USER MANUAL

SART

NRT-1000

NRT-1000 UM.E 20250709-11

NOTICE TO USERS

- Thanks for purchasing this product NRT-1000 SART.

- Please read this manual carefully to ensure proper use before installation and use of the NRT-1000.

- NEW SUNRISE will assume no responsibility for the damage caused by improper use or modification of the product or claims of loss of profit by a third party, and 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.

- NEW SUNRISE reserves the right to make continuous improvements on products, both in software and in hardware, without any prior notice.

- The copyright of this manual is owned by the manufacturer, NEW SUNRISE. Prior written permission is required to copy or reproduce the manual or part of the manual.

- 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. NSR does not make any representations or warranties (implied or otherwise) regarding the accuracy and completeness of this document.

- Lithium battery is used in this product, which is not allowed to be modified, shorted or burned.

- Please keep the manual for your future reference.

WARNING:

The battery should be replaced when the marked expiry date is reached.
Dispose of the lithium batteries carefully. Lithium batteries should have two poles insulated prior to disposal because the remaining power could cause severe harm to human beings. Local regulations should be followed when batteries are disposed of in order to protect your environment.

HOW TO ACTIVATE SART

1. Take off the SART from the mounting bracket.
2. Remove the black protector.
3. Pull off the red pin and rotate the operation handle to ON.
4. Check the LED indicator. While the LED is on, SART is ready to be triggered.
5. Keep the SART as high as possible by using the telescopic pole supplied or hang the SART in the life raft by using the rope supplied.

WARNING：

Do not activate the SART unless in case of emergency. If the SART is activated for any reasons, the battery pack in SART should be replaced to maintain enough life of batteries. The red pin should also be replaced because it cannot restore to its right state after being pulled off.

MODIFY RECORD

No.	Modify by	Date	Paragraph	Version	Reason
1	Q/A	2012/11/21		01	First edition.
2	Q/A	2014/09/01		02	Generally modified.
3	Q/A	2017/11/24	All	03	Wordings modified.
4	Q/A	2018/06/12	2, 3	04	Add a black protector.
5	Q/A	2018/12/28	All	05	Generally modified.
6	Q/A	2019/07/12	All	06	Generally modified.
7	Q/A	2023/07/20	2	07	Generally modified.
8	Q/A	2024/01/02	2, 3, 6, 7	08	Generally modified.
9	Q/A	2025/01/07	All	09	Generally modified.
10	Q/A	2025/02/28	2	10	Section 2.3 addition
11	Q/A	2025/07/09	All	11	Some modification

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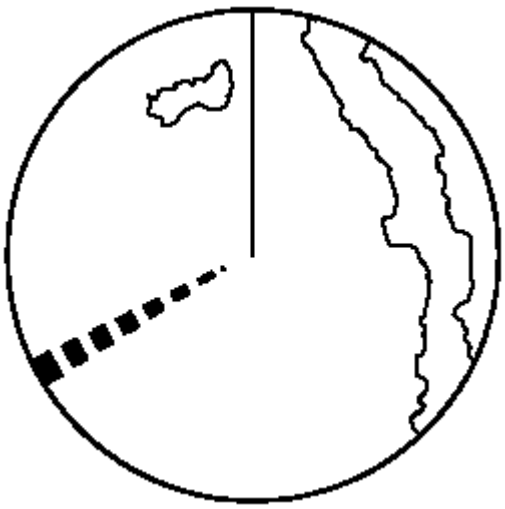
1. PRODUCT OUTLINE

The Search and Rescue Radar Transponder (SART) is a very simple 9 GHz receiver/ transmitter that provides a position.

The fundamental function of the SART is to indicate its position by producing range and bearing information on any 9 GHz radar screen of any nearby ship, vessel and aircraft (with no modification).

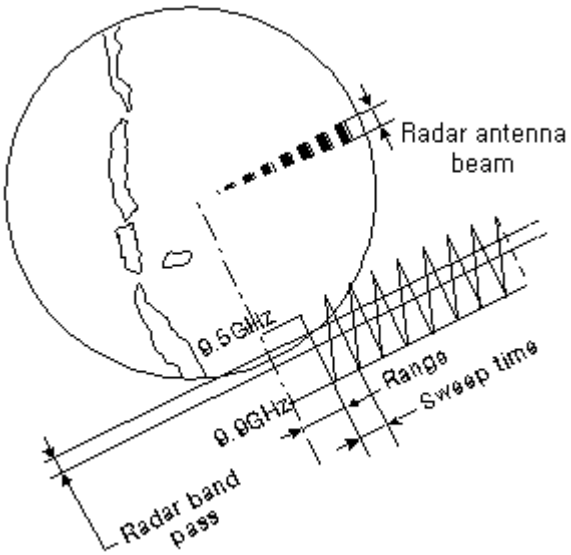
When its RADAR receiver is triggered by an interrogating RADAR of the 9 GHz band on a search and rescue ship or aircraft, the SART immediately transmits a coded response signal (a series of 12 dots).
The SART code displayed on the radar screen is a series of dots extending radially outwards from the location of the transponder.
The series of dots represents a range of approximately 10 nautical miles. This indication is an internationally accepted signal for search and rescue operations.

In addition, the SART gives confidence to survivors by giving a loud signal and visual indication of the approach of assistance.



In operation, the SART responds automatically using a 9 GHz high-speed frequency sweeping signal with a pulse emission period of 100 μs which is synchronous with any received scanning pulse.

The SART response signal scans all frequencies in the 9 GHz radar band.



To select the SART code only on the radar screen, use the "detuning of the radar receiver". This offset tuning erases all normal radar images caused by echoes with the same frequency as the radar transmission.
However, the SART code is not erased because the SART response signal scans all frequencies in the 9 GHz band.

2. HOW TO ACTIVATE

2.1 On Vessel

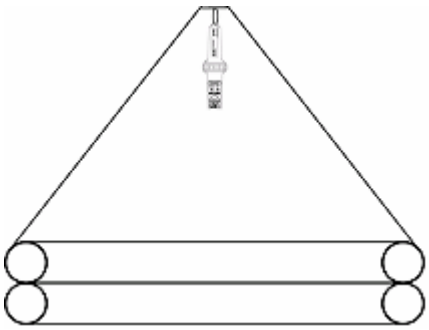
When still onboard the vessel, activate the SART as below:

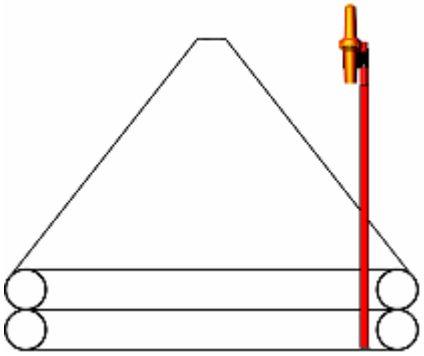
- Take off the SART from the mounting bracket.
- Remove the black protector.
- Pull off the red pin and rotate the operation handle to ON.
- Check the LED indicator. While the LED flashes, the SART is ready to be triggered. Once the radar signal is received, the LED indicator turns ON and the internal buzzer sounds "di, di...", which means it's transmitting.
- Keep the SART as high as possible by using the telescopic pole supplied.
- To close the SART, move the operation handle to OFF.

2.2 In Life Raft

Activate the SART in the life raft as below:

- Keep the SART as high as possible by using the telescopic pole supplied or hang the SART in the life raft by using the rope supplied.
- Remove the black protector.
- Pull off the red pin and rotate the operation handle to ON.
- Check the LED indicator. While the LED flashes, the SART is ready to be triggered. Once the radar signal is received, the LED indicator turns on and the internal buzzer sounds "di, di...", which means it's transmitting.
- To close the SART, move the operation handle to OFF.



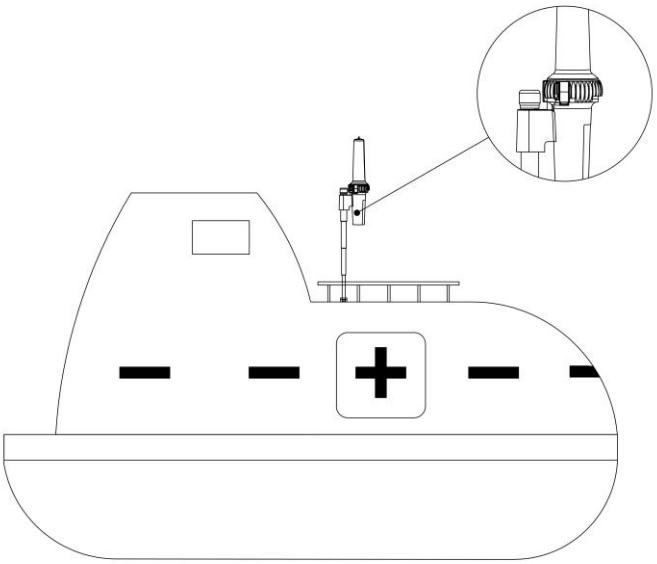


2.3 In Lifeboat

Activate the SART on the lifeboat as below:

- Keep the SART as high as possible by using the telescopic pole supplied, with an unobstructed view of the sky.
- The pole should be fixed vertically.
- Remove the black protector.
- Pull off the red pin and rotate the operation handle to ON.
- Check the LED indicator. While the LED flashes, the SART is ready to be triggered. Once the radar signal is received, the LED indicator turns on and the internal buzzer sounds "di, di...", which means it's transmitting.

- To close the SART, move the operation handle to OFF.



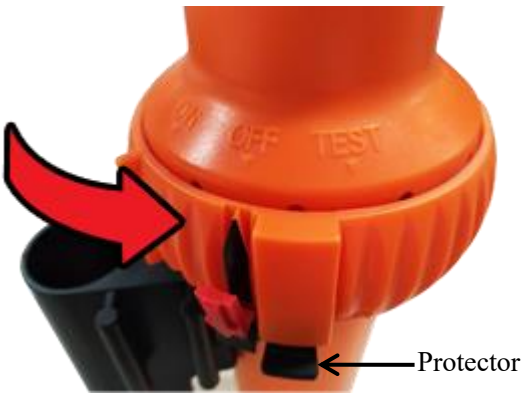
NOTE:

Operating the SART under the lifeboat canopy is not recommended if the canopy is made of materials that may obstruct the signals.

An outdoor lifeboat bracket may be used as an option. When mounted outside a freefall lifeboat, NRT-1000 should not be stored permanently on the bracket but should be moved to the bracket after the lifeboat is launched or in the water.

3. HOW TO TEST

- Take off the SART from the bracket.
- Hold the SART in an open space outdoors.
- Remove the black protector.
- Rotate the round operation handle to TEST.
- Check the LED status. If the LED flashes, the SART is ready to be triggered.



- When the receiver of the SART is triggered by an interrogating RADAR signal of the 9 GHz band on a search and rescue ship or aircraft, the SART immediately transmits a coded response signal (a series of 12 dots), which can be checked on the RADAR screen. The LED indicator turns on and the internal buzzer sounds "di, di...", which means it's transmitting.
- Rotate the round operation handle back to OFF and insert the black protector and then place SART back in the bracket.

Don’t pull the red pin when testing. The red pin can not be restored to its original status after being pulled. Pull the pin only when activating the SART in an emergency.

CAUTION：

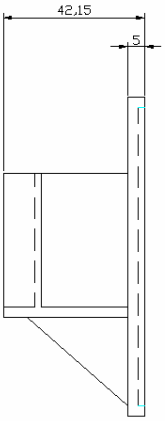
Even in low output power, the SART transmission can be well received by vessels nearby. Frequent tests should be avoided not only for interference but also for battery-saving.

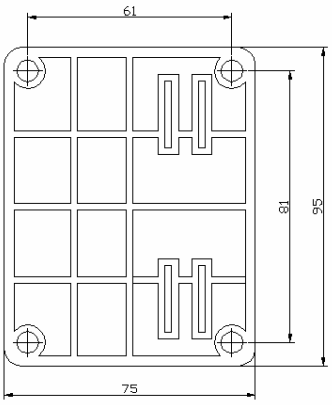
4. HOW TO MOUNT

The SART is mounted with the wall bracket in the bridge. The bracket should be mounted in a vertical position and in a place where the SART is easily available in case of an emergency. The SART is mounted in such a position to avoid direct sunshine and heating sources.

Fit the black bracket on the wall using four screws supplied, and then insert the SART into the bracket.

Before inserting the SART, open the cap of the pipe, put the pipe into the black hole on the SART from the upside, and then cover the cap on the pipe.





5. PERIODIC INSPECTION

Periodic inspection is very important to ensure the SART is in good condition. Each test should be executed in a short time because any test could reduce the life of the batteries.

5.1 Every Six Months

The inspection every six months should be carried out by operators on board. The inspection should cover the following items:

- Carry out the test procedure by following HOW TO TEST.
- Check whether any damage can be viewed.
- Check the expiry date of the batteries.
- Record the inspection result.

5.2 Every Five Years

The inspection every five years should be carried out by the manufacturer or authorized dealers. The inspection should cover the following items:

- Replace the battery pack together with the case and gasket.
- Check the watertightness of the case.
- Carry out a complete performance test.
- Record the inspection result.

6. HOW TO REPLACE BATTERY

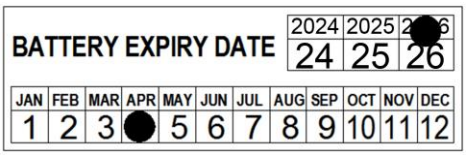
6.1 Battery Replacement

The expiry date of the batteries is marked on the case of the SART. The batteries should be replaced before the expiry date.

The following items are to be replaced together:

- Radome case of batteries (with operation instructions printed on the case);
- Case cover; Colorless indicator cover; Gasket; Two cells of batteries; Red pin.

All the above items are combined into a battery module, **NBT100**.



For example, the above sticker is punched as the expiry date of April 2026.

It's very important to replace with battery pack originally supplied/made by NSR, when the battery is expiry. NSR guarantees the quality of NSR products only when original NSR battery pack is used. When the product was tested and type approved, NSR battery pack was **an integral part** of the product. If a counterfeit battery pack is used on NSR product, the product will automatically lose the guarantee of all type approval certificates, and then, NSR will be exempted from the responsibility of warranty and other service guarantees. The counterfeit battery pack will affect NSR product from operating properly.

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

The following instructions need to be observed:

- It is strictly prohibited for any personnel to attempt to pry open the battery cover.
- Do not charge the battery or throw it into a fire.
- Do not expose the battery to an environment with a temperature higher than 70°C.
- Short-circuiting the positive and negative poles is strictly prohibited, and the poles should be well insulated with tape after the battery is replaced.

6.2 Battery Disposal

Warning: Lithium batteries should have two terminals insulated prior to disposal because the remained power could cause severe harm to human beings. Local regulations should be followed when batteries are disposed of in order to protect your environment.

6.3 Battery Transportation

The transportation of the battery pack must strictly comply with regulations on the transportation of lithium batteries. Before transportation, the positive and negative poles of the battery should be well insulated with tape to prevent exposure.

7. TECHNICAL SPECIFICATIONS

⑴ **Work Frequency:**	9.2 ~ 9.5GHz
⑵ **Carrier Power:**	≥400mW
⑶ **Receiving Sensitivity:**	≤-50dBm
⑷ **Communication Coverage:**	≥5nm
⑸ **Temperature Range:**	Operating: -20℃ ~ +55℃
	Storage: -40℃ ~ +70℃
⑹ **Size:**	95（d）×377（h）mm
⑺ **Weight:**	750g
⑻ **Battery:**	Voltage: DC 7.2V
	Operating time: 8 hours of continuous transmission (interrogated with a pulse repetition frequency of 1Hz) following 96 hours in a standby condition.
	Storage: 5 years onboard (see Note 1)
(9) Watertight:	At a depth of 10m for at least 5 min

*Note 1:

The battery pack can be stored at the dealer/agent max 1 year since purchased and it should be replaced within 5 years after being supplied to a vessel.

8. WARRANTY

All goods manufactured by NSR are warranted to be free from defects in workmanship and material for the period of 24 months since the date of installation on the vessel.

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 circumstances be liable for consequential damages.

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

NOTE:
The above warranty is subject to adjustment by the latest **Warranty Terms for NSR Products**.

CHECK LIST BEFORE DELIVERY

☒ Battery：

Expiry date：

☒ Watertightness verification：

☒ Mounting bracket：

☒ Transmission test：

☒ General operation：

☒ USER ID：

.....

NEXT INSPECTION DUE ON：

.....

Date：

Signature and stamp：

INSPECTION RECORDS （every 6 months）

NO	DATE	INSPECTION RESULT	INSPECTOR

INSPECTION RECORDS （every 6 months）

NO	DATE	INSPECTION RESULT	INSPECTOR

INSPECTION RECORDS （every 5 years）

☒ Battery replacement：

Battery supplier：

Model number：

New battery expiry date：

Old battery disposal：

☒ Gasket replacement：

☒ Performance test：

.....

NEXT INSPECTION DUE ON：

.....

Date：

Signature and stamp：

INSPECTION RECORDS （every 5 years）

☒ Battery replacement：

Battery supplier：

Model number：

New battery expiry date：

Old battery disposal：

☒ Gasket replacement：

☒ Performance test：

.....

NEXT INSPECTION DUE ON：

.....

Date：

Signature and stamp：

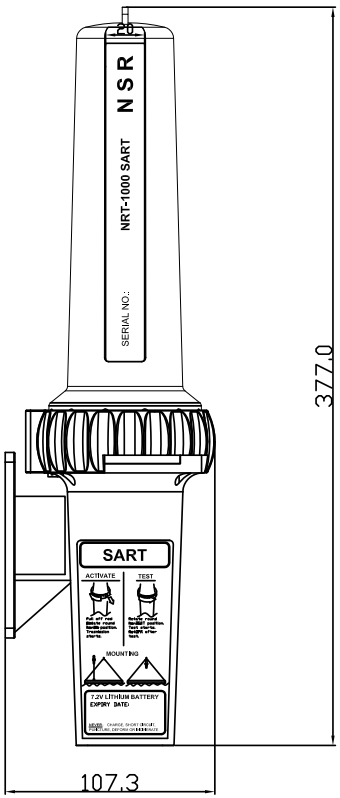
MEMO

MEMO

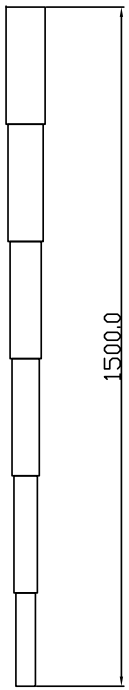
APPENDIX SIZE DRAWING

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
⚠			SIGNATURE	

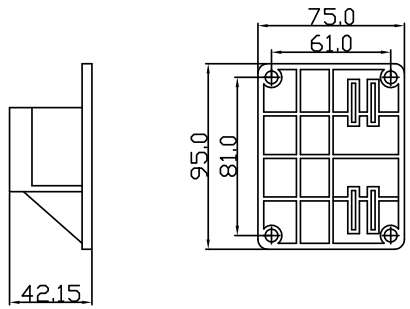
Total Length：1500mm (fully pulled out)



Transmitter



Tele-pole



Mounting Bracket

IP Grade： IP67

APPLICATION	NRT-1000 SART SIZE DRAWING								
DATE		ITEM	NRT-1000 SART					SIZE	A4
APPROVAL		SCALE	N/S	UNIT	mm	PRO-JECTION			
CHECKED		NSR marine	NEW SUNRISE CO., LTD.						
DRAWING									
DWG NO.	NRT1000-ID-001								

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July, 2025