LUTRON

Application Note #658

Revision C November 2021

Programming Residential Systems with Lutron LED Drivers

Overview

Lutron LED drivers deliver smooth, flicker-free, continuous, high-performance dimming with outstanding quality and superior reliability, removing the issue of LED compatibility. Available for fixtures from over 300 manufacturers globally, Lutron LED drivers offer the flexibility of zone-control with 2-wire or 3-wire dimmers or individually addressable fixtures with HomeWorks digital control. This application note explains programming best practices when using these LED drivers with Lutron residential systems.





Table of Contents

Wiring Diagram Overview	3
2-Wire Controls	3
3-Wire Controls	
EcoSystem Digital Controls (HomeWorks QS only)	
HomeWorks Digital Controls (HomeWorks only)	
Hi-lume 1% 2-Wire Driver	
UL® Marking and Compatibility	
Compatible Controls	
HomeWorks QS: Load Schedule	
HomeWorks QS: Assign the load to a control RadioRA 2: Add the control to the database	
RA2 Select: Adjusting Trim Settings	
Hi-lume 1% 3-Wire Driver	
Compatible Controls HomeWorks QS: Load Schedule	
HomeWorks QS: Load Schedule	
RadioRA 2: Add the control to the database	
RA2 Select: Adjusting Trim Settings	
Hi-lume 1%, 5-Series, and Embedded EcoSystem Solutions	
Compatible Controls	
HomeWorks QS: Load Schedule (LQSE-2ECO-D)	
HomeWorks QS: Assign the load to a control (LQSE-2ECO-D)	
HomeWorks QS: Load Schedule (QSGRJE).	
HomeWorks QS: Assign the load to a control (QSGRJE)	23
Hi-lume Premier 0.1% 3-Wire and EcoSystem Constant Voltage Driver	24
Compatible Controls for 3-Wire Constant Voltage Drivers	
HomeWorks QS: Load Schedule for 3-Wire Constant Voltage Drivers	24
HomeWorks QS: Assign the load to a control for 3-Wire Constant Voltage Drivers	25
RadioRA 2: Add the control to the database for 3-Wire Constant Voltage Drivers	
Compatible Controls for EcoSystem Constant Voltage Drivers	
HomeWorks QS: Load Schedule (LQSE-2ECO-D)	
HomeWorks QS: Assign the load to a control (LQSE-2ECO-D)	
HomeWorks QS: Load Schedule (QSGRJE) HomeWorks QS: Assign the load to a control (QSGRJE)	
HomeWorks Digital Controller and HomeWorks Digital 0.1% LED Controller	
Compatible Controls for HomeWorks Digital Controller	
HomeWorks QSX: Load Schedule for HomeWorks Digital Controller	
HomeWorks QSX: Assign the load to a control (LQSE-2HDC-D)	
Additional Information and Resources	37

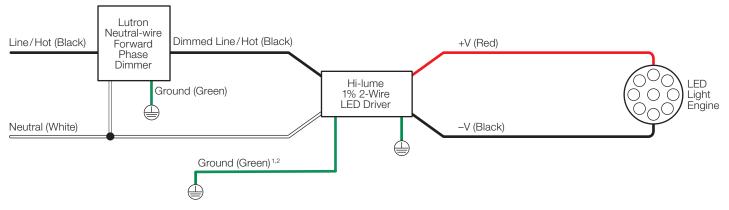
Wiring Diagram Overview

Different drivers will require different wiring configurations. It is essential to have the correct wires in place to support the selected drivers that are being used, both for power and control. Below are basic diagrams that illustrate the difference between 2-Wire controls, 3-Wire controls, and EcoSystem controls. The diagrams below are only meant to illustrate the differences between control types. Refer to the driver installation guides for comprehensive wiring diagrams.

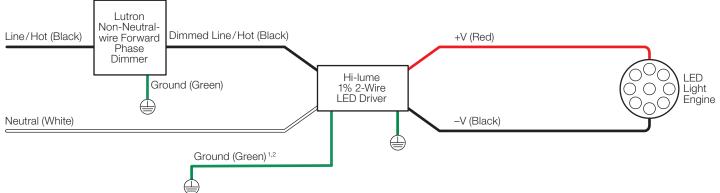
2-Wire Controls

The 2-wire control is an analog control method that is used to operate Lutron LED drivers. The dimmers set the intensity of the drivers and provide power to the drivers by providing a single line-voltage, phase-control signal from the dimmer to the driver on a dimmed hot wire. All drivers connected to a single dimmed hot wire must be on the same circuit and will be controlled together. The number of drivers that can be connected to a single circuit is limited by the dimmer being used.

Neutral Wire Application



Non-Neutral Wire Application



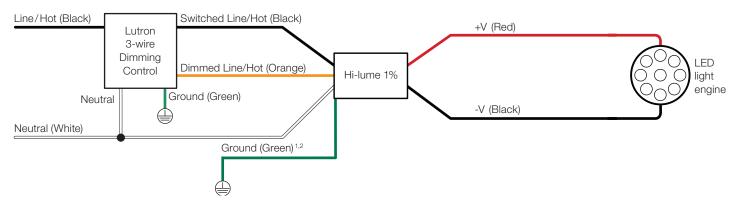
¹ Ground wire connection available on K case models only.

² Fixture and driver case must be grounded in accordance with local and national electrical codes.

Wiring Diagram Overview (continued)

3-Wire Controls

The 3-wire control is an analog control method that is used to operate Lutron LED drivers. It allows dimmers to set the intensity of drivers by providing a phase-control signal from the dimmer to the driver on a dimmed hot wire. The dimmer separately switches the power to the driver over a switched hot wire. The number of drivers that can be connected to a single circuit is limited by the dimmer being used.



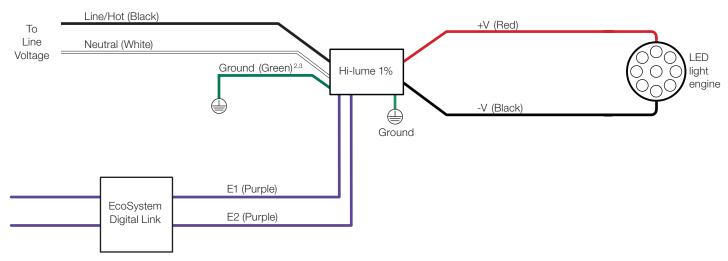
Ground wire connection available on K case models only.

Fixture and driver case must be grounded in accordance with local and national electrical codes.

EcoSystem Digital Controls (HomeWorks QS only)

EcoSystem technology is a control method for LEDs that provides addressing of individual fixtures and status feedback from the LED drivers. This makes it easy to digitally assign occupancy sensors, daylight sensors, time clocks, manual controls and other controls to one or many fixtures without complicated wiring. This opens an entire suite of energy-saving, systemmonitoring and system-control schemes where the design, setup and re-zoning are all done with software, making the electrical and control design simple.

Having each driver digitally addressed makes it possible to send commands to specific drivers or groups of drivers. Commands can be sent to drivers telling them to turn off their output, so the line voltage for the drivers should not be switched.



EcoSystem drivers are no longer available to order as of September 1, 2021.

² Ground wire connection available on K case models only.

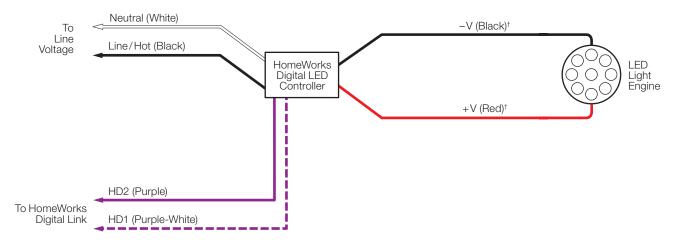
Fixture and driver case must be grounded in accordance with local and national electrical codes.



Wiring Diagram Overview (continued)

HomeWorks Digital Controls (HomeWorks only)

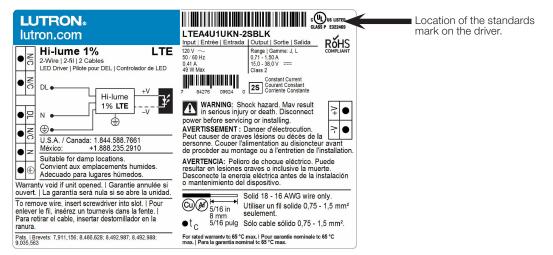
The HomeWorks digital technology standard allows individual addressability of each fixture to easily reconfigure lighting zones and accommodate changes in a space without rewiring. This feature provides a soft, incandescent-like transition between 0.1% and off.



Hi-lume 1% 2-Wire Driver

The Hi-lume 1% 2-Wire LTE LED driver is a high-performance LED driver that provides smooth, continuous, flicker-free, 1% dimming for virtually any LED fixture, whether it requires constant-current or constant-voltage.

UL_® Marking and Compatibility



Drivers marked as UL[®] recognized are ONLY compatible with those controls marked with an asterisk (*) on the following pages.

CLASS P E322469 Drivers marked as UL® Listed Class P are compatible with all controls referenced on the following pages.



Drivers marked as UL_® 8750 Listed and manufactured before November 20, 2017, are ONLY compatible with those controls marked with an asterisk (*) on the following pages. Date code on the driver is in international date format, DD/MM/YYYY.

Note: If the fixture or driver is not accessible and the standards marking is unknown, use controls marked with an asterisk (*).

Compatible Controls

The Hi-lume 1% 2-Wire LTE LED driver is compatible with the following HomeWorks and RadioRA 2 controls:

HomeWorks

Product	Part Number	Drivers per Control	Load-Type Setting
HomeWorks wallbox power module*	LQRJ-WPM-6P	2-10 (per output); 26 total per module	Hi-lume 1% 2-Wire LTE LED
GRAFIK Eye QS control unit*	QSGRJ-	2–10 (per output); 26 total per unit	Hi-lume 1% 2-Wire LTE LED
Phase adaptive DIN power module	LQSE-4A-120-D	1–6 (per output); 2 A maximum driver input current	Hi-lume 1% 2-Wire LTE LED
HomeWorks DIN power module*	LQSE-4A1-D	1–6 (per output); 1 A maximum driver input current	Hi-lume 1% 2-Wire LTE LED
HomeWorks LED+ DIN power module	LQSE-4A5-120-D	Zone 1: 1–20; 4 A maximum driver input current Zones 2–4: 1–13; 3 A maximum driver input current	Hi-lume 1% 2-Wire LTE LED
HomeWorks C•L dimmer	HQRD-6CL	1-6; 250 W max	Hi-lume 1% 2-Wire LTE LED
HomeWorks adaptive dimmer*	HQRD-6NA-	1-10; 400 W max	Hi-lume 1% 2-Wire LTE LED
HomeWorks 600 W dimmer*	HQRD-6ND-	1-8; 350 W max	Hi-lume 1% 2-Wire LTE LED
HomeWorks 1000 W dimmer*	HQRD-10ND-	1–13	Hi-lume 1% 2-Wire LTE LED
HomeWorks LED+ dimmer	HQRD-PRO-	1-20; 400 W max	Hi-lume 1% 2-Wire LTE LED
HomeWorks C•L hybrid keypad	HQRD-HNX	1-10; 200 W max	Hi-lume 1% 2-Wire LTE LED
HomeWorks GRAFIK T C•L dimmer	HQRT-G25LW	1-10; 400 W max	Hi-lume 1% 2-Wire LTE LED
HomeWorks phase selectable dimmer	HQRT-G5NEW	1-10; 400 W max	Hi-lume 1% 2-Wire LTE LED
GRAFIK T RF C•L hybrid keypad	HQRT-GHXB	1-10; 400 W max	Hi-lume 1% 2-Wire LTE LED

Note: All wattages are in terms of input wattage to the LED driver.

* See note on page 6 for control compatibility.

RadioRA 2

Product	Part Number	Drivers per Control	Low-End Setting/Load-Type Setting
RadioRA2 wallbox power module	LQRJ-WPM-6P	2–10 (per output); 26 total per module	Hi-lume 1% 2-Wire LTE LED
GRAFIK Eye QS control unit*	QSGRJ-	2–10 (per output); 26 total per unit	Hi-lume 1% 2-Wire LTE LED
RadioRA 2 C•L dimmer	RRD-6CL	1-6	Hi-lume 1% 2-Wire LTE LED
RadioRA 2 LED+ dimmer	RRD-PRO-	1–20; 400 W max	Hi-lume 1% 2-Wire LTE LED
RadioRA 2 adaptive dimmer*	RRD-6NA-	1–10; 400 W max	Hi-lume 1% 2-Wire LTE LED
RadioRA 2 600 W dimmer	RRD-6ND-	1–8; 350 W max	Hi-lume 1% 2-Wire LTE LED
RadioRA 2 1000 W dimmer*	RRD-10ND-	1–13	Hi-lume 1% 2-Wire LTE LED
RadioRA 2 C•L hybrid keypad	RRD-HNX	1-10; 200 W max	Hi-lume 1% 2-Wire LTE LED

Note: All wattages are in terms of input wattage to the LED driver.

* See note on page 6 for control compatibility.

HomeWorks: Load Schedule

Using the Lutron Designer programming software, add the load to the load schedule by going to the **design>loads** tab and selecting the appropriate load type for the driver. For the Hi-lume 1% 2-Wire LED Driver select **Hi-lume 1% 2-Wire LTE LED**.

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Family Room										Incandescent/Halogen			
Master Bedroom Suite										LED 0-10V			
Living Room										LED 3-Wire			
Foyer										LED Constant Voltage			
Dining Room										LED DALI LED EcoSystem			
Garage										LED Forward Phase			
Equipment Room 1										LED Hi-lume A-Series 3-Wire			
Equipment Room 2										LED Reverse Phase			
Lower Level													
Exterior													

The software automatically populates the **High-End** and the **Low-End** fields with the appropriate values for the selected driver. 78 (High) and 32 (Low) will provide the full dimming range (1-100%).

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Note: If the **High-End** and **Low-End** trim columns do not show, **Customize columns** will need to be selected. Next select the High/Low-End by selecting the checkbox. However, these trim values should not be changed.

	78	32

HomeWorks: Assign the load to a control

When assigning the load to a wallbox dimmer, GRAFIK Eye QS, or WPM, the assignment will be done in the **design>controls** tab. Use the area tree to navigate to the desired control/output and select **Assign**.

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Garage				WPM-6P CSD 001	Assign_		
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A window will appear on the right side of the screen. Find the load in question and select Assign.

+						Assi		
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3 2	LQRJ-WPM-6P	CSD 001				1		
N.	LQRJ-WPM-6P	CSD 001						
5 2	LQRJ-WPM-6P	CSD 001						
6 ." R	LQRJ-WPM-6P	CSD 001						
Output	Model	Device Name	Zone Name	Interface				
1,55	HQRD-10ND	CSD 001						
						New Los	b	Done

HomeWorks: Assign the load to a control (continued)

When assigning the load to a DIN Rail Power Module (DPM), this will be done in the **design>equipment** tab. Use the area tree to navigate to the desired module/output and select **Assign**.

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	DPM Wire Harness	5-2	Adaptive Module	Assign									
		5-3	Adaptive Module	Assign									
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		7-1	Adaptive Module	Assign									
		7-2	Adaptive Module	Assign									
		7-3	Adaptive Module	Assign									
Previous Area Next Area Collapse .		7-4	Adaptive Module	Assign									

A window will appear on the righthand side of the screen. Find the load in question and select Assign.

🔆 File Edit Reports Tools Help		Lutron Designer	C:\Users\mbre	ese\OneDrive - Lutron E	ectronics C	o., Inc\Desktop\HomeWorks Q	S Training\Tra	aining Labs	\Hybrid Home I	Project (31520	89) - End of Lab 12.hw	•				Madison Brees	se 🔳 🗔 🗙
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Previous Area Next Area	Collapse 🔺		7-4	Adaptive Module										Net	w Load		Done

RadioRA 2: Add the control to the database

Using RadioRA 2 programming software, navigate to the **design** tab of the programming software and select the **+** icon to add a new device location.

File Tools Settings Reports Help			RadioRA 2 - New Project*	
RadioRA2 Essentials		desig	gn prog m activate transfer	
New Project	3 🖬 X		To enable the program screen, add a light or a shade.	
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Main Repeater 5 / 100 Equipment Room Edit	SHE &			
Click here to add a room	Transferration			
	None selected	None selected		
	Find Main Repeater	Find Connect Bridge	clicit here to add a device location	
		1		
Contraction Contra				

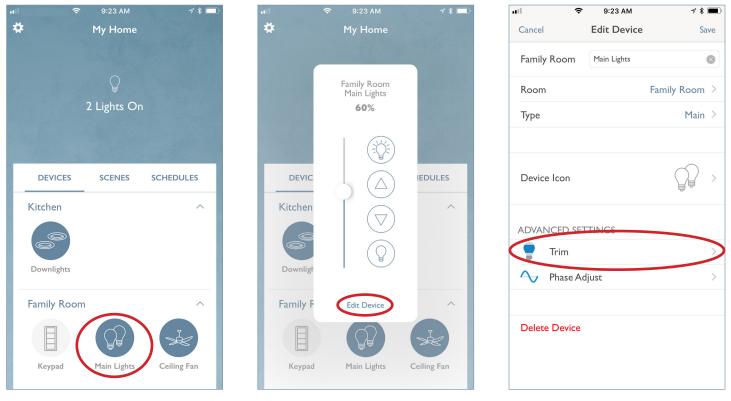
The Add New Device window will appear. Select the first dimmer available under **Dimmers & Switches** and select **Hi-lume 1% 2-wire LTE LED** under **Device Type**. This will automatically set the high and low-end trims to the appropriate levels. High = 78%; Low = 32%.

Note: Older versions of software may require the trim values to be adjusted manually. After the dimmer is added, right click on the device and select "Advanced Settings" to adjust the trim values.

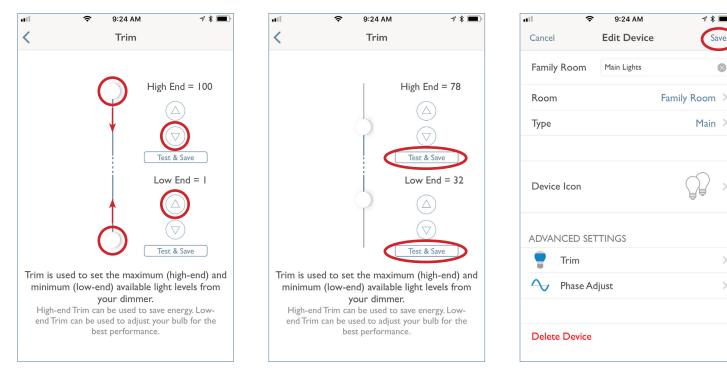
Available Devices	RF Maestro	
Pingers & Switches	Change Colors	Family RF Maestro Model Number RRD-GCL-WH Choose Alternate Model Faceplate Model Number
Keypads	Device Type End compatible LED lamp t Dimmer Zone Name No. Anti-Not Not Not Not Not Not Not Not Not Not	Inter 2 - Wire Dinime Inter aptive Dinmer Inter IT ELED ED/H-Iume A Startes LED driver (3-wire) me Dinmer terface
Shades	Switch Dual Voltage Swi RadioRA2 Neutra Fan Control	ilch al Switch Done ol

RA2 Select: Adjusting Trim Settings

To edit a device using the RA2 Select App, select the device from the home screen of the App by pressing on the icon or name of the device. First select Edit Device then select Trim from the Advanced Settings menu.



Set the high-end to 78 and press Test & Save. Set the low-end to 32 and press Test & Save. Select the back arrow (<) and select Save in the Edit Device window.



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1 * 1

Main >

Save

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Hi-lume 1% 3-Wire Driver

The Hi-lume 1% 3-Wire driver is a high-performance LED driver that provides smooth, continuous, flicker-free, 1% dimming for virtually any LED fixture, whether it requires constant-current or constant-voltage.

Compatible Controls

The Hi-lume 1% 3-Wire LED driver is compatible with the following controls:

HomeWorks

Product	Part Number		Drivers pe	Load Type						
		40 W	Driver	40 W Driver		40 W Driver		40 W Driver		
		120 V \sim	$_{ m 277~V}{\sim}$	120 V \sim	$_{ m 277~V}{\sim}$					
3-Wire Interface (120 V~)	PHPM-3F-120	1–41	-	1–31	-	LED Hi-lume A-Series 3-Wire				
3-Wire Interface (Dual Voltage)	PHPM-3F-DV	1–41	1–88	1–31	1–72	LED Hi-lume A-Series 3-Wire				
HomeWorks 3-Wire fluorescent dimmer	HQRD-F6AN-DV	1–15	1–33	1–11	1–27	LED Hi-lume A-Series 3-Wire				

Any of the following controls can be made compatible with the Hi-lume 1% 3-Wire LED driver by adding a PHPM-3F interface:

- LQSE-4A-120-D
- LQSE-4A5-120-D
- Wallbox power module: LQRJ-WPM-6P
- GRAFIK Eye QS control unit: QSGRJ-X
- HomeWorks forward-phase neutral wire dimmers (e.g., HQRD-PRO, HQRD-10ND, HQRD-6ND, HQRD-6NA)

RadioRA 2

Product	Part Number		Load Type			
		40 W	Driver	40 W Driver		
		120 V \sim	$_{ m 277~V}{\sim}$	120 V \sim	$_{ m 277~V}{\sim}$	
3-Wire Interface (120 V~)	PHPM-3F-120	1–41	-	1–31	-	LED Hi-lume A-Series 3-Wire
3-Wire Interface (Dual Voltage)	PHPM-3F-DV	1–41	1–88	1–31	1–72	LED Hi-lume A-Series 3-Wire
RadioRA 2 3-Wire fluorescent dimmer	RRD-F6AN-DV	1–15	1–33	1–11	1–27	LED Hi-lume A-Series 3-Wire

Any of the following controls can be made compatible with the addition of a PHPM-3F interface:

- Wallbox power module: LQRJ-WPM-6P
- GRAFIK Eye QS control unit: QSGRJ-X
- RadioRA 2 forward-phase neutral wire dimmers (e.g., RRD-PRO, RRD-10ND, RRD-6ND)

HomeWorks: Load Schedule

Using the Lutron Designer programming software, add a load to the load schedule by going to the **design>loads** tab and selecting the appropriate load type for the driver. For the Hi-lume 1% 3-Wire LED Driver select **LED Hi-lume A-Series 3-Wire**.

sign loads	rogra	m	activate	trans	fer	diagn	ostics							
orgin route	- Program		1			and and								
brid Home Project		Loads	HVAC Zones											
Main House											Find compatible Controls/L			
1st Floor		Zone # 0		Zone Description		Feed Circuit Ø		Fixture	0	Voltage 0		Fixture Wattage #		
Bath		1	Downlights		1		No	Undefined		120V	LED Hi-lume A-Series 3-Wire	32	1	37
Bedroom											LED DALI	-		
Office										/	LED Forward Phase			
Kitchen	+ 🖣+ 🗙 Edit									(LED Hi-lume A-Series 3-Wire			
Family Room											LED Reverse Phase			
Master Bedroom Suite											Magnetic Low Voltage	-		
Master Bedroom											Magnetic Low Voltage Switched			
Master Bath											MHN/HPS Switched	100		
Living Room											Motor 3-Wire			
Foyer											Motor Switched Neon/Cold Cathode			
Dining Room											Neon/Cold Cathode Switched			
Garage											Relay			
Equipment Room 1														
Equipment Room 2														
+ Lower Level														
Exterior														
		4												

The software automatically populates the **High-End** and the **Low-End** fields with the appropriate values for the selected driver. 78 (high-end) and 32 (low-end) will provide you with full dimming range (1-100%).

Loads	HVAC Z	ones					Find con	npatible Controls	s/LED lar	mp types Edit Fe	d types Cus	tonna solumn
d Circuit 🕴	AFCI 0	Fixture	Voltage #	Load Type	Fixture Wattage 0	Fixture Qty 0	Total Watts #	Interface			High End 🕴	Low End +
	No	Undefined	120V	Hi-lume 1% 2-Wire LTE LED	27	1	31				78	32

Note: If the **High-End** and **Low-End** trim columns do not show, you will need to click **Customize columns** and then select the High/Low-End by selecting the checkbox.

Find con	npatible Controls	/LED la	mp types Edit Fi	ture Types Cu	stomize columns
al Watts 🕴	Interface	0	Interface Qty	High End 🕴	Low End
				78	32

HomeWorks: Assign the load to a control

If the load is being assigned to to a wallbox dimmer, GRAFIK Eye QS control, or WPM, the assignment will be done in the **design>controls** tab. Use the area tree to navigate to the desired control and select **Assign**.

C File file Denvets Tools Help		Lutron Designer - C:\Users\zzing\Desktop\Hybrid Home Project (end of Lab 9)-v10.7.0-v11.0.6.hwqs*	
	program activate	ransfer diagnostics	
Hybrid Home Project Main House 141 Roor Bath Sedroom Cliffice Kitchen Family Room Mark Reform Sale	1000W Neutral Maestro BA COUNTY I	t Link + Link + GOOW INC Hybrid 68 OSG Hybrid 68RL Tabletop 108 (all Visor Control Transmitter B Gopand all Collapse all	Fice 4B Dual Group Light and Shade ton
Master Bachoon Master Bachoon Master Bach Master Master Bach Master Bach Master B	Partry X Edit Cot Show Wattage Summary Control Station 001	Very Very Properties Assigned To Output Model Device Name Model Interface Interface 1 2 / LGRU-WPM-4P CSD 001 Assign. Assign. Interface Interface 3 2 / LGRU-WPM-4P CSD 001 Assign. Interface Interface Interface 3 2 / LGRU-WPM-4P CSD 001 Assign. Interface Interface Interface 4 2 / LGRU-WPM-4P CSD 001 Assign. Interface Interface Interface 5 2 / LGRU-WPM-4P CSD 001 Assign. Interface Interface Interface 6 2 / LGRU-WPM-4P CSD 001 Assign. Interface Interface Interface	
		Output Model Device Name Zone Name Interface 1_x ² / _y HGRD-10ND ⁽¹⁾ CSD 001 Assign	
Previous Area Next Area C	cilapse 🔺		

A window will appear on the righthand side of the screen. Find the load in question and select Assign.

+									Assig	n			×
5.7		5-7		*دى 👘	12 A	*د,		Expa	nd all Main	Hous	llapse all e	Advanc	ed Settings Assign
	= = =				12	-	(÷.	Ist Flo			Assign
BRL	Tabletop 10B (a	II Visor Co	ontrol	Pico 48 Dual	Wall seeTemp	Softswitch Relay	Ceiling		Ē		chen		Assign
	on/off and RL)	Transmi		Group Light and		,					 Downlights (LED Hi-lum 	ie A-Series	Assign
				Shade Icon					+		mily Room aster Bedroom Suite		Assign
									ŧ	-	ing Room		Assign
nd all	Collapse all								i i	· · ·			Assign
	1								i i		ning Room		Assign
ew P	roperties As	signed To							1.1	Exterio			Assign
tput													
	Model	Device Name	Zone Name		Interface								
s'	LQRJ-WPM-6P	CSD 001											
s' s	LQRJ-WPM-6P	CSD 001											
3	LQRJ-WPM-6P	CSD 001											
\$	LQRJ-WPM-6P	CSD 001											
\$	LQRJ-WPM-6P	CSD 001											
2	LQRJ-WPM-6P	CSD 001											
	1												
dout													
utput	Model	Device Name	Zone Name		Interface								
utput	Model HQRD-10ND	Device Name	Zone Name		Interface								

HomeWorks: Assign the load to a control (continued)

If the load is being assigned to a control that does not directly support 3-wire dimming, be sure to select the correct interface in the **Interface** dropdown menu.

De	evice Locations Auto-Create Loads	Expand all	Collapse all			Cus	tomize column
-	Pantry X Edit Cut Co	py View Pro	operties As	signed To			
		Output					
	_		Model	Device Name	Zone Name	Interface	
		1 2	LQRJ-WPM-6P	CSD 001	Downlights	None	
	Show Wattage Summary		LQRJ-WPM-6P	CSD 001	Assign	Mone	
		3 ,5" 	LQRJ-WPM-6P	CSD 001	Assign	PHPM-3F-120-WH	
			LQRJ-WPM-6P	CSD 001	Assign	Printerent	
			LQRJ-WPM-6P	CSD 001	Assign		
		6 "" "	LQRJ-WPM-6P	CSD 001	Assign		
		Find comp	patible LED lamp	types			

If the load is being assigned to a DIN Rail Power Module (DPM), this will be done in the **design>equipment** tab. Use the area tree to navigate to the desired module/output and select **Assign**.

File Edit Reports Tools Help	_				onics Co., Inc\Desktop\Home\	vorks qo manning (n	anning cau:	striyonu nome	riojeci (51520	55) - Elia Of Lao 12.114				Madison Breese
sign equipment	✓ program	activate	transfer	diagnos	ics									
orid Home Project (3152089)	Equi	pment Backroom +												Edit
Main House			Rectanglour			夏夏								
First Floor	2	× (),~	7 0											
Foyer				12.717 and	100 ° 2002 °	e* 1								
Family Room	+ .+ × Edit		isor Control I eceiver	Hybrid Repeater Palladio Control	m HVAC 1 phase 20A AFC er DIN Panel	DIN Rail Power Panel 8 w/TBs								
Living Room			ecciver	control	er birtiner	Turker of wy ros								
Dining Room														
- Kitchen	- Feed													
Master Bedroom Suite			Collapse all											Customize colu
Bedroom		Din Rail Panel 001 ×	dit											
Bath		0 0	Dev	rices Output Input Dig	ital 6 (Loop 1)									
Office					Area Zone Name	Load #	Feed	Load Type	Wattage	Fixture Quantity	Total	Interface	Interface Qty	
Garage		i	1-	1 Adaptive Module	Assign				,	. ,			-,	
Lower Level				2 Adaptive Module										
Gallery			1		Assign									
Theater			1-	4 Adaptive Module	Assign									
Equipment Room 1	+ 📭 🗙 Edit		2-	1 Adaptive Module	Assign									
Equipment Room 1	+ ++ ~ +0	📜 🛄	2.		Assign									
Exterior		A	2-	3 Adaptive Module	Assign									
T Extendr		1 🖷 💻	2-	4 Adaptive Module	Assign									
		💾 🚅	3-	1 Switching Module	Assign									
		······································	3	2 Switching Module	Assign									
			3-		Assign									
			3-	4 Switching Module	Assign									
		o 📕 🛛 📆		cco	Assign									
			4	1 Adaptive Module	Assign									
		• • • • • • • • • • • • • • • • • • •	4-	2 Adaptive Module	Assign									
		13 14 10 9	4-	3 Adaptive Module	Assign									
			4-	4 Adaptive Module	Assign									
		: Show Wattage Summary	5	1 Adaptive Module	Assign									
		DPM Wire Harness	5-	2 Adaptive Module	Assign									
			5-	3 Adaptive Module	Assign									
			5-	4 Adaptive Module	Assign									
			7-	1 Adaptive Module	Assign									
			7-	2 Adaptive Module	Assign									
			7-	3 Adaptive Module	Assign									
	Collapse 🔺		7	4 Adaptive Module	Assign									

HomeWorks: Assign the load to a control (continued)

A window will appear on the right hand side of the screen. Find the load in question and select Assign.

le Edit Reports Tools Help	_					o, Inc\Desktop\HomeWork	, and a second se	, and								Madison Breese	
sign equipment	▼ program	activate tra	nsfer	diagno	stics												
orid Home Project (3152089)	E	equipment Backroom +													Assign		
Main House	8						e e								nd all Collapse all	Advanc	
First Floor			e	3 TT - 0 5	1000										Main House		-
-Foyer				KANT IN	-	"INC	*								Living Room		
Family Room	U.	V-21 QS Smart Panel QSM Wireless Visor C Receiv			diom HVAC roller		IN Rail Power anel 8 w/TBs										
-Living Room	+ 📭 🗙 Edit	THE REAL PROPERTY OF THE PROPERTY OF THE REAL PROPE		com	- Ciller	District 1	1111 U 11/103								🔆 West Unde	ercab (100A) (LED Lutron	. 1
Dining Room															+ Master bear		-
Kitchen															+ Bedroom		
+ Master Bedroom Suite		Equipment Locations Expand all Co	lapse all														
Bedroom		Din Rail Panel 001 × Edit															
Bath		0	Devi	ces Output Input	Digital 6 (Lo	oon 1)											
Office		°		Туре	Area	Zone Name	Load #	Feed	Load Type	Wattage	Fixture Quantity	Total	Interface	Int			
Garage		¥ 🖆	14	Adaptive Module													
Lower Level		🕌 🚅		Adaptive Module													
Gallery		*		Adaptive Module													
				Adaptive Module													
Theater	a la			Adaptive Module													
Equipment Room 1	+ 📭 🕂 🗙 Edit			Adaptive Module													
Equipment Room 2				Adaptive Module													
Exterior		🐺 🚟		Adaptive Module													
		╸╸╸╸╸╸╸╸╸		Switching Module			_							-			
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		- 11 - 12 - 13		Adaptive Module													
				Adaptive Module													
		¹³ ¹⁴ ¹⁰ ¹⁰ ¹⁰ ¹⁰		Adaptive Module													
							-										
		Show Wattage Summary		Adaptive Module													
				Adaptive Module Adaptive Module													
				Adaptive Module Adaptive Module													
				Adaptive Module													
				Adaptive Module													
				Adaptive Module Adaptive Module													
			7-	Adaptive Module													

Since the load is being assigned to a control that does not directly support 3-wire dimming, be sure to select the correct interface in the **Interface** dropdown menu.

Devices	Output Input Digital 6 (Loop 1)												
	Туре	Area	Zone Name	Load #	Feed	Load Type	Wattage	Fixture Quantity	Total	Interface	Interface Qty		
1-1	Adaptive Module	Kitchen	• Kitchen • West Undercab	100A		LED Lutron 1% Phase Control (2-wire) Driver	0	1	0	None 🔻			
1-2	Adaptive Module		Assign						Nerro	1-PA-120-WH			
1-3	Adaptive Module		Assign							HTA-DV-WH			
1-4	Adaptive Module		Assign										
2-1	Adaptive Module		Assign										
2-2	Adaptive Module		Assign										
2-3	Adaptive Module		Assign										
2-4	Adaptive Module		Assign										

RadioRA 2: Add the control to the database

Using RadioRA 2 programming software, navigate to the **design** tab and select the **+** icon to add a new device location.

File Tools Settings Reports Help			RadioRA 2 - New Project*	
RadioR4,2 Essentials		design	pro ram activate transfer	
New Project	3 🖬 X		To enable the program screen, add a light or a shade.	
Rooms	Main Repeater 001	Connect Bridge 001		
Kooms Main Repeater 5 / 100 Equipment Room Est	Main Repeater (01	Connect Bridge 001		
Technical Support + 1.844 588.7661 Support Community https://forums.lutron.com/				

The Add New Device window will appear. Select the first dimmer available under Dimmers & Switches and select the Ivalo Recessed LED/Hi-lume A-Series LED Driver (3-wire) under Device Type. This will automatically set the high and low-end trims to the appropriate levels. High = 78%; Low = 32%.

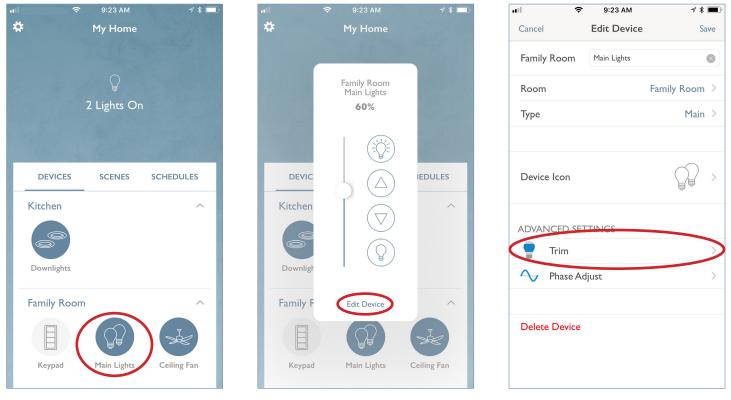
Note: Older versions of software may require the trim values to be adjusted manually. After the dimmer is added, right click on the device and select "Advanced Settings" to adjust the trim values.

vailable Devices	RF Maestro Adap	tive Dimmer with	LED Driver	
Commers & Switches	Change Colors		Family RF Maestro Model Number RRD-6NA-WH Choose Alternate Mode Faceplate Model Numt	
Keypads	Device Location Device Type	Hi-lume 1% 2-Wire	CW-1-WH Description Maestro 600W ELV/MLV, Adaptive Dimmer with N	
	Find compatible LED lamp to Zone Name Zone Location	Dimmer LED/CFL/INC Dimmer INC/MLV Dimmer INC/MLV Neutral Dimmer		evue.
Auxiliary Repeaters	Fixture Wattage Fixture Quantity Total Zone Wattage	ELV/MLV/INC Adaptive Dim Hi-lume 1% 2-Wire LTE LED Ivalo Recessed LED/Hi-lume Dual Voltage 3-wire Dimme		>
To an a To an a Million		Dimmer With Interface 0-10V Dimming With Interfa LED Constant Voltage	ice	
Shades		Switch Dual Voltage Switch RadioRA2 Neutral Switch		Done
	eet for the selected device to ensure	Fan Control Fan Soeed Control		

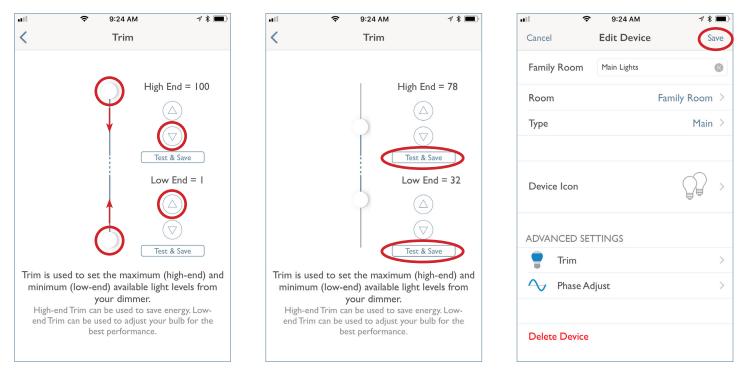
Hi-lume 1% 3-Wire (continued)

RA2 Select: Adjusting Trim Settings

To edit a device using the RA2 Select App, select the device from the home screen of the App by pressing on the icon or name of the device. First select **Edit Device** then select **Trim** from the **Advanced Settings** menu.



Set the high-end to 78 and press **Test & Save**. Set the low-end to 32 and press **Test & Save**. Select the back arrow (<) and select **Save** in the **Edit Device** window.



Hi-lume 1%, 5-Series, and Embedded EcoSystem Solutions¹

Please refer to the following Application Note for an explanation of how to design, program, activate, and troubleshoot a HomeWorks QS system that utilizes EcoSystem ballasts/drivers. The document is split into two sections, with one section focused on the DIN-rail Power Module with EcoSystem solution, and the other section focused on the GRAFIK Eye QS with EcoSystem solution. Please refer to the appropriate section based on the control hardware being used on the specific project.

www.lutron.com/PasswordProtectedDocumentLibrary/Using%20EcoSystem%20in%20HWQS.pdf

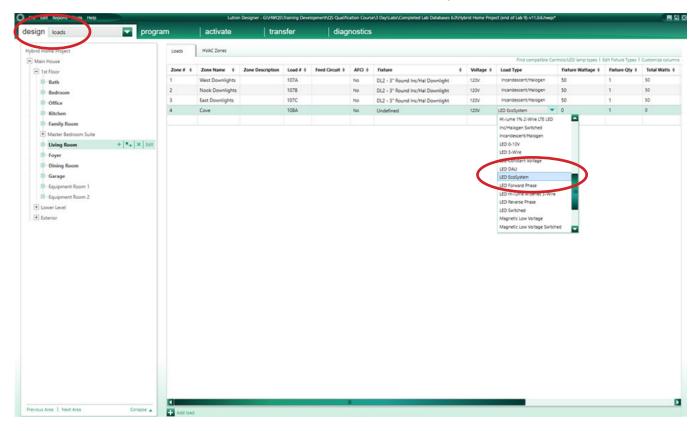
Compatible Controls

The Hi-lume 1% EcoSystem driver can be assigned to the following controls:

Product	Model N	lumber	Recommended	Drivers per Control
	120 V~	277 V~	Software Version	
HomeWorks QS with EcoSystem	LQSE-2ECO-D QSGRJE QSGRE	_	10 or higher	64 per EcoSystem link

HomeWorks QS: Load Schedule (LQSE-2ECO-D)

To add a load to the load schedule go to the **design>loads** tab and select the appropriate load type for the driver. For the Hi-lume 1%, 5-series, and Embedded EcoSystem drivers, select **LED EcoSystem**.



¹ EcoSystem drivers are no longer available to order as of September 1, 2021.

Hi-lume 1%, 5-Series, and Embedded EcoSystem Solutions (continued)

HomeWorks QS: Assign the load to a control (LQSE-2ECO-D)

If the load is being assigned to to a LQSE-2ECO-D the assignment will be done in the **design>equipment** tab. Select the desired loop and select **Assign** under the **Ballasts** column.

File Edit Benorts Tools Help	Lutron Designer - Gr/HWQS(Training Development/QS Qualification Course(3 DayLabs/Completed Lab Databases 6.0/Hybrid Home Project (end of Lab 9)-v11.0.6.hwgs*	
design equipment 🔽 progra	am activate transfer diagnostics	
Hybrid Home Project	Equipment Backroom +	Toolbox
- Main House		
 1st Floor 		
-Bath	DIN Rail Power LV-21 LV-17 QS/Smart Panel QSM Wireless 1 phase 20A Visor Control Single zone Hybrid Repeater Connect Bridge	
-Bedroom	Module Eco AFCI Panel Receiver HVAC Controller	
Kitchen		
-Family Room	Equipment Locations Expand al Collapse al Coutonize column	
Master Bedroom Suite	Equipment Locations Epand all Collapse all Collapse all Collapse all	mns
-Living Room	Processors	
-Foyer	Emili Text	
Dining Room		
Garage		
Equipment Room 2 + + K Edit	OS Power Panel 1	
Lower Level		
Exterior	Hybrid Repeater 1	
	WAC Controller 1	
	HIAC Controller 1	
	F 05M	
	Connect Bridge	
	🖻 EcoSystem DPM X Esit 🛕 Not Ausigned	
		Interface
	Asion_	
Previous Area Next Area Collapse 🔺		D

A window will appear on the righthand side of your screen. Find the load in question and select Assign.

transfer	diagnostics		
		O Assign	×
		Expand all Collapse all	Advanced Settings
e		Main House	Assign
	a start and start	E Living Room	Assign
QS Smart Panel QSM Wi	reless 1 phase 20A Visor Control Single zone Hybrid Repeater Connect Bridge AFCI Panel Receiver HVAC Controller	Cove (LED EcoSystem.)	Assign
d all Collapse all			
1			
1			
		New Load	Done
Edit Assigned			Done

Hi-lume 1%, 5-Series, and Embedded EcoSystem Solutions (continued)

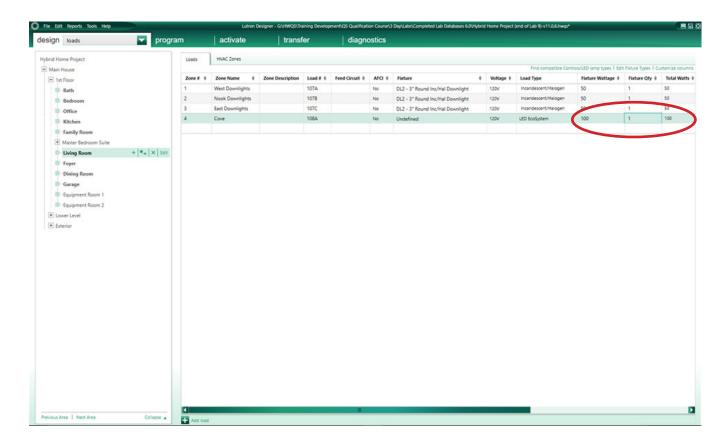
HomeWorks QS: Load Schedule (QSGRJ-_E)

To add a load to the load schedule navigate to the **design>loads** tab and select the appropriate load type for the driver. For the Hi-lume 1%, 5-series, and Embedded EcoSystem drivers, select **LED EcoSystem**.

Each GRAFIK Eye QS with EcoSystem unit can have a maximum of 64 EcoSystem ballasts/drivers connected to it and can control a maximum of up to 16 zones, however, **Fixture Qty** is unable to be changed to anything other than 1 for an EcoSystem load type in the software. For EcoSystem zones that contain multiple ballasts/drivers the fixture quantity will need to be left at 1 and the TOTAL fixture wattage will have to be entered in the **Fixture Wattage** field.

For example, if there are 4 EcoSystem Sconce fixtures that are 25 W each and are all in the same zone, 100 W would be entered in the **Fixture Wattage** field and the **Fixture Qty** would be left at 1.

Note: EcoSystem ballasts and drivers must be programmed and assigned to GRAFIK Eye QS zones using the local buttons and display on the GRAFIK Eye. EcoSystem ballast/driver to zone mapping cannot be performed through the HomeWorks QS software.



Hi-lume 1%, 5-Series, and Embedded EcoSystem Solutions (continued)

HomeWorks QS: Assign the load to a control (QSGRJ-_E)

If the load is being assigned to a QSGRJ-_E, navigate to the **design>controls** tab. Select one of the Eco outputs and select **Assign** under the **Zone Name** column.

File Ertention Tools Help	Lutron Desig	ner - G(\HWQS\Training Develo	pment\QS Qualification Course\3	Day\Labs\Completed Lab Databa	ses 6.0\Hybrid Home Project (end of L	ab 9)-v11.0.6.hwqs*	
esign controls	program activate	transfer	diagnostics				
Hybrid Home Project	Controls RF Link QS Link	H48 Link +					Edit Toolbo
Main House				a 📰 a 📥	11 11	3	
= 1st Floor	2 P			-کہ ہے ⁻	г (O) г (-) ² _ 2	R
Bath							100 C
Bedroom	QSG Hybrid 6BRL Tabl	etop 10B (all Visor (off and RL) Transn	Control Pico 48 D nitter Group Lig	ual Wall seeTemp Softswi ht and keypad	itch Relay Ceiling Occ RF Wire tem	eless WPM 6 Zone perature	QSG Eco
Office			Shade Ico		sens		
Kitchen							
Family Room	Device Locations Auto-c	reate Loads Expand all	Collanse all				Customize colum
Master Bedroom Suite		test total option					
-Living Room	Control Station 001 ×	Edit Cut Copy	View Properties 🚹 No	Assigned			
Foyer							
Dining Room + +	× Edit	Number Of Zo 16		Groups: Model: QSGRJ-16E			
Garage		Output Ing	ut		20		
Equipment Room 1	Show Wattage Summary		Model Device Name	Zone Name	Interface		
Equipment Room 2		1 Phase	QSGRJ-16E CSD 001	Assign_			
Lower Level		2 Phase	QSGRJ-16E CSD 001	Assign_			
Exterior		3 Phase	QSGRJ-16E CSD 001				
		4 Eco	QSGRJ-16E CSD 001	Assign_			
		5 Eco	QSGRJ-16E CSD 001				
		6 Eco	QSGRJ-16E CSD 001	Assign			
		7 Eco	QSGRJ-16E CSD 001	Assign_			
		8 Eco	QSGRJ-16E CSD 001	Assign			
		9 Eco	QSGRJ-16E CSD 001	Assign			
		10 Eco	QSGRJ-16E CSD 001	Assign			
		11 Eco 12 Eco	QSGRJ-16E CSD 001	Assign			
		13 Eco	Q5GRU-16E CSD 001 Q5GRU-16E CSD 001	Assign_			
		14 Eco	QSGRU-16E CSD 001	Assign			
		14 ECO		Assign			
		15 540					
		15 Eco 16 Eco	Q5GRJ-16E CSD 001 Q5GRJ-16E CSD 001	Assign			

A window will appear on the right side of the screen. Find the load in question and select Assign.

						💭 Assign	⊠
		. 🗐 .*	اللجي 📩 اللجي	5.5	- ,5*	Expand all Collapse all	Advanced Settings
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		-			enne	1st Floor Uving Room	Assign Assign
	Control	Pico 48 Dual	Wall seeTemp Softswitch Relay	Ceiling Occ RF	Wireless		EcoSystem) Assign
Transi	mitter	Group Light and Shade Icon	keypad		temperature sensor		Poligit
						-	
nd all	Collapse all						
Сору	View Properties	s 🔒 🚹 Not Assigne	ed				
nber Of Z	ones: N	Number of Shade Groups:					
	•	D 🔽	QSGRJ-16E				
utput In	put						
utput In	Model	Device Name	Zone Name	Interface			
		Device Name CSD 001	Zone Name	Interface			
Phase	Model		Zone Name	Interface		-	
Phase Phase	Model QSGRJ+16E	CSD 001	Zone Name	Interface			
Phase Phase Phase	Model QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001	Zone Name	Interface			
Phase Phase Phase Eco	Model QSGRJ-16E QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001 CSD 001	Zone Name	Interface			
Phase Phase Phase Eco Eco	Model QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001 CSD 001 CSD 001	Zone Name	Interface			
Phase Phase Phase Eco Eco Eco	Model QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001 CSD 001 CSD 001 CSD 001	Zone Name	Interface			
Phase Phase Phase Eco Eco Eco Eco	Model QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001	Zone Name	Interface			
Phase Phase Eco Eco Eco Eco Eco	Model QSGRJ-16E	CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001	Zone Name	Interface			
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Phase Phase Eco Eco Eco Eco Eco Eco Eco	Model QSGRJ-16E	CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001	Zone Name	Interface		New Load	Done
Phase Phase Phase Eco Eco Eco Eco Eco Eco	Model QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001 CSD 001	Zone Name	Interface		New Load	Done

Hi-lume Premier 0.1% 3-Wire Driver and EcoSystem Driver¹

The Hi-lume Premier 0.1% Constant-Voltage Driver (L3D0) is a high-performance LED driver capable of controlling up to 96 W of 24 V \sim constant-voltage loads. This driver provides smooth and continuous dimming down to 0.1% low-end. It is ideal for use with strip lighting in applications such as coves, under or over cabinet lighting and pathway lighting. The driver is UL₀ listed with an integrated wiring compartment and can be mounted up to 150 ft (45 m) away from the load.

Compatible Controls for 3-Wire Driver

The Hi-lume Premier 0.1% Constant-Voltage driver is compatible with both EcoSystem and 3-wire control types. When using a 3-wire control, the Hi-lume Premier 0.1% Constant-Voltage driver is compatible with the following controls:

HomeWorks QS

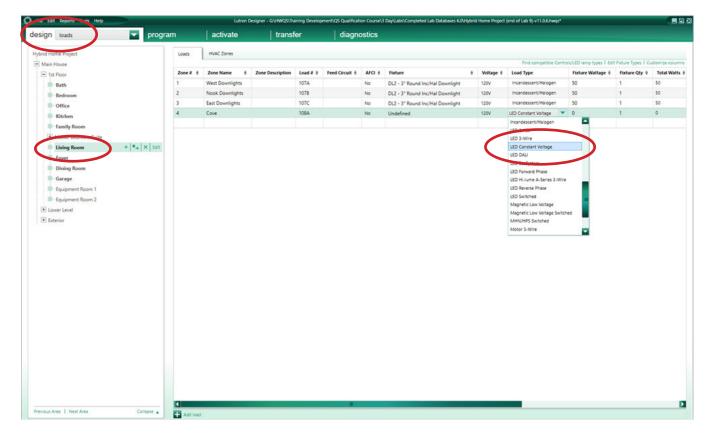
Product	Model I	Number	Recommended System	Drivers per 0	Control
	120 V~	277 V~	Version	120 V~	277 V~
HomeWorks QS with EcoSystem	HQRD-F6AN-DV	HQRD-F6AN-DV	10 or higher	1-6	1-14

RadioRA2

Product	Model Number		Recommended System	Drivers per Control		
	120 V~	277 V~	Version	120 V~	277 V~	
RadioRA 2	RRD-F6AN-DV	RRD-F6AN-DV	10 or higher	1-6	1-14	

HomeWorks QS: Load Schedule for 3-Wire Driver

To add a load to the load schedule navigate to the **design>loads** tab and select the appropriate load type for the driver. For the Hi-lume Premier 0.1% Constant-Voltage driver, select **LED Constant Voltage**.



¹ EcoSystem drivers are no longer available to order as of September 1, 2021.

HomeWorks QS: Assign the load to a control for 3-Wire Driver

If the load is being assigned to a HQRD-F6AN-DV navigate to the **design>controls** tab. Select the **Assign** under the **Zone Name** column.

File Edit Reports Tools Help	Lutron Designer - Gr\HNQ5\Training Development\Q5 Qualification Course\3 Day\Labx\Completed Lab Databases 6.0\Hybrid Home Project (end of Lab 9)+v11.0.6.hwqs*	
design controls rogra	m activate transfer diagnostics	
	m activate transfer diagnostics Controls RF Link QS Link H48 Link +	Edit Toolbox
Previous Area Next Area Collapse		

A window will appear on the righthand side of your screen. Find the load in question and select Assign.

H48 Link + H48 Link + Sature 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	trans	sfer	diag	nostics						
it Cut Copy View Properties Assigned Output Model Device Name Interface	SRL Tableto	op 108 (al and RL)	I Visor Con Transmitt	trol Pic er Gr	o 48 Dual Wall seeTemp bup Light and keypad	Softswitch Relay	Ceiling Occ RF	Expand N Wirel temp	all Collapse all tain House 1st Floor Uving Room	Advanced Settings Assign Assign
	t Cut	Output	Model	Device Name		Interface				

HomeWorks QS: Assign the load to a control for 3-Wire Driver (continued)

After the load has been assigned to the control, the model number of the driver will appear in the **Interface** column.

File Edit Reports Tools Help				Development\QS Qualification C				opeer (end or ead					
equipment	✓ program	activate	transfer	diagnost	cs								
vbrid Home Project	Equipr	ment Backroom H											Edit Too
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= 1st Floor				(,) ^x ; ~	7 0	a ture a	1			-			
Bath				<u> </u>	1000	and a	100						
Bedroom	DIN Rail Module B		17 QS Smart Panel	QSM Wireless 1 phase 20A AFCI Panel	Visor Control Receiver	Single zone HVAC Controller	Hybrid Repeater	Connect Bridg	e LV-14				
III Office					1000 000 000 000 000 000 000 000 000 00								
-Kitchen													
Family Room	Equip	ment Locations Exp	and al. Collapse al									Curton	nize colum
+ Master Bedroom Suite	Eduity		and the second									Control	inte constitu
Living Room	•	Processors											
-Foyer													
Dining Room		10											
Garage													
Equipment Room 1	+	QS Power Panel 1											
Equipment Room 2	+ . × Edit												
+ Lower Level	+												
* Exterior		Hybrid Repea	ter 1										
		-											
	•	HVAC Control	ler 1										
	•	QSM											
		_											
	•	Connect Brid	ge										
	E	EcoSystem DPM X	Edit 🗛 Not A	ssigned									
		-	Lo	op 1 Loop 2									
			8	allasts	+ Load a	e e Occupancy	Fe	ed 8 Load	ype 0	Wattage 0	Qty. 0	Total Int	erface
				+ Living Room + Cove (108A)	108A			LED Co	nstant Voltage	40	1	40 L30	0-96W24V
		Ballasts 1 of 64		Assign									
		10104	Fin	d compatible LED lamp types									
tvious Area Next Area	Collapse 🔺					-						_	

RadioRA 2: Add the control to the database for 3-Wire Driver

On the **design** tab of the programming software select the + icon to add a new device location.

C File Tools Settings Reports Help			RadioRA 2 - New Project*	
RadioR42 Essentials		design	n pro ram activate transfer	
New Project	s 🖬 X		To enable the program screen, add a light or a shade.	
Rooms	Main Repeater 001	Connect Bridge 001		
Main Repeater 5 / 100 Equipment Room Edit	1000			
Click here to add a room	Free C			
	None selected	None selected		
	Find Main Repeater	Find Connect Bridge	inform to add a device local	
ALLITRON				
Technical Support +1.844.588.7651 Support Community https://forums.lutron.com/				

The Add a New Device window will appear. Select the first dimmer available under Dimmers & Switches and select LED Constant Voltage under Device Type.

27

Available Devices	RF Maestro		
Dimmers & Switches			Family RF Maestro Model Number RRD-6CL-WH Choose Alternate Model
	Change Colors Device Location		Faceplate Model Number CW-1-WH
Keypads	Device Type Find compatible LED lamp Zone Name Zone Location Fixture Wattage Fixture Quantity Total Zone Wattage	LED/CFL/INC Dimmer INC/MLV Dimmer INC/MLV Neutral Dimmer ELV/MLV/INC Adaptive Din HI-Iume 1% 2-Wire LTE LED) e A-Series LED driver (3-wire) er
Shades	sheet for the selected device to ensure		Done
		Remote Dimmer	

The Hi-lume Premier 0.1% Constant Voltage Driver (L3D0) is a high-performance LED driver capable of controlling up to 96 W of 24 V constant voltage loads. This driver provides smooth, continuous, and flicker-free dimming down to 0.1% lowend. It is ideal for use with strip lighting in applications such as coves, under or over cabinet lighting and pathway lighting. The driver is UL_{\odot} Listed with an integrated wiring compartment and can be mounted up to 150 ft (45 m) away from the load, depending on the wire gauge.

Compatible Controls for EcoSystem Driver

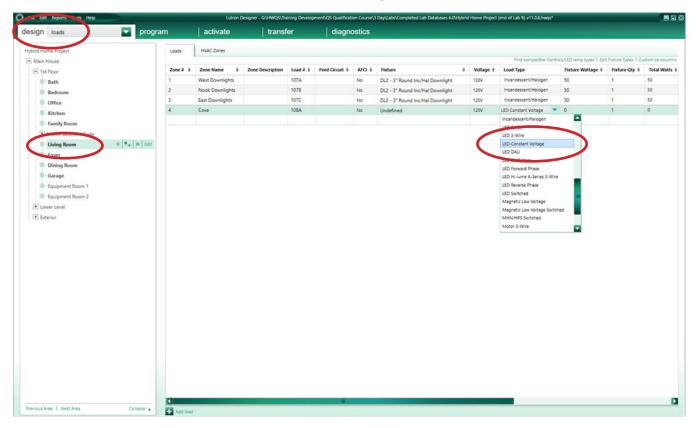
The Hi-lume Premier 0.1% LED driver can be assigned to the following controls:

HomeWorks QS with EcoSystem

Product	Model I	Number	Recommended System	Drivers per Control	
	120 V~	277 V~	Version		
HomeWorks QS with EcoSystem	LQSE-2ECO-D QSGRJE QSGRE	_	10 or higher	64 per EcoSystem link	

HomeWorks QS: Load Schedule (LQSE-2ECO-D)

To add a load to the load schedule go to the **design>loads** tab and select the appropriate load type for the driver. For the Hi-lume Premier 0.1% driver select **LED Constant Voltage**.



HomeWorks QS: Assign the load to a control (LQSE-2ECO-D)

To assign the load to a LQSE-2ECO-D, navigate to the **design>equipment** tab. Select the desired loop and select **Assign** under the **Ballasts** column.

File Edit Decosts Tools Help	Lutron Designer - GVHWQ9\Training DevelopmentQ2 Qualification Course\3 DayLabol.Completed Lab Databases 6.0Hybrid Home Project (end of Lab 9)-v11.0.6hwqs*	
design equipment 🔽 progr	am activate transfer diagnostics	
Hybrid Home Project	Equipment Backroom + 687	Toolbox
- Main House		
1st Floor		
Bath	DIN Rail Power LV-21 LV-17 QS Smart Panel QSM Wireless 1 phase 20A Visor Control Single zone Hybrid Repeater Connect Bridge	
-Bedroom	Module Eco AFCI Panel Receiver HVAC Controller	
Kitchen		
Family Room	Equipment Locations Epend al Collepse all Collepse all	
Master Bedroom Suite		nns
Living Room	Processors	
-Foyer	anaa Fito	
Dining Room		
Garage		
Equipment Room 2 + + K Edit	GS Power Panel 1	
Lower Level		
+ Exterior	Hijdvid Repeater 1	
	HVAC Controller 1	
	е q5м	
	\bigcirc	
	+ Connect Bridge	
	5	
	🖻 EcoSystem DPM X Edit 🚹 Not Asigned	
	1000 2	
	Ballasts	nterface
	ensigned Asign-	
Previous Area Next Area Collapse 🔺		Þ

A window will appear on the right hand side of the screen. Find the load in question and select Assign.

Q5 Smart Panel Q5M Wireless 1 phase 20A Visor Control Single zone HVAC Controller Hybrid Repeater Connect Bridge	Assign Expand all Collapse all Main House String Room Living Room	Advanced Settings Assign Assign Assign
QS Smart Panel QSM Wireless 1 phase 20A Visor Control Single zone Hybrid Repeater Connect Bridge	Main House 1st Floor Uving Room	Assign Assign
d all Collapse all		
*1		
d.		
x	New Load	Done

HomeWorks QS: Assign the load to a control (LQSE-2ECO-D) (continued)

After the load has been assigned to the EcoSystem loop, the model number of the driver will appear in the Interface column.

Sign equipment 🔽 pro	gram activate transfer diagnostics	
adain edailainean 🔤 🔽		
orid Home Project	Equipment Backroom +	Edit
Main House		
= 1st Floor		
-Bath	DIN Rail Power UV-21 UV-17 QS Smart Panel QSM Wireless 1 phase 20A Visor Control Single zone Hybrid Repeater Connect Bridge UV-14	
-Bedroom	Module Eco	
10 Office		
- Kitchen		
-Family Room	Equipment Locations Expand all Collapse all	Customize col
+ Master Bedroom Suite		
Uving Room	Processors	
Foyer		
Dining Room Garage	e 🔤	
Equipment Room 1		
Equipment Room 2 + + K Ed	CS Power Panel 1	
Equipment Room 2 T + × to		
Exterior	Hybrid Repeater 1	
Lateror		
	HVAC Controller 1	
	C QSM	
	Connect Bridge	
	EcoSystem DPM X Est Assigned	
	Ballasts	Total Interface 40 L3D0-96W2
	Ballasts Arrigen	1. 1500-96W2
	1 of 64 Program	
vious Area Next Area Collapse		

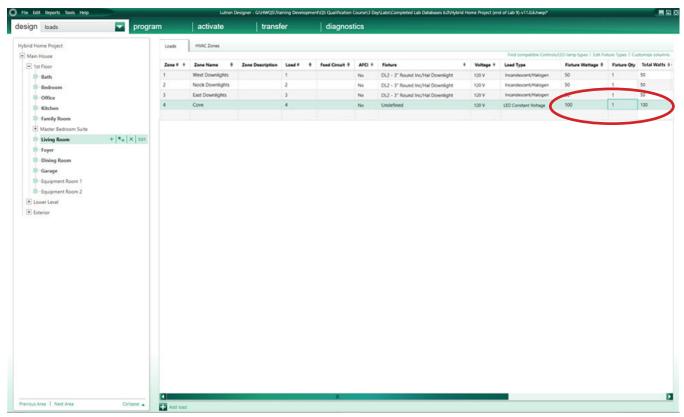
HomeWorks QS: Load Schedule (QSGRJ-_E)

To add a load to the load schedule go to the **design>loads** tab and select the appropriate load type for the driver. For the Hi-lume Premier 0.1% driver select **LED Constant Voltage**.

Each GRAFIK Eye QS with EcoSystem unit can have a maximum of 64 EcoSystem ballasts/drivers connected to it and can control a maximum of up to 16 zones. However, **Fixture Qty** is unable to be changed to anything other than 1 for an EcoSystem load type in the software. For EcoSystem zones that contain multiple ballasts/drivers the fixture quantity will need to be left at 1 and the TOTAL fixture wattage should be entered in the **Fixture Wattage** field.

For example, if there are 4 EcoSystem Sconce fixtures that are 25 W each and are all in the same zone, 100 W would be entered in the **Fixture Wattage** field and the **Fixture Qty** would be left at 1.

Note: EcoSystem ballasts and drivers must be programmed and assigned to GRAFIK Eye QS zones using the local buttons and display on the GRAFIK Eye. EcoSystem ballast/driver to zone mapping cannot be performed through the HomeWorks QS software.



HomeWorks QS: Assign the load to a control (QSGRJ-_E)

If the load is being assigned to a QSGRJ-_E the assignment will be done in the **design>controls** tab. Select one of the Eco outputs and select **Assign** under the **Zone Name** column.

sign controls	- program	activate	transfer	diagnost	ics				
		. []							
orid Home Project	Contro	Is RF Link QS Link H	148 Link +						Edit To
Main House			,5 [#]		¹ د, ۲ ¹ د, -	1. Salar 1.	- ,5"	,5°	innin
- 1st Floor	1				•				1
Bath	QSG	Hybrid 6BRL Tabletop 1	108 (all Visor Co	ntrol Pis	o 48 Dual Wall seeTem	o Softswitch Relay Ceiling Occ RF	Wireless	WPM 6 Zone	QSG Eco
Bedroom		on/off and	d RL) Transmit	ter Gr	oup Light and keypad ade Icon		temperature		
Office				Sh	ade Icon		sensor		
Kitchen	_								
Family Room	Device	e Locations Auto-Create L	.cads Expand all Ci	ollapse all					Customize
Master Bedroom Suite			1 1 1						
Living Room	- Co	ntrol Station 001 X Edit	Cut Copy	/iew Properties	Not Assigned				
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	■+ × Edit	1000000 <u></u>		• 0		U-16E 🔽			
Garage			Output Inpu						
Equipment Room 1	Sho	w Wattage Summary		Model Devic	e Name Zone Name	Interface			
Equipment Room 2			1 Phase	QSGRJ-16E CSD	01 Assign_				
Lower Level			2 Phase	QSGRJ-16E CSD	01 Assign				
Exterior				QSGRJ-16E CSD	01				
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			16 Eco	QSGRJ-16E CSD (

A window will appear on the right hand side of the screen. Find the load in question and select Assign.

+						💭 Assign	×
		(20)		-	and the second s	Expand all Collapse all	Advanced Settings
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Visor	Control	Pico 48 Dual	Wall seeTemp Softswitch Relay	Ceiling Occ RF	Wireless	Living Room	Assign
Transr		Group Light and		, see a second	temperature	Cove (LED EcoSystem)	Assign
		Shade Icon			sensor		
pand all	Collapse all						
Сору	View Properties	🔥 Not Assign	ed				
lumber Of Z	-	umber of Shade Groups					
6	0		QSGRJ-16E				
Output In							
	Model	Device Name	Zone Name	Interface			
1 Phase	QSGRJ-16E	CSD 001					
2 Phase	QSGRJ-16E	CSD 001					
3 Phase	QSGRJ-16E	CSD 001					
	QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001					
4 Eco							
4 Eco 5 Eco	QSGRJ-16E	CSD 001					
3 Phase 4 Eco 5 Eco 6 Eco 7 Eco	QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001					
4 Eco 5 Eco 6 Eco 7 Eco	QSGRJ-16E QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001 CSD 001					
4 Eco 5 Eco 6 Eco 7 Eco 8 Eco	QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001 CSD 001 CSD 001					
4 Eco 5 Eco 6 Eco	QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E QSGRJ-16E	CSD 001 CSD 001 CSD 001 CSD 001 CSD 001				New Load	Done

HomeWorks QS: Assign the load to a control (QSGRJ-_E) (continued)

After the load has been assigned to the EcoSystem loop, the model number of the driver will appear in the Interface column.

ie Edit Reports Tools Help	the second second second second	Lutron Designer	G:\HWQS\Training Develo	pment\QS Quali	fication Course\3 Day	Labs\Completed Lab Databas	es 6.0\Hybrid Home Project (end of Lab 9)-v11.0.6.hwqs*	
sign controls	✓ program	activate	transfer	dia	gnostics			
brid Home Project	Contro	Is RF Link QS Link	H48 Link +					Edit
Main House		1 3 📰 3 📰			. 🗐 🖉		3 3 3 3 3	J
1st Floor		2 2				· · ·		2 2 2
Bath	The second				<u> </u>			
Bedroom	QSG	Hybrid 6BRL Tabletop on/off a	nd RL) Transr	Control	Pico 48 Dual Group Light an	Wall seeTemp Softswi d keypad	tch Relay Ceiling Occ RF Wireless V temperature	VPM 6 Zone QSG Eco
Office					Shade Icon		sensor	
Kitchen								
Family Room	Device	e Locations	Loads Expand all	Collapse all				Customize
+ Master Bedroom Suite	Device		codes expand an	conspire an				costoringe
Living Room +	🗣 🗶 Edit 🖃 Co	introl Station 001 X Edi	t Cut Copy	View Propertie	s 🛛 📥 Not Assi	ined		
-Foyer								
Dining Room		1111111 LT	Number Of Z		lumber of Shade Grou	OS: Model: QSGRJ-16E		
Garage		1	Output In					
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Equipment Room 2	31	w watage summary	1 Phase	QSGRJ-16E	CSD 001	Assign_		
+ Lower Level			2 Phase	QSGRJ-16E	CSD 001	Assign		
+ Exterior			3 Phase	QSGRJ-16E	CSD 001	Assign	\frown	
			4 Eco	QSGRJ-16E	CSD 001	Cove	L3D0-96W24V-U	
			5 Eco	QSGRJ-16E	CSD 001	Assign		
			6 Eco	QSGRJ-16E	CSD 001	Assign		
			7 Eco	QSGRJ-16E	CSD 001	Assign		
			8 Eco	QSGRJ-16E	CSD 001	Assign		
			9 Eco	QSGRJ-16E	CSD 001	Assign		
			10 Eco	QSGRJ-16E	CSD 001	Assign		
			11 Eco	QSGRJ-16E	CSD 001	Assign		
			12 Eco	QSGRJ-16E	CSD 001	Assign		
			13 Eco	QSGRJ-16E	CSD 001	Assign		
			14 Eco	QSGRJ-16E	CSD 001	Assign		
			15 Eco	QSGRJ-16E	CSD 001	Assign		
			16 Eco	QSGRJ-16E	CSD 001	Assign		
			Find compatil	vie LED lamp typ	e			

HomeWorks Digital Controller and HomeWorks Digital 0.1% LED Controller

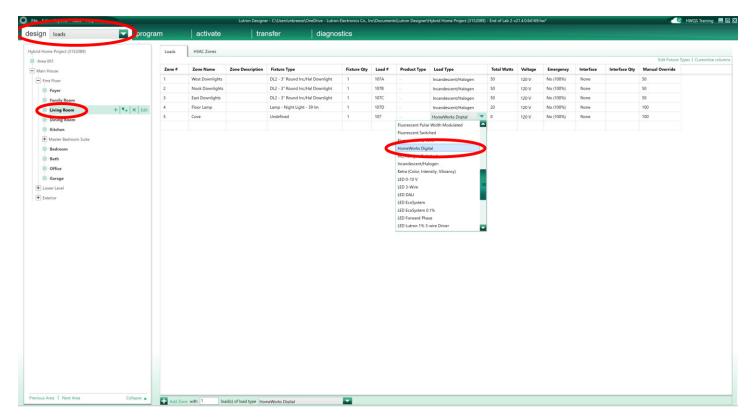
HomeWorks Digital 0.1% LED controllers provide a high-performance solution for any space, in any application. They provide smooth, continuous dimming down to 0.1% of full output current, and fade smoothly between 0% and 0.1% with Soft-on, Fade-to-Black.

Compatible Controls for HomeWorks Digital Controller

Product	Model Number		Recommended	Drivers per Control	
Product	120 V \sim	277 V \sim	Software Version	Drivers per Control	
HomeWorks QSX with Digital	LQSE-2HDC-D	LQSE-2HDC-D	21.4 or higher	64 per digital link	

HomeWorks QSX: Load Schedule for HomeWorks Digital Controller

To add a load to the load schedule, navigate to the **design>loads** tab and select the appropriate load type for the driver. For the HomeWorks Digital Controller, select HomeWorks Digital.



HomeWorks Digital Controller and HomeWorks Digital 0.1% LED Controller *(continued)*

HomeWorks QSX: Assign the load to a control (LQSE-2HDC-D)

To assign the load to a LQSE-2HDC-D, navigate to the **design>equipment** tab. Select the desired loop and select **Assign** under the **Ballasts** column.

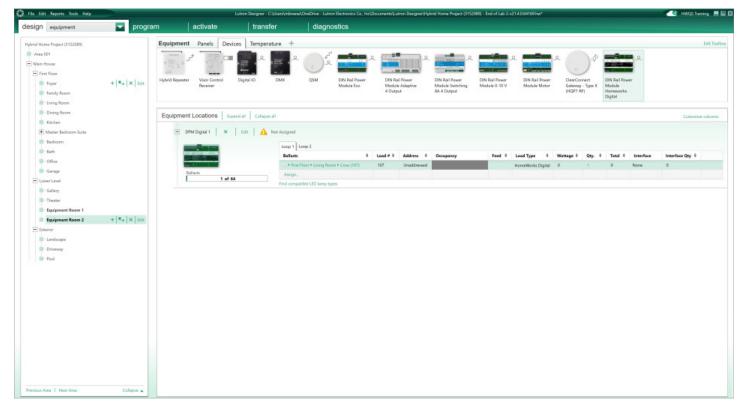
File Edit Reports Tools Help		Lutro	n Designer - C:\Users\mb	oreese\OneDrive - Lutron Electronics Co.,	Inc\Desktop\HomeWorks QS Train	ning\Training Labs\Hybrid Home	e Project (3152089) - End of Lab 12.hw ⁴		🔣 Madison Breese 📃 🖻 🛛
design equipment	program	activate	transfer	diagnostics					
Hybid Home Project (3152089) Main House First Floor Foyer Family Room Duing Room Doing Room	Equ 	ipment Backroom +	Visor Control Receiver	Hybrid Repeater Palladion HVXC Controller	1 phase 20A AFCI DIN Panel	Q. Niver TBs			Edit Toolbox
 Dating scalar Dating scalar Dating scalar Master Bedroom Suite Bath Office Garage Cover Level Gallery Thester Equipment Room 1 Exterior 	+ *+ × tot	Jepment LoCations Equance Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Processor Proces	pphy 1 er 1 Edit D	evices Output Input Dental Tite Ballats	co 1) € Load # € Address	θ Occupancy	Feed $\hat{\Psi}$ Load Type $\hat{\Psi}$ V	Vattage 0 Qty. 0 Total 0	Customize columns
Previous Area Next Area	Collapse 🔺	Show Wattage Summary							▼

A window will appear on the right hand side of the screen. Find the load in question and select Assign.

File Edit Reports Tools Help	Lutron Designer - Ci-(Users\mbreese-\OneDrive - Lutron Electronics Co., Inc\Desktop\HomeWorks QS Training\Training Labs\Hybrid Home Project (3152089) - End of Lab	b 12.hw*
equipment rogra	m activate transfer diagnostics	
brid Home Project (3152089)	Equipment Backroom +	Kypand all Collapse all Advanced
Main House First Floor Forger Family Room Duing Boom	Image: Control and Contro	Main House Text Flore First Flore Fore Cove (HomeWorks Digital)
• Kitchen	Equipment Locations Expand all Collapse all	
Master Bedroom Suite Bedroom Bath Office	Power Supply 1 Processor	
Garage Lower Level Gallery	Hybrid Repeater 1	
Theater Theater Equipment Room 1 + •+ × Edit Equipment Room 2 Exterior	Din Ral Panel 001 X Edit Devices Output Input Distail 1 Roos 31 Ballatts 0 Load # 0 Address 0 Occupancy Feed 0 Load Type 1	0 Wattage 0 Oty. 0 To
	Balasts 0 Load # 0 Address 0 Occupancy Fed 0 Load Type 1	
vious Area Neet Area Collapse 🛦	Show Wattage Summary	New Load

HomeWorks Digital Controller and HomeWorks Digital 0.1% LED Controller *(continued)*

HomeWorks QSX: Assign the load to a control (LQSE-2HDC-D) (continued)



Additional Information and Resources

EcoSystem Programming

For more information on configuring and using EcoSystem loads, refer to **Using EcoSystem Ballasts/Drivers in HomeWorks QS** available in the Application Notes section at www.lutron.com (requires a myLutron login).

Specification Submittals:

Hi-lume 1% 2-wire/EcoSystem (LTEA)

Hi-lume 1% 3-Wire/EcoSystem (L3DA)

Hi-lume Premier 0.1% EcoSystem/3-wire Constant Voltage (L3D0)

0.1% Premier HomeWorks Digital Controller

HomeWorks Digital Power Module

Installation Guides:

Hi-lume 1% 2-wire

Hi-lume 1% EcoSystem

Hi-lume 1% 3-Wire/EcoSystem

Hi-lume 0.1% 3-wire/EcoSystem

LCI Online - www.lutron.com/LCIonline

OVW 103 - Understanding Load Types

OVW 301 - Introduction to LEDs and LED Drivers

OVW 206 - Hi lume A Series LED Driver

Dimming LEDs

Controlling LEDs White Paper

Residential Systems Control of LED Lighting

Challenges of Dimming LED Loads on ELV and MLV Transformers

0-10 V=== Control Topology

Lutron, C•L, EcoSystem, GRAFIK Eye, GRAFIK T, Hi-lume, HomeWorks, Ivalo, Maestro, Maestro Wireless, Pico, RadioRA, RadioRA 2, RA2, RA2 Select, Soft-On, Fade-to-Black, Softswitch, and Tu-Wire are trademarks or registered trademarks of Lutron Electronics Co., Inc. in the US and/or other countries.

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Lutron Contact Numbers

WORLD HEADQUARTERS

USA Lutron Electronics Co., Inc. 7200 Suter Road Coopersburg, PA 18036-1299 TEL: +1.610.282.3800 FAX: +1.610.282.1243

support@lutron.com

www.lutron.com/support

North & South America Customer Assistance USA, Canada, Caribbean: 1.844.LUTRON1 (1.844.588.7661) Mexico: +1.888.235.2910 Central/South America: +1.610.282.6701

EUROPEAN HEADQUARTERS United Kingdom

Lutron EA Limited 125 Finsbury Pavement 4th floor, London EC2A 1NQ United Kingdom TEL: +44.(0)20.7702.0657 FAX: +44.(0)20.7480.6899 FREEPHONE (UK): 0800.282.107 Technical Support: +44.(0)20.7680.4481

lutronlondon@lutron.com

ASIAN HEADQUARTERS Singapore Lutron GL Ltd. 390 Havelock Road #07-04 King's Centre Singapore 169662 TEL: +65.6220.4666 FAX: +65.6220.4333 Technical Support: 800.120.4491 lutronsea@lutron.com

Asia Technical Hotlines Northern China: 10.800.712.1536 Southern China: 10.800.120.1536 Hong Kong: 800.901.849 Indonesia: 001.803.011.3994 Japan: +81.3.5575.8411 Macau: 0800.401 Taiwan: 00.801.137.737 Thailand: 001.800.120.665853 Other Countries: +65.6220.4666