

# **Product Manual**

## **Display Express**

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**Display Express PC**

**Display Express Software**

Version 5.8.0, DX Update Version 5.8.1  
July 27, 2012

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# Display Express Software Installation

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## What's new in version 5.8.0/5.8.1

### Custom Panel Header

You can now create a custom panel header for control panels.

### Introduction

Display Express is now available in two forms, an installation CD for Windows XP Pro. Windows 7 Pro PCs and Server 2003 servers, and preinstalled in a rack-mount PC. This manual covers both applications in three sections:

- Software Installation
- PC and System Setup
- Software Operation

### Display Express Service

Display Express Service (manages data handling on Web pages) must be run on Windows XP Pro or 7 Pro 32- and 64- bit. After installation, the Display Express Service will be started automatically, and every time the computer is booted it will be started automatically. If you want to start the service manually instead, you can do this by going to Start Menu > Control Panel > Administrative Tools > Services. Scroll down to Display Express. By right-clicking, you can change the start option to manual.

You can also start and stop the service using the Services Dialog.

### Internet Information Services

Internet Information Services (IIS) should be installed on your computer before Display Express is installed. To find out if IIS is installed on Windows XP, click on Control Panel > Add or Remove Programs, then click on the Add/Remove Windows Components icon on the left. In the next window, scroll down and find Internet Information Services. If it does not have a check mark next to it, then it is not installed.

To install IIS, click to put a check mark next to IIS, then click on Next, etc. You will need the CD used to install your operating system if the files are not installed on your hard drive, or the installation files may be stored in the server. On Windows Server 2003, look for Application Server instead of Internet Information Services in the Add/Remove Windows Components dialog. The PC will likely need to restart.

On Windows 7, go to Control Panel > Programs and Features > Turn Windows Features On or Off > Internet Information Services (IIS), and check the box. Then, click on the + next to IIS, click on the + at World Wide Web Services, + at Application Development Features, then click the box for ASP.NET.

### Web Access to Display Express

When you install Display Express, the installer gives you a choice of standalone, LAN or WAN configuration. In Standalone mode, no UDP/TCP ports are created, so only the user at the PC can access Display Express. In LAN mode, the ports are opened for local LAN access only, and WAN setting opens access to browsers outside your local LAN. Additional IT services are required to enable remote WAN access. To change access, manually uninstall the software from Control Panel, then re-install. No data will be lost.

## **Windows Firewall Exceptions for Display Express**

If LAN or WAN configuration is selected during installation, three firewall exceptions will be created: Display Express TCP, TCP port 2728, (local area network or any computer) Display Express UDP, UDP port 2728, (local area network or any computer) http://localhost/DX, TCP port 80, (local area or any computer).

## **Server Operation**

Presently, Display Express has been tested for installation on Server 2003, Windows XP and Windows 7 Pro, 32- and 64-bit.

Sites that use Display Express on a Server should use the ICE-HE Ethernet Head End. This unit can communicate to the server via Ethernet using Telnet, and then inserts the control commands over RF as a micro-channel between channels 4 and 5.

# Setup Tips for all Display Express Applications

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Your installation will go well if you keep a few key facts in mind. If you don't understand a bullet point, read the rest of the manual or call CR Support.

## Controller Installation

- **Create a spreadsheet and divide the system into Zones before you begin.** Otherwise, you'll need to change the controller addresses later on.
- **Pre-test display control on at least one controller and display before starting.** You can use a Head End and iC Send to test on and off control. In most cases, all displays and controller settings are the same across the system. If some are different, pre-test those, if possible.

## PC Setup

- **Change the Time Zone when you install the PC.** All the units are shipped sent to Central or Pacific Time. Also enable to synchronize with an Internet time server if possible (some networks may block that). Remote PCs will display the Display Express web server's time and date on the browser.

## Software Updates

- New versions of Display Express can be installed over previous versions. You won't lose any data or settings.
- Updaters for existing Display Express software are available on the CR website, [www.crwww.com/downloads](http://www.crwww.com/downloads).

## Display Express PC Setup

### General

- Windows 7 Pro 32-Bit software installed
- Web operation provided by Localhost IIS service
- Operating system and program files in C: drive

### Ethernet

IP Address: 192.168.1.245  
Subnet Mask: 255.255.255.0  
Gateway Address: 000.000.000.000

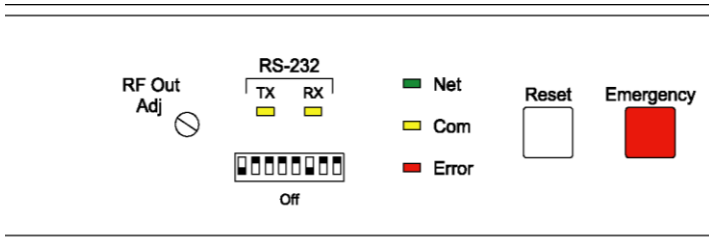
Telnet TCP Port: 2728 Telnet Access  
UDP Port: 2729 For remote Find access  
80 For Web Access

Web Access: Internal Access - <http://localhost/DX/>  
External Access - <http://<IP address>/DX/>  
External Access - <http://<Computer Name>/DX/>

# Head End Installation

In most applications, the Display Express PC will be installed adjacent to a Contemporary Research ICC-HE Head End or ICE-HE Ethernet Head End. Both can receive commands via RS-232 and insert the commands into the RF system as a small control channel between TV channels 4 and 5. Instructions for connecting the DX PC to the ICE-HE Ethernet Head End over IP are included on the next page. Additional instructions are included in the ICE-HE Head End manual.

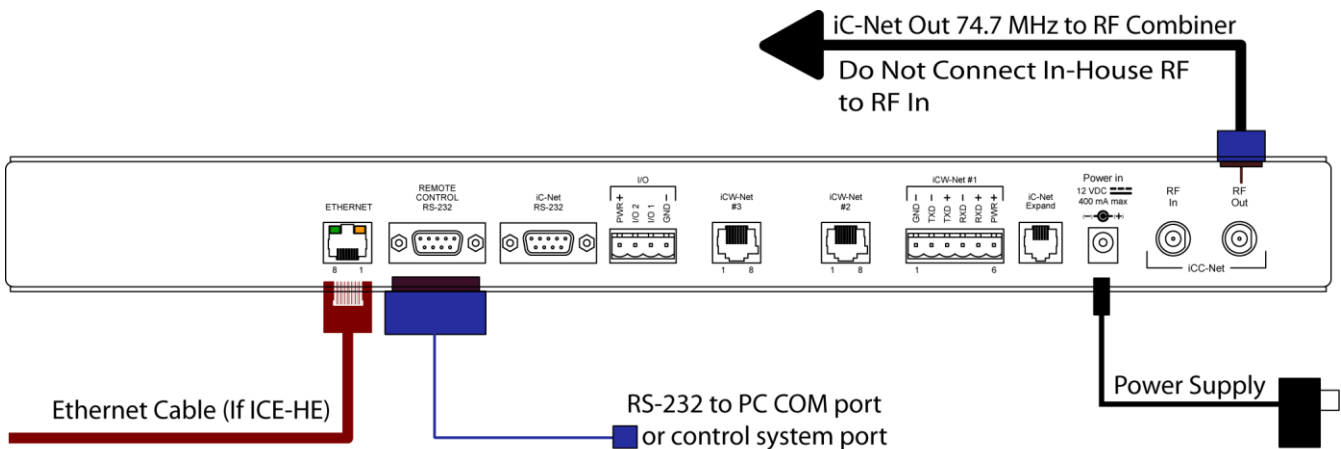
## RS-232 Control



Check the front panel of the Head End, as shown above, and see if the last 3 DIP switches under the RS-232 LED are set as follows:

- Switch 6 Off (Down)
- Switch 7 On (Up)
- Switch 8 On (Up)

This sets the speed of communication to 19,200 baud.



Next, connect the included RS-232 cable between the PC's 9-pin RS-232 port or USB adapter to the RS-232 Remote Control port on the back of the ICC-HE. The ICE-HE can also receive control commands via IP.

**Tech Note. Do not use the RF IN on the HE to pass through the entire RF feed through the HE. It's not a combiner input and doesn't pass any RF. Connect the RF OUT to a combiner input with the rest of the cable and modulator feeds.**

## Ethernet Control

The ICE-HE typically communicates over a network using a static IP address, and is shipped set to a default address:

IP Address: 192.168.1.251

Subnet Mask: 255.255.255.0

Gateway Address: 000.000.000.000

Odds are, at least the IP address will change when the ICE-HE is connected to the client's network. One your first steps will be to obtain a static address from the client's IT department, as well as an external gateway IP address if you intend on supporting the system from your office or anywhere outside the site's firewall.

Once you change the settings, create a label noting the settings and attach to the back of the ICE-HE.

### Reset IP Address

If you change the default address and forget what it is later on, you can always reset the ICE-HE back to the default settings using the unit's front-panel DIP switch 2. While the power is on, flip the switch off, then back on to reset the IP address. The IP and Subnet Mask will change, the Gateway will stay at its current setting.

Since its possible another network device is using the default IP address, the best approach is to enter the new settings offline, outside the network. You can use one of two, requiring one of two offline options:

1. Direct PC Connection. Use an Ethernet "Crossover" cable to make a direct connection to the ICE-HE Ethernet port and your PC. Two pairs of wires are reversed at one end to create a direct send/receive path for data.
2. Hub or Switch Connection. Another approach for connection is to use a standard Ethernet hub or switch between your computer and the ICE-HE. Using standard Cat5 Ethernet cables, connect your PC to one port, then connect the ICE-HE to the second port.

## RF Setup

The Head End sends the control channel at a level of 50 dBmV. In virtually all installations, the system installer has installed filters to the RF Out connection to match the level to the other RF channels. The manual that was shipped with the Head End provides more detail, if needed, can be downloaded from the Head End page in the [www.crvvv.com](http://www.crvvv.com) Web site.



# Display Zones

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Display Express assigns control to three entities:

- All Zones – All displays respond to a single command
- Zones – All displays within one of 15 Zones respond to a single command
- Single Display – Sends command to one display address

**When you design your Display Express system, arrange your display addresses into one of the 15 zones.** This allows you to control a group of displays as if they were one display.

Note that you can change the default names for Zones in Display Express – see Display – Setup in the Display Express section.

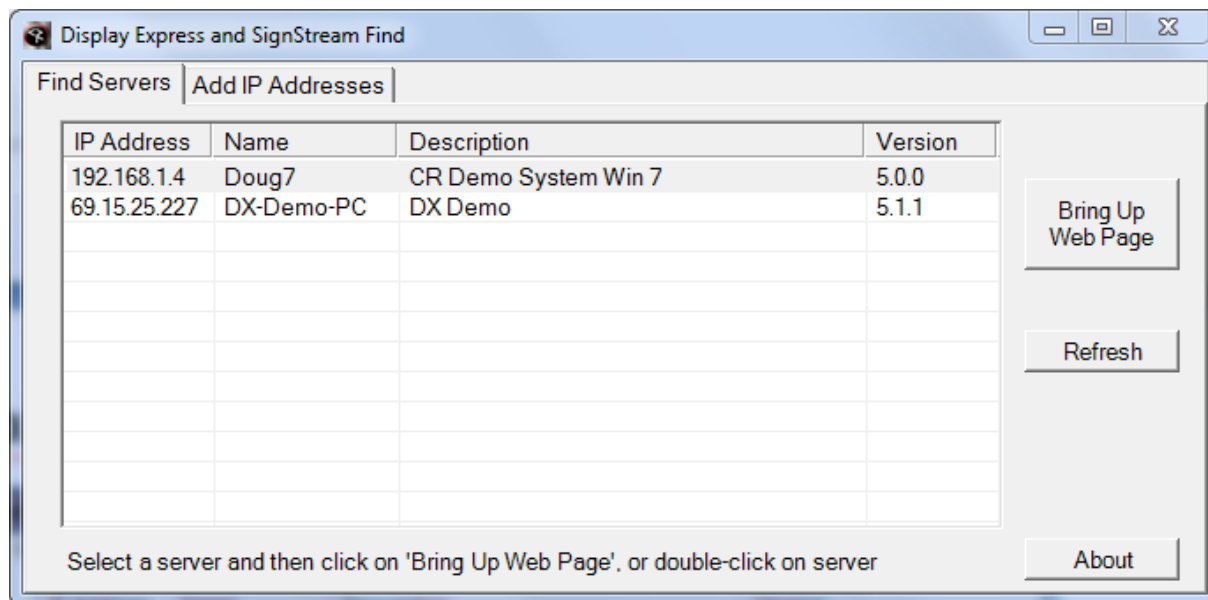
You'll discover that the ICC1-IR and ICC1-232 controllers typical for many Display Express RF control systems are designed to follow this Zone address format. You can use the 4 top switches in the second DIP switch to define the controller's Zone. You could stop at that point, or use the upper switches to define the controller's address within the Zone. For example, setting S2/1 On and S1/2 On defines that the controller is part of Zone 1 (256), and is the second unit in the Zone (2). The unique address of the controller would be 258 (256 + 2). The ICC2-ATSC follows a similar procedure – using front-panel programming, you set the unique Unit address (1-255), then the Zone (1-15).

Use the chart below as a guide to setting your Zones and addresses.

Zone	Device #	Unit	Total Device #
1	256	1-255	257-511
2	512	1-255	512-767
3	768	1-255	769-1023
4	1024	1-255	1025-1279
5	1280	1-255	1281-1535
6	1536	1-255	1537-1791
7	1792	1-255	1793-2047
8	2048	1-255	2049-2303
9	2304	1-255	2305-2559
10	2560	1-255	2561-2815
11	2816	1-255	2817-3071
12	3072	1-255	3073-3327
13	3328	1-255	3329-3583
14	3584	1-255	3585-3839
15	3840	1-255	3841-4094
All Zones	4095		

# DX Find

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Contemporary Research offers an app to find Display Express servers, called DX Find. This application can be downloaded from Download or Home pages at [www.crwww.com](http://www.crwww.com). When launched, DX Find will find all the Display Express Web servers in your network.

Simply double-click on the desired server row (or click the Bring Up Web Page button) to display the Web pages from that server. You can also find Display Express applications outside your network with the Add IP Addresses tab. To allow external access the IT department needs provide access:

- Make sure the Server's Windows Firewall exceptions allows access to TCP 2728, UDP 2728 and TCP 80, set Change Scope to Any Computer, or My Network if you want to limit access to within your network.
- The network firewall needs to be set up for remote access to the server and UDP ports.

# Display Express

**DX Display Express** Home Presets Schedules Alerts Setup

Home Schedule

Today's Schedule CR Demo  Enabled  Disabled

Preset	Time	Start	End	Days	Device	Power	HDTV	NTSC	Vol
All On	9:00 AM	10/25/2010		MTWRF	All Zones	On			
Left to Apps	9:01 AM	10/25/2010		MTWRF	Left Displays			Apps	
Center to Videos	9:01 AM	10/25/2010		MTWRF	Center Displays		Videos		
Right to Signage	9:01 AM	10/25/2010		MTWRF	Right Displays		Signage		
Right to Videos	11:00 AM	10/25/2010		MTWRF	Right Displays		Videos		
Left to Signage	11:00 AM	10/25/2010		MTWRF	Left Displays		Signage		
Center to Signage	11:00 AM	10/25/2010		MTWRF	Center Displays		Signage		
Left to Videos	1:00 PM	10/25/2010		MTWRF	Left Displays		Videos		
Right to Signage	1:00 PM	10/25/2010		MTWRF	Right Displays		Signage		
All Off	6:00 PM	10/25/2010		MTWRF	All Zones	Off			

< >

8/12/2011  
10:35 AM

Home Page

Display Express manages displays via Web pages accessed from the local Display Express PC, any computer on the network, or remotely from a distant location. The pages are compatible with IE7-9, FireFox, Chrome, Opera, and Safari browsers.

Tip: Don't use the back or forward buttons on the browser – that will leave the server, but you can usually refresh to get back, but you'll lose the data you entered if you haven't saved the info.

## Versions

Version 5 adds the ability to create any number of control panels, from a single column to 4 columns of 25 rows allowing simple access from any Web-enabled device, from Smartphones, tablets, laptops, or desktop PCs. This version adds another class of user – the Panel User. When this person logs in, they can only access the Web control panels assigned to them. Alerts can now be combined with Presets on custom DX Panels.

Version 5.3.0 adds the ability to send custom commands to external devices over RS-232 or IP. Special iC-Net commands, such as changing IR code sets in IR controllers, can be included in Presets. Updates to Preset Control and improved database operation are also included.

Version 5.6.0 adds the ability to create TV Control Panels, where a user can select a Zone or Groups of TVs, or a specific TV, and select channels, inputs, volume level or power.

### Local Access (Within LAN)

On the PC that has Display Express installed, Click on the Display Express icon on the desktop, or launch a browser and enter <http://localhost/DX/>.

From other computers on the LAN, you can:

- Install DX Find on the PC – it will locate Display Express for you (available at the bottom of CRwww.com home page).
- Point the browser to the Display Express URL on the network:
  - <http://<IP address>/DX/>
  - <http://<Computer Name>/DX/>

### Remote Access (WAN)

For access outside the local LAN the PC hosting Display Express should normally be set as a static IP address. DX Find can locate Display Express by entering the static IP address for the Display Express server on the 'Add IP Addresses' tab. You'll need to communicate with your IT department to set up access to Display Express from outside the network.

### Login



The image shows a web browser window displaying the Display Express login interface. At the top, there is a blue banner with the 'DX Display Express' logo. Below this is a yellow bar with the word 'Login' in black text. The main area is a light gray box with a white border. It contains two input fields: 'User Name' with the text 'Admin' and 'Password' which is empty. Below the fields is a blue 'Login' button.

When you first access Display Express, you'll need to log in to the server. When first installed, the user name for access is "Admin" (no password) accesses full use and administrative rights to DX. Upper and lower case doesn't matter for the User Name, only the password.

Once you start setting up DX, you can create three types of users:

- **System Administrator** – access to all features and DX Panels
- **System User** – access to first panel in each section, all DX Panels, but no editing options
- **Panel User** – can only access DX Panels assigned to the user name

### Log Off

You can log off DX by accessing the Home/Logoff menu, or close the browser.

## Setup – Options

**Head End Communication**

RS232 Baud Rate   
COM Port   
Delay Between Commands (default: 20 ms)  10 - 200 ms

IP Addresses e.g. 192.168.1.101  
Specify up to 4 Head Ends.  
   
   
Delay Between Commands (default: 40 ms)  10 - 200 ms  
[Make Changes](#)

**Logging**

Enable Logging  Enable Debugging

**Description**

[Change](#)

**Panel Page Header**

File containing graphic must be --

- 775 pixels wide x 79 pixels high
- A .gif, .jpg, .png or .bmp file
- Located on the DX server in folder  
C:\Program Files (x86)\Contemporary Research\  
SignStream DX Service\WebApp\Header\

Header File   
Color of 'Log Off' Heading   
[Make Changes](#)

**Tuning System**

[Send Tuning System Command](#)

**Computer Name** Doug-HP-Vision  
**IP Address** 192.168.1.25  
**Display Express Version** 5.7.8

The **Setup Options** pages define how Display Express connects to the system Head End and basic channel tuning operation.

### Head End Communication

Sets the form of communication to an ICC-HE or ICE-HE Head End. The ICC-HE communicates via RS-232, while the ICE-HE can handle data via Ethernet and RS-232. The RS-232 baud rate is normally set to 19,200. With Version 3.5, the user can specify up to four ICE-HE Ethernet Head Ends. Data will be set to all Head Ends at the same time, each Head End would be comprised of different Zones of displays.

The user can now specify the time delay between commands, using a 20ms delay for RS-232 and 40ms for Ethernet; if you experience missed commands, extend the delay time.

### Tuning System

Note, this is a legacy tool for older systems with Smart TVs. At most sites, the type of tuning is defined by the scanning process in the HDTV display.

### Logging

Enable logging or debugging features. Only use if asked by Contemporary Research Support.

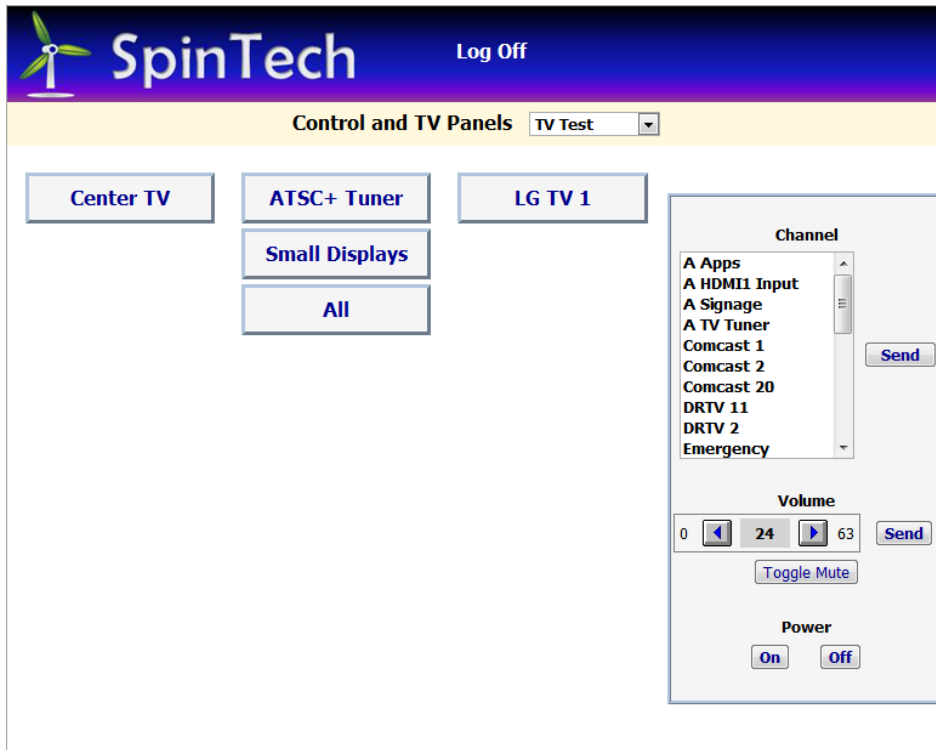
### Description

Change the name of the Display Express app displayed when found by the DX Find app.

### System Information

Lists the computer name, IP address and Display Express version.

## Panel Page Header



You can customize the header for control panels by creating a header of your own design. The parameters are:

- Create a graphic that is 775 pixels high x 77 pixels wide. Format can be JPEG, PNG, or GIF.
- Copy the image to C:\Program Files (x86)\Contemporary Research\SignStream DX Service\WebApp\Header
- Go to the Options page and select the desired header
- You can also change the color of the **Log Off** text

## Setup - Users

The screenshot shows the 'Setup Users' interface in DX Display Express. At the top, there is a navigation bar with 'Home', 'Presets', 'Schedules', 'Alerts', and 'Setup'. Below this, the 'Setup Users' section is active. It features three radio buttons: 'Create New User', 'Edit Existing User' (which is selected and highlighted with a yellow box), and 'Copy Existing User'. To the right of these buttons is a dropdown menu with the following options: 'Admin', 'iPhone', 'Sys User', and 'Tablet'. Below this is a large form titled 'User'. The form has a 'Name' field containing 'iPhone', a 'Password' field, and a 'Role' section with three radio buttons: 'System Administrator', 'System User', and 'Panel User' (which is selected). To the right of the 'Role' section, there are three lines of text describing the roles: 'Up to 16 uppercase, lowercase or numeric characters, e.g. Administrator234', 'Edits and controls presets, schedules and alerts', and 'Controls presets, schedules and alerts'. Below the 'Role' section is a 'Default Panel' dropdown menu set to 'Left TVs'. At the bottom of the form, there are two list boxes: 'User's Panels' and 'All Panels'. 'User's Panels' contains 'Left TVs' and 'Right TVs', with 'Right TVs' selected. 'All Panels' contains 'Default Panel', 'Left TVs', and 'Right TVs', with 'Right TVs' selected. There are also 'Save' and 'Delete' buttons at the top right of the form.

We've talked about this tool in the Panels section, primarily concerning setup of Panels Users. This page can also be used to create System Administrators and System users, similar to past versions of DX.

What's changed is that:

- Any user must log in to DX first
- You can create multiple System Administrators and Users
  - **System Administrator** – access to all features and DX Panels
  - **System User** – access to first panel in each section, all DX Panels, but no editing options
  - **Panel User** – can only access DX Panels assigned to the user name

When password access is enabled, the user must login when first accessing the pages. If desired, the password can be saved using the browser's "Remember Password" feature. Note that, if you save the password in User or Panel User mode, you may need to delete the password in the browser to enter admin mode (or use one browser for User access and another for Admin). Presently, Chrome 2.0 cannot remember the login password, but all other browsers are compatible with this feature. For added security, the password is encrypted when sent to the Display Express Web server.

## Setup – Name Displays and Zones

**Display Names**

Sort by Name     Sort by Display #

- 232-ATSC+ (258)
- ATSC TV (513)
- Center TV (769)
- LG TV (257)
- SBA 1 (1025)
- SBA 2 (1026)
- SBA 3 (1027)**
- SBA 4 (1028)
- SBA 5 (1029)
- SBA 6 (1030)
- SBA 7 (1031)
- SBB 1 (1101)
- SBB 2 (1102)
- SBB 3 (1103)
- SBB 4 (1104)
- SBB 5 (1105)

Name:

Display #:     1 - 4094

**Zone Names**

Zone:

New Name:

Use Default: All Zones

In this section, you can create names for Zones and individual display controllers.

### Changing Zone Names

The names of the Zones can be changed here. It's useful to start the text with the Zone number to remember which Zone the name represents. The list will always be sorted by the numeric order of the actual Zones.

### Display Names

When you need to control specific displays, it's easier to find them by name. Using this tool, you can create a name for any specific address, and change or delete the name at any time.

Note that Display Express Presets won't be affected if you add, delete, or change a name.



## Setup – Groups

The **Display Groups** enables creation of free-form Groups of displays. Unlike Zones, the list can include any individual or combination of controllers:

- Group – Select a Group, then click to add to the Group
- Zone - Select a Zone, then click to add to the Group
- Device - Select a named device, then click to add to the Group
- Device # - Enter a device number (address), then click + to add to the Group

Also unlike Zones, a Group preset will take longer to execute, because will need to Send the commands to devices sequentially (A Zone command sends a single address that all displays in the zone will respond to). The sequence will be in the order of entry.

## Setup – Name Channels

**Channel Labels**

Sort by Label     Sort by Channel

Apps (65)  
Comcast 1 (25-1)  
Comcast 2 (25-2)  
DRTV 11 (26-1)  
DRTV 2 (26-2)  
Emergency (6-1)  
ESPN 1 (20-1)  
ESPN 2 (20-2)  
**ESPN 4 (20-3)**  
House (5-1)  
Input HDMI1 (0-211)  
Input TV (0-200)  
Signage (120-1)  
Ticket 1 (21-1)

**Channel**     HDTV    20-3    e.g., 18-1 or 325  
 NTSC          2 - 127

**Label**    ESPN 4

**Setup Channels**

**NTSC Tune Rings**

**Tune Ring**    5-8 Tune    ▼

**Name**    5-8 Tune   

**Channels**    5-8   

for example 2-13,24,36,55-58

DX can now create a list of TV channels, so you can now tune by name, rather than having to remember the number of the channel. Editing is simple. Just add the Label (Name) of the channel, select HDTV or NTSC, enter the number, and Save. You can go back and modify the channel – handy when the cable company changes channel locations.

### Legacy Features

Where the system includes older Smart CRT TVs, you can send or clear the channel names in the TVs and well as set list of channels the sets are allowed to tune (called Tune Rings).

HDTV sets don't include the ability to name or control tuning. That is managed by the set's internal channel scanning.

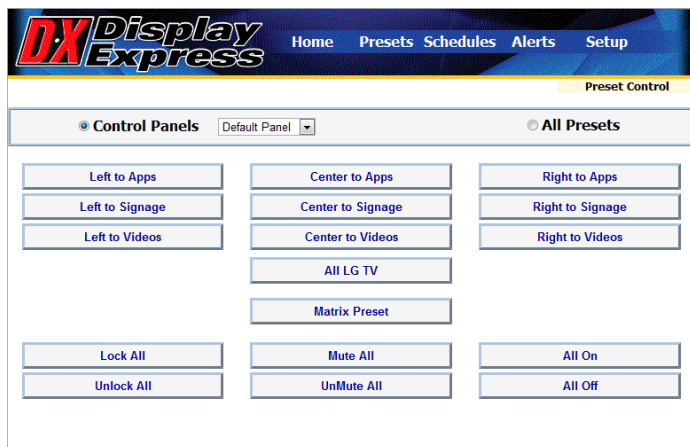
### TV Input/Captions Selection

It is possible to control input selection via Display Express as well. This is available for a limited list of IR controlled sets (LG, Panasonic, Visio, and ViewSonic) and RS-232 (LG) at this date, but we can add the capability to other IR and RS-232 sets when the need arises. Captioning does the typical IR toggling function, most sets don't have discrete caption on and off commands. Not all sets have every input.

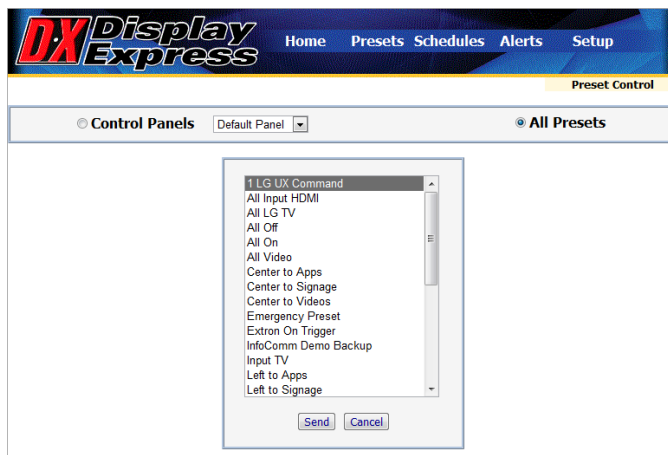
You set up Inputs just like a channel, but define it as a zero HDTV channel (0-NNN). The Input codes are:

115=Captions	206=Component1	211=HDMI1
200=TV/Tuner	207=Component2	212=HDMI2
201=Video1	208=RGB1	213=HDMI3
202=Video2	209=RGB2	214=HDMI4
203=Video3	210=RGB3	215=HDMI5
204=S-Video1		
205=S-Video2		

## Web Panels - Control, List, and TV Control Panels



**Control Panel**



**All Preset List**



**TV Control Panel**

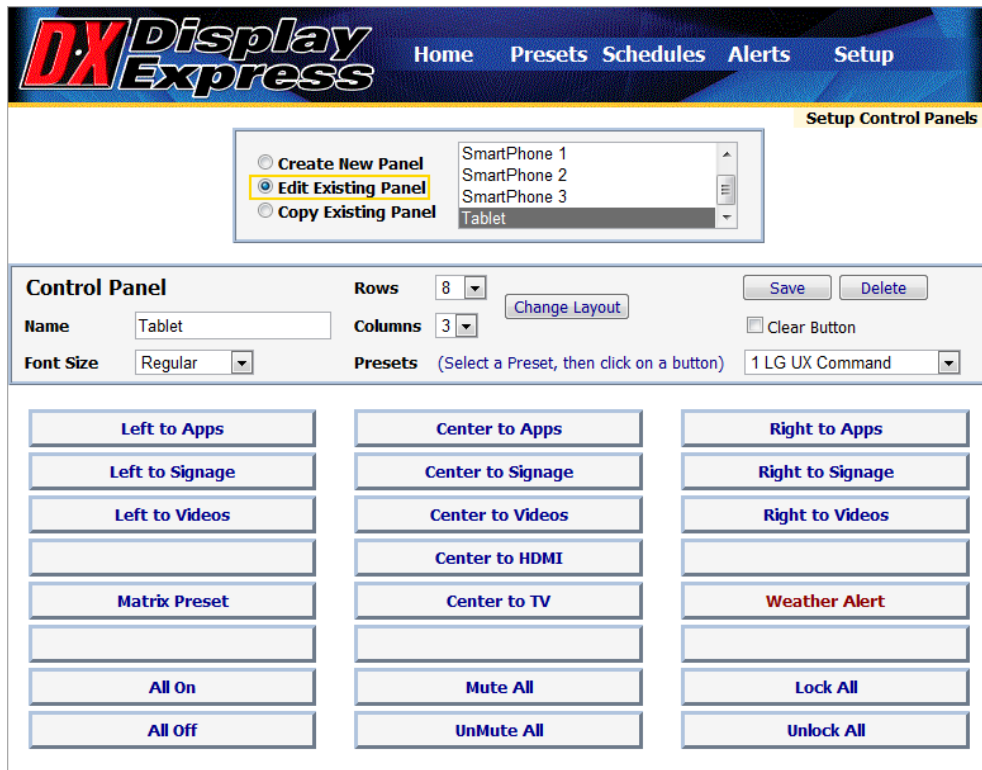
The **Control** page offers three ways to access Presets:

- **Control Panels** – Select from the Default or any number of custom control panels. The Administrator and System User can choose any panel created for any user.
- **TV Panels** – Select a Zone, Group, or specific TV to change channels, inputs, volume or power.
- **All Presets.** Sends a saved Preset group of commands to displays.

### iPad/iPhone "App Icon"

On an iPad or iPhone, use Safari to access the site's DX Express web server. Login with the assigned User name and password, and all the DX Panels created for the user appear. A drop-down menu at the top of the page will select between assigned Panels. To turn those Panels into an App, click the "boxed arrow" button at the top left of the page, then select Add to Home Screen. You'll then have the option to name the app icon, and it will place the link on the phone that will open Safari to your personal Panel. In iOS, the link will appear to bypass the login, jump directly to the user panels. This is because in iOS, Safari never actually closes. If you turn off power, you'll need to log in again.

## Control Panels – Control Panel Editing



To create the Control pages, click on Setup, then Panels. That brings up the setup Panel page.

As with other editing functions in DX, you can:

- Create a new panel
- Edit an existing panel
- Copy an existing panel (handy when pages are only slightly different or use a similar layout)

### Formatting

- You can select a layout of up to 25 rows and 4 columns. Click **Change Layout** once you selected the rows and columns you want.
- Next, click the Font Size. This will set the font as you add buttons. Also, if you switch fonts when you're finished, it will change the fonts in all buttons.

### Adding Buttons

- Use the "Click on a button to assign it to this button" **Preset** menu to select a Preset
- Click on a button to assign the Preset to the button.
- To remove a Preset from the button, select Clear Button, then click a button. It's also a fast way to remove several buttons – just keep on clicking.

### Presentation

Use blank buttons to create spaces between rows.

## Control Panels - TV Panel Editing

**DX Display Express** Home Presets Schedules Alerts Setup

Setup TV Panels

Create New Panel  Edit Existing Panel  Copy Existing Panel

Left TVs  
TV Control A

**TV Panel**

Name: Left TVs

Font Size: Regular

Rows: 10

Columns: 3

Change Layout

Save Delete

Clear Button

Large Displays

All

232-ATSC+ (258)

Groups (Select a Group, then click on a button)

Zones (Select a Zone, then click on a button)

Displays (Select a Display, then click on a button)

L Back 1	L Side 1	L Front 1
L Back 2	L Side 2	L Front 2
L Back 3	L Side 4	L Front 3
	L Side 5	L Front 4
Left Displays		L Front 5
All		L Front 6

Reserved for Channel and Volume control

Creating TV Control panels is similar to Control Panels, the difference is you are defining buttons that represent a Zone, Group, or individual TV.

As with other editing functions in DX, you can:

- Create a new panel
- Edit an existing panel
- Copy an existing panel (handy when pages are only slightly different or use a similar layout)

### Formatting

- You can select a layout of up to 25 rows and 3 columns. Click **Change Layout** once you selected the rows and columns you want.
- Next, click the Font Size. This will set the font as you add buttons. Also, if you switch fonts when you're finished, it will change the fonts in all buttons.

### Adding Buttons

- Select a Zone, Group or Display
- Click on a button to assign the TV to the button.
- To remove a TV from the button, select Clear Button, then click a button. It's also a fast way to remove several buttons – just keep on clicking.

## Control Panels – Assigning Users to Panels

This page can be used to create login names and passwords for Administrators and Users with System-wide access. DX 5.0 features a new class of users – Panel Users. This class of users can only access custom control panels when they login to the server. A System admin or System user can create and see all the control pages, as well as Presets, Schedules, and System features. The types of User access are:

- **System Administrator** – access to all features and DX Panels
- **System User** – access to first panel in each section, all DX Panels, but no editing options
- **Panel User** – can only access DX Panels assigned to the user name

### Assigning pages to Panel Users

- Create a user Name and Password (leave Password blank if you want to).
- Highlight a panel on the right list, then click the arrow button to add the panel to the user.
- Highlight a panel name in the user's list, then click the "X" button to remove from a user.

When a Panel User logs in to DX, they will only see the panels assigned. A pull-down menu at the top of the page will allow the user to select from multiple pages.

## Presets – Macros

A totally new feature to Display Express, this option is actually brought forward from the older IC Commander software. Macros contain the same control option used in creating basic Presets. The difference is that you can now save the group of commands by name, and reuse them in making Presets – this saves having to re-enter them when you create Presets.

To start, select:

- **Create New Macro** – Clears values in the Macro fields.
- **Edit Existing Macro** – Fills in the values from the selected Macro. Change and Save.
- **Copy Existing Macro** – Copies the values from the selected Macro. Change and Save.

Then select (click the checkbox at the left to include the values in the Macro):

- **Power** - Set Power On or Off.
- **HDTV Channel** – Enter HDTV channel in dashed (XX-X) or CableCard format (XXXXX)
- **NTSC Channel** – Enter desired analog channel (digital TVs will ignore this Preset)
- **Volume** - Set volume level 0 (Mute) to 63 (Full)
- **Control Lock** - Enable or disable display's front-panel and IR control (not all sets have this feature)
- **Tune Ring** – For legacy analog Smart TV control, defines list of channels accessible by user
- **Save/Restore** - Allows you to create and schedule Alerts. When **Save** is included, the display controllers will remember the power state and channel, then activate the new commands in the Preset. See page 18 for more information.
- **Command String**. See the Preset-Edit – Macros or Commands section for more information

To test the Macro, select a Display Group, Zone, Name or number, and click **Send**.

For basic DX applications, you don't need to create Macros, just add the control commands when you create the Preset. In more complex systems, especially for Advanced Presets, macros can be very helpful.

## Presets– Edit

The Display Edit page offers the ability to create, copy, or edit new display control Presets. Display Express assigns control Presets to three entities:

### Editing Modes

- **Create New Preset** – Clears values in the Preset fields.
- **Edit Existing Preset** – Fills in the values from the selected Preset. Change and Save.
- **Copy Existing Preset** – Copies the values from the selected Preset. Change and Save.

### Displays

- **Group** – Send preset to a named group
- **Zones** – All displays for all or one of 15 Zones respond to a single Preset
- **Display** – Selects display by name (see Displays-Names)
- **Display#** – Selects a display by entering an address

### Operations

- **Save** – Saves Preset
- **Delete** – Delete Preset
- **Send** – Sends Preset for testing operation

### Manual Control

In addition, you can select any Group, Zone, and Display, then enter a command on the right, then click SEND to send a command without saving as a Preset, or testing a Preset before saving.



## Macros or Commands

- **Use Macro** – Choose from a list of named control commands
- **Use Commands** – Enter commands from list below

Add or change values to an existing or new Preset. Parameters that are checked on the left will be sent, those unchecked will not be saved or sent. You can start with selecting a Macro, then change one or two of the options in the Command window. The values in the original Macro won't be changed.

- **Name** – Enter a name for a new or copied Preset.
- **Zone** – Select from 15 Zones or All Zones.
- **Single Display** – use radio button to select a Preset to a specific display.
- **Power** - Set Power On or Off. Try not to include Power On with every Preset, use it to power on the displays at the beginning of the event or day. The controllers have built-in delays after power on, as display often can't receive other commands during power-up.
- **HDTV Channel** – Enter HDTV channel in dashed (XX-X) or CableCard format (XXXXXX)
- **NTSC Channel** – Enter desired analog channel (digital TVs will ignore this Preset)
- **Volume** - Set volume level 0 (Mute) to 63 (Full)
- **Control Lock** - Enable or disable display's front-panel and IR control (not all sets have this feature)
- **Tune Ring** – For legacy Smart TV control, defines list of channels accessible by user
- **Save/Restore** - Allows you to create and schedule Alerts. When **Save** is included, the display controllers will remember the power state and channel, then activate the new commands in the Preset. When Restore is included, the controllers will return to the previous channel and power state. Also include a Volume setting with a Restore command to return the sets to a new audio level. The controllers don't store volume level with Save.
- **Command String.** In addition to typical display commands, there are other rarely used IC-Net commands that can be sent when needed, provided with system documentation. This includes:
  - Set display code - instructs a controller to use a different set of control codes for a different make and model of display.
  - Test basic display operation before presets have been defined. Select a Zone, Group, a named display, or a display address. Then enter
    - P1 turns power on
    - P0 turns power off
    - TC, nnn tunes in an analog channel (TC,33) tunes in channel 33
    - TH,nnn,nnn tunes in a digital channel (TH,15,1 tunes in channel 15-1
    - Other special commands are listed on the next page
  - Make – specific commands
  - LG Typical format will be UX,'kc 0 2',13 (command sets TV to 16:9 ratio). Refer to the set's manual for other commands. For most, you will change the values for the command (kc) and the data (2).
  - Sharp has a similar (but different) format: UX WIDE9 ,,\$0D for the standard Full wide screen command.

The chart below covers the most common commands that can be sent via the Special Commands tool. Many more are available from the product manual or product page at [www.crwww.com](http://www.crwww.com). Some commands can be sent with no other information, such as P1 for Power On. Most other commands need an added parameter, such as volume level or control type.

Command	Description	
<b>All Controllers</b>		
<b>Power Off</b>	<b>P0</b>	
<b>Power On</b>	<b>P1</b>	
<b>Tune Analog</b>	<b>TC,</b>	2-127 Example: TC,33
<b>Tuning Format All</b>	<b>S0,</b>	0=CATV 1=Off-Air 2=IRC 3=HRC 4=Auto
<b>Volume</b>	<b>VL,</b>	Sets TV volume level 0 = Mute 1 – 63 = Minimum level (1) to maximum volume (63)
<b>RS-232</b>		<b>ICC1-232, ICC2-ATSC, ICC2-VDC</b>
<b>Tuning Style ICC1-232</b>	<b>H1=</b>	1 = 5-digit CableCard style tuning (1-9999) 2 = Virtual HD Major-Minor tuning (tunes to virtual channel ID in display) 3 = Physical HD Major-Minor tuning (physical channel, minor digital)
<b>HD Tuning</b>	<b>TH,</b>	<Major>,<Minor> Example: TH,15,1 tunes channel 15-1
<b>HD Tune Style ICC1-232</b>	<b>TH,</b>	<Style>,<Major>,<Minor> Once a Style parameter is included in tuning command, the ICC1-232 will stay in that mode until the Style is changed  <Style> 0=No change in tuning style 1=5 digit channel (Major=high byte, Minor=low byte) 2=Virtual channel (Major-Minor) 3=Physical channel (Major=Physical - Minor=minor) Example: TH,3,15,1 tunes the digital channel physically broadcasting on 15 The ICC2-ATSC always tunes the virtual channel
<b>IR</b>		<b>ICC1-IR, ICC2-IRC</b>
<b>IR Code</b>	<b>T1,</b>	Sets IR control code. Check Manual or <a href="http://www.crwww.com">www.crwww.com</a> product Install page for codes

## Presets – Advanced Presets

**DX Display Express** Home Presets Schedules Alerts Setup

Preset Advanced Edit

Create New Preset  Edit Existing Preset  Copy Existing Preset

Click 'Add Preset to List Below' and then select a preset to add. Or click '+' for an empty row, then Set Displays and Set Commands.

Left to Apps  
Left to Signage  
Left to Videos  
Lock All  
Matrix Preset  
Mute All

Add Preset To List Below

**Preset** Name: Matrix Preset Save Delete Clear

Displays	Macro	Power	HDTV	NTSC	Vol	Lock	Other	Delay
<input checked="" type="checkbox"/> SB 1	Comcast 1		Comcast 1					
<input type="checkbox"/> SB 2	Comcast 2		Comcast 2					
<input type="checkbox"/> SB 3	ESPN 1		ESPN 1					
<input type="checkbox"/> SB 4	ESPN 2		ESPN 2					
<input type="checkbox"/> SB 5	TICK 2		Ticket 2					
<input type="checkbox"/> SB 6	TICK 3		Ticket 3					
<input type="checkbox"/> SB 7	DRTV 11		DRTV 11					

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Set Displays  Group  Zone  Display  Display #

Large Displays  
SB 1  
SB 2  
SB 3

All Zones  
Right Displays  
Left Displays  
Center Displays

232-ATSC+ (258)  
ATSC TV (513)  
Center TV (769)  
LG TV (257)

1 - 4094

Set Commands  Use Commands  Use Macro Set Delay Remove Delay

Comcast 1  
Comcast 2  
DRTV 11  
DRTV 2

Show Commands Below

1 to 999 10ths of a second

Most Presets will be created as a single command, as shown on the previous page. In version 3.0 and above, you can also create a multi-step preset. There are several key applications to this feature:

### Creating a “Matrix” Preset

This type of multi-step preset can create an array of displays and channels. For example, a sports bar may want to set up a group of displays to present a pattern of channels. The Preset above was created with this process:

- Beforehand, the user creates a series of Macros for each channel, and seven groups of displays, each group including two displays.
- Click **Show Commands** in the **Macro** section to display or hide the **Command** section (see the next page for that image).
- Click on **Presets – Adv Edit**, then click the “+” button at the right to enter the first line.
- Select a **Group** of displays (could be a Zone or individual display as well).
- Click a **Macro**, then click **Set Macro**. Notice that the row will show what commands are in the Macro.
- If you want to add a time delay between rows, enter a delay time and use **Set Delay** to add the delay.
- Click “+” to start the next row.
  - You could create the array of displays first, then go back and select the Macro for each display.
  - Note that when a row is active for editing, it will turn red.
  - You can also add a Preset to the list.
- You can also use Add Preset to insert a single or multiple Presets into the list. Once the Preset is added, you can change Displays, Macros, or Commands as you need.
- If you want to re-arrange the list, select a row and use the Up and Down arrows on the right to move.
- Enter a name and **Save**.
- Once you have the matrix defined, you can use **Copy Existing Preset**, change the Macros and save the new array by a new name.

If you want to create the array with Commands alone, click **Use Commands** and **Show Commands** in the Macro section and enter the commands as needed.

Editing is seamless between Macros and Commands. When you use a Macro, all the values are shown in the row. You can switch to Commands and change one value, such as Volume, without needing to change the macro. In that case, the Macro name will go away, but all the values from the macro will be kept.

The **Show Commands** option is also useful if you want to see what commands are stored inside a Macro.

### Controlling Power and Startup Delays.

Once a display is powered on, there is often some delay before the display is ready to listen to another command. Our controllers know this, and have a built-in time delay before they send commands included with power on. It's a great feature, but don't include Power On commands in a multi-step Preset. Since some sets LGs need to wait 8 seconds after power, it slows the process down.

The better plan is to power up the displays at the beginning of the event or day. Then use Presets with the other commands after that.

## Presets – System

The screenshot shows the 'System Preset' configuration page in the DX Display Express software. At the top, there is a navigation bar with 'Home', 'Presets', 'Schedules', 'Alerts', and 'Setup'. The main content area is titled 'System Preset' and contains several sections:

- Actions:** Three radio buttons: 'Create New Preset', 'Edit Existing Preset' (highlighted with a yellow box), and 'Copy Existing Preset'.
- Presets List:** A dropdown menu showing 'Backup Minimal' and 'System Backup'.
- System Status:** A box showing 'System Currently In Use: Sys2012-03-19\_1202', 'Backup Date/Time: 3/19/2012 1:59 PM', and 'Changes Made: No'.
- System Preset Form:** A form with the following fields:
  - Preset Name:** Text input field containing 'Backup Minimal'.
  - Backup System using:** A radio button that is selected.
  - Default System Name:** Text input field containing 'e.g. Sys2009-10-22\_1410'.
  - Overwrite Existing System:** A radio button that is selected, with a dropdown menu showing 'Minimal'.
  - New System Name:** Text input field.
  - Restore System:** A radio button, with a dropdown menu showing 'Minimal'.
  - Delete System:** A radio button, with a dropdown menu showing 'Minimal'.

This section allows you create a System Preset that can back up or restore all system data.

You can schedule an automatic backup as with any Control Preset, choosing a cycle, dates and times. You can also perform a manual backup or restore, just click the **Do Now** button, or **Save** the preset, and launch the process as with any other Preset.

Within the Preset, you can:

- **Backup System** to a default or custom name. The Default name will combine the year, date, and time (in military format). As an option, you can create your own name.
  - Note that the Default name format will create a unique backup folder when the backup is scheduled.
  - When you use Overwrite Existing System, the scheduled backup will overwrite the previous data.
  - Creating your own System Name will not overwrite the data if that system already exists.
  - The backup files are stored in the Program Files/Contemporary Research/SignStream DX Service/Data folder, stored in a folder with the Backup System name you selected.
- **Restore System** – Choose a System file. This will replace the current data when activated. Normally, you would use Do Now.
- **Delete System** – Choose a System file. This Event will delete that System folder when scheduled or using Do Now.

## External Presets

The screenshot shows the 'External Preset' configuration interface in the DX Display Express software. At the top, there is a navigation bar with 'Home', 'Presets', 'Schedules', 'Alerts', and 'Setup'. Below this, the 'External Preset' section is active. It features three radio buttons: 'Create New Preset', 'Edit Existing Preset' (which is selected and highlighted with a yellow box), and 'Copy Existing Preset'. A dropdown menu shows 'Extron On Trigger'. Below this, there are 'Save', 'Delete', and 'Send' buttons. The main configuration area includes a 'Name' field with 'Extron On Trigger'. Under 'RS232', there is a 'Baud Rate' dropdown set to '19,200' and a 'COM Port' field. Under 'IP', there is an 'Address' field set to '192.168.0.231' and a 'Port' field set to '4010'. The 'TCP' radio button is selected. A 'Command String' section provides instructions and an example: '\$A5,\$0F,\$FF,6,'TN',18,'PBS''. The 'Delay After Sending' field is currently empty, with a note '1 to 999 10ths of a second'.

This is a feature requested by our integrators and clients. Imagine a facility that has many displays controlled over RF, but also has a number of video projectors controlled by Extron units. With External Presets, you can now send commands to the Extron controllers over IP, managing the projectors using Display Express presets and scheduling. External Presets can be included in any control panel or scheduled, just like any standard Preset.

In the example of Extron controllers, you will likely program the units to act on a "trigger" string sent from Display Express. If you are the end user, you may need the help of an AV integrator in setting up commands for external systems and controllers.

## Schedule - Control

**DX Display Express** Home Presets Schedules Alerts Setup

**Schedule Control**

**Current Schedule** CR Demo  Enabled  Disabled Show  Today's Events  All Events

Preset	Time	Start	End	Days	Device	Power	HDTV	NTSC	Vol
All On	9:00 AM	10/25/2010		MTWRF	All Zones	On			
Left to Apps	9:01 AM	10/25/2010		MTWRF	Left Displays			Apps	
Center to Videos	9:01 AM	10/25/2010		MTWRF	Center Displays		Videos		
Right to Signage	9:01 AM	10/25/2010		MTWRF	Right Displays		Signage		
Right to Videos	11:00 AM	10/25/2010		MTWRF	Right Displays		Videos		
Left to Signage	11:00 AM	10/25/2010		MTWRF	Left Displays		Signage		
Center to Signage	11:00 AM	10/25/2010		MTWRF	Center Displays		Signage		
Left to Videos	1:00 PM	10/25/2010		MTWRF	Left Displays		Videos		
Right to Signage	1:00 PM	10/25/2010		MTWRF	Right Displays		Signage		
All Off	6:00 PM	10/25/2010		MTWRF	All Zones	Off			

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Schedules CR Demo  **8/12/2011 10:39 AM**

The Schedule Control page launches Events by date or recurring cycle. Events are similar to Presets, but include an assigned date, cycle, and time.

- **Schedule** displays the list of Events by date and time.
- **Enabled/Disable** – click to run or stop the schedule
- **Today's/All Events** – Displays just the events for today or all Events
- **Schedules** – Select from a list of saved schedules
- **Set Current Schedule** – set the selected schedule for current use

## Schedule - Edit

**Schedule Edit**

Create New Schedule  
 Edit Existing Schedule  
 Copy Existing Schedule

Alternate  
 CR Demo  
 Default Schedule

**Schedule** Name: CR Demo (Current)

Preset	Time	Start	End	Days	Device	Power	HDTV	NTSC	Vol
<input type="checkbox"/> All On	9:00 AM	10/25/2010		MTWRF	All Zones	On			
<input type="checkbox"/> Left to Apps	9:01 AM	10/25/2010		MTWRF	Left Displays			Apps	
<input type="checkbox"/> Center to Videos	9:01 AM	10/25/2010		MTWRF	Center Displays		Videos		
<input type="checkbox"/> Right to Signage	9:01 AM	10/25/2010		MTWRF	Right Displays		Signage		
<input type="checkbox"/> Right to Videos	11:00 AM	10/25/2010		MTWRF	Right Displays		Videos		

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**Schedule Preset**

One-Time  
 Recurring

Mon  Tues  Wed  Thurs  
 Fri  Sat  Sun

Start Date: 8/12/2011 e.g. 1/31/2008  
 End Date: e.g. 2/28/2008  
 Time: AM e.g. 8:00 AM

8/12/2011 10:40 AM

The Schedule Edit page creates a database of Events. DX now allows you to create multiple Schedules, so you can have one list for daily operation, and others for holidays or special events.

### Schedule Modes

- **Create New Schedule** – Allows creation of a new Schedule, clears values in data
- **Edit Existing Schedule** – Fills in the values of the selected Schedule. Change and Save.
- **Copy Existing Schedule** – Copies the values of the selected Schedule. Change and Save.
  - **Name Schedule** – create a name for a new schedule
  - **Save Schedule** – a red asterisk will appear to remind you to save any changes
  - **Delete Schedule**
  - **Export** - click the Export button at the top right of the page to export the schedule as a comma-separated data file, click the Export button at the top right of the page. This can be imported by a spreadsheet or other data program to arrange, display, and print as needed.

### Schedule Preset

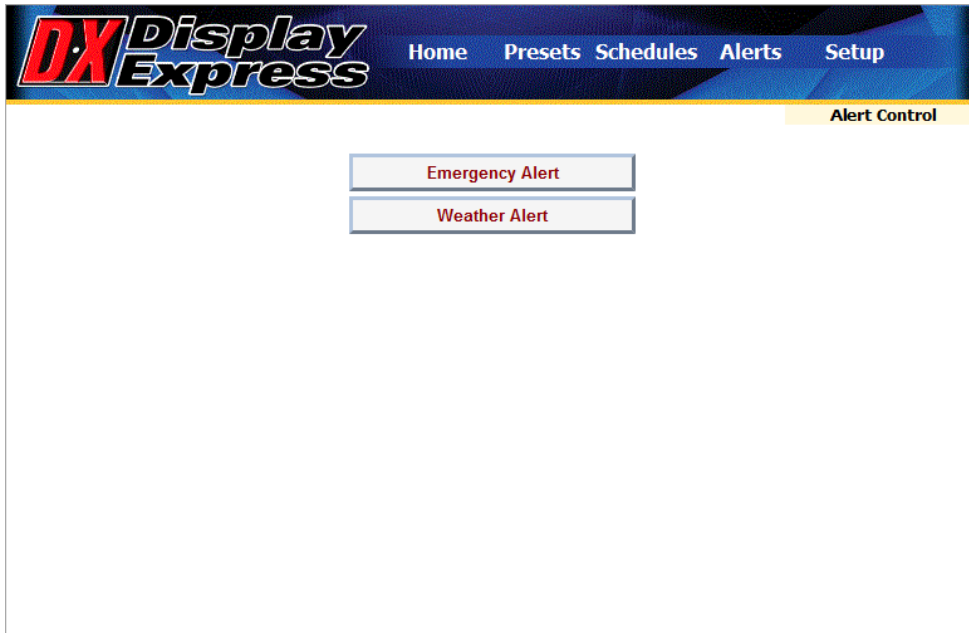
Schedules Presets by time. Date and recurring cycle.

- **Add** – Click when you are done to add Preset and time/date settings to schedule
- **Modify** – Click when you are done to modify the selected Preset'
- **Remove** – Removes Preset from schedule
  - **Select Preset** – selects the highlighted Preset
  - **One-Time** – Event is launched on one date only
  - **Recurring** – Check days of week for cycle
  - **Start Date** – When Event or cycle begins
  - **End Date** – When Event ends (removes Event from Schedule at 11:59 PM on specified day)
  - **Time** – AM or PM

DX will keep the cycle, Start Date, End Date, and Time values as you add new Presets to the schedule. This speeds up adding additional Presets – often, you only need to change the time values.



## Alerts - Control



The **Alerts Control** page will display a group of up to 45 buttons a user can click to launch a saved Alert. The **Alerts Edit** page defines the name and actions in the alerts. The role of Alert Presets has expanded in DX 5:

- More than one Alert can be active at any time
- Alerts can be added to custom Web Panels, just like standard Presets
- The Alert text is in Red, and the button will change to orange when the alert is active, click the highlighted button to turn the Alert off

The Alerts feature can impact more than displays. An RS-232 controller or integrated tuner/controller can send a message to presentation room control systems, triggering a programmed response by the system.

In addition, an external control system can send Telnet commands that can trigger a saved Emergency Alert.

## Alerts - Edit

**DX Display Express** Home Presets Schedules Alerts Setup

**Alert Edit**

Create New Alert  
 **Edit Existing Alert**  
 Copy Existing Alert

Emergency Alert  
Weather Alert

**Alert** Save Delete

Name Weather Alert

Preset  
Tune Ring 5-8  
Tune Ring All  
Tune Up  
Unlock All  
UnMute All  
Weather Preset

**Volume after Alert** 20 0 (Mute) - 63 (Full)  
 **Suspend Schedule while Alert is in effect**

The **Alerts Edit** page functions the same way as scheduling Events. However, Alerts behave differently than Events or Presets. When an Alert is sent, the iC-Net controllers will save their current power and channel settings. When an Alert ends, the controllers will return displays to their saved setting.

### Editing Modes

- **Create New Alert** – Clears values in Alert fields.
- **Edit Existing Alert** – Fills in the values of the Alert command. Change and Save.
- **Copy Existing Alert** – Copies the values of the Alert Command. Change and Save.

### Alert

- **Name** – Enter a name for a new or copied Alert.
- **Preset** – uses the values of a selected Preset, adds Save and Restore automation
- **Volume after Alert** – sets volume to set level after the Alert
- **Suspend Schedule** – deactivates scheduled presets when the Alert is active

**Save** the Alert. Up to 45 Alerts will appear on the Alerts Control page, and any Alert can be added to custom Web Panels.

Other systems can also trigger Alerts, sending a Telnet command to the DX computer. See **Telnet Commands** at the end of this manual.

## Telnet Commands

As integrators have asked for tools to interact with Display Express from custom control systems, we have added several Telnet commands to our software. More commands will be added on request from our users and control partners.

Commands are case-insensitive, so upper or lower case may be used. Precede all commands with ']'.

Command	Description	Examples
<b>?</b>	Displays all DX TCP commands.	]?
<b>EF</b>	Echo off	]EF
<b>EN</b>	Echo on	]EN
<b>ID</b>	Information on DX. <i>Reply:</i>	]ID [present application [working directory [version
<b>ServerInfo</b>	Information on a DX server. <i>Reply:</i>	]ServerInfo  [server name [server description [version
<b>SendPreset</b>	Have the Head End send the specified preset.	]SendPreset=Turn on All Displays
<b>StartAlert</b>	Have the Head End start a defined alert.	]StartAlert=Fire Drill
<b>StopAlert</b>	Have the Head End stop an alert that is running.	]StopAlert=Fire Drill
<b>Quit</b>	Close TCP connection.	]Quit

## Display Express TCP

To send commands to the Display Express server over the intranet using TCP/Telnet, do the following:

1. For HyperTerminal and other Terminal applications, enter the IP address of the Display Express server and 2728 as the Telnet port. Make sure the Windows Firewall exceptions include Display Express TCP, port 2728.
2. In a command window, type  
*telnet <name or IP address of Display Express server> 2728*  
For example, telnet CR Streams 2728. You should get a welcoming message.
3. Type Display Express TCP commands at the prompt. See above table of commands. For a list of commands, type ']?'. To stop, type ']quit'.

## SSCmd

SSCmd.exe is found in C:\Program Files\Contemporary Research\SignStream DX Service\bin. It can be used to execute TCP-style commands in a command window or in a batch .cmd file. For example, to send a preset to the Head End, navigate to the \bin directory in a command window, and at the prompt type ">sscmd ]sendpreset=Turn On All Displays"

## **Display Express Software**

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