Sperrymarine

VISIONMASTER FT®

Ship's Manual
Volume 2

(Configuration & Commissioning)

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Preamble

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NOTICE

Northrop Grumman Sperry Marine B.V. have a policy of continuous development. This may lead to the equipment described in this manual being at variance with equipment manufactured after its publication.

Warnings and Cautions

CAUTION! – ANTI-VIRUS PROTECTION

Before connecting an external device such as a USB memory stick, or external media such as a CD or DVD to the VisionMaster PC it is important that the external device/media should first be scanned with a recognised virus and malware scanning program that includes up-to-date virus definitions. Also, the external device/media should be reserved for use with VisionMaster PCs, with use on other computers kept to an absolute minimum.

Care should be taken to ensure that any PCs (e.g. laptops) that have been previously connected to other networks are subject to the same checks as external media prior to being connected to the network on which VisionMaster PCs are connected.

Revision Record

Table 1: Revision Record

Revision No	Issue Date
Issue 1	November 2006
Issue 2	December 2006
Issue 3	April 2008
Issue 4	July 2008
Issue 5	October 2008
Issue 6	June 2009
Issue 7	September 2009
Issue 8	November 2010
Issue 9	June 2011
Issue 10	March 2012
Issue 11	February 2013
Issue 12	April 2014
Issue 13	June 2015
Issue 14	October 2016
Issue 15	June 2017
Issue 16	March 2018
Issue 17	December 2018
Issue 18	January 2019
Issue 19	September 2019
Issue 20	November 2020
Issue 21	April 2022
Issue 22A	November 2022
Issue 23A	March 2023

Preface

HOW TO USE THIS MANUAL

The VisionMaster FT (VMFT) Ship’s Manual is divided into two volumes.

Volume 1 is intended for use by installation and service engineers.

Volume 2 (this manual) covers all configuration, service and commissioning functions carried out at the VMFT display. It also includes configuring a Conning Information Display (CID) and setting up the Total Tide application.

The structure and design of the manual should help you to quickly find the information that you need. Consistent presentation techniques are used throughout the manual.

Volume 2 is divided into the following chapters:

- **Chapter 1 - Configuration**. Details how to plan an Ethernet network system and the configuration procedures for the VMFT system using the configuration tool. The following appendices are included in this chapter:
  - **Appendix A - Configuring a Multinode System**. Describes the specific steps required when configuring a Multi-node system.
  - **Appendix B - Configuring a System for Client/Server Radar**. Describes specific steps required when configuring a system for Client/Server Radar (CSR), also instructions on installing and operating the TightVNC application for Clients and Servers.
  - **Appendix C - Configuring Peripheral Devices**. Includes information on the following peripheral devices:
    - Extra serial ports (external serial port and an internal PCI serial card).
    - How to install and configure the PC NAVTEX Client/Server application.
    - Configuring Moxa Ethernet switches
    - How to install a printer for the VMFT PC (local or network).
  - **Appendix D - BNWAS Setup**. Describes two BNWAS functions: BNWAS Reset and BNWAS Stage 2.
- **Chapter 2 - Diagnostics, Commissioning & Service Mode**. Describes the diagnostics and commissioning functions in the VMFT System menu, and how to access the Service desktop.
  - **Appendix A - C-MAP User Setup**. Describes how to register a C-MAP eToken
- **Chapter 3 - Configuring a Conning Information Display**. Describes how to use the CID designer in the configuration tool. The following appendix is included:
  - **Appendix A - Configuring a Second Monitor**. Describes how to configure a second monitor for CID pages using Microsoft display properties.

- **Chapter 4 - TotalTide Setup**. Describes how to set up the TotalTide application from the Service desktop.
- **Chapter 5 - NSI Service Manual** - includes a pdf of the Network Serial Interface (NSI) User, Installation and Service Manual.

Related Documents

Other publications in the VisionMaster FT series are listed in Table 2 below:

Table 2: Related Documents

Document Title	Document Number
Ship's Manual - Volume 1	65900011V1
ECDIS Bridge Card	65900008
Radar/Chart Radar Bridge Card	65900009
Radar/Chart Radar User's Guide	65900010
ECDIS User's Guide	65900012

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CHAPTER 1

CONFIGURATION

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1 Introduction

The Configuration program provides the service engineer with the tool to commission and service the VisionMaster FT (VMFT) system.

In general, the order of configurable sections as presented by the Configuration tool is designed to be the order in which the engineer should progress through the system configuration.

As features and values are configured the Configuration tool gives a graphical indication of each item's configuration status by means of coloured status buttons in the navigation column, see see "Status Buttons" on page 26.

The Validation window also gives a summary of any validation errors in the configuration, see Section 5.3 *Validation Errors*'. You can check the validation status of your configuration at any time by accessing **Validate** from the **File** menu. see "Validating and Exporting a Configuration" on page 289. Or, by right clicking on a specific invalidated status button, see Section 5.2 *Right Click Options on Configuration Topics*'.

The configuration tool includes a Quick Setup menu. This includes key summary pages that enable a service engineer to simplify and speed up the task of commissioning a basic VMFT configuration without necessarily referencing the more detailed Resources and Applications menus.

2 Planning the Network

Note: *This section is relevant if more than one* VisionMaster FT (VMFT) *processor has been installed, or if a single processor is joining an existing bridge network.*

Planning the Network describes what information needs to be planned and recorded in order to correctly configure the system to communicate across an Ethernet network.

A VMFT system can either be connected on its own network, or be part of a wider network on the bridge. Additionally, the system may use Moxa Ethernet switches supplied by NGSM, or connect to another network infrastructure on the bridge.

Information on configuring Moxa switches.is given in Section 4 *Configuring Moxa Network Switches*' of '*Chapter 1 Appendix C Configuring Peripheral Devices* '. Installation details are given in Volume 1, Chapter 4 '*Installing Consoles & Displays'*, Section 6.2. '*Installation*'.

2.1 System Components

The following components, if present, require configuration with network settings:

- Processor units
- Network switches (Moxas)
- Network Serial Interfaces (NSIs)

There may also be other equipment that can interface to VMFT within a network, but are not supplied by NGSM (for example, CCTVs). The VMFT system will need to be configured with the IP addresses of these devices (and the network settings for these devices may also need to be changed in order to communicate correctly). Additionally, some additional software components will also require configuration with appropriate network settings.

2.2 IP Address Range and Subnets

Each of the components listed in Section 2.1 will need to be assigned an IP address, also all components are required to be on the same subnet.

All equipment should use static IP addresses, **not** DHCP*.

For VMFT installations that are connected only to their own network the recommended IP address range is '192.168.0.1' to '192.168.0.254' with a subnet mask of 255.255.255.0.

* DHCP (Dynamic Host Configuration Protocol).allows systems to join a network by using the name of the computer. A 'DHCP server' gives IP addresses to computers that request one.

For installations connecting to an existing bridge network, a range of IP addresses (and associated subnet mask) will need to be allocated from the authority who manages the bridge network (for example, the ship's network administrators).

Table 1 below lists the location in the VMFT Ships Manual which describes the configuration of IP addresses and Subnet Masks for the system components.

Table 1: Configuring IP Addresses and Subnet Masks

System Components	Reference Location
Processor Units	‘*Chapter 1 Appendix A Configuring A Multi-Node System* ’, ~~Section ’~~
Moxa Network Switches	Volume 1, Chapter 4 ‘*Installing Consoles & Displays* ’, Section 6.2.4 *Modifying the IP Address*’.
NSIs	Section 8.3 *NSI Manager*’ and Chapter 5 ‘NSI Service Manual’.

Table 2 below lists the location in the VMFT Ships Manual which describes the configuration of IP addresses for other equipment..

Table 2: Configuring VMFT with IP Addresses for other equipment

Other Equipment	Reference Location
VDR (Multicast Groups)	Section 6.13 *VDR Configuration*’
NSI	Section 8.3.1 *Configuring an NSI Device*’
Opto 22 Units	Section 8.6 *Opto 22 Manager*’
VEINLAND DCU	Section 8.10.11 *Configuring a TCP Client Port*’ and Section 8.7 *DCU Manager*’
CCTV	Section 8.12.1 *LAN VIdeo Source Group*’
FarSounder Sonar	Section 9.10.17 *Sonar*’

To configure the IP address for the PC NAVTEX software refer to ‘*Chapter 1 Appendix C Configuring Peripheral Devices* ’, Section 3 *Installing and Configuring PC NAVTEX Software*’.

2.3 IEC 61162-450

In 2011 the IEC published the first edition of IEC 61162-450 to standardise sending IEC 61162-1 sentences ('NMEA 0183 messages') over an Ethernet network. This document also defined a method of transmitting binary data over the network which can be used to send display images to a Voyage Data Recorder (VDR), currently VMFT only supports this function to communicate with the VDR.

An amendment to the standard was issued in 2016 and the second edition issued in 2018. Each of these publications has minor differences in the protocol for sending image data to the VDR, and therefore which edition of IEC 61162-450 the bridge network complies to needs to be specified in the VMFT Configuration tool (see Section 6.13 *VDR Configuration*').

Each device on an IEC 61162-450 network that communicates using the protocols defined in that standard needs to be identified using a 'system function ID' (SFI).

SFIs are strings in the format 'ccxxxx', where 'cc' are two characters that correspond to the equipment's talker identifier defined in IEC 61162-1 (e.g. 'RA' for radar or 'GP' for GPS), 'xxxx' is a four digit number in the range '0001' to '9999' ('9999' is reserved for equipment that has yet to be configured).

VMFT systems consisting solely of radars use the identifier 'RA', systems consisting solely of ECDIS nodes use the identifier 'EI', all other systems use the identifier 'IN'.

Like an IP address, these SFIs need to be unique throughout the network. There may be a central list or registry of SFIs on board and it is important that when assigning SFIs to VMFT nodes that the SFIs do not clash, both within the VMFT installation and the wider network.

To configure SFIs, see Section 6.12 *61162-450 VMFT Nodes*'.

Additionally, the particular edition of IEC 61162-450 that the bridge network complies to imposes constraints on the network that need to be adhered to in order to remain IEC compliant.

Table 3 shows the network constraints for IEC 61162-450 editions and amendments related to IP Address range and IGMP Snooping.

Table 3: Network Constraints for IEC 61162-450 Editions

~~S~~	Ed. 1 2011	Ed. 1 Amd. 1 2016	Ed. 2 2018
IP Address Range	172.16.0.1 to 172.31.255.254 with a 16 bit network address mask	172.16.0.1 to 172.31.255.254 with a 16 bit network address mask	Any private network address as defined in ISOC RFC 1918 with any valid network address mask*
IGMP Snooping	Switches must have IGMP snooping disabled, if present	Switches must have IGMP snooping disabled, if present	Switches must support IGMP snooping

*. i.e. 10.0.0.0 to 10.255.255.255 (10/8 prefix), 172.16.0.0 to 172.31.255.255 (172.16/12 prefix) or 192.168.0.0 to 192.168.255.255 (192.168/16 prefix).

3 Setting the IP Addresses for Nodes

This section describes how to set the IP address and subnet mask for a node from within Windows, and also gives guidance on naming nodes and assigning IP addresses for nodes.

3.1 IP Address List

An IP address needs to be allocated for each node from the range allocated to the system as described in Section 2.2 *IP Address Range and Subnets*'

For VMFT installations that are only connected to their own network, it is recommended to reserve a block of IP addresses starting at 192.168.0.1.

In addition to configuring the IP address and subnet mask in Windows, each node includes a node name and a computer name that need to be entered in the Configuration tool, see Section 6.3 *Nodes*'.

It is recommended that the node names reflect either the purpose or location of the node, particularly for radar and ECDIS nodes, configured to provide display images to the VDR, see Section 6.13 *VDR Configuration*'.

For example, Table 4 below lists a multi-node system consisting of two radars, two ECDISs, a Conning Information Display (CID) and radars on the port and starboard bridge wings, with a set of nodes names and IP addresses assigned.

Table 4: Sample Node Name and IP Address Assignement

Node Name	IP Address
Radar1	192.168.0.1
Radar2	192.168.0.2
ECDIS1	192.168.0.3
ECDIS2	192.168.0.4
CID	192.168.0.5
RadarPort	192.168.0.6
RadarStbd	192.168.0.7

It is recommended to set the Windows computer name to match the node name where possible, in order to aid in troubleshooting, also it is advised to keep a record of the node names and IP addresses.

3.1.1 Adding Nodes to the System

In order to group the IP addresses of different equipment types together, if possible it is prudent to reserve additional IP addresses (e.g. in the example above, reserve 192.168.0.8 to 192.179.0.32). That way, if nodes are added to the system at a later date the IP addresses can follow on sequentially.

3.2 Setting the IP Address in Windows

1. Access the Control Panel by entering 'Control Panel' in the Search field in the bottom left corner of the desktop screen, see Figure 1.1.

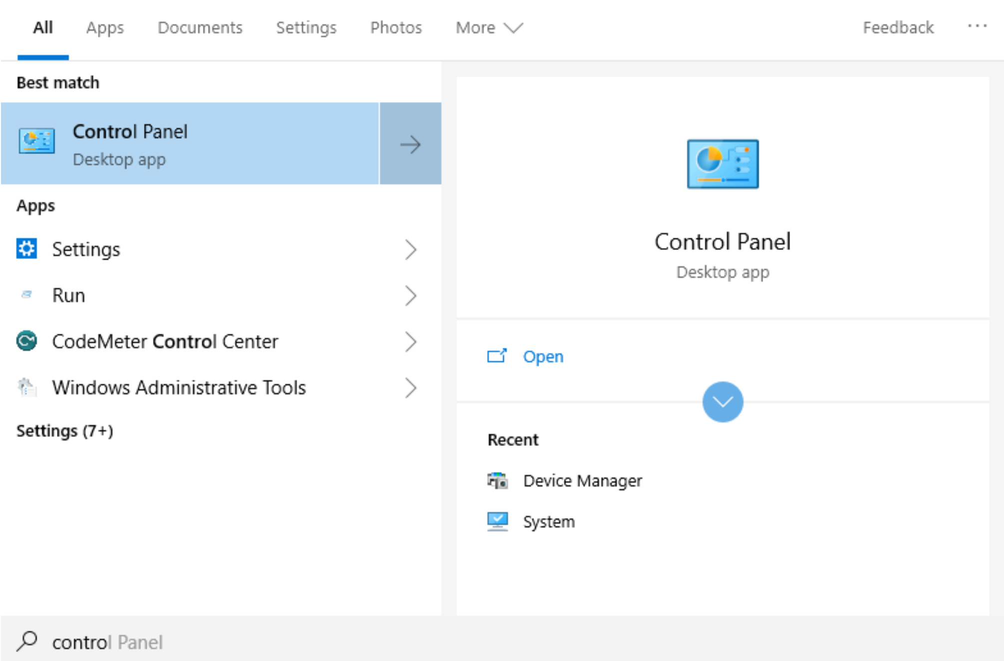


Figure 1.1 Select Control Panel

2. From the Control Panel window double click on View network status and tasks from the Network and Internet group, see Figure 1.2.

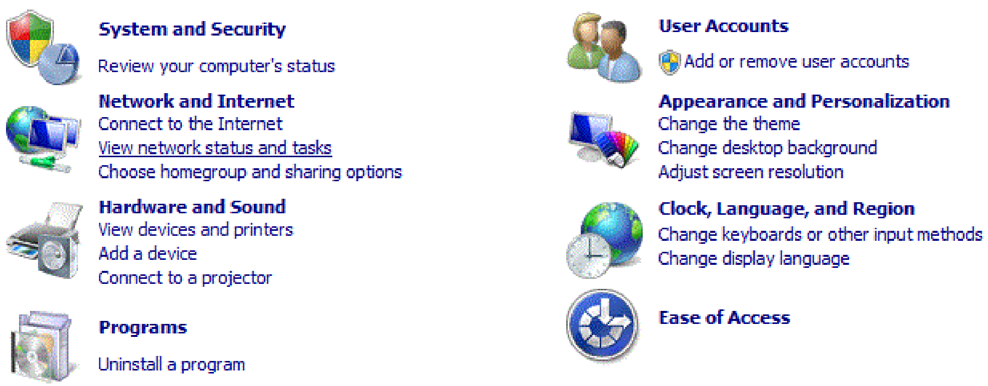


Figure 1.2 Control Panel options

3. The subsequent Network and Sharing Center window shows basic network information and set up connections, see Figure 1.3.

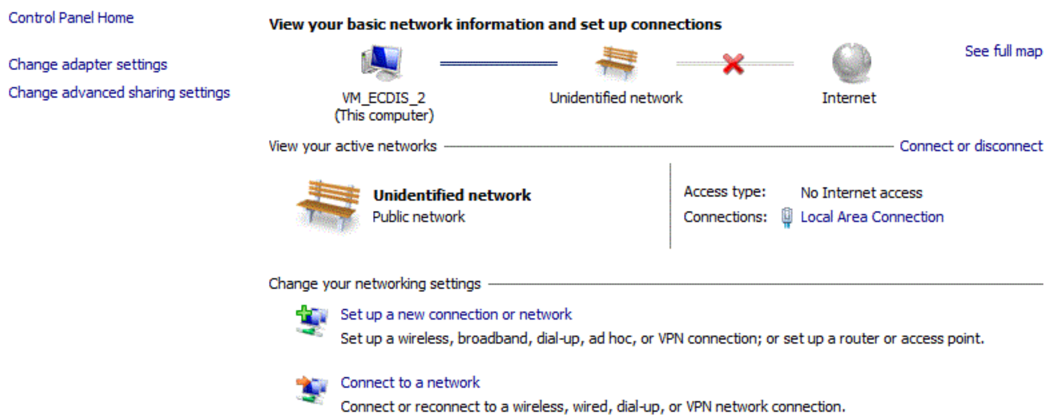


Figure 1.3 Network and Sharing Center

4. Providing a LAN cable has been connected between the VMFT PC and device select the 'Local Area Connection' link in 'Connections', a Local Area Connection Status window appears showing connection data, see Figure 1.4.

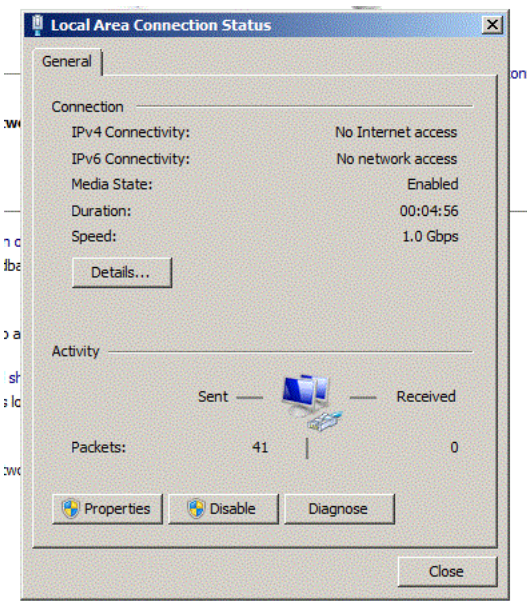


Figure 1.4 Local Area Connection Status

5. From the Status window click on the Properties button a Local Area Connection Properties popup window appears, see Figure 1.5.

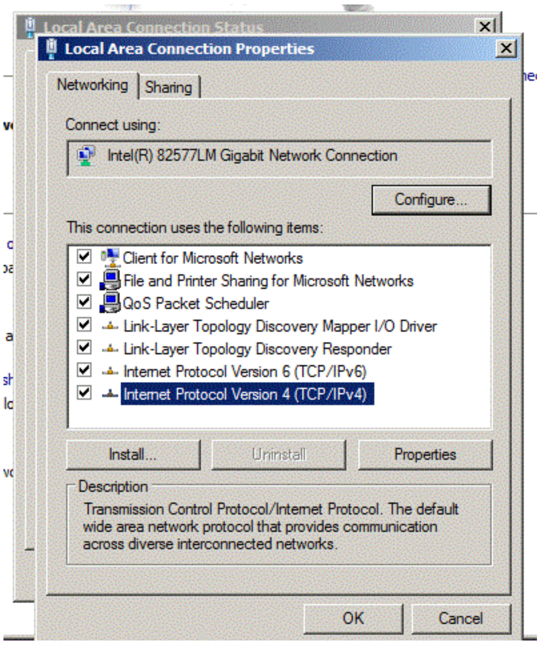


Figure 1.5 Local Area Connection Properties

6. From the Properties window select Internet Protocol Version 4 (TCP/IPv4) connection and click the Properties button, a Properties popup window for the connection opens, see Figure 1.6.

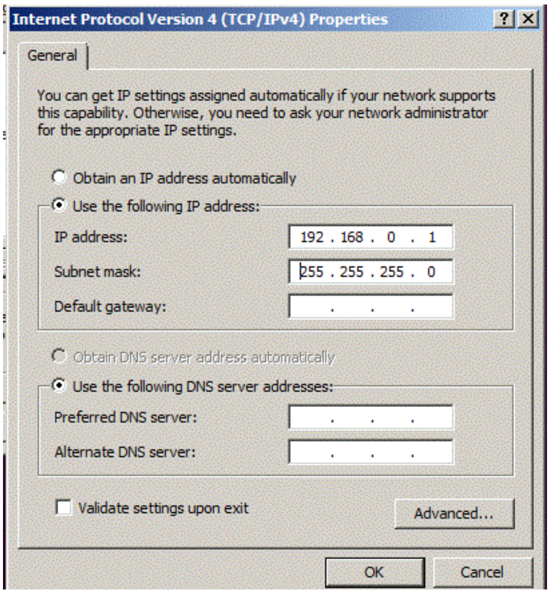


Figure 1.6 Internet Protocol Version 4 (TCP/IPv4) Properties

7. Tick the Use the following IP Address: radio button, the IP Address area becomes active.
8. Enter the IP address and subnet mask for the node (Section 3.1 *IP Address List*). Other fields in the window should be left blank. Click the OK button.
9. Repeat the process for each node on the system.

4 Accessing the Configuration Tool

To access the VisionMaster FT (VMFT) configuration tool do the following:

1. In VMFT log in as a service engineer, for details refer to Section 3.1 *Login*' in Chapter 2 '*Diagnostics, Commissioning & Service Mode* '.
2. Navigate to **Shutdown** in the System menu and click on the **Service Mode** button. The VMFT application shuts down and MS Windows opens with **OperatorMode** and **ServiceMode** icons displayed.
3. Double click on the **ServiceMode** icon, enter a valid password and click the forward button. The Windows Service desktop appears.
4. Double click on the **Config Tool** shortcut icon on the desktop. The VMFT Config Tool Launch window appears. This window shows the current system version number, copyright information and a status bar displaying the configuration loading status.

Figure 1.7 Config Tool Launch Window

When opened, the Configuration window comprises an active title line, and a toolbar which includes File, View and On-Screen Keyboard drop down menus.

To open the existing configuration file go to **File/Open** and from the **Open Saved Config** window select '**config.cfg**' and click **Open,** see Figure 1.8. The current configuration will open in the Configuration Tool.

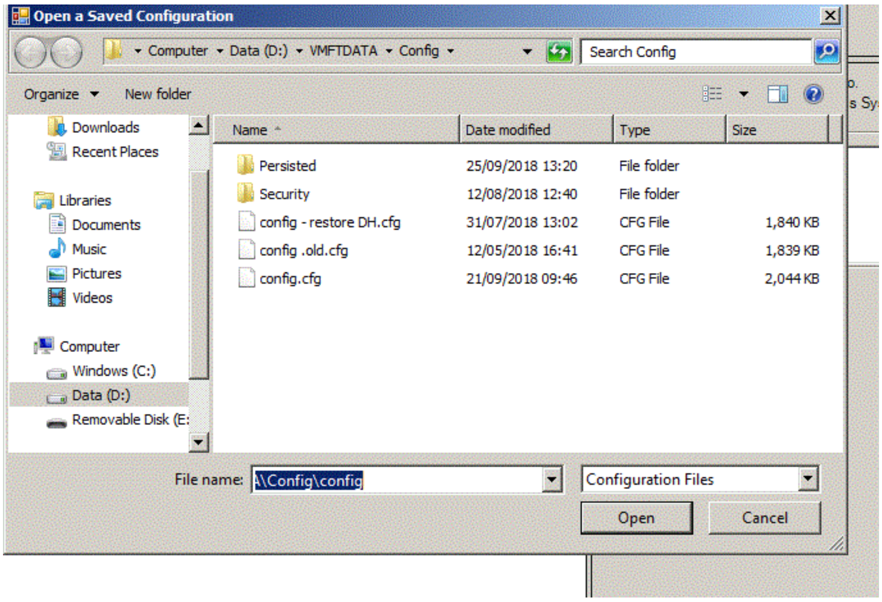


Figure 1.8 Open Saved Configuration

The main area of the window is divided into two size-editable columns; the left column contains the configuration navigation tree, and the right column is the main content area. Below the toolbar there is a Search facility.

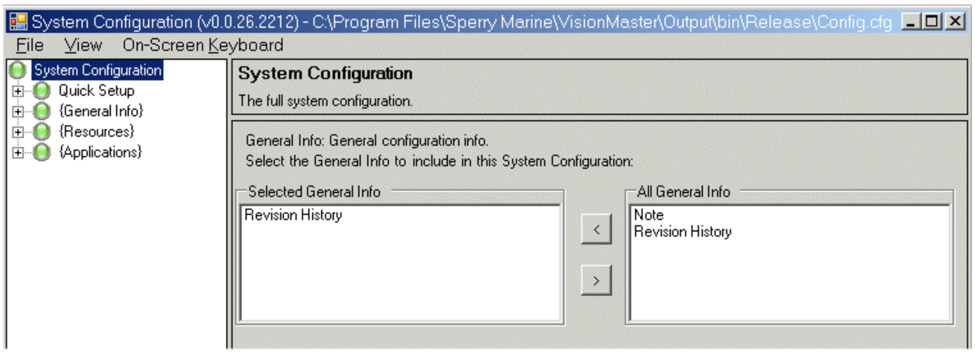


Figure 1.9 Configuration Tool Window

4.1 Changing the Login Status

When you access the configuration tool the system automatically opens the application in Service mode. To change the current login status (for example, from 'service' to 'developer'):

1. Click on the **File** drop down menu and select **Log In**. The Configuration Log In window appears.

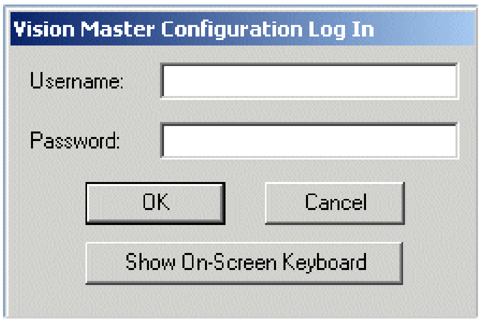


Figure 1.10 Login Window

2. Enter a valid user name and password in the respective fields and click the **OK** button. The system authenticates the data against a database of known users and provides user authentication, independently on each node of the system.
3. If the data entered is authenticated the configuration options listed in the navigation tree may change dependant on the operator's access level.

4.2 Accessing the On-Screen Keyboard

If you require access to a screen keyboard in order to enter data click on the **On-Screen Keyboard** drop down menu and select **Show**. A keyboard appears below the Configuration window.

Figure 1.11 On -screen Keyboard

4.3 Selecting the correct Configuration File

To select the configuration file which matches the product type you are using (for example, a two ECDIS node configuration), access the Config Picker tool on the Service desktop as described below.

4.3.1 Using the Config Picker Tool

1. From the Service desktop double click on the **ConfigPicker** icon. The Config Picker popup window appears, see Figure 1.12.
2. The Config Picker window lists the following four configuration groups in a navigation tree: Multinode, Production, Single Node and Training. Navigate to the required configuration by clicking on the group's **+** button (for example, if your system is a multi node total watch then open **MultiNode** and select **Multinode TotalWatchConfig.cfg**), see Figure 1.12.

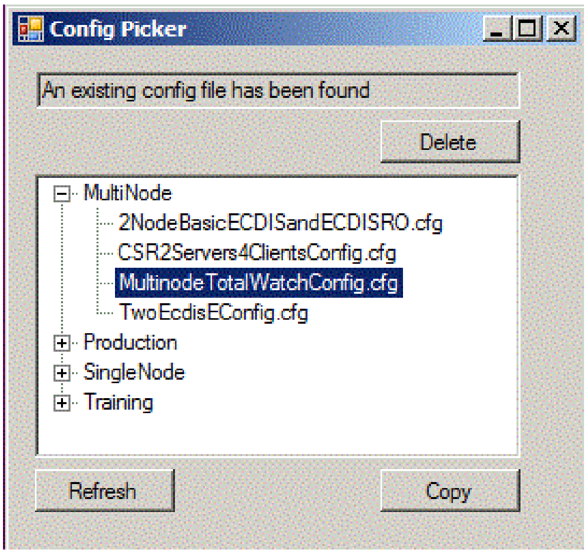


Figure 1.12 Config Picker Window

3. With the required configuration file selected click the **Copy** button. The configuration file is copied to the D: drive and automatically saved as 'config.cfg'.
4. The Delete button deletes the current 'config.cfg' file, NOT the selected file in the navigation list.
5. To close the navigation tree in the Config Picker click the **Refresh** button.
6. To close the Config Picker tool click the **X** button at the top right of the window.

4.4 Saving an Opened Product Configuration

After a product configuration has been copied from the Config Picker tool , any changes made to the configuration file must always be saved as config.cfg on the D: drive. It is from this file that the VisionMaster application will subsequently read the configuration.

Whenever a configuration is saved a Validation Errors popup warning appears prompting to enter information about the installation, see Figure 1.13.

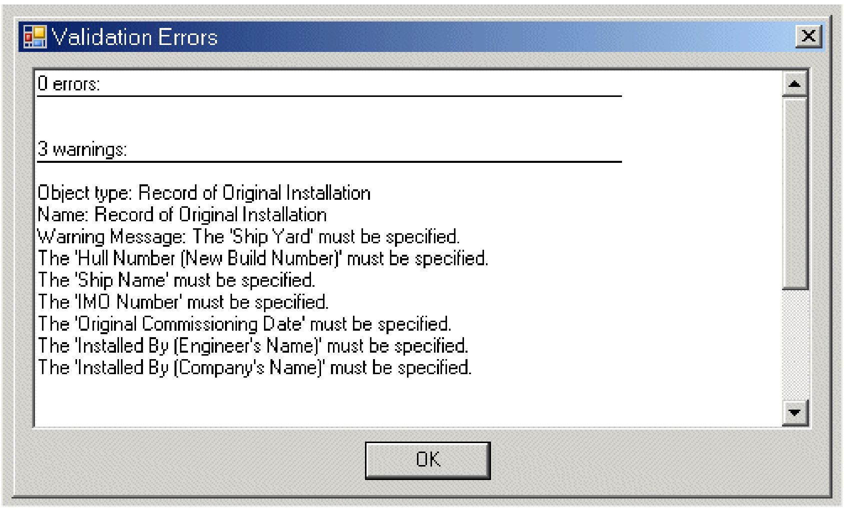


Figure 1.13 Validation Errors for Installation

Information about the installation may be entered as described in Section 6.1 *Record of Original Installation*'. If no information is entered the warning window can be closed by clicking the **OK** button. The VMFT application will open as normal but the warning error will remain when the configuration is re-opened.

4.4.1 Saving a Configuration to an External Device

After saving the configuration, it is advisable to also save the file to an external device such as a memory stick. This will enable you to transfer the system parameters in the configuration file to new equipment in the event of hardware modules requiring replacement.

4.5 Synchronize Files

The Synchronize Files option is used in a multi-node system to compare the currently loaded configuration file to the corresponding files on each node. For details refer to Section 7 *Changing the Current Configuration*' in '*Chapter 1 Appendix A Configuring A Multi-Node System*'.

5 Viewing Options

When a valid configuration file has been opened the navigation tree displays the following main menu items:

- Quick Setup
- General Info
- Resources
- Applications

To access their sub-menu functions either click on the **+** button to the left of the menu items, or click on the **View** drop down menu and select **Expand All**, all the topics relevant to the configuration file are displayed in the navigation tree.

To return to displaying the main menu items only, select **Collapse All** from the View drop down menu.

To search for a specific topic in the configuration use the search facility, as described in Section 5.4 *Search Configuration*'

5.1 Status Buttons

Each configuration topic in the navigation tree has an accompanying status button to the left of the function. When a topic's configuration status is valid the button colour is displayed as green. If a configuration setting is invalid, either because the topic has not been correctly configured, or the configuration setting made is not available, then the topic's status button is displayed as red and all it's hierarchical sub-menu functions up to System Configuration are displayed as orange.

Figure 1.14 below shows an example where **Own Ship Characteristics** has not been correctly configured.

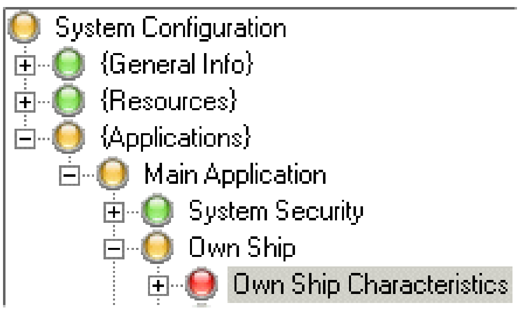
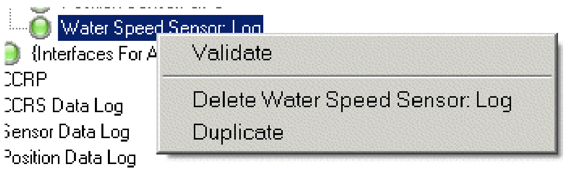


Figure 1.14 Status Buttons

If a configuration has warning errors present (see Section 5.3.1 *Warning Messages*') the topic's status button will be displayed in orange with it's hierarchical sub-menu functions also displayed as orange.

5.2 Right Click Options on Configuration Topics

The following options may available when you right click on configuration topics (depending on the selected topic).



- Validate
- Delete
- Duplicate

If a topic forms part a standard default configuration then only the **Validate** will be available. Using this option enables an individual topic to be validated, in addition to validating the whole configuration, see Section 10.1 *Validating a Configuration*'.

Topics that have been added to a configuration may be deleted or duplicated, in addition to being validated.

Selecting Delete removes the selected topic from the configuration file. Duplicate creates a topic identical to the selected topic and is used where a similar topic to the existing one is required.

5.3 Validation Errors

The configuration tool generates two types of validation error message; Errors and Warnings.

5.3.1 Warning Messages

Warning messages are generated where a configuration setting varies from the actual setting recommended by Sperry Marine. An example of a warning validation error is shown in Figure 1.15.

When a warning is generated, the topic's status button is displayed in orange. To access the error message, either select **Validate** from the File drop down menu, or right click on the topic and select **Validate.** A Validation Errors window appears listing the reasons for the warning message and recommendations to rectify it.

Note that, unlike an error message, a warning error does not generate an invalid (red) setting. Therefore a configuration containing warning errors may be saved and the VisionMaster application will open as normal, but any warning errors will remain when the configuration is re-opened.

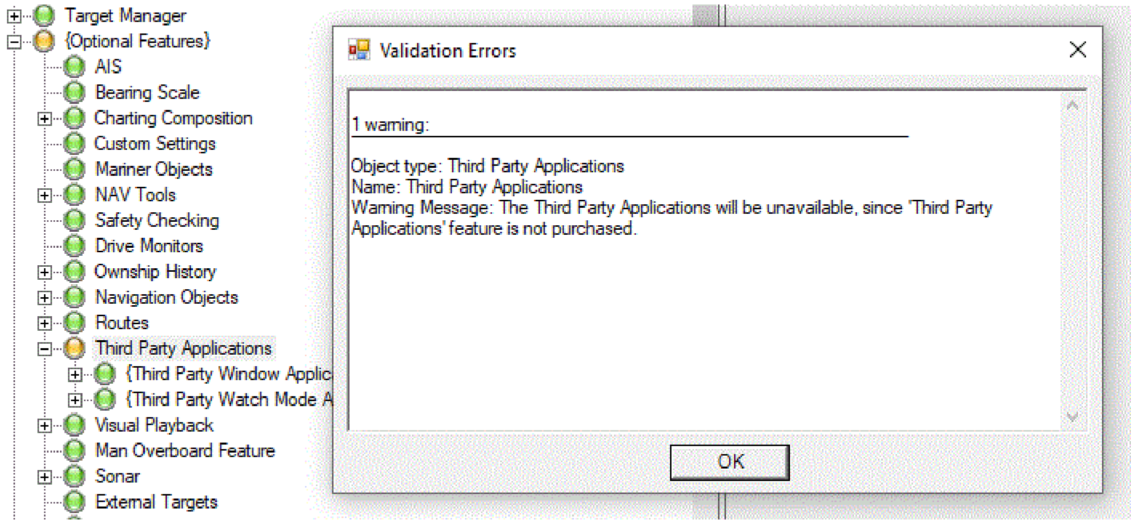


Figure 1.15 Typical Warning Validation Error

5.3.2 Error Messages

Error messages are generated when a selected object type has not been configured, or an incorrect setting has been entered in an object's configuration window.

When an error message is generated the status button of the unconfigured object appears red and the Validation Errors window details the reasons for the error message.

Note: *If your configuration includes one or more error messages when the Config tool is closed, the VisionMaster application will not run when the system is re-started.*

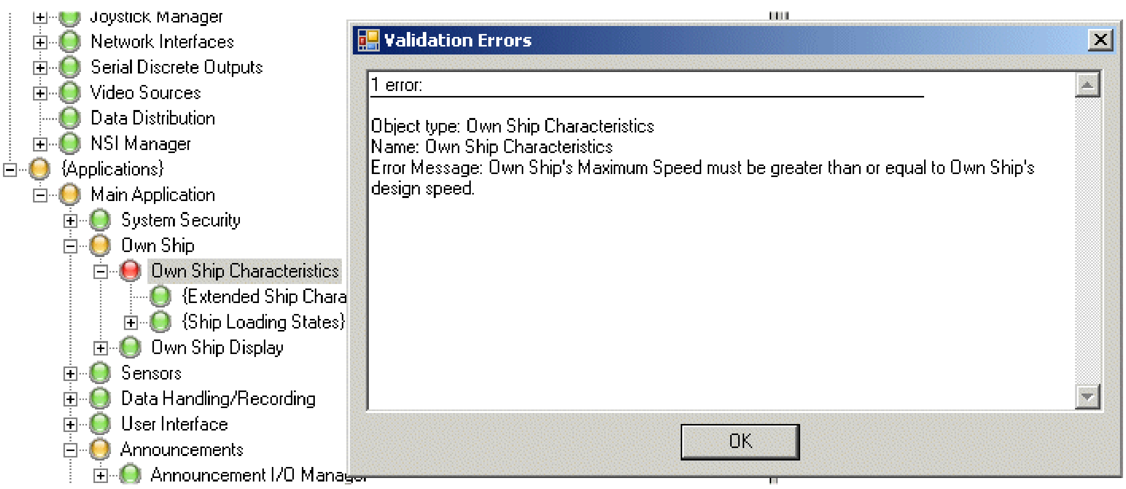


Figure 1.16 Typical Error Message

5.4 Search Configuration

The configuration tool includes a search facility that enables the user to quickly access a topic or function.

To use the Search facility:

1. Move the cursor into the Search field and click the left button, the on-screen keyboard appears.
2. Enter the required search using the keyboard and when complete press the Enter key. The program searches the configuration database and displays the topic in the main window. The topic folder is displayed in the field below and the folder also highlighted in the navigation tree.

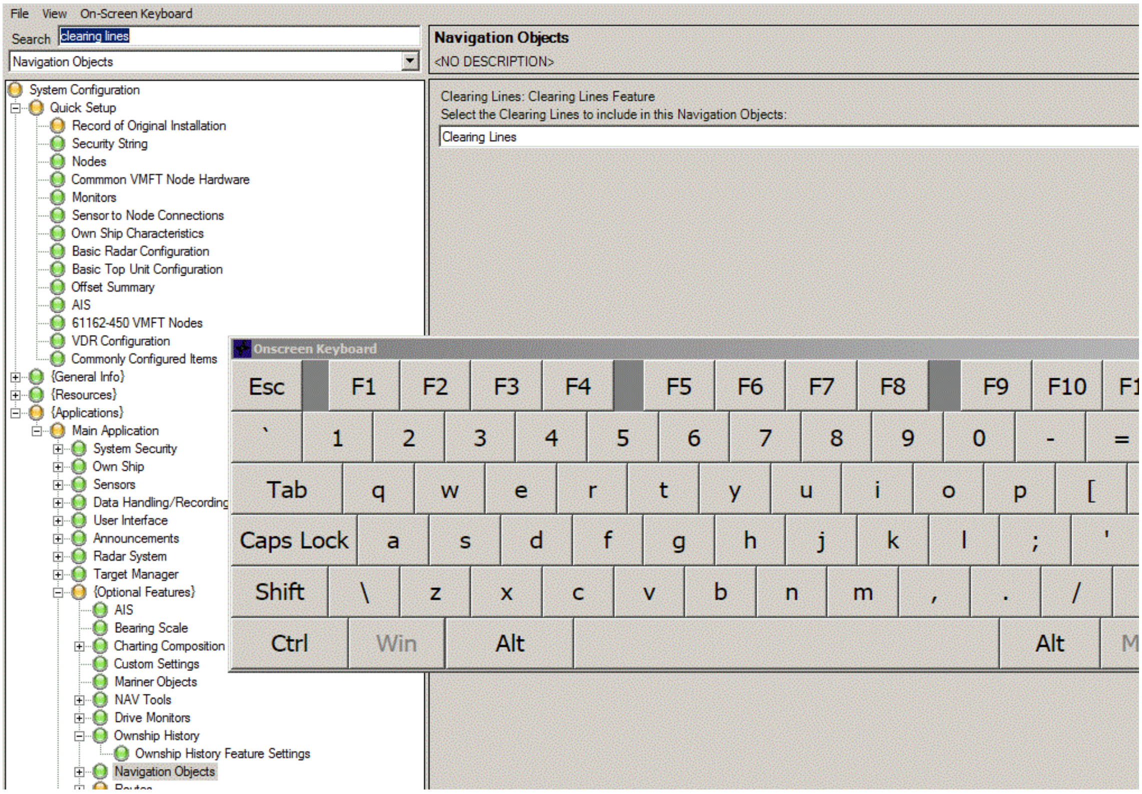


Figure 1.17 Search Results

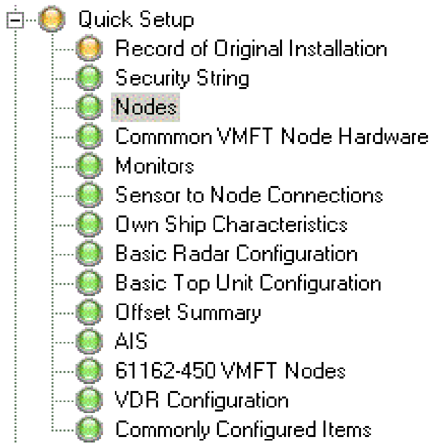
6 Quick Setup

The Quick Setup includes key summary pages that enable a service engineer to simplify the task of commissioning a basic VMFT configuration.

The pages included in Quick Setup are either summaries based on more detailed configuration pages found in the Resources or Applications menus, or in certain cases (for example, Monitors) a replication of the same page in the advanced configuration tool.

The following configuration pages are included in the Quick Setup and are described in the subsequent sub sections:

- Record of Original Installation
- Security String
- Nodes
- Common VMFT Node Hardware
- Monitors
- Sensor to Node Connections
- Own Ship Characteristics
- Basic Radar Configuration
- Basic Top Unit Configuration
- Offset Summary
- AIS
- 61162-450 VMFT Nodes
- VDR Configuration
- Commonly Configured Items



6.1 Record of Original Installation

The Record of Original Installation page includes a list of miscellaneous information that can be entered about the ship installation, see Figure 1.18.

If information is not entered, or only partly entered, a warning message is generated. The configuration can be saved, and the VMFT application opened but the warning error will remain when the configuration is re-opened.

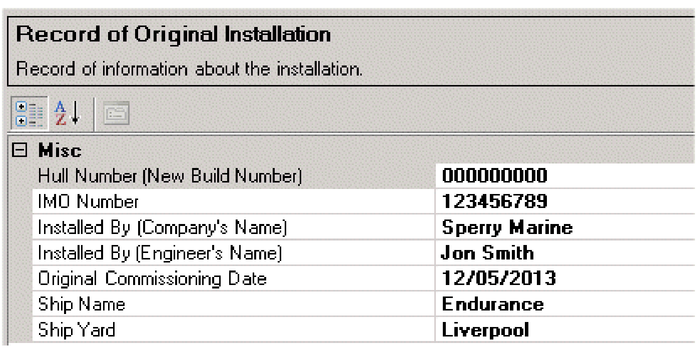


Figure 1.18 Record of Original Installation

6.2 Security String

A security string is required for each node on a multi-node system and defines the system level authorisation parameters available for that node and a list of any optional features that have been purchased by the customer.

Note: *If optional features that require purchasing are not defined in the security string then they will not appear in the VisionMaster application, even if the features have been successfully configured.*

The Security String window is replicated in the Main Application area of the configuration under 'System Security'.

A security string is provided by your VMFT supplier and will, in most circumstances, be automatically entered when the system is commissioned.

If a security string is required to be entered by a service engineer:

1. Insert the security device provided (sometimes known as a dongle) into a USB port on the PC and open **Security String** from the Quick Setup list. From the toolbar access the **On-Screen Keyboard**, enter the security code in the **Security String** field, and click the **Ent** key on the on-screen keypad.
2. When a valid alpha/numeric code has been entered the window displays auto-generated information derived from the code, including a five digit PIN, the number of nodes in the system with each product type, and purchased features information (if applicable).

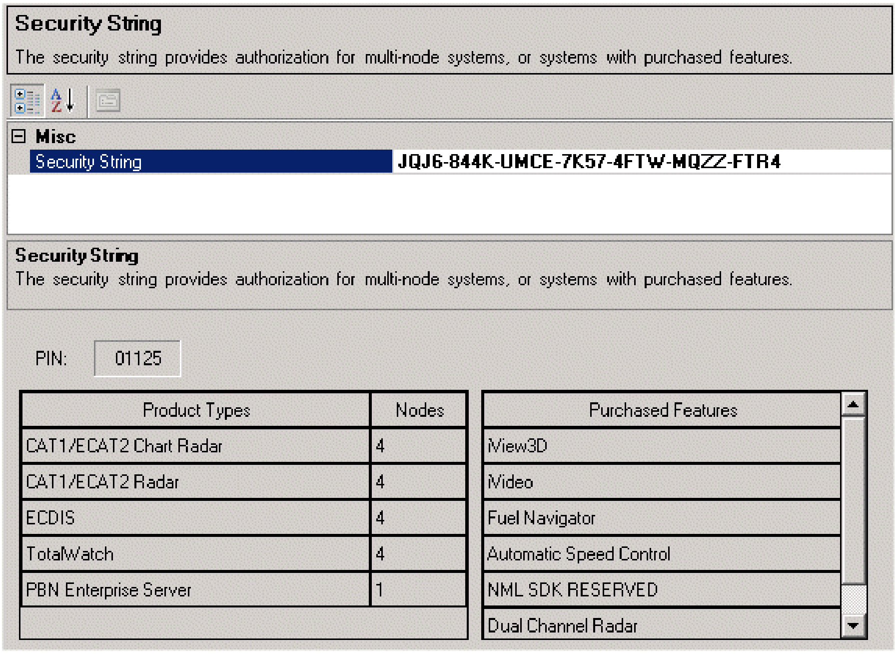


Figure 1.19 Security String window

When a security string has been validated each node on a multi-node system can be separately configured, see Section 6.3 *Nodes*'.

6.3 Nodes

The Nodes window lists all nodes assigned to a multi-node system, the Windows network host name, product type and processing participation.

Configuring nodes for a Client/Server Radar (CSR) system requires different settings. For information refer to Appendix B '*Configuring a System for Client/ Server Radar'*.

The Nodes window is replicated in the Resources area of the configuration.

The following configuration settings can be made from the Nodes window:

- Specify the number of nodes on the system. If the system is a standalone this will be set to 1.
- Change the base node name from the default.
- Change the network host name from the default.
- Select the product type (e.g. Total Watch, Cat 1 Chart Radar, ECDIS etc.).
- Change the processing participation from the default of Normal.

The up/down buttons and delete button to the right of the Display Name may be used when configuring a multi-node system.

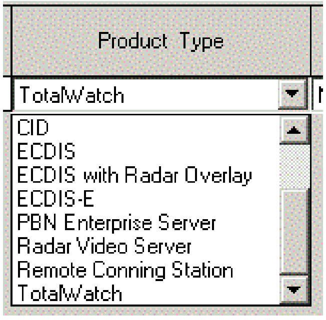
6.3.1 Setting up Nodes

1. Open the **Nodes** topic from the Quick Setup list.
2. To specify the number of nodes on your system, click on the **Number of Nodes** drop down arrow and from the list select the total number of nodes (maximum 32). Nodes are added or subtracted to the **Display Name** list with the base node name and number auto generated.

Note: *Each node must have a Security Device attached to the PC. The system will compare the allowed number of nodes to the actual number of nodes in the system. If the number of nodes exceeds the limit set in the Security String an Authorization Failure alarm is given. For a list security devices that can be used on VMFT nodes refer to Section 6.3.2 Security Devices'.*

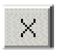
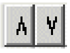
3. To change the node name from the default click in the **Base Node Name**: field, delete the default name, enter a new name and click on the **Auto-Generate Names** button. All the node display names on the system are changed accordingly.
4. Enter the windows network host name assigned to each PC on the system (this is the Computer Name shown in the Control Panel/System Properties). Note that the windows host names entered must be no more than 15 characters.

5. Click on the **Product Type** drop down arrow and select from the products list. If required, repeat the process for each node.



Note: *The Product Types selected must match the number of product types authorised by the Security String. If the product types do not match a Validation Error window will appear listing the reasons for the error.*

The window includes the option of deleting a line, or moving a node up or down the list.

6. To delete a node from the list click on the delete button.  The line is initially shown blank, after a few seconds the screen refreshes to display the list with the line removed and the Number of Nodes reduced accordingly.
7. To move a node line up or down the list, click on the up or down button to the right of the table.  The screen refreshes and the node line is moved up or down the list, depending on the button pressed.
8. The Processing Participation column enables the availability of each node for general system wide processing to be configured. The setting defaults to **Normal**, which means nodes are available for any general processing. The selections available from the Processing Participation drop down arrow are as follows:
   - **When Necessary** - this option may be selected for server nodes when the system is a client/server network configuration. It should not be selected for a general multi-node system.
   - **Unavailable** - never available for general processing. This would include nodes that are often turned off or disconnected from the system, such as laptops, or Remote Conning Station nodes in the captain's cabin where processing participation is always selected as Unavailable.

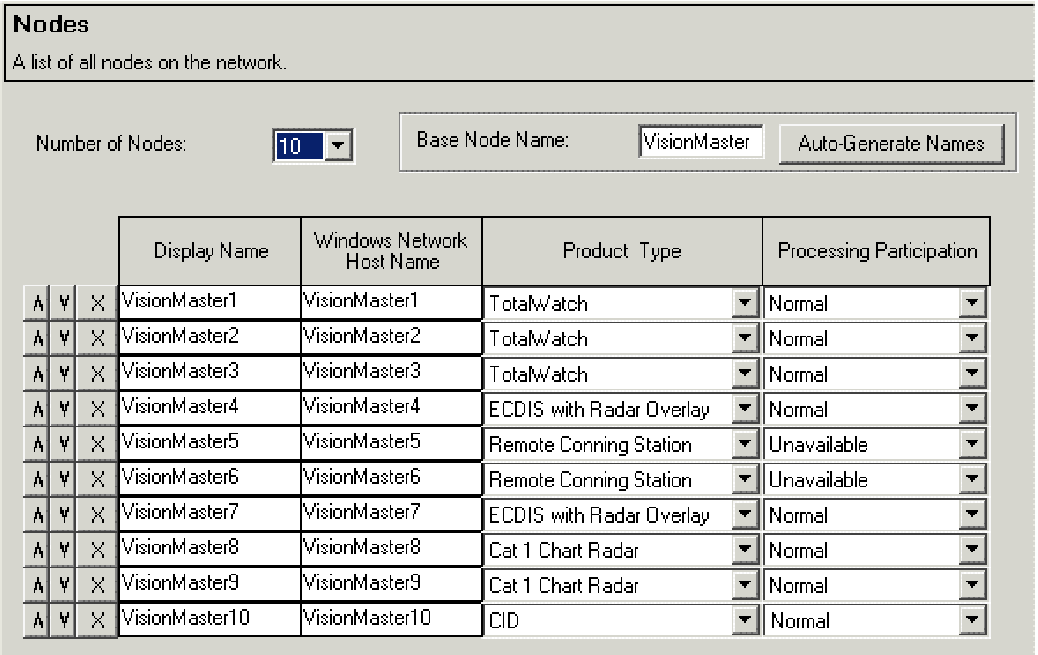


Figure 1.20 Nodes Window for a Multi-Node System

6.3.2 Security Devices

Security devices (product type identifiers) are provided as a 32SDV (32k memory size),32SDR (72k memory size) or 32SDT (80k memory size) followed by a three-digit number, as defined below:

- 001 for CAT 1 Radar (also Enhanced CAT 2 Radar)
- 002 for CAT 1 Chart Radar (also Enhanced CAT 2 Chart Radar)
- 003 for ECDIS
- 004 for ECDIS with Radar Overlay
- 005 for Multi-node workstation
- 006 for Total Watch (CAT 1 Chart Radar and ECDIS)
- 008 for CAT 2 Radar
- 010 for Training mode

The security devices listed above are for individual workstations, with the configured product type for each workstation matching the security device fitted. The exception being 005 (multi-node workstation) where the product type selected in the configuration determines the mode of operation.

6.4 Common VMFT Node Hardware

The following common hardware items that may be associated with VMFT nodes are shown in a table that also lists all the nodes on the system:

- PCIO
- Control Panel
- Buzzer Connection
- Scan Converter board (SC3 or SC4)

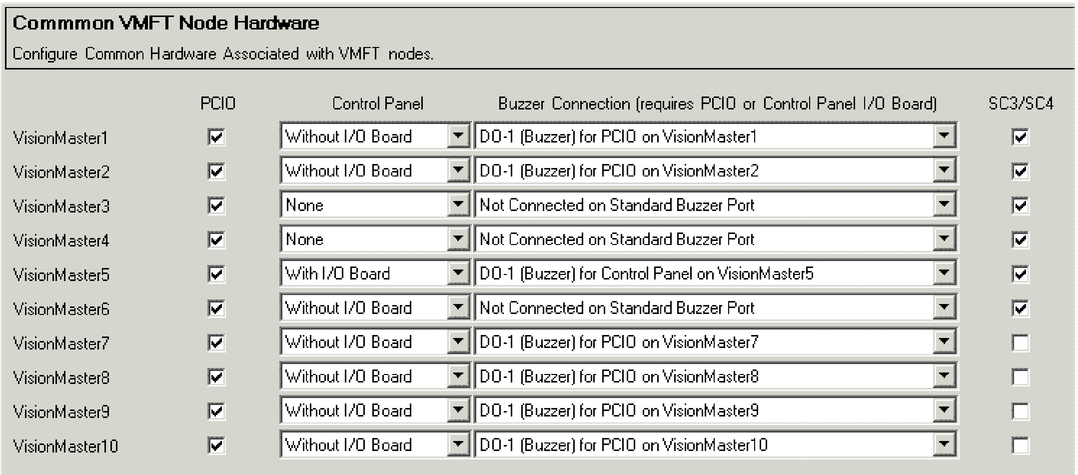


Figure 1.21 Common VMFT Node Hardware

6.4.1 Configuring Node Hardware

1. Tick the **PCIO** check box if the node has a PCIO board connected. For details on a PCIO see Section 8.1 *PCIO Board Manager*'.
2. A control panel attached to a node will be available as one of the following variants:
   - **Without I/O Board** - a basic control panel without an I/O board. When selected a serial control port for the control panel is automatically added to the I/O Port Manager list, see Section 8.10.4 *Control Panel Serial Control Port*'.
   - **With I/O Board** - a control panel that includes an I/O board, usually intended for nodes that do not include a PCIO board. When selected a serial port for the control panel is automatically added to the I/O Port Manager list, see Section 8.10.5 *Control Panel Serial Port*'.
3. Select the required option for each node from the drop down list. If the node does not include a control panel select **None**. For more information on configuring a control panel see Section 8.2 *Control Panel Manager*'.

4. The selections made for buzzer connection are based on the following criteria:
    - Nodes that are connected to a PCIO will have a discrete output selected (digital or relay) on the PCIO for the buzzer. In this case **DO-1 [Buzzer] for PCIO** must be selected from the Buzzer Connection drop down list.
    - Nodes that are connected to a control panel with I/O board will have a discrete output for the buzzer on the I/O board. In this case **DO-1 [Buzzer] for Control Panel** must be selected from the Buzzer Connection drop down list.
    - Certain nodes (for example, a CID) may not require a buzzer. In this case **Not Connected on Standard Buzzer Port** must be selected.
5. Nodes that are connected to a PCIO and include radar functionality will include an interface between the PCIO and the PC. The interface is a scan converter (SC) board, which is housed in the PC. Tick the **SC3/SC4** check box for all the nodes that include an SC board. For further information on SC boards, see Section 9.8.2 *Board Manager*'.

6.5 Monitors

The Monitors window enables the monitor settings for each node to be configured.

The following node specific settings can be made from the Monitors window:

- **Headless Node -** this option must <u>only</u> be selected for a Server node on a Client Server system. For details refer to Section B.2.1.2 *Setting up Monitors*' in Appendix B '*Configuring a System for Client Server Radar*'.
- **Monitor Type** - select the size of your monitor (shown in inches with width/height millimetres in brackets). When the monitor type has been selected the picture height and pixel width/height are automatically selected.
- If the monitor type is wide screen format (1920x1200 and above) the **CID Side Panel** check box is automatically ticked. Note that the CID side panel check box cannot be selected for non-wide screen format monitors.
- If **Custom** or **Other Type** has been selected from Monitor Type then the picture height in millimetres and pixel width/height may be changed.
- **Monitor ID** - select the numeric ID for each monitor. On a multi-node system all monitor IDs default to 1.
- **Monitor Communications Port** - select the communications port for the monitor. Each node requires a specific port, this is usually the predefined IO setting for monitors (Hatteland/Melford Monitor), see Section 8.10.2.2 *Selecting Pre-Defined IO Settings*'.

Configuring monitors for a Client/Server Radar (CSR) system using Panel PCs requires different settings. For information refer to Appendix B '*Configuring a System for Client/Server Radar*'.

Monitors
Configure the monitor settings for each node in the system. For a wide aspect monitor the ratio Width/Height >= 1.6.

	Node	Monitor Type	Picture Height (mm)	Width (pixels)	Height (pixels)	Monitor ID	CID Side Panel	Monitor Communications Port
	VisionMaster1	25.5" (1920x1200)	344	1920	1200	1	☑	VisionMaster1 PCIO TSCF/TSCM for Hatteland ...
	VisionMaster2	25.5" (1280x1024)	344	1280	1024	2	☐	VisionMaster2 PCIO TSCF/TSCM for Hatteland ...
	VisionMaster3	25.5" (1920x1200)	344	1920	1200	3	☑	VisionMaster3 PCIO TSCF/TSCM for Hatteland ...
	VisionMaster4	19.0" (1280x1024)	301	1280	1024	4	☐	VisionMaster4 PCIO TSCF/TSCM for Hatteland ...
	VisionMaster5	23.1" (1280x1024)	353	1280	1024	5	☐	VisionMaster5 PCIO TSCF/TSCM for Hatteland ...
	VisionMaster6	23.1" (1280x1024)	353	1280	1024	6	☐	<None>
	VisionMaster7	23.1" (1280x1024)	353	1280	1024	7	☐	VisionMaster7 PCIO TSCF/TSCM for Hatteland ...
	VisionMaster8	23.1" (1280x1024)	353	1280	1024	8	☐	VisionMaster8 PCIO TSCF/TSCM for Hatteland ...
	VisionMaster9	23.1" (1280x1024)	353	1280	1024	9	☐	VisionMaster9 PCIO TSCF/TSCM for Hatteland ...
▸	VisionMaster10	23.1" (1280x1024)	353	1280	1024	10	☐	VisionMaster10 PCIO TSCF/TSCM for Hatteland...

Figure 1.22 Monitors

6.5.1 Changing Monitor Settings

1. To change the monitor type click on the drop down arrow and select from a list of predefined sizes, Custom or Other Size. For example, if your monitor is a standard 340 mm console, select 23.1”; or if your monitor is a widescreen version, select a defined size (i.e. 25.5” or 27.0”).
2. If a widescreen monitor is selected which is required to interface to a VDR that cannot support wide screen modes the widescreen monitor type must be set to 23.1” (1280 x 1024) format.
3. If you have received a 26” monitor as a replacement for a 23” the monitor type should remain at 23.1”. When a widescreen system is running on this setting the screen will show blank side bands (approximately 2.5”) either side of the display.

Note: *When a widescreen monitor type (1920 x 1200) is selected. The screen resolution setting must also be applied at the Display Properties window, see ‘Chapter 3 Appendix A Configuring a Second Monitor ’*

4. Select **Custom** if your monitor does not have a serial communications port, the monitor comms port selection is then disabled.
5. Select **Other Size** if your monitor has a serial communications port but the monitor size is not included in the Monitor Type drop down list.
6. When Other Size or Custom monitor type are selected specify the **Picture Height**, and if required the **Width** and **Height (pixels)**, by clicking on the top and bottom arrows to the right of the current values.

7. If a predefined size or **Other Size** have been selected click on the drop down arrow of the Monitor Communications Port and select the Monitor serial port from the list of ports previously configured for the monitor, see Section 8.10.2 *Configuring a PCIO Serial Port*'.

Note: *If the monitor is configured to operate at a screen resolution different from the monitor type selected here, an 'Incompatible Resolution' window opens when the VisionMaster application starts up. The system will restart when the message is acknowledged. This will allow appropriate correction (either to the configuration or the windows display settings) to resolve the mismatch.*

6.6 Sensor to Node Connections

The Sensor to Node Connections function enables the user to define common navigation connections between sensors and VMFT nodes over the PCIO.

The window displays a grid listing all the configured sensors in the left column and all the VMFT nodes along the top row. Connections between sensors and each node are shown as physical port labels, which correlate to labels on the PCIO.

6.6.1 Configuring Sensor to Node Connections

1. To change the configuration of a sensor click on the sensor box in the grid. The configuration window for that sensor appears as a secondary sizable window. Figure 1.23 shows a typical heading sensor configuration window. For information on changing any sensor settings refer to Section 9.4.1.1 *Sensors*'.
2. To close the configuration window click the **Close** button.

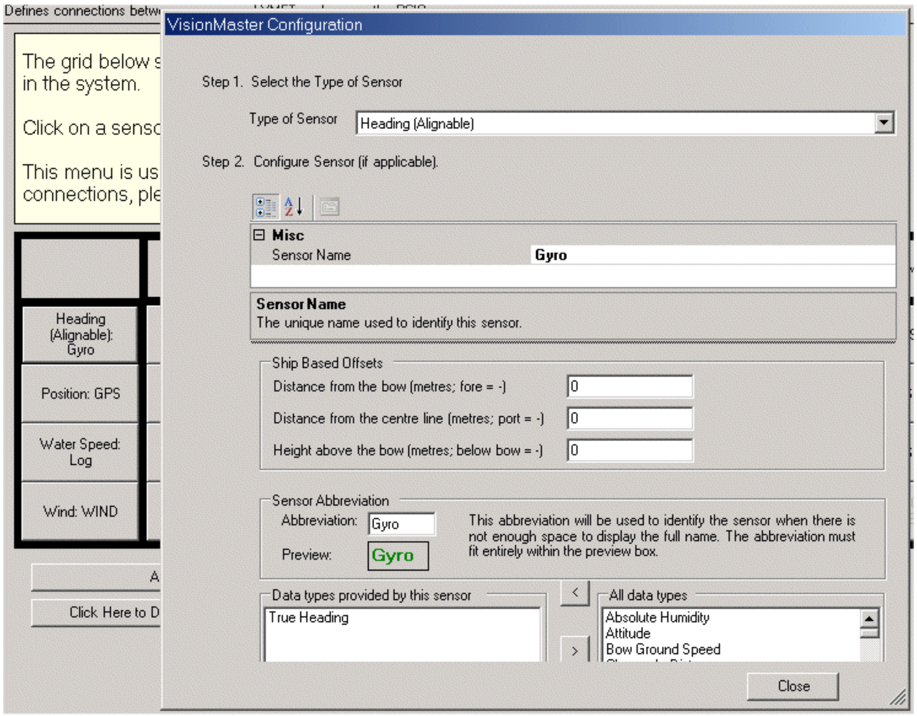


Figure 1.23 Configuration Window for Heading Sensor

3. To configure the connection between a sensor and the PCIO port click on the port label box. Figure 1.24 shows the PCIO port label TSC (Analog Heading Input) for the heading sensor.

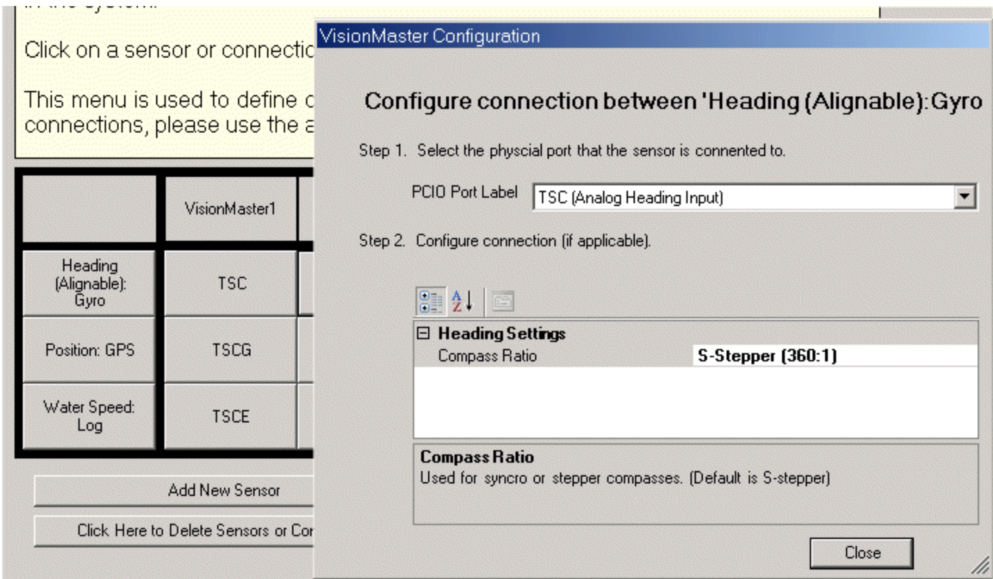


Figure 1.24 Configuration Window for Sensor Connection

6.6.2 Adding New Sensors

New sensors can be added to the Sensor to Node Connections grid by doing the following:

1. Click on the **Add New Sensor** button. A popup window appears prompting to select the type of sensor to be configured.
2. Click on the drop down arrow and select from the list. Note that the list only includes Heading, Position Water Speed and Wind. For information on configuring more types of sensors refer to Section 9.4.1.1 *Sensors*'. The sensor is added to the grid.
3. To configure the new sensor click on the sensor box. The configuration window for that sensor appears as a secondary sizable window. Figure 1.25 shows a typical wind sensor configuration. For information on configuring a wind sensor refer to '*Configuring a Wind Sensor*' on page 138.

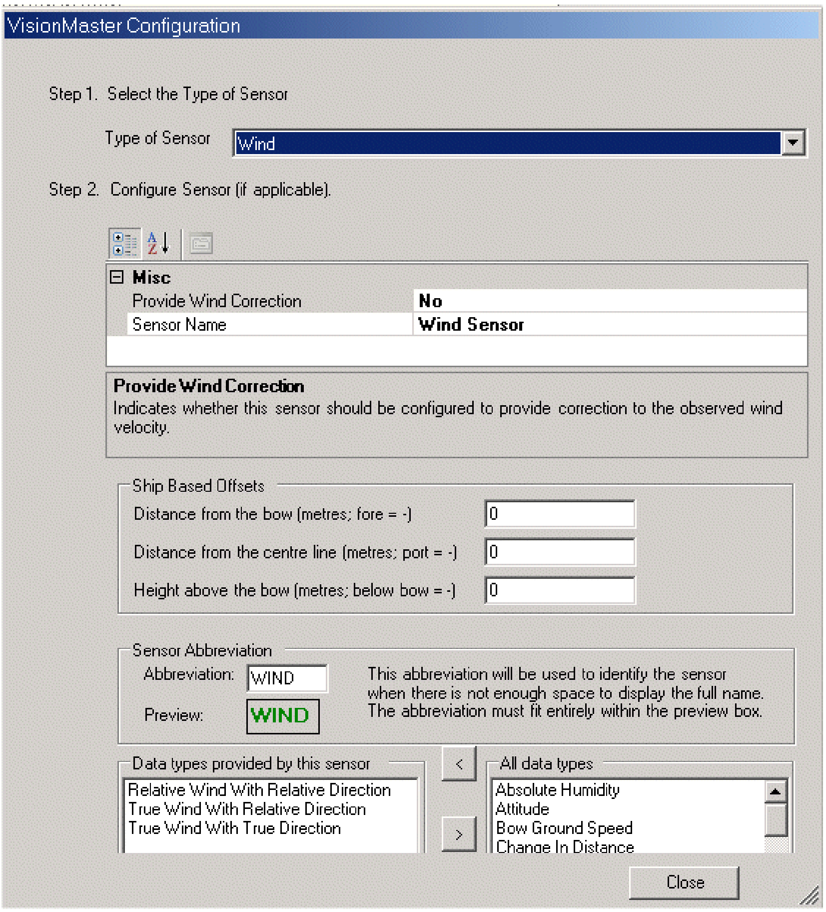


Figure 1.25 Wind Sensor Configuration Window

4. When a new sensor has been added to the grid the PCIO port labels show **[NOT CONNECTED]** for each node. To connect the sensor to a port click on the **[NOT CONNECTED]** box and select the connector on the PCIO by clicking on the PCIO Port Label drop down list in the popup window.
5. When a PCIO port label has been selected for the new sensor the popup window may then list a number of basic and advanced settings, see Figure 1.26. For information on configuring these PCIO port settings refer to Section 8.10.2 *Configuring a PCIO Serial Port*'.

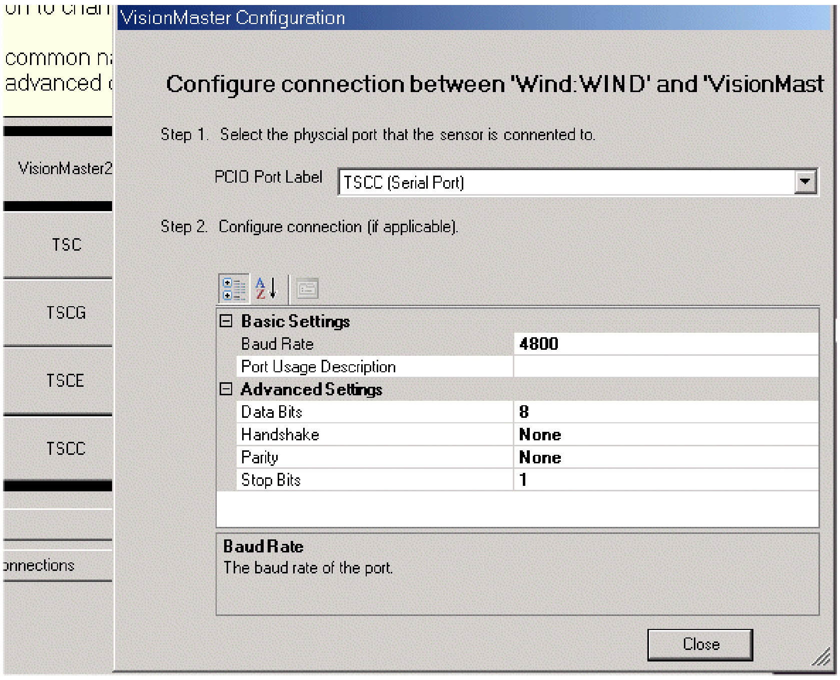


Figure 1.26 Select PCIO Port Label

6.6.3 Deleting Sensors or Connections

1. To delete a sensor or sensor connection from the grid click the **Click Here to Delete Sensors or Connections** button. All boxes in the grid display a small square in the top left corner with a red cross. The delete button changes to display **Click Here to Cancel Delete Mode** in red, see Figure 1.27.

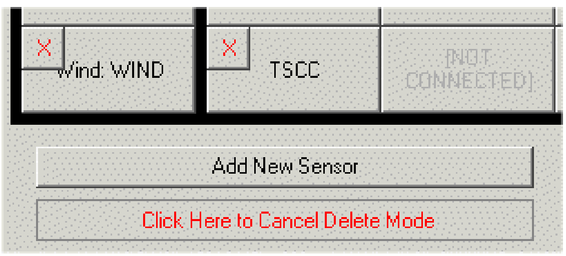


Figure 1.27 Cancel Delete Mode

2. To cancel the delete operation click the delete button again. The grid and button revert to their normal mode.
3. To delete a sensor or sensor connector click on its red cross. The sensor or connector is removed from the grid. Repeat the process for each item.
4. After the deletion process is complete the delete button must be clicked again in order to exit delete mode.

6.7 Own Ship Characteristics

Ownship Characteristics displays the following settings related to own ship:

- Alternate Bow distances and menu setting
- Dimensions, speed settings and turn rates
- Custom outline configuration

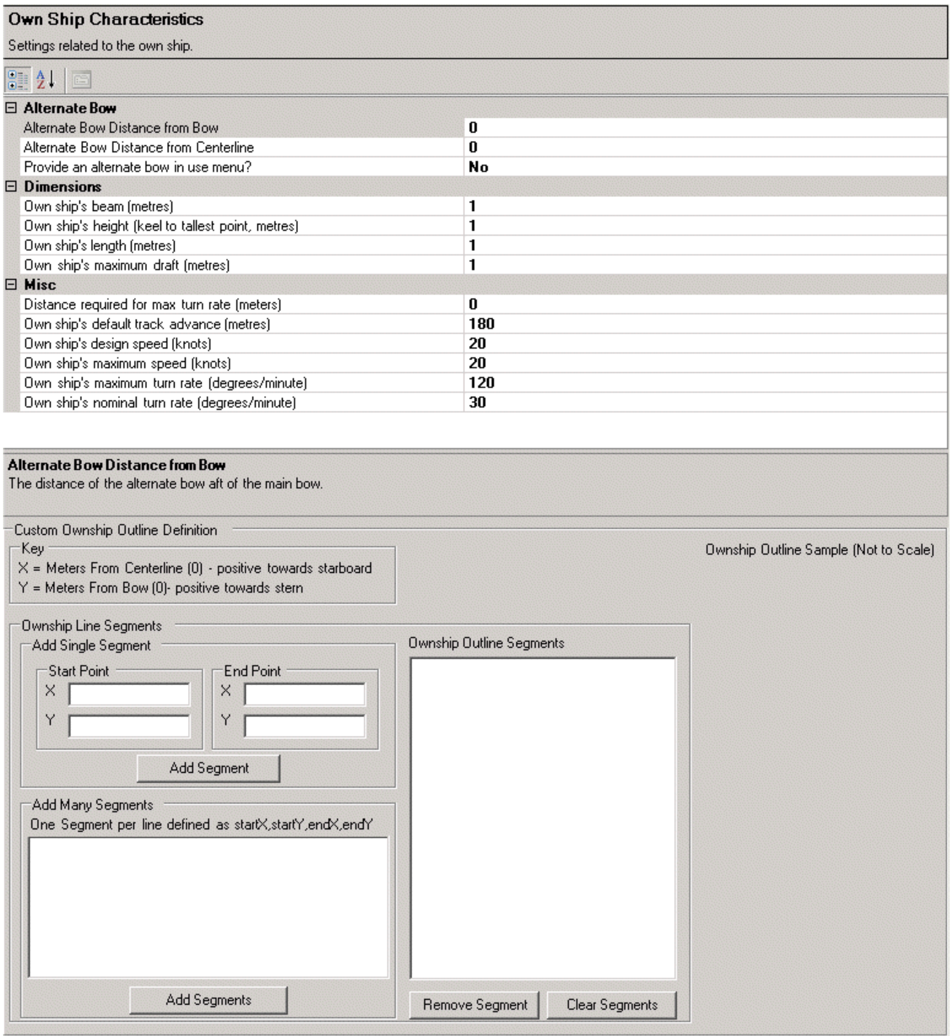


Figure 1.28 Own Ship Characteristics

The following sub sections describe how to set up alternate bow distances, own ship's dimensions, miscellaneous settings related to own ship and how to define a custom outline for own ship. The more detailed configuration page in the Applications menu includes information on configuring ship loading states and alternate bow in use inputs, see Section 9.3.1 *Own Ship Characteristics*'.

6.7.1 Alternate Bow Distances and Menu

When a discrete input has been selected the following Alternate Bow settings should be made in the Own Ship Characteristics window:

- **Alternate Bow Distance from Bow** - the distance of the alternative bow aft of the main bow.
- **Alternate Bow Distance from Centreline** - the distance of the alternative bow starboard of the centreline.
- **Provide an alternate bow in use menu?** - In the event that no external discrete input can be configured then this setting should be enabled by clicking on the drop down arrow and selecting **Yes**. A check box is then enabled on the Characteristics tab of the System Commissioning menu, allowing the operator to switch from main bow to alternative bow.

When an alternative bow is in use menu is selected, the system uses an alternate bow position as the reference point for all data relative to ownship. This includes, for example, the cursor readout and all position readouts.

The alternate bow position is configured at the CCRP window, see Section 9.4.3 *CCRP*'.

6.7.2 Dimensions

The dimensions settings include own ship's beam, height, length and maximum draft. On start up all dimensions default to an invalid value of 0.

The following own ship dimensions must be entered to validate the configuration:

- Beam represents the width of the vessel's beam (range from 1 metre to 999 metres maximum).
- Height represents the distance from the keel to the tallest point on the ship (range from 1 metre to 999 metres maximum).
- Length represents the length of the vessel, measured from the bow to the stern (range from 1 metre to 9999 metres maximum).
- Draft represents the maximum depth of ship's keel under water, measured from the waterline to the bottom of the keel (range from 1 metre to 999 metres maximum).

6.7.3 Miscellaneous

Miscellaneous includes the following settings:

- The distance required for own ship to reach its maximum turn rate in metres, regardless of ship’s speed. It is not necessary to enter a maximum turn rate value in order to validate Own Ship characteristics.
- The default track advance of own ship in metres, default 180 metres (range from 1 metre to 99999 metres maximum).
- the design speed of own ship in knots, default 20 knots (range from 1 knot to 199 knots maximum).
- the maximum speed of own ship in knots (range from 1 knot to 199 knots maximum).
- the maximum turn rate of own ship in degrees per minute, default 30 degrees per minute (range from 1 degree to 12000 degrees per minute).
- the nominal turn rate of own ship in degrees per minute, default 30 degrees per minute (range from 1 degree to 12000 degrees per minute).

To change the default values click in the field and enter the required value.

6.7.4 Custom Ownship Outline

A custom outline for ownship may be configured by entering line segments which are defined as x, y coordinates for the start and end point of each segment. These coordinates are measured in metres from the bow and centre line of the ship.

A validated line segment consists of an x and y value for the start point and an x and y value for the end point. An custom outline example is as follows:

0,0,10,10

10,10,10,100,

10,100,-10,100

-10,100,-10,10

-10,10,0,0

To enter the above values click in the Start Point X field and enter **0**, tab to the End Point X field and enter **0**, tab to the End Point Y field and enter **10**, and tab to the End Point Y field and enter **10**. Repeat for the other lines in a clockwise direction from the starting point.

The resulting symbol is a ship outline as shown in Figure 1.29 The X axis is positive from the centre point toward the starboard side of the ship. The Y axis is positive from the bow towards the stern.

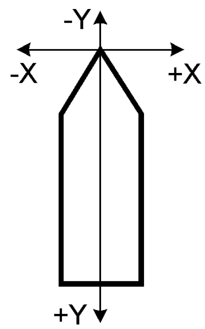


Figure 1.29 Custom Outline of Ownship

The maximum number of line segments for ownship's outline is 100.

A line segment string may be pasted from any text source into the **Add Many Segments** field.

A validation warning is given if the calculated dimension are more than one metre larger or smaller than the defined dimensions of the ship.

6.8 Basic Radar Configuration

The basic radar configuration page enables the following radar connections to be configured:

- The interswitch type used (if any) and the PCIO port the interswitch connects to.
- the channel connections for each node not connected to an interswitch, including Master/Slave status and top unit aliases.

If the system does not include an interswitch select **None** from the Step 1 drop down list and configure the node connections to the top units via the Channel Connections tab, see instructions and figure on page 46.

6.8.1 Interswitch

The Interswitch is a radar video/data matrix switch that allows multiple nodes to view and/or control multiple turning units.

The Interswitch is connected to serial ports on one or more PCIO units and interfaced to the Processor via a USB connection.

1. To select the type of Interswitch used on the system click on the Step 1 drop down arrow and select the model type (2-way or 6-way).
2. On the Interswitch Connections tab select the nodes that are connected to a PCIO. The number of nodes shown is dictated by the Interswitch model selected; a maximum of 4 nodes for a 2-way interswitch and 6 nodes for a 6-way interswitch. Figure 1.30 shows four nodes connected to a 2-way interswitch.

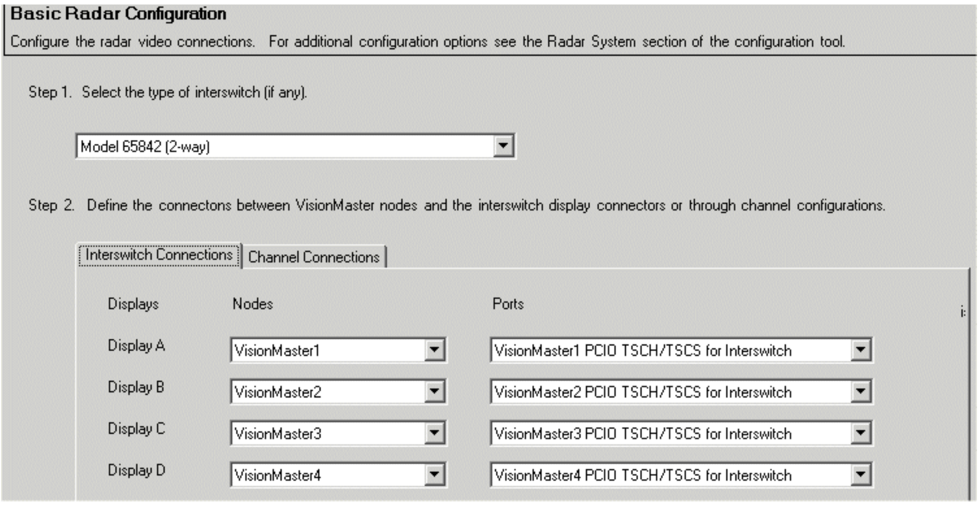


Figure 1.30 2-Way Interswitch Configuration Window

3. For each node select the PCIO port that the interswitch is connected to by clicking on the Ports drop down arrow and selecting from the list. The port should be one that has been previously configured to use Interswitch settings, see Section 8.10.2.2 *Selecting Pre-Defined IO Settings*' in the I/O Port Manager section.

The channel connections tab enables configuration of other nodes on the system that include a radar interface but are not connected to an interswitch*

1. Select the Master/Slave status of the node. For information on master and slave nodes refer to Section 9.8 *Radar System*'.
2. Select the Top Unit alias the nodes are connected to. The top unit aliases are listed alphabetically with the actual number of top units defined in Section 6.9 *Basic Top Unit Configuration*'.

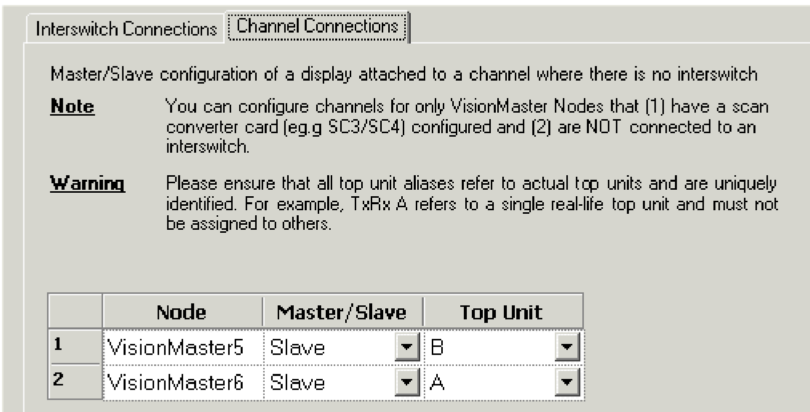


Figure 1.31 Basic Radar Configuration - Channel Connections

* The number of nodes shown in this tab is defined by the number of radar interfaces on the system (see Section 9.8.2 *Board Manager*'). For example, if there are six radar interfaces and four nodes connected to a 2-way interswitch then the Channel Connections tab will enable configuration of the remaining two nodes.

6.9 Basic Top Unit Configuration

The Top Units sub menu lists a maximum of six top units available for configuration. For a single radar the number of top units available is dependent on the Interswitch model selected. If the 2-way has been selected then units A to D are configurable; if the 6-way has been selected then units A to F are configurable. For a single dual radar without interswitch, tops units A and B are available.

To remove a top unit from a configuration untick the top unit’s check box, when a check box is unticked the **Configure** button for that top unit is removed, see Figure 1.32.

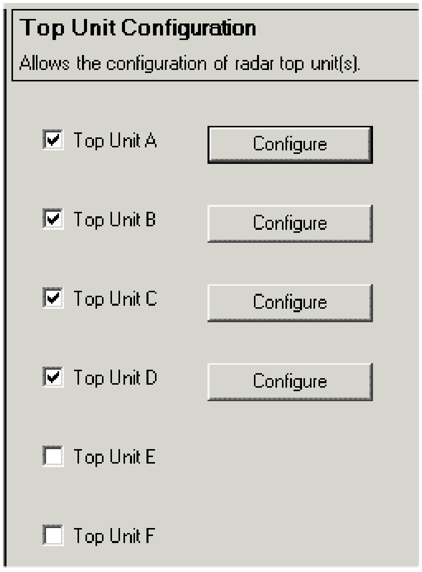


Figure 1.32 Top Unit Configuration

To change a top unit’s settings click the unit’s **Configure** button, a secondary window opens enabling settings for that top unit to be made from the following three tab folders:

- Transceiver
- Turning Unit
- Sector Blanking

6.9.1 Transceiver

The Transceiver fields display the following data and values:

- RF Feeder Length - enter the distance, in metres, from the transceiver to the turning unit.

Note: *Changing this setting from a default of 0 is only applicable if the transceiver location is a bulkhead. The maximum feeder length for a bulkhead transceiver is 99 metres.*

- Transceiver Location - select either Bulkhead or Aloft (masthead mounting).
- Transceiver Name - enables entry of an optional user name for the transceiver.
- Transceiver State - the slave only state of the transceiver (for interswitched systems only) select from **Standard** (default) and **Slave Only**.

To set a transceiver to Slave Only the Dil switches on the Interswitch need to be temporarily changed to accept global messages, this is done by setting the Dil switch from Local mode to Global mode (Link 1). The Dil switch should be set back to Local after the VMFT has tuned in and communicated with the Interswitch. The Interswitch will remember the setting.

For information on changing the settings of the Interswitch Dil switch refer to section 4.2.1 '*Dil Switches*' in Chapter 7 '*Interswitch Units*' in Volume 1 of the VMFT Ships Manual.

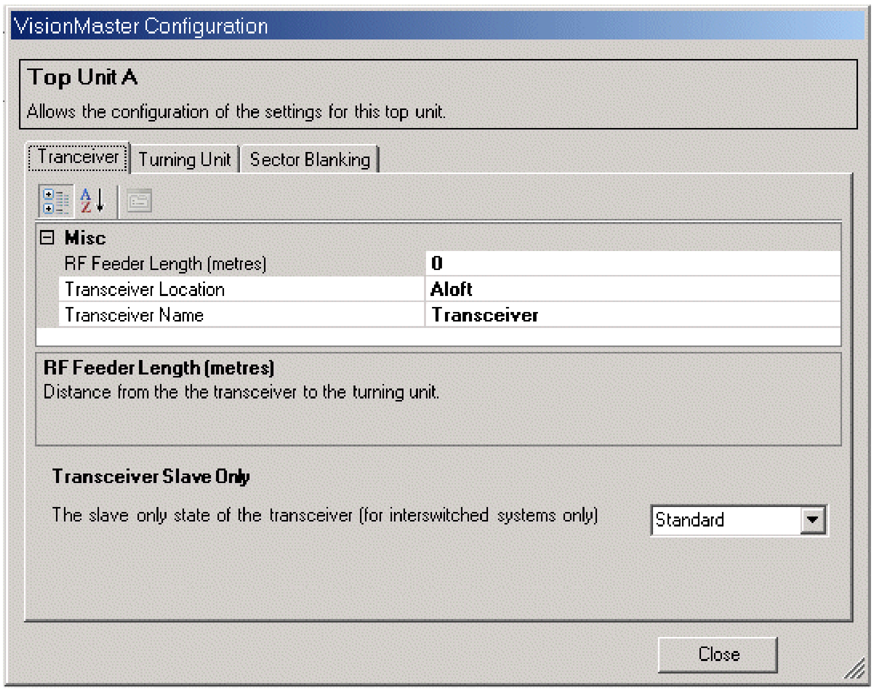


Figure 1.33 Top Unit - Transceiver

6.9.2 Turning Unit

The Turning Unit tab folder includes the selection of the beam width for the turning unit antenna and configuration of turning unit offsets.

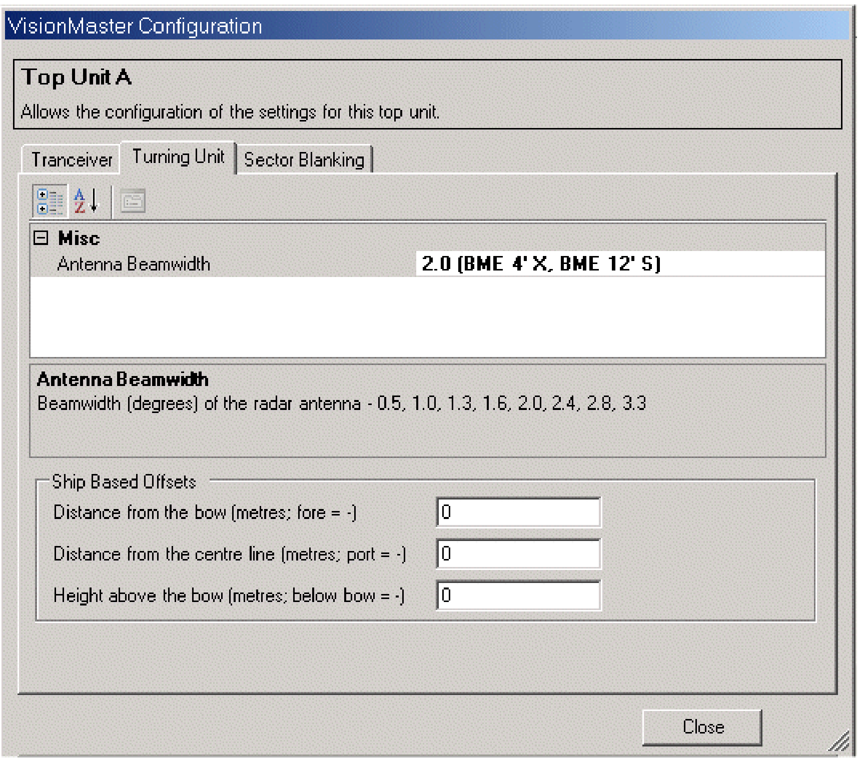


Figure 1.34 Top Unit - Turning Unit

The Antenna Beamwidth is the beamwidth, in degrees, of the radar antenna. The default value is **2.0**. To change, click on the drop down arrow and select the beamwidth currently installed on the system.

The Ship Based Turning Unit Offsets enable offsets relative to ship's bow to be configured. The maximum value for all position settings is +/- 999 metres:

- Distance from the bow (metres) - the position of the turning unit, measured from the bow towards the stern.
- Distance from the centre line (metres; port = -) - the position of the turning unit, measured from the centre line.
- Height above the bow (metres; below bow = -) - the vertical position of the turning unit, measured upward from the level of the bow.

On a dual radar, a different set of offsets may be applied to each turning unit.

For dual radar, the selected turning unit for channel 1 is considered the primary channel and its selected top unit the primary top unit.

The behaviour for motion updates and true motion resets remains the same as the single channel with the radar video origin of the primary top unit used as the reference point when either channel is in transmit.

6.9.3 Sector Blanking

The Sector Blanking window enables the configuration of two blanking sectors for the selected top unit. A transceiver will not transmit in any active blanked sector defined for it and the video in that sector is blanked.

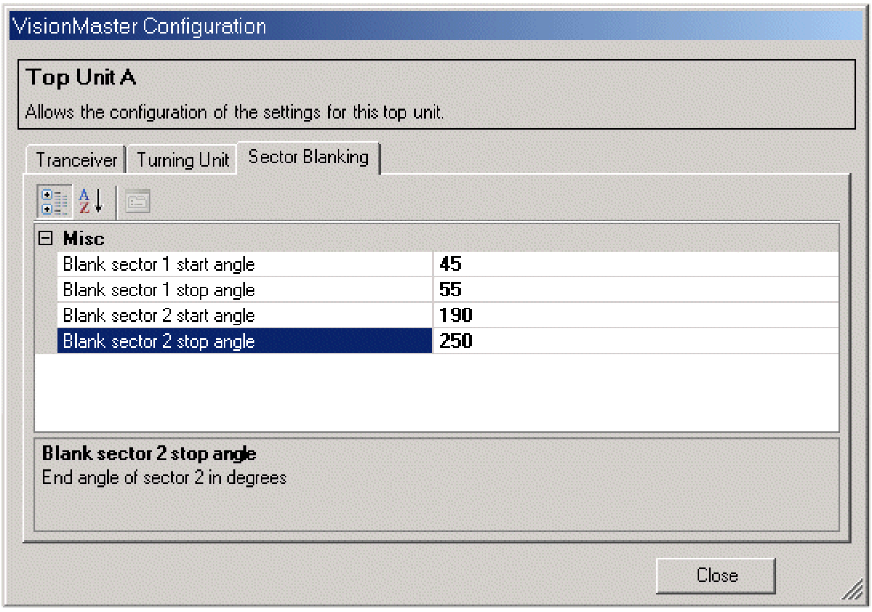


Figure 1.35 Top Unit - Sector Blanking

The sectors are set up so they do not overlap and do not blank more than 340 degrees of the radar picture. For example, blank sector 2 start angle cannot start before blank sector 1 stop angle finishes. If both the start and the stop angle are identical, the sector will not be active.

By system default, neither sector is active. The default start and stop angles are set at 0 degrees for blank sector 1 and 180 degrees for blank sector 2.

If a transceiver has blank sectors active, i.e. the start and end angles are not the same, an arc line is drawn at the relevant angles around the video circle bearing scale, indicating the arc that is being blanked. Figure 1.36 shows a graphic representation of blank sectors 1 and 2 with the angle values shown in Figure 1.35.

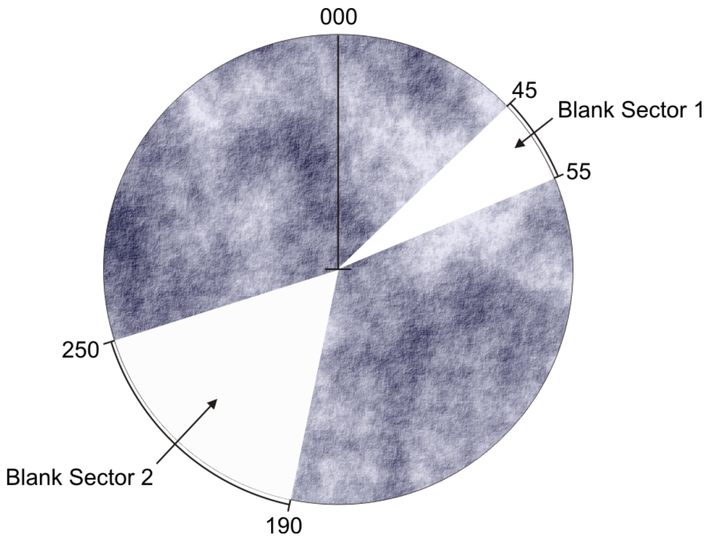


Figure 1.36 Blanking Sectors

Note: *Blanking sectors should not be placed in an arc that blocks the radar transmission to the horizon from 247.5 degrees to 112.5 degrees relative to own ship, or the right ahead direction (relative bearing 000 degrees).*

Sector Blanking for Dual Radar

On a dual radar configuration both top units may have different blanking sectors active. Sector blanking for Channel 1 top unit may have the same start and stop angles as Channel 2 top unit, or a different set of start/stop angles.

When sector blanking is active on dual radar and both top units have the same start and stop angles, a double arc line is drawn for each sector. The outer arc line defines the channel 2 blanking sector, and the inner line defines channel 1 blanking sector.

If the blanking sectors for Channel 1 and Channel 2 do not overlap the angles will be drawn relative to the radar channel's video origin, with the outer/inner arc line positions retained.

6.10 Offset Summary

The offset summary page enables distance units measured from own ship's CCRP to be entered. Distance units apply to three sensors (Gyro, GPS and Log) and turning units. The exact location of the CCRP can also be configured.

The offsets include distance from bow, distance from centre line and height above the bow.

If precise distances values for the three sensors types, CCRP and turning units are available, enter the position data in the relevant fields see Figure 1.37.

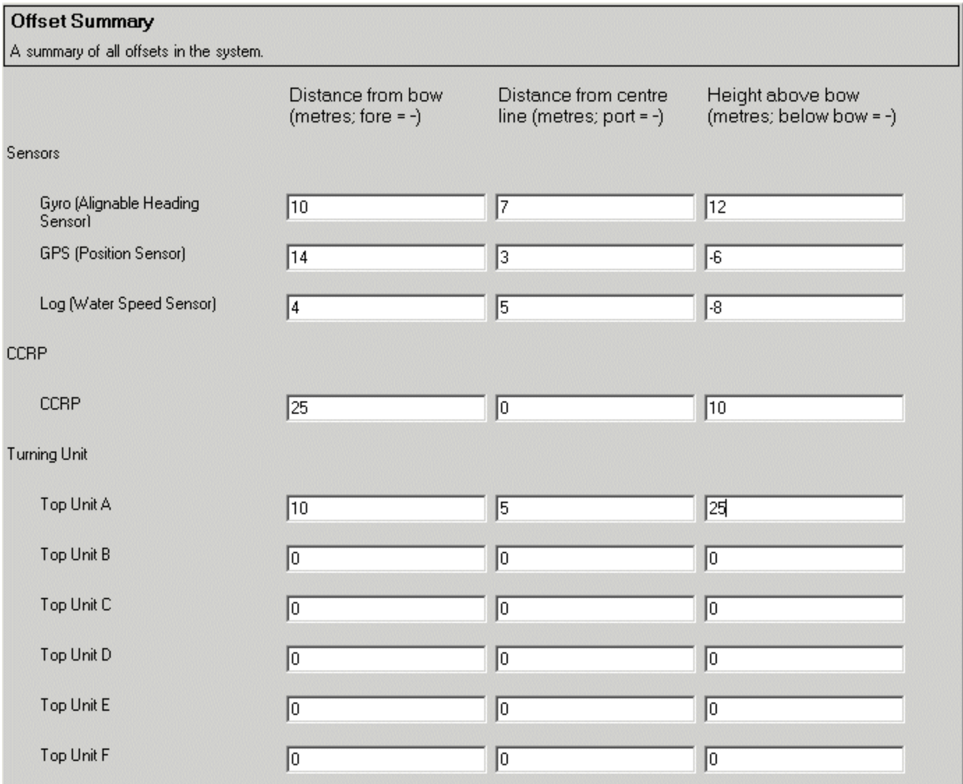


Figure 1.37 Offset Summary

6.11 AIS

The AIS window includes the following miscellaneous settings:

1. Enable AIS messages starting with '$' characters - This field enables AIS messages that start with a '$' character rather than the '!' character to be used. The default setting is **No**.
2. Enable AIS MKD Control - Enables output of AIS messages. In particular, on the Own Ship AIS menu the Message Tx tab becomes available. Additionally the operator can set various AIS Ownship features such as Draught, Destination, ETA, Vessel, Type of ship etc. (this data is sent to the AIS responder which should then reflect back the updated data to VMFT) The default setting is **No** (disabled). To enable the operator to set AIS ownship features click the drop down arrow and select **Yes**.

   The Talker ID in the output sentence will be as follows:

   - Standalone or system of Radar only nodes use RA
   - Standalone or system of ECDIS only nodes use EI
   - All other node use IN.
3. The system defaults to displaying AIS targets irrespective of the datum used for positioning. To remove AIS targets from the display when the position data is not WGS84 click on the drop down arrow and select **Yes**.

4. The amount of seconds before the system starts calculating an AIS target position by dead reckoning if no position information is received from the AIS. The default is 5 seconds. Values above 60 will cause the timestamp not to be taken under consideration.

A primary and secondary network port may be selected. Note that these ports will only require configuration if network ports are available.

The AIS window displays all the nodes on the system with the option of selecting the availability of AIS for specific nodes and a communications port from a list of PCIO ports, see Section 8.10.2 *Configuring a PCIO Serial Port*’.

Select the I/O port for each node that requires AIS by clicking on the Communications Port drop down arrow and selecting from list. For nodes that do not require AIS (for example, a dedicated CID node) select **No** from the **Available** column.

Note: *The serial port for AIS communications must have a baud rate of 38400 (usually COM 5), see Table 6 on page 90 for details.*

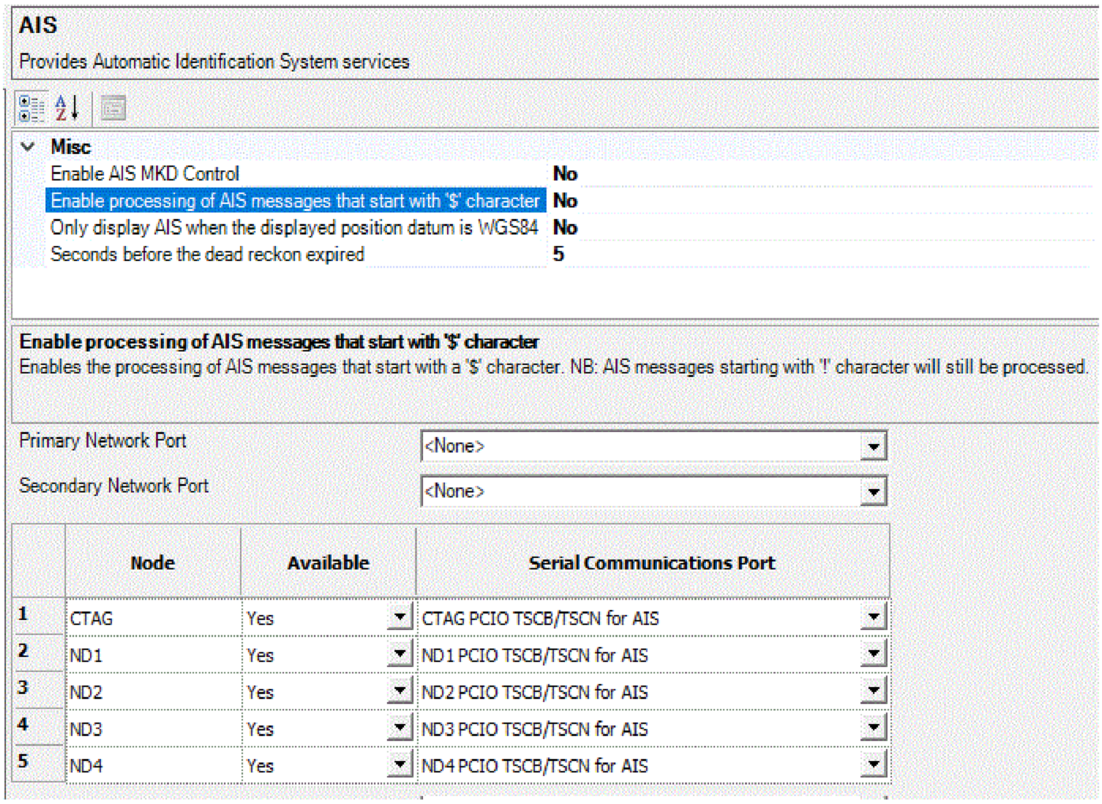


Figure 1.38 AIS Communications

6.12 61162-450 VMFT Nodes

The 61162-450 VMFT Nodes window enables 61162-450 protocols to be assigned and lists all VMFT nodes on the system. Two tick boxes allow the VMFT node ID and SFI (system function ID) to be auto generated.

To define a node as being the primary node, deselect the “AUTO Generate ID” option and change the Device ID to “1”. To define a node as being the Back-up node change the Device ID to “2”.

All remaining nodes can be assigned a Device ID between 3 and 255. Ensure all nodes have unique Device IDs. The SFI should be kept consistent, so untick **AUTO Generate SFI** and then edit the SFI to match.

The first digits of the SFI relate to the type of system installed and is common across all the nodes. If the system only contains radar products, this is 'RA'; if it only contains ECDIS products it is 'EI' and for other systems it is 'IN'. The last four digits can be any value between '0001' and '9998'.

To auto regenerate the ID and SFI fields click the **Regenerate AUTO Fields** button, having re-ticked the check boxes.

Note: *Within a VMFT system SFI uniqueness is ensured. However, the commissioning engineer must ensure that no SFI clashes with any other external -450 equipment on the bridge, including VMFT Top Units and additional VMFT display systems.*

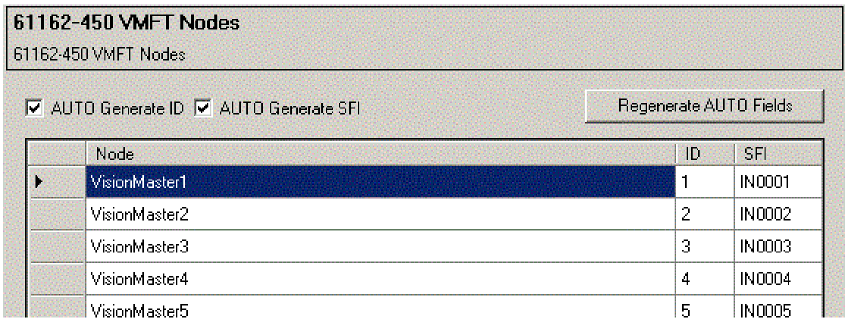


Figure 1.39 61162-450 VMFT Nodes

6.13 VDR Configuration

The VDR configuration window controls how VMFT nodes communicate with a voyage data recorder (VDR) using the IEC 61162-450 protocol.

Note: *When connecting to a VDR using IEC 61162-450 , the node names should be changed so that they describe the purpose or location of the node as this information is transmitted with the display image in order to assist with investigations.*

Note: *IEC standards require a two-ECDIS system to send display images at the 8 and 12 second points in a 15 second cycle. The default VMFT configuration files contain prepared VDR time offset data in order to achieve these settings.*

CAUTION!

If the IP address of a VMFT node has been re-configured as a result of connecting to a VDR, then IP addresses previously set up may need to be re-configured. Also devices attached to the node may need to be re-programmed.

The VDR configuration window includes two tab folders: System and Nodes.

6.13.1 VDR Configuration - System

The System tab folder (see Figure 1.40) includes the following settings:

- VDR Connection interfaces - the options include None, 61162-450 Ed1 and 61162-450 Am 1
  - **None** is selected if the VDR interface over IEC 61162-450 is disabled.
  - **61162-450 Ed 1** is selected when the VDR is using 61162-450 Edition 1 interface.
  - **61162-450 Am 1** is selected when the VDR is using 61162-450 Amendment 1 interface. Note that when this interface is selected the System tab displays Acknowledgment message groups, see Figure 1.41.
  - **61162-450 Ed 2** is selected when the VDR is using 61162-450 Edition 2 interface.
- VDR System Function ID - this is a four digit number of the receiving VDR in the range 0000 to 9998. The ID for the Danelec DM100 VDR is "VR0001". Other VDRs may use a different ID which is given in the VDR documentation.
- Video Image - includes the publishing period in milliseconds, this is the time period in which transmission offsets are defined for each connecting node (see Section 6.13.2) and the 61162-450 channel number (transmission group ID).

- ECDIS Display Source Information - includes the chart information transmission period. The default and maximum transmission period is 10 minutes (600000 milliseconds) and the 61162-450 channel number (transmission group ID).
- Transmission Groups - these are multicast addresses and destination ports from the list of pre-defined Transmission groups, see Table 5. Select the radio button for transmission group **239.192.0.26:60026.** Also includes a **Use node-specific group** radio button, which makes VDR settings easier to configure for node specific connections.

Table 5: Transmission Group Settings

Transmission Group	Address	Port
1	239.192.0.26	60026
2	239.192.0.27	60027
3	239.192.0.28	60028
4	239.192.0.29	60029
5	239.192.0.30	60030

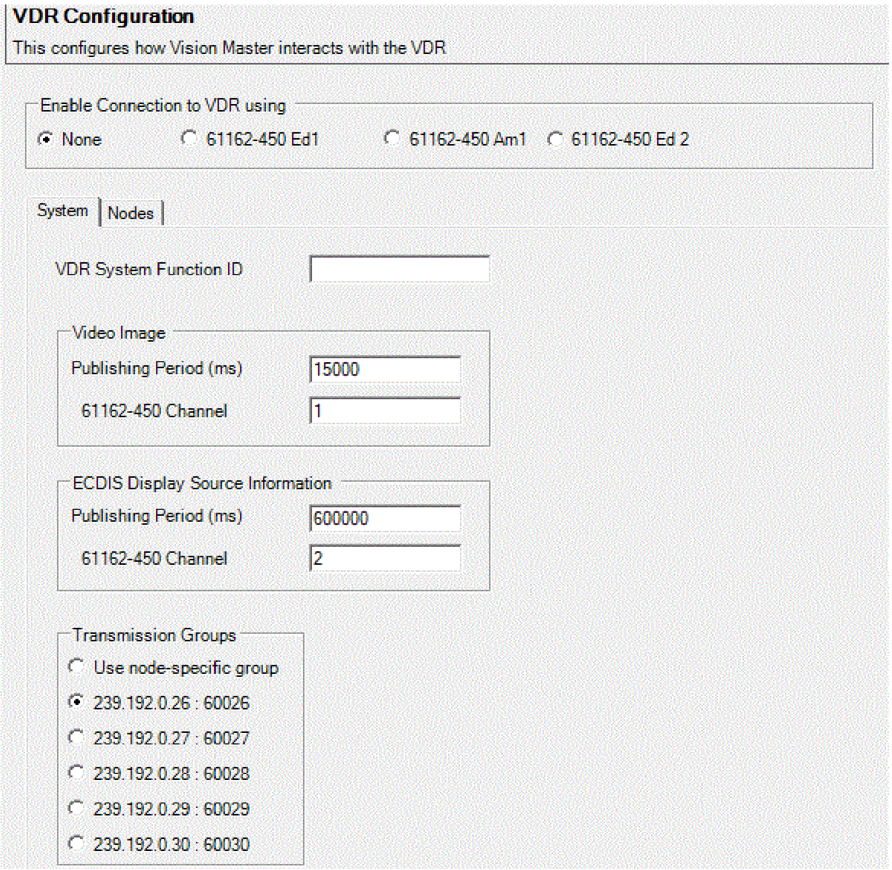


Figure 1.40 VDR Configuration - System tab folder

If 61162-450 Am 1 or 61162-450 Ed 2 are selected the System tab displays the an additional **Ack Message Groups** table. The multicast addresses and ports in this group mirror the same addresses shown in the Transmission groups (see Table 5). A separate address and destination port may be selected for acknowledged data from the VDR, providing the VDR supports this functionality, see Figure 1.41.

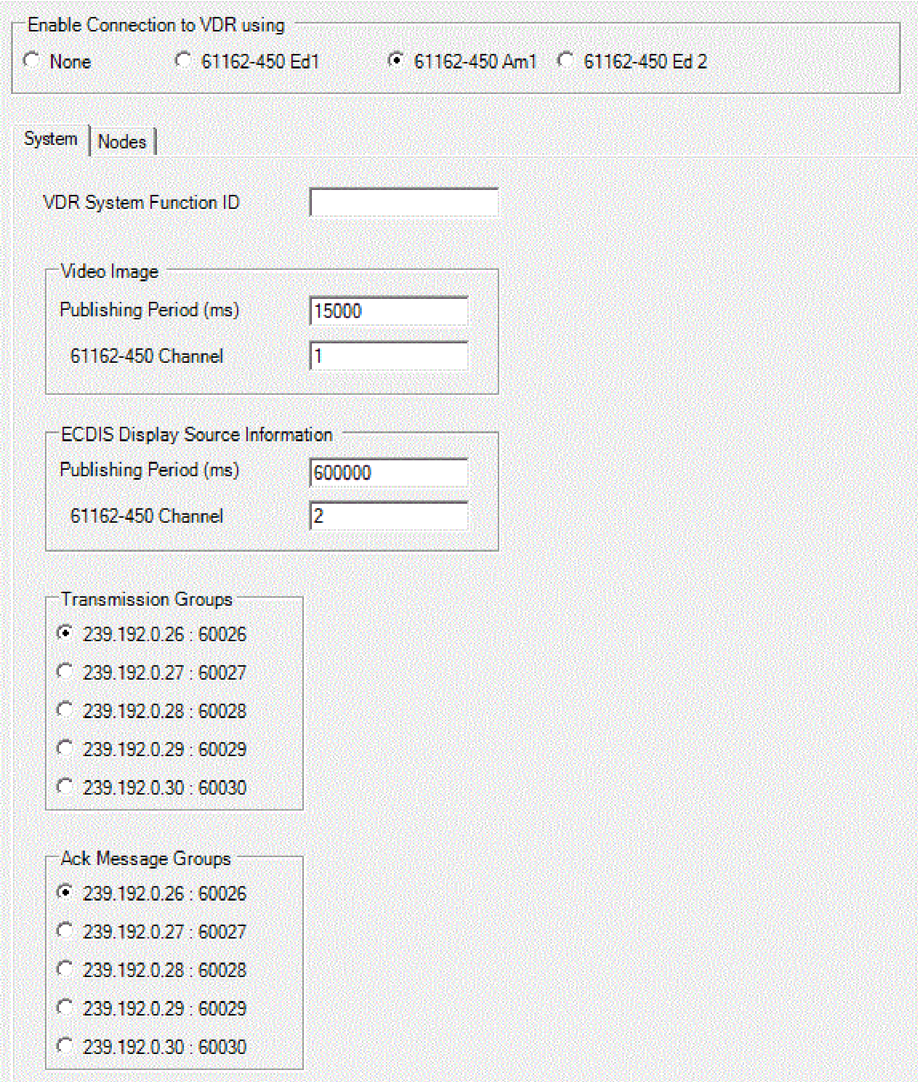


Figure 1.41 System tab folder with 61162-450 Am 1 or Ed 2 selected

6.13.2 VDR Configuration - Nodes

The VDR Nodes tab folder lists all the VMFT nodes on the system. VMFT nodes that are connected to a VDR should be selected by clicking the **Link to VDR** check box.

A **Video TX Offset** in milliseconds must be applied to the nodes connected to the VDR. The transmission offset defines the time after the start of the image transmission cycle at which a specific node will transmit a binary image.

The offsets for all nodes must be within the total Publishing Period as defined in the System folder (Video Image). For example, if the publishing period is 15000 milliseconds and there are 5 nodes linked to the VDR, the Video TX offsets can be 0, 2500, 5000, 7500 and 10000.

It is recommended that video transmission offsets are specified according to the following rule, as shown below:

X Band Radar	0 ms
S Band Radar	4000 ms
Main ECDIS	8000 ms
Back-up ECDIS	12000 ms

Video transmission offsets may be automatically generated for the linked nodes by clicking the **Auto Generate Offsets** button.

The Transmission Group drop down list enables a pre defined transmission group (as shown in System tab) to be selected. If no specific transmission group is selected the Global setting can be used.

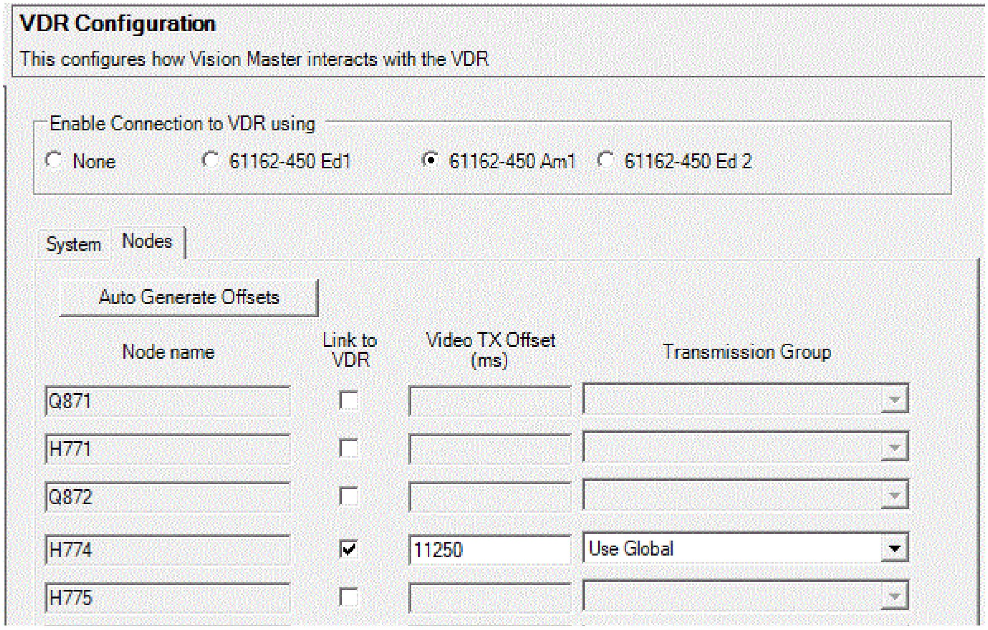


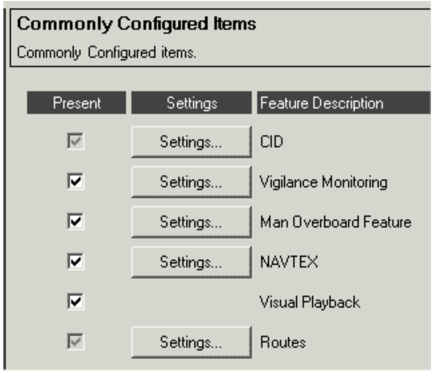
Figure 1.42 VDR Configuration - Nodes tab folder

Upon completion of the configuration within VMFT, the VDR must also be configured in accordance with the manufacturer's documentation.

6.14 Commonly Configured Items

The commonly configured items window allows the following features to be selected and configured (if required):

- CID
- Vigilance Monitoring
- Man Overboard
- NAVTEX
- Visual Playback
- Routes



To select a feature tick the feature's check box in the **Present** column. When a feature is selected a **Settings..** button for that feature appears. This applies to all features with the exception of Visual Playback, which does not require any configuration settings to be made.

If a feature is selected that requires configuration the **Settings..** button is displayed with a red background.

Opening the configuration window for that feature will also display **Validation Errors** in a red box, next to the **Close** button.

The following sub sections describe the configuration of common items listed.

6.14.1 CID

The CID (Conning Information Display) topic enables the selection of the default opening CID page for each node to be made.

The CID page is also available from the User Interface menu, see Section 9.6 *User Interface*'.

Figure 1.43 shows the default CID pages that can be selected and Side Pages selected for specific nodes.

If you have configured a second dedicated monitor to run CID pages select **Yes** from the **Select Secondary Monitor CID Pages** drop down arrow. For details, see '*Chapter 3 Appendix A Configuring a Second Monitor* '.

Note that if certain nodes are widescreen and the monitor has been configured as such (i.e. a monitor with a width/height of 1920x1200 or greater has been selected, see Section 6.5 *Monitors*'), then the option to select a default Side Page is also available.

The layout and mix of readouts for each CID page may be customised for a specific ship. Customisation is made via the CID Designer application, which is accessed by clicking on the **Launch Xml Designer** button.

For a description of how to configure CID pages using the CID Designer, see *Chapter 3 'Configuring a Conning Information Display*'.

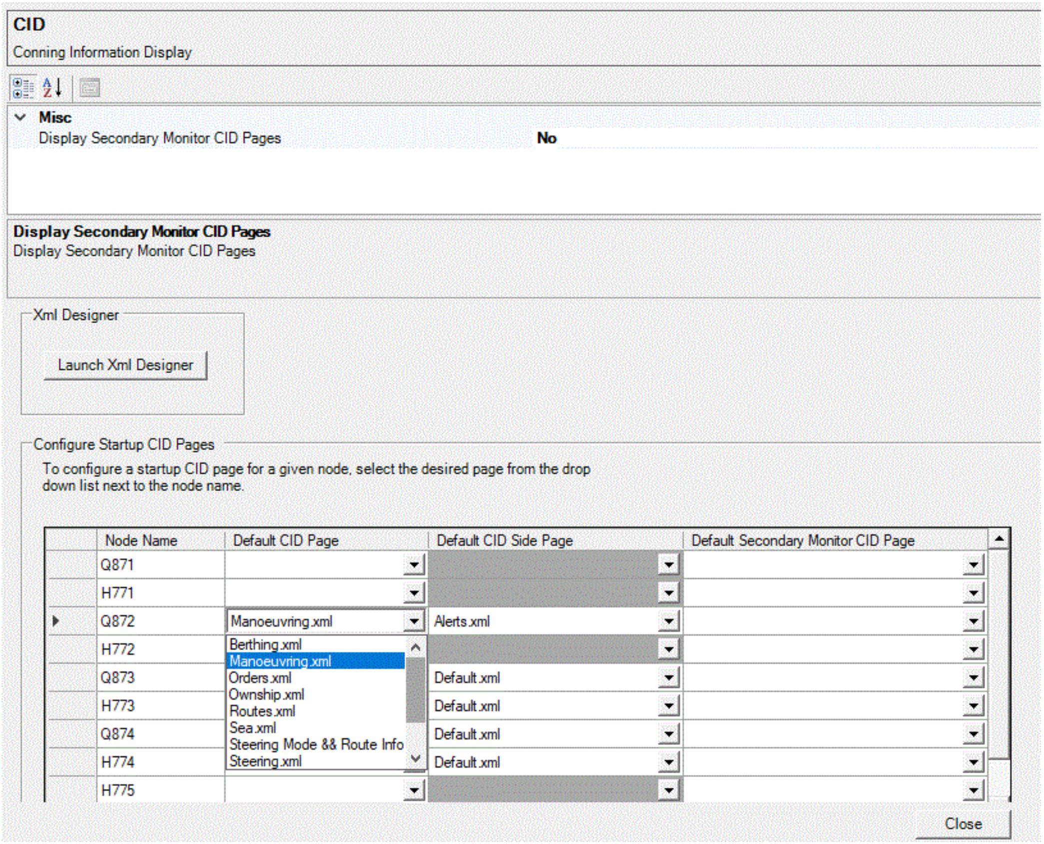


Figure 1.43 CID

6.14.2 Vigilance Monitoring

The Vigilance Monitoring topic enables the system to monitor operator activity or response by monitoring the use of the control panel.

For Vigilance Monitoring to operate the system must be connected to an external watch alarm generator. The watch alarm generator will be set to a 3, 6, 9, or 12 minute time interval. A reset line resets the timer on the generator when any contact closure is received.

Vigilance monitoring comes in three variants: level 1, level 2, and level 3.

Level 1 issues Vigilance Relay Pulses and EVE sentences (if configured) every minute as long as there is operator activity on any node configured to monitor activity. If there has been no operator activity after a full minute from the last pulse then level 1 stops pulsing the vigilance relay and producing EVE messages.

Note: *If there is activity after a pulse or EVE output, another pulse/EVE will be produced. This can extend the time at which the watch alarm system initiates its alarm up to a minute later. However, there will not be more than one pulse or EVE output within 60 seconds of the previous, even if there are multiple control inputs or continuous operator activity within the minute.*

Note: *A Vigilance EVE sentence will only be triggered by input from the tracker ball and its accompanying buttons, and will not be produced by joystick or control panel input.*

Level 2 will generate an alarm within VisionMaster prior to refraining from issuing Vigilance Relay Pulses, giving the operator some advanced notification prior to the backup navigated alarm sounding.

In addition to monitoring operator activity, level 3 asks the operator multiple choice questions to determine whether the operator is alert and active.

6.14.2.1 Vigilance Monitoring Configuration

Vigilance Monitoring can be configured to have an output signal as a pulse generated from a discrete output or an EVE sentence transmitted via a serial output port, or both of these.

Serial Output Configuration:

1. Select the Serial Output Port to be used by the Vigilance Monitor to send vigilance EVE sentences, by clicking on the drop down arrow and selecting from the list of previously configured serial outputs.
2. To configure the output, click on the **Configure** button and the I/O Port Manager will open for the port. See Section 8.10 *I/O Port Manager*'.
3. EVE sentences are displayed in the Port Monitor (see Section 3.4.3 *Communications*') with the following format:

   $INEVE, ,BNWAS,Operator activity*hh

Discrete Output Configuration

1. Select the Discrete Output to be used by the Vigilance Monitor for vigilance relay pulses by clicking on the drop down arrow and selecting from the list of previously configured discrete outputs.

Note: *For a group of nodes communicating via a network, at least one node configured with the vigilance monitoring may be connected to a single reset line. Operator activity on a node that is not directly connected to the reset line can still result in a Vigilance Relay Pulse or EVE message output indirectly through the connected node.*

2. To configure the output, click on the **Configure** button. See Section 8.1 *PCIO Board Manager*' for more.
3. The relay output parameters can be configured under the Misc section of the Vigilance Monitoring window, as shown below.

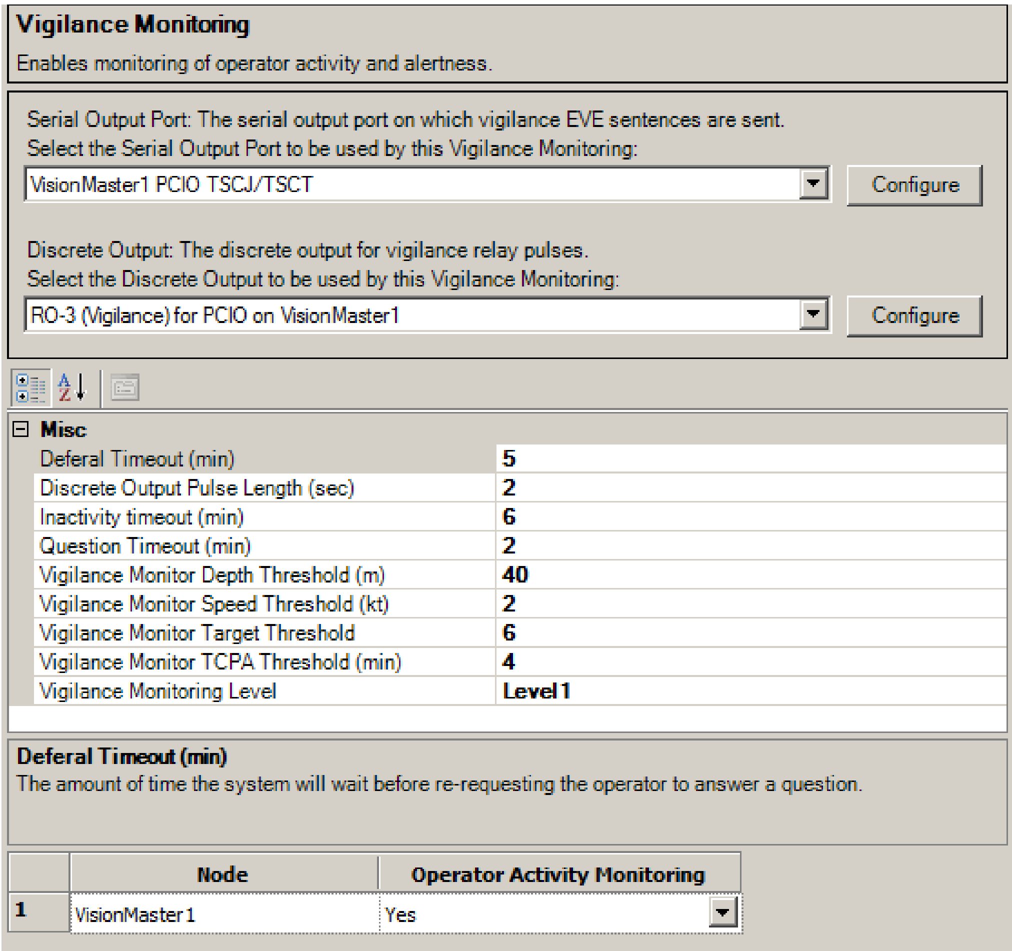


Figure 1.44 Vigilance Monitoring

The window shows the following miscellaneous parameters.

- **Deferral Timeout** - the amount of time the system will wait before re-requesting the operator to answer a question after a question has been deferred. The default time is 5 minutes.
- **Discrete Output Pulse Length** - the vigilance pulse duration for the discrete vigilance output. This can be configured in a range of 1 to 10 seconds.The default duration is 2 seconds.
- **Inactivity Timeout** - the amount of time (default 6 minutes) when there is no operator activity to:
  - Level 2: activating the vigilance alarm;
  - Level 3: asking the first vigilance question.

Note: *Level 1 vigilance monitoring will not use the inactivity timeout as used on Level 2.*

- **Question Timeout** - the amount of time the operator has to answer a question before a vigilance alarm is raised. The default time is 2 minutes.

- **Vigilance Monitor Depth Threshold (m)** - when own ship depth is less than this value (default of 40 metres) the system refrains from asking vigilance questions. Applies to Level 3 only.
- **Vigilance Monitor Speed Threshold (kt)** - when own ship depth is less than this value (default of 2 knots) the system refrains from asking vigilance questions or activating the vigilance alarm.
- **Vigilance Monitor Target Threshold** - when the number of processed targets (AIS or tracked) is greater than this value (default of 6) the system refrains from asking vigilance questions. Applies to Level 3 only.
- **Vigilance Monitor TCPA Threshold (min)** - when one or more targets have a TCPA less than this value (default of 4) the system refrains from asking vigilance questions. Applies to Level 3 only.
- **Vigilance Monitoring Level** - click in the field and click on drop down arrow to select from level 1, level 2 and level 3.

The lower part of the window displays all the system nodes, with Operator Activity Monitoring defaulting to **Yes** on each node. To disable monitoring activity on a node click on the node's drop down button and select **No**.

CAUTION!

Vigilance Monitoring is an important safety feature of the VMFT. Disabling the monitoring activity on a node must only be activated if the service engineer is confident that no operator activity will take place on that node in the foreseeable future.

6.14.2.2 Interface with BNWAS

The VMFT system may be connected to an external Bridge Navigational Watch & Alarm System (BNWAS).

To provide user activity information to a BNWAS, an EVE sentence or vigilance relay pulse may be output in response to user interaction with the VMFT. Level 1 Vigilance monitoring is the only level that is compatible with the use of a BNWAS.

It is a requirement of a BNWAS that it shall not be possible to initiate the reset function or cancel any audible alarm from any device, equipment or system not physically located in areas of the bridge providing proper look out. This requires that any system nodes that are non bridge stations listed for Operator Activity Monitoring have their monitoring set to No (see Figure 1.44 '*Vigilance Monitoring*').

If the BNWAS interface has been set up as described above then VMFT Operator activity will enable reset of the BNWAS timer if the BNWAS alarm has not gone off.

For more information on BNWAS Reset and BNWAS Stage 2 set up refer to Chapter 1, Appendix D '*BNWAS Setup*'.

6.14.3 Man Overboard

The Man Overboard (MOB) feature enables selection of a MOB discrete input and configuration of the relay state indicating the Man Overboard condition.

Note: *It is recommended that an external device such as a Labjack or Opto 22 is used as the discrete input for the MOB. See Section 8.5 Labjack Manager' or Section 8.13 Joystick Manager'.*

1. From the Man Overboard Feature window click on the drop down arrow in Step 1 and select the Discrete Input (if any) used to indicate a Man Overboard condition from the drop down list.
2. By default an energized relay is interpreted as a Man Overboard active event. To change the activate mode to Relay De-energized, click on the drop down arrow in Step 2 and select the option from the list.

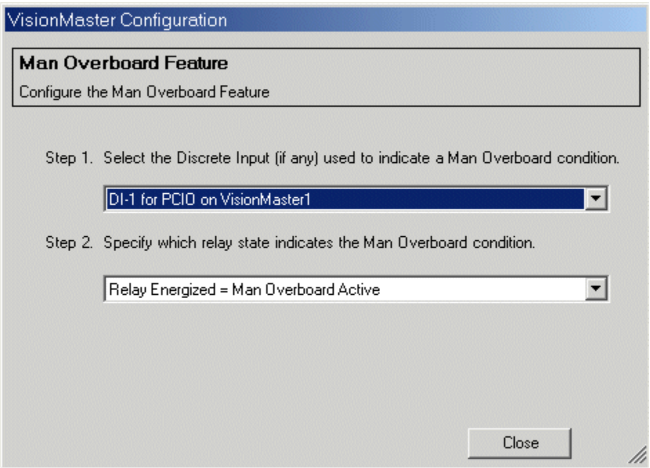


Figure 1.45 Man Overboard

6.14.4 NAVTEX

NAVTEX transmitting stations are used to routinely broadcast urgent coastal marine safety information to ships with a NAVTEX receiver. VisionMaster is able to access this information from the receiver by using a client/server application called PC NAVTEX.

Information on installing the PC NAVTEX software for Server and Clients is given in '*Chapter 1 Appendix C Configuring Peripheral Devices*'.

The NAVTEX configuration window enables the NAVTEX Server node to be selected, and NAVTEX client paths to be selected for participating nodes.

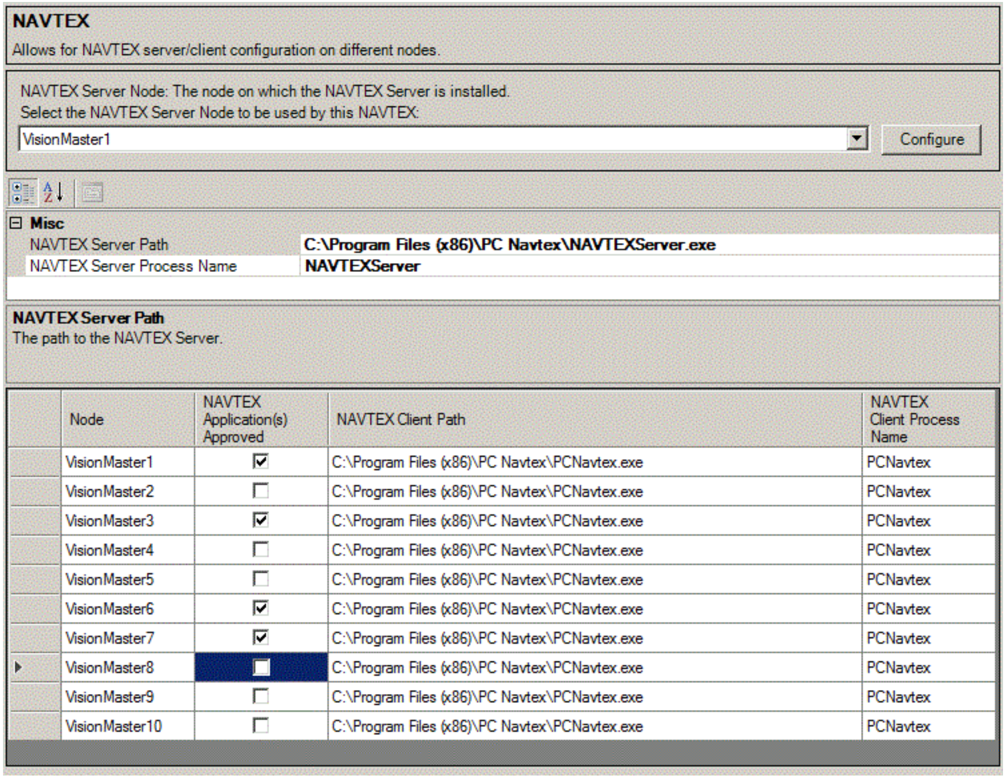


Figure 1.46 NAVTEX - not configured

1. Select the node to be used as the NAVTEX Server by clicking the drop down arrow and selecting from the list. Only one node is configured as a Server in a multi-node system. Do not select a Radar Video Server to be the NAVTEX. Note that the NAVTEX Client and Server can be run on the same node.
2. The NAVTEX Server Path and NAVTEX Server Process Name have predefined paths and names. These names should not be changed.
3. To select the nodes that will use NAVTEX tick the relevant NAVTEX Application(s) Approved check boxes.

6.14.5 Routes

The Routes configuration page enables the following miscellaneous route values to be changed:

- Off Track Limit (Left and Right side) - defaults to 100 metres (maximum 9999 metres)
- Route Speed - defaults to 10 knots (maximum 99 knots)
- Turn Radius - defaults to 1 NM (maximum 10 NM).

To change the miscellaneous default values click in the respective field and enter the required value.

For all other route configuration options refer to Section 9.10.6 *Routes*’.

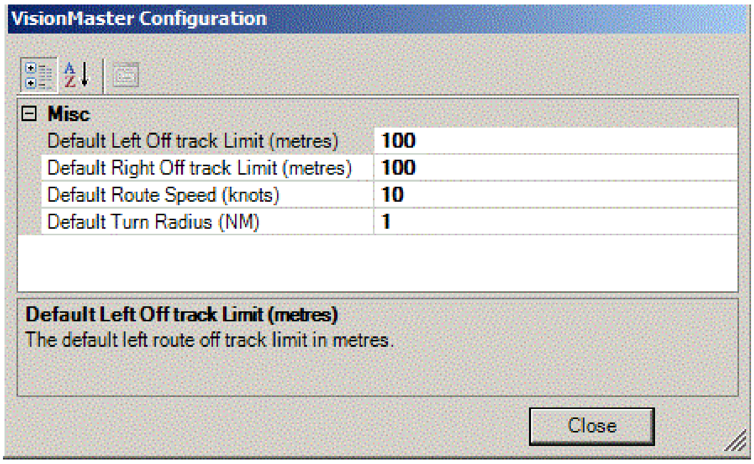


Figure 1.47 Route Miscellaneous Settings

7 General Info

The General Info menu includes as default a Revision History topic, which enables details of revisions made to the opened configuration file to be viewed.

From the General Info window a Note topic may also be added.

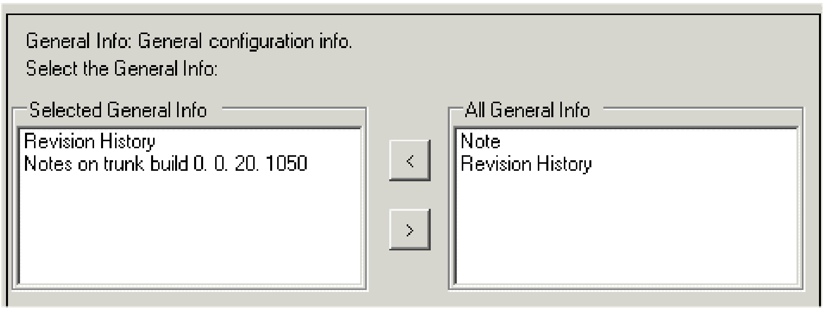


Figure 1.48 General Info

7.1 Revision History

Every time a configuration file is changed and saved the system logs the revision. A list of all the revisions relevant to the opened configuration appear in the Revisions column.

The read-only revision list includes date and time, configuration file name, operator's user name and the software version reference.

Below the revision list, details of a particular revision may be entered in the Notes column.

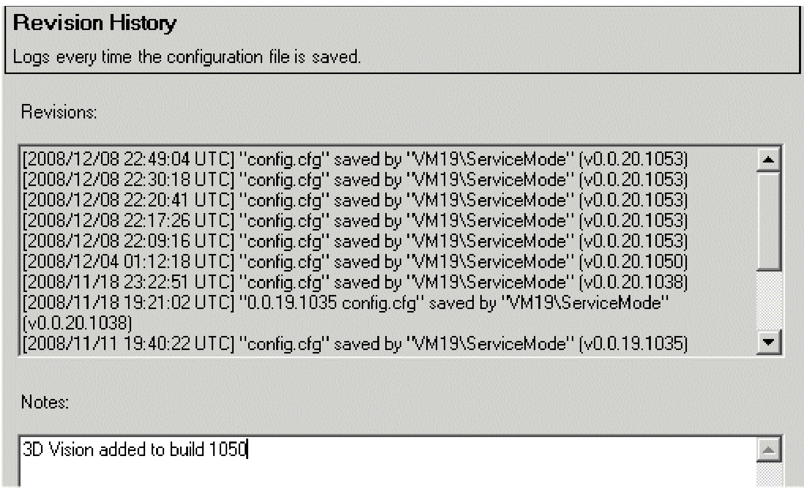
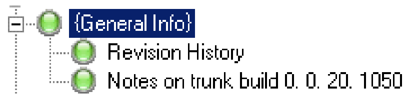


Figure 1.49 Revision History

7.2 Notes

To include a note topic, highlight **Note** in All General Info column and move to the **Selected General Info** column.

The Note topic may be used by the operator to make general notes on the configuration. When a name is entered in the **Title:** field the name is retained and displayed on the navigation tree.



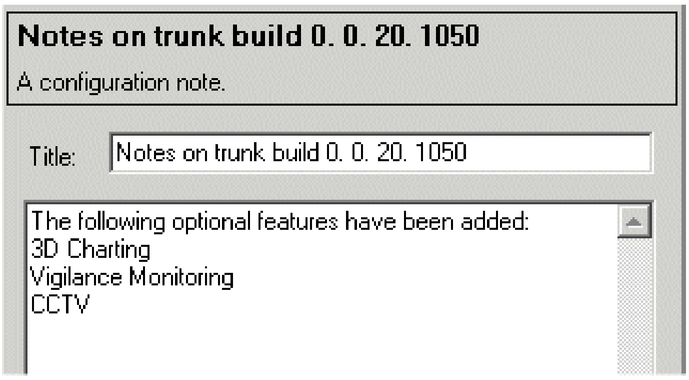
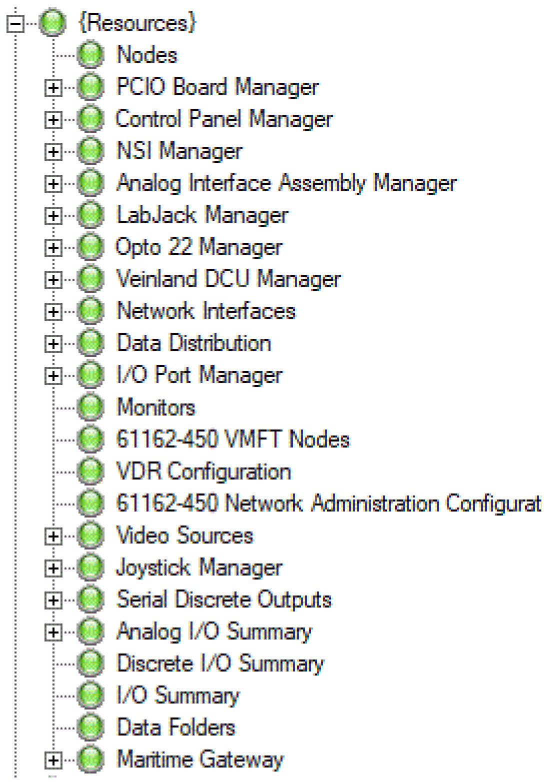


Figure 1.50 Notes

8 Resources



The Resources menu allows the configuration of general-purpose components in the system that are not necessarily associated with any specific feature. These are typically hardware components that may have different uses on different systems. For example, an I/O port is a resource which may be used to support any number of different functions (sensor data acquisition, track table output, etc.) or nodes, if the configuration is for a multi-node system.

The Resources menu includes the following default sub-menu functions:

- Nodes - configures the system node by specifying a identity name, a network host name and product type of the node. The Nodes function is replicated in the Quick Setup section of the configuration and is described in Section 6.3 *Nodes*’.
- PCIO Board Manager - configures the PCIO boards that are connected to the system, see Section 8.1 *PCIO Board Manager*’.
- Control Panel Manager - enables control panels that are connected to nodes on the system to be configured, see Section 8.2 *Control Panel Manager*’
- NSI Manager - enables Network Serial Interface devices to be configured. NSI devices allow NMEA 0183 serial data messages from a serial device to be transmitted over the Local Area Network (LAN), see Section 8.3 *NSI Manager*’.
- Analog Interface Assembly Manager - enables analog interface assemblies such as track control or propulsion control boxes connected to the system to be configured, see Section 8.4 *Analog Interface Assembly Manager*’
- Labjack Manager - For information on configuring a Labjack, see Section 8.5 *Labjack Manager*’.
- Opto 22 Manager - For information on configuring an Opto 22 serial port, see Section 8.6 *Opto 22 Manager*’.
- DCU Manager - For information on configuring DCU rails, see Section 8.7 *DCU Manager*’.
- Network Interfaces - Enables configuration of any network interfaces into the system, see Section 8.8 *Network Interfaces*’.

- Data Distribution - manages connection status between system nodes, including selecting nodes on a multi-node system to operate in Safe Mode, see Section 8.9 *Data Distribution*'.
- I/O Port Manager - configures all the input and output ports on the system, see Section 8.10 *I/O Port Manager*'.
- Monitors - configures all the monitors of a system and their communications ports. The Monitors function is replicated in the Quick Setup section of the configuration and is described in Section 6.5 *Monitors*'.
- 61162-450 VMFT Nodes - lists the system nodes that are connected to a VDR using IEC 61162-450. This function is replicated in the Quick Setup section of the configuration and is described in Section 6.12 *61162-450 VMFT Nodes*'.
- VDR Configuration - controls how VMFT nodes interact with a voyage data recorder (VDR). This function is replicated in the Quick Setup section of the configuration and is described in Section 6.13 *VDR Configuration*'.
- 61162-450 Network Administration Configuration - enables 61162-450 network administration settings to be changed, see Section 8.11 *61162-450 Network Administration Configuration*'.
- Video Sources - enables a video source for CCTV to be configured. The video source may be either generated over a network connection, or connected directly to the monitor, see Section 8.12 *Video Sources*'.
- Joystick Manager - For information on configuring a Joystick device, see Section 8.13 *Joystick Manager*'.
- Serial Discrete Outputs - enables configured serial ports to be used as discrete ports, see Section 8.14 *Serial Discrete Outputs*'.
- Analog I/O Summary - For information on the Analog I/O Summary, see Section 8.15 *Analog I/O Summary*'.
- Discrete I/O Summary - provides an overview of discrete I/O outputs and inputs provided by various components configured into the system (e.g. PCIO boards), and of the functions and nodes in the system that use these, see Section 8.16 *Discrete I/O Summary*'.
- I/O Summary - provides an overview of all I/O channels that are configured in the system, see Section 8.17 *I/O Summary*'.
- Data Folders - shows the locations of all VMFT data sub folders (charts, data logs) and enables browsing to the folder, see Section 8.18 *Data Folders*'.
- Maritime Gateway - a purchasable feature that enables internal network drives to be mapped on a VMFT PC in order to import and export route plans, chart and mapping objects etc. see Section 8.19 *Maritime Gateway*''

8.1 PCIO Board Manager

The PCIO Board Manager enables PCIO boards, connected to the system, to be configured.

The I/O Board Manager content area includes a left and right hand window (Selected PCIO Boards and All PCIO Boards), see Figure 1.51 below.

The Selected I/O PCIO Boards window lists the PCIO boards that the user has configured in the system. A standalone system will include one board only; for a multi-node system each PCIO board in the system must be configured.

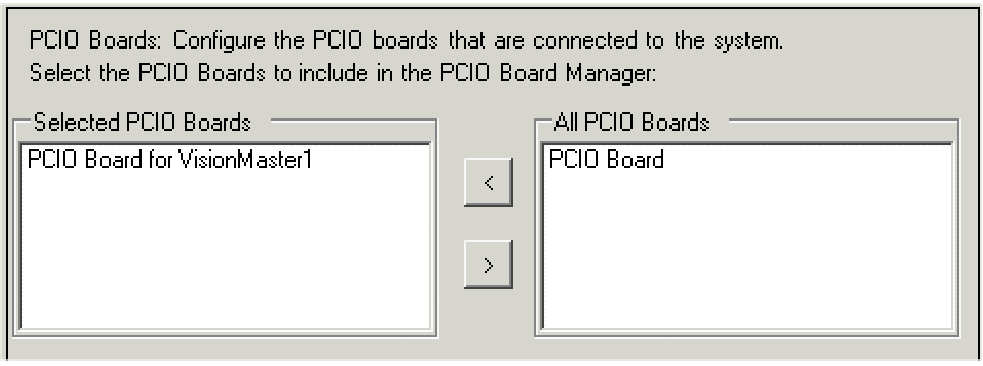


Figure 1.51 PCIO Board Manager

To configure a PCIO board, highlight **PCIO Board** in the **All PCIO Boards** window and click the **<** button. An unconfigured PCIO board is moved into the **Selected PCIO Boards** window and the system adds an unconfigured topic for the board in the navigation tree with a list of discrete outputs and inputs, duplicated from the previously configured PCIO board, with their possible identity and usage. The name of the discrete output may be changed from its default, refer to Section 9.7.4.3 *Buzzer Output*' for details.

A list of serial ports are also created for the board in the I/O Port Manager, see Section 8.10 *I/O Port Manager*'.

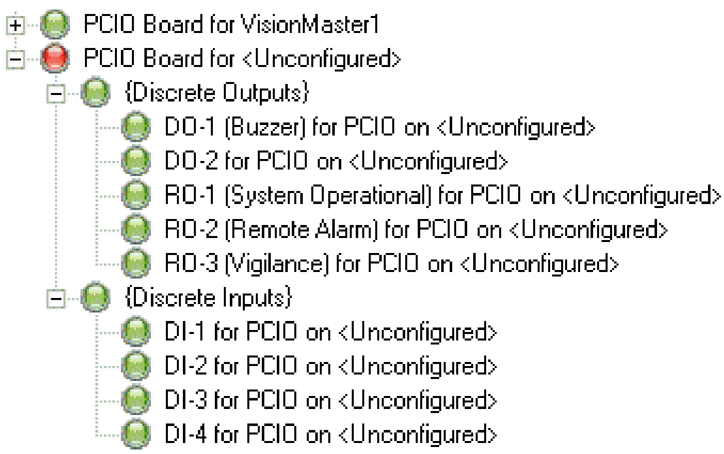


Figure 1.52 Unconfigured PCIO Board - navigation tree

8.1.1 PCIO Board for Node

To view details of the PCIO board click on the **PCIO Board for VisionMaster1** (where 'VisionMaster1' is the display name in the Nodes window).

The subsequent window allows the following settings for the PCIO board to be configured:

- Node
- Serial Port
- PCIO Sensor Interface
- Transmission Retries

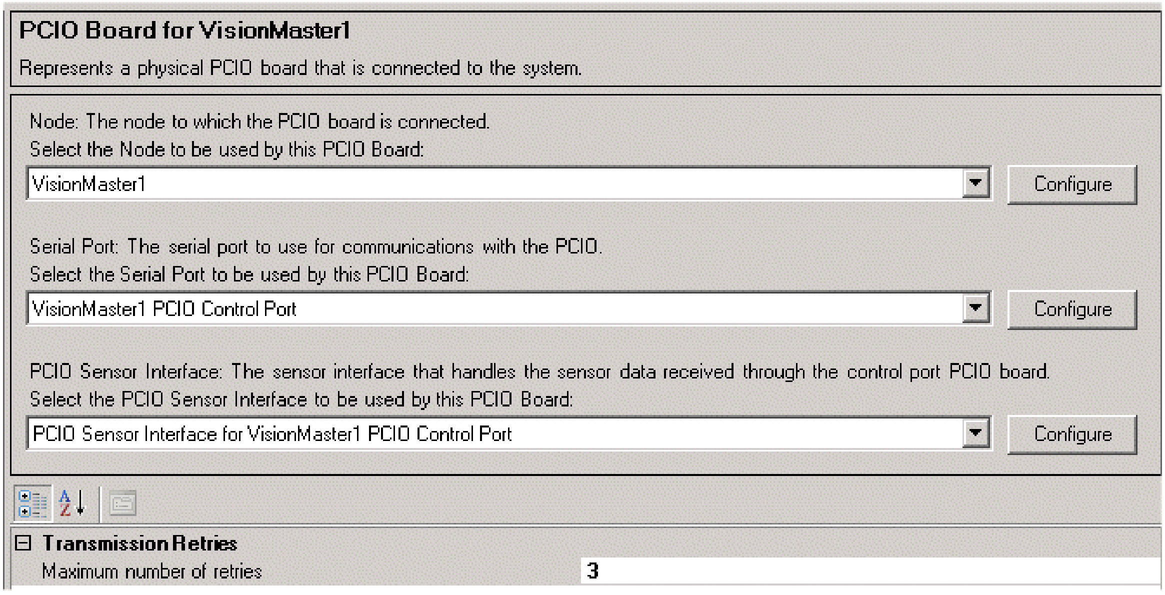


Figure 1.53 PCIO Board for Configured Node

8.1.1.1 Node

The Node field shows the name of the node to which the PCIO board is connected. If the system is a standalone this will be the only node selectable; if the system is multi-node then all other configured nodes will be available for selection by clicking on the Node drop down arrow to the right of the field and selecting the required node from the list.

To configure the selected node click on the **Configure** button, the Nodes window appears, see Section 6.3 *Nodes*'.

Note that when the node that the PCIO board is connected to is selected a series of I/O Ports, including the PCIO Control Port, are automatically generated for the PCIO board in the {I/O Ports} list, see Section 8.10 *I/O Port Manager*'.

8.1.1.2 Serial Port

The Serial Port serves as the control port for the PCIO board. If the PCIO Board is unconfigured the system will automatically assign a Serial Control Port to be configured.

To configure the serial port click on the **Configure** button, the PCIO Serial Control Port window appears, see Section 8.10.3 *PCIO Control Port*'.

8.1.1.3 PCIO Sensor Interface

The PCIO Sensor Interface field enables a link to the sensor interface that handles the sensor data received from the control port PCIO board.

To configure the sensor interface data click on the **Configure** button, the Sensor Interface for the PCIO Control Port window appears, see Section 9.4.1.2 *Interfaces for Acquisition*'.

8.1.1.4 Transmission Retries

The transmission retries specifies the maximum number of times a message will continue to be sent to the PCIO if no acknowledgment is received. The default is **3**.

To change the default click in the Maximum number of retries field and enter the required number. There are no minimum or maximum values for Transmission retries.

8.2 Control Panel Manager

The Control Panel Manager allows control panel variants for each system node and brilliance adjustments to be configured.

If the control panel does not include an optional I/O board a dedicated serial control port must first be configured from the I/O Port Manager. For details, refer to Section 8.10.4 *Control Panel Serial Control Port*'.

On a multi-node system the default setting in the Control Panel Manager is for all nodes to be connected to a basic control panel. To remove the nodes that are not connected to control panels select the node from the Selected Control Panels list and click the **>** button. The window and navigation tree should display only the VM nodes connected to control panels, see Figure 1.54.

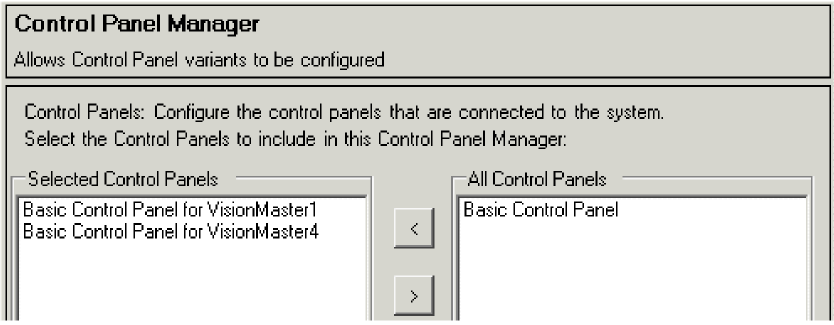


Figure 1.54 Control Panel Manager

To change the default settings for a control panel open the **Basic Control Panel for VisionMaster #** in the navigation tree, see Figure 1.55.

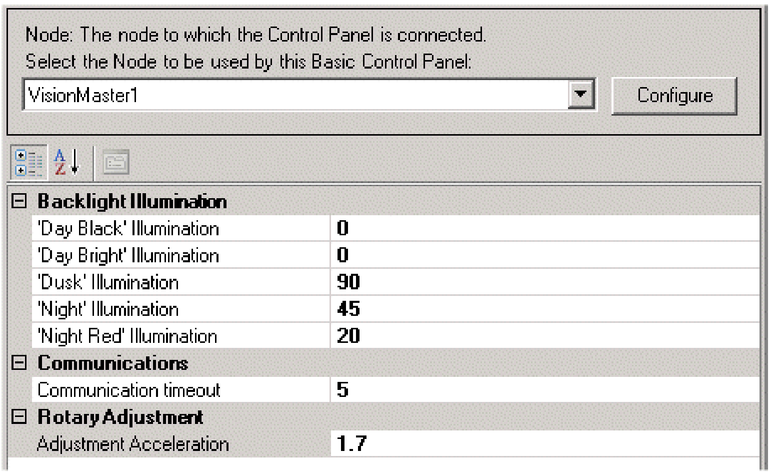


Figure 1.55 Basic Control Panel Configuration

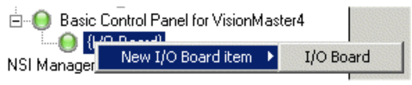
The following configuration settings can be made from the Basic Control Panel configuration window:

1. Node selection - the node to which the control panel is connected.
2. Backlight Illumination - enables illumination settings of the control panel's backlight to be increased or decreased from their defaults. Any adjustments are made relative to the current Day/Night mode and are maintained as the brilliance mode is changed.
3. Communications Timeout - the timeout, in seconds, after which the watchdog declares a communication failure if status messages are not received. The default timeout is five seconds. Valid values are any number equal or greater than 2 seconds.
4. Rotary Adjustment - When manual anti-clutter mode is used rotary control adjusts the anti-clutter sea setting. Larger values cause bigger adjustment as the control is rotated faster. The default value is 1.7. Valid values are equal or greater than 1.1.

8.2.1 Configuring a Control Panel I/O Board

A control panel may include an optional I/O board. The I/O Board is intended to support systems that are not deployed with a PCIO board by providing a limited number of ports. This includes one discrete output for the buzzer, one relay output, and one RS422 serial port capable of up to 38400 baud rate.

The navigation tree assigns an {I/O Board} sub menu to each control panel. To configure a new I/O board for the control panel right click on the sub menu and select I/O board from the flyout.



The navigation tree generates the following sub menu items, see Figure 1.56.

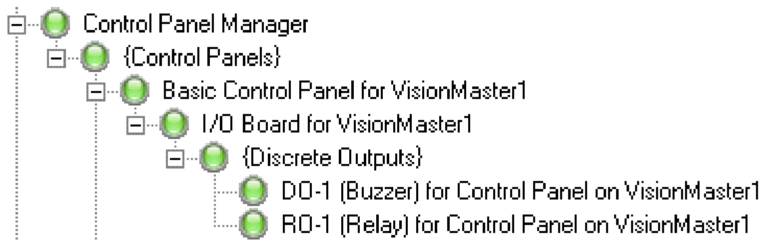


Figure 1.56 Control Panel Navigation Tree

Note that when an I/O board is added to a control panel the system automatically generates a serial port for the control panel in the {I/O Ports} list, see Section 8.10 *I/O Port Manager*'.

The **I/O Board for VisionMaster#** window enables the I/O board relay output to be used to indicate the 'System Operational' status of the node. When set to **Yes** (default) the relay is activated in the event of watchdog failure, or when the node is not running VisionMaster. If the I/O relay is set to **No** it can be used for other purposes, such as announcement outputs.

The discrete output is used to control the buzzer, the settings assigned to this window should not be changed.

If the relay output is to be used for a particular purpose, such as announcement outputs, then a suitable name should be assigned, otherwise the settings assigned to this window should not be changed.

The serial port may be used for LCD monitor communication in order to control the backlight. It is a pass through port that has no interaction with the control panel I/O board.

8.3 NSI Manager

An NSI device includes on the front panel, configuration switches, a reset switch and an Ethernet port. The rear of the device includes five ports for serial data and power connection.

An NSI device will have a default IP address of 192.168.x.yz, with x, y and z being defined by the three configuration switches.

The settings made at the configuration switches determine the mode of operation; Simple or Extended mode. For Simple mode the configuration switch settings are in the range 100 to 999, with the configuration embodied in the device's firmware. In Extended mode the configuration switch settings are in the range 1 to 99. For example, switch 1 is set to 0, with switch 2 and 3 set to '9', giving an IP address of 192.168.0.99.

To access the web pages for NSI devices in order to check the device's status and settings, and for all other information on installing and using an NSI device refer to '*NSI Service Manual* '.

8.3.1 Configuring an NSI Device

1. Click on the NSI Manager topic and select **NSI** from All NSI Devices column. An NSI device with a default ID of 001 is created and I/O ports 1 to 5 are automatically added to the I/O Port Manager list.
2. To change the configuration settings of the NSI open the NSI 001 on LAN 1 topic.
3. The LAN number defines the IP address of the device. Click on the **Configure** button to the right of the field to open the Network Interface LAN topic, see Section 8.8.1 *LAN Configuration*'.
4. Enter the IP address of the NSI device (for example 192.168.0.99), the last three digits of the IP address being the settings made at the configuration switches. The IP address entered is displayed in the title of the LAN topic and appears in the LAN Number of the NSI configuration window.
5. Enter the ID of the device in the NSI ID field. This is also the three digit configuration code selected at the configuration switches. The ID number entered becomes part of the NSI topic title, see Figure 1.57.

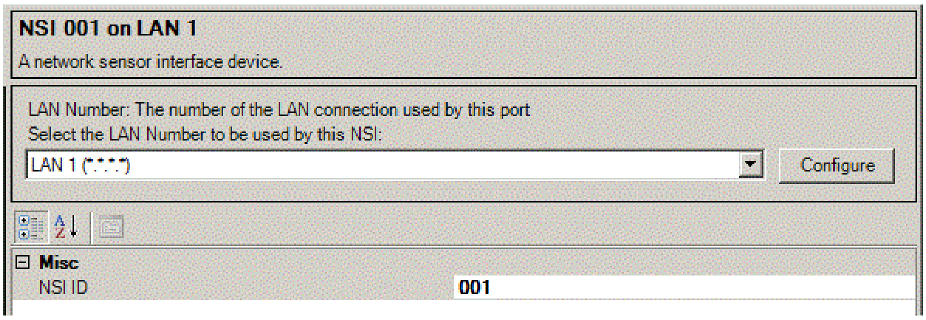


Figure 1.57 NSI Device Configuration Window

8.3.2 Configuring NSI Serial Data Ports

1. Click on the {I/O Ports} sub menu in I/O Port Manager to display the list of I/O ports, including the five serial ports automatically added when an NSI device has been configured, see Figure 1.58.

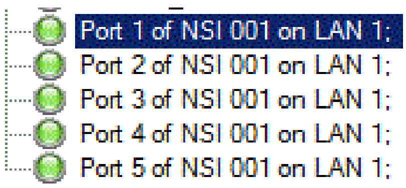


Figure 1.58 I/O Ports List with NSI Ports added

2. Click on an NSI port topic in the navigation tree to open the configuration window for that NSI UDP port, see Figure 1.59.

The following settings are available for configuration:

1. Node: The node on which this NSI Port resides. Select the node to be used from the drop down list.
2. LAN number: Displays the IP address of the NSI, as entered in the Network Interfaces window.

1. General

- Node Specific - If the NSI port is node specific then **Yes** should be selected. If the port is not node specific select **No**.
- Port Usage Description - enables a brief summary of the port usage to be entered, the description is shown in the I/O/ Port navigation tree. .

2. Input

- Input Enabled? - Defaults to **Yes**. If No is selected then the port can only be used for output.
- Group Address - The multicast group IP address over which the data will be received. The default group IP address for Input and Output is 225.0.0.0.
- Received buffer size - The size of the socket receive buffer (defaults to 4096).

- UDP Port Number - The port number over which the data will be received. This is a five digit number with the last number representing the UDP serial port.

3. **Output**
   - Output Enabled? - Defaults to **Yes**. If No is selected then the port can only be used for input.
   - Group Address - The multicast group IP address over which the data will be sent.
   - Maximum Output Rate - This is the maximum rate at which data will be written, the default rate is 38400 Baud. This value MUST be set to the same the baud rate that the NSI device is using, as defined in the Serial Settings web page of the device (Extended mode only). To change the baud rate click on the drop down arrow and select from the options (4800 Baud being the lowest, up to Unlimited).
   - Multicast Loopback - Indicates whether the port should ignore its own output data. Defaults to **Yes**.
   - UDP Port Number - The port number over which data will be sent to.

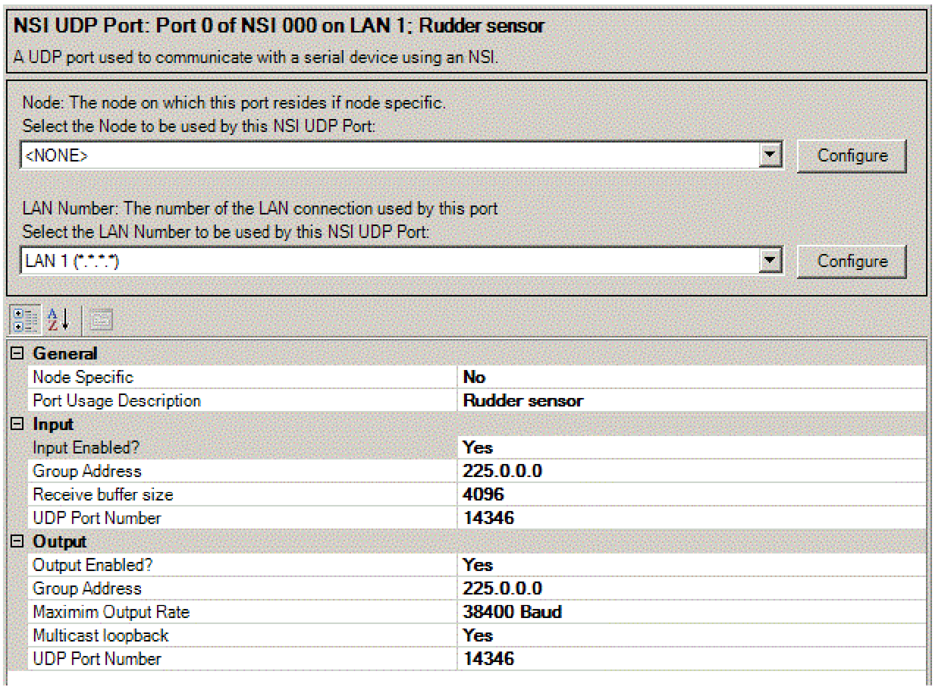


Figure 1.59 NSI UDP Port Configuration Window

8.4 Analog Interface Assembly Manager

One or more analog interface assembly boxes, usually for use with propulsion control or track control systems, may be configured.

To select an analog interface click on **Analog interface Assembly Manager**, select **Analog Interface Assembly Box** from the **All..** list and click the **<** button to move to the **Selected..** list. The navigation tree creates an unconfigured **Analog Interface Assembly Box Labjack1** topic. A similar unconfigured Analog Interface Assembly Box topic is also created in the Labjack Manager sub menu, see Section 8.5 *Labjack Manager*'.

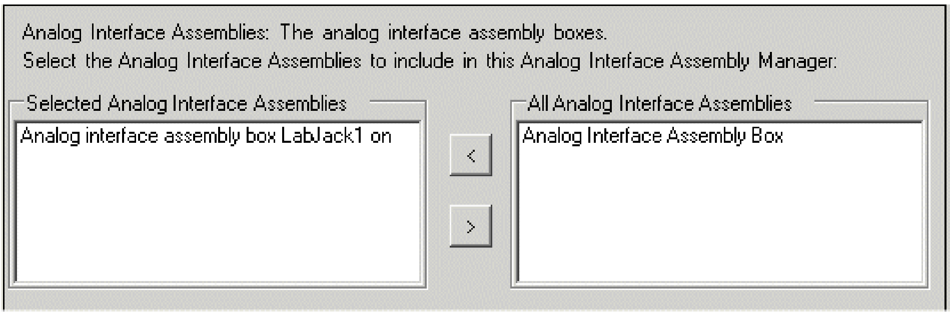


Figure 1.60 Analog Interface Assembly Manager

8.4.1 Configuring an Analog Interface Assembly Box

1. Click on the **Analog Interface Assembly Box Labjack1** topic to open the configuration window.
2. From the Box Type drop down list select the type of system the analog box interface to, see Figure 1.61. This may be a propulsion system such as a Kamewa or Emri, a track control assembly, or a custom assembly.

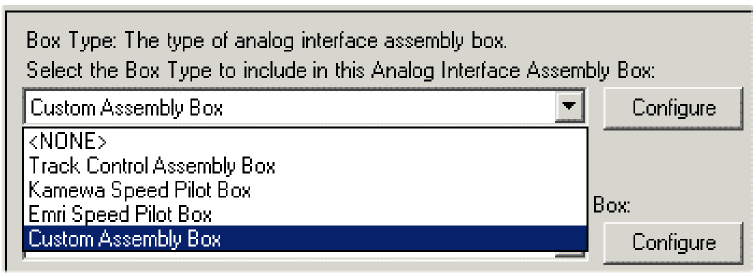


Figure 1.61 Analog Interface Assembly - Select Box Type

3. Select the node that the interface box is connected to. When a node has been selected the topics in the Analog Interface Assembly Manager and Labjack Manager are both displayed as configured.
4. The Labjack ID number defaults to 1. For information on selecting the correct Labjack number refer to Section 8.5.1 *Configuring a Labjack Device*'.

8.5 Labjack Manager

Labjack devices for analog and digital input and output data may be interfaced to the VisionMaster system.

The Labjack Manager window lists all the Labjack devices that are connected to the system in the **All Labjack U12 Devices** column this may include analog interfaces previously configured in Section 8.4 *Analog Interface Assembly Manager*’, see Figure 1.62 below.

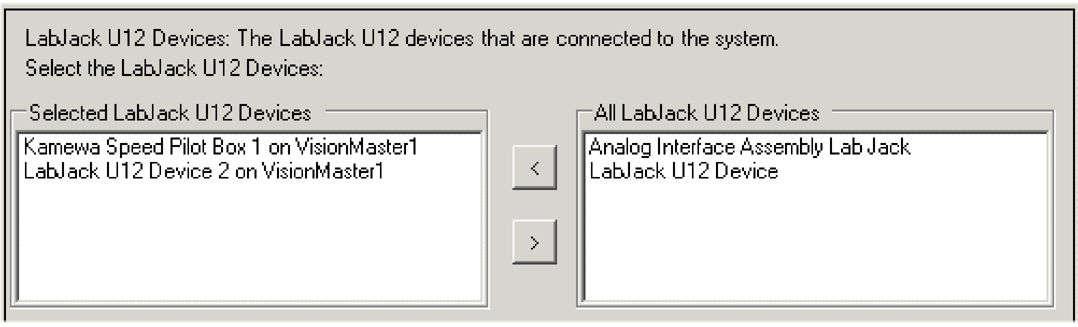


Figure 1.62 Labjack Manager

Select the device to include in the Labjack Manager and click on the **<** button. The selected device is moved to the **Selected Labjack U12 Devices** column and a configuration topic for the selected device appears.

8.5.1 Configuring a Labjack Device

The Labjack configuration window (see Figure 1.63 below) enables you to configure the selected Labjack device. The same configuration settings apply for a Labjack U12 device or an analog interface box.

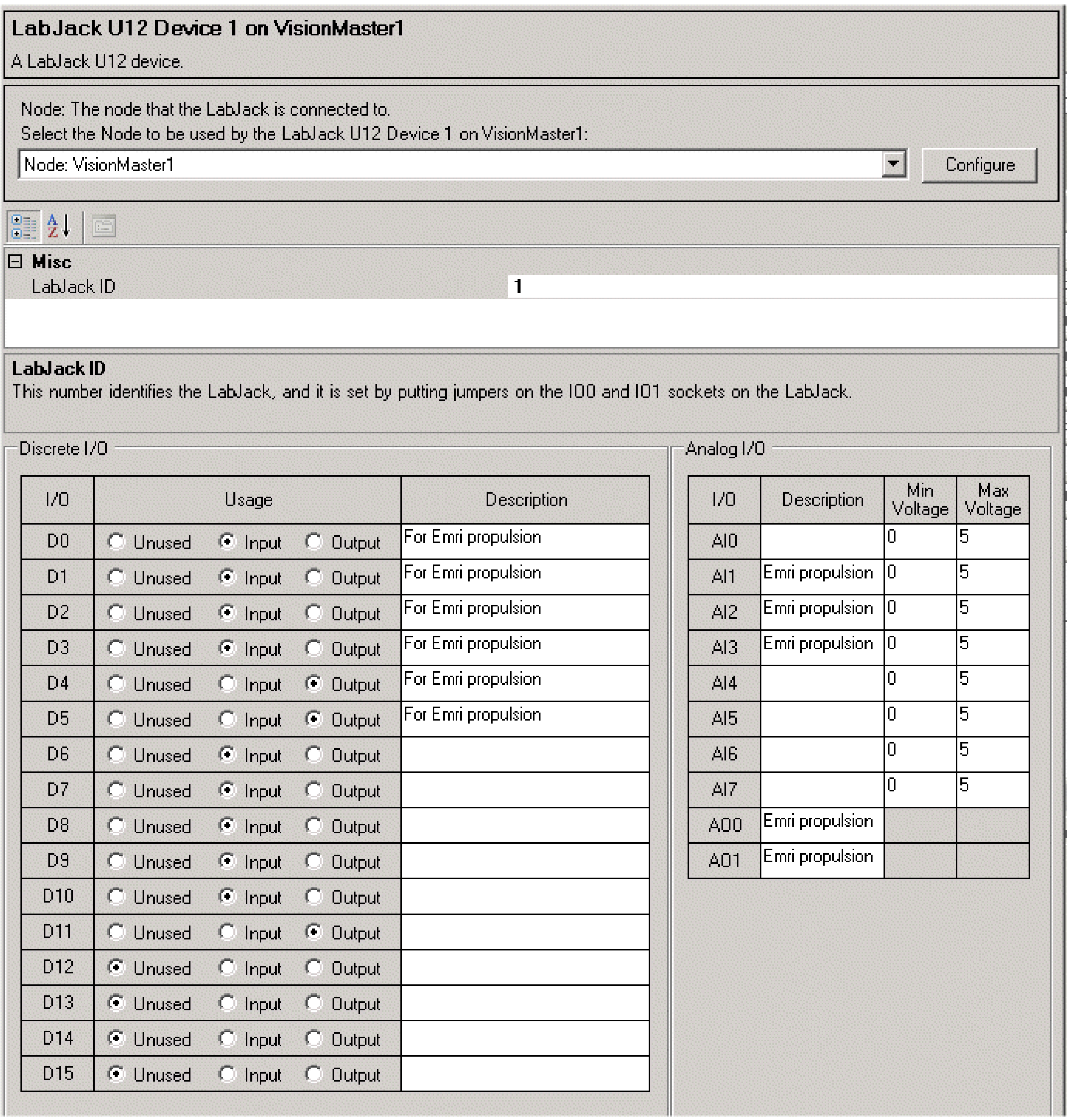


Figure 1.63 Labjack U12 Device Configuration Window

Node Selection

To select the node to which the Labjack device is connected, click on the **Node** drop down arrow to the right of the field and select from the list of configured nodes.

Miscellaneous

The Labjack ID number identifies the Labjack and defaults to 1. The number is set by putting jumpers on the IO0 and IO1 sockets on the device. To change the number click inside the field and click on the drop down arrow to the right of the field. Select the number (1 to 4) by clicking on the drop down arrow and selecting from the list. Note that different Labjack devices cannot have the same ID number.

Labjack ID

The Labjack configuration window includes a list of Discrete I/O connectors and Analogue I/O connectors. All discrete I/O connectors are initially set to **Unused**.

For discrete I/O tick the relevant **Input** and **Output** radio buttons corresponding to the connectors being used by the Labjack. If required, enter a text description in the **Description** field. Figure 1.63 shows a labjack which is used to interface with an Emri Propulsion system, see Section 9.10.19 *Propulsion Control Interface*’.

For analog inputs the minimum and maximum voltage thresholds are set to default values of 0 and 5 volts respectively. You can change the voltage thresholds, up to a maximum of 10 volts. Note that the maximum voltage must be less than the minimum voltage.

8.6 Opto 22 Manager

Opto 22 devices for analog and digital input and output data may be interfaced to the VisionMaster system.

The Opto 22 Manager window provides for the configuration of one or more Opto 22 racks. To select racks to include in the Opto 22 Manager highlight **Opto 22 Rack** in the **All** column and click on the **<** button. An Opto 22 rack is entered in the **Selected** column with a default rack number of **0**.

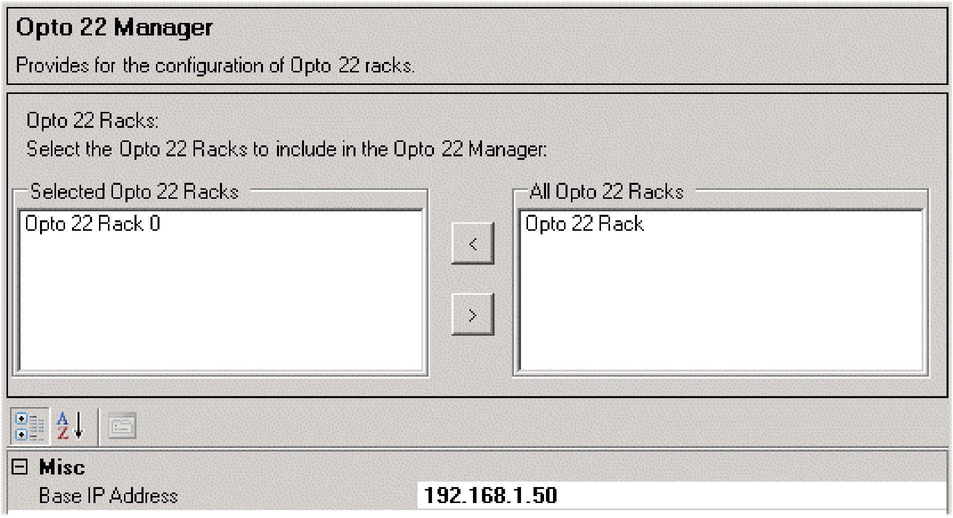


Figure 1.64 Opto 22 Manager

Repeat the above process if further Opto 22 racks are required. Each rack added to the **Selected** column is given the default number of **0** and a unconfigured topic is added to the Opto 22 Racks sub menu.

The Opto 22 Manager includes a base IP address, this IP address is used for rack 0*. The rack number determines the IP address of the rack, for Rack 0 the IP address is 192.168.1.50; for Rack 1 its 192.168.1.51 etc.

If necessary, the base IP address may be changed by clicking in the field and entering the correct numerical identification.

8.6.1 Opto 22 Racks

The Opto 22 Racks sub-menu enables the selection of modules that are connected to the rack to be made and the rack number, which identifies the rack, to be changed.

Click in the **Rack Number** field and enter the required number for all racks after Rack 0. When rack numbers have been entered, each topic's configuration status becomes valid (green).

* The Opto 22 address needs to be consistent with the other IP addresses and subnet definitions in use by the wider system.

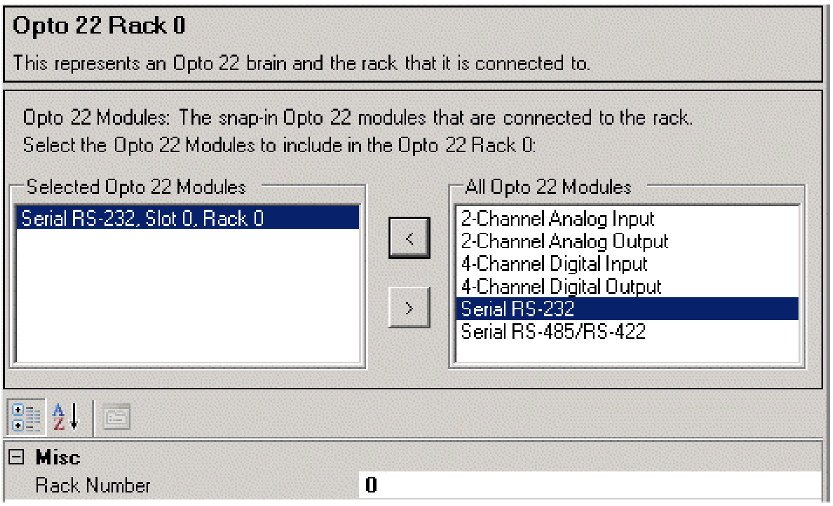


Figure 1.65 Opto 22 Racks

8.6.1.1 Configuring Opto 22 Modules

Each Opto 22 Rack window enables the configuration of the following input/output modules:

- 2-Channel Analog Input/Output
- 4-Channel Digital Input/Output
- Serial RS-232
- Serial RS-485/RS-422

To configure a module highlight the line in the **All Opto 22 Modules** column and click on the **<** button to move the module to the **Selected** column. A module description window, including Slot number, appears in the navigation tree, see Figure 1.66.

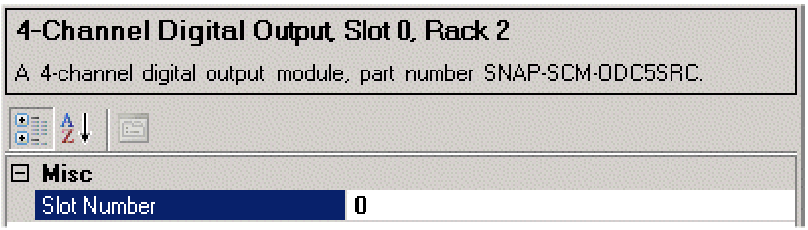


Figure 1.66 Opto 22 Module Window

If Analog or Digital I/Os are selected the system creates {Inputs} and {Outputs} sub-directories in the navigation tree, with each channel listed as a separate topic, from where usage descriptions may be entered. When two or four channel modules are selected each Input and Output module window requires a different slot number to be entered.

8.7 DCU Manager

If your system includes a Data Control Unit (DCU) this menu enables the selection and configuration DCU rails for the device.

A DCU rail is made of one MCU and one or more I/O modules. The selection of I/O modules include DIM8 (eight input modules) and DOM230_4 (four output modules).

To configure a DCU:

1. From the DCU Manager window select the number of DCU rails your device includes from the **All DCU Rails** list. The navigation tree lists the DCU rails as unconfigured sub menu items, see Figure 1.67.

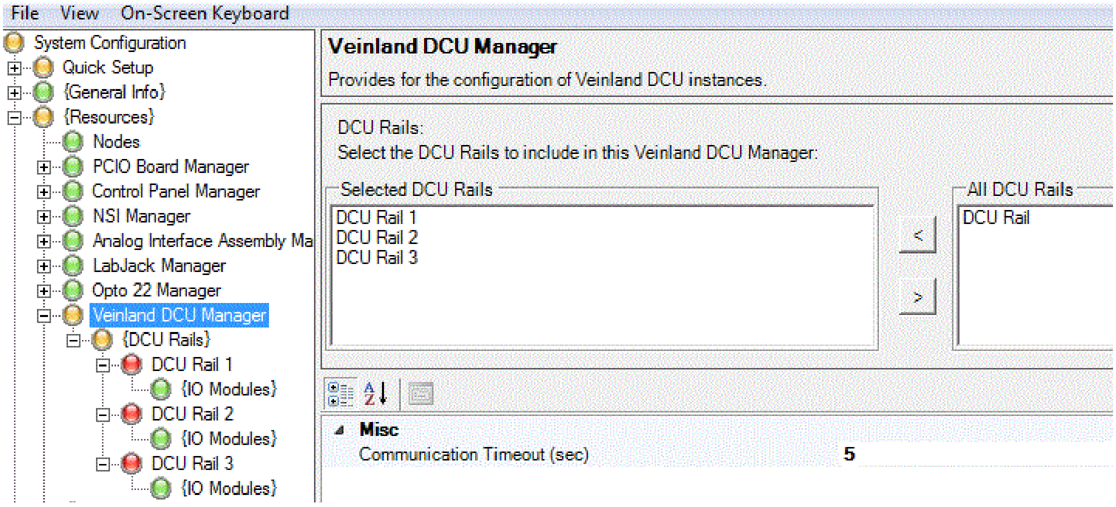


Figure 1.67 DCU - unconfigured

2. The Communication Timeout is the amount of time, in seconds, that a 'device unavailable warning' is raised if no message from the DCU rail has been received. The default timeout period is 5 seconds.

To configure DCU rails do the following:

1. Open the unconfigured DCU Rail topic in the navigation tree. The DCU Rail configuration window lists DIM8 and DOM230_4 in the All IO Modules column.

2. To configure a DIM8 module, select DIM8 from the All IO Modules list, The navigation tree creates 8 inputs (D1 to D8), see Figure 1.68.

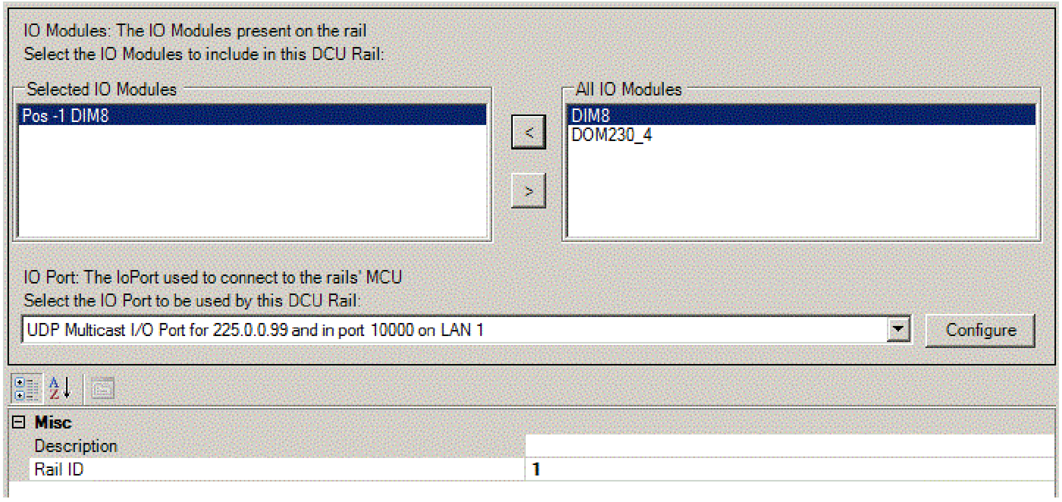


Figure 1.68 DCU Rail - DIM8 Input Modules

3. To configure a DOM230_4 module, select from the All IO Modules list, The navigation tree creates 4 outputs (D1 to D4), see Figure 1.69.

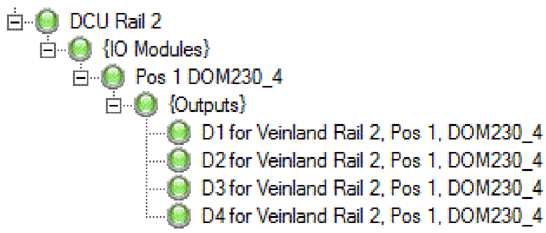


Figure 1.69 DCU Rail - DIM8 Output Modules

4. Select the I/O port used to connect the DCU rails' MCU. This port can be either Serial or TCP. For information on configuring for use as a TCP Client refer to Section 8.10.11 *Configuring a TCP Client Port*', see Figure 1.84. For configuring the port to use as a serial port refer to Section 8.10 *I/O Port Manager*'
5. If required, enter a description for the DCU rail in the Description field.

8.8 Network Interfaces

The Network Interfaces function is used to configure multiple LANs for systems using both network ports of the processor connected to two separate networks.

Note: *An additional LAN does not need to be configured for systems configured to use a dual homed LAN.*

8.8.1 LAN Configuration

The LAN topic enables LAN details to be entered, including the IP address range of the LAN and a unique number associated with the network, see Figure 1.70.

The address defaults to (*.*.*.*), with each * representing one of the four octets in an IP address.

Enter the IP address in the field. You can use * in an IP address octet to indicate a wildcard. For example, 192.168.1.*.

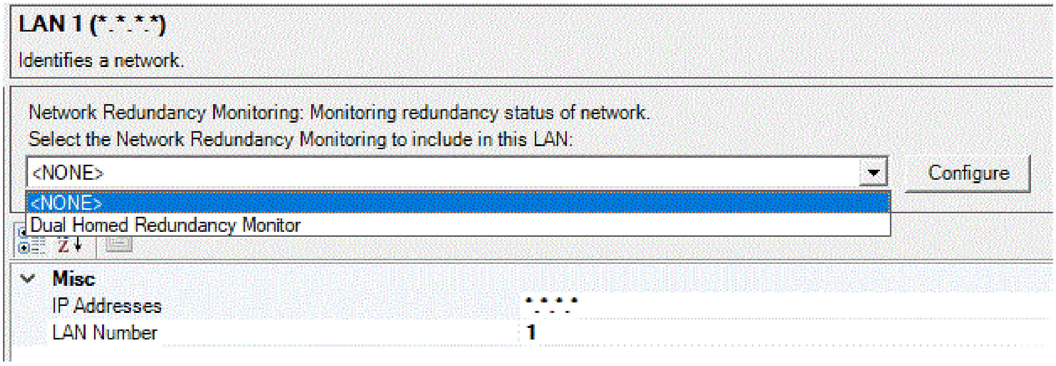


Figure 1.70 LAN Configuration

When an IP address has been entered, the address appears in the LAN window title for any configuration item that references it.

8.8.2 Dual Homed Redundancy Monitor

If a Dual Homed LAN is set up and selected in the LAN Configuration topic (see Figure 1.70), use the Dual Homed Redundancy Monitor to configure how to monitor the state of the Dual Homed LAN. Select the Nodes from the Node list to enable monitoring of their Dual Homed status, and set the Polling Interval time in milliseconds between checks for adapter status changes.

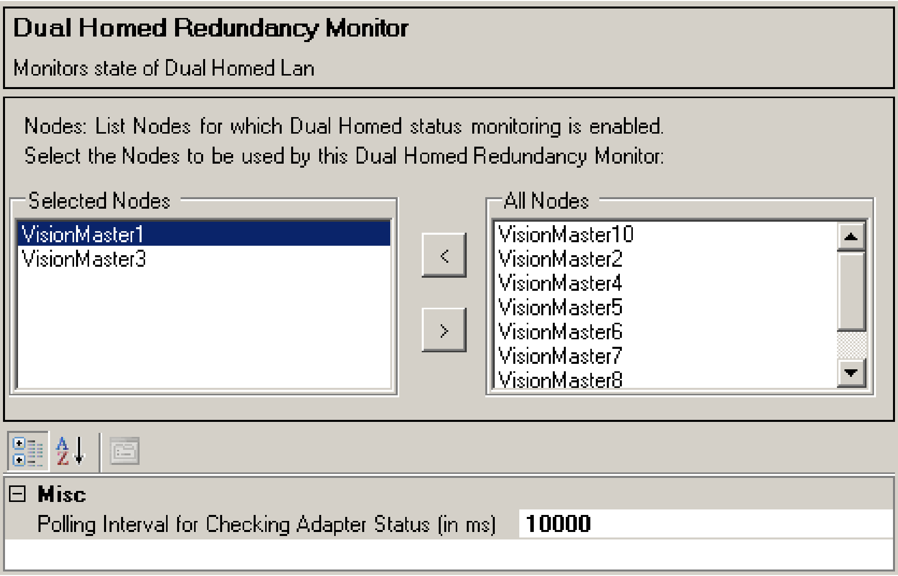


Figure 1.71 Dual Homing Node Configuration Settings

For more information on setting up a Dual Homed LAN, see Section 6 *Dual Homed LAN Interconnections*' in Chapter 4 '*Installing Consoles & Displays*' of Volume 1 of the VMFT Ship's Manual.

8.9 Data Distribution

Establishes and manages connection between system nodes, including enabling the broadcast time to live to be changed from the default and selecting nodes to operate in 'Safe Mode', where a node will automatically disconnect from the network if conditions on the network prevent the node from being usable.

For information on this facility, refer to Section 4.2.2 *Selecting Nodes for Safe Mode*' in Appendix A '*Configuring a Multi-Node System'*.

8.10 I/O Port Manager

The I/O Port Manager content area includes a left and right hand window (Selected I/O Ports and All I/O Ports), see Figure 1.72 below.

The Selected I/O Ports window lists all of the ports that the user has configured in the system, it also includes ports that have been automatically added as a result of a PCIO Board configuration, see Section 8.1 *PCIO Board Manager*'. This includes ports associated with any node in the system (such as a PCIO serial port) as well as ports that have no association with a particular node (such as a UDP multicast I/O port that is accessible from any node).

All the selected I/O ports are listed below the Ports heading as hyperlinks to the respective Serial Port window. Note that Figure 1.72 shows the I/O Port Manager for a standalone system, on a multi-node system the number of I/O ports configured is dependant on the number of PCIO boards in the system.

The Users list includes hyperlinks to hardware and functions connected to the serial ports, such as monitor, interswitch and AIS communications, which have been previously configured in Applications. Note that when ports are first configured the Users column will be empty.

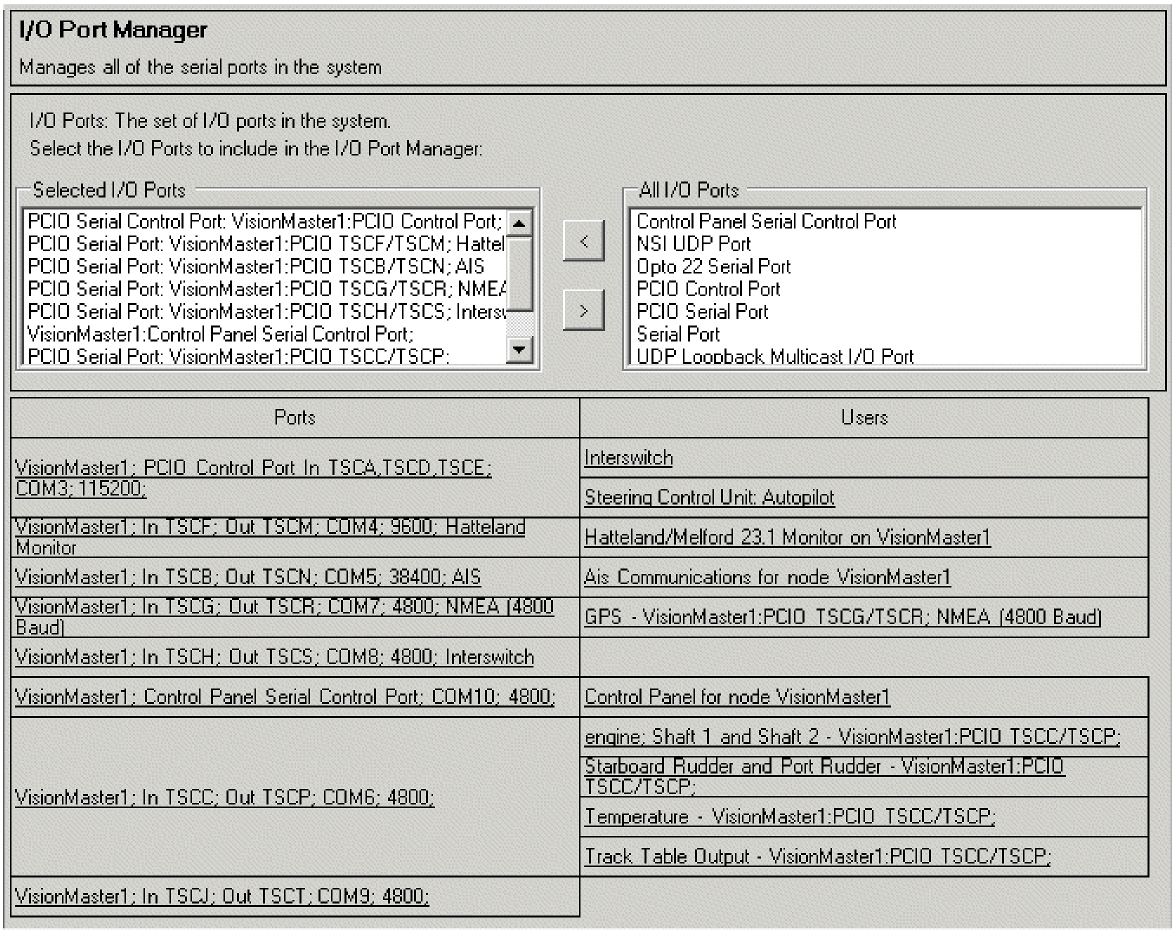


Figure 1.72 I/O Port Manager

To configure a selected I/O Port click on the hyperlink. The I/O Port window for the selected option appears, see Figure 1.73, page 91.

8.10.1 I/O Ports

The topics listed under the {I/O Ports} sub-directory enable each port to be configured. Table 6 below shows the standard input /output configuration for the VisionMaster FT system.

In addition to the serial ports the I/O port manager also manages serial control ports and a UDP multicast input port to the PC. If a NSI device has been configured the I/O Ports list will also include additional serial ports 1 to 5 that may be configured for the NSI, see Section 8.3.2 *Configuring NSI Serial Data Ports*'.

For each PCIO board in the system, the service engineer should configure:

- One PCIO Serial Control Port - this automatically supports input through TSCA, TSCD, and TSCE.
- A PCIO Serial Port for each serial port provided by the PCIO board that is expected to be used by the system, other than TSCA, TSCD, or TSCE.

Note: *Messages that pass through the serial inputs TSCA, TSCD and TSCE must comply with the requirements IEC 61162-1, i.e. the message must have a valid checksum and be no more than 82 characters.*

Table 6: Standard Input/Output Configuration

			Input		Output	
Serial I/O*	COM Port	Baud Rate†	Connector	Device	Connector	Device
1	COM 3	38400	TSCA	Serial Compass (HDT)	Not available	
2	COM 3		TSCD			
3	COM 3	4800	TSCE	Dual axis log (VBW)		
4	COM 4	9600	TSCF	Monitor control	TSCM	Monitor control
5	COM 5	38400	TSCB	AIS (VDO, VDM)	TSCN	
6	COM 6		TSCC		TSCP	
7	COM 7	4800	TSCG	GPS	TSCR	Track table output
8	COM 8	4800	TSCH	Interswitch	TSCS	Interswitch
9	COM 9		TSCJ		TSCT	

*. All serial inputs can work at 4800 baud; serial inputs 1, 5, and 6 can additionally work at 38400 baud.

†. The baud rate of the input/output must be the same.

8.10.2 Configuring a PCIO Serial Port

To configure a PCIO serial port from the I/O Port Manager window:

1. Highlight the port in the All I/O Ports list and click on the **<** arrow. The port is moved to the Selected I/O Ports list as an unconfigured port with an unconfigured (red) status button, a hyperlink for the unconfigured port also appears in the Ports column below.
2. To remove a port from the I/O Port Manager highlight the port in the Selected I/O/ Ports list and click on the **>** arrow, the port is de-selected and moved back to the All I/O Ports list and the hyperlink is removed.
3. The configuration window for the port can be accessed in one of three ways:

   a. double click on the port in the Selected I/O Ports list;

   b. click on the hyperlink in the Ports list; or

   c. double click on the port status line in the navigation tree.

When the configuration window is accessed, the following typical PCIO Serial port configuration window is displayed, see Figure 1.73 below.

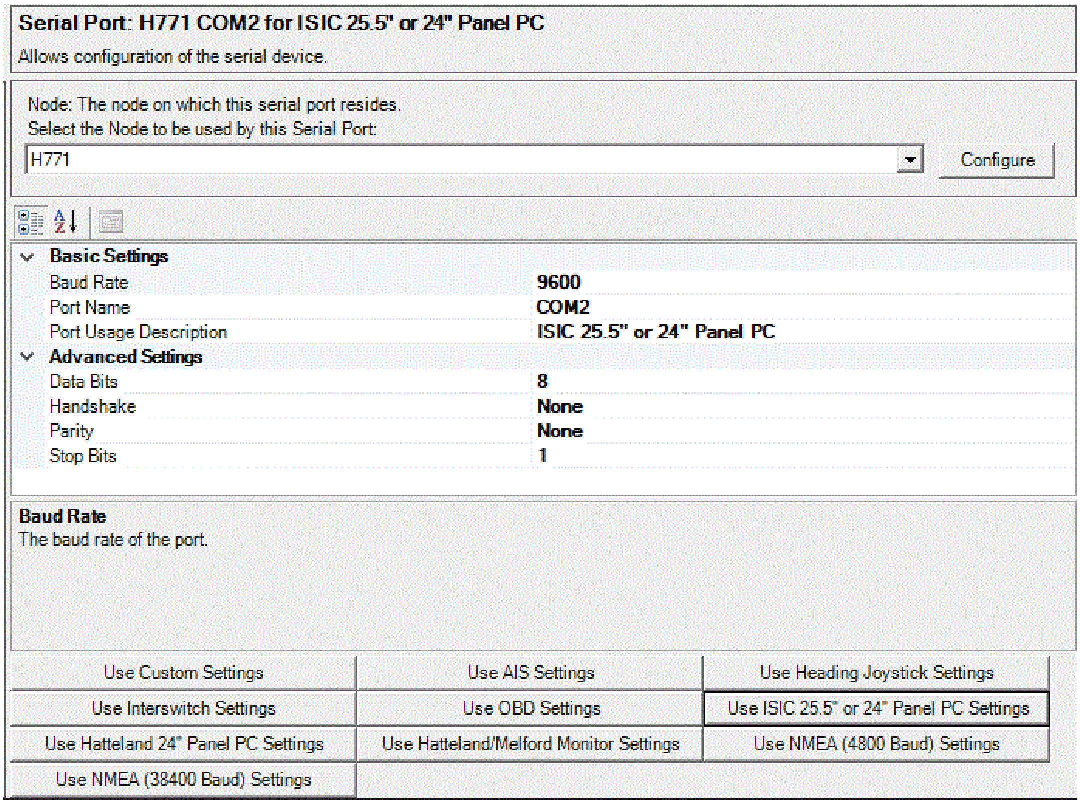


Figure 1.73 PCI/O Serial Port Configuration Window

The window displays certain default settings for a PCIO serial port including the baud rate (4800), the input/output labels (TSCF/TSCM) and the COM port (4). All default settings are configurable.

8.10.2.1 Selecting the Port Node

To select the node on which the serial port resides click on the Node drop down arrow to the right of the field and select the required node from the list.

If the system is single node, only one selection can be made, which is the Display Name in Nodes window. If the system is multi-node you can select or change the node on which the selected port resides.

Note: *On a multi-node system the serial ports for each node must be separately configured.*

To change the node configuration click on the **Configure** button, the Nodes content area appears, see Section 6.3 *Nodes*'

8.10.2.2 Selecting Pre-Defined IO Settings

The I/O Port configuration window includes a number of predefined IO settings arranged in a series of buttons at the bottom of the window, see Figure 1.73. These settings enable you to quickly configure the selected port for a defined purpose.

For example, to configure the port connected to a Hatteland or Melford monitor then click the **Use Hatteland/Melford Monitor Settings** button.

The basic and advanced settings of the port automatically change, dependant on the IO setting selected.

The port usage also appears in the PCIO serial port heading and the topic line in the navigation tree.

8.10.2.3 Changing Basic Settings

The basic settings include the following:

- Baud rate
- Port name or label
- Port usage description

Baud Rate

Note: All serial ports can work to a minimum of 4800 baud, which is the default setting. To check if the serial port baud rate can be increased, refer to Table 6. *For PCIO Serial ports the configuration will not validate if an invalid baud rate is selected.*

To change the baud rate click inside the rate field and click on the drop down arrow to the right of the field. Select the required baud rate from the drop down list.

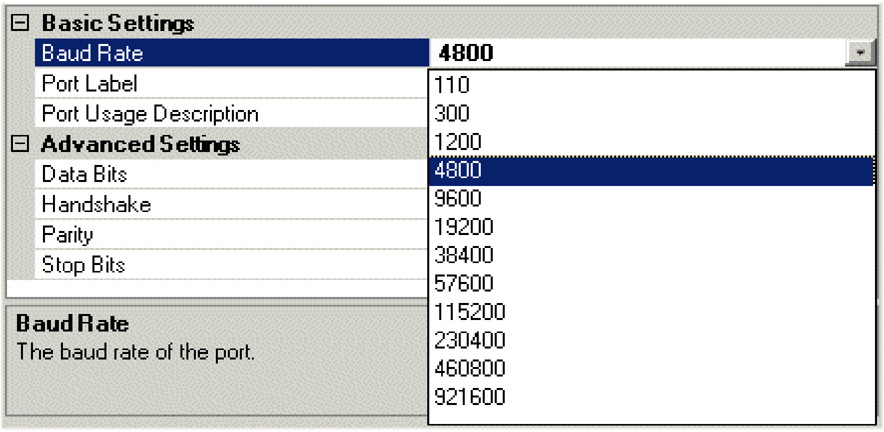


Figure 1.74 Baud Rates

Port Name/Label

The port label lists the physical input and output connections on the PCIO board that the port represents. The port name is the name of the selected port, i.e COM1, COM2 etc.

To change the port connections and name click on the drop down arrow to the right of the field. Select the required settings from the drop down list, Figure 1.75 below shows the list of port connections and names.

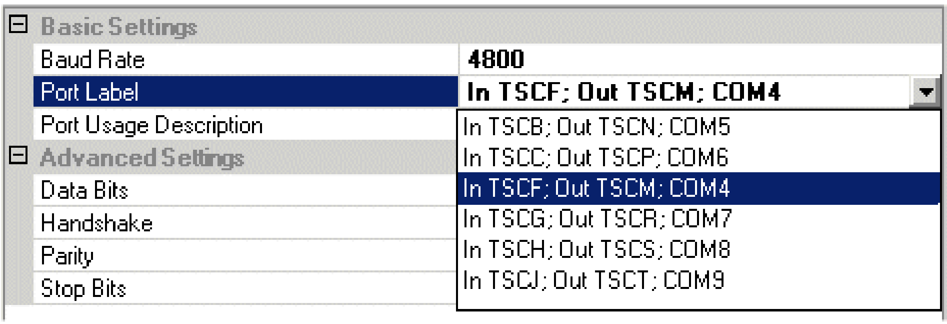


Figure 1.75 Port Label

Port Usage Description

The port usage description includes a summary of the port usage, i.e. the hardware or function connected to the PCIO serial port and listed in the Users column in I/O Port Manager.

8.10.2.4 Changing Advanced Settings

The advance settings include the following communications parameters:

- Data bits
- Handshake
- Parity
- Stop bits

Data Bits

The number of data bits is usually set to eight. To change the number of data bits delete the current number in the field and enter the required number.

Handshake

Handshake represents the handshaking protocol for serial port transmission of data. To change the value click on the drop down arrow to the right of the field and select the required value from the drop down list.

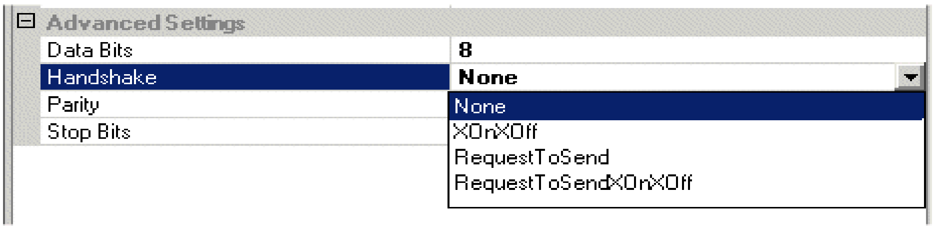


Figure 1.76 Handshake

Parity

The Parity value defaults to **None**, except where Interswitch Settings are selected for Port Usage when the value changes to **Even**. To change the parity of the port click on the drop down arrow to the right of the field and select the required value from the drop down list.

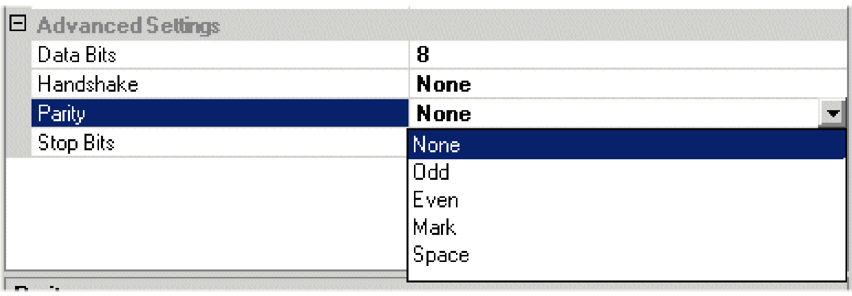


Figure 1.77 Parity

Stop Bits

The number of stop bits defaults to 1, the other values are 1.5 and 2. To change the value click on the drop down arrow to the right of the field and select the required value from the drop down list.

8.10.3 PCIO Control Port

On a multi-node system using a series of PCIOs, each node requires a PCIO Control Port. A configured PCIO Control Port is automatically added to the {I/O Ports} list when a PCIO board has been selected in Section 8.1 *PCIO Board Manager*'.

Figure 1.78 below shows the default settings for a PCIO Control port configuration window.

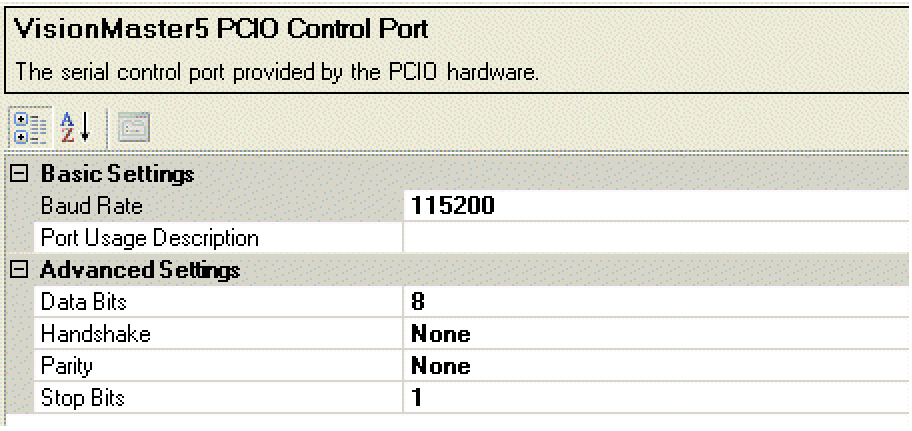


Figure 1.78 PCIO Control Port Configuration Window

The PCIO Control Port is the channel used for receiving and transmitting data between the PCIO and the Processor (PC). The baud rate for a PCIO control port is always set to a default rate of 115200.

The Control Port window does not require a port usage. Consequently there are no I/O setting buttons at the bottom of the window, although a description of the control port can be entered in the Port Usage Description field.

The configuration of the Basic Settings and Advanced Settings are the same as described previously in Section 8.10.2 *Configuring a PCIO Serial Port*'.

8.10.4 Control Panel Serial Control Port

A Control Panel serial control port is automatically configured and added to the {I/O Ports} list when a control panel has been selected for a node (see Section 8.2 *Control Panel Manager*'). On a multi-node system each node that is connected to a control panel will have a serial control port assigned.

Figure 1.78 below shows the default settings for a Control Panel serial control port configuration window.

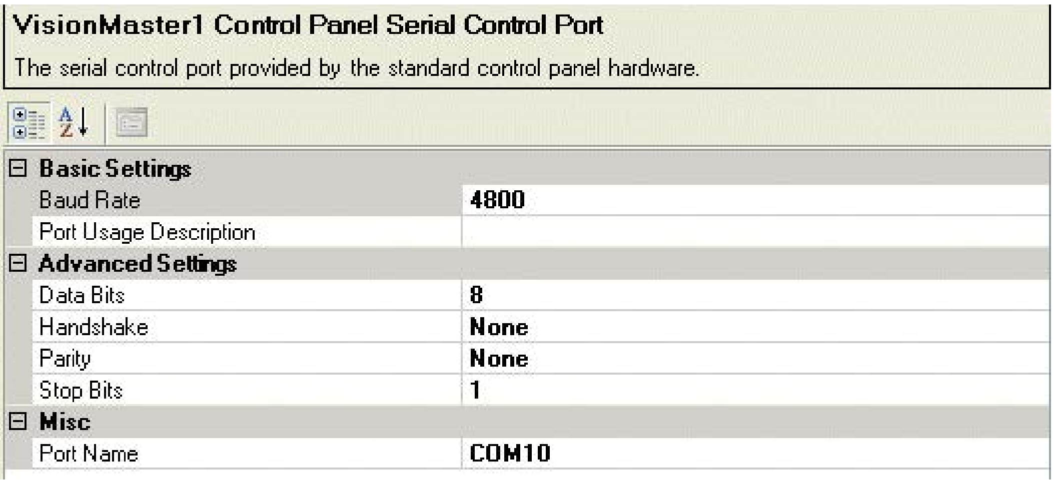


Figure 1.79 Control Panel Serial Control Port Configuration Window

The baud rate is always set to a default rate of 4800.

A port usage is not required to be entered, although a description of the control port (e.g. basic control panel) can be entered in the Port Usage Description field.

The Advanced Settings are the same as described previously in Section 8.10.2 *Configuring a PCIO Serial Port*'.

The control panel Port Name is the COM port assigned to the control panel (the default is COM10).

8.10.5 Control Panel Serial Port

A Control Panel serial port is automatically configured and added to the {I/O Ports} list when an optional I/O board has been configured for the control panel, see Section 8.2.1 *Configuring a Control Panel I/O Board*'.

Figure 1.80 below shows the default settings for a Control Panel serial port configuration window.

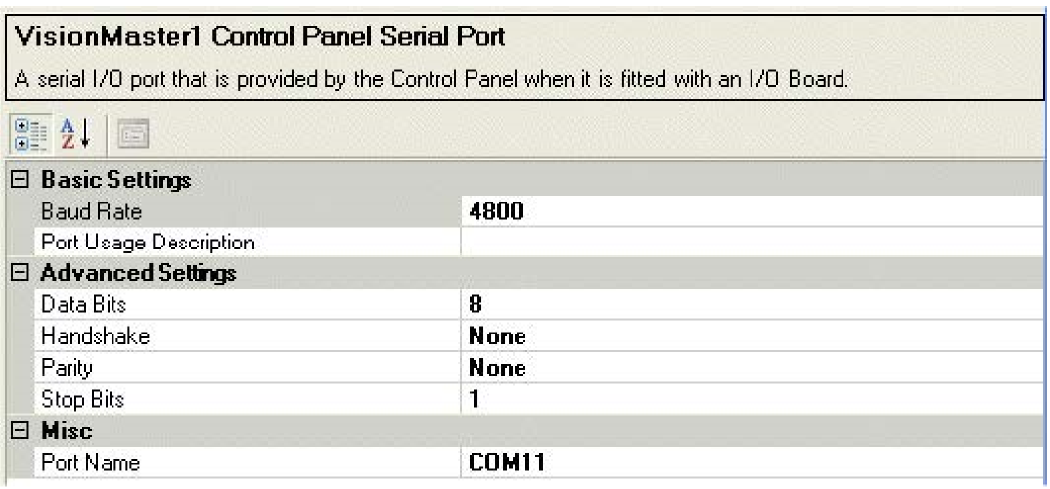


Figure 1.80 Control Panel Serial Port Configuration Window

The baud rate is always set to a default rate of 4800.

A port usage is not required to be entered, although a description of the control port (e.g. control panel IO board) can be entered in the Port Usage Description field.

The Advanced Settings are the same as described previously in Section 8.10.2 *Configuring a PCIO Serial Port*'.

The control panel Port Name is the COM port assigned to the control panel (the default is COM11).

8.10.6 Network I/O Port to PC

The I/O Port Manager enables you to configure UDP multicast network I/O ports from the Processor. UDP multicast I/O ports are used when communicating via a Sperry NSI box connected to the network, or other equipment that uses UDP multicast protocols.

The default setting is input and output enabled but the port may be configured to be either input only or output only.

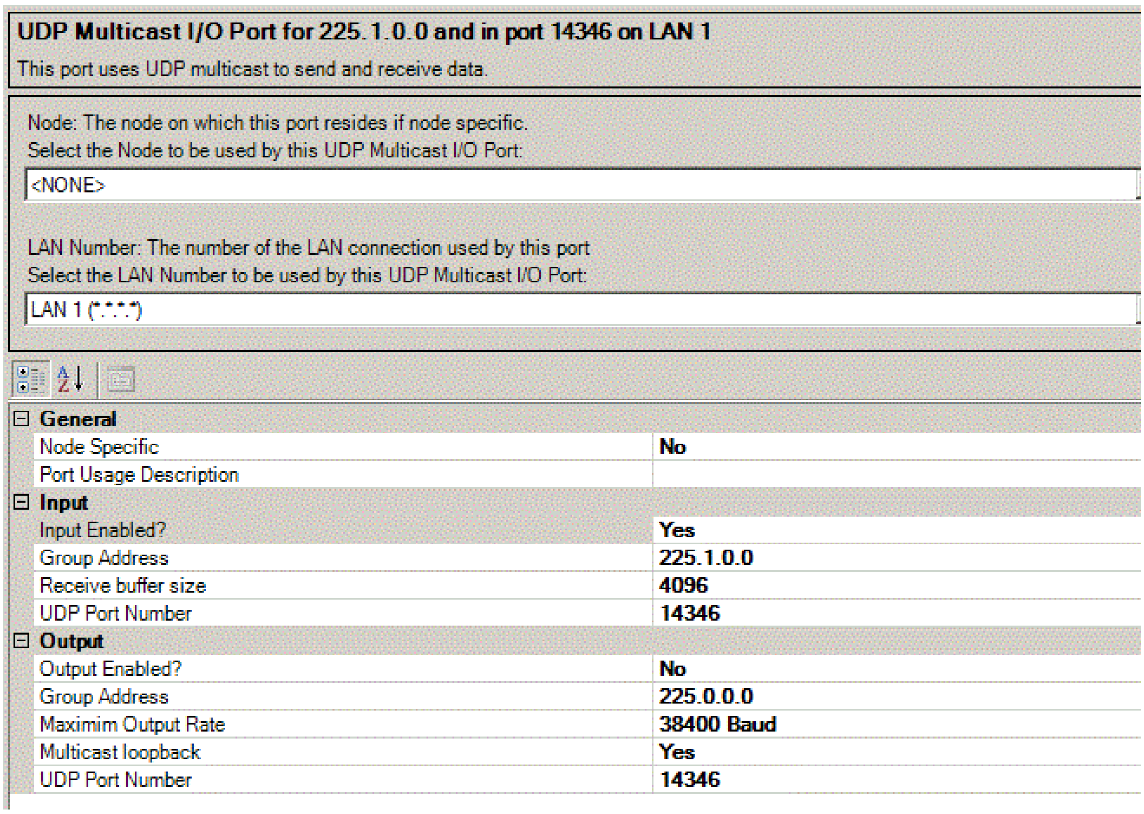


Figure 1.81 UDP Multicast I/O Port

8.10.6.1 LAN Number

The LAN Number is the number of the LAN connection used by this port, if the system only has one network card then this number remains at 1. The (*.*.*.*) indicates a wildcard setting for the IP address associated with the network.

To configure a specific IP Address click the Configure button, the LAN (*.*.*.*) window opens, see Section 8.8.1 *LAN Configuration*'.

8.10.6.2 Changing General Settings

The following general settings can be configured:

- **Node Specific -** select **Yes** if the I/O port is connected to a specific node (as selected in the Node drop down list). If the I/O port is not connected to a specific node select **No**, <NONE> is then automatically selected in the Nodes field.
- **Port Usage Description** - a description of what the port is to be used for (e.g. Nav Lines) can be entered.

8.10.6.3 Changing Input Port Settings

The following Input settings can be configured:

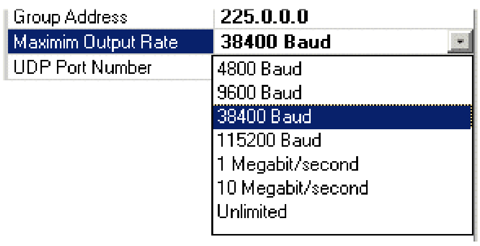
- **Input Enabled** - the enablement setting defaults to Yes, to disable input click on the drop down arrow to the right of the field and select **No**.
- **Group Address** - the Group Address is the multicast IP address over which data will be received. If the address requires changing click in the field and enter the required values.
- **Receive buffer size** - sets the size of the socket receive buffer (default 4096). If the default size is not sufficient for the connected sub system then either the port is set automatically to the correct buffer size, or the value can be manually changed entered in the field.
- **UDP Port Number** - the UDP port number over which the data will be received. If the port number requires changing click in the field and enter the required values.

8.10.6.4 Changing Output Port Settings

The output settings include the same settings as described for Input, but with the addition of Maximum Output Rate, which defaults to 38400 Baud and Multicast loopback, which defaults to **Yes** (this indicates that the port should ignore its own outbound data).

Setting the maximum output rate is important when communicating with an external device that cannot continually process the data faster than the rate set for the serial port. For example, track table output send over a UDP multicast port to an NSI box, which is connected via a serial port to the device receiving the target data. If the serial port is operating at 4800 baud, then the UDP port also needs to be limited to 4800 baud.

To change the maximum output rate click on the drop down arrow and select the required value from the list, which ranges from 4800 Baud to Unlimited.



8.10.6.5 Multicast Group Address

A multicast address can be configured within the following range:

224.0.0.0 to 239.255.255.255

IEC 61162-450 reserves a set of multicast addresses that must only be used for IEC 61162-450 communication.

The following address should only be used for IEC 61162-450 communication and must not be used for any other UDP multicast traffic:

239.192.0.1 to 239.192.0.64.

8.10.7 Configuring a UDP Port using a Loopback Adapter

A loopback adapter is a testing tool for a virtual network environment where network access is not available. In VisionMaster it is also used as the UDP port for the CCTV Vic Manager if a LAN Video Display Provider is being configured, see Section 9.10.14.1 *LAN Video Display Providers*'.

The General and Input/Output configuration settings for a UDP Multicast I/O Port are the same as described previously for the UDP Multicast I/O Port, the exception being that no LAN number is required.

8.10.8 Configuring a Opto 22 Serial Port

Before an Opto 22 serial port can be configured the module that houses this serial port must first be selected from the Opto 22 Manager sub-menu. This can be either an RS-232 or RS-485/RS-422 serial I/O. For details see Section 8.6.1 *Opto 22 Racks*'.

To configure a Opto 22 serial port from the I/O Port Manager window, move the serial port into the Selected I/O Ports list in I/O Port Manager and access its configuration window as described previously.

To select the Opto 22 module to be used by the serial port click on the Module drop down arrow to the right of the field and select from the list, see Figure 1.82 below. There may be more than one Opto 22 module configured in the Opto 22 Manager.

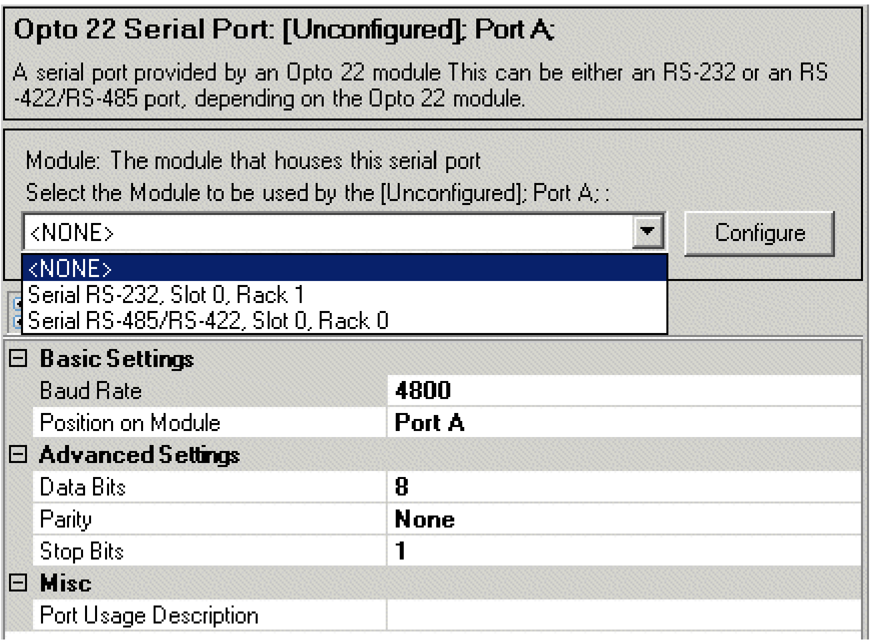


Figure 1.82 Opto 22 Serial Port Configuration Window

To change the baud rate from the default 4800 click inside the rate field and click on the drop down arrow to the right of the field. Select the required baud rate from the drop down list.

Position on Module

If the serial module allows two ports, then select the serial port position by clicking inside the field and clicking on the drop down arrow to the right of the field. Select the port (A or B) from the drop down list.

Advanced Settings

The advanced settings show the same default values as an I/O serial port. To change the Advanced Settings, see Section 8.10.2 *Configuring a PCIO Serial Port*’.

Port Usage Description

Enter an optional description of the usage of the port in the Port Usage Description field.

8.10.9 Configuring a Serial Port on the PC, an external Serial Port or an internal Serial Card

If the product type you are using does not require radar input, (i.e. an ECDIS without radar overlay or a Conning Information Display) then a PCIO unit may not be fitted to the node.

In this case a serial output may be configured in one of three ways:

1. By configuring a serial port on the PC, see Section 8.10.9.1 below.
2. As an External Serial Port (ESP) unit, connected to the PC via a USB port, with COM ports 12 and above assigned to the ESP.
3. As a PCI serial card, which is installed inside the PC.

If an ESP is to be connected to the PC, or a PCI serial card is to be installed in the PC, follow the instructions in ‘*Chapter 1 Appendix C Configuring Peripheral Devices* ’.

8.10.9.1 Configuring a Serial Port on the PC

To configure a serial port on the PC to enable audio output for the buzzer:

1. From the I/O/ Ports window select **Serial Port** from the list of All I/O Ports, see Figure 1.72. The system will automatically assign a port name (COM 1) and a baud rate of 4800.
2. Select the node on which the serial port resides, and if required, change basic and advanced settings.

This serial port may now be used to configure a serial discrete output for the buzzer, see Section 8.14.1 *Configuring a Serial Discrete Output*'.

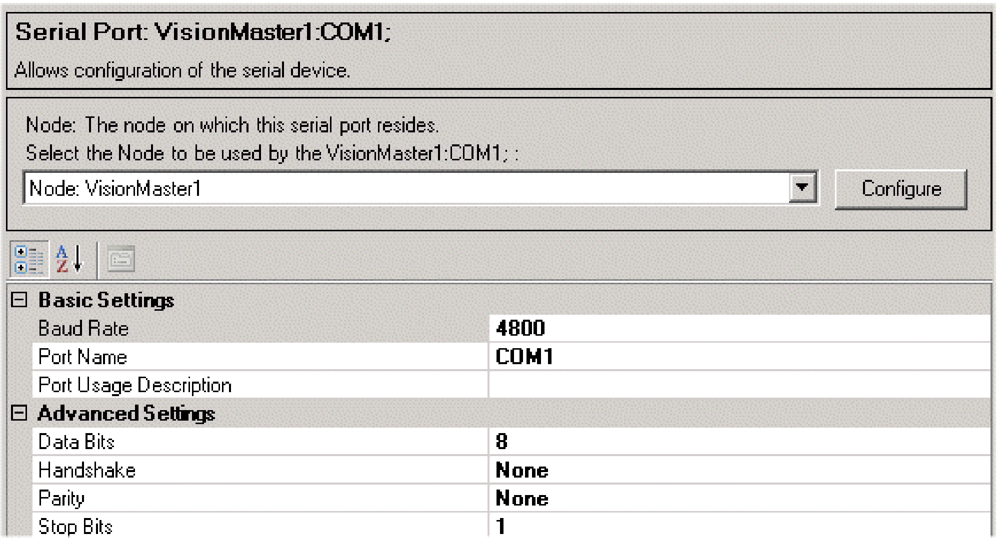


Figure 1.83 Serial Port (COM 1)

8.10.10 Configuring an NSI UDP Port

An NSI UPD serial port may be selected for configuration. If you have configured a NSI device from the NSI Manager menu the I/O Ports list will automatically generate serial ports 1 to 5 for the NSI, see Section 8.3 *NSI Manager*'.

When an NSI UDP Ports is selected from the All I/O Ports list the I/O Ports topic the port number defaults to 0.

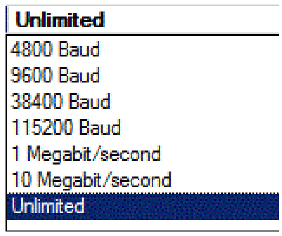
For details on configuring an NSI UDP port refer to Section 8.3.2 *Configuring NSI Serial Data Ports*'.

8.10.11 Configuring a TCP Client Port

A TCP Client Port uses TCP to communicate a suitable device, for example a VEINLAND DCU.

To configure a TCP Client port:

1. From the I/O/ Ports window select **TCP Client Port** from the list of All I/O Ports, see Figure 1.72. The system adds an unconfigured TCP Port to the {I/O/ Ports} list.
2. From the **Unnamed TCP Client Port** window select the following:
   a. If the TCP port is connected to a specific node select that node from the Node drop down. If the TCP port is not connected to a specific node do not select a node but ensure that the **Node Specific** selection in the General settings is set to **No**.
   b. From the **LAN number** field select the LAN to be used by this port.
   c. Enter a name for the TCP port in the Port Name field. An optional **Port Usage Description** may be entered.
   d. The Maximum Output Rate defaults to **Unlimited** to change the output rate click on the arrow and select from the drop down list
   e. Enter the IP address of the server the device is connected to and its IP port number. The IP address must be consistent with the VMFT network, in order for all devices to communicate.



Note: *The* **Connection idle timeout** *field allows a specific timeout value to be applied, in ms (e.g. 5000ms), appropriate to the device being connected in order to support device automatic reconnection if required. The default value is set to* **0** *(this may be adjusted as appropriate to the device).*

Figure 1.84 shows a TCP Client Port interface.

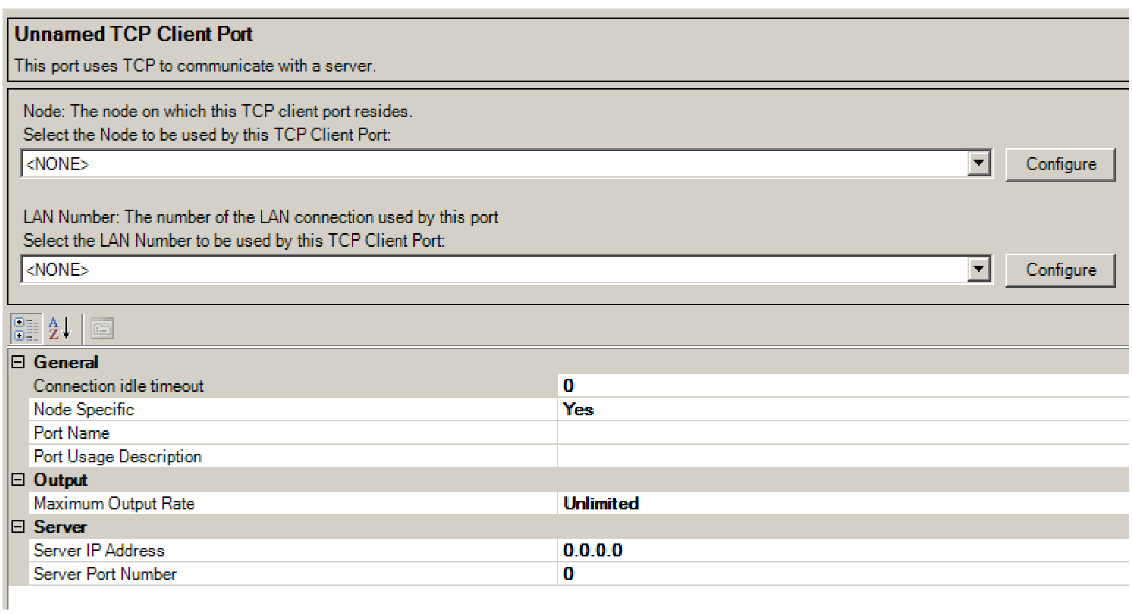


Figure 1.84 TCP Client Port Window

8.11 61162-450 Network Administration Configuration

The 61162-450 Network Administration configuration settings include enabling NETA, setting the Neta IP address and Port number.

Note: *It is advised that these setting should NOT be changed unless specifically requested by NGSM support.*

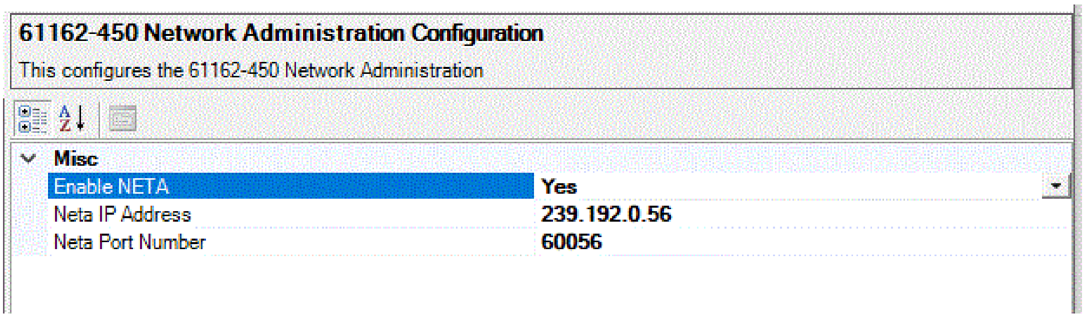


Figure 1.85 61162-450 Network Administration Configuration

8.12 Video Sources

The Video Sources function enables real time streaming video to be viewed as CCTV on the display. The video source may be generated either over a local area network (LAN) connection, or connected directly to a monitor using the Picture in Picture (PiP) feature of the monitor.

Note: *A Video Display Provider (either LAN or PiP, depending on the video source selected) must also be configured, in conjunction with the configuration of the video source. Refer to Section 9.10 Optional Features’ for details on configuring the video display providers.*

To select a video source, select **Video Source Group** in the All Groups column of the Video Sources window and click the < button. An unconfigured video source group is created.

When a Video Source Group has been selected an unconfigured topic is created in the navigation tree with {Video Sources} and {Child Groups} as sub menu items.

Multiple video groups may be created for both Vlc (VideoLAN connection) and PiP video. Each group may have one or more video sources and child groups configured. Figure 1.86 shows two LAN (named Network 1 and 2) and one Pip video source groups configured.

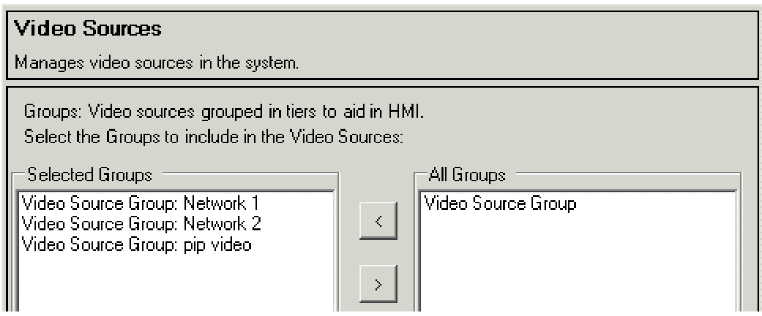


Figure 1.86 Video Sources

8.12.1 LAN VIdeo Source Group

A LAN video source enables up to four MPEG-4 video feeds (MPEG-4 part 10 [H-264 coding] and MPEG-4 [part 2]) received over a network to be displayed.

To configure a LAN video source group:

1. Click on the unconfigured **Video Source Group:** topic in the navigation tree. The configuration window for the group of video sources opens.
2. From the All Video Sources column, select **Vlc Client Source** and click the < button. A Vlc Client Source topic is created below the **{Video Sources}** sub menu.

3. To select child groups to include in the video source group select **Video Source Groups** from the All Child Groups and click the < button. A **Child Group** sub menu topic is created.
4. Enter a name for the video source group in the **Name** field. Each name must be unique if more than one group has been created. Figure 1.87 shows a typical example of a configured Video Source Group window.

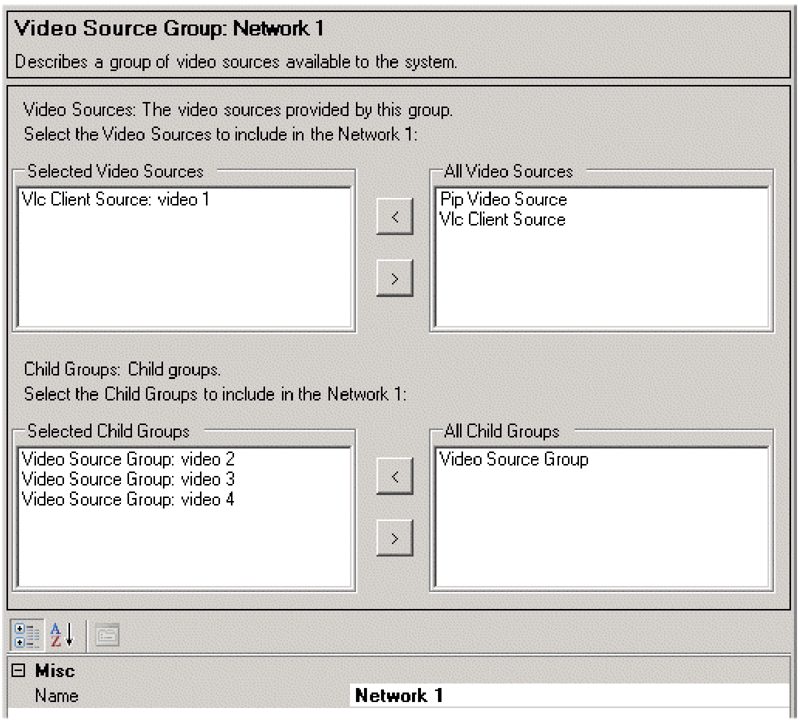


Figure 1.87 Video Source Group Configured

To configure a Vlc Client Source:

1. From the navigation tree, click on the Vlc Client Source: topic. The Vlc Client Source window displays the following auto generated data:
   - IP Address or RTSP URL - the IP address on which the video data is streamed, or the URL of the video stream data if protocol is used. The field should be blank when RTP or UDP is selected from the Protocol Used field.

   Note: *For connections using the RTSP protocol, authentication information can be added to the 'IP Address or RTSP URL' field in the format 'username:password@serverdetails...' E.g. to specify an RTSP connection to 192.168.0.100:8854/cam with the username 'john' and password 'smith', enter 'john:smith@192.168.0.100:8554/cam'.*

   - Port Number - the port number on which the video data is streamed. This field is ignored if protocol is RTSP.

- Protocol Used- the protocol used to stream the video data. The default is UDPM, to change the protocol click on the drop down arrow and select from the list of protocols.

2. Enter a unique name for this video source in the **Name** field. The name is assigned to the Client Source window and the topic in the navigation tree. The names entered for each streaming feed are displayed on the CCTV window when the VisionMaster system is running video.

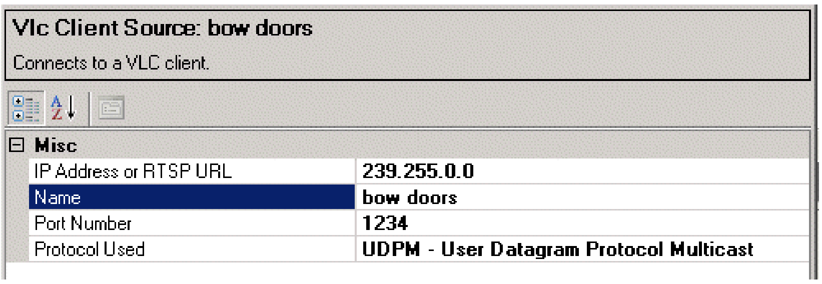


Figure 1.88 Vlc Client Source Configured

If Child Groups have been created for the video source, each group must have their Vlc Client Source configured, as described above.

The video sources are not fully configured until a video display provider has been selected from the Main Application, Optional Features list.

Note: *Each video display window should have a unique video source configured. If more than one video display selects the same source a popup message 'hostform has encountered an error' is displayed.*

Figure 1.89 shows a typical hierarchical sub menu for Video Sources when two LAN video source groups have been created and a video provider selected from Optional Features.

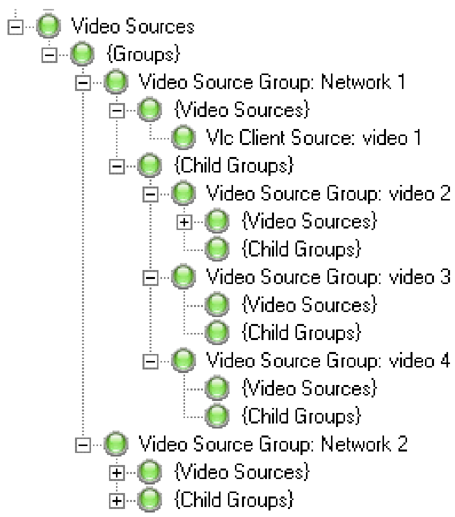


Figure 1.89 Resources sub menu for Video Sources

8.12.2 PIP Video Source Group

When using PiP as a video source, the composite video input on the selected monitor is used as the source of the PiP video.

The CCTV generated through PiP is displayed only on a full screen CID page, or the left side CID panel of a widescreen monitor.

Note: *Currently the PiP video feature is only available when using Hatteland monitors.*

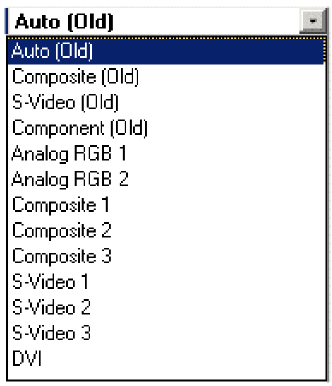
A pre configured element, generated in the CID Designer, is used as a placeholder over which the monitor's PIP video is displayed. For information on configuring a PiP placeholder, see Chapter 3 '*Configuring a Conning Information Display*'.

The configured size and aspect ratio of the placeholder element in the CID Designer matches the aspect ratio and location of the PiP video. For this reason, CCTV windows displaying PiP video cannot be moved or sized by the operator.

The system uses the serial interface of the backlight control to adjust the brightness of the composite PIP video.

To configure a PiP video source group:

1. Select **Pip Video Source** from the All Video Sources column in the Video Source Group window, see Figure 1.87.
2. Select Child Groups as required and name the video source group as described previously. A PiP Video Source topic is created below the **{Video Sources}** sub menu.
3. Click on **PiP Video Source:** in the navigation tree, the window enables the video to be named and the source to be selected.
4. The video source defaults to **Auto (Old).** To change the source click on the drop down arrow and select from the list.
5. Enter a unique name for this video source in the **Name** field. The name is assigned to the Pip Video Source window and the topic in the navigation tree.



8.13 Joystick Manager

One or more joystick devices, for use in performing heading control and entering temporary route plans, may be interfaced to the VisionMaster system

To select a Joystick device click on Joystick Manager, select **Heading Joystick** from the **All Joystick Devices** column and click the **<** button. The Heading Joystick is moved to the Selected Joystick Devices column and the navigation tree displays an unconfigured Heading Joystick topic with sub menu topics.

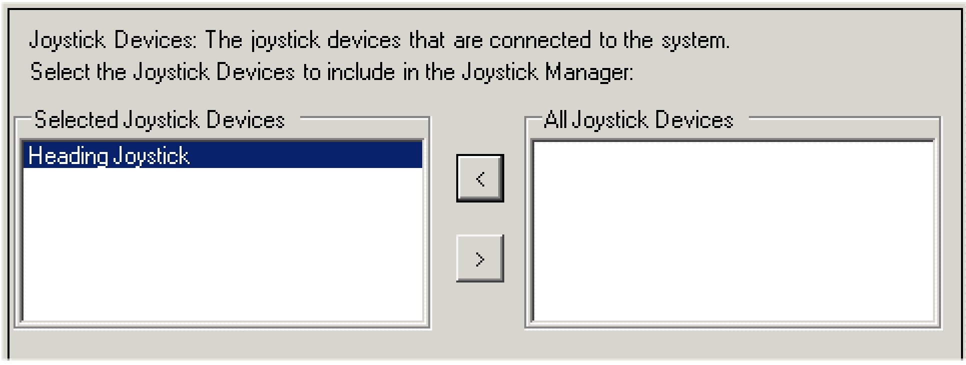


Figure 1.90 Joystick Manager

8.13.1 Configuring a Joystick Device

When a heading joystick has been selected, the communications with the device must be configured.

1. Click on the Heading Joystick topic in the navigation tree, highlight **Heading Joystick Communicator** and click the **<** button. The Communicator is moved to the Selected Heading Joysticks column and the navigation tree creates an unconfigured Heading Joystick Controller topic.
2. Select the **Heading Joystick Communicator** from the navigation tree. If the system is a multi-node then all nodes are listed in the Display Nodes column. From this column select the nodes that the joystick(s) is connected to. If a joystick is connected to more than one node, a communicator for each node must be configured.
3. Select the port to be used to communicate with the joystick, this needs to be an RS422 serial port.
4. Enter a name for the joystick device in the Joystick Name field.

When valid data has been entered in the Heading Joystick Communicator window the joystick device is configured, see Figure 1.91.

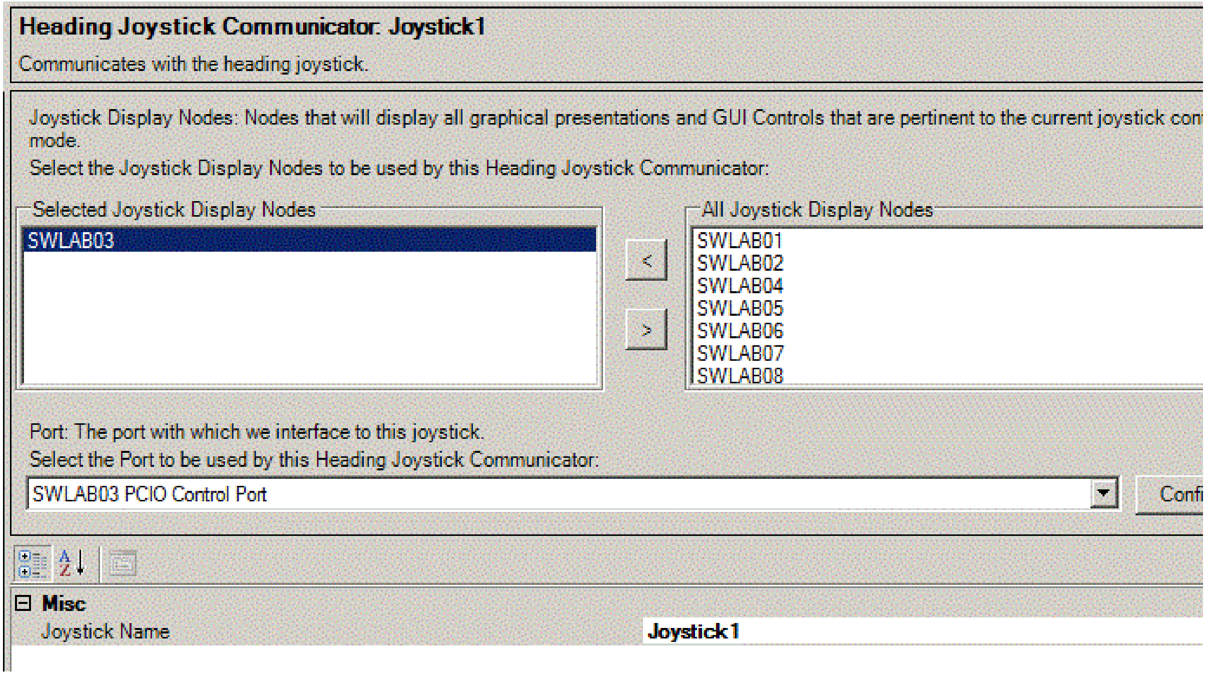


Figure 1.91 Heading Joystick Communicator

The Joystick control and parameters are set to default values, which are not required to be configured. These values are described in the two sub-sections below.

8.13.2 Heading Joystick Controller

The heading joystick controller defines the maximum distribution rate of the joystick button press and position in seconds. The default is 0.1 seconds.

To change the rate, click in the Distribution Rate (s) field and enter a value.

8.13.3 Heading Joystick Parameters

The heading joystick parameters window enable the values, which are used to process the movements of the joystick to be changed. The default values are shown in Figure 1.92 below.

Unless there are valid reasons for changing these values, the Heading Joystick Parameters should remain at default.

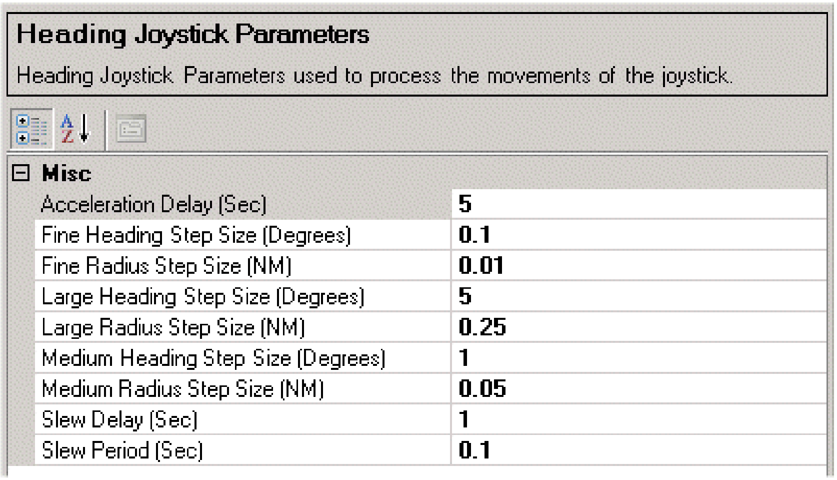


Figure 1.92 Heading Joystick Parameters

8.14 Serial Discrete Outputs

This function is provided in order to configure one or more serial ports to be used as an audio output for the buzzer. A discrete output is required to be configured when the system does not have a PCIO. This output may be via a control panel, monitor, labjack, or a serial discrete output on the PC.

If your system includes a monitor that provides discrete serial output on the buzzer connectors of the monitor's serial port (for example, a Hatteland Panel/ PC Monitor) then the option of selecting Monitor Discrete Output is available.

8.14.1 Configuring a Serial Discrete Output

1. From the Serial Discrete Outputs window select either **Serial Discrete Output** (or, if using a serial port monitor select **Monitor Discrete Output**) and click the **<** button to move to the Selected Serial Outputs column. An unconfigured **Serial Discrete Output: Buzzer** topic is included.

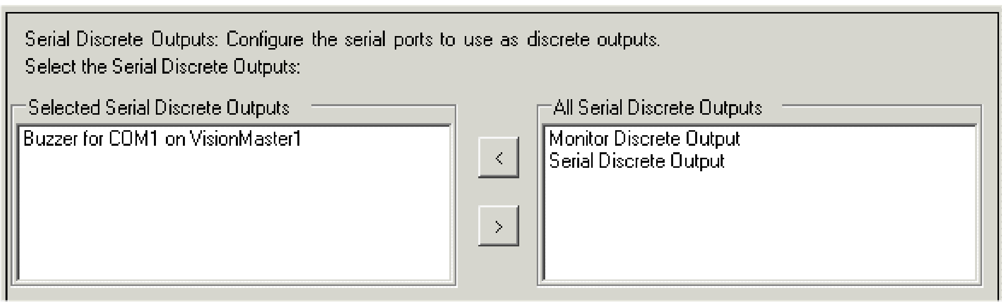


Figure 1.93 Selecting a Serial Discrete Output

2. Click on the unconfigured topic in the navigation tree to open the serial discrete output configuration window. The discrete output is automatically named Buzzer.

3. Select the serial port to be used by the buzzer, this will be a serial port on the VisionMaster PC. If no PC serial port has been configured, refer to Section 8.10.9.1 *Configuring a Serial Port on the PC*'.
4. If required, change the name of the discrete output.

Note that each configured serial discrete output must have a separate serial port selected. Two outputs cannot operate through the same COM port.

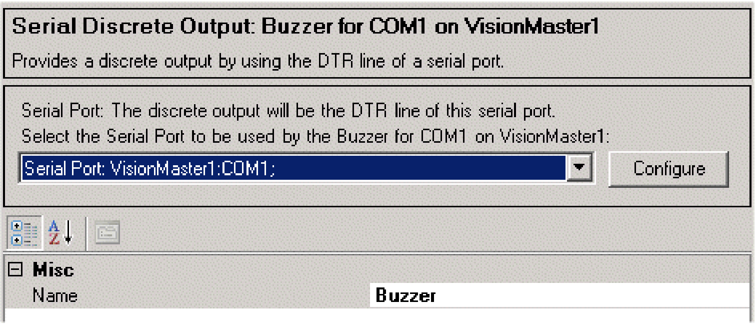


Figure 1.94 Configuring a Serial Discrete Output

8.15 Analog I/O Summary

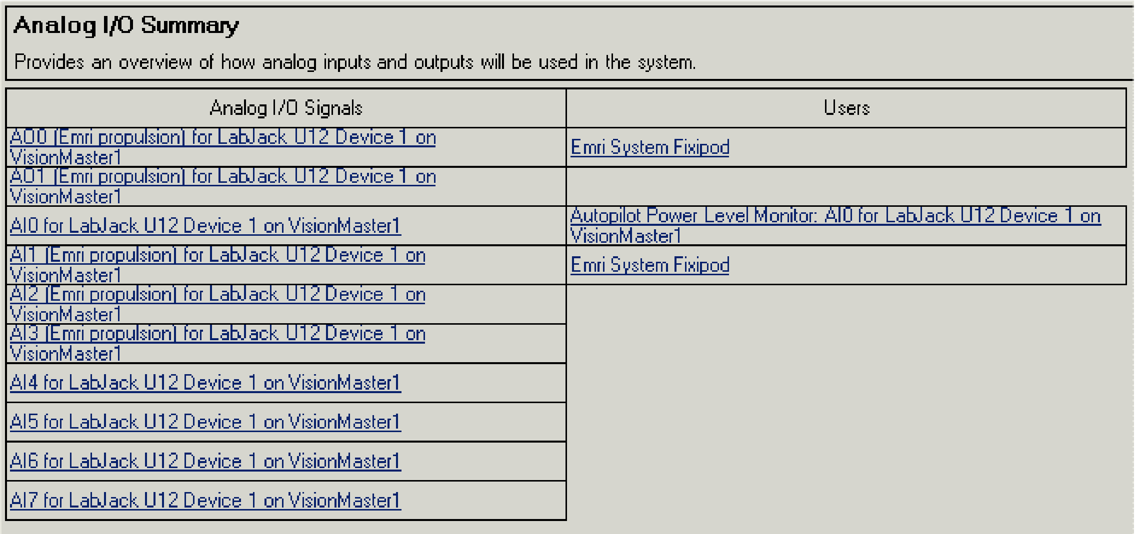
The Analog I/O summary window provides an overview on how the analog inputs and outputs (configured for Labjack or Opto 22 racks) will be used in the system.

If a Labjack is connected to the system, and has been configured from the Labjack Manager, the Analog I/O summary lists all the analog I/O connectors on the device, see Figure 1.63 '*Labjack U12 Device Configuration Window*'.

If analog Input/Output modules have been configured for an Opto 22 rack the analog connector number (A1, A2 etc.) together with the slot number are listed.

The window is divided into Analog I/O Signals and Users, with all listed data displayed as hyperlinks. To view and/or configure an I/O signal or user click once on the hyperlink, the relevant window for the selected line topic is displayed.

If an analog I/O has not been configured the window is blank.



Analog I/O Summary

Provides an overview of how analog inputs and outputs will be used in the system.

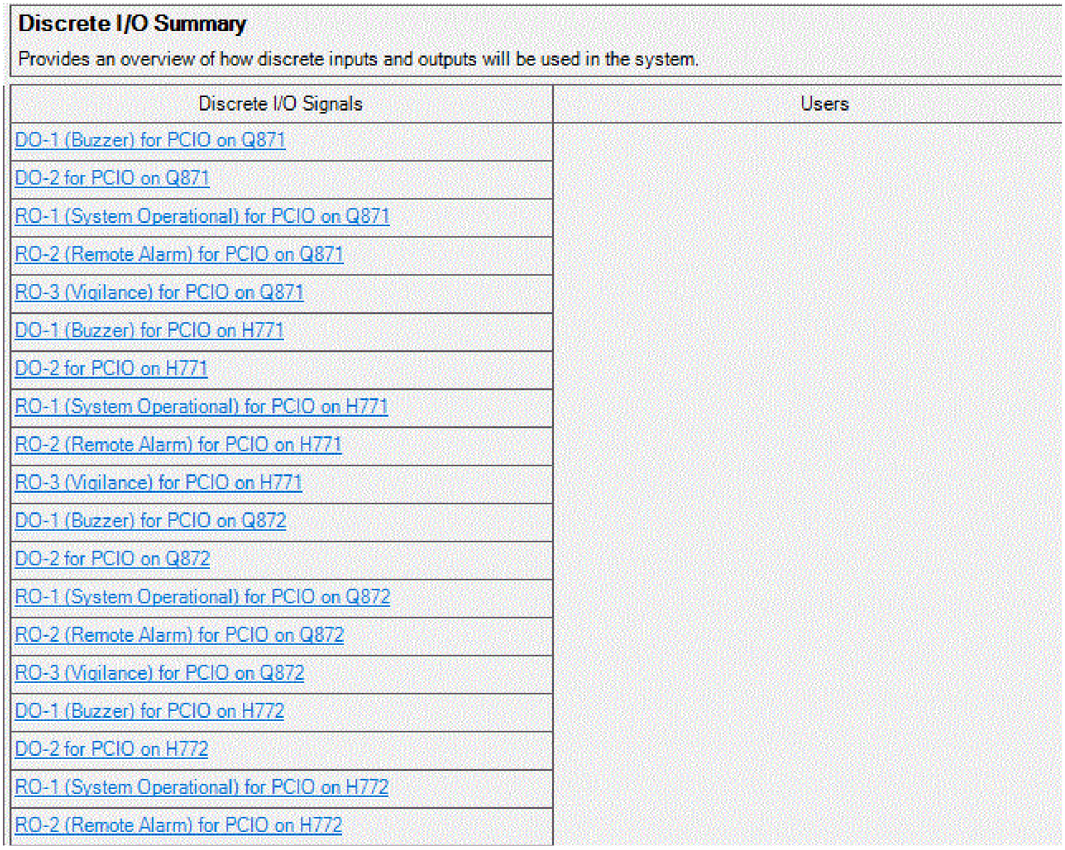
Analog I/O Signals	Users
AO0 (Emri propulsion) for LabJack U12 Device 1 on VisionMaster1	Emri System Fixipod
AO1 (Emri propulsion) for LabJack U12 Device 1 on VisionMaster1	
AI0 for LabJack U12 Device 1 on VisionMaster1	Autopilot Power Level Monitor: AI0 for LabJack U12 Device 1 on VisionMaster1
AI1 (Emri propulsion) for LabJack U12 Device 1 on VisionMaster1	Emri System Fixipod
AI2 (Emri propulsion) for LabJack U12 Device 1 on VisionMaster1	
AI3 (Emri propulsion) for LabJack U12 Device 1 on VisionMaster1	
AI4 for LabJack U12 Device 1 on VisionMaster1	
AI5 for LabJack U12 Device 1 on VisionMaster1	
AI6 for LabJack U12 Device 1 on VisionMaster1	
AI7 for LabJack U12 Device 1 on VisionMaster1	

Figure 1.95 Analog I/O Summary window

8.16 Discrete I/O Summary

The Discrete I/O summary window provides an overview on how the discrete inputs and outputs will be used in the system.

Where a PCIO board has been selected from PCIO Board Manager the discrete I/O summary window lists all the discrete inputs and outputs automatically generated by the system and shown as sub-menu items in the PCIO board navigation tree, see Figure 1.52.


Discrete I/O Summary

Provides an overview of how discrete inputs and outputs will be used in the system.

Discrete I/O Signals	Users
DO-1 (Buzzer) for PCIO on Q871	
DO-2 for PCIO on Q871	
RO-1 (System Operational) for PCIO on Q871	
RO-2 (Remote Alarm) for PCIO on Q871	
RO-3 (Vigilance) for PCIO on Q871	
DO-1 (Buzzer) for PCIO on H771	
DO-2 for PCIO on H771	
RO-1 (System Operational) for PCIO on H771	
RO-2 (Remote Alarm) for PCIO on H771	
RO-3 (Vigilance) for PCIO on H771	
DO-1 (Buzzer) for PCIO on Q872	
DO-2 for PCIO on Q872	
RO-1 (System Operational) for PCIO on Q872	
RO-2 (Remote Alarm) for PCIO on Q872	
RO-3 (Vigilance) for PCIO on Q872	
DO-1 (Buzzer) for PCIO on H772	
DO-2 for PCIO on H772	
RO-1 (System Operational) for PCIO on H772	
RO-2 (Remote Alarm) for PCIO on H772	

Figure 1.96 Discrete I/O Summary window

The window is divided into Discrete I/O Signals and Users, with all listed data displayed as hyperlinks. No entries appear in the Users column until after the various features that use discrete inputs and outputs have been configured.

To view and/or configure an I/O signal or user click once on the hyperlink, the relevant window for the selected line topic is displayed.

8.17 I/O Summary

The I/O summary window provides an overview of all the I/O channels configured in the system.

The window is divided into four columns: Nodes, Device, I/O and Users. Each column including hyperlinks to all the nodes, I/O channels and users on the system.

Devices such as PCIO boards include a drop down arrow which when clicked provides links to the I/O ports connected to the PCIO board. The Users column will then list all the devices and services linked to the I/O ports, see Figure 1.97.

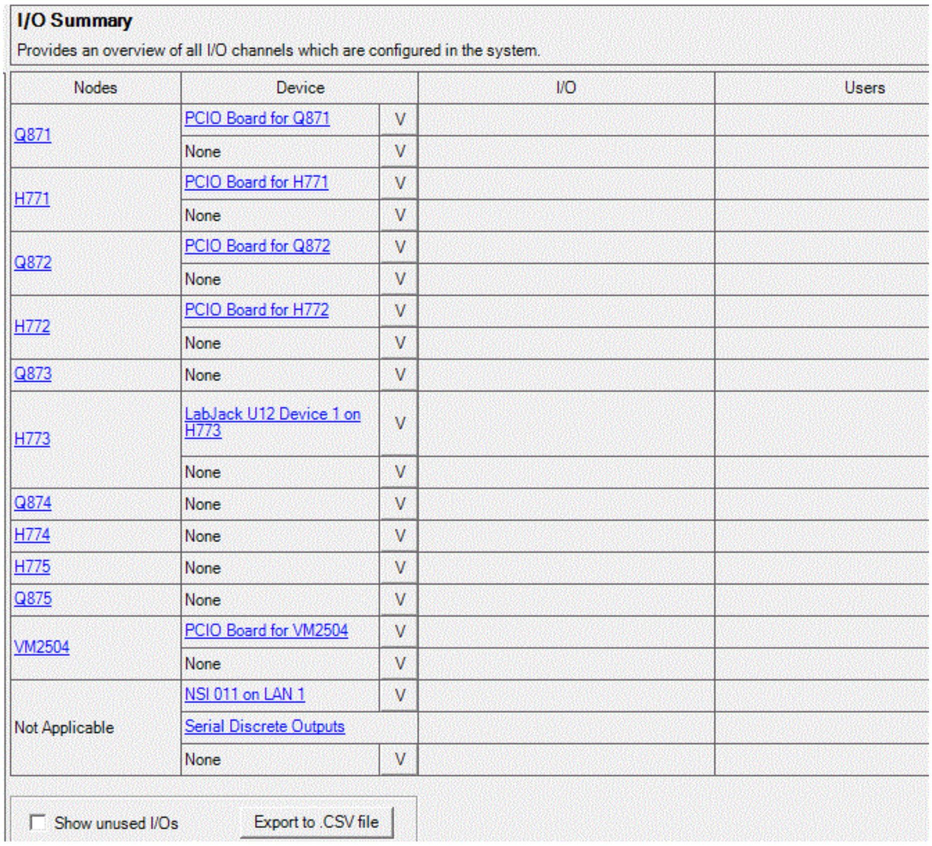


Figure 1.97 I/O Summary

I/O channels not used in the system can be displayed by ticking the **Show unused I/Os** check box.

An I/O summary can be exported to an external device, such as a USB memory stick. The file is exported as a.csv file. To export the file click on the **Export to.CSV** file box and navigate to the device drive.

8.18 Data Folders

The data folders window shows the folder location of ENC and VPF chart data, DataLog files and miscellaneous VMFT persisted data.

To browse to the data folder:

1. Click on the rectangle box to the left of the folder location, a browse button appears to the right of the folder line.
2. Click on the browse button, a **Browse For Folder** popup window appears enabling navigation to the data folder, see Figure 1.98.

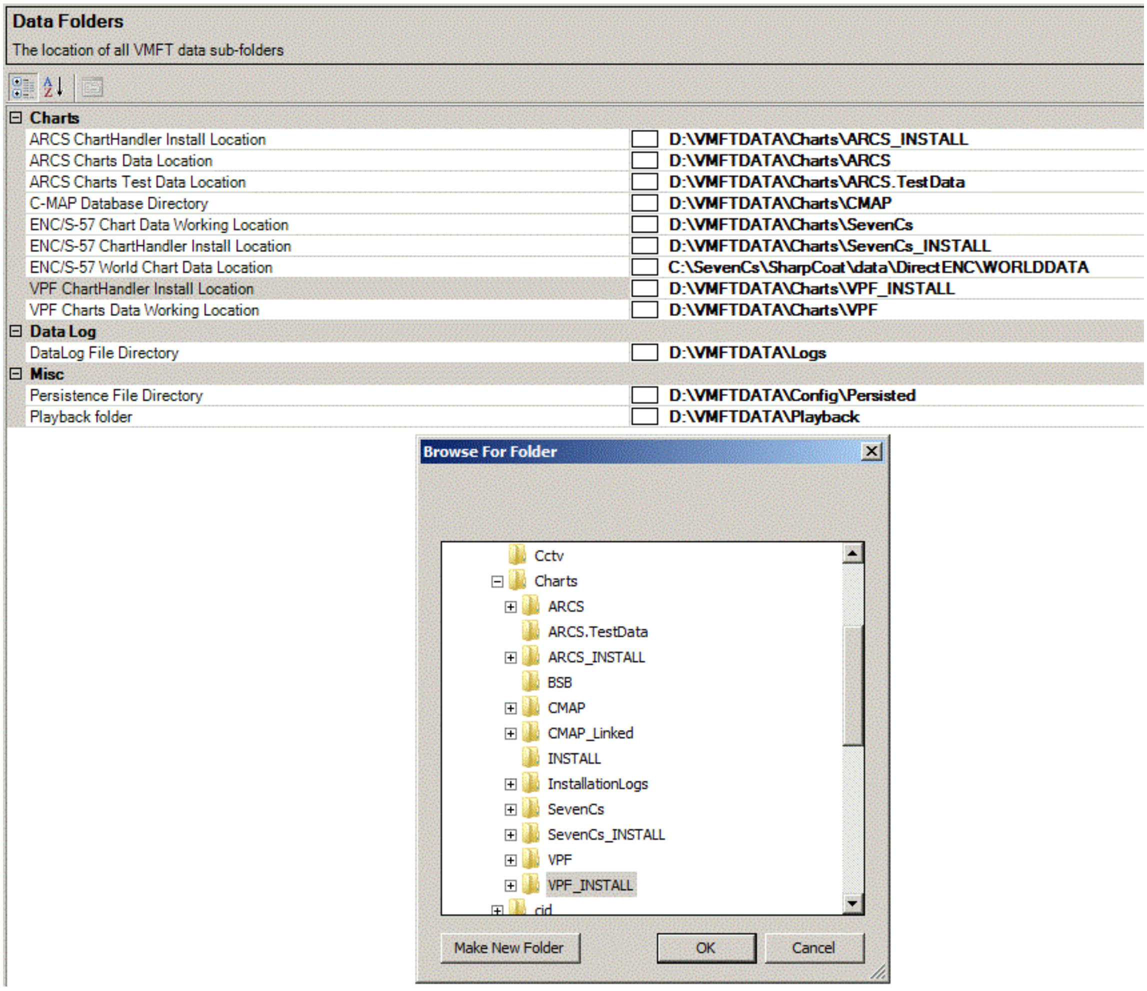


Figure 1.98 Data Folders - Browse For Folder

The Browse For Folder window enables the creation of new Windows folders. However it is NOT recommended that the data locations shown are changed.

8.19 Maritime Gateway

Maritime Gateway is a purchasable feature that enables the service engineer to map internal network drives on a VMFT PC in order to import and export route plans, chart and mapping objects etc.

To create a new Maritime Gateway drive:

1. Open the Maritime Gateway topic and from the 'All Maritime Gateway Drive' column select **Maritime Gateway Drive** and click the < arrow to move it to the 'Selected Drives'. An unconfigured Maritime Gateway Drive topic is added to the navigation tree.
2. Open the unconfigured topic, the drive is automatically assigned Drive Letter **X**, and other miscellaneous settings are blank.
3. If required enter a different drive letter that the network location will be mapped to.
4. Enter a Password and Username. This information will be supplied by Sperry service.
5. When Maritime Gateway drives have been configured these internal drives will appear in the VMFT when files and data are to be imported or exported

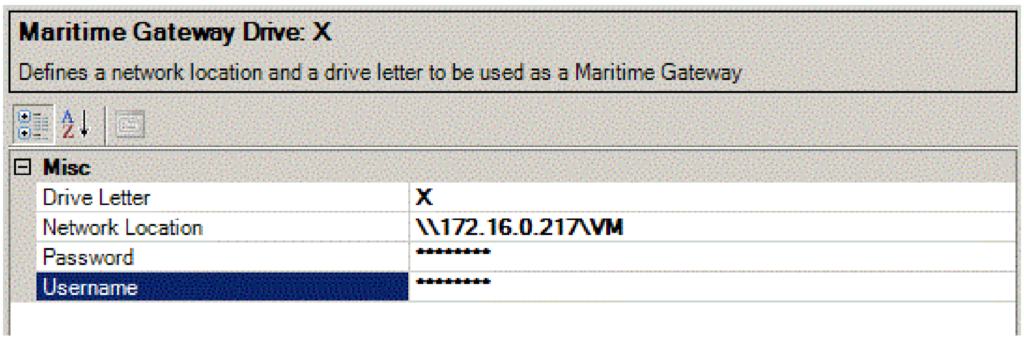
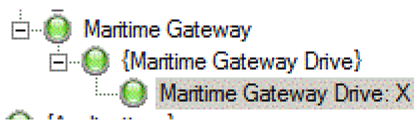


Figure 1.99 Maritime Gateway Drive

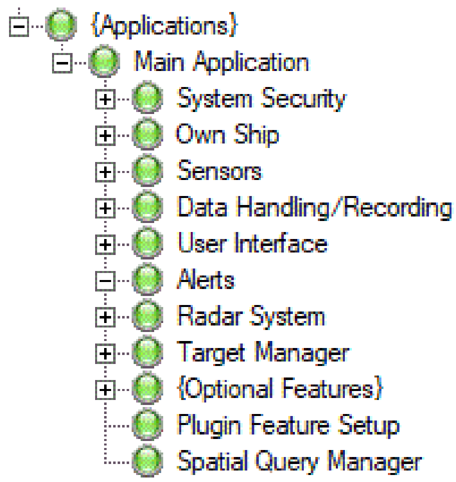
The navigation tree lists the configured Maritime Gateway drive. Further Maritime Gateway drives may be mapped, however this should not normally be required.



9 Applications

The Application menu specifies functions, and defines which functions use which resources.

The Main Application menu includes the following sub-menus and functions:



- System Security
- Own Ship
- Sensors
- Data Handling/Recording
- User Interface
- Alerts
- Radar System
- Target Manager
- Optional Features
- Plugin Feature Setup
- Spatial Query Manager

Apart from Plugin Feature Setup, all sub-menus include a number of functions, for information refer to the relevant section.

9.1 Main Application

The Main Application window enables you to select the Radar System and Target Manager for the application and navigate to their configuration settings.

Optional features for the configuration can be selected from the All Optional Features list.

The Operator Config Update and the Spatial Query Manager included in the main application can be selected for configuration. For details refer to Section 9.1.1.1 *Operator Config Update*’ and Section 9.12 *Spatial Query Manager*’.

The window also enables an alternative product logo (or no logo) and a different product name to be configured.

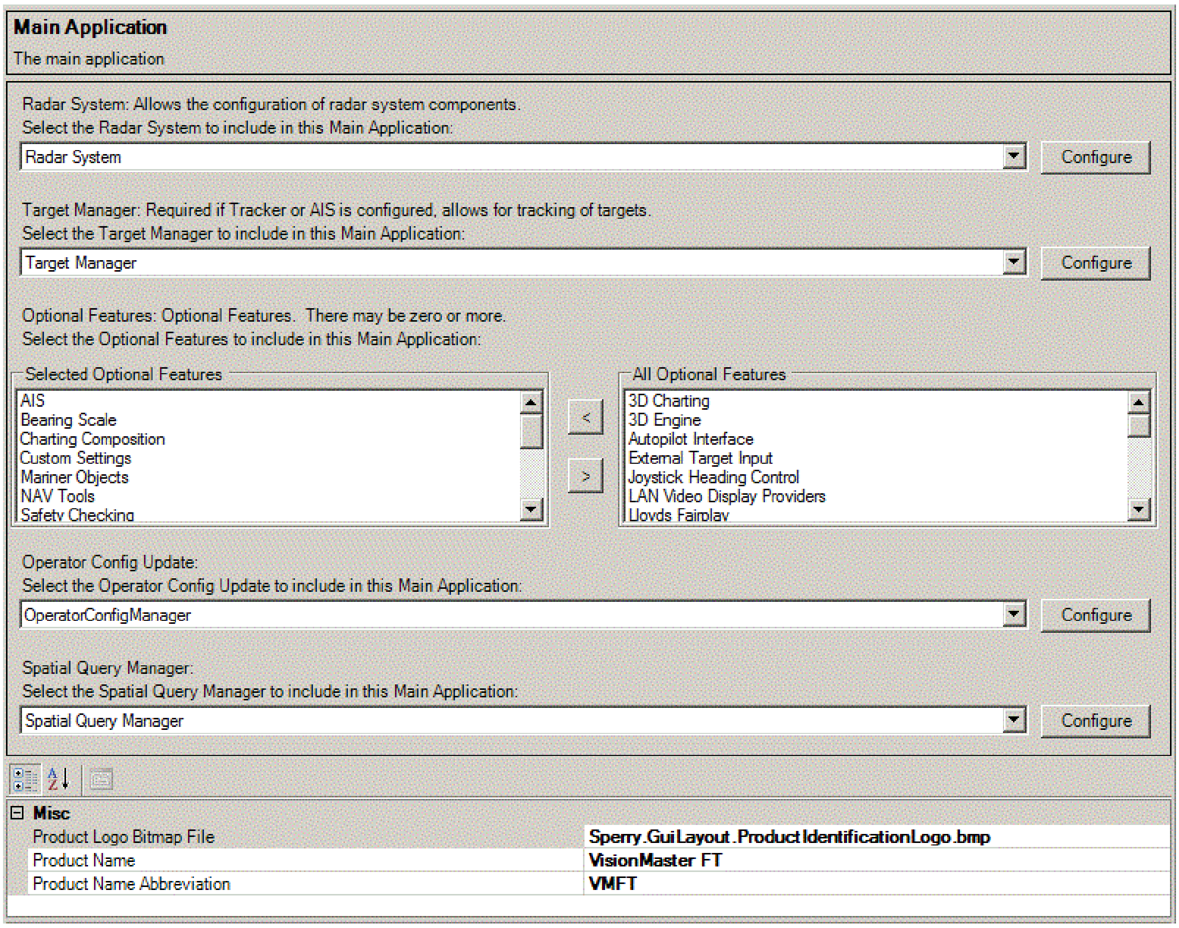


Figure 1.100 Main Application Window

9.1.1 Configuring the Main Application

1. To configure for Radar select **Radar System** from the drop down list and click on the **Configure** button. The Radar System configuration window appears, for details on this configuration, see Section 9.8 *Radar System*', *page 218*.
2. To configure the Targets select **Target Manager** from the drop down list and click on the **Configure** button. The Target Manager window appears, for details on target settings, see Section 9.9 *Target Manager*', *page 226.*
3. To select optional features highlight the feature in the **All Optional Features** list and click the **<** button, the feature is moved to the **Selected Optional Features** list. Certain selected features appear in the navigation tree and may required configuration (e.g. AIS). Removing selected features from the application is the reverse of this procedure.

9.1.1.1 Operator Config Update

When **OperatorConfigManager** is enabled (default mode) a configuration file that has been modified can be imported by the operator via the Config Update tab folder in System Commissioning. If this setting is set to <NONE> the Config Update tab folder on the application is disabled.

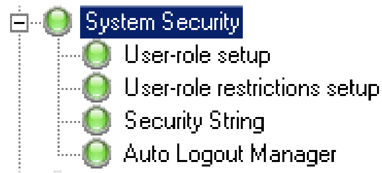
9.1.2 Configuring the Product Logo and Name

The Miscellaneous area includes the option of specifying an alternative brand to VisionMaster, including a product logo bitmap file, product name and product name abbreviation. The maximum number of characters for the product name is 20. The maximum number of characters for the abbreviation is 4.

This data should only be changed in the event that an OEM reseller * has purchased a system and requires a different brand name.

9.2 System Security

System Security includes the following sub menus:



- User-role setup
- User-role restrictions setup
- Security String
- Auto Logout Manager

A security string is required when the VisionMaster system is multi-node. The security string also defines any optional features (such as 3D Vision or CCTV) that have been purchased by the customer.

For Security String information, refer to Section A.4 ‘*Entering a Security String*’ in *‘Chapter 1 Appendix A Configuring A Multi-Node System*’.

9.2.1 User-Role Setup

The User-role setup window manages custom user roles. Each custom user-role maps to an inherited system role (e.g. Seaman, Ship Administrator, etc.) which determines the role level, as shown on the Security tab in Commissioning (see Chapter 2 ‘*Diagnostics, Commissioning and Service Mode’*). The user-role's level gives access to features that may be restricted to other role-levels.

The setup tab enables custom user roles to be created and system access defined:

* An OEM reseller is a term given to a company that purchases a product from another source, and implements it into their own design.

1. If custom user roles have been previously created click the User roles drop down arrow and select from the list. The inherited user roles in the Setup tab will list all the predefined roles and custom user roles with the exception of the user role that has been selected, see Figure 1.101.

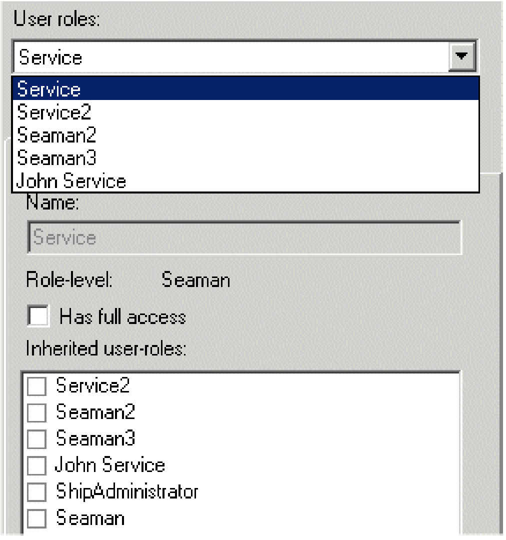


Figure 1.101 Select User Role

2. To create a new user role click the **New** button. The User roles and Name fields display **New Role 1**.
3. Click in the Name: field and enter a name for the user. The name entered here can be personalized to the specific user, e.g. **John Service**.
4. Click the **Update** button. The user name is saved and listed in the custom User roles drop down list.

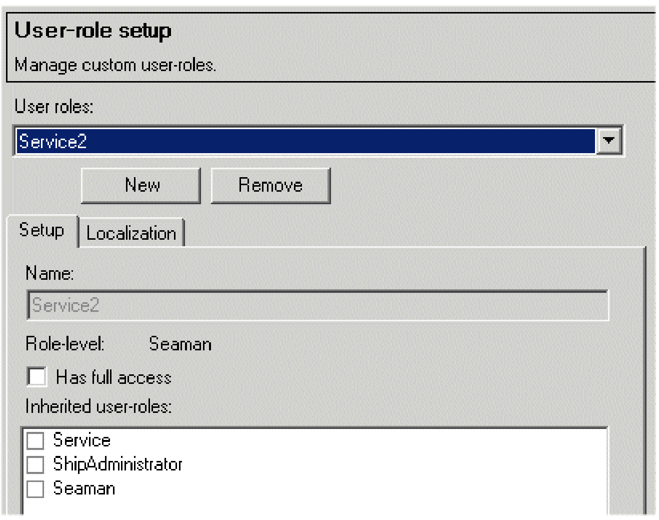


Figure 1.102 User Roles Setup

5. To allow a custom user to have full access to all system functions tick the **Has full access** check box.

6. To define the custom user role, select which inherited user roles should be inherited by ticking the **Inherited user roles** check boxes (inherited user roles will include system default roles such as Seaman, Ship Admin and Field Engineer). The role level selected is shown on the Setup tab.
7. To remove a custom user select from the drop down list, click the **Remove** button then click the **Update** button.

The Localization tab enables descriptions and localized role names to be assigned to custom user roles.

1. Click the User roles drop down list and select from the list of custom users. The localized description of the user shows **ENG New Role 1** in bold (ENG is an abbreviation of English and therefore should not be changed).
2. Select the localized description. The locale (ENG) and localized role name (New Role 1) appear in their respective fields.
3. Enter a name in the localized role name field (this is the name that will appear listed in the Permissions field of the Restrictions Setup window, and in the Security tab of the Commissioning menu). Click the **Update** button. The localized description is changed to the entered name, see Figure 1.103.
4. To delete a localized role name, select from the Localized descriptions list, click the **Remove** button then click the **Update** button.

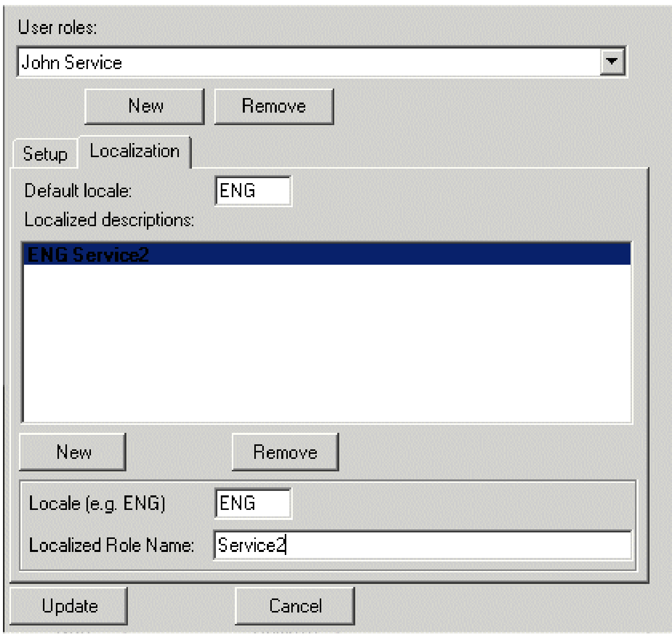


Figure 1.103 User Roles Localization

9.2.2 User-role Restrictions Setup

The user-role restrictions setup window manages restrictions and permissions to the localized and inherited user roles.

The window includes three lists: Protected items, Explicit Permissions and Resulting Permissions.

Protected Items includes **PCIO** and **Utility** menu items. These protected items can be assigned restrictions on a per user-role basis, or if no explicit restrictions are set then will inherit restrictions from inherited user-roles.

Click on the **+** buttons to view the usable controls for each menu item.

Explicit Permissions lists default user roles (Field Engineer, Ship Admin and Seaman) and custom user roles. The custom role names are the ones created in the Localized Setup tab.

Resulting Permissions is a hierarchical tree menu of localized and inherited user roles. The user role restricted setup window includes a key below the field describing the access rights icons.

To change user role restrictions for specific controls:

1. Navigate to the control in the Protected Items field and click the **Usable** item below the control. The control's default permission status is shown as a tick (allowed) or a cross (restricted) in the box below. If the default permission is restricted and no explicit permissions have been given, the only user with service access to the control is a Field Engineer.
2. To change the default permission click the **Item's default permission** check box.
3. Permission may be given for a control for selected users, even when the control's default is restricted. To allow permissions on a control for specific user roles tick the user role check box in the Explicit Permissions field. The check box is displayed with a tick and the user role in the Resulting Permissions field is also ticked.
   When assigning explicit permissions to a user role, any other roles that inherit that user-role may also inherit explicit permissions for that item.
4. To restrict permissions on the selected control click the user role's check box, the tick changes to a cross.
5. To remove the explicit settings given to all user roles for the protected item selected, click the **Remove Item explicit settings** box.

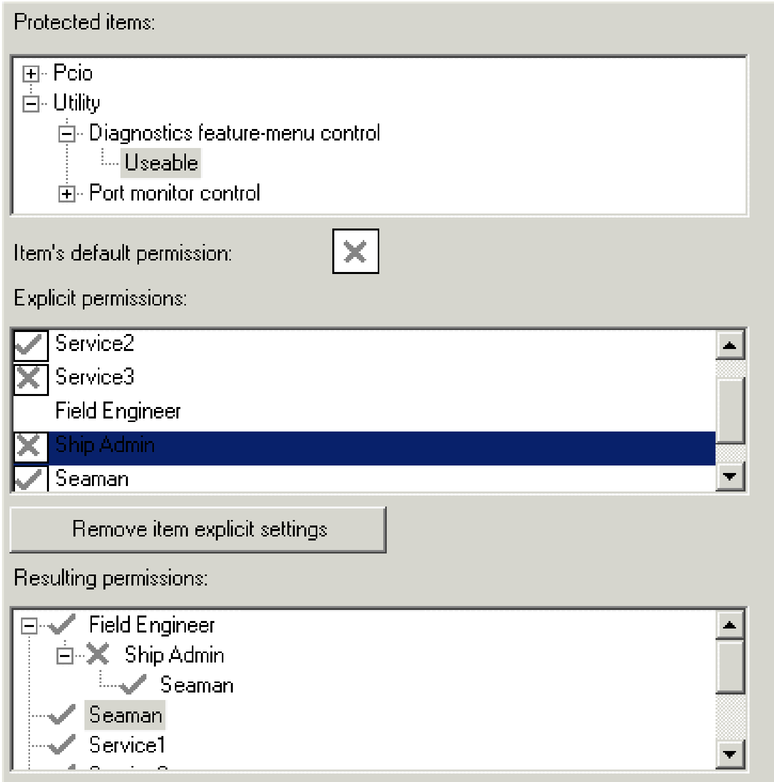


Figure 1.104 User Role Restrictions Setup

9.2.3 Auto Logout Manager

The Auto Logout Manager enables the time an inactive user is allowed to be logged in to be set, after which the system automatically logs out the user, requiring their password to be re-entered.

The default auto logout timeout period is fifteen minutes. To change this value click on **Auto Logout Manager** and enter the required time out period between 1 minute (minimum) and 30 minutes (maximum).

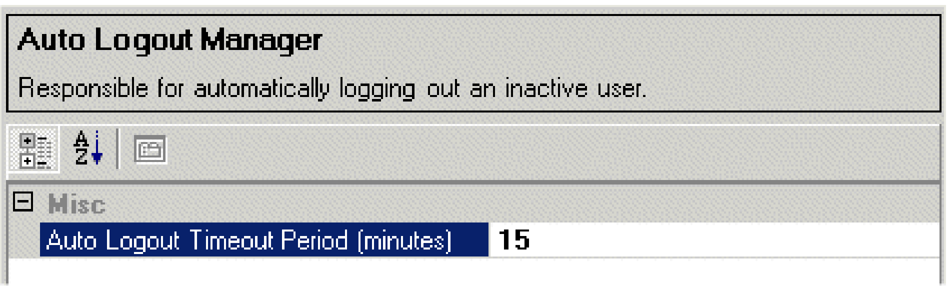


Figure 1.105 Auto Logout Manager

9.3 Own Ship

The Own Ship facility allows you to define a set of own ship characteristics (loading states, alternate bow, and custom outline) and own ship display settings (predicted vector and next turn EBL).

9.3.1 Own Ship Characteristics

The Own Ship Characteristics window shows the following settings:

- Ship loading states
- Alternate Bow in Use inputs
- Dimensions, speed settings and turn rates
- Custom outline configuration

Alternate bow distances, own ship dimensions, miscellaneous settings and custom outline configuration are described in the Quick Setup section, see Section 6.7 *Own Ship Characteristics*'.

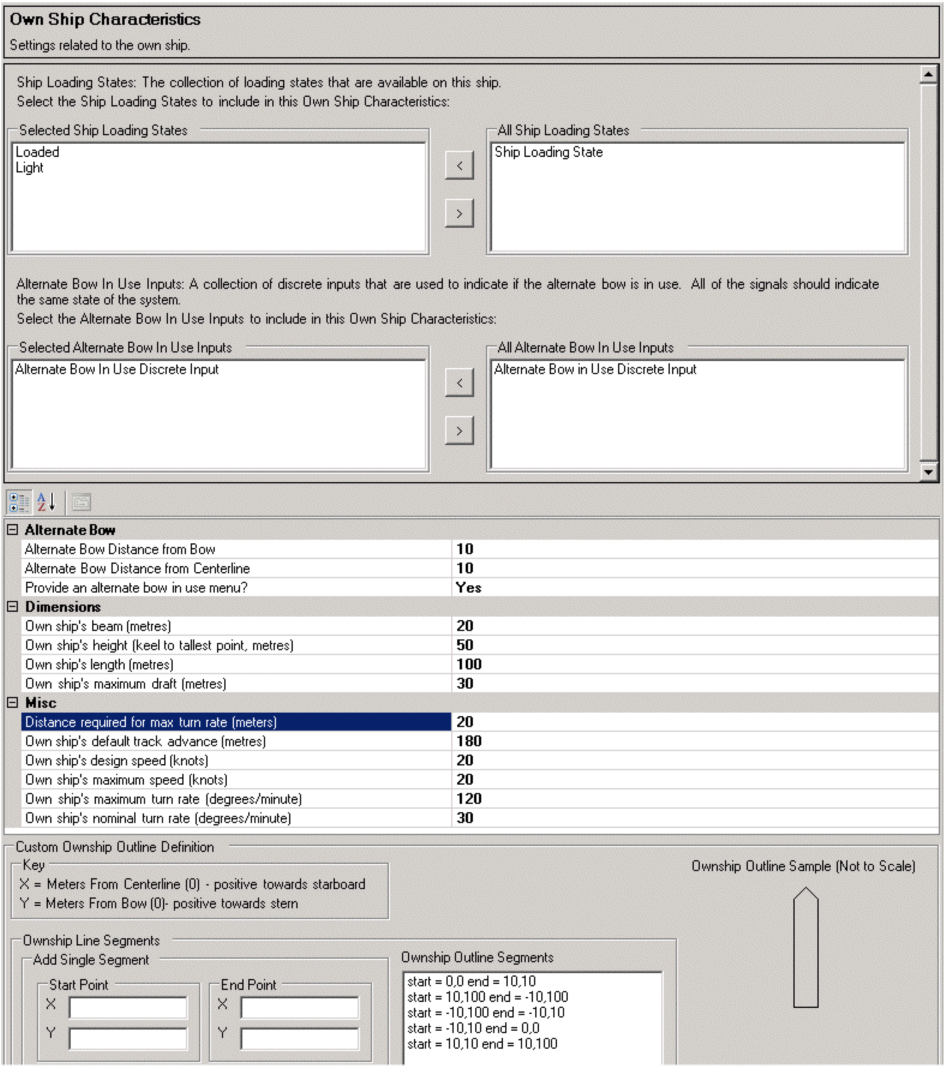


Figure 1.106 Own Ship Characteristics

9.3.1.1 Ship Loading State

A collection of ship loading states may be created.

Note: *Individual ship loading states should only be configured if the VM system includes the optional feature of a propulsion control interface.Some propulsion systems create load specific translation tables for each loading state defined for the ship, see Section 9.10.19 Propulsion Control Interface'.*

To define a loading state, highlight **Ship Loading State** in the All Ships Loading States column and click the **<** button. An unconfigured line is added to the {Ship Loading States} in the navigation tree.

To configure the loading state, click on the topic and from the subsequent window enter a unique name based on the current ship's load in the **Loading State Name** field. The ship loading state is configured.

9.3.1.2 Alternate Bow in Use Inputs

An alternate bow relative to the main bow may be used. Signals are provided by discrete inputs that indicate when the alternate bow is in use. All input signals should reflect the same system state.

When the alternate bow is in use the heading marker offset for all top units is automatically adjusted by 180°. When the bow in use changes, the radar remain in transmit without adverse effects, excluding re-building trails and re-acquiring targets.

Note: *The Alternative Bow in Use feature is not permitted if there is a Cat 2 Radar product type node configured, see Section 6.3 Nodes'.*

To configure an Alternate Bow:

1. Select **Alternate Bow in Use Discrete Input** by clicking the **<** button. An unconfigured line appears below Alternate Bow in Use Inputs sub menu.
2. Open the unconfigured topic and select the discrete input to be used by the alternate bow in use, see Figure 1.107.

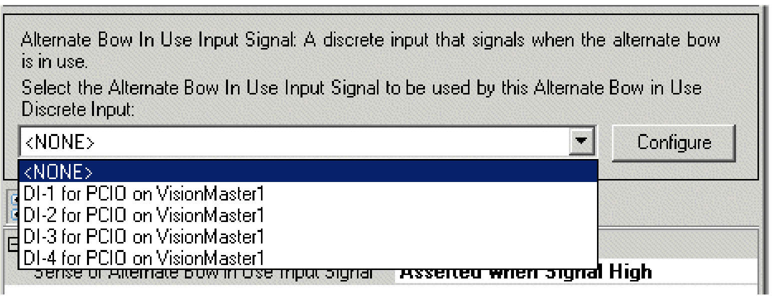


Figure 1.107 Alternate Bow in Use Discrete Input

3. The input signal defaults to sensing when the signal is high, this may be changed to asserting when the signal is low. Normally this setting should not be changed.

9.3.2 Own Ship Display

The Own Ship Display sub menu includes configuration of the following settings:

- Ownship Presentation Settings
- Predicted Vector and Next Turn EBL Output

9.3.2.1 Ownship Presentation Settings

This setting enables ownship ground velocity vector and predicted vector to be displayed simultaneously on the VisionMaster display.

The recommended setting is **No**.

To enable both presentation settings to be displayed select **Yes**.

CAUTION!

When Yes is selected a Warning message is generated informing that the simultaneous display of both vectors is not in accordance with IEC 62388. See Section 5.3.1 *Warning Messages*'.

9.3.2.2 Predicted Vector and Next Turn EBL Output

This setting enables predicted vector and next turn EBL output to be enabled.

In order to be backward compatible, VisionMaster is required to output a VMS Graphics (VMSG) sentence. The VMSG sentence provides Predicted Vector and Next Turn EBL data so that a receiving workstation can generate a graphic representation of the data as similar as possible to the graphics displayed at the sending workstation. This is used when a VisionMaster workstation is connected to a legacy system that is incapable of generating Predicated Vector or Next Turn EBL data.

Predicted Data and Next Turn EBL output are nominally configured for multi-node systems.

If the Predicted Vector display is on at the configured node, then the system transmits the VMSG sentence with correct data for the Predicted Vector data fields, with the data fields reflecting the Predicted Vector display on that node. If the Predicted Vector display is off at the configured node, then the system transmits the data fields as null.

If course mode is active, the system transmits correct data for the Next Turn EBL data fields. If course mode is inactive, then the system transmits the Next Turn EBL data fields as null.

To configure one or more Predicted Vector and Next Turn EBL output items:

1. From the Own Ship Display select Predicted Vector and Next Turn EBL output from the **All** field and click on the **<** button to move the item to the **Selected** field. An unconfigured line for the item appears in the navigation tree.

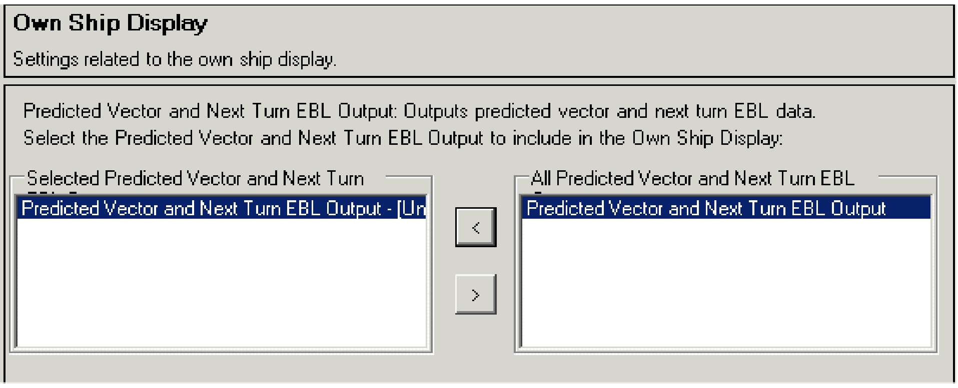


Figure 1.108 Own Ship Display

2. Click on the Predicted Vector and Next Turn EBL output line in the navigation tree. The configuration window for the item appears.
3. Click on the drop down arrow on the Port field to select the output port to be used for the item. The field displays a list of the currently configured ports. Select the port to be used from the list.
4. When a port is selected for use the item's status button colour in the navigation tree changes from red to green (valid).

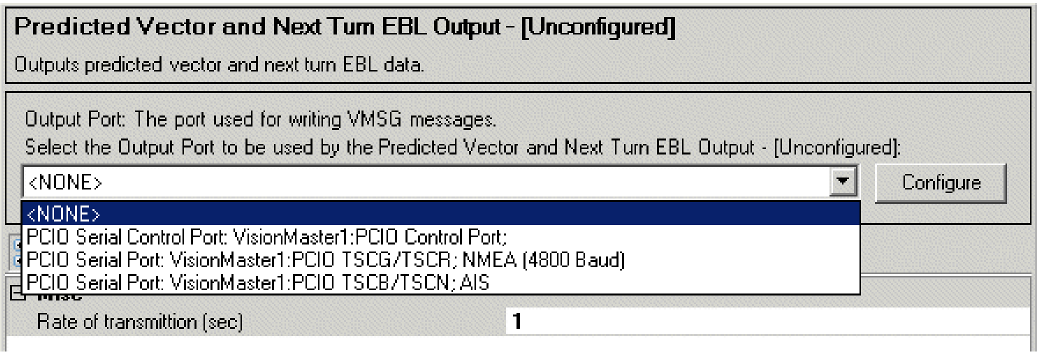


Figure 1.109 Predicted Vector and Next Turn EBL output configuration

5. To change the configuration of the port click the **Configure** button. The configuration window for the selected port appears, see Figure 1.73.
6. To change the rate that the VMSG sentence is sent from the default of 1 second to a value of up to 59 seconds click in the field and enter the required value using the keypad.
7. If required, additional Predicted Vector and Next Turn EBL output items may be configured using the steps listed above.

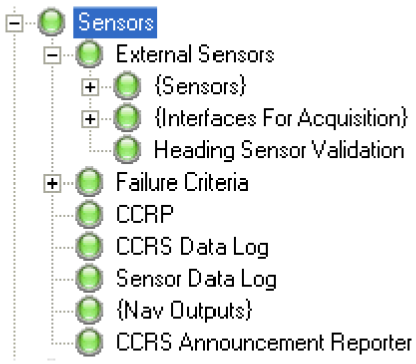
9.4 Sensors

The Sensors menu details the configuration of all sensor data acquisition and usage.

The menu also includes the configuration of the CCRP (consistent common reference point) with regards to own ship, the configuration of the CCRS[*] and Sensor data logs and the selection of a nav output for configuration.

The Sensors menu is divided into the following functions:

- External Sensors, including the following sub menu functions:
  - Sensors
  - Interfaces for Acquisition
  - Heading Sensor Validation
- Failure Criteria
- CCRP
- CCRS Data Log
- Sensor Data Log
- Nav Outputs
- CCRS Announcement Reporter



The Sensors window enables you to select a Nav output port, provide sensor selection for attitude and heave data and select the types of wind data that will be displayed in the wind selection menu.

A Nav Output port can be selected from either the Sensors window, or from the Nav Outputs window. For information on configuring a Nav Output see Section 9.4.6 *Nav Outputs*’.

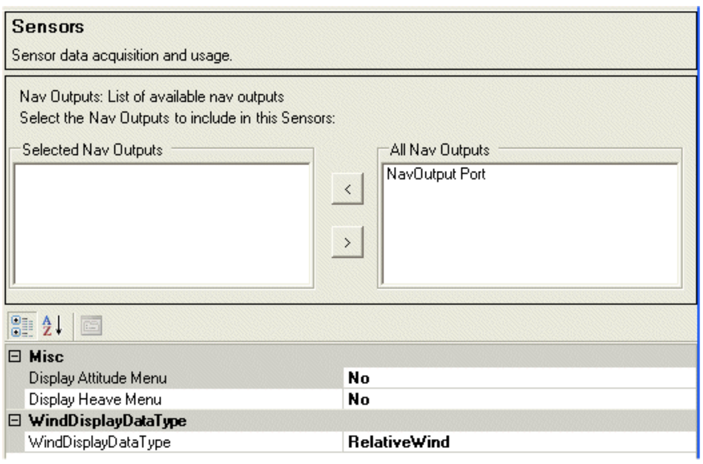


Figure 1.110 Sensors Window

* Consistent Common Reference System (CCRS) data includes the various types of data that describe the state of the ship, and which are usually received via sensors. Many of these types describe a characteristic of the ship itself (for example, the ship's heading, or the geodetic position of the ship, etc.), while others describe a characteristic of something associated with the ship, such as `Rudder Angle' or `Propeller Rpm and Pitch'.

9.4.1 External Sensors

The External Sensors sub menu lists in the right hand columns all types of sensors and interfaces for acquisition that may be connected to the system. The user may select any number of these items to be included in the configuration by selecting the item in the **All..** columns and clicking on the **<** button to move the item into the **Selected..** columns. Figure 1.111 shows the default settings for external sensors.

Note: *Fugro Trim Sensor and Rolls Royce Propulsion System Sensor may be included in the Selected Sensors list for Conning Info Display (CID) configuration. For details refer to "Configuring a Fugro Trim Sensor" on page 1-143 and "Configuring a Rolls Royce Propulsion System Sensor" on page 1-147.*

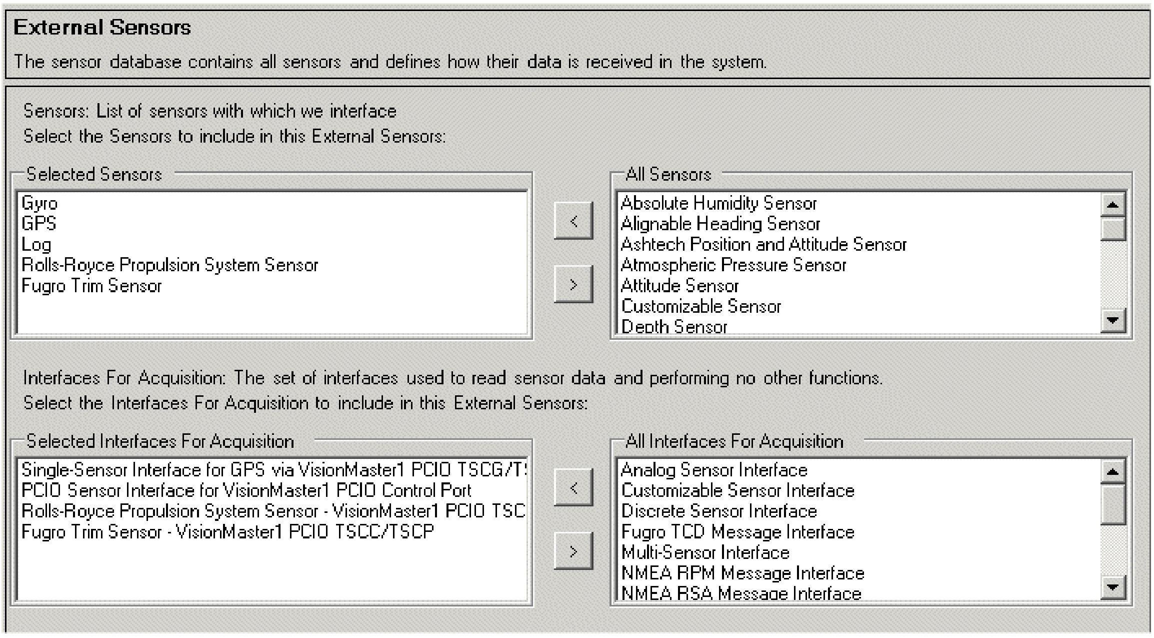


Figure 1.111 External Sensors

External Sensors is divided into the following two areas:

- Sensors
- Interfaces for Acquisition

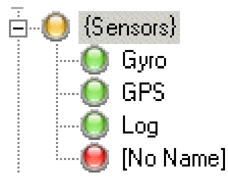
Note: *Not all the sensors and interfaces listed in the right hand columns are detailed in this section. Only the sensors and interfaces that are required to run a standard VisionMaster system, plus the interfaces that you may require (such as multi-sensor interface, and customisable sensor interface) are described.*

9.4.1.1 Sensors

The Sensors area of the window enables you to select the sensors which the system will interface to.

There are a minimum of three sensors that are required to interface with the VisionMaster system and are enabled at commissioning. These are shown in the Sensors list as follows:

- Gyro (Alignable Heading Sensor)
- GPS (Position Sensor)
- Log (Water Speed Sensor)



To add more sensors from the All Sensors list highlight the sensor name and click on the **<** button. The highlighted sensor is moved to the Selected Sensors field and the navigation tree lists the selected sensor as an unconfigured **[No Name]** topic in the Sensors sub-menu with the sensor’s status button displayed in red.

The following sub sections give information on configuring the default sensors listed above.

Configuration of the following additional sensor types is also described.

- Wind
- Generic Data
- Rudder System

The section ‘*Configuring an INS sensor*’ gives information on configuring a sensor that receives navigation and reports from an Integrated Navigation System (INS), see page 149.

Configuring an Analog Heading Sensor: Gyro

Figure 1.112 below shows default settings for a Gyro Alignable Heading Sensor.

A Gyro sensor is configured where an analog heading sensor is connected to the system with data acquired via a syncro or stepper interface, see Section 9.4.1.2 *Interfaces for Acquisition*’, ‘*PCIO Sensor Interface*’.

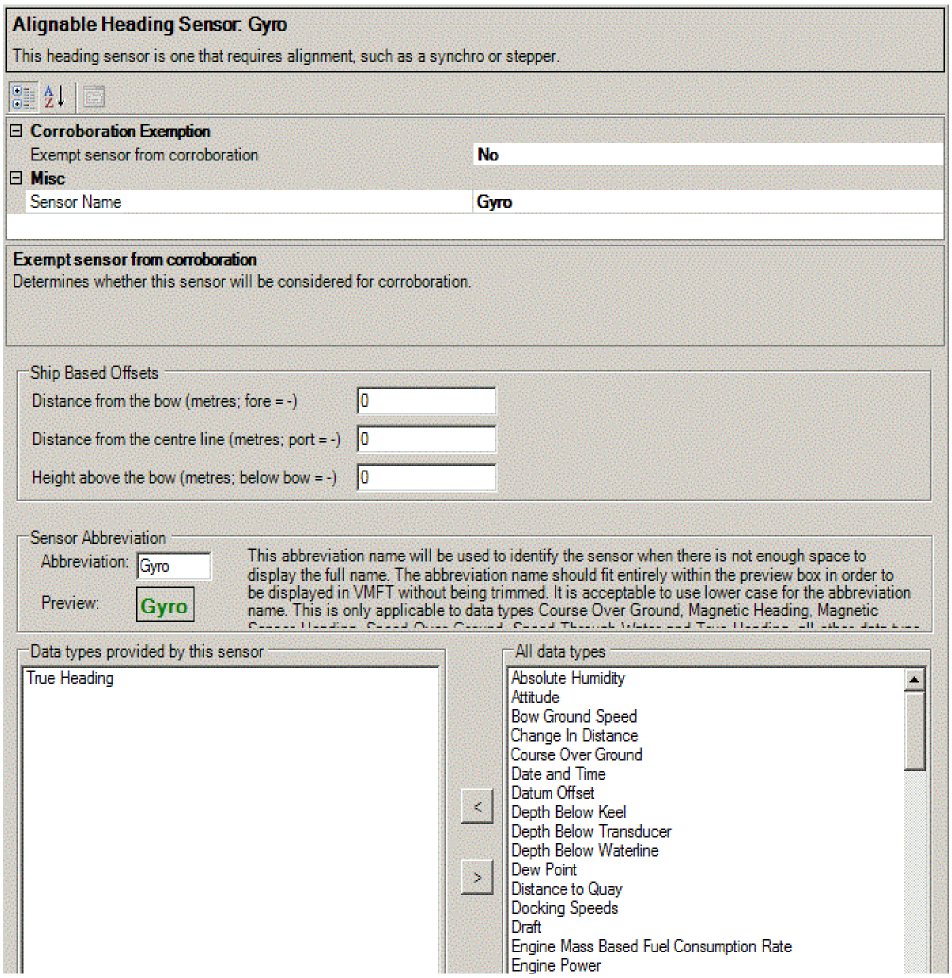


Figure 1.112 Configuration Window for Alignable Heading Sensor (Gyro)

Configurable data includes sensor name, sensor position (ship based offsets), abbreviation and selection of data types provided by the sensor.

To change the Gyro Sensor settings do the following:

1. The corroboration exemption determines whether the data from this sensor will be considered for corroboration. The default setting is **No**. Sensors should only be exempt from corroboration if the sensor source is dependent on data from other sensors, such that including it in corroboration would bias the assessment (for example, INS sensors). In this case corroboration exemption should be set to **Yes**.
2. To change the default name of 'Gyro' enter a name in the **Sensor Name** field. This is usually the descriptive name of the sensor hardware. On a multi-node system it is important that all heading sensors are assigned the same name. See 'Important Note' at the end of this section.

3. If precise distances and height position values of the sensor to the vessel are available, enter the position data of the sensor in the relevant fields of the Ship Based Offsets area.
4. The abbreviation is used to identify the sensor when there is not enough space to display the full name (for an alignable heading Gyro the abbreviation 'Gyro' should be used). When an abbreviation is entered the name appears in the preview box as green characters, if too many characters are entered, the text colour changes to red.
5. The type of data provided by the Gyro sensor defaults to **True Heading**. To select other data types for this sensor highlight from the All Data Types list and click the **<** button. The selected data types are moved to the left column.

Important Note: *In a multi-node system each PCIO must be physically connected to the same set of heading sensors. For information on configuring a set of sensors for a multi-node system, refer to Section 4 Configuring Resources' in 'Chapter 1 Appendix A Configuring A Multi-Node System'.*

Configuring a Serial Heading Sensor

If a non-alignable serial compass sensor is connected to the system the data is acquired via the 38400 baud TSCA input on the PCIO Control Port. For a serial compass sensor a serial heading sensor must be configured.

The data types provided by a serial heading sensor may be True Heading, or Magnetic Heading. If a magnetic heading sensor is configured the system can calculate true heading by applying magnetic variation and deviation offsets to the magnetic compass heading, or deviation values may be manually entered.

A configured serial heading sensor is required to be selected at the PCIO Sensor interface configuration window, under **High Speed Serial Compass Sensor**, see Figure 1.134.

Note: *Only one type of heading sensor (analogue heading or serial heading) can be selected for the system, although both types can be configured. Each node in a multi-node system must have the same heading sensor defined.*

Serial Heading Sensor - True Heading

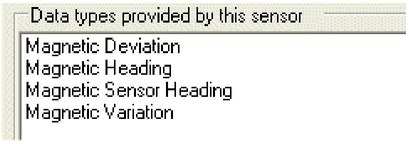
To configure a serial heading sensor as true heading, select **True Heading Sensor** from the All Sensors column. Configure the sensor as described previously for an Analog Sensor.

Note that the True Heading configuration window includes selection of the IO Port interface that will be used to obtain the sensor data. When true heading sensor is selected for the high speed serial compass at the PCIO Sensor Interface window the PCIO Control Port is automatically selected as the IO port interface.

Serial Heading Sensor - Magnetic Heading

To configure a serial heading sensor as magnetic heading, select **Magnetic Heading Sensor** from the All Sensors column.

The data types provided when a magnetic heading sensor is selected include magnetic deviation, heading, sensor heading and variation as default.



A Magnetic Heading Sensor configuration window also includes the option of configuring deviation values. If set to **No** (default) then the magnetic compass must provide the deviation values to the sensor. To manually enter deviation values click on the **Configure Deviation Values?** drop down arrow and select **Yes**. A three-column table appears where Magnetic Sensor Heading, Deviation (Degauss On) and Deviation (Degauss Off) values may be entered, see Figure 1.113. When a deviation value has been entered the table auto-generates an additional row. To delete a row click its **X** button.

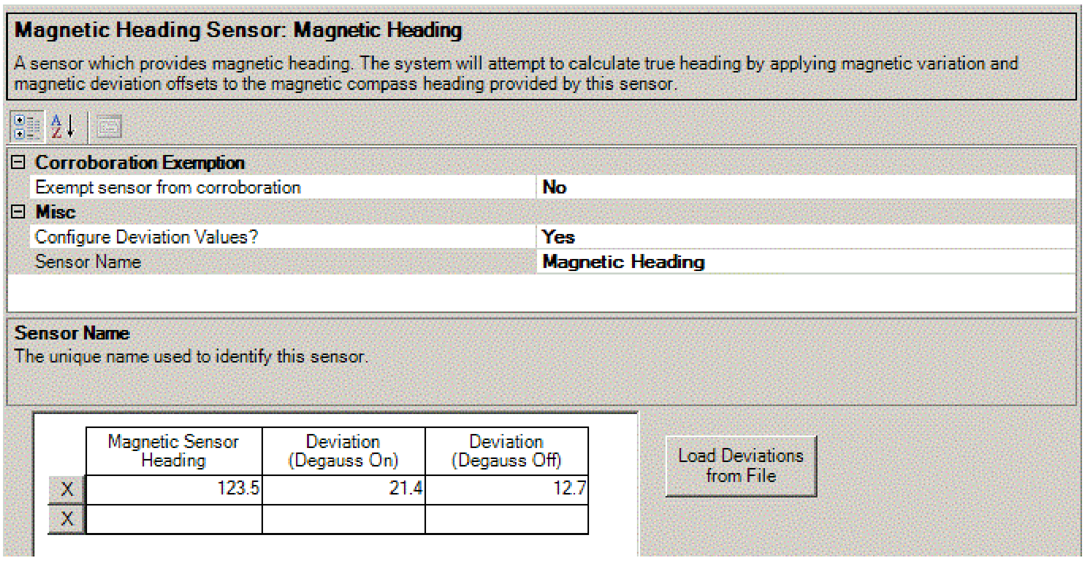


Figure 1.113 Magnetic Heading Sensor with Deviation Values

To load a set of deviation values from a file or external device click the **Load Deviations from File** button. A popup window enables you to navigate to deviation files (INI files).

Other configuration settings, such as Corroboration Exemption, Sensor name, Abbreviation and selection of additional Data Types are made as described previously for an Analog Heading Sensor: Gyro.

Configuring a Position Sensor: GPS

Figure 1.114 below shows default settings for a GPS Position Sensor.

A GPS sensor is configured where position data is being received from a GPS or GLONASS receiver.

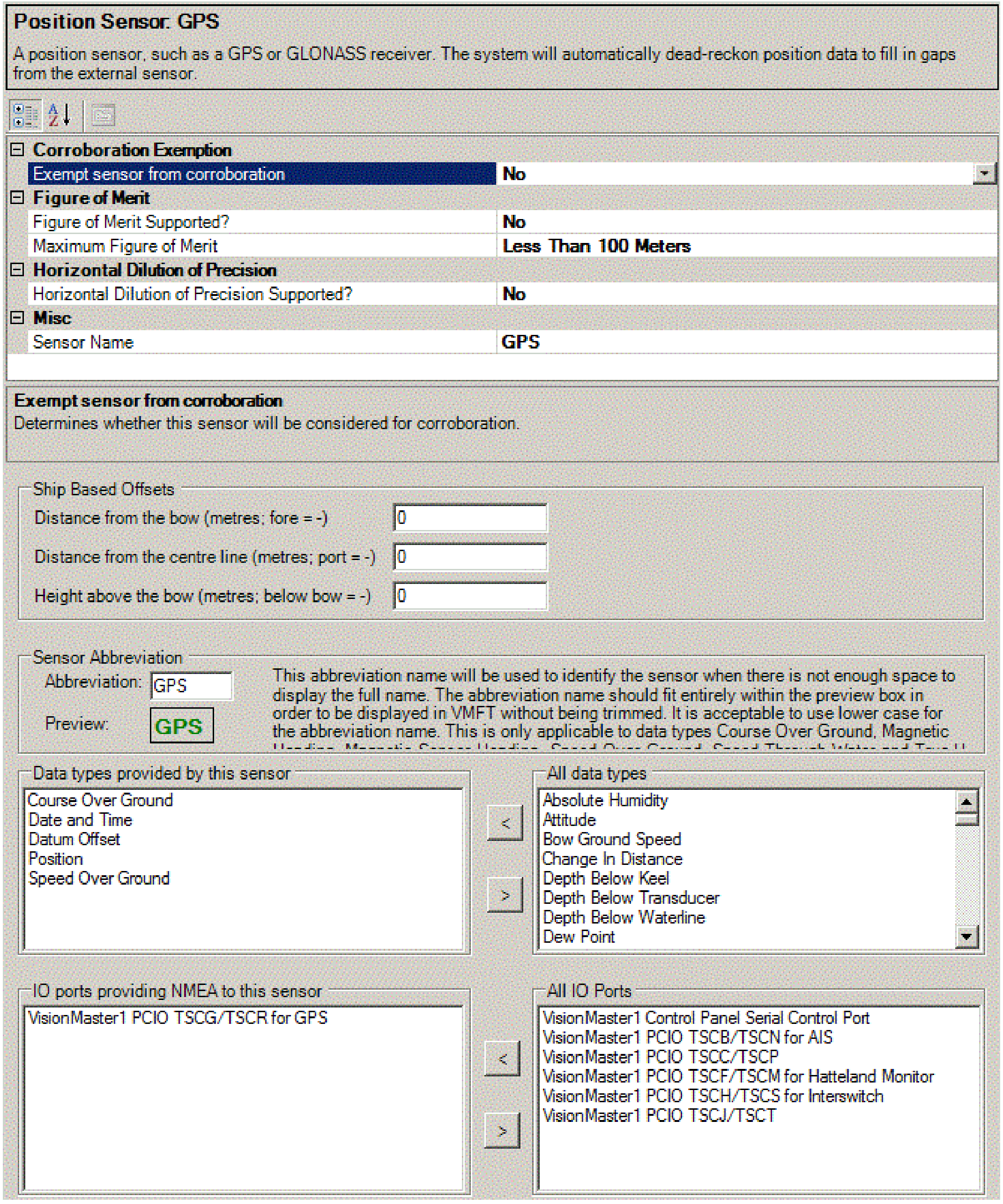


Figure 1.114 Configuration Window for a Position Sensor

In addition to the configurable options of Corroboration Exemption, Sensor name, sensor position, abbreviation and selection of data types as described previously for an Analog Heading Sensor: Gyro, the Position Sensor configuration window includes the following additional settings:

- Figure of Merit information - the **Figure of Merit Supported?** setting should always be set to No.
- Horizontal Dilution of Precision - whether to use supplied horizontal dilution of precision information for this sensor. Normally set to No.
- Data Types - the position sensor configuration window automatically selects the data types provided for this sensor, in addition to Position. These data types may be configured where necessary. For example, if your GPS unit does not provide datum offset information (DTM NMEA messages), remove the **Datum Offset** from the All Data Types column. Or, if you have a GPS-Gyro that provides position and heading, add True Heading to the list of data types provided by the GPS.
- IO Ports - this is the interface that will be used to obtain the sensor data, see Section 9.4.1.2 *Interfaces for Acquisition*'. The All IO Ports column lists all the I/O ports on the system, as defined in Section 8.10 *I/O Port Manager*'. A different I/O port for the GPS sensor may be configured where necessary and then selected from the All IO Ports column.

The display and selection of the IO Port on a sensor configuration window is limited to the following sensor types:

- Position
- Depth
- Ground Speed
- Water Speed
- True Heading
- Wind

Configuring a Water Speed Sensor: Log

Figure 1.115 below shows default settings for the sensor that measures the water speed.

The water speed is generated either via a pulse log interface on the PCIO Control Port, or another PCIO serial interface (TSCD, or TSCE for dual axis log) see Figure 1.134 '*PCIO Sensor Interface - configuration*'.

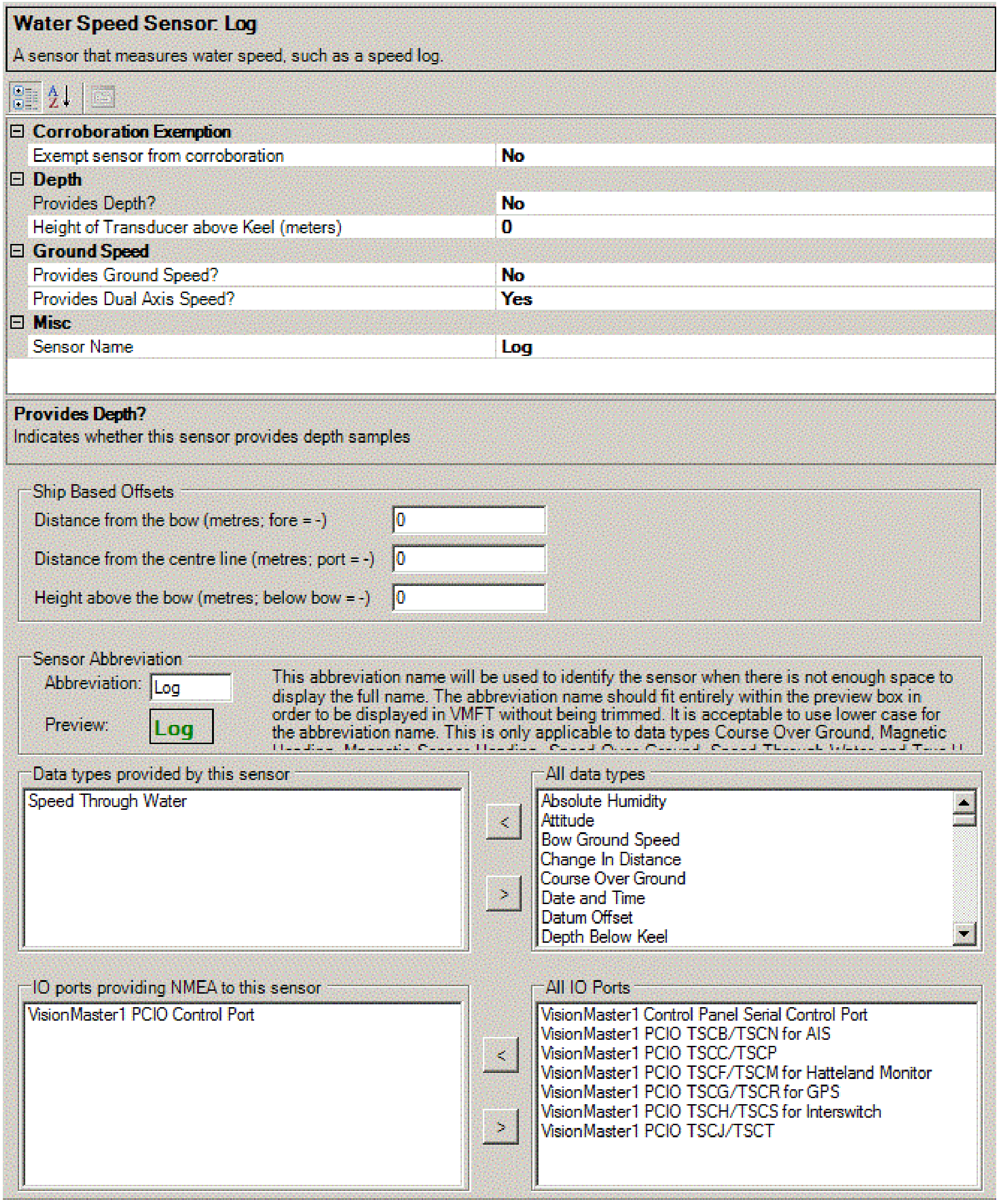


Figure 1.115 Configuration Window for a Water Speed Sensor

In addition to the configurable options of corroboration exemption, sensor name, sensor position, abbreviation and selection of data types as described previously for Analog Heading Sensor: Gyro, the Water Speed Sensor configuration window includes the following additional settings:

- **Depth -** indicates whether this sensor provides depth samples. To enable depth samples to be made click on the drop down arrow and select Yes.
- **Height of Transducer above Keel** - if the sensor has been enabled to provide depth samples the height of the transducer above the keel must be entered to provide an offset to the depth below keel measurements.
- **Ground Speed** - indicates whether this sensor provides ground speed samples. To enable samples to be made click on the drop down arrow and select Yes.
- **Dual Axis Speed** - indicates whether this sensor provides ground speed samples. The default setting is **Yes** as single Axis ground speed is no longer supported.

Configuring a Wind Sensor

When a wind sensor is selected the system creates the sub menus 'Relative Wind Directional Offset Translation Table' and 'Relative Wind Speed Scale Factor Translation Table' in the navigation tree.

Wind data may be received in the following three forms:

- Relative Wind with Relative Direction
- True Wind with True Direction
- True Wind with Relative Direction

A wind sensor may provide data in any subset of these three forms, which are automatically selected in the data types column. Whenever any one of these forms is not included, the system computes the values for the missing forms. The system treats the computed data in the same way it would if this data had been received directly from the sensor.

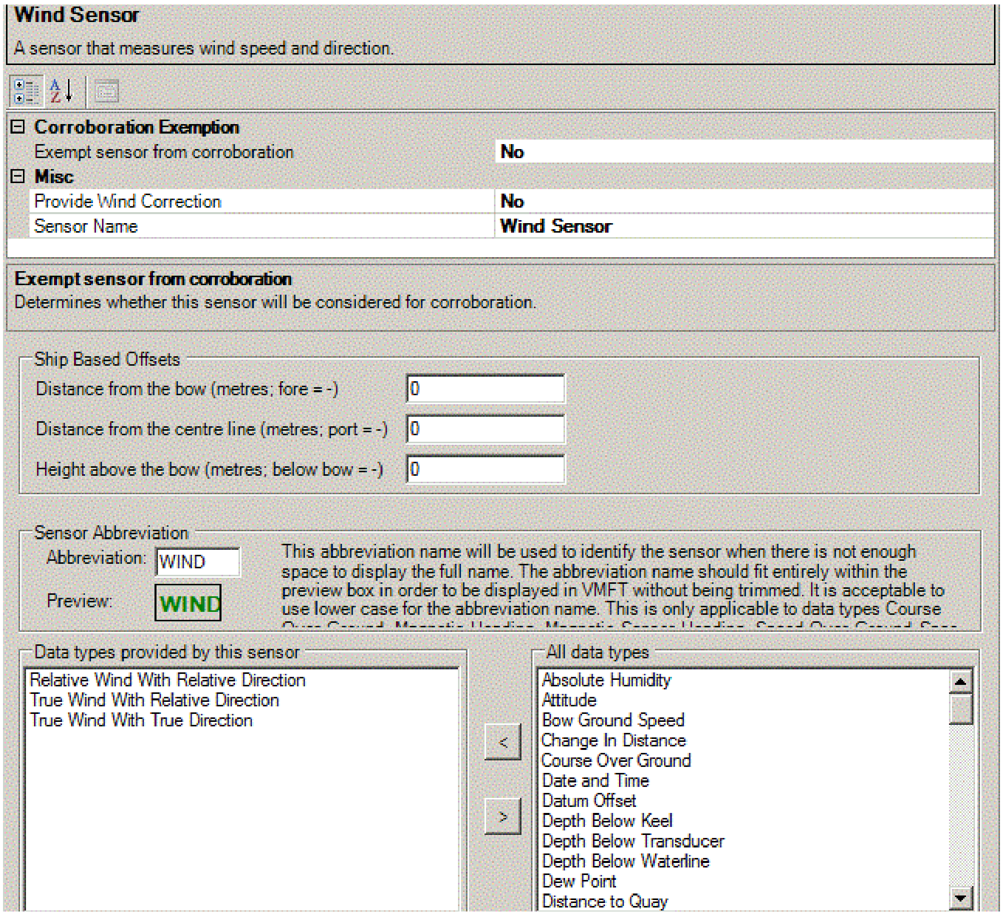


Figure 1.116 Wind Sensor

Wind sensors can be configured with a set of correction factors that apply at various wind directions. These correction factors must be configured if the **Provide Wind Correction** field is set to **Yes**.

When Yes is selected the Relative Wind Directional Offset and Relative Wind Speed Scale Factor translation table status buttons become unconfigured. The translation tables are not enabled if Wind Correction is set to No.

Configuring Wind Correction Translation Tables

The wind correction option allows wind sensors to be configured with a set of correction factors that are automatically applied to the sensed wind data at various wind directions.

When enabled, the translation tables provide a means of entering a set of adjustments to the relative wind speed and relative wind direction. The system then applies the correction factors to generate corrected versions of all three types of wind data and only uses the corrected values wherever the particular wind sensor's data is used or displayed.

Adjustment parameters are entered as directional offsets and/or speed scale factors. Up to 36 adjustment parameters may be entered for each translation table.

Directional Offset

To enter directional offset parameters click on the **Relative Wind Directional Offset Translation Table** topic in the navigation tree.

In the table columns enter observed relative wind directions and the required directional offset values in degrees.

When two or more rows of data are entered the system translates the offset values entered for the relative wind direction and draws a translation curve, based on the given data.

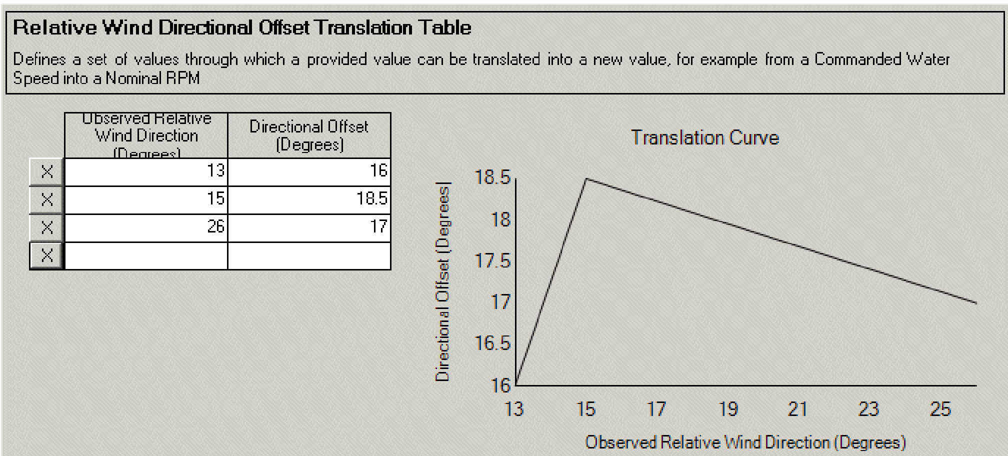


Figure 1.117 Relative Wind Directional Offset Translation Table

Speed Scale Factor

To enter speed scale factors click on the **Relative Wind Speed Scale Factor Translation Table** topic in the navigation tree.

In the table columns enter observed relative wind directions and the required speed scale factor values in knots.

When two or more rows of data are entered the system translates the speed scale factors entered for the relative wind direction and draws a translation curve, based on the given data.

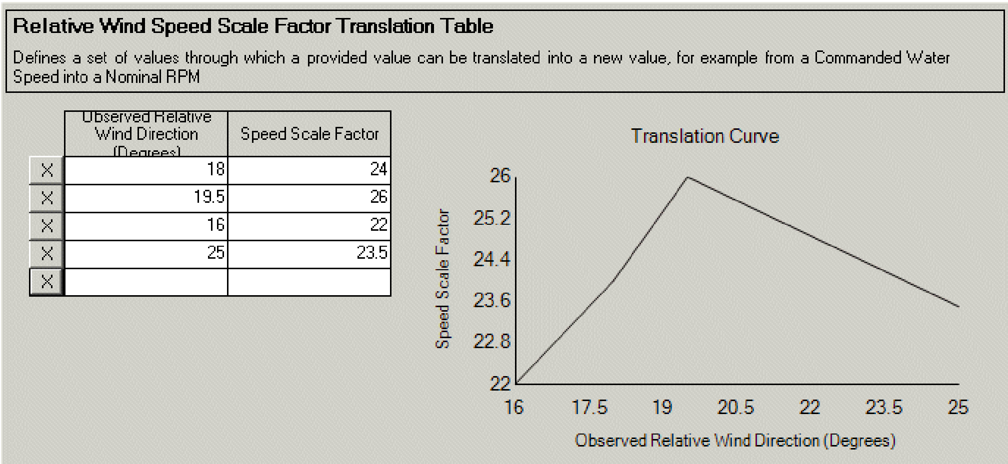


Figure 1.118 Relative Wind Speed Scale Factor Translation Table

Configuring a Generic Data Sensor

A generic data sensor is used to provide non-navigation related data, which may be received from an analog interface or an NMEA XDR message interface.

Generic data, received over a particular interface, is usually displayed on a Conning Information Display (CID) element and is defined by the data type selected from the Type of Data drop down list, see Figure 1.119.

For information on creating CID elements, see Chapter 3 '*Configuring a Conning Information Display*'.

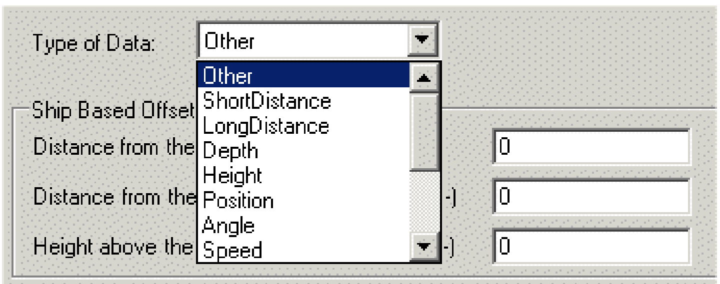


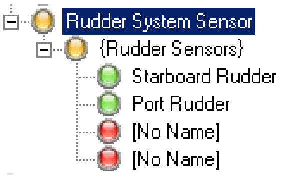
Figure 1.119 Generic Data Sensor- Select Type of Data

Configuring a Rudder System Sensor

This sensor represents the entire rudder system of the ship, which will consist of multiple distinct rudder sensors.

When selected, the rudder system sensor generates two rudders; Port and Starboard.

If the ship has more than two rudders, select the number from the Rudder System Sensor drop down list. The navigation tree will list the extra rudders as unconfigured **[No Name]** topics.



To configure a rudder sensor:

1. Enter a name for the sensor, usually a descriptive name for the rudder location. The given name appears in the navigation tree.
2. Enter the position data of the sensor in the relevant fields of the Ship Based Offsets area.
3. Enter an abbreviation used to identify the sensor.

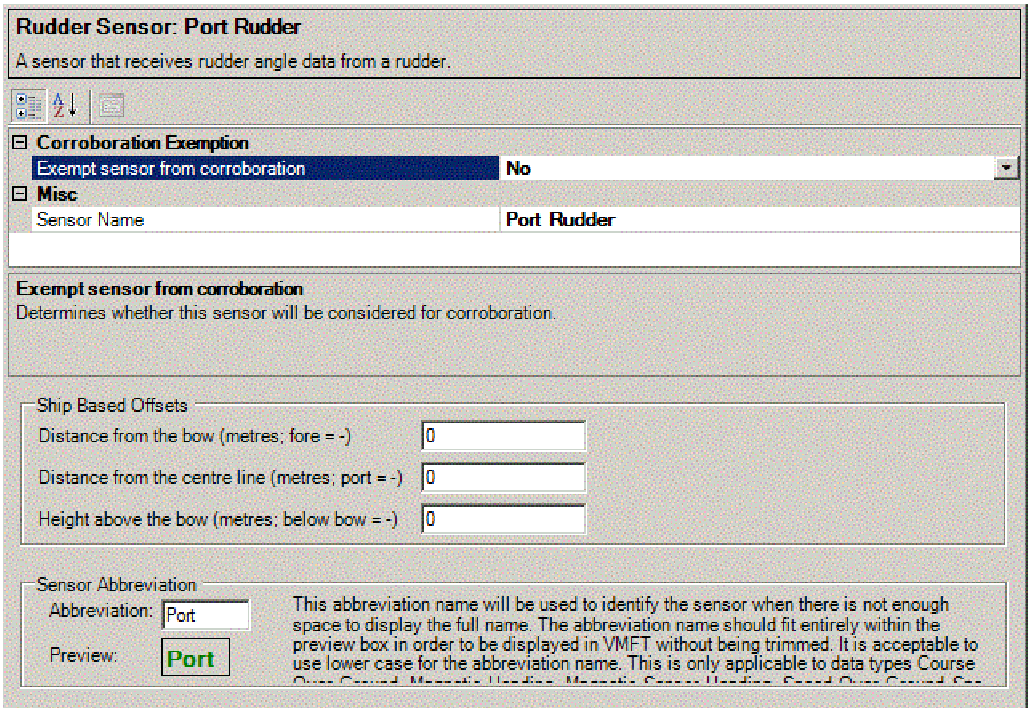


Figure 1.120 Configuration Window for a Rudder Sensor

Configuring a Fugro Trim Sensor

The VMFT can be configured to display data from Fugro MarineSTAR equipment using NMEA XDR sentences. In order to display the information, a CID side panel is also required to be defined, see '*Configuring a Conning Information Display*'.

XDR Sentence Definition

MarineSTAR data can be output as a series of XDR sentences. The XDR sentence is defined as transducer measurements, and the definition includes a Generic field for the inclusion of data types not specified in the definition. Using the XDR format brings the advantage that it can be used to output MarineSTAR berthing data in a standard, approved message format.

Table 7 lists the XDR sentence/ID numbers, data fields and units used. The bold fields in the table are intended to be used by the VMFT.

Table 7: XDR Sentence Definition

Sentence	ID	Data Field	Units
01	*1*	*Berthing Data Quality*	-
01	*2*	*Berthing Orientation*	-
01	*3*	*Bow Corner to Quay decimal*	*Meters*
01	*4*	*Stern Corner to Quay decimal*	*Meters*
01	*5*	*End Point to Quay decimal*	*Meters*
02	*6*	*GNSS Quality*	-
02	**7**	**Heading**	**Degrees**
02	**8**	**Rate Of Turn**	**Degrees**
02	*9*	*Course over Ground*	*Degrees*
03	**10**	**Speed - Forward**	**Knots**
03	**11**	**Speed - Athwart, Bow**	**Knots**
03	**12**	**Speed - Athwart, Stern**	**Knots**
03	*13*	*Speed - Overall SOG*	*Knots*
04	*14*	*Distance Run 1*	*Nm*
04	*15*	*Distance Run 2*	*Nm*
05	**16**	**Bow End to Quay**	**Meters**
06	**17**	**Stern End to Quay**	**Meters**
07	**18**	**Port, Bow Corner to Quay**	**Meters**
07	**19**	**Port, Stern Corner to Quay**	**Meters**
08	**20**	**Stbd, Bow Corner to Quay**	**Meters**
08	**21**	**Stbd, Stern Corner to Quay**	**Meters**

To configure a Fugro trim sensor:

1. From the External Sensors window select **Generic Data Sensor** from the list of all sensors. An unconfigured sensor is added to the list of sensors in the navigation tree.
2. Open the sensor page by clicking on [**No Name**] in the navigation tree.
3. Configure the Generic Data Sensor for the MarineSTAR by giving a sensor name based on the data type (e.g. XDR7- Heading). The given name appears in the navigation tree.
4. Enter an abbreviation for the sensor, it is advisable to include the sentence ID in the abbreviation, see Figure 1.121.

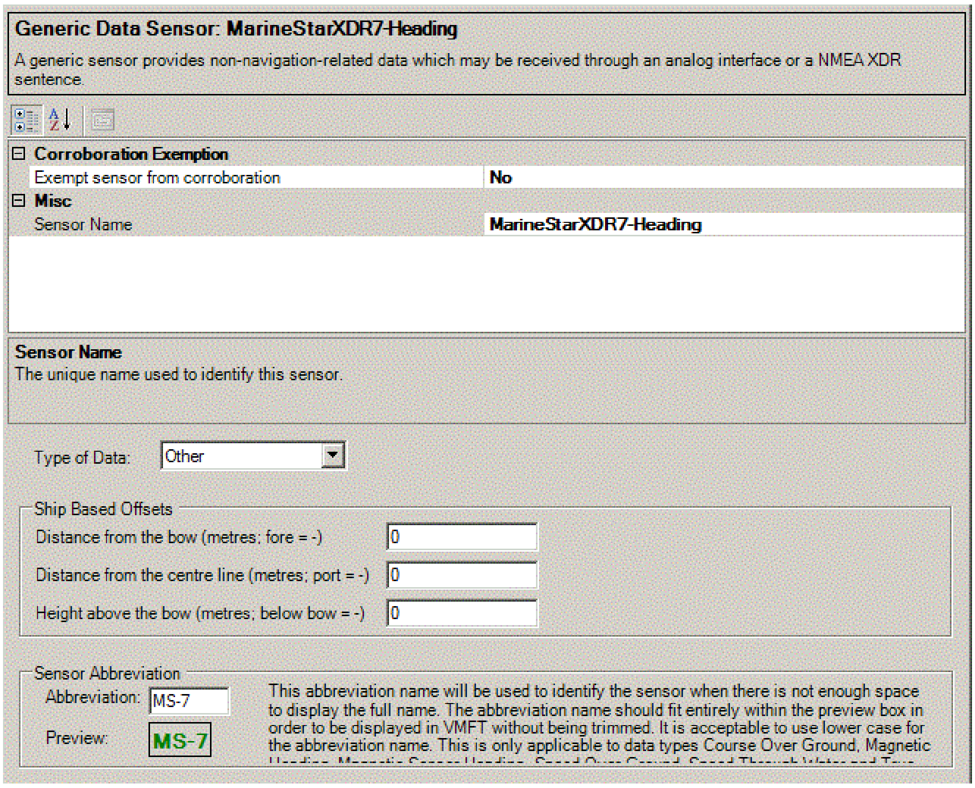


Figure 1.121 Generic Data Sensor for Fugro MarineSTAR Heading

5. Repeat the configuration process for each required XDR sentence. The XDR sentences will be listed in the external sensors navigation tree, see Figure 1.122.

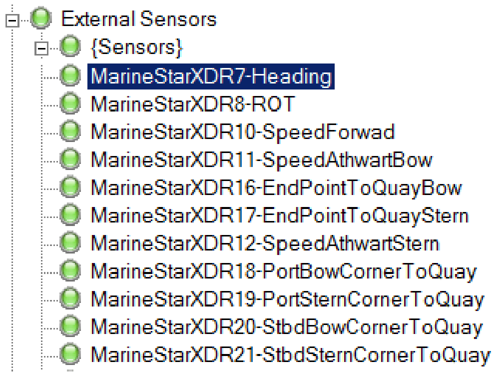


Figure 1.122 Fugro MarineStar XDR Sensor Sentences

Note that after entering a name and abbreviation, the sensor will remain unconfigured until a suitable interface has been selected and configured.

To configure an interface for the Fugro trim sensor:

1. From the Interfaces For Acquisition area of the External Sensors window select **NMEA XDR Message Interface** from the list of All Interfaces. An unconfigured topic is added to the Interfaces For Acquisition list in the navigation tree

Note: *A Fugro trim sensor will only work with a proprietary NMEA $PFMS sentence message. There are two types of $PFMS sentence; a DTQ (Distance to Quay) sentence and a SAD sentence, which acquires ground speed and docking speed data.*

2. From the unconfigured topic select Single Transducer Interface and select the port to be used by this interface, an unconfigured topic appears below the Single Transducer Interface.
3. Open the topic and from the Sensor drop down list select the previously configured MarineSTAR sensor.
4. In the Transducer ID field enter the ID that matches the transducer ID field of the XDR sentence, e.g. for Heading enter 7, see Figure 1.123.

When an interface has been configured the external sensor topic status becomes valid.

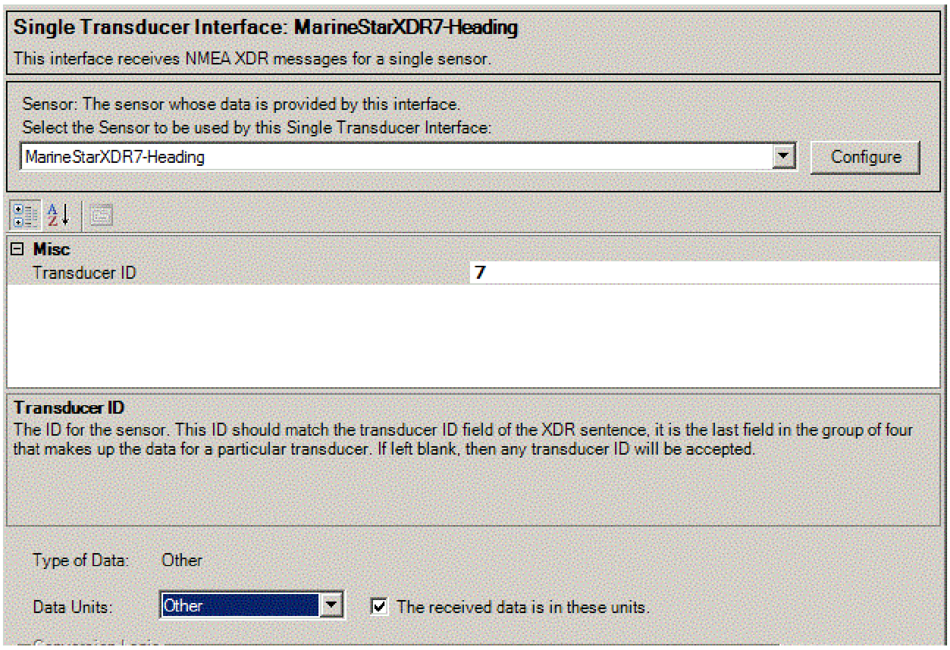


Figure 1.123 Single Transducer Interface for MarineSTAR XDR Heading

5. Repeat the configuration process for each required transducer interface. The XDR sentences will be listed in the external sensors navigation tree, see Figure 1.122.

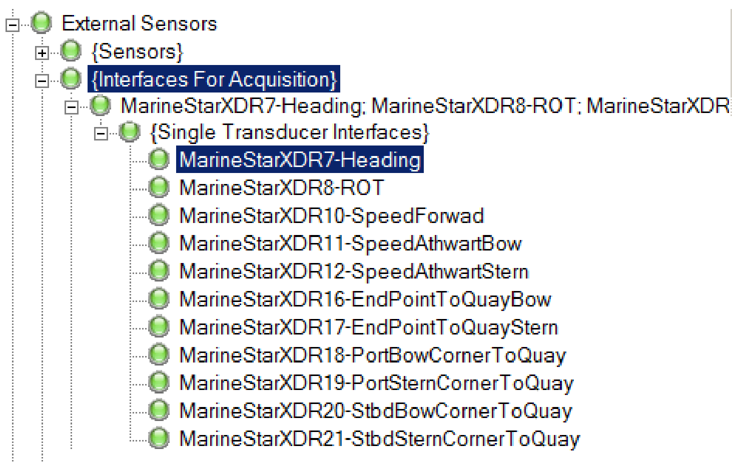


Figure 1.124 Fugro MarineStar XDR Sentences

In addition to the configuration of a Fugro trim sensor described above a Conning Information Display (CID) page is also required to be configured from the CID Designer. For information on this refer to Section 2.4.3 *Creating a Page for Fugro Trim Sensor*' in Chapter 3 '*Configuring a Conning Information Display*'.

Configuring a Rolls Royce Propulsion System Sensor

This sensor is required when a Rolls Royce propulsion system is being used.

To configure a Rolls Royce Propulsion system sensor:

1. From the External Sensors window select **Rolls Royce Propulsion System Sensor** from the list of all sensors. The sensor name is automatically added to the list of sensors and the navigation tree creates a hierarchical sub menu for sensor message identifiers.

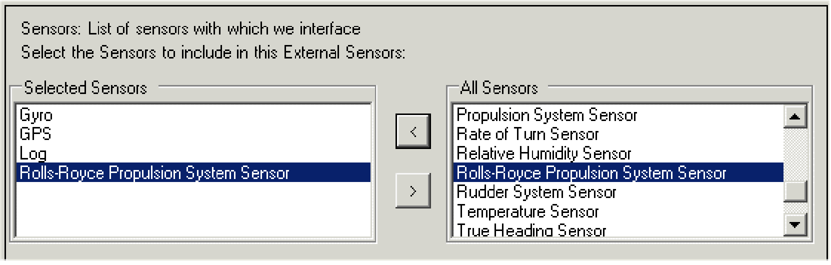


Figure 1.125 Rolls Royce Propulsion System Sensor Selection

2. From the navigation tree open the Rolls Royce Propulsion System sensor page and select the number of unique PRRP message identifiers for the system from a drop down list.

Note: *A Rolls Royce propulsion sensor will only work with a proprietary NMEA $PRRP sentence message. The PRRP message defines the second field to be 'uutn', where 'uu' is the unit number and 'n' is the message number ('t' is ignored by VMFT). Select the number of unique combinations of uu and n. The navigation tree creates unconfigured topics for each number of message identifiers.*

3. For each Rolls Royce Propulsion System sensor message topic a message number and unit number must be entered, see Figure 1.126.

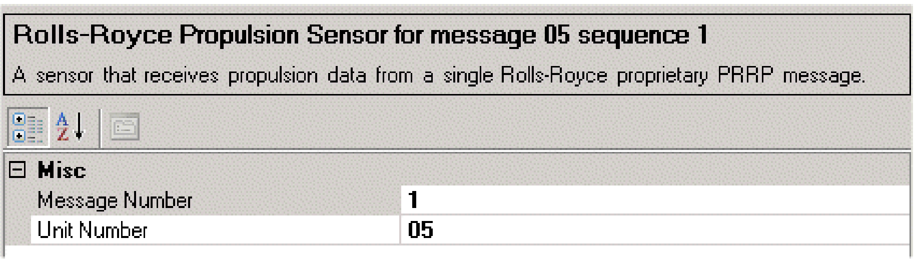


Figure 1.126 Rolls Royce Propulsion System Message Topic

4. Enter a one digit message number. This is the last character of the first field of the PRRP message, for example if the 4 digit message ID is '0501' then **1** should be entered.

5. Enter a two digit unit number. This is the first 2 characters of the first field of the PRRP message, for example if the 4 digit message ID is '0501' then **05** should be entered.

Note that the Rolls Royce Propulsion sensor will remain unconfigured until a suitable interface has been selected and configured.

To configure an interface for the Rolls Royce Propulsion system sensor:

1. From the Interfaces For Acquisition area of the External Sensors window select **Rolls Royce PRRP Message Interface** from the list of All Interfaces. An unconfigured topic is added to the Interfaces For Acquisition list in the navigation tree, see Figure 1.127.

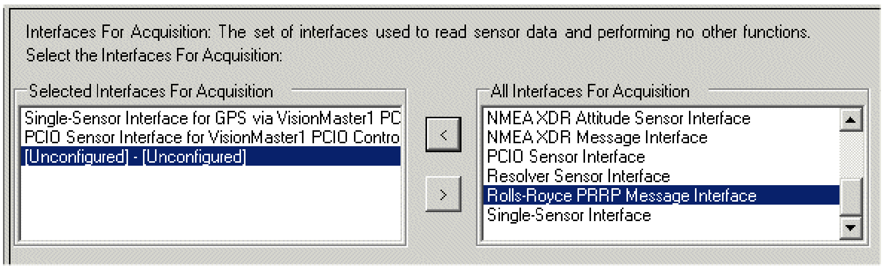


Figure 1.127 Rolls Royce PRRP Message Interface Selection

2. Open the topic and select the assigned name of the sensor (i.e. **Rolls Royce Propulsion System Sensor**).
3. Select the port that this interface receives data over by clicking on the Port drop down arrow and selecting from the configured ports list.

When an interface has been configured the external sensor topic status becomes valid.

In addition to the configuration of a Rolls Royce Propulsion system sensor described above a Conning Information Display (CID) page is also required to be configured from the CID Designer. For information on this refer to Section 2.4.4 *Creating a Page for Rolls Royce Propulsion System Sensor*' in Chapter 3 '*Configuring a Conning Information Display*'.

Configuring an INS sensor

An INS sensor is required to be configured when the VMFT receives navigation data and Navigation Status Reports (NSRs) from a separate Integrated Navigation System (INS).

To configure an INS sensor:

1. From the External Sensors window select **Integrated Navigation System** from the list of All Sensors. An unconfigured topic is added to the Sensors list in the navigation tree.
2. The Corroboration Exemption default is No (sensor is not exempt from corroboration). In a configuration where, for example, one INS sensor and two GPS sensors are configured the INS will receive input from the two GPS sensors, which have had their output previously corroborated. In this case the Corroboration Exemption should be set to **Yes** (sensor output exempt from corroboration) for the INS sensor.
3. Enter a name for the sensor in the Sensor Name field (e.g. INS1).
4. Enter an abbreviated name that will be used to identify the sensor in the Abbreviation field. The abbreviated name may be the same as the sensor name.
5. Select the data types provided by the INS sensor from the All data types list. The data types selected may be a combination of INS Status types and other data types, dependent on the INS sensor requirements.
6. Select the IO port providing NMEA to this sensor from the All IO Ports list. Figure 1.128 shows a typical configured INS sensor topic.
7. A customizable sensor interface for the INS sensor must be configured, including the same IO port selected in step 6. For details see "Customizable Sensor Interface" on page 160.

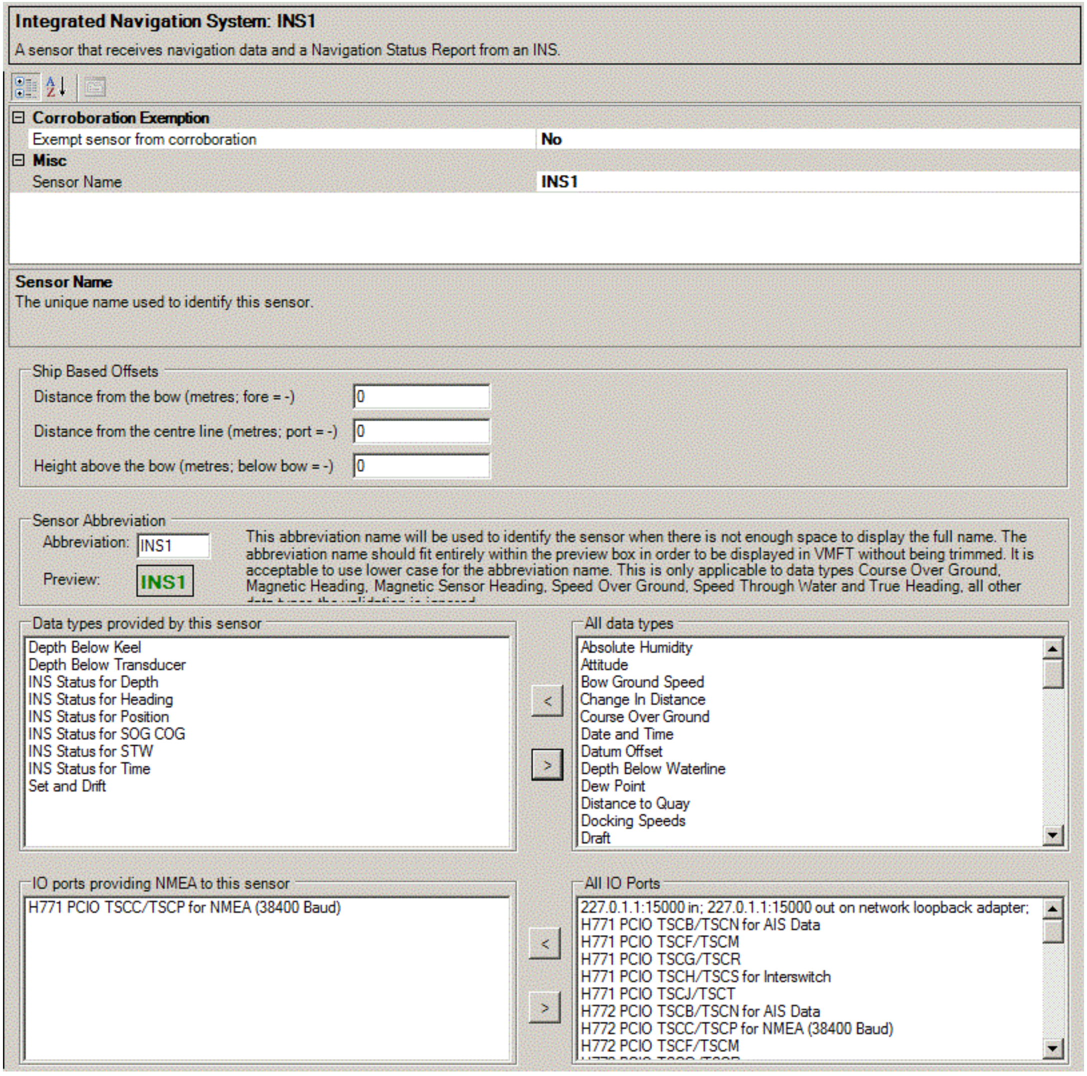


Figure 1.128 INS Sensor configured

9.4.1.2 Interfaces for Acquisition

The VisionMaster system supports the acquisition of received sensor data via serial interfaces on the PCIO board. The serial interfaces comply with IEC 61162-1 and IEC 61162-2 (i.e. serial interfaces operating at 4800 and 38400 baud respectively).

VisionMaster also supports receiving sensor data over other types of I/O ports, such as UDP Multicast I/O ports, which may be used where sensors' serial outputs are connected to an NSI box. This allows the sensor data to be directly available at any node of the system without relying on direct serial wiring to each node.

To access the sensor interfaces click on the **Interfaces For Acquisition** topic in the Navigation tree. The window shows a list of all types of interfaces that can be used to acquire sensor data, and allows the user to include any number of any of these types.

There are five types of sensor interface that can receive digital messages containing the sensor data:

1. Single-Sensor Interface or Multi-Sensor Interface:
   - Single Interface allows reception of data from a single sensor over any type of I/O port providing messages compliant with IEC 61162-1.
   - Multi-Sensor Interface allows reception of data from multiple sensors over a single I/O port of any type, where all sensors are providing messages compliant with IEC 61162-1, and no two sensors are providing the same type of data.
2. PCIO Sensor Interface: Lists the PCIO boards that are to be used for acquiring sensor data, as configured in the PCIO Board Manager.
3. Customizable Sensor Interface: Allows reception of data from multiple sensors over a single I/O port of any type, where all sensors are providing messages compliant with IEC 61162-1 (for example INS), multiple sensors may provide the same type of data, as long as the sensors can be distinguished by the sentence types or talker ids they use.
4. NMEA Message Interfaces: These are sensor interfaces that handle reception of IEC 61162-1 compliant NMEA sentences of the following types: RPM (for engine RPM or for shaft RPM and pitch data); RSA (for rudder angle data); XDR (for transducer data that may represent pressures, angles, temperatures, or other generic data).
5. Discrete Sensor Interface: If a Labjack device or Opto 22 rack is connected to the system and the source of sensor data from the device is digital input/output data then this interface is selected.

An analog sensor interface should be configured when the source of sensor data from a Labjack or Opto 22 rack is in analog format, or an analog interface on the PCIO board.

A Resolver sensor interface should be configured to receive analog input when a Rudder System Sensor has been configured.

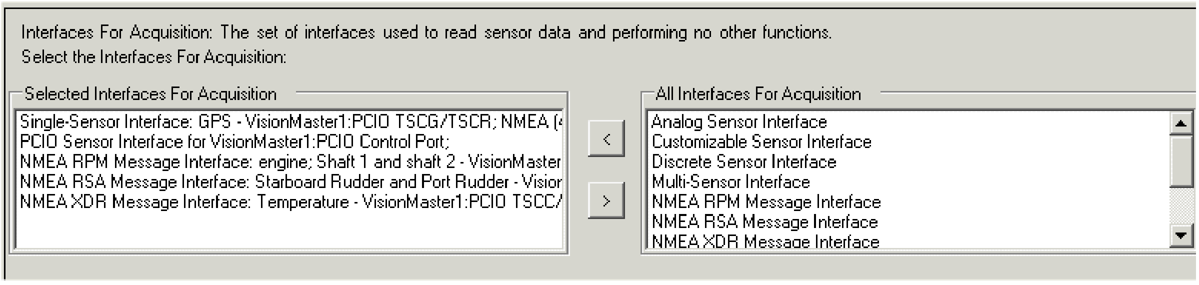


Figure 1.129 Interfaces for Acquisition

For all interface types that use a NMEA parser the sentences listed in Table 8 are used to obtain the data listed in the table.

Table 8: Sentences and Sensor Data

Group	Sentence	Data
Alerts	ACK,	Acknowledge alarm
	ACN	Alert Command
	ALC	Alert List
	ALF	Alert Condition
	ALR	Set alarm state
	ARC	Alert Command Refusal
Autopilot	ASD	Autopilot System Data
Depth	DPT	Depth Below Keel, Depth Below Transducer, Depth Below Waterline
Datum	DTM	Datum reference
Geodetic Position	GGA	Global Positioning System (GPS fix data
	GLL	Geographic position - Latitude/Longitude
	GNS	GNSS fix data
Heartbeat	HBT	Heartbeat supervision sentence
Heading	HCR	Heading correction report
	HDG	Heading, Deviation and , Magnetic Variation
	HDM	Heading, Magnetic
	HDT	Heading, True
	MHU	Meteorological Composite
	MMB	Humidity
	MTA	Air Temperature

Group	Sentence	Data
	MTW	Water Temperature
Wind	MWD	Wind direction and speed
	MWV	Wind Speed and Angle
	RMC	Recommended minimum specific GNSS data
	ROT	Rate of Turn
	RPM	Revolutions
	RSA	Rudder sensor angle
	RTE	Routes
	THS	True Heading and Status
Target	TLB	Target Label
	TTD	Tracked target data
	TTM	Tracked target message
	VBW	Ground Speed and Water Speed
AIS	VDM	AIS VHF data-link message
	VDO	AIS VHF data link (own ship)
	VDR	Set and Drift
	VHW	Water Speed and Heading
	VTG	Ground Speed and Course Over Ground
	WPL	Waypoint location
	XDR	Transducer measurements
	ZDA	Date and Time, Local Time Offset

System Output Sentences	EVE	General event message
	HSC	Heading steering command
	OSD	Own ship data
	RSD	Radar system data
	TLL	Target Latitude and Longitude
	ZTG	UTC and time to destination waypoint

The following table shows the support for sensor acquisition via specific external interfaces on the PCIO board.

Table 9: PCIO Serial Input Connections

Connector Name	COM Port	Messages received	Caveats
Serial Input 1/TSCA	3 (control port)	HDG/HDT ROT/THS	Cannot be used if any heading is configured for Serial Input 2
Serial Input 2/TSCD	3 (control port)	Any NMEA sensor sentences*	The same Talker/Sentence ID must not also be configured on Serial Input 1 or 3. Can be used for low speed heading input only if serial input 1 is unused
Serial Input 3 / TSCE	3 (control port)	Any NMEA sensor sentences *	The same Talker/Sentence ID must not also be configured on Serial Inputs 1 or 2
Serial Input 4 / TSCF	4	Any	
Serial Input 5 / TSCB	5	Any	
Serial Input 6 / TSCC	6	Any	
Serial Input 7 / TSCG	7	Any	
Serial Input 8 / TSCH	8	Any	
Serial Input 9 / TSCJ	9	Any	

*. TSCD or TSCE can be configured to receive messages from a speed log (providing IIVBW sentences) as long as it is not the same water speed sensor that is connected to the pulse log input of the PCIO board.

Table 10 below lists the commissionable baud rates for serial inputs 3 to 9.

Table 10: PCIO Serial Port Baud Rates

Port Name	Commissionable Baud Rates
Serial Input 2 and 3	4800
Serial Input 4	110, 300, 1200, 4800 and 9600
Serial Input 5	110, 300, 1200, 4800, 9600, 19200, 38400 and 57600
Serial Input 6	110, 300, 1200, 4800, 9600, 19200, 38400 and 57600
Serial Input 7	110, 300, 1200, 4800 and 9600
Serial Input 8	110, 300, 1200, 4800 and 9600
Serial Input 9	110, 300, 1200, 4800 and 9600

Note: *The serial port number 3 cannot be used as a heading source on a PCIO board fitted to a node that is also fitted with an SC2 or SC3 board. For a radar system the heading source should always be received via the PCIO board. If the system does not have radar, (e.g. ECDIS without radar overlay,) then the heading data may be configured via a single sensor or multi-sensor serial interface.*

When an interface has been selected the interface type is listed in the navigation field under the {Interfaces for Acquisition} sub-menu. When first selected the interface shows [Unconfigured] and its status button is displayed as red.

Configuring a Single or Multi-Sensor Interface

1. Click on the Single or Multi-Sensor Interface topic in the navigation area, the configuration window for the interface appears.
2. Select the port that the interface will receive data over by clicking the drop down arrow on the Port field. The field shows a list of ports previously configured in I/O Port Manager, see Figure 1.130 below. If no ports have been configured the field will display <NONE>.

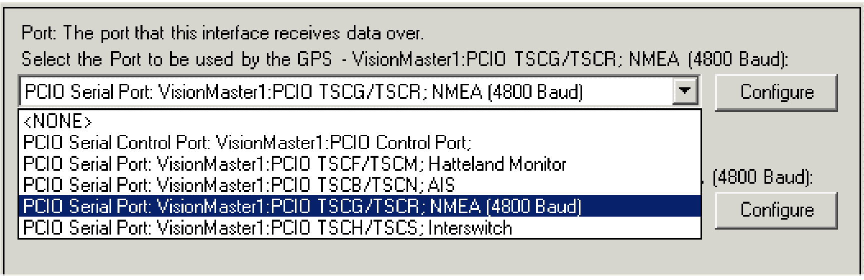


Figure 1.130 Single-Sensor Interface Ports available

3. To change the port settings click the **Configure** button, the port configuration window for the selected port is displayed, see Figure 1.73, page 91.
4. For a Single-Sensor Interface select the sensor that will provide data via the interface by clicking the drop down arrow on the Sensor field. The field shows a list of external sensors previously configured in Sensors, see Figure 1.131 below.

Note: *Heading sensors cannot be configured for a single or multi-sensor interface.*

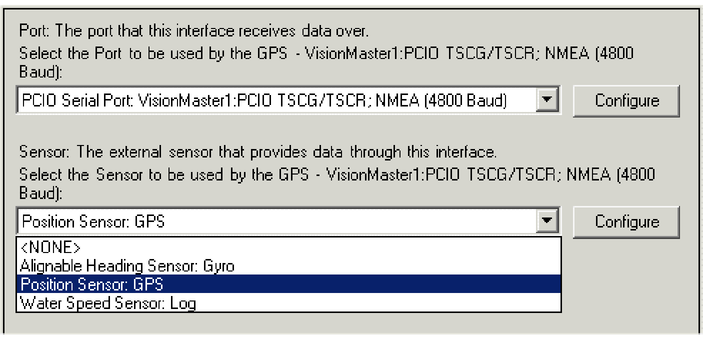


Figure 1.131 Single-Sensor Interface Sensors available

5. Should it be necessary to change the sensor configuration settings, click the **Configure** button, the configuration window for the selected sensor is displayed, see Figure 1.112, page 132.
6. For a Multi-Sensor Interface select the sensors that will provide data via the interface by highlighting each one from the list of previously configured sensors in the **All Sensors** list, and pressing the **<** button.

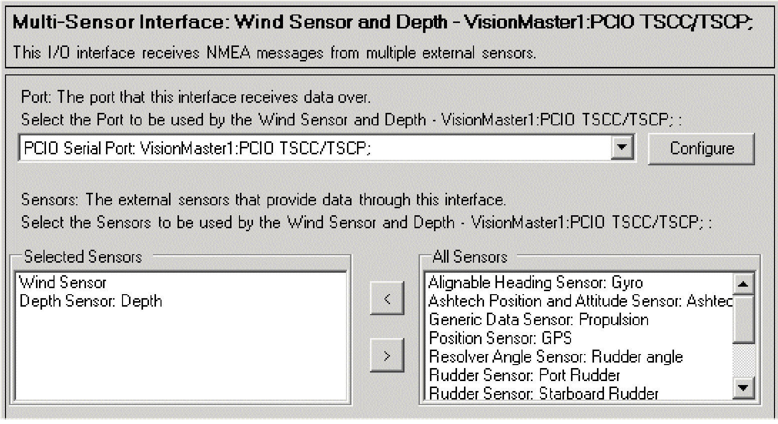


Figure 1.132 Multi-Sensor Interface Sensors available

Parsers

When a single or multi sensor interface is configured a NMEA 0183 Parser is added as a sub menu item to the interface.

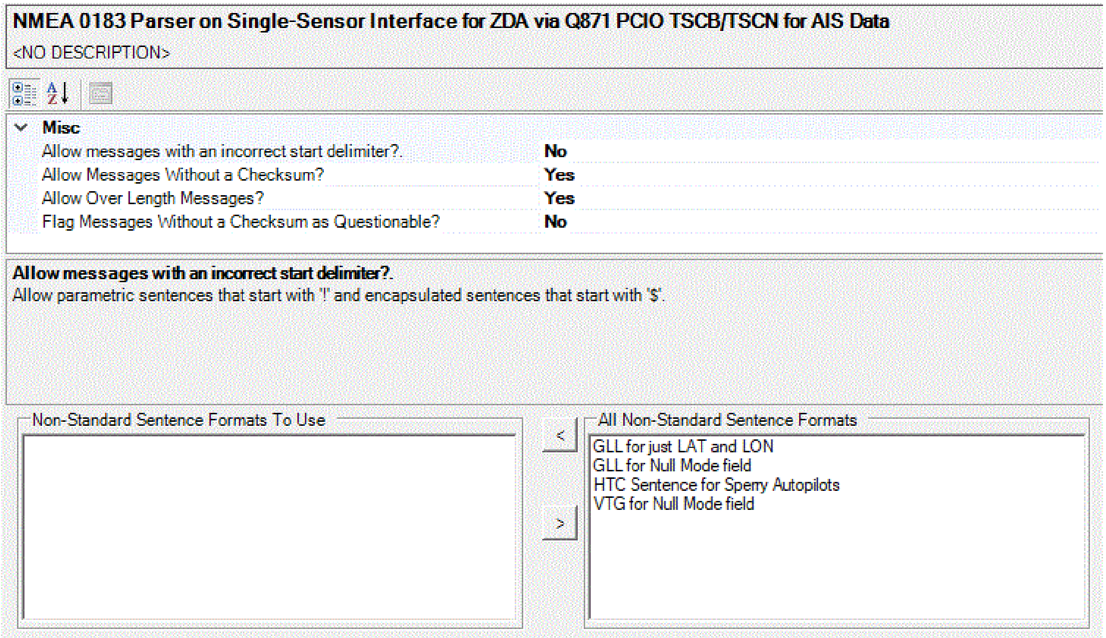


Figure 1.133 NMEA 0183 Parser

The NMEA 0183 Parser window includes a list of alternate sentence parsers that can be included to support non-standard equipment.

The Miscellaneous section includes the following settings:

- **Allow messages with an incorrect start delimiter?** - Allows parametric sentences that start with "!" and encapsulated sentences that start with "$" to be used when set to **Yes**. The default setting is **No**.
- **Allow Messages Without a Checksum?** - All NMEA messages are required to contain a valid checksum, although not all pieces of equipment adhere to this requirement. The default setting is to allow the parser to receive messages with or without a checksum, although if a message contains a checksum it must be valid. To only allow messages with a valid checksum click in the field and select **No**.
- **Allow Over length Messages?** - All NMEA messages are required to be less than or equal to 82 characters. The default setting is to allow the parser to receive over length messages. To restrict to messages of less than or equal to 82 characters click in the field and select **No**.
- **Flag Messages without a Checksum as Questionable?** - If messages without a checksum are allowed should the resulting data be flagged as questionable? Select Yes to flag checksum messages.

Select the following non-standard sentence format to be used by the Sensor Interface:

- GLL for just LAT/LON or Null Mode field
- HTC Sentence for Sperry Autopilots
- VTG for Null Mode field

PCIO Sensor Interface

The PCIO Sensor Interface window enables the configuration of sensor data from a PCIO board to be made.

The PCIO board will have been previously selected and configured from the Resources menu (see Section 8.1 *PCIO Board Manager*' and Section 8.10 *I/O Port Manager*').

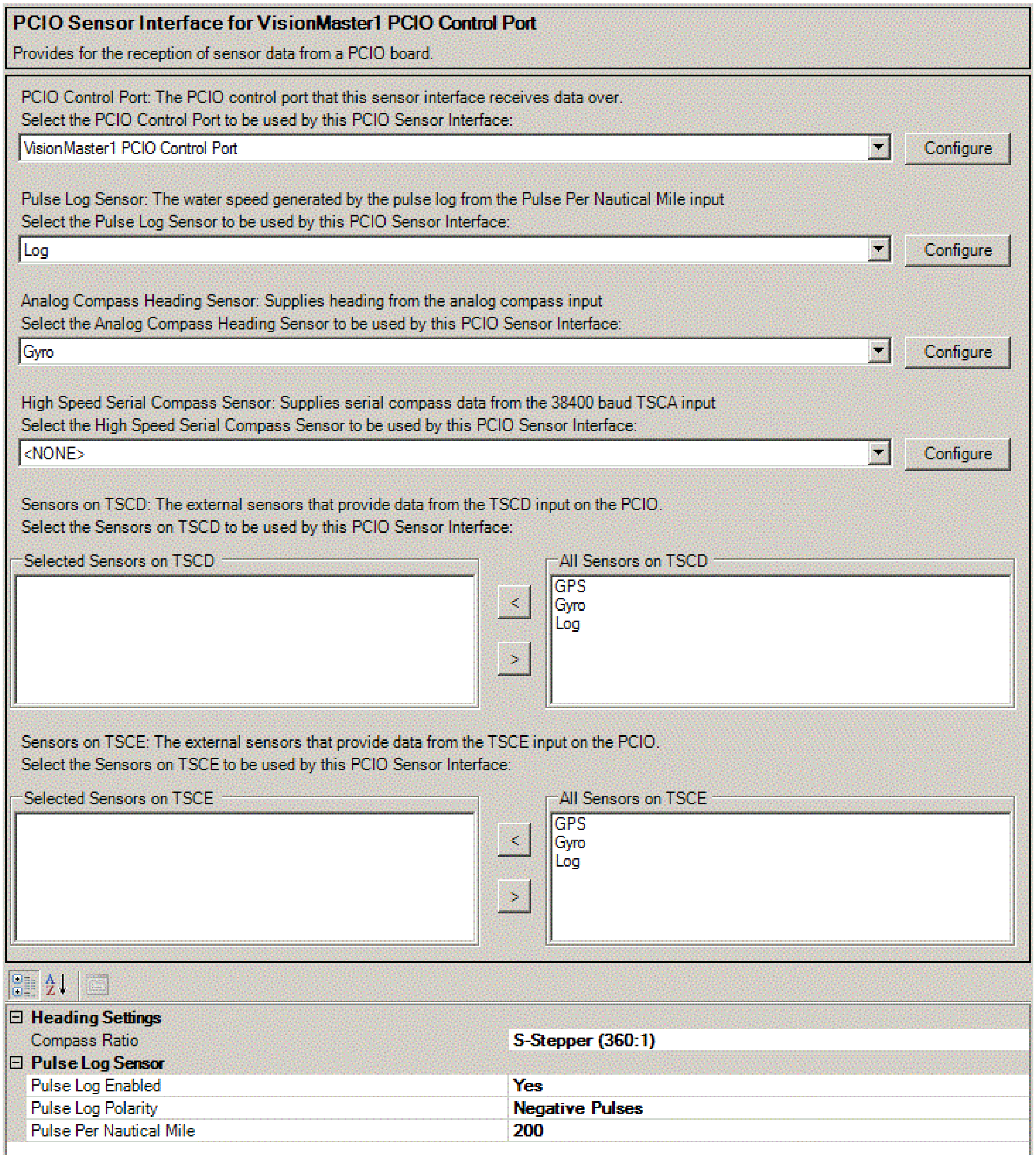


Figure 1.134 PCIO Sensor Interface - configuration

The configuration window for the PCIO unit includes the following selection options:

- PCIO Control Port - the control port that this sensor interface receives data over. The I/O Port Manager will have automatically created a serial control port for the configured PCIO board.
- Pulse Log Sensor - the water speed generated by the pulse log from the Pulse per Nautical Mile input on the PCIO board. Defaults to Log

- Analog Compass Heading Sensor - from the list provided, select the heading sensor whose data is provided via the stepper or synchro interface to the PCIO board. Defaults to Gyro.
- High Speed Serial Compass Sensor - if you are not using an analog compass heading, select the heading sensor whose data is provided via the 38400 baud TSCA input.
- Sensors on TSCD - from the list on the right, select each sensor whose data is provided via serial input TSCD. Note that heading sensors are not permitted here if a heading sensor is selected for the High Speed Serial Compass Sensor.
- Sensors on TSCE - from the list on the right, select each sensor whose data is provided via serial input TSCE. Note that heading sensors are not permitted here.

To change the current settings for the serial port and sensors click on the drop down arrows at the end of each data field and select from the previously configured I/O port and sensor lists.

Select the sensors for TSCD and TSCE to be used by the PCIO board by highlighting the sensors in the All Sensors lists and clicking on the **<** button.

Heading Settings

The heading settings enables the selection of compass ratio settings. applicable where an analog heading sensor is connected to the system. Heading data is acquired via a syncro interface or stepper motor interface connected to the PCIO board, the default is **S-stepper [360:1]**.

To select a different compass ratio click on the drop down arrow and select from the list.

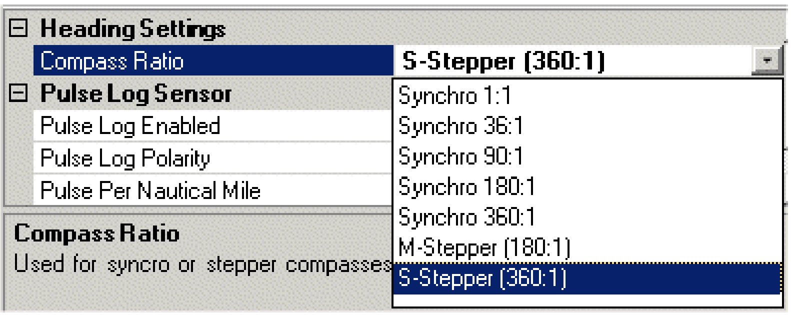


Figure 1.135 Compass Ratio Settings

The ratio settings that apply to a syncro interface are: 1:1, 36:1, 90:1, 180:1, or 360:1.

The ratio setting for the S-Stepper is 360:1. The ratio setting for the M-Stepper is 180:1.

Pulse Log Settings

The acquisition of single axis water speed data is made via a pulse log interface connected to the PCIO board. The following pulse log configuration settings are available, applicable where a pulse log sensor is connected to the system:

- Pulse Log Enabled - denotes whether or not a pulse log is connected to the system, defaults to **Yes**. To disable the pulse log click on the drop down arrow and select **No**.
- Pulse Log Polarity - defaults to Negative pulses, to change settings click on the drop down arrow and select **Positive Pulses**.
- Pulse per Nautical Mile - the pulse log rate, defaults to 200, a rate between 100 and 2560 pulses per nautical mile can be entered.

Customizable Sensor Interface

It should not normally be necessary for a customizable sensor interface to be configured. There are three general situations that may require such an interface:

1. Where VisionMaster receives IEC 61162-1-compliant (NMEA 0183) messages from more than one sensor over a single I/O port, and more than one of the sensors is providing data of the same type. For example, if two GPS sensors (e.g. GPS1 and GPS2) both provide their position data via the same serial port. In such a case, VisionMaster would need to distinguish data received from the two GPS sensors. The customizable sensor interface can be configured to tell VisionMaster, for example, that GPS1 provides GLL sentences, while GPS2 provides GGA sentences.
2. When an INS (Integrated Navigation System) sensor has been configured to provide IEC 61162-1-compliant (NMEA 0183) messages from multiple data types over a single I/O port. An INS sensor is required when the VMFT receives navigation data and Navigation Status Reports (NSRs) from a separate INS, see "Configuring an INS sensor" on page 149. Figure 1.136 shows a customizable sensor interface configured for an INS.
3. In situations where sensor data is received over a digital interface with a message format other than that specified by IEC 61162-1. Currently, VisionMaster does not support any other message formats.

Important Note: *In the event of a customizable interface requiring configuration, this procedure should only be attempted with phone support from Sperry Marine Engineering.*

The following section describes in general terms the configuration of a customizable sensor interface.

Configuring a Customizable Sensor Interface

When a Customizable Sensor Interface has been selected in the Interfaces for Acquisition window the system adds Message Parser and Message Usage Map as sub-menu items in the Navigation tree.

If a customizable sensor interface is selected in addition to a Single Sensor Interface, the system assigns the same serial port as previously configured for the Single Sensor. The customizable sensor interface configuration window enables the message parser, message usage map and serial IO port to be configured.

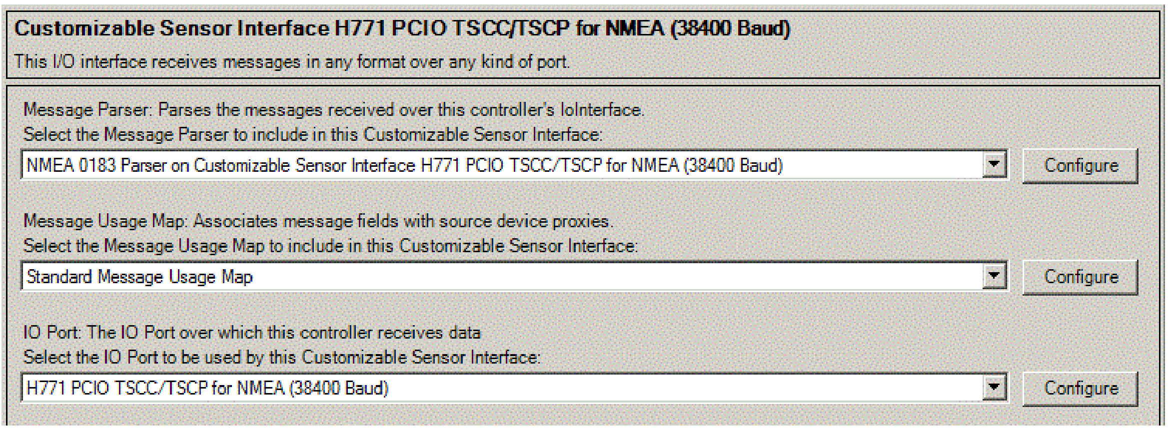


Figure 1.136 Customizable Sensor Interface

Message Parser

The Message Parser parses the messages the sensor interface receives from the PCIO. The message parser field enables you to select the type of parser from a drop down list (including the default NMEA 0183 Parser) and to configure the selected message parser for the I/O interface.

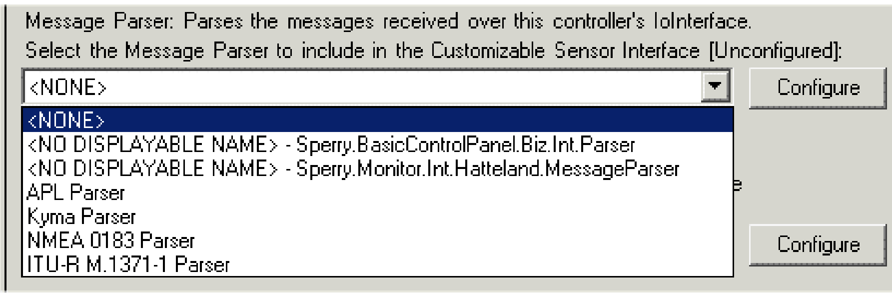


Figure 1.137 Message Parser for Customizable Interface

If the NMEA 0183 Parser is selected you can select alternate sentence parsers to support non-standard sentences. To do this click on the **Configure** button and select from the list of alternate sentence parsers to be included, see Figure 1.133 on page 156.

Message Usage Map

The message usage map provides mapping between the received data samples and the set of previously configured external sensors.

The message usage map defaults to **Standard**. This default should only be changed to **Field-Based** if you require to select specific sentence elements to be included in the message parser.

To select the sensor source devices to be used by the Standard Message Usage Map click on the **Configure** button. The subsequent window enables you to select the source devices that provide data through this interface.

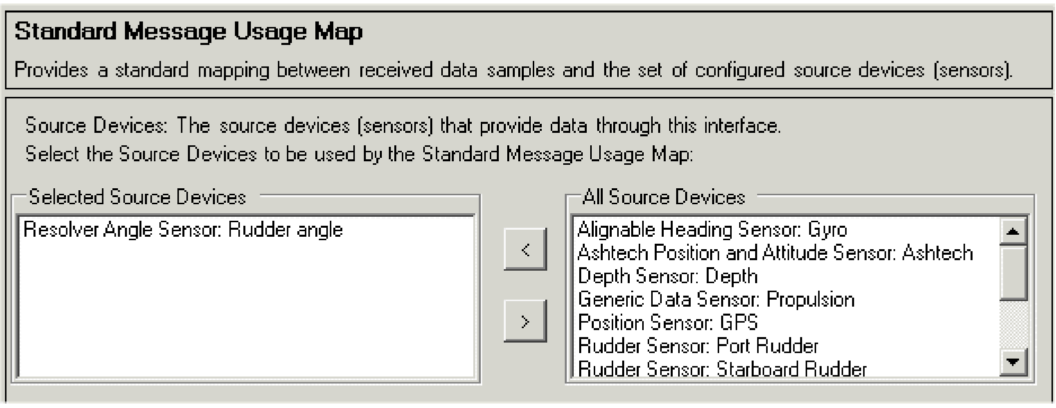


Figure 1.138 Standard Message Usage Map

To change the message usage map from **Standard** click on the drop down arrow to the right of the field and select **Field-Based**.

When Field-Based is selected for the message usage map the subsequent configuration window enables you to select the set of sensor source devices that provide data and the message field that will contain the supplied data.

To add Source Devices and Message Fields:

1. Click on the **Add Mapping** button. A line is created below the columns.
2. Click on the drop down button to the right of the Source Device and select from the list of configured external sensor devices.
3. Click on the drop down button to the right of the Message Field and select from the list.

Note: *You may first need to configure the set of expected message fields.*

4. To add further lines click the Add Mapping button again, or to delete a line highlight it and click the **Delete Mapping** button.

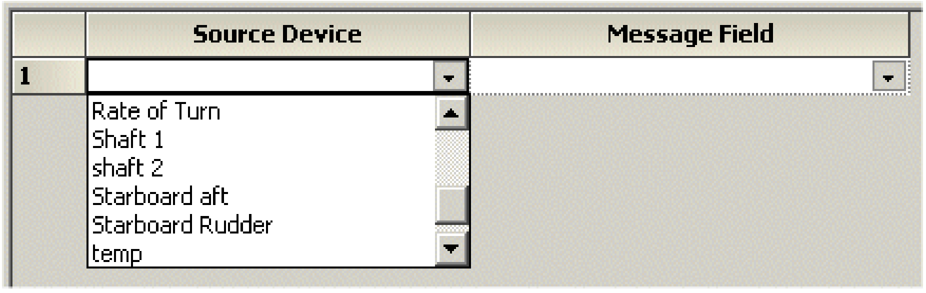


Figure 1.139 Field-Based Message Usage Map

If the NMEA 0183 Parser has been selected as the message parser and Field-Based is selected as the message usage map the NMEA 0183 Parser window includes, in addition to the selection of alternate sentence parsers, the option of configuring specific data elements of a sentence, including columns for Talker ID, Sentence ID, Physical Property and Message Field Name.

To configure data elements:

1. Click on the **Add Field** button. A line is created below the columns.
2. Click on the drop down buttons to the right of each column and select the specific data elements required to be parsed, see Figure 1.140 below.
3. To create further lines click the Add Field button again, or to delete a line highlight it and click the **Delete Field** button.

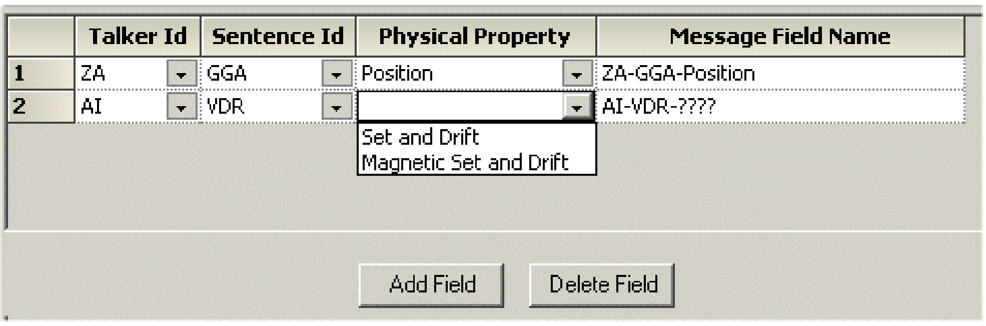


Figure 1.140 NMEA 0183 Parser - Add and Delete Fields

IO Port

To change the port settings for the customizable sensor interface from the default selection click on the IO Port **Configure** button.

The Serial Port in I/O Port Manager appears for the current port.

To select a new port for the sensor interface click on the I/O Port Manager in the navigation tree and configure a port from the **All I/O Ports** list. See Section 8.10 *I/O Port Manager*' on page 89.

NMEA Message Interfaces

There are three NMEA interface types that may be configured to receive the following NMEA messages:

- RPM messages
- RSA messages
- XDR messages

NMEA message interfaces are generally used to receive data that does NOT represent navigation data associated with own ship. Such data is usually only used for display on a CID.

Before configuring any of the three NMEA message interfaces, one or more sensors corresponding to the NMEA message interfaces must first be selected and configured from the list of sensors.

1. NMEA RPM Message Interfaces require sensor data in RPM, such as engine system and/or propulsion system sensors.
2. NMEA RSA [*] Message Interfaces require rudder system sensors.
3. NMEA XDR[†] Message Interfaces can be used with a wide variety of sensor types that provide data in the form of angles, RPMs, temperatures, pressures, and generic values.

Configuring an RPM Message Interface

The RPM message interface should be used when the system receives NMEA RPM sentences to obtain one of the following:

- RPM data associated with one or more of the ship's engines.
- RPM data associated with one or more of the ship's propeller shafts or propulsion units (e.g. azipods or fixipods).
- RPM and pitch data associated with one or more of the ship's propeller shafts or propulsion units.

To configure an NMEA RPM Message Interface:

1. Select **NMEA RPM Message Interface** from the Interfaces for Acquisition window, see Figure 1.129. The NMEA RPM Message Interface topic creates two sub menu topics; one for Single Engine RPM Interfaces, and another for Single Shaft RPM and Pitch Interfaces.
2. Click on the NMEA RPM Message Interface topic, the screen prompts to select either a Single Engine RPM Interface, or single shaft RPM and Pitch interface. Selections are made based on whether this interface is being used to get data for engine RPMs or for propulsion shaft RPM and (optionally) pitch.

* Rudder Sensor Angle
† Transducer measurements

3. If this interface is to be used to obtain engine RPM data, select the Single Engine RPM Interface. A new Single Engine RPM Interface topic appears below the Single Engine RPM Interfaces sub menu. Repeat this step for each engine whose RPM data is provided via NMEA RPM sentences over this interface.
4. Click on each of the new Single Engine RPM Interface topics added in the previous step, and select the engine sensor that represents the source of this data.
5. Select the engine ID that will be in the second field of the RPM sentence for data associated with this sensor. For example, if the ship has two engines (with ID=0 for the port engine and ID=1 for the starboard engine), then two Single Engine RPM Interfaces must be configured with each topic corresponding with the port and starboard Engine Sensors, which should have already been configured under 'Engine System Sensor' (see Section 9.4.1.1 *Sensors*').

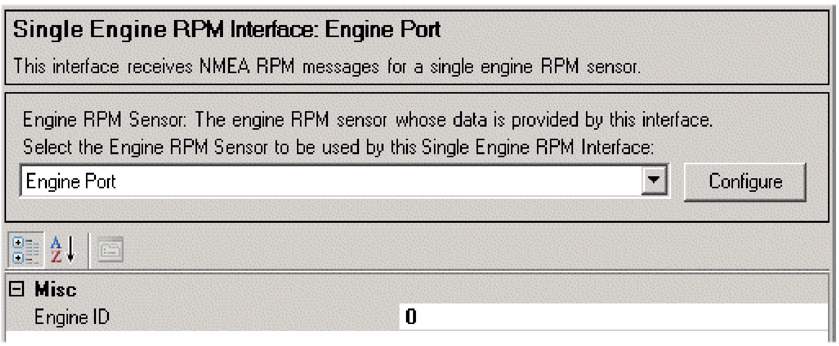


Figure 1.141 Single Engine RPM Interface

6. If a single shaft and pitch sensor, such as a Propulsion System Sensor has been configured, select the Single Shaft RPM and Pitch Interface. A new Single Shaft RPM and Pitch Interface topic appears below the Interfaces sub menu. Repeat this step for each RPM and Pitch interface.
7. Click on each of the new Single Shaft RPM and Pitch Interface topics added in the previous step, and select the shaft RPM and pitch sensor for the interface.

Note: *If there is more than one propulsion shaft on the ship, the data from each shaft may be received from either an independent I/O port, or over the same port. In the former case, an independent NMEA RPM Message Interface must be configured for each shaft, and each of these Interfaces would have a Single Engine RPM Interface. In the latter case, a single NMEA RPM Message Interface would have one Single Engine RPM Interface configured for each shaft.*

8. Enter an ID for each shaft. If there is only one shaft on the centre line of ship then ID is 0 (default). Odd numbers indicate starboard shafts, even numbers indicate port shafts. This ID must match the second field of the RPM sentence.

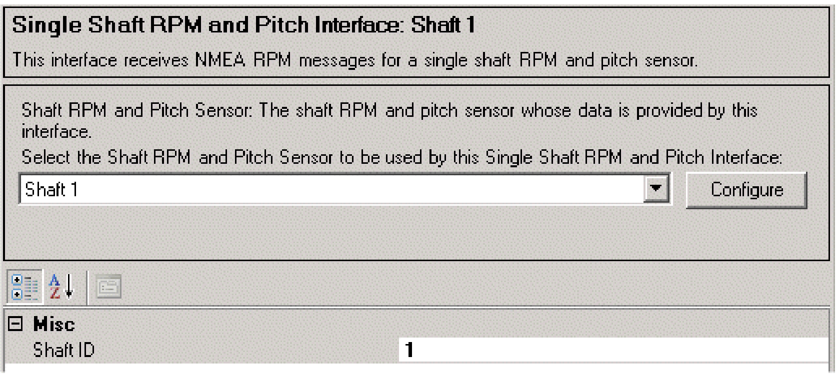


Figure 1.142 Single Shaft RPM and Pitch Interface

9. When the RPM sensor interfaces have been configured, select the port that the interfaces will receive data over by clicking on the port drop down arrow and selecting from the configured ports list. See Figure 1.143 for a typical configured RPM message interface.

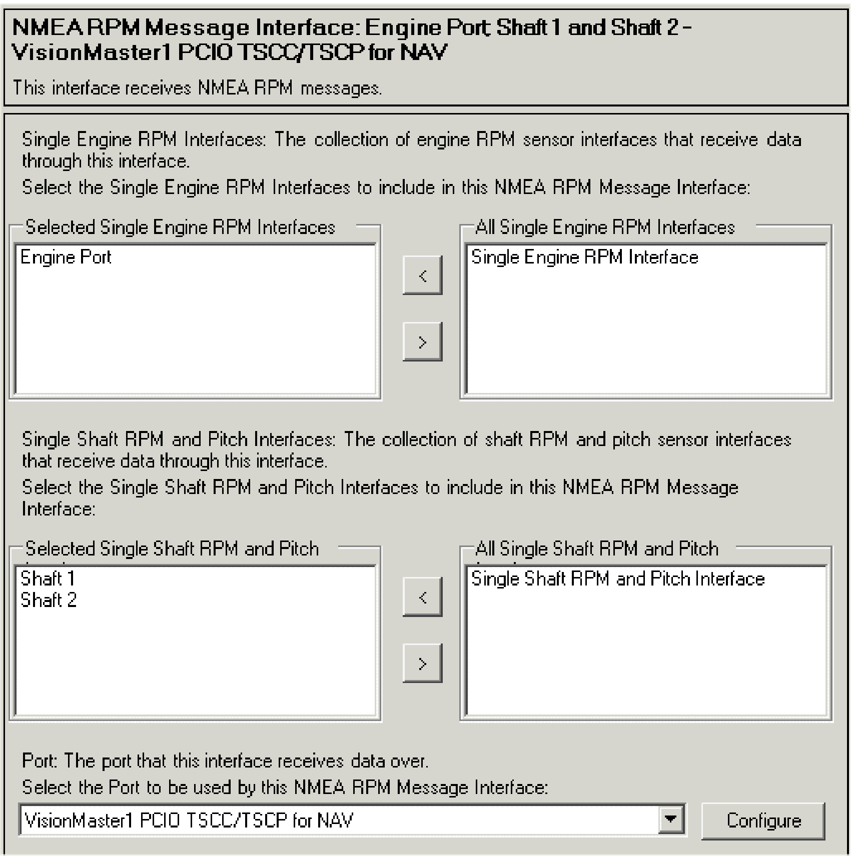


Figure 1.143 Configured NMEA RPM Message Interface

Configuring an RSA Message Interface

The RSA message interface should be used when the system receives NMEA RSA sentences to obtain rudder angle data from the ship's rudder system. This system will include port and starboard rudder sensors as default.

To configure an NMEA RSA Message Interface:

1. Select **NMEA RSA Message Interface** from the Interfaces for Acquisition window, see Figure 1.129. A new NMEA RSA Message Interface topic is created.
2. Click on the NMEA RSA Message Interface topic, the screen prompts to select the first and second rudder sensors to provide rudder angles to the RSA sentence.
3. Click on the drop down arrows and select the required sensors from the list of configured rudder system sensors.
4. Select the port that the interfaces will receive data over by clicking on the port drop down arrow and selecting from the configured ports list. See Figure 1.144 for a typical configured RPM message interface.

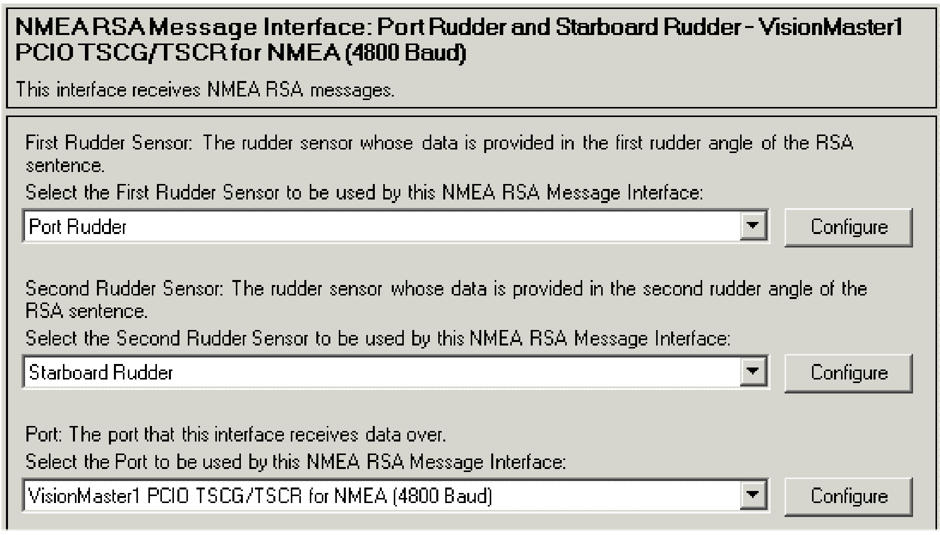


Figure 1.144 Configured NMEA RSA Message Interface

Configuring an XDR Message Interface

The XDR message interface should be used when the system receives NMEA XDR sentences to obtain data from a variety of types, including angles, RPMs, temperatures, and generic values (as defined for the XDR sentence by IEC 61162-1). XDR sentences can deliver data associated with many sensor types, although generally ones that do NOT provide own ship navigation data.

Note that some of these sensor types may provide data either by XDR sentences or by RPM sentence or RSA sentence. This data may include temperature sensors, generic data sensors, rudder sensors, engine RPM sensors, and propulsion system shaft sensors.

Important Note: *XDR sentences should NOT be connected to any of the ports that make up the PCIO control port (TSCA, TSCD and TSCE). This is because XDR data may interfere with communications between the PC and the PCIO over the control port.*

When XDR sentences are received over a single I/O port, the system can handle any number of distinct XDR sentences, each with any number of independent transducer values. However, each independent sensor's value must be identified with a transducer ID (as defined for the XDR sentence by IEC 61162-1) that is unique on the applicable I/O port. This is because, in such a case, the transducer ID is the only means the system has to identify which sensor is providing a given piece of data.

To configure an NMEA XDR Message Interface:

1. Select **NMEA XDR Message Interface** from the Interfaces for Acquisition window, see Figure 1.129. The NMEA XDR Message Interface topic automatically creates a Single Transducer Interfaces sub menu topic.
2. Click on the {**Single Transducer Interfaces}** topic and select a Single Transducer Interface for each sensor whose data is to be received in any XDR sentence over this port. For each selection, a new Single Transducer Interface sub-topic is created.

For each Single Transducer Interface topic created above, perform the following steps:

1. Select a previously configured sensor that is expected to supply one of the pieces of data received via XDR sentences on this interface. The system will automatically limit the selection to the types of sensors that can handle the data types supported by XDR sentences, see Figure 1.145 below.

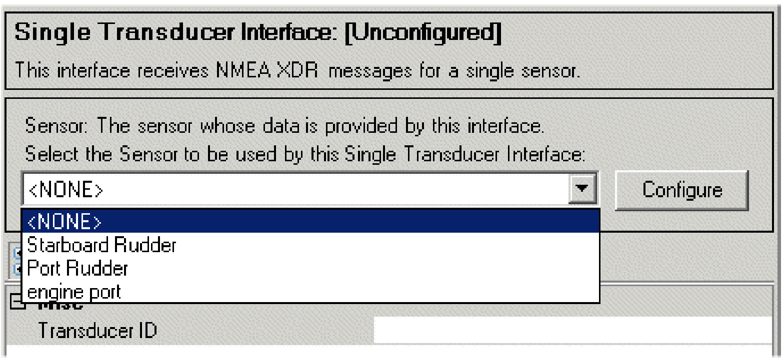


Figure 1.145 Single Transducer Interface - Sensor Selection

2. Enter the transducer ID, which will be in the last field in a group of four of the XDR sentence that provides the selected sensor's data.
3. From the **Data Units** field click on the drop down arrow and select the type of data units in which this data will be received. The system will limit this list to units that apply to the data type handled by the selected sensor. If the received data is not in any of the provided units, then select a unit that allows for easy conversion from the actual units, and untick **The received data is in these units** check box.
4. Enter the conversion logic needed to convert the value in the XDR sentence into the specified units. For example, if you are receiving temperature in the Rankine scale, select **Kelvin** data units, and for the conversion logic, enter 0.55556 in the **First, multiply by:** field and enter 0 in the **Second, add:** field, see Figure 1.146.

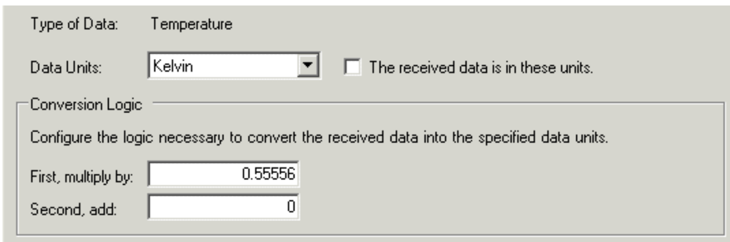


Figure 1.146 Single Transducer Interface - conversion logic

Analog Sensor Interface

An analog sensor interface is configured when analog data is received from a single external sensor. Analog data may come from a propulsion interface connected to the VisionMaster system.

The analog input line can be either from a Labjack device or an Opto 22 rack.

To configure an analog sensor interface:

1. Select **Analog Sensor Interface** from the Interfaces for Acquisition window, see Figure 1.129. An unconfigured topic is created.
2. Open the Analog Sensor Interface topic. From the Analog Input drop down list, select the analog input line to be used for receiving the sensor data.
3. From the Sensor Input drop down list, select the sensor and the device which corresponds to the source of the analog data. For example, **Starboard Rudder**. The type of data and data units will automatically change, based on the sensor type (e.g. for a rudder sensor, the type of data is Angle and the data units default to Degree).
4. The Polling Interval defaults to 1 second. The interval can be changed by entering a value in the field (minimum value 0.2 seconds).

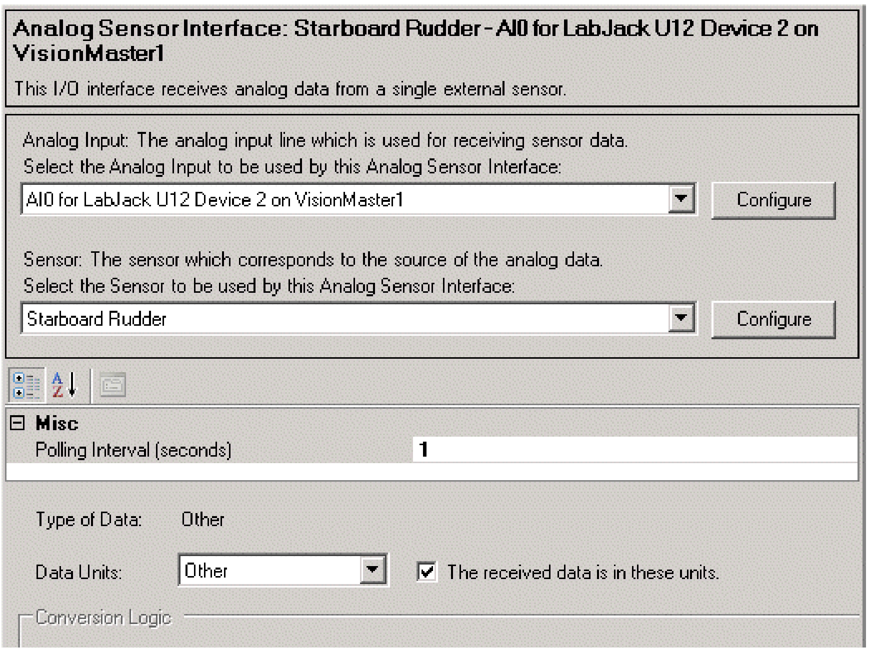


Figure 1.147 Analog Sensor Interface

5. Depending on the type of data, there may be different options of data units. To change the type of data units, or to enter a conversion logic, refer to steps 3 and 4 and Figure 1.146 on page 169.

Discrete Sensor Interface

A discrete sensor interface is configured when digital data is received from a digital input line, usually via a Labjack or an Opto 22 rack.

To configure an discrete sensor interface:

1. Select **Discrete Sensor Interface** from the Interfaces for Acquisition window, see Figure 1.129. An unconfigured topic is created.
2. Open the Discrete Sensor Interface topic. From the Discrete Input drop down list, select the discrete input line to be used for receiving the sensor data.
3. From the Sensor Input drop down list, select the sensor and the device which corresponds to the source of the analog data. For example, **Rudder Sensor: Starboard Rudder**.
4. An active discrete input value is interpreted as **1**, and an inactive discrete value is interpreted as **0**. To invert these input values from the default, click in the **Invert Value?** drop down arrow and select **Yes**.

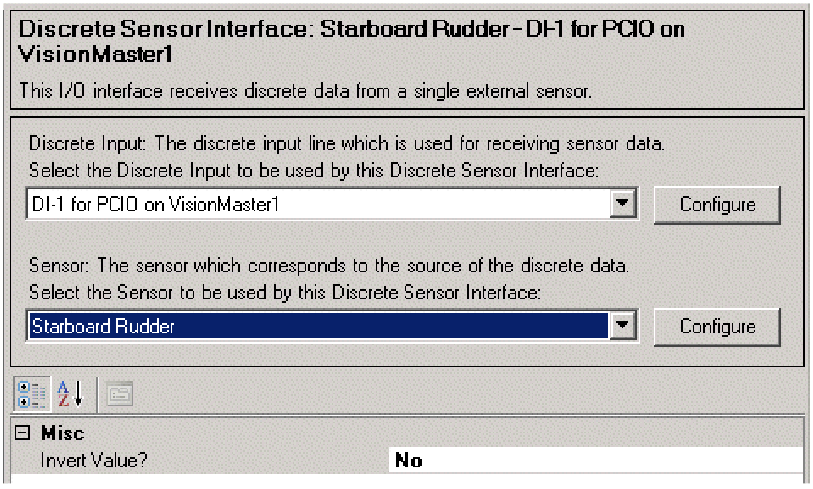


Figure 1.148 Discrete Sensor Interface

Resolver Sensor Interface

A resolver sensor interface is configured when a sensor used to receive angle data, usually from rudder or azipod angles, has been selected in Sensors. The interface identifies the analog input from the sensor used to receive the sin and cos of angle data.

1. Click on the first drop down arrow and select the Analog Input used for receiving the sin of the angle specified in the resolver angle sensor.
2. Click on the second drop down arrow and select the Analog Input used for receiving the cosine of the angle specified in the resolver angle sensor.
3. Select the sensor that corresponds to the source of the resolver angle data. This will be the resolver angle sensor previously configured in Sensors.

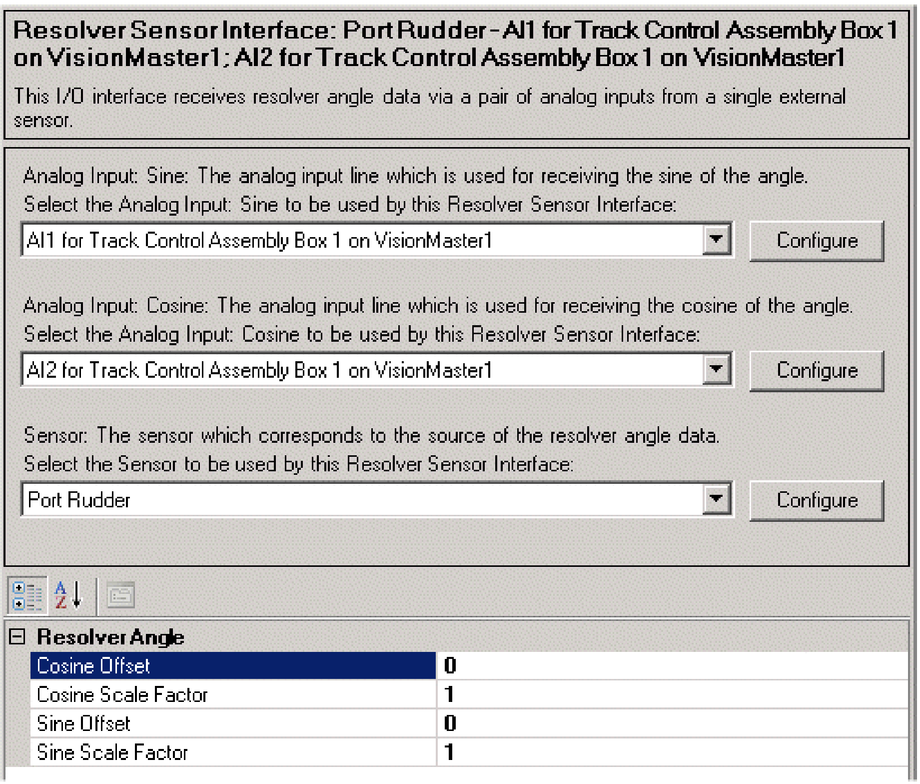
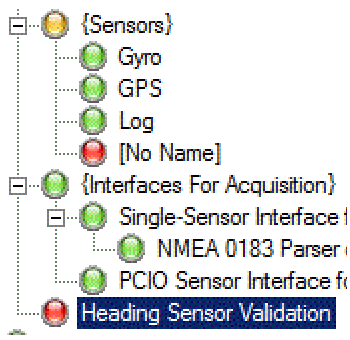


Figure 1.149 Resolver Sensor Interface

9.4.1.3 Heading Sensor Validation

The Heading Sensor Validation status button is displayed in red if a heading sensor that has selected from the Sensors list is not validated. When the heading sensor has been correctly configured the status button reverts to green.



9.4.2 Failure Criteria - Plausibility

The Plausibility window enables the minimum ground speed required to perform plausibility assessment on course over ground to be set.

The default minimum value is 0.5 knots. Normally this value should not be changed.

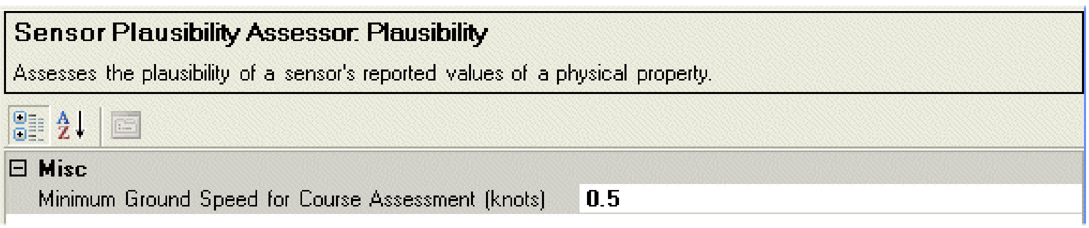


Figure 1.150 Failure Criteria - Plausibility

9.4.3 CCRP

The CCRP (consistent common reference point) is a location on own ship, to which all horizontal measurements such as target range, bearing, relative course, relative speed, closest point of approach (CPA) or time to closest point of approach (TCPA) are referenced, typically the conning position of the bridge.

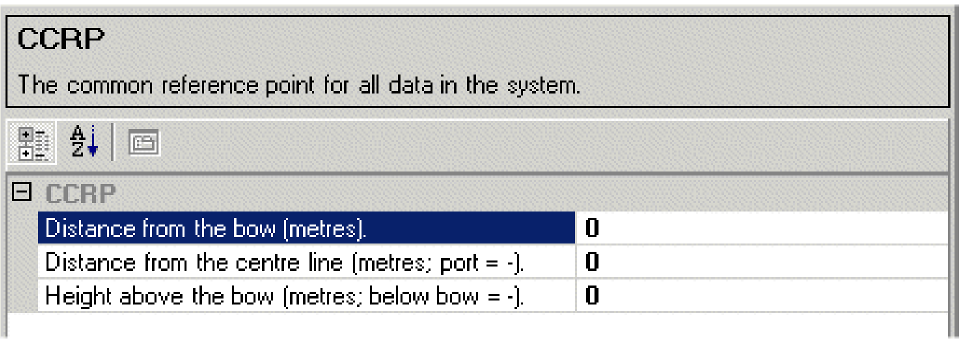


Figure 1.151 CCRP configuration

The exact location of the CCRP can be configured from the specific values listed below.

- Distance from the bow [metres] - the position of the CCRP, measured from the bow to the stern.
- Distance from the centre line [metres; port = -] - the position of the CCRP from the centre line.
- Height above bow [metres; below bow = -] - the vertical position of the CCRP, measured from the level of the bow.

All distance values default to zero, to change one or more values delete the 0 and enter the required value.

9.4.3.1 Alternate CCRP

If an alternate bow menu has been selected from Own Ship Characteristics window (see Figure 1.106 '*Own Ship Characteristics*') the CCRP window will include the same set of configurable values defined for CCRP, see Figure 1.152.

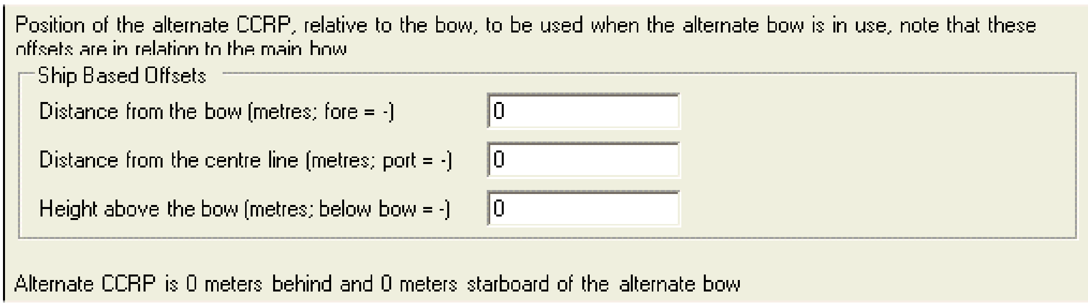


Figure 1.152 Alternate CCRP configuration

9.4.4 CCRS Data Log

The CCRS (consistent common reference source) data log enables configuration of the way CCRS data is logged.

In addition to the periodic logging, the system logs CCRS information whenever a sensor is selected.

The CCRS information logged by the system includes the following for each currently selected Sensor:

- Sensor Name
- Interface Name (see "Interfaces for Acquisition" on page 1-151)
- Data Type
- Data Value
- Data Validity
- Data plausibility
- Data origin (Manual vs. Real)
- Data source (Simulated vs. Real)
- Data Timestamp
- Time of Sensor Selection (if sensor selection event)

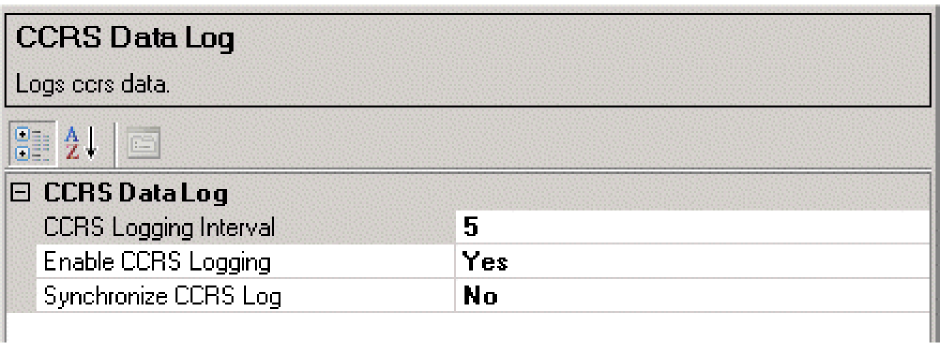


Figure 1.153 CCRS Data Log

The CCRS Data Log window enables the following settings to be configured:

- **CCRS Logging Interval** - the time increment, in seconds, in which CCRS data is logged. The default time is 5 seconds. To change the logging interval click in the field, delete the current value and enter a value between 1 second (minimum) and 60 seconds (maximum).
- **Enable CCRS Logging** - the system automatically enables the logging of CCRS data. To suppress data logging click on the drop down arrow to the right of the field and select **No**.
- **Synchronize CCRS Log** - enables CCRS data logging to be synchronized across nodes, the default is No. To enable click on the drop down arrow to the right of the field and select **Yes.**

9.4.5 Sensor Data Log

The Sensor data log enables configuration of the way Sensor data is logged.

The sensor information logged by the system for each configured sensor includes:

- Sensor Name
- Interface Name (see "Interfaces for Acquisition" on page 1-151)
- Data type (heading, position, etc.)
- Data value
- Data validity
- Data plausibility
- Data origin (Manual vs. Real)
- Data source (Simulated vs. Real)
- Data timestamp

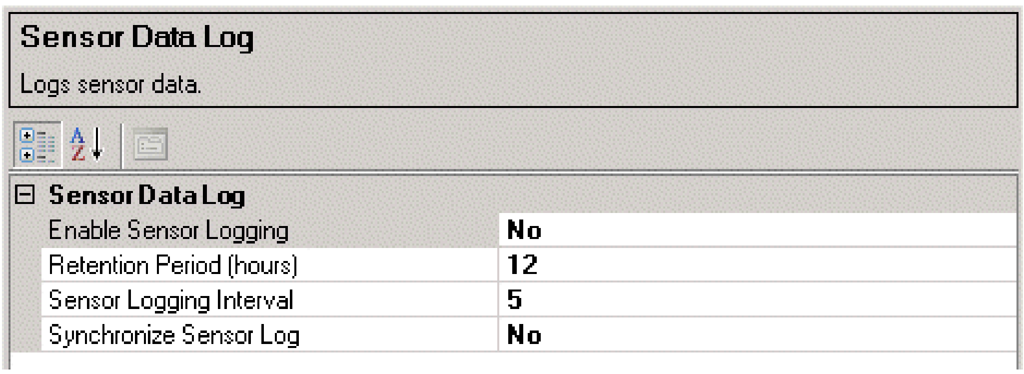


Figure 1.154 Sensor Data Log

The Sensor Data Log window enables the following settings to be configured:

- **Enable Sensor Logging** - the system automatically suppresses the logging of Sensor data. To enable sensor data logging click on the drop down arrow to the right of the field and select **Yes**.
- **Retention Period** - the length of time, in hours, that the system retains log files. The default time is 12 hours. To change the period click in the field, delete the current value and enter a value over 12 (there is no maximum time period for data retention).
- **Sensor Logging Interval** - the time increment, in seconds, in which sensor data is logged. The default time is 5 seconds. To change the logging interval click in the field, delete the current value and enter a value between 1 second (minimum) and 60 seconds (maximum).
- **Synchronize Sensor Log** - enables sensor data logging to be synchronized across nodes, the default is No. To enable click on the drop down arrow to the right of the field and select **Yes**.

9.4.6 Nav Outputs

The Nav Output option is mainly intended to be used when a VisionMaster ECDIS is connected to a radar scanner unit (for example, a BridgeMaster E [BME]). When enabled, the VisionMaster Nav Output should be connected to a Nav Input.

When a Nav Output is configured the following sentences defined in IEC 61162-1 (i.e. serial interfaces operating at 4800 baud) are selected as default:

- GGA (position data from the GPS Quality Indicator)
- ZDA (current system date and time)
- VTG (ground velocity)
- VBW (water velocity)

Additional Nav Output sentences can be selected from the **Navigation Data** column in the Nav Output Configuration screen, see Figure 1.156.

The data within the sentences is populated by the currently selected sensor information from the CCRS (with the exception of ZDA), not directly from sensor inputs.

Further sentences may be added by clicking on the sentence's check box in the Navigation Data area of the configuration window.

9.4.6.1 Configuring Nav Output

To configure one or more Nav Output items:

1. From the Nav Output window select Nav Output Port from the **All Nav Outputs** field and click on the **<** button to move the item to the **Selected** field. An unconfigured Nav Output Port appears in the navigation tree and Selected field. The system also creates a NMEA 0183 Formatter sub menu topic for each Nav Output Port. Figure 1.155 shows a configured and unconfigured Nav Output Port in the Selected Nav Outputs column.

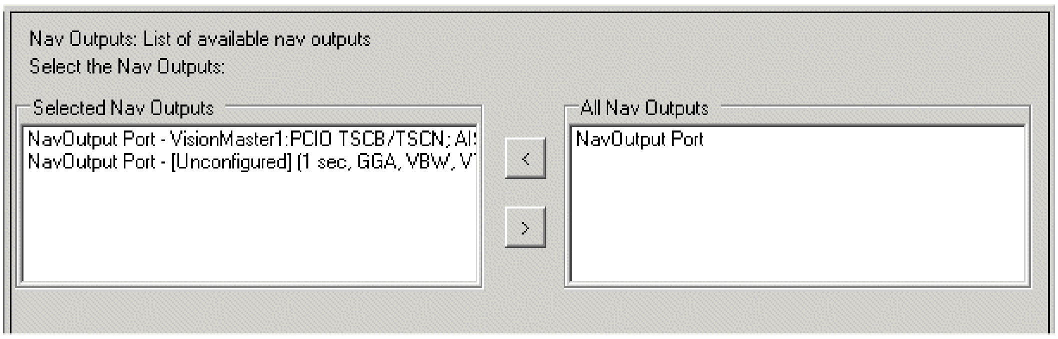


Figure 1.155 Nav Output Port

2. Click on the Nav Output Port line in the navigation tree. The configuration window for the item appears, see Figure 1.156.

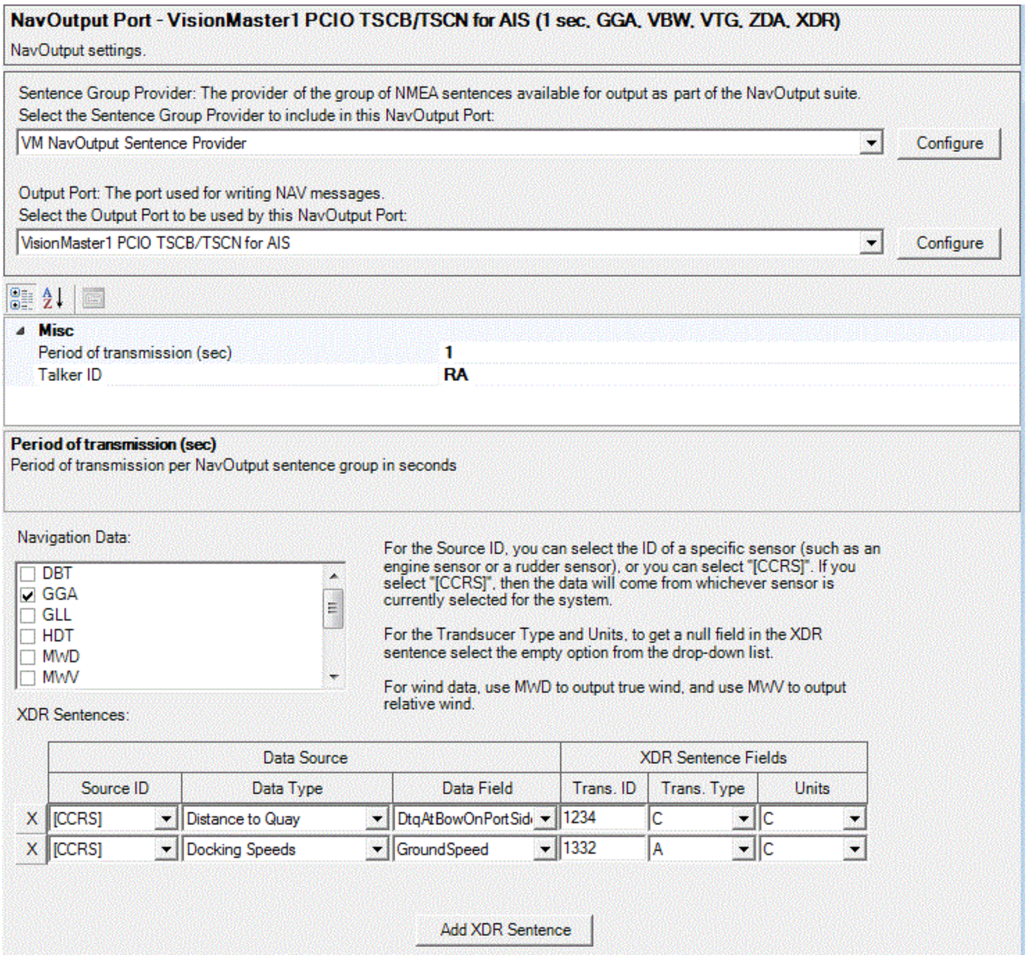


Figure 1.156 Nav Output Configuration - with XDR sentences added

When a Nav Output Port has been selected the **VM Nav Output Sentence Provider** is automatically selected as the sentence group provider.

3. Click on the drop down arrow on the **Output Port** field to select the output port to be used for the item. The field displays a list of the currently configured ports. Select the port to be used from the list.
4. When a port is selected for use the item's status button colour in the navigation tree changes from red to green (valid).
5. To change the configuration of the port click the **Configure** button. The configuration window for the selected port appears, see Figure 1.73.
6. The Talker ID defaults to IN. To change the ID based on your VMFT product type enter the required two digit ID in the field.
7. To change the transmission rate that the Output sentence group is sent, from the default of 1 second to a value of up to 59 seconds, click in the field and enter the required value using the keypad.

Talker IDs

The NMEA Talker ID for Navigation NMEA sentences output by VisionMaster are by default the official NMEA Talker IDs as specified in IEC 61162-1 Ed2,The default Talker ID is IN, but this can be changed in the Nav Output Port configuration screen, see Figure 1.156.

Navigation Data

In addition to the sentences listed in Section 9.4.6, the user may select other sentences by ticking their relevant check boxes. An NMEA sentence is defined to have a set of associated data types (e.g. heading, water speed, etc.). For any sentence, some subsets of the associated data types are required, and the remainders are optional. Additionally, NMEA sentences may or may not have the ability to indicate whether a field representing a particular data type is valid.

For a list of supported NMEA sentence types that the sentence is capable of reading, see Table 8, "Sentences and Sensor Data," on page 152.

XDR Sentences

The table of XDR sentences allows the user to define any number of XDR sentences to be sent by the system, where each sentence can contain any single value that is available from a specified sensor, or from the CCRS.

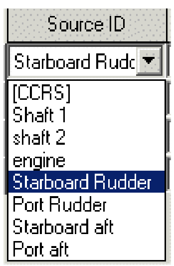
The XDR sentence fields require the following data:

- Transducer ID - this is a four digit number
- Transducer type - this is an alpa character such as **C** for temperature, **A** for angular displacement, **T** for tachometer (as in RPM), etc.
- Data Value - this is an alpa character such as **C** for Celsius, **D** for degrees, **R** for revolutions per minute, etc.

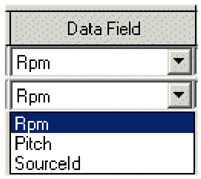
On the far right of the XDR Sentences table is the "User Input Units" field. This allows you to select the input source to ensure that the data values used in an XDR output message that has data derived from an XDR input message, match the data values configured for the XDR input message. Select by ticking the appropriate check box for the source input. It the check box for the output is not ticked, the data will be provided by the system units.

To configure a XDR Sentence table:

1. To add a row, click the **Add XDR Sentence** button. The system creates a default line with **[CCRS]** as the source ID. CCRS is used to collect data from whatever sensor is currently selected for the particular data type (e.g. position data from the selected position sensor). Otherwise, click on the drop down arrow and select from the list of previously configured NMEA sensor interfaces.



2. If CCRS is the source ID select the required data type. When a specific sensor source ID is selected, the Data Type and Data Field are automatically populated with the data type and value provided by this sensor, for example, ‘Engine RPM’ for Engine Sensor or ‘Rudder Angle’ for Port/Starboard Rudder.
3. The Data Field normally defaults to **Value**, although certain NMEA sensor interfaces, such as Propulsion System sensors enable the selection of more than one data field.



4. The XDR Sentence Fields define the content of the transducer ID, the transducer type, and the units of measure fields, as described above (where the XDR sentence format was defined). Any values may be used for the transducer ID. Only legally defined values may be selected for the transducer type and the units.
5. To delete a line from the table, click on the X button to the left of the Source ID field.

NMEA 0183 Formatter

The NMEA 0183 Formatter window includes the following miscellaneous setting:

Use Null Fields for Invalid or Missing Data, with the default setting as **No.**

When set to **No**, then if any data types for a given message are not invalid or unavailable, the system will NOT transmit the sentence unless it has a validity indicator[*] with which the system can indicate that the particular unusable piece of data is indeed invalid.

When set to **Yes** the system will always generate NMEA messages, even if the necessary data to fill those sentences is invalid or unavailable, but it will leave the field in the NMEA sentence null (i.e. there will be no characters in the message between the two commas that would normally delimit the applicable field). Note that if NMEA messages are sent in this way then the message will no longer adhere to the NMEA specification.

* A validity indicator is a flag or status field included in the NMEA sentence that can indicate the validity of some or all of the data the sentence contains.

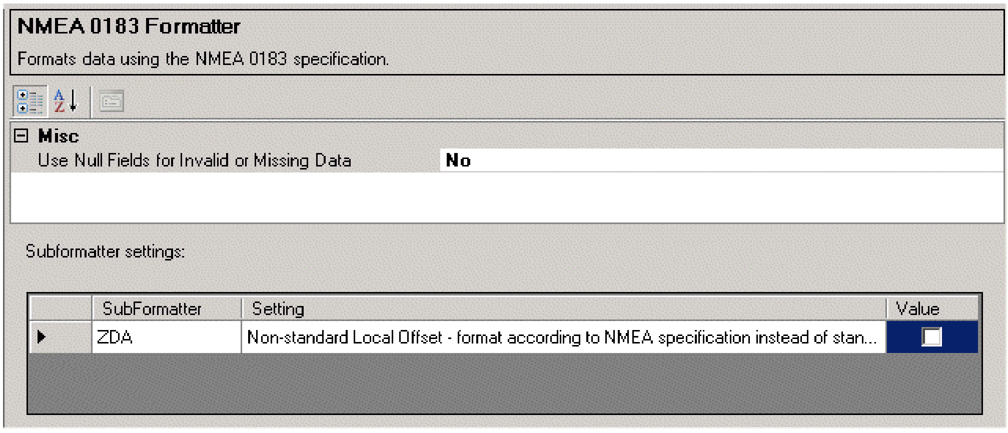


Figure 1.157 NMEA 0183 Formatter

The NMEA 0183 Formatter window also includes the option of inverting the local offset time of a transmitted ZDA message to ensure that the equipment receiving the message is able to display the correct local time.

The VisionMaster time offset (as defined in Time Management on the VMFT application) enables input of a local time offset from UTC in either an East direction or a West direction, where the offset is defined such that Local Time = UTC + Offset. The offset format within the ZDA message according to the NMEA specification defines the offset such that Local Time = UTC - Offset.

To invert the local offset time to comply with the NMEA specification instead of the VMFT standard practice tick the **Value** check box.

9.4.7 CCRS Announcement Reporter

The CCRS Announcement Reporter enables CCRS data types that, when selected for primary navigation, will always generate alarms if the data is degraded or unavailable.

CCRS data types that have been configured, but not selected for primary navigation, will only generate cautions if their data is degraded or unavailable.

The default list of data types used for primary navigation are as follows:

- Course Over Ground
- Speed Over Ground
- Position
- Speed Through Water
- True Heading

If Course Over Ground or Speed Over Ground are de-selected from the Primary Navigation column a Validation warning is generated, see Section 5.3.1 *Warning Messages*'.

Position, Speed Through Water and True Heading data types will generate validation errors, and therefore cannot be de-selected from the primary navigation column.

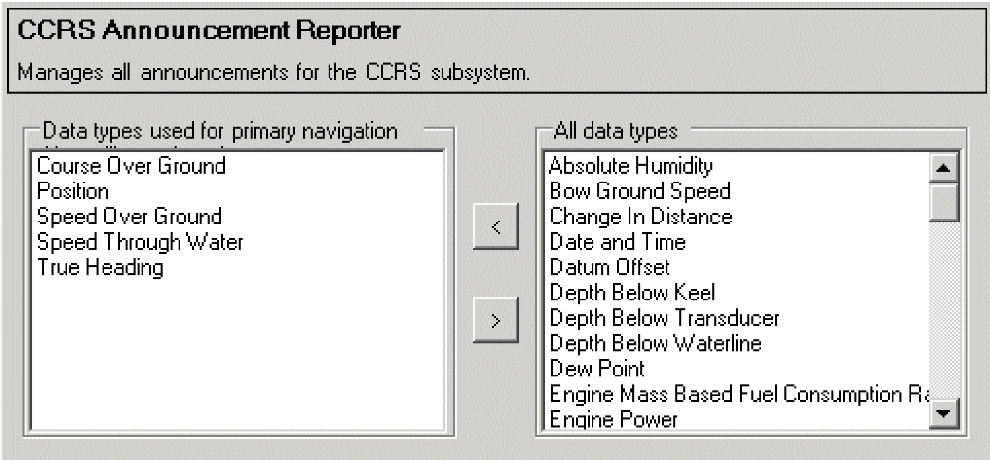


Figure 1.158 CCRS Announcement Reporter

To select other CCRS data types for primary navigation highlight from the list of All data types and click the < button.

9.5 Data Handling/Recording

Data Handling/Recording includes the following sub menus:

- Data Access
- Data Log
- Persistence Subsystem

9.5.1 Data Access

If a database SQL server is installed, Data Access enables configuration of a database server name and a Server TCP/IP Port Number.

Note: *It is advisable that these Data Access settings are not changed unless instructed to do so by NGSM Service support.*

The database server name is set at PANDORASRV and must be the same name across all nodes.

The SQL Server TCP/IP Port Number defaults to 12500. The port number may be set to a range between 1024 and 65535. Setting the number to 0 enables the SQL Browser service to identify the port used, although entering 0, or any other port number will require additional configuration of the SQL Server and Windows Firewall rules.

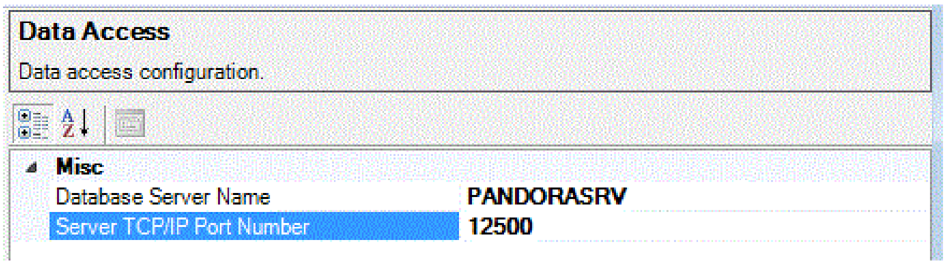


Figure 1.159 Data Access

9.5.2 Data Log

Data Log enables the archive drive where the data resides to be configured. Node Data Log enables you to configure the periodic rate at which the system logs data and the node state information to be suppressed.

The Data Log sub menu comprises Data Log and Node Data Log.

9.5.2.1 Data Log

To access the Data Log click on the **+** button of the Data Log sub menu and click the Data Log topic.

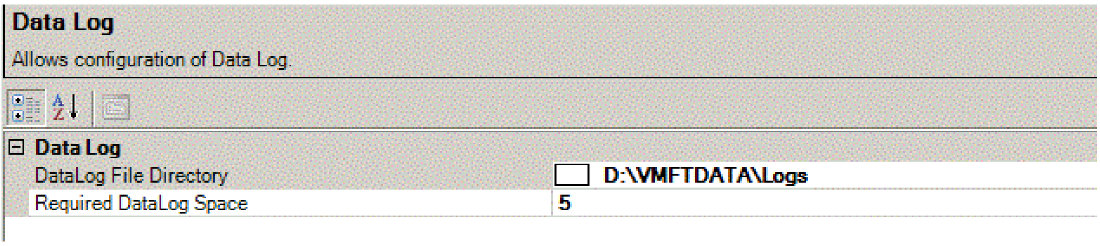


Figure 1.160 Data Log

The Data Log fields display the following data and values:

- **DataLog Drive** - the drive used for datalog archive files, defaults to **D:\VMFTDATA\Logs**. If the archive drive is changed to a network it must be valid for all nodes.
- **Required DataLog Space** - the disk space, in gigabytes, required for datalog archive files. The default is 5 gigabytes. The archive space range is between 1 and 10 gigabytes.

9.5.2.2 Node Data Log

To access the Node Data Log click on the **+** button of the Data Log sub menu and click the Node Data Log topic.

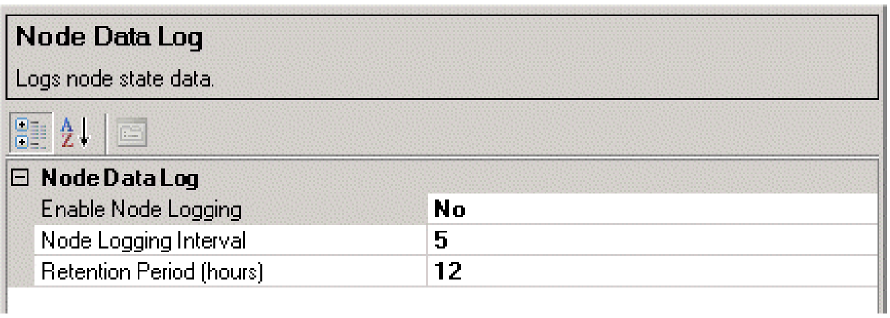


Figure 1.161 Node Data Log

The Node Data Log fields display the following settings and values:

- **Enable Node Logging** - the system automatically suppresses the logging of media data, to enable click on the drop down button to the right of the field and select **Yes**.
- **Node Logging Interval** - the time interval, in seconds, in which node state data is logged. The default is 5 seconds. To change the time interval click in the field, delete the current value and enter a value between 1 second (minimum) and 60 seconds (maximum).
- **Retention Period (hours)** - the number of hours that logging data is retained. The default is 12 hours. To change the retention period click in the field, delete the current value and enter the required value (there are no minimum or maximum values).

9.5.3 Persistence Subsystem

The persistence subsystem window displays the directory where the files containing persistent data will be stored. The directory defaults to **D:\VMFTDATA\Persisted.**

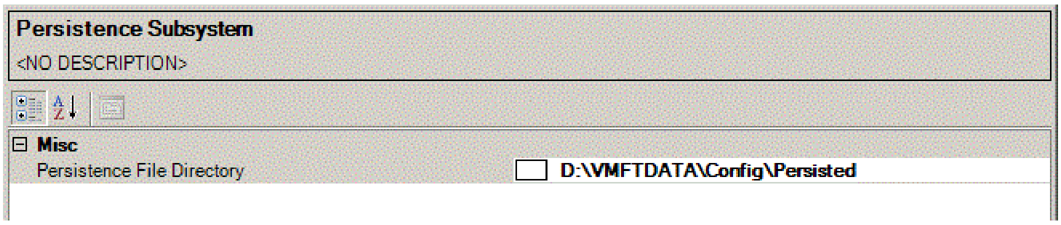


Figure 1.162 Persistence Subsystem

Data created and archived by the system (SQL database feature content, XML files, etc.) is saved in sub-folders on the system PC.

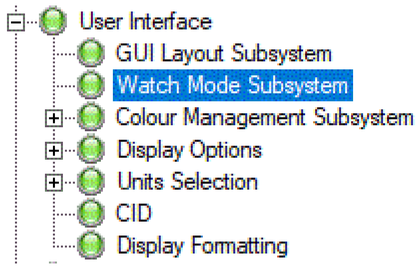
The root path D:\VMFTDATA\ include the following sub folders:

- Chart Handler
- Charts
- Datalog
- Datalog Archive
- Persisted Data

The root path D:\VMFTDATALogs include the following sub folders:

- Announcement
- CCRS
- Chart
- Position Sensor
- Prompt

9.6 User Interface



The User Interface sub menu allows the following configuration settings to be made:

- GUI Layout Sub System
- Watch Mode Subsystem
- Colour Management Subsystem, including:
  - Local Color Database;
  - Brilliance Groups Manager.
- Display Options, including:
  - Keypad Settings;
  - Dual Unit Settings
- Units Selection
- CID
- Display Formatting

For information on selecting a CID page refer to Section 6.14.1 *CID*' in the Quick Setup menu.

9.6.1 GUI Layout Sub System

The GUI Layout Subsystem topic allows the display of the Print Screen control to be enabled or disabled on the VisionMaster screen. The default setting is **No** (disabled).

If the VisionMaster node has a printer installed (see Appendix C '*Configuring Peripheral Devices*') click on the drop down arrow and select **Yes** to enable the Print Screen control.

Note that this control will only available on an ECDIS watch mode.

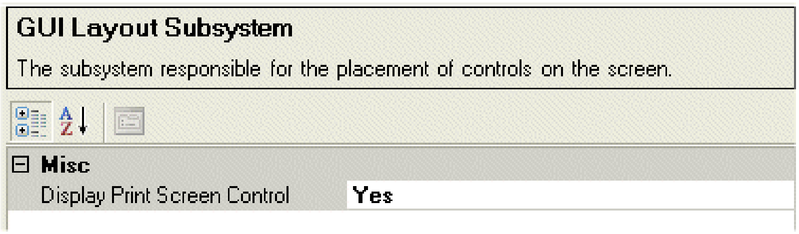


Figure 1.163 GUI Layout Subsystem

9.6.2 Watch Mode Subsystem

The Watch Mode subsystem allows the CAM (Central Alert Management) watch mode and CID CAM Watch Mode to be enabled or disabled for all nodes.

The CAM Watch Mode enables a CAM display that allows the CAM alert list to be permanently displayed when in the watch mode is selected.

The CID CAM Watch Mode provides a combined CID and CAM display to be permanently displayed when in the watch mode is selected.

To enable either Watch Mode for the node click on the drop down arrow and select Yes. The default is **Yes** for the CAM watch mode and **No** for the CID CAM watch mode.

The CID CAM Watch Mode is only suitable for 16:10 wide screen monitors.

Note: *The two CAM watch modes only apply to certain Product Types. Radar only nodes will not display CAM or CID CAM watch modes.*

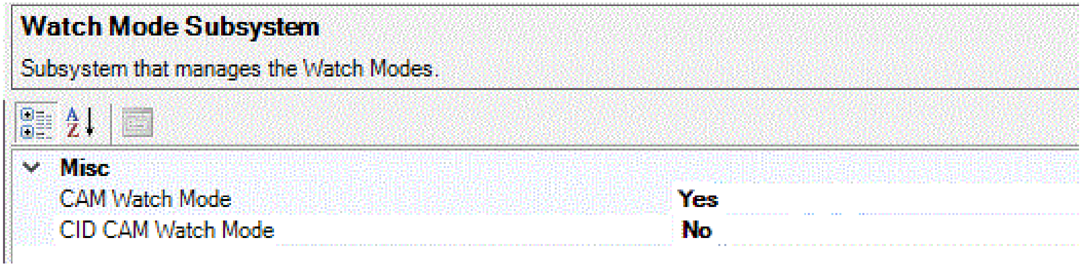


Figure 1.164 Watch Mode Subsystem

9.6.3 Colour Management Subsystem

The Colour Management database enables changes in day/night mode on a selected workstation of a multi-node system to be sent to other nodes on the system.

9.6.3.1 Local Color Database

The Local Colour Database window includes a miscellaneous setting that prompts to revert system colours when an application loses focus (the application colours will be restored when the application gains focus). The default is **No**. To enable this setting click on the drop down arrow to the right of the field and select **Yes**.

Note: *It is advised that this revert system colour setting should NOT be changed from No unless specifically requested by NGSM support.*

The Local Color Database topic also displays the number of configured nodes on the system, and is divided into **System-Wide Provider** and **System-Wide Responder** columns. The default setting is for all the node's check boxes to be ticked for both columns.

To enable a workstation to be a system wide provider, with other workstations on the network affected by the provider's day/night mode changes, untick the other node's check boxes in the Provider column and untick the provider workstation's Responder check box.

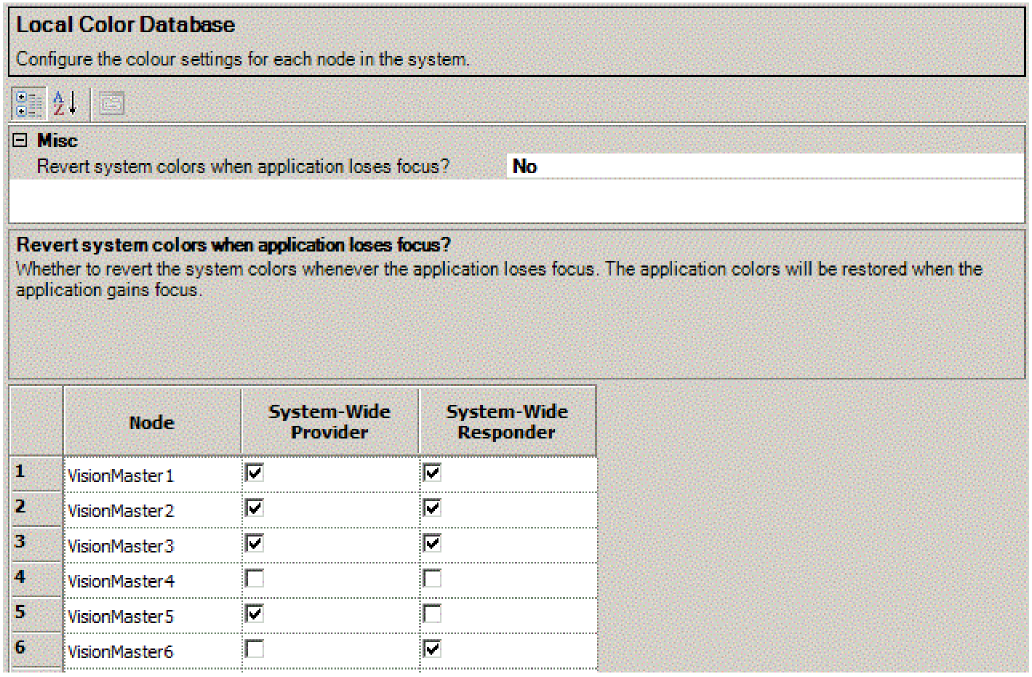


Figure 1.165 Local Colour Database

9.6.3.2 Brilliance Groups Manager

The Brilliance Groups manager enables the predefined list of brilliance groups to be edited, or a new brilliance group to be created from available colours to combine different features into a single group.

The Color Management facility prevents a single feature from being associated with more than one brilliance group.

The default values applied to each brilliance group result in colours that do not alter the IEC-required, or otherwise predefined, colour values for the selected colour set (e.g. Day Mode, Night Mode, etc.).

The brilliance adjustable functions are predefined to the following groups:

- Control Panel
- EBL / VRM
- Own Ship
- Range Rings
- Tools (includes PI lines, rotating cursor, constant turn radius, etc.)
- ARPA / AIS data (to extinction)
- Routes
- Alarms/Warnings
- Mariner Objects
- Chart Symbols
- NAV Objects

The operator may independently adjust the brilliance of each of these groups via **Groups** in the **Brilliance** menu. See the VisionMaster User Guides (Chart Radar or ECDIS) for further information.

Viewing and Configuring Existing Brilliance Groups

Note: *It should not normally be necessary for a brilliance group to be deleted or re-configured.*

To view details on each brilliance group, click on its status button in the navigation tree. The configuration window for the selected brilliance group appears showing the list of colours assigned to the group, Figure 1.166 below shows the brilliance group configuration window for own ship.

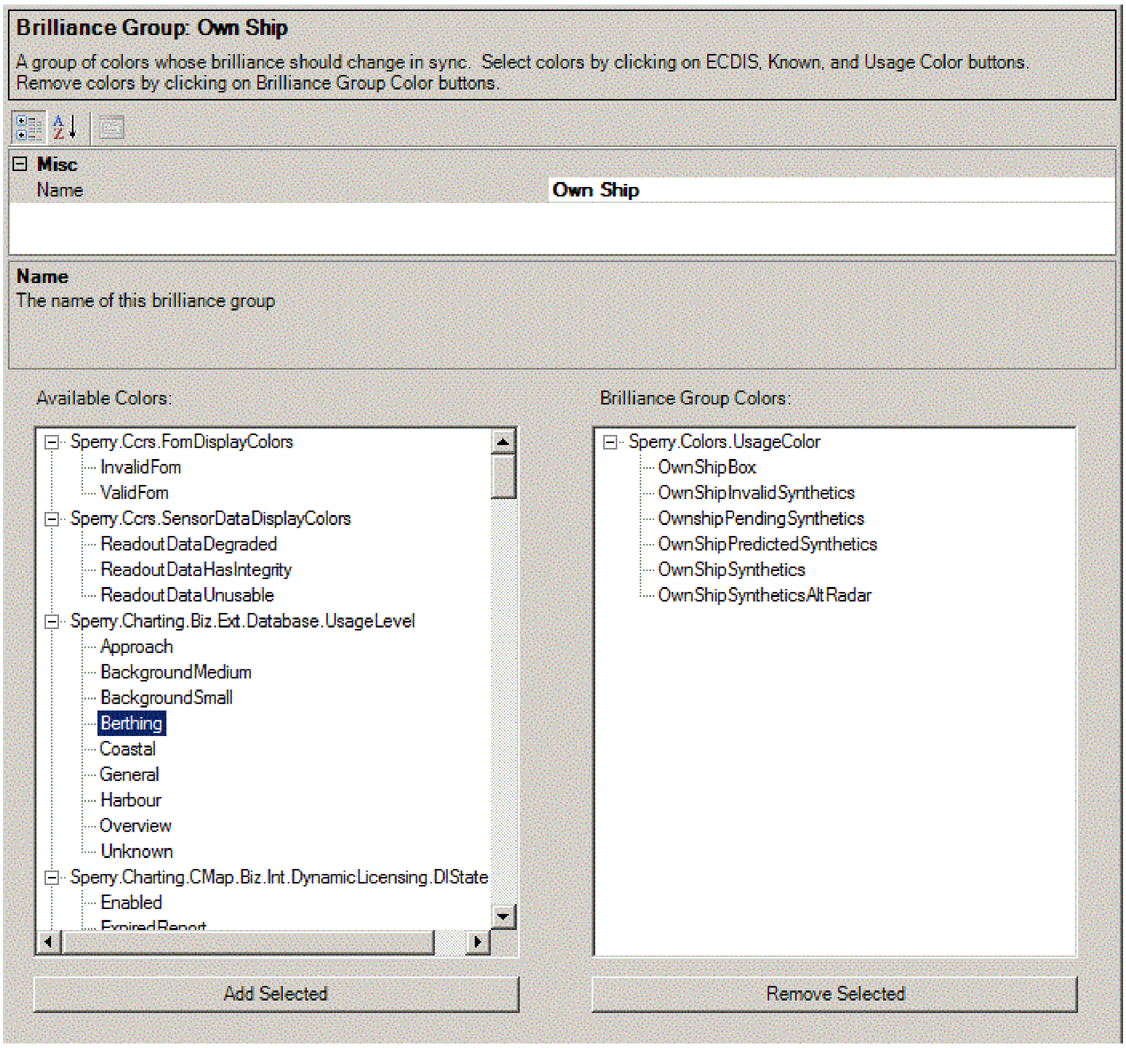


Figure 1.166 Brilliance Group: Own Ship

Creating a new Brilliance Group

To create a new brilliance group:

1. Click on the Brilliance Group Manager status button, the current brilliance groups list appears, see Figure 1.167 below.

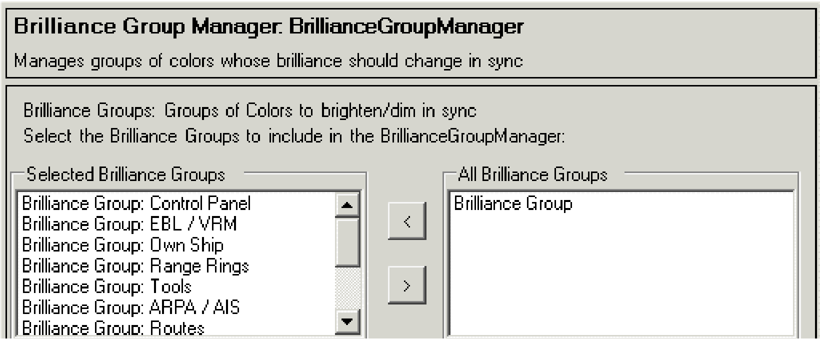


Figure 1.167 Brilliance Group Manager

2. Highlight **Brilliance Groups** from the All Brilliance Groups list and click on the **<** arrow. A new group is added to the selected brilliance group list.
3. Click on the **<Configure Me>** status button in the navigation tree. A blank configuration window for the brilliance group appears.
4. Select individual colours from the list of available colours and click on the **Add Selected** button at the bottom of the window. The selected colour and its parent directory are moved to the Brilliance Group Colors column.
5. To remove a colour highlight it in the Brilliance Group Colors column and click the **Remove Selected** button. The item and its directory are removed from the list.
6. With the required colours selected enter a name for the group in the **Misc: Name** field. The name should be applicable to the colours, or groups of colours selected. The example in Figure 1.168 shows a brilliance group named and created for critical points.
7. When a new brilliance group has been created it will appear in the Brilliance Group Manager and will also be available for the VisionMaster operator to independently adjust via **Groups** in the **Brilliance** menu.

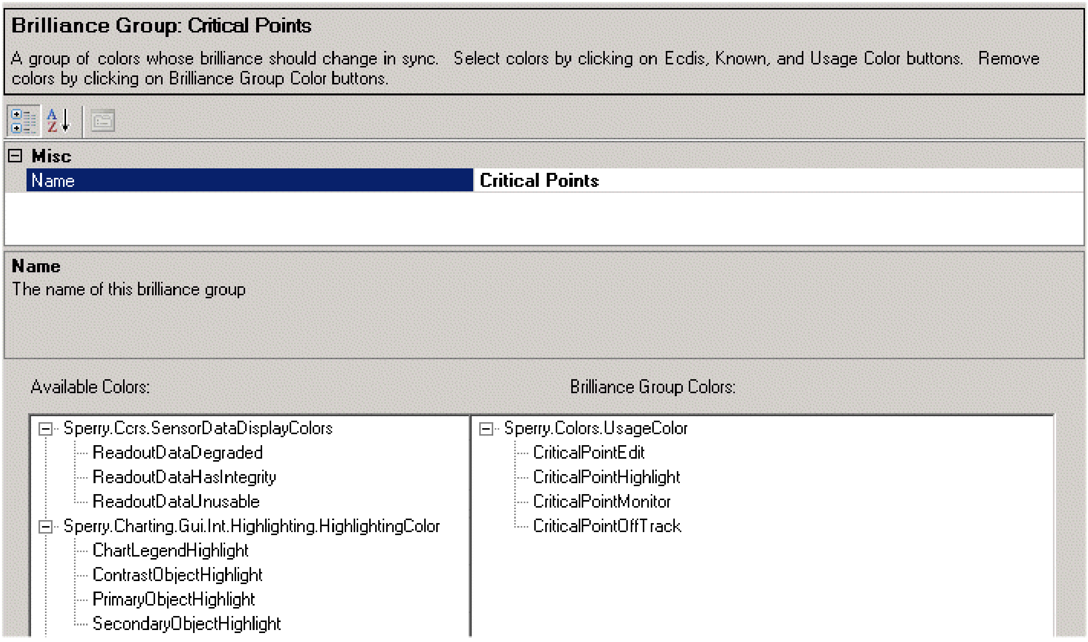


Figure 1.168 New Brilliance Group: Critical Points

9.6.4 Display Options

Display Options enables keypad settings and dual unit settings to be altered.

9.6.4.1 Keypad Settings

The Keypad Settings window enables the time before the screen keypad is removed from the screen, when no keys have been pressed, to be configured. The default timeout value is 30 seconds.

To change the timeout click in the field, delete the current value and enter the required value (there are no minimum or maximum timeout values).

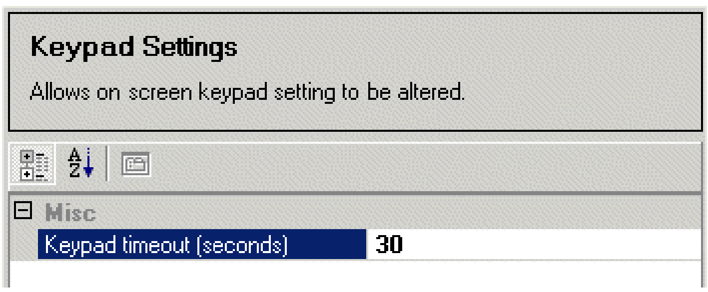


Figure 1.169 Keypad Settings

9.6.4.2 Dual Units Settings

Dual Unit settings show the threshold maximum and minimum distances in metres when the system swaps between displaying short distance units or long distance units. For example, the distance between own ship's CCRP and the current cursor position on the Cursor readout will swap between metres and NM (if configured, see Section 9.6.5 *Units Selection*') when the thresholds are reached.

The default auto short/long maximum changeover distance is 600 metres. The default auto short/long minimum changeover distance is 500 metres.

To change the maximum and minimum changeover values click in the respective fields and enter the required value, maximum value is 3700 metres; minimum value is 10 metres.

To disable the auto short/long unit changeover click on the drop down arrow to the right of the field and select **No.**

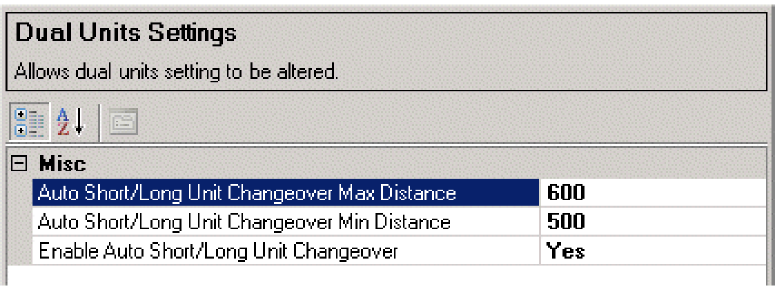


Figure 1.170 Dual Unit Settings

9.6.5 Units Selection

The Units selection window controls the ability of the operator to select displayed units while the VMFT application is running. The default setting is disabled (i.e. not to allow units selection by the operator).

To allow the operator to select display units click the drop down arrow and select **Yes**.

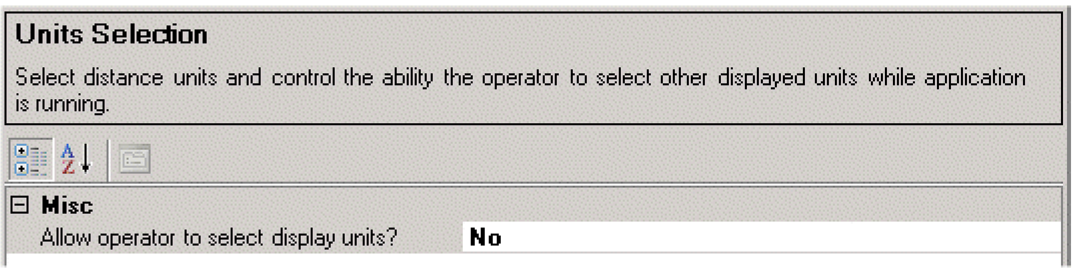


Figure 1.171 Units Selection

9.6.5.1 Unit Group Manager

The Unit Group Manager enables the operator to select the desired units to be displayed within a unit group.

Display Units are listed in the following unit groups:

Group	Default
• Short Distance	Metre
• Long Distance	Nautical Miles
• Depth	Metre
• Height	Metre
• Position	DD°MM.MMM
• Speed (and Windspeed)	Knots
• Temperature	Degrees Celsius
• Pressure	Pascal

The Long Distance Units group only allows for the selection of one unit, the default is Nautical Miles (NM). The following units have only one selection available:

- Angle (degrees)
- Angular Velocity (degrees per minute)
- Humidity (percent)
- Coordinate System (Geographic)
- Fuel Usage (Kilogram)

To change the availability of a unit selection tick the relevant check box.

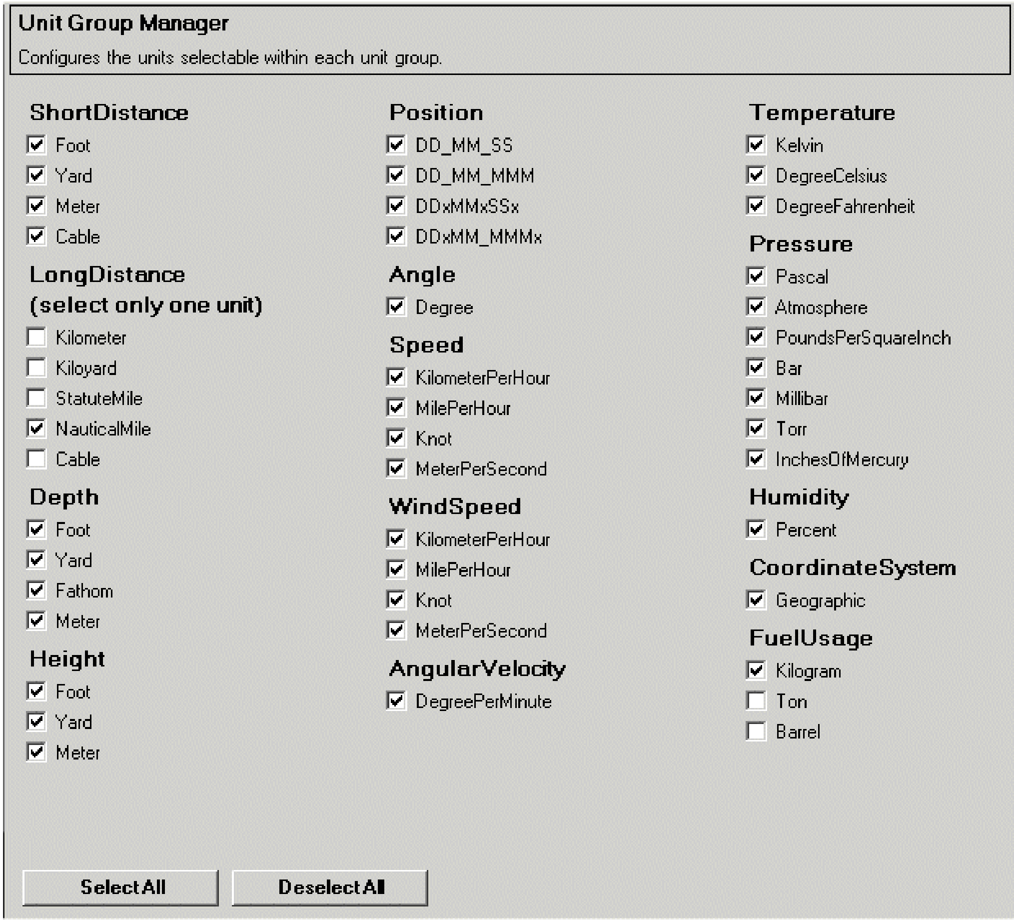


Figure 1.172 Unit Group Manager

Note: *The settings made on this screen do NOT effect the unit default settings, only the selection availability of that unit.*

To discard any changes made in the Units Group Manager and restore the default unit selection click the **Select All** button. All units are selected, with the exception of the Long Distance Unit (Nautical Miles), which must be manually selected.

To untick all units click the **Deselect All** button.

9.6.6 Display Formatting

The display formatting topic allows the Pitch & Roll properties shown on CID screens to be changed.

The following miscellaneous display defaults are applied to a CID screen displaying Pitch & Roll angles:

- Pitch positive when Bow is down
- Roll positive when Starboard is up
- Use default sign convention

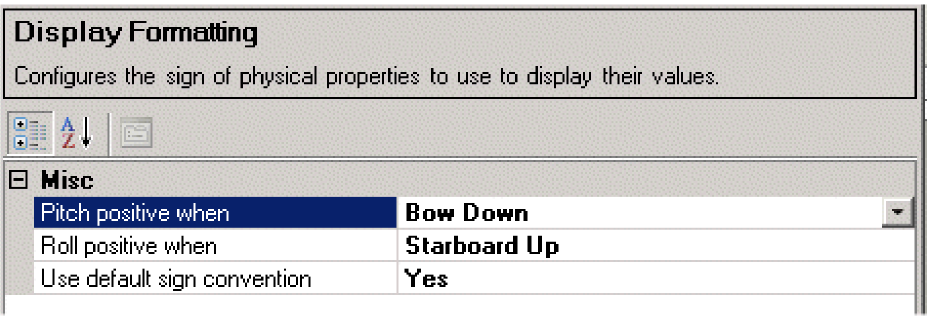


Figure 1.173 Display Formatting

To change the pitch positive to **Bow Up**, or Roll positive to **Port Up** click on the drop down arrows. A negative value is applied to the Pitch & Roll angles when the bow is up or the port is down. For a graphic representation of Pitch & Roll refer to '*Steering Page*' in Annex C of the Chart Radar User Guide (65900010) or Annex B of the ECDIS User Guide (65900012).

The sign convention for CID screens defaults to **Yes**. To switch off default signage select **No**.

9.7 Alerts

VisionMaster FT (VMFT) provides a range of alert configuration options, including both legacy (ALR and Discrete) inputs and outputs as well as Bridge Alert Management (BAM) compliant (ALF/ALC) inputs and outputs. In order to fulfil the objectives of the BAM guidelines, the newer BAM compliant interfaces should be used where possible.

To effectively commission the system and help reduce the burden of excessive high priority alerts on the bridge team, some knowledge of the relevant configuration options is beneficial.

9.7.1 Description of Alert Priorities

There are four alert priorities as listed below:

- emergency;
- alarms;
- warnings;
- cautions.

Emergency

Emergency alerts indicate that immediate danger to human life or to the ship and its machinery exists and that immediate action shall be taken.

Note: *Unless specifically designated, emergency alerts apply to external alarms only. There are no auto defined internal emergency alerts.*

Alarms

Alarms are defined as conditions requiring immediate attention and action by the bridge team to avoid any kind of hazardous situation and to maintain the safe operation of the ship. Alarms can also be escalated from unacknowledged warnings.

Warnings

Warnings are defined as conditions or situations which require immediate attention for precautionary reasons, to make the bridge team aware of conditions which are not immediately hazardous, but may become so.

Cautions

Cautions are defined as an awareness of a condition which still requires attention out of the ordinary consideration of the situation or of given information.

9.7.2 Description of Alert Categories

Alerts are separated for alert handling into three categories: A, B and C, described below*.

* As cautions should never cause an audible signal, they should always be given the category B. Category A alerts need an audible signal to distinguish which HMI has the additional information for decision support in order to handle the alert.

Category A Alerts

Category A alerts are specified as alerts where information at the display directly assigned to the function generating the alert is necessary, as decision support for the evaluation of the alert-related condition, e.g. danger of collision; and danger of grounding. These alerts, therefore, cannot be acknowledged at a CAM-HMI.

Category B Alerts

Category B alerts are specified as alerts where no additional information for decision support is necessary.

Category C Alerts

Category C alerts are alerts that cannot be acknowledged on the bridge but for which information is required about the status and treatment of the alerts, e.g. certain alerts from the engine. Category C alerts are external alerts only and originate from areas of the ship other than the bridge.

9.7.3 Responsibility Transfer

VMFT implements the 'Responsibility Transfer' concept from the BAM equipment standard (IEC 62923-1:2018). Responsibility Transfer provides a mechanism for an Alert Source to transfer responsibility of its alerts to another System Element. This is a useful way of reducing the number of high priority alerts the bridge team need to deal with.

VMFT supports the transfer of alerts both from external equipment and to external equipment. I.e. it supports the re-evaluation of external alerts as well as the re-evaluation of alerts by external equipment.

The fundamental requirement of Responsibility Transfer is that the target of the transferred alert has additional information about the condition for which the alert is raised, which enables it to take responsibility for raising the alert, potentially at a lower priority. Therefore, it is expected that the target of Responsibility Transfer has prior knowledge of the particular Alert Source that enables it to take responsibility for the alert condition.

To support responsibility transfer VMFT enables the configuration of which alerts should be allowed to be transferred from the VMFT system, and which alerts the system requests to take responsibility by specifying the associated alert IDs.

As noted, in order to transfer alerts to VMFT, knowledge of the actual alert condition is required. Therefore responsibility transfer commissioning should only take place in a system where knowledge of the alert condition is present. For example, an ECDIS may take responsibility for an alert resulting from loss of position data as the ECDIS monitors position data and is able to determine the impact of the condition on the system. Whereas a standalone CAM should not be configured to take responsibility of an alert as the additional knowledge of the alert condition is not present.

The Service Engineer should ensure that only equipment with knowledge of the Alert conditions raised by VMFT are configured to take responsibility for specific alerts from VMFT.

Responsibility transfer from VMFT can be configured for ALF output (see Section 9.7.7 *Alert Output (ALF/ALC)*').

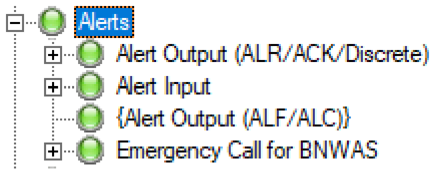
Responsibility transfer to VMFT can be configured for ALF inputs (see Section 9.7.6.4 *Configuring an External ALF Serial Alert Input Device*').

Note: *Responsibility Transfer is only supported for ALF devices compliant with IEC 62923-1:2018.*

9.7.4 Alert Configuration

The Alerts sub-system includes the following configurable items:

- Alert Output (ALR/ACK/Discrete)
- Alert Input.
- Alert Output (ALF/ALC)
- Emergency Call for BNWAS



Alerts enables the following configurations and selections to be made:

- Configuration of alert inputs and outputs through serial and discrete interfaces
- Configuration of the buzzer by selecting a discrete output via an external interface.
- Managing the output of emergency call ALR messages for BNWAS over configured ports.

The Alerts screen (see Figure 1.174) is divided into the following configurable areas:

- Alert Output (ALF/ALC) Alert Management interface selection for BAM[*] compliant alert output.
- Buzzer output selection for each node on the system
- Miscellaneous: includes allowing nodes to be configured without buzzers, set the default escalation period for CAT C alerts, set the minimum alert group size and set the silence period for CAT C alerts.

* BAM is a concept for the management, handling and harmonised presentation of alerts on the bridge. A Central Alert Management (CAM) system takes alert information from all alert sources on the bridge and presents them in one or more CAM displays where the alerts can be seen, heard and acknowledged.

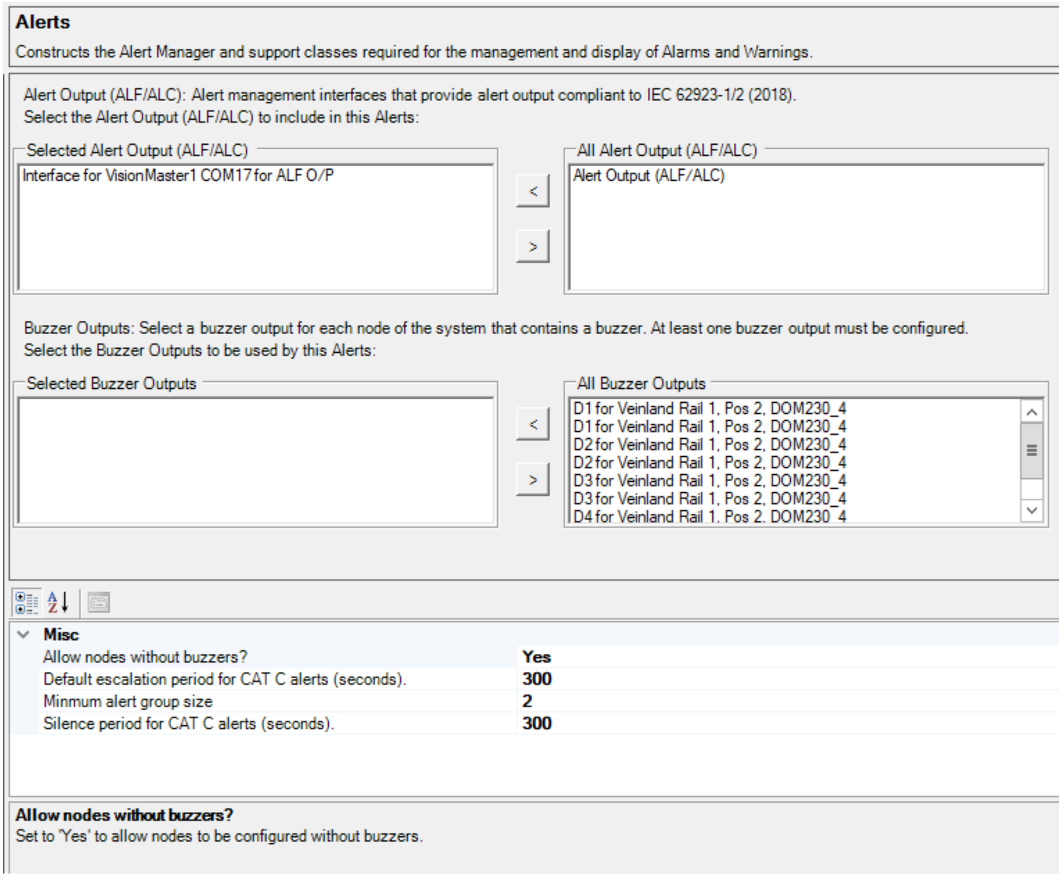


Figure 1.174 Alerts

9.7.4.1 Alert Output (ALF/ALC style)

An Alert Output (ALF/ALC Style) is an external BAM interface that outputs IEC 62923-1 compliant style sentences to third party devices such as a CAM (see Section 9.7.4.2 *CAM Backup and Redundancy Functionality*') or BNWAS.

For information on configuring this I/O refer to Section 9.7.7 *Alert Output (ALF/ALC)*'.

9.7.4.2 CAM Backup and Redundancy Functionality

All VMFT systems running a CAM are required by 302(87) 11.1 and 62923-1 6.5.3 to include a backup and redundancy alternative in the case of failure of the CAM interface. The CAM backup and redundancy used on VMFT is as follows.

In the event of failure of a single node in a multi-node VMFT system, the CAM interface can be displayed on an alternative node. It is the responsibility of the service engineer to ensure that at least two nodes are configured with the CAM watch mode enabled.

In the case of failure of the entire VMFT system, external alert sources will continue to present their alerts individually.

9.7.4.3 Buzzer Output

Enables selection of a discrete output (digital or relay) via an external device for the buzzer.

Note: *In order for a buzzer output to be selected here, a set of digital and relay outputs for a PCIO board, a Control Panel I/O board, a serial discrete output, Labjack device, a DCU rail or an Opto 22 device must have been previously configured, see Section 8.1 PCIO Board Manager', Section 8.5 Labjack Manager' Section 8.6 Opto 22 Manager' or Section 8.7 DCU Manager'.*

Note: *The preferred external devices for buzzer outputs are a PCIO board a Control Panel I/O board, or a serial discrete output. Using a DCU rail or Opto 22 device for buzzer output is not recommended.*

To select the required digital or relay output for each node highlight the outputs in the **All Buzzer Outputs** list and click the **<** arrow. The output is moved to the **Selected Buzzer Outputs** field.

To view or configure the output settings double click on the selected output. The window for the selected buzzer output will appear.

9.7.4.4 Miscellaneous Settings

The Miscellaneous area enables the following settings to be changed:

- **Allow nodes without buzzer? -** by default all nodes are required to provide a buzzer output. If a buzzer is not selected for each node, the configuration file will by default be invalid. To allow one or more nodes to be configured without buzzers, and the config file to remain valid, click in the field and select Yes.
- **Default escalation period for CAT C alerts** - the default escalation period for external Cat C warnings that have been received over a legacy interface is 300 seconds (5 minutes). After this period, if the alert hasn't been acknowledged or cleared at the source, the warning will be resounded (i.e. escalated). This value can be used to alter the resounding period.
- **Minimum alert group size -** defines the minimum number of required active alerts in a group for that group to be displayed when the display of alert grouping is enabled in the CAM watch mode. The default is 2 (i.e. an alert will only be displayed as part of a group if there is two or more active alerts in that group). To change the value, enter a number in the field.
- **Silence period for CAT C alerts** - defines the temporary silence period for external alerts configured as CAT C over legacy interfaces. This can be set to a period in the range 30 to 300 seconds.

9.7.5 Alert Output (ALR/ACK/Discrete)

The Alert Output (ALR/ACK/Discrete) window allows one of more serial ports or relays to be selected for legacy alert output.

The available selections from the All Outputs column are:

- Alert Output (ALR/ACK style)
- Discrete I/O

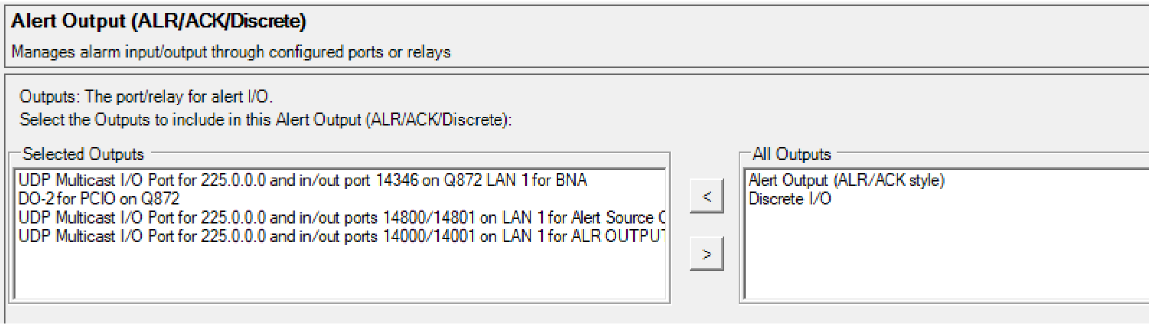


Figure 1.175 Alert Output (ALR/ACK/Discrete)

Note: *Alert Output (ALR/ACK style) and Discrete I/O interfaces are not BAM-compliant. Therefore new installations should use a BAM compliant alert interface, where possible.*

9.7.5.1 Configuring a Discrete I/O

When the Discrete I/O output is selected an unconfigured <Configure Relay> topic is created in the {Outputs} list, see Figure 1.176.

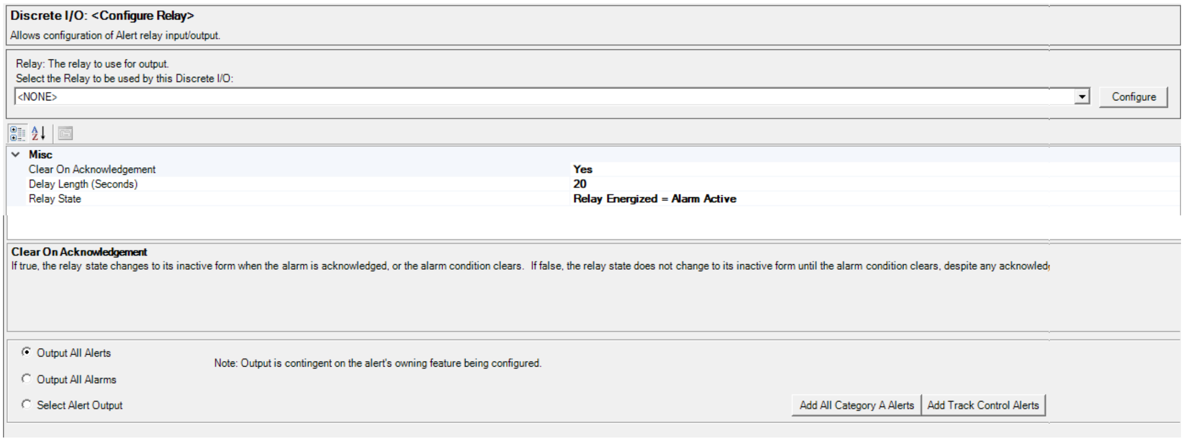


Figure 1.176 Discrete I/O : <Configure Relay>

1. Select the relay to be used for the alert output by clicking on the drop down arrow and selecting from the list of digital/relay outputs. The list contains the available discrete outputs in the system (e.g. on a PCIO board, Opto 22, Veinland DCU or Labjack).

Note: *You cannot select the same discrete output as the buzzer outputs previously selected at the Alerts window, see Figure 1.174.*

2. If the output requires configuration click on the **Configure** button. The digital/relay output configuration window for the selected relay appears.

Changing the Miscellaneous Settings

The following Miscellaneous settings may be changed:

- **Clear On Acknowledgement** - by default the relay state changes to its inactive form when the alert is acknowledged (i.e. **Yes**), or the alert condition clears. To change the relay state so that it does not change to an inactive form after acknowledgement click in the field and select **No**.
- **Delay Length (Seconds)** - denotes the amount of time between when the alert is activated and the relay changes to its active state. The default is 20 seconds.
- **Relay State -** by default an energized relay is interpreted as an active alert(i.e. **Relay Energized = Alarm Active).** If a de-energized relay is required to indicate an active alert, select **Relay De-energized = Alarm Active**.

The digital/relay output configuration window allows you to select which combination of alerts will cause the relay to energize/de-energize output.

The options include:

- All Alerts (i.e. any alerts active in the system will cause the relay output to be in its active state),
- All Alarms (i.e. only alerts with alarm priority active in the system will cause the relay output to be in its active state)
- Select internal or external alerts

A full list of internal alerts that can be raised by the system, together with a description and their priority status is given in Volume 1, *Chapter 1, Appendix A 'Alert Definitions*'.

Configuring Alert Outputs

The alert output setting defaults to **Output All Alerts**. To select specific alerts, click the **Select Alert Output** button, the subsequent screen lists all the alerts on the system, arranged alphabetically and by group, Figure 1.177.

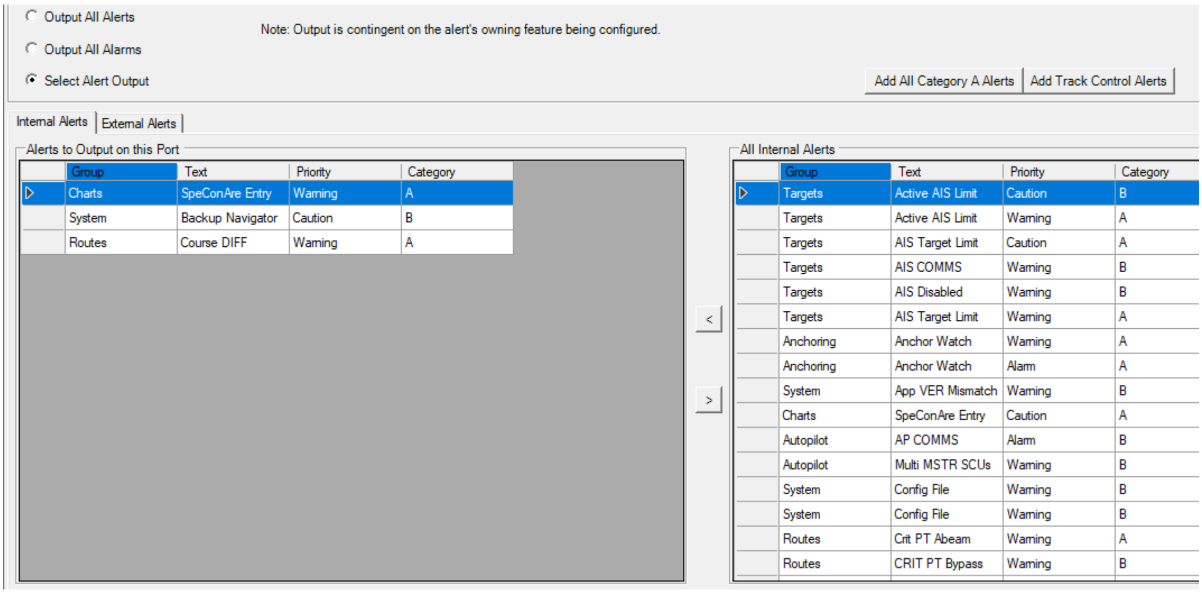


Figure 1.177 Discrete I/O - Select Alert Output

The screen includes two tab folders **Internal Alerts** and **External Alerts**.

Internal alerts are alerts generated by VisionMaster. External alerts are alerts that have been received from external equipment over a legacy serial ALR or discrete input (note that alerts received over an ALF interface cannot be selected here).

In addition to the selection of specific alerts, the screen includes two buttons that enable all Category A internal alerts and all Track Control alerts to be added to the output. This is a convenience function to allow alerts required for specific class rules to be easily selected.

9.7.5.2 Configuring an Alert Output (ALR/ACK style)

The steps to configure an alert serial ALR/ACK style output are similar to the steps described for a discrete I/O.

1. Select the port to be used by this alert output.
2. Select the alert output option as described in '*Configuring Alert Outputs*'

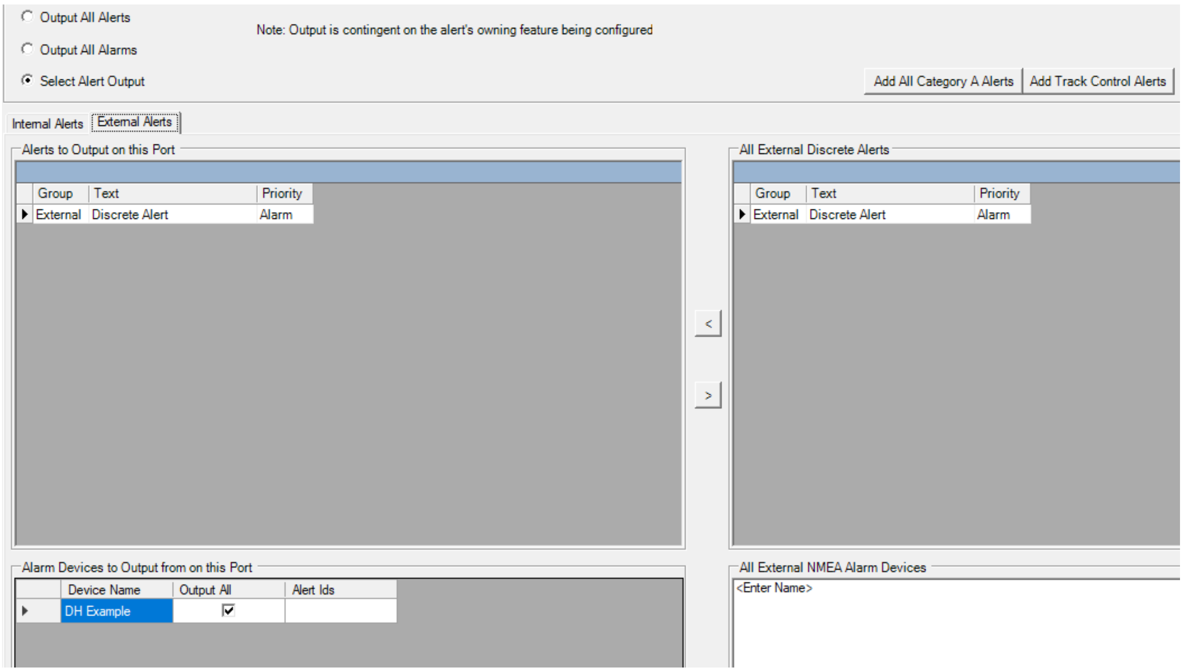


Figure 1.178 Alert Output (ALR/ACK style) - Select Alert Output

In the **All External NMEA Alarm Devices** column only ALR alert outputs are displayed. ALF interfaces cannot be selected.

9.7.6 Alert Input

The Alert Input section enables the VMFT node to act as a Central Alert Manager (CAM) and receive alerts from external serial and discrete devices.

The External Alert Providers can be either an external discrete alert device (digital input) or an ALF or ALR serial device, see Figure 1.179.

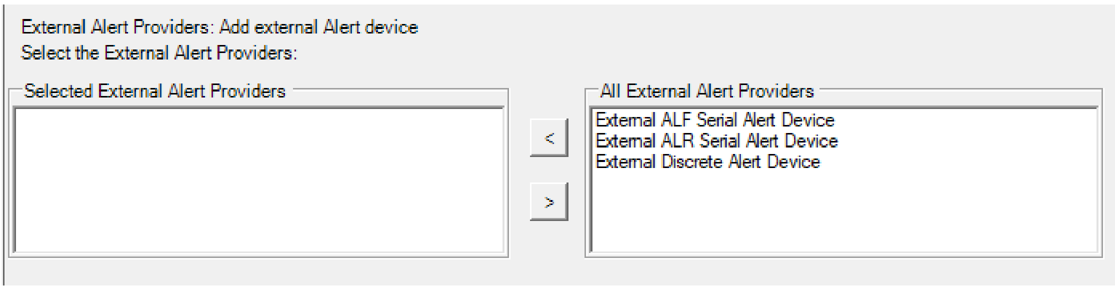


Figure 1.179 External Alert Providers

9.7.6.1 External Alert Providers

When external alert providers have been configured the providers are listed in the Alert Input navigation tree.

Note that alerts received via these external providers will be assigned an alert ID[*]. This ID will be used in the internal processing of the alert, including logging to the history log, as well as when the alert is output over a serial interface, if configured to do so.

Note: *When outputs have been selected and configured in Alert Output, these devices will also be shown in the External Alert Providers.*

Note: *External ALR Serial Alert devices and Discrete Alert devices are not BAM-compliant. Therefore, wherever possible, new installations should use ALF alert interfaces which are BAM compliant.*

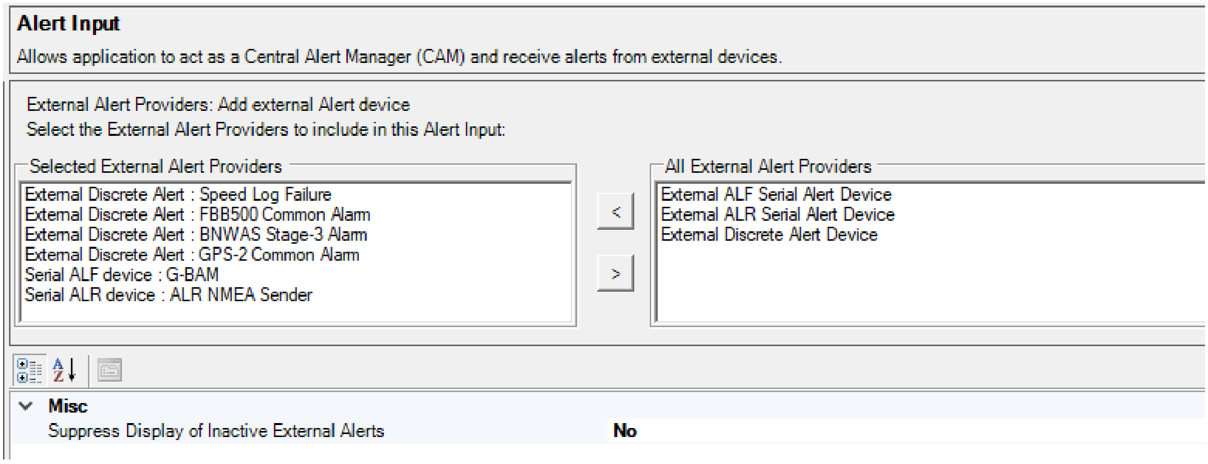


Figure 1.180 External Alert Providers

The Miscellaneous field includes the option of suppressing the display of inactive External Alerts. This setting must be selected on vessels required to conform with Russian regulatory requirements. On all other vessels this setting should remain at **No**.

9.7.6.2 Configuring a Discrete Alert Input Device

To select a discrete device as an external alert provider:

1. Highlight **External Discrete Alert Device** from the All External Alert Providers list (Figure 1.179) and click on the **<** button. The device is moved to the Selected Alert Providers list and an unconfigured topic is added to the Navigation tree.
2. To configure the device click on the node in the navigation tree. The external discrete alert device configuration window appears.

* For external discrete input alerts in ALF style output messages, the alert ID value x (between 1 and 99) results in a value of 10800 + x This is the value displayed on the CAM watch mode. If output in an ALR message the alert ID value is 800 + x.

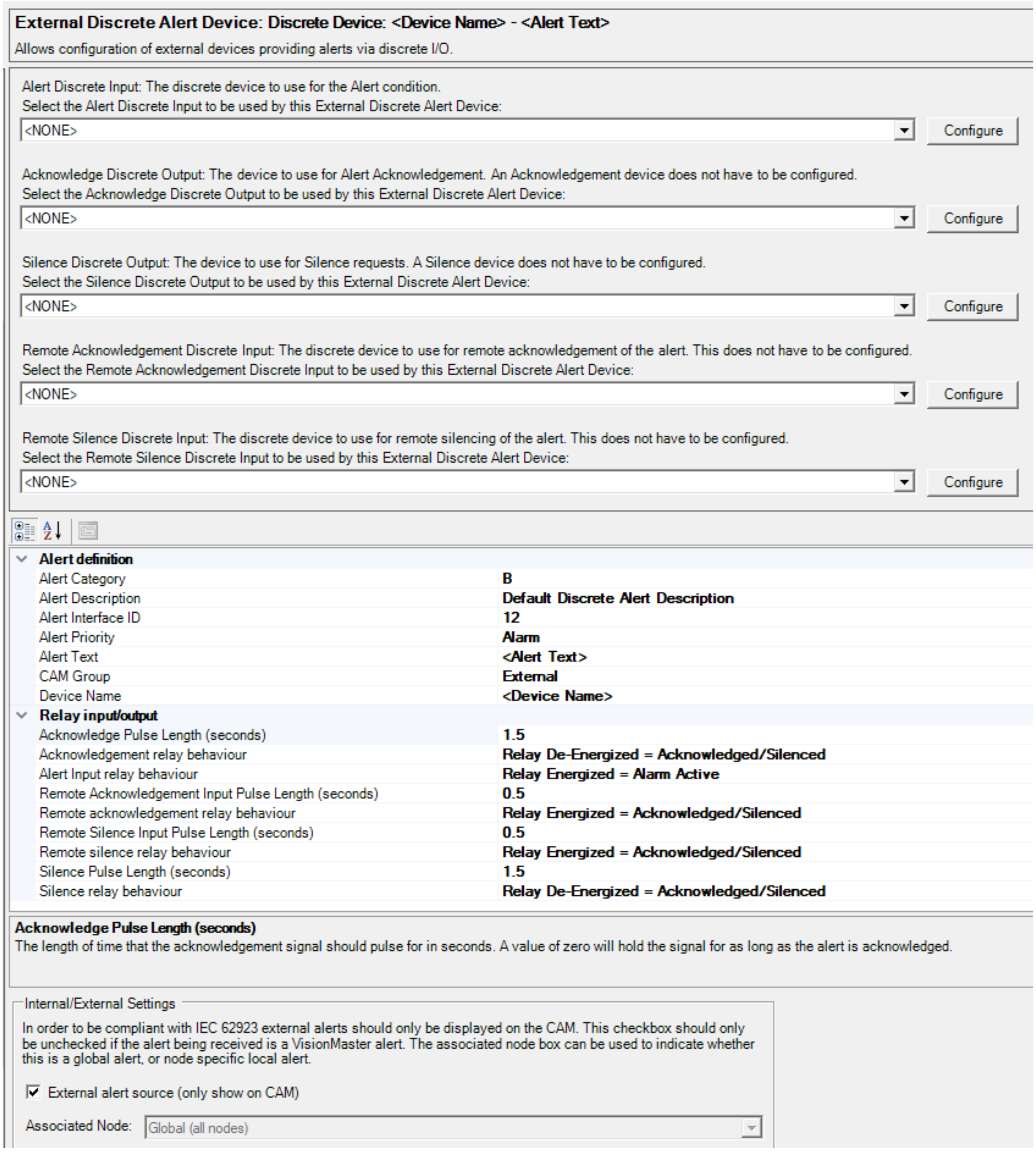


Figure 1.181 External Discrete Alert Device Configuration

The discrete alert device configuration window is divided into the following areas:

- selection of the Alert Discrete Input to indicate the alert condition.
- selection of the Acknowledge Discrete Output to send acknowledgement indications to the external device.
- selection of the Silence Discrete Output to indicate when a silence request has been made
- selection of the Remote Acknowledgment Discrete Input to allow the alert condition to be acknowledged remotely.

- selection of the Remote Silence Discrete Input to allow remote silence requests to be received for the alert.
- Miscellaneous Alert conditions.
- Internal/External Settings

Selecting Discrete Input/Output relays

To select the Input/Output relays used by the device, click on the drop down arrow and select from the list of configured I/O devices. To change the configuration of the selected device, click the **Configure** button to the right of the field.

Selecting Remote Acknowledgement Discrete Input

This function should be configured if the VMFT is acting as a CAM and is required to accept discrete input signals from remote equipment indicating that the alert has been acknowledged remotely.

To select the Remote Acknowledgement Discrete Input relay click on the drop down and select the required input from the list of discrete inputs.

Changing Alert Definition and Relay Settings

The following settings are listed under Miscellaneous with default values:.

Setting	Default
Alert Definition	
• Alert Category	• B
• Alert Description	• Default Discrete Alert Description
• Alert Interface ID	• 1 to 99
• Alert Priority	• Alarm
• Alert Text	• <Alert Text>
• CAM Group	• External
• Device Name	• <Device Name>
Relay input/output	
• Acknowledgement Pulse Length (seconds)	• 1.5
• Acknowledgement relay behaviour	• Relay De-Energized = Acknowledged
• Alert Input relay behaviour	• Relay Energized - Alert Active
• Remote Acknowledgement Input Pulse Length (seconds)	• 0.5
• Remote Acknowledgement relay behaviour	• Relay Energized = Acknowledged/ Silenced

Alert Category

The default category for Alerts is set to '**B**'. To change to **A** or **C**, click on the drop down arrow to the right of the field and select from the list. For information about alert categories refer to Section 9.7.2 *Description of Alert Categories*'

Alert Description

The description that appears on the CAM-HMI, and optionally on the ECDIS and Radar alert menu if configured as an internal alert. To change, delete the default entry and enter the required description.

Alert Interface ID

The ID of the discrete alert. If this alert is output by the system for use by other equipment, 10,800 is added to the ID when using an ALF output; and 800 is added to it when using an ALR output.

Alert Priority

The default priority from this device is set to **Warning**. To change to **Alarm, Caution** or **Emergency**, click on the drop down arrow to the right of the field and select from the list.

Alert Text

The Alert Text appears on the CAM-HMI and optionally on the ECDIS and Radar alert menu, if configured as an internal alert. To change this, delete the default entry and enter the required text.

CAM Group

The alert group to which the alert shall be added. This is displayed on the CAM-HMI, under the Group column. The default name used is **External**. To change this, delete the default entry and enter the required description.

Acknowledgement Pulse Length

Defines the length of time that the acknowledgement signal should pulse for in seconds. A value of zero will hold the signal for as long as the alert is acknowledged.

Acknowledgement relay behaviour

By default an inactive relay is interpreted as an acknowledged Alert. To change the setting to an active relay click on the drop down arrow to the right of the field and select Relay Energized = Acknowledged/Silenced.

Alert input relay behaviour

By default an energized relay is interpreted as an active alert. To change the setting to an inactive relay click on the drop down arrow to the right of the field and select Relay De-energized = Alert Active.

Remote Acknowledgement Input Pulse Length (seconds)

The length of time that the remote acknowledgement signal must remain pulsed in seconds before the system will acknowledge the alert.

Remote Acknowledgement relay behaviour

By default an energized relay is interpreted as a remote acknowledgement. To select a de-energized relay as indicating a remote acknowledgement click the drop-down button and select Relay De-Energized =Acknowledged/ Silenced.

Remote Silence input Pulse Length (seconds)

The length of time that the remote silence signal must remain pulsed in seconds before the system will silence the alert.

Remote Silence relay behaviour

By default an energized relay is interpreted as a remote silence. To select a de-energized relay as indicating a remote silence click the drop-down button and select Relay De-Energized = Acknowledged/Silenced.

Silence Pulse Length (seconds)

Defines the length of time that the silence signal should pulse for in seconds. A value of zero will hold the signal for as long as the alert is silenced.

Silence relay behaviour

By default an inactive relay is interpreted as an Alert silence. To change the setting to an active relay click on the drop down arrow to the right of the field and select Relay Energized = Acknowledged/Silenced.

Internal/External Settings

In order to be compliant with IEC 62923, external alerts should only be displayed on the CAM-HMI. However, there may be a need for particular external alerts to be displayed on the ECDIS or Radar Alert menu, either for a specific node, or all nodes (for example, a discrete signal when a node's UPS has failed).

To allow external alerts to be displayed on the Alerts menu of one or all nodes untick the **External alert source (only show on CAM)** check box.

By default the alert related to the discrete input will be displayed on all nodes (i.e. Global) if the **External alert source (only show on CAM)'** check box is unchecked. To select a specific node to display the alert click on the drop down arrow in the **Associated Node** field and select the required node*.

* It is recommended that if an Associated Node is selected then any networked alert should be configured to enter the system via this node.

9.7.6.3 Configuring an External ALR Serial Alert Device Input

1. To add an ALR device as an external alert provider: Highlight **External ALR Serial Alert Device** from the All External Alert Providers list and click on the **<** button. The device is moved to the Selected Providers list and added to the Navigation tree.
2. To configure the device click on the node in the navigation tree. The external ALR Serial alert device configuration window appears.

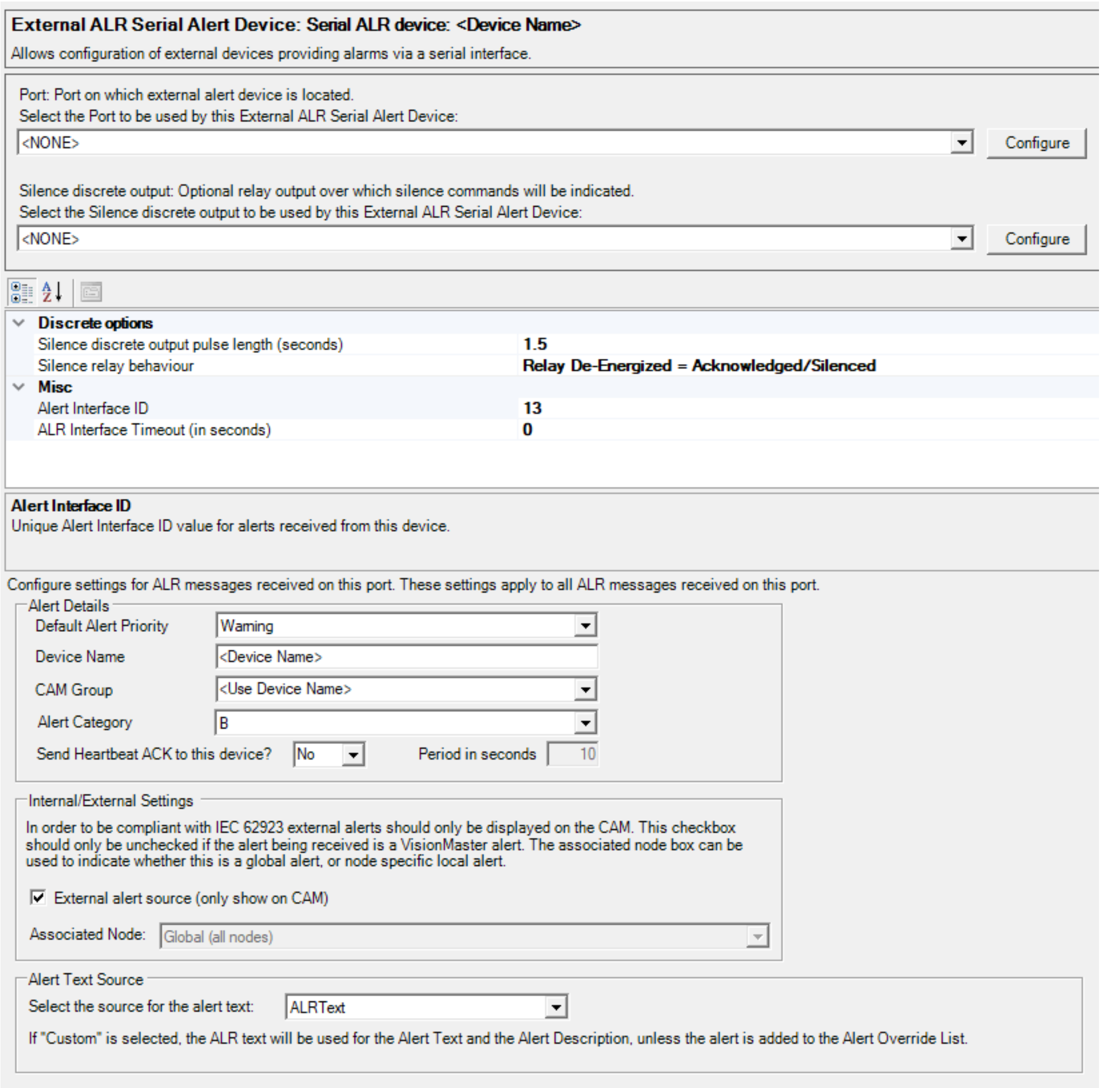


Figure 1.182 External ALR Serial Alert Device Configuration

To select the port to be used for the external ALR device:

1. Click on the Port drop down arrow. A list of the configured I/O ports in the I/O Port Manager is displayed. Select the port that will receive the ALR messages. If necessary, configure the port by clicking on the **Configure** button.

To select a discrete relay output used to indicate a silence request, for equipment that supports it:

1. Click on the Silence discrete output drop down arrow and select from the list of configured I/O devices. To change the configuration of the selected device, click the **Configure** button to the right of the field.

Configuring Discrete Options

1. *Silence Pulse Length (seconds)*

   Defines the length of time that the silence signal should pulse for in seconds. A value of zero will hold the signal for as long as the alert is silenced.

2. *Silence relay behaviour*

   By default an inactive relay is interpreted as an Alert silence. To change the setting to an active relay click on the drop down arrow to the right of the field and select Relay Energized = Acknowledged/Silenced.

Configuring Miscellaneous Settings

1. The Alert interface ID field is automatically populated with a unique ID. If this needs changing, it can be modified, but it must remain unique. The first alert received over this interface will have an ID of 800 plus the configured ID. All following alerts will have the first available ID above 800.
2. The ALR interface timeout determines the time after which the ALR interface is considered to have a loss of comms when there has been no message received. The default is 0, which means no timeout.

Configuring the Alert Details

The settings selected in the Alert Details area apply to all alert messages received over this port that don't have Custom settings defined. Custom priority and category settings can be defined for individual alerts, see **Selecting the Alert Text Source**. To configure the settings:

1. The Alert Priority defaults to **Warning**. To change to **Alarm**, **Caution** or **Emergency,** click on the drop down arrow to the right of the field and select from the list.
2. A device name is required for the external serial alert device. To enter a name click in the field, delete **<Device Name>** and enter the desired name. For example, if the port is to be used for NAVTEX alerts, enter NAVTEX in the Device Name.
3. The CAM Group field defines the group to which each alert received will be assigned. This group is displayed in the Group column on the CAM-HMI. The default is to use the device name entered. If desired you can select another CAM group name from a drop down list, or enter a custom name manually.

4. The category assigned to each received alert defaults to B. You can select another category from the drop down list. For a description of alert categories refer to Section 9.7.2 *Description of Alert Categories*'.

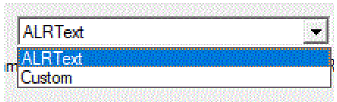
Note: *Only Category B alerts can be acknowledged on the CAM-HMI.*

5. The Send Heartbeat ACK to external devices defaults to **No**, to change the setting click on the drop down arrow and select **Yes**. The Heartbeat acknowledgement period defaults to 10 seconds, to change, enter a value in the **Period in seconds** field (there are no minimum or maximum values).

To allow external alerts to be displayed on the Alerts menu of one or all nodes untick the **External alert source (only show on CAM)** check box, refer to *Internal/External Settings*' on page 208.

Selecting the Alert Text Source

The source for the Alert text defaults to **ALRText,** which means the text as received in the ALR messages which will be used to display the alerts on VisionMaster. To change the source to **Custom** click on the drop down arrow and select from the list.



If **Custom** is selected the external ALR Alert device configuration screen displays an additional area: **ALR Override Configuration**

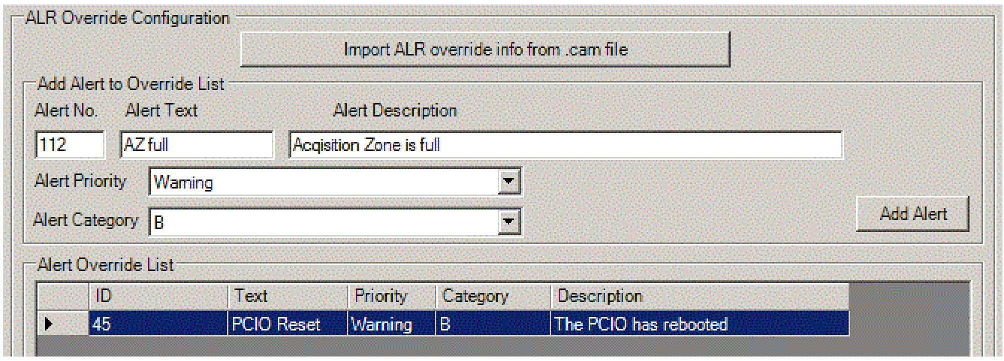


Figure 1.183 ALR Override Configuration

Note: *If Custom is selected and an alert is received from the device that is not overridden, the ALR text will be used for both the alert text and the description.*

The ALR Override Configuration area enables you to import override information from an appropriate.cam file, (providing a.cam file has been created, e.g. from a Navipilot). To import a file click on the **Import ALR Override Info From.cam File** button. A navigation window appears from where you can navigate to the required file.

To manually create an override alert list enter the Alert number, text and description and click the **Add Alert** button. The Alert is added to an Alert override list below. To edit or remove an alert from the Override list click on the  button to highlight the line and click either the **Edit Selected** or the **Remove Selected** button.

9.7.6.4 Configuring an External ALF Serial Alert Input Device

To add an ALF device as an external alert provider: Highlight **External ALF Serial Alert Device** from the All External Alert Providers list and click on the **<** button. The device is moved to the Selected Providers list and an unconfigured topic is added to the Navigation tree.

1. To configure the device click on the node in the navigation tree. The external ALF Serial Alert device configuration window appears.

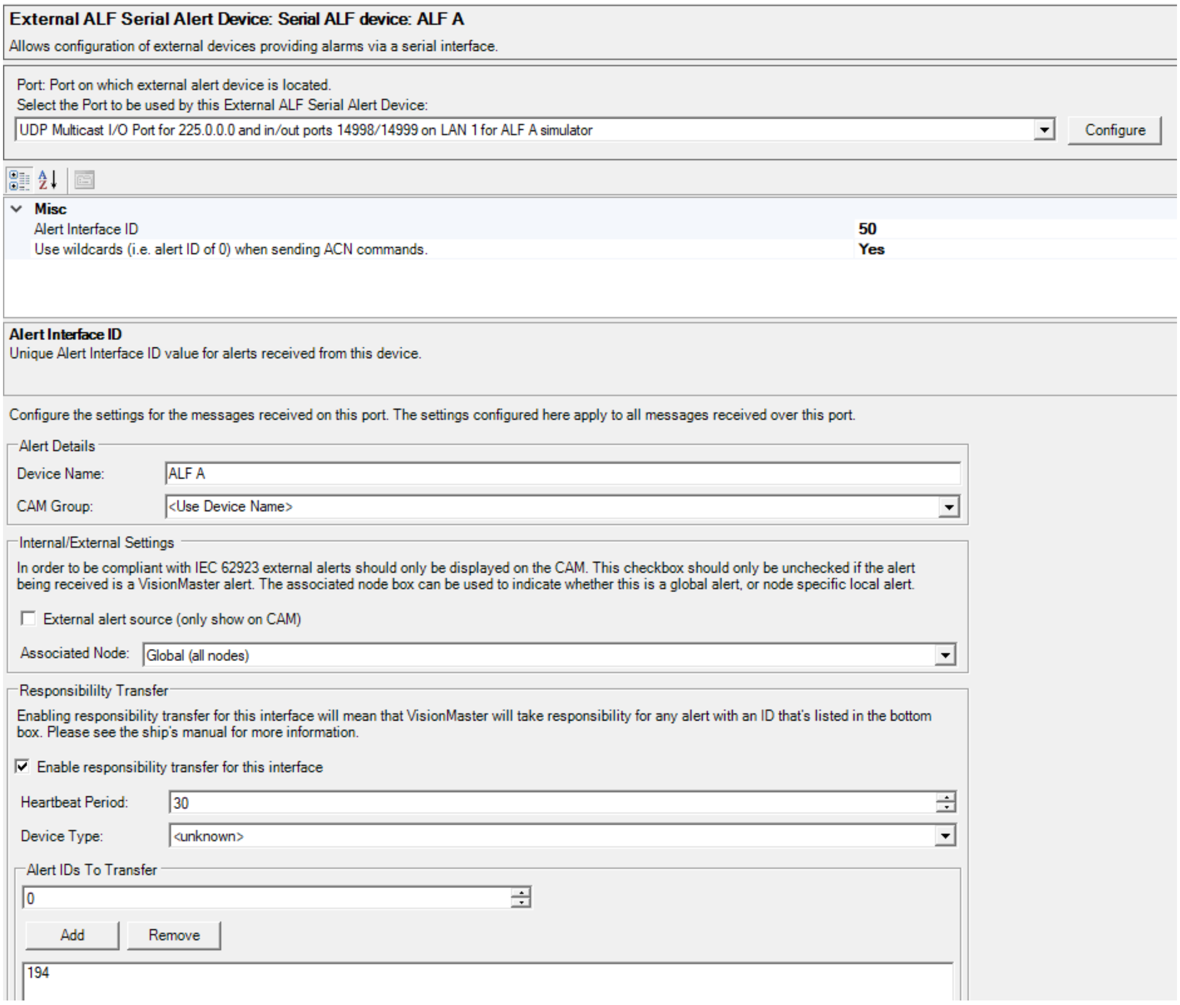


Figure 1.184 External ALF Serial Alert Device Configuration

The selection of the port to be used for the external ALF device, and miscellaneous settings (Alert Interface ID and 'Only show on CAM display') are as previously described for ALR inputs.

By default, alerts received over this interface will be considered external (i.e. they will only be displayed on the CAM-HMI). It may be necessary to display the alerts received on the ECDIS or Radar Alert menu, if they are considered part of the ECDIS/Radar system. This can be achieved by deselecting the '**External alert source**' check box.

Note: *To remain compliant to IEC 62923 (2018), all alerts from external sources must only be displayed on the CAM-HMI. Deselecting the External source check box must only be used in situations where the alert source is part of the ECDIS/Radar (e.g. a UPS).*

When alerts that are configured to be displayed on an ECDIS/Radar alert list are received over an ALF interface, by default they are displayed on all nodes. It is possible to assign the alerts received to a particular node using the '**Associated Node**' drop down list. When a node is selected, the alerts will only be displayed on that node*.

The ALF device window includes the additional miscellaneous feature:

Use wildcards when sending ACN commands

Set to **Yes** (default) when sending ACN commands for all alerts using wildcards (i.e. alert ID of 0). When set to **No** an ACN will be sent for each instance.

The device name entry and the selection of a CAM group are the same as previously described in “Configuring the Alert Details” on page 1-210.

Taking Responsibility for Alert Conditions from another ALF Device

To enable Responsibility Transfer for alert conditions raised by an external ALF device, do the following:

1. Tick the **Enable responsibility transfer for this interface** check box. When enabled the Heartbeat Period, Device Type and Alert IDs to Transfer fields are enabled.
2. Select the IDs of the alerts that are to be transferred by either selecting the device type of the alert source from the **Device Type** drop down list (see below), or by entering the IDs manually using the ID field and add/remove buttons.

Currently there is one defined device type to choose from:

- Naviknot 350/450/600

This device type has been provided to allow a list of pre-defined alert IDs to be configured that have been previously tested for responsibility transfer.

The Heartbeat Period defaults to 30 seconds. It is not expected that this will require changing.

* It is recommended that if an Associated Node is selected then any networked alert should be configured to enter the system via this node.

For more details regarding responsibility transfer see Section 9.7.3 *Responsibility Transfer*'.

Figure 1.185 shows a typical Responsibility Transfer area of the External ALF Serial Alert Device.

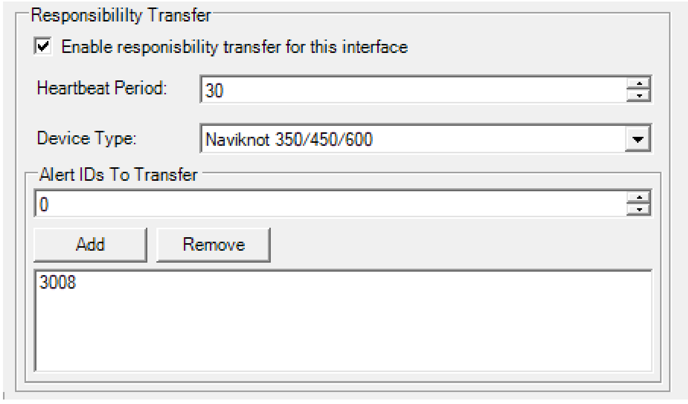


Figure 1.185 Responsibility Transfer - External ALF Serial Alert Device

9.7.7 Alert Output (ALF/ALC)

The Alert Output (ALF/ALC) configuration allows a BAM compliant alert output to be commissioned. Where possible this type of alert output should be used in place of either the Discrete or Serial ALR output options, see Figure 1.186.

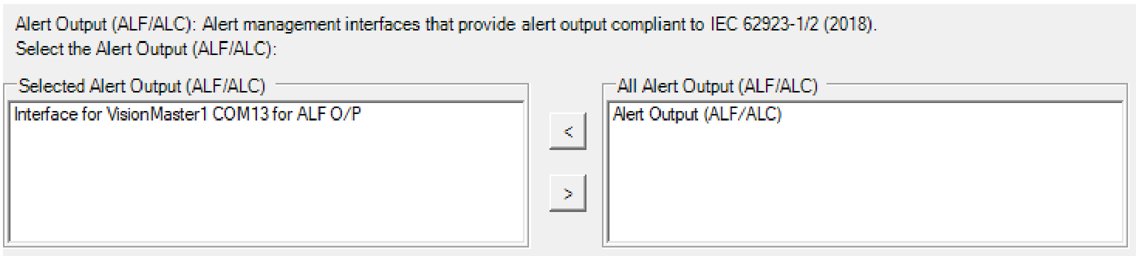


Figure 1.186 Alert Output (ALF/ALC) - selections

1. To add an ALF/ALC BAM compliant alert output select the Alert Output from the All Alerts section and click the < button.
2. To select the I/O port to be used by this interface click on the I/O port drop down list and select from the list of previously configured ports.
3. Select whether CAM only alerts (i.e. external alerts) should be included in the output. The default setting is to 'Exclude CAM Alarms'.
4. By default, alerts for all nodes will be output over the configured interface. The 'Node selection for ALF alert output' drop down list allows the output to transmit alerts only for a specific node.
5. To enable responsibility transfer for this interface tick the check box. This will display the list of alerts to be enabled/disabled for responsibility transfer.

6. Select the internal alerts to be enabled for responsibility transfer from the list in the right column. By default the list will contain all Category B warnings and alarms.

For more information on responsibility transfer refer to Section 9.7.3 *Responsibility Transfer*.

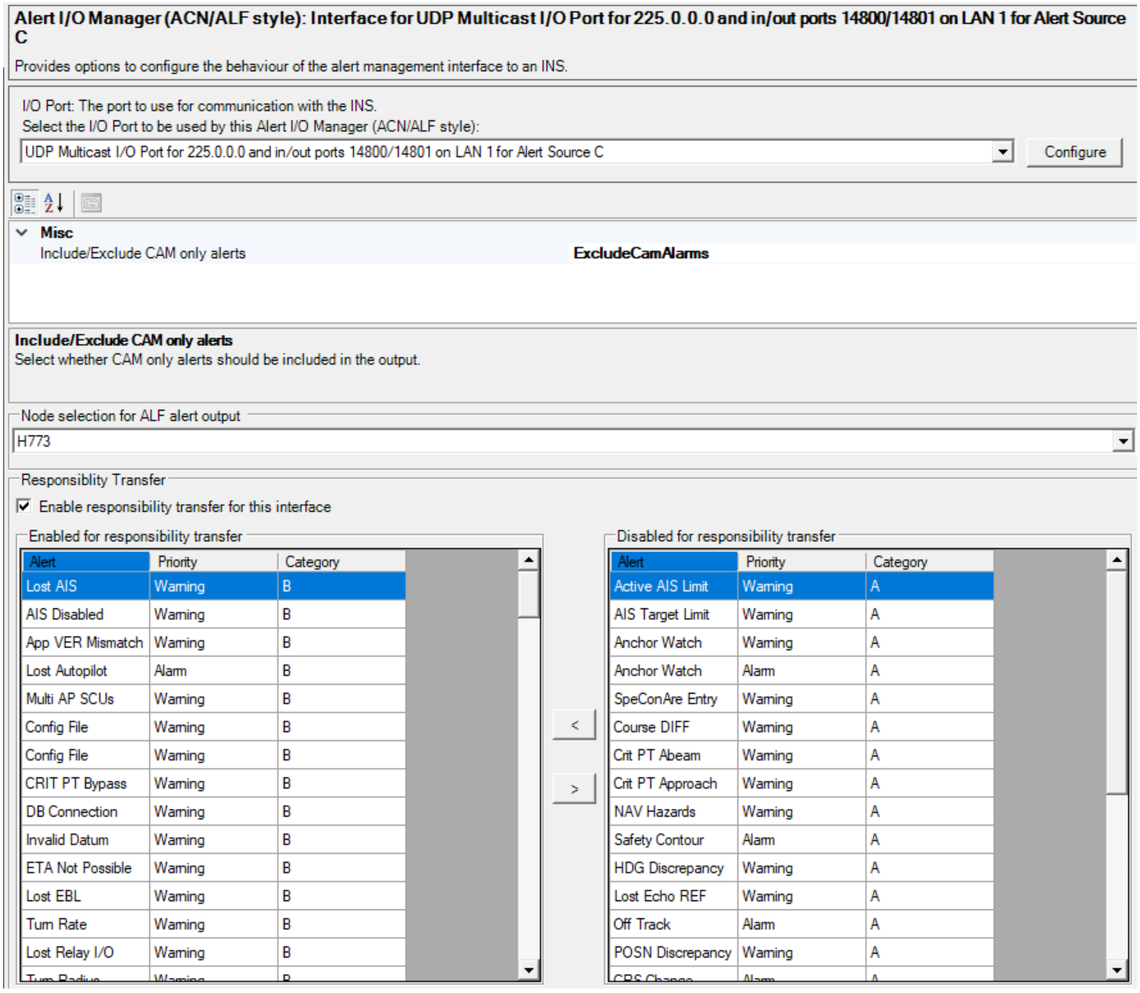


Figure 1.187 Alert I/O Manager (ACN/ALF style) - Interface

9.7.8 Emergency Call for BNWAS

The Emergency Call for BNWAS sub menu manages the output of emergency call ALR messages for BNWAS over configured ports, see Figure 1.188.

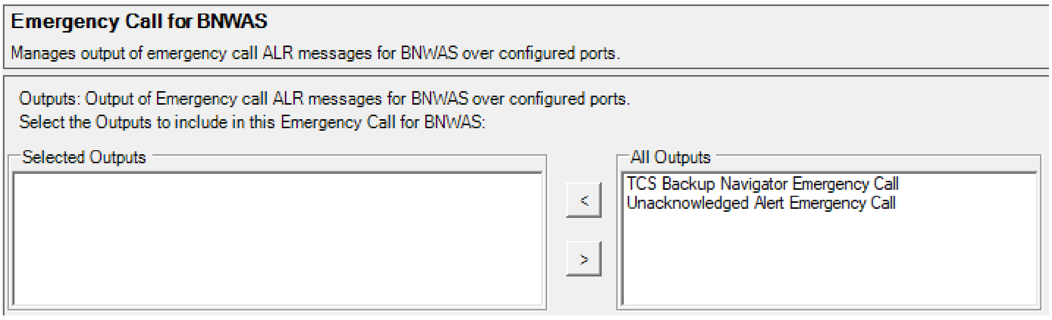


Figure 1.188 Emergency Call for BNWAS

There are two Emergency Call default options in the All Outputs column; **TCS Backup Navigator** and **Unacknowledged Alert.**

1. Select the required Emergency Call output for BNWAS and move to the Selected Outputs column. The column shows **<Configure Port>** and an unconfigured port is listed below the **{Outputs}** sub menu of the navigation tree.
2. Open the **<Configure Port>** item and select the output port to be used to send emergency call ALR messages for BNWAS by clicking on the Port drop down arrow and selecting from a list of previously configured ports. Figure 1.189 shows the configuration page when an **Unacknowledged Alert Emergency Call** has been selected.

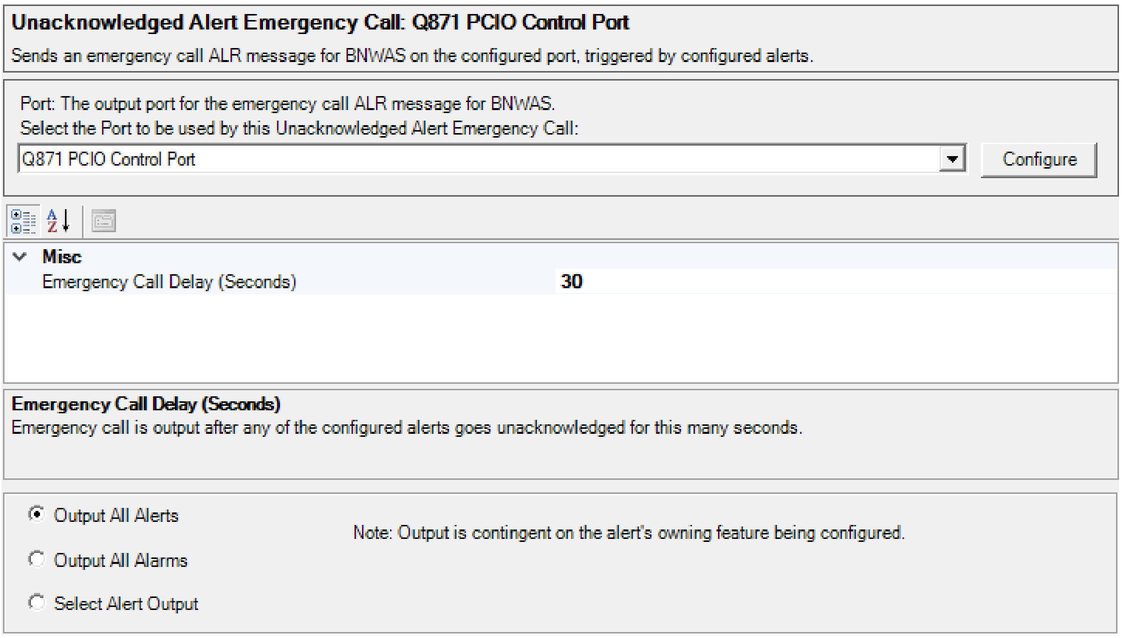


Figure 1.189 Unacknowledged Alert Emergency Call - select Output Port

a. The Emergency Call Delay setting defaults to 30 seconds. This is the time period that the emergency call is output after any of the configured alerts goes unacknowledged.

b. The three Output selection options allows you to select which combination of alerts will cause the emergency call to be triggered. The Alert Output options are described in Section 9.7.5.1 *Configuring a Discrete I/O*’.

3. When a **TCS Backup Navigator Emergency Call** has been selected the following screen prompts to select the output port to be used, see Figure 1.190. Select the port to be used for the TCS Backup Navigator as described in step 2.

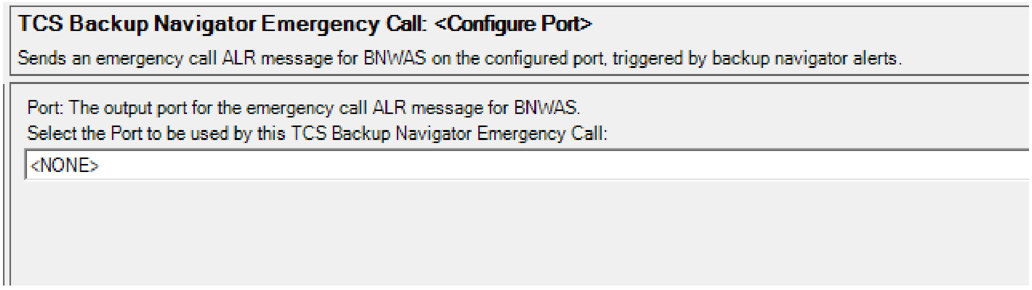


Figure 1.190 TCS Backup Navigator Emergency Call - select Output Port

9.8 Radar System

The Radar System facility enables you to configure the following radar system components:

- Interswitch
- Board Manager
- Top Units
- Target Tracker
- Test Targets

9.8.1 Interswitch

This section describes the configuration of a 2-way interswitch for a standalone system. For a description of a six-way interswitch for a multi-node system, and the selection of Slave nodes which are not directly connected to the interswitch, refer to *'Chapter 1 Appendix A Configuring A Multi-Node System*'.

The Interswitch is a radar video/data matrix switch that allows multiple nodes to view and/or control multiple turning units.

The Interswitch is connected to a serial port on the PCIO unit and interfaced to the Processor unit via a USB connection.

9.8.1.1 Configuring an Interswitch for a Standalone System

1. Access the Interswitch configuration window, either by clicking on the Interswitch topic in th e navigation tree, or by clicking the **Configure** button in the Radar System window.

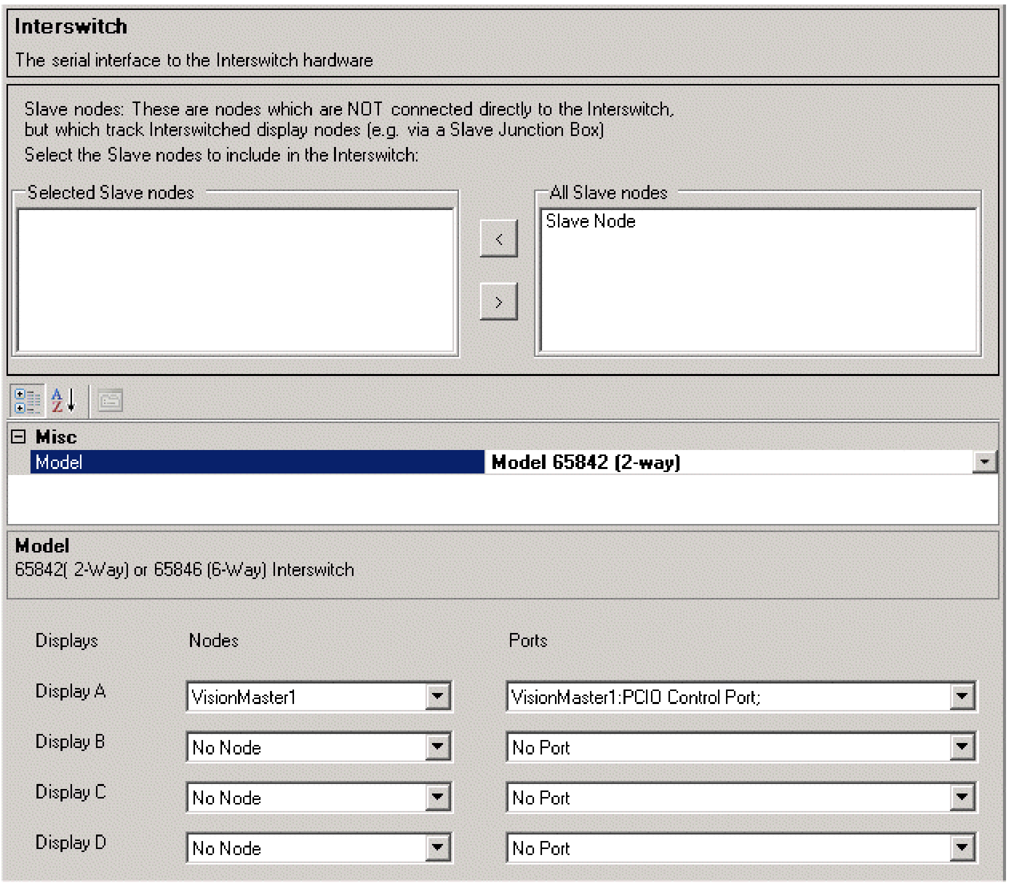


Figure 1.191 2-Way Interswitch Configuration Window

The Interswitch configuration window enables selection of the Interswitch model type (2-way or 6-way) and the selection of nodes and ports for each display. The displays are listed alphabetically, the number of displays shown is dictated by the Interswitch model selected; A to D for a 2-way interswitch and A to F for a 6-way interswitch.

The nodes field shows the display name given to the node, see Section 6.3 *Nodes*'. For a standalone system, only one node (e.g. VisionMaster1) is available.

2. To select a port for the display click on the Ports drop down arrow and select from the list. The port selected should be a port that has been previously configured to use Interswitch settings, see Section 8.10.2.2 *Selecting Pre-Defined IO Settings*' in the I/O Port Manager section.

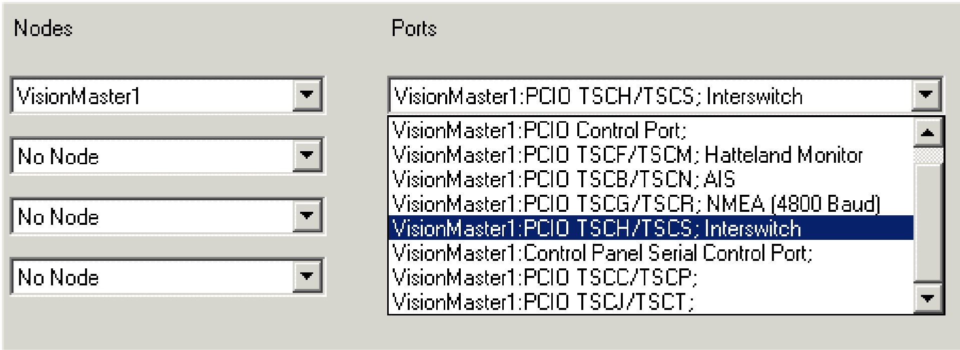


Figure 1.192 Selecting a Port for the Interswitch

When an Interswitch has been configured the system creates **{Slave Nodes}** and **{Slave Display}** sub menu topics below on the navigation tree.

9.8.1.2 Slave Nodes

If you have Slave nodes that track Interswitched Display nodes (for example, via a Slave Junction Box) then **Slave Node** should be selected from the All Slave Nodes field. An unconfigured Slave node is generated.

From the Slave Node topic select the display which will track an Interswitched display. This will be a display with no Interswitch port connected to it.

Select the display which the Slave node will track. This will be from the list of displays with Interswitch ports. The name of the slave display will be included in the Slave Node topic title.

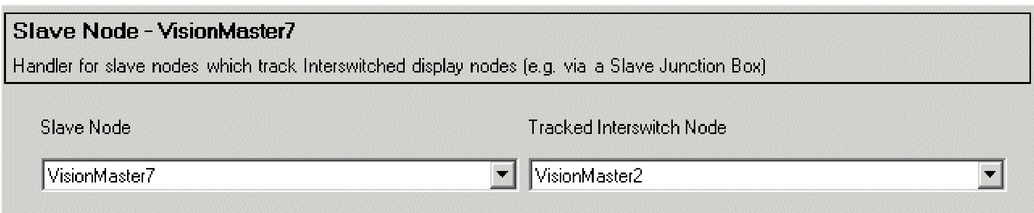


Figure 1.193 Slave Node

Note: *A Slave Junction Box cannot be used with dual channel radar displays. The Slave Junction box allows up to three single-channel slave radar displays to be connected to a radar transceiver.*

9.8.1.3 Slave Display

This window enables you to select slave only displays (i.e. the displays without an interswitch control connection) and which transceiver the displays are to be connected to.

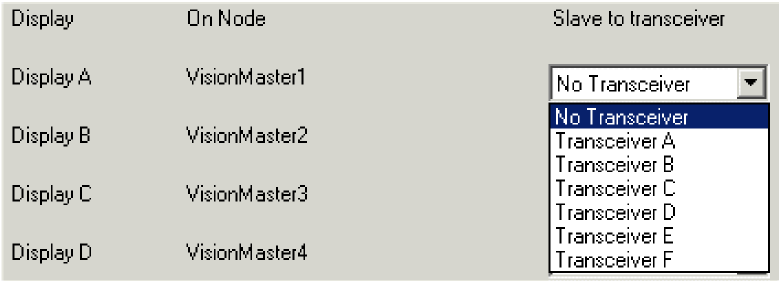


Figure 1.194 Slave Displays and Node Association

To select a transceiver for a display click on the Slave to Transceiver drop down arrow and select from the list.

In order to avoid a Slave only Tx conflict warning being generated on the Slave Display the LK1 Dil switch setting on the Interswitch must be set to Global (link setting 2-3) with VisionMaster running and then back to Local (link setting 1-2) to save the setting.

For more information on changing the Dil switches on an interswitch, refer to Chapter 7 '*Interswitch Units*', Section 4. 'Installation and Commissioning' in Volume 1 of the VisionMaster Ship Manual.

9.8.2 Board Manager

The radar interface between the PCIO Unit and the PC is via a unidirectional scan converter (SC) connection to an SC board, which is housed in the PC.

For a single radar, there will be an interface to one SC board, see Section 9.8.2.1 *Configuring a Radar Interface for Single Radar system*'.

If your system is a dual radar, you will be able to configure two radar interfaces to two SC boards, see Section 9.8.2.2 *Radar Interface for dual radar system*'.

The security string, which is provided by your VisionMaster supplier and usually entered when the system is commissioned, defines whether the system is a dual radar.

Important Note: *The selection of the radar interface is set at commissioning and should NOT be changed. The SC3/SC4 board is compliant with IEC 62388; the SC2 board is applicable for older systems and is compliant with IEC 60936. The Client Server Radar interface board is selected when your system is Client/Server based. For information on configuring a Client/Server system, see Appendix B 'Configuring a System for Client/Server Radar'.*

Note: *A radar interface board is not required if your product type, selected at Nodes is a standalone non-radar product, e.g. a CAM or ECDIS (without Radar Overlay).*

The following procedures should be done if your radar interface has been upgraded from SC2 to SC3/SC4, or if instructed to do so by Sperry Marine Engineering.

If required, the radar interface may be selected from either the Board Manager or {Radar Interface} sub menu.

9.8.2.1 Configuring a Radar Interface for Single Radar system

1. Click on Board Manager, select the SC board from the Radar Interface list and click the **<** button. The board is moved to the Selected Radar Interface list and an unconfigured topic is added below Radar Interface in the navigation tree.
2. Click on the unconfigured topic and select the node to be used by the board by clicking on the drop down arrow to the right of the field and selecting from the configured nodes.
3. The name of the node appears alongside the radar interface board in both the Selected Radar Interface list and topic line below the {Radar Interface} navigation tree.

When an SC board is configured the Board Manager is displayed as follows.

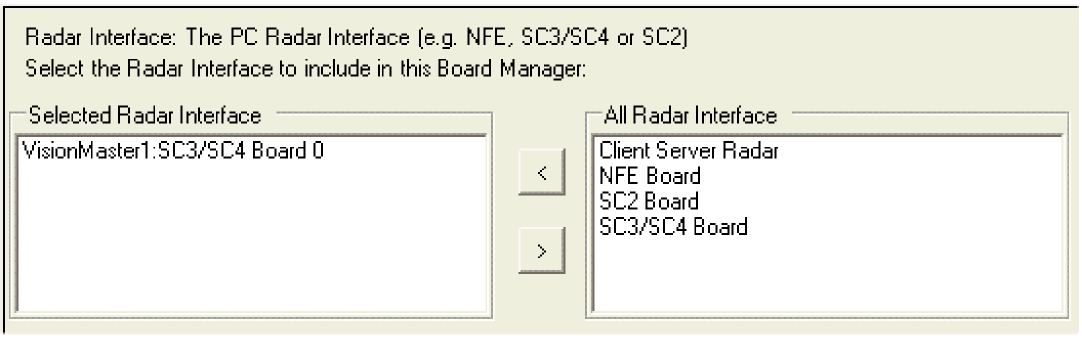


Figure 1.195 Board Manager for Single Radar

A multi-node system using more than one PCIO board will have radar interface boards configured for each PCIO board.

9.8.2.2 Radar Interface for dual radar system

A dual radar system consists of two radar channels; Channel 1 and Channel 2, and an auxiliary PCIO. For each radar channel a separate SC board must be selected and configured.

On a dual radar the two SC boards are defined as Board 0, which is assigned to Channel 1, and Board 1, which is assigned to Channel 2.

1. Select and configure the two SC boards as described previously for single radar systems. When two SC boards are configured the Board Manager appears similar to Figure 1.196 below. Board 0 and Board 1 will also appear as topics under the {Radar Interface} sub menu.

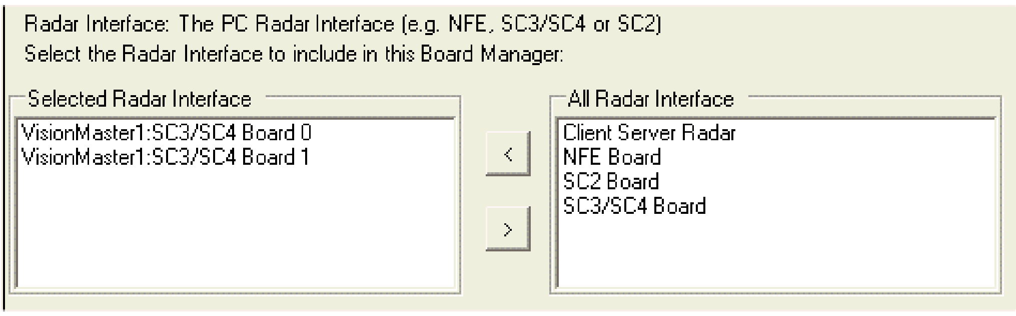


Figure 1.196 Board Manager for Dual Radar

9.8.3 Top Unit Configuration

The Top Unit sub-menu enables you to configure all the connected top units and define the master/slave state of a display in a non-interswitched system via the Channel Manager sub menu.

Each top unit must be separately configured for each Display. For information on configuring top units refer to Section 6.9 *Basic Top Unit Configuration*’ in Section 6 *Quick Setup*’.

9.8.3.1 Channel Manager - Single Radar

For a single radar system the Channel Manager will comprise Channel 0 only. No other radar channels can be added to this configuration.

9.8.3.2 Channel Manager - Dual Channel Radar

For a dual radar system the Channel Manager will comprise two channels, Channel 1 and Channel 2. A description of Channel 1 and Channel 2 configuration is described in Section 9.8.3.4 *Configuring Channels for Dual Radar*’.

9.8.3.3 Configuring the Channel for Single Radar

The Channel function enables configuration of the channel through which data is transferred from the top unit to the display.

Note: *The configuration of a channel is only available if there is no Interswitch fitted.*

The Channel enables you to select the display node, the master/slave status of the display attached to the channel and the top unit alias (A to F).

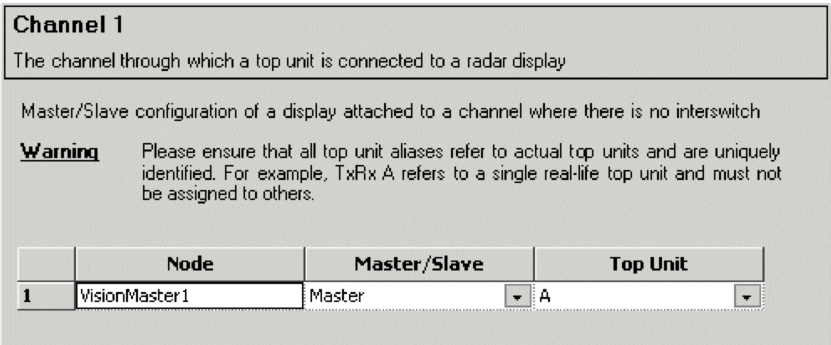
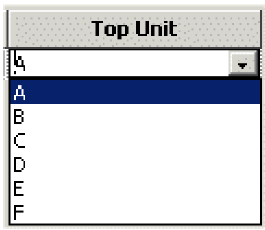


Figure 1.197 Channel Configuration

1. On a multi-node system the channel node defaults to the first display name on the nodes list. To change the node click in the **Node** field and enter the required node name.
2. The Master/Slave status of the channel defaults to **Master**. To change the status to permanent slave click on the drop down arrow and select **Slave**.
3. To select the top unit alias (A to F) for the channel click on the drop down arrow and select from the list of alpha aliases.



Important Note: *Ensure that the top unit alias selected refers to actual top units and is uniquely identified. For example TCVR A refers to a single real-life top unit, the alias must not be assigned to others.*

9.8.3.4 Configuring Channels for Dual Radar

On a dual radar system, Channel 1 is defined as the primary channel. Although both channels may have the same node and Master/Slave status, different top units must be selected for each channel. For example, Channel 1 could have Top Unit A, and Channel 2 could be assigned Top Unit B.

9.8.4 Target Tracker

The Target Tracker window enables the configuration of the software port number used to communicate with the Target Tracker.

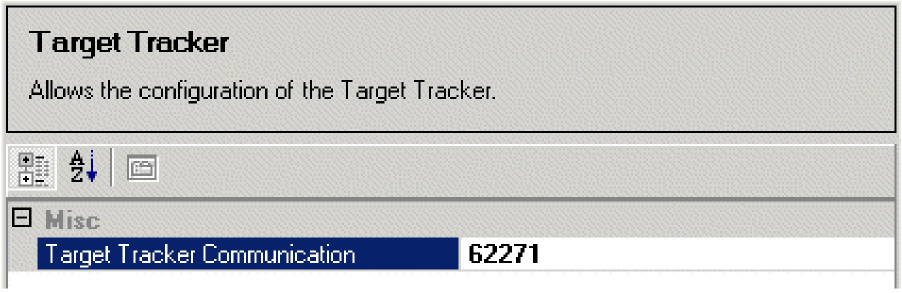


Figure 1.198 Target Tracker

It should not normally be necessary to change the software port number default value.

9.8.5 Test Targets

The Test Targets window displays a table which enables you to define target extents and video amplitude parameters for moveable test targets.

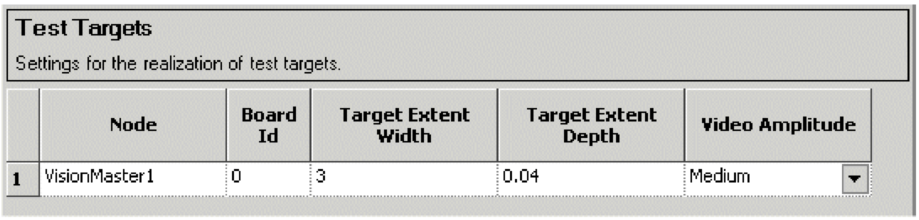


Figure 1.199 Test Targets

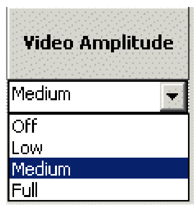
On a single node system the table lists one line for the node. The Node name is defined in Resources, Nodes (see Section 6.3 *Nodes*') and the Board Id relates to the SC board, which for a single radar is always set to 0.

The Target Extent Width defines the width extents in degrees for moveable test targets. The range is from 0.08^{o} to $22.5\ ^{o}$, the default is 3^{o}.

The Target Extent Depth defines the depth extents in nautical miles (NM) for moveable test targets. The range is from 0.002 NM to 0.4 NM, the default is 0.04 NM.

To change the values click in the field and move the trackball left to decrease, or right to increase.

The video amplitude defaults to medium. To change the amplitude click on the drop down button and select from the list.



9.8.5.1 Test Targets on Dual Radar

The Test Targets window for a dual radar will include two rows, one for each SC board. The test target configuration parameters for Board 0 and Board 1 may have different values applied.

	Node	Board Id	Target Extent Width	Target Extent Depth	Video Amplitude
1	vm9651	0	4	0.04	Medium
2	vm9651	1	3	0.04	Medium

Figure 1.200 Test Targets - dual radar

9.9 Target Manager

Target Manager enables the configuration of track table output, target number band and target rename input.

The track table is a list of all targets in the system, along with the data associated of each. This data includes course, speed, position, type (e.g. tracked, AIS etc.) and source of target (e.g. tracker).

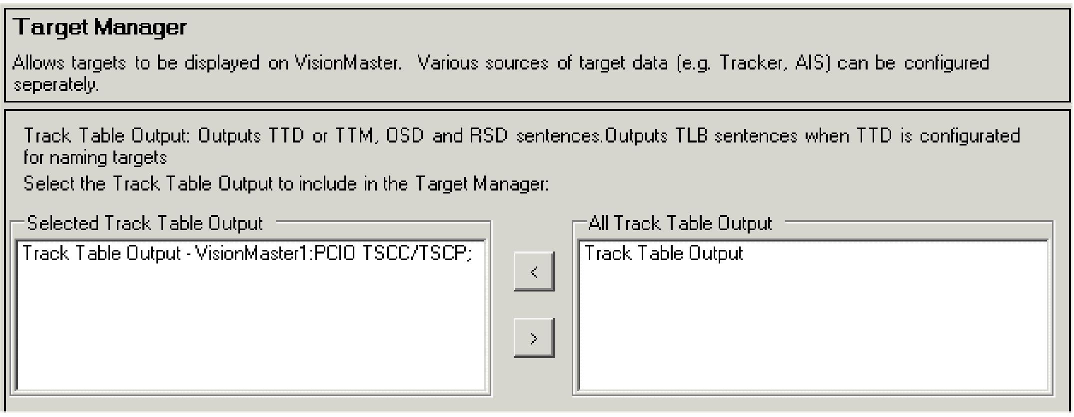


Figure 1.201 Target Manager

The following sub-menu functions are available from the Target Manager menu:

- Track Table Output
- Target Number Band
- Target Rename Input: TLB Communications

9.9.1 Track Table Output

The Track Table Output (TTO) Talker ID varies according to the product type and the set of nodes. The default ID is IN. Other talker IDs are listed below.

Standalone Nodes

Radar watch modes/product types use RA

Non Radar watch modes/product types use EI

Multi-node Systems

All Radar only nodes use RA

All ECDIS only nodes use EI

To generate a track table output:

1. Select **Track Table Output** from the All Track Table Output column in Target Manager and click on the **<** button. An unconfigured Track Table output line is added to the Target Manager menu.
2. Click on the Track Table output line in the navigation tree. A configuration window for the output appears.
3. All the automatic message providers (OSD, RSD and TLB) are selected by default. To de-select a message provider highlight the item in the Selected field and click the **>** button.
4. Select the port to be used for track table output by clicking on the I/O Port down arrow and selecting from the list of previously configured I/O ports from the drop down list, see Figure 1.202.
5. To configure the selected port click on the **Configure** button, the Serial IO Port configuration window appears, see Figure 1.73, page 91.

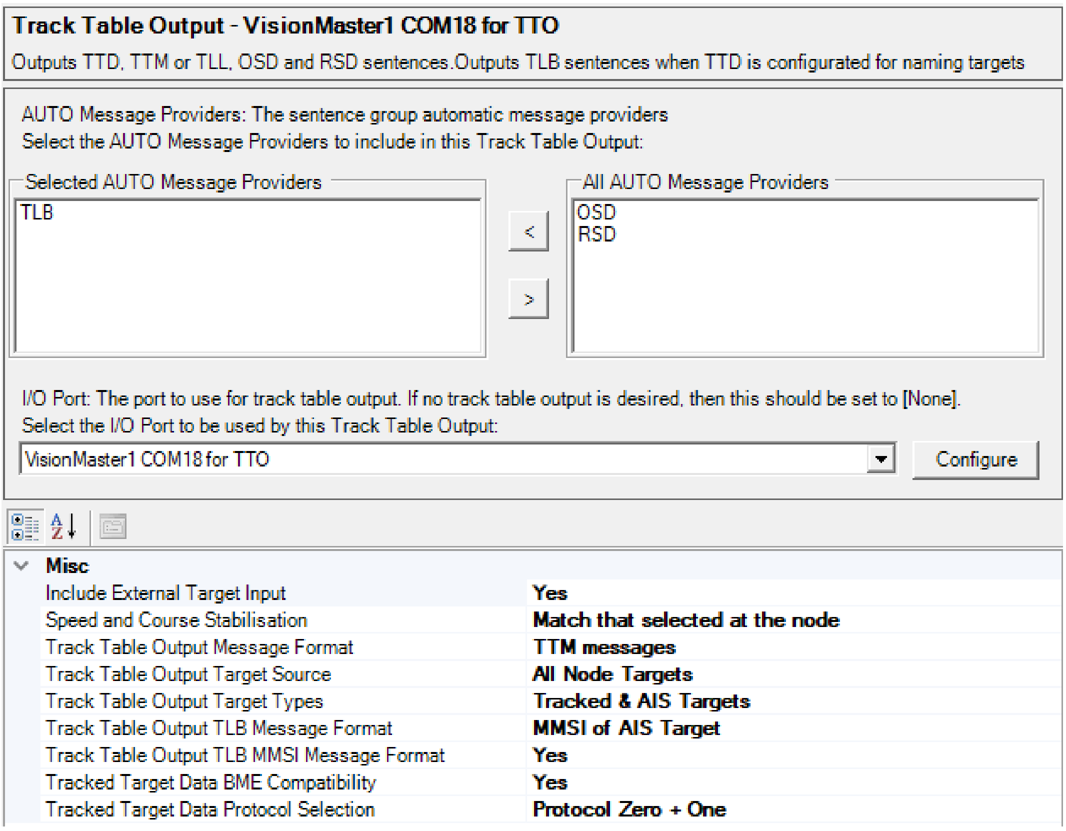


Figure 1.202 Track Table Output

9.9.1.1 Track Table Output- Target Source & Types

The Tracked Table Output Miscellaneous area specifies the following:

- Include External Target input
- Speed and Course Stabilisation
- Track Table Output Message Format
- Track Table Output Target Source
- Track Table Output Target Types
- Track Table Output TLB Message Format
- Track Table Output TLB MMSI Message Format
- Tracked Target Data BME Compatibility
- Tracked Target Data Protocol Selection

Include External Target input

Specifies if external targets will be output. Defaults to Yes.

Speed and Course Stabilisation

Specifies the stabilisation of the speed and course. The default is to match either the ground or water stabilised mode selected at the node. To restrict the track table output to ground or water stabilised click on the drop down arrow and select from the list.

Message Format

The message format defaults to **TTD** (tracked target data) messages. Data on up to four targets is encapsulated within each TTD sentence.

To change the message format click on the drop down arrow and select from **TTM** (tracked target message) or **TLL** (target Lat/Long).

Note: *The message format must be set to TTD to be compliant with IEC 62388 ed. 2. Selecting any other format will produce a warning.*

TTD and TTM format are sent as range and bearing target messages. TLL messages are sent as latitude/longitude format.

Target Source

The target source output defaults to **All Node Targets**. To change the output of targets from a local node only (for a multi-node system) select **Local Node Targets Only** from the drop down list.

Target Types

The Tracked Table Output Target Types specifies which type of targets will be output, the default is **Tracked and AIS Targets**. To change click on the drop down arrow and select **Tracked Targets Only** from the list.

TLB Message Format

Specifies the message content for TLB (target label). The default setting is **MMSI**[*] **of AIS Target,** which should be used for IEC compliance (see Note below). To change the format to **Name of AIS Target**, click on the drop down arrow and select.

TLB messages are output only when TTD messages have been selected in Message Format.

The selection of TLB message format is mainly intended to be used when VisionMaster is connected to a legacy radar system, see Section 9.9.3.

MMSI TLB Message Format

Specifies whether to prefix the TLB message content with the string 'MMSI'. The default setting is **Yes**. To change to **No**, click on the drop down arrow and select.

Note: *The TLB Message Format must be set to '**MMSI of AIS Target**' and the MMSI TLB Message Format must be set to '**Yes**' to be compliant with IEC 62388 ed. 2. If a different option is selected for either of these settings, a warning is produced.*

BME Compatibility

The Tracked Target Message (TTM) output as part of the Tracked Table Output defaults to outputting the Closest Point of Approach field to two (2) decimal places.

The previous generation of radar, BridgeMaster E, output the CPA field to one (1) decimal place. If the receiver of the TTM sentence previously interfaced to BridgeMaster E and is unable to process 2 decimal places for the CPA, BridgeMaster E compatibility mode can be enabled to limit the resolution to 1 decimal place.

To enable BridgeMaster E compatibility mode, set the Tracked Target Data BME Compatibility to **Yes**.

Unless there is a specific requirement for receiving equipment to use BME style TTM messages, there is no need to change this setting from its default of **No**.

TTD Protocol Selection

Specifies the TTD protocol to be used: **Zero** or **Zero + One** (the default option). Note that only selecting the Protocol **Zero** option is not compliant with IEC 61174:2015 requirements.

9.9.2 Target Number Band

The Target Number Band feature allows you to define distinct number ranges (bands) for each of the configured target types.

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* Maritime Mobile Service Identity

9.9.2.1 Addition of the feature

When the Target Number Band feature is added, the table of definitions is populated with an entry for each type of target configured in the system.

The number bands are initially defined to be consecutive starting at 1. The initial value for each **Number of Targets** entry is set to the same as the underlying target system maximum. These initial values give a suitable starting point. Before changing these values, consult the end user.

Note: *If the Tracker Target Number Band is edited, the upper range End Number should not exceed 999.*

Target Number Band

Allows definitions of target number banding limits for each target type.

Type	Start Number	End Number	Number of Targets	Limit of Targets Allowed
Tracker	1	200	200	200
AIS	201	850	650	650
External	851	950	100	500

Figure 1.203 Target Number Band definition table

Type

The type of target associated with the numbers in the row.

You cannot change this field.

Start Number

The first number of the band for the associated target type.

End Number

The last number of the band for the associated target type.

Number of Targets

The total number of targets allowed in the system for the associated target type.

The **Number of Targets** entered will override the maximum number of targets defined in the target subsystems.

Limit of Targets Allowed

Maximum number of targets allowed for the associated target type.

You cannot change this field.

9.9.2.2 Validation

Errors

The following conditions cause errors that you must address before you can use the feature:

- Overlapping number ranges.
- If the **Number of Targets** is greater than the **Limit of Targets Allowed**.
- If any of the fields have negative numbers.
- If a track table output is defined with TTD messages and an **End Number** value greater than 1023.

Warnings

The following conditions cause warnings. You can still use the feature if a warning is raised.

- The Number of Tracked Targets is less than the minimum target capacity defined by the IEC 62388.

Note: *We recommend that you do not use a Number of Tracked Targets less than 40 for CAT1 or less than 30 for CAT2.*

- The Number of AIS Targets is less than the minimum target capacity defined by the IEC 61174.

Note: *Note: We recommend that you do not use a Number of AIS Targets less than 240.*

- The Number of External Targets is less than the minimum target capacity defined by the IEC 61174.

Note: *Note: We recommend that you do not use a Number of External Targets less than 40.*

- The Number of Tracked Targets is different from the underlying system definition.

9.9.2.3 Use of the banded target numbers

The target number is displayed on the screen and used in the track table output.

The target number for any target is always within the number band defined for its type.

Where targets are correlated, the target number used is that of the target in the lowest number range.

9.9.2.4 Deletion of the feature

If you delete the Target Number Band feature, then the target numbering values will revert to their original system values.

9.9.3 Target Rename Input: TLB Communications

The target rename input window enables selection of the PCIO port used for TLB communications of tracked target data from a radar scanner unit (for example, a BridgeMaster E (BME) or other legacy radar hardware) to a VisionMaster (VM) ECDIS. For information on external target input to a VM, refer to Section 9.10.12 *External Targets*'.

Target data supplied by the radar scanner from a TTM input is re-named by the target manager and transmitted back to the radar scanner via TLB sentences. The system also renames each target supplied by the radar scanner that correlates with a current tracked VM target by selecting the new name to be the numerical identifier of the current tracked target.

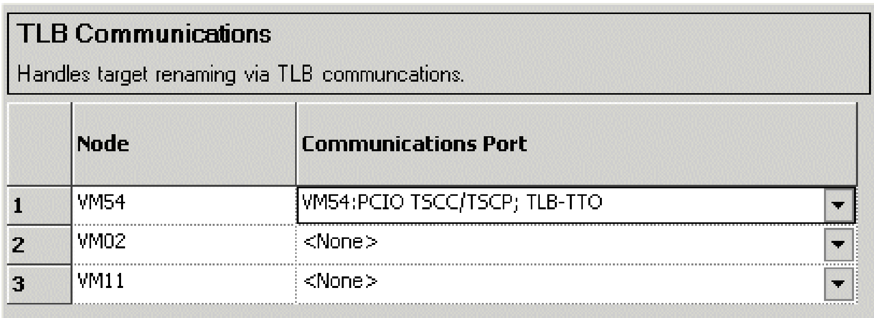


Figure 1.204 TLB Communications

On a multi-node system, the TLB communications window displays all nodes and allows different PCIO ports to be selected for each node (see Figure 1.204 above).

All system nodes displaying tracked target data use a common set of labels.

To select the PCIO port for TLB communications:

1. Click on the port drop down arrow, a list of PCIO ports previously configured in I/O Port Manager appears.
2. Select the port to be used from the drop down list. The standard I/O port defined for TLB communications is COM 7 (TSCG input, TSCR output), see Table 6 on page 90.
3. To configure the selected serial port click on the **Configure** button, the Serial I/O Port configuration window appears, see Figure 1.73, page 91.

9.10 Optional Features

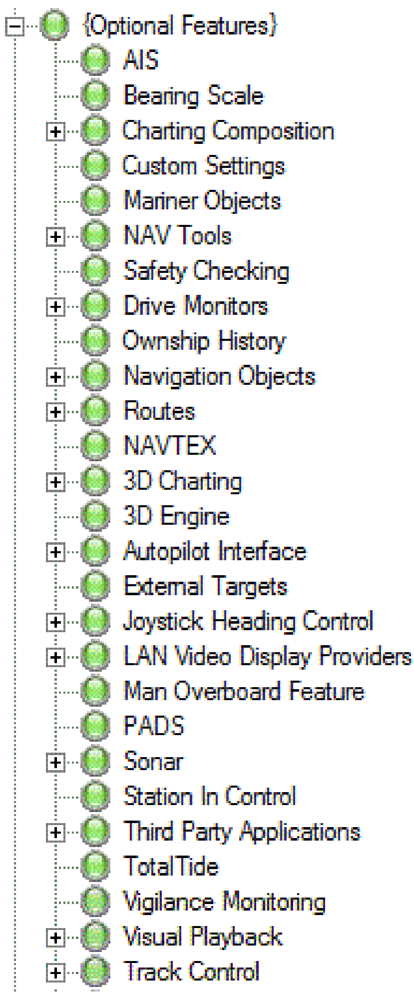
The Optional Features menu enables you to select relevant features for your configuration from a list of features.

The Optional Features window displays in the right field a list of all optional features available and in the left field a list of features currently selected.

To select a feature highlight the line in the **All Optional Features** list and click the **<** button.

The option appears in the **Selected Optional Features** list. If the number of options selected exceeds the limits of the window, page down the list by clicking on the down arrow.

The list below includes all available optional features that require configuration.



- Charting Composition - Chart Engines assigned
- NAV Tools
- Drive Monitor
- AIS - AIS communications
- Navigation Objects
- Man Overboard
- Routes - external route plan configuration
- Visual Playback
- Weather Fax
- Third Party Applications
- 3D Charting
- Autopilot Interface - NMEA Autopilot controller
- External Targets
- Joystick Heading Control
- PiP (or LAN) Video Display Providers
- NAVTEX
- Route Based Speed Control Selection
- Propulsion Control Interface - Kamewa or Emri propulsion systems
- Station In Control
- TotalTide
- Sonar
- Track Control
- Vigilance Monitoring

Note that a typical configuration would NOT necessarily include all the features listed above.

A node configured as a Static Site cannot also include Nav Tools, Man Overboard, Safety Checking, 3D Engine, Autopilot, Propulsion or Sonar, but can include the Trusted Targets feature, which is not available to a non-Static Site configuration

The following optional features are included in Section 6 *Quick Setup*' and are described in Section 6.14 *Commonly Configured Items*'.

- AIS - AIS communications
- Man Overboard
- NAVTEX
- Vigilance Monitoring
- Routes (miscellaneous settings only)

With the exception of Station In Control, all other optional features are described in the following sub sections. For information on configuring Station In Control, refer to Appendix A '*Configuring a Multi-Node System*'.

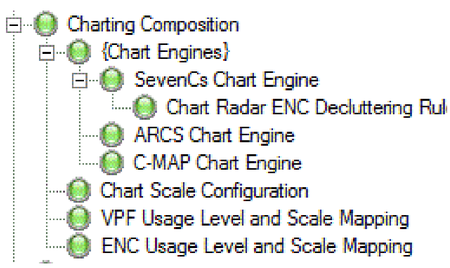
The list below lists optional features that do not require configuration and are therefore not described in this section:

- Bearing Scale
- Custom Settings
- Mariner Objects
- Pads
- Tides and Currents
- Safety Checking[*]
- 3D Engine
- Russian River Register Selector

9.10.1 Charting

The Charting facility allows for the selection and configuration of available chart engines. Chart Engines can be configured by accessing the charts installation directory.

The Charting window lists the currently selected chart engine and all available chart engines.



* Although Safety Checking is listed as an 'optional feature' this feature is mandatory (not optional), therefore all VMFT configurations enforce its selection.

To select a chart engine highlight the file in the **All Chart Engines** field and click on the **<** button. The file is moved into the **Selected Chart Engines** field and is listed and available for configuration in the Chart Engines navigation tree. De-selection of chart engines is a reversal of this procedure.

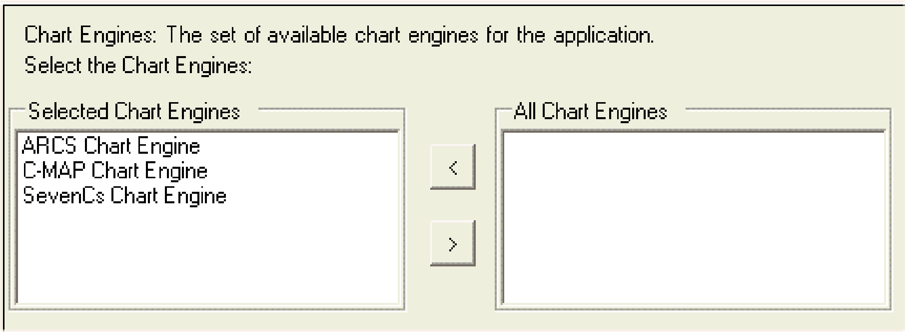


Figure 1.205 Charting

9.10.1.1 Supported Chart Engines

The VisionMaster system supports CMAP, SevenCs and ARCS (Admiralty Raster Chart Service) chart engines.

Note: *ARCS[*] are raster navigational charts (RNCs), supported by the SevenCs chart engine and can only be run on an ECDIS product.*

The CMAP chart engine supports the following chart formats:

- Professional[†]
- ENC[‡]
- Professional+
- JeppesenPrimar[**]

The SevenCs chart engine supports the following chart formats:

- S63 (encrypted S-57)[††]
- S-57[‡‡]
- Digital Nautical Charts (VPF)
- ARCS
- World Map (ENC)[***]

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* The ARCS charts are raster charts, which show a scanned version of a traditional paper chart, with the chart images stored as graphic files.
† CMAP's proprietary and unofficial chart format.
‡ Official S-57 encrypted charts converted to CMAP's proprietary chart database format.
** Consists of official ENC data from Primar and unofficial C-MAP chart data where official data is not present.
†† Encrypted official chart format, implementation based on IMO S63 standard.
‡‡ Unencrypted official chart format, implementation based on IMO S63 standard

If the chart type supports network installation, chart installation can be initialised from any node in the system.

Note: *Installing SevenCs, C-MAP or ARCS charts requires shutting down VisionMaster. Information on the chart installation process is given in Appendix A of the Charts chapter in the Chart Radar and ECDIS User Guides (65900010 and 65900012).*

When SevenCs or C-MAP chart engines are selected the Charting navigation tree creates a topic for the file under the Chart Engines sub directory.

To configure the selected chart engine click on this file in the navigation tree.

9.10.1.2 SevenCs Chart Engine

The SevenCs Chart Engine window enables you to configure the paths on the PC where SevenCs chart data are installed and specify whether a particular chart format is installed.

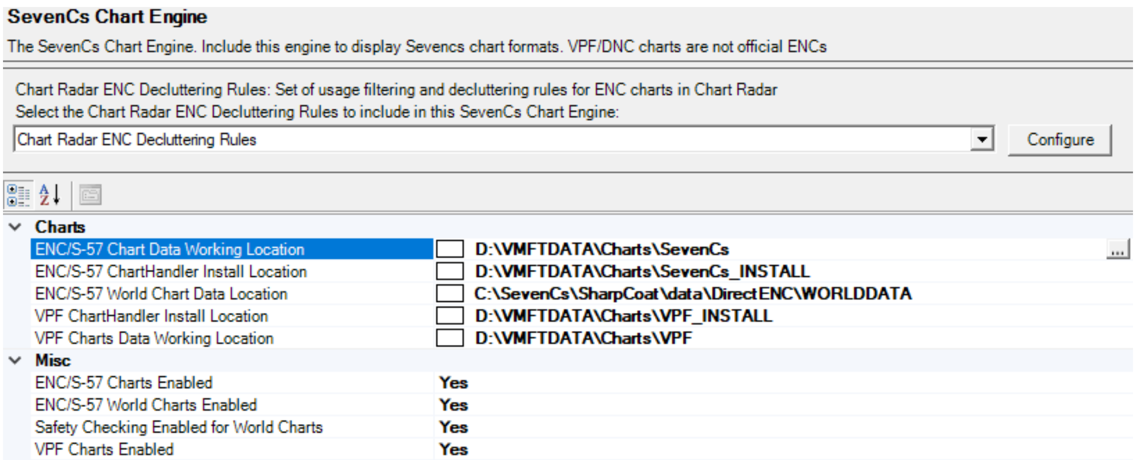


Figure 1.206 SevenCs Chart Engine

The chart data locations for SevenCs charts default to the paths shown in Figure 1.206. To change these locations, click in the field and then click on the browse button to the right of the chart format file.

Note: *With the exception of World Map chart data (which resides on the C: drive) the default chart data locations are on the D: drive. Unless there are valid reasons for changing this directory, the D drive default should remain.*

A Browse button can be accessed for each chart data location by clicking in the field, the button is located on the right side of the field. Clicking on the button opens a Browse For Folder window from where selected chart locations can be configured, *see Figure 1.207.*

*** The World Map database is delivered with the SevenCs Chart Engine and is based on the NGA World Vector Shoreline 1:250,000 charts. The structure of the data is defined by the IHO S-57 specification.

The installation directory selected at this window is the read-only chart destination directory that appears in the Sperry Chart Installer facility.

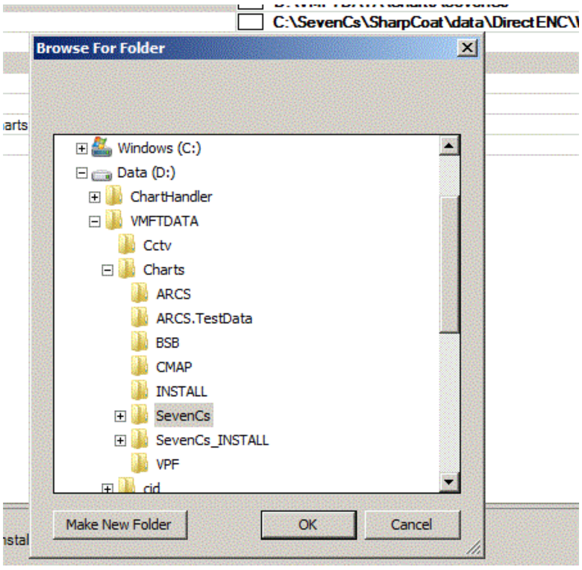


Figure 1.207 Browse For Folder Chart Engine

The SevenCs Chart Engine window also includes chart format enable/disable controls and safety checking enable/disable for World Charts. To enable or disable any of these settings click in the field and select Yes or No.

Chart Radar ENC Decluttering Rules

The Chart Radar ENC cluttering rules are a set of usage filtering and decluttering values applied to ENC charts in Chart Radar.

To access the window, either click on the **Configure** button in SevenCs Chart Engine, or click on the sub-menu topic in the navigation tree.

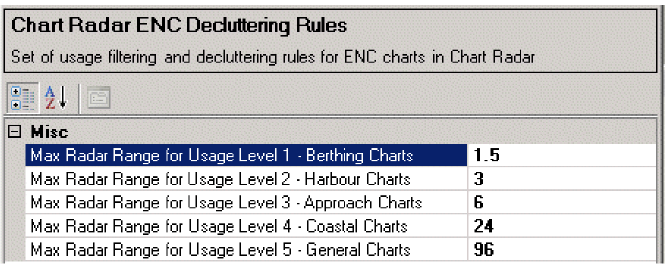


Figure 1.208 Chart Radar ENC Decluttering Rules

The values define the maximum radar range scale in NM at which ENC charts will be displayed for the following usage levels:

Table 11: Range Scale for Chart Usage Levels

Level	Range Scale (NM)	
	Default	Range
Level 1 - Berthing	1.5	Less than or equal to max. harbour range
Level 2 - Harbour	3	Less than or equal to max. approach range
Level 3 - Approach	6	Less than or equal to max. coastal range
Level 4 - Coastal	24	Less than or equal to max. general range
Level 5 - General	96	Must be more than the max. coastal range

9.10.1.3 ARCS Chart Engine

The ARCS Chart Engine window enables you to configure the path on the PC where the ARCS chart data is installed, see Figure 1.209.

ARCS defines separate directories for each ARCS chart format.

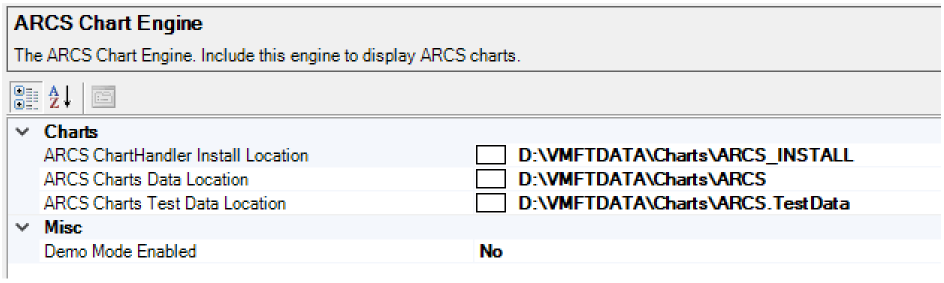


Figure 1.209 ARCS Chart Engine

The ARCS chart data and test data locations default to the D drive paths shown in Figure 1.210.

To display ARCS test data the demo mode must be displayed. To enable demo mode click in the field and select **Yes**.

9.10.1.4 C-MAP Chart Engine

The C-MAP Chart Engine window enables you to configure the path on the VMFT PC where the C-MAP chart data is installed.

A signature check on the C-MAP database may be set prior to chart installation by selecting Yes. The default for this setting is signature checked.

The C-MAP Chart Engine also enables C-MAP products with background charts to be entered or deleted.

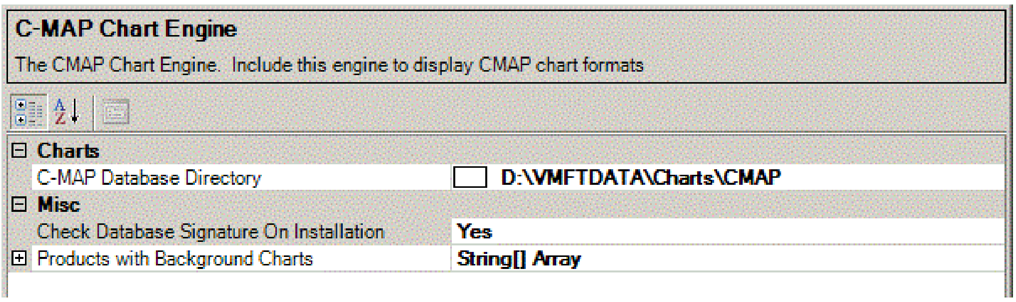


Figure 1.210 CMAP Chart Engine

The C-MAP chart directory defaults to the D drive path shown in Figure 1.210.

To edit the C-MAP chart formats with background charts click on the Browse button at the end of the **String [] Array** row, a String Collection Editor popup window appears, see Figure 1.211.

The list includes all C-MAP chart formats by default, edit the list using the keyboard and click the **OK** button. The list is automatically re-numbered in **Products with Background Charts** if chart formats are deleted or added.

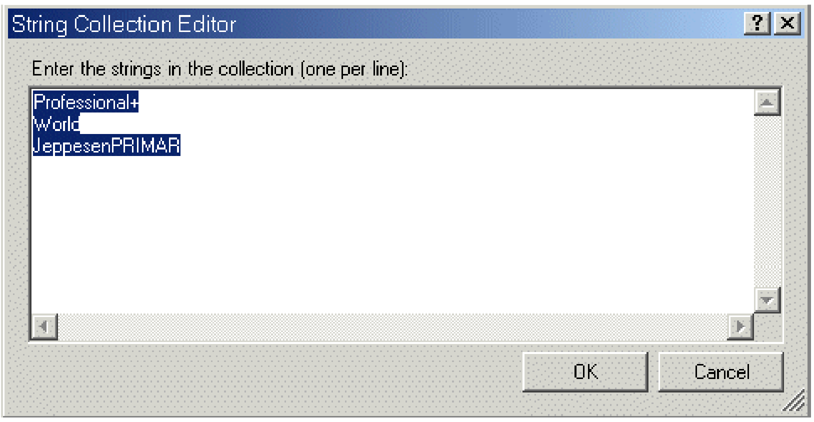


Figure 1.211 String Collection Editor

9.10.1.5 Chart Scale Configuration

The Chart Scale Configuration page enables chart scales for ARCS charts to be edited. These are the chart scales that appear in the VMFT application scale ratio drop down list when ARCS charts are being used.

The window includes a list of predefined RNC (raster nautical chart) scales, the default list ranges from 0.125 to 2.0, see Figure 1.212.

1. To edit the list of chart scales click the Browse button at the end of the **Double [] Array** row, a **Double Collection Editor** popup window appears, see Figure 1.212.

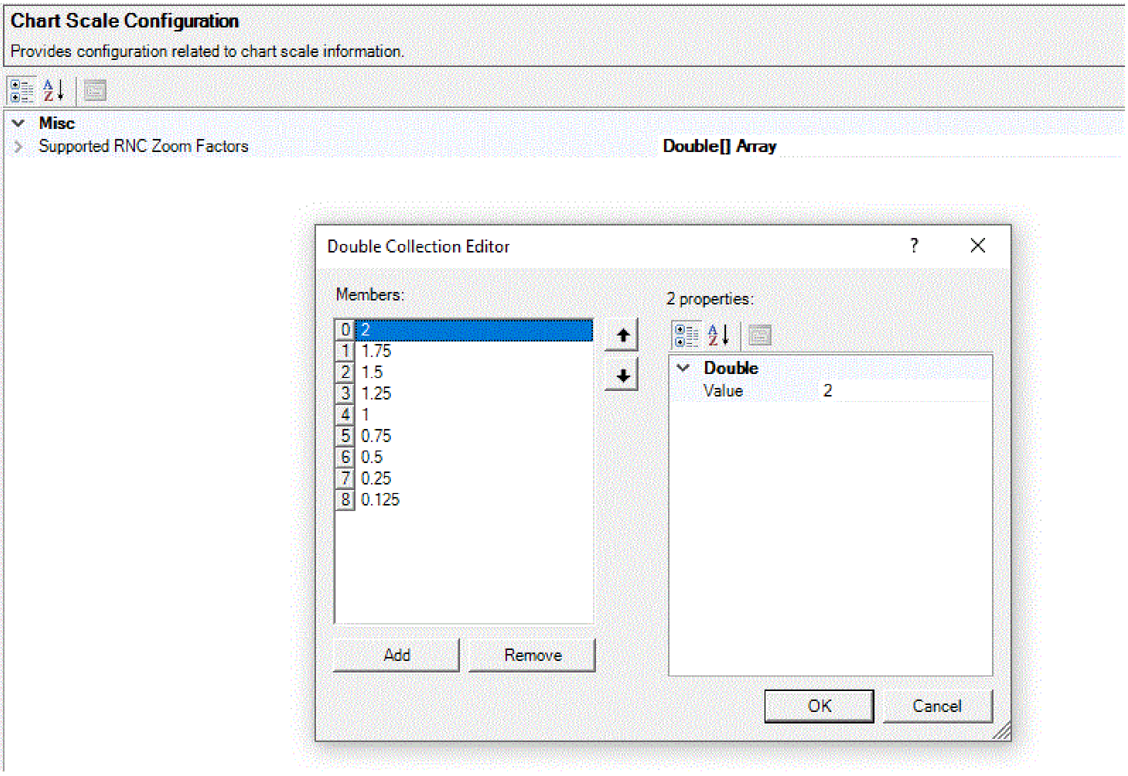


Figure 1.212 Chart Scale Configuration

2. To create an additional chart scale click the **Add** button, a **0** value is added to the **Members:** list and assigned a number.
3. With the **0** highlighted enter the required chart scale in the **Value** field and click the **Add** button, the entered value is added to the chart scale list and another **0** value is added.
4. Chart scales must be listed in ascending order for the Chart Scale Configuration topic to be validated. Therefore, to move the chart scale factor to its correct position in the list highlight the value and click the Up  button. Or, to move a value down the list click the Down button.
5. To remove a chart scale highlight the value and click the **Remove** button, the chart scale list is automatically re-numbered.

9.10.1.6 VPF & ENC Usage Level and Scale Mapping

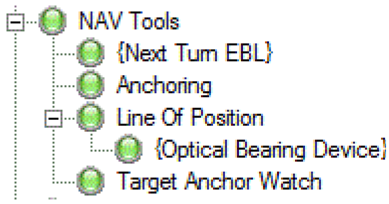
The VPF and ENC usage level and scale mapping topics list the minimum scales the system will use for various chart usage levels (e.g. Harbour, Approach, General etc). When the VMFT application is running the minimum scale and usage level for each chart is shown in the 'Chart Index' window, accessed from the Chart tools menu.

It is advisable that the scale mapping for each usage level is not changed from their default settings.

9.10.2 NAV Tools

NAV Tools sub menu includes the following features as standard:

- Next Turn EBL Output
- Anchoring
- Line Of Position (Optical Bearing Device)
- Target Anchor Watch



9.10.2.1 Next Turn EBL Input

Next Turn EBL Input enables the selection and configuration of the I/O port used for next turn EBL communications to be made for each node on the system.

1. Click on the **Next Turn EBL** topic in the navigation tree and click on the communications port drop down arrow.

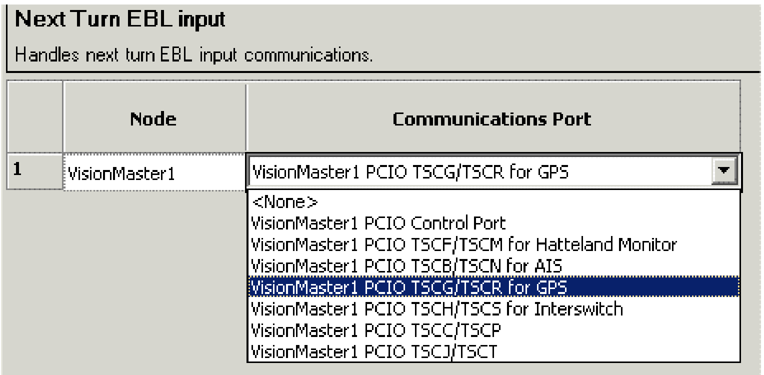


Figure 1.213 EBL Communications

2. Select the I/O port for each node that requires EBL communications by clicking on the Communications Port drop down arrow and selecting from a list of configured PCIO ports, see Section 8.10.2 *Configuring a PCIO Serial Port*'.

9.10.2.2 Anchoring

Anchoring provides configuration of the Anchoring feature. The following values may be entered or changed:

- Alert triggered when the Hawsepipe’s position moves.
- HawsePipe position
- Maximum chain length allowed before a warning is generated.

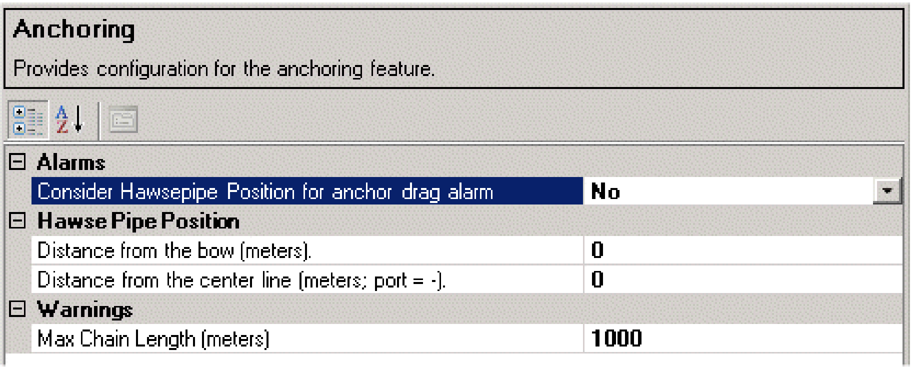


Figure 1.214 Anchoring

Denotes whether the anchor drag alert should be triggered when the hawsepipe’s location moves farther from the anchor position than expected, based on the length of the chain and depth. Defaults to **No**. When set to **Yes** this is applied as an additional criterion in determining the alerts state. The normal criteria (CCRP moving outside of the drag circle) is ALWAYS applied.

The hawsepipe position relative to own ship’s bow and own ship’s centre line defaults to 0. To change the values:

1. Enter the actual distance in metres of the hawsepipe from the bow. The distance entered must be less than the configured length of the ship, see Section 9.3.1 *Own Ship Characteristics*’.
2. Enter the distance of the hawsepipe from the centre line (from the port side). The distance entered must be less than the configured beam of the ship, see Section 9.3.1 *Own Ship Characteristics*’.

The maximum anchor chain length allowed before a warning is generated defaults to 1000 metres (maximum value).

3. Enter a maximum chain length value of between 1 metre to 1000 metres.

9.10.2.3 Line Of Position

The following miscellaneous and Sensor settings are included in the Line Of Position (LOP) window:

- LOG data retention period
- Length of time, in seconds, after which a LOP permanent fix will expire
- Time that the LOP sensor will be considered usable after a fix.

The log data retention period is the amount of time in days after which LOP log data is automatically deleted. The default is 90 days. The maximum log retention period is 180 days.

The LOP sensor will dead reckon between each fix. If the useable time is less than the condition assessor's dead reckoning tolerance (plus a small amount of time for the data to go degraded) then the Dead Reckoning Tolerance time will be used instead.

The usable time must be between 30 and 3600 seconds. The permanent fix expiration time must be the same or greater than the time the LOP sensor is usable.

The default for both settings is 300 seconds.

Figure 1.215 shows a typical configured LOP page.

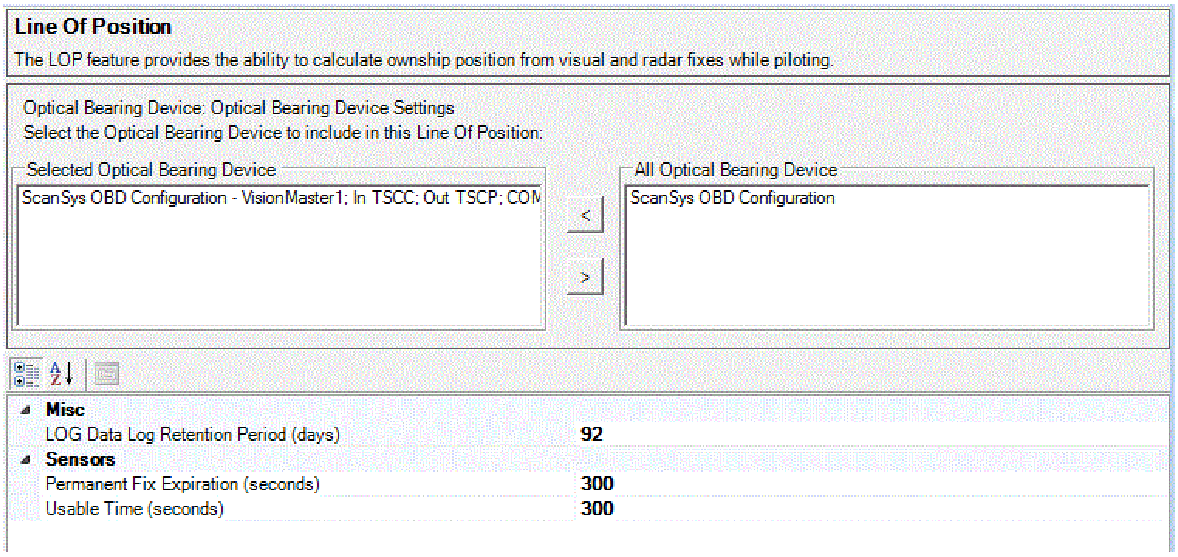


Figure 1.215 Line Of Position

The LOP window also enables an optional Optical Bearing Device (OBD) to be configured for input of LOP data.

Optical Bearing Device

To configure an OBD to be used for LOP data:

1. Select **ScanSys OBD Configuration** from the All OBD column and move to **Selected Optical Bearing Device** column. An unconfigured line is added to the Line Of Position navigation tree.
2. Open the unconfigured OBD topic and select the Port to be used to interface with the OBD. If no suitable port currently exists, configure a port from the I/O Port Manager by selecting **Use OBD Settings** from the pre-defined I/O Settings buttons, see Section 8.10.2. When a port is selected the OBD topic is configured.

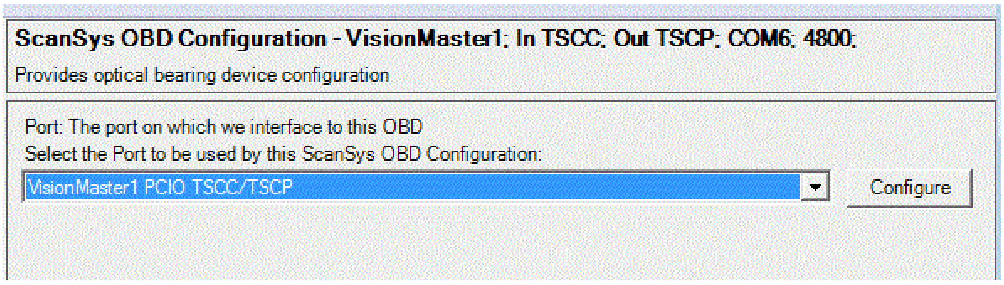


Figure 1.216 Selecting a OBD I/O Port

The ScanSys OBD must be compatible with model SR02-01Mk 4 and v3.2. interface specification.

Note: *The OBD device itself must be configured to provide $PSCML message for input of LOP bearing data. Previous format $PO NMEA message defined in older interface specifications is not supported. For information on setting the messaging format refer to the OBD documentation supplied with the device.*

9.10.2.4 Target Anchor Watch

Target Anchor Watch is used to allow the operator to verify that vessels at anchor are not drifting.

Target Anchor Watch is usually part of a static site facility. A static site is normally a stationary installation, such as an oil rig, or land based system.

Note: *On the VisionMaster display, target anchor watch is only available on a Radar or Chart Radar watch mode.*

There are no service configuration settings to be made to target anchor watch. For information on using this feature, refer to Annex B in the Radar/ Chart Radar User Guide, 65900010.

9.10.3 Drive Monitors

The Drive Monitors sub menu defines the hard drive partitioning for the VisionMaster PC. The default setting is for the PC to be partitioned between hard drive C and hard drive D.

The monitoring period in seconds for Drive Monitors may be set between 60 to 6000. The default is 600 seconds. The setting applies to all drives.

The table in the Drive Monitors window includes the following:

- Drive Letter (default C and D), additional drives may be added
- The required free space as a percentage of the drive capacity. The setting range is from 0% to 50%, the default is 15%.
- A delete button for each drive.

Normally these settings should not be changed.

If there is a requirement to add another hard drive partition (for example, to monitor an external device) click on the **Add Drive** button. A new row is added to the table.

Click on the drop down arrow of the new drive and select the required letter from the list, see Figure 1.217.

To delete a drive click the **Delete** button in the drive row. The drive is removed from the table.

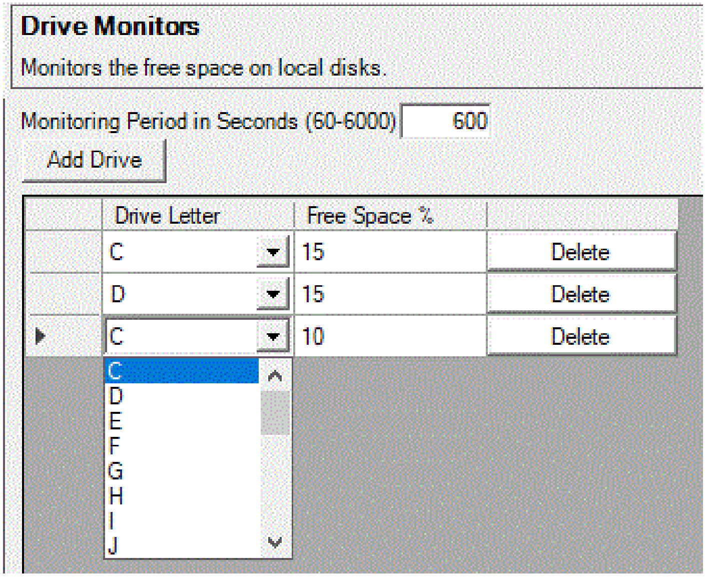


Figure 1.217 Drive Monitors- drive added

9.10.4 Ownship History

Ownship history includes a configurable sampling period setting.

The ownship history feature settings displays the period between recorded samples of ownship positions. The default period is 10 seconds.

The sampling period determines the resolution at which the history will be stored. The lower the sampling period, the lower the resolution.

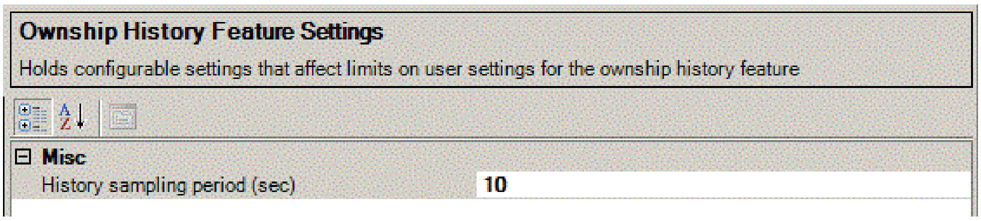


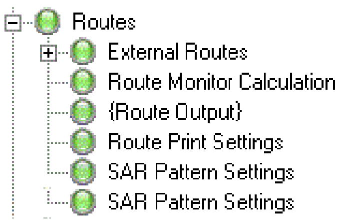
Figure 1.218 Ownship History Feature Settings

9.10.5 Navigation Objects

Navigation Objects includes the Clearing Lines feature, which is automatically enabled when Navigation Objects is selected as an optional feature. No other configuration is required.

9.10.6 Routes

The Routes enables the following route options to be configured:



- External Route (input source)
- Route Monitor Calculation
- Route Output port
- Route Print Settings
- SAR Pattern Settings

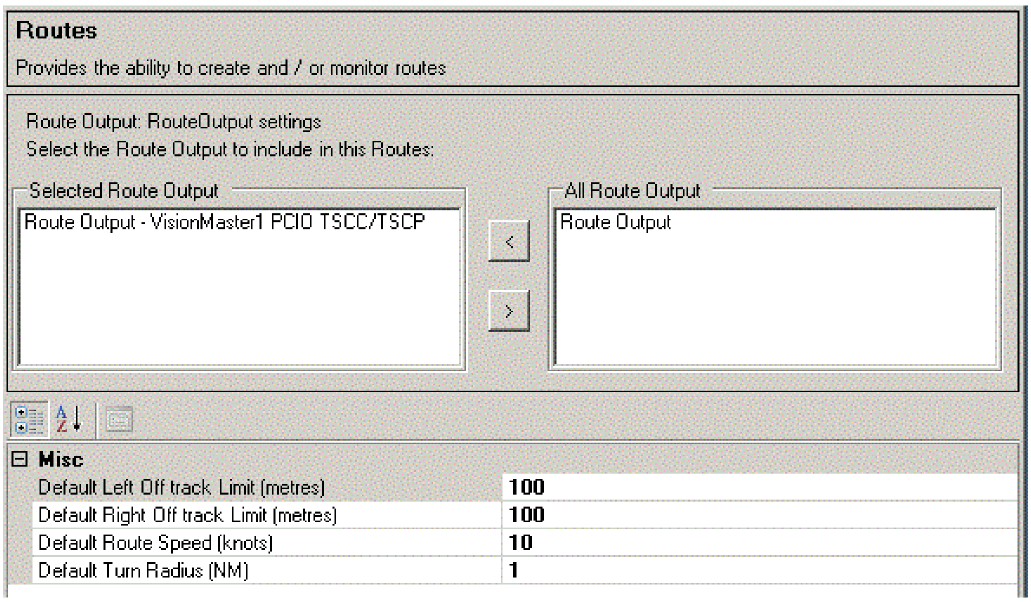


Figure 1.219 Routes Window

The Routes window enables the selection of a route output to be made and the following miscellaneous route values to be changed:

- Off Track Limit (left and right) - defaults to 100 metres (maximum 9999 metres)

- Route Speed - defaults to 10 knots (maximum 99 knots)
- Turn Radius - defaults to 1 NM (maximum 10 NM).

To change the miscellaneous default values click in the respective field and enter the required value.

The miscellaneous settings for routes are also replicated in the Quick Setup menu, see Section 6.14.5 *Routes*’.

9.10.6.1 Configuring a Route Output Port

A route output port is usually selected when a VisionMaster (VM) ECDIS is connected to a BridgeMaster E (BME) radar. In order to operate correctly the VM Route Output port must be connected to a BME Nav Input port.

When a route output port is configured, the system transmits the following sentences defined in IEC 61162-1:

- RTE (route)
- WPL (waypoint position)
- ZTG (time to next waypoint)

RTE and WPL sentences are transmitted in the order, RTE-WPL, which is compatible with BME Nav Input interface.

The Talker ID in the sentences will be as follows:

- Standalone or system of Radar only nodes, use RA
- Standalone or system of ECDIS only nodes, use EI
- All other nodes, use IN

1. To select a route output select the **Route Output** line in the All Route Output column and click on the **<** button. An unconfigured Route Output topic is added to the **{Route Output}** sub menu.
2. RTE and WPL output route messages are auto-selected. To select ZTG highlight and click the **<** button. The ZTG NMEA message provider is added to the list of output messages.
3. Click on the drop down arrow and select the port to be used to write route output messages. The port usage is usually an NMEA (4800 baud) serial port, see Section 8.10.2 *Configuring a PCIO Serial Port*'.

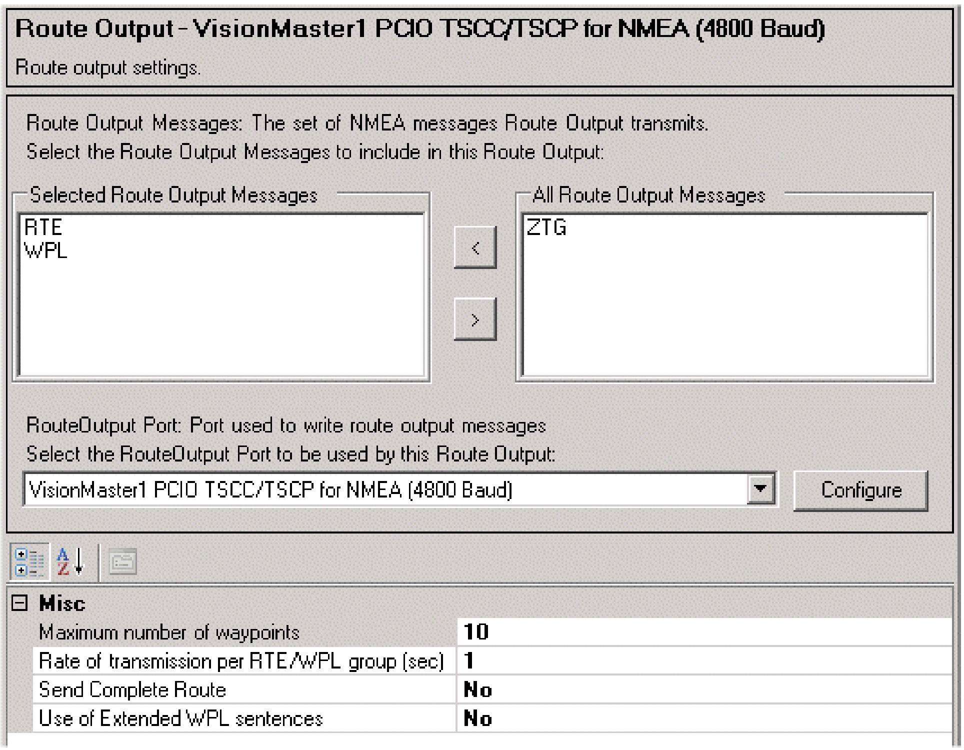


Figure 1.220 Route Output

The following miscellaneous route output values may be changed:

- Maximum number of waypoints - the maximum number of WPL sentences that can be sent after an RTE sentence. The default is 10 (the range is between 1 and 200).
- Rate of transmission per RTE/WPL group - how often a RTE/WPL sentence group should be transmitted in seconds. The default is 1 (the range is between 1 and 59 seconds).

- Send Complete Route - this is set to No if the route is to be sent to a BridgeMaster E or standalone VisionMaster radar. The data sent represents a sliding window of the maximum number of waypoints specified. If Yes is selected the complete monitored route is sent.
- Use of Extended WPL Sentences - the extended WPL sentence is used to transmit route data, including turn radius and approaching leg speed for each waypoint, to a peripheral positioning system. The default is **No**.

To change the miscellaneous default values either click in the respective field and enter the required value, or click the drop down arrow and select **Yes**.

9.10.6.2 External Routes

The External Routes sub-menu allows the monitoring of routes from an external input.

External Routes are routes that were created and stored on a GPS unit, a legacy VMS unit, or some other device external to the VisionMaster system. External routes can be displayed on VisionMaster if they are sent using NMEA 0183 (also known as IEC 61162-1) RTE and WPL sentences over a serial connection.

Notes

1. *The external device may also need to be configured to enable its route data to be transferred to the VisionMaster system.*
2. *The external device should be configured to send 'working' routes (i.e. a sliding window of waypoints) instead of 'complete' routes.*
3. *In some cases transferring additional route details such as waypoint names from certain GPS units may cause problems when the route is transferred to the system. For example, a Leica GPS should be configured to NOT send waypoint names. If transfer problems occur try disabling some of the optional route details. Refer to the device documentation for detailed information regarding the configuration of RTE and WPL messages.*

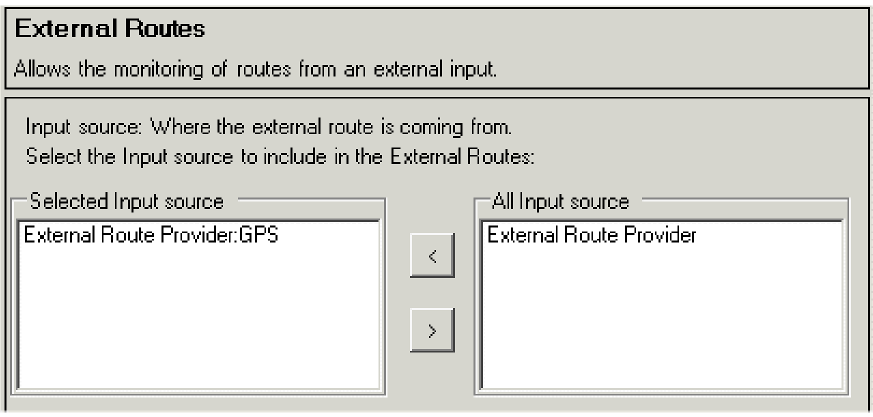


Figure 1.221 External Route Input

To configure an External Route input:

1. Click on the **External Routes** topic in the navigation tree.
2. Highlight **External Route Provider** in the All Input Source field and click the **<** button. An unconfigured External Route Provider topic is added to {Input Source} sub menu.
3. Click on the **External Route Provider** topic in the navigation tree. The configuration window for the external route is displayed.
4. Select the port to be used for the external route provider by clicking on the drop down arrow and selecting from the list of configured I/O ports.
5. If the port requires configuration click on the **Configure** button. The configuration window for the selected I/O port appears, see Section 8.10.2 *Configuring a PCIO Serial Port*'.

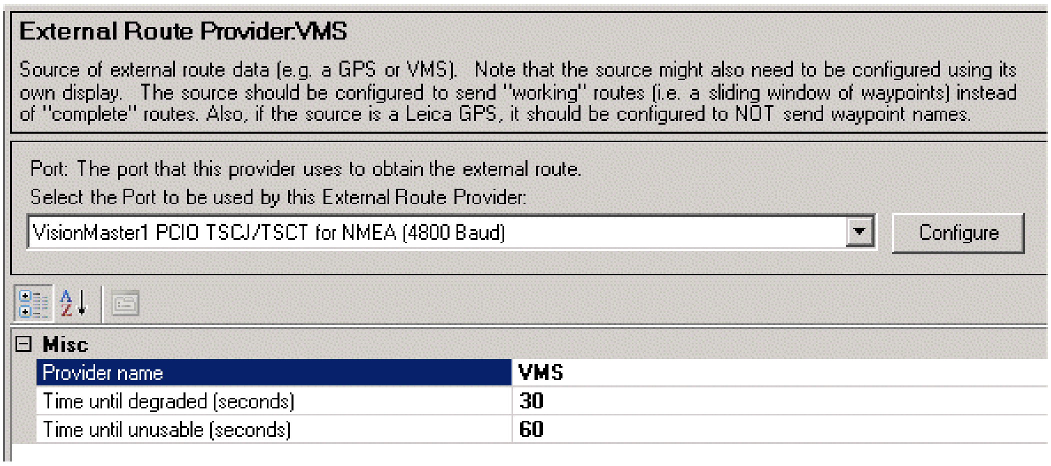


Figure 1.222 External Route Provider

6. In the **Provider Name** field enter a name to use for the external route input. When a name is entered the External Route Provider input is validated, i.e. its configuration status button colour changes to green and the Provider name is shown in the title and navigation topic.

The remaining Miscellaneous values are:

- Time until degraded (seconds) - denotes how long an external route plan data may be displayed in the ungraded color without any updates from the input source. Default value is 30 seconds.
- Time until unusable (seconds) - denotes how long an external route plan may be used without any updates from the input source. Default value is 60 seconds.

To change the default values click in the respective field and enter the required value. There are no minimum and maximum values for this miscellaneous route data.

9.10.6.3 Route Monitor Calculation

The Route Monitor Calculations sub-menu allows you to change miscellaneous settings, including own ship's maximum bearing limits from track and port/starboard cross track distance limits

Ship-based offsets, being the point where the cross-track distance should be calculated from, may also be entered.

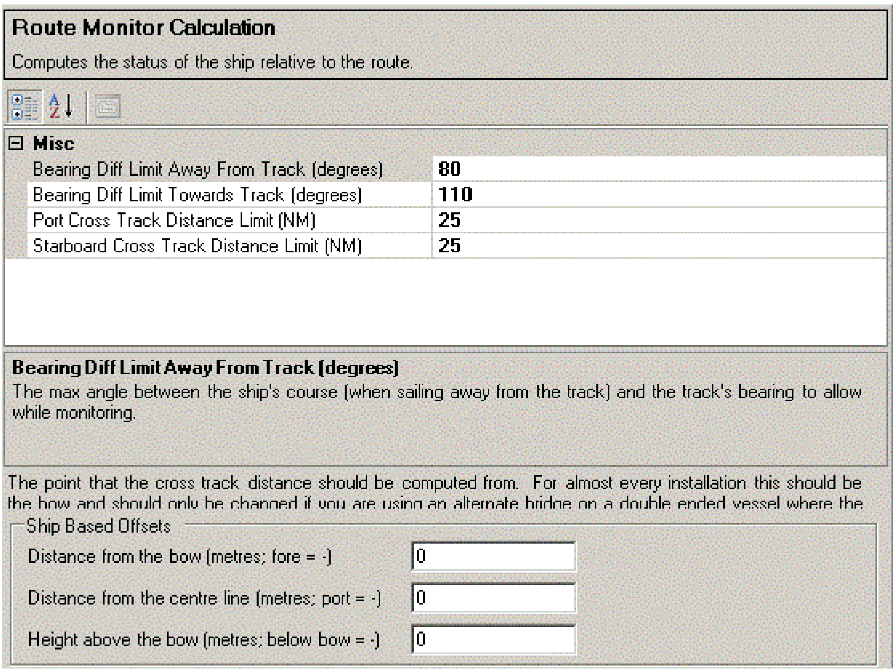


Figure 1.223 Route Monitor Calculation

The miscellaneous settings include the following:

- **Bearing Diff Limit Away From Track** - this is the maximum angle allowed when route monitoring between ship's course when sailing away from the route track and the track's bearing. The default setting is 80 degrees.
- **Bearing Diff Limit Towards Track** - this is the maximum angle allowed when route monitoring between ship's course when sailing towards the route track and the track's bearing. The default setting is 110 degrees.
- **Port Cross Track Distance Limit** - this is the maximum distance allowed on the port side between own ship and the monitored route. The default is 25 nautical miles.
- **Starboard Cross Track Distance Limit** - this is the maximum distance allowed on the starboard side between own ship and the monitored route. The default is 25 nautical miles.

For most installations Ship Based Offsets are calculated from the bow and should only be changed if the system is configured to support an alternate bow (see Section 9.3.1.2 *Alternate Bow in Use Inputs*'), which would require an alternate point to calculate cross track distance from. All ship based offsets are made in metres.

9.10.6.4 Route Print Settings

The route print settings window enables you to configure the name and size of the font used when a route is output to a local or networked printer.

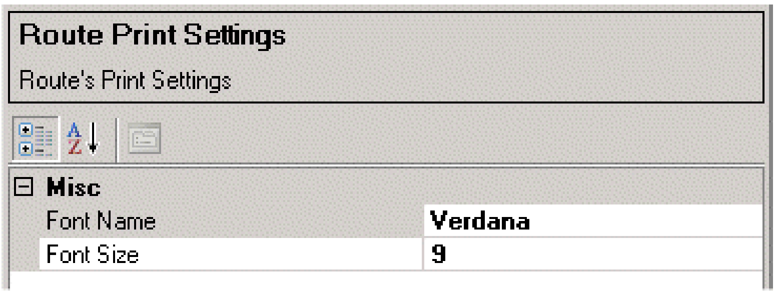


Figure 1.224 Route Print Settings

To change the font name from the default (Verdana) and the font size from the default (9pt) click in the respective fields and enter the required value.

9.10.6.5 SAR Pattern Settings

Provides a list of default settings for all the Search and Rescue (SAR) patterns. Included are settings for Creeping Line, Expanding Box, Parallel Line, Sector width and maximum number of SAR waypoints.

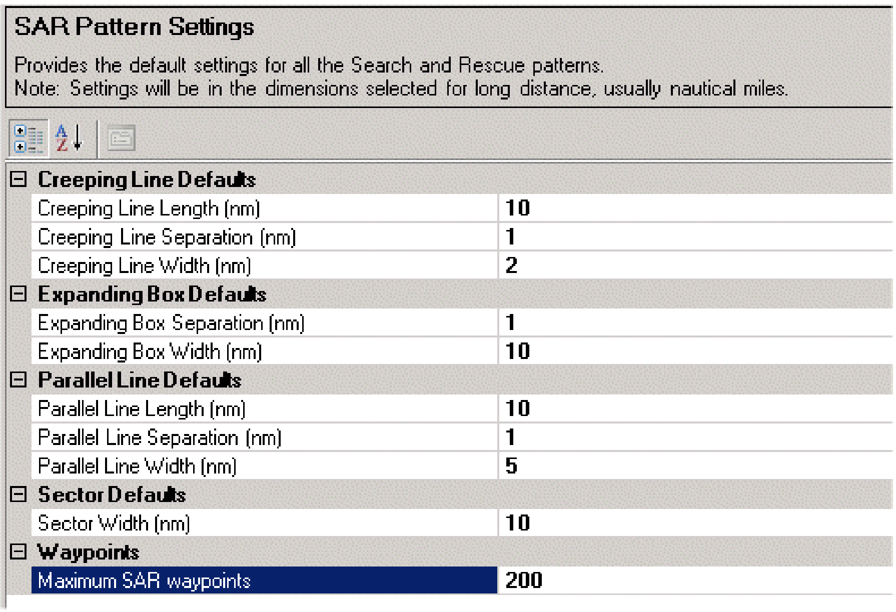


Figure 1.225 SAR Pattern Settings

9.10.7 Visual Playback

Visual Playback is an optional feature that is selected when Playback watch mode is required for a node.

Note: *Visual Playback is available to all VMFT product types with the exception of Cat 2 Radar product type.*

When Visual Playback is selected the navigation tree adds a Playback Manager sub menu topic.

The Playback Manager includes the following miscellaneous settings:

- Keyframe Frequency[*] - the time between each keyframe in milliseconds (default 20000, i.e. 20 seconds).
- Max Folder Size - the maximum size of captured data to retain (default 2000 MB).
- Min Folder Size - once the maximum size of captured data is reached the folder will be reduced to this size (default 1500 MB).
- Path to store data - the location of the recorded data on the node (default **D:\VMFTDATA\Playback**

The size of retained Playback data is allowed to reach its maximum folder size, at which point the oldest data (i.e. the difference between the maximum folder size and minimum folder size) is automatically deleted until the amount of Playback data is reduced to its minimum folder size.

This renewal and deletion of playback data is a continuous process.

The miscellaneous values in Visual Playback Manager are set at commissioning. It is therefore advisable that these values should only be changed after prior notification or guidance from NGSM service support.

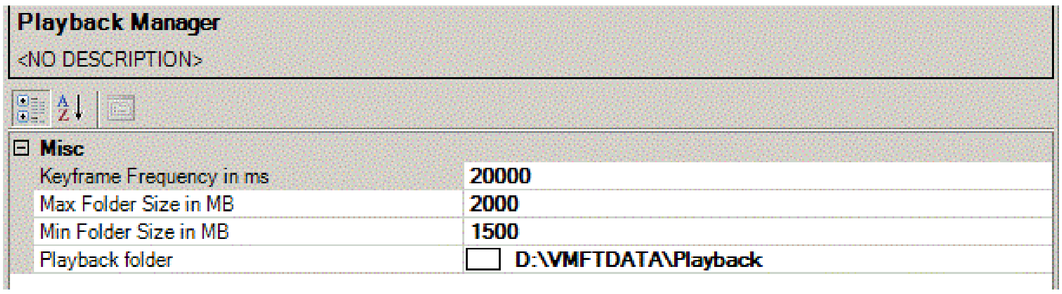


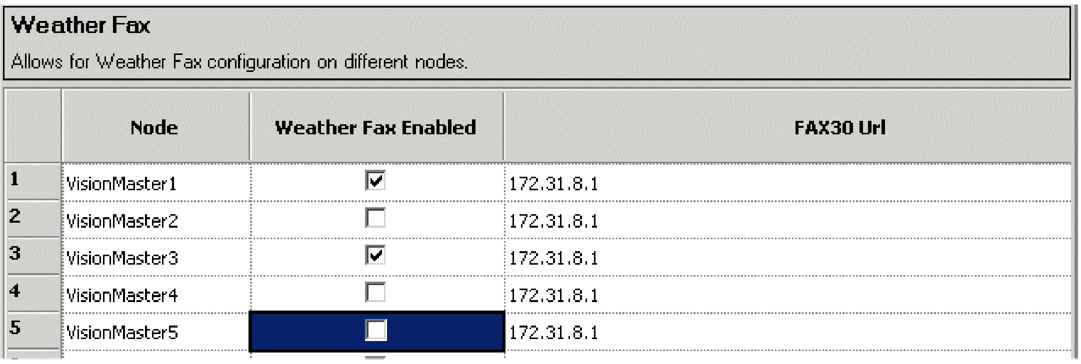
Figure 1.226 Playback Manager

9.10.8 Weather Fax

The Furuno Weather Fax (FAX30) is a device that receives weather images and navigational information from a built in radio receiver and displays the information on a web page using an internet browser installed on the VisionMaster PC.

The Weather Fax topic enables the selection of which nodes in a multi-node system will have the Weather Fax feature and entry of the FAX30 URL. Nodes enabled for weather fax interface with the FAX30 through a network connection.

* Within each Keyframe there are minor frame screen captures every 2 seconds. The minor frame frequency is not affected by changes to the Keyframe frequency.


Weather Fax
Allows for Weather Fax configuration on different nodes.

	Node	Weather Fax Enabled	FAX30 Url
1	VisionMaster1	☑	172.31.8.1
2	VisionMaster2	☐	172.31.8.1
3	VisionMaster3	☑	172.31.8.1
4	VisionMaster4	☐	172.31.8.1
5	VisionMaster5	☐	172.31.8.1

Figure 1.227 Weather Fax

9.10.9 Third Party Applications

Note: *Third party applications require evaluation by Sperry Marine prior to deployment on VisionMaster FT to ensure that their use is regulatory compliant and safe. As a result recommendations for third party applications are provided to all application providers outlining the constraints that third party applications should adhere to.*

There are two methods of configuring third party applications that can be opened from the VisionMaster display:

- as a popup windows application
- as an integrated watch mode

9.10.9.1 Configuring Third Party Window Applications

To configure third party windows applications:

1. Select **Third Party Application** from the All Third Party Window Application field by clicking the **<** button. An unconfigured Third Party Application topic is added to the **Third Party Windows Application** sub menu, see Figure 1.228.

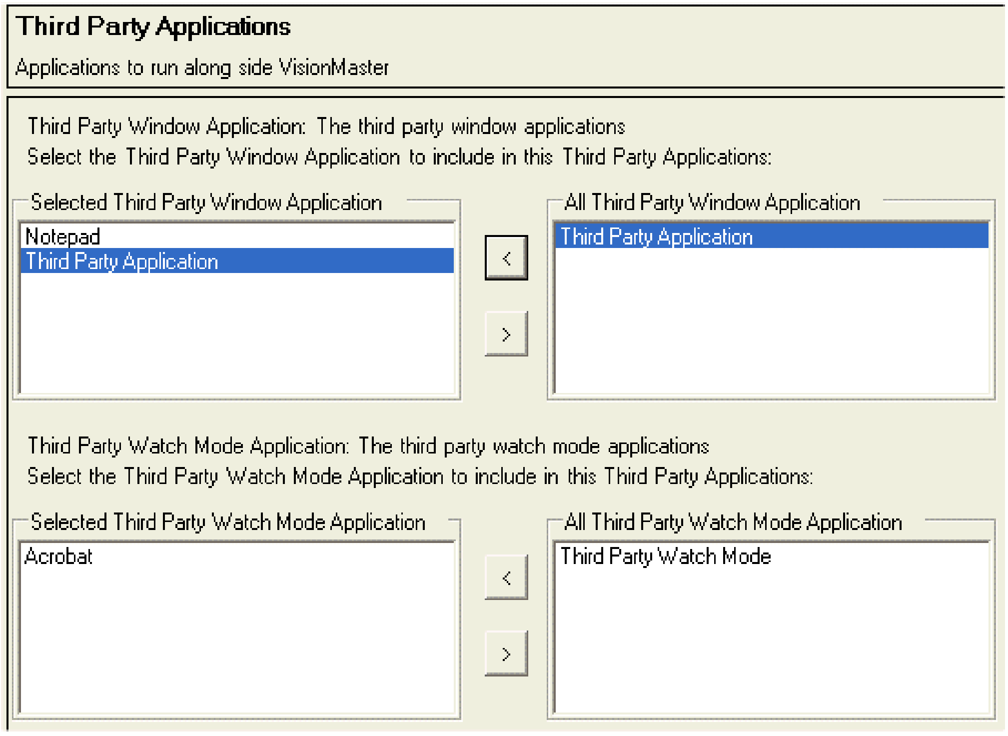


Figure 1.228 Third Party Applications

Open the Third Party Application topic. The configuration screen for third party applications appears, see Figure 1.229.

To enter or change Miscellaneous settings:

1. Enter the folder location and filename of the third party application or the launching application in the **Application Path and Filename** field. This is usually on the C: drive and will include the extension (usually **.exe**).
2. Enter the name of the third party app as you prefer it to be displayed on the VMFT menu in the **Displayed Menu Application Name** field.
3. To automatically close the third party app when changing watch mode select **Yes** (default setting). To keep the third party app open after the watch mode has changed select **No**.
4. To automatically close the third party app when entering Transmit in ECDIS watch mode select **Yes** (default setting). To keep the third party app open after Transmit has been selected select **No**.
5. To automatically close the third party app when entering Transmit in Radar watch mode select **Yes** (default setting). To keep the third party app open after Transmit has been selected select **No**.
6. The **Night Colour Warning**, which enables a prompt to be displayed with a warning that the application colour may not change when night settings are selected, defaults to **No**. To generate a prompt when night settings are changed select **Yes.**
7. The timeout period for the third party app to start defaults to 10 seconds. To change the timeout period click in the field and enter a value.

To enter Optional settings:

1. The Application Parameters are any parameters that may be required when opening the third party app or launching application. For example, 'c:\default.txt' will open the Notepad application with a default .txt file.
2. A Process Name is only required if the launching application is different to the third party app. This is the process name of the application as seen in the process tab of Task Manager. For example, 'notepad' is the process name for 'notepad.exe'.

Repeat the above procedure to configure additional third party applications. All configured third party applications will be available from the System menu of VisionMaster.

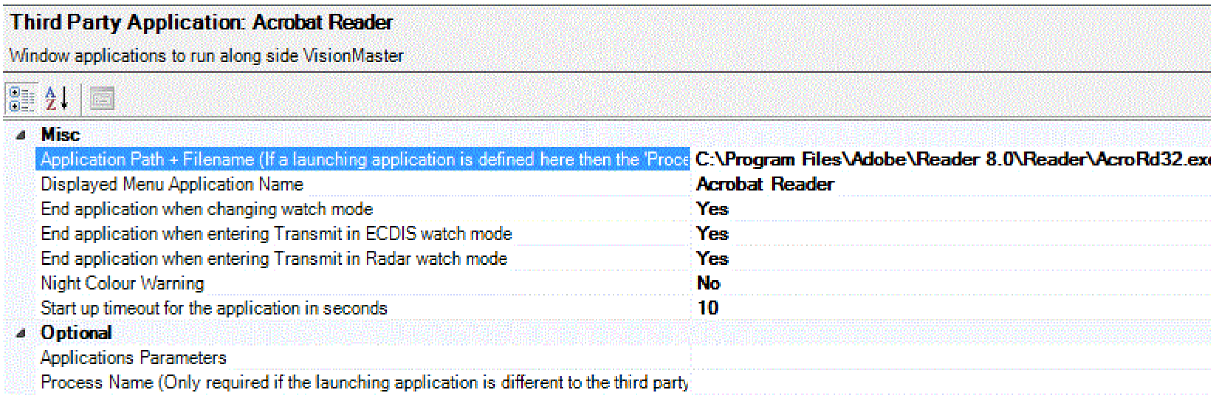


Figure 1.229 Third Party Application Configuration for Acrobat Reader

9.10.9.2 Configuring Third Party Watch Mode Applications

To configure third party watch mode applications:

1. Select **Third Party Watch Mode** from the All Third Party Watch Mode Application field by clicking the **<** button. An unconfigured Third Party Watch Mode topic is added to the **Third Party Watch Mode Application** sub menu.
2. The Third Party Watch Mode Application is configured in the same way as described previously for third party windows applications. The Third Party Custom name is the name that will appear on the Watch Mode list.

9.10.10 3D Charting and 3D Engine

3D Charting and 3D Engine are part of the 3D Vision facility. In order for the 3D Vision to operate successfully both optional features are required to be selected.

The 3D Vision is a feature which shows a 3D visualisation of ownship, chart depth information, and sonar data (if enabled).

To enable 3D Vision, move 3D Charting and 3D Engine to the list of Selected Optional Features. 3D Charting and a 3D Charting Configuration sub menu are created in the navigation tree.

9.10.10.1 3D Charting Configuration

The 3D Charting configuration window enables the following mesh display values to be configured:

- **Chart Altitude** - represents the altitude of the chart in metres, range from 0 metres to 100 metres (the default is 0).
- **Chart Opacity** - represents the opacity of the chart displayed on the water plane, range from 0% to 100% (the default is 0).
- **Mesh Opacity** - represents the opacity of the main mesh displayed, range from 0% to 100% (the default is 100).

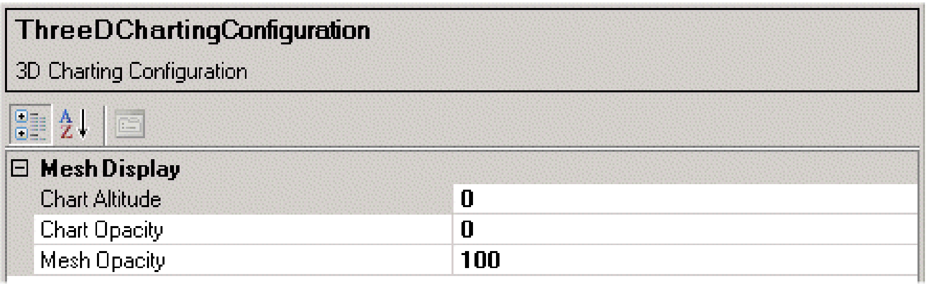


Figure 1.230 3D Charting Configuration

9.10.11 Autopilot Interface

Autopilot Interface enables the VisionMaster system to interface with an autopilot. The facility enables the selection and configuration of a steering control unit which is used to communicate with the autopilot.

1. To select the autopilot click on **Autopilot Interface** in the navigation tree. The default controller shown is a Standard NMEA Autopilot Controller.

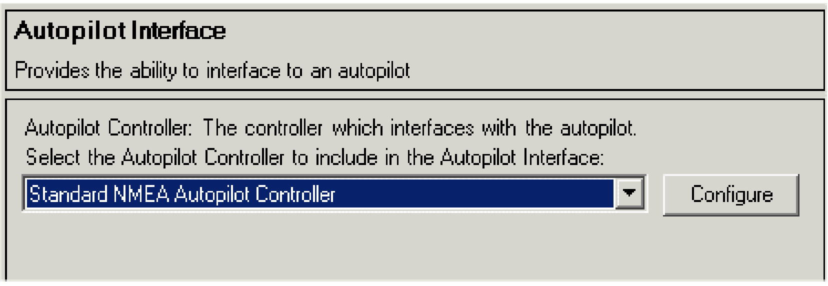


Figure 1.231 Autopilot Interface

2. To configure the autopilot controller click on the **Configure** button, the Standard NMEA Autopilot Controller configuration screen is displayed.

The Autopilot Controller configuration screen enables selection of the Autopilot type and the Steering Control Unit to be used by the Autopilot Controller.

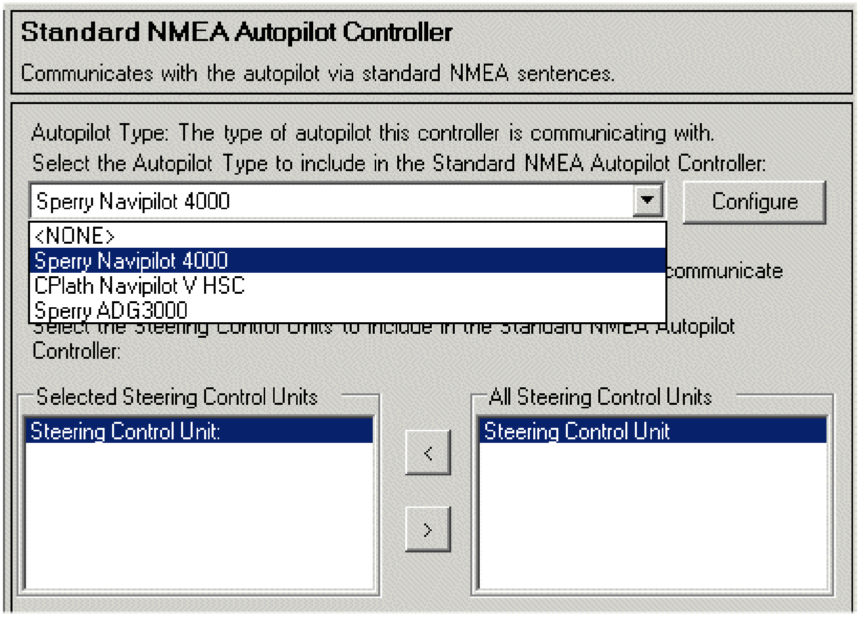


Figure 1.232 Autopilot Controller

1. The autopilot type defaults to **Sperry Navpilot 4000**. To change the type of autopilot the controller is communicating with click on the **Autopilot Type** drop down arrow and select from the list. In addition to the Navipilot 4000, the Autopilot types supported are **C Path Navipilot V HSC** and **Sperry ADG 3000**.
2. Highlight **Steering Control Unit** in the All Steering Control Units column and click on the **<** button. The unit is moved to the **Selected Steering Control Units** column and an unconfigured Steering Control Unit sub menu topic is created.

9.10.11.1 Changing Autopilot Miscellaneous Settings

To change the miscellaneous settings of the selected Autopilot click on the **Autopilot Type:** sub menu topic (the same settings apply to all the available Autopilot types).

1. The Communications Period defines the period, in seconds, that the controller will send commands to the autopilot. The default period is one second. To change click in the field and enter the required period.
2. The Interface Timeout Period defines the amount of time, in seconds, that the controller must receive a message from the autopilot before raising an Alert. The default period is 15 seconds. To change click in the field and enter the required period.

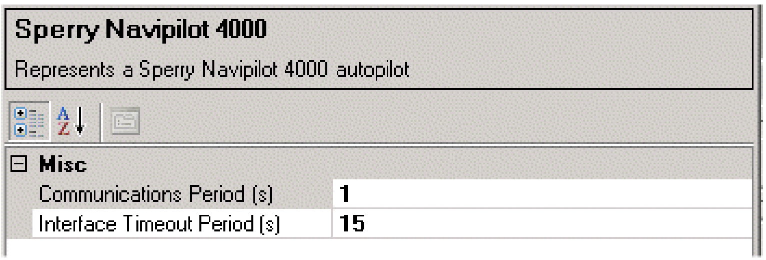


Figure 1.233 Autopilot Miscellaneous Settings

9.10.11.2 Steering Control Unit Configuration

To configure a Steering Control Unit (SCU):

1. Click on the **Steering Control Unit:** topic in the navigation tree, the configuration window for the unit is displayed.
2. Click on the drop down arrow and select the Autopilot Power Level Monitor to be included with the SCU. An unconfigured topic appears below the Steering Control Unit sub menu in the navigation tree.
3. Select the **Autopilot Power Level Monitor** topic from the navigation tree.
4. Click on the drop down arrow of the Power Level Analog Input field and select the Analog Input to be used for the monitor from a list of previously configured analog input devices. Figure 1.234 below shows a Labjack device selected for input.

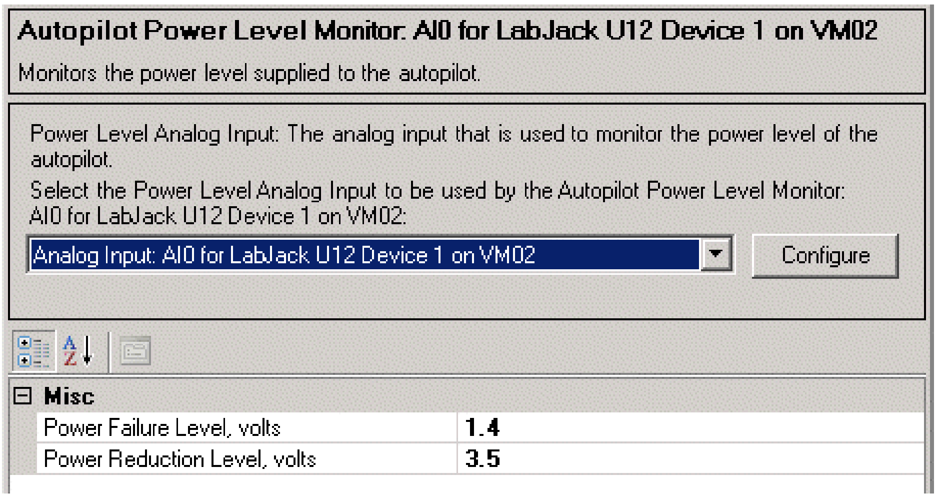


Figure 1.234 Autopilot Power Level Monitor

The window shows the following miscellaneous parameters for the mode.

- **Power Failure Level** - a power level less than this value will be considered a power failure. The default voltage is 1.4 volts (range between 1.4v and 4.25v).
- **Power Reduction Level** - a power level less than this value will be considered a reduction in power. The default voltage is 3.5 volts (range between 3.5v and 4.75v).

5. From the Steering Control Unit window select the port (or ports) that will interface with the SCU from a list of previously configured PCIO ports in the **All Ports** column and click the **<** button. The ports are moved to the **Selected Ports** column.
6. Enter a unique name for the SCU in the **SCU Name** field.
7. The switched communication lines default to **Transmit and Receive**. To change to transmit only click on the drop down arrow and select **Transmit**.

When Power Level Monitor, Port and an SCU name have been entered the SCU topic is validated, see Figure 1.235 below.

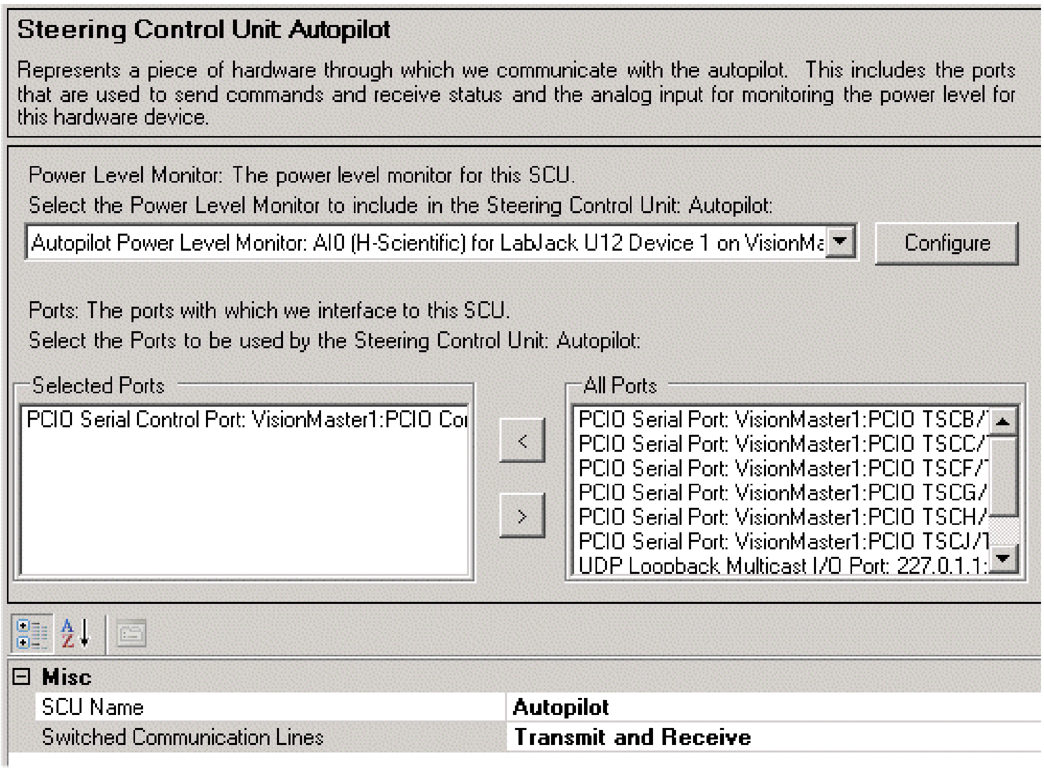


Figure 1.235 Steering Control Unit configured

To configure more SCUs for the Track Control System, repeat the above process.

9.10.12 External Targets

Target transfer from a radar scanner top unit (for example, a BridgeMaster E [BME]) to a VisionMaster (VM) ECDIS is achieved via TTM (tracked target messages), which allow the VM to display targets being tracked by the radar scanner. Each target input from the radar scanner has its own set of targets, each with a local label assigned. Each of these local targets require correlation with other targets in the VM system.

The target system identifier assigned to the target by VM is output in a TLB message to the relevant scanner unit, see Section 9.9.3 *Target Rename Input: TLB Communications*'. The target name is prefixed with the contents of the TLB message's label in parentheses, with a space between this TLB name and the target name assigned.

To configure an External Target input:

1. Click on the **External Targets** topic in the Option Features menu. When External Target Input is opened the window displays the following miscellaneous settings:
   a. Maximum Target ID Number - the maximum value of the target number can be set to a value between 0 and 9999 (default).
   b. Maximum Target Range - the maximum range for external targets can be set to a value between 0 and 96 NM (default).

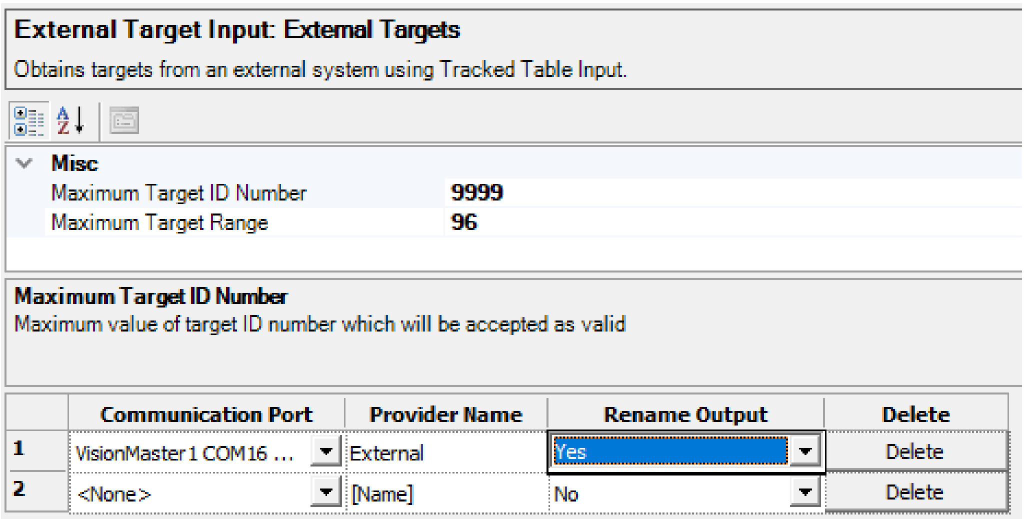


Figure 1.236 External Target Input: External Targets

2. Select the port to be used for the target input by clicking on the **Communication Port** drop down arrow and selecting from the list of configured PCIO ports and Control Panel ports. On a multi-node system the PCIO and Control Panel ports for each node are listed.

Note: *When a communication port is selected, a new configuration line is automatically generated below the current line.*

3. Enter a name for the external target provider in the Provider Name column, e.g. BME1.
4. To enable the TLB output message to be renamed click on the drop down arrow in the **Rename Output** column and select **Yes**.
5. On a multi-node system, repeat the process to configure other nodes for external target input.
6. To delete an external target input click on the line's **Delete** button. The line is removed from the window.

To change the maximum number of external targets, do the following:

1. Open the System Configuration tool and select the **External Targets Name and Number Limit** topic.

   In the navigation tree, this topic is located at **Applications > Main Application > Optional Features > External Targets > External Targets Name and Number Limit**.

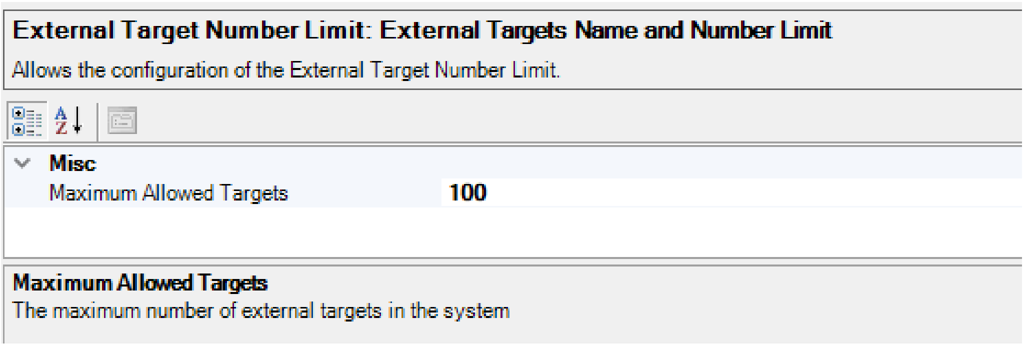


Figure 1.237 External Targets Name and Number Limit

2. In **Misc > Maximum Allowed Targets**, enter the new value. The Maximum Allowed Targets can be any number between 0 and 500. The default is 100.

9.10.13 Joystick Heading Control

The joystick heading control mode enables two configuration settings to be made to a connected heading joystick, which is generally mounted in the armrest of chairs on the bridge.

With Joystick Heading Control in the selected Optional Features list, click on the **Joystick Heading Control Mode** sub menu topic. The following window is displayed.

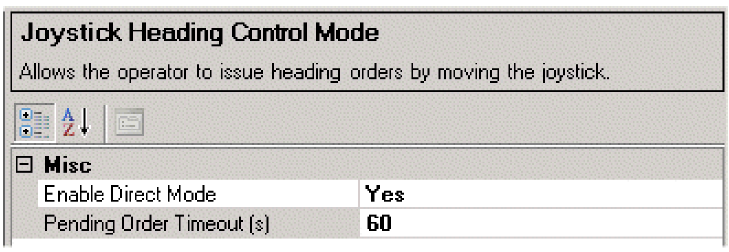


Figure 1.238 Joystick Heading Control Mode

Enable Direct Mode defines whether heading orders are entered with or without operator confirmation. The default is **Yes** (without confirmation). To order the system to generate a confirmation before heading orders from a joystick are implemented, click in the field and select **No**.

The Pending Order Timeout defines a timeout period with a default of 60 seconds. If there is no operator activity after this period then a pending order will be cancelled. If there is an active order then the pending order will revert to the active order, if there is no active order then the joystick mode will be exited. To change the period click in the field and enter a time period from 1 second upwards.

9.10.14 Video Display Providers

The following video display providers may be configured:

- LAN - for video generated over a local area network (LAN).
- PiP - where the video is generated using the Picture in Picture (PiP) feature of the monitor.

The type of video provider selected is dependant on the type of video source configured in Resources, see Section 8.12 *Video Sources*'.

9.10.14.1 LAN Video Display Providers

The LAN video display providers window enable the video source groups configured in Video Sources to be selected for up to four displays.

To configure a LAN Video Display Provider:

1. Select **LAN Video Display Providers** from the Optional Features list.
2. From the LAN Video Display Providers window, select **Vlc Client Control Provider** from All LAN Video Display Providers column and click the < button to move to Selected Providers column. The navigation tree generates unconfigured Vlc Client Control Provider and CCTV Vlc Manager topics.
3. Click the **Default video source for Video Display A:** drop down arrow and select from the list of names assigned to the video sources.
4. Repeat step 3 in the other Video Display fields for all the other configured Vlc client sources.
5. To configure the video sources click the **Configure** button to the right of the fields. The Vlc Client Source window for the selected source appears, see Figure 1.88.

The CCTV is, by default, set at 2048. Should the need arise, it is possible to amend this default value.

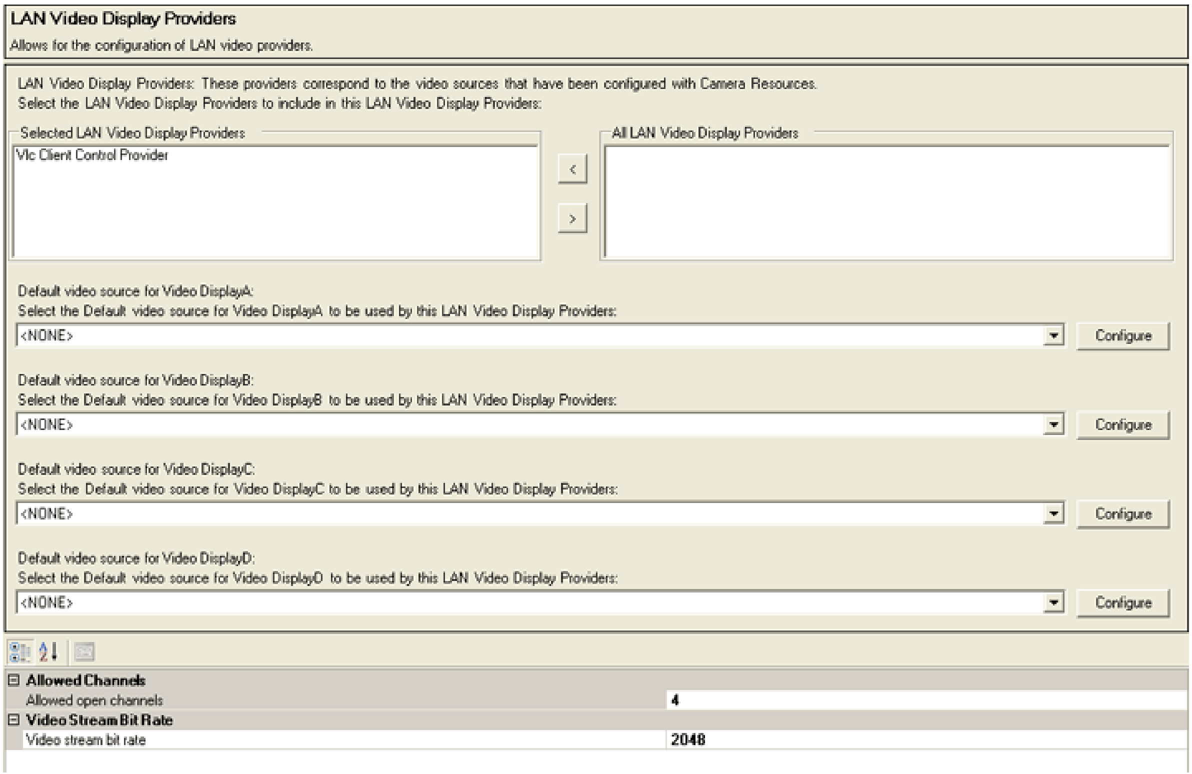


Figure 1.239 LAN Video Display Providers

The Vlc Client Control Provider includes a sub menu, CCTV Vlc Manager, which is automatically selected for the provider.

CCTV Vlc Manager

The CCTV Vlc Manager uses a UDP Loopback Multicast I/O port to send and receive messages. This port is used to communicate with an external process called ‘VicVideoHost’, which receives and displays streaming video from the video sources.

Click on the drop down arrow and select the previously configured UDP Loopback port from the list of available ports, see Section 8.10.7 *Configuring a UDP Port using a Loopback Adapter*’

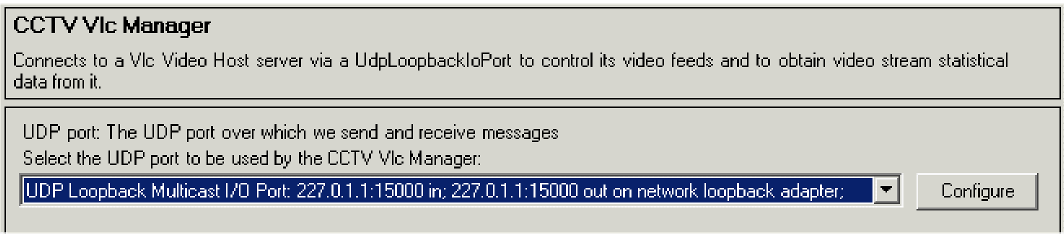


Figure 1.240 CCTV Vlc Manager

9.10.14.2 PiP Video Display Provider

The PiP video display provider window enables the source for PiP video, previously configured in Section 8.12.2 *PIP Video Source Group*', to be selected.

To configure a PiP Video Display Provider:

1. Select **PiP Video Display Provider** from the Optional Features list. The window displays **Pip** as the default video display provider.
2. To select the default source for the PiP video to be used by the display provider, click on the drop down arrow. The unique name for this video source will be the name assigned in the video source window, see Section 8.12.2 *PIP Video Source Group*'.

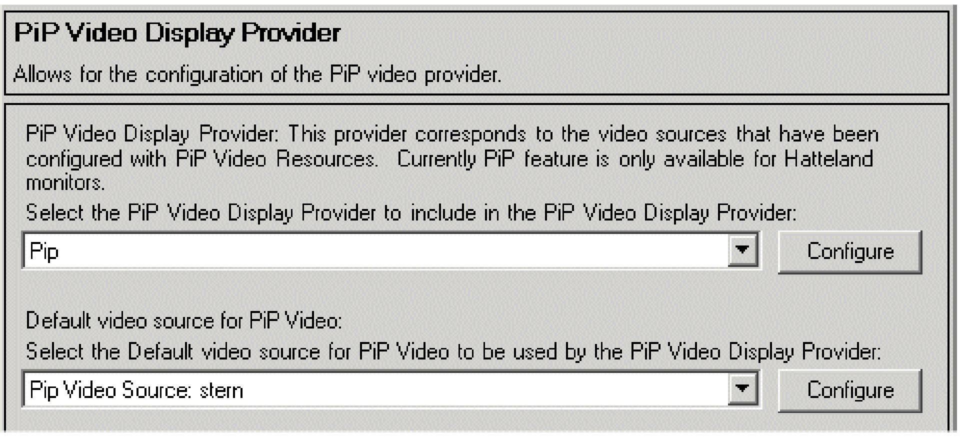


Figure 1.241 PiP Video Display Provider

9.10.15 Route Based Speed Control Selection

The Route Based Speed Control Selection enables the system to implement a route based speed control and configuration of the speed control functionality.

Note: *Route based speed control is a propulsion control mode and is only enabled when VisionMaster is interfaced to the ship's propulsion system, see Section 9.10.19 Propulsion Control Interface'.*

1. From the Route Based Speed Control Selection topic click on the drop down arrow and select **Route Based Speed Control**.
2. To configure the speed control functionality either click on the **Configure** button, or click on the **Route Based Speed Control** sub menu in the navigation tree. The general settings are displayed, see Figure 1.242.

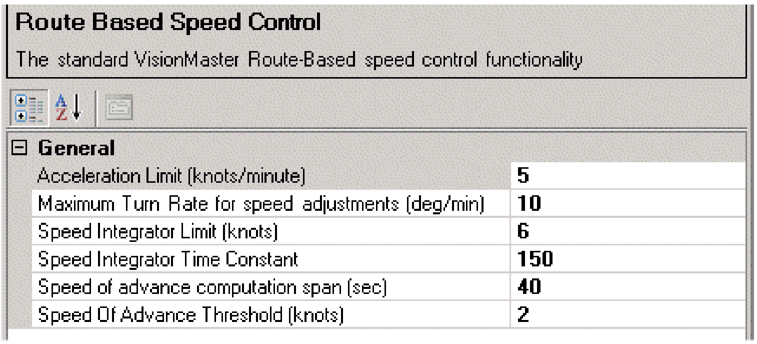


Figure 1.242 Route Based Speed Control

The following general settings may be changed:

Setting — **Default**

- **Acceleration Limit (knots/minute)** — 5 (0.5 min, 40 maximum)

  The maximum rate at which speed commands to the propulsion system are allowed to change

- **Maximum Turn Rate for speed adjustments (deg/min)** — 10

  The maximum turn rate at which speed command adjustments will be recalculated based on the speed achieved from the current speed commands.

- **Speed Integrator Limit (knots)** — 6

  The maximum adjustment that will be made to commanded speed, based on differences between commanded speed and the speed actually achieved.

- **Speed Integrator Time Constant** — 150 (adjustable up to 240)

  The time constant that determines how rapidly the system adjusts its speed commands to compensate for the difference between commanded speed and the speed achieved.

- **Speed of advance computation span (sec)** — 40 (adjustable up to 240)

  The time span over which the speed of advance is to be measured.

- **Speed of advance threshold (knots)** — 2 (no min or max)

  The threshold of the difference between the commanded speed of advance and the measured speed of advance.

9.10.16 TotalTide

The TotalTide feature is available to ECDIS nodes, or a Total Watch system that includes ECDIS. The TotalTide feature cannot be run on Radar/Chart Radar nodes.

If your system is multi-node the TotalTide window lists all the nodes on the system. Tick the check boxes of the nodes which will run the TotalTide application.

For information on setting up and running TotalTide refer to Chapter 4 '*TotalTide Setup* '

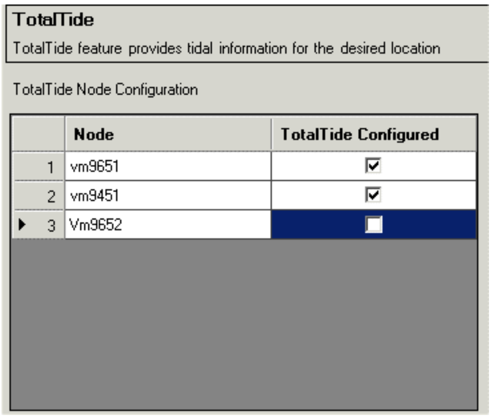


Figure 1.243 TotalTide

9.10.17 Sonar

The Sonar feature enables the configuration of a FarSounder Sonar (FSS) device.

The Sonar window enables the selection of which nodes (on a multi-node system) support communications with the FSS. If a node is not configured to communicate with the FSS, then sonar data and menus for displaying the sonar are not displayed on that node.

The FSS is typically mounted at the front of the ship, at a position relative to the bow. The Sonar configuration window enables the positioning of the sonar device to be made to an accuracy of up to a tenth of a metre. An entry of the Sonar's host IP address must be made in order to communicate between VisionMaster and the FSS software.

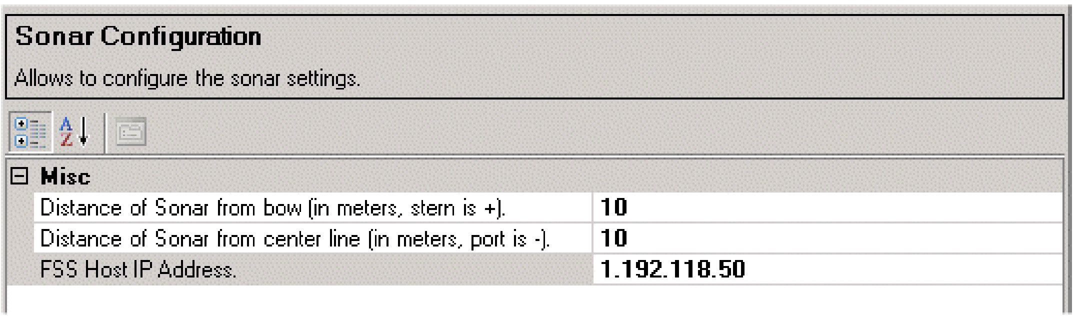
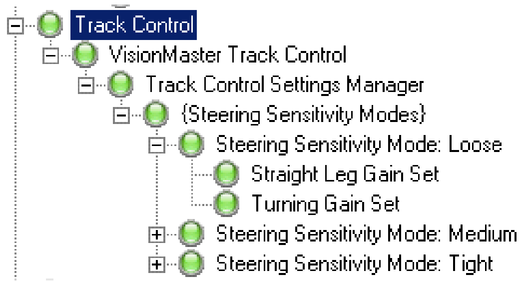


Figure 1.244 Sonar Configuration

1. Distance from Sonar to bow is the distance, in metres, of the FSS to the bow. If the distance is measured from the stern insert + before the value.
2. Distance of Sonar to centre line is the distance, in metres of the FSS to the ship's centre line. If the distance is measured from the port side insert - before the value.
3. Enter the IP address of the sonar in the FSS Host IP Address field.

9.10.18 Track Control



Track Control systems enable own ship to steer automatically along a monitored route, or to maintain a designated heading under various conditions and within the limits related to the ship's manoeuvrability.

A Track Control System consists of one or more VisionMaster nodes and may also include a separate heading control, known as an Autopilot, see *Section 9.10.11 Autopilot Interface*’.

This section also includes instructions on configuring VisionMaster track control settings to correspond to existing track control settings from a legacy VMS (Voyage Management System). See Section 9.10.18.2 *Configuring VMFT Track Control Settings from VMS*’.

9.10.18.1 Track Control Settings Manager

The track control settings manager handles all operator adjustable track control settings. The window is available as a sub menu topic under the VisionMaster Track Control menu.

The Track Control Settings Manager enables steering sensitivity modes to be selected and configured.

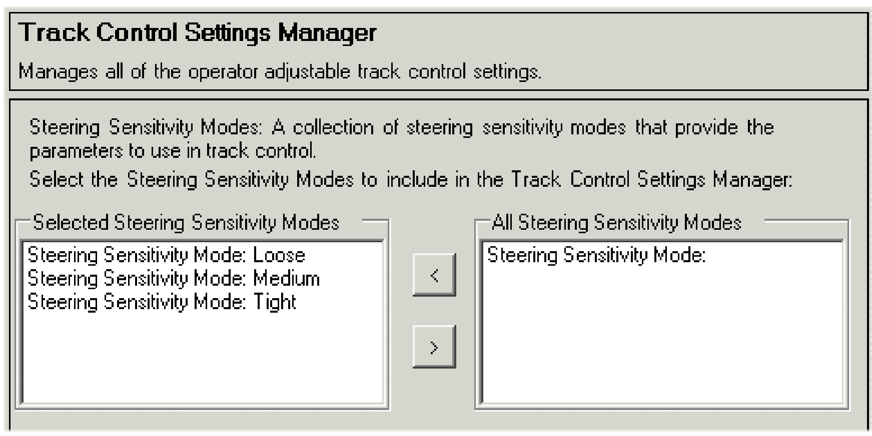


Figure 1.245 Track Control Settings Manager

The default selected steering sensitivity modes are Loose, Medium and Tight. Each mode includes a set of system defined parameters.

Steering Sensitivity Modes

The steering sensitivity modes determine the magnitude of track control adjustment for a given XTE (cross track error). These modes are selectable by the operator from the VisionMaster application.

The three default modes (Loose, Medium and Tight) define a particular set of parameters.

To configure the modes open the **{Steering Sensitivity Modes}** sub menu in the navigation tree and select the required mode, *Figure 1.246* below shows the window for **Loose** mode.

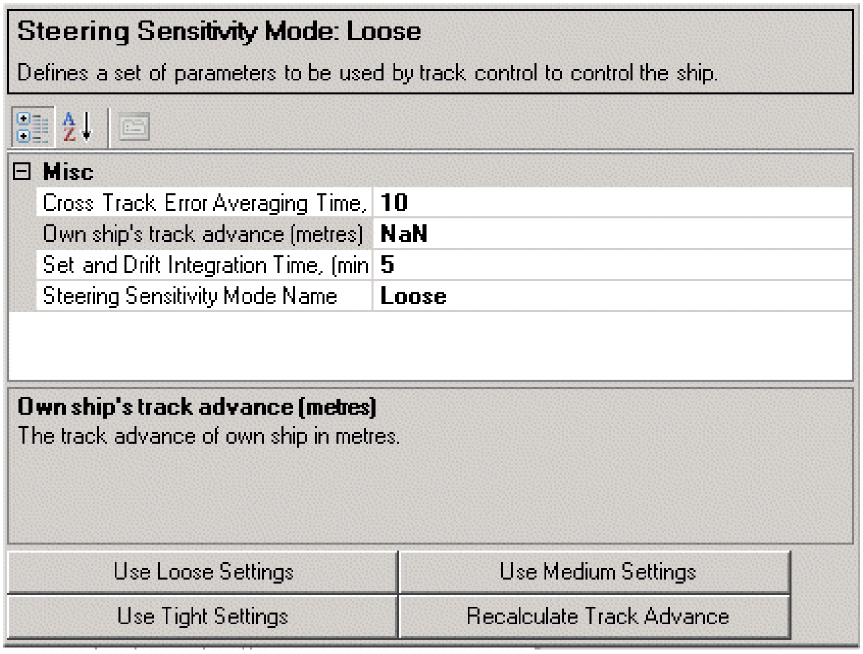


Figure 1.246 Steering Sensitivity Mode

The window shows the following miscellaneous parameters for the mode.

- **Cross Track Error Averaging Time** - the cross track averaging time in seconds to be applied. The default time is 10 seconds (range between 0 and 100).
- **Own ship’s track advance** - the track advance of own ship in metres. The default (**NaN**[*]) requires a value to be entered in order to configure the mode. There are no minimum and maximum values for track advance.
- **Set and Drift Integration Time** - the amount of sensor history, in minutes, that the system shall take into account when computing the set and drift to use for track control. There are no minimum and maximum values for this time.

* NaN (Not a Number) is a global property (variable) with a constant value. Comparison of any object to this property will return true if the object is a number and false if it is not.

The following default values apply for each mode:

- Loose mode: 5 minutes
- Medium mode: 3 minutes
- Tight mode: 1 minute

- **Steering Sensitivity Mode Name** - the name of the mode.

Note: *The cross track error averaging time and own ship track advance distance are the same default values on all modes.*

If the Set and Drift Integration time is changed for a given mode the default values listed above may be re-applied by clicking on the mode settings button at the bottom of the window, i.e. If the Set and Drift Integration time has been changed on Loose mode click the **Use Loose Settings** button to re-apply the default.

To recalculate own ship's track advance for the given mode, click the Recalculate Track Advance button

Straight Leg and Turning Gain Sets

Each Steering Sensitivity Mode topic includes Straight Leg Gain Set and a Turning Gain Set sub topics.

Each gain set includes computed gain corrections applied to the adjustment of the ship's heading.These corrections are in three parts.

1. The proportional gain reacts to the distance that the ship is off track.
2. The integral gain reacts to the length of time that the ship has been off track. The initial value is **NaN**.
3. The differential gain reacts to the rate at which the ship is moving toward or away from the track. The initial value is **NaN**.

Any adjustments to the computed corrections must be based on specific ship characteristics and operational requirements.

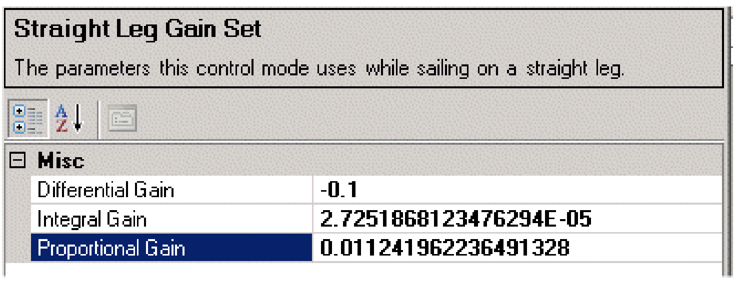


Figure 1.247 Straight Leg Gain Set

Creating a new Steering Sensitivity Mode

To create another mode select **Steering Sensitivity Mode:** in the All Steering Sensitivity Modes column of the Track Control Settings Manager and click on the **<** button. An unconfigured topic is added to the {Steering Sensitivity Modes} sub menu.

Open the unconfigured topic and apply a set of default mode settings to the new topic by clicking on one of the Use Settings buttons.

Configure the new mode settings as required. Note that the mode name must be unique, i.e. two modes cannot both be named 'Loose'.

When a new steering sensitivity mode has been created it appears in the Track Control Settings Manager list and is also selectable by the operator on the VisionMaster Track Control menu.

9.10.18.2 Configuring VMFT Track Control Settings from VMS

If you are upgrading systems from legacy VMS to VisionMaster you need to ensure that the configurable track control settings for VMFT are identical to the corresponding settings that existed in VMS.

In legacy VMS up to six gain sets could be configured, these sets would usually include a 'high gain', 'nominal' and 'low gain'. Each of the gain sets has a 'differential GPS' and a 'non-differential GPS' set of PID (Proportional, Integral and Differential) gains.

If the VMS had three gain sets (high, nominal and low), then the VMFT sensitivity modes should be configured with the 'tight' and 'medium' settings corresponding to the 'differential GPS' gain sets for the 'high gain' and 'nominal' cases, respectively. The 'loose' sensitivity mode would then be configured such that it matches the 'non-differential GPS' gain set for the 'low gain' case.

The following VisionMaster settings must correspond to VMS settings:

- Own ship's track advance value for each sensitivity mode should be taken from the corresponding gain set's track advance setting in VMS.
- Cross Track Error Averaging Time setting for each sensitivity mode should be taken from the corresponding gain set's 'XTE TC' setting in VMS.

If the VMS was configured with more than the standard three gain sets, then corresponding steering sensitivity modes for each gain set must be configured. Always use the 'differential GPS' values for the PID gains, except possibly in the case of the 'loosest' gain set, where the non-differential GPS values should be used.

9.10.19 Propulsion Control Interface

The Propulsion Control Interface enables VisionMaster to control the speed of the ship by interfacing to the ship's propulsion system through speed or other propulsion commands, such as RPM orders.

VisionMaster may interface with the following types of external propulsion systems:

- Kamewa
- Emri
- ConverTeam

The following simulator propulsion systems are also available for selection (see Figure 1.248):

- H-Scientific ShipSim
- SimVt

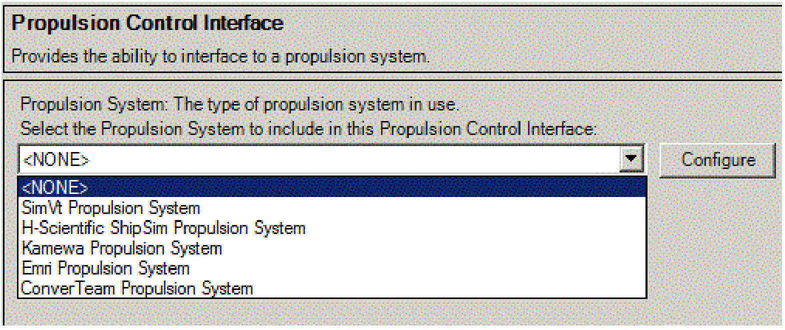


Figure 1.248 Selecting Propulsion Control systems

The following sub sections describe how to configure a Kamewa or an Emri propulsion system. If your VMFT is interfacing with a ConverTeam propulsion system please consult NGSM for information on configuration procedures.

9.10.19.1 Configuring a Kamewa Propulsion System

If a Kamewa is selected, the following configuration procedure is followed:

1. From the Propulsion Control Interface topic click on the drop down arrow and select **Kamewa Propulsion System Composition**. The navigation tree creates a **Kamewa Propulsion System** sub menu topic.
2. Click on this topic to configure the propulsion control interface. The Kamewa configuration window will include the following discrete signals used for interfacing with the Kamewa:
    - External Control Available Input - the input port used by Kamewa to indicate that external control is available.
    - Request for Control Output - the output port that is used to send the request for control to the Kamewa.
    - External Control Granted Input - the input port used by Kamewa to indicate that external control has been given.

   Usually, a LabJack device (or another device providing discrete signals directly to VisionMaster) will be used for all of these signals. To configure a Labjack, refer to Section 8.5 *Labjack Manager*’ in Section 5 ‘*Resources*’.

3. Select the discrete input and output ports. In a typical Kamewa installation, the discrete I/Os of the Labjack are used:
    - Discrete Input D1: Used for External Control Available Input
    - Discrete Output D2: Used for External Control Granted Input
    - Discrete Input D3: Used for Request for Control Output

    To support this, make sure that, under the LabJack U12 Device configuration, that D1 and D2 have their Usage configured as **Input**, and D3 has its Usage configured as **Output**, see Figure 1.63.
4. Select the analog output and input ports. The Kamewa configuration window will include the following analog control signals:
    - Water Speed Order Output - the output signal is used to order the propulsion system to achieve a desired speed through the water.
    - Throttle Position Input - an analog input signal is used by VisionMaster to indicate the current throttle position on the Kamewa system.
5. Select the analog output and input ports. In a typical Kamewa installation, the following Labjack signals are used:
    - Analog Output AO0: Used for Water Speed Order Output
    - Analog Input AI0: Used for Throttle Position Input

Configuring the Miscellaneous Settings

The Miscellaneous section includes the following settings:

- **Control Requested Response Timeout** - a value, in seconds, indicating how long VisionMaster should wait for the Kamewa system to grant control to VisionMaster once control has been requested. The default is 15 seconds. The Kamewa system is designed to automatically respond to such a request, and in most circumstances there should be no need for the default value to be changed.
- **Sense of External Control Available Input Signal and Granted Input Signal** - defines whether the 'asserted' state is indicated when the input signal is high or low. This setting represents the signal level at the connection to the LabJack U12 device. For example, if a 5V signal on a particular LabJack pin indicates that external control is available, then **Asserted When Signal High** should be selected.
- **Sense of Request for Control Output Signal** - if the relay is wired such that it is normally open, and energizing it closes the contacts, then **Asserted when Relay Energized or Signal High (1)** should be selected.

Note: *The discrete I/O signals from VisionMaster (VM) to the propulsion system should be wired such that when VM is in the process of starting or is powered off, the signals will not be seen by the propulsion system as indicating that VM is requesting or taking control. For example, on a Labjack, a Signal Low state from the LabJack board should result in an open contact, if a closed contact to the propulsion system represents a request for control.*

- **Speed Order Acceleration Limit -** the acceleration of the speed order limit in knots per second. The default value is 1 knot per second. In most circumstances there should be no need for this default value to be changed.

When a Kamewa Propulsion System has been correctly configured the configuration screen will appear as shown in Figure 1.249 below.

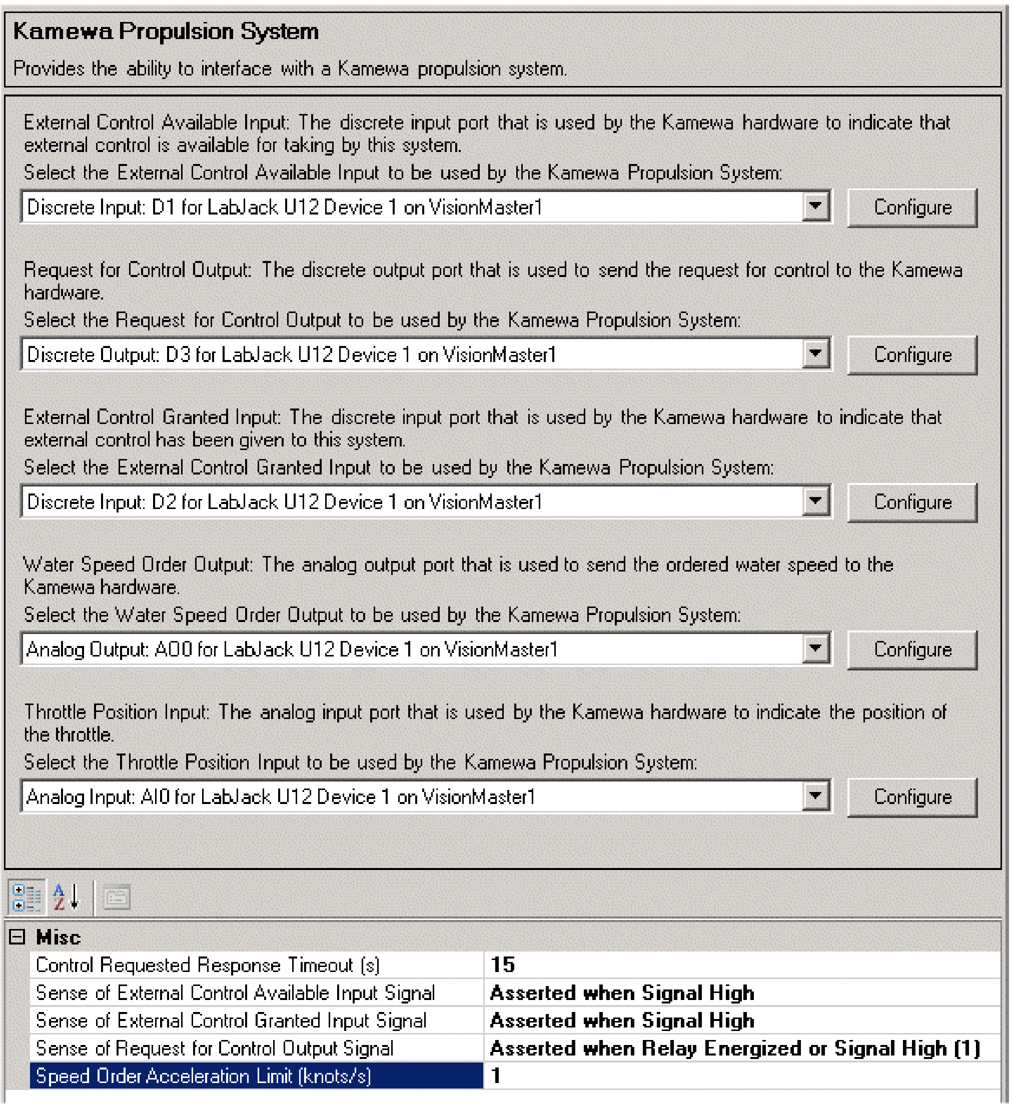


Figure 1.249 Kamewa Propulsion System Configuration

Translation Tables for Ship Loading States

The Kamewa propulsion system sub menu creates load specific translation tables for each loading state defined for the ship.

The translation tables can include a unique mapping from a water speed order voltage to a resulting water speed. For example, when the ship is in a light loading state, a water speed order signal of 3V may result in 20 knots, while in a loaded state the same signal may result in 15 knots.

Once a set of loading states have been defined (see Section 9.3 *Own Ship*'), a set of corresponding Load Specific Voltage to Throttle Position and Water Speed to Load Specific Voltage Translation Tables will appear in the navigation tree. For each loading state, these translation tables allow the user to specify any mapping of voltage to ordered water speed.

To configure a translation table:

1. Click on the **Voltage to Throttle Position Translation Table**, a one line table appears with **Voltage** and **Throttle Position (knots)** columns.
2. Enter the required number of voltages in the Voltage column, and a corresponding knots value in the Throttle Position column. As a value is entered a further table line is created. When two or more values have been entered the config tool will draw a Translation Curve graph showing the relationship between the voltage level of the order signal and the expected water speed that would result from this order, Figure 1.250 shows a graph where two rows of values have been entered.

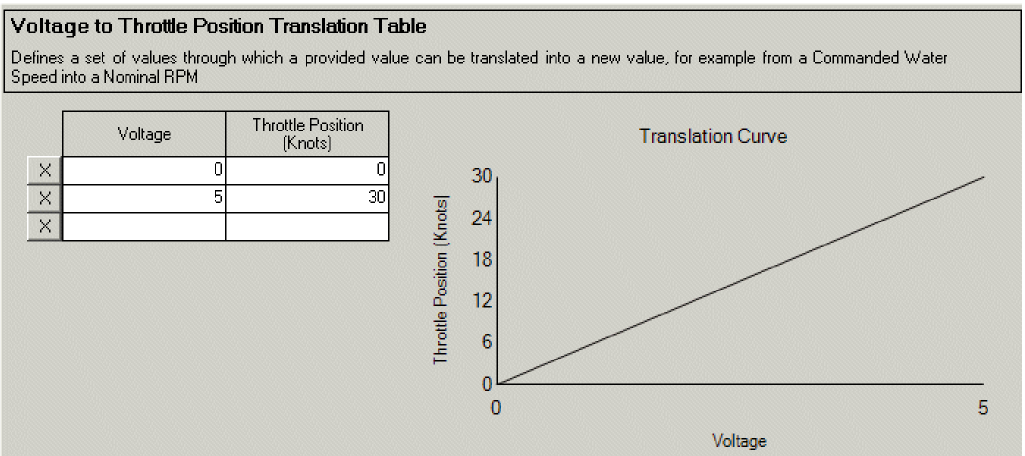


Figure 1.250 Voltage to Throttle Position Translation Table - with two rows

3. If the relationship between voltage and speed is not linear, the user can represent this with more than two rows, as shown below

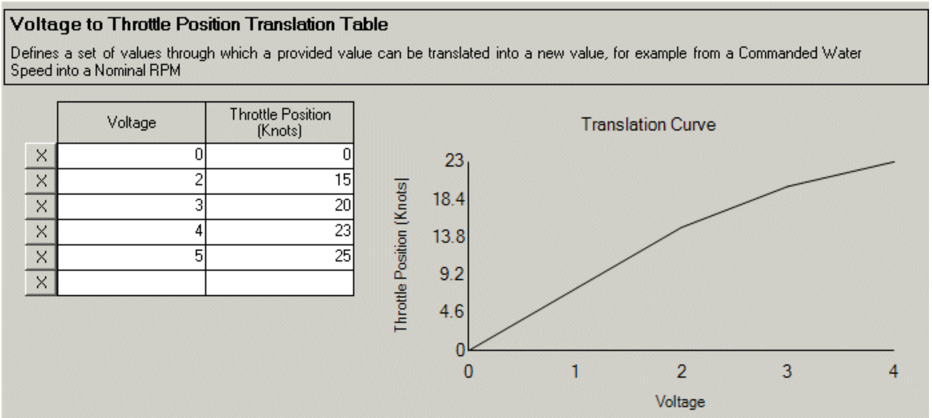


Figure 1.251 Voltage to Throttle Position Translation Table - with five rows

4. Click on the **Water Speed to Load Specific Voltage Translation Table**, a one line table appears with **Water Speed (Knots)** and **Load Specific Voltage** columns.
5. Repeat the process described above, see Figure 1.252 below.

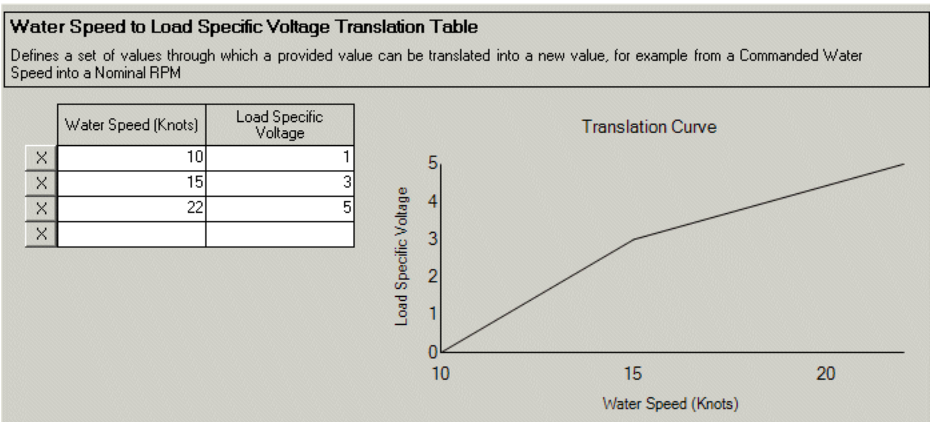


Figure 1.252 Water Speed to Load Specific Voltage Translation Table

9.10.19.2 Configuring a Emri Propulsion System

If a Emri system is selected, the following procedure is followed:

1. From the Propulsion Control Interface topic click on the drop down arrow and select **Emri Propulsion System Composition**. The navigation tree creates a **Emri Propulsion System** sub menu topic.

   The Emri propulsion system window differs from the Kamewa in that a set of propulsion units to include in the Emri propulsion system must be configured. The propulsion units include:

   - Fixipod
   - Port Azipod
   - Starboard Azipod

2. Select the propulsion units that are present on the ship from the **All Propulsion Units** column. Typically, there will be one fixipod and one of each azipod. A set of unconfigured sub menu topics for the propulsion units will appear in the navigation tree with each propulsion unit including 'Commanded RPM to Voltage' and 'Voltage to Actual RPM' translation tables.

When connecting to an EMRI system, VisionMaster provides a voltage, representing a commanded RPM, to each of the fixipods/azipods, and receives actual RPM values back from the EMRI. The RPM voltage signal is translated from a desired water speed by Visionmaster, which also interprets the 'actual RPM' voltages received from each fixipod/azipod.

All the discrete and analog signals associated with the EMRI system are usually handled by using two LabJack U12 devices, with each device connected to a separate node of VisionMaster.

A typical connection of EMRI system signals to the two LabJacks (node 1 and node 2) is as shown in Table 12, Table 13 and Table 14.

Table 12: Discrete signals on LabJack U12 device on Node 2

Discrete I/O	I/O from VM	Signal Name
D0	In	External Control Available
D1	In	Starboard Azipod Available
D2	In	Port Azipod Available
D3	In	Fixipod Available
D4	Out	Take Control
D5	Out	Request for Control

Table 13: Analog signals on LabJack U12 device on Node 1[*]

Analog I/O	Input Voltage (for Labjack)	Input Range	Signal Name
AI1	0-5V	-1 to 1	Starboard Azipod angle (sin value)
AI2	0-5V	-1 to 1	Starboard Azipod angle (cos value)
AI3	0-5V	-100 to 100%	Bow Thruster 1 power
AI4	0-5V	-100 to 100%	Bow Thruster 2 power
AI5	0-5V	-100 to 100%	Bow Thruster 3 power
AI6	0-5V	-100 to 100%	Bow Thruster 4 power
AO0	N/A	Determined by translation tables	Starboard Azipod Ordered RPM

*. Signal rows shown in grey do not relate to configuration of the EMRI; they are included because they would typically share the same LabJack.

Table 14: Analog signals on LabJack U12 device on Node 2*

Analog I/O	Input Voltage (for Labjack)	Input Range	Signal Name
AI1	0-5V	-150 to 150 RPM	Fixipod Actual RPM
AI2	0-5V	-150 to 150 RPM	Starboard Azipod Actual RPM
AI3	0-5V	-150 to 150 RPM	Port Azipod Actual RPM
AI6	0-5V	-1 to 1	Port Azipod angle (sin value)
AI7	0-5V	-1 to 1	Port Azipod angle (cos value)
AO0	N/A	Determined by translation tables	Fixipod Ordered RPM
AO1	N/A	Determined by translation tables	Port Azipod Ordered RPM

*. Signal rows shown in grey do not relate to configuration of the EMRI; they are included because they would typically share the same LabJack.

3. From the Emri Propulsion System window click on the **External Control Available Input** drop down arrow and select Discrete Input: D0 for Labjack device on node 2.
4. Click on the **Request for Control Output** drop down arrow and select Discrete Output: D5 for Labjack device on node 2.
5. Click on the **Take Control Output** drop down arrow and select Discrete Output: D4 for Labjack device on node 2

The Miscellaneous section is similar to the settings previously described for configuring a Kamewa propulsion system, but with the additional setting of Propeller Order Acceleration Limit. The default value is 2 RPM per second. In most circumstances there should be no need for this default value to be changed.

When an Emri Propulsion System has been correctly configured the window will appear as shown in Figure 1.253 below.

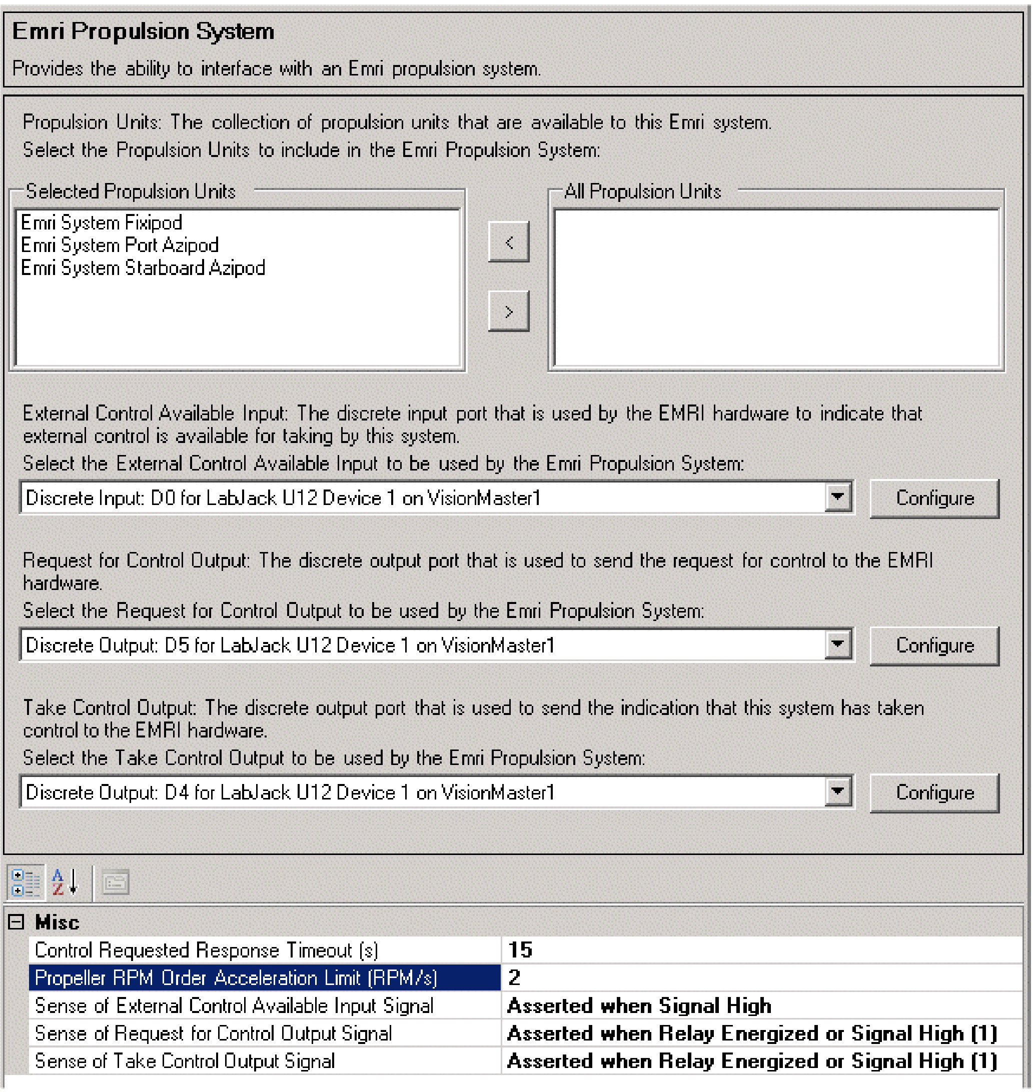


Figure 1.253 Emri Propulsion System Configuration

Configuring the Propulsion Units

The configuration of the Propulsion Units requires the following set of ports and shaft sensor to be selected:

- **Available Discrete Input** - defines what discrete input port is used for handshaking control with the Emri system
- **Actual RPM Analog Input** - defines the analog input port that is used to interpret the voltage levels in the actual RPM signals received from each fixipod/azipod.
- **Ordered RPM Analog Output** - defines the analog output port that is used to interpret the ordered RPM signals sent from each fixipod/azipod.
- **Shaft Sensor** - select the shaft sensor (previously configured under 'Propulsion System Sensor', see Section 9.4.1 *External Sensors*') that is associated with each fixipod/azipod actual RPM signal (this allows the RPM signals to be mapped to CIDs, if desired).

To configure the propulsion units (fixipod, port & starboard azipod):

1. Click on the **Available Discrete Input** drop down arrow and select the required Discrete Input (D1, D2 or D3), depending on which propulsion unit is being configured, see Table 12.
2. Click on the **Actual RPM Analog Input** drop down arrow and select the required Analog Input (AI1, AI2 or AI3), depending on which propulsion unit is being configured, see Table 14.
3. Click on the **Ordered RPM Analog Output** drop down arrow and select the required Analog Output (AO0 or AO1), depending on which propulsion unit is being configured, see Table 13 and Table 14.
4. Click on the **Shaft Sensor** drop down arrow and select the Shaft Sensor (from 1 to 3) to be associated with the data received via the Actual RPM Analog Input signal. This setting allows the RPM data to be selected for display in a CID widget by picking the configured sensor within the CID designer.

Note: *A Propulsion System Sensor, including the number of shafts in the propulsion system and the shaft sensor names, should have been configured in Main Application, Sensors. For details refer to Section 9.4.1 External Sensors'.*

Configuring the Propulsion Units Miscellaneous Setting

The Miscellaneous section includes the following setting:

Sense of Available Discrete Input Signal - defines whether the 'asserted' state is indicated when the input signal is high or low. This setting represents the signal level at the connection to the LabJack U12 device. For example, if a 5V signal on a particular LabJack pin indicates that external control is available, then **Asserted When Signal High** should be selected.

Note: *The discrete I/O signals from VisionMaster (VM) to the propulsion system should be wired such that when VM is in the process of starting or is powered off, the signals will not be seen by the propulsion system as indicating that VM is requesting or taking control. For example, on a Labjack, a Signal Low state from the labjack board should result in an open contact, if a closed contact to the propulsion system represents a request for control.*

When an Emri Propulsion Unit has been correctly configured the window will appear as shown below. Figure 1.254 shows a configuration for a propulsion unit Fixipod.

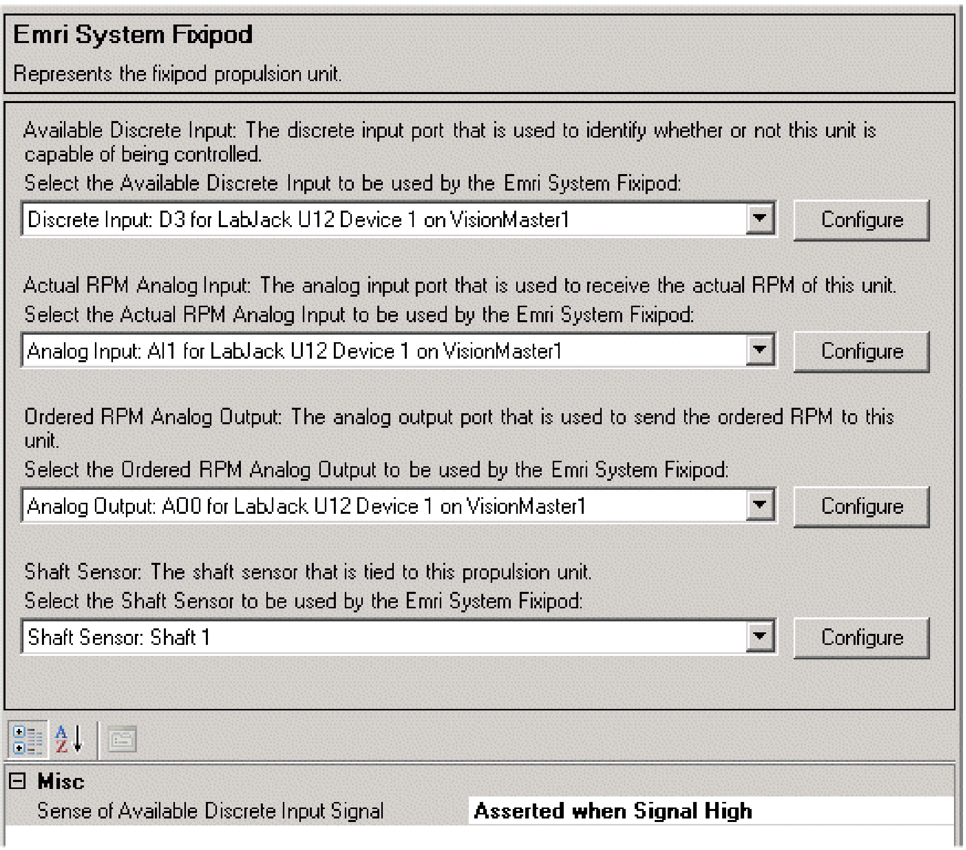


Figure 1.254 Emri Propulsion Unit Configuration

Translation Tables for Emri Propulsion Units

For each Emri propulsion unit the system creates translation tables for commanded RPM to voltage and voltage to actual RPM. The user selects the signals used as the Actual RPM analog input and the ordered RPM analog output.

Tuning of Ordered RPM Output Signals

When VisionMaster needs to order the EMRI system to achieve a particular speed, it generates Ordered RPM analog output signals by applying three translation tables.

The translation tables should be configured in the following order:

1. **Water Speed to Nominal RPM** - the desired water speed is translated to a ‘nominal RPM’ value. The nominal RPM is usually defined to be the correct RPM for the ship’s loading state. Figure 1.255 shows an example of a translation table for a ship full loaded state.

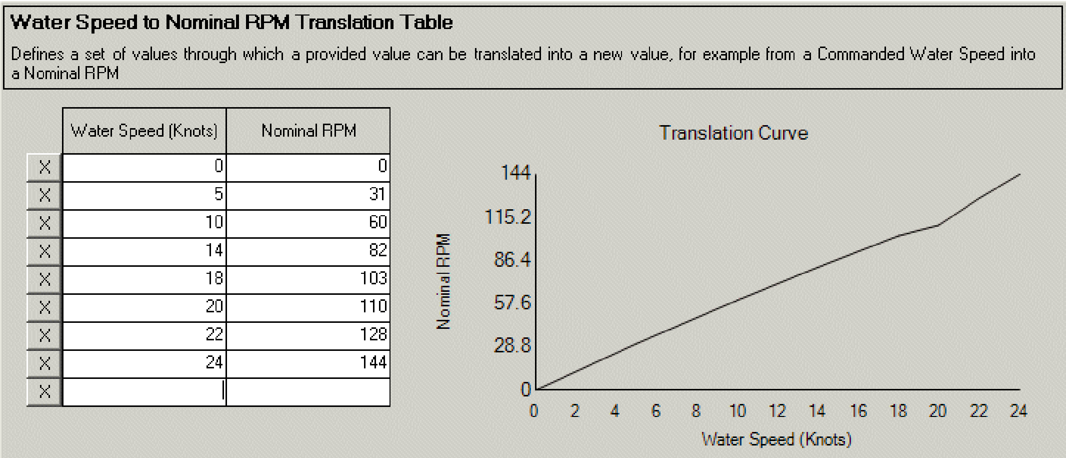


Figure 1.255 Water Speed to Nominal RPM for 'Full' load Translation Table

2. **Nominal RPM to Load Specific RPM** - while VisionMaster is controlling the speed, it will use this translation table for the current loading state of the ship. The result will be the actual RPM that should be generated to achieve the desired water speed. Figure 1.256 below shows a translation table for a full load. Note that the same RPM will be ordered for each propulsion unit.

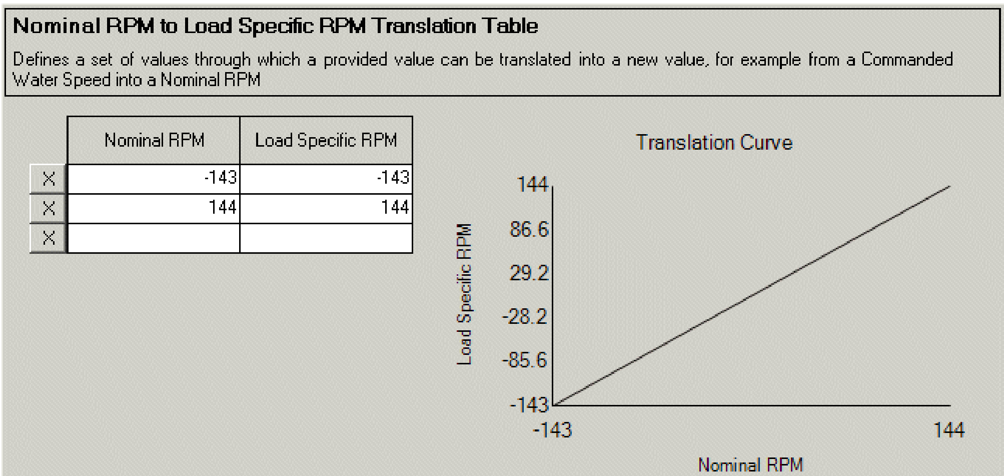


Figure 1.256 Nominal RPM to Load Specific RPM Translation Table

3. **Commanded RPM to Voltage** - this table must be configured independently for each propulsion unit, because, although the RPMs desired on each unit is the same, the voltage to achieve that for each unit could be different.

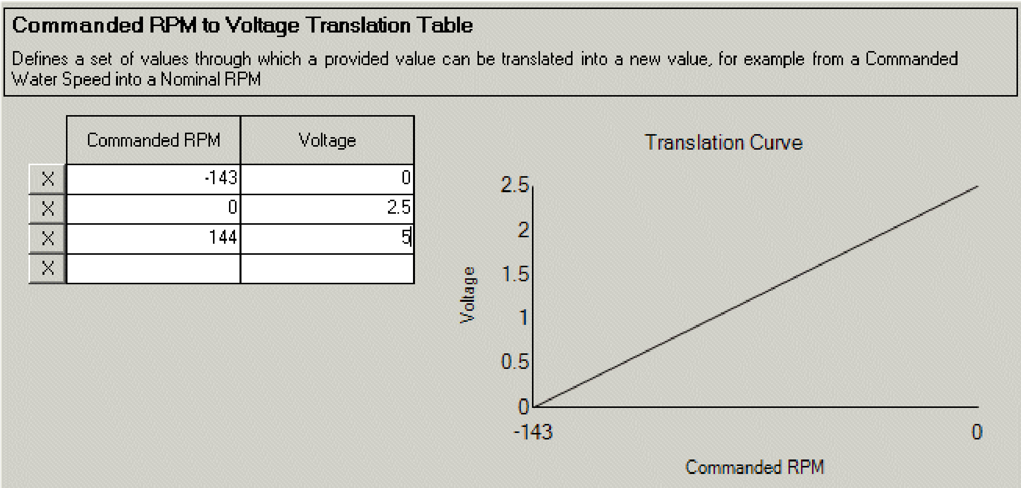


Figure 1.257 Commanded RPM to Voltage Translation Table

Tuning of Actual RPM Input Signals

Each propulsion unit includes a **Voltage to Actual RPM Translation Table**. This table is used to map the range of voltages (generally 0 to 5V) to a range of RPM values.

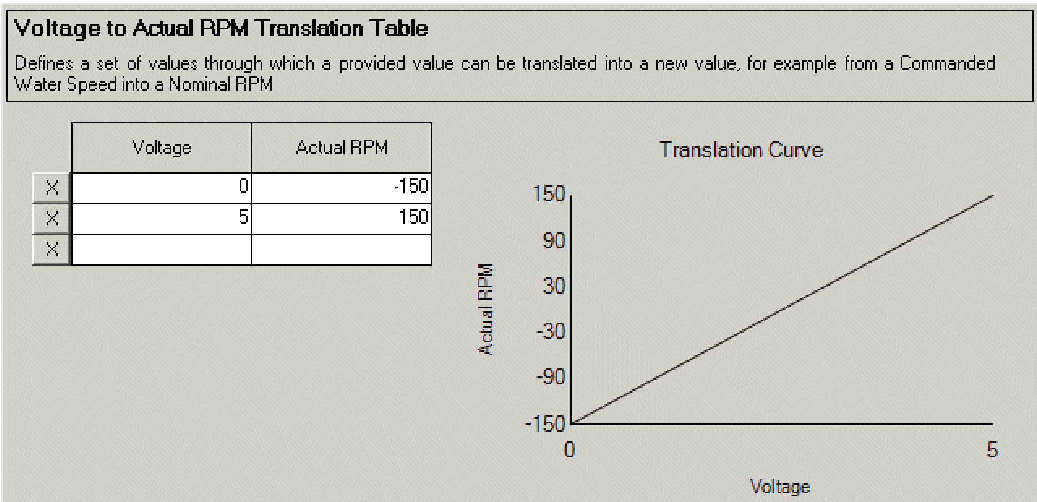


Figure 1.258 Voltage to Actual RPM Translation Table

9.10.19.3 Configuring a H-Scientific ShipSim Propulsion System

CAUTION!

A H-Scientific ShipSim propulsion system should only be configured for testing with the ShipSim simulator. This propulsion system must not be selected for use on a real vessel.

The H-Scientific ShipSim Propulsion System should be connected to a Labjack. If this propulsion system is selected, the following configuration procedure is followed:

From the Labjack device configuration window (see Figure 1.63 '*Labjack U12 Device Configuration Window*'):

1. Set the Analog I/O **AI0** description to **H-Scientific** (or something equally descriptive).
2. Set the the Analog I/O **AO0** description to **RPM order to H-Scientific** (or something equally descriptive).

From the H-Scientific ShipSim Propulsion System topic:

1. Click on the RPM Order Output: drop down arrow and select **Analog Output AO0 (RPM order to H-Scientific)..**
2. Click on the Actual RPM Input: drop down arrow and select **Analog Input AI0 (H-Scientific).**

The **Speed Order Acceleration Limit** is the acceleration of the speed order limit in knots per second. The default value is 1 knot per second. In most circumstances there should be no need for this value to be changed.

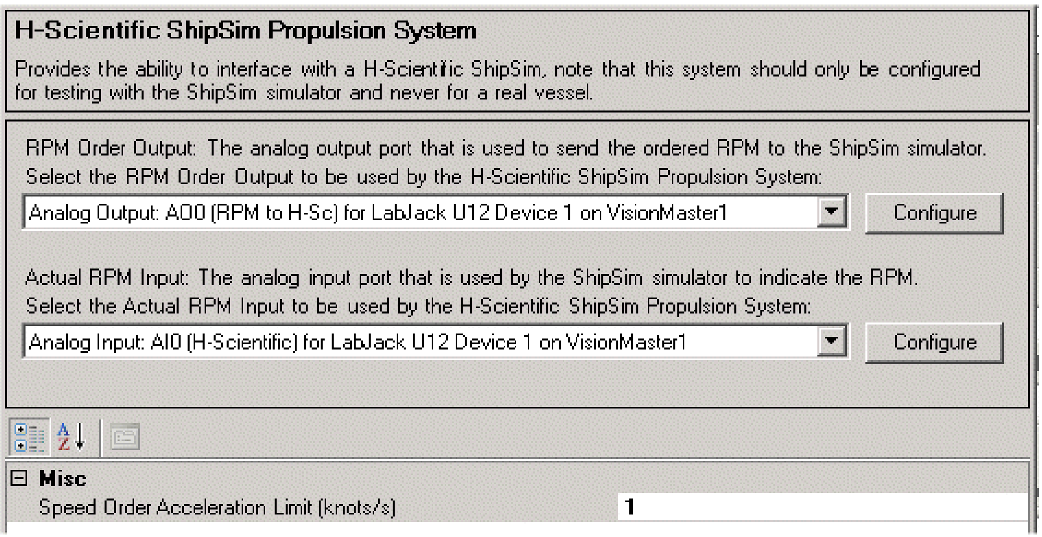


Figure 1.259 H-Scientific ShipSim Propulsion System

Tuning of Ordered RPM Output Signals

When VisionMaster needs to order the H-Scientific system to achieve a particular speed, it generates Ordered RPM analog output signals by applying three translation tables.

The translation tables should be configured in the following order:

1. **Water Speed to RPM** - the desired water speed is translated to a ‘nominal RPM’ value. The nominal RPM is usually defined to be the correct RPM for the ship’s loading state.
    - On the first line of the translation table set both Water Speed (knots) and RPM to **0**.
    - On the second line of the translation table set the maximum ship speed (Water Speed of **25** knots and **100** RPM).
2. **Commanded RPM to Voltage -** this table must be configured independently for each propulsion unit, because, although the RPMs desired on each unit is the same, the voltage to achieve that for each unit could be different.
    - On the first line of the translation table set both Commanded RPM and Voltage to **0**.
    - On the second line of the translation table set the Commanded RPM to **100** and the Voltage to **5**.
3. **Voltage to Actual RPM** - the voltage is translated to a ‘actual RPM’ value. The actual RPM is usually defined to be the correct RPM for the ship’s loading state.
    - On the first line of the translation table set both Voltage and Commanded RPM to **0**.
    - On the second line of the translation table set the Voltage to **2. 5** and the Commanded RPM to **100**.

9.10.19.4 Configuring a SimVt Propulsion System

CAUTION!

A SimVt propulsion system should only be configured for testing with the ShipSim simulator. This propulsion system must not be selected for use on a real vessel.

1. From the SimVt Propulsion system topic select the Water Speed Order Output port to be used. This is usually a serial port on the PCIO used to send the ordered water speed to the SimVt simulator.

The **Speed Order Acceleration Limit** is the acceleration of the speed order limit in knots per second. The default value is 100 knots per second. In most circumstances there should be no need for this value to be changed.

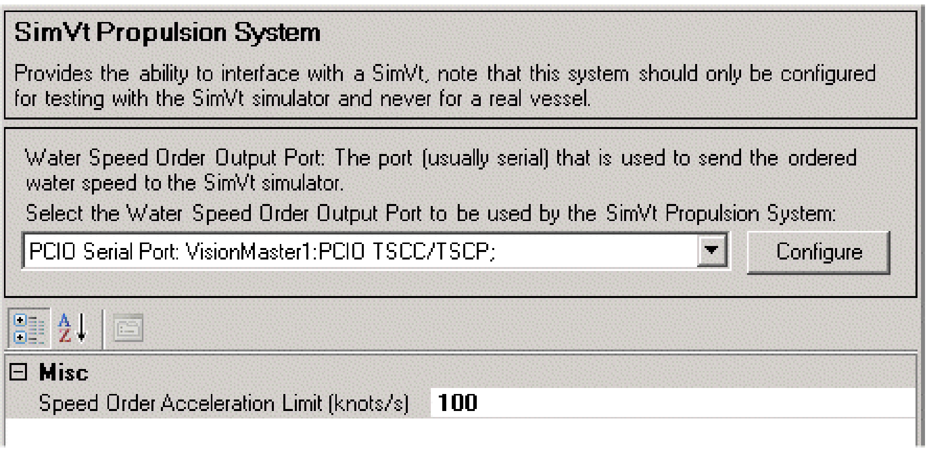


Figure 1.260 SimVt Propulsion System

9.10.20 Static Site

Static Site is an optional facility that allows for a stationary installation. This is intended for small single node installations (for example, an oil rig) and larger multi-node, land based Vessel Traffic Services (VTS) installations.

When configured, a Static Site system will apply to all nodes in a multi-node system.

The following optional features are incompatible when Static Site is selected:

- The following Nav Tools:
  - Next Turn EBL
  - Anchoring
  - Line Of Position
- Route planning, monitoring and ETA Calculator
- Man Overboard
- Safety Checking
- Autopilot
- Propulsion Control Interface
- Joystick Heading Control
- 3D Charting
- Sonar
- Conning Info Display

If these features have been previously selected their status buttons will be shown as red.

For a description of Static Site features, refer to Annex B '*Static Site*' in the Radar/Chart Radar User Guide, document number 65900010.

9.11 Plugin Feature Setup

The Plugin Feature Setup defines how plugin feature applications used with VMFT are handled.

The recommended option for this setting is **Force configuration of all recommended options**.

9.12 Spatial Query Manager

The Spatial Query Manager enables a limit to be set on the number of results that can be returned when performing a chart query (Pick Report) in a densely populated area,

If more objects are found than the limit, the query finishes and the objects found up to that point are returned. The default maximum number of query results is 500 objects. To change the limit click in the field and enter the required number. To have an unlimited number of query results shown enter 0.

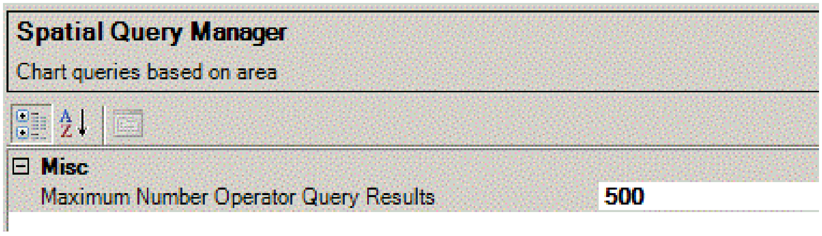


Figure 1.261 Spatial Query Manager

10 Validating and Exporting a Configuration

10.1 Validating a Configuration

The Validate function on the File menu provides a method of checking the reason for any invalid settings made to the whole configuration. This can be used in addition to checking the validation of individual topics by right clicking on them, see Section 5.2 *Right Click Options on Configuration Topics*'.

You can access the function at any time by clicking on the File drop down menu and selecting **Validate**. When a configuration setting is invalid the Validate window provides a brief description of all current validation errors, if more than one error exists then these are listed.

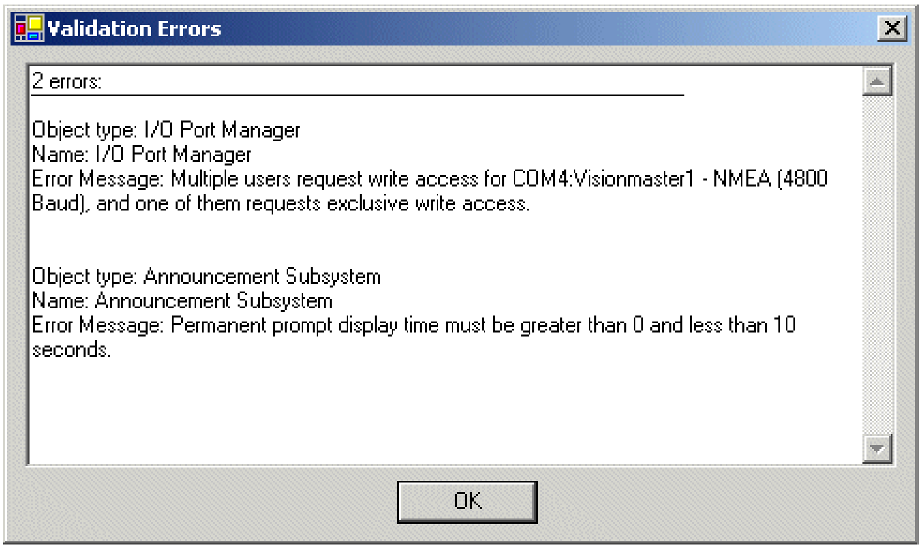


Figure 1.262 Validation Errors

To resolve validation errors check the colour of the status buttons in the navigation tree, the invalid configuration will be the item topic with the red status button.

Where there are no validation errors in the configuration file all status buttons show as green and the Validate window confirms no errors.

10.2 Exporting a Configuration

This function enables a saved configuration file to be saved as a readable.txt file to a external port (usually a USB memory stick).

To export a configuration file:

1. Click on the File drop down menu and select **Export Summary**. a browse window appears enabling you to navigate to the required external port.

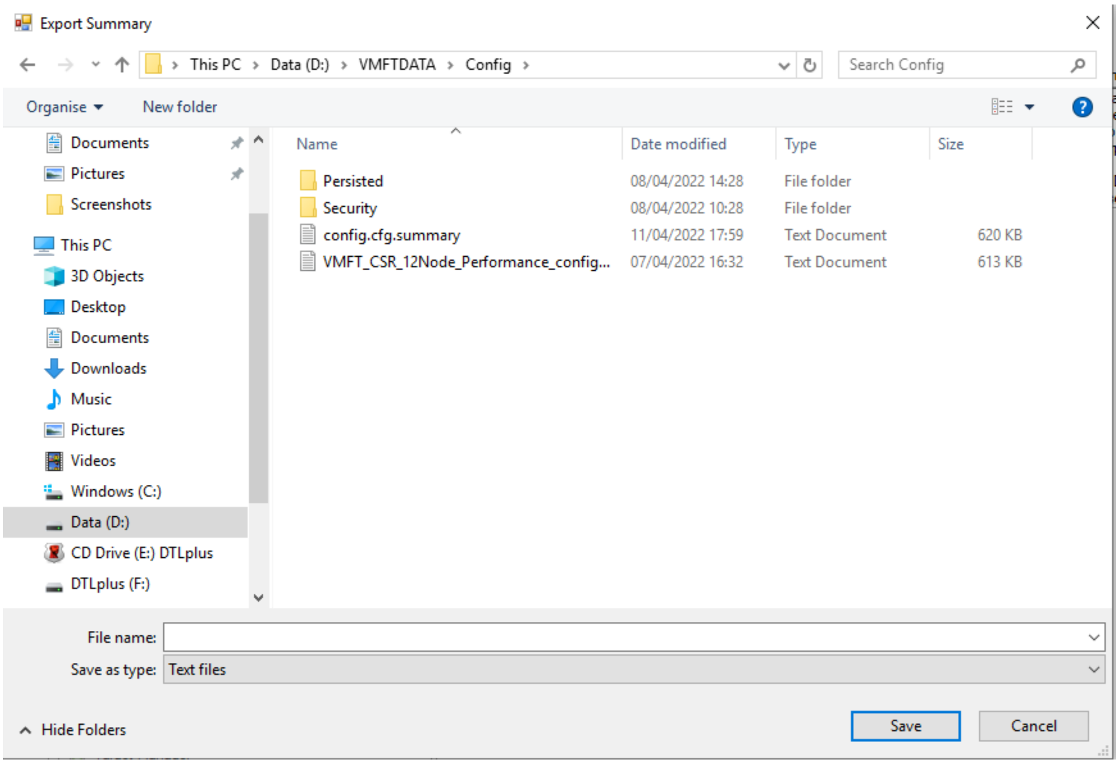


Figure 1.263 Export Summary

2. With the external drive displayed name the file in the **File name:** field and click the **Save** button. The file is saved as a.txt file and can be opened in a basic text editor program.

11 Clear All Persisted Data

The Clear All Persisted Data[*] option clears all persisted data that is stored on the system. The option is selected when, for example, persisted data residing on the system has become corrupted.

CAUTION!

The Clear All Persisted Data option should only be selected when requested to do so by a Sperry Service engineer. Always make a back up a copy of the configuration file prior to clearing persisted data.

After this option has been selected the configuration file reverts to its original commissioned production status.

[*] Data that is stored by the system during operation and retrieved by the system on any subsequent restarts. Examples of persisted data include route plans, mariner objects, data logs, commissioning settings.

12 Restart and Shutdown System

The **Restart System** command is selected if any errors or faults occur during the running of the system. This option will cause the System Configuration tool, and all other currently opened programs to close, the Windows system will power down and then restart.

The **Shutdown System** command is selected when the operator requires to shut down the system for a prolonged period of time. This option will cause the System Configuration tool, and all other currently opened programs to close and the Windows system to power down.

Chapter 1 Appendix A

Configuring a Multi-Node System

Contents

List of Figures

A.1 Introduction

The instructions given in this Appendix A detail specific steps a Service engineer must take to configure a VisionMaster multi-node system.

A multi-node system may be configured from one node. Before configuration it is important to ensure that the VisionMaster application is shut down on all nodes and that each node is in Service mode.

For all other instructions on configuring a VisionMaster system, refer to Chapter 1 ‘*Configuration*’.

A.2 Opening the Product Configuration File

When all IP addresses have been correctly entered, open the required product configuration file (i.e. **Multinode TotalWatchConfig.cfg**) using the Config Picker tool as described in Section 4.3 ‘*Selecting the correct Configuration File*’ of Chapter 1 ‘*Configuration*’.

To configure your multi-node system from the standard multi node configuration file refer to the following sections.

A.3 Entering a Security String

The security string defines the system level authorisation parameters available for that node, plus a list of any optional features that have been purchased by the customer.

The Security String topic is replicated in the Quick Setup section of the configuration For information on this function refer to Section 6.2 ‘*Security String*’ in Chapter 1 ‘*Configuration*’.

A.4 Configuring Resources

The following sub-sections covering general purpose components for a multi-node system are included where the configuration process differs from the instructions given in Chapter 1 ‘*Configuration*’, Section 8 ‘*Resources*’.

For instructions on configuring all other system resources refer to the relevant sections in Chapter 1 ‘*Configuration*’.

A.4.1 Configuring PCIO Boards

A multi-node system may include more than one PCIO board, see Figure A.1. To configure a number of PCIO boards:

1. From the Resources menu of the navigation tree open the PCIO Board Manager window. The PCIO Boards includes a **Selected PCIO Boards** column with the currently configured PCIO boards and an **All PCIO Boards** column.
2. Highlight **PCIO Board** in the All PCIO Boards column and click the **<** button. An unconfigured PCIO board is moved into the **Selected PCIO Boards** column and the system adds an unconfigured topic for the board in the navigation tree with a list of discrete outputs and inputs. A list of serial ports are also created for the board in the I/O Port Manager.

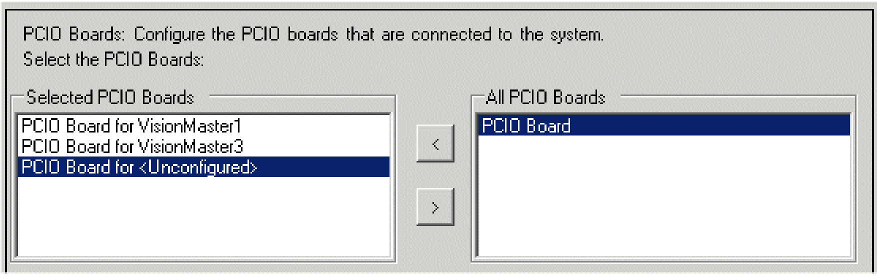
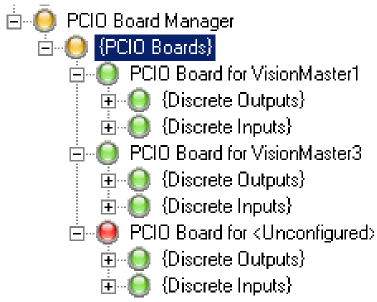


Figure A.1 PCIO Board Manager

3. Click on the unconfigured topic in the navigation tree and from the PCIO Board configuration window select the node to which the PCIO board is connected, see Figure A.2.



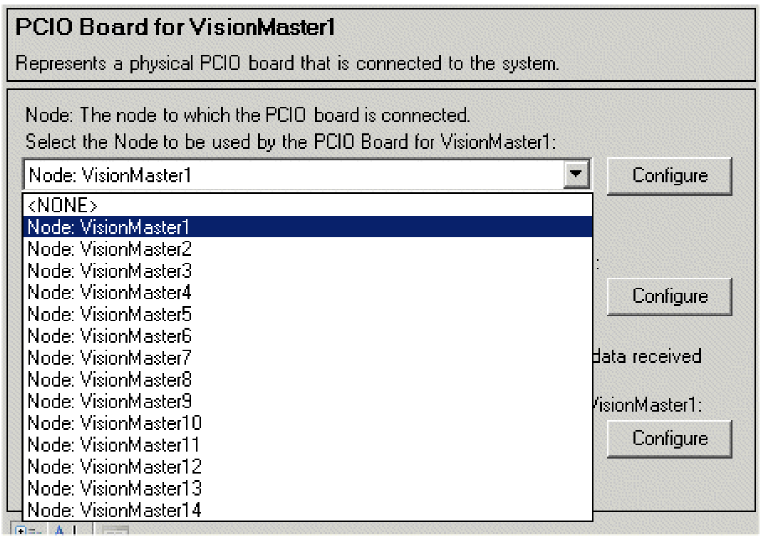


Figure A.2 Selecting Node for PCIO Board

A.4.1.1 Considerations when configuring PCIO Boards

In a multi-node system it is important that each PCIO is physically connected to and configured to the same set of heading sensors. One analog and one high speed serial compass interface is supported by the PCIO for selection.

All nodes which have a PCIO must have the same set of heading sensors configured. The heading sensors on each node must therefore have the same name assigned, e.g. ‘Gyro’.

For information on configuring sensors via the interfaces on the PCIO boards, refer to Section 9.4.1.2 ‘*Interfaces for Acquisition*’ in Chapter 1 ‘*Configuration*’.

A.4.2 Changing Data Distribution Settings

Data Distribution enables the broadcast TTL (Time To Live) to be changed from the default setting and selected nodes that will operate in ‘Safe Mode’ in the event of a network fault.

A.4.2.1 Node Connection Manager

The Broadcast TTL is the time, in seconds, used to allow for multi-network broadcast discovery.

The default value is five seconds. To change the time click in the **Broadcast TTL** field and enter the required value.

A.4.2.2 Selecting Nodes for Safe Mode

A multi-node system can be configured such that individual nodes are selected for ‘Safe Mode’. These nodes will automatically disconnect from the other VMFT nodes if they detect conditions on the network that may prevent them from operating reliably.

Typically, on a large system of 12 nodes or more, it is advisable that at least one Radar node and one ECDIS node are selected for safe mode.

A node operating in Safe Mode will function as a standalone node, with direct access to all primary sensor data types.

To select nodes to operate in Safe Mode:

1. From the navigation tree navigate to Data Distribution/Node Connection Manager and click on the **Safe Mode Indicator** button, the window opens with all system nodes listed in the **All Safe Nodes** column.
2. Select the nodes required for Safe Mode and click the < button. The nodes are moved to the **Selected Safe Nodes** column.

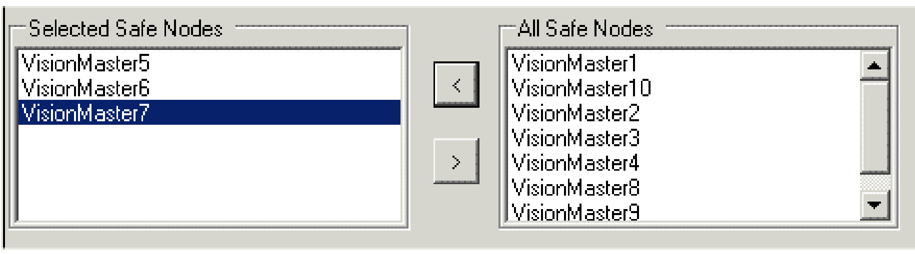


Figure A.3 Safe Mode Indicator

Note: *For a Client-Server system, it is not recommended to configure Safe Mode.*

Nodes selected for Safe Mode will automatically disconnect when network conditions dictate. On a selected node, the operator may also manually enter or exit Safe Mode from the VisionMaster display. For operator information refer to the ‘System’ chapters in the Chart Radar or ECDIS User Guides.

A.5 Configuring Applications

The following sub-sections covering application functions (including Section 3 '*Entering a Security String*') are included where the configuration process differs from the instructions given in this section.

For instructions on configuring all other applications refer to the specific section in Chapter 1 '*Configuration*'.

A.5.1 Radar System

A.5.1.1 Interswitch

The Interswitch is connected to a serial port on each PCIO unit of the system and interfaced to the Processors unit via USB connections.

1. To access the Interswitch window select **Interswitch**, either from the Interswitch drop down arrow in the Radar System window, or from the Interswitch topic in the navigation tree. Figure A.4 below shows a configured Interswitch window.

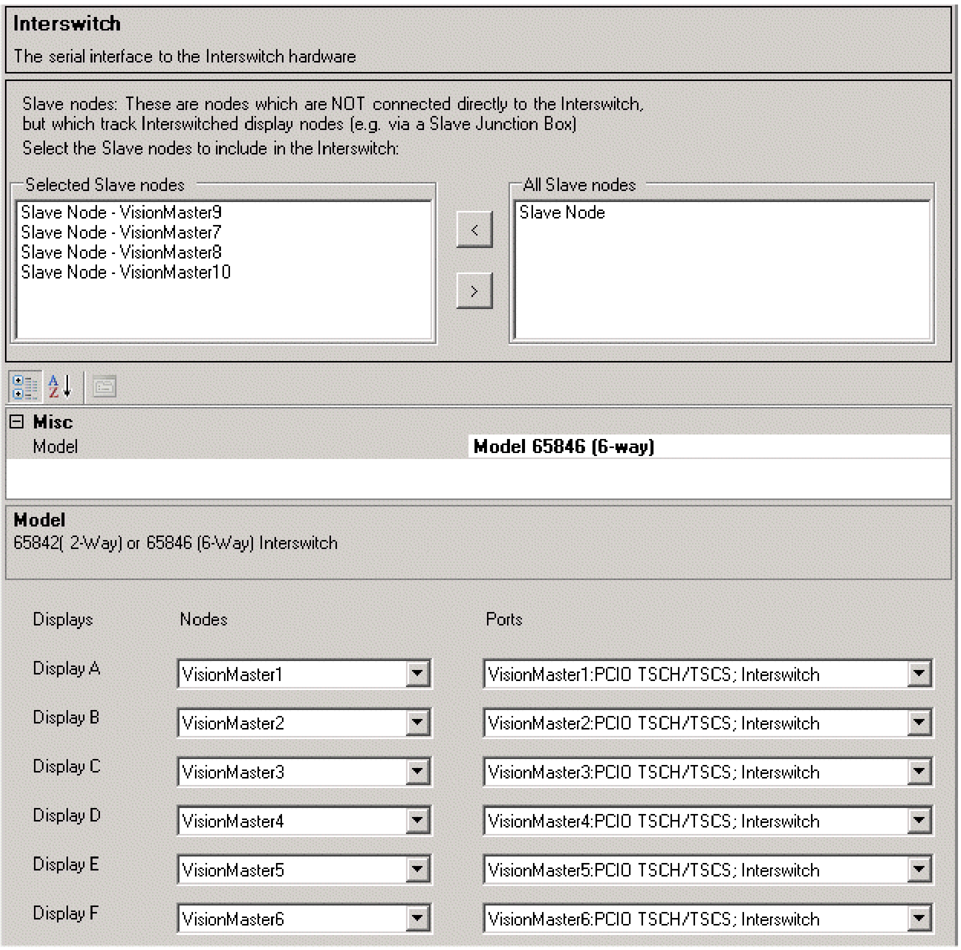


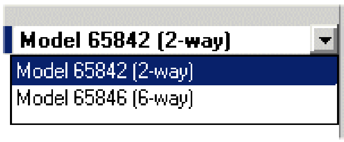
Figure A.4 Interswitch Configuration Window

The Interswitch configuration window enables the following settings to be made:

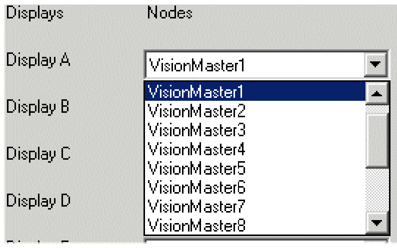
- **Slave Nodes** - the selection of slave nodes which are not connected directly to the interswitch.
- **Model** - the selection of the interswitch model type; 2-way or 6-way.
- **Nodes and Ports** - the selection of the nodes and ports for each display connected to the Interswitch.

The displays are listed alphabetically, the number of displays shown is dictated by the Interswitch model selected; A to D for a 2-way interswitch and A to F for a 6-way interswitch.

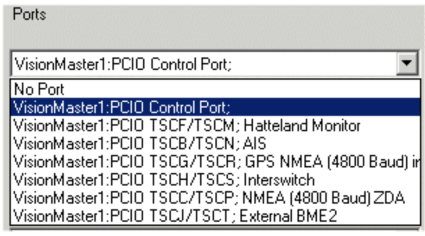
2. The system supports both 65842 (2-way) and 65846 (6-way) interswitches. To change the model from the default (2-way) click the drop down arrow and select 6-way from the list.



3. To select a node for each display click on the Nodes drop down arrow and select from the list previously configured in Nodes.



4. To select a port for the display click on the Ports drop down arrow and select from the list. The port selected should be a port that has been previously configured to use Interswitch settings.



Configuring Slave Nodes

If there are nodes on the system that are not connected directly to the Interswitch but which track interswitched display nodes, for example via a Slave Junction Box*, these slave nodes are required to be configured to their tracked node.

To configure one or more slave nodes:

1. Select **Slave Node** from the **All Slave Nodes** column and click on the button to move to the **Selected Slave Nodes** column. An unconfigured topic is added to the {Slave Nodes} sub menu list. Repeat the process for each slave node required.
2. Click on the unconfigured topic to open the Slave Node window.

*. A Slave Junction Box only allows up to three Slave displays to be attached.

3. Select the slave node from the drop down list. For example, if six nodes are directly connected to the interswitch on a 10-node system then the remaining four nodes will be available for selection.
4. Select the node to which the slave node will track. These will be the nodes selected on the Interswitch window, see Figure A.5.

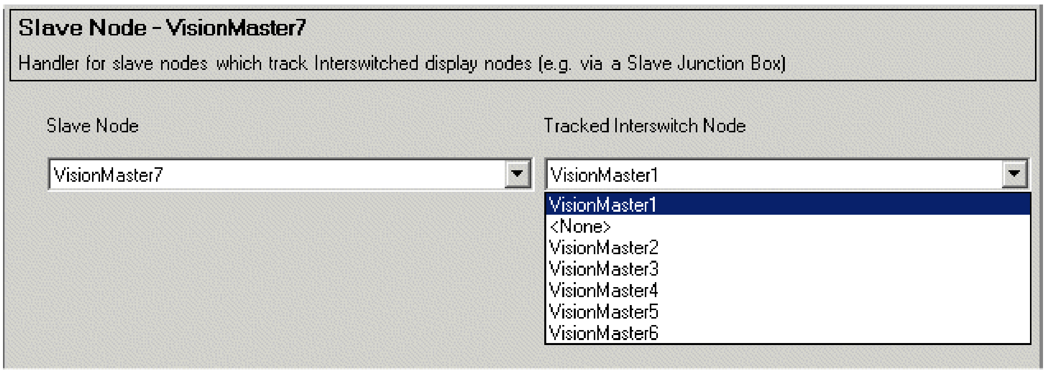
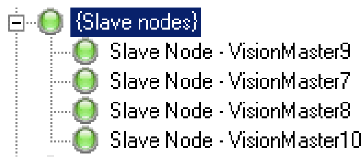


Figure A.5 Slave Nodes Configuration

5. The configured slave nodes will be shown listed in the navigation tree.



A.5.1.2 Displays: Slave Display

When an Interswitch has been configured the system automatically creates a **Displays: Slave Display** topic below the Interswitch on the navigation tree.

This window enables you to select slave only displays (i.e. the displays without an interswitch control connection) and which transceiver the displays are to be connected to.

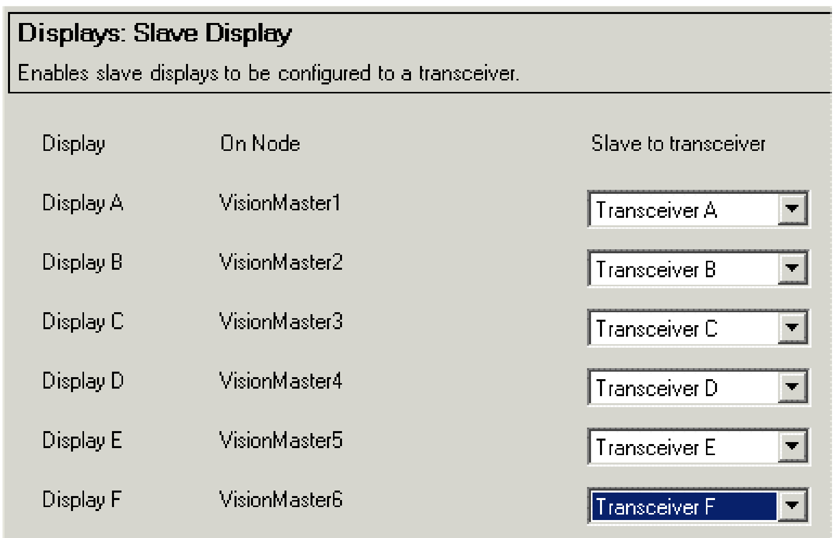
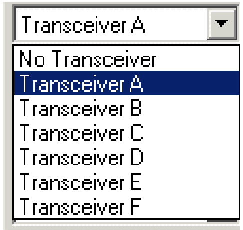


Figure A.6 Displays: Slave Only and Node Association

The displays and nodes are listed as previously configured on the Interswitch Configuration window.



To select a transceiver for a display click on the Slave Transceiver drop down arrow and select from the list.

The transceivers are listed alphabetically, with the number of transceivers dictated by the interswitch model previously selected; A and B for a 2-way interswitch and A to F for a 6-way interswitch.

A.5.2 Alerts

By default all system nodes are selected to receive discrete outputs for a buzzer. If certain nodes do not include a PCIO the option to allow nodes to be configured without buzzers may be selected. For details refer to Section 9.7.4.4 '*Miscellaneous Settings*' in Chapter 1 '*Configuration*'.

A.6 Configuring Optional Features

A.6.1 Station In Control

The Station In Control (SIC) feature is selected where a more secure system of control is required on a multi-node system. The feature enables critical system functions to be controlled only from one or more nodes that have been designated as a station control.

A SIC node may take control over any of the following SIC functions, defined as follows:

- Acknowledge alerts.
- Turn on/off the track control feature or make changes to track control parameters.
- Change the look ahead range, safety depth, and safety height.
- Control whether safety checking Cautions can raise an alarm.
- Change manual sensor values.
- Change the sensor source for any sensor.
- Turn on/off the speed control or make changes to speed control parameters.
- Start or stop the execution of all types of route plans.
- Change the current active chart database.
- Change the active Mariner Object layer, or modify the Mariner Objects that are tied only to geographic locations.

The SIC window is divided into a Miscellaneous parameter setting and a Station In Control Group Assignments table, see Figure A.7.

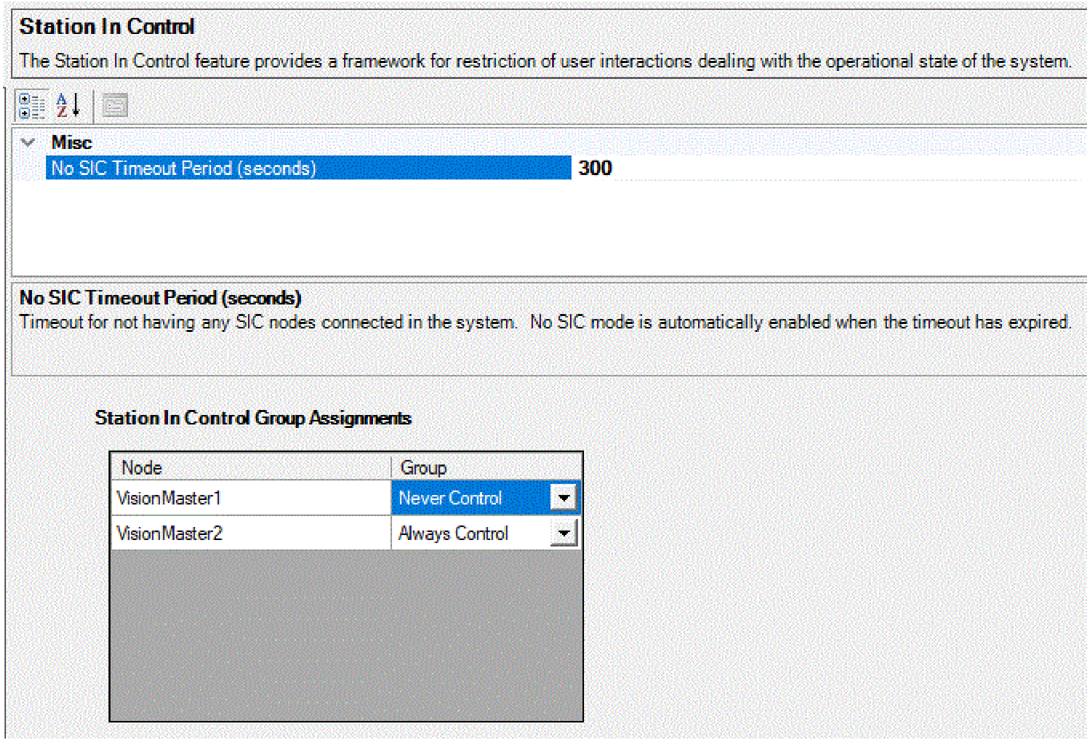


Figure A.7 Station In Control

A.6.1.1 Miscellaneous parameters

The following miscellaneous settings may be changed. All settings are displayed in seconds:

Setting	Default
• No SIC Timeout Period	• 300

Timeout for not having any SIC nodes connected to the system. No SIC mode is automatically enabled when the timeout has expired.

A.6.1.2 SIC Group Assignments

The SIC Group Assignments table defines the control status of all nodes on a multi-node system. The default state is for all nodes to be 'Always in Control'.

To change the control status of a specific node click on the Group drop down arrow and select from **Always Control** or **Never Control.**

Nodes that are selected in the Never Control group will never be in control of the functions listed in page 10, unless every node from the other groups is unavailable.

Nodes selected as **Never Control** will also be unable to Shut down or Re-Start All nodes in the System/Shutdown menu.

A.7 Changing the Current Configuration

The following procedures must be followed when changing the current configuration on a multi-node system:

1. From the VisionMaster (VM) FT application log in all nodes as Service mode, see Chapter 2 '*Diagnostics, Commissioning & Service Mode*' for details.
2. After login, go to Shutdown and click on the **Service Mode** button. The VisionMaster application on all nodes is shut down and the service desktop appears.
3. From one of the nodes open the Configure VM FT application and make the required changes to the configuration.

CAUTION!

If a node, configured as a database server, is detached from the multi-node system and database updates are made, the following warning is raised.

Database server not found: changes made to local database may be lost when reconnecting. Export a backup of changes recommended.

It is advisable to either re-connect the database server before updates are made, or export database changes to an external memory stick

4. When the required changes have been made, save the configuration and test the config file on the same node by opening the VM FT application. Ensure the config file is valid and works as expected with the application opened.

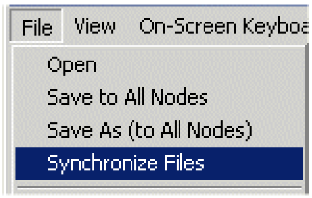
Note: *Alarms for missing interfaces will be raised on the node before the other nodes have been restarted.*

5. With the config file working correctly, restart all other nodes on the system.

A.8 Synchronizing a Configuration File

The Synchronize Files option compares the currently loaded config file and CID related files to the corresponding files on each node of the system.

To synchronize config files click on the File drop down menu in the top left of the screen and select **Synchronize Files**.



The following typical Synchronize Files window appears with a list of the nodes and any differences between the files on each node highlighted in a table, see Figure A.8.

If the config files are correctly synchronized the Info column of the table shows the message **Synchronized** over a green background against each node.

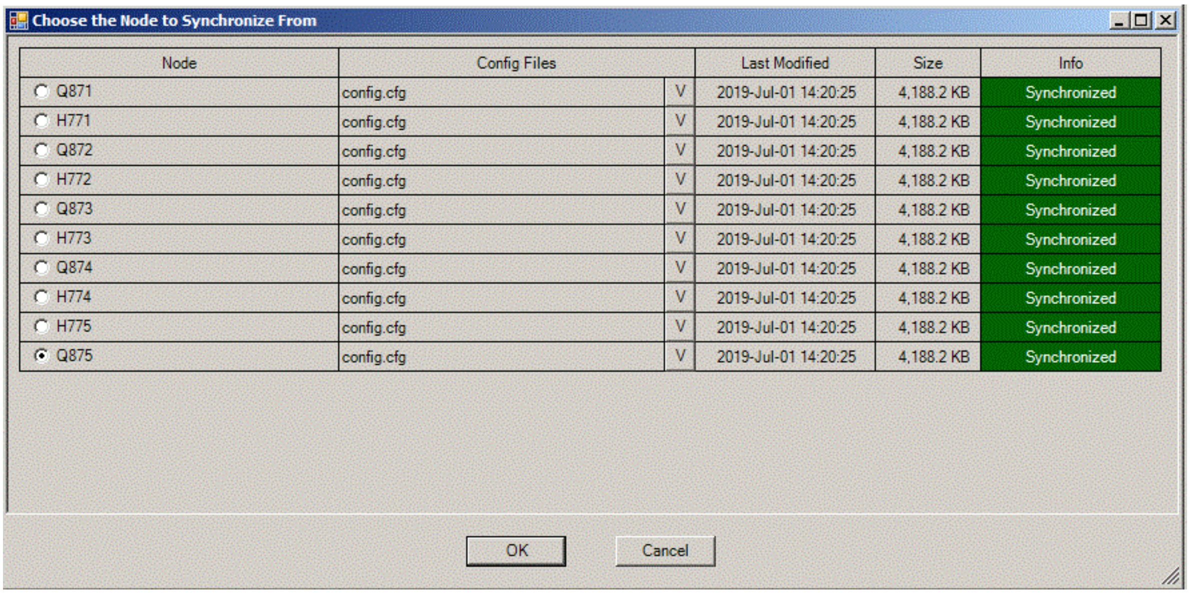


Figure A.8 Synchronise Files

To ensure each node has an identical set of loaded configuration files select the node to synchronize from by clicking the **Node** radio button and then click the **OK** button. All of the files from the selected node are copied to all other nodes in the system.

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Chapter 1 Appendix B

Configuring A System for Client/ Server Radar

CONTENTS

LIST OF FIGURES

B.1 Introduction

The following instructions given in this Appendix B detail specific steps a Service engineer may need to take in order to configure a VisionMaster system for Client/Server Radar (CSR).

Section B.2 '*Setting Up a CSR Configuration*' includes specific instructions on setting up or making changes to a CSR configuration.

For all other instructions on configuring VisionMaster, refer to Chapter 1 '*Configuration*'.

Prior to configuration each node on the CSR system must be assigned a unique IP address. For information on setting up IP addresses, refer to Section 3 '*Setting the IP Addresses for Nodes*' in Chapter 1 '*Configuration*'

A CSR system may be configured from any one node. Before configuration it is important to ensure that the VisionMaster application is shut down on all nodes and that each node is in Service mode.

A CSR system will include Server nodes, providing radar video for display at Client nodes, configured to receive radar video. A Client product type may be a CAT 1 Radar, Total Watch or ECDIS with radar overlay etc.

A CSR system may also include nodes that do not require radar video such as ECDIS, Conning Information Display (CID) or Central Alert Management (CAM).

This Appendix also includes instructions on installing and operating the TightVNC application, which allows remote access to perform control and administration tasks on Servers from a Client desktop, see Section B.3 '*TightVNC*'.

B.2 Setting Up a CSR Configuration

B.2.1 Configuring Resources

The following sub-sections covering Resource components for a Client/Server Radar (CSR) system and are included where the configuration process differs from the instructions given in Chapter 1 '*Configuration*', Section 8 '*Resources*'.

B.2.1.1 Setting up Nodes

On a typical CSR system the number of nodes, the type of node (e.g. Client or Server) and the product type is authorised and defined by a Security String, which is provided by your VisionMaster supplier and will, in most circumstances, be automatically entered when the system is commissioned.

Each node on the CSR system must also have a security device (sometimes known as a dongle) attached to the USB port of the PC.

The following procedure describes specific configuration steps that may be implemented when setting up nodes.

1. From the navigation tree click on the **Nodes** topic in the Resources menu.
2. To specify the total number of nodes on your system, click on the **Number of Nodes** drop down arrow and from the list select the number of nodes on the system[*]. Nodes are added to the **Display Name** list with their base node name and number auto generated.
3. To change the node display name click in the **Base Node Name**: field, delete the default name, enter a new name and click on the **Auto-Generate Names** button, see Figure B.1. For example, if a large number of Client nodes are to be generated then **Client** should be entered.
4. For Server nodes and nodes not receiving radar video such as ECDIS or CID nodes, enter the name of the node in the Display Name field.
5. Enter the windows network host name assigned to each PC on the system (this is the Computer Name shown in Control Panel/System Properties). Note, the windows host names entered must be no more than 15 characters.
6. For Server nodes click on the Product Type drop down list and select **Radar Video Server**.
7. For all other nodes select the relevant product type for that node from the drop down list (see note below). Repeat the process for each node, see Figure B.1.

*. The maximum number of nodes is 4 Servers and 32 Client connections, however only 20 Clients may be supported by the network infrastructure.

Note: *All Client nodes that are listed as ‘CSR Clients’ on the Client Server Radar sub menu topic require a radar video capable product type to be selected. To configure nodes for non radar video product types see Section 2.1.3 ‘Setting up Non-Radar Video Product Types’*

The Processing Participation column enables the availability of each node for general system wide processing to be configured. The setting defaults to **Normal**, which means nodes are available for any general processing.

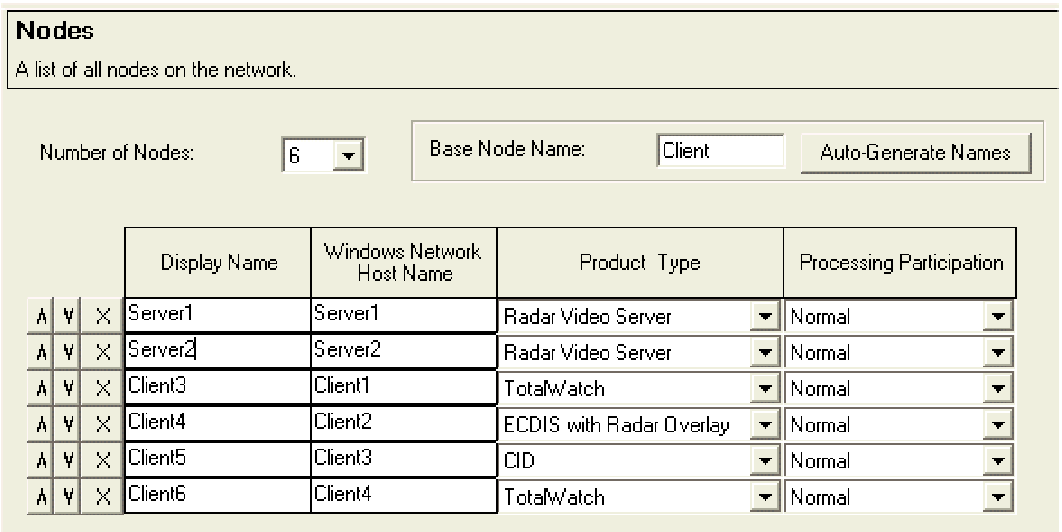


Figure B.1 Nodes Window

B.2.1.2 Setting up Monitors

The Monitors window enables monitor settings for Servers and Client nodes to be configured.

The Node column will automatically list the number of Servers and Clients as defined in the Nodes screen, for example, two Servers and four Clients. These settings cannot be changed.

The following CSR specific settings can be made from the Monitors window:

- **Headless Node** - tick the Headless Node check-box for all Servers on the system. The Server nodes do not have monitors connected, therefore when this option is selected the monitor settings for the Servers are disabled, see Figure B.2. As a result, the system does not perform monitor resolution tests when the Server nodes start up.
- **Monitor Type** - select the size of the Client monitor (shown in inches with width/height millimetres in brackets). For example, if the Clients on your system use ISIC Panel PCs select **25.5” ISIC Panel PC (1920x1200)** from the drop down list.

- When the monitor type has been selected the picture height and pixel width/height change dependant on the monitor size. If the monitor type is wide screen format (1920x1200 and above) the **CID Side Panel** check box is automatically ticked. Note that the CID side panel check box cannot be selected for non-wide screen format monitors.
- If **Custom** or **Other Type** has been selected from Monitor Type then the picture height in millimetres and pixel width/height may be changed.
- **Monitor ID** - select the numeric ID for each monitor. On a Client/Server system all monitor IDs default to 1.
- **Monitor Communications Port** - this column shows the communications port for all Clients. The port can be a pre-defined control panel serial port, or a monitor COMMs port on the Panel PC (depending on your monitor type).

Monitors
Configure the monitor settings for each node in the system. For a wide aspect monitor the ratio Width/Height >= 1.6.

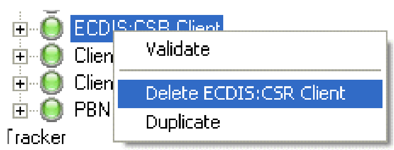
Node	Headless Node	Monitor Type	Picture Height (mm)	Width (pixels)	Height (pixels)	Monitor ID	CID Side Panel	Monitor Communications Port
SERVER1	☑	27.0" (1920x1200)	364	1920	1200	1	☑	<None>
CLIENT1	☐	19.0" (1280x1024)	301	1280	1024	1	☐	<None>
CLIENT2	☐	19.0" (1280x1024)	301	1280	1024	1	☐	<None>
CLIENT3	☐	19.0" (1280x1024)	301	1280	1024	1	☐	<None>
CLIENT4	☐	19.0" (1280x1024)	301	1280	1024	1	☐	<None>
CLIENT5	☐	25.5" ISIC Panel PC (...	344	1920	1200	1	☑	CLIENT5 COM2 for ISIC 25.5" Panel PC
SERVER2	☑	31.5" (1920x1080)	392	1920	1080	1	☑	<None>

Figure B.2 Client/Server Monitors

B.2.1.3 Setting up Non-Radar Video Product Types

The following procedure describes how to configure existing Client nodes on the system that do not require radar video, such as ECDIS, CID or CAM product types.

1. Select the product type for the non-radar video node.
2. When a non-radar video product type is selected on an existing CSR Client node a validation error is generated on the CSR (Radar System) sub menu topic
3. Right click on the Client Server Radar topic. The validation error window gives the display name or client number of the node that cannot be configured.
4. Remove the node from the {CSR Clients} sub menu by right clicking on the topic and selecting Delete.



5. When all non-radar video Client nodes have been removed from the {CSR Clients} sub menu the Client Server Radar sub menu topic is validated.

B.2.1.4 PCIO Board Manager

Each Server on the CSR network includes an integral PCIO board, therefore a PCIO board must be selected for all nodes configured as Servers.

The PCIO configuration window for a typical two Server node system is shown in Figure B.3.

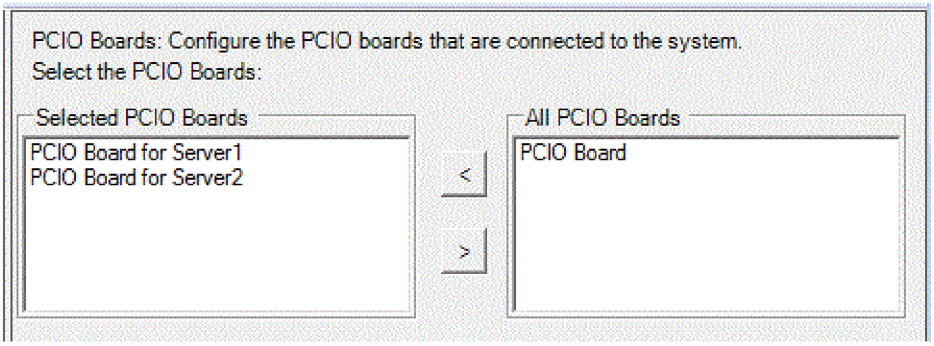


Figure B.3 PCIO Board Configuration for two Server nodes

If an additional Server node has been added to the Client Server Radar {CRS Servers} sub menu, see Section 2.2.2 '*Configuring a CSR Server*' Then a PCIO board for that node must be configured.

To add an additional PCIO board for a new Server node do the following:

1. Highlight **PCIO Board** in the All PCIO Boards column and click the **<** button, an unconfigured topic for the board is added in the navigation tree with a list of discrete outputs and inputs. A list of serial ports are also created for the board in the I/O Port Manager.
2. Click on the unconfigured PCIO Board topic in the navigation tree, from the PCIO Board configuration window select the Server node from the Node drop down list to which the PCIO board is connected, The PCIO board is validated when a Server node is selected.

B.2.2 Configuring Applications

The following sub-sections covering Applications components for a Client/Server Radar (CSR) network are included where the configuration process differs from the instructions given in Chapter 1 ‘*Configuration*’, Section 9 ‘*Applications*’.

B.2.2.1 Radar Interface

The {Radar Interface} sub menu forms part of a hierarchical Radar System/Board Manager menu. Below the Radar Interface is the Client Server Radar sub menu, which includes the Server and Client configuration windows. All the nodes configured in the Nodes window that receive radar video must be included in this section.

The Client Server Radar sub menu includes {CSR Servers} and {CSR Clients} sub menus for each CSR Server and CSR Client, see Figure B.4.

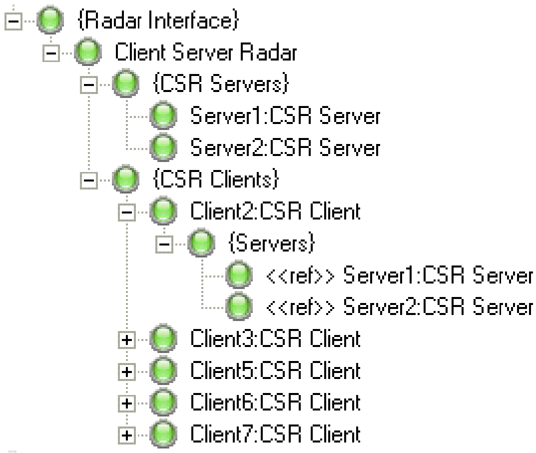


Figure B.4 Radar Interface Navigation Tree

B.2.2.2 Configuring a CSR Server

Before proceeding with the configuration of one or more additional Server nodes on a network, ensure the Server to be configured in the Client Server Radar sub menu has been previously configured at the Nodes and PCIO Board Manager windows.

1. Open the Client Server Radar topic, highlight **CSR Servers** in the All CSR Servers column and click the **<** button. An unconfigured CSR Server is moved into the Selected Servers column and the system adds an unconfigured topic in the {CSR Servers} navigation tree.

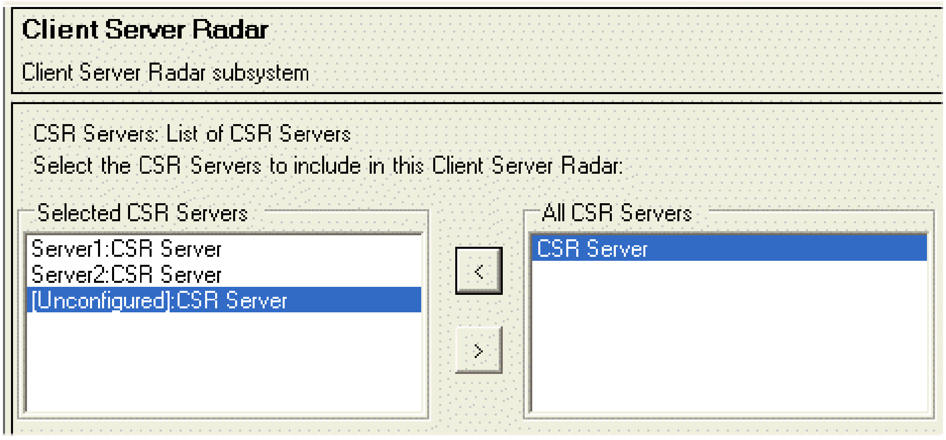


Figure B.5 Client Server Radar - Unconfigured CSR Server

2. Open the configuration window for the CSR Server by clicking on the unconfigured topic in the navigation tree.
3. Click on the CSR Server Node drop down arrow and select the node on which this CSR Server resides. When a Server node has been selected the Server topic is validated.

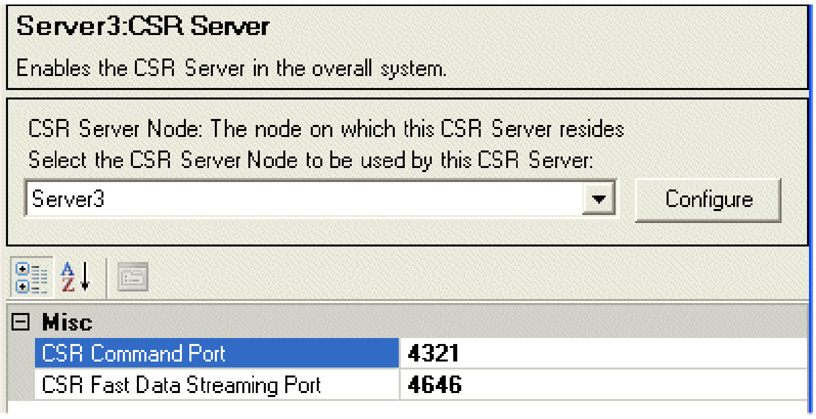


Figure B.6 CSR Server Window

4. The CSR Server window includes the following miscellaneous settings:
   - CSR Command Port - the port number at which the CSR Server send and receives data to and from the CSR Clients.
   - CSR Fast Streaming Data Port - the port number used for fast data streaming.

Normally these settings should not be changed from their default values.

B.2.2.3 Configuring a CSR Client

Before proceeding with the configuration of one or more additional CSR Client nodes, ensure the Clients to be configured in the Client Server Radar sub menu have been previously configured at the Nodes window.

1. Open the Client Server Radar topic, highlight **CSR Clients** in the All CSR Clients column and click the **<** button. An unconfigured CSR Client is moved into the Selected CSR Clients column and the system adds an unconfigured topic in the {CSR Clients} navigation tree.

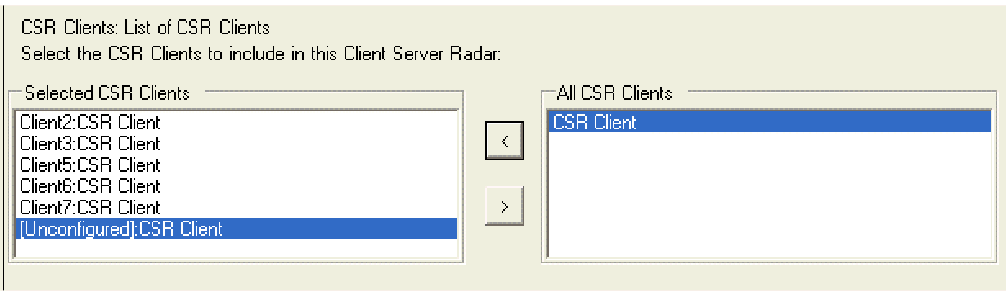


Figure B.7 Client Server Radar - Unconfigured CSR Client

2. Open the configuration window for the CSR Client by clicking on the unconfigured topic in the navigation tree.
3. Click on the CSR Client Node drop down arrow and select the node on which this CSR Client resides.
4. Select the Servers to which the Client will connect from the All Servers column. For every Server selected for the Client a topic is created under a {Servers} sub menu.

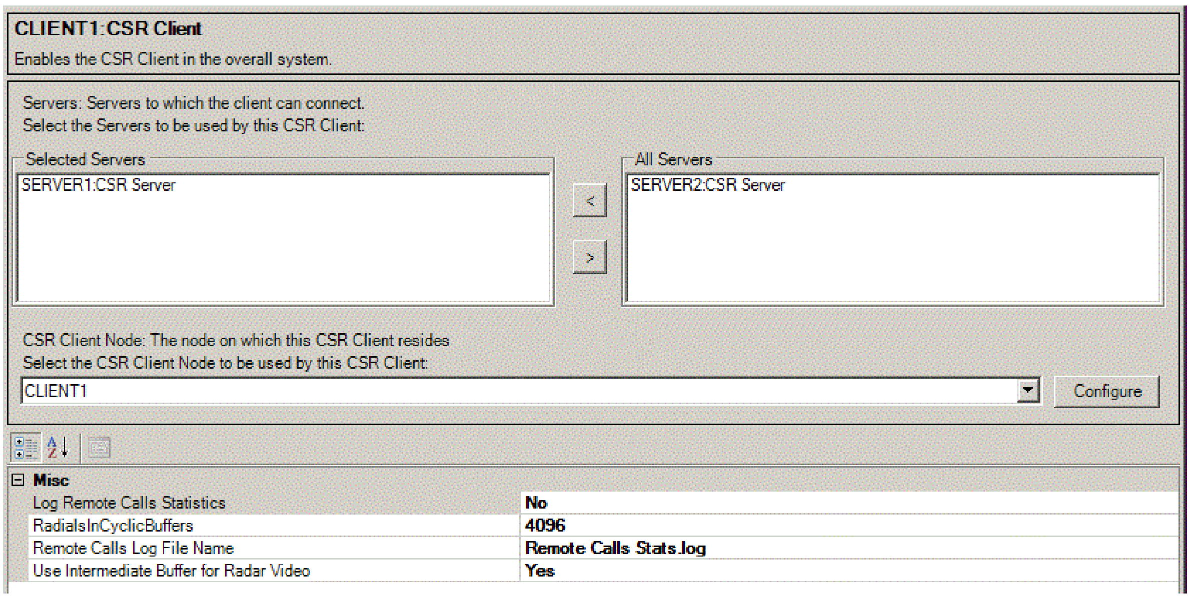


Figure B.8 CSR Client Window

5. The CSR Client window includes the following miscellaneous settings:
   - Log Remote Calls Statistics - enables the tracking of remote calls to the Server to be logged. Defaults to No.
   - RadialsInCyclicBuffers - the number of radials that the cyclic buffers can contain.
   - Remote Calls Log File Name - the name of the file for logged call statistics. The default is **Remote Calls Stats.log**.
   - Use Intermediate Buffer for Radar Video - this setting is required for systems that have newer graphics cards installed. The default is Yes.

Normally these settings should not be changed from their default values.

The Server nodes to which the Clients are connected include the Server configuration windows, as shown in Figure B.6 under the {Servers} sub menu as references. Any changes to the miscellaneous settings made at these referenced topics will be reflected in the same configuration windows of the Server sub menus.

B.2.2.4 Channel Manager

Each Server communicates with and receives radar/video data from a top unit. The Channel Manager sub menu (part of the Top Unit Configuration) enables configuration of the channel through which the data is transferred from the top units to the Servers.

Note: *A CSR system does not include a physical Interswitch.*

The Channel topic shows the Standby and Transmit TCVR communications alert timeout default values in seconds and lists configured Server nodes, and enables the Server's master/slave status and the top unit alias (A to F) for the Server nodes to be selected.

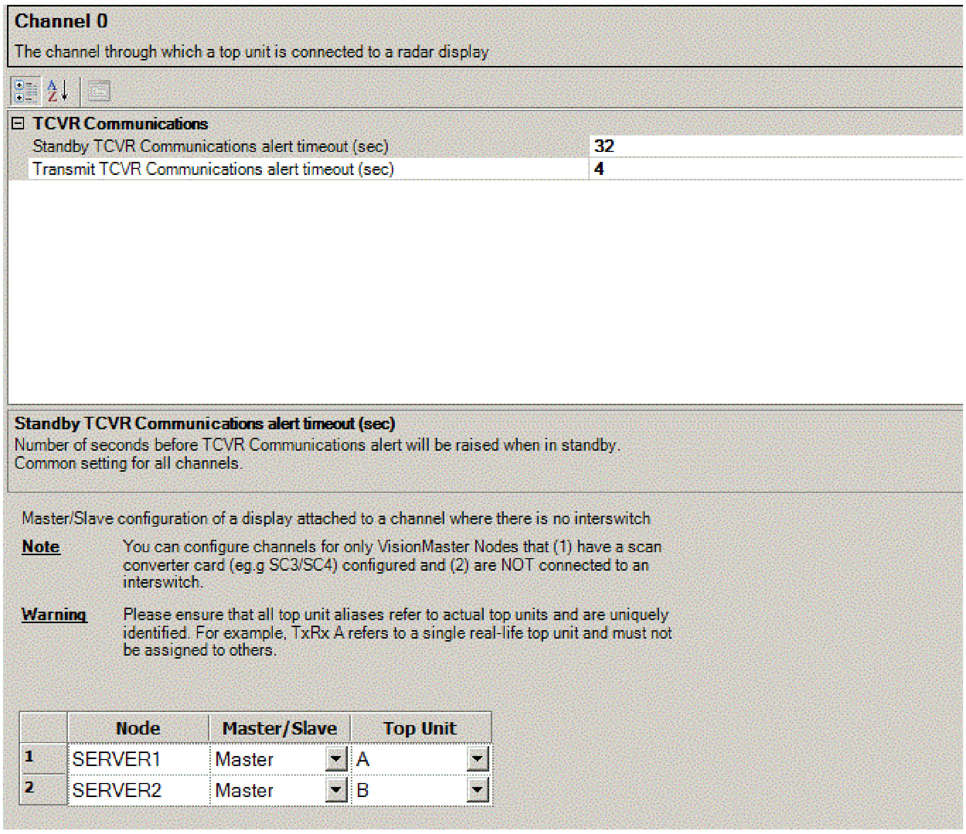


Figure B.9 Channel Configuration

A Server may be selected as the Master or Slave of a particular top unit with each top unit assigned to one Server. For example, a CSR system with two Server nodes must have each node assigned to the specific top unit it is connected to.

B.3 TightVNC

TightVNC (Virtual Network Computing) is an application which allows the service engineer remote access to perform control and administration tasks on Servers from a Client desktop.

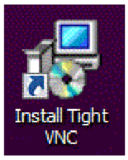
The application includes two components: the TightVNC Server, which makes the Server PC accessible for remote viewing and is installed on the Server; and the TightVNC Viewer, which is used to view and control the Server remotely and is installed on a nominated Client.

B.3.1 Setting Up TightVNC

The TightVNC software is automatically installed on the C: drive of all VisionMaster nodes.

To setup the TightVNC software:

1. Double click on the TightVNC icon on the Service desktop. An Open File - Security Warning window appears, see Figure B.10.



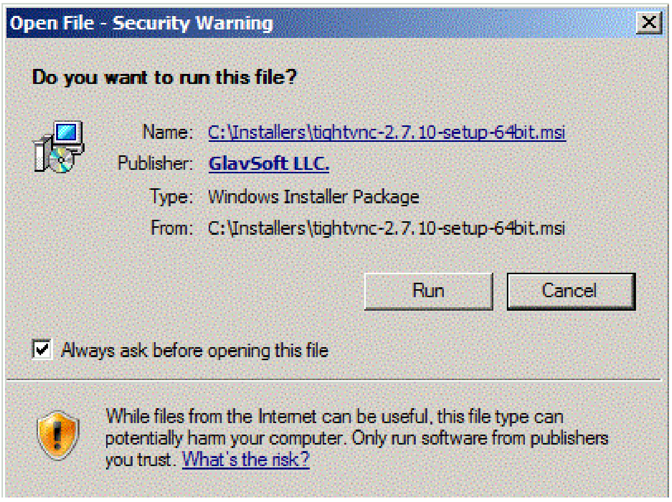


Figure B.10 Open File Security Warning

2. Check that the drive is correct in the Name: field and click the Run button. The TightVNC Setup Wizard window opens. Click the **Next** button to proceed with the setup.

3. The following Setup page prompts to choose the setup type that best suits your needs. The options are **Typical** (recommended for most users), **Custom** and **Complete**, see Figure B.11.

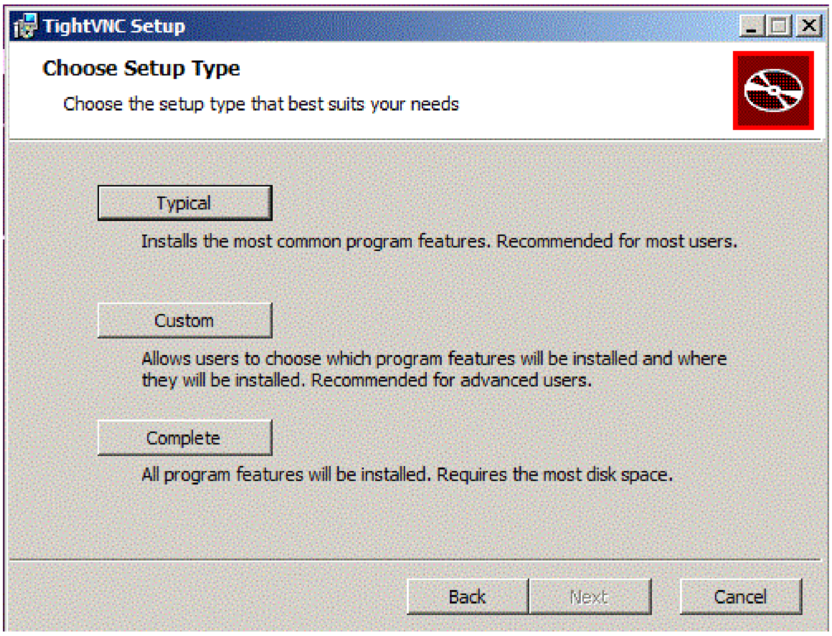


Figure B.11 TightVNC Setup - Choose Setup Type

4. The next screen prompts to select additional tasks that should be performed. The default setting on this screen is all additional tasks to be selected, see Figure B.11.

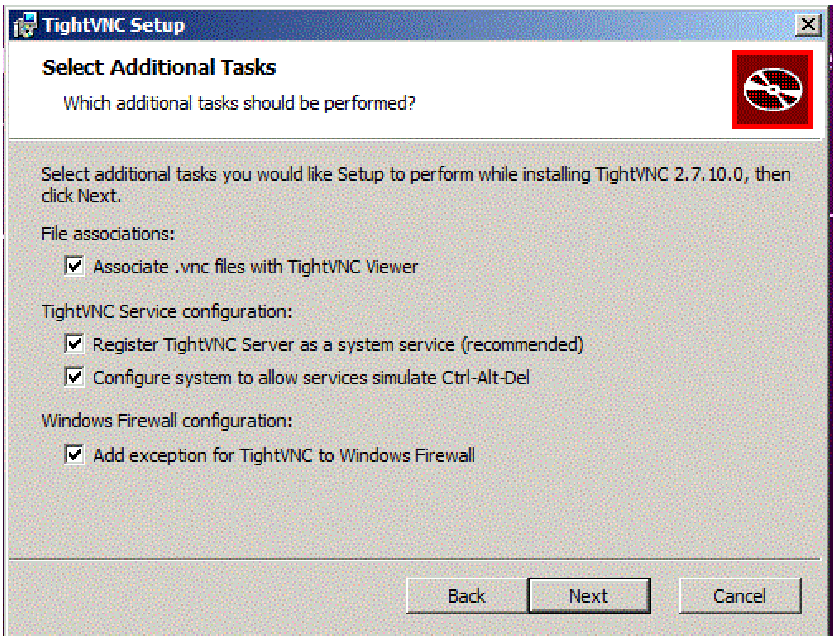


Figure B.12 Select Additional Tasks

5. If you are installing the application on a Server untick the **Associate .vnc files with TightVNC Viewer** check box, the type of install changes to **Custom**. Or, if you are installing the application on a Client untick the **Register TightVNC Server** check box, the type of install changes to **Viewer Only**. Click the **Next** button to continue.

6. The next screen prompts to set a password for remote access, and also enables the setting of an administrative password when used on multi-user systems. The standard service engineer's password as used on the VisionMaster system should be entered..
7. To set a password for remote access tick the **Require password.. button** and enter the required password in the Enter and Confirm password fields.
8. To enter an administrative password tick the **Protect control ..** button and enter a password in the Enter and Confirm password fields. If no administrative password is required tick the **Do not use password..** button.

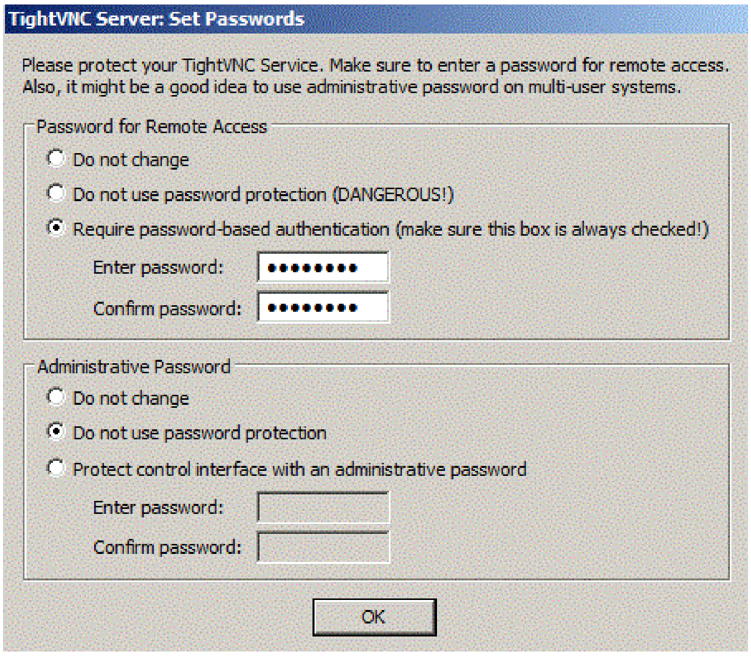


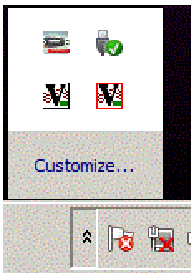
Figure B.13 TightVNC Setup - Enter Passwords

9. When a password has been entered, click the **OK**button. The application is installed onto the PC.
10. When complete click the **Finish** button to close the Setup wizard. After the setup program is finished, the TightVNC application can be accessed from the Start/ button in the lower left of the Service screen..

B.3.2 Using TightVNC

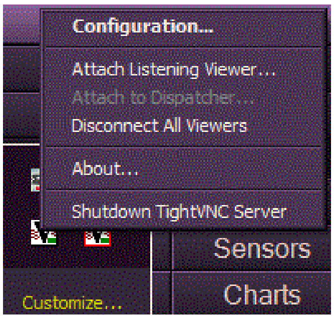
After the TightVNC setup program has finished open the VisionMaster application on the Server where the TightVNC Server component resides, and on the Client, where the TightVNC Viewer component resides.

B.3.2.1 Running the Server



On startup, TightVNC adds an icon to the system task bar on the Server node (accessed from the lower right of the toolbar). The appearance of the icon will change depending on the program's operational status.

1. When no viewers are connected the icon is shown with a white background (moving the cursor over the icon will show the Server IP address).
2. When viewers are connected the icon is shown in inverted colours.
3. When Client connections are disabled the icon is shown with a red border (moving the cursor over the icon will show the reason for the disabled connection, e.g. no valid passwords set).



Right clicking on the TightVNC Service or Server icon will display a popup menu where the following commands can be selected:

- **Configuration** - enables various parameters and settings of the TightVNC Service Configuration to be made. It is advisable that these settings should not be changed unless specifically requested to do so by an NGSM Service member.
- **Attach Listening Viewer** - allows a TightVNC Viewer running in Listening Mode to be attached. In this mode the Server connects to a Client. The window enables a Host name or IP address for the viewer to be entered.
- **Disconnect All Viewers** - this will disconnect all currently connected Client Viewers from the Server.
- **About...** - shows version and copyright information about the TightVNC software.
- **Shutdown TightVNC Server** - shuts the TightVNC Server down. When accessed the Server icon is removed from the task bar.

B.3.2.2 Running the Viewer

To view and control a remote desktop from a Client node when a TightVNC Server is running, do the following:

1. At the Client where the TightVNC Viewer component resides logon as Service mode from the System/Commissioning menu, see Section 3.1 ‘*Login*’ in Chapter 2 ‘*Diagnostics, Commissioning & Service Mode*’.
2. Open the TightVNC Viewer by clicking the **Start** button and selecting **All Programs/TightVNC/TightVNC Viewer**, see Figure B.14.

Figure B.14 Opening TightVNC Viewer

3. The TightVNC Connection window opens on the Client desktop. Enter the Windows host name of the Server or its IP address in the **TightVNC Server** field, or navigate to the Server on the network by clicking the Browse.. button, see Figure B.15.

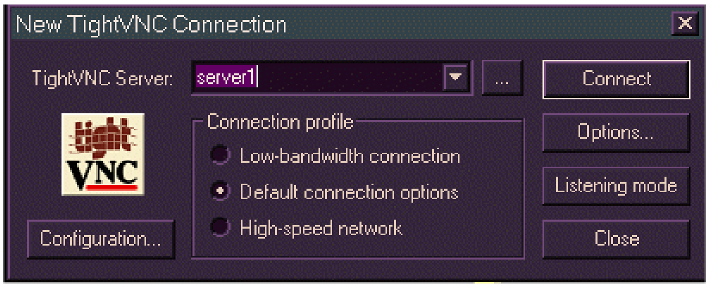


Figure B.15 TightVNC Connection

4. Click the **Connect** button. When the viewer is connecting to the server a connection status popup window appears in the top left of the VisionMaster display.
The viewer may also be started in ‘Listening mode’ by clicking on the button in the TightVNC Connection popup window. In this mode, the viewer's icon will appear in the system tray, and reverse connections are accepted from TightVNC Servers (see ‘Add New Client’ in Section 3.2.1 ‘*Running the Server*’).
5. On successful connection, a popup window prompts to enter your password. Enter the password defined in the Setup Wizard.
6. After the password has been entered the remote Server desktop appears with TightVNC controls at the top of the screen. Server menus may then be accessed from the Client node.
7. To close the TightVNC Viewer and return to VisionMaster on the Client node click the **X** button at the top right of the screen.

Chapter 1 Appendix C

Configuring Peripheral Devices

CONTENTS

LIST OF FIGURES

C.1 Introduction

This Appendix includes information on the following peripheral devices:

1. External Serial Port (ESP) Unit - how to install an ESP and configure a PCI Serial Card.
2. PC NAVTEX - how to install and configure the PC NAVTEX Client/Server application using the VisionMaster configuration tool and the PC NAVTEX application.
3. Configuring Moxa Ethernet Switches - includes information on how to enable IGMP Snooping, enabling static Multicast addresses when the system includes VDRs and how to configure RSTP protocol when other types of network switches are included in the system
4. VisionMaster Printer - how to install a printer for the VisionMaster PC (local or network).

C.2 Configuring an External Serial Port (ESP) Unit

C.2.1 Entering Service Mode

1. In the VisionMaster FT system log in as a service engineer, for details refer to Section 3.1 '*Login'* in *Chapter 2 'Diagnostics, Commissioning and Service Mode'*.
2. Navigate to **Shutdown** in the System menu and click on the **Service Mode** button. The VisionMaster system shuts down and the service desktop is displayed.

C.2.2 Installing the ESP

1. If there two USB cables in the ESP, plug the upper USB port cable into any spare USB port on the PC. Otherwise, plug in the single USB cable into a spare USB port. The following 'Welcome New Hardware Wizard' screen appears.

Figure C:1 Welcome to the Found New Hardware Wizard

2. From this screen select **No, not this time** and then click the **Next >** button:
3. When the following screen appears, select **Install from a list or specific location (Advanced)** and then click the **Next >** button.

Figure C:2 Install Software

4. When the following screen appears, untick **Search removable media (floppy, CD-ROM…)**; and select **Include this location in the search.** Click on the **Browse** button and select the following file: 'C:\Windows\System32\DriverStore\FileRepository\edgeport_ xxxx edgeport.inf.
Then click the **Next >** button.

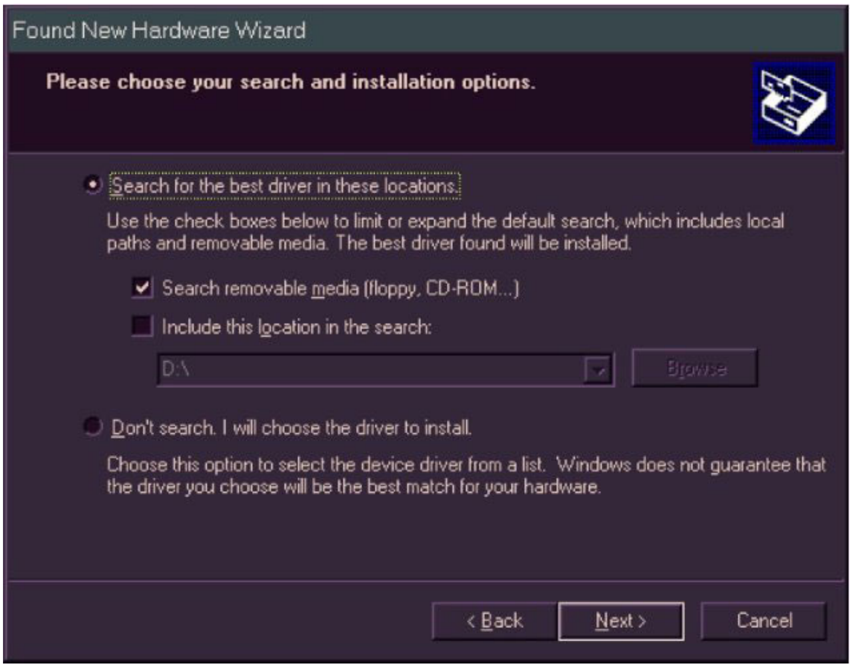


Figure C:3 Search and Installation Options

5. When the following screen appears select **Finish**.

Figure C:4 Finish New Hardware Wizard

6. If there is a second USB cable, plug it into the lower USB port (although this can actually be inserted into any spare USB port). The additional drivers will install automatically with no prompts.

C.2.2.1 Edgeport Configuration Utility

1. Click on the **Start** button at the bottom left of the screen and select '**All Programs / Digi USB / Edgeport Configuration Utility**'. You should see a window similar to Figure C:5, except with different Edgeport serial numbers.

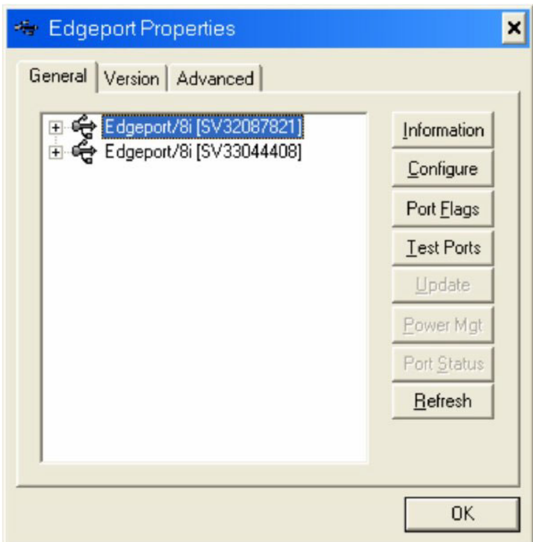


Figure C:5 Edgeport Properties

2. If there are two Edgeports displayed, select the **second** one and click on the **Configure** button.
3. Set up the COM ports as shown in Figure C:6 below and then select **OK**.

Note: *Edgeport COM ports default to RS232. The correct COM ports should be RS422: No Terminating Resistor.*

Note: *The Device Name will be different to that displayed below.*

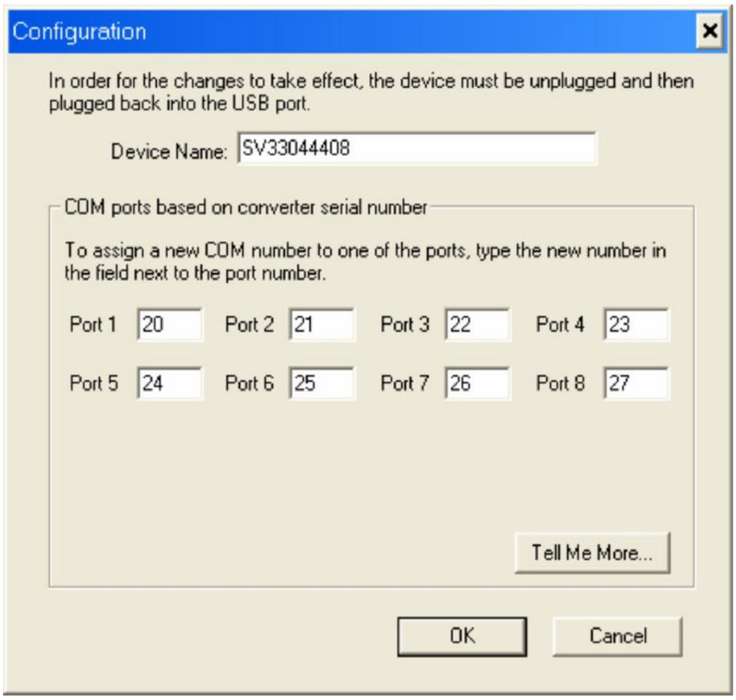


Figure C:6 Edgeport Configuration for second Edgeport device

4. The following COM Port Assignment warning appears. Select **OK**.

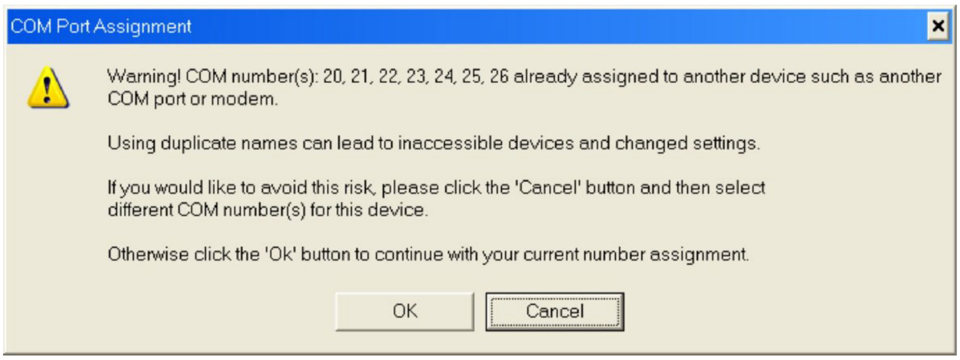


Figure C:7 COM Port Assignment Warning

5. The Edgeport Properties window re-appears. Select the first (or only) Edgeport and click the Configure button.

6. Set up the port numbers as shown in Figure C:6 below and then select **OK**.

Note: *The Device Name will be different to that displayed below.*

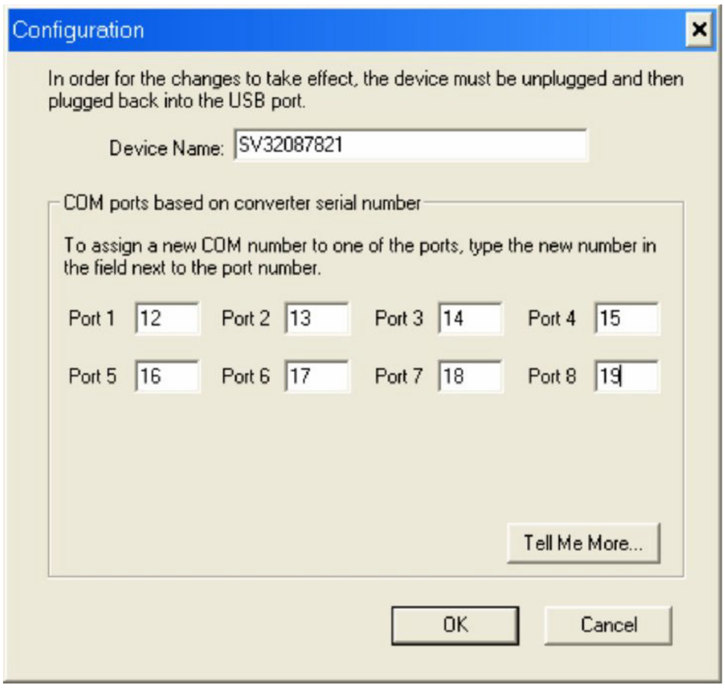


Figure C:8 Edgeport Configuration for first Edgeport device

7. Select **OK**. When the warning dialog appears select **OK**.
8. Select **OK** to exit the Edgeport Configuration Utility.
9. Click on the **Start** button select **Turn off Computer** and click on the **Restart** button to reboot the PC. This will reboot into Operator Mode.
10. To complete the configuration of the system re-enter Service Mode.

C.2.3 Configuring a PCI Serial Card

For information on the installation of a PCI serial card, refer to VisionMaster Ship's Manual - Volume 1, Chapter 4 '*Appendix B RS422/485 PCI Serial Card Installation*'.

Windows will automatically detect the presence of a newly installed card and may, or may not, prompt to install the software driver when the system is run up after installation. In either case before configuration the Serial Card driver CD must be installed in the CD drive of the PC.

C.2.3.1 Installing the Device Drivers

1. Access the Control Panel by entering 'Control Panel' in the Search field in the bottom left of the desktop and from the window select Control Panel.
2. From the Control Panel settings select **Hardware and Sound,** from the subsequent window select **Device Manager** from **Devices and Printers** a secondary **Device Manager** window appears, see Figure C:9

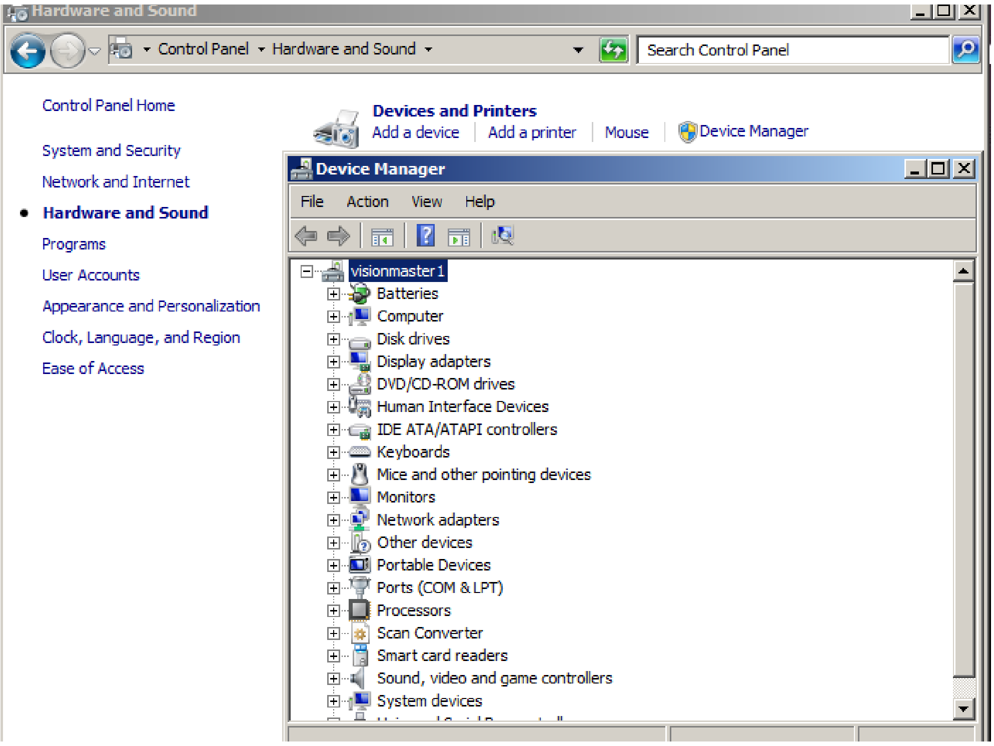


Figure C:9 Device Manager window

3. Right click on **PCI Serial Port** topic under 'Other Devices' and select **Properties**.
4. From the PCI Serial Port Properties window click on the **Update Driver** button.
5. The Upgrade Device Driver Wizard window appears, click on the **Next >** "Browes my computer for driver software" button.
6. Click the 'Browse' button and select your local CD Drive.
7. Check the 'Include subfolders' checkbox and select the 'Next' button.
8. The Device Driver Wizard searches for the driver file on the CD-ROM. When the file is located the subsequent window shows the location on the CD and prompts to click **Next**.
9. The Device Driver Wizard starts to install the drivers for the PCI Serial Card. A **Digital Signature Not Found** popup window will appear with a prompt to continue with the installation. To continue click the **Yes** button.
10. Click the **Next >** button at the Found New Hardware Wizard window.

11. At the following window click the **Next >** button again.
12. The following window prompts to search for driver files for the Moxa communications port. Tick the **CD-ROM drives** check box and untick the **Specify a location** check box.
13. The Found New Hardware Wizard searches for the driver file on the CD-ROM. When the file is located the subsequent window shows the location on the CD and prompts to click **Next**.
14. A window confirming the completion of the Found New Hardware Wizard appears. To close the wizard, click **Finish**.
15. The next window confirms the completion of the Upgrade Device Driver Wizard. To close the wizard, click **Finish**.
16. The subsequent window displays the properties of the installed Moxa serial card. Click the **Close** button.

C.2.3.2 Serial Port Numbering

1. From Service Mode, open the registry editor by searching for regedit in the start menu.

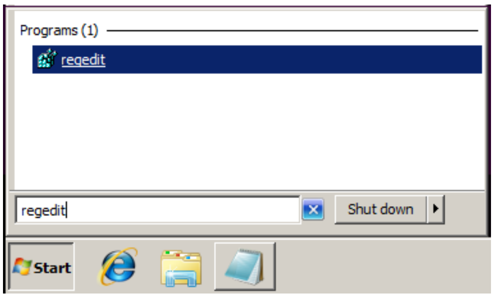


Figure C:10 Regedit from Start menu

2. From the Registry Editor top menu, select find and then search for a key matching the value 'Mxser'

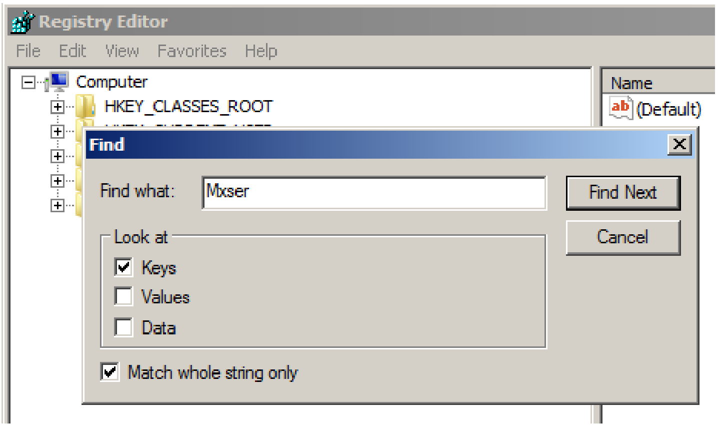


Figure C:11 Find Window

3. Right click this key to bring up sub menu, click permissions to enter the permissions window. Then open the advanced settings.

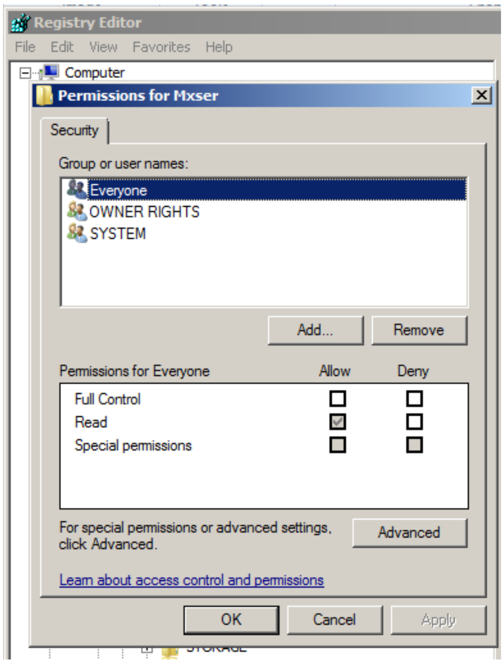


Figure C:12 Permissions Window

4. On the owner tab, select ServiceMode from the list of operators. Then enable the check box to apply changes to sub-folders and click OK. Return to the permissions menu, change the permissions for ‘Everyone’ to allow ‘Full Control’.

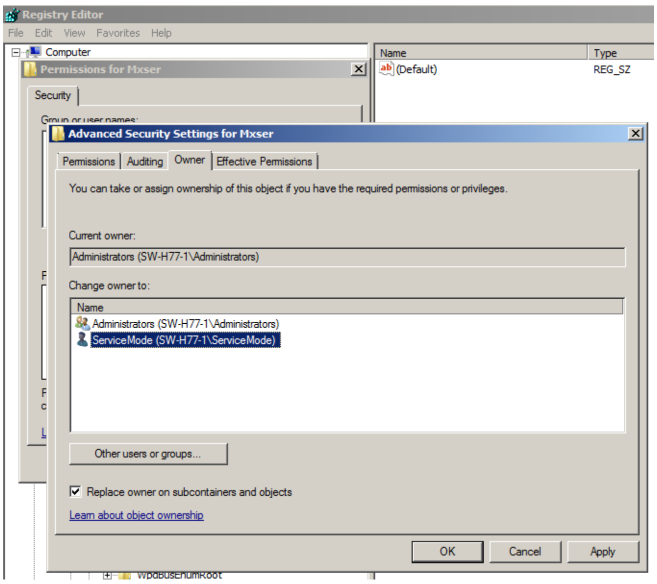


Figure C:13 Advanced Permissions

5. Expand the "Mxser" folder to see two sub-keys with line ending in 00 and one ending 01. Select sub-key ending 00.

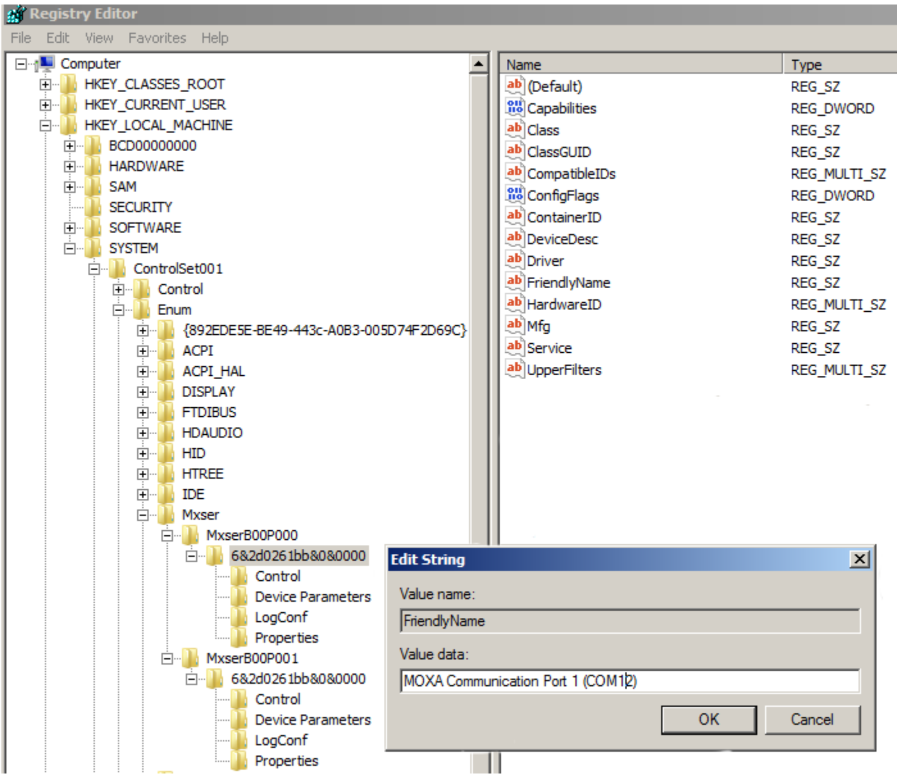


Figure C:14 Changing Friendlyname

6. Within this subkey, change the FriendlyName value to ‘Moxa Communication Port 1(Com12)’ click OK.
7. Select the subkey ‘Device Parameters’ and change the PortName value to "COM13".

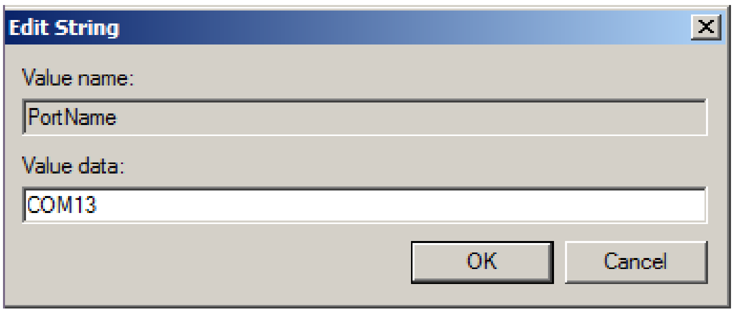


Figure C:15 Change PortName COM13

8. Again, enter the permissions menu of the 'Mxser' key by using the right click menu. Change the permissions for 'Everyone' so that the 'Full Control' checkbox is now set to Deny.

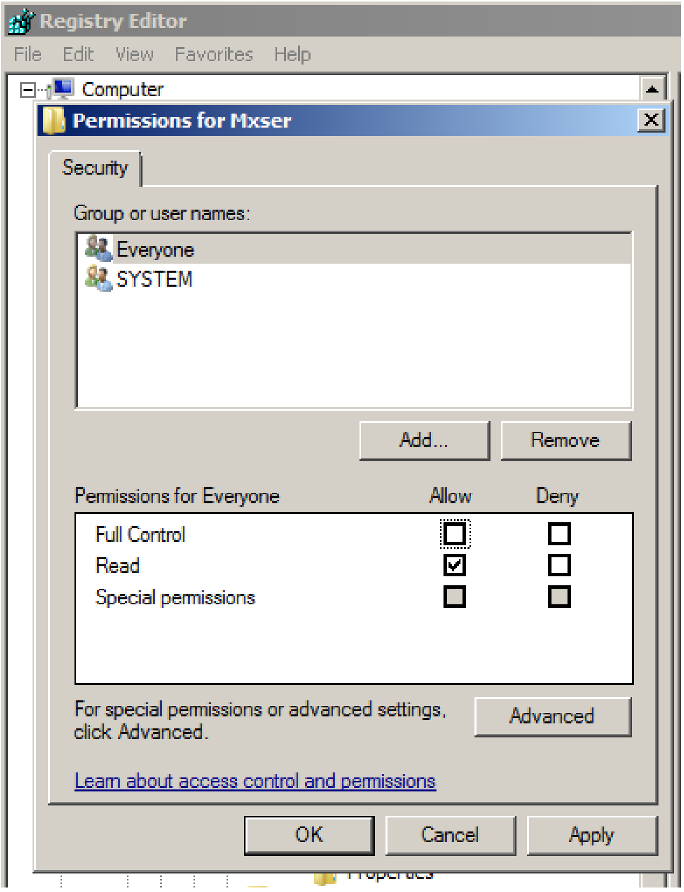


Figure C:16 Removing Permissions

9. Click the Advanced Settings tab. On the owner tab, select Administrators from the list of operators, then enable the check box to apply changes to sub folders, click OK.

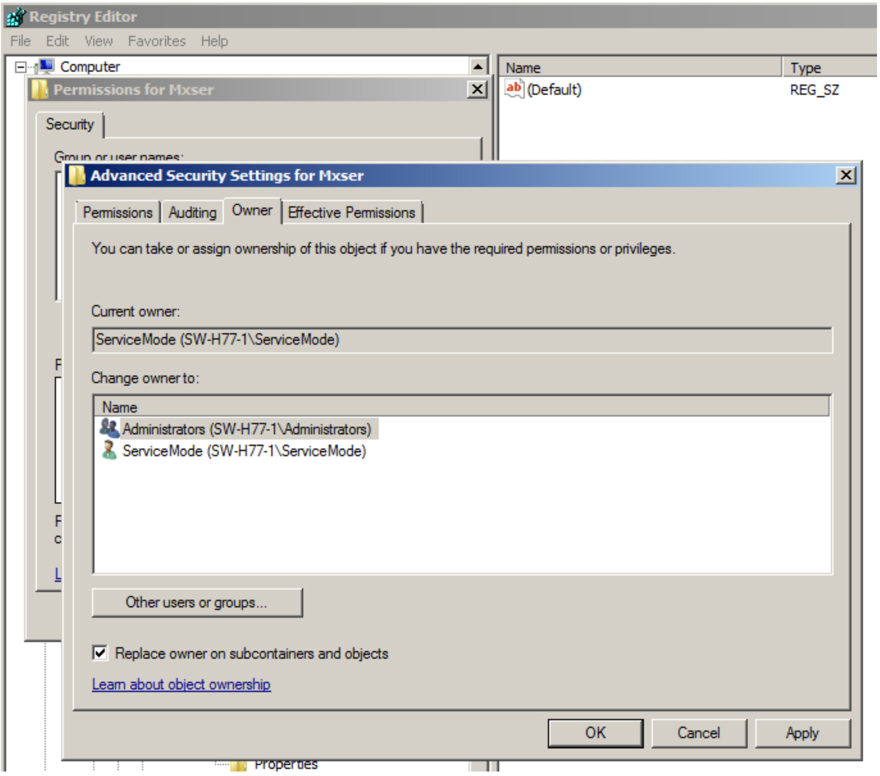


Figure C:17 Removing Ownership

10. From the left hand side of the window, Expand the HARDWARE key under HKEY_LOCAL_MACHINE. Expand the DEVICEMAP key. In the SERIALCOMM key you will see the two names of the keys under the ‘Mxser’ key that you changed previously. For the value ending in ‘00’ , change the value to COM12. For the value ending in ‘01’, change the value to COM13.

11. Close the registry editor and restart the processor.

C.3 Installing and Configuring PC NAVTEX Software

This section describes the following installation and configuration functions that are required to run the PC NAVTEX Client/Server application.

- Installing PC NAVTEX software from the VisionMaster FT (VMFT) Service desktop.
- Configuring NAVTEX from the VMFT Configuration tool.
- Configuring the PC NAVTEX Client/Server from the NAVTEX application.

PC NAVTEX includes two applications:

- Server - communicates with the NAVTEX receiver through a serial connection and stores the messages in a database on the server node.
- Client - provides the user interface that presents NAVTEX messages in a display window on the VMFT screen.

PC NAVTEX runs externally to the VMFT application.

CAUTION!

In order to meet regulatory requirements PC NAVTEX should only be installed on 'back of bridge' workstations that are not used for navigation purposes.

Note: *NAVTEX messages received are displayed as warnings by the Central Alert Management (CAM) watch mode.*

C.3.1 PC NAVTEX Client Configuration

C.3.1.1 Installing NAVTEX Client

1. From the VMFT service desktop double click on the **Install PC NAVTEX** icon to launch the NAVTEX Client installation process.
2. The PC NAVTEX Setup wizard, which guides you through the installation process appears, see Figure C:18. Click **Next** to continue with the process.

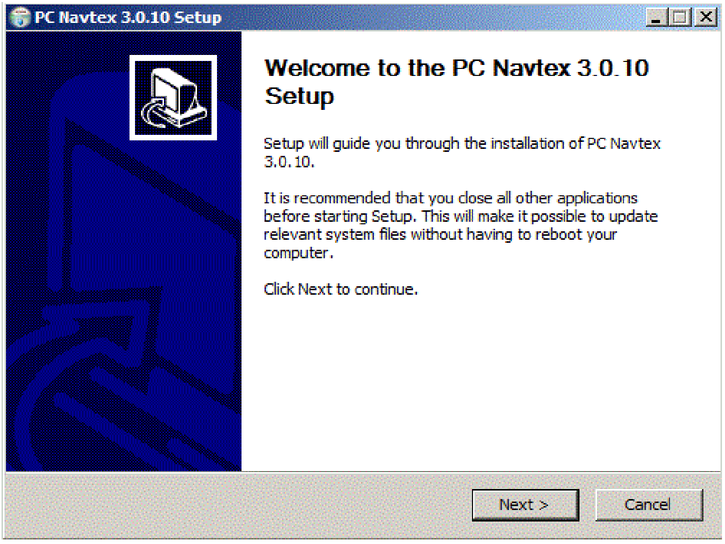


Figure C:18 PC Navtex Setup Screen

3. The next screen prompts to review the license terms before installation. Select **I Agree** to accept the PC Navtex license.
4. The next screen prompts to select either the Full product version or Demo version. If you have purchased the software and have a registration number select **Full version**. If you have not yet purchased the software select **Demo version.** This will give you a 30 demo of the software.
5. On the 'Choose Install Location' screen keep the destination as shown in the Destination Folder (**C:\Program Files(x86)\PC Navtex**) and click the **Next** button.

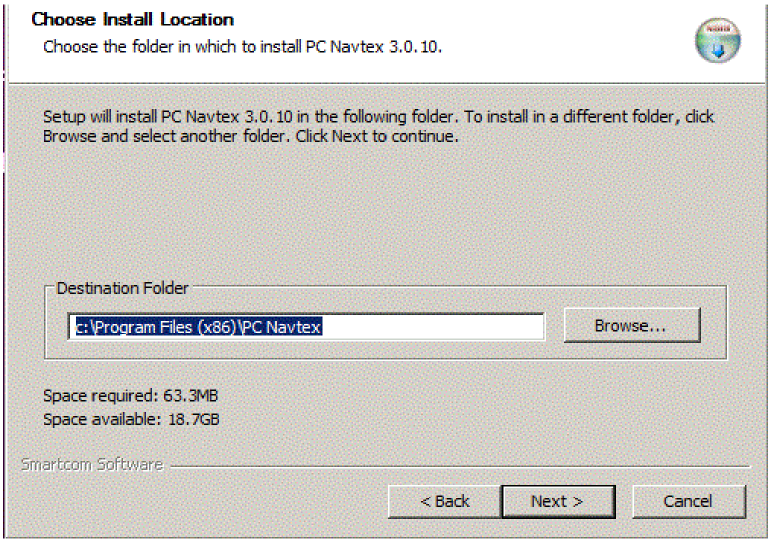


Figure C:19 Choose Install Location

6. When installation is complete the Setup wizard gives the option of running PC Navtex and opening a Readme file. Click the **Finish** button to confirm.

C.3.1.2 Mapping Network Drive

1. Open Windows Explorer, ensure the upper tool bar is present (Organize Layout Menu bar)
2. From the upper toolbar right click on **Computer** and select ‘**Map Network Drive**’
3. In the popup window, select the N drive, ensure that '**Reconnect at sign-in**' is ticked and type in the path to the Navtex Server's data location. Note that the **Browse**..' button will not show the other nodes, see Figure C:20.

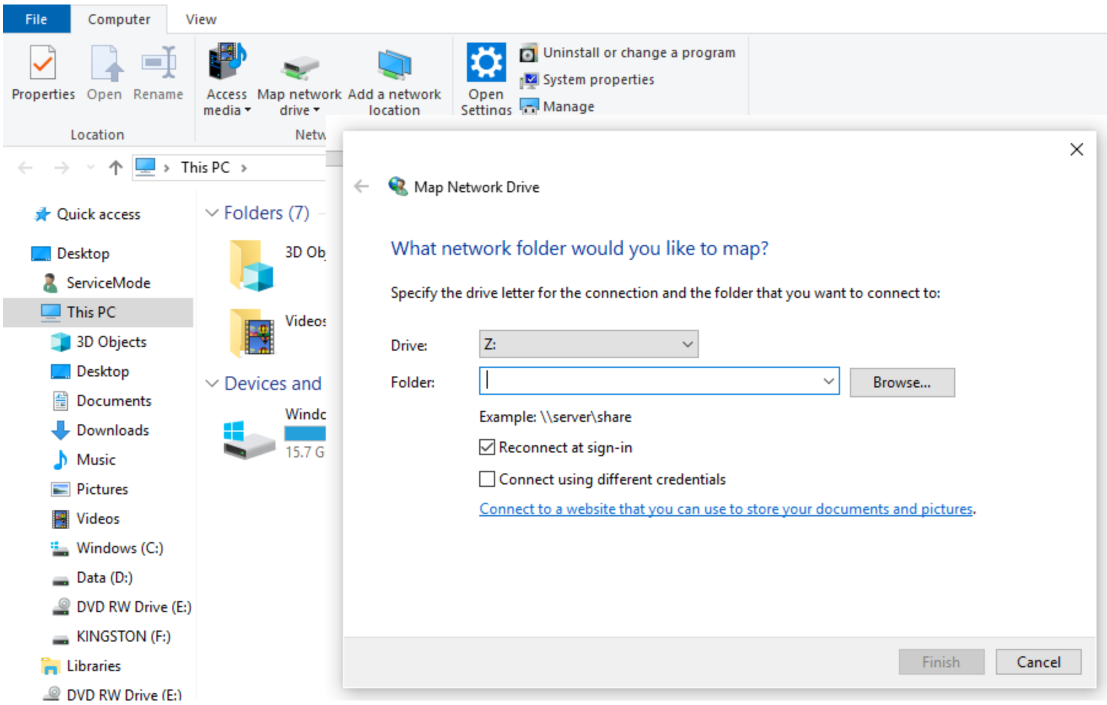


Figure C:20 Map Network Drive

Note: *VisionMaster nodes all have the same directory structure. If you intend to map to another node then the following should be entered in the Folder field: \\AnotherNode\VMFT__DATA$\NAVTEX.*

4. Click the **Finish** button. The Server Mapped drive can be seen alongside the node's local drives, see Figure C:21.

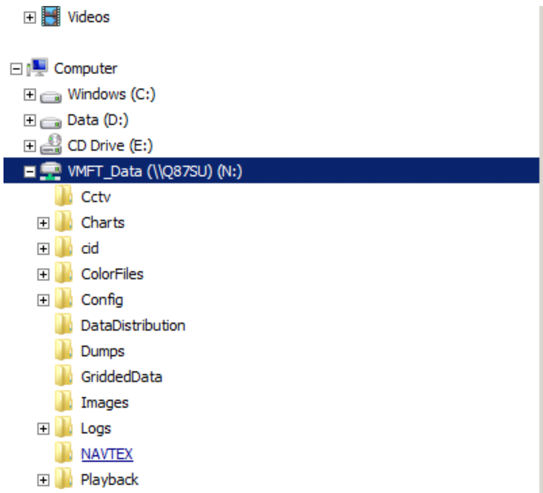
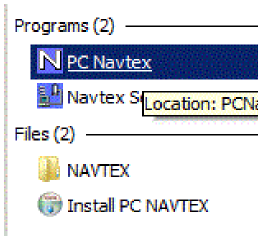


Figure C:21 Navtex Network Drive applied

C.3.1.3 Setting up Server Connections



1. Launch the PC Navtex client by clicking on the **Start** button in the lower left of the service screen and selecting **PC Navtex** program. The PCNAVTEX configuration window appears.
2. From the PCNavtex configuration window click on **Settings** in the upper toolbar and select **NAVTEX Server.**
3. From the Navtex Server window click on the Communications drop down list and select **Server Settings**. A popup **Server Settings** window appears over the PCNAVTEX window, see Figure C:22.

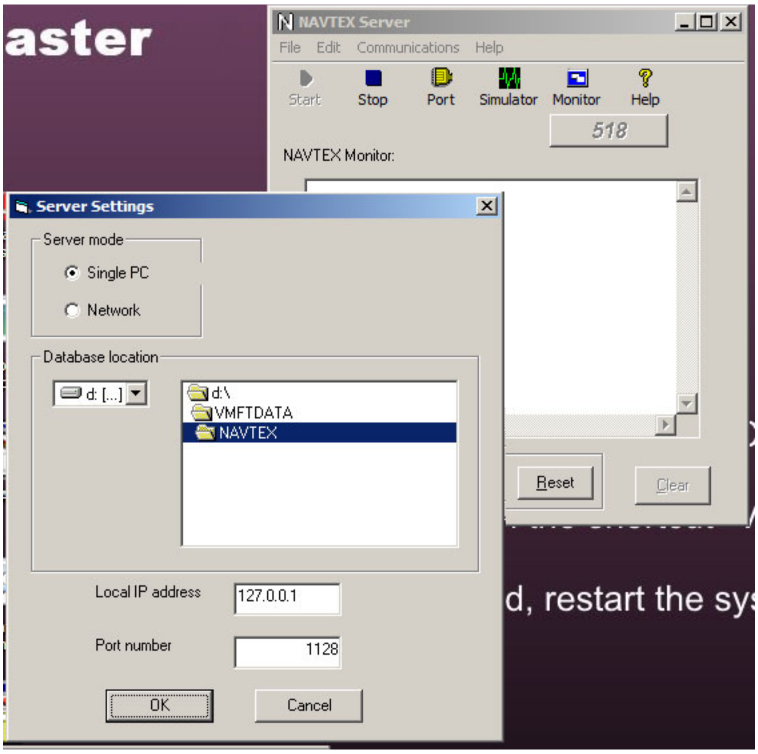
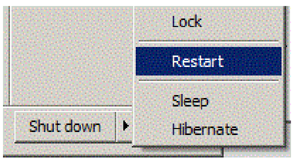


Figure C:22 PC NAVTEX- Server Settings

4. From the Server Settings window select the network drive in the **Database location.** The Local IP address is the IP for the client (Port number).
5. With Server Settings data entered click the **OK** button, a popup window appears prompting to restart the application.
6. Click the OK button and from the service desktop double click on the **NavTex Configure** icon to launch the post configuration script.
7. Restart the node by clicking on the Start button and from the Shut down arrow select **Restart**.



C.3.2 PC NAVTEX Server Configuration

C.3.2.1 Installing NAVTEX Server

1. Repeat steps 1 to 7 detailed in Section 3.1.1 *Installing NAVTEX Client*'.
2. With the Server installed launch the program by clicking on the **Start** button and selecting **Navtex Server** program, see Figure C:23.

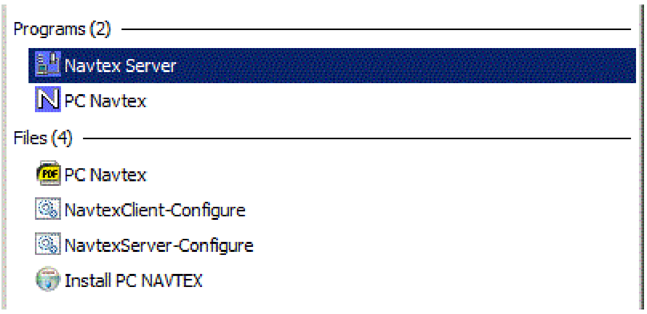


Figure C:23 Launch NavTex Server

3. After the Server has been launched the service screen will display **N** in the lower toolbar when the  icon in the lower toolbar is clicked.

4. From the Navtex Server window click on **Settings** in the upper toolbar and select **NAVTEX Server** to open the Server Settings popup window.
5. Enter the required server settings (Single PC, Data file path: d:\VMFTDATA\Navtex) and ensure the Server Name and Local IP address are the same. Click the **OK** button.
6. If any changes have been made to the Navtex Server Settings a popup window appears prompting to restart the application for changes to take effect. Click the **OK** button and from the service desktop double click on the **NavTex Configure** icon to launch the post configuration script.
7. Restart the node by clicking on the Start button and from the Shut down arrow select **Restart**.

C.3.3 Configuring PC NAVTEX in the VMFT Config Tool

C.3.3.1 Configuring NAVTEX

The configuration of NAVTEX is included in the Quick Setup menu of the configuration tool and is therefore described in Section 6.14.4 *NAVTEX*’ in Chapter 1 ‘*Configuration*’.

C.3.3.2 Configuring the External Alert Provider

1. From the Alerts/Alert Input menu in the configuration tool (Section 9.7.6 *Alert Input*’) click on the **External Alert Providers** topic.
2. In the Alert Input window select **External ALR Serial Alert Device** from the list of External Alert Providers, see Figure C:24.

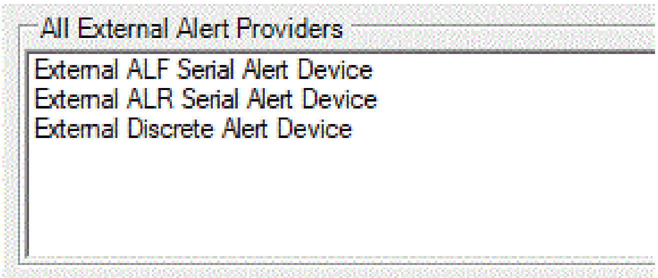


Figure C:24 External Alert Providers

3. Open the unconfigured topic **External ALR Serial Alert Device**, see Figure C:25.
4. Select the input port from which the PC NAVTEX message will be received. This will usually be a serial port that will need to have been set up for one client node, configured for NMEA [4800 Baud] settings, (see Section 8.1 ‘*PCIO Board Manager*’ in the Configuration chapter.

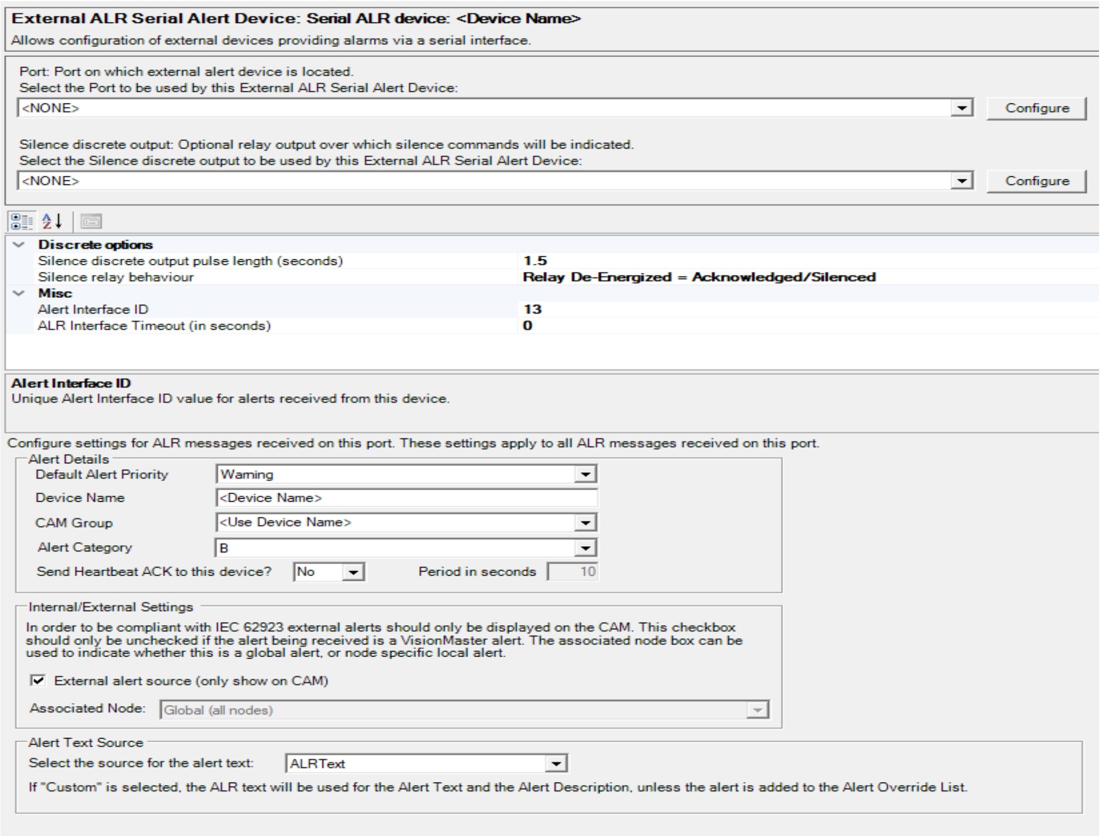


Figure C:25 External ALR Serial Alert Device

5. Make the following settings to the External ALR Serial Alert Device configuration window:
   a. The Alert ID is a unique ID value for alerts received from this device. The default is 1.
   b. The ALR interface timeout determines the time after which the ALR interface is considered to have a loss of comms when there has been no message received. The default is 0, which means no timeout.
   c. Select Yes or No for **Only Show On CAM Display.** When set to Yes all alerts displayed over this interface will only be shown on CAM displays. When set to No (default setting) alerts are shown on CAMs and all other displays.
   d. Change the Alert Type to **Warning**.
   e. Enter a name in the Device Name edit box, e.g. NAVTEX.
   f. Select a CAM Group in the CAM Group edit box.

For more information on configuring an External ALR Serial Alert device, see *Chapter 1 'Configuration'* Section 9.7.5 '*Alert Output (ALR/ACK/Discrete)*'.

C.3.4 PC NAVTEX Server Software Configuration

Important Note: *Always configure the NAVTEX Server node (i.e. the node connected to the receiver) before configuring the client nodes. The NAVTEX server is configured to run on only ONE computer.*

All nodes selected as NAVTEX clients must have access to the server database through a mapped network drive to the data path 'D:\VMFTDATA\NAVTEX'. The mapped drive will be either to this folder, or to one of its parents, and set to reconnect at Login.

C.3.4.1 Configuring the NAVTEX Server from the VMFT Application

1. Start VisionMaster in Operator Mode on the NAVTEX server node.

2. When VisionMaster is running click on the **System** menu button and then click on the **NAVTEX** button. The NAVTEX feature menu displays the Server name and, depending on the configuration, enables NAVTEX Client and/or Server displays to be accessed or terminated.

3. Click on the **Start/Show NAVTEX Server** button. If you have not yet registered the Registration window appears, see Figure C:26. Either enter an unlock code provided by the NAVTEX supplier, or click the **Continue evaluation and register later** button and then click the **Continue** button. For information on registration, see the following Note.

Note: *Each copy of PC NAVTEX must have an unlock code. For 30 days after installation it may be run in 'evaluation' mode. Until the unlock code is entered a blue Registration window will appear when the client or server is started. If you have the unlock code enter it and click* **Continue***. If you do not have the unlock code, click the* **Continue evaluation and register later** *button and then click* **Continue***. The unlock code may be obtained by contacting the PC NAVTEX supplier as indicated on the Registration window. The serial number shown at the top right of the window will be required to obtain the code. The unlock code will apply to only one computer.*

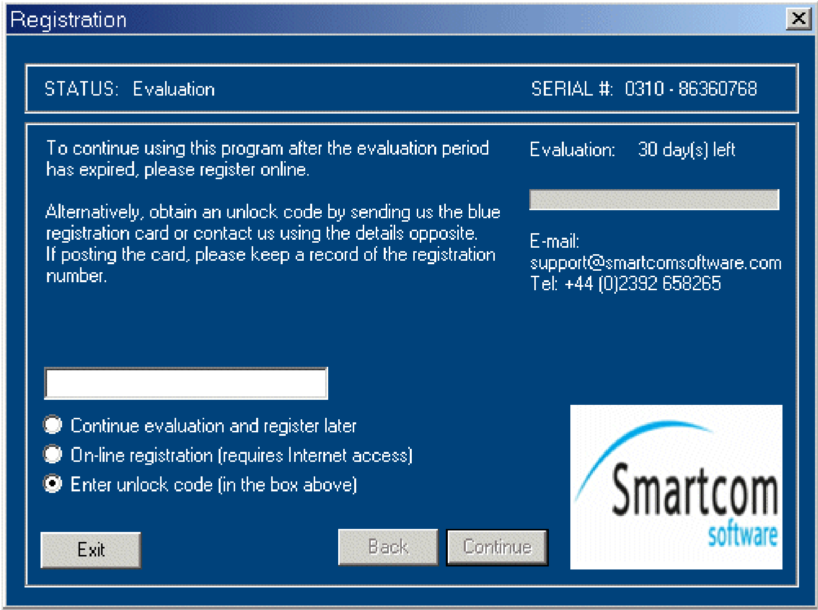


Figure C:26 Registration Window

4. After you have either entered an unlock code or selected the evaluation option from the Registration window click on the **Continue** button, the NAVTEX Server display window opens.

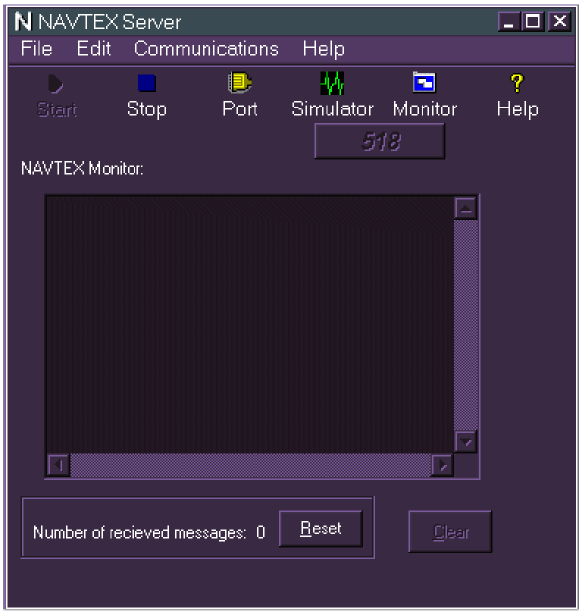


Figure C:27 NAVTEX Server Interface

5. From the NAVTEX Server top menu click **Communications** then select **Serial Port.** The **Serial Port Settings** popup window appears.

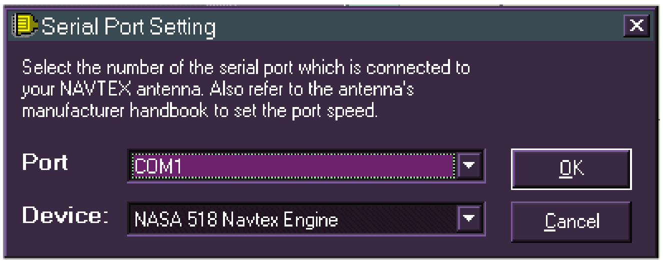


Figure C:28 Serial Port Settings

6. From the **Port** drop down list select the serial port that will be connected to the NAVTEX receiver.
7. From the **Device** drop down list select the receiver type and click the **OK** button.
8. Click **Communications** again and select **Server Settings**. The server node should be set to Single PC, the database location d:\VMFTDATA\Navtex and the Local IP address and Port number set to the server PC., see Figure C:29.

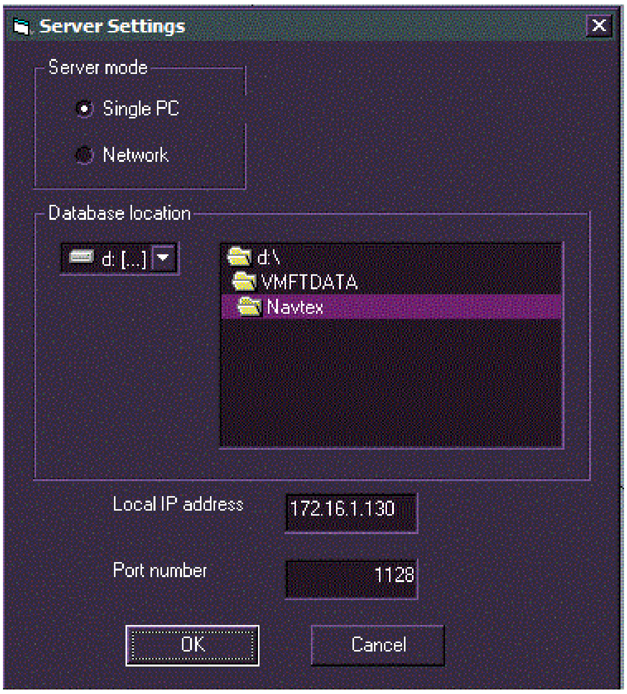
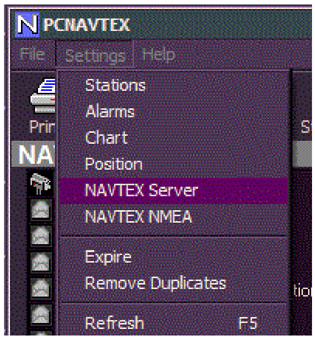


Figure C:29 Server Settings

9. With the Server Settings correct click the **OK** button.
10. Close the NAVTEX Server window by either selecting **Exit** from the File menu, or clicking the **X** at the top right corner of the window.
11. Restart the Server by clicking on the **Start/Show NAVTEX Server** button in the NAVTEX menu.

C.3.5 NAVTEX Software Configuration on Client Nodes

1. Open VisionMaster in Operator mode and from the **System** menu open the **NAVTEX** sub menu.
2. Click on **Start/Show NAVTEX Client**. If you have not yet registered for this node the Registration window opens, click the **Continue evaluation and register later** button and then click **Continue**.



3. From the NAVTEX Client window click on the Settings drop down menu and select **NAVTEX Server**. The Server Connection window opens showing the connection settings for a single PC Client, see Figure C:30.

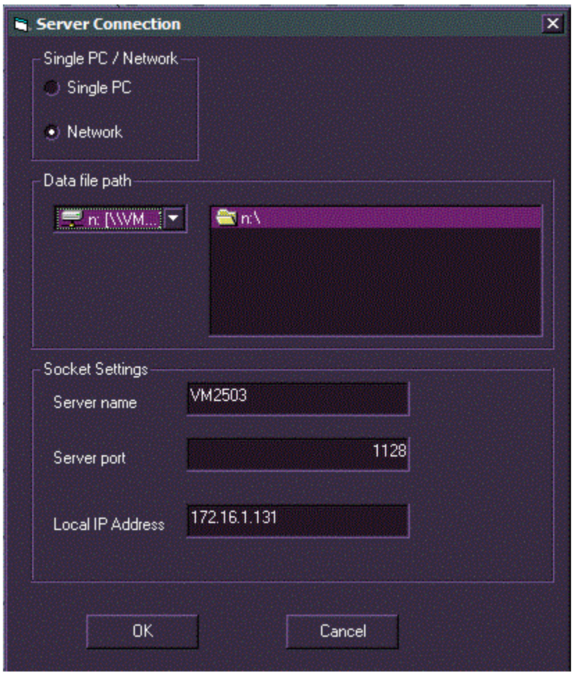


Figure C:30 Server Connection - Network Clients

4. As the client will be receiving data from the server select **Single PC**.
5. Change the Data file path to **n\:**.
6. The Server name and port will display the settings of the Server node. The Local IP Address shows the address of the specific Client node.
7. Click the **OK** button.
8. Restart the Client by clicking on the **Start/Show NAVTEX Client** button in the NAVTEX menu. The Client should connect to the Server and display sample messages, see Figure C:31.

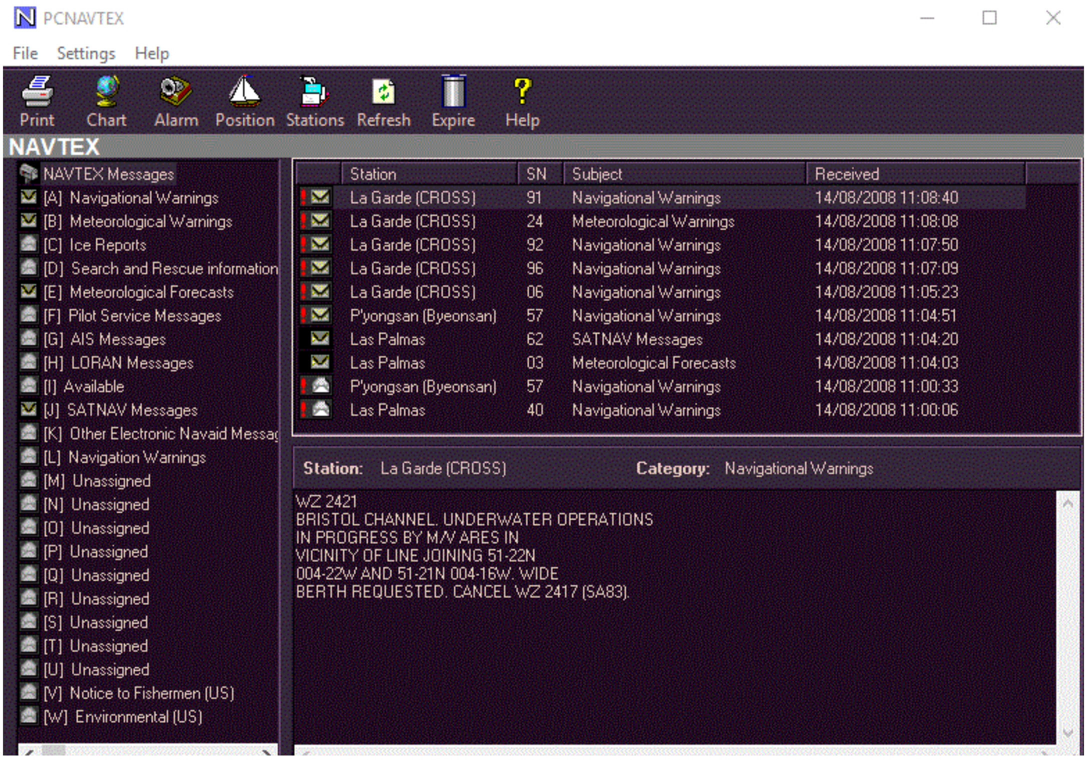


Figure C:31 Client NAVTEX Messages

9. Repeat the process on all Client nodes in the Multi-node system.

CAUTION!
Never close the Client or Server user interface when all that is desired is to minimise the Window. The Server must run at all times for messages to be received and the Client must be running to generate alarms. If the Client window is displayed and you want to return to VisionMaster, either click anywhere on the VMFT screen or click the minimize (_) button on the Client window.

After the clients are all installed and appear to be operating you can test the entire system as follows:

1. Start the NAVTEX client on all nodes.
   a. On any client node, click one of the categories (e.g. SatNav Messages) then highlight and delete all of the messages in that category.
   b. Select the same category on all other client nodes and see that the messages have been deleted. It may take up to 45 seconds for all of the messages to disappear.
   c. Repeat the procedure for all categories that have messages until all of the test messages have been deleted.

C.3.5.1 Selecting a Node for NAVTEX Messages

After the Server and a number of Clients have been installed and configured, one node must be selected to provide NAVTEX messages to the VMFT. This is done by configuring a port on a NAVTEX Client to send CAM alerts via a serial port.

One VMFT node running a PC NAVTEX client may be used to output messages from PC NAVTEX via a serial port. The VMFT system may then receive these messages and process these as VMFT alerts. This could be achieved by the messages being received as Serial input into a separate Serial COM Port on the same VMFT node. Alternatives include being received as Serial input into a Serial COM Port on a different VMFT node, or being received indirectly by VMFT via another supported input format.

All NAVTEX Messages are displayed by VMFT as Warnings (as defined in the Config tool, see Figure C:25 '*External ALR Serial Alert Device*').

The following options are available for messages generated from NAVTEX:

1. Audio alerts when NAVTEX messages arrive (requires speakers connected to the sound card).
2. VMFT alerts when NAVTEX messages arrive.
3. No alerts when NAVTEX messages arrive.
4. Both audio alerts and VMFT alerts.

Selection (1) will allow different sounds (or no sound) for each of the 26 NAVTEX categories.

For options 1, 2 and 4 an external NMEA Alert device must be configured, see Section 3.3.2 *Configuring the External Alert Provider*'.

If option 2 or 4 is selected you must enable the NAVTEX NMEA output and select a serial port to be used to send the alerts. To do this navigate to the NAVTEX NMEA popup window from the PC NAVTEX window, tick the **NAVTEX NMEA output enabled** check box and select the required COM port from the **Port** drop down list, see Figure C:32.

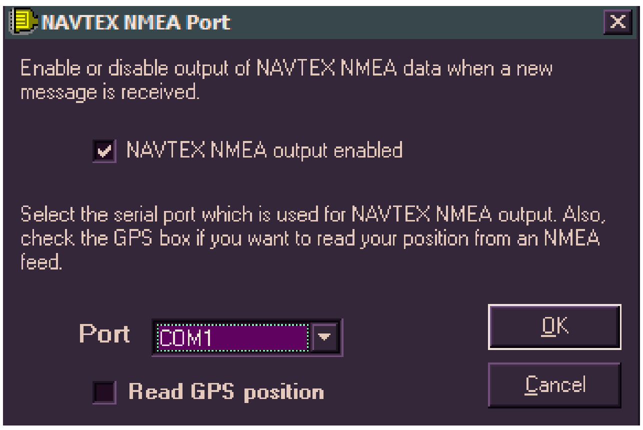


Figure C:32 NAVTEX NMEA Port

Option 2 will generate one VMFT alert for each NAVTEX category that has unacknowledged messages. If the operator acknowledges the alerts on VMFT the audio alert (if enabled) is silenced and the alert moved to the acknowledged alerts list. When all of the messages in that category have been acknowledged the alert will be removed from the list. NAVTEX messages can be acknowledged at any node and will indicate acknowledged at every node.

CAUTION!

It is not necessary to have the NAVTEX Client running on any node for messages to be received and placed in the alerts database. However, if the Client node that is generating the messages to VMFT is <u>not</u> running then no NAVTEX alerts will be presented on any VMFT node.

If options 2 or 4 are to be used, you will need to configure the sound files (.wav) for Navtex message alerts. To do this click on the **Alarm** icon in the PC NAVTEX window. The following popup window **Message Categories and Audio Alarms** appears from where you can associate a sound file with each type of alert generated from NAVTEX. For more information on audio alert configuration refer to Navtex help.

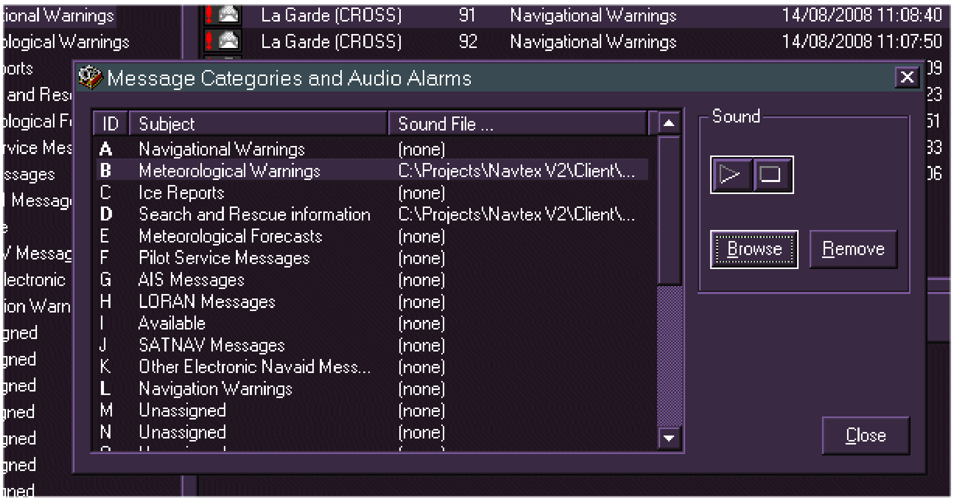


Figure C:33 Message Categories and Audio Alarms

If option 3 is to be used no external alert provider will need to be configured. However, it is possible to enable external announcements, as described in Section C.3.3.2, and just uncheck the **NAVTEX NMEA output enabled** tick box, which will result in no NAVTEX alerts on VMFT.

C.3.6 Configuring the NAVTEX Server for the Receiver

After the NAVTEX server has been installed and opened at the server node (either automatically after a reboot, or by clicking the **Start/Show NAVTEX Server** button) the NAVTEX server must then be configured to use a serial port to communicate with the NAVTEX receiver.

To configure the server to communicate with the receiver:

1. Right click on the icon letter **N** in the Windows task bar. If the icon N is not visible in Operator Mode, click on **Show NAVTEX Server** button on the NAVTEX feature menu to bring up the NAVTEX Server interface, see Figure C:27 on page 25.
2. Click the **Port** icon, the Serial Port Settings popup window appears, see Figure C:28 on page 26.
3. From the Port drop down list select the RS422 or RS232 port that will be connected to the receiver. Select the receiver type from the **Device** drop down list.

C.3.7 PC NAVTEX Simulated Mode

1. Within the PC NAVTEX click the **Monitor** icon to view the data from the receiver.
2. If there are currently no messages being received from the Receiver click the **Simulator** icon and the server will generate messages that can be used to demonstrate or test the clients and client/server connection. Messages are displayed in the NAVTEX Server window.

Note: *If you start the Simulator you must set the receiver type to Furuno FX300. Always make sure you reset the Receiver back to the correct type after you have tested the system from the Simulator.*

3. If the server stops for whatever reason click the **Start** icon to restart it.

C.3.8 VMFT Run Time Information

The node hosting the Server must always be started and the NAVTEX application opened before the Client nodes. If a Client node is started before the Server a message appears informing the operator that the connection has been forcibly rejected.

If the Server node is not running at all then each Client node will display a message indicating that it could not resolve the host computer. The Client will work correctly when the Server node is started and the NAVTEX application opened. In this case the Client software should NOT be closed, you can either minimise the NAVTEX window by clicking the _ button at the top right of the window, or click anywhere on the VisionMaster screen to automatically minimise the window.

The NAVTEX window will continue to run and will be displayed again if the **Start/Show NAVTEX Client** button is clicked.

C.4 Configuring Moxa Network Switches

The following sections describe specific configuration tasks that may need to be performed on Moxa Ethernet switches via the Moxa EthernetDevice web browser.

To access the Moxa EthernetDevice web browser:

1. Navigate to the Service desktop, for information refer to Chapter 2 '*Diagnostics, Commissioning & Service Mode*'.
2. Double click on the Moxa Config icon on the Service desktop. A 'Moxa Ethernet Switch and Video Server Configurator' window opens listing all the Moxa switches on the network.

3. From the lower toolbar open Internet Explorer and enter the IP address of a Moxa switch listed in the Moxa Configurator window in the Web address field and press return. The Moxa EtherDevice Switch configuration screen appears, see Figure C:34.

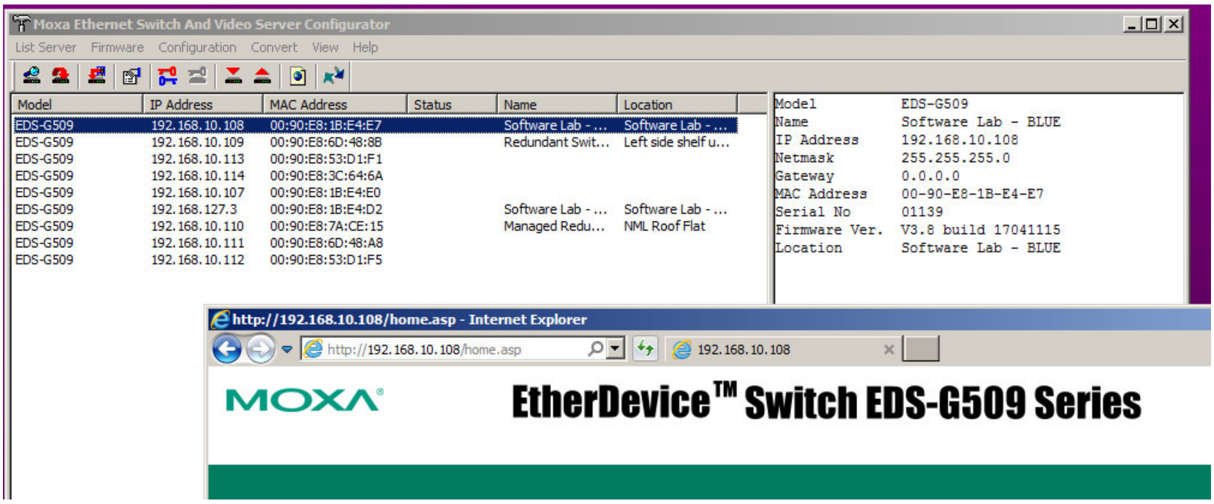


Figure C:34 Moxa Ethernet Switch and Video Server Configurator

4. From the EthernetDevice Switch window login with the user name '**admin**', a password is not required.

C.4.1 IGMP Snooping

IGMP Snooping provides the ability to prune multicast traffic so that it is only provided to ports on the network switch for which there are subscribers to multicast groups, thereby reducing the amount of traffic on the network.

The optimal setting for Moxa network switches is IGMP Snooping enabled.

IGMP uses UDP multicast addresses which are valid across a "broadcast domain". Without a router or Virtual Private Network (VPN) all VMFT installations would typically be in the same broadcast domain and be received across all subnets in the domain.

IGMP snooping is provided based on IGMPv1, IGMPv2 or IGMPv3. The selection of the IGMP version will be based on the highest version supported by all the connected nodes;

To allow IGMP to work correctly on Radar Display equipment the source IP address of IGMP packets from the Moxa switches need to be in the same subnet. This is to prevent UDP packet beings considered "spam" from outside the subset and discarded.

C.4.1.1 IGMP Protocol Constraints

Some network equipment may not support the IGMP protocol and for such equipment the network switch to which it is connected must be configured to provide membership responses on the device's behalf.

Equipment compliant to the following standards may not support IGMP:

- IEC 61162-450 Edition 1
- IEC 61162-450 Edition 1 Amendment 1 devices.

Equipment compliant to the following standards do support IGMP and should have network switches enabled to use IGMP Snooping:

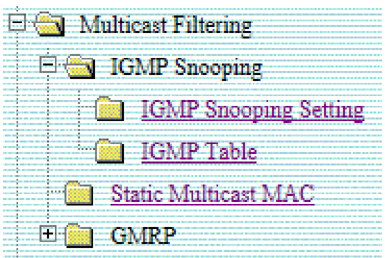
- IEC 61162-450 Edition 2

The equipment supplied by Sperry Marine currently known to support operating in accordance with the above standards are: OEM Danelec VDRs.

C.4.1.2 Enabling IGMP Snooping

To enable IGMP Snooping on Moxa network switches:

1. From the main menu on the left of the screen navigate to IGMP Snooping and select **IGMP Snooping Setting**.



Note: *The* **IGMP Snooping Setting** *page will display a switch setting page for a Moxa Layer 2 device as shown in Figure C:35 Moxa Layer 3 devices are not applicable to the VMFT Display.*

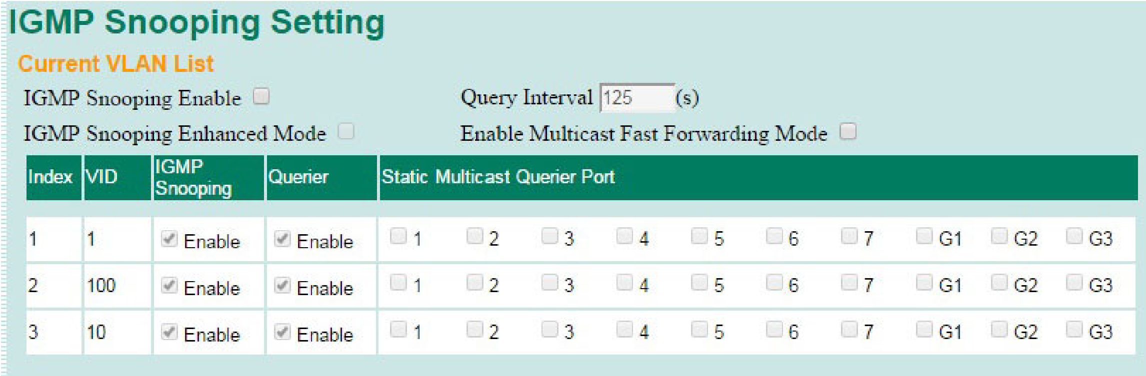


Figure C:35 IGMP Snooping Setting

2. To configure IGMP Snooping for the Moxa switch:
   a. Tick the **IGMP Snooping Enable** check box at the top of the window to enable the IGMP Snooping function globally.
   b. Tick the **Enable** buttons in the IGMP Snooping and Querier columns.
   c. Disable the **IGMP Snooping Enhanced Mode** check box.
   d. Cick the **Enable Multicast Fast Forwarding Mode** check box.
   e. The **Query Interval** default is 125 seconds, settings are between 20 and 600 seconds. The default setting should remain.
3. After configuring the Moxa IGMP Snooping settings navigate to the **Current Active IGMP Groups** page from the Multicast Filtering menu. Figure C:36 shows an active IGMP groups page.
4. Check displayed details on current active IGMP groups that were detected.

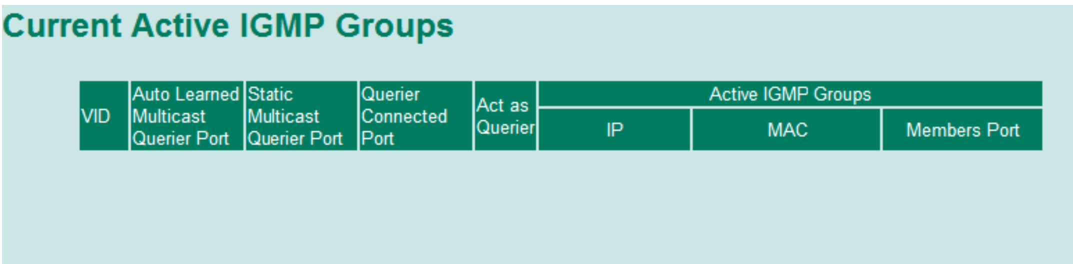


Figure C:36 Current Active IGMP Groups

C.4.2 Static Multicast for VDRs

Some devices such as VDRs that use an IEC 61162-450 network interface*.may only support multicast packets, but do not support IGMP Snooping. If the system includes VDRs the multicast traffic to a VDR port will be blocked when IGMP Snooping is enabled. Therefore, in order to provide mutlicast traffic a static multicast route needs to be defined for the device.

This is required to be done at each switch by defining the multicast MAC address for the multicast IP addresses a VDR requires and the ports through which the data needs to go.

Note: *The IP address set for the Moxa switch must have the same Subnet range (e.g. 192.168.10.x) as other Display/Radar equipment that are sending/receiving multicast UDP data.*
If a device provides multicast packets from outside the Display/Radar subnet range the packet will be discarded at the Radar and not processed.

C.4.2.1 Enabling Static Multicast

If a device receives multicast data for only a few minutes and then stops receiving, this is an indication that a static multicast group may be required, or the static group is not configured correctly.

To configure static multicast:

1. Connect to the Moxa switch and logon to the EthernetDevice Switch as previously described.
2. From the Multicast Filtering menu open the **Static Multicast MAC** sub menu. Figure C:37 shows a Static Multicast Address page.
3. Input the multicast MAC address of this host as defined in Table 1.
4. Tick the **Join Port** check box for each port on the switch for which the device connected needs to join group membership. For a VDR this would be the port to which it is connected and all multicast groups for which it needs to receive multicast group data.
5. Click the Activate button to enable the selected static multicast MAC address list.

*. Applicable to VDRs using Edition 1 and Edition 1 Amendment 1 versions of the IEC 61162-450 standard. Edition 2 is not currently supported.

Reserved -450 Multicast IP address	Multicast MAC Address
239.192.0.1	01-00-5e-40-00-01
239.192.0.2	01-00-5e-40-00-02
239.192.0.3	01-00-5e-40-00-03
239.192.0.4	01-00-5e-40-00-04
239.192.0.5	01-00-5e-40-00-05
239.192.0.6	01-00-5e-40-00-06
239.192.0.7	01-00-5e-40-00-07
239.192.0.8	01-00-5e-40-00-08
239.192.0.9	01-00-5e-40-00-09
239.192.0.10	01-00-5e-40-00-0A
239.192.0.11	01-00-5e-40-00-0B
239.192.0.12	01-00-5e-40-00-0C
239.192.0.13	01-00-5e-40-00-0D
239.192.0.14	01-00-5e-40-00-0E
239.192.0.15	01-00-5e-40-00-0F
239.192.0.16	01-00-5e-40-00-10
239.192.0.17	01-00-5e-40-00-11
239.192.0.18	01-00-5e-40-00-12
239.192.0.19	01-00-5e-40-00-13
239.192.0.20	01-00-5e-40-00-14
239.192.0.21	01-00-5e-40-00-15
239.192.0.22	01-00-5e-40-00-16
239.192.0.23	01-00-5e-40-00-17
239.192.0.24	01-00-5e-40-00-18
239.192.0.25	01-00-5e-40-00-19
239.192.0.26	01-00-5e-40-00-1A
239.192.0.27	01-00-5e-40-00-1B
239.192.0.28	01-00-5e-40-00-1C
239.192.0.29	01-00-5e-40-00-1D
239.192.0.30	01-00-5e-40-00-1E
239.192.0.31	01-00-5e-40-00-1F
239.192.0.32	01-00-5e-40-00-20
239.192.0.33	01-00-5e-40-00-21
239.192.0.34	01-00-5e-40-00-22
239.192.0.35	01-00-5e-40-00-23
239.192.0.36	01-00-5e-40-00-24
239.192.0.37	01-00-5e-40-00-25
239.192.0.38	01-00-5e-40-00-26
239.192.0.39	01-00-5e-40-00-27
239.192.0.40	01-00-5e-40-00-28

239.192.0.41	01-00-5e-40-00-29
239.192.0.42	01-00-5e-40-00-2A
239.192.0.43	01-00-5e-40-00-2B
239.192.0.44	01-00-5e-40-00-2C
239.192.0.45	01-00-5e-40-00-2D
239.192.0.46	01-00-5e-40-00-2E
239.192.0.47	01-00-5e-40-00-2F
239.192.0.48	01-00-5e-40-00-30
239.192.0.49	01-00-5e-40-00-31
239.192.0.50	01-00-5e-40-00-32
239.192.0.51	01-00-5e-40-00-33
239.192.0.52	01-00-5e-40-00-34
239.192.0.53	01-00-5e-40-00-35
239.192.0.54	01-00-5e-40-00-36
239.192.0.55	01-00-5e-40-00-37
239.192.0.56	01-00-5e-40-00-38
239.192.0.57	01-00-5e-40-00-39
239.192.0.58	01-00-5e-40-00-3A
239.192.0.59	01-00-5e-40-00-3B
239.192.0.60	01-00-5e-40-00-3C
239.192.0.61	01-00-5e-40-00-3D
239.192.0.62	01-00-5e-40-00-3E
239.192.0.63	01-00-5e-40-00-3F
239.192.0.64	01-00-5e-40-00-40

Table 1: Multicast IP to MAC Address

Table 1, "Multicast IP to MAC Address," lists the reserved multicast IP addresses used for -450. A -450 Ed 1 or Ed 1 Am1 VDR, with the static multicast address ranges to be used shown in the blue columns.

Multicast data filtering will not be enabled for the address range of 224.0.0.1 to 224.0.0.255 as recommended in RFC 4541.

If a different Multicast Mac address is required then this can be provided by Sperry Marine.

Notes: *The first 3 octets of the Multicast Address are: 239.192.0.*
The Multicast MAC first 5 groups are: 01-00-5e-40-00-

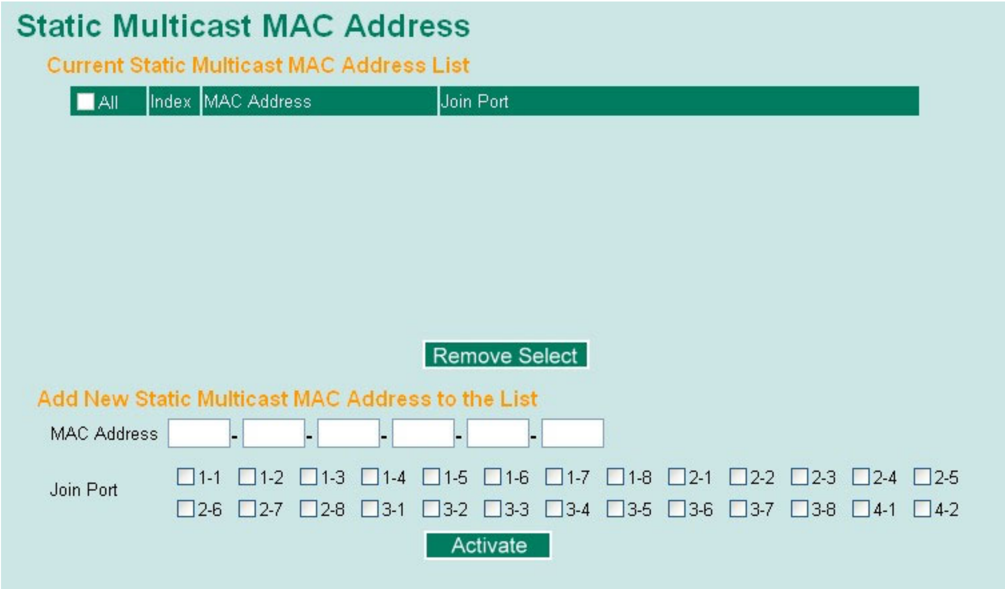


Figure C:37 Static Multicast MAC Address

C.4.3 Configuring Rapid Spanning Tree Protocol (RSTP)

In a system which comprises only Moxa switches, Turbo Ring V2 network loop detection should be used.

However, Turbo Ring loop installation is not compatible when network switches from other manufacturers are used in the same system. In this case a standard protocol such as Rapid Spanning Tree Protocol (RSTP) should be configured via the EthernetDevice web browser.

C.4.3.1 Enabling RSTP

RSTP needs to be selected on the ports which form the trunk backbone of the network, and any ports used for coupling rings or spurs to other network switches.

For a standard ring of network ports this would require the two ports connecting to adjacent switches to have 'Enable RSTP' enabled. Typically these would be ports 8 and 9.

Enable RSTP can be enabled on all Ports and the Moxa switch will, by default, attempt to determine whether a port is participating in the RSTP process. This can result in the port taking a number of seconds to become active as it needs to go through a 'learning process' in order to determine if it is part of an RSTP process.

To enable RSTP:

1. Connect to the Moxa switch and logon to the EthernetDevice Switch as previously described.
2. Double click on **Communication Redundancy** in the Main Menu. Figure C:38 shows the current status and redundancy settings.

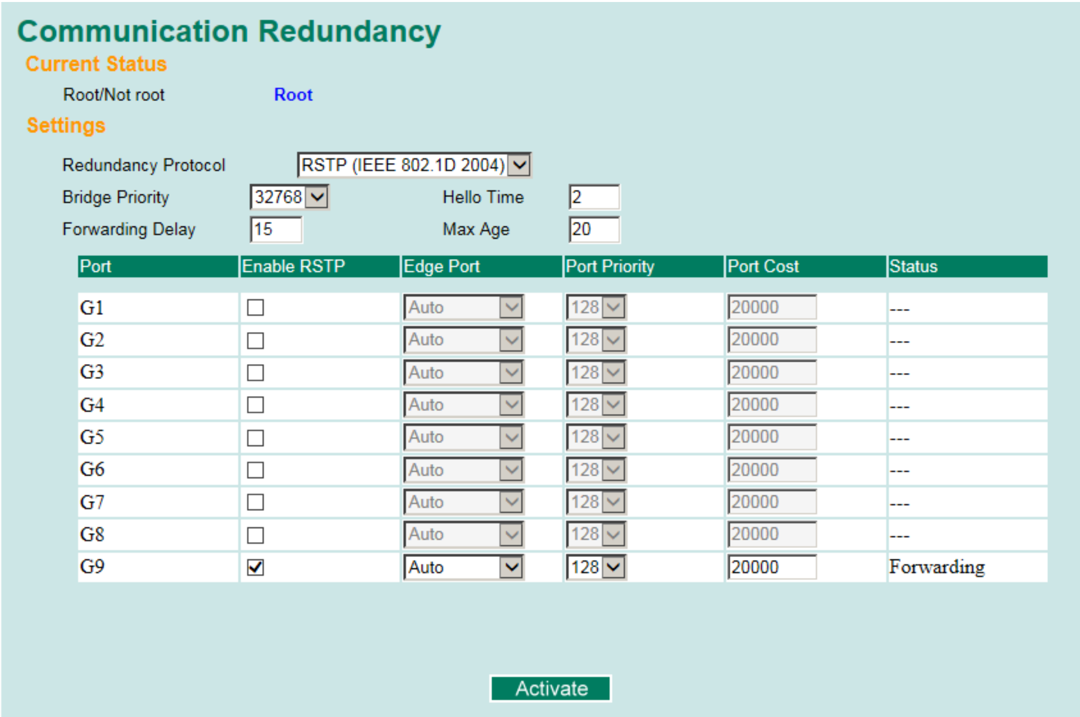


Figure C:38 Communication Redundancy

3. From the Redundancy Protocol drop down list select RSTP to override the Turbo Ring selection provided by the DIP switch, see Figure C:39.

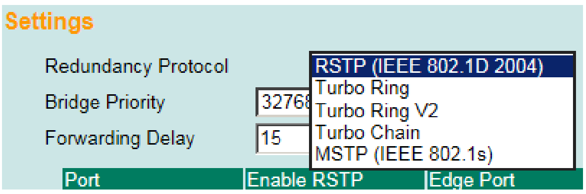
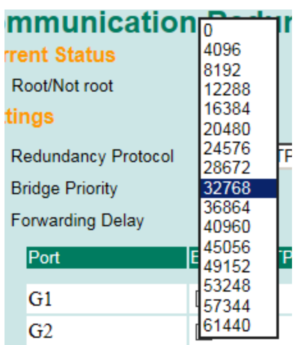


Figure C:39 Selecting Redundancy Protocol

4. The switch(es) that are acting as the central/core switch should be made the "root bridge" The root bridge can be chosen by selecting a lower value priority than the default (32768).



5. Increase this device's bridge priority by selecting a lower number. A device with a higher bridge priority has a greater chance of being established as the root of the Spanning Tree topology.

6. All other settings in the Communication Redundancy window should remain at their defaults.

7. Click the **Activate** button to enable RSTP for the selected ports.

C.5 Installing the VisionMaster Printer

C.5.1 Install Local USB Printer

To install a local USB printer, use the standard Windows "Add Printer" set up.

Note: *Use of a "Shared Printer" is not supported.*

1. From the Service desktop access the Control Panel by entering '**Control Panel'** in the Search field in the bottom left of the desktop screen, see Figure C:40.

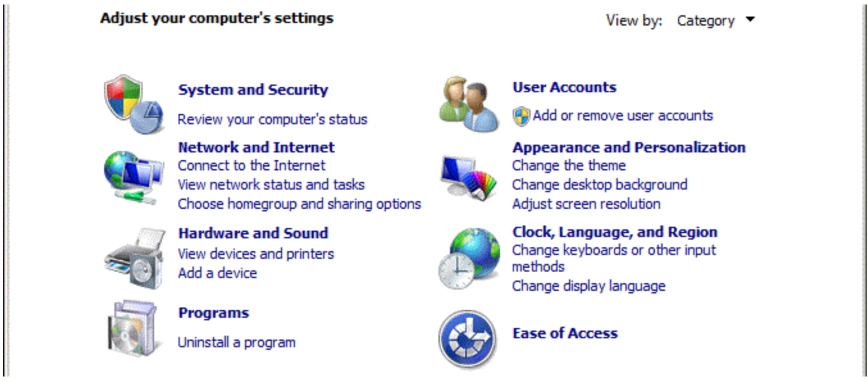


Figure C:40 Control Panel

2. In the **Hardware and Sound** section click on **View devices and printers**.
3. From the Devices and Printers page click on **Add a Printer**, the following screen prompts to `Choose a device or printer to add to this PC', see Figure C:41.

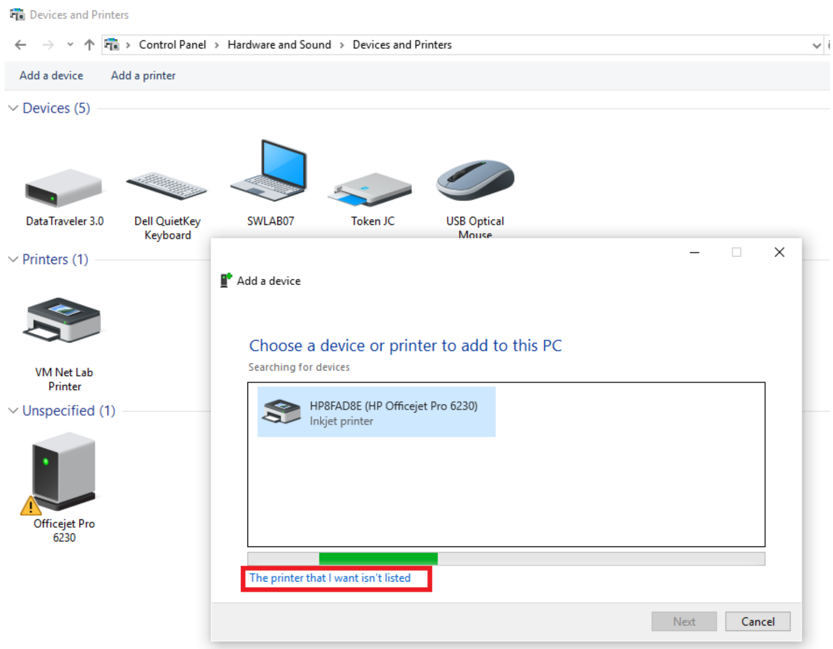


Figure C:41 Choose a device or printer.

4. Click the hyperlink `**The printer that I want isn't listed**' below the device/ printer box.
5. Browse to the printer to be installed. The following steps describe setting up the printer manually. Alternatively, to install the printer using the HP drivers refer to Section 5.2 *Install Network Printer*''
6. On the Add Printer screen, ensure the "Use existing port:" option is selected, then select the "USB option" from the list. Click **Next**.

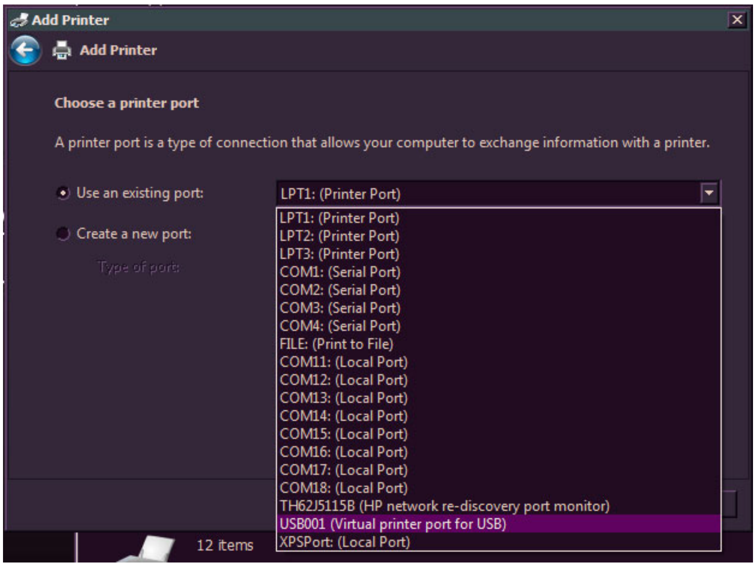


Figure C:42 Printer Port Selection

7. A list of standard printers will be displayed. From this list select the appropriate printer.
8. The next screen will allow you, if required, to apply a specific name for your printer. If required, delete the highlighted generic name and apply a new name. Click **Next**.

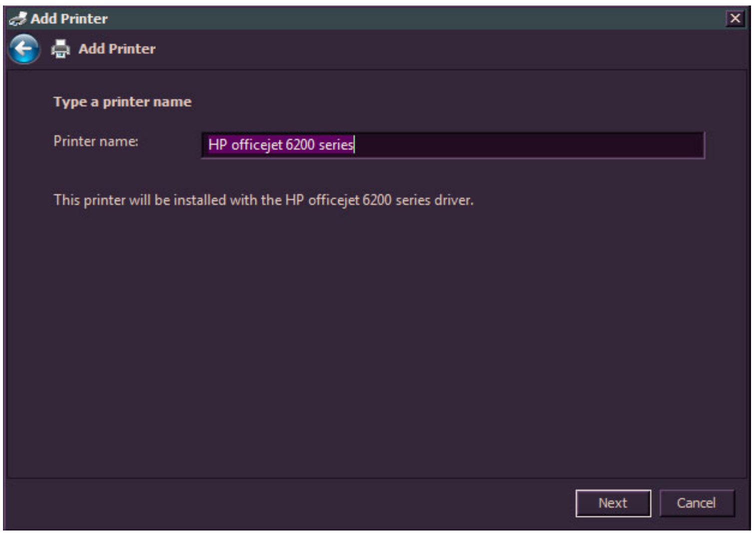


Figure C:43 Changing Printer Name

9. On the Printer Sharing screen - ensure that the “Do not share this printer” option is selected than. Click next again to install the printer.

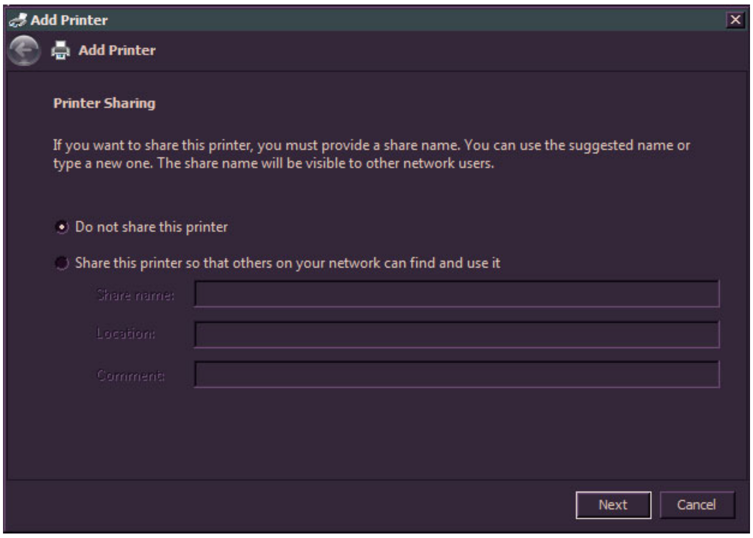


Figure C:44 Printer Sharing

10. Following successfully adding the new printer, click “Finish” to complete the installation.

C.5.2 Install Network Printer

This process assumes that:

a. The printer has been connected to the network infrastructure

b. The wired network IP for the printer is in the same subnet as the VMFT processors:

- Restart in Service Mode
- Use the desttop shortcut to install the printer driver or go to the folder `C:\Drivers\HP\Officejet Pro 6230`

This Screen will appear:

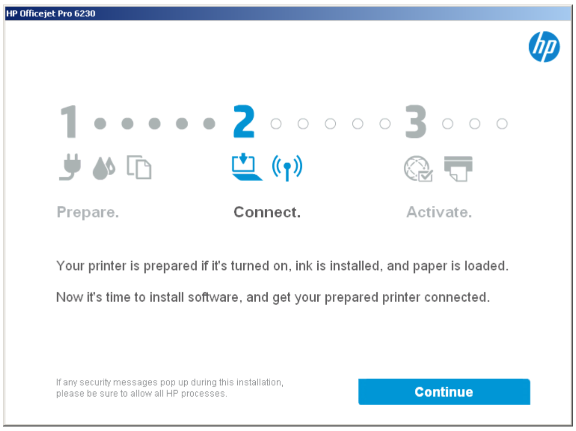


Figure C:45 Printer Connect

Click on "Continue"

If the printer has already been installed, this screen appears:

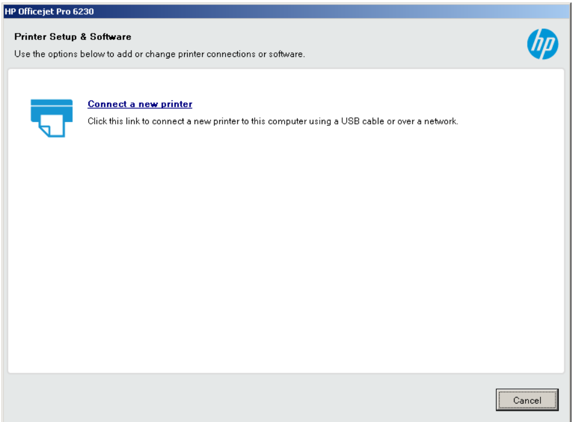


Figure C:46 Connect New Printer

Click on "Connect a new printer"

An Installations Agreements and Settings page will appear:

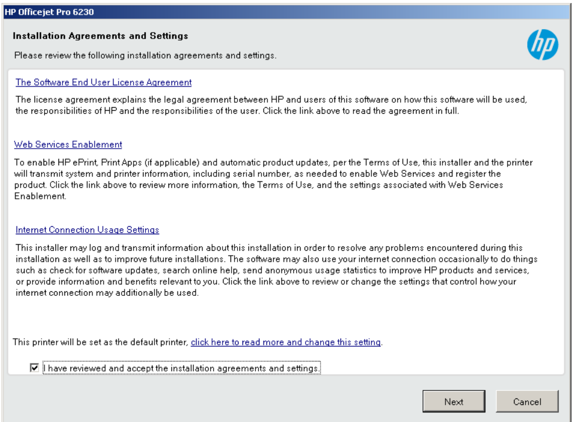


Figure C:47 Installation Agreements and Settings

From Figure C:47 click on "Web Services Enablement" hyperlink.

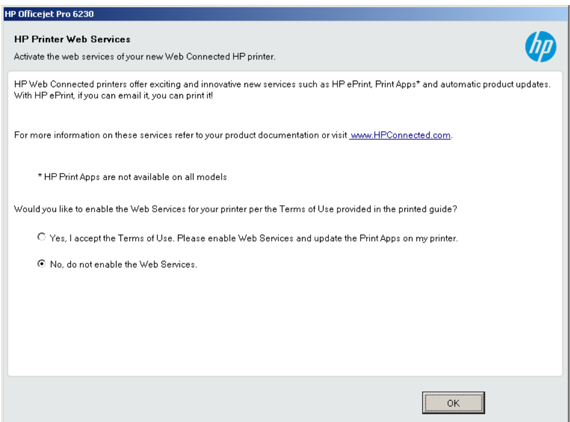


Figure C:48 Web Services

Select ‘No, do not enable the Web Services. Click “OK”

From the next screen “Installations Agreements and Settings”, click on Internet Connection Usage Settings to obtain this screen.

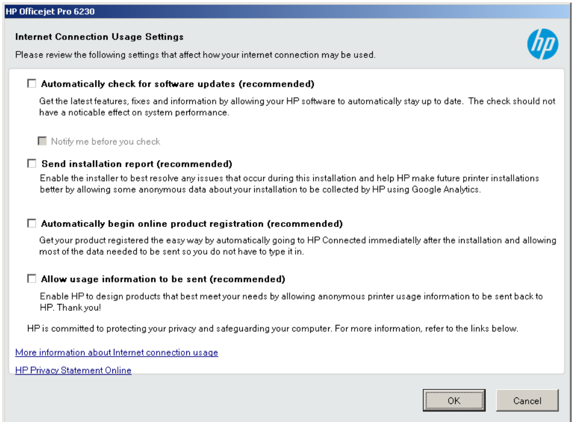


Figure C:49 Internet Connection and Usage

Uncheck ‘Automatically check for software updates‘

Uncheck ‘Send installation report‘

Uncheck ‘Automatically begin online product registration‘

Uncheck ‘Allow usage information to be sent‘

Click on ‘OK‘

From the Installations Agreements and Settings page (Figure C:47) click on the ‘Internet Connections Usage Settings’ hyperlink

Accept the EULA box and then on “Next”. The printer will install.

At the Connection Options Page select “Wired Network” then click on “Next”.

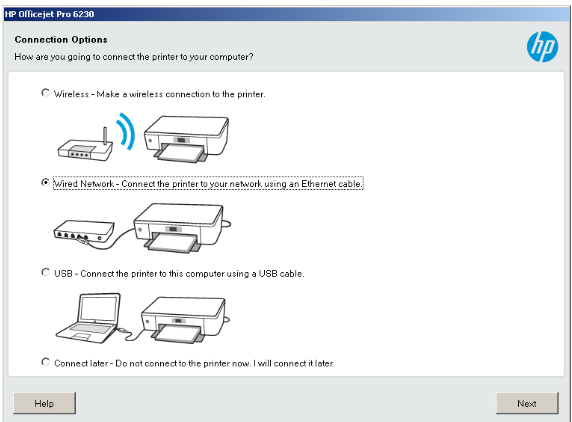


Figure C:50 Connection Options

Note: *If the processor is not connected to the network, a warning page will appear. Connect the processor to the network then click on “Retry”.*

Note: *If no printer is detected, a warning page will appear. Connect the printer to the network and then click “Next”.*

Connected printers will be shown, Figure C:51.

Select the Printer from the list and click on "Next". Network printer will install.

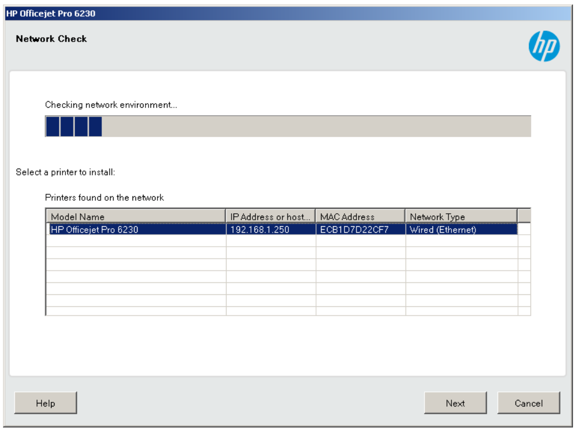


Figure C:51 Network Printers List

Once the printer has installed, click Exit.

Chapter 1 Appendix D

BNWAS Setup

CONTENTS

LIST OF FIGURES

D.1 Introduction

The VisionMaster FT (VMFT) system may be connected to an external Bridge Navigational Watch & Alarm System (BNWAS).

This Appendix describes the following BNWAS functions and how to commission them in VMFT:

- **Activity monitoring**
- **Alert transfer**: the actuation of the Stage 2 alarm

D.2 Supported Hardware

The BNWAS system currently supplied for new installations is manufactured by Veinland.

There are two versions of Veinland BNWAS hardware:

- P/N S0209: a BAM compliant version
- P/N S0201: an older non-BAM compliant version

We recommend that you use the new BNWAS hardware where possible.

The BNWAS hardware should be loaded with firmware version v2.5.5 or later. You can use the serial interface to check the firmware version of the hardware. To find out how to do this, refer to the Veinland manual. If you are using an older firmware version, the newer firmware version is flashed to the unit. A guide for re-flashing the firmware is available from Veinland.

You may use BNWAS systems from other manufacturers. To commission those systems, refer to the manuals provided by the manufacturers.

D.3 BNWAS Reset

If there is no operator activity for a configured timeout or dormant period, an alarm progresses to various parts of the ship to warn of a lack of adequate supervision of the bridge.

The reset function prevents the timeout from occurring by monitoring the activity on the bridge, which it does in the following ways:

- motion sensors
- activity resulting from use of bridge equipment, for example, movement of the mouse

A user can also reset the dormant period manually using physical reset buttons.

A reset function may be generated by reset devices forming an integral part of the BNWAS, or by external inputs from other equipment capable of registering physical activity and mental alertness such as VMFT Vigilance Monitoring, see Section 6.14.2.2 '*Interface with BNWAS*' in Chapter 1 '*Configuration*'.

When activated, a reset function does the following:

- Cancels any visual indication relating to the dormant period.
- Cancels any audible alerts caused by the dormant period expiring.
- Restarts the dormant period to run its full duration from the time of the reset.

D.3.1 Reset – Serial EVE Message

To reset the BNWAS by activity monitoring of the VMFT system, we recommend using an EVE message. You can configure an EVE message through the vigilance monitoring page of the configuration, as shown in Figure D.1.

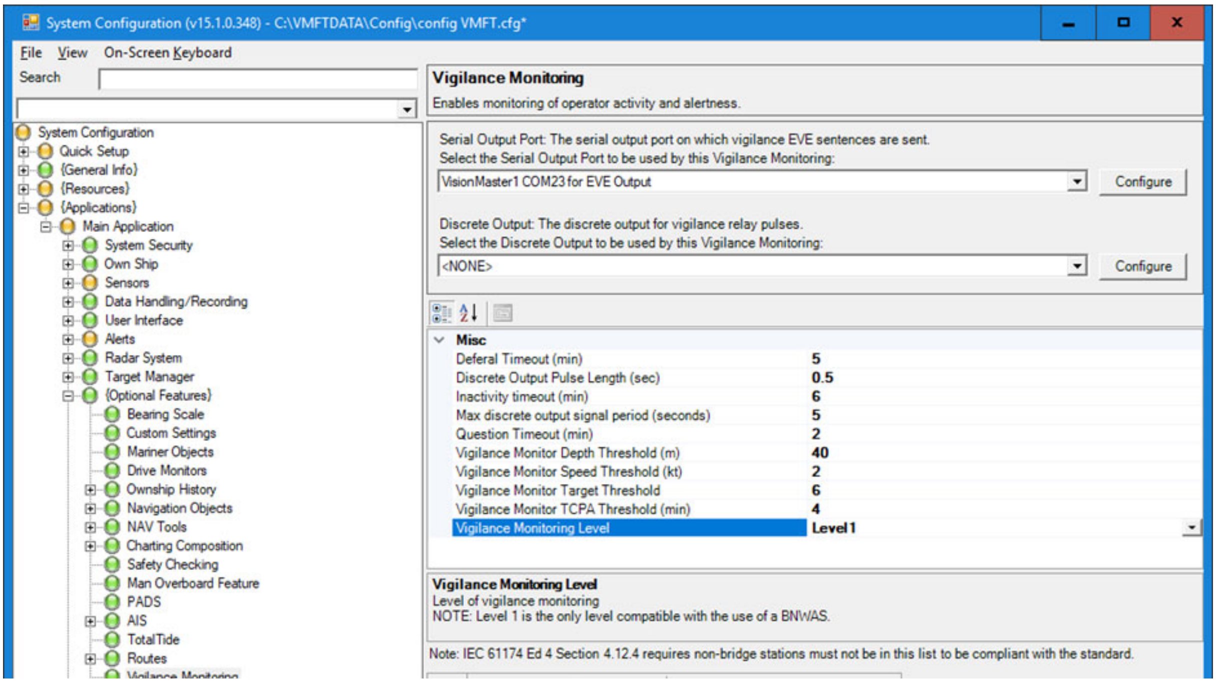


Figure D.1 Vigilance EVE output for BNWAS

1. In **Serial Output Port**, select a serial port to the BNWAS.
2. Set **Vigilance Monitoring Level** to **Level 1**. This is the only monitoring level with which you can use the BNWAS.

D.3.2 Reset - Closed Contact

If EVE support is not available, you can configure a closed contact discrete output.

This can be configured on the same page as shown in Figure D.1 by using the **Discrete Output** field.

	CAUTION
⚠	**The Veinland BNWAS only supports a vigilance pulse duration for the discrete vigilance output of 1 second.**

D.4 BNWAS Alert transfer

If a configured alert is active and has not been acknowledged for a period of 30 seconds, an emergency call is sent for that alert. When the BNWAS receives an emergency call, it immediately activates a Stage 2 alert.

D.4.1 Emergency call alert output

To transfer unacknowledged alerts on VMFT, we recommend using the emergency call ALR output feature if this feature is supported on your system. The Veinland BNWAS supports this feature.

You can configure the emergency call ALR output feature in the Alerts section of the system configuration tool, as shown in Figure D.2.

Note: *The emergency call and EVE activity monitoring may be configured using the same port.*

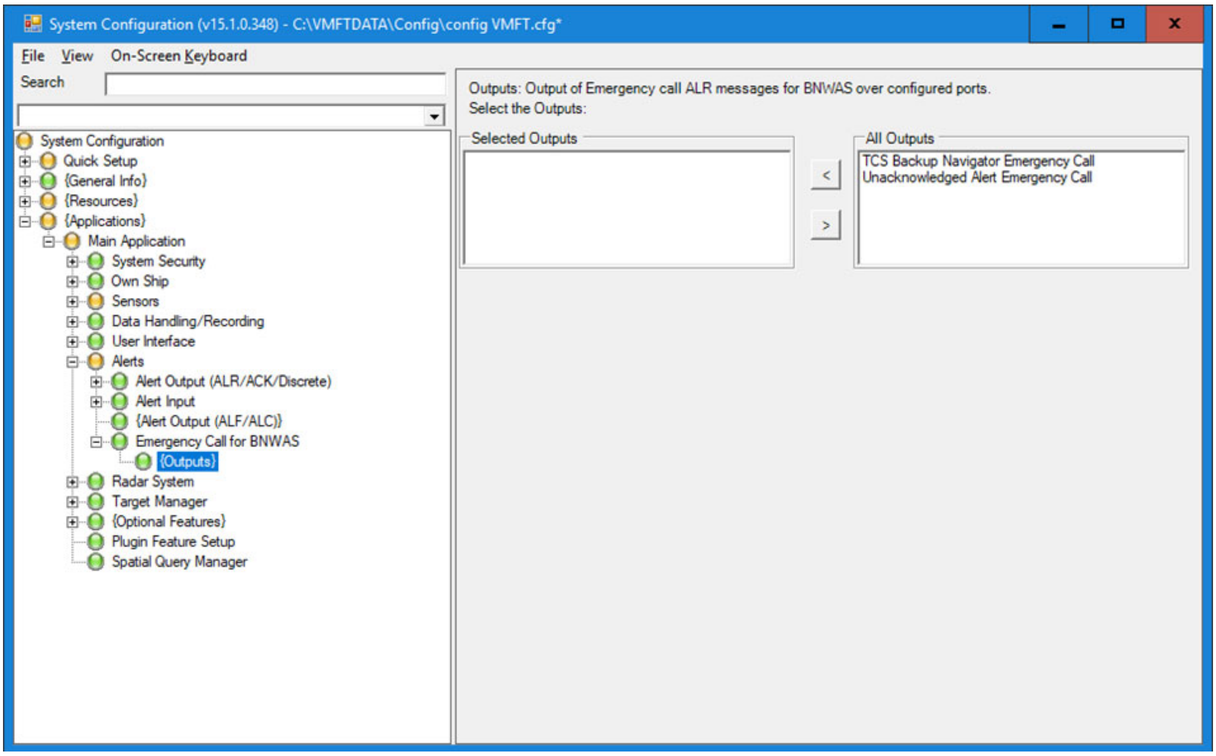


Figure D.2 Emergency call output

There are two emergency call output options:

- TCS Backup Navigator Emergency Call
- Unacknowledged Alert Emergency Call

If a track control system is being commissioned, select **TCS Backup Navigator Emergency Call**. This option provides transfer of unacknowledged track control related alerts in order to meet type approval requirements for the track control standard.

To transfer alerts not related to track control, select **Unacknowledged Alert Emergency Call**.

You can use both options simultaneously, for example, if you are using a track control system but also want to monitor additional alerts which do not form part of the track control system.

If you are using the older Veinland BNWAS hardware (P/N S0201), commission the ALR timeout on the BNWAS hardware to be 0 seconds. Refer to the Veinland BNWAS manual for guidance on how to do this. If you are using the newer BNWAS hardware (P/N S0209), this step is not necessary.

D.4.2 Alert Transfer - Closed Contact

You can transfer unacknowledged alerts using discrete closed contact. This method is not recommended when using a Veinland BNWAS. It may be suitable for BNWAS systems from other manufacturers. Refer to the manufacturers' manuals to find out if this method is suitable.

When using a BNWAS with a closed contact setup:

1. Select a Discrete I/O as described in Section 9.7.5.1 '*Configuring a Discrete I/O*' in Chapter 1 '*Configuration*'.

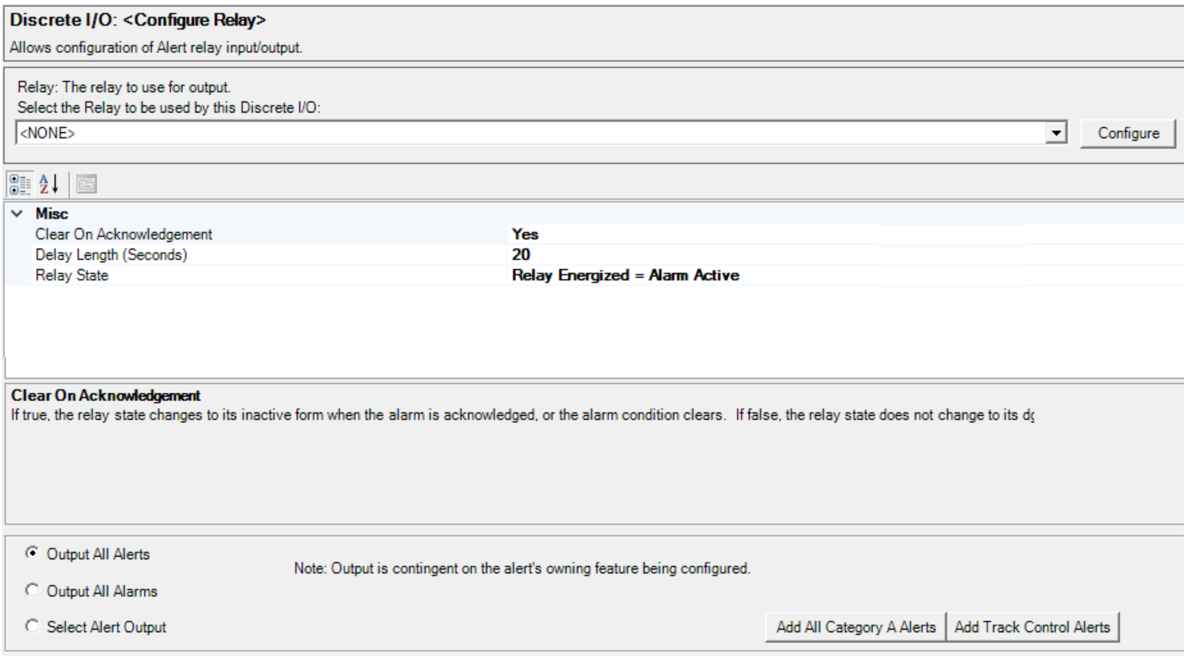


Figure D.3 Discrete I/O configure Relay for BNWAS

2. From the **Relay** list, select the relay to use for output.
3. Enter a value in **Delay Length (Seconds)**: if the system includes Track Control, enter **0**. Otherwise, enter **30**.
4. At the bottom of the screen, use the radio buttons to select the required level of alert transfer.

If the system includes Track Control, select **Select Alert Output** then, from the list of internal alerts, select **Backup Navigator**.

D.4.3 Alert Transfer - Serial

Some BNWAS systems may support the transfer of alerts via monitoring of alert output. This is not the recommended method when using a Veinland BNWAS, where the emergency call transfer mechanism is the preferred approach.

There are two methods of serial alert output:

- ALF
- ALR

The preferred output for BNWAS is ALF when this is supported.

CAUTION

Using ALR outputs is not recommended for use with Track Control systems as it does not support the alarm silencing requirements.

Do not use the Backup Navigator Caution to transfer alerts via an ALR interface.

- To configure an ALF output, see Section 9.7.7 '*Alert Output (ALF/ALC)*' in Chapter 1 '*Configuration*'.

  Note: *The ALF output must be a two-way communication.*

- To configure an ALR output, see Section 9.7.5.2 '*Configuring an Alert Output (ALR/ACK style)*' in 'Chapter 1 '*Configuration*''.

If a track control system is being commissioned, the following alerts should be selected in the alert output as a minimum:

- Early course change alarm (Early CRS Change)
- Actual course change alarm (CRS Change)
- Route End Alarm (APPR Route End)
- Track control stopped (TCS stopped)

All track control alerts can be selected as an output group by clicking the **Add Track Control Alerts** button in the Alert Output window, see Figure 1.177 in Chapter 1 '*Configuration*'.

CHAPTER 2

DIAGNOSTICS, COMMISSIONING & SERVICE MODE

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 Introduction

This chapter describes the Diagnostic and Commissioning facilities in the System menu which contain system data and values, some of which may be edited by an operator who has logged on in Service mode.

It also describes the VisionMaster Service desktop, which appears when a user has entered Service Mode from the Shutdown menu.

Appendix A '*C-MAP User Setup* ' describes how to register a C-MAP eToken from the Service desktop.

Note: *This chapter describes the functions available to a logged on user up to Service only. A user logged on as a Developer will have access to additional features not covered in this chapter.*

2 Diagnostics

The Diagnostics menu includes the following diagnostic sub-menu functions as a series of tab folders:

- Report
- Buzzer
- Performance Monitor (PM)
- Detail Log
- Sensor Status
- Connection Status
- Database
- Time (read-only data)
- Version (read-only data)
- TCVR Config (read-only data)
- TCVR Data (read-only data)
- TCVRBITE (read-only data)
- S/W (read-only data)

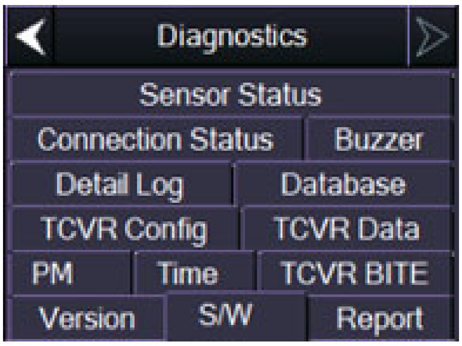


Figure 2.1 Diagnostics Menu

All the diagnostic sub-menus listed above, with the exception of **S/W,** are available to a non-logged in user.

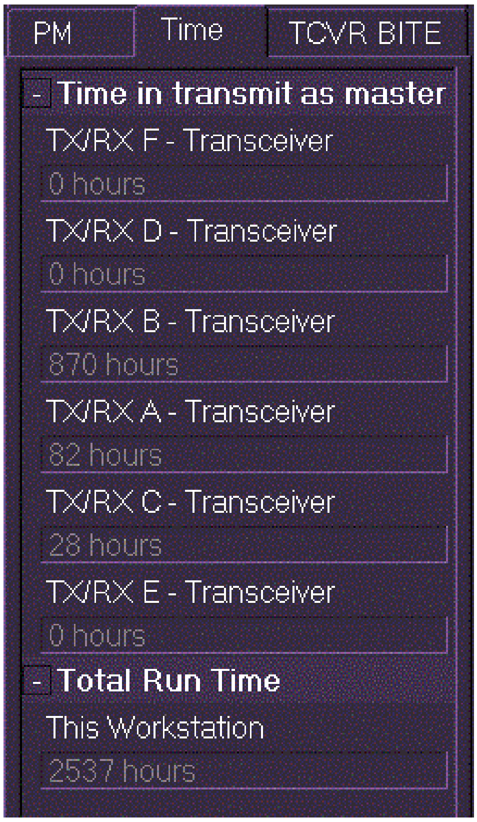
The following sub-menus have functionality for a non-logged in user and are therefore described in the 'System' chapter of the Chart Radar User Guide and ECDIS User Guide:

- Performance Monitor (for Operator Mode only)
- Report
- Detail Log
- Buzzer
- Sensor Status
- Connection Status

Note: *The Database Tab on the Diagnostics Menu displays information specific only to Client Server systems. This tab will not be present in non client server systems.*

2.1 Time

The Time folder displays transmission time for all available transceivers and total persisted runtime data for the specific node.



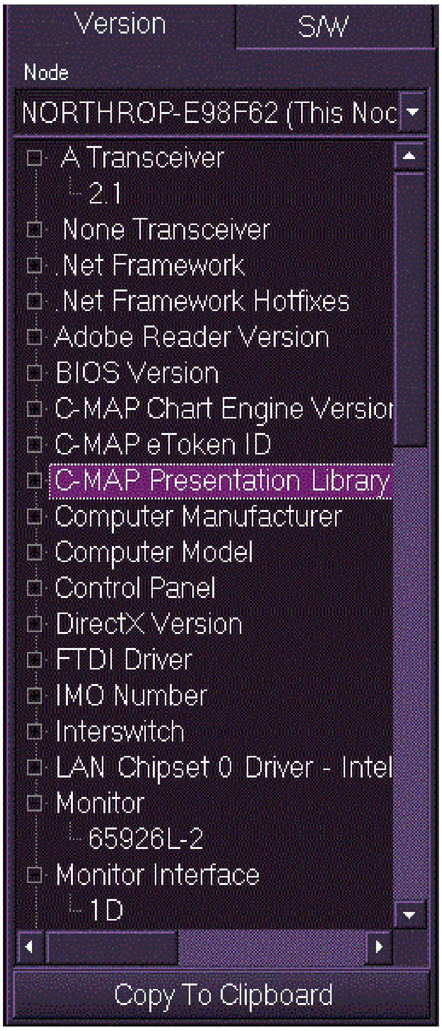
The information listed in the Time window is divided between **Time in Transmit as Master** (for transceivers) and **Total Run Time** (for nodes).

Time in Transmit as Master displays the transmission time in hours on all the available transceivers as listed in ‘Interswitch Control’ in the Radar menu. The transmission time will increment while the transceiver is transmitting as Master. When the transceiver is put into Standby, or its status changes to Slave, then the run time stops.

On a Client/Server Radar system the transceiver transmission times are collated by the server for Client node access.

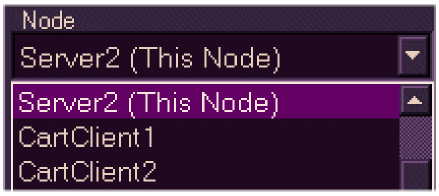
Total Run Time displays the total operational time in hours of the Workstation.

2.2 Version



The Version folder includes information on the components used by the particular node.

If your system is a Multi-Node or Client/ Server Radar then data on other nodes may be accessed. To view version information on other nodes in the system click on the node drop down arrow and select the required node from the list.



To view component details, expand the navigation tree by ticking the required component’s check box.

- A Transceiver
  - S/W version of transceiver for selected node
- B Transceiver[*]
  - S/W version of transceiver
- Net Framework
  - Net runtime service packs
- Net Framework Hot Fixes
  - If applicable, otherwise None.
- Adobe Reader Version
  - version number
- BIOS Version
  - ROM BIOS version
- C-MAP Chart Engine Version[†]
  - chart engine version number
- C-MAP eToken ID[*]
  - Sperry Marine eToken ID number
- C-MAP Presentation Library
  - Presentation library version number

* Applies when running Dual Radar
† Appear if C-MAP files are configured.

- Computer Manufacturer
  - name of PC manufacturer
- Computer Model
  - name and number of PC model
- Control Panel
  - version number
- Direct X Version
  - version number
- FTDI Driver
  - driver number
- IMO Number
  - 8-digit reference number
- Interswitch
  - version number
- LAN ChipSet 1 Driver
  - version number
- Monitor
  - part number (e.g. 65926L-2)
- Monitor Interface
  - version number
- Monitor Manufacturer
  - name of manufacturer
- Motherboard drivers
  - version number
- Motherboard Memory
  - amount of memory in MB
- Motherboard Processor (and Motherboard Processor 2*)
  - type and power of CPU
- Own Ship Name
  - name assigned to own ship
- PCIO compass board
  - standard or special
- PCIO firmware
  - version number
- SC Hardware Type
  - type of scan converter (SC) card, e.g. 0.SC3

* Applies when running Dual Radar.

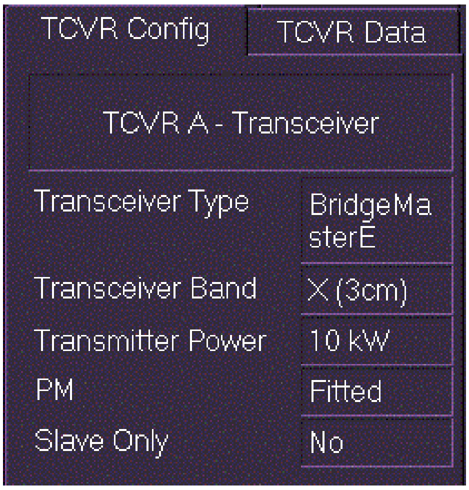
- SC3/SC4 driver/firmware
  - driver and firmware version of SC card.
- Security Block Provider
  - Aladdin eToken
- Security Block Serial #
  - serial number
- Security Block Version
  - version number
- SevenC's ChartHandler version
  - version number of ChartHandler
- SevenC's GeoSym Presentation Library Version
  - GeoSym version number and date
- SevenC's Kernel Version*
  - Kernel version number
- SevenC's S-52 Presentation Library
  - SevenCs presentation library version number
- SevenC's ShartCoat Version
  - ShartCoat version number
- SQL Server Version
  - Microsoft SQL Server version
- Video Card
  - type and version of video card
- Video Driver/Version
  - type and version of video driver
- VisionMaster FT Version
  - VMFT system software version number
- VLC version
  - software version number of VLC
- Windows Update Hotfixes
  - list of Windows hotfixes implemented
- Windows Service Pack
  - service pack number
- Windows Version
  - Microsoft Windows version

You can copy all the Version data by clicking on the **Copy To Clipboard** button at the bottom of the folder. The information is saved to the Windows clipboard and from there can be pasted to an external program or device.

* If SevenCs files are configured, shows the SevenCs kernel version

2.3 TCVR Configuration

The following data received periodically from the currently selected transceiver (TCVR) is displayed for information in the TCVR Config folder:

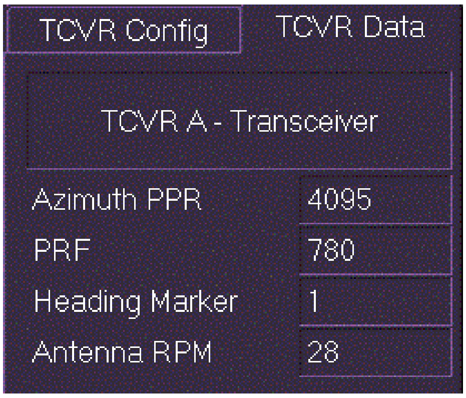


- **Transceiver Type** BridgeMaster (BM) E, BM generation or Unknown.
- **Transceiver Band** X band (3 cm), S band (10 cm) or Unknown.
- **Transmitter Power** X band is10 kW, 25 kW or Unknown. S band is 30 kW or Unknown.
- **PM** (Performance Monitor) Fitted or Not Fitted.
- **Slave Only** Yes if the transceiver is configured as Slave only, otherwise No.

For other manufacturers' transceivers all data shown, apart from the Transceiver Type, is displayed as Not Available.

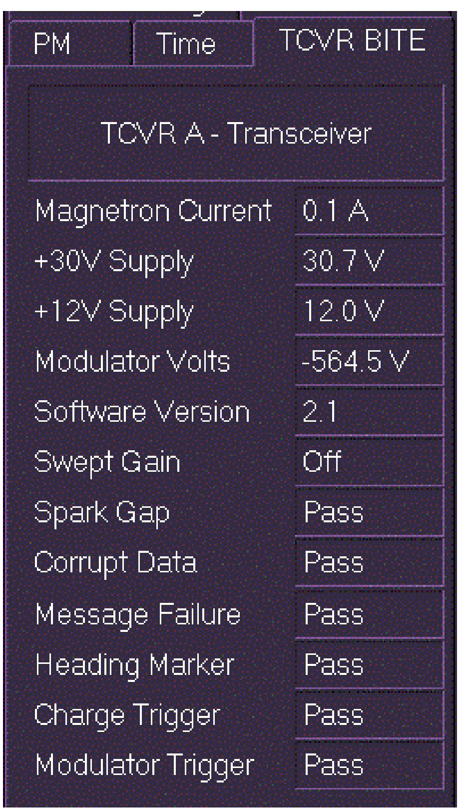
2.4 TCVR Data

The following data for the currently selected transceiver is displayed in the TCVR Data folder when the system is in Transmit.



- Azimuth Pulse Count (between heading markers)
- Pulse Repetition Frequency (PRF)
- Current Heading Marker (1 or 0)
- Antenna revs per minute (RPM)

2.5 TCVR BITE



When connected to a BridgeMaster (BM) E or BM II transceiver the following test results, except where indicated, are displayed on the transceiver's Built In Test Equipment (BITE) folder.

- Instantaneous magnetron current.
- Instantaneous +30V supply line voltage.
- Instantaneous +12V supply line voltage.
- Instantaneous modulator volts - BME transceivers only.
- Software Version
- Swept gain setting (on/off) - BME transceivers only.

If the connected transceiver is not a BME or a BM II all the BITE data is displayed as being unavailable. The BITE data is available for display irrespective of the display's Master/Slave or standby/transmit state.

The state of the following parameters for the currently selected transceiver is periodically monitored in both standby and transmit. If any of the available parameters indicate a failure, a BITE alarm is raised.

- Spark gap
- Corrupt data
- Message failure
- Heading marker
- Charge trigger - BME transceivers only.
- Modulator trigger - BME transceiver only.

2.6 Performance Monitor

The Performance Monitor (PM) facility allows the operator to detect degradation in the performance of the transceiver.

The PM facility is available when:

- the display is a Master display and is in Transmit mode.
- the connected transceiver is fitted with performance monitoring equipment.

The PM has two modes of operation:

- System Mode (default) which monitors the performance of the overall system.
- Receiver Mode which monitors the receiver path for incoming signals, including the receiver located in the Transceiver unit.

The following table summarises which values are adjustable in each mode:

Table 1: Performance Monitor - modes of operation

PM Mode		System PM tune level	Receiver PM tune level	XR adjust	XT adjust
Normal operation	System monitoring	Yes	No	No	No
	Receiver monitoring	No	Yes	No	No
Commissioning	System monitoring	Yes	No	Yes	No
	Receiver monitoring	No	Yes	No	Yes

While the PM is On any configured Sector Blanking is suppressed with an appropriate warning. If Video Build-Up is On it is automatically turned off.

2.6.1 Performance Monitor Operation

The PM folder displays the current operational Transceiver (TCVR), selected from the Radar menu, see *'Interswitch Control'* in the VisionMaster FT User Guide.

With reference to the User Guide, select the following operating parameters:

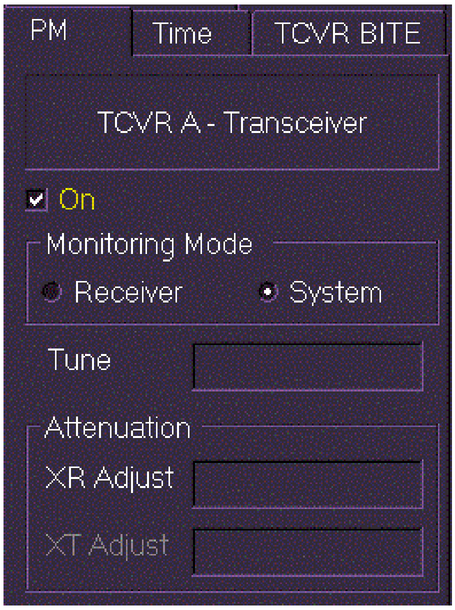
- Master Display (Interswitch systems)
- Transmit mode
- Range scale of 12 NM
- Long Pulse (LP) transmission pulse rate
- Manual clutter selection with A/C Rain and A/C Sea set to minimum
- Radar tuning mode to AFC on

- Gain setting at optimum level (if the setting is too low or too high the four tuning arcs may not be visible).

2.6.1.1 Adjusting the PM in Service Mode

To turn on the PM tick the check box next to On.

Note: *If sector blanking is active the system displays a warning prompt informing the operator that sector blanking is inhibited while the PM is switched on.*



When the PM is accessed in Service mode the Monitoring Mode (Receiver or System) and Attenuation (XR or XT) tune levels can be adjusted. The default for the tune values is the lowest value of the performance monitor tune range.

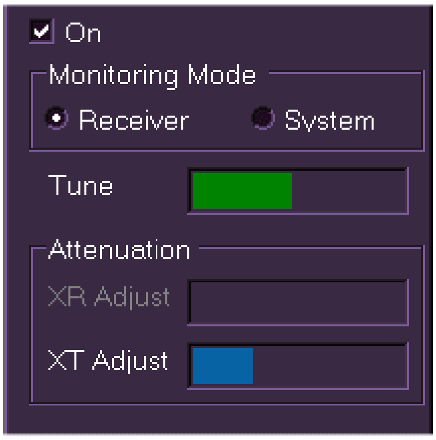
The monitoring mode selected will determine the attenuation adjustment available. Receiver mode enables XT to be adjusted; System mode enables XR to be adjusted.

Note: *When the PM is operational and the monitoring mode tuning level is being adjusted, four arcs are shown on the video circle. These arcs are approximately 0.3NM apart and start at a range scale of between 6NM to 10NM. The arcs extend from 290° to 320° (S Band), or from 155° to 185° (X Band), with respect to the heading line. The precise bearing value will alter depending on the Heading/ Stern line offset value.*

CAUTION!

The adjustment of the attenuation (XR or XT) tune levels should only be done when a major component such as the magnetron or receiver is changed.

To adjust the Performance Monitor, do the following:



1. Select Receiver monitoring mode by clicking the Receiver radio button, the XT Adjust in the Attenuation area becomes active.
2. Left click in the XT Adjust bar to activate the control, the bar will appear blue.
3. Move the trackball to the left to set the XT Adjust to minimum.
4. Left click in the **Tune** bar to activate the control. The current tuning level is shown as a green bar.
5. Move the trackball to the left to set the tune bar to minimum, while adjustment is in progress the tuning bar colour changes to blue.
6. Slowly move the trackball to the right to display maximum presentation of the four PM arcs that should be visible in the following video sectors: 290^{o} to 320^{o} for S -band and 155^{o} to 185^{o} for X-band.
7. Left click in the XT Adjust bar again and slowly move the trackball to the right to increase the XT bar until the outermost arc is just visible in the noise background.
8. Repeat steps 4 to 6, moving the trackball to left and right to achieve maximum visibility of the four arcs.
9. If necessary repeat step 7 so that the outermost arc is just visible in the noise background.
10. Select System monitoring mode and repeat the steps listed above but adjusting the XR attenuation rather than the XT.

If any value is adjusted the new value is stored and restored both upon power up and when interswitching as Master to a transceiver. A different set of tune values are maintained for each transceiver.

2.6.1.2 Adjusting the PM in Operator Mode

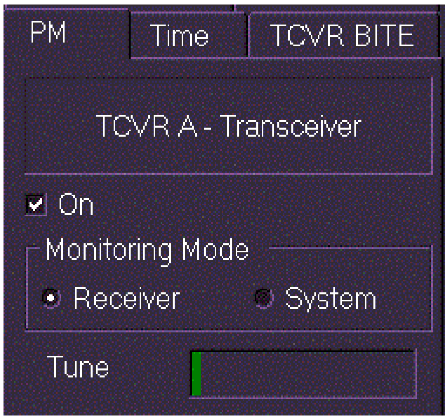
A non-logged on user can operate the PM and adjust the monitor mode (Receiver or System) tune levels to determine if there has been a drop in performance.

The ability to adjust the attenuation (XR or XT) tune levels is not available in operator (non-logged on) mode.

Note: *In Operator mode the PM switches off automatically after 10 seconds.*

To adjust the PM in Operator mode, do the following:

1. With the Monitoring Mode check box On select Receiver by clicking the **Receiver** radio button. The current tuning level is shown as a green bar.
2. Left click in the **Tune** bar to activate the control and move the trackball to the left to set the tune bar to minimum. While adjustment is in progress the tuning bar colour changes to blue.



3. Slowly move the trackball to the right to display maximum presentation of the four PM arcs that should be visible in the following video sectors: 290^{o} to 320^{o} for S -band and 155^{o} to 185^{o} for X-band. The number of arcs displayed shows the current performance.
4. Select System monitoring mode and repeat steps 1 to 3.

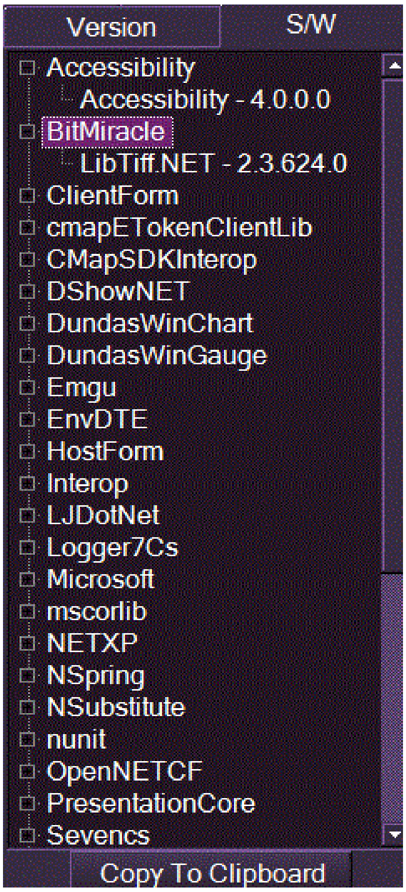
Note: *The arcs are spaced at 5dB intervals. If during operation performance decreases below the second arc, it shows a 10dB drop in performance.*

2.7 (S/W) Software

The S/W (Software) folder includes version information of all the operational software included on the system, including charting (CMAP and/or SevenCs) data. To view software component details, expand the navigation tree by ticking the required component's check box.

Data used during operation and stored in the Software folder is protected in such a way, that necessary modifications and amendments by the user cannot endanger its integrity and correctness.

You can copy all the Software data by clicking on the **Copy To Clipboard** button at the bottom of the folder. The information is saved to the Windows clipboard and from there can be pasted to an external program or device.



3 Commissioning

The Commissioning menu includes the following commissioning sub-menu functions as a series of tab folders:

- Login
- Video
- TCVR
- Authorization
- Config Update
- Charting
- Service
- Characteristics
- Track Control Settings

A non-logged on user may access data, or enter data in the following folders:

- Login - enter a user name and password
- Authorisation - enter and submit a temporary password
- Config Update - enables the configuration to be exported to a external device, and a modified configuration imported back to the system.
- Characteristics- select ship loading state and alternate bow (if configured).
- Charting - enables all charts to be deleted and review/confirm manual chart update conversions.
- Service - display Port Monitor, Port Logging and PCIO Diagnostic forms.

For a description of the Service functions available to a non-logged on user, refer to the relevant sections in the System chapter of the VMFT User Guides.

All other Commissioning functions will be displayed as read-only information to a non-logged on user. Editing these functions can only be made when a user is logged on in Service mode.

When the user is logged on in Service mode the Commissioning menu shows the following additional sub menu functions:

- Security
- Logging Control
- Track Control Settings

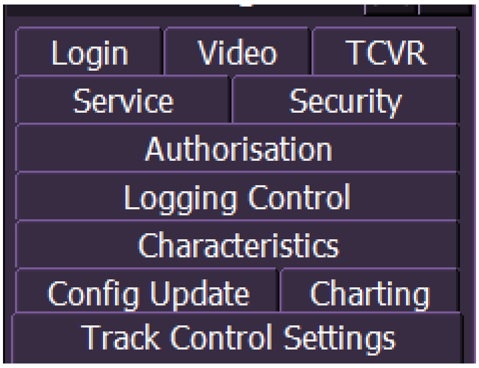
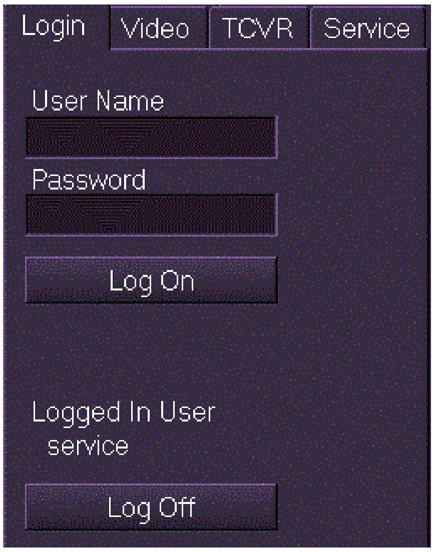


Figure 2.2 Commissioning Menu in Service Mode

3.1 Login



This function enables a suitably qualified user to access locked system processes by entering a user name and password.

When the Login tab folder is accessed the window confirms the current login functionality. If no user has logged on the authenticated user is shown as `None'. When a user has successfully logged on the window confirms the login status,
e.g. **Logged In User service**.

The system defines the following set of user groups (see Section 3.5 '*Security*'):

- Developer
- Field Engineer
- Ship Administrator
- Seaman

With the exception of `Seaman' which usually refers to a user of the system with no Login rights, each user group includes access to system processes that may not be available to the user group lower in the list.

Note: *A user logged on in Service mode has access to system processes up to a Field Engineer user group.*

To log onto the system do the following:

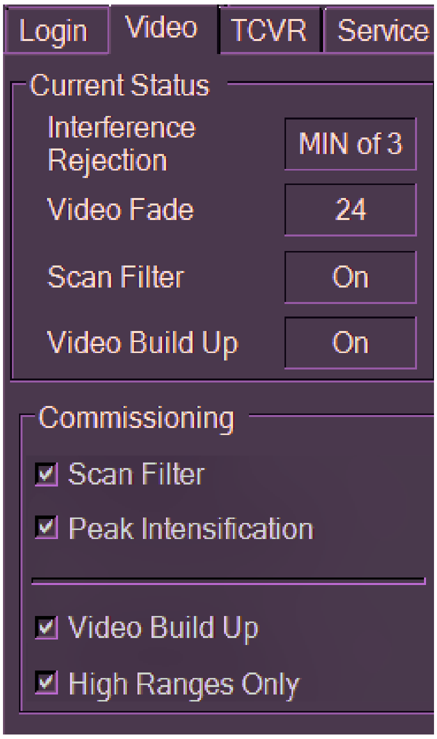
1. Left click in the **User Name** field, the alphanumeric keypad appears.
2. Enter a user name using the keypad, e.g. **service**.
3. Move the cursor to the **Password** field and enter a password which should be supplied by your administrator.

4. With the username and password entered click on the **Log On** button. The system authenticates the data entered against a database of known users. Where the Login data is authenticated the system displays additional system processes.

On a multi-node system user authentication is provided independently on each node.

When a user is logged on in Service, the Service Mode desktop can be accessed from the Shutdown menu, see Section 4 '*Service Mode*'.

3.2 Video



The Video tab folder shows the video enablement settings and read-only data transmitted from the Transceiver. The information is divided into the following two areas:

1. Current Status
2. Commissioning

The Commissioning area comprises four tick boxes which control the Scan Filter and Video Build Up enablement in the Current Status area.

Note: *The Commissioning settings can only be made by a user logged on in service mode. If the user has not logged on, or has no Login rights, these settings are greyed out.*

The Current Status area displays the following:

- **Interference Rejection** - the receiver interference-cancelling value is selected automatically and is read only.
- **Video Fade** - shows the decrement readout being applied to fade the video. The readout updates in real time.
- **Scan Filter** - Scan Filter can be turned On or Off by ticking the **Scan Filter** check box in the Commissioning area. If Scan Filter is **On** then **Peak Intensification** can be enabled by ticking its check box. If Scan Filter is **Off** then this setting is not available.

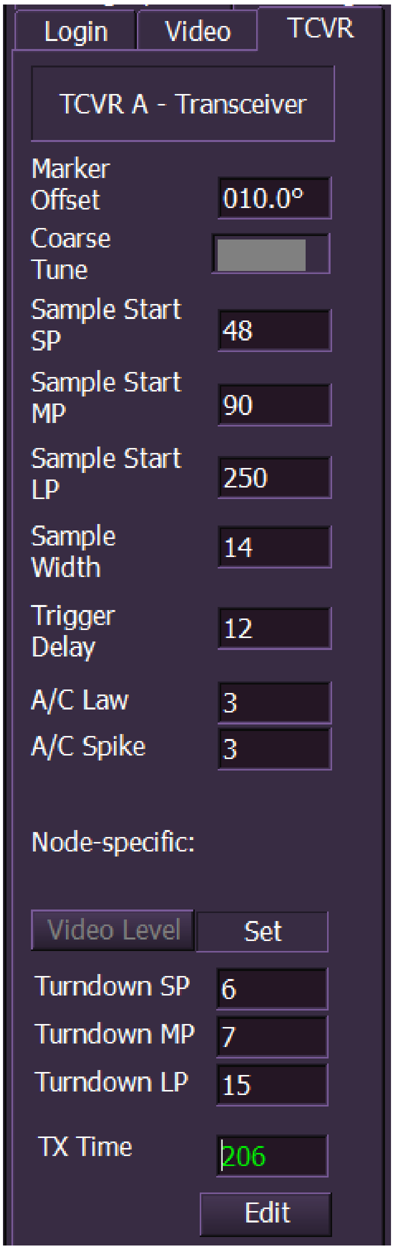
  The system default is Scan Filter enabled with peak intensification selected. Scan Filter is available on range scales of 0.75NM or greater. If the range scale is less than 0.75NM then **Scan Filter** is automatically turned Off.

- **Video Build Up** - Video build up can be turned On or Off by ticking the **Video Build Up** check box in the Commissioning area. If Video Build Up is **On** then **High Ranges Only** can be enabled by ticking its check box. If **Video Build Up** is **Off** then this setting is not available.

  The system default is for video build up to be enabled only on range scales of 3 NM or greater (or a scale ratio of 1:40,000 or greater on an ECDIS). If the range scale is less than these values then video build up is automatically turned Off.

3.3 TCVR Settings

A group of settings are stored in each display for all the Transceivers with which the display can operate.



3.3.1 Selecting the Required Transceiver

The field at the top of the TCVR tab shows the current Transceiver selected for the display. If a six way Interswitch is fitted, settings can be entered for up to six Transceivers, which are identified by letter ranging from A to F. If a two way Interswitch is fitted then only Transceivers A and B may be selected.

To select the required Transceiver:

1. Navigate to **Interswitch** in the Radar menu. The Interswitch window lists all available Transceivers.
2. To select the transceiver left click in the Transceiver (TCVR) radio button.

3.3.2 Setting the TCVR Parameters

The following transceiver parameters require the display to be in Transmit mode for visual feedback of the video. If the display is part of an interswitched system it must be connected to the appropriate transceiver if the parameters are to be reset. All the data is stored in real time when altered and restored at power on.

Note: *The settings made in TCVR are node specific, different settings made be entered on other nodes. On a multi-node system, the settings for each Transceiver must be the same on all nodes.*

The procedure for adjusting all of the parameters in the TCVR menu, except the Video Level and Coarse Tune settings, is as follows.

1. Position the screen cursor over the setting to be changed and left click. the text changes to green (editable).
2. Move the trackball left or right to change the setting to that required and left click to exit edit mode.

Alternatively, a right click will reveal a drop down numeric keypad from which a setting can be entered.

Information on the individual parameters of the TCVR settings is given below.

3.3.2.1 Marker Offset

The marker offset is the value of the heading marker, offset in degrees, and is the angular amount required to align the heading marker with the compass of the ship. This adjustment is present to allow compensation for the combined errors in physical positioning of the scanner unit and the 'squint angle' of the antenna.

The marker offset values are: minimum = 0°, maximum = 359.9°, system default = 10°.

If more than one turning unit is connected to the display the marker offset is retained and automatically applied when the transceiver for each turning unit is selected.

Adjusting the marker offset should only be carried out when ownship is stationary. To enter a marker offset:

1. Ensure that Enhance (Video Processing Control) is switched off.
2. Select H UP Unstabilised presentation mode.
3. Locate a known stationary target and find the target's relative bearing to ship by positioning an EBL to the centre of the target.
4. Click in the Marker Offset field and adjust the offset bearing so that the centre of the target is placed underneath the EBL.

3.3.2.2 Coarse Tune

The coarse tune level allows the centre tune frequency to be set up for the transceiver, the system default is set to the centre value of the AFC tune range. A different level can be stored for each transceiver and restored both at power on and when the transceiver is selected.

The current level of coarse tuning is indicated by the green shaded bar adjacent to the **Coarse Tune** caption. This bar indicates the tune level with the minimum to the left, and maximum to the right.

It will only be possible to set the coarse tuning if the Display is a master to the transceiver and the user is logged on as a service engineer.

Before coarse tune adjustment can be made, do the following:

1. Select Transmit mode and select LP (long pulse) for the transmission pulse length.
2. Select a range scale of 12 NM or above.
3. Set the transceiver tuning indicator to **MAN** (Manual) tuning (i.e. AFC off).

To adjust the coarse tuning:

1. Left click on the coarse tune bar to make the bar active. The bar colour changes from green to blue.
2. Move the trackball left to reduce the coarse tuning bar to minimum, then slowly move the trackball to the right to increase the tuning bar percentage.
3. Adjust the coarse tuning bar so that the fine tuning bar at the bottom left of screen is at maximum after its first minimum point has been reached.
4. Left click to set the level and de-activate the coarse tuning bar. The bar will return to its green shaded state.
5. If radar returns are available, select AFC, and confirm that the radar returns are not seriously degraded. If they are, repeat the adjustment and ensure that the first tuning maximum is selected.

3.3.2.3 Sample Start

Displays the sample pulse start for all pulse lengths (SP, MP and LP) in units of metres. Minimum for all pulse lengths = 6, maximum for all pulse lengths = 350. The system default values are: 48 (SP), 90 (MP) and 250 (LP).

The following table summarises which values should be input, according to the height of the antenna above sea level.

Table 2: Sample Start Parameters

Antenna Height (metres)	Short Pulse (SP)	Sample Start Medium Pulse (MP)	Long Pulse (LP)
0-10	48	90	250
11-20	75	150	250
21-30	100	150	250
31-40	130	180	250
41-50	160	200	260
51-60	180	200	280

3.3.2.4 Sample Width

Displays the sample pulse width in units of metres (minimum = 6, maximum = 70, system default = 14).

It should not normally be necessary to change these settings from their default values.

3.3.2.5 Trigger Delay

Displays the trigger delay in units of metres. (minimum = 6, maximum = 350, system default = 12).

Note: *Default is adjusted by RF feeder length in initialisation if Bulkhead Transceiver is fitted.*

For this setting, the radar must be set to the shortest practicable range, and the value adjusted to display known features at the correct range. Echoes from quay-sides should appear straight with no 'pushing' or 'pulling' near the centre of the picture.

3.3.2.6 A/C Law

Displays the Anti-Clutter (A/C) law in dimensionless units. (minimum = 0, maximum = 7, system default = 3).

Refer to the table below for the required setting for the A/C Law.according to the height of the antenna above sea level.

Table 3: A/C Law Settings

Antenna Height above sea level (m)	A/C Law Setting
32 and above	7
28 - 31	6
24 - 27	5
20 - 23	4
16 - 19	3
12 - 15	2
4 - 11	1
3 and below	0

3.3.2.7 A/C Spike

Displays the A/C spike in dimensionless units. (minimum = 0, maximum = 3, system default = 3).

It should not normally be necessary to change this setting from its default value.

3.3.2.8 Video Level

The signal level of the video received from the transceiver is monitored at regular intervals when the display is in transmit.

If the level falls below a low video level threshold a video alarm is raised. The video alarm is automatically cleared If the monitored video level is greater than the low video level threshold, or the transceiver is in standby.

The Video Level indicates whether the radar video input level to the display processor has been set up.

Note: *It is essential that the Coarse Tune level is set before setting the Video I/P level.*

Note: *The video level must be set up for each transceiver at each display.*

The Video Level should ONLY be set when the Master is transmitting in LP (long pulse). The default is **Unset**, but after the set up procedure has been initiated, it will show **Set**, **Low** or **High** as appropriate.

When video is set too low, or there is no video input **Low** is displayed, where video input is present **Set** or **High** are displayed. If the set-up procedure is unable to set the video level **Unset** is displayed.

1. Click on the **Video Level** button to initiate the set up procedure. The button changes to **Setting** and the procedure begins.

When the procedure is complete the button changes back to **Video Level**. The result of the set up procedure is shown after a period in the field adjacent to the button.

3.3.2.9 Turndown

Displays the video turndown for all pulse lengths (SP, MP and LP) in dimensionless units.

Minimum video turndown for all pulse lengths = 0, maximum video turndown for all pulse lengths = 15. The system default values are: 6 (SP), 7 (MP) and 8 (LP).

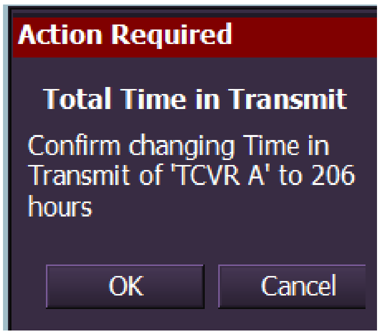
It should not normally be necessary to change these settings from their default values.

3.3.2.10 TX Time

The TX Time field enables the total time the transceiver has been in transmit to be reset, or the existing time restored after replacing a display.

The total time should be reset after replacing the transceiver, or major TCVR components such as the magnetron.

1. To change the TX time click the **Edit** button below the field.



2. Change the time to the required setting. An ‘Action Required’ popup window appears requesting confirmation of the changed time in transmit for the selected transceiver.
3. Click the OK button to confirm the change of setting.

3.3.3 Selecting and Setting other Transceivers in Interswitched Systems

1. Use the procedure given in Section 3.3.1 to select the next transceiver.
2. Use the procedures given in Section 3.3.2 to set the TCVR parameters for the selected transceiver.

Repeat steps 1 and 2 above until all system transceivers have been set up.

3.3.4 Transceiver Alerts

A transceiver communications alert is raised if a valid message has not been received from the transceiver for more than 3 seconds. The alert is raised regardless of the displays standby/transmit status.

A trigger error alert is raised when the transceiver is in transmit and there are fewer valid triggers than expected.

An azimuth error alert is raised when the transceiver is in transmit and either:

- the number of azimuth pulses between heading markers is greater or less than a margin of error of 5 pulses centred on a nominal value of 4096 pulses; or
- the number of pulses per revolution is within the margin of error, but a small error persists for a period of time (e.g. 4095 pulses per rev are received continually).

The azimuth error alert are cleared when:

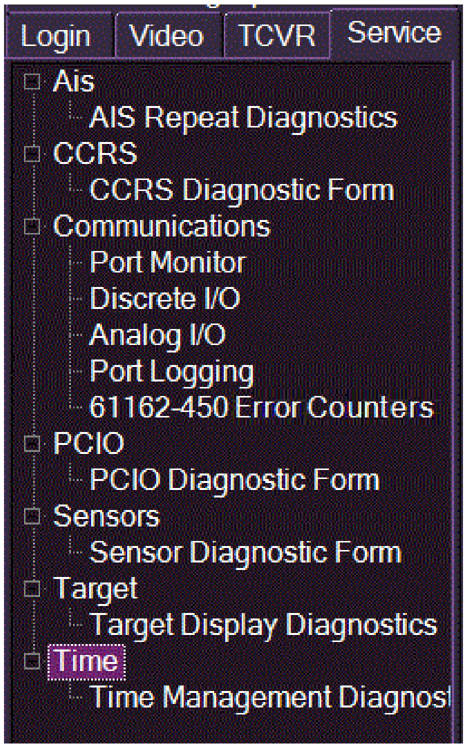
- Neither of the alert conditions is satisfied; or
- The transceiver is switched to standby.

When the transceiver is in transmit a heading marker error alarm is raised if a heading marker has not been received for more than 10 seconds. If a heading marker has not been received for more than 30 seconds the Master Display automatically switches the connected transceiver to standby.

The heading marker error alert is cleared when:

- A heading marker is received; or
- The transceiver is switched to standby.

3.4 Service



The Service tab folder displays the following navigation tree items:

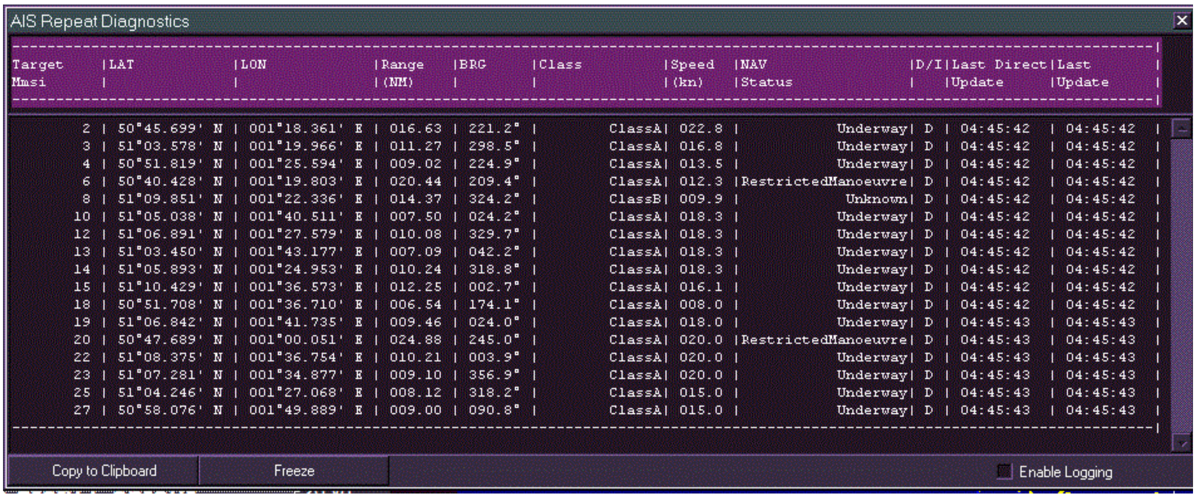
- AIS
  - AIS Repeat Diagnostics
- CCRS
  - CCRS Diagnostic Form
- Communications
  - Port Monitor
  - Discrete I/O
  - Analog I/O
  - Port Logging
  - 61162-450 Error Counters
- PCIO
  - PCIO diagnostic form
- Sensors
  - Sensors Diagnostic Form
- Target
  - Target Display Diagnostic Form
- Time
  - Time Management Diagnostic Form

The Port Monitor and Port Logging Communications functions, and the PCIO diagnostic form are available to a non-logged on user and are therefore described in the VisionMaster User Guides.

Note: *If your VMFT node is connected to a Track Control system (see Section 9.10.18 'Track Control' in Chapter 1 'Configuration') then the additional item 'VisionMaster Track Control' appears in the Service navigation tree. From this item a Track Control diagnostic form and Total Set & Drift Comparison form can be accessed.*

3.4.1 AIS

The AIS Repeat Diagnostics form displays real time data on AIS targets within the vicinity of own ship. Data includes the AIS MMSI, position, range, bearing, class (A or B), speed, navigation status and time of last update.



AIS Repeat Diagnostics

Target Mmsi	LAT	LON	Range (NM)	BRG	Class	Speed (kn)	NAV Status	D/I	Last Direct Update	Last Update
2	50°45.699' N	001°18.361' E	016.63	221.2°	ClassA	022.8	Underway	D	04:45:42	04:45:42
3	51°03.578' N	001°19.966' E	011.27	298.5°	ClassA	016.8	Underway	D	04:45:42	04:45:42
4	50°51.819' N	001°25.594' E	009.02	224.9°	ClassA	013.5	Underway	D	04:45:42	04:45:42
6	50°40.428' N	001°19.803' E	020.44	209.4°	ClassA	012.3	RestrictedManoeuvre	D	04:45:42	04:45:42
8	51°09.851' N	001°22.336' E	014.37	324.2°	ClassB	009.9	Unknown	D	04:45:42	04:45:42
10	51°05.038' N	001°40.511' E	007.50	024.2°	ClassA	018.3	Underway	D	04:45:42	04:45:42
12	51°06.891' N	001°27.579' E	010.08	329.7°	ClassA	018.3	Underway	D	04:45:42	04:45:42
13	51°03.450' N	001°43.177' E	007.09	042.2°	ClassA	018.3	Underway	D	04:45:42	04:45:42
14	51°05.893' N	001°24.953' E	010.24	318.8°	ClassA	018.3	Underway	D	04:45:42	04:45:42
15	51°10.429' N	001°36.573' E	012.25	002.7°	ClassA	016.1	Underway	D	04:45:42	04:45:42
18	50°51.708' N	001°36.710' E	006.54	174.1°	ClassA	008.0	Underway	D	04:45:42	04:45:42
19	51°06.842' N	001°41.735' E	009.46	024.0°	ClassA	018.0	Underway	D	04:45:43	04:45:43
20	50°47.689' N	001°00.051' E	024.88	245.0°	ClassA	020.0	RestrictedManoeuvre	D	04:45:43	04:45:43
22	51°08.375' N	001°36.754' E	010.21	003.9°	ClassA	020.0	Underway	D	04:45:43	04:45:43
23	51°07.281' N	001°34.877' E	009.10	356.9°	ClassA	020.0	Underway	D	04:45:43	04:45:43
25	51°04.246' N	001°27.068' E	008.12	318.2°	ClassA	015.0	Underway	D	04:45:43	04:45:43
27	50°58.076' N	001°49.889' E	009.00	090.8°	ClassA	015.0	Underway	D	04:45:43	04:45:43

Copy to Clipboard Freeze Enable Logging

Figure 2.3 AIS Repeat Diagnostics

The update of AIS diagnostics can be fixed by clicking the **Freeze** button, click the button again to return to auto update

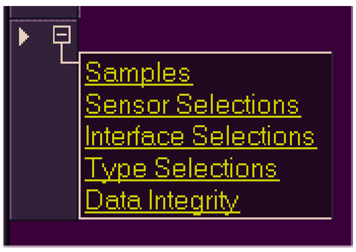
To copy the data click the **Copy to Clipboard** button. The AIS data can then be pasted into an external application (e.g. Notepad or Word).

3.4.2 CCRS

The Consistent Common Reference System (CCRS) Diagnostic Form provides for the viewing of various types of data that describe the state of the ship, and which are usually received via sensors, or in some cases computed from one or more sensors' data, or entered manually.

To view CCRS Diagnostic Form click on the CCRS **+** button, highlight the item in the tree menu and click the **Display Selected** button at the bottom of the tab folder. From the CCRS Diagnostic Form window click on the **+** box to the left of the window. The following different types of CCRS forms are listed as hyperlinks in a flyout window:

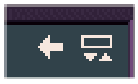
- Samples
- Sensor Selections
- Interface Selections
- Type Selections
- Data Integrity



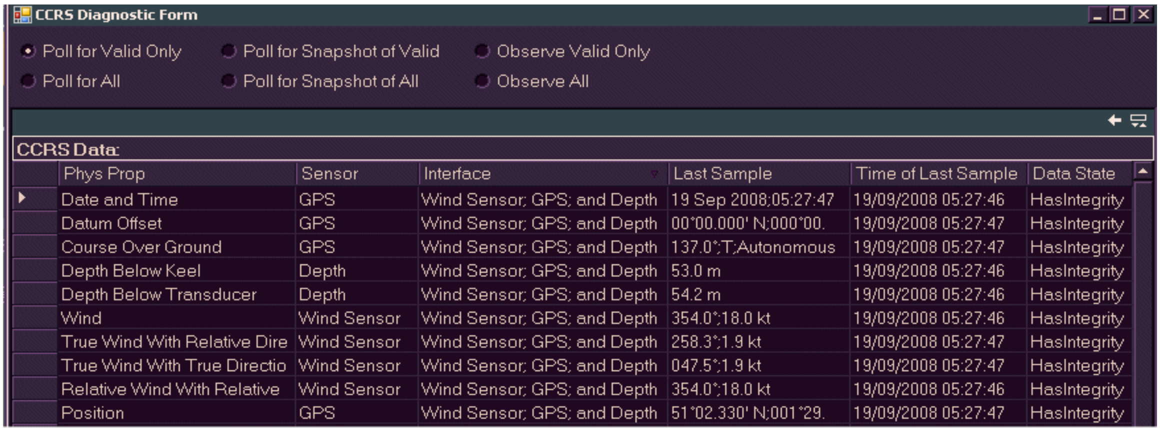
All CCRS diagnostic forms include a number of information filtering options in the form of radio buttons, including the following:

- Poll for All/Poll for Valid Only
- Poll for Snapshot of All/Snapshot for Valid
- Observe All/Observe Valid Only

To return to the list of hyperlinks after a CCRS Diagnostic form has been opened, click on the white arrow graphic at the top right of the list.



The information in the columns may be re-arranged by clicking on the column title. For example, to list the physical properties in alphabetical order click on the **Phy Prop** column title. Or, to list the configured sensor data starting from the top of the form, click the **Sensor** or **Interface** column titles, see Figure 2.4.



CCRS Diagnostic Form

Poll for Valid Only | Poll for Snapshot of Valid | Observe Valid Only

Poll for All | Poll for Snapshot of All | Observe All

CCRS Data:

Phys Prop	Sensor	Interface	Last Sample	Time of Last Sample	Data State
Date and Time	GPS	Wind Sensor; GPS; and Depth	19 Sep 2008;05:27:47	19/09/2008 05:27:46	HasIntegrity
Datum Offset	GPS	Wind Sensor; GPS; and Depth	00°00.000' N;000°00.	19/09/2008 05:27:47	HasIntegrity
Course Over Ground	GPS	Wind Sensor; GPS; and Depth	137.0°;T;Autonomous	19/09/2008 05:27:47	HasIntegrity
Depth Below Keel	Depth	Wind Sensor; GPS; and Depth	53.0 m	19/09/2008 05:27:46	HasIntegrity
Depth Below Transducer	Depth	Wind Sensor; GPS; and Depth	54.2 m	19/09/2008 05:27:46	HasIntegrity
Wind	Wind Sensor	Wind Sensor; GPS; and Depth	354.0°;18.0 kt	19/09/2008 05:27:46	HasIntegrity
True Wind With Relative Dire	Wind Sensor	Wind Sensor; GPS; and Depth	258.3°;1.9 kt	19/09/2008 05:27:47	HasIntegrity
True Wind With True Directio	Wind Sensor	Wind Sensor; GPS; and Depth	047.5°;1.9 kt	19/09/2008 05:27:47	HasIntegrity
Relative Wind With Relative	Wind Sensor	Wind Sensor; GPS; and Depth	354.0°;18.0 kt	19/09/2008 05:27:46	HasIntegrity
Position	GPS	Wind Sensor; GPS; and Depth	51°02.330' N;001°29.	19/09/2008 05:27:47	HasIntegrity

Figure 2.4 CCRS Data: Samples Form

3.4.2.1 Samples

The CCRS Data: Samples form lists all the sensor data types available on the system as physical properties. If the physical property has not been configured to provide sensor data then the row will display **(null)** in all subsequent columns. The Samples form includes the following columns:

- **Physical Properties** - a list of all available data types (e.g. Date and Time, Temperature etc).
- **Sensor** - the sensor which provides data for this physical property (e.g. GPS, Gyro etc.)
- **Interface** - the interfaces which acquire the received sensor data (e.g. PCIO Control port, PCI Serial Ports or Computed Data).
- **Last Sample** - the data value last sampled from this sensor (e.g. kt, metres, bearing etc.)
- **Time of Last Sample** - the date and time (in hours, minutes and seconds) of the last sample.
- **Data State** - the integrity of the data, i.e. 'Has Integrity', 'Plausible' or 'Usable'.

3.4.2.2 Sensor Selections

The CCRS Data: Sensor Selections form includes the data displayed in the first two columns of the Samples form, i.e. Physical Properties and Sensor.

3.4.2.3 Interface Selections

The CCRS Data: Interface Selections form includes the data displayed in the Sensors and Interfaces columns of the Samples form. Note that only configured sensors and interfaces are displayed on this form.

3.4.2.4 Type Selections

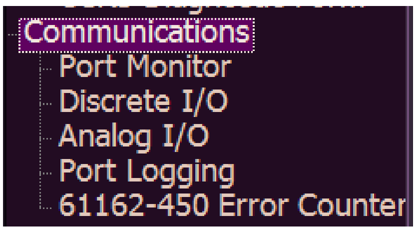
The CCRS Data: Type Selections form includes specific types of data in the Physical Properties column, i.e. Vessel Direction, Heading, Speed and Wind, and the sensor types that provide this data. For example, Speed data can be provided from a GPS, Log or echo reference sensor.

3.4.2.5 Data Integrity

The CCRS Data: Data Integrity form list the type of sensor which may provide data for the configured physical properties, and the integrity of that data provided. For example, Position data may be provided by GPS, DR (dead reckoning) or Manual Positioning; GPS and DR data 'Has Integrity', whereas data provided by manual positioning has only a data state of 'Usable'.

3.4.3 Communications

The Communications sub menu enables the following data to be viewed:



- Port Monitor - view data received from a selected port and data sent from the display to the port. Available for display to a non-logged on user.
- Discrete I/O - displays data on discrete outputs and discrete inputs configured for the system.
- Analog I/O - displays data on analog outputs and analog inputs configured for the system.
- Port Logging - enables data sent and received from a specified port to be captured and timestamped. Logged data can then be saved to an external device. Available for display to a non-logged on user.
- 61162-450 Error Counters - displays any error messages when using an IEC 61162-450 VMFT node interfacing to a VDR.

The following sub-sections describe the Discrete I/O, Analog I/O and 61162-450 error counters diagnostics.

3.4.3.1 Discrete I/O

The Discrete I/O window lists the configured discrete outputs and inputs on the node. If no discrete I/Os have been configured, the window is blank.

Note that the settings in the State and Pattern columns are greyed out; these settings are developer configurable only.

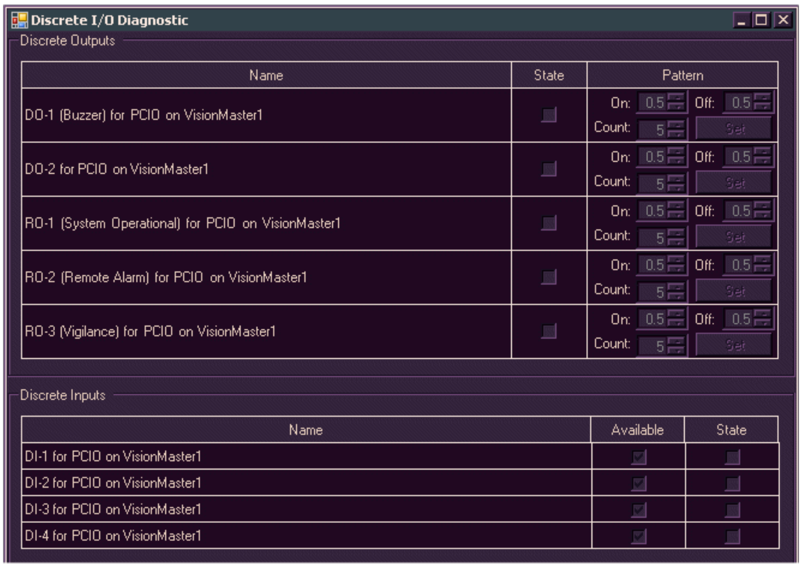


Figure 2.5 Discrete I/O Diagnostic

3.4.3.2 Analog I/O

The Analog I/O window lists the configured analog outputs and inputs on the node. The window includes the names of the Outputs and Inputs and the minimum & maximum voltages. If no analog I/Os have been configured, the window is blank.

Figure 2.6 Analog I/O Diagnostic

3.4.3.3 61162-450 Error Counters

The 61162-450 Error Counters window displays errors for any missing or invalid datagrams, unrecognized headers, binary image or other errors when a IEC 61162-450 VMFT node is interfaced to a VDR. If there are no monitoring errors the Error Counters window is blank.

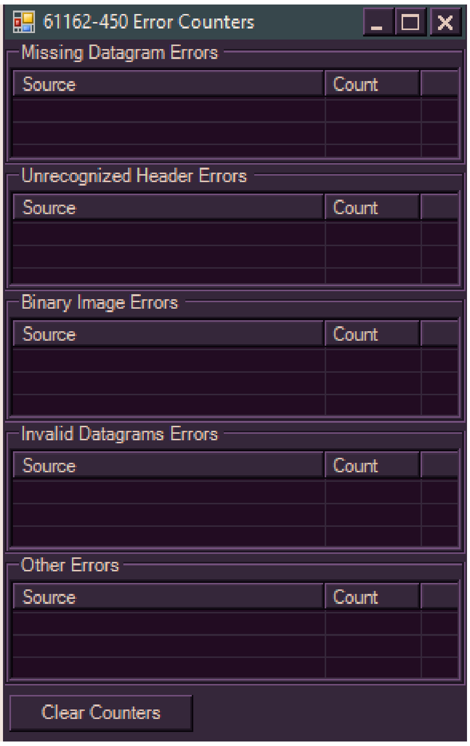


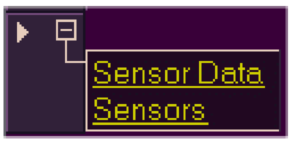
Figure 2.7 61162-450 Error Counters

3.4.4 Sensors

The Sensors Diagnostic form provides for viewing of information on all configured sensors listed in the Sensors Database.

From the Sensors Diagnostic Form window click on the **+** box to the left of the window. The following two types of Sensor forms are listed as hyperlinks in a flyout window:

- Sensor Data
- Sensors



Each Sensor form includes two information filtering options in the form of radio buttons:

- Poll Sensors
- Observe Sensors

To return to the hyperlinks after a Sensors Diagnostic form has been opened, click on the white arrow graphic at the top right of the list.

The Sensors Data diagnostic includes detailed data on all configured sensors.

The Sensors diagnostic form list each sensor, its interface, physical properties and location (if configured).

The information in the columns may be re-arranged in alphabetical order by clicking on the column title.

3.4.5 Target

The Target Display Diagnostics form enables the display of data for AIS and tracked targets to be configured.

The enabled settings on default are **Show Centre Points** and **Use Fixed Pixel Radius** (for alignment circles), see Figure 2.8.

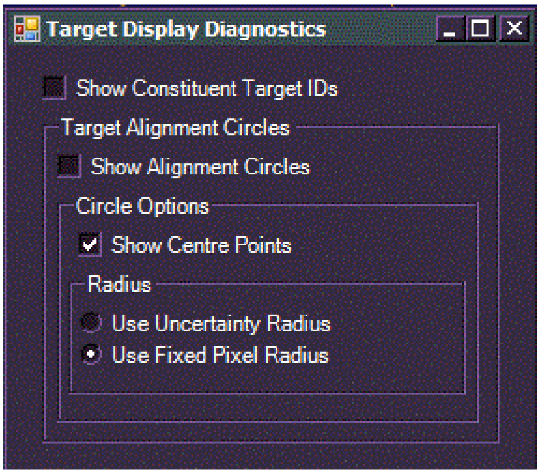


Figure 2.8 Target Display Diagnostics - default settings

To display target ID data tick the **Show Constituent Target IDs** check box. The constituent ID data for tracked targets and activated AIS targets comprises VisionMaster tracker data. AIS targets will additionally include the AIS MMSI.

To display target alignment circles tick the **Show Alignment Circles** check box. Note that the display of target alignment circles will vary dependant on the Radius selection used, either **Use Uncertainty Radius** or **Use Fixed Pixel Radius** (default).

Note that target ID data is only displayed when the VMFT node is in Transmit.

3.4.6 Time

The Time Management diagnostic form lists read-only data in the form of date and time values (hours, minutes and seconds).

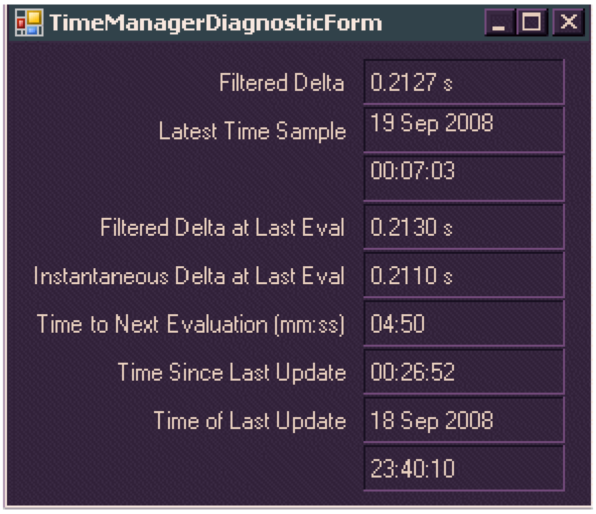


Figure 2.9 Time Manager Diagnostic Form

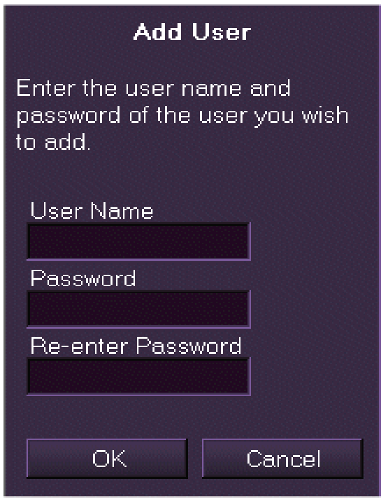
3.5 Security

The Security management folder enables a logged on user to create a group of members for a selected group. The members of a group will be in roles lower than the currently logged on user. For example, a field engineer may create users with Ship Administrators role or Seamen role, whereas a Ship Administrator can only create users with Seamen role.

The Group list is populated with role names that have been assigned in the Localization tab of the User Role Setup configuration, see Section 9.2 '*System Security*' in Chapter 1 '*Configuration*'.

To create and edit a security group:

1. Click on the Security tab and select the user role from the **Group** drop down list.



2. To add group members click on the **Add..** button. The Add User window appears prompting to enter a user name and a password of the user you wish to add to the group.
3. Enter the name and password, re-enter the password and click the **OK** button. The user's name appears in the Members list and a **User Added** prompt is temporarily displayed.
4. To remove a member from the group highlight the user to be removed from the Members list and click on the **Remove..** button. The screen prompts for confirmation of the action.

5. To confirm click the **Yes** button. The user is removed from the group and the Security window re-appears with the member's name removed from the list.
6. To change the password of a group member highlight the name in the list and click on the **Change Password..** button. The screen prompts to enter the old and new password for the member.
7. Enter the user's old password, then enter the new password, re-enter and confirm by clicking the **OK** button. The new password details are logged in the system and the Security window re-appears.
8. When members have been added to a group the given names appear in the Members field.

3.6 Logging Control

The Logging Control enables an operator logged on as a field engineer to enable or disable data logs.

The Logging Control window (Figure 2.10) displays a list of different types of log data, with certain data enabled as default. The default enablements are made at commissioning when the developer has set the logging level to Normal.

In the event of diagnosis of particular problems with the system the field engineer may enable certain log data. The decision of which log data to enable or disable should only be made with guidance from a system developer.

Any changes made to the default settings are not persisted. If the system is re-started the Logging Control reverts to the normal settings.

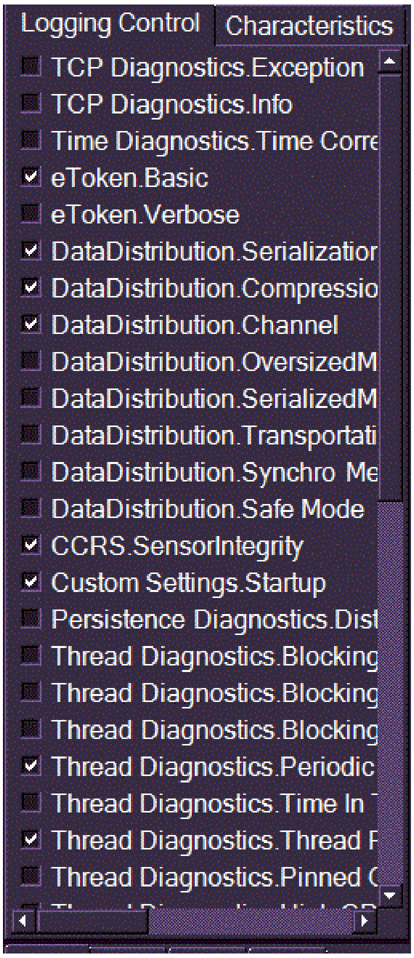


Figure 2.10 Logging Control Window

3.7 Track Control Settings

The Track Control Settings tab displays editable settings for Steering Mode and Gain Sets (Straight and Turning).

3.7.1 Steering Mode

The steering mode selection includes the following default settings: Loose, Medium, Tight and Advance.

The selection of the Steering Mode for Track Control is based on factors such as present traffic conditions, weather, ship's location, and position sensor performance.

3.7.2 Gain Set Controls

The Straight and Turning Gain Set controls include default values for Proportional, Integral and Differential.

Note: *It is advised that these values should NOT be changed without first contacting NGSM service support.*

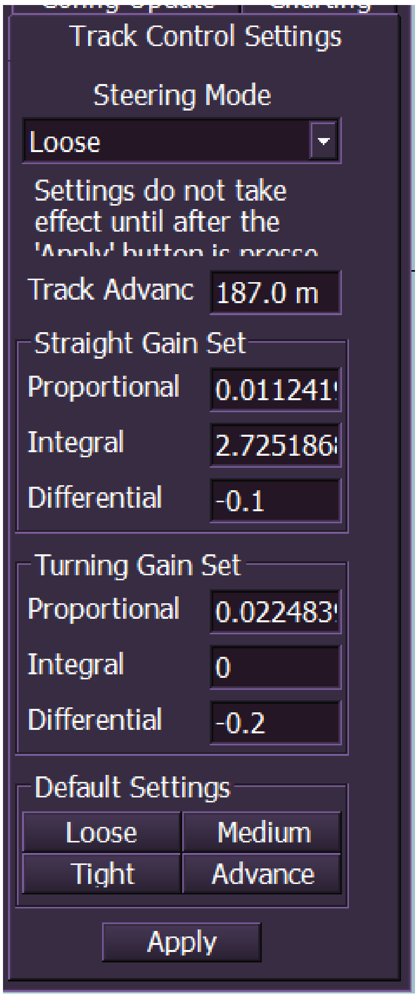
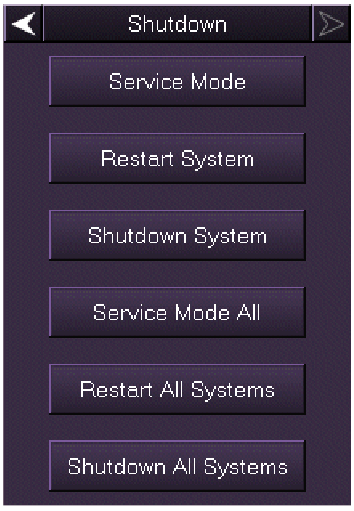


Figure 2.11 Track Control Settings

4 Service Mode

CAUTION!

Switching the system to Service Mode causes VisionMaster and Windows to shut down. Windows will restart with the service desktop displayed.



When a user has logged on in Service mode, as described in Section 3.1 '*Login*', the Service desktop can be accessed.

To access the desktop go to **Shutdown** in the System Menu. The **Service Mode** and **Service Mode All** buttons are now available for selection.

To shut down a single system click the **Service Mode** button, or to shut down all nodes on a multi-node system click the **Service Mode All** button.

An 'Action Required' message appears requesting operator confirmation. Click the **Yes** button to confirm. VisionMaster closes and the Windows operating system shuts down and then restarts with the VisionMaster FT service desktop displayed, see Figure 2.12 below.

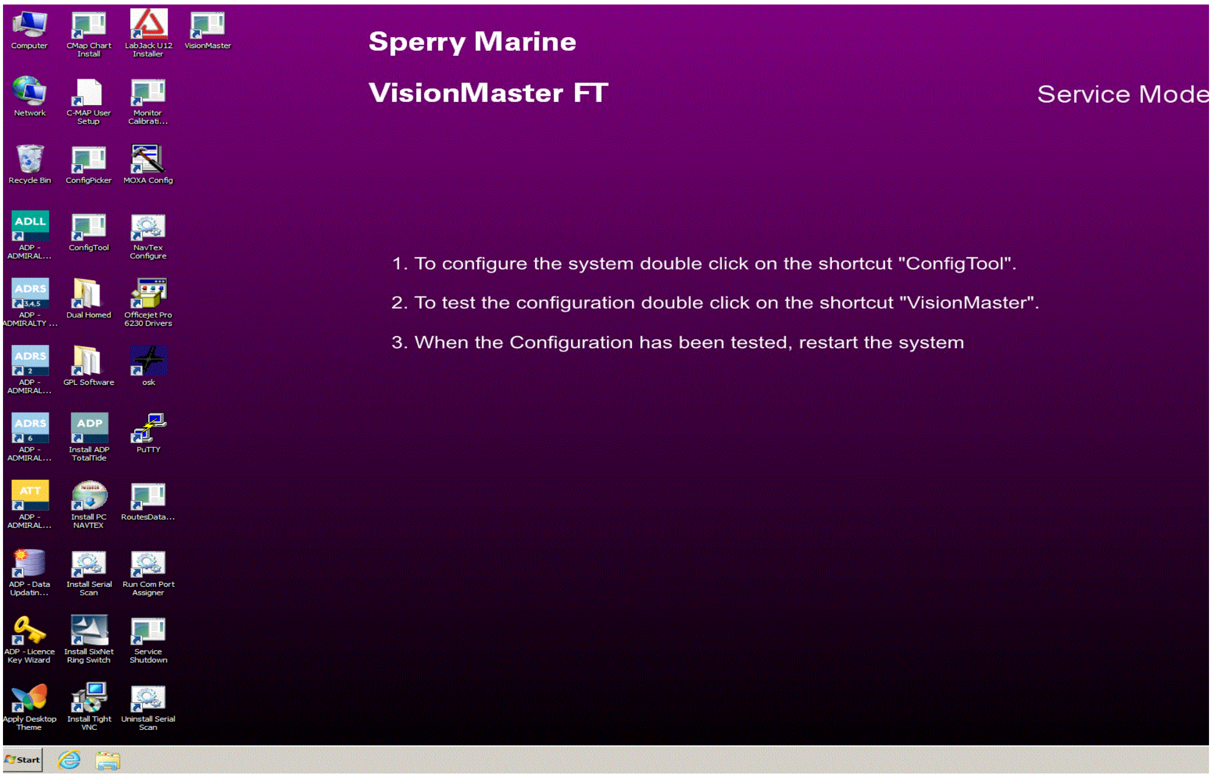


Figure 2.12 Service Desktop

The Service desktop includes a number of icons, most of which have been created as shortcuts.

The following VisionMaster applications programs may be accessed from the desktop by double clicking on the icon:

- **VMFT** - opens the VisionMaster application.
- **ConfigTool** - opens the VMFT configuration tool, see Chapter 1 '*Configuration*'.
- **ConfigPicker** - enables pre-defined configurations to be selected and copied, see Section 4.3 '*Selecting the correct Configuration File*' in Chapter 1 '*Configuration*'.
- **CMap Chart Install** - opens the C-MAP Sperry Chart Installer, see 'Charts' chapter in the Chart Radar and ECDIS User Guides.
- **C-MAP User Setup** - enables an C-MAP eToken to be registered, see Appendix A '*C-MAP User Setup*' in this chapter.
- **Monitor Calibration** - enables monitor COM ports to be scanned, downloads raw calibration data and converts the calibration data to VMFT format. Calibration files are saved to D:\VMFTDATA\ColorFiles\ folders. Note that *I*f new hardware is either added or wasn't present at earlier imaging time, a re-run of this tool will be required.
- **Service Shutdown** - enables the node to be immediately shut down so that maintenance can be performed. The node will returns to Service mode when powered back on. Service Shutdown is also accessed when new programs have been installed, for example, Total Tide application.
- **Run COM Port Assigner** - enables misaligned COM ports associated with the PCIO and Control Panel to be re-aligned after installation, if the PCIO was not connected during installation.

The following peripheral device programs may be accessed from the desktop by double clicking on the icon:

- **Install TightVNC** - enables remote access to perform control and administration tasks on Servers from a Client desktop, see Chapter 1, Appendix B '*Configuring a Client/Server Radar System'*.
- **Run COM Port Assigne**r - enables misaligned COM ports associated with the PCIO and Control Panel to be re-aligned after installation, if the PCIO was not connected during installation.
- **Install PC NavTex** - accesses a PC NavTex installation wizard. For configuration details see Chapter 1 Appendix C, '*Configuring Peripheral Devices*'.
- **Moxa Config** - enables a Moxa Ethernet Switch & Video Sensor Configuration to be made. For information on configuration refer to Section 4 '*Configuring Moxa Network Switches*' of Chapter C '*Chapter 1 Appendix C Configuring Peripheral Devices*'. For information on installing a

Moxa switch refer to section 6 '*Dual Homed LAN Interconnections*' in Chapter 4 '*Installing Consoles and Displays*' in Volume 1 of the VMFT Ships Manual.

- **Labjack U12 Installer** - accesses an NI LabVIEW install wizard that installs Labjack U12 installer onto your PC. For configuration details see Chapter 1 Appendix C, '*Configuring Peripheral Devices*'
- **Install SixNet Ring Switch** - accesses an Ethernet Switch Tools install wizard that installs Ethernet Switch tools onto your PC. For configuration details see Chapter 1 Appendix C, '*Configuring Peripheral Devices*'.
- **ADP Admiralty icons** - accesses install wizards for Digital Lists of Lights, Digital Radio Signals and TotalTide tools onto your PC. For configuration details on ADP TotalTide see Chapter 4 'T*otalTide Setup'*.

When VisionMaster is opened from the service desktop the application runs in Service Mode and the words **Service Mode** are permanently displayed in amber at the top of the video circle (or chart display when in ECDIS mode)

If VisionMaster is restarted from the System menu, by clicking the **Restart System** button, the application opens in operator mode.

CHAPTER 2 APPENDIX A

C-MAP USER SETUP

CONTENTS

LIST OF FIGURES

A.1 C-MAP User Setup

If C-MAP charts have been ordered a C-MAP eToken is supplied with all Chart Radar and ECDIS products. The eToken is registered in the system from an eToken USB dongle, which is pre-assigned with a unique user ID. The eToken dongle must be inserted into a USB drive on the VMFT PC before running the registration process. .

To access the service desktop a suitably qualified user logs on as a service engineer via the VisionMaster Login window, see Section 3.1 '*Login*' in Chapter 2 '*Diagnostics, Commissioning & Service Mode*'. After a successful login the user status is shown on the login screen, e.g. '**Logged In User service'**.

A.1.1 Accessing the Service Desktop

1. In VisionMaster, navigate to the System menu and select **Shutdown**. When logged on in Service the Service Mode button in the Shutdown menu is enabled, see Section 4 '*Service Mode*' in Chapter 2 '*Diagnostics, Commissioning & Service Mode*'.
2. Left click on the **Service Mode** button. The screen prompts to confirm that you want to switch to service mode. Click the **Yes** button to confirm, or click the **No** button to cancel and return to VisionMaster.
3. When switch to service mode is confirmed the VisionMaster system and any other open applications power down and the windows desktop displays two icons; Service Mode and Operator Mode.
4. Click on the Service Mode icon and enter the Service password, the service mode desktop appears.

A.1.2 Running eToken Registration

1. To run the eToken registration double click on the **C-MAP User Setup** icon on the Service desktop. A User Account Control popup window may appear prompting to allow a program from an unknown publisher to make changes to the computer.

2. Click **Yes** to proceed with the process.
3. The following window appears prompting to install a C-MAP eToken.

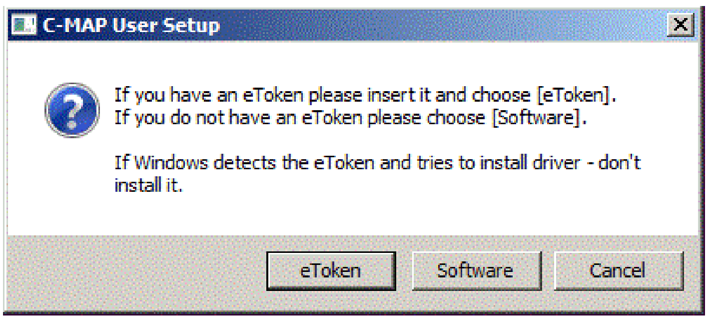


Figure A.1 C-MAP User Setup

4. Insert the C-MAP eToken dongle into one of the available USB sockets at the rear of the PC and click the **eToken** button.
5. If you do not currently have a C-MAP eToken click the **Software** button.
6. If the system detects that you are using a new eToken, you will need to reinitialise your C-MAP User ID and obtain new licences from C-MAP. To reinitialise click **Yes**, or to retain the previous state click **No**.

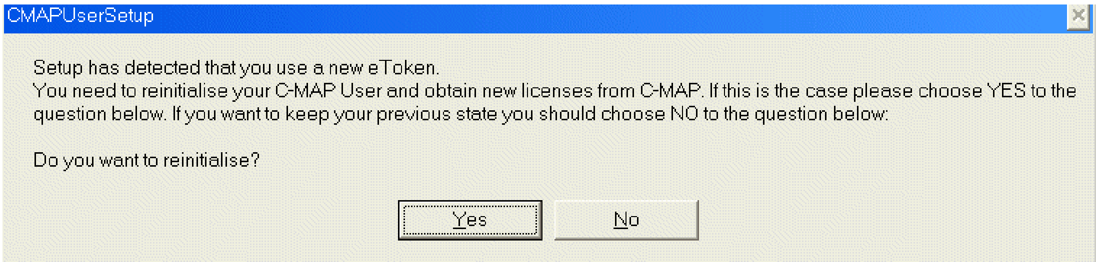


Figure A.2 Reinitialise C-MAP User

7. If **Yes** is selected the following confirmation prompt appears.

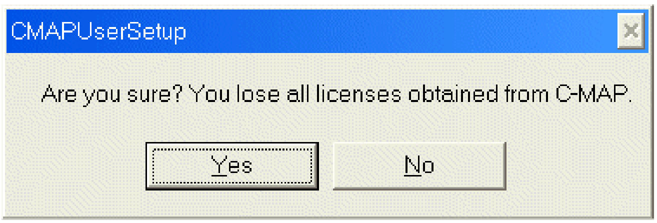


Figure A.3 Reinitialise Confirmation Prompt

8. To confirm click **Yes**. The registration process takes approximately 10 to 15 seconds. When the process is complete a window appears confirming **User Setup has successfully completed.** Click **OK** to confirm completion.

When the new software environment for the C-MAP eToken has been installed a C-MAP license file must be installed. The license file is provided by C-MAP and relates to a specific eToken reference number, located on the C-MAP dongle label.

CHAPTER 3

CONFIGURING A CONNING INFORMATION DISPLAY

CONTENTS

List of Figures

List of Tables

Appendix A Configuring a Second Monitor

1 Configuring CID Pages

Each node on a multi-node system may be configured with a different CID page as default. For monitors on the system that have a wide aspect ratio (see Section 6.5 ‘*Monitors*’ in Chapter 1 ‘*Configuration*’) then default side pages may also be configured. If a second dedicated monitor is connected to a node and has been configured (see Appendix A ‘*Configuring a Second Monitor*’ in this chapter) a default CID page for the second monitor may also be selected, see Figure 3.1.

To select a default start-up page for each node:

1. Navigate to the CID topic in the User Interface folder of the configuration file (see Section 9.6 ‘*User Interface*’ in Chapter 1 ‘*Configuration*’). The **Configure Start-up CID Pages** area lists the node names (if the system is multi-node) and includes a default CID page column and default side page columns. Note that these default side pages are only available if the associated node includes a wide screen monitor, otherwise the cells are greyed out.
2. Click on the drop down arrow to the right of the Default CID Page cell to display the list of pages and select the default page for each node. The list of default CID pages available for selection is as follows:
   - Berthing
   - Manoeuvring
   - Orders
   - Ownship (DNV GL NAUT(AW) Mandatory Screen)
   - Routes
   - Sea
   - Steering Mode & Route Info
   - Steering
   - System
   - Video
   - Winches

   Note: *If a commissioning engineer has previously created any custom pages, these will also be listed and available for selection.*

   Note: *The ‘Ownship’ CID page has been specifically created for use on NAUT(AW) class vessels and has undergone approval by DNV GL and as such* ***colours, text sizes and terminology must not be modified****. The only changes permitted are those which align the presented information with the vessel configuration, such as the quantity of sensors.*

3. On a wide screen display click on the drop down arrow to the right of the Default CID Side Page cell to display the list of pages. If your monitor is standard size no side page selection is available. The following default side pages may be selected:
    - Alerts
    - Default
    - Docking
    - Environment
    - Route
    - Sea & PIP
    - Sea
    - Steering

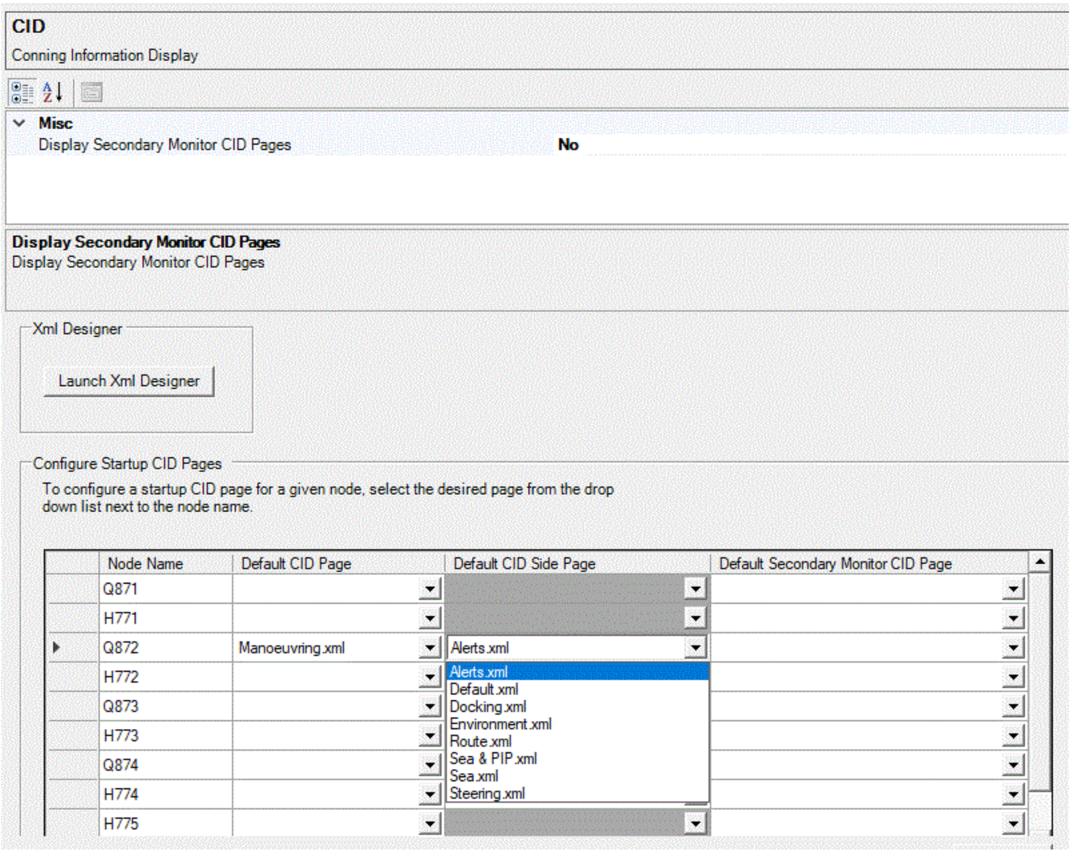


Figure 3.1 Selecting Default CID Pages

4. If you have a secondary monitor connected, select **Yes** from the **Display Secondary Monitor CID Pages** drop down arrow and click on the drop down arrow to the right of the **Default Secondary Monitor CID Page** field to display the list of pages. CID pages will only be available for selection if a secondary monitor has been configured.

2 CID Designer

The CID designer enables the following file types to be created:

- 5x4 Full screen pages
- 16x9 Full Screen pages
- 16x10 Full screen pages
- Side pages
- Pop-Up pages
- HUD widgets
- Element Groups
- Secondary Monitor pages

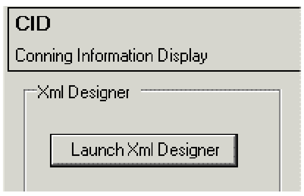
When CID pages, HUDs, Element groups or secondary monitor pages have been created, the following operations may be performed:

- Delete an existing page
- Modify an existing page
- Add CID elements to a page
- Delete CID elements from a page
- Resize and move CID elements on a page
- Modify properties of CID elements

Note: *It is recommended that all CID watch mode pages include a Date/Time control as an aid to confirm that the display is not frozen, see Section 2.3.5 'Element Group'.*

2.1 Opening the CID Designer

To open the CID designer navigate to the CID topic in the User Interface folder of the configuration file (see Section 9.6 '*User Interface*' in Chapter 1 '*Configuration*') and click on the **Launch Xml Designer** button.



The CID Designer application opens as a secondary window, over the Configuration application.

The CID Designer window comprises a drop down menu bar, toolbar icons and design area, see Figure 3.2.

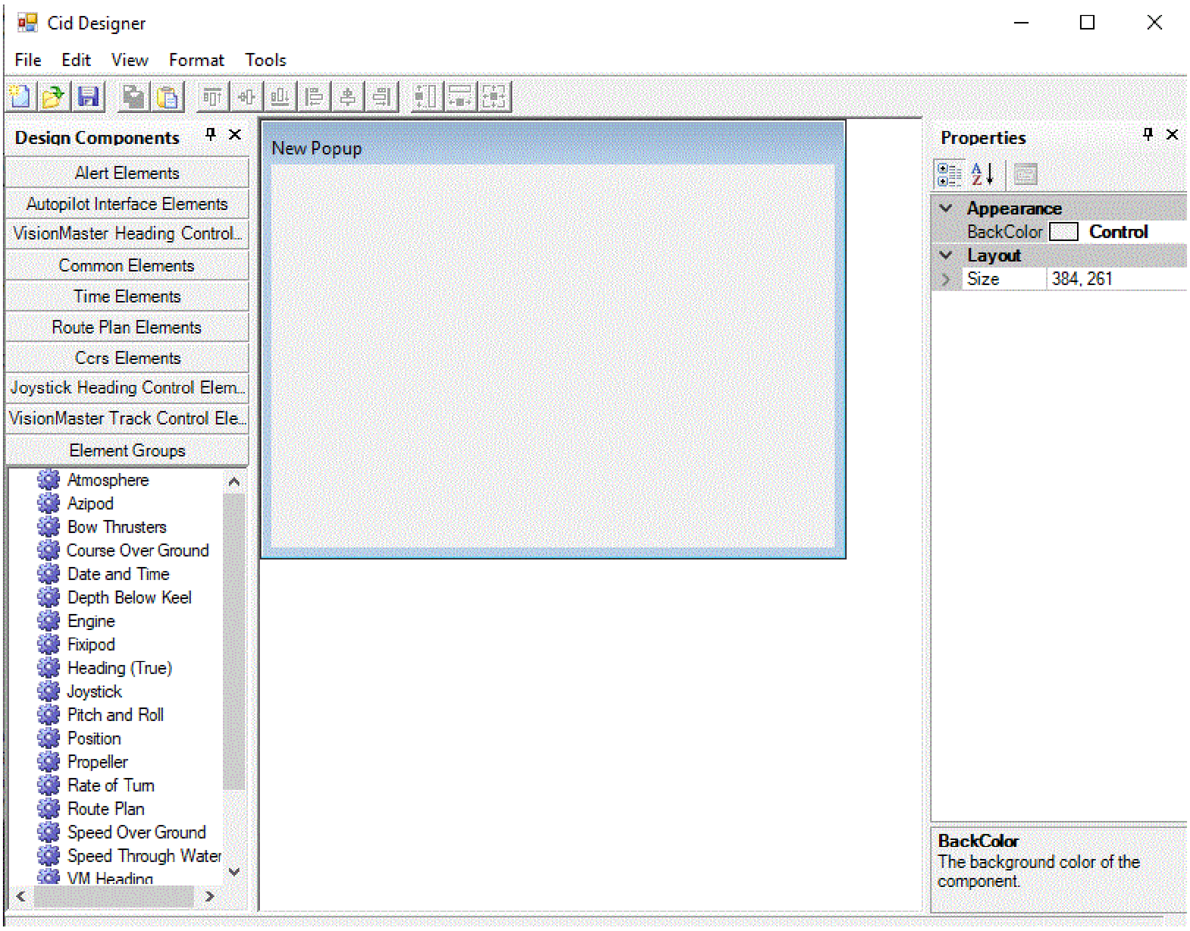
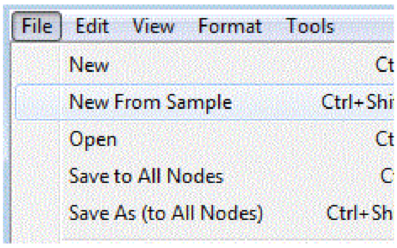


Figure 3.2 CID Designer Default Page

The design area opens with **Design Components** and **Properties** columns on either side of the main area and New Popup window in the page area. To minimise or close the columns click on the minimise and close icons.

2.2 Creating New Pages

New pages may be created and populated with element groups or CID elements.



There are two ways of creating a new CID page, you can either create a blank page by selecting **New**, or a new page populated by typical sample elements by selecting **New From Sample**. Both options are available from the File drop down list.

To add a new blank page select **New.** The **Select Type** window appears prompting to select the type of page to create, see Section 2.2.1 '*Selecting a Page Type*'.

2.2.1 Selecting a Page Type

When **New** is selected the following window prompts to select a page type to open, see Figure 3.3.

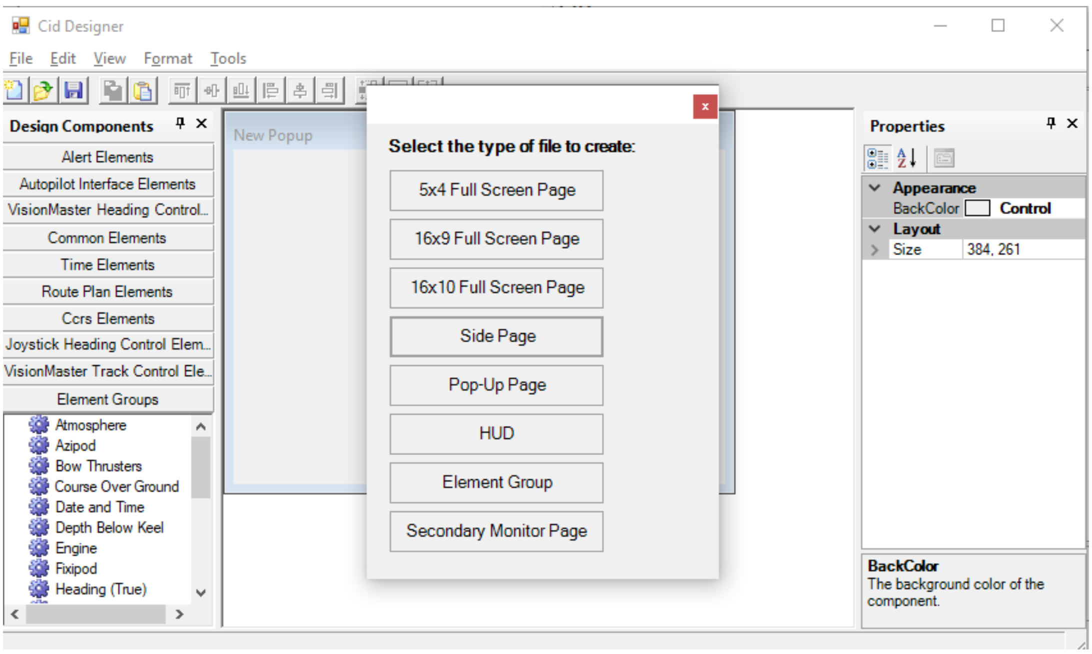


Figure 3.3 Select Page Type to Open

The selection of the type of full screen CID page is governed by your monitor type. If your monitor is a standard aspect ratio, i.e. 19" or 23", the 5x4 Full Screen Page is selected. If your monitor is a wide screen aspect ratio, i.e. 26" or 27", the 16x9 or 16x10 Full Screen Page is selected.

Side pages should be selected and configured for both ECDIS and Chart Radar nodes if the monitor is a wide screen version.

Popup pages are only available to be viewed on ECDIS nodes.

HUD (Head Up Display) are widgets that may be viewed in the primary chart area of ECDIS nodes. All HUD widgets are displayed as semi-transparent objects. For information, see '*HUD Widgets*' in Chapter 15 Conning Information Display of the ECDIS User Guide, 65900012.

The Secondary Monitor page should be selected if your system has been set up to include a secondary monitor. For further information refer to '*Chapter 3 Appendix A Configuring a Second Monitor*'.

All the page files are a series of xml files which reside on the system.

2.2.2 Creating a New CID Page

When New is selected from the File drop down list and a page type selected a blank New Page appears in the CID Designer with the page type in brackets, see Figure 3.4.

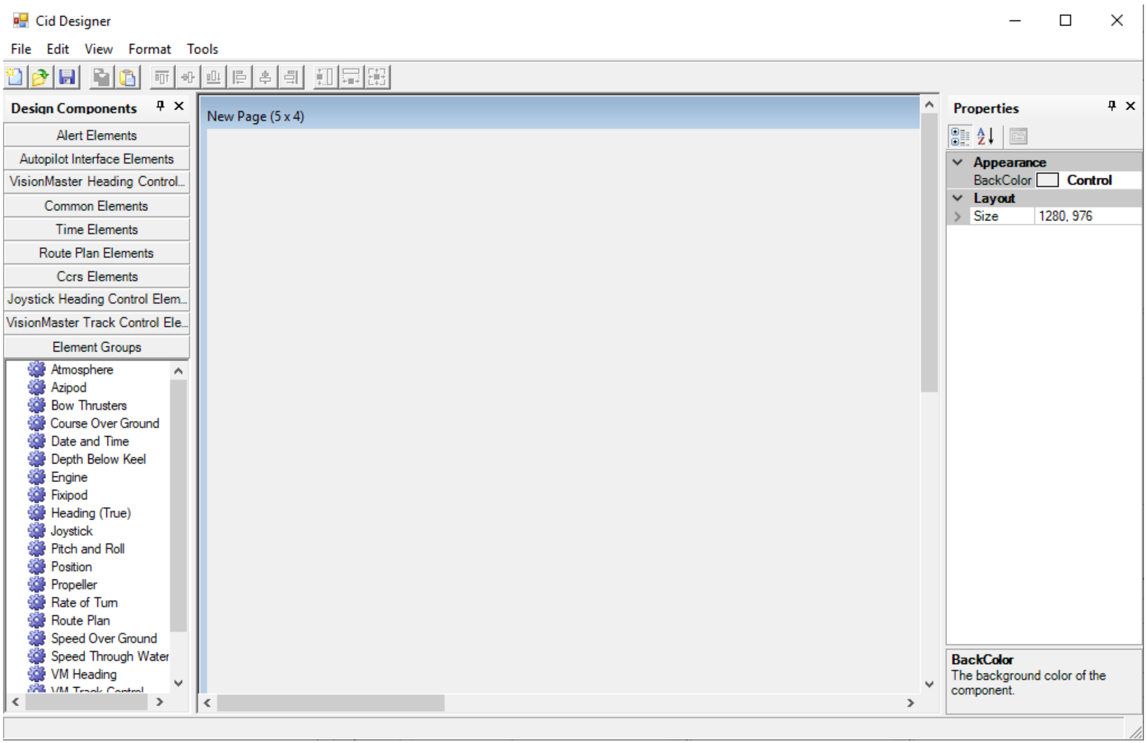


Figure 3.4 New Page

2.2.3 Creating a New CID Page from Sample

To select a new page from CID samples select **New From Sample** and select the file type. A list of CID sample xml pages for the file type are available, see Figure 3.5.

Select the required xml file from the list. A new page populated with CID elements for that page is opened.

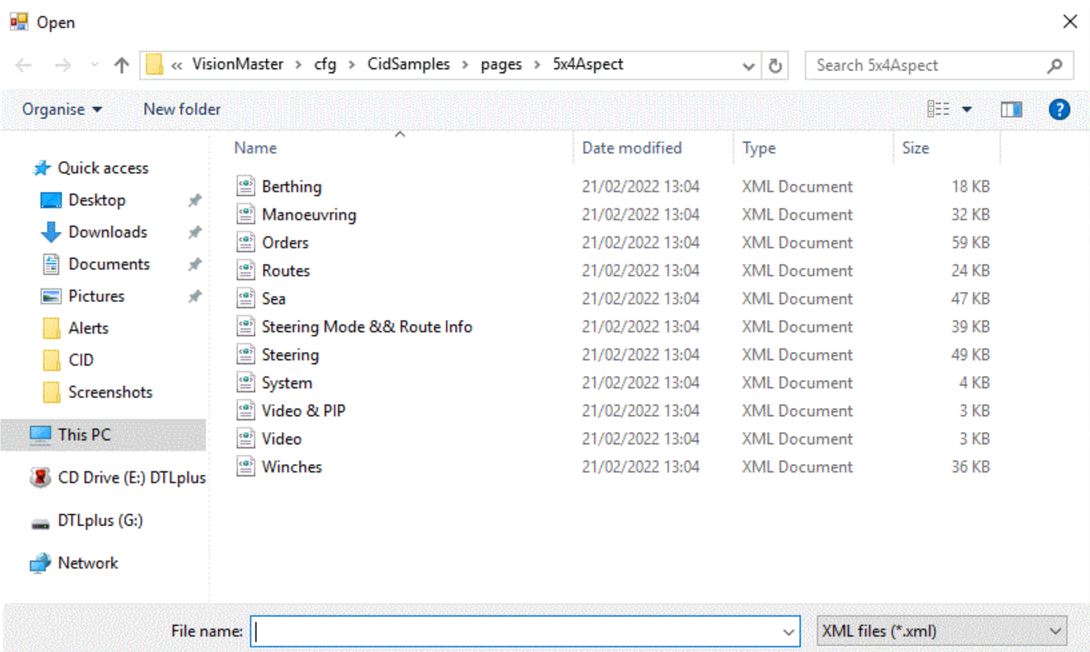


Figure 3.5 Open New From Sample file

To populate a new page with CID elements, or modify an existing an existing CID page, refer to Section 2.4 '*Customising CID Pages*'.

2.3 Opening Existing CID Pages

To open CID pages that have been previously created and saved, select **Open** from the File drop down list.

2.3.1 Full Screen Pages

When a 5x4 Full Screen page is selected a list of the default 5x4 aspect xml files are available, as listed in Section 1 '*Configuring CID Pages*' and shown in Figure 3.6.

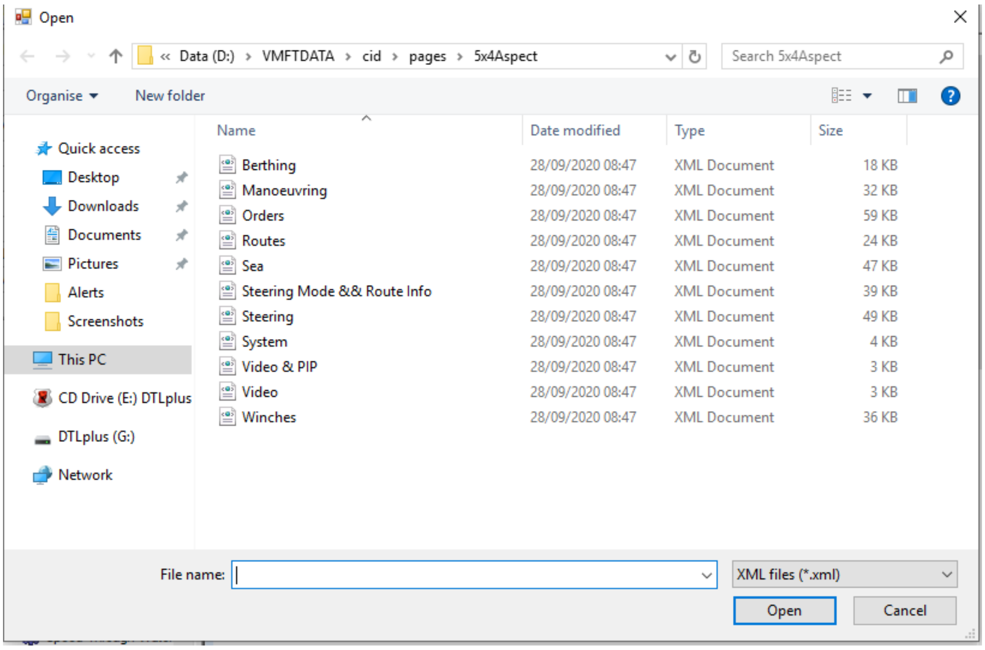


Figure 3.6 5x4 Aspect Full Screen page xml files

When 16x9 or 16x10 Full Screen pages are selected, all xml files shown in the 5x4 Aspect Full Screen directory are available, with the exception of Video & PIP.xml. The 16x9 and 16x10 page will also include Ownship.xml, which is not available to 5x4 aspect pages.

2.3.2 Side Page

When Side Page is selected a list of the default xml files are available, as listed in Section 1 '*Configuring CID Pages*' and shown in Figure 3.7.

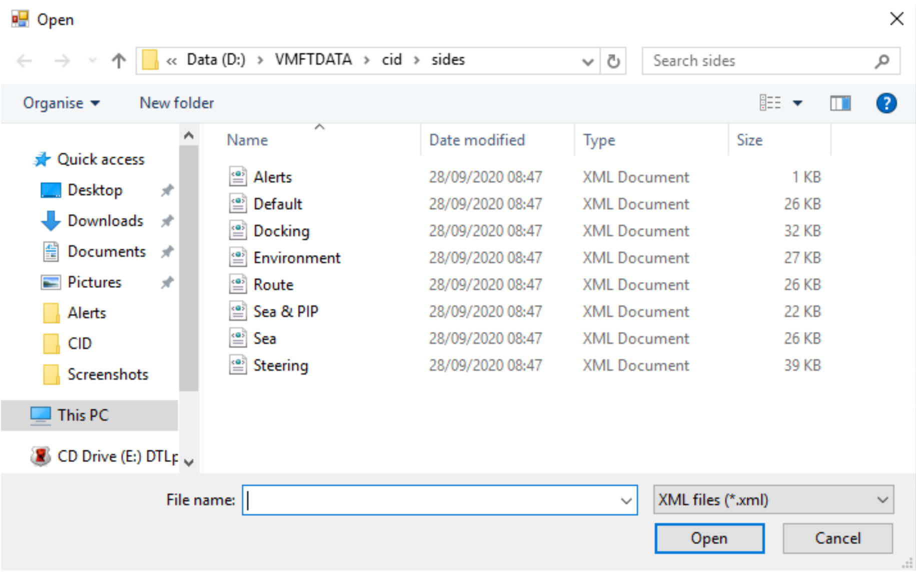


Figure 3.7 Open Side Page xml files

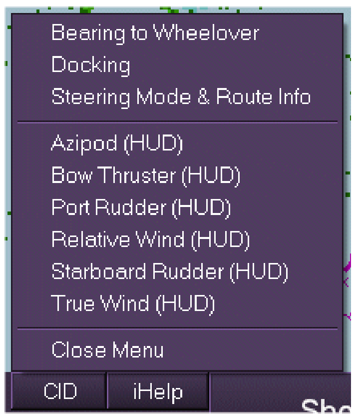
2.3.3 Popup Page

When Popup Page is selected, Windows Explorer opens the Popups sub directory. The default list of popup pages includes the following xml files:

- Bearing to Wheelover
- Docking
- Steering Mode & Route Info

Popup page files are available for display on an ECDIS from the CID button in the lower popup toolbar.

HUD widgets are also listed and are available for selection from the CID button, see Section 2.3.4 '*HUD*'.



2.3.4 HUD

When HUD is selected, Windows Explorer opens the Hud sub directory. The default list of HUD widgets includes the following xml files:

- Azipod
- Bow Thruster
- Port Rudder
- Relative Wind
- Starboard Rudder
- True Wind

CAUTION!

Although new HUD pages can be selected and existing pages edited, only the HUD xml files listed above should be used on the ECDIS. Other CID element groups which have been saved as HUDs will be listed in the Huds xml files directory, but if selected from the CID button, will cause the VMFT to shut down.

2.3.5 Element Group

An Element Group comprises a number of CID elements which have been compiled to display data for a particular function. For example, the Date and Time element group comprises date readout, time readout and time zone offset readout CID elements, see Figure 3.8.

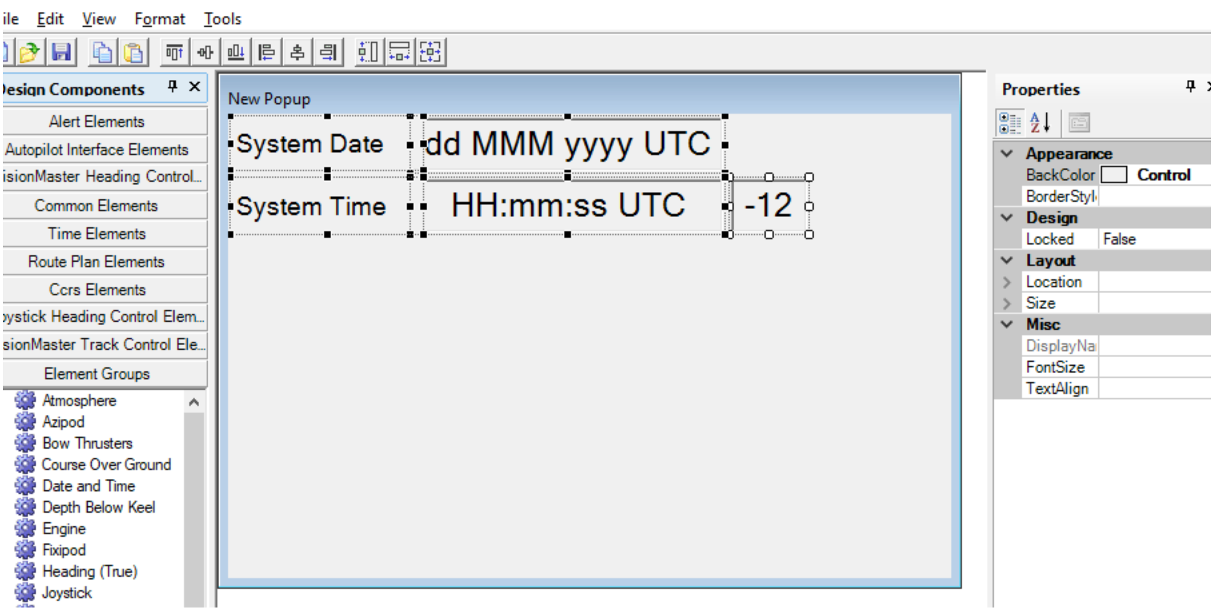
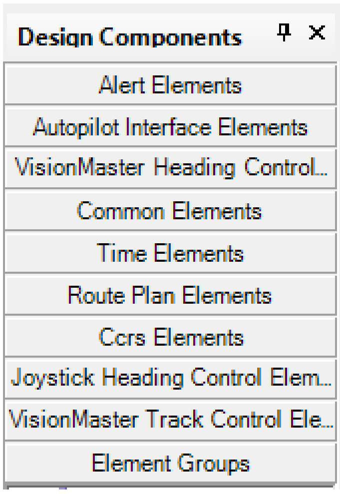


Figure 3.8 Date and Time Element group

2.3.5.1 CID Elements

A CID element represents one or more physical components of an xml page. These components are typically graphical or numeric readouts, but may also provide more complex functionality, such as graphs, chart displays, or CCTV displays.

All CID elements are compiled in appropriate groups with the following default groups of elements listed in the **Design Components** column.



- Alerts
- Autopilot Interface
- VisionMaster Heading Control
- CCRS
- Time
- Route Plan
- Common
- Joystick Heading Control
- VisionMaster Track Control

2.4 Customising CID Pages

The default CID pages listed for full screen, side page, popup pages and element groups may be deleted, copied, or modified.

2.4.1 Deleting CID Pages

To delete an existing CID page:

1. Navigate to the page to be deleted as described in Section 2.2 '*Creating New Pages*'. The Open window lists the available CID pages.
2. Select the page to be deleted, right click and from the drop down list select **Delete**. A confirm file delete popup window appears.
3. To confirm, click the **Yes** button, the page file is removed from the list and sent to the Recycle Bin. Or to cancel the deletion click the **No** button.

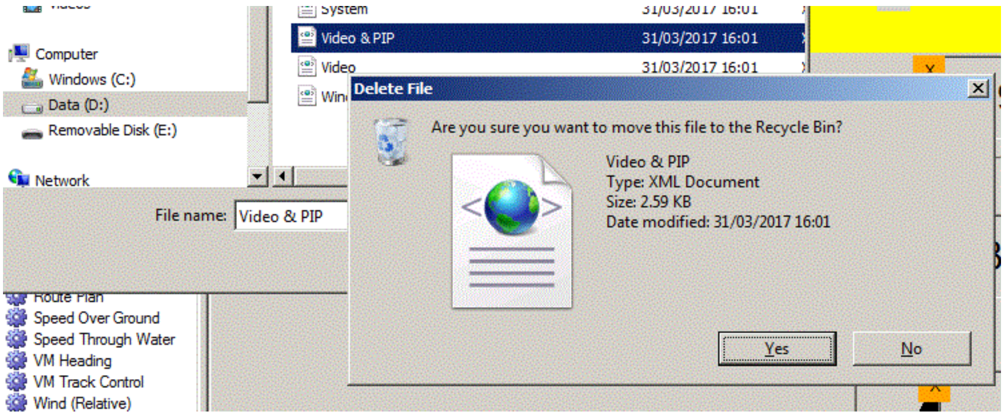


Figure 3.9 Delete Full Screen CID Page

2.4.2 Copying CID Pages

To copy an existing CID page:

1. Navigate to the page to be copied as described above.
2. Select the page from the list and click the **Open** button. The page appears in the CID Designer display area.
3. To copy the page click on the **File** menu and select **Save As (to All Nodes)** from the drop down list. The **Save As** popup screen appears.
4. Name the xml file in the **File Name** field and click the **Save** button. The copy of the page is listed with the existing full screen pages.

Note: *CID pages may be saved as different formats, or to different directories. For example, a full screen page or side page may be saved as a popup page and vice-versa, or an existing CID page may be copied and saved to an Additional Pages folder.*

2.4.3 Modifying CID Pages

To modify a CID page:

1. Navigate to the page to be modified as described above.
2. Select the page to be modified from the list and click the **Open** button. The full screen page appears in CID Designer display area, see Figure 3.10.

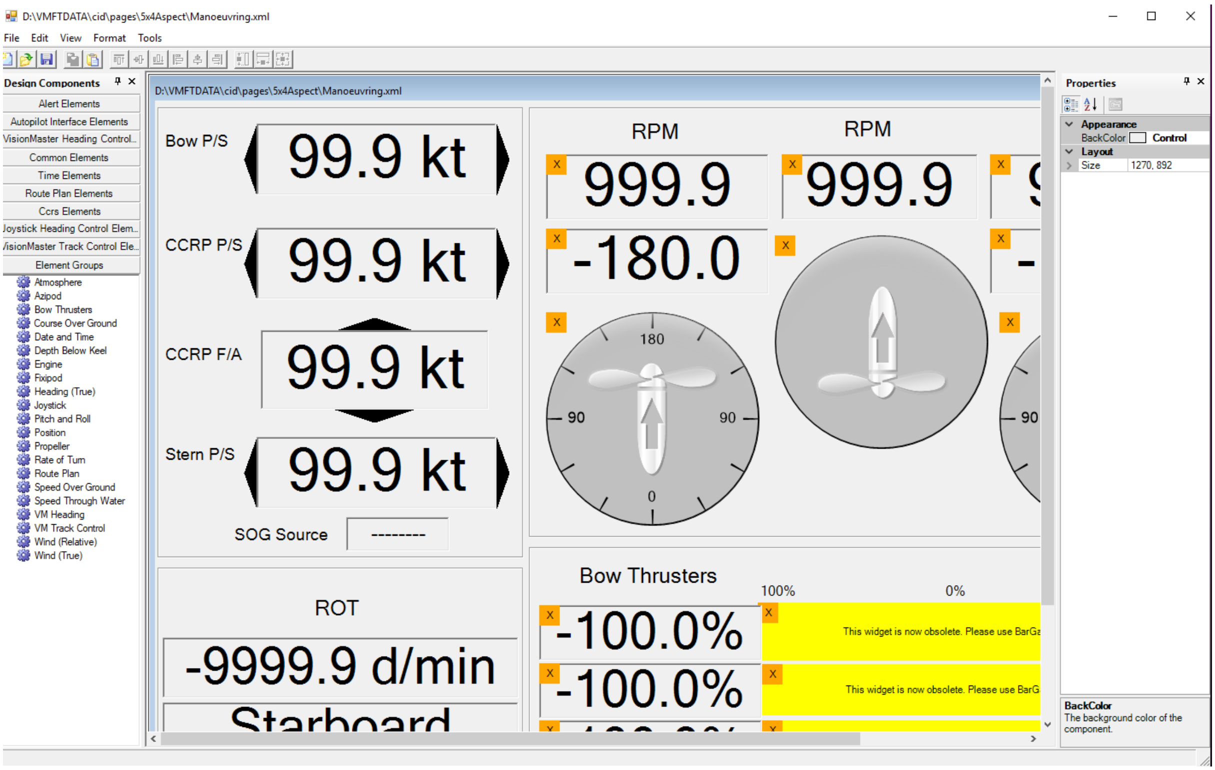


Figure 3.10 Modifying a CID Full Screen Page

Each CID element may be selected, or the element group to which the element belongs may be selected. CID elements and element groups once selected may be copied, moved, cut and pasted, re-sized or deleted.

3. To select an element group click on the edge of the group box, to select a single element click inside the box or icon. When a group or element is selected its box outline is shown with eight square editing points and the **Properties** column lists the element or group characteristics.
4. To copy, cut & paste or delete the element or group go to the **Edit** drop down menu and select the required action from the drop down list.

Elements or element groups may be re-sized and moved, either directly on the display, or by changing the element's Layout values in the **Properties** column.

If an element displays a  icon in the top left corner of its box, then the data source for this element is not configured. The icon disappears from the element box when the data source is configured.

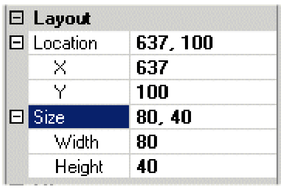
For instructions on adding new CID elements or element groups to an Full Screen page see Section 2.4.4 ‘*Adding Components to a Page*’.

2.4.3.1 Re-sizing Elements or Groups

To re-size an element or group directly on the display:

1. Move the cursor to one of the editing points. The cursor changes to a vertical, horizontal or diagonal arrow dependant on which editing point is selected.
2. Hold down the left key and move the trackball left or right to re-size. With the required size displayed, exit re-sizing mode by releasing the left key and clicking in the element box.

To re-size an element or group from the **Properties** column:



1. Click on the **+ Size** button to display the element’s current width and height in pixels.
2. Click in the Width and Height fields and enter the required values. The element or group is re-sized to the entered values.

2.4.3.2 Moving Elements or Groups

To move an element or group directly on the display:

1. Select the group or element box, and move the cursor to the control icon at the upper left of the box.
2. Hold down the left key and move the box to the required location by moving the trackball. As the box is moved horizontal and vertical guide lines appear to enable the box to be aligned with other element or group boxes.
3. When the box is in the required location release the left key.

To move an element or group from the **Properties** column:

1. Click on the **+ Location** button to display the element’s X and Y coordinates. The values shown are the height and width from the upper left corner of the element to the upper left corner of its container.
2. Click in the X and Y coordinate fields and enter the required values. The element or group is re-located to the entered values.

2.4.3.3 Customising Element Properties

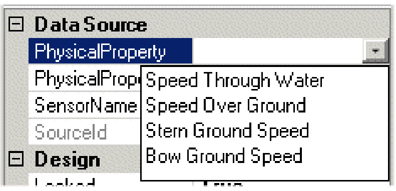
Certain CID elements, such as data fields, include properties which may be customised. The type of properties and selections available change dependant on the element type selected.

The following lists the editable properties on a typical data element.

Data Source

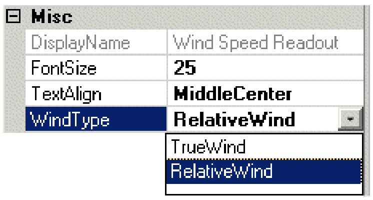
The Data Source properties are available on certain data readout elements and include the following:

- Physical Property
- Physical Property Field
- Sensor Name
- Source ID



The physical properties of certain elements may be customised, based on the restrictions of the selected element. For example, the physical properties of a ground or water speed readout element will be restricted to those configured for external sensors, see Section 9.4.1 '*External Sensors*' in Chapter 1, 'Configuration'.

If an element has no data source configured the physical properties will show 'Generic Data' and the drop down list will include all data types.

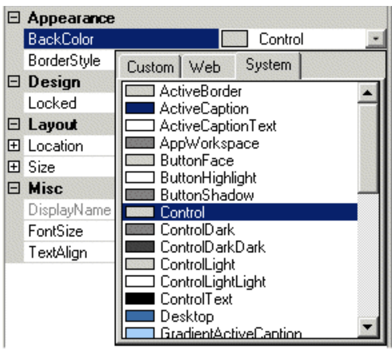


Other elements do not have editable data properties. For example, a wind speed readout is restricted to displaying wind speed in knots, with only the Wind Type (Relative or True) selectable.

To change data source properties either click on the drop down arrow and select from the list, or enter values in the appropriate fields.

Appearance

Certain readout elements such as Time or Route Plan elements will include Appearance properties, which comprise Back Colour and Border Style.



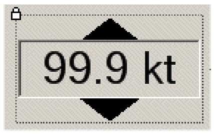
The Back Colour is the background colour of the element and defaults to the Control colour. To change the colour click on the drop down arrow and select from the list, the element colour changes to the colour selected.

The border style of the element box defaults to **Fixed3D.** To change the border style click on the drop down arrow and select from the list (**FixedSingle** or **None**).

Design

The design property enables an element to be locked in its position on the page. The default is for the element to be unlocked (**False**). To lock an element in position click on the drop down arrow and select **True**.

When an element is locked a lock icon appears at the top left corner of the element box.



Miscellaneous

The miscellaneous properties include the following:

- Display Name
- Font Size
- Text Align
- History Time (Depth below Keel)

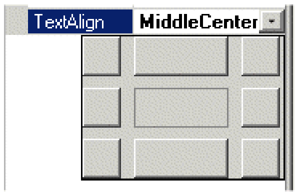
Note: *There may be more miscellaneous properties available dependant on the CID element selected.*

The display name is the name of the element that appears in the Design Components list. This value is read-only.

To change the font size click on the drop down arrow and select from the list (the font size ranges from 14pt to 500pt). Changing the font size does not re-size the element box.

Note: *A primary display unit is designed for a nominal viewing distance of one metre. In CID watch mode the instrumentation text for a primary monitor is 3.5mm high. For a remote mounted secondary monitor, the text needs to be scaled appropriately to suit the viewing distance.*

Text Align denotes the position of the text within the element box, the default value is **Middle Center**. To change the text alignment click on the drop down arrow and select the desired position from the graphic.



The Depth Below Keel (DBK) history time is the amount of history in minutes displayed on the depth graphic element.

To change the default time from three minutes up to a maximum of 30 minutes click in the **History Time** field and enter the required value.

2.4.3.4 Replacing Obsolete Elements

If an element is obsolete the element box will be displayed with a yellow background and a message advising to use an alternative element. Navigate to the element type and replace the obsolete element, see below.

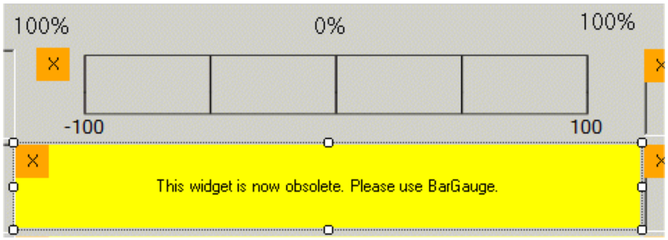


Figure 3.11 Obsolete Element

2.4.3.5 Reversing Azipod Gauge Elements

The azipod gauge element defaults to 180 degrees at the top of the gauge circle, with the propeller pointing north.

To create an aft facing Azipod gauge reverse the element by entering **180** in the **Direction Representing Zero Degrees** field. 180 degrees is shown at the bottom of the circle and the propeller is reversed to point south, see Figure 3.12.

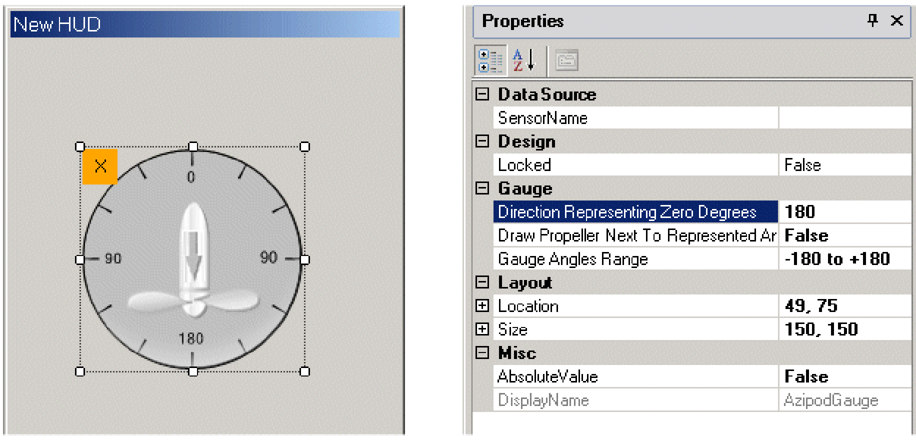


Figure 3.12 Azipod Gauge Reversed for Aft Facing Display

To reverse the gauge but retain the propeller facing north select **True** in the **Draw Propeller Next to Represented Angle** field. The propeller is re-drawn pointing north towards the 0 degree angle.

Note: *Aft facing gauge elements should ONLY be configured for vessels that have displays facing aft on a permanent basis. It should NOT be used for vessels that have been configured for Alternate Bow in Use, see Section 9.3.1 'Own Ship Characteristics' in Chapter 1 'Configuration'.*

2.4.4 Adding Components to a Page

To add design components (elements or groups) to a page:

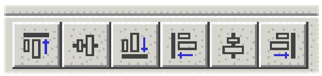
1. Navigate to the component to be added by clicking on its Elements group button in the Design Components column.
2. Left click on a component in the element list. Move the cursor to the area on the page where you want the component added and left click. The component is drawn on the page and its values appear in the Properties column. Repeat the process for each component.

When a component is drawn on the page the Format commands become enabled.

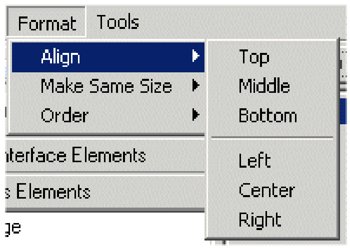
Component boxes can be aligned with each other along the top, middle or bottom face or to the left, centre or right faces.

The align commands are accessed in one of the following ways:

1. either from the toolbar icons; or



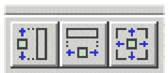
2. by clicking on the **Format** drop down menu and selecting **Align**.



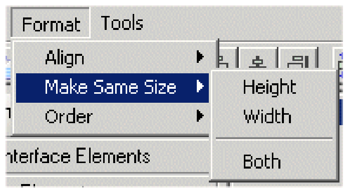
Component boxes can be made the same height, width or made the same size.

The Size commands are accessed in one of the following ways:

1. either from the toolbar icons; or



2. by clicking on the **Format** drop down menu and selecting **Make Same Size**.



2.4.5 Creating a Placeholder Window for PiP Video

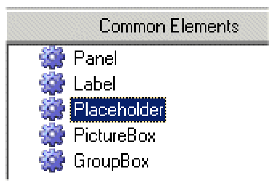
When a PiP video source and PiP display provider have been configured in the Config tool (see Chapter 1 '*Configuration*') a placeholder must be created in the CID Designer in which the monitor's PIP video is displayed. The PIP video is displayed within the boundaries of the placeholder.

PiP video is only available on a full screen CID page, or the left side CID panel of a widescreen monitor (16x10 Full Screen Page).

Note: *A placeholder element is not valid for secondary monitor CID pages, therefore a placeholder should NOT be created for a secondary monitor.*

To create a placeholder window for the PiP video:

1. Select Common Elements in the Design Components column. From the list of elements click on **Placeholder** and click in the area of the page where you want the element added. A placeholder is created with a default size of 150mm x 150mm.



2. To change the placeholder location, enter the X Y coordinates in the Properties, Layout column, see Figure 3.13.
3. With reference to Section 2.4.5.1 '*Minimum Sizes for Placeholders*' resize the placeholder to the required size, either directly on the display, or by entering the width and height in the Layout fields. For instructions, refer to Section 2.4.3.1 '*Re-sizing Elements or Groups*'.
4. In the Miscellaneous section, enter **PiP** in the PlaceholderControlId field and enter **PipVideo** in the PlaceholderFactoryName field.

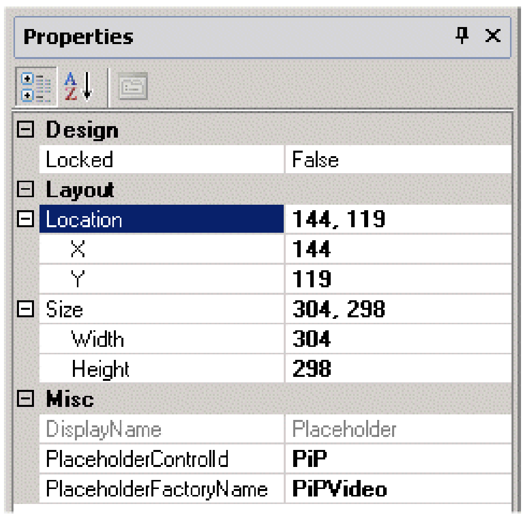


Figure 3.13 Placeholder Properties

2.4.5.1 Minimum Sizes for Placeholders

The placeholder window for Pip Video must be set to a size above the minimum specified for the monitor types listed in Table 1 and Table 2. If the placeholder window is below the minimum size for the monitor the video will not display correctly.

Table 1: Minimum Size of Placeholder in New Hatteland Monitors*

Monitor Size	Display Resolution	Min. Size of Placeholder
27 "	1920 x 1200	250 (Width) x 190 (Height)
27 "	1280 x 1024	250 (Width) x 190 (Height)
23.1 "	1280 x 1024	245 (Width) x 215 (Height)
19 "	1280 x 1024	310 (Width) x 270 (Height)
19" + 23.1" †	1280 x 1024	310 (Width) x 270 (Height)
19" + 23.1" + 27" †	1280 x 1024	310 (Width) x 270 (Height)
23.1" + 27" †	1280 x 1024	250 (Width) x 215 (Height)

* Monitors with tactile push button keypad and status LED ring.

† This information is for multi-node systems with a combination of 19", 23.1" and 27" monitors with display resolutions of 1280 x 1024. As the same 5 x 4 aspect CID page is used for all monitor sizes with this resolution the largest of the width and height specified for individual monitors should be used.

Table 2: Minimum Size of Placeholder in Older Version Hatteland Monitor*

Monitor Size	Display Resolution	Min. Size of Placeholder
23.1 "	1280 x 1024	160 (Width) x 150 (Height)

* Monitors with separate On/Off button and OSD controls.

2.4.6 Creating a Picture Box for an Image File

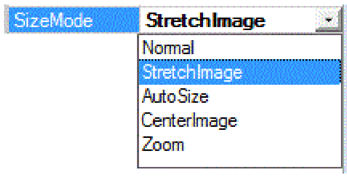
This section describes how to create a Picture Box for an image file.

Before setting up the Picture Box the image file must first be copied and saved to a VMFT drive from an external device such as a USB memory stick.

To create a Picture Box element for an image file:

1. Select Common Elements in the Design Components column and from the list of elements click on **PictureBox . C**lick in the area of the page where you want the element added. A PictureBox is created with a default size of 150mm x 150mm.
2. To change the Picture Box location, enter the X Y coordinates in the Properties, Layout column.
3. Resize the Picture Box to the required size, either directly on the display, or by entering the width and height in the Layout Size fields. For instructions, refer to Section 2.4.3.1 '*Re-sizing Elements or Groups*'.

4. In the Image Path field enter the location of the image to be placed in the picture box. Ensure that the file location and graphics abbreviation are entered correctly, see Figure 3.14.
5. The Size mode defaults to **Stretch Image.** To change the size mode click on the drop down arrow and select from **Normal, AutoSize, CenterImage** or **Zoom.**



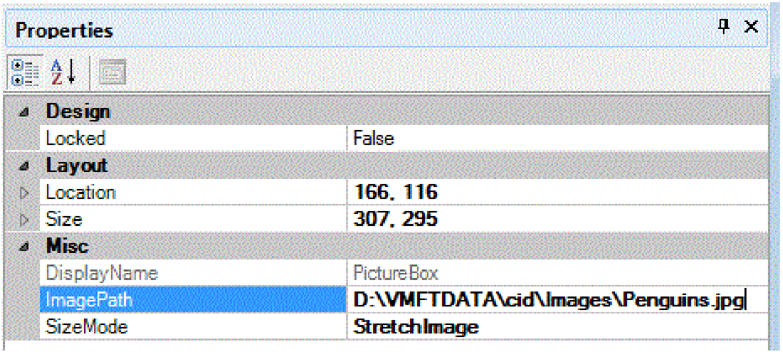


Figure 3.14 Picture Box Properties

2.4.7 Creating a Page for Fugro Trim Sensor

This section describes how to set up a CID page to display data from a Fugro Trim sensor when a Fugro Marinestar device is being used by the VMFT system.

A Fugro Trim Sensor and message interface for the sensor must be configured before creating the CID page. For information on the configuration of a Fugro Trim Sensor see "Configuring a Fugro Trim Sensor" on page 143 of Chapter 1 '*Configuration*'.

To create a CID page for a Fugro Trim Sensor:

1. Either open an existing CID page or create a new page as described in Section 2.4.4 '*Adding Components to a Page*'.
2. Select **Ccrs Elements** in the Design Components column. From the list of elements select on **LineGraph** and click in the area of the page where you want the element added. A default line graph table is created.
3. In the Properties column click in the Graph Title field and enter an appropriate title. The entered title appears above the graph table.
4. If required change the time span along the Horizontal Axis (defaults to 15 minutes), change the default values on the Vertical Axis (max 100, min -100) to more appropriate values for trim. The graph will update as values are changed.

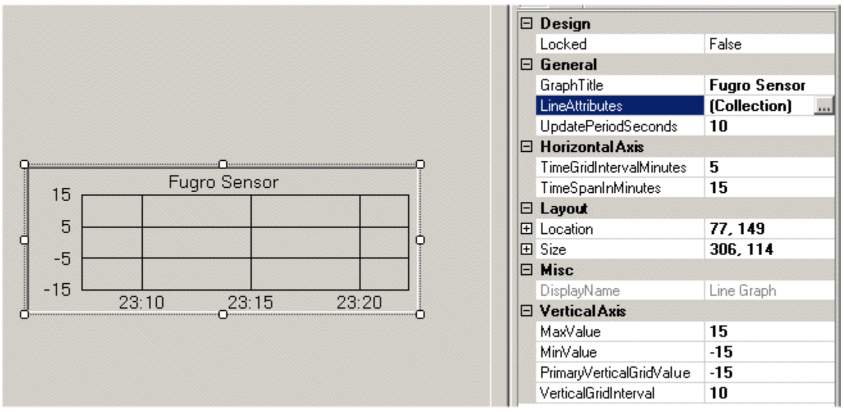


Figure 3.15 Fugro Trim Sensor Line Graph

5. To configure the data that will be displayed on the graph, click in the **(Collection)** field in **LineAttributes** and then click on the **...** button. A Line Attribute Configuration popup window opens, see Figure 3.16.

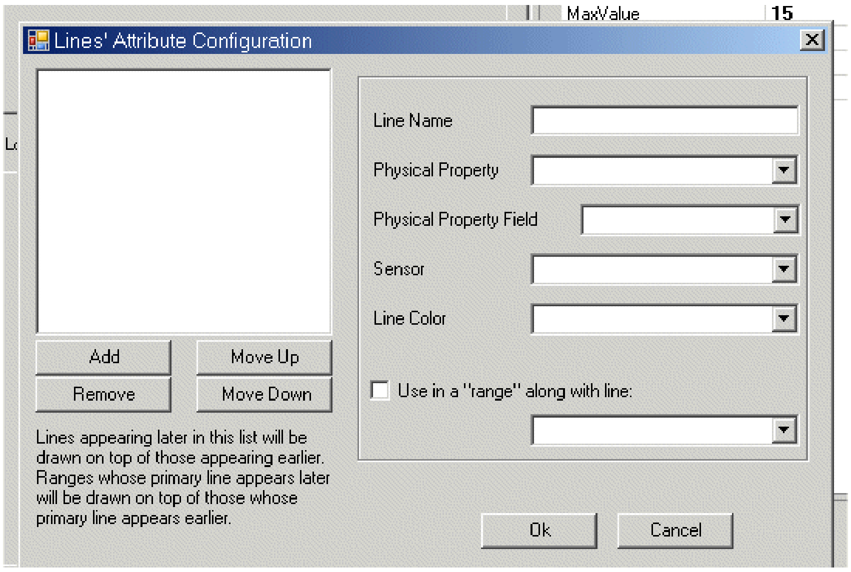


Figure 3.16 Line Attribute Configuration - Blank

6. Click the **Add** button seven times, twice for each colour band and once for the trim itself. Note that the trim sensor is actually four sensors in one; the trim sensor and three trim band sensors: green, yellow, and red. Seven new lines are created in the field above the Add button.
7. Select the first **<new line>**.
   a. Enter the Line Name **Red Band Lower**
   b. Select the physical property **Trim Band** from the drop down list.
   c. Select **LowerValue** from the PhysicalPropertyField.
   d. Enter **'Red band for <configured trim sensor name>'**.
   e. Select red from the Line Color drop down list.

8. Select the second **<new line>**.
    a. Enter the Line Name **Red Band Upper**
    b. Select the physical property **Trim Band** from the drop down list.
    c. Select **Upper Value** from the PhysicalPropertyField.
    d. Enter **'Red band for <configured trim sensor name>'**.
    e. Select red from the Line Color drop down list.
    f. Tick the **Use in a range along with line:** check box and select **Red Band Lower** from the drop down list.
9. Repeat steps 8 and 9 for Yellow and Green bands.
10. For the last line in the list enter the following:
    a. Enter the Line Name **Trim**
    b. Select the physical property **Trim** from the drop down list.
    c. Select **Trim** from the PhysicalPropertyField.
    d. Enter sensor name, e.g. **Fugro Trim Sensor**.
    e. Select a line colour that is not red, yellow or green from the Line Colour drop down list.
11. Figure 3.17 shows a completed Line Attribute Configuration window.

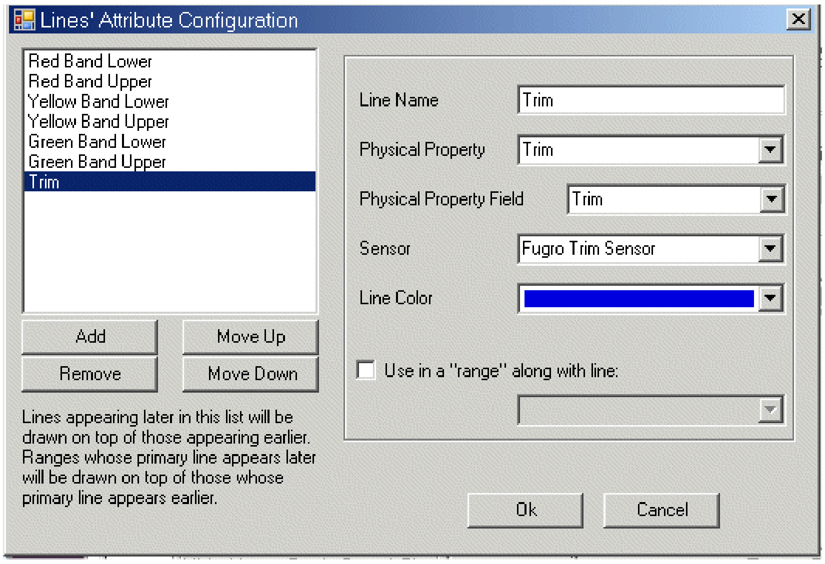


Figure 3.17 Line Attribute Configuration - Complete

Note that the order the fields appear in the list is important, the graph will render the topmost fields first so if you place the Red Band at the bottom of the list the only data that will be visible will be the red band.

In order for the Fugro MarineStar to operate correctly in the CID each XDR sentence (as defined in the system configuration) must be assigned to a physical property readout (display name).

To configure each physical property refer to Figure 3.18 and Table 3 below.

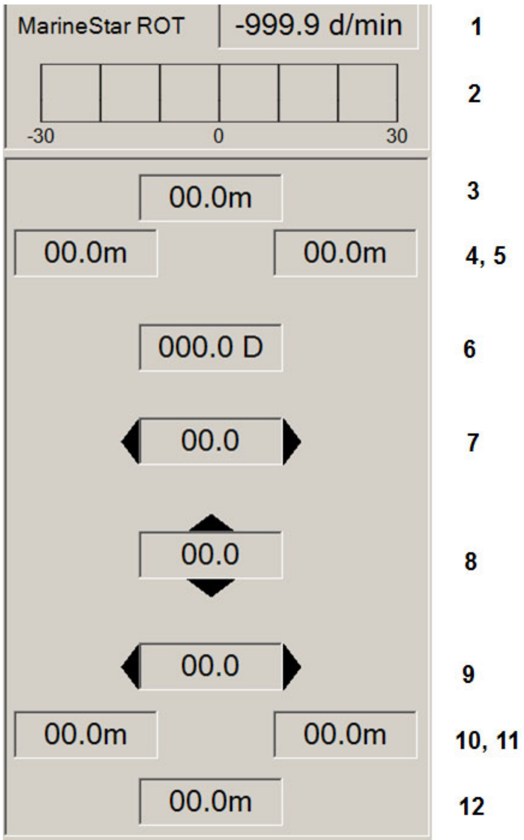


Figure 3.18 Fugro MarineStar CID Page

Table 3: Fugro Sensor Name and Physical Property

Ref ID	Sensor Name	Longest Expected Value	Display Name
1	MarineStarXDR8-ROT	-999.9 d/min	Physical Property Readout
2	MarineStarXDR8-ROT	30 to -30	Bar Gauge
3	MarineStarXDR16-EndPointToQuayBow	00.0m	Physical Property Readout
4	MarineStarXDR18-PortBowCornerToQuay	00.0m	Physical Property Readout
5	MarineStarXDR20-StbdBowCornerToQuay	00.0m	Physical Property Readout
6	MarineStarXDR7-Heading	00.0 D	Physical Property Readout

7	MarineStarXDR11-SpeedAthwartBow	00.0	Directional Readout
8	MarineStarXDR10-SpeedForwad	00.0m	Directional Readout
9	MarineStarXDR12-SpeedAthwartStern	00.0m	Directional Readout
10	MarineStarXDR19 PortSternCornerToQuay	00.0m	Physical Property Readout
11	MarineStarXDR21-StbdSternCornerToQuay	00.0m	Physical Property Readout
12	MarineStarXDR17-EndPointToQuayStern	00.0m	Physical Property Readout

When the Fugro MarineStar CID page is complete click the **OK** button and save the CID page.

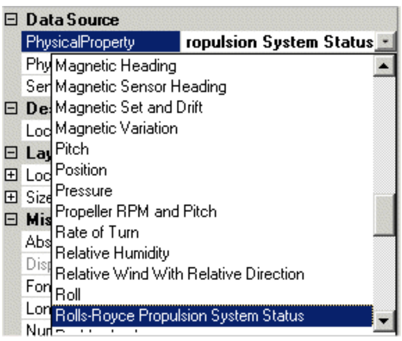
2.4.8 Creating a Page for Rolls Royce Propulsion System Sensor

This section describes how to set up a CID page to display data from a Rolls Royce Propulsion sensor when a Rolls Royce Propulsion sub-system is being used by the VMFT system.

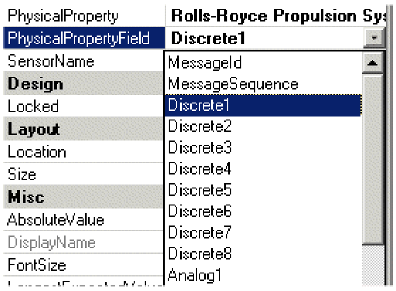
A Rolls Royce Propulsion System Sensor and message interface for the sensor must be configured before creating the CID page. For information on the configuration of this sensor see "Configuring a Rolls Royce Propulsion System Sensor" on page 147 of Chapter 1 '*Configuration*'.

To create a CID page for a Rolls Royce Propulsion Sensor:

1. Either open an existing CID page or create a new page as described in Section 2.4.4 '*Adding Components to a Page*'.
2. Select **Ccrs Elements** in the Design Components column. From the list of elements select **PhysicalPropertyReadout** and click in the area of the page where you want the element added. A readout widget is created.
3. In the Properties column click in the **PhysicalProperty** field and select **Rolls Royce Propulsion System Status** from the drop down list.



4. Click the **PhysicalPropertyField** drop down list and select the discrete or analog field you wish to display.



5. Click on the **SensorName** drop down list and select the sensor that corresponds to the message ID you wish to use. For example, if you need to display the 3rd analog value from the message identified as 0500 select **Analog3** as the physical property field and **Rolls-Royce Propulsion Sensor for message 05 sequence 0** as the sensor.
6. If necessary provide a suffix and a label widget to display the source of the data.

2.5 Saving a Page

When the required design components have been added and modified the page may be saved to the system.

1. To save the page, click on the **File** drop down menu and select **Save As (to All Nodes)**.
2. The subsequent window shows the list of current pages for the type of new page selected (Figure 3.19 below shows the popup window when an Element Group page has been selected).

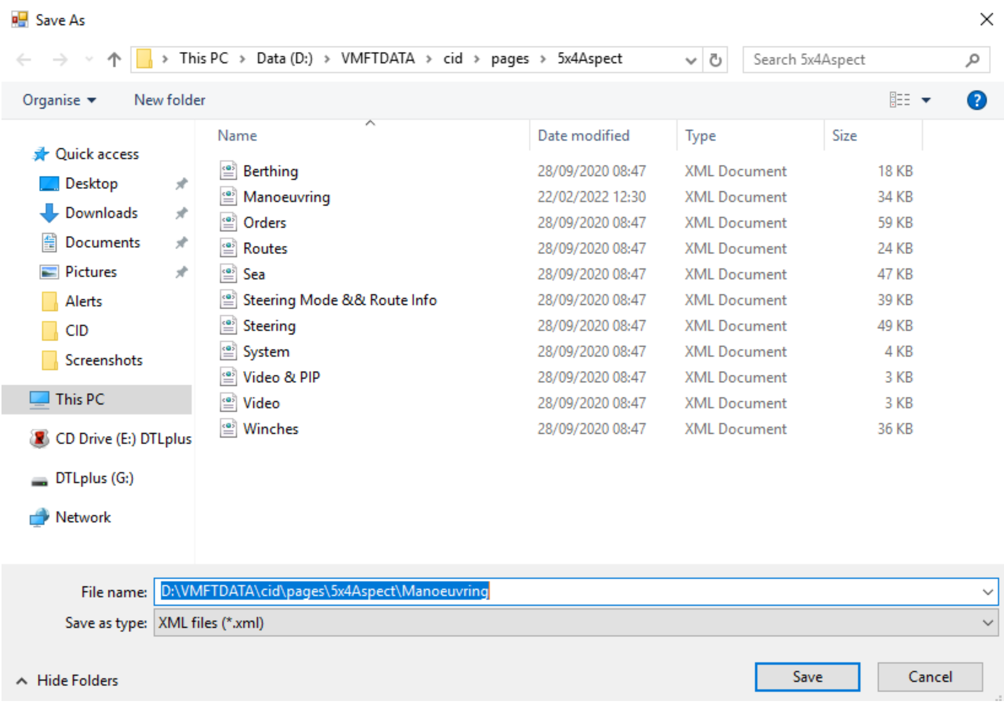


Figure 3.19 Saving a Page

3. To save the page as another type click on the **Save In** drop down arrow and navigate to the required sub-directory.
4. Enter the name in the **File name:** field and click the **Save** button. The page is saved in the sub-directory as an additional .xml file.

If the page is saved as a Full Screen page it will appear as an additional tab when the CID is opened, see "Configuring CID Pages" on page 4

If the page is saved as a Side page it will appear as an additional tab when Radar or ECDIS is opened on a wide screen.

If the page is saved as a popup it will appear as a selectable display page from the **CID** button, see "Popup Page" on page 12.

2.6 Exiting CID Designer

To exit the CID Designer click on the **File** drop down menu and select **Exit**. The program closes and the CID topic in the Configuration tool re-appears.

Chapter 3 Appendix A

Configuring a Second Monitor

CONTENTS

LIST OF FIGURES

A.1 Configuring a Second Monitor

A VisionMaster FT (VMFT) node can be configured to run a second dedicated monitor, which may be required in order to display a product type other than the main display, such as CID pages.

Note: *The secondary monitor must be the same native resolution as the primary monitor, i.e. both monitors at 19” or 23” etc.*

This Appendix describes how to configure a VMFT node to run a second monitor (which has been previously configured via the CID Designer) from the Microsoft Windows Control Panel.

A.1.1 Control Panel Setup

1. Power down the system and connect the second monitor into the other monitor port on the graphics card. For certain monitors and processors you may need a DVI to VGA converter. Do NOT use the on-board graphics port.
2. Power up the system and navigate to the desktop by logging in as a service engineer from the VisionMaster application (see Section 3.1 ‘*Login*’ in Chapter 2 ‘*Diagnostics, Commissioning & Service Mode*’).
3. From the Service desktop enter ‘Control Panel’ in the Search field in the bottom left of the desktop and from the subsequent window select Control Panel.
4. From the Control Panel settings select Hardware and Sound, see Figure A.1.

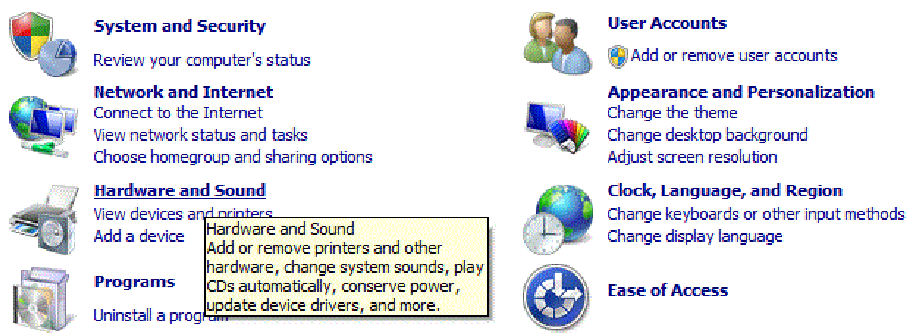


Figure A.1 Control Panel Window

a. From the Hardware and Sound window select ‘**Connect to an external display**’ in the **Display** menu, see Figure A.2.

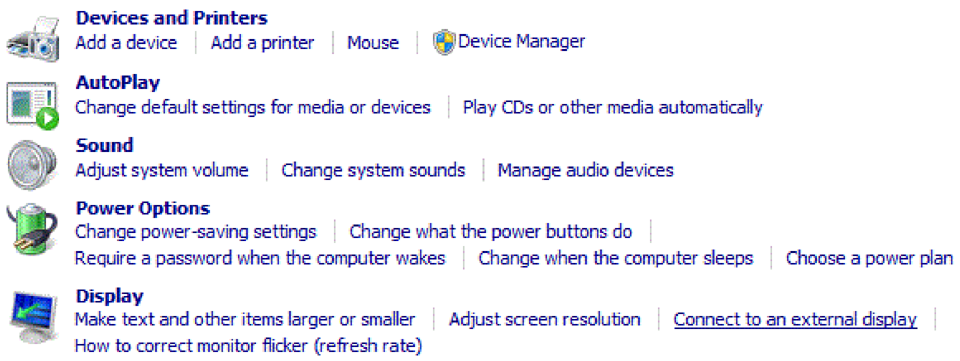


Figure A.2 Hardware and Sound Window

5. The Connect to External Display window enables you to configure the connected second monitor, see Figure A.3.

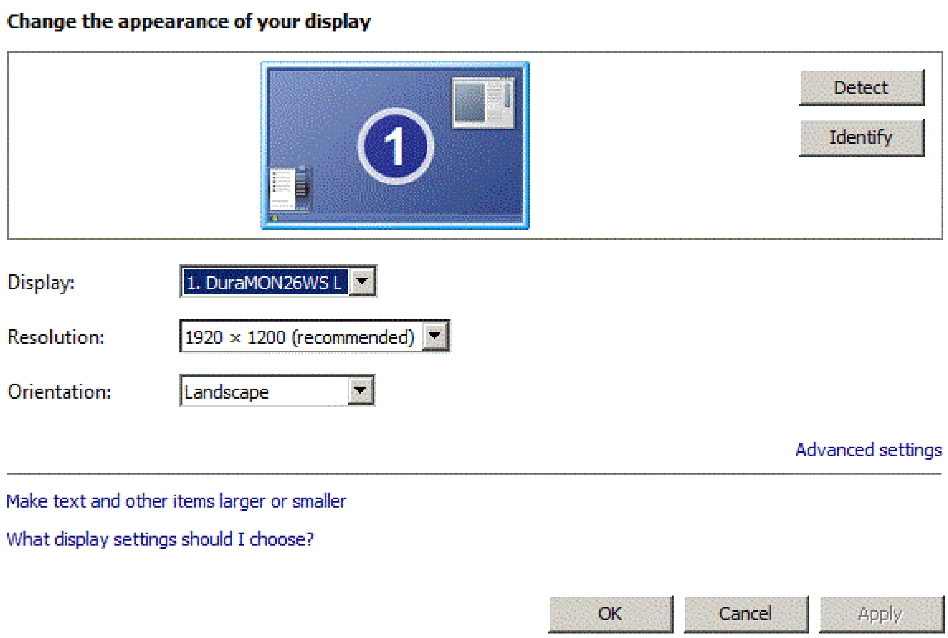


Figure A.3 Connect to External Display Settings

a. Click the **Detect** button to show the second monitor.

b. Configure the second monitor to show as Display **2,** which appears to the right of the primary Display **1**. These monitor icons can be moved to match the physical arrangement of your monitors by clicking on icon 2 and dragging it to the left of icon 1. When set click the **Identify** button.

c. Select the second monitor type by clicking the **Display** drop down list

d. Select the screen resolution of the secondary monitor. For example, if the screen resolution is a 19" or 23" select 1280 x 1024. If the screen resolution is 26" or 27" (widescreen) select 1920 x 1200.

e. The screen orientation defaults to Landscape. This can be changed to Portrait.

f. Click **OK** to save the settings.

6. Generate the CID page as described in Section A.1.2.

A.1.2 Setting up a CID page for Secondary Monitor

The following procedure describes how to generate a CID page, which will be displayed on the secondary monitor that has been previously set up as Desktop 2.

1. Open the Configuration tool and navigate to **CID** in the User Interface sub-menu.
2. From the ‘Display Secondary Monitor CID Pages’ click on the drop down arrow and select **Yes**. Note that the default secondary pages supplied with the equipment are 1920 x 1200 wide screen size.
3. On the CID page open the CID Designer by clicking on the **Launch Xml Designer** button. For details on the CID Designer, refer to Section 2 ‘*CID Designer*’ in Chapter 3 ‘*Configuring a Conning Information Display*’.
4. Create the required CID page for the secondary display, as described in Chapter 3 ‘*Configuring a Conning Information Display*’, Section 2.2 ‘*Creating New Pages*’. Ensure the CID page size matches the second monitor screen resolution, for a standard monitor, this will be 5 x 4 Aspect (1280 x 1024).
5. Click the Save As button in the File menu and save the page to the following directory: ‘**D:VMFTDATA\cid\SecondaryMonitorPages’,** see Figure A.4. The Secondary Monitor CID page may be saved under any suitable name.

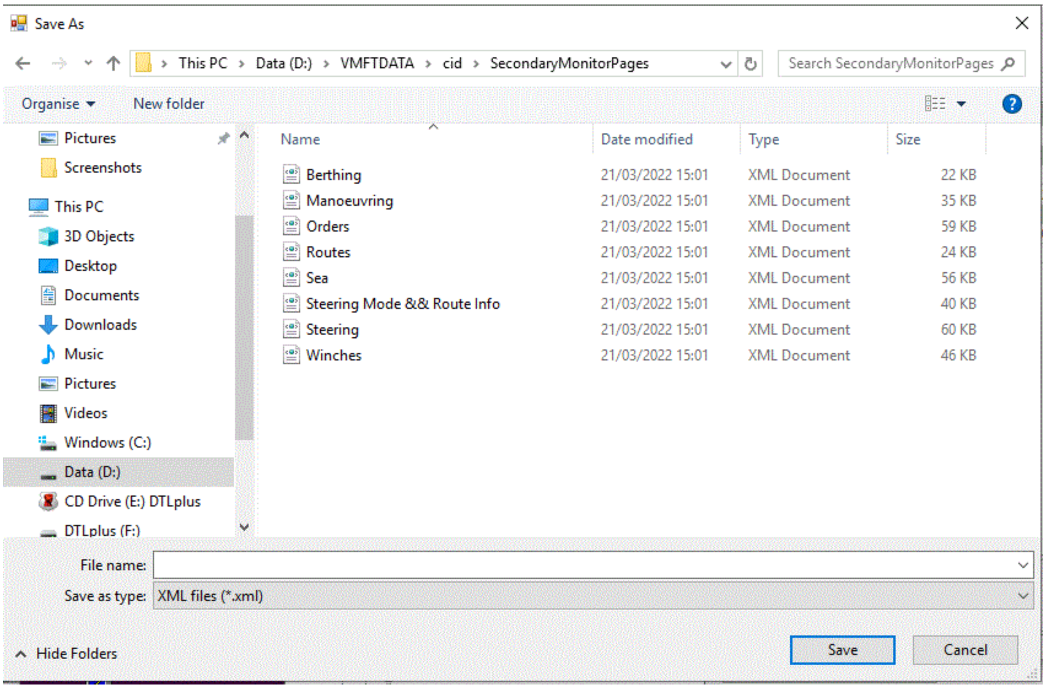


Figure A.4 Saving a CID page in CID Designer

6. Close the CID Designer, re-open the Configuration tool and navigate to the CID page. The page(s) saved in the SecondaryMonitorPages folder will be available for selection from the **Default Secondary Monitor CID Pages** drop down list.

When VisionMaster is opened again any node with a second monitor attached will show the default secondary monitor CID page selected.

CHAPTER 4

TOTALTIDE SETUP

CONTENTS

LIST OF FIGURES

1 Introduction

TotalTide is an optional feature which, when purchased and selected in the Configuration tool, is automatically installed as part of the VisionMaster installer.

After the version of VisionMaster that includes TotalTide is installed, an ADP TotalTide Setup folder is displayed on the Service desktop.

1.1 RunningTotalTide Setup

1. From the VisionMaster Service desktop double click the **Install ADP TotalTide** icon and click **OK** on the ADP Installer popup window. a 'Preparing to Install window' appears after a short period of time the 'Welcome Install Wizard' window appears, see Figure 4.1.

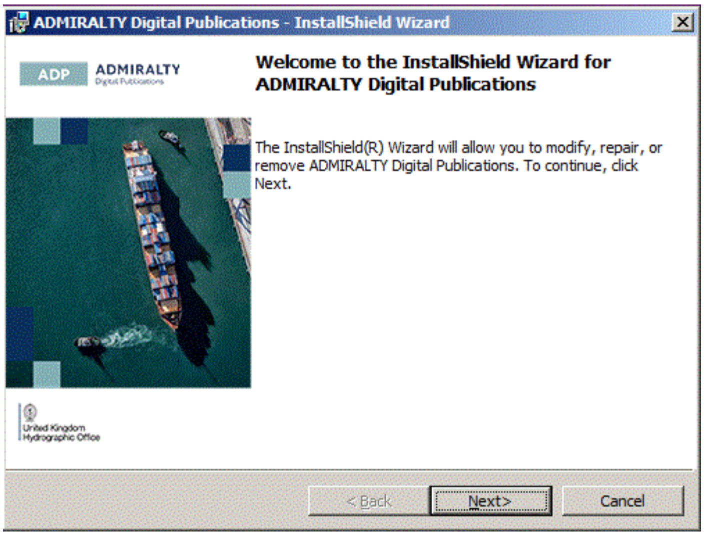


Figure 4.1 ADP InstallShield Wizard

2. Click the **Next** Button to proceed with the installation.
3. If TotalTide program already exists on the node the following screen requests selection to Modify, Repair or Remove the program, see Figure 4.2.

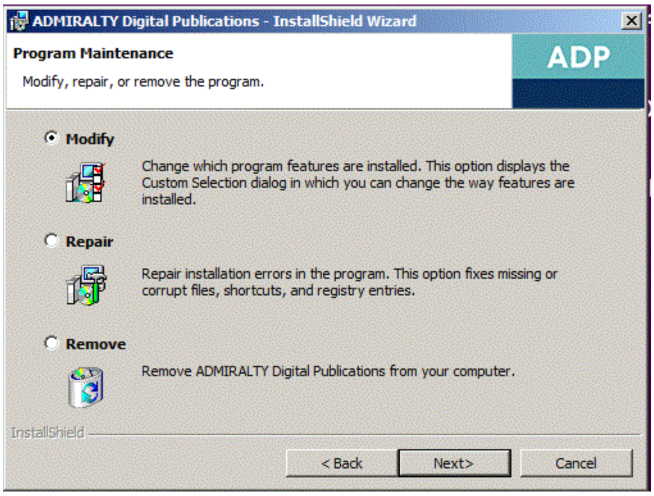


Figure 4.2 ADP InstallShield Wizard Program Maintenance

4. Select the required maintenance option and click the Next button, the next screen prompts to select the program features you want installed. Click on the ADP navigation button and select the installation option you require, see Figure 4.3.

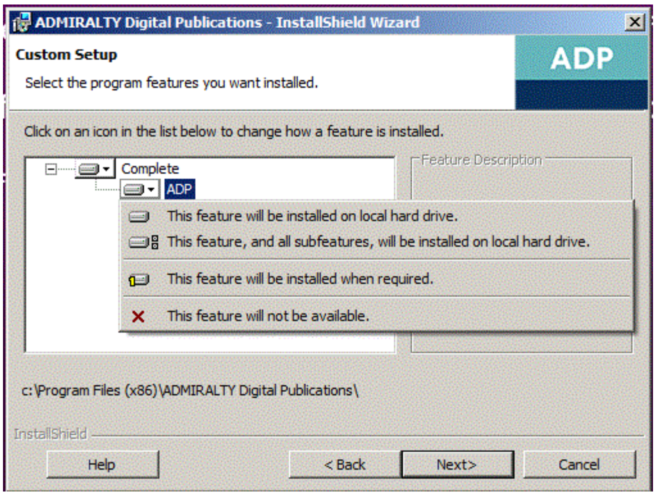
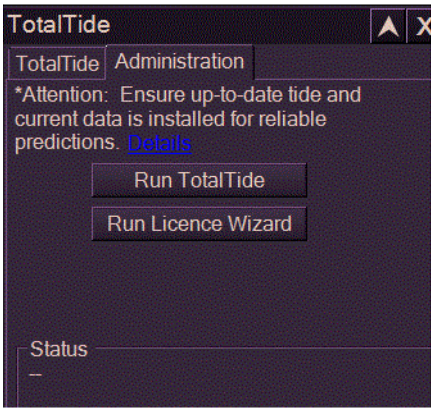


Figure 4.3 ADP InstallShield Wizard - Custom setup

5. At the next screen, click the **Install** button, or click the <Back button to review or change any of your installation settings. When Install is selected the TotalTide program is installed and eventually the ADP InstallShield Wizard Completed screen appears.

6. Click the Finish button to exit the install process. The TotalTide feature is then ready to be commissioned as usual.

7. Open the VisionMaster application in ECDIS watch mode, and from the Charts menu click on TotalTide sub menu. The TotalTide window appears with the Administration tab folder open and **Run TotalTide** button disabled.



To run the TotalTide application for up to one year, a start-up key and activation key must be entered, for details, see Section 1.2 '*Running Licence Key Wizard*'.

1.2 Running Licence Key Wizard

1. To obtain the required license files, click the **Run License Wizard** button. The Licence Key Wizard application opens prompting to enter the start up key that was supplied with the purchase of the ADP TotalTide application.

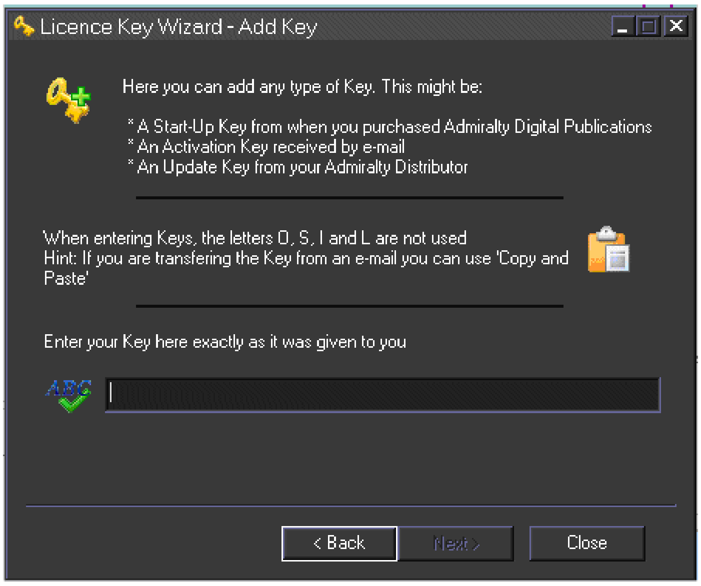


Figure 4.4 Licence Key Wizard - Add Key

2. Enter the key code in the field and click the **Next** button. If the key is validated the next screen confirms that the start up key has been installed, giving temporary 30 day access. To obtain an Activation key, which enables all licensed features, select **Request an Activation Key** and click the **Next >** button.

Figure 4.5 Licence Key Wizard - Request an Activation Key

3. The next screen prompts to obtain the activation key by email. You can send the request via email from a PC which has email facilities , send the request to a printer (if no printer is connected, this icon is greyed out), or save the request as a text file.

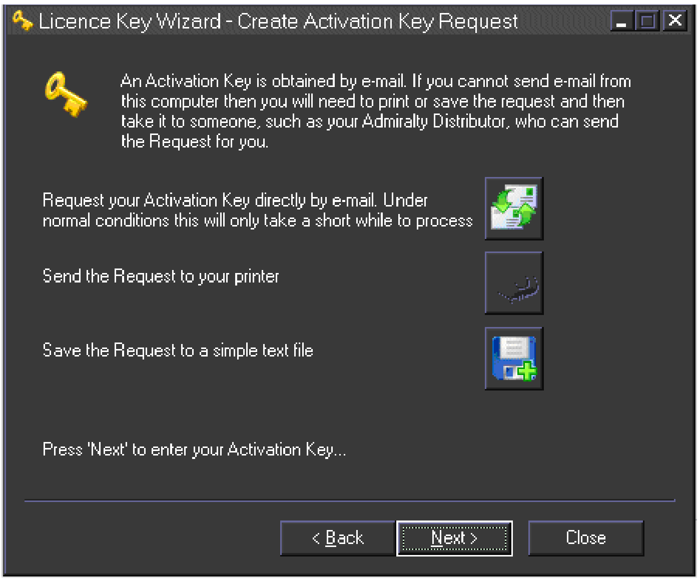


Figure 4.6 Licence Key Wizard - Create Activation Key Request

4. To save the request as a text file, click on the floppy disk icon. The text file can be saved in the VisionMaster C:\Program Files (x86)\ADMIRALTY Digital Publications\ (default path), or to an external device (for example, a USB memory stick). A **Save As** window opens with the file name **Activation Key Request.txt** shown as default. Save the file to the C: drive, or navigate to the external device and click the **Save** button.

5. Open the Activation Key Request text file. The file instructs an email message to be sent to *ADPMailGateway@UKHO.gov.uk*.. In the subject line there will be a string of letters and numbers beginning with UKHOBLAKR… Do not amend this subject line.
6. Send the email to the UKHO email address. A return email should arrive shortly after with an Activation key code. The email will also list the areas of the world the activation key covers.
7. From the Licence Key Wizard Start Up Key window select **Add an Activation Key** and click the **Next>** button. The Add Key screen shown in Figure 4.4 appears.

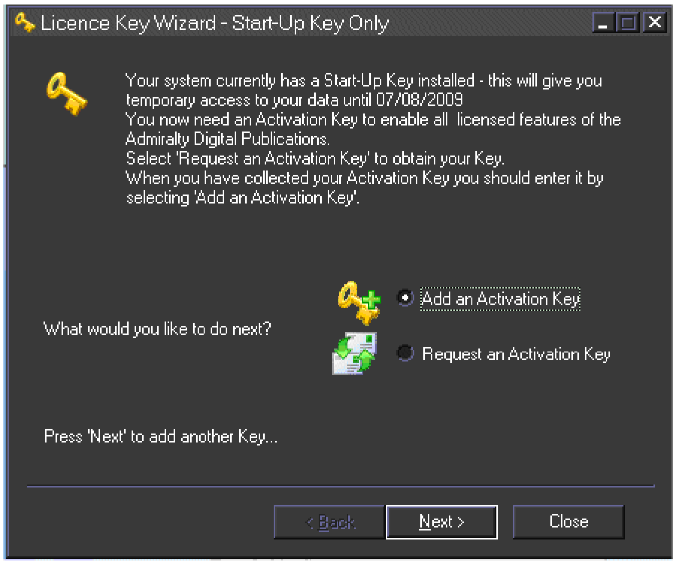
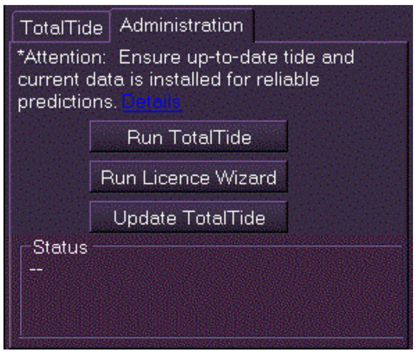


Figure 4.7 Licence Key Wizard - Add an Activation Key

8. Enter the activation key as shown on the email in the field and click the **Next>** button. The system reads the key and when validated confirms that the licence will grant the use of the TotalTide application for one year. At the end of the licence period you should re-licence the TotalTide areas you wish to retain access to.
9. Click the **Close** button to exit the Licence Key Wizard.
10. If the VisionMaster application is running, close the application and restart in order to enable the TotalTide application to run on ECDIS.

When a start-up key and activation key have been entered in the Licence Key Wizard, and the system re-started, the TotalTide Administration tab folder shows all features, including **Run TotalTide**, enabled.



1.3 Updating TotalTide Data

Once the TotalTide application has been installed, TotalTide data can be updated by clicking the **ADP-Data Updating Wizard** icon the Service desktop.

Update the ADP data by following the instructions on the Wizard.

CHAPTER 5

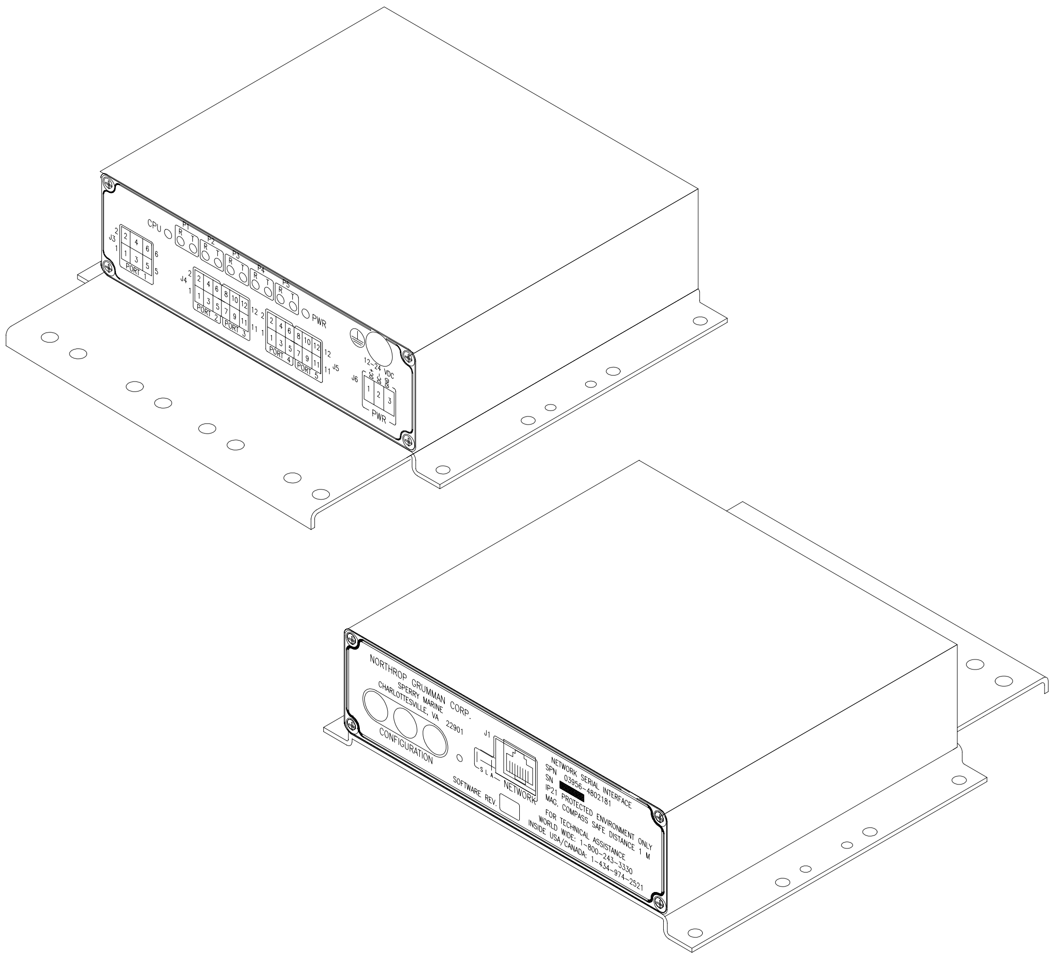
NSI SERVICE MANUAL

Introduction

The following pages include a pdf of the Network Serial Interface (NSI) User, Installation and Service Manual produced by Northrop Grumman Systems Corporation (Sperry Marine), document number JA26-8756C.

For information on configuring an NSI from the VisionMaster configuration tool refer to Section 8.3 '*NSI Manager*' in Chapter 1 '*Configuration*'.

NETWORK SERIAL INTERFACE (NSI) User, Installation and Service Manual



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Sperry Marine

Printed in U.S.A.

REVISION C JUNE 2007

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REVISION C JUNE 2007

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Safety Precautions

The following safety notice conventions are followed throughout this manual:

A **WARNING** contains an operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury or death of personnel.

A **CAUTION** contains an operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment.

A **NOTE** contains an essential operating or maintenance procedure, condition or statement that is considered important enough to be highlighted.

CAUTION

Do not attempt to open the unit or make any internal repairs yourself. Only Trained Service Technicians may make repairs to your unit.
Breaking a seal will void warranty!

WARNING:

Careless OR improper use of this system may result in vessel damage and/or SERIOUS INJURY OR DEATH.

BEFORE using this system, operators MUST be appropriately trained AND familiar with the warnings, safety instructions and information contained in this manual AND on system components.

ALWAYS keep system manuals in a well-known, readily available location.

CAUTION:

NEVER attempt to open ANY system components OR make ANY internal repairs yourself.

NEVER exceed specified system power OR environmental limits.

NEVER install unauthorized additional cards OR devices into this system.

ONLY Trained Service Technicians are to provide service OR make repairs to this system.

NEVER perform unauthorized service on this system.

NEVER provide unauthorized modifications to this system.

CHAPTER 1
INTRODUCTION

1-1 GENERAL DESCRIPTION

The Network Serial Interface (NSI) helps reduce the amount of shipboard cabling and thereby reduce installation cost by allowing bi-directional transmission of NMEA data through the network infrastructure. The Network Serial Interface (NSI) allows NMEA 0183 (IEC61162-1) serial data messages from a serial device to be transmitted over the Local Area Network (LAN).

The NSI does not interpret the serial messages. The NSI encodes (TX) and decodes (RX) all messages that start with a valid beginning delimiter ($ or !) and is terminated with <CR><LF>. All messages that conform to this format will be passed. The maximum length of the NMEA sentence is 82 characters.

The Network Serial Interface (NSI) can be installed using two different configurations:

a. Simple Mode: The NSI is configured at the factory. The end user supplies the factory with the following information:

1. An IP address that will not conflict with any devices on the network.
2. A list of the NMEA 0183 devices that will be connected to the input and output ports of the NSI.

A unique configuration switch value is assigned to the NSI. The input and output devices are assigned to each input and output port and the configuration information is written to firmware in a configuration file that cannot be modified in the field.

b. Extended Mode: The NSI is configured in the field. Each NSI is assigned a unique configuration switch value on the NSI. A user interface is provided which allows the installer to configure the NSI IP address and input and output ports to transmit NMEA 0183 serial data over the Local Area Network.

The NSI has the capability to be configured to designate a primary and secondary (backup) network source for providing serial data to the configured output ports in the extended mode (see Chapter 4). When the NSI is used in the extended mode, if the primary and secondary ports are receiving data at the same interval and the primary port stops receiving data for 1000ms, the NSI will switch to the secondary port (backup channel) to provide data to the configured output ports.

1-2 MANUAL CONTENTS

Chapter 1: Introduction
This chapter describes the Network Serial Interface usage.

Chapter 2: Equipment Layout
This chapter describes the front and rear panel switches, indicators, and connection ports.

Chapter 3: Using the Network Serial Interface in Simple Mode
This chapter describes the configuration settings and default parameters used when operating the Network Serial Interface in Simple Mode.

Chapter 4: Using the Network Serial Interface in Extended Mode
This chapter describes the configuration settings and default parameters used when operating the Network Serial Interface in Extended Mode.

Appendix A: NSI Mounting Dimensions

This chapter provides outline dimensions and mounting requirements for installing the Network Serial Interface.

Appendix B: NSI Configuration Defaults
This chapter describes the configuration settings and default parameters used when operating the Network Serial Interface.

Appendix C: NSI Configuration Worksheet
This appendix is used to record switch settings for the NSI, the label which is used to identify the NSI, the IP address, Subnet Mask, Default Gateway, Multicast Group Address, Discovery IP Port Number, and the Serial Ports baud rate.

Appendix D: NSI Wizard Worksheet
This appendix is used to enter input and output ports when configuring a NSI in Extended Mode.

Appendix E: Sample NSI Connection Block Diagram
This appendix contains a block diagram which illustrates how the input to a NSI can be configured using the NSI Wizard Add Page to supply an output to equipment connected to another NSI over the network.

1-3 ENVIRONMENTAL SPECIFICATIONS

ENVIRONIMENTAL SPECIFICATIONS		NSI ASSEMBLY PN 4802181
OPERATING TEMPERATURE	MEETS OR EXCEEDS	-15ºC TO +55ºC
STORAGE TEMPERATURE	MEETS OR EXCEEDS	-15ºC TO +55ºC
HUMIDITY	MEETS OR EXCEEDS	IEC 60945, PROTECTED CATEGORY
VIBRATION	MEETS OR EXCEEDS	IEC 60945, PROTECTED CATEGORY
EMI/RFI	MEETS OR EXCEEDS	IEC 60945, PROTECTED CATEGORY
DEGREE OF PROTECTION	MEETS OR EXCEEDS	IEC 529, IP21
COMPASS SAFE DISTANCE	METERS	1
HEAT DISSIPATION	MAX	4 WATTS
SUPPLY VOLTAGE		12 VDC OR 24 VDC +/- 10%
COLOR		YELLOW/BLACK
WEIGHT	MAX	1 KG

CHAPTER 2
EQUIPMENT LAYOUT

2-1 FRONT PANEL

The Network Serial Interface (NSI) front panel contains the configuration switches that are used to enter the three digit IP address for the NSI, the reset switch that is used to reset the NSI IP address and ports to the factory default settings, and the ethernet port that is used to connect the NSI to the Local Area Network.

CONFIGURATION SWITCHES	3 Digit configuration code set to identify the NSI.
RESET SWITCH	Momentary Switch: Used to restart the NSI.
ETHERNET PORT	RJ-45 connector used to connect the NSI to the Network (10/100 Mbs)

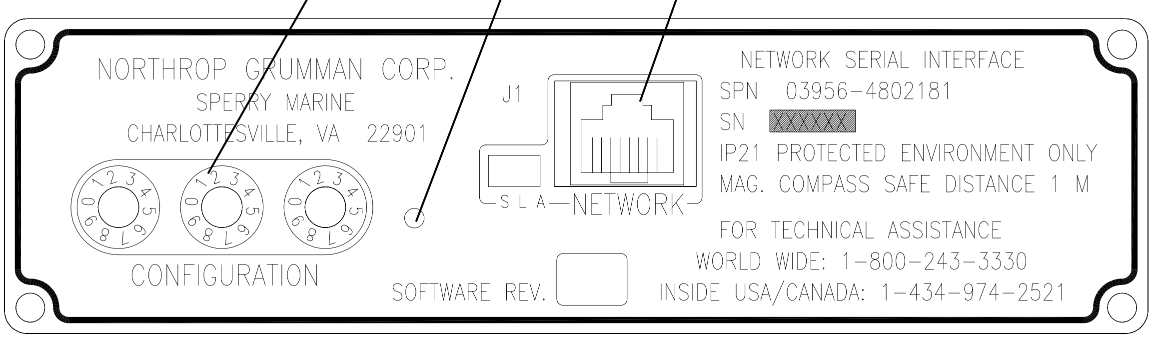


Figure 2-1. Network Serial Interface Front Panel

2-2 REAR PANEL

The Network Serial Interface rear panel is where the ship's ground, the ship's power, and the serial data cables are connected. Also included on the rear panel is a power (PWR) LED which lights when power is supplied to the NSI, a CPU LED which flashes when the NSI is functioning properly, and a receive (R) and transmit (T) LED which flashes when data is being transferred via the NSI.

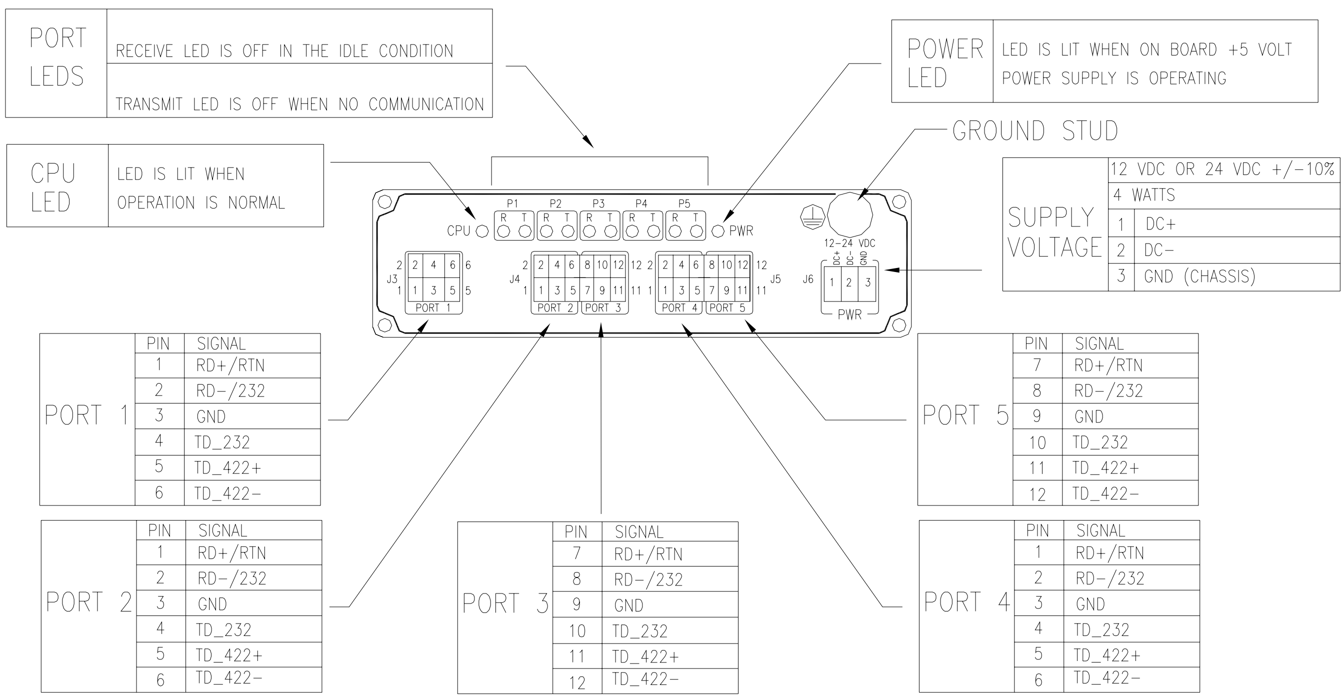


Figure 2-2. Network Serial Interface Rear Panel

CHAPTER 3
USING THE NSI IN SIMPLE MODE

3-1 NSI SIMPLE MODE OVERVIEW

The Network Serial Interface (NSI) front panel contains the configuration switches that are used to enter the three-digit identity of the NSI, the reset switch that is used to reset the NSI IP address and ports to the factory default settings, and the ethernet port that is used to connect the NSI to the Local Area Network.

The setting of the Configuration Switch determines one of two operating modes, Simple or Extended. For Simple Mode, the configuration switch settings are in the range 100 to 999.

In **Simple Mode** the configuration for a project is programmed into the Network Serial Interface firmware by Sperry Marine. Simple Mode has two differentiating features:

a. Configuration is quick and simple using the three digit Configuration Switch. No computer or special expertise is required.

b. The configuration is embodied in the firmware; it cannot be changed in the field.

Figure 3-1 shows and lists the configuration switches for the NSI to operate in Simple Mode.

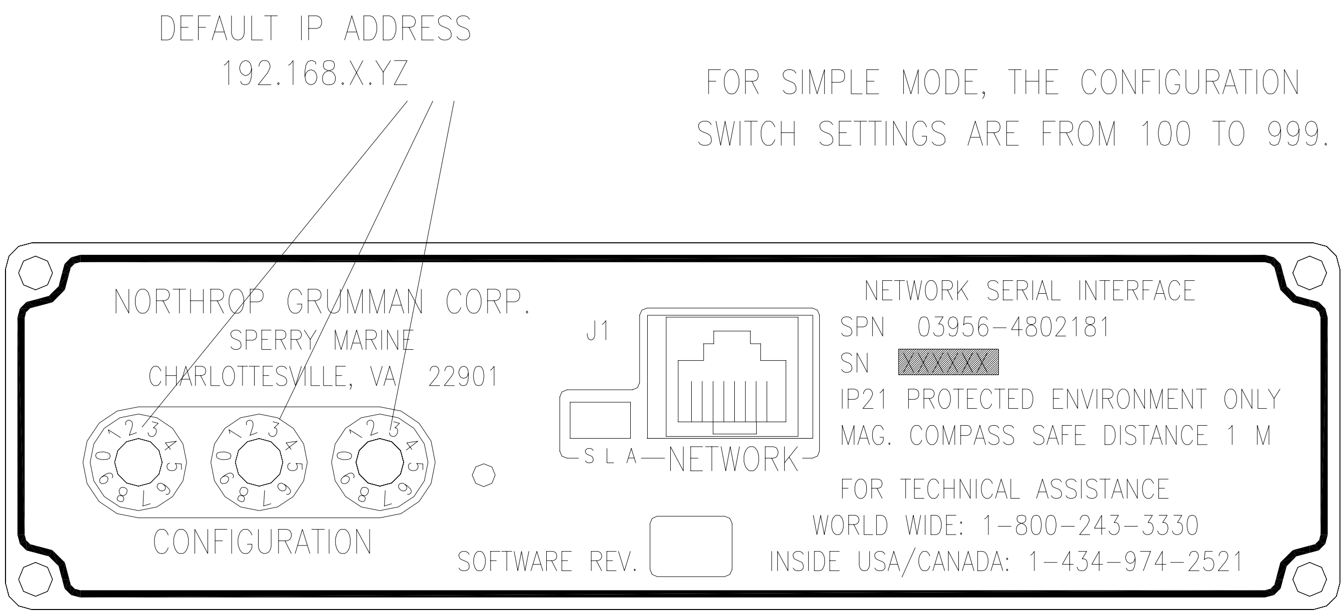


Figure 3-1. Configuration Switch Settings for Operating the NSI in Simple Mode

3-2 CONNECTING A COMPUTER TO ACCESS THE NSI IN SIMPLE MODE

There are two methods to connect a computer to check the status of a NSI in Simple Mode.

The first method is to connect a crossover cable directly from the Ethernet port on the computer to the network connection on the NSI. This method is useful when checking the status of the NSI at your desk.

The second method is to connect the computer directly to the network. The method is useful since the computer can communicate with all of the NSI units connected on the Local Area Network segment. The Cat5 cable works with the NSI when the NSI is connected to a network hub or router.

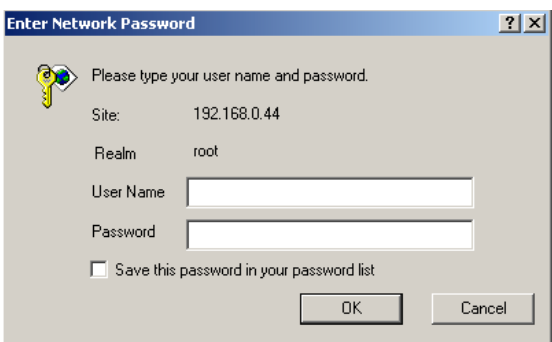
The following procedure is used to connect a computer to the network to access the NSI status web pages used in Simple Mode.

a. Set each NSI's switch to a unique number in the range from 100 to 999 (see figure 3-1). The resulting default IP address will be 192.168.1.00 to 192.168.9.99 with a default subnet mask of 255.255.0.0 (Simple Mode). If you cannot use these IP addresses because of a conflict, a crossover cable will be required to connect the computer directly to the NSI to change its IP address and subnet mask before attaching the NSI to the network.

b. Make sure that power is connected to the NSI(s).

c. Attach the computer to the network. **The computer must be on the same LAN segment as the NSI. Web page access is not supported through a router.**

d. Start the Internet browser. If using the default IP addresses, enter the URL **http://192.168.X.YZ** where 'XYZ' is the three digits (100 to 999 for simple mode) of the switch setting of the NSI that you will be communicating with. The following login box will appear. Login as '**user**' with password '**user**'.

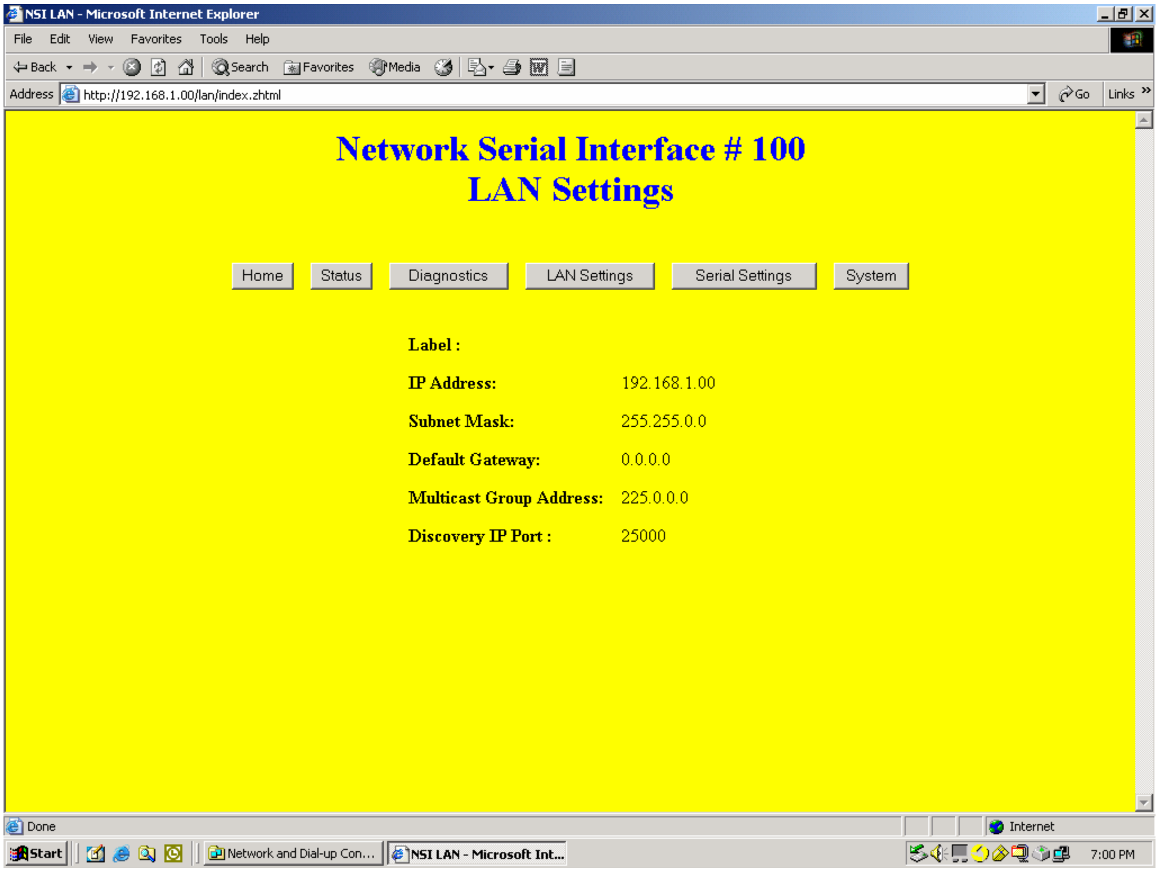


e. You will see the NSI's home page. If you have trouble accessing the NSI, check your computer's IP address and subnet mask.

NOTE

When using the Internet browser always disable page caching. Otherwise, you may see old values on the screen when navigating between pages. In Internet Explorer, you can go to Tools->Internet Options->General->Settings and under "Check for newer versions of stored pages" click on "Every visit to the page".

Figures 3-2 through 3-7 shows the status menus associated with the NSI operating in Simple Mode.



THIS MENU PROVIDES THE STATUS OF THE LAN SETTINGS USED WITH THE NSI.

Figure 3-2. NSI Home Page in Simple Mode

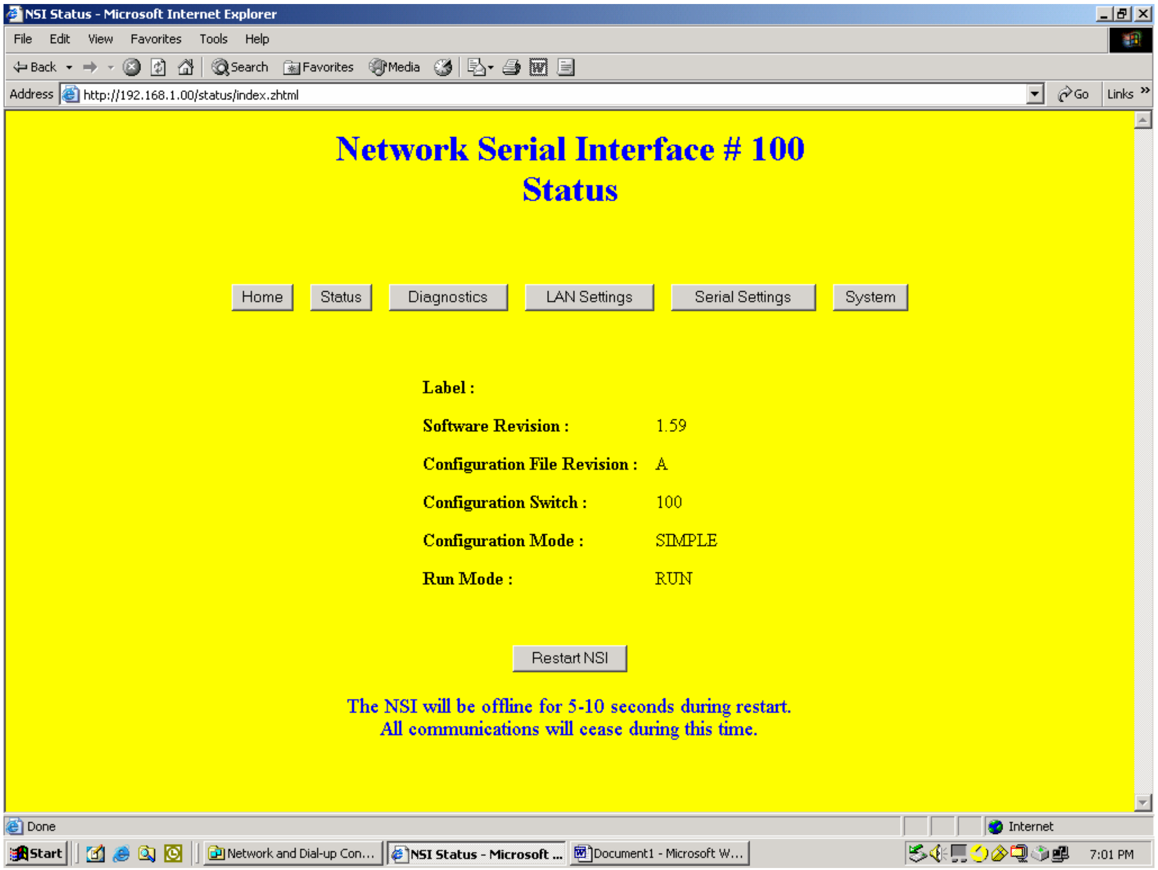


Figure 3-3. NSI Status Page in Simple Mode

Table 3-1. NSI Status Page in Simple Mode

Item		Description
1	Label	Enter a descriptive label for the NSI.
2	Software Revision	NSI firmware revision.
3	Configuration File Revision	This is the revision of the current configuration file. The revision will be the firmware revision (X.XX).
4	Configuration Switch	The setting of the three-digit switch 0-999.
5	Configuration Mode	SIMPLE, (switch setting 100-999), EXTENDED or EXTENDED DEFAULTS (switch setting 1-99), NO CONFIG, IDLE MODE (switch setting 0, shipping configuration)
6	Run Mode	Run, Error, Factory Test
7	Restart NSI	This button initiates an NSI restart.

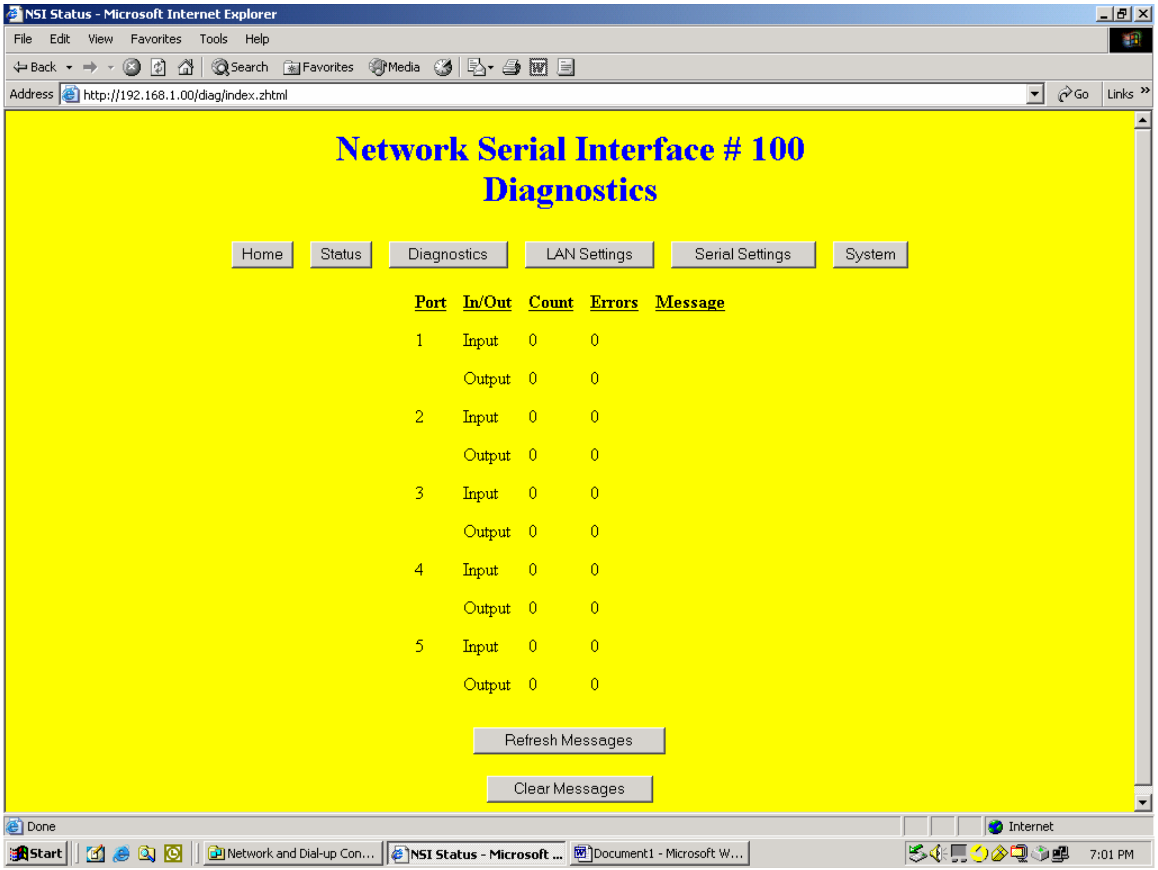


Figure 3-4. NSI Diagnostic Page in Simple Mode

Table 3-2. NSI Diagnostic Page in Simple Mode

Item		Description
1	Count	The number of valid NMEA messages received. This counter is reset at startup and rolls over after 65535.
2	Error	For inputs, an error is logged for an invalid NMEA message or if a timeout occurs. For outputs, an error indicates that a buffer overflow occurred, most often caused by a lower baud rate on the output than the on the input from which it is receiving data.
3	Message	The most recent message received or transmitted. If no messages have been received since startup, this field will be blank.
4	Refresh Messages	Use this button instead of the browser Refresh button.
5	Clear Messages	All message buffers and message counters will be cleared.

INFORMATION PAGE ONLY. THIS PAGE PROVIDES THE STATUS OF THE LAN SETTINGS.

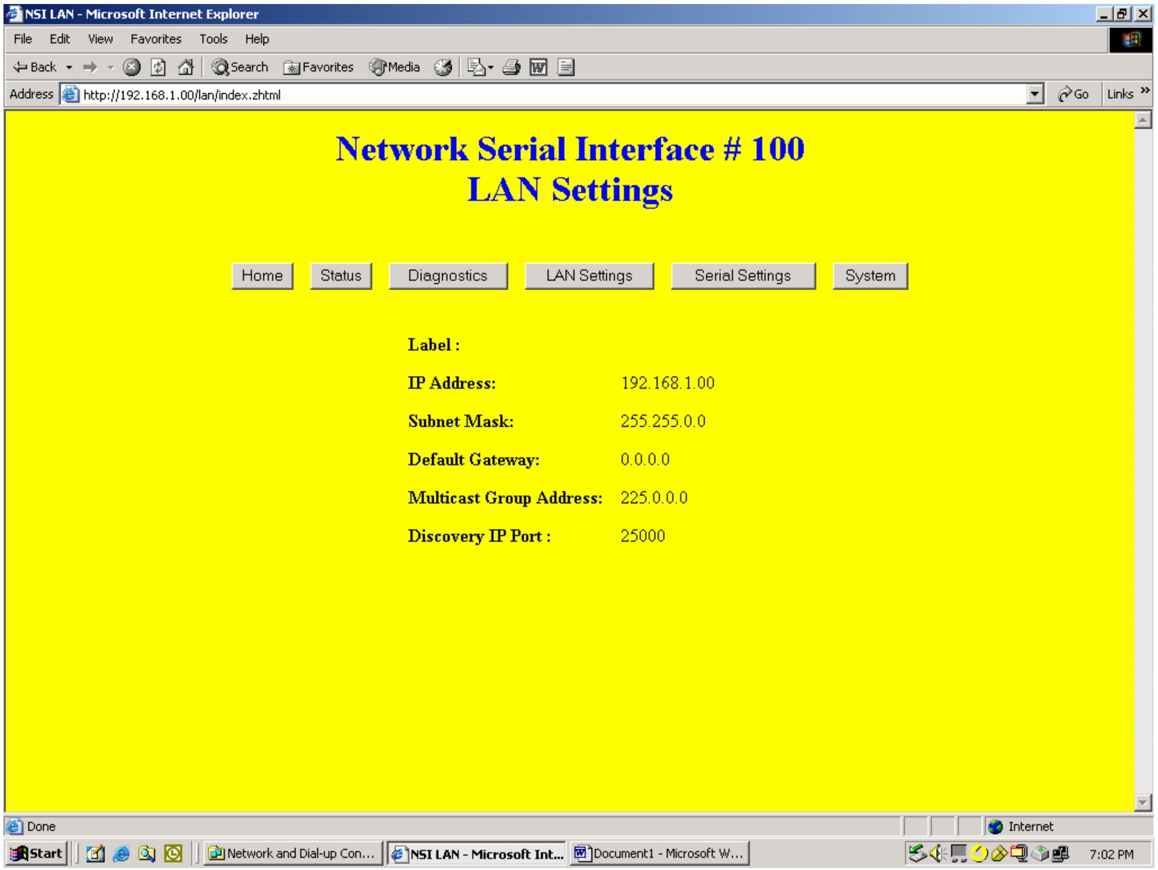
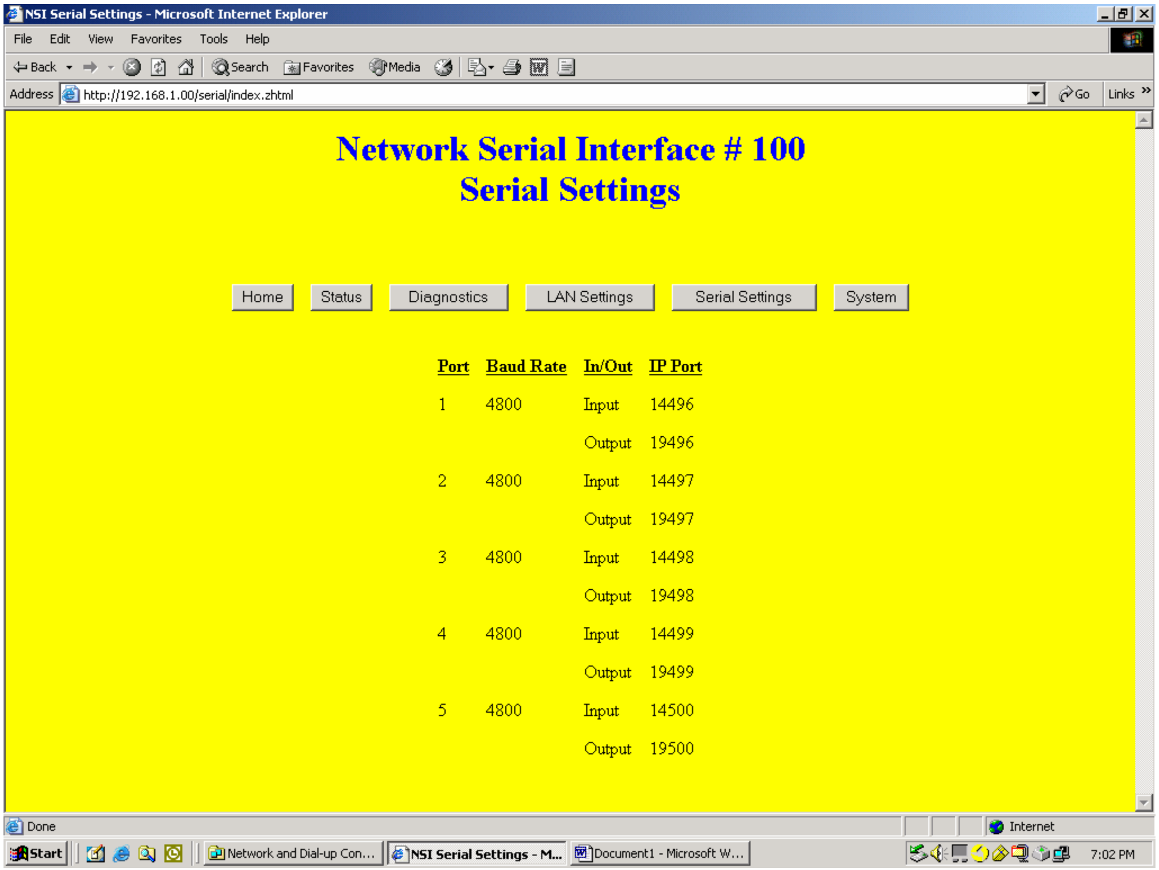


Figure 3-5. LAN Setting Page in Simple Mode



INFORMATION PAGE ONLY. THIS PAGE PROVIDES THE STATUS OF THE NSI SERIAL SETTINGS.

Figure 3-6. Serial Setting Page in Simple Mode

INFORMATION PAGE ONLY. THIS PAGE PROVIDES THE STATUS OF THE NSIs COMMECTED VIA THE NETWORK.

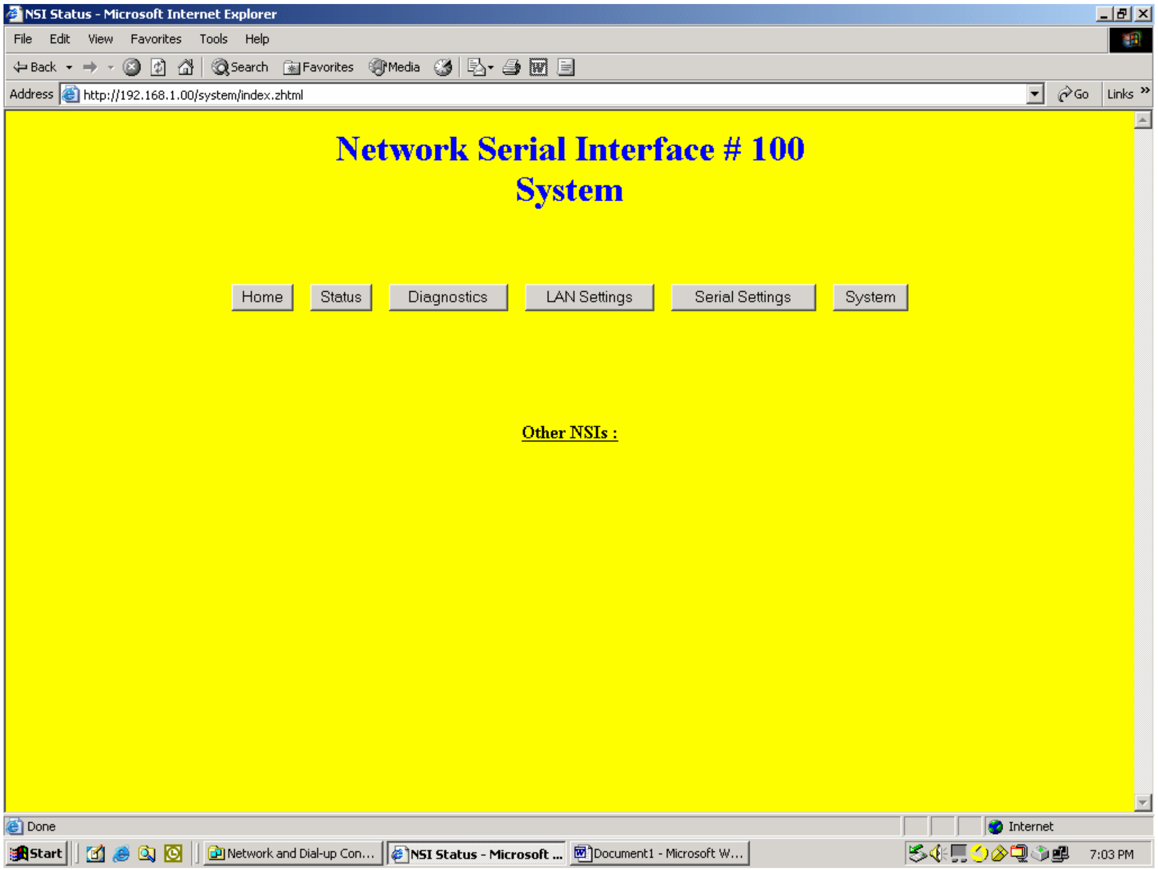


Figure 3-7. System Page in Simple Mode

3-3 COMMUNICATIONS WITH AN EXTERNAL COMPUTER

Some external computers such as a Voyage Management System will have the capability to directly communicate to NSI inputs and outputs over the LAN. Configuring these devices is beyond the scope of this document.

The information needed to configure an external computer will be found on the ‘Serial Settings’ page (IP Port) and the ‘LAN Settings’ page (Multicast Group Address).

Reset Button

The Reset button is recessed behind the NSI front panel, next to the Configuration switches. Operation is as follows:

Reset button activated	NSI restarts	Switch definition file defaulted
< 5 secs	Yes	No
> 5 secs	Yes	No
At power up	N/A	Yes

CPU Run LED

Approximately five seconds after startup, the CPU Run LED will start blinking once per second under normal conditions. If the LED blinks at a fast rate, an error such as a corrupted configuration file has been detected at startup. If this occurs, the configuration file can be reset to its defaults by depressing the Reset button at startup.

Performance

Two NSIs will delay the transmission of a NMEA message beyond that experienced with a traditional serial cable connection. The total delay comprises the sum of the following three elements:

- one message length
- 5-10 milliseconds for message processing
- any LAN traffic delays

Activation of the browser Refresh button, the Refresh Messages button or the Clear Messages button can temporarily increase the NSI’s message processing from 5 milliseconds to as much as 200 milliseconds. Messages will be delayed during this period, but not lost since the NSI employs message buffering.

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CHAPTER 4
USING THE NSI IN EXTENDED MODE

4-1 EXTENDED MODE OVERVIEW

When the Network Serial Interface (NSI) is used in Extended Mode, all of the configuration parameters (see Appendix B) can be changed in the field using a computer connected to the network. The settings of the configuration switches for Extended Mode are from 1 to 99 (see figure 4-1).

The following features have been incorporated to simplify the process for configuring the NSI in the Extended Mode:

- The defaults have been selected to minimize the amount of change required for most applications.
- The Wizard configures all of the NSIs as a system, by connecting a computer to just one NSI.
- 'Discovery' provides web page links to all of the NSIs currently online. Clicking on a link takes you directly to that NSI's home page.
- 'Recovery' will automatically configure a replacement NSI without human intervention.

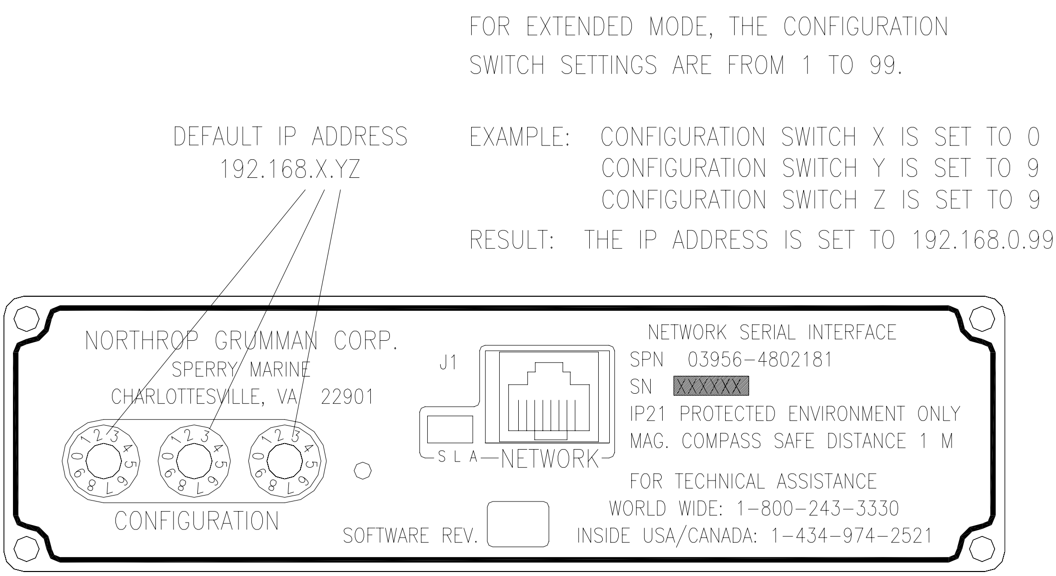


Figure 4-1. Configuration Switch Settings for Operating the NSI in Extended Mode

4-2 CONNECTING A COMPUTER TO ACCESS THE NSI

There are two methods to connect a computer to configure a NSI in Extended Mode.

The first method is to connect a crossover cable directly from the Ethernet port on the computer to the network connection on the NSI. This method is useful when configuring a single NSI.

The second method is to connect the computer directly to the network. The method is useful since the computer can communicate with all of the NSI units connected on the segment when configuring the input and output ports for the NSI.

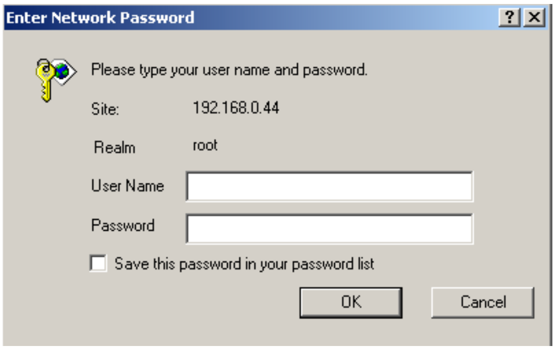
The following procedure is used to connect a computer to the network to access the NSI configuration and status web pages.

a. Set each NSI's switch to a unique number in the range 1 to 99 (see figure 4-1). The resulting default IP address will be 192.168.0.1 to 192.168.0.99 with a default subnet mask of 255.255.255.0 (Extended Mode). If you cannot use these IP addresses because of a conflict, a crossover cable will be required to connect the computer directly to the NSI to change its IP address and subnet mask before attaching the NSI to the network.

b. Make sure that power is connected to the NSI(s).

c. Attach the computer to the network. **The computer must be on the same LAN segment as the NSI. Web page access is not supported through a router.**

d. Start the Internet browser. If using the default IP addresses, enter the URL **http://192.168.X.YZ** where 'XYZ' is the three digits (001-099) of the switch setting of the NSI that you will be communicating with. The following login box will appear. Login as '**user**' with password '**user**'.



e. You will see the NSI's home page. If you have trouble accessing the NSI, check your computer's IP address and subnet mask. If the IP address of the NSI is in question, you can default it by pressing the Reset button for five seconds.

NOTE

When using the Internet browser always disable page caching. Otherwise, you may see old values on the screen when navigating between pages. In Internet Explorer, you can go to Tools->Internet Options->General->Settings and under "Check for newer versions of stored pages" click on "Every visit to the page".

4-3 USING THE WIZARD IN EXTENDED MODE

After the NSI(s) and computer have been connected to the network and the NSI configuration web page has been accessed, the Wizard can be used to configure the input and output ports in the Extended Mode. The Wizard assumes that:

- The baud rate of the input and output (of a pair) is the same.
- The default IP port assignments of the inputs have not been changed
- The 'Multicast Group Address' and 'Discovery IP port number' of all NSIs is the same

To use the wizard follow these steps:

a. Turn on all of the NSIs.

b. Access the first NSI's home page using the procedure described in paragraph 4-2. The Network Serial Interface Home Page should appear (see figure 4-2).

c. Select the "Run the Wizard" button to begin the process. The Wizard Add Page (figure 4-3) will appear. Use the NSI Wizard Worksheet (Appendix D) as a reference to record the configuration data during this process.

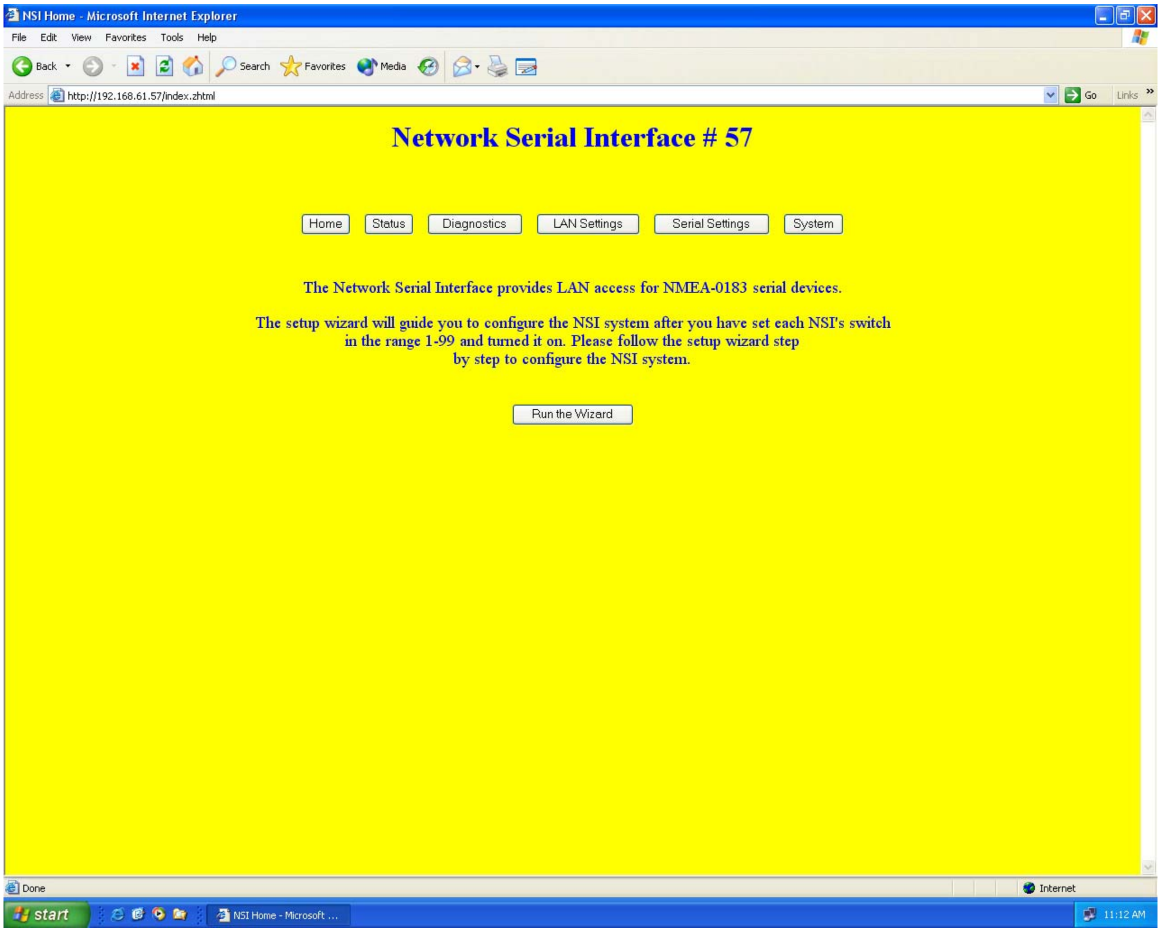


Figure 4-2. NSI Home Page in Extended Mode

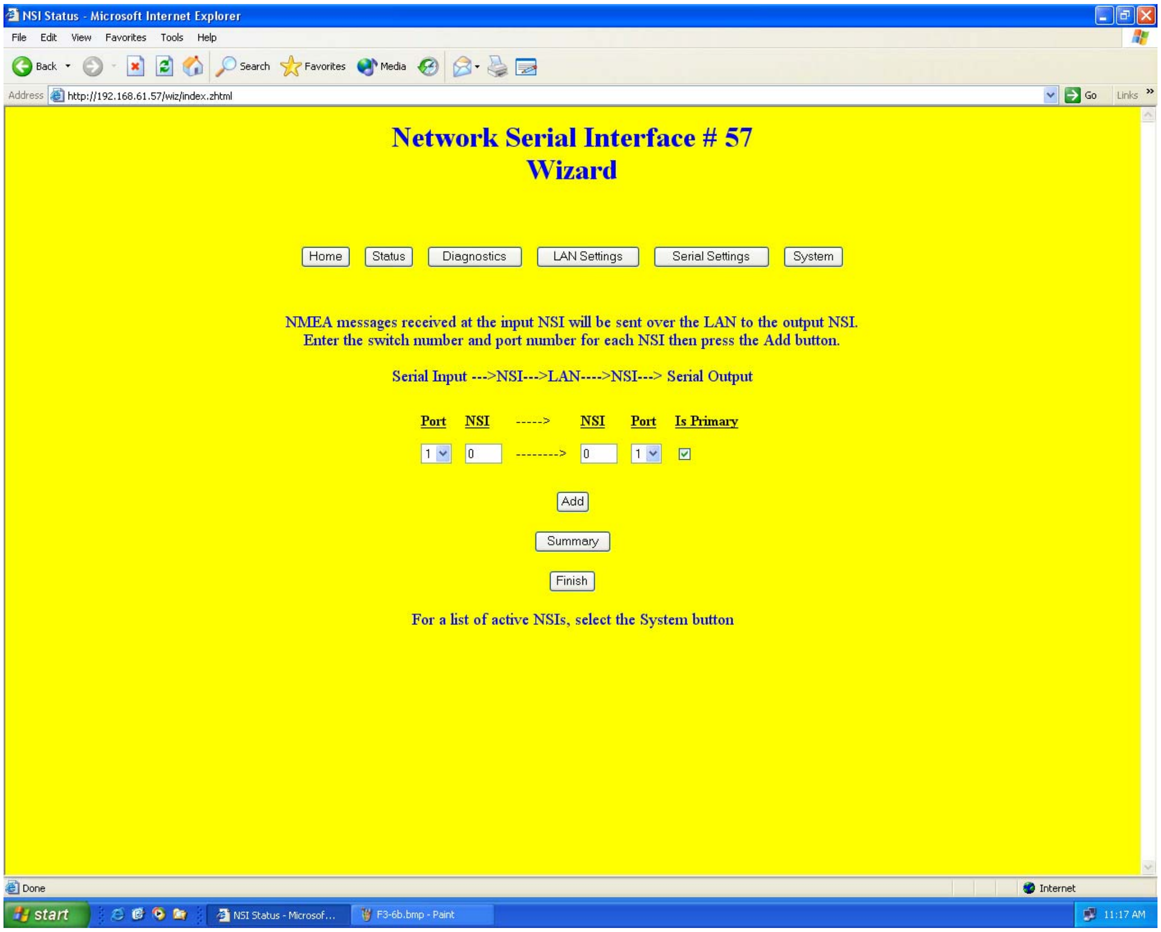


Figure 4-3. NSI Wizard Add Page

d. The Wizard will configure the system such that any NMEA messages received at the input NSI port (left) will be sent over the LAN to the output NSI port (right) (see figure 4-3). The Is Primary checkbox is used to determine if the input is a primary input from the LAN (checkbox is selected) or if it is a secondary input from the LAN (checkbox is not selected). Enter the NSI number and port number for each NSI then press the Add button. Valid NSI numbers for the input port on the left are from 1 to 99 and valid output port numbers for the NSI on the right are from 1 to 99. An input port can supply data to output(s) on the same NSI or other NSI(s). If an input port is supplying data to multiple outputs, enter each input-output combination separately.

e. Continue entering input-output pairs until the system is configured then select Finish.

NOTE

The Wizard only configures online NSIs. To check which NSI(s) is online, use the System button. To see the current configuration at any time, select the Summary button.

f. Select the Summary button to see the Wizard Summary page (figure 4-4). Additions may take several refreshes to appear in the list. Use the refresh button if a new addition does not appear immediately.

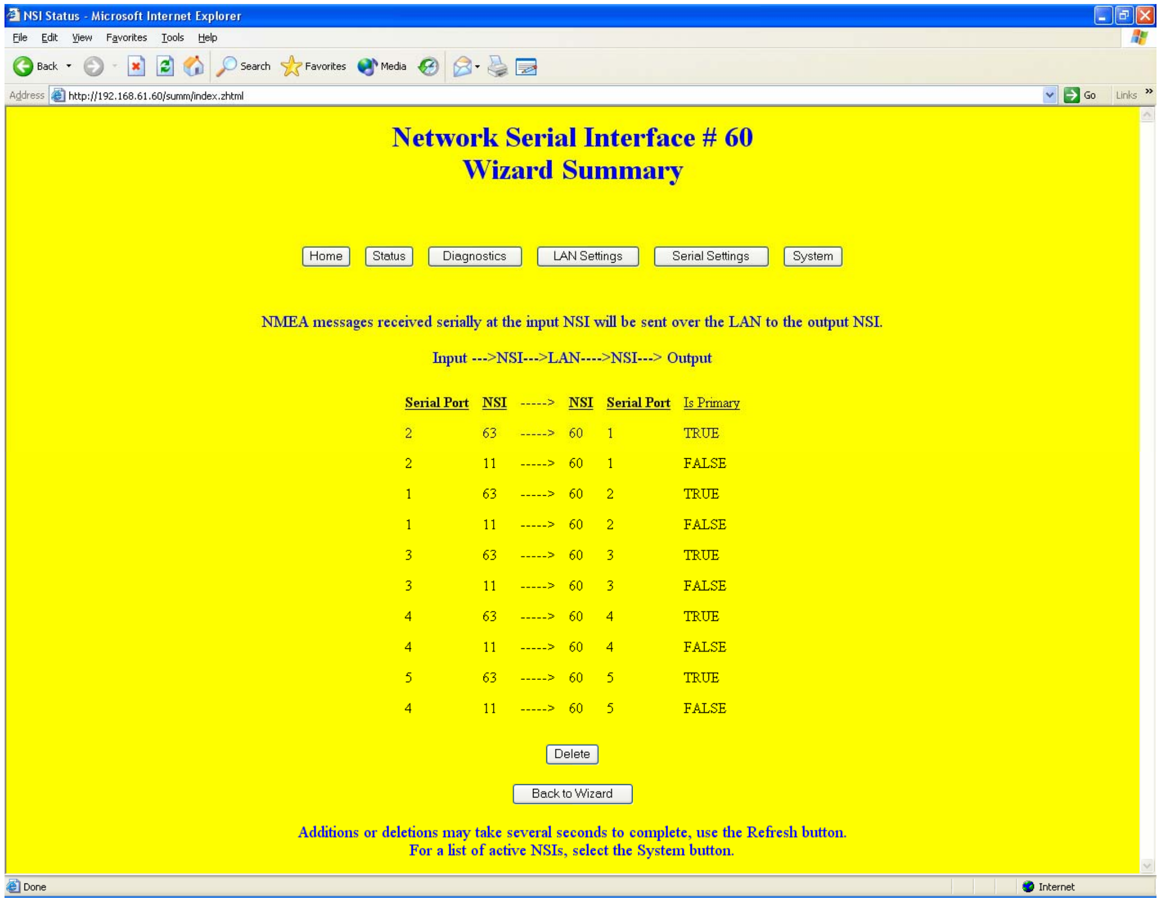


Figure 4-4. NSI Wizard Summary Page

g. To continue to add input-output pairs, select the ‘Back to Wizard’ button. To delete an entry, select the Delete button.

h. Figure 4-5 shows the Wizard ‘deletion’ page. To delete an entry, enter the output NSI and output port number then press the Delete button. To change an entry, first delete it then add the new one.

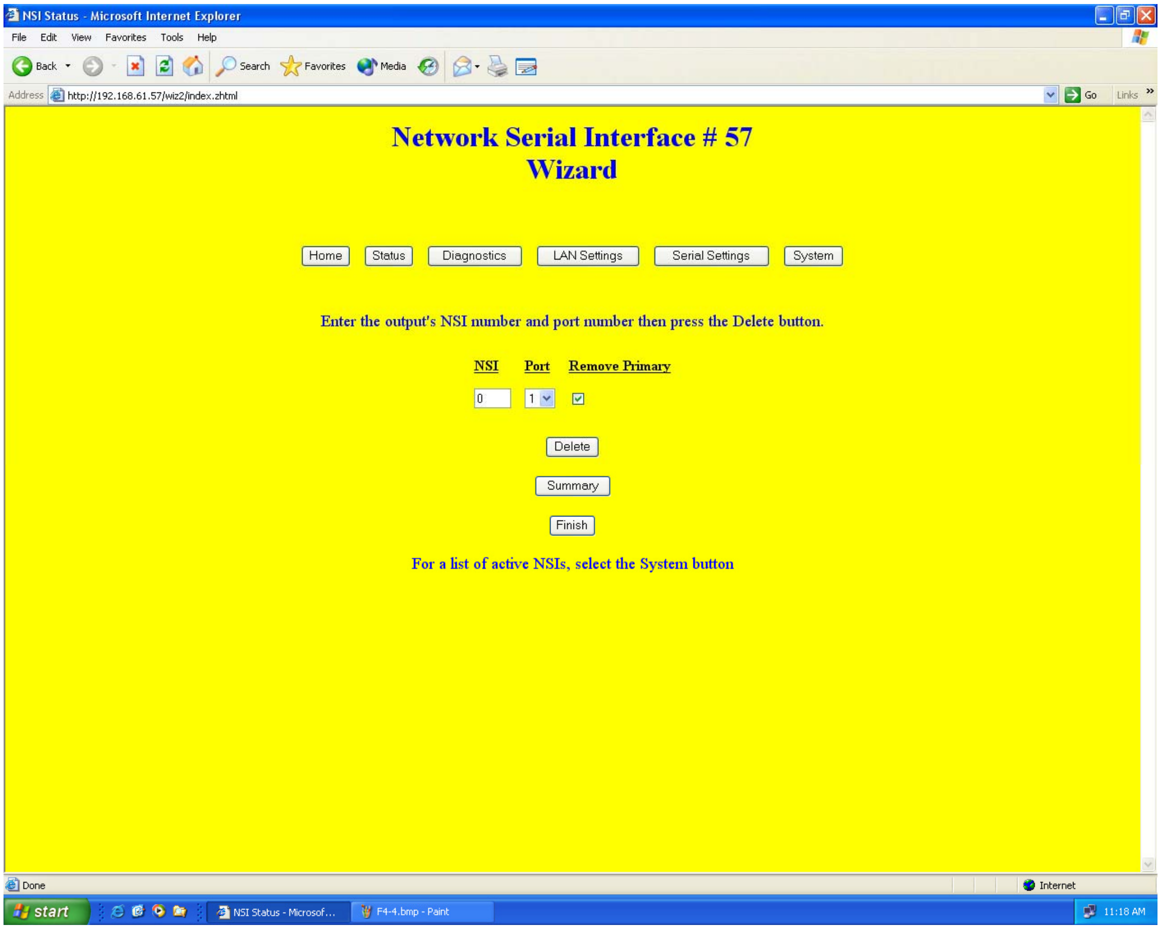


Figure 4-5. NSI Wizard Delete Page

4-4 CHANGING THE DEFAULTS

This section explains how to use the built-in menus to change the configuration defaults of a NSI in Extended Mode. **You may want to disable the Configuration Recovery feature before proceeding** (see paragraph 4-5 - Configuration Recovery).

Do not change the IP port assignments because the Wizard will perform this step for you automatically. Use the Configuration Worksheet in Appendix C to record the changes.

a. Access the NSI's home page (figure 4-6).

b. Select the "LAN Settings" or "Serial Settings" buttons to configure the NSI. See the 'LAN Settings' (figure 4-8 and table 4-3) or 'Serial Settings' (figure 4-9 and table 4-4) for descriptions and instructions on changing the defaults.

c. Once the NSI has been configured, use the System button to navigate to the next NSI if it is on the same LAN segment as your computer (see figure 4-7 and table 4-2).

d. Repeat steps a through c until all NSIs are configured.

NOTE

When using the Internet Explorer Browser, always disable page caching, otherwise you may see old values when selecting a new page. In Internet Explorer, you can go to Tools->Internet Options->General->Settings and under "Check for newer versions of stored pages" click on "Every visit to the page".

4-4.1 NSI Home Page (Extended Mode)

Figure 4-6 and table 4-1 illustrate and describe the buttons associated with the NSI Home page.

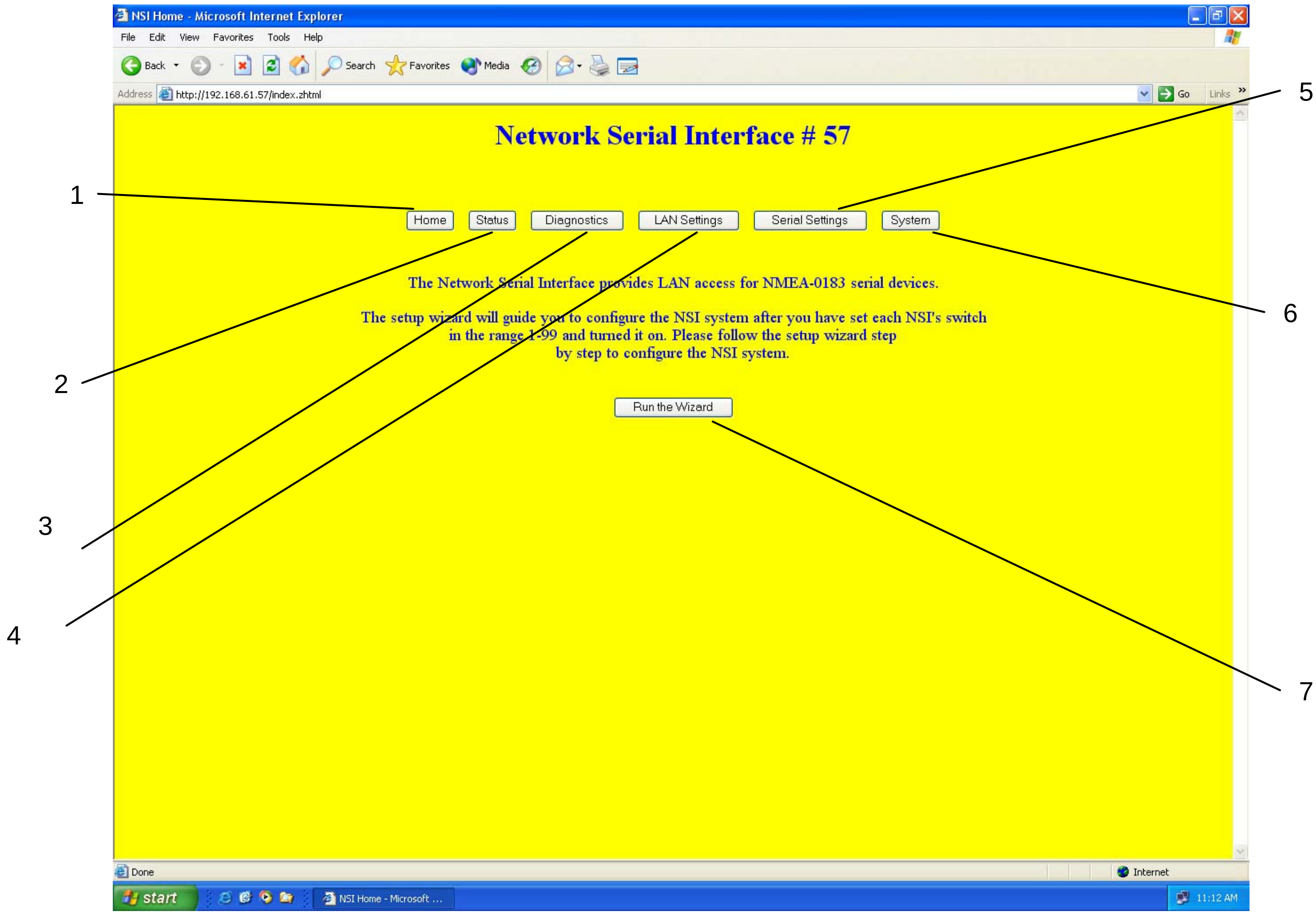


Figure 4-6. NSI Home Page Button Layout

Table 4-1. NSI Home Page Button Layout

Item	Button	Description
1	Home	Home page. The configuration wizard is initiated here.
2	Status	Status page. NSI label, Configuration Mode and Run Mode.
3	Diagnostics	Diagnostics page. Message counts, error counts and most recent message for each input and output. NSI Reset button.
4	LAN Settings	LAN Settings page. IP address, mask, default gateway, multicast group address, discovery IP port number and Configuration Recovery Enable.
5	Serial Settings	Serial Settings page. Baud rate, IP port numbers for inputs and outputs.
6	System	Displays a link to each NSI in the system.
7	Run the Wizard	Steps you through configuration of the inputs and outputs.

NORTHROP GRUMMAN
Sperry Marine

4-4.2 NSI System Page

Figure 4-7 and table 4-2 illustrate and describe the check boxes and NSI information presented on the NSI System page.

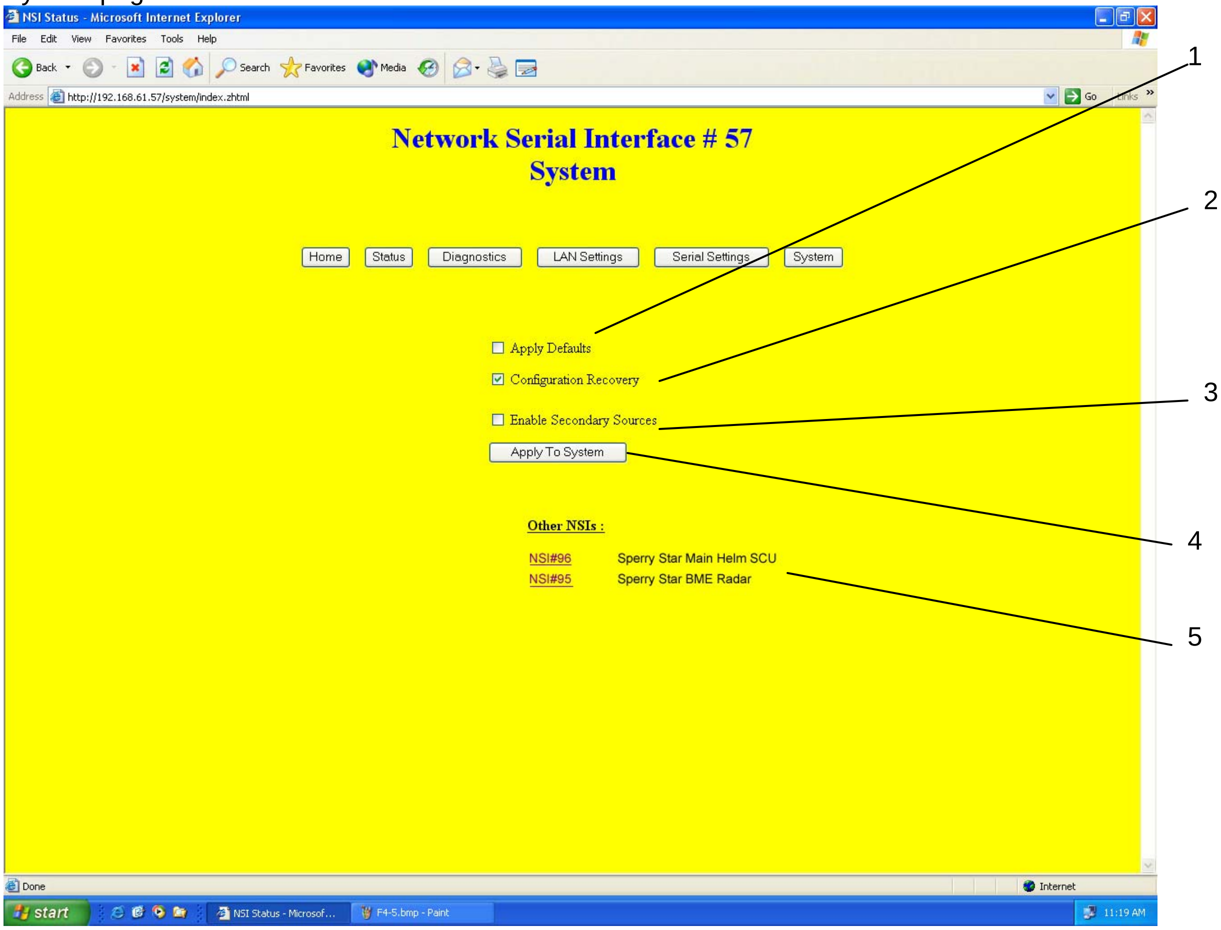


Figure 4-7. NSI System Page

Table 4-2. NSI System Page

Item	Button	Description
1	Apply Defaults	If this checkbox is selected, the configuration is forced to default values when the ‘Apply To System’ button is activated. All parameters are defaulted except the Configuration Recovery feature.
2	Configuration Recovery	Check this box to enable the configuration recovery feature. The default setting is Enabled. Refer to paragraph 4-5 for a description of the Configuration Recovery feature.
3	Enable Secondary Sources	Check this box to enable a secondary network input port for each serial output port.
4	Apply To System	Select this button after the two previous parameters have been changed and you are ready to submit the new values to the NSI. After this button is selected, all of the NSIs automatically restart.
5	Other NSIs	This is a list of all other NSIs discovered in the system. In order to be discovered, all NSIs should have the same Multicast Group Address and Discovery IP Port assignment. To go to the home page of any NSI in the list, just click on its link.

4-4.3 The LAN Settings Page (Extended Mode)

Figure 4-8 and table 4-3 illustrate and describe the settings associated with the LAN Settings page. These settings can be changed only in Extended Mode (switch number = 1-99).

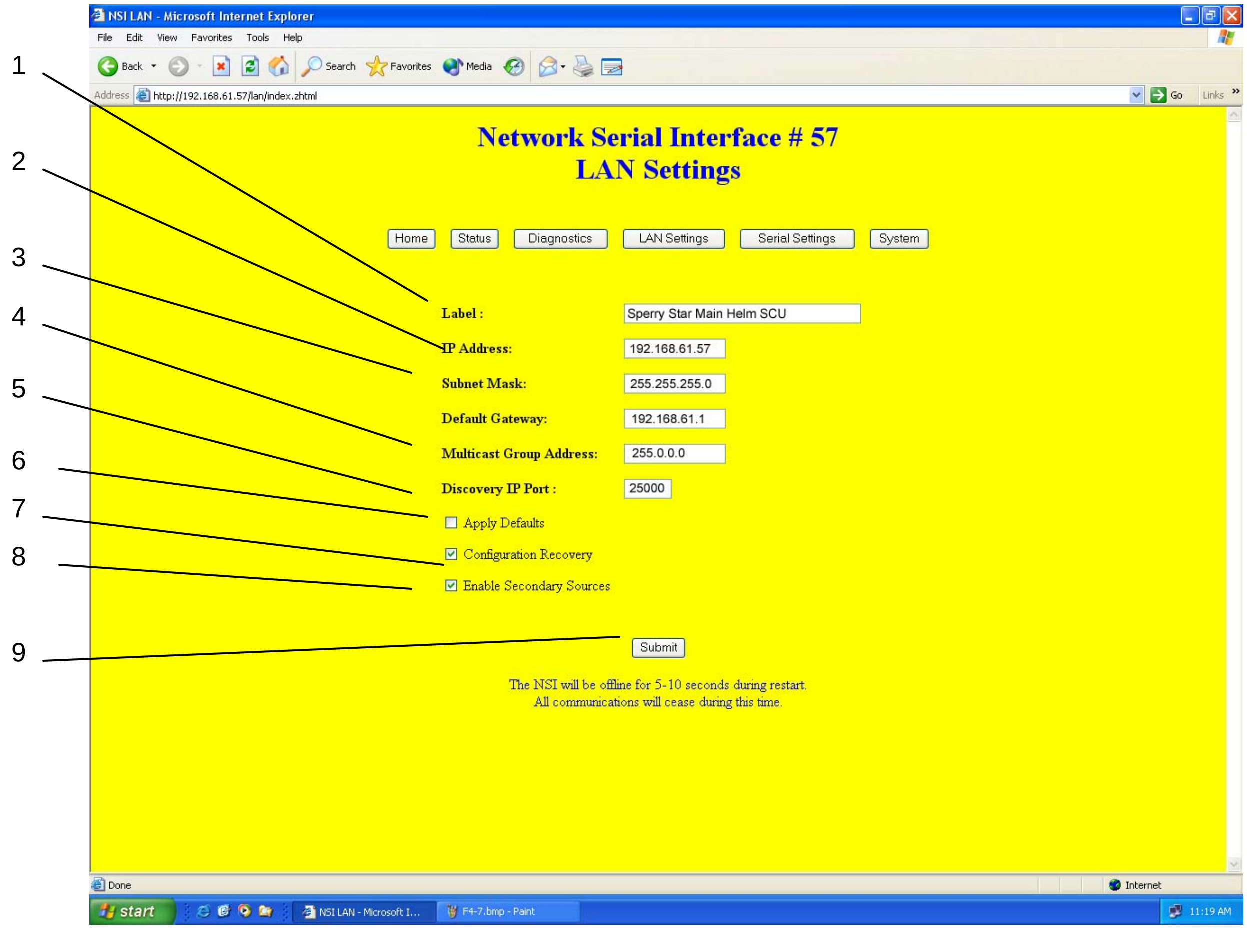


Figure 4-8. NSI LAN Settings Page

Table 4-3. NSI LAN Settings Page

Item		Description
1	Label	Enter a label for each NSI. Each NSI listed on the System page displays the NSI switch number, and this label.
2	IP Address	Enter an IP address. This is used for web browser and FTP access only. The default address is 192.168.0.1 - 192.168.0.99 corresponding to the three digit switch setting (1-99) of each NSI. Be aware that the default IP address for a particular NSI will track its switch number, ie if the switch number is changed, the default IP address will change as well.
3	Subnet Mask	Enter the subnet mask. The default is 255.255.255.0.

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Sperry Marine

Table 4-3. NSI LAN Settings Page

Item		Description
4	Multicast Group Address **	Enter the four octet address. The default is 225.0.0.0. The same Multicast Group Address should be used on all NSIs on the network. NSI inputs and outputs with the same Multicast Group Address and IP Port Number will communicate. The lower 23 bits of the multicast group address must be unique in order to avoid address conflicts. The 23 bits are part of the last three octets, ie in 225.0.0.0 the lower 23 bits are all zeroes.
5	Discovery IP Port Number	Enter an IP Port number from 0-65535 that will be used to discover all of the NSIs in the system. The default setting is 25000 which reserves 25000-25002.
6	Apply Defaults	If this checkbox is selected, defaults are applied when the Submit button is pressed. All parameters are defaulted except the Configuration Recovery feature.
7	Configuration Recovery	Check this box to enable the configuration recovery feature. The default setting is Enabled. Refer to paragraph 4-5 for the description of the Configuration Recovery feature.
8	Enable Secondary Sources	Check this box to enable a secondary network input port for each serial output port.
9	Submit button	Select this button after all parameters have been changed and you are ready to submit the new values to the NSI. After this button is activated, the NSI automatically restarts.

** Most applications should use normal Class D multicast addresses 224.0.0.0-239.255.255.255. However, any valid dotted octet 0.0.0.0-255.255.255.255 will be accepted so as not to eliminate the option of UDP unicast or broadcast.

4-4.4 Serial Settings Page

Figure 4-9 and table 4-4 illustrate and describe the Serial Settings page. These settings can be changed only in Extended Mode.

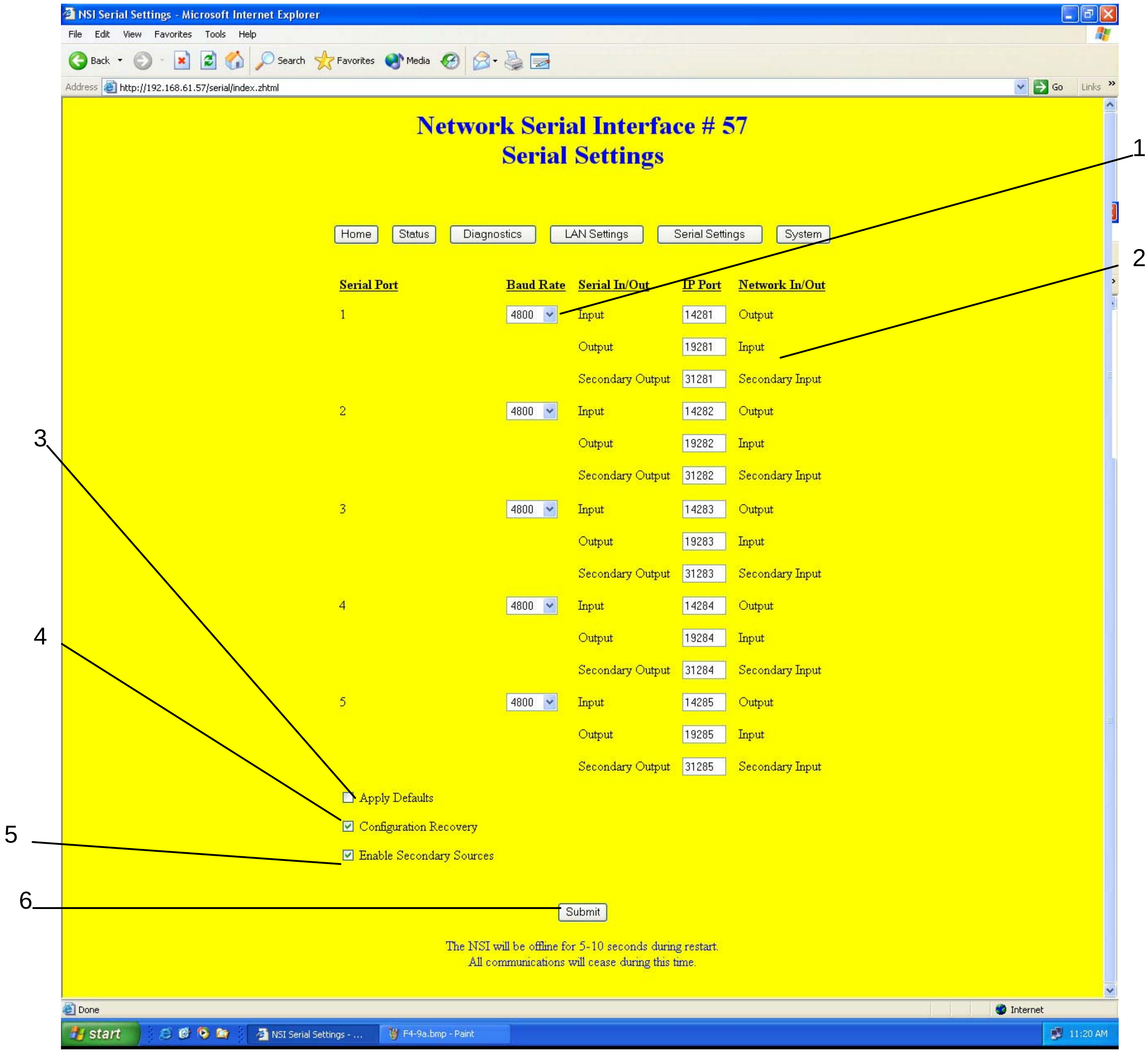

Figure 4-9. NSI Serial Settings Page

Table 4-4. NSI Serial Settings Page

Item		Description
1	Baud Rate	Select 1200, 2400, 4800, 9600, 19200, or 38400 baud.

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Table 4-4. NSI Serial Settings Page

Item		Description
2	IP Port number (do not change)	NSI inputs and outputs with the same IP Port Number and Multicast Group Address will communicate. Default IP Port Numbers 14001-14495 correspond to the inputs of NSIs with switch numbers 1-99. Default IP Port Numbers 19001-19495 correspond to the outputs of NSIs with switch numbers 1-99. Be aware that the default IP port numbers for a particular NSI will track its switch number, ie if the switch number is changed, the default IP port numbers will change as well.
3	Apply Defaults	If this checkbox is selected, the configuration is forced to default values when the Submit button is activated. All parameters are defaulted except the Configuration Recovery feature.
4	Configuration Recovery	Check this box to enable the configuration recovery feature. The default setting is enabled. This feature is described in paragraph 4-5.
5	Enable Secondary Sources	Check this box to enable a secondary network input port for each serial output port.
	Submit button	Select this button after all parameters have been changed and you are ready to submit the new values to the NSI. After this button is selected, the NSI automatically restarts.

4-5 CONFIGURATION RECOVERY

The Configuration Recovery feature will automatically sense and configure a new NSI in Extended Mode (switch setting 1-99) that is connected to the network. The new NSI must have the same switch number as the NSI that it is replacing. The new NSI will automatically be configured from a copy of the old NSI's configuration, supplied by one of the other NSIs on the LAN.

The new NSI must have a default configuration and its Configuration Recovery feature must be enabled. This will be the case for any NSI received from the factory. To insure that an NSI is in this state, press its Reset button for at least five seconds before connecting it to the LAN, or hold down its Reset button at power up.

Once an NSI is communicating on the LAN, it will save the configuration of all of the other NSIs in its system configuration file in flash memory. **Before an NSI is re-connected to a LAN after a period of absence, its Reset button should be initially depressed for five seconds or more to clear out any old system configuration data in its flash memory**. Alternatively, the Reset button can be held down at power up.

When configuring a system, the Recovery feature should first be disabled on all NSIs. Otherwise, you will not be able to default an NSI's configuration because it will be automatically restored from another NSI on the LAN. To disable the Recovery feature, de-select the 'Configuration Recovery' checkbox on the LAN Settings page or on the System web page. Do not use the Reset button to default configuration since this enables Configuration Recovery. Instead, use the "Apply Defaults" button on the "LAN Settings" page. The "Apply Defaults" button defaults all parameters *except Configuration Recovery*.

The Configuration Recovery feature will automatically restore all configuration parameters *except the Configuration Recovery setting*.

4-6 NSI STATUS AND DIAGNOSTICS

Figure 4-10 and table 4-5 illustrate and describe the information associated with the NSI Status page. Figure 4-11 and table 4-6 illustrate and describe the information associated with the NSI Diagnostic page.

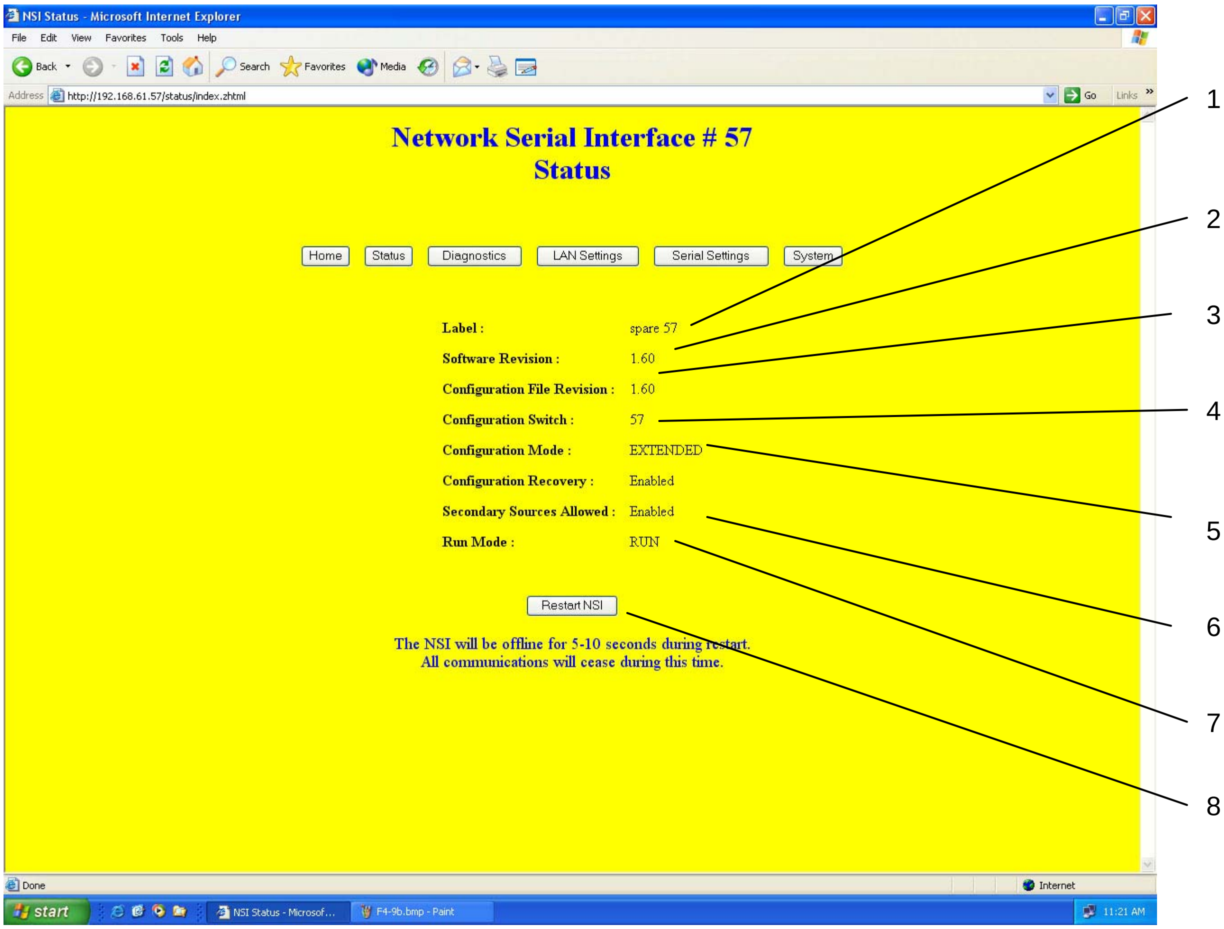


Figure 4-10. NSI Status Page

Table 4-5. NSI Status Page

Item		Description
1	Label	Enter a descriptive label for the NSI.
2	Software Revision	NSI firmware revision.
3	Configuration File Revision	This is the revision of the current configuration file. The revision will be the firmware revision (X.YY) under which the configuration was last changed.
4	Configuration Switch	The setting of the three-digit switch 0-999.
5	Configuration Mode	SIMPLE, (switch setting 100-999), EXTENDED or EXTENDED DEFAULTS (switch setting 1-99), NO CONFIG, IDLE MODE (switch setting 0, shipping configuration)
6	Secondary Sources Allowed	Indicates whether secondary sources have been enabled or not.
7	Run Mode	Run, Error, Factory Test
8	Restart NSI	This button initiates an NSI restart.

NOTE

To update the values on the NSI Diagnostic page, select the Internet browser Refresh button.

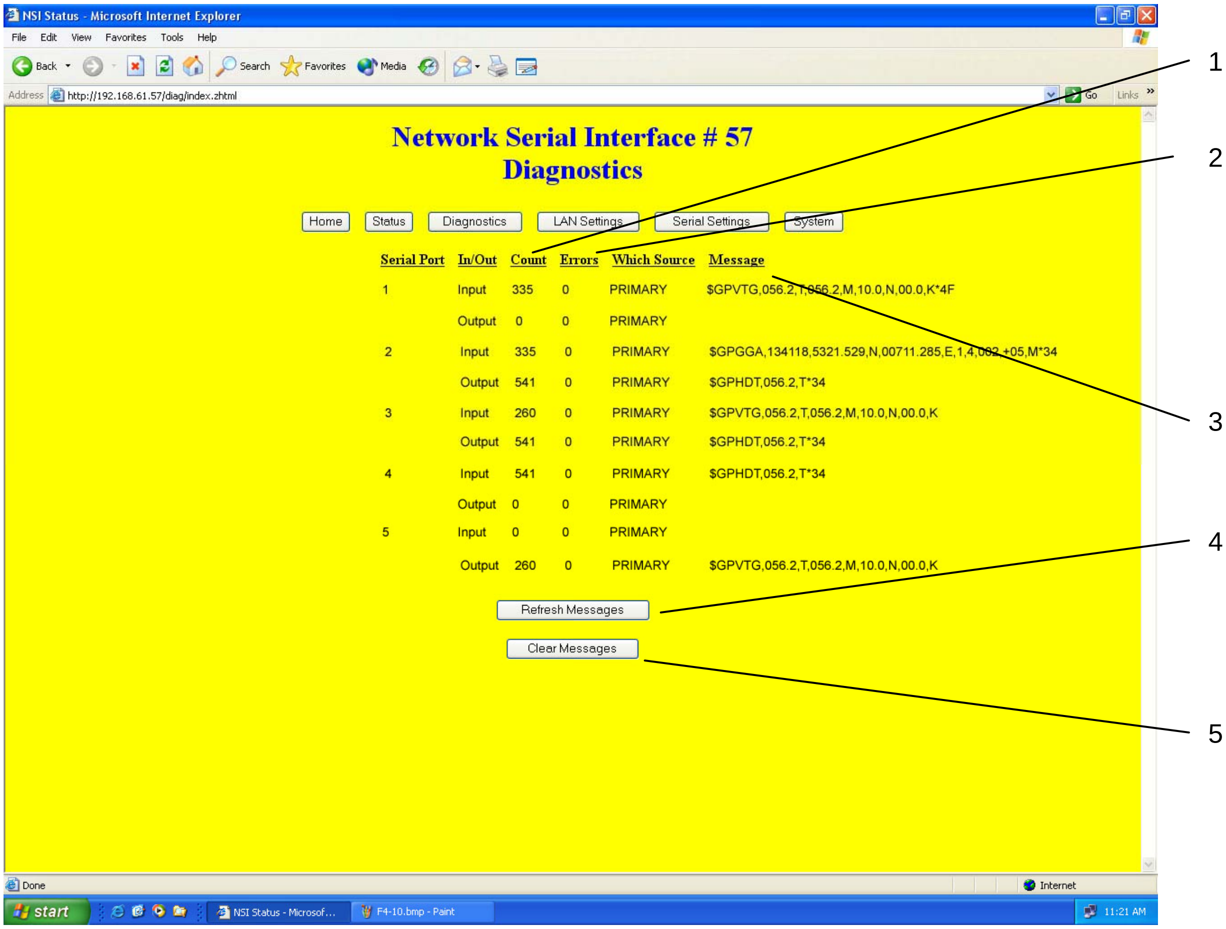


Figure 4-11. NSI Diagnostic Page

Table 4-6. NSI Diagnostic Page

Item		Description
1	Count	The number of valid NMEA messages received or transmitted per serial port. This counter is reset at startup and rolls over after 65535.
2	Error	For inputs, an error is logged for an invalid NMEA message or if a timeout occurs. For outputs, an error indicates that a buffer overflow occurred, most often caused by a lower baud rate on the output than the on the input from which it is receiving data.
3	Message	The most recent message received or transmitted. If no messages have been received since startup, this field will be blank.
4	Refresh Messages	Use this button instead of the browser Refresh button.
5	Clear Messages	All message buffers and message counters will be cleared.

4-7 COMMUNICATIONS WITH AN EXTERNAL COMPUTER

Some external computers such as a Voyage Management System have the capability to directly communicate to the NSI inputs and outputs over the LAN. Configuring these devices is beyond the scope of this document.

The information needed to configure an external computer will be found on the 'Serial Settings' page (IP Port) and the 'LAN Settings' page (Multicast Group Address).

The Configuration Switch

After an NSI has been configured, changing its Configuration Switch setting may disrupt communications to other NSIs and external computers such as a Voyage Management System. This is because the default IP port numbers will change since they are derived from the Configuration Switch setting (see the Configuration Defaults in Appendix B).

Configuration files

The NSI maintains three configuration files in its flash memory:

File	Flash file name	Description
Configuration	file1	Extended Mode configuration
Switch definitions	file2	Simple Mode configuration
System configuration	file3	used during Configuration Recovery

Reset Button

The Reset button is recessed behind the NSI front panel, next to the Configuration switches. Operation is as follows:

Reset button activated	NSI restarts	Config file defaulted	System config file defaulted	Switch definition file defaulted
< 5 secs	Yes	No	No	No
> 5 secs	Yes	Yes	Yes	No
At power up	N/A	Yes	Yes	Yes

The configuration file can be downloaded or uploaded as discussed in the FTP section below.

CPU Run LED

Approximately five seconds after startup, the CPU Run LED will start blinking once per second under normal conditions. If the LED blinks at a fast rate, an error such as a corrupted configuration file has been detected at startup. If this occurs, the configuration file can be reset to its defaults by depressing the Reset button at startup.

FTP

The NSI supports an FTP (File Transfer Protocol) server for file upload and download. This can be used to archive the configuration file to a computer and to later restore it to an NSI. An FTP client such as 'WS FTP Pro' (Ipswitch Software) is recommended. When using FTP, the login is "**user**" and the password "**user**". This login provides both download and upload privileges for the configuration file. The configuration file ("**file1**") can be found under the "**/fs2"** subdirectory.

After downloading a new configuration file, the new configuration will not take effect until the NSI is power cycled with the Reset button held down at startup for 10 seconds.

In the **/fs2** directory you will see other files ("**file2**", "**file3**"). These are not intended for user access.

Performance

Two NSIs will delay the transmission of a NMEA message beyond that experienced with a traditional serial cable connection. The total delay comprises the sum of the following three elements:

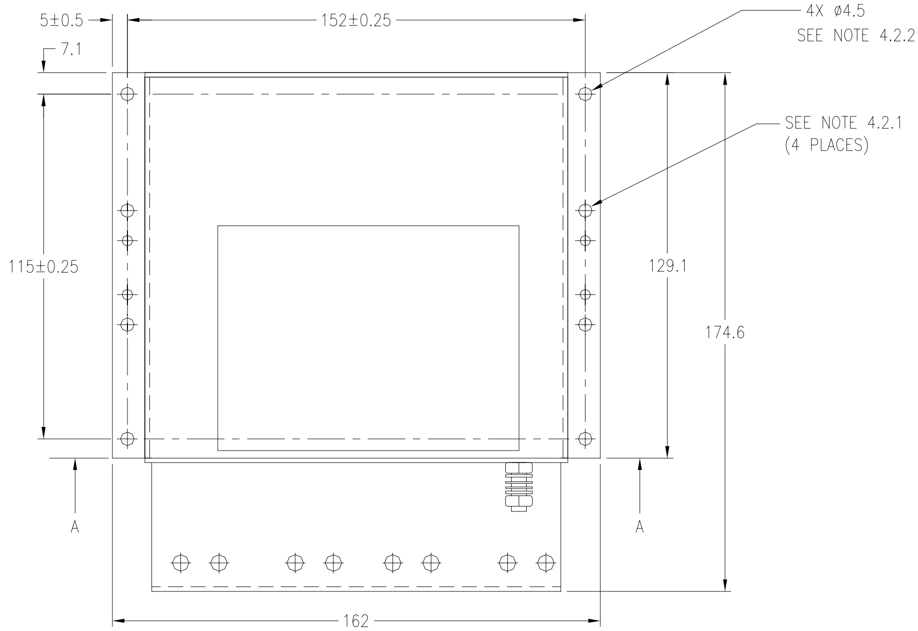
- one message length
- 5-10 milliseconds for message processing
- any LAN traffic delays

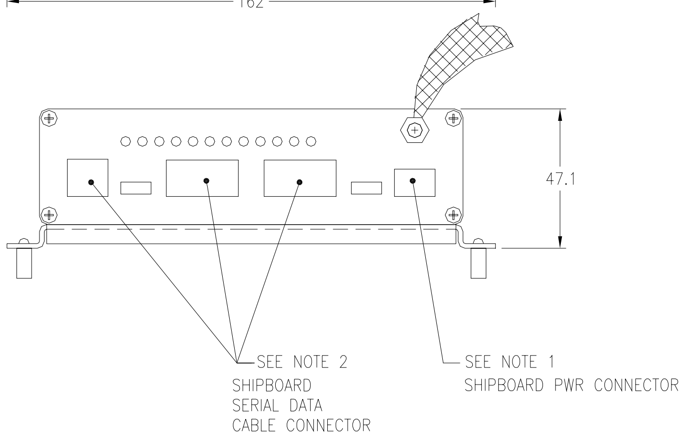
Activation of the browser Refresh button, the Refresh Messages button or the Clear Messages button can temporarily increase the NSI's message processing from 5 milliseconds to as much as 200 milliseconds. Messages will be delayed during this period, but not lost since the NSI employs message buffering.

APPENDIX A
NETWORK SERIAL INTERFACE MOUNTING DIMENSIONS

A-1 INTRODUCTION

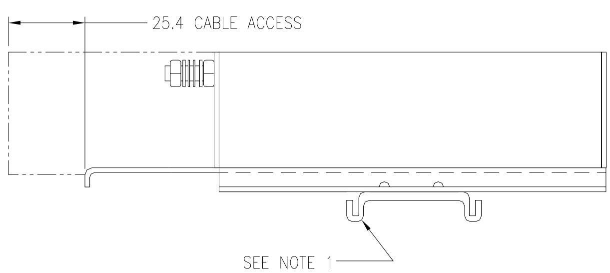
Figure A-1 shows the outline dimensions and mounting requirements for the Network Serial Interface (NSI). Make sure that the ship's ground is connected the ground stud on the NSI after the unit has been mounted.

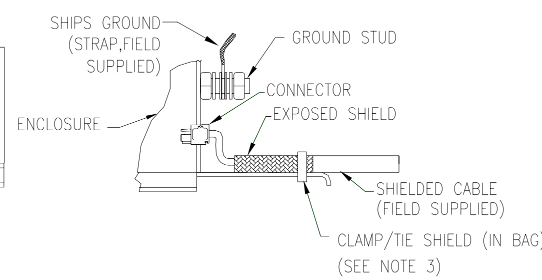




NOTE

A GROUND STRAP (CUSTOMER SUPPLIED) MUST BE USED WHEN THE NETWORK SERIAL INTERFACE IS DIN RAIL MOUNTED.





CABLE CONNECTIONS TO BOX

NOTES:
1. WHEN CONNECTING TO UNIT USE SHIELDED CABLE WITH 1.5–2.5mm^2 CONDUCTORS (16–14 AWG) ON ORANGE CONNECTOR.
2. WHEN CONNECTING TO UNIT USE SHIELDED CABLE WITH 1.0mm^2 CONDUCTORS (18 AWG) ON BLACK CONNECTORS.
3. GROUND SHIELDS TO BOX AS SHOWN.
4. MOUNTING OPTIONS:
   4.1 DINRAIL MOUNTING.
   4.2 SCREW MOUNTING.
      4.2.1 REMOVE DIN RAIL MOUNTING FEET USING A SMALL STRAIGHT BLADE SCREWDRIVER.
      4.2.2 HARD MOUNT USING (QTY 4) M4 OR #8–32 UNC–2A HARDWARE. REQUIRES REMOVAL OF DIN RAIL MOUNTING FEET (SEE NOTE 4.2.1)

Figure A-1. Network Serial Interface Mounting Dimensions

APPENDIX B
CONFIGURATION DEFAULTS

B-1 NSI CONFIGURATION DEFAULTS

Table B-1 lists the configuration defaults for the Network Serial Interface (NSI). The NSI is reset to these values whenever the reset switch is activated on the unit for more than five seconds or at startup. Default changes should be made on all NSIs at this stage, ***before*** using the Wizard in the Extended Mode. You can use the planning sheet in Appendix C as a reference during this process.

Table B-1. NSI Configuration Defaults

Parameter	Default setting
IP address	192.168.0.1 -192.168.9.99 corresponding to the 1-999 switch setting of the NSI
Subnet mask	255.255.255.0 (Extended Mode) 255.255.0.0 (Simple Mode)
Default gateway	0.0.0.0
Multicast Group Address	225.0.0.0
Discovery IP port number	25000 (also assigns 25001, 25002)
Baud rate	4800
IP port number of serial inputs and outputs (do not change these)	IP port numbers 14001-18995 are mapped to inputs of NSIs having switch numbers 1-999. IP Port Numbers 19001-23995 are mapped to outputs of NSIs having switch numbers 1-999. IP port numbers 31001-31495 are mapped to secondary input sources having switch numbers 1-99.

The default IP port assignments of the serial inputs and outputs listed in the above table should only be modified through the Wizard.

Here are some situations that may require a change from the defaults:

- If your network is segmented into subnets using routers, or the default IP address conflicts with other devices on your network. In either case the IP address and/or subnet mask must be changed from the defaults. The computer must be connected locally at the NSI to perform this operation.

- If the Multicast Group Address of the NSI conflicts with other devices on your network. **If the default IP port numbers are in conflict, do not change them. The Multicast Group Address must be changed instead of the IP port numbers.**

- If you have a device that must communicate at a different baud rate than the default setting

- If you want to enter a Label for each NSI in the Extended Mode. The Label makes it easier to identify an NSI on the System web page.

The configuration defaults can only be changed in the Extended Mode.

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APPENDIX C
NSI CONFIGURATION WORKSHEET

C-1 NSI CONFIGURATION WORKSHEET

Table C-1 is the configuration worksheet for the Network Serial Interface (NSI). This worksheet is helpful when configuring the NSI in the Extended Mode. This worksheet should be filled out to record switch setting for the NSI, the label which is used to identify the NSI, the IP address, Subnet Mask, Default Gateway, Multicast Group Address, Discovery IP Port Number, and the Serial Ports used.

After planning how the NSI will be used, the NSI is configured using the configuration wizard.

The serial port section of the worksheet is helpful when planning how the input and output ports of the NSI are mapped to supply serial data.

Table C-1. NSI Configuration Worksheet

Switch Setting	
Label	
IP Address	
Subnet Mask	
Default Gateway	
Multicast Group Address	
Discovery IP Port Number	

SERIAL PORT	**BAUD RATE**	**IN/OUT**	**COMMENT**
1		IN	
		OUT	
2		IN	
		OUT	
3		IN	
		OUT	
4		IN	
		OUT	
5		IN	
		OUT	

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APPENDIX D

NSI WIZARD WORKSHEET

D-1 NSI INPUT PORT AND OUTPUT PORT ASSIGNMENTS

Table D-1 is used to record and describe all of the system's inputs and outputs when configuring the Network Serial Interface (NSI) in the Extended Mode. Enter an input on the left, then enter an output to its right that will receive its data. For each input or output enter its NSI number (1-99) and port number (1-5).

Table D-1. NSI Input and Output Port Assignments

INPUT NSI #	INPUT PORT	INPUT DESCRIPTION	OUTPUT NSI #	OUTPUT PORT	OUTPUT DESCRIPTION

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APPENDIX E
SAMPLE NSI CONNECTION BLOCK DIAGRAM

E-1 SAMPLE CONNECTION BLOCK DIAGRAM

Figure E-1 is a block diagram which shows how the input to a Network Serial Interface (NSI) can be configured using the NSI Wizard Add Page to supply an output to equipment connected to another NSI over the network. Figure E-2 shows the electrical connections used when connecting RS232 and RS422 devices to NSI ports 1 through 5.

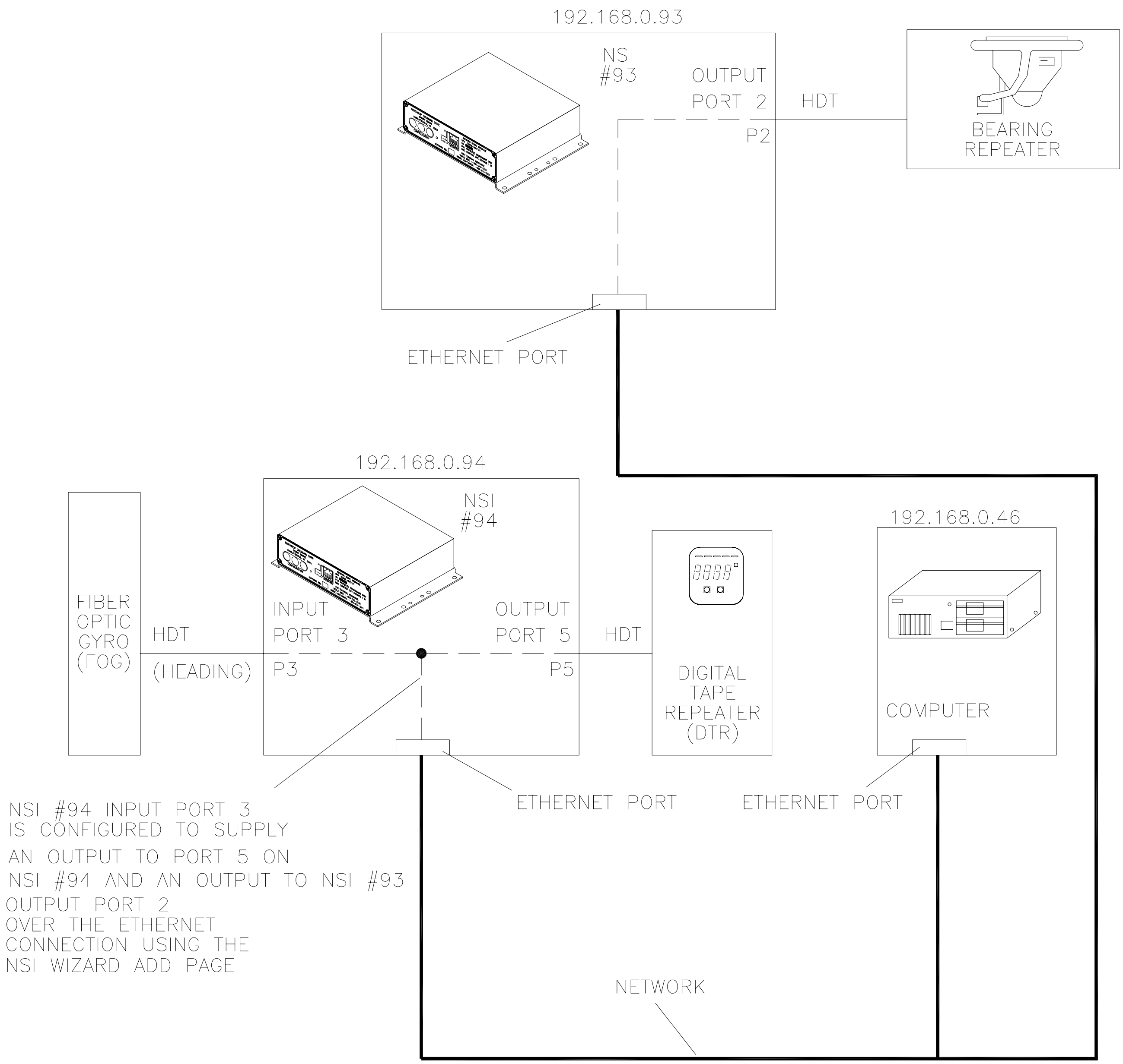


Figure E-1. Sample Network Serial Interface Connection Block Diagram (Sheet 1 of 2)

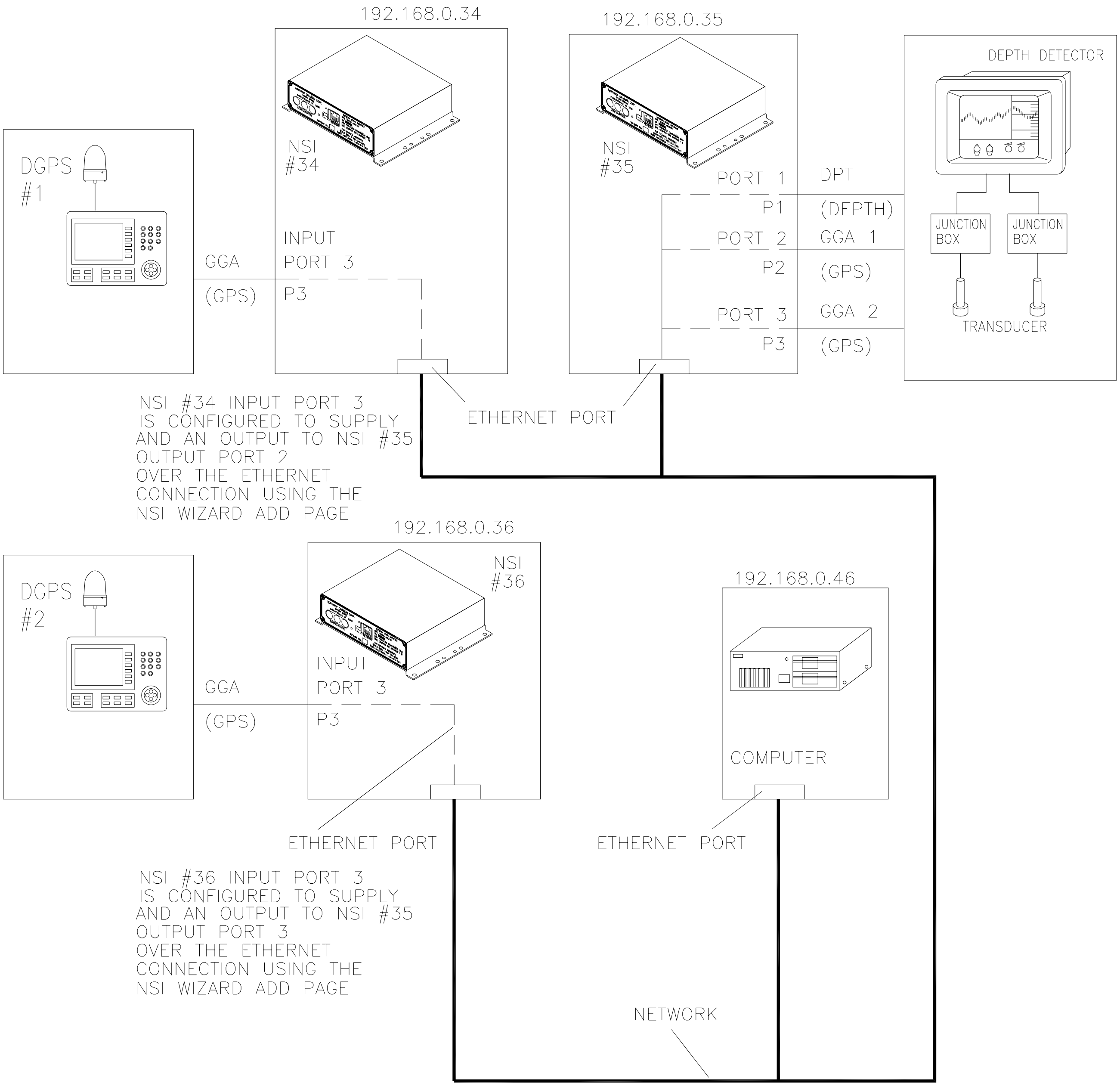
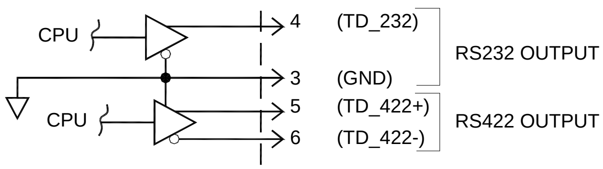
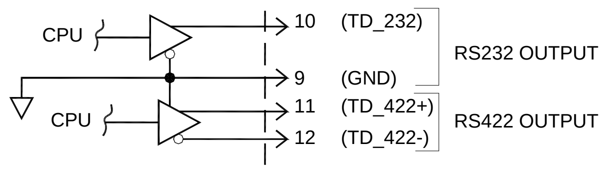


Figure E-1. Sample Network Serial Interface Connection Block Diagram (Sheet 2 of 2)

NMEA OUTPUT PORTS 1, 2, AND 4



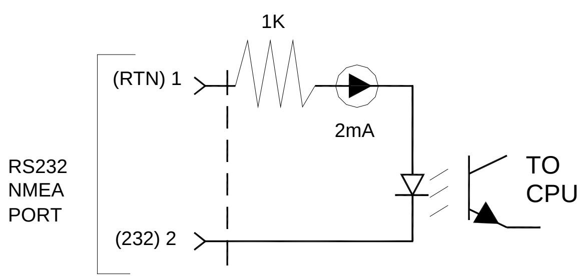
NMEA OUTPUT PORTS 3 AND 5



THE RS422 OUTPUTS MEET OR EXCEED T1A/RS422B AND ITU RECOMMENDATION V.11. THE OUTPUT HIGH VOLTAGE IS 2.4V MINIMUM AND 3.4V TYPICAL AT 20MA LOAD. DIFFERENTIAL OUTPUT IS 2.0V MINIMUM OR 3.1V TYPICAL WITH A 100 OHM LOAD.

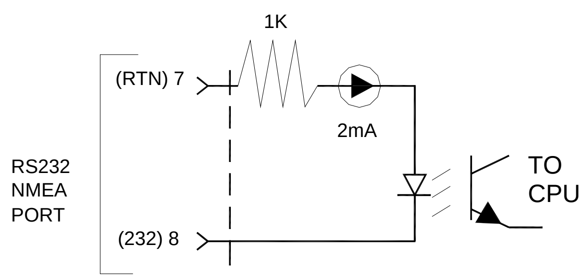
THE RS232 OUTPUT MEETS EIA/T1A-232E AND CCITT V.28 SPECIFICATION AT A DATA RATE OF 20KBPS. THE DRIVERS MAINTAIN THE ±5V EIA/T1A-232E SIGNAL LEVELS AT DATA RATES IN EXCESS OF 120 KBPS WHEN LOADED IN ACCORDANCE WITH EIA/T1A-232E SPECIFICATION.

NMEA INPUTS, RS232 PORTS 1, 2, AND 4



INPUT IMPEDANCE > 1K OHM

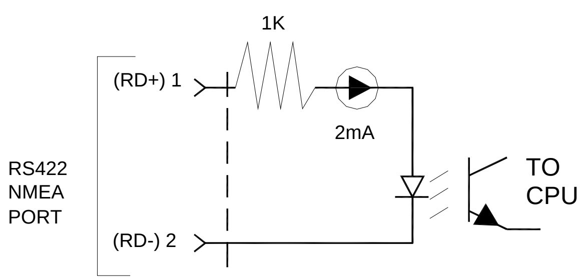
NMEA INPUTS, RS232 PORTS 3 AND 5



INPUT IMPEDANCE > 1K OHM

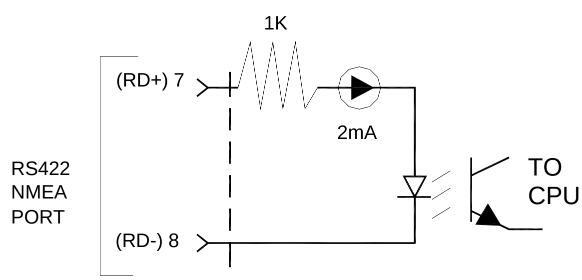
CONNECT RETURN LINE AS SHOWN FOR RS232 INPUT.

NMEA INPUTS, RS422 PORTS 1, 2, AND 4



INPUT IMPEDANCE > 1K OHM

NMEA INPUTS, RS422 PORTS 3 AND 5



INPUT IMPEDANCE > 1K OHM

NO GROUND CONNECTION USED FOR RS422 INPUT.

Figure E-2. Electrical Connections Used When Connecting RS232 and RS422 Devices

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GLOSSARY

Glossary of Terms

A

Acquisition Zone	An area on the video circle that has been defined by the operator. Any target that enters this zone is automatically acquired and tracked.
Activated Target	A symbol representing the automatic or manual activation of a sleeping target for the display of additional graphically presented information including: a vector (speed and course over ground); the heading; and ROT or direction of turn indication (if available) to display actually initiated course changes.
Automatic Identification System (AIS)	A system capability which enables ships and shore stations to obtain identifying and navigation information about other ships at sea, using an automated transponder.
Antenna	Slotted waveguide array for transmitting and receiving microwave signals. 10cm S-band (9 or 12ft aperture) or 3cm X-band (4, 6 or 8 ft aperture)
Anti-clutter	Removal of unwanted reflections on the radar screen caused by rain, sleet etc. (*see* Clutter).
Azimuth	The number of degrees from North (or other reference direction) that a line runs, measured clockwise.
ARCS	Admiralty Raster Chart Service. A service of British Admiralty, suppliers of electronic charts with world coverage, in the HCRF data format.
Azimuth Pulse	Azimuth (AZ): The number of degrees from North (or other reference direction) that a line runs, measured clockwise.

B

Backup Navigator Alarm	The Backup Navigator Alarm is affected by activating a commissioned PCIO relay output by way of an active alarm
BSB Electronic Charts	A supplier of raster-format electronic charts. Electronic charts based on the paper charts supplied by NOAA or CHS are available in the data format established by BSB.
Bulkhead Transceiver	Transmitter/Receiver mounted below decks with microwave or co-axial connection to the Turning Unit.

C

Chart Database	Structured collection of chart data sufficient for safe and efficient navigation on an ECDIS or Chart Radar system
Chart Format	The industry standard the defines the structure of a chart database (e.g. the ENC chart database uses the S-57 format)
C-MAP	C-Map Cartographic Service. Commercial supplier of vector-format navigational charts, which are not fully compliant with ECDIS standards as defined by IMO.

Consistent Common Reference Point (CCRP)	The CCRP is a location on own ship, to which all horizontal measurements such as target range, bearing, relative course, relative speed, closest point of approach (CPA) or time to closest point of approach (TCPA) are referenced, typically the conning position of the bridge.
Checksum	A numeric value used to verify the integrity of a block of data. When data is transmitted from point to point in a packet, the sending computer counts the bytes and adds a check digit at the end of the packet. The receiving computer calculates the bytes received and compares the sender's count with the receiver's count to determine if there is any change that might indicate tampering with the information.
Clearing Lines	Clearing lines are bearing lines or range lines used to approximate a position where a danger to own ship lies.
Clutter	Unwanted reflections on a radar screen, commonly from rain, snow or sleet.
CM93v3	CMAP's proprietary and unofficial chart format.
Conning Info Display	A Conning Info Display (CID) page is a collection of numeric and graphical readouts (also known as CID elements) that display various types of information useful during navigation.
Cross-Track Distance	The distance by which the ship's actual position deviates left or right from the Route Plan track.
Course-up	Stabilised display – the ship's bearing is shown at the top of the video circle with 000° elsewhere on the circle (representing True North).
D	
Datum	Any point, line, or surface used as a reference for a measurement of another quantity.
Dead Reckoning	A method of estimating the position of a ship without astronomical observations, as by applying to a previously determined position the course and distance travelled since.
Denso Paste	Soft brown petrolatum primer containing moisture-displacing corrosion-inhibiting compounds. Apply using a stiff brush or gloved hand.
DGPS	Differential GPS (see also GPS). Position sensor intended for precise commercial navigation in coastal waters. The DGPS employs an additional receiver for the reception of correction signals from a land-based transmitter to be applied to the satellite-based GPS position information.
Digitized Chart	A data format for electronic charts that are made using a digitizer device with paper navigational charts. On ships equipped to make digitized charts, these charts can be used for operating in areas for which electronic charts from official or commercial sources are not available. Digitized charts do not conform to any standards for chart display.

Distance To Go (DTG)	Distance to next action, such as a turn, while running a Voyage Plan.
DnV	Det norske Veritas. Independent maritime organization performing classification, certification, quality-assurance and in-service inspection of ships and mobile offshore units with the objective of safeguarding life, property and the environment.
Dongle	A small hardware device that, when plugged into a computer, enables a specific program to run on that computer. The program is disabled, or operates in a degraded mode if the device is not present.
Dynamic Brake	Braking is accomplished by electrically switching motors to act as generators that convert motion into electricity instead of electricity into motion.

E

Electronic Bearing Line	An EBL control is used to show the relative or true bearing of a target on the display. The EBL is moved with the cursor, and the bearing is read of the screen in degrees. One end is always anchored, either at the centre of the screen or at a operator-defined point on the video circle.
ECDIS	Electronic Chart Display and Information System. A standard of the International Maritime Organization (IMO), governing electronic navigational systems.
ENC	Electronic Nautical Chart. Chart data conforming to specification published in IHO Special Publication No. 57 (S57). Charts complying with this specification are available from various suppliers.
ENC (C-MAP)	Official S-57 encrypted charts converted to CMAP's proprietary chart database format.

F

Flyback Converter	Power supply switching circuit. During the first half of the switching period, the transistor is on and energy is stored in a transformer primary. During the second half period, this energy is transferred to the transformer secondary and the load.

G

Gain	The ratio of the signal output of a system to the signal input of the system expressed in dB. A gain of 10 would imply that the signal power had increased by a factor of 10. There are two general usages of the term in radar: (a) antenna gain (or gain factor) is the ratio of the power transmitted along the beam axis to that of an isotropic radiator transmitting the same total power; and (b) receiver gain (or video gain) is the amplification given a signal by the receiver.

GGA	NMEA sentence which provides the GPS current fix data.
Greenwich Mean Time (GMT)	The international time standard, based on local standard time at longitude 0º 0' 0" (in Greenwich, England). Also called Coordinated Universal Time (UTC).
Global Positioning System (GPS)	A system by which receivers anywhere on earth can obtain accurate position data. The term "GPS" is also used to refer to the receiver device.
Great Circle	A circle drawn around the Earth such that the centre of the circle is at the centre of the Earth. Following such a circle plots the shortest distance between any two points on the surface of the Earth.
Guard Zone	An adjustable zone around the vessel. Once a guard zone is set, any target that enters the guard zone will trigger an alarm.
H	
Head-up (H UP)	Unstabilised display – the ship's heading marker is always shown vertically upwards indicating straight ahead movement.
HCRF	Hydrographic Chart Raster Format. Electronic format used for BA-ARCS charts.
Heading Line	Line that projects forward showing where own ship is headed relative to the targets seen on the video circle.
Heading Marker	A heading marker on the display provides an important reference to direction. When the antenna is pointing ahead, it sends a pulse to the radar display that causes a line to show on the screen that represents the vessel's head. You can refer echoes displayed on the screen to your vessel's head and get the relative bearing of the echo. If the heading marker is not pointing exactly ahead, relative bearings will be wrong. You can quickly check for any such mistake by heading toward a small prominent visible object and see if the radar echo appears under the heading marker.
Heartbeat Listener	A set of configuration settings that monitors the INS interface for regular ALF-style heartbeat sentences.
Heatsink	Device used to conduct away and disperse the heat generated by electronic components.
HSC	Heading-to-Steer Command. Heading order sent to an autopilot from an external electronic navigation aid, such as the ECDIS.
I	
International Hydrographic Office (IHO)	The IHO has developed an ENC product specification as the standard for ECDIS data, and has published this specification in its Special Publication No. 57 (S-57).

International Maritime Organization (IMO)	An agency of the United Nations, responsible for improving maritime safety and preventing pollution from ships. The governing body responsible for SOLAS regulations and ECDIS specifications.
Integral Transceiver	Transmitter/Receiver housed in the Turning Unit.
Interswitch Unit	Enables radar systems to be connected together so that any Display Unit may be connected to any Scanner Unit.
I/O Interface	The collection of components that define the hardware, protocols, and formats used to communicate with an interfaced device. This will include a set of I/O Ports (in most cases, this will be a set of one).
I/O Port	A logical channel through which data is transferred, which may handle protocols needed to pass the data, but functions with no cognizance of the meaning of the data involved.centre A common example is a serial (RS-232) communications port.

L

Local Time Offset	Offset between local time and UTC.
Lock-o-seal	Two piece seal element (rubber ‘O’-ring with a metal backup ring) designed specially for bolts, studs and other fasteners.
Lost Target	A target representing the last valid position of a target before its data was lost. The target is displayed by a "lost target" symbol.

M

Magnetron	Device that is comprised of an electric circuit inside a strong but variable magnetic field, designed to generate coherent microwaves.
Master Display	A Master Display has complete control over a Transceiver. A Transceiver can only have one Master Display. A Master Display can only have one Transceiver.
Modulator	A modulator is a circuit or device that combines two different signals in such a way that they can be pulled apart later.
Monitor	The viewing unit, a Flat Panel Monitor (also known as FPD or LCD).
Multi-Function Workstation	A workstation that has been configured to be displayed in a number of presentation options (i.e. Chart Radar, ECDIS or CID).
Multi-Node system	A number of workstations, linked by a LAN, which have been configured as specific product types.
Multi-target Tote	A display panel showing details of multiple acquired targets.

N

NAVTEX	Enables access to coastal marine safety information transmitted from NAVTEX stations to ships with a NAVTEX receiver.

NIMA	National Imagery and Mapping Agency. An agency of the United States government, supplying navigational charts to the United States Navy.
Nautical mile (NM)	The nautical mile is closely related to the geographical mile which is defined as the length of one minute of arc on the earth's equator. By international agreement, the nautical mile is now defined as 1852 meters (1.15 standard miles).
National Marine Electronics Association (NMEA)	An association of manufacturers that has published widely used standards for navigation and other marine sensor communication. Their published standards include NMEA 0183, Standard for Interfacing Marine Electronic Navigational Devices, Version 1.5, December 1987, and Version 2.0, January 1992. This standard is commonly referred to as simply "NMEA 0183." The ECDIS is designed to use messages from any navigation, weather, or machinery sensor that conforms to this standard.
NOAA	National Oceanic and Atmospheric Administration. Agency of the US government, supplying navigational charts. NOAA charts are available in the BSB electronic format.
North-up (N UP)	Stabilised display – the bearing scale shows 000° at the top of the video circle (assumed to be True North). The ship's heading marker is shown at the appropriate bearing.

O

Opto-coupler	A component capable of optically transferring an electrical signal between two circuits and, at the same time, electrically isolating these circuits from each other. It consists of an infrared LED emitting section at its input, and a silicon photodetector, at its output, with other circuitry sometimes included as part of the device.

P

Parallel Index Lines	A set of parallel lines placed on the video circle to aid navigation.
Parity	An error-checking procedure in which the number of 1s must always be the same – either even or odd – for each group of bits transmitted without error.
Past Position Dots	Equally time-spaced past position marks of a tracked or reported target and own ship. The coordinates used to display past positions may be either relative or true.
Performance Monitor	A unit, which warns the operator of reduced radar performance. May be integral with the Turning Unit (X-band) or separate (S-band).
Product types	A small set of defined products, any one of which the VisionMaster application can function as. Product types apply to individual nodes.
Pulse Repetition Frequency	The number of radar pulses transmitted each second. The pulse transmission rate is automatically lengthened for longer ranges.

R

Random Access Memory	Memory used in computer systems. RAM is volatile memory, which does not hold data when the power is turned off
Range Rings	A set of concentric circles labelled by distance from the central point, useful for judging distance (especially from own ship).
Relative Motion – Relative Trails	Own ship is shown at a fixed point in the video circle (normally the centre). All target trails are shown relative to own ship's movement. This means stationary targets will have trails if own ship is moving.
Relative Motion – True Trails	Own ship is shown at a fixed point in the video circle (usually the centre). Target trails show their direction. Stationary targets do not produce trails.
Resolver	A type of rotary electrical transformer that is used for measuring the angle of a rotating machine such as an antenna platform. The primary winding of the transformer, fixed to the rotor, is excited by a sinusoidal electric current, which by electromagnetic induction causes currents to flow in two secondary windings fixed at right angles to each other on the stator. The relative magnitudes of the two secondary currents are measured and used to determine the angle of the rotor relative to the stator.
Rhumb Line	A line on a sphere that cuts all meridians at the same angle; the path taken by a ship or plane that maintains a constant compass direction.
Route	A set of waypoints that define the intended path of travel.

S

S-band	The S-band, or 10cm radar short-band, is the part of the microwave band of the electromagnetic spectrum ranging roughly from 1.55 to 5.2 GHz.
S57	Internationally accepted standard for electronic charts in the ENC vector-format. ENC data is standardized according to ECDIS specifications published in IHO Special Publication No. 57.
S57 PIN	Is used to generate a 16-character string which represents the encrypted hardware ID portion of the S-57 User Permit.
S63 Chart permit file	A file generated by the data manufacturer that is used, in conjunction with an S63 permit code to decrypt chart data for a particular set of ARCS charts or S57 cells.
S63 permit code	A code that identifies a license for using S57 charts. This is sometimes referred to as the S57 User Permit.
Scanner Unit	Comprises the Antenna and Turning Unit.
Scanner Control Unit	A unit which switches power to the S-band Turning Unit, under the control of the Display.

System Electronic Navigational Chart (SENC)	SENC is a database resulting from the transformation of the ENC by ECDIS, updates to the ENC by appropriate means, and other data added by the mariner. It is this database that is accessed by ECDIS for the display generation and other navigational functions, and is the equivalent to an up-to-date paper chart. The SENC may also contain information from other sources.
Sentence	A self contained line of data
SevenCs	A chart engine format
Slave Display	Display that is used to observe a radar image. It has limited functionality.
Sleeping Target	A target symbol indicating the presence and orientation of a vessel equipped with AIS in a certain location. No additional information is presented until activated thus avoiding information overload.
SOLAS	Safety of Life At Sea. A set of conventions adopted by the IMO and all of its signatory countries in 1974. These conventions regulate many of the features of ships used in international trade, including navigation equipment and its functionality
Sperry security block	A dongle used to identify a VM system (through a PIN), and identify permits for charts that are licensed on a system-by-system basis.
Standard Display (STD)	The standard set of chart objects (buoy information, conspicuous landmarks, etc.) specified for ECDIS display, in compliance with IMO standards.
Stern Line (SL)	A line, drawn across the video circle, showing the stern's direction. A stern line can be useful when ownship is backing into port or harbour.
Synchro	A motorlike device containing a rotor and a stator and capable of converting an angular position into an electrical signal, or an electrical signal into an angular position.
System PIN	Personal Identification Number that uniquely identifies a system.
T	
TotalTide	Enables VisionMaster to obtain tidal data from the UKHO TotalTide application, including the ability to view tide heights and tidal currents from tidal stations around the world.
Target	Object of interest on a radar display. Targets can be labelled (acquired) and tracked.
Trial Manoeuvre	Facility used to assist the operator to perform a proposed manoeuvre for navigation and collision avoidance purposes, by displaying the predicted future status of all tracked and AIS targets as a result of own ship's simulated manoeuvres.
Trigger PCB	A control board housed in the Transceiver. It controls the Modulator, Magnetron and sends signals to the Display to indicate when the magnetron has fired a pulse.

True Motion	Own ship moves across the video circle. Stationary targets do not produce trails.
TTMG	Track To Make Good. In the context of the ECDIS, TTMG denotes a temporary plan which may be activated at any time, and which by default consists of a 500nm track line on present heading.
Turning Unit	Contains the Antenna rotation motor, the microwave rotary joint, and may contain an integral Transceiver.

U

Universal Time Coordinated (UTC)	The international standard of time, kept by atomic clocks around the world. Formerly known as Greenwich Mean Time (GMT), local time at zero degrees longitude at the Greenwich Observatory, England. UTC uses a 24-hour clock.

V

Variable Range Marker	An adjustable range ring used to measure the distance to a target. When the VRM is adjusted over the leading edge of a return with the cursor control, the distance to the object is shown on the screen.
Vector	Direct connection between two points, either given as two sets of coordinates (points), by direction and distance from one given set of coordinates (True Vector), or a point in a vector space defined by one set of coordinates relative to the origin of a coordinate system (Relative Vector).
Video Circle	The area on the Display that shows the radar image.
Vigilance Alarm	A system alarm generated when the operator fails to give evidence of fitness.

W

Watch Alarm	The purpose of a watch alarm system is to monitor bridge activity and detect operator disability which could lead to marine accidents. The system monitors the awareness of the Officer of the Watch (OOW) and automatically alerts the Master or another qualified OOW if for any reason the OOW becomes incapable of performing the OOW's duties. This purpose is achieved by a series of indications and alarms to alert first the OOW and, if he is not responding, then to alert the Master or another qualified OOW. Additionally, the watch alarm may provide the OOW with a means of calling for immediate assistance if required. The watch alarm should be operational whenever the ship's heading or track control system is engaged, unless inhibited by the Master.
Waveguide	Hollow rectangular, oval or round tube used to convey microwave RF energy from one point to another in a radar transmitter or receiver.
Waypoint	A geographical location (for example, latitude and longitude) on a route indicating a significant event on a vessel's planned route (for example, course alteration point, calling in point, etc.).

WGS-84	World Geodetic System 1984. Chart datum specified in accordance with the IMO ECDIS standard.
Wheel-over	The geographic location, represented by a line where rudder movement should be activated to accomplish a planned turn. The wheel-over line may be displayed perpendicular to the approaching track or parallel to the departing track of each turn.
Wobbulation	Low frequency modulation of the Pulse Repetition Frequency (PRF) to help suppress interference.

X

X-band	The X-band (3cm radar spot-band) of the microwave band of the electromagnetic spectrum roughly ranges from 5.2–10.9 GHz. The relative short wavelength at X-band frequencies makes possible high-resolution imaging radars for target identification and target discrimination.

Glossary of Abbreviations

Symbols	
μA	Microamp (0.000001 amps)
μs	Microsecond (0.000001 seconds)
Ω	Ohms
ϕ	Phase
A	
A	Ampere
AC	Alternating Current
ADC	Analog to Digital Converter
AFC	Automatic Frequency Control (fine tuning)
AIS	Automatic Identification System
ARPA	Automatic Radar Plotting Aid – a system wherein radar targets are automatically acquired and tracked and collision situations computer assessed and warnings given.
AZ	Acquisition Zone
B	
BA	British Admiralty.
BCR	Bow Crossing Range
BCT	Bow Crossing Time
BIST	Built-In Self-Test
BITE	Built-In Test Equipment
BSH	German Federal Maritime and Hydrographic Agency (BSH) that provide type approval to EC Council Directives
C	
CAM	Central Alarm Manager
CD ROM	Compact Disk Read-Only Memory
CDX	Control differential transmitter
CHS	Canadian Hydrographic Service
COG	Course Over Ground
CPA	Closest Point of Approach [to own ship]
C UP	Course-up
CRT	Constant Radius Turn

CSE	CourSE [through water]
CX	Control transmitter
D	
dB	Decibel.
DC	Direct Current
E	
EBL	Electronic Bearing Line
EMC	Electromagnetic Compatibility
EPA	Electronic Plotting Aid
ERBL	Electronic Range and Bearing Line
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
F	
ft	Foot or feet
FPD	Flat Panel Display
G	
GMT	Greenwich Mean Time
GPS	Global Positioning System
GZ	Guard Zone
H	
HDG	Heading
HL	Heading Line
HO	Hydrographic Office.
H UP	Head-up
Hz	Hertz (unit of Frequency)
HT	High tension (meaning high voltage)
I	
IHO	International Hydrographic Organisation
in	Inch
I/O	Input/Output
K	
Km	Kilometre

kt	Knot (one nautical mile per hour – 1.15 mph)
kV	Kilovolt (1000 Volts)
kW	Kilowatt (1000 Watts)
L	
LAN	Local-Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LNFE	Low Noise Front End
LP	Long Pulse (available from 3 NM and upwards)
M	
m	Metre
mA	Milliamp (0.001 Amps)
MHz	Megahertz (1000000 Hertz)
MIS TRIG OUT	Mutual Interference Suppression Trigger Out – trigger used to suppress the video for 12μs to inhibit interference from other radars.
MMSI	Maritime Mobile Service Identity
MOB	Man overboard
Mod Trigger	Modulator Trigger
MP	Medium Pulse (available in the 0.5 NM to 24 NM range)
N	
nm	Nautical mile.
NDI	Nautical Data International. Licensed distributor of CHS charts in the BSB electronic format.
NM	Newton Metre
NMEA	National Marine Electronic Association
NNF	Not Normally Fitted
ns	nanosecond (0.000000001 seconds)
N UP	North-up
P	
PCB	Printed Circuit Board
PCIO	PC Input/Output
PEU	Processor Electronics Unit

PFC	Power Factor Correction
PFN	Pulse Forming Network
PIP	Picture In Picture (Video mode)
PM	Performance Monitor
PPI	Plan Position Indicator
PRF	Pulse Repetition Frequency
PRI	Pulse Repetition Interval
PSU	Power Supply Unit
R	
RAIM	Receiver Autonomous Integrity Monitoring
RAM	Random Access Memory
RF	Radio Frequency
RFI	Radio Frequency Interference
RM(R)	Relative Motion – Relative Trails
rms	Root mean square (AC voltage that equals DC voltage that will do the same amount of work)
RM(T)	Relative Motion – True Trails
RNS	Raster Navigational Chart
ROT	Rate of Turn
rpm	Revolutions per minute
RR	Range Rings
RVAP	Radio Video Adaptive Processor
S	
SART	Search and Rescue Transponder
SCU	Scanner Control Unit
SIC	Station In Control
SL	Stern Line
sm	Statute mile – A mile as measured on land, 5,280 feet or 1.6 kilometers. Distances at sea are measured in nautical miles.
SOG	Speed Over the Ground
SP	Short Pulse (available below 3 NM)
STW	Speed Through Water

T

T BRG	Target Bearing/True Bearing
TCPA	Time to Closest Point of Approach [to own ship]
TLB	Target Label
TM	True Motion
TRP	Temporary Route Plan
TTD	Tracked Target Data
TTG	Time To Go. Time to next action, such as a turn, while running a Route Plan.
TTM	Tracked Target Message
Tx/Rx	Transmitter/Receiver (Transceiver)
TX COMMS	Transceiver Communications

U

UTC	Universal Time Coordinated

V

V	Volt
VA	Volt amperes
VMS	Voyage Management System
VRM	Variable Range Marker

W

W	Watts

X

XTD	Cross Track Distance