SMRT AU11

PRODUCT USER MANUAL

AIS VHF DSC 121.5 MHz CLASS-M GNSS

TABLE OF CONTENTS

INTRODUCTION

sMRT AU11 OVERVIEW

HOW TO USE THE DEVICE

DOCUMENTATION

INTRODUCTION

This user manual provides all the information required to operate and test the sMRT AU11. The following symbols and conventions are used to indicate important information. Always observe these instructions. Ensure you read the warnings & safety information section of this manual before first use of the device.

WARNINGS: Instructions that, if ignored, could result in death or serious personal injury caused by incorrect operation of the equipment. These must be observed for safe operation.

CAUTIONS: Instructions that, if ignored, could result in personal injury or material damage caused by incorrect operation of the equipment. These must be observed for safe operation.

IMPORTANT NOTES: Important instructions that should be adhered to during system operation.

TYPOGRAPHIC CONVENTIONS

1. sMRT AU11 hardware features are displayed in bold upper case letters e.g. **ARMING SWITCH.**

2. Operation status is displayed in bold upper case letters with square brackets, e.g. **[OFF]**.

USING YOUR sMRT AU11 FOR THE FIRST TIME

Prior to first use, please ensure that you have fully read and understand the user manual and that you perform a full system test, detailed on Page 14.

WARNING: sMRT AU11 record of ownership. As a responsible manufacturer of life saving man overboard devices, the manufacturer maintains an ownership registration database to provide contact details to Government Search and Rescue (SAR) authorities in the event of an emergency.

CAUTION: The sMRT AU11 should only be used in an emergency. **DELIBERATE MISUSE MAY INCUR A SEVERE PENALTY.**

GLOSSARY OF TERMS & ACRONYMS

1

121.5 MHz – Very high frequency (VHF) 121.5 for international air distress

Aa

Ack – Acknowledgement

AIS – Automatic Identification System

Cc

Class-M – MOB class for DSC marine radio communications

Dd

DSC – Digital Selective Calling

Ee

ECDIS – Electronic Chart Display and Information System

EPIRB – Emergency Position Indicating Radio Beacon

Ff

FCC – Federal Communications Commission

Gg

Galileo – European Union satellite system

GNSS – Global Navigation Satellite System

GPS – Global Positioning System

Ii

IS – Intrinsically Safe

Ll

LED – Light Emitting Diode

Mm

MAYDAY – Voice distress priority message

MHz – Megahertz

MMSI – Maritime Mobile Service Identity

MRT – Marine Rescue Technologies

MSLD – Maritime Survivor Locating Device

mW – Milliwatt

Pp

PFD – Personal Flotation Device

PLB – Personal Locator Beacon

PLD – Personal Location Device

Rr

RDF – Radio Directional Finding

RMA – Return Merchandise Authorisation

RohS – Restriction Of Hazardous Substances directive

RTCM – Radio Technical Commission for Maritime services

Rx – Radio receiver

Ss

SAR – Search & Rescue

Serial Number – Manufacturer's identification number

SRI – Service Required Indicator

SOLAS – Safety Of Life At Sea

Tt

Tx – Radio transmitter

Uu

USCG – US Coastguard

Vv

VHF – Very High Frequency

Ww

W – Watt

WEEE - Waste Electrical and Electronic Equipment directive

WARNINGS & SAFETY INFORMATION

⚠ **WARNINGS:**

- The sMRT AU11 is a local area Maritime Survivor Locating Device (MSLD), that transmits emergency messages via VHF DSC, 121.5 MHz and the wearer's GNSS position via AIS.
- Before first use, perform a full system test to confirm that the device functions correctly.
- Once fitted into a PFD, a full system test of the sMRT AU11 should be performed every 3 months. Do not test the device more than once per month to avoid affecting battery performance in an emergency.
- The sMRT AU11 should only be used in marine environments and is **NOT** for use on land.
- The sMRT AU11 should **ONLY** be used in an emergency. **DELIBERATE MISUSE MAY INCUR A SEVERE PENALTY**.
- Annual inspection and recertification of the sMRT AU11 by an authorised service partner is mandatory every 12 months.
- Do not dismantle the sMRT AU11 as it contains no user serviceable parts. Authorised service partners offer a full and comprehensive service and repair facility for recertification of units and battery replacement. Please see the full list of service partners on smrtsos.com.
- The high intensity strobe light on the unit may cause discomfort if it is viewed for long periods. Avoid staring directly at it when operational.
- The sMRT AU11 uses positional data derived from its internal GNSS antenna to define the location of a man overboard. A clear view of the sky is required to obtain a GNSS position.
- Please note that the device is only as accurate as the positional data it receives.
- The sMRT AU11 contains lithium batteries; do not puncture, deform, short circuit, recharge or incinerate the sMRT AU11. Doing so will VOID the product warranty.
- Avoid handling the antenna unnecessarily when activated and do not attempt to remove the antenna.

- The sMRT AU11 must only be fitted to PFDs approved by the manufacturer. A full list of these can be found online.
- Only manufacturer approved and supplied attachment kits are to be used to fix the unit to the PFD.
- It is the user's responsibility to ensure that any ancillary equipment, such as survival suits/harnesses, PPE, belt pouch, clothing etc., do not interfere with the operation of the sMRT AU11.
- The sMRT AU11 will not float. Please attach a lanyard to a solid point in the life jacket when near water to prevent loss.
- To avoid damaging or losing the device, please ensure that it is attached to a lanyard through the eye hole on the rear of the unit.
- When wearing a survival suit and unable to manually activate the sMRT AU11, ensure the whole beacon is immersed in water for a minimum of 2 seconds for water activation.

CAUTIONS:

- Do not paint the sMRT AU11 or clean it with aggressive detergents or solvents. Some cleaning materials may damage the seals and affect the integrity of the device. This will VOID the product warranty.
- To ensure the sMRT AU11 operates as intended in an emergency:
    - Avoid dropping the unit
    - Avoid leaving the unit in direct sunlight, or in an environment where it will be exposed to high temperatures in excess of 70 °C.
    - Inspect the device periodically for signs of wear and tear, visible cracks or other damage.

  If any damage is found, **DO NOT USE** and contact an authorised service partner.

INTRODUCTION

This user manual provides all the information required to operate and test the sMRT AU11. The sMRT AU11 is a Class M compliant, Marine lifesaving device, transmitting on the 121.5MHz search and rescue (SAR) frequency, while simultaneously transmitting GPS position coordinates on AIS and DSC.

HOW THE sMRT AU11 WORKS

When armed, the sMRT AU11 is designed to automatically activate in an emergency when immersed in water. **AUTO ACTIVATION WATER SENSORS** are located on the top and bottom of the unit. If the unit is continuously immersed in salt or fresh water it will auto-activate.

A predetermined time delay prevents false activation caused by spray, rain and splashing. Once armed, the sMRT AU11 can also be manually activated by pressing the round rubber **ACTIVATION BUTTON** on the front of the device. The design of the **ARMING SWITCH**, in conjunction with the unit's **RESTRAINER TAB**, prevents the device from being accidentally activated while being carried or in transit.

Audible Alarm

The audible alarm notifies when the unit is alerting and raises awareness in case of false activation

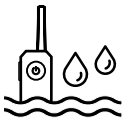
MOB Location via AIS

The location of the MOB is regularly updated and displayed on an AIS enabled device.

121.5 MHz

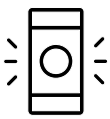
121.5 MHz

Features a low power homing signal to assist local rescue efforts



Dual Activation Methods

The device can be activated manually or automatically upon immersion in water for more than 2 seconds



Visual DSC Acknowledgement

LEDs indicate that the DSC distress signal has been received and acknowledged by a third party

Dual GNSS Receivers

Dual GPS and Galileo GNSS receivers for accelerated location detection

CLASS-M

Class M

Compliant to European regulation ECC/DEC/(22)02 relevant to the usage of MOB devices

Alert Signal via VHF DSC

All nearby vessels are automatically alerted to the man overboard situation via VHF DSC

sMRT AU11 PRODUCT RANGE

sMRT AU11

GENERAL PURPOSE

- Activates automatically on immersion in water or manually
- Alerts via VHF DSC and 121.5 MHz
- Indicates GPS position in less than 45 seconds updating GPS position via AIS every minute
- Multiple targets can be tracked simultaneously
- Individual MMSI identification
- Up to 75 mile range with worldwide satellite coverage
- Designed to be integrated into the SOLAS approved sMRT WIND PFD
- Built in flashing light enhances visual detection
- Utilises existing sMRT 121.5MHz receivers / SARfinders

sMRT AU11-HT

HELICOPTER TRANSIT

- Flight approved
- Activates automatically on immersion in water or manually
- Alerts via VHF DSC and 121.5 MHz
- Indicates GPS position via AIS every minute
- Individual MMSI identification
- Multiple targets can be tracked simultaneously
- Up to 75 mile range with worldwide satellite coverage
- Built in flashing light enhances visual detection
- Utilises existing sMRT 121.5MHz receivers / SARfinders
- Annual recertification ensures optimum performance
- Tested to enhanced specifications to ensure suitability for flight operation

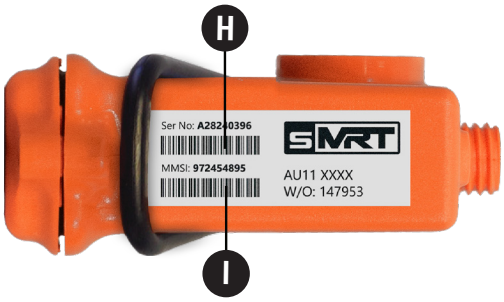
AU11-X

ATEX ZONE 2

- Activates automatically on immersion in water
- Alerts via VHF DSC and 121.5 MHz
- Indicates GPS position in less than 45 seconds updating GPS position via AIS every minute
- Multiple targets can be tracked simultaneously
- Individual MMSI identification
- Up to 75 mile range with worldwide satellite coverage
- Designed to be integrated into the SOLAS approved sMRT WIND PFD
- Built in flashing light enhances visual detection
- Utilises existing sMRT 121.5MHz receivers / SARfinders
- Annual recertification ensures optimum performance
- ATEX Zone 2 certified, conforms to ATEX Directive 2014/34/EU.
- Designed for safe operation in potentially explosive atmospheres.

FEATURES

- **A** Detachable Antenna
- **B** Auto Activation Water Sensors
- **C** Activation Button
- **D** Restrainer Tab
- **E** Arming Switch
- **F** Base Cap
- **G** Base Cap Screws



SIDE LABEL

- **H** Device Serial Number
- **I** Device MMSI Number

BASE LABEL

- **J** Recertification/Service Date

REAR LABEL

- **K** Operation Instructions

HOW TO ARM THE DEVICE

To operate correctly and ensure the sMRT AU11 is in the most effective position for water activation and emergency transmissions, the sMRT AU11 must be fitted to an MRT approved PFD.

ARMING THE sMRT AU11

The procedure below arms the device for both manual and auto-activation.

1. Remove the sMRT AU11 from the PFD, as per manufacturer's instructions and lift the **RESTRAINER TAB** up and over the **ARMING SWITCH**.
2. Slide the **ARMING SWITCH** down to the **[ON]** position until it clicks into place and ensure the **RESTRAINER TAB** is positioned in the gap above the **ARMING SWITCH**.
3. Reinsert the unit in the PFD as per manufacturer's instructions.
4. The sMRT AU11 is now ready for use.

WARNING: Once armed, the sMRT AU11 can remain in the ready position until the date of annual recertification (as printed on the recertification label at the base of the unit). Prior to returning the sMRT AU11 for annual recertification, ensure the unit is disarmed.

HOW TO ACTIVATE THE DEVICE

When activated, the sMRT AU11 will commence transmissions on the 121.5 MHz search and rescue frequency, while simultaneously transmitting GPS position coordinates on AIS and DSC. sMRT AU11 transmissions continue after activation until the device is disarmed/switched **[OFF]**. There are two methods of activation.

WHEN ARMED:

1. The sMRT AU11 activates automatically after continuous immersion in water.

2. The sMRT AU11 can be manually activated by pressing the round rubber **ACTIVATION BUTTON.**

IMPORTANT: The unit has two **AUTO ACTIVATION WATER SENSORS**. Both sensors must be continuously immersed to allow the unit to auto-activate.

CAUTION: To avoid accidental activation, **DO NOT** store or transport the unit in a wet or high moist environment.

HOW TO DISARM THE DEVICE

1. Slide the **ARMING SWITCH** up to the **[OFF]** position.
2. Lift and pull the **RESTRAINER TAB** down and over the **ARMING SWITCH**.

sMRT AU11 DETACHABLE ANTENNA

The sMRT AU11 is fitted with a detachable antenna that can be removed from the body of the MSLD.

- To **DETACH** the antenna, rotate the body counter clockwise until the two parts separate.
- To **RE-ATTACH** the antenna, fit the antenna into the body and screw in a clockwise motion.

IMPORTANT NOTE: Removing the antenna will expose the internal body. To avoid damaging the unit, an antenna screw cap should be used to seal the body.

IMPORTANT NOTE: Do not operate the sMRT AU11 without an antenna attached.

sMRT AU11 LIVE ALERTING LED PATTERNS

STATE	LEFT LED
Arming (good battery)	Green 3 flashes
Arming (battery bad, less than 12 hours left)	Red 3 flashes
Return to idle	Red 1 flash followed by Off
Alerting (no GNSS)	Purple slow flash
Alerting (GNSS LOCK)	White slow flash
Alerting (DSC rx'd) (1)	Green slow flash
Alert Cancelling	Red 1 flash followed by Off (2)

IMPORTANT NOTE: when activated the strobe will flash once every 6 seconds and the buzzer beeps in unison with the **LED** flashing.

TESTING

A full system test is performed on the sMRT AU11, at the point of manufacture. Before first use, we recommend carrying out a periodic full self-test on the product.

After deployment into active service, it is recommended that a full system test of the sMRT AU11 should be performed every 3 months. DO NOT test the device more than once per month as this could affect battery performance in an emergency.

For optimum performance, it is required that the device be returned to an authorised service agent for annual service and recertification.

TO SELF TEST:

1. Ensure the **ARMING SWITCH** is in the **[OFF]** position.
2. Press and hold the **ACTIVATION BUTTON** to activate test mode.

WARNINGS: Ensure the device has a clear view of the sky during testing to receive a GNSS signal.

If the sMRT AU11 fails any element of a self-test or any full system test, take it out of service immediately and contact a service station.

sMRT AU11 GNSS SELF-TEST LED STATES

STATE	LED
Test button pressed (good battery)	Green solid
Test button pressed (bad battery, less than 12 hours left)	Red solid
Test start/waiting for GNSS lock (good battery)	Green slow flash
Test start/waiting for GNSS lock (bad battery, less than 12 hours left)	Red slow flash
Test txing (ais burst)	Purple fast flash
Test txing (DSC)	Purple fast flash
Test (waiting for DSC ack)	White slow flash
Test (DSC ack rx'd)	2 green flashes
Test time out (DSC sent)	Nothing
Test time out (no DSC sent)	Red solid

IMPORTANT NOTE: if any of the faults trigger during a self-test, they will be displayed to the user via the **LEDs**.

IMPORTANT NOTE: Depending on conditions during testing it is possible that an AIS transmission may not be picked up by the receiving equipment. AIS data is transmitted every minute when operating in live mode which allows the receiver to identify and display a new target. If an AIS message is not displayed on the receiver this does not indicate that the device is faulty.

Ack = acknowledgement **Alt** = alternating **Rx'd** = received **Txing** = transmitting

sMRT AU11 LED FAULT STATES IN GNSS SELF-TEST

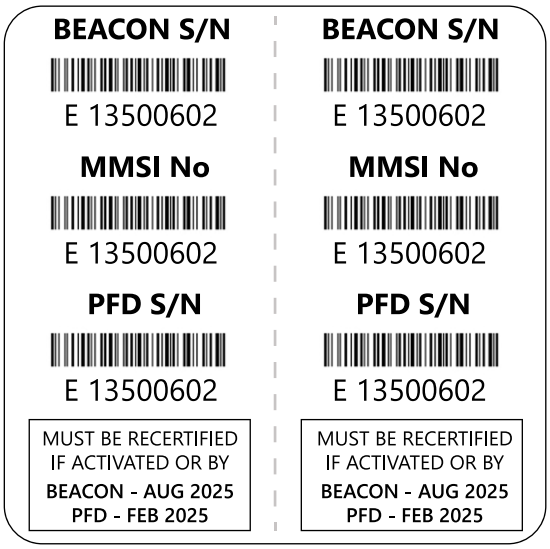
STATE	LEFT LED
Fault (battery critical)	Red fast flash
Fault (service interval)	Red fast flash w/ one white flash per 10 flashes
Fault (enclosure tamper)	Red fast flash w/ one purple flash per 10 flashes
Internal fault (scheduler)	One red flash every 10 flash intervals
Internal fault (GNSS)	Two red flashes every 10 flash intervals
Internal fault (VHF)	Six red flashes every 10 flash intervals

WARNING: If you experience any of the above, please return to an approved sMRT Service Partner.

TESTING THE sMRT AU11

Please visit www.smrtsos.com/dealers to book your service with the nearest approved service centre.

sMRT AU11 SERVICE LABEL (EXAMPLE)



WARNING: Do not use your sMRT AU11 if there are any signs of damage, or if any functional tests fail.

WARNING: If annual recertification is not undertaken prior to the recertification expiry date, as indicated on the unit, the operability and reliability of the unit will be severely affected and the unit will **NOT BE CERTIFIED FOR ANY FURTHER USE**

The sMRT AU11 is programmed with a Service Required Indicator. Upon the certification expiry date, an audible beeping alert will sound and **RED LEDs** will flash repeatedly. This indicates that the unit requires immediate recertification. The manufacturer is not liable for any defect or failure of the unit and any resulting effect including Personal Injury or Death.

RECERTIFICATION AND SERVICING

Annual recertification is mandatory to ensure the sMRT AU11 operates effectively in a lifesaving situation. Do not use your sMRT AU11 if there are any signs of damage, or if any functional tests fail – **RED LED**. The manufacturer and authorised service agents provide a comprehensive service and repair facility for recertification of units. A list of servicing partners can be found at smrtsos.com.

RETURN UNITS FOR RECERTIFICATION & SERVICING

Please contact the manufacturer at mrtcustomerservice@wescom-group.com, or your authorised service agent, to obtain an RMA tracking number for any units being returned for recertification and servicing. Record the RMA number and include it when returning units as it is used to track the device during the servicing and recertification process.

OPERATIONAL LIFE

The sMRT AU11 has an operational battery life of 1 year from the first use. When not in use, the product should be disarmed.

END OF LIFE STATEMENT

The manufacturer hereby declares that all materials, components and products supplied are in full compliance with RoHS & WEEE directives. At the end of the products operational life it must be returned to the manufacturer for safe disposal. If you are unable to return the unit then it must be disposed of according to local laws and regulations.

CHANGING CONTACT DETAILS OR OWNERSHIP

Factory assigned device MMSI numbers are allocated to sMRT AU11 units prior to shipping. It is the owner's responsibility to advise the manufacturer of any change of contact details or ownership of a sMRT AU11.

If ownership is transferred, you should contact the manufacturer or an authorised service partner to register the device in your name.

WARRANTY

Your sMRT AU11 is covered by a warranty against manufacturing defects in materials and workmanship for a period of 1 year from the date of purchase, in accordance with the following conditions:

- Marine Rescue Technologies Ltd reserves the right to repair or replace a faulty product at its discretion, free of charge, excluding shipping costs.
- A valid proof of purchase from the original buyer is required for warranty claims.
- Claims must be submitted in writing to Wescom Group or an approved service partner. A list of servicing partners can be found at smrtsos.com.

Marine Rescue Technologies Ltd is not liable under the warranty for:

- Repairs or modifications performed on the MSLD using non-approved parts, including batteries, or by entities other than Marine Rescue Technologies Ltd or approved service dealers, a full list of approved dealers can be found on the sMRT website, smrtsos.com.
- Parts, materials, or accessories not manufactured by Marine Rescue Technologies Ltd; in such cases, the consumer will be covered by the guarantee/warranty offered to Marine Rescue Technologies Ltd by the manufacturer or supplier.
- Unpaid products or those under alternative warranty agreements

The battery is warranted until the expiry date, provided the unit is tested according to the information in the user manual.

This warranty does not impact your statutory rights. The interpretation of this warranty is under English law. Please ensure you have fully read and understand the User Manual.

For further assistance, please reach out to our service department.
Email: smrt@wescom-group.com

DISCLAIMER

The sMRT AU11 is an MSLD that should only be activated as a last resort. Misuse or false activation is unlawful and irresponsible, and could result in prosecution or penalty.

The sMRT AU11 should not be relied on as the only source of man overboard notification and the vessel owner, operator or master must exercise common prudence and good seamanship at all times. Use of the sMRT AU11 in no way reduces liability of the vessel's master and crew who have the primary responsibility for safety on board. No device is 100% fail safe, nor can it guarantee safe rescue in an emergency. When activated, the sMRT AU11 is designed to transmit distress alerts to VHF DSC, AIS and 121.5 MHz equipped vessels or stations within range, but requires subsequent human interaction to acknowledge and respond to the distress alert.

Satellite GNSS lock and in-water tracking is dependent on the extent of satellite system coverage and reception at the time and location of the emergency. The actual time and success of rescue is therefore dependent on all these contributing factors and as such, is outside the control of the manufacturer.

This user manual contains important information that must be adhered to for reliable use and operation of the product. It is the owner's sole responsibility to make the effort to read this manual and to ensure that the equipment's operation and limitations are understood. Visit the manufacturer's website www.smrtsos.com to download the latest user manuals for all products. The manufacturer reserves the right to change specifications, equipment, installation and maintenance instructions without notice as part of the company's policy of continuous product development and improvement.

TRADEMARK NOTICE

Marine Rescue Technologies Limited, is the 100% owner of Marine Rescue Technologies Limited in the United Kingdom.

The absence of a product or service name or logo from those listed does not constitute a waiver of Marine Rescue Technologies Limited's trademark or other intellectual property rights concerning that name or logo.

Other product names mentioned within this document may be trademarks or registered trademarks, or a trade name of their respective owner. Contact Marine Rescue Technologies at mrtcustomerservice@wescom-group.com for a copy of our trademark policy before referencing or using any trademark or product name.

TERMS & CONDITIONS

Please visit www.smrtsos.com/terms-conditions to view our terms & conditions.

SPECIFICATION

GENERAL	
BATTERY TYPE	6V Li-MnO2
BATTERY LIFE	Minimum of 12 hours at -20°C
BATTERY SHELF LIFE AT +20°C	>3 years
OPERATING TEMPERATURE	-20° to +55°C
STORAGE TEMPERATURE	-45° to +70°C
OPERATING HUMIDITY	To 95% non-condensing
SHOCK	20G min
VIBRATIONS	EuroCAE ED-14F
FLAMMABILITY RATING	ED 14F 26.3.3 Category C:
BUOYANCY	Buoyant (index=9%)
TRANSPORTATION	Air cargo UN 3091 not hazardous
DIMENSIONS (CASE)	80mm (H) x 95mm (W) x 35mm (D)
WEIGHT	250g
ENVIRONMENTAL	EN 60945 & EN 303 132
STROBE LIGHT	15 Candela
ENVIRONMENTAL RESISTANCE	IP68:10
MOUNTING OPTIONS	Designed to integrate with a SOLAS approved life jacket
SELF ID	ITU-R M.585 compliant factory programmed freeform Maritime Identity with 972 prefix
COMPASS SAFE DISTANCE	30cm (for <1° deflection)
ALERTING RADIUS	Up to 5NM (depending on height of receiving antenna)*
TRANSMITTER PACKAGES	
AIR BAND FREQUENCIES	121.500 MHz
AIS Tx POWER OUTPUT	Nominal 1W EIRP
VHF TRANSMISSION FREQUENCIES	VHF DSC Channel 70: 156.525 MHz, AIS Channel 1: 161.975 MHz , AIS Channel 2: 162.025 MHz
VHF DSC Tx POWER OUTPUT	Nominal 1W EIRP
SIGNALLING TYPE	AIS and VHF-DSC
DISTRESS MODULATION	AM compliant to ITU-R M.690-3
AIR BAND POWER	100mW PERP
MARINE-BAND POWER	Nominal 1W EIRP
VHF ANTENNA	Centre-fed dipole, comprising coaxial cable and lambda/8 coil whip
GNSS RECEIVER	
GNSS RECEIVER TYPE	GPS plus Galileo
TTFF (TIME TO FIRST FIX)	30 seconds (typical) with nominal GPS signal levels -130dBm
GNSS UPDATE RATE	Every minute

VHF DSC AND AIS ALERTS	
AIS	Within 30 seconds of GNSS position acquisition
INITIAL OPEN LOOP DSC ALERT	Within 30 seconds after activation
SUBSEQUENT OPEN LOOP DSC ALERTS	Every 5 minutes for the first 30 minutes, every 10 minutes thereafter until VHF-DSC acknowledgement or the battery expires
FIRST DSC GPS DATA ALERT SENT	Immediately after GNSS position acquired
CONTROLS AND OPERATION	
AUTOMATIC WATER ACTIVATION	After 2 seconds of water sensor immersion
MANUAL ACTIVATION	Once armed, press Activation Button
OPERATING TIME	>12 hours continuous
STANDBY BATTERY LIFE	>3 years
PERMANENTLY ARMED	12 hours operation if armed for 12 months
GPS POSITION UPDATE	Minimum of 6 per minute
GPS TIME TO FIRST LOCK	Typically <1 minute under normal operating conditions
ALERT INDICATION	Audible and visible
APPROVALS	
EUROPEAN APPROVALS	EN 303 132 V2.1.1
EMC	EN 301 843-8: V1.1.1.005 EN 301 843-1: V2.3.1.0.0.8
SAFETY	EN 63268-1: 2018
MARINE	IEC 60945: 2002
RADIO (121.5 MHz)	EN 302 961 V1.2.1
RADIO (AIS)	EN 303 098 V1.2.1

*** Expected range derived from sea trials. Actual alerting range dependent on sea state, atmospheric conditions and height/altitude of receiving antenna.**

NOTES

WESCOM GROUP, UNIT J1, ANLABY TRADE PARK, SPRINGFIELD WAY, ANLABY, HULL, HU10 6RJ

TEL: +44 (0)1482 679 300 | SMRT@WESCOM-GROUP.COM | WWW.SMRTSOS.COM