


AIS-SART

SAR-16
Instruction manual

Please read through this manual before the first operation. If you have any questions, please contact the customer service, your local dealer or distributor.

Warning	
	Do not disassemble this equipment. Only qualified and authorized personnel could work on the equipment. There is electrical shock hazard.
	The improper disassemble, modification or, repair could cause electric shock, fire and personal injury.
	Lithium batteries is one-time used, it is not rechargeable. It must be handled in accordance with the local laws.
	Do not incinerate, puncture, deform or short-circuit.
	Avoid wiping the case with the chemical material. It could be damaged.

In the event that your SAMYUNG ENC product needs service, please return your product to your Samyung ENC distributor or authorized service center.

Warranty does not include follow cases even if the product is within warranty period.

1. The cost for check or adjust system malfunction. (Excpet after replacement of part.)
2. Fault by user (A fall, shock and damage), improper installation, misuse and defected by any other external cause.
3. Modification or service other than by SAMYUNG ENC, authorized distributors or authorized Service center.
4. If the serial number has been removed or changed.

-----TABLEOFCONTENTS-----

Chapter 1. Product specification	3
1-1 Designed to meet the following standards:.....	3
1-2 AIS Transmitter.....	3
1-3 Battery	3
1-4 Physical.....	3
1-5 GPS antenna and receiver	4
1-6 Environment.....	4
Chapter 2. Composition	5
2-1 Basic specification	5
2-2 Spare parts	5
Chapter 3. AIS-SART instruction.....	6
3-1 Instruction.....	6
3-2 Symbol of GPS plotter and electrical chart	6
Chapter 4. Installation and operation manual	7
4-1 Install in vessel.....	7
4-2 Installation in distress situation.....	8
4-3 Operation	9
4-4 Active mode.....	10
Chapter 5. System maintenance and fault diagnosis.....	11
5-1 Battery test	11
5-2 Transmission in Test Mode	12
5-3 Replace battery.....	13
SAR-16 OUTLINE DRAWING.....	14
Chapter 6. Warranty information	15

Chapter 1. Product specification

1-1 Designed to meet the following standards:

- ◆ IEC61097-14 Ed 1.0 IEC standard, AIS search and rescue transmitter
- ◆ IEC60945 Edn 4.0 IEC standard, environmental requirements
- ◆ ITU-RM.1371-4..... Universal AIS Technical Characteristics
- ◆ IEC61108-1..... IEC standard, GPS receiver equipment

1-2 AIS Transmitter

- ◆ Frequencies AIS1 (CH 87B) : 161.975 MHz(F1D)
AIS2 (CH 88B) : 162.025 MHz(F1D)
- ◆ Data Rate 9,600bps
- ◆ Bandwidth 25KHz
- ◆ Radiated power 1W(EIRP)
- ◆ AIS message type Message 1, Message 14
- ◆ Modulation GMSK
- ◆ Antenna pattern Vertical polarization

1-3 Battery

- ◆ Type Two ER34615M Lithium Batteries (not rechargeable)
5 years service life (from date of manufacture)
- ◆ Operating life 96 hours minimum
- ◆ Storage 5 years
- ◆ Service Replaceable

1-4 Physical

- ◆ Weight (main unit)..... 450g
- ◆ Weight, (including pole) 600g
- ◆ Size (main unit pole folded) H330 X W110 (mm)
- ◆ Length including pole extended.... 1.25m
- ◆ Lanyard..... 10m, 50Kg breaking strain

1-5 GPS antenna and receiver

- ◆ Antenna..... PATCH ANTENNA
- ◆ Receiver type 50-channel u-blox engine
GPS L1 C/A code
SBAS: WAAS, EGNOS, MSAS
- ◆ Accuracy..... Position 2.5 m CEP / SBAS 2.0 m CEP
- ◆ Start-up Times..... Cold start = 26sec
- ◆ Sensitivity..... Tracking : -162 dBm -161 dBm
Cold starts : -148 dBm -147 dBm
Hot starts : -157 dBm -156 dBm

1-6 Environment

- ◆ Operation temperature -20°C to +55°C
- ◆ Storage temperature -30°C to +70°C
- ◆ Waterproof Immersion to 10m
- ◆ Buoyancy Floats
- ◆ Exterior Finish Highly visible orange
- ◆ Compass safe distance 0.2m

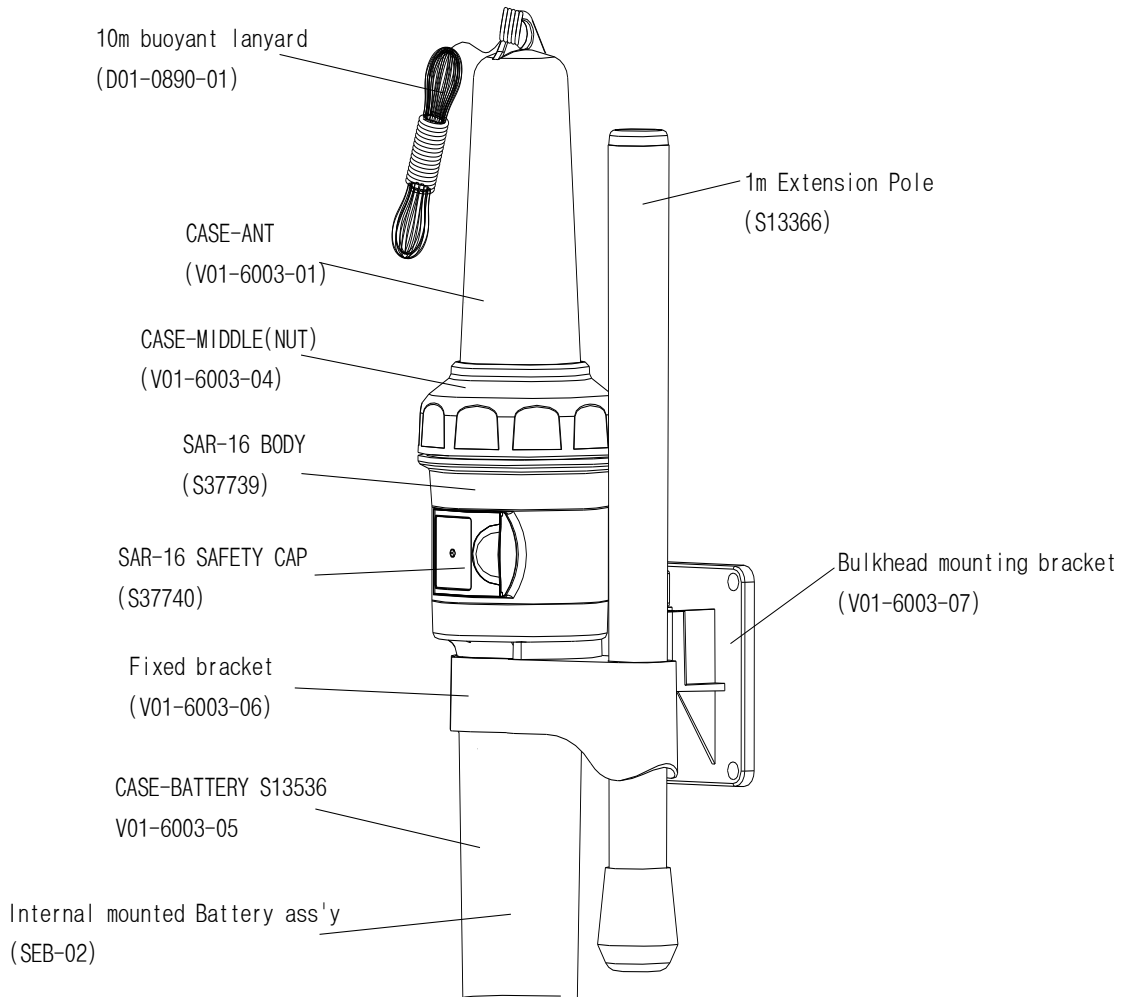
Chapter 2. Composition

2-1 Basic specification

No	Item	Size	Qty.	Part Number
1	AIS-SART	SAR-16	1EA	
2	Manual	SAR-16-M	1EA	

2-2 Spare parts

No	Item	Size	Qty.	Part Number
1	Battery ass'y	2ER34615M	1EA	SEB-02



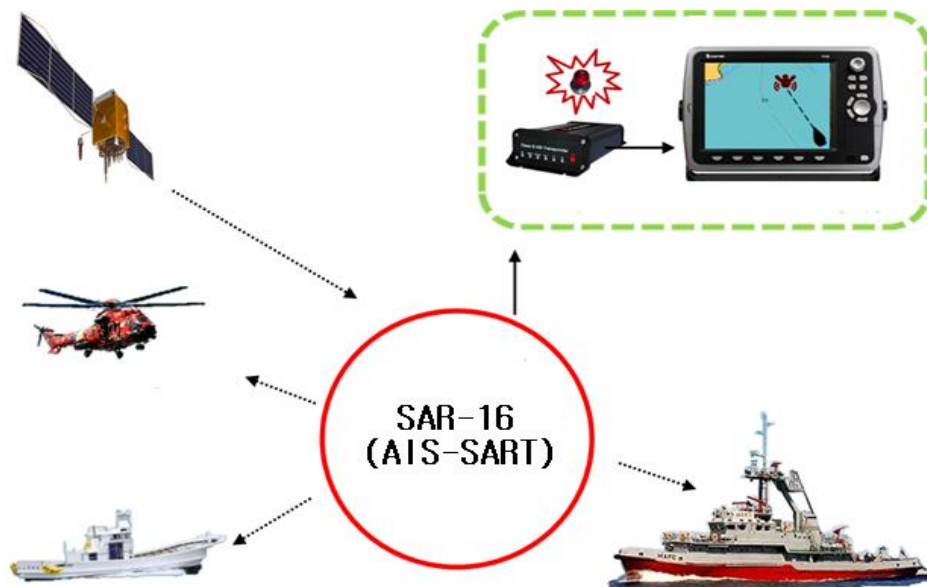
Chapter 3. AIS-SART instruction

3-1 Instruction

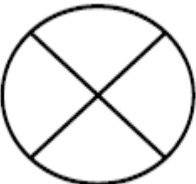
AIS-SART is a combined term of AIS (Automatic Identification System) and SART of distress signal transmitter. It is a distress signal transmitting device which sends a distress signal using the AIS system.

The basic operation of AIS-SART is shown as below.

When AIS-SART is activated and transmit a distress signal, AIS receivers installed in nearby vessels and coast stations receive the distress signal automatically and they display distress information on the GPS chart plotter by visual and auditory way.



3-2 Symbol of GPS plotter and electrical chart

Topic	Symbol	Description
AIS Search and Rescue Transmitter (AIS-SART)		A circle containing a cross drawn with solid lines.

Chapter 4. Installation and operation manual

4-1 Install in vessel

1. Install inside the vessel. (Near an emergency exit.)
2. Fix the bulkhead bracket in a convenient location (Refer to Figure 4.1a)
3. Mount the main unit onto the bracket. (Refer to Figure 4.1b)

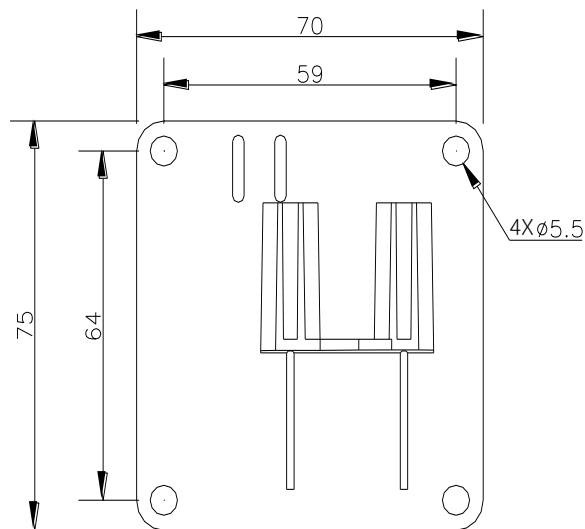


Figure 4.1a Bulkhead bracket Dimension

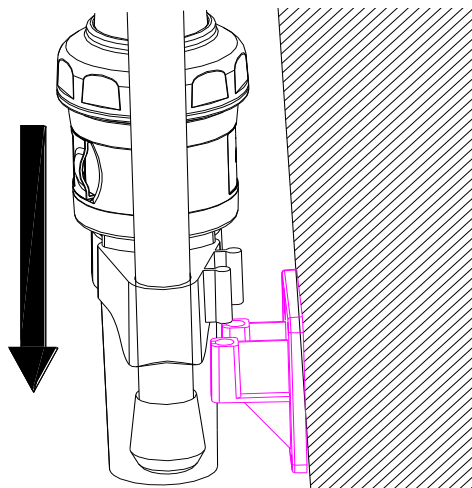


Figure 4.1b Bulkhead bracket install

4-2 Installation in distress situation

1. Transmit the SAR-16 distress signal.
2. Remove rubber cover and extend the extension pole to the full length.
3. Fix the extension pole firmly with lanyard as below figure.

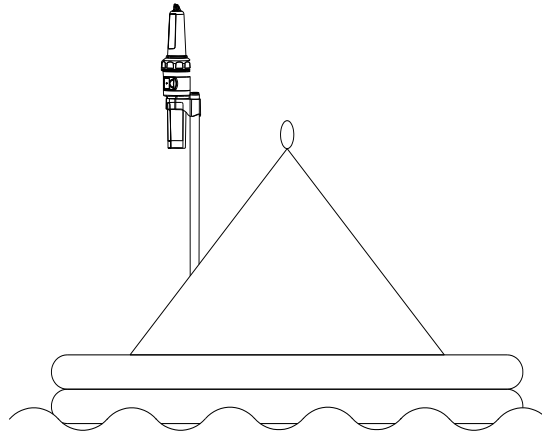


Figure 4.2a Installation using extension pole

1. Transmit the SAR-16 distress signal.
2. Install only main unit on the ceiling of lifeboat.

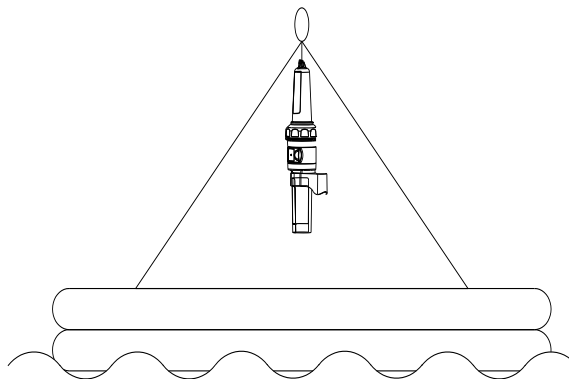


Figure 4.2b Ceiling Installation.

4-3 Operation

1. Separate SAR-16 from bracket.
2. Remove the protect cover.
3. Press [ON] switch.
4. Beep and light lamp in 1 second intervals.
5. After 15 seconds the distress signal is transmitted.
(Without GPS location information)
6. 1 minute later, a distress signal which contains the exact location information is transmitted.

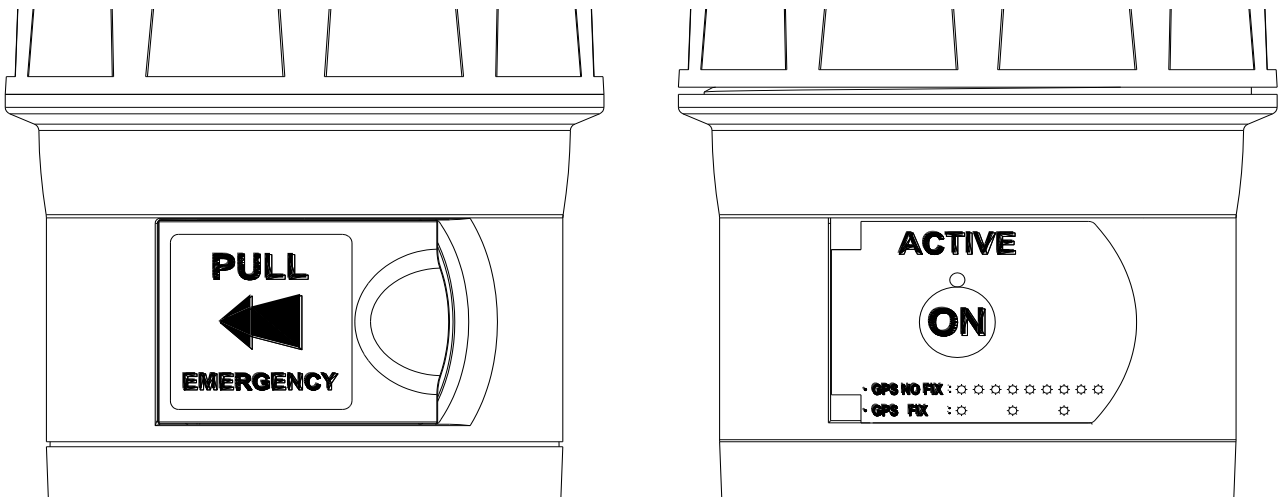


Figure 4.3 Operation

- To stop the distress signal transmitting, press [TEST] button for 2 seconds.



Do not remove protect cover except emergency situation. It will not reattach.

4-4 Active mode

In active mode the AIS-SART transmits messages in a burst of 8 messages once per minute.

The SOTDMA (Self-Organising Time Division Multiple Access) communication state of Message 1 is used to pre-announce its future transmissions.

The AIS-SART shall transmit Message 1 "Position report" with the Navigational Status set to 14 and Message 14 "Safety related broadcast message" with the text "SART ACTIVE".

Message 14 transmit nominally every 4 min and replace one of the position reports on both channels.

The AIS-SART transmissions shall alternate between AIS 1 and AIS 2.

In the 8th burst the increment to the next burst (sub-message=incr) shall be randomly selected between 2025 and 2475 slots.

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Chapter 5. System maintenance and fault diagnosis

5-1 Battery test

- Press **[TEST]** for 1 second. 2 seconds later the lamp flashes and beeps.

- You can determine the percentage of battery power remaining by the beep sound and lamp light. If the remaining battery power is low and there is no beep and flashing lamp send the equipment to the authorized service center for battery replacement.

The battery test is recommended to test every month for the best performance.

Beep and lamp flashing	Meaning
3 times	FULL
2 times	2/3 Remain
1 time	1/3 Remain
None	Replace the battery immediately



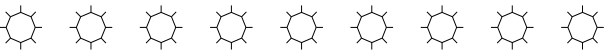
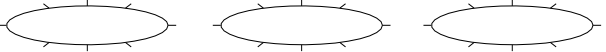

Make sure the battery expiration date. It need to be replaced every 5 years due to the battery Life. It is one-time used lithium battery and not rechargeable.

5-2 Transmission in Test Mode

1. Press the [TEST] for 10 second until you hear a beep and the lamp blinks.
2. Beep sounds and lamp blinks every second.
3. After 1 minute, three long beeps sound and lamp blinks.

If the three times of beep sound and blinking lamp does not appear for a minute, it means the device failed to acquire GPS signal. If it fails to acquire a GPS signal for 15 minutes, a test message is sent without GPS information.

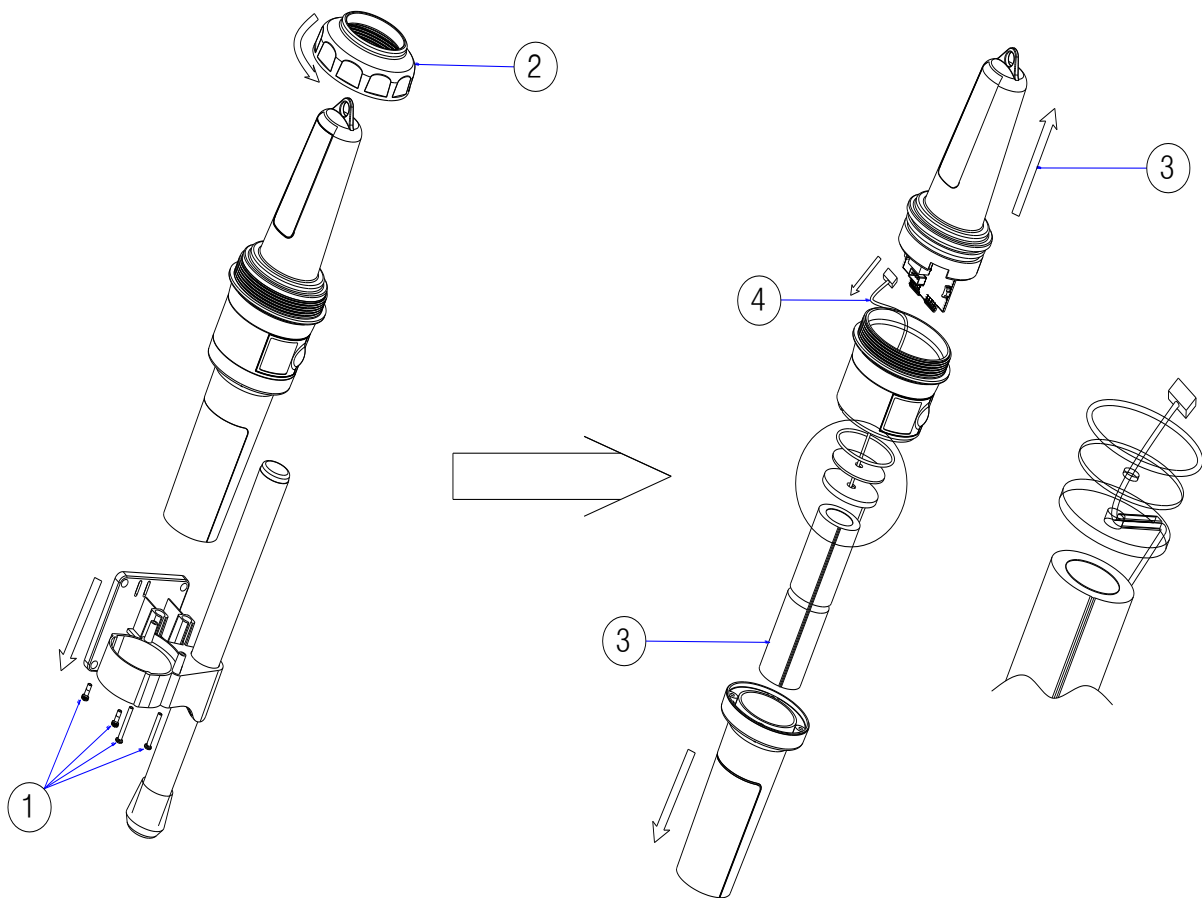
If it cannot acquire GPS signal repeatedly, test again under the open Sky. If the tests keep fail, please contact authorized service center.

- **TESTING** : 
- **TEST PASS** : 
- **ERROR** : 

5-3 Replace battery

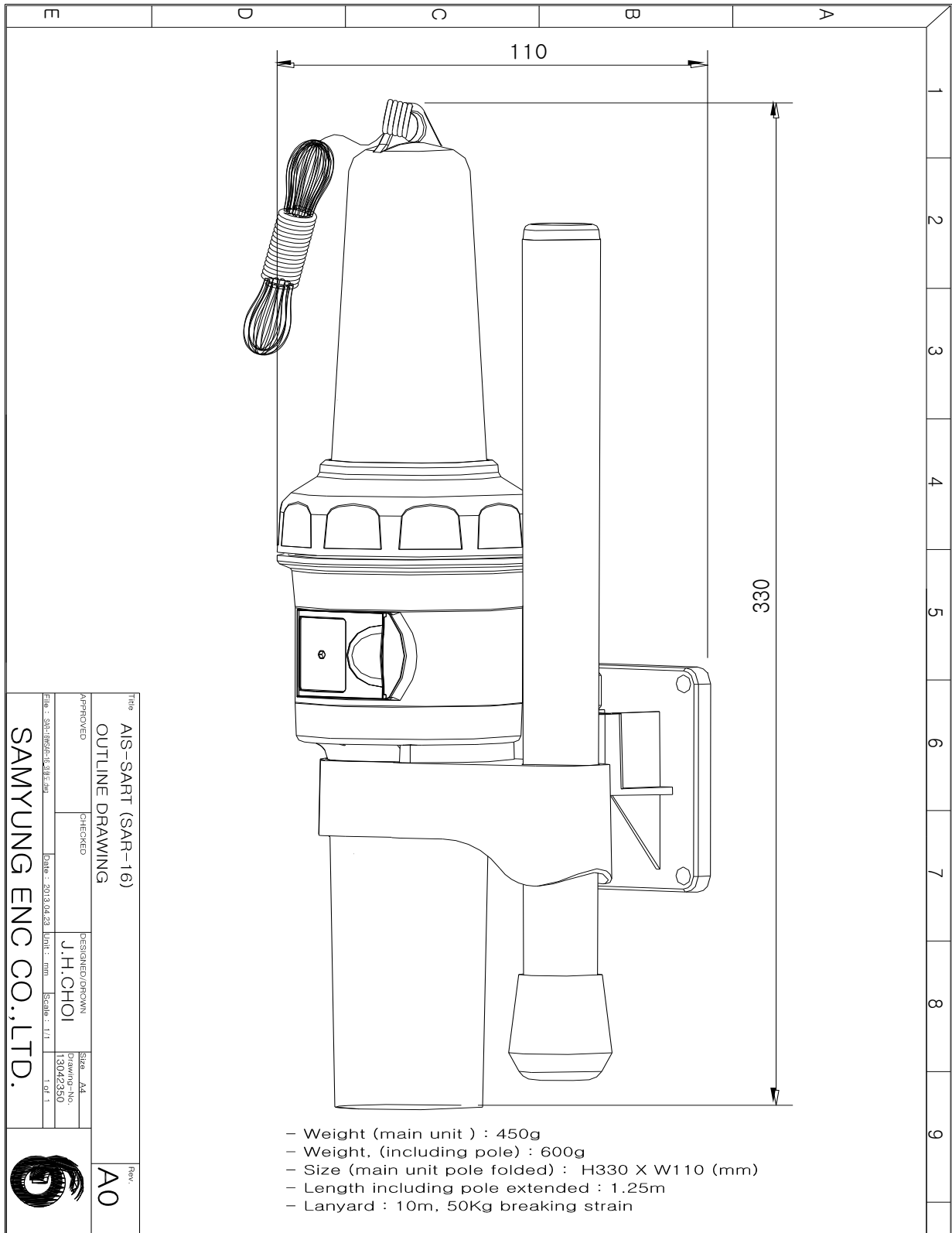
The battery in the **SAR-16 SART** should be replaced every 5 years. It is highly recommended to replace the battery before remaining power become 1/3 by for optimal performance.

- The battery replacement should only be performed by an authorized Samyung service agent. Failure caused by unauthorized personnel cannot be serviced under warranty.



- ① Remove 4 bolts.
- ② Rotate the nuts counterclockwise.
- ③ Separate upper and lower case.
- ④ Remover PCB connector which is connected to battery and replace the battery.

SAR-16 OUTLINE DRAWING



Chapter 6. Warranty information

Samyung ENC warrants our goods to be free from defects in materials and workmanship for one year from the date of original sale. We are not liable for any defect caused by the improper use or any modification.

Head office after-sales service

Address	65-20, Namhang-dong 2-ga, Yeongdo-gu, Busan, Korea
Company and department	Samyung ENC Co., Ltd. A / S team
Contact	Tel : +82-51-416-5516
	Fax : +82-51-416-5515
When A/S occurs, advice device name, serial number, operating status by telephone or fax will be addressed quickly.	

After-sales service areas (offices, agency)

Personnel	
Contact	Tel :
	Mobile :
Please take a note personnel and contacts at the time of purchase.	