

Northstar 8000i

12" Display Processor and System Installation Manual

NORTHSTAR





www.northstarnav.com


1 Preface

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1.1 Important Safety Information


IMPORTANT SAFETY INFORMATION	
Please read carefully before use	
	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety measures that follow this symbol to avoid possible injury or death.
	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.




It is your sole responsibility to use the Northstar 8000i in a manner that will not cause accidents, personal injury or property damage. Always observe safe boating practices.



When navigating the vessel, use the Northstar 8000i only as a navigational aid. Proper navigation of the vessel is the sole responsibility of the vessel operator.



Depth soundings should be used only for navigation. Never use a depth sounding to gauge depth, range or other conditions for swimming or diving.



The Global Positioning System (GPS) is operated by the US Government which is solely responsible for its operation, accuracy, and maintenance. The GPS system is subject to changes which could affect the accuracy and performance of all GPS equipment anywhere in the world.

⚠ WARNING

The electronic chart used by the Northstar 8000i is an aid to navigation designed to supplement, not replace, official government charts. Only official government charts supplemented by notices to mariners contain the information required for safe and prudent navigation. Always supplement the electronic information provided by the Northstar 8000i with other plotting sources such as observations, depth soundings, radar and hand compass bearings. Should the information not agree, the discrepancy must be resolved before proceeding any further.

⚠ WARNING

Never operate the 8000i in Simulate Mode while you're underway. It is the user's responsibility to ensure that Simulate Mode is used only in safe situations such as when you are moored in a marina.

⚠ WARNING

The accuracy of the sonar depth display can be limited by many factors, including the type of transducer, the location of the transducer, and water conditions. Ensure that the transducer is installed and used correctly.

⚠ WARNING

The radar must be set up before it is used for the first time. See "Set up the radar before using it" in the Radar Installation manual.

⚠ WARNING

Radar scanners emit electromagnetic energy at a frequency that can be harmful at close range. Always keep the recommended safe distance from the scanner as follows:

Scanner Model	Vertical beam angle of scanner (degrees)	Minimum safe distance (100 Watts per m² average power density) Note 1	Minimum safe distance (10 Watts per m² average power density) Note 2
2 kW	30	1.6 ft (0.5 m)	4.6 ft (1.4 m)
4 kW	25	3 ft (0.9 m)	9.3 ft (2.8 m)
6 kW	20	3.6 ft (1.1 m)	11.5 ft (3.5 m)
10 kW	20	9.5 ft (2.9 m)	30 ft (9.0 m)
25 kW	20	18 ft (5.5 m)	57 ft (17.4 m)

NOTES: Limits apply to exposure within the vertical beam angle.

Note 1: Peak occupational exposure limit pursuant to IEC 60936 Clause 3.27 and IEC 62252 Clause 4.32

Note 2: General public exposure limit pursuant to IEC 60936 Clause 3.27 and IEC 62252 Clause 4.32

Failure to adhere to these warnings may lead to death, serious injury or property damage. Northstar disclaims all liability for installation or use of this product that causes or contributes to death, injury or property damage or that violates any law.

CAUTION

You are strongly recommended to scan all removable media (such as USB memory sticks or CDs) for viruses or corrupt data on a separate device BEFORE connecting or using the removable media with the 8000i.

1.2 Disclaimer

As Northstar is continuously improving this product we retain the right to make changes to the product at any time which may not be reflected in this version of the manual. Please contact your nearest Northstar distributor if you require any further assistance.

It is the owner's sole responsibility to install and use the instrument and transducers in a manner that will not cause accidents, personal injury or property damage. The user of this product is solely responsible for observing safe boating practices.

BRUNSWICK NEW TECHNOLOGIES INC. AND ITS SUBSIDIARIES AND AFFILIATES DISCLAIM ALL LIABILITY FOR ANY USE OF THIS PRODUCT IN A WAY THAT MAY CAUSE ACCIDENTS, DAMAGE OR THAT MAY VIOLATE THE LAW.

Governing Language: This statement, any instruction manuals, user guides and other information relating to the product (Documentation) may be translated to, or has been translated from, another language (Translation). In the event of any conflict between any Translation of the Documentation, the English language version of the Documentation will be the official version of the Documentation.

This manual represents the product as at the time of printing. Brunswick New Technologies Inc. and its subsidiaries and affiliates reserve the right to make changes to specifications without notice.

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1.3 Warranty

The Northstar Warranty Statement is supplied as a separate document.

It is shipped with the Product Registration Card.

In case of any queries, refer to www.northstarnav.com.

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2 **Introducing the Northstar 8000i System**

Congratulations on your purchase of the Northstar 8000i, the revolutionary new integrated marine electronics system. The 8000i is designed for ease of use in the marine environment, with Touch Screen technology and online help.

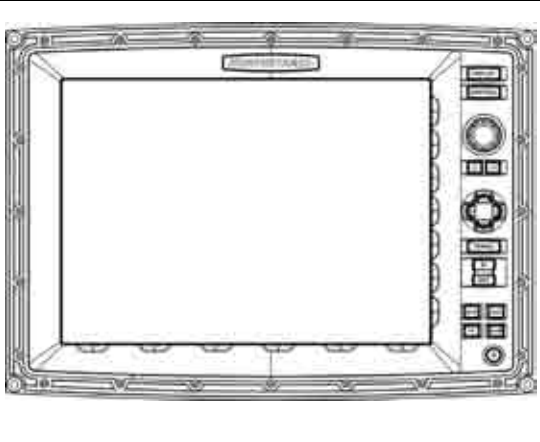
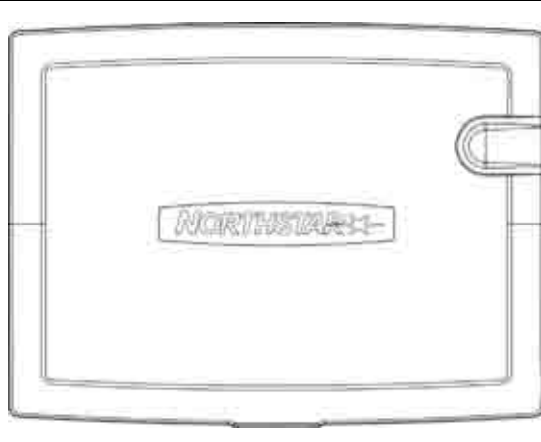
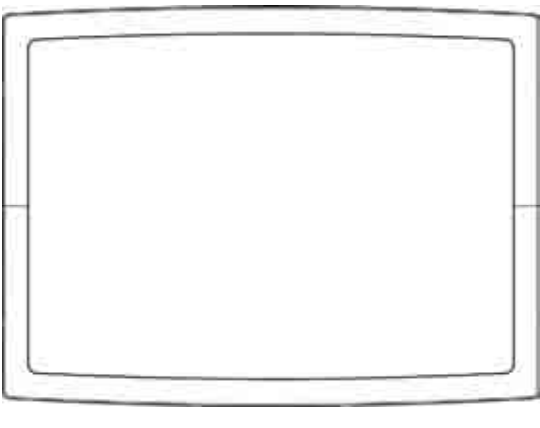
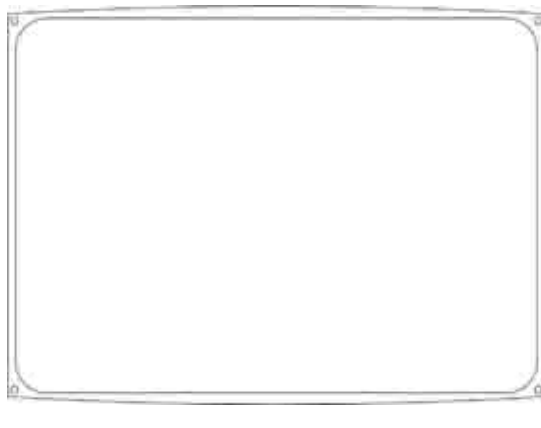
The 8000i can integrate navigation, fishfinding, instrumentation, multimedia entertainment, and an onboard camera. Whatever type of boat you have and however you use it, you can customize the 8000i to meet your needs.



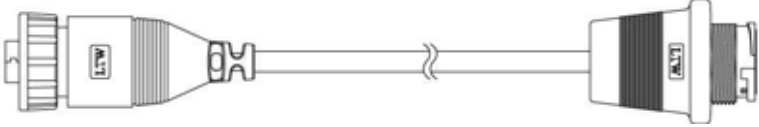
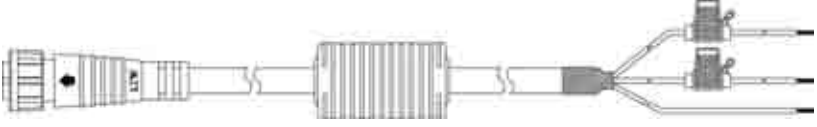
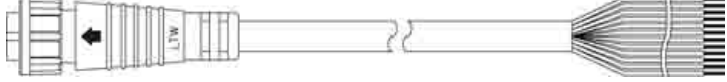
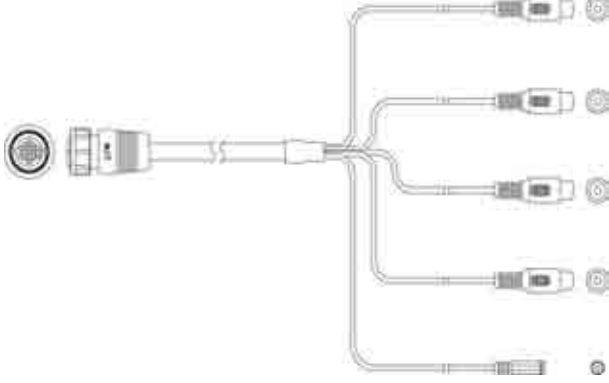


Flexible, modular, and innovative, the 8000i delivers awesome performance.

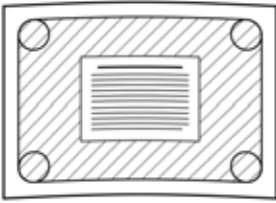
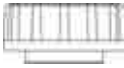





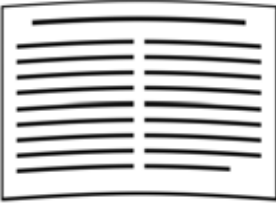
Please take a few minutes to read through this manual before cutting holes or locating equipment.

NOTE: The 8000i has several requirements that must be met to ensure safe and proper operation. Installation and interfacing of the 8000i should be handled by a marine technician.

3 **Check the 12 inch Display Processor parts**

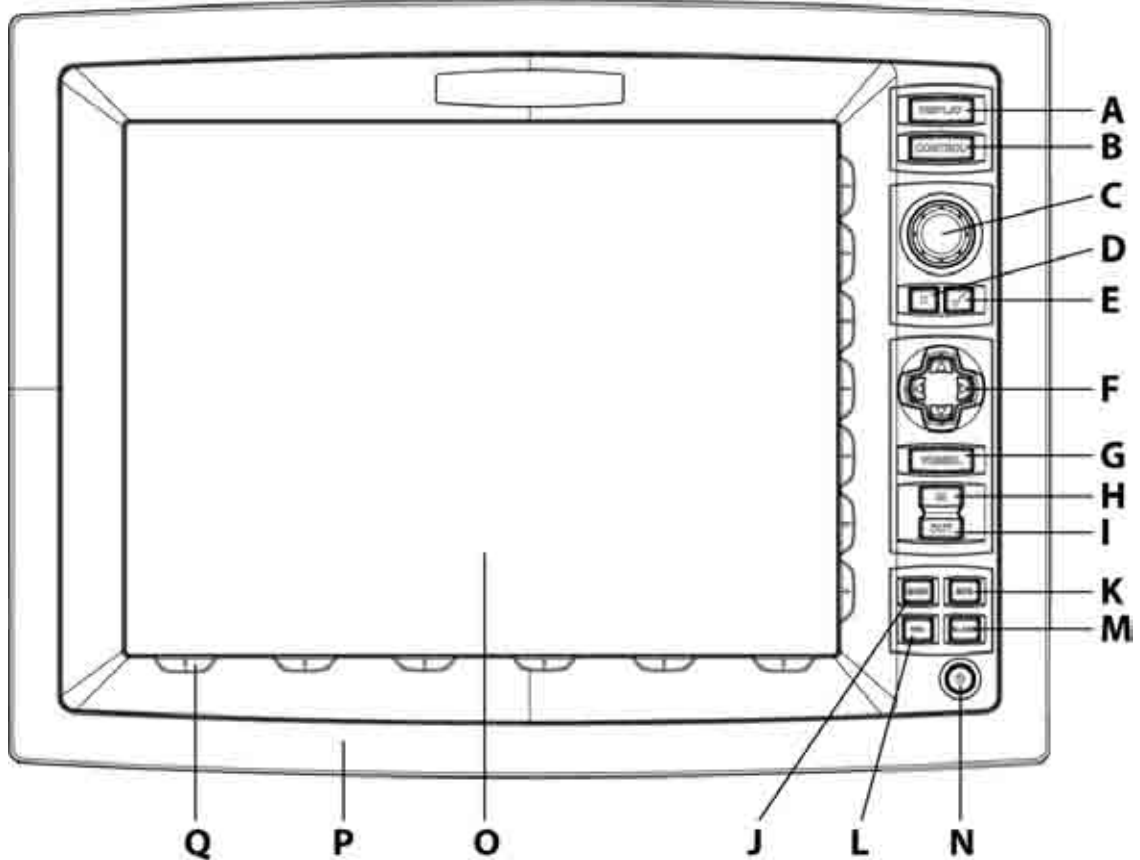
	
12" Display Processor NS004700	Sun Cover CV000074A-G
	
Mounting Bezel CS000661A-G	Mounting Gasket GA000141A-G

	
<p>Protective Caps HR000099</p>	<p>Mounting Screws HR000089</p>
	
<p>USB Dash Mount Connector CB000319B-G</p>	
	
<p>Power Cable and Fuses AS000453-G</p>	
	
<p>Utility Cable NS004801</p>	
	
<p>Audio Cable NS004802</p>	
	
<p>Ethernet Loopback AS010646A</p>	<p>Chart License Key NS004820</p>

	
<p>Mounting Template LA000600A-G</p>	<p>Chart Licence Key Holder MS000622A-G</p>
	
<p>This Installation Manual MN000605C-G</p>	<p>8000i Operation Manual MN000603C-G</p>
	
<p>8000i Quick Start Guide MN000643D-G</p>	<p>LCD Cleaning Cloth MS000619A-G</p>
	
<p>Warranty</p>	<p>Registration Card</p>

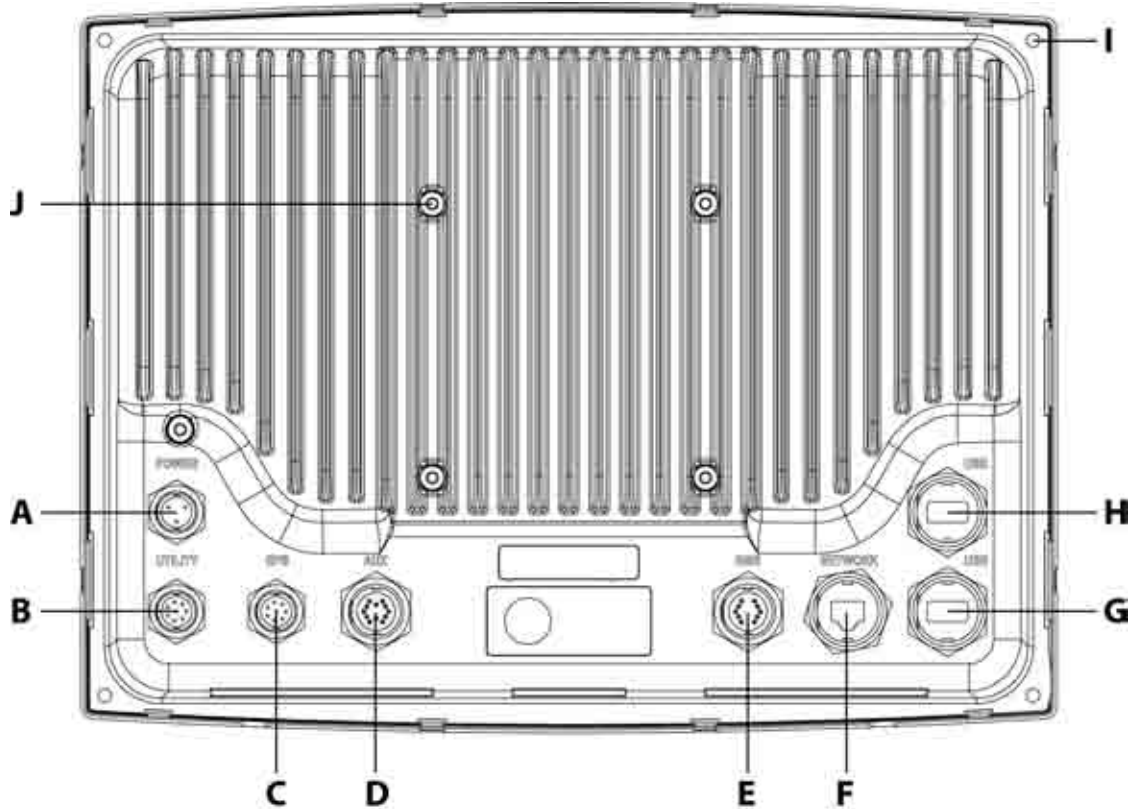
NOTE: Other system components are listed in the 8000i System Installation section. Be sure you have all required units and cabling BEFORE starting the installation.

4 Find your way around the 12 inch Display Processor



A	DISPLAY Key	Press once to show single pane options; press again to show page options
B	CONTROL Key	Press to change the active pane on a page; and, if you expand the pane to full size, press again to cycle through the other panes at full size
C	Rotary knob	Turn left (counter-clockwise) to scroll down, turn right (clockwise) to scroll up
D	Cancel Key	Press to cancel or exit
E	Confirm Key	Press to select or confirm
F	4 directional arrows	Press an arrow to pan the chart or move the Radar PPI in that direction
G	VESSEL Key	Press to center the <i>Chart</i> screen on your vessel or to re centre the Radar PPI
H	IN Key	Press once to zoom in one step. (This affects the active application-Chart, 3D Chart, Radar, Sounder or 3D Steer).
I	OUT Key	Press once to zoom out one step
J	MARK Key	Press to mark the current position with a default event mark icon
K	MOB Key	Man Overboard
L	VOL Key	Press to adjust the volume of the audio currently playing
M	ALARM Key	Press to show the alarm log

N	POWER Key	Press once to power the 8000i and the display unit On. Hold down for four (4) seconds to commence power Off. When the system is running press once to display on screen display to adjust screen brightness or to disable touch screen e.g. for cleaning
O	The Screen	12", 800 x 600 resolution
P	Mounting Bezel	Remove to reveal mounting screws
Q	Finger Guides	To guide fingers to onscreen controls



A	Power	Three pin power input (see "Power" page 38)
B	Utility	Communication to and from external devices. Use optional 12 pin cable (Part No. NS004801)
C	GPS	Connect to optional Northstar GPS (Part No. NS004743)
D	Aux	Auxiliary port. provides audio line out
E	RGB	External monitor connection (see "RGB port" page 50)
F	Network	Network Connection (see "Network" page 50)
G	USB	USB Connection (see "USB" page 48)
H	USB	USB Connection
I	Panel Mounting Holes	Panel mounting holes
J	VESA Mount Holes	Pedestal mounting holes

5 The Network Master Unit

The simplest type of 8000i System consists of a single stand-alone processor. A more sophisticated 8000i System consists of multiple processors, which can be a combination of 12" Display Processors or Black Box Processors, networked together.

If more than one processor is used in the 8000i System, **one processor only MUST be specified as the master unit**. You must decide which processor on the 8000i network will be responsible for handling incoming and outgoing navigation data. Therefore, when planning the wiring, make sure that all the data inputs and outputs, such as NMEA, are supplied to the master unit. Typically the master unit will be located at the main helm station.

The master unit MUST:

- have all the data wiring (such as NMEA) run to it. Incoming navigation data, such as GPS and NMEA, is received by the master unit and then distributed over the network to other processors.
- have the GPS antenna connected to it.
- have the chart license key connected to it. When the chart license key is connected and the charts unlocked, other processors can share the one license (see "Northstar 8000i C-MAP Chart License Key" page 25) and display the charts.
- have the autopilot connected to it (if applicable).
- have a USB port accessible by using the provided panel mount cable (this is to allow easy access to upgrade the system)

The master unit MUST be operating FIRST in order for the other processors to function with navigational information.

If the master is NOT operating, all the other display units will show a grey screen with the message "Master [name] unavailable". This will be the case for Chart, Radar, Sounder, 3D Chart and 3D steer.



6 **8000i System Installation**

A minimum 8000i System consists of a processor, display and GPS antenna. The system consists of either the Black Box Processor combined with a 12" Display Processor or the ALL-IN-ONE processor inside the 12" Display. This would be a stand alone system.

The versatility of the 8000i System means that it can be customized and expanded to suit each vessel and budget. Extra 12" Display Processors, 15" Monitors, and remote keypads can be added to create an 8000i network, so that the 8000i System can be operated or viewed from different locations around the vessel.

In addition, there is a wide range of Northstar (and compatible third party) components such as the Network Sounder and the Northstar Radar that can also be installed and added to the 8000i system to provide a totally integrated system, with the information from these devices available across the entire 8000i network. These components are outlined in the equipment sections of this manual.

Installation Sequence Summary Guidelines

1. Plan what will be the desired functionality for the system. Ensure you have acquired all the units and cabling before starting
2. If you are using an 8000i System in a multi-system installation, decide which processor is going to be the master processor and plan the wiring around this unit (see "The Network Master Unit" page 13)
3. Plan location of components: Location check list: Check screen viewing angles (see "Mounting the 8000i 12 inch Display Processor" page 33)
4. Check location constraints: magnetic fields, heat, direct sunlight, rain or spray. etc.
5. Check wiring constraints:
 - USB maximum cable length 16.5 ft (5 m)
 - Video and Audio cables away from high current cables
 - Power cables using the correct gauge
 - To help ensure proper operation, do not mount any part or cable within 1.6 ft (0.5 m) of the plane of a radar scanner or within 3 ft (1 m) of a compass or source of electrical noise such as engines, fluorescent lights, and power inverters.
6. Decide power requirements:
 - Check system current draw:
 - Decide breaker assignments.
7. Mount each Northstar 8000i System unit:
 - Close to the other parts of the system and to the boat power supply
 - Where there is space for the wiring and clearance to fit connectors without having sharp bends in the cables
 - Where there is access to wire the unit and to fit connectors
 - In a ventilated place
 - Away from exposure to direct sunlight, rain or spray
 - Where any front-panel controls can be operated easily.
8. If the unit is mounted on a flat panel, ensure the panel does not vibrate.
9. Do not mount any part where it can be used as a hand hold, where it might be submerged or where it will interfere with the operation, launching or retrieving of the boat.
10. Run Cables.
11. Connect all cables. It is recommended to fill out the System Installation Record sheet for each processor
12. Connect Chart licence key to the master unit.
13. Power on the master processor (see "Turn on the 12 inch Display Processor" page 63) and set to be the master (see "Set the network master unit" page 64) (ensure

other processors are off). Take note of the master processor name. It will be a good idea to use the provided System Setup Check sheet. This will provide a record of the settings on install and serve as a reminder to check all settings.

14. Install purchased charts. (see "Install the chart data" page 65)

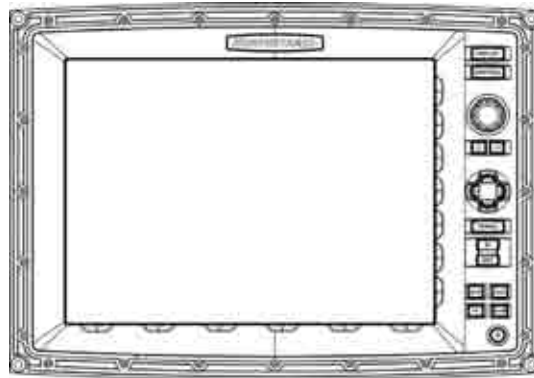
15. Configure System attributes such as time offset, draft, NMEA output etc (see "Northstar 8000i Initial Setup" page 63).

16. Power on the next processor and nominate the master processor when prompted (this can be done from this processor or from the master). Setup the processor. Repeat till all processors are on and configured.

NOTE: Pay particular attention to wiring constraints, and cable installation.

6.1 Northstar 8000i 12 inch Display Processor

Northstar 8000i 12" Display Processor NS004700



Description

The 12" Display Processor is an 8000i Processor and 12" Display rolled into one. It shares the same processor internal components as the 8000i Black Box Processor. The 12" Display has a direct bonded anti reflective coating using an infrared touch screen to control the system. The system can also be controlled by the built in Keypad, or by the optional 8000i Remote Keypad.

Place in 8000i System

The 12" Display Processor is used to view and control the 8000i Software. The 12" Display Processor also provides interface to external devices both within the 8000i range of products and with external devices such as an autopilot and other instruments. The unit can be stand alone or be connected the 8000i Network as part of a multi processor system. If this is to be the master processor be sure to have easy access to one of the USB ports for future upgrades of the system. Use the provided USB panel mount cable if necessary

Optional Parts

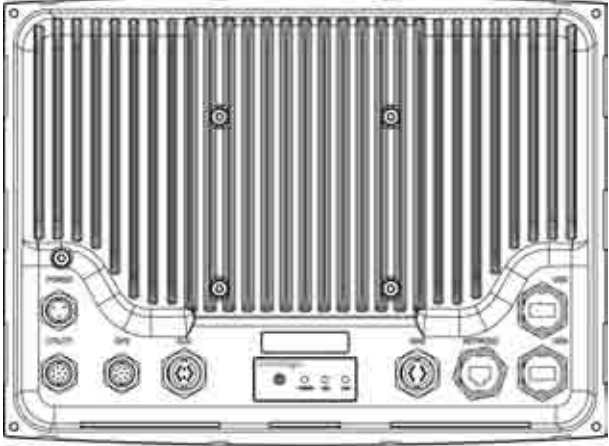
GPS Antenna (see "Northstar GPS Antenna (NS004743)" page 26),
Network Sounder (see "Northstar 8000i 1 kW Network Sounder" page 22),
Network Radar (see "Northstar 8000i Network Radar" page 19),
Chart licences (see "Northstar 8000i C-MAP Chart License Key" page 25),
USB Hub, Network Linker, DVD/CD Player, USB Video Interface, Remote Keypad, ethernet cables if connecting to network.

Other Functions

1 x NMEA in, 1 x NMEA out, NavBus, external alarms, repeater video out (800 x 600),

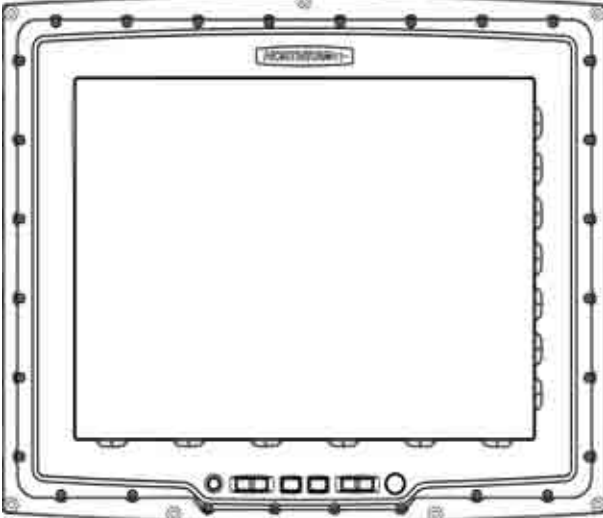
Location Guide	
The 12" Display Processor is sunlight viewable with an anti reflective coating. For best results position out of direct sunlight. The ideal location should have minimal glare from windows or bright objects. The unit is waterproof to IPX5 specification.	
Mounting	
The unit can be flush mounted or mounted on a third party VESA bracket using the holes in the rear of the case. Best viewing angles within a 120 degrees vertical range.	
Power requirements	
Operation Voltage (once powered)	10 V DC - 35 V DC
Operation Voltage less than 1 min	7 V DC - 9 V DC
Power consumption Max @ 12 V	50 W
Fuse	10 Amp @ 12 V DC (5 Amp @ 24 V DC)

6.2 Northstar 8000i Black Box Processor

Northstar 8000i Black Box Processor NS004730	
	
Description	
Northstar 8000i Black Box Processor:	
Place in 8000i System	
The Black Box Processor is used to run the 8000i software, which can be displayed either on a Northstar 15" Monitor, a 3rd party screen capable of displaying 1024 x 768 resolution or widescreen monitor that can support 1280 x 720. The processor provides interface to external devices both within the 8000i range of products and with external such as autopilot's and instruments. The unit can be stand alone or be connected the 8000i network as part of a multi processor system. If this is to be the master processor be sure to have easy access to one of the USB ports for future upgrades of the system. Use the provided USB panel mount cable if necessary	


Optional Parts	
GPS Antenna (see "Northstar GPS Antenna (NS004743)" page 26), Network Sounder (see "Northstar 8000i 1 kW Network Sounder" page 22), Network Radar (see "Northstar 8000i Network Radar" page 19), Chart licences (see "Northstar 8000i C-MAP Chart License Key" page 25), USB Hub, Network Linker, DVD/CD Player, USB Video Interface, Remote Keypad Ethernet cables if connecting to network.	
Other Functions	
1 x NMEA in, 1 x NMEA out, NavBus, external alarms, repeater video out (800 x 600),	
Location Guide	
Mount away from strong magnetic fields. Mount no more than 16.5 ft (5 m) away from the 15" Monitor when connecting to the USB of the monitor. This is used to drive the touch screen	
Mounting	
Mount horizontally or vertically. If mounting vertically, mount to a bulkhead or other structurally sound vertical surface. Do not mount to thin panels which are prone to vibration	
Power requirements	
Operation Voltage	10 V DC - 35 V DC
Operation Voltage less than 1 min	7 V DC - 9 V DC
Power consumption @12 V	45 W
Fuse	10 Amp @ 12 V DC (5 Amp @ 24 V DC)

6.3 Northstar 8000i 15 inch Monitor

Northstar 8000i 15" Monitor NS004710

Description
This is a 15 inch waterproof, sunlight viewable monitor

Place in 8000i System	
Primarily to display the 8000i software from a Northstar 8000i Black Box Processor. The 15" Monitor may also be used to display the video output of a PC or compatible video source, composite, S-video and DVI video sources.	
Other parts required	
For connecting to external 3rd party video sources, order the following cables	
VGA DB15 Video cable 6 ft (2 m)	NS004710
Composite Video cable 6 ft (2 m)	NS004803
DVI-D Video cable 6 ft (2 m)	NS004805
S-Video cable 6 ft (2 m)	NS004804
Other Functions	
The 15" Display has 2 x VGA inputs, 1 x DVI connector, 2 x composite video inputs, 2 x S-video inputs. Internal 2 Port USB Hub. It may also control the power state of a Northstar Black Box Processor	
Location Guide	
The 15" Display is sunlight viewable, with an anti reflective coating. For best results position out of direct sunlight. The ideal location should have minimal glare from windows or bright objects. The unit is waterproof to IPX5 specification.	
If connecting to the USB port of a Black Box Processor, mount no further than a 16.5 ft (5 m) cable run: mount any USB peripherals no further than 16.5 ft (5 m) away	
Mounting	
The unit can be flush mounted or mounted on a third party VESA bracket using the holes in the rear of the case.	
Power requirements	
Operation Voltage (once powered)	10 V - 35 V DC
Operation Voltage less than 1 min	7 V - 9 V DC
Power consumption @12 V	60 W
Fuse	10 Amp @12 V DC (5 Amp @ 24 V DC)

6.4 Northstar 8000i Network Radar

Northstar HD Digital Radar			
			
Description			
The Northstar HD Digital Radar consists of a Scanner and a Radar processor box. Information from the scanner is processed and broadcast onto the 8000i Network. Systems available in 5 models from 2 kW to 25 kW.			
Functions			
Radar functionality on 8000i, 6000i or 6100i displays			
Place in 8000i System			
The Northstar HD Digital Radar connects to the 8000i System Network, to the Northstar 8 Port Network linker or if it is the only Network device a crossover cable can be used to connect directly to a 8000i processor.			
Different size scanners require their own same size processor box			
Optional Parts			
NS002437R Heading Sensor required for chart overlay.			
Other Functions			
Receive heading sensor over NMEA			
Location Guide			
Mount in dry environment			
Mounting			
Mount vertically or horizontally. The unit has LED status lights on left hand side, next to connectors			
Power requirements	Voltage	Fuse	Draw*
2 kW Processor with Scanner	12 V DC	2 Amp	25 W
4 kW Processor with Scanner	12 V - 24 V DC	10 Amp	30 W
6 kW Processor with Scanner	12 V - 24 V DC	10 Amp	120 W
10 kW Processor with Scanner	24 V DC	15 Amp	250 W
25 kW Processor with Scanner	24 V DC	15 Amp	180 W

*Current Draw (with scanner under maximum wind conditions).

⚠ CAUTION

DON'T install the scanner inside of the recommended compass safe distances of any navigation instruments such as the magnetic compass and the chronometer. The compass safe distances are as follows:

2 kW radar	STD 2.3 ft (0.7 m) STEER 1.6 ft (0.5 m)
4 kW radar	STD 6.5 ft (2.0 m) STEER 5 ft (1.5 m)
6 kW radar	STD 7.5 ft (2.3 m) STEER 5.7 ft (1.75 m)
10 kW radar	STD 7.9 ft (2.4 m) STEER 6 ft (1.8 m)
25 kW radar	STD 7.9 ft (2.4 m) STEER 6 ft (1.8 m)

6.5 Northstar 8000i 8 Port Network Linker

Northstar 8000i 8 Port Network Linker NS004721



Description

The Northstar 8000i 8 Port Network Linker is a marinated 100 base ethernet switch.

Place in 8000i System

The Northstar 8000i 8 Port Network Linker is used to connect up to eight (8) Northstar 8000i network devices. Use the Linker when joining three (3) or more network devices together. You can use a crossover cable when joining just two (2) network devices together. Connect more than one linker together to give 16, 24 etc ports

Optional Parts

Ethernet cables to connect to other devices. Choose from the following lengths:

- Network Cable 1.6 ft (0.5 m) NS004810
- Network Cable 6.5 ft (2 m) NS004811
- Network Cable 16.5 ft (5 m) NS004812
- Network Cable 33 ft (10 m) NS004813
- Northstar 8000i Cable - Ethernet Joiner, male to male NS004814
- Unterminated Cable 328 ft (100 m) NS004817
- Network Connector Field Terminating Kit NS004816

Other Functions

LEDs indicate connectivity and network activity.

Location Guide

It has eight (8) x waterproof RJ45 connectors and one (1) x waterproof power connector.
Access to ships DC power

Mounting

Preferably mount vertically on to a panel. Create drip loops with all cables

Power Requirements

Voltage: 10 V - 35 V DC: current draw 2 W

6.6 Northstar 8000i 4 Port USB Hub

Northstar 8000i 4 Port USB Hub NS004720



Description

This is a maritized 4 Port USB Hub. It can accept USB 1.0 or 2.0 accessories


<p>Functionality</p> <p>Allows up to four (4) USB devices to be connected to a 8000i processor.</p> <p>Can accept the following devices</p> <ul style="list-style-type: none"> • NS004740 Northstar 8000i DVD-CD Player (see "Northstar 8000i DVD-CD Player" page 23) • NS004747 Northstar 8000i Remote Keypad (see "Northstar 8000i Remote Keypad" page 24) • NS004745 Northstar 8000i Video Interface (see "Northstar 8000i Video Interface" page 25) • C-MAP Chart Licence Key (see "Northstar 8000i C-MAP Chart License Key" page 25) • NS004710 Northstar 8000i 15" Monitor (see "Northstar 8000i 15 inch Monitor" page 17) • MS Windows Compliant Human Interface Devices • MS Windows XP Compliant USB Mass Storage Devices
<p>Place in 8000i System</p> <p>This unit attaches to a Northstar 8000i system processor via the supplied USB Cable. The processor needs to be on for the USB Hub to operate</p>
<p>Optional Parts</p> <p>USB Devices (see above)</p>
<p>Location Guide</p> <p>Needs to be within a 16.5 ft (5 m) Cable run from the system processor</p>
<p>Mounting</p> <p>Preferably mount vertically on to a panel. Create drip loops with all cables</p>
<p>Power Requirements</p> <p>Voltage: 10 V DC - 35 V DC: current draw 12.5 W</p>

6.7 Northstar 8000i 1 kW Network Sounder



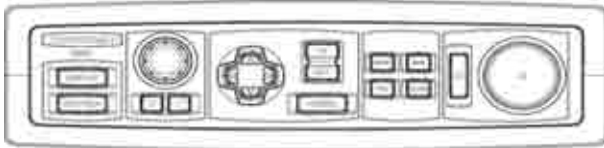
<p>Description</p> <p>The 8000i Sounder is an Ethernet based 1000 W/600 W auto-sensing depth sounder. It's Ethernet output provides fast accurate updates of depth data over the network to all 8000i processors.</p>
<p>Place in 8000i System</p> <p>You can connect the sounder to an 8000i processor either directly with a network crossover cable, (see "Network" page 50) or if there is more than one networked function in the 8000i system, through an 8000i 8 Port Network Linker.</p>
<p>Other parts required</p> <p>A transducer will need to be purchased separately. For additional transducer options, contact your Authorized Northstar Dealer.</p> <ul style="list-style-type: none"> • NS002660R Airmar B260 1 kW Through Hull • NS002657R Airmar B258 1 kW Through Hull • NS002658R Airmar TM258 1 KW Transom Mount • AA00210R Airmar P319 plastic trough hull 600 W • Radarsonics 210B thru hull 600 W • Radarsonics 250 transom mount 600 W <p>Network cable: A choice of network cables are sold separately in different lengths (see "Network" page 50)</p>
<p>Other Functions</p> <p>Capable of interfacing to Northstar Fuel Transducers (Future)</p>
<p>Location Guide</p> <p>This unit can be mounted closer to the transducer, for example, in the engine room or bilge area. It requires 10 V DC- 35 V DC to operate. Use a 5 Amp (see "Power" page 38). Network cable needs to be run to either a Northstar 8000i 8 Port Network Linker or a Northstar 8000i Processor (see "Network" page 50)</p>
<p>Mounting</p> <p>Preferably mount vertically on to a panel. Create drip loops with all cables</p> <p>For more information regarding installation please see the Northstar 8000i 1 kW Network Sounder Installation manual</p>
<p>Power Requirements</p> <p>Voltage: 10 V DC - 35 V DC: current draw 7.2 W</p>

6.8 Northstar 8000i DVD-CD Player

<p>Northstar 8000i DVD-CD Player NS004740</p>

<p>Description</p> <p>The Northstar 8000i DVD-CD Player is used for playing movie DVDs, Music CDs and for upgrading the system software. It can be either free standing or mounted into a panel.</p>

<p>Functionality</p> <ul style="list-style-type: none"> • Plays Music CDs, Music DVDs, MP3, • Plays DVD Movies, Video CDs • Loads Music on to 8000i system media location. • Loads new system software.
<p>Place in 8000i System</p> <p>The DVD-CD player is not a network device. The media in the drive is only accessible by the processor it is connected to.</p> <p>The unit connects to the 8000i system via the supplied USB cable. It requires ships' DC power and the 8000i processor to be on to operate.</p>
<p>Optional Parts</p> <p>If both 8000i processor USB ports are used, a NS004720 4 Port USB Hub may be used (see "Northstar 8000i 4 Port USB Hub" page 21)</p>
<p>Location Guide</p> <p>Location should have easy access to the slot loading mechanism.</p> <p>Locate no more than a 16.5 ft (5 m) Cable run away from the processor, USB Hub, or 15" Monitor it is attached to.</p> <p>Access to power: The DVD requires 10 V DC - 35 V DC. Current Draw 7 W Use a 5 Amp breaker</p>
<p>Mounting</p> <p>The DVD/CD Player can be flush mounted into a panel or be free standing. For installation information, see the Northstar 8000i DVD-CD Player Installation Manual.</p>
<p>Power Requirements</p> <p>Voltage: 10 V DC - 35 V DC: current draw 7 W</p>

6.9 Northstar 8000i Remote Keypad

<p>Northstar 8000i Remote Keypad NS004747</p>

<p>Description</p> <p>The Northstar 8000i Remote Keypad is a control interface for the 8000i System. It duplicates the controls of the 12" Display Processor and is mainly used to control the Northstar 8000i Black Box Processor, however it can be used as a second control for a 12" Display Processor</p>
<p>Place in 8000i System</p> <p>It connects to the 8000i processor via USB. It can be connected to any 8000i processor, a Northstar 8000i 15" Monitor or to a Northstar 8000i USB Hub. The unit is self powered through the USB Cable</p>
<p>Optional Parts</p> <p>If both processor, and or 15" Monitor USB ports are full use NS004720 4 Port USB Hub</p>

Location Guide

Locate the keypad relative to the screen it is controlling. The keypad does not require external power

Mounting

Select an area that has easy access in order to control the 8000i. Make sure the panel it is being mounted into is flat, to ensure a watertight seal

6.10 Northstar 8000i Video Interface

USB Video capture device NS004745**Description**

Video to USB converter

Functionality

Interfaces composite or S-Video feeds to a 8000i processor. Composite or S-Video can be from a security camera or an entertainment source. It is converted to a USB feed which connects to a 8000i processor or USB hub. The feed is then displayed on the 8000i processor it is connected to. The video is not networked. It is only visible on the local processor. The device can use NTSC PAL or SECAM. Select which source you use from within the 8000i software.

NOTE: Only one video capture device can be used per processor

Other parts required

Third party video feed. If using audio; connect the audio feed of the device to NS004802 audio cable which then connects to the Aux connector of the processor

Location Guide

Connect to a 8000i processor. Don't use a USB cable longer than 16.5 ft (5 m). Pay special attention to the video and audio cable runs. Refer to wiring guide (see "Wiring Guidelines" page 37)

6.11 Northstar 8000i C-MAP Chart License Key

C-Map Chart License Key**Description**

C-Map Chart License Key

Functionality

Holds the license information of the purchased charts.

Place in 8000i System

Connects to any USB port of a processor, USB hub or 15" Monitor USB hub.

One (1) license key is required per system. The licence key is inserted into the master processor on a multiprocessor system. This processor needs to be on in order for the rest of the displays to see chart detail.

Optional Parts

Chart Licenses. To Purchase C-Map MaxPro charts. Please refer to operation manual how to do this or contact an authorized Northstar dealer.

6.12 Northstar GPS Antenna (NS004743)



Read and observe the Warnings and Notices in the GPS Installation Manual

Northstar GPS Antenna NS004743**Description**

12 Channel GPS Antenna

Functionality

Provides vessel's position, course over ground and speed over ground to the 8000i System. The unit is powered from the 8000i processor

Place in 8000i System

Connects directly to the GPS port of a Northstar 8000i processor

Other parts required

Unit comes with a 33 ft (10 m) cable. Extensions may be required, contact your local Northstar dealer

Location Guide

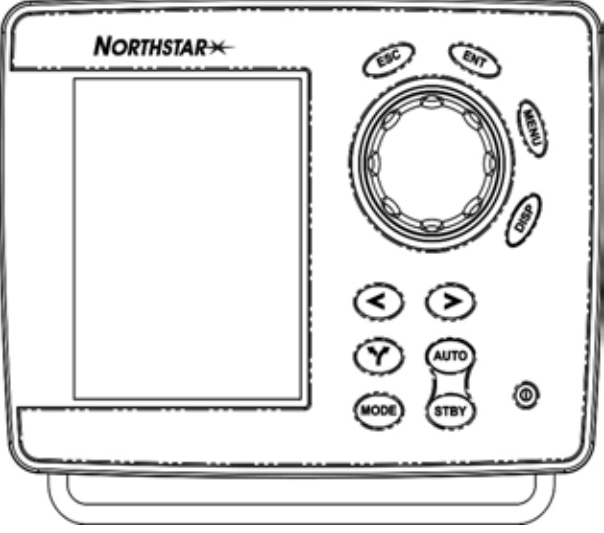
Read the location guide in the GPS Installation Manual

Mounting


Carefully follow the mounting instructions in the GPS Installation Manual

6.13 Other Components

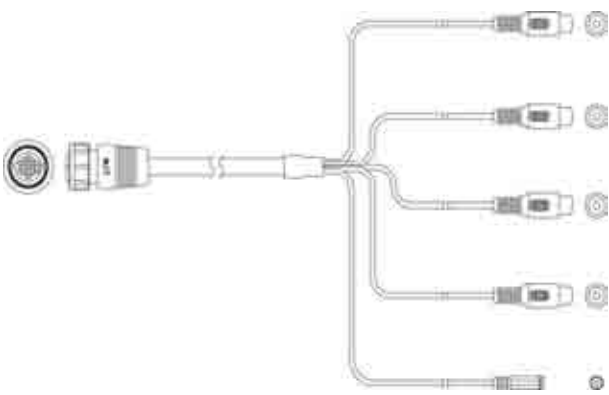
6.13.1 Autopilot

Northstar Autopilot 3300 Display NS002881 Core Pack NS002874	
	
Description	<p>The Autopilot system comprises of a display, a main control unit (MCU), a heading sensor and rudder feed back unit. It is intended to aid the helmsman in steering the boat for long periods of time.</p> <p>The heading sensor can be the separate fluxgate and gyro compass or the new HS02/HS03</p>
Functionality	<p>Steers the boat to follow a course or route created in the 8000i system.</p> <p>Provides true heading in to the 8000i system</p>
Place in 8000i System	<p>The unit has the ability to follow a course sent from the 8000i system. The Autopilot connects to the 8000i system using NMEA (see "NMEA" page 44) on the 12 pin Utility connector.</p> <p>For more information on connecting NMEA (see "NMEA" page 44). To setup NMEA in the 8000i software (see "Set NMEA Output" page 70)</p>
Other parts required	<p>Junction box or terminal strip</p>
Location Guide	<p>The display is a visible component and requires dash space. The MCU and other components can be hidden. For more information see the installation manual of the Autopilot</p>

6.13.2 Heading Sensor

HS02 , HS03 Rate Gyro Heading Sensor NS002437, NS002443

Description The Northstar family of heading sensors utilize a combination of a fluxgate compass and a rate gyro to provide a gyro stabilized heading. Both the fluxgate and gyro are enclosed together in a single rugged housing
Functionality Provides the vessels heading to the 8000i system. Use the heading sensor when installing a Northstar radar to give accurate radar overlay.
Place in 8000i System The heading sensor outputs NMEA which is connects to the utility cable of a 8000i processor
Location Guide Use the HS03 with external fluxgate when using around large quantities of ferrous metal, for example a steel or ferro-cement hull or cabin or steel or iron equipment, such as motors, cooking equipment and places where steel objects are stored.
Mounting and Calibration Refer to the instructions supplied with the heading sensor you are using. After installation of the heading sensor, it is mandatory to perform a heading CALIBRATION procedure to assure alignment with ship's compass and compensation for deviation. See the HS 02/03 installation manual.

6.13.3 Audio

Northstar Audio Cable NS004802


Description
The 8000i System provides audio from music or movies that are played on the system. Audio out is achieved by connecting the 8000i processor to an external amplifier and speakers. This could be a car stereo head unit with Aux in or a high end home theater system
Functionality
Left and right audio channel out Left and right audio channel in Microphone in
Place in 8000i System
Although music files can be stored on any 8000i system processor, the audio output is local to the processor that produces it.
Other parts required
Amplifier and speakers
Location Guide
Be careful running composite audio cable near power cables or other sources of interference as electrical interference can cause a hiss or hum over the speakers. And keep the length to minimum
Mounting
Connect to Aux port on a 8000i processor

6.13.4 NMEA-0183 Data

Description
NMEA-0183 is a very common data protocol in the marine industry. it is used to pass information between many different types of instruments, such as autopilots, wind, speed and depth sensors
Place in 8000i System
NMEA should be connected to the master processor
Optional Parts
For more NMEA inputs use the Noland MN 42 4 port multiplexer (see "NMEA Multiplexer (Noland NM42)" page 44). This expands the 8000i from one NMEA in to four NMEA inputs. If more NMEA outputs are required use the Noland XP15 four port expander. This will take the output of the 8000i processor and provide four duplicated NMEA ports
Location Guide
Connect all NMEA inputs and outputs to the master 8000i processor only

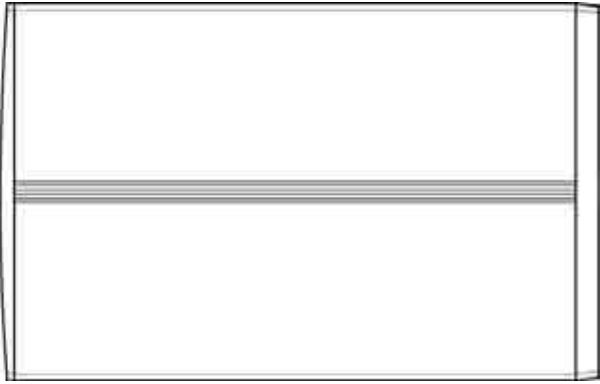
The following is a list of NMEA-0183 sentences supported by the 8000i system

Sentence	Input
DBT	Depth below the transducer
DPT	Depth
GGA	Global Positioning System Fix Data
GLL	Geographic Position, Latitude / Longitude

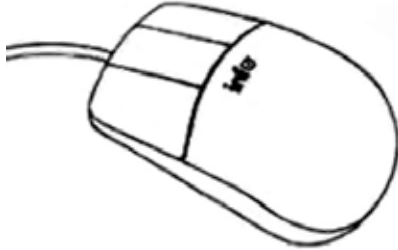
GSA	GPS DOP and Active Satellites
GSV	GPS Satellites in View
HDG	Heading, Deviation and Variation
HDM	Heading, Magnetic
HDT	Heading, True
MTW	Water Temperature
MWD	Marine Weather Discussion
MWV	Wind Speed and Angle
RMC	Recommend Minimum Specific GPS/TRANSIT Data
VHW	Water Speed and Heading
VTG	Track Made Good and Ground Speed

Sentence	Output
APA	Autopilot (subset of APB)
APB	Autopilot Sentence "B"
BEC	Bearing and Distance to Waypoint, Dead Reckoning
BOD	Bearing, Origin to Destination
BWC	Bearing and Distance to Waypoint, Great Circle
BWR	Bearing and Distance to Waypoint, Rhumb Line
BWW	Bearing, Waypoint to Waypoint
DBT	Depth Below Transducer
DPT	Depth
GGA	Global Positioning System Fix Data
GLL	Geographic Position, Latitude/Longitude
HCC	Basic Compass Heading
HDG	Heading, Deviation and Variation
HDM	Magnetic Heading
HDT	Heading, True
HSC	Heading Steering Command
MWD	Wind Direction and Speed
MWV	Wind Speed and Angle
RMB	Recommend Minimum Navigation Information
RMC	Recommend Minimum Specific GPS / TRANSIT Data
VHW	Water Speed and Heading
VTG	Track Made Good and Ground Speed
WCV	Waypoint Closure Velocity
WPL	Waypoint Location
XTE	Cross-Track Error, Measured
ZDA	Time and Date

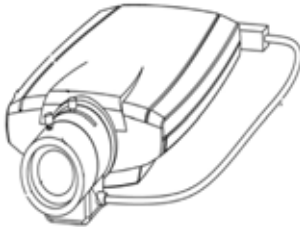
6.13.5 Mass Storage Devices


<p>Description</p> <p>Mass storage devices are third party products such as portable hard drives, and flash drives. These may be used to store music and movies. Many people have large music libraries which are too big to fit onto a 8000i System. Mass storage drives can be a great way to share music and videos between the home and boat. Connect the drive to the 8000i System which can then access the drive and share the stored media across the 8000i network.</p> <p>Refer to the "Manage your media files with a portable drive" in the 8000i Operation Manual.</p>
<p>Place in 8000i System</p> <p>Mass storage devices need to be USB. Attach to any USB port on a 8000i processor, USB Hub or a 8000i 15" Monitor.</p>
<p>Other Functions</p> <p>The 8000i can synchronize media with the storage drive and the 8000i processor (If enough space is available on the 8000i).</p> <p>Can play stored media directly from the drive</p>
<p>Location Guide</p> <p>Mount within a 16.5 ft (5 m) cable run to the 8000i USB port.</p>
<p>Power requirements</p> <p>Most USB hard drives use mains power (110 V AC - 240 V AC). Refer to the manufactures manual for installation instructions</p>

6.13.6 Human Interface Devices

HID pointing devices
<p>Description</p> 
<p>The 8000i processors are compatible with most USB, Widows XP compliant pointing devices. The user may prefer to operate the system using a remote wireless pointing device. There is a large selection available.</p>
<p>Place in 8000i System</p> <p>Used to control an 8000i processor</p>
<p>Mounting</p> <p>Connect directly to an 8000i processor or to the USB ports on the Northstar 8000i 15" Monitor or 4 port USB hub</p>

6.13.7 Network Camera


<p>Description</p> <p>A Network camera connects to the 8000i system via the ethernet network. Once a camera is installed it can be viewed from all processors on the network. Only one camera may be connected to the network. Capability for multiple cameras is anticipated in subsequent releases. Cameras supported are supplied by Axis communication www.axis.com. Recommended models for dry areas 206, 211, 221, for outdoors 225FD</p>
<p>Place in 8000i System</p> <p>Connects via ethernet cable to the 8000i 8 Port Network Linker</p>
<p>Other Functions</p>
<p>Location Guide</p> <p>Check with manufactures information on locations specific to the model of camera</p>
<p>Power requirements</p> <p>Requires power. See manufactures installation guide for more information</p>

7 Mounting the 8000i 12 inch Display Processor

Choosing the best mounting location

Choose the mounting locations carefully before you drill or cut. The 8000i Display should be mounted so that the operator can easily use the controls and clearly see the display screen. Be sure to leave a direct path for all of the cables. The display screen is high-contrast and anti-reflective, and is viewable in direct sunlight. For best results, install the 8000i 12" Display out of direct sunlight. The chosen location should have minimal glare from windows or bright objects.

NOTE: The LCD itself is the front panel. There is no plastic lens in front of the LCD. It has a special bonded anti-reflective and scratchproof film on the LCD front to assure no fogging and best contrast. DO NOT hit the lens with sharp or heavy objects because expensive LCD damage may occur.

The system is designed to allow full operation of the unit from a Windows compatible mouse. If the mounting location means that the unit is not easily within reach of the user in the helm chair you may wish to also install a 8000i Remote Keypad or third party USB Trackball to the helm chair.

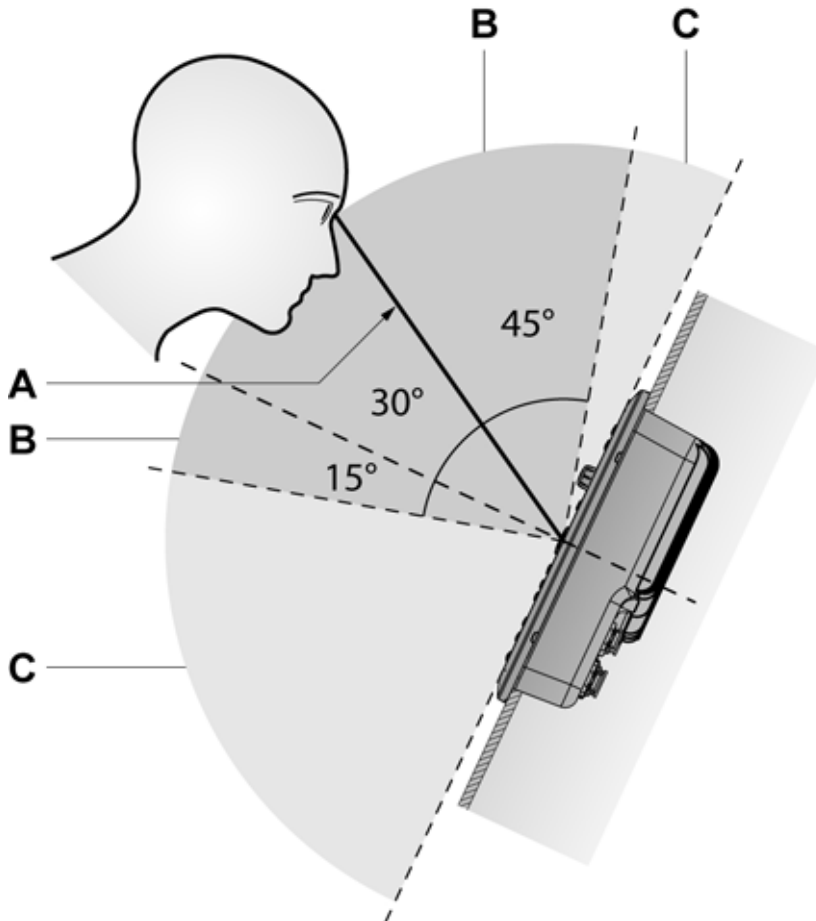
Leave sufficient clearance space behind the 8000i 12" Display Processor to connect all relevant cables.

Good ventilation is required behind the mounting panel. Poor ventilation may cause the 8000i 12" Display Processor to overheat, which, in turn, will cause the unit not to run at optimum performance. For overall width and height requirements, please see the diagram below.

The system requires the use of the touch screen or external mouse. If the unit is to be mounted outdoors and may experience conditions that would require the touch screen to be disabled (e.g. Hail, Snow) we recommend that a water proof pointing device (e.g. 8000i Remote Keypad or water proof USB mouse) is connected to the system.

Viewing Angle

The viewing angle can influence the viewability of the 8000i Display Processor. The best angle is from the top to slightly below perpendicular. Lower than perpendicular and the screen image will fade slightly. See following diagram.



Viewing angle	
A	Optimum viewing angle
B	Good viewing angle
C	Poor viewing angle or obstructed view

⚠ WARNING

Ensure that any holes cut are in a safe position and will not weaken the boat's structure.
If in doubt, consult a qualified boat builder.

⚠ WARNING

Do not mount any part where it can be used as a hand hold, where it might be submerged or where it will interfere with the operation, launching or retrieving of the boat.

WARNING

Before you cut a hole in a panel, make sure that there are no hidden electrical wires or other parts behind the panel.

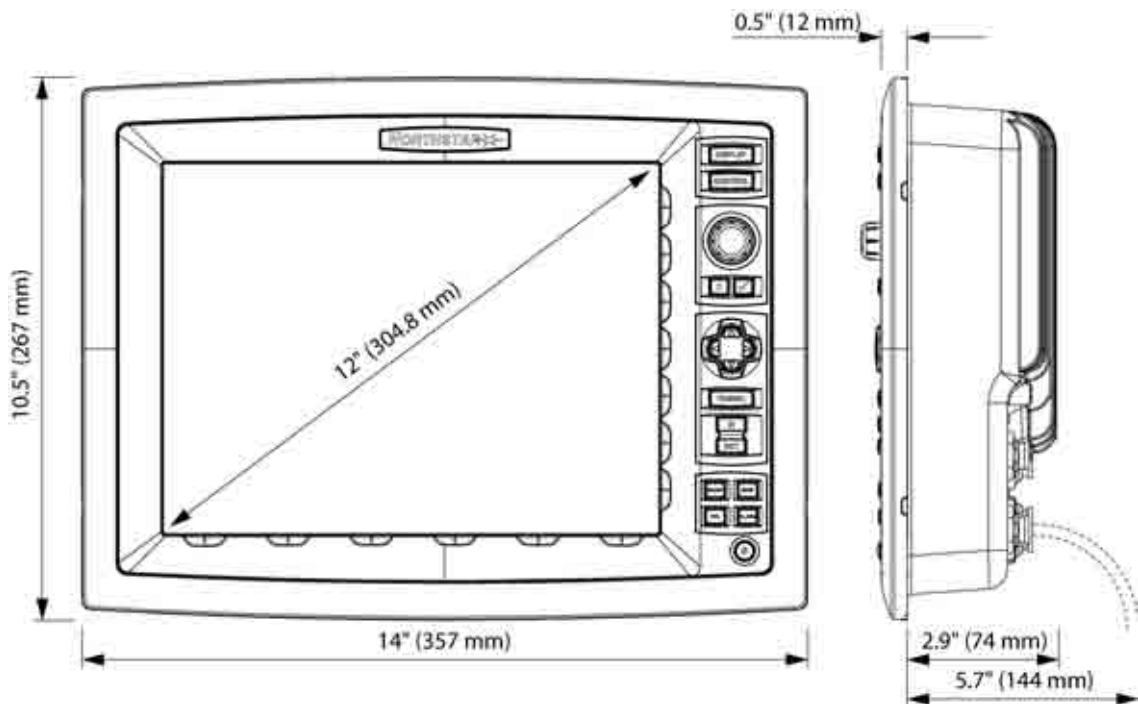
CAUTION

When flush mounting, be sure to mount the 8000i component on a flat surface. Mounting on a curved surface can result in water leaks around the cutout.

CAUTION

To prolong life of this product, use the supplied sun cover when not in use and during washdown.

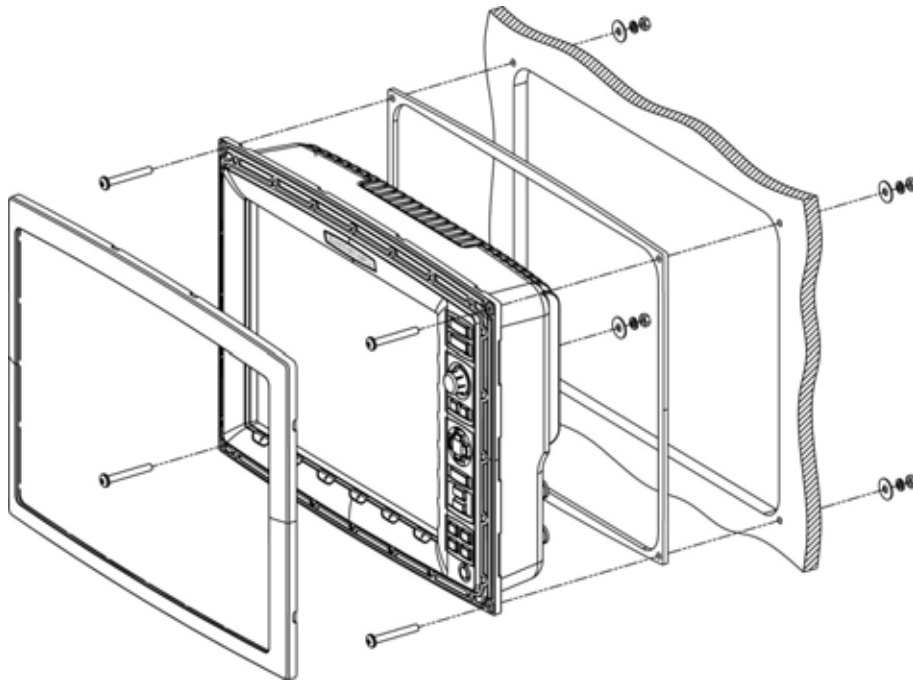
After washdown or use in a wet environment remove excess water from screen



Use the supplied mounting template as a guide to cut a hole in the panel. OBSERVE the instructions on the template for drill bit and corner hole sizes.

Hold the gasket in place on the back of the unit; the gasket can fit any way round. Hold the unit in place in the mounting hole and use the supplied screws to secure the unit.

Clip the bezel to the front of the unit; it can fit either way round. The bezel is a tight fit and is not easy to remove. It is however quite strong and if removal is necessary, gently pull upward on the bezel by holding the inside edge just above the Northstar logo



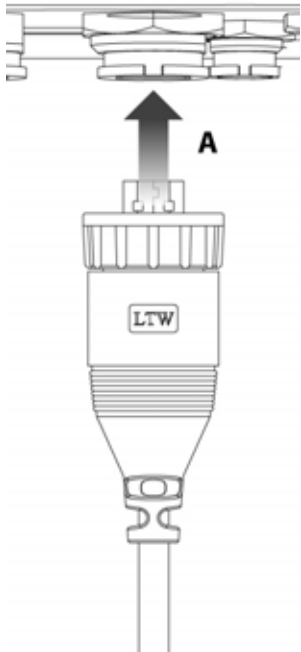
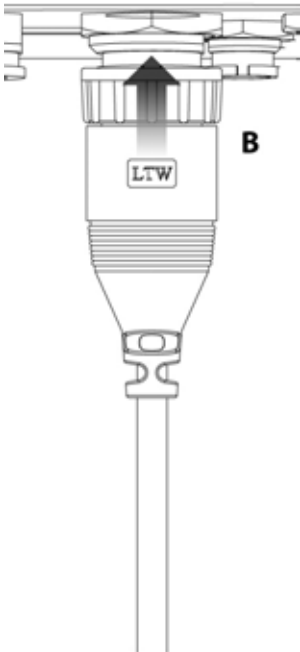
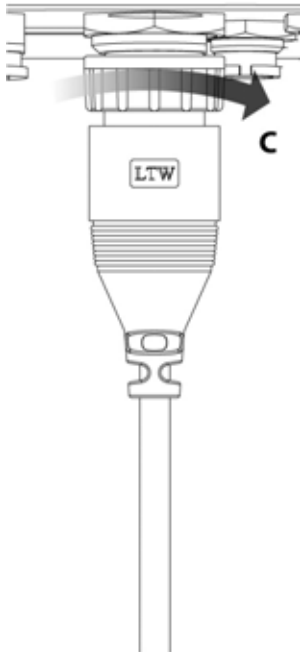
Form the cables into loops below the unit so that any condensation will drip off.
Turn on the processor (see "Turn on the 12 inch Display Processor" page 63).

8 **Wiring Guidelines**

Avoiding cable wiring shortcuts

Most installation problems are caused by shortcuts taken with system cables. When wiring the 8000i, follow the guidelines below.

DO NOT DO THIS!	DO THIS!
Do not make sharp bends in the cables	Do make drip and service loops
Do not run cables in a way that allows water to flow down into the connectors	Do tie-wrap all cables to keep them secure
Don't route the data cables in areas adjacent to radar, transmitter, or large-current-carrying cables	If cables are shortened, lengthened, or re-terminated, do seal and protect all wiring connections
Don't attempt to cut or splice the DVI, RGB or control cables. If longer versions are necessary, use the optional longer cables.	Do leave room at the back to install and remove cables

Waterproof Connections		
Locate the cable in to the socket. Do not use force as this may damage the pins of the connector	Push cable in to connector. Use care when locating pins	Turn lock nut in a clockwise direction until tight
		

8.1 Power

⚠ WARNING

Before starting the installation, be sure to turn electrical power off. If power is left on or turned on during the installation, fire, electrical shock, or other serious injury may occur. Be sure that the voltage of the power supply is compatible with the 8000i's voltage rating of 12 V DC or 24 V DC. (10 V DC - 35 V DC max range)

⚠ WARNING

Connecting to the wrong power supply can cause fire or damage to the equipment.

⚠ WARNING

Be sure to ground the equipment to prevent electrical shock and mutual interference. Be sure to use the fuse in the supplied power cable. Not using a fuse can cause fire or damage to the 8000i.

All 8000i units are shipped with a 6 ft (2 m) power cable. This can be extended using the following guidelines

- for a cable length up to 15 ft (5 m), use 14-gauge wire or heavier
- for a cable length from 15 ft (5 m) to 30 ft (10 m), use 12-gauge wire or heavier

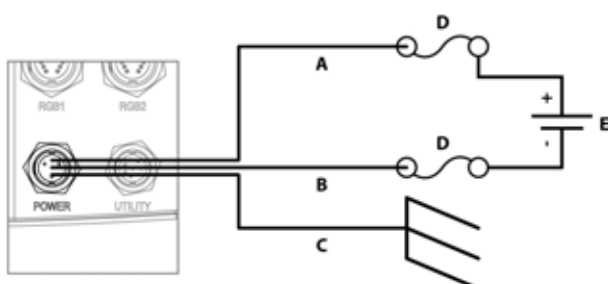
If you lengthen the power cable, use an external fuse at the battery end as an added safety precaution. The fuse size should be chosen to be appropriate for the size of the smallest conductor in the circuit. See the NMEA or American Boating and Yachting Counsel specifications to find the correct fuse for your wiring.

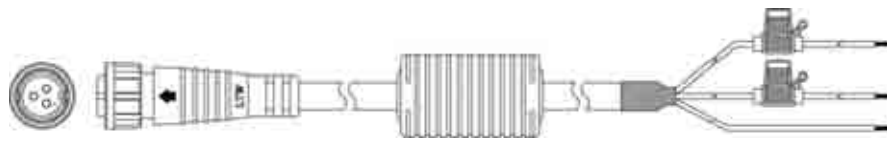
For the best protection from noise, connect the power wiring directly to the battery or dedicated electronics bus. The brown ground wire should be connected directly to ship's ground. The power cable has an inline fuse on the positive and negative side to protect the vessel's wiring, and prevent electrical fires and damage to the unit. If you shorten or lengthen this cable, be sure to keep the inline fuse intact (or provide circuit protection).

Spare in-line fuses are standard automotive type and are not supplied with the unit and should be purchased locally to avoid loss of function.

The 8000i can operate on voltages ranging from 10 V DC to 35 V DC. All Northstar 8000i components except the use the same 3 Pin power connector and cable as below.

NOTE: Make sure the correct fuse is used






Supplied NS004800 Power cable

A	Red		Battery positive supply 12 V DC or 24 V DC
B	Black		Battery negative supply
C	Green / Yellow Stripe (or Brown on older cables)		Ships ground (optionally connect to battery negative)
D	Fuse		Fuse
E	Battery		Battery

8000i System Power requirements

Part No	Description	Fuse or breaker size @ 12 V	Fuse or breaker @24 V	Max Power consumption
NS004700	Northstar 8000i 12" Display Processor	10 Amp	5 Amp	50W
NS004710	Northstar 8000i 15" Monitor	10 Amp	5 Amp	50 W
NS004730	Northstar 8000i Black Box Processor	10 Amp	5 Amp	45 W
NS004740	Northstar 8000i DVD-CD Player	5 Amp	3 Amp	7 W
NS004741	Northstar 8000i 1 kW Sounder	5 Amp	3 Amp	7.2 W
NS004720	Northstar 8000i 4 Port USB Hub	5 Amp	3 Amp	14 W
	Northstar 8000i 2 kW Radar Scanner and Processor	10 Amp	NA	25 W
	Northstar 8000i 4 kW Radar scanner and processor	10 Amp	5 Amp	30 W
	Northstar 8000i 6 kW Radar scanner and processor	10 Amp	5 Amp	120 W
	Northstar 8000i 10 kW Radar scanner and processor	NA	7 Amp	250 W
	Northstar 8000i 25 kW Radar scanner and processor	NA	7 Amp	180 W

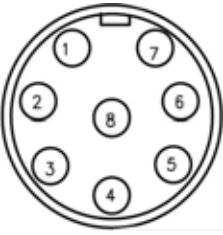
NS8000i Processor Power Pinout (view looking at connector on unit)		
	Pin	Function

	1	Battery -
	2	Battery +
	3	Ground
	Note: Drawing is the unit connector, not the cable	

8.2 GPS Port

Install an optional Northstar GPS (NS004743) Antenna using the supplied instructions and connect to Northstar 8000i processor GPS port. The GPS is self powered from the 8000i processor

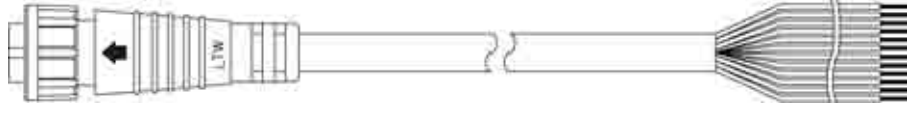
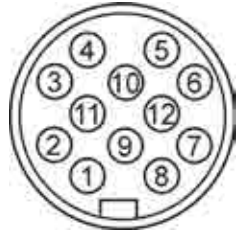


NS8000i Processor GPS Port Pinout		
	Pin	Function
	1	Ground
	2	+ 9 V out GPS Power
	3	Comms Out - (DGPS)
	4	Comms Out +
	5	Cmnds to DGPS
	6	Comms In
	7	Differential Data to GPS, Cmnds to DGPS
	8	-

8.3 Utility Port

Connect to other electronic devices using the the optional Northstar 8000i Utility cable (NS004801). The Utility cable has the following communication capabilities.

- 1 x NMEA Receive (see "NMEA" page 44)
- 1 x NMEA Transmit
- External Alarm (see "External Alarm" page 46)
- Remote Power On
- External Wake Up (see "External Alarm" page 46)
- System Controller re program (Service only)

NS004801 Utility Cable		
		
Utility connector Pinout viewed looking at connector		
		
Pin	Color	Signal
3	Yellow	NMEA RX +
6	Black/White	NMEA RX -
5	White	NMEA TX +
4	Black	NMEA TX - (Ground)
7	Orange	NavBus + (Future)
8	Blue	NavBus - (Future)
9	Dark Green	External Alarm
11	Gray	External Wake Up
12	Light Green	Remote Power On
1	Purple	System Controller (re program TX Service Only)
2	Pink	System Controller (re program RX Service Only)
10	Brown/White	System Controller (reset Service Only)

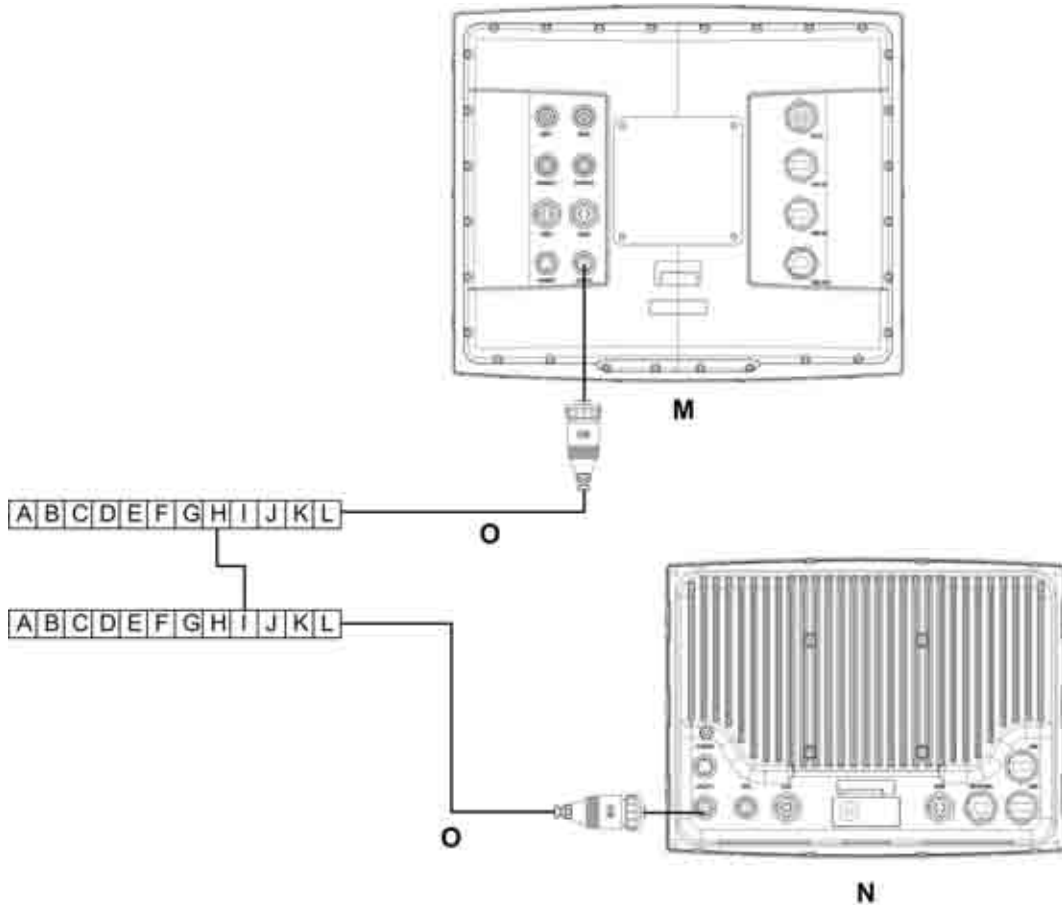
8.3.1 External Wake Up and Remote Power On

External Wake Up sends a signal to another device to initiate Power On. Connect External Wake to the Remote Power On of the other device.

The External Wake Up feature of the 8000i provides the ability for an 8000i Device to control the power state of another 8000i device that it is attached to.

For example when the power button is pressed on the Northstar 15" Monitor it sends a + Volts signal through its Utility Cable (External Wake Up) to the Black Box Processors Utility Cable (Remote Power On). The processor detects the voltage and powers on. When the monitor is turned off, the 8000i Black Box Processor detects zero volts and after (four) 4 seconds powers down.

NOTE: that the processor takes up to 30 Seconds to power down. This will not be visible on the 15" Monitor. Allow time for the processor to shut down before removing power to the system.

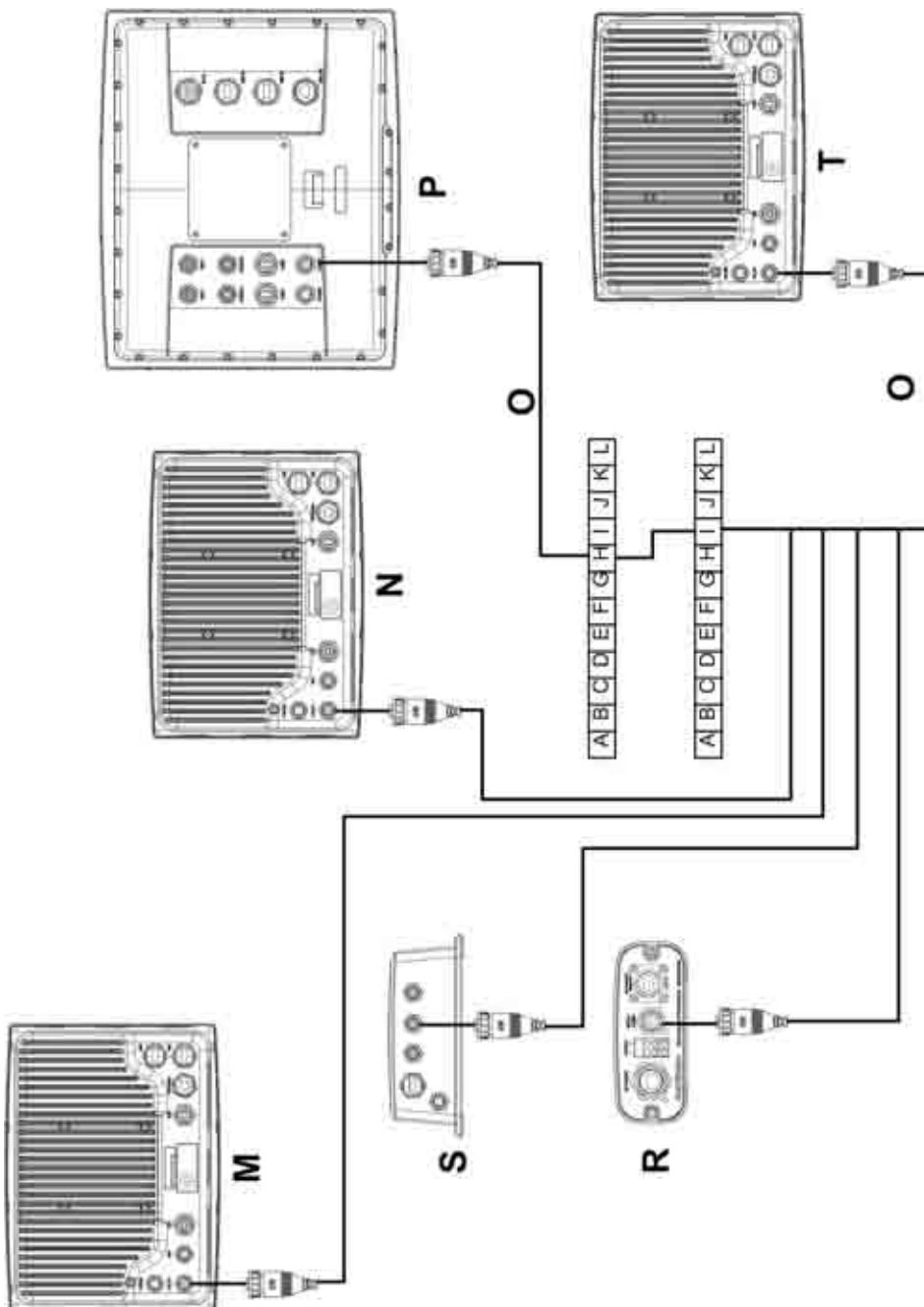


A	Yellow	
B	Black / White	
C	White	
D	Black	
E	Orange	
F	Blue	
G	Dark Green	
H	Grey	External Wake Up (Grey Wire) on the Utility Cable. Connect this to the Light Green wire on the Processor Utility Cable
I	Light Green	Remote Power On wire connected to the Black Box Processor
J	Purple	
K	Pink	

L	Brown / White	
M	Northstar 8000i 15" Monitor	
N	Northstar 8000i Black Box Processor	
O	NS004801 Utility Cable	

Remote power is a feature of the 12" Display Processor, Black Box Processor, 15" Monitor, Network Sounder and Network Radar. This means that connecting the Remote Power On wire (Light Green) to a device that outputs voltage such as a 8000i Processor, breaker or switch will start the Unit. The voltage required for remote power on needs to be greater than 5 V DC.

For example: Connect the Remote Power On wires (Light Green) of the (M)12" Processor (Upper Helm), (N) 12" Lower Helm, (T) Black Box Processor, (S) Sounder and (R) Radar to the External Wake Up of the (P) 15" Monitor. When the monitor is turned on the rest of the system will also turn on.



8.3.2 NMEA

NMEA connection on the Northstar 8000i processor Utility Cable. For more information on NMEA (see "NMEA-0183 Data" page 29)

On a multiple processor unit connect NMEA to the Master Unit

Receive NMEA				
8000i Utility Cable			NMEA Device	
Pin 3	Yellow	NMEA Receive +	Transmit +	NMEA out +
Pin 6	Black/White	NMEA Receive -	Transmit -	NMEA out - (or power ground if no NMEA Transmit -)

Transmit NMEA				
8000i Utility Cable			NMEA Device	
Pin 5	White	NMEA Transmit +	Receive +	NMEA in +
Pin 4	Black	NMEA Transmit (Ground)	Receive -	NMEA in - (or to power ground if no NMEA Receive -)

8.3.3 NMEA Multiplexer (Noland NM42)

Introduction

This section describes the setup and operation of the Noland NM42 NMEA Multiplexer with the 8000i system.

The multiplexer can be used to feed multiple NMEA talkers (e.g. heading, wind and depth sensors) into one Com port without causing the data clashes that would result from attempting to connect them directly. It will also allow the connection of one listener device such as an autopilot.

The multiplexer is intended for use with the general purpose NMEA port (NMEA5) contained within the Utility connector of the 8000i processor units (12" Display processor or Black Box Processor). It will not work with the GPS connector.

Commissioning

The Noland NM42 NMEA multiplexer must be setup to operate correctly with the 8000i, which involves increasing the default baud rate of the DB9 port (the communication link to the 8000i processor) to 19200. Error reporting will also be disabled to maximize bandwidth.

This will not affect the operation of the ports connected to the external NMEA devices – these ports are set to 4800 baud.

Equipment required

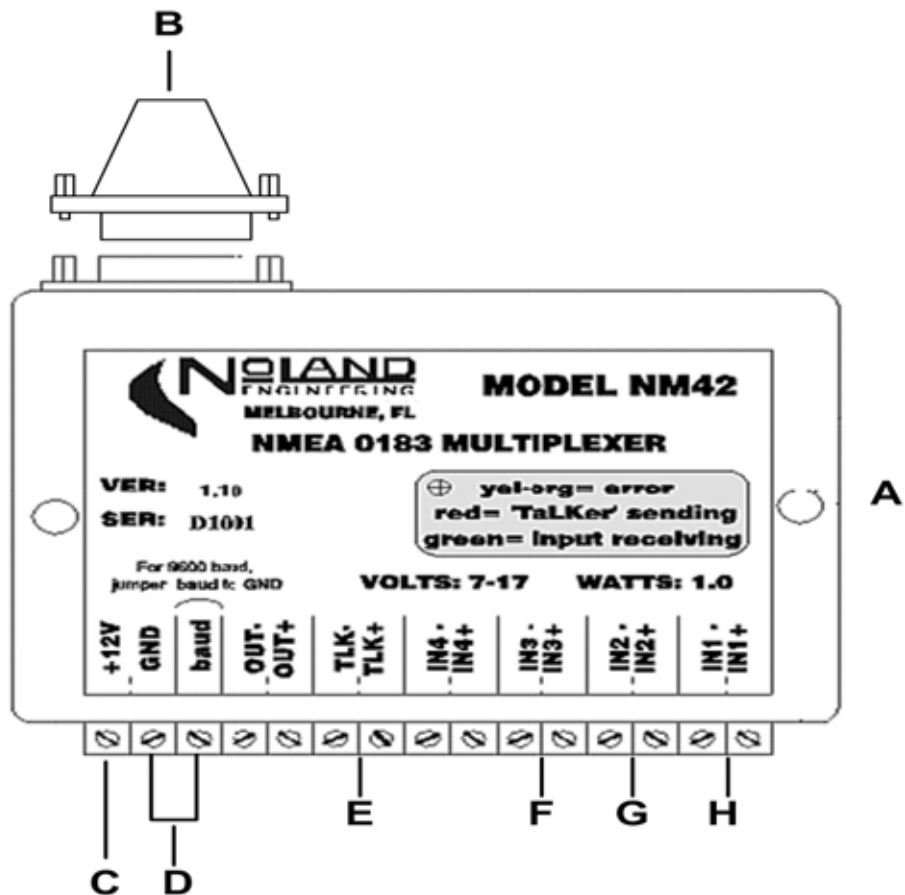
- Noland NM42 NMEA Multiplexer
- PC with one DB9 serial port (or DB25 to DB9 adapter)
- One DB9 extension cable (DB9 female to DB9 Male, straight through, not null-modem)
- Com port application such as HyperTerminal
- Small wire link

Procedure

1. Connect multiplexer to PC using DB9 extension and apply power to the multiplexer.

- N.B.** ensure Baud connector on multiplexer is NOT connected to GND. If it is, remove the link and power cycle the multiplexer.
2. Start com port application, set port to 4800, 8, N, 1, no flow control and connect to port.
 3. To set up the baud rate, send the following characters to the multiplexer and ensure the LED on the multiplexer blinks briefly as characters are sent;
@b2
 4. To turn off error reporting, send the following characters to the multiplexer;
@e2
 5. To check the new settings send the following characters and confirm HIGH baud = 19200 and Err Report = OFF;
@?
 6. Disconnect the multiplexer from the PC and power and short the Baud connector on the multiplexer to GND. This enables the high speed baud rate (DB9 and Out ports only).

Wiring



Noland NM42 Connections		
A	Noland NM42	NMEA 0183 Multiplexer
B	DB9 Serial Connector	DB9 Terminated to the 8000i Utility cable
C	Power	Power 8 V DC - 28 V DC
D	Baud / Ground Connection	Connect the Baud to ground. This enables 19200 high speed baud rate
E	NMEA output	Talker. Output to Auto pilot
F	NMEA in	NMEA for Instrument e.g. Heading
G	NMEA in	NMEA for Instrument e.g. Depth
H	NMEA in	NMEA for Instrument e.g. Wind

Connect the following;

1. Power (8 V DC to 28 V DC), check polarity.
2. Baud shorted to GND, as per Commissioning section.
3. Up to 4 NMEA talkers (input to 8000i) to IN1 through IN4.
4. Talkers must be 4800 baud
5. If talkers are single-ended, connect In1- to common ground.
6. 1 optional NMEA listener (output from 8000i) to TLK
7. Listener must be 4800 baud
8. If listener is single-ended, leave TLK- disconnected and connect listener GND to common ground.
9. Connect 8000i Utility port to multiplexer DB9 port by constructing a cable with the following pin-out

8000i Utility Function	8000i Utility Wire Color	DB9 Pin Number
TX+	White	3
GND	Black	5
RX+	Yellow	2
RX-	Black / White	5 (Common with ground)

N.B. OUT+/- port contains the combined talkers at 19200 baud (a duplicate of the DB9 port) and is redundant in this system.

8000i Utility Port

Change the Baud rate of the 8000i processor to 19200 (see "Set NMEA Baud Rate" page 71)

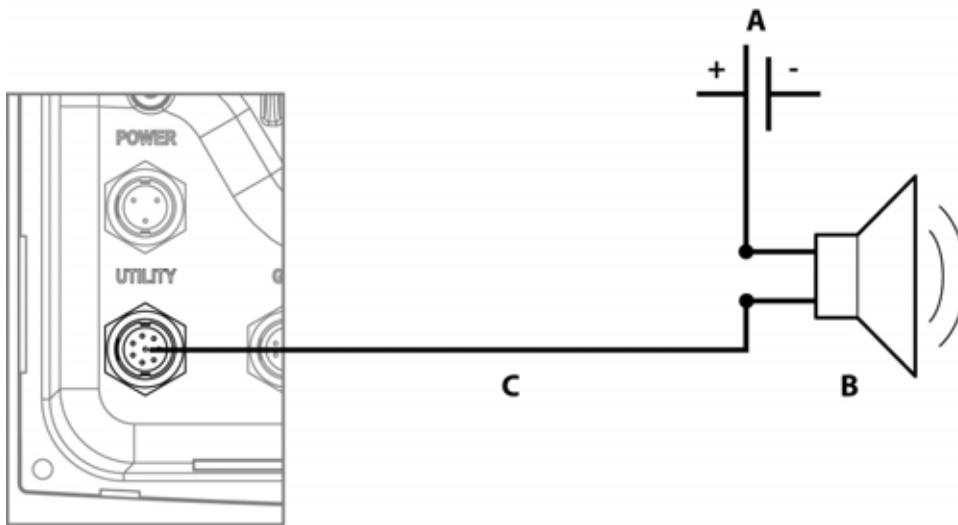
If a listener device is connected to TLK, configure the required 8000i NMEA output sentences (see "Set NMEA Output" page 70)

N.B. the output from the multiplexer is at 4800 baud.

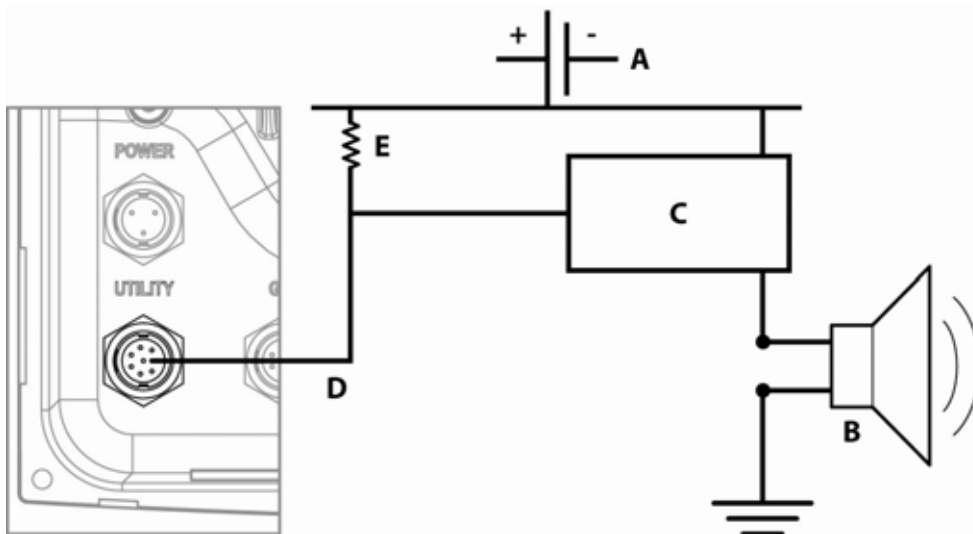
8.3.4 External Alarm

Connect 8000i to external alarms. The external alarm output (dark green wire on the NS004801 Utility Cable) switches to ground to sound the alarm. If the current drawn by the external alarms is more than 250 mA, fit a relay.

Refer to the Northstar 8000i Operation Manual for instructions on operation.



Connect 8000i to a low current external alarm which requires less than 250 mA	
A	Battery Positive (12 V DC or 24 V DC)
B	External Alarm
C	Dark green wire from 8000i Utility cable



Connect 8000i to a high current external alarm which requires more than 250 mA	
A	Battery Positive (12 V DC or 24 V DC)
B	External Alarm
C	Relay
D	Dark green wire from 8000i Utility cable
E	>240 ohm resistor

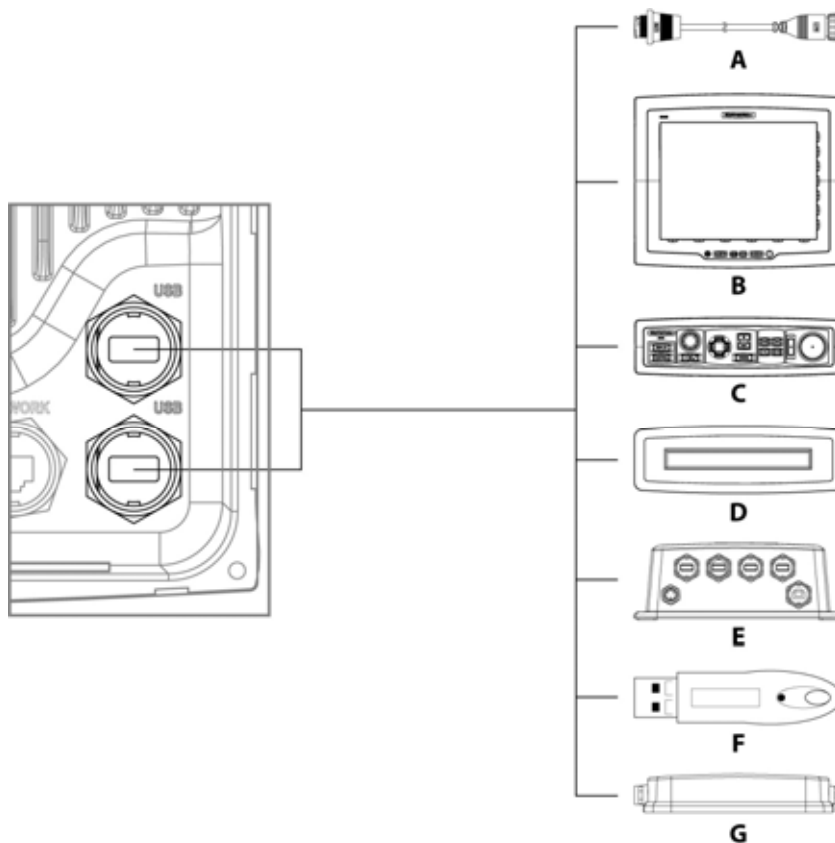
8.4 USB

An 8000i processor has two type A connectors, which are designed for Northstar 8000i USB cables. Each USB port's 5 V DC power output can provide up to 500 mA.

Connect a USB accessory, such as an 8000i System Remote Keypad, or a Northstar 8000i 4 Port Hub.

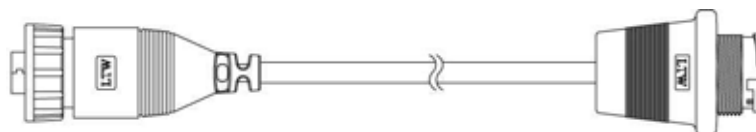
NOTE: It is recommended you use the install the supplied USB dash mount cable to a location that will provide easy access to attach USB devices. This especially applies to the Master 8000i processor. This make system upgrades much easier

USB can be run to maximum distance of 16.5 ft (5 m).




Use NS004809 USB Dash mount cable to bring make any single USB port more accessible: Do not use this cable as an USB extension cable. i.e. Do not join two (2) cables together. Use the 16.5 ft (5 m) cable instead

Connect to either USB Port on 8000i Processor	A	NS004809 USB Dash mount cable
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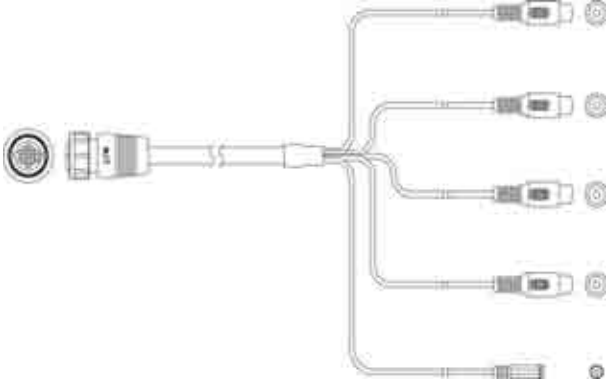


Use NS004808 to connect to the following. This cable is included with the following. This cable is also available in a 16.5 ft (5 m) length.

			
Connection on 8000i Processor		USB Device	Connection on Device
Either USB on processor	B	Northstar 8000i 15" Monitor	Connect to port labeled USB OUT
	C	Northstar 8000i Remote Keypad	Connect to USB "B Type"
	D	Northstar 8000i DVD-CD Player	Connect to USB "B Type"
	E	Northstar 8000i 4 Port USB Hub	Connect to USB "B Type"
	F	Northstar 8000i Chart Dongle	Connects directly
	G	Northstar 8000i USB Video Capture	Connects directly

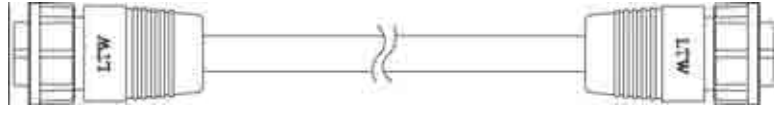
8.5 Auxiliary port

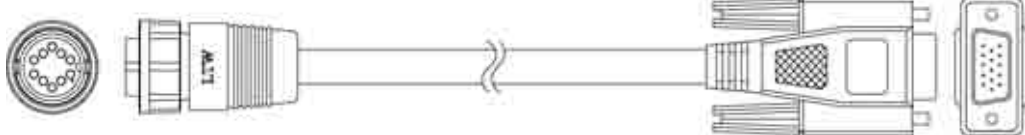
The 8000i can connect to external audio equipment using the cable shown below.

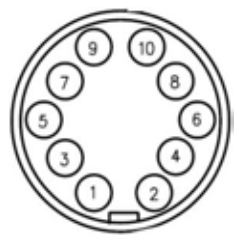
Connect to external audio equipment using optional NS004802 Audio Cable		
		
Red	RCA connector	Audio line output, right
White	RCA connector	Audio line output, left
Brown	RCA connector	Audio line input, right
Blue	RCA connector	Audio line input, left
Black	0.14" (3.5 mm) mono jack	Audio line input, mono. Centre pin is signal, surround is ground.

8.6 RGB port

The RGB port is used to connect the Northstar 8000i processor to an external monitor. This can be either the Northstar 8000i 15" Monitor or any third party monitor capable of displaying a minimum of 800 x 600 resolution.

To connect an 8000i processor to a 8000i 15" Monitor. Use optional NS004806 Cable		
		
From	To	Resolution
12" Display RGB Port	Northstar 15" Monitor RGB 1 or 2	800 x 600
Black Box Processor	Northstar 15" Monitor RGB 1 or 2	1024 x 768

To connect an 8000i processor to a third party monitor		
		
From	To	Resolution
12" Display RGB Port	Third party Monitor	800 x 600
Black Box Processor	Third Party Monitor	1024 x 768

NS8000i RGB Pinout		
	Pin	Function
	1	Red
	2	+ 9 V out GPS Power
	3	Comms Out - (DGPS)
	4	Comms Out +
	5	Cmnds to DGPS
	6	Comms In
	7	Differential Data to GPS, Cmnds to DGPS
8	-	

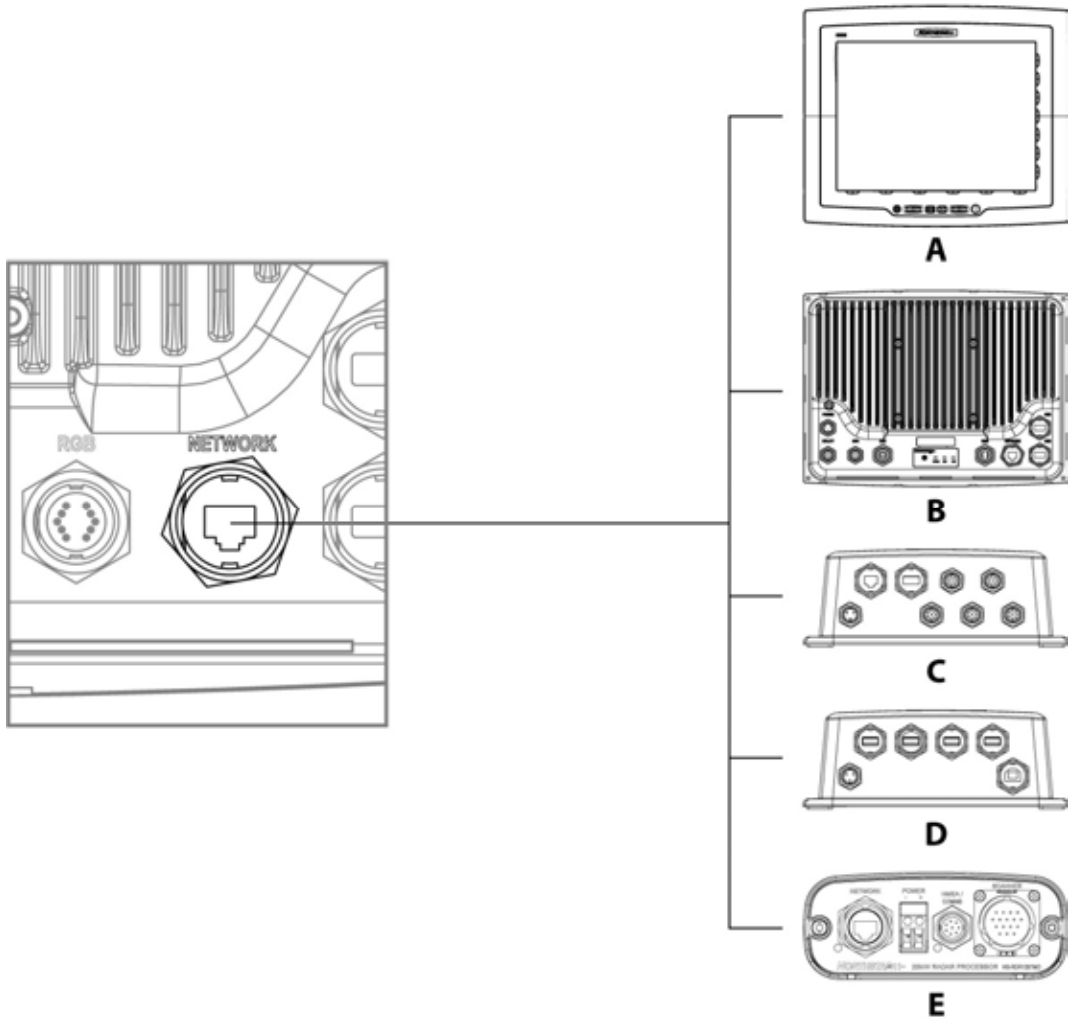
8.7 Network

If the Northstar 8000i processor is a stand alone unit, i.e. not connected to any other network device. Be sure to use the supplied Network Loop Back Plug. Connect this to the Network Port

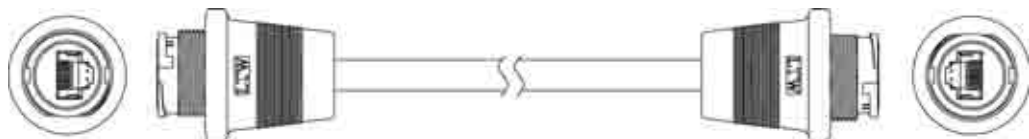
Insert loop back in to network socket if unit is operating as a standalone system



Use a Northstar 8000i Network Cable to connect to other 8000i network devices. If connecting to only one other network device, use optional cable NS004815 Crossover cable joiner in between two (2) conventional network cables



NS004815 Crossover Cable



Use any of the following from 8000i Processor

NS004810 Network Cable 1.6 ft (0.5 m)

NS004811 Network Cable 6.5 ft (2 m)

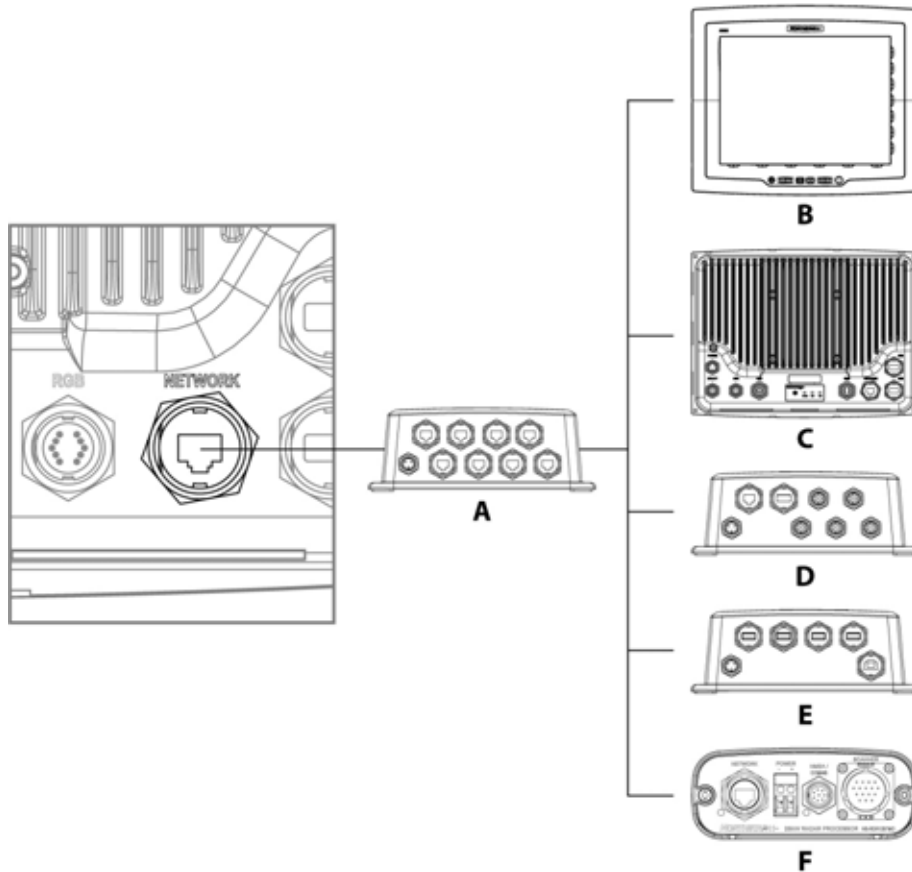
Use any of the following to network device

NS004810 Network Cable 1.6 ft (0.5 m)

NS004811 Network Cable 6.5 ft (2 m)

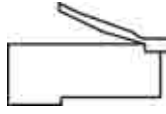

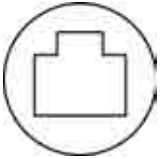
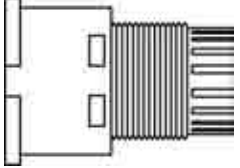

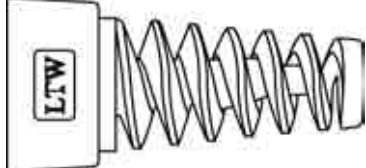
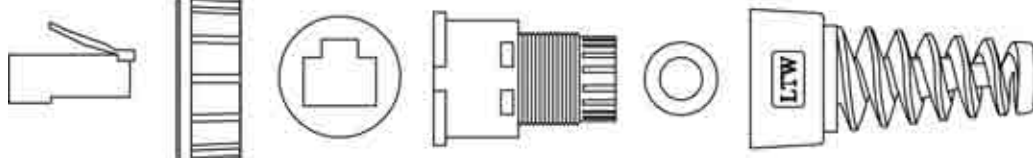
NS004812 Network Cable 16.5 ft (5 m)	NS004812 Network Cable 16.5 ft (5 m)
NS004813 Network Cable 33 ft (10 m)	NS004813 Network Cable 33 ft (10 m)
NS004817 Unterminated Cable 328 ft (100 m) (Use NS4816 network Connector Field Terminating Kit)	NS004817 Unterminated Cable 328 ft (100 m) (Use NS4816 network Connector Field Terminating Kit)
NS048140 Northstar 8000i Cable - Ethernet Joiner, male to male	

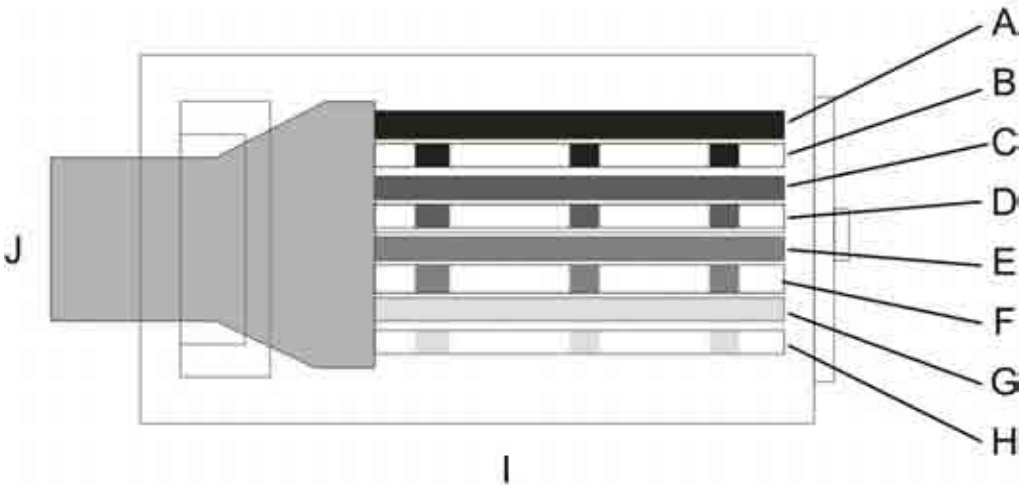
If connecting to three (3) network devices, use NS004721 Northstar 8000i 8 Port Network Linker



8.7.1 Field Terminated Network Cable

The Northstar 8000i Field terminating kit is a waterproof RJ45 connector. It is used when a pre-terminated network cable is not suitable for the situation at hand, such as a difficult cable run. Following the instructions below it can be used to terminate either NS004717 Network cable, which comes in 328 ft (100 m) lengths or to re-terminate any Northstar 8000i Network cable which may have had a connector cut off to pass through a bulkhead

NS004816 Northstar 8000i Field Terminate Kit parts		
		
RJ45 Connector	Lock Nut	Gasket
		
Body	Seal	Strain Relief
		
Order of assembly		

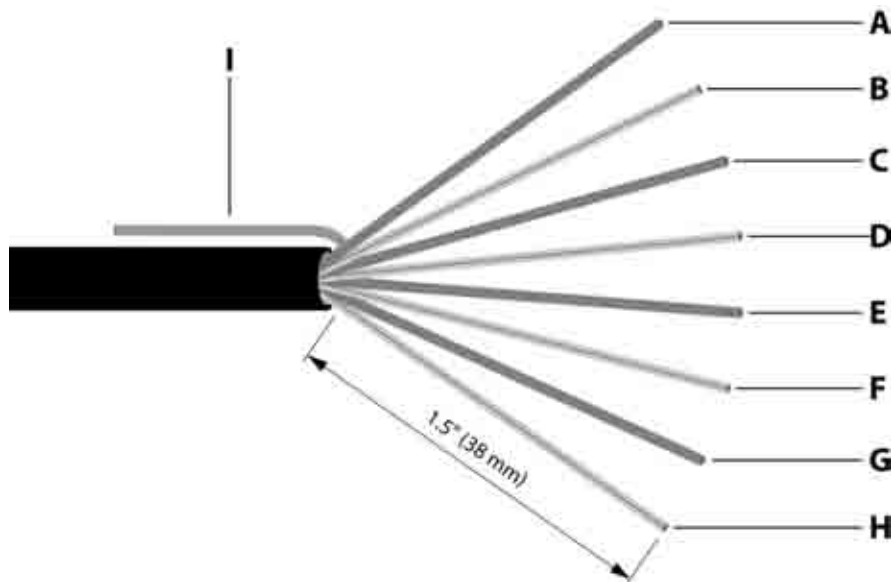


Northstar Field Terminating ethernet kit pinouts	
A	Brown
B	White/Brown
C	Blue
D	White/Green
E	Green
F	White/Blue

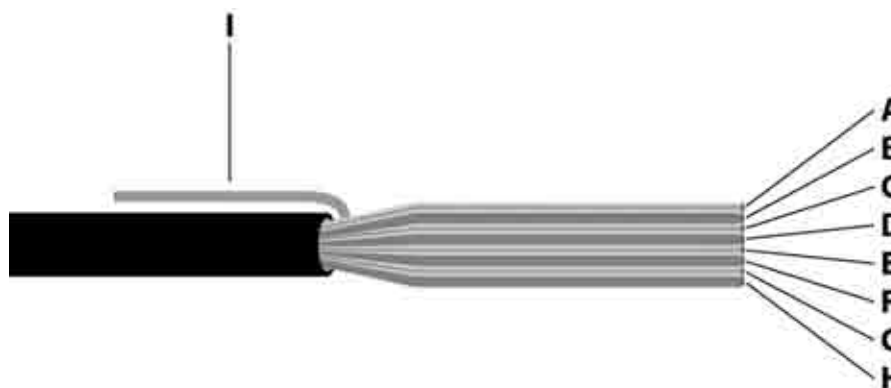
G	Orange
H	White/Orange
I	RJ45 Connector viewed from top with tang underneath
J	Cat 5e Cable
K	Shield

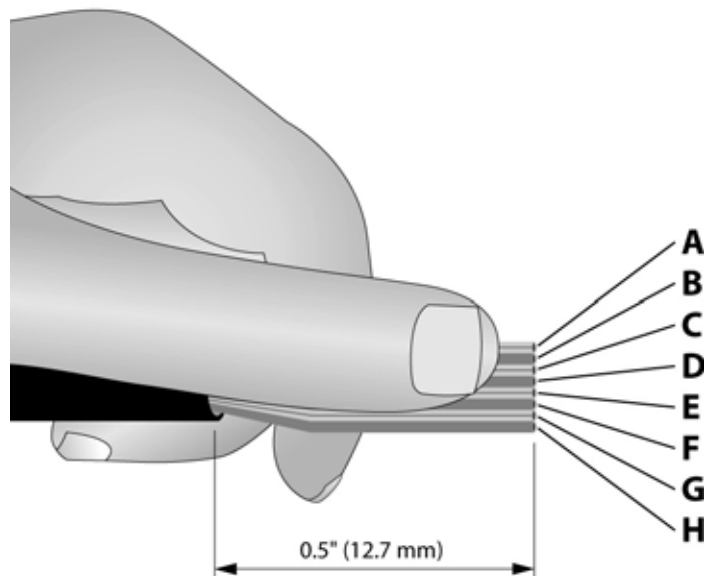
Terminating a Northstar 8000i RJ45 Field Kit

1. Cut the network cable to the desired length
2. Slide the strain relief boot on to the cable
3. Slide the locking nut on to the cable
4. Slide the connector collar on to cable
5. Remove 1½" (38.1 mm) of outer cable sleeve.
6. Remove the foil shield and plastic film. There is no need to strip the individual wires
7. Untwist the twisted paired wires.

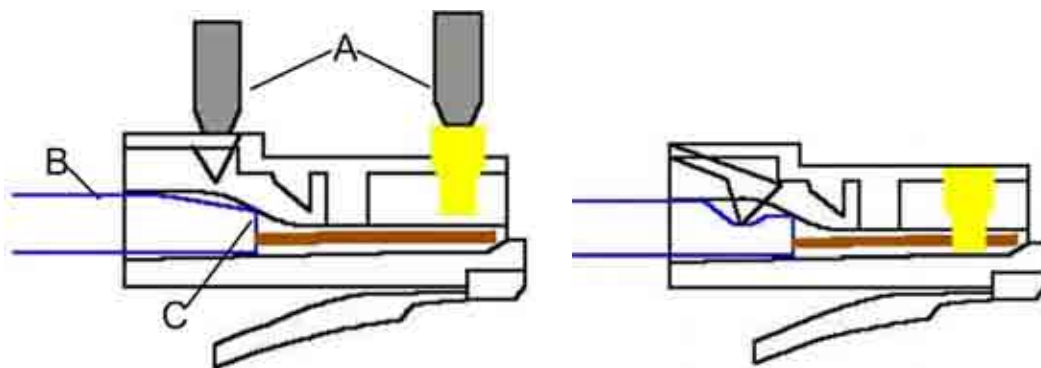


8. Arrange them in the order as shown in the diagram above. From left to right. The shield is bent backwards





9. Hold the arranged wires between your thumb and index finger so that the wires are close together and flatten
10. Once the wires are in the right order and flat cut them off to a length of ½" (12.7 mm) (see diagram above)
11. Insert the wires in the RJ 45 connector (**NOTE Make sure the connector is positioned tang down**)
12. Make sure the wires are pushed the very end of the connector and that some of the outer sleeve is inside the connector (see diagram below)
13. Using an RJ45 crimp tool and following the instructions of the tool terminate the connection

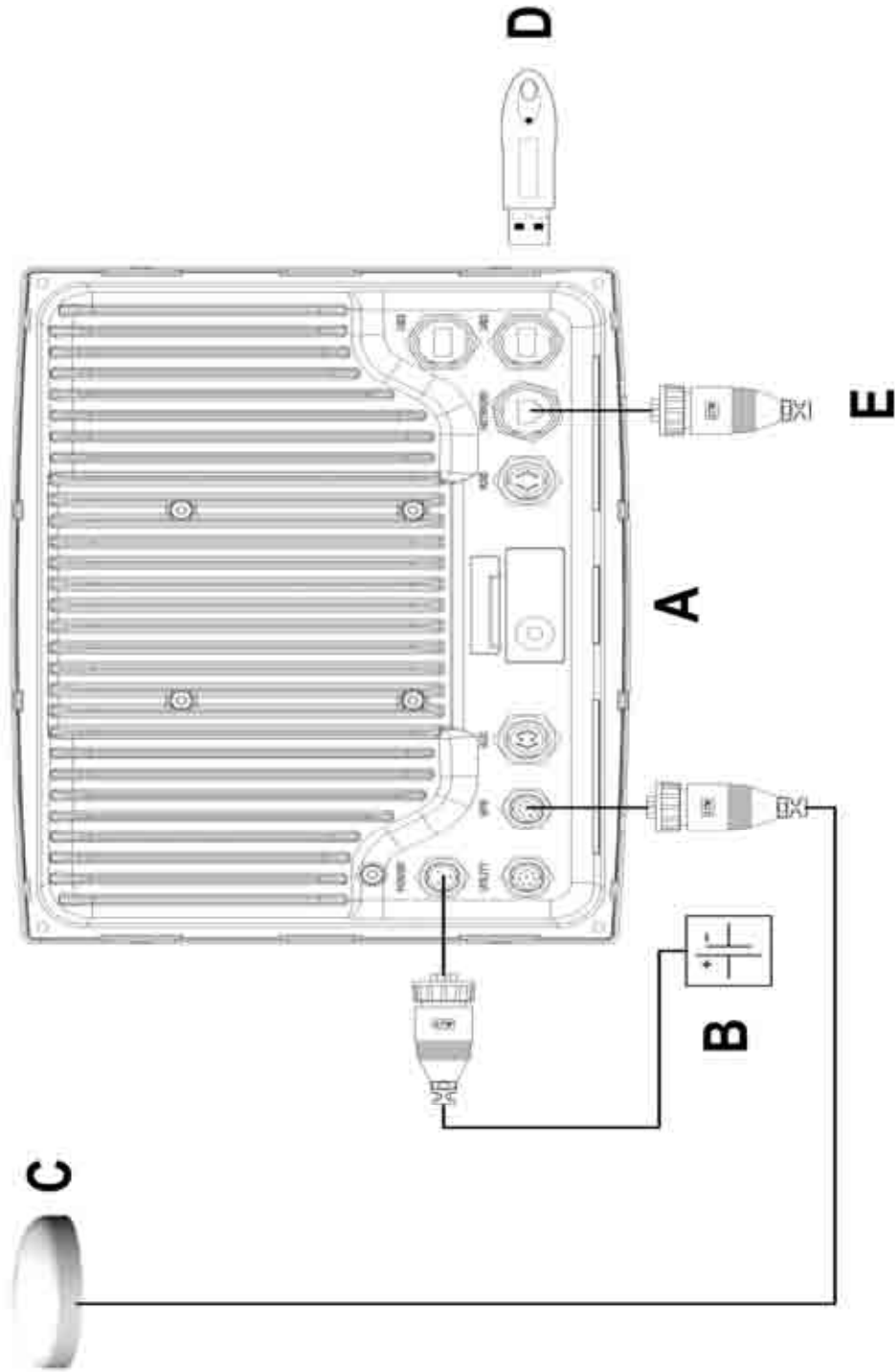


Before crimp		After crimp
A	Crimp tool. The crimp tools jaw presses the gold plated contacts down so they pierce through the insulation of all eight wires to make contact with the copper conductor	
B	Network cable	
C	Make sure sheath is pushed well inside the connector	

14. Cut any spare shield wire close to the plug
16. Slide the gasket, body and locking nut over the RJ45 connector slide
17. Slide the sealing nut and seal towards the body and screw together.

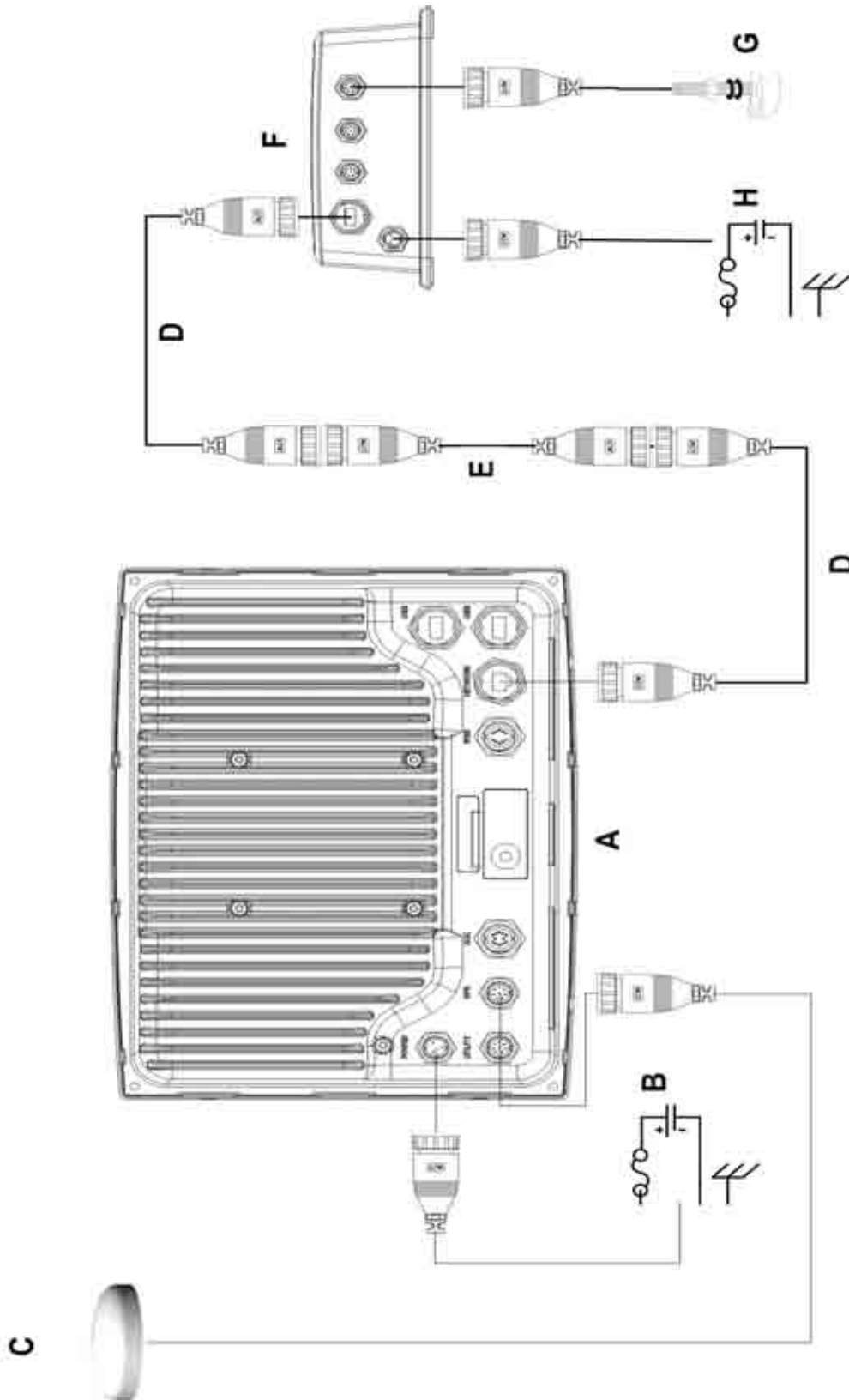
9 Example System Layouts

9.1 8000i Chart Plotter



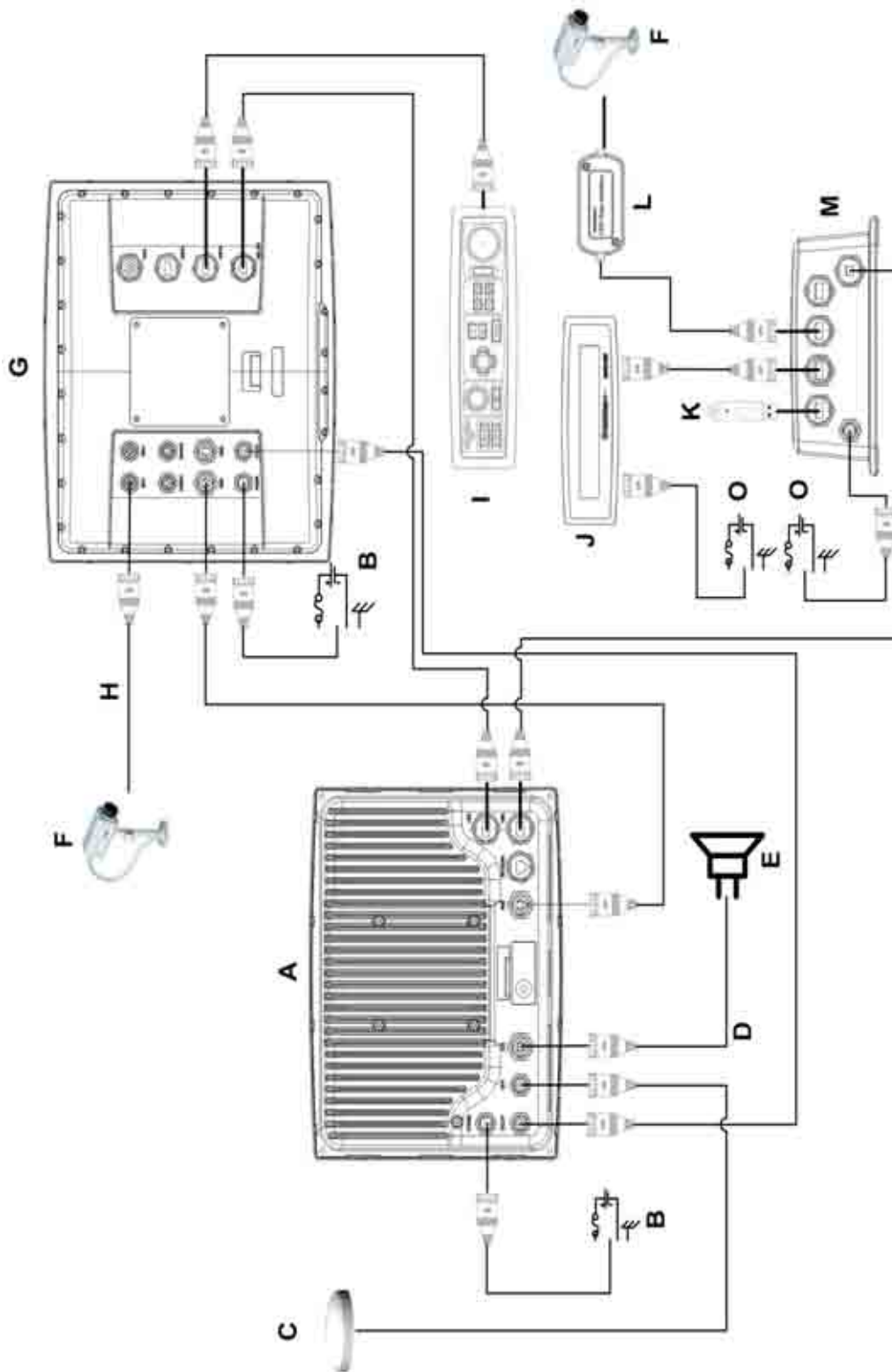
A	Northstar 8000i 12" Display Processor
B	Ships DC Power. Use a 10 Amp fuse or breaker
C	NS0004743
D	Chart License Key
E	Ethernet Loopback

9.2 8000i Plotter Sounder



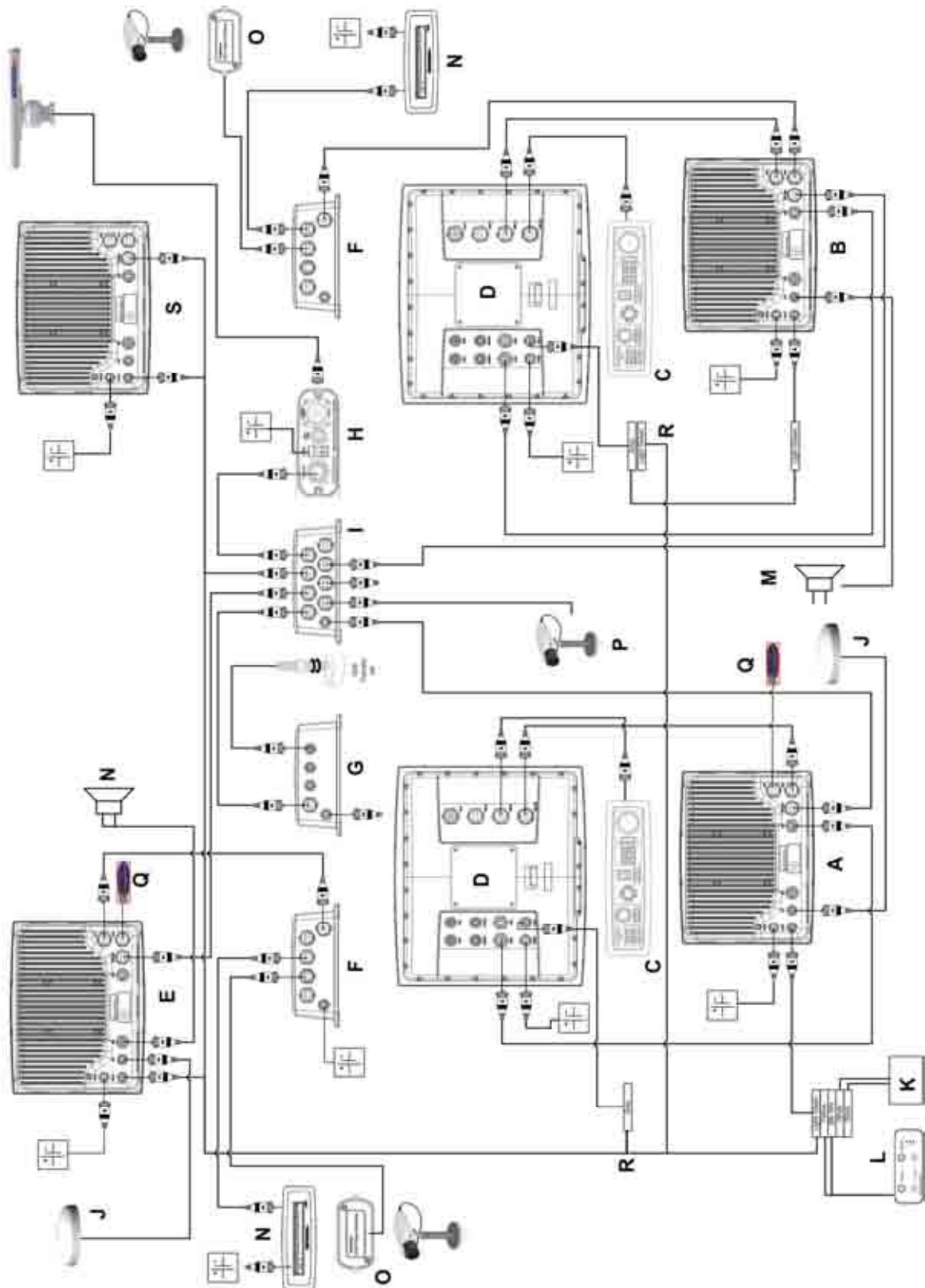
A	Northstar 8000i 12" Display Processor
B	Ships DC Power (see "Power" page 38) Connect using 10 Amp fuse or breaker
C	NS004743 Northstar GPS Antenna
D	Network Cable (see "Network" page 50)
E	NS004815 Network Crossover Cable
F	NS004741 1 kW Network Sounder
G	Choice of transducers
H	Ships DC Power. Connect using a 5 Amp fuse or breaker

9.3 Entertainment



A	Northstar 8000i Processor
B	Ships DC Power 10 V DC - 35 V DC 10 Amp fuse or Breaker (see "Power" page 38)
C	NS004743 Northstar GPS Antenna
D	NS004802 Northstar Aux in / out Audio Cable 6.5 ft (2 m)
E	Vessels Audio System: Connect to line in of a the vessels Audio System
F	3rd party composite camera or video source
G	Northstar 8000i 15" Monitor
H	NS004803 Northstar 8000i Composite Video Cable 6.5 ft (2 m)
I	NS004747 Northstar 8000i Remote Keypad (see "Northstar 8000i Remote Keypad" page 24)
J	NS004740 Northstar 8000i DVD / CD Player (see "Northstar 8000i DVD-CD Player" page 23)
K	Chart License Key
L	NS004745 Northstar 8000i USB Video Interface
M	NS004720 Northstar 8000i USB Hub
N	Ships DC Power 10 V DC - 35 V DC 5 Amp fuse or breaker

9.4 Full System



A	Northstar Black Box Processor NS004730. This unit is set up as the system master, All NMEA is connected to this processor as is the C-MAP chart licence
B	Northstar Black Box Processor NS004730
C	Northstar 8000i Remote Keypad
D	Northstar 8000i 15" Monitors NS004710
E	Northstar 8000i 12" Display Processor NS004700. A back up GPS and C-Map Licence key is attached. This unit can be made to take over as master if needed
F	Northstar 8000i 4 Port USB Hub NS004720
G	Northstar 8000i 1 kW Network Sounder NS004741
H	Northstar HD Radar
I	Northstar 8000i 8 Port Network Linker NS004721
J	Northstar GPS Antenna NS004743
K	Northstar or other Autopilot
L	Northstar Heading Sensor HS02 /03 NS002437, NS002443
M	Entertainment system.
N	Northstar 8000i DVD/CD player NS004740
O	USB Video Capture NS004745: Connect any composite video source to this device to view video on the display it is attached to
P	Axis Network camera
Q	C-Map Chart licence key
R	Eternal Wake up. This system has the external wake up wire (grey) of the master 15" Monitor connected to the remote power on of the two 12" processors and the other 15" Monitor so when the master is turned on the other processors will start
S	Northstar 8000i 12" Display Processor NS004700.

10 Northstar 8000i Initial Setup

When starting a multi-processor system for the first time. The following sequence should be followed.

1. Power on the master processor (see "Turn on the 12 inch Display Processor" page 63) and set to be the master (see "Set the network master unit" page 64) (ensure other processors are off). Take note of the master processor name. It will be a good idea to use the provided System Setup Check sheet. This will provide a record of the settings on install and serve as a reminder to check all settings.
2. Install purchased charts. (see "Install the chart data" page 65)
3. Configure System attributes such as time offset, draft, NMEA output etc.
4. Power on the next processor and nominate the master processor when prompted (this can be done from this processor or from the master). Setup the processor. Repeat till all processors are on and configured.
5. Start one processor at a time nominating the system master when prompted (see "Set the network master unit" page 64)

10.1 Turn on the 12 inch Display Processor

Just press the *Power* key to turn on the 8000i. The Northstar 8000i screen appears briefly, followed by the *Chart* screen in a single pane. The 8000i is ready to use. Refer to the Northstar 8000i System Operation Manual for instructions on how to use the 8000i System.

When starting for the first time. the system will prompt you to nominate master processor (see "Set the network master unit" page 64).

10.2 Adjust the brightness on a 12 inch Display Processor

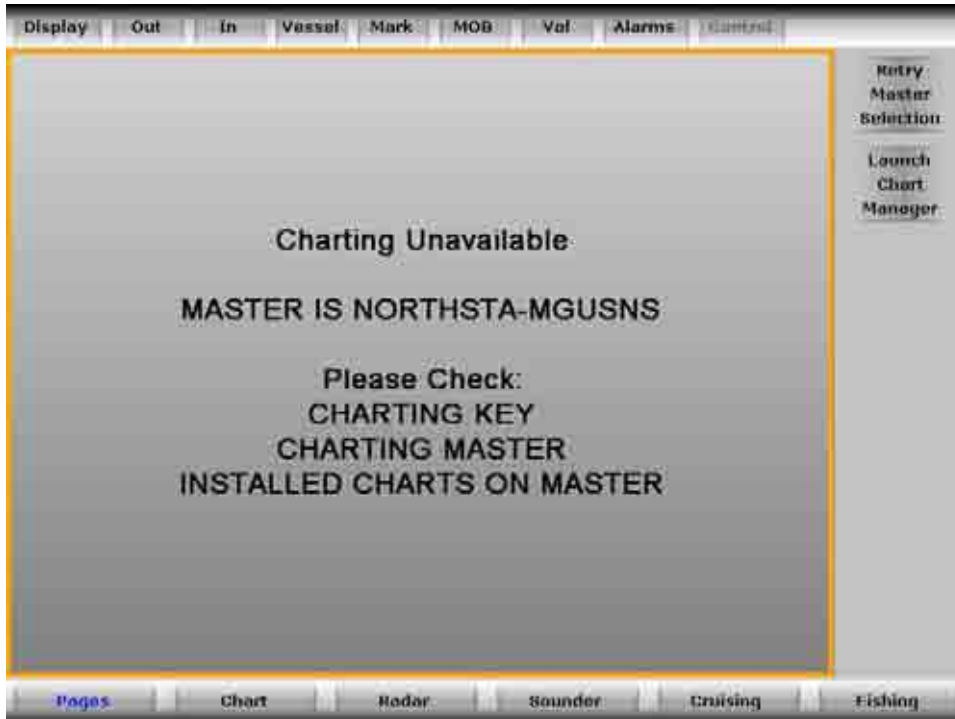
The brightness on the 8000i can be adjusted to allow for various lighting situations. For night time, the backlight can be turned down to aid night vision.

To adjust the backlight brightness

1. Briefly press the 8000i processor power key to bring up the onscreen display.
2. Select brightness control.
3. Use the rotary knob to adjust the brightness, then either:
 - wait until the 8000i exits the onscreen display automatically, or
 - select the Exit option (using the down arrow) then press the Confirm key.

10.3 Set the network master unit

When starting the processor for the first time, the system needs to be told which is going to be the master on the network. This also applies for stand alone processors. The following screen will appear



To set the master

- select **Retry Master Selection**
- select the unit to become master.



- press **Select As Master**
- select **Return** to exit master selection
- select **Launch Chart Manager** to install charts (see "Install the chart data" page 65)

10.4 Install the chart data

When you've purchased your chart collection licenses and any subscriptions, all the license code information for those charts is uploaded onto your C-Map Chart Master Key.

You must install the charts on the display unit that is set up as the 8000i master unit. Any other display units can access the chart collections when the 8000i master unit is On.

If the 8000i master unit is not Off, the chart collections cannot be accessed and a gray screen shows the message "Master Unavailable".

To install the charts means to register the data that you have purchased on the hard disk database (indicated by the licensed collection(s) on your Chart License Key) so that you can work with charts of the collection.

You can only install the collections you have licenses to in your dongle. Even if you have more than one dongle with licenses to different chart collections, you can only use one of the keys at a time.

CAUTION

You are strongly recommended to scan all removable media (such as CDs) for viruses or corrupt data on a separate device BEFORE connecting or using the removable media with the 8000i System.

Install Charts interface

The *Install Chart* interface allows you to install and to uninstall chart collections to your hard drive.

The interface has the header displaying the program name and the hardware key serial number and three integrated windows: Collection Data window, Control Panel, and Collection Status section:

- Collections Data window displays the list of chart collections, which contains the chart collections the licenses to which are loaded to the dongle, as well as the chart collection already installed to the hard drive. To navigate up and down the list, use the scroll panel at the right side of the chart collections list.
- Control Panel holds the buttons managing the process of chart collections installing and uninstalling.
- Collection Status section provides information on the current status of a selected chart collection.

To install chart collections

You can install either all the collections in the list or a selected collection.

To install all collections:

1. Touch **Install All** in *Control Panel*.
2. A dialog box requesting your confirmation opens. Select:
Yes to install all of the collections in the list,
No if you do not want to install all of the collections
3. A progress bar appears indicating the installation status.

To install a selected collection:

1. Select a collection in the list.
2. Touch **Install Selected**.
3. A dialog box requesting your confirmation opens. Select:

Yes to install the selected collection,
No if you do not want to install the collection.

4. A progress bar appears indicating the installation status.

You can only install the chart collection you have the license to. The presence of the license in the dongle is indicated by the green key icon near the chart collection name in the list of chart collections.

After a collection is installed, the globe and eye icons indicating the collection status are activated and the green circle with or without the lightning icon appears near the installed collection name:

- the active globe icon indicates that the collection is installed
- the active eye icon indicates that the collection is visible; if the eye icon is dimmed, the collection is invisible
- the green circle with the lightning indicates that the real-time updating is available; without the lightning – the real-time updating is unavailable.

The Collection Status section contains expanded information on the status of collections. To see an expanded description of a particular chart collection, select it in the list of chart collections.

If the chart collection is not installed yet, the Collection Status section contains the following information about the collection:

- the collection name and the name of the database to which the collection belongs
- the access to data status. It can be permanent if the collection is purchased, the date of the access to data term termination if the collection is rented, or expired if the access to data term is over
- the access to updates status. It can be the date of the access to updates term termination if the collection is purchased or rented, or expired if the access to data term is over
- the date indicating that you can not install collections from the databases issued later than this date
- the line telling that the collection is not installed.

If the chart collection is installed, the Collection Status section contains the following information:

- the collection name and the name of the database to which the collection belongs
- the collection contents
- the access to data status. It can be permanent if the collection is purchased, the date of the access to data term termination if the collection is rented, or expired if the access to data term is over
- the access to updates status. It can be the date of the access to updates term termination if the collection is purchased or rented, or expired if the access to data term is over
- the date indicating that you can not install collections from the databases issued later than this date;
- the line telling that the collection is installed
- the collection updating date.

10.5 Turn off the 12 inch Display Processor

Just hold down the *Power* key for about ten seconds. The Northstar 8000i screen appears, then the 12" Display Processor turns off automatically.

A small bar appears, counting down the seconds for you to hold the power switch down.

10.6 Set the system preferences

10.6.1 Select the time format

You can use the 12 hour or 24 hour time format. 24 hour is the default.

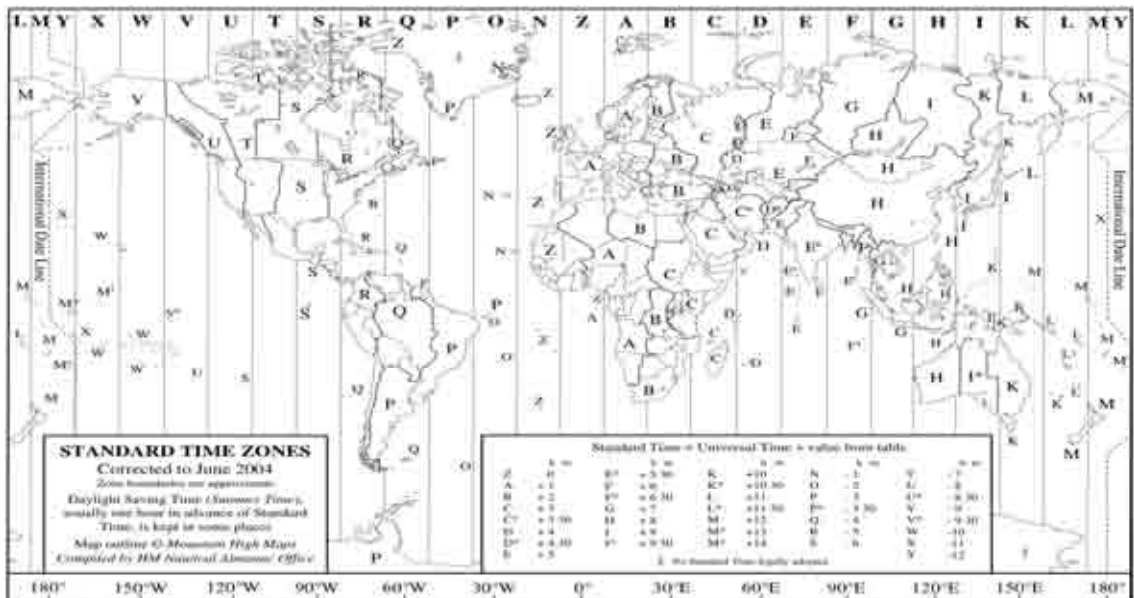
✎ To select the time format:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **System** to display a list of system specification options.
4. The **Time Format** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **System**.

10.6.2 Select your time zone

✎ To select your time zone:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **System** to display a list of system specification options.
4. The **Time Zone** button shows the current setting offset from GMT. Select **EDIT** if you want to change the setting and enter the offset using the onscreen keyboard.
5. Select **OK** to confirm the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **System**.



10.6.3 Turn the keypad beeps on or off

You can have the 8000i beeps On or Off. On is the default.

✎ To turn the beeps on or off:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **System** to display a list of system specification options.

4. The **Keyboard Beeps** check box shows the current setting.
5. Select the check box if you want to toggle to the other setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **System**.

Alternatively:

1. If you are using a 12" Display Processor, press the **Power** key briefly to display a list of options, then use the directional arrows to select **Key Beep**. Use the Confirm or Cancel keys to change the setting.
2. When you are finished, use the directional keys to select **Exit**, then select the Confirm key.

10.6.4 Change the transducer depth

The transducer depth is the difference in depth between the water line and the location of the transducer on the hull.

The depth column on the extreme right of the *Sounder* screen shows the DBT (Depth Below Transducer), and not the the depth below the water line.

The default offset is 0. (This default assumes that the transducer is located on the hull at the water line.)



You must enter an accurate value for the transducer depth. If you don't, all the depths on the *Sounder* screens will be wrong.

To change the transducer depth:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Sounder** to display a list of sounder specification options.
4. The **Transducer Depth** button shows the current setting. Select **Edit**, then enter the difference in depth between the water line and the transducer. For example, if the transducer is 5 ft (1.5 m) below the water line, just enter 5. If you want to check or change the distance units, (see "Select the small scale distance units" page 73) .
5. The new setting is applied immediately to all the *Sounder* screens.
6. When you are finished, select – **Sounder**.

10.6.5 Turn the keypad backlight on or off

You can have the backlight On or Off. On is the default.

To turn the backlight on or off:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **System** to display a list of system specification options.
4. The **Keyboard Backlight** check box shows the current setting.
5. Select the check box if you want to toggle to the other setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **System**.


Alternatively:

1. If you are using a 12" Display Processor, press the **Power** key briefly to display a list of options, then use the directional arrows to select **Key Backlight**. Use the rotary knob to change the setting.

10.6.6 Show/hide the top control bar

You can choose whether to show or hide the top control bar along the top of the screen. (The buttons in the top control bar duplicate the keys.)

If you change this setting, the 8000i will restart automatically.

 To show or hide the top control bar:


1. Select **Display**, then select **Setup** from the control panel.
2. Select + **Installation** to display a list of installation specification options.
3. The **Display Top Control Bar** check box shows the current setting.
4. Select the check box if you want to toggle to the other setting. The 8000i restarts automatically and the new setting stays until you change it again.
5. When you are finished, select – **Installation**.

10.7 Specify your vessel statistics

The following important information about your vessel should already be set up as part of the installation process, but you can change any of this if necessary.



If you do not enter an accurate draft AND an accurate safe depth, the "Depth Below Keel" alarm will not work correctly and your vessel is at risk of grounding. To calculate the safe depth, use the draft of your vessel and then add a safety margin.

 To specify your vessel statistics:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Vessel Statistics** to display the current settings for the:
 - Cruising Speed
 - Draft
 - Safe Depth (vessel draft, plus a safety margin)
4. Select **EDIT** next to the item that you want to change, then use the online keyboard to enter the new setting. Press **OK** to return to the vessel statistics options.
5. The new setting is applied immediately and stays until you change it again. If you want to change another setting, repeat the previous step.
6. When you are finished, select – **Vessel Statistics**.

10.8 Set the location of the media library

You must enter the location of the media library so that the 8000i can find your stored music and videos.

 To set the location of the media library:

1. Select **Display**.

2. Select **Setup** from the control panel.
3. Select + **Installation** to show a list of system installation specification options. (If you can't see these, select the down arrow to scroll them into view.)
4. Select **Change** next to Change Location of Media Storage. A data box appears, showing a list of all the available 8000i processors.
5. Select the new processor and select **Set Location** to confirm the new processor. The new settings are applied immediately and stay until you change them again.
6. When you are finished, select **Return**.

10.9 Set NMEA Output

 To select NMEA Output sentences:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Installation** to display a list of installation specification options.
4. Select **Configure NMEA output**.
5. Select the NMEA output to toggle between **Yes / No**
6. Select **Save** to confirm the new settings or **Return** to cancel.

NOTE: It is not possible to select all the parameters at the same time, due to frame rate timing. Please select only the ones required.

Sentence	Output
APA	Autopilot (subset of APB)
APB	Autopilot Sentence "B"
BEC	Bearing and Distance to Waypoint, Dead Reckoning
BOD	Bearing, Origin to Destination
BWC	Bearing and Distance to Waypoint, Great Circle
BWR	Bearing and Distance to Waypoint, Rhumb Line
BWW	Bearing, Waypoint to Waypoint
DBT	Depth Below Transducer
DPT	Depth
GGA	Global Positioning System Fix Data
GLL	Geographic Position, Latitude/Longitude
HCC	basic compass heading
HDG	Heading, Deviation and Variation
HDM	Magnetic Heading
HDT	Heading, True
HSC	Heading Steering Command
MWD	Wind direction and speed
MWV	Wind Speed and Angle
RMB	Recommend Minimum Navigation Information
RMC	Recommend Minimum Specific GPS / TRANSIT Data
VHW	Water Speed and Heading
VTG	Track Made Good and Ground Speed

WCV	Waypoint Closure Velocity
WPL	Waypoint Location
XTE	Cross-Track Error, Measured
ZDA	Time and Date

10.10 Set NMEA Baud Rate

The baud rate for NMEA in and out can be changed between 4800 and 19200

 To select NMEA Output sentences:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **installation** to display a list of installation specification options.
4. Select **NMEA Baud Rate**
5. The **NMEA Baud Rate** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
6. Select the new setting. The new setting is applied immediately and stays until you change it again.

10.11 Calibrate the touch screen

You can calibrate the touch screen so that the cursor is lined up with your finger more accurately. This makes it easier to select items on the screen.

 To calibrate the touch screen:

1. If you are using a 12" Display Processor, press the **Power** key briefly to display a list of options, then use the directional arrows to select **Calibrate Touch Screen**.
 2. Press the tick key to start the calibration process, then see Step 5.
- Alternatively, or if you are using a 15" Monitor:
1. Select **Display**.
 2. Select **Setup** from the control panel.
 3. Select + **System** to display a list of system options.
 4. Select **Calibrate** next to **Calibrate Touch Screen**.
 5. Follow the instructions on the screen. (If you want to be able to select the buttons at the bottom of the screen easily, you must touch the center of the targets.) When the cursor follows your finger across the screen, select the green arrow. This ends the calibration process.
 6. When you are finished, select – **System**.

10.12 Set the device (processor) name

The processor name can be changed to help identify it on the network. eg STARBOARD or FLYBRIDGE. If you change the processor name, the 8000i must be restarted to apply the new setting.

 To set the processor name:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **System** to display a list of system specification options.
4. The **Device Name** button shows the current setting. Select **EDIT** if you want to change the setting and enter the new name using the onscreen keyboard.

5. Select **OK** to confirm the new name. The 8000i restarts with the new name. The setting stays until you change it again.

10.13 Set the screen resolution

The screen resolution can be changed on the 8000i Black Box Processor to match the monitor it is attached too. Default is 1024 x 768. Other options are 800 x 600 and 1280 x 720. If you change the screen resolution, the 8000i must be restarted to apply the new setting.

 To set the screen resolution:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **System** to display a list of system specification options.
4. The **Screen Resolution** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting and select **OK** to confirm. The 8000i restarts with the new screen resolution. The setting stays until you change it again.
6. When you are finished, select – **System**.

10.14 Set the units

10.14.1 Select the speed units

You can select from Knots, mph, or kph for speed units. Knots is the default.

 To select the speed units:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Units** to display a list of unit specification options.
4. The **Speed Units** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **Units**.

10.14.2 Select the depth units

You can select from Feet, Meters, or Fathoms for depth units. Feet is the default.

 To select the depth units:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Units** to display a list of unit specification options.
4. The **Depth Units** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **Units**.

10.14.3 Select the pressure units

You can select from PSI, Bar, or hPa for pressure units. PSI is the default.

 To select the pressure units:

1. Select **Display**.

2. Select **Setup** from the control panel.
3. Select + **Units** to display a list of unit specification options.
4. The **Pressure Units** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **Units**.

10.14.4 Select the volume units for liquids

You can select from US Gallons, Liters, or Imperial Gallons for volume units for measuring liquids. US Gallons is the default.

 To select the volume units for liquids:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Units** to display a list of unit specification options.
4. The **Liquid Volume Units** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **Units**.

10.14.5 Select the large scale distance units

You can select from Nautical Miles, Statute Miles, or Kilometers for large scale distances. Nautical Miles is the default.

 To select the large scale distance units:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Units** to display a list of unit specification options.
4. The **Distance Units** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **Units**.

10.14.6 Select the small scale distance units

You can select from Yards, Feet, or Meters for small scale distances. Yards is the default.

 To select the small scale distance units:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Units** to display a list of unit specification options.
4. The **Distance Units Small** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **Units**.

10.14.7 Select the temperature units

You can select either Celsius or Fahrenheit for temperature. Fahrenheit is the default.

 To select the temperature units:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Units** to display a list of unit specification options.
4. The **Temperature Units** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting. The new setting is applied immediately and stays until you change it again.
6. When you are finished, select – **Units**.

10.15 Radar

CRITICAL NOTE: ON FIRST TIME STARTUP, LEAVE THE RADAR IN STANDBY FOR AT LEAST 30 MINUTES (NO TRANSMISSION). THIS ACTION EXTENDS MAGNETRON LIFETIME. DO NOT BE OVER ANXIOUS TO TRANSMIT!

10.15.1 Set up the radar before using it for the first time


IMPORTANT: You must set up the radar *before* using it for the first time.

The 8000i automatically detects the type of radar that's installed, but you need to enter some other information, as follows:

 To set up the radar before using it:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Radar** to show a list of radar specification options.
4. Select **EDIT** next to the **Radar Antenna Height** option, then use the online keyboard to enter the height of the radar scanner above sea level. (If you want to change the height units, see "Change the small distance units"). Select **OK** to confirm the new setting.
5. Select **EDIT** next to the **Radar Range Offset** option, then use the online keyboard to enter the amount of range offset. Select **OK** to confirm the new setting.
6. If your radar has an open array, select **EDIT** next to the **Radar Open Array Parking Angle** option, then enter the new parking angle using the online keyboard. Select **OK** to confirm the new setting.
7. Otherwise, skip this step.
8. Select **Radar Power on Action**, then select:
 - **Remain Off** to have the radar to remain Off when the 8000i starts up. This saves on power and magnetron usage.
 - **Standby** to have the radar warm up then remain in Standby mode when the 8000i starts up. This is the default.
 - This completes the initial set up. When you are finished, select – **Radar**.

10.15.2 Change the radar startup mode

 To change the radar startup mode:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select **+ Radar** to show a list of radar specification options.
4. Select **Radar Power on Action**, then select:
 - **Standby** if you want the scanner to warm up and then remain in Standby mode when the 8000i starts up. This is the default. The warm up can take 90 - 180 seconds, and an open array will rotate to face the bow.
 - **Remain Off** if you want the scanner to remain Off when the 8000i starts up. This saves on power consumption and magnetron usage.
5. When you are finished, select **- Radar**.

10.15.3 Change the radar range offset (trigger delay)

The radar range offset is also known as the trigger delay.

Ideally, the radar sweep should commence at your vessel (a radar range of zero). You may need to adjust the radar range offset to achieve this.

Symptoms that occur when this is set incorrectly are a large dark circle in the center of the sweep or you may notice straight objects such as a straight sea wall or jetty having a curve or indentation. Similarly, objects close to your vessel may appear "pulled in" or "pushed out". To rectify this adjust the radar range offset (trigger delay)

The best way to perform this procedure is to position the vessel about 50 yards to 100 yards (45 m to 90 m) from a straight-walled jetty or similar feature that produces a straight line echo on the display.

Select the 1/8 mile range

Adjust the gain setting until a reasonably good image of the jetty echo is displayed.

Adjust the radar range offset to make the jetty echo appear as a straight line on the display, as shown:



If it's not possible to position the vessel near a suitable target, perform a rough set up of the range offset by using the circle at the center of the radar screen as a guide.

If your **Radar** screen has:

- a wide black circle around the center, decrease the radar range offset until it almost disappears.
- no black circle at the center, increase the radar range offset until a black circle just starts to appear at the center.

To change the radar range offset:

1. Display the **Radar** screen and control panel. If you can't see the **Adjust Radar** button, select **Return**.
2. Select **Adjust Radar**, then select **Installation**.
3. Select **Radar Range Offset** then use **Up** and **Down** or the rotary knob to adjust the current setting.
4. Select **OK** to confirm the new setting.

10.15.4 Change the radar bearing alignment

Use the radar bearing alignment to rotate *Radar* image, one degree at a time, so that a known object dead ahead is directly under the vessel's heading marker.

This means that the *Radar* image is aligned with the displayed chart and the compass. An accurate bearing alignment is particularly important when the radar image is overlain onto the chart.

It's best to do this on a page showing a *Chart* screen with the radar overlay On in one pane, and a *Radar* screen in the other pane.

To change the radar bearing alignment:

1. Select **Pages**. If you:
 - don't have a page that shows the *Radar* screen in one pane and the *Chart* screen in the other pane, edit or create a page that shows these two screens. See "Edit a Page" in the Northstar Quickstart Guide.
 - do have a page that shows the *Radar* screen in one pane and the *Chart* screen in the other, select it.
2. Check that the *Chart* screen has the Radar Overlay turned On. If not, turn it on (see "Overlay the radar" in Chart).
3. Select the *Radar* pane so that it becomes the active pane. If you can't see the **Adjust Radar** button, select **Return**.
4. Select **Adjust Radar**, then select **Installation**.
5. The **Bearing Alignment** button shows the current setting. Select the button if you want to change the setting, then use the **Up** and **Down** buttons or the rotary knob to move the radar image one degree at a time, until the radar overlay is aligned with the chart.
6. Select **OK** to confirm the new setting.
7. When you are finished, select **Return**.

10.15.5 Change the parking angle

When an open array radar is turned Off, it continues to rotate for a while before it finally stops. The stop position is known as the parking angle. You can adjust the parking angle so that the open array will stop at your preferred position.

ALWAYS turn the radar scanner to standby before turning the 8000i OFF, or the scanner will keep turning for a while then shut down at some position other than the memorized one.

NOTE: The memorized open scanner parking position has some tolerance after the antenna stops turning due to wind speed and temperature at the time of setting this parameter. There is no mechanical clutch or brake inside the scanner. Please try this action several times for best compromise. After several hundred hours of running time, you may wish to re-check it.

To change the parking angle:

1. Select **Display**.

2. Select **Setup** from the control panel.
3. Select + **Radar** to show a list of radar specification options.
4. Select **EDIT** next to the Radar Open Array Parking Angle option, then enter the new setting using the online keyboard.
5. Select **OK** to confirm the new setting.
6. When you are finished, select – **Radar**.

10.16 Sounder

10.16.1 Change the water temperature offset

If there's a difference between the displayed water temperature and the actual water temperature, you can enter an offset to adjust the water temperature readouts to the correct level. The default offset is 0 (0°).

 To change the offset for the water temperature:

1. Select **Display** from the top of the screen.
2. Select **Setup** from the control panel.
3. Select + **Sounder** to display a list of sounder specification options.
4. The **Water Temperature Offset** button shows the current setting. Select **Edit**, then enter the difference between the displayed water temperature and the actual water temperature. The difference must be within -10 to 10. If you want to check or change the temperature units, (see "Select the temperature units" page 74).
5. The new setting is applied immediately to all the *Sounder* screens.
6. When you are finished, select – **Sounder**.

10.16.2 Change the water temperature averaging time

The water temperature sensor usually displays a readout every two seconds. If you'd prefer to see the readout averaged out over a different time period, use this setting to specify the time period.

 To change the water temperature averaging time:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Sounder** to display a list of sounder specification options.
4. The **Water Temperature Averaging** button shows the current time period in seconds. Select **Edit**, then enter the time period between temperature readouts. This can be a minimum of one second and a maximum of 30 seconds.
5. When you are finished, select – **Sounder**.

10.16.3 Change the sounder's speed offset

If there's a difference between the displayed speed and the actual speed, you can enter an offset to adjust the speed readouts to the correct level. The default offset is 0.

You'll need to obtain an accurate measurement of your vessel's speed. You can use a GPS receiver when you're travelling faster than 5 knots, follow another vessel travelling at a known speed between 5 knots and 20 knots, or make a timed run over a known distance. Best results are obtained in calm conditions where there is minimal current.

 To change the speed offset:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Sounder** to display a list of sounder specification options.

4. The **Sounder Speed Offset** button shows the current setting. Select **Edit**, then enter the difference between the displayed speed and the actual speed.
5. The new setting is applied immediately to all the *Sounder* screens.
6. When you are finished, select – **Sounder**.

10.16.4 Change the sounder's speed filter

The transducer usually displays a speed readout every two seconds. If you'd prefer to see the readout averaged out over a different time period, use the speed filter offset to specify the time period.

 To change the speed offset:

1. Select **Display**.
2. Select **Setup** from the control panel.
3. Select + **Sounder** to display a list of sounder specification options.
4. The **Sounder Speed Filter** button shows the current setting. Select **Edit**, then enter the difference between the displayed speed and the actual speed.
5. The new setting is applied immediately to all the *Sounder* screens.
6. When you are finished, select – **Sounder**.

10.17 Instruments

You can:

- choose how to view the instruments
- rename an instrument panel
- select the color scheme for an instrument panel
- change the layout of the instrument panel
- add a new instrument to a panel
- resize an instrument on a panel
- create an instrument panel
- change the appearance of an instrument
- delete an instrument from a panel
- delete an instrument panel

10.17.1 Create an instrument panel

Use this to create an instrument panel. You can create and store a maximum of 100 instrument panels, to suit different activities.

 To create an instrument panel:

1. Select **Display** then select **Instruments**. If you can't see the **Config** button, select **Return**.
2. Select **Config** from the control panel, then **Panel Config**.
3. Select **New Panel** then enter the name for the new instrument panel using the onscreen keyboard, and select **OK**.
4. Now you can add each new instrument (see "Add a new instrument").

10.17.2 Add an instrument

Use this to add a new instrument to your *Instruments* screen.

New instruments are always shown in the top left corner of the *Instruments* screen, so if you want to locate a particular instrument in the top left corner, add this last of all so that you don't need to reposition it.

The instrument must have been physically installed as part of your 8000i network, and must send and receive data using NMEA or NavBus formats.

To add a new instrument:

1. Select **Display** then select **Instruments**. If you can't see the **Select Panel** button, select **Return**.
2. Choose **Select Panel** then select the instrument panel that you want to change and select **Return**.
3. Select **Config** then select **Add Instrument**. The Select Data Channel box is displayed.
4. The **Active Channels** button shows the current setting. If it's On, the 8000i shows the data channels that are currently receiving that data. (If it's Off, the 8000i shows all the data channels that are available.) Select the button to toggle the Active Channels button **On**, if necessary.
5. Select + next to the data channel that is most appropriate for the instrument that you're adding (for example, if you're adding a water temperature sensor, select + Environment). The 8000i lists the instrument data available from that data channel.
6. Select the instrument data that you want to show, then choose **Next**.
7. The new instrument is shown immediately on the selected *Instruments* screen in the top left corner.
8. You can select the new instrument and drag it to a new location on the instrument panel. The yellow lines help you to align the new instrument with the existing instruments.
9. When you are finished, select **Save Changes**
10. If you want to add another new instrument, select **Add Instrument** and repeat the procedure. Otherwise, select **Return**.

10.17.3 Resize an instrument

You can use this to change the size of an instrument displayed on an instrument panel. The instrument can be set to small, medium, or large.

The default size is medium.

To resize an instrument:

1. Select **Display** then select **Instruments**. If you can't see the **Select Panel** button, select **Return**.
2. Choose **Select Panel** then select the instrument panel that you want to change and select **Return**.
3. Select **Config** from the control panel then select the instrument to be resized.
4. The **Resize Instrument** button shows the current setting. Select the button if you want to change the setting and a drop down list of choices appears.
5. Select the new setting then select **Save Changes** to confirm.
6. The new setting is applied immediately and stays until you change it again.
7. When you are finished, select **Return**.

10.17.4 Rename an instrument panel


You can use this to change the name of an instrument panel.

To rename an instrument panel:

1. Select **Display**, then **Instruments**.
2. Choose **Config**, then **Panel Config**, then **Rename Panel** to display the Rename Panel box.
3. Select the instrument panel that you want to rename.
4. Select **EDIT** then enter the new name using the onscreen keyboard.
5. Select **OK** to confirm the new name.
6. When you are finished, select **Return**.

10.17.5 Delete an instrument panel


You can use this to delete an instrument panel.

 To delete an instrument panel:

1. Select **Display** then **Instruments**. If you can't see the **Config** button, select **Return**.
2. Select **Config**, then select **Panel Config**.
3. Select **Delete Panel** to display the Delete Panel box.
4. Select the instrument panel that you want to delete then select **Delete**.
5. Select **OK** to confirm the deletion. The instrument panel is deleted and the Delete Panel box is re-displayed.
6. If you don't want to delete another instrument panel, select **Cancel**.

10.17.6 Delete an instrument panel

You can use this to delete an instrument panel.

 To delete an instrument panel:

1. Select **Display** then **Instruments**. If you can't see the **Config** button, select **Return**.
2. Select **Config**, then select **Panel Config**.
3. Select **Delete Panel** to display the Delete Panel box.
4. Select the instrument panel that you want to delete then select **Delete**.
5. Select **OK** to confirm the deletion. The instrument panel is deleted and the Delete Panel box is re-displayed.
6. If you don't want to delete another instrument panel, select **Cancel**.

11 Maintenance

CAUTION

Unless specified, clean the parts of the system with a damp cloth or mild detergent. Avoid abrasive cleaners, petrol or other solvents. Do not paint any part except for the cables or removable bezels.

CAUTION

Cleaning a glass LCD display: Clean a glass display with the cloth supplied or with a lint free cloth a fluid for cleaning glass. Rub the display gently so as not to scratch it.

CAUTION

Keep sensors and transducers free of weeds, paint and debris. Do not use a high pressure water jet on a paddle wheel speed sensor because it may damage the bearings.

CAUTION

If you unplug a cable from a unit, fit the blanking caps supplied onto the connector on the unit.

CAUTION

Do not expose any part of a plastic transducer to gasoline or paint solvents as they may weaken the plastic material. Wash only with water and detergent. Through hull and transom mount depth and speed transducers may be coated with a thin layer of antifouling paint. Only use water based antifouling paint.

11.1 Technical support, service and repairs

Northstar products are manufactured and serviced by BNT Marine Electronics.

The product is covered by a warranty which is supplied as a separate document.

If you need technical support, or answers to other questions after you've followed the instructions in this manual, you can:

- contact your Northstar distributor or
- see the inside back cover of the manual or
- visit www.northstarnav.com.

Before you make contact, be sure to have:

- the serial number of the hardware (usually shown on the faceplate of the unit).

When you describe the problem, be as complete and as accurate as possible.

12 **Restore**


12.1 **Restore settings and information**

You can restore the:

- global settings that are stored on the master unit. This option deletes all the changes that you've made and resets all the display units in your 8000i System
- local settings. This option affects only the display unit that you're currently using
- routes, tracks, and waypoints information if the data has been corrupted.

12.2 **Restore processor software**

This function will restore the operating system firstly back to factory defaults the it will apply any software patches that have been installed post factory.

 To restore the system processor:

1. Start the Northstar 8000i System processor
2. Select **Restore**
3. Wait for the Northstar 8000i Installation environment to start. This can take up to five minutes.
4. To restore the system select **Recover / Restore Current Version**
5. To upgrade, select the source listed on the screen (this could be the DVD drive or other mass storage device that the upgrade file is located on).
6. The system will prompt you to confirm. Select **Yes**.
7. The upgrade files will be copied across to the 8000i processor. This will take approximately five to six minutes
8. Once this is done the system will reboot automatically and the files are installed into the system, this should take approximately four to five minutes.
9. A message appears: "System resealed OK to Reboot?" Select **OK**.
10. The system will restart and the Northstar 8000i screen will appear. This will take up to three minutes for the first time following a upgrade.

13 Upgrading the 8000i system

Upgrades to 8000i system can be implemented very easily. Upgrades are available from the Northstar website. The upgrade is a single file that is downloaded and copied to the root of a USB pen drive. The upgrades can apply to all 8000i processors and the following network modules

- Northstar 8000i 1 kW Network Sounder.
- Northstar 8000i Radar (all models)

There two types of upgrade for a 8000i processor.

1. **Software patch upgrade.** This is a quick procedure using a small file that can be downloaded from the Northstar website www.northstarnav.com or from a Northstar dealer. This method will be used to fix known issues or for minor feature additions. Install this on to the system master. Other processors will upgrade off the master unit
2. **System image upgrade.** This is large file that can be downloaded and will be available from Northstar dealers on DVD format. This will erase the current system software and replace with a new version. It will not remove user settings such as waypoints, routes and page settings. This system will be used when major features have been introduced that require changes to the underlying operating system.

⚠ WARNING

A power disconnect during upgrade or installation will corrupt the system completely.

⚠ WARNING

To avoid loss of information such as waypoints etc. always back up your information.

⚠ CAUTION

When upgrading a multi-processor system. Start with the system master. When the master is being upgraded, all other units will be unusable and display a message alerting the user that the master is being upgraded.

13.1 Install Software patch on to a stand alone processor

Software patch: Stand alone processor

1. Down load upgrade file and copy to the root of your USB pen drive.
2. Start the 8000i processor and wait till system has finished loading and is running normally.
3. Make sure you have backed up your user settings and information such as waypoints etc (recommended)
4. Insert Pen drive into a spare USB port on the processor or USB hub connected to the processor.
5. Select **Display**.
6. Select **Installation**

7. Select **Software Upgrade**
8. When the upgrade screen appears select **OK** to continue. or **Cancel**. (optionally use the **Tick** or **X** on the keypad to continue or cancel)
9. When the system has finished copying files you will be prompted to remove the USB pen drive and power down the processor
10. Start the processor for the changes to take effect

13.2 Install a software patch to multi processor system

Software patch: multi-processor system MASTER

1. **Upgrade the Software on the Master Processor First** as outlined above. if you don't want to upgrade the other processors at this stage power them down before upgrading the master.

NOTE: All processors on the network must have the same software version. Once the master has being upgraded, all other units wont function until they have being upgraded

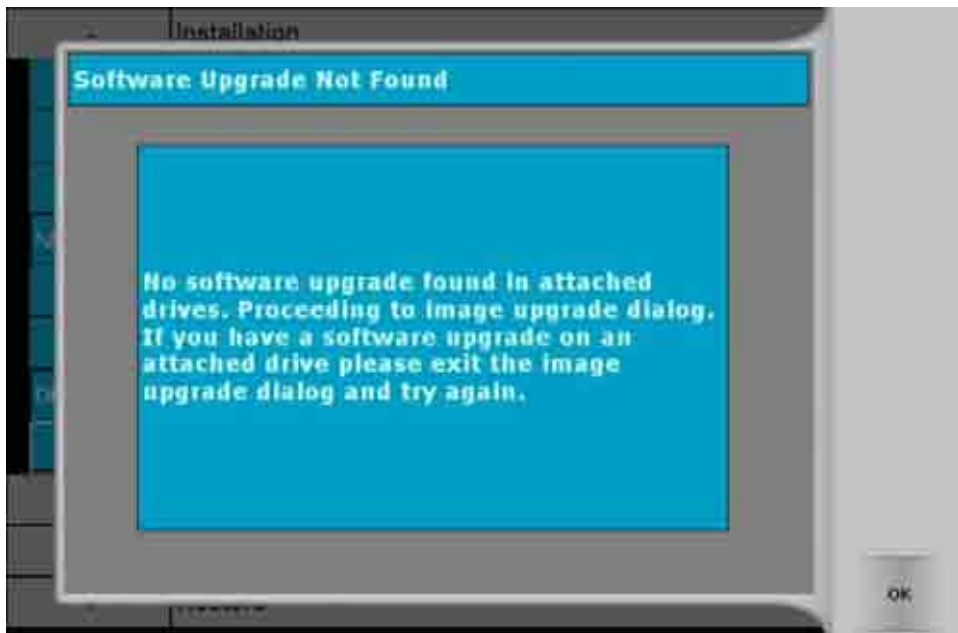
Software patch: multi-processor system Client.

1. Once the master has been upgraded. Power up the client processor. The upgrade will commence automatically. Files will be copied from the master and installed on to the client.
2. If the client processor was running when the master was upgraded it will display am message saying the software is incompatible with the master and prompt you to upgrade. Power down the unit and restart. The upgrade will commence automatically

13.3 Install a system image upgrade

System image upgrade

1. Start the 8000i processor and wait till system has finished loading and is running normally
2. Back up user settings (recommended)
3. Make sure there are no USB pen drives or other USB mass storage devices attached to the system. This can cause problems and possibly result in a mass storage device losing its data
4. Start the 8000i processor and wait till system has finished loading and is running normally
5. Make sure the 8000i DVD is connected to the processor being upgraded. Insert the image DVD (this can be obtained from your Northstar dealer.
6. Select **Display**.
7. Select **Installation**.
8. Select **Software upgrade**
9. Acknowledge that there is no software upgrade available and go to image upgrade page by selecting **OK**



10. Select the location of the Image:

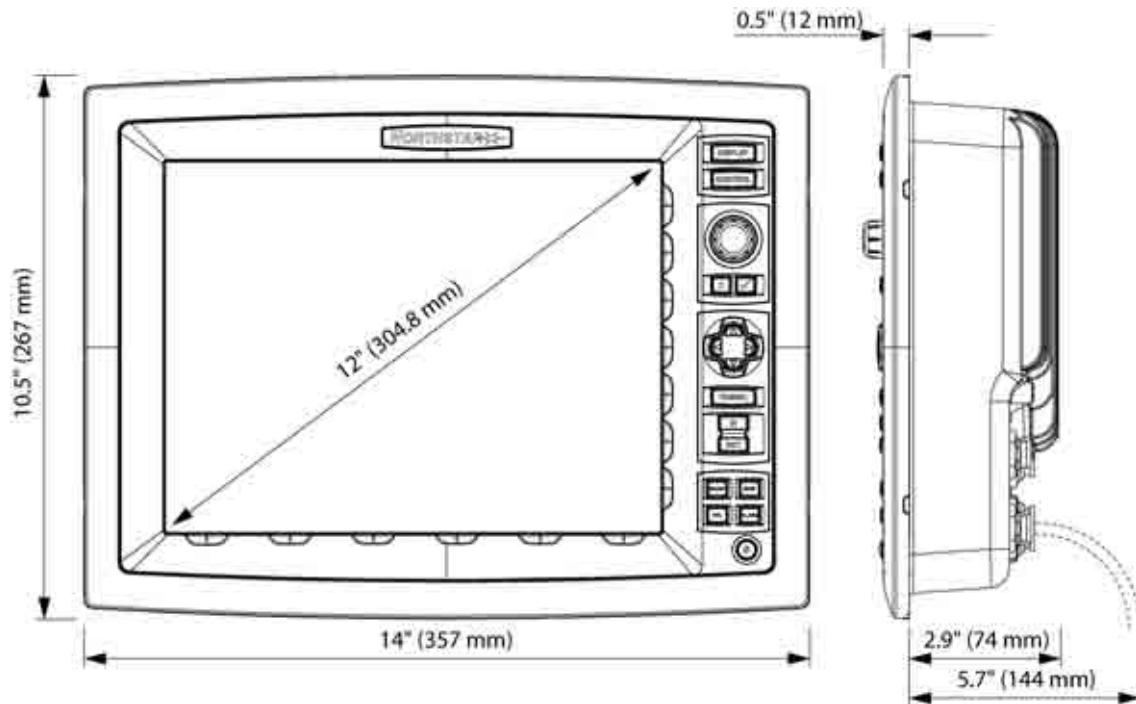


Files will be copied to the processor. This will take approximately ten minutes
The system will restart and start installing the image. This will take approximately thirty minutes.

NOTE: **DO NOT TURN OFF** the system while updating the image

The system will then restart automatically.

14 Specifications



Display	12 inches (0.3 m), 24-bit colour. Resolution: 800 x 600 to 640 x 480. Direct bonded glass improves contrast and eliminates the possibility of condensation.
Touch Screen:	Infrared touch screen
Power:	12 V DC or 24 V DC (max range 10 V - 35 V DC). 33.6 W (see "Power" page 38)
Analog RGB Output	800 x 600 (SVGA) (see "RGB port" page 50)
Control	Touch screen, built in keypad, remote keypad or third party pointing device
USB Interface	USB 2.0 and 1.0, 1.1 compliant. (see "USB" page 48)
NMEA	1 x NMEA in, 1 x NMEA out
Network	1 x waterproof ethernet 100 Base T
GPS	Optional Northstar NS004703 active GPS antenna 8 Pin connector
Audio	via NS004802 Cable 14 Pin Aux connector
Image control	Auto setup, Brightness, Contrast,
Connectors	All waterproof connectors with cable retention. Caps supplied for unused ports
Environmental	5°F to 131°F (-15°C to 55°C). The case and cables are waterproof to IPX5.
Overall dimensions	14" (357 mm) (W) x 10.5" (267 mm) (H) x 2.9" (74 mm) (D))

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NORTHSTAR 

**Northstar 8000i
12" Display Processor**

Installation Manual

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