	Manual activation / Self-Test switches
Weight	EPIRB	1.45 kg
	Container	1.6 kg
Size	EPIRB	116 (W)×710 (H)×100 (D) mm
	Container	220 (W)×415 (H)×144 (D) mm
406MHz Transmitter	Operating Frequency	406.031MHz±1kHz
	Power Output	5W
AIS Transmitter	Operating Frequency	AIS1(161.975MHz) /AIS2(162.025MHz)
	Power Output	1W
121.5MHz Homer	Operating Frequency	121.5MHz
	Power Output	50mW
GNSS Receiver	Type	u-Blox
	System Supported	GPS, BDS, Glonass, Galileo
Battery	Part No.	NBT400
	Type	Lithium battery
	Total Voltage Rating	14.4 V
	Battery life	Up to 9 years (See NOTE)
	Operating Life	More than 48hrs (-20℃)
Strobe light	Type	LED
	Color	White
	Flash Rate	20/min
Environment	Operating	-20℃ to +55℃
	Storage Temperature	-40℃ to +70℃
	Automatic Release	About 4 meters max (13 feet)

NOTE: *It's from the date of manufacture. 9 years consist of 1 year of shelf time and 8 years of onboard time. A 5-year health check is recommended.*
The replacement should be done according to the requirements of local authorities, if any.

2. INSTALLATION

Before installing the EPIRB, find a suitable mounting position on the vessel. It should be mounted upright against a vertical bulkhead. It is critical that you choose a position where the released EPIRB will not get trapped by overhangs, even if the vessel sinks.

Mount the EPIRB by the following rules:

- Consider easy access in an emergency.
- Mount on the outside of the vessel's structure.
- Mount close to the vessel's navigation position.

Avoid the following position when the EPIRB is mounted:

- Position with insufficient space for ejection and maintenance.
- Position within 1 meter of any compass equipment.
- Position within 2 meters of any Radar antenna.
- Direct impact from waves.
- Exhaust fumes, chemical and oil sources.

2.1 MOUNTING

The container can be installed horizontally or vertically.

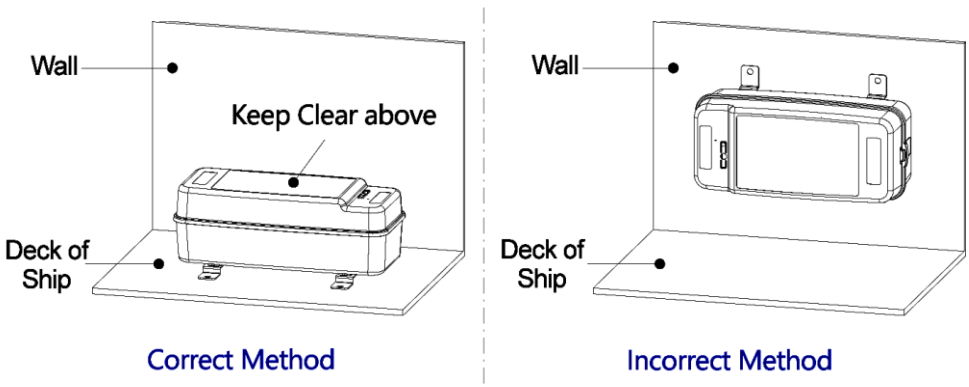


Fig. 1 Horizontal installation

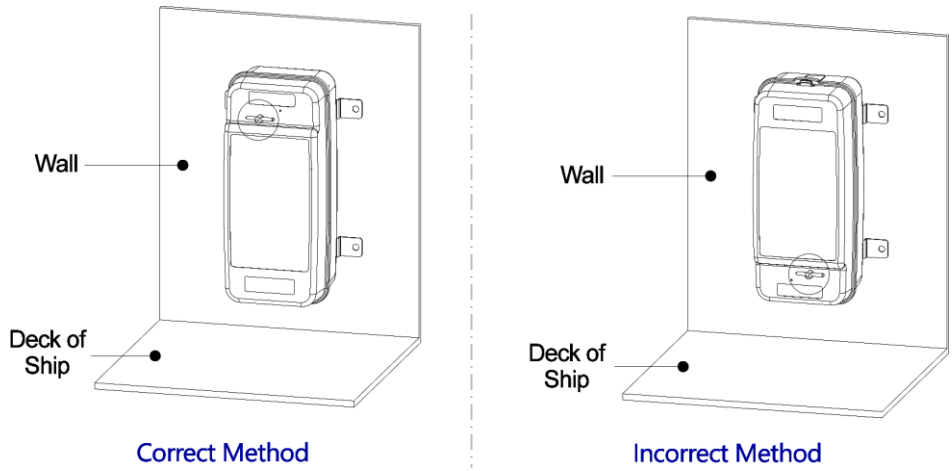


Fig. 2 Vertical installation

2.2 PLACING

Follow the steps below to place the EPIRB into the container.

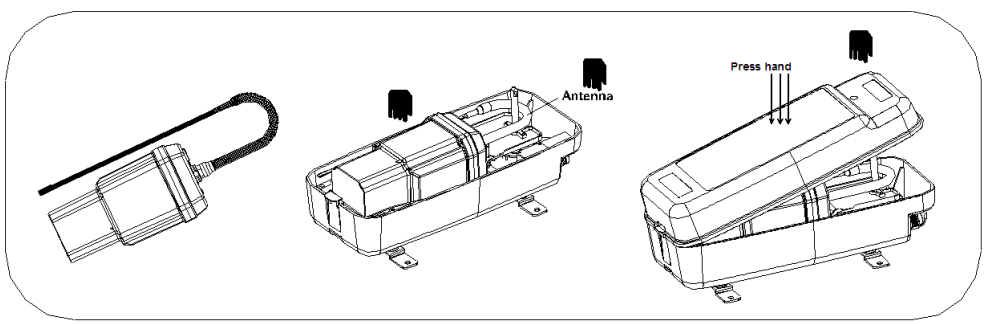
Step 1. Bend the antenna along the pole of NHR-100.

Step 2. Set the EPIRB into the container.

Step 3. "FRONT" should face upwards.

Step 4. Press down the upper cover.

Step 5. Fix the lock pin into the hole of the NHR-100 pole.



CAUTION:

When the EPIRB is placed into the container, make sure it is in the right direction. The side labelled FRONT should face upward while the EPIRB stays in the container. Otherwise a false alert may easily be triggered.

3. OPERATION

3.1 ACTIVATION

The EPIRB can be activated in two ways: automatically or manually. When activated, the EPIRB will behave in the following steps.

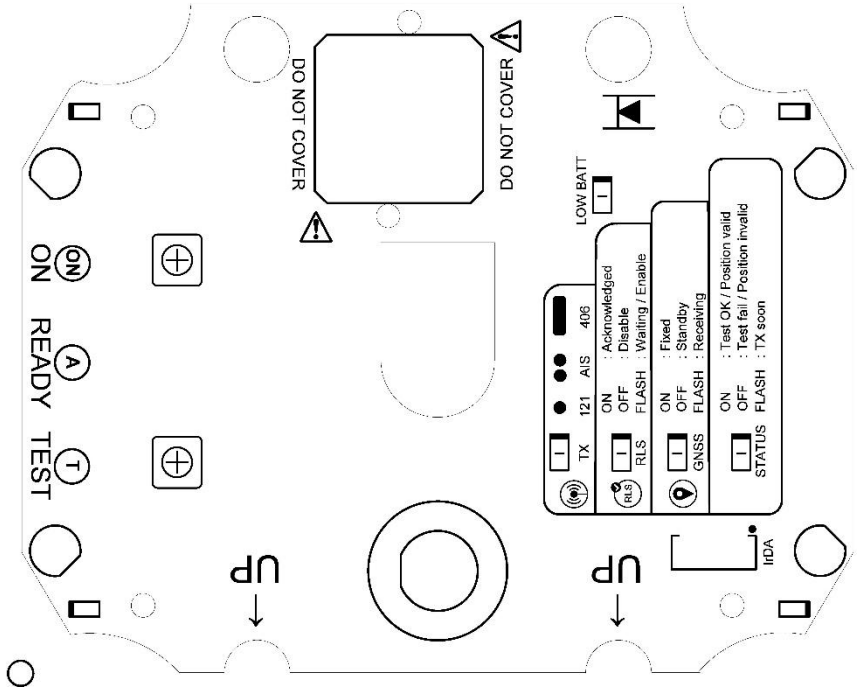
Step 1. All LEDs flicker once, one by one.
Step 2. The strobe light flickers every 3 seconds.
Step 3. **GNSS** LED flickers while acquiring GNSS data.
Step 4. **RLS** LED flashes every 1 second after the first transmission on 406 MHz. After the acknowledgement is received, the LED turns to ON. (Note: only when the RLS protocol is programmed)
Step 5. **TX** LED flashes long once while transmitting on 406 MHz.
Step 6. **TX** LED flashes short once while transmitting on 121.5 MHz.
Step 7. **TX** LED flashes short twice while transmitting on AIS1 or AIS2.

NOTE:

Once the EPIRB is activated, the strobe light will begin flashing immediately at 3-second intervals, however it won't transmit a distress alert for approximately 2 minutes. This gives you time to turn it off immediately in case of being activated by mistake.

When the EPIRB is activated, the guidance below will be helpful.

☑ The EPIRB should be kept upright. If possible, it would be better to be held.
☑ The EPIRB should be placed in an open place to the sky.
☑ There should be no overhangs above the EPIRB.
☑ Do not place the EPIRB close to any large structures.
☑ Do not lay down the EPIRB.
☑ In a life raft, hold the EPIRB up as high as possible.
☑ Let the EPIRB float in the sea when necessary.
☑ Do not touch the antenna with hand.



Summary of LED status in Activation

EPIRB State	LED LOW BATT	LED TX	LED GNSS	LED STATUS	LED RLS	Strobe Light
Normal	OFF	TX: Flash	--	--	--	Flash every 3 seconds
GNSS receiving	OFF	OFF	Flash	--	--	Flash every 3 seconds
GNSS fixed	OFF	OFF	ON	--	--	Flash every 3 seconds
GNSS standby	OFF	OFF	OFF	--	--	Flash every 3 seconds
Position valid	OFF	OFF	--	ON	--	Flash every 3 seconds
Position invalid	OFF	OFF	--	OFF	--	Flash every 3 seconds
406MHz TX soon	OFF	OFF	--	Flash 11 times	--	Flash every 3 seconds
406MHz TX	OFF	Long Flash Once	--	--	--	Flash every 3 seconds
AIS TX one message	OFF	Short Flash Twice	--	--	--	Flash every 3 seconds
121.5MHz TX	OFF	Short Flash Once	--	--	--	Flash every 3 seconds
TX failed	OFF	ON	--	--	--	Flash every 3 seconds
Insufficient Battery Energy	ON	OFF	--	--	--	Flash every 3 seconds
RLS enable/Waiting RLS	OFF	OFF	--	--	Flash	Flash every 3 seconds
RLS acknowledged	OFF	OFF	--	--	ON	Flash every 3 seconds
RLS disable	OFF	OFF	--	--	OFF	Flash every 3 seconds

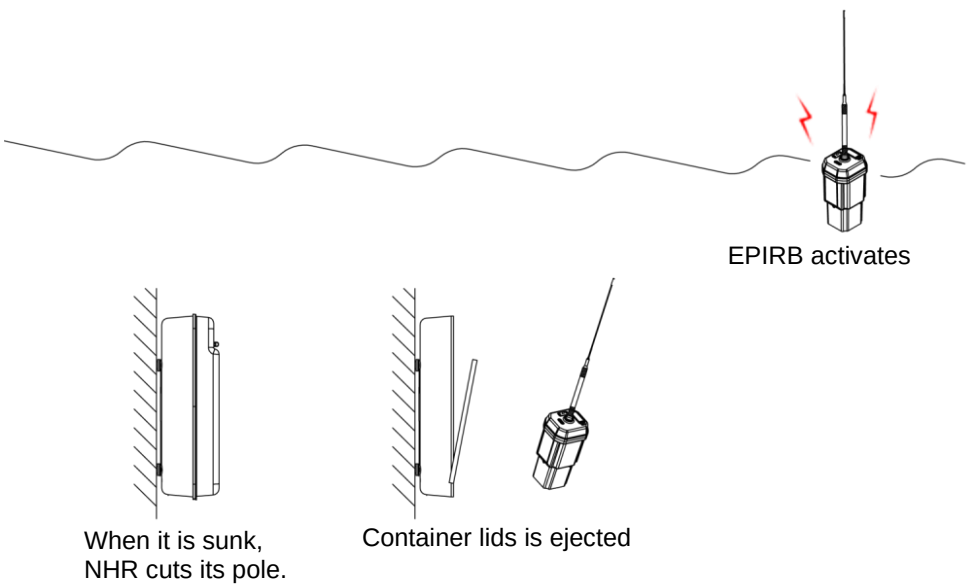
NOTE:

*The status "--" for LED of **GNSS**, **STATUS** or **RLS** can be "Flash", "ON" or "OFF" based on EPIRB state relative to the LED.*

AUTOMATIC ACTIVATION

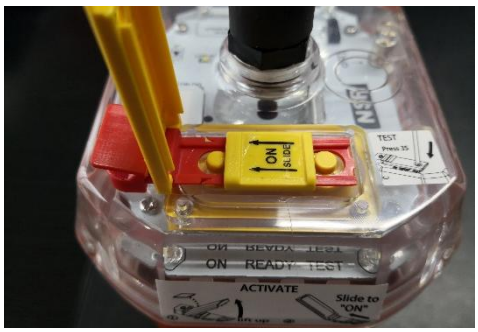
NEB-2000 is designed with float-free activation. It contains a spring-loaded ejector which automatically pushes the container cover off and releases the EPIRB if a vessel sinks. This automatic ejection is controlled by the Hydrostatic Release Unit (NHR-100). The plastic pole is pulled out before the container reaches about 4 meters depth. After the container cover is open, the EPIRB is ejected to float on the surface and is switched on automatically by the water sensor.

1) When the vessel sinks, the container is filled with seawater. The NHR-100 will operate when the container descends to a depth of about 4 meters below the water's surface. The plastic pole of NHR-100 is pulled out while the internal coil spring is pressed by water pressure.
2) The ejector pushes the EPIRB out of the container.
3) As the EPIRB floats away from the magnet, its sea sensor activates automatically.
4) Floating on the surface, the EPIRB transmits distress signals.



MANUAL ACTIVATION

If there is enough time when in distress, the EPIRB can be taken out from the container and brought to the life raft. In such a case, the EPIRB can be manually activated.



Please follow the instructions below.

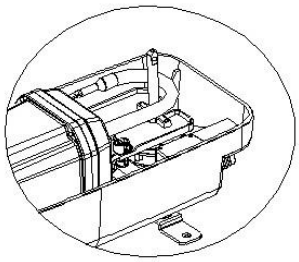
1) Open the switch cover. The protector tab will be broken.
2) Slide the switch fully to the left side, into the **ON** position.
3) The EPIRB is activated and transmits distress signals.
4) Hold or place the EPIRB as upright as possible on the surface, ensuring it has a clear view of the sky for proper operation.

NOTE:

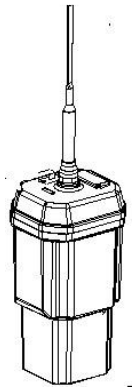
1. Do not break the protector tab or open the switch cover unless in distress;

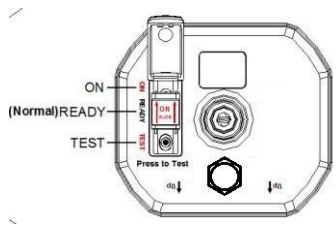
2. If the EPIRB stays near a metal wall or is held by the antenna with a hand, signal transmission may be affected.

① **In the container.**

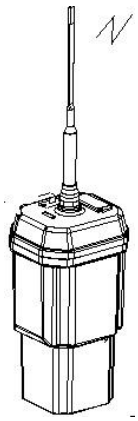


② **Take out of the container.**





③ **Open Switch Cover and Slide to ON.**



④ **Activated and Keep Upright.**

3.2 TEST MODE

1) Take the EPIRB out of the container.
2) Through the hole on the switch cover, use a screw driver or a pen to press the **TEST** button for 3 seconds and release the button.
3) The test operation begins and will last for about 30 seconds.
4) **STATUS** LED indicates the result of the Self-Test.
5) After the Self-Test completes, the EPIRB will be powered off automatically.

This action serves as a Self-Test for both the user and the inspector. See Section 4.1 Self-Test & Inspection for more details.

NOTE:

During the test, do not break the protector tab and do not open the switch cover.

3.3 DEACTIVATION

If the EPIRB has been activated for a cumulative period of more than 2 hours, the battery pack needs to be replaced. Make sure that the EPIRB can continuously operate for at least 48 hours in an emergency. See Section 4.3 for battery replacement instructions.

If the EPIRB has been activated by mistake or the emergency ends, the EPIRB must be switched off by sliding the switch back to the READY position.

If the EPIRB has been automatically activated in the water, deactivate the EPIRB by taking it out of the water and drying it for about 10 seconds.

4. MAINTENANCE

4.1 REGULAR CHECK

As an important part of the GMDSS, the EPIRB should be checked regularly. NEB-2000 has a built-in test capability that can check the status of the battery, strobe light, and both 406MHz and AIS/121.5MHz distress transmitters.
Checklists are provided at the back of this manual, and you should check the EPIRB regularly using these forms.
The check intervals are listed below.

Every 2 months	Conducting the Self-Test
Every year	Annual inspection by authorized radio companies
Every 2 years	HRU replacement
Every 5 years	Shore-based maintenance by authorized radio companies
Every 8 years	Battery pack replacement (see NOTE)

NOTE:

The replacement should be done according to the requirements of local authorities, if any.

4.2 SELF-TEST

It is recommended that the Self-Test should be taken every two months.

To perform the Self-Test, through the hole on the switch cover, use a tool to press and hold the **TEST** button for 3s, and then release the button. During the Self-Test, the transmitting messages won't be regarded as a distress alert even if received by satellite.

Check the LED status below:

Step 1. All LEDs flicker once, one by one.
Step 2. The strobe light fast flickers twice to indicate the Self-Test mode.
Step 3. The strobe light flickers every 3 seconds during the Self-Test.
Step 4. If the RLS protocol is programmed, the **RLS** LED flashes every second, otherwise **RLS** LED remains OFF.
Step 5. Sending a 121.5 MHz test homing signal to check the power and Frequency.
- **TX** LED flashes short once.

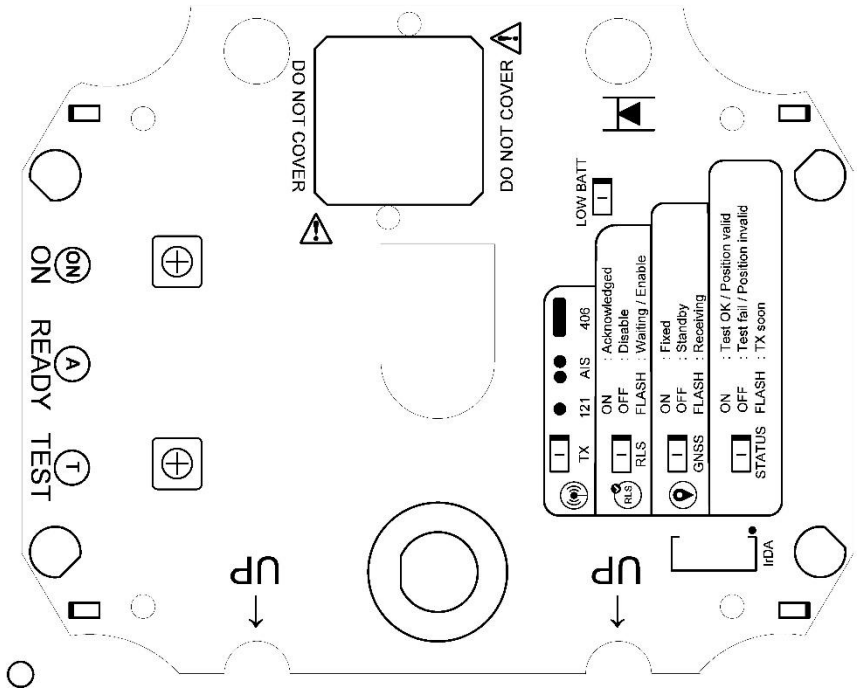
Step 6. Sending two AIS test messages to check the power and frequency.
- **TX** LED flashes short twice on each message.

Step 7. Sending a 406MHz test message to check the power and frequency.
- **TX** LED flashes long once.

Step 8. The self-test ends.

The Self-Test lasts for 32 seconds. The last 5 seconds are to indicate the test result.
- If passed, the **STATUS** LED keeps ON.
- If it fails, **TX** LED keeps ON.
- If PIE, **LOW BAT** LED keeps ON.

After 32 seconds, the Self-Test ends and the EPIRB is powered off automatically.



Summary of LED status in Self-test

EPIRB STATE	LOW BATT	TX	GNSS	STATUS	RLS*	Strobe Light
Self-Test OK	OFF	OFF	OFF	ON	Flash	Flash every 3s
Normal	OFF	Flash	OFF	OFF	Flash	Flash every 3s
Self-Test failed	OFF	ON	OFF	OFF	OFF	Flash every 3s
Insufficient Battery Energy	ON	OFF	OFF	OFF	OFF	Flash every 3s

*: Only when the RLS protocol is programmed.

If any failure is found in the Self-Test, it MUST be serviced by a qualified technician.

NOTE:

*1. The GNSS receiver inside the EPIRB is powered off during the Self-Test. So **GNSS** LED status does not mean the GNSS position is locked or not at the Self-Test.*

2. During the test, do not break the protection tab and do not open the switch cover.

3. PIE: Potentially Insufficient Battery Energy, when the total self-test times exceed 60.

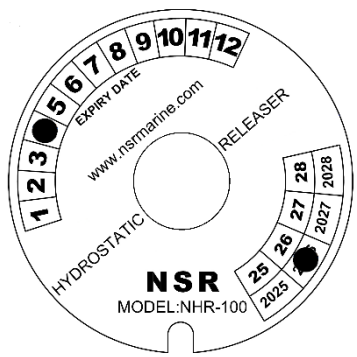
IMPORTANT NOTICE

a. The water sensor switch has two exposed contacts in the air. The unexpected seawater or rainstorm at sea may make two contacts conducting. Even though the magnetic bar on the ejector will keep the EPIRB from being activated. So, it's very important to place the EPIRB in the container in the proper direction and keep the container closed always, except for regular testing or maintenance.

b. If a false alert is activated, please carry out the following procedures to cancel:
   - Inform the nearest rescue organizations as soon as possible to stop all rescue services, if any.
   - Open the switch cover and slide the switch to the READY position to turn off the EPIRB.
   - In case the EPIRB can't be turned off, remove or bend the antenna and put the EPIRB into a sealed metal case for more than 7 days until the battery is exhausted. Consult the local agent for service.

4.3 REPLACE HYDROSTATIC RELEASE UNIT

The NHR-100 Hydrostatic Release Unit should be replaced every 2 years. An expiry NHR-100 may fail operation and the EPIRB may be mis-released. The expiry date is marked on the NHR-100's body to be checked regularly.



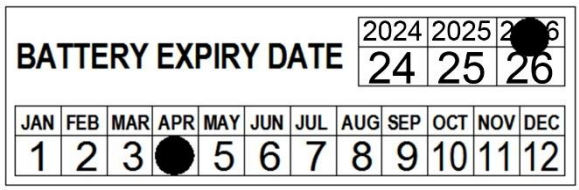
For example, the above sticker shows the expiry date of April 2026.

4.4 REPLACE BATTERY PACK

The expiry date is marked on the EPIRB, and it should be checked regularly.

The battery pack should be replaced when one of the following cases happens:

- The EPIRB has been used in an emergency.
- A false activation exceeds 2 hours of use.
- The expiry date has been reached.



For example, the above sticker shows the expiry date of April 2026.

It's very important to replace with NBT400 battery pack originally supplied/made by NSR (together with a seal and a protector tab for replacement), when it is expired. **NSR guarantees the quality of NEB-2000 only when the original NSR battery pack (NSR NBT400) is used.**

When NEB-2000 was tested and type approved, NSR NBT400 was an integral part of the EPIRB unit. If a counterfeit battery pack is used, this EPIRB unit will automatically lose the guarantee of all type approval certificates unless all tests needed for type approvals have been done again for the unit installed with a counterfeit battery pack. Those tests and approval usually take 1-3 years, and the cost shall be borne by the supplier or buyer of the counterfeit battery.

If a counterfeit battery pack is used on the NEB-2000, NSR will be exempted from the responsibility of warranty and other service guarantees. The counterfeit battery pack will affect the EPIRB from operating properly when the EPIRB is activated in an emergency.

The battery pack replacement should be performed by NSR, or the NSR-authorized EPIRB maintenance facility, or an NSR-authorized, trained and certified person.

NOTE：

Lithium batteries should have both terminals insulated before disposal, as any remaining power could cause severe harm to human safety. Local regulations should be followed when batteries are disposed of to protect the environment.

4.5 AIS TRANSMITTER IN EPIRB

An AIS transmitter can provide accurate positioning with a built-in GNSS receiver, which can significantly aid rescue operations. It transmits on dual AIS channels, AIS 1 and AIS 2.

The maximum communication range depends on both the heights of the transmitting antenna and the receiving antenna.

$A=2.5(\sqrt{H}+\sqrt{h})$ （nm）

H and **h** refer to the heights in meters of antennas above the sea.

AIS transmitting can cover at least 5nm on the condition that the transmitting antenna at the life raft is 1m high and the receiving antenna 16m high on the rescue vessel, both above sea level.

A unique identifier (User ID) is used in AIS EPIRB to ensure the integrity of the VHF data link. The ID is programmed during production and marked on the case. The ID can not be changed after being programmed unless done by the manufacturer.

The ID for an AIS EPIRB is 974xxyyyy, where **xx** represents the manufacturer ID, as 26/28 for NSR; **yyyy** is the serial number set by the manufacturer. For example, **974280008** is an AIS EPIRB produced by NSR.

When a position report is received with such an MMSI, together with a safety message "EPIRB ACTIVE", it should be transmitted from an AIS EPIRB.

During the self-test, the AIS message transmitted by the AIS EPIRB can be received by the shipborne AIS and displayed on its MKD.

- **Check the target list on MKD. There should be a target with the same MMSI as the USER ID of the AIS EPIRB.**
- **A safety-related message "EPIRB TEST" should be received from the same MMSI as the USER ID of the AIS EPIRB.**

NOTE：

If the above messages are not displayed on AIS MKD, please check the settings of the AIS MKD. Usually, test messages are muted on AIS MKD, but can be set in the menu by following the manufacturer's instructions.

4.6 RETURN LINK SERVICE (RLS)

RLS SYSTEM

The EPIRB, when activated, transmits the RLS status together with the distress signal on 406MHz. When the earth station receives this message, an acknowledgment can be returned to the EPIRB through the Galileo system (the only operational system for the time being). Then the EPIRB receives this acknowledgment by its GNSS module. In this way, the user can be notified that a distress signal has been received and located.

To enable RLS function, the EPIRB needs configuring with the Cospas-Sarsat RLS protocol. You can check your 15-digit HEX code on this webpage http://www.cospas-sarsat.int/en/pro and look for the link "Beacon Message Decoder Program" to check if your EPIRB has been programmed with RLS protocol.

RLS function is designed to send an acknowledgment to the user within 30 minutes of EPIRB activation (actual acknowledgement times are typically much quicker). The transmission of a distress alert to SAR authorities is independent of (and may have occurred before) the RLS acknowledgment indication on the EPIRB. The specification is described in the Galileo SAR Service Definition Document:
https://www.gsc-europa.eu/sites/default/files/sites/all/files/Galileo-SAR-SDD.pdf

RLS function is an option and may not be allowed in all countries or all EPIRB types. You can visit the webpage "Countries Allowing RLS Beacons" for the latest information about countries/regions supporting RLS:
https://cospas-sarsat.int/en/beacon-ownership/rls-enabled-beacon-purchase

RLS FUNCTION

RLS function is an indication to the user that confirms the distress signal has been received and is being transferred to the responsible Search and Rescue authority (SAR). It does not mean that a rescue has been organized/launched. It just means that the distress signal has been received and transferred to the appropriate SAR.

NEB-2000 is able to use the RLS function which is available in the Galileo satellite navigation system.

To enable the RLS function, NEB-2000 must be programmed with the RLS protocol using its coding software.

5. WARRANTY

All goods manufactured by NSR are warranted to be free from defect in workmanship and material for a period of 24 months from the date of delivery (unless stated otherwise and confirmed in writing), or 18 months from the date of installation, whichever comes first.

PROVIDED:

(a) NSR is given full particulars in writing of any claim prior to the expiration of such a period and within fourteen days of the discovery of the alleged defect.

(b) The goods have been stored, installed, maintained and used properly having regard in particular to this manual.

(c) Liability shall be limited at NSR to replacement or repair or to a sum not exceeding the net invoice value of the defective goods.

(d) Upon request, the alleged faulty goods are returned to NSR at the Buyer's expense.

(e) Unless expressly stipulated in the acceptance of the order, NSR gives no warranty or guarantee of the fitness or suitability of the goods for any purpose, whether disclosed or otherwise.

(f) All other warranties or conditions expressed or implied are hereby excluded and NSR shall in no event be liable for any loss of profit or any commercial damage, including but not limited to special, incidental, consequential, or other damage.

NSR guarantees the quality of NEB-2000 EPIRB only when the original NSR Hydrostatic Release Unit (NSR NHR-100) and battery pack (NSR NBT400) are used. If a counterfeit HRU or battery pack is used on NEB-2000, NSR will be exempted from the responsibility of warranty and other service guarantees.

For details, please refer to NSR's official warranty policy.

PRE-DELIVERY INSPECTION LOG

☑ Battery pack:

Batch date: .....

Replacement date: .....

☑ Hydrostatic Release Unit:

Batch date: .....

Replacement date: .....

☑ Housing inspection: .....

☑ Watertight verification: .....

☑ 121.5MHz transmission: .....

☑ 406MHz transmission: .....

☑ AIS transmission: .....

☑ Frequency: .....

☑ General operation: .....

☑ Next Inspection due on: .....

☑ Remark: .....

.....

☑ Inspection service: .....

Date: .....

Signature and Stamp:

PERIODIC INSPECTION LOG

☑ Battery pack:

Batch date: .....

Replacement date: .....

☑ Hydrostatic Release Unit:

Batch date: ….....

Replacement date: .....

☑ Housing inspection: .....

☑ Watertight verification: ….....

☑ 121.5MHz transmission: .....

☑ 406MHz transmission: .....

☑ AIS transmission: .....

☑ Frequency adjustment: .....

☑ General operation: .....

☑ Next inspection due on: .....

☑ Remark: .....

.....

☑ Inspection service: .....

Date: .....

Signature and Stamp:

PERIODIC INSPECTION LOG

☑ Battery pack:

Batch date: .....

Replacement date: .....

☑ Hydrostatic Release Unit:

Batch date: ….....

Replacement date: .....

☑ Housing inspection: .....

☑ Watertight verification: .....

☑ 121.5MHz transmission: .....

☑ 406MHz transmission: .....

☑ AIS transmission: .....

☑ Frequency adjustment: .....

☑ General operation: .....

☑ Next inspection due on: .....

☑ Remark: .....

.....

☑ Inspection service: .....

Date: .....

Signature and Stamp:

PERIODIC INSPECTION LOG

☑ Battery pack:

Batch date: .....

Replacement date: .....

☑ Hydrostatic Release Unit:

Batch date: ….....

Replacement date: .....

☑ Housing inspection: .....

☑ Watertight verification: .....

☑ 121.5MHz transmission: .....

☑ 406MHz transmission: .....

☑ AIS transmission: .....

☑ Frequency adjustment : .....

☑ General operation: .....

☑ Next inspection due on: .....

☑ Remark: .....

.....

☑ Inspection service: .....

Date: .....

Signature and Stamp:

PERIODIC INSPECTION LOG

☑ Battery pack:

Batch date: .....

Replacement date: .....

☑ Hydrostatic Release Unit:

Batch date: ….....

Replacement date: .....

☑ Housing inspection: .....

☑ Watertight verification: .....

☑ 121.5MHz transmission: .....

☑ 406MHz transmission: .....

☑ AIS transmission: .....

☑ Frequency adjustment: .....

☑ General operation: .....

☑ Next inspection due on: .....

☑ Remark: .....

.....

☑ Inspection service: .....

Date: .....

Signature and Stamp:

EPIRB LOCATION LOG

☑ Vessel Name: .....

☑ ID No. : .....

☑ Port of Registry: .....

☑ Installation Date: .....

☑ Registration Date: .....

Inspection Stamp:

Date, Signature:

EPIRB LOCATION LOG

☑ Vessel Name: .....

☑ ID No. : .....

☑ Port of Registry: .....

☑ Installation Date: .....

☑ Registration Date : .....

Inspection Stamp:

Date, Signature:

EPIRB LOCATION LOG

☑ Vessel Name: .....

☑ ID No. : .....

☑ Port of Registry: .....

☑ Installation Date: .....

☑ Registration Date: .....

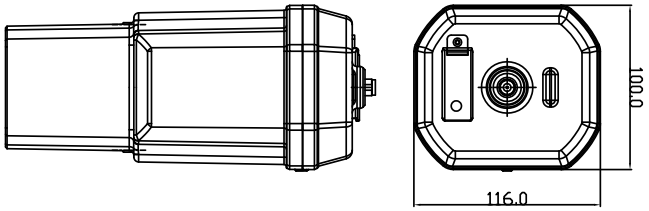
Inspection Stamp:

Date, Signature:

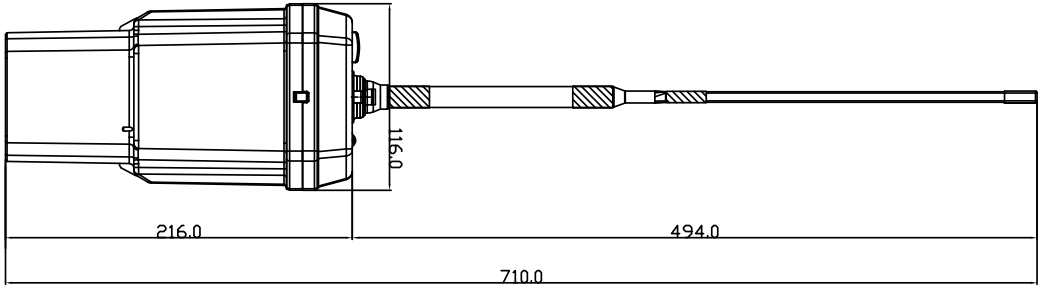
APPENDIX DRAWINGS

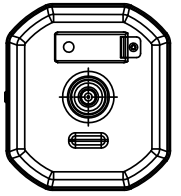
NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED SIGNATURE
0				

SIDE VIEW

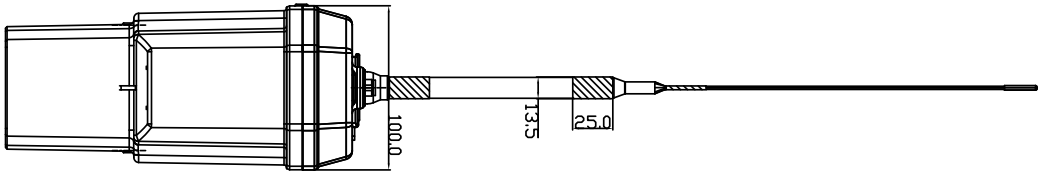


FRONT VIEW

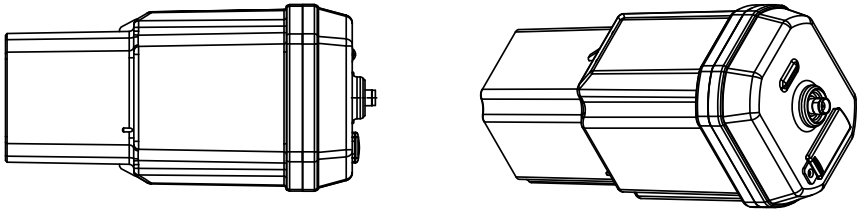




SIDE VIEW

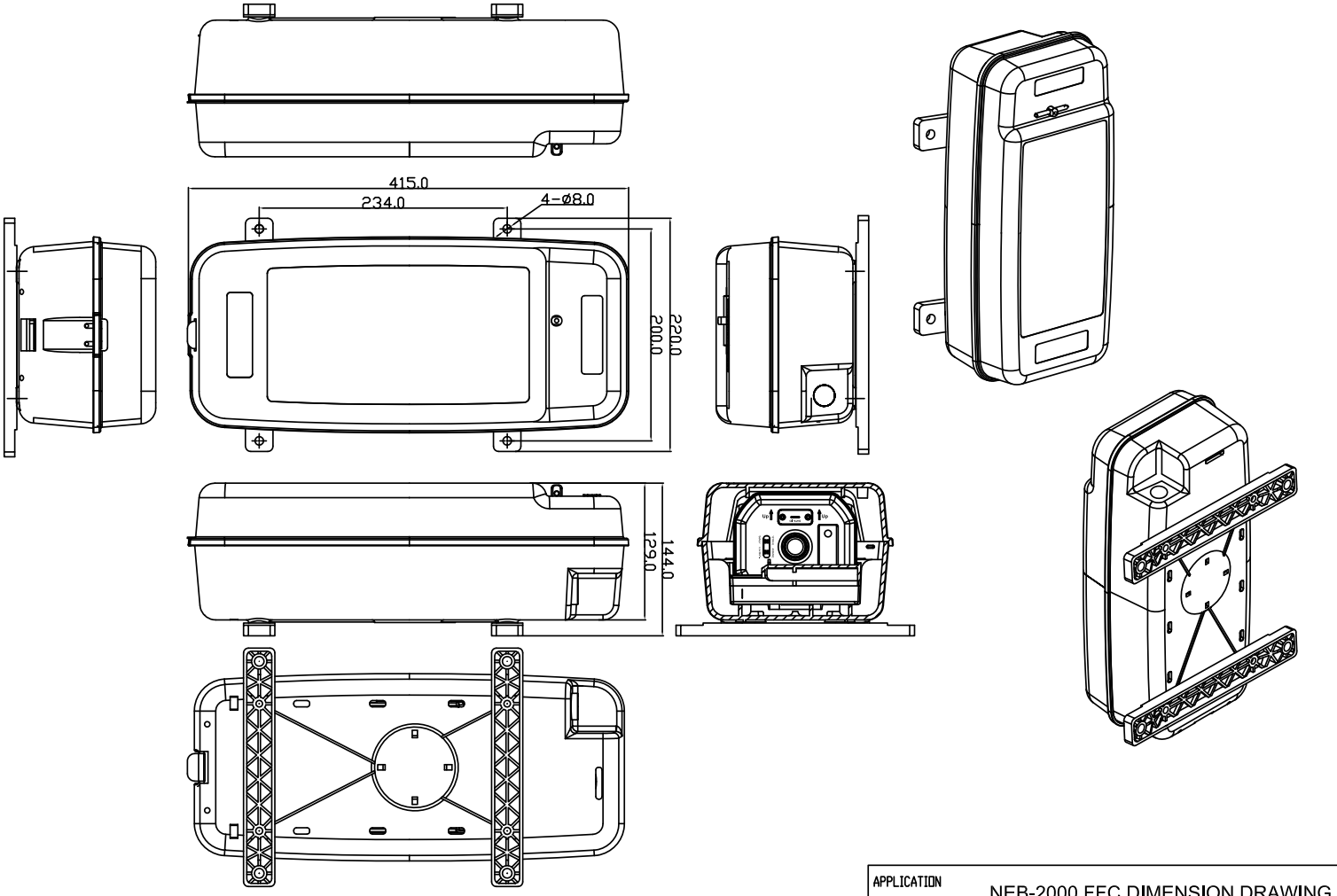


REAR VIEW



APPLICATION	NEB-2000 SIZE DRAWING						
DATE		ITEM				SIZE	A4
APPROVAL		SCALE	N/S	UNIT	mm	PRO-JECTION	
CHECKED		NSR marine	NEW SUNRISE CO., LTD.				
DRAWING							
DWG NO.	NEB2000-ID-001						

NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED SIGNATURE
0				



APPLICATION	NEB-2000 FFC DIMENSION DRAWING			
DATE		ITEM		SIZE A4
APPROVAL		SCALE N/S	UNIT	PRO-JECTION
CHECKED		NSR marine	NEW SUNRISE CO., LTD.	
DRAWING				
DWG NO.	NEB2000-ID-002			

www.nsrmarine.com

info@nsrmarine.com

April, 2025