



TechNotes

Revision 1/26/2022

Lutron QSX User Interface Primer

Options available to control Converging Systems loads

Background/Feature Set

The **Simplified Lutron Interface Module (SLIM)** accessible within the e-Node/4x000 family of gateways enables complete control of all features available within the Converging Systems e-Node/4x00 gateway device connected to the same (subnet) Ethernet network to which a Lutron QSX/RadioRA3 system is connected. This document assumes that you have already set up your device as per the **Quick Start Guide** for Lutron QSX ([see separate document](#)).

Such functionality includes the following:

- On/Off with adjustable dissolve rate
- Selection of any color from the HSV color space (for RGB and RGBW supported devices)
- Selection of any CCT (for RGBW and tunable white supported devices)
- Accurate dimming to any level and without flicker for Pure Mode device
- Hue accurate and CCT accurate dimming for all supported devices
- Dim-to-Warm option (in lieu of Dim-to-black) for all supported devices
- Optional ability to control colors using the RGB or RGBW color Space
- Ability to run one or more Effects (shows)
- Ability to run a Circadian Show tracking for any location throughout the world ([see separate document](#))

Lutron Platform support/non-support matrix

Supported Features	Non-supported/non-tested features
Single or Dual QSX Systems	
	Loads beyond those supported in dual QSX systems
Tracking of real and phantom Button Presses ¹	
Tracking of Loads (real and phantom) in Areas and direct Sub-Areas (Parent and Child Areas) ¹	Childs of Child Areas (Grand-child Areas)
Tracking of loads (real and phantom) in Areas or Sub-Areas is possible even though they are controlled by keypads or devices in "Grand-Child" areas	Keypads and loads in Areas subordinate to Child Areas cannot be tracked (currently)*
SeeTouch, Palladium and Other Hybrid Keypads	
Sensor output can be tracked, if needed, by tracking a real or phantom load (linked to those outputs with Lutron Designer) with SLIM	Sensor output cannot be tracked directly
Timeclock output can be tracked, if needed, by tracking a real or phantom load linked to those triggers (in Lutron Designer) with SLIM	Native Timeclock tracking is not possible
Button presses from Switches and Dimmers (real and phantom) can be tracked, if needed, by tracking a real or phantom load linked to those devices (in Lutron Designer) with SLIM	Tracking of connected loads to switches and dimmers is supported

Although Fade Rate of dimmers is not support natively (currently through Lutron), a fade rate can be programmed within the Lutron Table matching the Lutron dealer programmed fade rate entered within Designer.	Fade Rate of dimmers ²
	Control of Lutron button LED logic
Support of Press/Release/Multi-Tap and Hold features (only if identical/matching programming is made within SLIM)	SLIM cannot create a button type and upload to Lutron Designer for control. Button type has to be programmed with Lutron Designer
CCT can be tracked, if needed, by tracking a phantom load linked to those triggers (in Lutron Designer) with SLIM .	CCT output direct
	Ketra Vibrancy control is not monitored.
CCT control of supported LED elements from 1700K to 7000K	If CCT is set to a level outside of the range of any connected LED luminaire, the SLIM module will substitute the closest CCT value.
Ability to receive a timeclock event and trigger (i) one of 24 CSI stored presets or (ii) one of various CSI dynamic effects (see Appendix 1)	

¹ provided they are not in areas subordinate/below areas or sub-areas

² It is possible to enter a matching dissolve rate though within the SLIM [data field](#) (see Appendix 1)

Lutron User Interface (UI) Modes of Operation

On a macro level, control is possible from Lutron for three distinct modes of operation.

Mode	Description	Description
A	Lutron only	Control of Lutron loads (only) as Lutron has documented within their training materials.
B	CSI only	Control of Converging Systems loads (only) through the Lutron interface (as if the Converging Systems load was a supported Lutron load) as detailed within this document.
C	Lutron/CSI coordinated output	Parallel operation of Lutron load AND Converging Systems' load. Such operations might include: -On for a Lutron device AND concurrent On for a CSI device -CCT of 6000K on a Lutron device AND concurrent CCT of 6000K for a CSI device -Circadian tracking (i.e., "Natural Show" from Lutron) AND CSI's Circadian tracking can both track the sun from sun-rise to sun-set. -Lutron's App "camera function" can pick the same color for output to a Lutron device AND to CSI device.

In general, for many operations *no special programming* is required within Lutron Designer to enable the range of support specified above. Unique programming features within the e-Node's SLIM (Lutron) tab typically enable the bulk of Mode B and Mode C operations to be easily programmed with the following exceptions:

- For [Mode B](#) operations, an unused Lutron (device) button (real or phantom) needs to be available, and or a phantom load has to be programmed for utilization of the Ketra UI within the Lutron APP.



-For [Mode C](#) operations, where a Lutron load is required to be tracked, the e-Node programmer needs to have knowledge of the load's programmed name (appearing within Designer)

NOTE -- **Only specific button operations (Press/Release/Double tap/Hold) originally programmed within Lutron Designer can be seen by the CSI SLIM interpreter within the e-Node!** Specifically, if a **Double Tap** is desired to control a CSI device, that **Double Tap** would have needed to be programmed within Designer—the e-Node cannot alter the programming parameters within Designer but can only listen to the output strings. Therefore, it is incumbent on the e-Node programmer to fully understand the Lutron Button Type programmed within Lutron Designer in order to program the e-Node to listen to that exact Button identifier Type. ***In other words, if a Press (which we call a "3") is generated by the Lutron processor, and a Release (which we call a "4") is programmed within SLIM Tab, absolutely nothing will occur—either the button type needs to be changed within Designer (to a "4") or the SLIM programming needs to be changed to a "3."***

Now let's get started...

Lutron User Interface (UI) Types of Control

General control of connected loads to the Converging Systems e-Node/4x00 gateway occurs in two ways from the Lutron Platform:






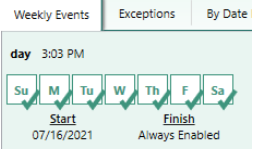
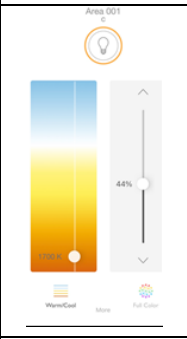
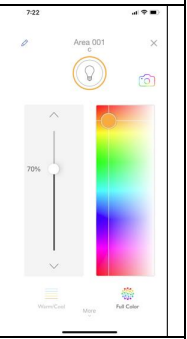
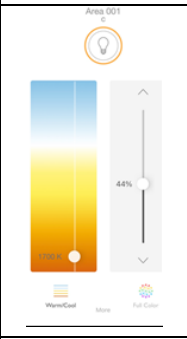
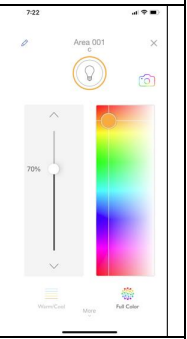
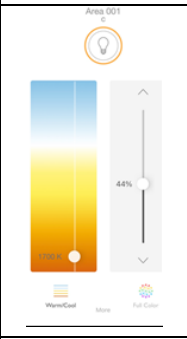
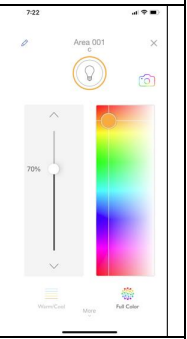
-[Listening](#) to Lutron **Button** Presses (real and phantom), and/or

-[Tracking](#) Existing Lutron **Loads** (real and phantom)

Lutron User Interfaces can be utilized to control CSI loads **IF** they appear on the following [Table](#). For those interfaces that cannot be directly listened to, their connected real or phantom loads can be used alternatively to indirectly monitor the activity of such non-supported User Interfaces.


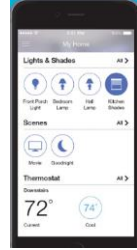
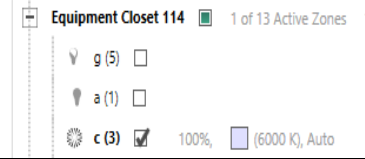
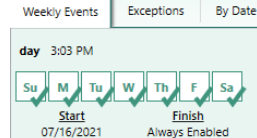
Now, from the below click on the applicable hyperlink (i) under the particular [Mode](#) of Operation (Lutron, CSI, or combined) and (ii) under the specific Lutron User Interface [Type](#) desired.

Table 1

Type	Description	Image	Mode A (LUTRON)	Mode B (CSI)	Mode C (HYBRID)				
LISTENING TO LUTRON BUTTON PRESSES (real and/or phantom)									
UI-1	Keypads (SeeTouch, Palladium and Hybrid) but not Dimmers or Switches		M-A	M-B1	M-C1				
UI-2	Pico and Visor Remotes		M-A	M-B1	M-C1				
UI-6a	Lutron APP mirroring visual representations of the above UI-1 and UI-2 devices (for Ketra UI see T-6b below)		M-A	M-B1	M-C1				
TRACKING EXISTING Lutron Loads (real or phantom)									
UI-3	Dimmers and Switches		M-A	M-B2	M-C2				
UI-4	Occupancy triggers		M-A	M-B2	M-C2				
UI-5	Timeclock events		M-A	M-B2	M-C2				
UI-6b	Lutron App/ Ketra UI	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">CCT control</td> <td style="width: 50%; text-align: center;">Full color control</td> </tr> <tr> <td></td> <td></td> </tr> </table>	CCT control	Full color control			M-A	M-B2	M-C2
CCT control	Full color control								
									

MODE A Documentation (CSI not in the picture here)

Background: For this basic **MODE A** case, user interfaces should be linked and programmed according to Lutron documentation. For completeness, all user interfaces tested and supported and referenced within this manual are listed below. Refer to applicable User Interface Types below.


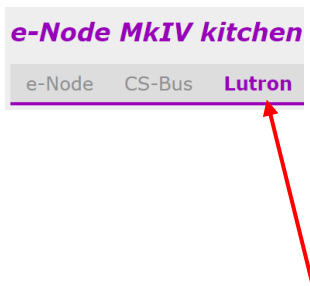
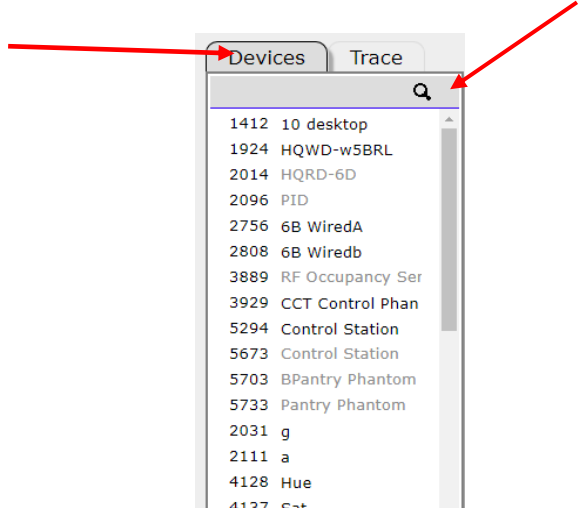
Mode	Overview	Detail
UI-1/ UI-2/ UI-3	Within Lutron Designer/Program/Devices , link and program button(s) to real or phantom load(s) with applicable settings	
UI-6a/ UI-6b	In general, no programming needed. Note: Lutron App auto-populates T-1 & T-2 devices as T-6a devices. In addition, the Lutron App populate T-6b devices. T-5 devices are populated under Schedule. Dimmers and Switches are not auto-populated per se, but their connected loads are auto-populated. Note: you may expose or hide devices within the Lutron App itself	
UI-4	Within Lutron Designer/Program/Occupancy , program available states to trigger real (or phantom load(s)) with applicable settings.	
UI-5	Within Lutron Designer/Program/Timeclocks , program available event(s) to trigger real (or phantom load(s)) with applicable settings.	

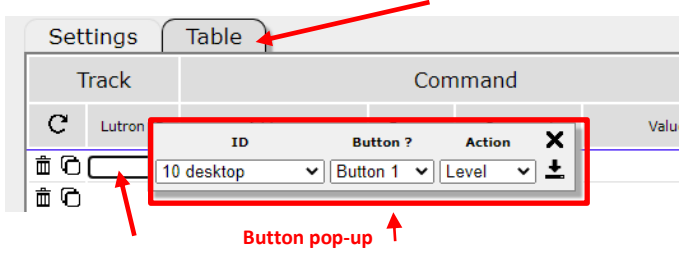
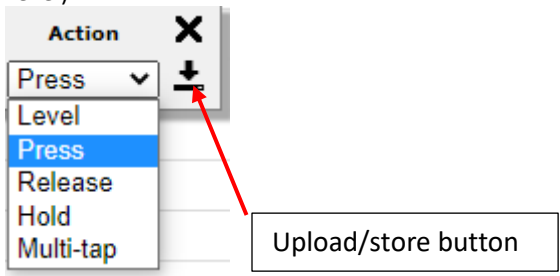
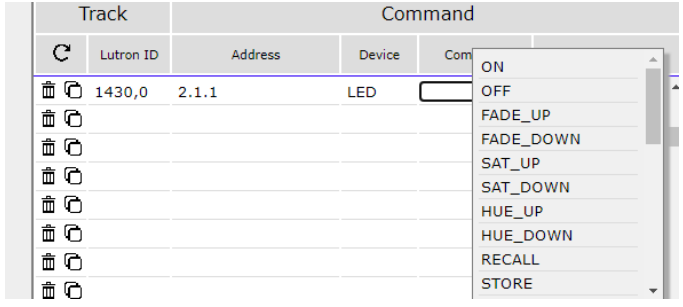
MODE B1 Documentation (CSI only in the picture here)

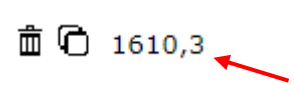
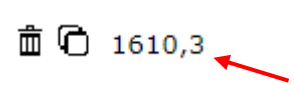
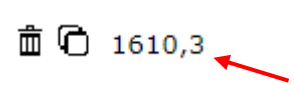
Background: For this basic **MODE B1** case, a **BUTTON** on specific real and phantom devices will be used to trigger an e-Node/4x00's connected load (LED or Motor).

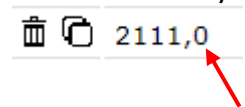
These directions are only applicable for [UI-1](#), [UI-2](#), and [UI-6a](#) user interfaces. If you have another UI Type, refer back to [Table](#) for additional guidance.

Step	Overview	Detail
B1-1	Determine if you have one or more existing buttons on <i>already activated</i> keypads that could be utilized to program and control Converging Systems loads.	If so, print out or view a Lutron Integration Report to determine these numbers/parameters*. If not, it is necessary to either free up keypad buttons or create phantom devices from which to control Converging Systems' operations.

		 <p style="text-align: center;">Tabletop Keypad</p> <p>*Or use our on-line look-up reference to determine button numbers for a wide variety of Lutron devices.</p> <p>For example, the top button on this keypad has the following data parameters associated with it (with our sample project—your assigned number for integration ID may vary). Using our on-line look-up, you can easily select button number when programming in Step B1-3</p> <table border="1" data-bbox="747 903 1380 1071"> <thead> <tr> <th>Integration ID</th> <th>Button #</th> <th>Operation*</th> </tr> </thead> <tbody> <tr> <td>1430 (or similar larger #)</td> <td>1 (top button)</td> <td>3 for press 4 for release 5 for Multi-Tap 6 for Hold</td> </tr> </tbody> </table> <p>*Only if programmed within Lutron Designer</p>	Integration ID	Button #	Operation*	1430 (or similar larger #)	1 (top button)	3 for press 4 for release 5 for Multi-Tap 6 for Hold
Integration ID	Button #	Operation*						
1430 (or similar larger #)	1 (top button)	3 for press 4 for release 5 for Multi-Tap 6 for Hold						
<p>B1-2</p>	<p>Proceed to the Lutron Tab within the e-Node Webpage and select “Devices”</p> 	<p>Wait for a few seconds or more for all available entries to auto-appear. This list will contain devices (real and phantom) and loads (real and phantom). You only have to concern yourself here with DEVICES where their names appearing will mirror their assigned names within Designer. You may have to select the spyglass to re-discover devices if are initially unavailable.</p> 						

<p>B1-3</p>	<p>After discovering Lutron DEVICES, select the “Table”</p>	<p>Find an unused programming line, and right click under Lutron ID to expose the Lutron Button Type pop-up.</p>  <p style="text-align: center;">Button pop-up ↑</p> <p>-ID. Select the applicable pre-populated ID (device) name to start your device programming.</p> <p>-Button. Next select the Button that you wish to program from the pulldown (you can select the ? for a full listing of button numbers).</p> <p>-Action. Select from one of the available choices (but not Level)</p>  <p style="text-align: center;">Upload/store button</p> <p>Note: you can only select the operation that was initially programmed within Designer.</p> <p>-Finally, hit the upload button when finished to proceed.</p>
<p>B1-4</p>	<p>You are now ready to select the (i) Address of the e-Node connected controller (“ZGN Address”), and its (ii) desired Action (“Command”) and “Value” (if applicable for that Command) which will trigger when the Lutron ID is sensed.</p>	<p>Fill in required entries to define what this (Lutron) button will do. Here, under Address you will find the Zone, Group, Node address (in this example 2.1.1), the CSI Device Type (in this case LED) and from the pulldown any supported Command selected.</p> 

		<p>Address -Enter your specific Zone, Group, Node address (here for our example we have entered 2.1.1)</p> <p>Device - Select LED or Motor as applicable from the pulldown</p> <p>Command - For the selection in the above step, select the applicable command that you wish this button to trigger (i.e., if you wanted the button to turn on the LED's pick ON).</p> <p>VALUE- For specific commands such as STORE, RECALL, CCT, HSV, HUE, SAT, SET, R*, G*, B*, W*, RGB*, RGBW*, you should enter the value as appropriate. Here is an example of possible values:</p> <table border="1" data-bbox="747 546 1412 1885"> <thead> <tr> <th>Command</th> <th>Description of possible values</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>STORE, RECALL</td> <td>Value from 1~24</td> <td>1 (is the 1st storage location)</td> </tr> <tr> <td>CCT.SET¹</td> <td>CCT Values from 1700K ~ 7000K Set (intensity) Values from 0 to 240</td> <td>2700 is for a CCT of 2700K (no K to be entered in value)</td> </tr> <tr> <td>HSV</td> <td>h.s.v (value for each from 0 ~240)</td> <td>0.240.240 Is Red, full SAT, and full brightness</td> </tr> <tr> <td>HUE</td> <td>H (values from 0~240)</td> <td>80 is green 160 is blue 0 or 240 is red</td> </tr> <tr> <td>SAT</td> <td>S (values from 0 ~240)</td> <td>240 is full saturation-that means no white 0 is no saturation which means the color has been tempered with White</td> </tr> <tr> <td>SET (Use Case #1)</td> <td>V (value from 0 ~240) "Set,v" is our word for brightness level. Used within the Lutron table to set a particular value where there is not a",0" in the Lutron Device ID.)  </td> <td>0 is off 120 is half brightness 240 is full on (For Use Case #1, a Value must be provided)</td> </tr> <tr> <td>SET (Use Case #2)</td> <td>(no value provided-see Step B2-G3) "Set" (alone) here refers to automatic tracking (of a Lutron load). Used within the Lutron table for any entry where tracking</td> <td>No value entered here (in Use Case #2)</td> </tr> </tbody> </table>	Command	Description of possible values	Example	STORE, RECALL	Value from 1~24	1 (is the 1 st storage location)	CCT.SET ¹	CCT Values from 1700K ~ 7000K Set (intensity) Values from 0 to 240	2700 is for a CCT of 2700K (no K to be entered in value)	HSV	h.s.v (value for each from 0 ~240)	0.240.240 Is Red, full SAT, and full brightness	HUE	H (values from 0~240)	80 is green 160 is blue 0 or 240 is red	SAT	S (values from 0 ~240)	240 is full saturation-that means no white 0 is no saturation which means the color has been tempered with White	SET (Use Case #1)	V (value from 0 ~240) "Set,v" is our word for brightness level. Used within the Lutron table to set a particular value where there is not a",0" in the Lutron Device ID.) 	0 is off 120 is half brightness 240 is full on (For Use Case #1, a Value must be provided)	SET (Use Case #2)	(no value provided-see Step B2-G3) "Set" (alone) here refers to automatic tracking (of a Lutron load). Used within the Lutron table for any entry where tracking	No value entered here (in Use Case #2)
Command	Description of possible values	Example																								
STORE, RECALL	Value from 1~24	1 (is the 1 st storage location)																								
CCT.SET ¹	CCT Values from 1700K ~ 7000K Set (intensity) Values from 0 to 240	2700 is for a CCT of 2700K (no K to be entered in value)																								
HSV	h.s.v (value for each from 0 ~240)	0.240.240 Is Red, full SAT, and full brightness																								
HUE	H (values from 0~240)	80 is green 160 is blue 0 or 240 is red																								
SAT	S (values from 0 ~240)	240 is full saturation-that means no white 0 is no saturation which means the color has been tempered with White																								
SET (Use Case #1)	V (value from 0 ~240) "Set,v" is our word for brightness level. Used within the Lutron table to set a particular value where there is not a",0" in the Lutron Device ID.) 	0 is off 120 is half brightness 240 is full on (For Use Case #1, a Value must be provided)																								
SET (Use Case #2)	(no value provided-see Step B2-G3) "Set" (alone) here refers to automatic tracking (of a Lutron load). Used within the Lutron table for any entry where tracking	No value entered here (in Use Case #2)																								

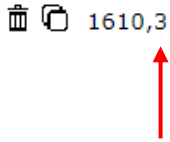

		<p>of a load device is desired and where there is a "0" in the Lutron Device ID.)</p> 	
R ²	R (values from 0 ~240)	0 is off 240 is full Red	
G ²	G (values from 0~240)	0 is off 240 is full Green	
B ²	B (values from 0~240)	0 is off 240 is full Blue	
RGB ²	r.g.b (values for each from 0 to 240)	240.0.0 Is full red	
RGBW	r.g.b.w (values for each from 0 to 240)	240.0.240.0 Is magenta (red and blue combined)	

¹We recommend against using these options except in special circumstances—HSV is a much better color model which permits accurate dimming.

²Recent advancements in the Lutron/CSI interface specifies Color Temperature as a combination of two variable CCT and Intensity. Therefore, a CCT slider by and of itself will not generate any output without a corresponding brightness component. Because phantom sliders can only be created singularly, concurrent phantom sliders are not possible. Therefore, use the Lutron Ketra UI for CCT instead which surfaces both a CCT and an Intensity control.

Note on using Dissolve Rates
You can also adjust the fade/dissolve rate for specific commands as shown below.

Track		Command				
🗑️	📄	Lutron ID	Address	Device	Command	Value
🗑️	📄	1610,3	2.1.1	LED	ON	:10
🗑️	📄	1610,3	2.1.1	LED	OFF	
🗑️	📄	2111,0	2.1.2	LED	SET	:60
🗑️	📄	2362,0	2.1.1	LED	SET	:2

		Sample commands which support dissolves	Syntax	Legend
		ON with dissolve rate	ON: x Manually enter as shown above with colon (or without the colon and the dissolve rate as per the next line)	X is seconds (in above example, ON will occur for ZGN address of 2.1.1 over a period of 10 seconds.
		OFF with dissolve rate	OFF Note: notice here <u>there is no dissolve rate or colon entered</u>	Since there is no dissolve rate (with colon), the default dissolve rate entered within e-Node Web page for “Dissolve 2” is utilized for OFF and On commands. Note: Here if Dissolve 2 was set to 9 seconds (within e-Node web setup), the OFF would occur in 9 seconds.
		SET command (with a non-“,0” entry in the Lutron ID address 	SET: x Manually enter as shown above with colon (or without the colon and the dissolve rate as per the next line)	If “:x” is specified the dissolve rate for operation for the ZGN load which is following a tracked load (i.e., Lutron Ketra load or other load) will occur in the number of seconds (“X”) specified here.
		SET command (with a ,0 in the Lutron ID “suffix” location 	SET Note: notice here <u>there is no dissolve rate or colon entered</u>	Since there is no dissolve rate (with colon), the default dissolve rate entered within e-Node Web page for “Dissolve 1” is utilized for the SET command. Note: Here if Dissolve 1 was set to 8 seconds (within e-Node web setup), the OFF would occur in 9 seconds.

That is, it, after you have selected the Command (and Value if required with Command), your programming for this button is complete. Now just continue onto an unused line for your next **DEVICE** programming step entry.

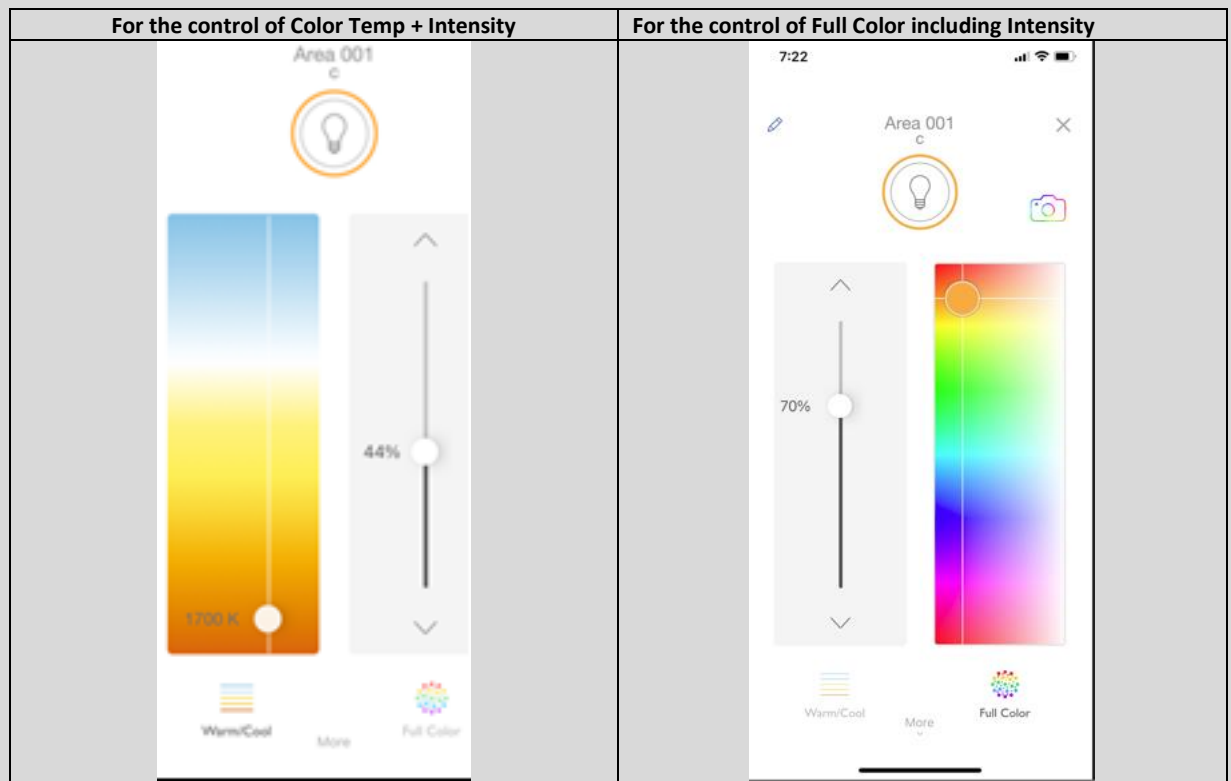
MODE B2 Documentation (CSI only in the picture here)

Background: For this more advanced **Mode B2** case, a **load** (real or [phantom](#)) linked to a real or phantom button press, sensor trigger, or Ketra UI panel selection (**but programmed within Lutron Designer for that linkage**) will be used to monitor and derive status from that load in order to mimic that load's output (where applicable) on an e-Node/4x00's connected load (LED or Motor).


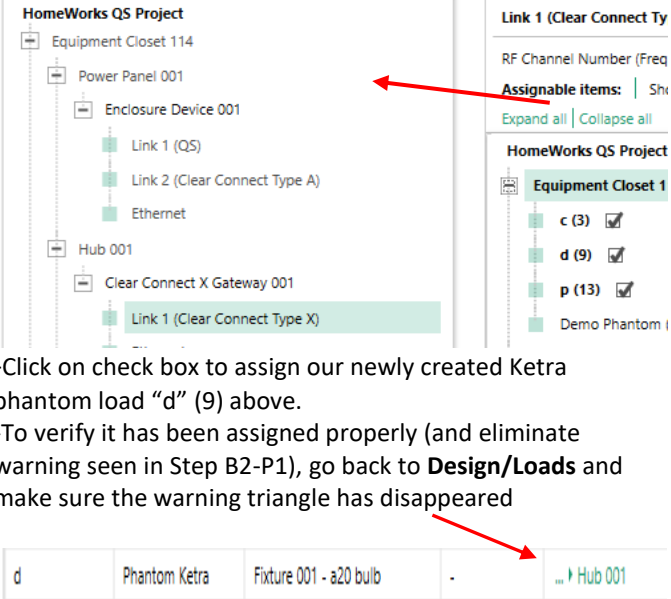

- These directions (2b-G1 onwards) are only applicable for [UI-3](#), [UI-4](#), [UI-5](#) user interfaces.
- In you desire to have a [UI-6b](#) user interfaces control an e-Node load, you will need to create a phantom Ketra load ([see below](#)).
- If you have another type of UI, refer back to [Table](#) for additional guidance.

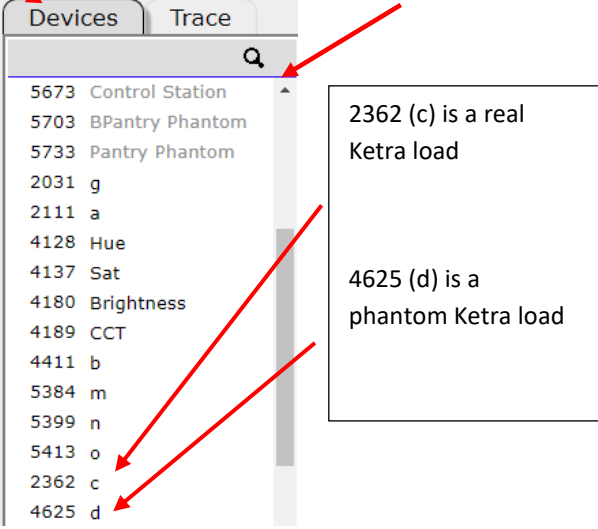

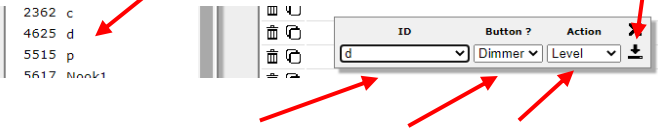

Type 6b- Phantom Load Note: In order for Mode B2/UI-6b User Interface (i) to be displayed on the Lutron APP and subsequently (ii) to be able to control a CSI lighting load, **a phantom Ketra load needs to be created within Lutron Designer**. This becomes the "load" that the [UI-6b](#) user interfaces will track. Proceed to [Step B2-P1](#) below first before proceeding to the general directions provided thereafter ([Step B2-G1](#)).

The phantom Ketra load will reveal itself within the Lutron App as shown below. For the control of Color Temp, the two controls include Color Temp and Intensity. For the control of Full Color, the three controls are Hue, Saturation and Brightness.



NOTE: If you have no need to control a CSI load similarly to how a Ketra load is controlled on the Lutron App, but would rather trigger a (i) specific color temperature + intensity or (ii) color level simply follow the steps to track any Lutron button on a UI and link that to a discrete command (see Steps [B1-1 -4](#) above).

Step	Overview	Detail
Creating a Phantom Ketra Load (for Type 6b operation)		
B2-P1	Within Lutron Designer/Design/loads create a phantom Ketra Load	-Create a load (as shown below) and name it appropriately 
B2-P2	Within Lutron Designer/Link assignment assign that phantom Ketra Load to an applicable Clear Connect Type X gateway	 <p>-Click on check box to assign our newly created Ketra phantom load “d” (9) above.</p> <p>-To verify it has been assigned properly (and eliminate warning seen in Step B2-P1), go back to Design/Loads and make sure the warning triangle has disappeared</p>
B2-P3	Upload change to Lutron processor through the Activate screen	<p>Click “Start Activation” to begin activating devices in the space</p> 
Directions for Linking Loads (real or phantom) with a Converging Systems load		
B2-G1	Proceed to the Lutron Tab within the e-Node Webpage and select “Devices”	<p>-Wait for a few seconds or more for all available entries to auto-appear (including any new Phantom loads created above).</p> <p>-This list will contain devices and loads (real and phantom). You only have to concern yourself here with LOADS where their names appearing will mirror their assigned names within Designer. Wait for a few seconds or more for all available entries to appear. You may have to select the spyglass to re-discover devices if are initially unavailable.</p>

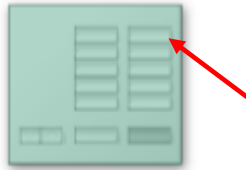
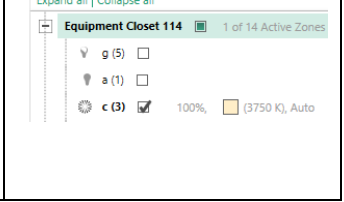
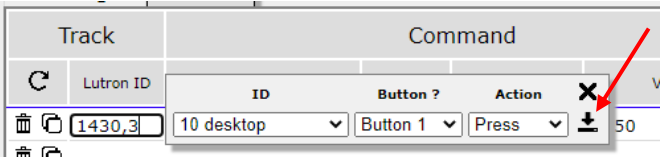

		
<p>B2-G2</p>	<p>Select Table and an unused row to perform your programming to monitor a Load.</p> 	<p>In this case since we are controlling only a CSI device (and not a Lutron Mode 1 fixture), we can use the phantom load created in Steps B2-P1/3 above. Here (in our example), the phantom Ketra load appears as “d.”</p>  <p>-ID. Select the applicable pre-populated ID name for your targeted LOAD to start your LOAD programming. -Button. Next select for the Button type DIMMER to monitor the variable output generated by Lutron for this load. -Action. Once DIMMER is selected, select LEVEL which is applicable choice here to complete this step.</p> <p>And finally hit the upload button when finished to proceed.</p>
<p>B2-G3</p>	<p>You are now ready to select the (i) (Z.G.N) Address of the e-Node connected controller (“ZGN Address”), and its (ii) desired Action (“Command”) and “Value” (if applicable for that Command) which will trigger when the Lutron ID is sensed.</p>	 <p>Fill in required entries to define how this load monitoring will operate.</p> <p>Address -Enter your specific Zone, Group, Node address (here for our example we have entered 2.1.1) Device- Select LED or Motor as applicable from the pulldown Command-For the selection in the above step, enter SET (don’t be confused with all of the other choices—SET is the wildcard here that monitors everything that you will need). Address – No Value is needed here since the “0” entered under Lutron will be tracking a variable string.</p>

		That is, it, after you have completed the above for a single line, your programming for this LOAD is complete. Now just continue on an unused line for your next LOAD programming entry.
--	--	---

MODE C1 Documentation (Hybrid Lutron & CSI)

Background: For this hybrid **MODE C1** case, a **BUTTON** on specific real and phantom devices will be used to trigger an e-Node/4x00's connected load (LED or Motor).

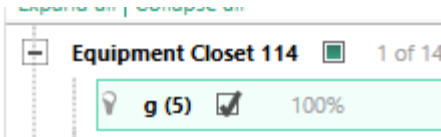
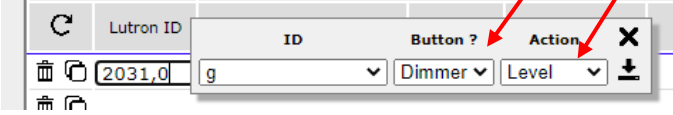


These directions are only applicable for [UI-1](#), [UI-2](#), and [UI-6a](#) user interfaces. If you have another type refer back to [Table](#) for additional guidance.

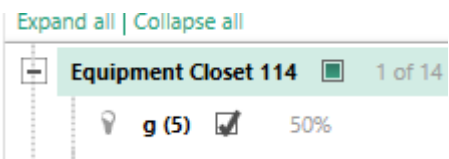
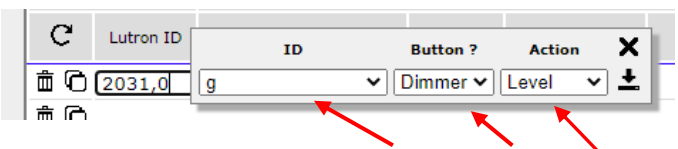

Step	Overview	Detail
C1-1	-Make sure that Lutron linkages have been made as per Mode A and -CSI linkages have been made as per Mode B1	Refer to the following steps for relevant examples.
C1 Ex 1	Example 1. Here, Button 1 on a 10-button desktop will control a Ketra bulb at 3750K @ 100% brightness as well as CSI load to the same CCT and brightness	-Set Lutron programming within Designer for "c" load to 3750K @ 100% brightness   -Set SLIM Table programming (button 1 on 10 button keypad selected)  -Set SLIM Table programming for above button to control CSI device with address of 2.1.1 and CCT of 3750 

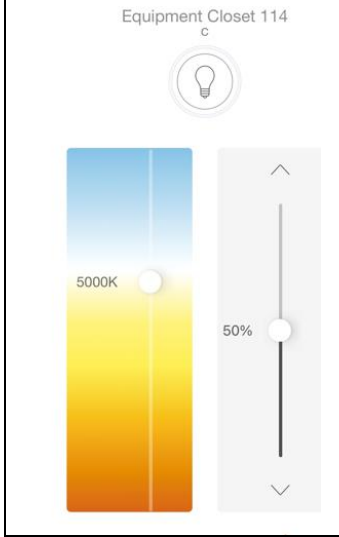
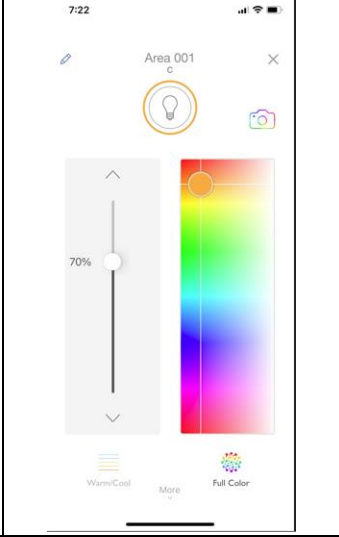
MODE C2 Documentation

Background: For this more advanced **Mode C2** case, a **load** linked to *a real or phantom* button press, sensor trigger, or Ketra UI panel selection (*but programmed within Lutron Designer for that linkage*) will be used to monitor and derive status from that load in order to mimic that output (where applicable) on an e-Node/4x00's connected load (LED or Motor).

These directions are only applicable for [UI-3](#), [UI-4](#), [UI-5](#), and [UI-6b](#) user interfaces. If you have another type refer back to [Table](#) for additional guidance.

Step	Overview	Detail
C2-1	<p>-Make sure that Lutron loads have been established and programmed as per Mode 1</p> <p>and</p> <p>-CSI linkages (to those loads) have been made as per Mode 2b</p>	<p>Refer to the following steps for relevant examples.</p>
C2 Ex.1	<p>Example 1. Create a scenario where an Lutron occupancy sensor will control a standard incandescent bulb (controlled by Lutron) to 100% (for occupied state) as well as a monochrome CSI load to the same 100% brightness.</p>	<p>- Set Lutron programming within Designer for "g" load to 100% brightness</p>  <p>- Set SLIM Table programming for "g" load to track load and accept the defaults of "Dimmer" and "Level."</p>  <p>- Set SLIM Table programming for above button to control CSI device with address of 2.1.1 and brightness tracking the "master" Lutron load by setting to SET (see below) without a value</p>  <p>Note: If you wish the tracking to fade at a rate that you select (rather than the default set within the e-Node setup page), simply end the fade rate with a colon in seconds.</p>  <p>Here, 60 seconds has been selected as the fade rate.</p>

<p>C2 Ex.2</p>	<p>Example 2. Create a scenario where an Lutron occupancy sensor will control a standard incandescent bulb (controlled by Lutron) to 50% (for occupied state) as well as a monochrome CSI load to the same 50% brightness.</p> <p>Note: In this load tracking scenario, the CSI load can only track the same brightness level of the “master” (Lutron-load). It is impossible for the CSI load to be set to a different brightness level</p>	<p>- Set Lutron programming within Designer for “g” load to 50% brightness</p>  <p>- Set SLIM Table programming for “g” load to track load and accept the defaults of “Dimmer” and “Level.”</p>  <p>-Set SLIM Table programming for above button to control CSI device with address of 2.1.1 and brightness tracking the “master” Lutron load by setting to SET (see below) without a value.</p> 		
<p>C2- Ex.3</p>	<p>Example 3. Create a scenario where a Ketra UI will control a Ketra bulb at 5000K @50% brightness as well a CSI full color load to 5000K but at 60% brightness.</p>	<p>-Ketra User Interface on Lutron App will auto-appear without any additional programming</p> <table border="1" data-bbox="747 1522 1421 1585"> <tr> <td>For the control of Color Temp + Intensity</td> <td>For the control of Full Color including Intensity</td> </tr> </table>	For the control of Color Temp + Intensity	For the control of Full Color including Intensity
For the control of Color Temp + Intensity	For the control of Full Color including Intensity			

Note: Simple move CCT to 5000K on the Lutron APP and set brightness to 50%

-Set SLIM Table programming to track for Ketra bulb (Ketra load is "c" here-2362)

	Lutron ID	ID	Button ?	Action	
	2031,0	g	Dimmer	Level	

-Set SLIM Table programming for above button to control CSI device with address of 2.1.1 with automatic tracking and a 10 second dissolve rate

No entry here

	2031.0	2.1.1	LED	SET		:10
--	--------	-------	-----	-----	--	-----

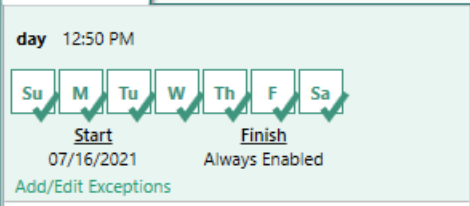
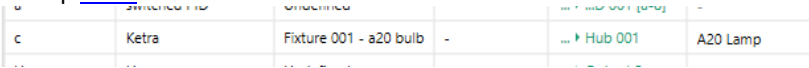

Appendix 1

Advanced Features

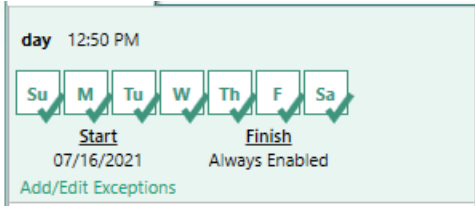
1. Ability to tie a Lutron timeclock event to a particular action, Recall setting, or Effect


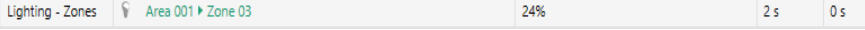
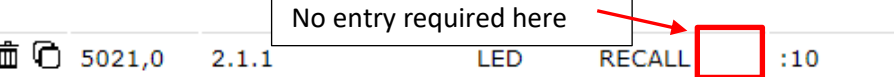
Background. As described elsewhere in this document, the Lutron LEAP protocol does not permit tracking of Occupancy or Timeclock Events. However, if the timeclock event is linked to a phantom load, the SLIM logic can track that load. Here are some examples which may be useful.

Example 1a. Have Timeclock event trigger a Ketra phantom load so that a full color CSI device can track that pre-programmed event from within Designer. For instance, a timeclock event might be set up to trigger a warm white output from a CSI controlled device.

Step	Overview	Detail
A1a-1	Set-up time clock event and name it appropriately	Under Program/Timeclocks, set up a timeclock event to trigger the particular event. 
A1a-2	Set up phantom Ketra load	See step B2-PI 1 for more detail. 
A1a-3	Enter within e-Node web page the tracking key (SET) for the desired ZGN device	See step c2-1 for more detail.  Here a phantom device may be set to 3000K by the installer to be activated by a timeclock event. Upon the occurrence of that timeclock event, a device with ZGN of 2.1.1. will output 3000K with a 10 second fade rate.

Example 1b. Have Timeclock event trigger a 0-10v DPM phantom load (set to 0-10v) so that the CSI device can receive variable output than can be mapped to particular operations. For instance, a timeclock event might be setup to recall at previously stored RECALL setting stored within the e-Node/ILC-xxx system.

Step	Overview	Detail
A1b-1	Set-up time clock event and name it appropriately	Under Program/Timeclocks, set up a timeclock event to trigger the particular event. 

A1b-2	Set up phantom DPM module set to 0-10v LED output	<p>Create a phantom DPM module and set to 0-10v LED so that variable output can be achieved.</p>  <p>Set a particular value between 1% and 24% for output device. An entry of 1% maps to a “1” for the Lutron Table, an entry of 24% maps to a “24 for the Lutron Table.</p>
A1b-3	Enter within e-Node webpage the RECALL ,x command to trigger the specific Stored preset	<p>For the phantom device created in the above step, set the value to 24% representing the transmitted parameter (24) to be read by the SLIM logic.</p>  <p>Here a phantom DPM module set to 0-10v sends a value which is mapped to specific stored Preset (in this 24% maps to Recall ,24). Upon the occurrence of that timeclock event, a device with ZGN of 2.1.1. will generate the stored RGBW or CCT+INT value store within the ZGN device.</p>  <p>Note: because of the “O” in the Lutron Device ID tracking location, the variable output will be transferred automatically on a one-to-one basis (i.e. ,1% equals Recall 1, 24% equals Recall 24. Therefore, there is no need to enter a value after recall except for any required fade rate in seconds after the colon.</p>