

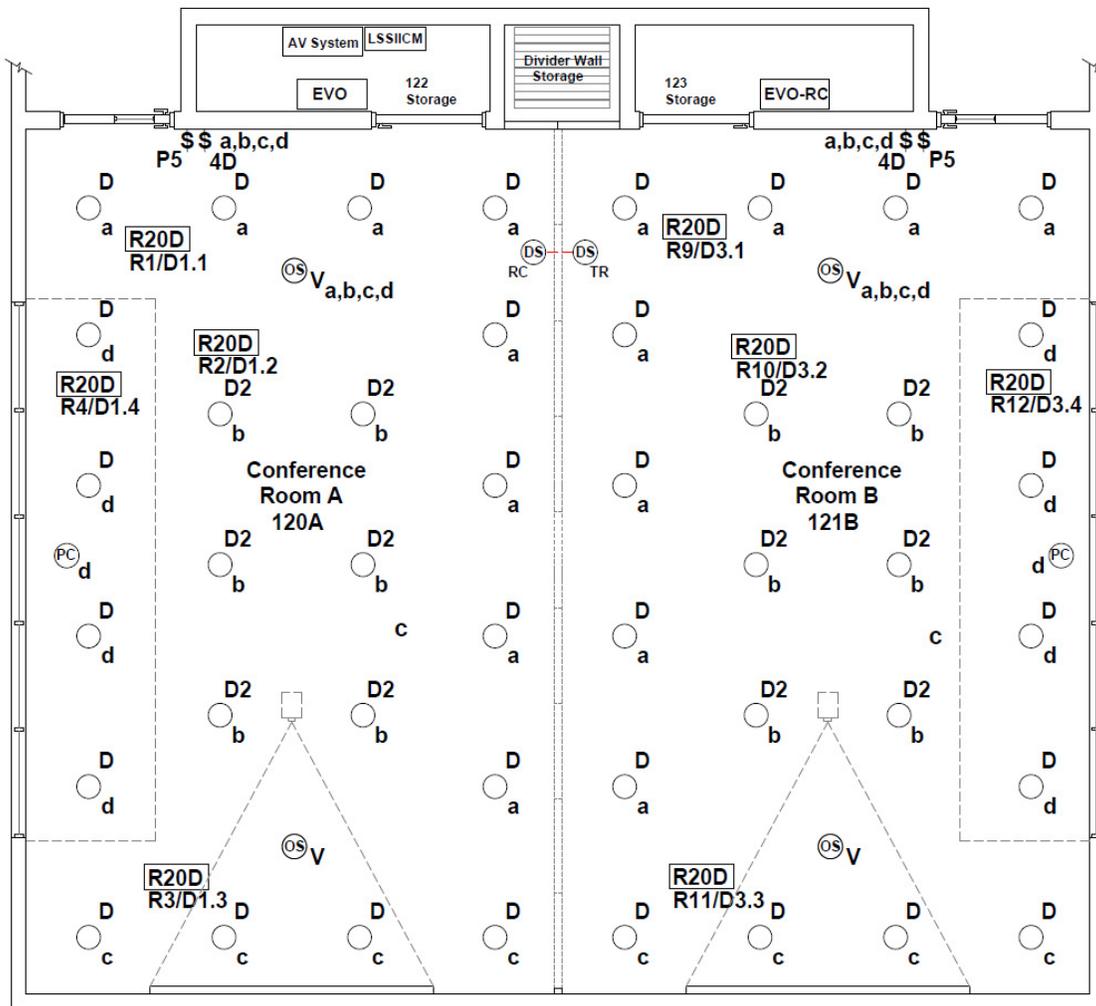
# Room Combine using LL-EVO and Echo Control Technical Bulletin

This document details a control operation for two conference rooms that allows for automatic room combine operation and AV system interfacing.

**Overview:**

These two-conference rooms have a partition wall between allowing the rooms to be combined into one larger room. An IR type optical sensor is used to detect when the partition wall is out dividing the rooms or retracted into its storage space combining the rooms. When this is done, the switch stations in each room become combined and operate both rooms. ILC uses an operation called Echo Device to create virtual switch stations that echo the buttons of another station to control a different space. This must be done within one LightLEEDer panel and cannot be done over two or more panels or from LightSync stations in the LightLEEDer panel network. This example system is configured with Two EVO relay panels. The first LL-EVO panel and the next room is provided with a LL-EVO-RC room controller as an extension of the first panels inputs and outputs.

## Conference Room Control and Room Combine Plan Layout



## Plan Notes

	Type:	Fixture:	Zone:	Dimming:	Qt:	Equipment:	Notes:
	D	6" LED Flood	a	0-10VDC	1	LL-EVO panel	Room 120-A
	D2	6" LED Spot	b	0-10VDC	1	LL-EVO-RC panel	Room 121-B
	D	6" LED Flood	c	0-10VDC	8	R20D relay	Load Relays w/0-10V Dimming
	D	6" LED Flood	d	0-10VDC (PC Daylight zone)	2	LS-G2-6-MZD4	Entry location Multi-Zone Dimmer
					2	LS-G2-5	Entry location 5 Preset station
\$	Button:	Preset:	Zone:	Dimming:	1	Partition TR/RC	IR room partition beam sensor set
P5	1	Entry Level	a,b,c,d	40%	4	Occupancy sensor	Vacancy operation Duel tech 10,000 sf.
	2	A/V	a,b,c,d	20%	1	LSSIICM	RS-232 Interface for AV system (Presets)
	3	Presentation	a,b,c,d	60%			
	4	Full	a,b,c,d	100%			
	5	Off	a,b,c,d	0%			
\$	Button:	On/Off Dimmer:	Zone:				
a,b,c,d	1	On/Off - Select	a Room Ltg				
	2	On/Off - Select	b Center Ltg				
	3	On/Off - Select	c Monitor Wall				
	4	On/Off - Select	d Window Ltg				
	5	Ramp UP	a,b,c,d / Select				
	6	Ramp Down	a,b,c,d / Select				

	LSSIICM AV	Input:	Preset 120A :	Zone:	Dimming:
		1	Entry Level	a,b,c,d	40%
		2	A/V	a,b,c,d	20%
		3	Presentation	a,b,c,d	60%
		4	Full	a,b,c,d	100%
		5	Off	a,b,c,d	0%
		Input:	Preset 121B:	Zone:	Dimming:
		7	Entry Level	a,b,c,d	40%
		8	A/V	a,b,c,d	20%
		9	Presentation	a,b,c,d	60%
		10	Full	a,b,c,d	100%
		11	Off	a,b,c,d	0%

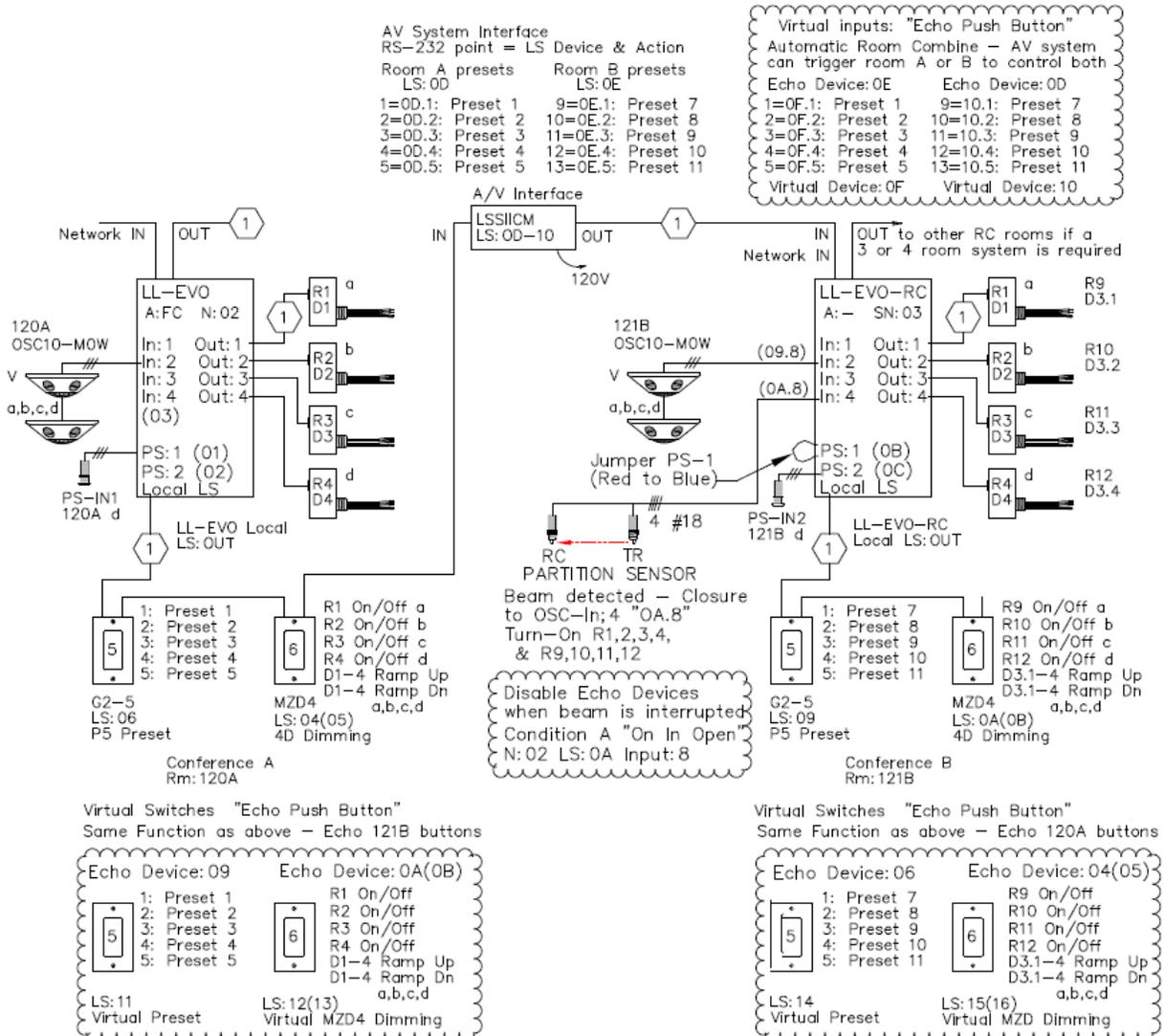
  

Dimming operation to be press and hold for all 4 zones or selected zones (On/Off held and flashing)

When the rooms are combined by opening the wall divider the 5-Button Preset and MZD 4-zone dimmer stations operate together as an Echo function

When the rooms are combined by opening the wall divider Inputs 1-5 & 7-11 operate together as an Echo function

## ILC EVO Riser Diagram



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TB0610 Rev A

## Programming the LightSync Echo switch station

The LightSync Echo Device operation provides a method of creating a virtual switch. This station exists programming only and typically is configured to mirror an existing switch stations control and Echo the push buttons of a different station. The Echo Device can be programmed as an “Echo Push Button”, “Echo Keyswitch”, or “Echo 4-input”.

In the example above:

Virtual station LS:11 is providing the same control as LS:06, but is Echoing the button push of LS:09

Virtual station LS:12 is providing the same control as LS:04, but is Echoing the button push of LS:0A

Virtual station LS:13 is providing the same control as LS:05, but is Echoing the button push of LS:0B

Virtual station LS:14 is providing the same control as LS:09, but is Echoing the button push of LS:06

Virtual station LS:15 is providing the same control as LS:0A but is Echoing the button push of LS:04

Virtual station LS:16 is providing the same control as LS:0B, but is Echoing the button push of LS:05

Virtual station LS:0F is providing the same control as LS:0D, but is Echoing the button push of LS:0E

Virtual station LS:10 is providing the same control as LS:0E, but is Echoing the button push of LS:0D

These two Echo devices 0F and 10 are for the AV interface (LSSIICM). They will allow the AV controller to operate both rooms with a single command to one of the rooms presets on address 0D or 0E, when the Echo operation is active in combine mode.

All Echo Devices are Enabled by a contact closure when the wall is retracted or Disabled by the same input opening when the partition sensor beam is interrupted by the wall. This example the IR beam detector is connected to LS:0A input 8 and could be done with a maintained toggle switch or a LightSync push button station operating a spare relay or LL-RSR logic status relay point.

This is done in the “Configure Input” screen by using the “Conditionals – Input Disable”

This must be done for each input used on the Echo station. (Figure 1)

Conditionals - Input Disable

Condition A

Condition B

Figure 1 – Conditional-Input Disable

In this example we have also added a command to turn ON all the relays when the wall is first opened (Figure 2). This will sync the relays ON in both rooms, so that any of the Push Button Toggle commands from the MZD stations will operate both rooms on/off together to prevent an out-of-sync condition.

Device: 0A	Input: 8	Device: 6 Button / 8 Input	Type A: Maintained On/Off
<input checked="" type="checkbox"/> RLY:02.01	<input checked="" type="checkbox"/> RLY:02.17	<input checked="" type="checkbox"/> RLY:02.33	
<input checked="" type="checkbox"/> RLY:02.02	<input checked="" type="checkbox"/> RLY:02.18	<input checked="" type="checkbox"/> RLY:02.34	
<input checked="" type="checkbox"/> RLY:02.03	<input checked="" type="checkbox"/> RLY:02.19	<input checked="" type="checkbox"/> RLY:02.35	
<input checked="" type="checkbox"/> RLY:02.04	<input checked="" type="checkbox"/> RLY:02.20	<input checked="" type="checkbox"/> RLY:02.36	
<input checked="" type="checkbox"/> RLY:02.05	<input checked="" type="checkbox"/> RLY:02.21	<input checked="" type="checkbox"/> RLY:02.37	
<input checked="" type="checkbox"/> RLY:02.06	<input checked="" type="checkbox"/> RLY:02.22	<input checked="" type="checkbox"/> RLY:02.38	
<input checked="" type="checkbox"/> RLY:02.07	<input checked="" type="checkbox"/> RLY:02.23	<input checked="" type="checkbox"/> RLY:02.39	
<input checked="" type="checkbox"/> RLY:02.08	<input checked="" type="checkbox"/> RLY:02.24	<input checked="" type="checkbox"/> RLY:02.40	
<input checked="" type="checkbox"/> RLY:02.09	<input checked="" type="checkbox"/> RLY:02.25	<input checked="" type="checkbox"/> RLY:02.41	
<input checked="" type="checkbox"/> RLY:02.10	<input checked="" type="checkbox"/> RLY:02.26	<input checked="" type="checkbox"/> RLY:02.42	
<input checked="" type="checkbox"/> RLY:02.11	<input checked="" type="checkbox"/> RLY:02.27	<input checked="" type="checkbox"/> RLY:02.43	
<input checked="" type="checkbox"/> RLY:02.12	<input checked="" type="checkbox"/> RLY:02.28	<input checked="" type="checkbox"/> RLY:02.44	

Figure 2 – Partition sensor to relay mapping



These rooms are also separately controlled by a pair of motion sensors. If one side of the combined room becomes un-occupied, then that space will turn off when the sensor times out. To get the relays synced all-on together again, use one of the preset buttons 1, 2, 3 or 4 that all have a relay On command mapped in the “Input To Relay Control” screen as well as a Goto dimmer level for each preset.

To create an Echo device, use the ILC LightLEEDer Pro software. You can copy the original device configuration into another LS device address. Select the address to be your virtual station then by using the “Copy Device Configuration” button and the original device address create a copy of the original LightSync station (for a MZD station both the on/off device and the dimming device address need to be copied).

Then change the Device Type line from the original “6 Button/8 Input” to “Echo Push Button” and select the device address to be Echoed (the LS button station in the room that this Virtual LS device will watch and Echo the button actions from). This will typically be the active LS station in the other room. (Figure 3)



Figure 3 – Echo Push Button set-up

You will still need go to the “Local Input To Relays” screen to map relay control (Figure 4). A shortcut button is available at the bottom to “Copy Relay Mapping” from the original device to the Virtual/Echo device.

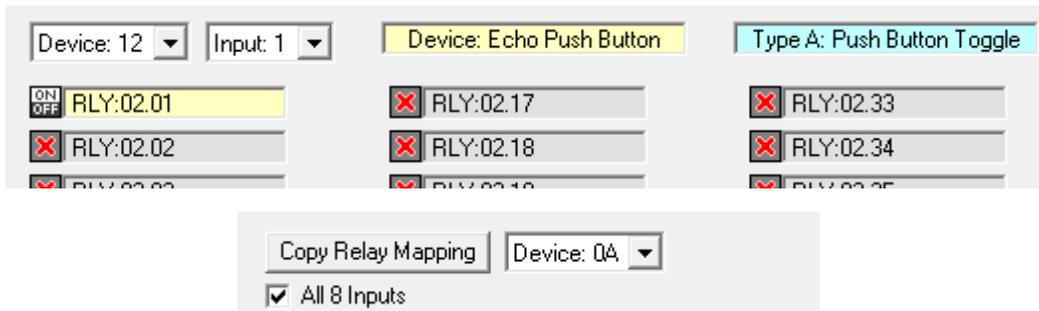


Figure 4 - Echo to relay mapping copy

Then go to the “Configure Dimmer Output” screen to create the dimming “Control Options” lines for the MZD Echo operation to match the original physical LS device. (Figure 5a and 5b)

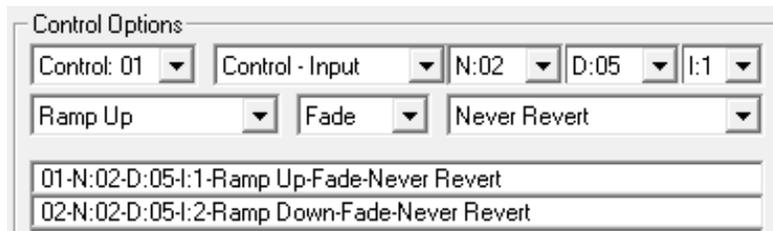


Figure 5a - Original MZD control from LS:05



Figure 5b - Echo device control from LS:13



The Preset control station will operate the same presets, so duplicating the commands for Goto levels in the dimmer screen “Control Options” is not required (figure 6).

05-P:1-Goto 40%-Fade-Never Revert
06-P:2-Goto 20%-Fade-Never Revert
07-P:3-Goto 60%-Fade-Never Revert
08-P:4-Goto 100%-Fade-Never Revert
09-P:5-Goto 0%-Fade-Never Revert

Figure 6 - Preset Control Options

The AV interface module LSSIICM is configured to give the AV controller the same Presets as the 5 button preset stations in each room. Additional programming is only needed if the AV controller requires an additional preset that is not currently used by the ILC 5-button stations. In this example we have skipped two presets (#6 & #12) to allow for a 6-button configuration in the future.

If there is more than one conference room or more rooms use presets, then you will need to adjust the preset number accordingly. A LightLEEDer system supports 255 presets network wide between all LightLEEDer panels.

**Notes:**

When a LightSync device is configured as an Echo Push Button, Echo Keyswitch or Echo 4-Input this device address will not support a physical device so if a LightSync station is set for this address the LightLEEDer or EVO panel will ignore the physical station.

Pilot status returns to LS station set for Echo operation will be Ignored or unused.

In the LL-Pro Software “Input Status” screen the device will be an Echo type and does not report as “Connected” unlike a physical LS device they will report as a “Echo Device”. When active the Echo device input status will report closures from the physical LS device it is set to Echo.

This configuration shown above is based on starting with LL-EVO Lighting Application configuration “FC” for a 4-zone conference room. We have added a second 4-zone conference room with the same operations and as a LL-EVO-RC panel (RC Sub-Node 03) as seen in the Riser diagram. This program set can be provided by ILC as Lighting Application “FC+03RC”

**Reference Documents:**

TB0013	LightLEEDer EVO Lighting Application for Stand-Alone and Conversion to Network Operation Technical Bulletin.pdf (this will include all 16 LL-EVO Lighting Application Control Mapping Matrix)
WD1002	LL-EVO Wiring Detail.pdf
LightSync	G2 Multi Zone Dimmer (MZD) Programming Guide.pdf
TB0004	LL Room Controller Mapping.pdf
PD0625	LS Serial Interface Control Module Enclosure Details.pdf
PD0625	LS Serial Input Interface Control Module Details.pdf
ID0626	LSSIICM RS232-485 Install.pdf
TB0604	LS Serial Input Module Modbus Mapping.pdf
LSSIICM	Modbus Serial Strings.pdf
TB0012	LL-RC 4RC Photosensor Address Re-Assignment.pdf

