



# Healthcare IECC 2015 Solutions

Design Guide

Crestron Electronics, Inc.

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# TOTAL ENERGY CONSUMPTION

Per capita usage; 10<sup>9</sup> BTU per person

	OIL	COAL	SOLAR
Temperate climates	2.50b	3.1b	0.25
Subtropical climates	1.23b	0.55b	1.18
Hot climates	0.09b	0.19b	3.73
Cold climates	1.15b	1.30b	2.21
	0.20b	0.82b	1.32
	<b>Total: 5.17</b>	<b>Total: 5.96</b>	<b>Total: 5.17</b>



## About IECC 2015

The International Energy Conservation Code (IECC) 2015 is a residential and commercial building energy code that has been adopted by many states and municipalities. The goal of this code is to reduce energy consumption by providing design and construction requirements for lighting controls.

Lighting controls such as occupancy status sensors, multi-level controls, and demand response provisions allow you to synchronize indoor light levels with daylight levels in accordance with IECC 2015.

## Design Guide Information

Crestron® offers this Design Guide for Healthcare - IECC 2015 solutions to use as a reference for typical layouts. Use it as guidance to make code compliance quick and easy. The Crestron team is also available to support with detailed design, submittal, and installation requirements. For additional information, please contact your Crestron representative at [CLCDesign@crestron.com](mailto:CLCDesign@crestron.com) or (888) 330-1502.

# IECC 2015 Code Standards

## Summary

### IECC 2015 Code Requirements

	Code Provision	Minimum Control Requirement	Code Description
ON/OFF CONTROL	C405.2.1.1.2*	Manual On / Partial Auto On (Vacancy Sensing Mode)	The general lighting must either be manually turned on or automatically turned on up to 50%.
	C405.2.1.1.2*	Automatic Full On (Occupancy Sensing Mode)	Lighting is permitted to automatically turn to full on.
	C405.2.1.1.3 C405.2.2.2 C405.2.2.3	Manual Controls	There must be one or more readily accessible manual lighting control(s) in each space.
	C405.2.1.1.1	Automatic Full Off	All lighting must be shut off within 30 minutes of vacancy.
	C405.2.2	Time-switch Controls (Programmable Timeclock)	All lighting must be programmed to shut off automatically when a space is scheduled to be unoccupied by using a programmable timeclock or signal from another control device (i.e. security system).
	C205.2.5	Exterior Lighting Controls (Timeclock, Photocontrol)	Exterior lighting should be controlled by the astronomical time clock (dusk, dawn, opening, closing) and photocontrols. See code for more information.
	LIGHT LEVEL CONTROL	C405.2.3	Daylight-responsive Continuous Dimming (Photocontrol)
C405.2.3.1.4		Continuous Dimming (0-10v Dimming)	Lighting should continuously dim from full light output to 15 percent or lower.

#### Primary Solutions

Zūm™ Wireless Light Control

GLPP

GLPAC

GLDALI

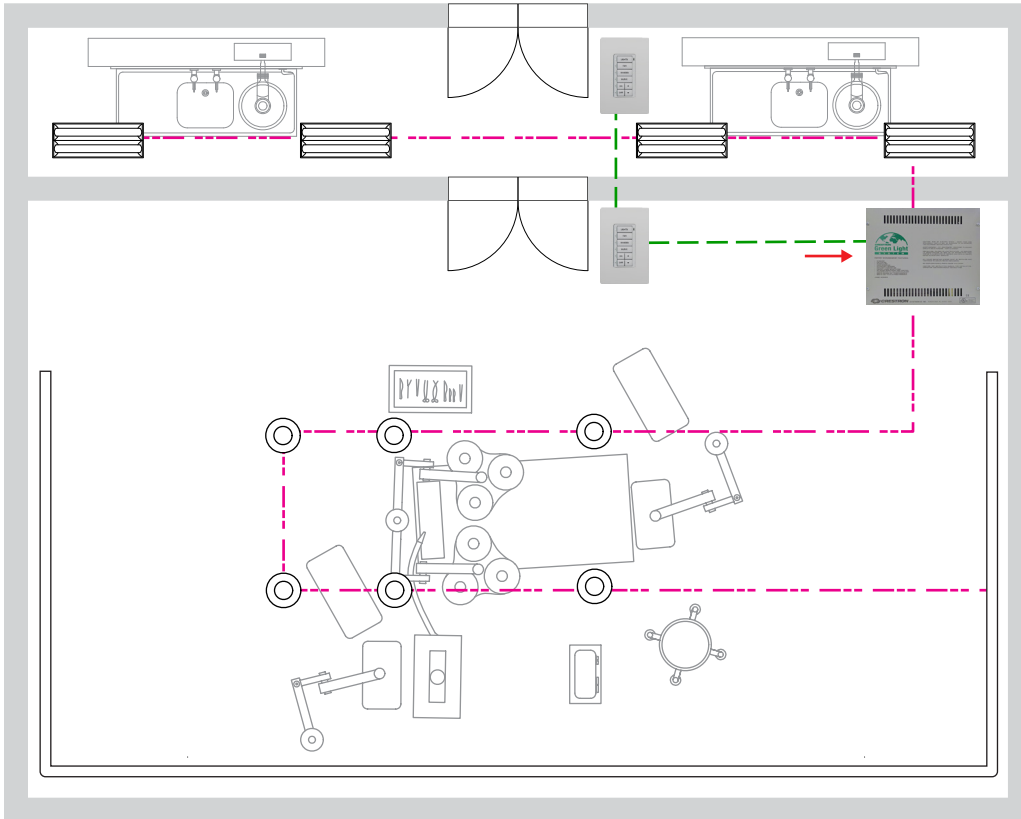
GLPAC

\* Not required if using time-switch controls (C405.2.2).

SPACE TYPE							
Patient Room/ Nursery/ Nurse Station	Exam/ Operating Room	Private Office	Corridor	Lobby	Restroom	Site Lighting	Parking Garage
		✓					
			✓	✓	✓		
✓	✓	✓	✓	✓	✓		
		✓	✓	✓	✓		
			or ✓	or ✓			
						✓	✓
		✓	✓	✓	✓		
		✓					
		✓	✓	✓	✓		
		✓	✓	✓	✓		
				✓			
✓	✓						
✓	✓					✓	✓

# Operating Room

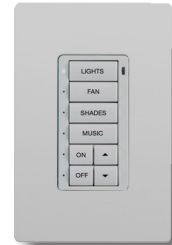
## GLDALI





### IECC 2015 Code Compliance:

- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)

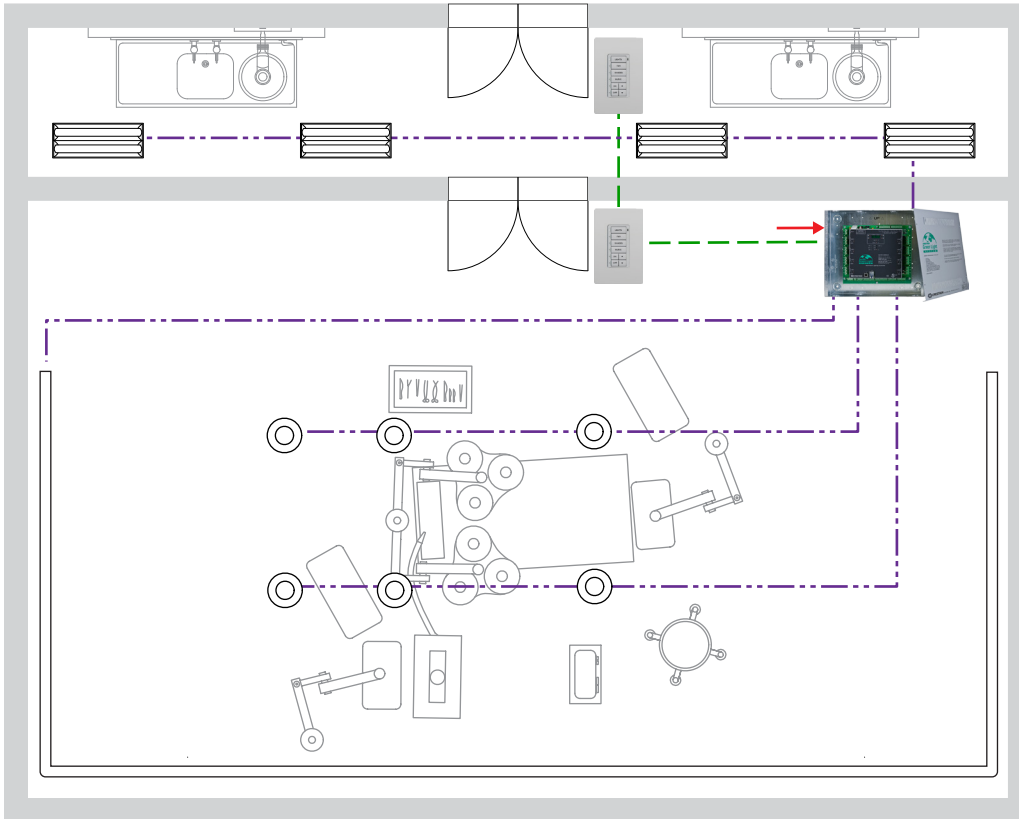
### Local Control:



Symbol	Qty.	Product	Description
	1	GLDALI	DIN-EN-3x18, RMC3, DIN-DALI-2, DIN-BLOCK, DIN-PWS60, CEN-SW-POE-5
	2	C2N-CBD-P	Cameo® Keypad, Standard Mount

# Operating Room

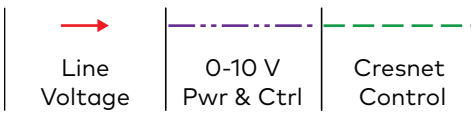
## GLPAC





### IECC 2015 Code Compliance:

- Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)

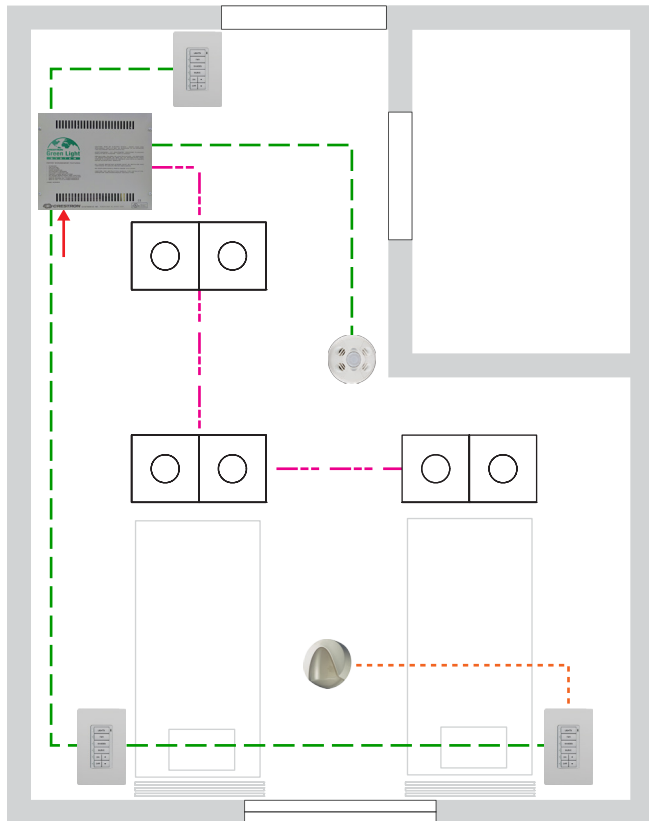
### Local Control:



Symbol	Qty.	Product	Description
	1	GLPAC-DIMFLV8-4E	Green Light Integrated Lighting System, 2 Isolated 4-Channel Outputs
	2	C2N-CBD-P	Cameo® Keypad, Standard Mount

# Patient Room / Exam Room

## GLDALI



## IECC 2015 Code Compliance:

- Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)

## Local Control:

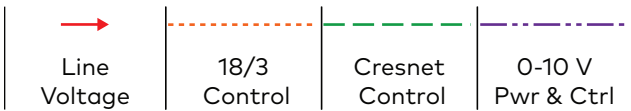
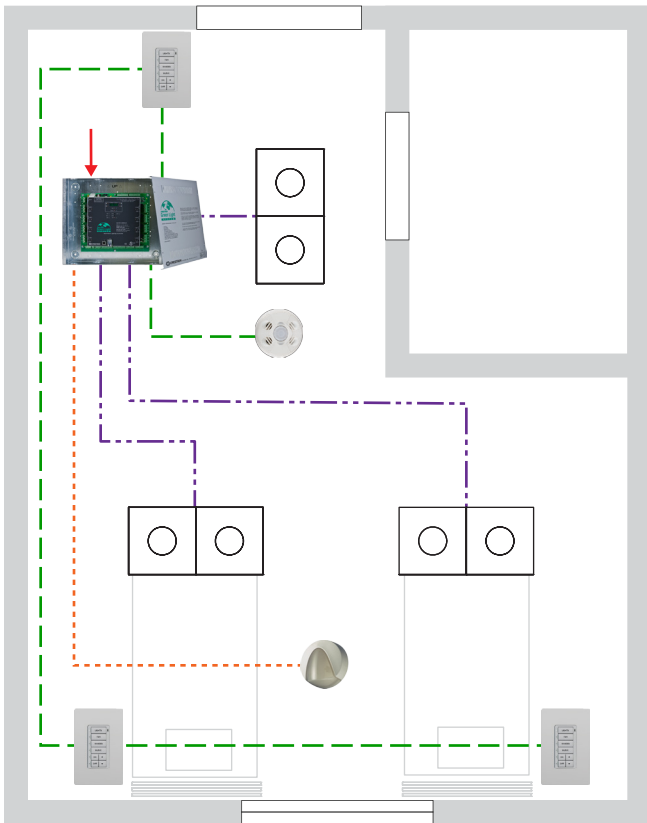


Symbol	Qty.	Product	Description
	1	GLDALI	DIN-EN-3x18, RMC3, DIN-DALI-2, DIN-BLOCK, DIN-PWS60, CEN-SW-POE-5
	3	C2N-CBD-P	Cameo® Keypad, Standard Mount
	1	GLS-ODT-C-NS	Dual-Technology Ceiling Mount Occupancy Sensor, 2000 sq. ft.
	1	GLS-LOL	Crestron Green Light® Photosensor, Open-Loop



# Patient Room / Exam Room

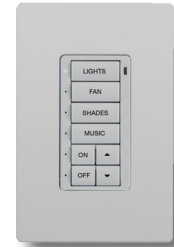
## GLPAC







## IECC 2015 Code Compliance:

- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)

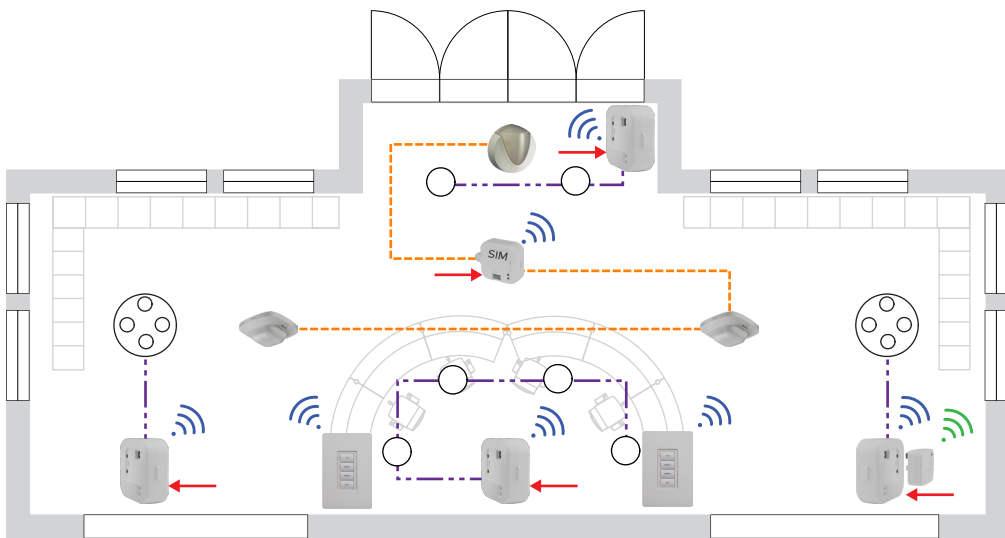
## Local Control:



Symbol	Qty.	Product	Description
	1	GLPAC-DIMFLV8-4E	Green Light Integrated Lighting System, 2 Isolated 4-Channel Outputs
	3	C2N-CBD-P	Cameo® Keypad, Standard Mount
	1	GLS-ODT-C-NS	Dual-Technology Ceiling Mount Occupancy Sensor, 2000 sq. ft.
	1	GLS-LOL	Crestron Green Light® Photosensor, Open-Loop

# Lobby

## Züm









- ▶ Add a ZUM-FLOOR-HUB and ZUMNET-GATEWAY for time-switch controls (C405.2.2).

### IECC 2015 Code Compliance:

- ▶ Automatic Full On (Occupancy Sensing Mode) (C405.2.1.1.2)
- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- ▶ Automatic Full Off (C405.2.1.1.1)
- ▶ Daylight-responsive Continuous Dimming (Photocontrol) (C405.2.3)

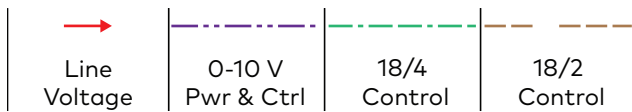
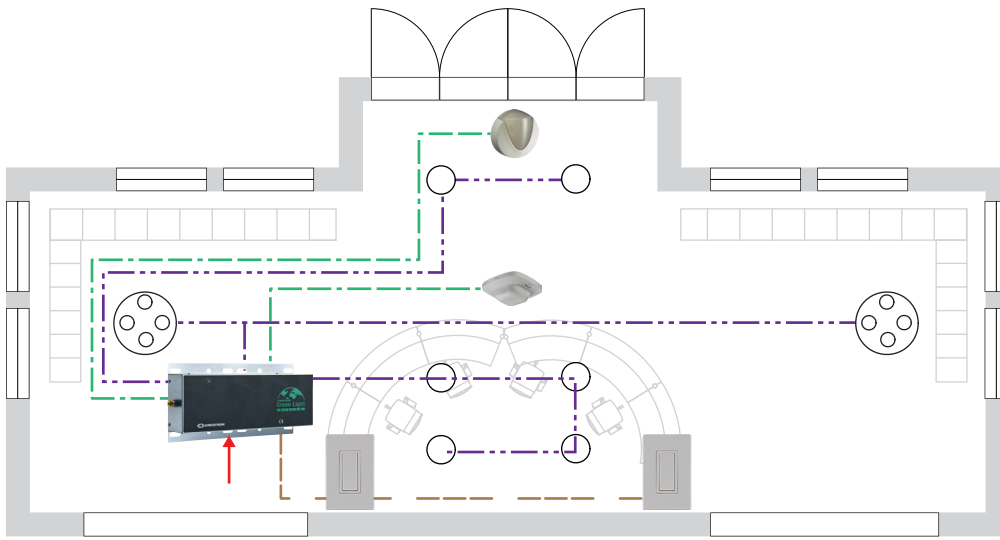
### Local Control:



Symbol	Qty.	Product	Description
	3	ZUMMESH-JBOX-5A-LV	Junction Box Zone Controller, 0-10V Dimming, 5A
	1	ZUMMESH-NETBRIDGE	Züm™ Network Bridge
	1	ZUMMESH-JBOX-SIM	Züm™ Junction Box Sensor Integration Module
	2	ZUMMESH-KP10CBATT	6-Button Battery-Powered Keypad
	2	GLA-IR-QUATTRO-COM1-24	High Definition PIR Presence Detector, Ceiling Mount, Square & Scalable 360° Coverage, 18-24 VAC/VDC
	1	GLS-LOL	Crestron Green Light® Photosensor, Open-Loop

# Lobby

## GLPP







## IECC 2015 Code Compliance:

- ▶ Automatic Full On (Occupancy Sensing Mode) (C405.2.1.1.2)
- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- ▶ Automatic Full Off (C405.2.1.1.1)
- ▶ Daylight-responsive Continuous Dimming (Photocontrol) (C405.2.3)

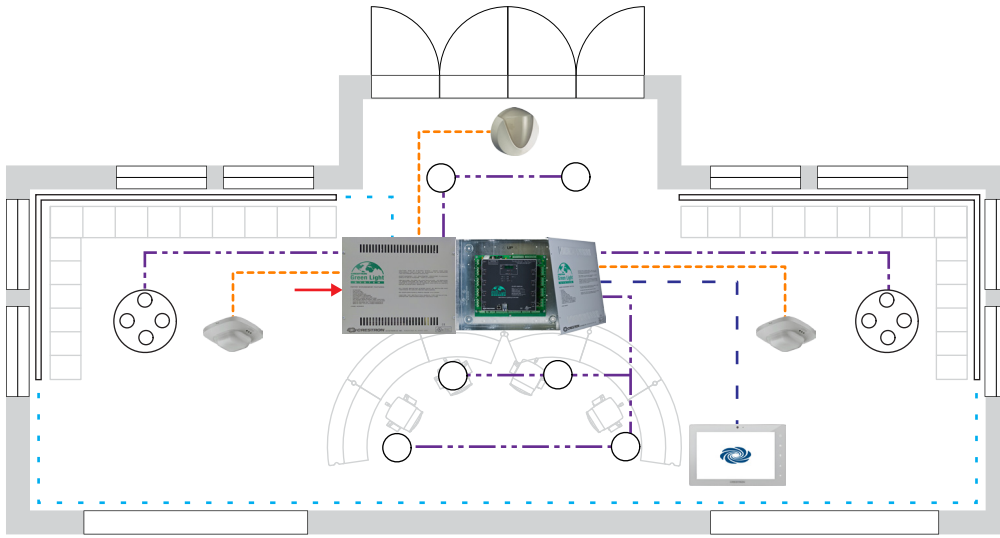
## Local Control:



Product	Qty.	Product	Description
	1	GLPP-1DIMFLV2-CN-PM	3-Ch 0-10V Dimmer with Cresnet® Control
	2	GLPPA-KP	In-Wall Keypad for GLPP
	1	GLA-IR-QUATTRO-COM1-24	High Definition PIR Presence Detector, Ceiling Mount, Square & Scalable 360° Coverage, 18-24 VAC/VDC
	1	GLS-LOL	Cresstron Green Light® Photosensor, Open-Loop

# Lobby

## GLPAC + DMX



## IECC 2015 Code Compliance:

- ▶ Automatic Full On (Occupancy Sensing Mode) (C405.2.1.1.2)
- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- ▶ Automatic Full Off (C405.2.1.1.1)
- ▶ Time-switch Controls (Programmable Timeclock) (C405.2.2)
- ▶ Daylight-responsive Continuous Dimming (Photocontrol) (C405.2.3)

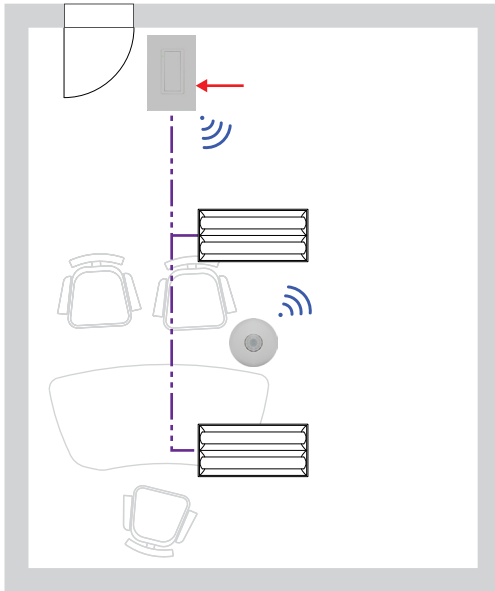
## Local Control:



Product	Qty.	Product	Description
	1	GLPAC-DIMFLV4	Green Light Integrated Lighting System, 4-Channel
	1	TSW-760	7" Touch Screen
	2	GLA-IR-QUATTRO-COM1-24	High Definition PIR Presence Detector, Ceiling Mount, Square & Scalable 360° Coverage, 18-24 VAC/VDC
	1	GLS-LOL	Crestron Green Light® Photosensor, Open-Loop

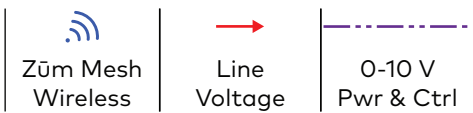
# Private Office

## Zūm



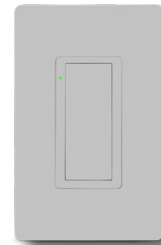
### IECC 2015 Code Compliance:



- ▶ Manual On / Partial Auto On (Vacancy Sensing Mode) (C405.2.1.1.2)
- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- ▶ Automatic Full Off (C405.2.1.1.1)
- ▶ Continuous Dimming (0-10V Dimming) (C405.2.3.1.4)



- ▶ Daylight-responsive continuous dimming (photocontrol) (C405.2.3) may be required if windows are present.

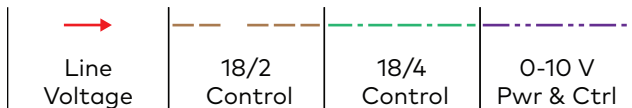
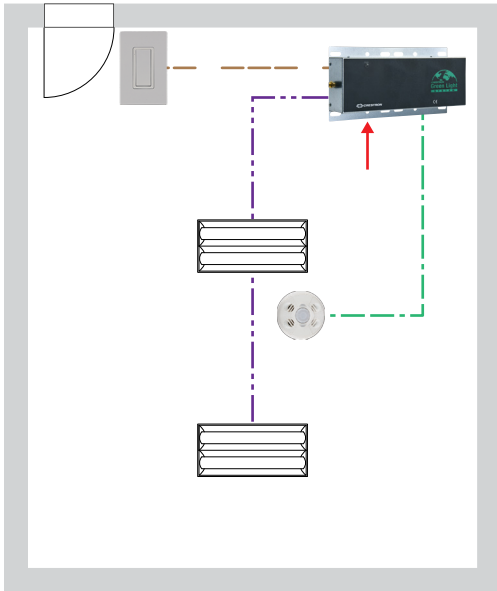
### Local Control:



Symbol	Qty.	Product	Description
	1	ZUMMESH-5A-LV	Zūm™ Wall-Box Dimmer, 5A
	1	ZUMMESH-PIR-VACANCY-BATT	PIR Vacancy Sensor (AUTO-OFF)

# Private Office

## GLPP



- Daylight-responsive continuous dimming (photocontrol) (C405.2.3) may be required if windows are present.

## IECC 2015 Code Compliance:

- Manual On / Partial Auto On (Vacancy Sensing Mode) (C405.2.1.1.2)
- Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- Automatic Full Off (C405.2.1.1.1)
- Continuous Dimming (0-10V Dimming) (C405.2.3.1.4)

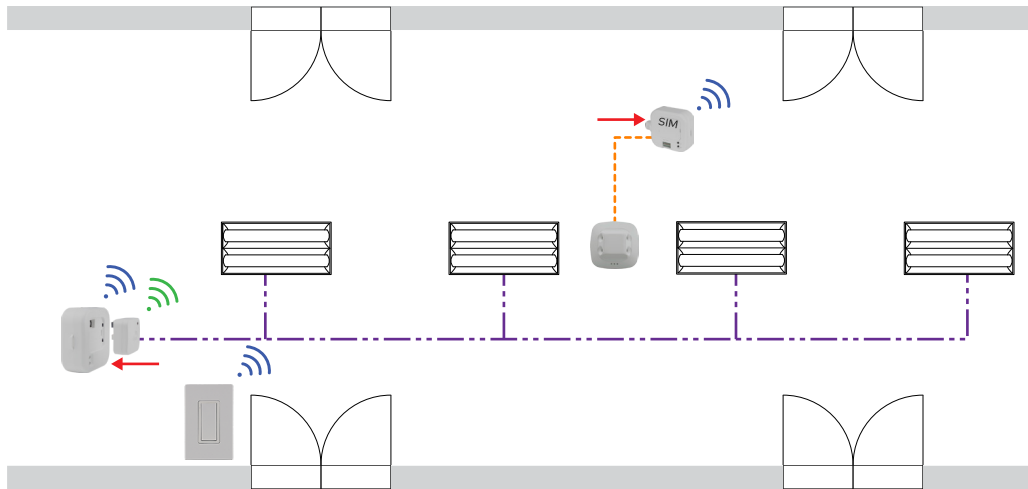
## Local Control:



Symbol	Qty.	Product	Description
	1	GLPP-DIMFLVCN-PM	1-Ch 0-10V Dimmer with Cresnet® Control
	1	GLPPA-KP	In-Wall Keypad for GLPP
	1	GLS-ODT-C-NS	Dual-Technology Ceiling Mount Occupancy Sensor, 2000 sq. ft.

# Corridor

## Zūm



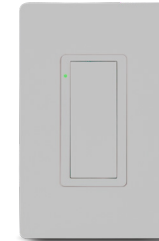
### IECC 2015 Code Compliance:

- ▶ Automatic Full On (Occupancy Sensing Mode) (C405.2.1.1.2)
- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- ▶ Automatic Full Off (C405.2.1.1.1)



- ▶ UL924 emergency lighting devices are available for life safety.
- ▶ Daylight-responsive continuous dimming (photocontrol) (C405.2.3) may be required if windows are present.
- ▶ Add a ZUM-FLOOR-HUB and ZUMNET-GATEWAY for time-switch controls (C405.2.2).

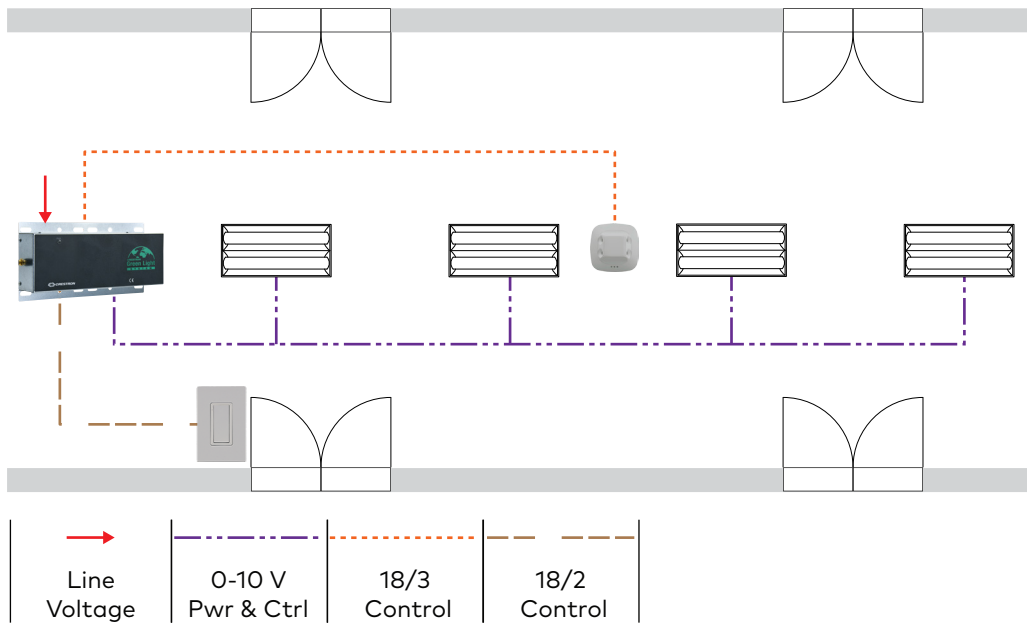
### Local Control:



Symbol	Qty.	Product	Description
	1	ZUMMESH-JBOX-5A-LV	Junction Box Zone Controller, 0-10V Dimming, 5A
	1	ZUMMESH-JBOX-SIM	Zūm™ Junction Box Sensor Integration Module
	1	ZUMMESH-NETBRIDGE	Zūm™ Network Bridge
	1	ZUMMESH-KP10ABATT	Rocker-Button Battery Powered Keypad
	1	GLA-US-HALLWAY-COM1-24	40 kHz Ultrasonic Presence Detector, Ceiling Mount, Hallway Coverage, 18-24 VAC/VDC, 33 ft corridor coverage, up to 8 hallway sensors per SIM

# Corridor

## GLPP






## IECC 2015 Code Compliance:

- ▶ Automatic Full On (Occupancy Sensing Mode) (C405.2.1.1.2)
- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- ▶ Automatic Full Off (C405.2.1.1.1)

- ▶ UL924 emergency lighting devices are available for life safety.
- ▶ Daylight-responsive continuous dimming (photocontrol) (C405.2.3) may be required if windows are present.

## Local Control:

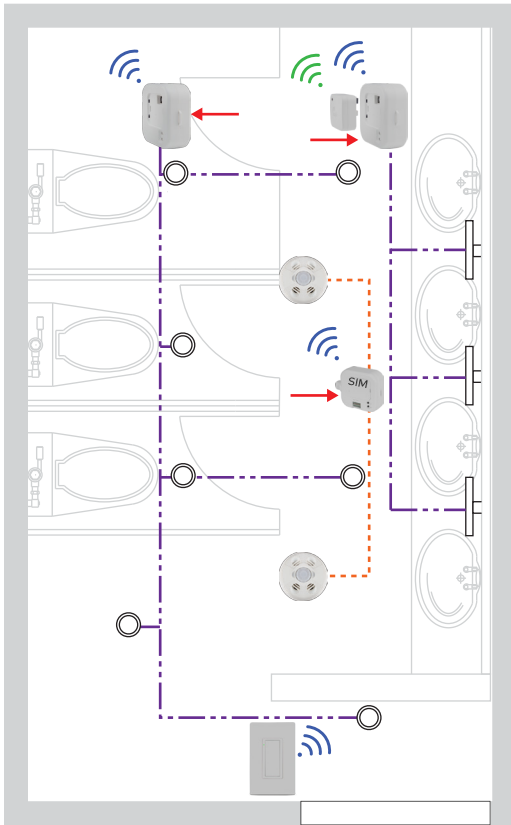


Product	Qty.	Product	Description
	1	GLPP-1DIMFLVCN-PM	1-Ch 0-10V Dimmer with Cresnet® Control
	1	GLPPA-KP	In-Wall Keypad for GLPP
	1	GLA-US-HALLWAY-COM1-24	40 kHz Ultrasonic Presence Detector, Ceiling Mount, Hallway Coverage, 18-24 VAC/VDC



# Public Restroom

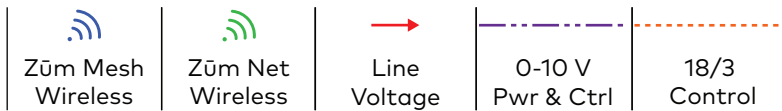
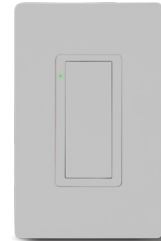
## Zūm



### IECC 2015 Code Compliance:

- ▶ Automatic Full On (Occupancy Sensing Mode) (C405.2.1.1.2)
- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- ▶ Automatic Full Off (C405.2.1.1.1)

### Local Control:

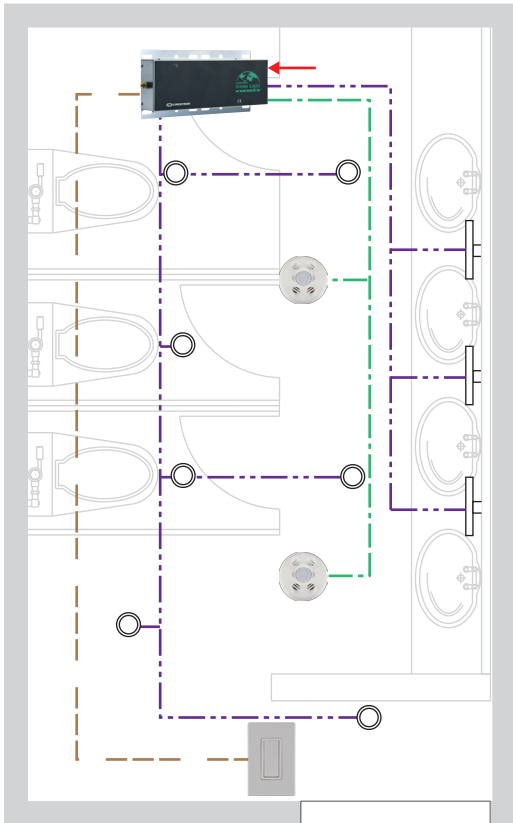


- ▶ Daylight-responsive continuous dimming (photocontrol) (C405.2.3) may be required if windows are present.

Symbol	Qty.	Product	Description
	2	ZUMMESH-JBOX-5A-LV	Zūm™ Junction Box Zone Controller, 0-10V Dimming, 5A
	1	ZUMMESH-NETBRIDGE	Zūm™ Network Bridge
	1	ZUMMESH-JBOX-SIM	Zūm™ Junction Box Sensor Integration Module
	1	ZUMMESH-KP10ABATT	Rocker-Switch Battery Powered Keypad
	2	GLS-ODT-C-NS	Dual-Technology Ceiling Mount Occupancy Sensor

# Public Restroom

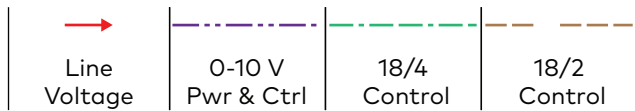
## GLPP






### IECC 2015 Code Compliance:

- ▶ Automatic Full On (Occupancy Sensing Mode) (C405.2.1.1.2)
- ▶ Manual Controls (C405.2.1.1.3, C405.2.2.2, C405.2.2.3)
- ▶ Automatic Full Off (C405.2.1.1)

### Local Control:

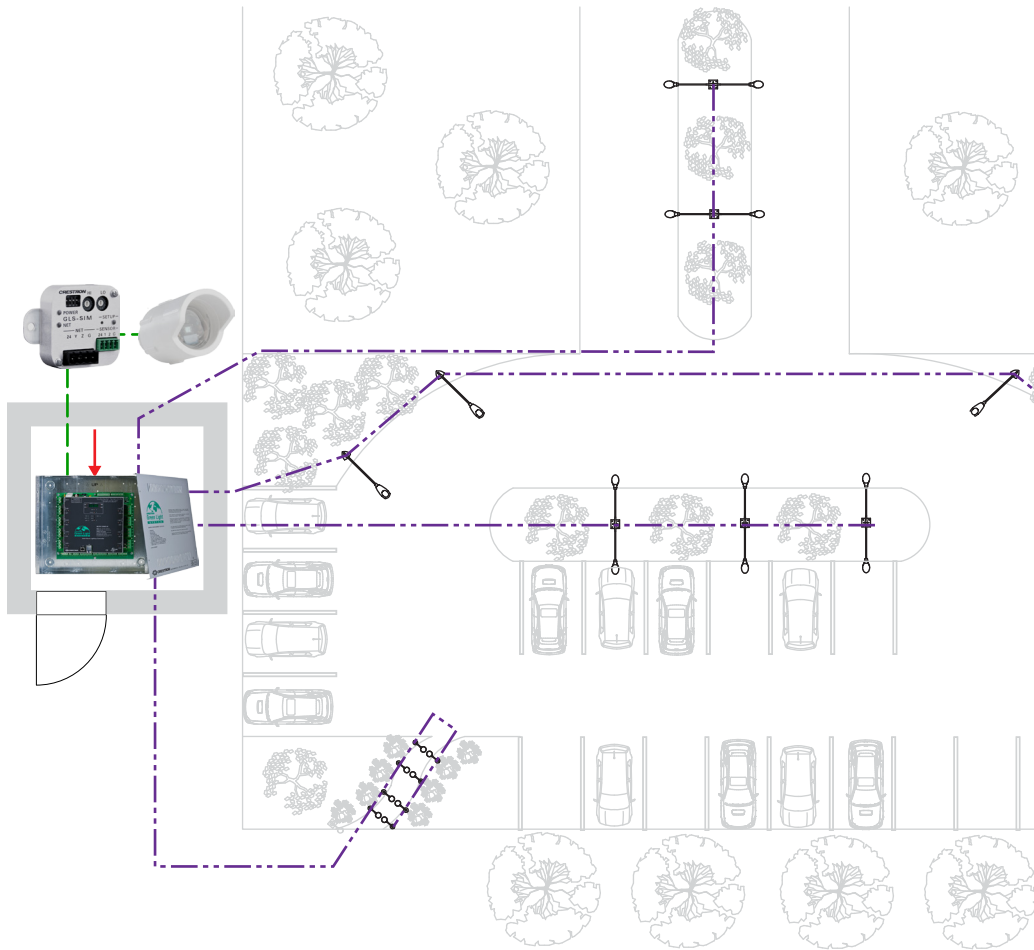


- ▶ Daylight-responsive continuous dimming (photocontrol) (C405.2.3) may be required if windows are present.

Product	Qty.	Product	Description
	1	GLPP-1DIMFLV2CN-PM	2-Ch 0-10V Dimmer with Cresnet® Control
	1	GLPPA-KP	In-Wall Keypad for GLPP
	2	GLS-ODT-C-NS	Dual-Technology Ceiling Mount Occupancy Sensor

# Site Lighting




## GLPAC



### IECC 2015 Code Compliance:

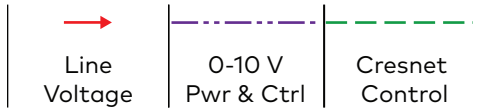
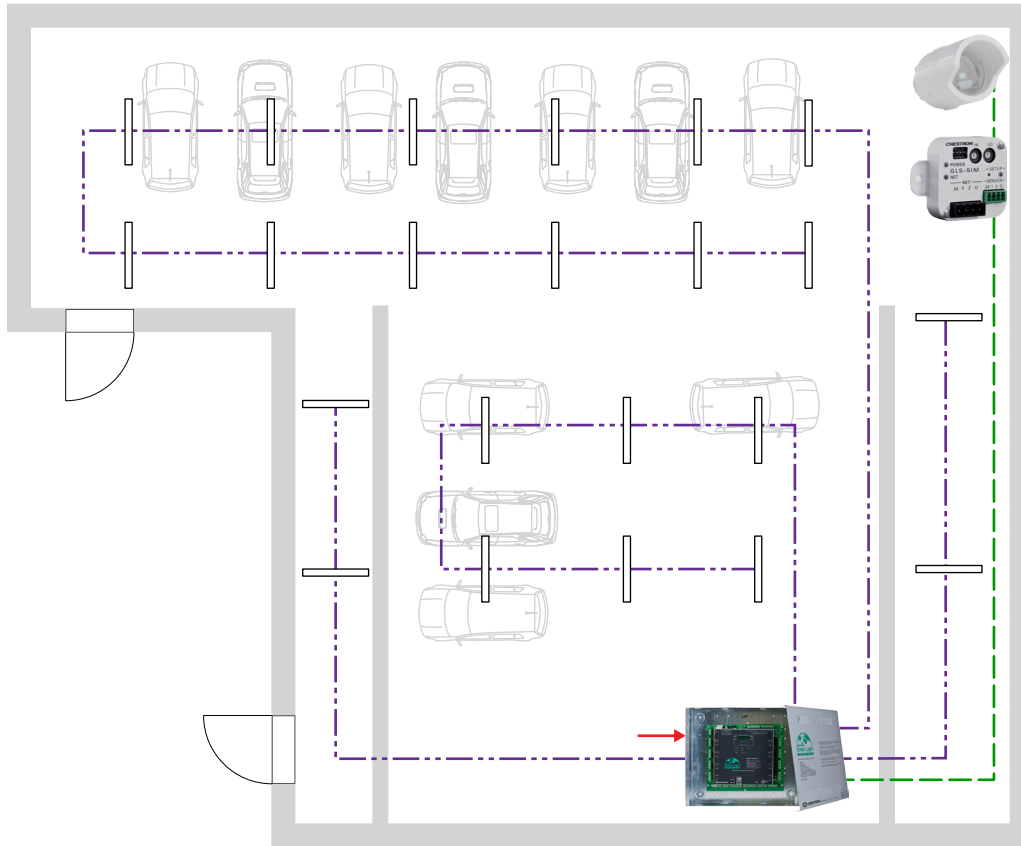
- Exterior Lighting Controls (Timeclock, Photocontrol) (C405.2.5)

→	— — — — —	— — — — —
Line Voltage	0-10 V Pwr & Ctrl	Cresnet Control

Symbol	Qty.	Product	Description
	1	GLPAC-DIMFLV4	Green Light Integrated Lighting System, 4-Channel
	1	GLS-LEXT	Crestron Green Light® Photosensor, Outdoor
	1	GLS-SIM	Crestron Green Light® Sensor Integration Module




# Parking Garage

## GLPAC

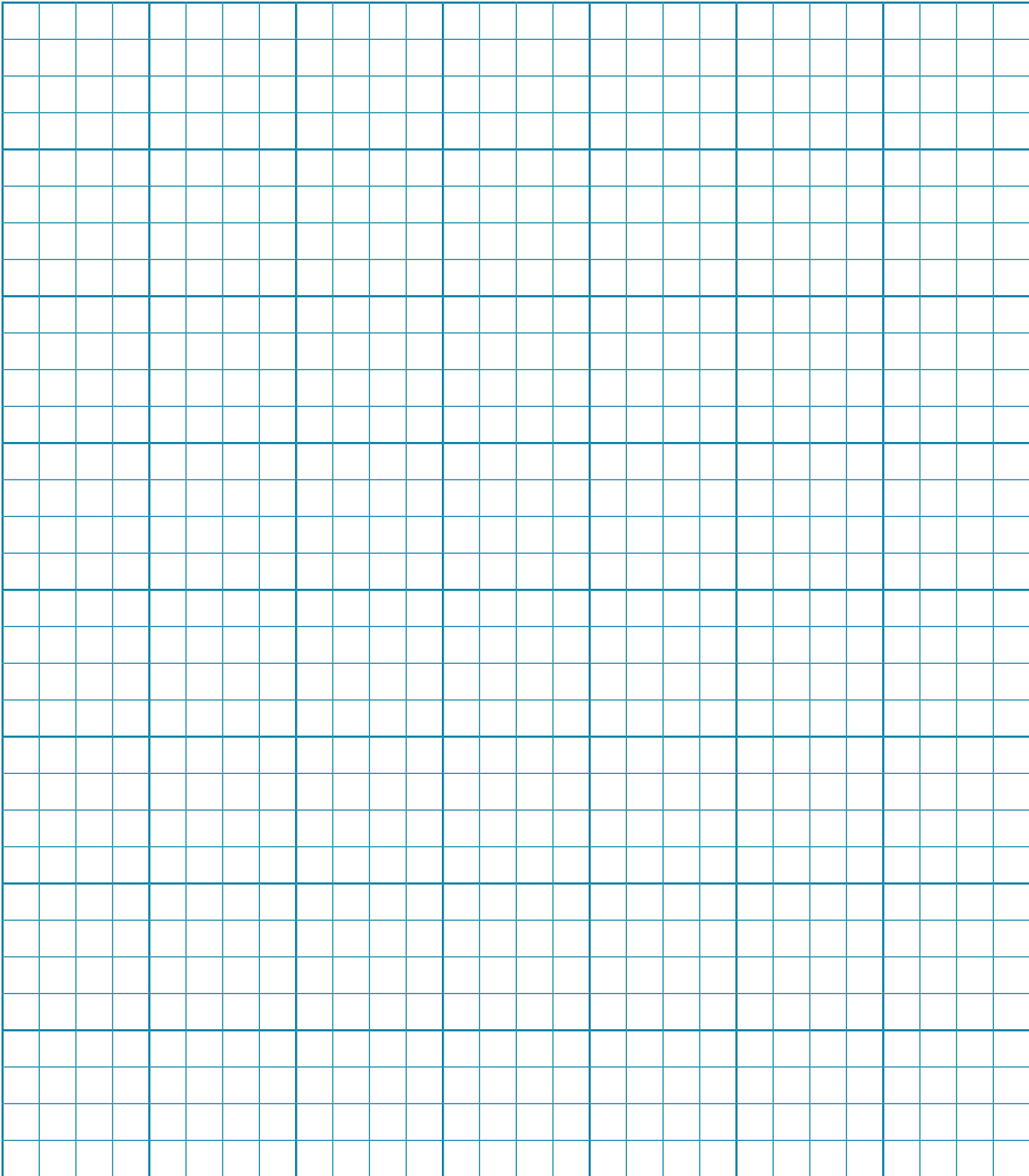


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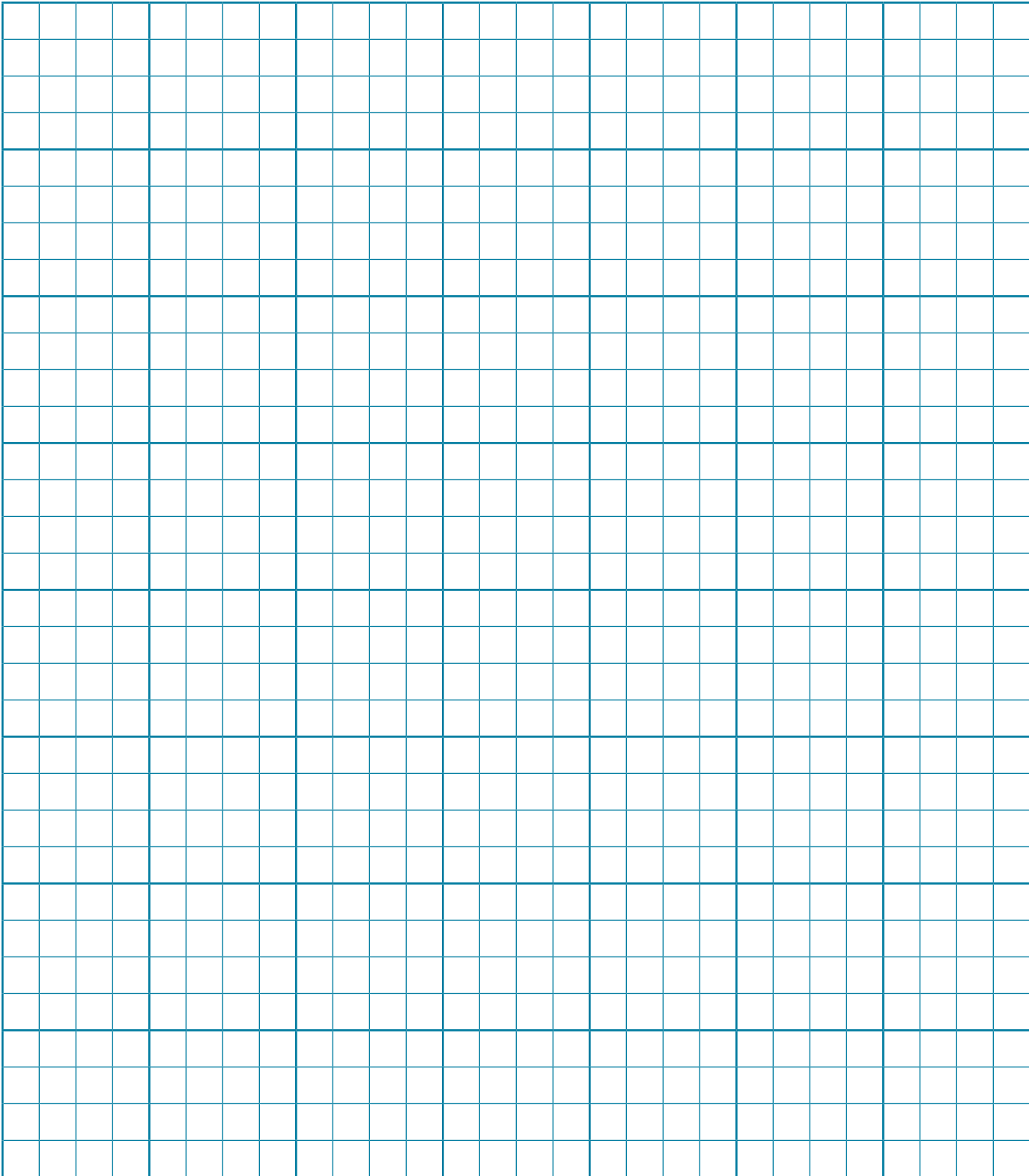
- ▶ Exterior Lighting Controls (Timeclock, Photocontrol) (C405.2.5)

Symbol	Qty.	Product	Description
	1	GLPAC-DIMFLV4	Green Light Integrated Lighting System, 4-Channel
	1	GLS-SIM	Crestron Green Light® Sensor Integration Module
	1	GLS-LEXT	Crestron Green Light® Photosensor, Outdoor

Notes



**Notes**



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