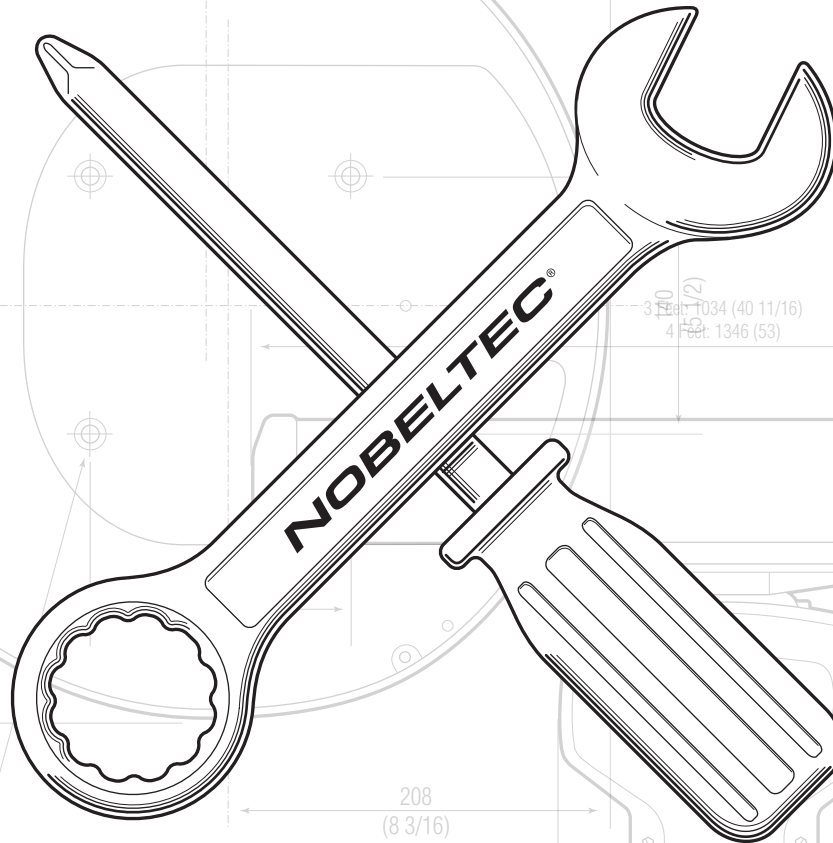


**NOBELTEC®**



**Radar Installer's Guide  
for 2kW Dome (IR2-2D20)**



**Nobeltec®  
InSight™ Radar 2 (IR2)**



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## Safety Instructions

**Do not open the equipment unless familiar with electrical circuits and the service manual.**

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

**Turn off all power before beginning installation.**

Fire, electrical shock or serious injury can result if the power is left on or is applied while the equipment is being installed.

### **Radio Frequency Radiation Hazard.**

The radar antenna emits electromagnetic radio frequency (RF) energy which can be harmful, particularly to your eyes. Never look directly into the antenna from a close distance while the radar is in operation. Never expose yourself to the transmitting antenna at a close distance.



## LIMITED WARRANTY

Please read the enclosed warranty certificate for all warranty questions. In brief: For customers inside the USA, Nobeltec and its hardware providers offer a limited warranty of 2 years on parts and 1 year on labor for all IR2 hardware. For all other customers, a 2 year limited warranty on parts that are delivered from Nobeltec's hardware partner.

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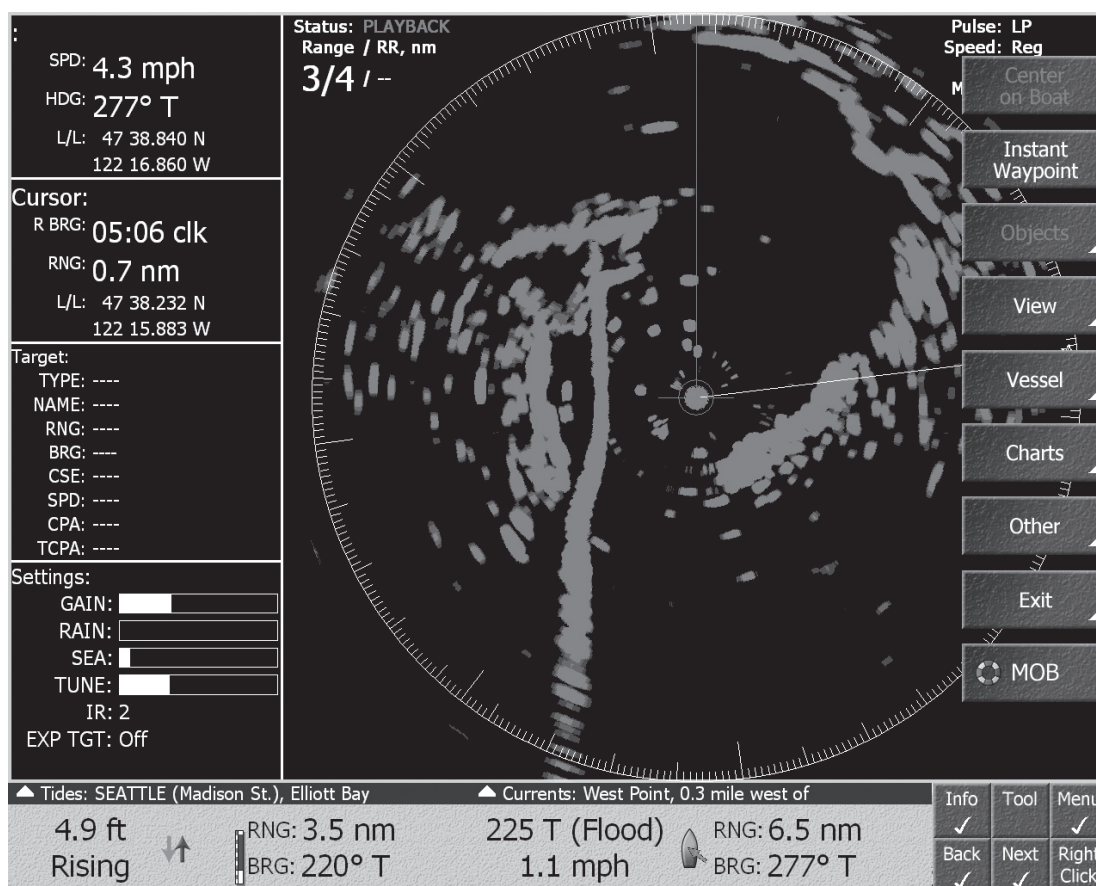
# chapter 1 Introduction

## Welcome to Nobeltec

Congratulations. You have purchased the world's most advanced radar in the recreational marine industry. This Installer's Guide assumes that you are a qualified marine electronics technician and are already familiar with Nobeltec's charting software and the process of installing sensitive electronic devices.

## What is InSight Radar 2 (IR2)?

IR2 is Nobeltec's radar solution. It includes a special radar that transmits digital data to a PC ready digital format. It also includes a special version of Nobeltec's navigation software designed to work with this digital radar data stream. This radar software includes a host of powerful tools designed to make navigating more safe and fun.



InSight Radar in Nobeltec Admiral's NavView interface.

### System Configurations

IR2 communicates with a proprietary protocol through standard USB devices. The Nobeltec line of products takes advantage of all the power of the PC, turning a standard or more ruggedized PC into the world's most powerful navigation platform.

#### Minimum System Requirements

- Microsoft Windows 2000 or XP
- 1.0 GHz processor with 256 MB Ram
- 16 bit color VGA-compatible display or better
- 64 MB (or better) high-end video graphics card
- 150 MB hard disk space – (additional space required for charts or other data)
- CD-ROM (DVD required for Passport Deluxe data)
- Available Serial and/or USB ports for NMEA data and Radar
- Mouse or other pointing device
- GPS for positioning
- Rapid output Heading Sensor (Use GPS Gyro Heading Sensor for best radar overlay on electronic charts)

#### Recommended System Requirements

In order to get the best results using Nobeltec InSight Radar software, we recommend you use a PC with the following specifications:

- Windows 2000 or XP Pro
- Pentium IV 2.4 GHz with 512 MB RAM (or more) and 200 MB hard disk space (Additional space required for navigation data)
- CD and DVD-ROM drive
- High-end 3D video graphics card with OpenGL capabilities
- Heading Sensor capable of outputting NMEA heading information. (If not using the preferred combo GPS/Heading sensor, we recommend the Nobeltec heading sensor. Its fast 10Hz output makes for better radar overlay.)
- GPS capable of outputting NMEA position information within 6' accuracy or a GPS Gyro heading sensor.

## Installation at a Glance

Below are the major steps for installing the Nobeltec InSight Radar solution. Use this as a guide for the installation process.

- Step 1.** Unpack the box and verify its contents.
- Step 2.** Install the InSight 2kW Dome.
- Step 3.** Connect the USB interface adapter to your computer.
- Step 4.** Install Nobeltec Navigation software.
- Step 5.** Use the Radar Setup Wizard.
- Step 6.** Tune your radar.
- Step 7.** Orient yourself and the customer to Nobeltec software and radar.





# chapter 2

## Getting Ready

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This chapter describes the components used for installing the radar on the vessel as well as some necessary precautions to be observed. The following diagram explains in more detail about the order of the system installation.

### Inspection of the delivered goods

Unpack your package and check if all of the following items are included and in good order.

- 2kW Radar Dome (IR2-2D20) with cable
- Nobeltec Software (Admiral or Visual Navigation Suite Radar Version)
- Installers Guide (this document)
- Operations Manual
- SeaLevel Single Port USB adapter (with Driver CD)
- Cable to connect Interface Adapter to the IR2-2D20
- Fasteners (4 bolts, 4 flat washers, 4 lock washers)
- Rocker switch
- Fuses, 5A (spare)

### Optional Cable List

The IR2-2D20 comes with a standard 10 meter cable. If you need a longer cable, they are available for purchase from Nobeltec. The chart below shows the other cable lengths that are available.

Cable length	IR2-2D20
10 meter (standard)	NTHRP010
15 meter	NTHRP011
20 meter	NTHRP012

## Checking the Power Supply

To allow proper operation of the IR2 radars, the ship's power supply capacity must satisfy the requirements detailed in the following table. Keep the battery properly charged anytime to prevent it from discharging.

### Power Supply Requirements

Supply voltage used	Maximum current drain	Allowable voltage range
12 VDC	2 Amps	10.8 to 41.6 VDC

CAUTION: AC power supply cannot be used.

### Fuse Replacement

Properly rated fuses must be used for a safe and proper operation of the IR2 radar. Refer to the following tables for correct ratings of the fuses used in the respective models.

### Supply Voltage to Fuse Table for IR2-2D20

Supply voltage used	Main Fuse
12 VDC	5A/250V or 125V *(6.3Ø x 32mm)

Note: Marked \* fuses are included with IR2.

# chapter 3

## Installing the Radar

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### Best Locations To Install the Radar

A radar's target detection capacity varies greatly depending on the fitted position of the scanner. An ideal position is a location high above the ship's keel line where there are no obstacles around the scanner. On an actual ship, such an ideal location is limited, therefore, consider the following suggestions when you determine the place to install the scanner:

**(a) Install scanner at a position as high as possible.**

The higher the installation position, the longer the ranging distance. Install the scanner at a position as high as possible after considering the ship's hull structure and radar maintainability.

**(b) Install scanner away from smoke-stack and mast**

If the scanner is installed at the same height as the smoke-stack or mast, radar waves may be blocked, creating shadow zones or generating false echoes.

**(c) Install scanner as far forward as possible.**

To avoid creating shadow zones or generating false echoes, install the scanner at a position nearer to the ship's bow and away from obstacles. When installing the scanner on a mast, position it in front of the mast (If obstacles cannot be avoided for the ship's structural reasons, refer to "Shifting away from obstacles" described below.)

**(d) Do not install the scanner near hot or heat-generating items.**

Do not install the scanner at a position where it may be subjected to smoke or hot air from smokestacks or heat from lamps.

**(e) Install the scanner away from antennas of other equipment.**

Install the scanner as far as possible from radio antennas.



**Warning:** Radar can effect and be effected by other antennas. Ensure that your scanner is installed as far from other antennas as possible.

**(f) Make the cable length as short as possible.**

Keep the distance from the scanner to the control box within the standard cable length of 10 m. If you use longer cable for unavoidable reasons, limit the cable length to a maximum of 20 m.

## Shifting away from obstacles

### Shifting from keel line

By shifting the scanner position from the keel line to the starboard side of the ship, it is possible to move shadow zones to the port side which can keep a clearer vision in the bow direction. The starboard shift distance is obtained by a few measurements and using the calculation below.

$$L_s = 0.4R + D/2 \text{ [m]} \quad (\text{when } R < 15\text{m})$$

$$L_s = 0.025R + D/2 \text{ [m]} \quad (\text{when } R \geq 15\text{m})$$

Where:  $L_s$  = Length of shift or distance to be shifted from keel line

$D$  = diameter of obstacle on keel line

$R$  = distance from scanner to obstacle

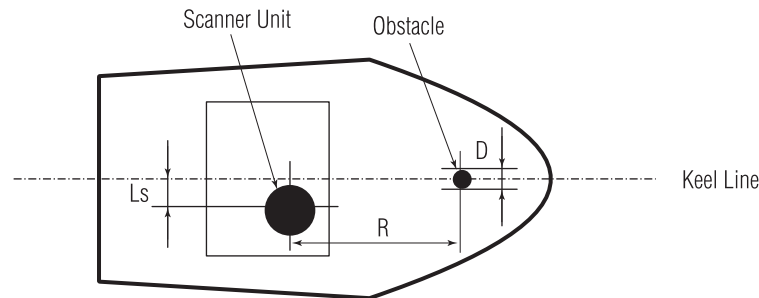


Figure 2.1: Shifting the antenna from keel line

### Obtaining sufficient dip angle

Raise the scanner position so that there is a sufficient dip angle (available between the line of sight from the scanner to the obstacle and the horizontal line.) By raising the dip angle above 5 degrees, it is possible to prevent mid- and long-distance shadow zones. The radar cannot detect objects below the line of sight.

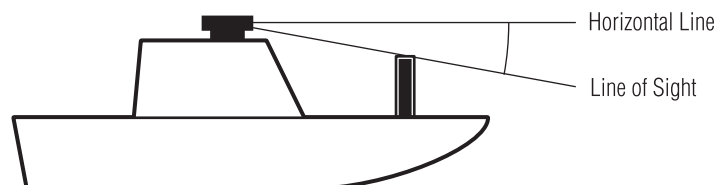


Figure 2.2: Obtaining sufficient dip angle

## Installing the Antenna Unit

When you have decided the place of installation, prepare the mounting bracket or platform as shown in Figure 2.3. If the surface of a platform or mounting base is not even, insert appropriate fairing materials between the antenna pedestal and the mounting surface to ensure a stable mounting platform.

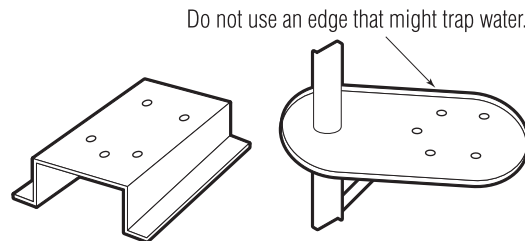


Figure 2.3: Recommended mounting base or platform

Using the included drill-hole template drill holes for the four locations on the mount base and use these holes to fix the scanner unit to the mount base with included bolts. The bolts included with your radar equipment will suffice for mount base thickness of 9 to 14 mm (0.35 to 0.55 in.). If the mount base is thicker or thinner than this, prepare the bolts listed in the tables 2.1 and 2.2.

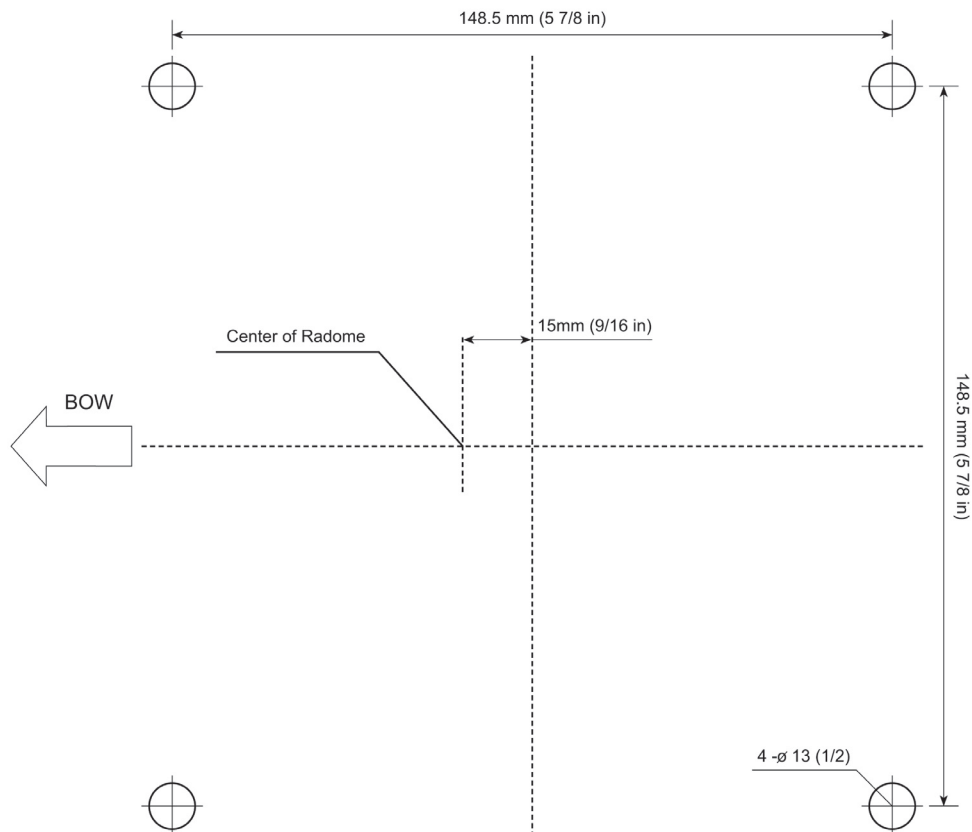
**Table 2-1 Bolts for Mounting Scanner Unit (Radome antenna)**

Thickness of mount base	Bolts necessary to fix radome scanner	Material	Remarks
1-4mm(0.04-0.16 in.)	B8 × 15 (1.5mm pitch)	Stainless	
4-9mm(0.16-0.35 in.)	B8 × 20 (1.5mm pitch)	Stainless	
9-14mm(0.35-0.55 in.)	B8 × 25 (1.5mm pitch)	Stainless	Included
14-19mm(0.55-0.75 in.)	B8 × 30 (1.5mm pitch)	Stainless	

### How to Install the Antenna

To install the radome on your vessel, follow the instructions below.

- 1) Make four bolt holes on the mounting plate using the template that comes packaged with your radar (or see sample below).
- 2) Place the antenna on the mounting plate and securely fix it with the bolts from the bottom.
- 3) We recommend using a mounting plate with a thickness of 9mm to 13mm (3/8 to 1/2) to match with standard bolt (m8x25U bolts) supplied.
- 4) If a thicker mounting plate is used, corresponding longer bolts will need to be purchased. The bolt size varies according to the thickness of the mounting plate.



Please Follow Installation Instructions.  
This template is **not** drawn to scale.

## Connecting the Radar Cable Wires

There are three sets of wires that you will need to connect on the radar cable. All three can be found in this section.

### General considerations

The cable connecting the Antenna and Control unit should already be attached to the Antenna. However, should the need arise for you to replace the cable, please contact Nobeltec to obtain instructions. If the attached cable meets your needs and you do not want to replace or extend the cable, you can skip this entire section.

- 1) The cable connecting the Antenna and Control Unit should be run separately away from other cables such as, radio antenna feeders, power cables, etc. Under no circumstances should it be in parallel arrangement with other cables. These precautions are essential to avoid radio interference to/from other equipment installed on the ship. If this is not possible, either cable set should be screened with metal conduit or another form of shielding.
- 2) Cable should be run as short as possible but be kept within the standard length to achieve best radar performance.
- 3) The copper braids of the cable must be grounded via a grounding stud in the transceiver unit.

### Power Supply Requirements

Supply voltage used	Maximum current drain	Allowable voltage range
12 VDC	2 Amps	10.8 to 41.6 VDC

CAUTION: AC power supply cannot be used

### Fuse Replacement

Properly rated fuses must be used for a safe and proper operation of the IR2 radar sensor unit. Refer to the following tables for correct ratings of the fuses used in the respective models.

#### Supply Voltage to Fuse Table for IR2-2D20

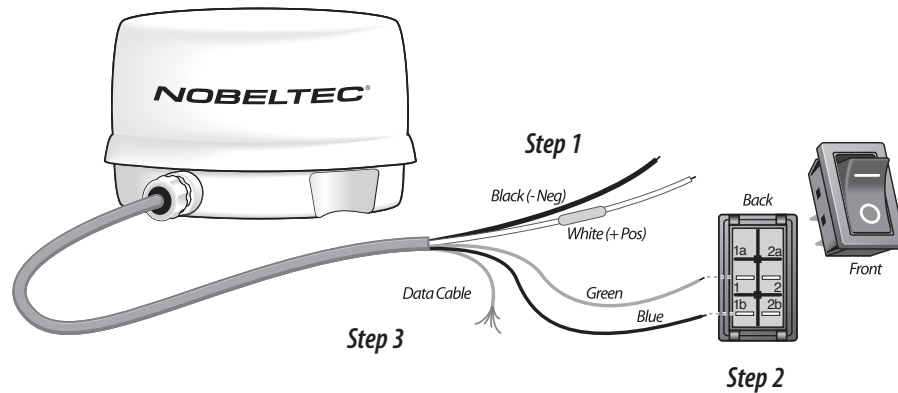
Supply voltage used	Main Fuse
12 VDC	5A/250V or 125V *(6.3Ø x 32mm)

Note: Marked \* fuses are included with IR2.

## Step 1: Wiring to Power

Follow the steps below to properly wire the IR2-2D20 to the power supply.

- 1) Route the large white and black wires on the IR2-2D20 cable directly to the power panel. No switch is required.
- 2) Connect the large black wire to the battery negative (-) terminal of the power panel.
- 3) Connect the large white wire (with the in-line fuse) to the battery positive (+) terminal on the power panel.



**Please Note:** Do not omit the in-line fuse unless a dedicated and fused terminal is available. In this case, install a 5 Amp fuse.



### Step 2: Wiring the On/Off Switch

You may use the On/Off switch provided or another style if desired. If you choose to use a different style, it must be rated for 30 VDC or more and have a carrying capacity of .1A or higher. The On/Off switch does not carry the main power to the Control Box. To install the On/Off switch, follow these steps.

- 1) Route the green and blue wires to the location for the On/Off switch.
- 2) If you choose to use the switch provided, refer to the diagram below to layout and cut a rectangular hole for the switch.
- 3) Pass the the green and blue wires through the hole from behind the panel and connect the wires to the switch.
- 4) Connect the Green wire to the terminal labeled "1" and the blue wire to the terminal labeled "1b" on the back of the switch.
- 5) Press the switch into the mounting hole.
- 6) Place the On/Off switch into the Off position.

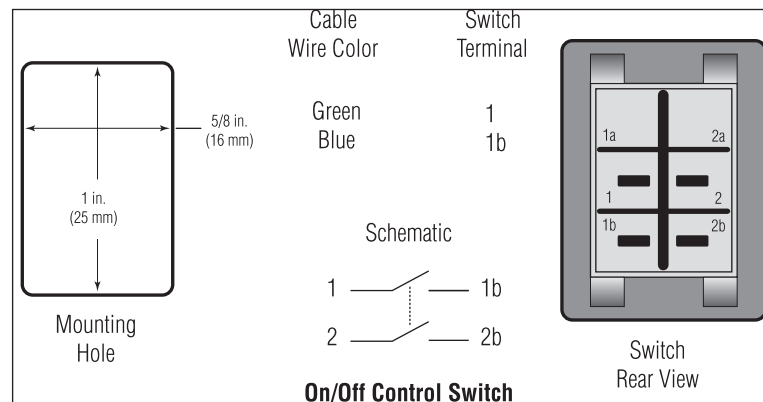


Figure 2.17 Cable #3: Power On / Off switch.

**Step 3: Wiring the Radar Cable to the SeaLevel Device**

The SeaLevel USB device is a necessary component because it converts RS-422 data from the radar into RS-232 via a USB connection with your PC. The SeaLevel USB device comes ready to connect to your radar. However, Nobeltec highly recommends that you use the included CD to install the drivers for this device after it has been connected and before proceeding to the next step.

In addition, if the cable that is provided is not long enough, you may need to extend the length of data cable on the radar (do not extend USB cable. See note below). In order to extend the radar cable, you will need to know the correct pinout numbers and wire colors on the DB9 connector. They are listed in the table below.

Connector Pinouts for the SeaLevel USB Device		
No	Color	Function
1	Orange	Data Out (+)
2	Yellow	Data Out (-)
3	Red	Data In (-)
4	Brown	Data In (+)
5	Black*	Ground



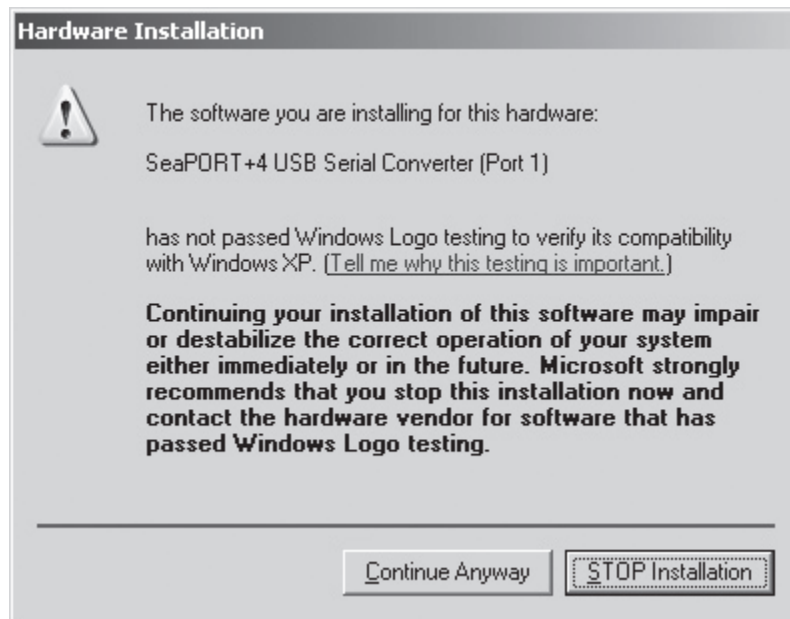
**Please Note:** Do not extend the USB cable. If you need to make the cable longer, extend the data cable coming out from the radar.

### Important Information Regarding the SeaLevel USB Adapter

This section covers the steps needed to connect your SeaLevel USB Adapter to your PC. Before you connect the USB device to your computer there are a few things that you should be aware of.

The drivers for the USB device are automatically installed when you load your Nobeltec program. Most Windows operating systems will automatically detect the USB ports and attempt to initialize them as soon as you plug the USB device into your PC.

If you are using Windows XP, a screen may appear (shown below) that tells you that the device has not passed Windows logo testing and that Microsoft recommends that you stop the installation of the device. While this notice makes it seem like the device could cause problems on your PC, please disregard this notice and click on the **Continue Anyway** button. The SeaLevel device has been thoroughly tested by Nobeltec and SeaLevel.



**Please Note:** Some Windows operating systems will require you to proceed through the initialization process twice for each port.

## Connecting the SeaLevel USB Adapter to your PC

Follow the steps below to connect the single-port USB adapter to your computer.

- 1) Unpack the USB Interface Adapter.
- 2) Plug the cable provided with the device into the adapter and the USB port on your PC.
- 3) Use the enclosed CD to install the drivers for the SeaLevel device.
- 4) The screen shown below should automatically appear after the USB device is plugged into your PC. Follow the onscreen instructions for initializing the port(s) on your SeaLevel device.



**Remember:** After clicking on the **Next** button, if you are using Windows XP, a screen will appear that says the USB device is not Windows Logo Certified. Ignore this message and click on the **Continue Anyway** button.

# chapter 4

## The PC Connection

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### Installing Nobeltec Software

It is necessary to install this software even if you have Nobeltec software already loaded on your system. In addition to installing the Nobeltec software on a new computer, it can also upgrade existing Nobeltec software to recognize, and operate the InSight Radar 2.

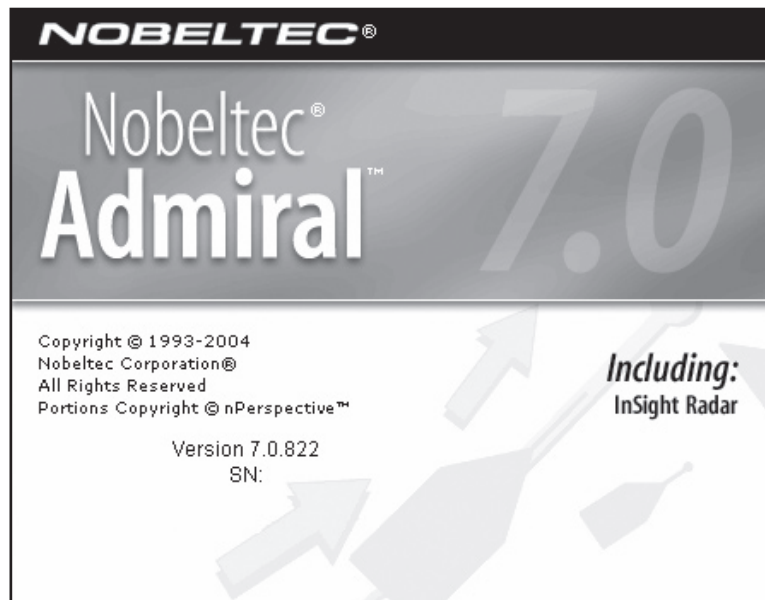
To install the Nobeltec software, Insert the program CD into your CD-ROM drive. The program will autorun an installation program.

Follow the on screen instructions to install or update the Nobeltec software.

If the CD does not autorun, follow the next set of instructions.

- 1) Select **Start | Run** from the taskbar and type D:\setup.exe (substitute the drive letter of your CD-ROM drive for “D” if it is different).
- 2) Follow the on screen instructions to install or update the Nobeltec Software.

Once installed, you should see a splash screen similar to the one shown below.



Nobeltec Admiral's Splash Screen showing the InSight Radar components are installed.



**Tip:** Notice that in the lower right corner, under the banner: “Including”, the InSight Radar components are installed. If you do not see this, chances are good that you have installed the wrong CD. Locate the correct CD and re-install.

## Using the Radar Setup Wizard

This section assumes that you have correctly installed the IR2 and that it is functioning properly.

The Insight Radar option to the Nobeltec software includes a Radar Setup Wizard that simplifies the integration process. You must run the Radar Setup Wizard the first time you install the software on a new computer on which you want to see the InSight Radar.

The Wizard also sets up the communication ports for other NMEA devices such as a GPS, heading sensor and more.

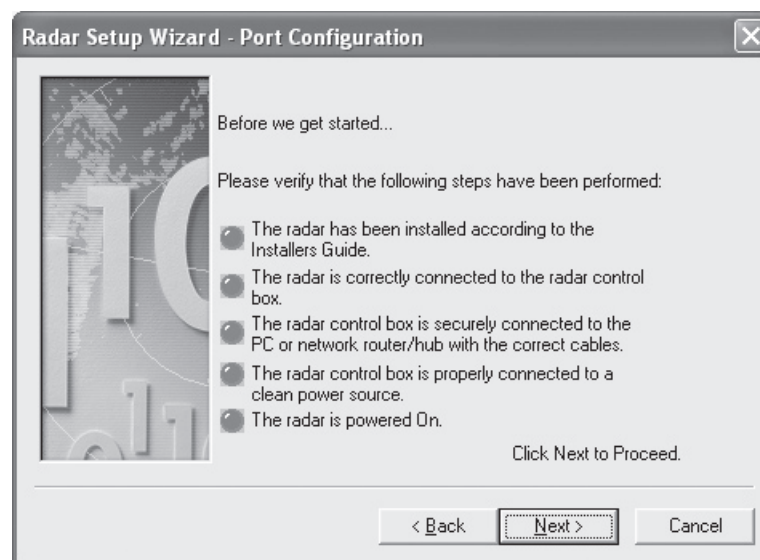
### To launch the Radar Setup Wizard

- 1) Click on the Start button on your Windows task bar. Then Programs | Nobeltec | Radar Wizard



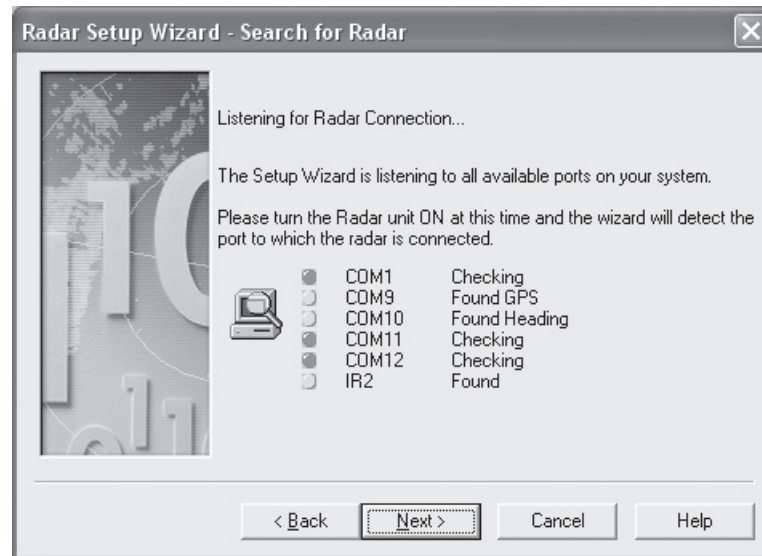
If the Radar Setup Wizard is not in the Nobeltec program group you have not installed the Nobeltec software with the Insight Radar properly. Check to make sure that you redeemed your voucher and have used the unlock code to install the radar functionality in your software.

- 2) After the opening screen appears, click on the Next button.



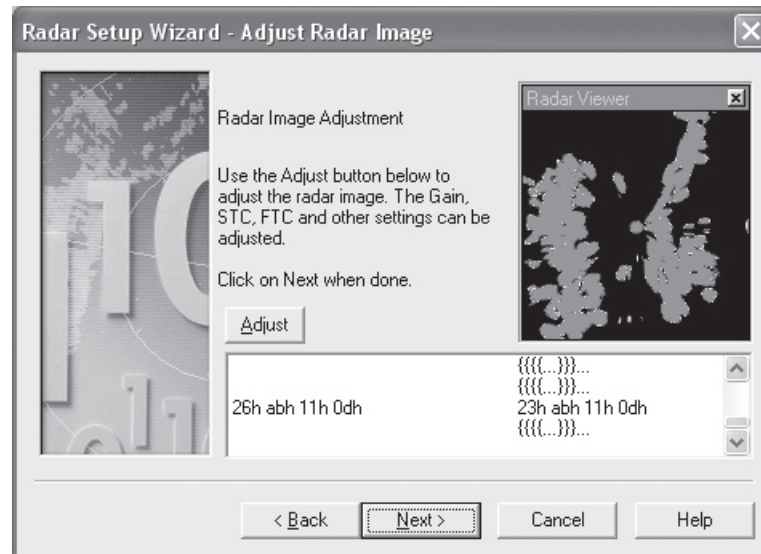
- 3) Verify that you have accomplished all of the requirements as outlined and then click on the Next button.

The Radar Setup Wizard will search your available serial ports for incoming information, including your GPS and heading sensor. Continue stepping through the Radar Setup Wizard making sure to closely follow the instructions.



**Tip:** When you run the Radar Setup Wizard make sure that your GPS, heading sensor and the radar are all properly installed, turned on and connected to your computer.

Once the Radar Setup Wizard detects your radar and other NMEA devices you can advance the Radar Wizard to the Adjust Radar Image page.



The primary objective on this page is to see the data in the white box towards the bottom of this screen flowing on both sides. The data on the left side is data going to the radar from the PC. The data on the right side is the radar responding to the PC. As long as you see data on both sides of this window, you can finish the radar wizard.

This page shows, after the appropriate radar warmup period of two minutes, a mini-version of the current radar image.

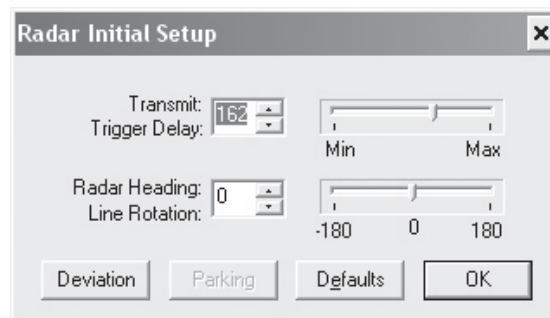


## Initial Radar Setup

### Setting the Trigger Delay

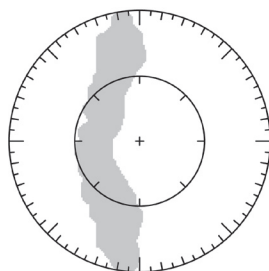
After successfully installing the radar, the transmit trigger delay should be reviewed and adjusted in order to compensate for cable transmission delays. Longer cable runs, generally require a higher trigger delay setting.

To do so, Start the Nobeltec charting software and launch the Insight Radar window. Once it is open and displaying a radar image, adjust the Transmit Trigger Delay. To do this, click on the **Radar** drop down menu then on the **Initial Radar Setup** option.

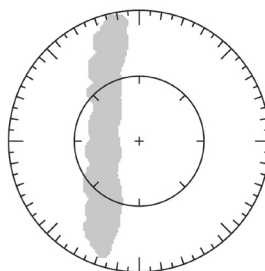


**Setting the Transmit Trigger Delay:** The transmit trigger delay (TxTrig) is a setting, when set incorrectly can cause a donut like ring to appear in the center of the radar image. The trigger delay should be initially set to reduce the size of the ring. In most cases Transmit Trigger should be between 125 and 160. Refinement of the transmit trigger is best done using Nobeltec's radar overlay on a chart.

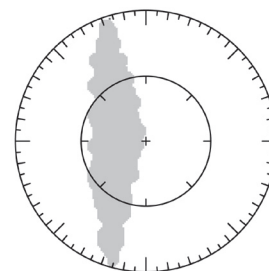
Transmit Trigger Delay can also affect the radar image of a straight object such as a breakwater and riverfront. These can appear deformed due to excessive or inadequate trigger delay. Properly setting this may require on-the-water tuning when looking at a straight object. The trigger delay adjustment removes deformations in the radar return as shown in the images below.



Inadequate Tx Trig



Good Tx Trig



Excessive Tx Trig

## Aligning the Radar Image

Getting the radar to properly align with the electronic chart requires a few key devices and software settings. As a summary, these three are:

**Compass Master Heading Correction:** In certain cases, it is not possible to install the digital compass exactly parallel with the vessel center line. This software setting allows an offset to be entered into the program to compensate for this occurrence.

**Radar Heading Line:** For similar reasons to the compass, it is not always possible to install the radar with the front of the radar exactly paralleling the vessel's keel line or center line, the Radar Heading Line adjustment can compensate for this occurrence.

**Compass Deviation:** Magnetic compasses can give incorrect readings for many reasons. The most typical is magnetic interference on the boat. The engine block, a large anchor and rode, and even electronics can create magnetic interference. The Nobeltec software allows you to enter in a deviation table that tells the software how to adjust the incoming heading data to compensate for these local deviations.



**Tip:** Using a Combination GPS Heading sensor that determines heading based on dual GPS antennas instead of magnetic significantly improves the accuracy of incoming heading data and simplifies the radar alignment process.



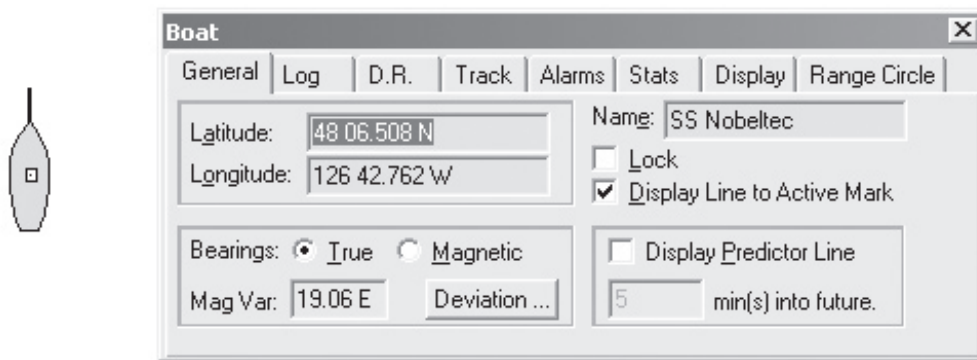
**Remember:** aligning the radar with a chart is not a perfect science. Remember that a chart is a hydrographers artistic view of the coastline and surrounding navigable information. A radar on the other hand is a real depiction of what is being returned and interpreted by the radar. You should expect that there will be some level of disparity between the chart and the radar.

### Adjusting the Compass Master Heading Correction

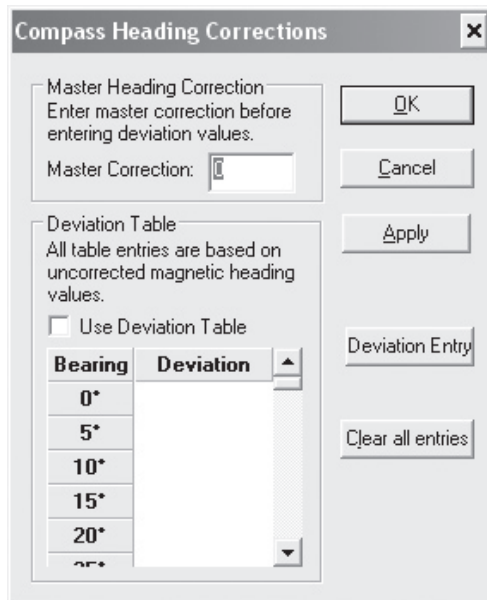
This process allows you to align the digital compass with the vessel center line. This is normally a one-time process that corrects the entire 360° equally.

To align the compass determine the amount of offset and enter it into the Compass Heading Correction screen.

To do this, Open the Nobeltec software and a chart window where you can see the icon that represents the boat. Right click on the boat and choose the option titled: Properties.



Once the Boat properties window is open, the General tab shows how the compass bearings are displayed (True or Magnetic) along with the magnetic variation at the boat location. Click on the Deviation button to open the Compass Heading Corrections dialog.



Enter the compass master correction value in the field provided.

Because the master value affects all degrees equally, make sure that you enter it before you proceed to creating a compass deviation table.

Click the **OK** button to close out of this dialog.

### Adjusting the Radar Heading Line Rotation

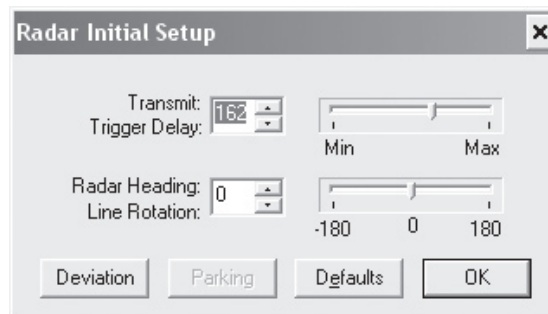
This process allows you to align the radar transceiver with the center line of the vessel and only needs to be set once. This is a different function than aligning your heading sensor so make sure you are adjusting the radars physical heading line to match the center line of your vessel.

One way to do this is to simply eyeball the difference. However, it is easiest to do this using the radar overlay feature. If the charted land does not appear to line up correctly with the radar return for the same land mass, use the rotate scroll bar to adjust the rotation angle until the overlaid image aligns correctly.



**Remember:** Make sure you have a heading sensor connected to the PC. Without a heading sensor, the Nobeltec software cannot align the image correctly onto the chart. To check if you have heading connected, add the Heading console item to the console and verify that it does not read N/A. (Tools | Options | Console | Heading check box).

To adjust this setting, Start the Nobeltec charting software and launch the InSight Radar window. Once it is open and displaying a radar image, click on the **Radar** drop down menu then on the **Initial Radar Setup** option.



Once in this window, use the spinner buttons or the slider to line up the image.



**Remember:** The Radar Heading Line is a one-time setup. Once you have it corrected, there should not be a regular need to adjust this setting. Alignment issues while underway are typically a function of compass deviation challenges.

### Creating a Compass Deviation Table

Due to magnetic interferences and other considerations, magnetic compasses can provide inaccurate information. To complicate this matter, the level of heading inaccuracy can change at each compass heading. To resolve this, inside the Nobeltec software is a table that allows you to enter correction values at each 5° increment.

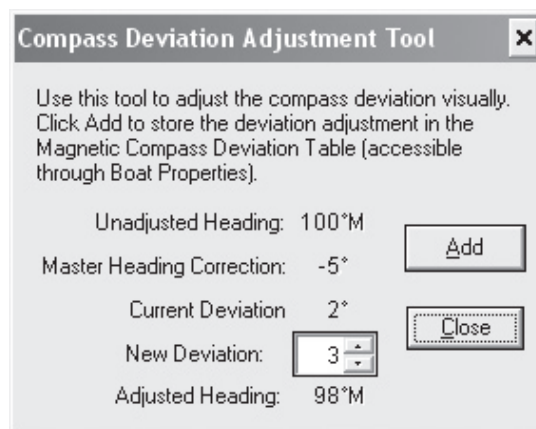


**Tip:** Using a Combination GPS Heading sensor that determines heading based on dual GPS antennas instead of magnetic significantly improves the accuracy of incoming heading data and simplifies the radar alignment process.

Once you have resolved the radar heading line and compass master rotations, you now need to test the radar alignment at various headings to discover the onboard deviations. The easiest way to do this is to be on the water in a clear open area and drive at each heading for a short while correcting the deviation as you go.

An example of a way to do this follows:

- 1) Once on the water with the Nobeltec software running with radar and the heading sensor, open the Compass deviation Adjustment tool (click on the **Deviation entry** button in the Compass Heading Corrections window - shown on previous page)



- 2) Steer to magnetic North.
- 3) With a chart window open with radar overlay turned on, observe how the radar lines up with the chart. If the radar does not line up correctly, use the screen above to rotate the radar image to the chart. Once lined up, hit the **Add** button to add this value to the deviation table.
- 4) Now, change the vessel heading to another heading and repeat the process until you feel confident that the radar image lines up with the chart at each heading.



# chapter 5

## Product Specifications

### Radar Specifications

		IR2-2D20
<b>Antenna</b>		20" enclosed radome
<b>Peak power output</b>		2kW (2000 Watts)
<b>Transmit frequency</b>		9445 ±30 MHz
<b>Beam Width</b>	<b>Horizontal</b>	4.7°
	<b>Vertical</b>	25°
<b>Rotation</b>		30 RPM
<b>Pulse Length / PRF</b>	<b>Short</b>	.1 µSec/2200 Hz
	<b>Medium</b>	.3 µSec/1100
	<b>Long Range</b>	.8 µSec/500
<b>IF center frequency</b>		60 MHz
<b>IF bandwidth</b>	<b>Short and Medium</b>	6 MHz
	<b>Long</b>	3 MHz
<b>Resolution</b>		480 x 480 pixels, 4 colors
<b>Operating Temperature</b>		-25° to +55°C (-13° to +131° F)
<b>Wind Force</b>		100 knots relative
<b>Water resistance</b>		IPX6
<b>Range scales (nm)</b>		1/8, 1/4, 1/2, 3/4, 1, 1.5, 2, 3, 4, 6, 8, 12, 24
<b>Minimum range</b>		Within 25 Meters on 1/8 NM range
<b>Range discrimination</b>		Better than 25m (82 feet)
<b>Range accuracy</b>		Better than 8m (26 feet) or 0.9% of max range of scale in use.
<b>Bearing accuracy</b>		Better than ±1°
<b>Other functions</b>		Gain, STC, FTC, interference rejection, target expansion
<b>Power Consumption</b>		30 Watts or less
<b>Voltage Supply</b>		10.8 to 41.6 VDC
<b>PC Interface</b>		RS-422 Bi-directional via USB
<b>Dimensions, Weight</b>		19.9375" W x 8.75" H, 15.4 lbs.

## Nobeltec InSight Radar (2kW Dome)

### Specifications

### Installer's Guide

#### Environmental Specification

To the requirements of IPX6. The major environmental specifications are as follows:

#### Temperature and humidity

	Operating Temperature	Storage Temperature	Humidity
Antenna Unit	-25° to +55°C	+77°C	93% ± 3% at +40°C

#### Vibration

2-5Hz up to 13.2 Hz: Amplitude  $\pm 1\text{mm} \pm 10\%$  (Max acceleration  $7\text{m/s}^2$  at 13.2Hz)

13.2 Hz up to 100Hz: Max acceleration  $7\text{ m/s}^2$  constant

#### Communication Ports

		Speed and Description
Admiral GlassBridge™ Network	Data Sharing Port #:	UDP Port #: 54,222
	Bandwidth Consumption	Less than 1 Mbps
	Direct Play Port #:	Assigned Dynamically by Microsoft Direct Play
	Bandwidth Consumption	Standard operation less than 1 Mbps Peaks during initial chart sharing at full consumption.
Serial Ports	Port #:	Com 1 - 31
	Bandwidth Consumption	From 4,800 bps (NMEA standard) to as high as 38,400 bps. (speed variance depends on transmitting or listening device)

\* Admiral's GlassBridge Networking uses UDP to send the real time nav-information in a proprietary packet and Microsoft's Direct Play networking tool for chart sharing and other network functions.



## Nobeltec Software Specifications

While the Nobeltec software is far more functional than a single table can describe, the following represents many of the major features that are relevant to navigation and radar.

### Chart Plotter Features

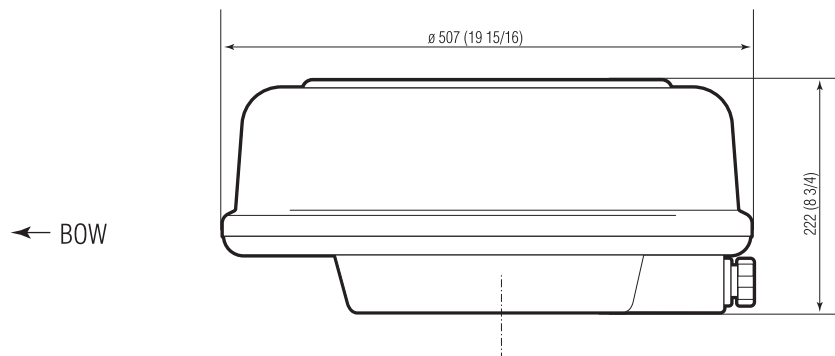
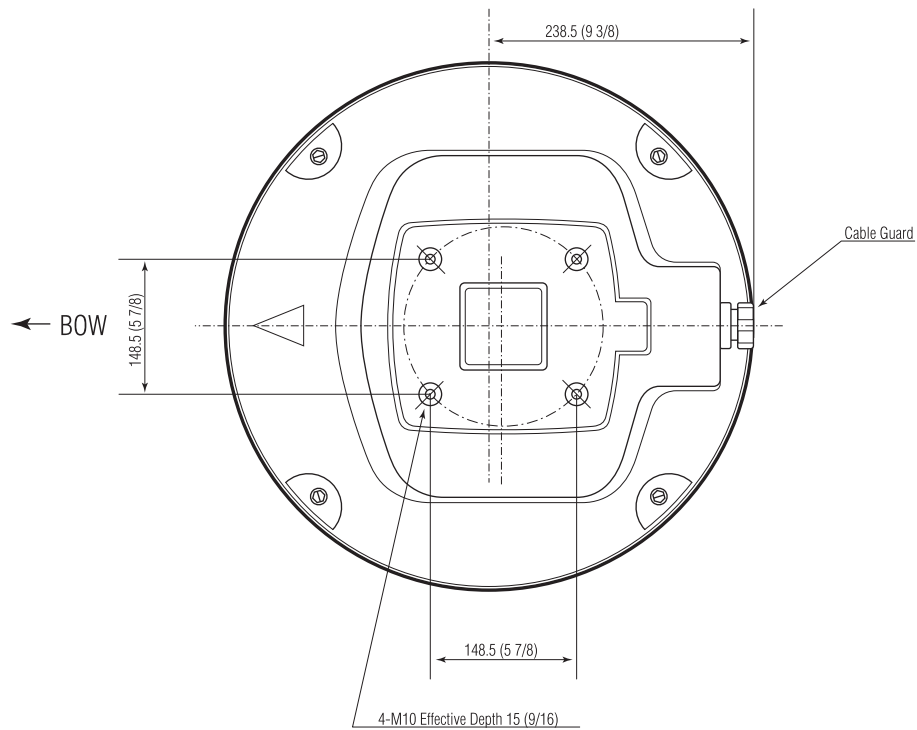
Features	Visual Navigation Suite	Nobeltec Admiral
Real-Time GPS navigation	Yes	Yes
GPS Upload/Download support	Yes	Yes
Passport chart support	Yes	Yes
Quilting for seamless charts	Yes	Yes
Free weather overlay	Yes	Yes
Includes Tides and Currents software	Yes	Yes
Customizable toolbars and nav console	Yes	Yes
Course Up/Leg Up/North Up/Heads Up	Yes	Yes
Autopilot support	Yes	Yes
Twilight and Night Vision	Yes	Yes
Boundaries and Alarms	Yes	Yes
Complete AIS support		Yes
GlassBridge™ network support		Yes
Multi-Monitor support		Yes
Customizable vessel scaling		Yes
Advanced Track line coloring		Yes
World chart dongle included		Yes
NavView user interface		Yes
Vessel Management System included		Yes
Display of radar targets from external radars		Yes

### InSight Radar Features

Features	Visual Navigation Suite	Nobeltec Admiral
InSight Radar window	Yes	Yes
Radar / Chart overlay	Yes	Yes
Split screen mode	Yes	Yes
Customizable radar toolbars (Planview)	Yes	Yes
EBL / VRM / Guard zone	Yes	Yes
Point and Click targeting (MARPA)		Yes
Multi-Monitor radar viewing		Yes
GlassBridge™ networking radar support		Yes
Radar console (NavView full screen)		Yes

## Nobeltec InSight Radar (2kW Dome)

### Installer's Guide



Weight: 6.8 kg (15 lb)



# chapter 6

## Troubleshooting

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### Frequently Asked Questions

- Q:** I was tracking a target on my radar screen and it suddenly disappeared. What happened to it?
- A:** One of the most critical pieces of data for target acquisition is a stable and correct heading value. MARPA or AIS targets are generally lost when the target is too small, returning too weak of an echo, or the heading fluctuates too much. If you experience lost targets on a consistent basis, you can create a recording of your radar and send it to us for further troubleshooting. To start recording, right click on the Radar window and select Record/Playback. Select Record, and the software will ask you for a file name. The extension for the existing IR2 radar is .RAD. Please zip your playback file and e-mail to [support@nobeltec.com](mailto:support@nobeltec.com) with a description of your problem.
- Q:** My radar image looks somewhat pixelated and coarse. What should I do?
- A:** The resolution of your radar may be set to 240 x 240. To fix this problem, access the **Options** menu from the toolbar or you can select it from the Main Menu. Once the **Options** menu is open, click on the **Radar** tab and from the list of settings change the radar resolution to 480 x 480.
- Q:** While using the Radar Setup Wizard, on the last screen I cannot click on the “Next” button to complete the setup process. What should I do?
- A:** Turn off the radar for 10 seconds and then turn it back on. It will go through the warm up period and after it has finished, you should then be able to click on the “Next” button to complete the setup process.
- Q:** I have the 2kW radar connected to a network using Admiral. I just downloaded or installed Windows XP - Service Pack 2 on my computer and now the network function doesn't work. What should I do?
- A:** Installing Microsoft Windows XP Service Pack 2 will not generate any new problems within your Nobeltec software. Actually, it will increase the stability of your system and it is highly recommended that you install it.
- However, there are new options in the update that may require you to go through some additional steps in order to configure your system correctly. Specifically, Service Pack 2 adds a new firewall feature to Windows XP and enables it by default. What this means is that before you will be able to do ANY networking features, you may need to configure the firewall to allow access to our application.

This affects:

- Retrieving site keys via the Internet automatically.
- Nobeltec Online synchronization.
- Automatic weather downloads.
- The entire Admiral networking feature.

In most cases, you will automatically receive a prompt the first time the program attempts to access the network asking you if you want to ALLOW or DENY access. If this prompt appears, select the option to always allow network access.

If you do not get this prompt and network access still does not occur, then you will need to manually add in the Nobeltec application into the firewall settings. This varies system to system based on the network drivers installed, so there is not a single set of steps at this time to do this configuration.

In addition, Microsoft has locked down the firewall options and settings so that applications cannot modify them. While this thinking is completely logical (what's the use of a firewall if that new virus can just go and configure it to let itself out), Nobeltec is not able to modify the setup of our application to automatically configure these settings for you.



