g! TechNotes

Revision 5/25/2011

Generic Single Zone Controller

Overview:

The Generic Single Zone Controller is a tool for controlling A/V switching devices which do not have drivers available in the g! Configurator. Generic Single Zone Controller was originally intended to allow custom IR or Serial commands to be sent to an unsupported AVR, but may be used in other ways as well. *Note that you may require a Pro Media App installed on your controller to add additional zone controllers as described in this document.*

NOTE: Elan does not recommend controlling any device through one-way IR or Serial, and using supported equipment is always the preferred method. This guide is intended as instruction when controlling unsupported gear is unavoidable.

Basic Concepts:

- In the g! system, all Media items that appear in the Viewer must be part of a media zone.
- To get a media zone in the Viewer, you must add a Zone Controller to the Media tab in Configurator.
- To get a zone in the Viewer, typically you will add a driver for a supported 2-way AVR or multi-zone controller. However…
  - If you are not using a zone controller with a supported driver…
  - …or are using some other device in lieu of a zone controller (such as a TV)…
  - …or need to send volume commands to something else (Amp/sub zone as the zone controller)…
  - …or don't need to control any "zone" but just need to get another interface in the Viewer on the media tab….
    - …add a **Generic Single Zone Controller**
      - Generic Single Zone Controllers add a zone with a expandable amount of sources, and allow you to send customizable commands for Power, Volume (either ramping, or in increments), Mute toggle, and Source.
      - Generic Single Zone Controllers also support basic Zone Controller functions like Displays, Settings Pages, and Slave Zones.

How to add a Generic Single Controller (Overview):

These steps should be considered the typical steps followed for controlling an IR or Generic Serial controlled AVR.

1. Learn Control Codes on the Input/Output tab.
2. Add a Generic Single Zone Controller.
3. Add sources as needed.
4. Choose Controller commands as appropriate: see the Reference Table below for more information.
5. Assign codes to the Controller commands as appropriate.
6. Complete media zone setup as you would on a supported zone controller (naming zones, adding displays and so on).

Using the basic overview above, you may add a Generic Single Controller to the system for a number of different purposes. However, not all steps may be required or there may be some variation to how commands are added. See the **"Other Uses…"** section at the end of this document for any special remarks that may pertain to non-standard usage.

GENERIC SINGLE ZONE CONTROLLER REFERENCE TABLE:

Generic Single Zone Controller Properties Reference:	
Name	Enter a name for the Zone Controller. This can be any name, but should be descriptive so this specific device can be identified in the Configurator. *Note that this name only appears in the Configurator—You must rename the Zone to change what appears in the Viewer.*
System #	Unique, read-only number assigned by g! for internal use.
Device Type	Read-Only field which reflects the type of Zone Controller selected during addition
Location	Optional field used to track the location of equipment with the Floor Plan tab. This field is currently used for reference only.
On Off Control Type	Drop-down field used to select the type of On/Off control available for the Zone Controller. ***Cycling (NOT RECOMMENDED)*** - Indicates that the Controller does not have discrete codes for on and off, just a single "Power" command. Elan recommends not using this option, as the device will almost certainly get out of sync at some point. If you must use a device that only has toggle commands, consider leaving it on at all times and not coding power commands, or replacing the device with one better suited to automation. Otherwise, you should plan on adding a settings page or other method to allow the customer to manually send a power command when it gets out of sync. *Cycling (Tracking Enabled)*-g! will **attempt** to track the state of the controller and send commands when appropriate. *Cycling (Tracking Disabled)*-g! will always assume the unit is ON. The Power button can be used to manually force a power command to be sent, but g! will never send power commands on its own. ***Discrete-*** Indicates that there are separate commands for "On" and "Off". When using this setting, g! will send the "On" command once when a source is selected, and not send another command to the controller until a different source is selected or the zone is turned off. ***Discrete Verify (Always Send)*** - Indicates that there are separate codes for "On" and "Off". When using this setting, g! will send the "On" or "Off" command each time a source button is pressed, even if g! believes the unit is already in the correct state. This setting also will send the power command again if the source/power is re-selected in the Viewer.
Source Control Type	Drop-down field used to select the type of Source control available for the Zone Controller. *Cycling (NOT RECOMMENDED)* - Indicates that the Controller does not have discrete commands for each source, just a "Next Source" toggle. Elan recommends not using this option as the device will almost certainly get out of sync at some point. If you must use a device that only has cycling commands, it is strongly recommended that you either replace the device with one better suited for automation, or handle all

Generic Single Zone Controller Properties Reference:	
	source switching somewhere else (so it may stay on one input). Otherwise, you should plan on adding a settings page or other method to allow the customer to manually send source commands when it gets out of sync. *Discrete*- Indicates that there are separate commands for each source. When using this setting, g! will send the source command once when a source is selected, and not send another command to the controller until a different source is selected or the zone is turned off. *Discrete Verify (Always Send)*- Indicates that there are separate commands for each source. When using this setting, g! will send the source command each time a source button is pressed, even if g! believes the unit is already in the correct state. This setting also will send the power command again if the source/power is re-selected in the Viewer.
Delay After On/Off	Drop-down field used to select the delay between an On/Off command and the next command sent to the Zone Controller. Use this setting if the controller needs time after turning on before it will accept another command. Increments are in milliseconds.
Delay After Source	Drop-down field used to select the delay between a source command and the next command sent to the controller. Use this setting if the controller needs time after selecting a source before it will accept another command. Increments are in milliseconds.
Volume Control Type	Drop-down field used to select the type of volume control available for the Zone Controller. *Pass to Active Source*- Indicates that g! will attempt to pass volume commands to whichever source is selected in the zone. This functionality is only supported on specific sources, such as HC Internal Player, and typically is not used. *Mappable Ramp*- Allows commands to be entered in such a way that ramping the volume by holding a finger on the "Volume Up" or "Volume Down" buttons is possible. Mappable Ramp should always be chosen if you wish to send custom volume commands. *Pass to Display*- Used with specific built-in display drivers. Indicates that g! will attempt to pass volume commands to whichever display is assigned to the zone. Typically this setting is not used. *None*- Removes the volume bar from the right side of the display.
Controller Commands	These provide a list of commands based on the selections made in the Generic Single Zone Controller Properties. As the settings change for the controller, the options in this section will change as well. For example, if **On Off Control Type** is changed from **Cycling** to **Discrete**, the power options in Controller Commands change from **Power On/Off** to separate commands for **Power On** and **Power Off**.

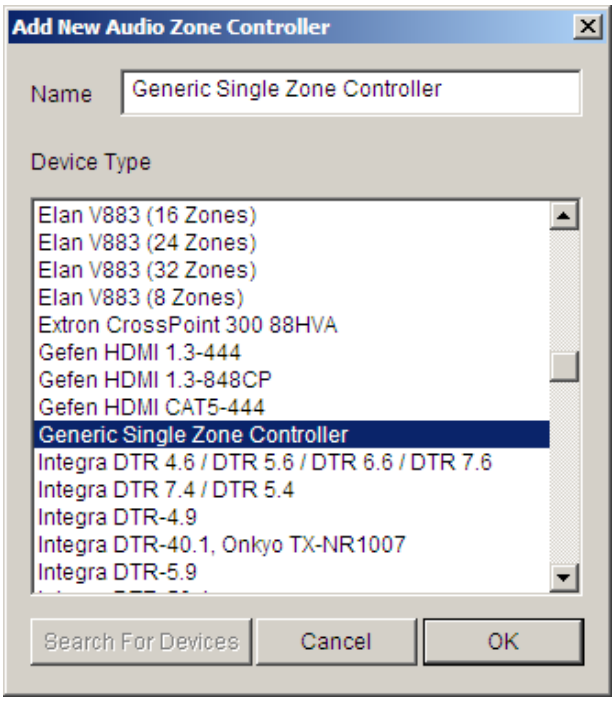
How to add a Generic Single Controller (Detailed Walkthrough)

Learn Control codes:

In Configurator, Learn or Import valid IR or Serial codes for your device on the Input/Output tab. If you require assistance with this, please see the appropriate chapters in the Training Guide. This step is true whether you are controlling an AVR, multi-zone switcher, Display, Amp, Volume Control (sub-zone) or any other AV hardware—to control the device you must first get valid control codes into the g! system.

Add a Generic Single Zone Controller:

To use the Generic Single Zone Controller, simply add a new Audio Zone Controller in the Media Tab. From the list, select "**Generic Single Zone Controller**" and click OK. *A Generic Single Zone Controller will be added to the system.*



Add Sources to a Generic Single Zone Controller:

Add the desired number of sources to the Generic Single Zone Controller. By default, the Generic Single Zone Controller is added to the system with only one Source. Additional sources may be added by simply right clicking the existing source and choosing **"Add New Audio Source"**.

Choose Controller Commands for a Generic Single Zone Controller:

Select appropriate settings from the drop-down menus to populate the desired entries in the Controller Commands box. Use the Reference table above to help you with your choices. *Remember that devices with discrete commands for Power and Source are strongly recommended*. Click the *Apply* button when finished.

Common Settings:

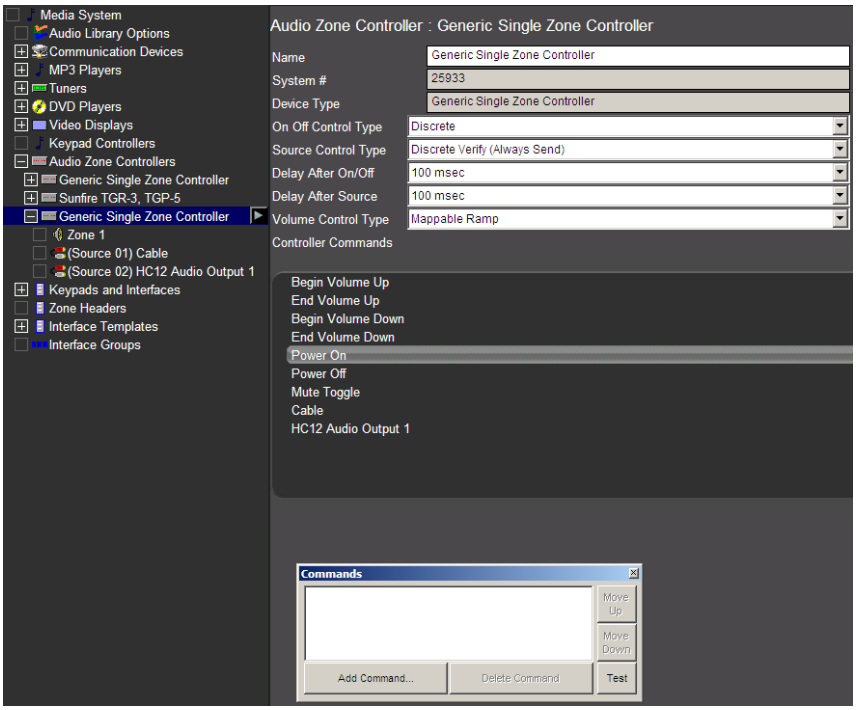
- **Power Type: Discrete (or Discrete Verify)**-Discrete indicates you have distinct Power ON and Power OFF commands, rather than just a power toggle. In Discrete mode, the power command will only be sent if g! believes the unit is in the wrong state.
- **Source Type: Discrete Verify (or Discrete)**-Discrete Verify will always send the appropriate source command, even if g! believes the unit is already in the correct state. In addition, Discrete Verify allows the source to be re-selected to force a command resend should g! become out of sync. Discrete or Discrete verify should be selected when you have discrete, individual source commands (AV1, HDMI, etc.).

  Note that after changing Source to Discrete or Discrete Verify, the Next Source Command entry will disappear and it may seem like no Source commands are added in its place. This is because Source Commands pull their name from the name of the Source assigned to them, and sources may not be added to the Zone Controller yet. The entry is actually there, but the name is blank until sources are added and configured.

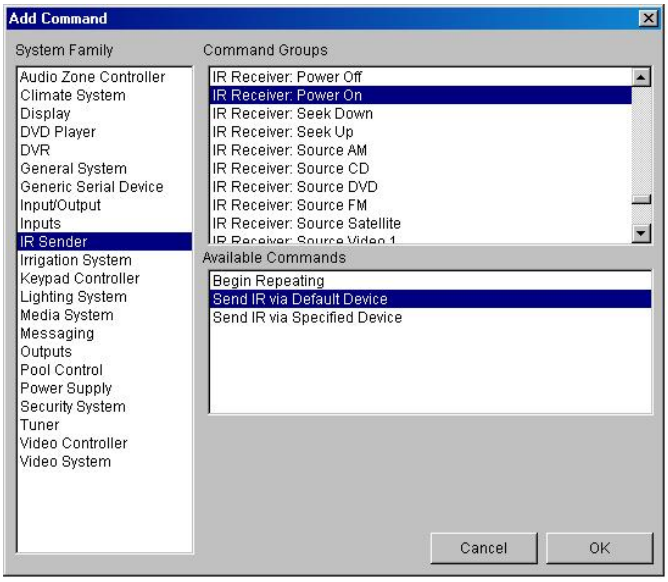
- **Volume Type: Mappable Ramp**-This is the setting you will use the majority of the time, and allows custom volume commands to be sent. Mappable Ramp enables the user to press and hold to ramp volume, or send individual volume commands to require multiple taps to increase volume in stages.
- **Delays:** Remember to set delay after Power or Source settings as needed if your device needs a certain amount of time after a power/source change before it will accept another command. This portion may require some experimentation.

Assign Commands to a Generic Single Zone Controller:

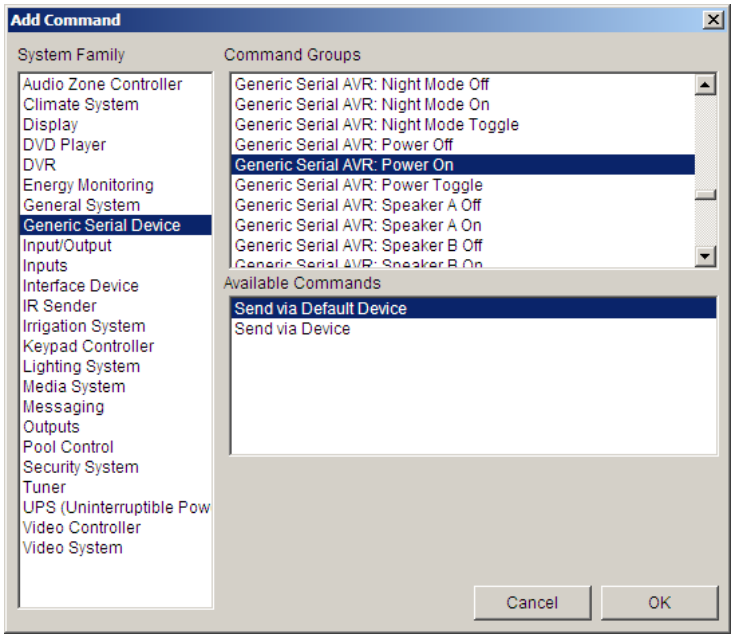
Adding controller commands for your Generic Single Zone Controller is the same for both IR and Generic Serial control. Click on an available Controller Command, such as Power On. *The Commands dialog box appears.*



1. Click the **Add Command...** button in the Commands dialog box. *The Add Command dialog box appears.*
   For an IR controlled device, select **IR Sender** from **System Family**. Select the desired command from **Command Groups**, then choose "**Send IR via Default Device**" and click "**OK**". *The command will be added to the Commands window.*



2. For a Generic Serial controlled device, select **Generic Serial Device** from **System Family**. Select the desired command from **Command Groups**, then choose "**Send via Default Device**" and click "**OK**". *The command will be added to the Commands window.*



3. *Add commands as needed for all power, source and mute commands. See the separate section below on adding Volume commands.*

Note: It is possible to add multiple commands in the Commands window. After adding the first, simply click the "Add Command…" button again for each command you wish to add. Commands will be executed in the order they appear in the Commands window.

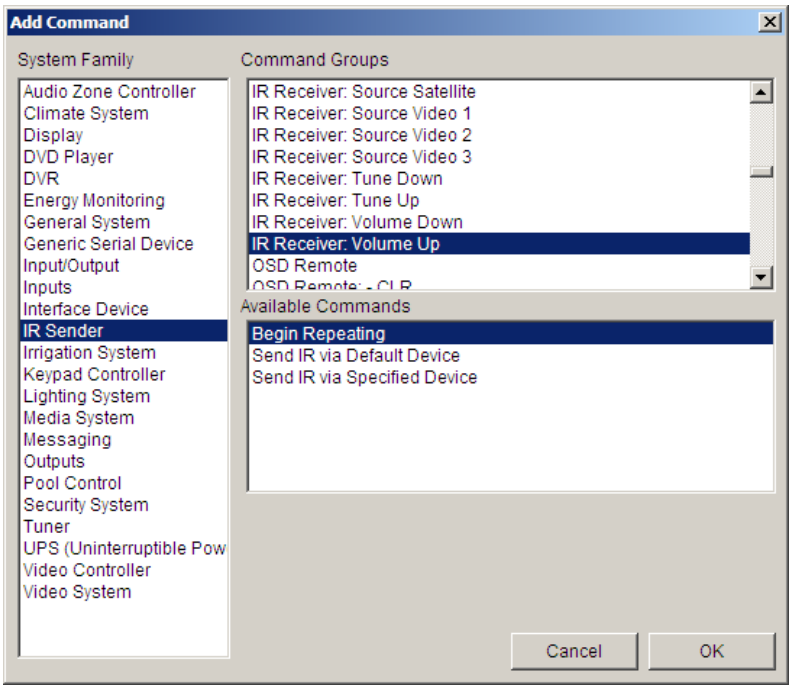
Configure Volume Commands (IR) for a Generic Single Zone Controller:

Volume typically is controlled so that a press and hold of a volume button will result in volume commands being sent repeatedly until button release. You may also use Mappable ramp to send an isolated volume increment, if you prefer. Both methods using *Mappable Ramp* are detailed below. Note that this section deals with adding Volume commands for an IR controlled device. For notes on volume control for a Generic Serial Controlled device, see below.

IMPORTANT: The device being controlled must have a command that will increase or decrease volume in increments. **Devices that only allow volume to be set to specific levels (10%, 20% etc) are not compatible.** You should also bear in mind that the size of the volume increment (1% increment, 5% increment etc.) is appropriate, and use the Incrementing method rather than Volume Ramping method as needed. You would not wish to repeat a 15% jump in volume every 300ms, for example.

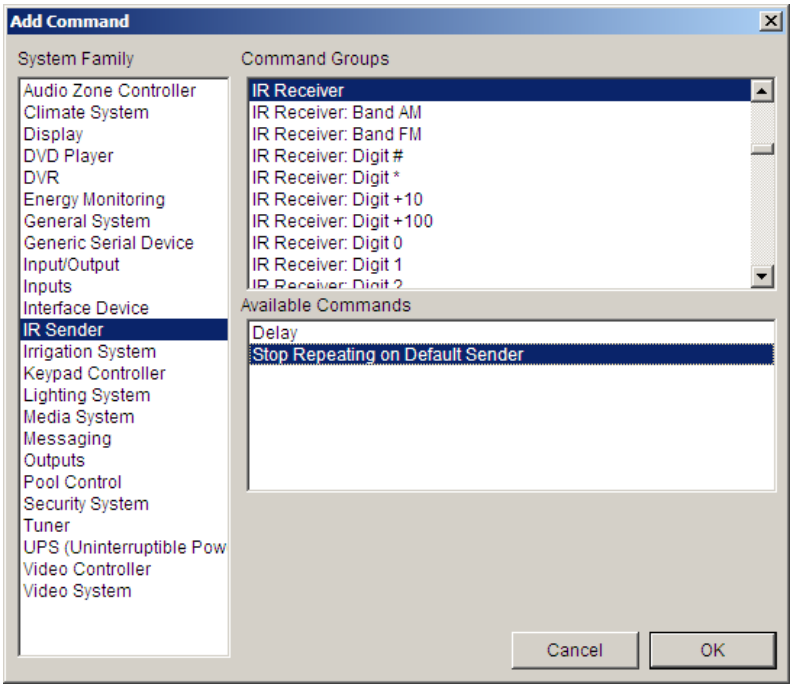
- **Volume ramping** can be set up for an IR controlled receiver or display by setting the Volume Control Type to "**Mappable Ramp**" and inserting the appropriate commands. Ramping volume is the standard behavior for most volume controls. *When used, the operator may simply hold down the volume up or volume down buttons, and the commands will continue to be sent until the desired volume is reached and the button is released.*

  1. From the **Controller Commands** list, select the command labeled "**Begin Volume Up**".
  2. In the **Add Command** window, select **IR Sender** from **System Family**, then select the **Volume Up** command appropriate to the device from the **Command Groups** list, then choose the option "**Begin Repeating**" from the "**Available Commands**" list.



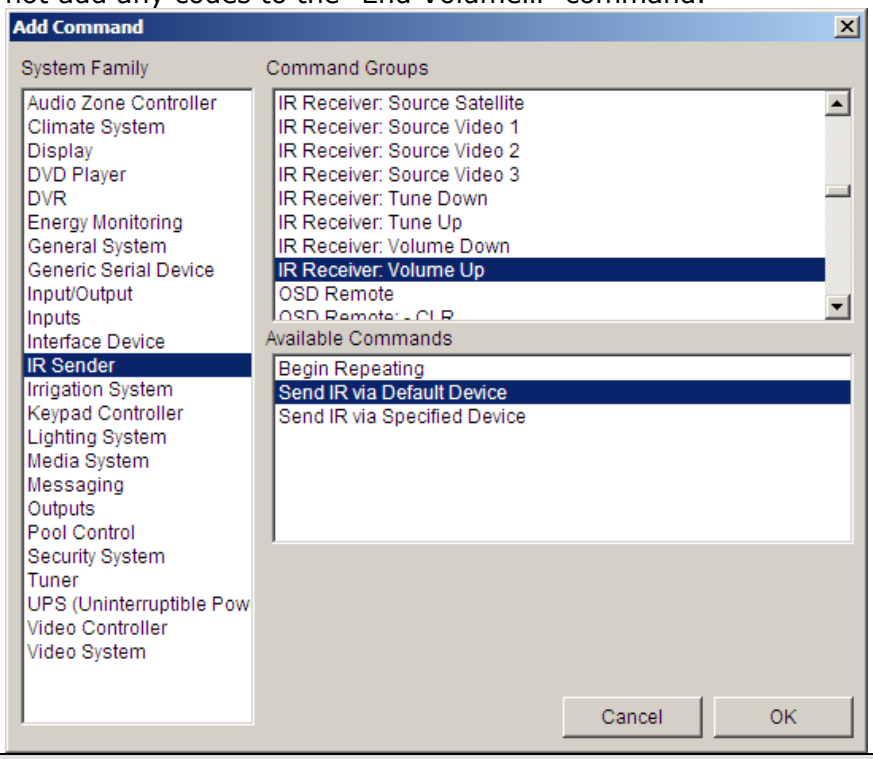
  3. From the **Controller Commands** list, select the command labeled "**End Volume Up**".
  4. In the **Add Command** window, select **IR Sender** from the **System Family** list, then find the block of commands relating to the device you are controlling in the **Command Groups** box. The top command in the block will show the device name with no command after it. Select this command, and you will have the option to select "**Stop Repeating on Default**

Sender" from the **Available Commands** box. Do so, and then click "OK".



Note: The other available option when the top level command is selected is Delay. This can be used to insert a delay between commands. When it is selected, a Time field becomes available, allowing you to enter a delay time using hours, minutes, seconds and milliseconds. Typically the Delay is inserted between two commands in the Commands box to add a pause between them.

- Mappable Ramp may also be used to send **increments** of volume, *without* the press-and-hold behavior. To do this, simply add a Volume command to the "Begin Volume…" command, and do not add any codes to the "End Volume…" command.



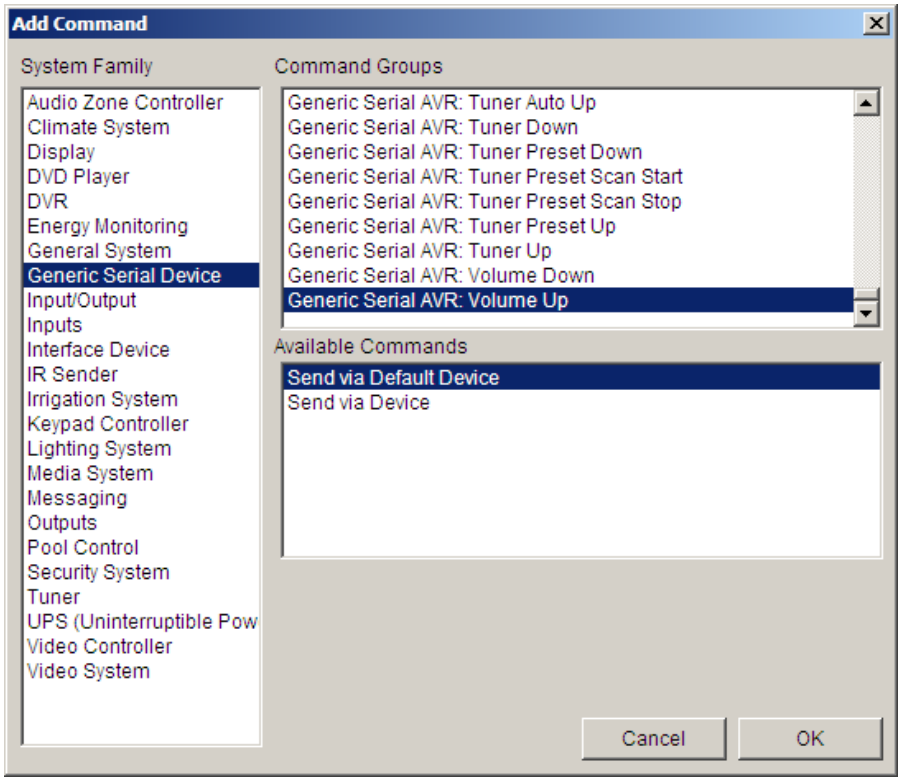
IMPORTANT: If you intend to use only volume increments, make sure to select **"Send IR via Default Device**" rather than "Begin Repeating". If you select a code to "Begin Repeating" with no command in "End Volume..." you will start a ramp cycle that never stops and possibly damage your speakers/ears!

Configure Volume Commands (Generic Serial) for a Generic Single Zone Controller:

While adding commands to a Generic Single Zone Controller is the same whether you are controlling IR or Generic Serial, Volume control is not. IR is simple, generally with a single Volume Up/Down code that takes around one-third of a second for each command to occur, providing a natural built-in latency to a repeated code action. Serial is comparatively much faster to transfer, with much shorter code strings, and none of the built-in transfer overhead, termination and pauses that are naturally present with IR. If a serial code string was set to "Begin Repeating" as is done with IR, simply tapping the button could be sufficient to ramp a volume control from 0% to 100%. As a result, when adding serial commands there is no option to "Begin Repeating". To increase volume with serial, Elan recommends using the Incrementing method. It is possible to also use timers and event maps to affect a manual repeat.

IMPORTANT: The device being controlled must have a command that will increase or decrease volume in increments. **Devices that only allow volume to be set to specific levels (10%, 20% etc) are not compatible.** You should also bear in mind that the size of the volume increment (1% increment, 5% increment etc.) is appropriate, and use the Incrementing method rather than Volume Ramping method as needed. You would not wish to repeat a 15% jump in volume every 300ms, for example.

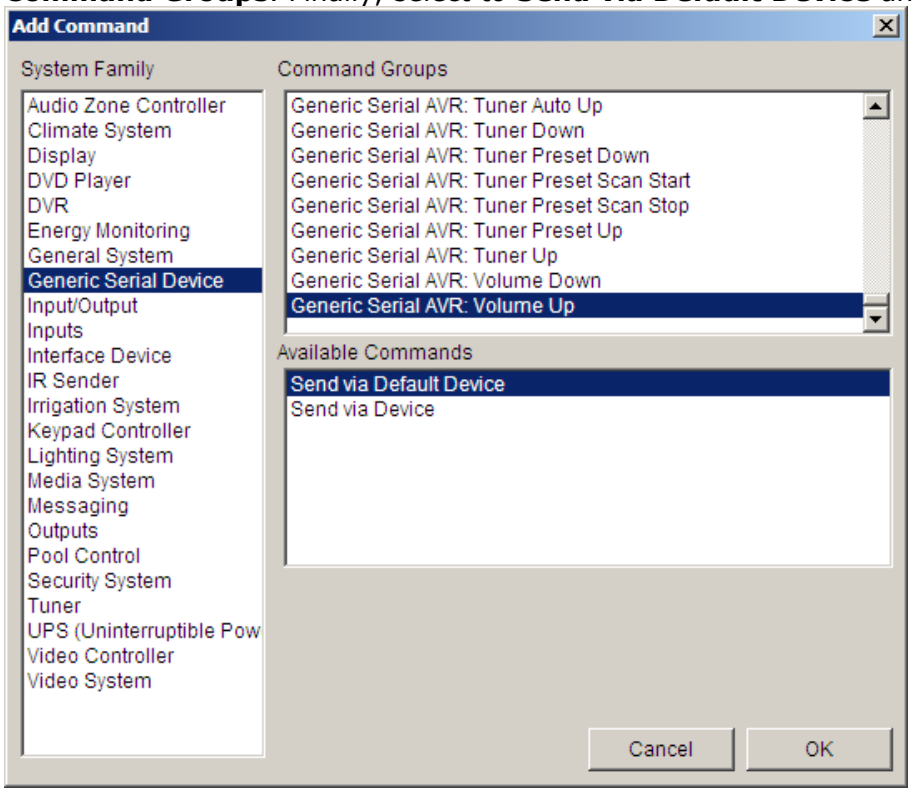
- Mappable Ramp for serial may be used to send **increments** of volume, *without* the press-and-hold behavior, and this is the recommended behavior on Generic Serial controlled devices. To do this, simply add a Volume command to the "Begin Volume…" command, and do not add any codes to the "End Volume…" command.



IMPORTANT: Ramping volume with repeating Generic Serial is not recommended. The Steps below are intended as a guide on how to create the action, but as the potential exists to create a runaway or "too fast" ramp, do so at your own risk.

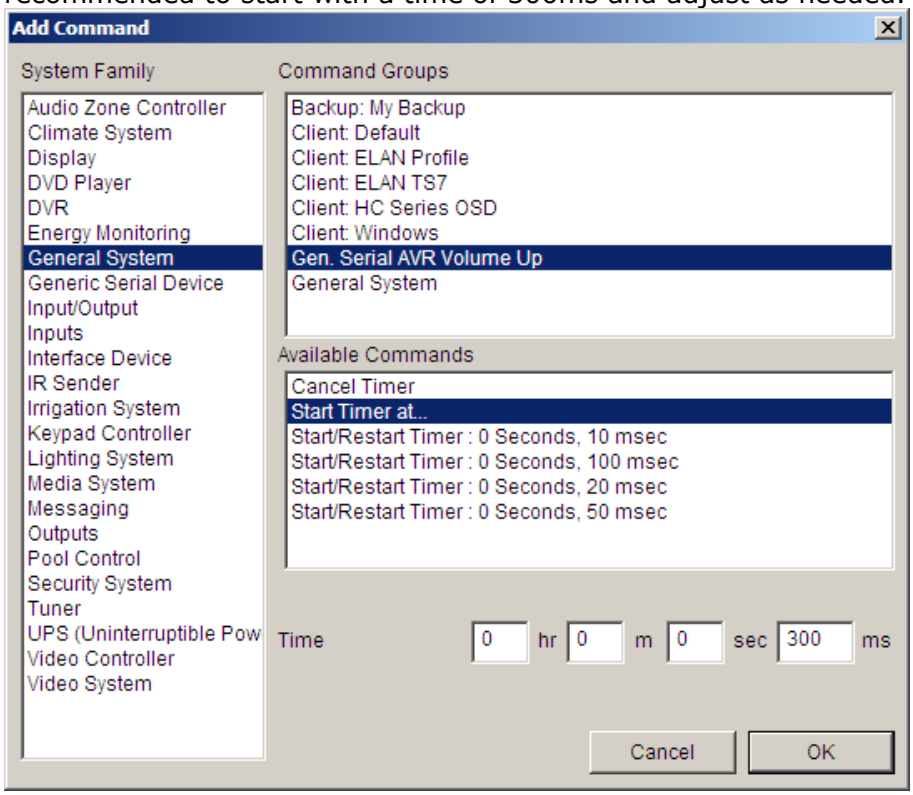
- Using Event Maps, it is possible to allow press-and-hold **volume ramping** with Generic Serial. The following process will detail how to use Run-Once System Timers to create a custom delay for repeating Generic Serial Commands. In the below steps, you will use the Begin Volume… Controller Command to start the Run-Once timer, rather than send a volume command directly. The Run-Once Timer will count down from the specified clock value to 0, and then generate an Event Trigger when it "expires". The Event Trigger will start an Event Map that sends a Volume command, and then re-start the Run-Once Timer. This process creates a repeating Volume command loop that has an adjustable delay (the length the Run-once timer runs). To stop the repeat, the End Volume … Controller Command is used to Cancel the Run-Once timer, stopping the cycle.
  It is very important to follow this process closely to avoid damage of your equipment!

  1. On the **Event Mapper Tab**, create a **Run-Once System Timer**, and name it something appropriate, like Gen. Serial AVR Volume Up.
  2. Right-Click the Run-Once Timer you just added under Run-Once Timers, and choose **Create Event Map For -> Timer Expired**.
  3. The Edit Event Map dialog box appears. Add a Command to the Event Map using the Add button on the right of the third section labeled Commands.
  4. Add the Volume Up command for your Generic Serial device. Choose **Generic Serial Device** from the **System Family**, and then choose the appropriate code from **Command Groups**. Finally, select to **Send via Default Device** and click OK.

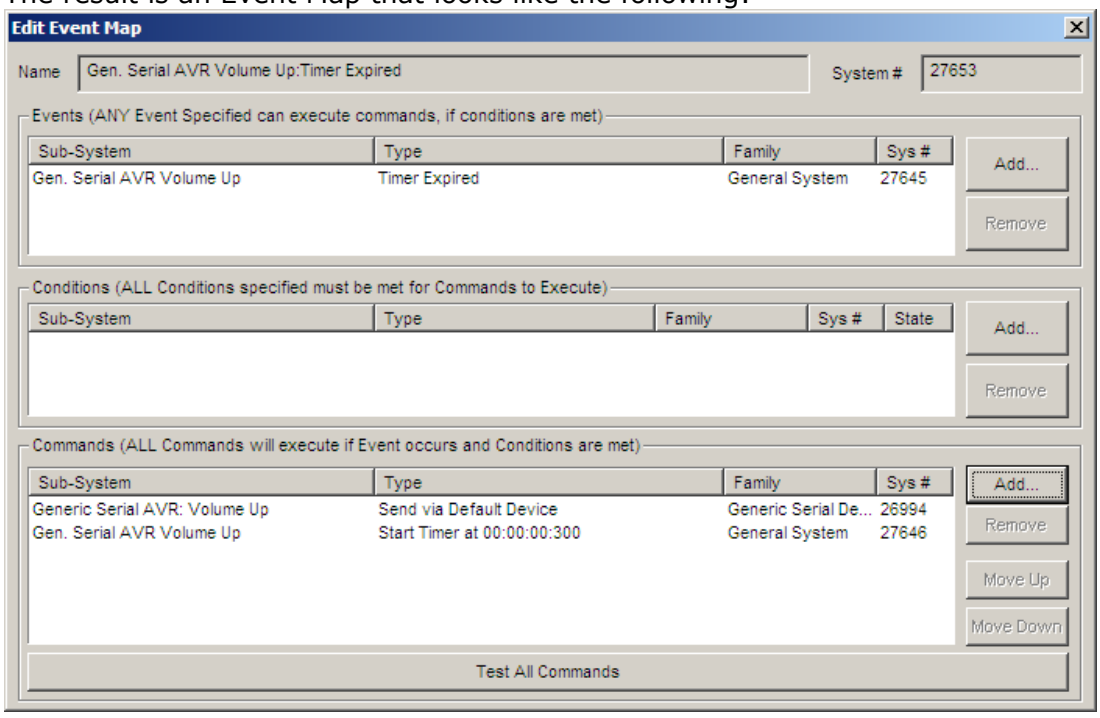


  5. Add a second command to the Event Map from General System to Start your timer, and choose the Start At option to enter a custom time value. Select System Family-> **General System**, then find the name of your **Run-Once Timer** and choose the "**Start Timer at...**" command to enter a custom time value for the run-once timer. It is

recommended to start with a time of 300ms and adjust as needed.

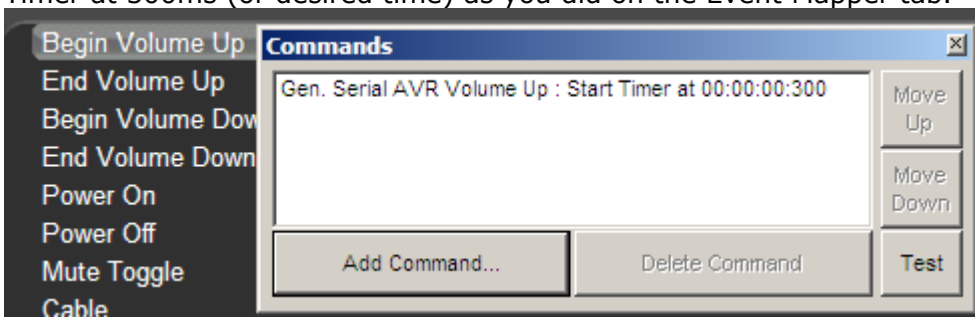


6. The result is an Event Map that looks like the following:

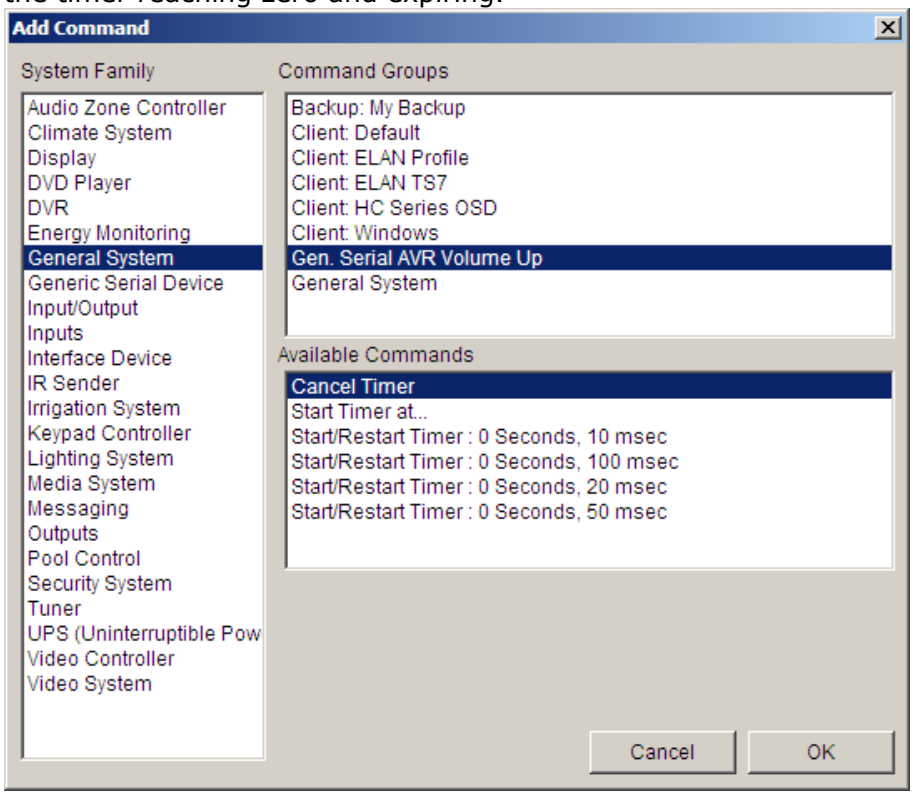


7. Repeat the steps above to create a second timer/event map for Volume Down.
8. Return to the Media tab and click on the Begin Volume Up Controller Command to open the Commands dialog box. Add a command from General System to Start the Run-Once

Timer at 300ms (or desired time) as you did on the Event Mapper tab.



9. Click on the End Volume Up Controller Command to open the open the Commands dialog box. Add a command from General System to **Cancel** the Run-Once Timer. Cancelling the timer will break the cycle, as the Event Map which repeats the command is based off the timer reaching zero and expiring.



10. Test the function from the Viewer and adjust the length of the timer on the Event Map tab as needed. When adjusting the timer, it is easiest to go to the Event Map tab, select the appropriate Event Map, and right-click the "Start Timer at" command in the Commands section to adjust the time value. It is unimportant to adjust the value of the timer on the Media tab, as this will only alter the delay before the first volume command is sent, and not the length of the time between repeats.
11. Repeat all steps for Volume Down.

OTHER USES FOR GENERIC SINGLE ZONE CONTROLLERS

Using Generic Single Zone Controller to Control a Multi-Zone Switch:

Note: As the name implies, the Generic Single Zone Controller can only control and display a single zone. There is no Generic Multi-Zone Controller, nor is there any way to add zones to a Generic Single Zone Controller. While Elan does not recommend attempting to control unsupported Multi-Zone units, the best way to handle this situation is to add a Generic Single Zone Controller for each zone on the multi-zone unit. This will ensure that everything is coded the same way and is easiest to come back to a few years down the road and remember the control scheme, and is easier to troubleshoot than Event Maps.

The basic steps above should be followed for adding *each* zone of your Multi-Zone Switch. If this is a Video Switch, you may wish to skip Volume control steps and set Volume Control Type to None. Once added, Generic Single Zone controllers may be slaved to your audio switch just like any other zone controller as needed.

Using Generic Single Zone Controller to Control a TV:

Generic Single Zone Controllers may be used to control a TV where there is no zone controller. In this situation the television itself is the "zone controller", and is added as a zone rather than separately as a display.

One example scenario for this use is a video display in a bar. In this scenario, the homeowner would like to have a news or sports channel showing on the display while listening to the audio programming from the Whole House Audio system. Here, the Generic Single Zone Controller would be configured to control the display itself, and the "Bar TV" zone would act just like any other zone in the Viewer software.

In this configuration, you will add a Generic Single Zone controller and configure Power, Source, and Volume commands on the Generic Single Zone Controller to send commands to the display directly. Adding a Video Display on the Media tab is not needed (unless Elan has a built-in driver you wish to leverage), and you do not need to add a Video Display to the Zone Properties as the commands are already being sent directly by the Generic Single Zone Controller.

Using Generic Single Zone Controller to Control Amps/VSE/Sub-Zones:

In this scenario, the setup is almost entirely identical to the way a standard AVR is configured, as we are simply routing Power/Volume commands to a different device. The one likely difference is that the sources are identical to an existing zone, likely fed from a pre-out into a singling input on the amplifier. In this instance, rather than add multiple sources to the Generic Single Zone Controller, simply add a single source using the special function "Output from Zone". This will automatically populate all sources from the desired zone pre-out, and will also automatically switch sources as needed on the zone feeding the output.

Using a Generic Single Zone Controller to add Interfaces to the Media Tab:

There may be occasions where you have no need to control a piece of third party a/v gear, but you wish to add additional interfaces to the Media tab to allow expanded control options. This concept may be likened to adding a "Custom Tab" to Media.

One example of this use is on an iPhone, where there is no support for Settings pages, and you wish to add the interface to the Viewer to allow control from normally unsupported interfaces. In other scenarios, you may have multiple displays in one area, and wish to send commands to a cable box or other source device without changing the audio/video switch state.

To use a Generic Single Zone Controller in this manner, simply add a Generic Single Zone Controller. Configuration of power, source and volume type options is not needed, though you may wish to set volume type to *None* to hide the volume bar. *(Note: there is no way to hide the power/source buttons).* Adding commands to any of the controller commands is not needed. Simply add the desired interfaces as Sources, and change the name of the zone to something appropriate such as "Settings", and advise your customer on its proper use.