

Lutron QSX/Athena - Utilizing Lutron Sequences to Control Converging Systems' e-Node Operations

Sequences utilized to control Motor and Lighting loads



Background/Feature Set

Within Lutron Designer, there is a function called Sequences that allows a single button to trigger to perform multiple operations. There are two types of Sequences.

➤ **Manual Sequence Operation.**

Overview.

This programmable operation enables a single button (or trigger) to be customized such that a different *manual* operation results from each successive press of a button/or trigger. As an example, the first button press (i.e., "Sequence 1") might turn a light to a dealer specified HSV color or CCT level (or a fan to a specified fan speed), and each successive button press would turn that same light to a different (dealer specified) HSV color or CCT + Intensity level (or a fan to different dealer selected fan speed). The second level would be programmed by the dealer as "Sequence 2," and if additional states were required for the Sequence, those states would be programmed as Sequence 3, Sequence 4, etc. as needed. And if desired, a final button press/trigger (i.e., Sequence n) could be programmed to turn the light (or fan) to OFF.

Advantage

Traditionally, where space and budget are not constrained, multiple keypads could be dedicated to having each button control a color or fan speed. But in certain circumstances where only a single Lutron keypad button is available to control multiple functions, this is a highly recommended option. This is very practical when wall space available for additional keypads is limited or budgets do not allow for multiple/ new keypads to be installed to control new lights (or fans).



➤ **Automatic Sequence Operation.**

Overview.

This programmable operation enables an *automatic* sequence to be programmed, such that after an initial single button/or trigger is invoked, successive operations or states will automatically occur based on programmed timing parameters. As an example, the first button press/or trigger (i.e., “Sequence 1”) might turn a light to a dealer specified HSV color or CCT level (or a fan to a specified fan speed), and after a certain predetermined period of time, that same light would automatically shift to a different (dealer specified) HSV color or CCT + Intensity level (or a fan to different dealer selected fan speed). The second state/level would be programmed by the dealer as Sequence 2, and if additional states were required after the 2nd Sequence, those states would be programmed as Sequence 3, Sequence 4, etc. as needed. And if programmed, a final button press/trigger (i.e., Sequence n) could be programmed to turn the light (or fan) to OFF.

Advantage

Traditionally, automatic sequences are desired when human intervention is neither desired nor possible. A time clock event could activate a Sequence which would adjust lights to certain levels during the course of the day (or night), and/or adjust fan speeds to certain level as well during the course of the day or night.

This Tech Note will address how to implement Lutron Sequences for the control of Luminaires and Motors/Fans. Follow the steps below for detailed information on how to implement this Lutron feature for the control of devices supported by the Converging Systems e-Node 4000/4100 gateways.

Lutron Load Creation

Phantom Load Creation for Fan/Motors and Fan Monochrome Lights

Background: For the support of each variable speed fan/motor, a **Phantom Load** will need to be created for Forward direction (Summer) which will allow also for precise speed control. And for each variable speed fan/motor with a reverse speed, another **Phantom Load** will need to be created for Reverse direction (Winter) which will also allow for precise speed control.

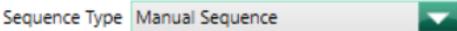
Similarly, a third **Phantom load** will need to be created for the control of any integrated LED luminaire within the Fan.

See these directions

https://www.convergingsystems.com/bin/doc/technotes/LutronLeap_modernformfans.pdf

for the setup of these Phantom Loads.

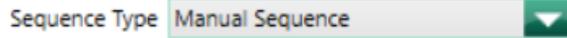
Lutron Sequence Creation

Lutron Programming—Manual Sequence		
<p>Background: For this basic example, a manual sequence will be created and will be attached to a button on a 10-button desktop control. All of these steps are performed with Lutron Designer.</p>		
Step	Overview	Detail
LS-1	Program a new Sequence Type within Lutron Designer.	<p>-Go to Program and from the pulldown select sequences</p>  <p>-Select add Sequence</p>  <p>-Name/Edit your new Sequence. For Motors we are going to add a Fan Speed Forward, and a Fan Speed Reverse. For LED luminaires, popular Sequences would include an LED Monochrome Cycle Sequence (monochrome light) or a Full Color/CCT Sequence.</p>  <p>-Since we are adding a Manual Sequence with this example, select for Sequence Type – Manual Sequence</p>  <p>-Select the real or phantom load type that you have already created for the load that you wish to control.</p> <p>-See below for directions for your type of load.</p> <ul style="list-style-type: none"> ✓ LS-2a for a Monochrome Luminaire Load often used within a fan, or ✓ LS-2b for a multiple speed/forward/reverse Fan load, or ✓ LS-2c for Full Color/CCT Luminaire.
LS-2a	Start programming Sequence Steps for the control of a (monochrome) LED luminaire	<p>Note: the light load must already be programmed within Lutron Designer in order to access the control for that load here. Refer to this link for the proper selection and/or creation of real or phantom loads for this operation.</p> <p>-Select the previously created Sequence</p> 

LS-2b

Start programming Sequence Steps for the control of a Fan or Projection Screen with forward and reverse (or up or down) functionality and multiple motor speeds available.

-Select Manual Sequence once again.



-Select for Assignable Items- Lighting Zones



-Under Sequence Steps, add the number of Sequence Steps that are desired by selecting the + mark for each new Sequence to be added. For this example, we will create a RED/WHITE/BUE sequence with a final OFF sequence. **Sequence 1** will be RED, Sequence 2 will be WHITE, **Sequence 3** will be BLUE, and **Sequence 4** will be OFF.



-Now program the intensity for each sequential Sequence (step).

Sequence	Customization
1	MF Light (16) Settings 25% Fade 2 s Delay 0 s
2	MF Light (16) Settings 50% Fade 2 s Delay 0 s
3	MF Light (16) Settings 100% Fade 2 s Delay 0 s
4	MF Light (16) Settings 100% Fade 2 s Delay 0 s
5	MF Light (16) Settings 0% Fade 2 s Delay 0 s

-Proceed to the [next step](#) if you wish to create a Sequence for fans/motors, otherwise proceed to Step [LS-3](#)

Note: One dimmer load must already be programmed within Lutron Designer for each motor direction to be controlled. Refer to this link for the proper selection and/or creation of real or phantom loads for this operation.



-Select the previously created Sequence (forward direction)



-Select Manual Sequence once again.



-Select for Assignable Items- Lighting Zones



-Under Sequence Steps, add the number of Sequence Steps that are desired by selecting the + mark for each new Sequence that is desired. For this example, we will create a 25%/50%/75%/100% sequence with a final OFF parameter. Sequence 1 will be 25%, Sequence 2 will be 50%, Sequence 3 will be 75%, Sequence 4 will be 100%, and Sequence 5 will be OFF.



-Now program the motor/fan direction and speed for each sequential Sequence (step). Typically, with a fan that has forward and reverse

directions you would create a duplicate of the first Sequence (of Summer) for the alternate direction of Winter (therefore a second sequence). See below for these two sequences that are designed to control a variable speed fan.

Sequence for UP/FWD/Summer (one direction of fan or motor)

Sequence	Customization
1	MF Summer (17) Settings 25% Fade 2 s Delay 0 s
2	MF Summer (17) Settings 50% Fade 2 s Delay 0 s
3	MF Summer (17) Settings 75% Fade 2 s Delay 0 s
4	MF Summer (17) Settings 100% Fade 2 s Delay 0 s
5	MF Summer (17) Settings 0% Fade 2 s Delay 0 s

Sequence for DOWN/REV/Winter (for the other direction of fan or motor)

Sequence	Customization
1	MF Winter (18) Settings 25% Fade 2 s Delay 0 s
2	MF Winter (18) Settings 50% Fade 2 s Delay 0 s
3	MF Winter (18) Settings 75% Fade 2 s Delay 0 s
4	MF Winter (18) Settings 100% Fade 2 s Delay 0 s
5	MF Winter (18) Settings 0% Fade 2 s Delay 0 s

-Proceed to [LS-3](#) to continue.

LS-2c Start programming Sequence Steps for the control of a Full Color/Full CCT LED load

Note: the light load must already be programmed within Lutron Designer in order to access the control for that load here. Refer to the [Lutron Quick Start Guide](#) for the proper selection and/or creation of real or phantom loads for this operation.

-Select the previously created Sequence



-Select for Assignable Items- Lighting Zones

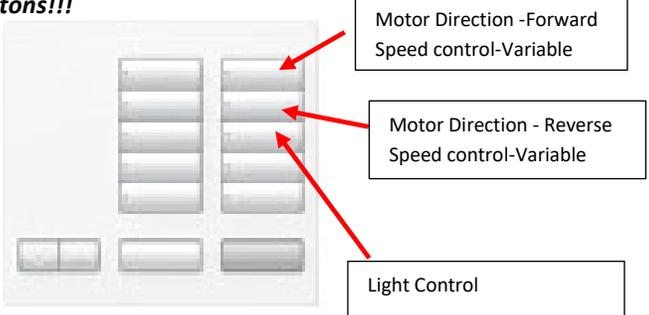
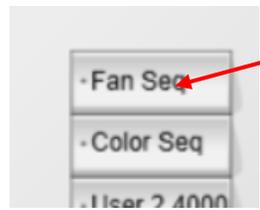


-Under Sequence Steps, select the + mark and add the number of Sequence Steps that are desired. For this example, we will create a RED/WHITE/BLEU sequence with a final OFF parameter. Sequence 1 will be RED, Sequence 2 will be WHITE, Sequence 3 will be BLUE, and Sequence 4 will be OFF.



-Now program the color level/intensity for each sequential Sequence (step).

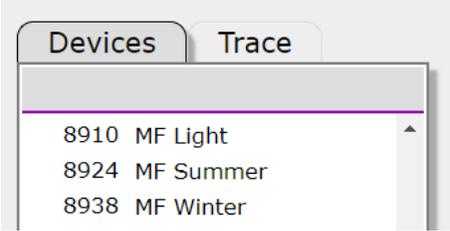
Sequence	Customization
1	Real Ketra (9) 100%, (0.7275, 0.2713), Auto
2	Real Ketra (9) 100%, (5030 K), Auto

		<table border="1" style="width: 100%;"> <tr> <td style="width: 10%;">3</td> <td style="width: 90%;">Real Ketra (9) 100%, (0.049, 0.0651), Auto</td> </tr> <tr> <td>4</td> <td>Real Ketra (9) 0%</td> </tr> </table> <p>-Proceed to Step LS-3 to continue.</p>	3	Real Ketra (9) 100%, (0.049, 0.0651), Auto	4	Real Ketra (9) 0%
3	Real Ketra (9) 100%, (0.049, 0.0651), Auto					
4	Real Ketra (9) 0%					
<p>LS-3</p>	<p>Link Sequence to applicable button press on a Lutron User Interface.</p>	<p>For the purposes of this example, we are going to link the operation of a few buttons on a 10-button Lutron keypad to control Fan speed (per direction--forward and reverse) as well as LEDS settings with just three buttons!!!</p>  <p style="text-align: center;">Tabletop Keypad</p> <p>-Within Lutron Designer, go to Program Devices and select the applicable Lutron Device to control these functions (i.e., in our case 10-button keypad).</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Device Location:</p> <p>Area 001 Demo Box ▶ 10 desktop</p> </div> <p>-Select the applicable button that you will be linking to previously created Sequence.</p>  <p>-Select Button Type, typically Single Action.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Button Type: Single Action</p> </div> <p>-For Assignable Items, Select Sequences.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Assignable Items Show All Sequences</p> </div> <p>-Select Manual Sequence and expand window with the +</p> <p>-Select the applicable Sequence to link to the targeted button. Here we are linking Fan Speed Forward to the first button.</p>				

		 <p>-Continue linking other Sequences as appropriate to other target buttons. -Upload the Lutron program to the Lutron processor. -Proceed to Converging Systems e-Node Programming below.</p>
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Converging Systems Lutron Tab Programming

Background: The e-Node 4000/4100 can track phantom button presses that have been set up for Sequences. Follow these directions.

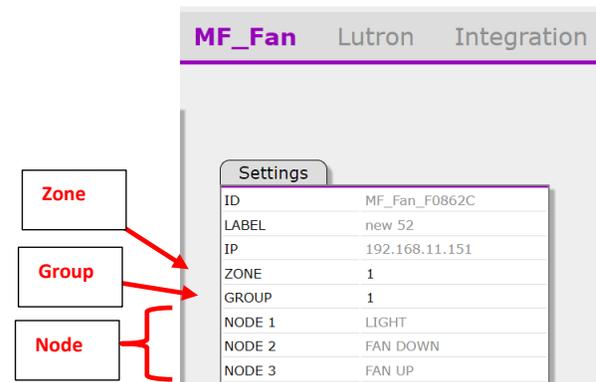
Step	Overview	Detail
CP-1	Make sure that Lutron programming has been made as per the previous section .	Refer to the steps above for more information.
CP-2	Make sure the e-Node 4x00 is connected to the Lutron systems	Refer to Lutron Quick Start Guide for more information on establishing the connection. Once the e-Node shows Connected to the Lutron LEAP processor, proceed to the next step .
CP-3	Fan Speed Forward Linkage. Here, we are going to monitor the phantom load for Fan Forward.	<p>e-Node MkIV</p> <p>ABiCUS DMX MF_Fan Lutron Integration</p> <p>-Within the e-Node/Lutron Tab, go to the Devices window and verify that all of the phantom loads generate in the above section are discovered (that is their name appears under Devices)</p>  <p>Pro Tip! This means that everything so far is working and a proper linkage between the phantom load and a Converging Systems object (lighting for motor operation) can be made. You can now proceed to the next instruction to make the linkage.'</p> <p>-Open the Lutron Table window and create a new data table line entry (anywhere there is an empty line).</p>  <p>Under Lutron ID scroll down and find the name for the Motor/Fan Summer.</p> 

- Accept the default of **Dimmer** and Action of **Level** hit the upload



arrow to accept this entry.

-Continuing through the rest of the same data table line, enter the **Zone/Group/Node** address for the target device (that will be controlled from the e-Node). For Fans, you will find the **Zone/Group/Node** address under the MF_Fan tab. For LED (PURE Mode) or DMX Devices, you will find those ZGN address under the CS-BUS tab or the DMX tab (if present).



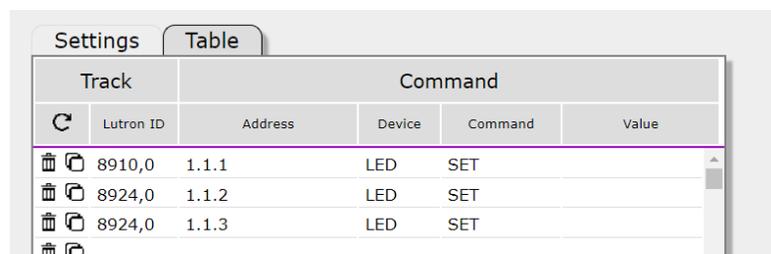
The screenshot shows the 'MF_Fan' settings page. A table lists various parameters. Red boxes labeled 'Zone', 'Group', and 'Node' have arrows pointing to the corresponding rows in the table.

Settings	
ID	MF_Fan_F0862C
LABEL	new 52
IP	192.168.11.151
ZONE	1
GROUP	1
NODE 1	LIGHT
NODE 2	FAN DOWN
NODE 3	FAN UP

Example.

- For this **Fan DOWN** (forward), pick **Zone/Group/Node** of **1.1.2**
- For **Fan UP** (reverse), pick **Zone/Group/Node** of **1.1.3**, and
- For **Light**, pick **Zone/Group/Node** of **1.1.1**

-To complete the **Data Table** entry (for each line), select **LED** (*and not motor for this example for we are using the syntax of lighting devices for Lutron only*) and for **Variable** select **SET** (without any value) to track a variable load.



The screenshot shows the 'Table' settings page with a data table. The table has columns for 'Track', 'Lutron ID', 'Address', 'Device', 'Command', and 'Value'.

Track	Command				
↻	Lutron ID	Address	Device	Command	Value
🗑️ 📄	8910,0	1.1.1	LED	SET	
🗑️ 📄	8924,0	1.1.2	LED	SET	
🗑️ 📄	8924,0	1.1.3	LED	SET	

-You have now successfully, programmed a motor and or lighting device to respond to Lutron Sequence functions. Congratulations