

FURUNO



Furuno BBWX4 SiriusXM Marine Weather & Audio Receiver

Installation instructions

Thank you for purchasing the Furuno BBWX4 Receiver

Tracking of weather is easier than ever with the Furuno® BBWX4 SiriusXM Receiver for Furuno MFD's. Furuno and SiriusXM have teamed up to bring you live, up-to-date weather information and forecasting to give you peace of mind, no matter when or how you are using your boat. The weather information is obtained from the weather industry's leading experts and is delivered via a digital receiver through SiriusXM's Marine Weather services.

You have the ability to receive high-quality and comprehensive weather information and forecasting that you can overlay onto your raster and vector charts. You will be provided with premium weather content, such as current weather reports, NOWRad® nationwide high-resolution weather radar imagery, and high-resolution Sea Surface Temperature images that can help fishermen locate fishing hot spots. Hardware and the SiriusXM weather service subscription are sold separately.

The Furuno BBWX4 SiriusXM Receiver also provides access to over 150* channels of SiriusXM satellite radio service which can be added at a discounted rate to the Marine subscription.

Safety Notices



Warning: Product installation and operation

This product must be installed and operated in accordance with the instructions provided. Failure to do so could result in personal injury, damage to your vessel and/or poor product performance.



Warning: Maintain a permanent watch

Always maintain a permanent watch, this will allow you to respond to situations as they develop. Failure to maintain a permanent watch puts yourself, your vessel and others at serious risk of harm.



Warning: Potential ignition source

This product is NOT approved for use in hazardous/flammable atmospheres. Do NOT install in a hazardous/flammable atmosphere (such as in an engine room or near fuel tanks).

Caution: Power supply protection

When installing this product ensure the power source is adequately protected by means of a suitably-rated fuse or automatic circuit breaker.



Warning: Switch off power supply

Ensure the vessel's power supply is switched OFF before starting to install this product. Do NOT connect or disconnect equipment with the power switched on, unless instructed in this document.



Warning: Product grounding

Before applying power to this product, ensure it has been correctly grounded, in accordance with the instructions in this guide.



Warning: Positive ground systems

Do not connect this unit to a system which has positive grounding.

Caution: Service and maintenance

This product contains no user serviceable components. Please refer all maintenance and repair to authorized Furuno dealers. Unauthorized repair may affect your warranty.

General Information

EMC Installation Guidelines

Furuno equipment and accessories conform to the appropriate Electromagnetic Compatibility (EMC) regulations, to minimize electromagnetic interference between equipment and minimize the effect such interference could have on the performance of your system. Correct installation is required to ensure that EMC performance is not compromised.

For **optimum** EMC performance we recommend that wherever possible:

- Furuno equipment and cables connected to it are:
 - At least 1 m (3 ft) from any equipment transmitting or cables carrying radio signals e.g. VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 7 ft (2 m).
 - More than 2 m (7 ft) 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 product is supplied from a separate battery from that used for engine start. This is important to prevent erratic behavior and data loss which can occur if the engine start does not have a separate battery.

- Furuno specified cables are used.
- Cables are not cut or extended, unless doing so is detailed in the installation manual.

Note: Where constraints on the installation prevent any of the above recommendations, always ensure the maximum possible separation between different items of electrical equipment, to provide the best conditions for EMC performance throughout the installation.

Water Ingress

Water ingress disclaimer:

Although the waterproof rating capacity of this product meets the IPX6 & IPX7 standard, water intrusion and subsequent equipment failure may occur if the product is subjected to commercial high-pressure washing. Furuno will not warrant products subjected to high-pressure washing.

Suppression Ferrites

Furuno cables may be fitted with suppression ferrites. These are important for correct EMC performance. If a ferrite has to be removed for any purpose (e.g. installation or maintenance), it must be replaced in the original position before the product is used.

Use only ferrites of the correct type, supplied by Furuno authorized dealers.

Connections to Other Equipment

Requirement for ferrites on non-Furuno cables. If your Furuno equipment is to be connected to other equipment using a cable not supplied by Furuno, a suppression ferrite MUST always be attached to the cable near the Furuno unit.

Product disposal

Dispose of this product in accordance with the WEEE Directive.



■ The Waste Electrical and Electronic Equipment (WEEE) Directive requires the recycling of waste electrical and electronic equipment. Whilst the WEEE Directive does not apply to some Furuno products, we support its policy and ask you to be aware of how to dispose of this product.

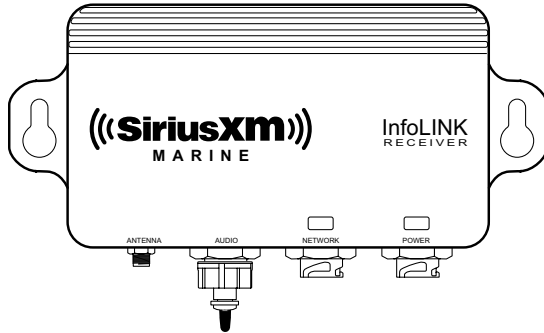
IMO and SOLAS

The equipment described within this document is intended for use on leisure marine boats and workboats not covered by International Maritime Organization (IMO) and Safety of Life at Sea (SOLAS) Carriage Regulations.

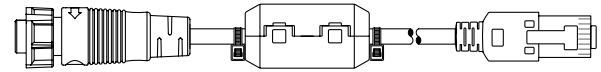
Technical accuracy

To the best of our knowledge, the information in this document was correct at the time it was produced. However, Furuno cannot accept 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, Furuno cannot accept liability for any differences between the product and this document.

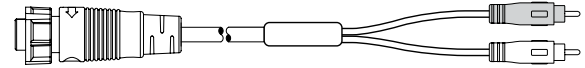
Parts Supplied



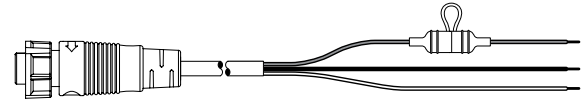
Furuno BBWX4 SiriusXM Receiver



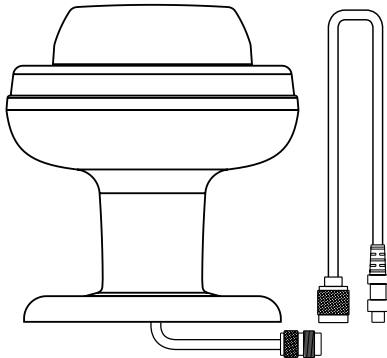
Furuno BBWX4 Network Cable



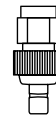
Furuno BBWX4 Stereo Audio Cable



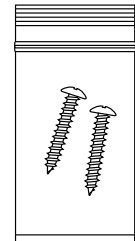
Furuno BBWX4 Power Cable



Shakespeare® SRA-50 Antenna
(Includes 25' Cable & Mounting Accessories)



SMA to SMB Adapter



Mounting Screws (2)

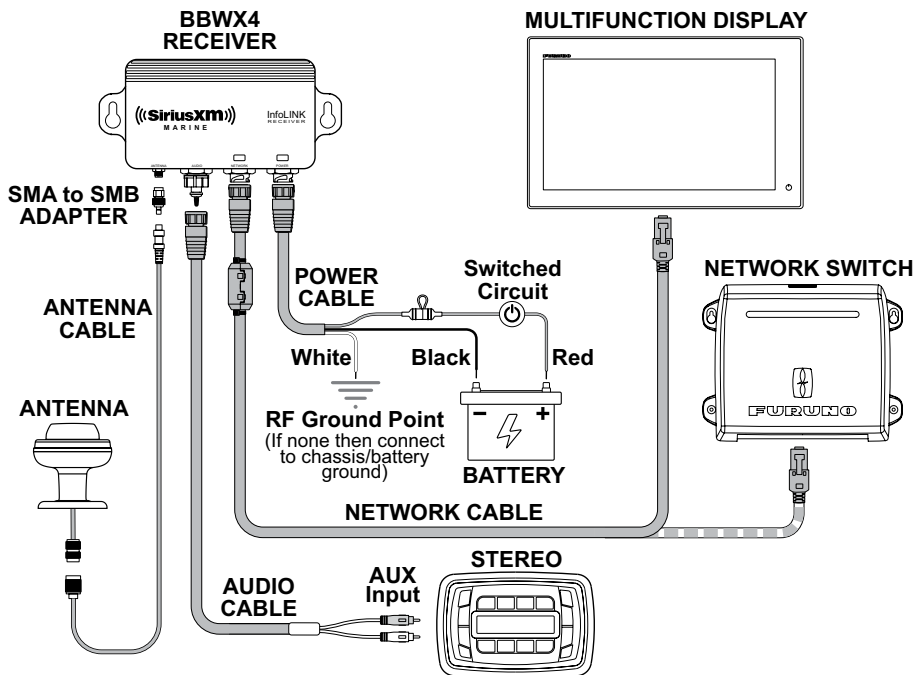
Multifunction display hardware and software compatibility

Installation Overview

Shown at right is a typical installation overview for the BBWX4 Receiver in a Furuno system.

The BBWX4 Receiver can be connected directly to a Furuno Multifunction Display, or to an Ethernet Hub or Network Switch.

The audio connection is optional and is used if you subscribe to a SiriusXM music and entertainment package in addition to the SiriusXM Marine subscription package.

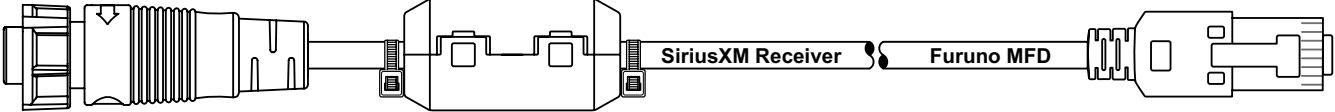

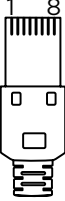


Required Additional Components

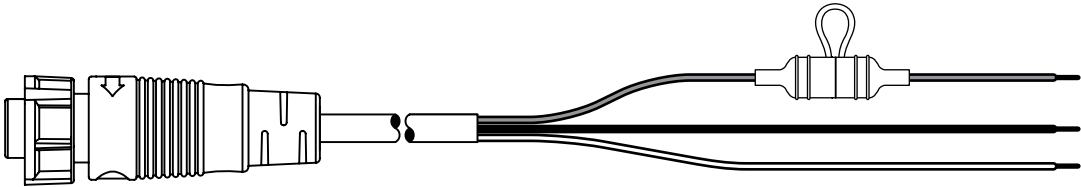
Component / Service	Required for SiriusXM Satellite Radio	Required for SiriusXM Marine Weather
Sirius SRA-50 type-approved antenna	✓	✓
Compatible Furuno multifunction display	✓	✓
GPS receiver — provides position information for your vessel in the weather, chart and radar applications. Some multifunction displays have an internal GPS receiver. If your display does not have an internal GPS, an external GPS receiver will be required.	✗	✓
Third-party external audio system — required if you want to listen to SiriusXM satellite radio.	✓	✗
SiriusXM marine weather subscription	✗	✓
SiriusXM satellite radio subscription	✓	✗


Cable Identification

The following is the pin identification for the Network Cable provided with the BBWX4 Receiver.

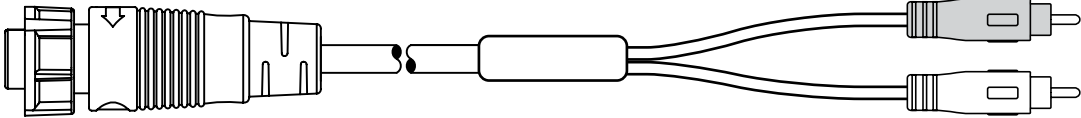
					
SiriusXM Connector	Pin	Description	Furuno Connector	Pin	Description
	1	Ethernet RX+ (White/Green)		1	Ethernet TX+
	2	Ethernet RX- (Green)		2	Ethernet TX-
	3	Ethernet TX+(White/Orange)		3	Ethernet RX+
	4	Ethernet TX- (Orange)		4	Not Used
	5	HW ID-A		5	Not Used
	6	HW ID-B		6	Ethernet RX-
	7	Shield/Ground		7	Not Used
				8	Not Used


The following is the pin and wire identification for the Power Cable provided with the BBWX4 Receiver.



Power Connector	Pin	Description	Wire Color	Description
	1	Battery + (Switched)	Red	Battery + (Switched)
	2	Ground -	Black	Ground -
	3	RF Shield Ground	White	RF Shield Ground

The following is the pin and connector identification for the Audio Cable provided with the BBWX4 Receiver.



Audio Connector	Pin	Description	Connector Color	Description
	1	Left Audio +	Red	Right Stereo Audio
	2	Left Audio -		
	3	Right Audio -	White	Left Stereo Audio
	4	Right Audio +		

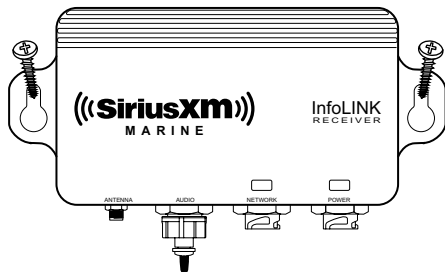
BBWX4 Receiver Installation

Select a mounting location for the BBWX4 Receiver that is sheltered from the elements. While the receiver is water resistant, it should be mounted where there will be no direct contact with water, or water spray, if possible.

Also consider the proximity for the several cables which will be need to be connected, antenna, power, data, and optionally audio, so that the cables reach.

Before mounting the unit, make a note of the Electronic Serial Number on the underside of the unit.

Once you have determined a suitable location, attach the receiver using the two provided screws.



Connect the Power Cable

The BBWX4 Receiver should be connected to a 12 or 24 volt power source, negative ground.

Caution: Some vessels may have a positive ground system. DO NOT connect to positive ground system.

Be sure the vessels' power is off before making the power connection, or the fuse or circuit breaker which will be powering the BBWX4 Receiver is off.

Power Wire	Connection (See diagram on page 7)
Red	12v or 24v positive power (switched on/off with vessel's main power)
Black	Ground (negative)
White	The RF shield wire. Ground this wire to the vessel's dedicated grounding system. For vessels without a dedicated grounding system, do not connect this wire.

Power Cable Extension

The product is supplied with a power cable, which can be extended if required.

The following restrictions apply to any extension to the power cable:

- Cable must be of a suitable gauge for the circuit load.

- Each unit should have its own dedicated power cable wired back to the distribution panel.

Total Length (max)	Supply Voltage	Cable Gauge (AWG)
0-5 m (0-16.4 ft)	12 V	18
	24V	20
5-10 m (16.4-32.8 ft)	12 V	14
	24V	18
10-15 m (32.8-49.2 ft)	12 V	12
	24V	16
15-20 m (49.2-65.5 ft)	12 V	12
	24V	14

Note: These distances are for a 2-wire power cable run from the battery to the product (approximate distance). To calculate the round trip length, double the figure stated here.

Breakers, Fuses and Circuit Protection

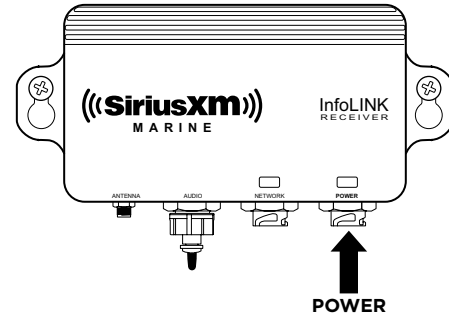
It is recommended that you fit a thermal breaker or fuse at the distribution panel.

- Thermal breaker rating: 5 A (if only connecting one device)

Note: The suitable fuse rating for the thermal breaker is dependent on the number of devices you

are connecting. If in doubt consult an authorized Furuno dealer.

Connect the Power Cable to the **POWER** connection of the receiver.



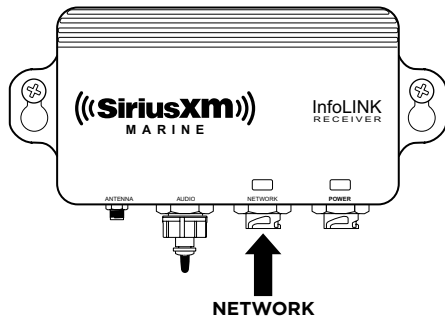
Connect the Network Cable

The Network Cable should be connected to your Furuno system. This cable has two different connectors - one end connects to the Furuno system and the other to the BBWX4 Receiver. The cable is marked near each end to distinguish the connectors.

If your Furuno system does not utilize a Network Switch, connect the RJ45 end of the cable to the Furuno MFD's Ethernet port.

If your Furuno system utilizes a an HUB101 or equivalent Network Switch, connect the RJ45 end of the cable to the Network Switch. If there are no available connections on the existing Network Switch, you will need to purchase another Network Switch to accommodate the BBWX4 Receiver.

Connect the 7-pin end of the cable to the **NETWORK** connection of the BBWX4 Receiver.



Connect the Audio Cable (optional)

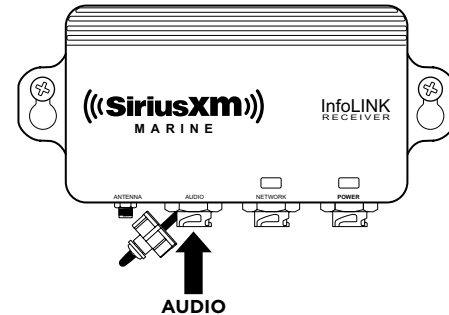
The audio connection is optional and is used if you subscribe to a SiriusXM music and entertainment package in addition to the SiriusXM Marine subscription package.

If you are not installing an audio connection, do not remove the water resistant cap that is installed on the BBWX4 Receiver's **AUDIO** connector.

The Audio Cable provides an RCA-style Left and Right audio connection. Connect these to the auxiliary (AUX) input on your audio device.

If your audio system does not have RCA connectors they will need an adapter cable, available from the local dealer or an electronics retailer.

Remove the water resistant cap that is installed on the BBWX4 Receiver's **AUDIO** connector, and connect the Audio Cable.



Antenna Installation

Caution: When installing the antenna, do not cut or alter the antenna cable, or remove the cable connectors.

Two considerations are necessary before installing the antenna. First, finding a suitable mounting location, and second determine how the antenna will be mounted. There are several in-box mounting options for the antenna, or accessories can be purchased from marine stores for additional mounting options.

In choosing where to mount the antenna, consider whether you will be securing the antenna from the underside of the mounting surface, or attaching the antenna to the mounting surface. Also, determine if the antenna wire will be passed through the mounting surface, or if it will be routed along the surface.

If the distance between the antenna and the BBWX4 Receiver is more than 25 feet, special Shakespeare cable kits are available. Plan and purchase the appropriate kit before proceeding (page 16).

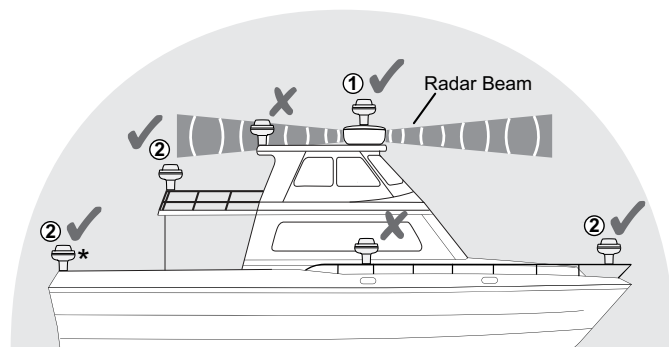
Choose a Location

The antenna must be mounted horizontally, and in a location that is open and has a clear view of the sky.

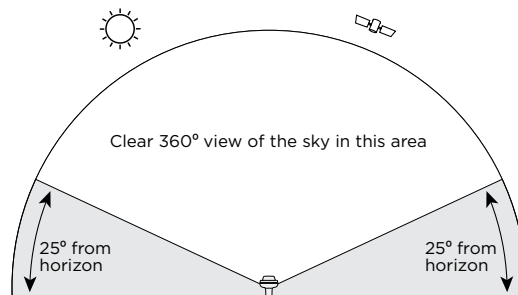
The antenna must also be mounted away from any metal objects or other structures that could block the line-of-sight reception of the satellite signal. The height of the antenna is not as important as having a clear view of the sky.

The antenna should be mounted a minimum of 1 m (3 ft.) away from other radio transmitting antennas (such as VHF or Sideband antennas), and a minimum of 2 m (27 ft.) from a radar antenna.

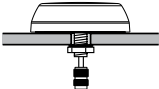
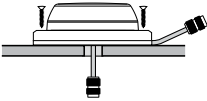
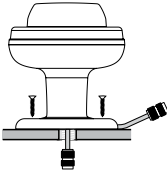
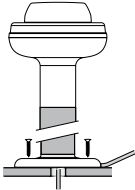
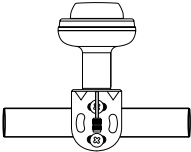
Once you have selected a possible mounting location, sight a full 360° circle around the antenna at an elevation angle of 25° to make sure no obstacles block the antenna's view of the sky.



*Keep antenna at least 1 m (3 ft.) away from engine to avoid interference.



Choose a Mounting Option

In-Box Mounting Options		
Surface Mount		Antenna secured from the underside of the mounting surface. For mounting surfaces between 1/4" and 1" thick, use the supplied extension shaft. Route antenna cable through the mounting surface. Secure from below mounting surface using the mounting lock washer & retaining nut.
Low Profile Surface Mount		Antenna secured topside to the mounting surface, and also used when the antenna cable cannot be routed through the mounting surface to the underside. Secure to the surface using 4 screws.
Pedestal Mount		Antenna secured topside above the mounting surface. Route antenna cable either through or above the mounting surface. Secure to the surface using 3 screws.
Optional Mounting Options (purchased separately)		
Extension Mast Mount		Extension masts can be purchased in varying lengths to extend the antenna up a greater distance above the mounting surface. Antenna secured topside to the mounting surface. Route antenna cable either through or above the mounting surface. Secure to the surface using 3 screws.
Rail Mount (Shakespeare model 4720 Rail Mount)		Use to attach the antenna to an existing 7/8", 1", or 1-1/4" rail on the vessel.

Installing the Antenna

In-box antenna mounting options are surface mount, low-profile surface mount, or pedestal mount. Optional mounting options require an extension mast, or a Shakespeare Style 4720 Rail Mount (each sold separately).

Always mount the antenna so that it does not interfere with safe operation of the vessel.

Important: When mounting to a surface using the low-profile, pedestal, or extension mast mounting method where the antenna cable will exit above the mounting surface, orient the base or pedestal bottom so that the antenna cable exits towards the rear of the vessel, away from oncoming wind from normal vessel motion.

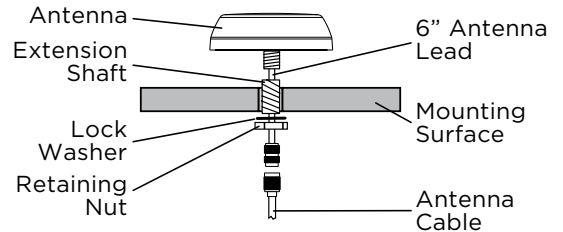
The following accessories are available from Shakespeare:

- SRS-3-KIT - Marine SiriusXM Splitter. Kit to connect two SiriusXM satellite receivers to one antenna. Includes three 25' cables which permit up to a 50' cable run from the antenna to each receiver.
- SRC-35 - 35' Marine SiriusXM Replacement Cable
- SRC-50 - 50' Marine SiriusXM Replacement Cable
- SRC-90 - 90' Marine SiriusXM Replacement Cable

Follow the instructions in the next sections for the mounting method you've selected. **Do not cut the 6" antenna lead or remove the connectors from any of the cables under any circumstances.**

Surface Mount

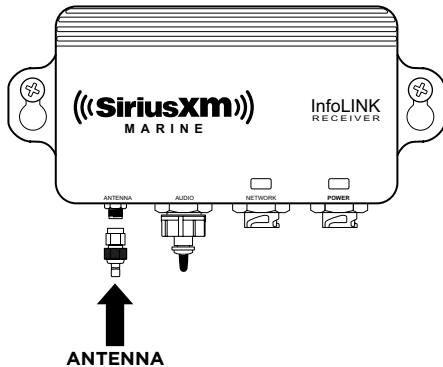
1. Drill a 9/16" mounting hole. When drilling fiberglass surfaces, use a small backup block of scrap wood underneath to control push-through splintering. Use caution to avoid drilling through or near fuel lines, fuel tanks, hydraulic lines, or electrical wiring.



2. For mounting surfaces greater than 1/4" thick (up to 1" thick), use the extension shaft (provided), otherwise continue with step 3.
 - a. Route the 6" antenna lead with TNC female connector through the center of the extension shaft.
 - b. Thread the extension shaft onto the existing antenna shaft and tighten.
3. Pass the 6" antenna lead connector and cable, and extension shaft (if used), through the hole

that was drilled.

4. Apply a small bead of marine sealant around the outer edge of the antenna base to insure a watertight seal.
5. Secure the antenna to the mounting surface with the supplied retaining nut and lock washer.
6. Connect the antenna cable to the 6" antenna lead.
7. Route the antenna cable to the BBWX4 Receiver and connect the antenna cable to the SMA to SMB Adapter. Connect the adapter to the **Antenna** connection of the BBWX4 Receiver.

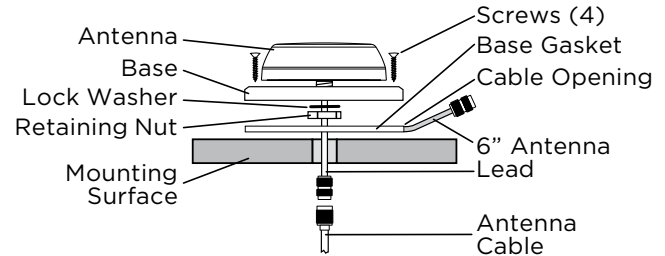


Low Profile Surface Mount

1. If you are going to route the antenna cable through the mounting surface, drill a 9/16"

center hole for the antenna cable. When drilling fiberglass surfaces, use a small backup block of scrap wood to control push-through splintering. Use caution to avoid drilling through or near fuel lines, fuel tanks, hydraulic lines, or electrical wiring.

2. Attach the antenna onto the base by using the lock washer and retaining nut.
3. Orient the antenna as desired. Place on the mounting surface and take off the antenna



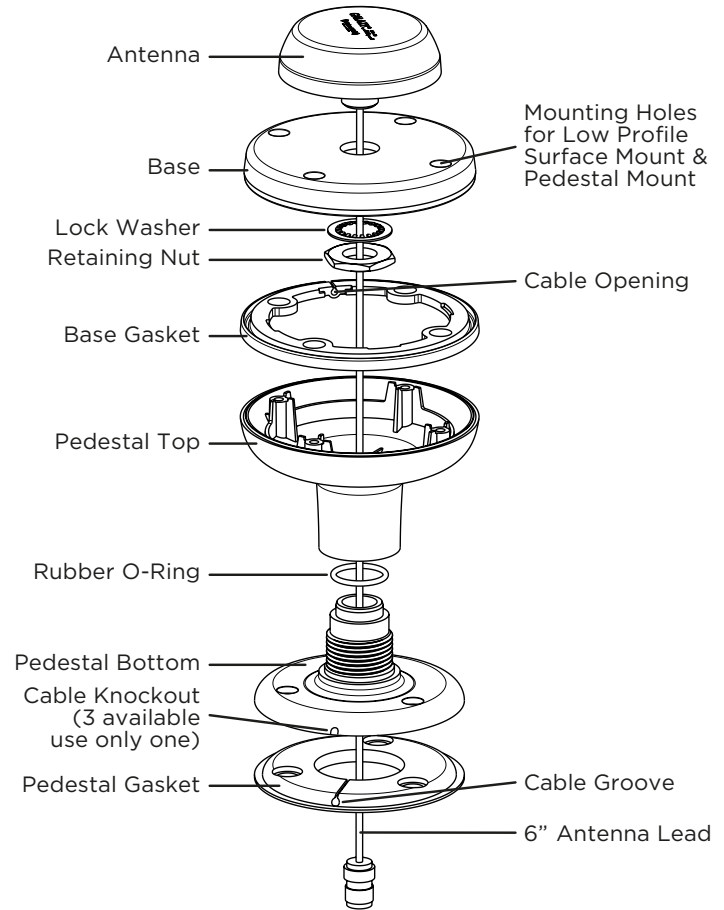
and base leaving the base gasket in the same position. Use the base gasket as a template to mark the locations for screws.

4. The provided mounting screws will accommodate most surfaces. If you find them too long, too short, or otherwise unsuitable for your application, substitute wood screws, machine screws/washers/nuts, or other hardware (not provided). Be sure to use only stainless steel hardware. If you find it too difficult to start the mounting screws, drill 7/64" pilot holes.

5. Either pass the 6" antenna lead along with the connector through the center hole, or, lay the 6" antenna lead into the cable opening in the base gasket. Place the antenna, base, and base gasket on the mounting surface aligning it to the marks made in step 3.
6. Use the provided mounting screws (or other stainless steel hardware, not provided) to mount the antenna to the surface. Do not over-tighten the screws.
7. Connect the antenna cable to the 6" antenna lead.
8. Route the antenna cable to the BBWX4 Receiver and connect the antenna cable to the SMA to SMB Adapter. Connect the adapter to the **Antenna** connection of the BBWX4 Receiver.

Pedestal Mount

1. If you are going to route the antenna cable through the mounting surface, drill a 9/16" mounting hole. When drilling fiberglass surfaces, use a small backup block of scrap wood to control push-through splintering. Use caution to avoid drilling through or near fuel lines, fuel tanks, hydraulic lines, or electrical wiring.
2. Assemble the antenna as shown:
 - a. Attach the antenna to the base with the lock washer and retaining nut.



out through the side of the pedestal bottom, make sure the antenna lead can turn freely so that it does not get twisted as you screw the antenna assembly onto the pedestal bottom. When complete, finish tightening the 3 screws that hold the pedestal base to the mounting surface. Do not over tighten.

- 11.** Connect the antenna cable to the 6" antenna lead.
- 12.** Route the antenna cable to the BBWX4 Receiver and connect the antenna cable to the SMA to SMB Adapter. Connect the adapter to the **Antenna** connection of the BBWX4 Receiver.

Extension Mast Mount

- 1.** Follow the installation steps 2a and 2b in the Pedestal Mount section, Place the rubber o-ring over the threads of the extension mast.
- 2.** You will need to feed the 25' antenna cable through the pedestal gasket and pedestal bottom, and through the extension mast, and connect it to the 6" antenna lead. Screw down the assembled antenna into the extension mast.
- 3.** Route the antenna cable to the BBWX4 Receiver and connect the antenna cable to the SMA to SMB Adapter. Connect the adapter to the **Antenna** connection of the BBWX4 Receiver.

Rail Mount

The center hole in ratchet-type antenna mounts will not accommodate the SRA-50's connector. You must use a rail mount which will allow the cable and its connector to pass through (Shakespeare model 4720 Rail Mount).

Do not cut the antenna cable and do not remove the connector in an attempt to accommodate a ratchet-type antenna mount.

- 1.** Follow installation steps 2a and 2b for the Pedestal Mount.
- 2.** Place the rubber o-ring over the threads of the rail mount and route the 6" antenna lead through the rail mount.
- 3.** Attach the antenna assembly to the rail mount by screwing it onto the rail mount until tight.
- 4.** Follow the instructions included with the rail mount for attaching the rail mount to a rail.
- 5.** Connect the antenna cable to the 6" antenna lead.
- 6.** Route the antenna cable to the BBWX4 Receiver and connect the antenna cable to the SMA to SMB Adapter. Connect the adapter to the **Antenna** connection of the BBWX4 Receiver.

Verify Operation

Power on the Furuno system, and the BBWX4 Receiver. Verify that the Power LED light is on (blue), and that the Network LED light is randomly flashing violet, which indicates normal network traffic.

Consult “Troubleshooting” on page 22 if the indicator LED lights are not on, or if the Network LED light is showing a blinking pattern.

Troubleshooting

The troubleshooting information in this section is for general reference. Consult the documentation that accompanied your Furuno system for specific operating instructions and advisory messages that may be displayed.

LED Indicator Lights

The BBWX4 Receiver has two LED indicator lights which show the current state of the receiver.

Power LED (Blue)	Network LED (Red/Violet/Blink)	Status
Off	Off	No Power. Turn power on or check power source/cable connection.
On	Violet, random blinking pattern	Normal network communication is established between the MFD and the BBWX4 Receiver. Blinking violet indicates network traffic.
On	Red, 1-blink fast pattern	Network Cable is not connected, or not secured. Make sure the cable is connected and secured to the BBWX4 Receiver.
On	Red, 1-blink slow pattern	Network cable connected is damaged or out of spec. Contact Furuno for a replacement cable.
On	Violet, 2-blink pattern for 18 seconds	BBWX4 receiver has lost the link connection to the MFD or network switch. Please check the network components.
On	Red, 2-blink pattern	Network Cable is not connected to the MFD or network switch. Confirm that the cable is connected to an MFD or network switch. If the cable is properly connected to the MFD or network switch, the cable may be damaged.
On	Red, 4-blink pattern	MFD is not communicating with the BBWX4 Receiver. Check the MFD to determine the reason why the MFD is not communicating with the BBWX4 Receiver.

MFD Message	Reason
No Signal (NoSignal)	Make sure that the vessel is outdoors with a clear view of the southern sky. Make sure the Antenna is mounted according to the instructions in this manual. Move your vessel away from any area which obstructs the antenna.
Check Antenna (Chek Antenna, CHK Antena, Chek Ant)	Make sure that the antenna cable is firmly and securely plugged into the BBWX4 Receiver. Make sure the antenna cable is not bent or broken. Turn the MFD off, then on, to reset this message. If the message persists, most likely the antenna cable has been damaged. Replace the antenna.
Antenna Disconnected	Check the antenna connection to make sure it is fully plugged into the BBWX4 Receiver.
Antenna Cable Shorted	Replace the antenna and antenna cable.
Check Tuner (Chek Tuner, Chk Tunr)	Network Cable is not connected to the MFD or network switch. Confirm that the cable is connected to an MFD or network switch.
Channel Not Available (Chan Unavailable, Ch Unavailable, Ch Unavail, Ch Unavl)	The channel you have selected is not available.

MFD Message	Reason
Channel Not Subscribed (CH Unsubscribed, Chan Unsub, Ch Unsub)	The channel you have selected is not part of your current subscription plan.
Waiting To Establish Connection (Waiting to Connect)	The BBWX4 receiver is connected to the MFD network, but the MFD has not yet established a connection.

Specifications

BBWX4 Receiver

Dimensions	.7 in (W) x 3.1 in (H) x 1.7 in (D) 180 mm (W) x 80 mm (H) x 42 mm (D)
Weight	.9.63 oz (273 g)
Nominal Supply Voltage	.12v or 24v DC
Operating Voltage Range	.10.8v to 31.2v DC
Power Consumption	.<3.0W
Operating Temperature	.-4°F to +158°F (-20°C to +70°C)
Waterproof Rating	.IPX 6/7
Antenna Connection	.SMA (SMA to SMB adapter included)
Network Connection	.TCP/IP over Ethernet (10/100-Base-TX) Static IP: 172.31.200.21
Audio Connection	.Stereo Analog Audio Out, 2v RMS
Power Connection	.2-Wire Switched B+ and Ground, plus RF Ground

Antenna

Type	.Shakespeare SRA-50
Pigtail Cable	.6 in (152 mm), TNC Female
Antenna Cable	.25 ft (7.6 m), TNC male to SMB

Cables

Network Cable Length	.8 ft (2.5 m) 7-pin to RJ45
Waterproof Rating	.Cable Connectors IPX 6/7
Power Cable Length	.6.5 ft (2 m), Fuse 5.0 A, AGC
Waterproof Ratings	.Cable Connector IPX 6/7, Fuse Holder IPX 5
Audio Cable Length	.6.5 ft (2 m)
Waterproof Rating	.IPX 6/7

Network OperationXM Network

Specifications are subject to change without notice.