



Kaleidescape Programming Manual for Crestron

Rev. 3.4, March 2009

Crestron Modules
OSD v7.0.1
SATP v7.0.1
Keypad v7.0.2

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1 Overview

1.1 Introduction

This programming manual provides an overview of the Kaleidescape control modules and touch panel templates designed for Crestron controllers. It explains everything a Crestron programmer needs to know to successfully integrate them into any Crestron project.

The modules and templates described in this document are not supported by Crestron. If you need additional technical assistance, please call Kaleidescape Support at 650-625-6160.

Note

Download the latest modules and templates from the [Support](http://www.kaleidescape.com) page of www.kaleidescape.com.

Touch Panels

Section 2 describes the Kaleidescape touch panel templates provided for Crestron devices. Touch panel controls are an integral part of the Kaleidescape experience. We strongly encourage you to insert the touch panel control templates into your project without any major modifications. The templates are complex, and modifications may remove important functionality or introduce bugs to the System.

Keypads

Section 3 discusses how to control music playback in zones equipped with keypads.

Programming

Section 4 explains how to program your Crestron system using the Kaleidescape modules. Our modules are designed to provide the flexibility required for many types of installations. System control can be as simple as using a single [RS-232](#) port to control a single movie zone, or as complicated as a large system using multiple [TCP/IP](#) clients with complex signal routing to control several movie and music zones. This section outlines the different approaches and discusses the pros and cons involved with each method.

It is important that you are familiar with Crestron's SIMPL Windows programming environment and Kaleidescape's products before reading this portion of the document.

Note

All string examples in this document are formatted for a Crestron [program](#); i.e. \r = hex 0D = carriage return.

Sample Installation

Section 5 guides you step-by-step through a sample installation to illustrate how an installation is programmed for Crestron control. It provides a practical demonstration of many of the major topics from the previous sections, showing how they fit into the installation process.

Troubleshooting

Section 6 describes how to troubleshoot common problems.

Appendices

The appendices provide additional details on touch panel templates, control port pinouts, and the input and output signals of the OSD, SATP, and keypad modules.

2 Touch Panels

2.1 Design Principles

The Kaleidescape user interface is widely recognized as the most intuitive and engaging in the industry. The user interface is designed so that the capabilities of the Kaleidescape System are easily discoverable by the user and simple enough for even children to use. Making the experience of interacting with the Kaleidescape System compelling and entertaining is our focus. Our desire to deliver the richest, most complete user experience possible influenced a number of critical touch panel design decisions.

For instance, we use the touch panel's full screen and incorporate a large video window into our recommended touch panel design. This ensures complete consistency and ease of use even when a separate video display is not available. We place key controls in the same locations in both the movie and music interfaces. We remove unnecessary controls from the screen and display only the exact buttons required for the particular feature being accessed. For example, the keyboard is displayed only when alpha-numeric input is needed. Once text entry is finished, the keyboard goes away. We judiciously use pop-ups to simplify the user experience and to manage secondary and tertiary controls. The upper right-hand corner of the layout is intentionally left open so that you can easily add buttons to tie into other house-wide sources and controls. We recommend that you program the Main Menu button to return the user to the whole-house source selection page and use the Volume control buttons for control as well as volume level feedback.

2.2 Touch Panel Variations

Kaleidescape offers three variations of touch panel controls. These three touch panel variations are listed in rank order, the first – with the video window – providing the richest user experience. This version is Kaleidescape's preferred implementation and should be used wherever possible.

The three touch panel variations are:

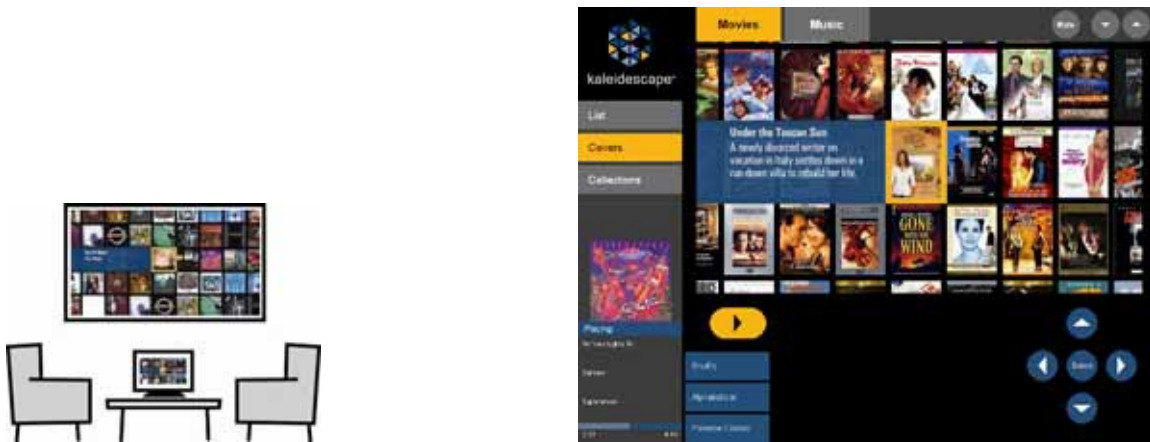
1. [OSD Control](#) WITH a Video Window
2. [OSD Control](#) WITHOUT a Video Window
3. Standalone touch panel ([SATP](#))

When choosing which variation to use in a particular installation, consider whether or not a video display is present, what the technical capabilities of the touch panel are, and whether a movie or music zone is to be controlled. Most installations need to implement several touch panel variations to provide quality control in every [zone](#).

These touch panel variations are all packaged separately and available as downloadable VTP files. Each file is constructed as a single page with sub-pages or popups to manage the secondary and tertiary controls within each variation. In addition, you'll need to download the appropriate Kaleidescape [module](#), explained later in this document.

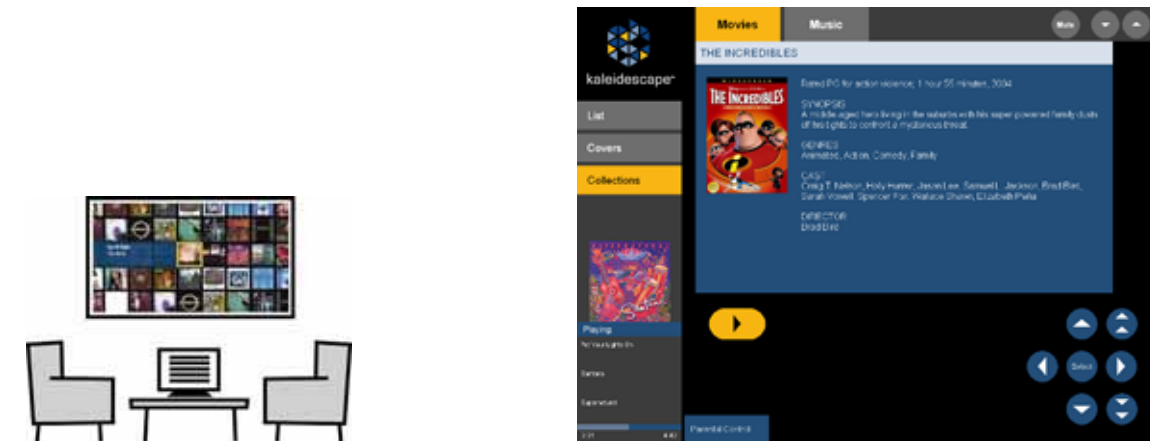
The touch panel variations are explained below and illustrated with screens taken from our 1024 x 768 pixel solution for the Crestron TPS-15.

OSD Control *WITH* a Video Window



OSD-with-video replicates the Kaleidescape System [OSD](#) on the touch panel, simplifying the user's operation. Kaleidescape strongly recommends that installers use this interface configuration to deliver a superior integrated user experience for both movies and music. To implement this solution, you need a touch panel that supports a video window and a Kaleidescape movie zone to provide video output to the panel. This is in addition to the separate video display, required for movie viewing. A separate display is not required for music-only [zones](#).

OSD Control *WITHOUT* a Video Window



The OSD-without-video variation delivers text-based details for all content. The touch panel replicates the details page for each movie or album while browsing in the OSD: List, Covers, and Collections. This solution requires a video display in the same room as the touch panel. Use this variation only when the touch panel cannot support a video window or when it has too little area to clearly display the OSD video image. This solution also requires a Kaleidescape movie zone.

Standalone Touch Panel (SATP)

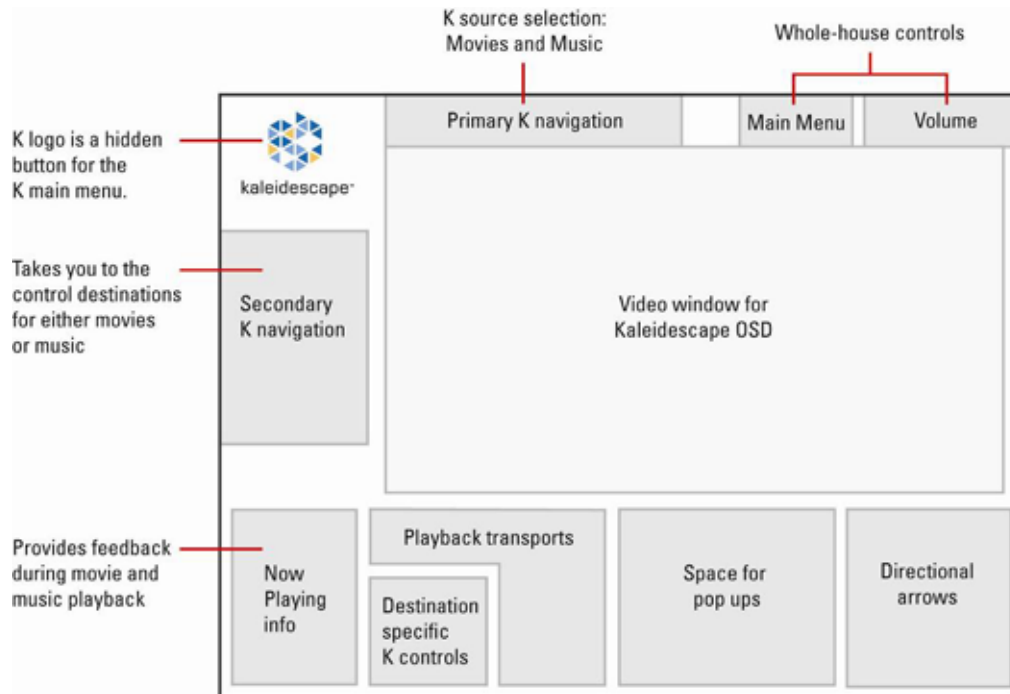


SATP provides music controls on touch panels in rooms without video displays (i.e., hallways, dining rooms, outdoors, etc.) or which have a display area too small to support a large video window. This simple, text-based interface is a powerful browsing tool, ideal for small LCD displays (320x240 pixels). Although this configuration delivers an effective way to browse a library and make selections, the experience is not as rich or as powerful as that provided by the previous two touch panel variations. Our Java-based Control Panels (available on computers via the User Web Utility) offer a user interface that is identical to this standalone touch panel solution. The standalone touch panel (SATP) solution controls your music library without any need for a video display. This solution works with any zone on any Kaleidescape player.

Please see [Appendix A](#) for sample screen shots for all three variations.

2.3 Anatomy of the User Interface Layout

The following diagram outlines the organization of the Kaleidescape touch panel user interface. This layout complements the Kaleidescape [OSD](#) and provides an intuitive means for controlling the Kaleidescape System. Consistent implementation of this grid layout across all panel sizes and control platforms improves overall System usability.



Selecting the Kaleidescape logo takes you to the Kaleidescape Main Menu. This deliberately unlabeled navigation point is not the ideal method of navigation on a touch panel. Instead, we give our audience visibility and immediate access to Kaleidescape's primary navigation sources (Movies and Music) at all times in the region next to the logo.

Programmers can integrate their whole-house controls by utilizing the appropriate Main Menu and Volume buttons located in the upper right-hand region.

Within the secondary Kaleidescape navigation (located along the left side) area, you'll find all the destinations where you can browse or control content. These destinations are the same for both movie and music: List, Covers, and Collections. The Parental Controls destination, which currently only applies to movie content, is accessed from within Movie List, Covers, or Collections. Now Playing is always visible in the music space, but in the movie space it only appears when a movie is being played.

Playback transports, directional arrows, pop-ups and other destination-specific Kaleidescape controls are placed along the lower section of the screen.

3 Keypads

Our keypad modules provide a method for controlling music playback from any zone on any Kaleidescape player without requiring control feedback. Although the keypad modules were created for use with keypads, they can use any button-like input. This can be an actual button on a keypad, a button on a touch panel, a motion sensor, or any other input device.

We provide two different keypad modules: presets and music collections. The keypad presets module allows you to program a keypad to play a pre-determined music item that can be easily changed by the user. The music collections module allows you to program a keypad so users can cycle through music items within a Music Collection.

3.1 Music Items in the Kaleidescape System

It is important to understand that the Kaleidescape System treats several different music items in the System as playable. The following table describes these items and how the random and repeat settings affect them.

Item	Description	Example	Random	Repeat
Single Track	Any single track on any album in the System	Hey Bulldog by the Beatles	Only the single track plays	Can be repeated
Album	Any single album in the System	The White Album	Can be played back in random order	Can be repeated
Mix Album	A user defined album that can contain any track(s) or album(s) in the System	My Favorite Jazz	Can be played back in random order	Can be repeated
Artist	All music tracks performed or composed by a given artist, regardless of what album the track is on. This plays randomly repeated until stopped.	The Beatles	Always random	Always repeat
Classical Composer	All music tracks composed by a given artist, regardless of what album the track is on. This plays randomly repeated until stopped.	Bach	Always random	Always repeat
Classical Work	A single classical work, incorporating all of its composite tracks into a single element.	Brahms Tragic Overture in D minor	Can be played back in a random order	Can be repeated
User-Defined Collection	All items within a user-defined collection. A collection may contain any of the above music items.	Mom's Favorites	Always random	Always repeat
Genre	All music tracks within the genre. This plays randomly repeated until stopped.	Rock	Always random	Always repeat
All Music	All the music on all albums in the System. This plays randomly repeated until stopped.		Always random	Always repeat

Random and Repeat

In the Kaleidescape System, some music items always play in random order and repeat. These music items include any Genre, any Artist, any Composer, any User-Defined Collection, and All Music. When any of these items are saved to a preset and played, the item plays in a random order starting with a random track. If the preset is re-selected, a new random track will play. This removes the requirement to use a “next track” button to skip an undesired track within a desired selection. For example, suppose you have programmed a Jazz button to play the Jazz genre. Every time that button is pressed, a randomly selected Jazz track starts playing. If the user doesn’t care for the current track, they can simply press the Jazz button again to hear a different one. A Beatles button, a Mozart button, a Mom’s Music button, or an All Music button would behave the same way.

A [zone](#)’s last state of random and repeat settings will control how albums, Mix Albums, and single tracks play from a preset. To control how these items are played back, the keypad presets module can change the random and repeat settings of the zone.

3.2 Presets

A [preset](#) ties a music item in the Kaleidescape System to a keypad button or other input trigger. Any music item can be saved as a preset, and there is no limit to the number of presets that can be used in a System. You can use the same music presets throughout an installation, or you can provide each zone with its own set of presets, or arrange the presets in any other manner that you find useful. For example, you can create a button designated “His Music” in the family room that plays the same music preset as any other “His Music” button in the installation.

Alternately, every keypad in an installation can have unique presets assigned to each individual button. In this scenario, setting a music preset to the first button in the family room does not affect buttons on the kitchen keypad. You can combine these approaches as you see fit. You can make a set of rooms share their own set of presets. For example, the breakfast nook, hallway, and entryway can all share one set of presets, while each child’s room has their own unique presets.

Tags and the Preset ID

Many radio tuners have presets, typically using numbered buttons to define each one. For instance, button 1 may be WKRP, button 2 may be WNPR, and so forth. The Kaleidescape System uses a text tag instead of a physical button. Each preset is defined by a [tag](#) that is associated with a music item in a System-wide table.

To simplify the creation of presets, the keypad presets module uses a [Preset ID](#) parameter to generate tags. A Preset ID can refer to a location or function. For instance, you can use a Preset ID like “Kitchen” to create presets for the kitchen’s music zone. A module with a Preset ID like “Country” can be used to program the same button on all keypads in the installation to play country music. The keypad presets module can lock the presets after they have been programmed or allow the user to change the presets. For example, a Preset ID called “Family Music” can be used to create a “John’s Music” button on multiple keypads. You can leave it up to John to set the type of music the button plays. John could set the preset himself to play the genre Jazz, the sub-genre called Dixieland Jazz, or even a favorite Mix Album.

The Preset ID is used, with the module's preset input number appended, to create the final tag used by the module. In other words, if you program the module with the Preset ID "Kitchen," the module's first preset input will use the tag "Kitchen1," the second preset input will use "Kitchen2" and so on. If you want two modules to share the same presets, simply give them the same Preset ID. Assign them different Preset IDs to create separate presets for each module.

Tags are currently not visible to the end users, but they may someday be seen on the OSD or Web Utility, so be sure to name the Preset ID appropriately.

Zones

Presets are shared between all zones on all players in the System. A preset saved on one music zone can be used anywhere the System. The keypad presets module itself needs to be tied to a specific zone. You must assign a [CPDID](#) and a [Zone ID](#) in the module to associate the presets with a player and zone in the System. See the [programming section](#) for more information.

Saving Presets

To save a preset, you must first play the desired music item. You can do this from any control interface – the OSD with an IR remote, an SATP touch panel, or even the Control Panels available through the User Web Utility. Once the desired music is playing, press and hold the keypad button for a few seconds to set the preset. The playback will mute briefly to let you know that the preset has been saved. It is possible to disable (lock-out) preset modification through the module.

Any discrete music item can be saved as a preset. Any individual track, album, Mix Album, Genre, Artist, Classical Work, Classical Composer, user-defined Collection, or All Music can be saved to a preset. If more than one item is set to play (for instance, if three albums are cued up in Now Playing) only the currently playing item will be saved to the preset. There is no need to re-save presets when new content is added to a Genre, Artist, Classical Composer, user-defined Collection, or Mix Album. The System plays the entire contents of those each time it is recalled, regardless of what tracks were present when the preset was saved.

Preset Browsing

The module also provides the ability to browse through the presets in numerical order. There are three controls provided for this activity: first, next, and previous. If a specific preset has not yet been defined, that preset is skipped and the next defined preset is activated.

Preset Feedback

Each preset in the module is associated with a descriptive text label identifying what is saved to that preset. For example, if the user saves the "Jazz" genre to a preset, then "Jazz" becomes the preset label. Likewise, if the user saves music by Queen or the Alice in Chains album Facelift to a preset, then the preset label becomes "Queen" or "Alice in Chains – Facelift" respectively. These labels can be used on keypad character displays or touch panels to identify the status of a preset button.

The module also reports information about the currently selected music entity using the "Now Playing Item" output. If a preset is currently playing, it displays the label associated with that preset.

3.3 Collection Browsing

You can program a set of buttons to browse through the items within a Music Collection. You can specify any Music Collection: Albums, Artists, Genres, Mix Albums, Classical Composers, Classical Works, New, or any user-defined Collection. The module provides three controls for browsing: first, next, and previous. These controls step through the Collection in the order shown on the OSD.

Available Collections

The following table describes the Music Collections currently available in the Kaleidescape System.

Item	Description	Sort Order	First Item
Albums by Artist	All albums in the System	Artists name, alphabetical	All Music
Albums by Title	All albums in the System	Album name, alphabetical	All Music
Artists	All artists in the System	Artists name, alphabetical	All Music
Classical Composers	All classical composers in the System	Composers name, alphabetical	All Classical Music
Classical Works	All classical works in the System	Work name, alphabetical	All Classical Music
Genres	The top 40 genres in the System	Genre name, alphabetical	All Music
Mix Albums	All user-defined Mix Albums in the System	Mix Album name, alphabetical	First Mix Album
New	The most recently imported albums in the System. The amount of time an album is considered new is determined by the user. This collection may frequently be empty.	Album name, alphabetical	First New Album
(user-defined)	A collection of any music items on the system, defined by the user.	Item name, alphabetical	All in this collection

As more Music Collections are added to the Kaleidescape System, they will be useable for Collection browsing.

Suppose the user wants to step through every album in their Kaleidescape System. To accomplish this, define a set of buttons to step through the Albums by Artist Collection. When the user presses the First Album button, All Music plays. This is because the first item on the Albums Collection is All Music. If the user then presses the Next button, the first album by the first artist plays, since the Album Collection is sorted alphabetically by artist name.

What's "Next"?

The controls in the keypad music collections module operate independently from other methods of choosing music to play. When a user presses the next button for a Collection, it always plays the next item relative to the last item played from the keypad. For example, suppose the System has three artists – Abba, The Beatles, and The Cars. While listening to Abba, the user presses the Next Artists button on the keypad to skip from Abba to The Beatles. A little while later, the user selects Abba from the OSD. The next time the user presses Next Artist on the keypad, The Cars will start playing, even though the user might expect The Beatles to start playing.

4 Programming

4.1 Understanding Kaleidescape Command Protocol

Kaleidescape System control is based on bi-directional ASCII string commands. All Kaleidescape components respond to commands from a Crestron controller and provide feedback in this format. It is not necessary to know the details of the Kaleidescape command protocol for Crestron programming. However, it is important to understand how these commands are routed in the Kaleidescape System.

The first field in the command string identifies the Kaleidescape component to which the command is being sent or from which feedback is being received. This device field has potentially two variables that also appear in [module](#) settings and settings made in the Installer Web Utility. The first is the Control Protocol Device ID ([CPDID](#)), which identifies the Kaleidescape component. The second, [Zone ID](#), identifies which movie or music [zone](#) is to be controlled.

Note

There are a few commands intended for a 1U, 3U or 5U Server, but these are generally limited to [IP address](#) recovery commands, and are not useful to the Crestron system.

Control Protocol Device ID (CPDID)

Every command and response begins with a Control Protocol Device ID (CPDID). In installations that do not require [Command Routing](#), the default CPDID None (01 in the ASCII command) is used for all Kaleidescape components. Do not change the default CPDID (None) unless your installation requires Command Routing.

In installations that use Command Routing, the CPDID routes commands to the intended zone. The Kaleidescape module verifies that it has received a valid response from the targeted zone by comparing the CPDID of the command and response.

For example, if you assign CPDID 02 to a 1080p Player, the PLAY command would look like this:

```
02/1/PLAY:\r
```

A command beginning with CPDID 01 (None) will always control the component that directly receives the command, either via its [RS-232](#) port or [TCP/IP](#), regardless of the CPDID setting of the component.

If the installation requires Command Routing, a unique CPDID for each controlled component must be set via the Installer Web Utility. The Kaleidescape modules include a field for entering corresponding CPDIDs.

Kaleidescape Music Zones

Some Kaleidescape players have more than one music zone. For instance, the Kaleidescape Music Player incorporates a CD/DVD reader and four music [zone](#) outputs, each of which must be controlled independently. To control the four music zones, the device field includes a [Zone ID](#) (01-04) that identifies the music zone to which the command is targeted. Each music zone behaves as a separate endpoint. Commands that target music zone 1 will generally not affect music zone 2 (power on/off commands affect all four zones) and so on.

For example, if you assign [CPDID](#) 06 to a Music Player, the PLAY command intended for music zone 3 would look like this:

```
06.03/1/PLAY:\r
```

Music commands addressed to the single zone of a 1080p Player always use Zone ID 01.

The Kaleidescape [modules](#) that control music zones include a field for entering a CPDID and a field for entering the Zone ID.

4.2 Kaleidescape Modules

Kaleidescape provides four different modules for controlling a player – a standalone touch panel ([SATP](#)) module, an onscreen display ([OSD](#)) module, a keypad presets module and a keypad music collections module. All modules can use either [RS-232](#) or [TCP/IP](#) for control. The modules are available from the [Support](#) page of Kaleidescape’s website. Always download the latest versions of the modules before beginning a project or revising an existing [program](#).

The OSD, SATP, and keypad presets modules each contain a set of transports: Play, Stop, Pause, Fast Forward, Rewind, Next, and Previous. These commands behave differently with the SATP and keypad presets module than they do on the OSD module. For example, the Stop input with the OSD module clears the screensaver if it’s running, clears a popup when it is showing, or stops music when Now Playing in the active screen. The Stop input on the SATP or keypad presets module always stops the music no matter what is shown on the OSD. Basically, the OSD module’s transport commands control the OSD, which then controls movies and music. The transport commands for the SATP and keypad presets modules only control the music that is currently playing.

OSD—Onscreen Display Control

The Kaleidescape OSD module works with either the [OSD with video window](#) or [OSD without video window templates](#) and is used to control a Kaleidescape movie zone. Kaleidescape recommends using a video feed for control for the best user experience. For more information on the inputs, outputs, and parameters of the OSD module, see [Appendix C](#).

SATP—Standalone Touch Panel Control

The Kaleidescape SATP module provides SATP (standalone touch panel) control where the OSD is not available or visible to the user. In such cases, the touch panel provides a standalone interface for a music zone. When used with a zone that supports both movies and music (such as the single zone from a 1080p Player) this module does not affect the OSD and provides a completely independent method for controlling the zone. The SATP module is designed to work with the SATP [template](#) described above.

Currently, the Kaleidescape SATP module does not control movie selection or playback. For more information on the inputs, outputs and parameters of the SATP module, see [Appendix D](#).

Keypad Presets

The keypad presets module provides simple control of music playback from a keypad. The keypad presets module associates music items in the System with keypad buttons. Although designed for keypads, any input could be used to trigger a preset and presets can be incorporated into touch panel designs. For more information on the inputs, outputs and parameters of the keypad presets module, see [Appendix E](#).

Keypad Music Collections

The keypad music collections module allows a user to browse through a collection with simple controls: first, next, and previous. For more information on the inputs, outputs and parameters of the music collections module, see [Appendix F](#).

Importing a Crestron Module

Each [module](#) consists of three files, a SIMPL Windows UMC file, a SIMPL+ USP file, and a SIMPL+ USH file. The SIMPL+ files are not intended for direct use within a [program](#), but are used as a processor for the accompanying UMC file.

Note:

The Kaleidescape modules for Crestron are designed to be used with the latest version of SIMPL Windows. Make sure you are using the most recent version of SIMPL Windows.

File names indicate the current version of the module, indicated by Xs in the file names below.

The Kaleidescape OSD module consists of three files:

- Kaleidescape OSD vX.X.X.umc
- Kaleidescape OSD Processor vX.X.X.usp
- Kaleidescape OSD Processor vX.X.X.ush

The Kaleidescape SATP module consists of three files:

- Kaleidescape SATP vX.X.X.umc
- Kaleidescape SATP Processor vX.X.X.usp
- Kaleidescape SATP Processor vX.X.X.ush

The Kaleidescape keypad presets module consists of three files:

- Kaleidescape Presets vX.X.X.umc
- Kaleidescape Presets Processor vX.X.X.usp
- Kaleidescape Presets Processor vX.X.X.ush

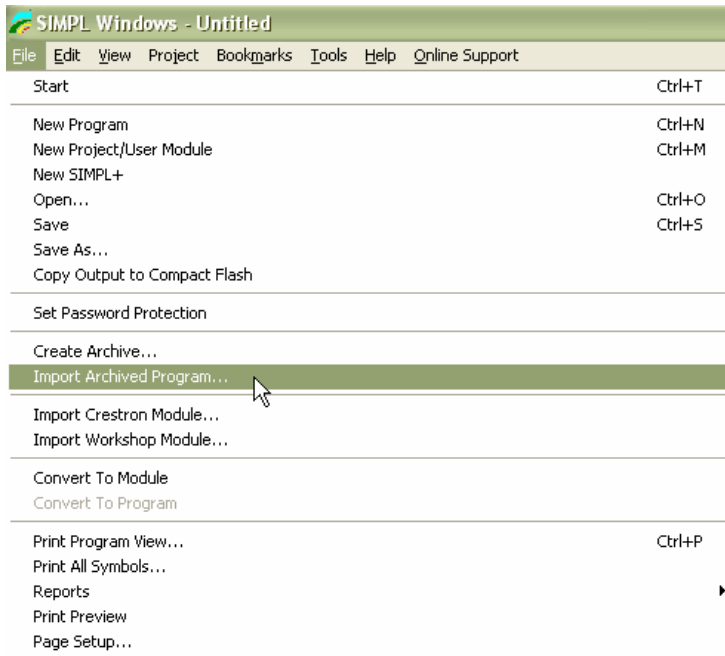
The Kaleidescape keypad music collections module consists of one file:

- Kaleidescape Music Collections vX.X.X.umc

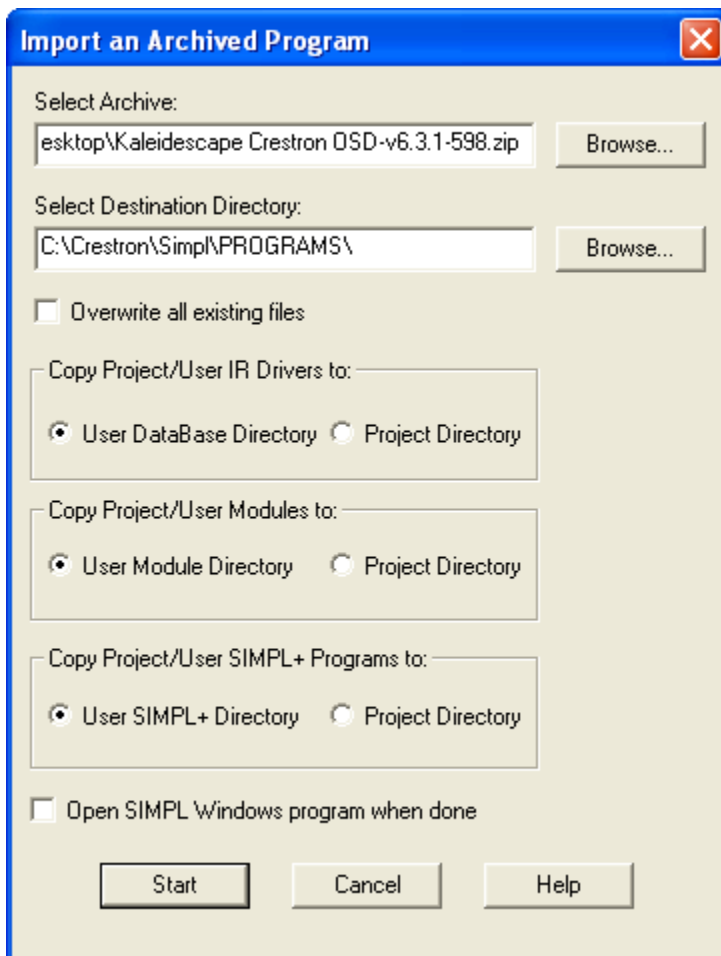
It is not necessary to import the module if you plan to use the sample program.

Automatic Import

Without unzipping the file, you can use the Import mechanism in SIMPL Windows. Select File, then select Import an Archived Program.



You must copy the User [Module](#) and SIMPL+ Program to the same location.



Module Version Number

The module version number describes changes in the interface and internal changes. The major version number is used to reference major API changes, such as the removal or addition of signals to the module. The minor version number changes when there are changes to the behavior of the module, or if there are minor modifications to the interface. Changes in the minor version number indicate that you may have to modify your program when you update to this module. Changes to the patch number indicate that there are no outward changes to the module and updating the module should not require any program changes.

The version number is presented in this format: (major).(minor).(patch)

Suppose you are using a module with the version number of 9.2.0. This module may have a very different interface from any version 8 or earlier, and will likely require changes in your [program](#) if you are updating from an earlier version. If version 9.2.1 were released, it should be very easy to upgrade from 9.2.0 and you should not see any outward changes. If version 9.3.0 were released, updating from either 9.2.0 or 9.2.1 may require program changes.

Kaleidescape strives to minimize interface changes. The majority of the changes are new inputs and/or outputs or slight name changes on existing inputs and/or outputs. Occasionally the inputs and/or outputs in a new release are rearranged to group new features logically. These changes

are not done lightly as they can make it very difficult for a programmer to update a module and usually accompany a change in the module's name.

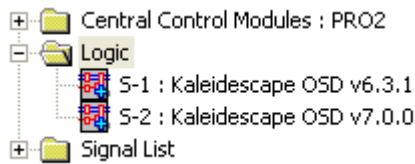
Updating Modules

Changes in the major or minor revision number are likely to have interface changes that will affect your existing program, and you may have to reconcile new inputs and outputs. Depending on the sub-set of the signals used in your installation, these new controls can often be ignored. After updating, open up your program in SIMPL Windows and choose "Project" and "Re-Synch Program" to obtain the new changes.

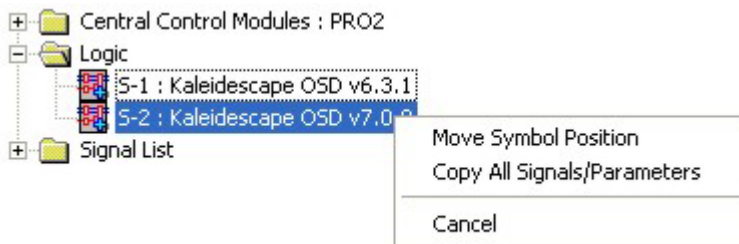
To update old modules, copy the signals from your existing modules to an instance of the new module. The steps given below are for updating OSD modules. Use similar process to update the SATP and Keypad modules.

To update OSD modules:

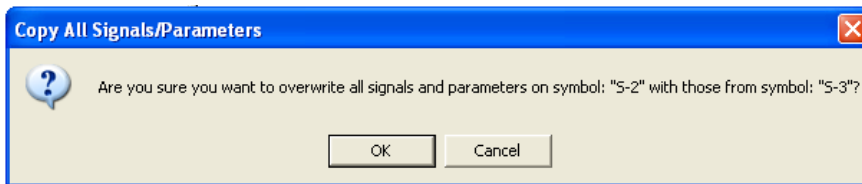
1. Open your Crestron Project and the OSD Demo.smw with the new OSD module.
2. Use Copy and Paste to add a new OSD module for every OSD module in your project.



3. Right-click on the module you want to update and drag it over the new OSD module.



4. Select Copy All Signals/Parameters from the popup menu.
5. Click OK at the confirmation dialog box.



6. Delete the old module.
7. Repeat Steps 3 through 6 for all the OSD modules you are updating.

You can use this process to update SATP and Keypad modules in your program.

Scalability

The complexity of the Kaleidescape modules is demanding on a Crestron processor. A single, dedicated Crestron CP2E can support:

- ▶ Up to 15 OSD modules OR
- ▶ Up to 15 [SATP](#) modules with five users actively browsing OR
- ▶ Over 90 keypad preset or keypad music collection modules

4.3 Connection Methods

All Kaleidescape players can be controlled via a [TCP/IP](#) connection over [Ethernet](#); most can also be controlled via an [RS-232](#) connection. The 1080p Mini Player lacks an RS-232 port and therefore must be controlled via a TCP/IP connection. In a Crestron control system, the Kaleidescape [modules](#) cannot distinguish between these two connection methods – the protocol is identical.

Kaleidescape recommends that you use TCP/IP over Ethernet for control connection in most cases. TCP/IP over Ethernet offers several advantages over RS-232:

- ▶ Very high bandwidth compared to RS-232
- ▶ Error detection and correction
- ▶ Uses standard CAT5/5e/6 cable and pinout (simple standard termination)
- ▶ Longer cable runs possible
- ▶ Requires only a single network port.
- ▶ No extra COM port cards to buy

Bandwidth can be a key issue, especially in multi-zone Systems. Text-based feedback from several zones can cause noticeable response latency over an RS-232 connection. This is especially critical when you are using [Command Routing](#) to control multiple Kaleidescape components through a single RS-232 port.

There are some installations where you may want to use RS-232. If you need to control the power state of a older Movie Player, RS-232 may be your only option (The 1080p Player, 1080p Mini Player, Movie Player 2, and Music Player can be powered on from TCP/IP-over-Ethernet commands). For more information on controlling power states, see *4.9 Power Control* on page 30.

You can also choose to use RS-232 control if the Crestron processor you are using does not have an Ethernet port or you prefer not to purchase an optional Ethernet card.

4.4 Programming Options

In addition to physical connections through RS-232 or Ethernet ports, there are different methods of combining Crestron programming with Kaleidescape commands. There are multiple methods of connecting Kaleidescape module signals to other device modules. The Kaleidescape command protocol also allows you to route commands indirectly, through a single physical connection, to any Kaleidescape player or server (Command Routing).

The following table illustrates how physical connections work with Crestron and Kaleidescape programming options (listed in order from highly recommended to not recommended).

Method	Diagram	Description
Single Ethernet port with multiple TCP/IP Clients		<p>Each player is associated with the Kaleidescape module through its own TCP/IP Client.</p> <p>Pros: Good control flexibility and through-put.</p> <p>Cons: Several TCP/IP Clients to manage. Cannot power on the older KPLAYER-2000 or KPLAYER-2500.</p>
Multiple RS-232 ports		<p>Each player has a direct connection to an RS-232 port on the controller.</p> <p>Pros: Best control flexibility and fair through-put.</p> <p>Cons: Limited distances, may require additional RS-232 ports.</p>
Command Routing with a single Ethernet port and single TCP/IP Client		<p>Kaleidescape module signals are jammed together through a single TCP/IP Client.</p> <p>Pros: Easier to program, good through-put.</p> <p>Cons: Places extra load on Crestron processor. Cannot power on a player.</p>
Command Routing with a single RS-232 port		<p>Kaleidescape module signals are jammed together through a single RS-232 port.</p> <p>Pros: Single RS-232 connection.</p> <p>Cons: Places extra load on Crestron processor. Poor through-put and limited distances. Cannot power on a player.</p>

All of these methods can be used in the same installation depending on factors such as the cable run length to players, the Crestron processor you are using, and the number of players in the installation.

4.5 Using Command Routing

[Command Routing](#) allows you to control multiple Kaleidescape players with only one connection to the controller. This can be either a [TCP/IP](#) or an [RS-232](#) connection to almost any player or server in the System. While Command Routing can be the best solution for some installation challenges, it also has inherent limitations and should not be used unless the installation requires it.

- ▶ If your Crestron controller has a dedicated RS-232 port for each Kaleidescape player or if you can establish direct TCP/IP communications with each player, you do not need to use Command Routing.
- ▶ If you need to control several players through a single RS-232 port or you need to use a single [IP address](#) for Crestron communications with the Kaleidescape System, you need to use Command Routing.

Command Routing via TCP/IP

In some installations, you may not be able to make a [TCP/IP](#) connection to each player. For example, the network administrator may have isolated the Kaleidescape System on its own network behind a NAT router and only a single IP connection is available. Or, possibly the network administrator has only provided for a single static IP address, and all other components are using dynamically assigned IP addresses—their addresses potentially changing with each power cycle or power outage.

For installations such as these, it is possible to route all the communications through a single [TCP/IP Client](#). This forces the Crestron processor to work harder than necessary and may slow down the System – especially if the [program](#) uses multiple [SATP modules](#). Using a single IP address and Command Routing introduces a single point of failure. If the Kaleidescape component with connection to the controller loses power or if it is replaced by a new component with the wrong IP address, you will lose control of the entire Kaleidescape System. These network topologies are not recommended for Kaleidescape Systems and should be avoided if possible.

If you must use a single IP address, you can do this by changing the TX\$ of every module to use the same signal name (jamming them together). Do the same for the RX\$ and Connection-F signals of every module. Then configure one TCP/IP Client to use the same TX\$, RX\$, and Connection-F signals. This routes all the TX\$ and RX\$ signals through that one TCP/IP Client.

Although the TCP/IP Client could connect to any Kaleidescape player to control any or all zones in the System, you will lose control of those zones if that player is turned off. To avoid this potential problem, connect directly to a server when you are using Command Routing as the server generally stays powered-on all the time. If there are multiple servers in the System, the additional servers can be left out of the control programming.

Command Routing via RS-232

Instead of using a TCP/IP Client, you can route all the communications through a single [RS-232](#) port. As noted above, this connection should be through the Kaleidescape server. However, Command Routing through the RS-232 Control Port can cause latency in some cases due to the RS-232 port's limited bandwidth and is not recommended.

If you must use a single RS-232 connection, change the TX\$ of every module to use the same signal name (jamming them together). Do the same for the RX\$ and signals of every module. Then configure one RS-232 port to use the same TX\$ and RX\$ signals. This routes all the TX\$ and RX\$ signals through that one RS-232 port.

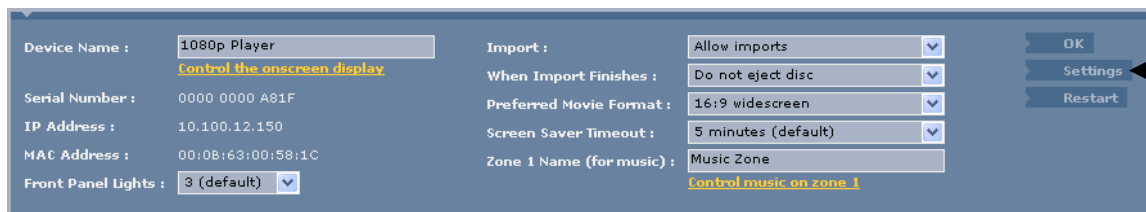
Setting the Control Protocol Device ID

[CPDIDs](#) are set for Kaleidescape components from the Installer Web Utility. You must also set the CPDID of the [OSD](#) or [SATP module](#) to match the player it is controlling. Do not assign the same CPDID to more than one device. Valid CPDID numbers for Command Routing range from 02 to 99. Setting CPDID None in the Installer Web Utility means that Command Routing is not being used for that device. Kaleidescape players set to CPDID None must have a direct connection to the controller (via RS-232 or TCP/IP). The Crestron module must then be set to CPDID 01 in order to communicate with the directly connected device.

For example, if you are using Command Routing via an [RS-232](#) connection to a 3U Server, the server responds to requests sent to CPDID None (01) and routes commands with other CPDIDs to the components to which you have assigned unique CPDIDs.

To set the CPDID:

1. Open the [Kaleidescape Installer Web Utility](#) in your browser.
2. Click **Settings** on the COMPONENTS tab for the device you want to assign a CPDID to.



Device Name : 1080p Player
Control the onscreen display
Serial Number : 0000 0000 A81F
IP Address : 10.100.12.150
MAC Address : 00:0B:63:00:58:1C
Front Panel Lights : 3 (default)
Import : Allow imports
When Import Finishes : Do not eject disc
Preferred Movie Format : 16:9 widescreen
Screen Saver Timeout : 5 minutes (default)
Zone 1 Name (for music) : Music Zone
Control music on zone 1
OK
Settings
Restart

3. Select the **CONTROL** tab in the resulting popup.



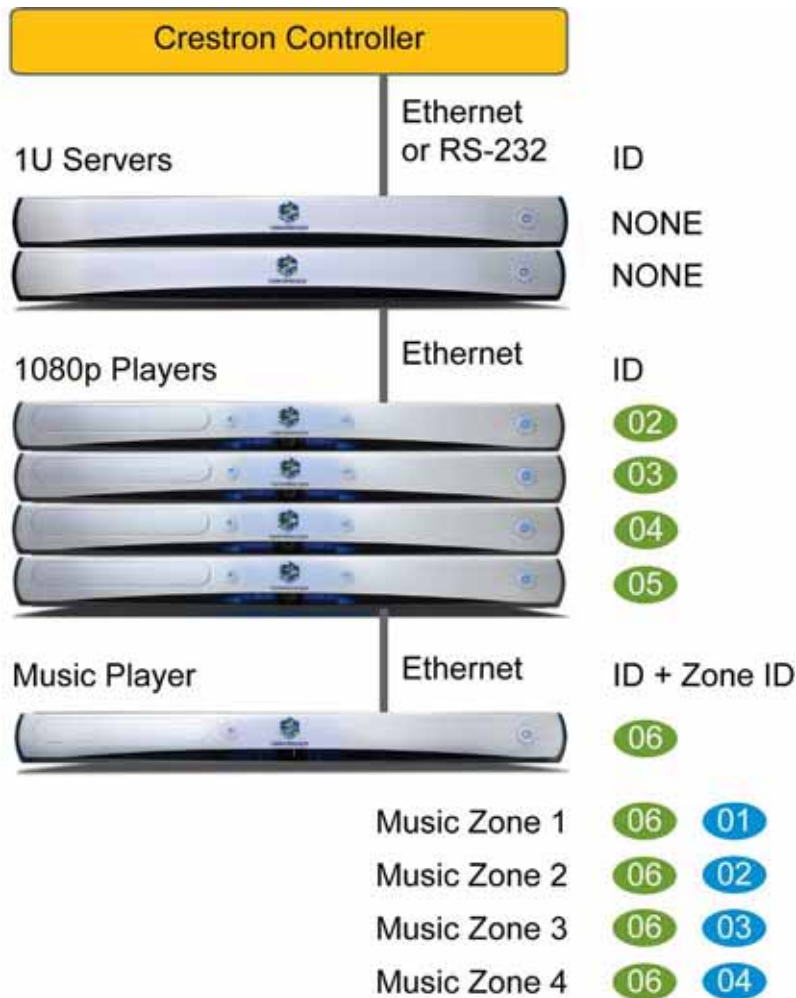
VIDEO AUDIO LANGUAGE NETWORK **CONTROL** REGION SCREEN MASKING
These settings are used by this component to communicate with controllers using the serial port.
Baud Rate : 19200
Data Bits : 8
Parity Bits : None
Stop Bits : 1
Flow Control : None
A Control Protocol Device ID (CPDID) may be assigned to this component. The CPDID allows indirect access through the control protocol. Be careful not to assign the same CPDID to more than one component in the same System.
Control Protocol Device ID : None
This component can respond to different infrared (IR) code sets. Mark the checkboxes corresponding to the code sets that you wish to use.
☒ Kenwood
☒ Toshiba
Some IR remotes use the same pair of buttons for skipping chapters and for paging through lists. (Sometimes they are used for changing chapters, too.) If the remote control used with this onscreen display has these kinds of buttons, specify how they are laid out:
The buttons are laid out : Vertically
OK Cancel

4. Select the Control Protocol Device ID (none, 02 through 99) from the drop-down list. Select None only if you are not using Command Routing for this device. For example, select None if this is a 3U Server to which you are connecting the controller.

- Click OK. You do not have to reboot the device.

CPDID Addressing Example

In the example illustrated below, a Crestron controller is connected to a 1U Server either by [Ethernet](#) or the [RS-232](#) Control Port. Unique [CPDIDs](#) are assigned from the Installer Web Utility to four 1080p Players and one Music Player. The Music Player has four music [zones](#) controlled independently with the addition of [Zone IDs](#). Since the 1U Server connected to the Crestron controller is the local device, it uses the default CPDID None. The second 1U Server does not need to be controlled, so its CPDID is left at the default CPDID None.



Each of the 1080p Players is controlled from a Kaleidescape [OSD module](#). The OSD modules must be configured to match the CPDIDs you assign the Players in the Installer Web Utility. The field for the CPDID is at the bottom of the module as shown below.

Control Protocol Device ID	02d
Time Update Interval	Update Time During Playback
Using a Controlled Mask	No

If the controller directs the 1080p Player to play the selected movie, the OSD module sends the text command below to the server:

02/1/PLAY:\r

The server receives the command and re-routes it to the player with the CPDID 02 via [TCP/IP](#) over Ethernet. Likewise, the response is directed through the server back to the OSD module with the CPDID 02.

For the Music Player, you must use a separate [SATP](#) and/or keypad module for each controlled zone. All SATP and keypad modules for the same player are assigned the same CPDID (06 in our example) but you must also set the [Zone ID](#) parameter (01 through 04). The SATP and keypad modules send every command with the CPDID followed by the Zone ID. This identifies each music zone as a separate, routable endpoint.

Control Protocol Device ID	06d
Zone ID	03d
Time Update Interval	Update progress during playback
List Window Length	20d

If the controller directs the Music Player to play the selected music in zone 3, the SATP module sends the text command:

06.03/1/PLAY:\r

The 1U Server receives the command and re-routes it to the Music Player (CPDID 06) via TCP/IP over Ethernet. The Music Player identifies the Zone ID of the command and plays back music in zone 3. Likewise, the response is directed through the 1U Server back to the SATP module for zone 3.

Note

If you are not using Command Routing, you must still set the Zone ID for the zone that the SATP or keypad module will be controlling.

This example has the Crestron processor connected to the 1U Server, but this would work just as well if the Crestron processor were attached to one of the 1080p Players. However, this is not recommended, as Command Routing does not function when the connected device is powered off. For example, if the Crestron processor is connected directly to the 1080p Player with CPDID 04, and that player is turned off, all Crestron control of the entire Kaleidescape System would stop working.

It is also important to note that a CPDID of 01 always sends commands to the directly connected device. If the Crestron processor were connected to the 1080p Player with CPDID 02, any

messages sent with CPDID 01 would be captured by that player and not routed to any others. In this case, both 01 and 02 would be correct values for the module's CPDID parameter. A direct connection to the controller is the only way to communicate with a component whose CPDID is set to None.

For more information, see the *Kaleidescape System Control Protocol Reference Manual* available from the [Support](#) page of the Kaleidescape website.

4.6 Music Zone Control

Music [Zone](#) Control allows you to control any music zone in the System from a movie zone's [OSD](#). Setting the Music Zone Control in the Installer Web Utility allows the user to select any zone from the movie zone's onscreen display. Now Playing shows what is playing in the currently selected zone.

To set Music Zone Control:

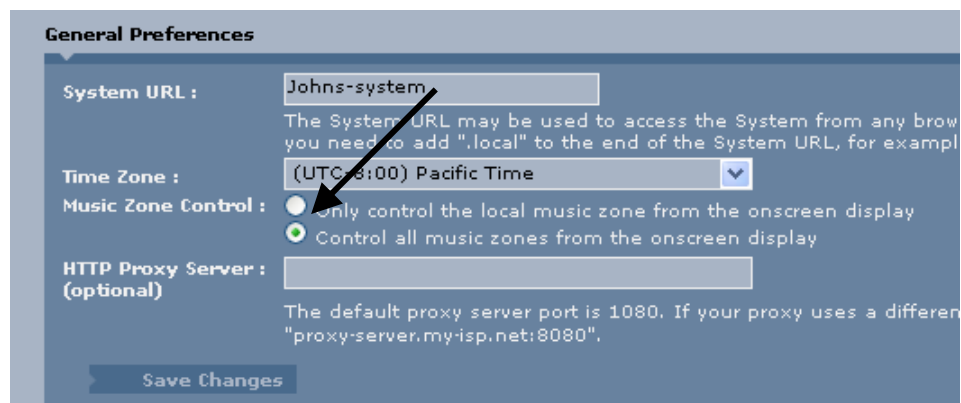
1. Name the zones in the **Zone # Name (for music)** option within the Installer Web Utility on the **COMPONENTS** tab. Name all the zones in the System, including movie zones.

Give the zones names easily understood by the user such as Sunroom, Dining Music, John's Music, or Baby's Music. These are the names listed in the OSD for users to choose from when they pick a zone to control the music.

Note

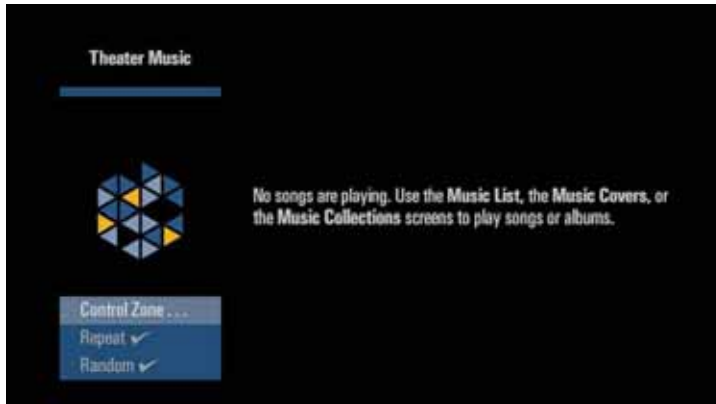
If you name a zone *Unused*, it will not appear as an option on the OSD selection.

2. In the Installer Web Utility, **PREFERENCES** tab, select **Control all music zones** from the onscreen display.

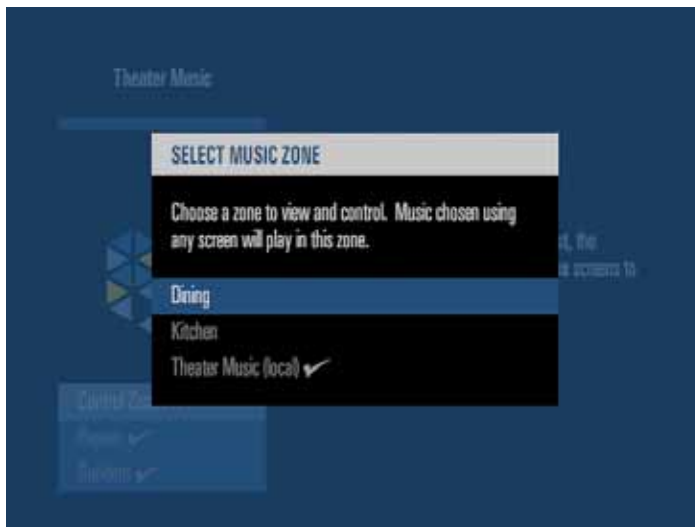


3. Click **Save Changes**.

On the movie zone's onscreen display, the user will be able to select the **Control Zone...** option in the Now Playing section of the display as shown below.



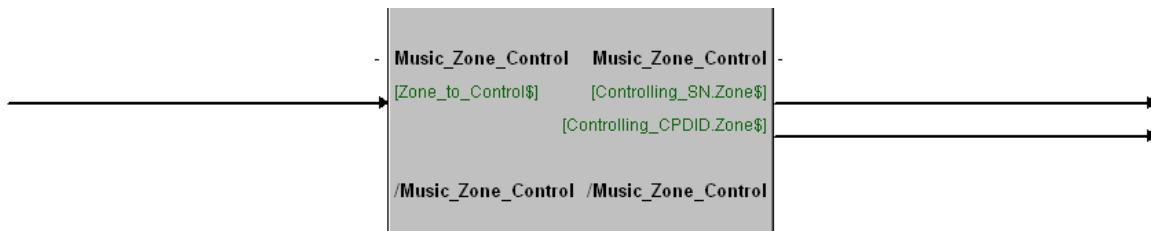
When the user selects **Control Zone...**, they are presented with all the available zones in the System according to the names assigned in the Kaleidescape Installer Web Utility.



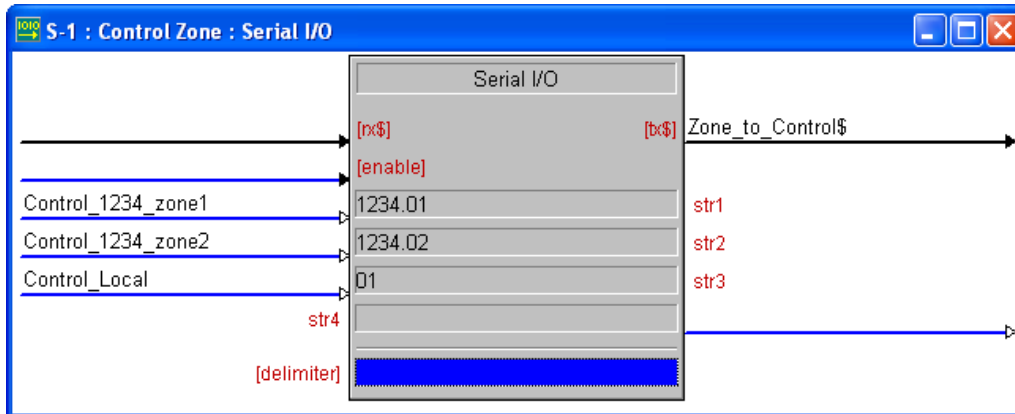
Whenever the user selects new music, he or she is prompted with a reminder that they are controlling a different music zone. The user then has the option to select another zone.

OSD Module Music Zone Selection

The zone that the onscreen display is controlling can be set from within the Kaleidescape OSD module. Control can be specified by using either the CPDID or serial number of the component you wish to control. Note that even though CPDID's may not be set, this feature can function. Because either CPDID or serial number can be used, the module also provides its feedback using both CPDID and serial number when telling which music zone the OSD is currently controlling.

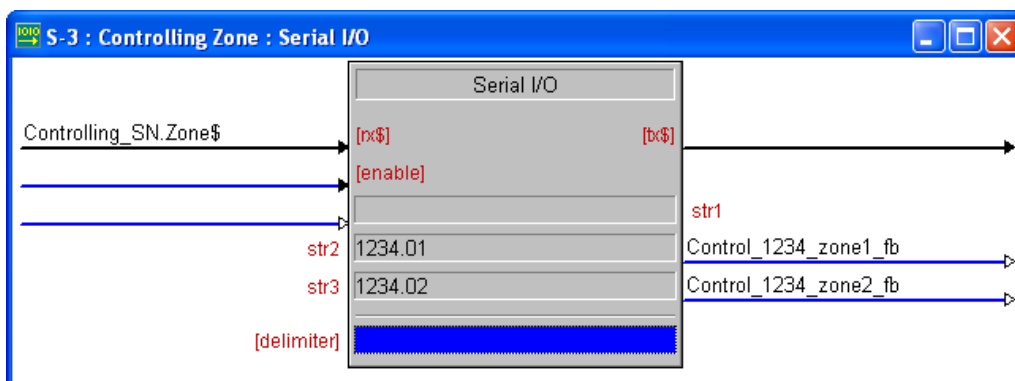


To use this feature with serial numbers, setup a Serial I/O with the serial numbers and Zone ID of the music zones that the onscreen display is to control. The following example shows how you can use a component's serial number to initiate control.



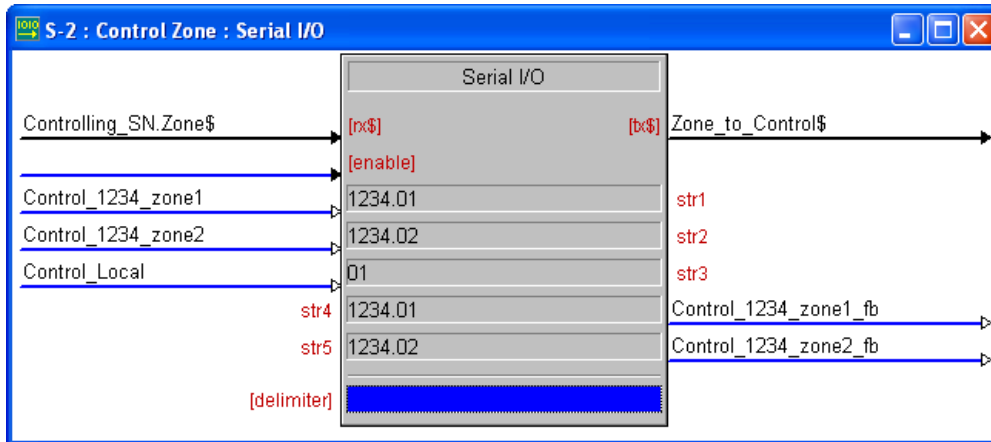
On the rising edge of the signal **Control_1234_zone1**, the onscreen display will begin controlling music of the first zone of the component with serial number 1234. On the rising edge of the signal **Control_1234_zone2**, the onscreen display will begin controlling the second zone of the component with serial number 1234. On the rising edge of **Control_Local**, the local movie zone will be again controlled. Note that 01 will always refer to the local zone.

To obtain feedback as to which serial number and zone the onscreen display is currently controlling, use the **[Controlling_SN.Zone\$]** output.

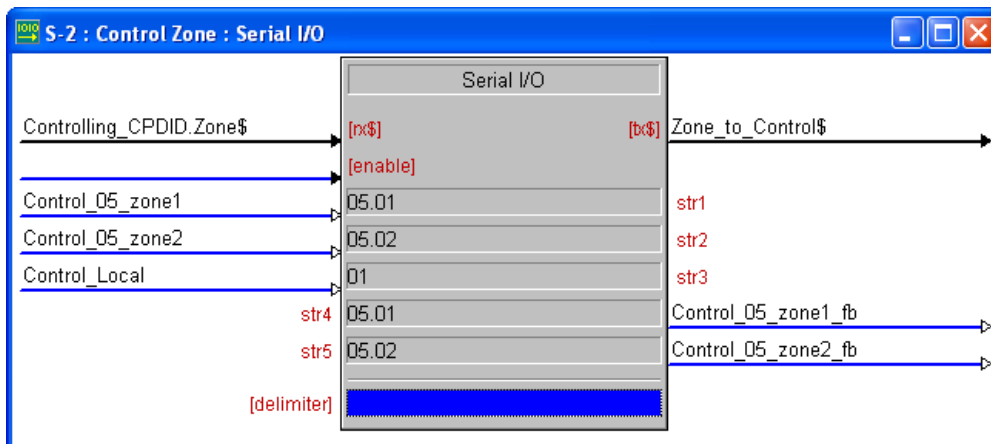


The **Control_1234_zone1 fb** signal will be high while the onscreen display is controlling zone 1 of component 1234 and the **Control_1234_zone2 fb** signal will be high while the onscreen display is controlling zone 2 of component 1234.

In an actual program, you would likely want to combine the above functions into a single serial I/O symbol, like so:



If you want to pick which zone to control using the CPDID of the component instead of the serial number, simply substitute the CPDID for the serial number in the strings, and take the feedback from the [Controlling_CPDID.Zone\$] output of the module. For instance, if you want to control zones 1 and 2 of a Music Player with a CPDID of 05, use the following:



4.7 Controlling a movie zone with both SATP and OSD Control

You may have a user who would like to use both the standalone touch panel ([SATP](#)) and the onscreen display ([OSD](#)) interface to control a movie zone, such as the single zone output of a 1080p Player. They may prefer to select music from a touch panel without turning on the video display. The best approach to this scenario is to imagine that the single zone is actually two different devices: one is an OSD-controlled movie zone which can play movies or music, and the other is an SATP-controlled music-only [zone](#). You must load both SATP and OSD-without-video [templates](#) onto the touch panel. These templates are designed as a single page to allow them to easily reside on the same touch panel. The single page design makes it easier to integrate our templates into a larger user interface file on the touch panel.

Both [modules](#) could use the same connection with their TX\$ and RX\$ signals jammed together, but the better method is to isolate the two different modules into their own [TCP/IP Clients](#). In

this case, the two TCP/IP Clients use the same [IP address](#), and the modules use the same [CPDID](#). Use buffers or other methods to separate devices on a touch panel. Remember to add a Make String Permanent symbol to keep the non-routed serial strings in memory.

4.8 Calibrate the Touch Interface

If you are using the OSD template with video, you must calibrate the touch panel interface to enable the user to touch the video feed. This calibration is in addition to the calibration of the Crestron touch panel itself.

Once you have the System functioning, press the Kaleidescape logo in the upper left corner of the OSD touch panel to bring up the Main Kaleidescape Menu and select System Status. Use the left/right arrows to select the System Setup Menu. From there, select the Calibrate Touch Panel entry and carefully follow the onscreen instructions.

The calibration information is stored in the player itself. Each zone that is used for OSD-video control must be calibrated.

4.9 Power Control

Whether you decide to connect to a component via [RS-232](#)¹ or [TCP/IP](#) may be determined by how you manage its power state. Both connection types support power-off (Enter Standby) commands, but not all components can respond to a power-on (Leave Standby) command over TCP/IP. Power-on works for all 1080p, Music and Movie Players receiving the command from an RS-232 connection. The following sections describe how to handle power control for Kaleidescape components.

Movie Player (KPLAYER-2000, KPLAYER-2500) Power Control

Early model Movie Players cannot be powered-on over a TCP/IP connection. When the Movie Player is put into standby mode, the [Ethernet](#) Port shuts down and it cannot receive any TCP/IP communications. Movie Players connected directly to the controller via the RS-232 Control Port can be powered on.

Using [Command Routing](#), it's possible to make a serial connection to one player and issue commands that route to a second player. Those routed commands travel over the network to the second player. If the second player is in standby mode in this scenario, power-on commands routed through the first player will not cause the second player to leave standby.

In some situations, this limitation is not an issue. The Movie Player remembers its power state, and resumes its last power state after a power outage. For example, if the Movie Player is fully powered on when the power is lost, the player automatically returns to the fully powered on state when the power is restored. Additionally, the Movie Player is very quiet (not completely silent—the fan runs as needed) and the noise is usually not noticeable when the player is in a cabinet. In many installations, the Movie Player is left fully powered-on continuously.

If you must power cycle the Movie Player from the Crestron controller, you have two options:

- ▶ Use RS-232 control without Command Routing (cable directly connected to the player).

¹ The 1080p Mini Player does not have an RS-232 control port.

- ▶ Use an infrared (IR) emitter to send the IR Power On command, but use TCP/IP for all other commands.

1080p Player, 1080p Mini Player, Music Player and Movie Player 2 Power Control

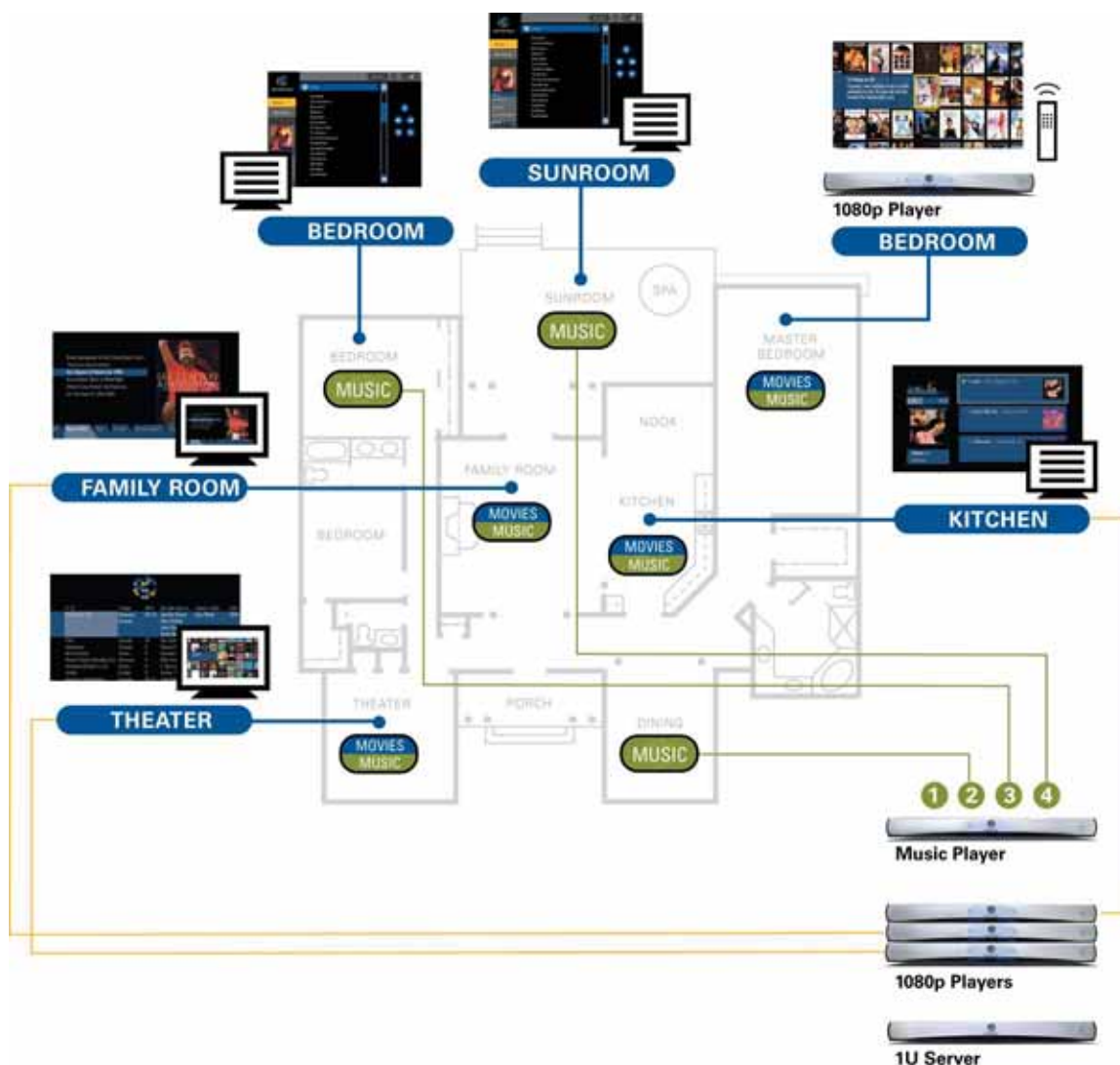
The Ethernet Port of later model Kaleidescape Players is powered while it is in standby—but in a limited mode.

If you send the Enter Standby command to the component over [TCP/IP](#), initially there is no response. After a moment, the network connection drops, and is then re-established. The component is now in limited mode and responds only to a limited set of commands. When a Leave Standby command is received, the component powers on. The network connection drops momentarily and then reconnects. The component is now ready to respond to commands normally. You cannot use Command Routing to power-on these components. When using TCP/IP, you must make a direct connection to the component to turn it on. Enter/Leave standby commands sent to the Music Player affect all four music zones.

5 Sample Installation

This section presents a step-by-step implementation of a sample installation. This sample installation uses direct control, without [Command Routing](#), via [TCP/IP](#) over [Ethernet](#). Although you can use a single TCP/IP Client to control the entire System with Command Routing, it puts unnecessary load on the Crestron processor. Connecting all [modules](#) to one TCP/IP Client is very inefficient, as each module must process all incoming messages in search of messages to act upon.

The layout of the installation is illustrated bellow.



Theater

The Theater has a TPS-15 with video capabilities. The Theater contains a projector, an adjustable screen masking system, controlled lighting, and shades. The 1080p Player will be controlled using the [OSD](#) module.

Family Room

The Family Room also has a TPS-15 and controlled lights but no masking or shades. The 1080p Player will be controlled using the OSD module.

Bedroom and Sunroom

The Bedroom and Sunroom each have a TPS-4L to control music [zones](#) 3 and 4 of the Music Player. Each music zone will be controlled with its own [SATP](#) module.

Master Bedroom

The Master Bedroom uses a universal remote to control the local 1080p Player.







Kitchen

The Kitchen has a TPS-12, but it wasn't possible to get a video cable to that location, so the OSD-no-video [template](#) will be used. The 1080p Player will be controlled using the OSD module. Additionally, the Kitchen touch panel will control the Dining Room's music using the Music Zone Control feature described in [Music Zone Control](#).

Music zone 1 from the Music Player is unused in this installation.

5.1 Assigning Static IP Addresses

For Crestron processor TCP/IP communications, each player is given its own static [IP address](#) using the Kaleidescape Installer Web Utility. Make sure you don't assign an IP address that is already being used by some other device in the network or that is within the dynamic range of addresses that are being assigned by the DHCP server.

1080p Players	IP Address
	192.168.1.51
	192.168.1.52
	192.168.1.53
	DHCP (dynamic)
Music Player	
	192.168.1.54
1U Server	
	DHCP (dynamic)

The Crestron processor does not need to control the 1080p Player in the Master Bedroom or the 1U Server, so these two components are left to obtain a dynamic address from the DHCP server. Kaleidescape components are set by default to obtain an IP address from a DHCP server.

To use static IP addresses use the NETWORK tab of the SETTINGS page.

1. Open the Installer Web Utility for the Kaleidescape System.
2. To change the network settings for a Kaleidescape component, click SETTINGS on the COMPONENTS tab.
3. Click the NETWORK tab.



NETWORK CONTROL

This device can obtain its IP configuration automatically if your network supports DHCP. If your network does not support DHCP, you will need to manually set the IP Configuration:

Current Network Configuration

IP Address : 10.100.12.167
Subnet Mask : 255.255.252.0
Default Gateway : 10.100.12.1
Preferred DNS Server : 10.100.0.92
Secondary DNS Server : 10.100.0.28

☒ Obtain IP Configuration automatically using DHCP
☐ Use the following IP configuration:

IP Address : [0] [0] [0] [0]
Subnet Mask : [0] [0] [0] [0]
Default Gateway : [0] [0] [0] [0]
Preferred DNS Server : [0] [0] [0] [0]
Secondary DNS Server : [0] [0] [0] [0] (optional)

OK Cancel

4. Click Use the following IP configuration.
5. Enter the appropriate IP information and click OK.

5.2 Configuring TCP/IP Clients

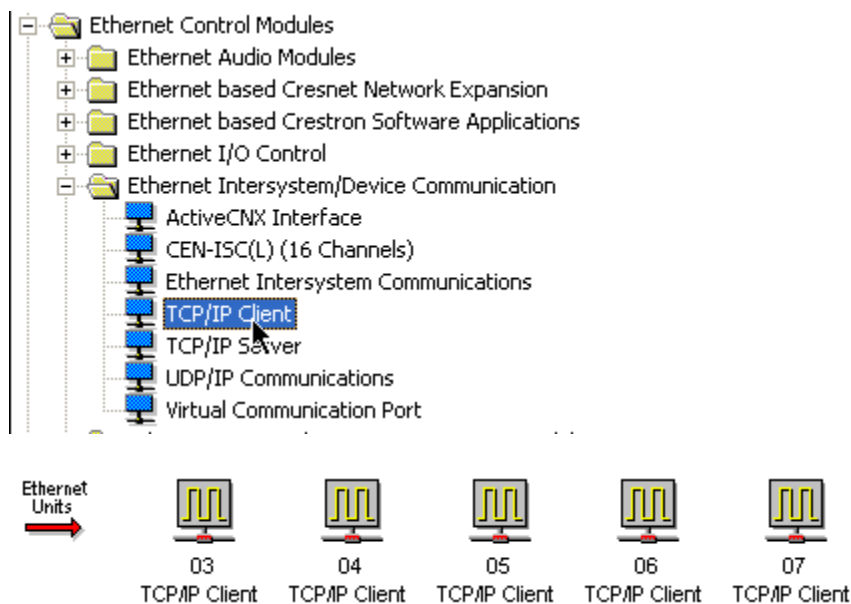
You will add five [TCP/IP Clients](#) to the Crestron [program](#); two for connecting to music [zones](#) 3 and 4 of the Music Player and three for connecting to each of the 1080p Players controlled from touch panels. You must name them, and assign each an [IP address](#) corresponding to a 1080p Player or Music Player. The 1080p Player in the Master Bedroom will be controlled with the IR remote and does not require Crestron programming.

The following sections assume you have already imported Kaleidescape's sample Crestron programs as described in [Importing a Crestron Module](#).

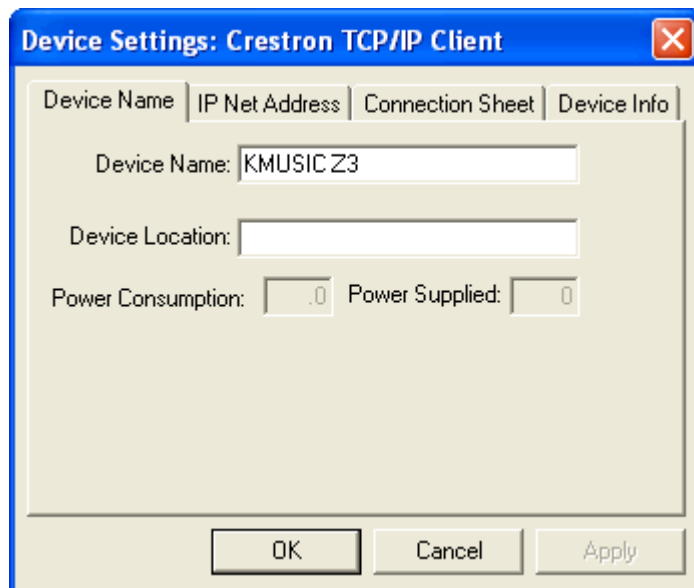
1. Open SIMPL Windows and click the Configure button to enter Configure View, as shown below.



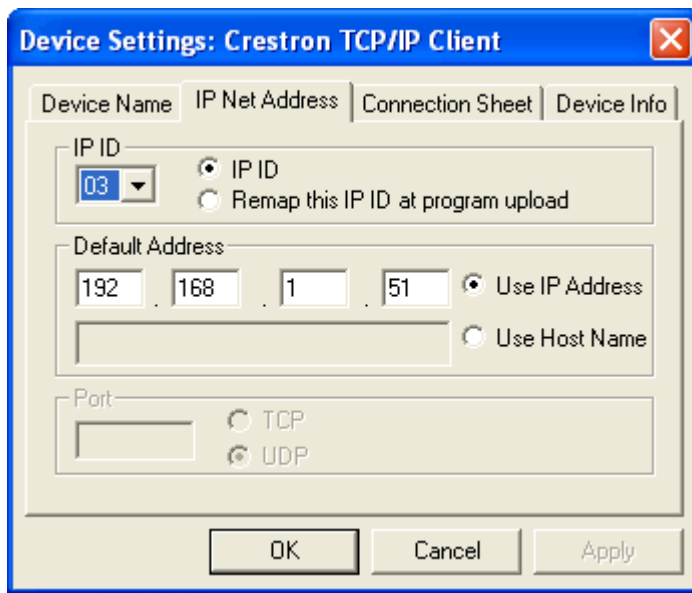
2. Drag five TCP/IP Clients into the program from the Device Library's *Ethernet Control Modules/Ethernet Intersystem/Device Communications* folder.



3. Double click the first TCP/IP Client icon. The Device Settings: Crestron TCP/IP Client dialog box appears.



4. Enter a descriptive name for the TCP/IP Client in the Device Name: text box. You may want to enter names that describe the location of the zone, such as KMusic-bedroom and KPlayer-familyroom.
5. Select the IP Net Address tab and enter the first IP address we defined in [Assigning Static IP Addresses](#).



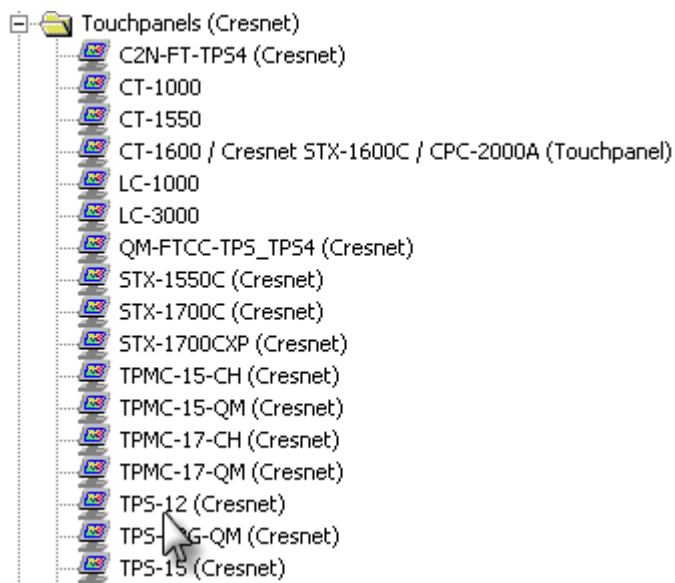
6. Click OK.
7. Repeat Step 3 through Step 6 for each TCP/IP Client. Remember that music zones 3 and 4 share the IP address of the Music Player (192.168.1.54). The TCP/IP Clients are now labeled with the names you gave them.



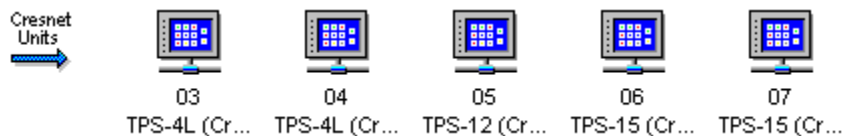
5.3 Configuring Touch Panels

You need to add the touch panels to the [program](#) and name them. Later you will copy the signal names from the TPS-15 samples in the Kaleidescape [OSD](#) Demo and Kaleidescape [SATP](#) Demo programs.

1. While still in the Configure View, find the touch panel symbols in the Device Library's *Touchpanels/Touchpanels (Cresnet)* folder.



2. Click and drag two TPS-4L, one TPS-12, and two TPS-15 symbols to the System View.



3. Rename the touch panels as you did for the TCP/IP Clients.



5.4 Programming TCP/IP Clients

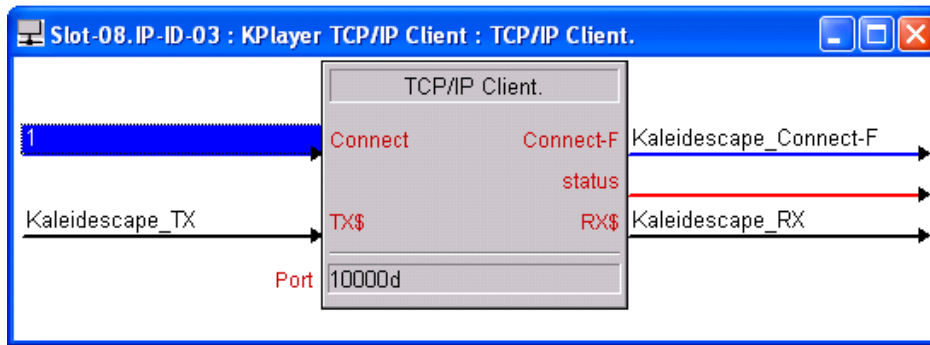
You must set the communication port and rename the TX\$ and RX\$ signals for each [TCP/IP Client](#).

1. Click the Program button.



2. Open the Central Control Modules folder in the Program View.
3. Find the TCP/IP Client in the Ethernet slot list.
4. Open each of the TCP/IP Clients and set Port to 10000.
5. Set the Connect input to 1.

6. Name the Connect-F, TX\$, and RX\$ connections as shown below.



Use the names shown here, “_Connect-F” “_TX” and “_RX,” so that the signals will correspond to the signals copied and pasted from the Demo [program modules](#) as described in the following section.

5.5 Programming Touch Panels

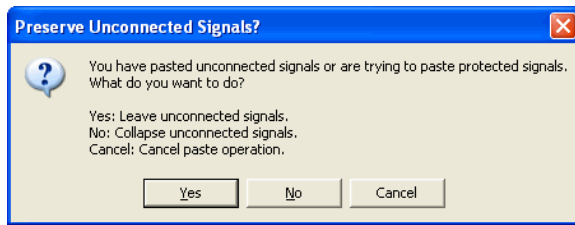
Next copy the signal names from the generic TPS-15 in the Kaleidescape [OSD](#) Demo and Kaleidescape [SATP](#) Demo program modules. Then copy the TPS-12 and TPS-15 signals from the OSD Demo program and the TPS-4L signals from the SATP Demo program.

The signals from the TPS-15 in the Kaleidescape OSD Demo program can be applied to any touch panel symbol with video capabilities. In this example, the TPS-15 signals from the OSD Demo program are used for both the TPS-15 and the TPS-12 touch panels. The signals from the TPS-15 symbol in the Kaleidescape SATP Demo program are for touch panels without video capabilities. In this example, the TPS-15 signals from the SATP Demo program are used for the TPS-4L touch panels.

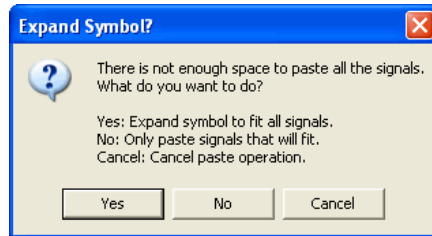
1. Open a new instance of SIMPL.
2. From the File menu, open the Kaleidescape OSD Demo program.
3. Click the Program button.



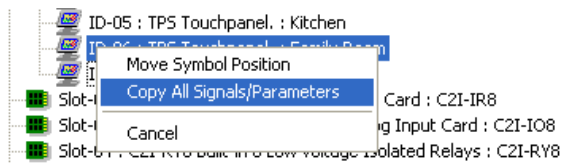
4. In the Detail View, scroll to the TPS-15 symbol. First copy the digital input signals.
5. To select all the digital input signals, highlight the first input signal and press Shift-End.
6. Press Ctrl-C to copy.
7. Return to your program and open the Kitchen touch panel in the Detail View.
8. Select the first digital input signal and press CTRL-V to paste the signals. The Preserve Unconnected Signals? dialog box appears.



9. Click Yes. The Expand Symbol? dialog box appears.



10. Click Yes. If you are prompted to name unconnected signals, click No.
11. Return to the Kaleidescape OSD Demo program and repeat Steps 4 though 10 for the rest of the input and output signals: digital, analog, and serial.
12. To copy all the signals from the Kitchen TPS-12 you just created, select the touch screen symbol in the Program View.
13. Right click and drag it over the Family Room symbol. The popup shown below appears.



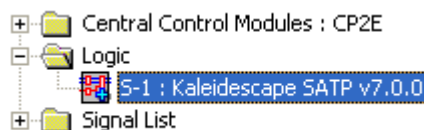
14. Select Copy All Signals/Parameters. Repeat for the Theater touch panel.

The Bedroom and the Sunroom touch panels use the signals from the SATP Demo program. The procedure is the same except you must open the SATP Demo program to copy the signals from the TPS-15 symbol. You will notice that the signal set is different. When you are done copying the signals to either the Bedroom or Sunroom module, use the right-click technique described above to copy the signals to the other SATP module.

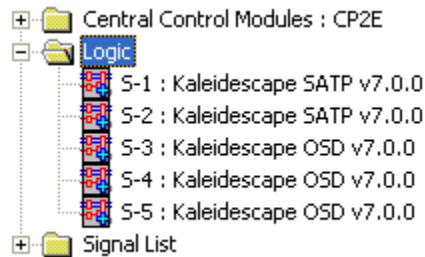
5.6 Adding Kaleidescape Modules

Now you will add the sample [OSD](#) and [SATP modules](#) from the Kaleidescape Demo [programs](#) to your SIMPL program.

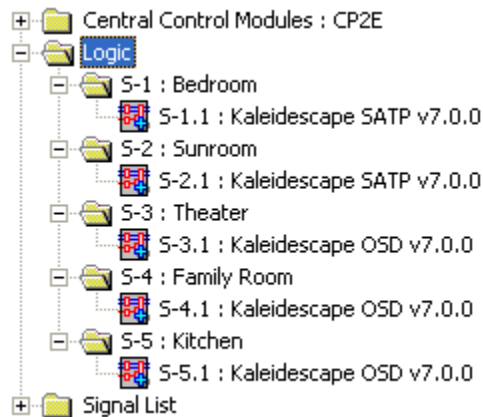
1. From the File menu, open the program Kaleidescape SATP Demo.
2. Select the symbol S-1: Kaleidescape SATP v7.0.0 and press Ctrl-C to copy it.



3. Return to your program and select the Logic folder.
4. Press Ctrl-V twice to paste two copies in the logic folder. If an error appears stating *Could not paste symbol*, verify that you imported the Kaleidescape Demo programs as described in [Importing a Crestron Module](#).
5. From the File menu, open the program Kaleidescape OSD Demo.
6. Highlight the symbol S-2: Kaleidescape OSD v7.0.0 in the Logic folder and press Ctrl-C to copy it.
7. Return to your program and select the Logic folder.
8. Press Ctrl-V three times to paste three copies in the Logic folder.



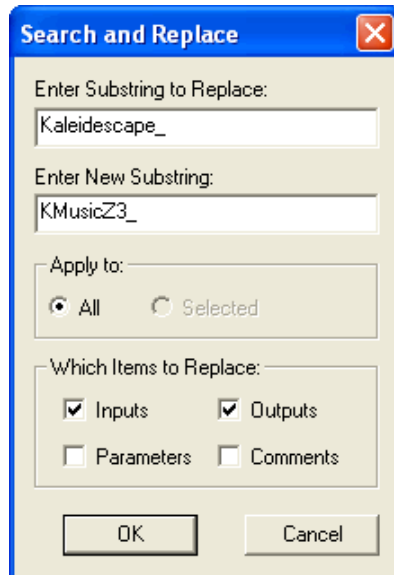
9. For clarity, organize your program by moving everything into subsystems based on zones.



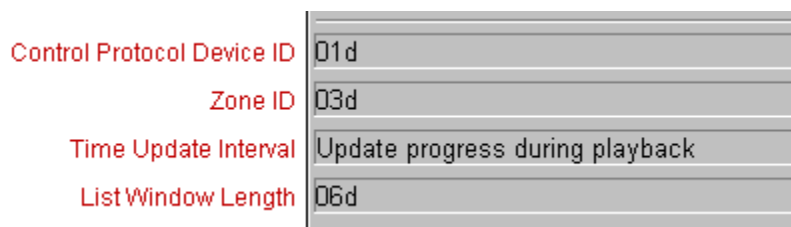
5.7 Programming Kaleidescape Modules

You must make each [module](#) unique by modifying the signal names of the sample modules.

1. Select the Bedroom subsystem (music zone 3) and press F9. The Search and Replace dialog box appears.



2. For all the inputs and outputs, replace “Kaleidescape_” with “KMusicZ3_”.
3. Click OK.
4. Repeat with the Sunroom (music zone 4) using the name “KMusicZ4_” and also with the Theater (KPlayer3_), Family Room (KPlayer2_) and Kitchen (KPlayer1_).
5. Open up the Bedroom’s SATP module, and scroll to the bottom.
6. Set the [Zone ID](#) to 3d (this is the 3rd music zone of the Music Player).
7. Change the List Window Length to 6d (the TPS-4L only supports 6 lines of text).



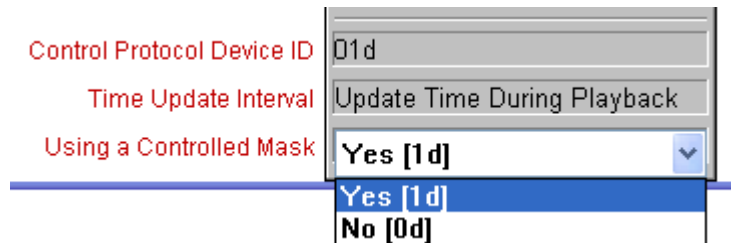
8. Repeat this for the Sunroom SATP module using Zone ID 04.
9. Use the same process to rename the signals of the touch panel modules.

For this installation example, all of the Control Protocol Device ID parameters are correctly set to their default [CPDID](#) None (1d) as we are not using any [Command Routing](#).

5.8 Screen Masking and Anamorphic Lenses

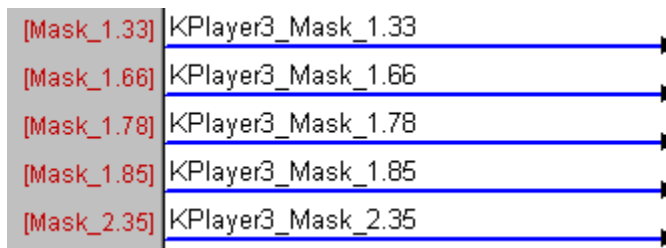
Our example includes a screen masking system in the Theater room.

1. Open the [OSD](#) module for the Theater and scroll to the bottom.
2. Click Using a Controlled Mask and select Yes from the drop-down list.



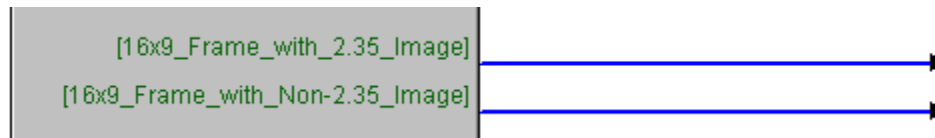
This tells the player that the screen mask is being used so that it places popup messages (such as the “Paused” wedge that shows in the upper-right corner of the screen) in the visible screen area.

3. Find the [Mask...] output signals in the Masking_Data roll-up. These outputs go high to indicate what kind of picture is being shown.



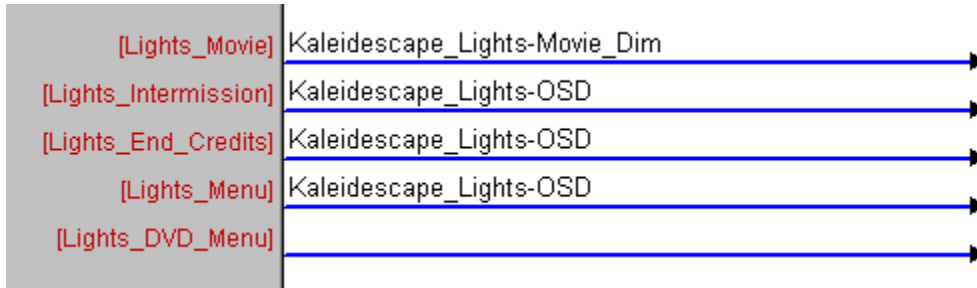
4. Tie these outputs directly to a Serial I/O symbol for use with the masking system.

If this installation’s projector had used an anamorphic lens, we could control it using the anamorphic outputs in the Video_Mode roll-up.



5.9 Lighting and Shades

In rooms that are primarily for movie watching – like the Theater and Family Room – it is a nice touch to turn down the lights when the movie starts, turn up the lights during intermission, and turn on the lights at the end credits. The [OSD module](#) provides outputs in the Lighting_Cues roll-up to easily accomplish this.



The signals go high for ½ second for each of these events. The signals are also buffered to allow jamming events together (as has been done here). For IR controlled lighting systems, no additional logic is needed. Simply tie these signals to the appropriate IR commands. For more complex lighting systems, tie these signals to the logic or module being used to control the lights.

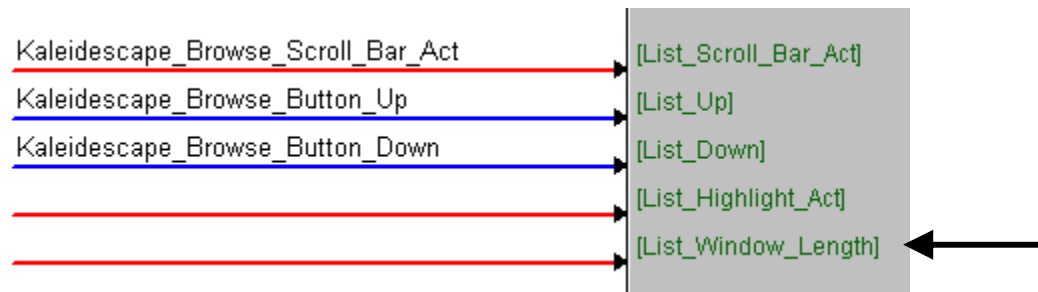
5.10 Secondary SATP Control

Suppose that in our sample installation, the owner decides to add a second [SATP](#) touch panel in the Bedroom, such as a TPMC-8X. The SATP [template](#) for the TPMC-8X uses 16 lines of text for display, instead of the 6 lines as shown on the TPS-4L. The best approach in this situation is to include an SATP module per touch panel *size* controlling each stream, each with its own [TCP/IP Client](#).

To support our two-panel sample scenario, add another TCP/IP Client pointing to the [IP address](#) of the Music Player and duplicate the entire control chain for the Bedroom. Copy the SATP module for the Bedroom and change all the signals to a unique name – for example “KMusicZ3.1_”. Change the List Window Length parameter on the new module to 16. Now the touch panels can browse independently of each other – one touch panel could be looking through the now playing information while the other is adding new content to play from the genre list.

This method of control will not work properly with [Command Routing](#) because the modules will not be able to isolate their feedback. You must use a dedicated direct TCP/IP connection per SATP module.

In larger, more complex installations, this method becomes problematic. If there are a large number of touch panels that need to control a large number of zones, creating a module for each zone-to-touch-panel combination is unworkable. To support more complex scenarios, the SATP module has an analog input for List Window Length in the List_Control roll-up.



This input allows you to change the list length at run time as needed. When the length changes the module refreshes the list with the new length.

For installations like this, remember to add a Make String Permanent symbol to keep the non-routed serial strings in memory.

6 Troubleshooting

6.1 User Program Commands

The following commands can help debug problems in an installation. These commands must be typed in Crestron's ViewPort or Toolbox Console using the "userprogcmd" command or the short version, "ucmd". The syntax for these commands is:

```
userprogcmd "<command>"
ucmd "<command>"
```

Where <command> is one of the following:

- k help
 - This command shows all the valid "k" commands. If multiple [modules](#) are in the [program](#), this information displays multiple times.
- k debug
 - This command enables debugging on all modules at run time. All modules report that debugging is turned on.
- k debug <CPDID>
 - This command enables debugging on only the modules controlling a player with the matching [CPDID](#). This command is helpful in installations using Command Routing.
- k stop debug
 - This command stops debugging output on all modules.
- k id
 - This command makes all modules report the CPDID of the component that they are controlling. If the component's CPDID is set to None, the module reports 01.
- k ver
 - This command reports the version number of the module. If multiple modules are in the program, this information will display multiple times.

6.2 Nothing is working

1. If you are using [TCP/IP](#), open up ViewPort or the Toolbox Console and type "est" to see the Ethernet Status. Verify that the [TCP/IP Client](#) is connected. If it is not connected:
 - Verify that it is attempting to connect to the proper [IP address](#).
 - Verify that you have placed a "1" on the "Connect" input of the TCP/IP Client.
 - Verify that you are using port 10000 on the TCP/IP Client.
 - Verify that the Crestron controller can successfully ping the Kaleidescape component by typing "ping" followed by the component's IP address. If this fails, check your network connections and settings.
2. If you are using [RS-232](#), check your cable connections, pinouts, and communication parameters. See [Appendix B](#).
3. Verify that the CPDID setting on the module matches the component's ID as set on the Installer Web Utility.

4. Verify that the [Zone ID](#) matches the audio output you are listening to ([SATP](#)).
5. Verify that you are not attempting to control the Kaleidescape 1U, 3U or 5U Server.
6. Open up ViewPort or the Toolbox Console, type `ucmd "k debug"` and attempt to use the interface. Module errors will be shown in the window as they happen and can provide useful information as to what the problem might be.
7. Open up Test Manager and verify the touch panel signals are reaching the module, and the module's TX\$ is reaching the communication port. Verify that the communication port's RX\$ is reaching the module.

6.3 The music isn't changing (SATP controlled zone)

Verify that you are controlling the music [zone](#) (audio output) that you are listening to.

6.4 I can't make selections using a touch panel with a video window

The Kaleidescape movie zone's touch panel interface is not calibrated correctly. See [Calibrate the Touch Interface](#).

6.5 I am not seeing video on my touch panel with a video window

1. If you are using S-video, verify that the Y and C connections are not reversed. (Try reversing them, just to be sure.)
2. Verify that the TPS/IMPC (the device where the video cables terminate) is receiving power either through Cresnet or its power connector. Note that a touch panel can be powered by the TPS/IMPC, but a TPS/IMPC cannot be powered by a touch panel.
3. Verify that the touch panel's video input is set correctly. Remove the power to the touch panel, touch and hold the touch screen, and re-apply power to the touch panel. You should see the touch panel's setup menu, which includes an option for setting up the video input.
4. Verify that the touch panel has the requisite video card installed (if applicable). If you do not have an option to configure the video input in the touch panel's setup menu, the panel likely does not support video.
5. Verify that the Kaleidescape movie zone is configured to provide the video output that the touch panel needs. (Players come from Kaleidescape with the composite and S-video interfaces enabled; however it is possible to turn these outputs off).
6. If more than one video input is available on the touch panel, verify that the input is correct.

6.6 The video on my touch panel is black and white

The touch panel's video input is set incorrectly (either you are using S-video and it expects composite, or vice-versa). Remove the power to the touch panel, touch and hold the touch screen, and re-apply power to the touch panel. You should see the touch panel's setup menu, which includes an option for setting up the video input.

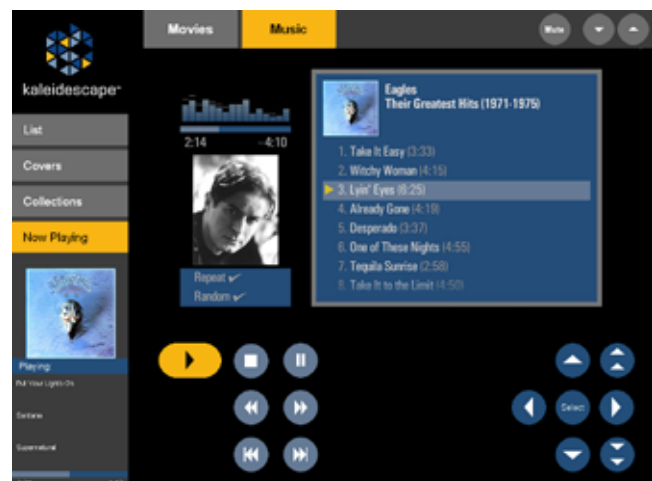
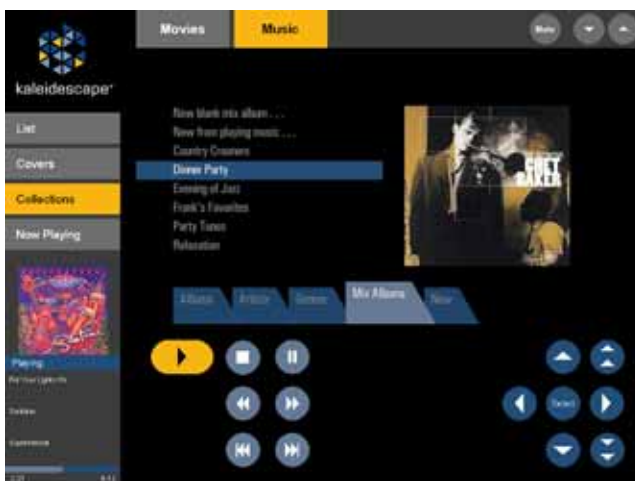
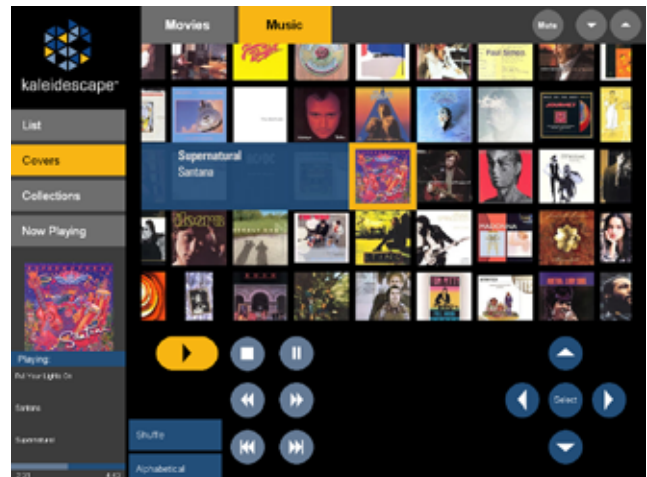
6.7 Getting Help

This document has outlined many different options for controlling a Kaleidescape System, and has presented a sample installation. If you have further questions about how to implement Crestron control of a Kaleidescape System, call Kaleidescape Support at 650-625-6160. The [modules](#) and [templates](#) described in this document are not supported by Crestron.

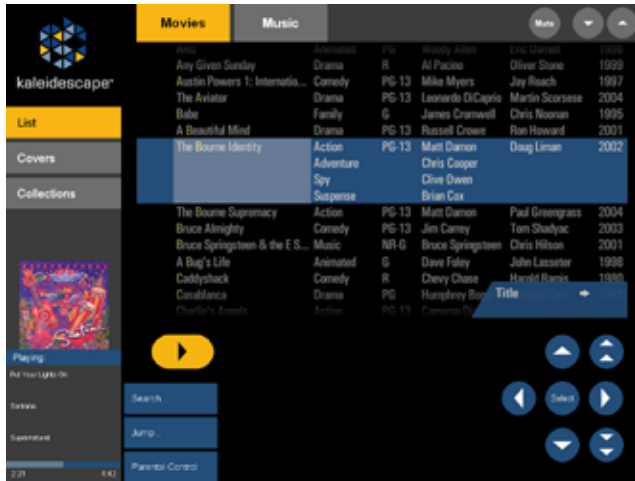
A APPENDIX

Screen Shots for UI Layouts

A.1 OSD Control WITH A Video Window—Music



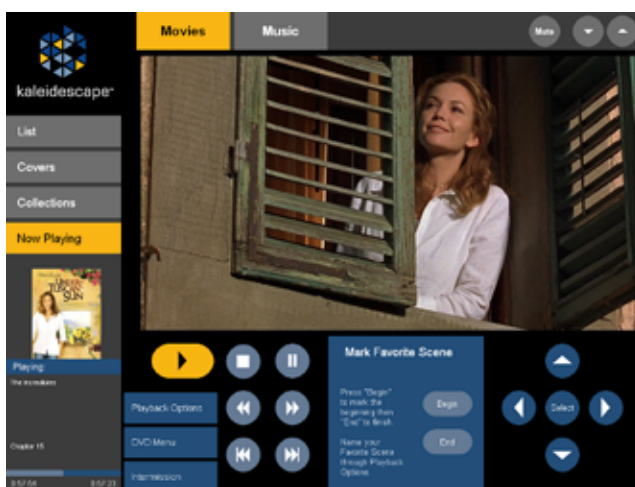
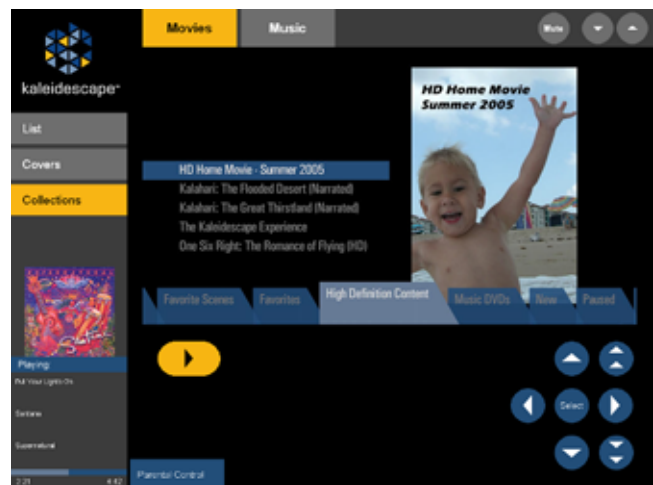
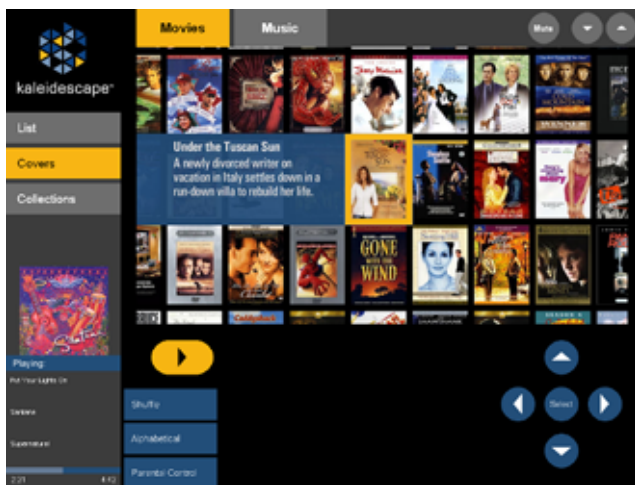
A.2 OSD Control WITH A Video Window—Movies



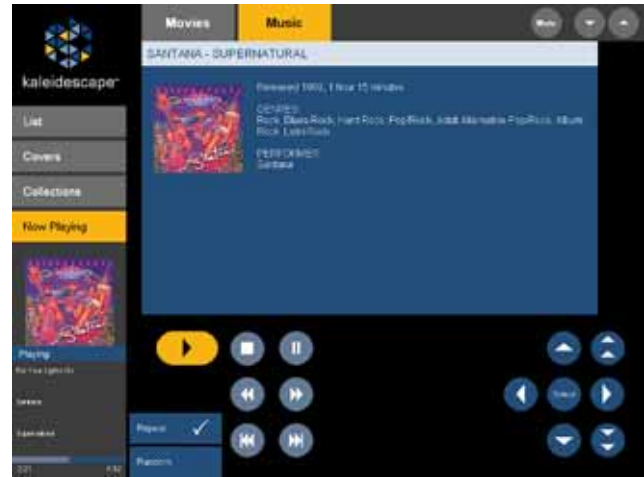
You can listen to music while selecting which movie to watch. The play back status box in the lower left corner feeds back either movie or music information.



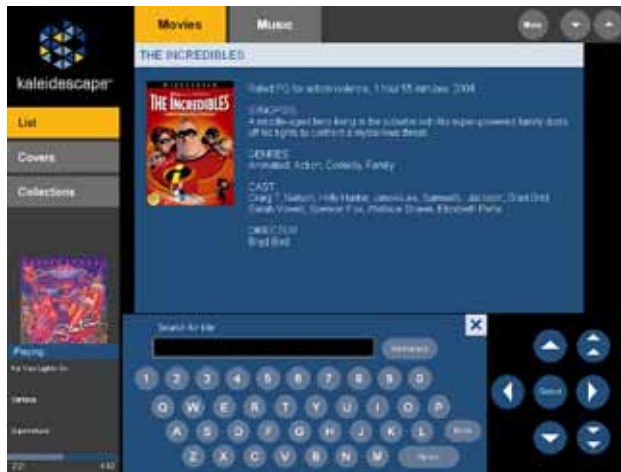
This layout shows the keyboard pop-up from selecting the “Search...” button.



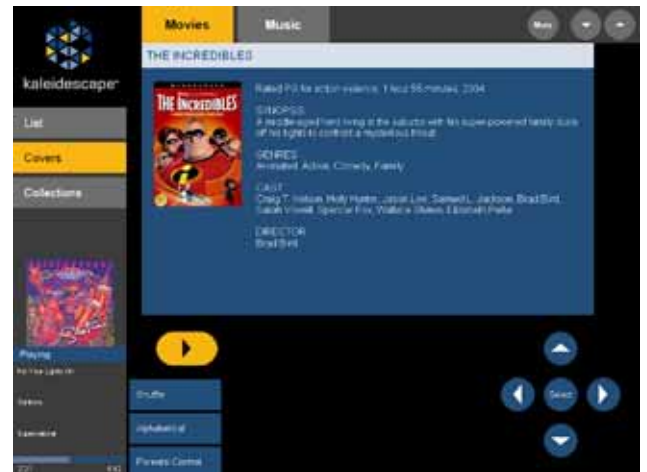
A.3 OSD Control WITHOUT A Video Window—Music



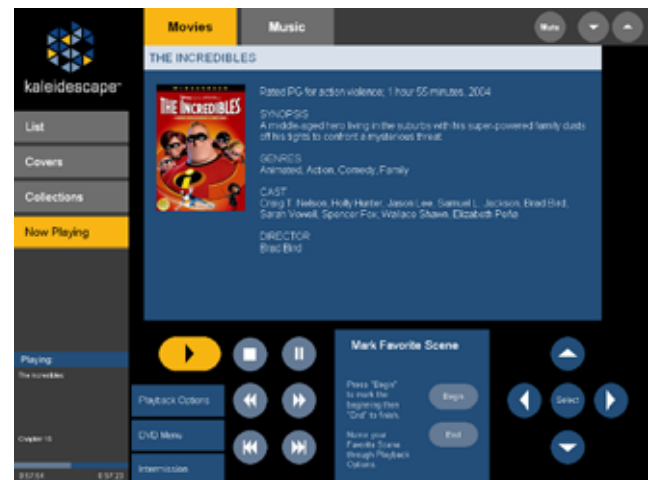
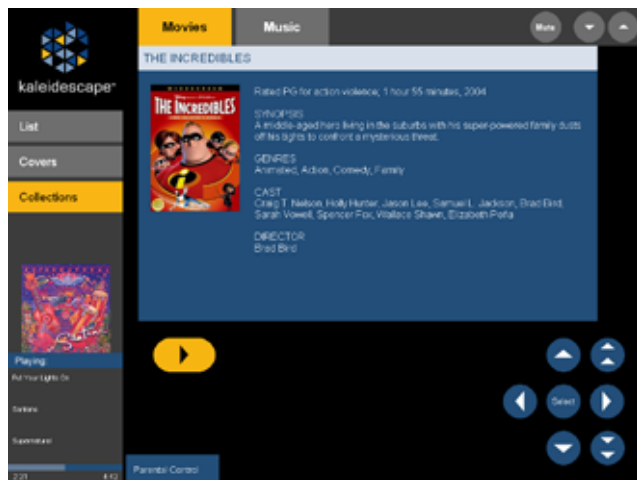
A.4 OSD Control WITHOUT A Video Window—Movies



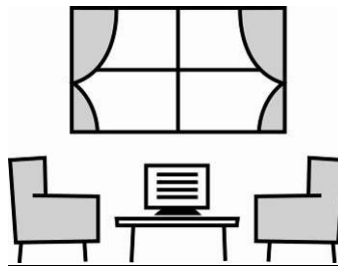
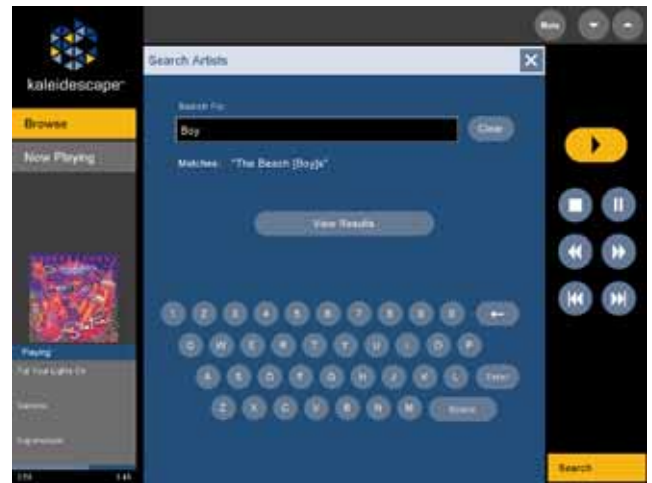
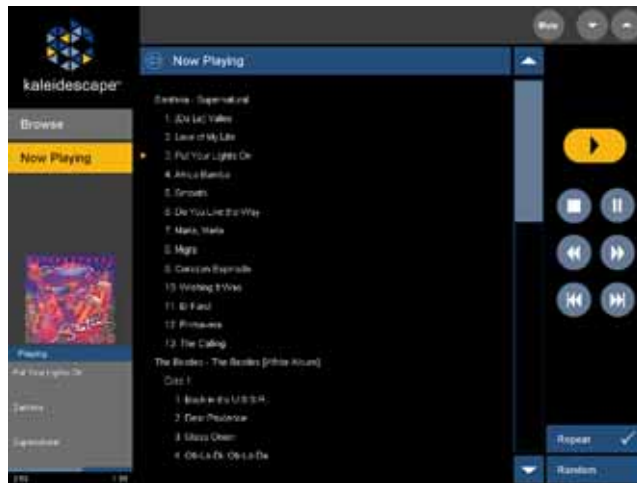
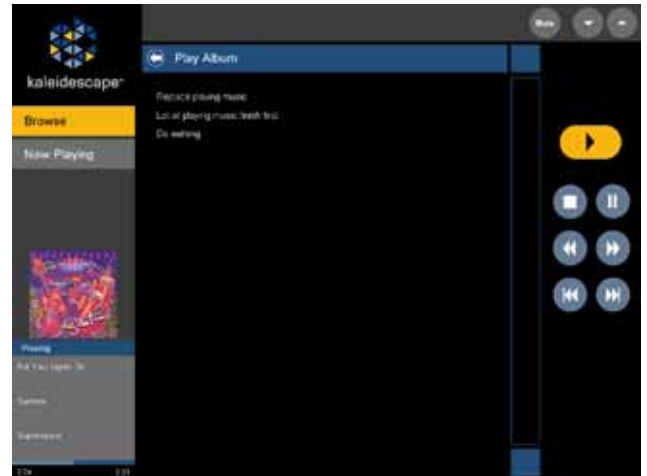
This layout shows the keyboard pop-up from selecting the “Search...” button.



You can listen to music while selecting which movie to watch. The play back status box in the lower left corner feeds back either movie or music information.



A.5 Standalone Touch Panel



B APPENDIX

RS-232 Cable Pinout and Port Configuration

B.1 1080p and Music Player Communication Parameters

If you are using the [RS-232](#) port to communicate with the Kaleidescape player, use the following default communication parameters:

Baud rate:	19200
Data bits:	8
Stop bits:	1
Parity:	N
Flow control:	N

You can change the RS-232 communications parameters of the Players from the Installer Web Utility.

B.2 1U, 3U and 5U Server Communication Parameters

If you are using the RS-232 port to communicate with the Kaleidescape server, use the following default communication parameters:

Baud rate:	115200
Data bits:	8
Stop bits:	1
Parity:	N
Flow Control:	N

You cannot change the RS-232 communications parameters of the server.

B.3 RS-232 Port Pin outs

The pin outs for the male DB-9 on the RS-232 Port are as follows:

- 1: unused
- 2: RD - Receive Data
- 3: TC - Transmit Data
- 4: unused
- 5: SG - Signal Ground
- 6: unused
- 7: optional RTS - Request to send
- 8: optional CTS - Clear to send
- 9: unused

Most Crestron controllers require a crossover (null-modem) cable.

Note that the older KPLAYER-2000 also has a female DB-9 service port that cannot be used for Crestron control.

C APPENDIX

OSD Module v7.0.1

Inputs, Outputs & Parameters

C.1 Parameters

Control Protocol Device ID

This must match the Control Protocol Device ID of the component as set through the Kaleidescape Installer Web Utility (<http://my-kaleidescape/installer>). Selecting "None" in the Web Utility is equal to 01 for this parameter. 01 (None) is the default. Note that when using 01, the Crestron processor must be directly connected to the indicated component.

Time Update Interval

This indicates whether the component should update the time remaining. If the title or chapter location, remaining, or level signals are used, this needs to be set to 1. If this information is not used, set this to 0 to conserve Crestron processing.

Using a Controlled Mask

If you are using an automated screen masking system, set this to 1 (yes) to ensure that System messages are not shown in the masked area. If you are using a fixed mask or no masking, you should set this to 0 (no) to allow those messages to appear at the top or bottom of the visible area.

C.2 Inputs

{{Rx\$}}

Used for connection to the RX\$ of the connected RS-232 port or TCP/IP Client.

{{Connect-F}}

Resends the startup messages to get the module feedback in sync with the component. If you are using TCP/IP, tie this to the Connect-F output of the TCP/IP Client in order to re-sync the feedback if the connection cycles. If using RS-232, simply put a 1 on this input.

Transports

[Play], [Pause], [Pause_On], [Pause_Off]

Performs the associated transport action.

[Stop]

Performs the associated transport action. On some screens this also acts as [Cancel].

[Fast_Forward], [Rewind]

Performs the associated transport action. Each press steps through different speeds. [Play] resumes the content at normal speed.

[Instant_Replay]

Skip backward 5 seconds on each rising edge.

[Skip_Forward], [Skip_Reverse]

Moves to the next or previous chapter. On some screens this also acts as [Page_up] or [Page_down].

[Intermission_Toggle]

Activates the intermission if it is not currently active. If it is already active, deactivates it. Activating intermission pauses the content, displays the cover art and cues the lighting system (if configured). When in intermission, [Play] resumes the content and [Stop] halts playback and returns the user to the Kaleidescape OSD.

[Intermission_On]

Like [Intermission_Toggle], but only activates intermission. Does nothing if intermission is already active.

[Intermission_Off]

Like [Intermission_Toggle], but only deactivates intermission. Does nothing if intermission is not active.

Navigation

[Up], [Down], [Left], [Right]

OSD navigation controls. Can be held down to speed the user through whatever list or menu they are currently navigating.

[Page_Up], [Page_Down]

For OSD screens showing a list, scrolls the list up or down by several lines at a time. Can be held down to speed the user through whatever list or menu they are currently navigating. Not required for basic navigation.

[Select]

Selects the currently highlighted option, finishes keypad input, clears error and warning messages and can re-sort the movie list.

[Cancel]

Dismisses the Kaleidescape Menu, dismisses the movie details page, halts keypad or keyboard input, and dismisses the Playback status page. For most functions, the [Stop] key performs identically, with the noted exception of dismissing the Playback status page. Not required for basic navigation.

The next three signals are used for OSD with Video. These signals allow a touch overlay to be created where the user can touch any aspect of the Kaleidescape OSD or the DVD Menu in order to make a selection. In order for this to function, a transparent slider must be placed over the video window. On the slider's Design tab, set the Dimension to 2-D, the Indicator type to None and ensure that Signed Feedback is off. The Slider's Analog join must be set as well as its Digital Press join. The first Analog value is the X value and the second is the Y value.

On first use, the OSD will prompt to calibrate the video touch interface.

[Touch_Channel]

Tie this signal to the Digital Press join of the slider. Indicates that the video window has been touched.

[Touch_X]

Tie this signal to the X value of the slider. Indicates the X coordinate of the video window that was selected.

[Touch_Y]

Tie this signal to the Y value of the slider. Indicates the Y coordinate of the video window that was selected.

OSD_Menu_Control

[Kaleidescape_Menu_Toggle]

Toggles the display of the Kaleidescape Menu. The Kaleidescape Menu can be used as a guide as it can take the user to any location in the Kaleidescape OSD. This menu pops up over whatever activity the user is currently engaged in. The [Menu_x] commands below are simply shortcuts to different selections within the Kaleidescape menu.

[Kaleidescape_Menu_On]

Like [Kaleidescape_Menu_Toggle], but only causes the Kaleidescape Menu to pop up. If it is already on screen, this does nothing.

[Kaleidescape_Menu_Off]

Like [Kaleidescape_Menu_Toggle], but only causes the Kaleidescape Menu to close. If it is not on screen, this does nothing.

[Menu_Movie_Place]

Causes the OSD to return to the last Movie place (List, Covers, or Collections).

[Menu_Music_Place]

Causes the OSD to return to the last Movie place (List, Covers, Collections, or Now Playing).

[Menu_Movie_List]

Causes the OSD to change to the Movie List place.

[Menu_Movie_Collections]

Causes the OSD to change to the Movie Collections place.

[Menu_Movie_Covers]

Causes the OSD to change to the Movie Covers place.

[Menu_Parental_Control]

Causes the OSD to change to the Parental Control place.

[Menu_Music_List]

Causes the OSD to change to the Music List place.

[Menu_Music_Covers]

Causes the OSD to change to the Music Covers place.

[Menu_Music_Collections]

Causes the OSD to change to the Music Collections place.

[Menu_Music_Now_Playing]

Causes the OSD to change to the Music Now Playing place.

[Menu_System_Status]

This last menu selection isn't often used, but the command is available for completeness. This signal causes the OSD to switch to the System Status place.

[Screen_Saver]

Activates the screen saver, if it is not already active.

[Screen_Saver_Stop]

Stops the screen saver. Performs no operation if the screen saver is not active.

[Child_Safe_Level]

Instantly sets the parental control level to the next level below the lowest level with a password.

[Default_Parental_Control_Level]

Changes the Parental Control level to the default level as set with the User Web Utility.

[Shuffle_Cover_Art]

Re-shuffle the current covers shown on the screen. Will also place the OSD into the shuffle mode if the alphabetize mode had previously been selected. This command only functions when in the Movie or Music Covers place. Shuffle mode is on by default, but can be disabled in the web utility.

[Alphabetize_Cover_Art]

Rearranges all of the cover art on screen into alphabetical order, disabling automatic shuffling. This command only functions when in the Movie or Music Covers place. This mode is off by default, but can be enabled in the web utility.

[Details_Popup_Toggle] Opens the Details popup on the OSD. This displays details about the currently playing content or currently selected movie.

[Filter_List]

Filters the Movie or Music List. Any text entered is used to narrow down the list of movies or albums.

[Filter_Keyboard_Clock]

Issues a Filter_List command if the keyboard is not active, and issues a Cancel if the keyboard is active. This has the effect of toggling the keyboard on and off while in the Movies or Music List.

[Quick_Search_Keyboard_Clock]

Pulse this input to toggle the [Quick_Search_Keyboard_Active] feedback. This input should be used to show and hide the quick search keyboard. The quick search keyboard should only have keys a through z on it.

Movie_Playback

[DVD_Menu]

For most DVDs, this calls up the DVD menu. The operation of this key may vary from DVD to DVD. It will also cue the lighting system, if configured.

[DVD_Top_Menu]

For most DVDs, returns to the main menu of the DVD. The operation of this key may vary from DVD to DVD.

[DVD_Resume]

For most DVDs, dismisses the DVD menu and return to the previously viewed content. The operation of this key may vary from DVD to DVD.

[DVD_or_Kaleidescape_Menu]

Functions as [DVD_Menu] during content playback and as [Kaleidescape_Menu_Toggle] when not in content playback. This can be used when control buttons are limited.

[Force_DVD_Menu_mode]

Temporarily forces the output of [DVD_Menu_fb] to go high. Useful as an override when the DVD Menu detection is incorrect.

[Force_clear_DVD_Menu_mode]

Temporarily forces the output of [DVD_Menu_fb] to go low.

[Force_DVD_DVD_Menu_mode_toggle]

Temporarily toggles the state of [DVD_Menu_fb].

[Favorite_Scene_Set_Start]

Set the beginning of the favorite scene. If not set, this defaults to the beginning of the content.

[Favorite_Scene_Set_End]

Set the end of the favorite scene. If not set, this defaults to the end of the content.

[Favorite_Scene_clock]

Toggles the state of [Favorite_Scene_fb], which can be used to control when the touch panel shows the Favorite Scene start and end buttons.

[Status_and_Settings_Toggle]

Toggles the display of the Status, Settings, and Navigation menu. The Status popup, Settings popup, and Navigation popup have been linked together such that pressing the left or right navigation keys while viewing one of these menus scrolls the user through all of these menus. Status provides information about the playback stream, Settings allows the user to set the audio or angle, and Navigation allows the user to jump to a different chapter or title within the content.

[Show_Navigation_Overlay]

Takes the user directly to the Navigation portion of the Status, Settings, and Navigation menu.

[Start_Chapter_Entry]

Used to enter a chapter number during content playback. Use the [Select] (described above) for an enter key.

[Start_Chapter_Entry_Clock]

This activates the [Start_Chapter_Entry] or [Cancel] in the user UI depending on the state of [Keypad_Active]. This has the effect of toggling the chapter entry on and off during playback.

[Audio_Next]

During playback, changes to the next audio stream. At other times has no effect.

[Subtitles_Next]

During playback, changes to the next subtitle stream. At other times has no effect.

[Angle_Next]

During playback, selects the next available angle. At other times has no effect.

[Angle_Prev]

During playback, selects the previous available angle. At other times has no effect.

Music_Playback

[Random_Toggle]

Toggles the random playback of music tracks. Note that this will not always function as some music will always play back in random order. See [Music Items in the Kaleidescape System](#) for details.

[Repeat_Toggle]

Toggles the repeat playback of music tracks. Note that this will not always function as some music will always repeat. See [Music Items in the Kaleidescape System](#) for details.

Keyboard/Keypad

Keyboard Input

Keyboard input is used for filtering the Movie or Music List, jumping to a specific place in the list, for naming favorite scenes and for naming mix albums. If any non-numeric (a-z) key is sent

to the OSD when in the Movie or Music List, the OSD jumps to the item that begins with that letter in the currently sorted column. Numeric keys start the passcode entry dialog.

In order to filter the list shown in the Movie or Music List, the [Filter_List] command must be given first. Once given, all keyboard keys (a-z, 0-9) can be used for the filter. If using the [Filter_Keyboard_Clock] input and [Keyboard_Active] output, the [Filter_List] command will automatically be issued at the appropriate time.

[Backspace]

The backspace key for a keyboard or keypad.

[Enter]

The enter or select key for a keyboard or keypad.

[Keypad_0] ... [Keypad_9]

Sends this digit to the OSD. Keypad input (0-9) is solicited from various functions such as [Start_Chapter_Entry], passcode entry and UPC entry. Entering unsolicited keypad input will be interpreted as passcode entry. Various entry modes require the [Select] input (described above) to be used as an enter key.

[Keyboard_A] ... [Keyboard_Z]

Sends this character to the OSD.

**[Keyboard_space], [Keyboard_period], [Keyboard_comma], [Keyboard_apostrophe],
[Keyboard_hyphen]**

Sends this character to the OSD.

[Other_Key_Inputs\$]

If other keyboard characters are required, create a Serial I/O (SIO) symbol and populate it with the desired keys. Each key should only send a single character at a time. Do not use Crestron's keyboard symbol with this input.

Script_Control

[Play_Script\$]

Use a Serial I/O (SIO) symbol to send the name of the script to play to this input. Every time this text changes, the module sends the command to play the script. The same script may be triggered more than once. The name is case sensitive. If the script name does not exist, a message stating this is shown on the OSD.

[Demo]

Plays the script named "Demo button", if it exists. Otherwise, will play all favorite scenes in order.

[Demo_Loop]

Plays the script named "Demo button loop", if it exists. Otherwise, will play all favorite scenes in an infinite loop.

Power

[Power_on]

Turns the component on. See [Power Control](#) for additional notes on this input. While held high, the module will attempt to keep the component turned on.

[Power_off]

Turns the component off. A component can be left in the on state indefinitely and a component's front panel LEDs can be turned off via the Installer Web Utility. When A/C power is interrupted, a component always returns to the last power state. See [Power Control](#) for additional notes on this input.

[Command_To_Player\$]

This input can be used to send any arbitrary command to the component. The module automatically adds the correct CPDID, sequence number, and terminating colon and line feed to any string being sent to this input. For example, attaching a Serial I/O (SIO) symbol to this signal and sending "PLAY" would send "03/1/PLAY:\n" to the component with CPDID 03. This input provides direct access to the control protocol.

Music_Zone_Control

[Zone_to_Control\$]

Set the local movie zone to control a (possibly remote) music zone. Input can define the device to control either by serial number or by CPDID. "01.01" will always return to local control. See [Music Zone Control](#) for more information.

C.3 Outputs

{{Tx\$}}

Used for connection to the TX\$ of the connected RS-232 or TCP/IP Client.

[Player_Name\$]

This output provides the name of the connected movie zone as defined in the Installer Web Utility.

Transports

[Play_fb], [Stop_fb], [Pause_fb], [Fast_Forward_fb], [Rewind_fb]

Indicates state feedback for the above functions.

[Intermission_fb]

This signal is active when in the intermission state.

Navigation

[Arrow_Keys_Active]

Indicates that the OSD is in a state where the arrows keys are required.

[Page_Keys_Active]

Indicates that the OSD is in a state where the page keys could be used.

OSD_Menu_Control

[UI_Page_OSD_Menu]

Indicates that the player is currently showing the Kaleidescape OSD. (As opposed to when a movie is playing.)

[Kaleidescape_Menu_fb]

This output is high as long as the Kaleidescape Menu is showing on the OSD.

[Menu_Movie_Place_fb]

Indicates that the OSD is in a “Movie” place. This is high whenever [Menu_Movie_List_fb], [Menu_Movie_Collections_fb], [Menu_Movie_Covers_fb], [Menu_Parental_Control_fb], or [Menu_Movie_Playing_fb] are high.

[Menu_Music_Place_fb]

Indicates that the OSD is in a “Music” place. This is high whenever [Menu_Music_List_fb], [Menu_Music_Covers_fb], [Menu_Music_Collections_fb], or [Menu_Music_Now_Playing_fb] are high.

[Movie_Capable]

Indicates that the Kaleidescape System is capable of movie playback. As of control protocol version 6.2, this is always assumed to be true.

[Menu_Movie_List_fb]

Indicates that the OSD is currently in the Movie List place.

[Menu_Movie_Collections_fb]

Indicates that the OSD is currently in the Movie Collections place.

[Menu_Movie_Covers_fb]

Indicates that the OSD is currently in the Movie Covers place.

[Menu_Parental_Control_fb]

Indicates that the OSD is currently in the Parental Control place.

[Menu_Movie_Playing_fb]

Indicates that movie content is currently playing back.

[Music_Capable]

Indicates that the Kaleidescape System is capable of music playback. This is assumed to be true whenever the Kaleidescape System reports a control protocol version of 5 or higher.

[Menu_Music_List_fb]

Indicates that the OSD is currently in the Music List place.

[Menu_Music_Covers_fb]

Indicates that the OSD is currently in the Music Covers place.

[Menu_Music_Collections_fb]

Indicates that the OSD is currently in the Music Collections place.

[Menu_Music_Now_Playing_fb]

Indicates that the OSD is currently in the Music Now Playing place.

[Menu_System_Status_fb]

Indicates that the OSD is currently displaying the System Status page.

[Screen_Saver_fb]

Indicates that the screen saver is currently being shown. The screen saver can be configured via the Kaleidescape Web Utility to automatically start after a selected period of inactivity. This setting defaults to 5 minutes.

[Screen_Saver_fb*]

The inverse of [Screen_Saver_fb].

[Details_Popup_fb]

Indicates that the Details popup is visible on the OSD.

[Quick_Search_Keyboard_Active]

Feedback for showing the quick search keyboard. If any key is pressed on the keyboard, this feedback goes low.

[Passcode_Entry_fb]

Indicates that the Passcode Entry popup is being displayed onscreen. Used for parental control.

[Simple_Question_fb]

Indicates that a popup window containing a simple question is onscreen.

[Information_Message_fb]

Indicates that a popup window containing an information message is onscreen.

[Warning_Message_fb]

Indicates that a popup window containing a warning message is onscreen.

[Error_Message_fb]

Indicates that a popup window containing an error message is onscreen.

[Play_Button_Available]

Indicates that the play button should be displayed to the user.

Movie Playback

[UI_Page_Movie_Playback]

Indicates that the player is currently in movie playback mode.

[DVD_Menu_fb]

Indicates that the DVD menu is being displayed. Due to the various methods of DVD authoring, this is an inexact indicator which will sometimes be incorrect.

[DVD_Menu_fb*]

The inverse of [DVD_Menu_fb].

[Main_Content_fb]

Indicates that the main video content is playing. This is low during trailers, special features, and the DVD menu.

[Ending_Credits_fb]

Indicates that the end credits are being shown.

[Favorite_Scene_fb]

Indicates that the touch panel should display the Favorite Scene start and end buttons.

[Status_and_Settings_fb]

Indicates that the Status, Settings, and Navigation menu is active.

[Popup_Status_fb]

Indicates that the user is viewing the Status portion of the Status, Settings, and Navigation menu.

[Popup_Navigation_Overlay_fb]

Indicates that the user is viewing the Navigation portion of the Status, Settings, and Navigation menu.

[Angle_Available]

This feedback goes high if an alternate angle is available in the current position of the playback.

[Number_Camera_Angles]

This feedback indicates the number of angles available in the current position of the playback.

[Current_Camera_Angle]

This feedback indicates the currently selected angle.

Music_Playback**[Music_Playback_Active]**

This signal is active during music playback.

[Random_Status]

Indicates that music is currently in random playback mode. Note that this will sometimes remain on as some music will always play back in random order. See [Music Items in the Kaleidescape System](#) for details.

[Repeat_Status]

Indicates that music is currently in repeat playback mode. Note that this will sometimes remain on as some music will always repeat. See [Music Items in the Kaleidescape System](#) for details.

Playback_Info

[Now_Playing_Title_Name\$]

Name of the currently playing content.

[Now_Playing_Artist_Name\$]

Name of the artist for the currently playing content

[Now_Playing_Album_Name_or_Chapter\$]

Name of the chapter or album for the currently playing content.

[Now_Playing_Cover_URL\$]

A touch panel that supports dynamic graphics can use this signal to display cover art for the currently playing content.

The following nine signals **[Title_x]** and **[Chapter_x]** can be used to display information about the currently playing content. If the "Time Update Interval" parameter is set to 1, the signals update once per second, otherwise the signals only update when the chapter or title changes.

Note that on a DVD, each "title" usually contains full content – the movie will be on its own title, as will an episode. Title information can be used to show overall progress through a piece of content.

[Title_Length]

Length of the current title in seconds. This is usually the length of the movie.

[Title_Location]

Current position of the playback within the title, expressed in seconds.

[Title_Remaining]

Number of seconds remaining in the current title.

[Title_Level]

A percentage of the elapsed time in the title (actually expressed as 0-65535). This can be used to place a progress bar (slider) on a touch panel to show where the current relative position in the playback.

[Chapter_Number]

Analog feedback indicating the current chapter.

[Chapter_Length]

Length of the current chapter in seconds. Usually a movie is made up of several chapters.

[Chapter_Location]

Current position of the playback within the chapter, expressed in seconds.

[Chapter_Remaining]

Number of seconds remaining in the current chapter.

[Chapter_Level]

A percentage of elapsed time in the current chapter (actually expressed as 0-65535). This can be used to place a progress bar (slider) on a touch panel to show the current relative position within the chapter.

No_Video_Details

[Details_Visible]

Used to drive the details popup on the touch panel. It will be high when the details can be displayed and low when they have been made “obsolete” by an onscreen change. Details should not be displayed when this is low.

[Details_Text\$]

A complete description of the currently highlighted film in the OSD, formatted to be very similar to the details list provided when selecting the highlighted item on the OSD.

[Details_Title\$]

The title of the content that is currently highlighted in the OSD.

[Details_Cover_URL\$]

A touch panel that supports dynamic graphics can use this signal to display cover art for the currently highlighted item. This works for both music and movie places.

[Movie_Details_Visible]

Same as [Details_Visible], except that this signal and the next one specify the aspect ratio of the cover art for the touch panel. When this signal is high, it indicates that the details should be displayed and that the cover art being reported through [Details_Cover_URL\$] is a DVD, and that the touch panel should use the 10:7 aspect ratio for cover art.

[Music_Details_Visible]

Same as [Details_Visible], except that this signal and the previous one specify the aspect ratio of the cover art for the touch panel. When this signal is high, it indicates that the details should be displayed and that the cover art being reported through [Details_Cover_URL\$] is a CD, and that the touch panel should use the 1:1 aspect ratio (square) for cover art.

Keyboard/Keypad

[Keyboard_Active]

Feedback indicating that keyboard input is expected. This should be used to show a A-Z, 0-9 keyboard on a touch panel.

[Keypad_Active]

This feedback indicates that keypad input is being solicited. This should be used to show a 0-9 keypad on the touch panel.

[User_Input_Prompt\$]

Used for the keyboard and keypad input. Indicates what input is being prompted for on the OSD.

[User_Input_Text\$]

Used for keyboard and keypad input. Indicates what input has already been entered on the OSD.

Masking_Data

[Mask_Absolute_Top], [Mask_Absolute_Bottom]

Describe the position for the top and bottom masks in absolute terms, measured from the top and bottom of the video signal, respectively. These values are expressed as Crestron percentage values. A [Mask_Absolute_Top] value of 20%, for example, means that the top mask should cover the top 20% of the video signal. These values do not account for overscan.

[Mask_Calibrated_Top], [Mask_Calibrated_Bottom]

Once the masking system is calibrated through the OSD, these signals will display the same information as [Mask_Absolute_Top] and [Mask_Absolute_Bottom], but in the values obtained mathematically from the calibration. The calibration will account for overscan.

[Mask_1.33], [Mask_1.66], [Mask_1.78], [Mask_1.85], [Mask_2.35]

Indicate the actual aspect ratio of the video content (as opposed to the full-frame content stored on the DVD). These signals can be used to recall presets on a masking system or scaler.

[Conservative_1.33], [Conservative_1.66], [Conservative_1.78], [Conservative_1.85], [Conservative_2.35]

The [Conservative_x] signals are similar to the [Mask_x] signals, but represent a more conservative estimate of the image aspect ratio. This value will never go too far into the actual picture. For instance, if a 2.35 movie were a bit taller than 2.35 and a true 2.35 mask would crop the image a bit, the conservative information would suggest the next-most open value: 1.85 - [Mask_2.35] and [Conservative_1.85] would both be active. Do not use these signals in conjunction with the [Mask_x] signals—use one set or the other.

Lighting_Cues

[Lights_Movie]

Pulses for 0.5 seconds when entering movie playback. This uses the [Main_Content_fb] signal (described above) and has the same restrictions. This is tied through a buffer so that it can be jammed with a touch panel button.

[Lights_Intermission]

Pulses for 0.5 seconds when entering Intermission. This is tied through a buffer so that it can be jammed with a touch panel button.

[Lights_End_Credits]

Pulses for 0.5 seconds when end credits are shown. This is tied through a buffer so that it can be jammed with a touch panel button.

[Lights_Menu]

Pulses for 0.5 seconds when returning to the Kaleidescape OSD from playback. This is tied through a buffer so that it can be jammed with a touch panel button.

[Lights_DVD_Menu]

Pulses for 0.5 seconds when entering the DVD menu as indicated by the [DVD_Menu_fb] signal. This is tied through a buffer so that it can be jammed with a touch panel button.

Video_Mode

[Frame_4x3], [Frame_16x9]

Indicate the full-frame aspect ratio of the video content output by the movie zone. This allows for adjustments for any external scaling that gets applied to the video frame. If the video output is configured to correct for 16x9, then [Frame_16x9] will remain high and black bars will be put in the image to correct any 4x3 content. Similarly when correcting for 4x3; black bars will be put in the image to correct any non-4x3 content.

[16x9_Frame_with_2.35_Image]

Indicates that the movie playing has a 16x9 frame and has an aspect ratio of 2.35:1. Use to control the positioning of the anamorphic lens used with 2.35 screens.

[16x9_Frame_with_Non-2.35_Image]

Indicates that the movie playing has a 16x9 frame and has an aspect ratio that is not 2.35:1. Use to control the positioning of the anamorphic lens used with 2.35 screens.

[Composite_x], [Component_x], [HDMI_x]

Used to describe the precise video mode and aspect ratio of each output. These signals provide similar information to that presented in the [Frame_x] feedback above. The specific meanings of the different suffixes are provided below.

[x_No_Output]

When this feedback is high, the video output x is turned off. This happens on a secondary output when the primary output is showing a mode that this output is not configured for. For example, if you have configured HDMI as the Primary Video Output, and the HDMI can display 576i but you configured the Composite video without 576i, then when a 576i signal is shown then the Composite output is disabled.

[x_480i]

NTSC interlaced

[x_576i]

PAL interlaced

[x_480p]

NTSC progressive

[x_576p]

PAL progressive

[x_720p60]

720p HD (North America)

[x_720p50]

720p HD

[x_1080i60]

1080i HD (North America)

[x_1080i50]

1080i HD

[x_1080p60]

1080p HD (North America)

[x_1080p50]

1080p HD

[x_4x3]

Showing 4x3 output.

[x_16x9]

Showing 16x9 output.

Script_Control

[Script_User_Command\$]

A script can contain a step that sends a string to the control system. That string appears in this output and can be matched with a Serial I/O (SIO) symbol to trigger custom programming.

Power

[Power_on_fb]

Indicates that power to the component is on. While held high, the module will attempt to keep the component turned on.

[Power_off_fb]

Indicates that power to the component is off.

Music_Zone_Control

[Controlling_SN.Zone\$]

Indicates (by serial number) which music zone the local movie zone is controlling. When the local music zone is controlled, this will match the serial number (plus “.01”) of the local device. See [Music Zone Control](#) for more information.

[Controlling_CPDID.Zone\$]

Indicates (by CPDID) which music zone the local movie zone is controlling. When the local music zone is controlled, this will match the CPDID (plus “.01”) of the local device. See [Music Zone Control](#) for more information.

D APPENDIX

SATP Module v7.0.1

Inputs, Outputs & Parameters

D.1 Parameters

Control Protocol Device ID:

This must match the Control Protocol Device ID of the component as set through the Kaleidescape Installer Web Utility (my-kaleidescape.com/installer). Selecting "None" in the Web Utility is equal to 01 for this parameter. 01 (None) is the default. Note that when using 01, the Crestron processor must be directly connected to the indicated component.

Zone ID

This indicates which zone output to control on the Kaleidescape player.

Time Update Interval

This indicates whether the component should update the time remaining. If the song position, remaining or progress level are used this needs to be set to 1. If this information is not used, set this to 0 to conserve Crestron processing.

List Window Length

This indicates the number of indirect text fields on the touch panel available for displaying selections while browsing or searching music. This can also be overridden using the analog input of the same name.

D.2 Inputs

{{Rx\$}}

Used for connection to the RX\$ of the connected RS-232 port or TCP/IP Client.

{{Connect-F}}

Resends the startup messages to get the module feedback in sync with the component. If you are using TCP/IP, tie this to the Connect-F output of the TCP/IP Client in order to re-sync the feedback if the connection cycles. If you are using RS-232, simply put a 1 on this input.

Transports

[Play], [Stop], [Pause], [Pause_On], [Pause_Off], [Fast_Forward], [Rewind], [Skip_Forward], [Skip_Reverse]

Performs the associated transport action.

[Play_or_Pause]

Performs a play action or pause action depending on the current playback state. If music is playing, this input pauses music playback. If music is stopped or paused, this input resumes playback.

Playback_Control

[Random]

Toggles the Random playback status. Note that this will not always function as some music will always play back in random order. See [Music Items in the Kaleidescape System](#) for details.

[Repeat]

Toggles the Repeat playback status. Note that this will not always function as some music will always repeat. See [Music Items in the Kaleidescape System](#) for details.

List_Control

[Browse_Select]

Causes the Browse view to be shown in the List Window. If the Browse view is already shown in the List Window, this input takes the user to the top of the Browse tree (home).

[Now_Playing_Select]

Causes the Now Playing information to be shown in the List Window.

[List_Begin]

Causes the List Window to go to the top of whatever list it is showing. If showing the Browse view, this input takes the user to the top of the tree (home). If showing the Now Playing view, this input takes the user to the beginning of the list or, if music is playing, the currently playing item.

[List_Back]

Causes the List Window to show the previous list. The back information between the Now Playing view and Browse view are independent.

[Keyboard_Search]

Activates the keyboard pop-up to allow a search string to be entered.

[List_Scroll_Bar_Act]

An analog input to allow the list to scroll in a Windows-like fashion.

[List_Up]

Moves the List Window up 1 page.

[List_Down]

Moves the List Window down one page.

[List_Highlight_Act]

An analog input to allow the highlight to scroll through the list.

[List_Window_Length]

Allows the number of indirect text fields used to display results to be modified at run time.

[List_Highlight_Up]

Moves highlight up one item.

[List_Highlight_Down]

Moves highlight down one item.

[List_Highlight_Select]

Selects currently highlighted item.

List_Window**[List_Select1], [List_Select20]**

Select one of the specific lines of the list window.

Keyboard**[View_Search_Result]**

Displays the results of the search to be browsed by the user.

[Keyboard_Enter]

If multiple matching items are found, the results are displayed to be browsed by the user.

If a single matching item is found, the item is selected for playback.

[Keyboard_Backspace]

Removes the last character entered from the queue built using the Keyboard_Input.

[Keyboard_Clear]

Removes all characters entered from the queue built using the Keyboard_Input.

[Keyboard_Cancel]

Aborts the current search.

[Keyboard_Space]

[Keyboard_A] through **[Keyboard_Z]**

[Keyboard_0] through **[Keyboard_9]**

Sends this character to perform search functions. For a standard QWERTY keyboard, each button on the keyboard will trigger a single character.

[Alphapad_x]

For a smaller, predictive text (cell phone style) keyboard, each button can represent multiple characters. For example, the 2 button would trigger [2ABC], which would then match any item with either a 2, A, B or C in that position.

[Other_Key_Inputs\$]

If other keyboard characters are required, create a Serial I/O (SIO) symbol and populate it with the desired keys. Each key should only send a single character at a time to this input.

Power

[Power_On] and **[Power_Off]**

Places the component in or out of standby mode. These inputs affect all four music zones of a Music Player. If [Power_On] is held high, the module will attempt to keep the component powered on.

[Command_To_Player\$]

This input can be used to send any arbitrary command to the component. The module automatically adds the correct CPDID, Zone ID, sequence number, and terminating colon and line feed to any string being sent to this input. For example, "PLAY" would become "01.01/1/PLAY:\n" for a module controlling CPDID 01 Zone ID 01. This input provides direct access to the control protocol.

D.3 Outputs

{{Tx\$}}

Used for connection to the TX\$ of the connected RS-232 or TCP/IP Client.

[Zone_Name\$]

This output provides the name of the connected music zone as defined in the Installer Web Utility.

Transports

[Play_fb], [Stop_fb], [Pause_fb], [Fast_Forward_fb], [Rewind_fb]

Transport feedback. Only one of these signals will be active at any given time.

Playback_Control

[Random_Status]

Indicates the Random playback status. Note that this will sometimes remain on as some music will always play back in random order. See [Music Items in the Kaleidescape System](#) for details.

[Repeat_Status]

Indicates the Repeat playback status. Note that this will sometimes remain on as some music will always repeat. See [Music Items in the Kaleidescape System](#) for details.

Playback_Info

[Music_Playback_Active]

This signal is active while music playback is occurring.

[Song_Length]

Length of the currently playing song, expressed in seconds.

[Song_Remaining]

Amount of time remaining in the currently playing song, expressed in seconds.

[Song_Progress_Level]

A percentage of the elapsed time in the song (actually expressed as 0-65535). This can be used to place a progress bar (gauge) on a touch panel to show where the current relative position in the playback.

[Song_Position]

Current position of the current song, expressed in seconds.

[Now_Playing_Title\$]

Name of the currently playing song.

[Now_Playing_Album\$]

Name of the album associated with the currently playing song.

[Now_Playing_Artist\$]

Name of the artist associated with the currently playing song.

[Now_Playing_Cover_URL\$]

Indicates the URL of the covert art for the currently playing content.

List_Control

[Browse_Selected]

Indicates that the Browse view is shown in the List Window.

[Now_Playing_Selected]

Indicates that the Now Playing view is shown in the List Window.

[List_Back_Available]

Indicates that the user can go back to the previous list. This can be used to show the back button as enabled or disabled.

[Keyboard_Search_Available]

Active when the touch panel is displaying a list that can be searched.

[Keyboard_Search_Active]

Active when the keyboard is required to accept a search string from the user.

[List_Scroll_Available]

Indicates that there is more information in the current list than can be shown in the List Window. This can be used to dynamically display the scroll bar.

[List_Scroll_Bar_FB]

Indicates the relative position within the list that is shown in the List Window. This provides the feedback for the [List_Scroll_Bar_Act] input.

[List_Scroll_Bar_Size_FB]

Indicates the relative size of the list to the size of the List Window and can be used with scroll bar modes to show a scroll bar handle that changes size depending on the amount of information not shown in the list. A value of 0 means that the entire list fits within the List Window (and the [List_Scroll_Available] output is low). Values between 1 and 9 indicate relative list bar sizes with 1 being the smallest (approximately 10% of the entire size scroll bar size) and 9 being the largest (approximately 90% of the entire size).

[List_Highlight_FB]

Indicates the absolute position of the highlighted line within the currently displayed list. This provides the feedback for the [List_Highlight_Act] input.

List_Window**[List_Title\$]**

The title shown at the top of the List Window.

[List_Text1\$], [List_Text20\$]

Text for each line of the List Window.

[List_Selected1], [List_Selected20]

Feedback for the select status of each line of the list. Leave any output blank that the touch panel is not actually using.

[List_Queue_Status1], [List_Queue_Status20]

Feedback to show the queue status of each line of the list. These values will either be 1 (playing), 2 (paused) or 3 (in the queue). This should be used to show a small icon adjacent to each line in the List Window.

Keyboard

[Keyboard_Title\$]

Banner describing the current function of the keyboard. For example, while searching for an Artist, this will contain "Search Artists."

[Keyboard_Text\$]

This field contains the text that has been entered on the search keyboard.

[Search_Mini_Result\$]

This field contains an abbreviated version of the search results. For example, while 43 items match the query, this string would read "43 Entries." If the search has been narrowed down to a single item, this string will display that item (i.e. "The Beatles").

E APPENDIX

Keypad Presets

Module v7.0.2

Inputs, Outputs & Parameters

E.1 Parameters

Control Protocol Device ID

This must match the Control Protocol Device ID of the component as set through the Kaleidescape Installer Web Utility (<http://my-kaleidescape/installer>). Selecting "None" in the Web Utility is equal to 01 for this parameter. 01 (None) is the default. Note that when using 01, the Crestron processor must be directly connected to the indicated component.

Zone ID

This indicates which zone output to control on the Kaleidescape player.

Preset ID

A text identifier used for the set of presets. The Preset ID may be unique among all preset modules, or multiple instances of the module may use the same Preset ID to manipulate the same set of presets.

Hold Time

This sets the amount of time to hold one of the [Preset#] inputs must be held in order to save the preset.

E.2 Inputs

{{Rx\$}}

Used for connection to the RX\$ of the connected RS-232 port or TCP/IP Client.

{{Connect-F}}

Resends the startup messages to get the module feedback in sync with the component. If you are using TCP/IP, tie this to the Connect-F output of the TCP/IP client in order to re-sync the feedback if the connection cycles. If using RS-232, simply put a 1 on this input.

[Play], [Stop], [Pause], [Fast_Forward], [Rewind], [Skip_Forward], [Skip_Reverse]

Performs the associated transport action.

[Play-Pause]

Performs a play action or pause action depending on the current playback state. If music is playing, this input pauses music playback. If music is stopped or paused, this input resumes playback.

[Random]

Toggles the Random playback status. Note that this will not always function as some music will always play back in random order. See [Music Items in the Kaleidescape System](#) for details.

[Repeat]

Toggles the Repeat playback status. Note that this will not always function as some music will always repeat. See [Music Items in the Kaleidescape System](#) for details.

[Preset_Lock]

When this input is high, saving any preset is disabled.

[Preset_First]

Triggers the first defined preset, starting at preset 1 and moving forward from there. Any preset not stored in the Kaleidescape system will be skipped.

[Preset_Next], [Preset_Previous]

Cycles through the module's presets, skipping any presets that have not been stored in the Kaleidescape System. If a preset is currently active, then the cycle starts there. If no presets are active, the cycle starts with the most recently selected preset.

[Preset1] – [Preset10]

Triggers or sets the preset. If the [Lock] input is low and the input remains high (held) for the amount of time specified by the Hold Time parameter, the preset will be saved. When the preset is saved, the audio will mute for a moment.

[Command_To_Player\$]

This input can be used to send any arbitrary command to the component. The module automatically appends the correct CPDID, Zone ID, sequence number, and terminating colon and line feed to any string being sent to this input. For example, "PLAY" would become

“01.1/1/PLAY:\n” for a module controlling CPDID 01 Zone ID 1. This input provides direct access to the control protocol.

E.3 Outputs

{{Tx\$}}

Used for connection to the TX\$ of the connected RS-232 or TCP/IP Client.

[Now_Playing_Item\$]

Information about the currently playing item. If the user is playing a genre, it displays the genre name. If the user is playing an album, it displays the album name. If the user is playing all music by a particular artist, the artist name gets displayed here.

[Now_Playing_Track\$]

The title and artist for the currently playing track given in the format:

<title> - <artist>

[Play_fb], [Stop_fb], [Pause_fb], [Fast_Forward_fb], [Rewind_fb]

Transport feedback. Only one of these signals will be active at any given time.

[Play-Pause_fb]

Same feedback as [Play_fb]

[Random_fb]

Indicates the Random playback status. Note that this will sometimes remain on as some music will always play back in random order. See [Music Items in the Kaleidescape System](#) for details.

[Repeat_fb]

Indicates the Repeat playback status. Note that this will sometimes remain on as some music will always repeat. See [Music Items in the Kaleidescape System](#) for details.

[Preset1_fb] – [Preset10_fb]

Indicates when the associated preset is currently active. Multiple presets can be active simultaneously, if the presets are set to the music entity.

[Preset1_Label\$] – [Preset10_Label\$]

Displays the name of the genre, artist, album, or track that the preset is set to. This is the same information that is displayed in the [Now_Playing_Item\$] signal when the preset is active.

Automatically updates to the latest information when a preset changes, as well as upon connection.

F APPENDIX

Music Collection

Module v7.0.2

Inputs, Outputs & Parameters

F.1 Parameters

Control Protocol Device ID

This must match the Control Protocol Device ID of the component as set through the Kaleidescape Installer Web Utility (<http://my-kaleidescape/installer>). Selecting None in the Web Utility is equal to 01 for this parameter. 01 (None) is the default. Note that when using 01, the Crestron processor must be directly connected to the indicated component.

Zone ID

This indicates which zone output to control on the Kaleidescape player.

Collection

The Music Collection that this module will cycle through. The default Collections are:

- Albums (all albums in order by artist)
- Artists (all artists)
- Genres (top 40 genres in the System)
- Mix Albums (defined Mix Albums)
- New (most recently imported, the time is defined in the Web Utility)

You can also specify any user-defined Collection.

F.2 Inputs

[First], [Next], [Previous]

Play the first, next or previous item in the collection.

F.3 Outputs

{{Tx\$}}

Used for connection to the TX\$ of the connected RS-232 or TCP/IP Client.

G APPENDIX

Module Release Notes

G.1 Crestron OSD Module

Version 7.0.1

- Significant speed improvements.
- Better handling of power state and connection status.
- Added [Zone_to_Control\$] input and [Controlling_SN.Zone\$] and [Controlling_CPDID.Zone\$] outputs.

Version 7.0

- Module re-organized to use signal roll-ups.
- Added keyboard and keypad inputs.
- Added [16x9_Frame_with_2.35_Image] and [16x9_Frame_with_2.35_Image] outputs.
- Added [Mask_Calibrated_Top] and [Mask_Calibrated_Bottom] outputs.
- Added [Random_Toggle] and [Repeat_Toggle] inputs for music playback.
- Added power status signals: [Power_on_fb] and [Power_off_fb].
- [Now_Playing_Cover_URL] can also return movie cover URLs.
- Changed join numbers in demo program.

Version 6.3.1

This version has been successfully tested using CUZ 4.0 Beta release.

- Improved high traffic performance.
- Added version number to file names.

Version 6.3.0

- Changed Connection_Reset to Connect-F in sample code to clarify its purpose.
- Fixed bug where content detail strings were sometimes overrunning the string buffer.
- Added signal to activate lighting when in the DVD menu.
- Added override capability for handling NAT for cover art URLs.
- Minor formatting and spelling corrections in code.

Version 6.2.0

- Fixed bug where the play button disappears when the new music choices popup.
- Fixed bug where setting Time Update Interval to 0 does not work.
- Added support for cover art for details browsing, including signals to indicate whether to use the DVD or CD aspect ratios.
- Modified coding style of module to reflect a single consistent style.
- Created SIMPL+ library to allow code to be used across all Crestron modules.
- Updated copyright text in the module.
- Added Virtual Serial Driver to module.
- Added signal for custom commands to be sent to the player.
- Added Virtual GUI Device driver to module.
- Linked module help function to this document.
- Added System Builder "Device Support" definitions so that the module can more easily be found in the database.
- Modified signal names to hide unnecessary signals in System Builder.
- Modified many signal names to clarify their purpose.

G.2 Crestron SATP Module

Version 7.0.1

- Significant speed improvements.
- Better handling of power state and connection status.
- The SATP Now Playing list now defaults to the currently playing track.
- The SATP search button is now suppressed on top Browse node. Searching on the top node is not supported.
- Better handling of an invalid SATP node. If an SATP interface is showing a collection while the collection is deleted, the interface will correctly move to a valid node.

Version 7.0

- Module re-organized to use signal roll-ups.
- Added version number to file names.
- Added keyboard and keypad inputs.
- Changed join numbers in demo program.
- Added [Random_Toggle] and [Repeat_Toggle] inputs for music playback.
- Added [Zone_Name\$] to return the name of the currently controlled zone.

Version 6.3.0

- Changed Connection_Reset to Connect-F in sample code to clarify its purpose.
- Corrected system name in sample program.
- Fixed bug where the module would sometimes not initialize properly if using command redirection.
- Modified nomenclature inside the module to clarify the browse protocol implementation.
- Minor formatting and spelling corrections in code.

Version 6.2.0

- Added help text to Crestron SATP module.
- Removed deprecated signals from module.
- Fixed bug where too many search results were being returned.
- Modified parsing routines to significantly improve module performance.
- Modified coding style of module to reflect a single consistent style.
- Created SIMPL+ library to allow code to be used across all Crestron modules.
- Updated copyright text in the module.
- Enabled signal containing URL for the cover art of the currently playing album.
- Added Virtual Serial Driver to module.
- Added signal for custom commands to be sent to the player.
- Added Virtual GUI Device driver to module.
- Linked module help function to this document.
- Added System Builder "Device Support" definitions so that the module can more easily be found in the System Builder database.
- Modified signal names to hide unnecessary signals in System Builder.
- Modified many signal names to clarify their purpose.

G.3 Crestron Keypad Module

Version 7.0.2

- Significant speed improvements.
- Better handling of power state and connection status.

Version 7.0.1

- Added version number to file names.

Version 7.0.0

- Changed Connection_Reset to Connect-F in sample code.

- Added signals to output labels for each preset.
- Added First/Next/Previous inputs to browse presets.
- Added Now Playing item output to display a plain text string indicating what is currently playing.
- Minor formatting and spelling corrections in code.

Version 6.2.0

- Modified coding style of module to reflect a single consistent style.
- Created SIMPL+ library to allow code to be used across all Crestron modules.
- Update copyright text - Crestron code.
- Added Virtual Serial Driver to module.
- Added signal for custom commands to be sent to the player.
- Linked module help function to this document.
- Added System Builder "Device Support" definitions so that the module can more easily be found in the database.
- Modified signal names to hide unnecessary signals in System Builder.
- Modified many signal and variable names to clarify their purpose.

Version 6.1.0

- Initial implementation of keypad API.

G.4 Crestron Touch Panel Templates

Versions Dated 2008-08-08

- Changed join numbers.
- Added repeat and random buttons to OSD-No-Video.
- Updated templates for current generation of Crestron touch panel hardware (e.g. TPS-15 instead of TPS-6000).

Version 6.2.0

- Fixed bug where the Now Playing Bug was not showing "paused" status.
- Updated the copyright text.
- Fixed bug where the play button disappears when the new music choices popup.
- Added dynamic graphics object to OSD-No Video details sub-pages. Split sub-page into two pages to handle different aspect ratios. This allows the cover art for the selection currently highlighted on the OSD to be displayed on the touch panel.
- Added dynamic graphics object to the now playing music bug for SATP and OSD to show the cover art for the currently playing music album.
- Placed a "play" button over the browse cover art on OSD No-Video touch panel templates.

H Glossary

Command Routing

A feature of Kaleidescape's command protocol that allows commands routed through a single physical connection on one Kaleidescape component to reach other Kaleidescape components on the network. This allows you to control multiple Kaleidescape components with only one connection to the controller. See [Using Command Routing](#) on page 21.

CPDID

An acronym for Control Protocol Device ID. A unique identifier that can be applied to each Kaleidescape device. See [Control Protocol Device ID \(CPDID\)](#) on page 13 and [Setting the Control Protocol Device ID](#) on page 23.

Ethernet

A baseband local network specification commonly used in home installations. Originally, this term only referred to the 10 mega-bit per second (10Mb/s) connection, but now is used as a generic term to describe various related technologies: Fast Ethernet (100Mb/s) and Gigabit Ethernet (Gig E—1000Mb/s). Sometimes the term for the cable signaling is used—10Base-T (Ethernet over Twisted pair), 100Base-T (Fast Ethernet over Twisted pair) or 1000Base-T (Gigabit Ethernet over Twisted pair).

Ethernet can carry many different protocols simultaneously, but [TCP/IP](#) is the most common.

IP

Internet Protocol (IP) is a protocol that allows connection or connectionless services. This protocol provides for addressing, message fragmentation and security. An IP connection can be made across the room, or across the world by hopping from network to network.

IP can ride on many different networks, but [Ethernet](#) is the most common in most home installations. When combined with the [TCP](#) protocol, the entire protocol suite is referred to as [TCP/IP](#).

IP Address

An address that uniquely identifies a device on an [IP](#) network. (Example: 192.168.1.100).

Module

A self-contained program designed to control a single device. Kaleidescape modules convert digital, analog, and serial signals into a serial stream that controls the player and provides feedback. Crestron refers to device programs both as macros and modules. For clarity, this document uses the term module for the Kaleidescape component programs.

Music Zone

An independent music output from the Kaleidescape System. For example, a Music Player has four music zones.

OSD

An onscreen display (OSD) is a user interface on the television screen (sometimes also on part of the touch panel) that allows you to select viewing options. OSD control means that the user is using the OSD to control a [zone](#)—either using an IR remote, an [OSD Video](#) or [OSD No-Video](#) touch panel. The user must see the OSD when using OSD control.

OSD No-Video

An [OSD](#) control interface on a touch panel that does not use a video window.

OSD Video

An [OSD](#) control interface on a touch panel that uses a video window. A user can touch the video window and XY coordinates are used to interpret this touch as a command.

Preset

A preset ties a music item in the Kaleidescape System to a keypad button or other input trigger. Any music item can be saved as a preset, and there is no limit to the number of presets that can be used in a System.

Preset ID

A text identifier used for the set of presets. The Preset ID may be unique among all preset modules, or multiple instances of the module may use the same Preset ID to manipulate the same set of presets. The Preset ID combined with the module's preset number (1-10) defines the tag that the module uses for the associated preset.

Program

A collection of modules, symbols, and logic used to control devices in the Crestron system. The Kaleidescape OSD Demo and Kaleidescape SATP Demo are called programs because they include example modules that can be used in a real-world program to control Kaleidescape components.

RS-232

Recommended Standard 232 is a standard for serial binary data interconnection between equipment. Sometimes called a COM port or Serial port, this “recommended standard” has been renamed several times during its history as the sponsoring organization changed its name, and has been variously known as EIA RS 232, EIA 232, and most recently as TIA 232.

See [Appendix B](#) for Kaleidescape device pinouts and port configuration.

SATP

An acronym for standalone touch panel. An SATP interface allows a user to control a [zone](#) using only the touch panel. The user need not see the [OSD](#) when using this interface.

Tag

A tag is used to define a preset. The tag is associated with a music item in a System-wide table when the preset is set.

TCP

Transmission Control Protocol (TCP) is a connection-oriented protocol that provides reliable delivery of data. In Crestron, a TCP connection behaves similar to an RS-232 port.

TCP defines a series of unique ports from 0 to 65535 that a client can connect to on a single [IP address](#). These can be thought of like a series of channels that divide up different functions – port 80 is typically used for a web server, port 25 for email, port 23 for telnet, port 14795 for a Crestron Toolbox connection, and port 10000 for Kaleidescape Control. These ports allow a single device (such as the Kaleidescape 3U Server) to provide multiple services – such as a web server (on port 80) and a control interface (on port 10000) at the same time using the same IP Address.

TCP/IP

Transmission Control Protocol / Internet Protocol (TCP/IP) is a suite of network protocols commonly used on most private networks and the Internet. See both [TCP](#) and [IP](#) above.

TCP/IP Client

A Crestron device symbol that is used to make a [TCP/IP](#) connection to a remote device. Although this symbol is imported into the program and managed as if it were a physical device, it is not – it is a defined connection. A single actual device can be connected with multiple TCP/IP Clients, sometimes even using the same [TCP](#) port number.

Template

A touch panel file containing the pages used to control a single device. Kaleidescape provides templates for touch panels of various sizes. These can be opened with Vision Tools, and the individual pages copied into your touch panel file for control of the Kaleidescape System.

Zone

An independent output from a Kaleidescape player. Some zones can only play back music and are called [music zones](#). Zones that can play back both movies and music are sometimes referred to as movie zones.

Zone ID

A number describing the [zone](#) output of a player. For example, A 1080p Player's single Zone ID is always 01 but the Music Player's four Zone IDs are 01, 02, 03 and 04.