

Raymarine SR100 Sirius Weather System

Installation Guide

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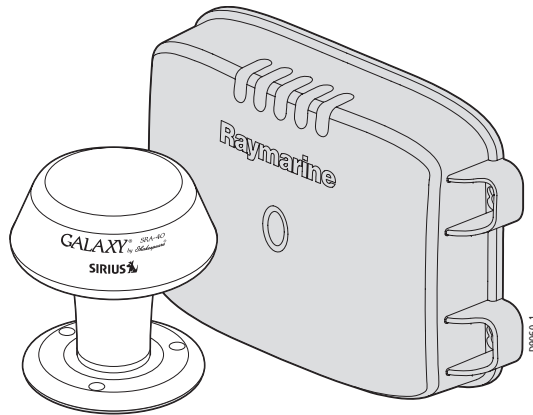
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Important information

Introduction



This guide contains an explanation of how to install, commission and maintain your Raymarine SR100 Sirius Weather System for use with your E-Series display.

Intended use

This product is a weather information system consisting of a receiver and antenna. The intended application is as one component of a navigation system for leisure marine boats and workboats not covered by IMO/SOLAS carriage requirements.

Safety notices



WARNING: Electrical safety
Make sure the power supply is switched off before you make any electrical connections.



WARNING: Product installation
This equipment must be installed and operated in accordance with the instructions contained in this handbook. Failure to do so could result in poor product performance, personal injury and/or damage to your boat.

WARNING: Navigation aid
Although this product has been designed to be accurate and reliable, many factors can affect its performance. As a result, it should only be used as an aid to navigation and should never replace common sense and navigational judgement. Always maintain a permanent watch so you can respond to situations as they develop.

Disclaimer

All information presented by the Sirius weather service is advisory only. You acknowledge the risk of incomplete and erroneous information and assume complete responsibility and risks associated with this device, and accordingly release Raymarine, Sirius Satellite Radio Inc., Navcast Inc, and WSI Corporation from any and all claims arising from the use of this service. By using this service, you acknowledge and agree that you have read the terms of the subscription agreement for this service and agree to all of the terms contained therein. If you do not have the subscription agreement, you may view a copy at www.sirius.com/marineweath-agreement or call **1-800-869-5480** for a copy to be sent to you.

EMC conformance

All Raymarine equipment and accessories are designed to the best industry standards for use in the recreational marine environment. The design and manufacture of Raymarine equipment and accessories conforms to the appropriate Electromagnetic Compatibility (EMC) standards, but correct installation is required to ensure that performance is not compromised. For full details and installation guidelines refer to www.raymarine.com

Warranty

To register your new Raymarine product, please take a few minutes to fill out the warranty card. It is important that you complete the owner information and return the card to us to receive full warranty benefits. Your product can also be registered via our website www.raymarine.com

Handbook information

To the best of our knowledge, the information contained in this handbook was correct as it went to press. Raymarine cannot accept any liability for any inaccuracies or omissions it may contain.

In addition, our policy of continuous product improvement may change specifications without notice. As a result, Raymarine cannot accept liability for any differences between the product and the handbook.

Handbook conventions

Throughout this handbook, the dedicated (labelled) keys are shown in bold capitals, e.g. **MENU**. The soft key functions are shown in italics, e.g. *SAVE* *ALL*.

Installation

EMC installation guidelines

All Raymarine equipment and accessories are designed to best industry standards for use in the recreational marine environment.

Their design and manufacture conforms to the appropriate Electromagnetic Compatibility (EMC) standards, but correct installation is required to ensure that performance is not compromised. Although every effort has been made to ensure that they will perform under all conditions, it is important to understand what factors could affect the operation of the product.

The guidelines given here describe the conditions for optimum EMC performance, but it is recognized that it may not be possible to meet all of these conditions in all situations. To ensure the best possible conditions for EMC performance within the constraints imposed by any location, always ensure the maximum separation possible between different items of electrical equipment.

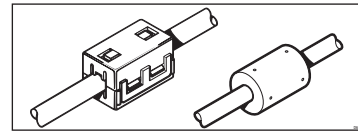
For optimum EMC performance, it is recommended that wherever possible:

- Raymarine equipment and cables connected to it are:
 - At least 3 ft. (1m) from any equipment transmitting, or cables carrying radio signals, e.g. VHF radios, cables and antennas. In the case of Single Side Band (SSB) radios, the distance should be increased to 7 ft. (2m).
 - More than 7 ft. (2m) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
 - The equipment is supplied from a separate battery to that used for engine start. Voltage drops below 10 V, and starter motor transients, can cause the equipment to reset. This will not damage the

equipment, but may cause the loss of some information and may change the operating mode.

- Raymarine specified cables are used. Cutting and rejoining these cables can compromise EMC performance and must be avoided unless doing so is detailed in the installation manual.
- If a suppression ferrite is attached to a cable, this ferrite should not be removed. If the ferrite needs to be removed during installation, it must be reassembled in the same position.

Suppression Ferrites

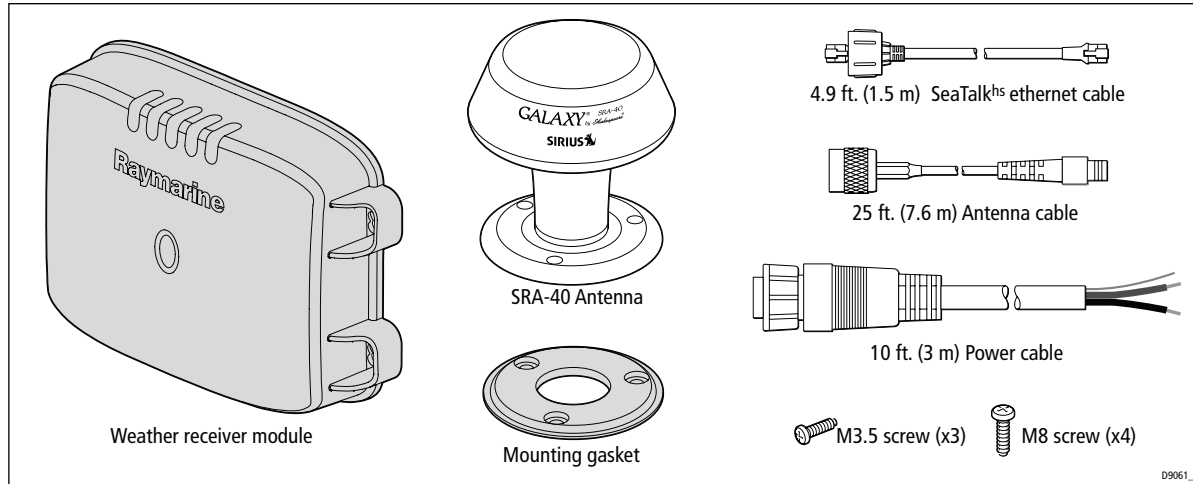


The illustration shows typical cable suppression ferrites used with Raymarine equipment. Always use the ferrites supplied by Raymarine

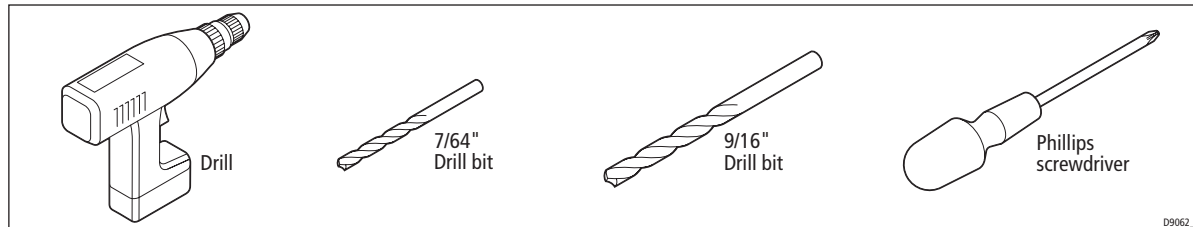
Connections to other equipment

If your Raymarine equipment is to be connected to other equipment using a cable not supplied by Raymarine, a suppression ferrite **MUST** always be attached to the cable near to the Raymarine unit

What's in the box?



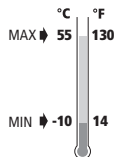
What tools do I need?



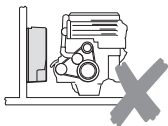
Planning the installation

When planning the installation and choosing locations for the antenna and receiver, consider the following points:

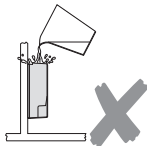
Receiver



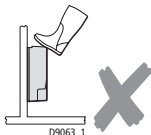
Protect from extremes of temperature.



DO NOT place near an engine, or where fuel vapor could be present.



DO NOT get it wet or put it where it can be splashed with water.

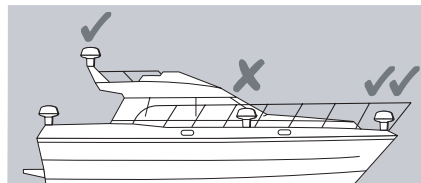


DO NOT put it where it can be kicked or trodden on.

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You should also choose the installation site so that the power cable can be easily removed.

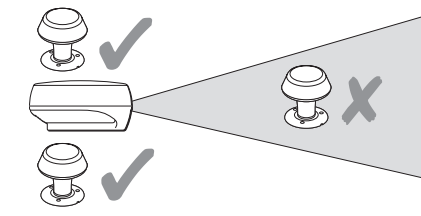
Antenna



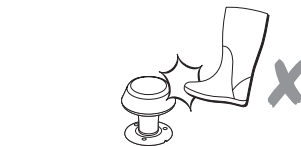
Make sure the antenna has a clear view of the sky. Height is not important. Make sure nearby objects do not block the antenna's view of the sky.



Make sure that the antenna is installed on a flat not curved surface.



If your boat has radar, make sure that the antenna is mounted above or below the radar scanner, but not in the radar beam.



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DO NOT install the antenna where it can be kicked or trodden on.

You should also make sure that the installation site has easy access from below in an area which is clear of cables and other obstructions.

Cable runs

CAUTION: Cables

DO NOT cut cables or remove connectors as this will severely reduce system performance.

If a longer cable is required you will need to purchase a replacement cable from a suitable dealer.

If a shorter cable is required, coil excess cable neatly and secure out of the way.

Consider the following points before installing the system cables:

- You will need to connect the antenna, ethernet and power cables to the receiver.
- All cables should be adequately clamped and protected from physical damage and exposure to heat.
- Avoid running cables through bilges or doorways, or close to moving or hot objects.
- Acute bends must be avoided.
- Where a cable passes through an exposed bulkhead or deckhead, a watertight gland or swan neck tube should be used.
- DO NOT cut the cables or remove the connectors.
- DO NOT pull cables through bulkheads using a cord attached to the connector. This could damage the connector.
- Secure cables in place using tie-wraps or lacing twine. Coil any extra cable and secure it out of the way.

You will need to run the following cables:

- Power cable.
- SeaTalk^{hs} network cable.
- Antenna cable.

Power cable

A 10 ft. (3m) power cable is supplied. This cable has a connector plug for connecting to the SR100 weather receiver at one end and three wires at the other for connecting to your boats power supply. This cable may be extended to a distance of 60 ft. (20m) using a suitable wire, gauge AWG 12 or greater. For full details of power connections refer to "Power cable" on page 10.

SeaTalk^{hs} Network cable

A 4.9 ft. (1.5m) network cable is supplied. This cable should be used to connect your weather receiver to either a SeaTalk^{hs} Network Switch or cross over coupler to connect to your E-Series display. If a longer cable is required it should be purchased from your local Raymarine dealer. For full details of available cable lengths refer to "SeaTalk^{hs}" on page 11.

Antenna cable

CAUTION: Antenna cable

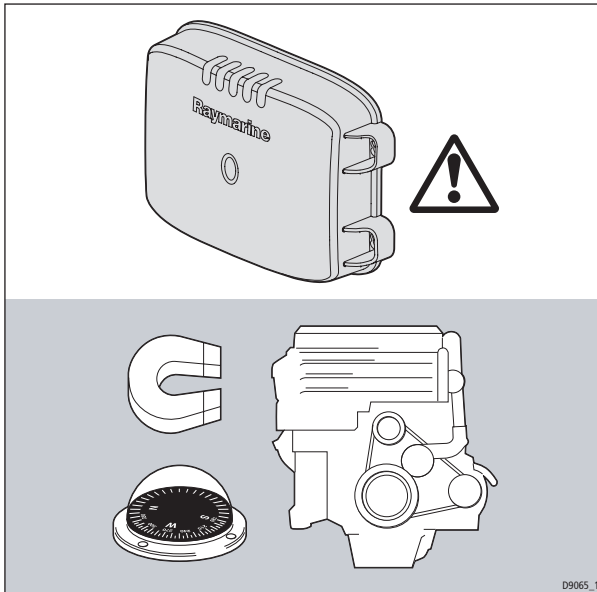
Cutting or splicing the antenna cable will result in severely reduced system performance.

An antenna cable of 25 ft. (7.5m) is supplied. This RF coax cable should be used to connect the antenna to the weather receiver. If a longer cable is required it should be purchased from your Shakespeare dealer. For full details of available cable lengths refer to "Accessories" on page 16.

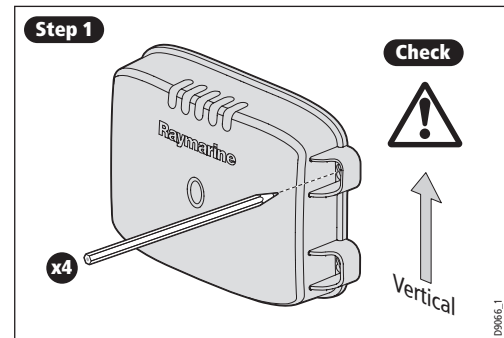
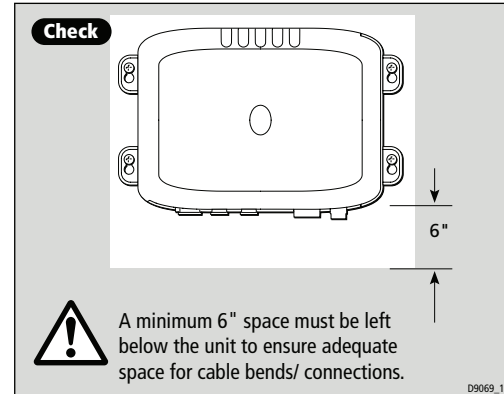
Installing the system

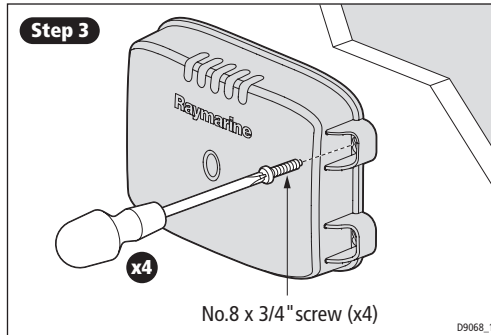
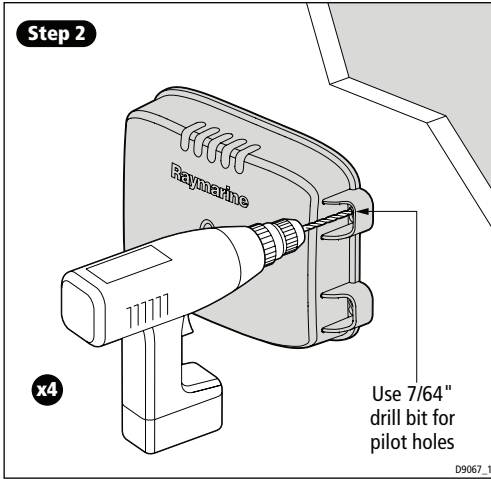
The following section gives details of how to install your SR100 Sirius Weather receiver and antenna.

Receiver



The receiver should be installed a minimum of 3 ft. (1m) away from an engine, compass or any magnetic device.



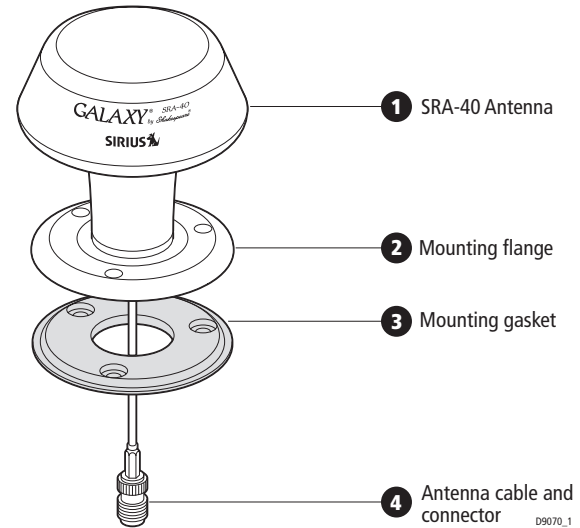


Antenna

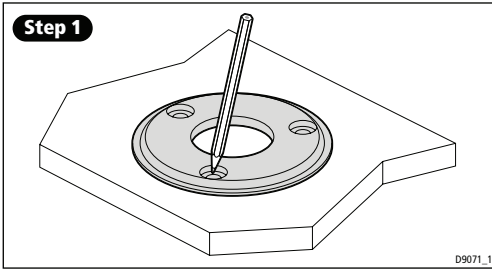
CAUTION: Antenna

DO NOT cut the antenna cable or remove the connector.

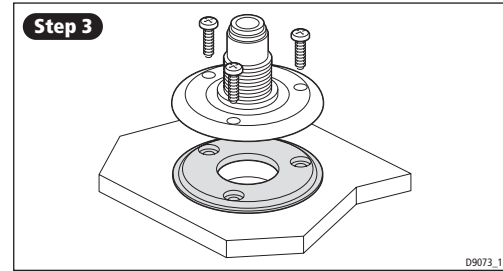
The antenna consists of the following components:



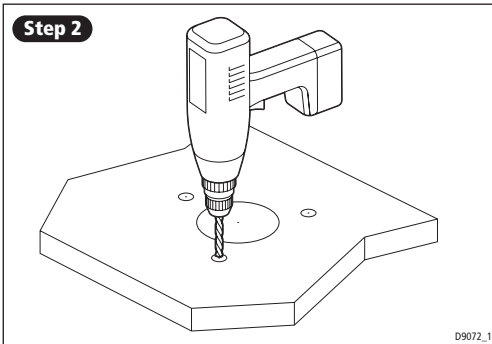
When selecting the antenna installation site, check that the area below the site has easy access and is clear of cables and other obstructions.



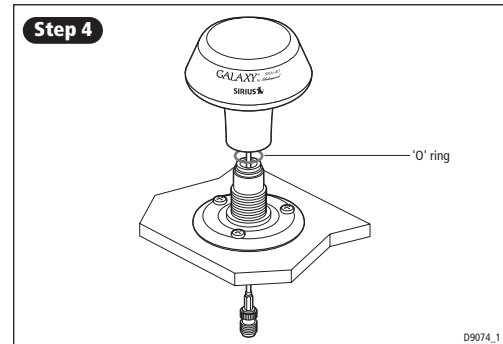
Using the gasket as a template mark the center hole and 3 fixing holes.



Fix the mounting gasket and flange into position using the supplied screws.



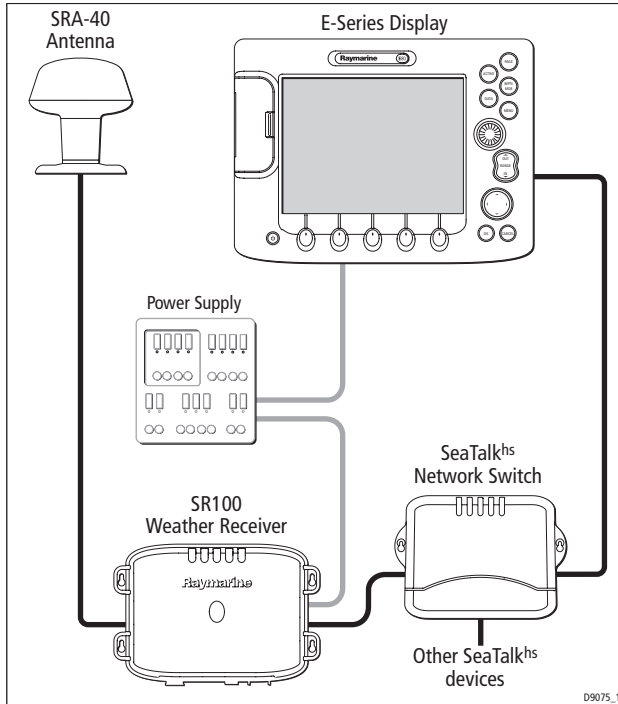
Use a 9/16" drill bit to drill the center hole and a 7/64" drill bit to make pilot holes for the fixing screws.



Thread the cable and connector through the mounting flange and gasket. Attach the antenna to the mounting flange, making sure the 'O' ring is in position.

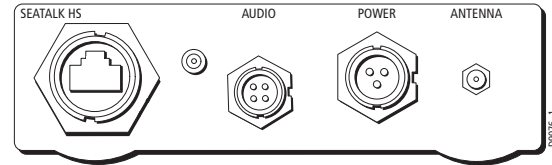
System connections

This section deals with connecting your Sirius weather system after installation



A typical Sirius weather system is shown in the illustration above.

Connector panel



The connector panel of the receiver provides the following connection sockets:

- **Power** - for connecting the system to your boat's DC power supply.
- **SeaTalk^{hs}** - for connecting the receiver to your boat's ethernet system.
- **Antenna** - for connecting the SRA-40 antenna to the system.
- **Audio** - not used at this time.

The connector panel also contains a light emitting diode (LED) to indicate system status for diagnostic purposes. For full details of the status LED refer to "Status LED" on page 15

Power cable

CAUTION: In-line fuse

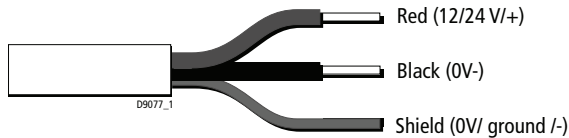
If you do not have a breaker in the power circuit, an in-line 2A quick blow fuse should be fitted to the positive (red) lead of the power cable.

Sirius SR100 weather systems are intended for use on boat's DC power systems operating in the range 9 V to 32 V. That is 12 V or 24 V systems.

There is no power switch on the SR100 receiver, it automatically turns on when the system is powered.

The power connection for your system should be made at either the output of the battery isolator switch, or at a DC power distribution panel. The power must be fed directly to the system through its own dedicated cable system and **MUST** be protected by a thermal circuit breaker or fuse, installed close to the power connection

A 10 ft. (3m) cable is supplied with your system for connecting to the boat's DC power supply as follows:



Extending the power cable

The power cable may be extended up to a maximum length of 60 ft. (20m) using a suitable AWG 12 multi-stranded cable.

Note: *If the power connections are accidentally reversed the system will not work. Raymarine recommends using a multi-meter to ensure that the power lead is connected with the correct polarity.*

Grounding the system

CAUTION: Grounding

This system is not intended for use on 'positive' ground boats. The power cable earth screen must be connected to the boat's RF ground system.

Your boat's power system should be either:

- Negative grounded, with the negative battery terminal connected to the boat's ground, or
- Floating with neither battery terminal connected to the boat's ground.

It is important that an effective RF ground is connected to your SR100 weather system.

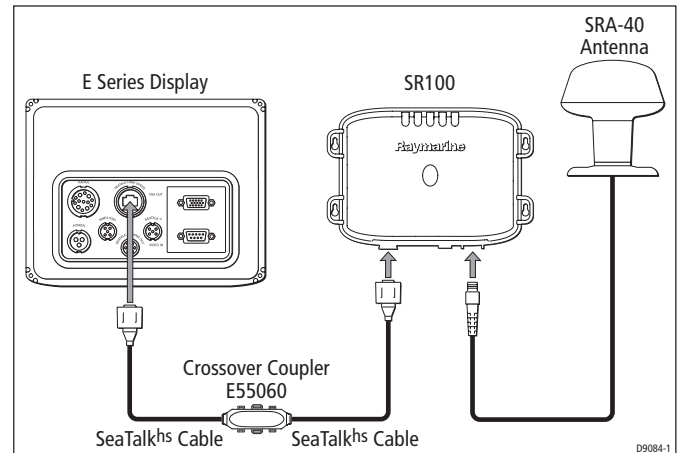
You must ground your weather system by connecting the drain wire (screen) of the power cable to the nearest ground point on your boat's RF system.

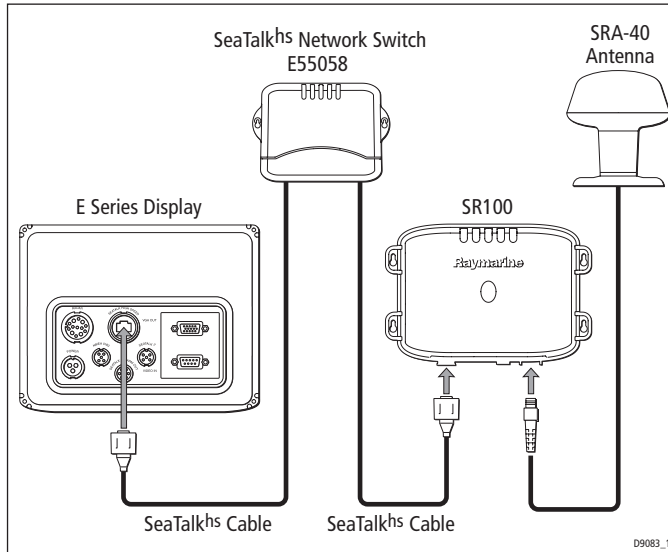
If you need to extend the wire, the extension wire should be an 8 mm braid or AWG 10 multi-strand cable.

If your boat does not have an RF system, connect the drain wire to the negative battery terminal.

SeaTalk^{hs}

The supplied SeaTalk^{hs} high speed network cable should be connected from the receiver to a network hub or a cross-over coupler to enable connection to your E-Series display.





Antenna cable

CAUTION: Antenna cable

DO NOT cut or splice the antenna cable or remove the connectors as system performance will be severely reduced.

The antenna cable should be used to connect the SRA-40 to the receiver. If a cable length greater than the 25 ft. (7.5m) supplied is required a substitute cable of suitable length should be purchased from your Shakespeare dealer.

System activation

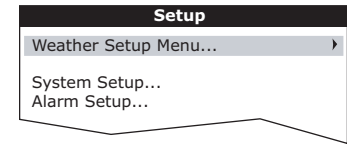
With your Sirius weather system correctly installed, this section details how to activate Sirius weather.

Activation

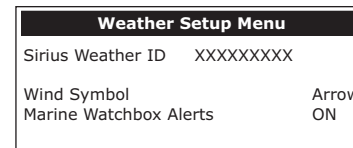
To activate Sirius Weather:

With the weather system and your E-Series display powered ON:

1. Open a weather application page and make it active. For full details of how to do this, refer to Raymarine Handbook No. *81244_2 E-Series Networked Display - Reference Manual*.
2. Press the **MENU** key. The Setup dialog box appears.



3. Use the trackpad to highlight *Weather Setup Menu*.
4. Use the trackpad to enter *Weather Setup Menu*.



Your Sirius Weather ID number is displayed on the first line of the Weather Setup Menu.

5. Make a note of your Sirius Weather ID number.
6. Contact Sirius Weather at **1-800-869-5480** to activate your system.

Upgrading software

There may be occasions when it is necessary to upgrade your Sirius SR100 software. The following section gives details of how to carry out this operation.

Before upgrading your SR100 software, there are 2 pieces of hardware that are necessary to complete this process:

- A blank CompactFlash (CF) memory cartridge of 8 Megabytes capacity or larger. Raymarine recommends using SanDisk brand CF cards with E-Series.
- A CF reader/writer device for your PC or Mac. This device will be used to copy the files downloaded from Raymarine.com to the CF card. The CF reader/writer can be an external device (e.g. connected by USB to your computer), or can be internal/built in.

Downloading the software upgrade

1. Point your web browser to **<http://www.raymarine.com>**
2. Navigate to *Software update* pages.
3. Click the relevant link to download the Sirius weather upgrade.
4. Follow the on-screen instructions.

Upgrading your SR100 software:

CAUTION: Software upgrade

While this software upgrade is not intended to erase data stored in your E-Series displays internal memory, it is strongly recommended that you perform a backup before

upgrading software should anything interrupt the upgrade process.

You can use the same CF card used to perform the software upgrade for backup, or you can use a different card if you wish.

To perform a backup:

1. Power your E-Series display **ON**. The navigation disclaimer appears.
2. Press **OK**.
3. Insert the backup CF card into the E-Series card slot.
4. If not already in chart plotter mode, press the **PAGE** key.
5. Select a page containing a chart plotter application.
6. Press the **DATA** key.
7. Press the *ARCHIVE AND TRANSFER* soft key.
8. Press the *SAVE TO CARD* soft key.
9. Press *SAVE ALL*. All of your display's highlighted (e.g. Waypoints) stored data is copied to the CF card.

To save all stored data it is necessary to do a *SAVE ALL* with Waypoints highlighted, a *SAVE ALL* with Routes highlighted and a *SAVE ALL* with Tracks highlighted.

The data has now been saved and you may proceed with the software upgrade.

To upgrade SR100 software:

With your Sirius system and E-Series display powered **OFF**:

1. Insert a suitable CF card containing the software upgrade into the E-Series display.
2. Power your E-Series display **ON**. The Software Update Utility screen is displayed.

The Sirius upgrade file is displayed in the left hand column. It should be highlighted, if not use the trackpad and highlight it.

3. Press the *Upgrade Remote Unit* soft key.
4. Press the *Upgrade Remote Unit on Ethernet* soft key. The Upgrade progress meter appears.
5. Within 15 seconds of pressing the *Upgrade Remote Unit on Ethernet* soft key, power your Sirius Weather system ON.
The status bars will begin updating. If they do not begin updating within 30 seconds, check:
 - i. that the correct software revision was selected.
 - ii. that the Sirius Weather receiver was powered ON within 15 seconds of pressing the *Upgrade Remote Unit on Ethernet* soft key.
 - iii. that the SeaTalk^{hs} connection is intact.
6. When the update process is complete, remove the CF card from the card reader slot.
7. Press the *REBOOT* soft key. Your E-Series display will restart automatically.
Your Sirius Weather System and E-Series display are now ready for normal operation.

For full details of how to operate your Sirius Weather Application refer to Raymarine Handbook No. *81244_2 E-Series Networked Display - Reference Manual*. A copy of this manual is available from the relevant product pages at **www.raymarine.com**

Maintenance and troubleshooting

Introduction

This section provides information on routine maintenance and troubleshooting that can be carried out by the user.

Your Sirius SR100 Weather System is a sealed unit. **DO NOT** remove the cover of the receiver. Adjustments require specialized service procedures and tools only available to qualified service technicians. There are no user serviceable parts or adjustments.

Maintenance

CAUTION: Power supply
Always turn your weather system OFF before carrying out routine maintenance.

Routine checks

Your Sirius SR100 Weather System is a sealed unit. Routine checks are therefore limited to the following periodical checks:

- Examine the cables for signs of damage, such as chafing, cuts, or nicks.
- Check that the cable connectors are firmly attached and dust caps are fitted to any connection not in use.

Cleaning

Your Sirius SR100 Weather System is a sealed unit and does not require regular cleaning. However, if you find it necessary to clean the unit, follow these basic procedures:

- Wipe the module clean with a damp cloth.
- If necessary, use iso-propyl alcohol (IPA) or a mild detergent solution to remove any grease marks.

Troubleshooting

Your Raymarine product, prior to packing and shipping, has been subjected to comprehensive test and quality assurance programs. However, if the unit should develop a fault, please refer to the following section to identify the most likely cause and the corrective action required to restore normal operation. If you still have a problem after referring to the following section, contact your local dealer, national distributor or Raymarine Technical Services Department for further advice.

Status LED

The LED on the connector panel provides valuable information on the status of your SR100 system.

The LED blinks green while the system is operating normally. If the unit detects a problem, the LED blinks amber to indicate a warning or red to indicate an error. The pattern of the LED blink is a code representing the nature of the problem. For multiple warnings/errors the codes are given in sequence with a 1.5 second pause between the indications.

The following table shows the LED status codes and their meanings:

LED color	LED pattern	Description
Green	Blinking	Normal operation
Amber	1sec ON, 1 sec. OFF	Antenna disconnected

LED color	LED pattern	Description
Amber	1 sec. ON, 1 sec. OFF, 1 sec. ON, 2 sec. OFF	SeaTalk ^{hs} cable disconnected
Red	Blinking	Internal fault

It is normal during the first minute of initial power that the SR100 status LED shows no activity and remains off. During the second minute the status LED will start to flash the amber or red fault strings. Typically, during normal operation, a flashing green LED will occur within 90 seconds of initial power. If there is no LED indication of any sort displayed after 90 seconds you should check the in-line fuse or circuit breaker.

A blinking red LED indicates an internal fault condition. If this condition persists contact Raymarine Technical Services.

Accessories

The following accessories are available from your local dealer, national distributor or Raymarine Customer Service Department:

Part No.	Description
E55049	1.5 m SeaTalk ^{hs} Network cable
E55050	5 m SeaTalk ^{hs} Network cable
E55051	10 m SeaTalk ^{hs} Network cable
E55052	20 m SeaTalk ^{hs} Network cable

The following accessories are available from your local Shakespeare dealer:

Part No	Description
SRS-35	35 ft. antenna cable and connectors
SRS-50	50 ft. antenna cable and connectors
SRS-90	90 ft. antenna cable and connectors

Technical support

www.raymarine.com

United States

Raymarine Technical Support

1-800-539-5539 extension 2444, or
(603) -881-5200

Product Repair and Service

Raymarine Product Repair Center
21 Manchester Street,
Merrimack, NH 03054 - 4801
1-800-539-5539

Opening hours:
Monday through Friday 0815 - 1700
Eastern Standard or Eastern Daylight
Savings Time.

Help us to help you

When requesting service, please quote the following product information:
Equipment type ● Model number ● Serial number

Appendix A: Technical specification

General

Environmental	
Waterproof	IPX-2
Operating range	-10° C to + 50°C
Storage range	-20° C to + 70°C
Humidity	up to 95% at 35°C non-condensing

Receiver

Size	10¾" x 7½" x 2½" (273.3 x 187.2 x 61.7 mm)
Weight	2.2 lbs (1 kg)
Mounting	Four keyholed mounting tabs, screws
Power	Reverse polarity protected
Voltage	9 V to 32 V DC
Current	0.7 A at 9 V (2 A peak)
Fuse	2A (recommended)
Connectors	RJ-45 SeaTalk ^{hs} 3 pin Power 4 pin Audio (not used) SMB RF Antenna

Antenna

Size	Φ 3½" x 4¼" (including mounting flange and gasket)
Weight	8 oz. (226 g)
Mounting	Three countersunk holes, screws
Connector	SMB RF

Appendix B: List of Abbreviations

Abbreviation	Description
AWG	American Wire Gauge
CF	CompactFlash
DC	Direct current
EMC	Electromagnetic Compatibility
FCC	Federal Communications Commission
ft.	feet
IMO	International Maritime Organization
LED	Light Emitting Diode
m	meters
mm	millimeters
°C	Degrees Centigrade
RF	Radio Frequency
SMB	Sub Miniature B
SOLAS	Safety of Life at Sea
USB	Universal Serial Bus
V	Volts
VHF	Very High Frequency
WEEE	Waste Electronic and Electrical Equipment Directive

Raymarine World Wide Warranty

Raymarine Inc.

APPLICABLE TO PRODUCTS SOLD THROUGH OFFICIAL RAYMARINE INC. DEALERS, DISTRIBUTORS AND BOAT BUILDERS WITHIN THE AMERICAS AND CARIBBEAN.

Limited warranty

Subject to the terms, conditions and limitations set forth in this U.S. Limited Warranty (hereinafter the 'Warranty'), Raymarine warrants that its products, when properly installed and used, will be free from defects in material and workmanship for a period of twenty-four (24) months (with respect to VHF radios, a period of thirty-six (36) months), from the date of first purchase (the 'Warranty Period').

For the purposes of this warranty, 'date of first purchase' means the date that the product was purchased by the first retail customer; or in the case of a product installed on a new vessel by a certified Raymarine original equipment manufacturer (a 'Raymarine OEM'), the date that such vessel was purchased by the first retail customer.

Raymarine will, at its sole option, repair or replace any defective products or components returned during the Warranty Period in accordance with the terms, conditions and limitations set forth below. **Such repairs or replacement will be the sole remedy of the customer under this Warranty.**

Obtaining Warranty Service

Standard Warranty Service

To qualify for standard warranty service the product must be returned to a Raymarine-certified service agent, or directly to Raymarine in person, or by mail (i) within the Warranty Period, and (l) within thirty (30) days of the alleged product failure. Any products returned by mail must be securely packaged and sent pre-paid and insured to Raymarine or to a Raymarine-certified service agent. All products, whether returned in person or by mail, must be accompanied by a copy of the original sales receipt, to be eligible for standard warranty service.

A list of Raymarine-certified service agents is available from Raymarine Technical Support or at www.raymarine.com

'On Board' Warranty Service

For any Raymarine product or system that (i) has been installed on your vessel by a Raymarine-certified service agent or by a Raymarine OEM, and (ii) has a MSRP equal to or greater than USD \$2,500, you are eligible to receive warranty service by a Raymarine certified service agent on-board your vessel ('On Board Warranty Service') for a period of 12 months from the date of first purchase of such product or system, or the date of first purchase of the vessel on which such product or system has been installed (the 'On Board Warranty Period'). In order to obtain On Board Warranty Service eligible customers

MUST:

- (i) within the On Board Warranty Period, and (ii) within thirty (30) days from the date of the alleged failure giving rise to the warranty claim for which you are requesting On Board Warranty Service, contact a local Raymarine-certified service agent and request On Board Warranty Service.
- Present to the Raymarine-certified service agent a copy of the original sales receipt for the product, together with proof of the date of installation of the product by a Raymarine-certified service agent. The service agent may at its sole option, accept or deny such proof of purchase and proof of installation as sufficient to qualify you for On Board Warranty Service.

Costs associated with travel, mileage, taxi fares, launch or docking fees, aircraft or vehicle rental, meals, customs, shipping, communication charges, and service agent travel costs are specifically excluded from coverage under this Warranty and are your responsibility. **In addition**, this Warranty does not cover fees associated with hauling, shipping or towing your vessel to a Raymarine-certified agent.

Upon the expiration of the On Board Warranty Period, you are still eligible to receive standard warranty service for the remaining term of the Warranty Period, but will not be eligible for continued On Board Warranty Service.

Limitations and Exclusions

In addition to any other limitations and exclusions set forth herein, Raymarine is not responsible for, and this Warranty does not cover:

- failures due to abuse, misuse, accident, unauthorized alteration or repair, improper installation (whether or not by a Raymarine-certified service agent), shipping damage or corrosion;
- Costs associated with routine system checkouts, alignment/calibration, seatrials or commissioning;
- repair or replacement of consumable items, including, without limitation, fuses, batteries, drive belts, radar mixer diodes, snap-in impeller carriers, impellers, impeller bearings and impeller shafts;
- costs associated with overtime or premium labor costs;
- differences in material, coloring or size that may exist between actual products and the pictures or descriptions of such products in our advertising, advertising literature or on the Internet;
- products purchased by a customer from a United States dealer via the Internet if such products were not delivered and installed within the United States; or
- the replacement of missing components from the package of any product purchased through an online auction site.

Other conditions

This Warranty is fully transferable provided that you furnish the original proof of purchase to Raymarine or, in the case of On Board Warranty Service, to a Raymarine-certified service agent. This Warranty is void if the label bearing the serial number has been removed or defaced.

TO THE EXTENT CONSISTENT WITH STATE AND FEDERAL LAW, THE FOREGOING WARRANTY IS RAYMARINE'S SOLE WARRANTY AND IS APPLICABLE ONLY TO NEW PRODUCTS PURCHASED IN THE UNITED STATES OF AMERICA. THE PROVISIONS OF THIS WARRANTY ARE IN LIEU OF ANY OTHER WRITTEN WARRANTY, WHETHER EXPRESSED OR IMPLIED, WRITTEN OR ORAL, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THE LIABILITY OF RAYMARINE TO A CUSTOMER UNDER THIS WARRANTY, WHETHER FOR BREACH OF CONTRACT, TORT, BREACH OF STATUTORY DUTY OR OTHERWISE SHALL IN NO EVENT EXCEED AN AMOUNT EQUAL TO TEN (10) TIMES THE MANUFACTURER'S SUGGESTED RETAIL PRICE OF THE PRODUCT GIVING RISE TO SUCH LIABILITY AND IN NO EVENT SHALL RAYMARINE BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL OR INDIRECT DAMAGES.

SOME JURISDICTIONS DO NOT ALLOW EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES 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, WHICH VARY FROM JURISDICTION TO JURISDICTION.

This Warranty supersedes and replaces all previous Warranties.

January 2005

Raymarine UK Ltd.

APPLICABLE TO PRODUCT SOLD THROUGH OFFICIAL RAYMARINE UK LTD. DEALERS, DISTRIBUTORS AND BOAT BUILDERS WITHIN EUROPE, THE MIDDLE AND FAR EAST, AFRICA AND AUSTRALASIA.

Limited Warranty

The Raymarine warranty terms and conditions as described below do not affect the customers legal rights and complies with EU Directive 1999/44/EC.

In order to ensure that the product continues to operate efficiently and reliably, we recommend that, before using the product, the customer carefully reads the Owner's Handbook and follows the advice on the safe and correct operation and use of the product. We recommend that the Raymarine product is installed by a Raymarine certified installer. Installation by persons other than a Raymarine certified installer may invalidate the warranty.

1. Product warranty

1.1 Raymarine warrants each new product to be of good materials and workmanship. Raymarine, or its approved agents, will repair or exchange under warranty any parts or product proven to be defective in material or workmanship under normal use, for a period of 2 years (24 months) from date of sale to end user, subject to the limits contained in this warranty document.

1.2 The Raymarine warranty covers the parts and labour associated with any warranty repair as described above, provided that the product is returned to Raymarine or one of its approved agents.

1.3 Raymarine reserve the right to replace under warranty, not repair, certain Raymarine products subject to the limitations below, provided that they are returned to the nearest Raymarine National Distributor. For details of such products refer to the internet at www.raymarine.com or contact your nearest Raymarine National Distributor.

2. Onboard warranty

2.1 In addition to the Product warranty cover as described above, Raymarine will, authorize onboard warranty service by the nearest Raymarine approved service agent,

subject to the maximum mileage and other limits referred to in paragraph 4.12 below, on products, where proof of installation, or commission by Raymarine certified installers, can be shown.

2.2 The warranty provides for onboard repair or exchange of the product, by Raymarine or its approved service agents, for a period of 2 years (24 months), subject to the limits contained in this warranty document. In the case of a product installed, by a Raymarine certified OEM installer, on a new boat prior to the sale of the boat to a customer, the 2-year period will begin on the date of the sale of the boat to the customer. In the case of a product installed, by a Raymarine certified installer, on a boat already in the possession of the customer, the 2-year period will begin on the date of the commissioning of the installed product.

2.3 Certain Raymarine products are not covered by onboard warranty unless the products are pre-registered and on board warranty is purchased from the Raymarine certified installer. For details of such products refer to the internet at www.raymarine.com or contact your nearest Raymarine National Distributor.

2.4 The Purchaseable onboard warranty is subject to the limitations below.

3. Obtaining warranty service

3.1 In the event of warranty service being required, the customer should contact Raymarine Technical Support or the nearest Raymarine approved service agent - the contact details of Raymarine Technical Support and a full list of the names and details of worldwide service agents are available on the internet at www.raymarine.com and in the Owner's Handbook.

3.2 In cases where the customer is requesting a warranty service and a Raymarine certified installer has not installed the product; i.e. Product warranty, the affected product must be returned to the customer's local Raymarine approved service agent or direct to Raymarine with:

- 3.2.1 proof of purchase showing the date of purchase and the name of the supplier of the product; and
- 3.2.2 the serial number of the affected product; or
- 3.2.3 a warranty card completed by the product supplier (which will contain the information required by paragraphs 3.2.1 and 3.2.2).

Subject to the limitations below, the product will be repaired or replaced (at the discretion of Raymarine or a Raymarine Service Agent) at no further cost and promptly returned to the customer.

3.3 In cases where the customer is making a warranty claim and the product has been installed by a Raymarine certified installer, (boat builder, installer, dealer etc.) i.e. Onboard warranty, the nearest Raymarine approved service agent should be contacted and onboard service requested (which will be subject to the limits referred to in paragraph 4.12 below). Before the onboard warranty service is performed, the customer must have available:

3.3.1 proof of purchase showing the date of purchase and the name of the supplier of the product; and

3.3.2 the serial number of the affected product; or

3.3.3 proof of installation of the product by a Raymarine certified installer; or

3.3.4 a warranty card completed by the product supplier (which will contain the information required by paragraphs 3.3.1 and 3.3.3).

3.4 In cases where onboard warranty has been purchased - as described in 2.3; the nearest Raymarine approved service agent should be contacted and onboard service requested, information detailed in 3.3.1 and 3.3.2 is required. Onboard warranty service will only be performed if the product serial number confirms that the onboard warranty service has been purchased and is valid.

4. Warranty limitations

4.1 Raymarine warranty policy does not apply to any product that has been subjected to accident, abuse or misuse, shipping damage, alterations, corrosion, incorrect and/or non-authorized service, or products on which the serial number has been altered, mutilated or removed.

4.2 Certain products do not carry the onboard warranty, as described in section 2 above, unless the onboard warranty cover is purchased at the time of installation. The purchaseable onboard warranty is only available on products purchased in specific territories, for further details refer to the internet at www.raymarine.com or contact your nearest Raymarine National Distributor.

4.3 Products purchased outside the country of installation will not be covered by onboard warranty.

4.4 Raymarine assumes no responsibility for damage incurred during installation or as a result of improper installation.

4.5 This warranty does not cover routine system checkouts, alignment/calibration, sea trials or commissioning, unless required by replacement of part(s) in the area being aligned.

4.6 Raymarine assumes no responsibility for damage caused by or to other equipment, systems or components occasioned by improper or unauthorized connection, or use, of the product.

4.7 Consumable items, including, but not limited to: fuses, batteries, drive belts, radar mixer diodes, snap-in impeller carriers, impellers, impeller bearings, and impeller shafts are specifically excluded from this warranty. A complete list of the consumable items relating to each product can be found in the Owner's Handbook and/or on the internet at www.raymarine.com.

4.8 All costs associated with transducer replacement, other than the cost of the transducer itself, are specifically excluded from this warranty.

4.9 Overtime/premium labour portion of services outside of normal working hours is not covered by this warranty.

4.10 If repairs are necessary under the warranty, the affected product must be forwarded to a Raymarine facility or a Raymarine approved service agent, at the owner's expense.

4.11 The Raymarine warranty does not cover any differences in material, coloring or size between those alluded to in corporate advertising, literature or published on the internet, which are not specifically objected to at the time of delivery.

4.12 Travel costs other than auto mileage, tolls and two (2) hours travel time, are specifically excluded from the warranty on all products. Costs, which are excluded from the coverage of this warranty, include but are not limited to; taxi fares, launch fees, aircraft rental, subsistence, customs, shipping, and communications charges etc.

4.13 Neither Raymarine nor a Raymarine service agent shall be liable for any incidental, indirect, consequential or special (including punitive or multiple) damages, nor shall

Raymarine or a Raymarine service agent be liable for any loss of profit, business, contracts, opportunity, goodwill or other similar loss. The liability of Raymarine or a Raymarine service agent to a customer under this warranty, whether for breach of contract, tort, breach of statutory duty or otherwise, shall not exceed US\$1,000,000. Nothing in this paragraph 4.13 shall limit the liability of Raymarine or a Raymarine service agent in respect of death or personal injury caused by its negligence, fraud or any other liability which by law, cannot be excluded or limited.

4.14 All Raymarine products sold or provided hereunder are merely aids to navigation. It is the responsibility of the user to exercise discretion and proper navigational skill independent of any Raymarine product.

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January 2005

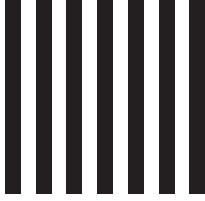


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RAYMARINE INC

21 Manchester Street
Merrimack, NH03054-4801



Note: This information is held by Raymarine only and shall not be made available to any other companies. Raymarine may send you mailshots/details of any new products.

Please tick this box if you do not wish to receive any further information from Raymarine.



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Raymarine UK Limited

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Portsmouth

PO3 5BR

England

Americas and the Caribbean

Detach and mail this portion within **48 hours**.

To validate the warranty, the customer or dealer must fill in the requested information below and mail to address shown on front.

Retain the other portion of this card for your records.

Do not distribute my name or information to third parties.

Stick barcode label here

Purchase date

Purchased from

Dealer address

Installed by

Installation date

Commissioned by

Commissioning date

Owner's name

Boat's name/ Boat type/ Location

Mailing address

Owner's occupation

UK, Europe, Middle and Far East, Africa and Australasia

Detach and mail this portion within **48 hours**.

To validate the warranty, the customer or dealer must fill in the requested information below and mail to address shown on front.

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