

ARIS EXPLORER

Getting Started



[soundmetrics.com](https://www.soundmetrics.com)

ARIS EXPLORER GETTING STARTED MANUAL

TABLE OF CONTENTS

- 2 DISCLAIMER
- 3 ARIS EXPLORER: INTRODUCTION OF THE SONAR
 - Features
 - ARIS Explorer 3000
 - ARIS Explorer 1800
 - ARIS Explorer 1200
- 5 WHAT'S IN THE BOX?
 - Inside the Transit Case
 - Inside the Waterproof Box
- 9 PARTS OF THE ARIS EXPLORER SYSTEM
 - ARIS Explorer
 - Command Module
- 11 SETTING UP THE EXPLORER
- 15 IMAGING WITH THE EXPLORER
 - Orienting the Explorer
 - Imaging Example
 - Acoustic Volume
 - Range, Cross-Range & Image Perspective
- 19 INTRODUCTION TO ARIScope
 - Installing ARIScope
- 20 ARIScope Basics
 - Main Elements of the User Interface
 - Top Bar
- 23 APPENDIX
- 24 SPECIFICATIONS
 - Technical Specifications
 - Provided Power Supply
 - Power Consumption
 - PC Requirements
 - Recommended PC Configuration
- 25 MOUNTING DIMENSIONS
 - ARIS Explorer 3000
 - ARIS Explorer 1800 & 1200
- 26 MAINTENANCE
 - Anode Inspection
 - Cable Connector Care
 - Lens Bubbles
 - Lens Housing Removal
 - How to Install Silt Plugs
- 33 COMMAND MODULE
 - Troubleshooting
 - Status Codes
- 35 ACCESSORIES
- 37 NOTES
- 38 WARRANTY INFORMATION
- 40 CONTACT US

DISCLAIMER

- IMAGES SHOWN IN THE MANUAL ARE FOR REPRESENTATIONAL PURPOSES ONLY; ACTUAL APPEARANCE OF PRODUCTS MAY VARY
- SOUND METRICS RESERVES THE RIGHT TO CHANGE ANY INFORMATION IN THIS MANUAL WITH OR WITHOUT NOTIFICATION

WARNING:

- MISUSE OF EQUIPMENT CAN RESULT IN SAFETY HAZARDS

CAUTION:

- DO NOT POWER ON SYSTEM WITHOUT FULLY ENGAGING ALL CONNECTORS - CONNECTORS MUST BE FIRMLY TIGHTENED BY HAND UNTIL CONNECTOR STOPS TURNING AND PROVIDED GAUGE CAN NOT FIT BETWEEN CONNECTOR GAP
- DO NOT DISCONNECT CABLES WHILE SYSTEM IS UNDERWATER OR POWERED ON; POWER MUST BE OFF BEFORE DISENGAGING CONNECTORS
- DO NOT OVERTIGHTEN SCREWS; OVERTIGHTENING SCREWS CAN DAMAGE UNIT - APPROVED TORQUE IS AS FOLLOWS:
2.5 Nm – M4 SCREWS, 5 Nm – M5 SCREWS, AND 25 Nm – M8 SCREWS
- DO NOT ATTEMPT TO REPAIR EQUIPMENT
- FAILURE TO FOLLOW ABOVE INSTRUCTIONS WILL VOID WARRANTY



✓ GAUGE NO LONGER FITS BETWEEN CONNECTOR GAP



PLEASE READ THE ENTIRE MANUAL BEFORE USING THE ARIS EXPLORER

ARIS EXPLORER: INTRODUCTION OF THE SONAR

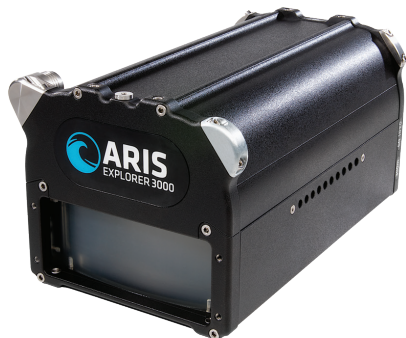
ARIS EXPLORER

FEATURES

- Dynamic Focus Using Dual Frequency
- Unprecedented High-Definition Imagery
- Capable of Imaging at Close Range
- Built in Compass and Depth Gauge
- Optional Longer Range Applications -
Three Models from which to Choose



ARIS EXPLORER: INTRODUCTION OF THE SONAR



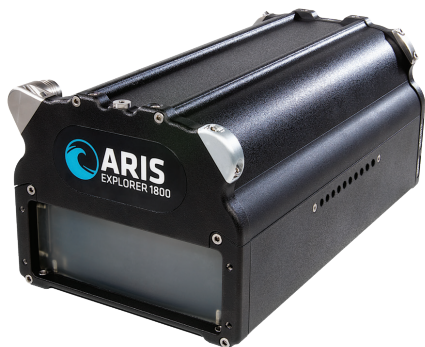
ARIS EXPLORER 3000

IDENTIFICATION MODE

Identification Frequency: 3.0 MHz
Range: 5 m

DETECTION MODE

Detection Frequency: 1.8 MHz
Range: 15 m



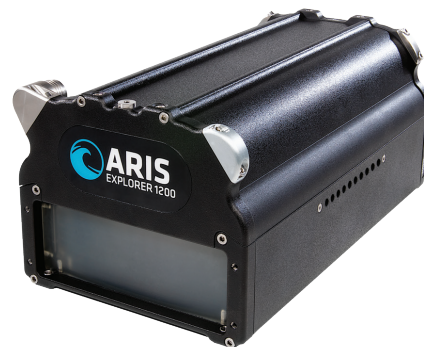
ARIS EXPLORER 1800

IDENTIFICATION MODE

Identification Frequency: 1.8 MHz
Range: 15 m

DETECTION MODE

Detection Frequency: 1.1 MHz
Range: 35 m



ARIS EXPLORER 1200

IDENTIFICATION MODE

Identification Frequency: 1.2 MHz
Range: 35 m

DETECTION MODE

Detection Frequency: 0.7 MHz
Range: 80 m

WHAT'S IN THE BOX?

INSIDE THE TRANSIT CASE



	PRODUCT	PART #
1	ARIS Explorer 3000, ARIS Explorer 1800, or ARIS Explorer 1200	021001 021002 021003
2	15 m ARIS Cable	013534
3	Waterproof Box	013410
4	Command Module	013470
5	Getting Started Manual	015045

WHAT'S IN THE BOX?



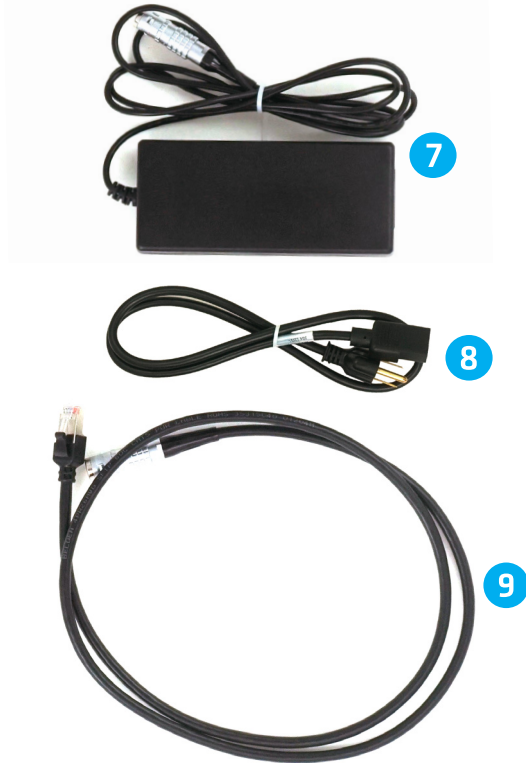
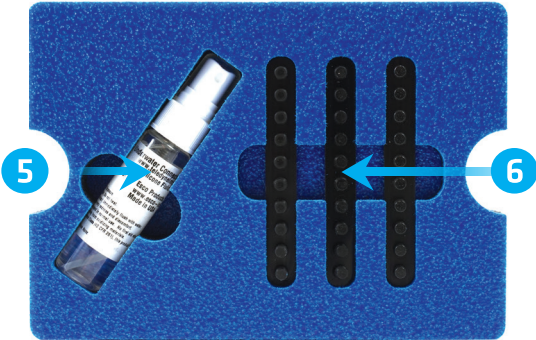
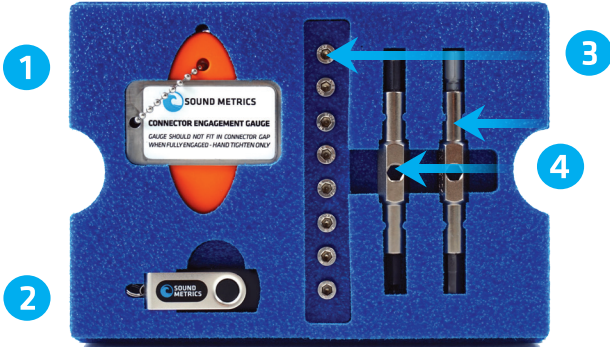
WHAT'S IN THE BOX?

INSIDE THE WATERPROOF BOX



	PRODUCT	PART #
1	Connector Gauge	015872
2	Software USB Drive	014385
3	M5 x 10 mm Screws (x8)	014945
4	Fix It Sticks (x2)	016265
5	Silicone Spray	015043
6	Silt Protection Strip	016264
7	Power Supply	015046
8	AC Power Cable	016268
9	Ethernet Cable	014512

WHAT'S IN THE BOX?



PARTS OF THE ARIS EXPLORER SYSTEM

ARIS EXPLORER



1 CONNECTOR - Connects the sonar to ARIS Cable

Note: Always be sure connectors are fully engaged before submerging underwater

2 LENS - Focuses sound into a high resolution image

3 SILT PLUG HOLES - Mounts Silt Plug Strips

PARTS OF THE ARIS EXPLORER SYSTEM

COMMAND MODULE



The Command Module monitors the power and connection status of the sonar. The ring-shaped LED around the main power switch gives visual feedback on the current operating state of the system.

See Page 34 for the primary status indications of the Command Module.

SETTING UP THE EXPLORER



STEP 1

Attach the bronze nut of the ARIS Cable to the ARIS Explorer, making sure to line up the key in the cable with the keyway on the connector. Push in while tightening the ARIS Cable.



STEP 2

Attach the stainless threaded end of the ARIS Cable to the Command Module, making sure to line up the key in the Command Module connector with the keyway on the cable connector. Push in while tightening the nut on the Command Module.

Note: To tighten or loosen the nut, turn the nut in the direction indicated on the Command Module.

SETTING UP THE EXPLORER



STEP 3

Using the edge of the Connector Gauge, check that the connectors are mated. The Gauge will no longer slide into the connector gap when fully engaged.

Note: Gently wiggling the cable while turning the bronze nut will aid in tightening the connector.

SETTING UP THE EXPLORER

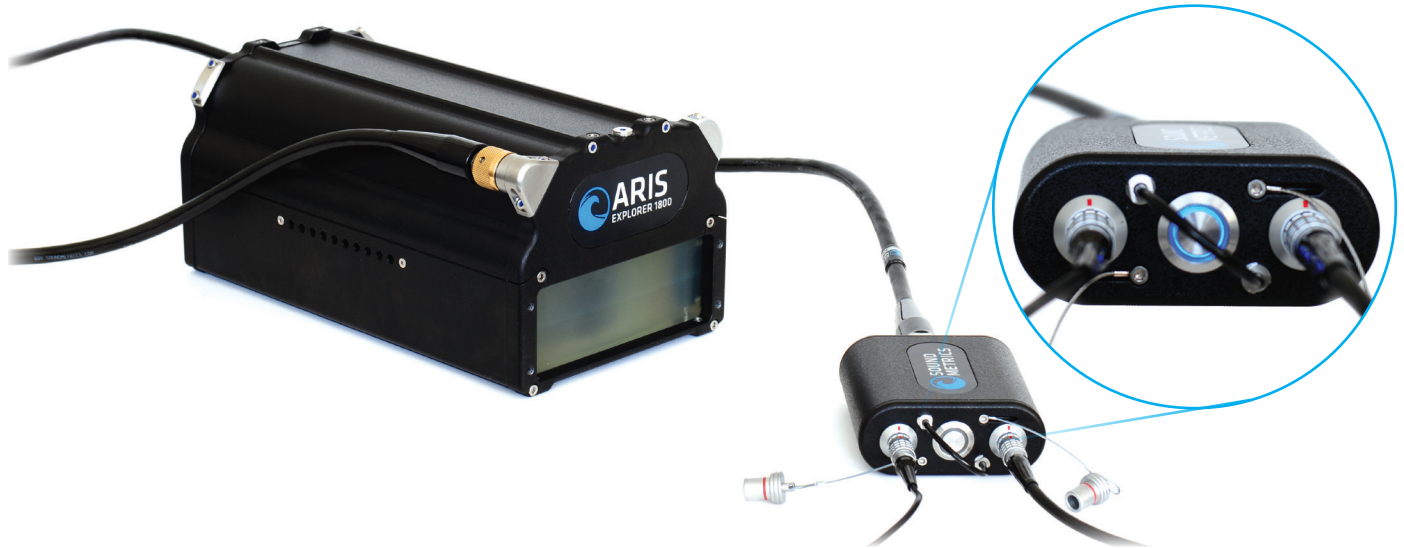


STEP 4

1 Pull the waterproof plugs out of the Command Module. **2** Line up the red dot on the Ethernet Cable connector with the red dot on the receptacle on the Command Module. Push in the connector until it is locked into place. Connect the Power Supply to the Command Module.

Note: To release the connector, pull the sleeve on the silver connector back until it slips out of the receptacle.

SETTING UP THE EXPLORER

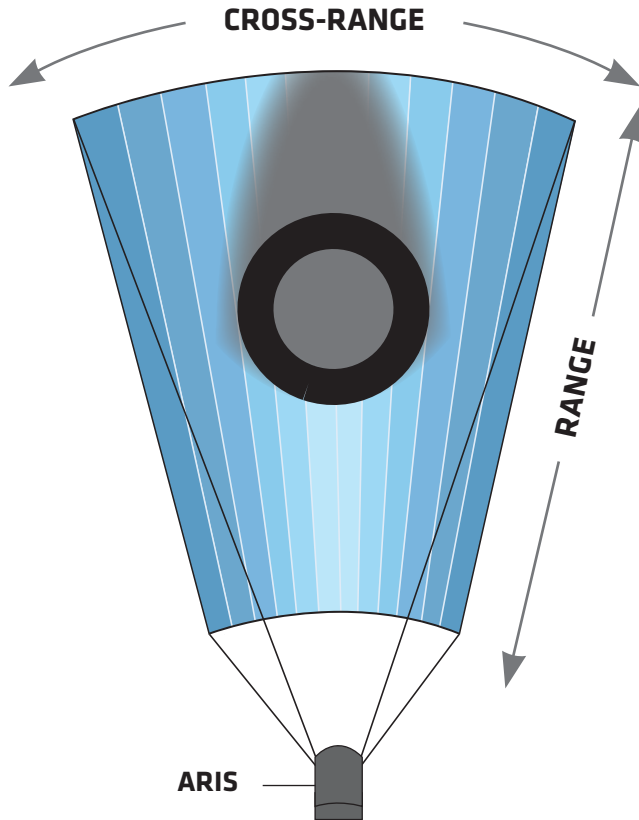


STEP 5

Press the center button on the Command Module to power on the ARIS Explorer. The blue light will flash a few times before remaining steady.

Note: Press the button on the Command Module again to power down the ARIS Explorer.

IMAGING WITH THE EXPLORER



Multiple beams directed from the ARIS Explorer create a fan of narrow slices that form the “acoustic wedge.” Each individual slice produces a section of the image, where information in range is then placed appropriately with neighboring information in cross-range to produce the entire image.

ORIENTING THE EXPLORER

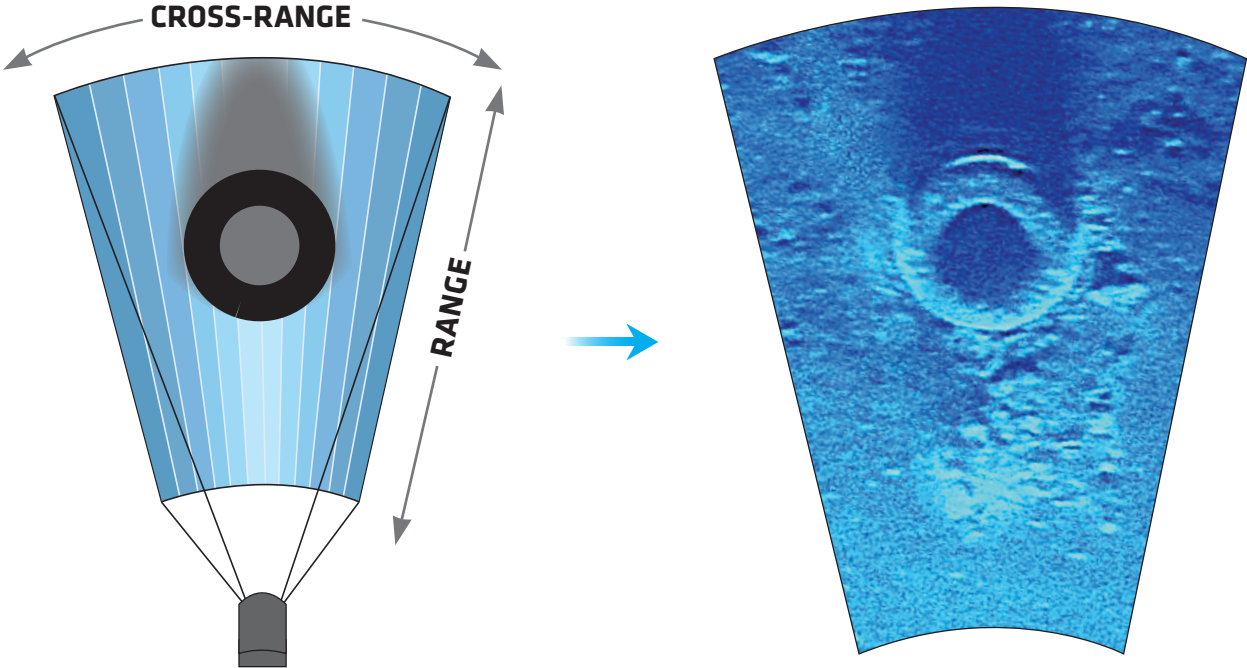
Orient the Explorer such that the acoustic wedge covers the object. The surface is shown in range and cross-range.

Note: The image perspective of the ARIS is 90° from the aim.

IMAGING WITH THE EXPLORER

IMAGING EXAMPLE

The ARIS image shows range and cross-range information from an apparent top-down perspective.

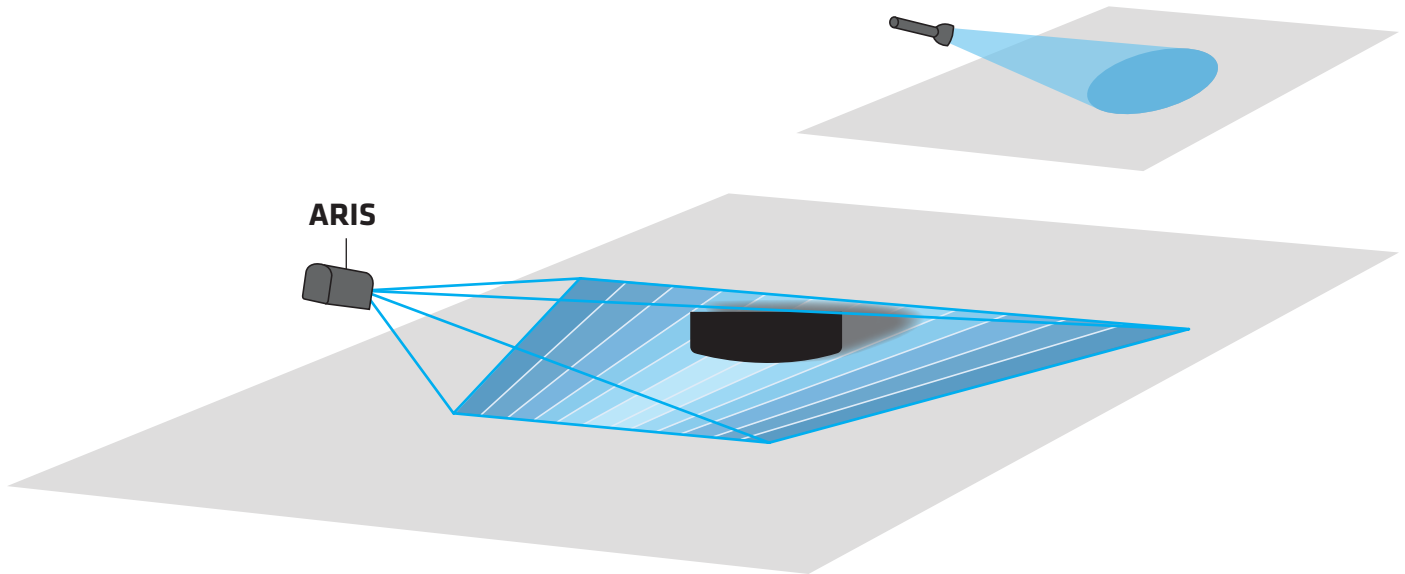


IMAGING WITH THE EXPLORER

The following illustrations demonstrate how to image an object lying on a surface using the ARIS Explorer:

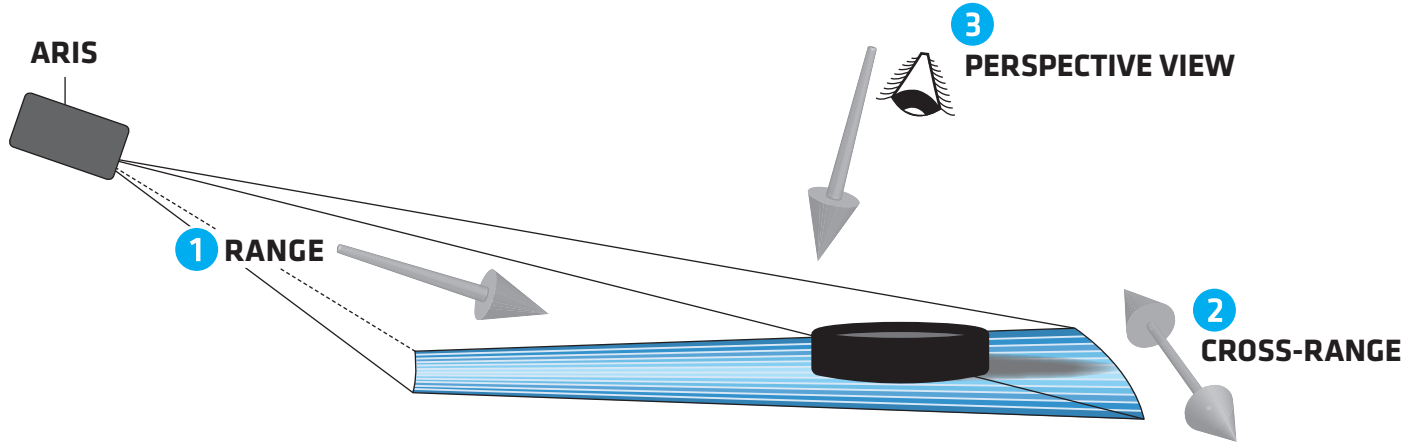
ACOUSTIC VOLUME

The ARIS Explorer uses multiple beams to project a wedge-shaped volume of acoustic energy, much like a flashlight projects a cone-shaped volume of light.



IMAGING WITH THE EXPLORER

RANGE, CROSS-RANGE & IMAGE PERSPECTIVE



Range, cross-range, and perspective are relative to the acoustic wedge. Each of these are at 90° to the other two, much like three edges that come together at the corner of a box.

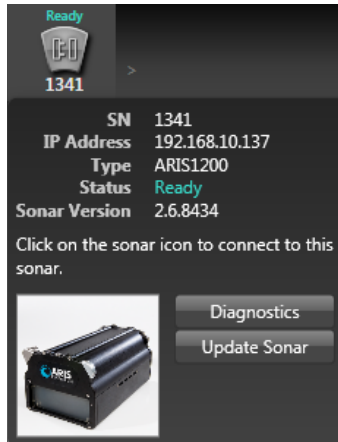
- 1 RANGE** - Distance away from the ARIS along the length of the wedge
- 2 CROSS-RANGE** - Distance directly across the width of the wedge
- 3 PERSPECTIVE** - Apparent top-down view of transmitted image

INTRODUCTION TO ARIScope



Manual and automated controls are simple using the ARIScope software interface. The latest ARIScope is available for download by logging in to the Sound Metrics portal at:

www.soundmetrics.com/My-Account/Downloads/Customers/Software/ARIS

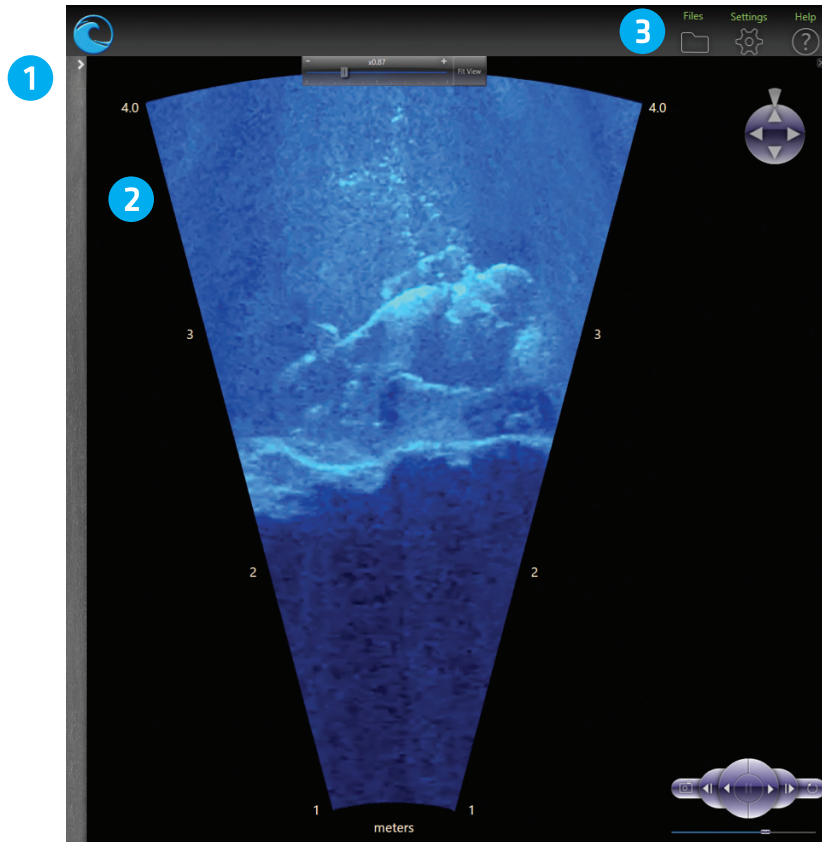


INSTALLING ARIScope

Un-install any previous version of ARIScope. Open the ARIScope installer file from the USB drive or downloaded from the Sound Metrics portal. Follow the install prompts to install the latest version of the software to the PC. Connect to the ARIS, hover the mouse over the sonar icon, and click *Update Sonar*.

Note: Your computer may need to restart to complete the installation process.

ARIScope BASICS



MAIN ELEMENTS OF THE USER INTERFACE

- 1 CONTROL PANEL**
Contains sub-sections for image control and image filter activation
Click on the arrow to reveal options
- 2 IMAGE DISPLAY**
Presents the sonar image and controls
- 3 TOP BAR**
Contains icons for sonar, files for playback, and controls for choosing files, modifying application settings, and accessing the help file

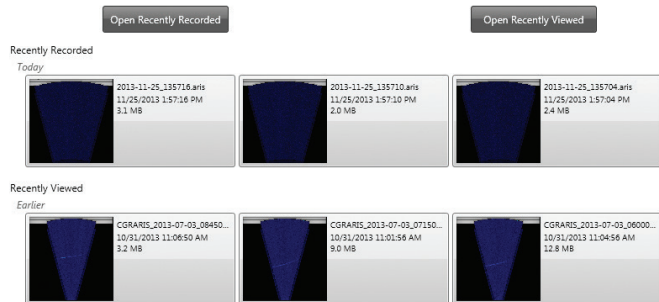
ARIScope BASICS

TOP BAR

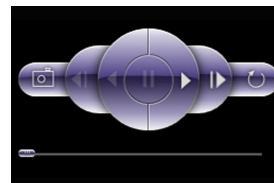









1 FILES ICON

Click on the Files icon to display a thumbnail list of recently opened and recorded *.aris* image files. Mousing over a thumbnail displays a larger image with complete file path information.



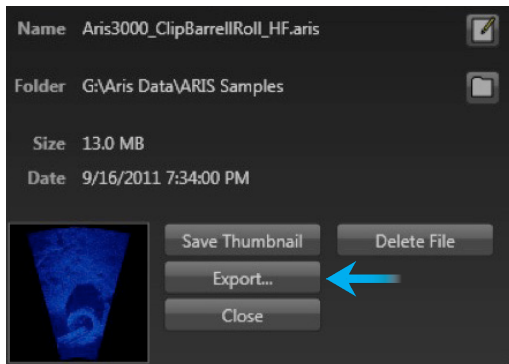
Playback Files - Press one of the “Open” buttons at the top of this window to get a Windows® File Open dialog to navigate to your files. See Section 1.5 of the ARIScope Help Guide for more information.



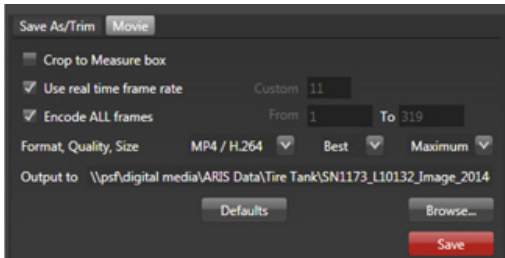
-  **Screen Capture** - Saves a *.png* of the entire playback window
-  **Reverse Single Step Frame** - Navigates to previous frame
-  **Previous** - Plays video in reverse
-  **Pause** - Pauses video
-  **Next** - Plays video
-  **Single Step Frame** - Navigates to next frame
-  **Replay** - Replays the selected file continuously

ARIScope BASICS

Export Files - *The export option is revealed after hovering over the file icon. The user can rename the file and open Windows Explorer to the file location.*



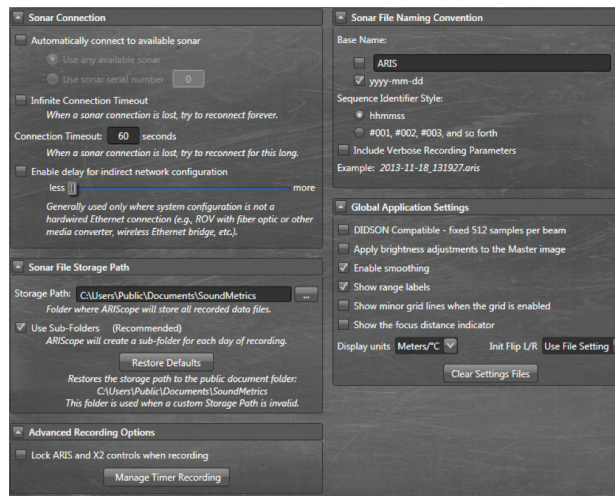
Choose the specifics of the export and click “Save.”



See section 1.4 of the ARIScope Help Guide for more information.

2 SETTINGS ICON

Click on the Settings icon to access available preferences. *See section 1.6 in the ARIScope Help Guide for more information.*



3 HELP ICON

A more detailed ARIScope Help Guide can be accessed by clicking on the Help icon.

ARIS EXPLORER APPENDIX

TABLE OF CONTENTS

- 24 SPECIFICATIONS
 - Technical Specifications
 - Provided Power Supply
 - Power Consumption
 - PC Requirements
 - Recommended PC Configuration
- 25 MOUNTING DIMENSIONS
 - ARIS Explorer 3000
 - ARIS Explorer 1800 & 1200
- 26 MAINTENANCE
 - Anode Inspection
 - Cable Connector Care
 - Lens Bubbles
 - Lens Housing Removal
 - How to Install Silt Plugs
- 33 COMMAND MODULE
 - Troubleshooting
 - Status Codes
- 35 ACCESSORIES
- 37 NOTES
- 38 WARRANTY INFORMATION
- 40 CONTACT US

SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Depth Rating: 300 m

Maximum Cable Length: 150 m

ARIS Explorer 3000:

Dimensions: 26 x 16 x 14 cm

Weight in Air: 5.12 kg

Weight in Water: 1.55 kg

ARIS Explorer 1800 & 1200:

Dimensions: 31 x 17 x 14 cm

Weight in Air: 5.82 kg

Weight in Water: 1.48 kg

PROVIDED POWER SUPPLY

Input: 100 - 240 Vac

Output: 48 Vdc

Maximum Power: 70 W

POWER CONSUMPTION

Typical: 18 W

PC REQUIREMENTS

- Windows 7 SP1 or Higher Operating System
- PC Interface: 100BaseT Wired Ethernet

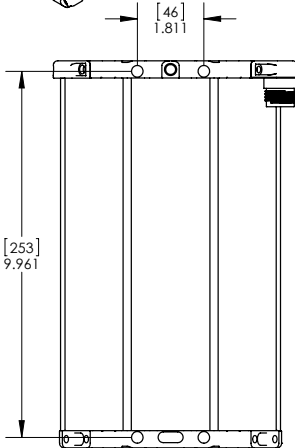
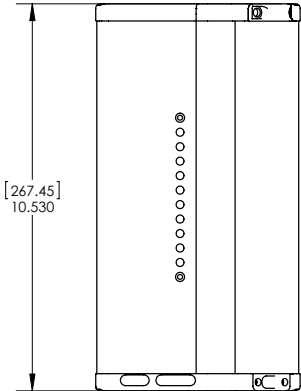
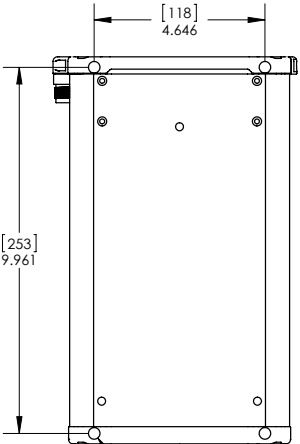
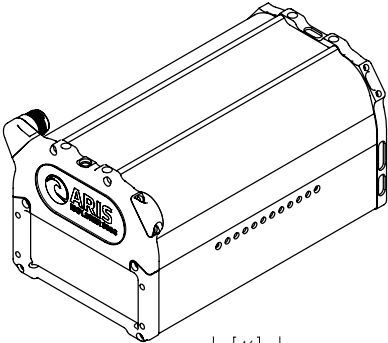
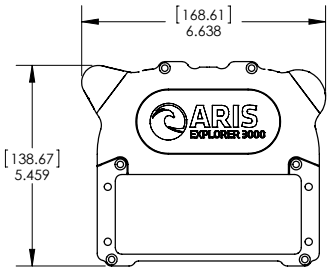
RECOMMENDED PC CONFIGURATION

- DirectX 11 Compatible Graphics
- Multi-Core CPU
- 8 GB RAM
- 512 MB Video RAM
- 64 GB Available Hard Disk Space

MOUNTING DIMENSIONS

ARIS EXPLORER 3000

[mm]
inch

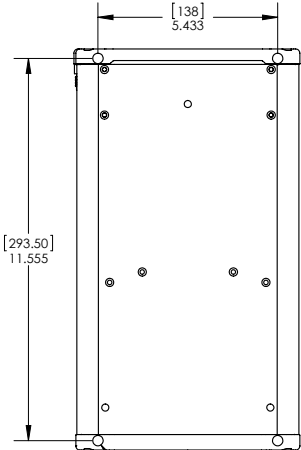
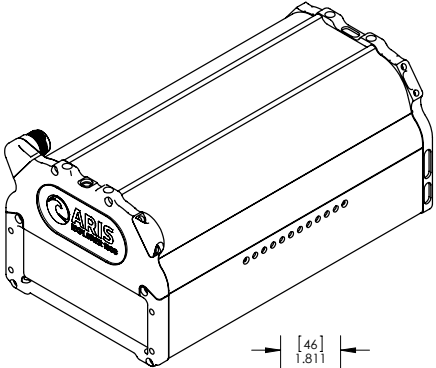
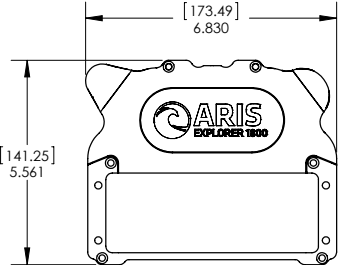


ALL MOUNTING HOLES
M5 x 8 Ψ 8MM
8 PLACES

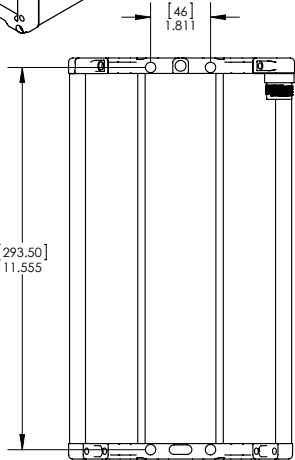
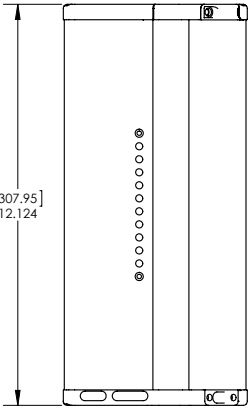
MOUNTING DIMENSIONS

ARIS EXPLORER 1800 & 1200

[mm]
inch



ALL MOUNTING HOLES
M5 x .8 ∇ 8MM
8 PLACES



MAINTENANCE



ANODE INSPECTION

- Periodically inspect attached anode
- Replace anode when it reaches approximately 50% of original size

CABLE CONNECTOR CARE

- Lightly spray connectors with provided lubricant before use; do not use grease
- Ensure connectors are clean after every use; clean with diluted mild dish detergent and rinse thoroughly with fresh water when necessary



LENS BUBBLES

Bubbles seen in the lens are normal and will not affect imaging during normal use.

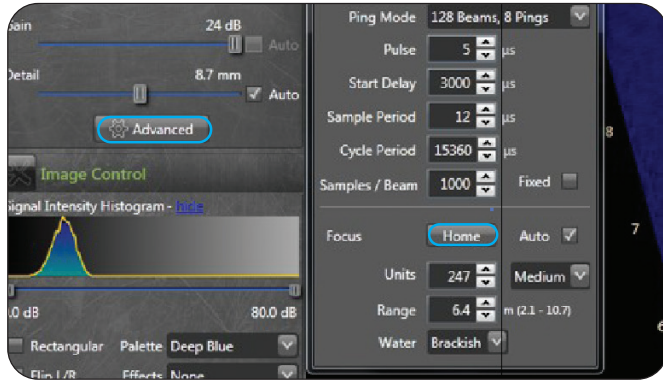
MAINTENANCE

LENS HOUSING REMOVAL

After using ARIS in a high-silt environment, the lens housing should be removed for cleaning. Using silt plugs minimizes how often this needs to be done.

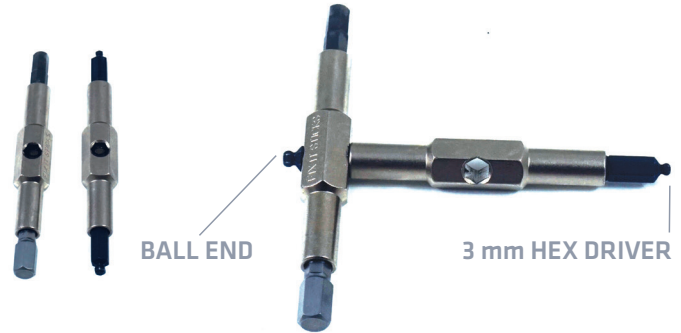
Tools Needed:

- Fix It Sticks (x2)
- 3 mm Hex Driver



STEP 1

Before powering down the ARIS, click on the *Advanced* button and then click *Home*.



STEP 2

Insert one of the Fix It Sticks through the center of the second Fix It Stick to create a handle for the driver.

Note: Make sure the 3 mm Hex Driver is fixed at the end.

MAINTENANCE



STEP 3

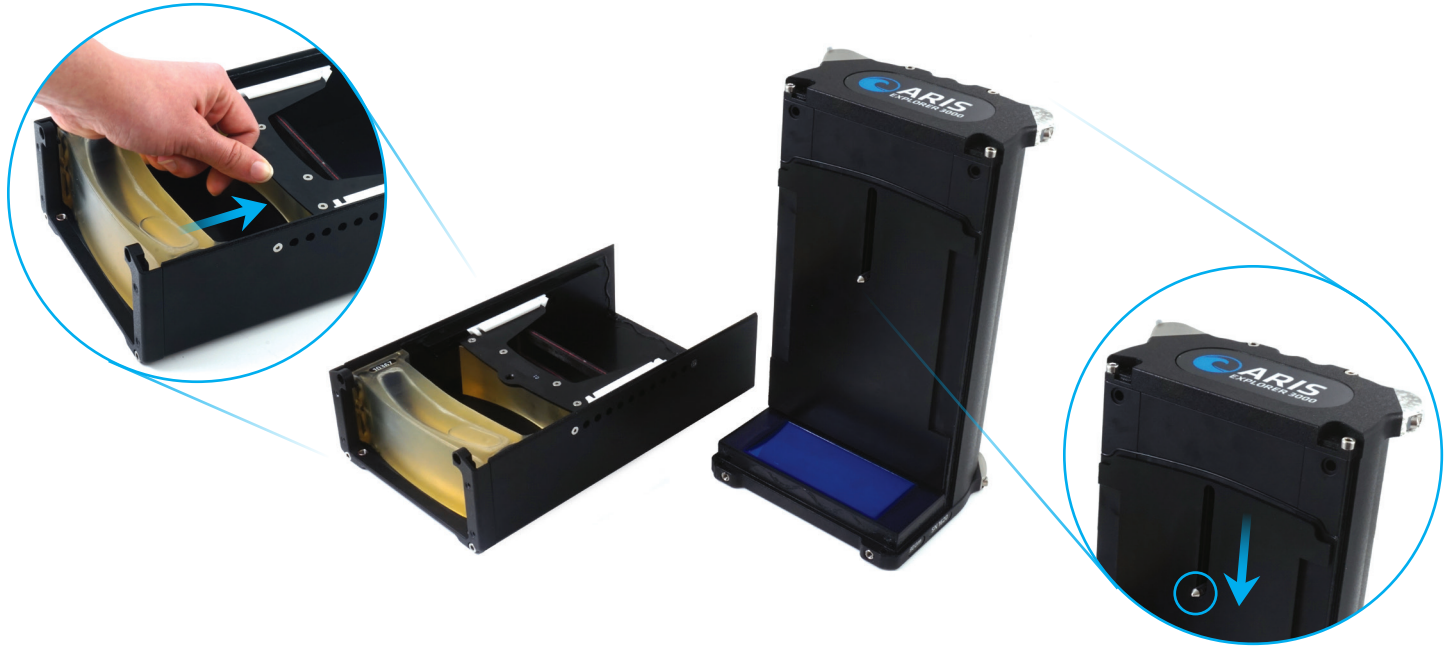
Remove the two Screws on the top of the front lens housing, and remove the two Screws on the bottom of the rear end cap.



STEP 4

Disconnect the lens housing from the pressure housing.

MAINTENANCE



STEP 5

Ensure the lens is in the Home position at the bottom of the focus groove. Slide the focus lens to the end of the travel. Inspect the lens housing and clean with fresh water.

MAINTENANCE

ASSEMBLY



STEP 1

Place the lens housing onto the pressure housing ensuring the pin engages into the hole in the focus bracket. Connect the top two Screws on the front of the Explorer and the bottom two Screws on the back of the Explorer.

Note: Do not overtighten Screws. See Page 2 for approved torque values.



STEP 2

Power the sonar, and connect it to ARIScope. While looking through the silt plug holes, move the focus by sliding the range slider in ARIScope back and forth.

Note: If engaged properly, you will see the focus lens moving back and forth through the silt plug holes.

MAINTENANCE

HOW TO INSTALL SILT PLUGS

If you plan on using the ARIS in a high silt environment you may want to install the silt plugs.



STEP 1

Install eight of the ten silt plugs on each side of the sonar, leaving one plug on each end of the strip open.

STEP 2

Submerge in water until the lens housing is full, and install the remaining two silt plugs to seal in the water.

COMMAND MODULE

TROUBLESHOOTING

- Ensure all cables are tightly connected
- Check PC to ensure all firewalls are allowing ARIScope access












- Check Power Management settings on PC

Note: For Windows 7 SP1, go to Control Panel/Network and Internet/Network and Sharing Center/Local Area Connection/Properties/Configure/Power Management. Uncheck "Allow the computer to turn off this device to save power" press OK. Restart the computer for change to take affect.

- For continued connection issues, contact Sound Metrics

COMMAND MODULE

STATUS CODES

LED INDICATOR	FAULT / WARNING	SONAR POWER	ACTION FOR SONAR OPERATOR
	No Messages from ARIS	ON	Cycle power to ARIS (<i>network okay but sonar firmware not running</i>).
	No Links with ARIS	ON	Check that cable from Command Module (CM) Ethernet connector is attached to ARIS. If connected, check for dirty or broken contacts at each end.
	No Ethernet to PC	ON	Check that cable from CM Ethernet connector is plugged in to PC. If connected, check for dirty or broken contacts at each end.
	Current < Min	OFF	Press switch once to reset the CM, check cable connections, and press switch again to retry turning on power.
	Current < Normal	OFF	Cycle power to ARIS.
	Voltage < Min	OFF	Check that the external AC/DC 48 V power supply is plugged in and has the indicator LED on; cycle power to ARIS.
	Temperature > Max	OFF	Turn off the CM, and let it cool down; move the unit to a cooler location (<i>e.g. not in direct sunlight</i>) if possible.
	Breaker Fault	OFF	Turn off CM. Disconnect sonar cable, and turn on CM. If no breaker fault then turn off CM, connect cable, and turn on CM.
	Power > Max	OFF	Cycle power to ARIS.
	Voltage > Max	OFF	Replace the external AC/DC 48V power supply. If not using the supplied SMC power supply, ensure that $24\text{ V} \leq V_{in} \leq 48\text{ V}$.
	Current > Max	OFF	Cycle power to ARIS.

NOTE: For persistent error codes, contact Sound Metrics

ACCESSORIES



CABLES

All Sound Metrics imaging sonars come with a 15m cable. They are engineered to be small and light yet strong enough to handle the toughest environments.

Additional cable is available in 30, 60 and 150m lengths.

NOTE: Custom cable length available upon request.



CONCENTRATOR LENS

An ideal accessory for shallow water tasks. The plano concave Concentrator Lens allows beams to go farther with less interference from surface and bottom reverberation.

Available in only the 1° model for ARIS Explorer 3000.

Available in 1°, 3° and 8° beam width models for ARIS Explorer 1800 and ARIS Explorer 1200.

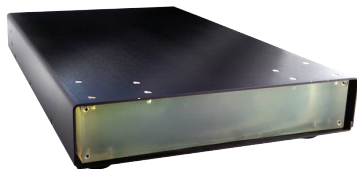


SPREADER LENS

For close-up imaging tasks inside 10m, the Spreader Lens provides maximum coverage at minimal range.

Available in a 28° vertical field of view model.

ACCESSORIES



TELEPHOTO LENS

Ideal for medium and long range imaging. The combination of narrow horizontal beamwidths (*down to .15°*) and narrow vertical beamwidths (*down to 3°*) increases the return signal by as much as 10 dB additional range. Images are delivered in ultra-high resolution in a concentrated 15° field of view for ARIS Explorer 1800 and 1200.



ARIS ROTATOR AR₂

With the ARIS Rotator AR₂, easily and accurately aim the ARIS Explorer with 2-axis control of pan and tilt or tilt and roll.



ARIS ROTATOR AR₃

With the ARIS Rotator AR₃, easily and accurately aim the ARIS Explorer with 3-axis control of pan, tilt, and roll.

The AR₂ and AR₃ enables more complete imaging of the surrounding environment. Varying the roll angle on a target provides a 3D-like perspective and also rolls the sonar to the best possible angle to image the seafloor, ship hulls, dam faces, and more.

WARRANTY INFORMATION

WHAT TO DO IN CASE OF A PROBLEM WITH THE ARIS EXPLORER

Sound Metrics Corp (SMC) warrants the ARIS Explorer for one year according to the terms of the official warranty document. If the sonar appears to be defective, please contact SMC by email or phone to discuss your options. In many cases, we can help resolve issues without having to return the unit, but if not, SMC pledges to repair your sonar as quickly as possible. For sonar returns, you need to contact SMC for a “Case Number” and provide details of the problem - this allows us to prepare so your sonar can be repaired and returned to you quickly. We ask that you ship the sonar in its original protective storage case. If still under warranty, the unit will be repaired and returned to you at no cost; otherwise, you will be charged for parts, labor, and return shipping. We will provide you with an estimate of any repair and wait for approval before proceeding with the work.

In most cases, it is not advisable to open or attempt to repair the sonar in the field. However, this may be the only option if time is critical. SMC is best qualified to make that determination and our personnel can provide step-by-step instructions if that is determined to be the best course of action. Your warranty may be void if you attempt such servicing without first contacting SMC.

SOUND METRICS

11010 Northrup Way
Bellevue, WA 98004

PHONE: 425-822-3001

EMAIL: support@soundmetrics.com

WEBSITE: www.soundmetrics.com

WARRANTY INFORMATION

ARIS EXPLORER LIMITED WARRANTY

Sound Metrics Corp (SMC) warrants that the ARIS Explorer (Product) will be free from defects in materials and workmanship under normal usage for one year from the date the Product is shipped to the first purchaser of the Product, unless SMC has agreed in writing to alter any of the foregoing terms.

Any implied warranties, including without limitation the implied warranties of merchantability and fitness for a particular purpose, shall be limited to the duration of this limited warranty, otherwise, the repair, replacement, or refund as provided under this express limited warranty is the exclusive remedy of the consumer, and is provided in lieu of all other warranties, express or implied. In no event shall SMC be liable, whether in contract or tort (*including negligence*) for damages in excess of the purchase price of the product, or for any indirect, incidental, special, or consequential damages of any kind, or loss of revenue or profits, loss of business, loss of information or data, software or applications, or other financial loss arising out of or in connection with the ability or inability to use the product to the full extent these damages may be disclaimed by law.

Some states and jurisdictions do not allow the limitation or exclusion of incidental or consequential damages, or limitation on the length of an implied warranty, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state or from one jurisdiction to another. This warranty extends only to the first purchaser of the Product, and is not transferable.

This limited warranty is your exclusive remedy and applies to new Product which are accompanied by or sold with this written warranty when the Product is purchased from Sound Metrics or its authorized partner or reseller. Outside the United States and Canada your rights in warranty may differ from this written warranty. This limited warranty gives you specific legal rights, and you may also have other rights which vary from country to country or jurisdiction to jurisdiction.

If the Product proves defective during the warranty time period, please contact SMC by email or phone to discuss options for repair or replacement at the sole option of SMC. SMC will, in a timely manner, provide you an option for repair or replacement but that, in any event, SMC will repair or replace your Product in a commercially reasonable time. For warranty work, you must first contact SMC for a "Case Number" and provide details of the problem - this allows preliminary preparation so your Product can be repaired or replaced as necessary. We ask that you ship the Product to SMC or SMC's designated repair depot in its original protective storage case. The Product will be repaired or replaced and returned to you at no cost. SMC reserves the right to use functionally equivalent conditioned, refurbished, pre-owned, or new parts in the case of repair or replacement. In most cases, it is not advisable to open or modify the Product in any manner. However, this may be the best initial action if time is critical. SMC is best qualified to make that determination and their personnel can provide step-by-step instructions if that course of action is determined best at SMC's sole discretion. Any attempt to alter the Product in any manner or the misuse or abuse of the Product may void your warranty.

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