

MCN *Standard*TM

Version 7
Remote Comparator Display

For
Windows Vista, 7
Server 2003, 2005 and 2008R2

S2-61043-250



***This manual covers the software version indicated on the cover page.
Older software versions may not have all the features and may operate differently.***

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Revision History

S2-61043-210 MCNRCD for Windows

S2-61043-240 Updated Manual to remove obsolete procedures and information.

S2-61043-245 Updated Screen Shots

S2-61043-250 Release for MCN Standard Version 7.20.xx
Added support for HIB-IP 8002 Module

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Introduction

This manual covers the installation, configuration, and operation of the MCN (Monitoring and Control Network) Standard software.

The standard version of the MCN software has capabilities as indicated below.

Function	Standard
Number of Network Interfaces supported	1
Remote Client Support	No
Support for Third Party Clients	No

The manual may refer generically and interchangeably to this application as "MCN Standard" or "Standard Software".

RCD stands for "Remote Comparator Display".



The Standard software has executable file names as shown below:

Program	Shorthand	Executable file name
Hardware Setup	HWSetup Standard	Hardware Setup Standard. exe
Configuration Program	MCN Config standard	McnConfig Standard.exe
Monitoring Program	MCN Standard	MCNRCD Standard.exe

Major sections of the manual comprise of:

Introduction

General discussion of the MCN Monitoring & Control Network, system requirements for the MCN Standard software.

Introduction

Installation	Installation of the MCN software (and the PCLTA Driver Software if used).
System Configuration	This is the largest part of the manual, because it describes in detail all the system configuration features and options.
Mcn Standard Program	This covers the operation of the MCN Standard run-time program.
Appendices	Troubleshooting, special configuration, etc.

Example System Diagrams

System diagrams in this manual are included to illustrate example generalized systems and principles and are not intended to reflect any particular system configuration. In particular, a simplified IP infrastructure is shown. Real-world IP networks may require and include additional routers, gateways, switches, etc.

Typical Monitoring & Control Network (MCN) Systems

There are a few things that must be configured and connected in order to establish a working system. A typical Mcn Standard is shown in the figure below attached to an MCN network. The MCN Standard Remote Comparator Display system consists of:

- An Mcn Standard PC running MCN the Standard program.
- One or more network interfaces for the Mcn Standard PC (such as a HIB-IP, internal PCLTA or HIB-232).
- One or more Comparator I/O Modules (such as an AIB or CIB).
- Optionally, other interface modules (such as IOB) to drive auxiliary outputs and alarms.

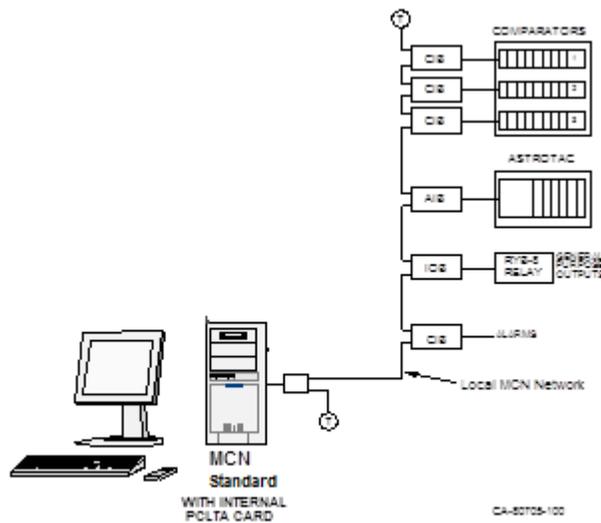


Figure 1 - Simple MCN Standard System

MCN System Overview

The main programs that make up the MCN Standard software package:

- **MCNConfig** Program
(McnConfig Standard.EXE)
This is the configuration program run by the system designer such as an engineer or technician to build the configuration files when the system is installed or changed.
- **Mcn Standard** Program
(McnRcd standard.EXE)
This is the program that runs on the Mcn Standard PC. It has a local display that displays the status of the devices on the MCN system (Comparators, I/O points, alarms, etc.). It allows the operator to control receivers (with Force-Vote and Disable functions) and other I/O devices (relays, etc.) from the Mcn Standard PC.

The Mcn Standard program **does not** support any clients.

Reference Documents

Details of other hardware components of the system can be found in the following documents:

- Monitoring and Control Network, System Manual
Part Number S2-60425
- HIB-IP Remote Network Interface Hardware Reference Manual
Part Number S2-61173
- HIB-232 Host Computer Interface Module, Hardware Reference Manual
Part Number S2-60427
- CIB Comparator I/O Module, Hardware Reference Manual
Part Number S2-60426
- AIB Astro-TAC Comparator Interface Module, Hardware Reference Manual
Part Number S2-60399
- IOB I/O Control Module, Hardware Reference Manual
Part Number S2-60630
- EXB-232 and EXB-IM Network Extender Modules, Hardware Reference Manual
Part Number S2-60596
- EXB-IP and EXB-FI Network Extender Modules, Hardware Reference Manual
Part Number S2-61089
- Router Modules, Hardware Reference Manual
Part Number S2-60649



Package Contents

All MCN Standard System packages will include the following:

Software CDs

The MCN *Standard* software package includes:

- **Installation Program:**
The standard Install shield program is used to install the software on a Single PC. The CD contains the HwSetup, McnConfig, and MCN Standard software only.
- **HWSetup Program:**
This is used to select which network Interface to use for legacy hardware support. No software Key is required for this system to operate.
- **MCNConfig Program: (McnConfig Standard .exe)**
This is the configuration program that is used by an engineer or technician to build the configuration files when the system is installed or changed.
- **MCN Standard Program:**
This program operates on the Mcn Standard PC. It has a local display that displays the status of the devices on the MCN system (Comparators, I/O points, alarms, etc.). It allows the operator to control receivers (with Force-Vote and Disable functions) and other I/O devices (relays, etc.) from the Mcn Standard PC.

System/User Manuals

- Hard copies of the System, User and Hardware manuals.(*Including this Manual*)
- PDF copies of System, User and Hardware manuals.



***** MCN Standard System package **does not** include the following: *****

Hardware Key (for Mcn Server versions Only)

- Not used with the Standard software version

Software Key CD (for Mcn Server versions Only)

- Not used with the Standard software version

No PCs Included

The MCN Standard software package does not include any PCs.



NOTE: The MCN Standard program does not pass any status and control data to MCN Client PCs.

PC Hardware Requirements

McN Standard software requires a PC with the following minimum system configuration:

- Windows Vista, or 7, Windows Server 2003, 2005, 2008R2
- Pentium D or Core i3 at 2GHz or above.
- 2 GB Memory.
- Color Monitor with at least 800 x 600 resolution, higher resolution recommended
- Mouse
- 100Base-T Ethernet port
- One open serial port if the local network interface is a HIB-232
- CD ROM Drive
- Open USB Port
- One open PCI slot if the Network Interface is a PCLTA (only for 32-bit operating systems)



Note: All PCs are not equipped with an available and correct type of PCI slot. Check the manufacturer mother board specifications carefully for compatibility.

Supported Operating Systems

MCN Program	Version	Win XP	Serv 2003	Win Vista		Win7		Server 2008 R2	
				32B	64B	32B	64B	32B	64B
McN Standard	3.xx	✓	✓	--	--	--	--	--	--
	4.xx	✓	✓	--	--	--	--	--	--
	5.xx	✓	✓	✓	○	✓	○	✓	○
	6.xx	✓	✓	✓	○	✓	○	✓	○
	7.xx	--	--	✓	○	✓	○	✓	○

- ✓ Fully Supported
- Only supports systems using HIB-232 and HIB-IP Network Interfaces. PCLTAs are not supported under 64 Bit OS versions.
- Not supported.



NOTE: Support for Windows 2000 has been discontinued in Version 5.00.

Released Software Versions and Options

The following table, list the different versions of the MCN software and the specific features that are available with each one.

MCN Program	Ver.	Client & Server	Clients	Dial Up	Network Interfaces Supported	TCPI
Standard	Up to 7.x	No	No	Yes With HIB-232	One (1)	No

User Access Control

Permission windows have been added since Version 5.x in the following programs, for when a user makes a change that requires access rights under the Windows User Access Control scheme:

- HWSetup
- MCN Config Standard
- Mcn Standard

Network Interfaces & Drivers

A Network interface is required to establish a communication link between the monitoring PC running the MCN Standard software and the MCN Network with its various modules.

There are three general categories of MCN Network Interfaces that can be used with Mcn Standard program:

HIB-IP External Modules	For connection to MCN networks over IP networks
HIB-232 External Modules	For Local RS-232 connection; (Although the HIB-232 manual talks about dial-up operation, the Mcn Standard program is intended to be connected full-time to the MCN network(s) that it serves.
Internal Boards PCLTA-21	For direct connection to the MCN Network Supported only by 32-bit operating systems. (Also supports connection to remote networks using EXB Network Extender Modules)

Supported Network Interface Details

The Mcn Standard program can use the following versions of HIB modules or the PCLTA cards for the interface between the PC and the MCN network.

HIB-IP Modules Version 110 & up 78K (Also includes HIB-IP 8000 & 8002)

HIB-232 Modules Version 200 & up 78K (with Rotary address switches on back)

PCLTA-21 Boards

Half-Size PCI boards 78K or 1250k versions
Only for 32-bit operating systems.

The PCLTA card is one of the Network interface types which can be used with the MCNRCD solution. The PCLTA-21 model is specifically a 32 bit PCI card type with the universal 3.3v and 5v compatibility for use with Conventional slots. See Figure 2.



Note: All PCs are not equipped with the correct type or number of available PCI slots. Check the manufacturer motherboard specifications carefully for compatibility.

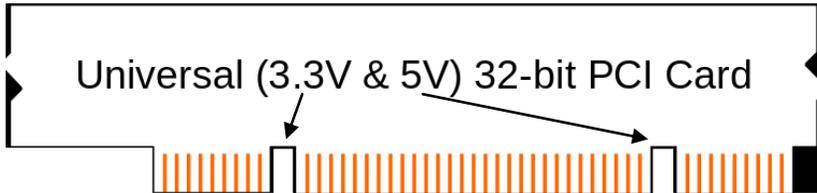


Figure 2



Warning: PCLTA Internal PCI Network Interfaces are supported only with 32-bit operating systems, since device drivers for the PCLTA cards are not available for 64-bit operating systems.

Unsupported Network Interfaces

The following older Network Interfaces are not supported with Mcn Standard

HIB Modules	Version 000-199	(without Rotary address switches on back)
PCLTA (original)	Full-size ISA bus boards	78K or 1250 versions Single or dual interfaces
PCLTA-10	Half-size ISA bus boards	78K or 1250 versions
PCLTA-20	Half-size PCI bus boards	78K or 1250 versions



All HIB-232 modules have a unit number of S2-60081-xxx. If the 'xxx' number is less than 200 you have an early version HIB module that is not supported.



Network Interface Drivers for Mcn Standard and MCNConfig Standard

There are a couple of drivers that may need to be installed, depending on the type of Network Interface that is being used.

- The PCLTA Interface boards need a software driver to run the Mcn Standard program. This will be included with the PCLTA & software package. This drive is only available for 32-bit operating systems.
- The HIB-IP 8002 module requires a USB driver to be installed, before any of the MCNConfig applications can perform its' hardware configurations. (The older HIB-IP and HIB-232 modules do not need a driver for normal operation of the Mcn Standard program.)

Installation

Installation Overview

The installation of the Mcn Standard software and network interfaces should be done in the following order:

- 1) If a PCLTA network interface will be used, install the PCLTA device drivers first and then the network interface card, before testing the interface. See *Installing PCLTA Network Interface (If needed)* on Page 18.
- 2) Run setup.exe on the Mcn Standard PC to install the Mcn Standard software. See *Installing MCN Standard Software* on page 23.
- 3) Run the MCNConfig program to customize the MCN System Resources and display windows for your system. See **MCNConfig Program: Configuring System Resources** on Page 48.
- 4) If you are using HIB-IP units, program them using MCNConfig program. See *Programming HIB-IP and HIB-IP 8002 Units* on page 52.
- 5) Run the Mcn Standard program on the Mcn Standard PC. See *Mcn Standard Program* on page 121. You will be asked to enter the MCN Software Key and IP parameters on the first use.

Example Screen Captures & Example Data



Example screen captures with various details of the programs are shown throughout this manual to give the reader an example of what to expect during setup, installation, and operation of the software. Newer versions of the software may include updated windows with slightly different wording or additional fields and features.

Data shown in example screen captures is presented only for example purposes only. It does not reflect any particular user's system.

Various sections of the manual focus on particular topics. Example screen captures within a section are presented as examples of the topics covered in that section. Example data show in the screen captures in one section may not apply to screen captures shown or system configuration described in different sections.

IP Addresses, Subnet Masks, and Gateway IP Addresses, shown in the manual may not necessarily be compatible for the appropriate linking between HIB-IP modules and the Monitoring PC. They were taken from test systems in a lab and are used as examples only. They do not reflect your required system settings, and should not be taken as recommendations.

**** Quickstart Setup Procedure ****



Initially, it may be desirable or even necessary to quickly configure a working MCN system. The following outline will assist and guide you through the necessary steps to do so.

Gather System Information

- A. What you need to know:
 - I. The Type and Quantity of the Equipment that will be monitored.
 - II. Whether MCN network monitoring will remote or local to the MCN Standard PC. This must complement the type of NI device which has been purchased.
 - III. If remotely monitored, what method will be used to connect the Remote location to the MCN Network; e.g. WAN, PSTN, T1 Trunk or Other.

If locally monitored, whether the PC will connect to the local MCN Network via LAN or RS232.
 - IV. What type of MCN Network Interface (**NI**) you will be connecting to.

Install and Setup

Software Installation: Installation details on standard software. Pages 23

- Standard (Single Interface, No Clients, No SW Key)

HW Setup Program: Pages 26-31.

(Using the information gathered previously choose the NI to configure.)

- If PCLTA or Dial up Pages **27**
- If HIB-232 Serial Pages **30**
- If HIB-IP Pages **31**

Building a System; (Use the MCN-Config Standard Program)

Add Network Interface:

(Minimum is one; Maximum is one for Mcn Standard versions.)

Use 'Network Interface' window: (**MENU: View / Network Interface**)

See Page: 49 Select and configure the appropriate type of interface: (PCLTA, HIB-232, HIB-IP)

Add Channels and/or Channel Names:

(Optional, but recommended to provide better clarity for the Displayed statuses)

Use 'Channels' windows (**MENU: View / Channels**)

See Page: 58

Add Hardware Modules: (*Minimum Requirement is one*)

Use 'Hardware' window: (MENU: View / Hardware) See Page: 56
Add the correct type of Monitoring interface device. (*e.g. Select CIB for a Comparator interface board*). Other options: (AIB, IOB, GPIO)

Enter Receiver & I/O Point Names & Information:

Use 'Receivers' window: (MENU: View / Receivers) See Pages: 63

Enter data for all receivers & I/O Points in the Receiver Window.
Select the proper Display Table Type (Comparator, Generator, Door, etc.) for all Receivers & I/O points.

Email Group: (**Optional, for problem reporting.**)

Use 'Email Group' window: (MENU: View/ Email Group)
See Pages: 60

Display Windows:

Use 'Display Windows' window: (MENU: View/ Display windows)
See Page: 76
Creates and configures the screen Layout and Appearance of the receivers to be displayed.

Display Tables:

Use 'Display Tables' window: (MENU: View/ Display windows)
See Pages: 67
Translates the bit data of the hardware, into specific indications on the status display screen.

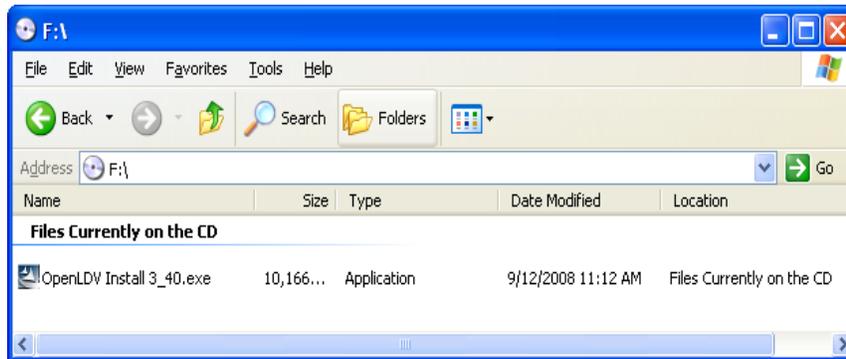
Installing PCLTA Network Interface (If needed)

PCLTA Internal PCI Network Interfaces are supported only on 32-bit operating systems. Drivers for the PCLTA cards are not available for 64-bit operating systems.

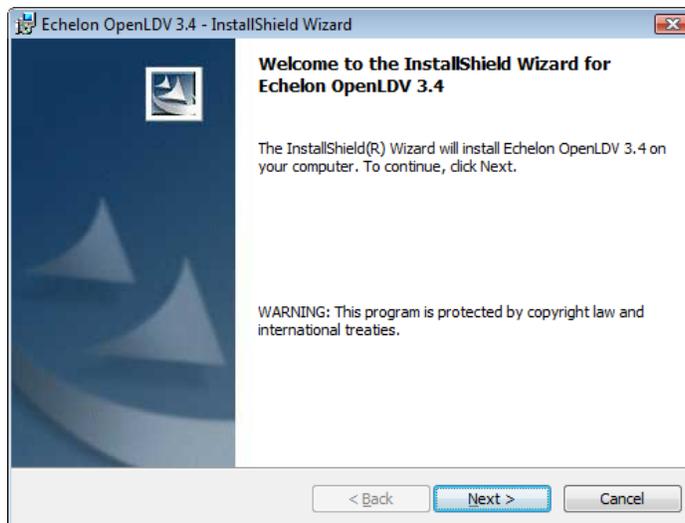
If you are not using a PCLTA card, skip to the **Installing MCN Standard Software** section on page 23.

PCLTA Device Driver Installation (32 bit operating systems only)

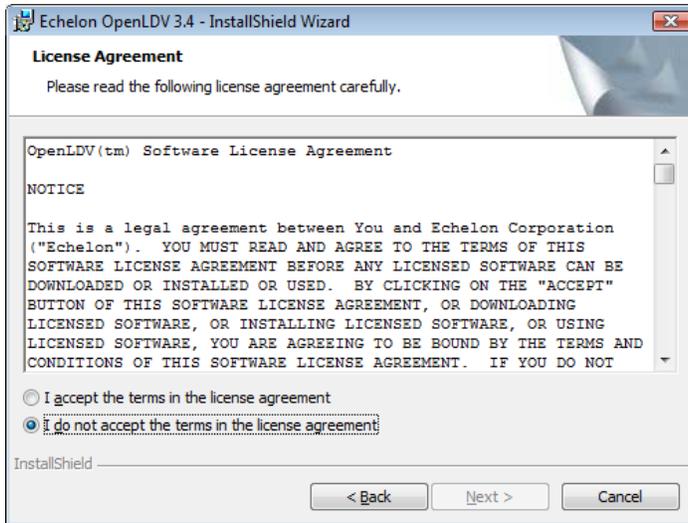
Insert the PCLTA driver CD into the CDROM drive. When the CD contents folder is displayed as shown below, double-click the “*OpenLdv Install 3_40.exe*” file to start the installation of the PCLTA device drivers and OpenLdv.



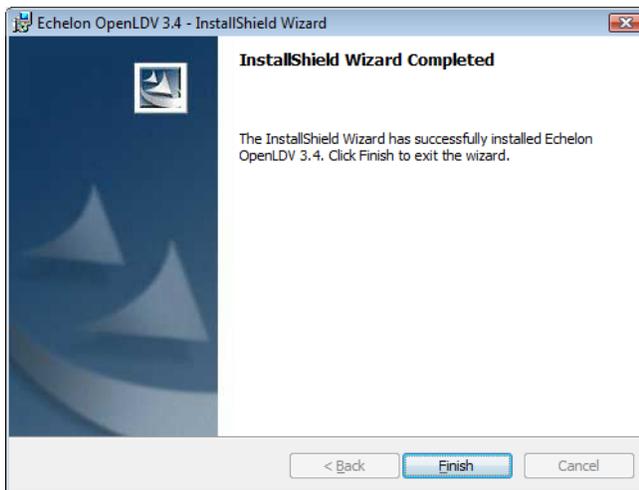
The OpenLDV Install welcome screen will be displayed as shown below. Before continuing, it is recommended that you exit all Windows programs.



Click the **Next** button to display the “Software License Agreement” window as shown below.



Click on **“I Accept the terms in the License agreement”** then click the NEXT button. OpenLDV and the PCLTA drivers will be installed. Once complete, the “Setup Complete” window will be displayed as shown below.



Click the **Finish** button.

Finally, you must power down the computer before installing the PCLTA network interface card.

Installing PCLTA Network Interface Card

The PCLTA device drivers must be installed prior to installing the card. If the drivers have not been installed, complete each of the previous steps for this section.

To install a PCLTA card into your PC, follow these steps:

1. Turn off the PC and remove the power cord.
2. Open the PC case and locate an empty slot.
3. Remove the corresponding blank panel from the rear of the PC.

4. Insert the PCLTA card into the slot, ensuring that the edge connectors are fully mated, and the slot in the rear panel-mounting lug of the PCLTA is aligned with the threaded hole in the PC chassis.
5. Replace the screw to hold the PCLTA firmly in place.
6. Reinsert the power cord and then restart the PC.

On power-up, Windows will automatically sense the Plug-n-Play adapter, and associate it with the drivers installed in the previous step.

If the Plug ‘n Play features of the card **failed**, the following “Found New Hardware Wizard” window may be displayed.



Select “No, not this time”, then click the **Next** button to display the following window.



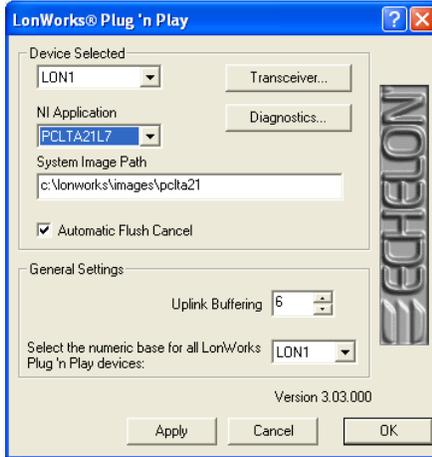
On the above window, select “Install the software automatically”, and then click the **Next** button. Click the **Next** or **Finish** buttons in the remaining windows to complete the installation.

Configure and Test the PCLTA Network Interface

Configure & test the PCLTA board as shown below. *It will not run if it is not configured.*

From the **Start** menu button on the Windows desktop, select Control Panel from the list, and then double click the “LonWorks Plug ‘n Play” icon. (If the “LonWorks Plug ‘n Play” icon is not visible, change the Control Panel properties to “Classic View”.)

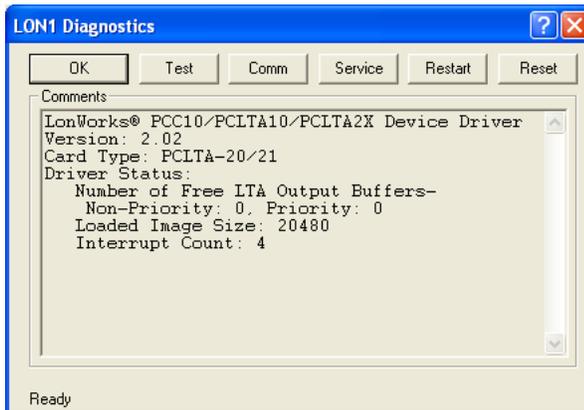
The following “LonWorks Plug ‘n Play” window will be displayed.



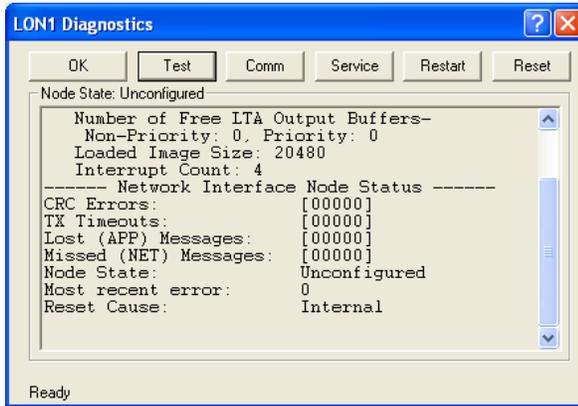
In the NI Application drop-down list, choose an image that is compatible with MCNRCD from the following table. (For all operating systems, the Image name should end with “L7”.) Then click the **Apply** button.

	Windows XP, Vista, 7 (32 bit versions only)
Images Compatible with MCNRCD	PCLTA21L7
Images to Avoid	PCLTA21VNI, PCL10VNI

To check if the PCLTA network interface has been installed correctly, click the **Diagnostics** button to display the following window.



Finally, click the **Test** button to display status information similar to the following window.

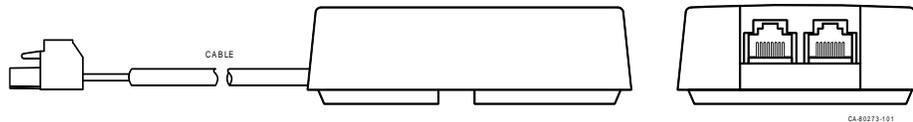


When finished, click the **OK** button on this “LON1 Diagnostics” window, and then click the **OK** button on the “LonWorks Plug ‘n Play” window.

If the PCLTA network interface card was installed prior to device driver installation, the PCLTA may not function correctly. To correct this situation, see *Appendix: Fixing a Botched PCLTA Installation* on page 141.

Cabling and Termination

The PCLTA card is different from all other MCN modules in that it does not have an RJ-45 connector for the network cable to plug into. A ‘T’ Adapter (S2-60617), shown below, must be installed to connect the PCLTA’s two-pin connector with the MCN network cable. Use one RJ-45 connector on this adapter for the network cable, and plug a terminator (either TP/XF1250 or TP/FT10) into the other.

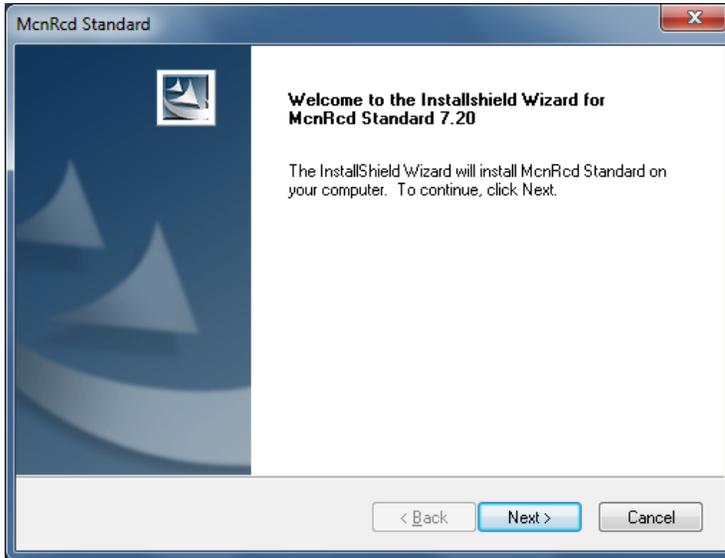


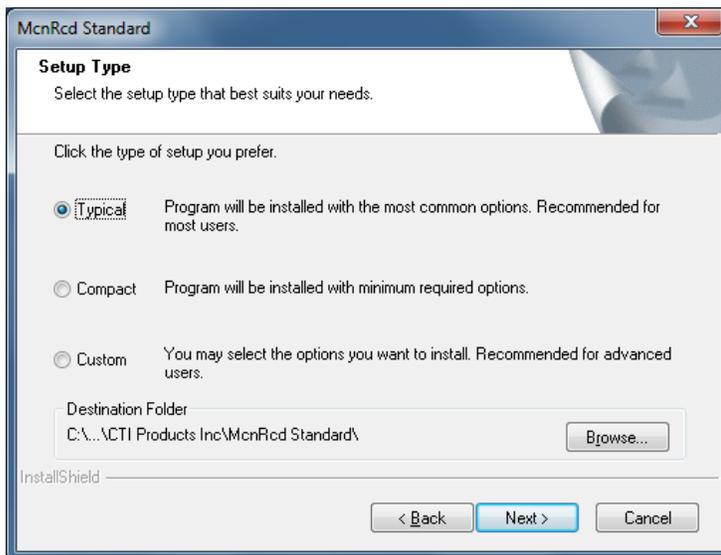
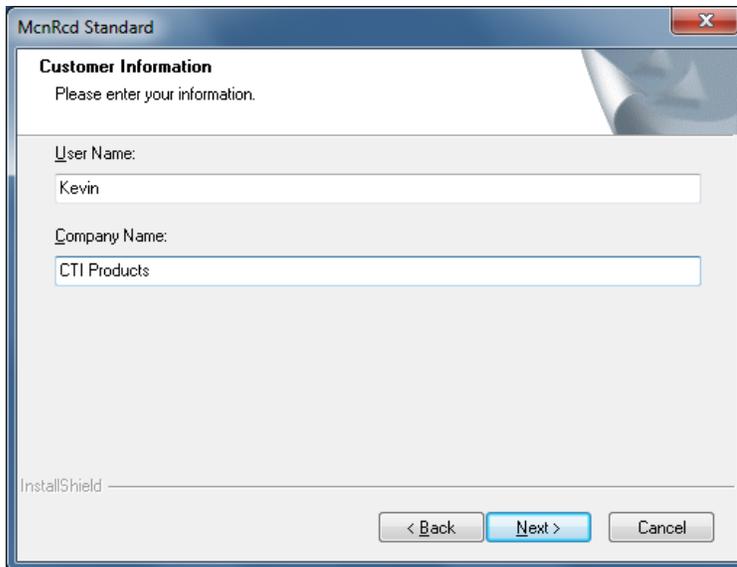
Installing MCN Standard Software

Run Setup.exe from the CD.

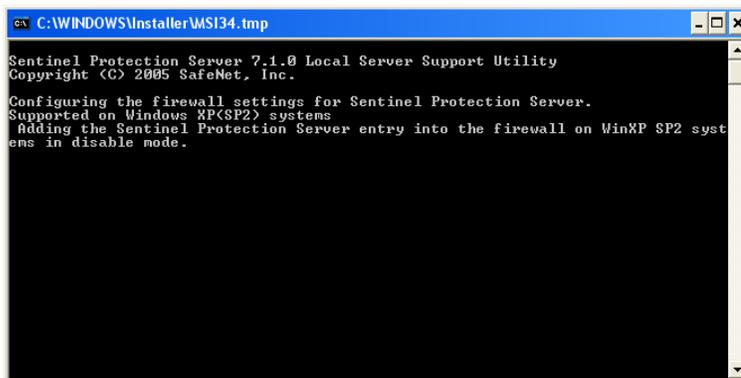
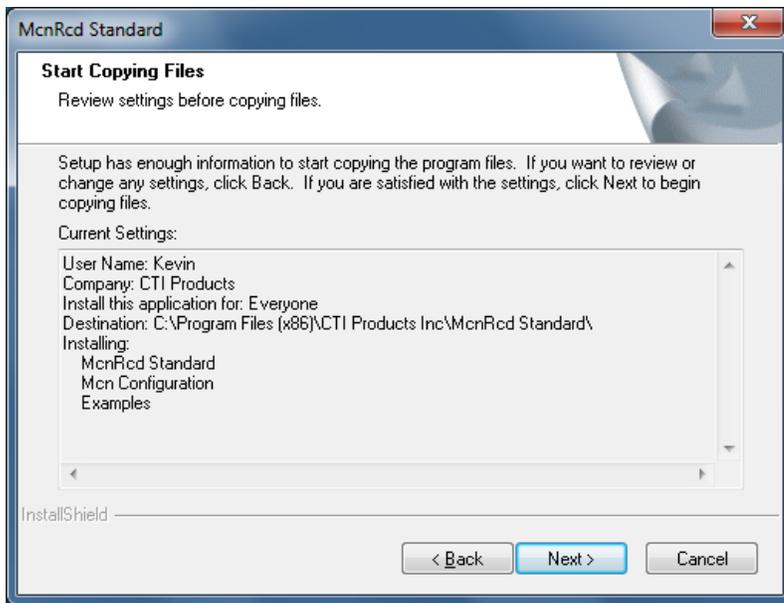


You must have Administrator rights to install the Mcn Standard software.

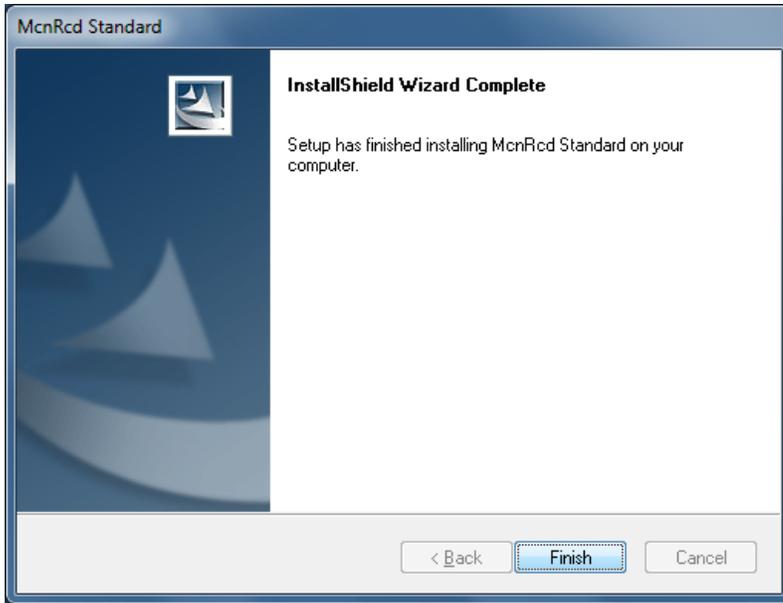




If you choose the custom installation, you can deselect program options which you do not wish to be installed; however this is atypical and not recommended.



This screen might be visible only in older versions of the windows OS.

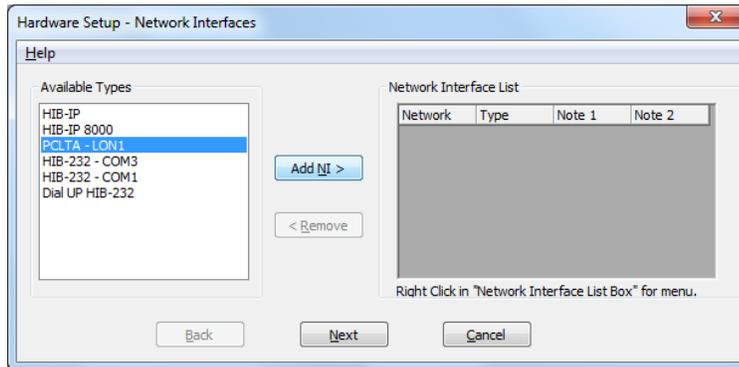


Hardware Setup – (HWSetup Standard.exe)

The Hardware Setup program is used to select and set up the Network Interface (PCLTA, Dial UP, Non-Dial-up HIB-232, or HIB-IP) to use in the system.

Network Interface Setup

The first time HW Setup is ran, it sees that there is no Network Interface defined on the PC. It will ask you what type of Network Interface (NI) you plan to use.



Select the type of Network Interface you intend on using with your system, from the list of possible types available.



Important The standard version of MCN program will allow the selection of only one Network Interface from this window; So if the wrong interface is selected you will have to remove it first, before you can add the correct one.

Network Interface Type	Description
PCLTA	Internal board in the PC. The MCN network will connect directly to this board. If there is a PCLTA board that is properly installed, the HW Setup program will list it in the "Possible Types" list. See: <i>PCLTA Setup</i>
HIB-232 - COM _x	Non-Dial-up HIB-232 units - Non-dial-up HIB-232s connect to a COM port directly or through external leased-line modems or equivalent. - The program detects all COM ports reported by Windows. Depending on your PC, not all ports may be available for use. Some COM ports may not be brought out to a connector. Some COM ports may be reserved for an internal modem. (For example in the snapshot above, COM3 is actually an internal modem.) See HIB-232 (Non Dial-UP)
HIB-IP	Remote Network Interface that connects to the PC through an IP channel You will set up parameters for the HIB-IP unit in the system database by using McnConfig program. (You will also have to download those settings to the HIB-IP from the McnConfig program.)

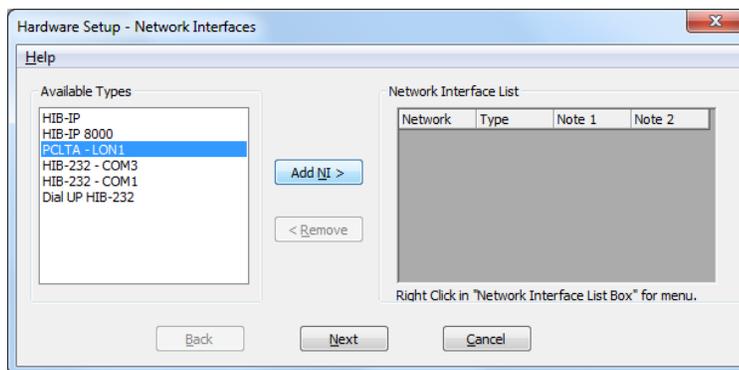
PCLTA Setup

If a PCLTA Card (and its driver) are properly installed on your PC, the HW Setup program will detect it and present it in the *Possible Types* list box.

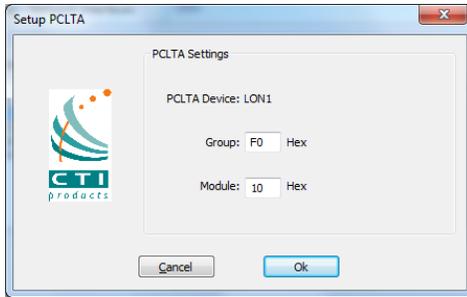
You can check to see if the PCLTA card is installed and operational, by going to Control Panel and running the Lonworks application. You may then click on the Diagnostics tab; if the installation was done correctly there will be a status box without error indications.



Warning: There are no PCLTA drivers available for 64 Bit Operating Systems.



- Select the PCLTA and click the *Add NI* button.



The Group/Module address defaults to “F0/10” during installation.

- Change the Group and Module address as required for your system.
- Click the OK button.

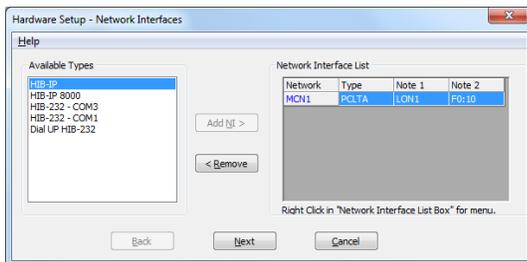


Important: MCN Address Setting

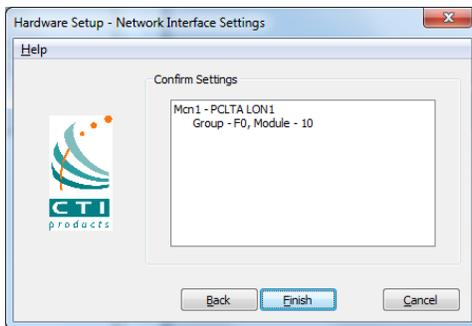
Each PC and each MCN module in the system must have a unique address. If you are setting up multiple PCs, be sure to set up each PCLTA card with its own address.

If you have a Custom Engineered System (with custom system documentation part number KA-8xxxx-xxx), be sure to set the PCLTA address to the Group & Module numbers shown in your documentation. Failure to do so may cause the system not to work

In the above window, click the **OK** button. The Network Interface window will re-appear:



Click the Next button.



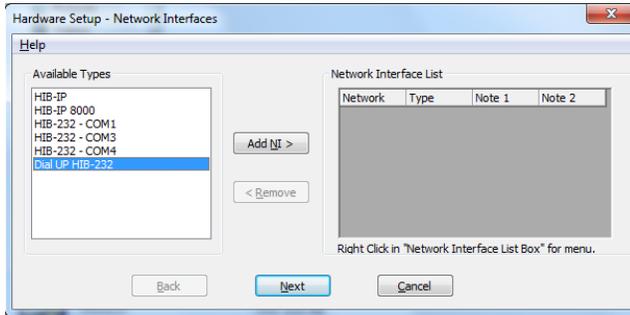
Click the Finish button in the confirmation window.

The appropriate information for the PCLTA is now stored in the registry and will be available for use by McnConfig and Mcn Standard programs.

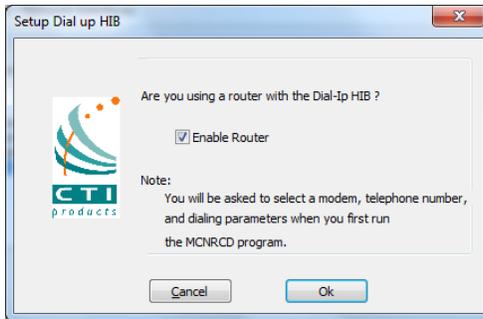
The MCN Group and Module addresses are set up on hex rotary switches on the back of the HIB-232 unit.

PCLTA / HIB-232 (Dial-UP)

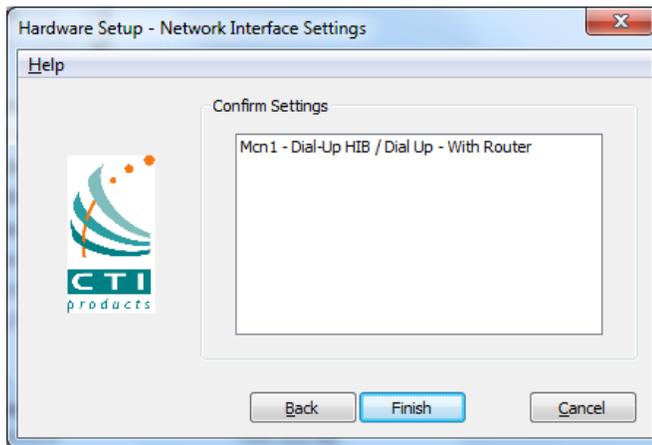
If you have to connect with leased line modems you will need to use a HIB-232 module. Select the Dial UP HIB-232 port from the **Available Types** list box as shown below:



If the Modem must be configured to dial select '**Enable Router**' and click **Ok**.

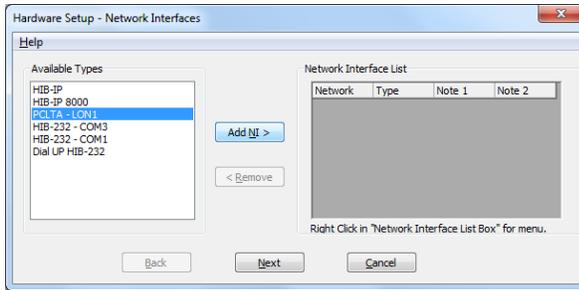


Once the settings for the Dial UP HIB-232 are verified and confirmed, click **Finish**.



HIB-232 (Non Dial-UP) Com x

If you have a HIB-232 module and are using it directly connected select the proper COM port from the **Possible Types** list box:



The program detects all COM ports reported by Windows. Depending on your PC not all ports may be available for use.

- * Some COM ports may not be brought out to a connector.
- * Some COM ports may be reserved by an internal modem.

(For example: In the snapshot above, COM3 is actually an internal modem.)

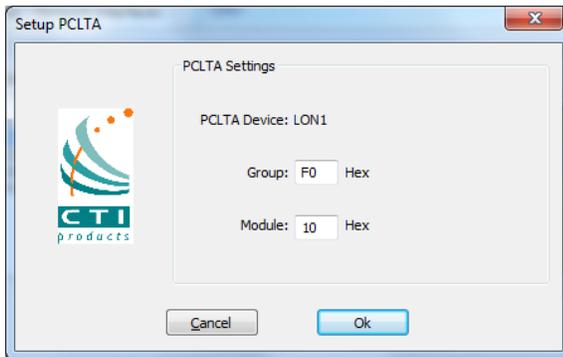
USB to Serial Adapters

The Mcn Standard program will work with some USB to Serial adapters. We cannot guarantee that it will work with all such adapters since we cannot test all brands.



Important: Some USB to Serial adapters will change their COM port number when they are plugged into a different USB connector. If you are using one of these and you change its connection, you will have to re-run the HW Setup program to select the new COM port.

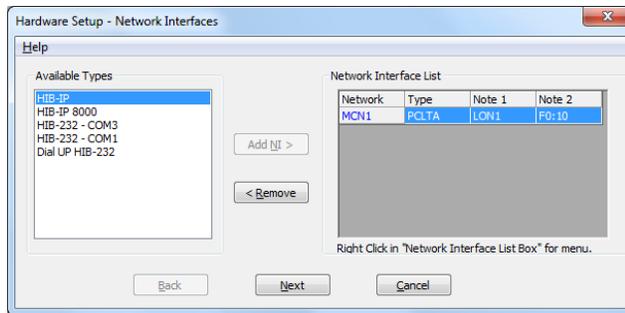
- Select the proper COM Port and Click the Add NI button



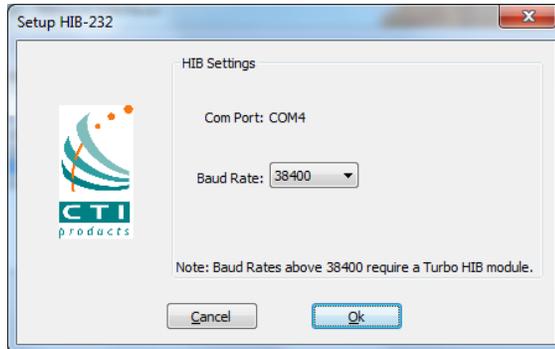
- Select the appropriate baud rate. Be sure that the baud rate matches the Baud rate switches on the HIB-232 module.

(The Group and Module addresses for the HIB-232 unit are set with rotary switches on the unit. See **Important: MCN Address Setting** on Page 28 for more information on MCN addressing.)

- Click the OK button.



- Click the Next button for the above window.



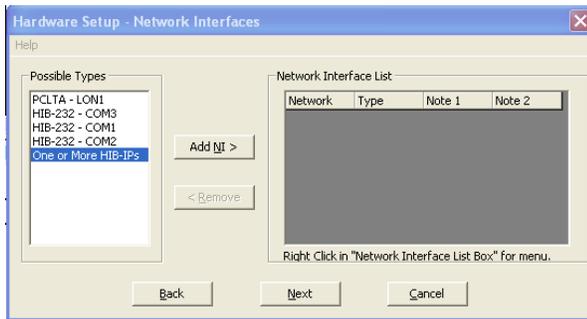
- And Click the Finish button.

The HW Setup program will save the setting in the registry.

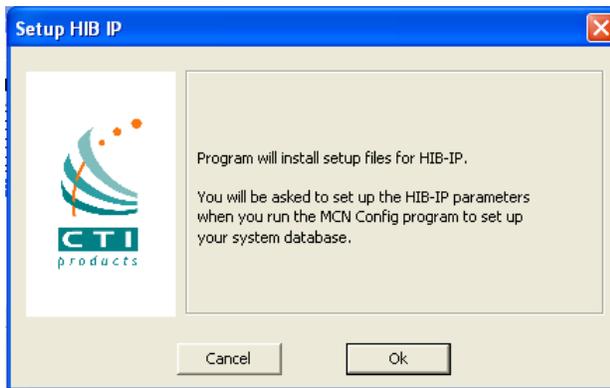
This setting will be used by the Mcn Standard program.

HIB-IP

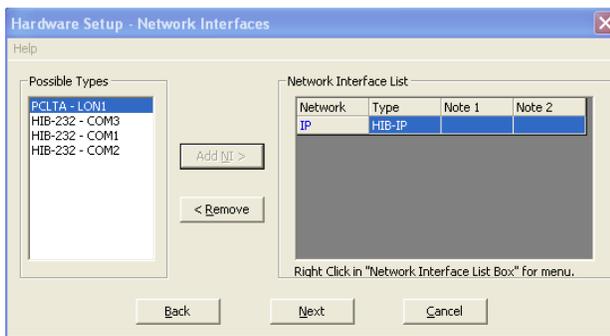
If you will be using a HIB-IP unit, select it from the Possible Types list.



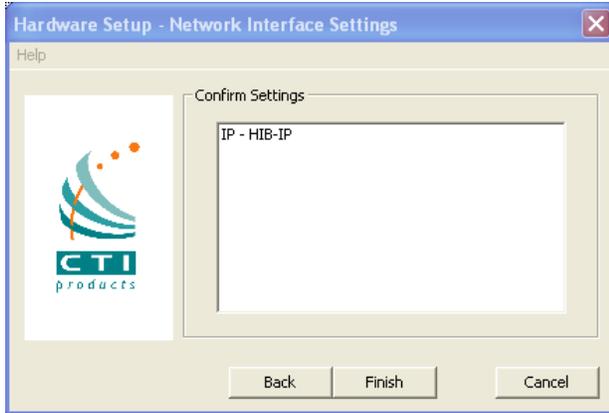
- Select the HIB-IP option. (Although the line says "One or more HIB-IPs", you will be able to use only one HIB-IP with the standard Mcn Standard program. If you need to connect to multiple HIB-IP units at a time, you'll need the MCN Advanced Server software.)
- Click the Add NI button.



- Click the OK button.



- Click the Next button



- Click the Finish button.

HIB-IP Parameters

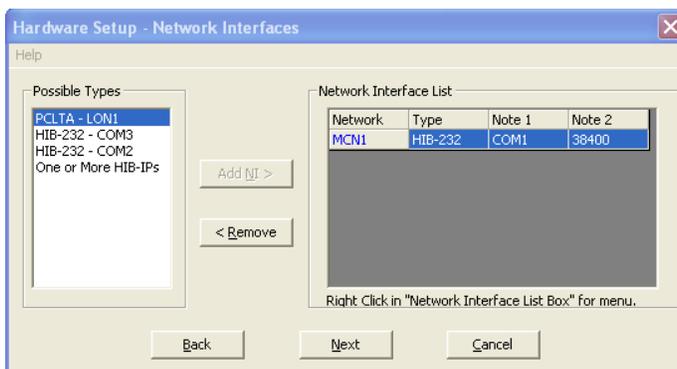
As shown in the “**Setup HIB-IP**” window above, you will later need to enter the HIB-IP parameters in the system database using the McnConfig program. You will also have to download those parameters to the HIB-IP using McnConfig.

Miscellaneous Installation Considerations

Changing Settings for your Network Interface

If you need to Change, Remove or Add a Network interface, re-run the HWSetup program. This program can be used to change the:

- Type of Network Interface
- PCLTA Device or Group & Module address
- HIB-232 COM Port or Baud Rate



To change these items you can either:

- Double click on the Network Interface to edit its parameters or
- Click the Remove button to remove the Network Interface and select a different one.

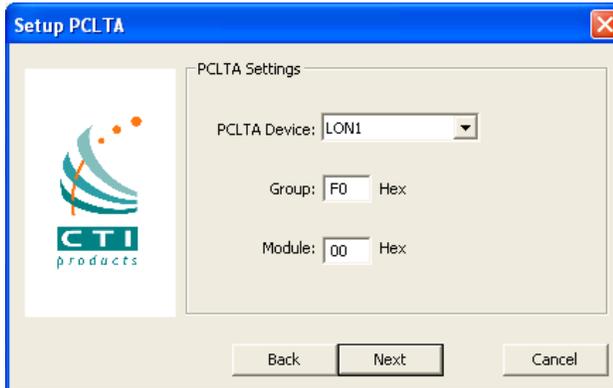


Warning: If you have a Custom Engineered System (with custom system documentation part number KA-8xxxx-xxx), be sure to set the PCLTA address to the Group & Module numbers shown in your documentation. Failure to do so may cause the system not to work

In the above window, click the **Next** button

Changing the PCLTA Group/Module Address

If the Group/Module address for the PCLTA Network Interface needs to be changed (or to query the PCLTA for its current address), simply run the *hwsetup.exe* program. This program can be found in the main program working directory (typically c:\Program Files\CTI Products Inc\McnRcd). Then click the **Next** button until the following window is displayed.



The Group/Module address defaults to “F0/00” during installation. However, each PC must have a unique address.

In the above window, click the **Next** button, then the **Finish** button to complete the address change for the PCLTA Network Interface.

PC Power Options Setup

The “Power Options” icon in the Control Panel allows for a wide variety of PC operation parameters. However, installation of Mcn Standard software will disable any possibility of the PC going into the Standby or Hibernate Mode.

The monitor may be allowed to “sleep” as long as the “Monitor Timeout” is less than the “Standby Time”. Otherwise, the monitor will never sleep.

Printer Installation

For printer logging to occur, a printer must be installed from the Windows operating system. From the ‘ **Start** ’ menu button on the windows desktop, select “Printers and Faxes” from the list, then select “Add a Printer” from the list of “Printer Tasks”.

Uninstalling Mcn Standard software

There are a few methods for uninstalling the MCN software suite provided below. Certain methods support Installed feature selection while others only perform complete removal.

Using the Installation Disk (Removes all or selected features)

To uninstall Mcn Standard software or any of its features, you can use the Installation CD. Insert the Mcn Standard distribution CD into the CDROM drive. If 'Autoplay' is enabled in your windows OS, a Dialog/options box should pop up with options to 'Run setup.exe'. After clicking the Run setup.exe, you may choose to either remove specific features or the entire program suite and all installed features.

If the Autoplay feature is disable use the following 'Menu method'

Click the **Start** menu button on the Windows desktop, then select "**Run**" from the list. In the "**Run**" dialog box, type *d:setup.exe* (where d is the drive letter of the CDROM drive), then click the **OK** button. In the "InstallShield Wizard" window, select "Remove", then click the **Next** button. Follow the prompts until the InstallShield Wizard completes the removal process.

Using the Control Panel (For complete removal only)

Click the **Start** menu button on the Windows taskbar, select control panel from the list. Depending on your view selection, choose either 'Programs' or 'Programs and Features'. Locate and double click the Mcn Standard name from the list and follow the prompts.

System Configuration

Overview of MCNConfig

The MCNConfig program is used to configure an MCN system. System configuration involves:

1. Defining system resources in the **Resource Windows**, such as Network Interfaces, Hardware Modules, Receiver Names, Channels, and Email Groups.
2. Designing the **Display Windows** to be displayed for the Mcn Standard program.

Resource Windows

The MCNConfig program will be used to define your system by entering data into the following Resource Windows. (There is only one of each type of Resource Window for each system.)

- **Network Interface** Indicates which Network Interface is used for this system. If you are using a HIB-IP unit, this is where you will enter the IP and MCN address settings.
- **Hardware** Enter the information about the hardware modules. (CIBs, AIBs, IOBs, etc.) present in the system.
- **Receivers** Enter the site Names and Descriptions for all the receivers in the system.
- **Channels** Enter the names of the radio channels used in the system. Each channel can have multiple hardware modules.
- **Email Groups** Enter the Email Groups & Recipients for alerts generated by the Mcn Standard program.
- **Display Tables** Each type of device to be monitored and controlled will have a Display Table. The Display Table maps the hardware I/O bits of the device into status indications.

The Mcn Standard software ships with the standard Comparator Display Table and a number of generic I/O Display Tables.

Customized Display Tables can be created with special status text displays (On/Off, Alarm,, Run/Normal, etc.) for control and monitoring devices in your system.



Certain fields of the resource Center windows link to each other as shown by the arrows.

The screenshot shows the McnConfig software interface with four windows open:

- Hardware Window:** A table with columns: Index, NI, Group, Module, Type, Banks, Location, Name, Channel. Row 4 is highlighted with a red box. The 'Channel' column for row 4 contains 'Fire'.
- Channels Window:** A table with columns: Index, Channel, Email Group. Row 3 is highlighted with a red box. The 'Channel' column for row 3 contains 'Fire' and the 'Email Group' column contains 'FD Techs'.
- Receivers Window:** A table with columns: Index, NI, GRP-MOD, Type, Channel, BY, Name, Description, Tag-1, Tag-2, Display Table. Row 33 is highlighted with a red box. The 'Channel' column for row 33 contains 'Fire' and the 'Name' column contains 'Hilltop WT'.
- Email Groups Window:** A table with columns: Index, Recipient, Type. Row 1 is highlighted with a red box. The 'Recipient' column for row 1 contains 'SmokeEater@fd.gov'.

Red arrows indicate the following links:

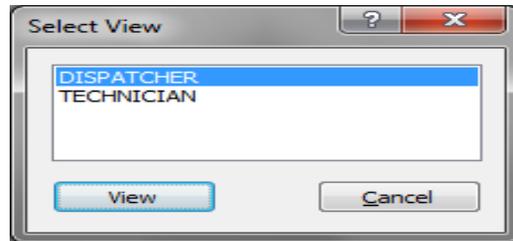
- From the 'Channel' field of row 4 in the Hardware window to the 'Channel' field of row 3 in the Channels window.
- From the 'Channel' field of row 3 in the Channels window to the 'Channel' field of row 33 in the Receivers window.
- From the 'Email Group' field of row 3 in the Channels window to the 'Recipient' field of row 1 in the Email Groups window.

- So you should notice that the Network Interfaces ‘NI’ in the ‘Hardware window are directly linked to all those Receivers in the Receiver window with the same Group and Module address.
- The Aliases entered in Channel windows can be selected and directly assigned to be channel names for the configured modules in the Hardware Window.
- The Email addresses configured in the ‘Email Groups’ window can be selected and directly assigned to a channel name in the Channels window.

The Display Window

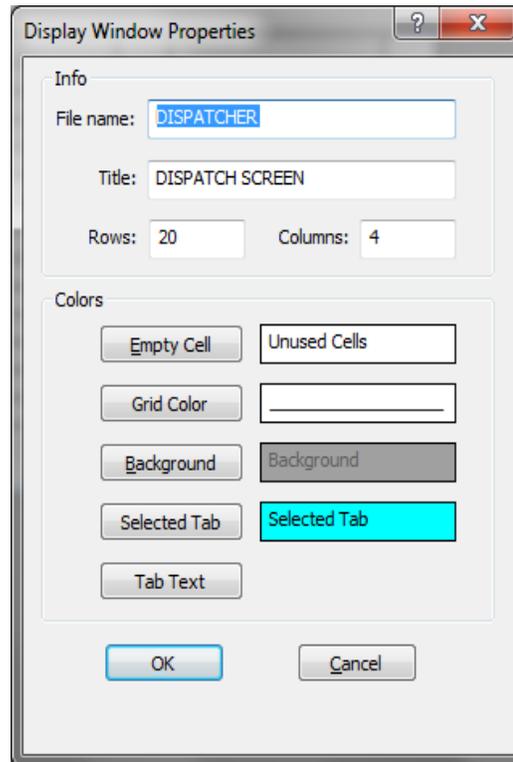
The Display Window contains the status screens that you build for the Mcn Standard programs. Each status screen can contain multiple Tabs and multiple channels; but also Multiple Screens can be defined within the Display window for a system.

If there are multiple screens built within the Display window, you will have to click the “**View**” tab and select “**Display Window**” and choose which specific screen you want to view.



Renaming a Screen

You can rename existing screens if changes are made to the system; by opening the specific screen, clicking the “**Edit**” tab and selecting “**Display Window Properties**”.



The screenshot shows a window titled "Technician Screen" with a tabbed interface. The "Fire - EMS" tab is selected. The main area contains a grid with the following data:

Fire	Status	EMS	Status	Hilltop WT Alarms	Status
Hilltop WT	Off-Line	Hilltop WT	Off-Line	Generator	Off-Line
Fernwood	Off-Line	Fernwood	Off-Line	Door	Off-Line
Anderson Twp	Off-Line	Anderson Twp	Off-Line	AC Power	Off-Line
West High	Off-Line	West High	Off-Line	Battery Charger	Off-Line
Mt Airy	Off-Line	Mt Airy	Off-Line	DC Power	Off-Line
Harrison	Off-Line	Harrison	Off-Line	Microwave	Off-Line
Airport	Off-Line	Airport	Off-Line		
		Cheviot	Off-Line		

Typical Technician Display Window

The following is an example of the Display Windows configurability:

- For Technicians, a large display grid with one tab showing all systems on a single grid.
- For Dispatchers, a small grid with multiple tabs showing only one channel per tab.
- Different Display Windows for different dispatchers with different subsets of channels available. (Police channels for Police dispatcher, Fire & EMS channels for Fire Dispatcher, etc.)

The screenshot shows a window titled "PD Dispatch" with three tabs: "East", "West", and "Detectors". The "Detectors" tab is selected, displaying a list of channels and their status:

Comm Center	Off-Line
Fernwood	Off-Line
Anderson Twp	Off-Line
Milford	Off-Line
Clermont	Off-Line
Marionmont	Off-Line
3 Mile WT	Off-Line
West High	Off-Line
Mt Airy	Off-Line
Englewood	Off-Line
Hammond Twp	Off-Line
Harrison	Off-Line
Airport	Off-Line
Wassamata U	Off-Line
PS 104	Off-Line

Typical Dispatcher Display Window

Example System

You can load the Example System from the "Example System" directory off the main program directory (typically c:\Program Files\CTI Products Inc\McnRcd\Example System).

Navigating The MCNConfig Program:

The MCNConfig program is a 32-Bit Windows program. Navigation, menus and toolbars are similar to other Windows programs.

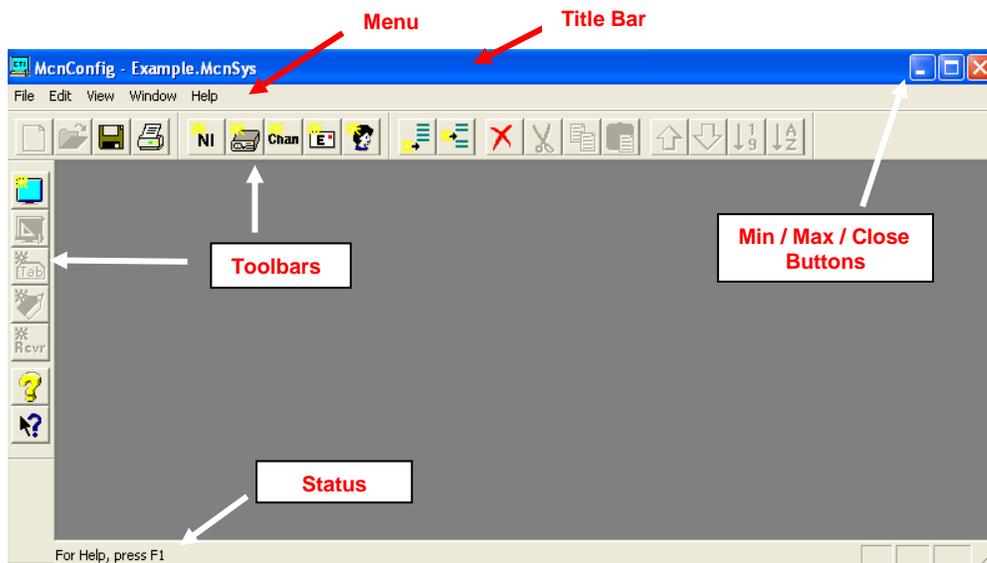
- Standard Windows **Hot-Keys** that can be used with this program include:
Ctrl-C Copy current selection to clipboard
Ctrl-V Paste clipboard to current location in selected window.
- **Context Sensitive Menus** are available in different windows by Right-clicking an item.
- **Scroll Bars** are available when the contents of a window (other than the main window) are larger than the size of that window.

Controlling the Windows

You can have multiple windows (resource windows or display windows) open on the workspace at a given time. You can control the windows as follows:

- **View** the Resource Windows (Hardware, Receivers, Channels, Display Tables or Email Groups) or Display Windows with the **View** menu.
- **Select** an open window by clicking the mouse on it or using the **Window** menu.
- **Move** a window by grabbing its title bar and dragging it.
- **Re-size** a window by grabbing an edge or corner and dragging it.
- **Minimize /Restore, Maximize and Close** the window using the standard Windows buttons on the top right corner of each window. If you close the last window, you will close the system. If changes have been made, you will have a chance to save the system.
- You can save the sizing and layout of your workspace by using the **Save Layout** command in the **Edit** menu.

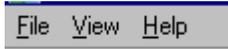
Screen Elements



This program has many standard menu functions that are used in other Windows programs. For example, menus can be selected with the mouse or by holding down the **ALT** key while pressing the underlined letter on the menu. Note that a menu's appearance may change, and various menu options may be disabled, depending on the current state of the system.

Menu Bar

Two versions of the Menu Bar will be displayed. When there is no system opened, a small Initial Menu Bar will be displayed:

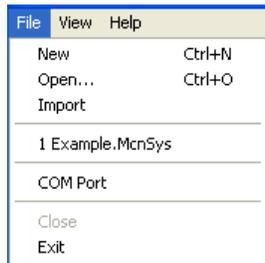


When a system is loaded, the standard Menu Bar will be displayed:



Initial File Menu

When there is no system loaded, the Initial File Menu is available.



New

Starts a new system from scratch.

Open

Opens an existing system from disk. This will open all the files associated with a particular system. Only one system can be open at a given time. You must close the existing system before starting a new system, importing a system from the DOS version of MCNRCD, or opening another system.

Import

Imports a system from the DOS version of the MCNRCD program.

Recent Files

Allows you to quickly open a recently used system.

COM Port

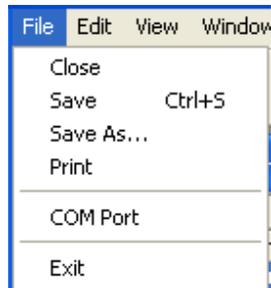
Selects the COM port used to program HIB-IP units

Exit

Exits the program.

Standard File Menu

Once a system is loaded, the Standard File Menu is available:



Close

Closes the current

system.

If something has changed, you will be given a chance to save it.

Save

Saves the current

system with the current name.

This will save all the files associated with a particular system.

Save As	Saves the current system with a new name. This will save all the files associated with a particular system.
Print	Prints the contents of the currently selected window.
COM Port	Selects the COM port used to program HIB-IP units
Exit	Exits the program. If something has changed, you will be given a chance to save it.

The Standard File Menu does not have the Open, Import, or Recent Files menu items.

Saving Files



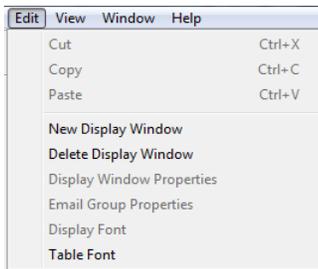
We recommend that you save the system in a subdirectory or sub-folder of the main program's working directory (typically *C:\Program Files\CTI Products Inc\McnRed Standard*). When you first save a system, Windows may default to the My Documents folder. If so, browse to the working directory and add a new directory for your system description files.

Edit Menu

The **Edit** Menu is available whenever a system is loaded. Some menu items may not be enabled depending on the currently active window.



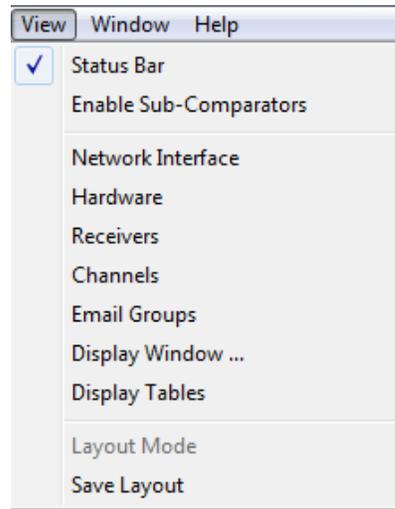
Note: Any font settings made from here are only effective within MCN Config program. The font settings for the Mcn Standard programs are set by the user from within those programs.



Cut	Cuts the selected item(s) and saves a copy in the clipboard.
Copy	Copies the selected item(s) to the clipboard.
Paste	Pastes the contents of the clipboard to the current cursor location. Some fields are special fields and will only accept certain data (or certain ranges of data) from the clipboard. See <i>Restrictions on Using the Clipboard</i> on page 91 for more details.
New Display Window	Opens a new MCN Display Window.
Delete Display Window	Deletes an MCN Display Window.
Display Window Properties	Sets the properties (Window Title, Number of Rows & Columns) for the currently selected MCN Display Window.
Email Group Properties	Sets the properties (Group Name, Hold-off Time) for the currently selected Email Group.
Display Font	Only available to set the font and size of text within the Display Window; Used to simulate the display for the Mcn Standard program.
Table Font	Sets the font and size of text within currently opened, active windows. Not active in the Display Window.

View Menu

The **View** Menu is used to display a list of available windows, from which you may quickly select and make active for use. Some items will only appear when certain options are purchased with the License.



Status Bar	Turns the Status Bar (at the bottom of the screen) on or off.
Enable Sub-Comparators	Displays a tab for Sub-comparator fields and options in the Display Table and Receiver Window. Turn this off for a less cluttered screen view if sub-comparators are not used.
Network Interface	Opens the Network Interface Window and makes it active.
Hardware	Opens the Hardware Resource Window and makes it active.
Receivers	Opens the Receiver Resource Window and makes it active.
Channels	Opens the Channel Resource Window and makes it active.
Email Groups	Opens the Email Groups Window and makes it active.
Display Window	Opens an RCD (Remote Comparator Display) Display Window and makes it active.
Display Tables	Opens the Display Tables Window and makes it active.
Layout Mode	Turns on Layout Mode in a Display Window to enable re-sizing of columns (active only when a Display Window is active.)
Save Layout	Saves the current working screen layout (Window Positions, Column widths). This layout will be used the next time the program is started.

Window Menu



Cascade

Cascades all open windows

Tile

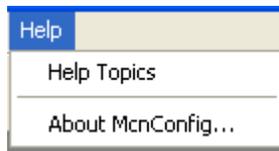
Tiles all open windows

Window List (1-N)

Indicates currently open windows. Use this list to select and open a Resource (Network Interface, Hardware, Receivers, Channels, Email Groups, and Display Table) or Display window. The Resource Windows will appear in the order they were opened.

Display Windows will be listed as named by the user.
(Windows 6 & 7 in this screen shot are Display Windows.)

Help Menu



Help Topics

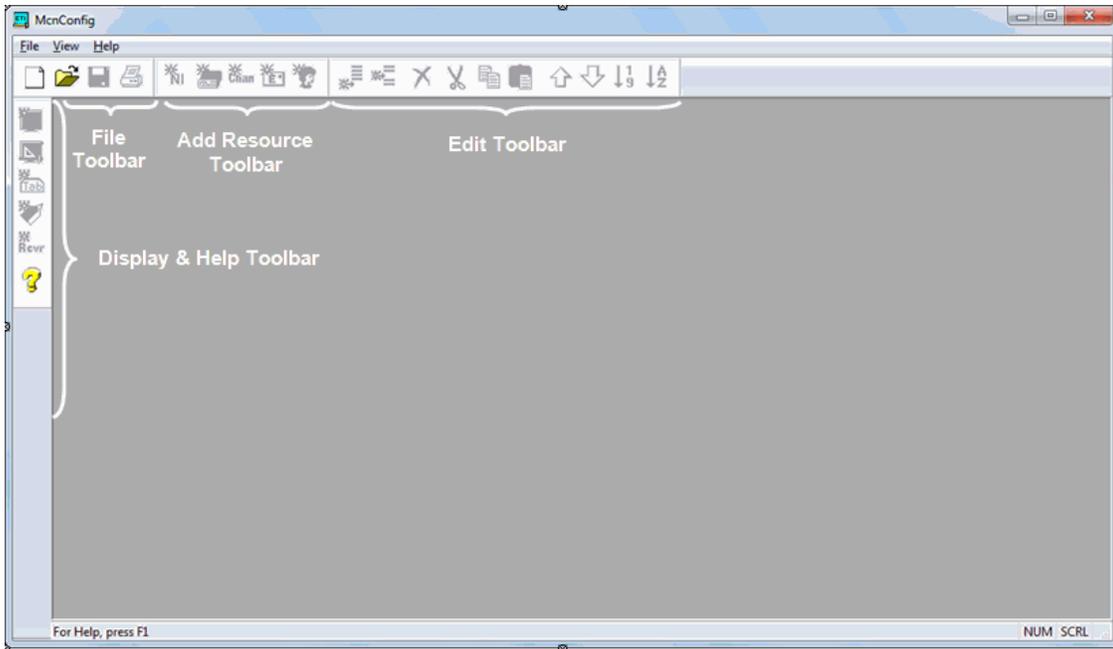
Brings up the standard **Help** menu.

About MCNConfig

Displays information about the program.

Toolbars

The MCNConfig program has dockable toolbars indicated in the screen capture below. You can move the toolbars by clicking on the beginning or ending line in the toolbar and dragging it to the desired location.



Each Toolbar button has a Tool Tip that will be displayed when you hover the mouse over it. A more lengthy description of the button will appear in the Status Line at the bottom of the main window.

File Toolbar



New

Opens a new system.
Same as **File ... New** menu item.



Open

Opens a system from disk.
Same as **File ... Open** menu item.



Save

Saves the current system to disk.
Same as **File ... Save** menu item.



Print

Prints the data from the active window.
Same as **File ... Print** menu item.

Add Resource Toolbar



New Network Interface Module

Adds a new Network Interface module to the Network Interface resource window. (The Standard version of the Mcn Standard program supports only 1 Network Interface. If you need to support more than one Network Interface, you will need the MCN Advanced Server software.)



New Module

Adds a new module to the Hardware List resource window. Adds the appropriate number of Receivers or I/O Blocks in the Receiver window.



New Channel

Adds a new channel to the Channel List resource window.



New Email Group

Adds a new Email Group (tab) to the Email Group resource window.



New Email Recipient

Adds a new Email Recipient to the currently selected Email Group. If no Email Group is defined, this will add a new Email Group.

Edit Toolbar

Items in the Edit Toolbar work only in the currently selected window. If a toolbar item is not available in a particular window, it will be grayed out.



Note: Some fields are special fields and will only accept certain data (or certain ranges of data) from the clipboard. See *Restrictions on Using the Clipboard* page 91 for more details.



Append

Adds a new item to the end of a list of items. This item is not available in the Receiver Window or Display Window.



Insert

Inserts a new item at the current location in a list of items. This item is not available in the Receiver Window or Display Window.



Delete

Deletes the currently selected item(s).



Cut

Deletes the currently selected item(s) and copies them to the clipboard.



Copy

Copies the currently selected item(s) to the clipboard without deleting them from the selected window.



Paste Pastes the clipboard contents to the current location in the selected window: See Preceding **Note**.



Move Up Moves up the currently selected item in the list. This item is not available in the Receiver Window or Display Window.



Move Down Moves down the currently selected item in the list. This item is not available in the Receiver Window or Display Window.



Sort Numeric Sorts the Hardware Module list by MCN Group & Module numbers. This item is available only in the Hardware Window.



Sort Alpha Sorts the list alphabetically. This item is available only in the Channel Window and the Email Window.

Display & Help Toolbar



New Display Adds a new display window.



Display Window Properties

Opens the Grid Properties dialog box. Allows changes to be made to the window Title, and the number of rows and columns for a Display Window. This item is available only when a Display Window is selected.



New Tab Appends a display tab to the selected Display Window. This item is available only when a Display Window is selected.



New Label Adds a Label at the current position in the selected Display Window. This item is available only when a Display Window is selected.



New Receiver Adds Receiver(s) or I/O Group(s) to the current position in the selected Display Window. This item is available only when a Display Window is selected.



Help Displays the Help menu window.

MCNConfig Program: Configuring System Resources

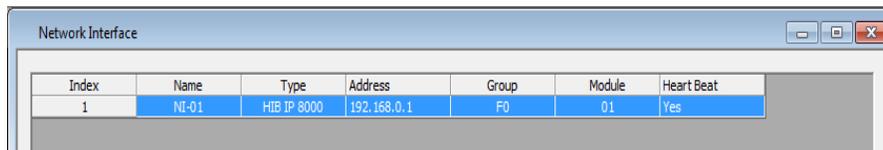
The process to configure a working system begins with configuring the following four Resource Windows:

- Network Interface Window Displays the Network Interface selected for this system. This window also lets you configure the IP settings for a HIB-IP module (if used).
- Hardware Window Define hardware modules & addresses
- Receiver Window Define receiver names & I/O group names for all hardware modules
- Channel Window Enter channel information
- Email Group Window Enter email information for alerting

Network Interface Window : Details

This window displays the Network Interface selected for this system.

This window also lets you configure the IP settings for a HIB-IP module (if used).



Index	Name	Type	Address	Group	Module	Heart Beat
1	NI-01	HIB IP 8000	192.168.0.1	F0	01	Yes

The Standard version of the Mcn Standard software only supports a “*single*” Network Interface. If you need to support multiple Network Interfaces, you'll need to upgrade to the MCN Advanced Server software.

The Network Interface Resource Window includes the following fields:

Name

Network Interface Name (as stored in the database for this system)

Type:

Type of Network Interface Module:

Non-IP PCLTA (Lonworks or Dial up)
HIB-232 (Serial/Non Dial up)

IP HIB-IP

The settings for Non-IP Network Interfaces are set up with the HWSetup program and stored in the PC registry. The Mcn Standard program will get that information from the registry when it runs.

The settings for the IP Network Interfaces (HIB-IP) are set up in the MCNConfig program and saved in the database for the MCN system. You will also use the settings stored in the system database to program the HIB-IP unit (through a COM port).

Address

This is used only for Non-IP Network Interfaces.

It is a pointer to the Non-IP Network Interface that is set up with the HWSetup program.

It will normally be "MCN1".

Group

MCN Group Number for this module (Hex value 00-FE)
This is shown only for HIB-IP units (which are configured in MCNConfig program).

Module

MCN Module Number for this module (Hex value 0-F).
This is shown only for HIB-IP units (which are configured in MCNConfig program).

MCN Group & Module Settings



Warning: All Network Interfaces and MCN modules must have unique addresses.

In addition, with regard to custom engineered systems with Routers and EXB Network Extenders, there may be specific Group & Module addresses that must be used with particular Network Interfaces, depending on their location in the MCN network.

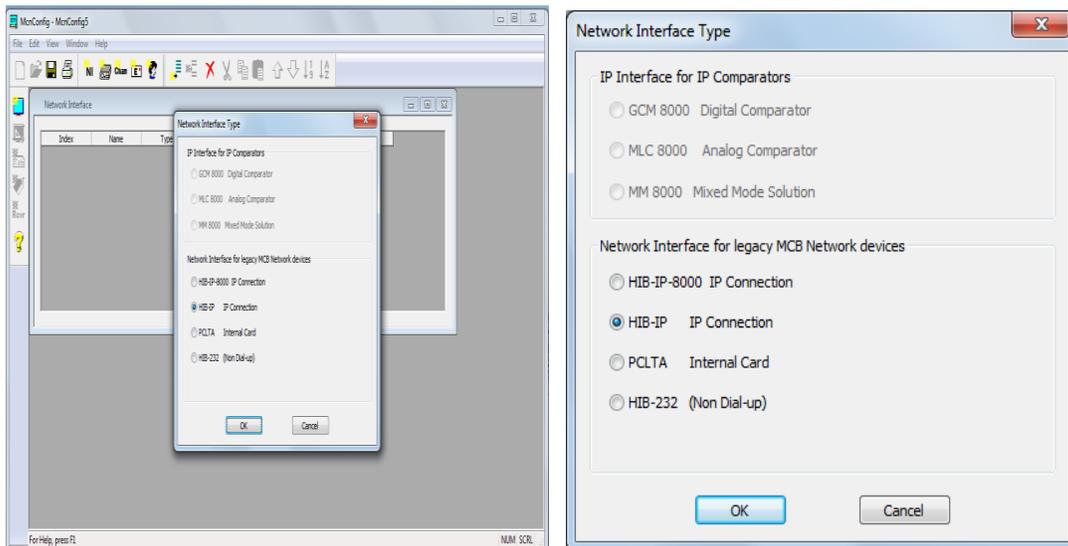
If you have a Custom Engineered System, be sure to consult your custom system configuration documentation for the proper setting for the Group & Module addresses for your Network Interfaces.

Adding a HIB-IP and HIB-IP 8002 Network Interface

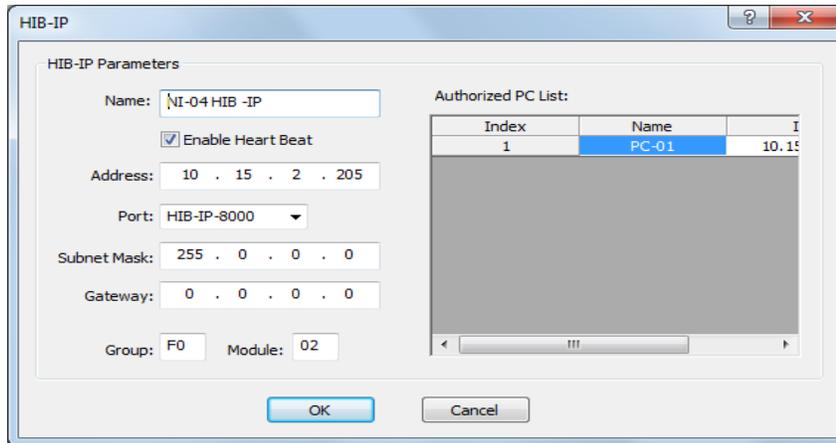
Note: If you are using a PCLTA or HIB-232 Network Interface Skip this section and go to **Hardware Resource Window** Page 55.

When you start to build a new system, the MCNConfig standard program will look in the registry to determine which Network Interface has been selected through the HWSetup program. If you have set up a Non-IP Network Interface (such as a PCLTA, or a Non-Dial-Up HIB-232) in the HWSetup program, the MCNConfig program will find it and select it as the Network Interface for this system.

If however you have a HIB-IP or HIB-IP 8000 in the HW Setup program, when the MCNConfig program opens the 'Network Interface Type' window will be shown as seen below on the left.



Upon selection of the required type of HIB-IP interface the 'HIB-IP Parameters' window will appear.



Enter the appropriate parameters for the HIB-IP or the HIB-IP 8000 unit:

Name

You may re-name the HIB-IP unit to change its default to a preferred name. This is the name that you will refer to when you add hardware modules to the system.

Address

Enter a valid Class A, B, or C IP address for this unit.
See details in the HIB-IP Hardware Reference Manual.

Subnet Mask

Enter the Subnet Mask for this IP address.
See details in the HIB-IP Hardware Reference Manual.

The HIB-IP Subnet Mask **cannot be less restrictive** than the following standard IP Class Subnet Masks

Class	First Octet	Standard Subnet Size	Standard Subnet Mask
A	1-127	16,777,214	255.0.0.0
B	128-191	65,543	255.255.0.0
C	192-223	253	255.255.255.0
D	224-239	Multicast – Do not use.	
E	240-255	Experimental – Do not use.	

The HIB-IP units can accept a subnet mask that is more restrictive (more 1's set in the Subnet Mask), but not less restrictive.

Gateway

If the Mcn Standard PC will be using an IP address that is in a different subnet than the HIB-IP, you must enter a Gateway IP address. This is the IP address of the IP router that the HIB-IP will communicate to in order to talk to a PC that is on a different IP subnet. The Gateway IP address must be on the same subnet as the HIB-IP unit.



If the Mcn Standard PC and the HIB-IP are on the same subnet, you do not have to enter a Gateway address.

See details in the HIB-IP Hardware Reference Manual.

Group

MCN Group address for the HIB-IP.

Value: 00-FE Hex

See Warning under **Important: MCN Address Setting** on Page 28.

Module

MCN Module address for PCLTAs and HIB-IP units.

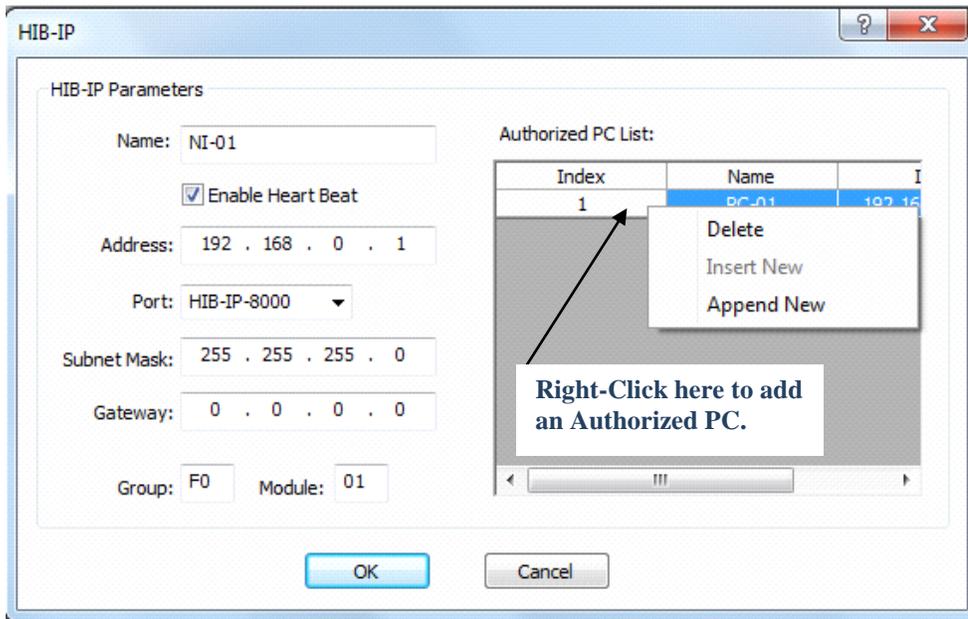
Value: 00-7E Hex Usually a HIB-IP will be set for a module number of 10 hex or above. This leaves room for HIB-232 modules in the system, which are limited to Module Numbers 0-F.

See Warning under **Important: MCN Address Setting** on Page 28.

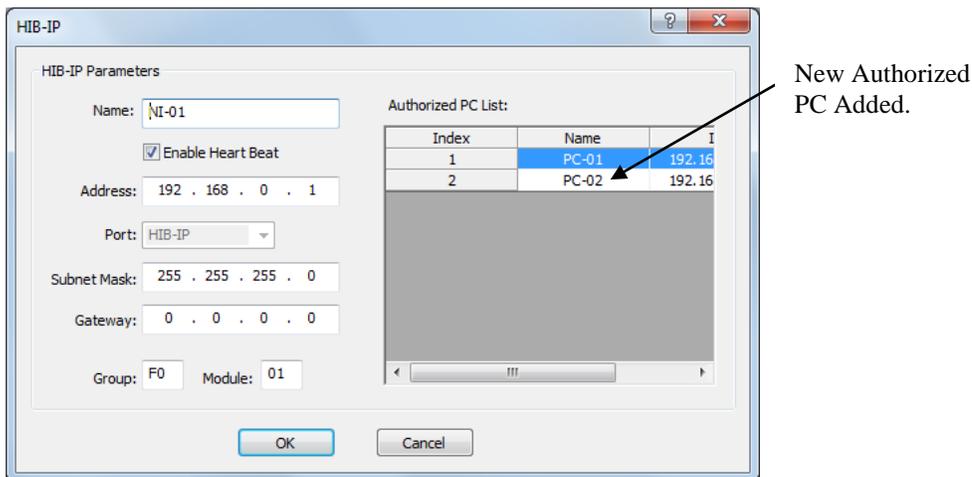
HIB-IP Authorized PCs

For system security purposes, the HIB-IP will only communicate with PCs that have been added to the Authorized PC list. You may enter multiple IP addresses for Authorized PCs.

To add an Authorized PC, **Right-Click** on the Authorized PCs list to bring up the menu.



Select **Append New**.



- A new PC will be entered.
- Edit the PC Name (if desired).

MCNConfig Program: Network Interface Window

- Edit the IP settings to match the PC you plan to use.
- You can add additional Authorized PCs by right-clicking in the Authorized PC list.
- Set up the parameters for the HIB-IP unit.
- When you are finished entering Authorized PCs, click the **OK** button.



Although you can enter multiple Authorized PCs in the HIB-IP database, the HIB-IP can only connect to one PC at a time. If a second PC attempts to connect to a HIB-IP at the same time (even if it is in its Authorized PC list), it will be rejected.

The HIB-IP unit will appear in the Network Interface window.

Index	Name	Type	Address	Group	Module	Heart Beat
1	NI-01	HIB IP 8000	192.168.0.1	F0	01	Yes

It will then be associated with all the hardware modules (such as CIBs, AIBs, and IOBs).



In the MCNConfig Standard program you can have only one Network Interface per system. (If you need multiple Network Interfaces, like multiple HIB-IP units, you'll need the MCN Advanced Server software.)

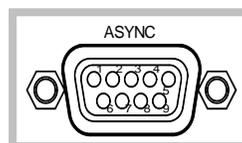
Programming HIB-IP and HIB-IP 8002 Units

You must use the MCNConfig program to upload the system configuration parameters to the HIB-IP unit before you can use it.

1. Be sure all the HIB-IP and Authorized PC parameters have been entered into the PC database as described above

For Legacy HIB-IP Modules with the DB9 Serial connector:

2. Connect a Null Modem cable (CTI # 89-11314) between the PC and the Async Serial Programming connector on the HIB-IP.



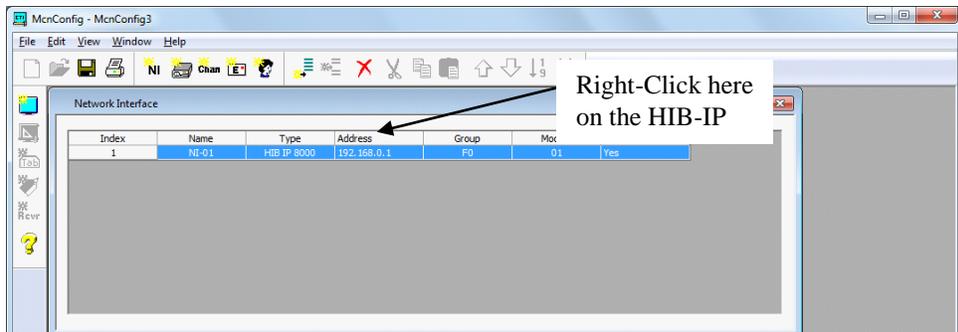
MCNConfig Program: Network Interface Window

For HIB-IP 8002 Modules with the USB connector:

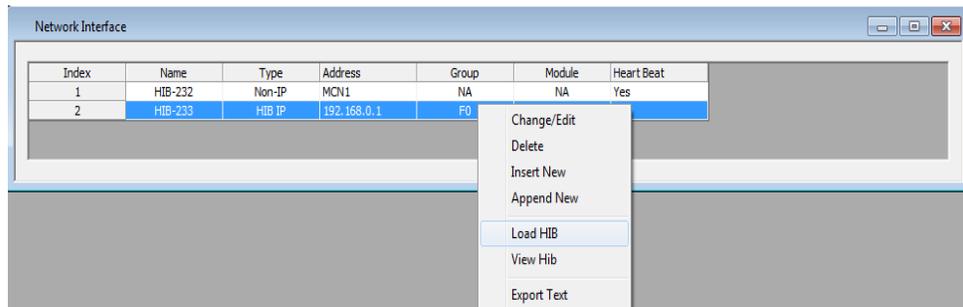
3. Connect a standard 4 pin A/B male USB Cable between the PC and the USB Programming connector on the HIB-IP 8002.



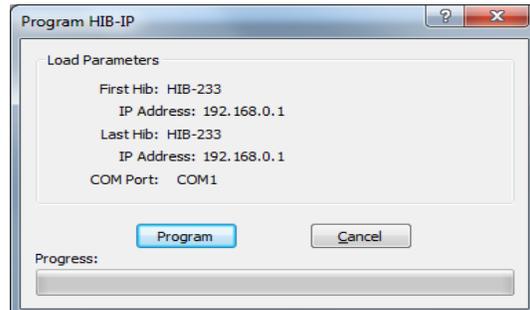
4. Go to the Network Interfaces window and select the proper HIB-IP unit if more than one is shown.



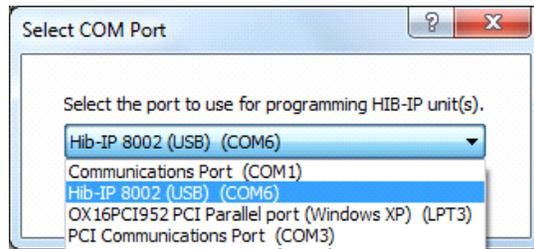
5. Right-click on the HIB-IP unit and select "Load HIB" from the pop-up window.



6. Click the "Program" button.



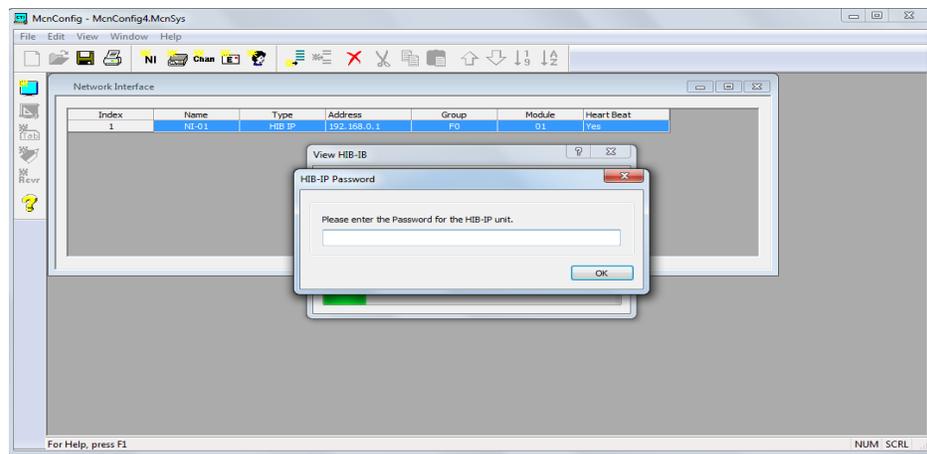
The application will automatically scan for all the available ports and display a list.



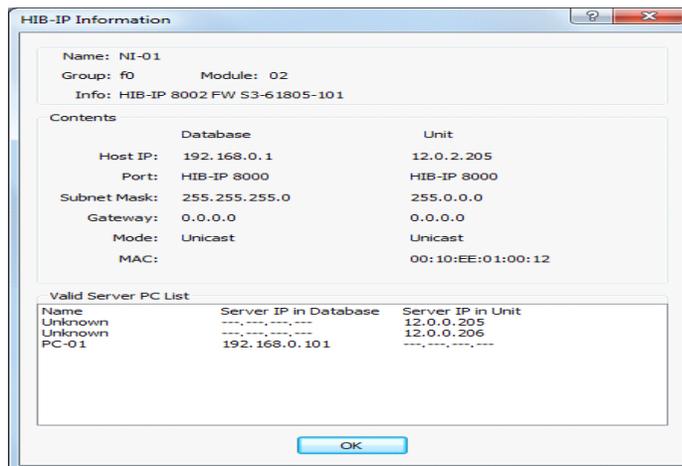
After selecting the appropriate communications port and clicking ok, you will initially be required to enter the HIB-IP Password to authorize configuration changes to the module. There is a default Password which can be changed if needed. (See changing Password)



NOTE: Default Password = "Initial-Password!"



7. You can also read or verify the information in the HIB-IP by selecting the "View HIB" menu item from the previous pop up window. This will read and display the configuration data within the HIB-IP unit.



You may also refer to the HIB-IP Hardware Reference Manual S2-61173 for additional details on HIB-IP Set up and Installation.

Hardware Resource Window

This is a list of hardware modules in the system.

Index	NI	Group	Module	Type	Banks	Location	Name	Channel
1	Hib IP-01	00	0	CIB	1	Comm Center Rack 1	Spectra-TAC 1	Police East
2	Hib IP-01	00	1	CIB	1	Comm Center Rack 1	Spectra-TAC 2	Police West
3	Hib IP-01	00	2	CIB	3	Comm Center Rack 2	Digitac 1	FD Dispatch
4	Hib IP-02	10	0	AIB	1	Hilltop Water Tank	Astrotac 1	Detectives
5	Hib IP-02	10	1	IOB Std	1	Hilltop Water Tank	Alarm I/O	Alarms

The Hardware Resource Window includes the following fields:

NI

Network Interface to use for this module.

This is a drop-down field that will let you select from the defined Network Interfaces for this system (either PCLTA, HIB-232, or HIB-IP). In the example above, there is a HIB-IP at the Communications Center connecting to the modules there and another at the Hilltop Water Tank.

Group

MCN Group Number for this module (Hex value 00-FE)

Module

MCN Module Number for this module (Hex value 0-F)

Type

Module Type from the following table:

Module Type	Description	Receivers or I/O Blocks
CIB	Comparator Interface	8
AIB	Astrotac Comparator Interface	8, 16, 24, 32, 40, 48, 56, 64 (Depending on Bank setting)
IOB Std (4 bits each)	General I/O Controller	8 I/O Blocks
IOB 2 Bit (2 bits each)	General I/O Controller	16 I/O Blocks
IOB 1 Bit (1 bit each)	General Input Device	32 Input Blocks

Banks

Number of receiver banks (8 receivers per bank). AIB modules can have up to 8 banks. All other modules have only 1 bank. A drop-down list is provided.

Location

Typically refers to site name for this particular module.

Free format text field for customer use.

Not required for program operation.

Can be used in error logging & emails

Name

Typically used to identify a particular module.

Free format text field for customer use.

Not required for program operation.

Used in error logging & emails.

Channel

The radio channel associated with this module.

Drop-down field.

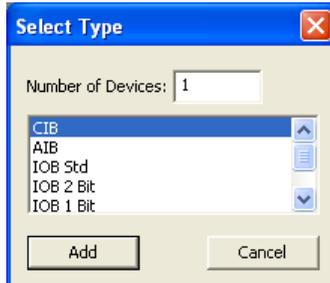
Select one of the Channels from the Channel resource list.

Can be used in error logging & emails

Adding a Hardware Module



- Add new hardware module with the **New Module** button.



- Select a Hardware Type and hit Add.

A new hardware module will be added to the bottom of the list. It will have the next Group & Module number.

Index	NI	Group	Module	Type	Banks	Location	Name	Channel
1	Hib IP-01	00	0	CIB	1	Comm Center Rack 1	Spectra-TAC 1	Police East
2	Hib IP-01	00	1	CIB	1	Comm Center Rack 1	Spectra-TAC 2	Police West
3	Hib IP-01	00	2	CIB	3	Comm Center Rack 2	Digitac 1	FD Dispatch
4	Hib IP-02	10	0	AIB	1	Hilltop Water Tank	Astrotac 1	Detectives
5	Hib IP-02	10	1	IOB Std	1	Hilltop Water Tank	Alarm I/O	Alarms
6	Hib IP-02	10	2	CIB	1			None

- If this is an AIB module, enter the proper number of banks.
- Enter the Location and Name.
- Select a Channel from the drop--down menu

Index	NI	Group	Module	Type	Banks	Location	Name	Channel
1	Hib IP-01	00	0	CIB	1	Comm Center Rack 1	Spectra-TAC 1	Police East
2	Hib IP-01	00	1	CIB	1	Comm Center Rack 1	Spectra-TAC 2	Police West
3	Hib IP-01	00	2	CIB	3	Comm Center Rack 2	Digitac 1	FD Dispatch
4	Hib IP-02	10	0	AIB	1	Hilltop Water Tank	Astrotac 1	Detectives
5	Hib IP-02	10	1	IOB Std	1	Hilltop Water Tank	Alarm I/O	Alarms
6	Hib IP-02	10	2	CIB	1	Hilltop Water Tank	Spectra-TAC	None



Don't see any Channels in the list? See *Adding a Channel* on page 58 for instructions on how to create channels.

Group & Module Numbers

The program assigns the first module a Group:Module address of 00:0.

If this is not correct for your system, you can change the Group & Module numbers.

Group numbers are hex values that can be from 00 to FE.

Module numbers are hex values that can be from 0 to F.

The program will automatically increment the Module number from the last used number.

When the Module number rolls over from F to 0, it will increment the Group number.

Group & Module number combinations in any particular MCN system must be unique. The Mcn Standard can access multiple separate MCN Networks with multiple HIB-IP units. Separate MCN Networks are networks that are not tied together with EXB modules. Separate MCN Networks can have modules with the same MCN Group & Module number combinations.

Automatic Linking to Receiver Window

When you add a new Hardware Module, the program automatically adds the appropriate number of Receivers or I/O Groups in the Receiver window.

When you change the order of hardware modules in the Hardware window, the Receivers & I/O Groups follow in the Receiver Window.

When you select a hardware module, the receiver window scrolls so that the first receiver or I/O group in that module is visible.

Hardware Window Toolbar Buttons

The following toolbar buttons will also function in the Hardware Window:



Append



Insert



Delete



Copy



Paste

See *Toolbars* on page 44 for more details.

Channels Resource Window

The Channels Window contains a list of radio channels used in the system. It is used to logically group a number of hardware modules. It can also be used to route email alerts to different email groups for different channels.

Index	Channel	Email Group	WD Multiplier
1	Police East	Techs	0
2	Police West	Techs	0
3	Detectives	Supervisors	0
4	Fire	Supervisors	0
5	BMS	Techs	0
6	Alarms & Gen	Techs	0
7	Publics Works	Supervisors	0
8	Maintenance	Supervisors	0
9	Central Dispatch	Techs	0

Each channel has the following fields:

Channel

Channel name. (e.g.: Fire East, Countywide, Command, etc.) Free format text field.
Used in error logging & emails

Email Group

This is the group of Emails to send error alerts to for this channel.
Drop-down field: Select one of the Email Groups from the Email Group resource list.

WD Multiplier

The Watch Dog Multiplier configures the time interval for error monitoring and logging.
Drop-down field: Select a multiplier value from the list.
This is a licensed feature that is only available and viewable with the System Performance Toolkit option.



Adding a Channel

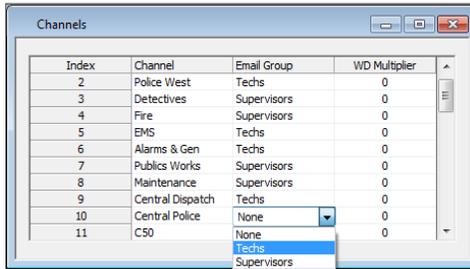
- Add new channel with the **New Channel** button.
The program will add a new Channel to the end of the list

Index	Channel	Email Group	WD Multiplier
1	Police East	Techs	0
2	Police West	Techs	0
3	Detectives	Supervisors	0
4	Fire	Supervisors	0
5	BMS	Techs	0
6	Alarms & Gen	Techs	0
7	Publics Works	Supervisors	0
8	Maintenance	Supervisors	0
9	Central Dispatch	Techs	0
10	C49	None	0

- Enter the Channel Name.

Index	Channel	Email Group	WD Multiplier
1	Police East	Techs	0
2	Police West	Techs	0
3	Detectives	Supervisors	0
4	Fire	Supervisors	0
5	BMS	Techs	0
6	Alarms & Gen	Techs	0
7	Publics Works	Supervisors	0
8	Maintenance	Supervisors	0
9	Central Dispatch	Techs	0
10	Central Police	None	0

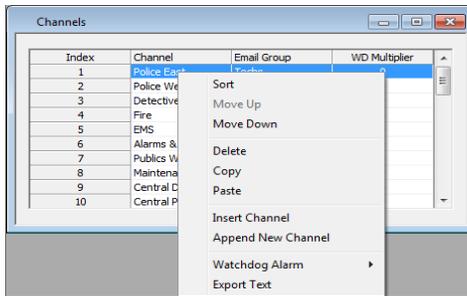
- Select an Email Group from the drop-down selection



Don't see any Email Groups in the list? See *Adding an Email Group* on page 60 for instructions on how to create channels.

Channel Window Context Sensitive (Right Click) Menu

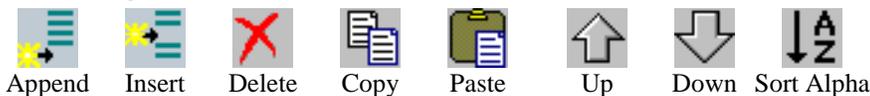
By right-clicking on the Channel list, the following menu appears:



- **Sort:** organizes the channels alphabetically.
- **Move Up** and **Move Down:** will shift the selected channel up or down in the list.
- **Delete:** will erase a channel.
- **Copy:** will record the current selection to the clipboard.
- **Paste:** will write the clipboard contents to a specified location.
- **Insert New Channel:** will add a new channel at a specific location in the list.
- **Append New Channel:** adds a new channel at the end of the list.
- **Watch Dog Alarm:** enables or Disable Watchdog flags for all receivers, and points, in the channel. (*Available only with the System Performance Toolkit 'SPT' Option.*)
- **Export Text:** will export a text file copy, of the contents for this window.

Channel Window Toolbar Buttons

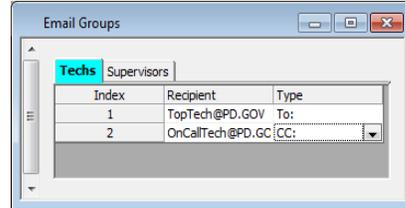
The following toolbar buttons will also function in the Channel Window:



See *Toolbars* on page 44 for more details.

Email Groups Resource Window

The Mcn Standard program can send emails when it detects failures. Emails can be sent to multiple recipients. You can send email alerts to different groups of email recipients based on which channel has a failure. An email window with two email groups is shown below



If the Email Group window is not visible, use the menu command **View ... Email Groups** to open it. Each Email Group has its own tab. An "Email Group Tab" identifies a group of email addresses with a "Group Name". This is a free format text field. (ex: Police Techs, FD/EMS Techs). Each entry in an Email group has the following fields::

Recipient

Destination email (ex: TopTech@PD.GOV)
There can be multiple recipients in an Email Group.

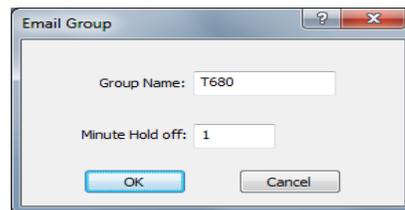
Type

Message type to use for messages to this email address.
Select from: To:, CC:, BCC:

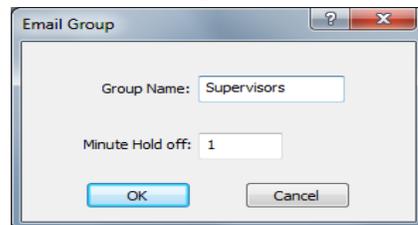


Adding an Email Group

- Add a new Email Group with the **New Email Group** button. The Email Group Dialog box appears. It will have a unique Email Group name.



- Enter the desired Email Group Name and the Hold Off Time and click the **OK** button.

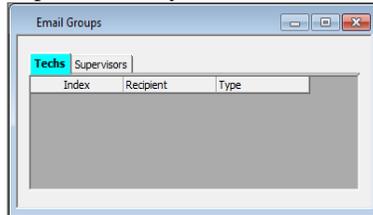


Email Hold off Time

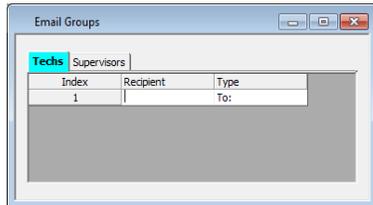
In normal system operation, multiple failures can happen within a short time of each other. For instance, a "Stuck Microphone" will eventually cause all the receivers to go into Fail mode. Typically, all the receivers will fail within about 15 seconds of each other. The system can aggregate these failures into one email instead of sending multiple emails. When the program starts to send an email to an Email group, it will wait for the Email Hold off Time to expire before sending the email. When the timer times out, the system will send all the collected messages in one email.

Adding Email Recipients

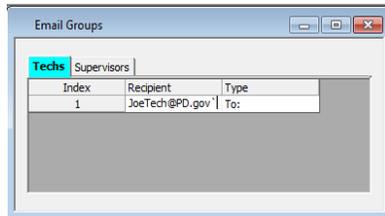
Once an Email Group is created, you can add email recipients.



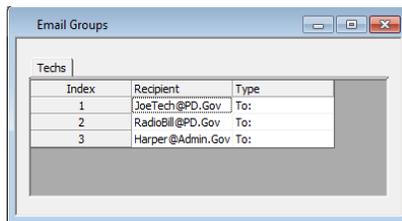
- Add a new Email Recipient with the **New Email Recipient** button
If no Email Group is defined, this will add a new Email Group.



- Enter the desired email address.



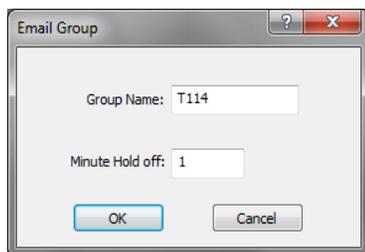
- Continue the process to add more recipients to a group.



Adding Multiple Email Groups



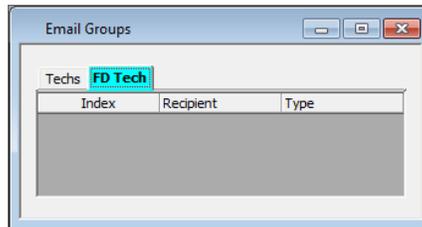
- Add additional Email Groups by using the **New Email Group** button or right click on the Current Group Tab: Then enter the preferred Group name.



Default Name.



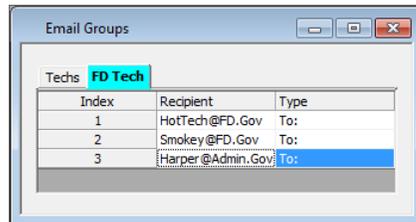
Edit Name.



Finished.

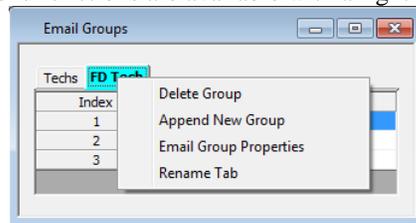


- Add recipients with the **New Recipient** button.



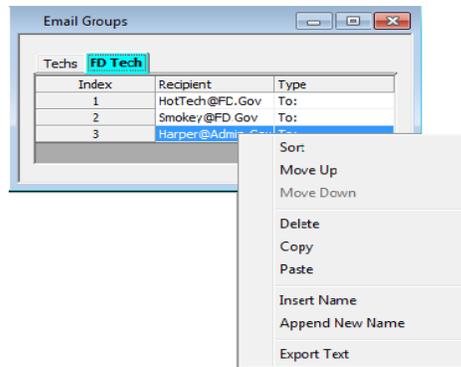
Email Group Context Sensitive (Right Click) Menu

The following menu functions are available with a right click on the Email Group tabs.



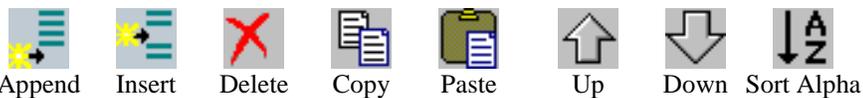
Email Recipient Context Sensitive (Right Click) Menu

The following menu functions are available with a right click in the Email Recipient list.



Email Group Window Toolbar Buttons

The following toolbar buttons will also function in the Email Groups Window:



See *Toolbars* on page 44 for more details.

Receivers Resource Window

The Receivers Window shows:

- The site names for all the receivers in the system.
- Input/Output groups for I/O modules

It is based on the modules defined in the Hardware Window.

The screenshot shows a window titled "Receivers" containing a table with the following columns: Index, NI, GRP:MOD, Type, Channel, RX, Name, Description, Tag-1, Tag-2, SubDevice, WD Alarm, Display Table, and Link to Output. The table lists 17 receiver entries, each with a unique index and name (e.g., Channel5e, Channel6e, etc.).

Index	NI	GRP:MOD	Type	Channel	RX	Name	Description	Tag-1	Tag-2	SubDevice	WD Alarm	Display Table	Link to Output
45	Hibi-01	00:5	CIB	None	5	Channel5e				No	No	Comparator	
46	Hibi-01	00:5	CIB	None	6	Channel6e				No	No	Comparator	
47	Hibi-01	00:5	CIB	None	7	Channel7e				No	No	Comparator	
48	Hibi-01	00:5	CIB	None	8	Channel8e				No	No	Comparator	
49	Hibi-01	00:6	CIB	None	1	Channel1f				No	No	Comparator	
50	Hibi-01	00:6	CIB	None	2	Channel2f				No	No	Comparator	
51	Hibi-01	00:6	CIB	None	3	Channel3f				No	No	Comparator	
52	Hibi-01	00:6	CIB	None	4	Channel4f				No	No	Comparator	
53	Hibi-01	00:6	CIB	None	5	Channel5f				No	No	Comparator	
54	Hibi-01	00:6	CIB	None	6	Channel6f				No	No	Comparator	
55	Hibi-01	00:6	CIB	None	7	Channel7f				No	No	Comparator	
56	Hibi-01	00:6	CIB	None	8	Channel8f				No	No	Comparator	
57	Hibi-01	00:7	CIB	None	1	Channel1g				No	No	Comparator	
58	Hibi-01	00:7	CIB	None	2	Channel2g				No	No	Comparator	
59	Hibi-01	00:7	CIB	None	3	Channel3g				No	No	Comparator	
60	Hibi-01	00:7	CIB	None	4	Channel4g				No	No	Comparator	
61	Hibi-01	00:7	CIB	None	5	Channel5g				No	No	Comparator	
62	Hibi-01	00:7	CIB	None	6	Channel6g				No	No	Comparator	



Fast Navigation in Receiver Window

The Receiver Window is linked to the Hardware Window. Clicking on a module in the Hardware Window will bring up the first receiver of that module in the Receiver Window.

Each entry in the Receivers Window has the following fields:

NI

Network Interface for this hardware module. This is a read-only field and is defined in the Hardware window.

Grp:Mod

The MCN Group & Module number for the hardware module. This is a read-only field defined in the Hardware Window. The order of modules follows the module order in the Hardware window.

Type

The Module Type (CIB, AIB, IOB Std, IOB 2 Bit, IOB 1 Bit, etc.) for the hardware module. This is a read-only field that is controlled in the Hardware Window

Channel

The radio channel for the hardware module. Read-only field (defined in Hardware list).

Rx

The Receiver Number for this receiver. This is a sequential number for a particular receiver within its module. Read-only field. The maximum receiver number in a module is based on the Bank number in the Hardware list.

Name

Receiver site name (ex: North Tower, VA Hospital, etc.). Free-format text field. Change the Receiver Name by selecting the cell and typing in the name.

You can also cut & paste descriptions from Excel. See *Using the Clipboard from other Applications* on Page 90.

Description

Free format text field for general customer use. Many customers use this field to store an identifier for the leased line, microwave channel, or T1 channel bank and channel number for this receiver. This field is not required for program operation. Can be used in error logging & emails

You can also cut & paste descriptions from Excel. See *Using the Clipboard from other Applications* on Page 90 for more details.



Sub-Device

This is an available feature of the Standard software, when the Sub Comparators under the View Menu is enabled.

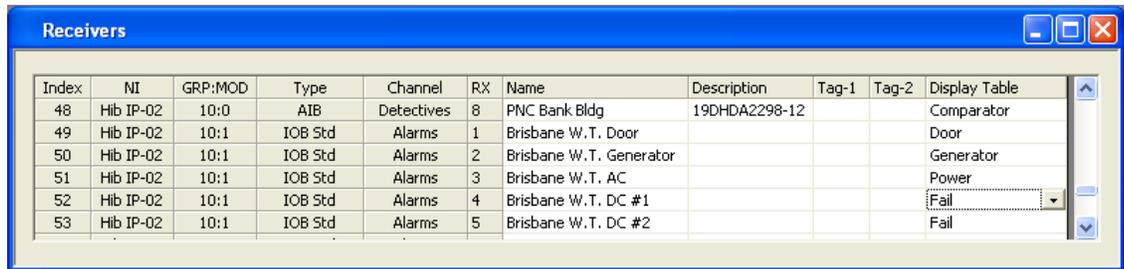
It allows a sub device to be linked to a particular Receiver.

Display Table

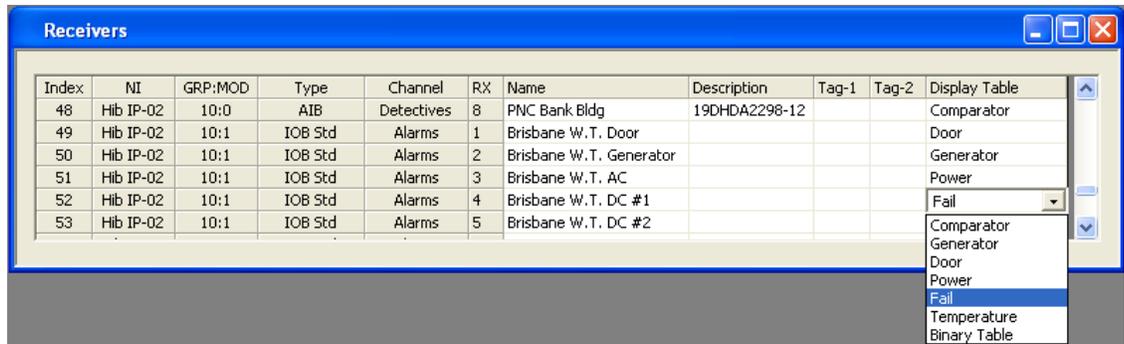
This is the mapping table to use for this receiver (or alarm point). The Display Table determines how the input bits from the hardware modules are mapped to the status display.

If you have all receivers, you will probably only use the "Comparator" table. This maps the inputs to the standard "Vote", "Rx", "Dis", and "Fail" statuses.

If you have any Input / Output groups which can be used for things such as microwave or site alarms, you will need to select a different Display Table (such as "Generator", "Door" or "Power") for those points.



This is a drop-down field. Select one of the Display Tables from the drop-down list.



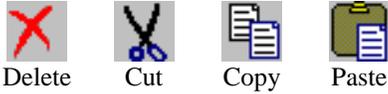
Receiver Window Context Sensitive (Right Click) Menu

The following menu functions are available with a right click in the Receiver list.



Receiver Window Toolbar Buttons

The following toolbar buttons will also function in the Receiver Window:



See *Toolbars* on page 44 for more details.

Since the Receiver & I/O Group rows are controlled by the Hardware Window, functions such as Append, Insert, Sort, Up, & Down are not available in this window.

Alarms and Display Tables

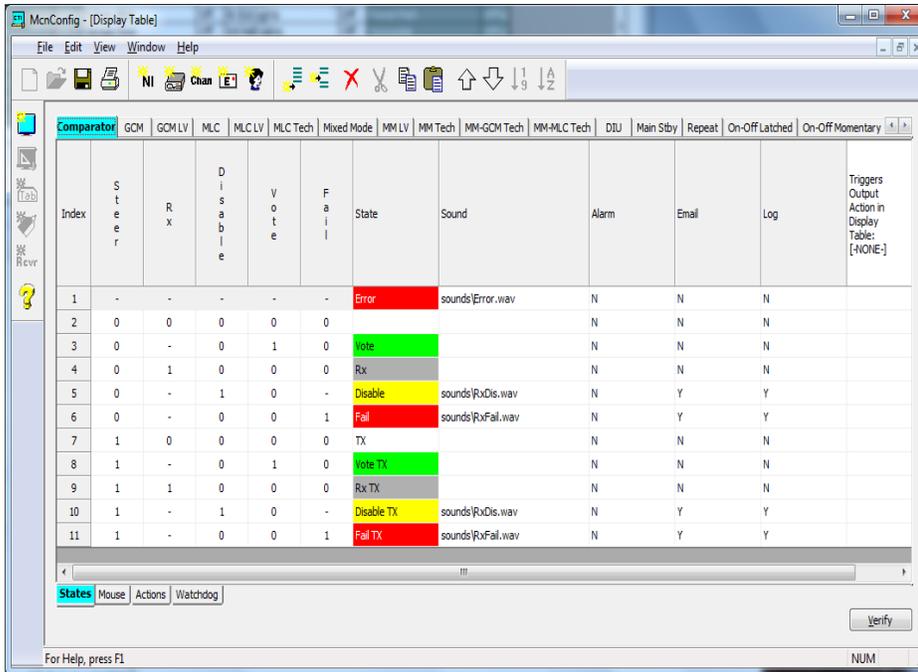
You can configure "sticky" alarms in the system through the Display Tables. Alarms will be displayed in the Alarm tab of the System events (Log) Window. They will remain in that window until acknowledged and reset. Alarms can also generate sounds when they go into the active state. See the Alarm Display – Log Tab / Alarms Tab section on page **127** for details on Alarm operations, and the States Tab States Tabsection starting on page 68 or instructions on how to enable alarms in the Display Tables.

The Display Tables window allows you to define various Display Tables for I/O devices. The Display Tables map the input bit values from the devices to the text and colors to be displayed on the screen. If there is a standard Display Table for your receivers or I/O types, you probably will not need to modify the data in the Display Tables window.

The Display Table types may vary depending on the version of the software package, but a number of Display Tables are pre-defined:

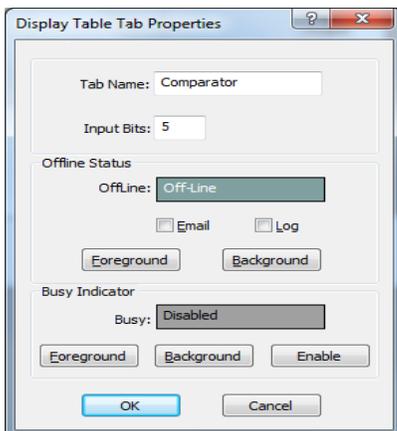
- Comparator
- Generator
- Door
- Power
- Fail
- Temperature
- Alarm
- Binary Table

From the menu, select **View / Display Tables**.



Display Table Tab Properties

To display the overall properties for a Display Table, **Double-Click** on its tab.



From the Display Table window you can change the following items for this Display Table:

- Display Table (tab) name
- Number of input bits
- Offline Text & Colors (displayed when a module is offline)
- Logging flag for the Off-Line state.
- Busy State indicator (for legacy modules)

States Tab

Index	State	Rx	Displayable	Vote	Fail	State	Sound	Alarm	Email	Log	Triggers Output Action in Display Table: [-NONE-]
1	Error	-	-	-	-	Error	sounds\Error.wav	N	N	N	
2		0	0	0	0			N	N	N	
3	Vote	0	-	0	1	Vote		N	N	N	
4	Rx	0	1	0	0	Rx		N	N	N	
5	Disable	0	-	1	0	Disable	sounds\RxDIs.wav	N	Y	Y	
6	Fail	0	-	0	0	Fail	sounds\RxFail.wav	N	Y	Y	
7	TX	1	0	0	0	TX		N	N	N	
8	Vote TX	1	-	0	1	Vote TX		N	N	N	
9	Rx TX	1	1	0	0	Rx TX		N	N	N	
10	Disable TX	1	-	1	0	Disable TX	sounds\RxDIs.wav	N	Y	Y	
11	Fail TX	1	-	0	0	Fail TX	sounds\RxFail.wav	N	Y	Y	

Each Display Table has a series of states based on the values of the input bits. In addition to the specifically defined input states, each Display Table has two special states:

- **Offline.** This is displayed when a module is offline. It is configured in the Display Tab Properties window.
- **Default:** This is the first state in the table (with all dashes). It is used for any of the conditions not shown in the table.

The fields in the States tab are:

State Bit Names

This field shows the functions of the input bits as received from the hardware. Bit 0 (lsb) is the right-most bit in the State Lines.

Since the comparator modules have fixed bit assignments, the Comparator Display Table has fixed bit names. Bits used by other I/O devices will be user-defined based on their function. The Bit Names in these Display Tables are user-assignable.

State Input Bits

Each Status line has a series of input bits that corresponds to its state. This is a trinary (binary with don't care) field that defines the state.

Trinary Values

- 0 Not active
- 1 Active
- Don't Care

Don't Care bits

A state that has a dash "-" in a bit position will be active whether that bit is either active or inactive. For example, in the standard Comparator Display Table, the Vote state has a Don't Care for the Rx bit. The Vote status will be indicated whether or not the Receive bit is active.

State Priority

The states in the table have the following priority:

- 1. Off-Line If the module is off-line.
- 2. Numbered States Lowest number has the highest priority.
- 3. Default State If no other state is found to match the input bits.

If an input value is covered by two defined states, the lower numbered state will be displayed.

State Text & Color Field

This is free-format text to be displayed when this state is active.

Foreground and background colors can be defined for each state.

Sound Field

This field is the .WAV sound file to be played whenever any input changes to this state. This field is typically used only for alarm conditions.

Sounds are played only if the state is also logged. If you want a sound to play for a state entry, make sure the Log field is set to 1.

Email Field

This is a flag to determine whether or not to log this state to email.

- 0 = Don't log
- 1 = Log

If the Logging flag is set to 1, an email log entry will be generated whenever an input goes into or out of this state.

Log Field

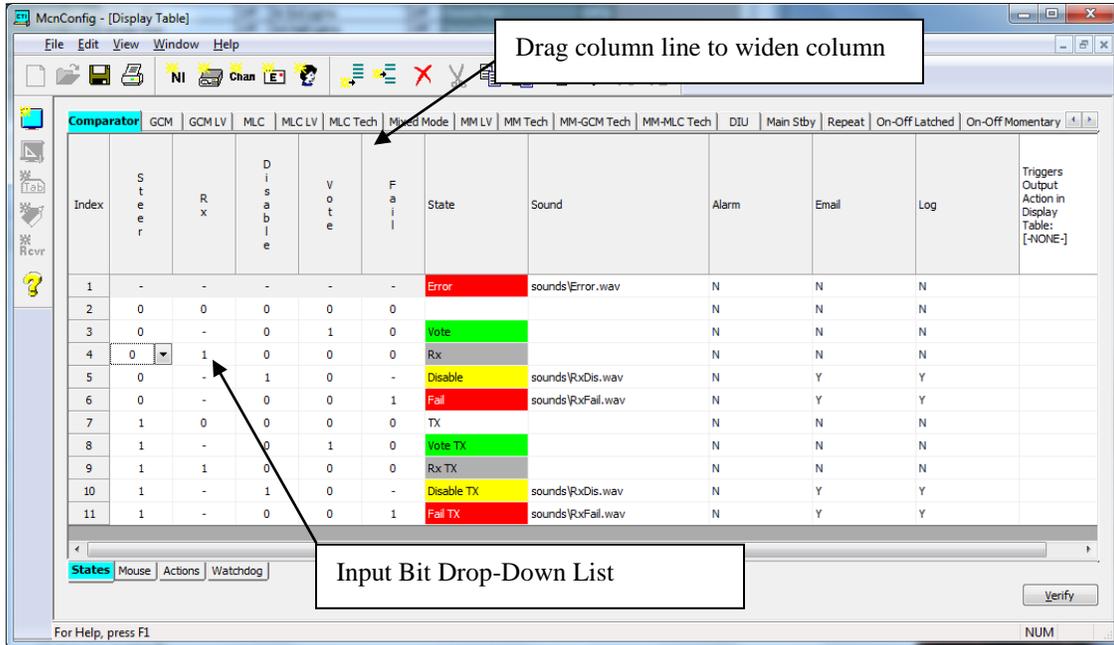
This is a flag to determine whether or not to log this state (to screen, printer, or disk).

- 0 = Don't log
- 1 = Log

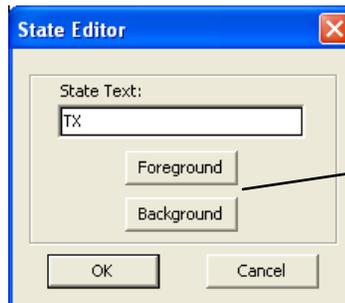
If the Log flag is set to 1, a log entry will be generated whenever an input goes into or out of this state.

Editing the fields

Input Bit Values: Click in the bit value field to edit
 You can either enter a value (0,1,-) or use the drop-down list.
 You may need to widen the columns to see the drop-down list properly.



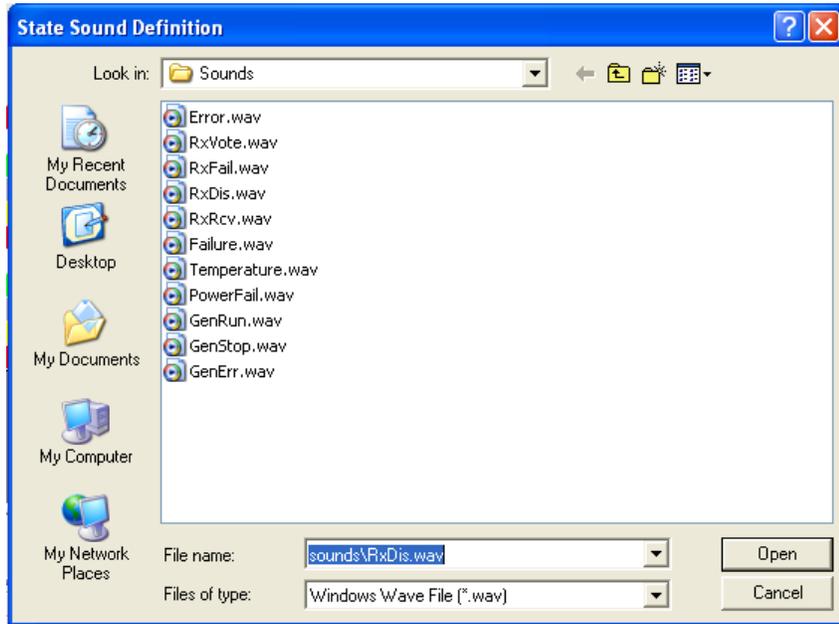
State Names Double click on the State name.
 A State Editor dialog box will appear.
 Enter the appropriate State Text.



State Color From the State Editor dialog box, hit the
 Foreground or Background button.
 Select the appropriate color.

Sound

To select a sound, double click in the Sound cell.
Select the appropriate WAV file from the State Sound Definition window.



Alarms Flag

Click in the field.
Type in "Y" or "N" or use the Drop-Down List.

Email Flag

Click in the field.
Type in "Y" or "N" or use the Drop-Down List.

Log Flag

Click in the field.
Type in "Y" or "N" or use the Drop-Down List.

State Table Verify

Since the entries in the Display Table are free-format (and also allow Don't Care bits), it's easy to build a Display table that doesn't work like you thought it would. You can therefore verify how the MCN software will interpret the table by clicking the Verify button on the bottom right corner of the Display Table window. This will bring up a Display Table Verification window; which will show the states that result from each possible binary input value.

The screenshot shows a window titled "Comparator - Binary Table" with a table containing 20 rows. Each row represents a binary input value (Index 1-20) and its corresponding state and sound output. The states are color-coded: red for Fail/Error, green for Vote/Vote TX, yellow for Disable/Disable TX, and grey for Rx/TX.

Index	S t e e r	R x	D i s a b l e	V o t e	F a i l	State	Sound
1	0	0	0	0	1	Fail	sounds\RxFail.v
2	0	0	0	1	0	Vote	
3	0	0	0	1	1	Error	sounds>Error.w
4	0	0	1	0	0	Disable	sounds\RxDi.w
5	0	0	1	0	1	Disable	sounds\RxDi.w
6	0	0	1	1	0	Error	sounds>Error.w
7	0	0	1	1	1	Error	sounds>Error.w
8	0	1	0	0	0	Rx	
9	0	1	0	0	1	Fail	sounds\RxFail.v
10	0	1	0	1	0	Vote	
11	0	1	0	1	1	Error	sounds>Error.w
12	0	1	1	0	0	Disable	sounds\RxDi.w
13	0	1	1	0	1	Disable	sounds\RxDi.w
14	0	1	1	1	0	Error	sounds>Error.w
15	0	1	1	1	1	Error	sounds>Error.w
16	1	0	0	0	0	TX	
17	1	0	0	0	1	Fail TX	sounds\RxFail.v
18	1	0	0	1	0	Vote TX	
19	1	0	0	1	1	Error	sounds>Error.w
20	1	0	1	0	0	Disable TX	sounds\RxDi.w

An "OK" button is located at the bottom center of the window.

Display Table 'Right Mouse Click' Menu

Clicking the right mouse button over a cell will offer the following options:

Move Up

Moves a row up one position

Move Down

Moves a row down one position

Delete Row

Deletes a row

Delete Sound

Deletes the sound entry for the selected row.

Copy

Copies the highlighted cell(s) to the clipboard. Does not work with entire rows.

Paste

Pastes the clipboard to the current cell. If more than one cell is on the clipboard, the additional cells will be pasted to cells to the right.

Insert

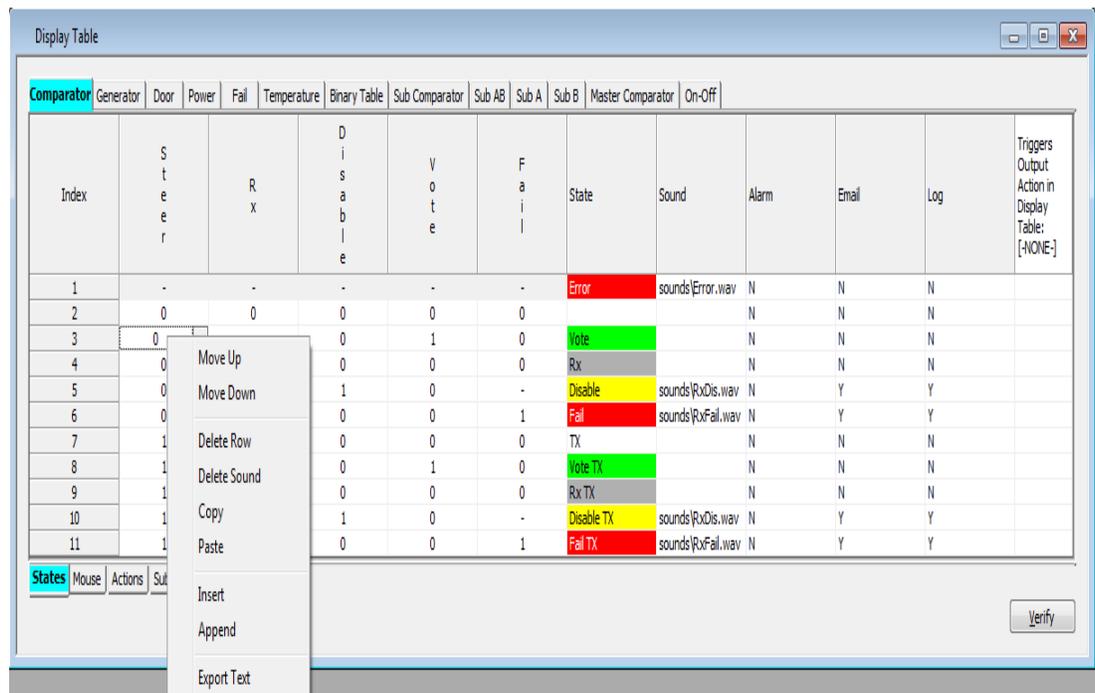
Inserts a blank row at the current location

Append

Appends a blank row to the end of the Display Table

Export Text

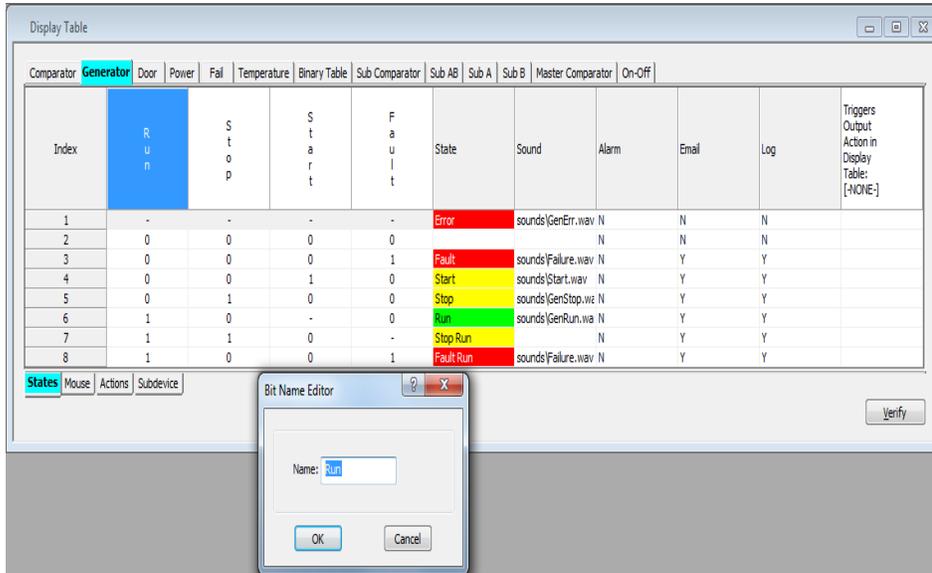
Will export a text file copy, of the contents for this window.



Editing Bit Names

To edit the Bit Names for a Display Table, **Double Click** on the Bit Name.

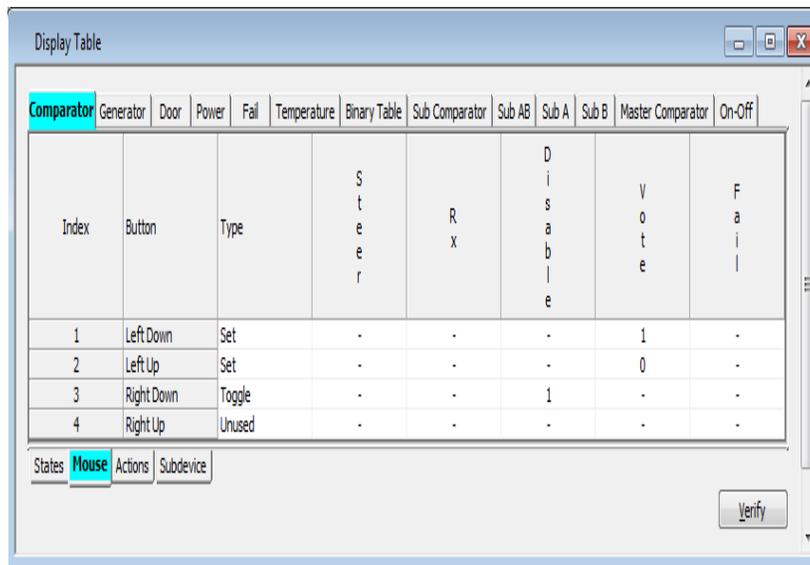
The Bit Names for the Comparator Display Table are fixed and cannot be edited.



Mouse Actions Tab

Four(4) mouse button actions are defined for each Display Table:

- Left Mouse Button Down (Press)
- Left Mouse Button Up (Release)
- Right Mouse Button Down (Press)
- Right Mouse Button Up (Release)



Each Mouse Event Line contains the following fields:

Button

Describes the mouse event

Type

This is the action that will be taken when this mouse event occurs.

Choices are:

- Unused This Mouse Event does not generate an vent

- Set This Mouse Event explicitly sets defined bits to the states shown.
("0"bits are set to 0, "1" bits are set to 1, "-" bits are left alone)

- Toggle This Mouse Event toggles the state of all the bits marked with a "1".

Bits

The bit names are taken from the States tab. They can be either "0", "1" or "-". See the **Type** field for description of how each of these bits is handled.



Note that the bits that appear here may not all be output (control) bits, due to the actual device being controlled. In the example above, the only valid output bits are Vote and Disable.

Editing the fields

Type

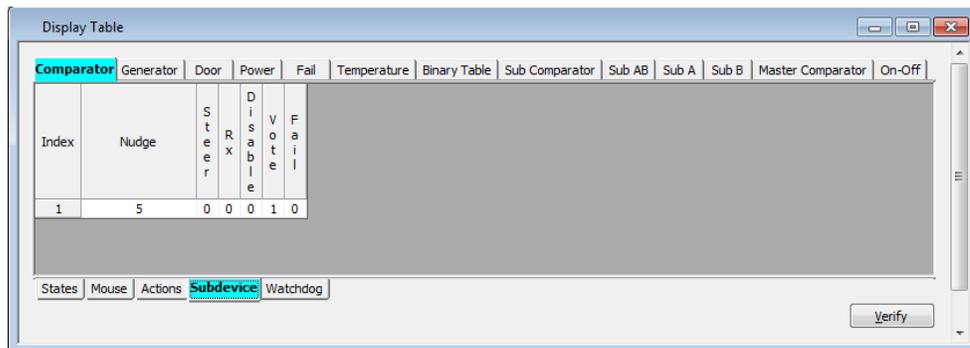
To edit, click in the field.
Select the type with the Drop-Down menu.

Bits

To edit, click in the bit value field.
You can either enter a value (0,1,-) or use the drop-down list.
You may need to widen the columns to see the drop-down list properly.

SubDevice Tab

The SubDevice Tab that is displayed below is only available when sub-comparators are enabled under the **View** Menu. It must be configured for use in conjunction with the Master Comparator option that passes the Master Vote down to the Sub-Comparator. For specific details about this Tabs' functions and options see Page 102. For a deeper understanding about the Application, Configuration and Implementation of Master-Sub Comparators, refer to the Section title '**MCNConfig Program:Master-Sub Comparator Configuration**' on Page 93.



MCNConfig Program: Display Windows

Display windows are the screens that you build for the Men Standard program. Each Display Window can contain multiple Tabs and multiple channels.

In this section, we will discuss how to:

- Add a new Display window
- Add Labels
- Add Receivers (and I/O groups)
- Add Tabs
- Move & Modify Labels & Receivers

Adding a New Display Window



- Add a new Display Window with the **Add Display Window** button.

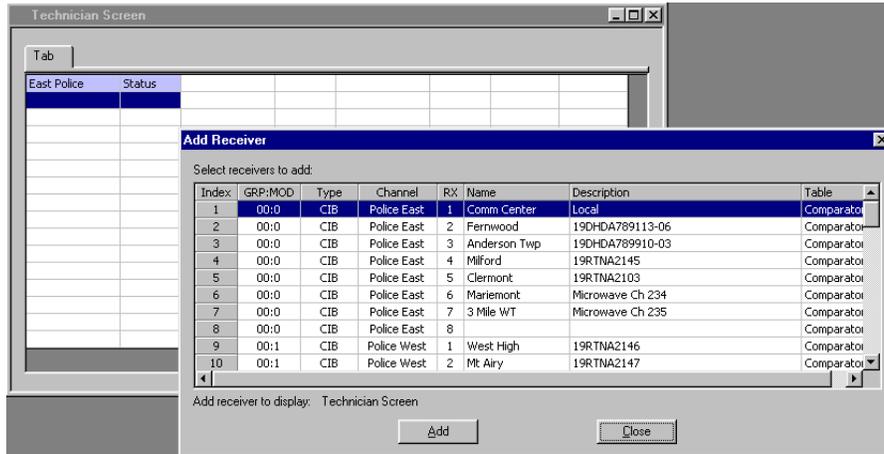
- Change the File Name, Title, Rows, and Columns as desired and click the **OK** button.

- A blank Display Window with one Tab will appear

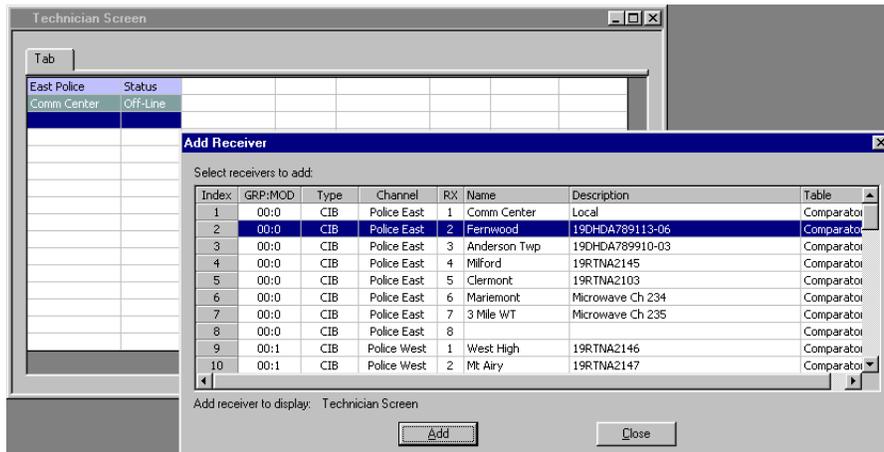
Adding Receivers & I/O Groups to the Display Window



- Add new Receivers or I/O Groups in the Display Window using the **Add Receiver** button from the Toolbar on the left.
- An **Add Receiver** dialog box will appear. This is similar to the Receiver Window, but it has additional buttons.

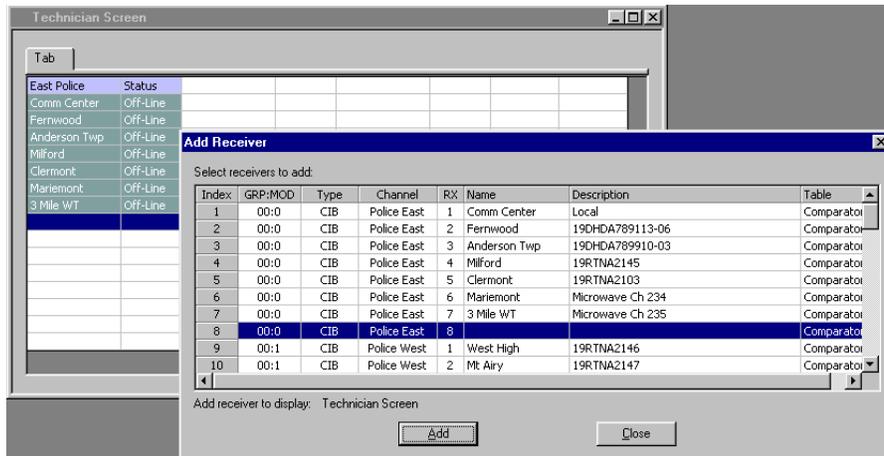


- Select the receiver or I/O group that you want to add, and click the **Add** button.

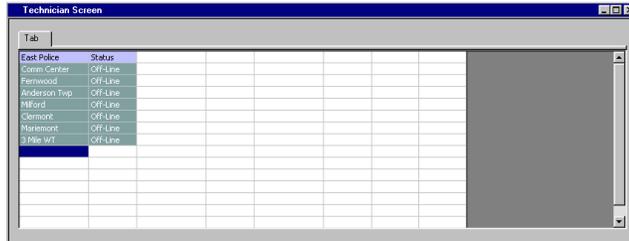


- An **Add Receiver** dialog box will appear. This is similar to the Receiver Window, but it has additional buttons.

- Press the **Add** button for each additional receiver or I/O groups you wish to add.



- The program will continue adding receivers to the selected column in the Display Window. If it reaches the bottom of a column, it will wrap to the top of the next column.
- When you are finished adding a range of receivers or I/O groups, click the **Close** button.

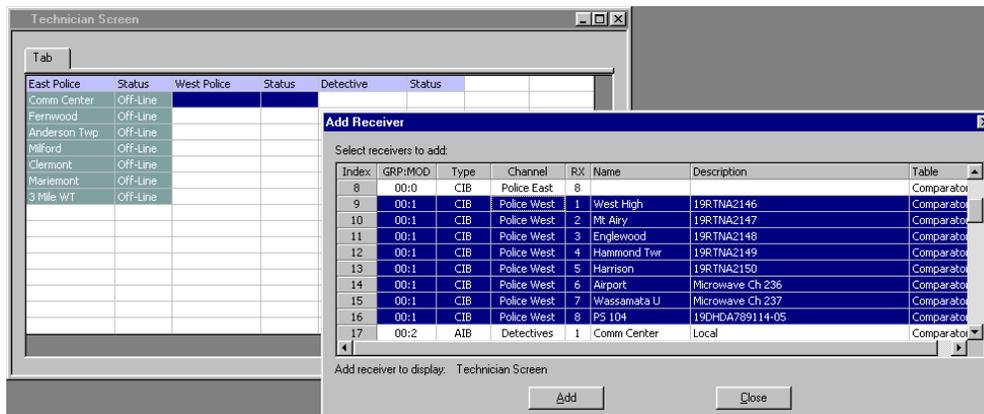


- Move to the position for the next receiver and repeat until you have all the receivers added.

Adding a block of receivers or I/O points to the Display Window



- Press the **Add Receiver** button.
- In the Add Receivers dialog box, select a block of receivers



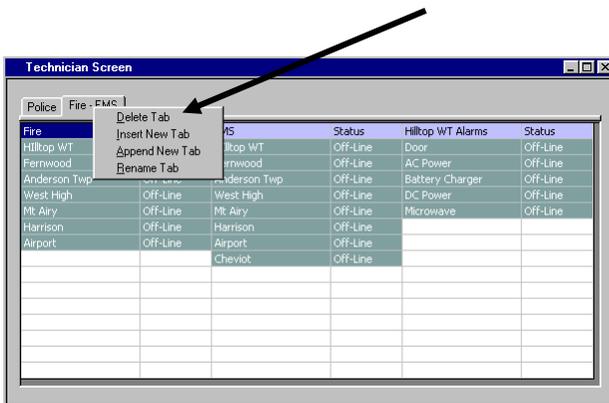
- Add Labels, Receivers, and I/O Groups for that tab.

The screenshot shows a window titled "Technician Screen" with a tabbed interface. The "Fire - EMS" tab is active. Below the tabs is a table with the following data:

Fire	Status	EMS	Status	Hilltop WT Alarms	Status
Hilltop WT	Off-Line	Hilltop WT	Off-Line	Generator	Off-Line
Fernwood	Off-Line	Fernwood	Off-Line	Door	Off-Line
Anderson Twp	Off-Line	Anderson Twp	Off-Line	AC Power	Off-Line
West High	Off-Line	West High	Off-Line	Battery Charger	Off-Line
Mt Airy	Off-Line	Mt Airy	Off-Line	DC Power	Off-Line
Harrison	Off-Line	Harrison	Off-Line	Microwave	Off-Line
Airport	Off-Line	Airport	Off-Line		
		Cheviot	Off-Line		

Deleting Display Tabs

- Right-click on the tab and select *Delete Tab* from the pop-up menu.



Changing Display Window Parameters

You can change the following properties of a Display Window.

- Display Window Title
- Number of Rows
- Number of Columns

In this example, we want to get rid of the unused fourth column.

Fire	Status	EMS	Status	Hilltop WT Alarms	Status
Hilltop WT	Off-Line	Hilltop WT	Off-Line	Generator	Off-Line
Fernwood	Off-Line	Fernwood	Off-Line	Door	Off-Line
Anderson Twp	Off-Line	Anderson Twp	Off-Line	AC Power	Off-Line
West High	Off-Line	West High	Off-Line	Battery Charger	Off-Line
Mt. Airy	Off-Line	Mt. Airy	Off-Line	DC Power	Off-Line
Harrison	Off-Line	Harrison	Off-Line	Microwave	Off-Line
Airport	Off-Line	Airport	Off-Line		
		Cheviot	Off-Line		



- Press the **Display Window Properties** button.

- Change the number of Columns from 4 to 3.
(You could also change the Title or number of rows at this point.)
- Hit the **OK** button.

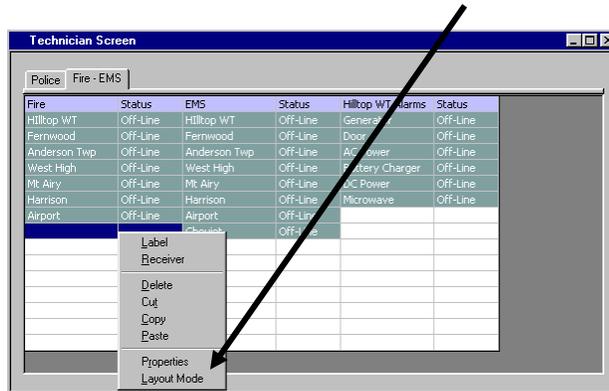
Fire	Status	EMS	Status	Hilltop WT Alarms	Status
Hilltop WT	Off-Line	Hilltop WT	Off-Line	Door	Off-Line
Fernwood	Off-Line	Fernwood	Off-Line	AC Power	Off-Line
Anderson Twp	Off-Line	Anderson Twp	Off-Line	Battery Charger	Off-Line
West High	Off-Line	West High	Off-Line	DC Power	Off-Line
Mt. Airy	Off-Line	Mt. Airy	Off-Line	Microwave	Off-Line
Harrison	Off-Line	Harrison	Off-Line		
Airport	Off-Line	Airport	Off-Line		
		Cheviot	Off-Line		

The number of columns is reduced for all tabs. If you reduce the grid size, you may lose receivers or labels that fall outside the new range. Receivers and I/O Groups are still in the Receivers Window; they just disappear from the Display Window.

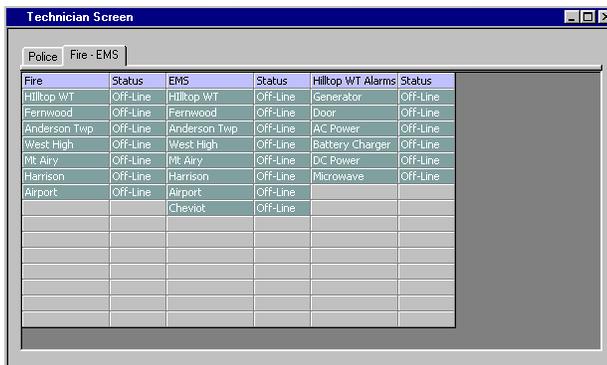
Changing Column Widths in Layout Mode

You can change the column width for the resulting Display Window. To do this, you must go into Layout Mode.

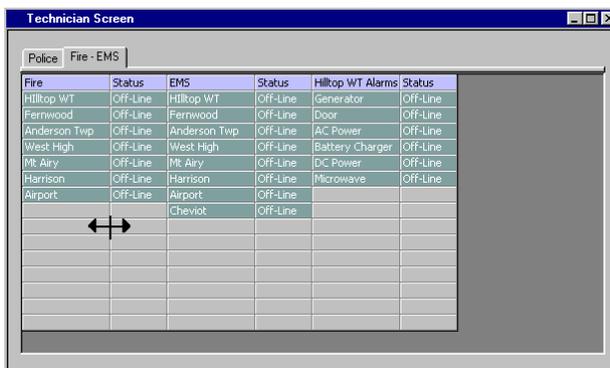
- Right-click in the grid and select *Layout Mode*.



The grid will turn gray, indicating it is in Layout Mode.



- Move the cursor over a column separator line. The cursor will turn into a double-headed arrow.



MCNConfig Program: Display Windows

- Press the left mouse button and drag the column to the proper width.
- Repeat with the right column separator for the Status column.

Fire	Status	EMS	Status	Hilltop WT Alarms	Status
Hilltop WT	Off-Line	Hilltop WT	Off-Line	Generator	Off-Line
Fernwood	Off-Line	Fernwood	Off-Line	Door	Off-Line
Anderson Twp	Off-Line	Anderson Twp	Off-Line	AC Power	Off-Line
West High	Off-Line	West High	Off-Line	Battery Charger	Off-Line
Mt. Airy	Off-Line	Mt. Airy	Off-Line	DC Power	Off-Line
Harrison	Off-Line	Harrison	Off-Line	Microwave	Off-Line
Airport	Off-Line	Airport	Off-Line		
		Cheviot	Off-Line		

Column Width Note

All the Receiver columns are the same width.

All the Status columns are the same width.

Changing a column width will change the width of all the similar columns on all tabs.

- Right-Click in the grid and select *Edit Mode*.

Fire	Status	EMS	Status	Hilltop WT Alarms	Status
Hilltop WT	Off-Line	Hilltop WT	Off-Line	Generator	Off-Line
Fernwood	Off-Line	Fernwood	Off-Line	Door	Off-Line
Anderson Twp	Off-Line	Anderson Twp	Off-Line	AC Power	Off-Line
West High	Off-Line	West High	Off-Line	Battery Charger	Off-Line
Mt. Airy	Off-Line	Mt. Airy	Off-Line	DC Power	Off-Line
Harrison	Off-Line	Harrison	Off-Line	Microwave	Off-Line
Airport	Off-Line	Airport	Off-Line		
		Cheviot	Off-Line		

The window will return to Edit mode.

East Police	Status	West Police	Status	Detectives	Status
Comm Center	Off-Line	West High	Off-Line	Comm Center	Off-Line
Fernwood	Off-Line	Mt. Airy	Off-Line	Fernwood	Off-Line
Anderson Twp	Off-Line	Englewood	Off-Line	Anderson Twp	Off-Line
Milford	Off-Line	Hammond Twp	Off-Line	Milford	Off-Line
Clermont	Off-Line	Harrison	Off-Line	Clermont	Off-Line
Mariemont	Off-Line	Airport	Off-Line	Mariemont	Off-Line
3 Mile WT	Off-Line	Wassamata U	Off-Line	3 Mile WT	Off-Line
		PS 104	Off-Line	West High	Off-Line
				Mt. Airy	Off-Line
				Englewood	Off-Line
				Hammond Twp	Off-Line
				Harrison	Off-Line
				Airport	Off-Line
				Wassamata U	Off-Line
				PS 104	Off-Line

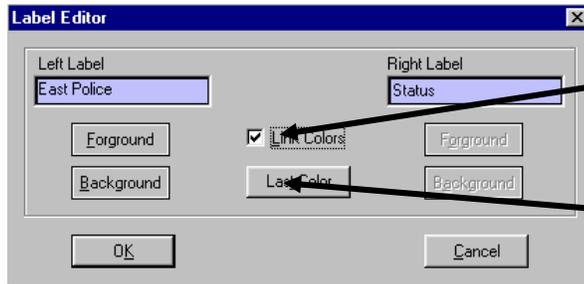
Changing Label Text & Colors

You can change a Label text or color by doing one of the following:

- Double click on a Label.
- Right-Click on the Label and select the **Label** menu item.
- Select a Label cell and press the **New Label** toolbar button.



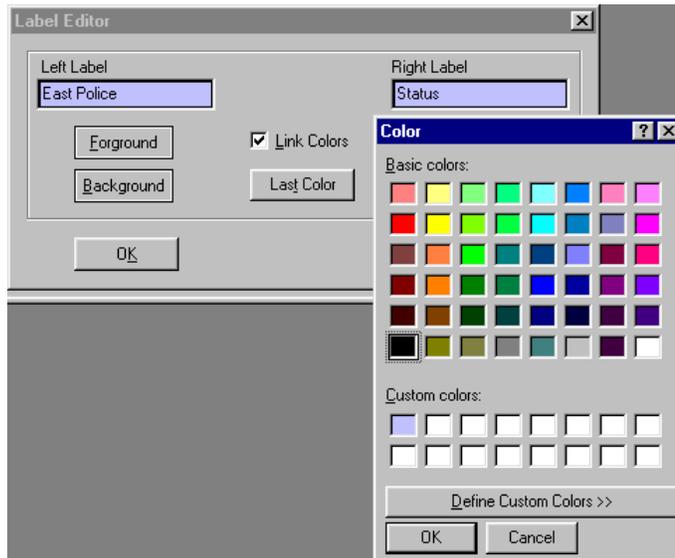
The Label Edit dialog box will appear.



When the Link Color box is checked, the left & right labels will have the same colors.

When changing the color of a series of labels, press the Last Color button to set current label to the last color used.

- You can edit the left & right text.
- You can change the Foreground or Background color of the labels by hitting the **Foreground** or **Background** button below the label



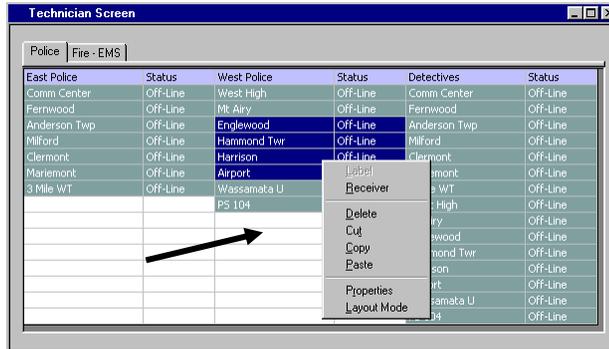
- Select a color and hit **OK**
- If you want a color not shown, hit the **Define Custom Colors** button.

Moving Receivers & Labels in the Display Window

This section covers single column cuts & pastes. See the next section for cutting & pasting multi-column selections

To move Labels, Receivers, or I/O Groups:

- Select the items to move
- Right click and select the Cut menu item. (Alternately, use the *Cut* toolbar button)

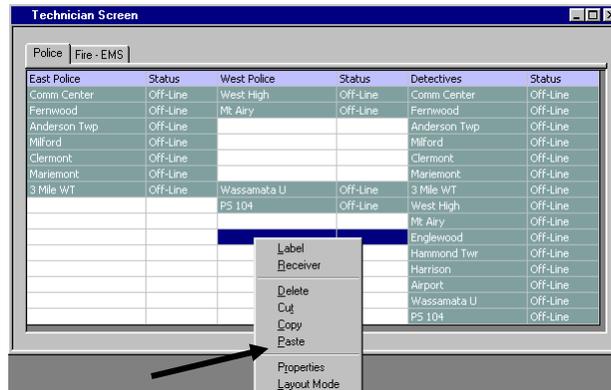


This cuts the selection and places it in the clipboard.

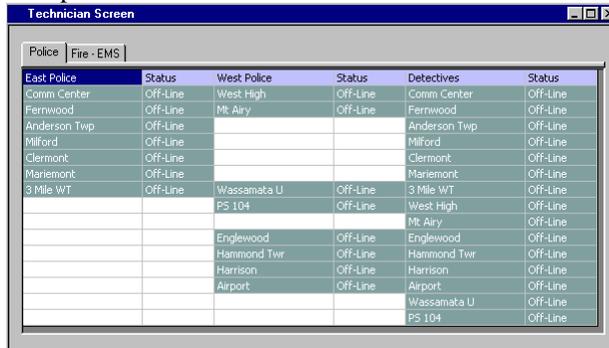
- Move to the desired location

Right click and hit Paste.

(Alternately, use the *Paste* toolbar button)



This pastes the items into the new location.



Cutting & Pasting Multiple Columns

Cutting and pasting occur in the following order:

1. Across (left to right)
2. Down

Copying the range shown puts the cells into the clipboard in the following order:

1. Label 1
2. Label 2
3. Glendale Rx
4. Univ Cntr Rx
5. Mercy Hosp Rx
6. HQ Rx

Label 1		Label 2	
Glendale	Off-Line	Univ Cntr	Off-Line
Mercy Hosp	Off-Line	HQ	Off-Line

Pasting the clipboard to a single cell or column...

Label 1		Label 2	
Glendale	Off-Line	Univ Cntr	Off-Line
Mercy Hosp	Off-Line	HQ	Off-Line

Label 1		Label 2	
Label 1			
Label 2			
Glendale	Off-Line		
Univ Cntr	Off-Line		

Results in a single column (probably not the result you wanted.)

Pasting the clipboard to a range with the same number of columns ...

Label 1		Label 2	
Glendale	Off-Line	Univ Cntr	Off-Line
Mercy Hosp	Off-Line	HQ	Off-Line

Label 1		Label 2	
Glendale	Off-Line	Univ Cntr	Off-Line
Mercy Hosp	Off-Line	HQ	Off-Line

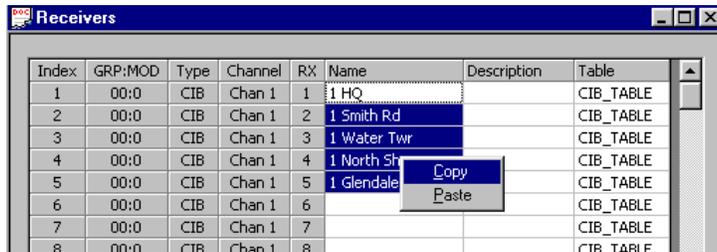
Preserves the shape of the range of cells.

Pasting a Row of Receivers Directly from the Receiver Window

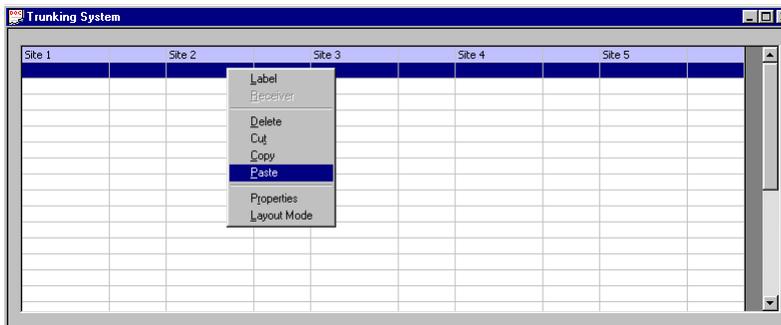
All the examples shown assume you have a system with many receiver sites and want to look at the sites in a column arrangement. If you have a trunking system with many channels but just a few sites, you may want to display each channel as a row with the sites going across from left to right.

You can do this by cutting and pasting a group of receivers directly from the Receiver Window into the Display Window.

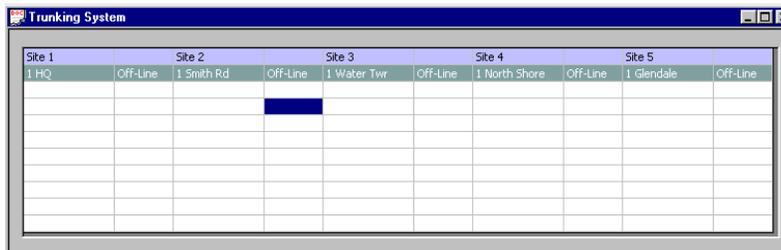
1. From the Receiver Window, highlight a group of receivers and Copy to clipboard.



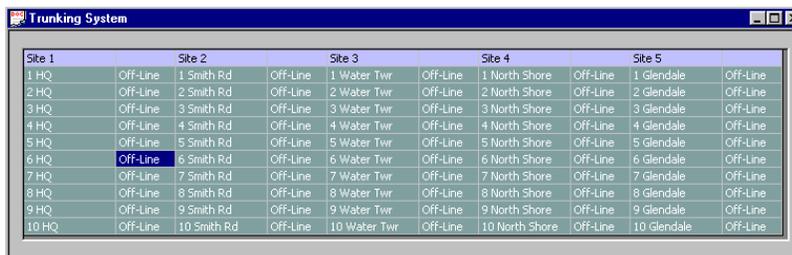
2. Go to the Display Window.
Move the cursor to the starting position for the row of receivers.
Highlight the row and Paste the clipboard to the screen.



3. The receivers are pasted into the Display Window in a horizontal row:



4. A 10-Channel 5-Site System



Display Window Tools

Display Window Tab Context Sensitive (Right Click) Menu

The following menu functions are available with a right click on a Display Window Tab.



Display Window Context Sensitive (Right Click) Menu

The following menu functions are available with a right click in the Display Window Grid.

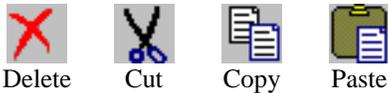


Quick Receiver & Label Changes

You can double-click on a Receiver or Label cell to change it. The “Add Receiver” or “Add Label” dialog box will open, allowing you to make changes to the cell.

Display Window Toolbar Buttons

The following toolbar buttons will also function in the Receiver Window:

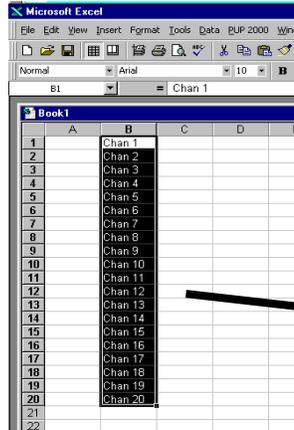


Since the Display Window uses a fixed grid, functions such as Append, Insert, Sort, Up, & Down are not available in this window.

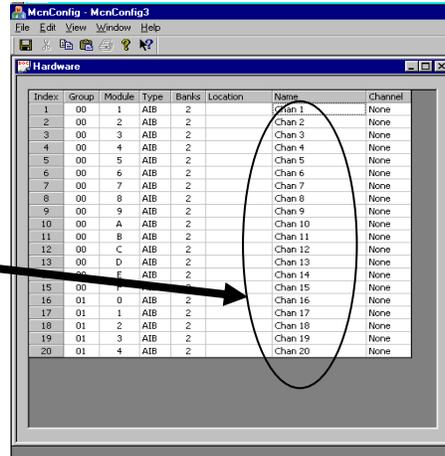
Using the Clipboard from other Applications

Many people keep system data in other applications, such as Excel. You can cut and paste some of this data from the other application into the MCNConfig program to save typing time.

Various fields in the MCNConfig database have special properties and thus have restrictions as to whether or not you can paste data from other applications or other windows. See the following section for restrictions.

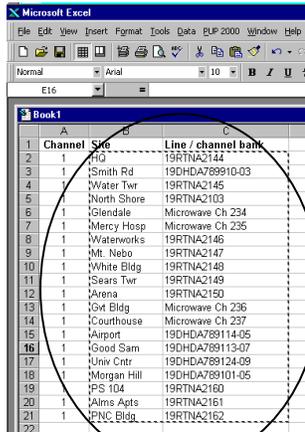


Copy (Ctrl-C) a column of Names in Excel

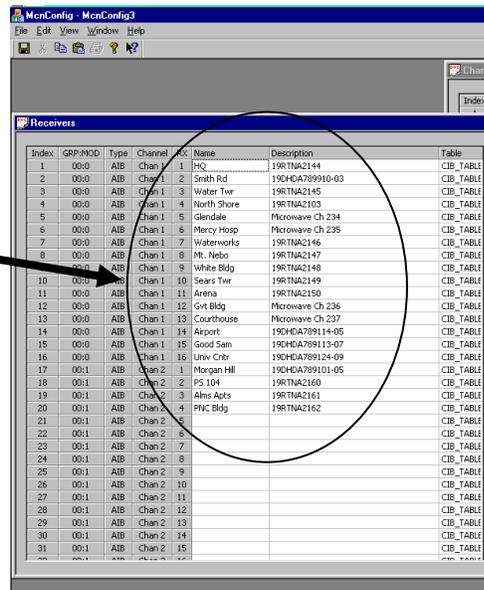


And Paste (Ctrl-V) them into the MCNConfig Hardware List

Or



Copy Receiver Site Names and Line Numbers from Excel



Into the MCNConfig Receiver List

Restrictions on Using the Clipboard

Various fields in the MCNConfig database have special properties and thus have restrictions as to whether or not you can paste data from other applications or other windows.

In all List Windows, any column that is highlighted in gray is a static column and cannot be changed in that window.

You cannot copy items into a drop-down field, except items from an identical drop-down field.

Module List Window:

Group Field	This field accepts only hex data from 00 to FE. You can paste data from the clipboard, but it must be hex data in this range. For every non-valid entry, you will see an error dialog box.
Module Field	This field accepts only hex data from 0 to F. You can paste data from the clipboard, but it must be hex data in this range. For every non-valid entry, you will see an error dialog box.
Type	This is a drop-down entry that limits the data to pre-defined hardware types. You cannot paste into this column.
Banks	Bank numbers are limited by the Module Type used. CIBs can have only 1 bank. AIBs can have up to 8. You can paste into this column for AIB modules. Each entry must be between 1 & 8. You will get a warning if you try to reduce the number of banks in an AIB.
Location	This is a free-format text field. You can paste text into this column.
Name	This is a free-format text field. You can paste text into this column.
Channel	This field allows entry of only channels defined in the Channel List window. You can cut & paste from one part of this column to another part. You cannot paste other types of data into this column.

Receiver List Window

Name	This is a free-format text field. You can paste text into this column.
Description	This is a free-format text field. You can paste text into this column.
Table	This field allows entry of only display tables defined in the Display Table window. You can cut & paste from one part of this column to another part. You cannot paste other types of data into this column.

Channel List

Channel	This is a free-format text field. You can paste text into this column.
Email Group	This field allows entry of only Email Groups defined in the Email Groups window. You can cut & paste from one part of this column to another part. You cannot paste other types of data into this column.

Email Group

Recipient	This is a free-format text field. You can paste text into this column.
Type	This field allows entry of only Email Types (To: & CC:). You cannot cut & paste from one part of this column to another part. You cannot paste other types of data into this column.

Display Window (Screen Layout)

All Cells

The cells require either:

- Left & Right Labels or
- Valid Receiver or other I/O Function Block References.

You can paste receivers from Receiver List window.

You can cut & paste a range of labels & receivers from a Display Window.

You cannot paste other types of data into these cells.

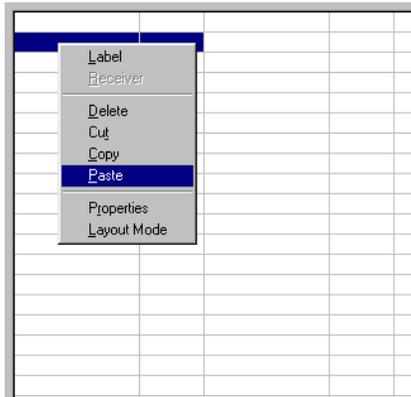
Pasting a Column of Receivers from the Receiver Window into the Display Window:

(Channels with a large number of sites)

- From the Receiver Window, highlight a group of receivers and Copy to clipboard.

Index	GRP/MOD	Type	Channel	RX	Name	Description	Table
1	04:F	AIB	Chan 1	1	HQ	19RTNA2144	CIB_TABLE
2	04:F	AIB	Chan 1	2	Smith Rd	19CHDA789910-03	CIB_TABLE
3	04:F	AIB	Chan 1	3	Water Twr	19RTNA2145	CIB_TABLE
4	04:F	AIB	Chan 1	4	North Shore	19RTNA2103	CIB_TABLE
5	04:F	AIB	Chan 1	5	Glendale	Microwave Ch 234	CIB_TABLE
6	04:F	AIB	Chan 1	6	Mercy Hosp	Microwave Ch 235	CIB_TABLE
7	04:F	AIB	Chan 1	7	Waterworks	19RTNA2146	CIB_TABLE
8	04:F	AIB	Chan 1	8	Mt. Nebo	19RTNA2147	CIB_TABLE
9	03:F	AIB	Chan 1	9	White Bldg	19RTNA2148	CIB_TABLE
10	03:F	AIB	Chan 1	10	Sears Twr	19RTNA2149	CIB_TABLE
11	03:F	AIB	Chan 1	11	Arena	19RTNA2150	CIB_TABLE
12	03:F	AIB	Chan 1	12	Gvt Bldg	Microwave Ch 236	CIB_TABLE
13	03:F	AIB	Chan 1	13	Courthouse	Microwave Ch 237	CIB_TABLE
14	03:F	AIB	Chan 1	14	Airport	19CHDA789114-05	CIB_TABLE
15	03:F	AIB	Chan 1	15	Good Sam	19CHDA789113-07	CIB_TABLE
16	03:F	AIB	Chan 1	16	Univ Cntr	19CHDA789124-09	CIB_TABLE
17	00:1	AIB	Chan 2	1	HQ	19CHDA789101-05	CIB_TABLE
18	00:1	AIB	Chan 2	2	Smith Rd	19RTNA2160	CIB_TABLE
19	00:1	AIB	Chan 2	3	Water Twr	19RTNA2161	CIB_TABLE
20	00:1	AIB	Chan 2	4	North Shore	19RTNA2162	CIB_TABLE
21	00:1	AIB	Chan 2	5	Glendale		CIB_TABLE
22	00:1	AIB	Chan 2	6	Mercy Hosp		CIB_TABLE
23	00:1	AIB	Chan 2	7	Waterworks		CIB_TABLE
24	00:1	AIB	Chan 2	8	Mt. Nebo		CIB_TABLE
25	00:1	AIB	Chan 2	9	White Bldg		CIB_TABLE
26	00:1	AIB	Chan 2	10	Sears Twr		CIB_TABLE

- Go to the Display Window.
Move the cursor to the starting position for the column of receivers.
Paste the clipboard to the screen.



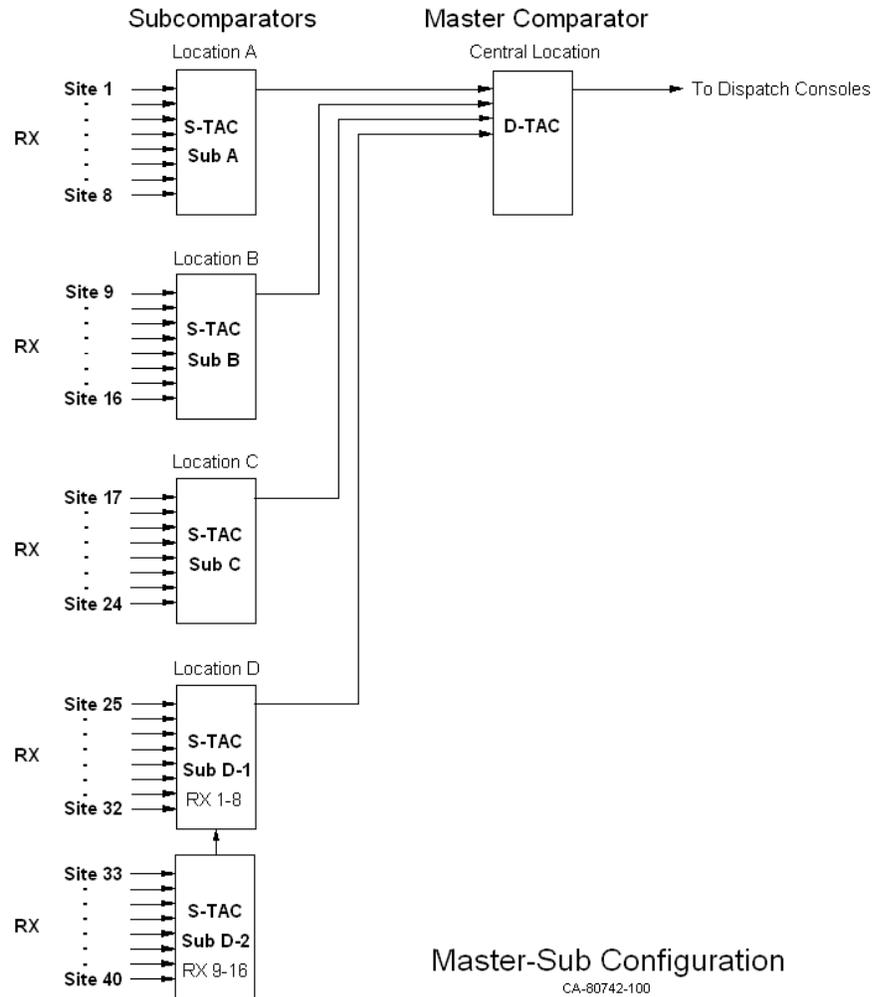
HQ	Off-Line		
Smith Rd	Off-Line		
Water Twr	Off-Line		
North Shore	Off-Line		
Glendale	Off-Line		
Mercy Hosp	Off-Line		
Waterworks	Off-Line		
Mt. Nebo	Off-Line		
White Bldg	Off-Line		
Sears Twr	Off-Line		
Arena	Off-Line		
Gvt Bldg	Off-Line		
Courthouse	Off-Line		
Airport	Off-Line		
Good Sam	Off-Line		
Univ Cntr	Off-Line		

The receivers are pasted to the Display Window in a column.

MCNConfig Program: Master-Sub Comparator Configuration

Configuration Overview

MCNRC D for Windows can handle systems in which comparators are arranged as Master Comparators and Sub Comparators. A group of comparators that are in a Master-Sub configuration can be depicted as in the following diagram.



In this case, eight receivers at Location A are fed into Sub Comparator A. Likewise, eight receivers at Location B are fed into Sub Comparator B, and additional locations may have comparators with their own receivers. The selected audio from each of these locations is fed to the Master Comparator at the Central Location. Finally, the selected audio from the Master Comparator is sent to the Dispatch Consoles. Each one of the comparator chassis would have a CIB module connected to it.

Equipment-Centric View

The following diagram shows an equipment-centric view of the system described above. It has the following:

- A display for each receiver for each Sub Comparator
- A display for the Master comparator, showing each of the Sub Comparators feeding it.

It does not use the special Master-Sub Comparator features in MCNRCD (discussed below).

Master Comparator						
Sub A	Rx					
Sub B	Rx					
Sub C	Vote					
Sub D	Rx					
Sub Comparator A	Sub Comparator B	Sub Comparator C	Sub Comparator D-1	Sub Comparator D-2		
Site 1	Site 9	Site 17 Rx	Site 25	Site 33		
Site 2 Rx	Site 10	Site 18 Vote	Site 26	Site 34		
Site 3 Rx	Site 11 Rx	Site 19 Rx	Site 27 Vote	Site 35 Dis		
Site 4 Vote	Site 12	Site 20	Site 28 Rx	Site 36		
Site 5 Rx	Site 13	Site 21 Rx	Site 29	Site 37		
Site 6 Rx	Site 14 Vote	Site 22	Site 30	Site 38		
Site 7	Site 15 Rx	Site 23 Rx	Site 31	Site 39		
Site 8 Dis	Site 16	Site 24	Site 32	Site 40		

The above display indicates:

- The Master Comparator is voting Sub Comparator C.
- There are other Vote indications on Sub A, Sub B, Sub C, and Sub D.

Each comparator is shown as an independent comparator (although they are actually physically connected in a Master-Sub configuration).

To determine which audio is being heard by a dispatcher, you would have to go through a two-stage process:

1. Determine that the Master Comparator is voting Sub Comparator C
2. Sub Comparator C is voting Site 18

In other words, there is no immediate direct indication of which site’s audio is being heard by the dispatcher. The Votes on Sites 4, 14, and 27 from Sub Comparators A, B, & D are not the signal being used by the Master Comparator at the moment, even though they have a “Vote” indication. This can be very confusing to a dispatcher

However, the equipment-centric display could be useful for a technician who is troubleshooting the system. If, for example, a Vote is stuck on a Sub Comparator, it would be readily apparent on this screen.

Virtual Comparator View

A dispatcher is not necessarily concerned with the details of master and sub comparators. They would only need to know which receiver is the one that is providing the audio. A System view or Virtual Comparator view is shown below.

Sub Comparator A	Sub Comparator B	Sub Comparator C	Sub Comparator D-1	Sub Comparator D-2
Site 1	Site 9	Site 17 Rx	Site 25	Site 33
Site 2 Rx	Site 10	Site 18 Vote	Site 26	Site 34
Site 3 Rx	Site 11 Rx	Site 19 Rx	Site 27 Rx	Site 35 Dis
Site 4 Rx	Site 12	Site 20	Site 28 Rx	Site 36
Site 5 Rx	Site 13	Site 21 Rx	Site 29	Site 37
Site 6 Rx	Site 14 Rx	Site 22	Site 30	Site 38
Site 7	Site 15 Rx	Site 23 Rx	Site 31	Site 39
Site 8 Dis	Site 16	Site 24	Site 32	Site 40

This view shows:

- A display for each receiver for each Sub Comparator
- No indication for the Master comparator
- A Virtual Comparator with 40 inputs.
- A single green "Vote" indication, showing the receiver being heard by the dispatcher.
- "Rx" indications for the receivers that are voted in the Sub Comparators but are not voted in the master.

The Virtual Comparator view uses a special Master-Sub Comparator feature of the MCNRCD software, and allows the use of a special Sub-Comparator display table. The Master-Sub feature in the MCNRCD software allows votes on sub comparators that are not being used by the Master Comparator to be modified to display "Rx" instead of "Vote". They will be modified to display "Rx" since their sub comparators are not the voted audio at the Master Comparator. In this display, there is an immediate direct indication of which site's audio (Site 18) is being heard by the dispatcher.

Enhanced Virtual Comparator View

An alternate Enhanced Virtual Comparator view is shown below:

Sub Comparator A	Sub Comparator B	Sub Comparator C	Sub Comparator D-1	Sub Comparator D-2
Site 1	Site 9	Site 17 Rx	Site 25	Site 33
Site 2 Rx	Site 10	Site 18 Vote	Site 26	Site 34
Site 3 Rx	Site 11 Rx	Site 19 Rx	Site 27 Rx V	Site 35 Dis
Site 4 Rx V	Site 12	Site 20	Site 28 Rx	Site 36
Site 5 Rx	Site 13	Site 21 Rx	Site 29	Site 37
Site 6 Rx	Site 14 Rx V	Site 22	Site 30	Site 38
Site 7	Site 15 Rx	Site 23 Rx	Site 31	Site 39
Site 8 Dis	Site 16	Site 24	Site 32	Site 40

This view:

- Is similar to the Virtual Comparator View
- Shows only one green "Vote" indication (the receiver whose audio is being used)
- Shows an "Rx V" indication for the sites that are voted in the Sub Comparators but are not voted in the master. The "Rx V" indication is shown in gray, so as not to be confused with the green "Vote" indication.

This provides a bit more information than the standard Virtual Comparator view. It also provides feedback to the user when he tries to Force-Vote a receiver. He will get an indication that the CIB received his command (by the "Rx V" status) even if the master comparator does not vote the receiver's Sub Comparator.

The Virtual Comparator and Enhanced Virtual Comparator views can be implemented with standard Display Tables that are shipped with the Master-Sub Comparator option. You may modify those display tables or create your own display tables to suit your system's needs.

Implementing the Virtual Comparators

To implement either of the above “Virtual Comparator” displays, the following steps should be taken:

1. **Enable Master-Sub features** of the MCNRCD for Windows software.
2. **Setup the Network Interface, Channels, Hardware, and Receivers windows** as instructed earlier in this manual
3. **Assign Display Tables** for the Master and Sub Comparator receivers and **Define the SubDevices** for each channel of a Master Comparator.
4. **Design the Display Window** for the Virtual Comparator.

Optionally, if you want to customize the Master or Sub-Comparator display tables:

5. **Customizing Display Tables** for Master and Sub Comparators.

Each of these steps will be explained in detail in the following sections.

1. Enable Master-Sub features

From the **View** menu, click on *Enable Sub-Comparators* to display a “check mark” next to this menu item as shown below. This provides access to Master-Sub features of the MCNRCD for Windows software.



2. Setup Network Interface, Channels, Hardware and Receiver windows

The Network Interface, Channels and Hardware windows for this example system should look like the following. The generation of these tables has been explained in previous sections of this manual, and will not be discussed in detail here.

Index	Name	Type	Address	Group	Module
1	PCLTA	Non-IP	MCN1	NA	NA

Index	Channel	Email Group
1	Central Master	None
2	North	None
3	East	None
4	South	None
5	West	None

Index	NI	Group	Module	Type	Banks	Location	Name	Channel
1	PCLTA / MCN1	00	0	CIB	1	Central	Master	Central Master
2	PCLTA / MCN1	10	0	CIB	1	North	Sub A	North
3	PCLTA / MCN1	20	0	CIB	1	East	Sub B	East
4	PCLTA / MCN1	30	0	CIB	1	South	Sub C	South
5	PCLTA / MCN1	40	0	CIB	1	West	Sub D-1	West
6	PCLTA / MCN1	40	1	CIB	1	West	Sub D-2	West

The Receivers window will be discussed in the next section.

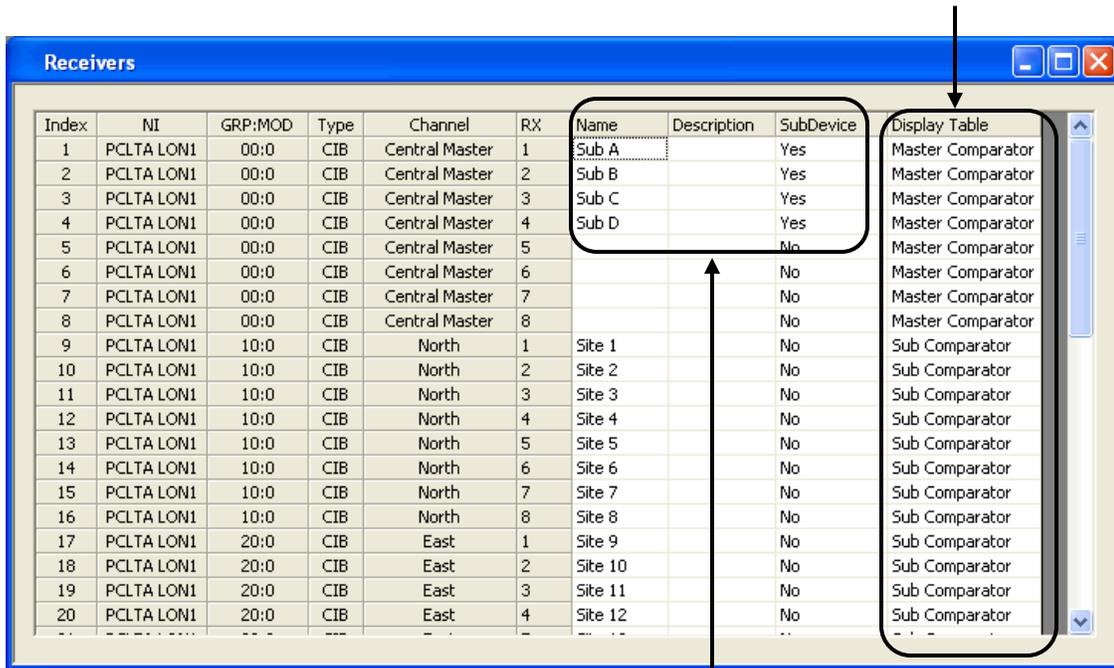
3. Assign Display Tables and Define the SubDevices

A. Assign Display Tables

In the “Receivers” window, double-click in the Display Table column and select the proper Display in the cell for each receiver as illustrated by the following Table Entry.

Receivers	Display Table
Master Comparator	"Master Comparator"
Sub Comparator	"Sub Comparator" (for Virtual Comparator) "Sub Comparator Enhanced" (for Enhanced Virtual Comparator)

3 A: Assign Display Tables for Master & Subs



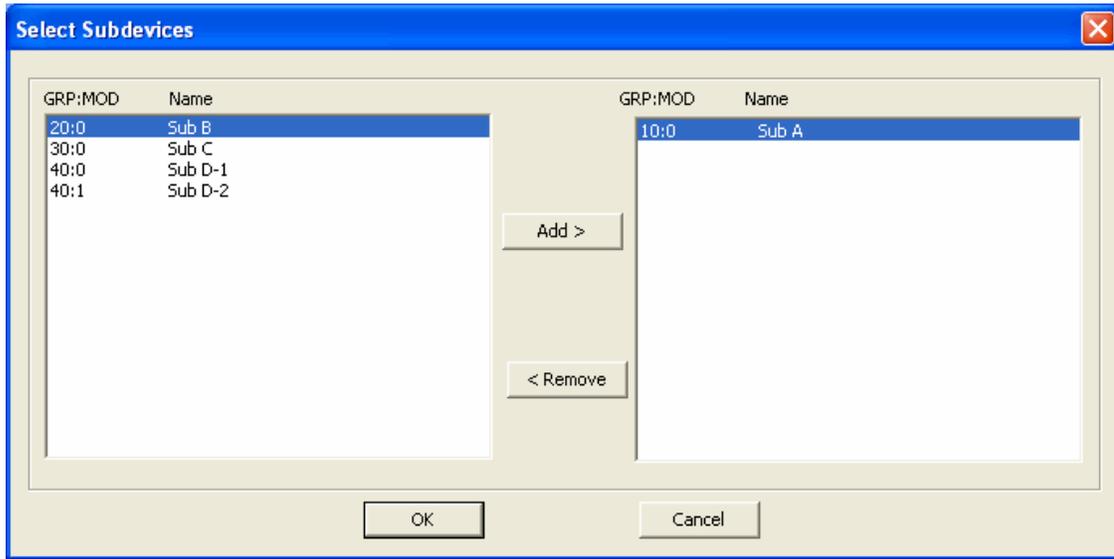
3 B: Define SubDevices for each receiver in Master comparator

B. Assign Sub Devices for each receiver in the Master Comparator

In the “Receivers” window, a “SubDevice” column will be displayed as shown below (only with Master-Sub features enabled as indicated above).

1. For each receiver of a Master Comparator, double-click its cell in the “SubDevice” column to display the following “Select SubDevices” window.
2. From the list of available SubDevices on the left side, “Add” the appropriate receivers to the right side of this window.

For the first Master Comparator receiver that is fed from Sub Comparator A, the “Select SubDevices” window should look like the following.

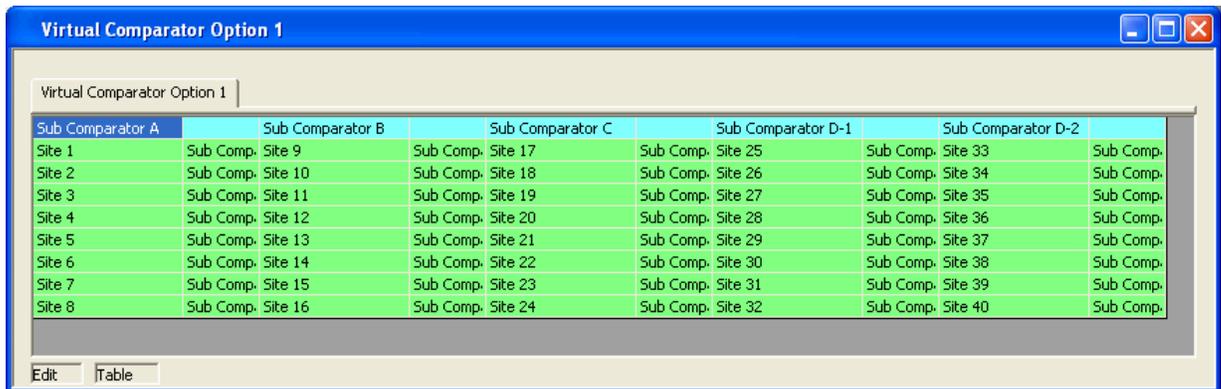


Click the **OK** button to close this window.

Notice that the cell in the “SubDevice” column of the “Receivers” window for this receiver is now set to “Yes”.

4. Design the Display Window for the Virtual Comparator

As shown in the following Display Window, all 40 site receivers of the Sub Comparators are included in the display. Note that the Master Comparator is not shown in this Virtual Comparator view.



5. Customizing Display Tables

In the “Display Table” window, several types of devices have been predefined, including Comparator, Generator, Door, and others. Each device type has its own tab across the top of this window. The Master-Sub Comparator Option adds the following Display Tables:

- Master Comparator
- Sub Comparator
- Sub Comparator Enhanced

If these display tables suit your application, you can skip this section. If you need to modify them, read on.

Sub Comparator Display Table

The Sub Comparator display table **States** tab is shown below:

Index	Master	Steer	Rx	Dis	Vote	Fail	State	Sound	Email	Log
1	-	-	-	-	-	-	Error		N	Y
2	-	-	0	0	0	0			N	N
3	-	-	-	1	0	-	Disable		N	Y
4	-	-	-	0	-	1	Fail		N	Y
5	0	-	1	0	-	0	Rx		N	N
6	1	-	-	0	1	0	Vote		N	N

This Sub Comparator **States** table has several basic differences from the basic Comparator display table:

- The Steer bit is a Don't Care (we're not using Transmitter Steering in this system)
- An additional Master (Master Vote) bit has been added (leftmost bit).
- The Vote state requires the Master bit (Master Vote) bit to be set (State 6)
- If the Rx bit is set and the Master (Master Vote) bit is not set, the display will show "Rx", even if the Vote bit (Sub Comparator Vote) is set (State 5)

The Master (Master Vote) bit is inherited from the Master comparator. It is only set when the Sub Comparator is voted in the Master Comparator.

Master Comparator Display Table

States Tab

The Master Comparator display table **States** tab is shown below:

Index	Steer	Rx	Dis	Vote	Fail	State	Sound	Email	Log
1	-	-	-	-	-	Error		Y	Y
2	-	0	0	0	0			N	N
3	-	-	1	0	-	Disable		Y	Y
4	-	-	0	-	1	Fail		Y	Y
5	-	1	0	-	0	Rx		N	N
6	-	-	0	1	0	Vote		N	N

This Master Comparator **States** table has a basic difference from the basic Comparator display table:

- The Steer bit is a Don't Care (we're not using Transmitter Steering in this system)

SubDevice Tab

The **SubDevice** tab has been added in the Master-Sub Comparator option. The Master Comparator display table **SubDevice** tab is shown below:

Index	Nudge	Steer	Rx	Dis	Vote	Fail
1	5	0	0	0	1	0

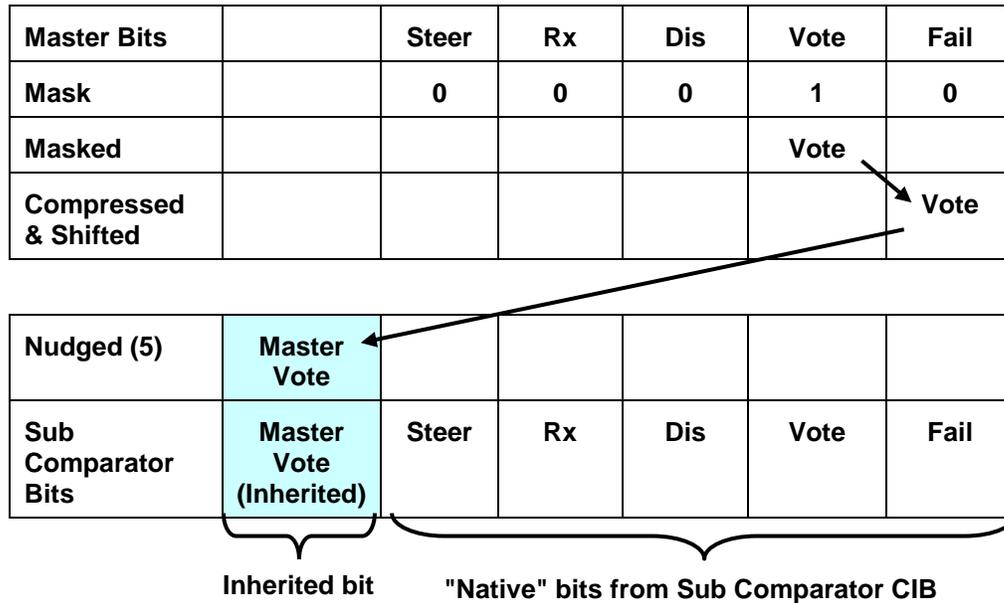
The **SubDevice** tab for the Master Comparator has the following items that are used to pass the Master Vote down to the Sub Comparator:

- Bit Mask for the Vote bit is a 1. This is the bit that will be passed on to the Sub Comparator devices.
- The Nudge field is set to 5. This tells the program how far to move the inherited bit(s) in the SubDevice. This number will depend on the SubDevice.

Bit Mask and Nudge Fields

The Bit Mask fields indicate which bit(s) is (are) used to pass to the SubDevice.

In general, the "Nudge" field should be the number of native bits in the destination SubDevice Table. (If there are Multi-dependencies – multiple Master Comparators for each Sub Comparator – you will need to specify special nudge values.)



The best way to understand how to set the Bit Mask and Nudge fields is to consider how the MCNRCD program processes the bits from the Master comparator as shown above:

1. The program masks out all bits that have a "0" in the mask field. It passes only those bits that have a "1" in the Bit Mask field (Vote in this case)
2. All the bits with a "1" in the bit mask field are compressed and shifted to the right to fill the Least Significant Bits (right hand bits). In the above example, there is no compression going on – only shifting. The compression comes in when there are multiple non-contiguous mask bits set to "1". In that case, the program compresses the bit field by deleting all the unused bits. This is shown in the **Multi-Bit Mask** section on the next page.
3. The Compressed & Shifted Bits will be nudged to the left by the number specified in the "Nudge" field (5 in this case).
4. The Nudged bit will be passed to all the receivers in the Sub Comparators.
5. The resultant bits (the inherited bit plus the "native" Sub Comparator bits) will be used in the Sub Comparator Display Table to determine the status to display.

Multi-Bit Mask

There may be times in which you need multiple bits from a master device to be passed to a sub device. The following table illustrates how to do this.

If, for example, you wanted to pass the "Rx" and the "Vote" bits from the Master comparator to the Sub Comparator, you would set the mask as shown:

Master Bits			Steer	Rx	Dis	Vote	Fail
Mask			0	1	0	1	0
Masked				Rx		Vote	
Compressed & Shifted						Rx	Vote
Nudged (5)	Master Rx	Master Vote					
Sub Comparator Bits	Master Rx	Master Vote	Steer	Rx	Dis	Vote	Fail

Inherited bits
"Native" bits from Sub Comparator CIB

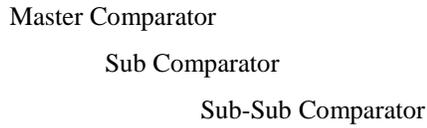
For Multi-Bit Master-Sub Comparator, the MCNRCD program processes the bits from the Master comparator as shown above:

1. Both the "Rx" and "Vote" bits have a "1" bit set.
2. The "Rx" & "Vote" bits are compressed (unused bits are deleted) and shifted to the right to fill the Least Significant Bits (right hand bits)
3. The Compressed & Shifted Bits will be nudged to the left by the number specified in the "Nudge" field. (5 in this case)
4. The Nudged bits are passed to all the receivers in the Sub Comparators.

(Note that this is just an example of what could be done with multiple bits to show how multiple bits are handled.)

Multi-Level Inheritance – Sub-Sub Comparators

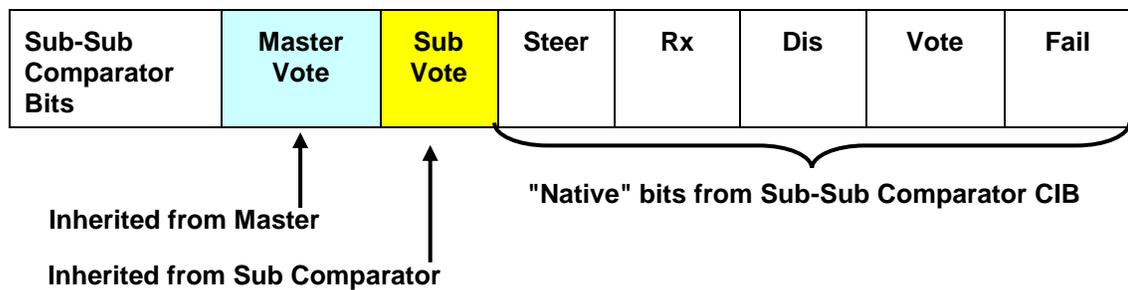
The Master – Sub Comparator feature allows you to pass bits down from a master device to a sub device as shown above. You can create multi-level systems as shown below:



You can only pass down native bits, not inherited bits. In the example above:

- The Sub Comparator could pass its own Vote bit down to the Sub-Sub Comparator.
- It could not pass down the Master Vote bit that it inherited from the Master Comparator.

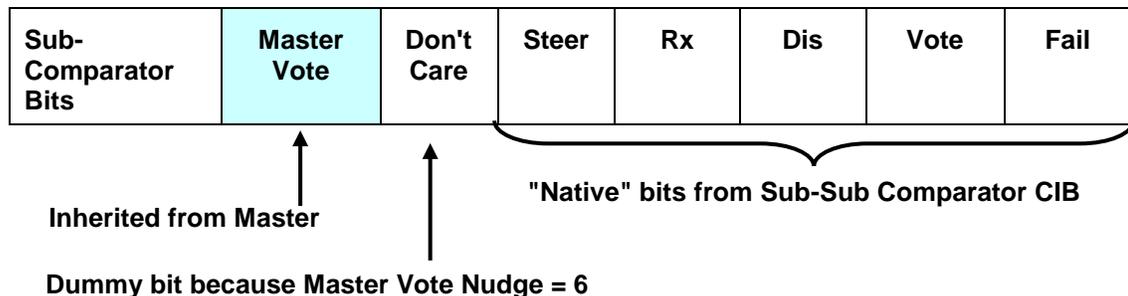
You might need a Master Vote and Sub Vote bit in the Sub-Sub Comparator as shown below:



To accomplish this, set up the following parameters:

- Master Vote Bit Nudge = 6
- Master Comparator Sub Devices: Sub Comparator & Sub-Sub Comparator (This passes the Master Vote bit directly down to both sub-levels)
- Sub Comparator Vote Bit Nudge = 5
- Sub Comparator Sub Device: Sub-Sub Comparator (This passes the Sub Vote bit down.)

Since the Master Vote bit is nudged 6 bits, it will be nudged the same amount in each of its SubDevices. Thus, the bits for the Sub Comparator Display Table for this example should be set up as follows:



When you fill out the States in this table, just make the Don't Care bit a "-" in all states.

*In this example, we were able to pass the Master Vote bit down two levels, but it was not passed through the Sub Comparator. It was passed **directly** from the Master comparator to the Sub Comparator.*

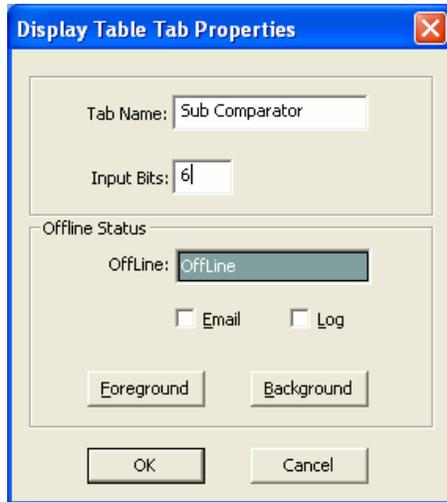
Creating New Display Tables for Master and Sub Comparators

This section shows how to add new display tables for Master or Sub Comparators. It assumes that you are familiar with the Master and Sub device bit interaction as described in the previous section.

Sub Comparator Display Table

To add a tab for a new device to properly display the four Sub Comparators in our “Virtual Comparator” example system from Page 95,

- Right-click on one of the existing tabs at the top of the Display Table window
- Click on *Append New Table*. The following window will be displayed.



- Type in a new **Tab Name** such as “Sub Comparator”.
- Select the number of status **Input Bits** that this new device will possess.

In addition to the 5 Input Bits of the predefined Comparator device, we will use an additional status bit to hold the Vote bit that will be inherited from the Master Comparator. So in this case, the number of **Input Bits** should be set to 6.

- Click on **OK** to close this window. A new blank display table will be entered with 6 bits.

States Tab

- Right-click anywhere on the States Table for this new “Sub Comparator” device, then click on *Append* to add lines for additional states.
- Modify each state line in the States Table to satisfy the display requirements for this system’s “Virtual Comparator. As shown in the following, a bright Green “Vote” will be displayed only when the Sub Comparator has voted (the Vote bit is set) and the Master Comparator has voted (the Master bit is set).

For our example of four Sub Comparators feeding into a Master Comparator, the **States** tab for a new “Sub Comparator” device may look like the following.

Index	Master	Steer	Rx	Dis	Vote	Fail	State	Sound	Email	Log
1	-	-	-	-	-	-	Error		N	Y
2	-	-	0	0	0	0			N	N
3	-	-	-	1	0	-	Disable		N	Y
4	-	-	-	0	-	1	Fail		N	Y
5	0	-	1	0	-	0	Rx		N	N
6	1	-	-	0	1	0	Vote		N	N

Mouse Tab

Next, the **Mouse** tab for this “Sub Comparator” display table should be modified to appear as follows.

Index	Button	Type	Master	Steer	Rx	Dis	Vote	Fail
1	Left Down	Set	-	-	-	-	1	-
2	Left Up	Set	-	-	-	-	0	-
3	Right Down	Toggle	-	-	-	1	-	-
4	Right Up	Unused	-	-	-	-	-	-

SubDevice Tab

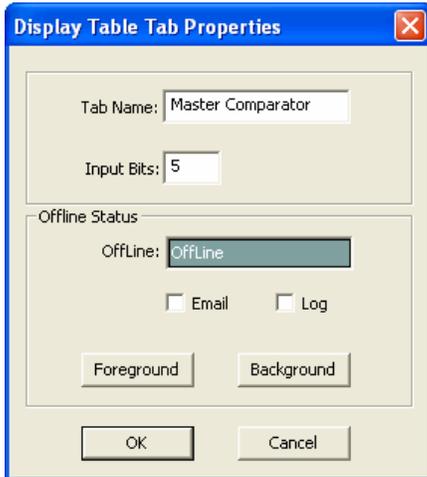
The Sub Comparator display table should have all bits set to "0" since we are not passing bits down from the Sub Comparator to a lower level device.

Index	Nudge	Master	Steer	Rx	Dis	Vote	Fail
1	0	0	0	0	0	0	0

Master Comparator Display Table

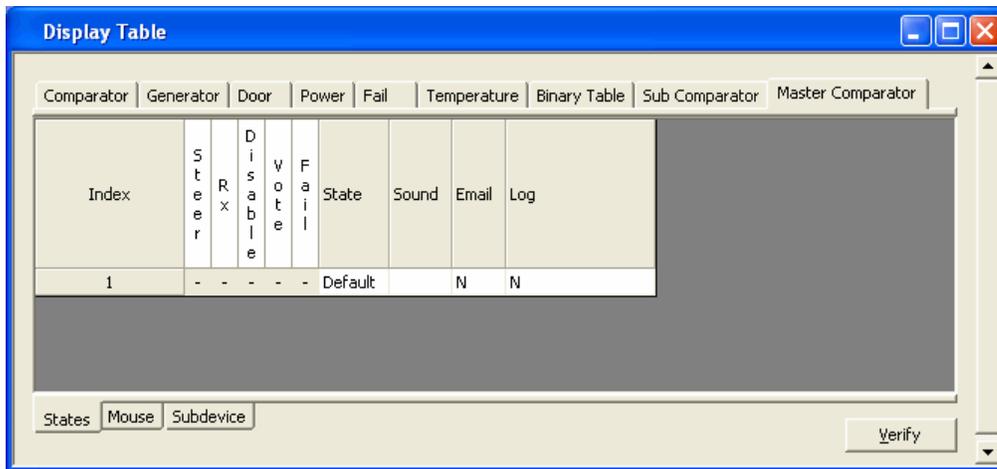
To add a tab for a new device to properly handle information from the Master Comparator in our example system, right-click on one of the existing tabs, then click on **Append New Table**. The following window will be displayed. Type in a new **Tab Name**, such as “Master Comparator”.

Then select the number of status **Input Bits** that this new device will possess. This Master Comparator display table will have nearly the same function as the predefined “Comparator” Display Table, so in this case, the number of **Input Bits** should be set to 5. Click on **OK** to close this window.



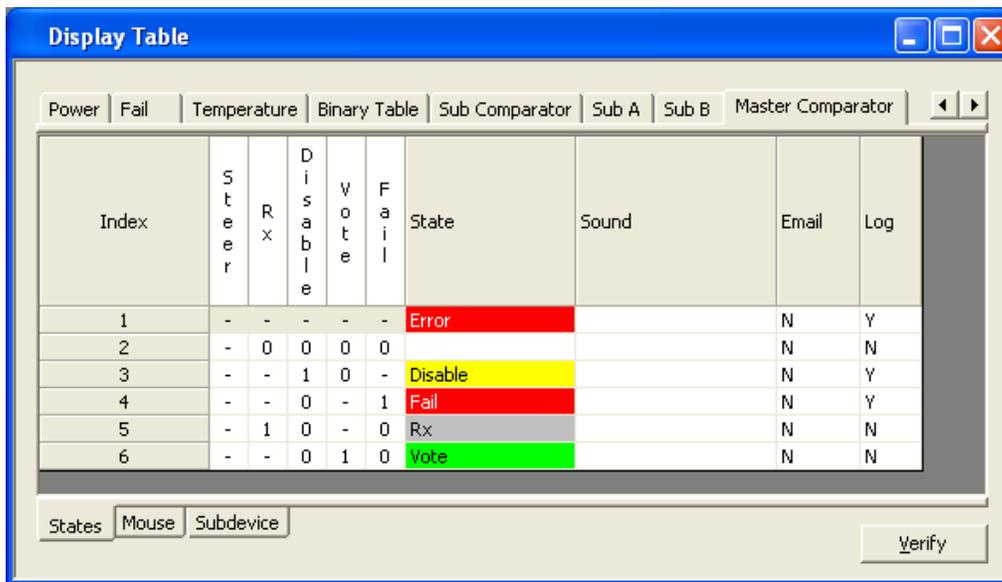
States Tab

After the table is shown, we have to add the bit names as shown below. Note that the bit order is not random; it must match the bits as they are received from the CIB modules.



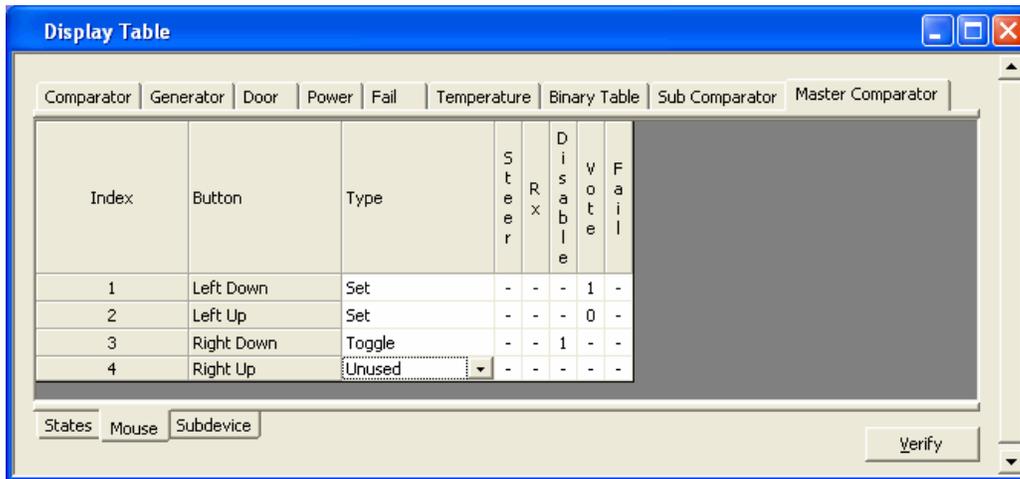
If the Master Comparators will never be displayed in an Equipment-Centric view, we could live with a minimalistic state table as shown above. No additional lines would need to be added to define states,

However, we've filled out the Master Comparator table as shown below so that a Master Comparator can be displayed in an equipment-centric view.



Mouse Tab

Next, the **Mouse** tab for this “Master Comparator” display table should be modified to appear as follows.



SubDevice Tab

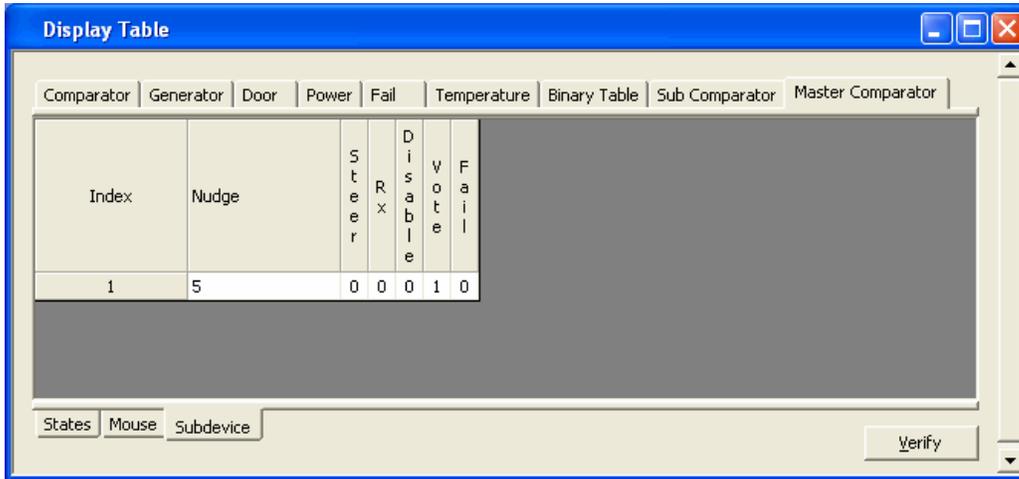
Finally, the **SubDevice** tab for this “Master Comparator” display table must be altered to correctly pass its “Vote” bit to the Sub Comparator display table created earlier. Since the “Vote” of the Master Comparator must be passed to properly display status of the “Virtual Comparator”, that bit should be masked by setting it to “1” as in the following window.

Before the Master Comparator status information is sent to the Sub Comparator status information for proper display of a “Virtual Comparator”, this Master Comparator data is altered in two ways.

- First, the data for any single status bit that is masked in the “SubDevice” tab will be promoted to the least significant (right-most) bit of the status word.
- Second, the data in that least significant bit (Bit 0) will be “Nudged” a number of places to the left (specified in the “Nudge” column) so that it appears in the correct bit location for the Sub Comparator status.

MCNConfig Program: Master-Sub Comparator Configuration

For this example, the **States** tab for the “Sub Comparator” was modified earlier to specify that Bit 5 will hold the “Vote” status from the Master Comparator. So the bit must be “Nudged” from Bit 0 to Bit 5. Since the Bit is being nudged 5 places to the left, the “Nudge” parameter in the following display is set to 5.

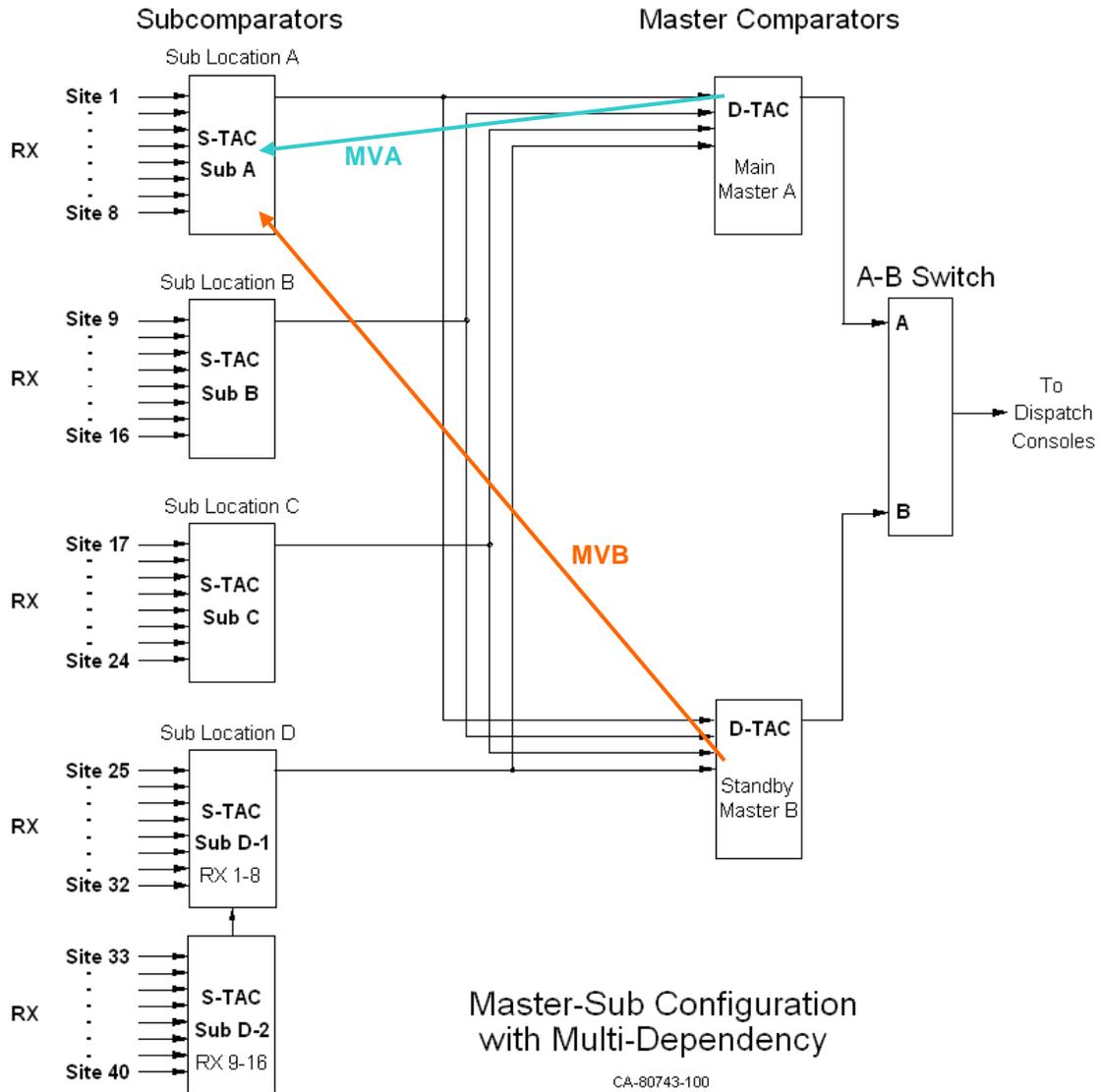


The screenshot shows a window titled "Display Table" with a tabbed interface. The "Sub Comparator" tab is selected. A table displays configuration parameters for the Sub Comparator. The table has columns for Index, Nudge, Stere, R, x, D, i, s, a, b, l, e, V, o, t, e, and F, a, i, l. The first row shows Index 1, Nudge 5, Stere 0, R 0, x 0, D, i, s, a, b, l, e 0, V, o, t, e 1, and F, a, i, l 0. Below the table are tabs for States, Mouse, and Subdevice, and a Verify button.

Index	Nudge	S t e r	R	x	D i s a b l e	V o t e	F a i l
1	5	0	0	0	0	1	0

MCNConfig Program: Master-Sub Comparator Configuration with Multi-Dependency

The features described in the previous “Master-Sub Comparator Configuration” section can be used in a more complex arrangement which adds “Multi-Dependency”. Multi-Dependency can be defined as the ability of a Sub Comparator to inherit status bits from multiple Master Comparators. This arrangement provides a level of redundancy and is depicted in the following diagram.



With multiple masters as in this example, Sub Comparator status bits will be inherited from both Master Comparators. The above diagram illustrates this for the first Sub Comparator with Master Vote A (MVA) and Master Vote B (MVB) vectors. Likewise, the other Sub Comparators in this system will also inherit status bits from both Master Comparators.

MCNConfig Program: Master-Sub Comparator Configuration

Multidependency will let you display this system as two virtual comparators:

- Virtual Comparator A using the Sub Comparators and Master A and
- Virtual Comparator B using the Sub Comparators and Master B.

The previous discussion under the section *Multi-Bit Mask* on page 104 will be used to build the Display Tables for this system.

First we need to get the Vote bits from Master A and Master B passed down to the Sub Comparators. The diagram below shows that the Master Vote bit will be masked and passed to the SubDevice. The Master A Vote will be nudged 5 bits, and the Master B Vote will be nudged 6 bits.

Master Comparator B

Master B Bits			Steer	Rx	Dis	Vote	Fail
Mask			0	0	0	1	0
Masked						Vote	
Compressed & Shifted							Vote

Master Comparator A

Master A Bits			Steer	Rx	Dis	Vote	Fail
Mask			0	0	0	1	0
Masked						Vote	
Compressed & Shifted							Vote

Sub Comparators

Master A Nudged (5) Master B Nudged (6)	Master B Vote	Master A Vote					
Sub Comparator Bits	Master B Vote (Inherited)	Master A Vote (Inherited)	Steer	Rx	Dis	Vote	Fail



To accomplish the above, set up the following parameters:

- Sub Comparator Display Table(s) with slots for Master Vote A & B
- Master A Display Table with Vote Bit Nudge = 5
- Master B Display Table with Vote Bit Nudge = 6
- Master A Comparator Receiver slot Sub Devices: Sub Comparators
- Master B Comparator Receiver slot Sub Devices: Sub Comparators

Composite Sub Comparator Display Table

A Composite Sub Comparator display table can be built as shown below:

Index	MVB	MVA	Steer	Rx	Dis	Vote	Fail	State	Sound	Email	Log
1	-	-	-	-	-	-	-	Err		N	Y
2	-	-	-	0	0	0	0			N	N
3	-	-	-	-	1	0	-	Disable		N	Y
4	-	-	-	-	0	-	1	Fail		N	Y
5	-	-	-	1	0	-	0	Rx		N	N
6	0	0	-	1	0	1	0	Rx V		N	N
7	-	-	-	0	0	1	0	Sub Force Vote		N	N
8	0	1	-	-	0	1	0	Vote A		N	N
9	1	0	-	-	0	1	0	Vote B		N	N
10	1	1	-	-	0	1	0	Vote A B		N	N

This can be used for somewhat of an equipment-centric view, but with added information about whether or not this sub comparator is also voted by the master comparator(s). This display might be useful for a technician.

Multiple Views of the Virtual Comparators

For a dispatcher, it is helpful to be able to display the example system as two virtual comparators:

- Virtual Comparator A using the sub comparators and Master A and
- Virtual Comparator B using the sub comparators and Master B.

To do this, we need a Sub Comparator Display Table for both virtual comparators as shown below:

For Virtual Comparator A:

Index	MVB	MVA	Steer	Rx	Dis	Vote	Fail	State	Sound	Email	Log
1	-	-	-	-	-	-	-	Err		N	Y
2	-	-	0	0	0	0	0			N	N
3	-	-	-	1	0	-	-	Disable		N	Y
4	-	-	-	0	-	1	-	Fail		N	Y
5	-	-	1	0	0	-	0	Rx		N	N
6	-	-	0	0	1	0	0	Sub Force Vote		N	N
7	-	1	-	-	0	1	0	Vote		N	N

For this view, the dispatcher is interested only in what receiver is being used through the Master A comparator. This Display table shows a "Vote" only when the Master A comparator has selected the sub comparator. It ignores what the Master B comparator is doing.

For Virtual Comparator B:

Index	MVB	MVA	Steer	Rx	Dis	Vote	Fail	State	Sound	Email	Log
1	-	-	-	-	-	-	-	Err		N	Y
2	-	-	0	0	0	0	0			N	N
3	-	-	-	1	0	-	-	Disable		N	Y
4	-	-	-	0	-	1	-	Fail		N	Y
5	-	-	1	0	0	-	0	Rx		N	N
6	-	-	0	0	1	0	0	Sub Force Vote		N	N
7	1	-	-	-	0	1	0	Vote		N	N

For this view, the dispatcher is interested only in what receiver is being used through the Master B comparator. This Display table shows a "Vote" only when the Master B comparator has selected the sub comparator. It ignores what the Master A comparator is doing.

Master Comparators

For the Master A Comparator, the SubDevices Tab of the Display Table should appear as in the following.

Index	Nudge	S t e r	R x	D i s	V o t e	F a i l
1	5	0	0	0	0	0

And for the Master B Comparator, the SubDevices tab of the Display Table should appear as in the following.

Index	Nudge	S t e r	R x	D i s	V o t e	F a i l
1	6	0	0	0	0	0

Multiple Views: Display Table Override

So we may have a number of Display Tables set up to view a master or sub comparator, for example:

- Equipment-Centric
- Virtual Comparator
- Enhanced Virtual Comparator
- Composite Sub Comparator
- Sub A
- Sub B

Looking at the Receiver window below, you'll see only one value for Display Table for each receiver.

Index	NI	GRP:MOD	Type	Channel	RX	Name	Description	SubDevice	Display Table
1	LTA LOI	00:0	CIB	entral Maste	1	Sub A		Yes	Master Comparator
2	LTA LOI	00:0	CIB	entral Maste	2	Sub B		Yes	Master Comparator
3	LTA LOI	00:0	CIB	entral Maste	3	Sub C		Yes	Master Comparator
4	LTA LOI	00:0	CIB	entral Maste	4	Sub D		Yes	Master Comparator
5	LTA LOI	00:0	CIB	entral Maste	5			No	Master Comparator
6	LTA LOI	00:0	CIB	entral Maste	6			No	Master Comparator
7	LTA LOI	00:0	CIB	entral Maste	7			No	Master Comparator
8	LTA LOI	00:0	CIB	entral Maste	8			No	Master Comparator
9	LTA LOI	10:0	CIB	North	1	Site 1		No	Sub Comparator
10	LTA LOI	10:0	CIB	North	2	Site 2		No	Sub Comparator
11	LTA LOI	10:0	CIB	North	3	Site 3		No	Sub Comparator
12	LTA LOI	10:0	CIB	North	4	Site 4		No	Sub Comparator
13	LTA LOI	10:0	CIB	North	5	Site 5		No	Sub Comparator
14	LTA LOI	10:0	CIB	North	6	Site 6		No	Sub Comparator
15	LTA LOI	10:0	CIB	North	7	Site 7		No	Sub Comparator

How do we use all these different Display Tables to take a different view of the comparators?

The secret is to use the **Display Table Override** in the **Display Windows**.

When a receiver is placed in a Display Window, you can use a special Display Table *for that instance* of the receiver by using the Display Table Override.

MCNConfig Program: Master-Sub Comparator Configuration

For example, if you want to display a system in two ways:

- Virtual Comparator A (using Master A comparator)
- Virtual Comparator B (using Master B comparator)

You would set up a one tab for each Virtual Comparator as shown below:

Virtual Comparator A

Sub Comparator A	Sub Comparator B	Sub Comparator C	Sub Comparator D-1	Sub Comparator D-2
Site 1	Site 9	Site 17 Rx	Site 25	Site 33
Site 2 Rx	Site 10	Site 18 Vote	Site 26	Site 34
Site 3 Rx	Site 11 Rx	Site 19 Rx	Site 27 Rx	Site 35 Dis
Site 4 Rx	Site 12	Site 20	Site 28 Rx	Site 36
Site 5 Rx	Site 13	Site 21 Rx	Site 29	Site 37
Site 6 Rx	Site 14 Rx	Site 22	Site 30	Site 38
Site 7	Site 15 Rx	Site 23 Rx	Site 31	Site 39
Site 8 Dis	Site 16	Site 24	Site 32	Site 40

Virtual Comparator B

Sub Comparator A	Sub Comparator B	Sub Comparator C	Sub Comparator D-1	Sub Comparator D-2
Site 1	Site 9	Site 17 Rx	Site 25	Site 33
Site 2 Rx	Site 10	Site 18 Rx	Site 26	Site 34
Site 3 Rx	Site 11 Rx	Site 19 Rx	Site 27 Rx	Site 35 Dis
Site 4 Vote	Site 12	Site 20	Site 28 Rx	Site 36
Site 5 Rx	Site 13	Site 21 Rx	Site 29	Site 37
Site 6 Rx	Site 14 Rx	Site 22	Site 30	Site 38
Site 7	Site 15 Rx	Site 23 Rx	Site 31	Site 39
Site 8 Dis	Site 16	Site 24	Site 32	Site 40

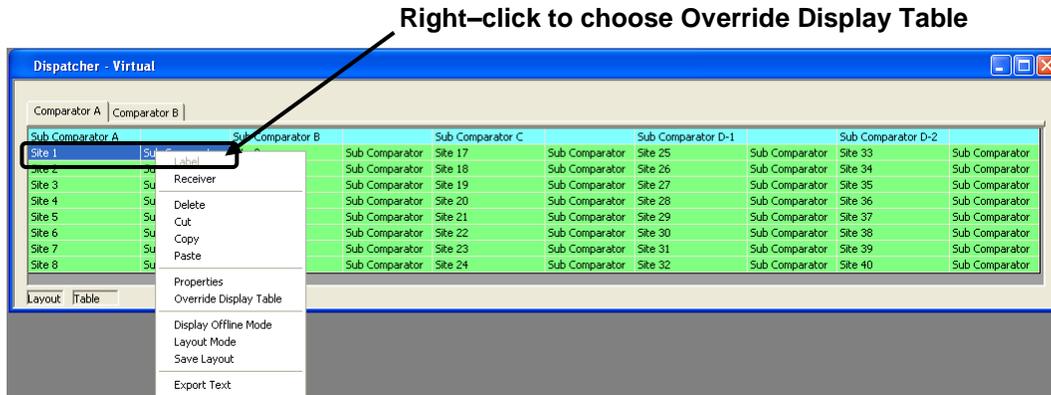
The Display Windows are similar, with the following differences:

- Master Comparator A is voting Sub Comparator C and using Rx 18.
- Master Comparator B is voting Sub Comparator A and using Rx 4.

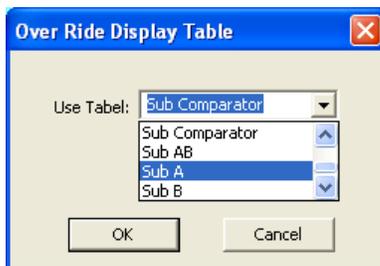
If the Dispatcher had the A-B switch in position "A", he would hear audio from Rx 18. If he had it in the "B" position, he would be hearing Rx 4.

MCNConfig Program: Master-Sub Comparator Configuration

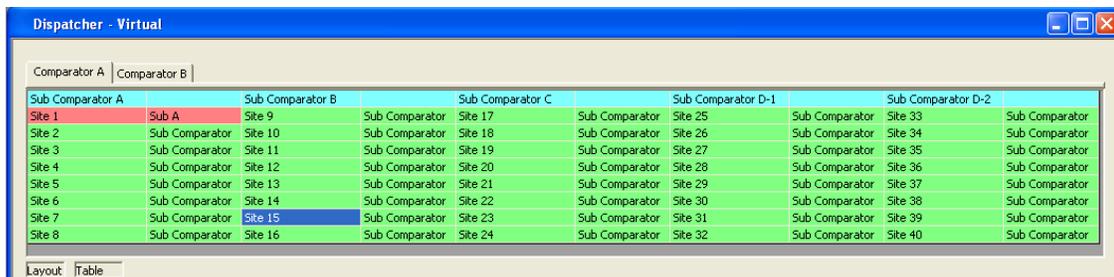
To build this display we use the Display Table Override feature. For each receiver in a Display Window that will use a different Display Table than chosen in the Receivers Window, right-click its cell in the Display Window as shown below.



Then click the **Override Display Table** menu item to display the following window.



Choose **Sub A**, and then click **OK**. The Display Window will indicate receivers with Display Table Overrides with a Reddish background as shown below. The cells for other receivers using their default Display Table will have a green background.



Repeat this procedure for each receiver that should have an override for the default Display Table.

The Display Table for all receivers of a comparator can be overridden. And taking it a step further, the Display Table for all receivers in a Display Window can be overridden. To make Display Table Overrides to many receivers at once, perform the following steps:

- Select all receivers that you wish to override with a type of Display Table.
- Right-click the selection, then click the **Override Display Table** menu item to display the Override Display Table window.
- Select the proper Display Table from the list, then click **OK**.

MCNConfig Program: Master-Sub Comparator Configuration

If all receivers in the above Display Window were selected to be overridden with Sub A Display Table, the Display Window would appear as follows.

Sub Comparator A	Sub Comparator B	Sub Comparator C	Sub Comparator D-1	Sub Comparator D-2			
Site 1	Sub A	Site 9	Sub A	Site 25	Sub A	Site 33	Sub A
Site 2	Sub A	Site 10	Sub A	Site 26	Sub A	Site 34	Sub A
Site 3	Sub A	Site 11	Sub A	Site 27	Sub A	Site 35	Sub A
Site 4	Sub A	Site 12	Sub A	Site 28	Sub A	Site 36	Sub A
Site 5	Sub A	Site 13	Sub A	Site 29	Sub A	Site 37	Sub A
Site 6	Sub A	Site 14	Sub A	Site 30	Sub A	Site 38	Sub A
Site 7	Sub A	Site 15	Sub A	Site 31	Sub A	Site 39	Sub A
Site 8	Sub A	Site 16	Sub A	Site 32	Sub A	Site 40	Sub A

Likewise, for Comparator B, the result would look like:

Sub Comparator A	Sub Comparator B	Sub Comparator C	Sub Comparator D-1	Sub Comparator D-2			
Site 1	Sub B	Site 9	Sub B	Site 25	Sub B	Site 33	Sub B
Site 2	Sub B	Site 10	Sub B	Site 26	Sub B	Site 34	Sub B
Site 3	Sub B	Site 11	Sub B	Site 27	Sub B	Site 35	Sub B
Site 4	Sub B	Site 12	Sub B	Site 28	Sub B	Site 36	Sub B
Site 5	Sub B	Site 13	Sub B	Site 29	Sub B	Site 37	Sub B
Site 6	Sub B	Site 14	Sub B	Site 30	Sub B	Site 38	Sub B
Site 7	Sub B	Site 15	Sub B	Site 31	Sub B	Site 39	Sub B
Site 8	Sub B	Site 16	Sub B	Site 32	Sub B	Site 40	Sub B

Note that in this system, the default Display table for these sub comparators was "Subcomparator". We would probably use the default for an equipment-centric view. For this dispatcher display, however, both views use Display Table Overrides.



Note: Default Display Tables

The MCNRCD program passes bits downstream from a Master device to sub devices using the Display table that is in the Receiver window. You must use the proper Display Table (the one with the Sub Device Bit Mask & Nudge) as the default Display Table in the Receiver window

McN Standard Program

This is the software run on the McN Standard PC. It has a local display that displays the status of the devices on the MCN system (Comparators, I/O points, alarms, etc.). It allows the operator to control receivers (with Force-Vote and Disable functions) and other I/O devices (relays, etc.) from the McN Standard PC.

The McN Standard program *does not* support any remote Clients.



Warning: Do not run the DOS version of MCNRCD and the McN Standard program at the same time on the same Network Interface!

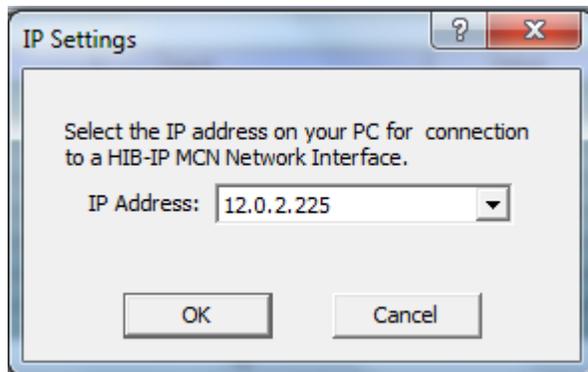
This will cause sluggish operation. You may notice modules going off-line, responding very slowly, or even not responding at all to mouse presses.

First Time Setup

The McN Standard program needs to set up a number of parameters before it can function. When you run the software for the first time, it will ask you to enter some values.

Selecting an Ethernet NIC to talk to the HIB-IP units

Next, the program needs to know which Ethernet NIC card will be used to talk to the HIB-IP units. The IP Settings window appears and asks you to select an IP address (associated with a NIC card in your PC) that you will use to talk to the HIB-IP units.



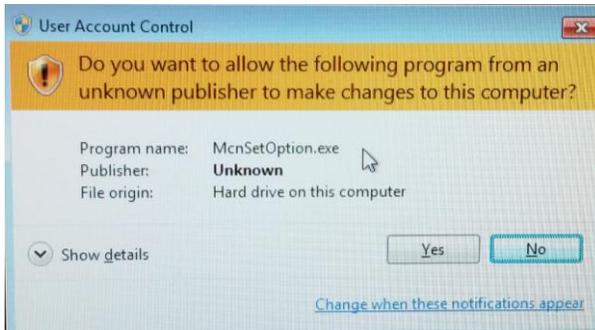
Select an IP address and NIC card using the drop-down list. There will be an entry for each combination of IP addresses and NIC cards in your PC. Typically you will have only one NIC card, so you will probably have only one entry.



The program will ask for this information even if you don't have any HIB-IP units in your system. Humor the program and select an IP address and NIC card anyway.

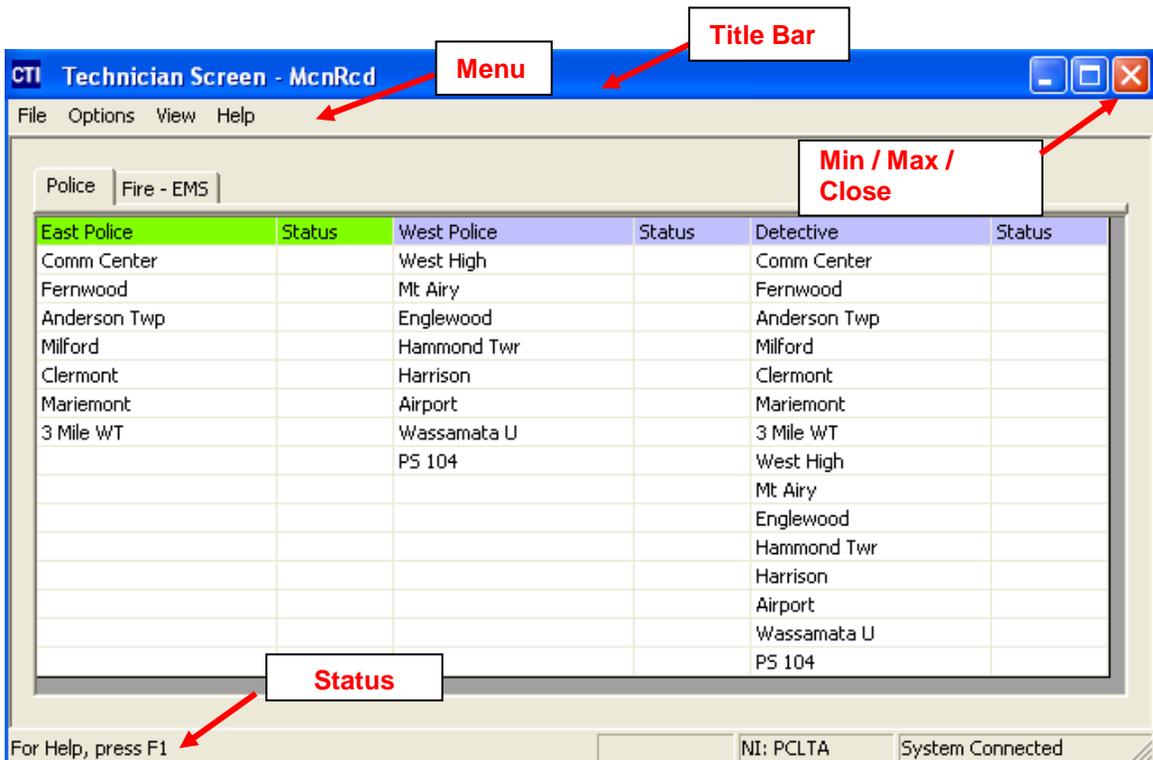
Windows UAC Permission

The Mcn Standard application needs permission to make changes. If you have the UAC enabled, you will need to give the Mcn Standard program access.



Select the **Yes** option.

Screen Elements



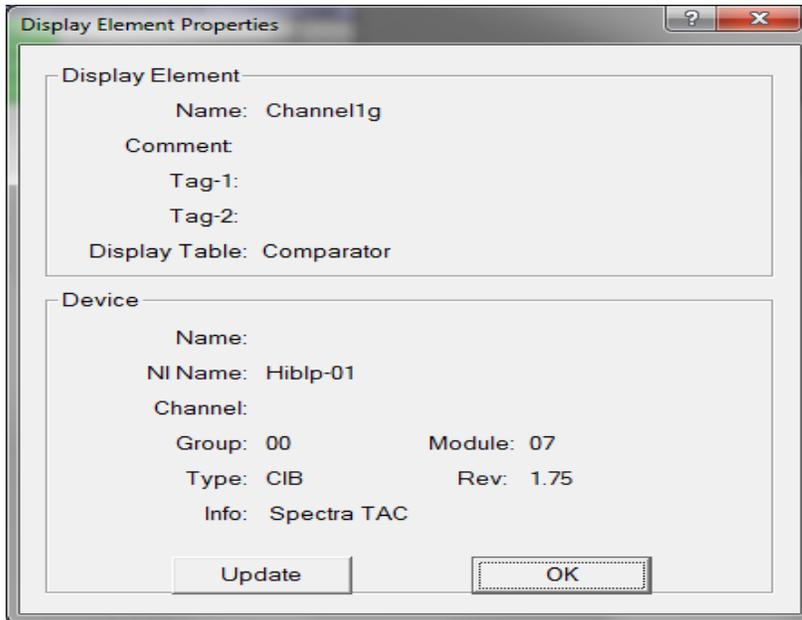
Controlling the Mcn Standard Window

You can control the Mcn Standard window as follows:

- **Move** the window by grabbing its title bar and dragging it.
- **Re-size** the window by grabbing an edge or corner and dragging it.
- **Minimize /Restore, Maximize** and **Close** the window using the standard Windows buttons on the top right corner of each window.

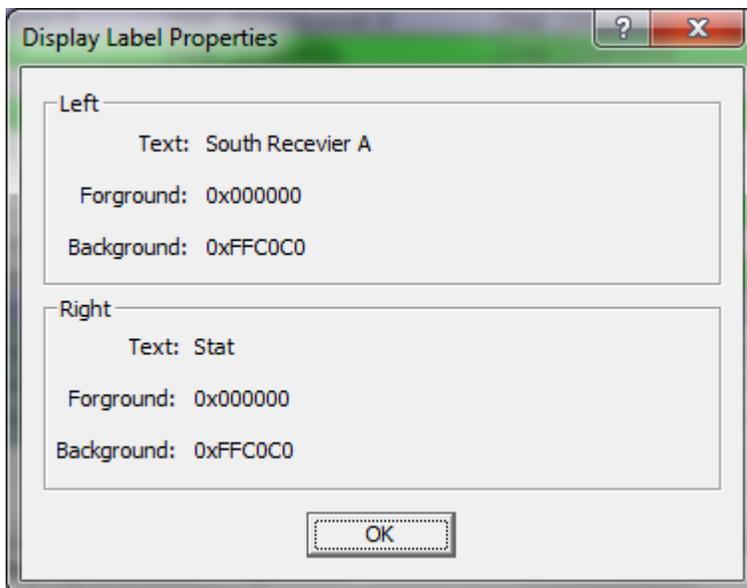
Display Element Properties

More information can be obtained about each specific receiver by performing a shift and left click over the particular screen element and bringing up the Display Element Window.



Display Label Properties

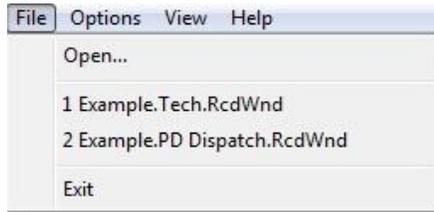
More information can be obtained about each Label, by performing a shift and left click over the particular screen Label and bringing up the Display Label Properties Window.



Menus

This program has many standard menu functions that are used in other Windows programs. For example, menus can be selected with the mouse or by hitting the **ALT** key & the underlined letter on the menu. Note that a menu's appearance may change, and various menu options may be disabled, depending on the current state of the system.

File Menu



Open

Opens a Display Window created in the MCNConfig program.

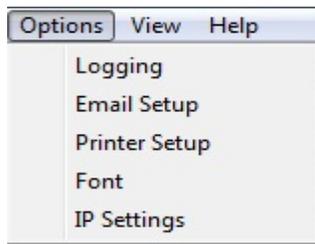
Recent Files

Allows you to quickly open a recently used Display Window.

Exit

Exits the program.

Options Menu



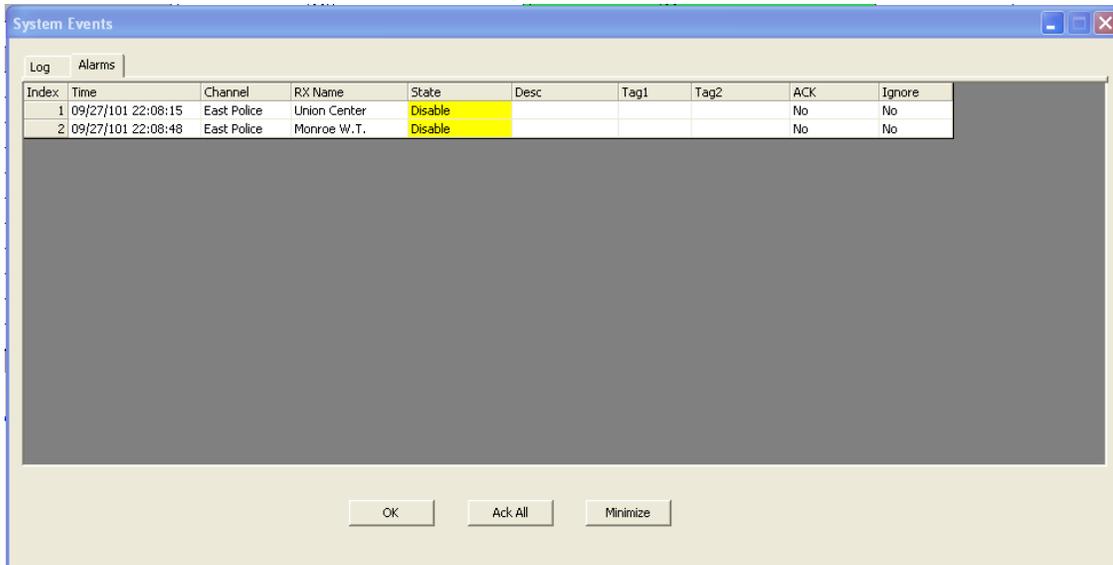
Logging & Sound

Alerts can be sent to the PC screen, printer, file, or email recipients. Alert sounds can also be enabled.

Email Setup

Email parameters must be entered before email alerts can be generated. See *Alarm Display – Log Tab / Alarms Tab*

If a Receiver or I/O point is configured for Alarm operation, it will be displayed on the Alarms tab of the System Event window when it goes into an Alarm state.



This tab shows all alarms which are:

- Active and/or
- Unacknowledged.

The state shown will be the state at the latest time the alarm became active. It does not necessarily show the current status.

If an alarm state has a sound configured for it, that sound will be played when a point goes into the alarm state. For multiple alarms, the alarm sound will not be repeated unless 2 seconds has elapsed since the previous alarm.

Alarms must be acknowledged. They can be acknowledged with either:

- The **Ack All** button or
- The Ack drop-down field in the individual alarm line.

Alarms will be removed from the window when:

- The alarm is acknowledged and
- The state returns to normal

If there is a nuisance alarm, it can be placed on Ignore status with the Ignore field.

Receivers and I/O points can be configured for Alarm operation by selecting an appropriate Display Table. Alarm activity can also be enabled on an existing Display Table. See the *Alarms and Display Tables section starting* on page 66 for *instructions* on how to enable alarms and sounds in the Display Tables.

Email Setup on page 127 for other requirements for email alerts.

Printer Setup

Printer parameters must be entered before alerts are sent to a printer.

Font

Used to change the Font type or size for the display grid.

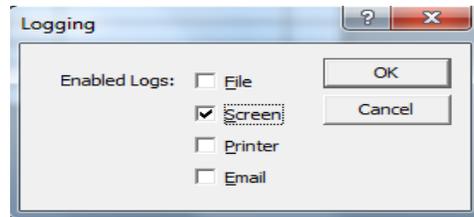
IP Settings

Lets you select the appropriate IP address to communicate with a HIB-IP unit (if you are using a HIB-IP for your Network Interface).

Enabling & Disabling Logging

Alerts generated by the Mcn Standard program can be sent to the PC screen, printer, file, or via email to selected recipients. Alert sounds can also be enabled.

The following window will be displayed when **Logging** is selected from the Options Menu.



Select the types of logging required, then click the **OK** button.

If logging to **File** is enabled, the file is named **MCNRCD.log** and is located in the Mcn Standard system directory. This is normally at:

C:\ProgramData\CTI Products Inc\McnRcd

If logging to **Screen** is selected, then logs are displayed for each detected system event appropriately configured in the display Table of the system configuration.

Sounds will only accompany alarm events, if configured in the Display Table of the system file.

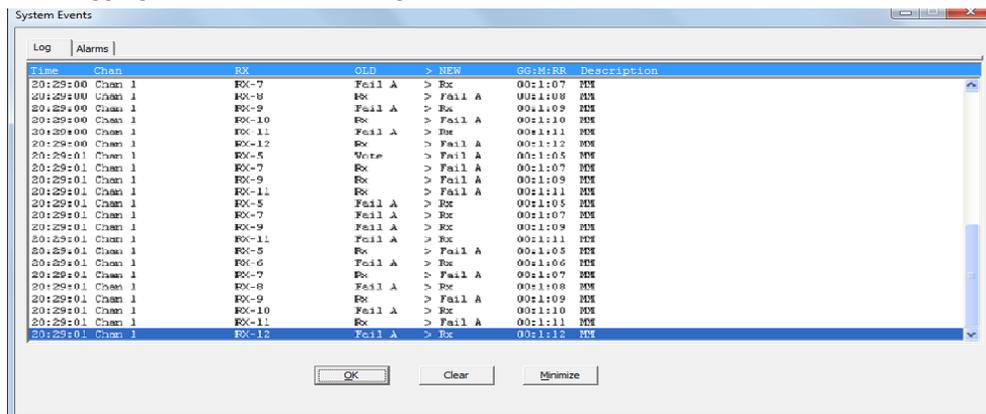


NOTE: Unnamed receivers and I/O points are considered unused by the program so that all transitions are ignored and will not generate alarms or logs.

System Events Window

The history of Logs and Alarm Statuses are available under the System Events Window. The appropriate selections must first be configured in the States Tab of the Display Table with Mcnconfig. Then, if the logging to screen is enabled this window will automatically pop up and update for each valid Log and/or Alarm event.

When Screen Logging is enabled, status changes will be listed on the screen as shown below.

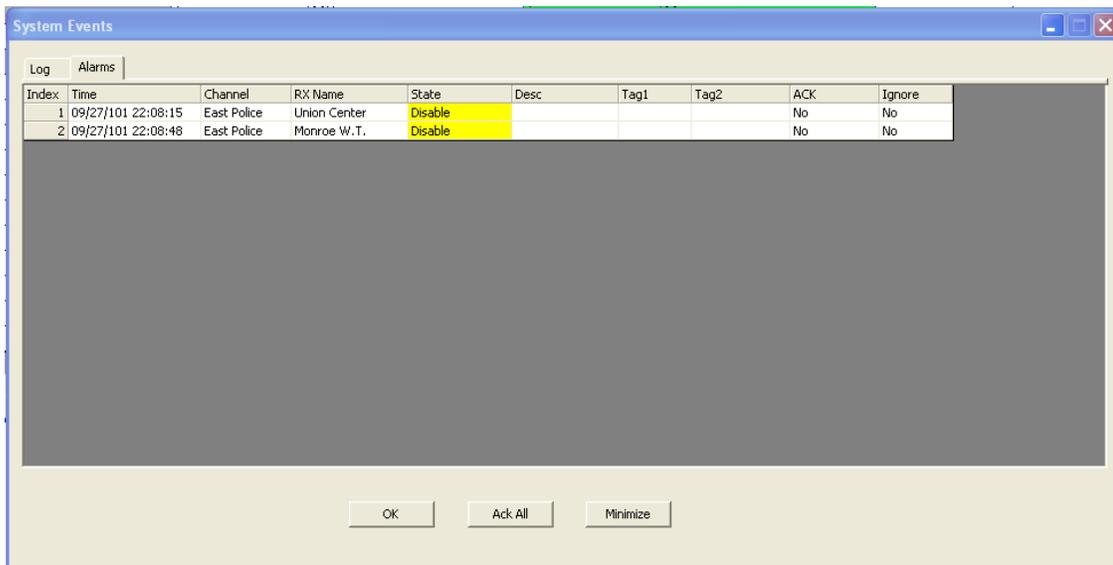


- Hitting the OK button will close the window but keep the log entries.
- Hitting Clear will delete the log entries.

You can view the Log & Alarm window later by selecting **View / Log Window** from the menu.

Alarm Display – Log Tab / Alarms Tab

If a Receiver or I/O point is configured for Alarm operation, it will be displayed on the Alarms tab of the System Event window when it goes into an Alarm state.



This tab shows all alarms which are:

- Active and/or
- Unacknowledged.

The state shown will be the state at the latest time the alarm became active. It does not necessarily show the current status.

If an alarm state has a sound configured for it, that sound will be played when a point goes into the alarm state. For multiple alarms, the alarm sound will not be repeated unless 2 seconds has elapsed since the previous alarm.

Alarms must be acknowledged. They can be acknowledged with either:

- The **Ack All** button or
- The Ack drop-down field in the individual alarm line.

Alarms will be removed from the window when:

- The alarm is acknowledged and
- The state returns to normal

If there is a nuisance alarm, it can be placed on Ignore status with the Ignore field.

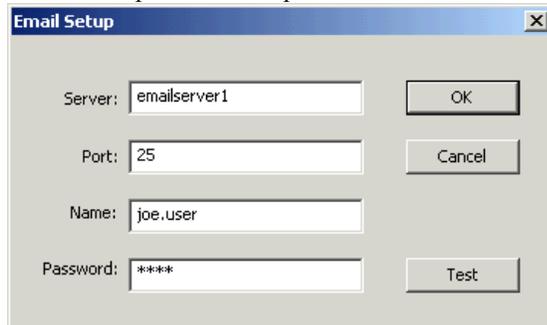
Receivers and I/O points can be configured for Alarm operation by selecting an appropriate Display Table. Alarm activity can also be enabled on an existing Display Table. See the Alarms and Display Tables section starting on page 66 for instructions on how to enable alarms and sounds in the Display Tables.

Email Setup

For Email logging to occur, the following setup requirements must be met:

1. In the MCNConfig program, email groups and recipients must be specified in the "Email Groups Resource Window" on Page 60 for more information.

2. In the MCNConfig program, the "Email Group" must be specified for each Channel in the "Channels Resource Window" on Page 58 for more information.
3. In the MCNConfig program, the "Email" log flag must be set to "Y" in the Display Table States tab for those statuses you wish to be sent to the email. See page 68 for more information.
4. Enable Email alerts in the "Logging & Sound" window. To navigate to this window, select "Logging & Sound" from the Options Menu. See page 126 for more information.
5. Email parameters must be provided in the following window. To display this window, choose "Email Setup" from the Options Menu.



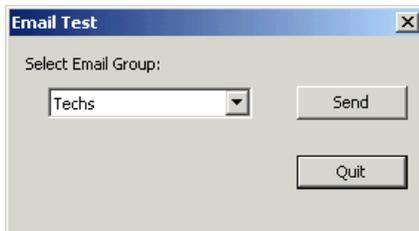
NOTE: The MCN Email Setup will only support Mail Servers running Legacy versions of the POP or IMAP security protocols.

Parameters in the above window should be obtained from the email administrator at your facility.

Server	IP address or name of the email server at this facility. This can be either numeric address (such as 10.0.0.41) or a name that points to the email server through a Domain Name Server (DNS), as shown above.
Port	Email server port for accepting incoming mail messages, referred to as the "Listen Port"
Name	A valid email address that the above server services. MCN email alerts will be "From" this email address. The domain name (the portion of an email address after the "@" symbol) should not be included in this field.
Password	A valid password for the email address used in the "Name" field above.

Email Setup Verification

A "Test" button is provided in the "Email Setup" window to verify if all email parameters are set correctly. Click on this **Test** button to display the "Email Test" window shown below:

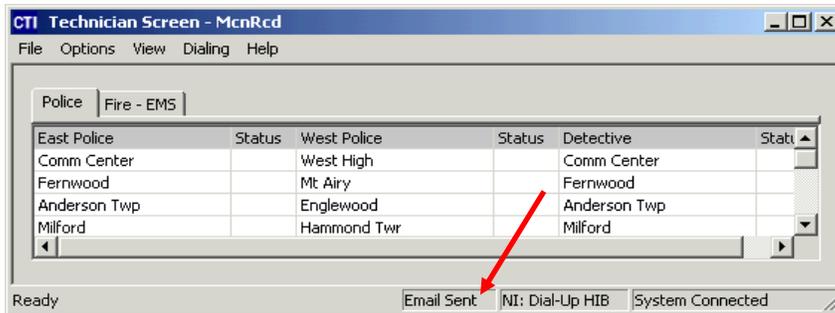


To send a test email, select an Email Group from the drop-down list, then click **Send**. If successful, the following "Test Passed" window will be displayed.



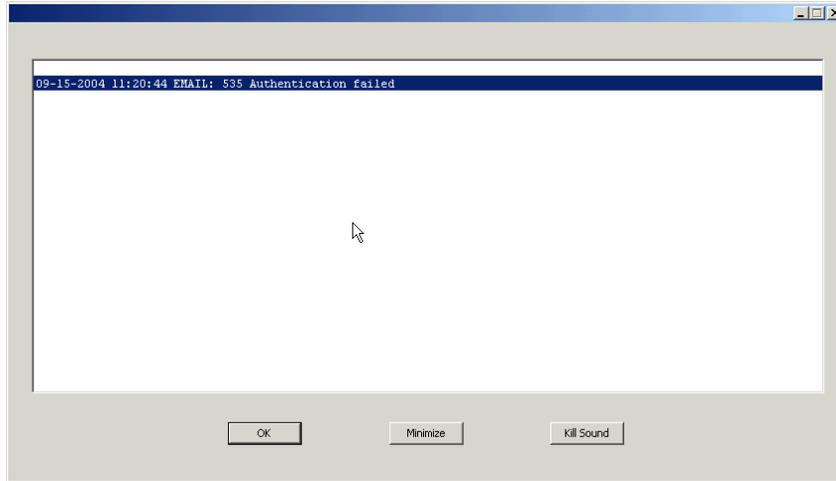
MCN Standard Program

Another way to verify that the Mcn Standard program has successfully logged into the email server in the window above (and an email has been submitted for transmission), is to notice the Status Bar at the bottom of the Mcn Standard display window. If successful, the "Email Sent" status message will be displayed as shown below.



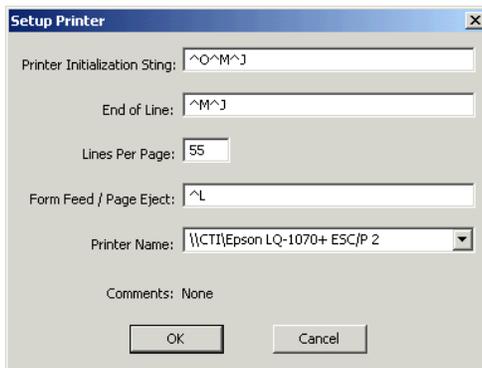
This email message will be delayed until the "Holdoff Time" specified in the "Email Group" properties window has expired. Navigate to this parameter in the MCNConfig program by right-clicking on a tab of the "Email Groups" Resource Window, then select **Email Group Properties**. See *Email Hold off Time* on page 60 for more information. This message will be visible for approximately 15 seconds.

If the Mcn Standard program was unsuccessful at logging into the email server, an error indication will be logged to screen as shown below. Screen logging does not have to be enabled for this type of screen log to occur.



Printer Setup

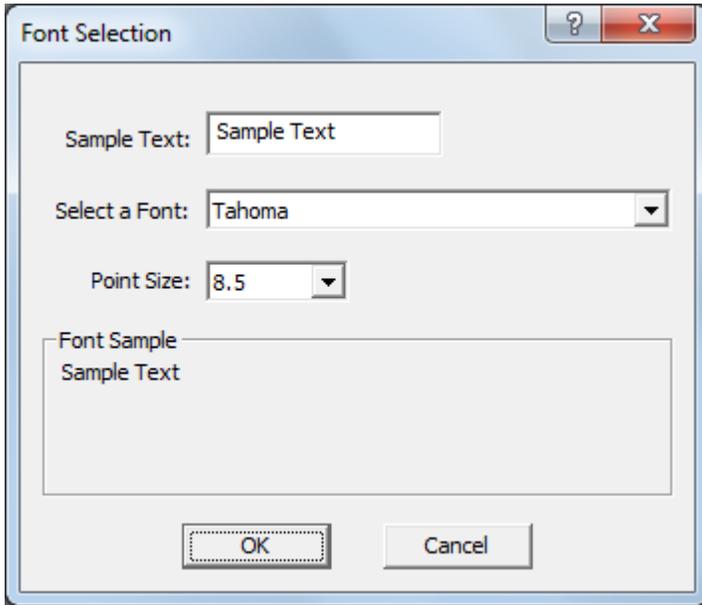
For alerts to be printed, printer parameters must be provided in the following screen. To display this window, choose “Printer Setup” from the Options Menu.



Parameters in the above window can be obtained from the specific printer documentation.

- **Printer Initialization String** This Escape character sequence is sent to the printer at the start of a new print job. In the example above, ^O instructs the printer to print without using a bottom margin, since continuous paper will be used. ^M selects 10.5 points for the font height and 12 characters per inch horizontally. And ^J specifies the line feed distance.
- **End of Line** This Escape character sequence is sent to the printer after each line of print. Normally, this should consist of escape characters for “line feed” and “carriage return”.
- **Lines per Page** Enter the number of lines to be printed on each page.
- **Form Feed/Page Eject** This Escape character sequence is sent to the printer after the number specified in “Lines per Page” above have been printed on a page.
- **Printer Name** A drop-down list is provided to select from the installed printers on this PC.

Font

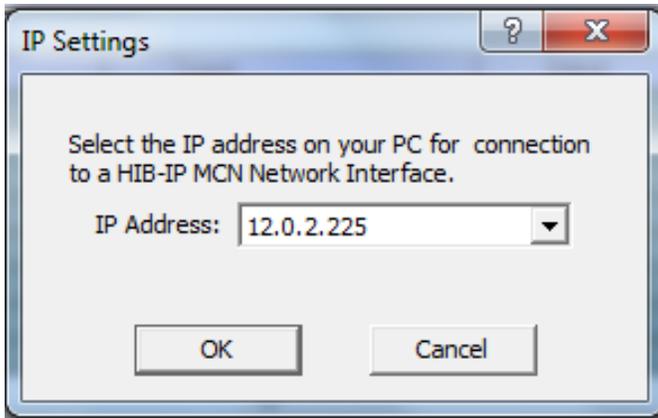


The Font Selection window is used to select a font and a font size for the Receivers and Function Blocks in the Display Window.

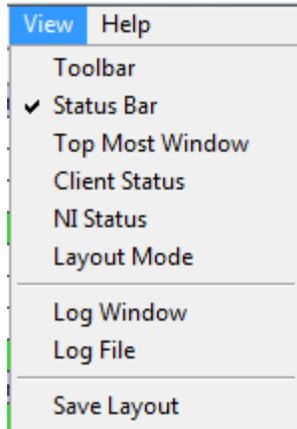
The row sizes will automatically stretch or shrink in response to font size changes. You may have to manually change the column widths after you make a change.

IP Settings

The window below is used to select the appropriate IP addresses on your PC to use in communicating with the HIB-IP unit(s) (if used) and the Client PCs.



View Menu



Toolbar

When checked, enables the Toolbar.

Status Bar

When checked, enables the Status Bar (at the bottom of the Mcn Standard display window).

Top Most Window

When checked, ensures that the Mcn Standard display window is always the Top Most Window.

NI Status

Opens the Network Interface Status window to display the status of all Network Interfaces in use by the Mcn Standard.

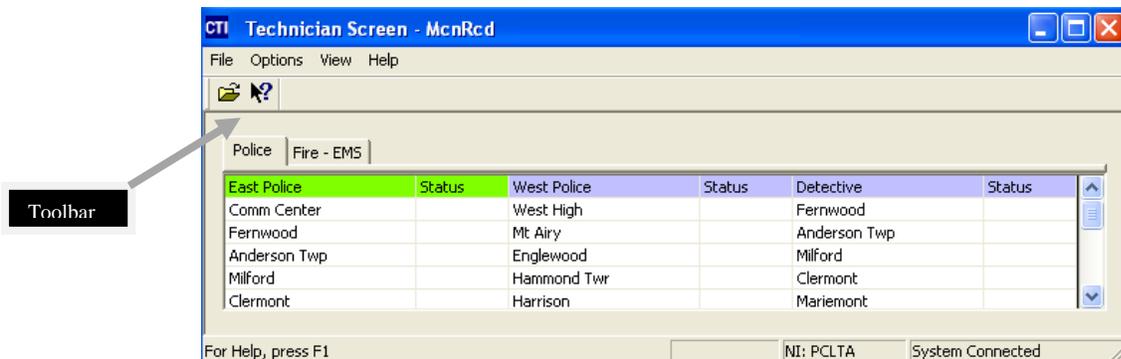
Layout Mode

When checked, allows column widths to be adjusted, “Layout Mode” will be indicated in the Status Bar (at the bottom of the Mcn Standard display window).

Save Layout

Use this command to save column width changes performed when in Layout Mode.

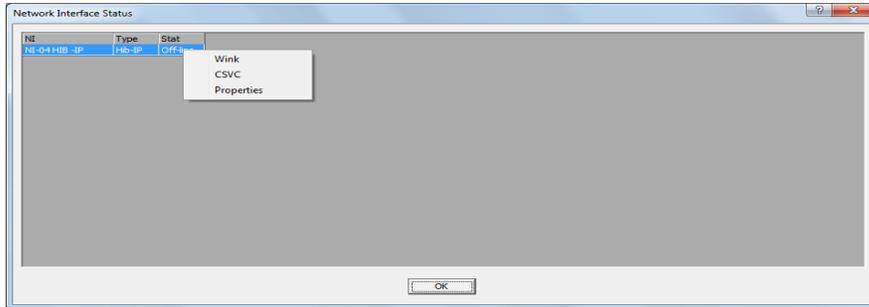
The following figure shows the Toolbar and Status Bar enabled.



NI Status Window

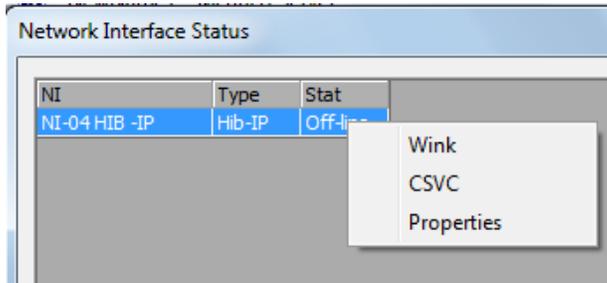
The NI Status Window shows the status of the Network Interfaces associated with this system.

The Standard software supports only a single Network Interface.



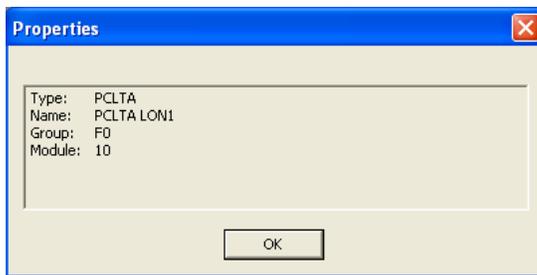
Network Interface Properties Display

For additional information on the Network Interface, right-click on the selected Network Interface and select the Properties menu item.

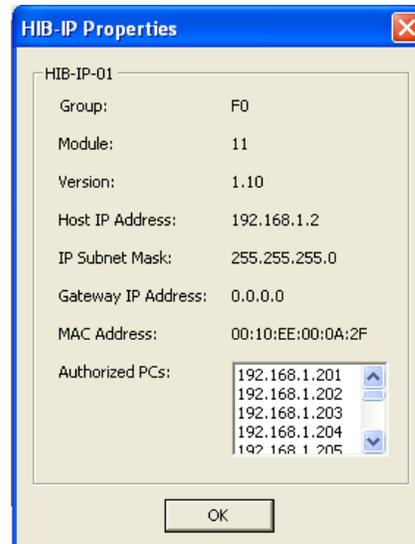


The Properties will vary, depending on what type of Network Interface is in use.

PCLTA Properties

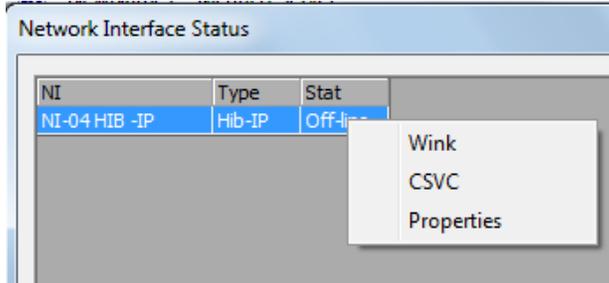


HIB-IP Properties



Additional HIB-IP Diagnostic Functions

When you Right-Click on a HIB-IP Network Interface, you have two additional diagnostic options: Wink and CSVC.

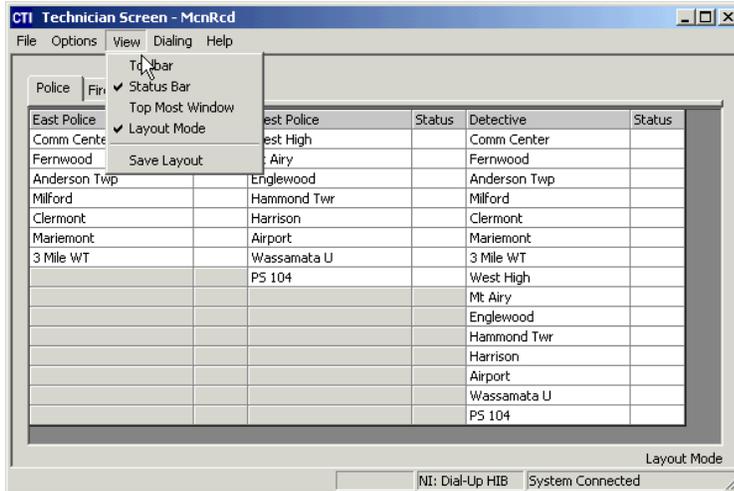


Wink This will blink the "Wink" LED on the front of the HIB-IP unit. This can be helpful to identify problems with a HIB-IP unit.

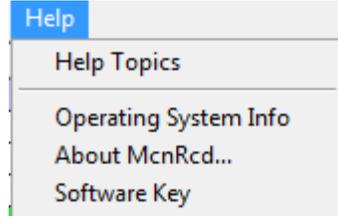
CSVC This is the equivalent of pressing the CSVC button on the front of the HIB-IP unit. In special instances a CTI engineer may instruct you to click on the CSVC function.

Layout Mode

The following figure shows the Mcn Standard Display Window in Layout Mode.

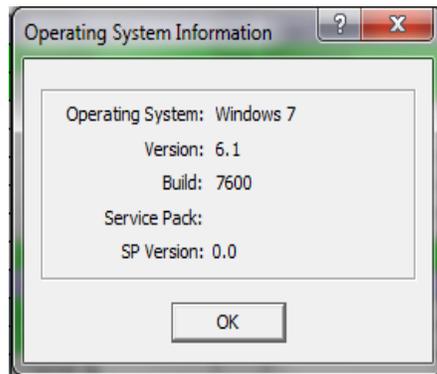


Help Menu



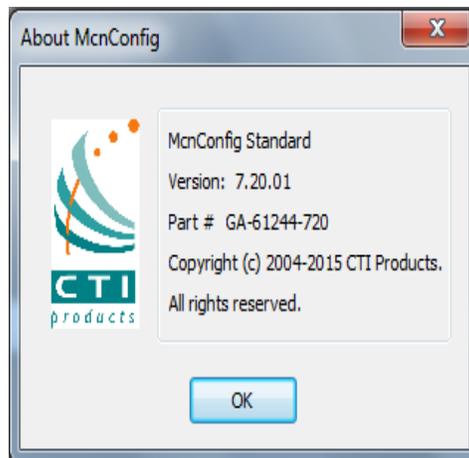
Operating System Info

The operating system info will display relevant details about the OS on which the MCN Program is installed.



About McnRcd...

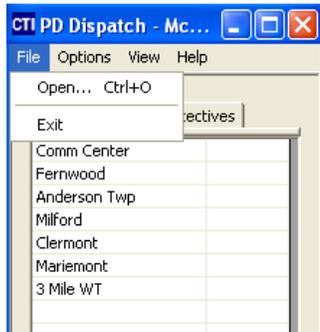
The about McnRcd, will display relevant details about the currently installed McnRcd Program and its Licensing.



File Menu

The File menu has the following menu items:

- Open Allows you to select a new screen
- Exit Allows you to exit the program

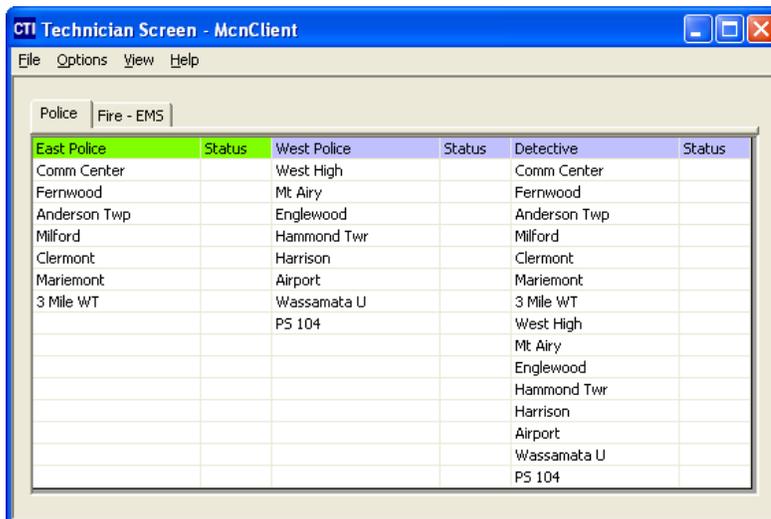


Open

The Open window may show a list of screens if available which can be loaded by the Mcn Standard program.



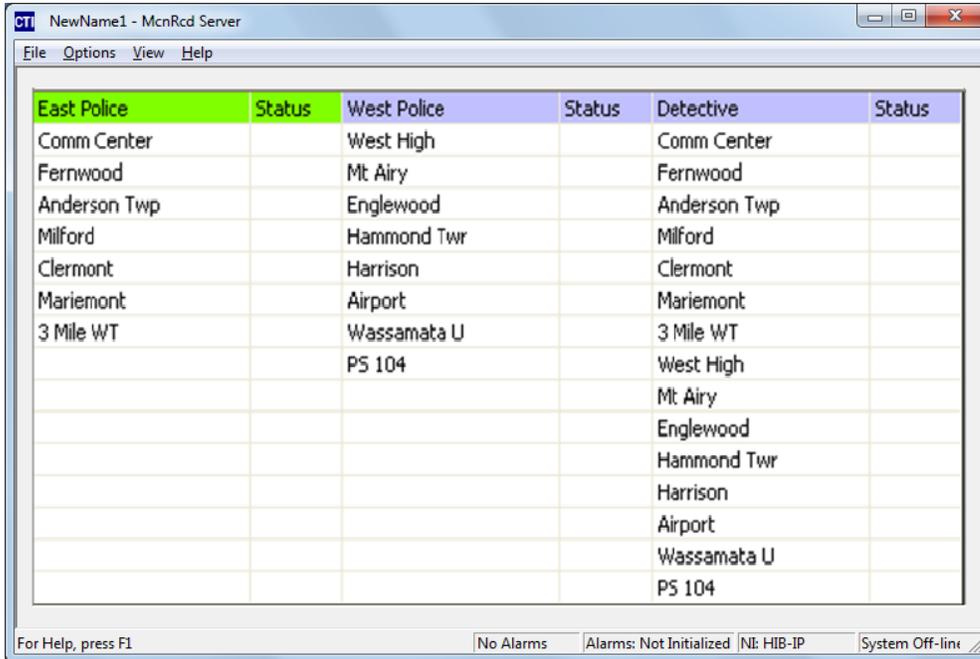
- Select the appropriate screen from the list presented and hit OK.
- The new screen will appear:



Options Menu

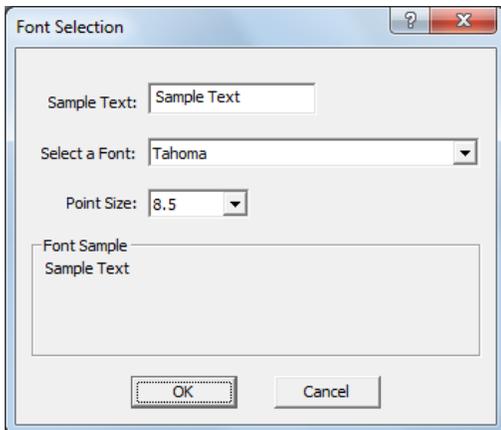
The Options menu has the following menu items:

- Font Allows you to adjust the font type and size for this screen.
- IP Settings Allows you to change the IP settings (as described earlier)



Font Window

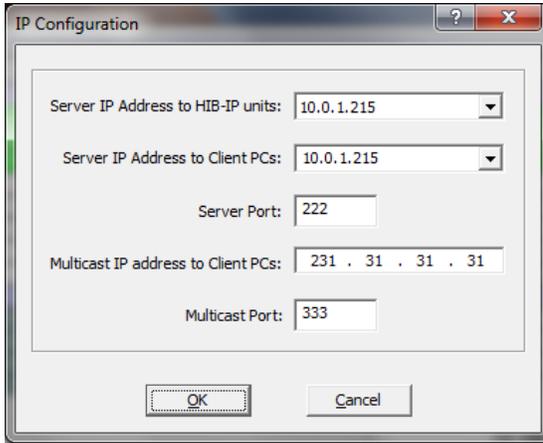
The Font Selection window is used to select a font and a font size for the Receivers and Function Blocks in the Display Window.



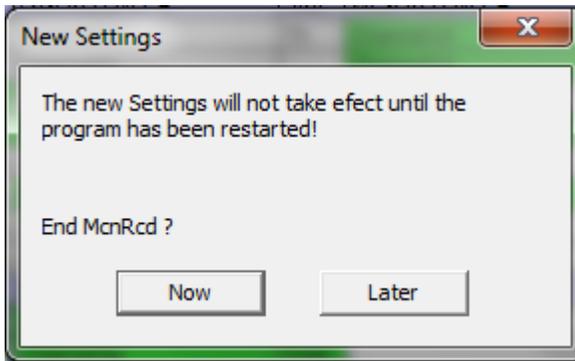
The row sizes will automatically stretch or shrink in response to font size changes. You may have to manually change the column widths after you make a change. See page 139 for directions for setting column widths.

IP Settings

This IP Configurations window is the same window that appears when the MCN Client program is run for the first time.



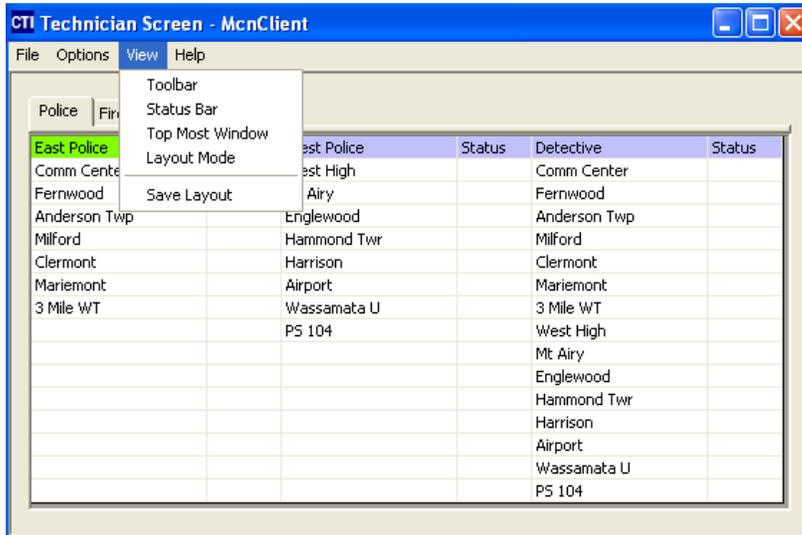
If you change any of the settings, they will not take effect until you re-start the MCN Client program.



If you click the “**Now**” button the program will automatically end, however it will manually need to be restarted.

View Menu

The View menu is similar on all MCN versions.



Toolbar

Turns the Toolbars on or off.

Status Bar

Turns the Status Bar (at the bottom of the screen) on or off.

Top Most Window

Allows MCN Client window to stay on the top of other programs that are running.

Layout Mode

This allows you to edit the column widths.

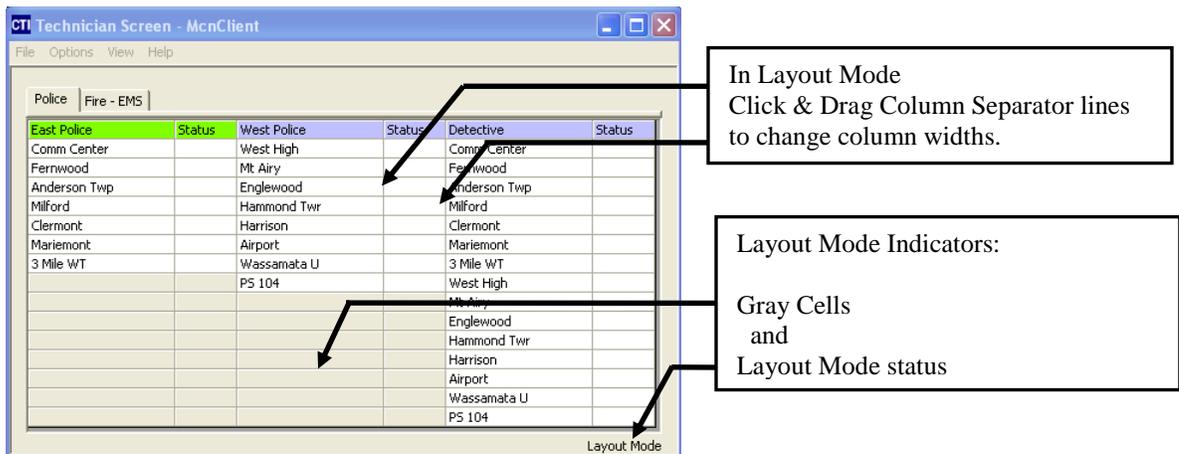
Save Layout

Saves the column widths and Display Window position.

Layout Mode

When this is on, you can drag the vertical column bars. The unused cells turn gray to indicate you are in Layout mode.

All the Receiver columns have the same size and all the Status columns have the same size.



When in Layout Mode, the program will not send mouse clicks to the Mcn Standard. Turn off Layout Mode to enable normal program operation.

Appendix: Running LonScript Under Debug

LonScript:

This is an Engineered System Custom Configuration Programming feature, which can be used to program the Routers and EXB modules with special custom address forwarding tables.

ROUTER and EXB module scripts will typically only be used during initial system installation, system expansions, and/or spare replacements. During initial system installation the scripts could be used to verify that the ROUTER configurations match the units contained in that ROUTER network.



Warning: Any of the operations mentioned or described, may only be performed under the direction of CTI Products.

Purpose of Custom Configuration

A Custom configuration that is specific for each system can be programmed in to the Routers of EXB modules as required to segment traffic flow, so as to pass only the required traffic and not overload the lower speed channels in the system. For instance, routers may be programmed to *pass* traffic from CIBs on the 78K side to the 1.25M side, but to *block* CIB traffic from the 1.25M side to the 78K side.

Enabling LonScript

The Lonscript feature is available and accessible from within all MCNRCD program versions except for McnServer 8000. The feature is enabled through the software by adding ‘ / debug’ to the Desktop Shortcut path that runs the application e.g. “C:\Program Files (x86)\CTI Products Inc\McnRcd Standard\McnRcd Standard.exe” /debug.

A Special Custom Script file is required. If the system has been qualified for custom configuration A CTI Products Disk will be included with your order. Please contact CTI Products if the disk is missing as this is the only way to acquire the appropriate files.

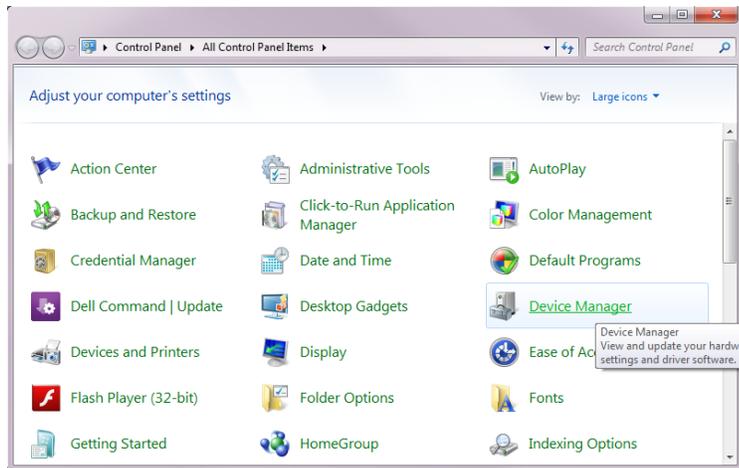


Note: Misuse of this feature could permanently disable your hardware. Always contact CTI Products for assistance.

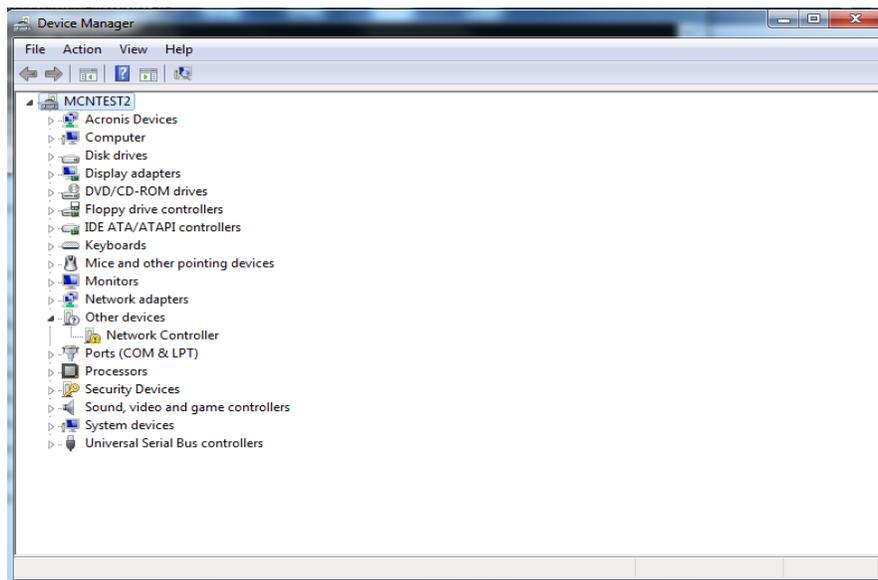
Appendix: Fixing a Botched PCLTA Installation

The PCLTA drivers must be loaded prior to installing the PCLTA card. If the PCLTA card was installed first, and an attempt was made by the Windows operating system to load the drivers, follow these steps to re-install the drivers correctly:

Navigate to the Control Panel from the **Start** Menu, then click the “Device Manager” icon from the window as shown below. (If the icons are not visible, change the Control Panel to “View by: Large Icons”.)



In the “Device Manager” window Check the hardware list under Network adapters. If the driver for PCLTA network interface is not installed correctly, “Other Devices” will be listed (instead of “LonWorks Network Interface”). Expand the “Other Devices” icon so that “Network Controller” is listed as shown below.



Select “Network Controller” with an “!” through its icon, then from the **Action** Menu, select “Disable”. Follow any additional prompts, and restart the PC.

The PCLTA driver can now be reinstalled from the distribution CD (S2-61502).

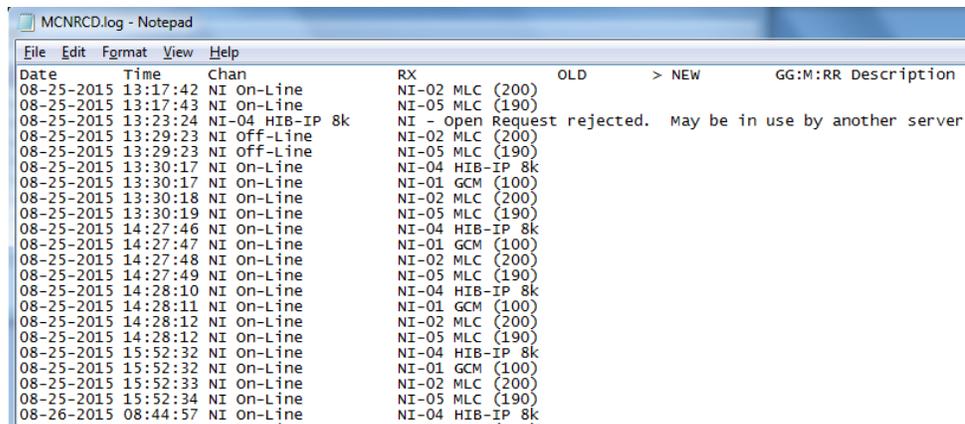
Appendix: Error Logging Definitions

Logging is a feature of the MCN and the RCD Programs to assist with System Hardware Status, Trouble shooting and Diagnostics. The messages to be logged are formatted for general text output. The formatting of messages to be logged to the screen, printer, file, or email is defined a file

C:\Users\UserName\MyDocuments\MCNRCD\MCNRCD.Log (Where UserName is the Windows User name under which you were logged on when the program was last running and logging.). This file is automatically created from the MCNConfig program when a new system is defined, and updated when a system is edited. If the format of resulting error logs is not suitable, a text editor can be used to edit the **C:\Users\UserName\MyDocuments\MCNRCD\MCNRCD.Log** file to produce a customized format.

Logging to a File

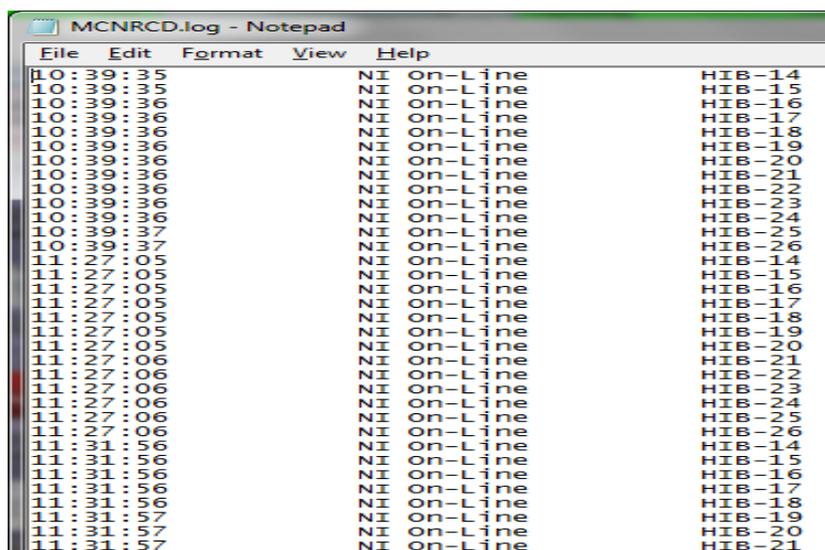
The typical logging definitions for a file are shown in the example below.



```
MCNRCD.log - Notepad
File Edit Format View Help
Date Time Chan RX OLD > NEW GG:M:RR Description
08-25-2015 13:17:42 NI On-Line NI-02 MLC (200)
08-25-2015 13:17:43 NI On-Line NI-05 MLC (190)
08-25-2015 13:23:24 NI-04 HIB-IP 8k NI - Open Request rejected. May be in use by another server.
08-25-2015 13:29:23 NI Off-Line NI-02 MLC (200)
08-25-2015 13:29:23 NI Off-Line NI-05 MLC (190)
08-25-2015 13:30:17 NI On-Line NI-04 HIB-IP 8k
08-25-2015 13:30:17 NI On-Line NI-01 GCM (100)
08-25-2015 13:30:18 NI On-Line NI-02 MLC (200)
08-25-2015 13:30:19 NI On-Line NI-05 MLC (190)
08-25-2015 14:27:46 NI On-Line NI-04 HIB-IP 8k
08-25-2015 14:27:47 NI On-Line NI-01 GCM (100)
08-25-2015 14:27:48 NI On-Line NI-02 MLC (200)
08-25-2015 14:27:49 NI On-Line NI-05 MLC (190)
08-25-2015 14:28:10 NI On-Line NI-04 HIB-IP 8k
08-25-2015 14:28:11 NI On-Line NI-01 GCM (100)
08-25-2015 14:28:12 NI On-Line NI-02 MLC (200)
08-25-2015 14:28:12 NI On-Line NI-05 MLC (190)
08-25-2015 15:52:32 NI On-Line NI-04 HIB-IP 8k
08-25-2015 15:52:32 NI On-Line NI-01 GCM (100)
08-25-2015 15:52:33 NI On-Line NI-02 MLC (200)
08-25-2015 15:52:34 NI On-Line NI-05 MLC (190)
08-26-2015 08:44:57 NI On-Line NI-04 HIB-IP 8k
```

Logging to Email

The application is capable of send the same logged data via Email. However only SMTP is supported.



```
MCNRCD.log - Notepad
File Edit Format View Help
10:39:35 NI On-Line HIB-14
10:39:35 NI On-Line HIB-15
10:39:36 NI On-Line HIB-16
10:39:36 NI On-Line HIB-17
10:39:36 NI On-Line HIB-18
10:39:36 NI On-Line HIB-19
10:39:36 NI On-Line HIB-20
10:39:36 NI On-Line HIB-21
10:39:36 NI On-Line HIB-22
10:39:36 NI On-Line HIB-23
10:39:36 NI On-Line HIB-24
10:39:37 NI On-Line HIB-25
10:39:37 NI On-Line HIB-26
11:27:05 NI On-Line HIB-14
11:27:05 NI On-Line HIB-15
11:27:05 NI On-Line HIB-16
11:27:05 NI On-Line HIB-17
11:27:05 NI On-Line HIB-18
11:27:05 NI On-Line HIB-19
11:27:05 NI On-Line HIB-20
11:27:05 NI On-Line HIB-21
11:27:05 NI On-Line HIB-22
11:27:05 NI On-Line HIB-23
11:27:05 NI On-Line HIB-24
11:27:05 NI On-Line HIB-25
11:27:05 NI On-Line HIB-26
11:31:56 NI On-Line HIB-14
11:31:56 NI On-Line HIB-15
11:31:56 NI On-Line HIB-16
11:31:56 NI On-Line HIB-17
11:31:56 NI On-Line HIB-18
11:31:56 NI On-Line HIB-19
11:31:56 NI On-Line HIB-20
11:31:56 NI On-Line HIB-21
```

Logging to a Printer

The typical logging definitions for printing are shown in the example below.

```

MCNRCDlog - Notepad
File Edit Format View Help
Date Time Chan RX OLD > NEW GG:M:RR Description
08-25-2015 13:17:42 NI On-Line NI-02 MLC (200)
08-25-2015 13:17:43 NI On-Line NI-05 MLC (190)
08-25-2015 13:23:34 NI-04 HIB-IP 8k NI - open Request rejected. May be in use by another server
08-25-2015 13:29:23 NI Off-Line NI-02 MLC (200)
08-25-2015 13:29:23 NI Off-Line NI-05 MLC (190)
08-25-2015 13:30:17 NI On-Line NI-04 HIB-IP 8k
08-25-2015 13:30:17 NI On-Line NI-01 GCM (100)
08-25-2015 13:30:18 NI On-Line NI-02 MLC (200)
08-25-2015 13:30:19 NI On-Line NI-05 MLC (190)
08-25-2015 14:27:46 NI On-Line NI-04 HIB-IP 8k
08-25-2015 14:27:47 NI On-Line NI-01 GCM (100)
08-25-2015 14:27:48 NI On-Line NI-02 MLC (200)
08-25-2015 14:27:49 NI On-Line NI-05 MLC (190)
08-25-2015 14:28:10 NI On-Line NI-04 HIB-IP 8k
08-25-2015 14:28:11 NI On-Line NI-01 GCM (100)
08-25-2015 14:28:12 NI On-Line NI-02 MLC (200)
08-25-2015 14:28:12 NI On-Line NI-05 MLC (190)
08-25-2015 15:52:32 NI On-Line NI-04 HIB-IP 8k
08-25-2015 15:52:32 NI On-Line NI-01 GCM (100)
08-25-2015 15:52:33 NI On-Line NI-02 MLC (200)
08-25-2015 15:52:34 NI On-Line NI-05 MLC (190)
08-26-2015 08:44:57 NI On-Line NI-04 HIB-IP 8k
08-26-2015 08:44:58 NI On-Line NI-01 GCM (100)
08-26-2015 08:44:58 NI On-Line NI-02 MLC (200)
08-26-2015 08:44:59 NI On-Line NI-05 MLC (190)
08-26-2015 08:45:06 NI On-Line NI-04 HIB-IP 8k
08-26-2015 08:45:06 NI On-Line NI-01 GCM (100)
08-26-2015 08:45:07 NI On-Line NI-02 MLC (200)
08-26-2015 08:45:07 NI On-Line NI-05 MLC (190)
    
```

Logging to the PC Screen

The typical logging definitions for screen are shown in the example below.

```

MCNRCD.log - Notepad
File Edit Format View Help
10:39:35 NI On-Line HIB-14
10:39:35 NI On-Line HIB-15
10:39:36 NI On-Line HIB-16
10:39:36 NI On-Line HIB-17
10:39:36 NI On-Line HIB-18
10:39:36 NI On-Line HIB-19
10:39:36 NI On-Line HIB-20
10:39:36 NI On-Line HIB-21
10:39:36 NI On-Line HIB-22
10:39:36 NI On-Line HIB-23
10:39:36 NI On-Line HIB-24
10:39:36 NI On-Line HIB-25
10:39:37 NI On-Line HIB-26
11:27:05 NI On-Line HIB-14
11:27:05 NI On-Line HIB-15
11:27:05 NI On-Line HIB-16
11:27:05 NI On-Line HIB-17
11:27:05 NI On-Line HIB-18
11:27:05 NI On-Line HIB-19
11:27:05 NI On-Line HIB-20
11:27:06 NI On-Line HIB-21
11:27:06 NI On-Line HIB-22
11:27:06 NI On-Line HIB-23
    
```

Error Logging Definition File Parameters

Email Subject Line	The text between quotes on this line will appear in the subject line of email alerts.
Email Recipients	Information in this section includes the “Email Groups” specified in the MCNConfig program and should not be edited.
Log File Name	The text between quotes is the file name that logs will be saved to.
Printer Device Name	The text between quotes is the default printer device name “device”. This should not be edited
Log Window Title	The text between quotes on this line will appear in the title block of the displayed log window.
Header Text (column titles)	The text between quotes on this line will be the first line in the body of the email, file, printout, or screen.
Fields to Log	For each field to be logged, the following four parameters must be specified: <ul style="list-style-type: none"> ▪ Column for start of field ▪ Field Name, or text enclosed in quotes (see Field Name table below) ▪ Beginning character position to be printed for field ▪ Ending character position to be printed for field

Field names are defined below.

Field Name	Description
Date	Date of state change. Format is mm-dd-yyyy
Time	Time of state change. Format is hh:mm:ss
Oldstate	State of signal prior to change
Newstate	Current state of signal
Gmr	Group, Module, Receiver address of signal. Format is gg:m:rr
Channel	Channel name
Rxname	Receiver name
Desc	Description of Receiver name
“text”	Text between quotes will be logged as written

Glossary

1250	1.25mbps high speed backbone Network Rate
78K	78kbps standard network rate for CIB, HIB, AIB, IIB, and IOB modules.
AIB	ASTRO-TAC™ Comparator Interface Module connects a Motorola ASTRO-TAC™ comparator to the MCN Network. It extends the comparator lights and switches over the network to a remote display position (either a PC or console display).
CIB	Comparator Interface Module connects a voting system comparator to the MCN Network. It extends the comparator lights and switches over the network to a remote display position (either a PC or console display).
CTI	Shorthand for our full company name, "CTI Products, Inc." The initials "CTI" come from our parent company - Combined Technologies, Inc. "CTI" is used in some circles -- but not in this manual -- to mean "Computer Telephony Integration"; but we, were using this acronym first!
EXB	System Extender Module is used in pairs to connect two MCN networks together or the extend the length of an MCN network beyond 4000 feet. Allows control and monitoring of multiple remote comparators from a central site.
Group	Equivalent to the Subnet portion of the network address, less one. Valid values are from 00 to FE (hexadecimal).
HIB-232	This Host Computer Interface Module connects a PC to the MCN Network over an RS-232 connection. It can be local to the PC or connected through leased-line modems or an equivalent full-time RS-232 channel.
HIB-IP	This Host Computer Interface Module connects a PC to the MCN Network over an IP network.
IIB	Input/Output Interface Module connects a parallel operator display device (such as a console) to the MCN Network. Can be used with AIB ASTRO-TAC™ Comparator Interface Modules to provide voting status indications (Vote, Receive, Disable, and Fail) to a console. Also can be used with CIB Comparator Interface Modules to extend the comparator display and control for other comparators over a long distance.
IOB	Input/Output Control Module connects I/O devices such as relays to the MCN Network. Used with a HIB to create an I/O control system.
IP	Internet Protocol
IP Address	Any node connected to an IP (Internet Protocol) network must be identified with a unique 32-bit address. These 32-bit addresses are commonly written <i>in dotted decimal</i> notation as four decimal numbers (referred to as octets because each decimal number represents 8 bits) separated by decimal points. Each octet can be a number from 1 to 255. For example, 131.9.1.2 is a valid IP address.
IP Subnet	A portion of an IP network that encompasses a specific range of IP addresses (ex: from 10.1.1.0 to 10.1.1.255). All IP devices on the same subnet talk to each other directly (or through hubs or switches). They do not need a router between them. (See also Subnet Mask.)
MCN	Monitoring and Control Network

Module	Equivalent to the Node portion of the network address, less one. Valid values are from 00 to 7E (hexadecimal) for MCN modules.
NIC	Network Interface Card – Interface card between the PC and the Ethernet network.
PBX	Private Branch Exchange (In-house telephone system switch)
PCLTA	Internal MCN Network Interface for PC
Port (IP)	A number indicating a logical connection within an IP device. Ports allow multiple types of messages (email, HTTP, FTP, etc.) to be sent to the same IP address. The IP device decides what to do with each message depending on which port it is addressed to.
PSTN	Public Switched Telephone Network (Dial-Up phone system)
RCD	Remote Comparator Display
Subnet Mask	<p>The bits that define the Subnet range. A portion of the IP Address Bits (normally the upper bits) are used to define the subnet range. The subnet mask identifies the “NetID” and “HostID” portions of the IP address in a bitwise fashion. The mask is constructed by placing a “1” in any bit that is part of a subnet (NetID) address. So subnet mask bits that are SET define the NetID, and CLEARED subnet mask bits define the HostID.</p> <p>A subnet mask of 255.255.255.0 defines the NetID as the first three octets, and the HostID as the last octet. For example, for the address 192.47.73.111 and the subnet mask of 255.255.255.0, the subnet can be identified as 192.47.73.0.</p>

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