

Converging Systems/Creston Home Interface Guide

Control of Converging Systems e-Node and CS-BUS compatible LED and/or controllers through Ethernet (IP) (or DMX fixtures)



Integration Note



Manufacturer:	Converging Systems, Inc.
Model Number(s):	CS-Bus Motor and Lighting Controllers
Crestron Home Code Base	V4.000.0284 and later
Driver Developer:	Converging Systems Inc. (Crestron Developer Partner)
Converging Systems Gateway Required Firmware Level	See here . <i>(You must upgrade if you have an incompatible version)</i>
Document Revision Date:	3/27/2024 Rev 4.0

Important Note

This documentation covers as (ii) the enhanced Crestron Home-Native Platform Lighting Driver (“[NPLD](#)”) with full support for the Crestron scene manager and Crestron Native Lighting UI, as well as general references to the legacy (i) the Crestron Home-Platform Extension Driver (“[PED](#)”) (with no support for Crestron scene manager), seamless integration to the NPLD with a custom UI for motor control. **Once Crestron launches their SDK for Motor control, the subset PED driver will be retired and the Crestron Motor UI will be adopted.**

Contact Converging Systems for the current status of motor control drivers for Crestron Home. References within this document for Motor control are WIP currently.

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Revision Update:

Rev	Date	Detail
1.0	11/11/2022	This covers the Converging Systems Platform Extension Driver (“PED”) which was released prior the release of the Crestron SDK for lighting which did not support the Crestron scene manager. This version utilized a non-Crestron custom User Interface to mimic the Crestron native driver.
2.0	8/9/2023	This cover the Converging Systems Native Platform Lighting Driver (“NPLD”) which was released based on the new Crestron Lighting SDK which enabled integration of Converging Systems’ lighting elements into the Crestron scene manager. This version utilizes the standard Crestron Lighting User Interface that is used to support Crestron’s own and supported lighting fixtures.
4.0	3/27/2024	This covers the new hybrid NPLD with PED (motor functionality) and Crestron Home 4.0. This utilizes the Crestron Native UI for lighting and a custom UI for motor control.

OVERVIEW AND SUPPORTED FEATURES

The Converging Systems’ e-Node gateways are designed to act as the communication intermediary between a Crestron Home and Converging Systems’ lighting or motor controllers.

The Converging Systems ILC-x00 family of **LED** lighting controllers are networkable devices which can provide support for Converging Systems' Flexible Linear Lighting Arrays (FLLA) RGB, RGBW, and monochrome LED devices as well as specific third-party surface mount and recessed RGBW fixtures

The Converging Systems IMC-x00 family of **MOTOR** controllers are networkable devices which can provide for third-party motor platforms.

THE FOLLOWING OPTIONS ARE SUPPORTED BY THE CONVERGING SYSTEMS e-Node/Gateway (LIGHTING) DRIVER:

- Discrete control of LED states (ON/OFF) including feedback of ON/OFF ^{C1 D1}
- Bi-directional control of Hue/Saturation/Brightness color settings ^{C1 D1}
- Bi-directional control of Brightness settings for monochrome devices ^{C1 D1}
- Bi-directional control of Correlated Color Temperature (CCT or Dynamic White) settings ^{C1 D2}. Specific CCT settings can be selected as well using CCT UP (Cooler) and CCT Down (Warmer) controls ^{C1 D2}
- Activation of Circadian Lighting (Sunrise to midday sun to Sunset dynamic settings) using Crestron Circadian controls ^{C1 D2}
- Support of communication using Telnet with or without authentication (Port 23) ^{C1 D1}
- Ability to store and recall specific color using Crestron Scene Manager ^{C1 D1 (with NPLD Drivers)}
- Control via all thin-client interfaces (Crestron touchscreens and keypads) ^{C1 D1}

THE FOLLOWING OPTIONS ARE NOT SUPPORTED BY THE CONVERGING SYSTEMS e-NODE/Gateway (LIGHTING) DRIVER:

- Circadian lighting on some third-party DMX fixtures
- Exact color temperature output on some third-party DMX fixtures
- Ability to recall specific Effects ^{C1 D1 (with NPLD Drivers-WIP)}
- Ability to change Dissolve/Fade Rates (time to transition from one state to another) (i) for On and Off states, (ii) for Presets to other Presets (tbd) and (iii) for state-to-state transitions within Effects ^{C1 D1 (with NPLD Drivers-WIP)}

THE FOLLOWING OPTIONS ARE SUPPORTED BY THE CONVERGING SYSTEMS e-NODE/GATEWAY (MOTOR) DRIVER:

(currently the Crestron Lighting SDK does not support Motors natively —it is expected that once that SDK is created, motor control will be available from Converging Systems)

THE FOLLOWING OPTIONS ARE NOT SUPPORTED BY THE CONVERGING SYSTEMS e-NODE/GATEWAY (MOTOR) DRIVER:

(TBD)

Notes:

^{C1} Supported with Converging Systems' e-Node 2000/4000 & FLLA linear elements and Clarte Lighting Absolute Light fixtures

^{D1} Supported with Converging Systems' e-Node 2100/4100 dmx Gateway with all 3rd party DMX fixtures

^{D2} Supported with Converging Systems' e-Node 2100/4100 dmx Gateway with specific 3rd party DMX fixtures

Tabular Summary of Supported Features

The following commands are supported by the current driver for the various lighting and motor control devices (except those that are grayed out).

LED Lighting Commands

Table 1

General CS-Bus Commands	Crestron Home Device Specific Commands	ILC100c ILC-300	ILC-400	ILC-450	ILC100m & ILC-400 in mono mode	ILC-200	e-Node DMX
General LED Control Commands							
ON	On	✓	✓	✓	✓	✓	✓
OFF	Off	✓	✓	✓	✓	✓	✓
EFFECT,n	Effect	✗	✗	✗			✗
STORE,#	Store	✓	✓	✓	✓ _{vs}		✓
RECALL,#	Recall	✓	✓	✓	✓ _{vs}		✓
DISSOLVE.1=XX	Default Dissolve Set	✗	✗	✗	✗		✗
DISSOLVE.2=XX	Default Dissolve Set	✗	✗	✗	✗		✗
DISSOLVE.3=XX	Default Dissolve Set	✗	✗	✗	✗		✗
DISSOLVE.4=XX	Default Dissolve Set	✗	✗	✗	✗		✗
SEQRATE=XX	Default Dissolve Set	✗	✗	✗	✗		✗
HSB (HSL) Color Space Commands							
FADE_UP	Fade Up	✓	✓	✓	✓	✓	✓
FADE_DOWN	Fade Down	✓	✓	✓	✓	✓	✓
SET,L	Set (brightness)	✓	✓	✓	✓		✓
HUE_UP	Hue Up	✗	✗	✗			✗
HUE_DOWN	Hue Down	✗	✗	✗			✗
HUE,H	Hue	✓	✓	✓			✓
SAT_UP	Sat Up	✗	✗	✗			✗
SAT_DOWN	Sat Down	✗	✗	✗			✗
SAT_S	Sat	✗	✗	✗			✗
STOP	Stop	✗	✗	✗	✗		✗
HSV,h.s.v	In-line command	✓	✓	✓			✓
RGB Color Space Commands							
RED,R	Red	✗	✗	✗			✗
GREEN,G	Green	✗	✗	✗			✗
BLUE,B	Blue	✗	✗	✗			✗
WHITE,W	White	✗	✗	✗	✗		✗
RGB,R.G.B	RGB	✗	✗	✗			✗
RGBW,R.G.B	RGBW		✗	✗			

STOP	Stop	✓	✓	✓	✓		✓
Correlated Color Temperature (CCT) Commands and SUN (Circadian) Commands							
CCT,XXXX,v	CCT + INT		✓	✓		✓	✓
CCT_UP	CCT Up		✓	✓		✓	✓
CCT_DOWN	CCT Down	✓	✓	✓		✓	✓
SUN,XXX	SUN		WIP	WIP			
SUN_UP	SUN Up		WIP	WIP			
SUN_DOWN	SUN Down		WIP	WIP			
Bi-Directional Commands							
COLOR=?	Automatic polling within Driver. Note: Driver achieves function with Notify ON	✓	✓	✓	✓		✓
VALUE=?	Automatic polling within Driver Note: Driver achieves same function with Notify ON						
STATUS=?	Automatic polling within Driver Note: Driver achieves same function with Notify ON		✓	✓		✓	✓
Accessory e-Node Command/Setup Parameters							
Telnet Login with Authentication (with e-Node***)		✓	✓	✓	✓		✓
Telnet Login without Authentication**		✓	✓	✓	✓		✓

Notes:

- * Reserved
- ** Possible with enhancements to Driver
- *** By turning off or on authentication within e-Node through Web-Pilot or Pilot application

Motor Commands

(this table will be updated once the Crestron SDK supports motors)

Table 2

General Commands	Crestron Home Device Specific Commands	IMC-100 (with e-Node)	BRIC ("Bric Mode") (with e-Node)	CVM ("IMC-300MKII")
General Motor Control Commands				
GOTO				
UP	Raise	✓	✓	✓
DOWN	Lower	✓	✓	✓
STOP	Stop	**	**	**
MOTOR RIGHT				
MOTOR LEFT				
RETRACT	Raise			
TOGGLE				
STORE,#		✓****	✓	✓****
RECALL,#		✓****	✓	✓****
PRESET.X=XX.XX				
Bi-Directional Commands				
STATUS=?				
POSITION=?	Automatic			
Accessory e-Node Command/Setup Parameters				
Telnet Login with Authentication (with e-Node***)		✓	✓	✓
Telnet Login w/o Authentication***)		✓	✓	✓

Notes:

* Reserved

** By simply hitting the same directional button a 2nd time

*** By turning On or OFF Authentication in Web Pilot or Pilot application

**** With Version 2 of driver will handle stores and recalls from 1 to 20 (update on Converging Systems site at

https://www.convergingsystems.com/software/local_profiles_library.php#crestronhome

INTEGRATION REQUIREMENTS-CONVERGING SYSTEMS CONFIGURATION

NOTE: Converging Systems LED and Motor Controllers REQUIRE a communication device (i.e., e-Node/2x00 or e-Node/4x00 for Ethernet connectivity). It is not possible to connect CSI LED or Motor controllers to a Crestron Home controller in any other way.

The system will need to be installed and configured according to the Converging Systems documentation, prior to integration with the Crestron Home system. The Converging Systems e-Node web-page commissioning tool can be accessed by selecting the triple settings icon on the e-Node webpage

NOTE: It is recommended that the Converging Systems' controller(s) as well as the e-Node Ethernet gateway (communication device) are running the latest version of firmware available at the time of installation

WIRING DIAGRAM (for IP connection)



Figure 1

Wiring/Configuration Notes:

1. Maximum length of CS-Bus cabling from e-Node to the last ILC-xxx/IMC-x00 controller using CAT5e or better cabling (and obeying the 1-1 pin-out requirements for the RJ-25-RJ25 cable and a twisted pair of the same color carrying the signals on pins 3 and 4 of an 6P6C cable) = 4000 feet
2. Maximum number of ILC-xxx/IMC-xxx controllers and Converging Systems' keypads (if provided) that can exist on a single network connected to a single e-Node device = 254
3. Maximum number of e-Nodes that can exist on a Crestron system = 254

BILL OF MATERIALS (for IP control)

Table 3

#	Device	Mfg.	Part Number	Protocol	Connector Type	Notes
1	Crestron Home	Crestron	CP4-R , PC4-R MC4-R DIN-AP4-R	Ethernet	RJ-45	
2	Network Switch	Various	Various	Ethernet	RJ-45	
3	e-Node/2x00 or e-Node/4x00	Converging Systems	e-Node 2000/4000 (or CVM)	Ethernet	RJ-45 (for Ethernet)	
4	Lighting Controller (or Motor Controller)	Converging Systems	ILC-x00 or IMCx00	CS-Bus protocol	RJ-25 for CS-Bus communication	Must terminate beginning and end of bus with 120 ohm resister on pins 3/4
5	Flexible Linear Lighting (FLLA) luminaries	Converging Systems	FLLA- Monochrome/Bi- White/RGB or RGBW type		1-color 2 pin 2-color 3 pin 3-color 4 pin 4-color 5 pin	
5 alt.	Alternate RGBW Fixture	Various	Various	Requires ILC-450	8 pin Phoenix type	
6 opt	e-Node 21004100 dmx controllers	Converging Systems	e-Node 4100/2100	Ethernet	RJ-45	

COMPONENT HARDWARE SETUP

NOTE: Please refer to [Appendix 1](#) for a reference document for general hardware instructions for Converging Systems devices. You may also find the Quick Start Guides that accompanied your hardware useful. In addition, these documents provide additional detail as to Best Practices for wiring and setup.

-Once completed with this work, proceed to the next section-[Component Software Setup](#). Other relevant and more detailed information can also be found as follows:

Lighting Control https://www.convergingsystems.com/lighting_install_library.php

Motor Control

https://www.convergingsystems.com/motor_install_library.php

There are also a number of short Quick Start Guides for various products that can be downloaded from the above links as well.



Best Practice-Setup Hardware before proceeding to the next section

COMPONENT SOFTWARE SETUP (using e-Node and e-Node Pilot app)

NOTE: Please refer to [Appendix 1](#) for a reference document for complete software commissioning for Converging Systems devices. This includes information on software commissioning including Activation/ Addressing and Turning on Bi-Directional Communication (NOTIFY). You may also refer to Quick Start Guides that accompany your hardware. In addition, these documents provide additional detail as to Best Practices for programming. ‘

-Once completed with this work, proceed to the next section-[Crestron Home Setup and Programming](#).

Other relevant and more detailed information can also be found as follows:

Lighting Control

https://www.convergingsystems.com/lighting_install_library.php

Motor Control

https://www.convergingsystems.com/motor_install_library.php

There are also a number of short Quick Start Guides for various products that can be downloaded from the above links as well.

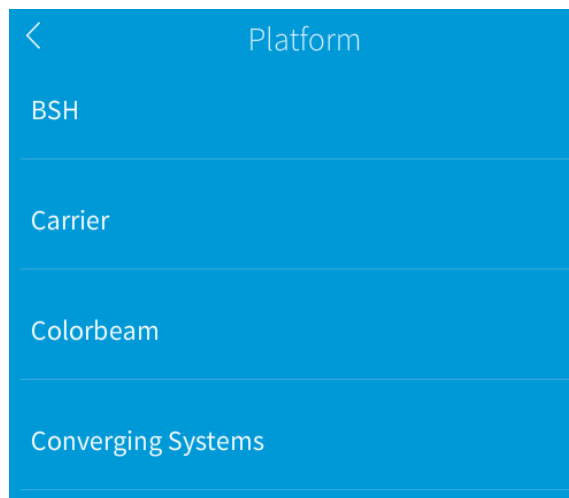


Best Practice-Active/Address and Customize Software (within Hardware) before proceeding to the next section

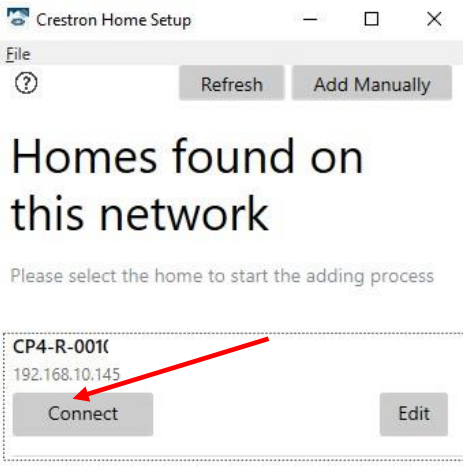


Crestron Home Programming

Driver Details

Converging Systems drivers can be found within Crestron Home Setup software for Converging Systems (see table below for specific driver nomenclature). Search under Drivers/Platform for **Converging Systems** as shown below. There may be a number of available drivers make sure that you use the **Next** option to review all drivers.

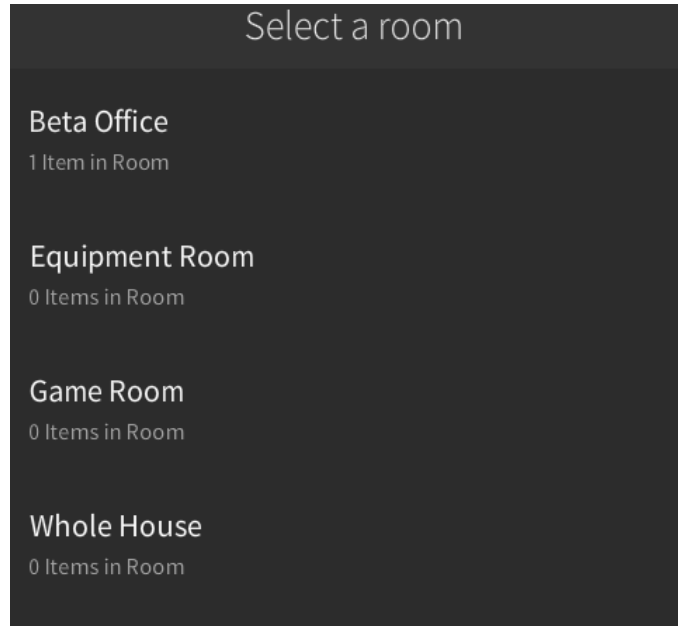


Note: Make sure you have loaded in the latest Crestron Home drivers for Converging Systems. Allow Crestron Home to search for new drivers before proceeding.

Type	Step	Detail
CH-1	Load Crestron Home Setup	<p>-Launch the <i>Crestron Home Setup</i> app which is used to setup your Crestron Home processor (dealer setup software). After it is launched, select Refresh to auto-discover “Homes found on this Network” and hit “Connect” for applicable Home/processor.</p>  <p>-Enter your credentials when prompted to launch the Crestron XPanel.</p>  
CH-2	Adding Devices (communication devices and ZGN controllers)	<p>Background on Device Placement</p> <p>You will be adding an IP communication device/Gateway or in Crestron parlance, a “Platform” such as the e-Node/xxx, as described below in step CH-3 and one or more ZGN Devices (controllers) as described below in step CH-5. Regardless if the load controllers are Native mode or DMX mode, they are all referred to here as ZGN Devices (for each one can be addressed with a Zone/Group/Node address).</p> <p>With respect to the Platform device (e-Node e-Node/dmx or similar), it really does not matter into what “room” that you place this (Platform) device, but you must place it</p>

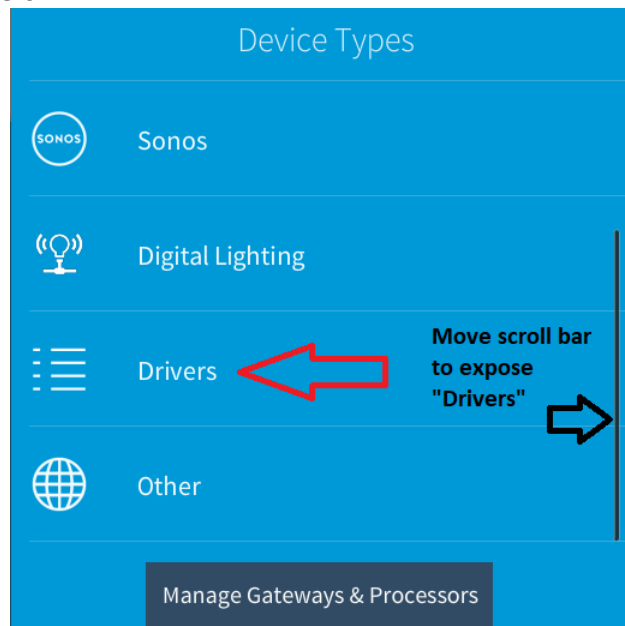
somewhere. What is important, however, is where you place the individual controllers (**ZGN Device**) that will be controlled through Crestron touch panels, keypads and mobile apps. Individual controllers, which we refer to as **Zone/Group/Node (ZGN) Devices**, must be placed into the appropriate room where they can be found and controlled. See [CH-7](#) after first completing [CH-3](#) in order to proceed. Now let's begin. But before advancing to discovering ZGN devices, it is required that you first discover the Platform or gateway. Please proceed.

-Select the room into which your Platform will be installed.



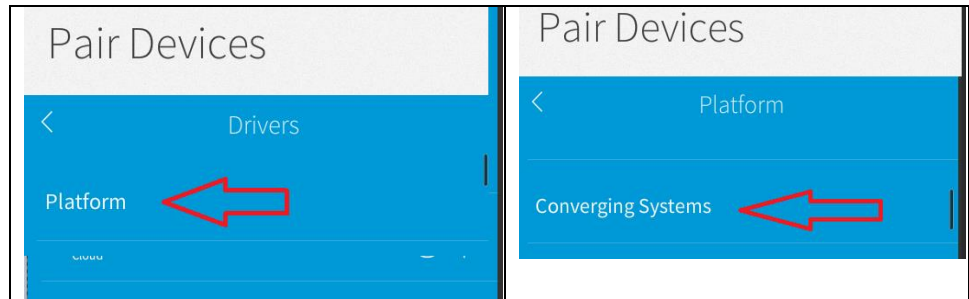
CH-3 Load **Platform** Driver (into applicable room set above)

-Next, select **Drivers**



-Next, allow the Crestron auto-download procedure to complete (when the rotating icon stops).

- Select **Platform** and scroll down and select “**Converging Systems.**”

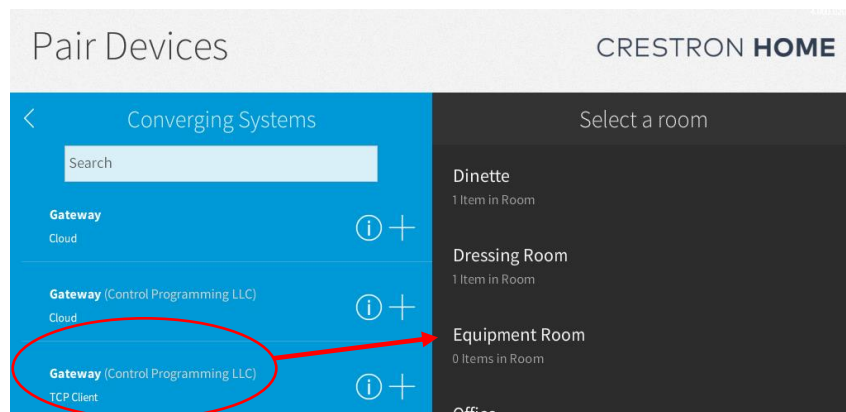


-Depending upon the Crestron driver release schedule, you may see either one of the following entries below:

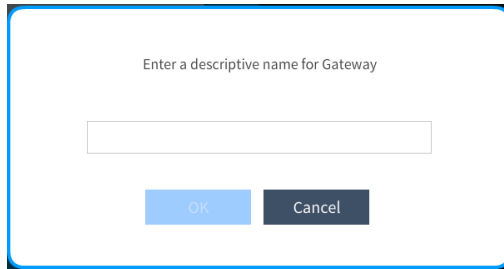
- The Gateway/**TCP Client** is the V4 (“**NPLD**”- **Native Platform Lighting Driver**) v 4.000.0284 or later (**Select this one for CRESTRON HOME 4.0 and later**)
- The Gateway/**Cloud** is the V2 (“**PED**”-**Platform Extension Driver**)- v 2.00.003.15

-Select the “**Native/NPLD**” Driver. The **Gateway-Cloud/PED**” Driver is a legacy driver that does not use the Native Crestron UI for lighting but does properly control motor devices with a separate UI. **The PED should only be used for legacy Crestron Home installation (prior to OS 4.0 that do not support the Lighting SDK).**

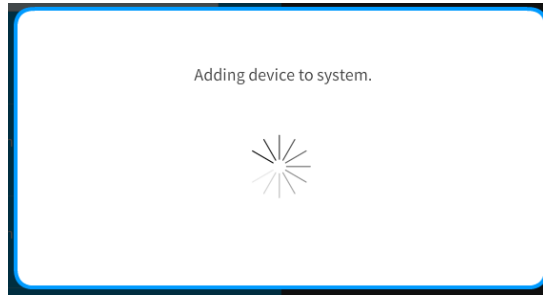
-Then select the “**+**” on the right side of the Platform device-TCP Client (e-Node) that you wish to position within the targeted room



-Provide a useful name for the **Platform/Communication Gateway** (i.e., e-Node xxx) and select **OK** to continue



-After you have entered the requested information, you will see this message below. Once this message disappears you are ready to proceed.

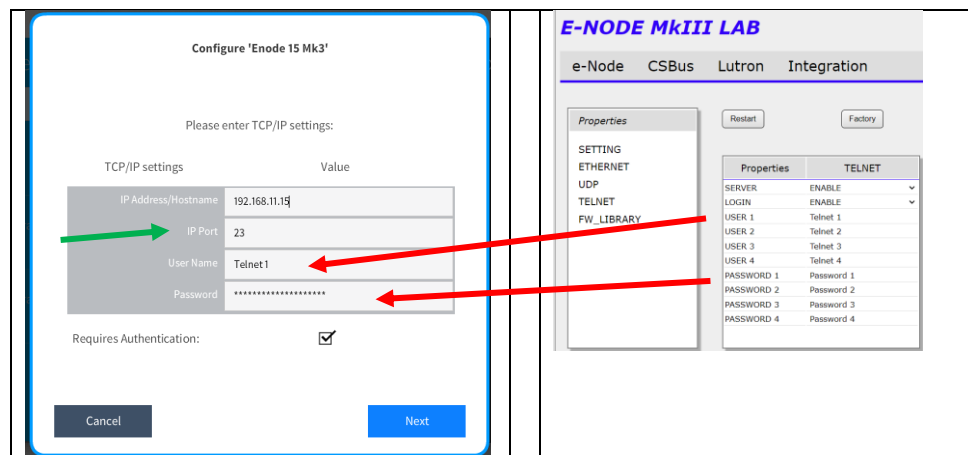


-Proceed to the next step to continue the installation process.

CH-4 Add TCP/IP settings information

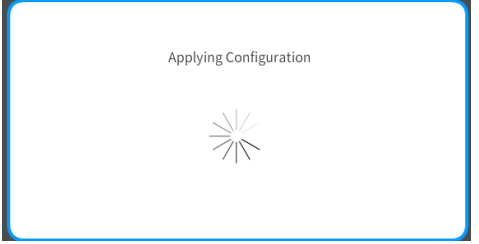
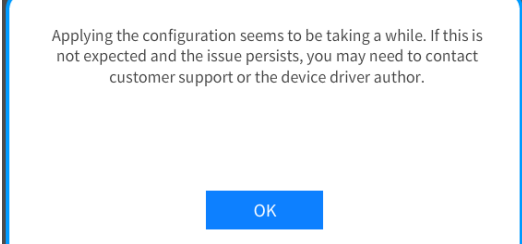
-Within the **Configure 'name'** window, enter the **Platform's** (e-Node's) **IP Address**
 -Fill in additional information as follows:

- **IP Port** – Leave as 23
- **User Name** – Enter user name as provided within the Platform's Telnet tab for an unused Telnet socket (i.e., User 1 credential if unused—enter here)
- **Password**— Enter password as provided within same tab for the same socket.



- Select **Next** to continue

- While device data is being acquired you will see the below message on the left (see notes in this Step if this step never completes and/or you see the below message on the right message)

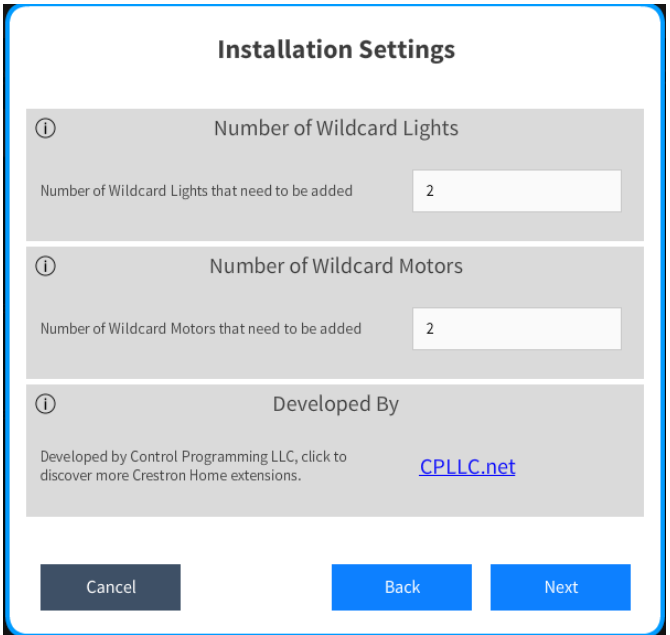
<p>If your system has ZGN devices properly connected</p>	<p>If your system has no ZGN devices properly connected or if you are running older firmware</p>
	
<p>➤ This message should disappear after 20-30 seconds after the Gateway is successfully installed.</p>	<p>➤ Check to see if you have at least one ZGN device installed. Click here.</p> <p>➤ Check to see if you have the min. level of firmware installed. Click here.</p>

CH-5 Add supplemental information (as a preparation for discovering connected load devices)

See section [CH-8](#) for more information on Wildcard loads.

-Within the **Installation Settings** window, enter the **Number of Wildcard Lights** (or Motors) (i.e., virtual device) that are desired to be auto-populated (i.e., a virtual device with a **ZGN** of 2.1.0 will control specific devices with addresses of 2.1.**1** and 2.1.**2** and 2.1.**3** etc.)

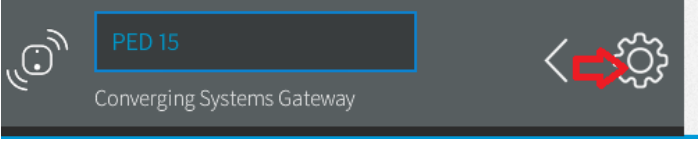
Note: Phantom Wildcard Devices are useful if you want a single virtual Crestron UI device to be able to be populated in one or more rooms to control multiple ZGN (loads) rather than just a single ZGN (load). This cuts down on bus traffic and eliminates any delays encountered with typical macros that generate a kind-of “popcorn” effect when triggered.



- Select **NEXT** to continue

Ch-6
 Verify Platform has been properly loaded and is on-line

-Verify connectivity by selecting the tool icon



and confirm that Status is set to Online in the popup.

Status: Online

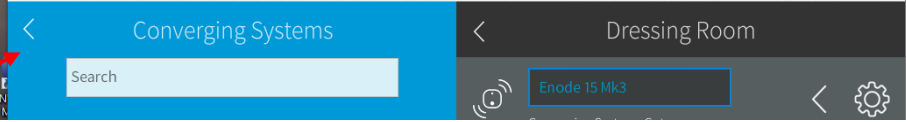
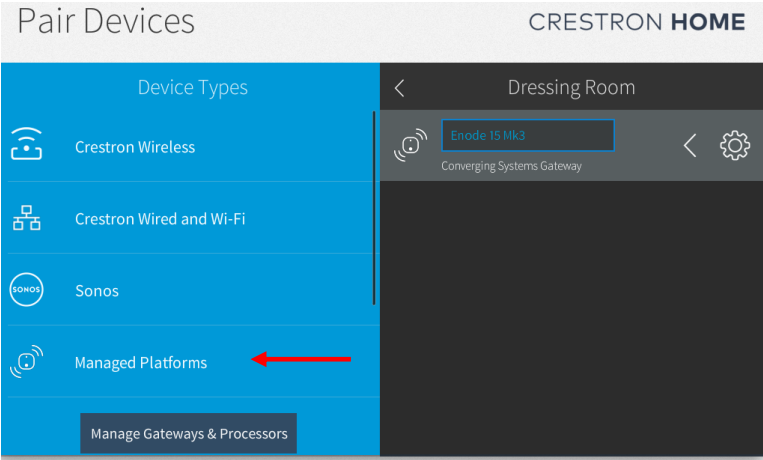
Note: If status comes back Offline, check your power and IP address and credentials. If you entered the wrong IP address you may have to delete the **Platform** and try again.

-When completed with this window, "X" out to continue.

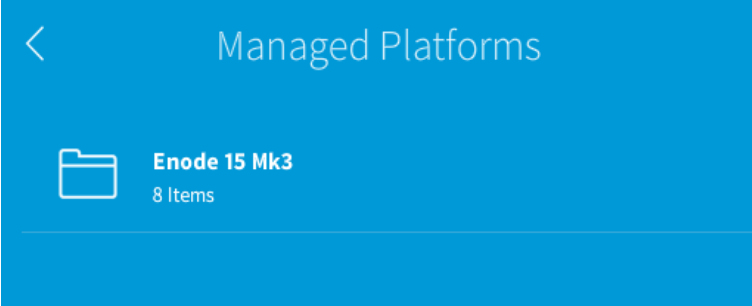
Ch-7
 Discover previously discovered/addressed* **ZGN** controllers (and assign to applicable Rooms)

*Using the e-Node web page setup procedure.

-Left arrow (a number of times) within the left/Blue window to navigate back to the **Pair Devices Home page** where the **Manage Platforms** tab can be seen.

-Hover over the most recently programmed **Platform** (e-Node) and then select it (click on the entry)

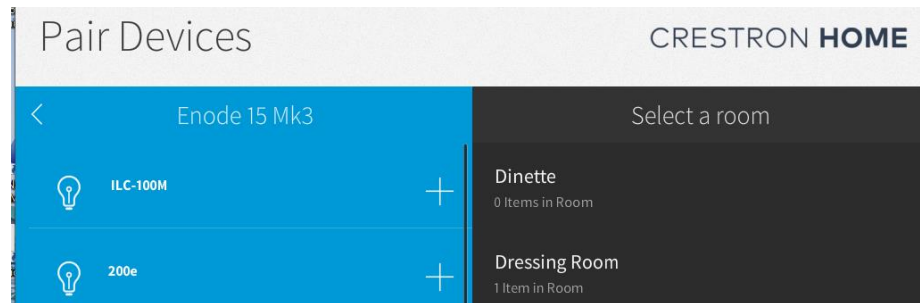


-Immediately all discovered/addressed **ZGN** controllers will auto-populate below the Assigned name of the selected **Platform** device. Below, see where **ZGN** devices have been discovered for the Platform. Note, up to 254 CS-Bus devices can be discovered or 32 DMX devices per Platform.



-At this point you can place any load (**ZGN** device) within any previously named Room. Simply (i) select the correct room for the device within the “Select a room” (right/**dark**) window and (ii) select the “+” mark to the right of the selected ZGN controller (within the left/**blue** window) that you wish to position in that room

Note: If you are adding Motor Control devices, see Appendix [A2](#) for more information here.



-Provide a useful name for the **ZGN** controller



-Continue this process until all loads have been assigned to applicable rooms

CH-8 Wildcard Devices Info

Note on Wildcard Devices

The option to create and use any number of Wildcard Device(s) is a labor-saving feature to permits one or more **phantom ZGN** device to be created that can in turn trigger real **ZGN** devices that share the same **Zone** and **Group** Address regardless of their (different) **Node** addresses. For instance, if you have a room with four loads with **ZGN** addresses of 2.1.1, and 2.1.2 and 2.1.3 and 2.1.4, you can create a wildcard device as shown below (with **Zone** and **Group** matching the target devices, but with **Node** set to **0**) that will trigger all of the above devices with identical **Zone** and **Group** settings).

For more information on Zone/Group/Addressing see this [document](#).

Installation Settings

① **Zone**
Zone number to use as wildcard. If set to zero, it will control all zones.

① **Group**
Group number to use as wildcard. If set to zero, it will control all groups within the specific zone.

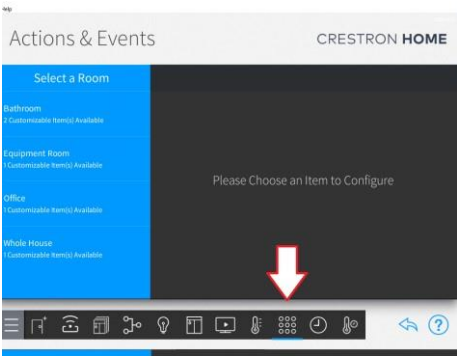
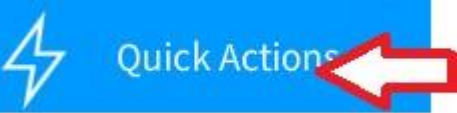
① **Node**
Node number to use as wildcard. If set to zero, it will control all zones within the specified group.

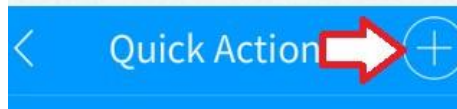
Programmable Events

Note Programmable Events have several triggers

- When all of the loads power off
- When all of the loads power on

A Quick Action can then be programmed for these triggers as follows:

PE-1	Create new Quick Action type	<p>-Go to the Actions and Events Tab</p>  <p>-Select a Room, and select Quick Action</p>  <p>-Select the "+" mark to add a new Quick Action</p>
------	------------------------------	--

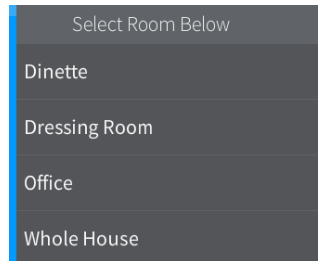


-Name your new Quick Action

-Select "OK" to continue

-Next to "Mode" scroll down and select "Sequence"

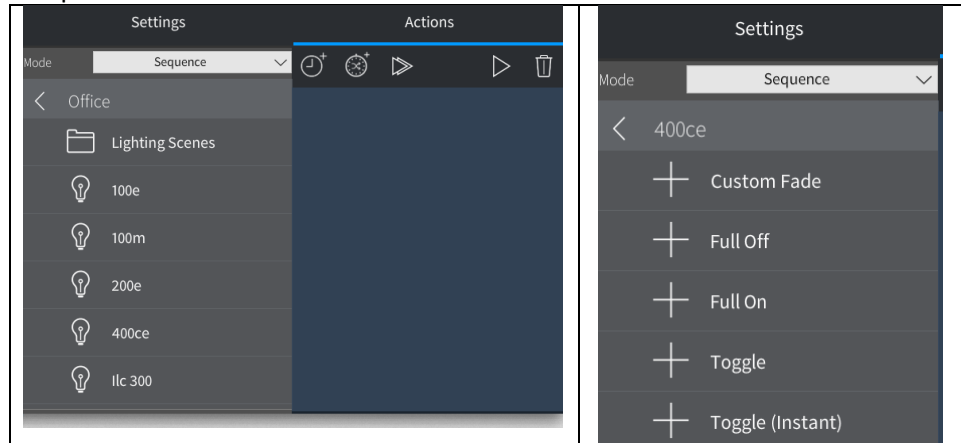
-Select Room where a programmed ZGN load is located



PE-2


Customize Entry

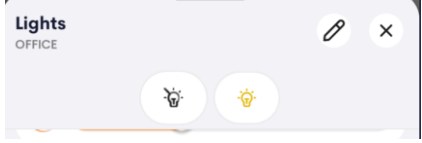
-The following pulldown will appear. Select a ZGN load and a desired action to complete.



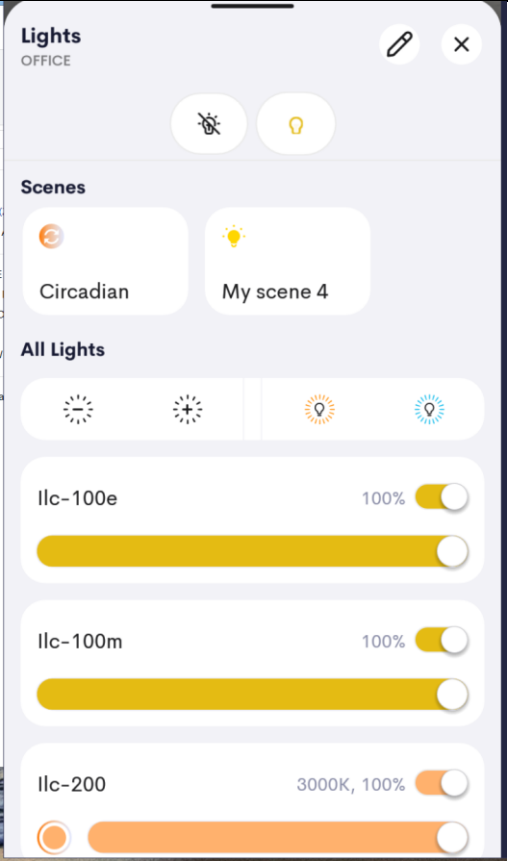
-Set other relevant settings as desired under **Actions**.

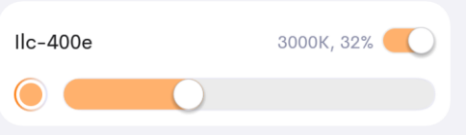
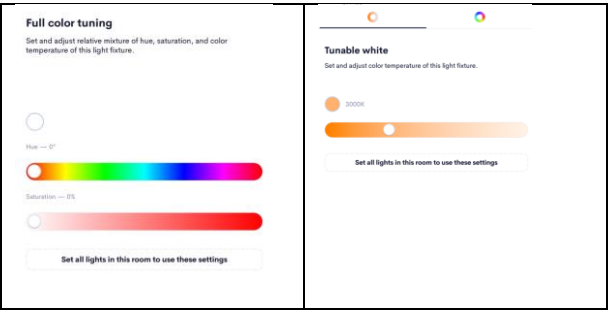
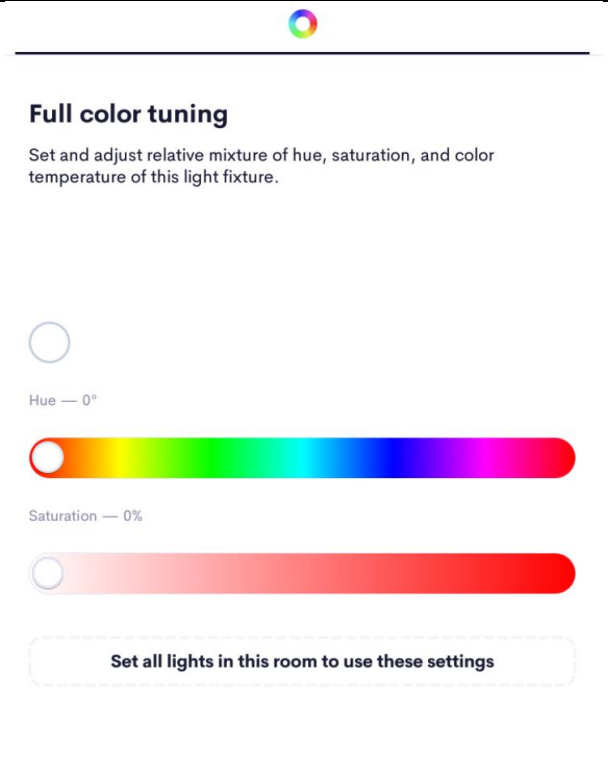
Nuances/Known Issues

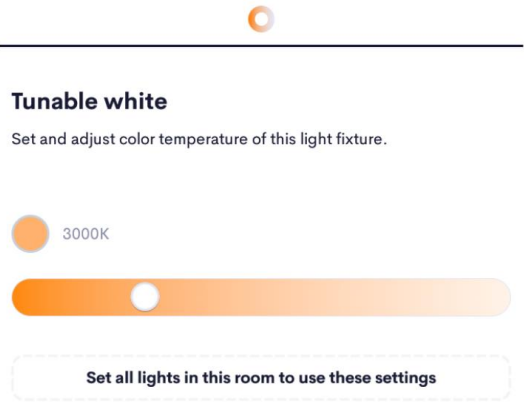

Driver Issues		
D-1	Automatic Updates to Crestron Home from changes in e-Node programming	The driver will automatically communicate with the e-Node/e-Node/dmx to import dynamically and changes to the current configuration only after a reboot or a refresh is initiated. For instance, new ZGN (i.e., any additions made through the e-Node webpage discovery process) devices, any name changes, and changes in ZGN addresses will be automatically reflected in the existing Crestron programming.
D-2	State changes to ZGN devices	Any controller changes to existing discovered controllers (i.e., color to bi-white to mono) may require deleting said device within Ch and re-adding it after a reboot of the Crestron processor.
D-3	If no ZGN devices are connected	If no ZGN devices are connected to the Platform, or no ZGN devices have been discovered/activated that are connected to the Platform, the Platform driver may not properly load as shown in Step CH-4 . Check your connections and setup and repeat operation. If there are no connected/activated connected ZGN devices connected to your Platform, the automated discovery process required for the Gateway driver to be properly installed is unable to complete (by design). For more information click here .
Crestron Home App Issues		
C-1	Android versus iOS	When you select adjustment dot on iOS app to make changes, pop-up sometimes do not appear (on IOS only). You may have to leave screen and come back. 
C-2	All Room ON/OFF	All ON/All Off button on Room view fails to operate after a few sequences are pressed. You may have to

		toggle a particular control and then come back to use this control – but repetitive use causes issue (Crestron has been notified).
		
C-3	On/Off with individual control	CH uses a default color on control. So when you set a CCT or HSV color and turn it off with this control, a subsequent ON command will set it to the default Crestron Power on setting. Contact Crestron for how to set default color/brightness levels./

End-User Experience

Details	User Interface
<p>Room View</p> <ul style="list-style-type: none"> -Displays the rooms that are active and where loads are programmed -Monochrome loads will have a brightness slider. - <ul style="list-style-type: none"> • RGB and uncalibrated HSB loads will have HSB sliders • Full Spectrum loads will have HSB and CCT sliders 	

<p>Adjustment Controls General</p> <p>Each room will display an ON/OFF toggle and intelligently configured sliders for control of the targeted load</p> <p>Status “light bulb” reacts to ON/OFF Status (bi-directional feedback)</p>	
<p>Adjustment Controls-Full Spectrum Devices (calibrated LED type)</p> <p>-Sliders will reach to actual state (bi-directional feedback) -Sliders will control HSB</p>	
<p>Adjustment Controls-RGB devices (and uncalibrated RGBW devices)</p> <p>-Sliders will reach to actual state (bi-directional feedback) -Sliders will control HSB</p> <p>Note: Legend that indicate CCT here is not supported and text will be corrected by Crestron in the future. No CCT is available with devices that do not have CCT inherent capabilities.</p>	

<p>Adjustment Controls-Bi-White Devices</p> <p>-Sliders will control Intensity and Color Temp (CCT) -Sliders will reach to actual state (bi-directional feedback)</p>	
<p>Adjustment Controls-Monochrome Devices</p> <p>-Slider will control Intensity only -Slider will reach to actual state (bi-directional feedback)</p>	

Test Project

Step #	Step Overview	Detail
T-1	Test with User Interface.	With either a Crestron app or a touch screen, verify operation.
T-2	Test with Actions/Execute	-Create an Action within the Scripts window and select Execute
T-3	Test with Crestron remote	<p>-You should also be able to control the LED using various supported Crestron Home remotes (and other keypads).</p> <p>-Proceed through each button and interface to verify proper operation. If certain functions are not operational, check your programming within Composer.</p>


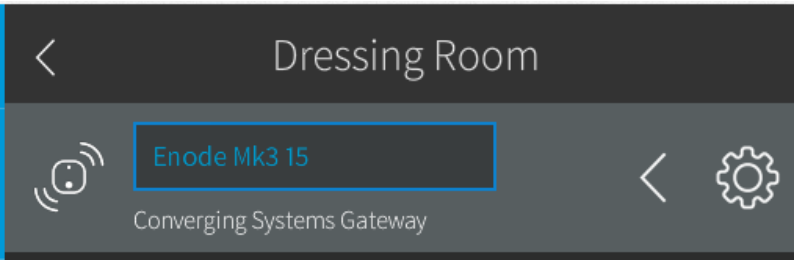
SUPPLEMENTAL CRESTRON HOME INSTRUCTIONS

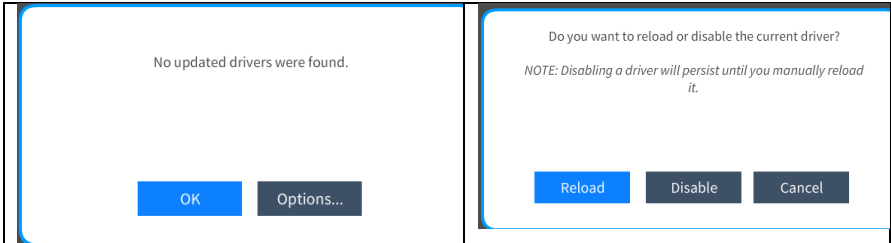
A1. Adding (incrementally new) ZGN Devices

If you want to add a new **ZGN** device after you have initially set up your system, the new device can be discovered/add in either of two ways.

-Approach 1--Simply reboot the Crestron processor and proceed to Step [C-7](#) where it will be automatically added to list of **ZGN** of non-assigned **ZGN** devices (available to assign to a Room), or

-Approach 2 – Re-discover the new device without rebooting the Crestron processor as described below (“Refresh”).

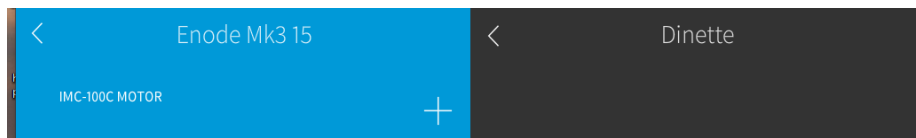
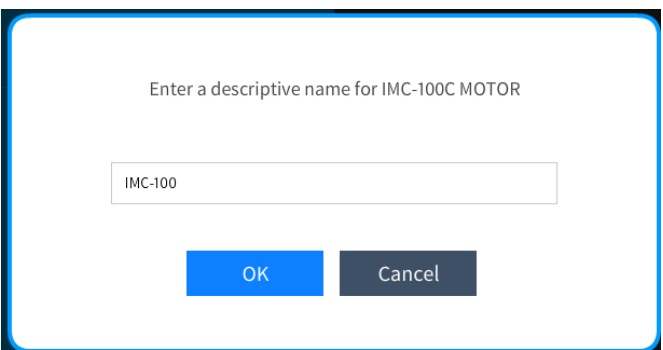
Step #	Step Overview	Detail
A1-1	Add incremental ZGN device	<p>While in Crestron Home Setup/Pair Device window,</p> <ul style="list-style-type: none"> -Select the room where the target Platform to which the new ZGN device is connected, then -Select the Platform itself within that Room to which the new ZGN device is connected. <div style="text-align: center;">  </div> <p>-After selecting the Platform, select the gear wheel icon to expose a popup</p> <div style="text-align: center;">  </div> <p>-Select Check for Driver Update, and after it completes its cloud search, select Options then Reload and CH will re-discover connected ZGN devices.</p>

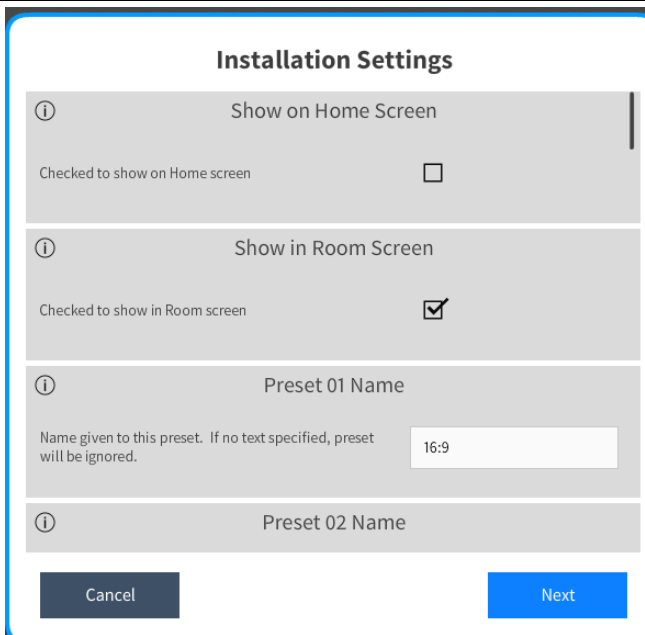
		 <p>-Add the new ZGN device(s) as before within Step CH-7</p>
--	--	--

A2. Adding Motor Devices

The current 4.0 OS release of Crestron Home supports a lighting SDK for the native control of Converging Systems' Platform (gateways) and connected LED lights. Control of Motor(s) connected to the Converging Systems' Platform is now an included option within the NPLD (as a built-in Platform Extension Driver - PED) within the NPLD (Wow) with its own (basic) customized UI.

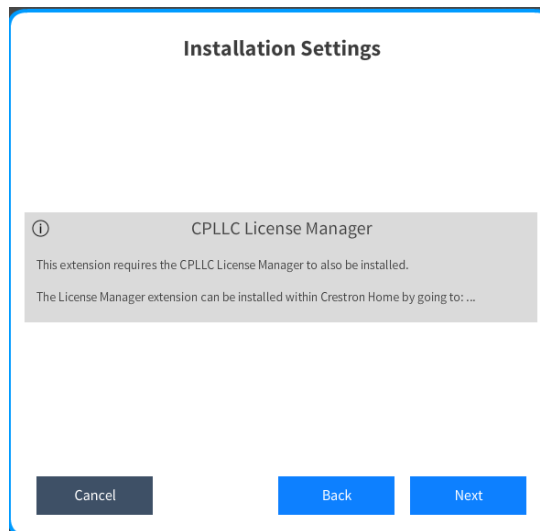
Please follow the directions below to enable this exciting functionality. As soon as the Crestron SDK for motor devices is launched these directions will be modified and the UI will become more integrated within Crestron Home.

Step #	Step Overview	Detail
A2-1	Add motor just like light	<p>-After the Platform can see the supported motor device, you will see this screen. Select the supported motor and add it to the appropriate Room</p>  <p>-Name the Motor device and hit OK.</p>  <p>-Add relevant information as requested by this next screen. Note: a number of presets are available depending upon the target device. Enter a name for each Preset. If you fail to enter a name that preset will be eliminated.</p>

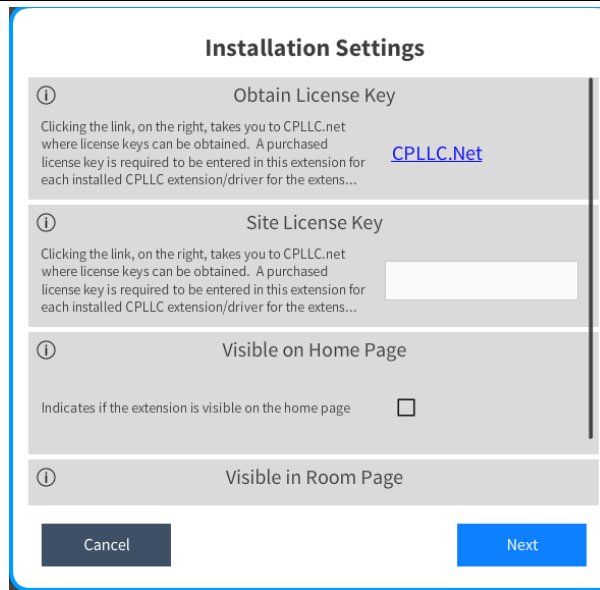


-Select **“Next”** to proceed

-This unique integration of a PED within the NPLD requires a License Manager to be added to your systems (at no cost). This screen starts this installation process.

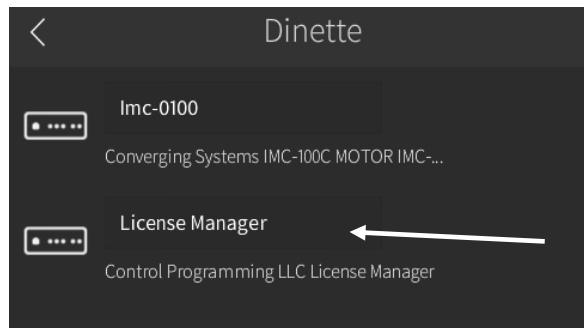


-Select **“Next”** here to proceed.

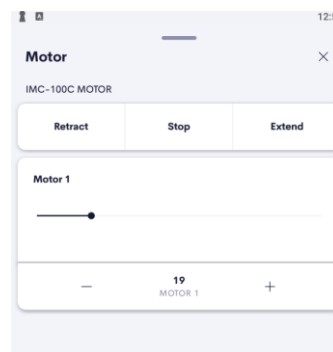


Note: this above step requiring a License Manager will be eliminated in next release.

When you see this page, simply click NEXT instead of selecting any of the options presented (you will not need to obtain a license key or add any information here as it is auto-programmed). When completed, your screen should look like this. (Note the requirement for installing the License Manager will be eliminated in the next driver release.)



-The functionality available is dependent upon the motor supported. Currently, only the IMC-100 without intermediate presets is supported. Therefore, the Retract, Stop, and Extend functions only are supported.



COMMON MISTAKES

1. Forgetting to set TELNET credentials for Converging Systems e-Node device within the Lighting Interface page. Typically, Telnet sessions require a LOGIN ID. Recent versions of the e-Node now have four Telnet sockets available. Unless changed from the factory defaults, Telnet 1 is the default of username and Password 1 is the default for password.

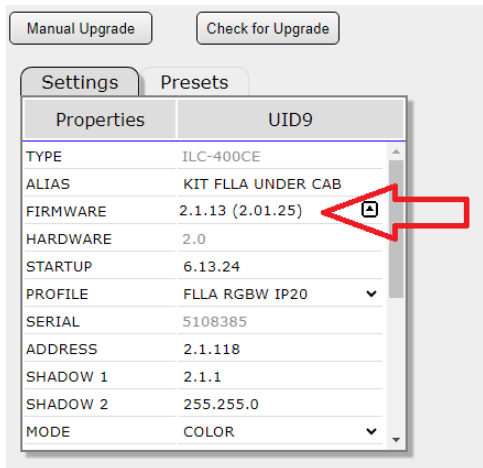
Note: Make sure that the settings within the e-Node match the setting within your MOTOR or LED module.

2. Forgetting to update **Zone/Group/Nodes** addresses within the default IP driver for specific controllers. The default driver from Converging Systems is set to **2.1.0** for lighting devices, and **1.1.0** for motor devices. The “0” in the last location refers to a wildcard setting which causes all devices with a Node address from 1 to 254 to respond. If you have a setup with uses specific addresses other than **2.1.1** for instance (i.e. **2.1.2** for the second controller, **2.1.3** for the third controller, etc.) you must update the serial or IP driver accordingly. You should always select a non “0” address for a controller so that its bi-directional communication will operate (and the indicator LED on the ZGN controller will turn from Green to Yellow).
3. Using commas between the **Zone/Group/Node** entries instead of periods (within the Address Tag)
4. Forgetting to check to make sure you have the latest Converging Systems firmware loaded for your system. Minimum levels of firmware are shown below

Product Name	Min. FW level required for Crestron Home
<ul style="list-style-type: none"> ➤ e-Node MKIII ➤ WAC A1G10-DMX ➤ Somfy UAI+ 	V 02.05.04 or later
<ul style="list-style-type: none"> ➤ e-Node MKIV 4000/4100 ➤ WAC A1G20-DMX 	V 01.03.05 or later

Note: If you have a version of firmware installed prior to the above versions, please upgrade you Gateway as shown [in Step 5](#) below

5. After you select **Check for Upgrade** and refresh your browser, if the version in parentheses is greater than the value to the left (without parentheses), simply select the download icon to update your firmware.



6. You have failed to enter at least one CSBUS (IMC-x00, ILC-xxx), DMX or DALI device under the applicable tab on your Gateway

Pure Mode	<div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; padding-bottom: 5px;"> e-Node CSBus Lutron Integration </div>
DMX Mode	<div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; padding-bottom: 5px;"> e-Node DMX Lutron Integration </div>
DALI Mode	<div style="display: flex; justify-content: space-between; padding-bottom: 5px;"> e-Node Dali Lutron Integration </div>

Appendix 1

Converging Systems System Setup/Configuration

Before proper operation between the Converging Systems' controllers and a third-party control system can begin, it will be first necessary for most applications to configure the Converging Systems' products using the e-Node Pilot (PC-based) application or the Web-Pilot application. Subsequently, matching communication parameters within the third-party control system are required-see specific directions for each system at

https://www.convergingsystems.com/inres_atoz.php.

In case you have not previously configured a Converging Systems controller product, please refer to the following directions.

Background

The Converging Systems e-Node is an Ethernet communication device which can be used to connect a supported third-party control system to one or more Converging Systems motor and/or lighting controllers. Alternatively, the Converging Systems' IBT-100 serial interface device can be used alternatively to connect the same number of Converging Systems' controllers to a supported third-party control system in situations where Ethernet communication is not desired (but where bi-directional feedback is still required).

However, regardless of whether you desire to interface **more than one** lighting controller (or motor controller) each with its own controllable operation (i.e. its own **Zone/Group/Node** or **Z/G/N** address) with either the e-Node (Ethernet) or the IBT-100 (RS-232c communication), and/or you desire **bi-directional communication/feedback** between your user interface (UI) and a particular motor or lighting controller, **you must still follow the directions below under (i) e-Node Programming and (ii) ILC-100/ILC-400 Programming** in order to establish **unique ZGN address(es) for connected loads** and **turn on the NOTIFY command** which provides for that bi-directional communication.

Note: If you plan on utilizing the IBT-100 for serial communication and (i) **you will not need** more than one address other than the factory default **ZGN** address of 2.1.0 for lighting controllers or 1.1.0 for motor controllers, and (ii) **you do not need bi-directional communication** between the lighting load or the motor load and your User Interface, then you can proceed to the IBT-100 Set up Section and you may skip the (i) e-Node Programming section as well as (ii) the ILC-100/ILC-400 Programming sections below.

Please download [Hardware and Software Setup Guide](#) from the Converging Systems website which can also be found **Resources/Installation Guides/System/Installation Guides** or by going to these links below

Type of Setup	Link (look for Systems/Installation Guides)
Led Lighting Control	https://www.convergingsystems.com/lighting_install_library.php
Motor Lighting Control	https://www.convergingsystems.com/motor_install_library.php

-Complete all the setup steps in the referenced document and then AND ONLY THEN proceed to Crestron Home Setup Software instructions above.

Appendix 2

Background on Addressing

This information is only relevant for when you **start** adding buttons and sliders within the GUI section of your Elan project. All Converging Systems' devices (loads or controllers as opposed to communication devices) that are connected to a communication device (e-Node or IBT-100) will be addressed using a unique **Zone/Group/Node** addressing scheme (**Z/G/N**). Those addresses are referred to within Elan Configurator as **Zone, Group and Node Addresses**.

Background on ZGN Addresses: The largest group is referred to as the **Zone**, which might be associated with a floor of a building. The next smaller group is referred to as the **Group**, which might be associated with a room on that floor of a building. Finally, the smallest entity is referred to as the **Node**, or the particular unit in that Room or Group, and within that Floor of Zone. From the factory, all lighting devices have a default address of **Zone=2, Group=1, Node=0** ("0" refers to an undefined unit).

Range of Z/G/N Addresses: Enter a number between 1 and 254 for Zone numbers, Group numbers, and Node numbers.

Please note -- no two controllers should be assigned the same Z/G/N address if you desire individual control. You can assign multiple controllers identical Z/G/N addresses after you have commissioned units and have verified that all units are operational.

Background on Bi-Directional Feedback: Once a load device (CS-Bus controllers) is programmed using the e-Node Pilot application to a non-zero value, then **AND ONLY THEN** can those devices can be queried or monitored for state data (color or motor position) which is quite useful in auto-updating sliders and numerical readouts.

The figure below describes this hierarchy.

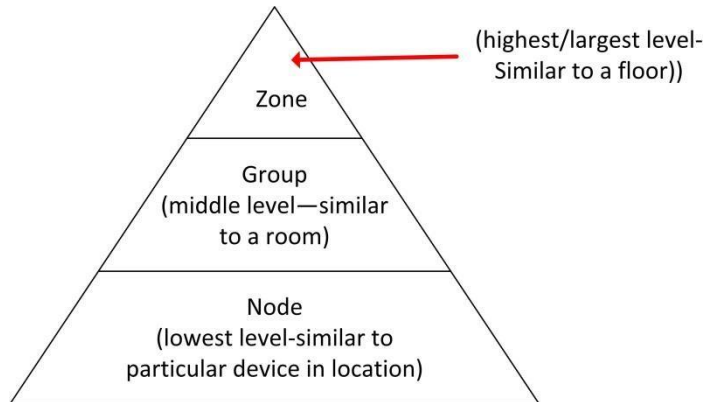


Figure 3

YOU MUST HAVE PRE-ASSIGNED Z/G/N ADDRESSES TO ALL LOADS BEFORE PROCEEDING WITH ELAN PROGRAMMING. See the Converging Systems' documentation on the e-Node Pilot application for more information here.

At this point after you assigned **Z/G/N** address to all loads (ILC-100 or ILC-400 controllers) it would be useful to write down a "map" of all interconnected loads and their re-assigned **Z/G/N Addresses** for use when programming within Elan Configurator.

Example: If you have a device with a Z/G/N address of **2.1.1**, then the Elan system can monitor that device to determine its current lighting status. If you choose to enter a wildcard address of a **2.1.0** (that is a broadcast to all units with Z/G/N addresses between **2.1.1** and **2.1.254**), only the unique color settings available from the device with an address of **2.1.1** or the first Z/G/N unit in the series will be queried. See [Appendix 5](#) for more information.

Example: If you have a device with a Zone/Group/Node ("**Z/G/N**") address of **2.1.1**, then the Elan system can poll that device to determine its current lighting status. If you choose to enter a wildcard address of a **2.1.0** (that is a broadcast to all units with

Z/G/N addresses between 2.1.1. and **2.1.254**), only the unique color settings available from the device with an address of **2.1.1** or the first Z/G/N unit in the series will be queried.

Specifically, if you had more than one ILC-100/ILC-400 controllers, you could give them (through the e-Node Pilot application) addresses as follows:

Table 4

ILC unit	Zone/Group/Node Address
First Unit	2.1.1
2 nd unit	2.1.2
nth unit	2.1.3 or some other number up to 254

Appendix 3
COLOR SPACE ISSUES

Appendix 4

Addressing Deep Dive

Topic	Section
How to Set up group control	Section 1

1.0 How to set up group control of loads using sliders with feedback available to sliders.

Addressing Background CS-Bus controllers can be address with a unique **Zone/Group/Node (ZGN)** address. Up to 254 entries can be used for each field. The first field is the **Zone** (or largest range), the middle field is the **Group**, and the last field is the **Node**. No two loads can share the same **Z/G/N** address. As an example, if you will be populating a pair of two controllers within each of two rooms on two floors of a building here would be the suggested addressing that could be used.

	Floor One	Floor Two
Room 1	2.1.1 for first controller in room. 2.1.2 for second controller in this room	
Room 2	2.2.1 for first controller in room. 2.2.2 for second controller in this room	
Room 3		3.1.1 for first controller in room. 3.1.2 for second controller in this room
Room 4		3.2.1 for first controller in room. 3.2.2 for second controller in this room

Group Addressing. In certain cases, it is desirable is simply send a wildcard address for a group of controllers to all respond in unison rather than programming each individually to respond through macros. There are two problems with macros in general. One is that often they are executed serially which means that if you had two hundred loads referenced within a macro, the timing of the execution of the last command sent out might be delayed from the first command sent out. In this case, not all LEDs would turn on or OFF at the same time, potentially. The second issue involves the actual programming time required to program scores or even hundreds of commands for a simple ALL OFF button.

Within the CS-Bus software protocol is the concept of utilizing a "0" within any address field as a surrogate for defined numbers ranging from 1 to 254 within that same field. Thus, if you issued a command of #2.1.0.LED=ON:<cr>, all units with addresses of 2.1.1 to 2.1.254 would immediately respond. Please see the table below for an example of how various wildcards could be used.

Specific controller address	Specific command that will trigger targeted controller
2.1.1	2.1.0 or 2.0.0 or 0.0.0
2.1.2	2.1.0 or 2.0.0 or 0.0.0
2.1.3	2.1.0 or 2.0.0 or 0.0.0
2.2.1	2.2.0 or 2.0.0 or 0.0.0
2.2.2	2.2.0 or 2.0.0 or 0.0.0
2.2.254	2.2.0 or 2.0.0 or 0.0.0
5.254.4	5.254.0 or 5.0.0 or 0.0.0

NOTIFY Command Background Converging Systems has a **NOTIFY** function which automatically provides color state feedback (from the targeted controller) provided a unique **Zone/Group/Node (Z/G/N)** address is provided with an action/argument payload to that specific controller. Specifically, if a command to invoke a color change is directed to a

controller that has a **Z/G/N** address of 2.1.1, that specific controller with that address will respond back to the automation system as to its specific color state if and only if there is a color state change impacted on that specific controller.

In some cases, as has been discussed above, there might be a requirement to send a group command or all hail command to more than one controller. In this case, the group command would be directed not to a single controller or load but to a series of controllers. To reduce bus traffic when a series of controllers is given the same command, ***the status of the first controller whose node number is 1 greater than the wildcard command of "0" will respond and will be automatically remapped to the wildcard address of "0" from which the command emanated**** (which reduces bus traffic by up to 243 messages). The logic here is that if 254 controllers are all told to turn **Red**, only the surrogate for that group of controllers will respond and within the CS-Bus messaging logic that surrogate is the controller with a node of "1." So, for example, if a **#2.1.0.LED.VALUE=240.0.0:<cr>** command is transmitted to 254 controllers, they will all turn to **Red**, but only the controller with an address of **2.1.1** will respond with its new color status. In this case, a command on the bus from that surrogate controller would come back as follows: **!2.1.1.LED.VALUE=240.0.0** (the exclamation mark indicates that it is a message from CS-Bus device rather from an automation controller). Please see the diagram on the next page for the theory of operation here.

*Note: this is in 2018 updates to our ILC-400 firmware initially

2.0 Reserved.