

MicroComm DXL

Administrator Software

&

Local User Interface

June 2011

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1 Overview

1.1 Intent & Scope

The initial section of this document describes the features and operation of the MicroComm DXL Configuration, Logging, and Diagnostic application. The latter part of this document describes the MicroComm DXL Local User Interface (LUI) and the Boot Mode operation.

1.1.1 Administrator Software

The MicroComm DXL Configuration, Logging, and Diagnostic application is used to:

- manipulate the configuration of DXL systems,
- review and control the logs generated by the system, and
- view the diagnostic information produced by the system

This program runs on standard IBM PC compatible hardware.

The DXL Administrator application consists of four main modules; the Shell, the Configuration Module, the Logging Module, and the Maintenance Module. These four modules are nearly independent parts of a single Windows application.

A standard windows installer will install this application. In the process, it will create an application directory to hold the application and all its data subdirectories.

1.1.2 Local User Interface

The Local User Interface is comprised of an 11-button keypad, with a backlit LCD, and three LED status indicators that are located on the front panel of the Digital Communication Controller (DCC). Every DCC provides a Local User Interface (LUI) and the purpose of this is to facilitate the installation and troubleshooting of an Exchange. This document provides a description of the LUI's operation when accessed remotely through a Telnet client.

1.1.3 Boot Mode

The 'boot mode' is entered by holding down the 'Boot Mode' button (which is at the back of the DXL box) while powering up the DXL. In this mode, you will be able to make selections on the physical DXL box, such as:

- choosing which applications to run on the DXL
- clearing IP addresses
- clearing memory
- running memory tests

2 The MicroComm DXL Administrator

This section describes the features of the MicroComm DXL Administrator shell. In this section you will learn how to define, open, close, save, rename, display and delete projects. You will also learn how to set various preferences for the DXL Administrator.

2.1 Administrator System Requirements

2.1.1 Minimum System

CPU	Intel Pentium or higher
Operating System	Microsoft Vista, Windows 7, Windows XP or compatible
RAM	256 Mbytes or more (depending on OS)
Hard Drive	128 Mbytes free
Video	1024 x 768 or higher resolution
Pointing device	Mouse or other pointing device

2.1.2 Requirements for Online Operation

Communications	V.90 modem or RS232 serial port or Ethernet network interface
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2.1.3 Optional Feature Requirements

Microphone required for recording Messages.

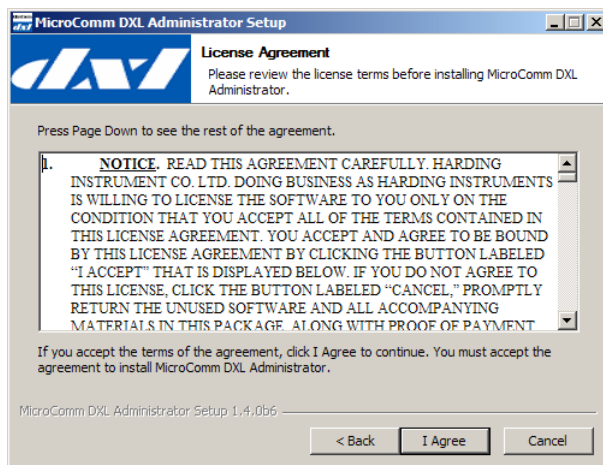
2.2 Installing the MicroComm DXL Administrator

The DXL Administrator is installed with a Windows installation program. The following MicroComm DXL Administrator Setup window should automatically load once you have inserted the DXL Administrator CD ROM into the CD drive of your PC. Note that Administrator rights are needed to install the program.

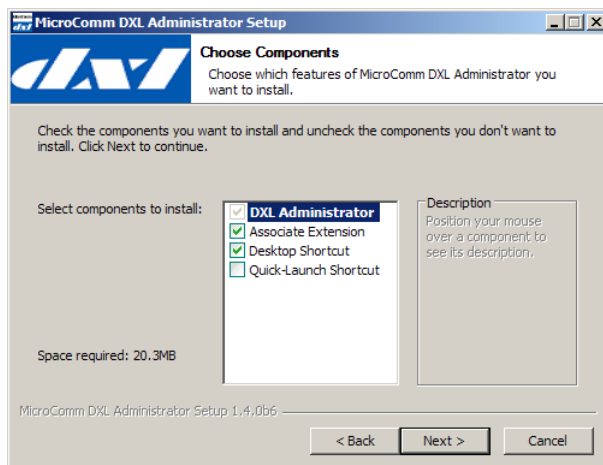
The first page displays the version of the software. Click the **Next >** button to continue with the installation.



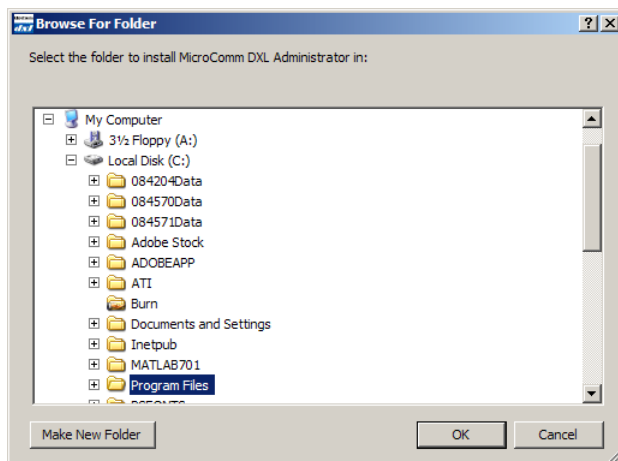
The second page of the setup displays the licence agreement. Read the agreement carefully and if you agree with the terms and conditions proceed with the installation by clicking the **I Agree** button.



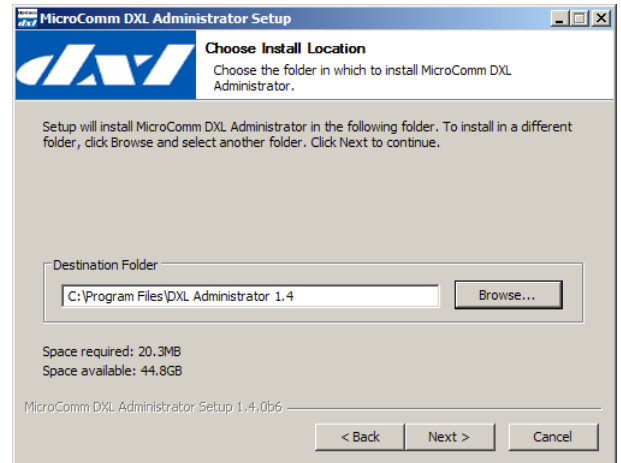
The next page of the setup allows you to select certain optional features you can use to start up the MicroComm DXL Administrator once it is installed. The three possible start-up options include an Associate Extension, a Desktop Shortcut and a Quick Launch Shortcut. The Associate Extension and Desktop Shortcut are initially checked as default selections, however clicking on the appropriate checkbox can change them. Click on the **Next >** button to proceed with the installation.



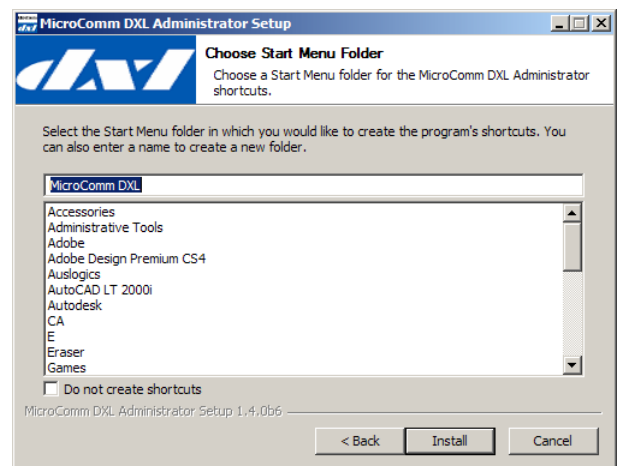
The next page displays the Destination Folder where the DXL Administrator folder will be located. A default location will be displayed. You can use the **Browse...** button to navigate to a new location.



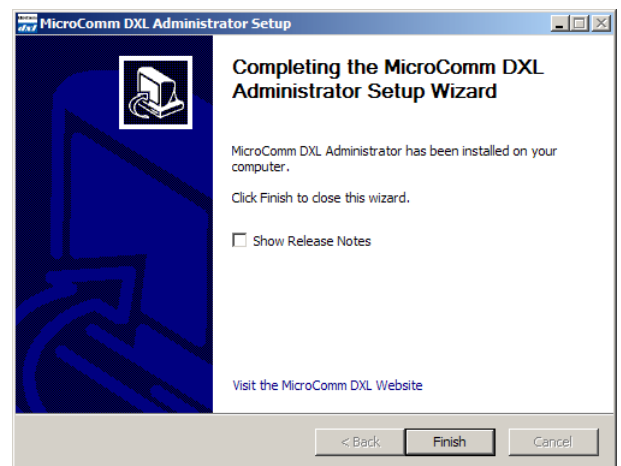
The **Browse...** feature will display a tree structure of your folders, select the location for the **MicroComm DXL Administrator**. Click the **OK** button once you have made your choice and you will return to the **Destination Folder**. Once you have decided where you want the program to be located click the **Next >** button.



The next page of the setup asks you to select a Start Menu Folder. The default name of the folder will be MicroComm DXL, but you can change the name of this folder if you wish. Once you have made this selection click on the **Install** button. The program will now be installed on your PC.



The last page of the setup provides you with an option to display **Release Notes**. Once you have made these selections click **Finish** to complete the installation and close **MicroComm DXL Administrator Setup** window.



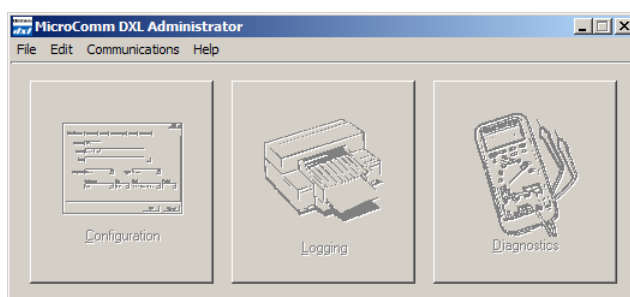
2.3 Getting Started

To open the MicroComm DXL Administrator click on the Desktop Shortcut (shown on the right) or click on the **DXL.exe** located in the location you specified as the Start Menu Folder in the setup. If you have selected the Quick Launch Shortcut then you will have an icon on the task bar that will allow you to start up the program.



Note that starting with version 1.4 the DXL Administrator supports running as a standard user under Vista and Windows 7 so no “UAC” prompt should appear. Note that Administrator rights are still needed with Windows XP and when using dial-up modems. For XP, use an administrator account. For Vista/Windows 7, right click the application shortcut and select "Run as administrator".

When the program opens the **MicroComm DXL Administrator** window appears. A flash screen that displays the version number of the software will also briefly appear. The **Configuration**, **Logging** and **Diagnostics** buttons will be dimmed and cannot be selected because a project is not open. When a project is open this window will display the project name in the title bar and these three buttons will be enabled.



2.4 MicroComm DXL Administrator: Main Menus

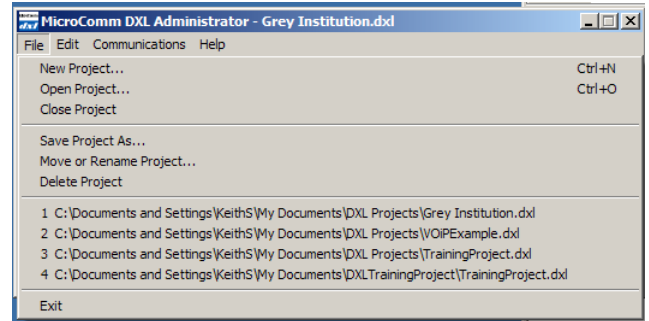
The **MicroComm DXL Administrator** window has four menus, they are: **File**, **Edit**, **Communications** and **Help** and they are described below.

2.4.1 File Menu

The **MicroComm DXL Administrator File** menu is used to manage projects. A project is a planned implementation of a DXL system that includes both hardware and operational characteristics of the system. Each project has a name and will normally be located in the default folder DXL Projects (The user can select another folder if he wishes).

Selecting **File** will reveal a set of options: **New Project...**, **Open Project...** and **Exit** are the only choices that you can make without an open project

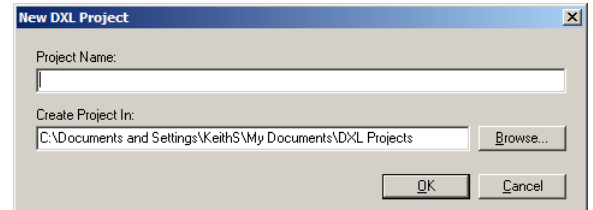
Once you have opened a project the other items, **Close Project**, **Save Project As...**, **Move or Rename Project...** and **Delete Project** will be available.



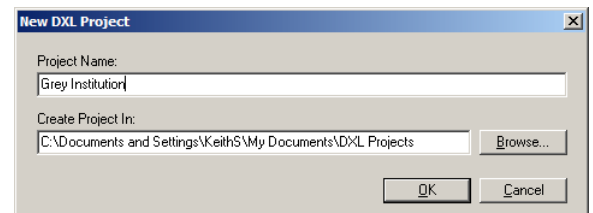
2.4.1.1 New Project...

Click on **New Project...** if you want to create a new project. The **New DXL Project** dialog box will appear.

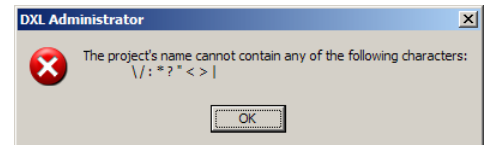
The **Create Project In:** entry is set to the default DXL Projects folder (This folder address can be set in the general preferences see Section 2.4.2.1.1). You can use the **Browse...** button to navigate to another folder if you want to save your project in some other location.



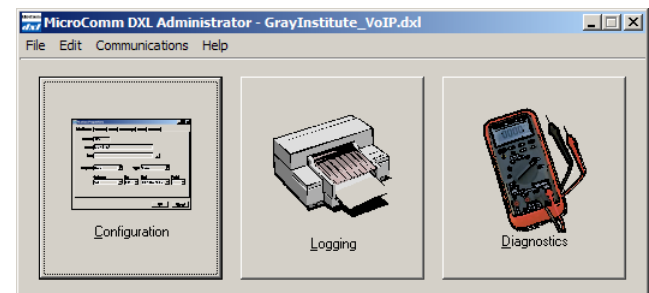
In the **New DXL Project** dialog box you can type in the name of the project in the **Project Name:** entry. Select a path to a folder in the **Create Project In:** entry, which is where the configuration data will be located.



The project name should not include the characters \ / : * ? " < > | . If you type in a name and use one of these characters then the name will not be accepted when you click the **OK** button of the **New DXL Project** dialog box. An error information box will appear.



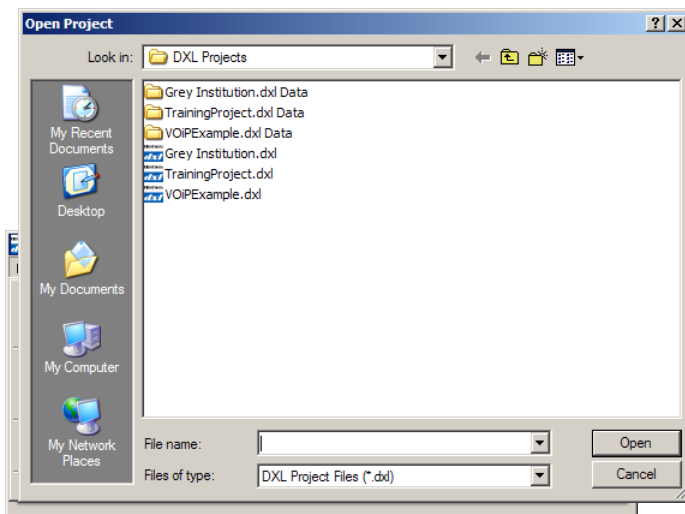
Once you have typed in the **Project Name:** and selected an entry for the **Create Project In:** box, you can select the **OK** button to save this information. The project will be created and will open. The screen reverts to the **MicroComm DXL Administrator** window with the project name now included in the title bar. The **Configuration**, **Logging** and **Diagnostics** icons will now be selectable.



2.4.1.2 Open Project...

Select this option to open an existing project. The **Open Project** window will pop up. Click on the name of the project that you want to open. Initially the contents of the default DXL projects directory will be displayed (the entry in the **Look in:** box). Project files have a '.dxl' extension. You can navigate to other locations if you have saved your project in another directory.

Click on the name of the project that you want and then click on the **Open** button in order to open this project. For example if you want to open the project called Grey Institution select the dxl icon labelled 'Grey Institution.dxl' and then click on **Open**.



Remember that you can only have one project open at a time.

Click on **Cancel** to close the **Open Project** window.

2.4.1.3 Close Project

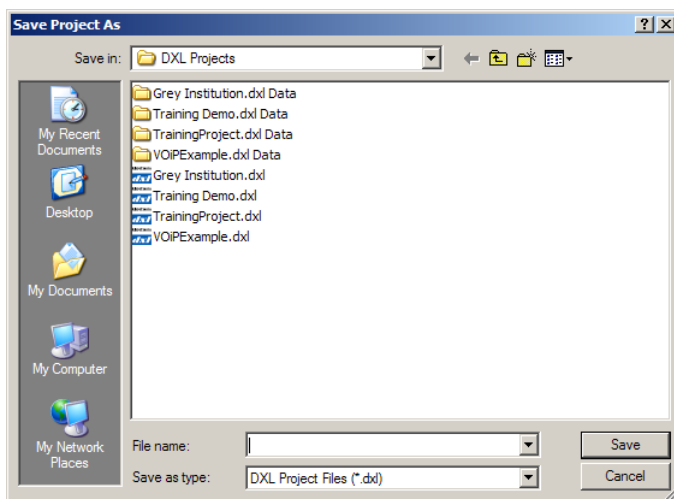
Click on **Close Project** if you want to close the project that is open. Note that the program does not display a confirmation message before closing as long as you have saved the edited configuration. If you have not saved the edited configuration then the program will ask for confirmation before closing. When you close a project it will leave the **MicroComm DXL Administrator** window open, so that you can choose to open a new project if you wish.

2.4.1.4 Save Project As...

Any project you define in the Administrator is saved as soon as you create the project. However, if you want to make a copy of the open project then you can click on **Save Project As...**

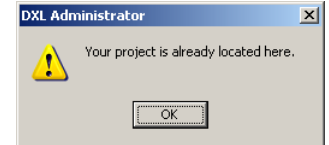
This option will take you to the **Save Project As** window. Choose the directory in which you want to save the project and specify the new name of the project in the **File name:** entry.

To make a copy of the project that you are working on, you will have to specify either a different name or a different location or both. Note that the project will not be saved until you click the **Save** button.



If the project name and location you specified are the same as the name and location of the current project that you are trying to save a warning message will appear.

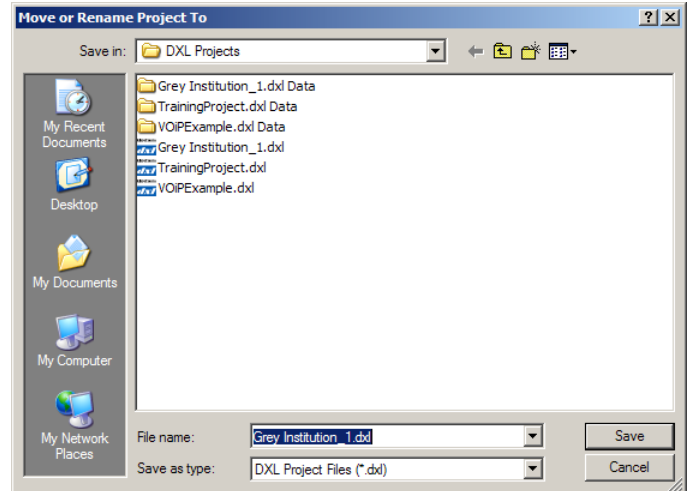
Click on the **Cancel** button to exit the **Save Project As** window. In this case the project will not be saved.



2.4.1.5 Move or Rename Project...

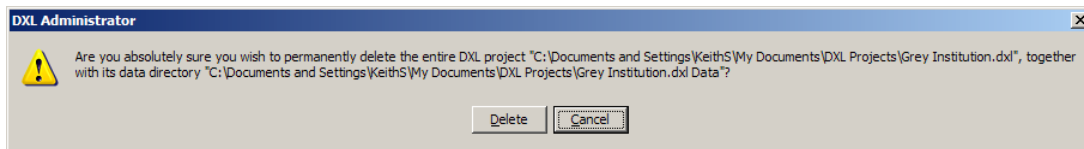
This option lets you rename the open project. Selecting this option will take you to the **Move or Rename Project To** window. Even though all the projects and their associated files will appear in this window, the program will only allow you to rename the current project that is open. Type the new name of the renamed project into the **File Name:** area.

Click the **Save** button to save the project under the new name. Click on the **Cancel** button to exit the **Move or Rename Project To** window, in which case, the project will not be saved with this new name.



2.4.1.6 Delete Project

This option lets you delete the open project. The program will display a confirmation message. Click on **Delete** in order to delete the project or click on **Cancel** in order to cancel the operation.

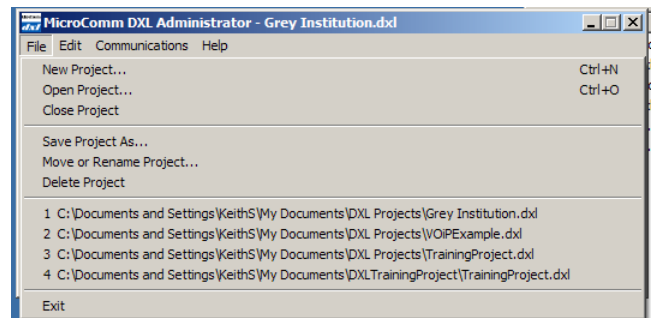


2.4.1.7 List of Recent Projects

The **File** menu also contains a list of the most recently opened projects. This area will display from one to ten project names. The choice for the number of projects to be displayed in the **File** menu is made in the **General** tab, which is located in the **Preferences...** option of the **Edit** menu.

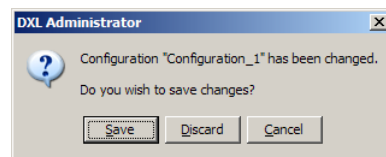
The list of projects, in the order that they were last opened, will appear with consecutive serial numbers. Click on the name of the project that you want to open.

Note that the project that was most recently used moves to the top of the 'List of Recent Projects'.



2.4.1.8 Exit

Choose this option to close the **MicroComm DXL Administrator** window and exit from the program. If you have not made any changes in the configuration, then the program will not ask for confirmation before shutting down. However, if you have made any changes then the program will prompt you to save your changes before quitting. Click the **Save** button to save the changes that you have made. Click on **Discard** if you do not want to save the changes that you have made in the **DXL Configuration Editor** since the last time you saved your settings. Click on **Cancel** if you do not want the DXL Administrator to shut down.

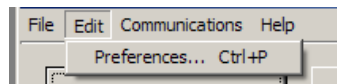


2.4.2 Edit Menu

The **Edit** menu of the **MicroComm DXL Administrator** has only one entry **Preferences....** A few of the items that can be set in **Preferences...** include setting the default location for the project directory, defining how many recent projects are displayed in the **File** menu and specifying the total length of all the tones and messages.

2.4.2.1 Preferences...

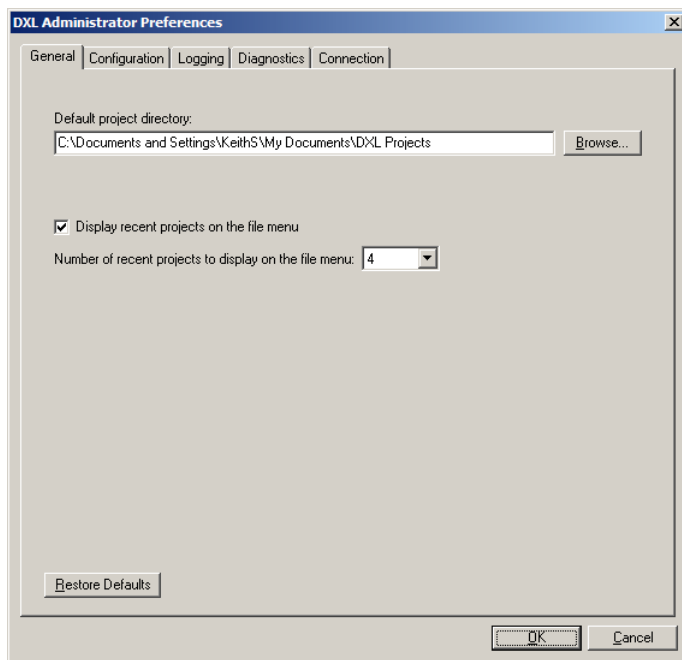
The **Edit** menu of the MicroComm DXL Administrator brings up a list of Edit choices. Selecting **Preferences...** brings up a window with five tabs; **General**, **Configuration**, **Logging**, **Diagnostics**, and **Connection**.



2.4.2.1.1 Preferences – General

The **General** tab allows you to select a location to save DXL project files. On start up of the DXL Administrator a default project directory is used to store your projects (this directory can be changed using the Browse feature). The default directory displayed (DXL Projects) appears in the **Default Project Directory** text box. Click the **Browse...** button if you want to navigate to another location to specify a different default directory.

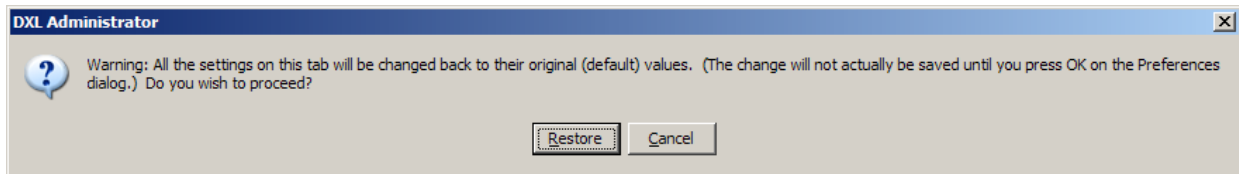
If you put a tickmark next to **Display recent projects on the file menu** the location of the most recently used projects will appear on the **File** menu of the **MicroComm DXL Administrator**. This list can be used for quick reference and loading. If the option is not ticked then the project names will not appear on the **File** menu.



You can choose to display up to a maximum of 10 of the most recent projects on the **File** menu by selecting the appropriate number in the **Number of recent projects to display on the file menu:** drop-down menu.

Note that no changes will be made in this window until you click on the **OK** button to accept the changes. Click on **Cancel** to retain the previous values and nullify any changes that you have made in this window.

Click on the **Restore Defaults** button if you want to set the setting in this tab back to their original default values. When you click on this button a confirmation message appears. Click on **Restore** if you want to restore the setting



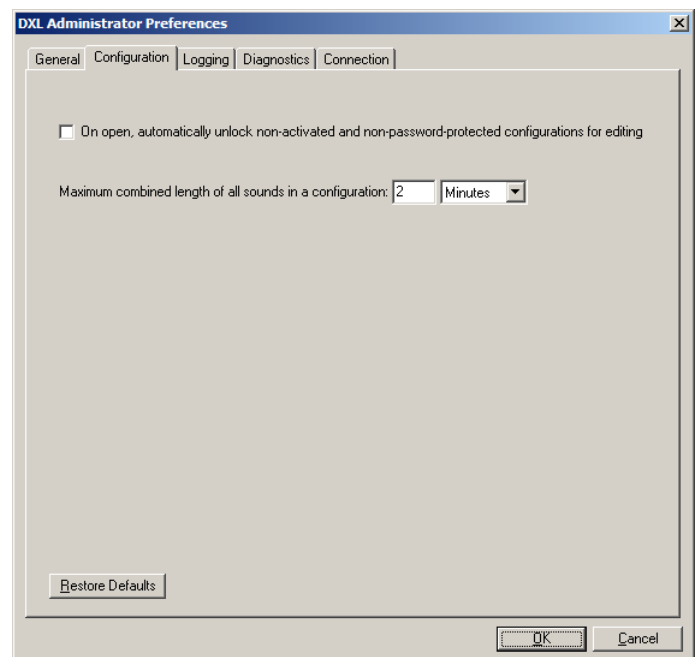
in this tab back to their original default values. Note that the program will not implement the tab settings until you click on **OK** in the **General** tab.

Also note that this button appears with each tab in the **DXL Administrator Preferences** window. Remember that even though the button performs the same function it has to be used individually for each tab.

2.4.2.1.2 Preferences – Configuration

Clicking on the **Configuration** tab allows you to set the combined length of all the sounds in the Configurations. These sounds are comprised of 'tones' and 'messages'. You can specify the maximum length of all the combined sound files by filling in a number for **Maximum combined length of all sounds in a configuration**; and then use the drop down menu to set the value to either seconds or minutes. 'Sounds' are explained in greater detail in the **Sounds...** section of the **Edit** menu of the **MicroComm DXL Configuration Editor**

Once a configuration has been downloaded to a working DXL system and activated it can no longer be edited. You will be required to make a copy of the configuration in order to carry out editing tasks. Place a tick mark in the checkbox beside the **On open, automatically.....for editing** option, if you want the program to automatically 'unlock' the **DXL Configuration Editor** each time you open the configuration editor. Note that the **DXL Configuration Editor** window will open in an 'unlocked' state only if it has not been activated or if it is not password protected.



Also note that no changes will be made until you click on the **OK** button to accept the changes.

The **Restore Defaults** button works in exactly the same way as the button in the General tab (discussed previously) and is not discussed here again.

2.4.2.1.3 Preferences – Logging

Logging is discussed in a Section 4

2.4.2.1.4 Preferences – Diagnostics

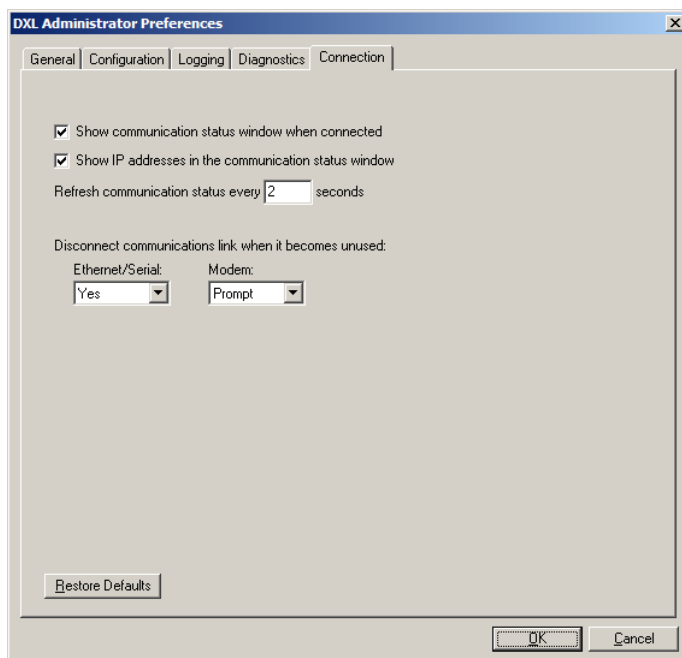
Diagnostics is discussed in Section 5

2.4.2.1.5 Preferences – Connection

The **Connection** tab lets you stipulate whether you want the **Communication Status** window to appear and also the rate at which you want the connectivity status between the PC and the DXL exchanges to be refreshed.

The **Communication Status** window displays whether or not the PC is currently connected to the exchanges on the DXL. This window is explained further in Section 3.1.1.10. If you check the **Show Communication status window when connected** option the **Communication Status** window will always be displayed when the PC is connected to the exchanges on the DXL. If you leave this option unchecked, then this window will not be displayed.

The time period of the ‘connectivity status’ is the rate at which the PC checks the communication status of the exchanges that it is already connected to, and to the exchanges with which it is possible for it to make a connection. The PC will check these connections with the time period that you specify in the box **Refresh communication status every ____ seconds**. Remember that this time period is in seconds.



2.4.3 Communications Menu

The **Communications** menu is used to establish connection links between your PC and the DXL system. The Configuration, Logging and Diagnostics modules use these links to transfer information between your PC and the exchanges in the DXL system.

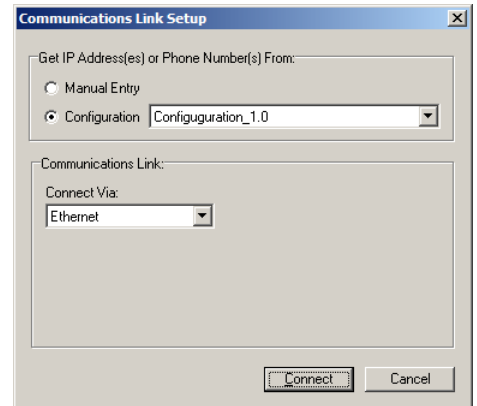
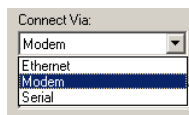


Selecting the **Communications** tab displays the following choices, **Connect...**, **Show Setup** and **Show Status**. Initially the **Connect...** entry can be selected while the **Show Setup...** and **Show Status** are cannot be selected. Once one or more connection links have been established these two entries can then be selected.

2.4.3.1 Connect...

Selecting the **Connect...** entry brings up the following window. You can either select **Manual Entry** or **Configuration**. You will also need to select the type of **Communications Link** using the pull down menu provided in the **Connect Via:** box.

In both the **Configuration** and the **Manual Entry** options, you can connect to the exchange(s) via an Ethernet, Modem, or Serial connection. Choose the appropriate connection type from the **Connect Via:** drop-down menu. When you establish a connection link to the exchanges, it does not affect the configuration that is presently operating the DXL system.



The most important difference between the **Manual Entry** and the **Configuration** options is that when you use the **Manual Entry** option the computer can only connect to a single exchange, since you are only specifying a single IP address or phone number. However, when you use the **Configuration** option, the computer can connect to multiple exchanges since the configuration may contain several exchanges, each with their own individual IP address or phone number.

Configuration

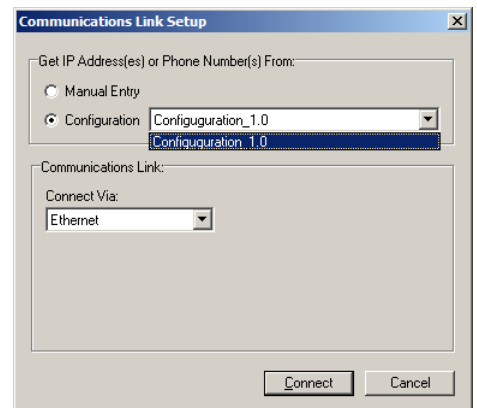
Ethernet:

Choose the Ethernet option if you want the program to retrieve the IP addresses for the exchanges from the configuration that you have selected. Then click on the **Connect** button.

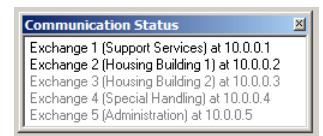
When you do this the PC will connect to all the valid exchanges by using the IP address that has it retrieved from the configuration that you have selected. However, it will not connect to exchanges that are invalid (IP address that cannot be accessed) and those that are not defined on the currently active configuration.

This is the default setting and is used most commonly.

After you click on the **Connect** button the program will display a **Communication Status** information box.

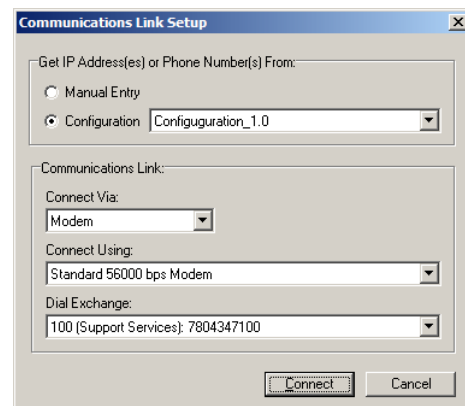


If you have connected to the exchanges by using the **Configuration** option then the **Communication Status** window will display all the exchanges that belong to the configuration that you have selected. If the computer cannot connect to certain exchanges then these exchanges will appear in grey/italic in the **Communication Status** window. In our example, the PC computer cannot connect to Exchanges 3, 4 and 5 but has successfully made a connection link to the Exchanges 1 and 2 and they appear in black.



Modem:

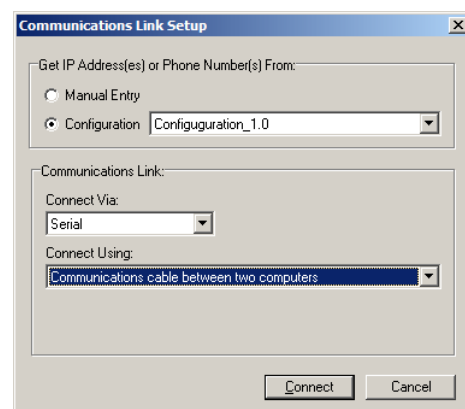
When you connect via a modem, you will have to choose the modem on your PC that you want to use from the **Connect Using:** drop-down menu. The **Dial Exchange:** drop-down menu displays the phone numbers of all the exchanges that are defined in the configuration you have selected. You will have to choose the phone number of the exchange that you want to retrieve information from using the **Dial Exchange:** drop-down menu. Note that administrative rights are required (ie: run the DXL Administrator as an administrator) when connecting to an exchange this way. See Appendix B for more details.



Serial:

When you connect via a serial connection, the **Connect Using:** menu displays the serial ports on your computer. You will have to choose the port that your computer will be using to connect to the serial port on the DXL, from the **Connect Using:** drop-down menu. The serial port will be hard wired to a specific exchange. See Appendix A for more details.

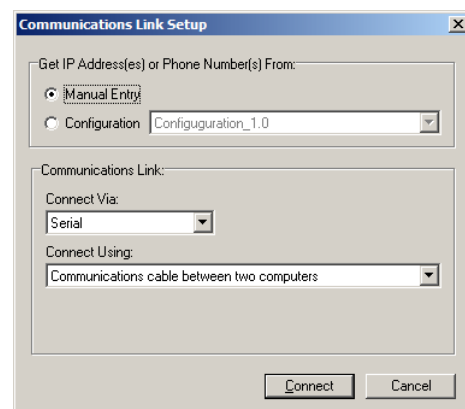
Note that direct serial connections are no longer supported with Vista/Windows 7 due to a lack of support in the operating system.



Manual Entry

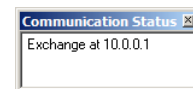
Choose the **Manual Entry** option if you do not have a configuration that can supply the information your PC needs to make the connection to the exchanges on the DXL. In this case, your PC will be connected to one specific exchange with the unique IP address or phone number that you specify. Once you have connected to this exchange, you will be able to download the configurations that belong to this exchange.

Remember that you cannot use the **Manual Entry** option with the DXL Log Viewer.



Ethernet:

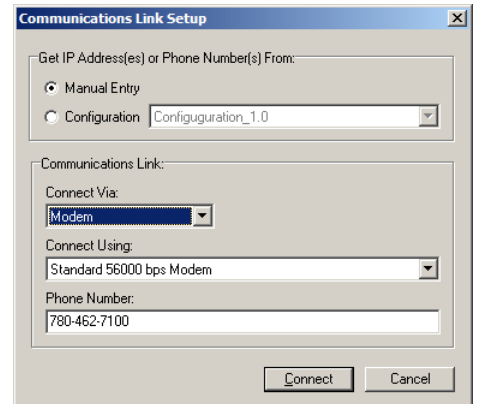
If you want to connect via an Ethernet connection, then you will have to type the IP address of the exchange in the **IP Address:** entry. In this case, the PC will try to connect to the exchange that has the IP address that you have entered.



If you have connected to the exchanges manually via an Ethernet connection then the **Communication Status** window will only display the IP address of the exchange that you are linked to. This window will only appear after you click on the **Connect** button.

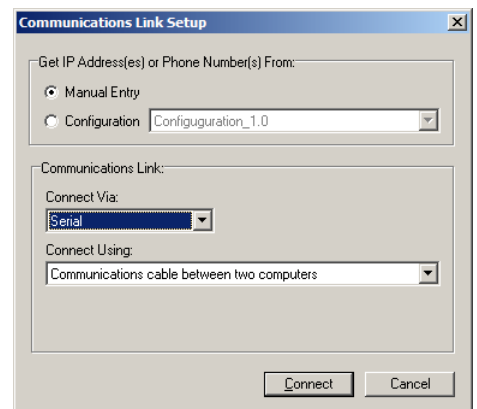
Modem:

If you want to connect via a Modem connection, then you will have to choose the modem that you want to use, from the **Connect Using:** drop-down menu. You will also have to enter the phone number of the exchange that you want to connect to in the **Phone Number:** entry.



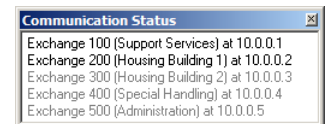
Serial:

The serial connection works in exactly the same way as described for the **Configuration** option.



Connection Problems

There can be cases when the computer is able to retrieve the IP address/phone number but is unable to set-up a connection with the DXL box. This could be because the DXL box has been switched off or your computer cannot access it due to some other reasons.



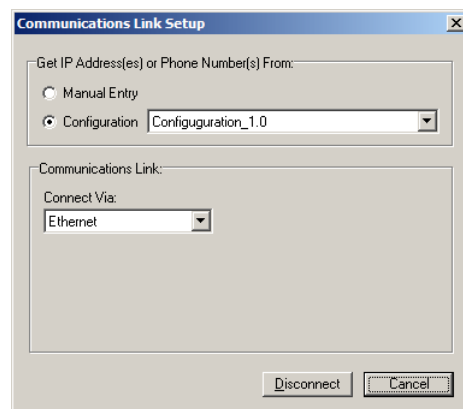
In this case, the **Communication Status** window appears and displays the exchanges that you have chosen to connect to in grey (dimmed).

Another connection problem could be that the exchange is already connected to another computer that is also using the administrator software. In either case, a retry box will pop up and count the number of seconds specified in the **Refresh communication status every ____ seconds** before attempting to reconnect. You can choose to close the retry box and not connect to the exchange at all, or click the reconnect now button to try again right away. The retry box will keep popping up until a connection is established, or until it gives up after a number of tries (a message box will be displayed to explain the error).

Firewalls can also create problems with connections. Verify that exceptions are setup to allow ICMP PING, Telnet, and FTP protocols.

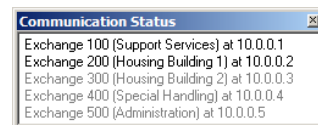
2.4.3.2 Show Setup

The **Show Setup** brings up the **Connection Link Setup** window. This window is for information only and cannot be edited.



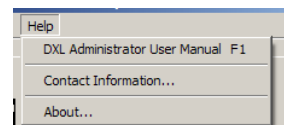
2.4.3.3 Show Status

Selecting Show Status will bring up the **Communication Status** window showing a list of possible connections. In this example the dimmed/*italic* entries indicate that there are no devices responding at the IP address. The black entry indicates a device is responding to the IP address being sent out, and a connection link exists.



2.4.4 Help Menu

Selecting the **Help** tab of the MicroComm DXL Administrator window displays the following choices.



2.4.4.1 DXL Administrator User Manual F1

Selecting **DXL Administrator User Manual F1** will bring up a PDF copy of the Administrator Software & Local User Interface manual.

2.4.4.2 Contact Information...

Clicking on this option brings up an information box giving the address and phone numbers for Harding Instruments. Exit by clicking the **OK** button.



2.4.4.3 About...

Clicking on **About...** brings up an information window that displays the current operating version of the MicroComm DXL Administrator, along with copyright information and the name of the application. This window is for display purposes only. Click on **Version Info...** to obtain more details if required. Exit this window by clicking on the **OK** button.

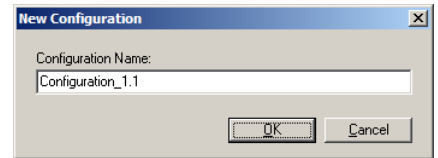


3 The MicroComm DXL Configuration Editor

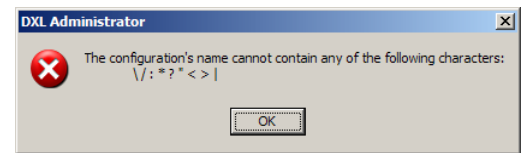
Once you have opened a project, the next step is to either open a new configuration or open an existing configuration. Click on the **Configuration** button on **MicroComm DXL Administrator** window to open a new or existing configuration.

Opening a New Configuration

If you have not defined a configuration for this project, then a **New Configuration** dialog box will pop up. Type the name that you want to give the configuration in the **Configuration Name:** entry, then click on the **OK** button. An empty **DXL Configuration Editor** window will open, with the name that you assigned to the configuration in the title bar.



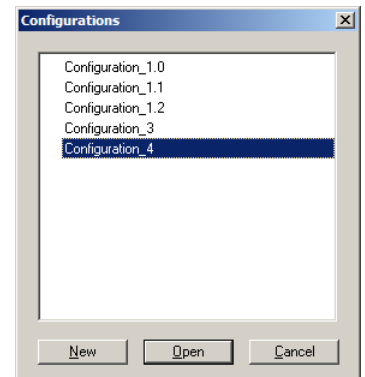
The characters (\ / : * ? “ < > |) cannot be used in the configuration name and you will get an error message if you have used one of these characters after clicking the **OK** button.



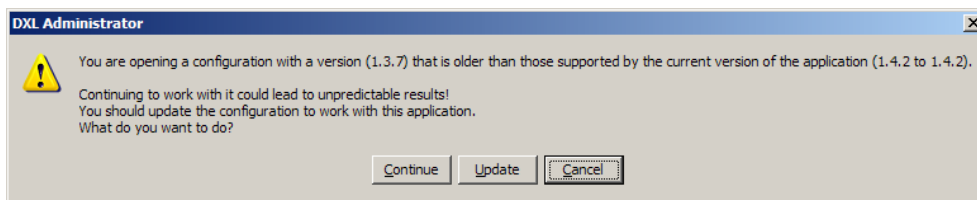
Opening an Existing Configuration

If you have already created a configuration for the project that you have open, then a **Configurations** window will pop up, with the name of the configuration(s) displayed. You will also see three buttons at the bottom of this window.

Since you can define many configurations for the same project, click on **New** to define a new configuration for the active project. To open an existing configuration, select the name of the configuration that you want to open and click on **Open** (or double click the configuration name). If you do not want to open a new or existing configuration, then click on the **Cancel** button.





When opening an older configuration the program will prompt you if it needs to upgrade the configuration to match the Administrator.



It is recommended that you always choose to update the configuration and then perform a “Save as...” with a new name for backup purposes. If you do not want to update (for example, if you cannot update the site’s DXL firmware to match the new version) then you should quit and use the required earlier version of the **MicroComm DXL Administrator** to edit that configuration.

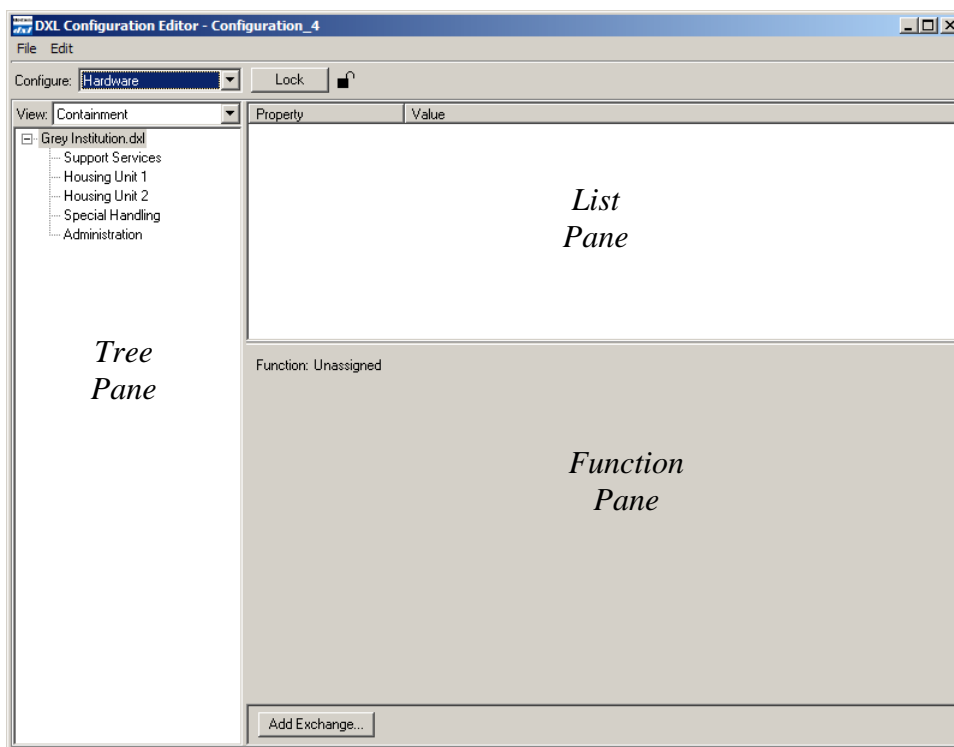
DXL Configuration Editor

Following either of the two operations described above the **DXL Configuration Editor** window appears with the name of the configuration on the top title line. You can begin to edit parameters in this window only if the configuration is Unlocked. Note that the **Lock/Unlock** button toggles each time it is pressed. For a new project, the window opens in the Unlocked state, but with an existing project it will open in the Locked state.

- If a **DXL Configuration Editor** window appears with a 'locked padlock'  icon beside the **Lock/Unlock** button the configuration is locked from editing and you will not be allowed to edit this configuration until it is unlocked.
- If a **DXL Configuration Editor** appears with an 'unlocked padlock'  icon beside the **Lock/Unlock** button the configuration can be edited.

If you click on the **Unlock** button and can't 'unlock' the padlock the configuration has already been activated and cannot be modified further. You will only be able to view the configuration settings. (You can use the **Save as ...** file entry to make an editable copy.)

The **DXL Configuration Editor** window has 3 panes that display information as the system is built. The pane on the left side is referred to as the Tree pane, the pane on the upper right side is referred to as the List pane, while the lower right pane (it may not be present in all cases) is referred to as the Function pane. Initially, the name of the project (in this example: the Grey Institution.dxl) is the only item that is displayed in the Tree pane. However, once you have defined exchanges these exchanges will also appear in the Tree pane (Support Services, Housing Unit 1, etc.).

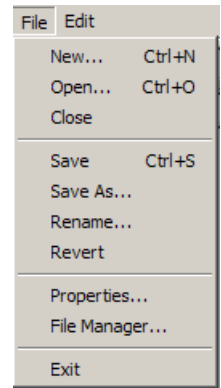


The **DXL Configuration Editor** window has two menu entries **File** and **Edit**, which are discussed in detail in the next few sections.

3.1 MicroComm DXL Configuration Editor Menus

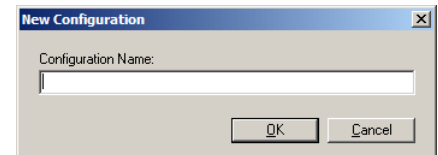
3.1.1 File Menu

The **File** menu allows you to create a **New...** configuration, **Open...** an existing configuration, and **Close...**, **Save**, copy (**Save As...**), or **Rename...** an open configuration. In addition this menu has options that allow you to import and export configurations, as well as to upload, download and activate various configurations. These latter operations are available through the **File Manager...** menu selection.



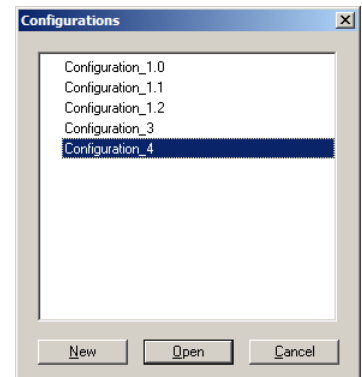
3.1.1.1 New...

Click on **New...** if you want to define a new configuration. This brings up the **New Configuration** dialog box as discussed above in "Opening a New Configuration".



3.1.1.2 Open...

Selecting this menu item brings up the **Configurations** information box, which lists all the configurations that have been saved for this project.



To develop a new configuration, select the **New** button and proceed as discussed above in "Opening a New Configuration". To open an existing configuration, select the name of the configuration and then click on **Open**, or simply double-click on the name of the configuration that you want to open. Then proceed as discussed above in "Opening an Existing Configuration".

3.1.1.3 Close

Select this menu item if you want to close the existing configuration. This will leave the **DXL Configuration Editor** window open in case you wish to load another configuration.

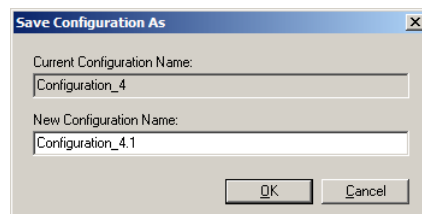
3.1.1.4 Save

Select this menu item if you want to save the current file (e.g. in the case when some changes are made) by overwriting the existing file. This option offers no confirmation; so ensure that all the changes are appropriate for the file being saved.

3.1.1.5 Save As...

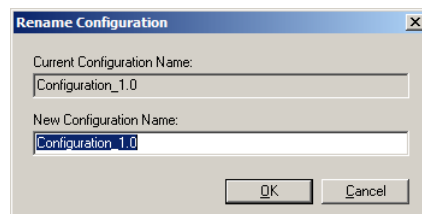
Select this menu item to save the existing configuration with a new configuration name. This is helpful when you want to make some changes to the existing configuration and then save these changes as a new configuration. This option is also helpful if you decide to activate a configuration on the DXL. When this occurs, the configuration that is activated can no longer be edited and you will have to save the configuration with a new file name in order to make changes.

Selecting this option brings up the **Save Configuration As** window. This window displays the **Current Configuration Name:**. Type the name of the new configuration into the **New Configuration Name:** entry. Click the **OK** button to save the new configuration. Click on **Cancel**, in order to cancel the operation.



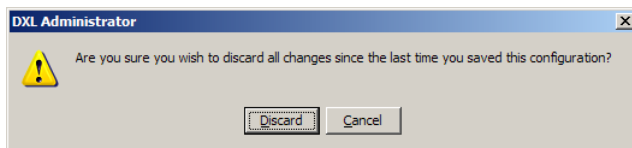
3.1.1.6 Rename...

Select this menu item to rename the current configuration with another name. This brings up the **Rename Configuration** window, which displays the current configuration name. Enter the new name into the **New Configuration Name:** entry. Click on the **OK** button to save the current configuration with its new name. Click on **Cancel** in order to cancel the operation.



3.1.1.7 Revert

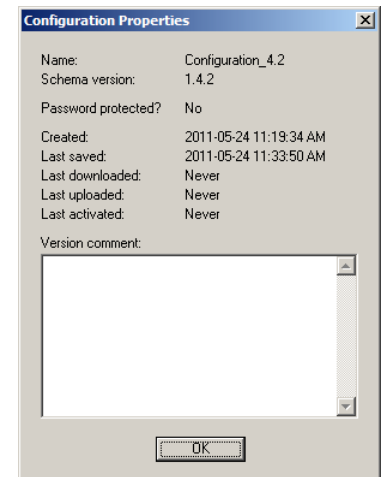
Select this menu item if you have made certain changes to the configuration but you now wish to return to the configuration settings that were available the last time the configuration was saved.



In effect the **Revert** option undoes all the changes that have been made up to the time you last saved the changes to the configuration. The program will display a confirmation message before it proceeds. Click on **Discard** to eliminate the changes that you have made since you last saved the configuration or click on **Cancel** to cancel the operation.

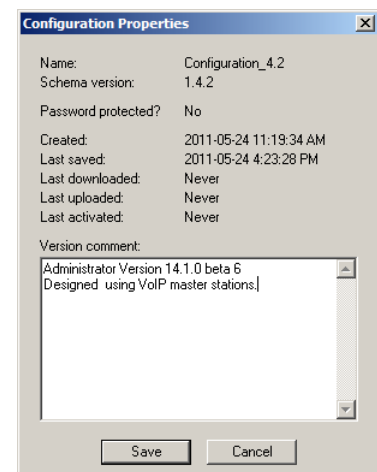
3.1.1.8 Properties...

When you select this menu item, the program brings up the **Configuration Properties (Read – Only)** window if the configuration is in a ‘locked’ state or it brings up the **Configuration Properties** window if the configuration is in an unlocked state. The list of the items that appear in this window is displayed on the right and a description of these items is listed in the table below. You can add to or change the **Version comment**: if the configuration is unlocked. Click on **OK** to exit this window.



Item	Description	Display
Name:	Name of the Configuration	Name of Configuration
Schema Version:	Will display version of schema of the database that is used to create the Configuration files	Version Number is displayed
Password protected?	Will indicate if the Configuration is password protected	Yes/ No
Created:	Will indicate when Configuration was created	Date and time displayed
Last saved:	Will indicate when Config. was most recently saved	Date and time displayed
Last downloaded:	Will indicate when Config. Was most recently downloaded	Date and Time displayed
Last uploaded:	Will indicate the time when the current Configuration was last uploaded	Time displayed
Last activated:	Will indicate the time when the current Configuration was last activated	Time displayed
Version Comment	Will display any user comments	Comment displayed

As soon as you start to type comments in the **Version Comment** box the selection buttons at the bottom of the **Configuration Properties** window will change. You will see a **Save** button and a **Cancel** button. Click on the **Save** button to save your comments or click on **Cancel** button to cancel the operation.



3.1.1.9 File Manager ...

The File Manager allows communications between your PC and a DXL system. Some of the communication functions include; transferring configuration files from your PC to the DXL system, activating configurations, download logging information, and carrying out diagnostics procedures. In order to carry out these operations you need to select the communication channels between the PC and the DXL system that are to be used. The **Communications Link Setup** allows you to setup and display the connection links in the **Communication Status** window. From this list you can select the specific channels you wish to use.

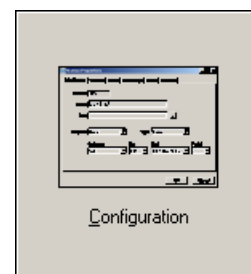
Each of the three different modules in the **MicroComm DXL Administrator** can use the File manager once a communication channel is established. You can establish communication channels between your PC and the exchanges in the DXL system in a variety of ways, depending on the module that you are operating in.

Here it is important to distinguish between the connection links and the communication channels to the exchanges. When you connect the PC to the exchanges using a configuration the PC by default is connected to all the exchanges on the DXL. However, if you want the PC to establish a communications channel to specific exchanges then select only the exchanges that you want the PC to communicate with. Remember that you can only establish communication channels to exchanges on the DXL after the PC has setup the main communication link. When you make this initial communication link it is setup for all the three modules. Connecting and disconnecting from exchanges to modules does not alter the main link itself.

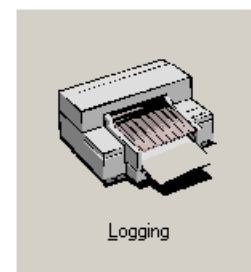
There is a separate option that you can use to connect or disconnect communication channels from the exchanges, for each of the three modules. Depending on the module you are in you can choose to connect or disconnect the communication channels to certain exchanges. However the connection and disconnection from exchanges in a module does not affect the selections in other modules, nor does it affect the main link.

Depending on the module that you are in, the mode of accessing the exchanges and other settings may vary slightly. So, in this discussion, we will highlight the settings that are common for all the modules. Any choices and settings that vary will be discussed with their respective sections.

In the **DXL Configuration Editor**, you can connect to the exchanges on the DXL through the **File Manager**. You can access this option by clicking on the **File Manager...** located on the **File** menu of the **DXL Configuration Editor**. The reason for connecting to exchanges from the **File Manager** window is so that you can load configurations onto the exchanges, delete configurations from the exchanges and activate configurations on the exchanges.



In the DXL Log Viewer, you can connect to the exchanges on the DXL by clicking on the **Connect...** menu item that is located on the **Transfer** menu of the **DXL Log Viewer**. The reason for connecting to exchanges from the **DXL Log Viewer** window is so that you can download logs from the exchanges that you are connected to.



In the Diagnostics and Communication module, you can connect to the Exchanges on the DXL by clicking on the Remote Front Panel menu item that is located on the View menu of the DXL Diagnostics and Communication dialog. The reason for connecting from this module is so that you can view the front panel of the DXL box that the exchange is loaded on. From this remote front panel, you can perform the same tasks (and click on the same buttons) as if you were physically depressing the buttons on the DXL box.



The first commonality for the three modules is the Communication Link Setup window. The only difference here is in the fact that you cannot do a manual connection to connect to the exchanges from the DXL Log Viewer.

3.1.1.9.1 Connect...

To connect to the exchanges on the DXL, the administrator needs to retrieve the IP address or the phone number of the exchange(s). It can get this information from the configuration file, or directly from you, the user. If you have a configuration for the DXL system that you want to connect to, then you can use the configuration to supply this information. If not, then you will probably use a manual entry to supply the administrator with an IP address or phone number for a single exchange. Once the PC has connected to the IP address or phone number, you can then download a configuration from that system. You can then use this configuration for future connections to the entire system.

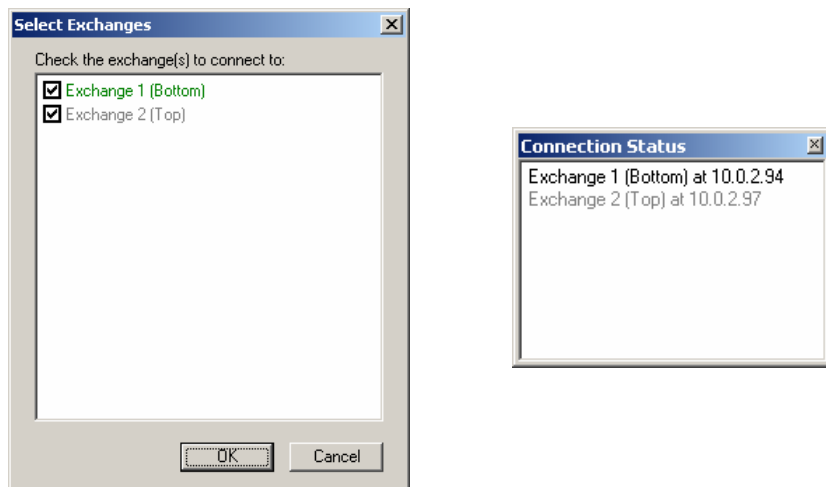
3.1.1.9.2 Select Exchanges

The purpose of the **Select Exchange** option is to let you choose the exchange that the PC can connect to if there is more than one exchange in a configuration that the computer can connect to. Therefore, the **Select Exchanges** option will be dimmed (not selectable) if the computer only connects to one exchange, such as in the case of a manual entry.

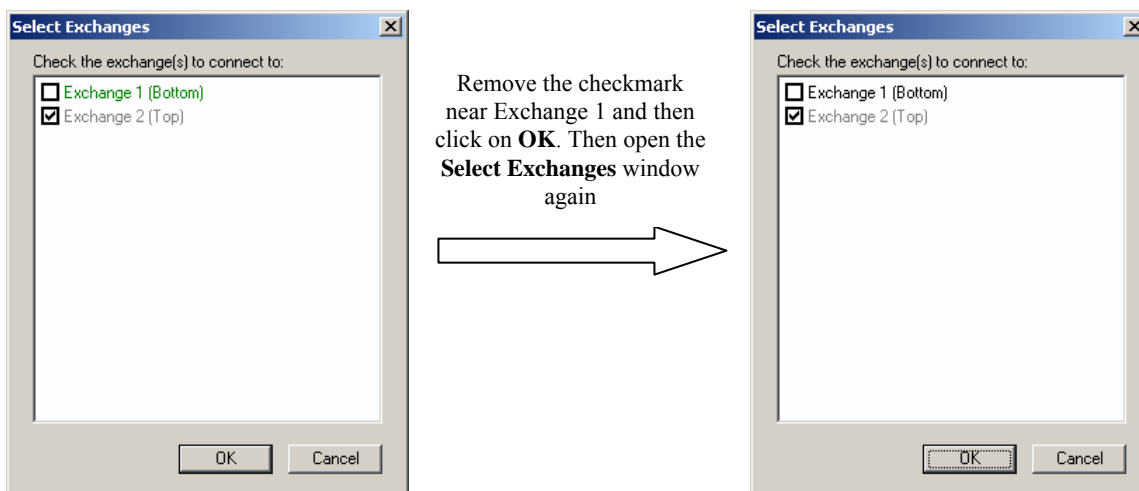
The **Select Exchanges** window displays the valid exchanges that the PC could connect to. If an exchange appears in green, this means that the computer is currently connected to this exchange. If an exchange appears in black, this means that the PC is periodically checking its connectivity with the exchange and as long as the exchange remains black, it is possible for the computer to make a connection to the exchange. If an exchange appears in grey, this means that it is not possible for the computer to make a connection to that exchange. This could be because the DXL boxes have been switched off or the I/P address is not consistent with the IP address in the Configuration or for some other reason.

3.1.1.9.2.1 DXL Configuration Editor & DXL Log Viewer

From the figure below, notice how Exchange 1 is in green, which means that the PC is currently connected to Exchange 1. Exchange 2 is in grey because it is not possible for the computer to make a connection to Exchange 2. Notice how this is reflected in the Communication Status window as well. By clicking on the right mouse button in the **Select Exchanges** window a pop-up menu is displayed which allows you to place a tick mark next to all the exchange names or remove the tick marks from all the exchanges.

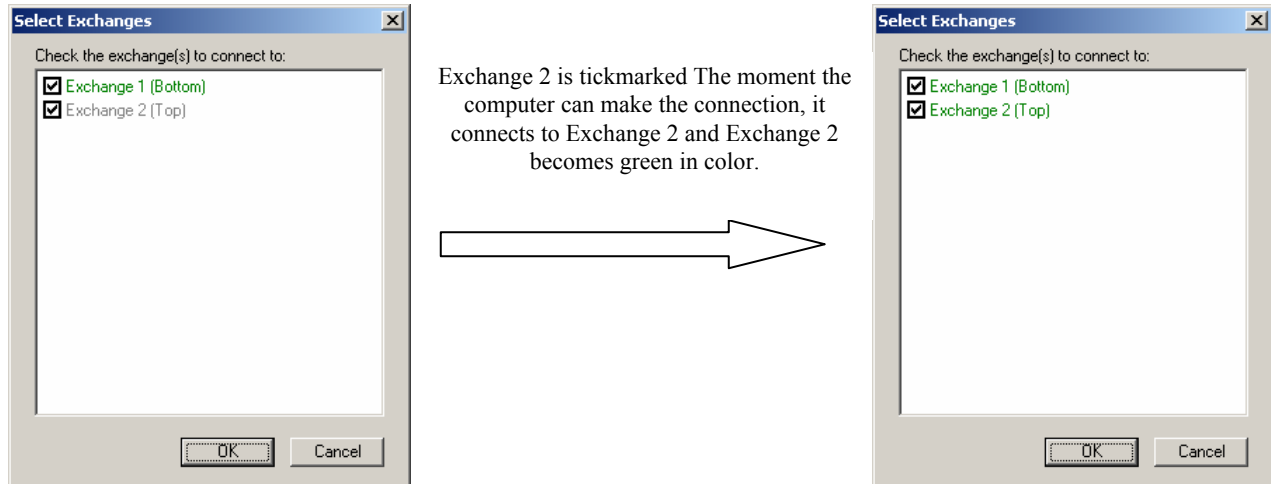


Now from the two exchanges in the figure, say that we did not want to connect to Exchange 1 (Bottom). If you do not want to connect to this exchange remove the checkmark near the exchange name and then click on the **OK** button. Now open the **Select Exchanges** window again. You will see from the figure below that Exchange 1 (Bottom) now appears in black as the PC is no longer connected to this Exchange.



It is important to remember that whether the computer is connected to the exchange or not, it is constantly checking the connectivity between itself and the various exchanges that it can make a connection with. When an exchange is displayed in grey it is not possible for the computer to make a connection to that exchange. If you leave a tick mark beside the exchange that is displayed in grey, the computer will continue checking the connectivity between itself and the exchange. The moment the PC is able to make a connection to the exchange, it

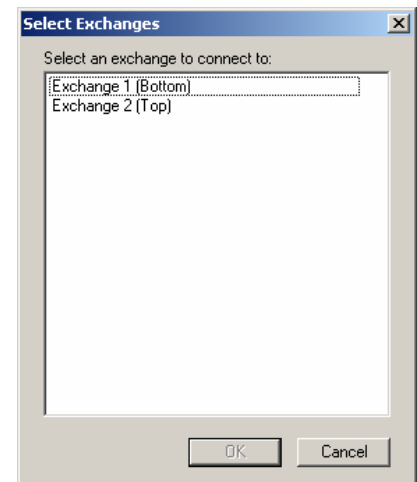
will immediately connect to that exchange. In the figure below, Exchange 2 (Top) has a tick mark beside it, and that the computer is continuously monitoring the connection between itself and that exchange. The moment Exchange 2 comes online (becomes available); the computer connects to Exchange 2. After the PC connects to Exchange 2, the exchange name becomes green in colour, indicating that the computer has successfully made a connection to it.



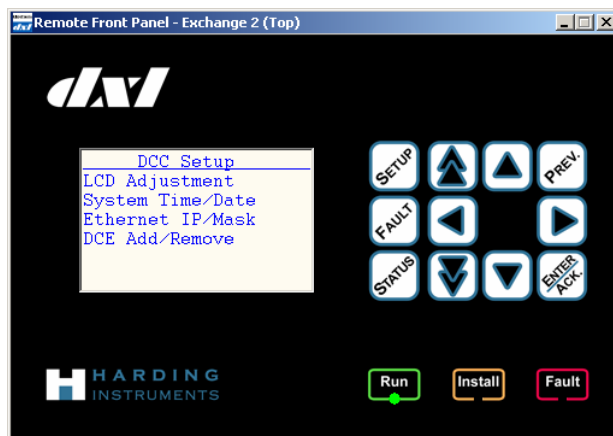
3.1.1.9.2.2 Diagnostics and Maintenance

The **Select Exchanges** window is slightly different for the Diagnostics module. This is because when you are in the Diagnostic module, the PC can only connect to one exchange at a time. Therefore, instead of the tick marks beside the Exchanges, you will simply have to click on the exchange that you want to connect to.

From the figure on the right, you can see that both Exchange 1 and Exchange 2 are displayed in black, indicating that it is possible for the PC to make a connection to either exchange. Just click on the exchange that you want the PC to connect to and then click on the **OK** button.



After you click on the **OK** button you will see the **Remote Front Panel** appear when the connection to the exchange is made.

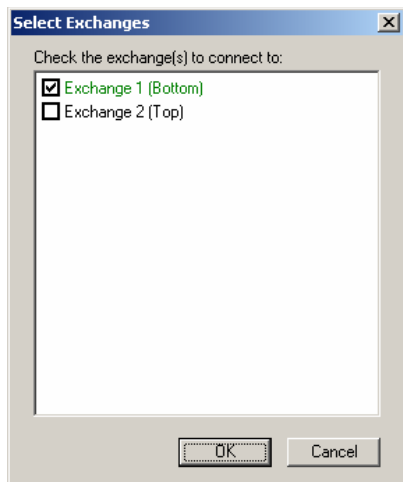


3.1.1.9.2.3 General

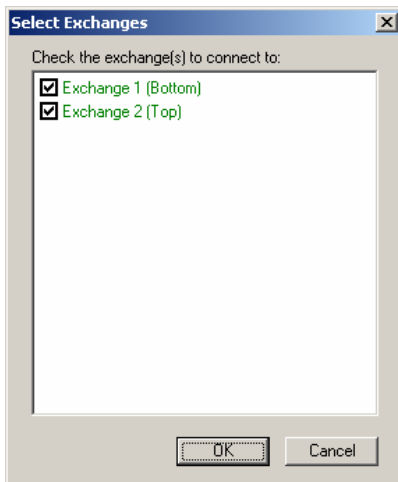
Remember that the **Select Exchanges** window for a module operates independently of the **Select Exchanges** window in the other modules. Therefore, the exchanges that you select in the **Select Exchanges** window of the File Manager (DXL Configuration Editor) could be different from the exchanges that you select in the **Select Exchanges** window of the DXL Log Viewer.

As an example, the three **Select Exchanges** windows shown below have all been opened during the same connection session. In the first window, the PC is connected to Exchange 1 through the File Manager window. In the second window, the PC is connected to both exchanges through the Log Viewer window. In the third figure, the PC could be connected to either exchange through the Diagnostics module. Therefore, the connection to exchanges from different modules is totally independent. Connecting and disconnecting from exchanges through the **Select Exchanges** window in a module does not affect the communication status of exchanges in a different module.

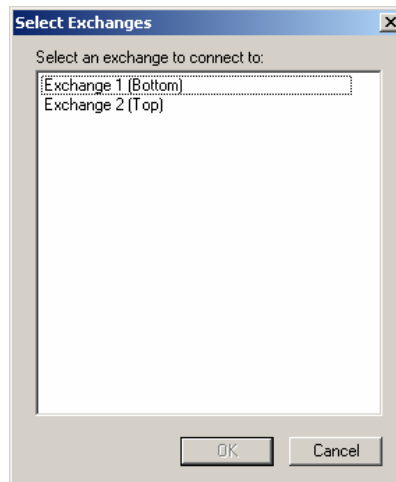
Select Exchanges window edited in the File Manager



Select Exchanges window edited in the DXL Log Viewer



Select Exchanges window edited in Diagnostics



3.1.1.9.3 Disconnect...

When you disconnect the main communication link, you are closing the connection between the PC and ALL the exchanges on the DXL that the PC is connected to. Remember that when you disconnect, this affects the connection to the exchanges for all the three modules. When you disconnect, the Communication Status window disappears.

Remember that disconnecting the main link is entirely different from disconnecting the connection between the PC and one or more exchanges, from the Select Exchanges window. When the PC connects or disconnects from certain exchanges, the main link is still intact, but you are simply choosing to connect or not to connect to certain exchanges. However, when the main communication link is disconnected, the PC can no longer connect to any of the exchanges on the DXL. Disconnecting the connection between the PC and exchanges on the DXL is discussed with the Select Exchanges option; however, in this section we will discuss how you can disconnect the main communication link between the PC and the DXL.

3.1.1.9.3.1 DXL Configuration Editor and DXL Log Viewer

To break the connection with the exchange on the DXL from the File Manager window, just click on the **Disconnect...** button. You will see that the **Disconnect...** button changes to a **Connect...** button.

To disconnect from the exchanges on the DXL from the DXL Log Viewer, just click on **Disconnect...** in the **Transfer** menu. You will see the **Communications Link Setup** window appear. Click on the **Disconnect** button in this window. Click on **Cancel** if you do not want to disconnect from the Exchanges.

3.1.1.9.3.2 Diagnostics and Maintenance

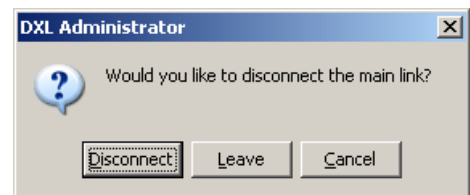
The PC displays the remote front panel of the DXL when it is connected to an exchange on the DXL from the Diagnostics and Maintenance module. To disconnect from an exchange, close the Remote Front Panel. Once you do this, the PC is disconnected from the exchange on the DXL. However, this does not close the main communication link for this module; neither does it affect the connections in the other modules.

To disconnect the main link, you have to click on the **File Manager...** menu option that is located on the **File** menu of the MicroComm DXL Diagnostics and Maintenance dialog. Click on **Disconnect...** once the **File Manager** window opens. This will close the connection from the PC to ALL the exchanges on the DXL.

3.1.1.9.4 Closing windows while connected to Exchanges

There are two possible cases that could take place when you close the File Manager window from the DXL Log Viewer window or the DXL Diagnostics and Maintenance window.

As an example, let us say that you had established the original connection (by clicking on the **Connect** button) from the Log Viewer. If the computer is currently connected to the exchanges and since you had established the connection to these exchange(s) from the Log Viewer itself, the program will prompt you with a message as you try to shutdown the Log Viewer window.



However, if the computer is currently connected to the exchanges but you had NOT established this connection from the Log Viewer window, then the program will NOT prompt you with a message as you try to shutdown the Log Viewer window.

Still continuing with the example, click on **Disconnect** if you want to close the DXL Log Viewer window and close the main communication link by disconnecting the computer from ALL the exchange(s) that it is connected to on the DXL. When you do this, remember that the PC will disconnect from ALL the exchanges, in all the modules, that it is connected to.

Click on **Leave** if you want to close the DXL Log Viewer window but you want the computer to remain connected to the exchange(s) on the DXL. Do this only if you are planning to connect to the same exchanges (over the same link) from the other modules as well. However, if you click on the **Leave** button, the program will not prompt you with a message the next time that you try to close this window. This is because you have already told the PC to leave the connection intact. However, if you click on **Cancel** instead of **Leave**, then the program will prompt you with a message the next time that you try to shut down this window.

Click on **Cancel** to cancel the current operation.

Therefore, remember that the program only prompts you with a message if you are trying to shut down the window from which you had set-up the original connection.

3.1.1.10 File Manager...

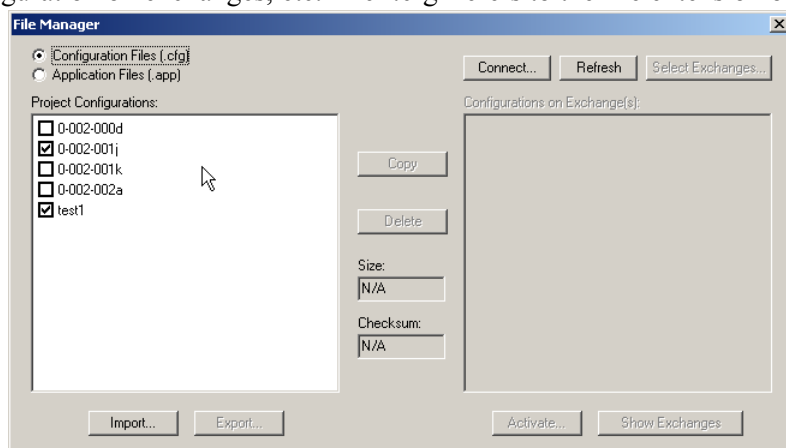
From the File Manager window, you can manage, activate, copy, distribute and delete configuration files and application files. You can also use this window to import and export configuration/application files, upload configurations/applications to exchanges, and download configurations/applications from exchanges.

There is an important distinguishing factor between the configuration files (.cfg) option and the application files (.app) option. In the configuration files (.cfg) option, the **Project Configurations:** area only displays the configurations that exist in the project that is open. In the application files (.app) option, the **Installed Applications:** area displays all the applications that are installed on the PC.

3.1.1.10.1 Configuration Files (.cfg)

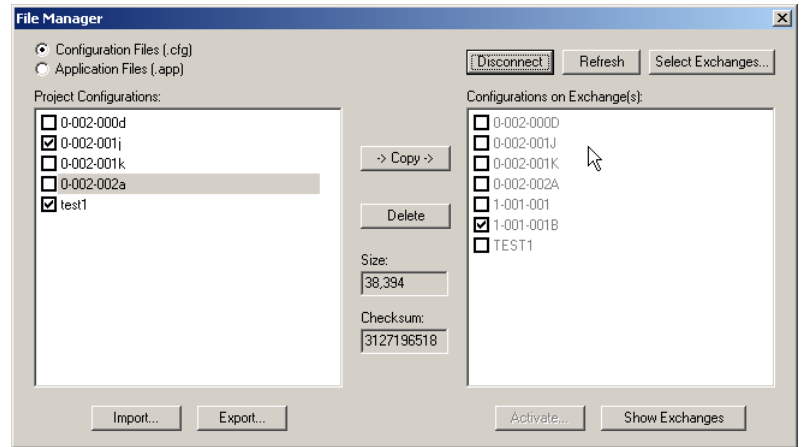
Select this option to manage the configuration files, by uploading configurations to exchanges, downloading configuration from exchanges, activating configuration on exchanges, etc. The '.cfg' refers to the file extension of the configuration files. If the PC is not currently connected to the DXL system, the **File Manager** window opens and displays the files that are on your computer only. These files are displayed in the **Project Configurations:** area.

In this case, you will not be able to see the exchanges on the DXL, as you are not currently connected to any of the exchanges.



If you are already connected to the exchanges on the DXL when the **File Manager** window opens, then you will be able to see all the exchanges that currently exist in the **Project Configurations:** area.

You will also be able to see the configurations that are active on the exchange(s) that the PC is currently connected to, in the **Configurations on Exchange(s)** area.



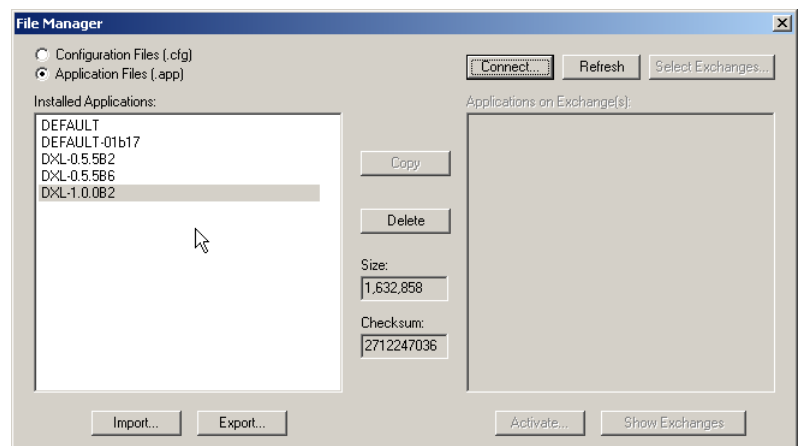
The **Project Configurations:** area displays all the configurations that are currently defined in the open project. The presence of a tick mark beside a configuration name indicates that this configuration has been activated at some point in time. However, this does not mean that it has been uploaded to the current exchanges on the DXL.

The **Configurations on Exchange(s):** area displays all the configurations that are currently stored on all the exchanges that the computer is connected to. The presence of a tick mark beside the configuration name indicates that this configuration is currently active and running on the DXL.

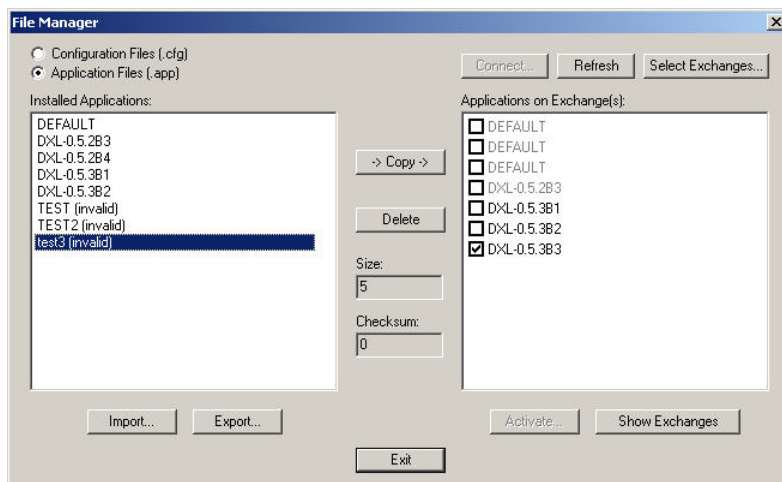
3.1.1.10.2 Application Files (.app)

Select this option to manage the application files by uploading applications to exchanges, downloading applications from exchanges, activating applications on exchanges, etc. The '.app' refers to the file extension of the application files.

The **Installed Applications:** area displays a list of all the application files that are presently installed on your computer. Certain names appear with an invalid beside them. This indicates that there is an error with the file and hence, you will not be allowed to activate this file.



If you are already connected to the exchanges on the DXL when the **File Manager** window opens, then you will be able to see the **Applications on Exchange(s):** area. This area displays all the applications that are currently loaded on the exchanges that the PC is connected to. To view which exchange an application is on, select the application and then click the **Show Exchanges** button. The application that has a tick mark beside it is the only application that is currently active on the exchanges.



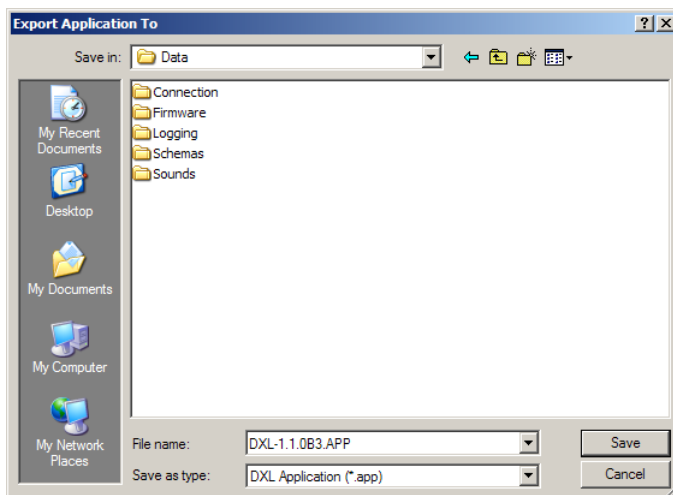
When you open the **File Manager** window, all other DXL Administrator windows become disabled, so that you can only click on items and buttons in the **File Manager** window. In this case, when you connect to exchanges from the **File Manager** window, you can only view the contents of the **Communication Status** window. You cannot resize this window or click on the window.

3.1.1.10.3 Export...

You can export configuration files (and its associated sound files) and application files if you want to e-mail them to another user or import them into another project, etc. Remember that you can only export configurations from the current project that you are working in, however you can export any installed application file that is on your computer. Also remember that you do not have to be connected to the exchanges on the DXL if you want to export a configuration file or an application file.

The **Export...** button works similarly for both the configuration files and the application files, so it will be explained using the configuration files as an example.

To use the **Export...** button you have to first click on the configuration that you want to export from the **Project Configurations:** area. When you click on this button, the program brings up the **Export Configuration To** window and inserts the name of the configuration that you want to export, into the **File Name:** entry. Use the icons to select a destination for saving this exported configuration file. Note that an exported configuration file would have a '.cfg' file extension, while an exported application File would have an '.app' file extension.



Click on **Save** to export this configuration to the location that you have selected in the **Save in:** entry, or click on **Cancel** in order to cancel the operation.

3.1.1.10.4 Import...

You will usually import a file when you are trying to install an updated version of an application file. As updated versions of the application files become available, they are usually e-mailed to the DXL administrators. As an administrator, you can then download the file from the e-mail and import it into your computer. You can then load it onto the exchanges on the DXL and activate it so that it is running on the exchanges. You can also import a configuration file that another administrator may have e-mailed to you. Although, since you will probably be using your own configuration files that you have developed, it is less likely that you will have to import a configuration file. Remember that you do not have to be connected to the exchanges on the DXL if you want to import a configuration file or an application file.

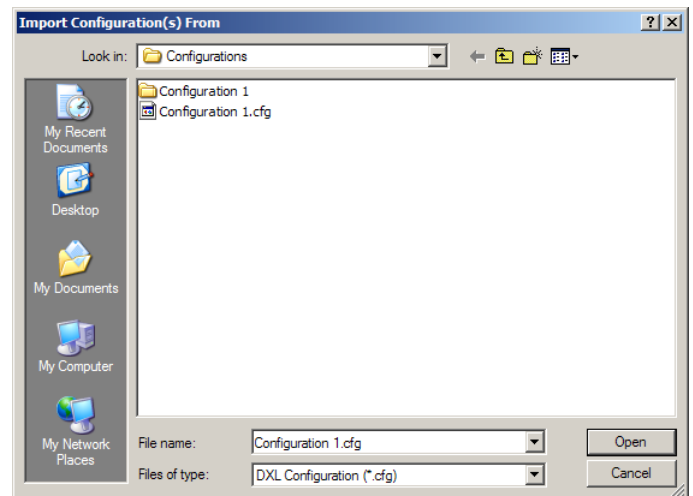
The **Import...** button works similarly for both the configuration files and the application files, so it will be explained using the configuration files as an example.

When you import a configuration, it can only be imported into the project that is currently active and open. Application files are independent of the project that you are running and by importing an application file, you are simply installing this file on your computer.

Note that you cannot import or create a configuration that has the same name as a previously activated configuration. The exception to this is when you are trying to restore a previously activated configuration (after it was deleted) by using the import option.

Click on the **Import...** button to bring up the **Import Configuration(s) From** window. Select a configuration to be imported by using the icons or type the name of the configuration that you want to import into the **File name:** entry. This file has a '.cfg' file extension if you are importing a configuration file, or it has an '.app' file extension if you are importing an application file.

Click on Open to import this file. Remember that if you are importing a configuration file, then the file is imported into the existing project that is currently open and active. Click on **Cancel** to cancel the operation. Now that the configuration has been imported into the existing project, you will be able to open it and view it in exactly the same way as you open other configurations.



Note that if the computer is already connected to the exchange(s) when you open the **File Manager** window, then you can skip the process below which describes how to connect to the exchange(s) on the DXL.

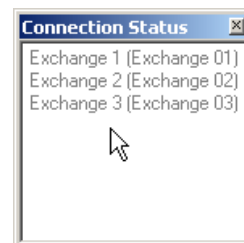
3.1.1.10.5 Connect...

The **Connect...** button works similarly for both the configuration files (.cfg) option and the application files (.app) option.

Connection problems

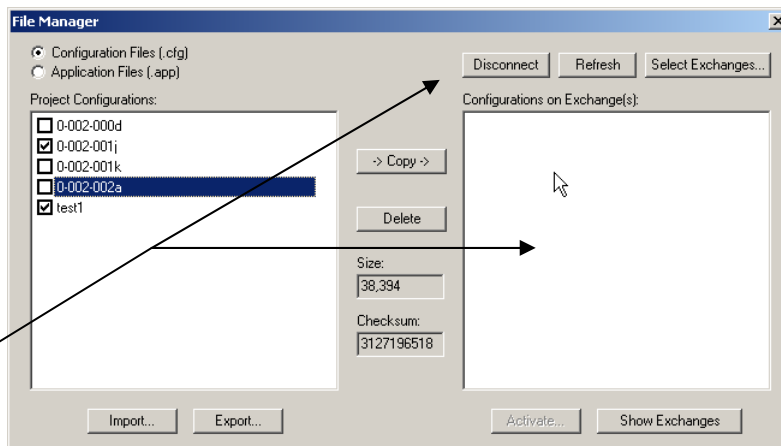
There could be a case when the computer is able to retrieve the IP address/phone number but is unable to set-up a connection with the DXL box. This could be because the DXL box has been switched off or your computer cannot access it due to some other reasons.

In this case, the **Communication Status** window appears and displays the exchanges that you have chosen to connect to, in grey.



Also note that when this happens, the **Configurations on Exchange(s)** area will appear, but it will be empty because the computer has been unable to connect to the required exchanges.

You will also see that the **Connect...** button changes to a **Disconnect** button. This is because the computer has been able to retrieve the IP addresses or phone numbers, but it has been unable to access the required exchanges.



Notice how the **Configurations on Exchange(s)** area is empty

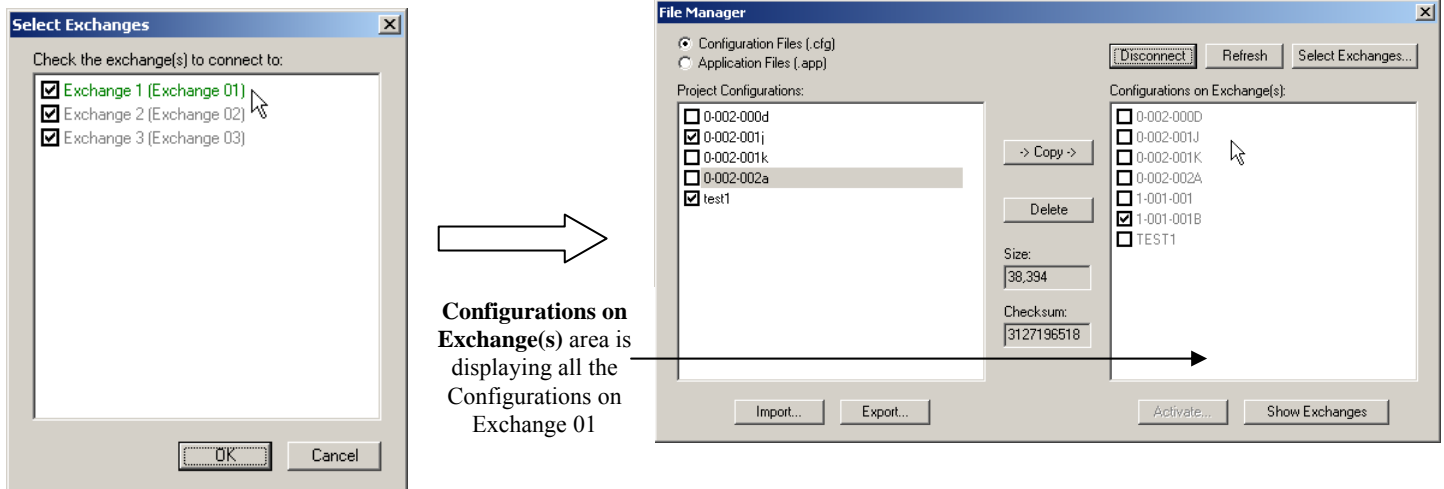
Also, the **Connect...** button has changed to a **Disconnect** button

3.1.1.10.6 Select Exchanges...

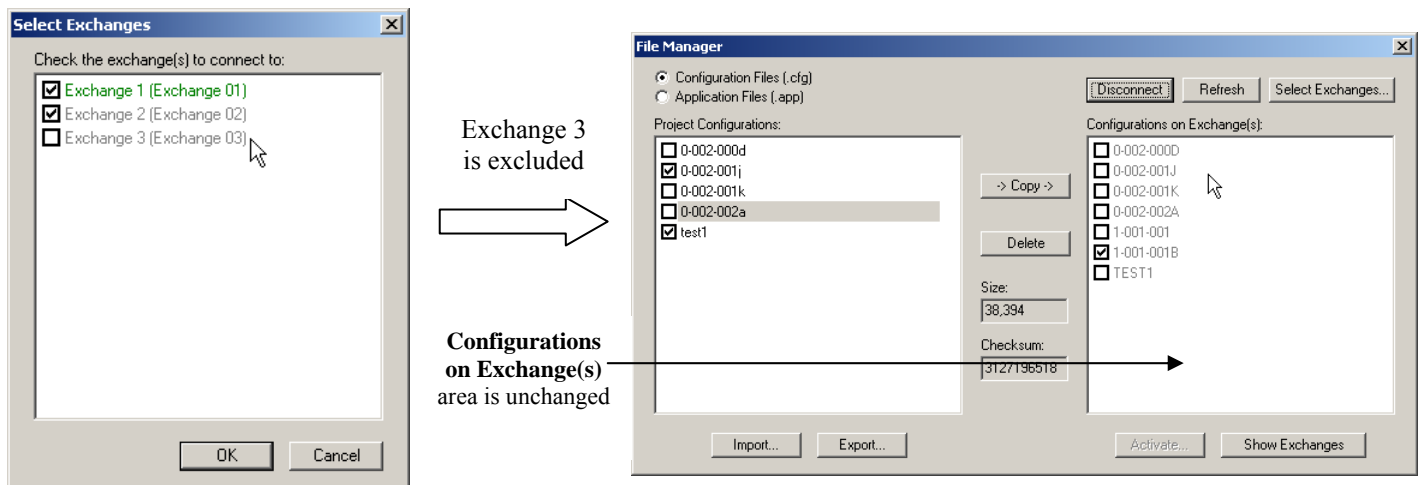
Please refer to Section 3.1.1.9.2 for a description of how to select the exchanges that you want to connect to on the DXL. Remember that when you connect through the manual connection in the **Communication Link Setup** window, you will not be able to use the **Select Exchanges...** button in the **File Manager** window. The following examples are illustrated.

In our example, we have decided to connect to all the exchanges with IP addresses (or telephone numbers) defined in configuration 'TEST1'. Now, click on the **Select Exchanges...** button. You will see the **Select Exchanges** window pop up, which will display the exchanges: Exchange 01, Exchange 02 and Exchange 03. By default, the PC is connected to all the Exchanges that are not in grey and have a tick mark beside them. The **Configurations on Exchange(s)** area is displaying all the configurations that contain these three Exchanges.

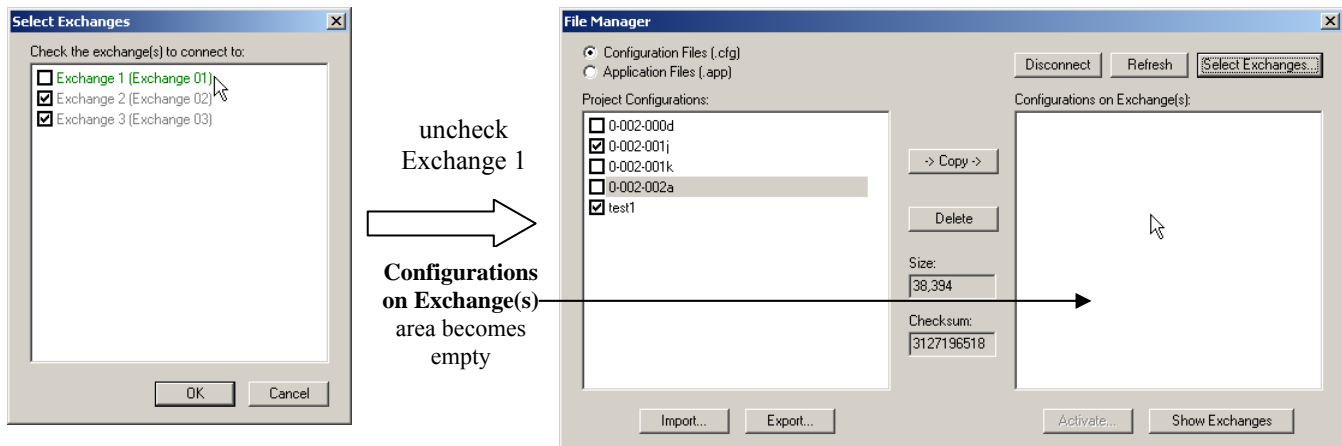
However, in our example, Exchange 02 and Exchange 03 appear in grey, meaning that the computer has been unable to connect to these exchanges. Therefore, since Exchange 01 is the only Exchange that the computer is connected to, the **Configurations on Exchange(s)** window is only displaying the configurations that are on Exchange 01.



Now, say we do not want to view the configurations on Exchange 3 and so we decide to exclude Exchange 03. To do this, we will have to remove the tick mark from Exchange 03 in the **Select Exchanges** window and then click on the **OK** button. When you do this, you will see that the configurations on exchange(s) area do not change. This is because Exchange 01 is the only exchange that the computer can connect to and hence, excluding Exchange 03 has no effect on the Configurations that are displayed in the Configurations on Exchange(s) area.



Now, in our example, say you do not want to view Exchange 01. Simply uncheck the box next to it in the **Select Exchanges** window and click on **OK**. You will see that the moment you do this, the **Configurations on Exchange(s)** area becomes empty. This is because all the configurations that were previously displayed in this area all belonged to Exchange 01, which was the only exchange that the computer could connect to.



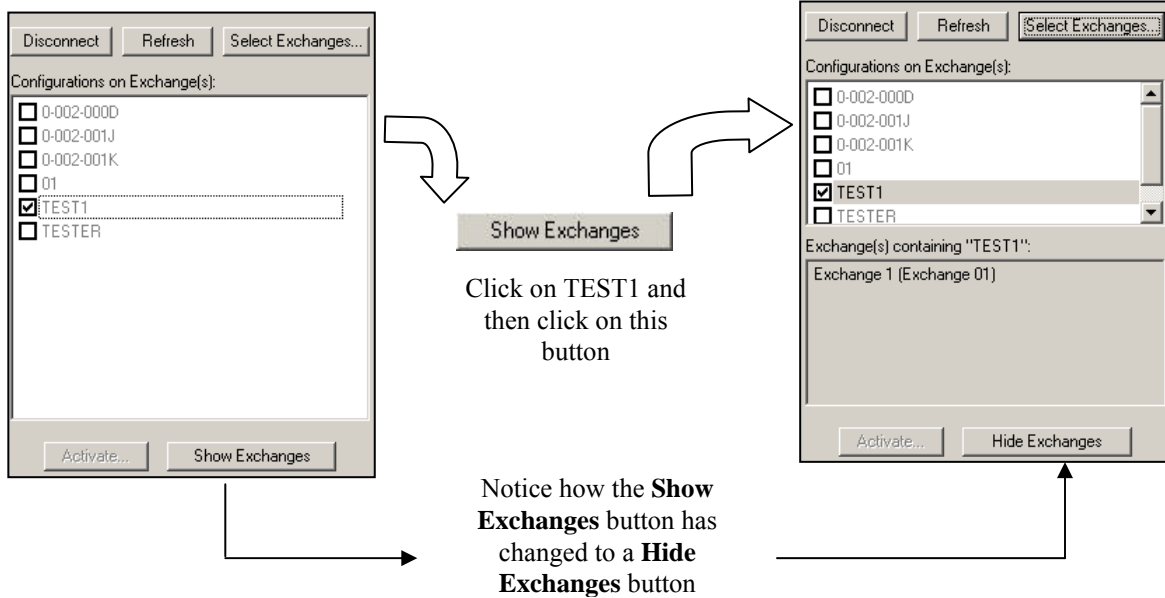
Note that when you are connected to the exchange(s) on the system, the **Connect** button toggles to a **Disconnect** button.

3.1.1.10.7 Show Exchanges

The **Show Exchanges** button is used to display the exchanges that a particular configuration is located on. Note that the program will only display the exchanges that the computer can connect to. To view the exchanges on which a configuration is located, click on the name of the configuration in the **Configurations on Exchange(s)** area and then click on the **Show Exchanges** button. You will see the exchanges on which your selected configuration is located, in the exchange(s) containing area.

When you click on the **Show Exchanges** button, this button toggles to a **Hide Exchanges** button. If you want to remove the display that shows the exchanges that a configuration is located on, then click on the **Hide Exchanges** button. Doing this will remove the exchange(s) containing display.

In our example, notice how the program lists only Exchange 01 (and not Exchange 2 or Exchange 3) for the Configuration TEST1. Remember from the previous example that this is because Exchange 01 is the only Exchange that the computer can connect to.



3.1.1.10.8 Refresh

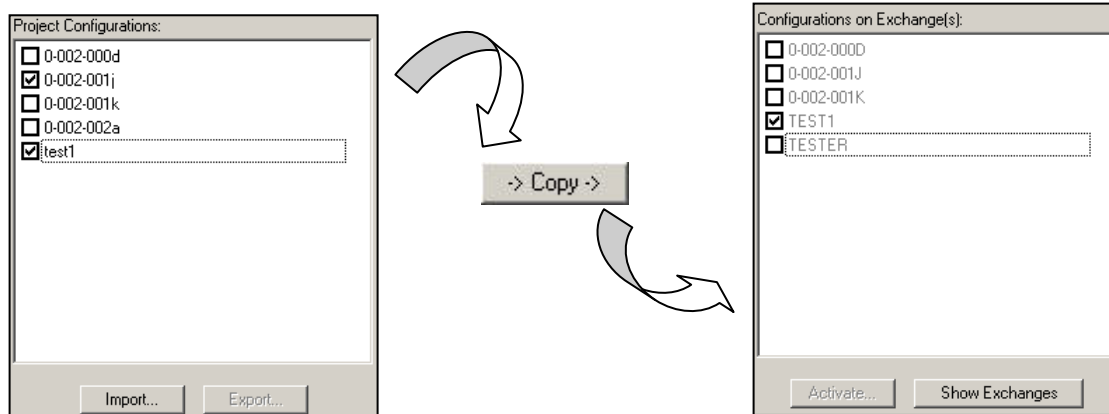
When the computer initially connects to the **File Manager** window and connects to the exchanges, it is possible that the system does not make a connection to certain exchange(s) due to an error. To avoid the chance of not connecting to certain exchanges because of errors on the network etc., click on the **Refresh** button to reconnect to all the exchanges. This will ensure that the computer is connecting to as many exchanges as it can.

3.1.1.10.9 Copy

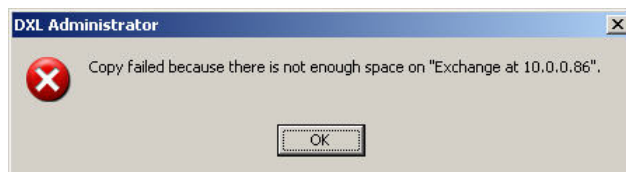
The **-> Copy ->** button lets you upload a configuration or application onto the exchanges on the DXL. By default, the program will upload the files onto all the exchanges on the DXL unless you have selected specific exchanges in the **Select Exchanges** window (using the **Select Exchanges...** button). In this case, the program will only upload the files to only those exchanges that you have specified in the **Select Exchanges** window. The **Copy** button is dimmed and not selectable if your PC is not currently connected to any of the Exchanges on the DXL.

Select a configuration from the **Installed Configurations:** area and then click on the **-> Copy ->** button. The configuration will be added to the **Configurations on Exchange(s):** area and hence, will be uploaded to the exchanges that the computer is currently connected to.

In this example, let's say that we want to copy the Configuration 0-002-001k from the **Project Configurations:** area (the computer) to the **Configurations on Exchange(s):** area (the exchanges on the DXL). To do this, click on 0-002-001k and then click on the **-> Copy ->** button. You will see that the configuration is added to the **Configurations on Exchange(s):** area with the name: 0-002-001K. Therefore, the Configuration 0-002-001k has been uploaded to all the exchanges that the computer is connected to.

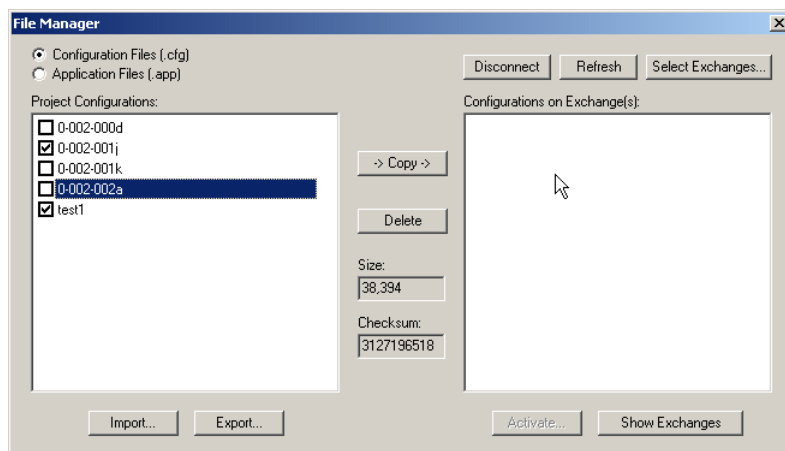


Note that if the memory on the exchange is full when you try to copy the file(s), then you will receive an error message stating that there is not enough memory space on the selected exchange. You will then have to delete certain configurations from the exchange(s) in order to free up memory.



You may want to view a configuration that does not exist on your PC. The **<- Copy <-** button lets you download a configuration from the exchange that it is located on, into the project that you are working in. To do this, first select the configuration that you want to view, from the **Configurations on Exchange(s):**. Then click on the **<- Copy <-** button. The file will be added to the active project that you are working in and will appear in the **Project Configurations:** area. You will be able to open this configuration and view it in exactly the same way as you open other configurations. You can copy multiple files at the same time by holding down the 'Ctrl' key on the keyboard and clicking on the files that you want to copy.

Note that if the computer is able to retrieve the IP addresses/phone number but is unable to connect to the required exchanges because the DXL box is off or for some other reason, then the **Configurations on Exchange(s)** area remains empty. This scenario is shown in the figure to the right.



In our example, if you try to copy Configuration 0-002-002a from the **Project Configurations** area to the **Configurations on Exchange(s)** area, you will receive the following error message. This message means that the computer has been unable to upload the selected configuration to the exchange(s) on the DXL because PC has been unable to connect to any of the exchanges on the DXL.



The **Copy** button works similarly for the Application Files (.app) option.

Rules for copying Configuration Files and Application Files:

The rules that apply to the Copy operation are listed below:

- 1) Uploading and distribution of the default application is NOT allowed.
- 2) Files will NOT be copied to offline or unselected exchanges.
- 3) The user will not be able to copy a file with the same name (but different checksum value) as an activated file. Therefore, even if the file that you are trying to copy onto the exchanges is not the same as the activated file that is already on the exchanges, the system will not allow you to copy this file if both the file that you are trying to copy and the activated file, have the same name.
- 4) If a file is being copied to multiple exchanges, then ALL the exchanges MUST have enough space for this file.
- 5) Nothing is transferred when the user tries to re-copy or re-distribute a file that is already present on the Exchanges.

3.1.1.10.10 Activate... (Activating a Configuration File)

This button lets you activate a particular configuration. By activating a configuration, you are ensuring that the configuration that you have activated is the only configuration that is active and running on the DXL. Note that the DXL can have many configurations loaded on it, but it can only have ONE ACTIVE configuration at one time. Also note that once you have activated a configuration, you will not be able to make changes to that configuration.

To activate a configuration, select the configuration that you want to activate from the **Configuration(s) on Exchanges:** list and then click on the **Activate...** button. The program will prompt you with a message. Click on **Activate** to continue with the activation or click on **Cancel** to cancel the operation.

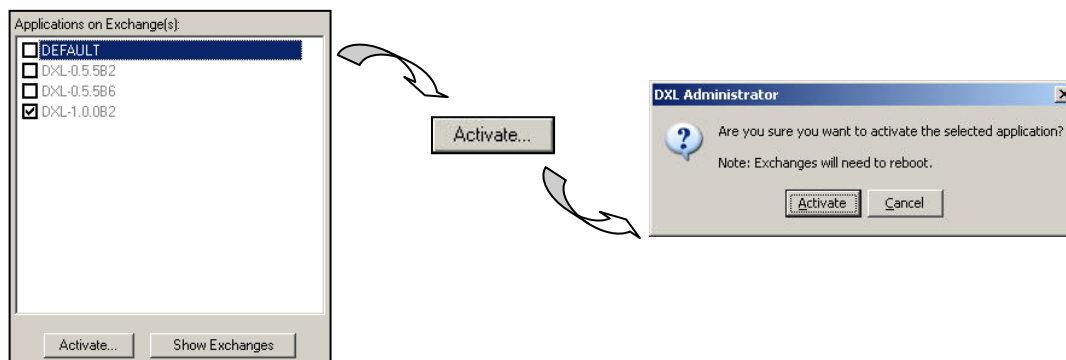
After clicking on **Activate**, you will see another dialog window pop up, which lets you choose how you want the configuration to be activated. Click on **Reboot** to activate the configuration and reboot the exchanges. The activated configuration will be loaded as the exchanges reboot (fastest process). Click on **Load** to activate the configuration and then load the activated configuration on the DXL while the DXL is operating (much slower process). During this process, the exchanges will continue to run and calls in progress will continue, but you will not be able to start or end calls. If you click on **Cancel** the entire activation process is halted and the configuration will not be activated.



3.1.1.10.11 Activate... (Activating an Application File)

This button lets you activate a particular application. By activating an application, you are ensuring that the application that you have activated is the only application that is active and running on the DXL. Note that the DXL can have many Applications loaded on it, but it can only have ONE ACTIVE application at one time. Also note that the application has to be loaded on the exchanges in the **Applications on Exchange(s)** area before it can be activated.

Click on the Application file that you want to activate and then click on the **Activate...** button. The program will display a confirmation message. Click on **Cancel** to cancel the activation process or click on **Activate** to continue with the activation process. Note that in this case you will not have a choice as the DXL must reboot in order to activate a different application.



On start-up, a DXL Exchange runs the currently activated application. As the application starts, it loads the currently activated configuration which tells it how to operate the hardware on the exchange.

Note that when an application file is activated, the **File Manager** will automatically try to connect to the rebooted exchanges after the DXL has rebooted. However, in the case of a PPP connection, if the exchange that provides the main link between the PC and the exchanges is rebooted, then the PPP connection will be severed. In this case, you will have to setup the PPP connection with the exchanges after they have rebooted.

3.1.1.10.12 Distribute


The distribute feature lets you distribute files that exist on the exchanges, to all other eligible exchanges in the system (over an Ethernet connection). This feature requires that the distributing exchanges **MUST** be using protocol 2.0. Exchanges running the default application (which uses protocol 1.0) will not be able to distribute files to other exchanges.

The distribute feature is important for optimizing file transfer over a PPP connection. Uploading files over a PPP connection is slow and should be avoided as much as possible. For instance, when copying a file to multiple exchanges, it is faster to copy the file to one exchange and then distribute the filter to other exchanges instead of trying to directly copy the file to every exchange. This is because the Distribute feature uses the Ethernet and is therefore much faster. The File Manager will try to perform the latter distribute operation if possible however, if none of the Exchanges are capable of distributing the files, then the File Manager will still allow the user to copy the files directly but with a warning to the user that it will be slow and will therefore take much longer.

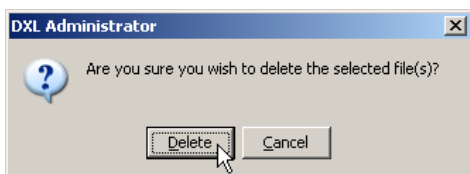
Copying files over the Ethernet will remain the same when the files are to be uploaded to the exchanges directly. Copying files over the PPP, however, will utilize the distribute function as much as possible. If the user tries to copy a file from the Project Configurations: area to the Exchanges and the file is already present on one of the exchanges, then the File Manager will check to see if the exchange can distribute the file first before trying to re-copy the file onto the remaining exchanges. Therefore, the user may see a copy operation over the PPP turn into a distribute operation instead.

Note that when an exchange is receiving a file, it may become non-responsive until the transfer is complete. Therefore it is possible that the File Manager will fail to talk to an exchange even though it is both online and connected. The File Manager handles this situation by using a retry dialog box, which is similar to the dialog box that is used for reconnection.

3.1.1.10.13 Delete

Click on the  button to delete a configuration from the project in the **Installed Configurations:** window, or to delete a configuration on an exchange in the **Configurations on Exchange(s):** window. Remember that if you want to delete a configuration from the **Configurations on Exchange(s)** area you will have to be connected to the exchanges on the DXL.

To do this, click on the configuration or application that you want to delete and then click on the **Delete** button.



You will receive a confirmation message before the file is deleted. Click on **Delete** to delete the file or click on **Cancel** to cancel the operation.

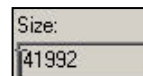
Remember that you cannot delete the default application or the currently active configuration file / application file.

3.1.1.10.14 Disconnect

You will be able to see the **Disconnect** button only after you click on the **Connect...** button and after the computer has successfully opened a connection to the exchanges on the DXL. Click on the **Disconnect** button to close the connection to the selected exchanges. When you do this you will not be able to view the configurations that are located on the exchanges on the DXL i.e. the **Configurations on Exchange(s)** area will be greyed out because the computer is no longer connected to the exchanges on the DXL.

3.1.1.10.15 Size

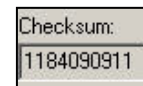
The **Size:** entry indicates the size of an application file or a configuration file. To display the size, click on the name of the configuration in either the **Installed Configurations:** area or the **Configurations on Exchange(s):** area. The size of the file will appear in the **Size:** entry.



Size:
41992

3.1.1.10.16 Checksum

The **Checksum:** is a value that is calculated from a group of data in a file and it is often passed along with the data when it is transferred. Since an application or a configuration may have more than one configuration defined with the same name (which must be avoided in practise), you can use the Checksum: entry along with the name of the file, in order to determine if the files displaying the same name are actually the same files. This is because, if a file that has the same name and the same checksum value, then it is highly probable that it is the same file. However, if the files have the same name but a different checksum value then they are most likely not the same files.



Checksum:
1184090911

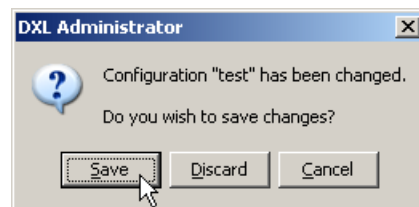
To display the **Checksum** value in this area, simply click on the name of the configuration in either the **Installed Configurations:** area or the **Configurations on Exchange(s):** area. The size of the file that you have selected will appear in the **Checksum:** entry.

3.1.1.11 Print Setup...

3.1.1.12 Print...

3.1.1.13 Exit

Select this option to close the **DXL Configuration Editor** window. Note that the program asks for no confirmation if you have not edited the configuration since the last time that you saved it. If you have edited the configuration and have not saved the changes, then the program will display a message that will ask if you want to save your changes.

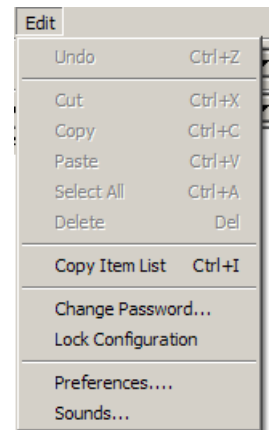


Click on Save if you want to save your changes and then exit the **DXL Configuration Editor**. Click on **Discard** if you want the program to exit the window after discarding the changes that you made since you last saved the configuration. The program will revert to the last saved settings and will then exit the window. Click on **Cancel** if you want to cancel the current operation and leave the DXL Configuration Editor window open.

Even after the **DXL Configuration Editor** window is shut down, the **MicroComm DXL Administrator** window will still be available. Therefore, even though you have closed the configuration, the project that the configuration is located in, remains open.

3.1.2 Edit Menu

The **Edit** menu of the MicroComm DXL Configuration Menu has the following list of entries, where only the five entries **Copy Item List**, **Change Password...**, **Lock (Unlock) Configuration**, **Preferences...**, and **Sounds...** are implemented at this time. The entries **Undo**, **Cut**, **Copy**, **Paste**, **Select All** and **Delete** are not implemented.



3.1.2.1 Copy Item List

When active, select the **Copy Item List** option (or ctrl-I) and the current contents of the right hand list pane (along with the column headings) is copied as text to the clipboard in a Tab-separated format. This is useful when copying, for example, station or master lists for pasting into Excel, etc.

3.1.2.2 Change Password...

Select the **Change Password...** option to bring up the **Change Password** window, which allows you to set up a password, to change the current password, or to remove the password altogether. The purpose of this option is to prevent unauthorized users from making changes to the configuration. Once a password has been set and is active, you will need to know the password to unlock the configuration and make changes. Note the configuration can be viewed without entering the password.

Setting up a Password for the First Time:

If a password has never been set, then the **Current Password:** entry is not available. To set the password, type a string into the **New Password:** entry, and then confirm this new password by typing it into the **Confirm New Password:** entry. Click on **OK** to accept the new password. Click on **Cancel** in order to cancel the operation.



Change an Existing Password:

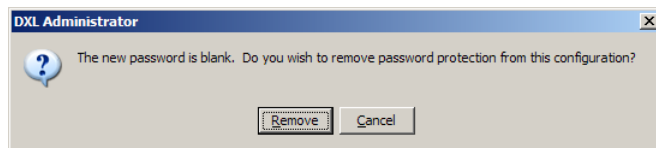
Click the **Change Password...** option to change the existing password. Type the existing password into the **Current Password:** entry. Then type the new password into the **New Password:** entry. Now confirm this new password by re-typing it into the **Confirm New Password:** entry. Click on **OK** to accept the new password. Click on **Cancel** in order to cancel the operation and retain the old password.



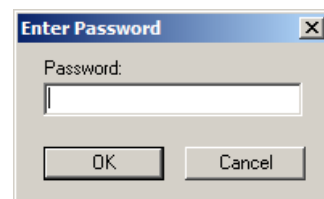
Delete an Existing Password:

To remove the password altogether, click on the **Change Password...** option. Enter the existing password into the **Current Password:** entry and leave the **New Password:** and **Confirm New Password:** entries blank. Click on **OK** to continue with the process of removing the password or click on **Cancel** to cancel the operation.

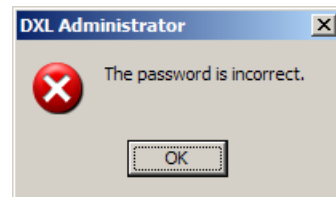
If you click on **OK**, then a confirmation message will appear. Select **Remove** to deactivate the password and remove it. If you click on **Cancel** then a message will appear, informing you that the password has not been changed. Click on **OK** to exit this window.



If you click the **Unlock** button after the password has been set, then the program will prompt you to enter the password in the **Enter Password** window.



If you enter an incorrect password an error message will be displayed and the configuration will remain in a locked state. Press **OK** to exit the error message window. If you enter the correct password the **Lock** button will change to an **Unlock** button, indicating that the **DXL Configuration Editor** window is now open for editing.

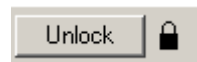


3.1.2.3 Unlock Configuration/ Lock Configuration

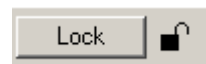
The **Unlock Configuration** or the **Lock Configuration** entry is available on the **Edit** menu. Clicking on this entry will either toggle the configuration from the unlocked state to the locked state or from the locked state to the unlocked state. If a password has been set then the **Enter Password** window will pop up when you click on the **Unlock Configuration** entry and you will need to type in the correct password to unlock the configuration.

You can also lock or unlock the configuration directly from the **DXL Configuration Editor** using the **Unlock/Lock** button that appears at the top of the window adjacent to a 'padlock' icon.

When this icon shows a closed padlock the configuration is currently in a locked state. When the configuration is in the locked state, you will not be allowed to edit the configuration and will only be allowed to view the configuration. To unlock the configuration, you can click on the **Unlock** button. If you have set a password the **Enter Password** window will appear and you will be required to type in the correct password in order to unlock the configuration. If you have not set a password the configuration will immediately change to the unlocked state. When the configuration is in this unlocked state you will be allowed to edit the configuration.

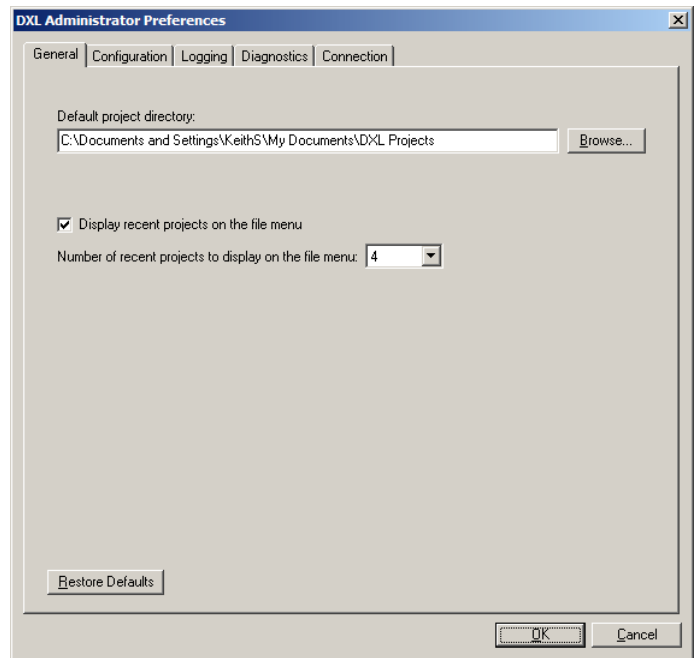


When this icon shows an open padlock, it indicates that the configuration is currently in an unlocked state and can be edited. You will have to click on the **Lock** button in order to lock the configuration.



3.1.2.4 Preferences...

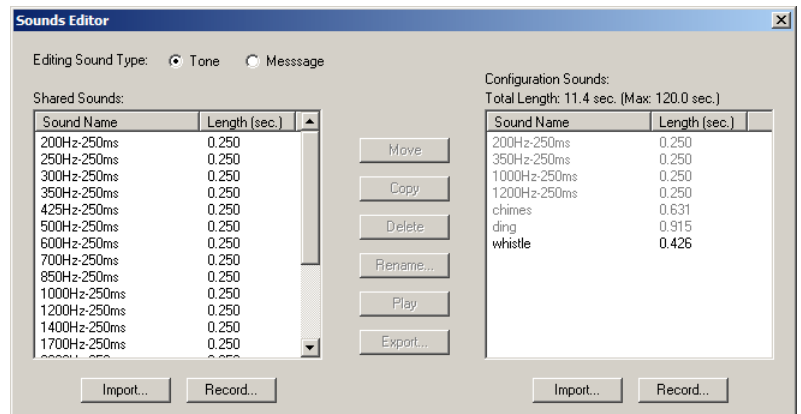
This option brings up the **DXL Administrator Preferences** dialog window, which has five tabs; **General**, **Configuration**, **Logging**, **Diagnostics**, and **Connections**. The **General** tab and the **Configuration** tab were discussed in Section 2.4.2.1.2. Refer **DXL Log Viewer** section for a description of the Logging tab.



3.1.2.5 Sounds...

Select this option to import, export, record, edit and play various sound types. This brings up the **Sounds Editor** window. There are two sound types: **Tone** and **Message**. Tones are normally short sound clips such as buzzer, whistles or bells. Messages are usually longer sound clips often obtained by recording a voice announcement.

The **Sounds Editor** window has two display areas. The **Shared Sounds:** area lists Sounds that can be used in any configuration.



The **Configuration Sounds:** area specifies Sounds that are only being used in the configuration that you are currently editing.

This window also displays the total combined length of time of all the current configuration sounds as well as the total maximum allowed length of all the configuration sounds.

To edit sounds in either area click on the name of the sound to select it. Once you have selected a sound you can edit the sound by using the options in the centre of the screen. You can use the Shift and Ctrl keys to select multiple sounds. Note that the options are identical for both the Tone and Message sound types. Descriptions of the various buttons that appear on this screen are shown below. Remember to click on the sound that you want to edit before choosing the options below.

You can click on the **Exit** button at any time to close the **Sounds Editor** window.

Move

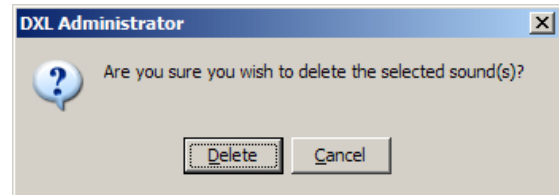
Click on **Move** to move a sound from one area (source) to the other (destination), so that it is not available in the source area anymore. The direction of the arrows '>>>' or '<<<', indicates the direction of movement.

Copy

Click on **Copy** to copy a sound from one area into the other area. This makes the sound available in the both the source and the destination areas. The direction of the arrows '>>>' or '<<<', indicates the direction of movement.

Delete

Click on **Delete** to delete a selected sound from a particular area so that it is no longer available. A confirmation message window appears and you will need to click on **Delete** to delete the sound or click on **Cancel** to cancel the operation.

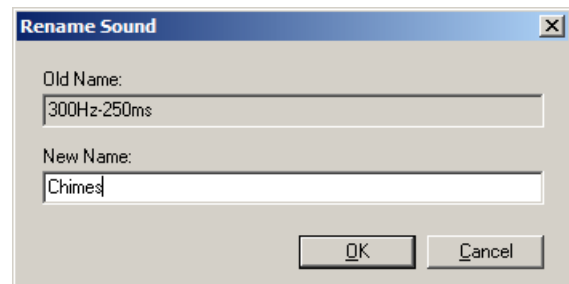


Rename

Click on **Rename** to give a new name to a particular sound.

The **Rename Sound** window appears. Type the new name of the sound file into the **New Name:** entry. Click on **OK** to change the name or click on **Cancel** to cancel the operation.

Rename is only enabled when you have a single sound selected.

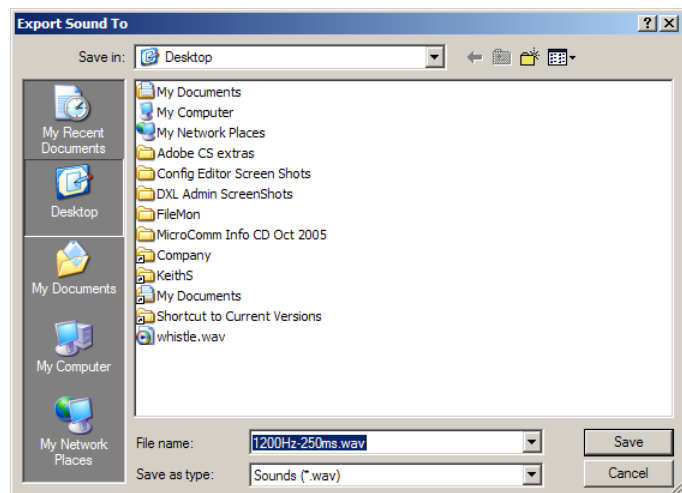


Play

Click on **Play** to play a sound type so that you can hear what it sounds like. This option is not available if a sound card is not installed. The Play button will change into a Stop button while the sound is being played. This is so that you can press Stop at any time if you want to stop playing the sound type. **Export...**

Click on **Export...**, to export and save sound types as wave ('.wav') files.

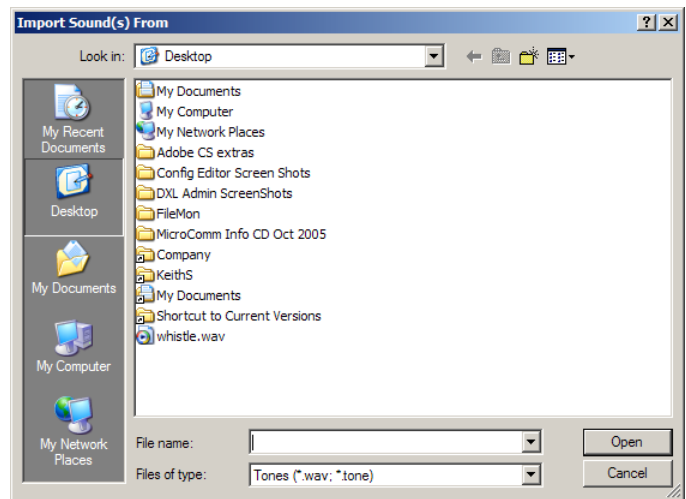
This brings up the **Export Sound To** window. Use the icons to select the destination for saving the file. Type the name that you want to give the exported sound file in the **File Name:** entry. Click on **OK** to export the file or click on **Cancel** to cancel the operation.



Import...

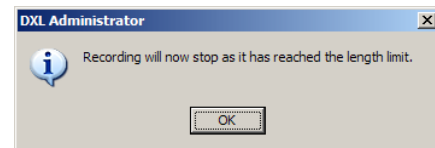
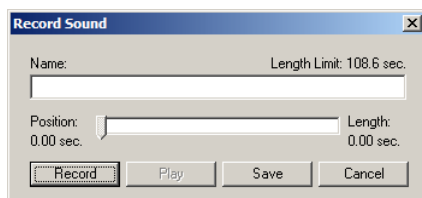
First click in either the **Shared Sounds:** or the **Configuration Sounds:** area, whichever area that you want to import the file into. Then click on the **Import...** button.

This brings up the **Import Sound(s) From** window. Select the location of the file (to be imported) by using the icons or, type the name of the file to be imported in the **File name:** entry. Click on **Open** to import the sound file(s) into the selected area or click on **Cancel** to cancel the operation.

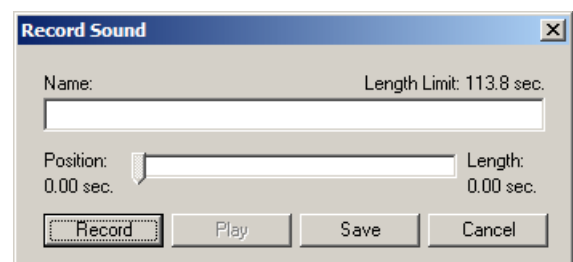


Record...

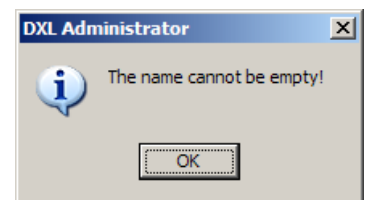
Select this option to record a sound type so that it can be used for playback. This brings up the **Record Sound** window. Most often, this option is used to record a Message sound, which can then be played back when required. Note that it is necessary to have a sound card, microphone and other devices for recording purposes. You will receive a message once the sound has finished recording. You can click **Cancel** at any time to cancel the operation and close the **Record Sound** window. If you are recording a configuration sound and it exceeds the time total time limit for recorded sounds you will receive an error message



Enter a name for the file into the **Name:** entry and then click on **Save** to save this recorded sound.

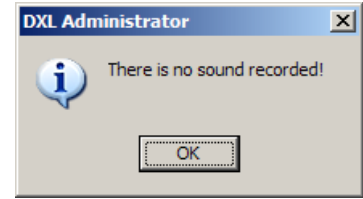


You will receive an error message if you try to save a sound file without entering a name for the file in the **Name:** entry.



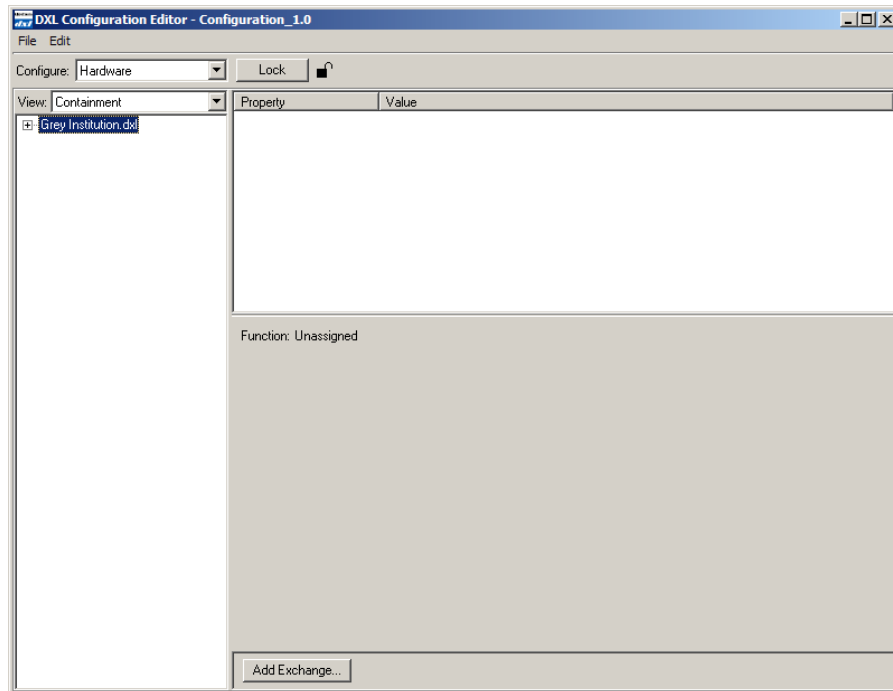
You will receive an error message if you attempt to save a sound file (by clicking on **Save** in the **Record Sound** window) when a sound has not been recorded.

You can listen to a tone or message by selecting the sound and clicking the **Play** button.



3.2 Creating a Configuration

From this initial window, use the **Add Exchange...** button to add and configure the exchanges in the system.

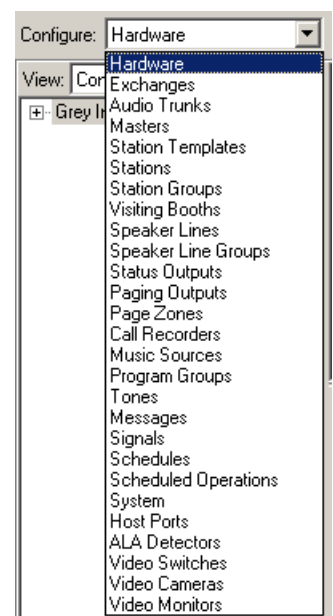


At this point you have a starting point to begin adding your MicroComm DXL hardware components and adding and configuring your devices. The following sections give an overview on how this accomplished but be aware that we are always updating and adding new devices and features so some device types and settings may differ or not be shown.

3.2.1 Order of Adding Design Components to the Configuration

To develop a configuration, it is necessary to specify the design components in a hierarchical manner, as certain items must be configured before other items can reference them. For example, you cannot connect a master station to an exchange without first specifying the components (DCC and DCEs) in the exchange.

In the **DXL Configuration Editor** the **Configure:** drop-down menu lists all the different types of devices that can be included in a configuration. This list is in the hierarchical order that you should use in order to build up the configuration. Even when you follow this list as you are designing the configuration, it will be necessary to make at least a second pass through the list.



3.2.2 Common Device Entries & Choices

There are certain entries and choices that appear in many different dialog boxes in the Configuration. They will be defined and explained in this section and a full explanation will not be repeated in the subsequent sections.

3.2.2.1 ID Number

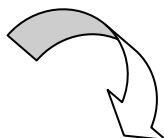
An ID Number is assigned to every device in a DXL system. Each device in a class requires a unique ID number, where ID numbers are restricted to 5 digits (i.e. from 1 to 99999). Type the ID number of a master, station, visiting booth, page zone etc. into the **Number:** entry. It is recommended that all master stations have ID numbers with the same number of digits.

A consideration when assigning ID numbers to a system that has Telephone Masters is to minimize the number of digits that are required to call a master. For example, if you keep all the Master Stations ID numbers to 2 digits, then the master station could be called faster than if a full 5 digits are used to identify the masters.

For the same reason you should keep the length of the ID numbers for stations as short as possible as this will minimize the number of digits that you will need to dial to call a station. Initially, the default length for master station IDs is 2-digits and the default length for station ID's is 4 digits. You can change these values in the **System** option of the **Configure:** entry.

If you enter an ID number for a station, master, page zone etc., whose length exceeds the value defined for the system the **DXL Configuration Editor** will prompt you to change the system properties. For example, if you decide to use the ID number '99999' for a station, then the system will prompt you with a message (shown below). Click on **Yes** if you want to use up to 5 digit ID numbers for dialling to stations. Click on **No** if you want to continue to use the default value of 4 digits for ID numbers. Click on **Cancel** to return to the **Station Properties** window.

In the figure below, notice the message that is received after entering '99999' for the ID number and then clicking on the **OK** button.



Note that you can change the number of ID digits required to dial a master, page zone, station, station group or visiting booth in the **System** section of **Configure:**, which will be discussed in Section 3.2.21.

3.2.2.2 **Name**

A name is assigned to each device in the DXL system. **Name:** can be up to 20 characters, with no restriction on the type of characters and it should be descriptive so that it is readily identifiable. Type the name that you want to give a device into the **Name:** entry. This name is used in diagnostics, logging and in call request lists.

3.2.2.3 **Info**

You may type additional information about the Devices into the **Info:** entry. You can enter additional information in a small text editor window by selecting the ‘...’ button at the side of **Info:** text box. There is a 65,000 character limit for this text box.

3.2.2.4 **Exchange**

The **Exchange** drop-down menu lists all the exchanges that are defined in the system. From this list of exchanges select the exchange you want to locate a device on. In the example on the previous page master “Central Control 1” is located on exchange ‘Support Services’.

3.2.2.5 **Box**

The **Box** drop-down menu lists the DCC and all the DCEs ‘boxes’ that make up the exchange you have selected. From this list select the ‘box’ you want your device to connect to.

3.2.2.6 **Card**

The **Card** drop-down menu lists the kind of Control Card (SCC or MCC) or VOIP Card and hence, the type of stations/masters that you specified when you defined the system.

3.2.2.7 **Port**

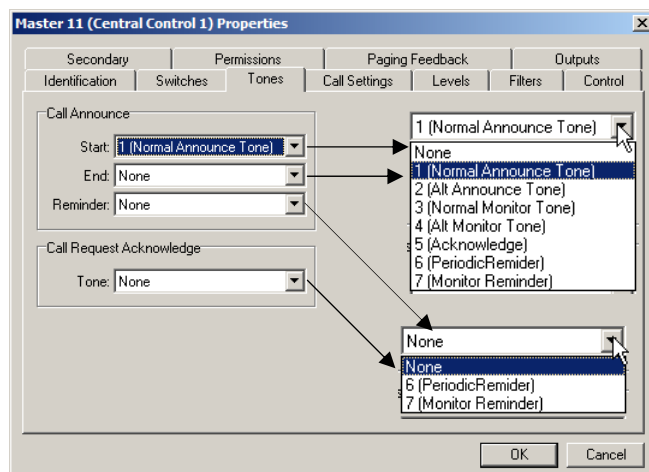
The **Port** drop-down menu lists all the ports that are defined (and available) for the particular ‘box/card’ that you selected. From this list you can select the particular port that you want the device to use.

You can use the hardware tree view to specify the port location of a device. For example, if you select a DCC from the hardware tree view and create a new device, then the drop-down list in the dialog will automatically select the first available port on that DCC. If the port is not found, then the first available port in the system will be selected instead. Furthermore, the next device that is created will automatically select the next available port, unless you have selected a different location in the hardware tree view.

3.2.2.8 Tones

Tones are used in the DXL system to inform operators and users on the status of calls. There are three basic tones that are used with most devices: None, Normal and Alternate. Select None if you don't want to hear a tone. The sound that you will hear for a Normal or Alternate tone will depend on how you have configured these tones in the **Tones** section of **Configure**.

Tones are used at various times during a call; Start, End and Reminder. To hear a tone at the beginning of a call choose **Start**. To hear a tone at the end of a call (when the call is finished) choose **End**. To hear a tone as a periodic reminder while a call is in progress choose **Reminder**.



3.2.2.9 Call Request Acknowledge

The **Acknowledge Call Request** option works in the following way: when for example a master initiates a call request to a second master, a tone will be sent back to the master that initiated the call request, to let the person making the call know that his call request has been queued at the second master. This is usually selected so that the operator that initiated the call request is informed that his call request has been queued and is not left wondering whether or not the second master received the call request.

This options works similarly for a station. When a station makes a call request to a master, a tone is heard at the station, to inform the person (that made the call request) that his call request has been queued at the master.

3.2.2.10 Call Request Priority

The 'call request priority' is used to determine the queue position of a device that makes a call to a master. The top of the queue lists the highest priority device and the bottom of the queue lists the lowest priority device. For example, if Station 1 has a priority of 20, Station 3 has a priority of 30 and Station 2 has a priority of 25, and all these devices call Master 1, then the devices will be queued at Master 1 as follows:

- I Station 3 (top of the queue)
- I Station 2
- I Station 1 (bottom of the queue)

Where 'I' stands for an intercom station call request.

3.2.2.11 Call Priority

The **Call Priority** option is used to determine if a new call should interrupt an existing call or page zone call. A call requires an audio connection between two end devices and the DXL normally calculates the call priority as the maximum value of the call priorities assigned to the two end devices. A call will be interrupted if a higher priority device makes a call to either one of the end devices. Note that it is not possible to interrupt masters (to initiate a call to the master) while they are in an existing call. Initially, all priorities are set to the default value of 50 (priority settings are in the range of 0 to 100).

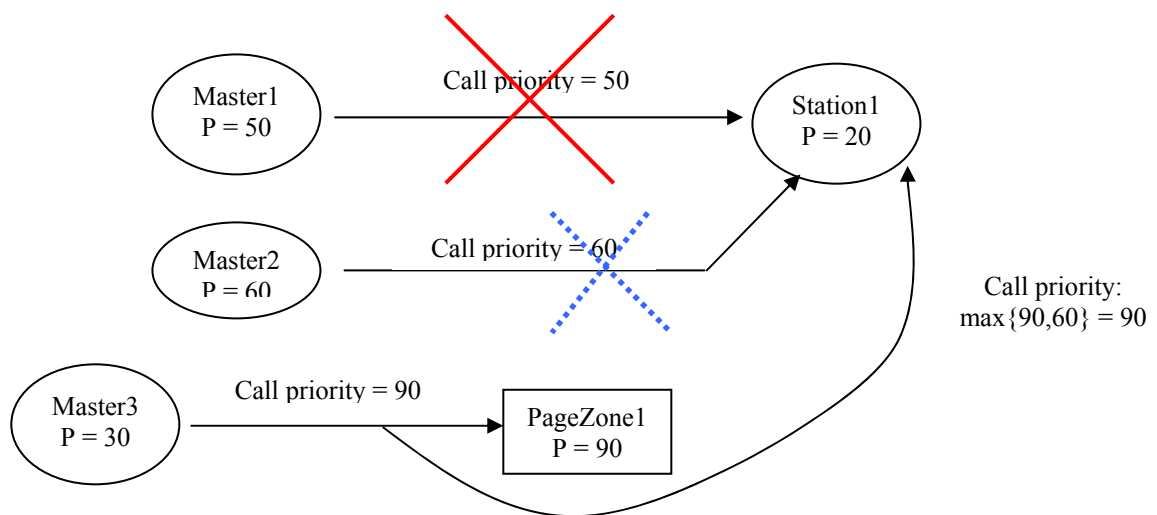
In most cases, the priority is defined as the maximum of the priority of the devices in the call. Exceptions to this are paging calls and calls to compound stations, where the priority is calculated using the priority that is assigned to the page zone or the compound station, rather than the priorities of their constituent members.

To interrupt an existing call, the priority of the new call is calculated. If the interrupting call (from a master, page zone, etc.) is of a higher priority than the existing call, then the existing call is disconnected and a new call is established between the interrupting device and the device that was previously in a call. The device on the other end of the disconnected call is not put on hold, nor is the original call re-established after the higher priority call is terminated. This discussion applies to normal master-to-station calls and page calls to zones.

Pre-existing calls between pairs of visiting booth stations, as well as program distribution and audio level alarm monitoring are re-established after a higher priority call or page is ended.

In general program distribution is set to the lowest priority, audio level monitoring the second lowest, and all calls and pages would be assigned higher priorities.

For example, if Master1 has a priority of 50 and Station1 has a priority of 20, then the priority of the call would be $\max\{50, 20\} = 50$. Now if Master2 has a priority of 60 and wants to interrupt Station1, then the priority of the new call with Master2 would be $\max\{60, 20\} = 60$, which is higher than the priority of the existing call (which is 50). Hence, the call between Master1 and Station1 is disconnected and a new call is set-up between Master2 and Station1. This is illustrated in the picture below.



Now, say Master3 (P = 30) wants to make a page to PageZone1 (P = 90) and say that Station1 is included in PageZone1 and is currently in a call with Master2. First, the system will calculate the priority of the new call between Master3 and PageZone1, which is $\max\{30, 90\} = 90$. But since Station1 (with a call priority of 60) is currently in a call with Master2, the system will also compare the priority of the new page call (which is 90) to the priority of the call between Master2 and Station1. This would be $\max\{90, 60\} = 90$. Hence, Master3 would be

able to interrupt Station1 and make a page to PageZone1. Note that if the priority of Station1 had been greater than the priority of the interrupting call, then Master3 would not have been able to make a page to Page Zone1, as the device in the zone (Station1) was busy. Also note that if you cannot connect to every device in a page zone, then you cannot make a page to that zone until the device is free.

3.2.2.12 Initial Volume

This volume setting is used to increase or decrease the audio received by a particular device. The **Initial Volume** control slider is used to adjust the volume setting in 1 dB steps from -16dB to +16dB. You can change this value to suite your person preferences during normal operation of the system. The value you set in the configuration is only an initial volume setting.

3.2.2.13 Program Group

Master stations, intercom stations and page zones can be connected to audio program material that could be provided by audio sources, via one or more of the DCC/DCE audio inputs. Each program group can consist of up to six music sources, with each music source available at two different volume settings. A program group can remain local to the exchange or it can be distributed to other exchanges in the system via the Digital Audio Trunk.

You can make the program group selection from the **Program Group**: drop-down menu that you will see in the **Call Settings** tab for masters, stations and page zones. Note that you will not see anything in this menu if you have not assigned music sources to the program group in the **Program Groups** selection in **Configure**. You can assign each master, station or page zone with a program group. Program availability can also be enabled and disabled on a station-by-station basis, by any master that has permission to do this.

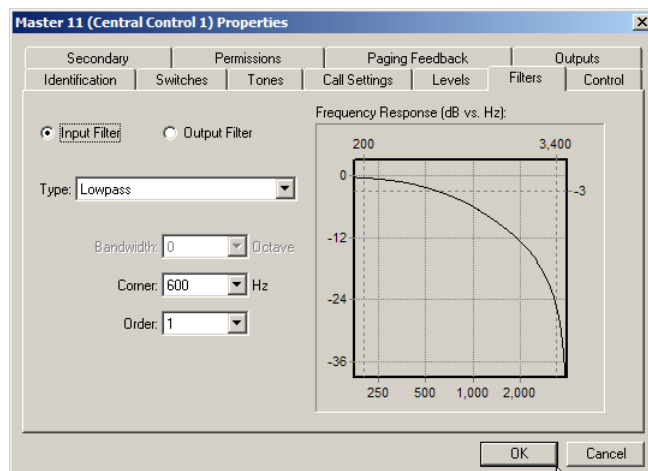
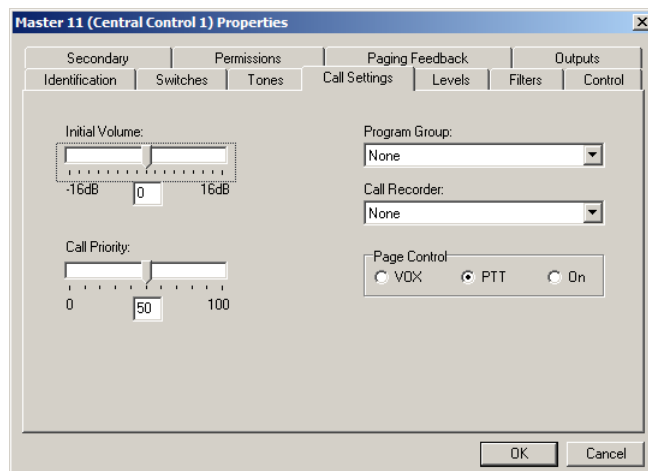
3.2.2.14 Filters

The **Filters** tab is used to filter the incoming audio and outgoing audio. This tab appears with all the devices that have either an audio input or an audio output. The **Filters** tab appears in the following sections of **Configure**: Masters, Station Templates, Stations, Paging Outputs, Call Recorders and Music Sources.

Choose the **Input Filter** option if you want to filter the quality of the incoming audio. Choose the **Output Filter** option if you want to filter the quality of the outgoing audio.

From the **Type**: drop-down menu, you can select the type of filter that you want to use. The choices are:

None, Lowpass, Highpass, Bandpass, Bandstop and Advanced. Please refer to the ALA Detectors in Section 3.26 for a description of the various options in this window.



3.2.2.15 Speaker

The Speaker adjustment sets the audio level of incoming audio to the device. You can change each slider in 1 dB steps from -16 dB to +16 dB to change the levels. The purpose of these level settings is to adjust for different room acoustics. Once these setting are established, an operator cannot change them during normal operation.

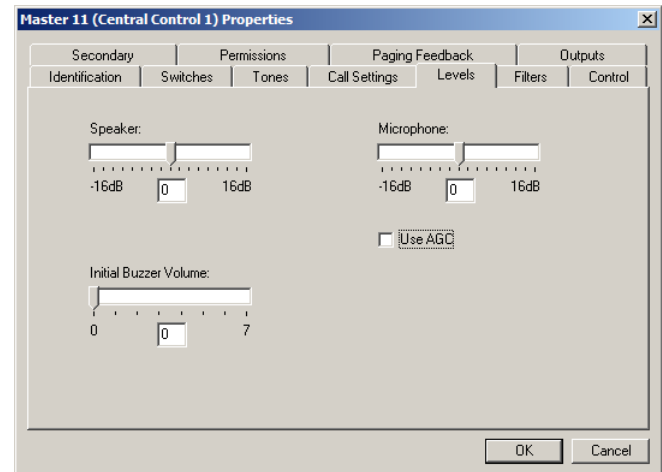
3.2.2.16 Microphone

The **Microphone** adjustment sets the level of the outgoing audio from the device. You can change each slider in 1 dB steps from -16 dB to +16 dB to change the levels. The purpose of these level settings is to adjust for different operators and different room acoustics. Once these setting are established, an operator cannot change them during normal operation.

Tick the **Use AGC** (Automatic Gain Control) checkbox to automatically adjust the gain so that the transmitted sound will be at a uniform power level, even if the audio input power to the microphone changes.

3.2.2.17 Initial Buzzer Volume

The volume setting is used to increase or decrease the volume of the buzzer at the master station. The slider can change the buzzer volume in 8 steps from 0 (off) to a maximum of 7.



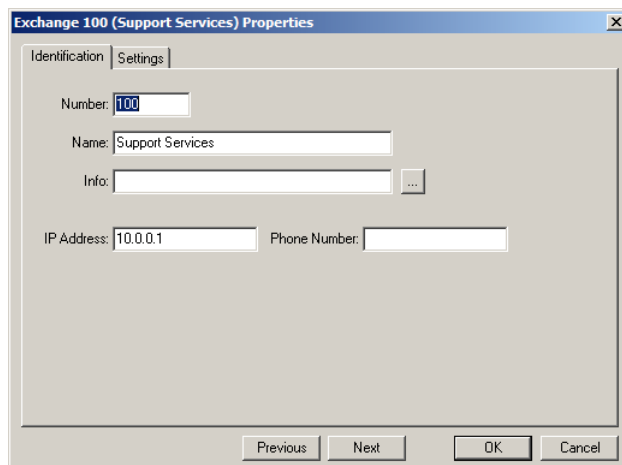
3.3 Adding Exchanges

Configuring an exchange requires several steps. At the top level, an exchange contains a DCC and up to 4 DCEs. The DCC and DCEs in turn contain cards that must be specified for the application that is specific to the user. Every DCC or DCE has space available for two Station Control Cards (SCC1 and SCC2). The type of stations that will be connected to the unit will determine the type of SCC cards that you will have to select.

3.3.1 Exchange Properties Window

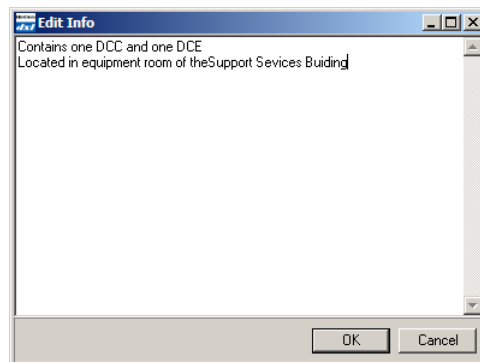
3.3.1.1 Exchanges - Identification

Click on the **Add Exchange...** button. This brings up the **Exchange Properties** window, which has two tabs: **Identification** and **Settings**. The **Identification** tab has entries for **ID Number:**, **Exchange Name:**, **Info:**, **IP Address:** and **Phone Number:**. Initially the default number 1 appears in the **Number:** text box (or the next number in sequence if the user had previously added an exchange). You can change this number to a value that suites your design. A consideration in selecting numbers is that when all the exchanges are displayed in the system, they are initially displayed in increasing ID numerical order.



Type the name of the exchange into the **Name:** entry. The name is used in displays, logs and diagnostics and should provide a descriptive identification of the exchange i.e. Housing Unit 1.

The **Info:** text box is optional and is used to add any useful information that will help to describe the exchange and make it easier for maintenance or administration personnel to understand the system setup and operation. Click on the '...' button to fill in additional information in a small text editor window.



Fill in the IP address for the exchange into the **IP Address:** entry. Each exchange requires a unique IP address. An IP address is an identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address.

Within an isolated network, you can assign IP addresses at random as long as each one is unique. The four numbers in an IP address are used in different ways to identify a particular network and a host on that network.

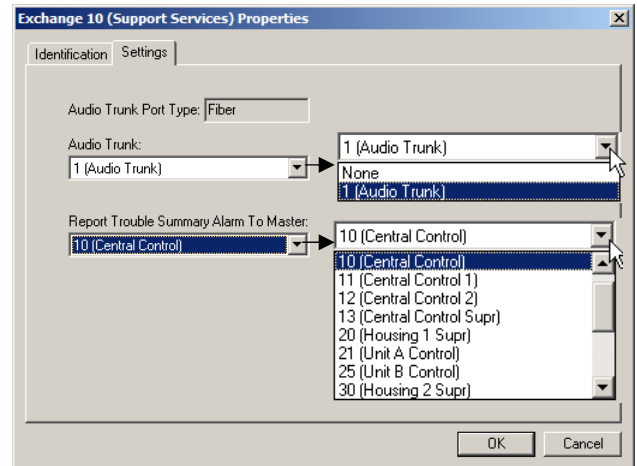
The **Phone Number:** entry is used to specify the dial-up number for the modem. You can enter the telephone number in various formats i.e. 1-780-462-7100, 17804627100.

3.3.1.2 Exchanges – Settings

The **Settings** tab is shown on the right.

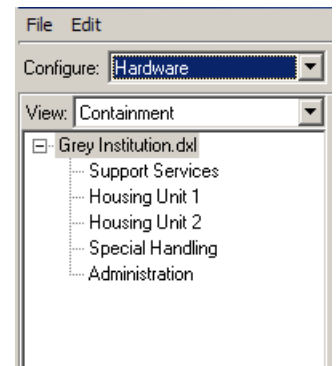
The **Audio Trunk:** pull-down menu displays all the audio trunks that have been defined. Select the appropriate audio trunk once the audio trunks have been created.

The **Report Trouble Summary Alarms:** box uses a pull-down menu to display all the master stations in the system. From this menu select the master station that is to receive the alarms. Since initially no master stations are described in the configuration, you will have to return to the **Exchange Properties** window to specify this information after the master stations have been defined.



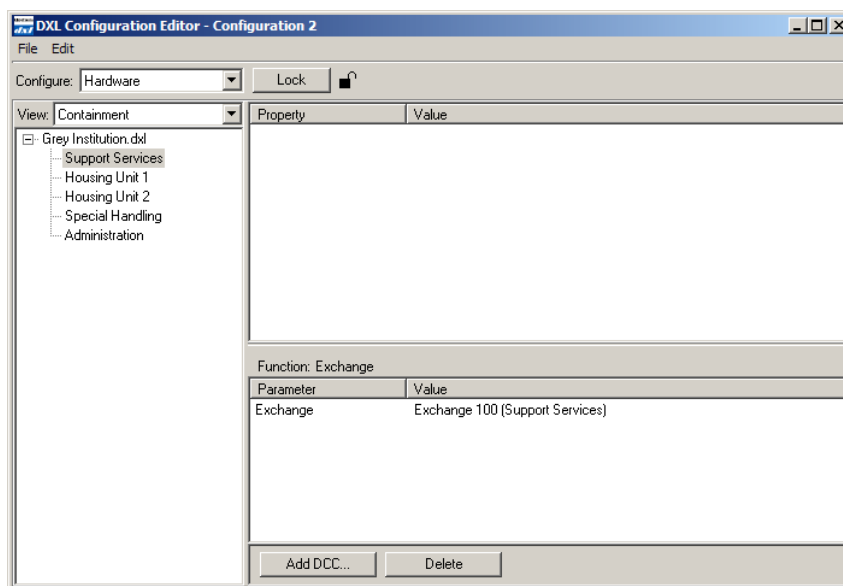
The **Audio Trunk Port Type:** will display whether you have chosen fiber or copper transmission medium for the audio trunk connections. This option is defined in the **Audio Trunks** option in **Configure**, and cannot be changed in the **Exchange Properties** window.

Once all the exchanges are configured, the **View:** Containment entry appears as shown on the right. Notice that the system name Grey Institution.dxl now has an expansion/contraction icon. The exchanges themselves do not have an expansion/contraction icon since no subcomponents have yet been defined.



3.3.2 Adding a DCC, DCE, DIO, TBE or PZE to an Exchange

If you select one of the exchanges (for example: Support Services) by clicking on its name, the **DXL Configuration Editor** window will now display certain information about the exchange in the Function pane. Initially a DCC can be added to the exchange as shown below. Once you have added a DCC to the exchange, the **Add DCC...** button in the Configuration Editor window (because each exchange can only have one DCC) will change to an **Add DCE...** button and the additional entries **Add DIO...**, **Add TBE...** and **Add PZE...** will appear. In certain situations **Modify...** and **Delete** buttons may also appear to allow you to change certain settings or delete unwanted cards. Note that when you have added the maximum of four DCEs and/or TBEs to the exchange, the **Add DCE...** and **Add TBE...** buttons will be dimmed and you will no longer be able to select them.

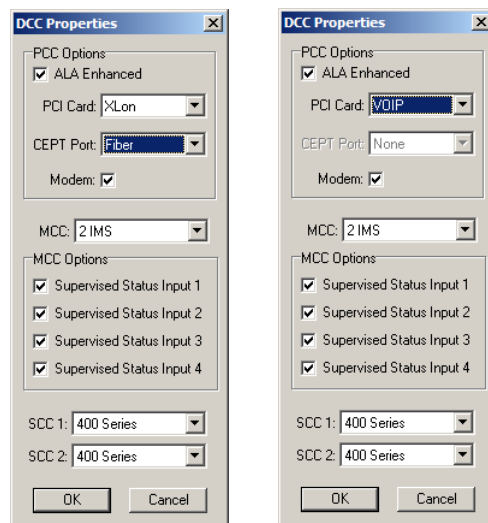


3.3.2.1 Adding a DCC

Click on the **Add DCC...** button to fill in the necessary entries in the **DCC Properties** window. If the DCC has audio level alarm capability you should select the **ALA Enhanced** checkbox. The DCC supports desktop or panel mount Intercom Master Stations (IMS), Touch Screen Master Stations (TMM) and/or Telephone Set Master (TSM) Stations or VoIP Intercom Master Stations. If you select a **PCI Card:** entry of XLon (a Lonworks card) you can use IMS master stations, TMM master stations and/or TSM master stations. If you select a **PCI Card:** entry of VOIP (a voice over internet protocol card) you can use VoIP masters and stations, TMM master stations and/or TSM master stations. A VoIP system uses the Ethernet network as the digital audio trunk. If you select VOIP then the **CEPT Port** entry will be dimmed and cannot be selected. If the **PCI Card:** selection is set to XLon the pull-down menu on **CEPT Port:** allows you to select the type of digital audio trunk; None, Copper or Fiber.

If the DCC has a modem, then the **Modem:** checkbox should be selected.

The entries for **MCC:**, **SCC 1:** and **SCC 2:** are selected using pull-down menus



The **MCC**: selections can be set to:

- None: if no master stations are required for the DCC
- IMS: if two IMS (or TMM) master stations are required
- IMS/TSM: if one IMS (or TMM) master station and one TMS master station is required
- TMS: if two telephone set master stations are required.

The **MCC Options** can also be setup to enable/disable the port supervision of the MCC status inputs.

Note that if you set the **PCI Card:** to VOIP and have an MCC that allows the connection of a IMS (or TMM) master station and you attempt to configure an IMS master the software will prevent you from doing this and will give you a warning message. In this case you must specify a TMM master station.

The SCCs can be selected to support the 300 series, 400 series or 401 series intercom stations.

The dialog boxes below show the pull-down selections for the five selectable entries.

DCC Properties

PCC Options:

- ☒ ALA Enhanced

PCI Card: XLon

CEPT Port: XLon

Modem: ☒

MCC: 2 IMS

MCC Options:

- ☒ Supervised Status Input 1
- ☒ Supervised Status Input 2
- ☒ Supervised Status Input 3
- ☒ Supervised Status Input 4

SCC 1: 400 Series

SCC 2: 400 Series

OK Cancel

DCC Properties

PCC Options:

- ☒ ALA Enhanced

PCI Card: XLon

CEPT Port: Fiber

Modem: ☒

MCC: 2 IMS

MCC Options:

- ☒ Supervised Status Input 1
- ☒ Supervised Status Input 2
- ☒ Supervised Status Input 3
- ☒ Supervised Status Input 4

SCC 1: 400 Series

SCC 2: 400 Series

OK Cancel

DCC Properties

PCC Options:

- ☒ ALA Enhanced

PCI Card: XLon

CEPT Port: Fiber

Modem: ☒

MCC: 2 IMS

MCC Options:

- ☒ Supervised Status Input 1
- ☒ Supervised Status Input 2
- ☒ Supervised Status Input 3
- ☒ Supervised Status Input 4

SCC 1: 400 Series

SCC 2: 400 Series

OK Cancel

DCC Properties

PCC Options:

- ☒ ALA Enhanced

PCI Card: XLon

CEPT Port: Fiber

Modem: ☒

MCC: 2 IMS

MCC Options:

- ☒ Supervised Status Input 1
- ☒ Supervised Status Input 2
- ☒ Supervised Status Input 3
- ☒ Supervised Status Input 4

SCC 1: 400 Series

SCC 2: 400 Series

OK Cancel

DCC Properties

PCC Options:

- ☒ ALA Enhanced

PCI Card: XLon

CEPT Port: Fiber

Modem: ☒

MCC: 2 IMS

MCC Options:

- ☒ Supervised Status Input 1
- ☒ Supervised Status Input 2
- ☒ Supervised Status Input 3
- ☒ Supervised Status Input 4

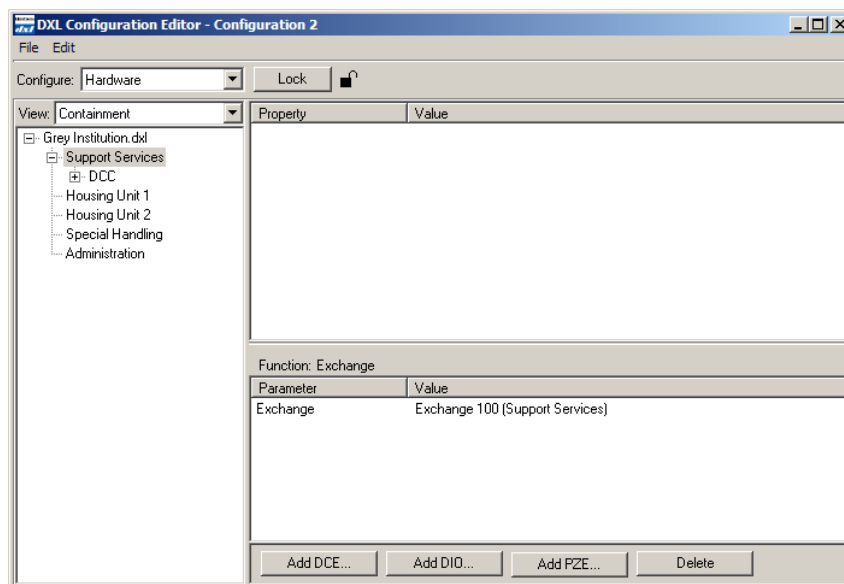
SCC 1: 400 Series

SCC 2: 400 Series

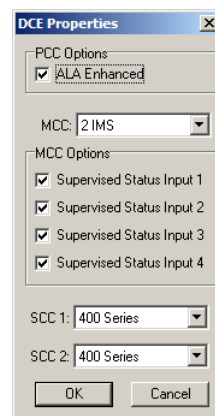
OK Cancel

3.3.2.2 Adding a DCE

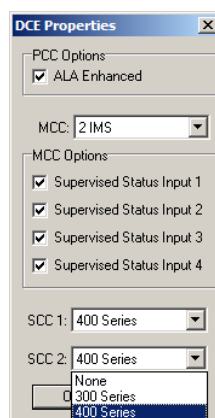
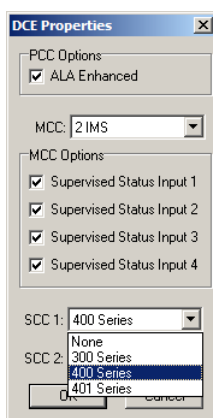
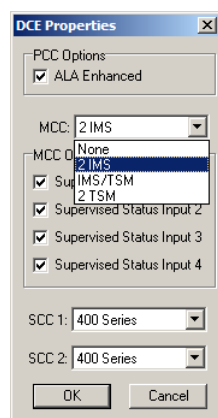
Once a DCC has been added, the configuration window will change to allow you to add DCEs, DIOs, TBEs or PZEs.



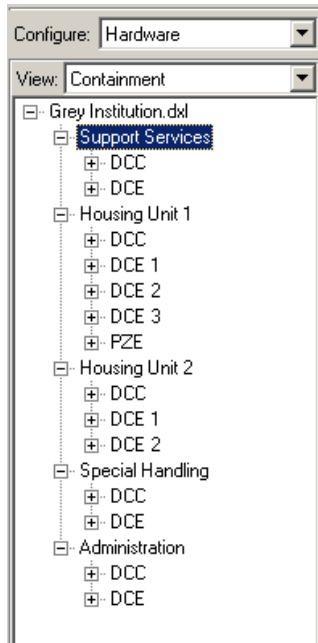
You can now add up to four DCEs and/or TBEs to one exchange. The **DCE Properties** window is shown on the right. Use the pull-down menus to select the appropriate options for the **MCC:**, **SCC 1:** and **SCC 2:** cards. You must also indicate in the checkbox if the DCE has **ALA Enhanced** capability.



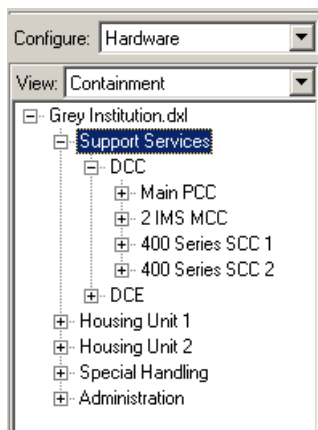
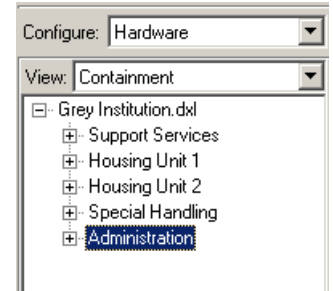
The pull-down selections are shown below.



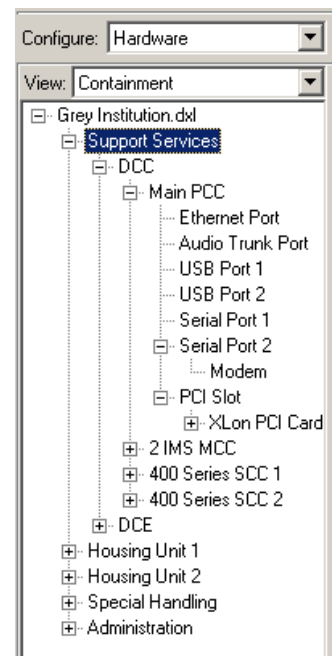
After you have added a DCC and a DCE(s) to the exchange, then the exchange will display an expansion/contraction icon. This indicates that the exchange has sub-components. The view of the Tree pane appears as shown on the right.



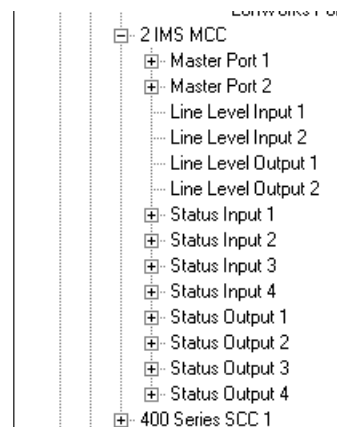
Select the '+' sign to expand each expansion/contraction icon. This will display the DCC and DCE sub-components in each of the exchanges. Notice that each DCC and DCE has an expansion/contraction icon that allows for further expansion of the Tree pane.



As an example, expanding the DCC for the 'Support Services' exchange, shows that the DCC consists of a Main PCC card, an MCC card that is configured for 2 IMS Masters and two SCC cards that support the 400 series intercoms. In a similar manner, the Main PCC card can be expanded as shown on the right. In this case further expansion of the RS232/Modem Serial Port and PCI Slot indicates that a modem and an Xlon PCI card have been specified.

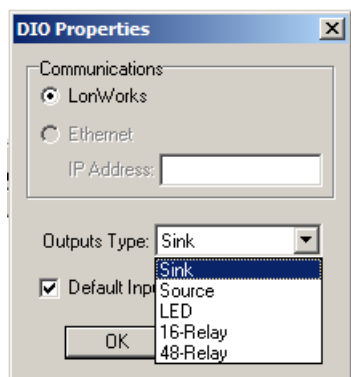
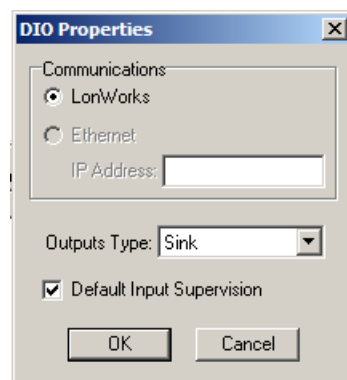


In a similar manner, the 2 IMS MCC can be expanded to show all the ports associated with the MCC. These include the two master station ports, two line level audio inputs, two line level audio outputs, 4 status inputs and 4 status outputs.



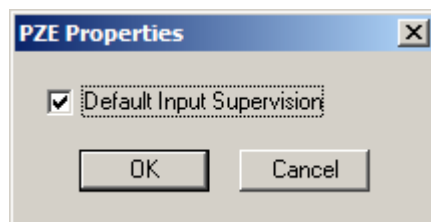
3.3.2.3 Adding a DIO

A DCC has 4 status inputs and 4 status outputs. If a system requires more status inputs or outputs Discrete Input/Output (DIOs) modules can be added to the system. If you select **Add DIO...** in the **DXL Configuration Editor** the following pop-up window appears. Selecting the **Output Type:** in the pull-down menu gives you a choice of outputs Sink, Source, LED, 16-Relay or 48-Relay. Inputs can be either supervised or unsupervised. If the inputs are supervised you can detect up to two contact closures for each input. For a complete discussion on DIOs see the installation manual IM-DIO-100-2.7. DIOs require a LonWorks connection at present; however DIOs that use an Ethernet connection are under development.



3.3.2.4 Adding a PZE

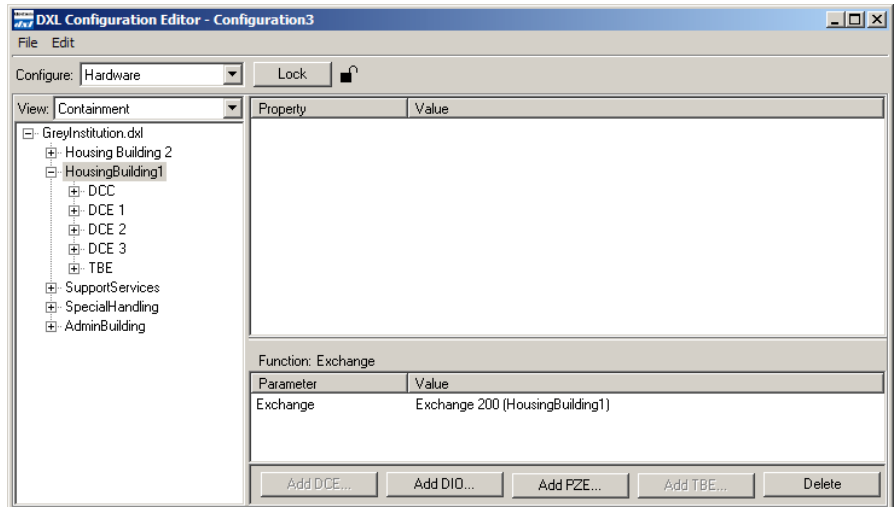
The PZE-110 Page Zone Expander offers a flexible means for adding page zones to a DXL system. The unit allows for 3 separate page inputs with each input connected to 6 individually selectable relay controlled outputs. Each input has a selectable controlled relay (controlled by the DXL) that can be used to key an amplifier. In addition the PZE has 16 status inputs. The following pop up will appear when you configure a PZE. If the status inputs have terminating resistors you should check the **Default Input Supervision** entry. Up to 12 PZE-110s can be connected to each DXL exchange. The document IM-PZE-110-1.0 gives a more complete description of the PZE.



3.3.2.5 Adding a TBE

A TBE-310 can be added to an exchange when the **Configure:** entry of the **DXL Configuration Editor** is set to **Hardware**. The window that appears after a DCC, two DCEs and a TBE have been added to an exchange (Housing Building 1) is shown in the following picture.

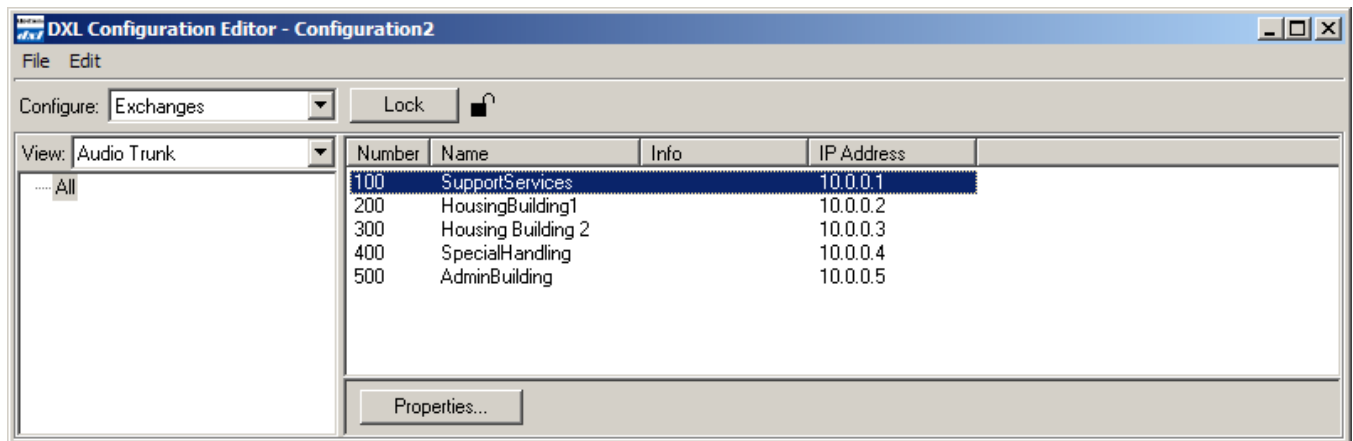
The buttons at the bottom of the **DXL Configuration Editor** window allows you to **Add DCE...**, **Add DIO...**, **Add PZE...**, **Add TBE...** or **Delete** a selected item. Once a fourth DCE and/or TBE has been added the DCE and TBE selection buttons will dim and can no longer be selected.



3.3.3 Editing Exchange Entries

Once you have entered all the parameters associated with the various exchanges you can select the exchanges option in the **Configure:** entry of the **DXL Configuration Editor** window. All the exchanges in the system will appear in the List pane.

Select one of the exchanges by clicking on it and then select the **Properties...** button. This will cause the **Exchange Properties** window to open for that particular exchange. You can now edit the entries in this window. Since we have not yet specified master stations or an audio trunk it will be necessary to return to the exchanges and complete the entries in the **Settings** tab.



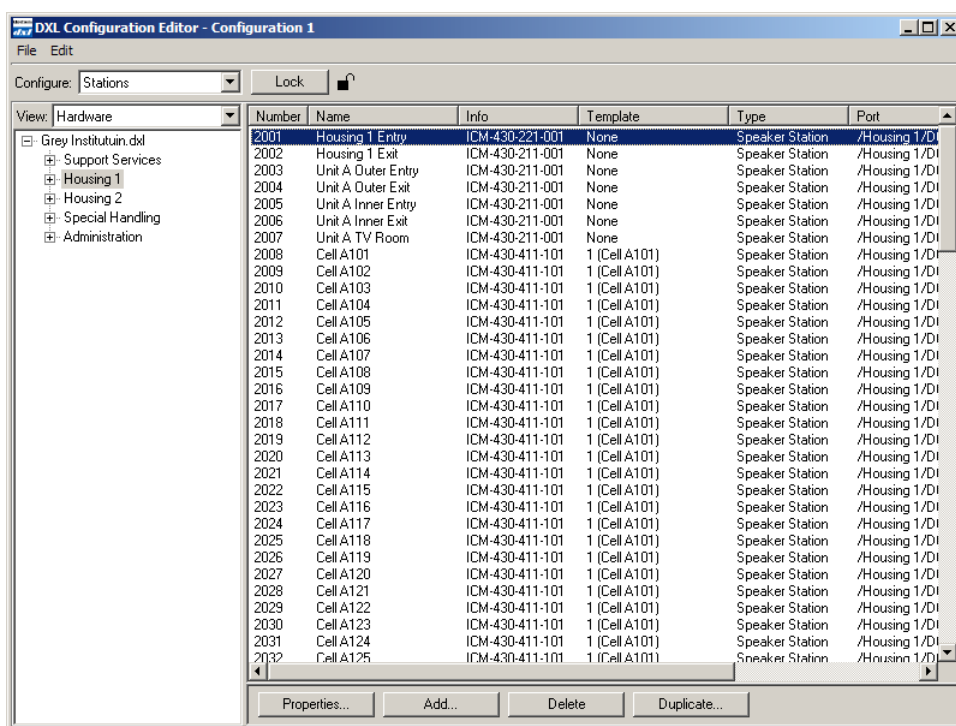
3.3.4 Adding New Entries & Deleting/Changing the properties of Existing Entries

You will notice that all the sections in **Configure**: starting from **Audio Trunks** and going up to **Video Monitors**, have a similar window where you can add new entries, delete existing entries and view/edit the properties of existing entries.

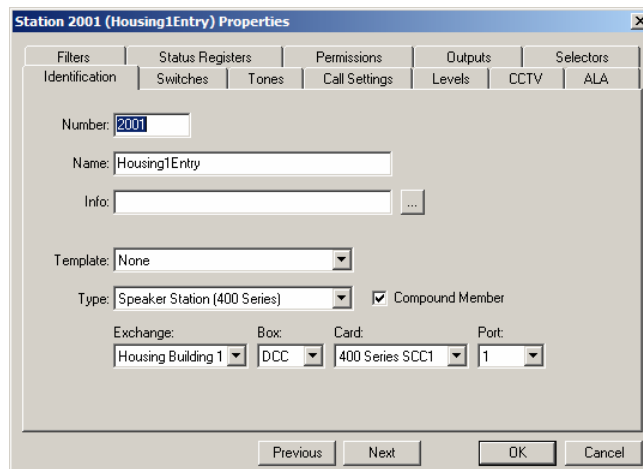
Let us use the Stations section as an example.

3.3.4.1 Properties Button

To view the existing stations in the configuration, select **Stations** in **Configure**:. Now set the **View**: to hardware. You will be able to see a list of all the exchanges in the tree pane. Now, say you want to view the stations that are defined for a particular exchange click on the exchange that you want and you will see a list of the existing stations in the list pane. If this list is empty, it means that no stations have been defined for this exchange. In the figure below, you will see all the stations that have been defined for the Exchange Housing 1.

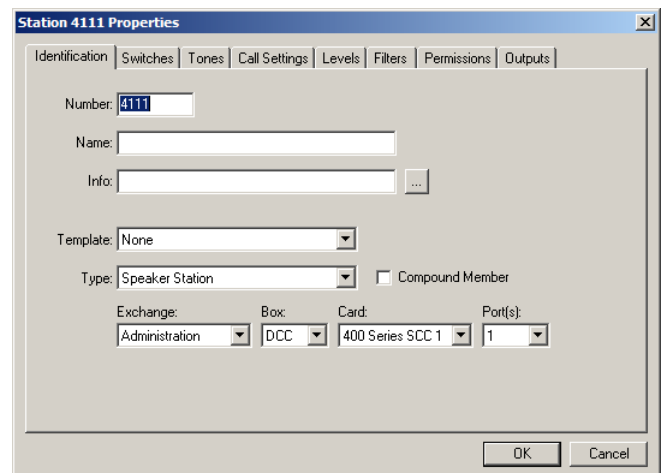
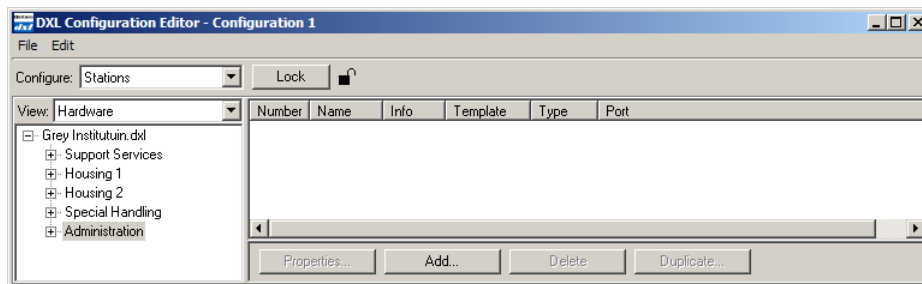


Now, if you want to view or edit an existing station, click on the station that you want to view and then click on the **Properties...** button, or just double-click on the station. This will bring up the **Station Properties** window. You can now view and edit the properties of this station. When editing, the Properties windows also include convenient **Previous** and **Next** buttons which allow the user to save their current changes and move to the previous or next item in the list while keeping the current tab the same (if possible).



3.3.4.2 Add... Button

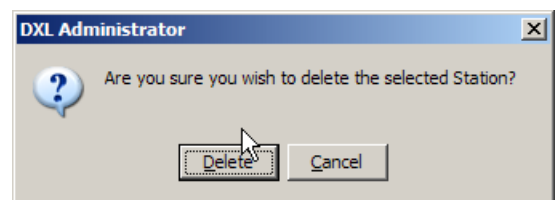
In most cases, when you first define a configuration, you will not have any stations defined. In this case, the list pane will be empty. To add a new Station, click on the **Add...** button. This brings up the **Station Properties** window, where you can define the properties of your station. (Note we have scaled the size of the **DXL Configuration Editor** window)



3.3.4.3 Delete Button

If you want to delete an existing station, just click on the station and then click on the **Delete** button. You can also click on the station and then click the Delete button on your keyboard.

Irrespective of the method you use, the program will ask you for confirmation before deleting the Station(s). Click on **Delete** to delete the Station or click on **Cancel** to cancel the operation.



3.3.4.4 Duplicate... Button

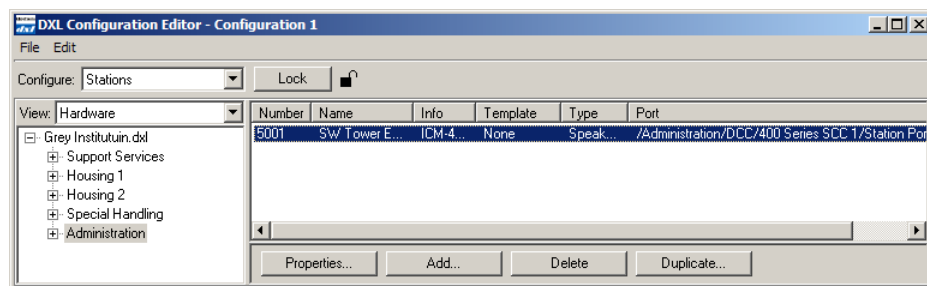
The Stations section in **Configure:**, is the only section that has the **Duplicate...** button. You may have to define hundreds of Stations, which would be time-consuming if you had to enter each Station separately. The **Duplicate...** button lets you easily make copies of a station of the same type, instead of defining and 'adding' each station separately.

To duplicate a station, simply click on the station that you want to duplicate and then click on the **Duplicate...** button. This brings up the **Duplicating Station** window. In the figure below, we want to duplicate Station 5001.

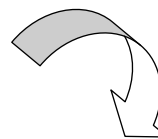
So, we click on Station 5001 and then click on the **Duplicate...** button, which gives rise to the **Duplicating Station** window.

Number To Duplicate

Enter the number of stations that you want to duplicate in **Number to Duplicate:** entry. The default for this is always 10. Enter the ID **Number** of the first duplicated Station in **First Number:** box. By default, this number will always be the next available ID number.



Select the station that you want to duplicate and then click on the **Duplicate...** button



First Number

The **First Number:** entry displays the next available ID number that continues from the ID numbers of the stations that have already defined. If you want the stations to begin with a different ID number then type the ID number of the first duplicated station into the **First Number:** entry. Only digits can be used for the ID number and the program will automatically increment the last digit of the ID number when it generates the remainder of the duplicated Stations.

If you enter any kind of character other than a number in the **First Number:** entry the program will display an error message, as shown below. Notice how the ID number has been set to 1A, which is invalid because of the alphabetic character.

Invalid ID number entered
in **First Number:**



First Name

Type the name of the duplicated stations into **First Name:**. By default, the program always follows the name format of the station that you want to duplicate and increments any numbers that you may have assigned at the end of your Station Name. If you do not have any numbers at the end of your station name, then the program will automatically add numbers at the end of each duplicated station name and will increment these numbers in order. Thus, all the duplicated stations will have the same station name and will be differentiated by the station numbers that are assigned at the end of the name.

Port, Card, Box

Pick the first port where you want to begin locating the duplicated stations. Use the **Port** drop-down menu to select the port. Note that when the ports in the first box are assigned the program will automatically move to the ports on the next box and continue locating the duplicated station on the next box.

Select whether the port is located on the DCC or the DCE, from the **Box** drop-down menu.

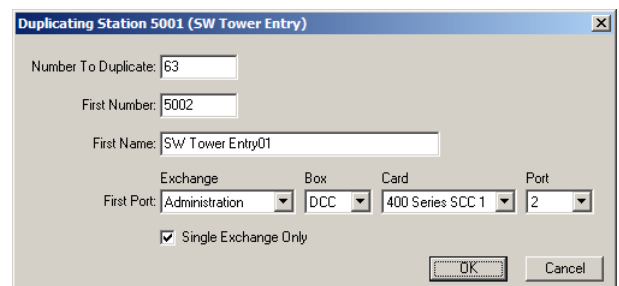
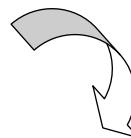
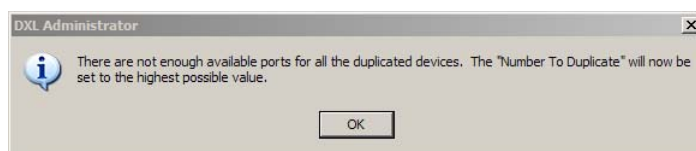
Select the SCC card that you want to locate the duplicated stations on, from the **Card** drop-down menu.

Exchange

Select the exchange where you want to begin locating the duplicated stations. Use the exchange drop-down menu to make this selection. In our example, the program will begin locating the stations on Port 2 of the exchange Administration.

If you have the **Single Exchange Only** option checked, then the program will NOT move to the next exchange if it does not have the space to duplicate the number of stations that you want (on the selected exchange). However, if you do not select this option and the exchange runs out of ports, then the program will proceed to locate the remainder of the duplicated stations on the ports of the next exchange. This is usually not good practice and this option is always left checked by default.

To illustrate this, if you decide to duplicate 100 Stations on Administration Exchange, and you have selected the **Single Exchange Only** option, then the program will display the following message, as it will not have the number of ports needed to locate 100 Stations on Exchange 01.



When you click on the **OK** button, the program will proceed to assign the highest number of stations that it can duplicate on the Administration exchange in the **Number To Duplicate:** entry. Notice how the program has changed this entry to 63 (instead of 100) stations. If you now click the **OK** button, the program will duplicate 63 stations on Administration Exchange. If you had not selected the Single Exchange Only option, the program would have located the first 63 stations on Administration Exchange and would have continued to locate the remainder of the duplicated stations (37 stations) on the next available exchange

3.4 Digital Audio Trunk

A call connection between exchanges in a DXL system uses a digital audio trunk configured in a ring topology that usually includes all the DCCs (i.e. all the exchanges) in the system. Twenty channels are available for audio connections and 6 channels are available for music distribution. The ring can be either copper or fiber optic depending on the type of DCCs that have been ordered for the system. In principle, a system could consist of two or more isolated digital audio trunks, with no audio paths between the isolated trunks.

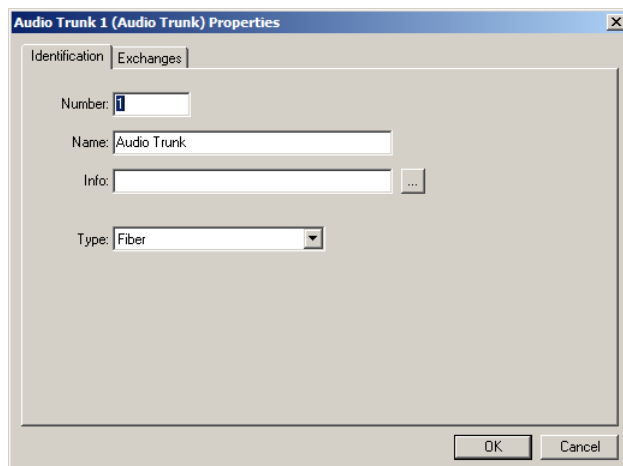
3.4.1 Audio Trunk Dialog Box

Select **Audio Trunks** from **Configure:**. This will display a default audio trunk. Select this trunk and then select the **Properties...** button to bring up the **Audio Trunk Properties** window, which has 2 tabs: **Identification** and **Exchanges**.

3.4.1.1 Audio Trunk Properties – Identification

Select the type of Digital audio trunk that is being used from the **Type:** pull down menu: Copper or Fiber optic.

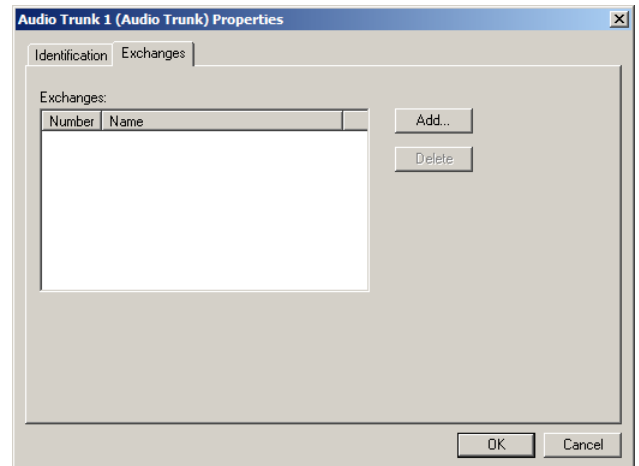
Once you have entered the name of the Audio Trunk, it will appear in the header of the **Audio Trunk Properties** window.



3.4.1.2 Audio Trunk Properties – Exchanges

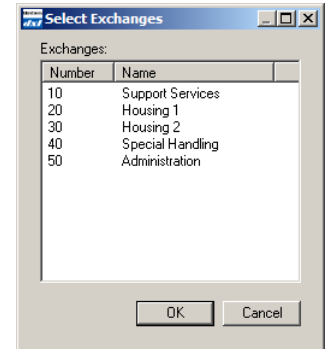
The **Exchanges** tab lists all the exchanges in the digital audio loop. Each exchange is listed in the Exchanges: area with its ID number and Name. If you have not added any exchanges to the audio trunk this window will be empty.

Click on the **Add...** button to bring up the **Select Exchanges** window.



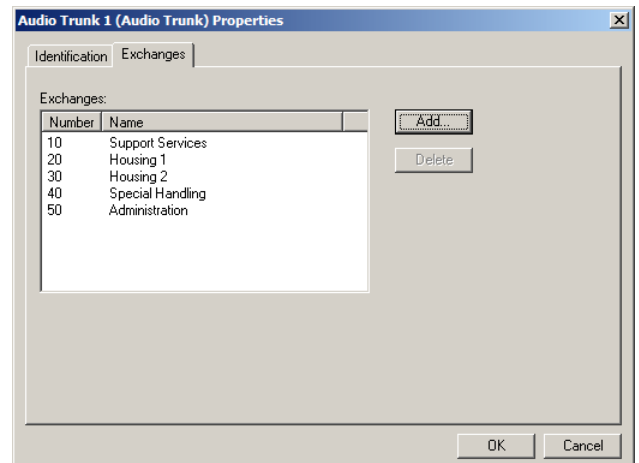
This window lists all the exchanges in the system. Click on the exchange that you want to include in the audio trunk and then click on the **OK** button to make the selection. Click on **Cancel** to cancel the operation. You can make more than one selection at a time from this list.

Exchanges that have been defined with audio trunk ports that do not match the audio trunk type will NOT be displayed here.



The exchanges that you have selected appear in the **Exchanges:** area and are now all a part of the audio trunk ring.

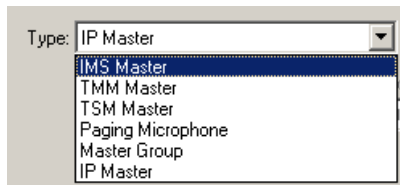
To delete an exchange from the audio trunk, click on the exchange that you want to delete and then click on the **Delete** button.



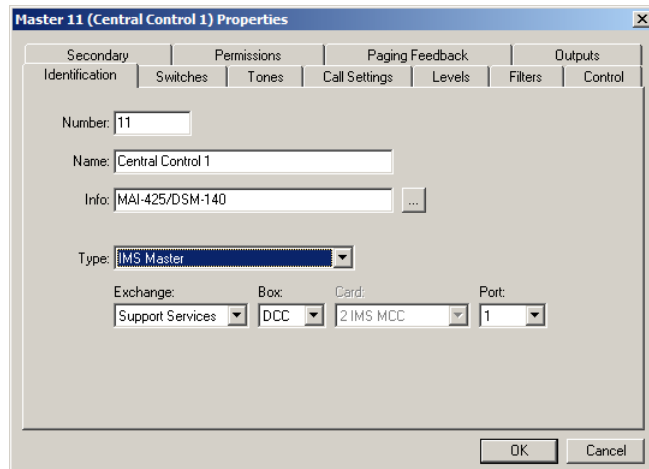
3.5 Masters

The DXL supports Intercom Master Stations (IMS); Touch Screen Master Modules (TMM); Telephone Set Master Stations (TSM); Paging Microphones, Master Groups and Internet Protocol (IP) Masters, and IP Touch Screen Master Modules (TMM IP).

In the **Master Properties** window, with the **Identification** tab selected, you will have to choose the **Type** of master. Use the pull-down menu to select the type of master.



A short description of the various types of Masters is provided below:

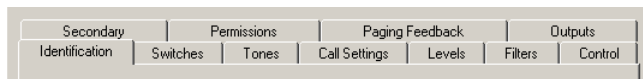


IMS and TMM Masters

Intercom master stations (IMS) can be either desktop (IMS-440) or panel mount (MAI-425) master stations with associated display panels. The IMS require a connection to the data-exchange network (LonWorks network), which requires a LonWorks card in the PCI slot of the DCC.

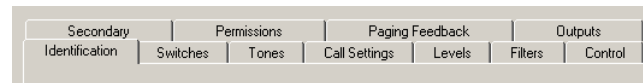
Touch Screen Master Modules (TMM) master stations are similar to IMS master stations except that they do not have a display, and therefore do not require the DCC to have a PCI card (i.e. they do not require a connection to a data-exchange network). The TMM masters use the same type of ports as the IMS master stations. TMM master stations are used with touch screens and host ports.

The tabs associated with an IMS and TMM masters are shown. If a system has CCTV, or Host Ports the master station tabs will change to allow you to configure these devices



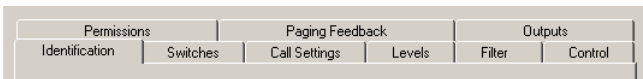
TSM Masters

A Telephone Set Master (TSM) is a standard operating phone that is used as a master station. The tabs for configuring a TSM are shown on the right; again additional tabs will be present if a system has CCTV or Host Ports.



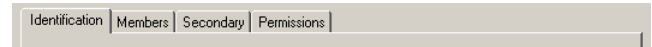
Paging Microphone Master

Paging Microphones are only used to make announcements to page zones and can only transmit audio in one direction. Stations cannot make call requests to these masters and Paging Microphones cannot establish calls with Masters or Stations. These Masters are usually associated with a PTT switch that is pressed when the Master wants to transmit a page. Again additional tabs will be present if a system has CCTV or Host Ports.



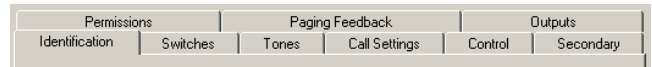
Master Group

Master Groups are a special type of master; they are not masters in the physical sense. Instead, a **Master Group** is an entity that has different masters as members of its group. All masters that are members of a master group, share the permission lists (discussed later) of all the masters in the group. Additional tabs will be present if a system has CCTV or Host Ports.



IP Master and TMM IP Masters

The IP Master Stations use Voice over Internet Protocol (VoIP). The inter-exchange Ethernet network is used for call connections between exchanges. Such systems do not require a digital audio trunk (CEPT network). Every DCC in a system (i.e. every exchange) requires a VOIP card. The tabs for an IP master station are shown on the right. Note that IP Masters support 14 pre-defined switches that correspond to the speed dial keys on the right side of the IMS-640. TMM IP Masters have 2 pre-defined switches setup as PTT and hook switches.



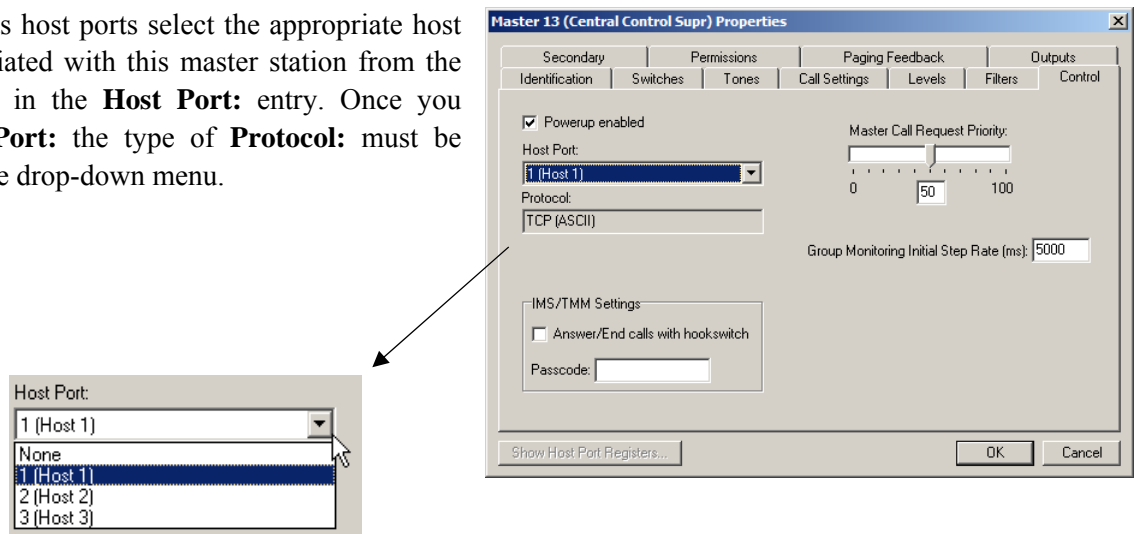
3.5.1 General Tabs

There are certain ‘general’ tabs in the **Master Properties** window that are identical, irrespective of whether you choose a TSM, TMM, Paging Microphone Master, Master Group or IP Master. Hence, we will discuss these ‘general’ tabs below and then continue on to the tabs that vary for each type of Master.

3.5.1.1 Control

The **Properties** windows for the IMS, TMM, TSM, Paging Microphone and IP masters have a **Control** tab. The Master Group does not have a **Control** tab. The information boxes in the **Control** tab differ slightly depending on the type of master station. The various information boxes are discussed below.

If your system has host ports select the appropriate host port that is associated with this master station from the drop-down menu in the **Host Port:** entry. Once you specify a **Host Port:** the type of **Protocol:** must be specified using the drop-down menu.



Tick the **Powerup enabled** checkbox to start-up the master station in an enabled mode. If you do not select this option, then this master station will start-up in a disabled state and all call requests will be forwarded to the secondary master station. Therefore, it is important to select a secondary master if you do not want the master to start-up in an enabled state.

The **Master Call Request Priority** sets the priority of a call request made by this master station. When a master station has several call requests queued, they are displayed according to their call request priority on the master's display. Normally, the call at the top of the call request queue is answered first.

The information box **IMS/TMM Settings** is present in the **Control** tab for the IMS or TMM master. The **Passcode:** is a string of numbers (up to 10 digits) that allows an operator to enable this master station by typing in the passcode string. If a passcode has been set then an operator can enable or disable the master station at the master station itself. If the passcode entry has not been set and the master is disabled, then the disabled master can only be enabled by another master station that has the permission to do this.

IMS Masters usually answer calls by pressing the 'ENTER' button on their keyboard and end calls by pressing 'END'. However, if you want to use the handset hookswitch as the switch that is used to answer and end calls then tick the **Answer/ End Calls with Hookswitch** checkbox. In this case, a call will be answered when you pick up the handset of the Master and will be ended when you replace the IMS handset on the hookswitch. Note that this option is only available if you choose an IMS or a TMM Master.

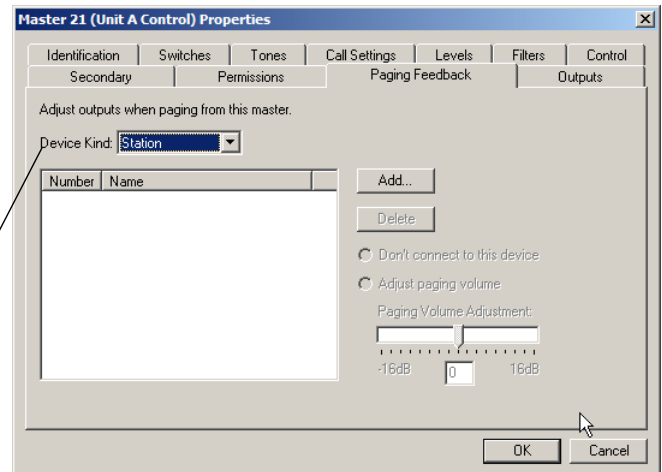
For a TSM master entries on the **Control** tab will include an area for **TSM Settings** information box. When an operator is sitting at a master and attending to call requests etc., the master is said to be in a manned state. When a master is left unattended, it is usually put in an unmanned state, so as to inform other masters that it is unattended. Tick the **Accept Man/Unman** key sequence checkbox if you want to enter a special sequence to either man or unman a TSM. This system wide sequence is defined in the **Systems** selection in **Configure:**. You will be able to enable or disable the master station if the **Accept Man/Unman** key sequence option is enabled. If you do not choose this option then another master station with permission, will be required to man or unman this master station. When the TSM is left unmanned, you will hear a distinct audible tone when the handset is taken off hook.

The **TSM Settings** contains two checkboxes. If you select the **Require** function prefix keys then this means that any calling sequence that you dial will require a prefix digit. Do not select this option if you want to dial a number from the TSM, without using a prefix digit. Since this could lead to potential conflicts (devices in different classes could have the same ID number) the system uses a hierarchy to step through the different classes of devices until it finds a matching ID number. Please refer to the Systems section (in **Configure:**) for a further explanation of 'prefix keys'.

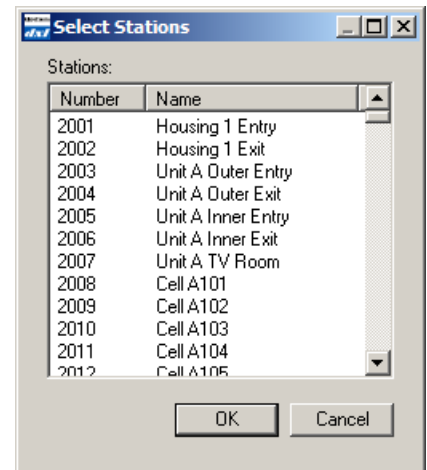
3.5.1.2 Master Properties – Paging Feedback

The **Paging Feedback** tab contains an information box that lists all the stations and paging outputs that are either excluded or will have their volume reduced when this master station broadcasts over a page zone. Any station or paging output could be included on this list. The purpose of this feature is to eliminate audio feedback from stations or paging outputs.

Station
Paging Output



Select **Station** in the **Device Kind:** entry and then click on the **Add...** button to add a station to the list. This will bring up a **Select Stations** window where a list of all the stations in the system will appear. From this list, click on the station that is causing audio feedback and then click on the **OK** button to add this station to the information area in the **Paging Feedback** tab. Click on **Cancel** to exit from this screen.



To add a paging output to this list, click on **Paging Output** in the **Device Kind:** entry and then follow the same steps as above for adding a paging output to the list.

The **Paging Feedback** tab lists all the stations or paging outputs that have been identified as causing audio feedback. Now that this list is defined, select a station or page output from this list and then select one of the two options: **Don't connect to this device** or **Adjust Paging Volume**.

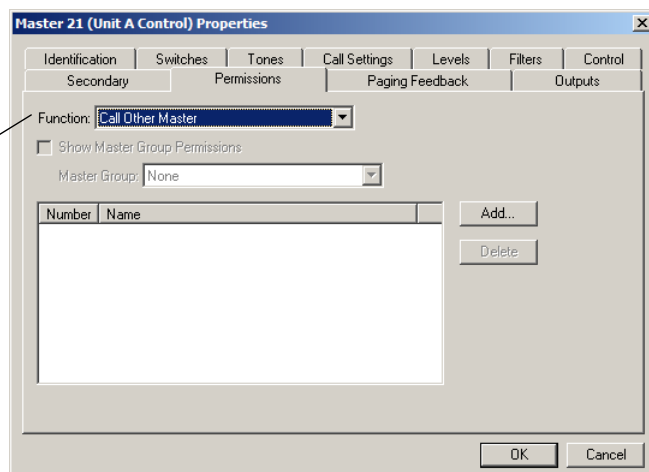
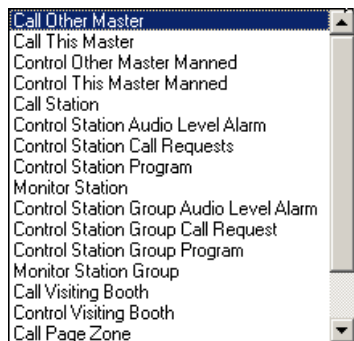
If you select **Don't connect to this device**, then the station (or page output) that is selected will be disconnected when a page is made to a page zone that contains this station (or page output).

If you select **Adjust Paging Volume** then the volume of the audio output of the station (or page output) gets reduced when a page is made to a page zone that contains this station (or page output).

If you want to simultaneously change the audio output of many stations, select these stations first and then make the paging adjustments.

3.5.1.3 Master Properties – Permissions

The **Permissions** tab lists the stations, page zones, monitors etc. that this master station can access. To see a list of the classes of devices that a master station can access, use the **Function:** pull-down menu.



Click on the function that you want to give the master permission to access and it will appear in the **Function:** area. As an example, say that we want to give the master permission to call a station. Click **Call Station** in the **Function:** drop-down menu. Now we have to identify the stations that we want to give the master permission to call.

Click on the **Add...** button to see a list of all the stations that are related to the **Call Station** entry. You can make an individual selection of stations from this list or you can add all the stations to the list. As the devices are added to the permission list they will appear in the information window, with the **Number** and **Name** of each device displayed. In a similar fashion, you can add devices for each entry that you choose in the **Function:** drop-down menu.

To delete a device from the information window, click on the name of the device in the information window and then click on the **Delete** button.

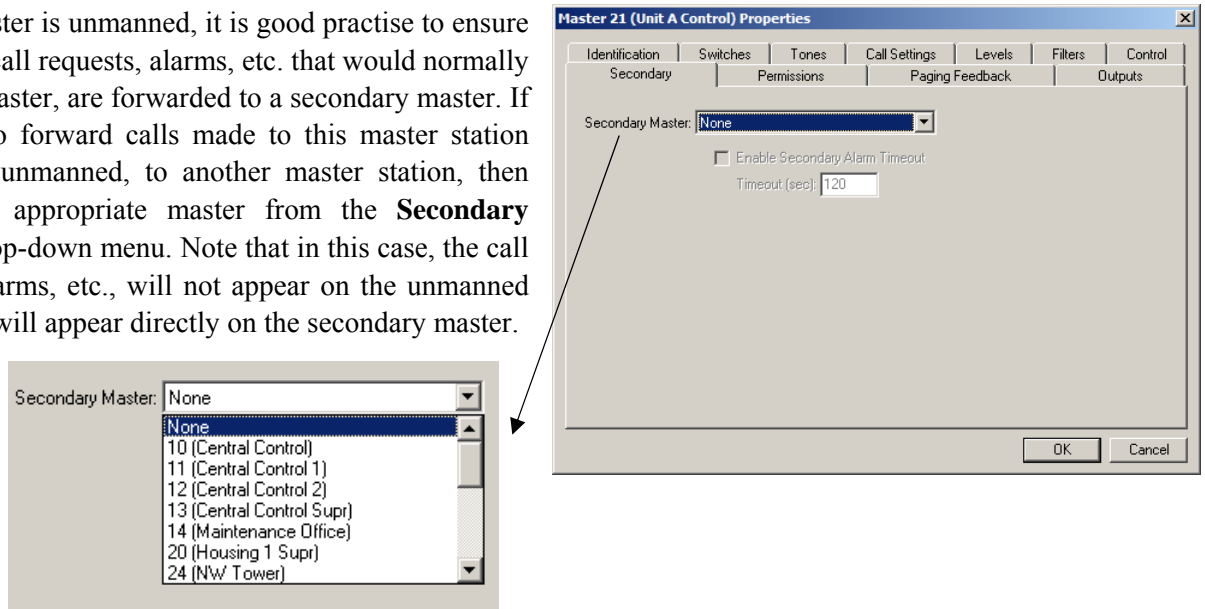
Note that a Master Group is a separate type of master; please refer to the **Master Group** section for a detailed description of how these masters operate.

You will only be able to click on the **Show Master Group Permissions** checkbox if the master that you are defining is a member of a master group. Click on the **Show Master Group Permissions** checkbox to display the permissions for the master group that this master belongs to. In this case, the master group that the master belongs to will appear in the Master Group: entry. Note that if this master is a member of more than one master group, then all the master groups that it is a member of will appear in the **Master Group:** drop-down menu. If you want to view the permission lists of a particular master group, then click on the master group in the **Master Group:** drop-down menu and then scroll through the various permissions in **Function:**. Note the permissions that you are viewing are the permissions for the master group that this master belongs to, and not the permissions of the master itself. However, if you add or delete devices from the information area while you are viewing the **Master Group Permissions**, remember that you are adding and deleting the permissions to only the master and not the master group. Even if you are currently viewing the Master Group permissions when you add or delete a device from the permission list, the permission for this device is added to the master and not the master group.

Note that Paging Microphone Masters only have three selections in their Function: permissions list: Call Page Zone, Control Page Zone Program and Control Page Zone Volume. This is because Paging Microphones are only used to make pages to page zones.

3.5.1.4 Master Properties – Secondary

When a master is unmanned, it is good practise to ensure that all the call requests, alarms, etc. that would normally go to this master, are forwarded to a secondary master. If you want to forward calls made to this master station when it is unmanned, to another master station, then choose the appropriate master from the **Secondary Master:** drop-down menu. Note that in this case, the call requests, alarms, etc., will not appear on the unmanned master and will appear directly on the secondary master.



When a master is manned but unattended (i.e. there is no one to answer call requests and acknowledge alarms) is another case where a secondary master will come into play. If the **Enable Secondary Alarm Timeout** is checked and a time in seconds is entered in the **Timeout (sec)** box then all the requests that are sent to this unattended master will be forwarded to the secondary master if the operator does not answer the requests within the specified time. Call requests, alarms, etc. will appear on both the manned master and the secondary master, and the operators at either master will be able to answer and acknowledge these requests. Also note that the system will not allow you to enable a secondary alarm timeout if you have not specified a secondary master from the **Secondary Master:** drop-down menu.

3.5.1.5 Master Properties – CCTV

The **CCTV** tab that appears in the **Stations** section of **Configure:** operates in exactly the same way as the **CCTV** tab for master stations and will not be discussed in detail in the stations section

The **CCTV** tab allows you to control the video connections between monitors and cameras associated with masters and stations when a call is made from a master to a station. A similar tab provides the same setting for a station. The CCTV camera tab lets you associate a group of video cameras and video monitors with a master station. When a call is made these lists are used to determine which commands to send to the video switch. This causes the video switch to connect the appropriate video cameras and video monitors for the call. In addition to an audio connection this allows you also set-up a visual connection to see whom you are talking to.

Note that you will need to first define the video switches in the **Video Switches** section of **Configure:**. Only after you have defined a video switch will the **CCTV** tab appear in the Master **Properties** dialog box. Remember that the video switch must be set with the Camera/Monitors Commands option selected (this choice is made in the **Commands** tab of the **Video Switches** section in **Configure:**). After this, you will have to define the video

cameras and video monitors that are using these switches in the **Video Cameras** and **Video Monitors** section of Configure:.

Note that these CCTV settings are only defined for the 'CALL' event i.e. when a call is made from a master to a device.

When you select the **CCTV** tab of a **Master Station Properties** the following window appears. If there are no video cameras or video monitors associated with a Master Station the information box will be empty.

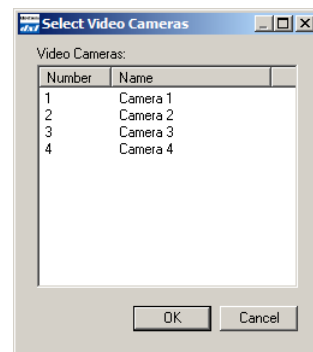
The **Sequence** number defines the order in which the video cameras and video monitors will be connected. The sequence number always remains in serial number order from 1 to 99999.

The **Number** is to the ID number of the pre-defined video camera or video monitor. This ID number is assigned when you define the devices in the **Video Cameras** and **Video Monitors** sections and cannot be changed.

The **Name** is the name of the video camera or video monitor that was assigned to it when it was defined.

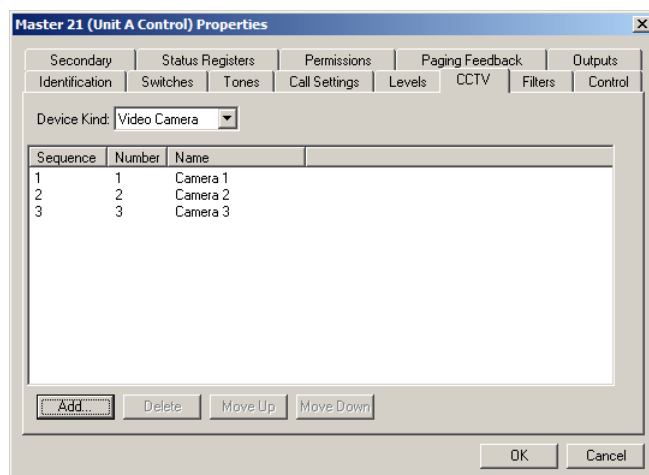
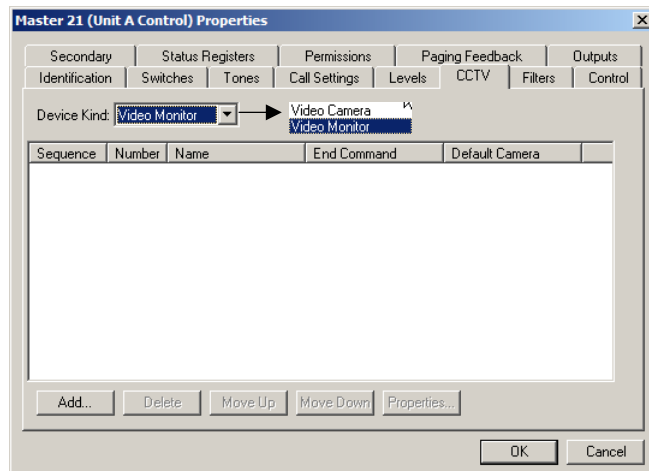
Video Camera

If you want to associate a video camera with a master station, click on **Video Camera** in the **Device Kind:** entry and then click on the **Add...** button. This brings up the **Select Video Cameras** window. From this window, click on the video camera that you want to associate with this master and then click on **OK**.



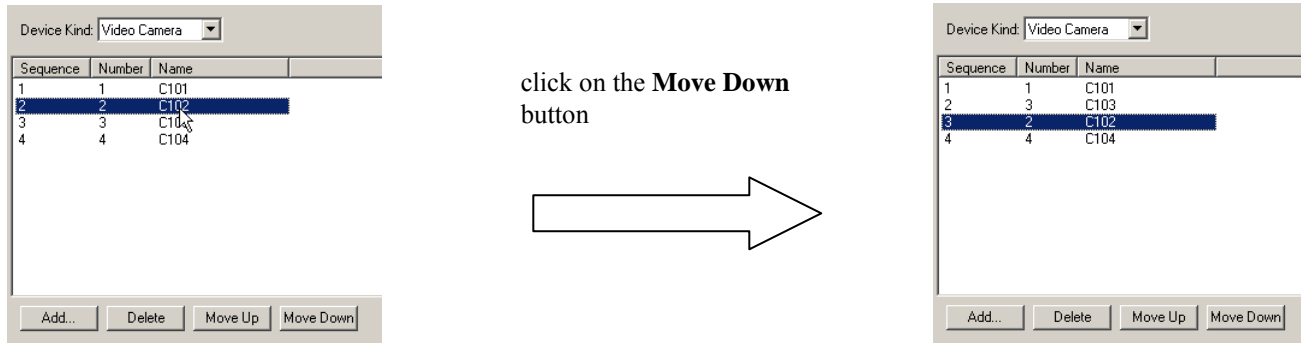
The cameras that you have added will appear in the window shown on the right.

To delete a camera click on the video camera that you want to delete and then click on the **Delete** button.



To move a video camera down or after another camera by 'one place', click on the camera entry and then click on the **Move Down** button. Note that this will change the

sequence number of the camera. In the figure below, we have selected camera C102 (sequence number of 2) and have clicked on the **Move Down** button. Notice how the camera C102 has moved below camera C103. Also, notice how camera C103 now has a Sequence number of 2. The Sequence numbers always remain in sequential order.



The **Move Up** button operates in a similar way, except that it moves the device that you have chosen, 'one place' upwards.

Hence, depending on the camera and the monitor that you want to connect together, the **Move Up** and **Move Down** buttons will allow you to quickly and easily change the associations between cameras and monitors.

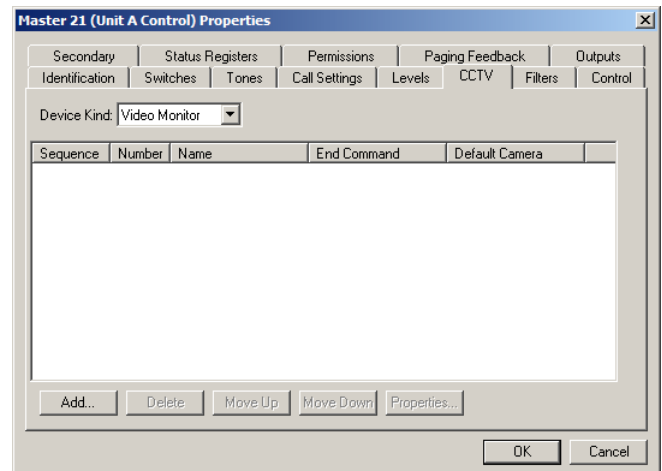
Video Monitor

If you want to associate a video monitor with a master station then click on **Video Monitor** in the **Device Kind:** entry and then click on the **Add...** button. This brings up the **Select Video Monitor** window.

The title '**End Command**' in this window, displays the command that the DXL will send the video switch after the call to the station has been completed.

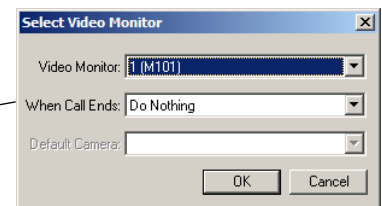
The title '**Default Camera**' displays the default camera that the monitor on the master will be connected to, after the call has been completed.

The entries for these titles are discussed next.



From the **Select Video Monitor** window, click on the video camera that you want to associate with this Master from the **Video Monitor:** drop-down menu.

Do Nothing
Disconnect
Show Default Camera



For this video monitor, you will also have to define what the video monitor must do after the call to the station has ended. This choice is made from the **When Call Ends:** drop-down menu. Note that there may not always be three

options in this drop-down menu since the choices that appear in this menu depend on the type of switch that you have defined. The definition for the type of switch that is used, is made in the **Commands** tab of the **Video Switches** section in **Configure**:

- If the video switch is defined as a **Pelco** switch, then you will see three options in the **When Call Ends**: drop-down menu. They are: **Do Nothing**, **Disconnect** and **Show Default Camera**.
- If the video switch is defined as a **Vicon**, **Ultrak**, or **Bosch** switch, then you will see only two options in the **When Call Ends**: drop-down menu. They are: **Do Nothing** and **Show Default Camera**.

The three options are discussed below:

- If you select **Do Nothing**, then the DXL will not send a command to the video switch and therefore, the monitor will be left connected (no action taken) to the Station's camera at the end of the call.
- If you select **Disconnect**, then the DXL will send a command to the video switch telling it to disconnect the video monitor from the video source after the call has ended.
- The **Show Default Camera** option means that the DXL will send a command to the video switch telling it to connect the video monitor to the default camera after the call has ended.

You will be able to make a selection for the default camera from the **Default Camera**: drop-down menu. This menu will contain a list of all the cameras that you have defined so far. Click on any one of these cameras to set it as the default camera. A default camera can be separately specified for each monitor. Note that you can only set a **Default Camera**: if you have chosen the **Show Default Camera** option from the **When Call Ends** drop-down menu.

Once you have completed defining the monitors, click on the **OK** button to associate this video monitor with the master.

The **Add...**, **Delete**, **Move Up** and **Move Down** buttons in the **CCTV** tab, work in exactly the same way as the previous section and will not be discussed here again.

The **Properties...** button is an additional button that appears with this window. This button is used to view the settings of a video monitor that has already been defined. To view the properties or settings, click on the video monitor and then click on the **Properties...** button or just double-click on the video monitor.

Rules

We will now discuss some rules for connecting video monitors on Masters to video cameras on Stations and vice-versa. In the discussion 'M' refers to a video monitor and 'C' refers to a video camera. The notation M101→C101 means that Monitor101 is connected to Camera101.

The following rules apply for the **Camera/Monitor Commands** method of interconnecting cameras and monitors:

1. With the exception of rule #2, connections will be established between cameras and monitors in the same order that they are assigned in the Configuration, until no further connections are possible (either the cameras or the monitors run out). So, the program begins sending commands for connecting the monitors on the master to the cameras on the station (in sequential order) and this continues until either the monitors on the master run out or the cameras on the station run out. Next, the cameras on the master are connected to the monitors on the station (in sequential order) and this continues until either the cameras on the Master or the monitors on the Station run out.

Example: A Master has monitors M100, M101 and cameras C100 and C101. A Station has monitor M200 and camera C200. So, when the master calls the station, the following connections are made: M100 → C200 and this assignment stops here as the station does not have any more cameras to connect M101 to. Next, commands are sent for the following connections to be made: C100 → M200. This assignment stops here as the station does not have any more monitors to connect C101 with.

2. When a master calls a visiting booth or a compound station where a monitor has been assigned to each of the constituent stations, the first camera that is assigned to the master will be connected to the first monitor of each constituent station (even if the master has more than one camera). This “multiple connection” also applies if additional master station cameras and visiting booth station monitors are available.

Example: A Master Station with two monitors and one camera makes a call to a visiting booth that has two member stations. Each station in the visiting booth has one camera and one monitor.

When the master calls the visiting booth, the first monitor at the master will be connected to the camera on the first station. The second monitor at the master will be connected to the camera on the second station. The camera at the master will be connected to the monitor on the first station and the monitor on the second station simultaneously.

3. When a master station calls a visiting booth or a compound station where a monitor has NOT been assigned to each of the constituent stations (i.e. none of the stations have monitors associated with them), then connections between intercom station cameras and master station monitors will be made in a round robin fashion.

Example: a master station with monitors numbered M100, M101, M102, M103 (assigned in that order) calls a three member compound station made up of Stations 200, 300 and 400 (assigned in that order). Station 200 has cameras numbered C201 and C202, Station 300 has cameras C301 and C302 and Station 400 has cameras C401 and C402.

The connections between cameras and monitors are made in order as:

M100 → C201

M101 → C301

M102 → C401

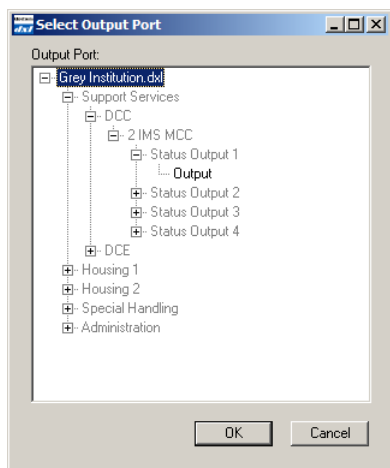
M103 → C202

No further connections are possible as all the master’s monitors have been connected.

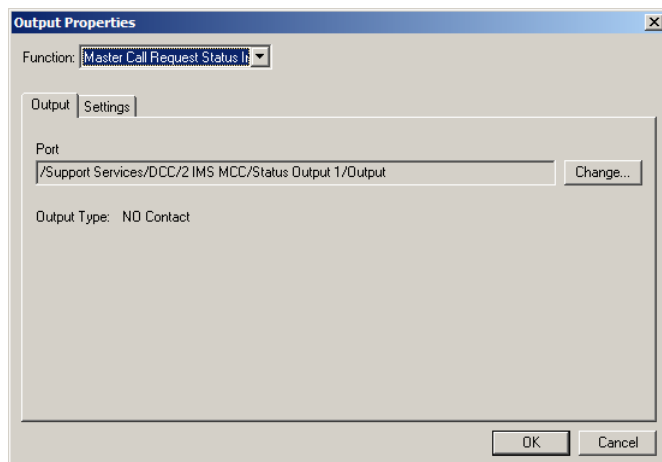
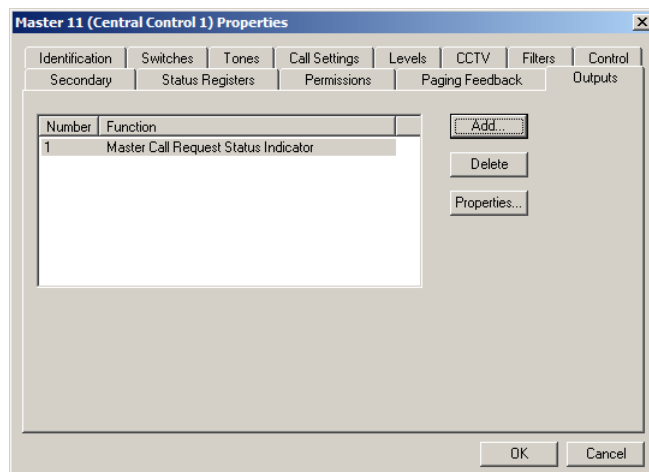
4. When a Master Station makes a call to a visiting booth or a compound station, any duplicated entries will be “filtered” to prevent the same camera from being connected to two (or more) Master Station monitors.

3.5.1.6 Master Properties – Outputs

The **Outputs** tab is used to set outputs that will provide information on the status of the master station. You can add an output by selecting the **Add...** button. This will bring up the **Output Properties** window followed by a **Select Output Port**. Expand the tree structure until you find the desired output.



When you have made your selection click the **OK** button and you will return to the **Output Properties** window, which has two tabs **Output** and **Settings**. The output port you have chosen will be displayed in the **Port** information box. The **Function:** pull-down allows you to select the purpose of the output. At present the only selection possible is as a Master Call Request Status Indicator.



The **Settings** tab allows you to set the output to one of six possible patterns:

Off

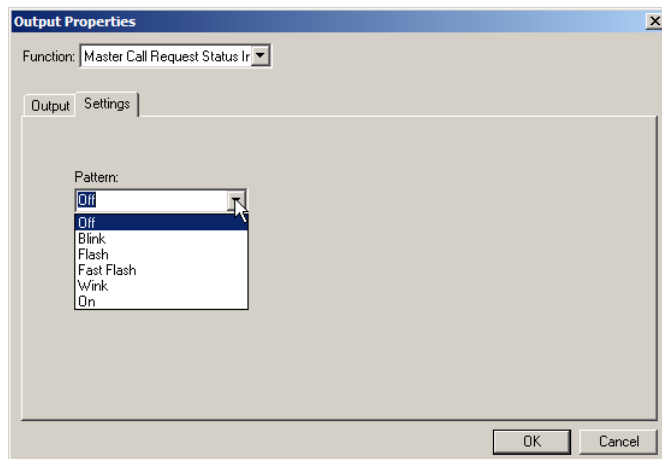
Blink on 1/8 off 7/8 at 1 Hz.

Flash on 1/2 off 1/2 at 1 Hz.

Fast Flash 1/2 on 1/2 off at 2 Hz.

Wink on 7/8 off 1/8 at 1 Hz.

On



3.5.2 IMS and TMM Master Stations

3.5.2.1 IMS and TMM Master Properties – Switches

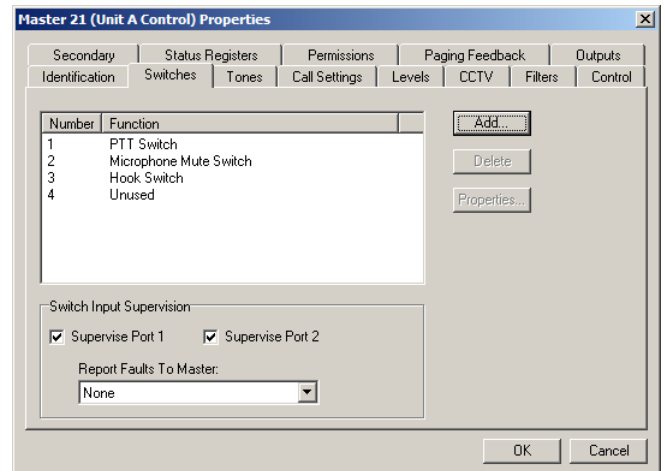
The **Switches** tab is shown on the right. The IMS Master uses two audio lines and each audio line can provide contact closure information for up to two switches. Contact closures for only three of the four possible switches are used in an IMS Master. The entries shown in the **Master Properties** window are the default entries for standard operation of an IMS Master.

The IMS switches have terminating resistors and can be supervised to check for open or short circuit faults on the audio **lines**. **The check boxes beside Supervise Port 1 and Supervise Port 2** turn this capability on or off. If a port is supervised, its faults are always reported to the Exchange DCC; however, you also have the option of reporting the faults to a Master Station.

The pull-down menu on the Report Faults To: drop-down menu lists all the Master Stations in the system. Select the Master Station that will be monitoring the faults, from this list. All the faults that are detected on the supervised switches will be forwarded to the Master that you define here.

Note that if you do not define a Master to report the faults to, then the faults will still appear on the DXL but they will not be reported to any of the Master Stations. If the Master that is to monitor faults has not been defined yet, then you will have to return to this window later.

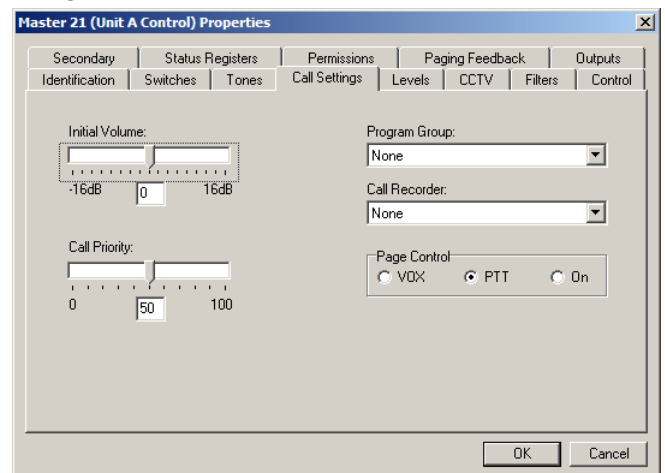
You can define a port as being unsupervised, by removing the tick mark in the checkbox beside Supervise Port 1 or Supervise Port 2. Note that if you have an unsupervised port, you will only be able to define one switch for that port. If a port is unsupervised, then any faults that occur at its switch will not be reported to the DXL or to the Master Station.



3.5.2.2 IMS and TMM Master Properties – Call Settings

You can select the Page Control so that it operates as VOX (Voice Operated Switch), PTT (Press to Talk) or On. When a Master makes a page announcement, the audio connection can be made immediately if On is selected, or only after the push to talk (PTT) switch is depressed if PTT is selected, or when speech is started if VOX is selected. The PTT and VOX options allow the operator time to compose his thoughts before transmitting a message. The PTT option allows the operator to have a local conversation (when the PTT button is released) without having it broadcast as a part of the page message.

Select a tape recorder from the Call Recorder: drop-down menu, to record all the conversations of this Master. Select the appropriate Program Group: from the drop-down menu, to make programmed music available at this Master.



3.5.3 TSM Master Stations

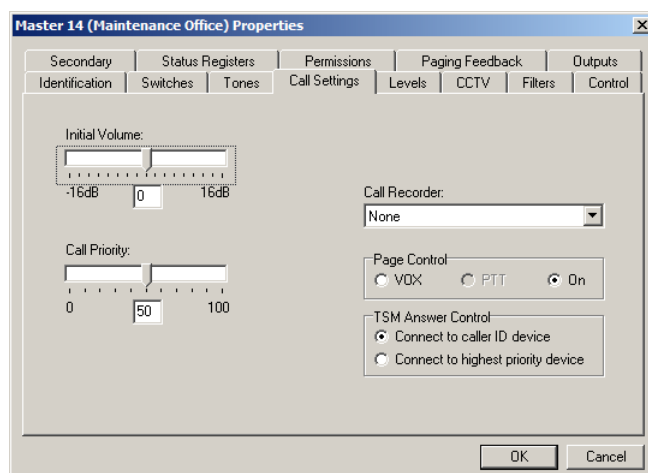
Telephone Set Master (TSM) Stations use a standard telephone as a Master Station. Pre-defined prefixes and suffixes allow an operator to make page announcements, calls to Stations and other Master Stations, and perform monitoring and control functions. The default operation of telephone Masters is similar to the standard operating procedures for a MicroComm DXL system, however the MicroComm DXL telephone calling sequences can be customized for a particular facility in order to create a more efficient operation. The parameters that define how the telephone Masters will operate is set in the System selection of the Configure: entry.

3.5.3.1 TSM Master Properties – Switches

The Switches Tab lets you assign switches to the TSM Master. Normally, the off-hook condition is the only switch action associated with a telephone and this does not require any settings. Select the Add... button to bring up a dialog box that lets you assign switches to the TMS Master. For example, you could specify a switch on the TSM that acts as a PTT switch for page announcements.

3.5.3.2 TSM Master Properties – Call Settings

Select the Connect to caller ID option to connect to the device that is shown in the caller ID message (sent between the first and second rings). This provides a connection that is consistent with the phone's caller ID display even if call requests from higher priority devices are received after the caller ID transmission. Select the Connect to highest priority device option to connect to the device that has the highest priority call request queued at the time the handset is lifted. This is likely the preferred method for phones that do not have caller ID display.



The Page Control area has three options: VOX (Voice Operated Switch), PTT (Press to Talk) or On. When a Master makes a page announcement, the audio connection is made immediately if you select On, or when the speech is started if you select VOX. The PTT option is non-selectable. The VOX option allows the operator time to compose his thoughts before transmitting the message.

Select the appropriate tape recorder in the Call Recorder: drop-down menu, to record the conversations of this Master Station.

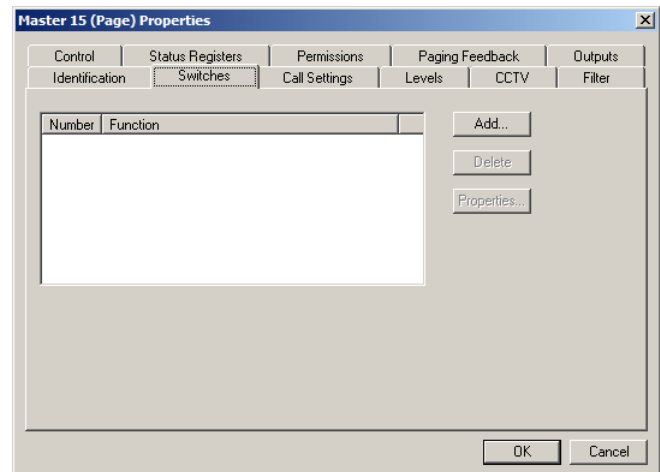
3.5.4 Paging Microphone Master

A Paging Microphone is a Master Station that connects to an audio input port on a DCC or a DCE. A Paging Microphone does not have a display and can only communicate in one direction. Hence, it is usually used to make pages to Page Zones and it cannot make call requests to other Masters or calls to Stations. An external switch is required to act as a PTT switch when the Paging Microphone is making a page. A Paging Microphone is used in conjunction with a Host Port or a Switch Panel.

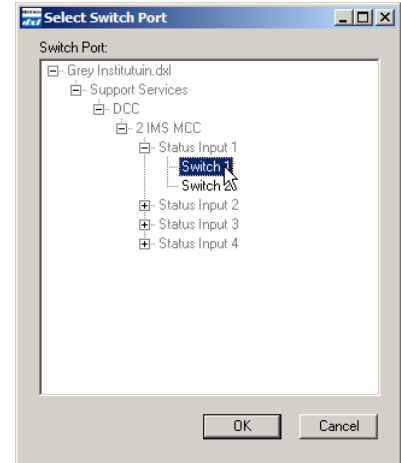
3.5.4.1 Paging Microphone Master Properties – Switches

The Switches Tab is shown on the right. Initially there are no switches associated with the Paging Microphone Master Station. You need to define a PTT switch, which is an external switch that is connected to one of the switch inputs on the DCC or DCE.

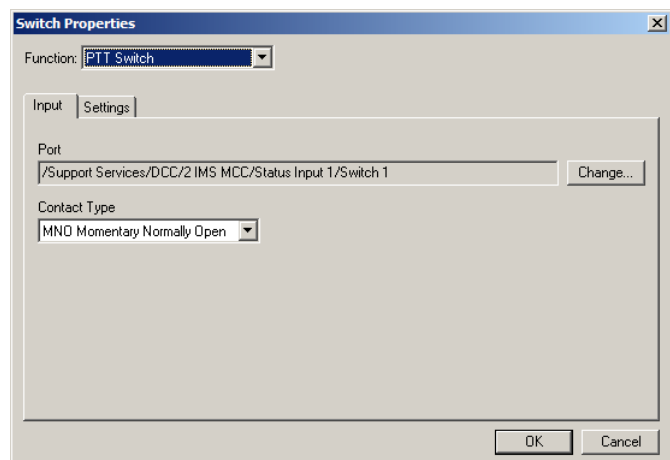
Select the Add... button to add a switch to the Paging Microphone Master Station. This brings up the Switch Properties window followed by a Select Switch Port window.



In the Select Switch Port window expand the tree structure to select a switch port. Once you select the switch input you want, click the OK button. The Select Switch Port window will disappear and you will revert to the Switches Property window.

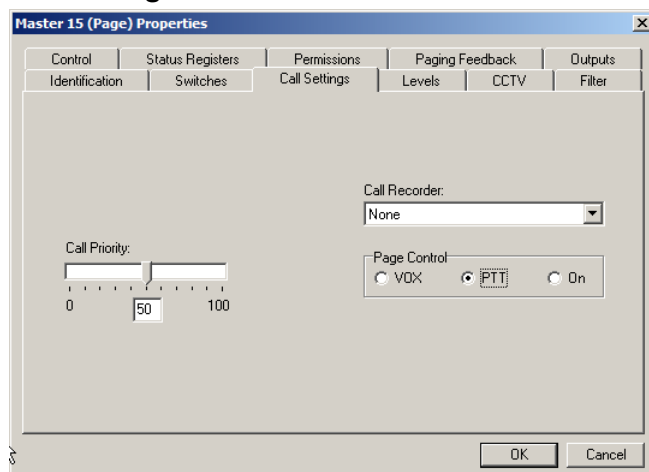


Use the pull-down Function: menu to select the purpose of the switch. The path where the switch is located is displayed in the Port entry information. You can use the Select... button next to the Port entry to bring up the Select Switch Port window again if you wish to change the switch you have selected. Browse through the tree structure, to locate the switch you want to use. Once you find the switch, select the switch by clicking on it and hit the OK button. This will again take you back to the Switch Properties window. Select the Contact Type for the switch from the drop-down menu.



3.5.4.2 Paging Microphone Master Properties – Call Settings

The **Page Control** area has three options: **VOX** (Voice Operated Switch), **PTT** (Press to Talk) or **On**. The **PTT** option will not be available until you define a PTT switch in the **Switches** tab. When a page master makes a page announcement, the audio connection is made immediately if you select **On**, or only after the PTT switch is depressed if you select **PTT**, or when the speech is started if you select **VOX**. The **PTT** and **VOX** options allow the operator time to compose his thoughts before transmitting the message. The **PTT** option allows the operator to have a local conversation without having it broadcast as a part of the page message.



Select the appropriate tape recorder in the **Call Recorder:** drop-down menu, to record all the conversations of this master station.

3.5.5 Master Groups

Both IMS/TMM and TSM Masters can be configured to act as a single master or as a member of one or more groups of masters. Each master and master group can be independently configured with their own set of master permission Lists.

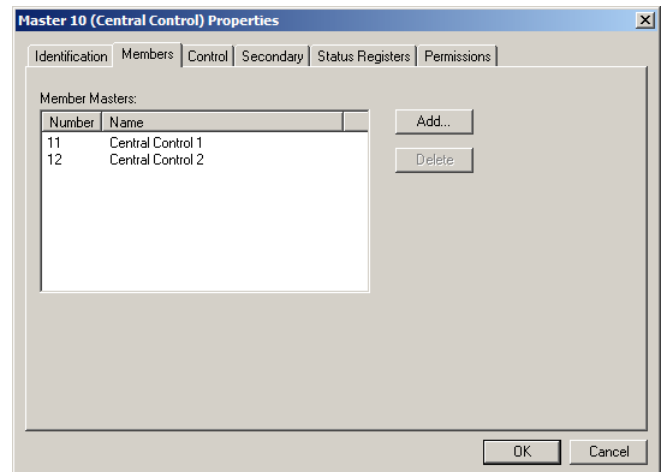
As a member of a group (or groups), a master will receive its own alarms and call requests, and it will also receive the alarms that are directed to any of the master groups that it belongs to. Similarly, a master that is a member of a master group operates on the union of its own permission lists and the permission lists of all the groups that it belongs to. While a master can be a member of more than one master group, it can have only one secondary master (or secondary master group). Also, alarms that are directed specifically to the master (not the group) are forwarded to the master's secondary when it is unmanned, rather than to the remaining members of its group.

Master groups can also be configured with secondary masters or master groups. In this case, alarms that are specifically directed to the master group are not forwarded until the last of its members is unmanned.

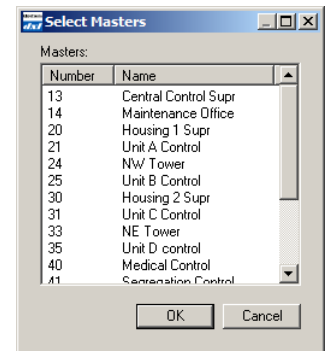
Master Groups are very useful for the purpose of queuing call requests at many masters. So, if a station issues a call request, then this call request is queued at all the masters in the master group. Hence, call requests and alarms can be attended to much more quickly than if there was only a single Master that was responsible for handling all the requests.

3.5.5.1 Master Group Master Properties – Members

The **Members** tab contains an information box that lists all the masters that are included in this master group.



Click on the **Add...** button to view a list of all the master stations in the system. The **Select Masters** window pops up, and you make your selections from this list. After selecting a master, it is added to the **Member Masters:** area and this master will no longer appear in the **Select Masters** window.



3.6 Station Templates

The **MicroComm DXL Configuration Editor** supports station templates in order to quickly and easily configure many similar stations, such as in a housing unit. These are virtual devices with almost the same set of properties as real intercom stations (which are described in the next section). The principal difference is that they do not have a hardware port address.

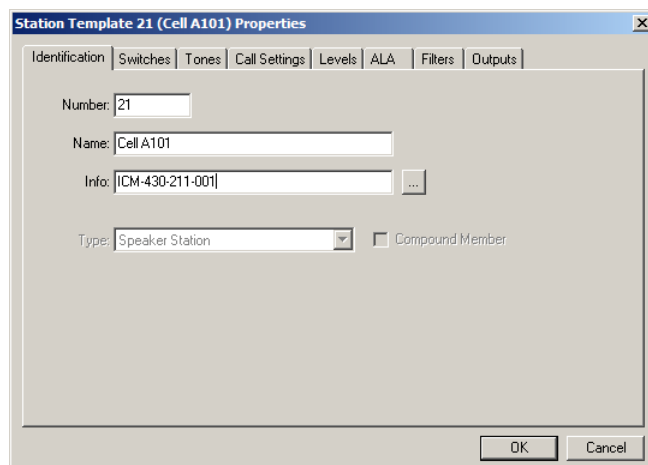
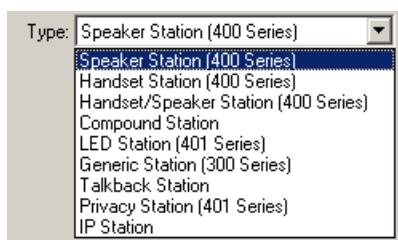
The physical intercom stations may be based on a particular template. In this case, the station inherits the value of its properties from its station template. All the stations that are created from a specific template will have the same set of properties that you have defined in the template. For example, if a template is defined to have its call requests directed to Central Control then all the stations that are created from this template will send their call requests to Central Control. If the template is edited and Central Control is replaced by Control A, then all the stations derived from this template will have their call requests directed to Control A.

You can edit an individual station (that is based on a template) and change any of its properties to a different value. In this case the station will retain its own value for that property, but the other properties will still be determined from its template. If you have many stations that are based on a single template, then the properties for all the stations can be changed simultaneously by changing the property in the template.

Each station template is based on a single type of station. You can define as many station templates as you need. Stations that are based on the same template share the switch input and functional values defined for that type. They also use the same initial values for the associated parametric fields such as call request priority, tone settings etc.

The type of a station template cannot be changed if there are existing stations that are based on this template, and the entry that allows you to select the type of station will be dimmed.

When you click on the **Add...** button to define a new station template, you will see the **Station Template Properties** window, with the default **Type:** set to **Speaker Station**. Select the pull-down next to the **Type:** entry box to see the list of the Station types that can be selected.



You can create as many station templates as you like for each of the station templates types defined in **Type:** entry. Once you have selected a **Type:** of station the **Station Template Properties** dialog box will contain the same set of tabs for the **Speaker**, **Handset**, **Handset/Speaker**, **LED Station**, **Privacy Station**, **Talkback Station**, **IP Station**, and **Generic Station Templates** except the **Handset** the **Handset Station Templates** will not have an ALA tab. The template for a **Compound Station Template Properties** dialog box is similar to the entries for the **Compound Station Properties** dialog box except that the members cannot be defined. In all cases, see Section 3.7 for more details on Station settings.

The **Station Template Properties** dialog box is similar for the **Speaker**, **Handset**, **Handset/Speaker**, **LED Station**, **Privacy Station**, **Talkback Station**, **IP Station** and **Generic Station Template Properties** dialog boxes. Rather than repeating similar descriptions, only the **Speaker Properties Template** dialog box is described.

3.6.1 Speaker Station Template

3.6.1.1 Speaker Station Template Properties - Identification

The **Identification** tab for the **Speaker Station Template Properties** dialog box is similar to the **Identification** tab for the **Speaker Station Properties** dialog box. The main difference is that the template does not have entries for the port connection.

If you want the stations that are created from this template to be members of a Compound Station, then you need to place a tick mark in the **Compound Member** checkbox.

Once stations have been created based on this template the **Type** entry will be dimmed and cannot be changed without first deleting all the stations derived from this template

The screenshot shows the 'Station Template 1 (Cell A101) Properties' dialog box with the 'Identification' tab selected. The fields are as follows:

Field	Value
Number	1
Name	Cell A101
Info	ICM-430-211-001
Type	Speaker Station
Compound Member	<input type="checkbox"/>

Buttons at the bottom: OK, Cancel.

3.6.1.2 Speaker Station Template Properties – Switches

The **Switches** tab has default entries for two switches. The function of these two switches is initially set to Unknown. Select a switch and then click on the **Properties** button to bring up a pop-up **Switch Properties** dialog box with two tabs, **Input** and **Settings**. A drop-down menu allows you to specify the function of the switch. (A description of the switch functions is contained in the Stations section of this manual.)

The screenshot shows the 'Switch Properties' dialog box with the 'Input' tab selected. The 'Function' dropdown menu is open, showing a list of options:

- Call Request
- Call Request Cancel
- Call/End
- Hook Switch
- Microphone Mute Switch
- Music Select** (highlighted)
- PTT Switch
- Page
- Panic Alarm
- Tamper Alarm
- Tamper Alarm Cancel
- Unused
- Volume Step

The screenshot shows the 'Station Template 21 (Cell A101) Properties' dialog box with the 'Switches' tab selected. It contains a table of switches and a section for 'Switch Input Supervision'.

Number	Function
1	Music Select
2	Call Request

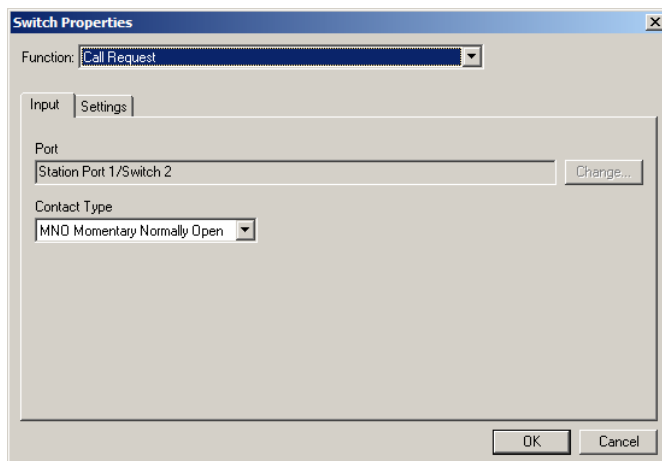
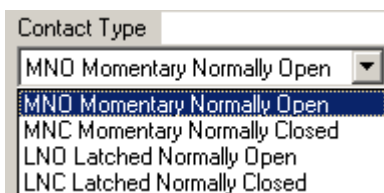
Buttons: Add..., Delete, Properties...

Switch Input Supervision:

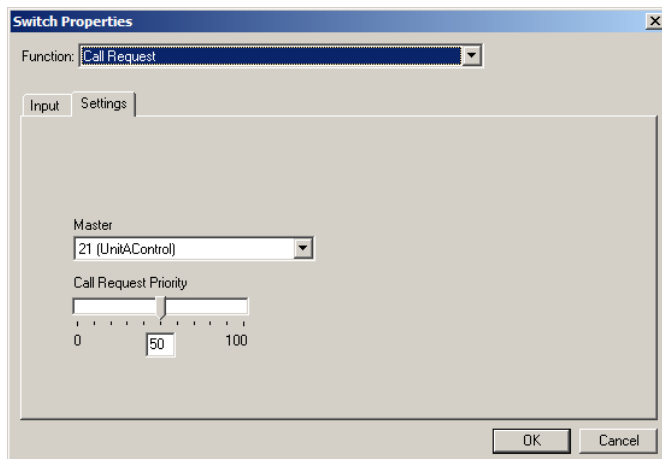
- ☒ Supervise Port
- Report Faults To Master: 13 (CentralControlSuper)

Buttons at the bottom: OK, Cancel.

The **Input** tab in addition to selecting the **Function:** of the switch allows you to use a pull-down menu to specify one of the four possible types of switch contacts. The default is set to MNO Momentary Normally Open, which is usually used for DXL stations.

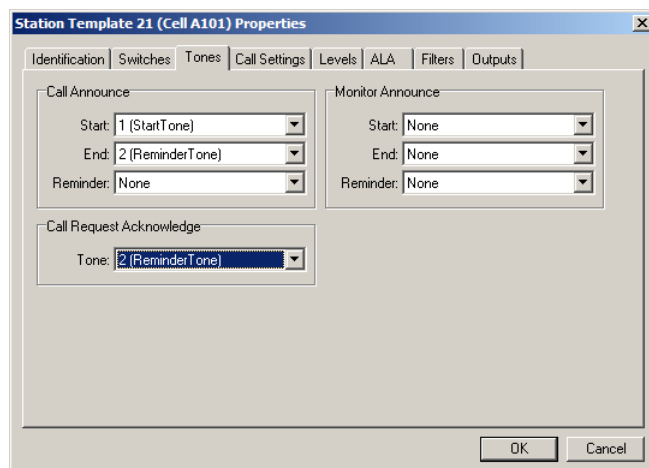


The **Settings** tab allows you to specify the master station that will for example receive a call request (if the switch function is set to **Call Request**) as well as set the priority of the call request. **Call Request**, **Tamper Alarm** and **Panic Alarm** switch function are directed toward a master needs require a priority setting. The **Call/End** switch is associated with a station and a **Page** switch is associated with a page zone. The remaining switches do not have an entry on the **Settings** tab.



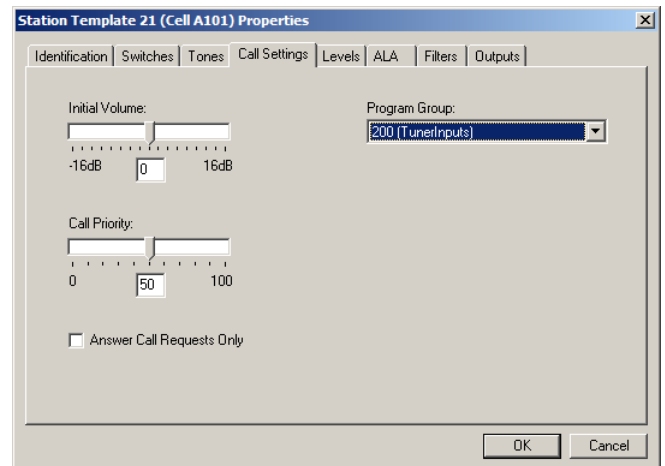
3.6.1.3 Speaker Station Template Properties – Tones

The **Tones** tab for the **Speaker Station Template Properties** dialog box is identical to the **Tones** tab for the **Speaker Station Properties** dialog box. The entries for the **Tones** tab are discussed in Section 3.7.



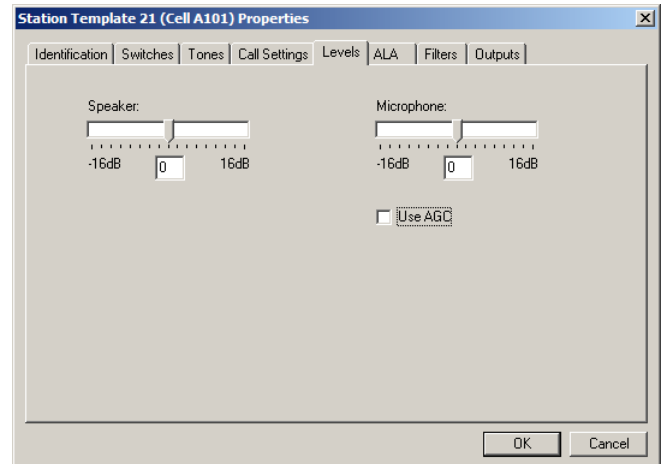
3.6.1.4 *Speaker Station Template Properties - Call Settings*

The **Call Settings** tab for the **Speaker Station Template Properties** dialog box and the **Speaker Station** dialog box are identical and is discussed in Section 3.7.



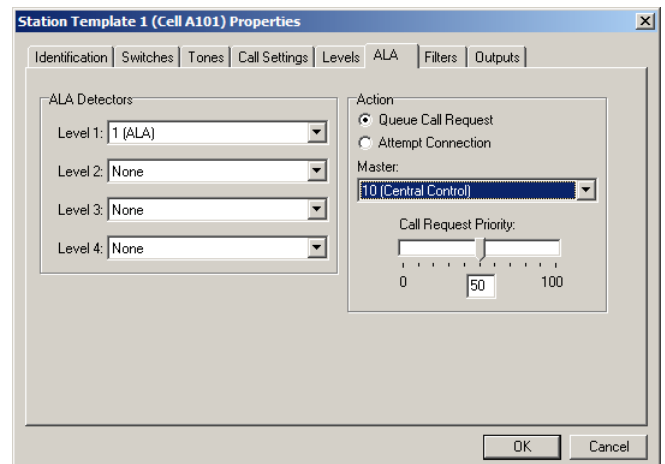
3.6.1.5 *Speaker Station Template Properties – Levels*

The **Levels** tab for the **Speaker Station Template Properties** dialog box and the **Speaker Station** dialog box are identical and is discussed in Section 3.7.



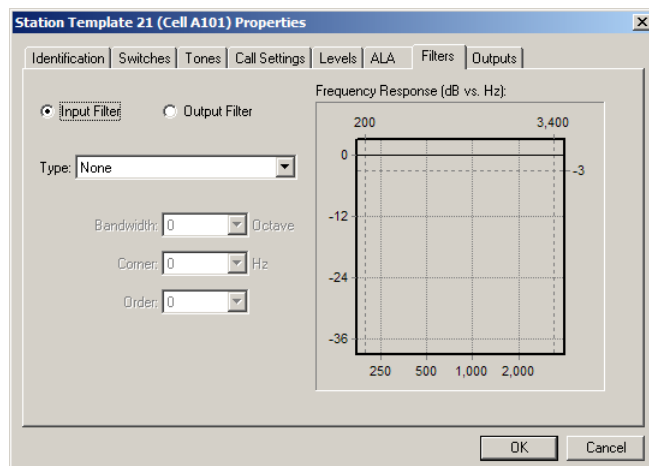
3.6.1.6 *Speaker Station Template Properties – ALA*

The **ALA** tab for the **Speaker Station Template Properties** dialog box and the **Speaker Station** dialog box are identical and is discussed in Section 3.7.



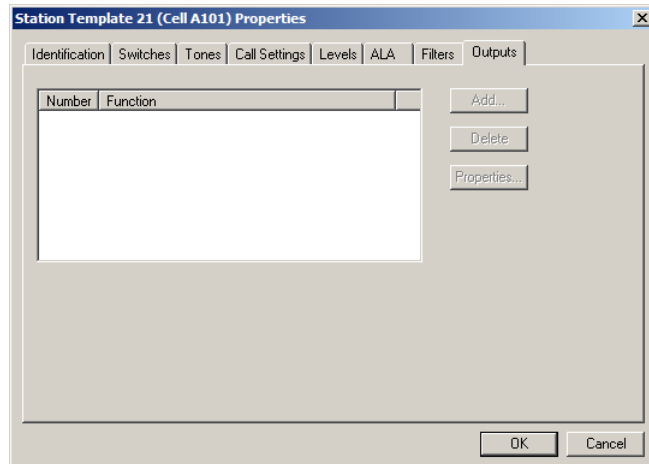
3.6.1.7 Speaker Station Template Properties – Filters

The **Filters** tab for the **Speaker Station Template Properties** dialog box and the **Speaker Station Properties** dialog box are identical and is discussed in Section 3.7.



3.6.1.8 Speaker Station Template Properties – Outputs

The **Outputs** tab for the **Speaker Station Template Properties** dialog box and the **Speaker Station Properties** dialog box are identical and is discussed in Section 3.7.



3.7 Stations

The MicroComm DXL system supports several types of intercom Stations:

- **Speaker Station (400 Series)**
- **Handset Station (400 Series)**
- **Handset/Speaker Station (400 Series)**
- **Compound Station**
- **LED Station (401 Series)**
- **Privacy Station (401 Series)**
- **Generic Station (300 Series)**
- **Talkback Station**
- **IP Station (600 Series)**

The **DXL Configuration Editor** has slightly different Station Properties dialog boxes for each type of station. The dialog boxes for the Speaker Station, Handset Station, Handset/Speaker Station, LED Station, Privacy Station, Generic Station, IP Station and Talkback Stations are similar and are discussed together. The Compound Station dialog box is significantly different and is discussed separately.

3.7.1 Intercom Stations

All intercom stations, except Talkback and IP Stations, are connected to a DXL system via ports on the SCC cards contained in the DCCs or DCEs. There are 3 types of SCC cards: SCC-400, SCC-401 and SCC-300 cards. Talkback Stations connect to the DXL system using a TBE on a USB connection (similar to a DCE). IP Stations use VOIP over Ethernet and require a VOIP PCI card in every DCC.

A half-duplex Intercom Station uses an audio speaker as both the station loudspeaker and the station microphone. Such stations have one or two switches; the first switch is normally used to generate a call request signal, while the optional second switch is usually used to act as a rotary switch for program distribution. The DXL supports 3 types of speaker stations; 300 series with only a speaker (and possibly a transformer) at the intercom station (Generic Stations); 400 series intercom stations with a microphone amplifier at the station (Speaker Stations); and 401 series intercom stations (LED Stations) which have a microphone amplifier and a LED that provides a visible feedback signal to the station.

The speaker stations available for use with the SCC-400 cards include Harding Instrument's ICM-420, ICM-430, ICS-4x0 and 45-ohm speakers that have been augmented with an ICB-400 intercom board. The SCC-401 cards support ICM-421, ICM-431 and ICS-4x1 stations. The SCC-300 can be used with ICM-320, ICM-330 and ICM-3x0 stations, as well existing generic 45-ohm speakers are compatible with the SCC-300.

A Handset Station is a full-duplex station wired to 2 adjacent channels on an SCC-400 card. A call request is generated when a button next to the handset is pressed, and is cleared when the handset is placed on the hook switch. The most common application of Handset Stations is to connect them in pairs to form a visiting booth, where two people can visit using telephone handsets via a full-duplex connection, similar to a normal telephone. The FDH-420 is a Handset Station.

A Handset/Speaker Station connects to two adjacent SCC-400 ports. When the user speaks through the handset, the station provides a full-duplex connection, but when the handset is on hook the speaker provides a half-duplex connection. The Handset/Speaker Station is an FDH-440.

IP Stations (600 series) utilize VOIP technology and operate over the DXL Ethernet network. They include 4 switches and 2 outputs which can only be utilized by the IP Station itself. As IP Stations do not require physical ports their “VOIP PCI Card” ports are created “on-the-fly” as needed with no limitations on the number allowed.

Finally, a Compound Station is a group of two, three or four physical stations. The member stations must all be wired to the same DCC or DCE and be designated as a member of a compound station i.e. the **Compound Member** checkbox in **Station Properties** dialog box **Identification** tab must be checked.

Station Templates

Before continuing on how to define a Station, it is important to use and understand what a **Station Template** is. The **MicroComm DXL Configuration Editor** uses station templates in order to quickly and easily configure many similar Stations. These are virtual devices with almost the same set of properties as real intercom Stations. The principal difference is that they do not have a hardware port address.

You can define any station(s) based on a station template, which is defined in the **Station Template** section of **Configure:**. Hence, if a **Station Template** is defined as a **Speaker Station** then all the Stations based on this template will also be Speaker Stations. You can quickly and easily configure many stations that have the same properties. Station Templates are discussed in the Section 3.6 and it is highly recommended that you use them.

Defining Switches

A station is usually associated with one or more switches. Each switch will have an associated button, usually located on the front panel of the station, and it performs a specific function. A station that has no switches cannot issue a call request and hence cannot make a call request. The different types of switches are:

- Call Request switch – when you press the button that is associated with this switch, the station will issue a call request to a Master Station.
- Call Request Cancel switch – when depressed this switch will cancel a previously queued call.
- Call/End – when depressed will end a call at a designated station
- Hook Switch – this switch is usually used with a Station that has a handset device. When the handset is on the hook an associated switch is said to be on-hook and when the handset is taken off the hook switch then it is said to be off-hook.
- Microphone Mute switch – this switch is used to mute a conversation when it is pressed. This type of switch is usually used in VOX applications, where the operator may be transmitting a message over the paging speakers but he suddenly wants to have a private conversation with someone, without having his private conversation distributed over the speakers. The operator can press the microphone mute button to stop the transmission of audio.
- Music Select switch – the button that is associated with this switch is usually used to begin or end the music that is played at a station, to skip past sound tracks and to set the volume of the music to either high or low.
- PTT switch – the button that is associated with this switch is used as the push-to-talk button at the master station. Hence, the person that is speaking at the master has to press the PTT button and keep it pressed while speaking, in order for the audio to be transmitted from the master.
- Page switch – when pressed the Page Switch will activate a specified page zone

- Panic Alarm switch – a panic alarm switch is a special switch that can generate an alarm that is queued at a designated master.
- Tamper Alarm switch – a tamper alarm is a special type of alarm that is queued at the master when it occurs. This switch does not have to be associated with an external button on the station. A switch can be configured as a tamper alarm switch so that it sends an alarm to the master when it is pressed, released or tampered with.
- Tamper Alarm Cancel switch – this switch is used to cancel a tamper alarm when it occurs. The purpose of having this switch on a station is to force the operator who received the alarm, to physically go to the station and turn off the tamper alarm.
- Unused switch – you can set a switch to the ‘unused’ state, which means that the switch does not have a specific function. You can use this setting for a switch that is present but which you will not be using or a station that has provisions for two switches but only one switch present.
- Volume Step – this switch is used so that the user can step through different volume levels for audio clarity. This type of switch is mostly used at visiting booth stations for users that are hard of hearing. Each time the user presses the switch, the volume would increase progressively and then cycle back to the starting point.

There are two switch settings that only appear when you set a Station to be a **Compound Station Member**. They are the Compound Call Request Switch and the Compound Music Select switch:

- Compound Call Request switch – when you press the button that is associated with this switch, a call request is sent to the master that is configured to receive the call requests from the compound station. Additionally, all the station that are members of the compound station will be connected to this master station for the call, so that audio from all the stations will be mixed and heard at the master, and audio from the master will be heard at all the member stations.
- Compound Music Select switch – the button that is associated with this switch is usually used to begin or end the music that is played at the compound station (and hence, at all the members Stations), to skip past sound tracks and to set the volume of the music to either high or low.

The **Station Properties** dialog box could have up to 12 tabs (depending on whether a Host Port and CCTV has been defined). Two of the most critical settings are defining the port connection (in the **Identification** tab) and defining which master will receive a call request (in the **Switches** tab). Other parameters that can be set include volume levels, tones that can be generated when a call is made, defining the Master that will receive hardware faults, etc.

3.7.1.1 Station Properties - Identification

The **Identification** tab is shown on the right.

Select the **Template:** entry to specify the parameters of the Station according to a fixed template that has already been defined in the **Station Templates** section of **Configure:**. The station will be the same type as the template, and the **Type:** entry will be dimmed and you will not be allowed to select this option.

Set **Template:** to **None** if the station is not based on a pre-defined template. Use the drop-down menu in **Type:** to select the type of station and finally choose the station port required.

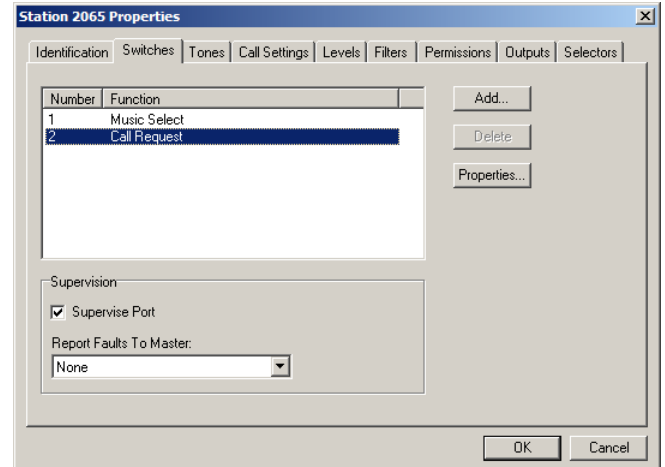
The screenshot shows the 'Station 2008 (Cell A101) Properties' dialog box with the 'Identification' tab selected. The dialog has a title bar and a close button. Below the title bar are tabs for 'Permissions', 'Outputs', and 'Selectors'. The 'Identification' tab is active, showing fields for 'Number' (2008), 'Name' (Cell A101), 'Info' (empty), 'Template' (21 (Cell A101)), 'Type' (Speaker Station), and 'Compound Member' (unchecked). At the bottom, there are four dropdown menus: 'Exchange' (Housing Building 1), 'Box' (DCC), 'Card' (400 Series SCC 1), and 'Port' (8). 'OK' and 'Cancel' buttons are at the bottom right.

3.7.1.2 Station Properties - Switches

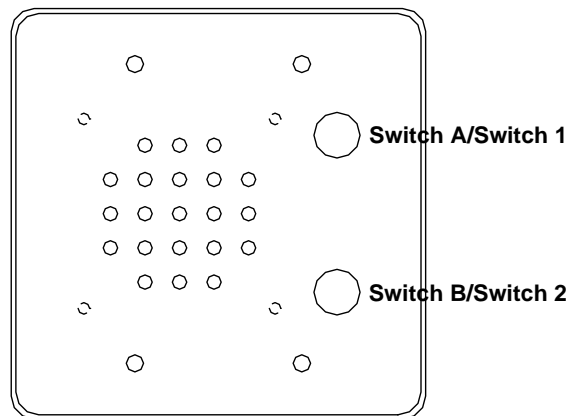
Up to two switches can be multiplexed over an audio line. The 300 and 400 series intercom speaker stations can be ordered with no switches, one switch or two switches. Without a switch, the station cannot generate a call request. The two switches on a Speaker Station are usually used for generating call requests, and for rotating through the available music channels. The possible use for switches include the following:

- **Call Request**
- **Call Request Cancel**
- **Call/End**
- **Hook Switch**
- **Microphone Mute Switch**
- **Music Select**
- **PTT Switch**
- **Page**
- **Panic Alarm**
- **Tamper Alarm**
- **Tamper Alarm Cancel**
- **Unused**
- **Volume Step**

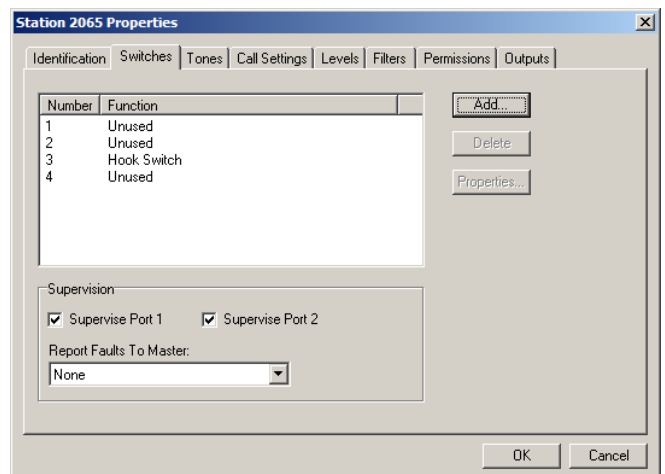
The **Switches** tab opens with the switches set to Unused. These switches are predefined switches and cannot be deleted. Because of this, the **Delete** button is always dimmed when you click on switches that have been predefined by the program. The Number 2 switch push-button is physically located on the lower right hand side of a station front plate and is normally used as the **Call Request** switch. If there is a second switch the push button associated with that switch (Switch Number 1) is located on the upper right hand side of the station front plate and is commonly used as a music select switch.



The following drawing displays the switch positions.



The **Handset** and **Handset/Speaker Stations** have a full-duplex connection and require two audio channels, where each channel can be multiplexed with contact closure information for up to two switches. Therefore, if you define a station type as a Handset or a Handset/Speaker type station, the **Switches** tab will initially display three of the four switches in the **Unused** state. For this type of station the second switch on the first port is usually used as a Call Request switch and the first switch on the second port is usually used as a Hook Switch.



Some station switches have terminating resistors and can be supervised to check for open or short circuit faults on the audio lines. The check boxes beside **Supervise Port 1** and **Supervise Port 2** turn this capability on or off.

Note that if you have an unsupervised port then you will only be able to define one switch for that port except for **IP Stations** which support 4 pre-defined switches with no supervision.

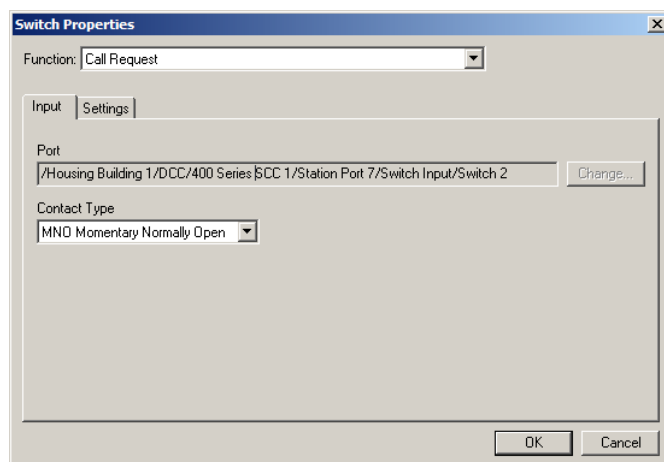
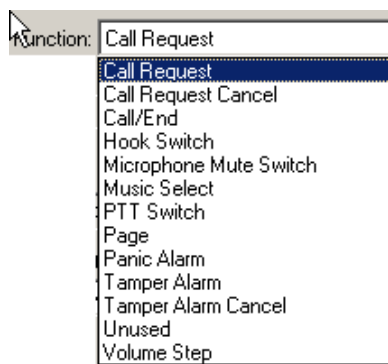
The pull-down menu on the **Report Faults To:** drop-down menu lists all the IMS, IP, or host monitored Master Stations in the system. The master station that received the reported fault requires a display or host. Select the master station that will be monitoring hardware faults from this list. All the faults that are detected on the supervised switches will be forwarded to the master that you define here. If the master station has not yet been defined you will have to return to this entry later. Note that if you do not define a master to report the faults to, then the faults will still appear on the DXL but they will not be reported to any of the master stations.

3.7.1.2.1 Using a pre-defined switch

If you want to use a pre-defined switch or you want to change the properties of an existing switch, click on the switch that you want to use and click on the **Properties...** button. This brings up **Switch Properties** window with two tabs. This window lets you define the settings for each switch.

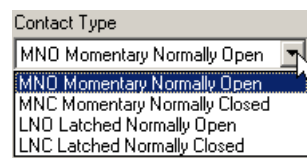
Switch Properties – Input

Select the function that you want this switch to perform from the **Function:** drop-down menu.



The program will automatically insert the location of the switch into the **Port information box**.

Set the **Contact Type** of the switch from the drop-down menu. The audio line switches in standard DXI/DXL stations are Momentary Normally Open switches (the default setting), but with Generic stations or external switches other switch types are possible.

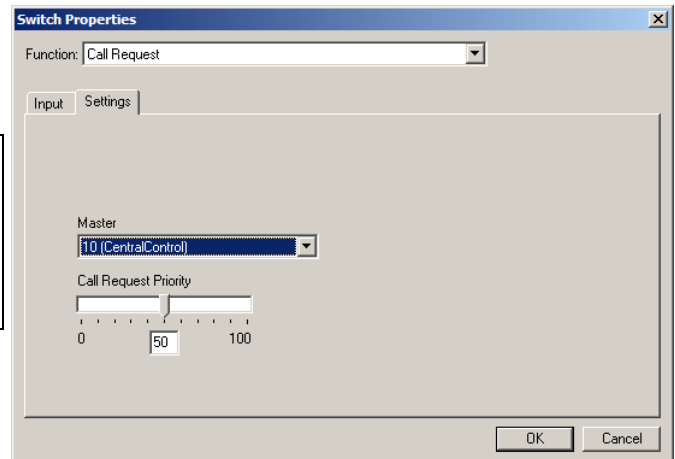


Switch Properties – Settings

In the **Settings** tab, you will have to set the call request priority of the switch and the Master that the call request will be sent to.

Select the master that you want the call request to be sent to, from the **Master** drop-down menu. This is an extremely important setting, if you do not assign a master, then the station will not be able to issue a call request.

Set the call request priority of the station by using the **Call Request Priority** slider.

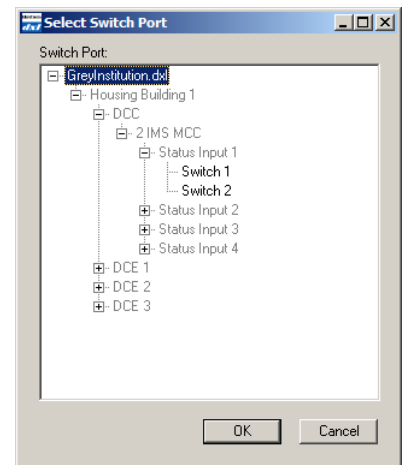
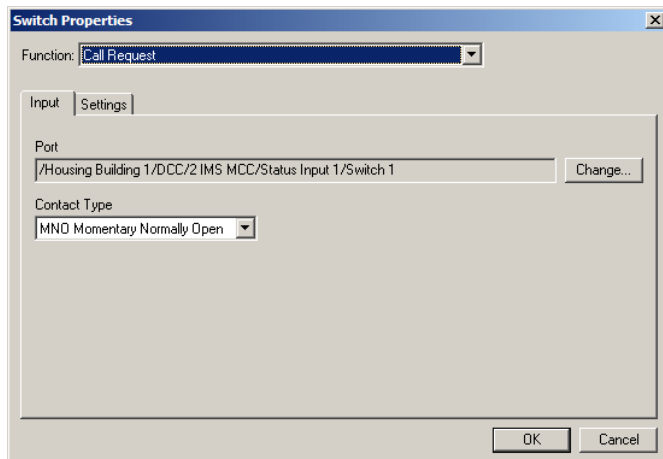


3.7.1.2.2 Adding a new switch

To add a new switch in addition to the pre-defined switches, click on the **Add...** button that appears on the **Switches** tab.

Switch Properties – Input

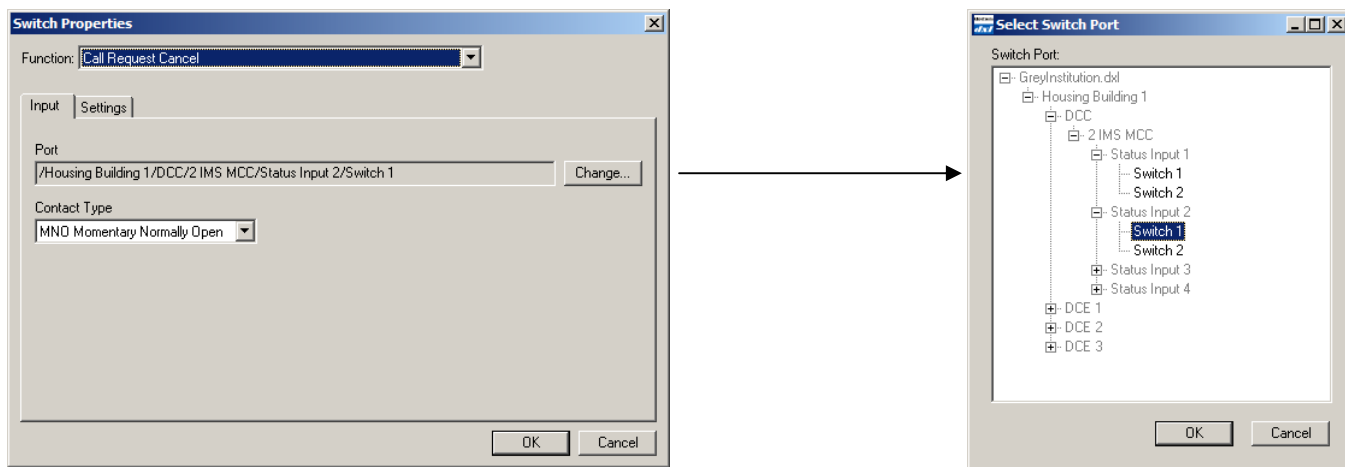
When you click on the **Add...** button to add a new switch, the **Switch Properties** window opens followed automatically by the **Select Switch Port** window, shown on the right. Use the expansion icons to expand the tree structure until the desired switch is located. Select the switch and click on the **OK** button and you will return to the **Switch Properties** window.



If you selected Switch 1 this port is now displayed in the Port entry of the **Switch Properties** window. You can now select the function of this switch (in this example a Call Request Cancel). You can use any of the unused status input switches that are located on the same DCC or DCE or any of the unused switches on a DIO. The only restriction in using DIO switches is that due to latency they cannot be assigned audio functions, such as a PTT function. The software will prevent you from making such an assignment.

Now click on the **OK** button to add this switch to the **Switches** tab. Switch 3 is now added to the list. To change the properties of this switch, simply click on the switch and click on the **Properties...** button. Click on the **Delete** button to delete Switch 3. Note that it is not possible to delete predefined Switches (Switch 1 and Switch 2).

Clicking on the button **Change...** in the **Switch Properties** dialog box will immediately bring up the tree structure of the **Select Switch Port** window and allow you to change the designated switch.



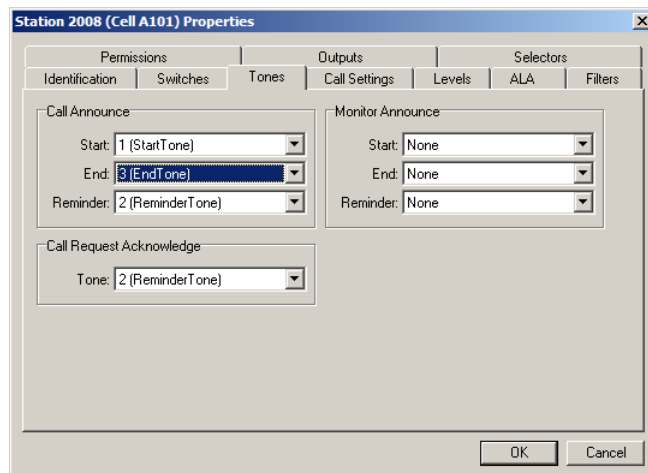
Switch Properties - Settings

The settings for this tab are identical to the settings for the pre-defined switches and will not be discussed.

3.7.1.3 Station Properties – Tones

Tones can be associated with either call or monitoring operations. **Call Announce** and **Call Request Acknowledge** entries were discussed previously in section 3.2.2

The **Monitor Announce** tones are the tones used to inform a station that it is being monitored. Select **None** if you do not want to inform the station that it is being monitored. You can use the pull-downs to select from the list of tones that have been defined. You can specify if a tone is generated when the monitoring begins (if you select **Start**), when the monitoring ends (if you select **End**) and as a periodic reminder during the monitoring process (if you select **Reminder**).

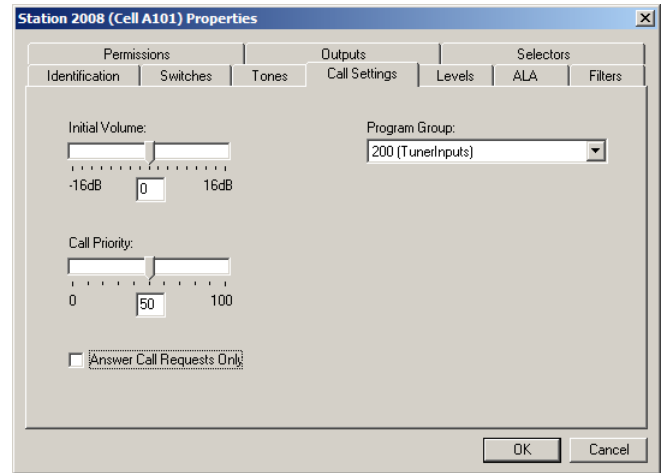


3.7.1.4 Station Properties – Call Settings

Tick the **Answer Call Requests Only** checkbox in order to ensure that a Master can only establish a call to a station after the station has made a call request to the master. In this case, the Master will not be able to place a call to a station on its own and will only be able to answer call requests from a station.

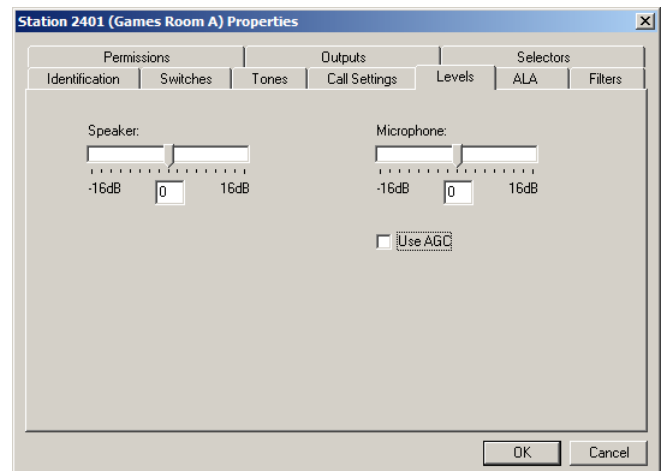
Initial Volume and Call Priority are discussed in section 3.2.2.

Program Group is used for stations that are allowed to listen to music. Each program group will consist of several audio sources, often at two different audio levels.



3.7.1.5 Station Properties – Levels

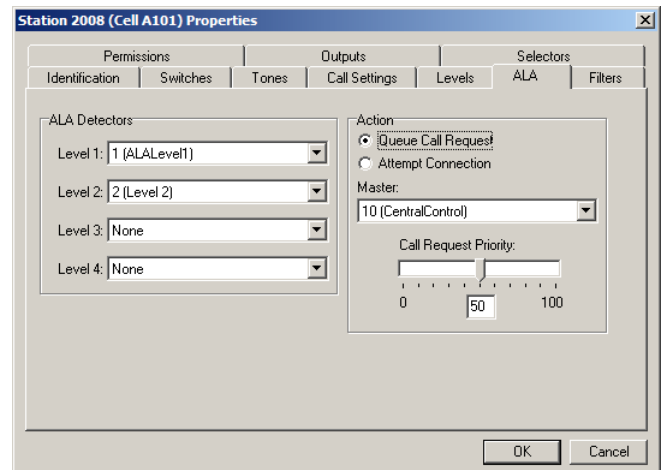
The **Levels** tab can be used to increase or decrease the sound levels transmitted or received by the station. These settings cannot be changed while the system is running and are used to balance the sound levels in a facility to compensate for different room acoustics. The AGC check box will turn on the automatic gain control, which will try and adjust all incoming sounds to have the same sound levels.



3.7.1.6 Station Properties – ALA

You can set up to four different levels for the ALA, depending on the types of alarm that you need. You can set a different (or the same) ALA for each Level of the ALA, from the drop-down menu that is available with each Level.

When an ALA is triggered, you can configure the system to do one of two things in the **Action** area. The first option is to Queue Call Request, which means that the system will queue a call request to a master the moment an ALA is triggered. You will have to choose the master that you want to send a call request to, from the **Master**: drop-down menu. If you decide to queue a call request to a master when an ALA is triggered, you can also set the priority of this call request by using the Call Request Priority slider.

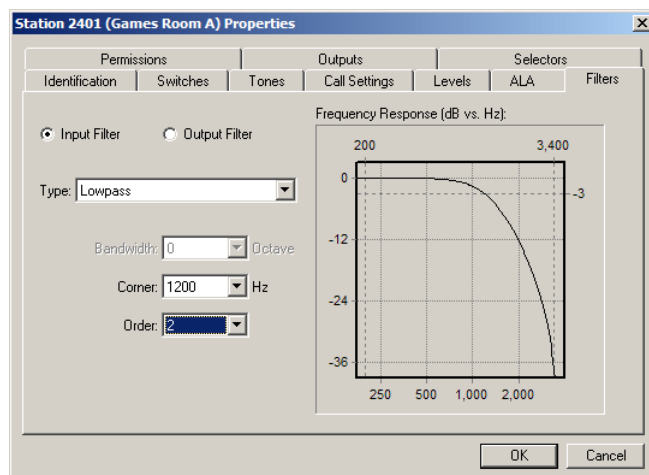
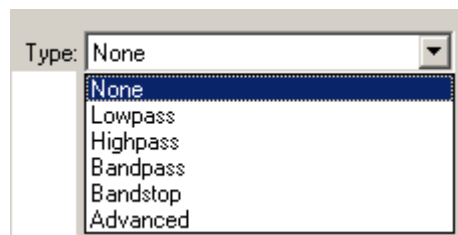


The second option is to directly **Attempt Connection** with a Master without issuing a call request, the moment the ALA is triggered. You will have to choose the Master that you want to attempt the connection with, from the **Master:** drop-down menu.

The same option is also available with a **Station Template** and therefore, this section is only discussed briefly with the **Station Templates** section in **Configure:**. Note that you cannot define an ALA for a Compound Station or for a Compound Station Template.

3.7.1.7 Station Properties – Filters

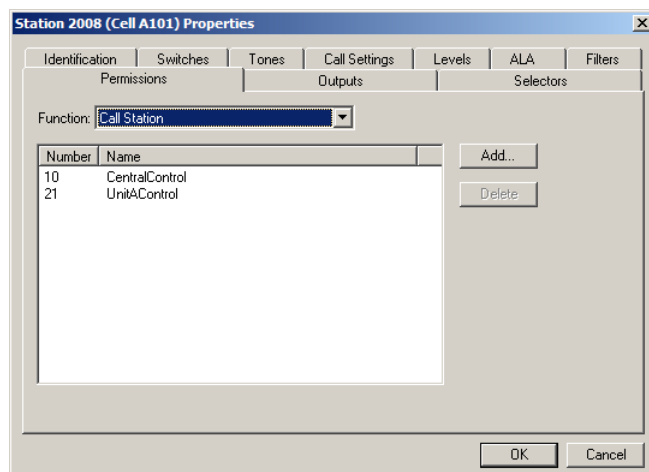
The **Filter** tab can be used to include an audio filter for both the incoming audio from the station and the output audio transmitted to the station. The input and output filters can be one of five different types; highpass, lowpass, bandstop, bandpass, advanced. If **None** is selected no filter is used.



The filter parameters can be set using the pull down menus. Audio filters may be useful in rejecting background noise or compensating for different room acoustics.

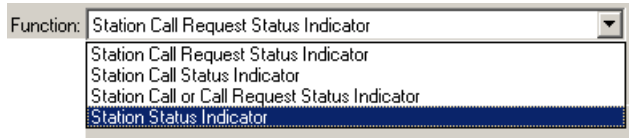
3.7.1.8 Station Properties – Permissions

The **Permissions** tab is used to specify which master stations are allowed to call, monitor, or control this station. The pull down menu for **Function** displays the various functions that can be performed.

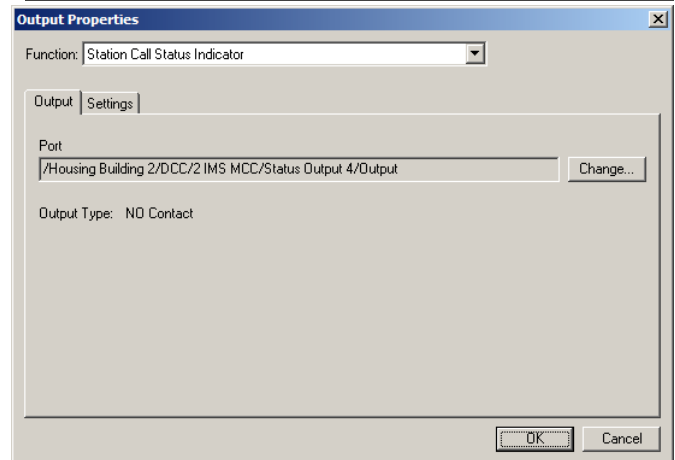
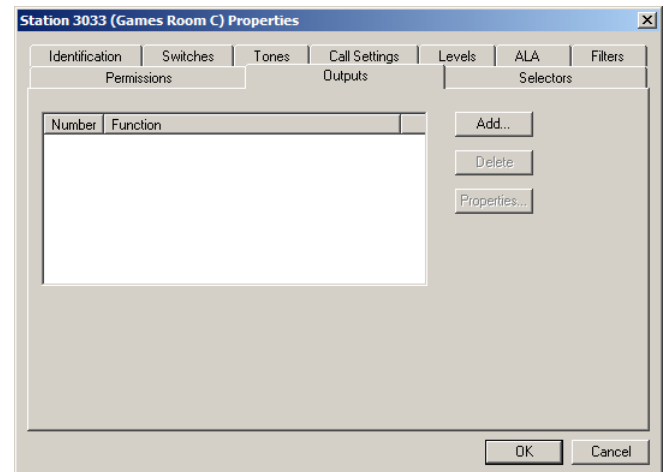
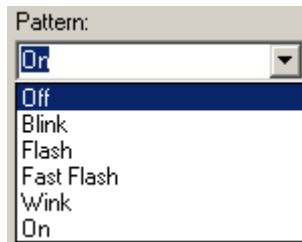


3.7.1.9 Station Properties – Outputs

The **Outputs** tab allows you to activate an output when the station is in various operating states. When the **Add...** button is clicked a tree of the system hardware is displayed. The tree nodes can be expanded until the desired output port is displayed. If an output is already used it will be dimmed, if not it will be selectable. The function of the output can be selected from the **Function** drop down menu.



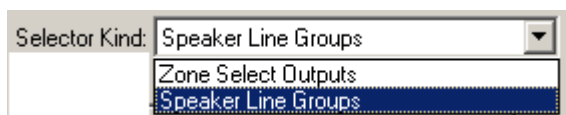
There are two tabs associated with the **Properties** display of an output. The **Setting** tab allows the output to be set to blink, flash, fast flash, wink or on. The selected pattern will be used to drive the selected output port when the station is in the state(s) identified by the function. This applies to all of the functions except the Station Status Indicator. The Station Status indication function is predefined to flash the output in the call request state, and to turn the output on in the call state.



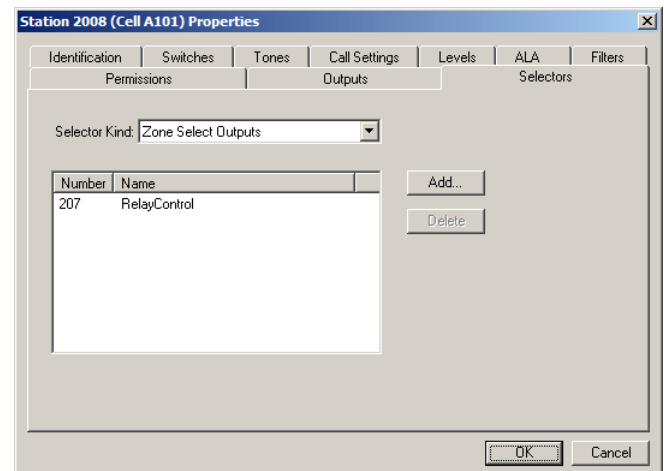
3.7.1.10 Station Properties - Selectors

When the station output is used in a page zone of a speaker line group or a relay controlled by a zone selected status output, the **Selectors** tab is used to specify these **Speaker Line Groups** and the **Zone Select Outputs**. These selectors may be activated when a page is made to the station.

The **Selector Kind** pull down menu offers the following choices.



The list on the selectors tab will display the selectors of



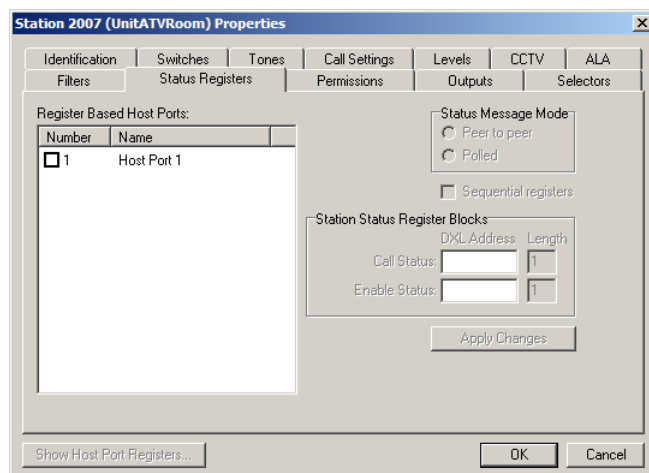
the currently selected kind that are associated with the talkback station, and only selectors of that kind can be added to the station.



3.7.1.11 Station Properties - Status Registers

Note that the **Status Registers** tab will not appear if you have not defined any Host Ports in the system.

If you have already defined Host Ports then you will see a list of them, and they will all appear with a checkbox (which is unticked by default) beside them. Tick the Host Ports that you want the Station to report its status to. For a description of the other entries, please refer to Section 3.24.1.12: Host Port – Status Registers.



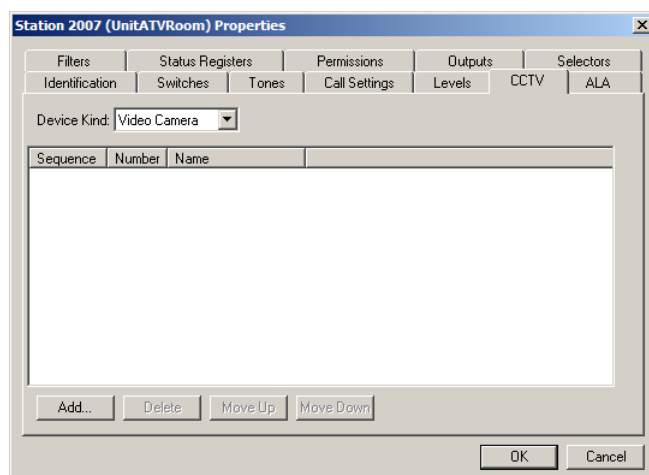
3.7.1.12 Station Properties – CCTV

The basic purpose of this tab is to allow you to set-up connections between monitors/cameras on masters and monitors/cameras on stations, when a call is made from a master to a station. The CCTV camera tab lets you associate a group of video cameras and video monitors with a master station so that the DXL knows what commands it needs to send to the video switch. The appropriate video cameras and video monitors can then be connected for the call.

Note that you will have to first define the video switches in the **Video Switches** section of **Configure**. After this, you will have to define the video cameras and video monitors that are using these switches in the **Video**

Cameras and **Video Monitors** section of **Configure**. Only after this is done, will you see the CCTV tab appear in the **Station Properties** window. Also note that these CCTV settings are only defined for the 'CALL' event i.e. when a call is made from a master to a station. Calls that are made from masters to visiting booths and from masters to compound stations are set up as calls between a master and the constituent members of a visiting booth or a compound station.

You will have to carefully decide the sequential order of the cameras and the monitors for each Station, as the CCTV connection between a master and a station will be set up in the sequential order. See the sections on Video Switches, Video Cameras and Video Monitors for further details.



3.7.2 Compound Stations

A Compound Station is a group of stations (up to a maximum of 4) that are treated as a single station. When you make a call connection from a master to a compound station, all the stations in the compound group are connected to the master. The audio from each of the individual stations in a compound station is combined into a single audio signal. The most common application of compound stations is for door entries where the two individual Stations on either side of the door are treated as a single station.

3.7.2.1 Compound Station Properties - Identification

Select a Template: from the drop-down menu if you want to base the Station on a pre-defined template.

Select **None** in the **Template:** entry if you do not want to base the Station on a template. Select the **Type:** of Station to be a **Compound Station**.

Station 2500 (Housing 1 Entry Door) Properties

Identification | Tones | Call Settings | Members | ALA | Status Registers | Permissions

Number: 2500

Name: Housing 1 Entry Door

Info: ...

Template: None

Type: Compound Station

OK Cancel

3.7.2.2 Compound Station Properties - Members

The **Members** tab lists all the stations that are to be included in this compound station. A maximum of 4 stations can be included in a compound station.

To add a station to this list, click on the **Add...** button. This brings up the **Select Stations** dialog box that lists all the stations in the exchange that have the compound station check box checked. Select the station to be added to the compound station and then click on **OK**.

You will not be able to click on the **Add...** button after you have added four stations to the **Member Stations:** area.

To delete a Station from this list or area, simply select the station to be deleted from the **Member Stations:** area and then click on the **Delete** button.

Station 2500 (Housing 1 Entry Door) Properties

Identification | Tones | Call Settings | Members | ALA | Status Registers | Permissions

Member Stations:

Number	Name
2001	Housing1Entry
2002	Housing1Exit

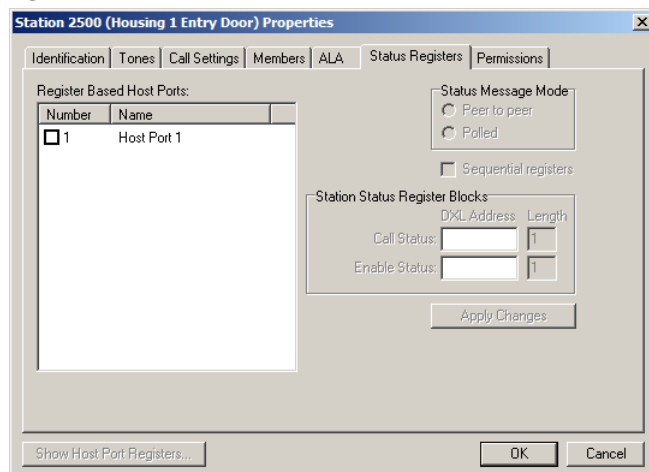
Add... Delete

OK Cancel

3.7.2.3 Compound Station Properties – Status Registers

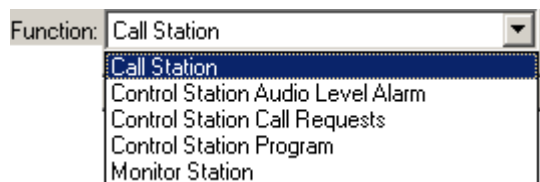
Note that the **Status Registers** tab will not appear if you have not defined any host ports in the system.

If you have already defined host ports then you will see a list of them, and they will all appear with a checkbox (which is unticked by default) beside them. Tick the host ports that you want the station to report its status to. For a description of the other entries, please refer to Section 3.24.1.12: Host Port – Status Registers

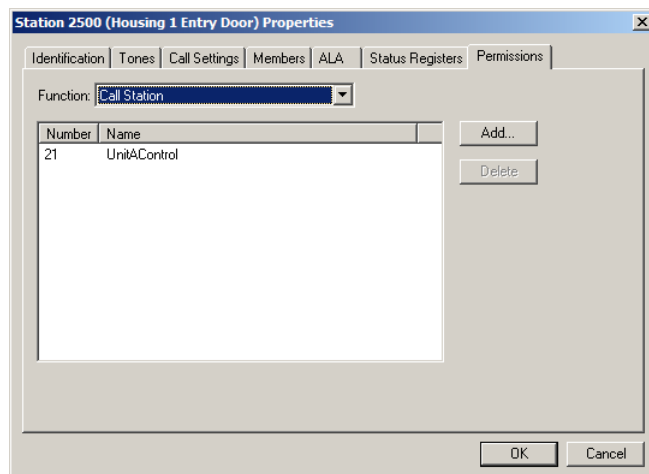


3.7.2.4 Compound Station Properties –Permissions

The **Permissions** tab allows you to specify which master stations can control the compound station. The pull down menu for **Functions:** displays the possible control functions.



Clicking on the **Add...** button brings up a pop up menu that lists all the master stations in the system. You make your selections from this list.

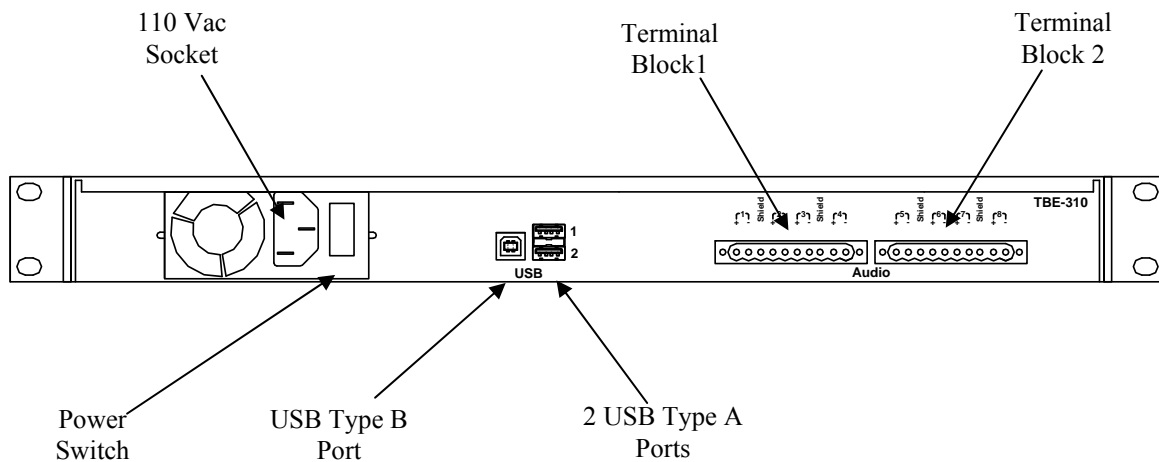


3.7.3 Talkback Station

The TBE-310 Talkback Amplifier Expander outputs are configured as a special type of station. The TBE-310 offers a flexible solution for driving speakers with talkback capability. The TBE-310 has eight constant voltage output channels that can be used to drive paging loudspeaker circuits. Each channel's output power is rated at 5 watts at 25 volts. Several channels on the TBE-310 can be connected in parallel to form a single output with higher output power (i.e. connecting three outputs together would provide a 15 (3 x 5) watt output). Any group of sequential channels on a single TBE can be connected in parallel. When outputs are connected in parallel appropriate settings must be made in the Configuration specifying which outputs are to be connected.

Each loudspeaker connected to a Talkback Amplifier Expander circuit must be equipped with an appropriate 25 volt loudspeaker matching transformer. Loudspeaker matching transformer taps must be set so that the total audio power load on each circuit does not exceed the rated output.

The 1U 19" rack mount enclosure connects to a DXL exchange via a USB cable. The back view of the TBE-310 is shown below.



Rear View of TBE-310

Up to 4 TBE-310s can be connected to each DXL exchange; however the total number of TBE-310s and DCEs that can be connected to an exchange is limited to 4.

3.7.3.1 Configuring a TBE-310 using the Administrator

The following example uses a TBE to communicate with three areas. The example Housing Building 1 is divided into two identical units called Unit A and the Unit B. The following example uses a TBE-310 to communicate with 3 separate areas in Unit A.

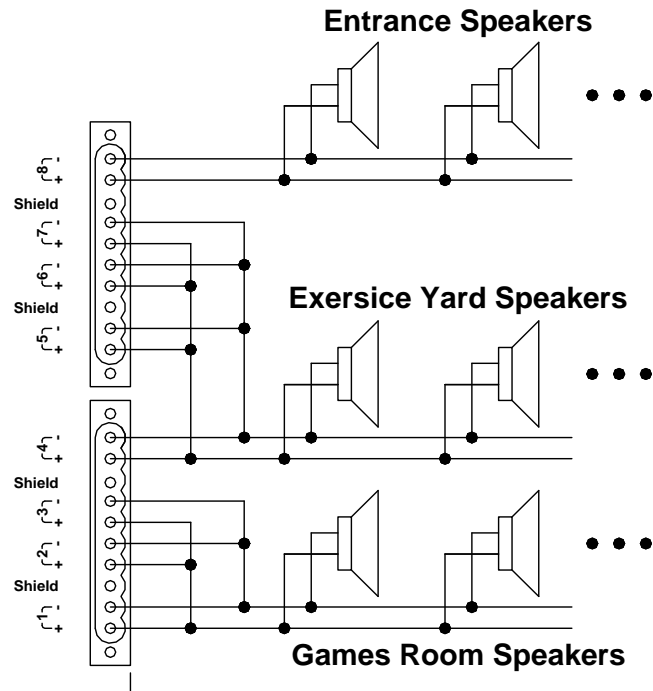
The three areas are to consist of,

- 1) An overhead bank of speakers in the games room that are used to make broadcasts or play background music in the room. The overhead speakers are configured to act as a single station with talkback capability. This station is named 'Games Room A', and the station is required to deliver 15

watts of audio power to drive the overhead speakers. The master station 'Unit A Control' or the 'Housing1Super' can make calls to this station.

- 2) A bank of pole mounted speakers is used to broadcast messages to the exercise yard. The bank of speakers is configured as a station named 'Exercise Yard A'. Twenty watts of audio power are required to drive the speakers. The master station 'Unit A Control' has permission to make calls to this station,
- 3) A station named 'Entrance A' requires 5 watts of audio power to drive the overhead speakers in the entrance area. The master station 'Unit A Control' or 'Housing1Super' can make calls to this station.

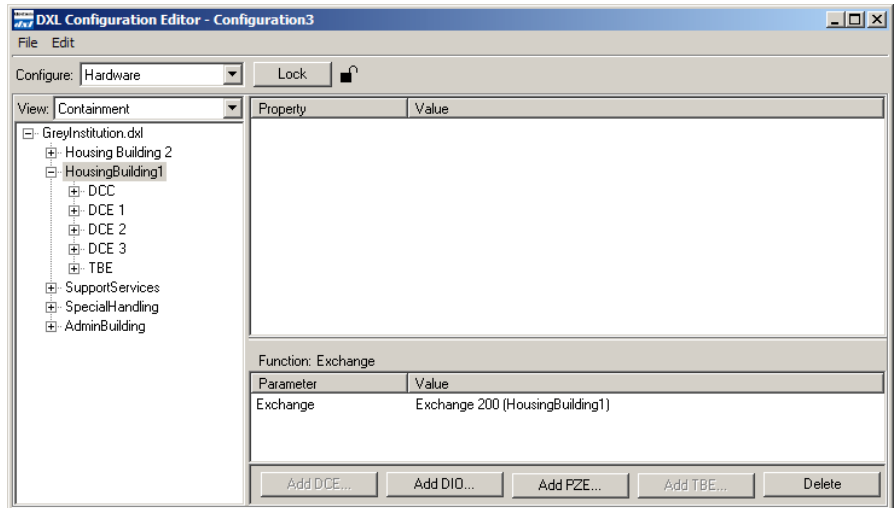
Since each output line can supply 5 watts of audio power 3 output lines must be paralleled to provide 15 watts of audio output power to the Games Room speakers. Similarly, 4 output lines must be paralleled to provide 20 watts of audio power for the Exercise Yard speakers, while a single output line is adequate to drive the speakers in the entrance area. The TBE will be wired as follows:



3.7.3.2 Adding a TBE to the configuration

A TBE-310 can be added to an exchange when the **Configure:** entry of the **DXL Configuration Editor** is set to **Hardware**. The window that appears after a DCC, two DCEs and a TBE have been added to an exchange (Housing Building 1) is shown in the following picture.

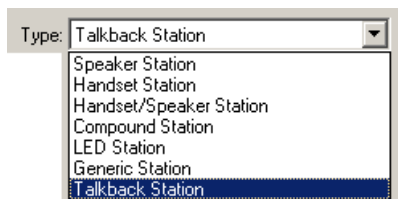
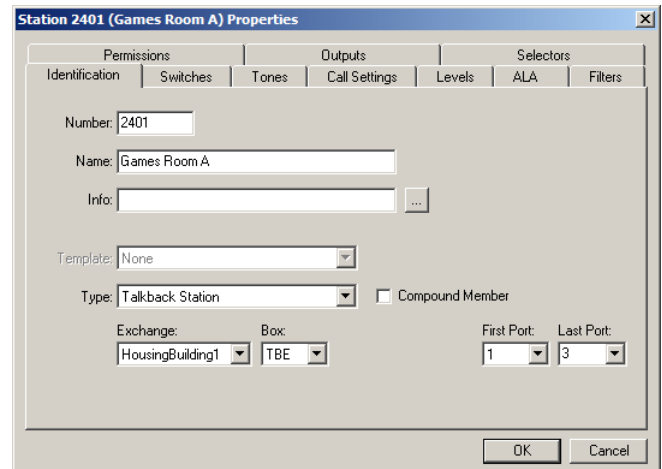
The buttons at the bottom of the **DXL Configuration Editor** window allows you to **Add DCE...**, **Add DIO...**, **Add PZE...**, **Add TBE...** or **Delete** a selected item. Once a fourth DCE and/or TBE has been added the DCE and TBE selection buttons will dim and can no longer be selected.



3.7.3.3 Defining the Talkback Stations in the Configuration

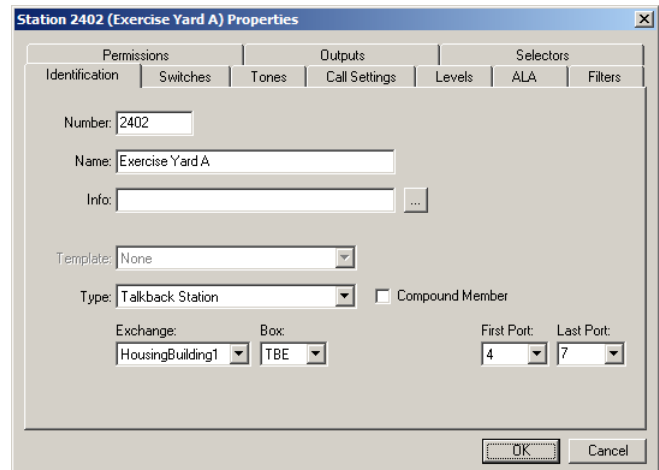
The TBE-310 outputs are configured as a special type of station. In our example we will configure the TBE as three separate stations, namely 'Games Room A', 'Exercise Yard A' and 'Entrance A'. Setting the **Configure:** entry in the **DXL Configuration Editor** to **Stations** allows us to **Add...** **Delete...** or select **Properties** for each station. When you click the **Add...** button the **Station Properties** dialog box appears:

You need to identify the station with an ID **Number** and **Name**, and using the pull down menu assign **Talkback Station** as the **Type** of station.



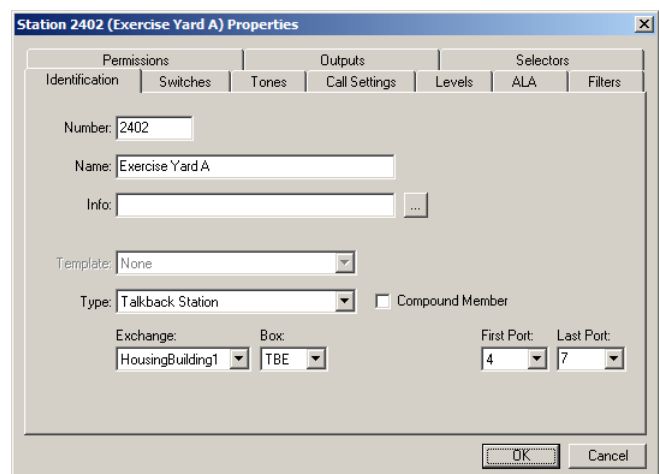
The entries for **First Port** and **Last Port** tell the configuration which ports are connected together in parallel for this station. In this picture 3 ports are connected in parallel.

The station **Exercise Yard A** settings are shown on the right. The ports 4 to 7 of the TBE are connected in parallel to give an audio output of 20 watts.



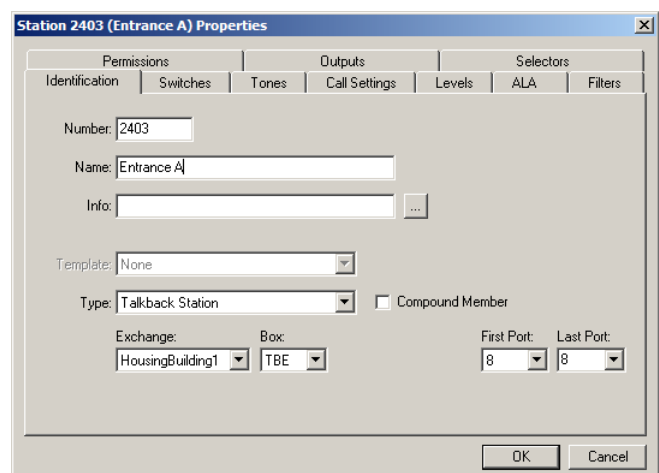
The dialog box is titled "Station 2402 (Exercise Yard A) Properties". It has a tabbed interface with tabs for Permissions, Outputs, Selectors, Identification, Switches, Tones, Call Settings, Levels, ALA, and Filters. The Identification tab is active. The fields are: Number: 2402, Name: Exercise Yard A, Info: (empty), Template: None, Type: Talkback Station, Compound Member: (unchecked), Exchange: HousingBuilding1, Box: TBE, First Port: 4, Last Port: 7. There are OK and Cancel buttons at the bottom right.

The station **Exercise Yard A** settings are shown on the right. The ports 4 to 7 of the TBE are connected in parallel to give an audio output of 20 watts.



This is a duplicate of the previous dialog box, showing the same settings for Station 2402 (Exercise Yard A).

The station **Entrance A** settings are shown on the right. Only port 8 is used for this audio output.



The dialog box is titled "Station 2403 (Entrance A) Properties". It has the same tabbed interface as the previous dialog. The Identification tab is active. The fields are: Number: 2403, Name: Entrance A, Info: (empty), Template: None, Type: Talkback Station, Compound Member: (unchecked), Exchange: HousingBuilding1, Box: TBE, First Port: 8, Last Port: 8. There are OK and Cancel buttons at the bottom right.

3.7.3.4 Talkback Station Properties Dialog Box

The Talkback Station Properties dialog box has 10 tabs that are used to set parameters for the talkback stations. These will be described briefly in this section.

3.7.3.4.1 Talkback Station Properties - Identification

The **Identification** tab is used to specify an ID Number, Name, and the ports that are connected in parallel. Once a **Talkback Station** is selected the **Template** entry is dimmed (i.e. you cannot use a template to describe a Talkback Station). If this station is to be used as a member of a compound station then the **Compound Member** check box needs to be checked.

The screenshot shows the 'Station 2401 (Games Room A) Properties' dialog box with the 'Identification' tab selected. The 'Number' field contains '2401'. The 'Name' field contains 'Games Room A'. The 'Info' field is empty with a browse button. The 'Template' dropdown is set to 'None'. The 'Type' dropdown is set to 'Talkback Station'. The 'Compound Member' checkbox is unchecked. The 'Exchange' dropdown is set to 'HousingBuilding1', the 'Box' dropdown is set to 'TBE', the 'First Port' dropdown is set to '1', and the 'Last Port' dropdown is set to '3'. The 'OK' and 'Cancel' buttons are at the bottom right.

3.7.3.4.2 Talkback Station Properties - Switches

The **Switches** tab can be used to **Add...** switch(es) to the talkback station. A talkback station has no predefined switches. Clicking the **Add...** button brings up a window with a tree structure of the hardware configuration. The tree structure can be expanded until it displays switch inputs, which can be wired to an external switch to perform the desired function.

The screenshot shows the 'Station 2401 (Games Room A) Properties' dialog box with the 'Switches' tab selected. The 'Add...' button is highlighted. The 'Delete' and 'Properties...' buttons are also visible. The 'OK' and 'Cancel' buttons are at the bottom right.

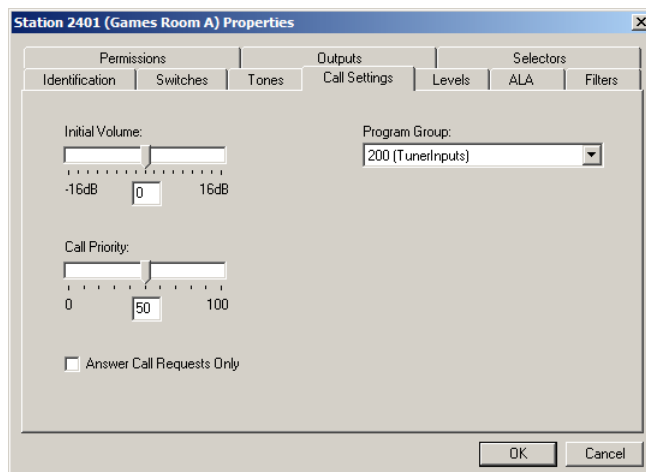
3.7.3.4.3 Talkback Station Properties - Tones

The **Tones** tab has entries for defining **Start**, **End**, and periodic **Reminder** tones when a call is being made to the talkback station. Similarly, when the talkback station is being monitored a start, stop, and periodic reminder tone can be sent to the station. Tones are created using the **Tones** entry in the **Configure:** box of the **DXL Configuration Editor**. If the station has a call request switch, a call request acknowledge tone can be sent back to the station when a call request is queued at a master station.

The screenshot shows the 'Station 2401 (Games Room A) Properties' dialog box with the 'Tones' tab selected. The 'Call Announce' section has 'Start' set to '1 (StartTone)', 'End' set to 'None', and 'Reminder' set to 'None'. The 'Monitor Announce' section has 'Start' set to 'None', 'End' set to 'None', and 'Reminder' set to 'None'. The 'Call Request Acknowledge' section has 'Tone' set to 'None'. The 'OK' and 'Cancel' buttons are at the bottom right.

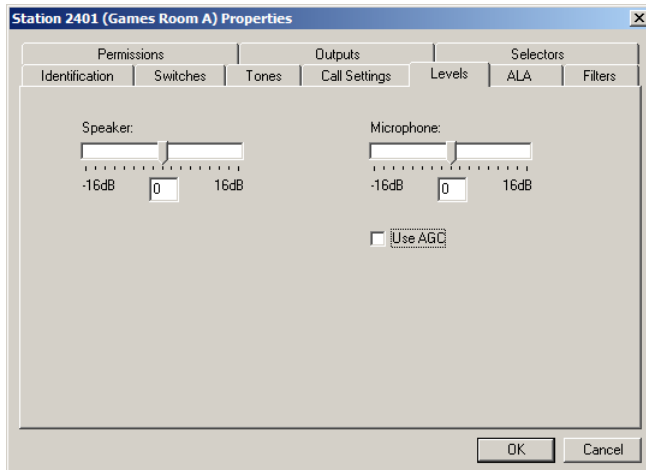
3.7.3.4.4 Talkback Station Properties - Call Settings

The **Call Settings** tab has entries for **Volume**, **Call Priority**, and **Program Group**. **Program Group** is a set of music source that can be transmitted to this station. An operator at a master station with permission for program control can select one of the music sources in the selected program group when the DXL is running.



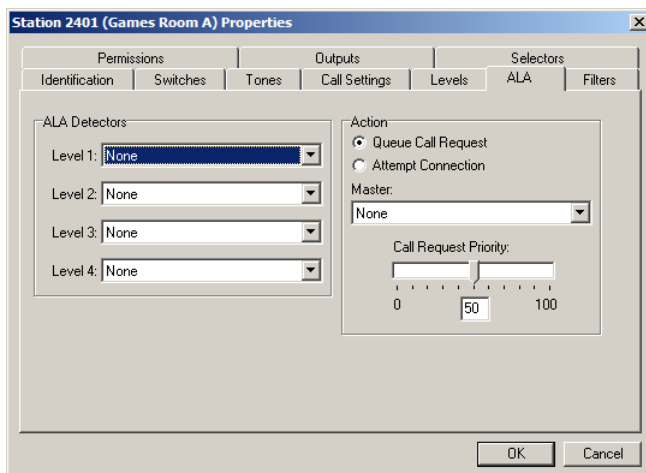
3.7.3.4.5 Talkback Station Properties - Levels

The **Levels** tab can be used to increase or decrease the sound levels transmitted or received by the station.



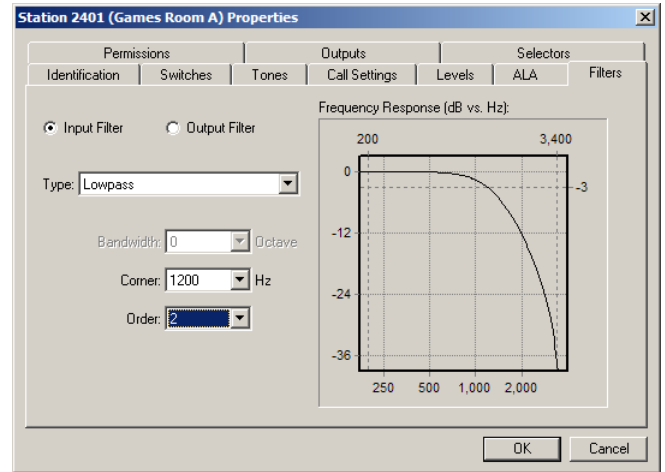
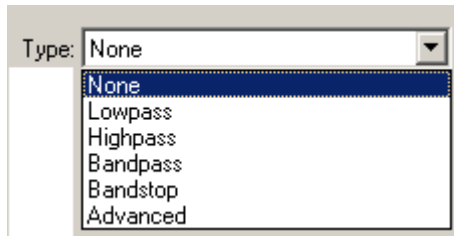
3.7.3.4.6 Talkback Station Properties - ALA

The **ALA** (Audio Level Alarm) tab is used to configure automatic monitoring of the incoming audio from the station. If a loud audio signal is detected that exceeds a set threshold it can trigger an alarm. Four different sound level alarm thresholds can be set. An operator, who has permission to turn on/off the monitoring, or an automatic schedule, can select the appropriate level.

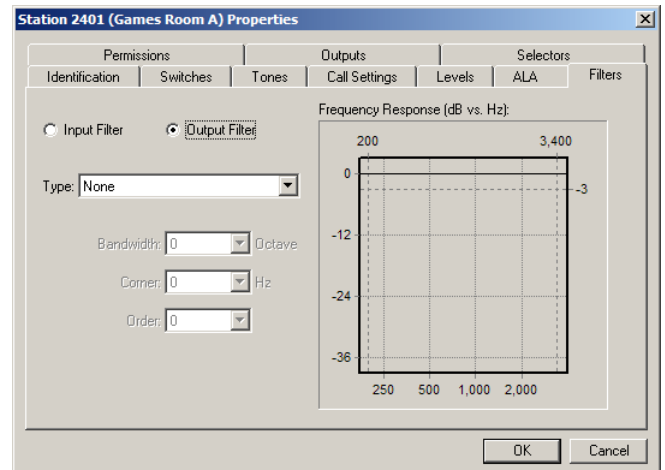


3.7.3.4.7 Talkback Station Properties - Filter

The **Filter** tab can be used to include an audio filter for both the incoming audio from the station and the output audio transmitted to the station. The input and output filters can be one of five different types; highpass, lowpass, bandstop, bandpass, advanced. If none is selected no filter is used.

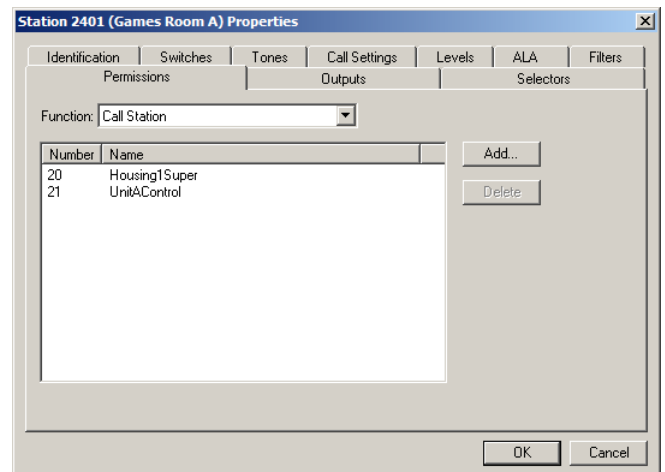
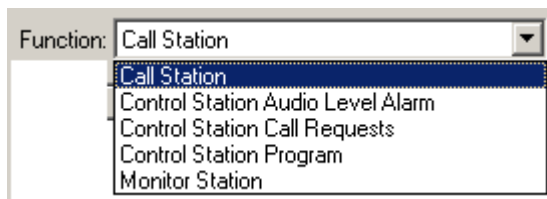


The filter parameters can be set using the pull down menus. Audio filters may be useful in rejecting background noise or compensating for different room acoustics.



3.7.3.4.8 Talkback Station Properties - Permissions

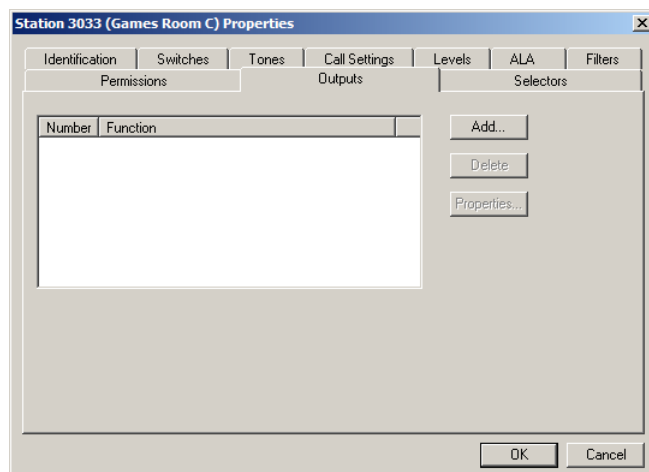
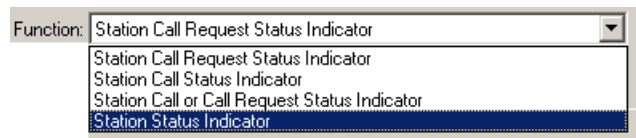
The **Permissions** tab is used to specify which master stations are allowed to call, monitor, or control this station. The pull down menu for **Function** displays the various functions that can be performed.



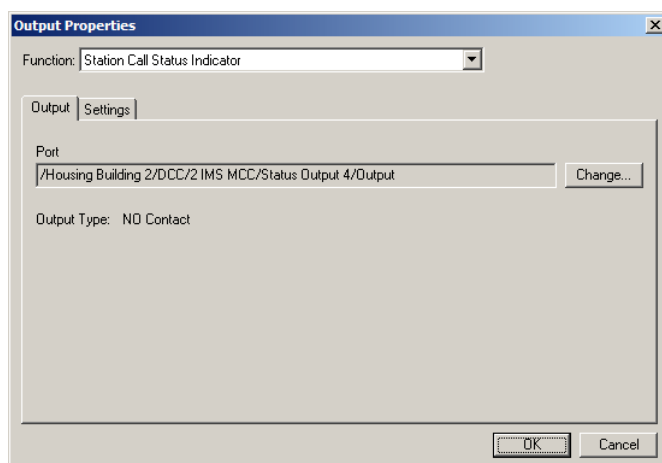
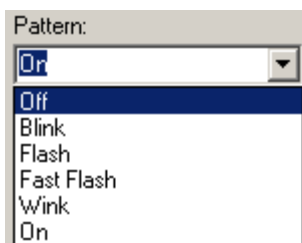
For a particular function the **ADD...** button will generate a popup menu that lists all the master stations in the configuration. From this list of master stations you can assign the master station(s) that are allowed to perform the selected function.

3.7.3.4.9 Talkback Station Properties - Outputs

The **Outputs** tab allows you to activate an output when the station is in various operating states. When the **Add...** button is clicked a tree of the system hardware is displayed. The tree nodes can be expanded until the desired output port is displayed. If an output is already used it will be dimmed, if not it will be selectable. The function of the output can be selected from the **Function** drop down menu.



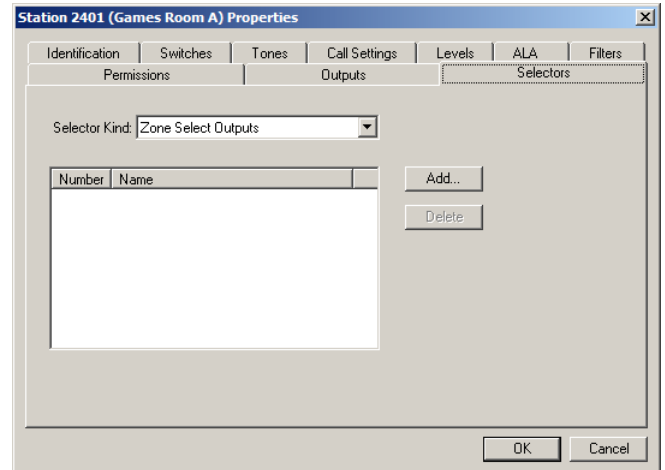
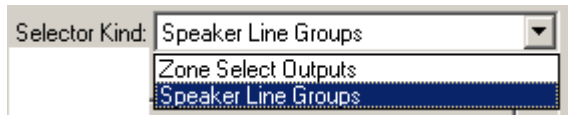
There are two tabs associated with the **Properties** display of an output. The **Setting** tab allows the output to be set to blink, flash, fast flash, wink or on. The selected pattern will be used to drive the selected output port when the station is in the state(s) identified by the function. This applies to all of the functions except the Station Status Indicator. The Station Status indication function is predefined to flash the output in the call request state, and to turn the output on in the call state.



3.7.3.4.10 Talkback Station Properties - Selectors

When the TBE talkback output is used to drive the audio input of a speaker line group or a relay controlled by a zone selected status output, the **Selectors** tab is used to specify these **Speaker Line Groups** and the **Zone Select Outputs**. These selectors may be activated when a page is made to the talkback station.

The **Selector Kind** pull down menu offers the following choices.



The list on the selectors tab will display the selectors of the currently selected kind that are associated with the talkback station, and only selectors of that kind can be added to the station.



3.8 Station Groups

A Station Group is a group of Stations that can be controlled with a single command. For example all the cells in a housing unit may have music available at certain times. A group that includes all the Stations in the housing unit allows the operator to turn on or turn off the programming to all cells simultaneously. Similarly, ALAs (Audio Level Alarms) can be turned on/off to a group of Stations by sending the appropriate command to the Station group.

3.8.1 Station Group Dialog Box

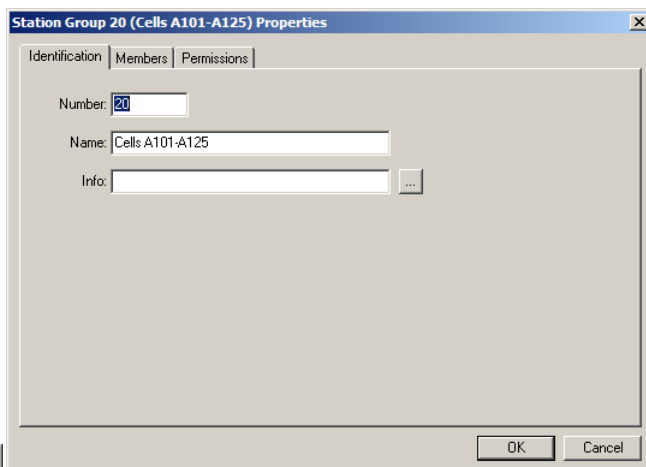
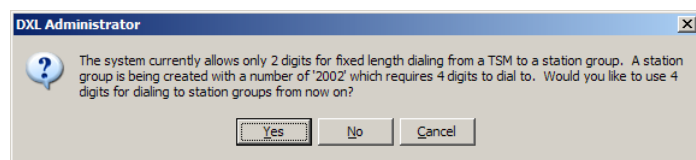
In order to make the operation of a DXL system easier an operator must be able to control stations as a group rather than each station individually. An example would be to turn on and off the program sources for a block of cells, or to turn on and off monitoring of a group of cells.

A Station group dialog box has three tabs: Identification and Members and Permissions.

3.8.1.1 Station Groups Properties – Identification

If you type in a **Number:** that is longer than 2 digits then a dialog box will pop up asking you to confirm whether a different length is really required. Click **Yes** to make the change. Note that this change is reflected in the **System Properties** (TSM Dialling tab) selection in **Configure:**.

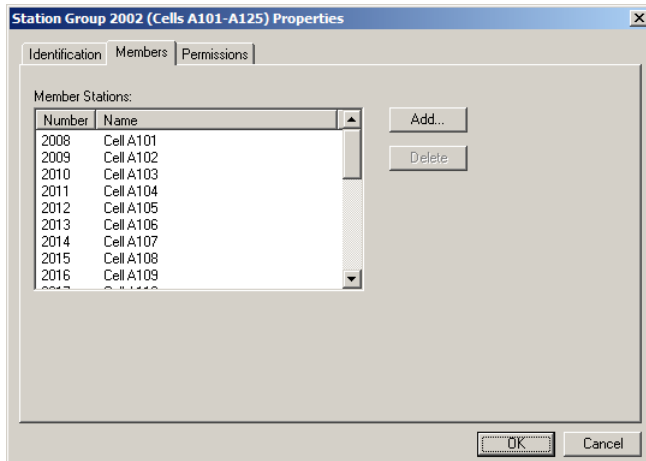
This dialog box shows up for Stations, Masters, Page Zones and Visiting Booths as well.



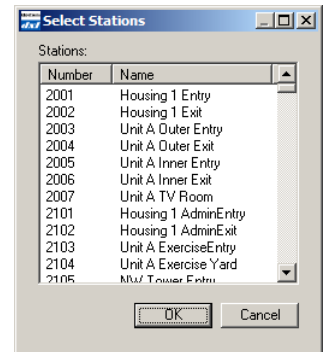
3.8.1.2 Station Group Properties – Members

The **Member Stations:** area lists all the Stations that are members of this Station Group. To add a Station to the list, click **Add...** This brings up the **Select Stations** window, displayed on the next page.

To remove a Station from the list, simply select the Station and then click on the **Delete** button.

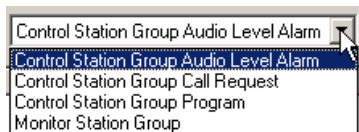


The **Select Stations** window lists all the Stations in the system. From this list, select the Stations that are to be members of the Station Group and click on the **OK** button. Click on **Cancel** to leave the **Select Stations** window.

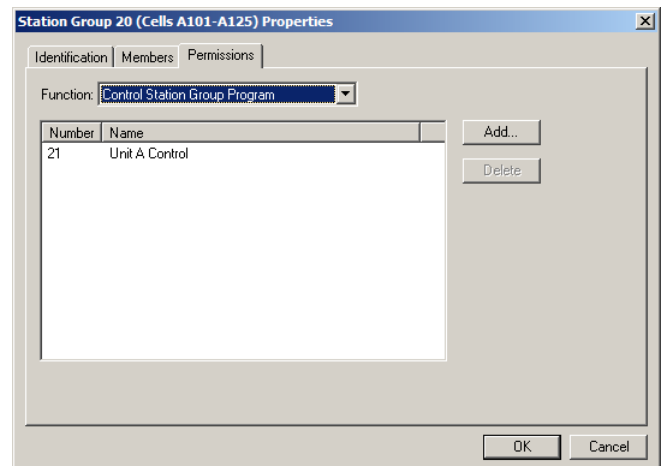
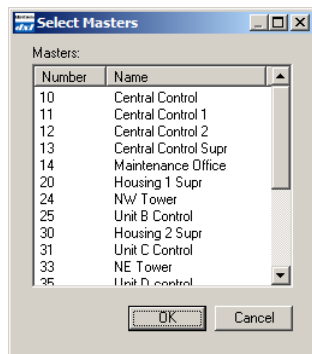


3.8.1.3 Station Group Properties – Permissions

The Function pull-down presents a list of operations that can be carried out on a group of stations.



From this list select the function you want then select the **Add...** button to bring up a Select Masters dialog box with a list of all the master stations in the system. Select the master stations that are allowed to control this function then click on the **OK** button.



3.9 Visiting Booths

A visitor booth consists of an audio connection between two Handset Stations. The audio connection may be enabled permanently or enabled by a Master Station operator on demand. If the audio connection is established on demand then the connection remains intact for a predetermined length of time.

3.9.1 Visiting Booth Properties Dialog Boxes

There are four tabs associated with a visiting booth: Identification, Tones, Control and Permissions.

3.9.1.1 Visiting Booth Properties – Identification

The drop-down menus in First Station and Second Station highlights all the stations that are defined as Handset Stations in the Stations section of Configure:.

When you select a Station in the First Station entry, then this station does not appear in the Second Station drop-down menu and vice versa.

After you make the settings for First Station and Second Station, this pair of Stations makes up a visiting booth.

The screenshot shows the 'Visiting Booth 1 (Visiting Booth 1) Properties' dialog box with the 'Identification' tab selected. The dialog has four tabs: Identification, Tones, Control, and Permissions. The 'Identification' tab contains the following fields: 'Number' (text box with '1'), 'Name' (text box with 'Visiting Booth 1'), 'Info' (text box with a browse button), 'First Station' (drop-down menu with '5109 (VisitBooth1 Guest)'), and 'Second Station' (drop-down menu with '5111 (VisitBooth1 Resident)'). A message below the stations states: 'The selection for the second station has been restricted because the first station has been chosen. This restriction can be removed by setting the first station to 'None'.' At the bottom are 'OK' and 'Cancel' buttons.

3.9.1.2 Visiting Booth Properties –Tones

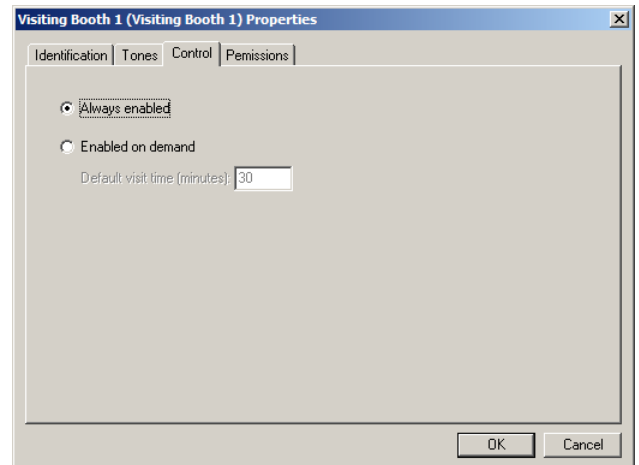
The Visiting Booth has provisions to include Start, End and Reminder tones during a call between the two stations. The pull-down menus list the tones that you have defined for the system, and you can make your selections from this list.

The screenshot shows the 'Visiting Booth 1 (Visiting Booth 1) Properties' dialog box with the 'Tones' tab selected. The dialog has four tabs: Identification, Tones, Control, and Permissions. The 'Tones' tab contains a section titled 'Call Announce' with three drop-down menus: 'Start' (selected '1 (Normal Announce Tone)'), 'End' (selected '1 (Normal Announce Tone)'), and 'Reminder' (selected 'None'). At the bottom are 'OK' and 'Cancel' buttons.

3.9.1.3 Visiting Booth Properties – Control

The **Control** tab has two main options. Choose the **Always enabled** option to keep the visiting booths permanently connected, so that they will become active the moment the handsets are taken off hook.

The **Enabled on demand** option allows a Master Station to control when a visiting booth is enabled. The Default visit time (minutes) entry controls how long the visiting booth connection remains active.

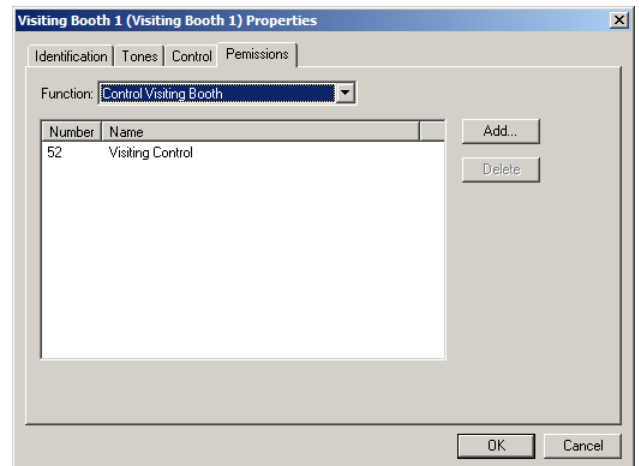


3.9.1.4 Visiting Booth Properties – Permissions

The **Permissions** tab is used to specify which master station(s) can talk to the visiting booth and which master station(s) can control the visiting booth. The Function pull-down menu has two choices;

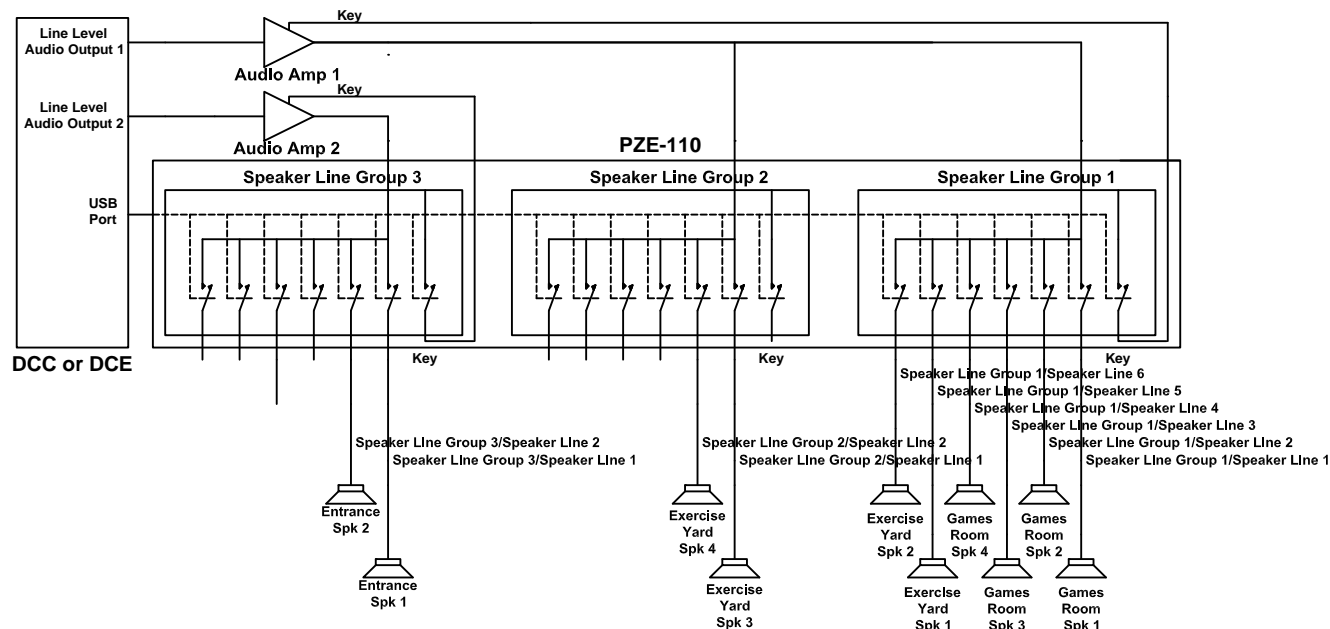


The **Add...** button brings up a window that lists all the master stations in the system. From this list you make the appropriate selection.



3.10 Speaker Lines

In the following example a PZE will be used in 4 different Page Zones in an example Housing Unit 1. The PZE is wired as follows.

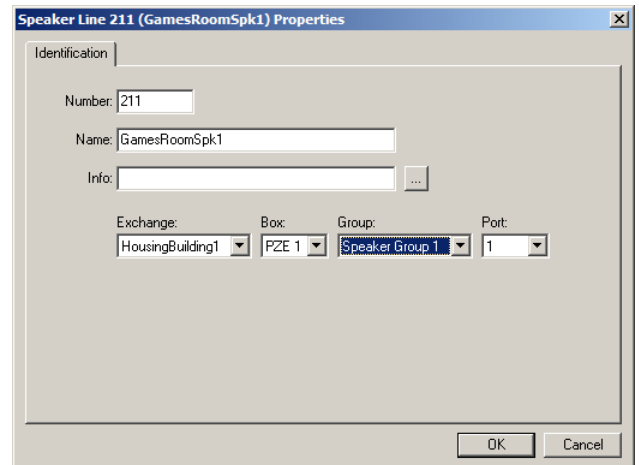
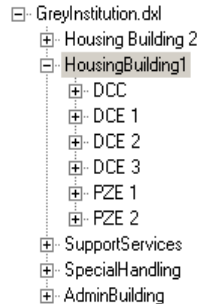


The four page zones are to consist of,

- 1) Page zone named 'Games Room' uses audio amplifier 1 and transmits audio to four speaker lines in the Games Room. The mute control for amplifier 1 uses the Key relay associated with Speaker Group 1. In addition two other status output relays are to be operated when this page zone is activated. The master station 'Unit Control' is permitted to make pages to this page zone.
- 2) Page zone named 'Exercise Yard' uses audio amplifier 1 and transmits audio to the four speaker lines in the Exercise Yard. The mute control for amplifier 1 uses the Key relay associated with Speaker Group 1. In addition two other status output relays are to be operated when this page zone is selected. The master station 'Unit Control' has permission to make pages to this page zone.
- 3) Page zone named 'Entrance' uses audio amplifier 2 and transmits audio to the two speaker lines in the Entrance area. The mute control for audio amplifier 2 uses the Key relay associated with Speaker Group 3. The master station 'Unit Control' has permission to make pages to this page zone.
- 4) Page zone named 'Unit Page' sends audio to all the PZE speaker lines associated with the above three page zones as well as stations Cell 101 through Cell 125 and Cell 201 through Cell 225. The operators at master stations 'Unit Control' and 'Housing1Super' have permission to make pages to this page zone.

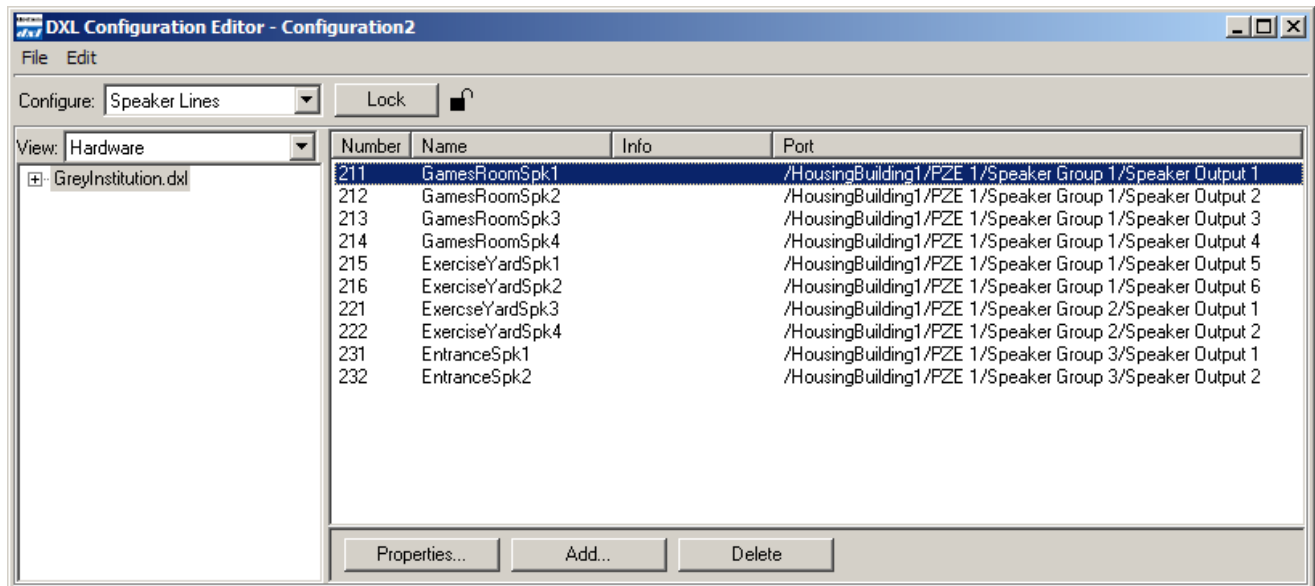
3.10.1 Defining the Speaker Lines

Once a PZE has been added to an Exchange the tree view of the hardware configuration will display the PZE entries in an exchange.



The first step in configuring a PZE is to identify and name each of the speaker lines that will be used. Different Page Zones can use different combinations of speaker lines and we must be able to identify which speaker line relays are to be activated for the different Page Zones. Setting the **Configure:** entry in the **DXL Configuration Editor** to **Speaker Lines** allows us to **Add...**, **Delete** or select **Properties** of each speaker line. The **Properties** entry allows us to view and edit a speaker line. The **Speaker Line Properties** dialog box appears when you click the **Add...** button. You need to identify the speaker line with an ID **Number**, **Name** and the PZE **Port** that it is connected to.

Once you have specified the speaker lines, the **DXL Configuration Editor** List Pane will display the speaker lines (in this picture only the speaker lines for PZE 1 are displayed).



3.11 Speaker Line Groups

Once the speaker lines are configured the next step is to specify the PZE Speaker Line Groups used in the configuration. Selecting **Speaker Line Groups** in the **Configure:** entry of the **DXL Configuration Editor** allows us to **Add...** Speaker Line Groups to the configuration. Speaker Line Groups will be associated with the line level audio from paging outputs or stations (with an SPA-120). The audio will be connected to the input of an audio amplifier and its output will in turn be connected to one or more speaker line groups.

Speaker Line Group 201 (PZE1 Group1) Properties

Identification

Number: 201

Name: PZE1 Group1

Info:

Exchange: HousingBuilding1 Box: PZE 1 Group: Speaker Group 1

OK Cancel

Click **Add...** to add a new speaker line group. After you have defined one speaker line group the **DXL Configuration Editor** will also allow you to **Delete** an existing speaker line group, or view or edit the **Properties...** of a speaker line group. In our example we require 3 speaker line groups.

DXL Configuration Editor - Configuration2

File Edit

Configure: Speaker Line Groups Lock

View: Hardware

GreyInstitution.dxl

Number	Name	Info	Port
201	PZE1 Group1		/HousingBuilding1/PZE 1/Speaker Group 1
202	PZE1 Group2		/HousingBuilding1/PZE 1/Speaker Group 2
203	PZE1 Group3		/HousingBuilding1/PZE 1/Speaker Group 3

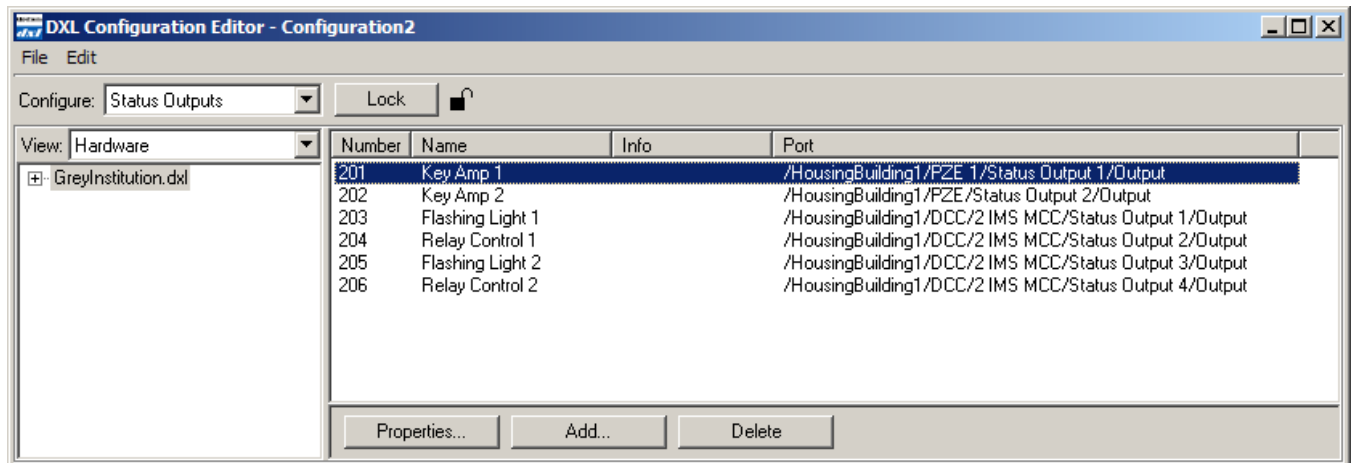
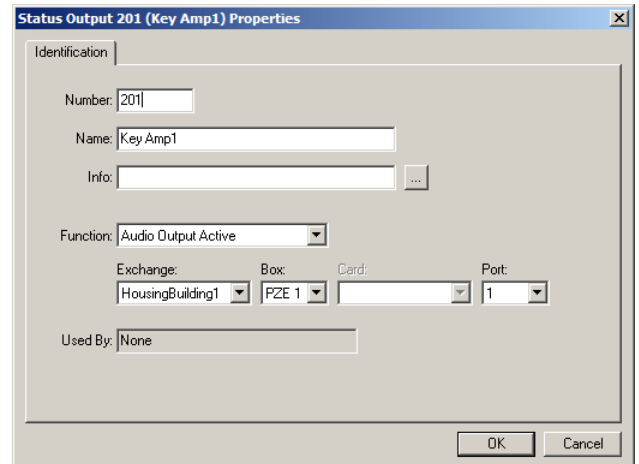
Properties... Add... Delete

3.12 Status Outputs

Status outputs are relay outputs that can be assigned one of the following functions:



For example the **Page Zone Selected** outputs are used to control relays that will be activated for some page zones but not for others. You could configure a relay network that could perform the same functions as a PZE-110 but with the added complexity of having to wire it up. In our example we have configured six status outputs, two using the PZE and four using the status outputs of the DCC. The two outputs associated with the PZE are used to key the mute control of the amplifiers and are assigned the **Audio Output Active** function. The other 4 status outputs will be activated when a page zone is selected and are assigned the **Page Zone Selected** function. The list pane of the **Configuration Editor** displays the status outputs.



3.13 Paging Outputs

Paging outputs are audio outputs used as inputs to audio amplifiers and their associated selectors. The amplifier outputs are generally connected to external speakers (in this case via the PZE). Four types of paging outputs are supported: MCC Line out (line level outputs), IP Station Ports (utilizing the speaker or line out on the 600 Series IP Stations), Generic Station Ports (utilizing SPA adapters on 300 series ports), and Speaker Station Ports (utilizing SPA adapters on 400 series ports).

In our example the two amplifiers require two line level outputs from a DCC or DCE. Selecting **Paging Output** in the **Configure:** entry of the **DXL Configuration Editor** allows us to add paging outputs to the configuration.

3.13.1 Paging Output Dialog Box

The Paging Output Dialog Box has 5 tabs; Identification, Call Settings, Levels, Outputs and Filter.

3.13.1.1 Paging Output Properties - Identification

The **Identification** tab requires an ID **Number**, **Name**, **Info**, **Type**, and the location of the output **Port**.

The picture below shows the list pane of the **DXL Configuration Editor** with **Configure:** set to **Paging Outputs**. All the paging outputs for Housing Building 1 are displayed.

Paging Output 22 (Amplifier A1 Input) Properties

Identification | Call Settings | Levels | Selectors | Filter

Number: 22

Name: Amplifier A1 Input

Info:

Type: MCC Line Out Port

Exchange: Housing Building 1 | Box: DCE 1 | Card: IMS/TSM MCC | Port: 1

Previous | Next | OK | Cancel

DXL Configuration Editor - Configuration2

File Edit

Configure: Paging Outputs | Lock

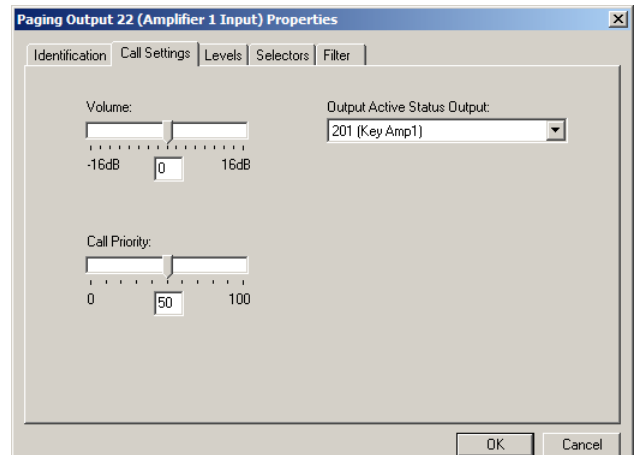
View: Hardware

Number	Name	Info	Port
11	Laundry		/SupportServices/DCC/2 IMS MCC/Line Level Output 1
12	Maintenance		/SupportServices/DCC/2 IMS MCC/Line Level Output 2
20	Unit Page		/HousingBuilding1/DCC/2 IMS MCC/Line Level Output 1
21	Housig1Admin-Page		/HousingBuilding1/DCC/2 IMS MCC/Line Level Output 2
22	Amplifier 1 Input		/HousingBuilding1/DCE 1/IMS/TSM MCC/Line Level Out...
23	Amplifier 2 Input		/HousingBuilding1/DCE 1/IMS/TSM MCC/Line Level Out...
41	MedicalPage		/SpecialHandling/DCC/2 IMS MCC/Line Level Output 1
43	Segregation Page		/SpecialHandling/DCE/IMS/TSM MCC/Line Level Output 1
51	Administration Page		/AdminBuilding/DCC/2 IMS MCC/Line Level Output 1
52	Visiting Page		/AdminBuilding/DCC/2 IMS MCC/Line Level Output 2

Properties... | Add... | Delete

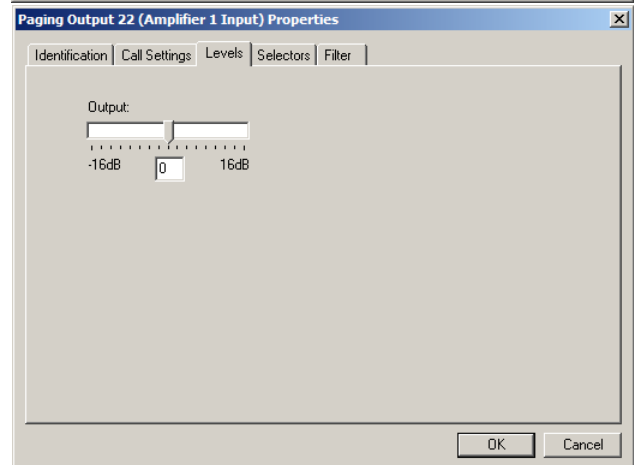
3.13.1.2 Paging Output Properties - Call Settings

The **Call Settings** tab has slider adjustments to set **Volume** (it can be set from -16dB to +16dB in 1 dB increments) and **Call Priority** (it can be set from 0 to 100). Initially the default values are set to 0 dB and 50, respectively. The **Output Active Status Output** pull-down will display all the available status output entries of type **Audio Output Active**. It lets you select an output which will be activated when this page output is used. This status output is normally used to key the audio amplifier.



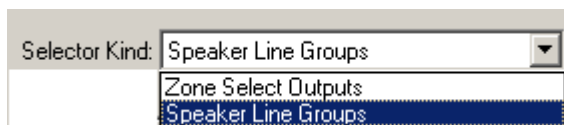
3.13.1.3 Paging Output Properties - Levels

The **Levels** tab has one slider adjustment for **Output**, which can be set from -16 dB to +16 dB. The level adjustment is set for a particular configuration and cannot be changed, whereas the volume adjustment can be changed by an operator while the system is running. Level adjustments are used to compensate for the acoustic properties of different spaces so as to provide a uniform level of sound volume throughout a facility. Volume adjustments can be used to compensate for voice characteristics of different personnel and can be carried out while the system is operating.

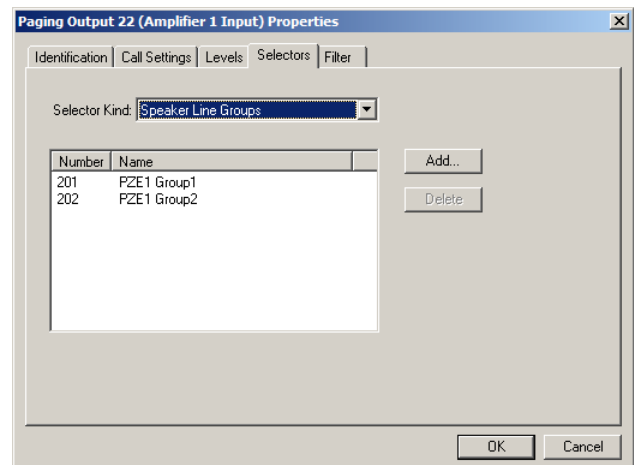


3.13.1.4 Paging Output Properties - Selectors

The **Selectors** tab is used to specify which outputs may be activated included when a paging output is activated. The **Selector Kind** pull-down menu is used to select the kind of selector to add.



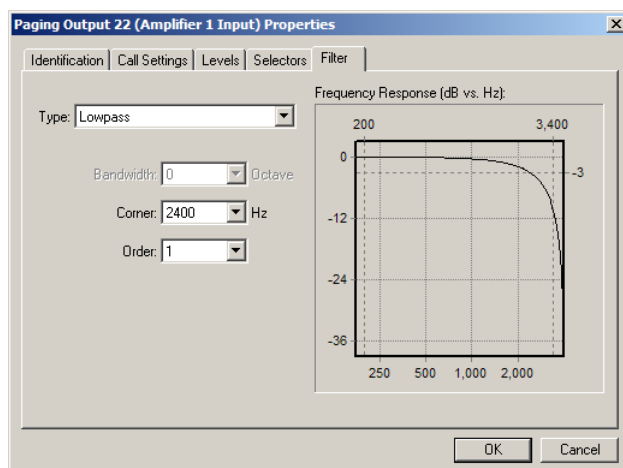
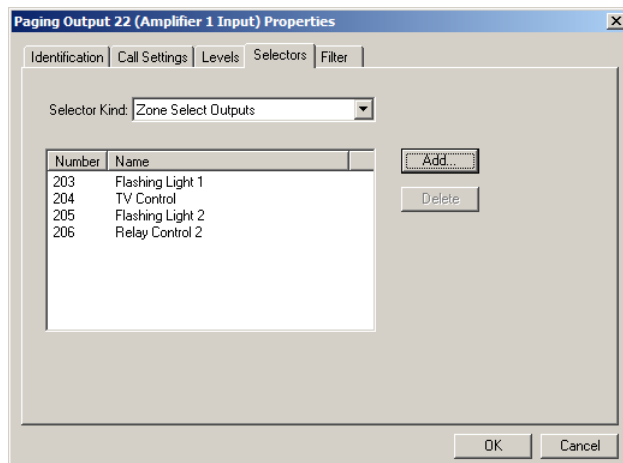
If we select **Speaker Line Groups** then click the **Add...** button all the available speaker line groups are displayed. From this list of groups you can select the groups that will be driven by the audio from this paging output. (You can visualize these group inputs as being driven directly from the paging output even though in practice they are connected to the output of an amplifier that has this paging output as its input.) Once a group has been associated with a paging output it will no longer be available for other paging outputs i.e. it will not show up when the **Add...** button is clicked. In our example Amp 1 is connected to both PZE 1 Speaker Line Group 1 and PZE 1 Speaker Line Group 2.



If we select **Zone Select Outputs** then click the **Add...** button a list of all the available status outputs with the **Zone Select Outputs** functions are displayed. In this example we have defined four status outputs, two of which are to be used for page zone 'Games Room' (Flashing Light 1 and TV Control) while the other two are used with the page zone 'Exercise Yard'. All four must be added to this Page Output.

3.13.1.5 Paging Output Properties - Filter

The **Filter** tab allows us to add a frequency shaping characteristic to the audio output channel. A filter is not normally required and the default is none. Filters may be useful if there is noise or room acoustics are poor.



3.14 Page Zones

Page zones are groups of loudspeakers connected to speaker lines, stations, master stations and other page zones that can be connected in a single paging announcement. Paging output and status output relays can also be activated when a page zone is selected. When the **Configure:** entry is set to **Paging Zones** in the **DXL Configuration Editor** you can **Add...**, **Delete** or examine the **Properties** of a Page Zone.

3.14.1 Page Zone Properties Dialog Box

A Page Zone Properties dialog box can have up to six tabs; Identification, Tones, Call Settings, Members, Permissions and if your system has a Host Port a Status Registers tab.

3.14.1.1 Page Zone Properties - Identification

Selecting **Page Zone** in the **Configure:** entry of the Configuration Editor allows us to add page zones to the configuration. Clicking the **Add...** button brings up a window with 5 tabs; **Identification**, **Tones**, **Call Settings**, **Members** and **Permissions**. The **Identification** tab requires that you assign an **ID Number** and **Name** for the page zone. In this case the page zone is named 'Games Room'.

The screenshot shows the 'Page Zone 20 (Games Room) Properties' dialog box with the 'Identification' tab selected. The 'Number' field contains '20' and the 'Name' field contains 'Games Room'. There is an 'Info' field with a button next to it. The 'OK' and 'Cancel' buttons are at the bottom right.

3.14.1.2 Page Zone Properties - Tones

The **Tones** tab has entries for defining **Start**, **End**, and periodic **Reminder** tones when a page announcement is being made. Configuration tones are created using the **Tones** entry in the **Configure:** box of the **Configuration Editor**.

The screenshot shows the 'Page Zone 20 (Games Room) Properties' dialog box with the 'Tones' tab selected. Under the 'Call Announce' section, there are three dropdown menus: 'Start' (set to 'StartTone'), 'End' (set to 'None'), and 'Reminder' (set to 'None'). The 'OK' and 'Cancel' buttons are at the bottom right.

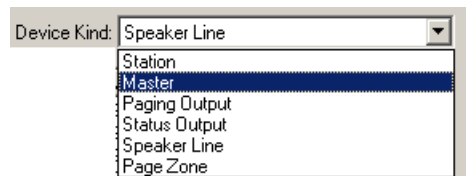
3.14.1.3 Page Zone Properties - Call Settings

The **Call Settings** tab has entries for **Volume**, **Call Priority** and **Program Group**. **Program Group** is a set of music sources that can be transmitted over the page zone. An operator at a master station with permission for program control can select one of the music sources when the DXL is operating.

The screenshot shows the 'Page Zone 20 (Games Room) Properties' dialog box with the 'Call Settings' tab selected. It features a 'Volume' slider ranging from -16dB to 16dB, currently set at 0. Below it is a 'Call Priority' slider ranging from 0 to 100, currently set at 50. To the right is a 'Program Group' dropdown menu set to '200 (TunerInputs)'. The 'OK' and 'Cancel' buttons are at the bottom right.

3.14.1.4 Page Zone Properties - Members

The **Members** tab is used to specify the devices that will be connected or activated when this page zone is paged. The **Device Kind** pull-down menu allows us to make the appropriate selections.

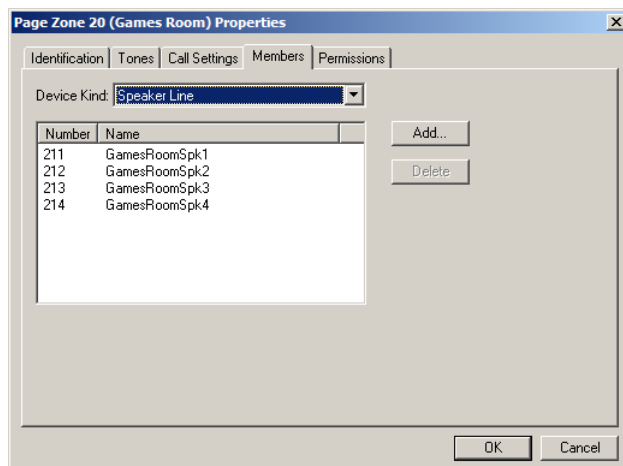


The Speaker Line entry will only be displayed after you have added a paging output that includes one or more speaker line groups. Similarly, the Status Output entry will only be displayed after adding a paging output that includes one or more Zone Select Outputs.

Clicking **Add...** after selecting the **Station** entry will bring up a list of all the stations in the facility. From this list select any stations you wish to include in the page zone. Selecting **Masters** will allow you to select any masters in the system.

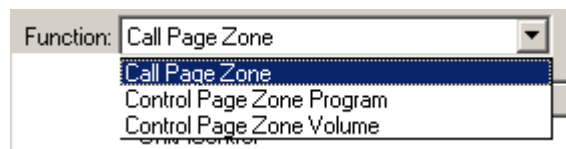
Clicking **Add...** after selecting **Paging Output** will bring up a list of all the paging outputs. Select the paging outputs that you want to include in this page zone. In this example only audio amplifier 1 is selected.

When you click **Add...** after selecting **Status Output** only the status outputs associated with current paging output members will be displayed. Similarly, only the speaker lines in the speaker line groups associated with the included paging output members will be displayed after you select speaker line as the device kind. You must add paging outputs to a page zone before you can add any of the selectors associated with that page output to a page zone.

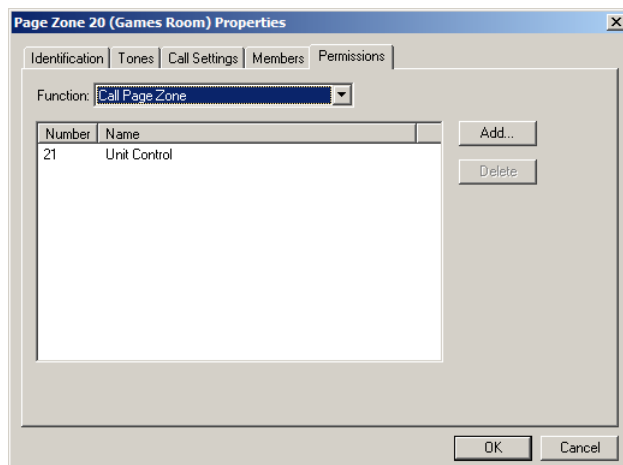


3.14.1.5 Page Zone Properties - Permissions

The **Permissions** tab specifies which master stations can make an announcement over the page zone, which masters can change the volume and which masters can control page zone programming, i.e. transmitting background music over the page zone. The **Function** pull-down menu offers the following selections.



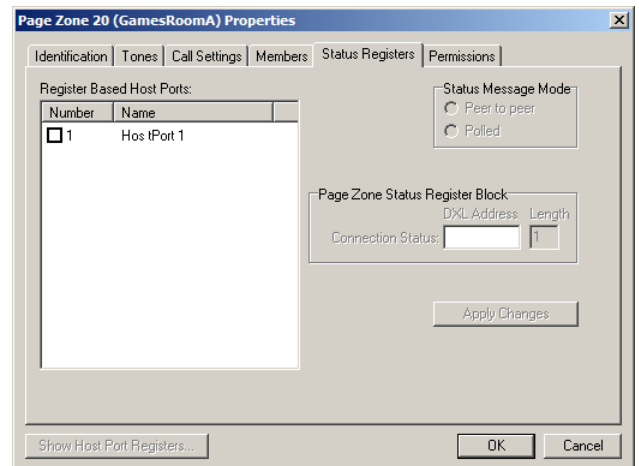
In this example only Unit Control is allowed to make pages to the Games Room.



3.14.1.6 Page Zone Properties – Status Registers

Note that the Status Registers tab will not appear if the you have not defined any Host Ports in the system since the Status Register Tab is used with a register based Host Port.

If you have already defined Host Ports then you will see a list of them, and they will all appear with a checkbox (which is unticked by default) beside them. Tick the Host Ports that you want the Station to report its status to. For a description of the other entries, please refer to Section 3.24.1.12: Host Port – Status Registers.



3.15 Call Recorders

Call recorders are used to record conversations, often the conversations made during a visiting booth session. A master station that has the call recorder assigned to its permission list can control the call recorder. Four types of call recorder outputs are supported: MCC Line out (line level outputs), IP Station Ports (utilizing RTP streams only), Generic Station Ports (utilizing SPA adapters on 300 series ports), and Speaker Station Ports (utilizing SPA adapters on 400 series ports).

3.15.1 Call Recorder Dialog Box

A Call Recorder Properties dialog box can have up to five tabs; Identification, Call Settings, Levels, Filter and CCTV Monitors (only if CCTV monitors are defined for the system).

3.15.1.1 Call Recorder Properties – Identification

The **Identification** tab requires that you type in an **ID Number** and a **Name**, as well as setting the **Type** and then using the drop-down menus to select a audio output port that will provide the audio input to the call recorder. You will not be able to select audio ports that have been assigned previously.

The screenshot shows the 'Paging Output 22 (Amplifier A1 Input) Properties' dialog box with the 'Identification' tab selected. The fields are as follows:

- Number:** 22
- Name:** Amplifier A1 Input
- Info:** (empty field with a browse button)
- Type:** MCC Line Out Port
- Exchange:** Housing Building 1
- Box:** DCE 1
- Card:** IMS/TSM MCC
- Port:** 1

Buttons at the bottom: Previous, Next, OK, Cancel.

3.15.1.2 Call Recorder Properties – Call Settings

The **Call Setting** tab has slider adjustments for setting the initial volume and call priority. If any status outputs have been set to **Audio Output Active** the pull-down menu for the **Output Active Status Output** box will display all these outputs. If you select one of these outputs to be associated with this call recorder then as soon as an audio channel is established to the specified line level audio output the associated status output contacts will close.

The screenshot shows the 'Call Recorder 51 (VisitiBooth1Recorder) Properties' dialog box with the 'Call Settings' tab selected. The fields are as follows:

- Volume:** Slider from -16dB to 16dB, currently at 0.
- Output Active Status Output:** None
- Call Priority:** Slider from 0 to 100, currently at 50.

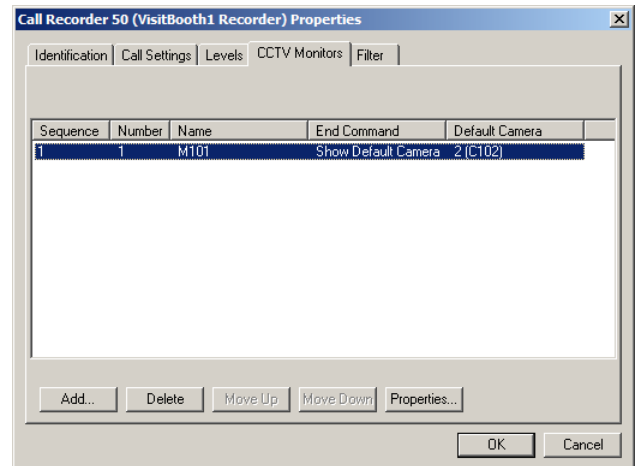
Buttons at the bottom: Previous, Next, OK, Cancel.

3.15.1.3 Call Recorder Properties – Levels

The **Levels** tab sets the speaker output level to the call recorder. You can adjust the output level in 1 dB steps from -16 dB to +16 dB. This setting is made during the initial setup and it is used to compensate for sensitivity differences in the call recorders.

3.15.1.4 Call Recorders Properties- CCTV Monitors

The CCTV Monitors tab is used to connect a monitor to a specified camera or sequence through a group of cameras. When the audio channel is opened to the line level output, specified as a call recorder, a signal will be sent to the video switch to connect the video cameras to the predefined monitors.



3.15.1.5 Call Recorders Properties- Filter

An audio filter can modify the audio that is sent to the line level audio output. The **Filter** tab allows you to specify the characteristics of this filter.

3.16 Music Sources

Three types of music sources are supported: MCC Line in (line level audio input ports on the DCCs or DCEs), Generic Station Ports (utilizing SPA adapters on 300 series ports), and Speaker Station Ports (utilizing SPA adapters on 400 series ports).

Up to six music sources can be circulated throughout a DXL system via the digital audio trunk and are available at every exchange. At an exchange, a music source can be transmitted to stations as two selectable separate music channels, one at a low volume level and a second at a higher volume level. Select **Music Sources** from **Configure**: and then click on the **Add...** box. You will see a new dialog box called **Music Source Properties**.

3.16.1 Music Sources Properties Dialog Box

This dialog box has 4 tabs: Identification, Call Settings, Levels and Filter. Note that music sources have to be included in program groups so that they can be played at masters, stations and page zones. Program groups are discussed in the next section.

3.16.1.1 Music Source Properties – Identification

The **Identification** tab requires you to assign an ID Number, Name, Info, Type, and specify the port the music source is connected to. Any ports have been assigned previously will not be selectable.

The screenshot shows the 'Music Source 20 (UnitATuner1) Properties' dialog box with the 'Identification' tab selected. The fields are as follows:

- Number: 20
- Name: UnitATuner1
- Info: (empty field with a browse button)
- Type: MCC Line In Port
- Exchange: Housing Building 1
- Box: DCC
- Card: 2 IMS MCC
- Port: 1

Buttons at the bottom: Previous, Next, OK, Cancel.

3.16.1.2 Music Source Properties – Call Settings

Each music source that is available in an Exchange is transmitted as two separate audio signals, one at a Low Volume and a second at a High Volume level. You can adjust the volume level of the two signals separately in 1 dB steps by using the slider.

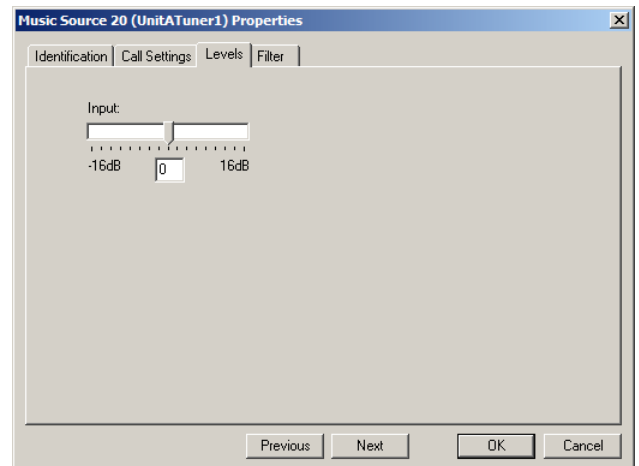
The screenshot shows the 'Music Source 20 (UnitATuner1) Properties' dialog box with the 'Call Settings' tab selected. The volume controls are as follows:

- Low Volume: A slider between -16dB and 16dB, currently set at 0.
- High Volume: A slider between -16dB and 16dB, currently set at 0.

Buttons at the bottom: Previous, Next, OK, Cancel.

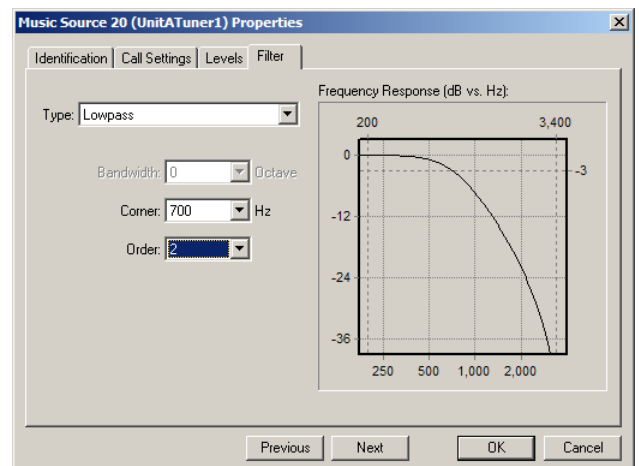
3.16.1.3 Music Source Properties – Levels

Once selected, the High Volume and Low Volume levels should remain fixed. In the Levels tab you can move the Input slider to compensate for either quiet or loud audio sources and you can adjust this level in 1dB steps from -16dB to +16dB.



3.16.1.4 Music Source Properties – Filter

With the Filter tab you can specify the settings for additional filtering of the incoming audio.



3.17 Program Groups

A single Program Group consists of a collection of one or more music sources i.e. different music sources can be members of one or more program groups. A program group associated with a master, station or page zone is available to these devices. This assignment of the program group to these devices is generally made in the **Settings** tab of the device.

A station's music select switch lets you step through the list of music sources that are defined for the program group that has been assigned to the Station in the configuration. Starting from the idle state (no program), if you press the music select switch then the station plays the first configured program channel (at its lowest volume). If you press the switch a second time, the same program channel is played at its higher volume. If you press the switch a third time, the second program channel is played at its lower volume. If you press the switch again, the music channel moves to the next track. When you reach the last program channel and you press the music select switch, the program will stop and you will not be able to hear any more music. If you press the switch again, the music will continue playing.

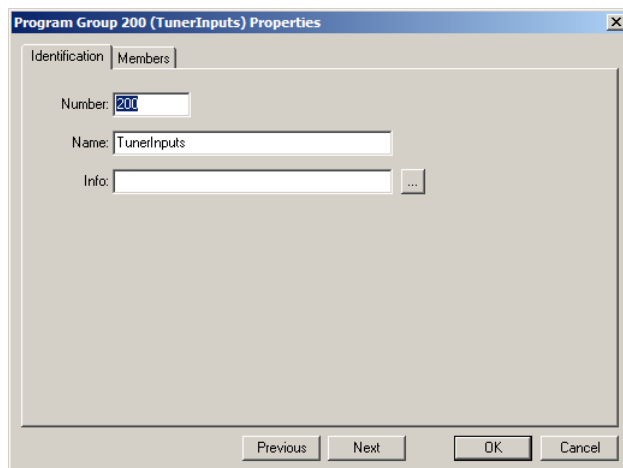
A station's program availability can be enabled and disabled from any master station that has the permission to do this. When disabled, the program channel is disconnected from the station and the program selection switch on the station is ignored. When program availability is re-enabled, it begins at the program channel and volume settings that were in effect at the time that it was disabled.

3.17.1 Program Group Dialog Box

Setting the **Configure:** entry in the **DXL Configuration Editor** to **Program Groups** will display, in the List pane of the Configuration Editor window, all the program groups in the system. Selecting **Add...** will bring up the **Program Group Properties** window, with two tabs that will allow you to create a Program Group.

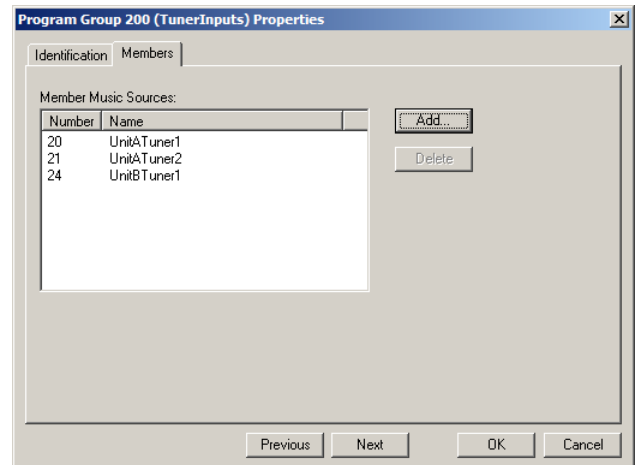
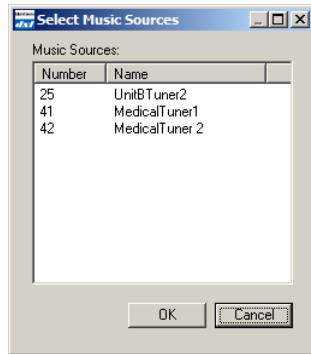
3.17.1.1 Program Group Properties – Identification

The Identification tab has entries for ID Number and Name.



3.17.1.2 Program Group Properties – Members

The Members tab lets you add music sources to the program group. Click on the **Add...** button to add music sources to the program group. This brings up the Select Music Sources dialog box.



Initially the **Select Music Sources** dialog box lists all the music sources in the system. The music sources are identified by their ID **Number** and **Name**. To add a music source as a member of a program group, click on the music source(s) from this and click **OK**. This will add the selected music source(s) to the **Member Music Sources** area of the **Members** tab. Once a music source has been added it will no longer be displayed in the **Select Music Sources**.

To delete a music source from this area, click on the music source and then click the **Delete** button.

3.18 Tones

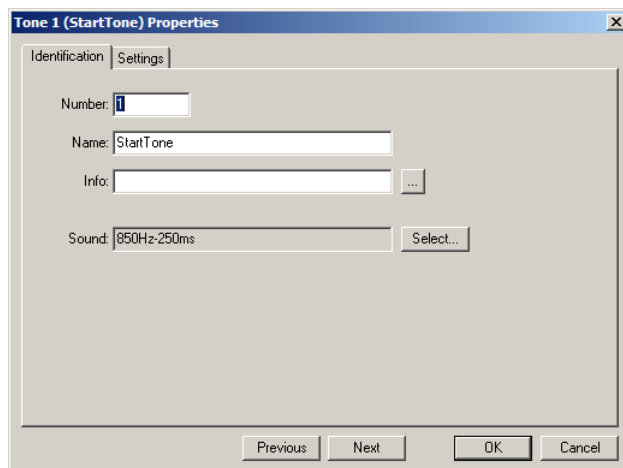
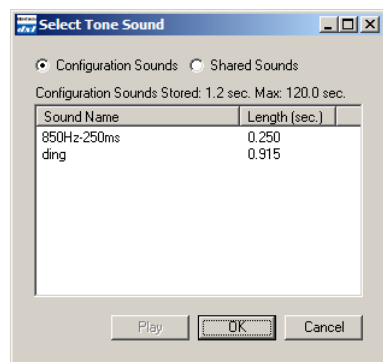
Tones are sound clips used to notify users that an event is about to occur or is in progress. Selecting **Tones** in the **Configuration:** entry of the **DXL Configuration Editor** will display, in the list pane, all the tones that have been defined in the configuration.

3.18.1 Tones Dialog Box

You can add a new tone to the configuration click on the **Add...** button, or to change an existing tone click on the tone that you want to edit, and then click on the **Properties...** button. Either of these two operations will bring up a **Tones Properties** dialog box with two tabs: Identification and Settings.

3.18.1.1 Tone Properties – Identification

The **Identification** tab has entries for an ID **Number**, a tone **Name** and Info: text box. Click on the **Select...** button to add a sound to the **Sound:** entry. This will bring up the **Select Tone Sound** window, shown below.



Configuration sounds are sounds that are used in the currently active configuration that you are working on. Shared sounds are sounds that are available in the software and can be used by any application, if desired. If a sound from the **Shared Sounds** list is selected for use in the configuration then it will automatically be added to the list of **Configuration Sounds**.

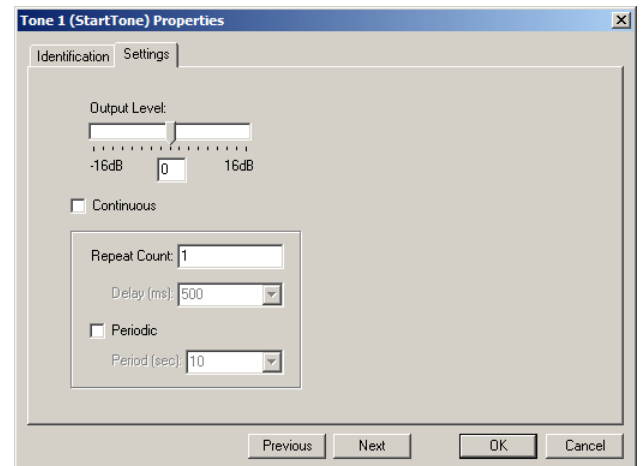
To listen to either a **Configuration Sound** or **Shared Sound**, select the appropriate choice. Click on the **Sound Name** that you want to hear and then click on the **Play** button. Click on the sound that you want to add to the **Sound:** entry and then click on the **OK** button to add the sound to this entry. Click on **Cancel** to exit the window. Please refer to Section 3.1.2.5 for a detailed description of the **Sounds Editor** window.

3.18.1.2 Tone Properties – Settings

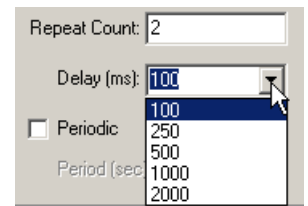
The **Settings** tab has a slider to adjust the **Output Level** in 1 dB steps from -16 dB to +16 dB.

A tone consists of a sound clip that can be played continuously, played once, repeated several times or played periodically.

If you select the **Continuous** checkbox then the sound clip is played continuously, without any delay between clips. However, when you select this option, the other entries: **Repeat Count:** and **Periodic:** are dimmed and cannot be selected.

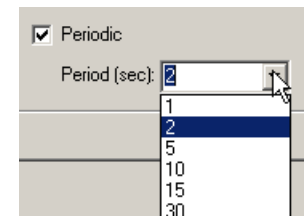


The **Repeat Count:** sets the number of times that the same tone is repeated in one sound clip. The **Repeat Count:** entry is editable, and if you change this value to any number that is higher than a one the **Delay (ms):** entry becomes highlighted. Use the **Delay (ms):** drop-down menu to set a time delay between the tones. This value can be set to from 0.1 seconds up to 2 seconds and is the interval between the repeating tones in the sound clip.



The **Periodic** entry causes the sound clip (or repeated sound clip if **Repeat Count:** is higher than 1) to be played periodically, with a period that can be selected from the **Period (sec):** drop-down menu. This value can be set from 1 to 30 seconds.

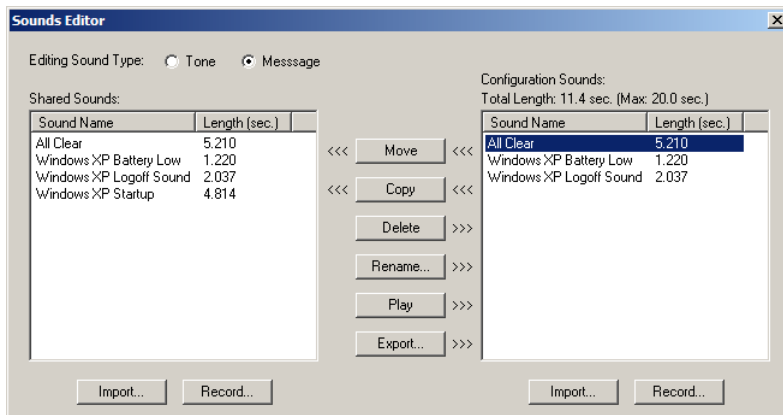
Note that the period must be greater than the length of the sound clip.



3.19 Messages

Messages and tones are similar in that they are interpreted by the DXL system as .wav files. Tones are usually short sound clips generated automatically for such things as a busy signal, classroom bells or a call request signal. Messages are sound clips that are only used when an operator requests that the message be played, for example an All Clear message after a fire alarm.

Messages stored as .wav files can be imported as **Shared Sounds**: or as **Configuration Sounds**:. The example shows .wav files imported from Microsoft Office 2000. Selecting **Import...** brings up a window that you can use to navigate to locate the desired .wav file. Please refer to Section 3.1.2.5 for a description of the **Sounds and Messages Editor** window.



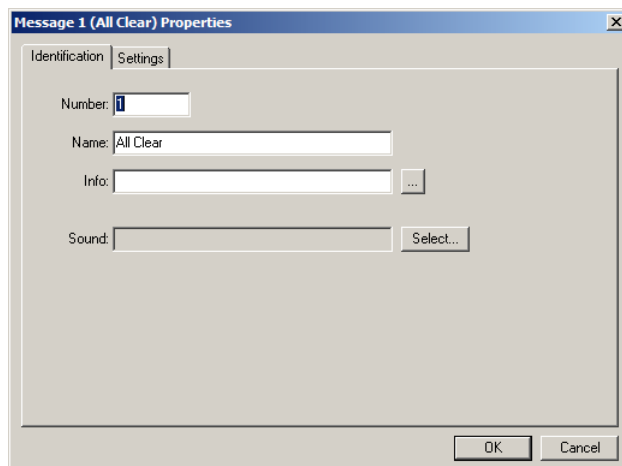
3.19.1 Message Dialog Box

The **Message Properties** dialog box has two tabs: **Identification** and **Settings**.

3.19.1.1 Message Properties – Identification

The **Sound**: entry lists the name of the sound file that describes the message. To select the sound file that you want to add to the Message, click on the **Select...** button.

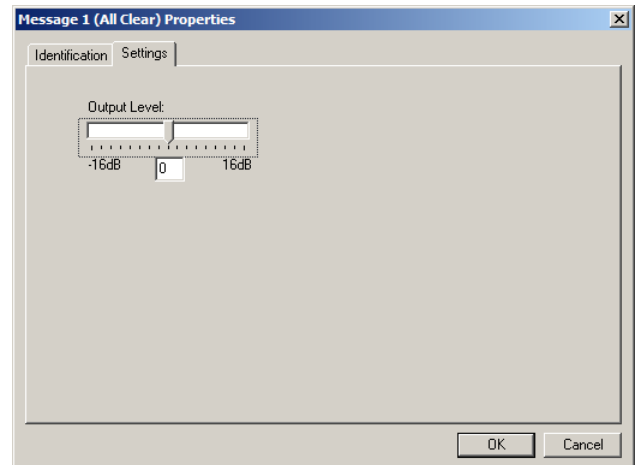
This brings up the **Select Message Sound** window, where the available message sounds are listed. You can select from either the list of messages in the **Configuration Sounds** or the list of messages in the **Shared Sounds**.



To listen to either a **Configuration Sounds** message or a **Shared Sounds** message, click on the **Sound Name** and then click **Play**. Once you have selected the sound that you want, click on the **OK** button to add the message sound to the **Sound:** entry. Click on **Cancel** to cancel the operation and exit the window.

3.19.1.2 Message Properties – Settings

The **Settings** tab has only one entry, which is an **Output Level** slider that can change the output level from –16 dB to +16 dB in 1 dB steps.



3.20 Signals

Signals are either messages or tones that are played automatically at predetermined times. Examples of signals could be a morning wake up call, start or end of a class, meal times and time signals. Selecting **Signals** in the **Configuration:** entry of the **DXL Configuration Editor** will display, in the List pane, all the signals that have been defined in the configuration.

3.20.1 Signals Dialog Boxes

You can add a new signal to the configuration click on the **Add...** button, or to change an existing signal click on the signal that you want to edit, and then click on the **Properties...** button. Either of these two operations will bring up a **Signal Properties** dialog box with three tabs: **Identification**, **Settings** and **Permissions**.

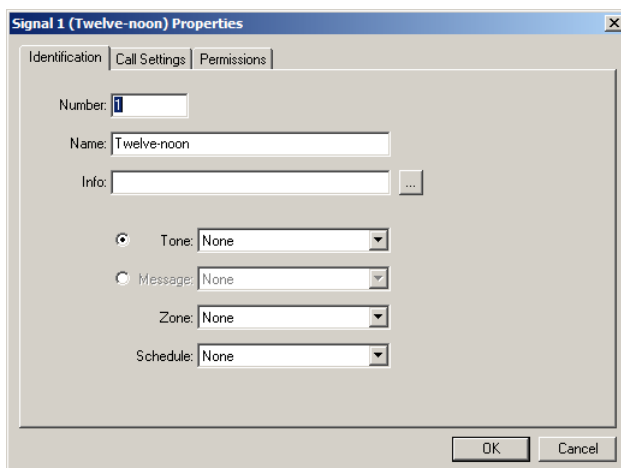
3.20.1.1 Signal Properties - Identification

The **Identification** tab has entry boxes for ID **Number**, **Name** as well as an **Info:** text box.

Clicking on one of the selection circles adjacent to the **Tone** or **Message** boxes determines whether the signal uses a tone or message. The pull-down menu displays all the tones (messages) in the configuration. From this list select the one you wish to use.

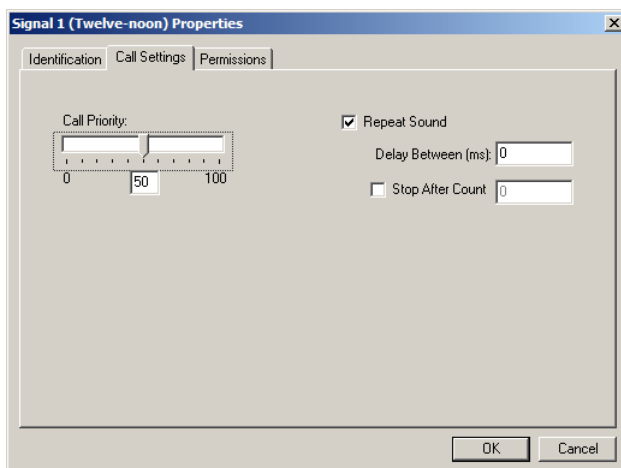
The **Zone** pull-down menu lists all the page zones in the configuration. Select the page zone that you want this signal to be broadcast over.

The **Schedule** pull-down menu lists all the schedules that have been defined for the configuration. You can select the appropriate schedule. Schedules are discussed in Section 3.19.



3.20.1.2 Signal Properties – Call Settings

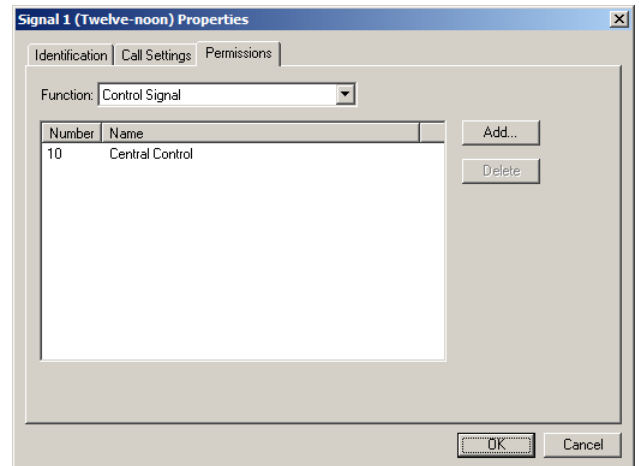
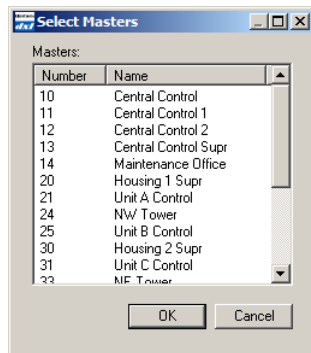
The **Call Settings** tab has a slider adjustment to set the **Call Priority** of the signal. You can specify that the tone or message be repeated several times or continuously, as well as control the delay time between the repetitions.



3.20.1.3 Signal Properties –Permissions

The **Permissions** tab is used to specify which master stations can control the signal, i.e. have the signal transmitted over the specified page zone. This transmission would be in addition to the scheduled automatically generated transmissions.

Clicking on the **ADD...** button brings up a window that lists all the master stations defined in the configuration. From this list you can select the appropriate master station(s).



3.21 Schedules

Schedules are used to set up a list of times when certain events are to occur. With the DXL configuration a schedule is used to program the times when either a tone or message is to be broadcast. An example of such a scheduled event is a buzzer sound to indicate the start and end of a classroom period. Selecting **Schedules** in the **Configuration:** entry of the DXL **Configuration Editor** will display, in the List pane, all the schedules that have been defined in the configuration.

3.21.1 Schedule Dialog Box

You can add a new schedule to the configuration by clicking on the **Add...** button, or to change an existing schedule click on the schedule that you want to edit and then click on the **Properties...** button. Either of these two operations will bring up a **Schedule Properties** dialog box with two tabs: **Identification** and **Schedule**.

3.21.1.1 Schedule Properties – Identification

The **Identification** tab has text box entries for **ID Number**, **Name** and an optional **Info:** text box.

The screenshot shows the 'Schedule 1 Properties' dialog box with the 'Identification' tab selected. It contains three text input fields: 'Number' (with a small icon to its left), 'Name', and 'Info' (with a small icon to its right). At the bottom right are 'OK' and 'Cancel' buttons.

3.21.1.2 Schedule Properties – Schedule

The **Schedule** tab has two text box areas called **Include** and **Exclude**. Clicking on the **Add...** button adjacent to the **Include** text box will bring up a dialog box that allows you to schedule the times when a signal is to broadcast. Once you have defined the scheduled times for this event to occur a short descriptive summary will be displayed in the **Include** area. Clicking on the **Add...** button next to the **Exclude** text box allows you to specify times when this event is not to occur. Again a short summary of the exclude times will be displayed in the text box area.

The screenshot shows the 'Schedule 1 Properties' dialog box with the 'Schedule' tab selected. It features two large text areas: 'Include' and 'Exclude'. To the right of each area are four buttons: 'Add...', 'Copy...', 'Edit...', and 'Delete'. At the bottom, there are two sections: 'Limits' with checkboxes for 'Start on' (1/1/2000) and 'End by' (12/31/2099), and 'Next Occurrences' with three 'Never' entries. 'OK' and 'Cancel' buttons are at the bottom right.

Clicking on the **Add...** button the **Date-Time Specified** dialog box is displayed. Using check boxes you can specify the months that you want to include in your schedule. You can click on the **All** button to include all months of the year or **None** button to remove all checked entries.

Clicking on the **Add...** button for **Days of the Month** brings up a dialog box that allows you to select a single day or a range of days.

The 'Add Day(s)' dialog box has two radio buttons: 'Single' (selected) and 'Range'. The 'Single' section has a spin box with the value '3'. The 'Range' section has fields for 'From' (1), 'to' (31), and 'every' (1). There are 'OK' and 'Cancel' buttons at the bottom.

The 'Add Day(s)' dialog box has two radio buttons: 'Single' and 'Range' (selected). The 'Range' section has fields for 'From' (1), 'to' (31), and 'every' (1). There are 'OK' and 'Cancel' buttons at the bottom.

You can either type in the entries or use the arrows to scroll to the desired value. A range of 1 to 31 days will include every day of the month even if the month has fewer days. After you click on **OK** you will return to the **Date-Time Specifier** dialog box and can click on the **Add...** button for **Days of the Month** to specify another day or a second interval of days

Clicking on the Add... button for Hours of the Day brings up a dialog box that allows you to select a single hour or a range of hours. Once you have made your selections click on the **OK** to save your settings. You can repeat this process as many times as required to include all the hour time intervals you require.

The 'Add Hour(s)' dialog box has two radio buttons: 'Single' (selected) and 'Range'. The 'Single' section has a spin box with the value '8'. The 'Range' section has fields for 'From' (0), 'to' (23), and 'every' (1). There are 'OK' and 'Cancel' buttons at the bottom.

Clicking on **the Add...** button for **Minutes of the Hour** brings up a dialog box that allows you to select a single minute or a range of minutes. When you select range of minutes you also can select the time interval between events. Once you click on **OK** you can click on **Add...** again to select another single minute or range of minutes.

The 'Add Minute(s)' dialog box has two radio buttons: 'Single' (selected) and 'Range'. The 'Single' section has a spin box with the value '0'. The 'Range' section has fields for 'From' (0), 'to' (59), and 'every' (1). There are 'OK' and 'Cancel' buttons at the bottom.

Example

The following example shows a Monday Wednesday Friday class schedule with a buzzer sounded on the hour and 50 minutes later from 8 AM until 4 PM from January 4, 2006 until April 12, 2006 with no classes for the week of February 19 to 25.

The 'Date-Time Specifier' dialog box has four sections: 'Months of the Year' (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec), 'Days of the Month' (days 1 to 31), 'Days of the Week' (Mon, Tue, Wed, Thu, Fri, Sat, Sun), and 'Hours of the Day' (hours 8 to 16). There are 'Add...', 'Edit...', and 'Delete' buttons for each section. At the bottom are 'OK' and 'Cancel' buttons.

The following two **Date-Time Specifier** dialog boxes will satisfy these requirements. On the left is the **Include** times and on the right is the **Exclude** times.

Date-Time Specifier

Months of the Year:
☒ Jan. ☒ Feb. ☒ Mar. ☒ Apr. ☐ May ☐ Jun. ☐ All
☐ July ☐ Aug. ☐ Sept. ☐ Oct. ☐ Nov. ☐ Dec.

Days of the Months:
 days 1 to 31

Days of the Week:
☒ Mon. ☐ Tue. ☒ Wed. ☐ Thu. ☒ Fri. ☐ Sat.
☐ Sun.

Hours of the Day:
 hours 8 to 16

Minutes of the Hour:
 minute 0
 minute 50

Date-Time Specifier

Months of the Year:
☐ Jan. ☒ Feb. ☐ Mar. ☐ Apr. ☐ May ☐ Jun.
☐ July ☐ Aug. ☐ Sept. ☐ Oct. ☐ Nov. ☐ Dec.

Days of the Months:
 days 19 to 25

Days of the Week:
☒ Mon. ☐ Tue. ☒ Wed. ☐ Thu. ☒ Fri. ☐ Sat.
☐ Sun.

Hours of the Day:
 hours 8 to 16

Minutes of the Hour:
 minute 0
 minute 50

Returning to the **Date-Time Specifier** dialog box you will see the following display. Note the summary description of the scheduled event.

Schedule 8 (Class Times) Properties

Identification Schedule

Include:
 On Mon, Wed, and Fri of Jan to Apr
 At 0 and 50 minutes past 8 to 16 o'clock

Exclude:
 On Mon, Wed, and Fri days 1 to 3 of Jan
 At 0 and 50 minutes past 8 to 16 o'clock
 On Mon, Wed, and Fri days 13 to 31 of Apr
 At 0 and 50 minutes past 8 to 16 o'clock
 On Mon, Wed, and Fri days 19 to 25 of Feb
 At 0 and 50 minutes past 8 to 16 o'clock

Limits:
☐ Start on 1/1/2000 at 00:00
☐ End by 12/31/2099 at 23:59

Next Occurrences:
 Fri 2006-01-27 08:00
 Fri 2006-01-27 08:50
 Fri 2006-01-27 09:00

3.22 Scheduled Operations

Scheduled Operations are used to set up a list of times when certain operations are to occur. The list of operations that can be controlled are shown on the right.

With a DXL configuration a Scheduled Operation can be used to program the times when ALAs are turned on or when programming is made available. Either a group of stations or individual stations can be controlled. **Scheduled Operations** makes use of **Schedules** to specify the times when an operation is to occur.

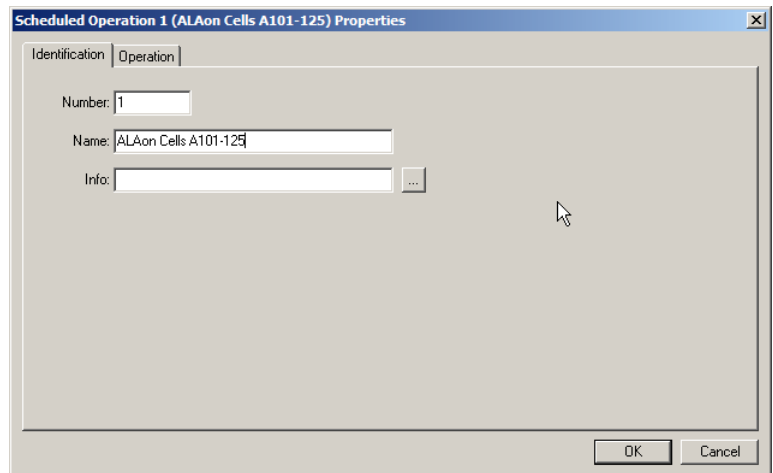


3.22.1 Scheduled Operations Dialog Box

You can add a new scheduled operation to the configuration by clicking on the **Add...** button, or to change an existing scheduled operation click on the schedule that you want to edit and then click on the **Properties...** button. Either of these two operations will bring up a **Scheduled Operations Properties** dialog box with two tabs: **Identification** and **Operation**.

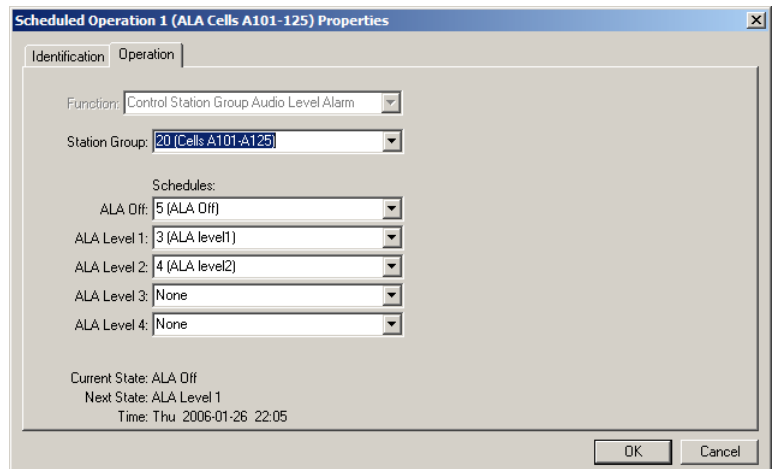
3.22.1.1 Scheduled Operations Properties – Identification

The **Identification** tab has text box entries for **ID Number**, **Name** and an optional **Info:** text box.



3.22.1.2 Scheduled Operations Properties –Operation

When you open the **Operation** tab you need to select the **Function** that this scheduled operation is to perform. The dialog box will appear in two different formats depending on whether you are using it to control an ALA or a Program. Four different ALA setting are possible and you have the option of scheduling different ALA setting for different times.



If you select a Program control function the dialog box will have two entries that allow you to specify the scheduled turn on and turn off times.

Scheduled Operation 2 (Program Control) Properties

Identification | **Operation**

Function: Control Station Group Program

Station Group: 20 (Cells A101-A125)

Schedules:

Program Off: 7 (Programming Off)

Program On: 6 (Programming On)

Current State: Program Off
Next State: Program On
Time: Thu, 2006-01-26 18:00

OK Cancel

3.23 System Properties

The System option lets you define system wide parameters that characterize how the system operates.

3.23.1 System Properties Dialog Box

The System Properties dialog box has five tabs: **TSM Dialling**, **Master Operation**, **Clock**, **Logging** and **General**.

3.23.1.1 System Properties – TSM Dialling

A system that has Telephone Set Masters (TSMs) needs to have well defined calling sequences in order for an operator to use the TSM to carry out his functions. Such tasks include calling other master stations or intercom stations, making page announcements, turning on ALAs (audio level alarms), etc.

Function	Prefix
Call Master	0
Call Page Zone	*
Call Station	#
Call Visiting Booth	9
Control Master Manned	Disabled
Control Page Zone Program	7
Control Station Audio Level Alarm	2
Control Station Call Requests	4
Control Station Group Audio Level Alarm	3
Control Station Group Call Request	Disabled
Control Station Group Program	6
Control Station Program	5

Note that call and monitor connections require the entry (on the telephone keypad) of a Prefix, followed by the Device ID Number and a termination character as shown below.

Fixed Length Dialling:

Prefix	Device ID.	Separation Key
--------	------------	----------------

Variable Length Dialling:

Prefix	Device ID.	Termination Key
--------	------------	-----------------

Function Prefixes Option:

The various functions that a TMS Master can perform are shown in the area marked Function. The scroll bar allows us to view the 14 possible functions that can be carried out from a telephone Master.

Highest Priority



Lowest Priority

Function	Prefix
Call Master	0
Call Page Zone	*
Call Station	#
Call Visiting Booth	9
Control Master Manned	Disabled
Control Page Zone Program	7
Control Station Audio Level Alarm	2
Control Station Call Requests	4
Control Station Group Audio Level Alarm	3
Control Station Group Call Request	Disabled
Control Station Group Program	6
Control Station Program	5
Control Visiting Booth	8
Monitor Station	1

The dialling prefix shown in the **Prefix** areas gives the DXL the ability to determine the desired operation (**Function**) to be carried out. Prefixes for each of these functions can be changed from the default values shown. For example, if the user sets the Call Master Prefix to '#', then every time the user begins a call from a TSM that starts with '#', the DXL will be aware that a master is being called.

The prefix entered is up to you, however only the twelve characters that are available on a telephone set will be allowed... Enter the prefix by clicking inside the box and typing out a character or number.

Different functions can have the same prefixes. In this case, the DXL will search (by priority) for the first device with a matching prefix. Priority is defined as the top of the list having the highest priority; with the priority decreasing as you scroll downwards. If a set of devices has been disabled, then these devices are omitted from this priority search.

The length of the digits in the prefix area is fixed by the entry in **Prefix Digits**. This entry cannot be individually set for each function, so you will have to decide on the number of prefix digits and this number will be the same for all the function prefixes. For example, if you decide that the Prefix Digit is 2, then each function prefix must have two characters. You can insert a leading zero if the function prefix is only a single digit.

You can also disable certain functions by leaving a prefix entry for a particular function empty. This causes the empty cell to be filled with the word 'Disabled'. You can also click in the cell and choose 'Disabled' from the drop-down menu.

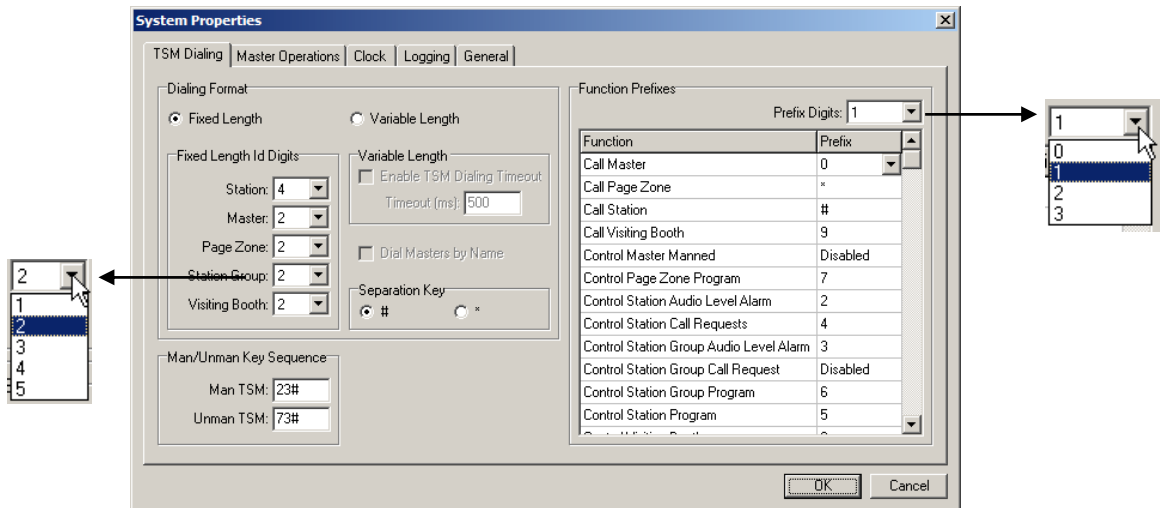
Each function that is listed in the **Function** area is listed in the table below. Note that the '0' and '1' options referred to in the table are the parameter fields for the control function.

S.No.	Function	Function Description	Procedure to Follow
1.	Call Master	Allows a TSM to make a call to a Master Station.	1) Enter the required Prefix, followed by the Master Station ID (with preceding zeroes if required). 2) Enter the required Prefix, followed by the name of the Master Station.
2.	Call Page Zone	Allows a TSM to make a call to a Page Zone as defined in the configuration	Enter the required Prefix and then the Page Zone ID (with preceding zeroes if required).
3.	Call Station	Allows a TSM to make a call to a Station.	Enter the required Prefix and then the Master Station ID (with preceding zeroes if required).
4.	Call Visiting Booth	Allows a TSM to make a call to a visiting booth.	Enter the required Prefix and then the visiting booth ID (with preceding zeroes if required).
5.	Control Master Manned	Allows a Master to Man or Unman another Master.	Enter the required Prefix, the Master ID, the Configuration Separation Character and then '0' to Unman a Master or, '1' to Man a Master.
6.	Control Page Zone Program	Program availability for Page Zones can be enabled/ disabled from TSMs.	Enter the required Prefix, the Page Zone ID, the configured Separation Character and then '0' to turn Program availability off, or '1' to turn it on.
7.	Control Station Audio Level Alarm (ALA)	Audio level alarm settings for Stations can be adjusted from TSMs.	Enter the required Prefix, the Station ID, the configured Separation Character and then '0' to turn the ALA off, or '1' to turn the ALA on.
8.	Control Station Call Requests	Call requests from Stations can be enabled/ disabled from TSMs.	Enter the required Prefix, the Station ID, the configured Separation Character and then '0' to disable call requests, or '1' to enable call requests.
9.	Control Station Group Audio Level Alarm	Audio level alarm settings for Station Groups can be adjusted from TSMs.	Enter the required Prefix, the Station Group ID, the configured Separation Character and then '0' to turn to turn the ALA off, or '1' to turn the ALA on.
10.	Control Station Group Call Request	Call requests from Stations Groups can be enabled/ disabled from TSMs.	Enter the required Prefix, the Station Group ID, the configured Separation Character and then '0' to disable call requests, or '1' to enable call requests.
11.	Control Station Group Program	Program availability for Station Groups can be enabled/ disabled from TSMs.	Enter the required Prefix, the Station Group ID, the configured Separation Character and then '0' to turn Program availability off, or '1' to turn it on.
12.	Control Station Program	Program availability for Stations can be enabled/ disabled from TSMs.	Enter the required Prefix, the Station ID, the configured Separation Character and then '0' to turn Program availability off, or '1' to turn it on.

13.	Control Visiting Booth	Visiting booths can be enabled (with timer support) and disabled from TSMs	<p>Enter the configured Prefix, the visiting booth ID, the configured Separation Character and a 2-digit Parameter Value, which is show in the table below.</p> <table><tr><th>Par. Value</th><th>Operation</th></tr><tr><td>00</td><td>Disable visiting booth</td></tr><tr><td>01</td><td>Enable visiting booth without a timer</td></tr><tr><td>02 – 98</td><td>Enable visiting booth for the entered number of minutes</td></tr><tr><td>99</td><td>Enable the visiting booth for the Configuration visitation time*.</td></tr></table> <p>* Configuration visitation time has a 30 minute default value, but can be changed in the Configuration.</p>	Par. Value	Operation	00	Disable visiting booth	01	Enable visiting booth without a timer	02 – 98	Enable visiting booth for the entered number of minutes	99	Enable the visiting booth for the Configuration visitation time*.
Par. Value	Operation												
00	Disable visiting booth												
01	Enable visiting booth without a timer												
02 – 98	Enable visiting booth for the entered number of minutes												
99	Enable the visiting booth for the Configuration visitation time*.												
14.	Monitor Station	Allows a TSM to monitor a Station. This is like a Master making a call to a Station but with audio only travelling from the Station back to the Master.	Enter the required Prefix and then the Station ID (with preceding zeroes if required).										

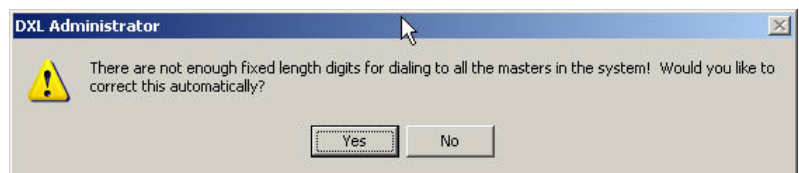
Fixed Length Dialling:

Select the **Fixed Length** option to set a the fixed number of digits that need to be dialled when the TSM calls a station, a master, a page zone, a station group or a visiting booth. The number of digits varies from 1 to 5 digits, and these digits can be selected using the drop-down menu that appears with **Station**, **Master**, **Page Zone**, **Station Group** and **Visiting Booth**.



Note that the **Fixed Length Id Digits** includes the device ID number as well as any preceding zeroes. For example, if the **Fixed Length Id Digits** for a station is set to 4, the call station prefix is set to # and the station device number is 34, then you will have to dial #0034 in order to make a call to this station from the TSM. The purpose of this option is to make the system more efficient. For example, if the system has only 6 Master Stations then 1 digit would be sufficient to identify the Master Stations, hence making the calling sequence more efficient.

Also note that if the number selected in the **Fixed Length Id Digits** option is less than the number of digits in the device ID field, then the program issues a warning.



If you select **Yes** then the program will automatically change the entry in the **Fixed Length Id Digits**, for the device that the warning pertains to. If you select **No** then the program will allow you to keep your choice but will not allow you to dial to this device.

The separation character is used to separate the Device ID from the parameter field for different Functions. You can set this character to either a '#' or a '*'.

Variable Length Dialling:

For variable length dialling, you still have to enter the prefix but you can omit the leading zeroes before the device ID. For example, to dial to Station 34, simply dial the prefix followed by 34 i.e. #34.

The **Timeout (sec)** lets you configure a timeout, after which it is assumed that the number that you have dialled is complete. You can set this timeout by typing a number into the box that is located beside this option. Note that this entry is accepted as time in seconds.

Function	Prefix
Call Master	0
Call Page Zone	*
Call Station	#
Call Visiting Booth	9
Control Master Manned	Disabled
Control Page Zone Program	7
Control Station Audio Level Alarm	2
Control Station Call Requests	4
Control Station Group Audio Level Alarm	3
Control Station Group Call Request	Disabled
Control Station Group Program	6
Control Station Program	5

Another way to tell the system that you have completed a dialling sequence, is by using the **Termination Key**, which can be set to either '#' or '*'. Enter this character when your dialling sequence is complete. This is a single system wide setting.

Note that when the Timeout (sec) and the Termination Key are both set, the program will implement whichever comes first, when it is determining if you have finished entering the dialling sequence.

Select the **Dial Masters by Name** option to dial to a master station on a name basis. Note that a TSM can use name or number dialling only when it is dialling another Master Station. All Page Zones, Stations and visiting booths can only be reached through number dialling. Also note that the leading zeroes concept is not applicable when you dial to a master with its name. Hence, you can simply type the name of the master by using the telephone keypad. Note that if the master's name contains characters that are not available on the TSM keypad, then you will not be able to dial to this Masters by using its name.

Also, since the DXL is aware of the names associated with each master station, it allows the system to display names starting with the characters that you enter. For example, say a master station has the name 'Axel' and another master has the name 'Acid' and there are no other Master Stations present on the system. If you type the letter A, then the program brings up the name 'Acid' (alphabetically). However, if you continue to enter the sequence by entering the letter 'X' then the program brings up the name 'Axel', as you have now entered 'AX' which are the first two letter in 'Axel'.

Man/Unman Key Sequence Option:

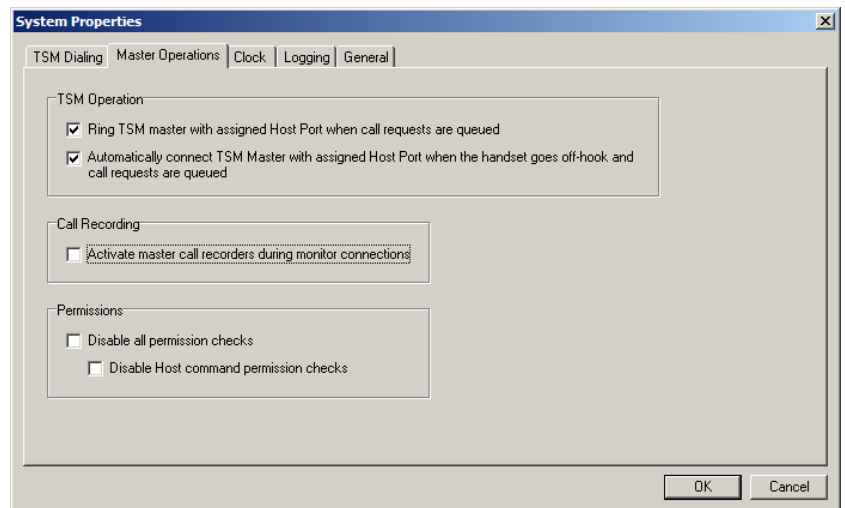
A TSM can optionally man or unman itself by dialling a configurable key sequence that does not require a device ID. The default string is 23# for Man TSM and is 73# for Unman TSM; however you can change this string. Remember that these Man / Unman key sequences must be unique and different from all the function prefixes. If you do not want a TSM to be able to Man or Unman itself then you can leave the entries blank. Unmanning a TSM causes the telephone to output an unmanned tone when it is taken off-hook or when a call request is made to it.

The main purpose of manning or unmanning a TSM is to inform other Masters of the status of a TSM i.e. whether the TSM is currently manned or unmanned. This is so that the appropriate action can be taken with respect to calls, call requests, etc. that are sent to the TSM.

Note that if a TSM cannot locally unman itself, then it can be configured so that when it is taken off-hook, it can send a call request to its secondary master, to make a request to be unmanned.

3.23.1.2 System Properties – Master Operation

The Master Operation dialog box has 4 check boxes to specify how the TSM will operate with a host port. When TSMs are operated with a Host Port then several additional Configuration options (configured on a per system basis) become available.



When a TSM is controlled directly by the DXL and is not assigned with a Host Port, it will always ring when a call request is queued. However, when the TSM is associated with a Host Port, it will now receive commands from the Host port instead of directly connecting to call requests that are queued. Hence, if you select the Ring TSM Master with Assigned Host Port when call requests are queued option, then the TSM will always ring when call requests are queued, and while the Host Port is sending messages to the TSM, to tell it what to do with these call requests. If you leave this option unchecked and the TSM is associated with a Host Port, then the TSM will not ring as the Host Port is sending it messages (regarding the call requests) and so, the Host Port will have to find another way of alerting the TSM to these messages. This single setting applies to Master Station, Intercom Station and ALA call requests.

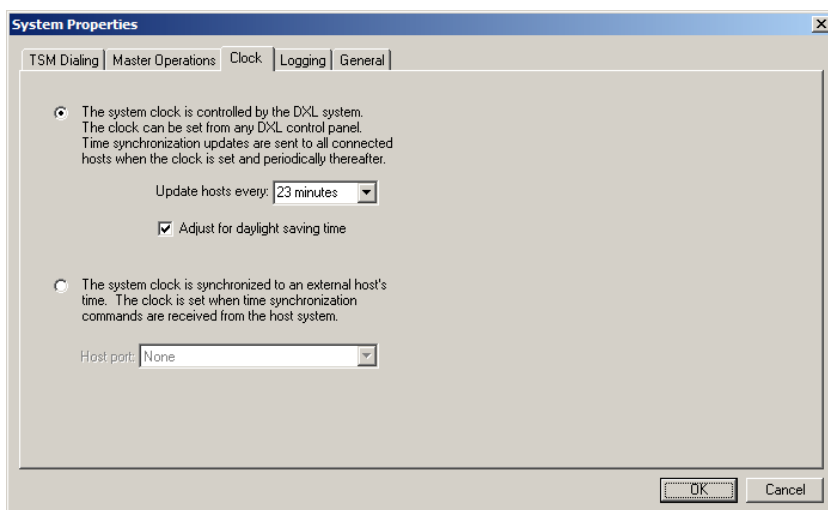
You can select the Automatically connect TSM Master with assigned Host Port when the handset goes off hook and call requests are queued option. This option allows the DXL to automatically establish a connection with its assigned Host Port when the handset is lifted (off-hook) and call requests are queued. Alternatively, if this option is not selected, then the TSM will not automatically make this connection and will require that the host make the connection.

Select the option under Call Recording, if you want to let the TSM automatically activate a call recorder when a Monitor connection is being made. The process for monitoring a Station with a TSM has been described in the table above (S.No. 14).

If you select the Disable permissions check option, then the system will disable permissions that have been set for Masters, Master Groups, etc. The general purpose of this option is to perform testing on the system when it is initially installed. For testing purposes, the permissions may be disabled in order to ensure that all the Masters, Master Groups etc., in the system, can call each other. If this option is left unchecked then the permissions that have been defined in the Configuration, will still be in effect.

3.23.1.3 System Operation – Clock

The **Clock** tab lets you set the system time in two different ways depending on whether the DXL or Host Port is acting as the System Clock Master.



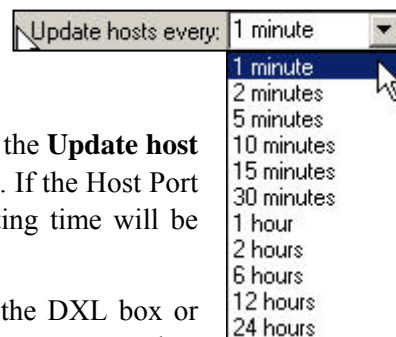
Top Option:

Select this option if you want the DXL to act as the System Clock Master. In this case, the Host Port will receive a message from the DXL to update its time to the current time that is present on the DXL, during normal operation.

You can set the period of time after which the Host Port will update its time, from the **Update host every:** drop-down menu. The time in this option ranges from 1 minute to 24 hours. If the Host Port time needs to be synchronized with the DXL time very closely, then this updating time will be smaller and hence more frequent.

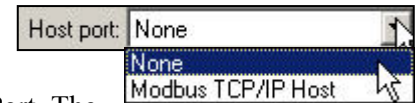
However, note that if DXL time is physically changed by using the keypad on the DXL box or through the Remote Front Panel, then the Host Port will automatically receive a message to update its time and will ignore the updating time that has been set.

When you select the **Adjust for daylight savings time** option, then the DXL will automatically adjust its time according to the daylight savings time and will inform the Host Port to do the same. If this option is left unchecked, then the DXL box will continue with its regular time without adjusting for daylight savings.



Bottom Option:

Select the second option if you want the Host Port to act as the System Clock Master. When you select this option, the DXL box will receive a message from the Host Port, to update its time to the current time that is present on the Host Port. The DXL will automatically receive this message whenever the time on the Host Port deviates from the time on the DXL.

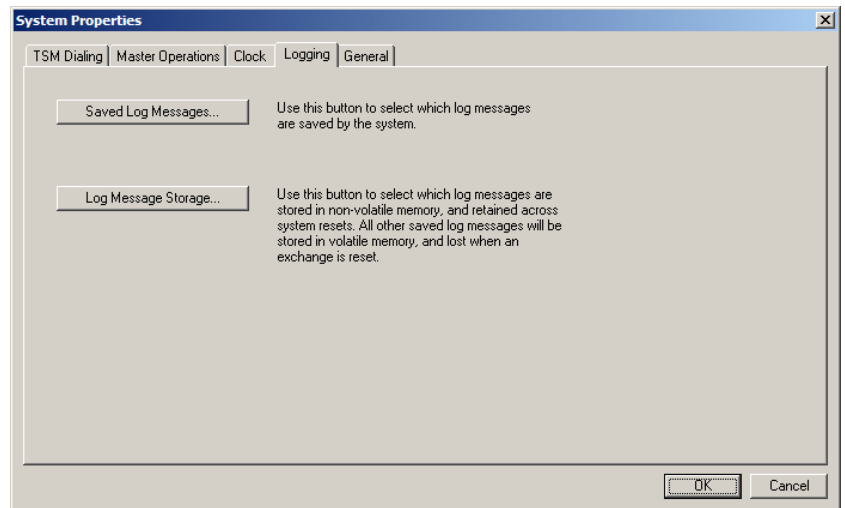


The DXL can choose the Host Port with which to synchronize its time, by choosing the name of the Host Port from the Host Port drop-down menu. This menu displays all the Host Ports that are currently associated with the DXL.

3.23.1.4 System Properties – Logging

The DXL system logs all significant events, which include intercom activities, call requests, etc. A description of Logs and how they are managed and saved is outlined in the DXL Log Viewer section of this manual.

The Logging tab, shown below, lets you automatically save Log messages for future reference. These messages can be saved either in volatile or non-volatile memory on the DXL.

**Top Option:**

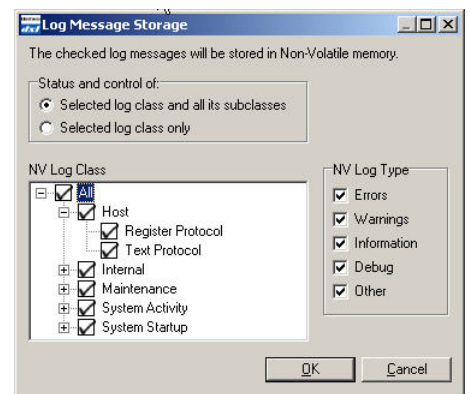
Click on the **Saved Log Messages...** button if you want to save the Logs in volatile memory. These logs will be lost if the exchange is reset or there is a power failure. You can select the logs that you want to save from the Save Log Messages window that appears. Please refer to the DXL Log Viewer section of this manual for a description of the options in this window, and for help on how to use these options.

Bottom Option:

Click on the **Log Message Storage...** button if you want to save Logs in non-volatile memory. These logs will be NOT be lost if the exchange is reset or there is a power failure.

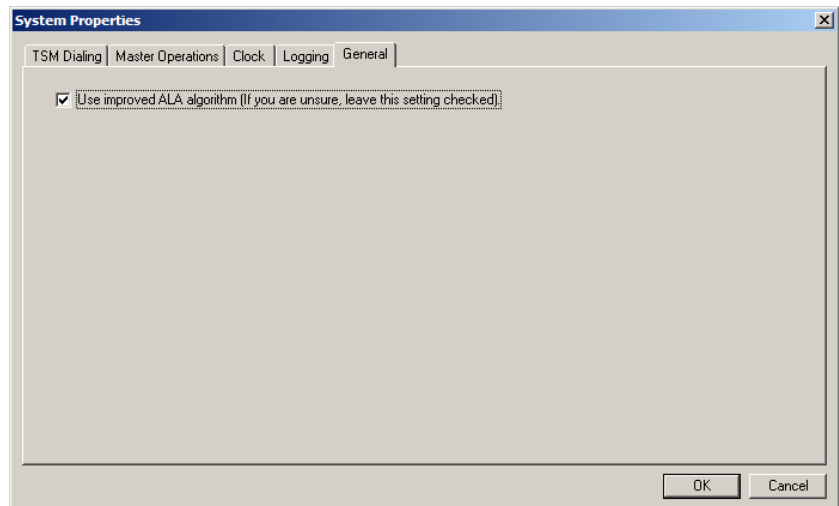
You can select the logs that you want to save from the Log Message Storage window. This window allows the user to save all or selected messages on the DXL.

Please refer to the DXL Log Viewer section of this manual for a description of these options. Note that in this case, the Log Class and Log Type are referred to as NV Log Class and NV Log Type, where NV is an acronym for non-volatile.



3.23.1.5 System Properties – General

The **General** tab allows you to select the improved ALA algorithm. With this algorithm there are fewer parameters to set when configuring the operation of an ALA.



3.24 Host Ports

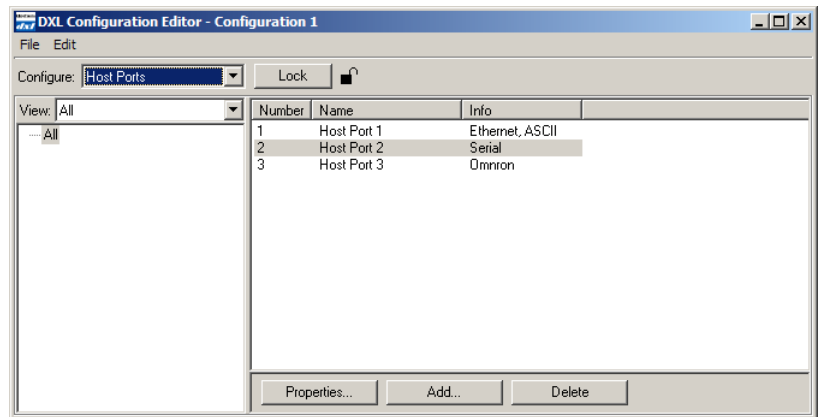
This section describes how host ports are implemented in a DXL configuration. Details on the various host port protocols supported by the DXL are contained in the Installation Manual IM-DXL-HIS-P2.0.

The system supports the use of host ports in order to communicate with external systems. Host Ports and a DXL system exchange three types of messages: Command messages, Status messages and Response messages. Only the Host is allowed to send Command messages to the DXL, however, the DXL can send Response messages (in response to a command sent by the Host) and Status messages (to describe the status of the DXL) to the Host. The physical connection to the external network can be either an Ethernet network or an RS232 serial connection.

Host Ports entries appear in a **Master Properties** (under the **Control** tab and the **Status Register** tab) window. Host Ports entries also appear in the **Stations** (under the **Status Registers** tab) and **Page Zones** (under the **Status Registers** tab) window. You must remember that any changes made in the Host Port section will also affect these entries.

When you select **Host Ports** from the **Configure:** pull-down menu of the **DXL Configuration Editor**, initially there will be no entries in the List pane as you have not yet defined any Host Ports. Click on **Add...** button in the main window to add a new host port.

If **Host Ports** have already been defined and you want to edit a Host Port, then select the Host Port that you want to edit and click on the **Properties...** button in the main window.



Select a host port and click on the **Delete** button in the main window to delete an existing host port.

3.24.1 Host Port Dialog Box

A **Host Port Properties** dialog box will initially have six tabs: **Identification**, **Connection**, **Protocol**, **Messages**, **Monitor** and **Masters** and if you select a Register Based protocol two more tabs will be displayed **Registers** and **Status Registers**.

3.24.1.1 Host Port Properties – Identification

The **Identification** tab text box has entries for an ID **Number**, **Name** and an **Info** box.

3.24.1.2 Host Port – Connection

A Host port is connected to one of the Exchanges in a DXL system and this Exchange is specified in the **Exchange:** entry of the **Connections** tab. The pull-down menu displays all the Exchanges that have been defined in the Configuration. From this list you can select the appropriate Exchange.

Select the **Ethernet** option if you want the host to use an Ethernet connection to communicate with the DXL. The DXL obtains the IP address of the host when the Host Port opens a connection to the DXL system. The **IP Address** entry is simply the IP Address of the Exchange. Note that this IP Address was previously defined in the Exchange section of **Configure**;, when the Exchange was first created in the Configuration.

TCP/UDP Port: is the TCP or UDP port number that this host port will ‘listen’ to while it is waiting for a connection from a client host system. The number of digits for this entry is limited to 65535. However, the entries from 0 – 1023 are typically reserved for ‘well-known’ protocols and hence, you should use TCP/UDP Port numbers that lie between 1024 and 65535. If you assign a number in the range of 0 to 1023 a warning box will appear. The default port number is 10000 for the first port defined on the Exchange and additional ports defined on the Exchange will use the next higher free TCP/UDP Port number. Since it is possible to have multiple host ports on the same Exchange, it is necessary to ensure that each Host Port has a unique TCP/UDP Port number for that exchange. The same TCP/UDP Port: number can be reused by Host Ports on other exchanges. Note that some TCP/UDP Port: numbers may already be used by other functions in the system.

Check the **Serial** option if you want the host to use a Serial (RS232) connection to communicate with the DXL. Select the **Serial Port** (port 1 is the only port used at present). In this case you can use the pull down menus to specify the **Baud Rate**, **Data Bits**, **Parity**, **Stop Bits**, and **Flow Control**.

3.24.1.3 Host Port – Protocol

The **Protocol** tab defines the protocol that the host uses to communicate with the DXL.

ASCII based hosts communicate with strings, while register based hosts communicate with integers stored in registers.

ASCII Messages:

For ASCII Messages, the Command/ Status messages are sent as a stream. The first four characters identify the command followed by spaces, characters or numbers and ending with a carriage return. The DXL will respond to an illegal or badly formatted command message with a Syntax error message. All commands that are formatted properly will generate either a ‘Sntx’, ‘Fail’, ‘Busy’ or ‘Done’ response, followed by the command that caused it.

The DXL transmits the ASCII string using the TCP protocol over an Ethernet link. When using TCP, the DCC operates as a server and the hosts will operate as clients. Since TCP relies on the underlying IP protocol for addressing purposes, each DCC and each host must have a unique IP address. The IP address for each DCC is defined in the Configuration.

On system start-up, the DCC(s) monitors the TCP port number for connections from the external host(s). In order to begin communications, the host must initiate a TCP session to the IP address/port number of the DCC. When a session is opened, the DCC determines the host's return IP address and port number. Hence, all future status messages will be sent through this address and port number, and the DCC will also accept and execute commands sent from the host, via this connection.

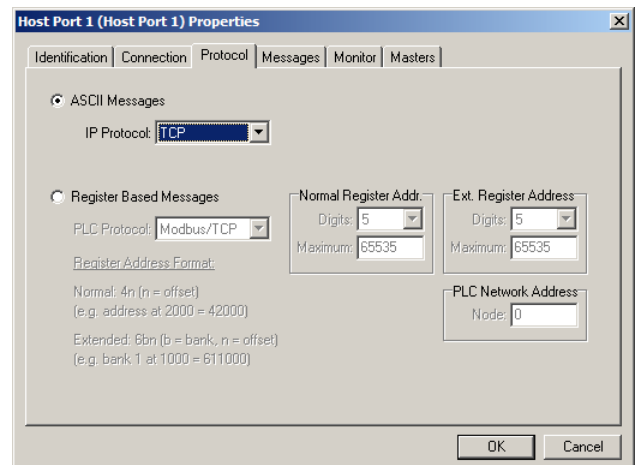
Register Based Messages:

For Register Based Messages, the DXL and the external host exchange command and status information by reading and writing to blocks of registers. However, the DXL can also use a separate set of register for communication specifically with each Master Station. This is done through 'command registers' that can be configured separately for each Master. In addition to these command registers, each Master, Station and Page Zone can also have 'status registers'. These registers are used to report the current status of a Master, Station or Zone, to the host. For example in the case of a Station two status registers are used to inform the host if the station is in call, and if it is enabled.

Also, when you select the **Register Based Messages** option, two additional tabs appear on the **Host Port Properties** dialog box, these tabs are titled **Registers** and **Status Registers** and they are covered in the last section of the Host Port description.

3.24.1.3.1 ASCII Messages

Selecting an Ethernet connection in the **Connection** tab and then **ASCII Messages** in the **Protocol** tab **TCP** is the only **IP Protocol** available.



3.24.1.4 Host Port (ASCII Messages) – Messages

The **Messages** tab lets you control the messages that are sent from the DXL system to the external host system. When the DXL system makes a call to a Station or performs some other action, it has the option of sending an unsolicited message informing the host of the action that it has just performed (i.e. it is not a message that is generated in response to a command from a host). This message is known as a Status Message. You can enable or disable each status message by checking or unchecking a message in the **Enabled Status Messages:** list. By default, all messages are enabled.

Upon receiving a command message from the host the DXL will act on the command and then send a **Response Message** back to the host.

Response Messages are messages that are sent by the DXL in response to a command that was received from a host. For example if a message is sent to the DXL to connect master 10 to station 100.

Ical 10 100 <CR>

If the **Use Response Method Format** is checked the response messages will take one of the following four forms;

Done Ical 10 100 a positive confirmation or a negative confirmation in one of the following forms

Busy Ical 10 100

Fail Ical 10 100

Sntx Ical 10 100

Status messages will have the same format i.e. the message sent from the DXL to the host will be preceded by a **Done** command.

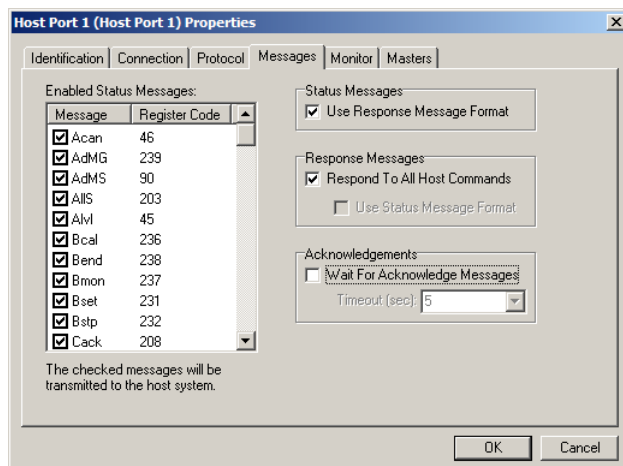
The **Respond To All Host Commands** box is checked by default. This is the recommended option which means that the DXL will respond to all commands sent by a host. The response can be a positive confirmation (**Done**) or a negative confirmation (**Sntx**, **Busy** or **Fail**). If this box is left unchecked then only the negative confirmation messages will be sent from the DXL back to the host.

Status Messages can be sent in two different forms;

- **Response Message Format, or**
- **Status Message Format**

If the **Use Response Method Format** is unchecked, the **Respond To All Host Commands** box is checked and **Use Status Message Format** is checked in the case of a positive response (i.e. **Done**) the DXL will respond to the host by echoing the command and not preceded it by a **Done** command. In the case of a negative response, it will still respond with a negative confirmation.

In order to prevent the DXL from overwriting messages, the host must send an acknowledge message after processing both Status Messages and Response Messages sent by the DXL. Hence, the DXL can be configured to wait for an acknowledgement to each message that it has sent to the host. Select the **Wait For Acknowledge Messages** checkbox if you want the host to send an acknowledgement to the DXL, after it has received a message

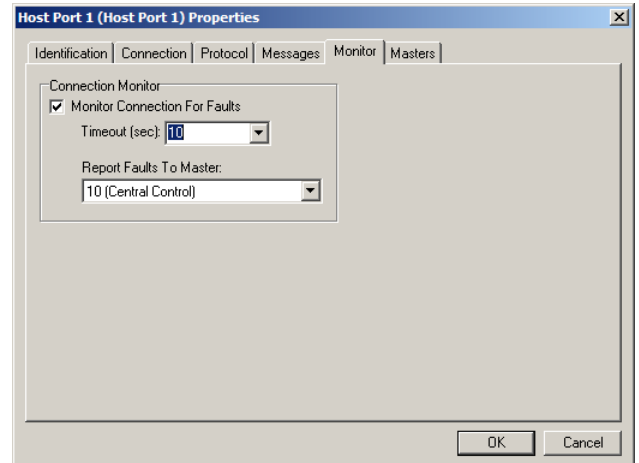


from the DXL. If this option is selected then the DXL cannot send another message until an acknowledgement has been received or the system has timed out, whichever is first. You can set the Timeout Period from 3 seconds to 30 seconds from the **Timeout (sec)** drop-down menu.

3.24.1.5 Host Port (ASCII Messages) – Monitor

The **Monitor** tab lets you control the connection monitor timers between the host and the DXL. You can monitor the connection for faults by checking the **Monitor Connection for Faults** box and specifying a timeout period for the connection in the **Timeout (sec)** drop-down menu. The DXL system will detect a fault on this connection if it has not received a message from the external host within this period. The default value for this timeout period is 10 seconds. When you select this option, the DXL will send messages to the host at least twice in each timeout period. This allows the host to monitor the connection as well.

You can choose which Master Station to report these faults to by clicking on the name of a Master Station in the **Report Faults To Master:** drop-down menu.

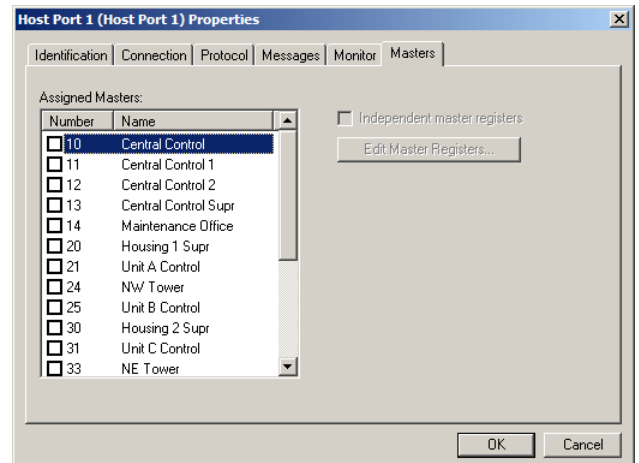


3.24.1.6 Host Port (ASCII Messages) – Masters

The **Masters** tab lets you associate some or all of the Master Stations with the host port. The command messages that the host sends to a Master are written into the command registers for a Master.

The **Assigned Masters:** list displays all the Master Stations in the system. Put a tick mark beside the Master Station that you want to associate with this host port. Unchecking a Master Station will only change the Master Station Configuration if the Master Station has been assigned to this host port.

Initially all the Masters Stations are left unchecked by default. When you select a Master Station by placing a checkmark beside it, it causes this Host Port to be set as the Host Port of the selected Master Station(s). This setting can also be seen in the Master Properties (under the Control Tab) window which is viewed by selecting the Masters section in **Configure:**.



3.24.1.7 Host Port (Register Based Messages) - Protocol

If you select an **Ethernet:** connection and then **Register Based Messages** in the **PLC Protocol** tab you can select one of three transport protocols that are presently supported.

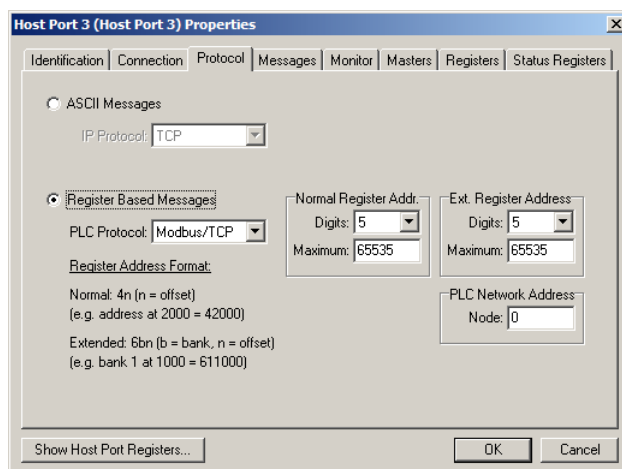


- **Modbus/TCP**
- **Cimplicity/TCP**
- **Omron/UDP**

If you select **Serial:** connection then only the Modbus/TCP protocol is supported.

Modbus/TCP and Cimplicity/TCP:

The **Modbus/TCP** and **Cimplicity/TCP** from the user's point of view have identical protocols and only the **Modbus/TCP** protocol is discussed. If you choose **Modbus/TCP** with the pull-down menu for the **PLC Protocol:** entry you will need to enter 5 other parameters. The first **Normal Register Addr:** entry requires you to enter the number of decimal digits required to identify the offset address of the registers. The second entry **Maximum** sets the maximum number of contiguous register addresses that are available. The **Extended Register Address** entries require that the same two parameters must be specified. When you assign register addresses the **Configuration Editor** will use this information to check if you have made valid entries. The **PLC Network Address** must correspond to the PLC Network Address assigned to the Modbus PLC.



The **Normal Register Addr** refers to normal memory that may reside on either the DXL or the external host and it always begins with the number '4'. **Digits:** specifies the number of decimal digits in the offset and it can be set from 3 digits to a maximum of 6 digits. **Maximum:** specifies the maximum number of registers that the DXL or the host can use for this Host Port. Initially a default value of 65535 is set for a setting of 5 or 6 digits (assumes addresses can be located with a 16 bit offset number relative to a base address) or to the maximum value possible with a setting of 3 or 4 digits. For many PLCs, this must be set to a lower value. The program automatically adds a number of zeroes before the **Maximum:** entry so that the number of digits in the offset equals the number chosen in **Digits:**.

The **Normal Register Addr:** follows the format of $4n$ where n is the offset. As an example, if **Digits:** = 5 and **Maximum:** = 65535 (which is a common assignment for PLCs), then the last memory address that can be assigned is the address at location $4n = 465535$.

The **Ext. Register Address:** refers to extended memory that may reside on the DXL or the external host and it always begins with the number '6'. **Digits:** specifies the number of digits in the offset and can be set from 3 to a maximum of 6 digits. **Maximum:** specifies the maximum number of memory registers that the DXL or the host can use for each host port. The **Ext. Register Address** follows the format of $6bn$ where b is the bank number and n is the offset. As an example, if **Digits:** 4 and **address** = 999, then the last memory address that can be assigned is the address at location $6bn = 690099$, where the first digit from the address is always picked off as the bank

number. Notice that the system automatically adds two zeroes before the two 9's because the number of digits in the offset (which is 0099) must be 4.

Omron/UDP

If the **PLC Protocol: Omron/UDP** is chosen then you have additional entries to make in the **DXL Network Address** and the **PLC Network Address** areas. The **Normal Register Addr.** and the **Ext. Register Address** entries are similar to the same entries for the **Modbus/TCP** option.

You will have to fill in the **Module:** entry for the PLC and the DXL and the Node: number for the PLC. Additionally, you will need to enter the Network: address for the DXL and the PLC, which is the address that is used when information is being sent between the DXL and the PLC.

Since the Node: for the DXL is fixed and depends on the Exchange, the IP address implies that each Exchange cannot have more than one host port when the Omron/UDP protocol is used.

3.24.1.8 Host Port (Register Based Messages) – Messages

This tab is identical to the Messages tab that has been described in the ASCII Messages – Messages section. Please refer to this section for a description of this tab.

3.24.1.9 Host Port (Register Based Messages) – Monitor

This tab is identical to the Monitor tab that has been described in the ASCII Messages – Monitor section. Please refer to this section for a description of this tab.

3.24.1.10 Host Port (Register Based Messages) – Registers

For register-based protocols, you must configure a set of register blocks that are to be used for communication between the DXL and the host system. This is performed using the **Registers** tab, which is only visible when **Register Based Messages** is selected under the **Protocol Tab**. The Registers tab lets you specify the start address and length of each block of registers that are required by the protocol.

DXL Address refers to virtual registers (both normal and extended) that reside on the DXL.

PLC Address refers to registers (both normal and extended) that reside on the PLC.

Using these registers the DXL can send Status messages and Response messages to the Host. **The Status:** registers are used to send either message. The Host can send a command message to the DXL by using the **Command:** registers. Note that using **Command:** registers is the only way in which a Host can send a command to a device in the DXL system that is not associated to a Master.

3.24.1.10.1 Register Descriptions

To ensure that both the DXL and the external host receive every message sent by each other, they must coordinate the message transfers.

- A **Handshake**: register and careful sequencing are used to ensure that the sending party does not overwrite any message before the receiving party reads it. These registers are used differently, depending on the mode that is used. Hence, this register will be discussed separately with each mode in the next section.
- The external host writes into the **Command**: register when it wants to send a command to the DXL.
- The **Status**: register holds status and response messages that are being sent from the DXL to the external host.
- The **Alarm Queue**: register is updated when an alarm is active.
- The **Ack'd Queue**: register holds the alarms that have been acknowledged, but have not been cleared yet. Most often, this queue displays tamper alarms and call requests that have been disabled.
- The **Disabled Queue**: register shows the devices that have been disabled.

Register Blocks	DXL Address	PLC Address	Entries	Length
Handshake:	4000100		1	
Command:	4000101		5	
Status:	4000106		5	
Alarm Queue:	4000111		5	10
Ack'd Queue:	4000121		5	10
Disabled Queue:	4000131		5	10

Note that the register addresses that you enter must be compatible with the register address format requirements of the selected PLC or external host.

There are 2 modes of operation for a register based protocol and they are: the **Peer to peer** mode and the **Polled** mode. These modes determine whether the registers are located in the external host or in the DXL. Hence, changing the **Status Message Mode** between **Peer to peer** and **Polled** causes the register start address edit controls to move between the DXL Address and the PLC Address columns.

Peer to peer mode

In the **Peer to peer** mode, the registers are located in the host system and the DXL will write to these registers to send messages to the host. This mode provides the highest performance and minimizes the band-width requirements.

In the **Peer to peer** mode, the DXL will write a message to the registers and then wait for the external host to read those registers before writing another message. Since the registers are located on the external host in this mode, the DXL cannot tell when the external host has read them. Hence, the external host must write to the **Handshake**: register in order to acknowledge that it has read the current message from the registers, and that it is now ready for the DXL to write the next message.

Polled Mode

In the **Polled** mode, the output registers are located on the DXL system and the external host must periodically read these registers (or ‘poll’ them) in order to determine if there is a new message from the DXL.

In the polled mode, the external host is made to read the handshake register in order to check for a new status message from the DXL. Hence, whenever the DXL has a status message to send to the host, it will update the handshake register with a non-zero value. Therefore, if a non-zero value is returned when the host reads the handshake register, it implies that a status message from the DXL is waiting to be read by the host.

Sequential Registers and Equal Queue Sizes Options

The **Sequential registers** and **Equal queue sizes** check boxes are ticked by default. Hence, when an address is entered into **Handshake:** then the default for the system is to sequentially add registers for the **Command:** entry. In a similar manner, once an address is entered into **Status:**, the system will automatically generate sequential addresses for **Alarm Queue:**, **Ack’d Queue:** and **Disabled Queue:**. You can uniformly change the number of **Entries** by using the scroll next to **Alarm Queue:** (the other two registers will change automatically). If the **Equal queue sizes** box is unchecked then the queue size for three registers Alarm, Ack’d and Disabled can be individually set using the adjacent scroll bars.

However, if the Sequential Registers check box is unchecked, then you have the option of defining a separate address for Command:, Alarm Queue:, Ack’d Queue: and Disabled Queue:.

The **Length** fields are non-editable entries and are meant for reference purposes only.

Note that no changes will be accepted until you click on the **Apply Changes** button, which will update the changes to the system. The changes will not be updated on the system if you just click on the OK button without first clicking on the **Apply Changes** button. The Apply Changes button is also convenient if you have the Host Port Registers shown, as they will update right after you click on Apply Changes.

Register Blocks	DXL Address	PLC Address	Entries	Length
Handshake:	4000100		1	
Command:	4000101		5	
Status:	4000106		5	
Alarm Queue:	4000111		5	10
Ack'd Queue:	4000121		5	10
Disabled Queue:	4000131		5	10

Status Message Mode:
☐ Peer to peer
☒ Polled
☒ Sequential registers
☒ Equal queue sizes

Apply Changes

Show Host Port Registers... OK Cancel

Register Blocks	DXL Address	PLC Address	Entries	Length
Handshake:	4000100		1	
Command:	4000101		5	
Status:	4000106		5	
Alarm Queue:	4000111		6	12
Ack'd Queue:	4000123		11	22
Disabled Queue:	4000145		5	10

Status Message Mode:
☐ Peer to peer
☒ Polled
☒ Sequential registers
☐ Equal queue sizes

Apply Changes

Show Host Port Registers... OK Cancel

Register Blocks	DXL Address	PLC Address	Entries	Length
Handshake:	40100		1	
Command:	40200		5	
Status:		690900	5	
Alarm Queue:		690910	6	12
Ack'd Queue:		690930	5	10
Disabled Queue:		690940	5	10

Status Message Mode:
☒ Peer to peer
☐ Polled
☐ Sequential registers
☐ Equal queue sizes

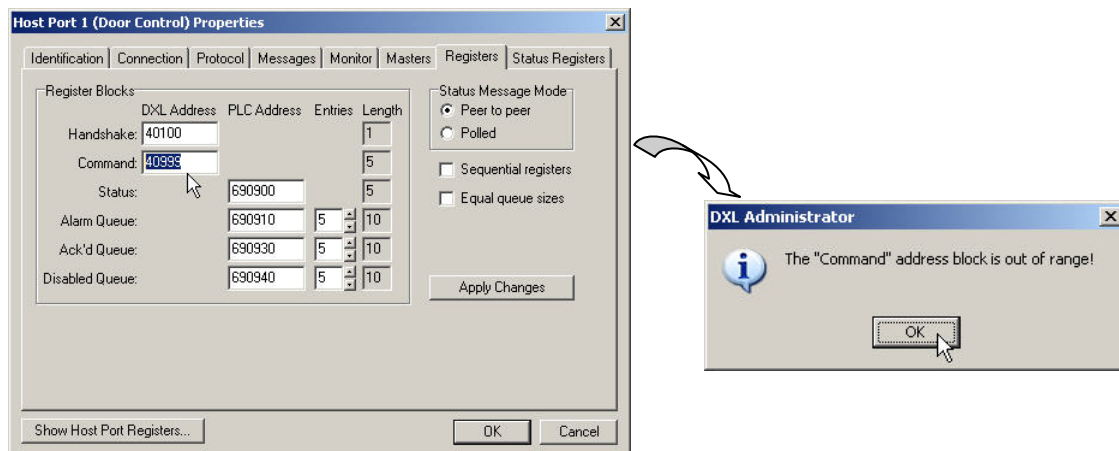
Apply Changes

Show Host Port Registers... OK Cancel

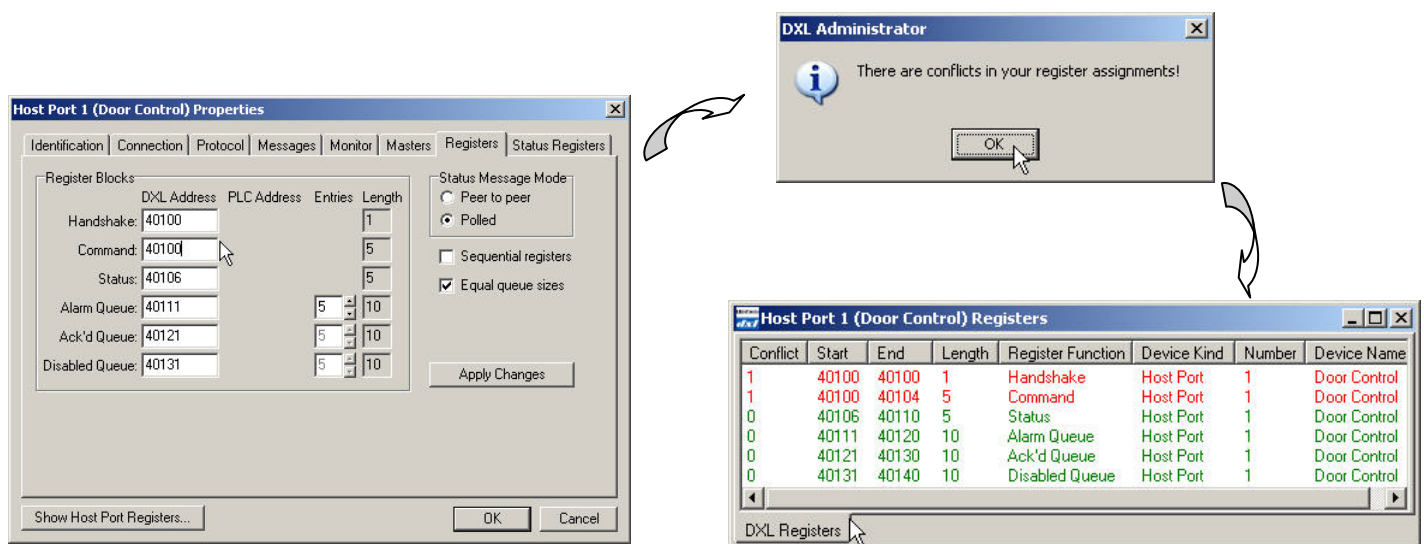
Conflicting and Erroneous Addresses

Note that if the number of digits in the offset part of the address that is entered is not equal to the number of digits that is defined in Digits: in the **Protocol** tab, then the program will automatically insert additional zeroes before the offset, in order to make the number of digits in the offset equal to the number selected in **Digits:** (which is defined in the Protocol Tab).

If you specify an address block that is greater than the Maximum: entry in the Protocol Tab, then the program displays an error message.



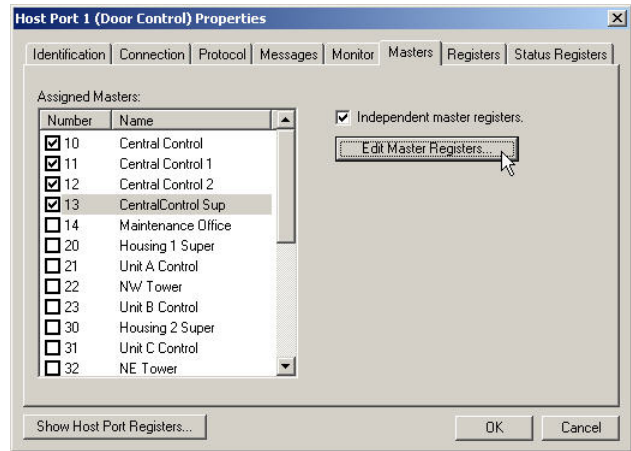
If you specify an address block that is conflicting with another address block then you will get an error message, and the conflicting parameters will show up in red when you click on the Show Host Port Registries button. All valid address locations will appear in black



3.24.1.11 Host Port (Register Based Messages) – Masters

The **Masters** tab lets you associate some of the Master Stations with the host port. This tab has been explained in the **Host Port (ASCII Messages) – Masters** section. Please refer to this section for a description of this tab.

However, the additional option that appears in this tab is the Independent master registers option, which appears with the Edit Master Registers... button beneath it. Master Registers are a set of registers for each Master Station, which will be used for communication between each master and the host. Therefore, the **Edit Master Registers...** selection has to be made for each Master Station. These registers allow the host to send a command directly to the Master, as well as to the associated devices that are connected to this Master.



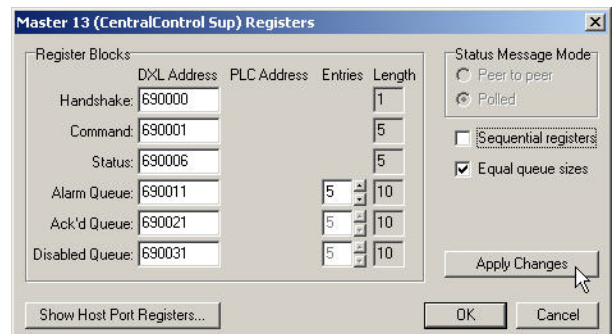
If the Independent master registers box is unchecked then the Master Station that is assigned to the host port cannot have Master Registers.

If the Independent master registers box is checked then you can define and edit the Master Registers for each Master by clicking on the **Edit Master Registers...** button. This brings up the Master Registers window.

Descriptions of registers for Master Stations

- **Handshake: registers:** Depending on whether the **Peer to peer** or the **Polled** option has been chosen, this set of registers will behave in exactly the same fashion as described previously.
- **Command: register:** The external host writes into the **Command:** register when it wants to send a command to a particular Master on the DXL.
- **Status: registers:** Each Master has two (optional) registers that indicate the device that the Master is connected to. This is indicated in the Status: registers. The first register indicates the type of device that the Master is connected to and the second register indicates the ID Number of that device.
- **Queue: registers:** the DXL maintains an optional block (for each Master) of “queue registers” that display the top entries on the active queue for each Master Station. Each queue register block requires two registers per entry. The first register in each pair will hold an alarm code (depending on whether an alarm is active, has been cleared, or a device has been disabled). The second register will hold the ID number of the device that generated the alarm.

The **Sequential** registers and **Equal queue sizes** selections as well as the entry into the various address registers, works in the exactly the same way as described in the previous sections.



Note that this register assignment procedure has to be carried out for each Master. Note that no changes will be accepted until you click on the **Apply Changes** button, which will update the changes to the system. When

satisfied with your settings click on OK to save the changes and return to the main Masters tab. Click on Cancel in order to cancel the changes made and return to the Masters Tab.

3.24.1.12 Host Port (Register Based Messages) – Status Registers

Each Master, Station and Page Zone can have “status” registers, which can be selected under the Status Registers tab. These registers (which are optional) can be used to report the current state of these specific devices to the host and are read - only registers (from the host’s point of view). Note that the address registers defined here must not clash with previously defined addresses.



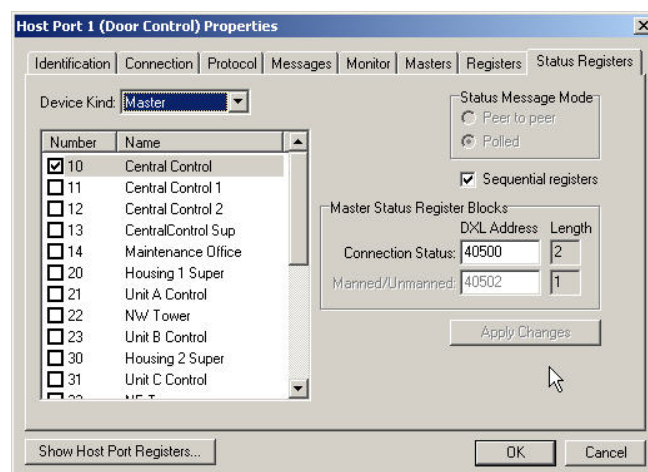
First, select the device kind that you want to define Status Registers for, from the Device Kind: drop-down menu. This could be a Master, a Station or a Page Zone. To add a device with Status Registers to the Host Port, put a tick mark in the check boxes that are next to the names of the devices. By default, all these boxes are left unchecked.

Device Kind: Master

When you select Master in the Device Kind:, you will have to put a tick mark next to each Master that you want to select.

Each Master has two optional registers to indicate the device(s) that it is connected to. The first register indicates the kind of device that the Master is connected to and the second register holds the ID number of that device. These registers must be contiguous and are defined in the Communication Status: entry.

The default is to have the Sequential Registers box ticked so that the system automatically assigns a sequential address to the Manned/ Unmanned option.



However, if you uncheck this option, then you will have to enter an address for the Manned/ Unmanned: option. Each Master has a single (optional) register that indicates its manned/unmanned status. If a Master is manned, then this register is set to a non-zero value. If it is unmanned then this register is set to zero.

Select Apply Changes to update the changes to the system. Note that this procedure will have to be carried out for each Master Station that you are adding.

Note that this setting can also be seen in the Master Properties (under the Status Registers Tab) window which is viewed by selecting the Masters entry in Configure:.

Device Kind: Station

When you select Station in the Device Kind:, you will have to put a tick mark next to each Station that you want to select.

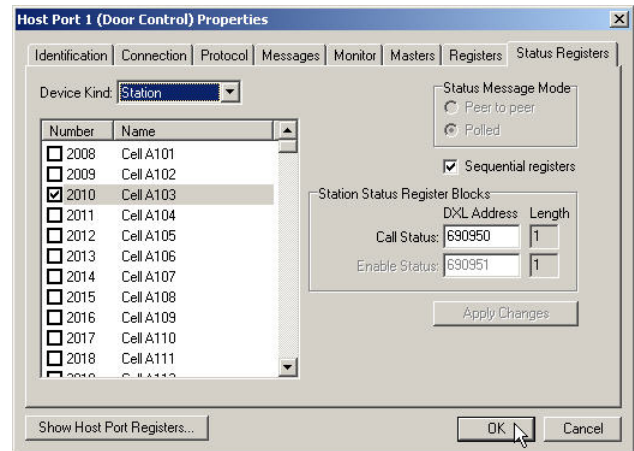
Each Station has a single (optional) Call Status: register, which indicates the Station's call request and connection state. Each bit in the register indicates a different setting. Please refer to the DXL Host Interface Specification Manual in order to distinguish what each bit stands for.

The default is to have the Sequential Registers box ticked so that the system automatically assigns a sequential address to the Enable Status: option.

However, if you uncheck this option, you will have to enter an address for the Enable Status: option, which is a single (optional) register that indicates the enable/ disable (state) of the Station.

Select Apply Changes to update the changes to the system. Note that you will have to repeat this procedure for each Station that you are adding.

Note that this setting can also be seen in the Station Properties (under the Status Registers Tab) window which is viewed by selecting the Stations section in Configure:.



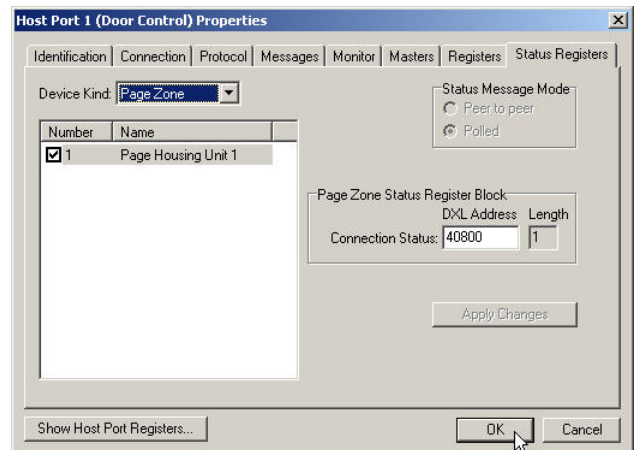
Device Kind: Page Zone

When Page Zone is selected in the Device Kind:, you have to place a tick mark next to each Page Zone that you want to select.

You will have to fill in an address for the Connection Status:, which is a single (optional) register that indicates the current communication status of the Zone.

Select Apply Changes to update the changes to the system. Note that you will have to carry out this procedure for each Page Zone that you are adding.

Note that this setting can also be seen in the Page Zone Properties (under the Status Registers Tab) window which is viewed by selecting the Page Zones section in Configure:.



Show Host Port Registers Button

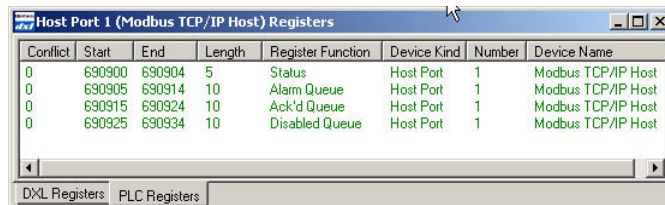
You can click on the Show Host Port Registers button at any time, to display a window that details the register function, its length, the start and end of its address location, the kind of device it is associated with and the name and number of the device. The window also displays register functions that are conflicting and the conflicting parameters will show up in red. This window will be empty if no registers have been defined yet. This window displays registers in both the DXL and the host (which is most typically a PLC).

If you select the Show Host Port Registers button in the **Peer to peer** mode, then the **Host Port Registers** window will appear with two tabs at the bottom of the window: **DXL Registers** and **PLC Registers**. This window displays address, length, function, device kind, number and name of the registers for both the DXL and the PLC.



The screenshot shows the 'Host Port 1 (Modbus TCP/IP Host) Registers' window with two tabs: 'DXL Registers' and 'PLC Registers'. The 'DXL Registers' tab is active, displaying a table of registers.

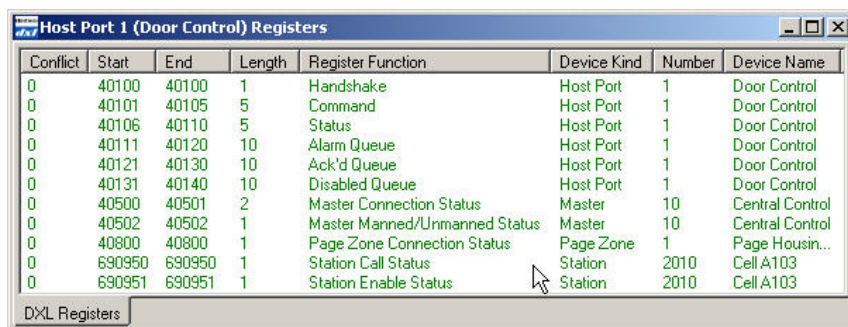
Conflict	Start	End	Length	Register Function	Device Kind	Number	Device Name
0	40001	40005	5	Command	Master	1	Touchscreen Master
0	40100	40100	1	Handshake	Host Port	1	Modbus TCP/IP Host
0	40101	40105	5	Command	Host Port	1	Modbus TCP/IP Host



The screenshot shows the 'Host Port 1 (Modbus TCP/IP Host) Registers' window with two tabs: 'DXL Registers' and 'PLC Registers'. The 'PLC Registers' tab is active, displaying a table of registers.

Conflict	Start	End	Length	Register Function	Device Kind	Number	Device Name
0	690900	690904	5	Status	Host Port	1	Modbus TCP/IP Host
0	690905	690914	10	Alarm Queue	Host Port	1	Modbus TCP/IP Host
0	690915	690924	10	Ack'd Queue	Host Port	1	Modbus TCP/IP Host
0	690925	690934	10	Disabled Queue	Host Port	1	Modbus TCP/IP Host

If you select the Show Host Port Registries button in the **Polled** mode the **Host Port Registers** window will appear with only one tab at the bottom of the window: **DXL Registers**. This window will display the address, length, function, device kind, number and name of the registers for the DXL.



The screenshot shows the 'Host Port 1 (Door Control) Registers' window with a single tab: 'DXL Registers'. The window displays a table of registers.

Conflict	Start	End	Length	Register Function	Device Kind	Number	Device Name
0	40100	40100	1	Handshake	Host Port	1	Door Control
0	40101	40105	5	Command	Host Port	1	Door Control
0	40106	40110	5	Status	Host Port	1	Door Control
0	40111	40120	10	Alarm Queue	Host Port	1	Door Control
0	40121	40130	10	Ack'd Queue	Host Port	1	Door Control
0	40131	40140	10	Disabled Queue	Host Port	1	Door Control
0	40500	40501	2	Master Connection Status	Master	10	Central Control
0	40502	40502	1	Master Manned/Unmanned Status	Master	10	Central Control
0	40800	40800	1	Page Zone Connection Status	Page Zone	1	Page Housin...
0	690950	690950	1	Station Call Status	Station	2010	Cell A103
0	690951	690951	1	Station Enable Status	Station	2010	Cell A103

3.25 ALA (Audio Level Alarm) Detectors

An audio level alarm (ALA) is an alarm that is triggered when a sound exceeds a predefined threshold level. ALAs can alert an operator to unusual and unexpected sounds. The threshold level to trigger the alarm is based on the volume, the frequency characteristics and the duration of the sound. The alarm can be configured for any intercom station in the system providing the supporting hardware is available on the DCC/DCE to which it is wired. Up to four different ALA configurations can be defined for each station, allowing different thresholds to be selected for various times of the day. The DXL allows an operator to disable an ALA or to enable an ALA on either an individual station or a station group. ALAs are assigned to stations by selecting the ALA tab for the Station or Station Templates.

3.25.1 Defining ALA Detectors

You can define an ALA detector by selecting **ALA Detectors:** in the **Configure:** box of the **DXL Configuration Editor** and clicking on the **Add...** button. This brings up a dialog box with 3 tabs; **Identification**, **Filter** and **Detector**.

3.25.1.1 ALA Detector Properties – Identification

The **Information** tab has entries for **ID Number**, **Name** and **Info**.

3.25.1.2 ALA Detector Properties – Filter

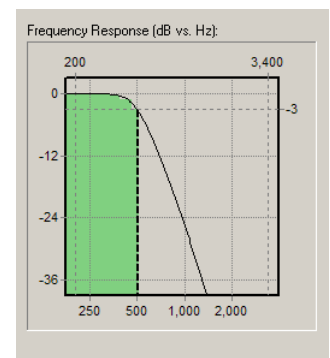
There are six different types of filters that you can choose from: None, Low-pass, High-pass, Band-pass, Band-stop and Advanced.

3.25.1.2.1 Filter Parameters

The following terms are used to describe the filter parameters.

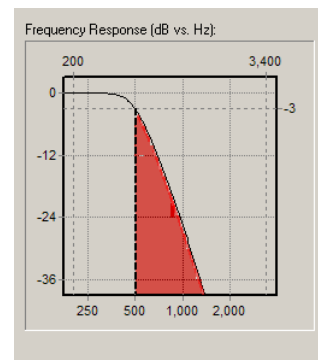
- **Pass-band:** the pass-band is a range of frequencies where a filter passes signals with a predefined limit on the amount of attenuation the signal will experience i.e. an ideal pass-band would pass signals with no attenuation but such a filter cannot be realized in practice. In our discussions the pass-band is considered to be the range of frequencies where the signals are attenuated less than 3dB. The 3dB values are often referred to as the corner frequency.

In the figure to the right, the pass-band is from the left-most point on the graph up to 500 Hz (corner frequency). Note that 0dB is the maximum value of the pass-band signal.



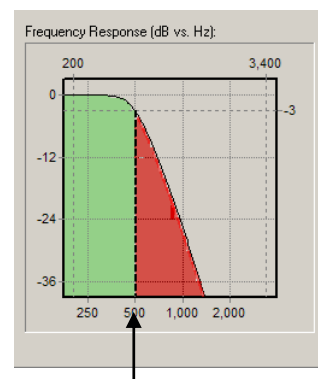
- **Stop-band:** is the range of frequencies through which the filter attenuates (or lessens the amplitude of) the signal. In our discussions we will consider stop-band as the range of frequencies where the signals are attenuated more than 3dB.

In the figure to the right, the stop-band is all frequencies above 500 Hz .



- **Corner frequency:** is the transition frequency between the pass-band region and the stop-band region, or the point at which the frequency is attenuated by -3dB (where the response curve intersects the -3dB line).

You can read the corner frequency from the graph by looking at the point where the -3dB line crosses the response curve and determining the frequency that corresponds to this point. In the figure to the right, the corner frequency is 500 Hz.



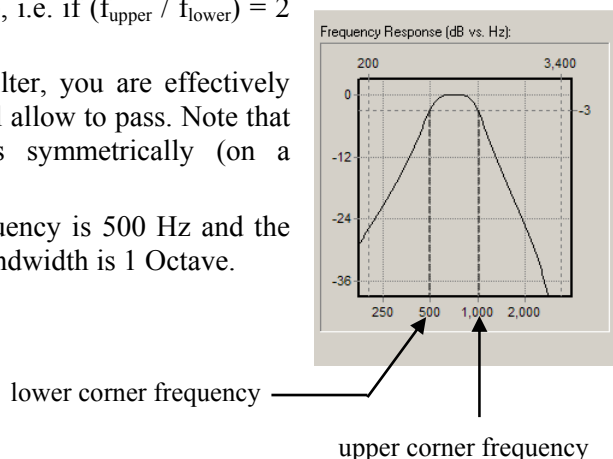
Corner Frequency = 500 Hz

- **Bandwidth:** band-pass and band-stop filters have two corner frequencies: a lower corner frequency and an upper corner frequency, both of which pass through the -3dB points. In the case of a band-pass filter the bandwidth is the range of frequencies that occur between the lower and upper corner frequencies.

Note that the number of octaves = $\log_2 (f_{\text{upper}} / f_{\text{lower}})$, i.e. if $(f_{\text{upper}} / f_{\text{lower}}) = 2$ corresponds to 1 octave.

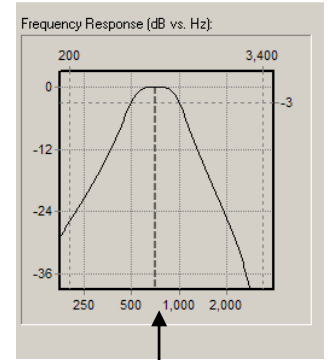
As you increase the bandwidth of the band-pass filter, you are effectively increasing the range of frequencies that the filter will allow to pass. Note that this increase in bandwidth always takes places symmetrically (on a logarithmic scale) around the centre frequency.

From the figure on the right, the lower corner frequency is 500 Hz and the upper corner frequency is 1000 Hz and hence, the bandwidth is 1 Octave.



- **Centre frequency:** is the frequency that is the geometric mean (or the centre) of the two corner frequencies. This frequency is only defined for band-pass and band-stop filters.

Note that the upper and lower corner frequencies are always symmetrically distributed about the centre frequency.

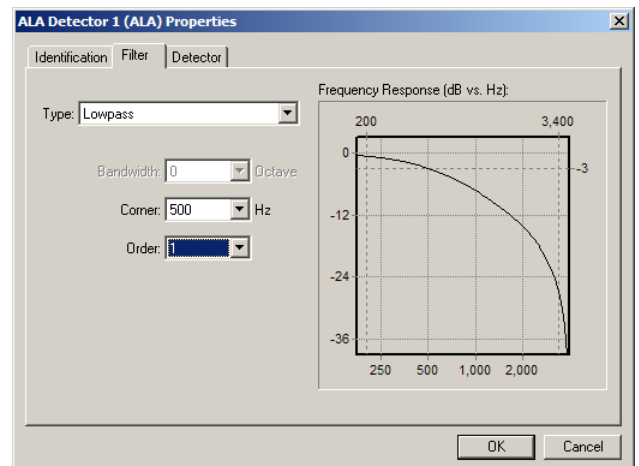


Center Frequency = 700 Hz

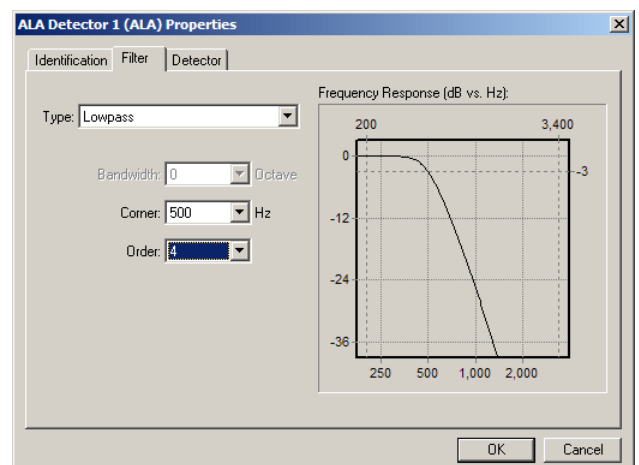
- **Order:** of a filter determines how steeply the slope of a response curve decreases. A filter with a lower order attenuates a signal much more gradually than a filter with a higher order. Hence, higher order filters are more selective in terms of the audio that they allow through and the audio that is attenuated.

Notice that both the plots below are low-pass filters with a corner frequency of 500. However, the plot on the top has a filter order of 1 while the plot on the bottom has a filter order of 4. Note how the plot on top begins attenuating the signal well before the corner point is reached and in the stop-band gradually attenuates the signal, achieving an attenuation of -36 dB at approximately 3,400 Hz. However, the plot for the higher order filter shown at the bottom does not attenuate the signal much before reaching the corner frequency (thus keeping the signal at an optimal constant amplitude) and then sharply attenuates the remainder of the signal, obtaining an attenuation of -36 dB at approximately 1,500 Hz.

Low-pass Filter
Corner frequency = 500 Hz
Order = 1



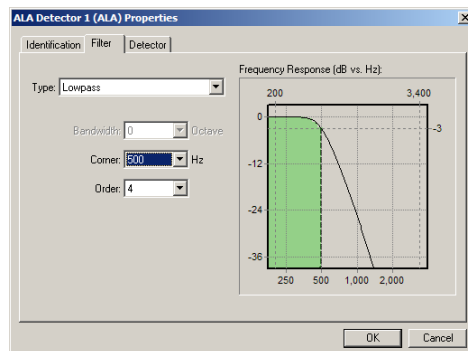
Low-pass Filter
corner frequency = 5
order = 4



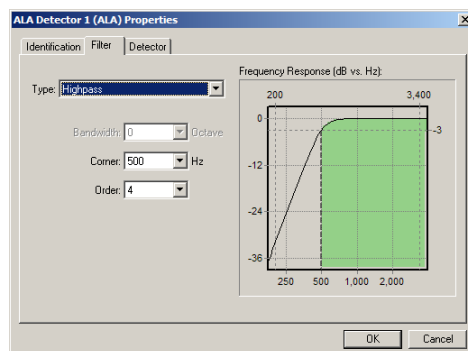
3.25.1.2.2 Filter Descriptions

The different types of filters that you can define in the Configuration are:

- **Low-pass filter:** this filter passes all frequencies below a stated corner frequency and attenuates all frequencies above the corner frequency. This filter allows low frequency sound through and filters out high frequency sound.

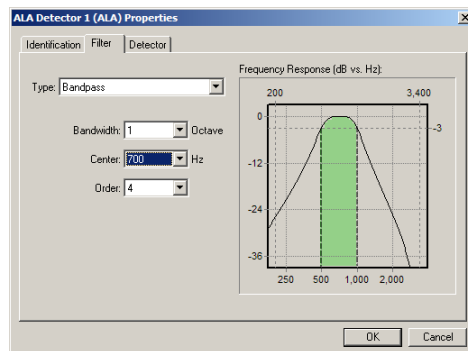


- **High-pass filter:** passes all frequencies above a stated corner frequency and attenuates all frequencies below the corner frequency. This filter allows high frequency sounds through and attenuates low frequency sound.



- **Band-pass filter:** passes all frequencies that occur within a range of frequencies (around the centre frequency) and attenuates all frequencies that occur above and below this range of frequencies.

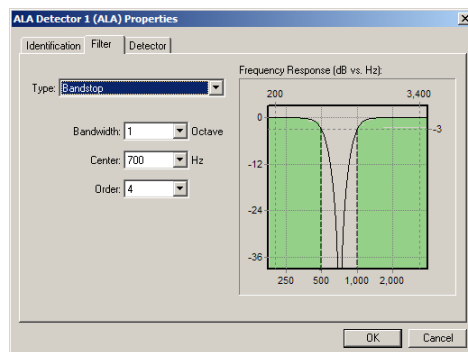
From the figure on the right, the filter will only pass the frequencies that are between 500 Hz and 1000 Hz and will attenuate all frequencies that fall outside this range.



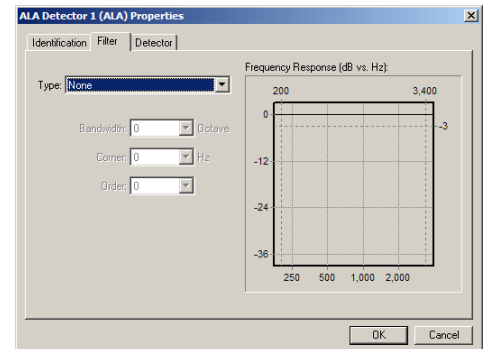
- **Band-stop filter:** attenuates all frequencies that occur between the two corner frequencies and passes all signals that occur outside this continuous range.

From the figure on the right, the filter passes all frequencies that occur below 500 Hz and above 1000 Hz and attenuates the frequencies that occur between 500 Hz and 1000 Hz.

As you increase the bandwidth of the band-stop filter, the range of frequencies that the filter is attenuating, will increase.

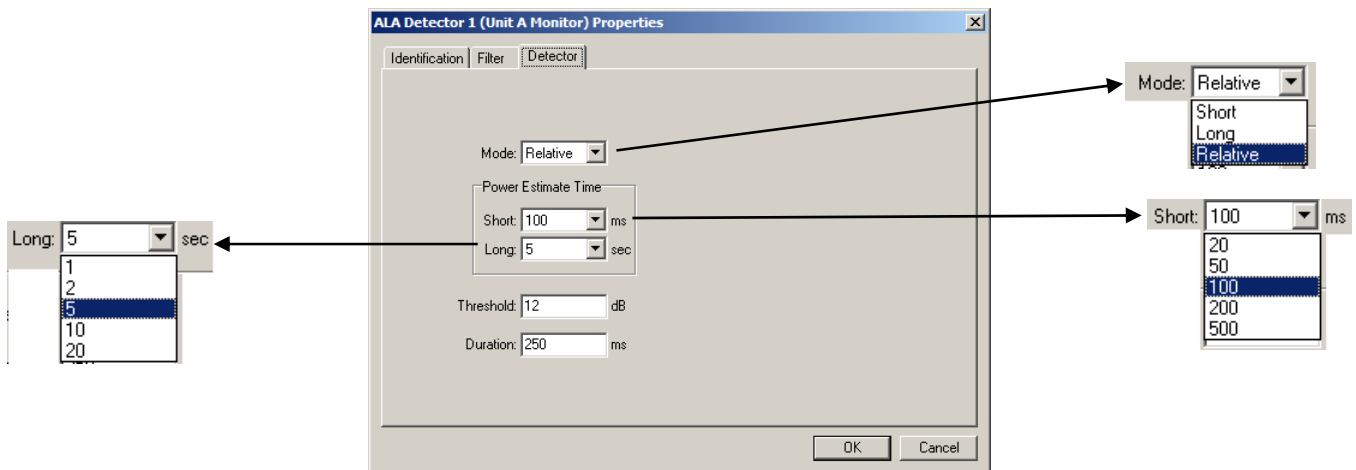


- **Advanced filter:** You can use this type of filter if the standard filters do not provide sufficient filtering. Please contact Technical Support at Harding Instruments if you wish to use this type of filter.
- **No filter:** If you select **None**, this means that you have not set a filter. In this case, you do not need to enter the bandwidth, the corner frequency or the order of the filter.



3.25.1.3 ALA Detectors Properties – Detector

ALA detectors use the outputs from filters to generate alarms if the signals passed through the filters exceed certain a preset threshold. This threshold depends on the frequency, amplitude and duration. If in the **General** tab of the **System Properties** window you selected the advanced ALA algorithm the parameters you will be required to set include, **Mode**:, **Power Estimate Time**, a **Threshold**: and a **Duration**:. If you did not select the advanced algorithm you will also have to select a **Sensitivity** parameter.

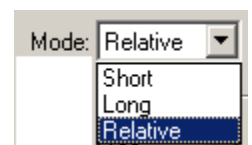


The DXL processes the signal by extracting the power from the filtered signal and then averaging the power over a certain period of time. Depending on the time period that you choose, this averaging of power gives the result of a short term power estimate (**STPE**) or a long term power estimate (**LTPE**). In the relative mode, the DXL program compares the **STPE** to the **LTPE**.

Mode

There are three modes of operation that an ALA detector can have: Short, Long and Relative.

- **Short Mode:** The Short mode is used to detect short bursts of sound. In this mode, the ALA alarms are triggered when the STPE is greater than the threshold.

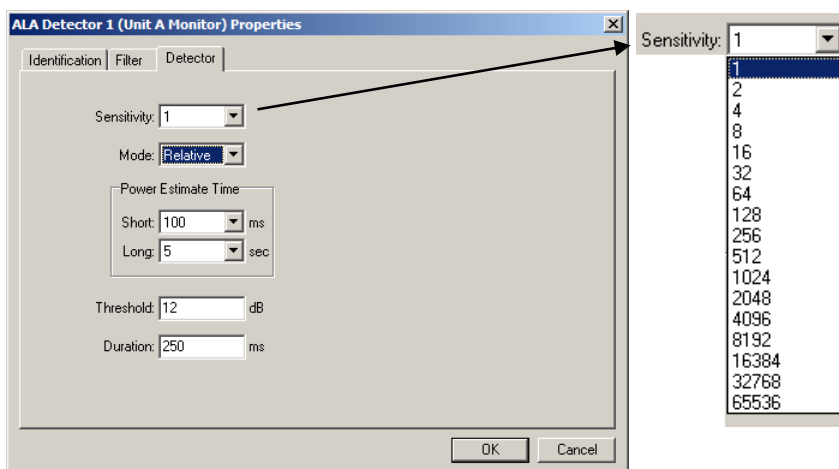


- **Long Mode:** The Long mode is used to monitor the background noise levels. In this mode, the ALA alarms are triggered when the LTPE is greater than the threshold.
- **Relative:** The Relative mode is used to detect short term noises that exceed the background noise level by a pre-determined amount.

Since the Relative mode uses the values from both the short-term and the long-term mode, you need to set the Power Estimate Time for both the **Short Estimate Time** and the **Long Estimate Time**.

Sensitivity

If the advanced ALA algorithm is not selected in **System Properties** the **ALA Detector Properties Identification** tab requires a **Sensitivity** parameter to be set. When estimating the power of quiet signals, the DXL may produce a power estimate that is too small to be used internally. To correct this, you can increase the sensitivity from the Sensitivity: drop-down menu, so that the **LTPE** is small, but not zero.



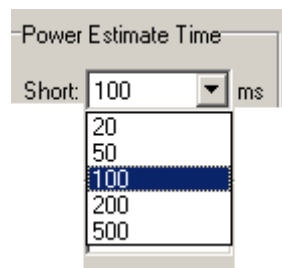
Sensitivity should also be set > 1 when using Relative mode in quiet environments that are producing many alarms, or for detecting noises in very quiet environments. Please refer to the ALA section in Diagnostics to view the power estimates for a given channel. If the power estimates are very low then you will know that you need to increase the sensitivity of the detector.

Power Estimate Time

The Power Estimate Time is the time period over which the system averages the power of the signal. There are two selections that you can make: **Short** and **Long**.

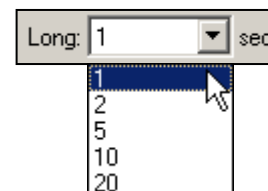
- **Short**

The **Short Time Power Estimate** averages the power over a short period of time. Using the drop down menu you can set the **Short Power Estimate Time** in the range of 20 ms to 500 ms.



- **Long**

The **Long Time Power Estimate** averages the power over a longer period of time. You can use the drop down menu to set the **Long Power Estimate Time** in the range of 1 sec to 20 sec.



Threshold:

The **Threshold:** is a value that must be exceeded before the system starts timing the duration.

Duration:

This is the time the signal must exceed the threshold before an alarm is generated.

3.26 Video Switches

A video switch uses the configuration information to program how an external CCTV switch is controlled. Video switches are controlled by the DXL system either through one of the serial ports on a DCC or through status outputs on a DCC or DCE. The DXL supports both a “Serial Connection Method” of operation and an “Alarm Contacts Method” of operation.

The “Alarm Contacts Method” of operation uses physical **Status Output** contacts on the DXL to control external video switching equipment. The “Serial Connection Method” of operation sends commands through the serial port to the video switch. The commands can trigger alarms (open or close virtual contacts), or cause the switch to connect cameras to monitors. You can use either one of these two methods can be used to control a video switch.

3.26.1 Video Switches Properties Dialog Box

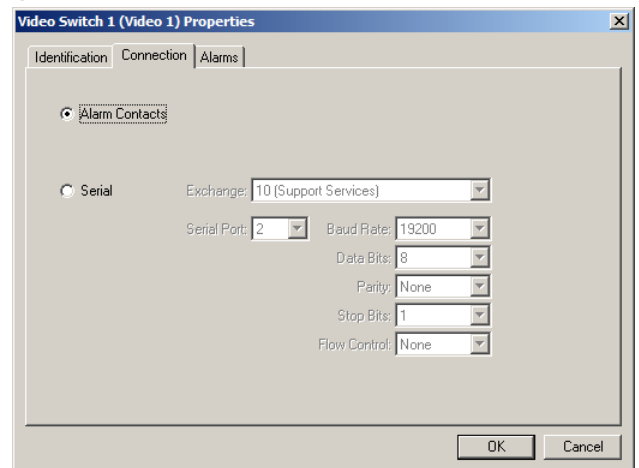
You can define a Video Switch by selecting **Video Switches:** in the **Configure:** box of the **DXL Configuration Editor** and clicking on the **Add...** button. This brings up a dialog box that initially has 3 tabs; **Identification**, **Connection** and **Alarms**. In the **Connection** tab if you select **Serial** connection instead of the default setting of **Alarm Contacts** the **Alarms** tab will change to a **Command** tab.

3.26.1.1 Video Switches Properties – Identification

The **Identification** tab has 3 box entries **ID Number:**, **Name:** and **Info:**.

3.26.1.2 Video Switches Properties (Alarm Contacts) – Connection

The **Connection** tab allows you to select either an **Alarm Contacts** or a **Serial** connection to control the Video Switch.



Alarm Contacts

The “Alarm Contacts Method” of operation requires that each video switch be explicitly configured with a Status Output. Hence, the video switch is activated when the Status Output ‘closes’ and is deactivated when the Status Output ‘opens’. In order to use the Status Output as a video switch control you will need to define a **Status Output** as a **CCTV Alarm Contact** in the **Status Outputs** section of **Configure:**.

For each video switch (that supports the “Alarm Contacts Method”), the DXL allows you to define one or more alarm triggers. In defining the alarm control, you will need to include the **Status Output** that is activated; along with the events that cause the **Status Output** to ‘open’ and ‘close’, and the devices that cause the alarm to trigger. Except for connections between visiting booths members, the status associated with each output can be configured to include a specific Master Station, or any Master Station.

Alarm Contacts can be configured so that they are activated in response to a variety of events. Deactivation can occur on the transition to the acknowledged state or the cancelled state (or the end of a call for the “In Call” or

“Monitored” state). The events that activate and deactivate the alarms are discussed in the next section and a table is included that summarises all the possibilities.

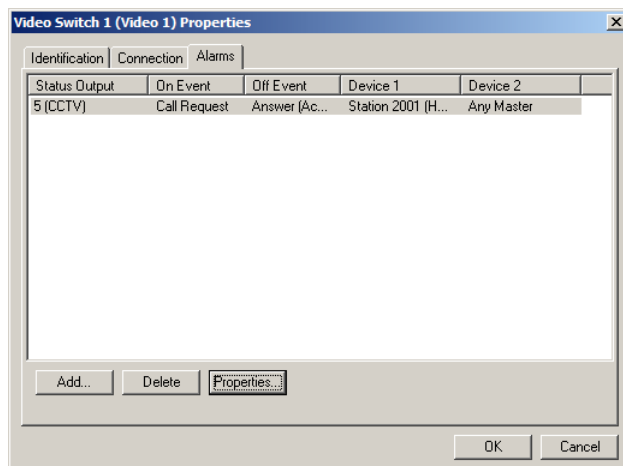
3.26.1.3 Video Switch Properties (Alarm Contacts) – Alarms

If you chose the **Alarm Contacts** option and then open the **Alarms** tab a dialog box appears which requires that you specify up to 5 parameters to control the video switch.

You can use the **Delete** button to delete an alarm that has already been defined. To do this, click on the alarm that you want to delete and then click on the **Delete** button.

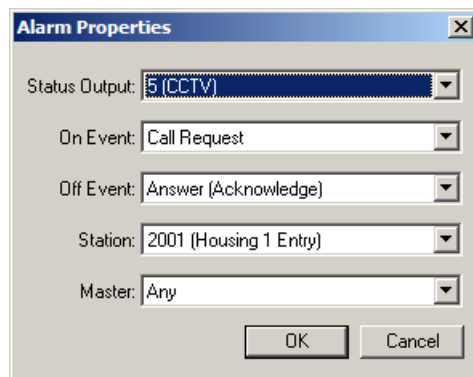
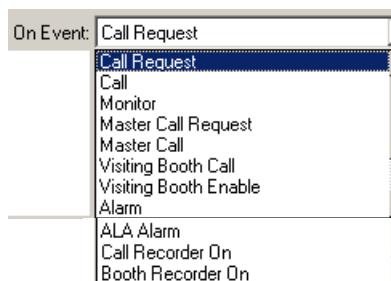
To view or edit the properties of an existing alarm, click on the alarm in the **Alarm** tab dialog box and then click on the **Properties...** button. Alternatively, you can double-click on the alarm. Either of these actions will cause the **Alarm Properties** dialog box to open.

To add an Alarm, click on the **Add...** button in the **Alarms** tab. The **Alarm Properties** dialog box appears.



From the **Status Output:** drop-down menu select the **Status Output** that is to be associated with this video switch.

The **On Event** is the occurrence of a specific event that triggers the contact closure of the status output switch. Choose the event that you want to use to trigger the alarm, from the **On Event:** drop-down menu. A list of the possible events in the **On Event:** drop-down menu is shown below.



The **Off Event** is the occurrence of a specific event that opens the status output contact. Choose the event that you want to use to turn off the alarm, from the **Off Event:** drop-down menu. The menu items that appear in the **Off Event:** drop-down menu depend on the **On Event** that you have chosen.

When you press the **Add...** button you will see the last two titles in the **Alarm Properties** window as being **Station:** and **Master:**. This applies if the **On Event** is entered as a **Call** (the default setting). Depending on the type of event that is selected, this may not always be the title for the two entries. The choices that you make for these two entries are displayed under **Device 1** and **Device 2** in the **Alarms** tab window.

Example: when the **On event:** is **Call** and the **Off Event:** is **End**, then the two drop-down menus are titled as **Station:** and **Master:**. In this case the status output contact closes when a call is made from a Master to the Station, and opens when the call ends.

However, when the **On Event:** is **Master Call** and the **Off Event:** is **End**, then the titles for the two drop-down menus change to **Master:** and **Master:**. In this case the status output contact closed when a call is made to a Master from second Master. The designation for the devices depends on the type of On Event that you choose.

Click on the **OK** button in the **Alarm Properties** window when you have selected all the parameters and return to the **Video Switch Properties Alarm** tab. The display window of the **Alarm** tab will show the values that you have chosen. In the **Alarms** tab display area **Device 1** and **Device 2** refer to the two devices that may be involved in triggering an alarm. The choice of devices is made in the last two entries of the **Alarm Properties** window. For example, a call alarm is triggered when a call is made to a Station from a Master. In this example, **Device 1** would be the Station and **Device 2** would be the Master.

Note that it is not always necessary that two devices are involved in triggering an alarm. There may be only one device involved, such as in the case of an alarm that is triggered by turning on a call recorder at a Station. In this case, **Device 1** would be the Station and there would be no entry for **Device 2**.

It is important to remember, that the DXL is only responsible for activating or deactivating the video switch through the Status Output. However, the DXL operator is not responsible for the action that the switch takes after it has been activated or deactivated as this is entirely up to those responsible for programming the video switch. The following table displays the various combinations of alarms.

On Event	Off event	Device 1	Device 2	Explanation
Call request	Answer (Acknowledge)	Station	Master	Switch is activated when a Station makes a call request to a Master Switch is deactivated when the call request is acknowledged by the Master
	End (Cancel)	Station	Master	Switch is activated when a Station makes a call request to a Master Switch is deactivated when the call is terminated or cancelled
Call	End	Station	Master	Switch is activated when a call is made from a Master to a Station Switch is deactivated when the Master ends the call
Monitor	End	Station	Master	Switch is activated when the Master begins monitoring a Station Switch is deactivated when the Master ends monitoring of a Station
Master CRQ	Answer (Acknowledge)	Master	Master	Switch is activated when a Master makes a call request to another Master Switch is deactivated when the call request is

				acknowledged by the Master
	End (Cancel)	Master	Master	Switch is activated when a Master makes a call request to another Master Switch is deactivated when the call is terminated or cancelled
Master Call	End	Master	Master	Switch is activated when a Master makes a call to another Master Switch is deactivated when either of the Masters ends the calls
Visiting Booth call	End	Visiting Booth	Master	Switch is activated when a Master makes a call to a visiting booth Switch is deactivated when the Master ends the call with the visiting booth
Visiting Booth enable	Visiting Booth disable	Visiting Booth	N/A	Switch is activated when a visiting booth is enabled Switch is deactivated when the visiting booth is disabled
Alarm	Acknowledge	N/A	Master	Switch is activated when an alarm occurs Switch is deactivated when the Master acknowledges the alarm
ALA Alarm	Acknowledge	Station	Master	Switch is activated when an ALA occurs at a Station Switch is deactivated when the ALA is acknowledged by the Master
Call recorder on	Call recorder off	Station	N/A	Switch is activated when a call recorder is turned on at a Station Switch is deactivated when the call recorder is turned off at the Station
Booth recorder on	Booth recorder off	Visiting Booth	N/A	Switch is activated when a booth recorder is turned on at a visiting booth Switch is deactivated when the recorder is turned off at the visiting booth

3.26.1.4 Video Switches Properties (Serial) - Connection

If you select a serial port connection you will have to use the drop-down menus to choose the **Exchange**: and either **Serial Port**: 1 or **Serial Port**: 2. In addition you need to specify the following parameters. An asynchronous serial transmitted word (or packet) consists of a start bit, 7 or 8 data bits, an optional parity bit followed by 1 or 2 stop bits.

- **Baud Rate**

Choose the baud rate that you want to use from the **Baud Rate**: drop-down menu. This sets the number of bit transfers per second.

- **Data Bits**

Choose the number of data bits (7 or 8) that you want to use from the **Data Bits**: drop-down menu. This determines the number of data bits that are transmitted in each word.

- **Parity**

The parity bit is used for error checking in serial communications. You can choose even parity, odd parity or no parity from the **Parity**: drop-down menu. Selecting **None** means that you are not including a parity-bit in a transmitted word. When you use even or odd parity, the system calculates the number of data '1' bits in each word and then adds a single bit at the end of the data bits to make the total number of number of data plus parity '1' bits sent either an odd or even number.

- **Stop Bits**

The Stop Bits are used to signal the end of communication for a single packet of information. Choose the number of bits (1 or 2) that you want to use from the **Stop Bits**: drop-down menu.

- **Flow Control**

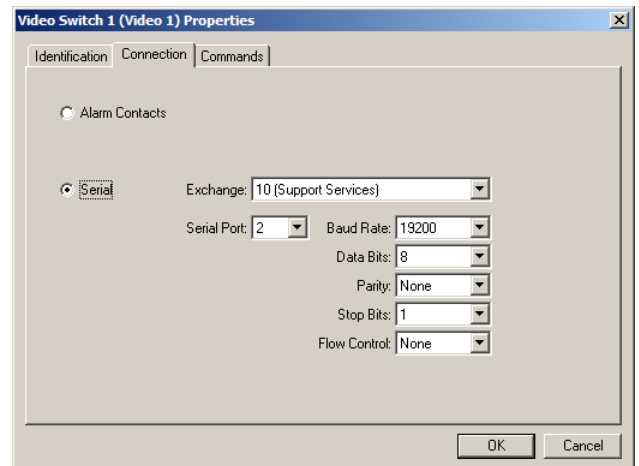
Serial Port 1: When you select Serial Port 1, the **Flow Control** drop-down menu has two options: **None** and **Xon/Xoff**.

Xoff is a character that is sent by the receiver to temporarily stop the transmission during communication. **Xon** is sent by the receiver when it is ready for more data.

None is used if you do not want a flow controller. In this case, you cannot temporarily stop the transmission and the receiver has to be able to keep up with the transmission rate.

Serial Port 2: Note that if you select Serial Port 2, the **Flow Control** drop-down menu has three options: **None**, **Xon/Xoff** and **Hardware**.

You can use Hardware flow control if you want to use actual hardware lines to perform handshaking. When a receiver is ready for data, it asserts the RTS line, indicating that it is ready to receive data. This line is then interpreted by the sender at the CTS input, which tells the sender that it is clear to send data to the receiver.

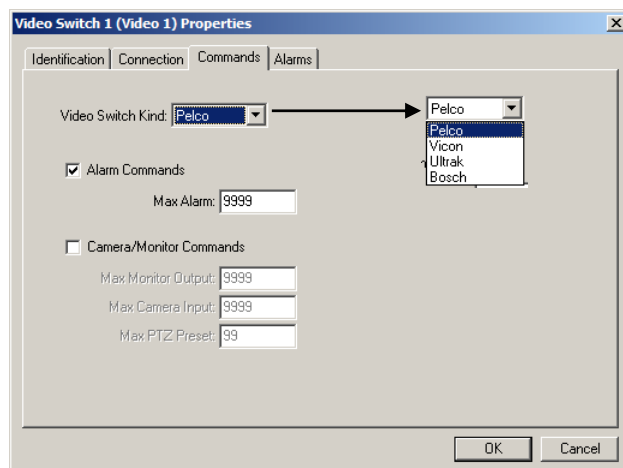


3.26.1.5 Video Switches Properties (Serial) – Commands

When you choose the **Serial** connection method in the **Connection** tab, the **Commands** tab appears.

In this tab, you need to define the type of video switch that you are using from the **Video Switch Kind:** drop-down menu. The present choices are Pelco, Vicon, Ultrak or Bosch.

You are also given two choices depending on the action that you want the video switch to take when an alarm is triggered. The choices are the **Alarm Commands** option and the **Camera/Monitor Commands** option. (You can select both these options at the same time.). If you check the Alarm Commands option a fourth tab entitled **Alarms** will appear.

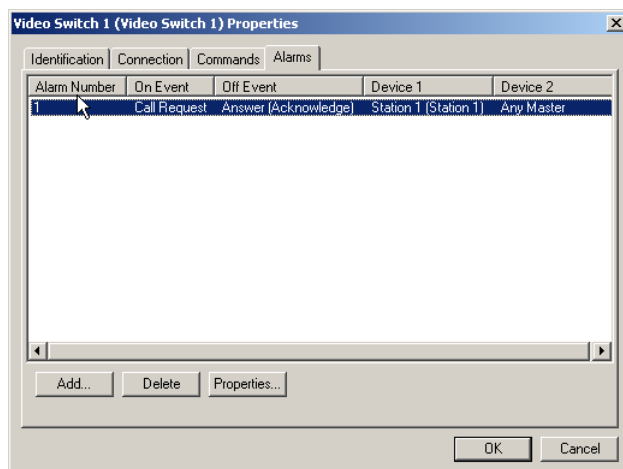


3.26.1.6 Video Switches Properties (Serial) – Alarm

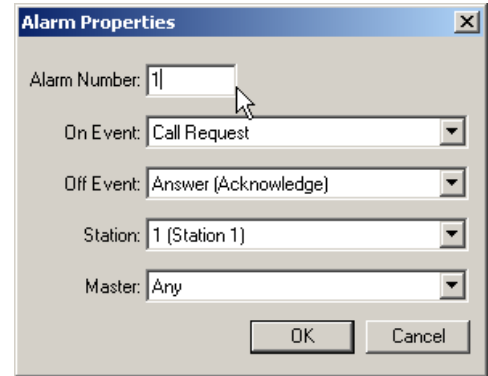
This option informs a video switch that an event has occurred. It identifies the type of event that occurs and sends through the serial port an Alarm Number to a video switch. The Alarm Number is a unique identifier and corresponds to the occurrence of a specific event. You need to define a unique Alarm Number for each different event that you want to trigger an alarm. The Alarm Number is defined in the **Alarms** tab, which appears on the **Video Switches Properties** dialog box, when you select the **Alarm Commands** option.

The **Max Alarm:** entry sets the maximum number of alarms that you can define in the **Alarms** tab. This number can be set anywhere in the range from 1 to 99999.

The **Alarms** tab operates in exactly the same way as the **Alarms** tab that was discussed with the Alarm Contacts selection in Section 3.26.1.3. The only difference is that **Status Outputs** contact closures are not used to activate or deactivate the video switch, but instead the DXL sends to the video switch through the serial port a command that informs the video switch the Alarm Number. The **Alarms** tab now displays an Alarm Number instead of a Status Output.



In the **Alarms** tab, click on the **Add...** button to define a new alarm. This brings up the **Alarm Properties** dialog window. This dialog box has five entries: **Alarm Number:** a unique ID Number, **On Event:** the type of event that you want to trigger an alarm, **Off Event:** the type of event that turns off the alarm, **Device 1** (Station: in this case) and **Device 2** (Master in this case) are the device(s) that triggers the alarm.



If you try to use the same Alarm Number to define another alarm then a pop-up error message will appear.



When the event that you define in the **Alarm Properties** dialog window occurs the DXL sends a message (with the Alarm Number) to the video switch to inform the switch of this occurrence. Remember that the action that the video switch takes after receiving this information is entirely up to the personnel who program the settings on the video switch and is not associated with the DXL operator.

The other entries in the **Alarm Properties** dialog window were discussed previously in Section 3.24.1.3

Note that the maximum number of alarms that you can define in the **Alarm** tab depends on the number that you have entered for **Max Alarm:** in the **Commands** tab.

Video Switches: Commands – Camera/Monitor Commands

Camera/Monitor Commands are created ‘on-the-fly’ and are used to set up connections between monitors and cameras when calls are established between devices. The usefulness of this method lies in the fact that the user does not have to explicitly define every event for which the monitors and cameras on the Master and the Stations are connected. Additionally, you do not have to explicitly define which camera gets connected to which monitor and vice-versa. This is because the Configuration uses a set of rules when it decides the cameras and the monitors that are to be connected when a call is established. Because of the flexibility of the Camera/Monitor Commands, this kind of connection can only be set-up when a call is made from a Master to a Station and not for any other type of event.

You have to choose the camera and monitors that you want to associate with each Master and each Station in the **CCTV** tab that appears in the Masters section and the Stations section of **Configure:**, respectively. When a call is established with a particular device, the system automatically connects the camera and the monitor at the two devices. Note that cameras and monitors cannot be associated with compound stations or visiting booths, but are rather associated with their constituent intercom stations.

For a discussion of the rules that assign cameras to monitors and vice-versa, please refer to the discussion of the **CCTV** tab in the Masters section of **Configure:** (Section 3.5.1.5).

Note that you cannot define CCTV values for a Station or a Master, if you have not defined a video switch with the **Camera/Monitor Commands** selection. Also note that you cannot define video cameras and video monitors in the **Video Cameras** and **Video Monitors** section of **Configure**: if you have not defined video switches with the **Camera/Monitor Commands** selection.

You will have to enter preset values for the type of switch that you have defined. The different values that you need to enter are explained underneath:

- You will have to enter a value for **Max Output Monitor**: which is the maximum number of monitors that can be used with the type of video switch that you have defined.
- You will also have to enter a value for **Max Input Camera**: which is the maximum number of cameras that can be used with the type of video switch that you have defined.
- Finally, you have to enter a value for the **Max PTZ Preset**: which is the information for the pan, tilt and zoom settings for the camera.

In our example figure to the right, we have stated that Video Switch 1 that is defined as a Pelco switch can have a maximum of 3 monitors and 2 cameras that are associated with this switch. Additionally, a video camera that is defined with this switch can have a maximum PTZ value of 2.

When you decide to define video monitors in the **Video Monitors** section, you will only be able to define 3 monitors that use Video Switch 1.

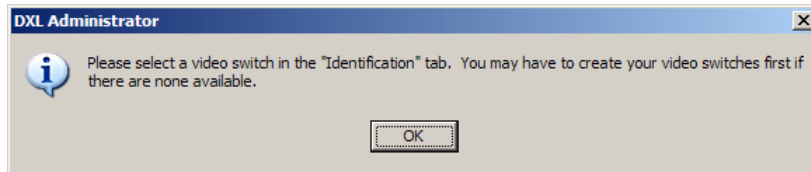
Also, when you define video cameras in the **Video Cameras** section, you will only be able to define 2 cameras that use Video Switch 1. Additionally, you will only be able to set a maximum of 2 for the PTZ settings for each camera

The purpose of setting these values is because they are used for error checking when you define a video camera or a video monitor in the Video Camera and Video Monitor sections of **Configure**. If the values that you define in these sections do not fall into the range of preset values (that have already been defined), then you will receive an error message. The range of values for the different video switch types is tabulated below.

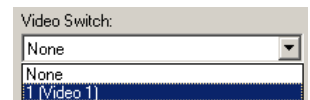
Switch Name	Max Monitor Output	Max Camera Input	Max PTZ Preset
Pelco	3 – 99999	2 – 99999	2 – 99999
Vicon	3 – 99999	2 – 99999	2 – 99999
Ultrak	3 – 99999	2 – 99999	2 – 99999
Bosch	3 – 99999	2 – 99999	2 – 99999

3.27 Video Cameras

To define a Video Camera, click on the **Video Cameras** section in **Configure:** of the Configuration Editor. Click on the **Add...** button to add a new video camera. The **Video Camera Properties** dialog window with a single tab **Identification** will appear. Note that you cannot define a Video Camera if a Video Switch has not been defined with the **Camera/Monitor Commands** option. This **Camera/Monitor Commands** option is selected in the **Commands** tab of the **Video Switches** section in **Configure:**. If you have not defined this type of Video Switch then the program will give you an error message (shown below) when you try to define a Video Camera (clicking the OK button).

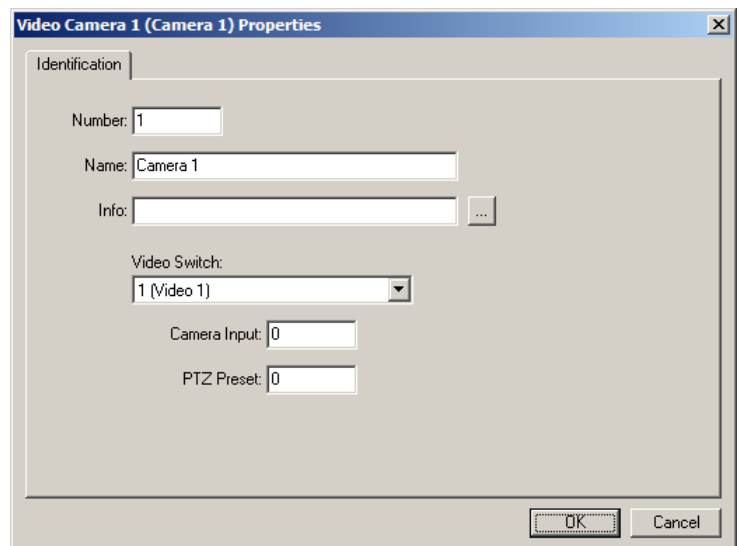


Choose the video switch that you want to associate with this video camera from the **Video Switch:** drop-down menu. Note that you can associate the same video switch with more than one video camera. Also note that you will not see any video switches in this menu if they have not been previously defined.

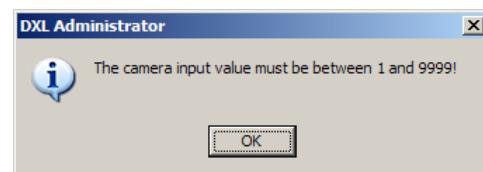
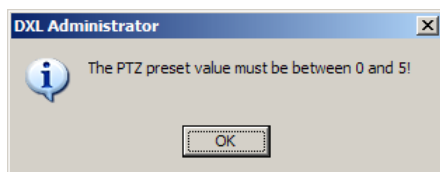


Once you have defined the video switch that you want to use with this video camera, you will have to enter two more values. Enter the number for the input video camera that you want to use, in the **Input Camera:** entry. Enter the **PTZ preset** values that you want to use with this video camera into the PTZ Preset: entry.

Note that the two values that you enter will need to fall within the same range as the numbers that you had entered for the **Max Camera Input** and the **Max PTZ Preset** for this video switch in the **Camera/Monitor Commands** tab of the **Video Switch Properties** window.

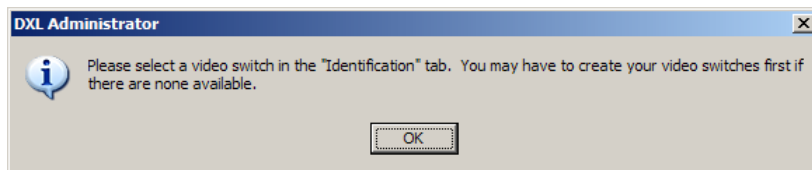


If the numbers do not fall within this range, then you will see an error message for out of range PTZ and input camera values.

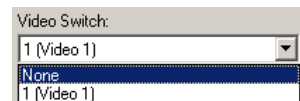


3.28 Video Monitors

To define a Video Monitor, click on the **Video Monitors** section in **Configure:** drop-down menu in the **DXL Configuration Editor**. The **Video Monitors Properties** dialog window with a single tab **Identification** will be displayed. Click on the **Add...** button to add a new video monitor. Note that you cannot define a Video Monitor if you do not have a Video Switch defined with the **Camera/Monitor Commands** option. This **Camera/Monitor Commands** option is selected in the **Commands** tab of the **Video Switches** section in **Configure:** of the **DXL Configuration Editor**. If you have not defined this type of Video Switch then the program will give you an error message (shown below) when you try to save your Video Monitor parameters.

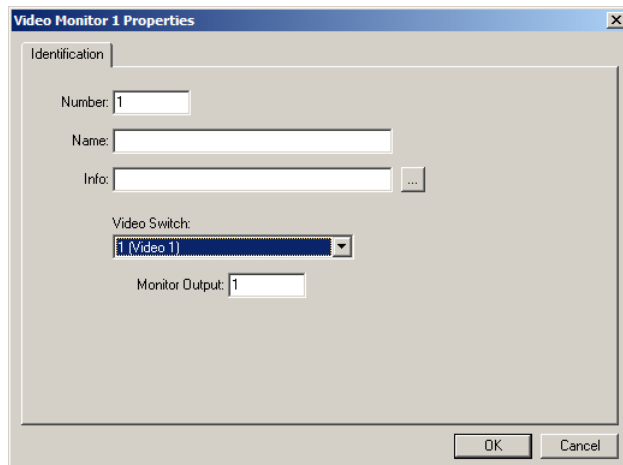


Choose the video switch that you want to associate with this video monitor from the **Video Switch:** drop-down menu. Note that you can associate the same video switch with more than one video monitor. Also note that you will not see any video switches in this menu if they have not been previously defined.

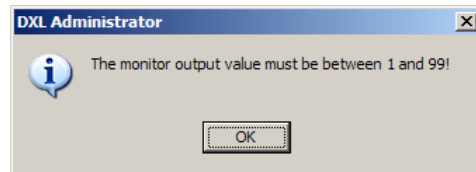


Once you have defined the video switch that you want to use with this video monitor, you will have to enter the video monitor that you want to use, by entering the number into the Output Monitor: entry.

Note that this value will have to fall in the same range as the numbers that you had entered for the Max Monitor Output for this video switch in the Camera/Monitor Commands section of the Video Switch Properties window.



If the number that you enter does not fall in this range, then you will see an error message.



4 The MicroComm DXL Log Viewer

4.1 Introduction

The DXL system logs all significant events including intercom activities, call requests, alarms, errors etc. The Log Viewer merges and displays the log information that it collects from the DXL exchanges. It also saves this information into a log file that can be reloaded and viewed at a later time even when the log viewer is no longer connected to the DXL system. You can select individual messages on the Log Viewer window by clicking on them.

You can view a subset of all the logs in this window, by using the various filter settings that are available. There is no fixed capacity for the number of logs that can be viewed or saved, however, it is advisable to save important messages intermittently (by exporting the logs into a file) and delete older messages so as to free up disk space on the PC. All messages that appear in the Log Viewer window are stored in a database on the computer that is running the Log Viewer.

Some examples of messages that are generated by a common sequence of events occurring are:

- If a Master calls a Station then a sequence of logs that are similar to the ones displayed below will be displayed in the Log Viewer window:

- Master #1 (Touchscreen Master) dialled (to call) Station #4 (ICM #4).
- Master #1 (Touchscreen Master) is establishing call to Station #4 (ICM #4).
- Call from Master #1 (Touchscreen Master) to Station #4 (ICM #4) has been established.

- When the Master has decided ends its call to the Station, then the following logs are generated.

- Master #1 (Touchscreen Master) is ending its call to Station #4 (ICM #4).
- Call from Master #1 (Touchscreen Master) to Station #4 (ICM #4) has been ended.

- If a fault occurs in the wiring, which may be an open circuit or a short circuit, then the following logs are generated:

- Station #3 (ICM #3) has 1 switches faulted.
- Fault from Station #3 (ICM #3) has been sent to Master #1 (Touchscreen Master).

The first log indicates that a line has an open circuit or a short circuit fault on it. The second log indicates that a message has been sent to the Master Station, thus informing the Master of this fault.

- If this fault has been cleared, then the following logs are generated:

- *Station #3 (ICM #3) has 0 switches faulted.*
- *Fault from Station #3 (ICM #3) has been cancelled by Master #1 (Touchscreen Master).*

The first log indicates that the line has been fixed and hence, the fault has been cleared. The second log indicates that the Master has cleared the fault on the Station.

- When a line is faulted, a trouble alarm is generated which can then be sent to a particular Master Station that is specified in the Configuration. The following logs are generated when this trouble alarm and fault is being reported to a Master Station:

- *Trouble alarm from Exchange #1 (Main Exchange) has been sent to Master #1 (Touchscreen Master).*
- *Fault from Station #3 (ICM #3) has been sent to Master #1 (Touchscreen Master).*

The first log indicates that Station #3, which is located on Exchange #1, has a fault associated with it. Hence, Exchange #1 has sent a trouble alarm to Master #1. The second log indicates that the status of the fault has also been sent from Station #3 to Master #1.

- When this fault is cleared, the following log messages are generated.

- *Fault from Station #3 (ICM #3) has been cancelled by Master #1 (Touchscreen Master).*
- *Trouble alarm from Exchange #1 (Main Exchange) has been cancelled by Master #1 (Touchscreen Master).*

The first log indicates that the fault has been cleared and therefore, it has been cleared by Master #1. The second log indicates that since the fault has been cleared, Master #1 has also cleared the trouble alarm.

- When an intercom Station sends a call request to a Master Station then, the following log is generated.

- *Call request from Station #1 (ICM #1) has been sent to Master #2 (IMS Master).*

This log indicates that the Station has sent a call request to the Master and this call request is now queued.

- When the Master answers the call request, the following logs are generated.

- *Master #2 (IMS Master) dialed (to call) Station #1 (ICM #1).*

- *Master #2 (IMS Master) is establishing call to Station #1 (ICM #1).*

- *Call request from Station #1 (ICM #1) has been removed from Master #2 (IMS Master).*

- *Call from Master #2 (IMS Master) to Station #1 (ICM #1) has been established.*

The first log indicates that the Master has established the call to the Station by dialling to the station, and this call is established in the second log. The third log indicates that once the call has been established, the call request is removed from the queue. The last log indicates that the call from the Master to the Station has been established.

- When the call between the Master and the Station is complete, the following logs are generated.

- *Master #2 (IMS Master) is ending its call to Station #1 (ICM #1).*

- *Call from Master #2 (IMS Master) to Station #1 (ICM #1) has been ended.*

- When a Master Station makes a page call to a Page Zone (defined in the Configuration) then the following logs are generated:

- *Master #2 (IMS Master) dialled (to call) Page Zone #1 (All Page).*

- *Master #2 (IMS Master) is establishing call to Page Zone #1 (All Page).*

- *Call from Master #2 (IMS Master) to Page Zone #1 (All Page) has been established.*

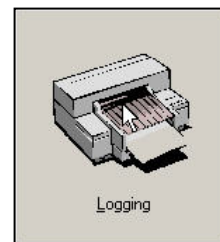
- When a Master Station has decided to end its call to a Page Zone (defined in the Configuration) then the following logs are generated:

- *Master #2 (IMS Master) is ending its call to Page Zone #1 (All Page).*

- *Call from Master #2 (IMS Master) to Page Zone #1 (All Page) has been ended.*

4.1.1 Opening the Log Viewer

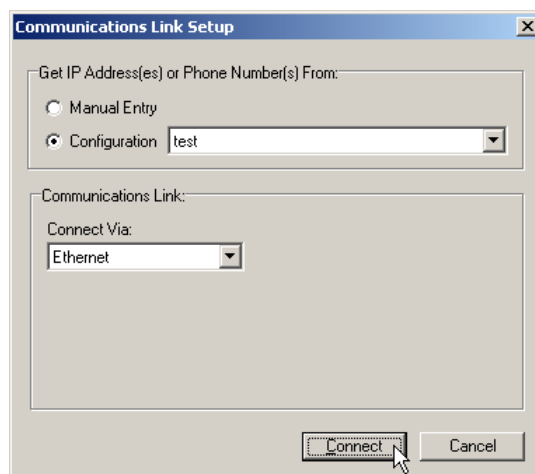
You can open the Log Viewer window by clicking on the Logging button on the MicroComm DXL Administrator. This option lets you view the different types of events that are logged by the system and the log message content of each event. Once you press this button, the program displays a window with a menu from which you can select various options.



4.1.2 Connecting to the Exchanges

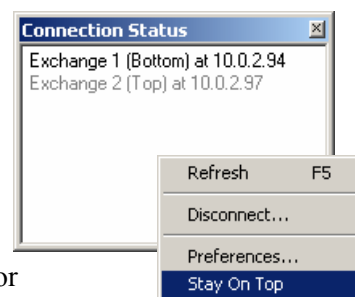
If the computer is not already connected to any Exchange(s) on the DXL and you open the DXL Log Viewer then a Communications Link Setup window appears. In this window, the Manual Entry option is disabled and therefore, you have to use the Configuration option to connect to the Exchange(s) on the DXL. This window is the same as the window that appears when you try to open the File Manager window through the DXL Configuration Editor. Please refer to Section 0 for a description of this window.

Note that if the computer is already connected to the Exchange(s) on the DXL then the program will skip the Communications Link Setup window and will directly display the Select Exchanges window, which is discussed next.



When you click on the Connect button in the Communications Link Setup window, the Select Exchanges window appears with checkmarks beside all the Exchanges that the computer will try to connect to and download logs from. This window has been discussed in the Communication Link Setup Dialog in Section 3.1.1.9.2. Please refer to this section for a description of how to use the Select Exchanges window.

When you connect to the Exchanges on the DXL, you will see the Communication Status window appear. Please refer to Section 0 for a description of this window. You can 'right-click' on the Communication Status window and then click on one of the four options that appear: Refresh, Disconnect..., Preferences..., Stay On Top.



If you click on Refresh, the PC will check the connectivity to the Exchanges.

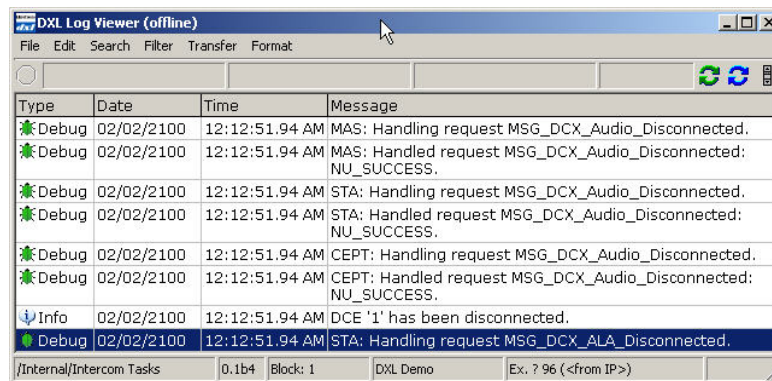
If you click on Preferences..., this will take you to the DXL Administrator Preferences window. In the Connection Tab of this window, you can choose to show or hide the Communication Status window. This tab has been discussed in Section 0

Remember that the Communication Status window does not always appear, as it depends on the option that you have selected in the Connection Tab of the DXL Administrator Preferences window. This tab has been discussed in Section 2.4.2.1.3. In this tab, say that you have selected the option that will ensure that the Communication Status window is displayed when the PC connects to the Exchanges. Now, say you close the Communication Status window by clicking on the ☒ symbol in the top-right corner of the Communication Status window. Now, if you want to view the Communication Status window again, click on the Disconnect... button that is located in the Transfer Menu of the Log Viewer window. This opens the Communications Link Setup window. Click on Cancel in this window. After you do this, you will see that the Communication Status window re-appears.

4.1.3 The Log Viewer Window

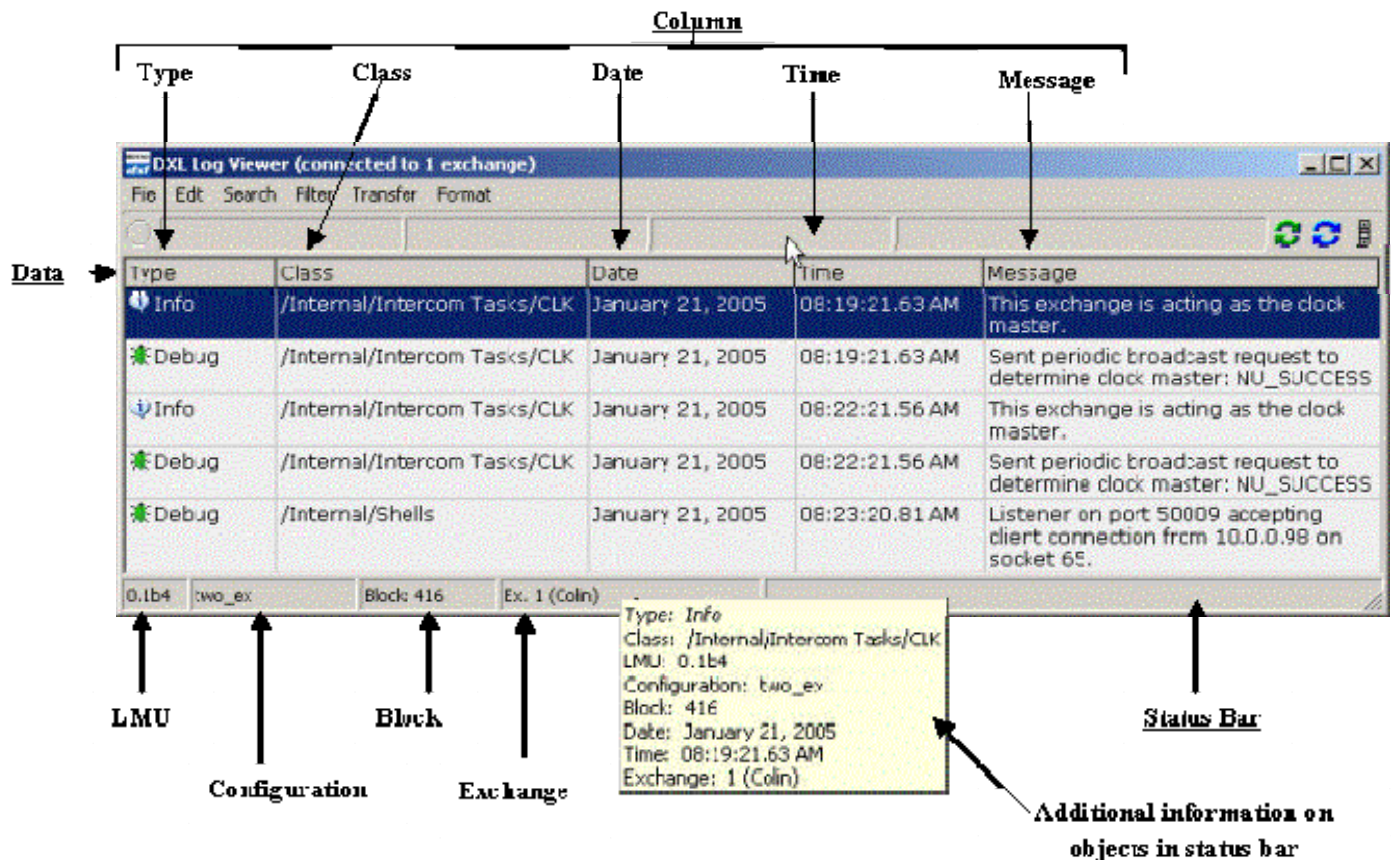
The main menu in the Log Viewer window lets you:

- Connect to the Exchange that you want to download log messages from.
- Select messages for 'copying' into other files or for printing purposes.
- Change the default setting that the log viewer starts up with
- Search for messages that contain certain letters, words or phrases
- Filter messages according to the Class & Type of event, the Exchange from which the logs originated, the Message that is generated from the event occurring and the Time that a log is generated.
- Change the font settings for the messages as well as the column setting and the scrollbar for the Log Viewer window.



Note that for viewing purposes, it is not necessary to be connected to an Exchange, as the logs can be viewed offline. However, new logs can only be downloaded after connecting to the required Exchange(s).

The Log Viewer window has several display characteristics that can display the following information for each log entry. A picture representing these parameters is shown below.



Each log entry has nine characteristics that are described below:

- Message Type – this indicates the type of message that is being viewed. There are six types of messages: Errors, Warning, Information, Debug, Other and Unknown.
- Message Class – this indicates the Class of message that the message falls under. The current Message Classes fall under: Host, Internal, Maintenance, System activity and System Startup. Classes are a hierarchical classification of messages into related groups
- LMU file – the LMU file contains a detailed description of how to format the log entries. Hence, this records the LMU file that was used to build the application that was running when the log was generated. The Messages subdirectory contains the log message format databases produced by the external log message utility program. These databases are needed to translate from the internal log entry format used by the exchanges, to easily readable log messages displayed by the log viewer module. The log message databases are stored in compressed form in the LMU file.
- Configuration – this records the Configuration that was active on the exchange when the log was generated.
- Date – this indicates the date at which a log was generated. Note that this time is based on the DXL Exchange clock and not on the PC clock.

- Time – this indicates the time at which a log was generated. Note that this time is based on the DXL Exchange clock and not on the PC clock.
- Exchange – this indicates the DXL Exchange from which the log was downloaded.
- Block – a block is memory that usually encompasses an hours' worth of logs and always contain logs that have the same base time (the same hour). All blocks are assigned with a block number and they are used for debugging purposes. Both volatile and non-volatile memories on the DXL have their own blocks. When logs of the same base time (the same hour) are generated, they are stored in a block of memory and newer blocks are added for each new base time. So, when the memory gets full, the older blocks are deleted so that there is room for newer blocks to be stored. This allows the system to delete an hours' worth of logs (in blocks) without having to delete all the logs in order to gain more memory.

However, a case may occur where more than one block has the same base time. This may occur in the case where the base time has changed, the Configuration or the LMU files have changed, the system time has changed or the threshold (maximum memory available for a block) has been exceeded. As an example of the usefulness of blocks, say the system time has suddenly changed. This causes unrelated messages that may have the same time to be displayed together. In this case, you can use the block numbers to decipher the groups of messages that were part of the same block and hence, you will be able to follow the correct sequence of logs without becoming confused with the time of the log messages.

- Message – this is the actual log message that is generated and displayed by the DXL Log Viewer.

4.1.4 Log Window Operations

There are various operations that you can use in the Log Viewer window. They are listed below:

- You can resize the Log Viewer window by clicking along the border of the window and resizing it. You can also do this by clicking on the standard minimize or maximize buttons in the title bar.
- You can change the order of the columns by dragging and dropping them. Click on the column header and then drag the mouse or pointer across to where you want to insert the column.
- To resize a column in the Log Viewer window, hold the mouse or pointer over the column divider in the column header, and then slide it across to the desired width.
- To manually resize a column in the status bar, hold the mouse or pointer over the column divider in the status bar, and then slide it across to the desired width.
- You can abort almost any operation by clicking the red STOP button on the upper left corner of the Log Viewer window. This button is disabled unless an operation is in progress, during which time it turns to a red colour.

4.1.5 Keyboard Shortcuts

Keyboard Shortcut	Description
'Shift' + select upper limit + select lower limit	If you want to select a whole set of concurrent logs at the same time then hold down the 'Shift' key and click on the first log that you want in the sequence. Continue holding down the 'Shift' key and then click on the last log in the sequence. When you do this, you will see that all the logs between the two limits that you have selected become highlighted.
Home	go to the earliest log (the oldest log)
End	go to the latest log (the most recent log)
Ctrl + ↑ or ↓ (Up/Down Arrow keys)	scroll upwards or downwards by an increment or decrement of one second
Ctrl + Alt+ ↑ or ↓	scroll upwards or downwards by an increment or decrement of one minute
Ctrl + Page Up/Page Down	scroll upwards or downwards by an increment or decrement of one hour
Ctrl + Alt + Page Up/ Page Down	scroll upwards or downwards by an increment or decrement of one day
Log selection + Ctrl + C	makes a copy of a log or a set of logs
Ctrl + A	selects all the logs (logs become highlighted)
Ctrl + F	find a log message
F3	find the next log from the current point, with the text string that you have already defined
Ctrl + F3	find the previous log from the current point, with the text string that you have already defined
Ctrl + G	go to a log with a specified date and time
F5	refresh or update the Log Viewer by downloading the latest logs
'Esc' key	press this key if you want to abort an operation that is executing in the Log Viewer
Shift + Ctrl + A	disable all the active filters and display all the logs in the Log Viewer

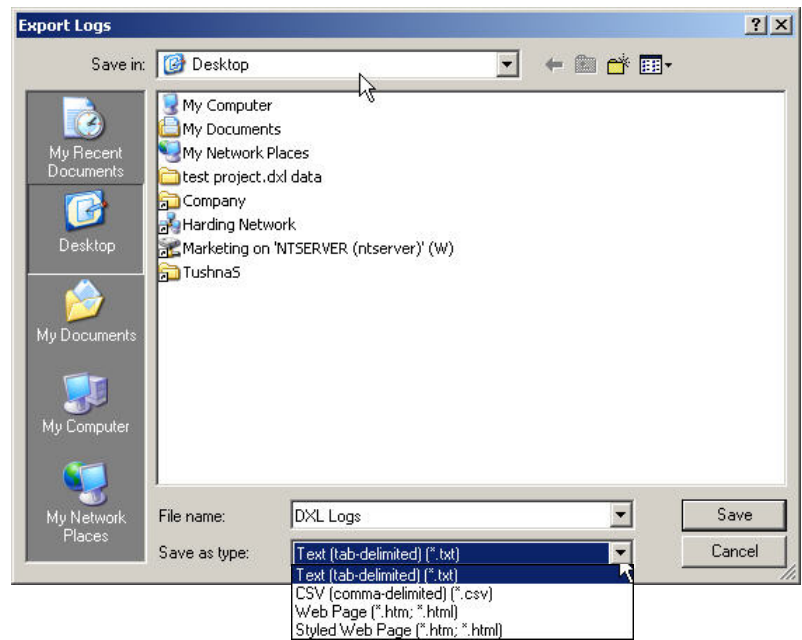
4.2 The Main Menus

The Log Viewer window has six menus that you can select from: **File**, **Edit**, **Search**, **Filter**, **Transfer** and **Format**. These menus are discussed

4.2.1 File Menu

4.2.1.1 Export...

It is possible to save the logs from the DXL Log Viewer window. Select **Export...** to open up the Export Logs window. Select the location of where the logs are to be saved in **Save in:** and type the name of the file in **File name:**. The file can be saved in a variety of different formats that you can choose from the **Save as type:** drop-down menu. You can save the file in the CSV format if you want to import it onto an Excel worksheet later on. You can save the file in a Styled Web Page format if you want to preserve your colour and font settings.



Note that all the logs in the database are NOT exported. The program will only export those logs that are available with the current filter settings and this is independent of whether or not you can actually see these logs in the Log Viewer window.

4.2.1.2 Export Selection...

You can save a selection of sequential logs from the DXL Log Viewer window. Simply drag the mouse or pointer over the selected logs, or click on the log, hold down the shift key and use the arrow keys on the keyboard to make a selection. Now click on **Export Selection...**. The program will display the standard Export Logs dialog, to let you choose the location, type and filename of the saved file. Select the location of where the logs are to be saved in **Save in:** and type the name of the file in **File name:**. The file can be saved in a variety of different formats that you can choose from the **Save as type:** drop-down menu. Note that the program will only export those logs that are available with the current filter setting.

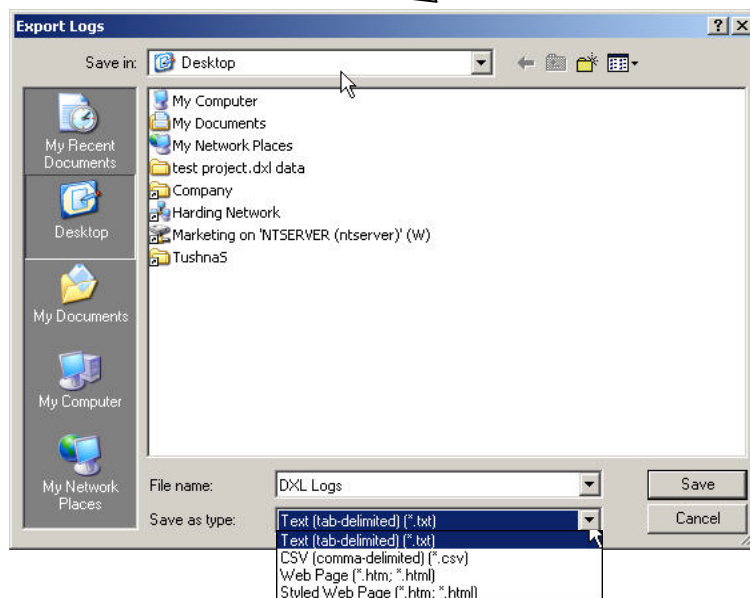
From the picture below, the logs to be saved have been 'highlighted' or selected, and they will be saved with the file name of 'DXL Logs', which is indicated in the **File name:** entry.

DXL Log Viewer (connected to 1 exchange)

File Edit Search Filter Transfer Format

Type	Class	Date	Message
Debug	/Internal/Interco	04/01/2005	Intercom task SG initialized successfully.
Debug	/Internal/Interco	04/01/2005	Intercom task CONFIG initialized successfully.
Info	/Internal/Shells	04/01/2005	ConfigShell listener starting on port 50007.
Debug	/Internal/Shells	04/01/2005	Listener on port 50007 bound and accepting connections on socket 9.
Debug	/System Startup	04/01/2005	DXL system application file 'DXL-0.4.0B3.APP' okay.
Debug	/Internal/Shells	04/01/2005	Listener on port 50007 accepting client connection from 10.0.1.200 on socket 73.

0.1b4 Configuration_2 Block: 1 Ex. 30 (Housing Building 2)



4.2.1.3 Print...

Select File and then Print to print the logs that appear on the Log Viewer window. First the Log Viewer prepares the logs for printing and then the standard print dialog is displayed in order to print the prepared logs. Click on the red button to abort the print job and a message saying “printing aborted” will appear. Note that the program will not let you shut down the logging window until either the files have finished printing or you have aborted the print job.

4.2.1.4 Print Selection...

This option lets you print the selected logs only.

4.2.1.5 Exit

Select Exit to close the Log Viewer window.

4.2.2 Edit Menu

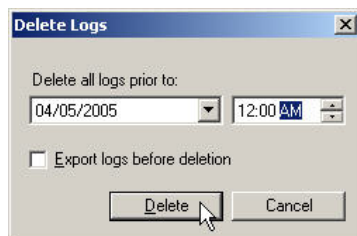
4.2.2.1 Copy

The Copy item copies the selected logs from the DXL Log Viewer window to the clipboard in tab-delimited format. You can then 'paste' these logs into any text document. To copy 1 log, click on it and then choose Copy from the Edit menu. To select more than one file simply hold down the shift key and click on the desired logs or, click and drag the pointer over multiple sequential logs. Then select Copy. You can 'paste' these logs into any other program that supports text entry.

4.2.2.2 Select All

To select all the logs, just click on Select All, which highlights all the logs in the Log Viewer window.

4.2.2.3 Delete Logs...



Select this option to delete all the logs (from the Log Viewer database) that have occurred before a particular date and time. Select the date using the calendar that appears in the Delete all logs prior to: drop-down menu. The standard calendar control lets you scroll through the months using the arrow buttons. Press delete to Delete all logs prior to the selected date and hour or click on Cancel in order to cancel the operation.

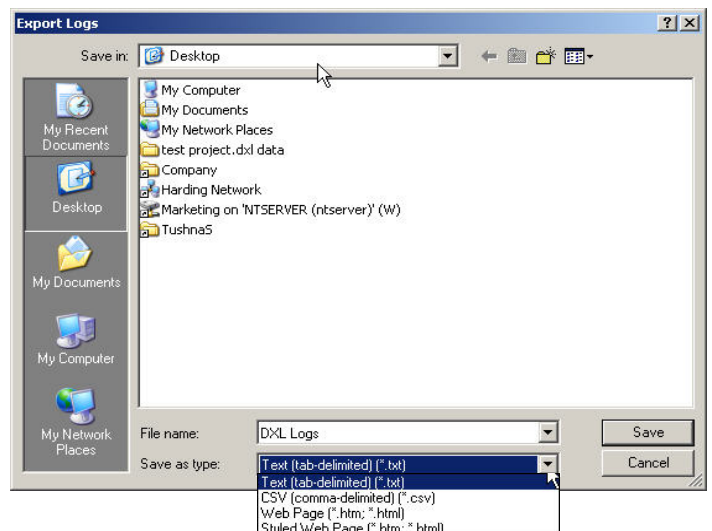
Note that the date and time that appears in this window is set to the date and time of the current log that is selected in the Log Viewer window, with the time always being set to the base time (the hour time). Hence, logs are always deleted in a block of 1 hour duration and it is not possible to delete specific logs in a particular hour.



You can change the date by using the standard calendar dialog. To change the year, click on the year and use the scroll to change to the required year. You can also enter the date by clicking on each entry in the date and typing it in manually. You can select the time by scrolling through the times using the scroll button or by clicking on the hour entry in the time and typing it in manually. To change between AM and PM, click on this entry and scroll or type it in manually.

Select the Export logs before deletion option if you want to export or save the selected logs before deleting them from the database and hence, the Log Viewer window.

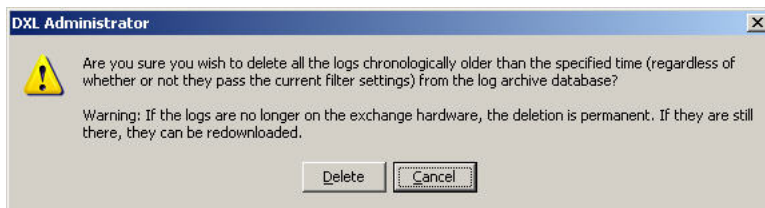
Select the location of where you want to save the logs in Save in: and type the name of the file in File name:. The file can be saved in a variety of different formats that you can choose from the Save as type: drop-down menu.



Note that once this option is ticked, and you click the Delete button then ALL the logs that you have selected for deletion will be saved, irrespective of the current Filter settings. The program will prompt you to save the Logs in the Export Logs window.

It must be noted that ALL logs prior to this date and time are deleted, irrespective of the current Filter settings. Also, if the logs are still present on the Exchange hardware, then it is still possible for you to re-download the logs. However, if the logs have been deleted from the Exchange hardware, then it will not be possible to re-download them.

If you have the options: Automatically download logs as needed and Automatically stream current logs, turned on, then having these options 'on' may interfere with the deletion of the logs. This is because these options may trigger an immediate download of the logs that have just been deleted. Therefore, you will be prompted to turn these options 'off' before continuing with the deletion. To understand what these options are, please refer to Sections 4.2.5.4 and 4.2.5.5



You will receive a confirmation message before the logs are deleted. Click on Delete to delete the selected logs or click on Cancel in order to cancel the operation.

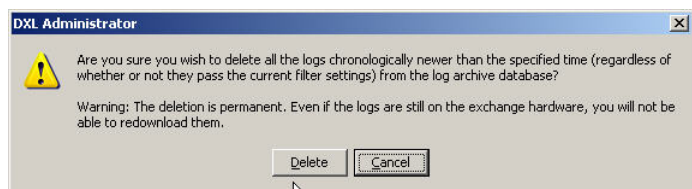
Delete Future Logs Option

There is another option that is not apparent in the Edit drop-down menu. If you press the 'Ctrl' key (on the computer keyboard) while selecting the Delete Logs... option, then a new window pops up: the Delete Future Logs window. This window lets you delete all logs subsequent to a given time and date. The purpose of having this option is to allow users to delete logs with an incorrect date and time. For example, say a user has incorrectly set the year on the DXL to be year 2030. Now if these logs are not deleted, then they will remain at the end of the Log Viewer window until the year 2030. However, this Delete Future Logs option lets you delete these incorrectly dated logs so that they do not interfere with the presentation of other logs. Note that only logs that are currently in the database and have a date greater than the date and time entered will be deleted. This option will not affect logs that will actually be downloaded in the subsequent time period.

The process of picking the starting date and time, as well as exporting logs before deletion, is identical to the previous section and is not covered here again.

However, it must be noted that ALL logs succeeding this date and time are deleted, irrespective of the current Filter settings. Also, note that these logs are deleted permanently, and it will not be possible to download them again from the Exchange hardware.

You will receive a confirmation message before the logs are deleted. Click on delete to Delete the selected logs or click on Cancel in order to cancel the operation.

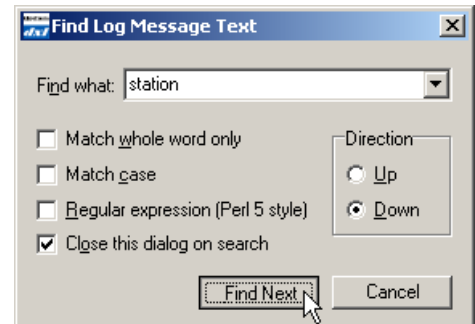


4.2.3 Search Menu

You can search through the logs for specific text in the message field. Searches may initiate log transfers from the exchange(s) if the Log Viewer is online.

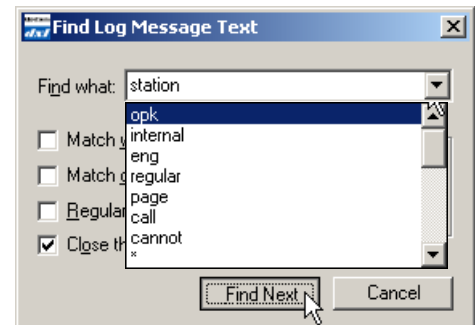
4.2.3.1 Find...

To search for some text in the content of a message, select Find... in the Search menu. This displays a standard find text dialog, which is a resizable window. You must enter the text string to search for, in the Find what: entry and then select Find Next. The search proceeds by highlighting the row of the message that contains the search string.



The search will continue upwards or downwards from the current log, depending on whether you choose Up or Down in the Find Log Message Text window.

By default, the previous search string always appears in the Find What: menu each time a search is conducted. Also by default, the direction of the search will always be the same as the direction in the last search. For convenience, the search strings that have been previously entered are available in the Find what: drop-down menu. There will be up to 25 previous text strings stored in the Find what: drop-down menu.



If a particular phrase or word is required then put a tick in the Match whole word only box. If this is left unchecked, then the search will also identify words or sentences that contain the search string within their text body. For example, if the text 'Ed' is being searched for, then this will match the last two letters of the word 'Fred' if Match whole word only is not checked. You can select the Match Case option if you want the search to be case sensitive.

To look for a text string using a regular expression, tick Regular expression (perl-5 style) and enter the text string in the appropriate format. A link to using PERL-5 style syntax can be found at: www.perl.org under the "Online Documentation" section on the website.

Select Close this dialog on search to close the Find Log Message Text window once the first search matching the search string is found. If this box is not checked, then the Find dialog will remain open after the search, and the user can repeat the search by clicking the Find Next button. Hence, a new log will be highlighted each time the search string is found in one.

The user can cancel the search by selecting Cancel. For convenience, the user can abort the search by hitting the red STOP button on the Log Viewer window.

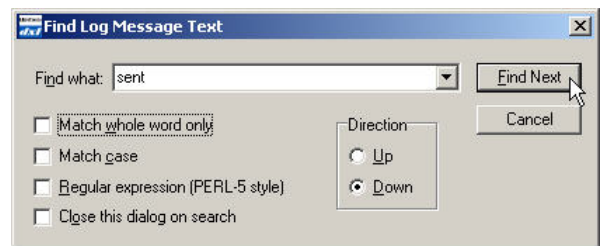
If the search is successful then the appropriate log is highlighted. If it is not successful, then a message will inform you that the search string was not found.



4.2.3.2 Find Again

You can repeat the same search (in the same direction) again by selecting Find Again on the Search menu.

If a search string had not been entered prior to selecting Find Again, then the Find Log Message Text dialog will open so that you can enter the string that you want to search for. Click on Find Next to begin the search or click on Cancel to cancel the search.



4.2.3.3 Find Previous

You can repeat the same search in the opposite direction by selecting Find Previous on the Search menu.

If the search is successful then the appropriate log is highlighted. If it is not successful, then a message will inform you that the search string was not found.

If you have not entered a search string prior to selecting Find Previous, then the Find Log Message Text window will open so that you can enter the string to be searched for. You can cancel the search by selecting Cancel.

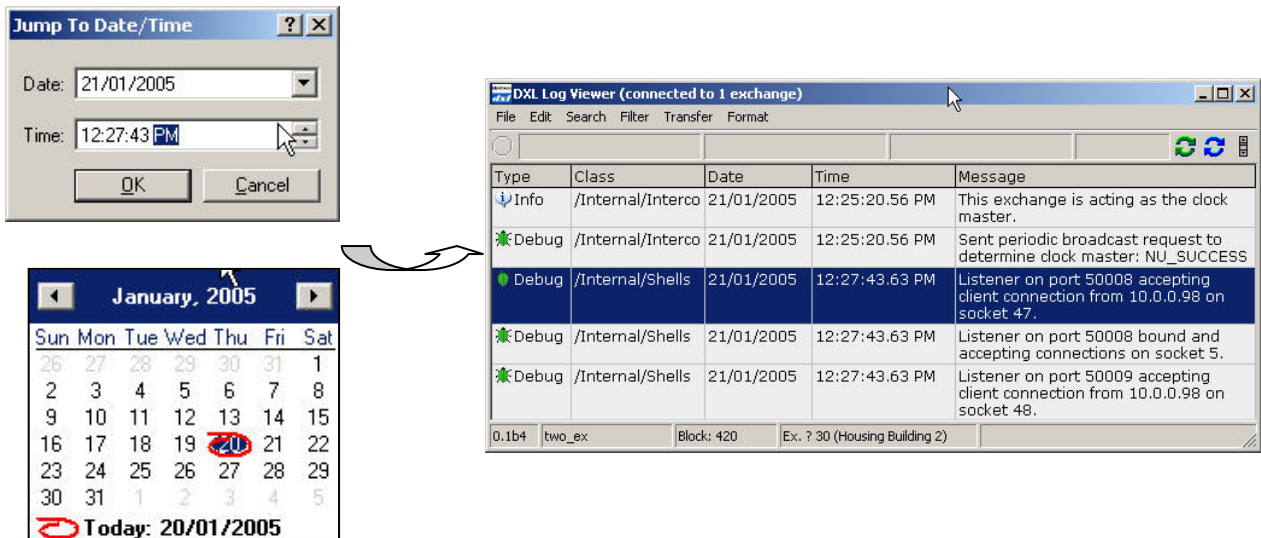
4.2.3.4 Go To Date and Time...

You can jump to a log that occurred on a particular date and time by selecting Go To Time/Date... in the Search menu. This brings up the Go To Date and Time window. You can select the date using the calendar that appears in the Date: drop-down menu. The standard calendar control lets you scroll through the months by using the arrow buttons. To change the year, click on the year and use the scroll to change to the required year. You can also enter the date by clicking on each entry in Date: and typing it in manually.

You can select the time by scrolling through the times using the scroll button to the right of the Time: entry, or by clicking on any entry in Time: and typing it in manually. Select the component of time (i.e. hour, minutes, seconds, AM/PM) and then use the scroll button to change the selected component or manually type in the new value. The up and down arrow keys will also change the selected value.

Note that if there are many logs with the same date and time, then the program will jump to the first log with that date and time.

The figure below displays the date being entered in the Go To Date and Time window, by using the standard calendar dialog. Once the date and time are set, the Log Viewer highlights the first log that matches the date and time that has been entered.



If there are no logs that match the date that you specified, then the program will display the message depicted on the right.

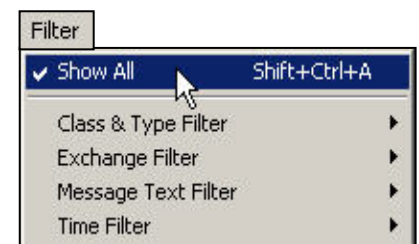


If there are no logs at the time that you specified, then the last log with an earlier time will be selected and displayed

Hit OK to carry out the search or Cancel, to cancel the operation.

4.2.4 Filter Menu

You can filter the log messages so that only messages that match all the filter criterion are displayed. When the display is currently being filtered by using any of the filter types, then a "Filter" status message is displayed in the status bar located near the top of the DXL Log Viewer window. This is done in order to inform the user that the messages in the Log Viewer window are currently being filtered. The Filters that are currently in use will have a tick mark beside them in the Filter menu. More than one filter can be applied to log messages at the same time.



There are four types of filters: Class & Type Filter, Exchange Filter, Message Text Filter and Time Filter.

Once you have made the filter selections then the various setups can be saved for reuse and loaded when required. If all the logs are not displayed and some are currently filtered then a tick mark appears next to the filter name in the Filter menu. Hold the pointer over filter name and then select a particular option. All the options are listed below.

Certain options appear repeatedly for each type of filter and hence, these common options are discussed once in order to avoid repetition. They are:

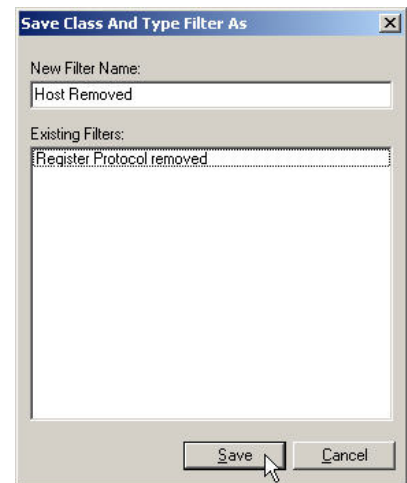
Show All Option

Select Show All to temporarily disable a filter without changing its settings. When a filter is bypassed, its Show All item will be checked. Selecting the Show All option when it is already checked will re-enable the filter with its previous setting.

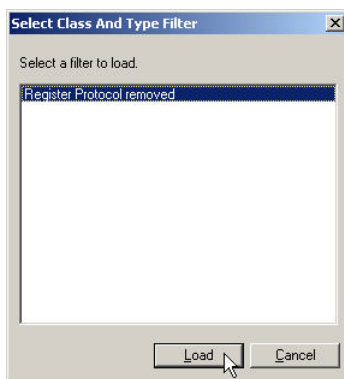
Save As... Option

Click on Save As... from the Filter's submenu to save the current filter settings for later reuse. Type a name for this filter setting into New Filter Name:. The Existing Filters: list displays the filter configurations that have already been saved. Select Cancel to cancel the operation.

Note that Class & Type Filters are saved in a common location that is independent of the active project. This allows the same Class & Type Filters to be reused on multiple projects. All other filters are saved as a part of the active project.



Load... Option:

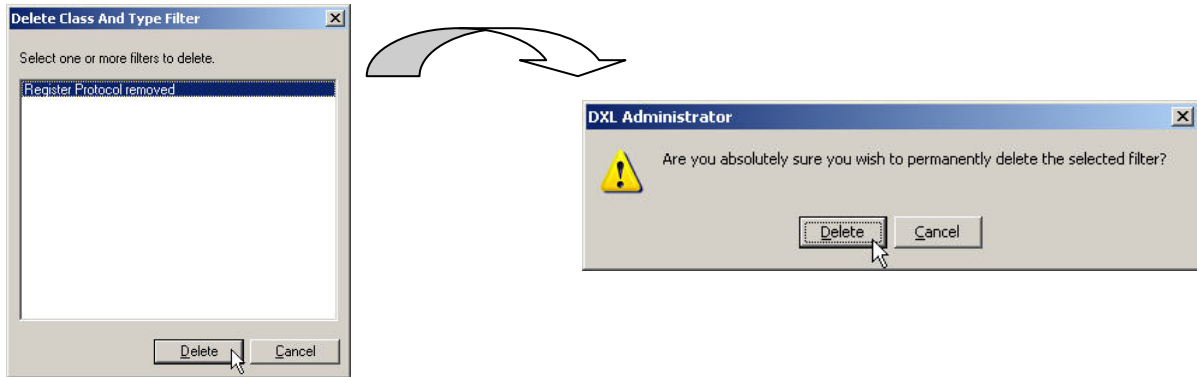


Click on Load... from the Filter's submenu in order to load a previously saved filter setup. This brings up the Select Filter dialog. Click on the name of the filter that you want to load and click Load. Clicking Cancel will close the dialog and leave the filter settings unchanged.

If there are currently no filters of this type that are saved then the Load option is greyed out and you will not be able to select it.

Delete... Option

Select Delete... in the Filter's submenu to delete any unwanted filter settings that have been saved. This will bring up the Delete Filter window. Select one or more filters in the list and then click on Delete. You will be prompted to confirm the deletion before the filter settings are deleted. So, you can click on Delete to delete the selected filter or click on Cancel to cancel the operation.

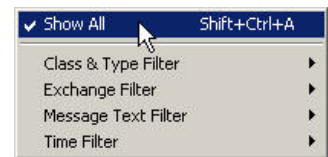


If there are currently no filters of this type that are saved then the Delete option is greyed out and you will not be able to select it.

The other options that appear in the Filter menu and in the submenus are discussed below.

4.2.4.1 Show All

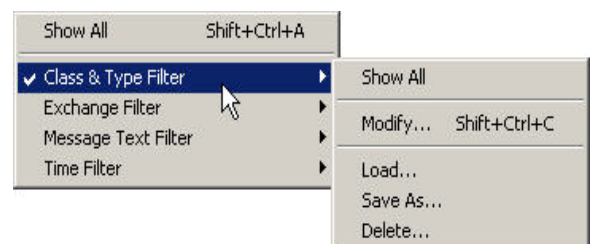
Select Show All to display all the logs that are currently in the Log Viewer window. In effect, this option disables any filters that might be currently filtering the logs and hence, displays all the logs that are present in the Log Viewer window. If you select this option, then it appears with a tick mark beside it.



- Class and Type Filters allow the Log Viewer to display particular classes and types of messages.
- Exchange Filters allow the Log Viewer to display only those logs that belong to a particular Exchange or a group of Exchanges. Any logs that do not belong to one of these exchange(s) are excluded from display in the Log Viewer window.
- Message Text Filters allow the Log Viewer to show or hide logs that contain text that is specified by the user.
- Time Filters allow the Log Viewer to display logs that fall in between a certain date and time.

4.2.4.2 Class & Type Filter

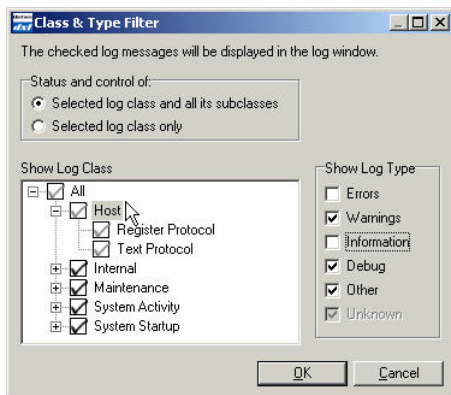
Each log message is assigned to a particular class and given a particular type. They are displayed in the respective Class and Type columns on the Log Viewer window. The logs can be filtered so that only certain classes and types of messages are displayed.



Classes form a hierarchy that groups related messages together. There are 5 main classes of messages: Host, Internal, Maintenance, System Activity and System Startup. Each of these classes has one or more subclasses that can be viewed by clicking on the '+' icon. If you hold down the 'Shift' key while clicking on the '+' icon, this expands all the subclasses recursively. Each class or subclass has 6 message types that are generated by the firmware on the DXL and that are used by the Log Viewer when it encounters logs. They are: Errors, Warnings, Information, Debug, Other and Unknown. These message Types are displayed in the Type column on the Log Viewer window.

- Errors inform the user of any inaccuracies or faults in the system.
- Warnings show up in the case when an inaccuracy may or may not be present.
- Information informs the user of operations being carried out on the DXL box.
- Debug is primarily used for the developers of the firmware in order to debug the software.
- Other is a message that the system gives the user if it cannot determine the kind of Log Type that it has i.e. a message that it cannot categorize into one of the four options above.
- Unknown is displayed when messages are created with a newer application that contains a new LMU file that is different from the LMU files that are currently on the system. Therefore, the program cannot categorize the message, as it does not have the LMU file that the message was created with. To correct this, you need to download the new application (or get one from elsewhere).

Modify... Option:



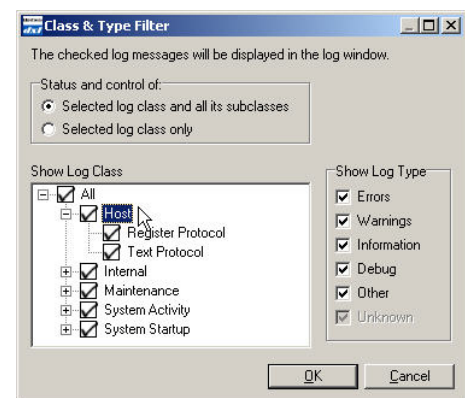
Select Modify... to display logs of a particular class and/or type. This brings up the Class & Type Filter window. You can select a class or a subclass by clicking on its name. You can resize the window if needed.

When a class of message (for example: Host) is ticked this means that this class of message is being displayed in the Log Viewer. Similarly, when a type of message (for example: Errors) is ticked, this means that the Log Viewer is displaying this type of message.

If you want to filter all the messages belonging to a certain class (i.e. Host) and want to mirror these same changes for its subclasses (i.e. Register Protocol and Text Protocol) then select Selected Log Class and all its subclasses. In this case, any changes made for a class will affect all the messages of that class and all its sub classes.

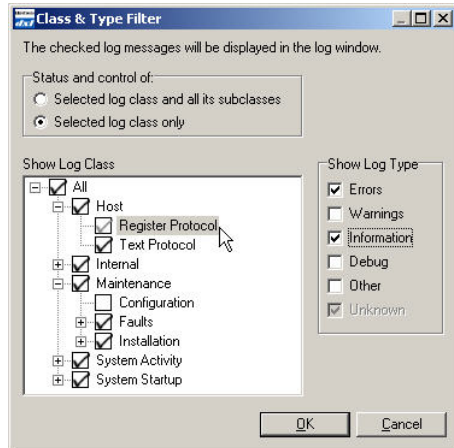
So, placing a tick mark beside a Class indicates that all the messages of that class and its subclasses will be displayed in the Log Viewer. Hence, this will also automatically assign a tick mark to its subclasses as well.

Now, if you want to filter all the messages of a certain Type, then placing a tick mark beside the message Type will allow the Log Viewer to display this message Type. If message Types



are turned on or off (by checking or unchecking them) for a particular class of message (i.e. Host), then these message Types will also be turned on or off for the subclasses (i.e. Register Protocol and Text Protocol) of that particular class of message.

However, turning message Types on and off for a subclass of messages (i.e. Register Protocol), will only affect that particular subclass and the Class that it belongs to.



In order to keep the changes made in a subclass independent of changes made in a class and vice versa, select the Selected Log Class only option.

Hence, selecting a particular Class of messages (i.e. Host) by placing a tick mark beside it does not mean that the subclasses belonging to that class will also be used. You will have to turn on or off each message class and subclass individually along with their related message Types.

Turning message Types on and off for a Class of messages (i.e. Host), will only affect that particular Class (without affecting its subclasses). Similarly, turning message Types on and off for a subclass of messages (i.e. Register Protocol), will only affect that particular subclass.

Hence, changes only apply to the selected class or subclass.

If you are in Selected log class and all its subclasses mode, clicking on a tick will affect the inclusion of messages for both the selected class and all its subclasses, but not its parent/ancestor classes. Also note that:

- A black tick beside a class means that all messages of any type belonging to that class (or one of its subclasses) will be displayed.
- A black tick beside a type means that all messages of that type belonging to the selected class (or one of its subclasses) will be displayed.
- The absence of a tick beside a class means that no messages of any type belonging to that class (or one of its subclasses) will be displayed.
- The absence of a tick beside a type means that no messages of that type belonging to the selected class (or one of its subclasses) will be displayed.
- A grey tick means that the conditions for having either a black tick or no tick have not been met.
- Clicking on no tick or a grey tick will make it black, while clicking on a black tick will make it white. All other ticks will be updated in order to preserve all the above conditions for every class and type.

If you are in Selected log class only mode, clicking on a tick will affect the inclusion of messages for the selected class only. Also note that:

- A black tick beside a class means that all messages of any type belonging to that class will be displayed.
- A black tick beside a type means that all messages of that type belonging to the selected class (or one of its subclasses) will be displayed.
- The absence of a tick beside a class means that no messages of any type belonging to that class will be displayed.
- The absence of a tick beside a type means that no messages of that type belonging to the selected class will be displayed.

- A grey tick means that the conditions for having either a black tick or no tick have not been met.
- Clicking on no tick or a grey tick will make it black, while clicking on a black tick will make it white. All other ticks will be updated in order to preserve all the above conditions for every class and type.

Note that “All” is not really a class but the route of all classes (you will never see “All” as a class name in the Class column).

The Unknown type of class is only applicable to “All”. This is because, if the type is unknown, then so is the class (hence you can’t control it on a per-class basis).

Note that no changes will be made until you click on the OK button to accept the changes and return to the Log Viewer window. Click on Cancel to retain the previous values and nullify any changes made in the current window.

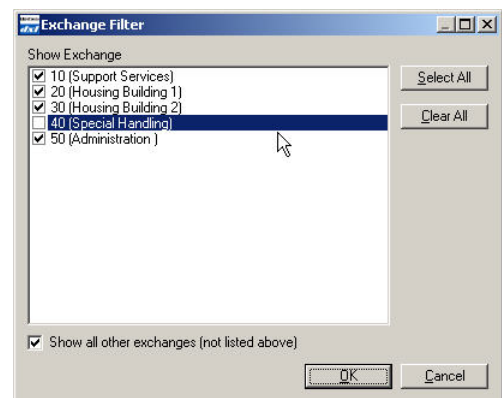
4.2.4.3 Exchange Filter

You can filter the logs to display entries from only a particular Exchange or set of Exchanges. Once this selection has been made, it can be saved for reuse and loaded when required. A tick mark appears next to Exchange Filter in the Filter menu if this filter has been turned on. Hold the pointer over Exchange Filter and then select a particular option. Most of the common options have been discussed in the previous section. The Modify... option is described below.

Modify... Option:

Select Modify... to view or change the filter settings. This brings up the Exchange Filter window, which lists all the exchanges in the current Project. To display the message log entries for an Exchange or a group of Exchanges, place a tick mark beside all the Exchanges whose log messages you want displayed. Then click the OK button to display the log messages from the selected Exchange(s). The log entries that are from the unselected Exchange(s) will not appear in the Log Viewer window.

Click on Select All to display the log messages from all the Exchange(s) in the Show Exchange area. This places a tick mark beside all the Exchange names. Click on Clear All to display none of the log messages from the Exchange(s) in the Show Exchange area. This removes the tick marks from all the Exchange names.



It is possible for different Configurations to have the same exchange number (i.e. 10) but a different exchange name. For example, Configuration 1 may have Exchange 10 defined as Support Services, whereas Configuration 2 may have Exchange 10 defined as Medical Unit. In this case, all the names that are associated with the same Exchange number will appear in a list beside the Exchange number. So in our example, it will appear in the Show Exchange area as:

☐ 10 (Support Services, Medical Unit)

This allows the user to view the different names on different Configurations that are all defined with the same Exchange number.

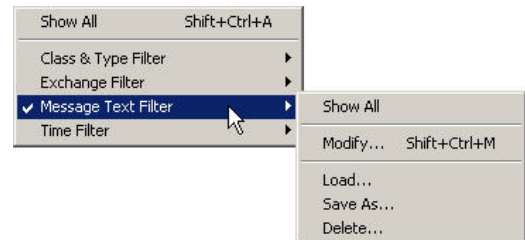
In order to display logs for Exchanges that are not shown in the Show Exchange area, put a tick mark in the Show all other exchanges (not listed above) checkbox. This lets you display log messages that may belong to a Configuration that you do not have in your current Project.

For example, say a new Configuration is made, but you do not have a copy of the Configuration yet on your PC. In this case, you will never see the logs from this exchange as the Exchange itself will not show up in the Show Exchange list. Since this new Configuration may be the one that is currently active, it is very important for you to be able to see the logs from this Exchange. Hence, you will have to put a tick mark in this checkbox, if you want to be able to see all the logs from this new Exchange (which is on the currently active Configuration). If this option is left unchecked, then the Log Viewer will only display logs from the Exchanges that have been checked in the Show Exchange list and will ignore the logs from any other Exchanges that are not in this list.

To apply the changes, click on the OK button or click Cancel to cancel the changes that have been made.

4.2.4.4 Message Text Filter

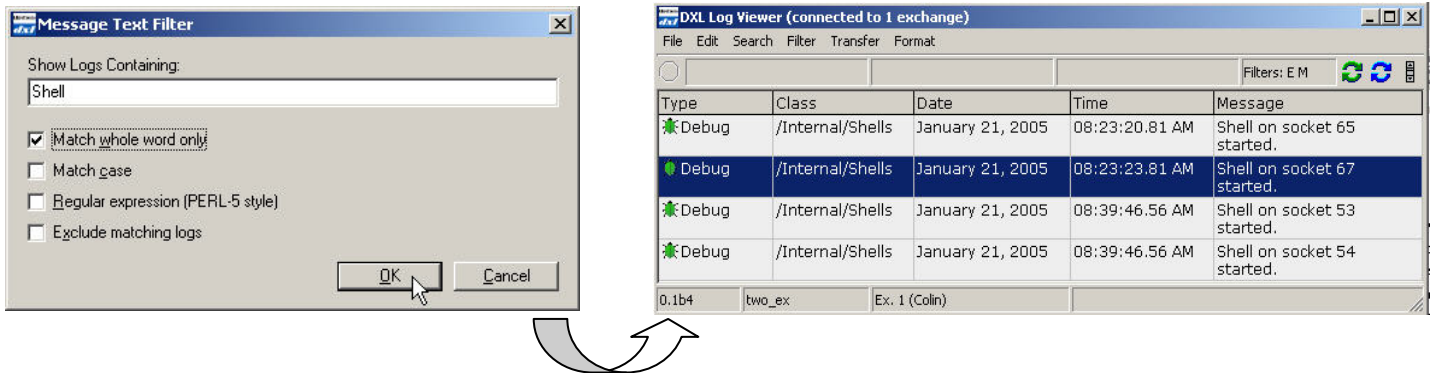
The logs can be filtered to show only messages that contain certain words, phrases or expressions.



Modify... Option:

Select Modify... to search for and display logs that contain some particular message content. Selecting this option brings up the Message Text Filter window. Type the text string or word that you want displayed in all the logs, in Show Logs Containing. If you want to find a particular phrase or word in a log, then tick the Match whole word only box. If this is left unchecked, then the search will also show all the logs that contain a part of the search string within their text body. Tick the Match Case option if the text string or word that you are looking for is required to be case sensitive.

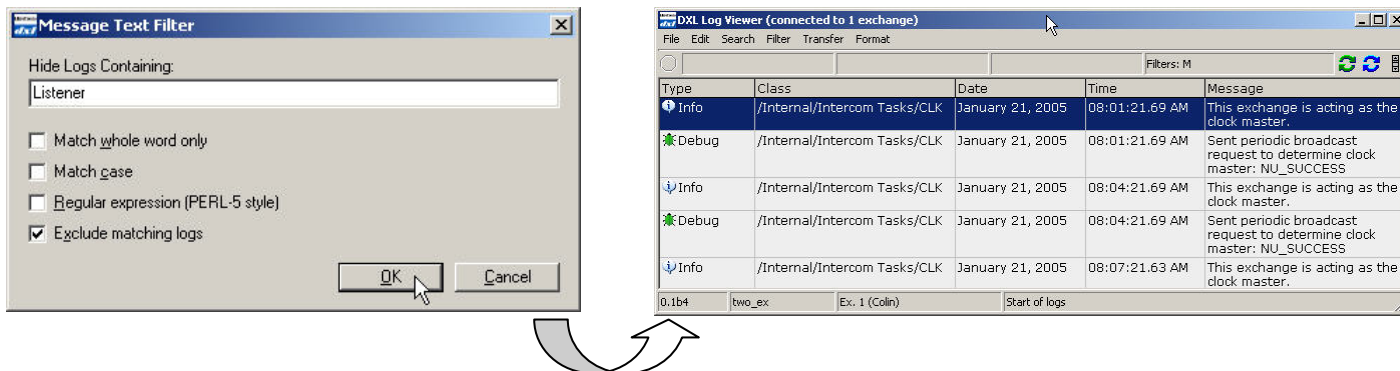
In the figure below, the Log Viewer window has displayed all logs containing the word 'Shell'.



To look for a text string using a regular expression, tick Regular expression (Perl-5 style) and enter the text string in the appropriate format. Please refer to the Search menu for more information about using regular expressions.

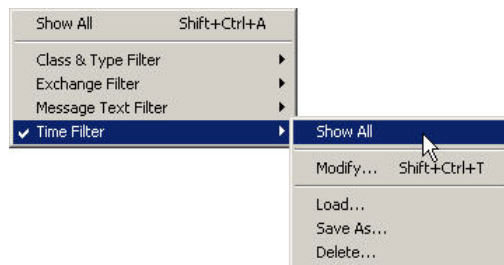
Tick Exclude matching logs if you want to hide, rather than show, all the log entries that match the search string that you enter. When this option is selected, the Show Logs Containing: entry, will switch to a Hide Logs Containing: entry. Click OK to activate the message text filter or click Cancel to cancel the search.

In the figure below, the logs have been filtered to exclude all logs that contain the word 'Listener' and hence, all logs that do not contain this word have been displayed.



4.2.4.5 Time Filter

The logs can be filtered to display only messages at or within a certain time period and date. The setting can then be saved for reuse and loaded when required.



Modify... Option

Select Modify... to display messages that occur at or within a certain time period and date. This brings up the Time Filter settings window. You have to setup the filter by setting the earliest time (E.T) and the latest time (L.T) of logs that you want to display. When the time filter is enabled, the Log Viewer displays only those log entries whose time is between the E.T and the L.T.

There are two basic modes of operation: Other (static) and Relative. In the relative mode, the E.T is always specified to be some fixed amount of time before the L.T (i.e. it is relative to the L.T). In the other mode (static mode), the time period is always specified between a fixed date and time, and therefore, does not change.

How to specify Date and Time for the entries below:

Select the date in Specify: by using the calendar that appears in the drop-down menu. The standard calendar control lets you scroll through the months by using the arrow buttons. To change the year, click on the year and use the scroll to change to the required year. You can enter the date by simply clicking on each entry and typing it in manually. You can also change the time directly, by clicking on each entry in Specify: and typing it in manually, or by clicking on each entry and using the scroll to scroll through that entry.

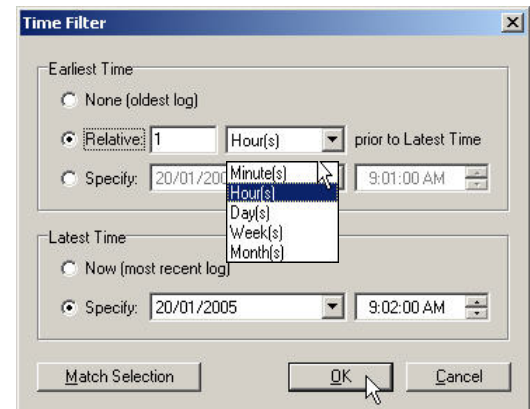


To switch between AM and PM, click on the entry and use the scroll.

The following components of the E.T and the L.T are discussed underneath.

❖ Earliest Time (E.T):

- None: This indicates that no earliest time has been set, which means that the Log Viewer will display the oldest downloaded log.
- Relative: you can ask to see logs that have been downloaded a specific amount of time before the L.T. By typing in a number in Relative: and then specifying whether it is Minutes, Hours, Days, Weeks or Months in the drop-down menu, you can specify to see all logs a specified period of time (defined in Relative:) prior to the L.T.
- Specify: this is a specified date and time for the E.T.



❖ Latest Time (L.T):

- Now: this is the latest or most recent log that has been downloaded by the Log Viewer.
- Specify: this is a specified date and time for the L.T.

The various combinations of the E.T and the L.T are shown in the table below.

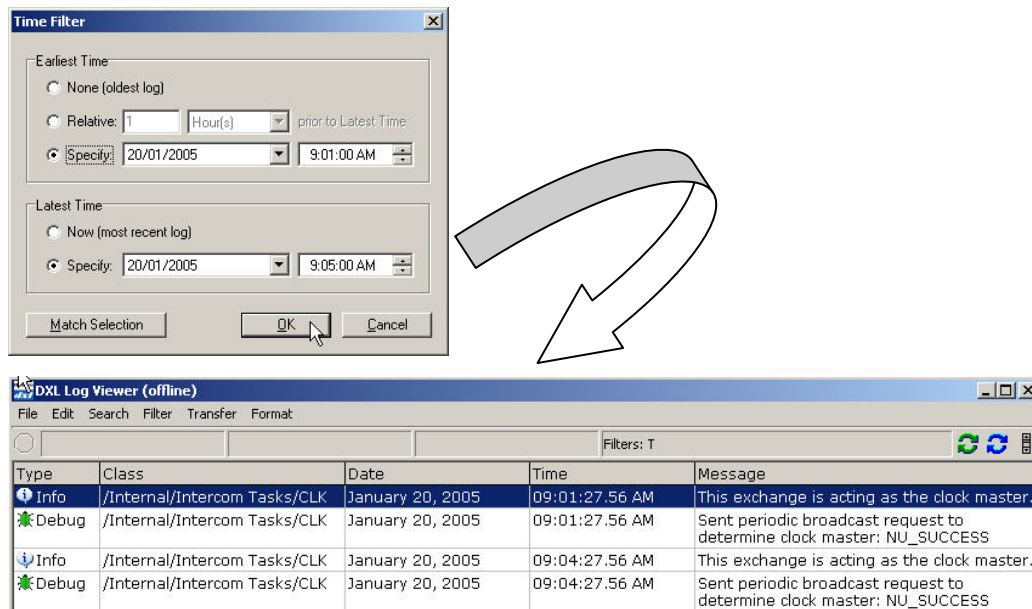
Earliest Time (E.T)	Latest Time (L.T)	Description
None	Now	Displays all logs from the oldest recorded log to the latest log that has been downloaded.
None	Specify	Displays all logs from the oldest recorded log to the logs on the time and date specified in Specify (L.T).
Relative	Now	Displays all logs that were downloaded a specified amount of time prior to the most recent log.
Relative	Specify	Displays all logs that were downloaded a specified amount of time prior to the time and date in Specify: (L.T).
Specify	Now	Displays all logs between the date and time in Specify: (E.T) and the most recently downloaded log.
Specify	Specify	Displays all logs between the specified dates and times

A special case that occurs in this time filter is when the Earliest Time = None and the Latest Time = Now. This case is the same as having no time filter, in which case all the logs are displayed in the Log Viewer. Therefore, this is the case that is displayed when the Show All option is checked in the Filter menu.

Another special case that occurs is when Earliest Time = Relative and the Latest Time = Now. In all other cases, the Earliest Time that you can set for the logs is a constant. However, in this special case, the Latest Time changes as you download new logs. For example, if you are browsing logs near the E.T while you are in stream mode, and a new log happens to be downloaded, the arrival of the new log may cause an adjustment to the time window. This is because the L.T has changed with the new log coming in, but the E.T has also changed because it is

relative to the L.T. Therefore, the logs that you were browsing before the new log came in, may suddenly become excluded from the display.

From the time filter shown below, the logs are to be filtered between the date and time shown in the E.T and the L.T. Hence, the appropriate logs have been displayed in the Log Viewer window.



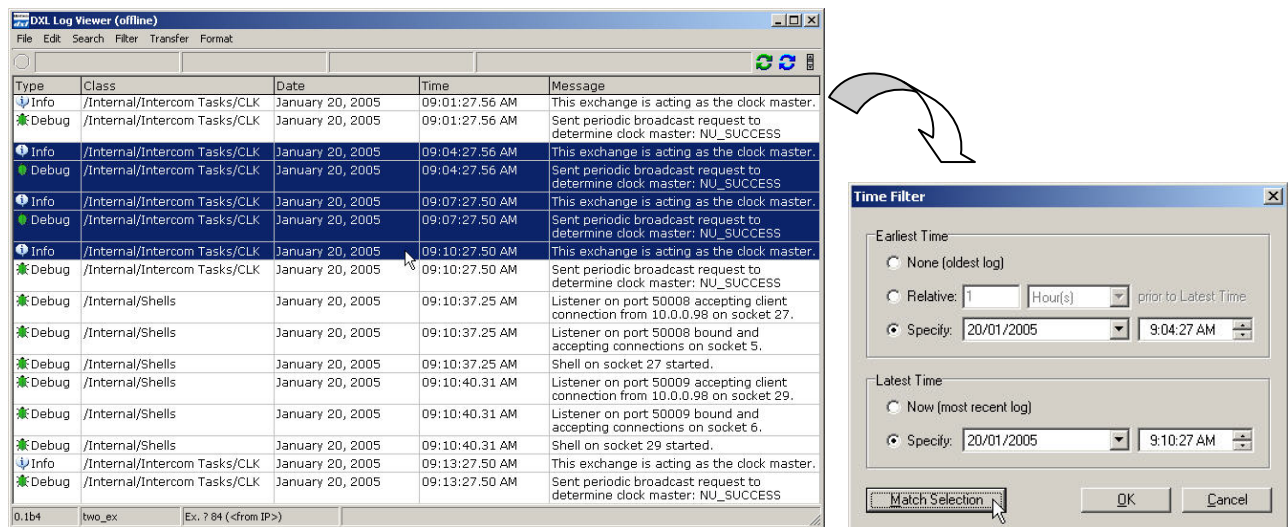
The Match Selection option is used to set the earliest and the latest date and time (in the Time Filter), to match the logs that are selected in the Log Viewer. It always changes both ends (E.T and L.T) of the Time Filter to specific dates and time.

You must select the logs of interest before opening the Time Filter dialog. You can select more than one log in the Log Viewer window by holding down the shift key and clicking on a sequential set of logs, or by clicking and dragging the pointer over multiple sequential logs.

Once you have selected the logs of interest, open the Time Filter dialog and click on Match Selection. Notice that Specify: (E.T) will be updated to the date and time of the first log in the selection, and Specify: (L.T) will be updated to the date and time of the last log in the selection.

Once you click on the OK button, the program will filter and display ALL logs (not just the selected sequential logs) that fall between the specified range of date and time. Therefore, the Log Viewer will display all logs from the same 'second' value that you specify in E.T and L.T, as well as logs that may be downloaded later and which fall between the E.T and the L.T.

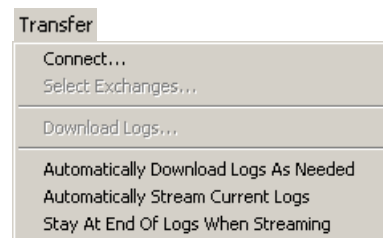
From the figure below, notice how the date and time in Specify: (E.T) has been updated to the date and time of the first log in the selection (from the Log Viewer). Also notice how the date and time in Specify: (L.T) has been updated to the date and time of the last log in the selection (from the Log Viewer).



Time Filters are particularly useful in conjunction with searches. They limit the range of the search to those log entries that pass the filter criteria. Generally, the most useful Time Filter is the Relative: (E.T) to Now: (L.T) setting. This is used to display only those logs from the last day or last hour. This greatly speeds up searches and makes the scrollbar more useful for scanning and locating logs. A time filter with a specific start and end time is particularly useful if you are studying events from a particular period of time (for example, last Monday from 6:00am to noon).

4.2.5 Transfer

The transfer menu commands are used to control how and when the log viewer will get log entries from the connected exchanges



4.2.5.1 Connect...

Click on the Connect... button to setup the main communication link between the PC and the Exchanges of the DXL system. This brings up the Communications Link Setup window. Please refer to Section 0 for a description of this option.

4.2.5.2 Select Exchanges...

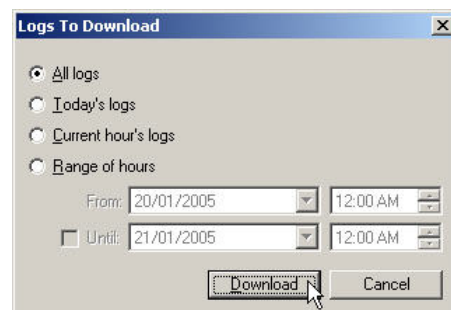
Once you have setup the main communication link, you can select the Exchanges that you want the PC to communicate with. Please refer to Section 3.1.1.9.2 for a description of this option.

4.2.5.3 Download Logs...

Select Download Logs to automatically download logs. When you select this option, it brings up the Logs to Download dialog box. This option is unavailable if you are not currently connected to an Exchange.

Note that even though the program downloads the logs that you specify in the options below, the Log Viewer window only displays the logs that have passed the current filters. The Class & Type and Exchange filters affect both the downloading and the display of logs, while the Message Text and Time filters affect only the display. The current filters could have been set either through the Filter menu or through the startup settings. Also note that any reference to time is made with reference to the time of the DXL Exchange and not the operating system time.

- The first option is All logs. This option downloads all the logs to date that have not already been downloaded.
- Select Today's logs to download the logs for the present day.
- Select Current hour's logs to download logs for the current hour.
- Select Range of hours, to set a range of time within which you want to download the logs. Enter the date and time to begin the logs, in From: and tick Until: to set the end date and time for the logs. If you leave the Until: entry unticked, then all the logs after the time entered in From: will be downloaded.



You can select the date by using the calendar that appears in the date drop-down menu. The standard calendar control lets you scroll through the months using the arrow buttons. To change the year, click on the year and use the scroll to change to the required year. You can also enter the date by clicking on each entry in date and typing it in manually.

You can select the time by scrolling through the times using the scroll button on the right of the time entry, or by clicking on the hour entry in time and typing it in




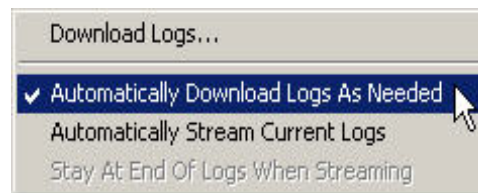
manually. To change between AM and PM, click on it and scroll or type it in again.

Click on Cancel or press the 'Esc' key to cancel the download if you don't want to retrieve any logs.

The logs will be retrieved from the exchange(s) when you click on the Download button. The download status is displayed on the Status Bar. You can click on the red STOP button to abort the transfer while it is in progress.

4.2.5.4 Automatically Download Logs As Needed

Select Automatically Download Logs as Needed from the Transfer menu if you wish to download logs when they are needed to fill in the Log Viewer display. You can turn this option on or off by toggling, through using the green circular arrow  (Toggle Auto-Download Mode) in the Log Viewer window.




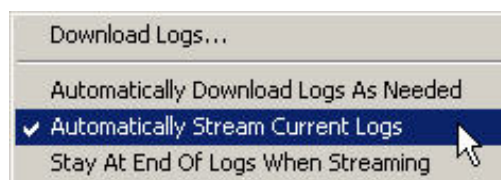
When you scroll to a section in the logs with missing (not downloaded) log entries, or you scroll back past the oldest log or you scroll forward beyond the newest downloaded log, then the program automatically downloads these logs in an effort to fill the gaps. Usually a whole hour of the missing logs will be downloaded at a time. However, in the case that there are not enough logs to fill the screen, the program will continue to download logs (exceeding an hour) until it has enough logs to fill the Log Viewer screen. A similar operation is also carried out if you decide to jump to a certain date and time using the Go To Date/Time... option from the Search menu. If the logs for the date and time that you specify have not been downloaded by the Log Viewer, then the system will automatically download these logs when you jump to this location. This operation of 'filling in the gaps' will always take place for any operation that you try to execute in the Log Viewer window. Therefore, as long as you have the Automatically Download Logs as Needed option 'turned on', the Log Viewer will always try to fill in the missing gaps in logs, irrespective of whether you are trying to export logs, copy logs, print logs or update the scrollbar, etc.

If this selection is not ticked, then the program will NOT automatically download missing logs as you scroll through dates and times with missing log entries.

Note that even though the program downloads the logs specified by the options described above, the Log Viewer window only displays those logs that pass the current filters.

4.2.5.5 Automatically Stream Current Logs

Select Automatically Stream Current Logs for the program to automatically download new logs as they are being generated by the system. The option can also be turned on or off by toggling, through using the blue circular arrow  (Toggle Stream Mode) in the Log Viewer window.



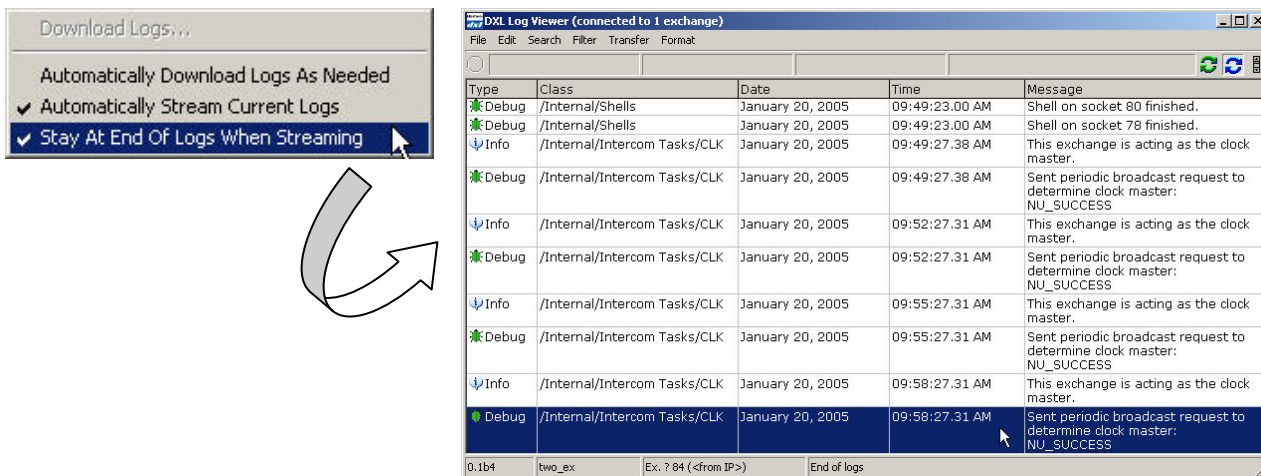
If this option is left unticked then the program will not download the logs as they are being generated.

4.2.5.6 Stay At End Of Logs When Streaming

Select Stay at End Of Logs When Streaming to ensure that new logs that appear at the bottom of the screen (most recent logs), scroll up the screen as newer logs are received. Hence, this option ensures that the cursor is left at the last log (most recent log) that is downloaded; indicating the end of the current log downloads. If the cursor is left on the last log, then as new logs are coming in and moving upwards, this option will ensure that the cursor is left on the last log that is downloaded (and hence it remains highlighted).

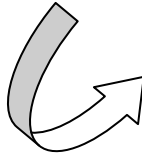
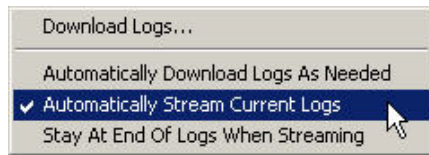
A note to remember here is the fact that some logs that stream in may have a lesser date/time than the most recent log. This could be due to an error in the logs. In this case, although the cursor still remains on the last row, you may not be able to see the logs that are of interest to you (with the correct date/time) until you scroll upwards.

From the figure below, as new logs are streaming in, they are moving upwards, however, the cursor remains on the most recently downloaded log (last log downloaded).



If this option is left unticked then even though the new logs that are streaming in are moving upwards, the highlighted log will remain at the point where the user last clicked on the Log Viewer Screen. Note that you cannot select this option if you do not select the Automatically Stream Current Logs option in the Transfer menu. Note that when you have this option 'turned on', you will always see the message 'End of Logs' in the status bar at the bottom of the Log Viewer window, when you are on the last line (log) of the Log Viewer window. However, this message will disappear if this option is not selected.

On a busy system, logs may be coming in so fast that there is no chance to scroll off the last row, and aborting doesn't help either because another log comes in as soon as the previous one is aborted. In this case, it would be useful for you to turn off the stream button as this will disable streaming altogether and will give you to change the filter so as to decrease the frequency of logs being streamed.

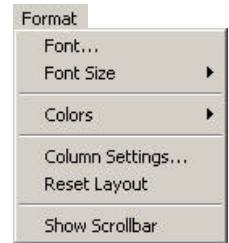


Type	Class	Date	Time	Message
Debug	/Internal/Shells	January 20, 2005	09:49:23.00 AM	Shell on socket 80 finished.
Debug	/Internal/Shells	January 20, 2005	09:49:23.00 AM	Shell on socket 78 finished.
Info	/Internal/Intercom Tasks/CLK	January 20, 2005	09:49:27.38 AM	This exchange is acting as the clock master.
Debug	/Internal/Intercom Tasks/CLK	January 20, 2005	09:49:27.38 AM	Sent periodic broadcast request to determine clock master: NU_SUCCESS
Info	/Internal/Intercom Tasks/CLK	January 20, 2005	09:52:27.31 AM	This exchange is acting as the clock master.
Debug	/Internal/Intercom Tasks/CLK	January 20, 2005	09:52:27.31 AM	Sent periodic broadcast request to determine clock master: NU_SUCCESS
Info	/Internal/Intercom Tasks/CLK	January 20, 2005	09:55:27.31 AM	This exchange is acting as the clock master.
Debug	/Internal/Intercom Tasks/CLK	January 20, 2005	09:55:27.31 AM	Sent periodic broadcast request to determine clock master: NU_SUCCESS
Info	/Internal/Intercom Tasks/CLK	January 20, 2005	09:58:27.31 AM	This exchange is acting as the clock master.
Debug	/Internal/Intercom Tasks/CLK	January 20, 2005	09:58:27.31 AM	Sent periodic broadcast request to determine clock master: NU_SUCCESS

0.1b4 two_ex Ex. ? 84 (<from IP>)

4.2.6 Format Menu

You can change the type, size and colour of the text being used in the Log Viewer window by choosing an option in the Format menu. You can also change the column settings and layout as well as add or remove the scroll bar, through the Format menu.



4.2.6.1 Font...

To change the font, select Font... from the Format menu. This brings up the standard Font selectable dialog, shown below. The changes that you are making to the font, will all appear in the Sample window.

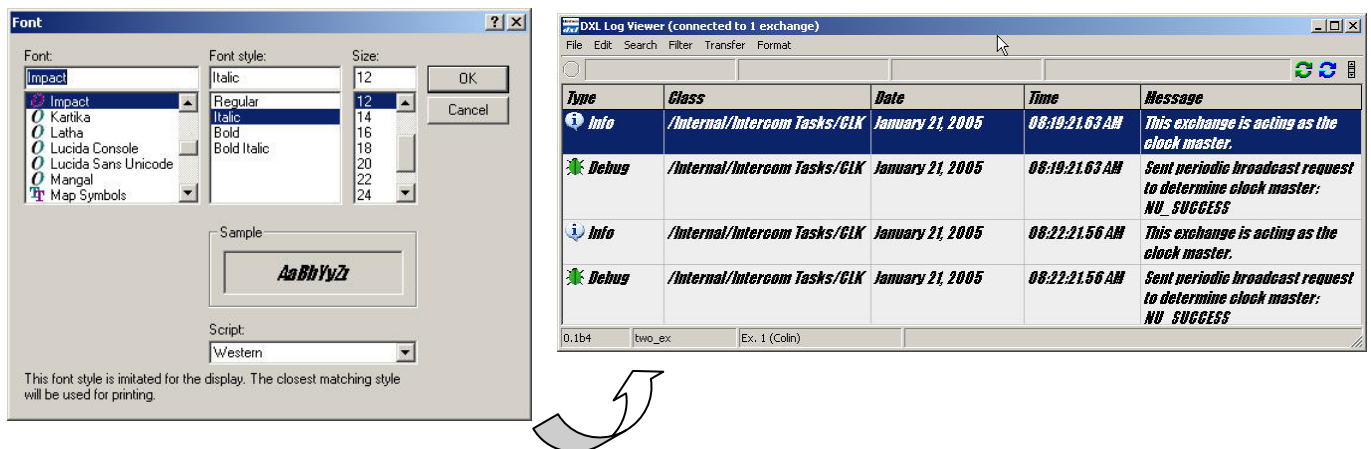
Use Font: to change the font type. Use the scrollbar to view different types of fonts and then click on the font that you want to use.

Use Font Style: to change the display style of the font. You can click on any of the Font Style: selections that are listed. They are usually: Regular, Italic, Bold and Bold Italic.

Use Size: to change the size of the font. Use the scrollbar to view different sizes of fonts and then click on the font size that you want to use.

Use Script: to change the characters of the font by using the drop-down menu and scroll bar. Normally, this value should remain unchanged.

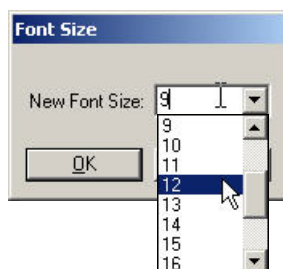
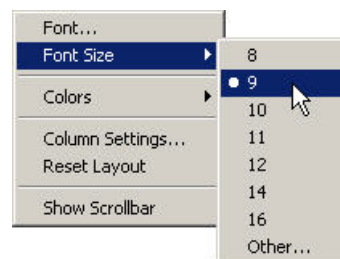
The figure below shows how the font of the logs has been changed in the Log Viewer window



Note that no changes will be made until you click the OK button to accept the changes and return to the Log Viewer window. You can click Cancel in order to retain the previous values and nullify any changes that you made in the Font dialog.

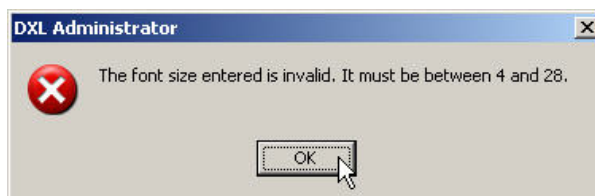
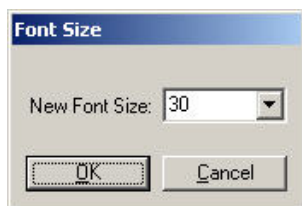
4.2.6.2 Font Size

The Font Size lets you modify the size of the font without going into the Font... option. Hold the pointer over Font size and then click on the size that you want to use. Note that the font size will change immediately, without any confirmation from the program.

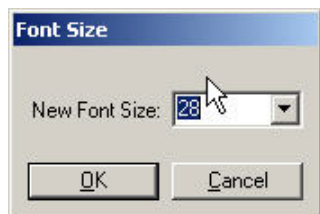


If you want to use a Font size that is not in the list then click on Other.... A Font Size window pops up and you can select a font size by using the scrollbar in the drop-down menu.

You can also manually type a font size into the New Font Size: entry. However, if this size is not between 4 and 28 then the program will display an error message.

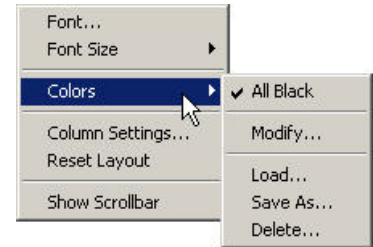


If you enter a font size that is too large to be displayed in the Log Viewer window then the program will display an error message. In this case, you must hide some columns, increase your screen resolution, enter a smaller font size or decrease the size of some of your columns (other than the Message column, which is resized automatically).



4.2.6.3 Colors

You can set the colours of the Log Class and the Log Types. Once this selection has been made, the colour scheme can be saved for reuse and loaded when required. Hold the pointer over Colors and then select a particular option. All the options are listed below.



Select All Black to ensure that any data concerning the log messages in the Log Viewer window appears in black. This is the default of the system and this option appears with a tick mark beside it if it is being used. This option is only unchecked when the colours are modified. This option is particularly useful if you want to make everything temporarily black for a print job.

Message Classes:

The logs can be filtered so that messages of certain classes and/or types are displayed in different colours. There are 5 main types of message classes: Host, Internal, Maintenance, System Activity and System Startup and they are displayed in the Class column on the Log Viewer window. Each of these classes has one or more subclasses that can be viewed by clicking on the '+' icon.

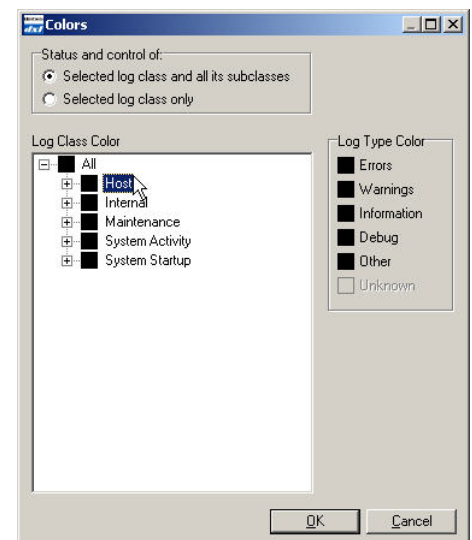
Log Types:

Each class or subclass has 6 message log types that are generated by the firmware on the DXL box. These can be selected as: Errors, Warnings, Information, Debug, Other and Unknown. These message Types are displayed in the Type column on the Log Viewer window. Errors inform the user of if there are any inaccuracies or faults in the system. Warnings show up in the case when an inaccuracy may or may not be present. Information informs the user of operations being carried out on the DXL box. Debug is primarily used for the developers of the firmware in order to debug the software. Other is a message that the system gives the user if it is not sure of what kind of Log Type it has i.e. a message that it cannot categorize into one of the four options above. Unknown is displayed when messages are created with an LMU file that is different from the LMU files that is currently on the system and hence, being used to translate the messages. Therefore, the program cannot categorize the message, as it does not have the LMU file that the message was created with.

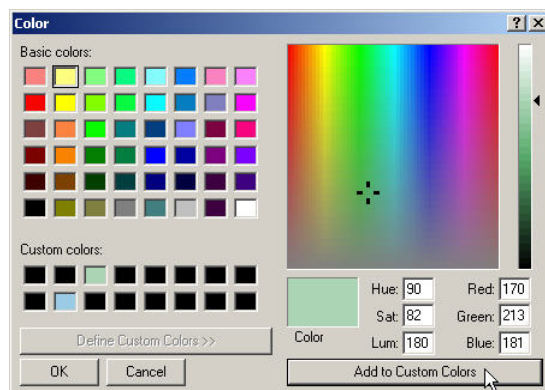
Modify... Option:

Select Modify... to change the colours of message classes and/or types. This brings up the Colors window, which will allow you to modify the existing colours for the logs. By default, all the log messages are displayed in black and therefore, all the log classes and types appear with a black box.

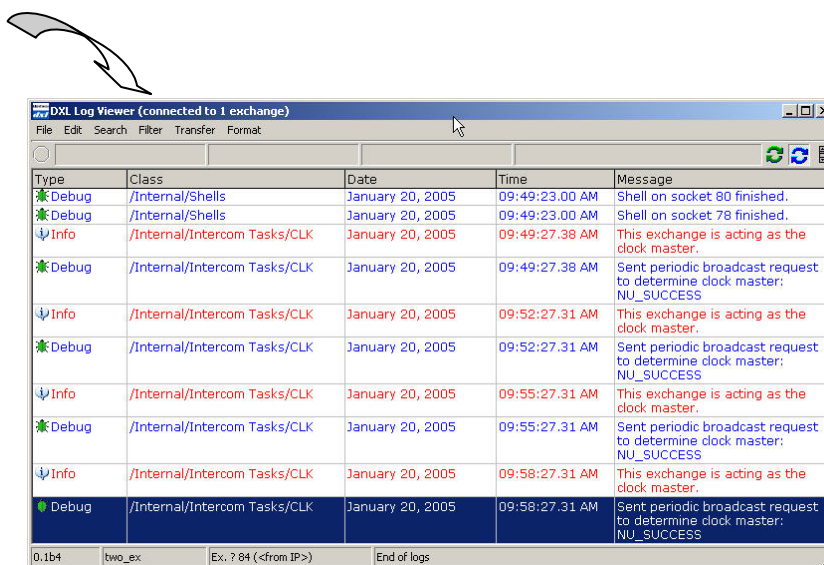
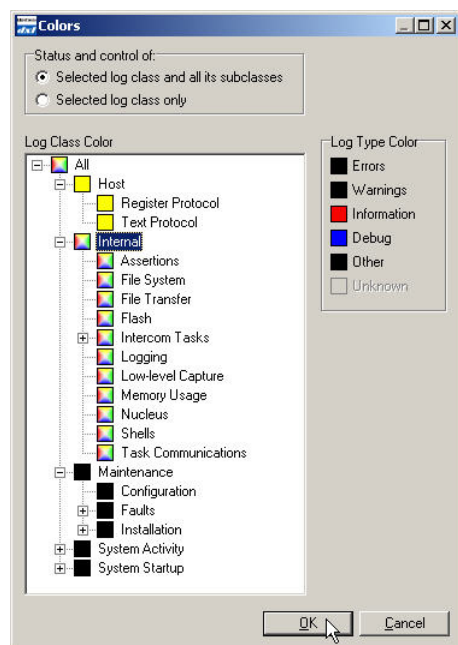
You can select a class or a subclass by clicking on its name. You can change the colour of a log class and/or type by clicking on the current colour and selecting a colour from the Color window that appears. You can resize the window if needed.



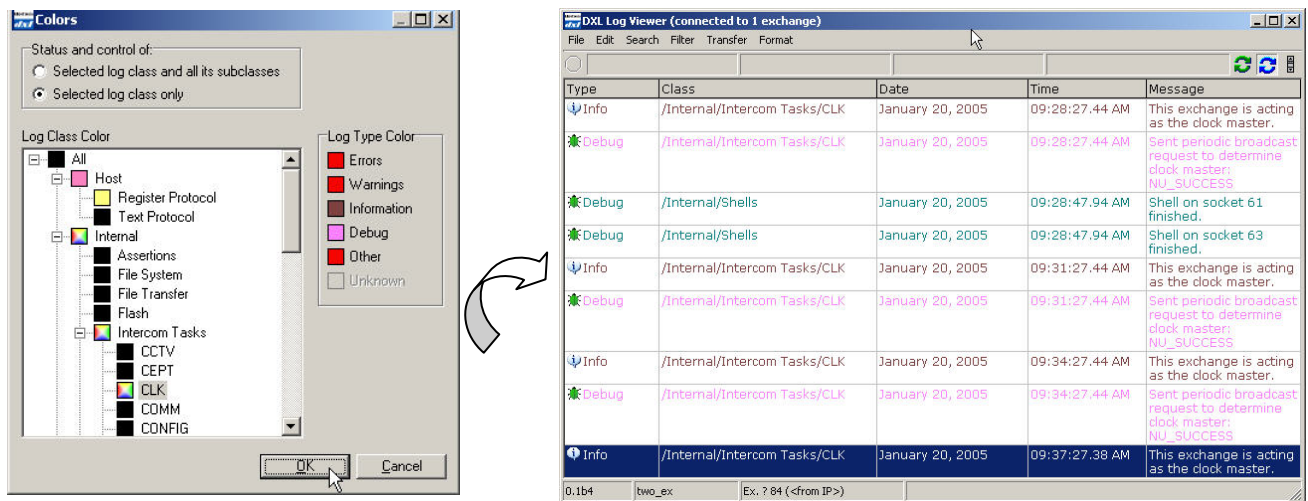
To select a colour, click on any colour in Basic colours. You can also define unique customized colours by clicking on Define Custom Colors in the Color window. The expanded dialog lets you select any colour that you want, either numerically or by picking from the HSV controls. You can add the colour that you want to the Custom colors: area, by selecting a colour and then clicking on Add to Custom Colors.



If you want to change the colour of a message for a class and mirror these same changes for its subclasses then select Selected Log Classes and all its subclasses. In this case, any changes in the colour of a class will affect all the messages of that class and all its sub classes. If all log type messages in a class are the same colour, then its box will show a solid colour. However, if the entries in the Log Type Colour display are different, then the class as well as its subclasses and the root will show a multicolored box.



In order to keep the changes made in a subclass independent of changes made in a class and vice versa, select the Selected Log Class only option. So, changing the colour of a class or a subclass and making changes to its properties will only affect the particular class or subclass that these changes are being made to. Similarly, changing the colours for each option in the Show Log Type display for a class or a subclass, will only affect that particular class or subclass. If the options in Log Type Colour are set to different colours, then the class or the subclass that this applies to will appear as a multicolored box. Hence, changes only apply to the selected class or subclass.



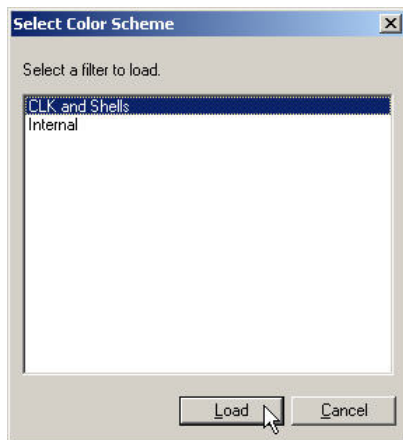
If you are in Selected log class and all its subclasses mode, clicking on a colour will affect the inclusion of messages for both the selected class and all its subclasses, but not its parent/ancestor classes. Also note that:

- A solid colour box beside a class means that all messages of any type belonging to that class (or one of its subclasses) will be displayed in the colour that you choose.
- A solid colour box beside a type means that all messages of that type belonging to the selected class (or one of its subclasses) will be displayed in the colour that you choose.
- A multicolored box means that the conditions for having a solid colour have not been met.

If you are in Selected log class only mode, clicking on a tick will affect the inclusion of messages for the selected class only. Also note that:

- A solid colour box beside a class means that all messages of any type belonging to that class will be displayed.
- A solid colour box beside a type means that all messages of that type belonging to the selected class (or one of its subclasses) will be displayed.
- A multicolored box means that the conditions for having solid colour have not been met.

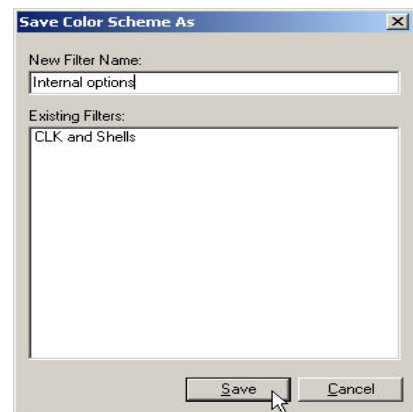
Note that “All” is not really a class but the route of all classes (you will never see “All” as a class name in the Class column). Note that no changes will be made until you click on the OK button to accept the changes and return to the Log Viewer window. You can hit Cancel in order to retain the previous values and nullify any changes made in the current window.

Load... Option:

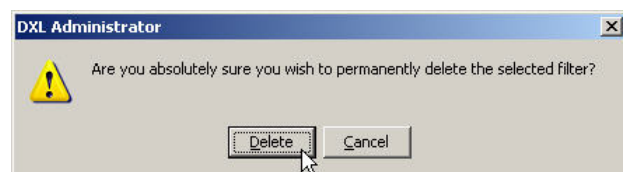
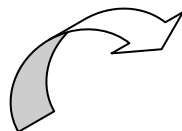
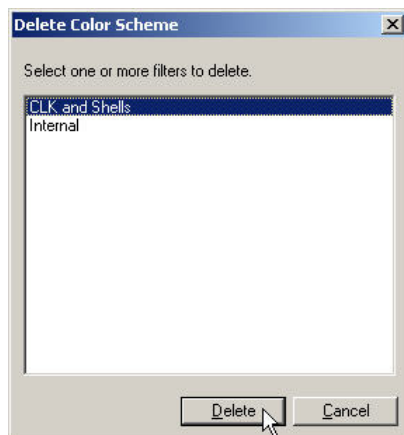
Select Load... to load a previously saved colour scheme. This brings up the Select Color Scheme window. Click on the name of the filter to load any saved colour schemes. Click on Load to load the colour scheme or click on Cancel to cancel the operation. This option is disabled if there are no saved filter settings that you can load.

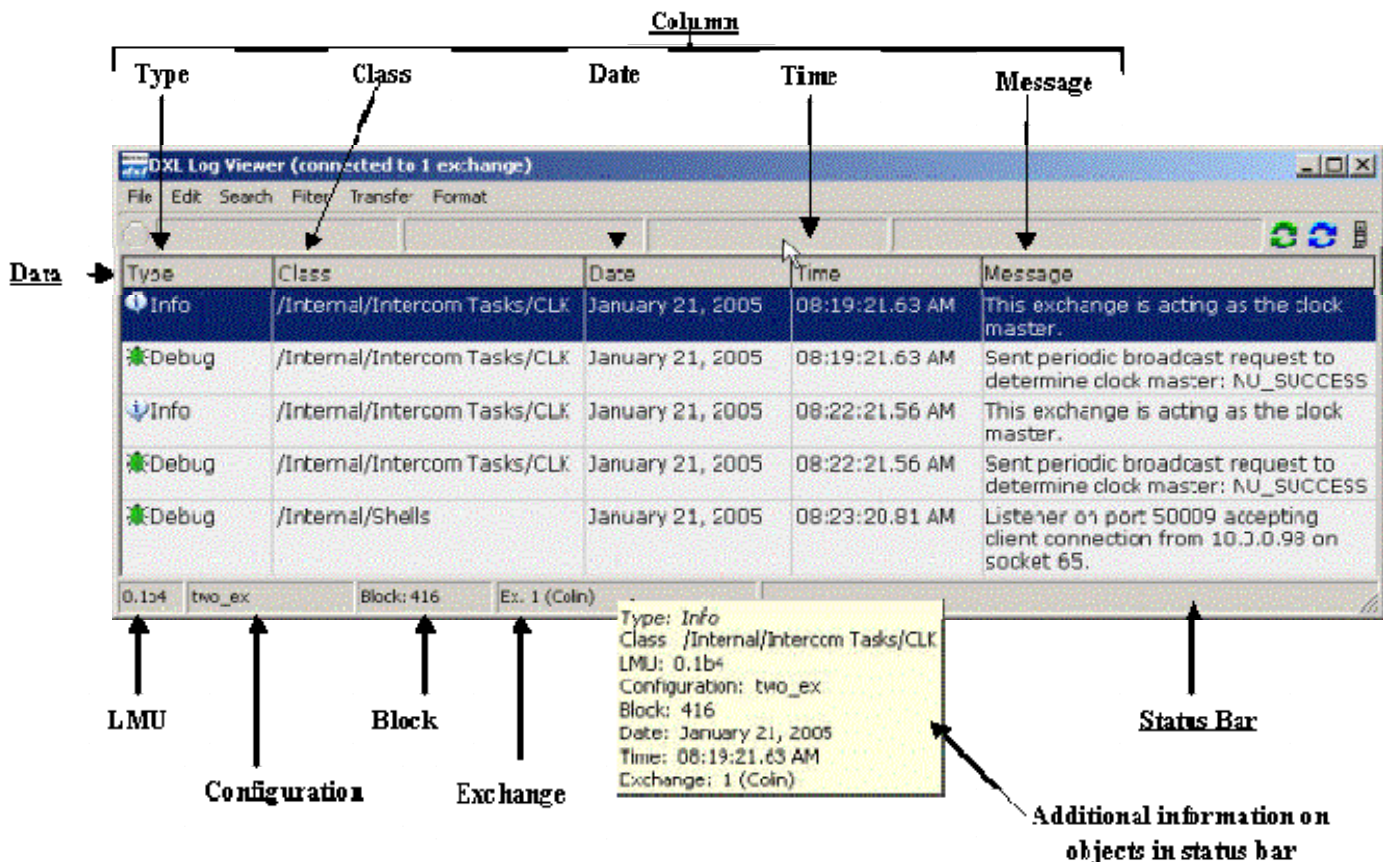
Save As... Option:

Select Save As... in order to save the most recent colour scheme for later reuse. Type a name for the colour schemes that you want to save in New Filter Name:. These colour schemes are saved with the application and not the project, when the user clicks on the Save button. The Existing Filter: area displays the colour schemes that have already been saved. Click on Cancel to cancel the operation.

**Delete... Option:**

Select Delete... to delete an existing colour scheme. This brings up the Delete Color Scheme window. Click on the name of the filter that you want to delete and then click on Delete to delete any saved colour schemes. The program will display a confirmation message, "Are you absolutely sure you wish to permanently delete the selected filter?". So, you can click on Delete to delete the colour scheme or click on Cancel to cancel the operation. This option is also disabled if there are no saved filter settings that you can delete.





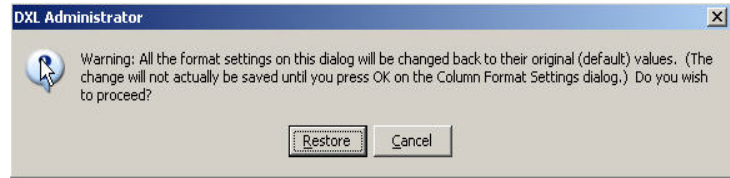
Note that you can get further information on the selected logs. To do this, hold the mouse pointer over the status bar. The Log Viewer will briefly display all the information for the selected log entry.

Some of the information can be formatted in several ways and these formatting selections are made under the Format column in the Column Settings... option. These are:

- **Type** – you have three options for displaying this data. If you want the Type of log to appear with an icon, then choose Icon. If you want the Type of log to appear with a name, then choose Name. If you want the Type of log to appear with both an icon and a name then choose Both.
- **Date** – you can choose for the Date of the logs to appear in a Long format, eg. “January 13, 2005” or in a Short format, “DD/MM/YYYY”. However, the Long and Short format depend on your PC’s ‘Regional and Language Options’, which are found in the Control Panel settings of your PC.
- **Time** – you can choose for the Time of the logs to appear in 24 Hour mode “14:03:36”, in AM/ PM mode “02:03:36 PM”, in 24 Hour (ms) mode “14:03:36.25” or in AM/ PM (ms) mode “02:03:36.25 PM”. High precision time is useful on a busy system where tens or hundreds of logs are coming in per second.
- **Exchange** – to view the Exchange that a log is downloaded from, you can choose for the Exchange to appear with the Number of an Exchange, the Name of an Exchange, or Both, the number and the name of an Exchange.

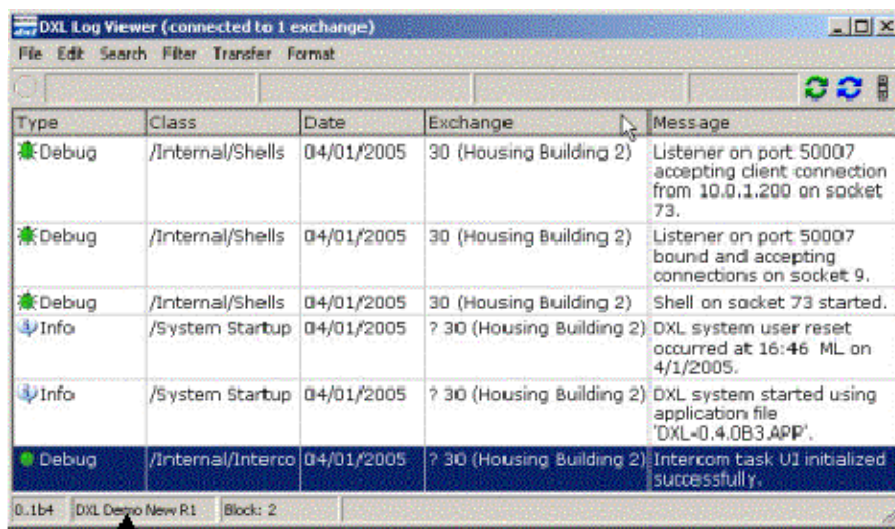
Restore Defaults Option:

You can click the Restore Defaults button to change all the Format Settings back to their original default values. This will display a confirmation dialog. Click on Restore to continue with the changes or click Cancel to cancel the operation. Note that the changes will not take effect until you click OK on the Column Format Settings window.



Note that when you view logs, an Exchange or set of exchanges might appear in a '? Exchange number' format. This occurs when you are viewing logs that were generated while running a Configuration that is no longer installed on the DXL and is missing on the PC. Since the program cannot find the Configuration that these logs belong to, it chooses to map the log into the current Configuration by displaying a '?' with the Exchange number of the current Configuration that is active on the system. This mapping or assumption is usually correct, but it may not necessarily be so.

Additionally, when you select a log, the Log Viewer window displays the Configuration that this log belongs to. This Configuration is displayed either as a separate column in the Log Viewer window, or in the Status bar, depending on the current Column Settings that you have chosen.



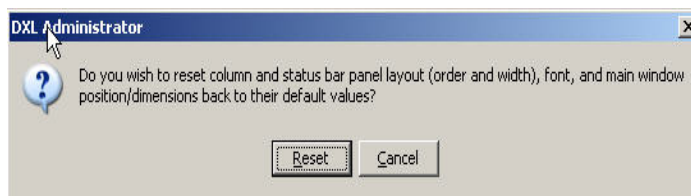
? – Unknown device

30 – Exchange number of current Configuration

DXL Demo New R1 – Configuration that the unknown device belongs to.

4.2.6.5 Reset Layout


The Reset Layout menu item lets you reset the column and status bar panel layout (order and width), font, and main window position dimensions back to their default values. A confirmation message is displayed when you select this item.

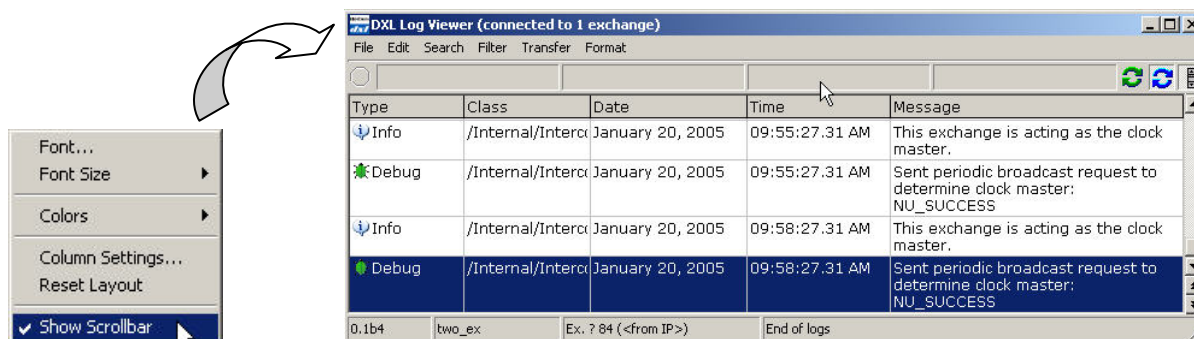


You can click on Reset to reset the default values or click on Cancel to cancel the operation.

4.2.6.6 Show Scrollbar

Select Show Scrollbar to toggle the scrollbar on the Log Viewer window, to On or Off. The Show Scrollbar menu item is checked when the scrollbar is displayed and this is illustrated in the figure below.

The scrollbar can also be toggled on or off by clicking the grey scrollbar  (Toggle Scrollbar) in the Log Viewer window. If the scrollbar is on and the Auto Download mode is on, then the Log Viewer will attempt to download all the logs that it can.



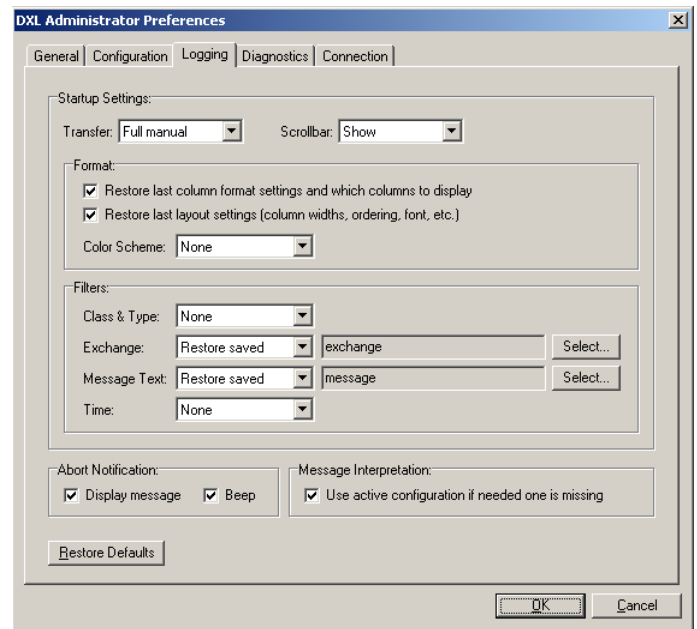
4.2.7 Edit Menu Continued

4.2.7.1 Preferences

Select Preferences... in the Edit menu to bring up the DXL Administrator Preferences window. This window consists of 5 tabs: General, Configuration, Logging, Diagnostics and Connection. The first two tabs have already been discussed with the DXL Configuration Editor, so the Logging Tab is discussed here.

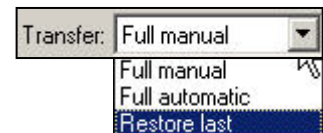
4.2.7.1.1 Preferences – Logging

Select the Logging Tab to configure the Startup Settings:. These are the settings that the program uses when the DXL Log Viewer starts up. Note that the changes made here will only come into effect when the Log Viewer is closed and reopened.



Transfer Option

You can select different options in the drop-down menu in Transfer:, to set the preferences for how the logs are to be downloaded from the DXL Exchanges.



Select Full manual to disable the three options in the Transfer menu, which are: Automatically Download Logs As Needed, Automatically Stream Current Logs and Stay At End of Logs When Streaming. These 3 options are discussed further with the discussion of the Transfer menu section.

Select Full automatic to enable all the 3 options.

Select Restore last to restore the saved settings that were used when the Log Viewer was last closed.

Scrollbar Option

Scrollbar: lets you show or hide the scrollbar on the main Log Viewer window. Select Show to display the scrollbar on startup. Select Hide to hide the scrollbar from view on startup.



Select Restore last to restore the setting that was in use when the log Viewer was last shut down.

All the settings in the Scrollbar: drop-down menu affect the Show Scrollbar option in the Format Menu.

Format Settings:

Put a tick mark in the Restore last column format settings and which columns to display checkbox, for the Log Viewer to revert (on start-up) to the format settings that were used before the user last exited the Log Viewer window. Choosing this option affects the Column Settings... menu item in the Format menu.

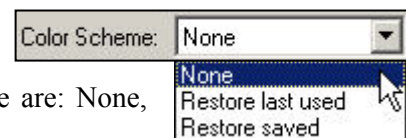
If the option is left unchecked then the program will use the default settings for the system, which are the settings that you get by choosing the Restore Defaults button in the Column Format Settings dialog (this dialog appears when you select the Column Settings... menu item in the Format menu).

Put a tick mark in the Restore last layout setting checkbox, for the Log Viewer to revert (on start-up) to the layout settings that were used when the user last exited the Log Viewer window. These options are dependent on the Font... and Font Size options in the Format menu and whether or not the user had manually changed the size or positions of the columns when the program was last run.

If the option is left unchecked then the program will use the default settings for the system.

Color Scheme Option and the Filters Option

There are various settings for the Filters and the Color Scheme that have to be configured so that the Log Viewer knows the setting that it will use on start-up. The options that appear for each of the Filters and for the Color Scheme are: None, Restore last used and Restore saved.



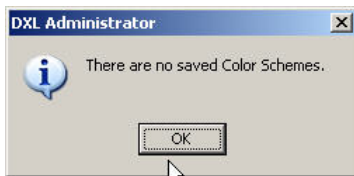
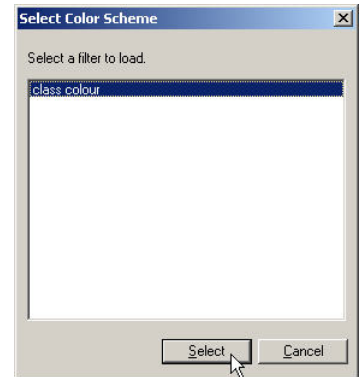
Select None if no Colour Scheme is required when the program starts, in which case the default colour scheme – where all the log messages appear in black – is used. Any Filters that are set to None will be disabled when the Log Viewer starts up.

Select Restore last used if you want to use the Filter or Colour Schemes settings that were used when the user last exited the Log Viewer window. This option is independent of whether the Filter or Color scheme was a saved setting or was simply a setting that was used before the Log Viewer was last shut down.

Select Restore saved when you want to use a saved Filter or Color Scheme. When you select this option from the drop-down menu, you will see a Select... button appear next to it. Click on the Select... button so that you can choose the saved setting that you want to load when the Log Viewer starts up.

As an example, when you click on the Select... button for the Color Scheme setting, you will see the Select Color Scheme dialog. From this dialog, select the saved color scheme that you want to use by clicking on it. Click the Select button to make the selection or click Cancel to cancel the operation.

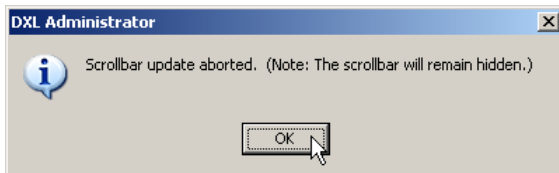
If you have not loaded a project then only the Color Scheme and Class & Type Filters are configurable. This is because the Color Scheme settings and the Class & Type Filters are saved with the application; while the Exchange Filters, Message Filters, and Time Filters are saved with the project (and therefore it requires that a project is loaded before these filters can be configured).



If there are no saved Color Schemes and you click on the Select... button, then you will get a message saying, "There are no saved Color Schemes".

Abort Notification Option:

If you carry out an operation such as a search operation, and want to be informed of whether the operation is aborted or not, then the Abort Notification: display is used.



If Display Message is ticked then you will see a dialog box that will inform you if a message is aborted. This message also appears if you abort an action by hitting the red STOP button.

If Beep is ticked then you will hear a beep sound indicating that a particular operation was aborted. This sound also plays if you aborted the action by hitting the red STOP button. These options are particularly helpful if the Log Viewer is carrying out simultaneous operations, such as downloading logs during a search. So in this case, if you click the STOP button then the download will be aborted but the search will continue. Hence, depending on the message that you receive, you will be aware of the operation that was aborted.

Message Configuration Option:

The logs in the database are generated using Configuration files. The Log Viewer uses these Configuration files to download the log messages that are displayed in the Log Viewer window. If Use active configuration if needed one is missing is ticked and the original Configuration file is missing, then the program automatically uses the active Configuration that is available on the system when it is downloading the logs. You should say how this will only result in correct log interpretation (i.e. lookups of device numbers/names and other info in the configuration while formatting the logs) if the active configuration and the missing one are sufficiently similar.

Note that you will not be able to make any changes until you click the OK button to accept the changes and return to the Log Viewer window. Click Cancel to retain the previous values and nullify any changes made in the Preferences window.

4.2.7.1.2 Preferences – Diagnostics

This option is currently not operational.

Note that no changes will be made until you click on the OK button to accept the changes and return to the Log Viewer window. Click on Cancel to retain the previous values and nullify any changes made in the current window.

5 MicroComm DXL Local User Interface

5.1 Introduction

This document describes the operation of the MicroComm DXL's Local User Interface (LUI). The interface is comprised of an 11-button keypad, a 64-pixel x 128-pixel backlit LCD, and three LED status indicators that are located on the front panel of the Digital Communication Controller (DCC). This document also provides a description of the LUI's operation when accessed remotely through a Telnet client.



Every DCC provides a Local User Interface (LUI) that is used to facilitate the installation and troubleshooting of an Exchange. Through the LUI, you can:

- Adjust the LCD's contrast and backlight intensity.
- Invoke self-test routines on the DCC and any attached devices that provide a self-test feature. These test results are displayed on the front panel and any self-test failures are added to the device's fault list.
- Install new or replacement USB, LonWorks, and Ethernet devices such as DCEs, Desktop Masters, etc.
- Set the DCC's static Ethernet IP address(es) and net mask.
- Set the PPP Ethernet IP addresses.
- View and set the system time and date.
- View and acknowledge Faults that are local to the Exchange. Individual lists are provided for:
 - All of the unacknowledged faults on the Exchange.
 - All Faults (including those that have been acknowledged). A separate list is provided for the DCC and for each DCE.
- View the Status of all of the devices on an Exchange including installed firmware components.

When the user first starts up the DXL box, the following screen is displayed. Note that the first line may display a number of different strings, depending on the condition in which the DXL is booted.

- "Power on Detected" indicates that the user has powered the DXL using the switch at the back of the DXL.
- "Power on Restart" also indicates that the user has powered the DXL.
- "User Reset" indicates that the user has initiated a reset of the DXL. This may appear when the user loads a new Application, or enters a new IP address, etc. In this case, the DXL would ask the user whether it is to reboot or reset itself.
- "Exception Code xxH" (where xx is the two-digit HEX error code) indicates a firmware or hardware error or issue, such as entering an incorrect IP address.

```
DXL Boot Version 1.0
Power on Detected

Loading Application
DXL_V1.1b2.APP
.....done.
```

Please refer to Boot Mode section, for a further description of the options that may be entered in a "boot mode" situation.

5.1.1 The Remote Front Panel

The LUI may also be accessed remotely via a Telnet client that is connected through the Ethernet port, a serial port, or the modem port. This Remote Front Panel interface provides a ‘mirror’ of the local display and allows you to carry out the same operations, as if you were using the front panel keyboard. It also allows you to make changes using the remote computer’s keyboard (rather than using the front panel keypad).

The port number used to access the Telnet client (referred to below as “terminal”) is 50000. This port number can however, be changed.



The Remote Front Panel can be selected by clicking on the Diagnostics icon, displayed above, in the MicroComm DXL Administrator window and then selecting View and then Remote Front Panel....






5.2 Display Description

5.2.1 Introduction

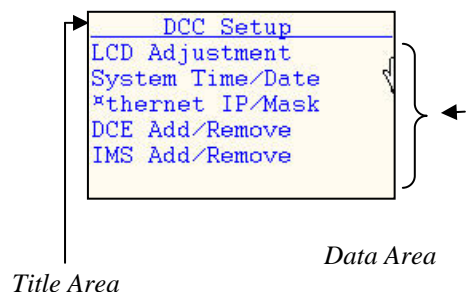
This section will describe the main buttons and keyboard keys that you will use as well as a description of what you will expect to see on the actual DXL box and the remote terminal.

5.2.1.1 Keypad Display Organization

The user interface is organized in a simple hierarchical menu structure (limited to three main levels or menus).

Select any of the three dedicated top level menu keys (, , & ) to “jump” directly to one of three top level menus. From this point, the menus are traversed via the  key (to display the selected sub-menu), and the  key (to return to the previous higher level in the same menu). Note that if you are currently viewing or editing values in a screen that is under one of the three main menu options (eg. The SETUP menu), and you want to go directly to another menu by pressing that menu key (eg. the FAULT menu), then when you return to the previous menu (by selecting the SETUP menu), the program will automatically take you to the active screen that you had exited in that menu.

All display screens are divided into two parts; the title area and the data area. The title area is a single line of information that identifies the screen that is being displayed. A separation line delineates the title area from the data area. The data area of the screen is where the values associated with the screen are displayed and edited. Scrolling is performed in the data area only; the title always stays on the first line of the screen and never scrolls off.




5.2.1.2 Cursors and Visual Cues

Four customized characters are provided to mark the cursor position at the left hand position:












- : This is the default cursor that alternates with the character at the leftmost position on the line (usually for a heading or title that cannot be changed)
- ◆ : This is the default cursor that alternates with the character that is being edited at a point in time.
- ⤴ : This cursor is substituted in place of the '□' cursor when positioned on the first line of the LCD and additional items towards the top of a list are available for display.
- ⤵ : This cursor is substituted in place of the '□' cursor when positioned on the last line of the LCD and additional items towards the bottom of a list are available for display.

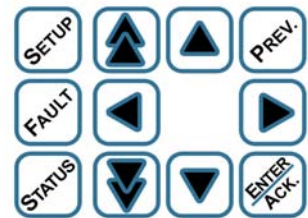
During value editing, the default cursor alternates with the field that is selected for modification.

Generally speaking, you can edit any line on the DXL screen that has a colon ':' on it (by pressing the  key). Conversely, you cannot edit any line that has an equal sign '=' on it, as it is displaying a field that cannot be changed.

5.2.1.3 Keypad Description













The keypad is made up of three groups of keys.

- The first group of keys (, , & ) are used to jump to the highest level of the menu structure.
- The second group of keys (, , , & ) are used to scroll forward and in reverse through the various menu items and fault/status lists.
- The last group of keys (, , , & ) are used for moving up and down the menu hierarchy, for editing values, and for acknowledging faults.



As previously mentioned, the local display and keypad can also be accessed via a remote terminal. When you connect to an Exchange in this fashion, the computer's keyboard maps to the front panel keys of the DCC, as shown in the following table.

Table : Mapping computer keyboard to front panel keys

DCC Keypad											
Terminal Keyboard	F1	F2	F3	↑	Page Up	↓	Page Down	←	→	Bksp.	Enter
Numeric Keypad	N/A	N/A	N/A	8 ↑	9 Pg Up	2 ↓	3 Pg Dn	4 ←	6 →		Enter

Note that unlike the local keypad on the DXL box, the key repeat rate for the remote terminal depends upon the setup of the terminal (i.e., the Telnet client). The auto-repeat of the cursor is therefore determined by the terminal's settings.

Also note that instead of using the keyboard, you can also use a mouse to point and click on buttons that appear on the Remote Front Panel.

5.2.1.4 Keypad Group #1 (, , &)



Select the Setup key to display a top-level menu that allows a particular “Setup” item to be selected for display and editing as desired. This includes setting the LCD contrast & backlight intensity, setting the system time, setting up the Ethernet network(s), etc. Please see Section 5.5 for additional details.



Select the Status key to display a top-level menu that displays the Status of selected I/O ranges, as well as other information such as firmware versions. Please see Section 5.6 for additional details.




Select the Fault key to display a top-level menu that allows a particular range of Exchange Faults to be selected for display. This includes wiring faults, audio trunk faults, self-test faults, etc. Please see Section 5.7 for additional details.




5.2.1.4.1












5.2.1.5 Keypad Group #2 (, , , &)



This key performs the two (context sensitive) functions described below:


You can select the  key to parse a list of items (such as a Fault list). This key behaves as follows:




- If the cursor is on a line other than the last line of the display, and there are additional items above this line, then select  to move the cursor up one line. The contents of the display in the current window do not change.
- If the cursor is on the first line of the display, and there are additional items towards the top of the list, then select  to scroll the entire contents of the display down by one line such that the first line displays the new item. Hence, the last line of the display is 'dropped' or disappears from the screen and the cursor remains on line one.
- If the cursor is on the first line of the display, and the first line is displaying the first item on the list, the string "<First Item>" is displayed on that line for a 1-second period (the list does not wrap). After the 1-second period has expired, the line is refreshed with the original information. This is to inform you that you have reached the first line or item.
- If you want to edit an item (e.g. setting the clock), select the  key to display the next valid value for the selected field. If the selected field already contains the last valid value, it is replaced by the first valid value for the field (the list wraps). If the key is held down for more than 1-second, the field will auto-increment at a 0.5 second rate until the key is released. Cursor blinking is suppressed throughout the auto-increment period to improve the readability of the display. Note that these behaviours are consistent for both numeric and textual fields.












e.g. When adjusting the clock's tens of minutes field, if you repeatedly press the  key, then this will produce the sequence 0  1  2  3  4  5  0. When adjusting the clock's two character format field, if you repeatedly press the  key, then this will produce the sequence AM  PM  ML  AM.




This key performs the two (context sensitive) functions described below:




You can select the  key to parse a list of items (such as a Fault list). This key behaves as follows:

- If the cursor is on a line other than the last line of the display, and there are additional items below the current line, then select the  key to move the cursor down one line. The contents of the current display window do not change.
- If the cursor is on the last line of the display, and there additional items on the list, then select the  key to scroll the entire contents of the display up by one line such that the last line displays the new item. Hence, the (previous) first line is dropped and the cursor remains on the last line.
- If the cursor is on the last item of the list, the string “<Last Item>” is displayed on that line for a 1-second period (the list does not wrap). After the 1-second period has expired, the line is refreshed with the original information. This is to inform the user that the last line or item has been reached.
- To edit an item (e.g. setting the clock), select the  key to display the previous valid value for the selected field. If the selected field contains the first valid value, it is replaced by the last valid value for the field (the list wraps). If you hold down the key for more than 1-second, then the field will auto-decrement at a 0.5 second rate until the key is released. This behaviour is consistent for both numeric and textual fields.


e.g. When adjusting the clock's tens of minutes field, if you repeatedly press the  key, then this will produce the sequence 0  5  4  3  2  1  0. When adjusting the time's two character format field, if you repeatedly press the  key, then this will produce the sequence AM  ML  PM  AM.






You can use the  key to speed up the parsing of a list of items (such as a Fault list), by scrolling a screen at a time (towards the top of the list) rather than a line at a time. This key behaves as follows:

- If the cursor is on a line other than the first line of the display, then select the  to move the cursor to the first line of the display. The content of the display does not change.
- If the cursor is on the first line of the display, and there are additional items towards the top of the list, then selecting the  key causes the next six items towards the top of the list to be displayed. The cursor remains on line one.
- If the cursor is on the first line of the display, and there are four or fewer additional items towards the top of the list, then selecting the  key causes the first four (or fewer) items to be displayed. After writing the data to the display, the string “<First Item>” is displayed on line #1 for a 1-second period. After the 1-second period has expired, the line is refreshed with the original information. This is to inform the user that the first line or item has been reached.






You can use the  key to speed up the parsing of a list of items (such as a Fault list) by scrolling a screen at a time (towards the end of the list) rather than a line at a time. This key behaves as follows:

- If the cursor is on a line other than the last information line of the display, then select the  key to move the cursor to the last information line of the display. The content of the display does not change.
- If the cursor is on the last physical line of the display, and there are additional items towards the end of the list, then selecting the  key causes the next six items towards the end of the list to be displayed. The cursor is then positioned on the last information line.
- If the cursor is on the last information line of the display, and there are no additional items towards the end of the list, then selecting the  key causes the string “<Last Item>” to be displayed on the last information line for a 1-second period (the list does not wrap). After the 1-second period has expired, the line is refreshed with the original information. This is to inform the user that the last line or item has been reached.


5.2.1.6 Keypad Group #3 (, , , &)





The  key performs the two (context sensitive) functions described below:



- Select the  key to return the display to the next highest level in the menu hierarchy (unless the user is in the process of editing a programmable value). If you are already at the top level, then the display is not changed.
- If you select the  key while editing a value, then this ends the editing process and returns the cursor to the left hand position on the display without saving any changes.




The  key performs the three (context sensitive) functions described below:




- Select the  key to display the selected menu item on one of the three top-level screens (that display menu selections).

e.g. If you press the  key when the cursor is on “Set Time/Date” (under Setup), then this brings up a screen that displays the current time and date.

- While you are editing an item, you can select the  key to complete the editing process by saving the modified value and returning the cursor to the left hand position of the display.
- When the DXL is displaying a list of faults, select the  key to “acknowledge” the fault at the cursor position. If you do this from the Unacknowledged Faults screen (which displays only unacknowledged faults), then the newly acknowledged fault is immediately removed from the list in this screen.






You can use the  key for editing values and this is described below:

- When you are editing any values other than the LCD contrast and backlight intensity, you can press the  key to move the cursor to the next field to the right (unless it is already in the right most field). If the cursor is already in the right most field, no action is taken.
- When you are adjusting the contrast of the LCD, you can press the  key to increase the contrast of the LCD. If the contrast is already at the highest contrast setting then no action is taken (the contrast setting does not wrap). If you hold down the key for more than 1-second, then the contrast setting will auto-increment at a 0.5 second rate until you release the key or the highest contrast setting is reached.
- When you are adjusting the intensity of the LCD backlight, you can select the  key to increase the setting. If the intensity is already at the highest intensity setting then no action is taken (the backlight intensity does not wrap). If you hold down the key more than 1-second, the intensity setting will auto-increment at a 0.5 second rate until you release the key or the highest intensity setting is reached.



You can use the  key for editing values as described below:

- When you are editing values other than the LCD contrast and backlight intensity, you can press the  key to move the cursor to the next field to the left (unless it is already in the left most field of the editable value). When the cursor is already in the left most position, then no action is taken.
- When you are adjusting the contrast of the LCD, you can use the  key to decrease the contrast. If the contrast is already at the lowest setting then no action is taken (the contrast setting does not wrap). If you hold down the key for more than 1-second, then the contrast setting will auto-decrement at a 0.5 second rate until the key is released or the lowest contrast setting has been reached.
- When you are adjusting the brightness of the LCD backlight, the  key decreases the intensity. If it is already at the highest intensity setting, no action is taken (the backlight intensity does not wrap). If held down for more than 1-second, the intensity setting will auto-decrement at a 0.5 second rate until the key is released or the lowest intensity setting has been reached.










5.3 Value Editing

5.3.1 Introduction

Value editing is performed in a consistent fashion, whether the item is strictly numerical (e.g. static IP address), or is textual in nature (e.g. selecting a device to install). During editing, you are not allowed to enter an invalid value. For example, if the time is in AM/PM mode, then you are not allowed to enter 13 as the hour. This applies to all editing screens.

5.3.1.1 Editing from the Front Panel

The process of editing a value from the front panel encompasses several steps:

- 1) First, use the  and  keys as necessary, to ensure that the cursor is placed on the line containing the value that you want to edit. The start of each line will always blink with the character on the first line and the '□' symbol.
- 2) Next, keep the  key pressed in order to select the first available field for alteration and to begin the editing session. The selected field alternates with the cursor to allow it to be identified. During editing, leading zero suppression is disabled to ensure that you can clearly identify all of the digits that can be modified. Note that any field that you want to modify will always blink alternately with the character in that field and the '◆' symbol.
- 3) Next, use the  and  keys to select the desired value for the field that you want to modify. To prevent you from making erroneous choices, only valid choices are presented (as best as possible).
- 4) Next, press the  key to select the next field for (possible) alteration. Repeat Step 3 for each field, as necessary. If you make an error, use the  key to return to a previous field to correct the error.
- 5) Once you have made all the necessary changes, press the  key to complete the editing session and save the modified value. The cursor is then returned to the leftmost position on the screen. If the changes are not to be saved and you want to retain the previous values, then you can nullify the changes that you have made by hitting the  button.

5.3.1.2 Editing from a Remote Terminal

Editing at a remote terminal is similar to editing at the DCC's front panel. First, you must place the cursor on the line containing the value to be modified. Then press the '→' key to begin the editing process.

Then use the '↓', & '↑' keys to select the desired value for the field that you are modifying, and use the '→' and '←' keys to move from field to field. Not all digits are valid in all cases. For example, the digits '0' through '5' are valid when entering the "tens of minutes" field of the system time, while the digits '6' through '9' are not. If already on the last editable field, the cursor will remain in the same position. In a fashion similar to editing on the DCC's front panel, you have to press the Enter key to store the modified value and return the cursor to the leftmost position on the screen.

An example terminal based editing session is provided below, with a red blinking box that is used to indicate the position of the cursor. As an example, the time is being changed from 2:32 PM to 12:38 AM.

- First, position the cursor on the line that you want to modify. In this example the system time is to be updated, so the cursor is placed on the third line of the display.

```
System Time/Date
Time> 2:32 PM
Date> Feb 20, 2002
```

- Next, press the '→' key to select the first field for editing (the "tens of hours" in this case). The cursor alternates with a 'blank' in the "tens of hours" position to indicate that it is selected for modification.

```
System Time/Date
Time>  2:32 PM
Date> Feb 20, 2002
```

- Next, press the '↓' key once to decrement the "tens of hours" field to the value '1' (alternatively, you could also press the '↑' key to go up to '1'). If the system time was in military mode, pressing the '↓' key would have selected a "2" (rather than "1").

```
System Time/Date
Time> 12:32 PM
Date> Feb 20, 2002
```

- Next, press the '→' key three times to move to the "units of minutes" field. The "units of hours" and "tens of minutes" are separate fields that are not being changed in this example.

```
System Time/Date
Time> 12:32 PM
Date> Feb 20, 2002
```

- Next, use the '→' key to move to the time format field.

```
System Time/Date
Time> 12:38 PM
Date> Feb 20, 2002
```

- Next, use the '↓' key to select "AM".

```
System Time/Date
Time> 12:38 AM
Date> Feb 20, 2002
```



- Finally, press the Enter key to complete the editing session. At this point, the new value is stored and the cursor is returned to the first character position of the display.

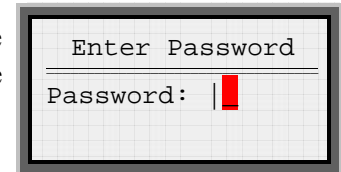
```
System Time/Date
Time> 12:38 AM
Date> Feb 20, 2002
```









Note that if you are using the Remote Front Panel to edit the LCD Adjustment window, then the degree of the Contrast and the Backlight option will be denoted with 'Xx...' rather than with a bar plot '■ ■ ■ ■ ■'


5.4 Password Protection

Each Exchange is afforded a password that is maintained via the system Configuration. Front panel access for “browsing” is always allowed, however, you may not be allowed to change editable values (except LCD contrast and backlight intensity) may not be modified if password protection is in force.

If you press the  key (with the cursor on an editable line), or the  key (with the cursor on an unacknowledged fault), then you will get the screen illustrated at the right (if password protection has been enforced).



You can enter the password by using the , , , and  keys, followed by the  key. During password entry, the ‘*’ character is used to confirm that a keystroke was entered. If you enter a valid password, then you will be returned to the previous screen, with the first editable field of the line selected for modification (if password entry was invoked via the  key). If password entry was invoked via the  key, then you will also be returned to the previous screen, however, you will have to press the  key again, to actually acknowledge a fault. The password remains in effect until the occurrence of the timeout that returns the display to the default screen (e.g. until 5-minutes after the last key press).

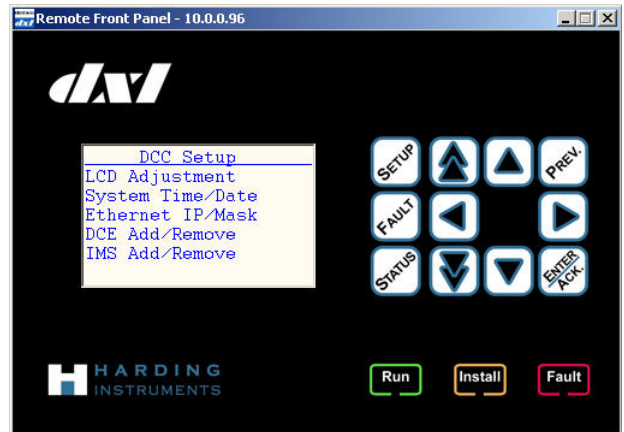
If you enter an invalid password, then the digits that you had entered are cleared and the cursor is returned to the original position (i.e. the original Enter Password screen is reinstated). You can cancel password entry at any time by pressing the  key. In this case, you will be returned to the previous screen with the cursor at the leftmost position.

5.5 The “Setup” Menu

5.5.1 Introduction




The setup menu has up to 6 different options that you can choose from. These are:

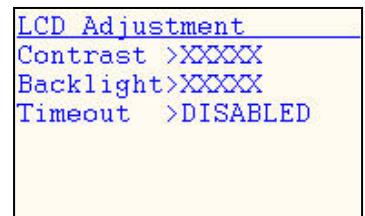
- 1) LCD Adjustment
- 2) System Time/ Date
- 3) Ethernet IP/ Mask
- 4) DCE Add/ Remove
- 5) IMS Add/ Remove
- 6) ALA Activations









Note that the IMS Add/ Remove option will only be available if a LonWorks card has been installed on the DXL.

5.5.1.1 The “LCD Adjustment” Option






Press the  when the cursor is on the LCD Adjustment line, which will take you into the LCD Adjustment screen. To scroll between the 3 rows on this screen, place the cursor at the start of each line and then use the  and  keys.




Contrast:














To edit the contrast, move the cursor to the start of the Contrast line and then hit the  key to move to the start of the first editable field, which is the bar display that appears . If the Contrast is set to zero, then no display will appear. To increase the contrast, press the  key and to decrease the contrast, press the  key. Note that the contrast increases or decreases by a half bar each time you press one of the keys. Once you have finished editing the contrast, press the  key to save the changes and return the cursor to the start of the Contrast line. If you do not want to save the changes that you have made, then press the  key, which will return the cursor to the start of the line without saving the changes.



Backlight:

To edit the backlight on the LCD display, move the cursor to the start of the Backlight line and then press the  key to move to the start of the first editable field, which is the bar display that appears . If the Backlight is set to zero then no display will appear. To increase the contrast press the  key and to decrease the contrast, press the  key. Note that the contrast increases or decreases by a half bar each you press one of the keys. Once you have finished editing the contrast, press the  key to save the changes and return the cursor to the start of



the Backlight line. If you do not want to save the changes then press the  key, which will return the cursor to the start of the line without saving the changes.

Timeout:







The Timeout option lets you to enable or disable a timeout. When enabled, this option will take the user to the System Time/ Date window if there has been no activity on the keypad for a period of time that is set by the user. To edit the Timeout option on the LCD display, move the cursor to the start of the Timeout line and then press the  key to move to the start of the first editable field. If the timeout has been disabled then the word 'Disabled' will appear. To increase the timeout period, use the  key and to decrease the period use the  key. The Timeout option will run through the loop: Disabled  1  2  3  4  5  6  7  8  9  Disabled.

Once you have finished editing the Timeout, you can press the  key to save the changes, which returns the cursor to the start of the Timeout line. If you do not want to save the changes then press the  key, which will return the cursor to the start of the line without saving the changes.

5.5.1.2 The "System Time/ Date" Option

Select this option by placing the cursor at the start of this line and then press the  key. You can enter this option if you want to change the date and time on the DXL. To edit the time on the LCD display, move the cursor to the start of the Time: line and then press the  key to move to the start of the first editable field, which is the hour. The time is in the format HH:MM and the cursor will be blinking alternately with the ' ' symbol.

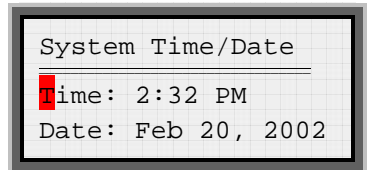
```
System Time/Date
Time> 23:37 ML
Date> Feb 14, 2004
```


Note that the program will not allow you to enter an invalid digit. Hence, if the time is set to AM and the second digit in the Hour field is 8 i.e. H8:32 AM, then the program will not allow you to enter a number into the first entry for the Hour field, because this would be invalid. You can enter a digit into each entry by using the  key to move forward between entries and using the  key to move backwards between entries. The entries can be changed by using the  key to scroll up and the  key to scroll down. Press the  key to save the changes and return the cursor to the start of the Time: line or press the  key to ignore the changes made and return to the start of the line.

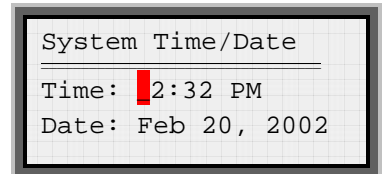
You can edit the system date in a similar fashion.




An example editing session is provided below, with blinking characters that are used to illustrate the position of the cursor. In this example, the time is being changed from 2:32 PM to 12:38 AM.

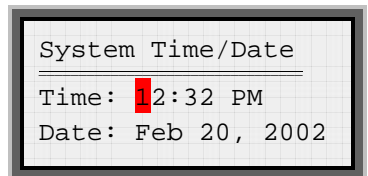
- Firstly, position the cursor on the line that you want to modify. In this example the system time is to be updated, so the cursor is placed on the Time: line.




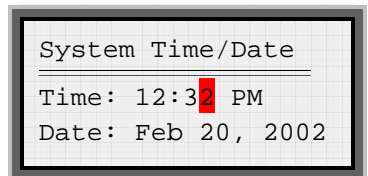
- Next, press the  key to select the first field for editing (the “tens of hours” in this case). The cursor alternates with a ‘blank’ in the “tens of hours” position to indicate that it is selected for modification. Leading zero suppression is disabled for standard numerical values only (it is not disabled in the “tens of hours” field).




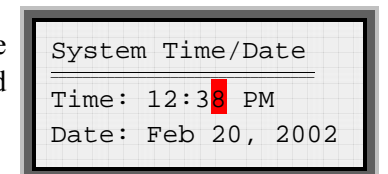
- Next, press the  key to decrement the “tens of hours” field to the value ‘1’ (alternatively, you could also press the  key to go up to ‘1’). If the system time was in military mode, pressing the  key would have selected a “2” (rather than “1”).




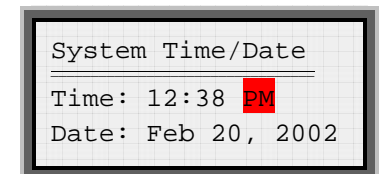
- Next, press the  key three times to move to the “units of minutes” field. The “units of hours” and “tens of minutes” are separate fields that are not being changed in this example.



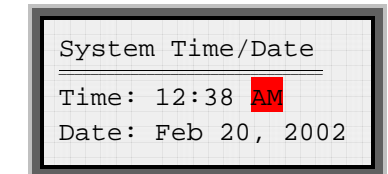
- Next, press the  key and hold it down. After a ½ second pause, the “units of minutes” field will begin to auto-increment. The key is released after it reaches the desired value of “8”.





- Next, press the  key to select the “time format” field for editing.

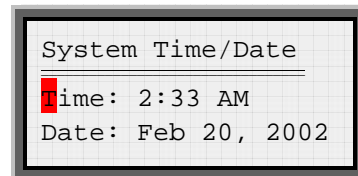


- Next, press the  key to select “AM”.



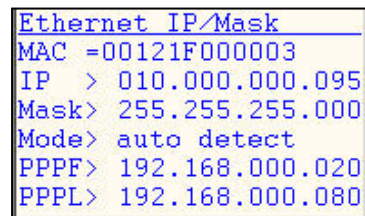
- Finally, press the  key to complete the editing session. At this point, the new value is stored and the cursor is returned to the first character position of the display.

- If you had wanted to escape from the editing session (i.e., cancel the time change), you could have pressed the  key at any time during the session. This would have restored the time to its original value. Note that in this example, the clock had been running while editing, so the time has advanced by one minute.

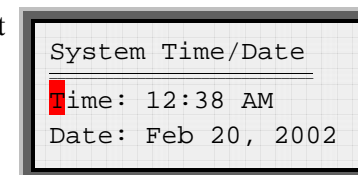


5.5.1.3 The “Ethernet IP/ Mask” Option


You can select this screen if you want to change any of the values that appear with a colon ‘:’ (or a ‘>’ symbol in the case of the remote terminal) beside them. The field MAC which appears with an ‘=’ sign beside it, cannot be changed. When you scroll to the top of the screen, it will only be possible for you to scroll until the IP field (this field is designated as the <first item> by the DXL). This is because it is not possible to edit the MAC field.

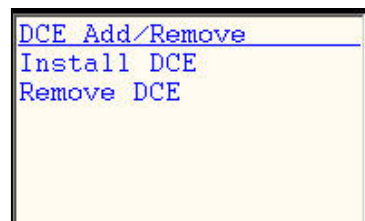


You can use this option to set the DCC’s static Ethernet IP address(es) and net mask as well as the PPP Ethernet and gateway IP addresses.




5.5.1.4 The “DCE Add/ Remove” Option

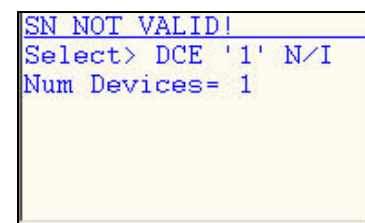
Press the  key to select this option and it will take you to the DCE Add/ Remove screen. This screen contains two options: Install DCE and Remove DCE. This window gives you the option of adding or removing a DCE from the system depending on the option that you choose. Note that you will only be allowed to select the Install DCE option if the DCC currently has a DCE connected to it with a solid orange Install light.






Note that this light will be blinking on the DCC, indicating that a DCE box is waiting to be installed. If there are multiple DCEs waiting to be installed, then this solid orange light (on the DCE) will inform the user of which DCE box is to be installed next.




Install DCE:

Press the  button to select the Install DCE option when the cursor is at the start of this line. This brings up a screen, which may display ‘SN Not Valid’ as the title if you have not entered a serial number (SN) for the DCE. Note that this has no bearing on the installation or deletion of the DCE.




Select the  button to move to the first editable field. Then use the  button to scroll between DCE '1', DCE '2', DCE '3' and DCE '4'. It is up to you to decide the device ID number that will be given to the DCE box, however, this should reflect the choices that you have made in the Configuration. DCEs that have not been installed in the system yet, will appear with a 'N/I' (not installed) beside them. When you have made a selection, press the  button to return to the DCE Add/ Remove screen.


Remove DCE:

To delete a DCE, select the Remove DCE option by pressing the  button when the cursor is at the start of this line. This brings up the Remove Device window. Select the  button to reach the first field that can be edited. Then use the  button to scroll between DCE '1', DCE '2', DCE '3' and DCE '4', which gives you the choice of the DCE that you want to remove. While scrolling, a 'N/I' beside the DCEs indicates that those DCEs are currently not installed.

```
Remove Device
Select> DCE '1'
```



Once the DCE that you want to delete, appears on the window, press the  button to delete this DCE. SN not Valid may appear on top of the window as you may not have entered the serial number (SN) for the DCE into the system yet. However, this has no bearing on the installation or deletion of the DCE. The program will take you back to the DCE Add/ Remove screen.

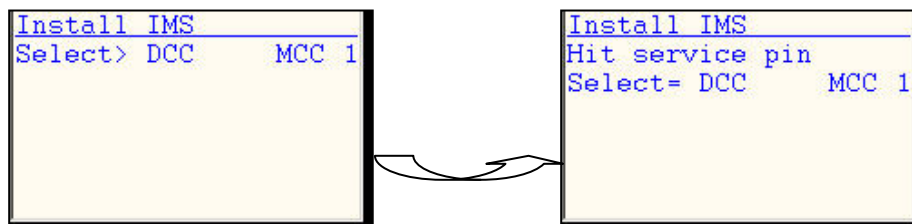
5.5.1.5 The "IMS Add/ Remove" Option





Press the  button to select this option. This takes you to a screen that lets you install or remove an Intercom Master Station (IMS). Note that you will have to initially install an IMS so that the DXL recognizes it.

```
IMS Add/Remove
Install IMS
Remove IMS
```



Install IMS:

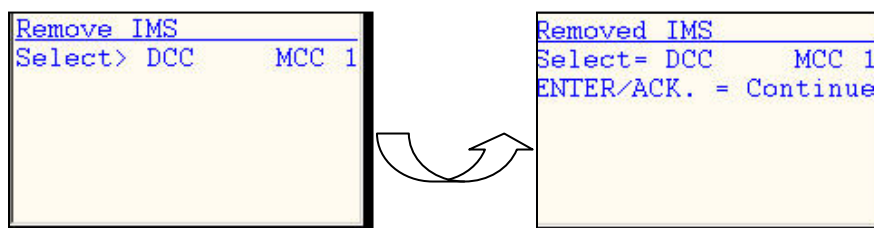
To install an IMS, select the Install IMS option, which takes you to the Install IMS screen. Press the  button to reach the first field that can be edited. Scroll through the list by using the  key in order to display the parameters for MCC1, MCC2, MIC1 and MIC2 for the DCC and each DCE. MCC is an acronym for Master Control Card, which is used to define the Master Stations. MIC is an acronym for Microphone and MIC1 and MIC2 refer to the audio channels that are associated with the IMS.







Note that all the parameters for the DCC and each DCE appear over here, whether or not they are already installed. Also, even though some of these parameters may already be installed, the program will not stop you from installing them again. Once you have scrolled to the appropriate parameter, press the  key. The program will instruct you to Hit Service Pin. You must now press the service pin located behind the IMS in order for the DCC or DCE to recognise the IMS. Once you have pressed this pin, the screen will display a message indicating whether an MCC1, MCC2, MIC1 or MIC2 has been added, and whether it has been added to a DCC or a DCE. The program will then ask you for confirmation by displaying the message, “Enter/ ACK = Continue”. If you press the  key (to accept the confirmation), then this IMS is added to the DCC or DCE that you have specified. To cancel the installation, press the  key anytime before you press the  key.

Remove IMS:

To remove an IMS from a DCC or a DCE, select the Remove IMS option. This takes you to the Remove IMS screen. Press the  button to reach the first field that can be edited. Scroll through the list by using the  key, to display the parameters MCC1, MCC2, MIC1 and MIC2 for the DCC and each DCE.

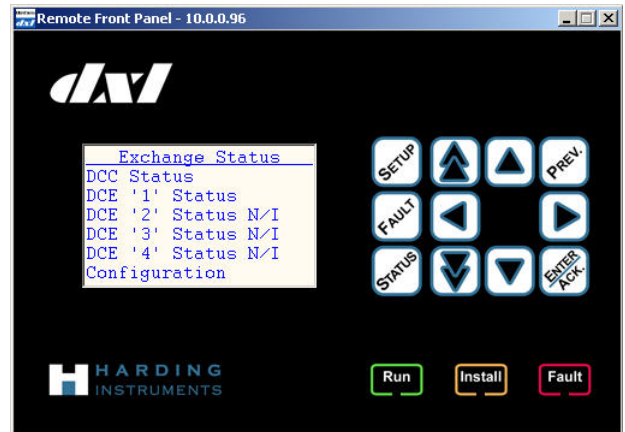



Note that all the parameters for the DCC and each DCE appear here, whether or not they have already been deleted. Also, even though some of these parameters may have already been deleted, the program will not stop you from deleting them again. Once you have located the parameter that you want to delete, press the  key. The program will display the message, “Enter/ ACK = Continue” to ask for confirmation. If you press the  key then this IMS parameter is now deleted from the DCC or DCE that you have specified. To cancel the installation, press the  key anytime before you press the  key. If an MCC card that was connected to an IMS is deleted while the IMS is connected to the DCC or DCE, then the IMS will display a message saying, “Configuration not bound” on its display screen.

5.6 The “Status” Menu

Selecting the Status menu brings up the Exchange Status window, which allows you to choose between 6 options. These options are:

- 1) DCC Status
- 1) DCE ‘1’ Status
- 2) DCE ‘2’ Status
- 3) DCE ‘3’ Status
- 4) DCE ‘4’ Status
- 5) Configuration

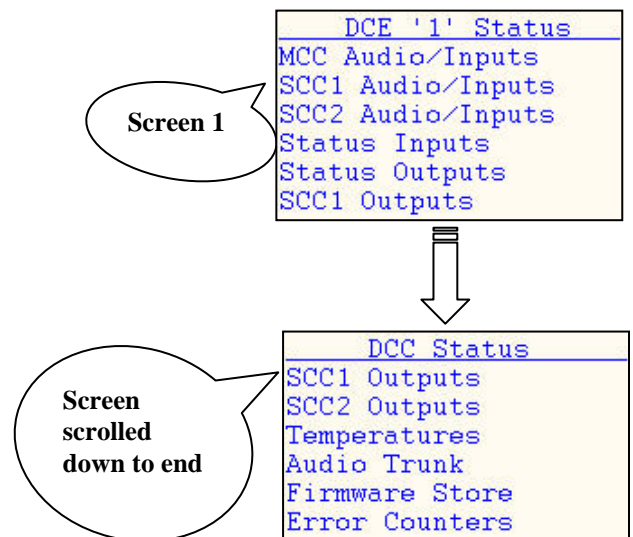


The screen consists of the items displayed above. You can select an item by placing the cursor in front of the desired parameter and then pushing the  key. The system will display N/I (not installed) next to any DCE that is not currently installed on the system. Note that the Status menu is mainly for displaying values, and that you cannot edit values in this menu.

5.6.1 The “DCC Status” Option

This menu allows the user to view the status of various parameters related to the DCC. They are:

- 1) MCC Audio/ Inputs
- 2) SCC1 Audio/ Inputs
- 3) SCC2 Audio Inputs
- 4) Status Inputs
- 5) Status Outputs
- 6) SCC1 Outputs
- 7) SCC2 Outputs
- 8) Temperatures
- 9) Audio Trunk
- 10) Firmware Store
- 11) Error Counters



5.6.1.1 General

For all switch inputs, “I” indicates an idle state, “A” indicates a switch A line voltage, “B” indicates a switch B line voltage, “S” indicates a short circuit fault connection and “O” indicates an open circuit fault connection. This is displayed in the table below:

Table: Switch States

S.No.	State	Status for Intercom Master Station
1.	I	idle
2.	A	switch A line voltage
3.	B	switch B line voltage
4.	S	short circuit fault connection
5.	O	open circuit fault connection

5.6.1.2 The “MCC Audio/ Inputs” Option

MCC is an acronym for Master Control Card. Each line in the MCC Audio/ Input screen displays the status of an individual Master Station and is broken into four fields. The first field is fixed and displays whether the user is installing MCC1 or MCC2. The second field is the Master Station ID number that is assigned to MCC1 and MCC2, in the Configuration. If a string has not been assigned in the Configuration or no Configuration has been loaded then the “-----” string is displayed.

The third field is the text string or name assigned to the Master Station. If the Master Station has not been assigned in the Configuration but has been loaded, then the “-----” string is displayed. If the Master Station is identified in the Configuration but has not had a text string assigned, then ‘blank’ characters are displayed.

The fourth field displays the status of the line(s).

The different states for various types of Master Stations is displayed below.

Intercom Master Station:

For an IMS, the first character displays the status of the speaker line (S) and the second character displays the status of the microphone line (M). “I” indicates an idle state, “A” indicates a switch A line voltage, “B” indicates a switch B line voltage.

DCC	MCC	Status	SM
1	2	IMS Master	IA
2	--	-----	ON

The different states of the IMS are displayed in the table below:

Table : The Intercom Master Station “MCC Audio/ Inputs” Option

S.No.	State S M	Status for Intercom Master Station
1.	I I	off hook
2.	I A	on hook
3.	A I	PTT*, off hook
4.	A A	PTT, on hook
5.	B I	mute, off hook
6.	B A	mute, on hook

* PTT = Push To Talk switch

Touchscreen Master Module:

For a Touchscreen Master Module (TMM), the first character displays the status of the speaker line (S) and the second character displays the status of the microphone line (M). This is displayed in the table below:

Table : The Touchscreen Master Module “MCC Audio/ Inputs” Option

S.No.	State S M	Status for Touchscreen Master Module
1.	I A	Idle
2.	A A	PTT*

* PTT = Push To Talk switch

Telephone Master Station:

For a Telephone Master Station, the characters, “ON” (onhook) and “OF” (offhook) are displayed to indicate the status of the TSM. If the interface (SLIC) associated with the telephone is shutdown (due to a high temperature failure, for example), then this is indicated with an “HT” (High Temperature) symbol. If the telephone is on hook and ringing, then this is indicated with an “RG”.

Table : The Telephone Set Master Station “MCC Audio/ Inputs” Option

S.No.	State S M	Status for Telephone Master
1.	ON	on hook
2.	OF	off hook
3.	HT	shut down due to high temperature failure
4.	RG	on hook and ringing

DCC	MCC	Status	SM
1	1	Touchscreen	IA
2	3	Telephone Ma	ON

5.6.1.3 The “SCC1 Audio/ Inputs” Option

SCC refers to the Station Control Card. Since both SCC1 and SCC2 have identical properties, they are discussed here together. Each SCC card has a pair of lines that can be used by the switches (A and B), and the audio lines, in the case of a 400-series card. However, in the case of a 300-series card, the switches have their own lines.

DCC SCC1 Status			
01	2	FDH #2	I
02	2	FDH #2	A
03	---	-----	0
04	---	-----	0
05	---	-----	0
06	---	-----	0

Each line on this screen represents the status of individual intercom Stations. Each line is composed of four fields.

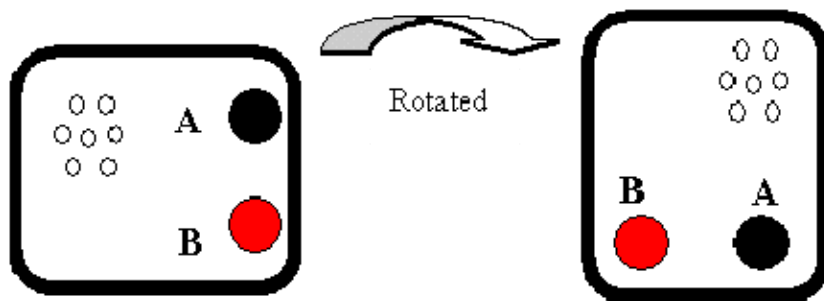
The first field is the hardware intercom number. Since each SCC can support sixteen Stations, it implies that the Station numbers run from 01 through 16.

The second field is the Station ID number that is assigned in the Configuration. If a Station has not been assigned with an ID number or there is no Configuration loaded, then the string, “-----” is displayed.

The third field is the text string or name assigned to the Station. If the Station has not been assigned in the Configuration but has been loaded, then the “-----” string is displayed. If the Station is identified in the Configuration but has not had a text string assigned, then ‘blank’ characters are displayed.

The fourth field displays the status of the lines or inputs. “I” indicates an idle state, “A” indicates a switch A line voltage, “B” indicates a switch B line voltage, “S” indicates a short circuit fault connection and “O” indicates an open circuit fault connection.

As an example, Switch A and Switch B will often appear on a microphone Station as follows:



5.6.1.4 The “SCC2 Audio/ Inputs” Option

This option works identically to the SCC1 Audio/ Inputs option and is not covered here again. Please see the section above in order to determine how this option works.

DCC	SCC2 Status
01	----- 0
02	----- 0
03	----- 0
04	----- 0
05	----- 0
06	----- 0

5.6.1.5 The “Status Inputs” Option

DCC	Status Inputs
Status In 1=	Occt
Status In 2=	Occt
Status In 3=	Occt
Status In 4=	Occt

The Status Inputs are four general-purpose lines that can be employed for various purposes. Each line on this screen represents the state of one of the four Status Inputs and is comprised of two fields. The first field consists of the number that designates which Status Input it is (ex. Status Input 1) and the second field indicates the state of the chosen Status Input.

Note that these states are displayed as ‘Occt’ (Open Circuit) when the Status Inputs are not being used.

A list of the states is shown in the table below.

Table : The “Status Inputs” Option

S. No.	State	Description
1.	Idle	idle condition
2.	A sw	switch ‘A’ line voltage
3.	B sw	switch ‘B’ line voltage
4.	Scct	short circuit fault condition
5.	Occt	open circuit fault condition

5.6.1.6 The “Status Outputs” Option

DCC	Status Outputs
Status Out 1=	Off
Status Out 2=	Off
Status Out 3=	Off
Status Out 4=	Off

The status outputs are four general-purpose lines that can be employed for various purposes. Each line in this screen represents the state of one of the four Status Outputs and is comprised of two fields. The first field consists of the number that designates which Status Output it is (for example, Status Output 1) and the second field indicates the state of the chosen Status Output.

Note that these states are displayed as ‘OFF’ when the Status Outputs are not being used, and this is the default display. A list of states that could be displayed for an LED that is connected to a Status Output is shown below.

Table : The “Status Outputs” Option

S. No.	State	Description
1.	On	LED remains on
2.	Off	LED remains off
3.	Fast	On for 1/4 th of a second & off for 1/4 th of second, at equal intervals
4.	Flash	On for 1/2 of a second and off for 1/2 of a second, at equal intervals
5.	Wink	On for 1/8 th of a second and off for 7/8 th of a second
6.	Blink	On for 7/8 th of a second and off for 1/8 th of a second

5.6.1.7 The “SCC1 Outputs” Option

DCC	SCC1 Outputs
01 2	FDH #2 = Off
02 ---	-----= Off
03 ---	-----= Off
04 ---	-----= Off
05 ---	-----= Off
06 ---	-----= Off

SCC refers to the Station Control Card. Since both the SCC1 Outputs and the SCC2 Outputs have identical properties, they are discussed here together. These outputs have no meaning when it comes to the 300-series and 400-series cards. However, for the 401-series card, these lines can be used to drive switches, audio channels and LEDs.

Each line on this screen represents the status of individual intercom Stations. Each line is composed of four fields.

The first field is the hardware intercom number. Since each SCC can support 16 lines, it implies that the Station numbers run from 01 through 16.

The second field is the Station ID number that is assigned in the Configuration. If a Station has not been assigned or there is no Configuration loaded, then the string, “-----“ is displayed.

The third field is the text string or name assigned to the Station. If the Station has not been assigned in the Configuration but has been loaded then the “-----“ string is displayed. If the Station is identified in the Configuration but has not had a text string assigned then ‘blank’ characters are displayed.

The fourth field displays the status of the outputs. If the Status Outputs are not connected, all the outputs show a default of ‘OFF’.

5.6.1.8 The “SCC2 Outputs” Option

This option works identically to the SCC1 Outputs option and is not covered here again. Please see the section above in order to determine how this option works.

5.6.1.9 The “Temperatures” Option


This screen identifies reference voltages, fan speeds and temperatures for various parameters in the DXL. The temperatures are displayed in degrees Celsius (°C). Monitoring the status of these parameters helps with hardware debugging and troubleshooting. This has been described in the table below:

```
DCC Temperatures
FAN SPEED= SLOW
PCC TEMP = 23    C
MCC TEMP = 26    C
SCC1 TEMP= 23    C
SCC2 TEMP= 24    C
LEFT FAN = SPINNING
```

Table : The “Temperatures” Option

S. No.	DXL Parameter	Status of Parameter	Action to be Taken
1.	Voltage (V)	<ul style="list-style-type: none"> - Good - Too high 	<ul style="list-style-type: none"> - None - Check why voltage is so high
2.	Fan Speed	<ul style="list-style-type: none"> - Slow - Medium - Fast 	<ul style="list-style-type: none"> - None - Check fan speed - Check fan speed
3.	Fan Status	<ul style="list-style-type: none"> - Spinning - Not spinning 	<ul style="list-style-type: none"> - None - Check why fan is not spinning
4.	Temp (°C)	<ul style="list-style-type: none"> - Temperature in degrees Celsius 	<ul style="list-style-type: none"> - Check temperature to see if it is as expected.

5.6.1.10 The “Audio Trunk” Option


A call connection between exchanges in a DXL system uses a digital audio trunk, which is usually configured in a ring topology that includes all the exchanges in the system. Press the  key to select this option. This will take you to the Audio Trunk screen. This screen displays the name and number of the audio trunk, along with whether it is referring to the Local parameter or the Loop parameter.

```
Audio Trunk
Local=Works #1
Loop =Works #1
```

Loop stands for the main audio trunk or Master name that encompasses various exchanges.



Local stands for the line that is coming into the DCC from the Exchange that is before it (the DCC) in the audio trunk.

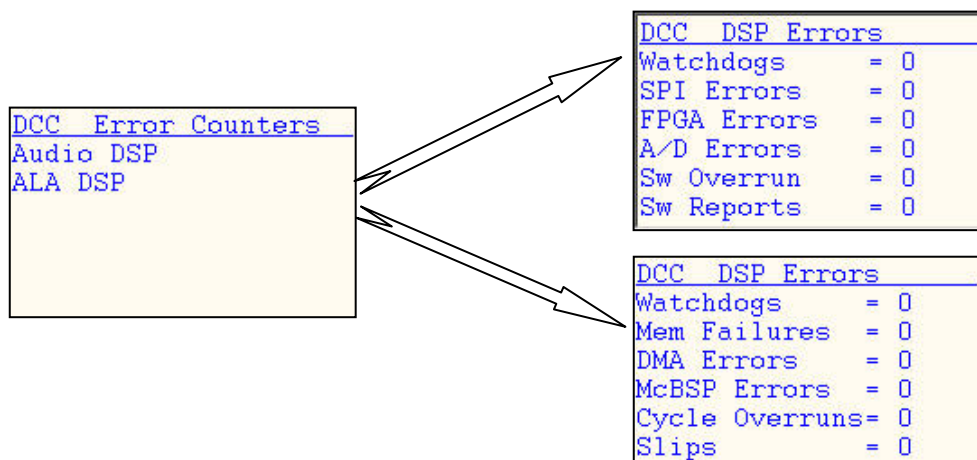
5.6.1.11 The “Firmware Store” Option

Select this option by pressing the  key. This brings up the Application Files window. This window displays the firmware that is currently running on the DXL system along with all the files that are associated with it. This window is for display only and cannot be edited.

```
Application Files
OB6800140-02B1.HEX.GZ
OB6800210V02B30.BIN.G
OB6800250V02B30.BIN.G
OB6800251V02B30.BIN.G
OB6800310-01B3.BIN.GZ
OB6800410-01B9.BIN.GZ
```

5.6.1.12 The “Error Counters” Option

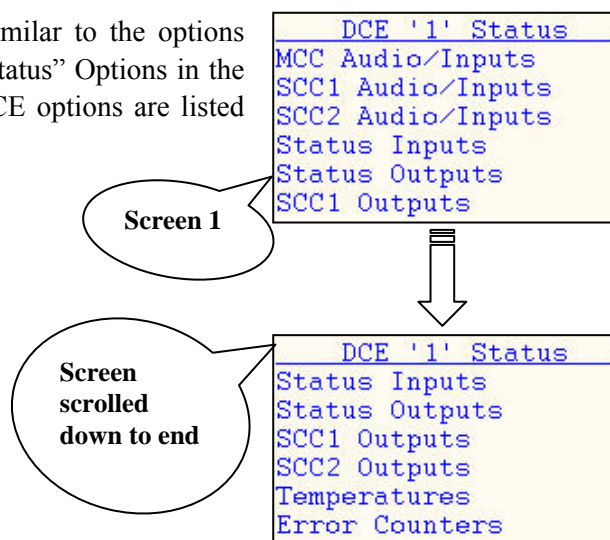
Press the  key to select this option, which brings up the DCC Error Counters screen. This screen has two options displayed: Audio DSP and ALA DSP. You can select either option by placing the cursor at the start of each line and pressing the  key. When selected, both options display a DCC DSP Errors screen, which displays various errors in the system. Please contact Harding Instruments in order to decipher these errors.



5.6.2 The “DCE ‘1’ Status” Option

The options that exist under the DCE Status Option are similar to the options under the DCC status Option, so please refer to the “DCC Status” Options in the previous section, for a description of these options. The DCE options are listed below:

- 1) MCC Audio/ Inputs
- 2) SCC1 Audio/ Inputs
- 3) SCC2 Audio Inputs
- 4) Status Inputs
- 5) Status Outputs
- 6) SCC1 Outputs
- 7) SCC2 Outputs
- 8) Temperatures
- 9) Error Counters



Note that these options will remain the same for the DCE ‘1’, DCE ‘2’, DCE ‘3’ and DCE ‘4’ options.

5.6.3 The “DCE ‘2’ Status” Option

The options for this section are similar to the options under the DCE ‘1’ Status Option, so please refer to the “DCE ‘1’ Status” Option in Section 5.6.2 for a description of these options.

5.6.4 The “DCE ‘3’ Status” Option

The options for this section are similar to the options under the DCE ‘1’ Status Option, so please refer to the “DCE ‘1’ Status” Option in Section 5.6.2 for a description of these options.

5.6.5 The “DCE ‘4’ Status” Option

The options for this section are similar to the options under the DCE ‘1’ Status Option, so please refer to the “DCE ‘1’ Status” Option in Section 5.6.2 for a description of these options.

5.6.6 The “Configuration” Option

Select this option by placing the cursor at the start of the line and then press the



key.


CFG displays the name and version number of the current Configuration that is active and operating on the DCC.

```
Configuration Status
CFG=DXL Manuals R3.CF
DCE1=
DCE2=
DCE3=
DCE4=
APP=DXL-0.5.2B1.APP
```

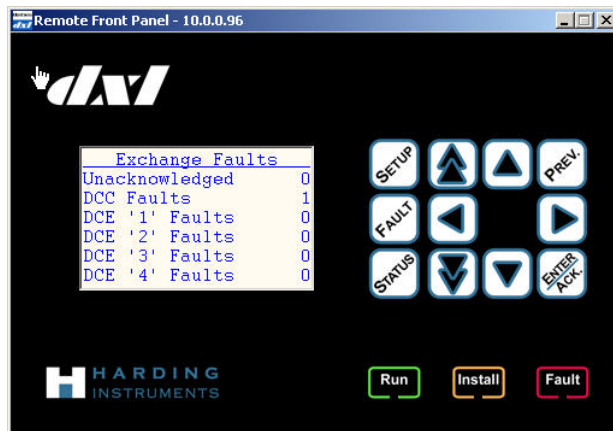
This screen displays the serial number for DCE 1, DCE 2, DCE 3 and DCE 4. The display will say, “NOT VALID” next to a DCE that is installed, but has no serial number (SN) entered. The display will be a ‘blank’ if the DCE(s) are not currently installed in the system.

APP displays the application version that is currently active and operating on the DXL box.

5.7 The “Faults” Menu

Press the  key on the DXL box to select this menu. The purpose of this menu is to describe various faults that are present in the system. The Exchange Faults window contains the following options:

- 1) Unacknowledged
- 2) DCC Faults
- 3) DCE ‘1’ Faults
- 4) DCE ‘2’ Faults
- 5) DCE ‘3’ Faults
- 6) DCE ‘4’ Faults




5.7.1 The “Unacknowledged Faults” Option


Note that the Unacknowledged Faults option lists all the faults irrespective of whether they are on the DCC or the DCE. If you want to view faults that are specific to the DCC or one of the four DCEs, then you will have to select that particular option.

Unacknowledged Faults			
DCC	MCC	Spkr1	A
DCC	MCC	Micr1	A
DCC	SCC1	Stn01	A
DCC	SCC1	Stn02	A
DCC	Trnk		C

Note that when a fault occurs, it is displayed in both the Unacknowledged Faults window as well as in the DCC Faults window or the DCE Faults window, depending on where the fault has occurred. Also note that a fault can be physically acknowledged or cleared only in the Unacknowledged Faults window and not in any of the other windows. This is because the DCC Faults window and the DCE Faults windows only display the status of the faults.

You can set the status of the faults to one of three characters: ‘A’, ‘C’ or ‘K’, and they are described below:

- Character ‘A’ – this character stands for an Active fault and appears next to the description of a fault when a fault has occurred. You can press the  key to acknowledge a fault in the Unacknowledged Faults window, however, this does not mean that the fault has been rectified. Once you have acknowledged a fault, it disappears from the Unacknowledged Faults window. Note that this does not mean that this fault has disappeared from the DCC Faults window or DCE Faults window (depending on where it has occurred).
- Character ‘K’ – this character stands for an acKnowledged fault and informs the user that a fault has been acknowledged but has not been rectified. Hence, even though the fault has been acknowledged in the Unacknowledged Faults window and disappears from that window, it will still appear in the DCC Faults window or DCE Faults window (depending on where the fault has occurred) with a ‘K’ beside it. The fault will only disappear from the DCC Faults window or the DCE Faults window when the fault has been rectified.

- Character 'C' – this character stands for a fault that has been Cleared and informs the user that the fault has been rectified but not acknowledged. If a fault is rectified then the fault in the Unacknowledged Faults window as well as the DCC Faults or DCE Faults window, appears with a 'C' beside it. This fault disappears from both windows when the fault is acknowledged, by pressing the  key in the Unacknowledged Faults window (on the line containing the fault, that has a 'C' beside it).

A table describing these faults is displayed below:

Table : Status of Faults

S. No.	Progression of Fault	Status of Fault	
		Unacknowledged Faults Window	DCC or DCE Faults Window
1.	Fault occurs and nothing is done	A	A
2.	Fault occurs and is acknowledged* without rectification	Fault disappears	K
3.	When process above (3.) occurs and the fault is rectified	Fault disappears	Fault disappears
4.	Fault occurs and is rectified but not acknowledged	C	C
5.	When process above (4.) occurs and the fault is acknowledged	Fault disappears	Fault disappears

* all faults are acknowledged in the Unacknowledged Faults window

5.7.2 The “DCC Faults” Option

The faults that are displayed in this window are specific to the DCC. This window only displays the status of the faults and therefore, you cannot acknowledge faults in this window. Please see the previous section for a description of characters that appear in the fault window.

DCC Faults			
DCC	MCC	Spkr1	A
DCC	MCC	Micr1	A
DCC	SCC1	Stn01	A
DCC	SCC1	Stn02	A
DCC	Trnk		C

The following table lists faults that may appear only in the DCC Faults window.

Table : Faults that apply only to DCCs

S. No	Parameter	Fault Description
1.	DCE '1'	DCE 1 not present
2.	DCE '2'	DCE 2 not present
3.	DCE '3'	DCE 3 not present
4.	DCE '4'	DCE 4 not present
5.	Trnk	Audio trunk not working
6.	Battery	Battery not working
7.	Cnfg	No Configuration present
8.	Ethn XXXXX*	Ethernet failure

* 'X' denotes the corresponding Ethernet number

5.7.3 The “DCE '1' Faults” Option

The faults that are displayed in this window are specific to DCE '1'. This window only displays the status of the faults and therefore, faults cannot be acknowledged in this window. Please see the section on the Unacknowledged Faults window for a description of the characters that appear in the fault window.

A table describing the faults that may appear in both the DCC and the DCEs is displayed below:.

Table : Faults that apply to DCCs and DCEs

S. No	Parameter	Fault Description
1.	Fans	Fans not running properly
2.	SCC1 Stn XX*	Station faults
3.	SCC2 Stn XX	Station faults
4.	MCC Spkr X	Master faults
5.	MCC Micr X	Master faults

* 'X' denotes a number that corresponds to the Station, Speaker or Microphone number

5.7.4 The “DCE ‘2’ Faults” Option

The faults that are displayed in this window are specific to DCE ‘2’. This window only displays the status of the faults and therefore, faults cannot be acknowledged in this window. Please see the section on the Unacknowledged Faults window for a description of characters that appear in the fault window.

5.7.5 The “DCE ‘3’ Faults” Option

The faults that are displayed in this window are specific to DCE ‘3’. This window only displays the status of the faults and therefore, faults cannot be acknowledged in this window. Please see the section on the Unacknowledged Faults window for a description of characters that appear in the fault window.


5.7.6 The “DCE ‘4’ Faults” Option

The faults that are displayed in this window are specific to DCE ‘4’. This window only displays the status of the faults and therefore, faults cannot be acknowledged in this window. Please see the section on the Unacknowledged Faults window for a description of characters that appear in the fault window.

5.8 Default Screens

After a Timeout period (set by the user) of inactivity on the keypad, the DCCs’ display automatically returns to one of two “default” screens. Note that some screens will disable the Timeout period (e.g., the Install IMS screen or Remove IMS screen) by continuing to remain in the screen that the user is working with.

A discussion on how this Timeout period is set, is discussed in Section 5.5.1.1 – the LCD Adjustment Screen. If the Timeout is enabled to a certain time period and if there are no unacknowledged faults, then the System Time/Date screen is displayed after the Timeout period has expired. Conversely, if unacknowledged faults are present, then the Unacknowledged Faults screen is displayed after the Timeout period has expired. When a Timeout period has been set, the display will automatically switch between these two screens as faults occur and are acknowledged.

When either default screen is displayed, the interface should behave as if those screens had been invoked via the keypad (e.g. pressing the  key on the System Time/Date screen should move the screen up one level to the Setup menu).

5.9 Status Indicators



5.9.1 Introduction





The front panel of the DCC and the DCE includes the three status indicators: Run, Fault and Install. The function of each indicator is described below.

5.9.1.1 The “Run” Indicator

This indicator is Green in colour and is illuminated to indicate that the DCCs, DCEs and DSP(s) are powered and running properly.

5.9.1.2 The “Install” Indicator

When a DCE is connected on the network, but has not been assigned to a logical device in the Configuration (i.e. it has not been “installed”), then its front panel  indicator will begin to display an orange colour, in order to provide notice to the user. Similarly, the  indicator on the front panel of the DCC will begin to blink if there are DCEs defined in the Configuration, for which a physical assignment has not yet been made.

It should be noted that the  indicator on the DCC may be blinking without the  indicator blinking on any of the DCE devices, and conversely, one or more  indicators may be blinking on DCE devices without the DCC  indicator blinking.

The Install indicator is Orange in colour and blinks on the DCC when one or more LonWorks, USB, or Ethernet connected devices such as DCEs are queued for installation. If there are no devices queued, the Install indicator is extinguished. Note that if there is more than one DCE to be set up for installation, then the orange light will appear on a single DCE at a time, which will indicate the DCE that is to be installed next in the queue.

5.9.1.3 The “Fault” Indicator

This indicator is Red in colour and blinks when an unacknowledged fault of any type is present (on that device). The DCC fault indicator reports only faults that are present on the DCC (it does not report DCE faults), including faults that are detected on the audio trunk and the USB network. Similarly, a DCE fault indicator only reports faults that are local (including a failure to connect to the USB) to the DCE in question. Note that due to hardware limitations, the fault indicator will be on solid (not blinking) under some fault conditions (i.e. when the FPGA (Field Programmable Gate Array) cannot be loaded due to a hardware fault or an invalid firmware image).

5.10 Initial Setting of IP Addresses

When a DCC is shipped it does not contain preloaded application firmware, and thus does not contain an initial valid IP address. The following procedure is recommended to insure the DCCs have the correct IP addresses.

Steps to bring a DCC to the operational state:

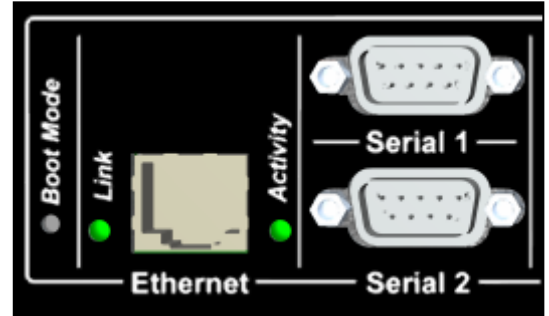
1. Connect Power to the DCC, do not make an Ethernet connection.
2. Turn the DCC on.
3. Using the front panel, enter the setup menu and configure the I/P Address for the unit.
4. Connect the Ethernet cable to the back of the box.
5. Once loaded, connect to the DCC with the administrator and download the correct firmware.
6. Once loaded, connect to the DCC with the administrator and download the correct configuration.

Note: The reason for this is that the DCC running the default application has DHCP enabled if no I/P address is explicitly assigned. If the customer has a DHCP server on the same network, the DCC may get an I/P assigned to it from the server that should not be used. If the lease time is long, the I/P leases may not expire in time causing the customers DHCP server to run out of addresses to assign.

If DHCP is not an issue (either no server on the network or the leases expire quickly ensuring the server does not run out of addresses), then Ethernet may also be connected at initial power up.

6 Boot Mode

The ‘boot mode’ is entered by holding down the ‘Boot Mode’ button while powering up the DXL box. In this mode, you will be able to make selections such as, choosing which Applications to run, clearing IP addresses, clearing memory, and running memory tests. Note that in order to enter this mode, you will have to hold down the ‘Boot Mode’ button with a bent paper clip or a small screwdriver. However, you must not use a sharp instrument that is capable of damaging the button.





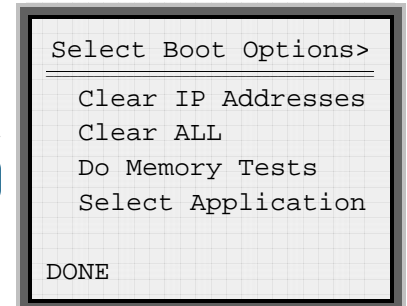
In this mode, you will be presented with some options that will allow you to:

- Choose the DXL Application that is to be loaded when the DXL starts up. The choices in this option would include the Default Application (which would load if no other applications are present) plus any other applications loaded into the FLASH memory. However, the Configuration files on the DXL unit would not be affected.
- Clear the non-volatile memory (NVRAM and FLASH) in the DXL units, including all the downloaded Configurations, Applications, and IP addresses. User confirmation will be required for this action.
- Invoke comprehensive SDRAM (and optionally NVRAM/FLASH) memory tests and possibly other diagnostics. In this case, the Configuration files on the DXL unit will not be affected.





6.1 The “Boot Options” Window

6.1.1 Introduction

This is the main window that you will initially see in the boot mode. You can use the options in this window to enable/disable various self-tests or clear Configurations and IP addresses before booting. You can use the  and  keys on the front panel of the DXL box in order to move to different lines. This window has four options to select from:



- 1) Clear IP Addresses
- 2) Clear ALL
- 3) Do Memory Tests
- 4) Select Application






To enable a test or option, go to the start of the line using the up  and down  arrow keys, and then select the option by hitting either the  key or the  key. A test or option that has been enabled appears with a tick mark ‘☒’ beside it. Note that you can select more than one option at a time and can place a tick mark beside all the options at the same time. Once you have finished using the options on the screen, select the DONE option to exit the window and continue loading the DXL.

Note that if you do not press a single button after the Boot Options window has loaded, then a timeout of 60 seconds will come into effect. This will ensure that the DXL exits the Boot Options window and continues to

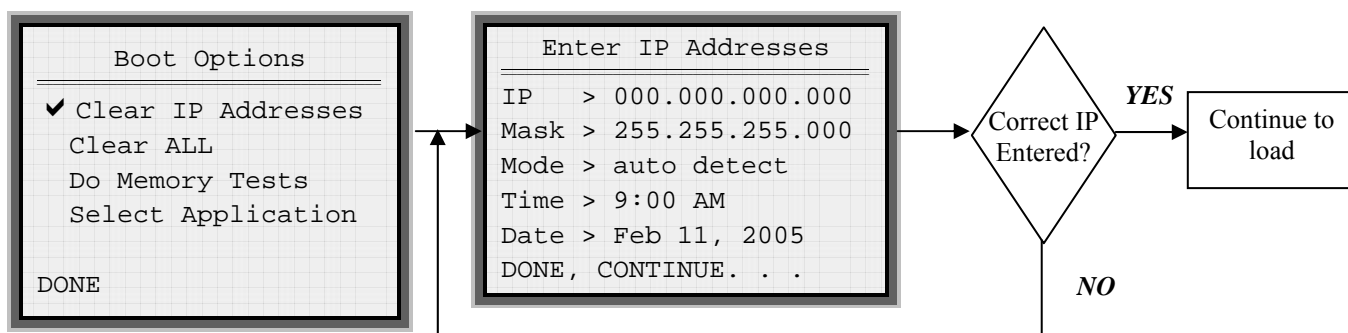
load. This is done in an effort to prevent the DXL from remaining trapped in this window if the window has been entered due to non-booting issues, accidental entry or hardware flaws.

6.1.1.1 The “Clear IP Addresses” Option

Select this option if you want to clear all the IP addresses and masks on the DXL. This option is useful if you wish to move the DXL box to another location that may have a different IP address and net mask.


After you select DONE, and the Application begins to load, it will bring up the Enter IP Addresses window, with the cursor on the IP line and the IP address set to ‘000.000.000.000’. You will have to use the  key to move to the first editable value in this line and then edit the IP address by using the up  and down  arrow keys to scroll between the digits. Then use the  key to return to the beginning of the line. Once this is done, you will have to go to the last line (which will display DONE, CONTINUE...) and select the  key to continue with the loading.

Note that if you do not enter an IP address or you enter an invalid IP address, then the program will go to the start of the DXL Boot window, and will then return to the Enter IP Addresses window and wait for you to enter an IP address. If you enter the correct IP address then the Application will continue to load, and the system will display the DCC Setup window.

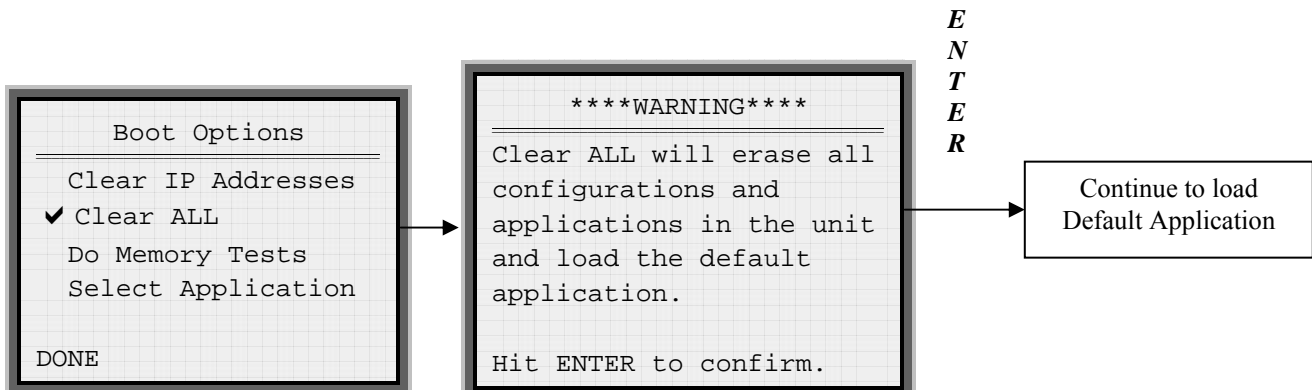


Note that this description only applies to standard Applications. If you want to load the Default Application, then you will not be taken to the Enter IP Addresses screen and therefore, will not be prompted to enter an IP address. Instead, the Default Application will be loaded right away.

6.1.1.2 The “Clear ALL” Option

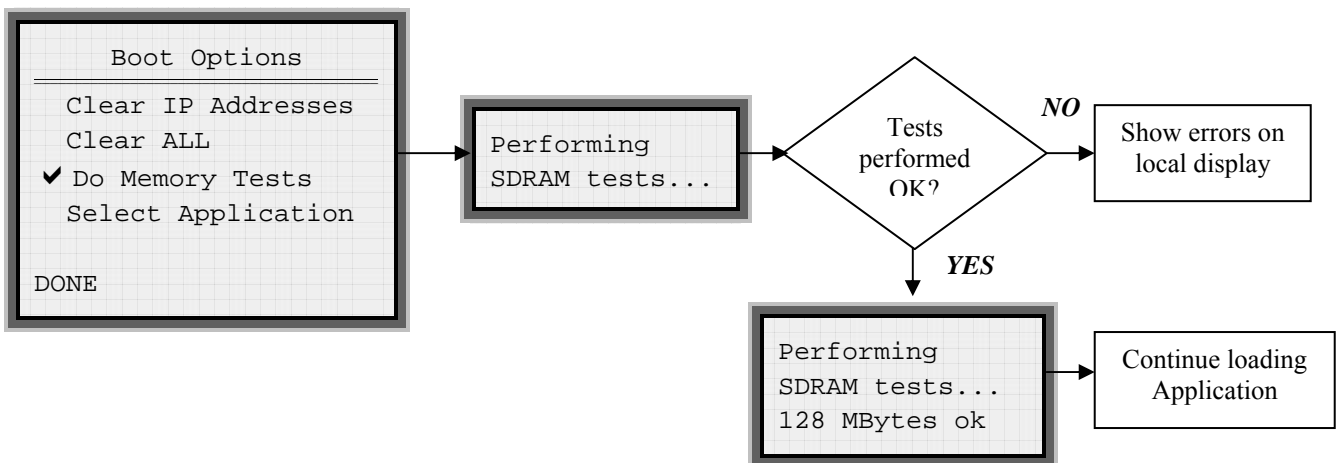
Select this option if you want to clear the ENTIRE unit Configuration. This will include all the Configurations, Applications and IP addresses on the DXL. You will receive a confirmation message when you select the Clear All option. When you select this option, the Enter IP Addresses window will appear with the IP address set to zero. You will have to enter the IP address and then go to the line containing DONE, CONTINUE... and then press the  key to continue loading the Default Application. Subsequently, if you enter an incorrect IP address then the DXL will not be able to load the Application and will continue to return to the Enter IP Addresses window. Please refer to the Clear IP Addresses option for a description of this subsequent process.

Note that when you select this option and subsequently enter the correct IP address, then the default Application will be loaded on the DXL, as all the other Applications have been cleared.





6.1.1.3 The "Do Memory Tests" Option

Select this option if you want to perform extensive memory tests on the SDRAM. This will add a few minutes to the booting time of the DXL. If the tests proceed without detecting any errors then the window will display a message saying that the test was OK and will continue loading the application. Any errors that are detected in the tests will be displayed on the local display. Note that if the Clear All option is simultaneously selected, then further checks will be run on the NVRAM and the FLASH, which will further extend the booting time by several more minutes. A list of errors will also be displayed in the local window when these memory tests are carried out.

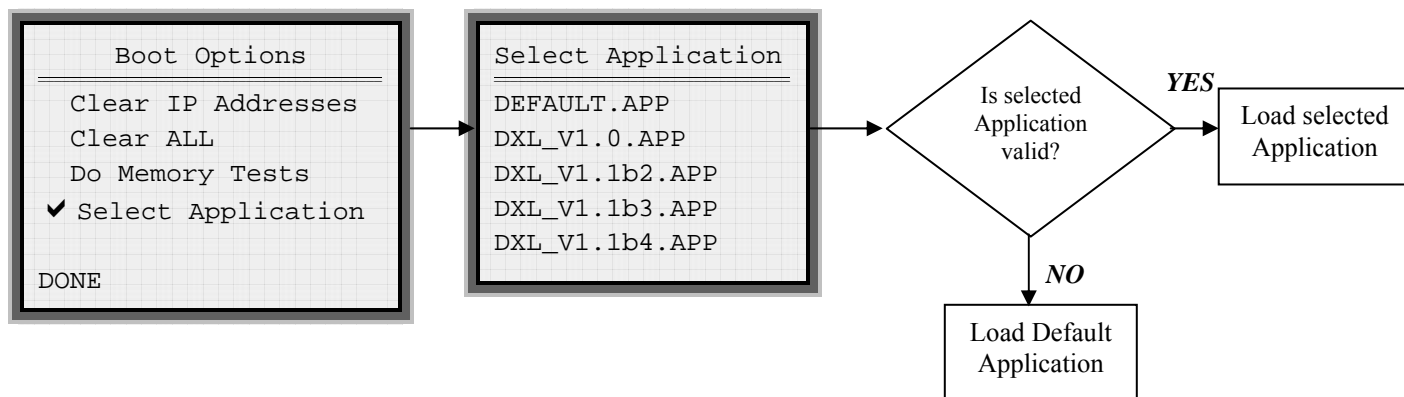


6.1.1.4 The "Select Application" Option

Selecting this option will invoke the Select Applications window, after you have selected DONE in the Boot Options window. This window will display all the Applications that are currently available on the DXL. Pick an

Application by first using the up and down arrow key to scroll through the lines and then use either the  key or the  key to load the Application and run it on the DXL.

Note that the first line will always display the name of the default Application and the line underneath that will display the most recently used Application. It is possible to display a maximum of the six most recently used Applications that are present on the DXL. If no valid Application file is found, then the program will skip this menu and will load and run the default Application instead.



6.2 Load and Run Program

After these selections have been made and carried out, the program will run and load the Application that you have selected (or the default Application in the case that you have not made a choice or the choice is invalid). A descriptive menu is used to indicate the loading status and report any errors.

Note that the first line may display a number of different strings, depending on the condition in which the DXL is booted.

```

DXL Boot Version 1.0
Power on Detected

Loading Application
DXL_V1.1b2.APP
.....done.
  
```

- “Power on Detected” indicates that the DXL has been powered up by using the switch at the back of the DXL.
- “Power on Restart” also indicates that the DXL has been powered by the user.
- “User Reset” indicates that the user has initiated a reset of the DXL. This may appear when you load a new Application, or enter a new IP address, etc. In this case, the DXL would check with the user about whether it is to reboot or reset itself.
- “Exception Code xxH” (where xx is the two-digit HEX error code) indicates a firmware or hardware error or issue, such as entering an incorrect IP address, etc.

6.3 Warnings

A list of the warnings that may appear on the local display under certain conditions is displayed below.

Warning

If the DXL battery is removed and the DXL is allowed to remain inactive for a while, then the DXL memory will lose all the Applications that are stored on it and will only retain the Default Application. This warning may arise in other cases as well, but the removal of the battery and subsequent DXL inactivity, may be the most common reason for this type of error. In this case, when the user tries to start up the DXL, the following warning will be received.

Hence, it will load the Default Application after the user hits the  key to confirm the request.


****WARNING****

No valid applications were found.

Reverting to DEFAULT APP.
Please check the DXL backup battery.

Hit ENTER to confirm.

Warning

If the user has selected a particular Application to load when the DXL starts up, but this Application is no longer available on the DXL (as it may have been deleted), then the DXL will not be able to find the selected Application that is required for loading. Hence, it will load the Default Application after the user hits the  key to confirm the request.

****WARNING****

The last selected application was not found.

Reverting to DEFAULT APP.

Hit ENTER to confirm.

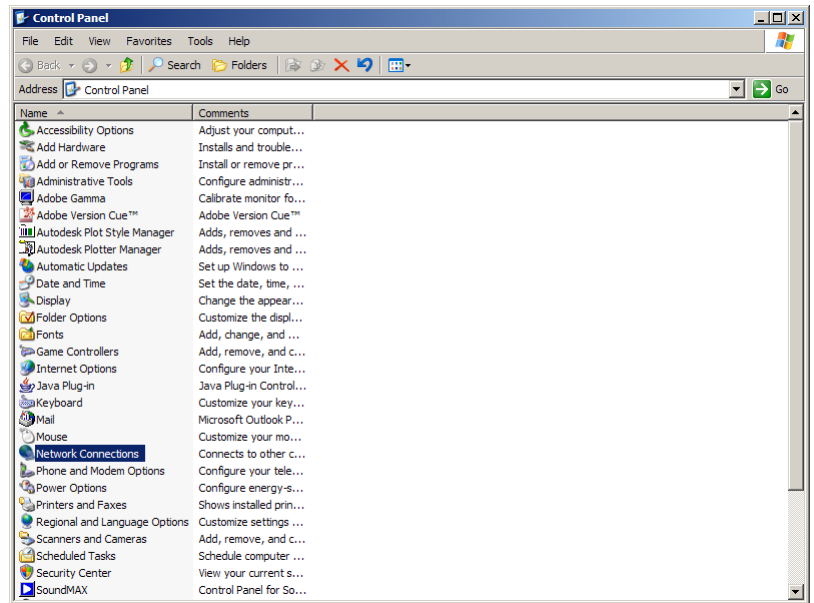
Appendix A

A 1 Setting up a Serial Port Connection from your PC to a DXL DCC.

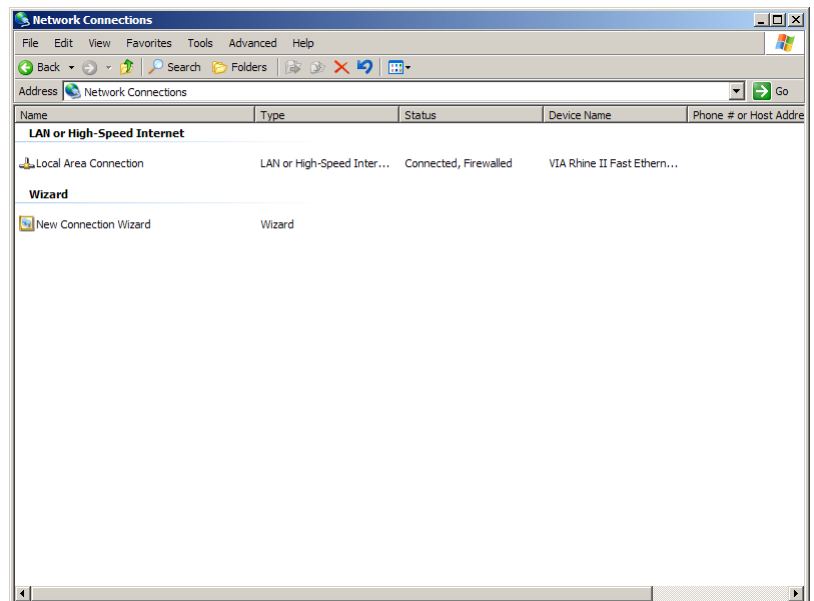
This Appendix gives instructions to the user on how to use Windows XP operating system to configure a serial port on your PC so that your PC can communicate with a MicroComm DXL System using a null-modem cable. Note that direct serial connections are no longer supported with Vista/Windows 7 due to a lack of support in the operating system.

A 1.1 Using the New Connection Wizard

The first step in configuring the serial port of your PC so that it can transfer information between your PC and a DXL DCC is to open the Control Panel window followed by double clicking the **Network Connections** icon. This will open the **Network Connections** window.



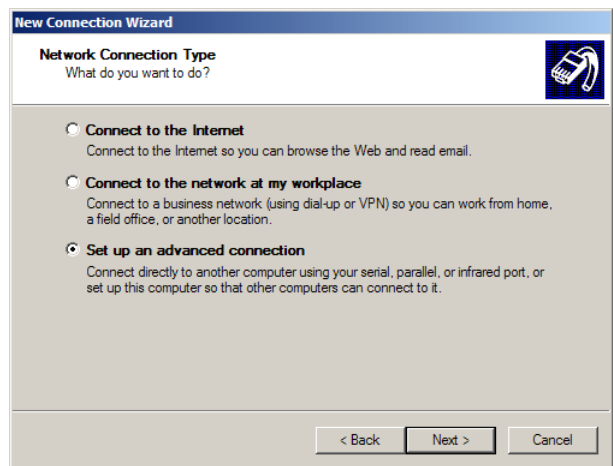
The Network Connections window displays all the current Connections on your PC. The next step in creating a serial connection is to use open the New Connection Wizard by using the File menu or double clicking the New Connection Wizard icon.



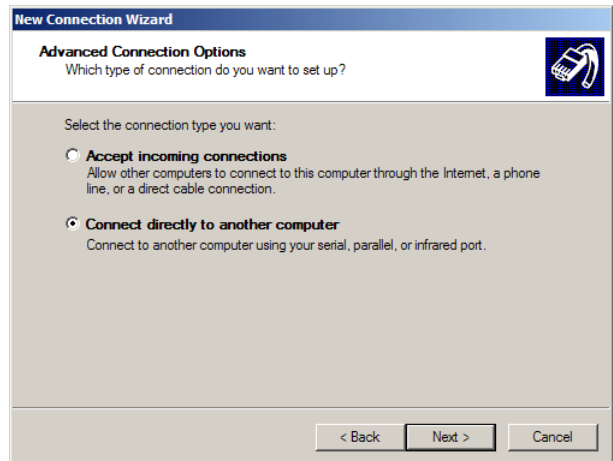
The **New Connection Wizard** opens with a page entitled **Welcome to the New Connection Wizard**. After reading the information about what the **Wizard** does you can click on **Next>** button.



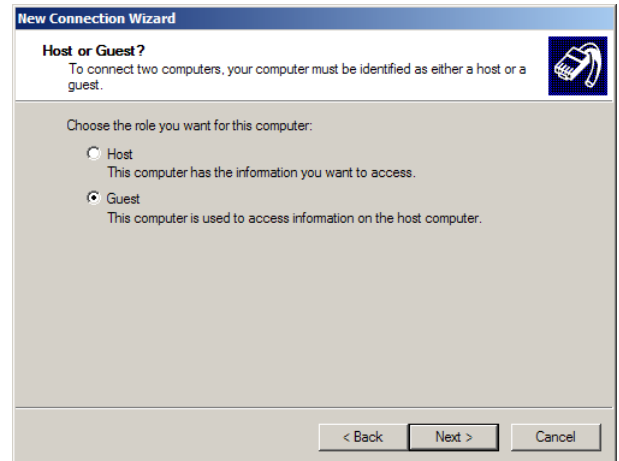
The next page of the **Wizard**, the **Network Connection Type**, asks you what type of connection you want to set up. Select the **Set up an advanced connection option**, followed by clicking on the **Next>** button.



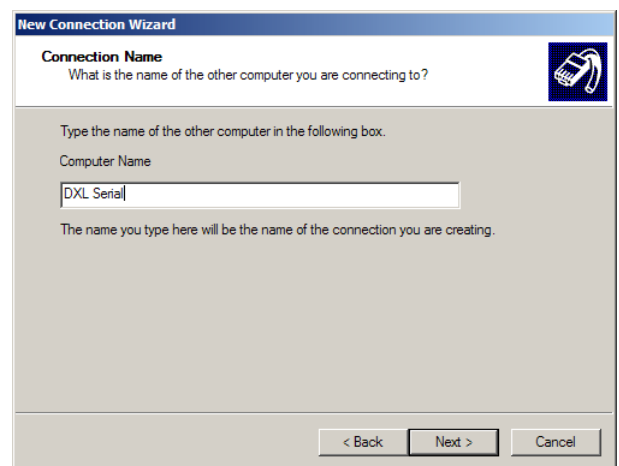
The next page of the **Wizard**, the **Advanced Connection Options**, asks you what type of connection you want to set up. Select the **Connect directly to another computer** (a DCC is similar to a PC) option, then click on **Next>** button.



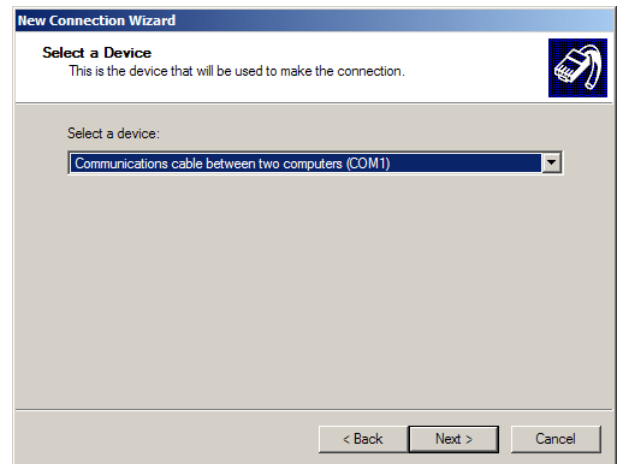
The next page of the **Wizard**, the **Host or Guest?**, asks you if you want your PC to act as a Host or as a Guest. Select the **Guest** option, then click on **Next>** button.



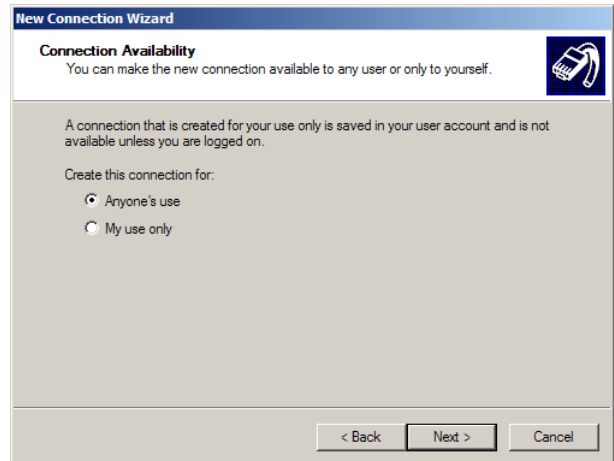
The next page of the **Wizard**, the **Connection Name**, asks you to give your PC serial connection a name. Type in a suitable name (we have used DXL Serial) followed by clicking the **Next>** button



The next page of the **Wizard** asks you to select a device, use the pull-down menu to view all the port devices in your PC. Select the one you want to use for your serial port then click the **Next>** button.



The next page of the **Wizard** titled **Connection Availability** asks you who should be able to use the connection; you can select **Anyone's use** or **My use only**.



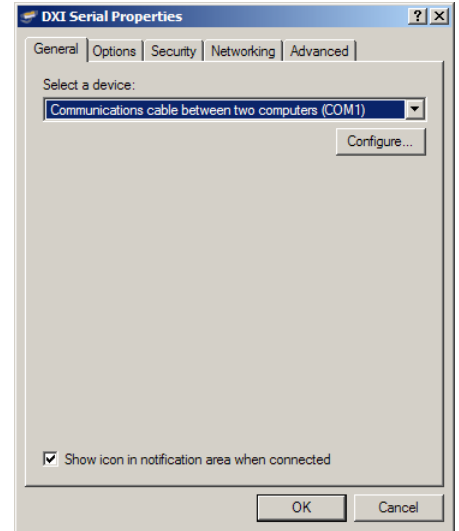
At this point you have almost completed configuring the serial connection and the **Completed the New Connection Wizard** page of the Wizard is displayed. You can use the check box entry if you would like to create a shortcut icon on your desktop. If you are satisfied with all your entries click on the **Finish** button.



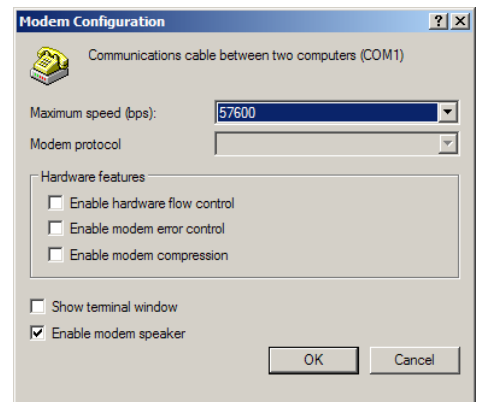
The **Connect DXL Serial** dialog box will now appear. You can type in User name and a Password (here we have used dxl as both the User name and the password). You can use the checkbox if you want your PC to save this user name and password. To complete the configuration for the serial port connection you need to click on the **Properties...** button.



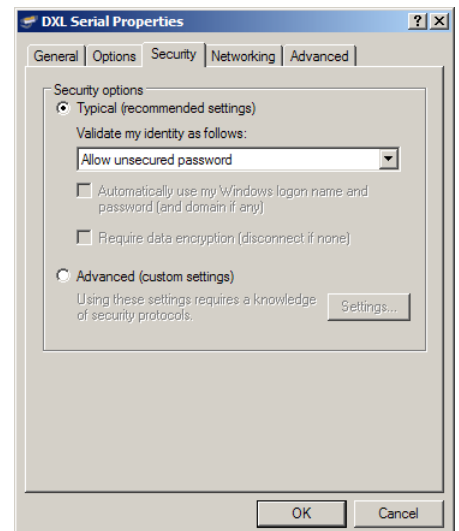
The **DXI Serial Properties** dialog box has 5 tabs; **General**, **Options**, **Security**, **Networking** and **Advanced**. You will need to change the default settings in the **Security** tab and change the default configuration in the **General** tab. To change the configuration click the **Configure...** button on the **General** tab to bring up a **Modem Configuration** dialog box.



In the **Modem Configuration** dialog box use the pull-down menu to select a speed of 57600 bps and use the check boxes to turn off all the **Hardware Features**. Once these settings are made click OK to return to the **General** tab of the **DXI Serial Properties** dialog box.



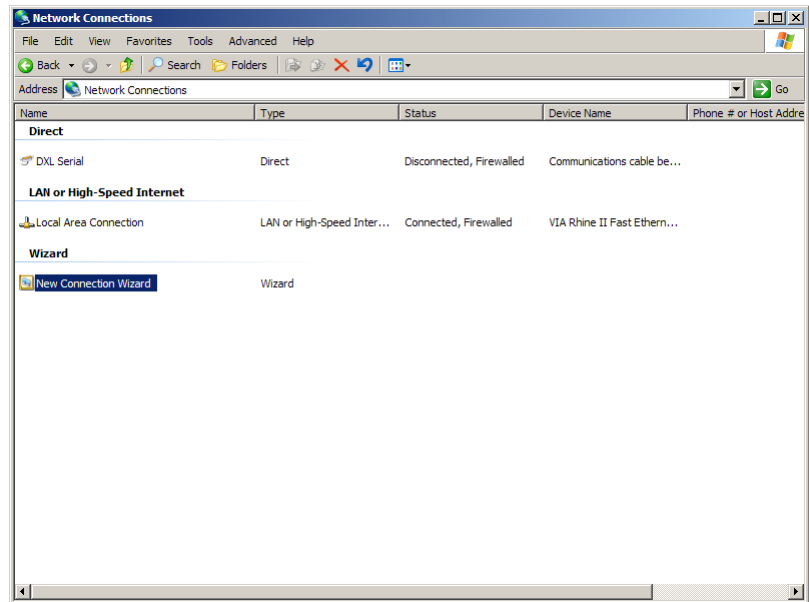
Select the **Security** tab of the **Modem Configuration** dialog box. Select the **Typical** option and click OK to return to the **Connect DXL Serial** dialog box.



You will now return to the **Connect DXL Serial** dialog box and you can close the dialog box at this time.



The Control Panel window will now display the **Direct** connection named **DXL Serial**.



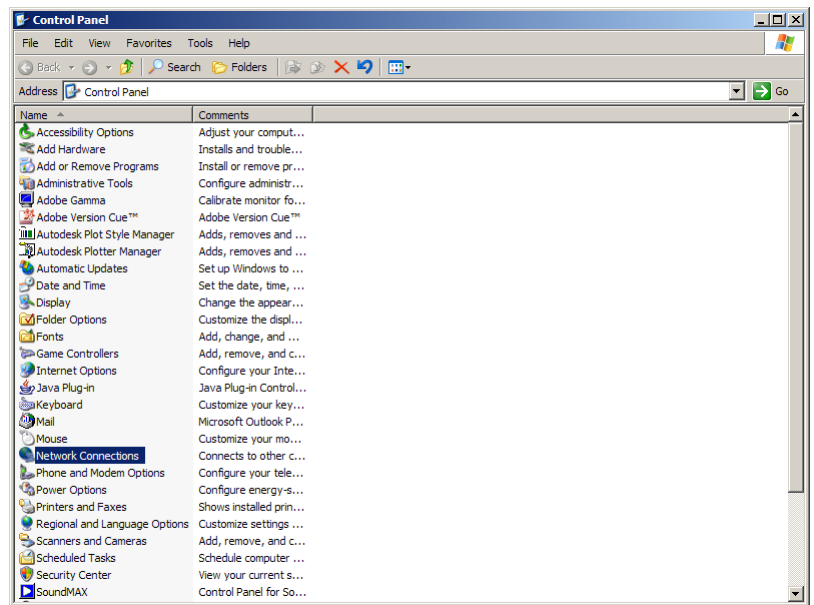
Appendix B

B 1 Setting up a Modem Connection from your PC to a DXL DCC.

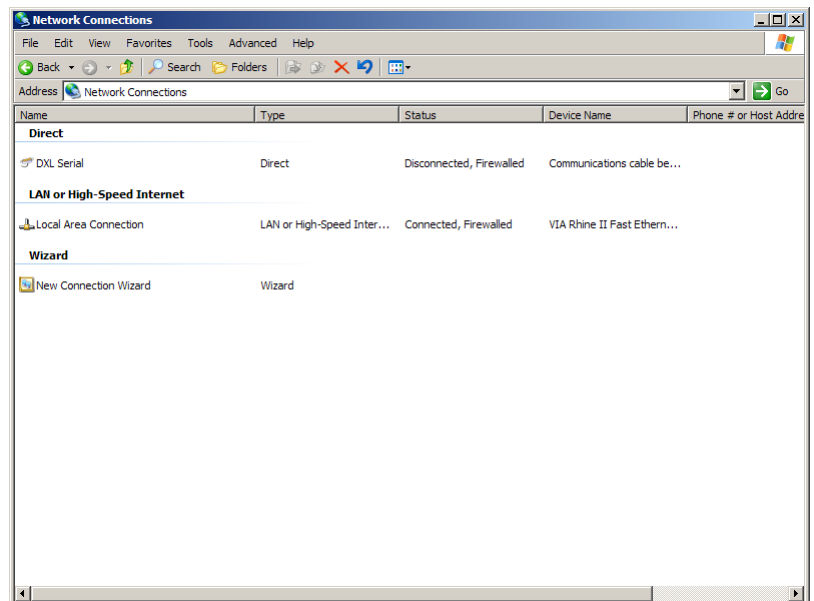
This Appendix gives instructions to the user on how to use Windows XP operating system to configure a modem on your PC so that your PC can communicate with a MicroComm DXL System. Note that these steps are only required for manual connections, the DXL Administrator will automatically setup modem connections when the user uses the Communications "Connect..." menu.

B 1.1 Using the New Connection Wizard

The first step in configuring the modem in your PC so that it can transfer information between your PC and a DXL DCC is to open the Control Panel window followed by double clicking the **Network Connections** icon. This will open the **Network Connections** window.

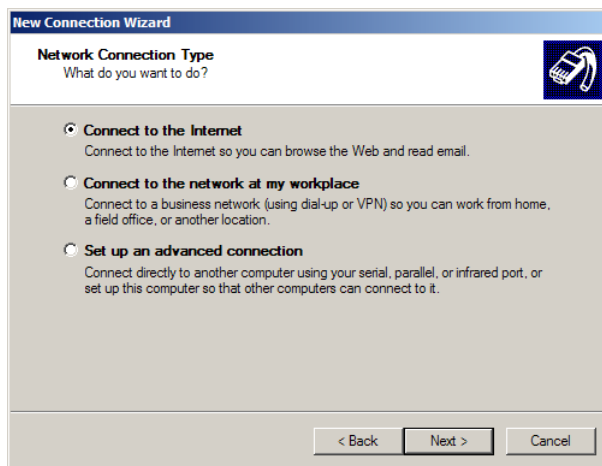


The **Network Connections** window displays all the current Connections on your PC. The next step in creating a serial connection is to use open the **New Connection Wizard** by using the **File** menu or double clicking the **New Connection Wizard** icon.

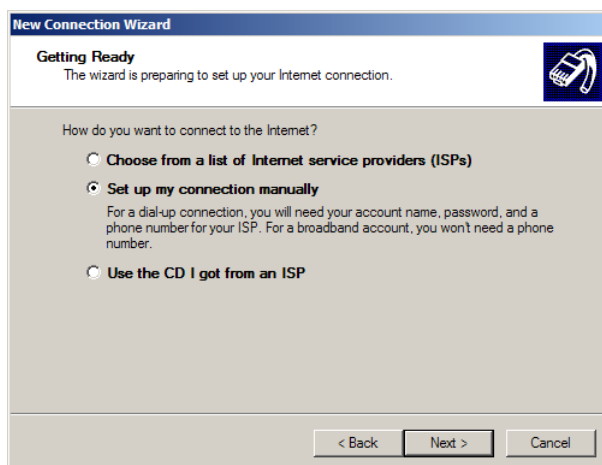


New Connection Wizard opens with a page entitled **Welcome to the New Connection Wizard**. After reading the information about what the Wizard does you can click on **Next>** button.

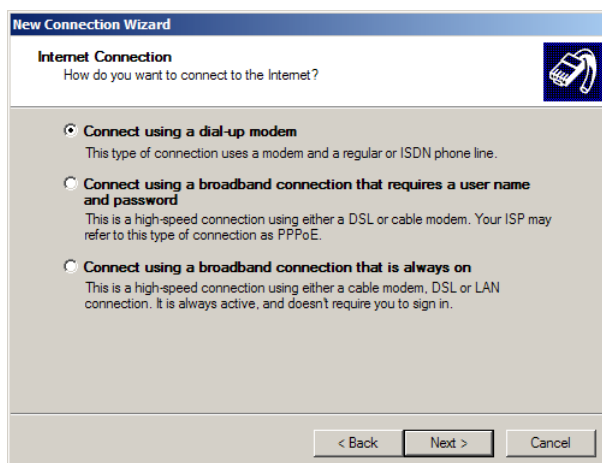
The next page of the **Wizard**, the **Network Connection Type**, asks you what type of connection you want to set up. Select the **Connect to the internet**, followed by clicking on the **Next>** button.



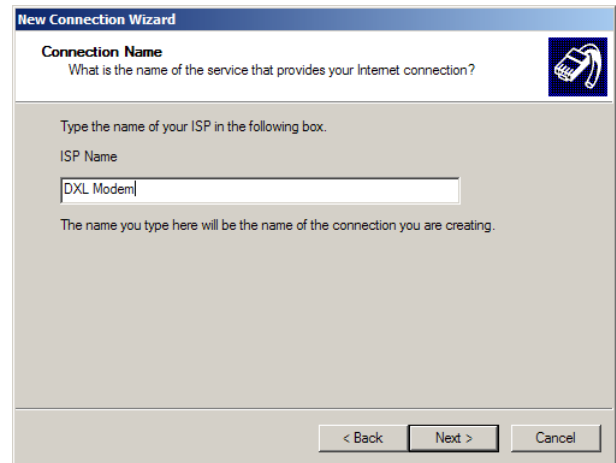
The next page of the **Wizard** is **Getting Ready**. Select the **Set up connection manually** option, then click on **Next>** button.



The next page of the **Wizard**, the **Interconnect Connection**, asks you how you want to connect to the Internet. Select the **Connect using dial up modem** option, then click on **Next>** button.

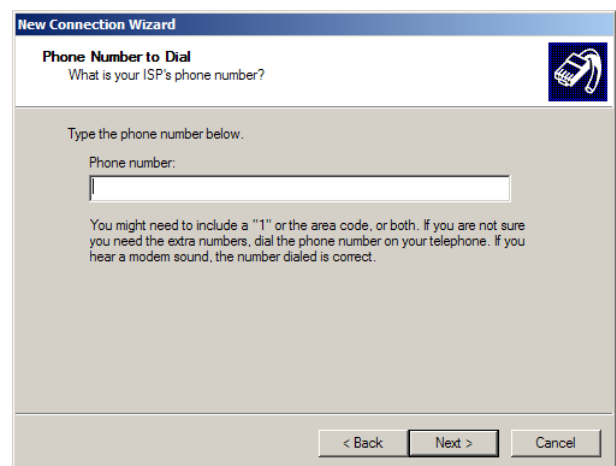


The next page of the **Wizard**, the **Connection Name**, asks you to give your PC modem connection a name. Type in a suitable name (we have used DXL Modem) followed by clicking the **Next>** button



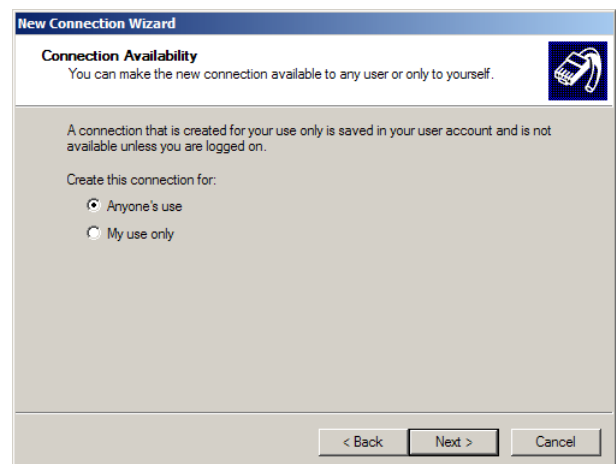
The screenshot shows the 'New Connection Wizard' window with the 'Connection Name' tab selected. The title bar reads 'New Connection Wizard'. Below the title bar, the text 'Connection Name' is followed by the question 'What is the name of the service that provides your Internet connection?'. A small icon of a modem is in the top right corner. The main area contains the instruction 'Type the name of your ISP in the following box.' followed by 'ISP Name'. A text box contains the text 'DXL Modem'. Below the text box, it says 'The name you type here will be the name of the connection you are creating.' At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

The next page of the **Wizard** asks you to type in the phone number of the modem. This is not required at this stage since we are not going through telephone network. Click the **Next>** button.



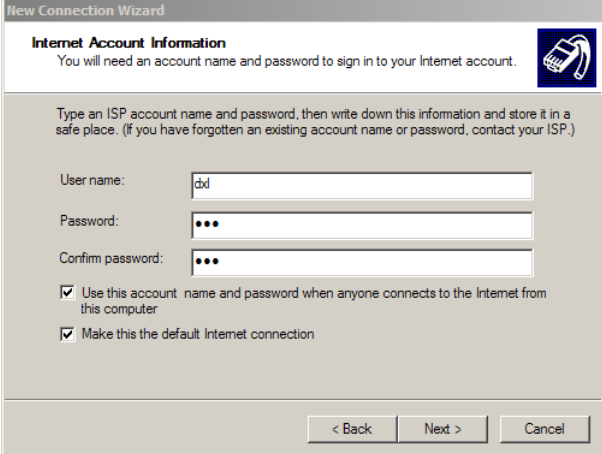
The screenshot shows the 'New Connection Wizard' window with the 'Phone Number to Dial' tab selected. The title bar reads 'New Connection Wizard'. Below the title bar, the text 'Phone Number to Dial' is followed by the question 'What is your ISP's phone number?'. A small icon of a modem is in the top right corner. The main area contains the instruction 'Type the phone number below.' followed by 'Phone number:'. A text box is empty. Below the text box, it says 'You might need to include a "1" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.' At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

The next page of the **Wizard** titled **Connection Availability** asks you who should be able to use the connection; you can select **Anyone's use** or **My use only**.



The screenshot shows the 'New Connection Wizard' window with the 'Connection Availability' tab selected. The title bar reads 'New Connection Wizard'. Below the title bar, the text 'Connection Availability' is followed by the question 'You can make the new connection available to any user or only to yourself.' A small icon of a modem is in the top right corner. The main area contains the instruction 'A connection that is created for your use only is saved in your user account and is not available unless you are logged on.' followed by 'Create this connection for:'. There are two radio buttons: 'Anyone's use' (which is selected) and 'My use only'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

The next page of the **Wizard, Internet Account Activity**, asks you to type in a User name and Password.



New Connection Wizard

Internet Account Information
You will need an account name and password to sign in to your Internet account.

Type an ISP account name and password, then write down this information and store it in a safe place. (If you have forgotten an existing account name or password, contact your ISP.)

User name:

Password:

Confirm password:

☒ Use this account name and password when anyone connects to the Internet from this computer

☒ Make this the default Internet connection

< Back Next > Cancel

At this point you have almost completed configuring the modem connection and the **Completed the New Connection Wizard** page of the **Wizard** is displayed. You can use the check box entry if you would like to create a shortcut icon on your desktop. If you are satisfied with all your entries click on the **Finish** button.



New Connection Wizard

Completing the New Connection Wizard

You have successfully completed the steps needed to create the following connection:

DXL Modem

- Make this the default connection
- Share with all users of this computer
- Use the same user name & password for everyone

The connection will be saved in the Network Connections folder.

☐ Add a shortcut to this connection to my desktop

To create the connection and close this wizard, click Finish.

< Back Finish Cancel

The **Connect DXL Modem** dialog box will now appear. You can type in User name and a Password (here we have used dxl as both the User name and the Password). You can use the checkbox if you want your PC to save this user name and password. To complete the configuration for the serial port connection you need to click on the **Properties...** button.



Connect DXL Modem

User name:

Password:

☒ Save this user name and password for the following users:

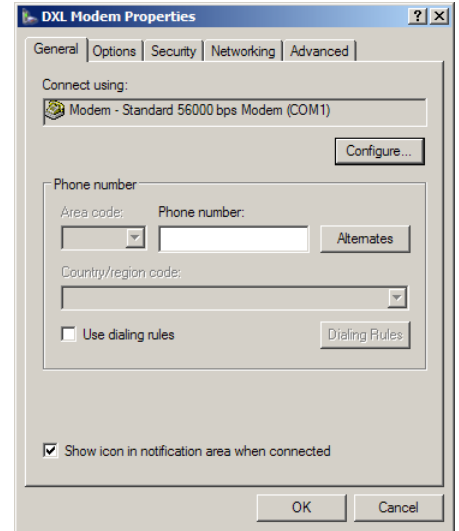
☐ Me only

☒ Anyone who uses this computer

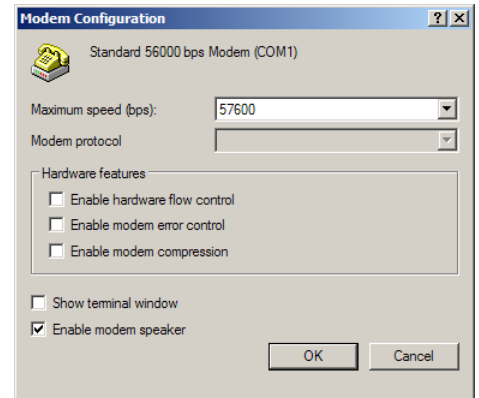
Dial:

Dial Cancel Properties Help

The **DXI Modem Properties** dialog box has 5 tabs; **General**, **Options**, **Security**, **Networking** and **Advanced**. You will need to change the default configuration in the **General** tab. To change the configuration click the **Configure...** button on the **General** tab to bring up a **Modem Configuration** dialog box.



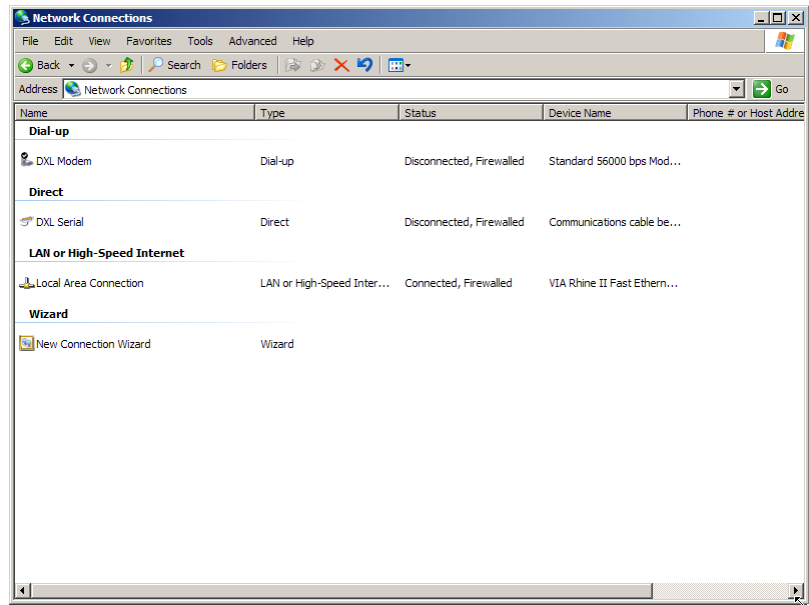
In the **Modem Configuration** dialog box use the pull-down menu to select a speed of 57600 bps and use the check boxes to turn off all the **Hardware Features**. Once these settings are made click OK to return to the **General** tab of the **DXI Serial Properties** dialog box.



You will now return to the **Connect DXL Modem** dialog box and you can close the dialog box at this time.



The Control Panel window will now display the **Dial-up** connection named **DXL Modem**.



Appendix C Acknowledgements

The DXL Firmware uses a software package entitled “Time Routines” developed by Michael Ringgaard. As per his instructions we include the following notice. The use of the routines in the Firmware package falls under condition 2.

Time routines

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