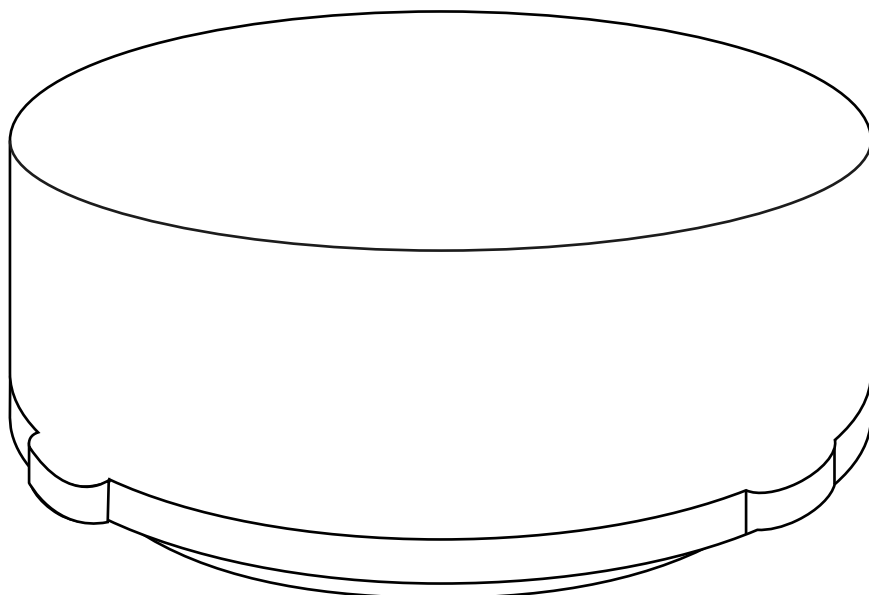




MAR12AMAE010



Radar Antenna MDS-12

WARNING AND INSTALLATION MANUAL

Imported by:

AvMAP
SATELLITE NAVIGATION

AvMap Srl
Viale Zaccagna 6, 54033 Carrara (MS), Italy
www.seiwa-marine.com



1. Warranty and warnings

AvMap Srl warrants every unit to be free from defects in material and workmanship under normal use and service for a period of 24 months from original retail purchase. During the warranty period, **AvMap Srl** will repair or replace any component which fails in normal use without charges for parts or labour. Technological developments, modifications and upgrades of software are not covered by warranty. To receive warranty service, contact your local authorized dealer for shipping instructions. The device should be securely packed with its tracking code clearly written on the outside of the package, shipping to be paid by the customer. Include a copy of the original sales receipt as the proof of purchase. This limited warranty does not extend to any device which has been subjected to misuse, neglect, accident, incorrect wiring or improper installation. **AvMap Srl** reserves the right to repair or replace the device at its sole discretion.

For more warranty information please see the web site: www.seiwa-marine.com

For technical advice or assistance in Europe contact:

AvMap Srl

Viale Zaccagna 6, 54033 Carrara (MS), Italy

Customer support: +39-0585-784044

service@seiwa-marine.com

SAFETY INSTRUCTONS



“DANGER”, “WARNING” and “CAUTION” notices throughout this manual. It is the responsibility of the operator and the installer of the equipment to read, understand and follows these notices. If you have any questions regarding these safety instructions, please contact the Company's customer service or your local dealer.

WARNING



Do not open the equipment. Hazardous voltage which can cause electrical shock, burn or serious injury exists inside the equipment. Only qualified personnel should work inside the equipment.



Wear a safety belt and hard hat when working on the antenna unit. Serious injury or death can result if someone falls from the radar antenna mast.



Stay away from transmitting antenna. The radar antenna emits microwave radiation which can be harmful to the human body, particularly the eyes. Never look directly into the antenna radiator from a distance of less than 1 m when the radar is in operation.



Turn off the radar power switch before servicing the antenna unit. Post a warning sign near the switch indicating it should not be turned on while the antenna unit is being serviced. Prevent the potential risk of someone being struck by the rotating antenna and exposure to the RF radiation hazard.



Do not disassemble or modify the equipment. Fire, electrical shock or serious injury can result.



Turn off the power immediately if water leaks into the equipment or the equipment is emitting smoke or fire. Continued use of the equipment can cause fire or electrical shock.



Do not place liquid-filled containers on top of the equipment. Fire or electrical shock can result if liquid spills into the equipment.

2. Foreword

Thank you for choosing the MDS-12 marine radar antenna. The radar antenna is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless properly installed and maintained. Please carefully read and follow the recommended procedures for installation, operation and maintenance. While this unit can be installed by the purchaser, any purchaser who has doubts about his or her technical abilities may wish to have the unit installed by an authorized Dealer or other qualified technician.

We want to Hear from you!

Your suggestions and comments are highly important to us. Please send us your feedback at service@seiwa-marine.com.

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2.1 Features

The main features of the MDS-12 marine radar antenna:

- Built-in ethernet RJ45 connection cable to connect via a WiFi router to Seiwa Explorer 23 WiFi, and to SWx chartplotter series. (WiFi Router not included in the box).
- 4kW high power all weather radar
- 36NM range
- Traditional SEIWA quality and reliability in a compact, lightweight and low-cost radar antenna.
- Digital radar target technology.
- Built-in excellent sea and rain clutter algorithm.
- Fully digital signal processing.
- High performance microwave front end.

2.2 Technical Specifications

ANTENNA UNIT

- Radiator: Slotted waveguide array
- Radiator length: 55 cm
- Horizontal beamwidth: 4°
- Vertical beamwidth: 25°
- Sidelobe:
 - Within + 20° off mainlobe; less than -18 dB
 - Outside + 20° off mainlobe; less than -23 dB
- Polarization: Horizontal
- Antenna rotation speed: 24 rpm (+ 2)
- Wind resistance: Relative wind speed 100 knots (51.5 m/s)

TRANSCIVER MODULE (contained in radome)

- Transmitting tube: MSF1421B or MAF1421B
- Frequency: 9410 MHz + 30MHz
- Peak output power: 4kW nominal
- Pulselength & pulse repetition rate:

- 0.08 μ S, 2100 Hz (0.125, 0.25, 0.5, 0.75, 1.5nm)
- 0.3 μ S, 1200 Hz (1.5, 2, 3nm)
- 0.8 μ S, 600 Hz (3, 4, 6, 8, 12, 16, 24, 36nm)
- Warm up time: 1:30 minutes
- Modulator: FET switching method
- I.F.: 60MHz
- Tuning: Automatic or manual
- Receiver front end: MIC (Microwave IC)
- Bandwidth:
 - Tx pulselength 0.3 μ S and 0.08 μ S: 25MHz
 - Tx pulselength 0.8 μ S: 3MHz
- Duplexer: Circulator with diode limiter

ETHERNET CABLE

- Ethernet cable with RJ45 connector

POWER SUPPLY UNIT

- From 10.5 Vdc to 40 Vdc built-in regulated power supply

ENVIRONMENT

- Temperature:
 - Antenna unit; -25°C to +70°C
- Humidity:
 - Relative humidity 93% or less at +40°C
- Compass safe distance:

	Standard Compass	Steering Compass
Antenna unit	130cm	95cm

3. Installation

This chapter provides the procedures necessary for installation. Installation mainly consists of the following:

- sitting and mounting the display unit and antenna unit
- connection of the signal cable and the power cable
- establishing the ground
- checking the installation, and
- adjustments.

3.1 Antenna Unit Installation Sitting, handling considerations

- The antenna unit is generally installed either on top of the wheelhouse or on the radar mast on a suitable platform. Locate the antenna unit where there is a good all-round view as far as possible, no part of the ship's superstructure or rigging intercepting the scanning beam. Any obstruction will cause shadow and blind sectors. A mast for instance, with a diameter considerably less than the width of the radiator, will cause only a small blind sector, but a horizontal spreader or crosstrees in the same horizontal plane as the antenna unit would be a much more serious obstruction; you would need to place the antenna unit well above or below it.
- It is rarely possible to place the antenna unit where a completely clear view in all direction is available. Thus, you should determine the angular width and relative bearing of any shadow sectors

for their influence on the radar at the first opportunity after fitting. (The method of determining blind and shadow sectors appears later in this chapter.)

- If you have a radio direction finder on your boat, locate its antenna. Clear the antenna unit, to prevent interference to the direction finder. A separation of more than two meters is recommended.
- To lessen the chance of picking up electrical interference, avoid routing the signal cable near other onboard electrical equipment. Also avoid running the cable in parallel with power cables.
- The compass safe distance should be observed to prevent deviation of the magnetic compass.

Standard Compass	Steering Compass
1.3m	0.7m

3.2 Mounting of the MDS-12 Radome

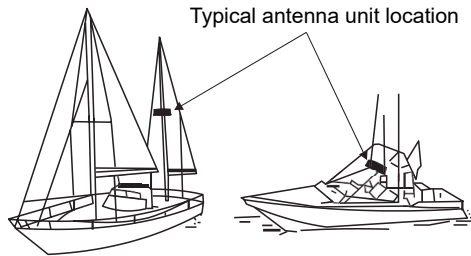


Figure 3.2a - Radome cover

Unpacking the antenna unit

1. Open the antenna unit packing box carefully.
2. Unbolt the four bolts at the base of the radome to remove the radome cover.

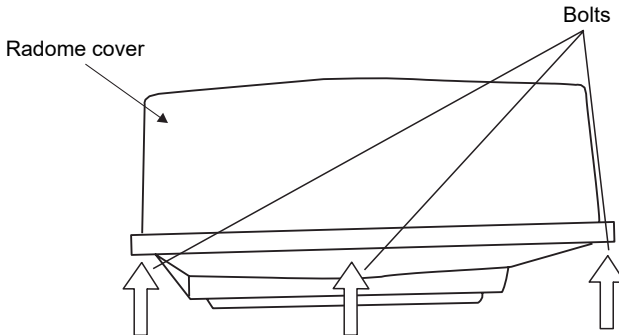


Figure 3.2b - Antenna unit

3. Drill holes in the antenna mounting platform in accordance with the previous removal of the base mounting map.
Note: the hole is arranged in parallel with the center line of the ship.
4. Loosen the antenna cover and the base of the 4 screws, carefully remove the cover.
5. Remove the cable clamping plate by unfastening four screws and removing a gasket.
6. Pass the cable through the hole at the bottom of the radome base.
7. Secure the cable with the cable clamping plate and gasket. Ground the shield and vinyl wire by one of the screws of the cable clamping plate.

8. Connect the wire to the Video Processing unit.
 - (1) 4-pin connector to J18
 - (2) RJ45 connector to J12

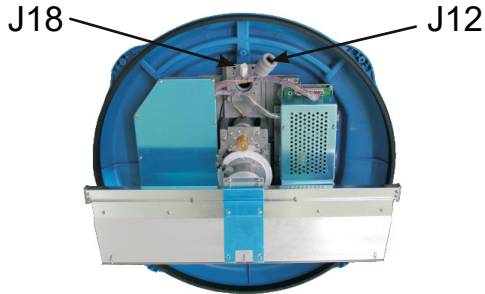


Figure 3.2.c - Antenna unit

9. Fix the shield cover. Do not pinch the cable.

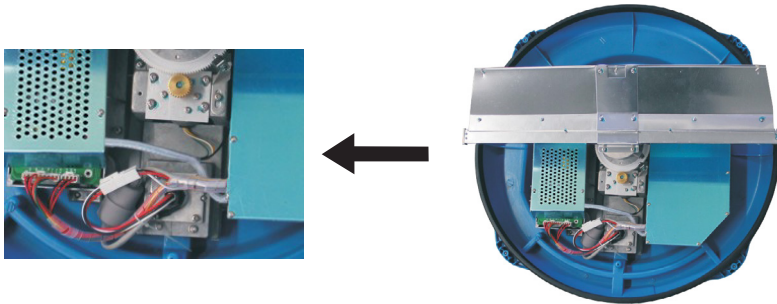


Figure 3.2.d - Antenna Cable Wiring

10. Loosely fasten the radome fixing bolts. You will tighten them after confirming the unit is working normally.

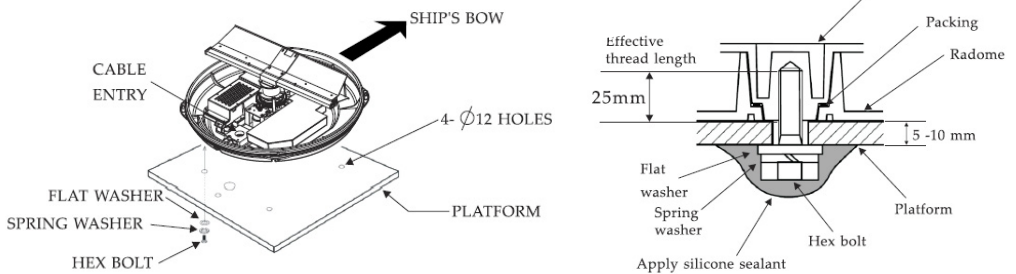
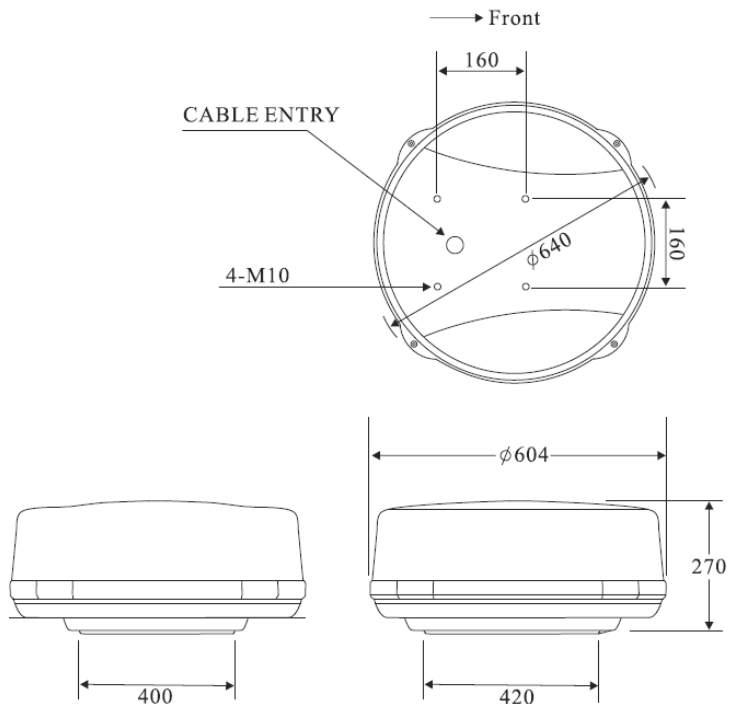


Figure 3.2.e - How to fasten the radome base to the mounting platform

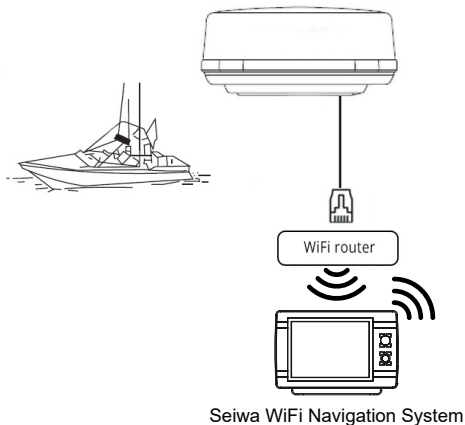
4. Drawings and dimensions



5. Connections

The radar antenna connects via ethernet cable to an external WiFi router (not included) to provide a stable signal. Through the WiFi router, the radar antenna MDS-12 connects wirelessly to the navigation system.

MDS-12 is compatible with SEIWA EXPLORER 23 WiFi, SWx 900 and SWx 1200 series.



5.1 Setup configuration

1. Connect your WiFi router to a PC using the WiFi router program and pre-configure the WiFi router settings as following:
 - Set the WiFi router IP Address to 223.168.1.1
 - Set WiFi Router USERNAME and PASSWORD as per your preference.In this setup configuration as example we set USERNAME to "Radar MDS-12" and PASSWORD to "12345678".
 - Save the settings of your WiFi router and disconnect the WiFi router from the PC.
2. Connect the MDS-12 ethernet cable to the pre-configured WiFi router as shown on figure 5.1
3. Connect the radar MDS-12 to correct power source as shown on figure 5.1.
4. Power on the radar MDS-12.
5. Power on the Seiya WiFi navigation system.
6. In the main menu of the Seiya WiFi navigation system open the "Ports and Connectivity" menu, select WiFi and enable Wireless LAN. After that you can select the WiFi router USERNAME from the list of available networks. As per our example Radar MDS-12 appears on the list and use the WiFi router PASSWORD to connect. As per our example PASSWORD "12345678".

Note: The network will be remembered by the Seiya WiFi navigation system and next time it will be connected automatically.

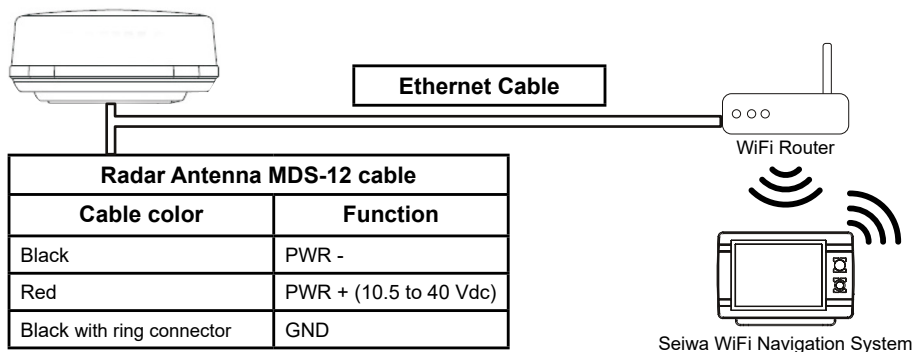


Figure 5.1

Note: the ground wire (black cable with ring connector) is used to connect to the grounding of the metal boat. For wooden or fibreglass boats it is not needed to connect the ground wire.

Note: it is suggested to add a power switch with fuse (5A for 12V and 3A for 24V) for the radar antenna.

6. Product conformity information

6.1 Simplified EU declaration of conformity

Hereby,

SI-TEX Marine Electronics, 25 Enterprise Zone Drive suite 2, Riverhead, NY 11901, USA declares that the radio equipments in the following table are in compliance with Directive 2014/53/EU.

Si-Tex 4kW Radar Antenna	MDS-12
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The full text of the EU declaration of conformity for every single product is available at the following internet address: eudeclaration.avmap.it