

# **DMX QConnect for DMX Pathfinder CR**

## **User Guide**

Version 2.2  
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### **Pathway Connectivity**

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# INTRODUCTION

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## WELCOME TO DMXQCONNECT!

This User Guide is intended to familiarize you with the setup and use of the DMXQConnect routing software, the "human interface" for your new DMX distribution system. In preparing the User Guide, it has been assumed that you are reasonably familiar with the Microsoft Windows 95 operating system, and that Windows 95 is installed on your personal computer. It has been further assumed that you have some working experience with DMX512 and the various control systems, dimming systems, lighting instruments and accessories that utilize this lighting control protocol.

We do encourage you to follow this guide closely as you become familiar with your new DMX distribution system, so that upon completing the familiarization you will be able to use the software and hardware with the utmost confidence and effectiveness. The importance of this will become obvious the first time something in your lighting system fails to work properly and suspicion tends to fall upon the DMX distribution system, since it's the "glue" that connects everything together. Being able to track down and isolate the cause of these problems and solve them quickly, thereby minimizing loss of valuable production time, is one of the most sought-after skills in the entertainment lighting field. You'll find that DMXQConnect is designed to assist you in developing such skills.

The Users Guide is divided into five chapters:

- **About DMXQConnect** is an overview of the origins, purpose and function of the DMXQConnect software package.
- **System Requirements and Installation** describes what kind of computer DMXQConnect needs, and how to get the whole system up and running quickly.
- **Getting Familiar with DMXQConnect** is an easy to follow tutorial that leads you through the "basics" of setting up and changing DMX routing configurations.
- **Command Reference** is a good place to look whenever a menu item or function needs a quick explanation.
- **Diagnostics and Troubleshooting** describes those built-in features that help you develop your fault-finding skills.

## Chapter 1: About DMXQConnect

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### QUICK START

*Like most users of new lighting control equipment, you probably want to get your system up and running and performing useful work right away. You may already be familiar with the basic concepts of DMX signal line patching, or routing as it commonly known. You may be the person installing and commissioning a new system, not the end user. If any of these accurately describes your particular situation, you may wish to skip this chapter and go immediately to Chapter 2, install the DMXQConnect software and verify that your PC and the patch system are "communicating". Go on to Chapter 3 to learn how to use the software. Return to this chapter and read through at your leisure when and if you are interested in background information.*

### WHAT IS DMX Q-CONNECT?

The proliferation of DMX512 controlled equipment in the entertainment lighting industry, and indeed related industries such as special effects and motorized scenery control, has resulted in various schemes to interconnect this equipment with control systems. DMXQConnect, together with the Pathway DMXPathfinder, represents the first fully electronic, software based method of routing DMX signals to and from control consoles and receiving equipment.

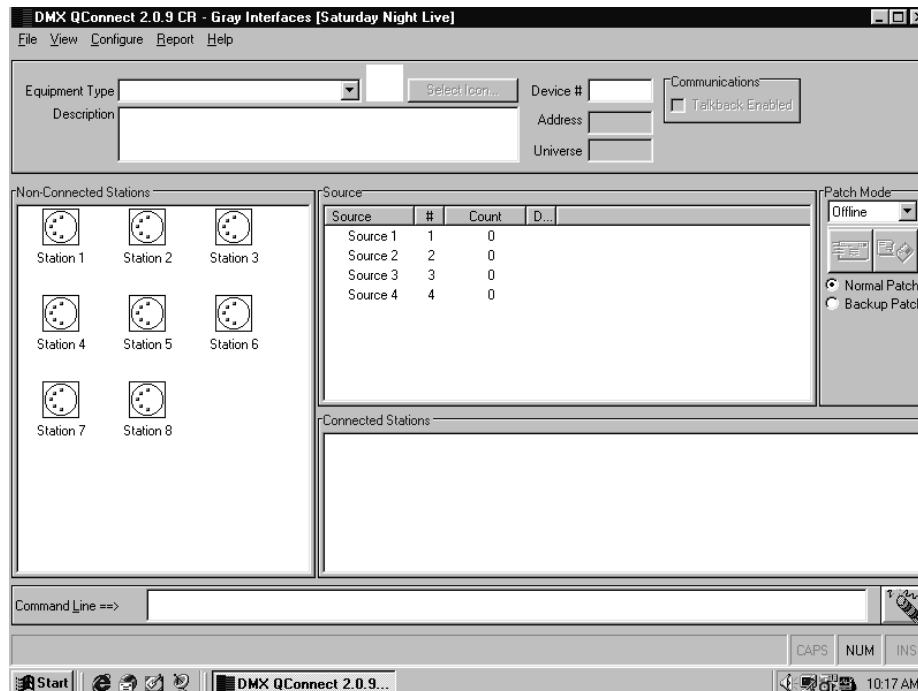
Previous attempts at creating DMX networks around off-the-shelf hardware usually involved cumbersome cord and plug patches to provide a data path between control systems and receiving equipment, via optically isolated repeater units (DMX opto-splitters). A single data path would require one cord to connect a source jack to the input of an opto-repeater, and another to connect the output of the repeater to the send jack. By the time all input and output connections were made for a given production, the patch rack bore an unsettling resemblance to the old load patch panels that have been obsolete for almost twenty years.

**DMXQConnect** is a software tool enabling the user to construct a virtual DMX data communications network on a personal computer. It will permit the user to add descriptive text notes and device address information, and then transmit the resulting interconnectivity data to an electronic matrix patch system, or *crosspoint router*, that physically interconnects all of the control system's elements in an organized, logical manner. High-speed solid-state crosspoint

matrix devices that are commonly used in digital telephone switching systems carry out the patching function.

Unlike most common local area networks, a DMX512 network often requires many separate data paths to handle the number of device addresses and codes necessary for medium to large-scale installations. Each data path can accommodate only 512 eight-bit codes. As well, it is common practice to use more than one control console in larger productions, or to provide more than one location within a facility to "plug in" control consoles. Yet another complication arises when equipment using communications protocols other than DMX512, or even running on entirely different electrical signals, must be connected to the installed DMX wiring system. These and other factors drove the development of the Pathway Connectivity *DMXPathfinder* and *DMXQConnect* as a comprehensive solution to the network problems faced by all DMX system designers and users.

We designed *DMXQConnect* to be a simple to learn and use utility. Its main function is to facilitate the creation of "patch" files on a personal computer, then to allow the user to send these files to the *DMXPathfinder* electronics rack where they are implemented as actual patch configurations. Of course, *QConnect* also supports file editing, disk archiving and hardcopy printing functions. Additional features include the ability to add text notes to each connection record, and a useful device address calculator that displays (and prints) the DMX port number and absolute DMX device address for receiving equipment being operated by control system numbers greater than 512.



Launching *DMXQConnect*, the user is presented with a combination status screen and work area made up of several window “panes”. It is here that the main work of creating a patch file is done. An old file can be retrieved from the archive, edited, and saved as a different one, or a new patch can be started from scratch. The basic connectivity information needed by the system can be described simply: where do we get the signal from to control a given piece of equipment?

All DMX input (source) locations in the installation are shown, ready for immediate use, in the *Source* pane (these names can be edited at any time in a separate *Configure Sources* window). Similarly, all DMX output stations are shown in either the *Non-Connected Stations* or *Connected Stations* panes (these names can be edited at any time in a separate *Configure Stations* window). Both Sources and Stations include a description field to allow optional text notes to be added to each connection record.

Clicking on any station (connected or unconnected) will provide you with additional information in a station detail pane at the top of the screen. Here you will find (and be able to change) the optional device type and icon for the station, as well as provide a detailed description or note. The *Device #* cell allows you to enter the control console's idea of how to find the color scroller (or other receiving equipment) that you are connecting via a given record -- typically a value ranging from one to several thousand. *DMXQConnect* automatically computes the "real" address for the scroller which of course can be no higher than 512, and pops it into an *Address* cell for all to see, especially whoever is in charge of hanging lights and setting thumbwheel address switches.

*DMXQConnect* also allows the user to specify which stations will be handling bi-directional communications; that is, where the connected equipment is capable of both sending and receiving data on separate wire pairs. The *DMXPathfinder* will, incidentally, handle any manufacturer's native protocol provided that it meets the basic requirements of EIA (Electronic Industries Association) RS-422 or RS-485, and its baud rate doesn't exceed 2 megabits per second.

What about using the network for signals that *don't* meet RS422/485 specs? That's where the *DMXPathfinder's* cable isolation feature comes in. If you don't select a given input or output path in the workspace, the actual installed DMX wiring for that node remains physically and electrically isolated from the Pathfinder's transceiver electronics. This means that you can use the wiring to handle almost any low voltage, low power application you can think of, for example: headsets, contact closures, or analog control signals.

## **Chapter 2: System Requirements and Installation**

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### **SUMMARY:**

This Chapter describes:

- What kind of PC you need to run *DMXQConnect*
- How to install the *DMXQConnect* software
- How to get the system communicating properly

### **SYSTEM REQUIREMENTS**

#### **OPERATING SYSTEMS**

*DMXQConnect* runs under Windows 95 and Windows NT.

#### **VIDEO**

*DMXQConnect* works best with SVGA displays at a resolution of 800x600 or 1024x768.

Standard VGA monitors (640x480) or notebook computer displays can be used, but more screen scrolling will be required.

#### **CPU AND MEMORY**

*DMXQConnect* will run on any 486 or higher PC with at least 8 megabytes of RAM (real physical memory). However, it is recommended to use at least a Pentium level CPU with 16 megabytes of RAM to minimize the time *DMXQConnect* requires to perform certain operations such as data sorting.

#### **HARD DISK SPACE**

*DMXQConnect* will occupy approximately 2.5 megabytes of hard disk space plus space for your patch files.

#### **MOUSE**

*DMXQConnect* works best with a pointing device (mouse). Any mouse that works with Windows will work properly with *DMXQConnect*. Two-button operations are supported. If no mouse is available, *DMXQConnect* makes use of certain keyboard keys. Most functions are accessible this way.

#### **COM PORTS**

The *DMXQConnect* program utilizes one asynchronous communications port (COM port) for file data transfer and control between the PC and the

DMXPathfinder rack. Any COM port in the range of 1 to 4 will work. DMXQConnect supports baud rates of 300 to 19,200.

## PRINTER

Patch files created by DMXQConnect can be printed out as hard copies. Any printer supported by Windows will work well.

## INSTALLING DMXQCONNECT

1. To begin, start Windows 95. Close all open applications and disable any virus-detection software.
2. Insert the CD-ROM (or the 3½" diskette labeled Disk 1) for DMXQConnect in your drive. (Depending on your computer, the Setup program may start automatically. If it does, skip steps 3 through 6, and follow the instructions on the screen.)
3. Use your left mouse button and click **Start** on the Task Bar.
4. Select Settings and then choose **Control Panel**.
5. Double-click **Add/Remove Programs**.
6. Click the **Install** button.
7. Follow the on-screen instructions to carry out the installation.

## TESTING THE SOFTWARE INSTALLATION

1. Clicking on the DMXQConnect icon will start DMXQConnect. A DMXQConnect graphic will appear briefly. Verify that the user name shown is correct. Then after a few seconds, a combination status and work area screen will appear.
2. A small window will appear, prompting you to enter an initial show name. You can use any number of characters for this, then click on **OK**.
3. The user name should appear at the top of the screen, along with the new show name.
4. Three separate areas (panes) should now fill most of the screen. The largest, at left, is identified as "Non-Connected Stations". Point your mouse at the top left-most header in this pane and click and drag the right side of this header to the right until you can read "Station Name" in the header and the full default station names in the column below. Do the same for the top right pane, identified as "Source", and the lower right "Connected Stations" pane. Default station and source names should appear only in the Non-Connected Stations and Source panes.
5. Try clicking once on one of the default station names. This name should now appear in the Station Detail pane directly above the Non-Connected Station pane.

*The test is finished! Your PC has now been verified to run DMXQConnect properly.*

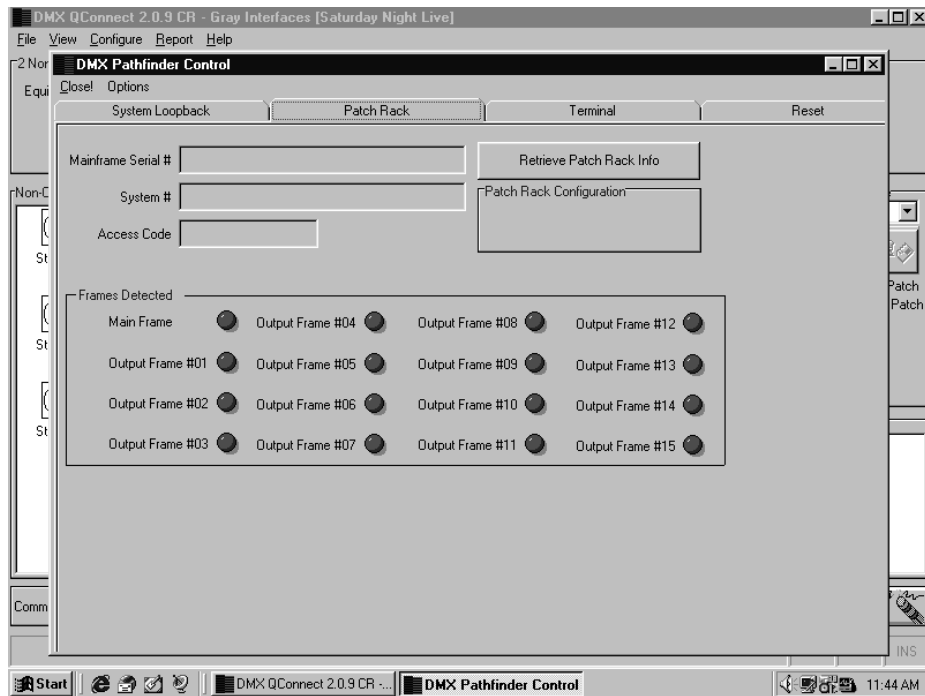
## COMMUNICATIONS SETUP

1. Determine which COM port your computer will utilize for PC comm data communications with the *DMXPathfinder* rack (COM1, 2, 3 or 4). Don't attempt to use one that's already in use for an internal fax/modem or other device. If your mouse uses COM1, you shouldn't use COM3 for the comm link to the Pathfinder since it shares the same IRQ number as COM1. Choose COM2 instead. If no devices are currently assigned any COM ports, you can use any port you like.
2. If your PC will be connected to the 9-pin female RS232 jack on the face of the Master Control Module in the rack, use the appropriate serial data cable. Usually this will be 9-pin male to 9-pin female. The cable must be wired pin-to-pin (no swapping); null modem cables will not work.
3. If the PC will be communicating with the *DMXPathfinder* via a permanently installed data line, determine whether you will be using an RS232 or RS485 interface for the physical link. Both types of interfaces are provided at terminal blocks in the rear wiring bay of the Pathfinder rack. A good rule of thumb for making this decision is whether the line will be longer than 15 meters (50 feet). Longer runs should use RS485 (up to 500 meters / 1600 feet). The advantage of using RS232 is that no special hardware is needed; you can connect your PC's COM port directly to the Pathfinder. For RS485, a 232-485 or 232-422 converter, or an RS422/485 serial adapter card is required; this must be near or inside the PC. It is acceptable to connect two or even three PCs to the Pathfinder at the same time; one at the front panel and one each to the RS232 and RS485 terminal blocks.
4. Pay particular attention to possible ground loop problems when connecting the PC comm data line, since signal common at the *DMXPathfinder* is connected to electrical ground. This should not be a problem when using RS232 since the PC and the Pathfinder will never be far apart, hence there will be little or no difference in voltage between ground at the PC and ground at the Pathfinder. However, RS485 lines can be very long and differences in ground potential may be significant in some installations. In this case we suggest that you disconnect the data cable shield at one end of the wire run, or use an optical isolator to create an electrical barrier in the data link between the PC and the Pathfinder.
5. To establish that the PC comm function is working properly, for convenience, you could use a laptop or notebook computer plugged into the front panel RS232 jack. This will allow you to see the face of the *DMXPathfinder*, so that you can view the front panel LED displays.
6. Energize the *DMXPathfinder* rack, and check that the **RUN** LEDs on all of the plug-in modules are illuminated. No **ERR** LEDs should be lit up. Also

ensure that the **BACK/NORM** switch on the Master Control Module is set to **NORM**.

7. Launch *DMXQConnect*. First click on **View, DMX Pathfinder Options**. Choose the *DMXPathfinder* Hardware Configuration tab. If you know how many input and output modules your system was supplied with, assign those values in the # of Input Cards / # of Output Cards fields. Click **OK**. Now choose **View, DMX QConnect Options** from the top menu bar, then select the **Comm Port** tab. Select the COM port your PC is using for router communications, then the speed (the factory default baud rate is 9600 -- if you want to use a different speed, refer to the *DMXPathfinder - Operation & Maintenance Manual* and change the DIP switch settings on the Master Control Module). The other port settings should be Parity: none, Data Bits: 8, Stop Bits: 1, Handshaking: No. Click **OK**.
8. Now choose **View, DMXPathfinder Control** from the menu bar. The **Terminal** tab will automatically be selected. A blank terminal communications window should occupy the center of the screen. Click on the **Connect** button at the lower left. At this point the **COM** LEDs on each *DMXPathfinder* module should illuminate for about two seconds, and three or four lines of text should appear in the terminal window. This text has been sent back to your PC from the Pathfinder, and it indicates that the communications function is working properly.
9. If you get no response from the *DMXPathfinder* and instead get a **COMM FAILURE** message, this means that *DMXQConnect* has "timed out" waiting for the expected reply. The most common causes for this are incorrectly wired cables and incorrect PC hardware configuration. Check once again for COM LED activity at the Pathfinder. If present, the transmitted-data wiring to the Pathfinder is OK but not the received-data wiring. Another cause might be a defective PC COM port. If the terminal window contains unrecognizable characters, you probably have a baud rate mismatch between your PC and the Pathfinder. Select a different speed from the **View, DMX QConnect Options - Comm Port** tab (try 19,200 first). Some PCs can also experience communication problems due to hardware conflicts. In this case you may get a "Runtime Error" message and immediate exit from *QConnect*. In this case it is necessary to review the hardware setup of your PC. Check the Port settings by clicking on the Windows 95 Start button, then Settings, Control Panel, System, Device Manager, Ports. Also check in the PC's CMOS setup to ensure that the COM ports are set at their default addresses and IRQs. Consult the Factory if you are unsuccessful at getting the PC comm function working properly.

10. Once the PC-to-Pathfinder communications function is working correctly as described previously in item 8, you should verify that all of the *DMXPathfinder* module frames are responding to commands from the PC. Click on **View, DMXPathfinder Control**, then choose the **Patch Rack** tab. This screen contains sixteen graphical red LEDs, each corresponding to a module frame in the largest possible *DMXPathfinder* system. Click on the **Retrieve Patch Rack Info** button, and one or more of the LEDs should turn green according to the actual installed configuration of your system. Any LEDs that remain red when they should be green points to hardware configuration or installation errors – refer to the *DMXPathfinder* Operation & Maintenance Manual or consult with the Factory for assistance. The most likely causes, however, will be incorrectly addressed modules or internal cabling problems.



11. Click on the **Close** button to exit from the DMXPathfinder Control window.
12. The last thing to do is enable *DMXQConnect* to send patch files to the *DMXPathfinder* rack. At the top right of the main screen you will see the **Patch Mode** pane. Change the mode from Offline to Batch, then click on the “send” icon below. A “DMXQConnect Serialization” window will appear if the software has not been previously enabled. (If QConnect has already been enabled, a moving bar graph will appear under the send button -- skip the remaining steps). You should see a 15-digit Activation Serial Number; record this on a piece of paper and contact the Factory at (403) 243-8110 or fax (403) 287-1281 to obtain an authorization number. When you receive the 8-digit number, enter it into the Activation Key window and click **OK**.

The window should now close and a moving bar graph will appear briefly under the send button. If it's not convenient to call for the number at this time, click on **Cancel** and go on to Chapter 3. You can repeat this process when you have your authorization number, and all other functions except patch file transfers will work fine in the meantime.

*Software and hardware setup is now complete! You can now proceed to Chapter 3 and learn to use DMXQConnect.*

## Chapter 3: Getting Familiar with DMXQConnect

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### SUMMARY

Follow this Chapter to learn how to create, edit and save patch files and send them to the *DMXPathfinder*. Station and Source configuration is covered here.

### BEFORE WE GET STARTED

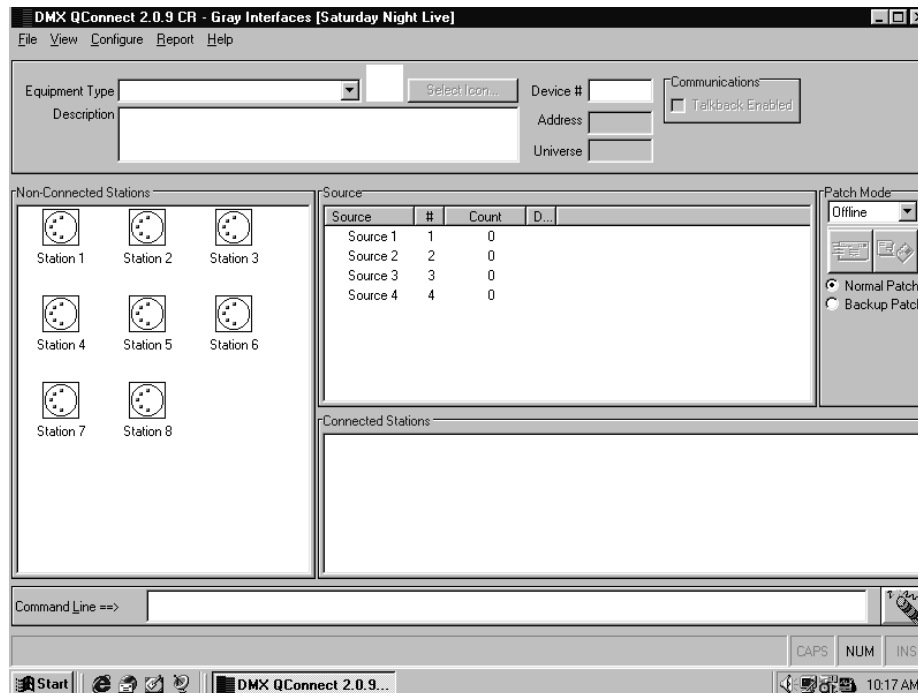
Our discussion assumes that you, the user, have at least a basic understanding of Microsoft Windows 95, and how to navigate around its various menus and controls using a mouse. We will also assume that the *DMXQConnect* software has been properly installed on your computer's hard disk, and that communication between the PC and the *DMXPathfinder* rack has been set up to function correctly.

Make sure that power to the *DMXPathfinder* electronics has been switched on, and check that all of the faceplate **RUN** LEDs are illuminated, but none of the **ERR** LEDs are on. Also ensure that the **BACK/NORM** (backup/normal) switch on the Master Control Module is set to the **NORM** position. If you need to change the switch from backup to normal, you must also press the adjacent **RESET** pushbutton to put the Pathfinder into Normal Mode. It's worth remembering that when in Backup Mode the Pathfinder will not respond to any commands from the PC. A Reset command from the front panel or from a PC will always activate the mode selected by the position of the **BACK/NORM** switch.

### NEW SHOW

Launch the *DMXQConnect* program by clicking on its program icon. A graphic window will appear briefly, then the combination status screen and work area screen will appear.

To get a fresh start, click on **File, New Show**. Enter the working title for the show file (20 characters maximum) in the box marked Name. An optional Description may be entered to provide additional information. When done click **OK**.



## PATCHING

First go to the Patch Mode pane at the far right of your screen. Make sure that Offline is selected. This will ensure that DMXQConnect won't try to send patch information to the DMXPathfinder until you are ready.

We're now set to patch a few stations. First, left-click on one of the stations in the Non-Connected Stations pane. Then, holding the left mouse button down, "drag" the selected station over to the Sources pane and over top the desired source (the source will highlight to indicate your selection), and release the mouse. Your station will now appear in the Connected Stations pane. You have now made your first patch connection. Try patching a few more of the unconnected stations in the same manner. If you make a mistake simply drag the station from the Connected Stations pane to the correct source in the Sources pane.

## ICONS & DESCRIPTIONS

Whenever you click on a Station, either Connected or Non-Connected, information associated with that station appears in the Station Detail pane at the top of your screen. Click on any station. The station name and connected status appear as the title of the Station Detail pane. Now click in the description area of the Station Detail pane and type in a description such as:

*Scrollers for cyc wash*

This description can be modified to include reminders or notes at any time by repeating the above process. Right-clicking on the description area gives you

access to the usual Windows commands of **Undo**, **Cut**, **Copy**, **Paste** and **Delete**, making it easy to edit this information.

Since our description indicates that scrollers are attached to this station, let's get the station icon to match, to make it easier to identify. Click on the ▾ button at the right of the Equipment Type box in the Station Detail pane and select **Color Scroller** from the choices offered. An icon representing a color scroller will now appear with that station.

## PATCHING MULTIPLE STATIONS

There are various ways to patch several Stations to a single Source. You can use whichever suits your situation best.

To select non-sequential stations, hold down the **[Ctrl]** key on your keyboard as you click the Stations you want to patch. Then click and drag one of the stations chosen to the Source desired. The selected group will follow.

To select sequential stations, hold down the **[Shift]** key on your keyboard as you click the first and then the last Station in the range you want to patch. Then click and drag one of the stations chosen to the Source desired. The selected group will follow.

## UN-PATCH A STATION

It's easy to un-patch a station, that is, to return a connected station to non-connected status. In the Connected Stations pane, either:

Right-click on the desired station and select **Disconnect**

Or

Left click on the desired station and drag it to the Non-Connected pane

The conventions for selecting multiple stations, if desired, described in patching multiple stations, also apply here.

## SAVING

You don't need to do anything special to save a patch as everything you do is saved to your computer's hard disk as you work. To create backups, see **Backup Your Data** later in this chapter.


*You've now completed the basics of creating a patch. In the chapters ahead we'll discuss how to get your patch information from DMXQConnect to the DMXPathfinder as well as system configuration.*


## TALKBACK

If you are using IPS dimmers, Wybron Scrollers or any other receiving equipment that uses XLR pins 4 and 5 for DMX "talkback", you'll need to enable the *DMX Pathfinder's* bi-directional mode for the station(s) involved. Click on the station(s) in either the Non-Connected or Connected panes that you wish to enable talkback for. Then, click the check-box **Talkback Enabled** in the Communications pane at the top of the screen. It is good practice to enable talkback only for those stations where it is being used. *Remember that in order for talkback to work, equipment and wiring must use separate wire pairs for transmit and receive data.*

## COMMUNICATING WITH THE DMXPATHFINDER

When you're ready to convert your work from a "virtual" patch to an actual one, you'll want to upload, or *transfer*, the patch file from the computer to the *DMX Pathfinder* rack. All patch file transmissions between *DMXQConnect* and the *Pathfinder* are controlled and initiated by the Patch Mode pane. This discussion assumes that PC-to-Pathfinder communications have been properly set up and verified to be working properly. See *Communications Setup* in Chapter 2 if this has not been done, then you can proceed as follows:

Go to the Patch Mode pane. Available patch modes are **Live**, **Batch** and **Offline**. Batch is the most commonly used mode. In Batch, the patch is transferred to the rack only when the Send Patch button  is clicked. In Live mode every change you make is communicated to the *DMX Pathfinder* rack as you do it. You may find this useful in a rehearsal situation, but since there is a small (3-sec.) delay every time the rack is communicated with, it is not practical for extended use. Use the Offline mode when you are not connected to the Pathfinder rack or do not wish to inadvertently send patch files the rack (note that Offline mode is always activated whenever QConnect is launched). In any case, the Patch Mode can be changed on the fly, at any time.

Set the Patch Mode to **Batch**. Now press the Send Patch button . You should see a small bar graph appear to show you the progress of the patch transmission to the rack. In any case no more than 5 seconds should pass. If it takes longer, there is a communications problem and you should check the Event Log.

If all has gone well with our first file transfer, let's do it again -- this time, we'll transfer the patch file to the *DMX Pathfinder* as a *Backup* patch. Follow the same procedure as before, except now choose **Backup Patch** in the Patch

Mode pane. The bar graph will confirm, as before, that the file transfer function was successful, the Backup patch is now stored in the Pathfinder's backup patch memory.

Now we have two files (albeit with the same data) stored in the *DMXPathfinder's* internal memory. Let's try swapping patch configurations. Using the Main Menu, click on **View, DMXPathfinder Options**. Select the **DMXPathfinder Patch Mode** tab. Click on the **Select Backup Patch Mode** button. You will see a message asking you to confirm the command – click **Yes**. “Backup Patch Selected” will appear in the black response window. The backup patch has now been activated in the Pathfinder rack. Note that this time we didn't transfer any data from the PC to the Pathfinder, instead we sent a command to change its active patch configuration from Normal to Backup.

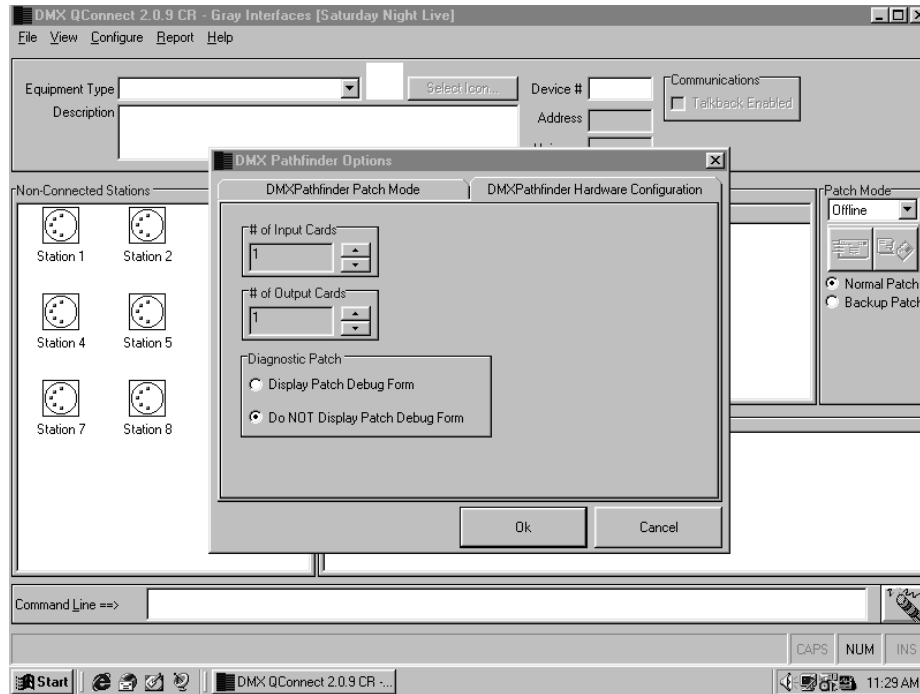
Let's try another communications function. Using the Main Menu, click on **View, DMXPathfinder Options**. Select the **DMXPathfinder Patch Mode** tab. Click on the **Clear Existing Patch Mode and Normal Patch Data** button. Again, you will see a message asking you to confirm the command – click **Yes**. “Patch Cleared” will appear in the black response window. What happened? The Clear command has struck the entire active *DMXPathfinder* configuration to an unpatched state, the electronic equivalent of pulling all the cords from a conventional patch panel. It has also erased the Normal Patch data from the rack's internal memory (but not the Backup Patch data). This is, of course, another function to use carefully but it should always be used when a production ends to ensure that the Pathfinder is completely isolated from the installed DMX wiring.

There are two more communications functions available: *System Loopback and Reset*. The System Loopback function is fully described in Chapter 5: *Diagnostics and Troubleshooting*. This function is not likely to be used in day-to-day operations. Reset will remotely re-activate the currently selected patch file at the *DMXPathfinder*, and it's useful when a module has been replaced and the local reset switch was not pressed afterwards. Avoid using the Reset command during live performance, however, since it will result in a momentary pause in DMX data transmission.

## SETTING UP THE SYSTEM

Now that we've had a chance to get familiar with *DMXQConnect's* patch creation, editing and communications features, it's time to customize the software installation to suit the particular requirements, or *parameters*, of the DMX distribution system as installed in your facility.

Select **View** from the main menu. Choose **DMXPathfinder Options**. Click on the **DMXPathfinder Hardware Configuration** tab.



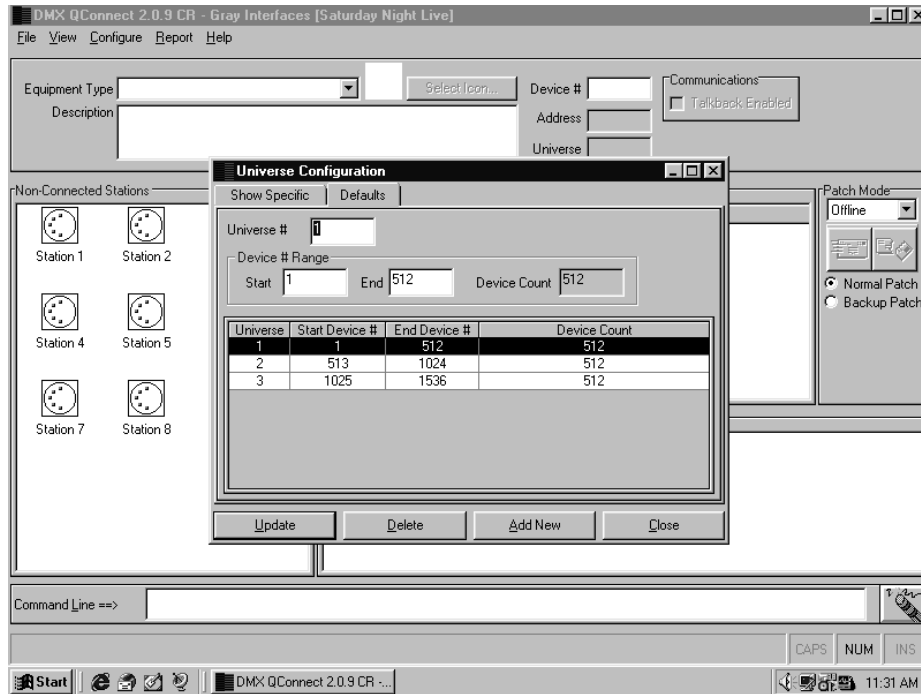
Notice that there are several panes of parameter information contained in this window. The # of Input Cards and # of Output Cards define the actual size of your installation in terms of input and output lines; these parameters should only be set once when your system is commissioned, and changed only if the system is expanded. Contact the Factory or your local customer support if you are unsure about the correct values for these fields.

## CONFIGURE UNIVERSE

DMX Universes need to be set up properly to take full advantage of the optional DMX address calculation features in DMXQConnect.

On the main menu, click **Configure, Universe**.

There are two tabs, **Show Specific** and **Defaults**. The values entered under the Default tab will be used unless there are values entered in Show Specific. Show Specific values will supersede the Default values. DMXQConnect uses the values entered here to calculate the numbers displayed in the Address box of the Station Detail pane at the top of the working screen. DMX Universe Parameters are not essential information for the DMXPathfinder to patch correctly, they only serve as a utility for the user.



Select the **Defaults** tab. Notice that initially there are three universes set up as defaults. The number (1, 2, 3 etc.) in the Universe # box at the top refers to an actual control console DMX output port, or *Universe*. Each DMX Universe carries a large number of DMX device codes (sometimes called *dimmer* or *channel* numbers), usually the maximum 512, but sometimes fewer. These values will vary with different installations, but in any case should match those assigned in your control console's port parameters. The numeric ranges of these device codes are assigned in the Start Device # and End Device # boxes. No overlapping device numbers are permitted between universes. If your lighting control system uses values different from those shown, you can edit the defaults by clicking on the desired Universe in the table below and entering the new values in the appropriate boxes above. When done, click on the **Update** button and the new values will now appear in the Universe table. To add a new universe record, click on the **Add New** button, then enter the new data and again click on **Update**. When finished, click on **Close**.

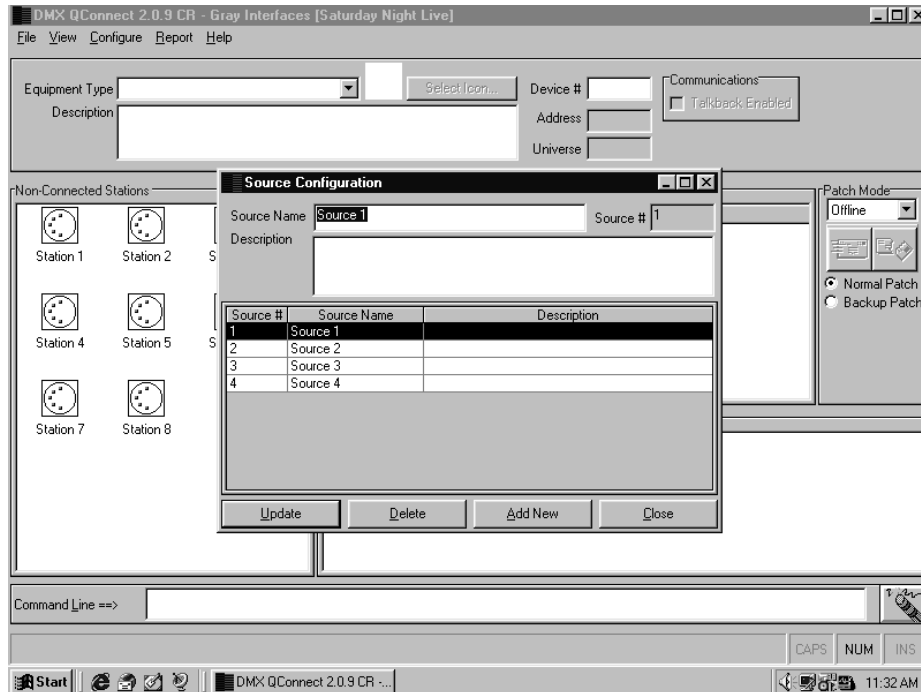
It is unnecessary to enter any universe information under the Show Specific tab unless the requirements of, say, a touring show requires different values to be used. When that show moves out, be sure to use the **Delete** button to

erase all information contained in the Show Specific tab so that the Default values will be used again. Remember that Show Specific values take precedence over Default values.

When back in the main working screen, select a Connected or Non-Connected Station by clicking once on it. Then enter *1234* in the *Device #* box in the Station Detail pane at the top of the screen. Notice that the *Address* box now displays *210*, and the *Universe* box shows *3*. What good are these figures? Let's say you have a color scroller that you want your console to control on channel #1234. How do you set the scroller's address switches when they have a maximum allowable range of 1 to 512? DMXQConnect has saved you the trouble of using mental math or carrying a calculator to figure out the real address for the scroller, and which console port it will connect to.

## SOURCE CONFIGURATION

Next we will assign working names to the various DMX sources (control console outputs) using the **Configure, Source** window and table. Access it from the main menu now.



To add a new Source, Click the **Add New** button to clear the Source Name and Description boxes at the top of the window. Click on the Source Name box and type in the name of Source (e.g. Main Console DMX 1). Use the [Tab] key or click in the Description field. An optional description may be entered here. When done click the **Update** button or use the [Enter] key to complete the addition to the Sources table. It's best to use [Enter] if you are continuing to add more sources, as it automatically increments the Source # and repositions the cursor in the Source Name box. After entering the last Source Name or Description, don't hit [Enter] or the **Update** button to avoid adding another source. Click elsewhere in the Source table or click on **Close**.

To modify an existing Source, click on it in the Source table to highlight it, then click on the Source name or Description box (whichever you wish to modify). The regular text editing conventions of Windows 95 apply, including the right-click editing tools. When your editing is complete, click the **Update** button or use the [Enter] key to complete the modification to the Sources table.

To delete any existing default Sources and start fresh, click on the bottom (last) Source in the table. While it is highlighted, click the **Delete** button in the Configure Sources window. A prompt message to confirm your action will

appear. Click **Yes** to confirm. Continue until all Sources in the table have been deleted. *Note: Only the last Source in the table can be deleted with each Delete action.*

## STATION CONFIGURATION

Like Sources, Stations should be configured in advance to make your patching intuitive and easy. Go to the main menu and click **Configure, Station**.

The Station Configuration window is similar to the Source Configuration window. We have a table of Stations, as well as Station Name and Description boxes. To configure, edit, add or delete Stations, follow the same procedures as outlined above in *Source Configuration*.

## CONFIGURING YOUR INFORMATION DISPLAY

### Pane Sizes

There are many useful ways to configure your workspace to suit your own preferences. Pane size can be change to display more information, and station information can be displayed in a number of ways.

To change the pane size, move the cursor over the vertical divider between the Non-Connected Stations and Sources panes until it becomes the resize cursor. Then click and drag the vertical divider to where you want it. Similarly, the horizontal pane divider between the Sources and Connected Stations panes can also be moved. Pane sizes will be retained from this session next time you launch DMXQConnect.

### Station Icons & Detail

While some like the ease of identification afforded with the use of Station Icons, others prefer more station information to be presented. Until now we've looked at stations in large icon view. To change to small icons or detail view, move your cursor to the Non-Connected or Connected pane and right-click. Choose **View, Detail**.

Now instead of large icons, Stations are presented in a table format showing a small icon, Station Name, number, Equipment Name, Description, etc. The Non-Connected and Connected panes can be individually set to create workspace you find useful. You can enlarge the pane to see more. Similarly the individual columns of the table can be resized in the same way. Move the cursor to the table column heading area, between two columns. Again the cursor should change to the resize cursor. When it does, click and drag the column border until it is the desired width.

## CONNECTED STATIONS DISPLAY

To see which stations are connected to a specific source, simply click on the desired source in the Source pane. The Connected Stations display will change to show you only the stations connected to that Source. To remind you that you are only looking at the stations connected to a particular source, a green “LED” appears beside the Source referenced.

You may wish to see all the Connected stations, not just those connected to a single Source. If this is the case, right-click inside the Connected Stations pane and select **Show All**. Then if you wish to see which source that station is connected to, simply click on the desired station. The green “LED” will appear beside the source that station is connected to. In Detail view, the associated source number will appear in the last column.

## SORTING

Station information displayed in Detail View can be quickly re-sorted to display the information in a manner relevant to your needs. Click on a column heading to sort the table by the values in that column. Clicking on the same column heading toggles the sort order between ascending and descending.

## PRINTED REPORTS

Provided that Windows 95 has been configured with your printer and it is connected, printed reports detailing your patch data in an organized format can be obtained from *DMXQConnect*. Reports can be useful backup and documentation tools, as well as great designer’s reference. In addition, reports can be exported to a variety of formats including Lotus, Excel and Word, for incorporation into other documents.

To view a report, select **Report, Connected Stations by Source** from the main menu. This will generate the actual report and open the **Reports** window.

Maximize the report window so that it fills the screen. If the report form looks empty, you probably don’t have any stations patched. Close the report window and patch a few stations before re-opening report. Controls for the report display appear along the bottom of the window.

## COMMAND LINE

As an alternative to the “drag and drop” style of patching, you can work in a “Command Line” mode, without the mouse. Similar to many lighting control consoles, in this mode the numeric keypad on your keyboard can be used to assign stations to sources. **TIP:** *You’ll find that the selecting the **Detail** view for both Non-Connected and Connected panes will make this process easier.*

With the mouse, click on the Command Line box at the bottom of the workspace (if the Command Line box isn’t there, make sure it is checked in the main menu under View). Make sure that your keyboard Num Lock is enabled and the keyboard LED is illuminated. Patch information is entered by using the numeric keypad to key in the station number followed by the [\*] or [@] key, then the source number followed by the [Enter] key. To clear the Command Line for the next entry, press the [Delete] key on your keyboard. If the Command Line is no longer highlighted, use the mouse to click on the “eraser” button to the right of the Command Line to clear it. To patch several stations to the same source, use the [+] as “and” or the [/] key as “thru”. For example to patch stations 1, 3, 5, and 7 to source 1, key in:

**1 + 3 + 5 + 7 \* 1 [Enter]**

Similarly to patch Stations 8 thru 15 to Source 2, key in:

**8 / 15 \* 2 [Enter]**

Or you can mix it up to patch 1 and 7 and 12 thru 15 to Source 3 by keying:

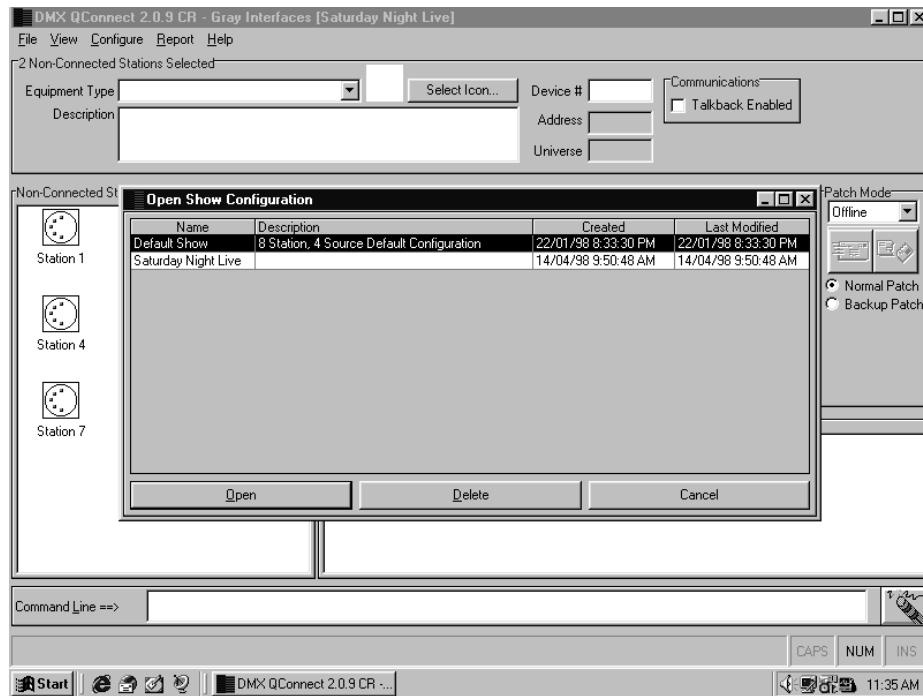
**1 + 7 + 12 / 15 \* 3 [Enter]**

## BACKUP YOUR DATA!

To protect yourself from an accidental loss of patch data, we suggest that you make archive copies of your data. Select **File** from the main menu, followed by **Create Backup...** Use the standard Windows 95 file management conventions to specify where you want the data archived to. If you need to restore a show from an archive, Use **File, Restore From Backup...** You will be asked if you wish to make a backup of the existing data first since this action will replace the current data with the backup copy. Note that this process archives *all* show patches and configuration data.

## OPENING A DIFFERENT SHOW

You may wish to work with a show other than the one that you used during your last session. If that is the case, choose **File, Open Show** from the main menu. A dialog box will open with the shows residing in DMXQConnect's archives. Simply click on the desired show to highlight it, then click on the **Open** button.



## Chapter 4: Command Reference

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### SUMMARY

This Section describes the function and use of *DMXQConnect* main menu commands. For a step-by-step procedure on how to create patch files and send them to the *DMXPathfinder*, refer to *Chapter 3: Getting Familiar with DMXQConnect*.

### FILE MENU

The File menu deals with the functions of saving, retrieving, and deleting individual patch files. Exiting the *DMXQConnect* program is also done from the File menu.

#### New Show

Opens the New Show dialog box and erases the currently loaded patch data from the work area. You are prompted for a name and description for the new show. Show names of up to 20 characters (including spaces) are supported.

#### Open Show

Opens the **Open Show** dialog box containing the names of all show patch files in the database. The user highlights a show file name and loads it into the work area by clicking **Open**. Shows can also be deleted from this dialog box.

#### Rename Show As

Used to save the current show with a new name.

#### Save Show As

This function can be used to make the current show the base for a new show by entering the name of the new show. Conversely, if the show name is left unchanged, the current show is saved as a separate file and “stamped” with the current date and time. A given show name can be used any number of times as all show names are stored in a queue, with the oldest files on top and the newest at the bottom of the list.

#### Create Backup

If you wish to archive your *DMXQConnect* database, this is where it's done. Note that this process archives all show patches and configuration data.

Use the standard Windows 95 file management conventions to specify where you want the archive saved to.

### Restore from Backup

A database that has been archived, can later be restored using this dialog box. When **Restore From Backup...** is selected, the user is first prompted to create a backup of the existing database. This is always recommended, since the Restore function will over-write all existing show files and system configuration data. Specify the location of the file.

### Exit

Closes the DMXQConnect program. Note that when QConnect is re-launched, the last open show file is automatically opened.

## VIEW MENU

### DMXPathfinder Event Log F5

Opens the *DMXPathfinder* Event Log window, displaying a record of all communications “events” and messages sent to or from the Pathfinder. This will include patch commands, acknowledgements, and a date/ time stamp for each message. Outgoing commands appear in green, while incoming messages are in blue. Communication failures appear in red.

Log entries should be cleared from time to time, such as at the end of a production run, or before setting up for a new show. This will keep the log relevant and current. Click on the **Clear Event Log** button when you wish to perform this function. Be warned, however, there is no “undo” function on this operation.

Click on the **Refresh** button to redraw the log and go to the most recent event.

### DMXPathfinder Control

This brings up a window with a number of displays relating to direct control of the *DMXPathfinder's* internal functions. Here you'll find tabs for **Terminal**, **Patch Rack**, **System Loopback** and **Reset**. Full instructions can be found in **Chapter 5: Diagnostics and Troubleshooting**.

### DMXQConnect Options

This brings up a window with a number of displays relating to your preferences when using DMXQConnect. You'll find the following tabs:

**Splash:** This refers to the initial screen and graphic seen when DMXQConnect is first started. You can specify a specific display time duration or have the splash hold until “a Key is Pressed or a Mouse is Clicked”.

**Display:** You can choose to have the Command Line and Status Line display at the bottom of your screen, by click-checking the appropriate boxes.

**Comm Port:** This screen defines the hardware connection parameters between your PC and the DMXPathfinder. See *Chapter 2: Communications Setup* for instructions. **WARNING: Changing these settings may result in a loss of your DMXPathfinder connection.**

**Database Backup:** As with any other computer application, it is wise to make backups of your DMXQConnect data. QConnect will remind you to make a backup as the program is being closed, after the specified number of uses.

### DMXPathfinder Options

These will provide the means to remotely select patch mode and configure your DMXPathfinder interface. A display with two tabs appears:

**DMXPathfinder Patch Mode:** Lets the user remotely toggle the DMXPathfinder patch configuration between the two file data stores (Backup and Normal) from the PC. A Clear function is included which, when chosen, completely strikes the current patch configuration from the Pathfinder and erases the Normal patch data from its memory. The Backup patch data in the Pathfinder’s memory is not affected.

**DMXPathfinder Hardware Configuration:** Use the mouse to click on your selections. **IMPORTANT: These settings are typically made once during system setup, and will not need to be changed unless your system hardware is modified.** **WARNING: Incorrect settings or modifications may result in incorrect operation.**

The model (DMXPathfinder LR or Classic) must be set to match the connected hardware. DMXPathfinder LR is identified as such on the front face of the modules. Classic hardware is only identified as DMXPathfinder on the face.

The **Diagnostic Patch** selection provides a means for the user or technician to analyze the patch file output data format and content. When Display Patch Debug Form is click-checked, a debug window will open every time a PC-to-Pathfinder patch file transfer is initiated. The window contains a “dump” of the actual bit-by-bit patch data that was just sent to the Pathfinder. Normally you should leave this selection set to Do NOT Display Patch Debug Form.

Input and Output card selection is discussed in detail in *Chapter 3: Setting Up the System*.

## Show Command Line & Show Status Bar

You can choose to have the Command Line and Status Line display at the bottom of your screen, by click-checking the appropriate items.

## CONFIGURE MENU

### Station

To add a new Station, click the **Add New** button to clear the Station Name and Description boxes at the top of the window. Notice that the next undefined station number is displayed in the station number box. Click in the Station Name box and type in the name of the station (e.g. FOH 1). Use the **[Tab]** key or click in the Description field. An optional description may be entered here. When done click the **Update** button or use the **[Enter]** key to complete the addition to the Stations table.

To delete any existing Station and start fresh, click on the bottom (last) Station in the table. While it is highlighted, click the **Delete** button in the Configure Stations window. A message to confirm your decision will appear. Click **Yes** to confirm. **Note: Only the last Station in the table can be deleted with each Delete action.**

To modify an existing Station, click on it in the Station table to highlight it, then click on the Station Name or Description box (whichever you wish to modify). The regular text editing conventions of Windows 95 apply, including the right-click editing tools. When your editing is complete, click the Update button or use the **[Enter]** key to complete the modification to the Stations table.

### Source

To add a new Source, click the **Add New** button to clear the Source Name and Description boxes at the top of the window. Notice that the next undefined source number is displayed in the source number box. Click in the Source Name box and type in the name of Source (e.g. Main Console DMX 1). Use the **[Tab]** key or click in the Description field. An optional description may be entered here. When done click the **Update** button or use the **[Enter]** key to complete the addition to the Sources table.

To modify an existing Source, click on it in the Source table to highlight it, then click on the Source name or Description box (whichever you wish to modify). The regular text editing conventions of Windows 95 apply, including the right-click editing tools. When your editing is complete, click the **Update** button or use the **[Enter]** key to complete the modification to the Sources table.

To delete any existing Sources and start fresh, click on the bottom (last) Source in the table. While it is highlighted, click the **Delete** button in the Configure Sources window. A message to confirm your decision will appear.

Click **Yes** to confirm. *Note: Only the last Source in the table can be deleted with each Delete action.*

## Equipment Type

The Equipment Type selection provides information about a station and determines the icon displayed with the station. The list of available equipment types for selection is determined here.

To add a new Equipment Type, click the **Add New** button to clear the Equipment Type and Description boxes at the top of the window. Click in the Equipment Type box and type in the name of Equipment (e.g. Color Scroller). Use the **Browse** button to point to the icon you wish to be associated with that Equipment Type. Icons are normally found in Program Files\QConnect\Icons.

To modify an existing Equipment Type, click on it in the Equipment Type table to highlight it, then click on the Equipment Type box to edit. The regular text editing conventions of Windows 95 apply, including the right-click editing tools. When your editing is complete, click the **Update** button or use the [Enter] key to complete the modification to the Equipment Type table. Use the **Browse** button to point to the icon you wish to have associated with each Equipment Type. Icons are normally found in Program Files\QConnect\Icons.

To delete any existing Equipment Type, click on the desired Equipment Type in the table. While it is highlighted, click the **Delete** button. A message to confirm your decision will appear. Click **Yes** to confirm.

You can edit existing icons or add new icons to your icon library. Icons are standard .ico files and can be created and modified with a number of shareware utilities.

## Universe

DMX Universes need to be set up properly to take full advantage of the optional DMX address calculation features in DMXQConnect.

There are two tabs, **Show Specific** and **Defaults**. The values entered on the Defaults tab will be used unless there are values in Show Specific. Show Specific will supersede the Default values.

The Universe # refers to an actual DMX console (or control system) output port. Universe Parameters are the number and range of DMX device codes configured on that port. DMXQConnect uses the values entered here to calculate the numbers displayed in the Address box of the station detail pane at the top of the working screen. DMX Universe parameters are not essential information for the DMXPathfinder to patch correctly, they only serve as a utility for the user.

To add a new Universe, click the **Add New** button to clear Universe and Description boxes at the top of the window. Click in the Universe # box and type in the number of the Universe.

To delete any existing Universe, click on the desired Universe in the table. While it is highlighted, click the **Delete** button. A message to confirm your decision will appear. Click **Yes** to confirm.

To modify an existing Universe, click on it in the Universe table to highlight it, then click on the Universe box to edit. The regular text editing conventions of Windows 95 apply, including the right-click editing tools. When your editing is complete, click the **Update** button or use the **[Enter]** key to complete the modification to the Universe table.

## REPORT

To view a report, select **Report, Connected Stations by Source** from the main menu. This will generate the actual report and open the Report window.

Maximize the Report window so that it fills the screen. If the report form looks empty, you probably don't have any stations patched. Controls for the Report display appear along the bottom of the window.

As well, reports can be exported to a variety of formats including Lotus, Excel and Word, by clicking on the "suitcase" button and selecting the format desired.

## Chapter 5: Diagnostics and Troubleshooting

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### SUMMARY

This Chapter explains how to use *DMXQConnect* and the *DMXPathfinder's* built-in diagnostic software to check for possible problems with file transfers or in the *DMXPathfinder* modules, to assist in verifying new DMX wiring installations and how to enter the system Access Code. It will also deal with what corrective action can be taken by the user. For a detailed overview of the theory of operation, functional description and troubleshooting of the *DMXPathfinder's* internal hardware and firmware systems, please refer to a separate document, *DMXPathfinder CR - Operation & Maintenance Manual*.

### SYSTEM HEALTH CHECK

*DMXQConnect* incorporates a simple user function to determine whether the Personal Computer and *DMXPathfinder* are communicating properly with each other and if all of the Pathfinder's module frames are connected and responding properly. If not already running, launch QConnect and click on **View, DMXPathfinder Control**. Choose the **Patch Rack** tab. This screen contains sixteen graphical red LEDs, each corresponding to a module frame in the largest possible *DMXPathfinder* system. Click on the **Retrieve DMXPathfinder Info** button, and one or more of the LEDs should turn green according to the actual installed configuration of your system. Any LEDs that remain red indicate missing, miswired or defective module frames as no response was received.

The Mainframe Serial # field at upper left should now be displaying a series of numbers that identify the first frame in the system. The System # field will also contain some characters if a system identifying number was assigned. The Access Code field may or may not display an 8-character user access code. If it does, the word "VALID" will display in the Patch Rack Configuration pane to the right. If not, "INVALID" will display. If this is the case, you will need to contact the Factory to obtain an Access Code for your system. Refer to *Access Codes and Serial Numbers* in this chapter for instructions on entering the Access Code.

### FILE TRANSFER ERRORS

As described in Chapter 3, patch file transfers are checked on two different levels for errors. First, a CRC (Cyclic Redundancy Check) is performed at the

DMXPathfinder on the received file to ensure data integrity. The response message "Successful patch file transfer" should be seen in QConnect's DMXPathfinder Event Log for every file send operation. If the message "Unsuccessful patch file transfer" appears, there is probably hardware trouble, most likely with the Master Control Module (MCM) in the *Pathfinder*. Replace the MCM with a spare unit and retry the file transfer. Another possible cause for this error would be incompatible software versions between DMXQConnect and the MCM EPROM.

The second and more likely cause of error, would be a defective or missing Input or Output Module. In this instance the file transfer would be successful, but the end result would not be. The **ERR** LED on the face of the MCM, and possibly on the suspect IPM or OPM, would be illuminated. The message "Output [or Input] Card *nnn* Communications timeout error" would appear in the Event Log, where *nnn* indicates the sequential number of a suspect input or output module. Locating a defective input module is easy since there are no more than eight in any system (001 - 008), but it may take some counting to find a bad output module (001 - 128). Replace the suspect module with a known good one, making sure that the replacement's rotary address switches are set to the correct module number, and retry the file transfer. The MCM **ERR** LED should now be off, and the response message should not indicate any problems.

## LOOPBACK TEST

DMXQConnect incorporates a link to a built-in set of input/output diagnostic test routines in the DMXPathfinder firmware. The purpose of the System Loopback Test is to allow the user to verify the proper operation of each and every data receiver or transmitter, crosspoint matrix device, cable and connection used for passing DMX signals through the *Pathfinder*. To accomplish this, QConnect provides the means of sequentially checking all Pathfinder hardware or selecting a specific set of input or output circuitry for testing. The Pathfinder will respond with confirmation of the currently selected hardware I/O device channel and the status of the test (passed or failed). **CAUTION: before running the Loopback Test routines, first ensure that any Input or Output modules to be tested are not connected by the installed wiring or portable cabling to any external transmitting or receiving equipment whatsoever. As well, when Loopback Test is started all DMX data moving through the DMXPathfinder will be cut off until you exit from the DMXPathfinder Control screen.**

There are two ways to run the Loopback Tests: using a graphical screen or using a terminal window method. We suggest that if you are simply checking for cable integrity, the graphic screen is most convenient. If you are carrying

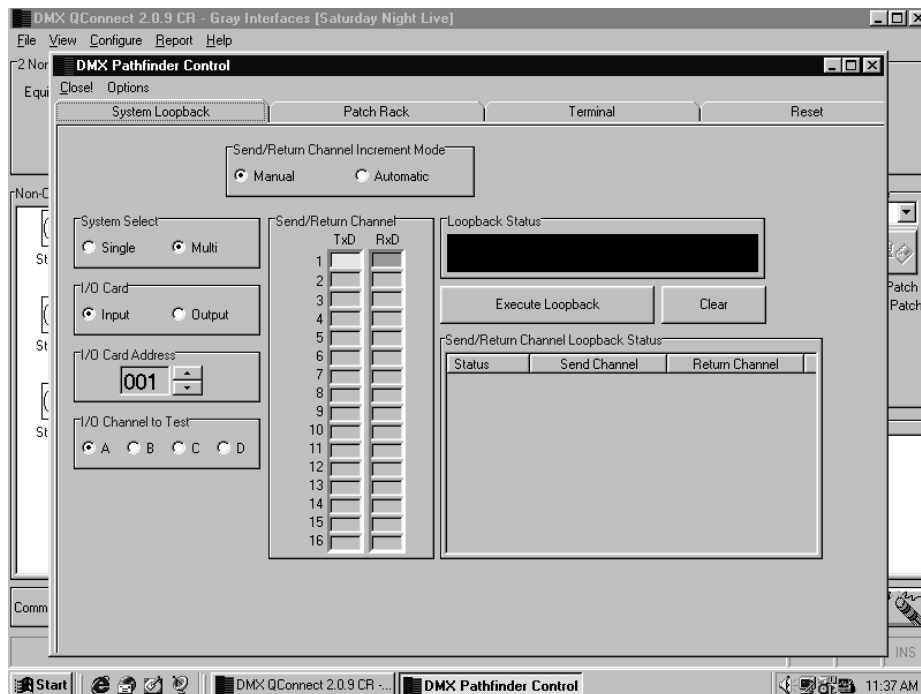
out “deep” testing of the *DMX Pathfinder* crosspoint electronics, the terminal window will be faster. Both methods can be used for either test, however.

These tests require that a “loopback connector” be plugged into either the optional insert jack on the face of the I/O module or the source/station jack at the far end of the installed DMX wiring. Loopback connectors are standard 5-pin XLRs with pins 2&4, and 3&5 connected. A female connector will be required for testing the source (input) modules and wiring, while a male connector is used to test the station (output) modules and wiring.

When a loopback test is initiated, the *DMX Pathfinder’s* Master Control Module generates a pseudo-DMX signal and creates a routing path through the Pathfinder electronics according to the I/O parameters that the user has assigned. The signal is transmitted on the selected Output Module’s send data pair (XLR pins 2 and 3) and received back on the same module’s return data pair (XLR pins 4 and 5). If an Input Module is being tested, the signal is transmitted on the return data pair (XLR pins 4 and 5) and received back on the receive data pair (XLR pins 2 and 3). Loopback Test does not check for pin 1 continuity.

## GRAPHICAL SCREEN METHOD

If not already open, launch *DMXQConnect* and select **View, DMX Pathfinder Control** from the main menu. Choose the **System Loopback** tab. In general, the left side of this screen is for selecting the test parameters, and the right side is for starting the test and viewing the results. You might recognize the green/yellow LED bar display in the center as a duplicate of what you would see on the face of the *DMX Pathfinder’s* Master Control and Frame Control modules. At the top of the screen are buttons for setting manual or automatic



test mode.

To do a continuity test for a given output line, say Station #15, follow these simple steps:

1. Set the **System Select** button for your particular *DMXPathfinder* configuration, **single**-frame or **multi**-frame (default is multi-frame)
2. Select **Output** module as the **I/O Card** type.
3. Increment the **I/O Card Address** to **004** (since each I/O module has 4 inputs or outputs, output #15 will be on module #4)
4. For **I/O Channel to Test**, select button **C** (output #15 is the third channel)
5. Leave the **Send/Return Channel Increment Mode** set at the default **Manual**.
6. Click on the **Execute Loopback Test** button. The word TESTING will appear in the black **Loopback Status** window, changing after about 1 second to PASSED or FAILED. A record of the test results will appear in the Send/Return Channel Loopback Status display.
7. A PASSED result indicates that the line has been wired correctly and the transmit/receive circuitry on that Output Module is functional.
8. If the response shows FAILED and it's a new installation that's being tested, the most likely cause is a mis-wired cable to the station. You can determine whether the fault is with the cable or the Output Module by reconnecting the suspect cable to a known good output or swapping the Output Module with another (remember to set the three address switches correctly!).

To carry out a complete check of all crosspoint router and transmit/receive circuitry which could possibly affect the selected input or output line, change the **Send/Return Channel Increment Mode** to **Automatic**, then execute the test again. This time you will see the green/yellow LED bar display incrementing as the test checks every input/output crosspoint combination and I/O bus connection in sequence. The process will take about one minute for each line being tested (versus 15 seconds when the test is run from the terminal window). If a problem is encountered during automatic testing, the test will terminate at the suspect I/O bus channel location as shown on the LED bar display and in the Loopback Status window. It is a good idea at this point to try restarting the test by clicking on the next Send (TxD) channel green LED following the one where the testing stopped, then executing again. If the problem was with the previous Send channel, the test should now continue normally. If the problem was a Return (RxD) channel, the test will not continue unless you click on the next RxD yellow LED.

Send/Return bus channel problems discovered during loopback testing can be traced to a defective Input or Output Module, Master Control or Frame Control Module, or the I/O bus cabling that links the *DMXPathfinder*'s module frames. In general, problems that affect only one input or output line point to the actual Input or Output Module. Problems that affect all lines in a given frame point to

the Frame or Master Control Module, and problems that affect every line in the system are most likely caused by a I/O bus cable connection. Make a note of the defective I/O channel and which lines are affected, then refer to the *DMXPathfinder CR – Operation & Maintenance Manual* for further assistance in correcting the fault.

### TERMINAL WINDOW METHOD

Launch *DMXQConnect* and select **View, DMXPathfinder Control** from the main menu. The **Terminal** window is open in the foreground. Click on the **Connect** button below the window, and several lines of text will appear. Your personal computer is now in direct text-mode "conversation" with the *DMXPathfinder*. The heading will read "DMX Crosspoint Router Ver.2.0 Diagnostics" or something similar depending on the vintage of the Pathfinder firmware. Below the heading is a list of single-letter keyboard commands for various functions. Three menu choices are listed: *System Loopback Test*, *Access Code Input*, and *Serial Number and Access Code Support Status*. Use upper-case characters to select from these items.

Choose **L** for Loopback Test. Notice that the window now lists a menu consisting of single-keystroke commands with short form descriptions, and at the bottom there is a response area with a set of headings. The response section provides an indication of the currently selected hardware I/O device channel and the status of the test (Passed or Failed).

The following is a detailed explanation of the use of the Loopback Test terminal command menu to test the *DMXPathfinder* electronics. Note that the response area updates each time a command is given at the keyboard, and that commands may be in upper or lower case characters.

#### **f - Single/multiframe system select**

Pressing "f" toggles the selected system configuration between single frame or multiple frame systems. A single-frame system is the smallest possible configuration, with all Input and Output modules in the same frame. Most systems are multi-frame, that is, where Input Modules are in the first rack frame and Output Modules are in one or more subsequent frames. This setting must match the installed Pathfinder hardware for the tests to work properly.

#### **t - Input/output card type select**

Pressing "t" toggles the I/O module type between Input and Output, allowing the user to select the type of module to be tested.

#### **m - Manual/automatic mode**

Pressing "m" toggles the test mode between manual and automatic. In manual mode, the user manually increments or decrements the internal send/return bus channel to be tested (range 01-16), allowing a specific bus channel to be targeted for testing. This mode might be used to check for a possible defective internal bus channel, or when the external cable installation is being checked for continuity and it is unnecessary to deal with any of the Pathfinder's internal circuitry. Automatic mode sequentially scans all 16 internal send/return bus channels and tests all possible crosspoint matrix combinations for the I/O module channel being tested. This constitutes a complete and thorough check of all internal wiring and circuitry affecting the selected I/O channel, and a passed test will guarantee proper functionality of that channel.

**c - Card I/O Channel select**

Pressing "c" increments the Input or Output Module's I/O channel between A, B, C , and D, allowing the user to select one of the four channels on each I/O module to be tested.

**s - Send channel increment**

Pressing "s" increments the internal send bus channel (range 01-16), allowing the user to select a specific bus channel for testing in Manual test mode or where to start testing in Automatic mode.

**S - Send channel decrement**

Pressing "S" decrements the internal send bus channel (range 01-16), allowing the user to select a specific bus channel for testing in Manual test mode or where to start testing in Automatic mode.

**r - Return channel increment**

Pressing "r" increments the internal return bus channel (range 01-16), allowing the user to select a specific bus channel for testing in Manual test mode or where to start testing in Automatic mode.

**R - Return channel decrement**

Pressing "R" decrements the internal return bus channel (range 01-16), allowing the user to select a specific bus channel for testing in Manual test mode or where to start testing in Automatic mode.

**i - Initiate test /continue test /pause test**

Pressing "i" after setting up the test parameters and plugging in the loopback connector, will start running the selected test. A test run in Manual mode will complete almost instantly since there is only one send and return channel to be tested. The response section in the terminal display window should update and first show "Testing" in the *Status* column, then it should update again to show "Passed". If the display shows "Failed", check that the loopback connector is wired properly and

plugged in to the I/O channel indicated on the display. Re-run the test on a known good input or output channel.

In Automatic mode, pressing "i" will start running the test at the currently selected internal send/return bus channel, with the progress and results of every individual crosspoint test (Testing, Passed) displayed as it completes. The Source Line TxD and RxD LEDs on the face of the Pathfinder's Master Control Module will track the progress of the test. If a problem with any aspect of the test occurs, the test will halt at the point where trouble was encountered. Both the Pathfinder LED display and the PC terminal window response will indicate the send and return channel where there is a problem. In most cases, troubles pinpointed by these diagnostic tests can be easily corrected by simple replacement of the suspect module, or by correcting mistakes in the installed DMX wiring. In rare cases, there may be a connection problem in one of the rack frames or their interconnecting cables. Please refer to the *DMX Pathfinder CR - Operation & Maintenance Manual* for more assistance if you suspect that this is the source of trouble.

Pressing "i" after starting an Automatic test will pause the test, and pressing it again will allow the test to continue.

**a xxx (Enter) - Board address select (001-008 input, 001-128 output card)**

Pressing "a" followed by the 3-digit card number and [Enter] will select a specific Input or Output Module for testing. All key presses are echoed in the terminal display window and the new selected number will be confirmed by an update in the response area. The short form description above gives the maximum possible numeric ranges for the two types of I/O modules. Spaces between the characters are not required.

**Enter - redisplay command menu**

Pressing the [Enter] key at any time will reprint the entire command menu on the PC display. This is useful if there is no printed version of the menu handy for reference during Loopback Test operations.

## ACCESS CODES AND SERIAL NUMBERS

To view or enter the system Access Code, launch *DMXQConnect* and select **View, DMXPathfinder Control** from the main menu. The **Terminal** window is now open in the foreground. Click on the **Connect** button below the window, and several lines of text will appear. Your personal computer is now in direct text-mode "conversation" with the *DMXPathfinder*. The heading will read "DMX Crosspoint Router Ver.2.0 Diagnostics" or something similar depending on vintage of the Pathfinder firmware. Below the heading is a list of single-

letter keyboard commands for various functions. Three menu choices are shown: *System Loopback Test*, *Access Code Input*, and *Serial Number and Access Code Support Status*. Use upper-case characters to select from these items.

#### **A - ACCESS CODE INPUT**

When the DMX Pathfinder system is originally installed, and if/when the Master Control Module is replaced, the user must enter a unique access code to enable PC-to-Pathfinder patch file transfers. The access code has been determined at the Factory, and relates to the actual rack hardware supplied for a given system. Additional I/O modules may be added or removed from the system by the user at any time, but adding more output frames requires that a new access code be used. The access code, once correctly entered, is stored in non-volatile memory in each Master Control Module supplied with the system and no further action is ever required unless hardware is changed as described above. If your system includes a spare Master Control Module, make sure it is enabled by plugging it in and going through the access code input procedure again.

To enter the access code, turn on [**Caps Lock**] and select "Access Code Input" by pressing "**A**".

Type in the 8-character code that was supplied with your system. When the 8th character has been entered, you will be prompted to confirm your Access Code. Press "**Y**" to accept the code, "**N**" to reject the code and try again, or [**Esc**] to abort the entry function altogether. When you have entered the correct code and accepted it, the message "Done!" will appear.

#### **N - SERIAL NUMBER AND ACCESS CODE SUPPORT STATUS**

The main purpose of this function is to allow the user to poll the system and detect the installed module frame hardware. Each frame in a given system has a unique serial number, and these numbers are displayed along with an "OK" status flag which indicates proper functioning of each Frame Control Module.

A frame that has a missing or defective Frame Control Module, a frame that is disconnected from the system Comm Bus, or frames not present, will not be detected by the poll. The poll response will also display the current system configuration (Single frame or Multiframe) as set on DIPswitch #6 on the Master Control Module.

These Diagnostics menu functions can be terminated at any time by clicking on the Close icon [**X**] at the top right of the **DMXPathfinder Control** screen. When the screen is closed, a soft reset command is issued to the Pathfinder to re-establish its current patch configuration.

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