

ALM100

Alarm Module

User's Manual

Revision 1.1

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Maretron Manual Part #: M001901

Revision History

Revision	Description
1.0	Original document
1.1	Added cautions about using red Loctite and acetone cleaners Added information about Instance parameter Corrected installation template Corrected PGN numbers in specification tables Updated firmware revision number

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1 Introduction

Congratulations on your purchase of the Maretron Alarm Module. Maretron has designed and built your ALM100 to the highest standards for years of dependable and accurate service.

Maretron's Alarm Module generates visual and audible alerts for any monitored condition. The Alarm Module includes an extremely loud 105 dB SPL Piezoelectric sounder, along with a red high-brightness LED to indicate an alarm condition. A second green LED indicates that the Alarm Module is powered and ready to be triggered. The audible alarm can sound any one of 32 distinct pre-programmed patterns to indicate different alerts. The Alarm Module can be triggered by alarms generated by Maretron's N2KView Vessel Monitoring System, or by Maretron's DSM250 Color Graphics Display. The Alarm Module mounts in a standard electric box or can be flush mounted on any surface. Completely waterproof, the Alarm Module can be mounted inside or outside the vessel.

The Maretron ALM100 is designed to operate within the harsh demands of the marine environment. However, no piece of marine electronic equipment can function properly unless installed, configured, and maintained in the correct manner. Please read carefully and follow these instructions for installation, configuration, and usage of the Maretron ALM100 in order to ensure optimal performance.

1.1 Firmware Revision

This manual corresponds to ALM100 firmware revision 1.0.6.

1.2 ALM100 Features

The Maretron ALM100 has the following features.

- NMEA 2000 Network Interface
- Super loud 105dB audible alarm
- Bright Red LED visual alarm
- Green LED status indicator
- Mounts in standard electrical wall box or flush mount box
- Multiple user-selectable alarm patterns
 - o "Code-3" (ISO 8201, Smoke/Fire) 0.5s on, 0.5s off, 0.5s on, 0.5s off, 0.5s on, 1.5s off
 - o "Temporal 4" (T4, CO) 0.1s on, 0.1s off, 0.1s on, 0.1s off, 0.1s on, 0.1s off, 0.1s on, 5.0s off
 - o "IMO Code 1a (7 pulse)" (General Emergency Alarm, SOLAS III/50,III/6.4) [1 s on, 1 s off][repeat 7 times]long tone (7s on), 1 s off
 - o "IMO Code 2" Continuous on
 - o "IMO Code 3.a" [0.5 s on, 0.5 s off][repeat continually]
- Waterproof - Can be mounted indoors or outdoors

1.3 ALM100 Accessories

Maretron offers the following accessories for the ALM100:

- CP-WH-ALM100 ALM100 White Faceplate

1.4 Quick Install

Installing the Maretron ALM100 involves the following five steps. Please refer to the individual sections for additional details.

1. Unpack the box (Section 2.1)
2. Choose a mounting location (Section 2.2)
3. Mount the ALM100 (Section 2.3)
4. Connect the ALM100 (Section 2.4)
5. Configure the ALM100 (Section 2.5)

2 Installation

2.1 Unpacking the Box

When unpacking the box containing the Maretron ALM100, you should find the following items:

- 1 – ALM100 Alarm Module
- 1 – ALM100 Black Faceplate
- 2 – ALM100 Mounting Screws
- 2 – Faceplate Mounting Screws
- 1 – Faceplate Gasket
- 1 – Sounder Volume Control Baffle Plate
- 1 – Sounder Volume Control Shutter
- 1 – Screw for Sounder Volume Control
- 1 – Sounder Collar
- 1 – Sounder Gasket
- 1 – ALM100 User's Manual
- 1 – Warranty Registration Card

If any of these items are missing or damaged, please contact Maretron.

2.2 Choosing a Mounting Location

Please consider the following when choosing a mounting location.

1. The ALM100 is waterproof, so it can be mounted in a damp or dry location.
2. The orientation is not important, so the ALM100 can be mounted on a horizontal deck, vertical bulkhead, or upside down if desired.
3. The ALM100 is temperature-rated to 55°C (130°F), so it should be mounted away from engines or engine rooms where the operating temperature exceeds the specified limit.

2.3 Mounting the ALM100

The ALM100 is designed to be mounted in an ANSI/NEMA WD 6 electrical switch box, but it may also be mounted directly into a wall.

If mounting the ALM100 into an electrical box, which can in turn be surface-mounted onto a wall or bulkhead, attach the ALM100 securely to the electrical box using the included mounting screws or other fasteners as shown in Figure 1 below.

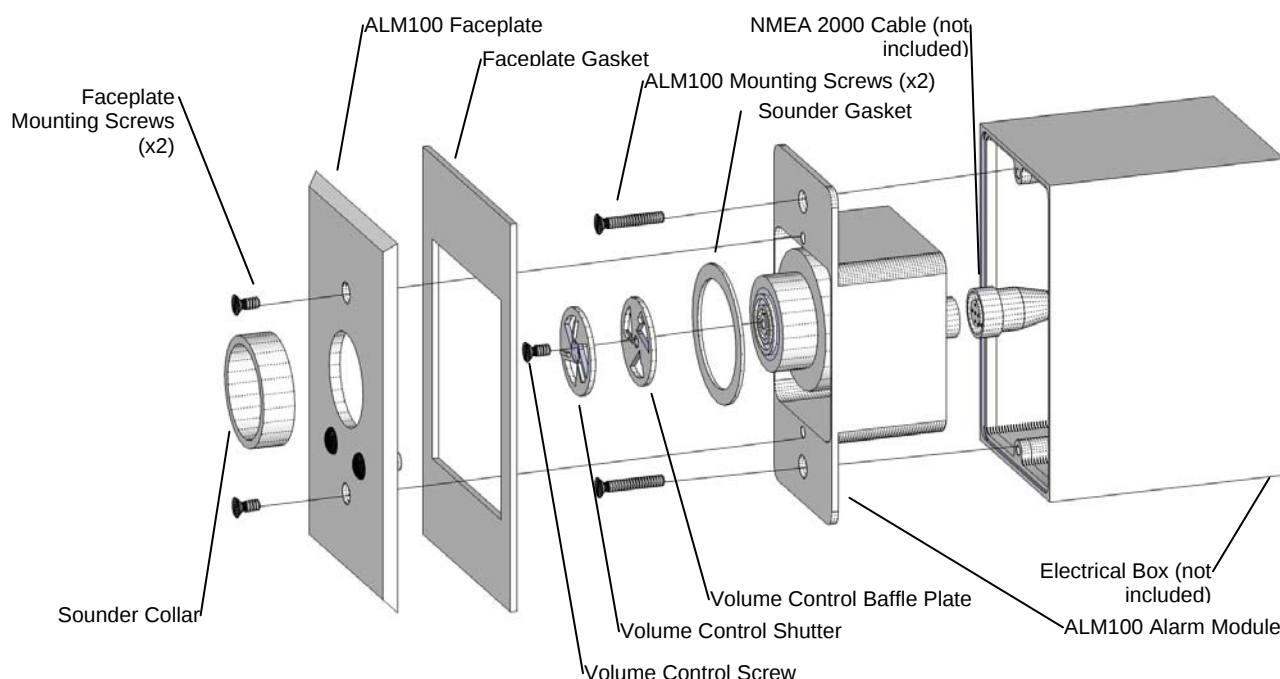


Figure 1 – Mounting the ALM100 into an Electrical Box

If flush mounting the ALM100 into a wall, use the installation template in Section 7 as a guide to cut the hole in the wall and drill the mounting holes for the ALM100. Next, attach the ALM100 securely to the wall using the included mounting screws or other fasteners as shown in Figure 2 below.

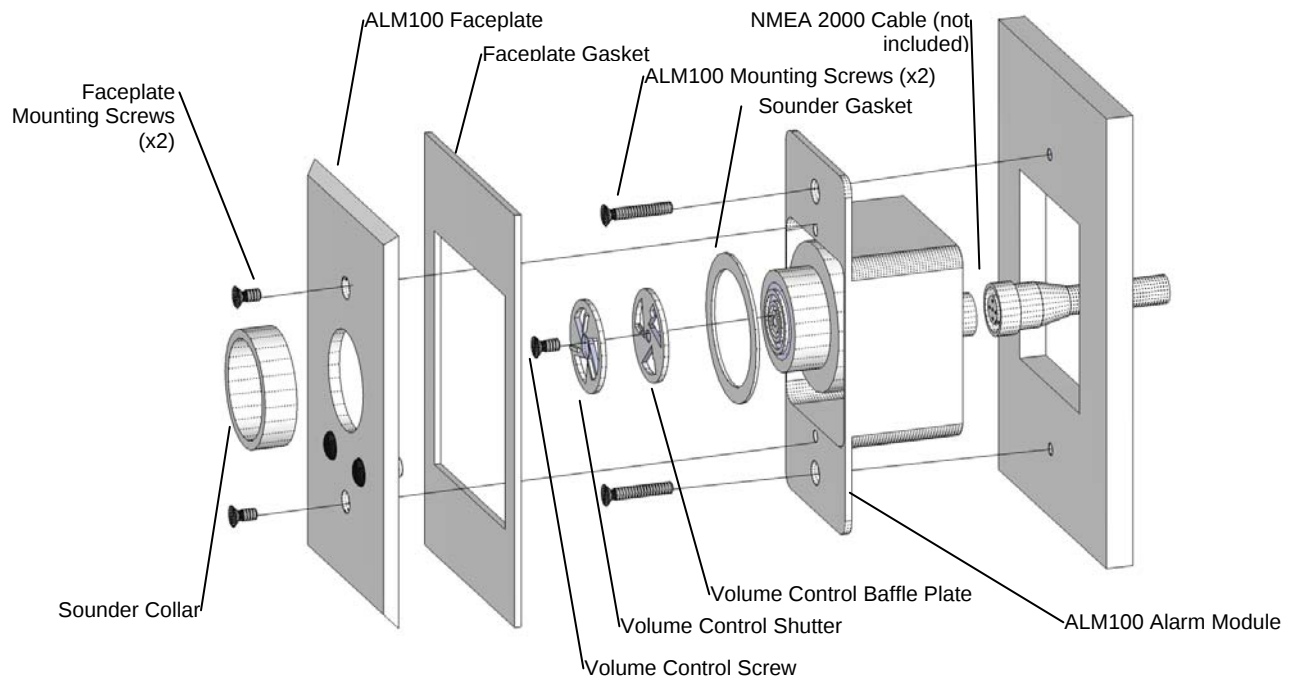


Figure 2 – Flush Mounting the ALM100 Directly to a Wall

The following instructions apply wither mounting the ALM100 into an electrical box or to a wall:

- 1) Connect the NMEA 2000 cable to the connector on the ALM100 Alarm Module
- 2) Using the included ALM100 mounting screws, mount the ALM100 Alarm Module to the wall or electrical box
- 3) Place the sounder gasket over the sounder on the ALM100 alarm module
- 4) Place the faceplate gasket over the ALM100 alarm module
- 5) Mount the ALM100 faceplate over the ALM100 alarm module using the included faceplate mounting screws.
- 6) Screw the sounder collar onto the sounder of the ALM100 alarm module, which should now be protruding through the large hole in the faceplate, and tighten until snug.
- 7) Optionally, you may install the volume control by first placing the volume control baffle plate over the front of the sounder, then placing the volume control shutter over the volume control baffle plate, and finally attaching both to the sounder by threading the volume control screw into the hole in the center of the sounder.

2.4 Connecting the ALM100

The ALM100 requires a single type of electrical connection: the NMEA 2000[®] connection (refer to Section 2.4.1).

2.4.1 NMEA 2000[®] Connection

The NMEA 2000[®] connector can be found on the rear of the enclosure. The NMEA 2000[®] connector is a round five pin male connector (see Figure 3). You connect the ALM100 to an

NMEA 2000® network using a Maretron NMEA 2000® cable (or compatible cable) by connecting the female end of the cable to the ALM100 (note the key on the male connector and keyway on the female connector). Be sure the cable is connected securely and that the collar on the cable connector is tightened firmly. Connect the other end of the cable (male) to the NMEA 2000® network in the same manner. The ALM100 is designed such that you can plug or unplug it from an NMEA 2000® network while the power to the network is connected or disconnected. Please follow recommended practices for installing NMEA 2000® network products.

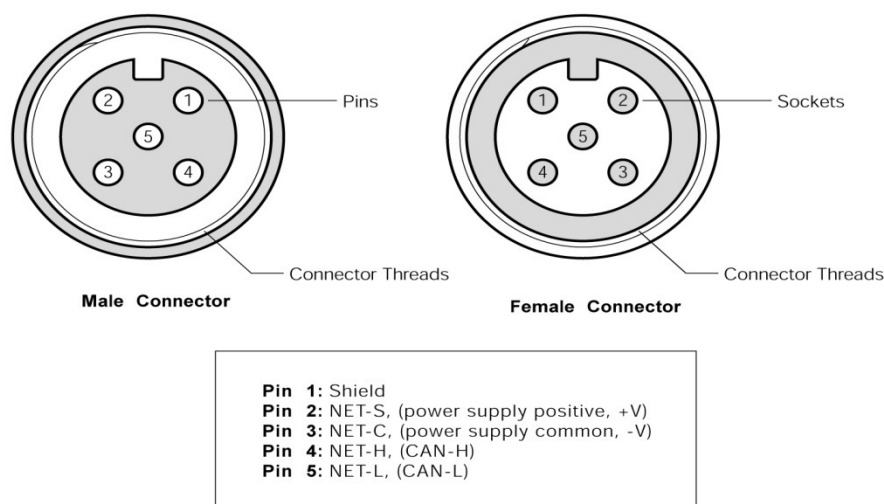


Figure 3 – NMEA 2000® Connector Face Views

2.4.2 Checking Connections

Once the NMEA 2000® connection to the ALM100 has been completed, you should first check to see that power is being received by the ALM100 by checking that the green power LED on the front of the unit is illuminated. Next, you should check to see that information is being properly received by using the ALM100 test function on an appropriate NMEA 2000® display, such as the Maretron DSM250. If the alarm does not sound and flash the red LED during testing, please refer to Section 4, “Troubleshooting”.

2.5 Configuring the ALM100

The ALM100 will sound alarms received over the NMEA 2000 network as it is shipped from the factory; however, it may require configuration, depending on whether you have multiple ALM100's installed on the network. There are several configurable items within the ALM100, which are detailed in the remainder of this section.

You configure the ALM100 using a Maretron DSM250 display or other NMEA 2000® display unit that is capable of configuring the ALM100. Please refer to the Maretron *DSM250 User's Manual* for details.

2.5.1 Instance

NMEA 2000® provides for a unique annunciator instance for each alarm device on a vessel. This field allows a display device such as Maretron N2KView or a DSM250 to select different annunciators for sounding alarms for different alert types. For instance, an alert specific to engine operation may only sound in the engine room, pilot house, and crew quarters, while a general alarm would sound throughout the ship. This value should be programmed in each ALM100 so that each ALM100 is associated with a unique instance number. The default instance number is 0, which is used to indicate the first ALM100 that is hooked to the network. Subsequent ALM100s connected to the network would be numbered 1, 2, and so on.

2.5.2 Label

The ALM100 may be programmed with a text label that will be displayed in monitoring software and displays that recognize device labels, such as the Maretron N2KView Vessel Monitoring System and the Maretron DSM250 display. The label will let you assign an easy-to-remember text label (example: "Alarm in Pilothouse") to make it easy for you to identify the device as you are configuring the monitoring software or display, as well as when alerts are generated.

2.5.3 Test Annunciator

Devices capable of configuring the ALM100 also have the ability to cause the ALM100 to generate an alarm indication, flashing the red alarm LED and sounding the annunciator. You may use this function to determine whether the ALM100 is properly connected and configured. When you select this option, the red alarm LED and annunciator will be activated for a short period of time.

2.5.4 Advanced Configuration...

Certain parameters do not normally need to be set in order for normal operation, but are included in an advanced configuration section for use in special situations.

2.5.4.1 Device Instance

NMEA 2000® provides for a unique device instance for each alarm device on a vessel. This value should be programmed in each ALM100 so that each ALM100 is associated with a unique device instance number. The default instance number is 0, which is used to indicate the first ALM100 that is hooked to the network. Subsequent ALM100s connected to the network would be numbered 1, 2, and so on.

2.5.4.2 NMEA 2000® PGN Enable/Disable

The ALM100 is capable of transmitting NMEA 2000® messages (or PGNs) associated with monitored switch circuits. You may individually enable or disable each of these messages. You may also change the rate of transmission of each of these messages if desired.

2.5.4.3 Restore Factory Defaults

Selecting this configuration option causes all stored parameters in the ALM100 to be reset to the values they contained when the unit was manufactured.

2.5.4.4 Installation Description...

The ALM100, along with all other Level A certified NMEA devices, has two user-programmable installation description fields. You may program these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc. This configuration option will allow you to program the values of these fields.

3 Maintenance

Regular maintenance is important to ensure continued proper operation of the Maretron ALM100. Perform the following tasks periodically:

- Clean the unit with a soft cloth. Do not use chemical cleaners as they may remove paint or markings or may corrode the ALM100 enclosure or seals. Do not use any cleaners containing acetone, as they will deteriorate the plastic enclosure.
- Ensure that the unit is mounted securely and cannot be moved relative to the mounting surface. If the unit is loose, tighten the mounting screws.
- Check the security of the cable connected to the NMEA 2000® connector, and tighten if necessary.

4 Troubleshooting

If you notice unexpected operation of the Maretron ALM100, follow the troubleshooting procedures in this section to remedy simple problems. If these steps do not solve your problem, please contact Maretron Technical Support (refer to Section 6 for contact information).

Symptom	Troubleshooting Procedure
The ALM100 is not visible on the NMEA 2000® network.	Ensure that the ALM100 is properly connected to the NMEA 2000® network. Ensure that the segment of the NMEA 2000® network to which the ALM100 is connected is powered. Check that the green power LED on the front of the ALM100 is illuminated. Ensure that the ALM100 you wish to monitor is not configured as “Disabled”. Ensure that the ALM100 has the appropriate NMEA 2000® PGNs enabled as described in Section 2.5.4.1.

The ALM100 does not sound when expected.	Ensure that the ALM100 is properly connected and powered as described in the preceding section. Use the “Test Annunciator” function of the DSM250 display to verify that the ALM100 is receiving messages, as described in section 2.5.3. Ensure that alerts are configured correctly. Ensure that the ALM100 has been configured with an instance number as described in section 2.5.1. Check the alarm configuration in N2KView or the DSM250 to ensure that this instance number appears in the list of annunciators to sound for the particular alarm. Please refer to the <i>DSM250 User's Manual</i> or the <i>N2KView User's Manual</i> for details on alarm configuration.
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5 Technical Specifications

As Maretron is constantly improving its products, all specifications are subject to change without notice. Maretron products are designed to be accurate and reliable; however, they should be used only as aids to navigation and not as a replacement for traditional navigation aids and techniques.

Specifications

Parameter	Value	Comment
Annunciator Volume	105 dB SPL	Mechanical Volume Control
Annunciator Frequency	2.9 kHz	

Certifications

Parameter	Comment
NMEA 2000® Standard	Level A
Maritime Navigation and Radiocommunication Equipment & Systems	IEC 61162-3
Maritime Navigation and Radiocommunication Equipment & Systems	IEC 60945
FCC and CE Mark	Electromagnetic Compatibility

NMEA 2000® Parameter Group Numbers (PGNs)

Description	PGN #	PGN Name	Default Rate
Periodic Data PGNs	130824	Proprietary Annunciator*	1 time/second
Response to Requested PGNs	126464	PGN List (Transmit and Receive)	N/A
	126996	Product Information	N/A
	126998	Configuration Information	N/A
Protocol PGNs	059392	ISO Acknowledge	N/A
	059904	ISO Request	N/A
	060928	ISO Address Claim	N/A
	065240	ISO Address Command	N/A
	126208	NMEA	N/A
Maretron Proprietary PGNs	126720	Configuration	N/A

*Future firmware updates will allow the ALM100 to be in conformance with the upcoming NMEA 2000 alarm messaging protocol, once it is defined.

Electrical

Parameter	Value	Comment
Operating Voltage	9 to 32 Volts	DC Voltage
Power Consumption	100 mA	NMEA 2000 Interface
Load Equivalence Number (LEN)	2	NMEA 2000® Spec. (1LEN = 50 mA)
Reverse Battery Protection	Yes	Indefinitely
Load Dump Protection	Yes	Energy Rated per SAE J1113

Mechanical

Parameter	Value	Comment
Size	2.75" x 4.50" x 2.00" (70mm x 114mm x 51mm)	Including wall plate – Mounts in standard single-gang electrical box
Weight	13 oz. (368.5g)	

6 Technical Support

If you require technical support for Maretron products, you can reach us in any of the following ways:

Telephone: 1-866-550-9100
Fax: 1-602-861-1777
E-mail: support@maretron.com
World Wide Web: <http://www.maretron.com>
Mail: Maretron, LLC
Attn: Technical Support
9014 N. 23rd Ave Suite 10
Phoenix, AZ 85021 USA

7 Installation Template

Please check the dimensions before using the following diagram as a template for drilling the mounting holes because the printing process may have distorted the dimensions.

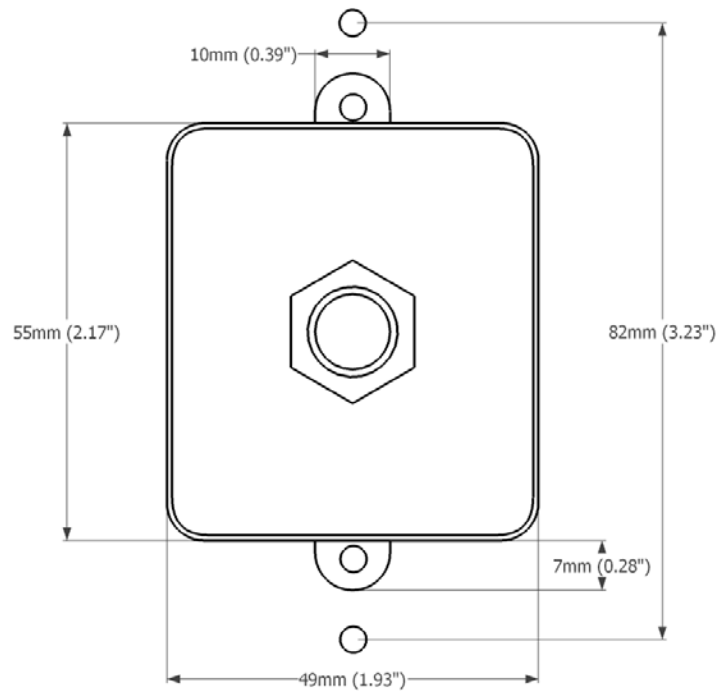


Figure 4 – Mounting Surface Template

8 Maretron (2 Year) Limited Warranty

Maretron warrants the ALM100 to be free from defects in materials and workmanship for **two (2) years** from the date of original purchase. If within the applicable period any such products shall be proved to Maretron's satisfaction to fail to meet the above limited warranty, such products shall be repaired or replaced at Maretron's option. Purchaser's exclusive remedy and Maretron's sole obligation hereunder, provided product is returned pursuant to the return requirements below, shall be limited to the repair or replacement, at Maretron's option, of any product not meeting the above limited warranty and which is returned to Maretron; or if Maretron is unable to deliver a replacement that is free from defects in materials or workmanship, Purchaser's payment for such product will be refunded. Maretron assumes no liability whatsoever for expenses of removing any defective product or part or for installing the repaired product or part or a replacement therefore or for any loss or damage to equipment in connection with which Maretron's products or parts shall be used. With respect to products not manufactured by Maretron, Maretron's warranty obligation shall in all respects conform to and be limited to the warranty actually extended to Maretron by its supplier. The foregoing warranties shall not apply with respect to products subjected to negligence, misuse, misapplication, accident, damages by circumstances beyond Maretron's control, to improper installation, operation, maintenance, or storage, or to other than normal use or service.

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Statements made by any person, including representatives of Maretron, which are inconsistent or in conflict with the terms of this Limited Warranty, shall not be binding upon Maretron unless reduced to writing and approved by an officer of Maretron.

IN NO CASE WILL MARETRON BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, DAMAGES FOR LOSS OF USE, LOSS OF ANTICIPATED PROFITS OR SAVINGS, OR ANY OTHER LOSS INCURRED BECAUSE OF INTERRUPTION OF SERVICE. IN NO EVENT SHALL MARETRON'S AGGREGATE LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT(S) INVOLVED. MARETRON SHALL NOT BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES, WHETHER ARISING OUT OF BREACH OF CONTRACT OR WARRANTY, TORT (INCLUDING NEGLIGENCE), OR OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY MARETRON, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO.

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Warranty Return Procedure:

To apply for warranty claims, contact Maretron or one of its dealers to describe the problem and determine the appropriate course of action. If a return is necessary, place the product in its original packaging together with proof of purchase and send to an Authorized Maretron Service Location. You are responsible for all shipping and insurance charges. Maretron will return the replaced or repaired product with all shipping and handling prepaid except for requests requiring expedited shipping (i.e. overnight shipments). Failure to follow this warranty return procedure could result in the product's warranty becoming null and void.

Maretron reserves the right to modify or replace, at its sole discretion, without prior notification, the warranty listed above. To obtain a copy of the then current warranty policy, please go to the following web page:

<http://www.maretron.com/company/warranty.php>