

# **Control 4 Envy Driver Documentation**

**Revision 0.85** 

#### SETUP

Install the Envy unit per the installation guide. The Control 4 driver relies upon the Wake on Lan feature to bring the Envy online or out of sleep. This requires the Control 4 unit running director to be on the same LAN segment as the Envy. Most residential installs this is not an issue but be careful if there are VLANs, multiple routers, or other sophisticated network configuration. This is no different from any other device that uses WOL.

After installing Envy and connecting to the display and the network, it is recommended to reserve the Envy's MAC address to a fixed IP address in the customer's DHCP server so that it always returns to the same IP. If the IP changes Control 4 will lose the ability to communicate with it.

Next install the driver and make appropriate control connections for HDMI input and output. While an avswitch proxy is used, Envy does not support any switching. A typical install will have the Envy positioned between the receiver/preamp and a display. The preamp output connects to the Envy INPUT. The Envy OUTPUT will connect to the display.

Should the customer desire a reduced latency connection for gaming or other purposes, the PASSTHROUGH output can be connected a secondary input on the main display. It may be best in this case to not make the connection in composer and fire the input display command on the display in programming. A non-delayed copy of the input signal always appears on the PASSTHROUGH output. This change in video latency can be significant, it is recommended that the setup be tested as there may need to be changes in the audio system to account for lip sync delay between the two outputs.

Configurations with Envy before, after or between HDMI switches should technically work but will complicate the installation. Using a local HDMI switch to switch between two displays (Flat panel and drop-down projector for instance) would be fine if it supports 18Ghz. Same for input switching with a local 18Ghz capable switch. HDMI matrix distribution switches should most likely be avoided due to EDID complications. When connecting to a projector over a long HDMI cable, hybrid fiber optic cables fully rated for 18Ghz are recommended. For short cables 2m 18Ghz qualified HDMI cables are recommended.

With the Envy powered on and on its permanent IP address, go to Connections > Network in composer and connect it as you would any device. The driver will immediately connect to the Envy and learn its MAC address. The **Status** property should show an online connection and the **MAC Address** property should be filled in with the unit's MAC address. Communications are fully established with the Envy.

roperties	;			
Advanced Pro	perties			
Properties	Actions	Documentation	Lua	
Version			Driver: 21 Env	y: v1.1.1.1
Status			Online - Control C	Connection Active
MAC Addre	:55		A8-A1-59-3C-DB-	8B

#### **DISPLAY FEATURES**

The Envy supports display of Volume level, mute state, and arbitrary messages. The Auto Volume property enables binding of the Envy's **room's Video's Audio End Point 1** for both volume level and mute. If the volume overlay is disabled on the audio processor this prevents triggering of aspect ratio changes while adjusting volume. Display of mute and volume can be enabled/disabled independently.

Auto Volume	Enabled	~
Auto Mute	Enabled	~
Message Persist - Se	3	▲ ▼

Should the Envy not be in the same C4 room as the audio endpoint, the **VOLUME\_DISPLAY** variable is writable and could be linked to another device's volume variable in programming. A Mute on/off command is available via programming commands to toggle the mute display on and off.

Envy also supports writing of arbitrary messages to the display. For example, an alert such as "Doorbell Rang" etc. could be written to the screen. This can be done by either writing to the **DISCRETE\_MESSAGE** variable or by using the "Display Discrete Message" command. The command supports a time variable for display of that message. Messages written with the variable use the **Message Persist** time.

Examples can be found in the Programming Examples section below.

# **REMOTE KEY ASSIGNMENTS**

A secondary sub-proxy is provided which allows control of the Envy via the SR-260 remote or touch panel. Most of the keys have been exposed as assignable in this mode. Guide is mapped to the Menu command or Hamburger, and the settings menu is mapped to Menu on the SR260. To use this, the Envy OSD proxy must be exposed under Navigation > Watch for the room.

INFO	Toggle DebugOSD ~
RECALL	None ~
PVR	Profile Menu V
NUMBER_1	Aspect 4:3 v
NUMBER_2	Aspect 16:9 V
NUMBER_3	Aspect 2.35:1 ~
NUMBER_4	Aspect 2.00:1 V
NUMBER_5	Aspect 2.20:1 ~
NUMBER_6	Aspect 2.40:1 ~
NUMBER_7	Aspect 2.55:1 ~
NUMBER_8	Aspect 2.76:1 ~
NUMBER_9	None ~
NUMBER_0	None ~
STAR	Aspect Auto ~
POUND	Aspect Hold ~
PAGE_UP	None ~
PAGE_DOWN	None ~

#### Remote Key Assignments

Any additional commands can be assigned to the SR260 at the room level for aspect ratios etc. via programming for use with other sources active.

# **CALIBRATION MODE**

The calibration mode prevents any command other than heartbeats to be sent to the Envy. This is a convenience for calibrators that may need to guarantee the control system does not send any commands to the Envy. This prevents having to disconnect the Envy from Control 4 during calibration runs. At this time, the Envy remote must be used. Re-enabling allows commands to be sent to the Envy again.

#### PROFILES

Almost all configuration on the Envy is managed via profiles. Full documentation on profiles is available at the Envy web site. Please refer to the Profiles user guide at https://madvrenvy.com/#downloads for more details. A quick primer follows.

Profiles are groups of settings that are applied based either on a condition (attribute of incoming signal), manually by the user (via remote), or automatically by Control 4 or other automation system. Profiles are additive in the sense that several can be active at one time and only settings specifically enabled on the profile are set when that profile is activated. Settings can conflict and override each other, however in practice this is not generally an issue. Profiles are combined into groups. Within a specific Profile Group ONLY ONE PROFILE IS ACTIVE AT ANY TIME. Profiles can only be activated, not deactivated. To deactivate a profile, another profile in the group must be activated or the entire group must be deactivated.

There are three categories of profiles:

**Built in profiles not for external interaction** - These are typically automatically detected by some attribute such as frame rate, color space, HDR flag etc. By design they are not exposed for integration. Should there be a need to make a programming change such as changing a profile on a projector that does not observe HDR flags, that should be done via variable programming as described later in the document. Profiles in the following groups are internal only:

- Incoming Resolution
- Incoming Frame Rate
- Incoming Aspect Ratio
- Incoming Colorimetry
- Incoming Flags

**Built in profiles needing external interaction** - There are two groups of profiles that should be automated externally. For example, if a customer has two displays and an external HDMI switch is used to connect them, programming in composer should force a display profile change. The display profile may have a different 3DLut for each display. These profiles are pre-defined but re-namable on the Envy and accessible via programming. You can both activate these profiles as well as program off local activation on the Envy via events.

- Source Profiles 1-8
- Display Profiles 1-4

Profiles can be activated via programming. In the below example the first four Source profiles had been renamed. Display profiles 6-8 have not been renamed. It is much nicer to work with the properly named profiles.

Select		×
Lighting Conditions Bat Cave Curtains Closed + Lights on Curtains Open - Daylight Curtains Open - Night	^	OK Cancel
Unnamed Profile Source Profiles Device 5 Device 6 Device 7		
Device 8 Nvidia Shield Panasonic Blu-Ray Roku Sony UHD	~	

To activate a given source profile when the room source is changed via the Watch activity, you can use the CURRENT\_SELECTED\_DEVICE room variable to send the "Activate Source Profile" command in programming. A more complete example is in the programming examples later in the document.

Ψ	Inistogram		
	madVR Envy		
6	G Device Variables		
6	Envy OSD		
	laster Bedroom		×
madVR Envy Actions			
Activate Pro Envy	file Nvidia Shield on	Theater->madVF	2
Commands	Conditionals	Loops	
-	Conditionals crific Command	Loops	^
-		Loops	^
Device Spe		Loops	^
Device Spe     Activate Profile	crific Command	Loops	^
Device Spe     Activate Profile	crific Command	Loops	^
Device Spe     Activate Profile	crific Command	Loops	^

**Custom profiles** - Custom profiles can be triggered either on the Envy or via programming in Composer. These profiles are user defined and re-namable on the Envy and accessible via programming. You can activate these profiles via Control 4 programming. For example, if a customer has an anamorphic lens on a sled and prefers to move the lens manually based on content, when the command to the sled is sent, a profile can be applied that appropriately enables or disables anamorphic stretch on the Envy. The same user may also have blinds and lighting controlled by Control 4 and would like to optimize their HDR tone mapping based on the perceived brightness and contrast based on lighting conditions. By using two custom profile groups, one for lighting and one for the lens, only one of each type of profiles would be active at any given time. These settings do not conflict with each other and would make an exceptionally clean install. It is HIGHLY RECOMMENDED that custom profiles are given custom names via USB keyboard or the "Envy IP Control" PC application. Example Envy Custom profiles and groups:

Profile Group Anamorphic Lens Profile Lens In Profile Lens Out Profile Group Lighting Conditions Profile Curtains Open - Daylight Profile Curtains Closed + Lights on Profile Curtains Open - Night Profile Bat Cave

Group appearance in Composer:



For programming, the custom and built in profiles are activated on the Envy by selecting the Activate Profile Device Specific Command. The command can then be associated with any normal programming in Composer.

Select	×	MadVR Envy Actions
Anamorphic Lens	OK.	Deactivate Group on Theater->madVR Envy
Display Profiles	Cancel	Commands Conditionals Loo
Source Profiles		Device Specific Command
		Deactivate Profile Group ~
		Group

Groups work in the same way. Groups are only used from Control 4 if there is a need to disable all profiles within a group. In the above example, it may be desirable to deactivate all lighting profiles by deactivating the group "Lighting Conditions". It is unlikely the user would want to deactivate the Anamorphic profile as the correct one needs to be enabled depending on which position the lens is in.

Should the profiles in the driver come out of sync with the Envy, the "Refresh Profiles" button on the Actions tab will re-synchronize the Driver's profiles with the Envy. If profiles have been added and deleted to the Envy it may be necessary to manually delete programming that is orphaned because the associated profiles on the Envy have been removed.

Best practice is to determine the profiles required by the customer and build them on the Envy first, test them manually, then assign programming based on the desired automation.

#### **UPDATE ENVY LICENSE**

The Envy license entitlement can be updated via a "Refresh License" button under the Action tab.

## **HOTPLUG and 1080P OUTPUT**

Both HDMI Hotplug on input and 1080P 60 output can be forced. This is sometimes handy when installing and moving cables around. These can also be fired programmatically and have corresponding event triggers.

# STORING AND RESTORING ENVY CONFIGURATIONS

The Envy allows user settings to be stored and fallback settings to be stored to installer and suggested settings via buttons under the Action tab.

P	ropertie	s		
A	dvanced F	roperties		
	Properties	Actions	Documentation	Lu
	<b>D</b> .		~	1
	Rest	ore User Set	tings	
	Store	User Settin	gs	
	Rest	ore Suggest	ed Settings	
	Store	Suggested	Settings	
	Delet	e Profile Ma	ps	
	Rest	ore Installer	Settings	
	Store	Installer Se	ttings	
	Refre	sh License		
	Force	e Hotplug		
	Force	e 1080P60 O	lut	
	Refre	sh Profiles		
	Debu	g Action		

Storing of user settings prompts for a slot and a user-friendly name. These can be seen on the Envy menu. Restoring only prompts for the slot.

<b>C</b> Action Parameter List			×
Slot	1		~
Name			
		ОК	Cancel

The installer and suggested settings require a password to store but may be restored without the password at any time.

## VARIABLES, COMMANDS, AND PROGRAMMING

All video attributes detected by the Envy are exposed for programming. These variables are **READ ONLY**. They may be used to automate external devices based on the input and output video. For example, there may be a need to change color space or activate a high lamp mode for HDR content. Those automations should be programmed from these variables.

Additionally, two **WRITABLE** variables are exposed for programming convenience DISCRETE\_MESSAGE and VOLUME\_DISPLAY. Any text written to DISCRETE\_MESSAGE will be written to the display in the same way as the Discrete Message command. The display time is set by the global property Hangtime. VOLUME\_DISPLAY is provided to allow linking the volume output of some component into the volume display. Mute display is ONLY available via the MuteOn and MuteOff commands.

 Variable
 Potential Values

 DISCRETE\_MESSAGE
 <Writable string>

 VOLUME\_DISPLAY
 <Writable string>

 INPUT\_STATUS
 Signal | NoVideo

 INPUT\_3D\_MODE
 2D | 3D

 INPUT\_SET
 16:9 | 4:3

 INPUT\_BIT\_DEPTH
 12bit | 10bit | 8bit

 INPUT\_CHROMA
 444 | 422 | 420 | RGB

 INPUT\_OLOR SPACE
 601 | 709 | 2020 | PAL | DCI

 INPUT\_RATE
 23.976p | 24.000p | 30.000p | 60.000p | 59.940p | 23.970p

 INPUT\_BIT\_DEPTH
 12bit | 10bit | 8bit

 OUTPUT\_SD\_MODE
 2D | 3D

 OUTPUT\_BIT\_DEPTH
 12bit | 10bit | 8bit

 OUTPUT\_BIT\_CEROMA
 444 | 422 | 420 | RGB

 OUTPUT\_BIT\_DEPTH
 12bit | 10bit | 8bit

 OUTPUT\_BLACK\_LEVEL
 TV | PC

 OUTPUT\_BLACK\_LEVEL
 TV | PC

 OUTPUT\_CLOOR SPACE
 601 | 709 | 2020 | PAL | DCI

 OUTPUT\_CHROMA
 444 | 422 | 420 | RGB

 OUTPUT\_CHROMA
 444 | 422 | 420 | RGB

 OUTPUT\_COLOR SPACE
 601 | 709 | 2020 | PAL | DCI

 OUTPUT\_CHROMA
 444 | 422 | 420 | RGB

 OUTPUT\_COLOR SPACE
 601 | 709 | 2020 | PAL | DCI

To simplify programming, conditionals are provided for the above variables.

madVR Envy Actions		
If Theater->ma to Disconnecte	-	UT is CONNECTED
Commands	Conditionals	Loops
O GPU Temperature H	ligh	
O HDMI Temperature	High	
O Signal is	Present	O NotPresent
<ul> <li>Input rate is</li> </ul>	= ~	24.000p 🗸
O Input resolution is	= ~	720x480 ~
O Input Aspect Ratio is	= ~	4:3 ~
O Input Frame mode is	) 3D	○ 2D
O Input color space is	= ~	601 ~
O Input dynamic range	is = ~	SDR 🗸
O Input chroma is	= ~	RGB 🗸
O Input bit depth is	= ~	8bit 🗸
<ul> <li>Output rate is</li> </ul>	= ~	24.000p 🗸
O Output resolution is	= ~	720x480 ~
Output Aspect Ratio	is = ~	4:3 ~
Output Frame mode	is 💿 3D	○ 2D
O Output color space i	s = ~	601 ~
Output dynamic rang	geis = ∨	SDR 🗸
<ul> <li>Output chroma is</li> </ul>	= ~	RGB 🗸
Output bit depth is	= ~	8bit 🗸

Almost all Envy features can be automated by commands. These commands can be used to provide control of envy at the room level on SR260 and NEEO remotes.

Deactivate G	roup on Theater->ma	dVR Envy
Commands	Conditionals	Loops
Deactivate Profile Gro	up	~
Mute On Mute Off Temporary Output Asp Send Generic Comman Display Discrete Mess Force 1080P Output Force Hotplug Open Menu Activate Profile Deactivate Profile Gro	nd age	

Send Generic Command allows all remote buttons to be send and mapped to SR260 buttons for other sources at the room level.

Open Menu allows for direct opening of the Envy's menus.

The Temporary Output Aspect Ratio command will temporarily override the aspect ratio envy has detected. A customer with a Constant Image Height (CIH) setup may want the ability to override the detected aspect ratio. It may be desirable to use standard C4 programming to map Auto, Hold etc. to the 3 custom buttons or other unused buttons. The temporary override will continue until the video has changed resolution/refresh or Envy has detected a content change. Some configurations that minimize projector resyncs may need more manual oversight than other systems. Custom Experience buttons have also been provided for these functions as documented below.

madVR Envy Action	s	
	ly Force Output Aspect nadVR Envy	Ratio Auto on
Commands	Conditionals	Loops
Oevice S	pecific Command	^
Temporary Output	Aspect Ratio	~
OAR	Auto	~
	Auto	
	Hold 4:3	
	16:9	
	1.85:1	
	2.00:1 2.20:1	
	2.35:1	
	2.40:1	
	2.55:1 2.76:1	
	2.70.1	

### **EXPERIENCE BUTTONS**

Several Experience buttons have been created to provide a UI for some of the most common functions a user might want while Enjoying their Envy or for demoing the advanced features offered by the Envy at the touch of a button. The experience buttons must have their ENVY\_LINK control connection linked to the main Envy driver in programming.



Aspect Ratio - The Aspect Ratio experience button is a single driver that represents the common aspect ratios as well as the two special Hold and Auto settings. When added to the project it will be named "Off". Select the AR this button is to represent. This will rename the driver and update the icon set for that AR. When that override is active, it will light up. Only one AR will be active at a time. This provides a "radio button" type interface for managing aspect ratio while viewing video. It may be desirable to favorite these buttons to the room.

Highlight Recovery - Toggle the Highlight recovery setting for demonstration purposes.

Shadow Recovery - Toggle the Shadow recovery setting for demonstration purposes.

Contrast Recovery - Toggle the Contrast recovery setting for demonstration purposes.

**Toggle Tone Mapping** - Toggle the Tone Mapping for demonstration purposes.

Toggle Histogram - Toggle the Histogram display.

Toggle DebugOSD - Toggle the Debug display.

Toggle 3DLut - Toggle the 3DLut on and off.

The Experience buttons must have a control link connected to the Envy driver. It's easiest to insert the toggle Experience Buttons and select the aspect ratio for the Aspect Ratio button, then go into connections and link them to a control connection in the same way you would link a mini driver. No programing is required.

Name	Туре	Connec	tion	Inpu	t/Output	Connected To
Control Outputs -						
S Envy Control	Control	ENVY_	LINK	Outp	out	madVR Envy->Envy Control
NVY_LINK Input Dev	rices					
LINV I_LINIX INPUt Dev						
Device	Name		Locati	on	Connectio	ons
		ontrol	Locati			
Device madVR Envy madVR Envy	Name Envy Co Envy Co			er	Auto->En	ons vy Control vy Control
madVR Envy	Envy Co	ontrol	Theate	er er	Auto->En Hold->En	vy Control
MadVR Envy	Envy Co Envy Co	ontrol	Theate Theate	er er er	Auto->En Hold->En 16:9->En	vy Control vy Control
MadVR Envy madVR Envy madVR Envy	Envy Co Envy Co Envy Co	ontrol ontrol ontrol	Theate Theate Theate	er er er er	Auto->En Hold->En 16:9->En 2.35:1->E	vy Control vy Control vy Control
MadVR Envy madVR Envy madVR Envy madVR Envy	Envy Co Envy Co Envy Co Envy Co	ontrol ontrol ontrol ontrol	Theate Theate Theate Theate	er er er er	Auto->En Hold->En 16:9->En 2.35:1->E Debug O	vy Control vy Control vy Control envy Control
MadVR Envy madVR Envy madVR Envy madVR Envy madVR Envy madVR Envy	Envy Co Envy Co Envy Co Envy Co Envy Co	ontrol ontrol ontrol ontrol ontrol	Theate Theate Theate Theate Theate	er er er er er er	Auto->En Hold->En 16:9->En 2.35:1->E Debug O Histogran	vy Control vy Control vy Control Envy Control SD->Envy Control
MadVR Envy MadVR Envy MadVR Envy MadVR Envy MadVR Envy MadVR Envy MadVR Envy	Envy Ca Envy Ca Envy Ca Envy Ca Envy Ca Envy Ca	ontrol ontrol ontrol ontrol ontrol ontrol	Theate Theate Theate Theate Theate Theate	er er er er er er er	Auto->En Hold->En 16:9->En 2.35:1->E Debug O Histogran	vy Control vy Control vy Control Envy Control SD->Envy Control n->Envy Control
MadVR Envy madVR Envy madVR Envy madVR Envy madVR Envy madVR Envy madVR Envy madVR Envy	Envy Co Envy Co Envy Co Envy Co Envy Co Envy Co Envy Co	ontrol ontrol ontrol ontrol ontrol ontrol ontrol	Theate Theate Theate Theate Theate Theate	er er er er er er	Auto->En Hold->En 16:9->En 2.35:1->E Debug O Histogran	vy Control vy Control vy Control Envy Control SD->Envy Control n->Envy Control

# **PROGRAMMING EXAMPLES - Triggering projector settings**

You may need to trigger various projector settings from video variables. For example, to change the gamma table or picture mode on the connected projector, find the OUTPUT\_DYNAMIC\_RANGE variable in Device Events. Then, find the Envy and conditionals tab, select "Output dynamic range is" and drag over the necessary options. In this example a different gamma table is desired for SRD, HDR, and HDR10. Next, go to the projector and drag the commands for the desired picture settings to be fired when the desired output signal is sent. Beware some projectors ignore commands during resync so a delay may be needed. In this example we want to alter the gamma table on our projector depending on the content being in SDR, HDR, or HLG.

First, select the attribute that triggers the change. In our case, OUTPUT\_DYNAMIC\_RANGE variable on the main Envy proxy tracks this attribute.



Next, select the appropriate conditional

⊡-⊵ mac	CLAST_ROOM UVR Envy Device Variables VIDEO_OUTP VIDEO_OUTP ALERT_MESS	UT_01_INPUT UT_02_INPUT	>
madVR Envy Actions			
If Theater->madV = HLG	R Envy Output	dynamic range i	5
Commands	Conditionals	Loops	
Commands O Output Aspect Ratio is		Loops 4:3	× ^
			^
Output Aspect Ratio is	= ~ [	4:3	<
Output Aspect Ratio is Output Frame mode is	■ ~ [ ③ 3D = ~ [	4:3	> ^ >

Then assign commands to set the proper gamma table on the projector in response to the conditional.

Script
Script
When the variable Theater->madVR Envy->OUTPUT_DYNAMIC_RAN
Programming Controls
Else & And Or Break Stop Delay 5 second
# Comment
Script Actions
<ul> <li>If Theater-&gt;madVR Envy Output dynamic range is = SDR</li> <li>Set Gamma Table to Normal Theater-&gt;RS-4500</li> <li>If Theater-&gt;madVR Envy Output dynamic range is = HDR10</li> <li>Set Gamma Table to Custom1 Theater-&gt;RS-4500</li> <li>If Theater-&gt;madVR Envy Output dynamic range is = HLG</li> <li>Set Gamma Table to Hybrid Log Theater-&gt;RS-4500</li> </ul>

#### **PROGRAMMING EXAMPLES - Associating Source Profiles and deactivating groups**

The CURRENT\_SELECTED\_DEVICE room variable can be used to trigger source profiles on the Envy. Select CURRENT\_SELECTED\_DEVICE under device events, then select the same under device actions, then under conditionals select "is =" the desired sources and drag them into the page script. Then select the Envy and use the Device Specific Command "Activate Source Profile" to associate the correct source profile to the correct input.

CURRENT_SELECTED_DEVICE Actions			
If Theater->CURRENT_SELECTED_DEVICE EQUAL TO Theater->SHIELD TV			
Commands	Conditionals	Loops	
● Is = ∨	Theater->SHIELD TV	~	
<b>∩</b> Is = ∨	the value of		

Given named source profiles, the correct programming is illustrated below:

Script
Script
When the variable Theater->CURRENT_SELECTED_DEVICE changes
Programming Controls
Else & And Or Break Stop Delay 5 second
# Comment
Script Actions
<ul> <li>If Theater-&gt;CURRENT_SELECTED_DEVICE EQUAL TO Theater-&gt;SHIELD TV</li> <li>Activate Profile Nvidia Shield on Theater-&gt;madVR Envy</li> <li>If Theater-&gt;CURRENT_SELECTED_DEVICE EQUAL TO Theater-&gt;Sony UHD</li> <li>Activate Profile Sony UHD on Theater-&gt;madVR Envy</li> </ul>
If Theater->CURRENT_SELECTED_DEVICE EQUAL TO Theater->Panasonic Blu-ray Activate Profile Panasonic Blu-Ray on Theater->madVR Envy
If Theater->CURRENT_SELECTED_DEVICE EQUAL TO Theater->Roku Activate Profile Roku on Theater->madVR Envy

If there are specific settings but the base profile is adequate for other sources, the Source group can be deactivated if no specific matching source is selected by using else commands.



# **PROGRAMMING EXAMPLES - Activating custom profiles**

If a customer has a room with changing lighting levels, there may be a desire to alter HDR tone mapping etc. based on lights and window covering status. This can be achieved by assigning different groups based on light levels or blind positions. Assume the following groups:

Profile Group Lighting Conditions Profile Curtains Open - Daylight Profile Curtains Closed + Lights on Profile Curtains Open - Night Profile Bat Cave

The profiles are assigned to the various shade positions. When any profile in the "Lighting Conditions" group is activated the rest are deactivated. When the group is deactivated, none of the settings in any of the profiles in the group apply. And commands may be used to get super fancy and account for lighting as well as window covering position. This can get complicated and should be built as a macro so that it could be tied to all the lights and window coverings the customer might manupulate.



# **PROGRAMMING EXAMPLES - Anamorphic Lens**

To program an anamorphic lens, its best to create macros for each state. In this instance a relay on the EA is used to control the lens sled. A variable is used to track the state of the lens. This requires the addition of the Variables agent and the creation of a STRING type variable. In our case we have called it **PjLensMode**. The variable is optional but prevents triggering unnecessary commands/relay activations. The following macro is for 16:9 image with lens out of the light path. If the lens is already in the 16:9 position, do nothing, otherwise set the variable to 169, Activate the profile "Lens Out" on the Envy, and open the relay to move the lens out of the light path.

Script
Script
When Projector 169 is executed
Programming Controls
Else & And Or Break Stop Delay 5
# Comment
Script Actions
If Variables.>PjLensMode EQUAL TO 169
Stop
Nº Else
Variables->PjLensMode = 169
Activate Profile Lens Out on Theater->madVR Envy
Open the Theater->Anamorphic Lens

The reciprocal macro is for 2.35:1 image with anamorphic lens in the light path.

Script          Script         When Projector Anamorphic 235 is executed         Programming Controls         Else       And         Or       Break         Break       Delay         # Comment         Script Actions         If Variables->PjLensMode EQUAL TO a235         Stop         Else         Activate Profile Lens In on Theater->madVR Envy         Variables->PjLensMode = a235         Close the Theater->Anamorphic Lens	Script	
Programming Controls          Image: Stop       Image: Stop       Image: Stop       Image: Stop         Image: Stop       Image: Stop       Image: Stop       Image: S	•	
Else & And Or Break Stop Delay 5 # Comment Script Actions If Variables->PjLensMode EQUAL TO a235 Stop Else Activate Profile Lens In on Theater->madVR Envy Variables->PjLensMode = a235	When Projector Anamorphic 235 is executed	
<pre># Comment Script Actions  If Variables-&gt;PjLensMode EQUAL TO a235  Stop  Else Activate Profile Lens In on Theater-&gt;madVR Envy Variables-&gt;PjLensMode = a235</pre>	Programming Controls	
Script Actions  If Variables->PjLensMode EQUAL TO a235  Stop  Else  Activate Profile Lens In on Theater->madVR Envy  Variables->PjLensMode = a235	► Else         & And         I         Or         I Break         I Stop         I Delay         5	
<ul> <li>If Variables-&gt;PjLensMode EQUAL TO a235</li> <li>Stop</li> <li>Else</li> <li>Activate Profile Lens In on Theater-&gt;madVR Envy</li> <li>Variables-&gt;PjLensMode = a235</li> </ul>	# Comment	
<ul> <li>Stop</li> <li>Else</li> <li>Activate Profile Lens In on Theater-&gt;madVR Envy</li> <li>Variables-&gt;PjLensMode = a235</li> </ul>	Script Actions	
<ul> <li>Else</li> <li>Activate Profile Lens In on Theater-&gt;madVR Envy</li> <li>Variables-&gt;PjLensMode = a235</li> </ul>	If Variables->PjLensMode EQUAL TO a235	
Activate Profile Lens In on Theater->madVR Envy Variables->PjLensMode = a235	Stop	
Variables->PjLensMode = a235	Ne Else	
	Activate Profile Lens In on Theater->madVR Envy	
Close the Theater->Anamorphic Lens	Variables->PjLensMode = a235	
	Close the Theater->Anamorphic Lens	

The Macros can now be executed manually via button press or upon source selection with standard C4 programming.

# **PROGRAMMING EXAMPLES - Notification**

To program a notification for a door station or doorbell, simply use the Display Discrete Message command with the text of your choice in the script box for the button pressed event:

	rbell Rang!!! on Theat	
	screte message for 6	
Commands	Conditionals	Loops
- Eg Preset Sett	ings	^
0	Set Flat	$\sim$
0		
Device Spe	cific Command	
Display Discrete Mes	sage	~
Message	Doorbell Rang!!!	~
Time	6	<b> </b>

Script
Script
When Doorbell on Security->DoorBird has been pressed
Programming Controls
Else & And Or Break Stop Delay 1 seconds
# Comment
Script Actions
Display Doorbell Rang!!! on Theater->madVR Envy as a Discrete message for 6 seconds

A more blinking style announcement could be sent by reducing the display time and inserting delays as follows. This creates a one second on/one second off blink. The delay is for two seconds because the madVR is given the command to display the message for one second, at the same time the EA begins it's timer, one second for the message and another second for the "off" time", repeating as many times as needed.:

Vvne	n Doorbell on	Security->Doo	orBird has b	een presse	
Programming Con	trols				
NEIse	& And	Dr 🖶 Break	📫 Stop	📫 Delay	2 second
# Commen	t				
Script Actions					
📫 Display Do	orbell Rang!!! on	Theater->madVR E	Envy as a Discre	ete message f	or 1 seconds
📫 delay 2 sec	onds				

If you prefer to write to the variable DISCRETE\_MESSAGE this syntax will also work. The display time is set globally in properties as Hangtime.

	LASI_MENU_S     LAST_ROOM_S     madVR Envy     Device Variables     VIDEO_OUTPL     VIDEO_OUTPL     ALERT_MESS/     OISCRETE_ME     INPUT_3D_MO     INPUT_ASPEC	SELECTED JT_01_INPUT JT_02_INPUT AGE SSAGE DDE	
DISCRETE_MESSAGE	Actions		
Theater->madVR Envy->DISCRETE_MESSAGE = Doorbell Rang!!!			
Commands	Conditionals	Loops	
Set to Value     Doorbell Rang!!!			
◯ Set to Value of			
Backup->LAST_MESSAGE ~			

Script
Script
When Doorbell on Security->DoorBird has been pressed
Programming Controls
Else & And Or Break Stop Delay 1 second
# Comment
Script Actions
Theater->madVR Envy->DISCRETE_MESSAGE = Doorbell Rang

Variables can also be used to supply the text of the notification. For example with an alarm system, the TROUBLE\_TEXT message may indicate when a sensor is opened, however we only want to display this if the alarm activates:

	C LAST_ROOM_S madVR Envy C Device Variables C VIDEO_OUTPU C VIDEO_OUTPU C ALERT_MESSA C DISCRETE_ME DISCRETE_ME C INPUT_3D_MO	T_01_INPUT T_02_INPUT GE SSAGE DE
DISCRETE_MESSAGE		
>DISCRETE_	MESSAGE to the val MESSAGE to the val rage->TROUBLE TE	
Commands	Conditionals	Loops
<ul> <li>Set to Value</li> <li>Set to Value of</li> <li>Security-&gt;Carriage G</li> </ul>	arage->TROUBLE_TEX1	Γ ~

Then associate the variable write with the proper trigger on the customer's alarm panel.

Script
Script
When the variable Security->Carriage Garage->ALARM_STATE changes
Programming Controls
Else & And Or Break For Contract of the seconds
# Comment
Script Actions
Set Theater->madVR Envy->DISCRETE_MESSAGE to the value of Security->Carriage Garage->TROUBLE_TEXT