

CRISTAL

CCLDIM

User Manual

Version 2.70 - 2026-10-21

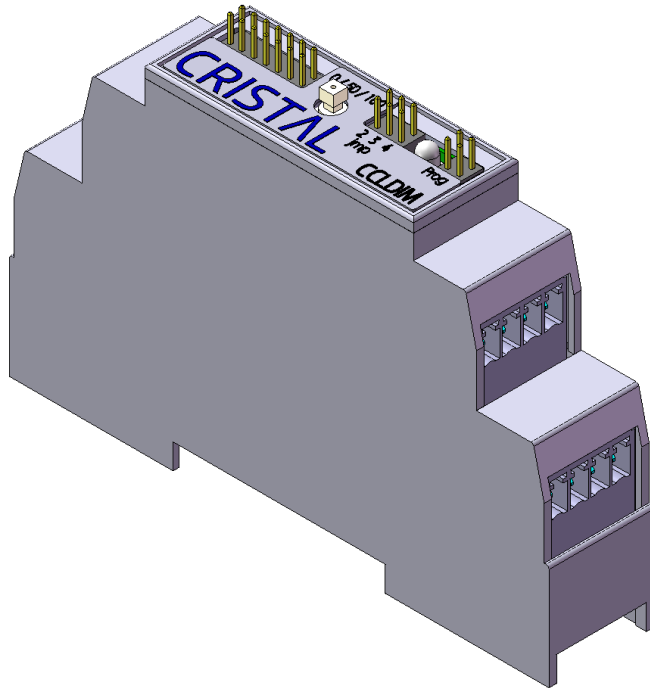


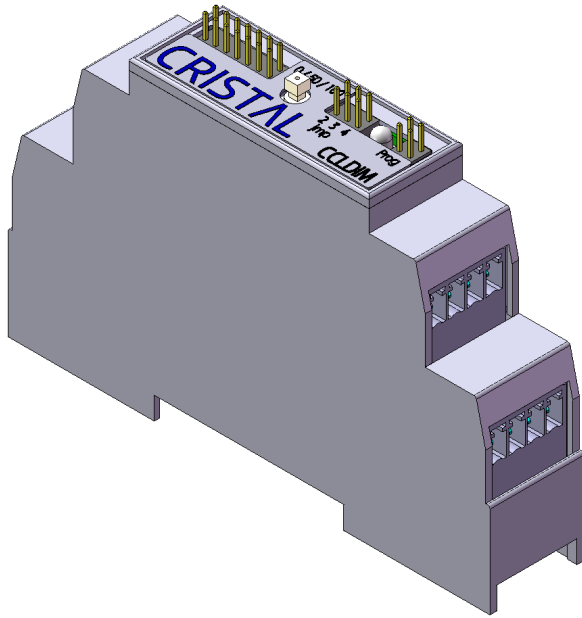
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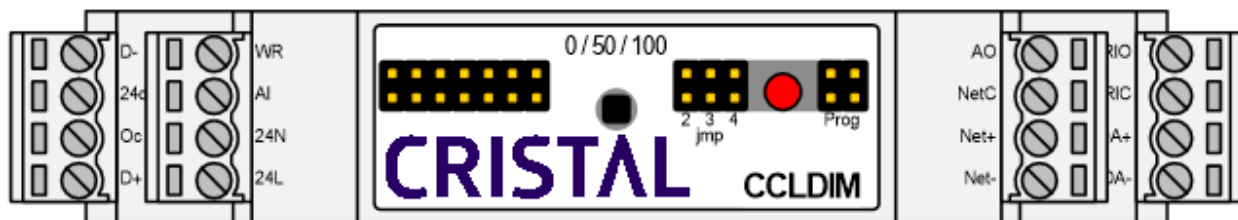
1 General Description

The dimming controller allows the control of 0-10V ballasts or 0-10V drivers over a DALI or BACnet MS/TP network. The dimming controller can be mounted in the Cristal CCLD panel series or simply deployed into 1 to 4 control circuit enclosures and networked using BACnet MS/TP or DALI topology.



CCLDIM dimming controller

2 Installation



Dimming controller terminals

2.1 Terminal identification



WARNING: ELECTRICAL RISK Turn off the power supply before the beginning of the installation. Otherwise it can cause electrical shocks and damage the equipment.

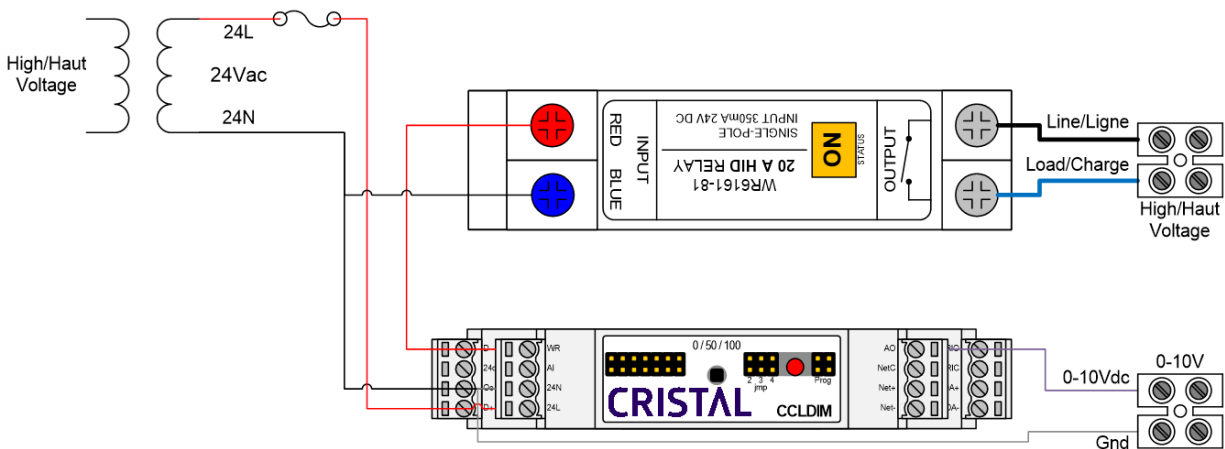
Signal	Description
24L	Positive (hot) power supply input terminal.
24N	Negative (neutral) power supply input terminal.
Net +	RS-485 communication, positive terminal.
Net -	RS-485 communication, negative terminal.
DALI+	DALI communication, positive terminal.
DALI-	DALI communication, negative terminal.
DI-1 Dim+	Digital Input for button 1.
DI-2 Dim-	Digital Input for button 2.
DI-3 Occ	Digital Input for the occupancy sensor.
24Vdc Out	24 Vdc power supply for the buttons, the motion sensor and the light sensor.
0-10V Input	Analog Input for the light sensor or the potentiometer.
0-10V Output	0-10Vdc output. Connected to the 0-10 Vdc signal in ballasts and LED drivers.
Pulse Output	Pulse signal to control a WR-6161 latching relay.

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Signal	Description
RL Out	Traditional relay output (normally open).
Com	NO contact common terminal.

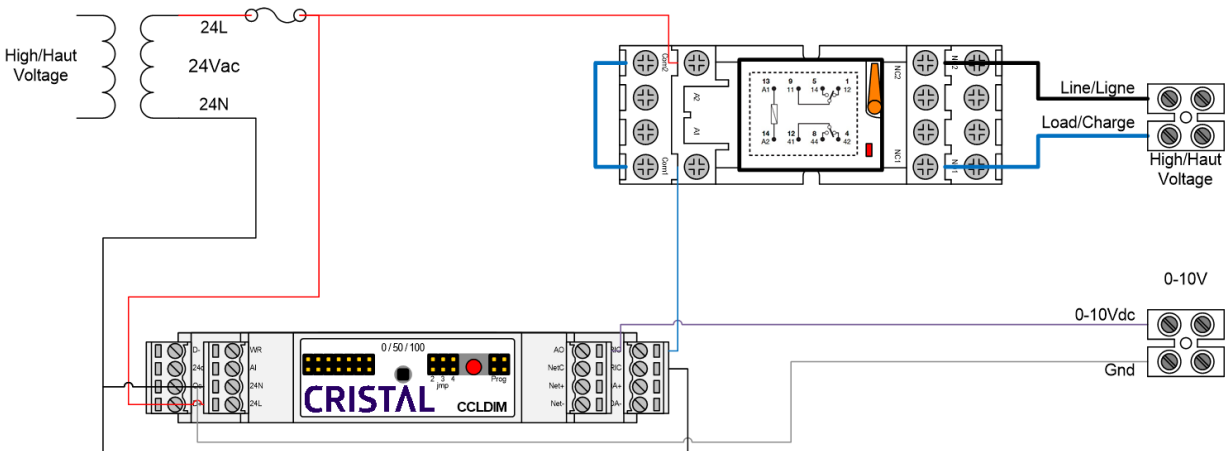
2.2 Connections

2.2.1 WR-6161 relay wiring



WR-6161 relay wiring

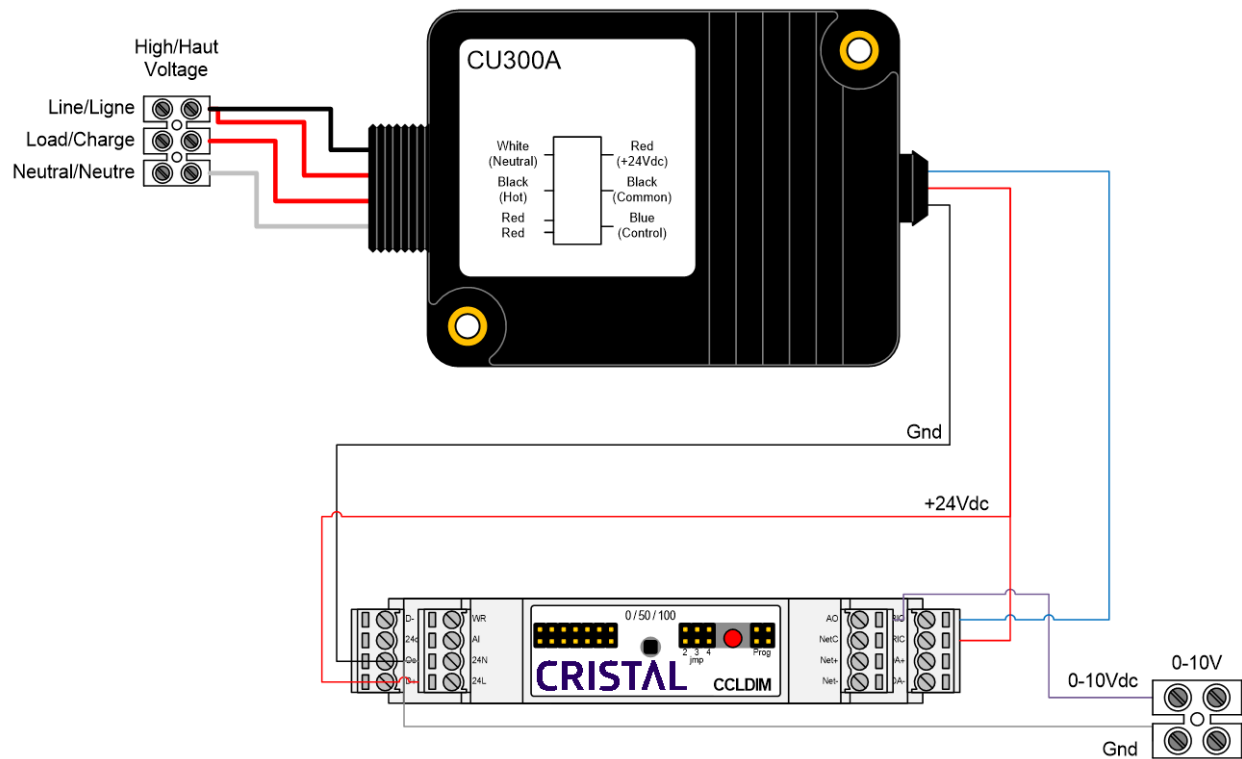
2.2.2 Common relay wiring (RMIA Normally Closed)



Common relay wiring

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2.2.3 Power pack wiring

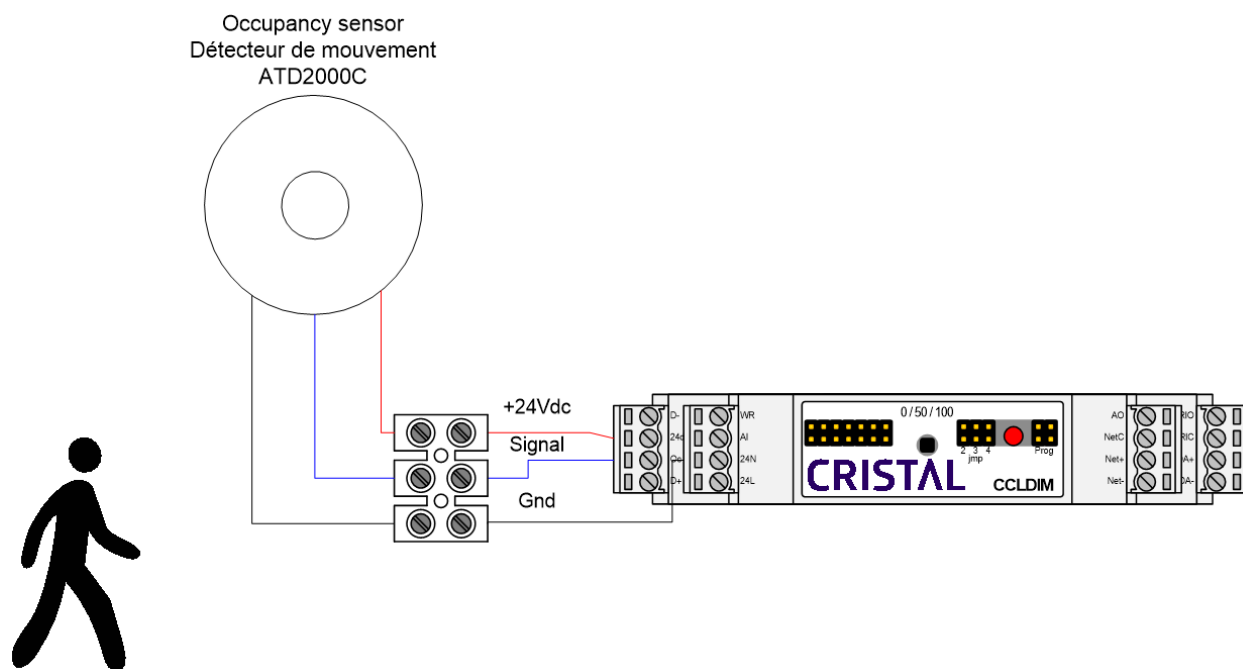


Power pack wiring

Note: the "Pulse Output" output is not functional with a 24Vdc power supply.

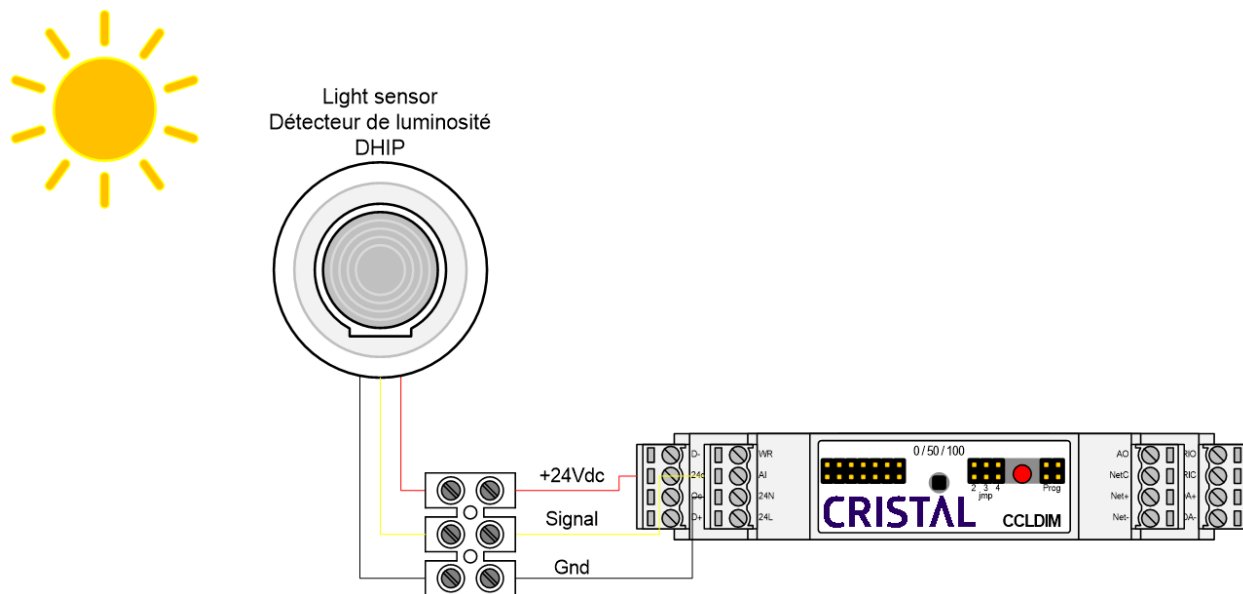
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2.2.4 Wiring with an occupancy sensor



Wiring with an occupancy sensor

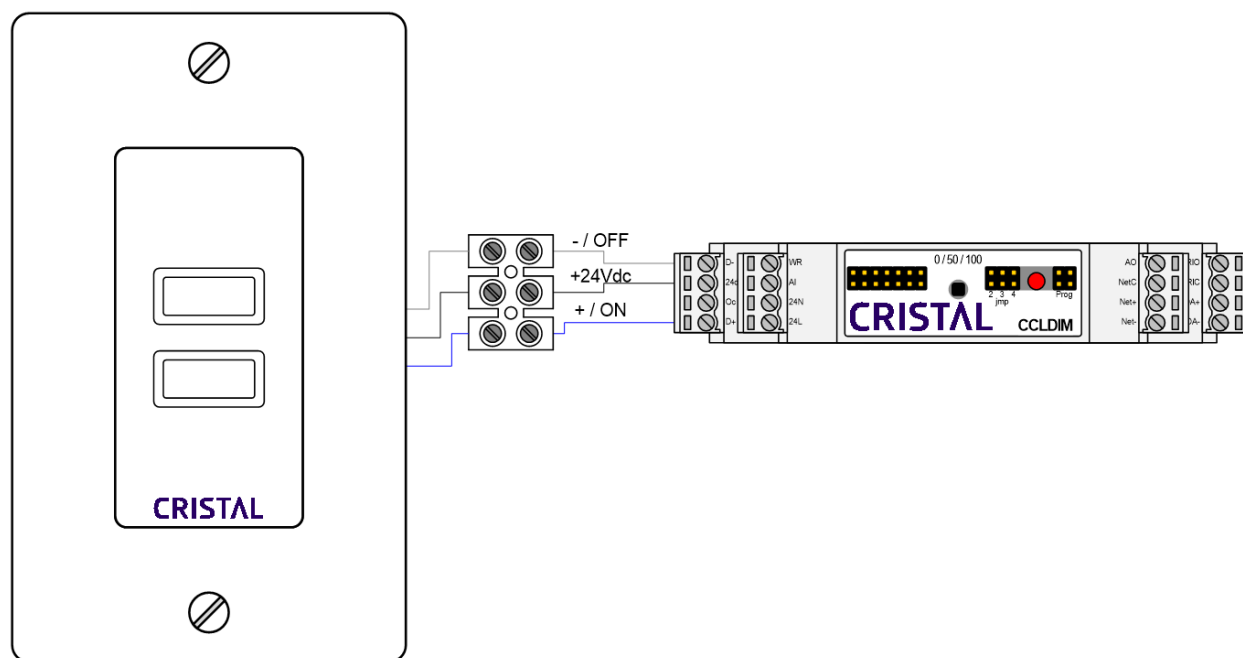
2.2.5 Wiring with a light sensor



Wiring with a light sensor

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2.2.6 Wiring with push buttons



Wiring with push buttons

3 Outputs

3.1 Pulse Output

Positive or negative rectified 24 Vac for three WR-6161 Panasonic relays.

3.2 0-10V Output

The controller changes its output using linear voltage mode.

The 0-10Vdc output is protected against short-circuits and inverted polarity using a 140 mA fuse. The fuse automatically resets when the power supply is turned off from the dimming controller for a few seconds.

This output can drive up to 50 Philips Advance Mark 7 ballasts. The number of ballasts or LED drivers may change from manufacturers and models.

With an internal controller setting, this output can source voltage as required for some LED drivers.

3.3 RL Out / RL Com

These are the output terminals for traditional relay control using 24 Vac or 24 Vdc. It can be set to control the power relay using normally open or normally closed logic.

4 Jumpers

4.1 *Term.*

Installing a jumper on **Term** activates the termination resistor of the RS-485 network.

4.2 *Jp3, Jp4*

Configures the dimming controller in relay mode. This avoids receiving lamp failures because the 0-10V output has no feedback.

Turn off the power supply before placing a jumper on Jp3 and Jp4.

Do not place a jumper on Jp2.

Remove jumpers Jp3 and Jp4 once the dimming controller has started.

4.3 *Jp2, Jp4*

Configures the dimming controller with 0-10V output and relay.

Turn off the power supply before placing a jumper on Jp2 and Jp4.

Do not place a jumper on Jp3.

Remove jumpers Jp2 and Jp4 once the dimming controller has started.

4.4 *Jp4*

Reset the dimming controller configuration.

Turn off the power supply before placing a jumper on Jp4.

Do not install jumpers on Jp2 or Jp3.

When placing a jumper on Jp4 two seconds after power up, the configurations are cleared. This resets the BACnet setting to default known values:

Item	Value
Device Name	CCLDIM
Device Id	14
MSTP MAC	127
MSTP Baud Rate	38400

Also, all DALI variables (short address, etc.) will be configured to factory values. See the Objects section in the Communication chapter.

5 Software Algorithm

The dimming controller allows 0-10 V ballasts control.

5.1 Settings

The dimming controller settings are done using the **Config.bin** file available from the BACnet network. This BACnet file is changed with the BACnet Browser software.

5.2 Power Limit

The Power Limit caps the maximum level of the 0-10V output. The dimming controller compares every output command against the Power Limit and, when the command is higher, it reduces the output to the Power Limit value. A Power Limit of 100% leaves the output unrestricted, and a Power Limit of 0% forces the output off.

The Power Limit is expressed in percent and applies to all commands. It can be adjusted at run time through the POWER LIMIT object or with the Set Power Limit button commands.

6 Communication

The dimming controller uses DALI or BACnet MS/TP communication protocol on a RS-485 physical link. For advanced settings, you need the BACnet Browser software on BACnet MS/TP.

6.1 DALI

The dimming controller is not powered by the DALI signal.

According to the configuration, it appears as a “DALI control gear, Fluorescent lamps (device type 0)” or “control gear, Switching function (device type 7)”.

6.2 BACnet MS/TP

When the dimming controller is at the end of a RS-485 network, we may enable the terminating resistor by installing a jumper on **Term** to terminate the network or use an external resistor. Call Cristal Controls to order a CC-BIAS.

For more RS-485 network information, refer to the Cristal Controls **Setting up a RS-485 Network** guide.

6.3 Objects

BACnet objects list. Many objects allow direct control on inputs and outputs of the dimming controller.

Object	Instance	Name	Min Value	Max Value	Default	Description	Notes
Device		CCLDIM	0	4194302			
BI	0	DIGITAL IN 1	0 = OFF	1 = ON		Digital input DI 1	5
BI	1	DIGITAL IN 2	0 = OFF	1 = ON		Digital input DI 2	5
BI	2	DIGITAL IN 3	0 = OFF	1 = ON		Digital input DI 3	5
BI	4	RELAY FB	0 = OFF	1 = ON		Relay feedback.	5
BO	0	RELAY CMD	0 = OFF	1 = ON	0 = OFF	Relay Command.	2, 3
BV	0	OCCUPIED MODE	0 = inactive	1 = active	1 = active	Occupied mode.	2, 4, 5

Object	Instance	Name	Min Value	Max Value	Default	Description	Notes
BV	1	NETWORK OCCUPANCY	0 = inactive	1 = active		Network occupied mode.	5
BV	2	NETWORK BUTTON 1	0 = released	1 = pressed		Network button 1 state.	5
BV	3	NETWORK BUTTON 2	0 = released	1 = pressed		Network button 2 state.	5
BV	4	NETWORK BUTTON 3	0 = released	1 = pressed		Network button 3 state.	5
BV	5	NETWORK BUTTON 4	0 = released	1 = pressed		Network button 4 state.	5
BV	6	NETWORK BUTTON 5	0 = released	1 = pressed		Network button 5 state.	5
BV	7	NETWORK BUTTON 6	0 = released	1 = pressed		Network button 6 state.	5
AI	0	OUTPUT 0-10V FB	0.0%	100.0%		0-10V output feedback	5
AI	1	INPUT 0-10V	0.0%	100.0%		Input 0-10V	5
AI	2	24VDC FB	0.0%	100.0%		24 VDC Feedback	5
AI	3	LAMP FB	0.0%	100.0%		Lamp feedback	4, 5
AI	4	LAMP 2 FB	0.0%	100.0%		Status for 2nd daylight zone.	5
AO	0	OUTPUT 0-10V	0.0%	100.0%	0.0%	Output 0-10V	2
AO	1	LAMP CMD	0.0%	100.0%		Lamp command	4
AV	0	LUX SETPOINT UNOCC	-65534	2147483647	0	Unoccupied mode setpoint	1, 5
AV	1	LUX SETPOINT	0	4294967295	500	Occupied mode setpoint	2, 5
AV	2	INPUT CONTROL	0			Input value used in the control	2, 5

Object	Instance	Name	Min Value	Max Value	Default	Description	Notes
AV	3	POWER LIMIT	0.0%	100.0%	100.0%	Maximum allowed output level. 0% = full shedding.	5
MSV	0	SCENE CONTROL LOCAL	1	48		Scenes control	
FILE	0	Config.bin	-	-	-	Configuration file	
FILE	1	ConfigNetwork.k.bin	-	-	-	Network configuration file	

Notes:

- 1 Negative values will be relative to the occupied setpoint.
- 2 The dimming controller writes to the configured priority.
- 3 Switching ballast ON or OFF is also controlled by the dimming controller.
- 4 These are the main objects a BAS will use.
- 5 Allows BACnet COV subscription for two devices.

6.4 Properties

6.4.1 Device

Property Identifier	Property ID	Property Datatype	Conformance Code
MSTP_MAC_Address	512	Unsigned	W
MSTP_Baudrate	513	Unsigned	W
Active_Scene	700	Unsigned	R
System_Info_Temperature	901	REAL	R
System_Info_Flash_ID	910	Unsigned	R

6.4.1.1 MSTP_MAC_Address

The MS/TP MAC address. The accepted values are between 0 and 255. The default value is 127.

6.4.1.2 MSTP_Baudrate

The MS/TP baud rate. The default value is 2 (38400 bps). The accepted values are as follows.

Value	Description
0	9600
1	19200
2	38400
3	57600
4	76800
5	115200
6	230400

6.4.1.3 Active_Scene

The scene currently active on the dimming controller.

6.4.1.4 System_Info_Temperature

Allows obtaining the current temperature in degrees Celsius. This temperature value is not calibrated and is provided for informational purposes only.

6.4.1.5 System_Info_Flash_ID

The identifier of the internal flash memory.

6.4.2 Binary Input

The digital inputs (DIGITAL IN 1, 2, and 3) support the following proprietary properties.

Property Identifier	Property ID	Property Datatype	Conformance Code
Command_Allowed	532	Enumerated	W
Digital_Input_Signal_Type	550	Enumerated	R

6.4.2.1 Command_Allowed

Allows temporarily disabling an input. After a reboot the input is enabled. The accepted values are as follows.

Value	Description
0	The input is disabled
3	The input is enabled

6.4.2.2 Digital_Input_Signal_Type

The type of signal detected on the digital input. The values are as follows.

Value	Description
-------	-------------

0	DC
---	----

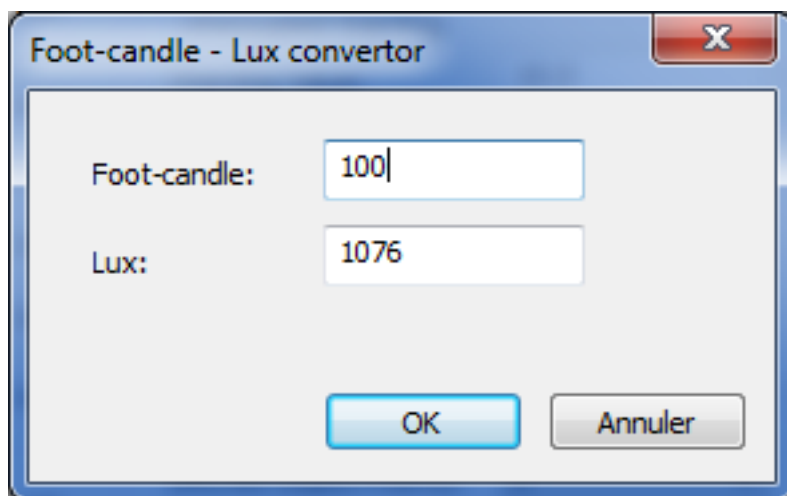
1	AC
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7 Setting

The dimming controller can be set using the Cristal Controls BACnet Browser application software. This software allows reading and writing the dimming controller setting over the BACnet network. The settings can also be saved and read from a file. Here are the different dimming controller settings and their uses. This application software is free and is available at cristalcontrols.com.

7.1 Configuration buttons

Button	Details
Load from file	Allows loading a binary setting file in the interface.
Save to file	Saves the setting in a binary file.
Read	Read the current setting of the dimming controller.
Write	Write the setting in the dimming controller.
Config Version	Indicates the version of the setting.
Foot-candle to Lux	Displays a window to convert a value of foot-candle to lux and vice versa.



Configuration buttons

7.2 Status

CCLD4002 - CCLD4002

COV Subscription	COV Increment	Property	Scene	DALI Variables
Status	Network Input State	Input	Potentiometer	Digital Input
	Output	Button	Occupancy	Settings

Input

0.0000 %

Digital Input 1 Inactive

Digital Input 2 Inactive

Digital Input 3 Inactive

Input 0-10V 0.0064 Volt

Input Feedback 0.02 Volt

Output

Command ON Feedback ON

100.00 %

10.00 Volt

Occupancy Occupied

Setpoints

Setpoint 500 Lux Setpoint unoccupied 0 Lux Write

Burn In Duration

0 hours Write

Run Hour

0 hours Reset

Unoccupied Delay

0 seconds Write

BACnet Output Command Dim Mode

Fade Write

☐ Show overwrite options

Load from file

Save to file

Read

Write

Foot-candle to Lux

Config Version: 3

Status window

This window provides access to the status of the dimming controller.

Item Explanation

Input The entry value is calculated in lux or percent depending on setting.

Digital Input 1 Value of the digital input 1.

Digital Input 2

Value of the digital input 2.

Digital Input 2

Item	Explanation
<i>Digital Input 3</i>	Value of the digital input 3.
<i>Input 0-10V</i>	Value of the 0-10V physical input.
<i>Output</i>	Last command sent to the relay. Output percentage: if shown in red, the output feedback is not following the output command. Value of the 0-10V physical input as 0% and 100% can be limited by settings.
<i>Occupancy</i>	Occupied mode.
<i>Setpoint</i>	Setpoint for occupied mode.
<i>Setpoint unoccupied</i>	Set point of the unoccupied mode.
<i>Burn-In Duration</i>	Remaining time (in hours) for initial lamp burn-in. Writing a value greater than zero starts the burn-in and the value will decrease by one each hour. While the burn-in is active, dimming commands are prohibited.
<i>Run Hour</i>	Indicates the total time (in hours) the output has a value greater than 0%. The button "Reset" writes zero to this value to clear accumulated times.
<i>Unoccupied Delay</i>	Delay (in seconds) before the Occupancy takes into account the changes to the input. For example, this value may adjust the time of a motion sensor. It must then be set to minimum as sensor delay is added to this delay.
<i>BACnet Output Command Dim Mode</i>	Determines if the BACnet command uses the fade or not.

Item Explanation

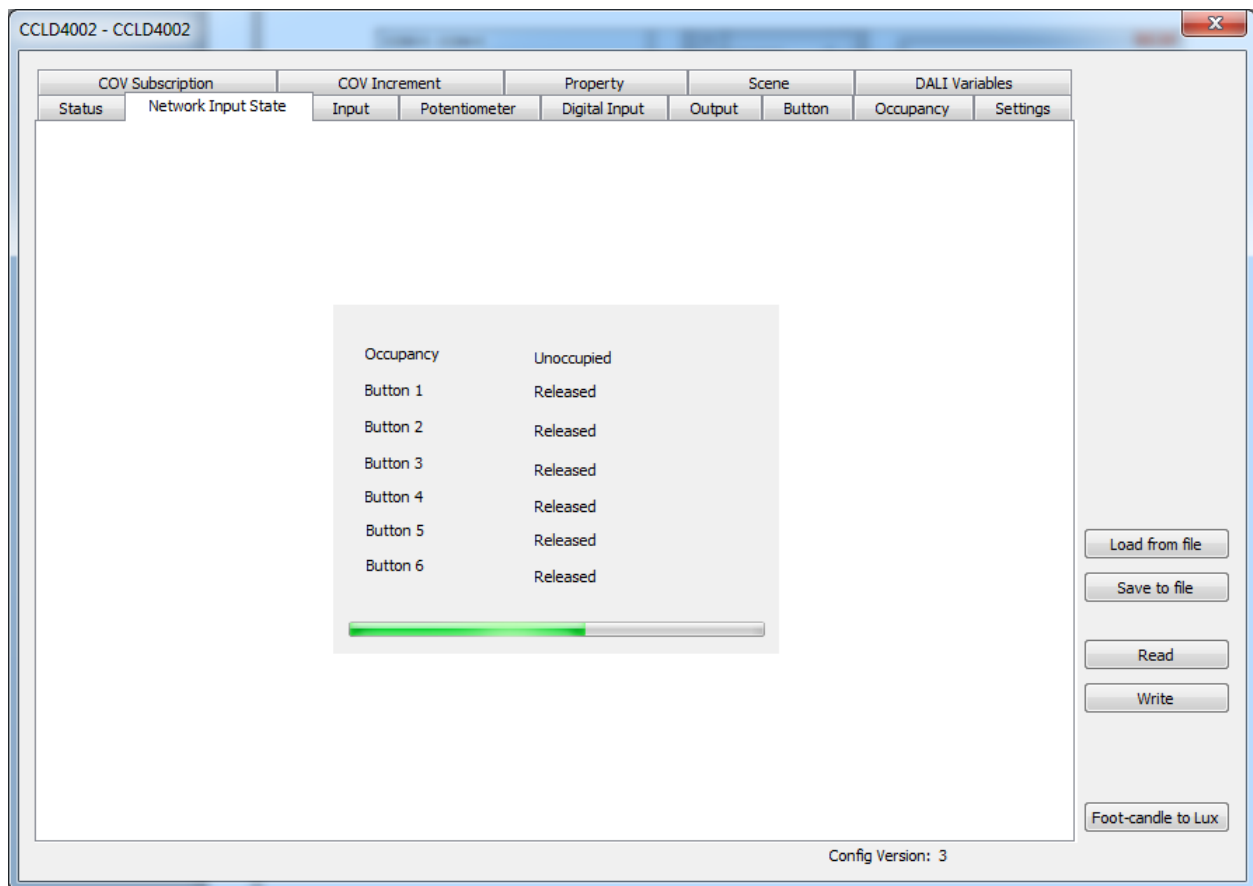
Overwrite This section allows direct modification of some values.

Output 0-10V Percentage of the 0-10V output.

Occupancy Occupancy mode.

Input Input value.

7.3 Network Input State



Network Input State window

This window displays the current states of the network inputs as read by the dimming controller. This information is useful when the dimming controller reads the BACnet objects from other controllers by itself.

7.4 Input

CCLD4002 - CCLD4002

COV Subscription COV Increment Property Scene DALI Variables

Status Network Input State Input Potentiometer Digital Input Output Button Occupancy Settings

Input

Mode Potentiometer

Input Network

Filter Time 0.6 Secs

Minimum Voltage 0.0 Volt

Maximum Voltage 10.0 Volt

Load from file

Save to file

Read

Write

Foot-candle to Lux

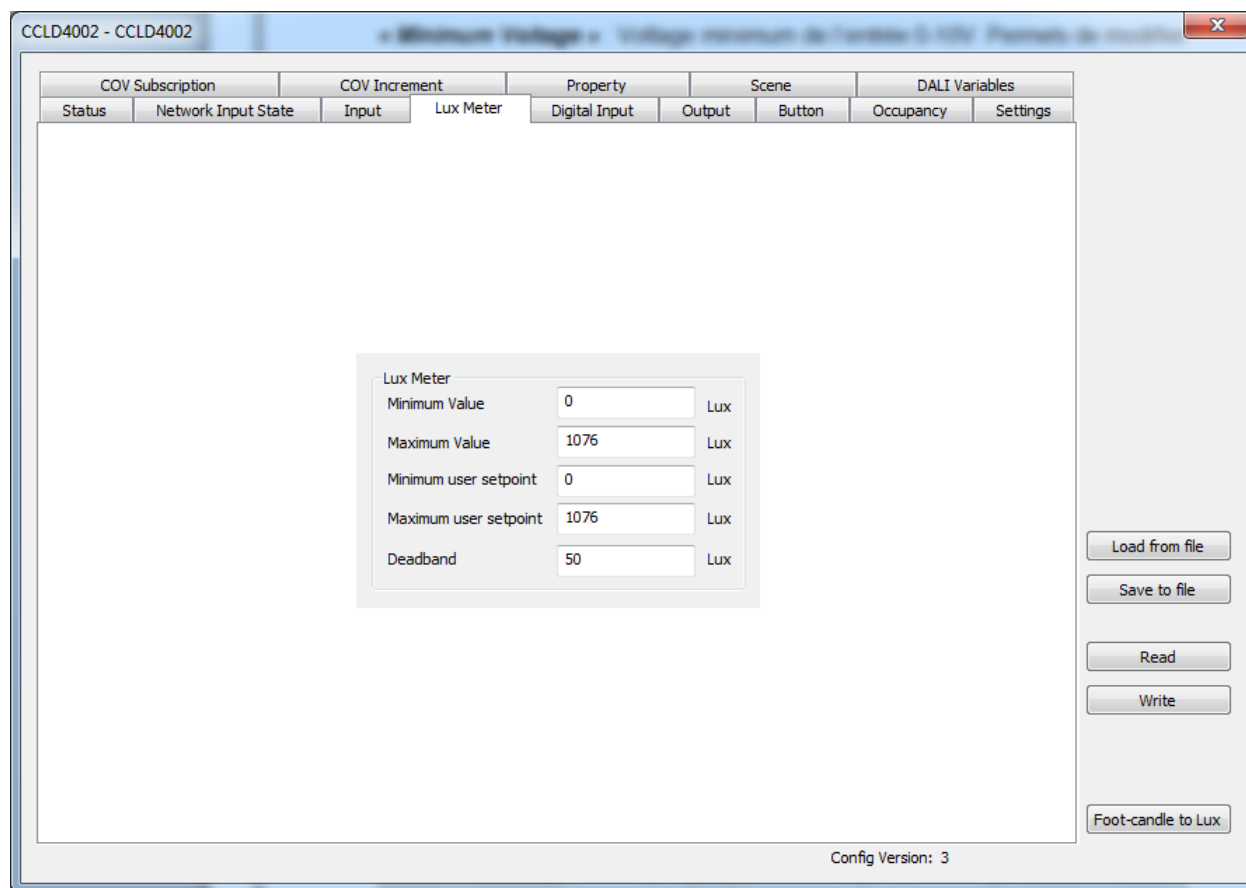
Config Version: 3

Input window

This window is to set the analog Input parameters.

Item	Explanation
<i>Mode</i>	Operation mode for the input. Daylight harvesting or Potentiometer . If not used, select Potentiometer .
<i>Input</i>	Input signal type: 0-10V input or BACnet . If no device is connected to analog input, select Network .
<i>Filter Time</i>	Filter time applied to an input reading.
<i>Minimum Voltage</i>	Minimum voltage of the 0-10V input. Modify the value representing 0% of the input.
<i>Maximum Voltage</i>	Maximum voltage for the 0-10V input. Modify the value representing 100% of the input.

7.5 Lux Meter

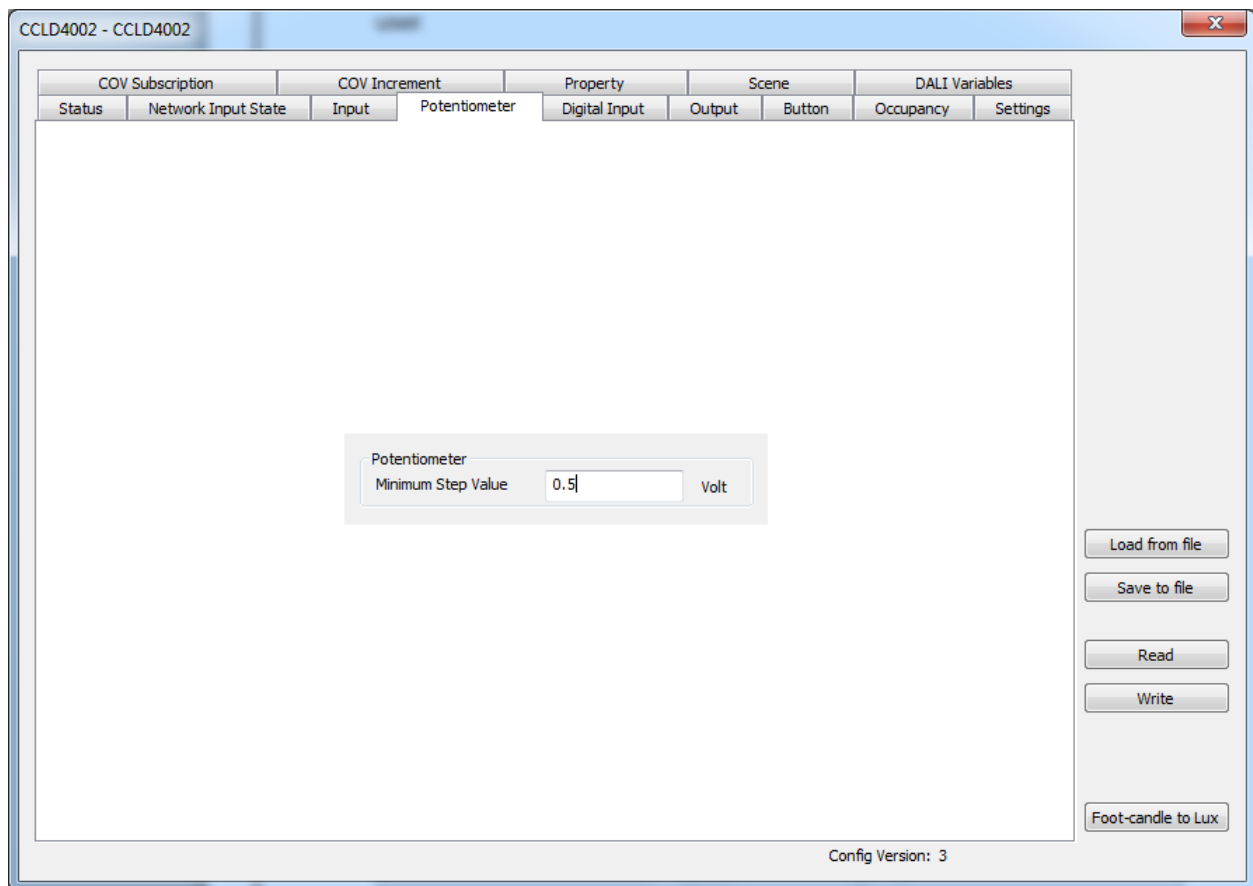


Lux Meter window

This window is to set the lux meter.

Item	Explanation
<i>Minimum Value</i>	Minimum calibration (in Lux) readable by the sensor. This value is usually 0.
<i>Maximum Value</i>	Maximum calibration (in Lux) readable by the sensor. This is the Lux reading when the sensor gives a 10V signal.
<i>Minimum user setpoint</i>	Minimum setpoint value that can be adjusted by the user.
<i>Maximum user setpoint</i>	Maximum setpoint value that can be adjusted by the user.
<i>Dead band</i>	Dead band to avoid fast ON and OFF cycles.

7.6 Potentiometer

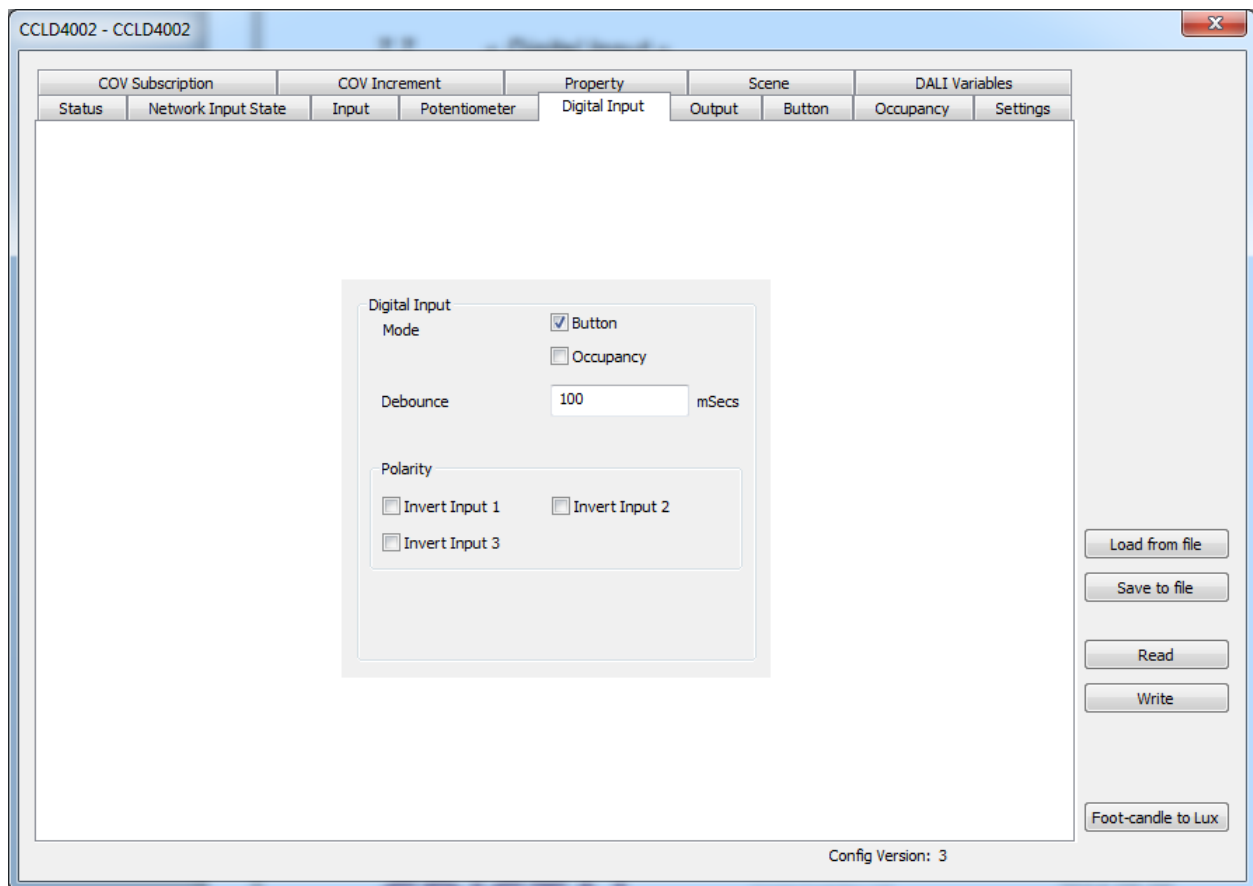


Potentiometer window

This window is to set the potentiometer input.

Item	Explanation
<i>Minimum Step Value</i>	Minimum change in volts at the input before applying change to the output. This setting avoids cycling caused by potentiometer input readings.

7.7 Digital Input



Digital Input window

This window is to set the digital inputs.

Item	Explanation
<i>Mode</i>	Button enables the digital inputs 1 and 2 to be used as buttons. Occupancy enables the digital input 3 to be used as the occupancy input.
<i>Debounce</i>	Debounce time on digital inputs.
<i>Polarity / Invert Input n</i>	Invert the logical value of the digital input.

7.8 Output

CCLD4002 - CCLD4002

COV Subscription		COV Increment		Property	Scenes		DALI Variables	
Status	Network Input State	Input	Potentiometer	Digital Input	Output	Button	Occupancy	Settings

Output

Output Type: 0-10V + Relay

0-10V Type: Source

Relay Contact Type: Normally Open

Minimum Voltage: 0.0 Volt

Maximum Voltage: 10.0 Volt

Physical minimum: 1 %

Control Filter Time: 5 Secs

Relay Feedback: ☒

DALI Destination

Enable: ☐

☐ First Device Group

☐ Address: 0

☐ Group: 0

☐ Broadcast

Output 2

Offset: 30 %

Limit: 70 %

Output 2 DALI Destination

Enable: ☐

☐ First Device Group

☐ Address: 0

☐ Group: 0

☐ Broadcast

Load from file

Save to file

Read

Write

Foot-candle to Lux

Config Version: 4

Output window

This window is to set the 0-10V output.

7.8.1 Output

Item	Explanation
Output Type	Enable the 0-10V output (0-10V + Relay) or disable it (Relay).
0-10V Type	Enable the 0-10V Sink or Source output.
Relay Contact Type	Normally Open or Normally Closed relay contact.
Minimum Voltage	Minimum value of 0-10V output in volts.

Item	Explanation
<i>Maximum Voltage</i>	Maximum value of 0-10V output in volts.
<i>Physical Minimum</i>	Voltage used to turn off the output with the relay. This value corresponds to the “Physical Minimum Level” when using DALI.
<i>Control Filter Timer</i>	Output filter time in seconds.
<i>Relay Feedback</i>	Set if using a relay with feedback on the WR output.

7.8.2 DALI Destination

Item	Explanation
<i>Enable</i>	If DALI destination is enabled, modifications of the dimming controller output level are sent on the DALI network to the specified address.
<i>First Device Group</i>	First DALI group configured in the dimming controller. The group with the lowest number.
<i>Address</i>	A DALI short address.
<i>Group</i>	A DALI group number.
<i>Broadcast</i>	Broadcast.

7.8.3 Output 2

The second output is an internal calculation for a second lighting zone. When in daylight mode, the controller is dimming the inside zone near the corridor and the second zone is communicated to a second controller to dim a brighter zone near the windows.

When the controller is in manual mode and not in daylight control, the second output follows the value of the first input.

Item	Explanation
<i>Offset</i>	Offset, in percent, of the second output. While first output is below this value, second output will be 0%.

Item Explanation

Limit Limit, in percent, for the second output. From this value, both outputs have the same level. Below this value, the second output has a linear value function of the first input.

7.9 Button

Button window

This window is to set the actions of the physical and network buttons.

7.9.1 Button

Select the button being configured.

7.9.2 Configuration

How to set the selected button.

Item	Explanation
<i>Mode</i>	Push-button treats the input as a momentary button and gives access to the full command list. Switch treats the input as a maintained contact and limits the command list to the toggle commands.
<i>Command</i>	Command for button. See table below.
<i>Value / Scene</i>	Percentage or scene number. For a toggle command, this is the first of the two values.
<i>Value 2 / Scene 2</i>	Second value used by the toggle commands. Each press alternates between this value and the <i>Value / Scene</i> value.
<i>Press Delay</i>	Debounce of the input.
<i>Press Step Time</i>	Time between the resend of the long press command.

7.9.2.1 Command List for buttons

Command	Button function
<i>Undefined</i>	No command / inactive
<i>Direct Value</i>	Pressed = "Value" %
<i>Max Level / Up</i>	Pressed = Max Level Long Press = Up (repeated)
<i>Last Level / Up</i>	Pressed = Last Level Long Press = Up (repeated)
<i>Off / Down</i>	Pressed = Off Long Press = Down (repeated)
<i>Max Level / Up / Store Scene X</i>	Pressed = Max Level Long Press = Up (repeated) Released for 30 seconds = Store Scene
<i>Off / Down / Store Scene X</i>	Pressed = Off Long Press = Down (repeated) Released for 30 seconds = Store Scene
<i>Recall Max Level</i>	Pressed = Recall Max Level
<i>Recall Min Level</i>	Pressed = Recall Min Level
<i>Off</i>	Pressed = Off
<i>Go To Scene X</i>	Pressed = Go To Scene
<i>Go To Scene X / Store</i>	Pressed = Go To Scene Long Press = Store Scene After 30 seconds = Store Scene
<i>Go To Scene X / Up</i>	Pressed = Go To Scene Long Press = Up (repeated)

Command	Button function
<i>Go To Scene X / Down</i>	Pressed = Go To Scene Long Press = Down (repeated)
<i>Go To Scene X / Up / Store</i>	Pressed = Go To Scene Long Press = Up (repeated) Released for 30 seconds = Store Scene
<i>Go To Scene X / Down / Store</i>	Pressed = Go To Scene Long Press = Down (repeated) Released for 30 seconds = Store Scene
<i>Go To Scene X / On And Step Up</i>	Pressed = Go To Scene Long Press = On And Step Up
<i>Go To Scene X / Step Down And Off</i>	Pressed = Go To Scene Long Press = Step Down And Off
<i>Go To Scene X / On And Step Up / Store</i>	Pressed = Go To Scene Long Press = On And Step Up Released for 30 seconds = Store Scene
<i>Go To Scene X / Step Down And Off / Store</i>	Pressed = Go To Scene Long Press = Step Down And Off Released for 30 seconds = Store Scene
<i>Modulo Up / Up</i>	Pressed = raises the output to the next multiple of "Value" % Long Press = Up (repeated)
<i>Modulo Down / Down</i>	Pressed = lowers the output to the previous multiple of "Value" % Long Press = Down (repeated)
<i>Max Level / Off (toggle)</i>	Pressed = toggles between Max Level and Off
<i>Last Level / Off (toggle)</i>	Pressed = toggles between Last Level and Off
<i>Max Level - Up / Off - Down (toggle)</i>	Pressed = toggles between Max Level and Off Long Press = Up or Down depending on the current state
<i>Last Level - Up / Off - Down (toggle)</i>	Pressed = toggles between Last Level and Off Long Press = Up or Down depending on the current state
<i>Direct Value (toggle)</i>	Pressed = toggles between two configured "Value" % levels
<i>Go To Scene (toggle)</i>	Pressed = toggles between two configured scenes
<i>Set Power Limit</i>	Pressed = sets the power limit to "Value" %
<i>Set Power Limit (toggle)</i>	Pressed = toggles the power limit between two configured "Value" % levels

7.9.3 Destination / Local

Item	Explanation
------	-------------

<i>Enable</i>	Indicates if the button affects the dimming controller itself.
---------------	--

7.9.4 Destination / DALI Network

Item	Explanation
------	-------------

<i>Enable</i>	Indicates if the button sends the command on the DALI network.
---------------	--

<i>First Device Group</i>	First DALI group configured in the dimming controller.
---------------------------	--

<i>Address</i>	A specific DALI short address.
----------------	--------------------------------

<i>Group</i>	A specific DALI group number.
--------------	-------------------------------

<i>Broadcast</i>	Broadcast.
------------------	------------

7.10 Occupancy

The screenshot shows a software window titled "CCLD4002 - CCLD4002". At the top, there is a tabbed interface with the following tabs: "COV Subscription", "COV Increment", "Property", "Scene", and "DALI Variables". The "DALI Variables" tab is active, and within it, the "Occupancy" sub-tab is selected. The main configuration area contains the following elements:

- An "Occupancy" dropdown menu set to "Occupied".
- A "Configuration" section with a "Command" dropdown set to "Last Level / Up" and a "Value" input field followed by a "%" symbol.
- A "Destination" section with a "Local" sub-section containing an "Enable" checkbox that is checked.
- A "DALI Network" sub-section containing an "Enable" checkbox that is unchecked, and three radio buttons: "First Device Group" (selected), "Address", and "Broadcast".
- Below the radio buttons, there are two input fields: "Address" with the value "0" and "Group" with the value "0".

On the right side of the window, there are four buttons: "Load from file", "Save to file", "Read", and "Write". At the bottom right, there is a button labeled "Foot-candle to Lux". The bottom status bar of the window indicates "Config Version: 3".

Occupancy window

This window is to set the actions of the occupied mode.

7.10.1 Occupancy

Item	Explanation
------	-------------

<i>Occupied</i>	Set the actions for the occupied mode.
-----------------	--

<i>Unoccupied</i>	Set the actions for the unoccupied mode.
-------------------	--

7.10.2 Configuration

See the Configuration section under Button.

7.11 Settings

CCLD4002 - CCLD4002

COV Subscription	COV Increment	Property	Scene	DALI Variables				
Status	Network Input State	Input	Potentiometer	Digital Input	Output	Button	Occupancy	Settings

Output

On Delay 2000 mSecs

Output Error Value 30 %

Relay Delay Multiplier 50 mSec

Unoccupied Warning

Warning Value 10.0 %

Warning Time 300 Secs

☒ Allow override

Override Time 3600 Secs

BACnet Output Priority 8

Load from file

Save to file

Read

Write

Foot-candle to Lux

Config Version: 3

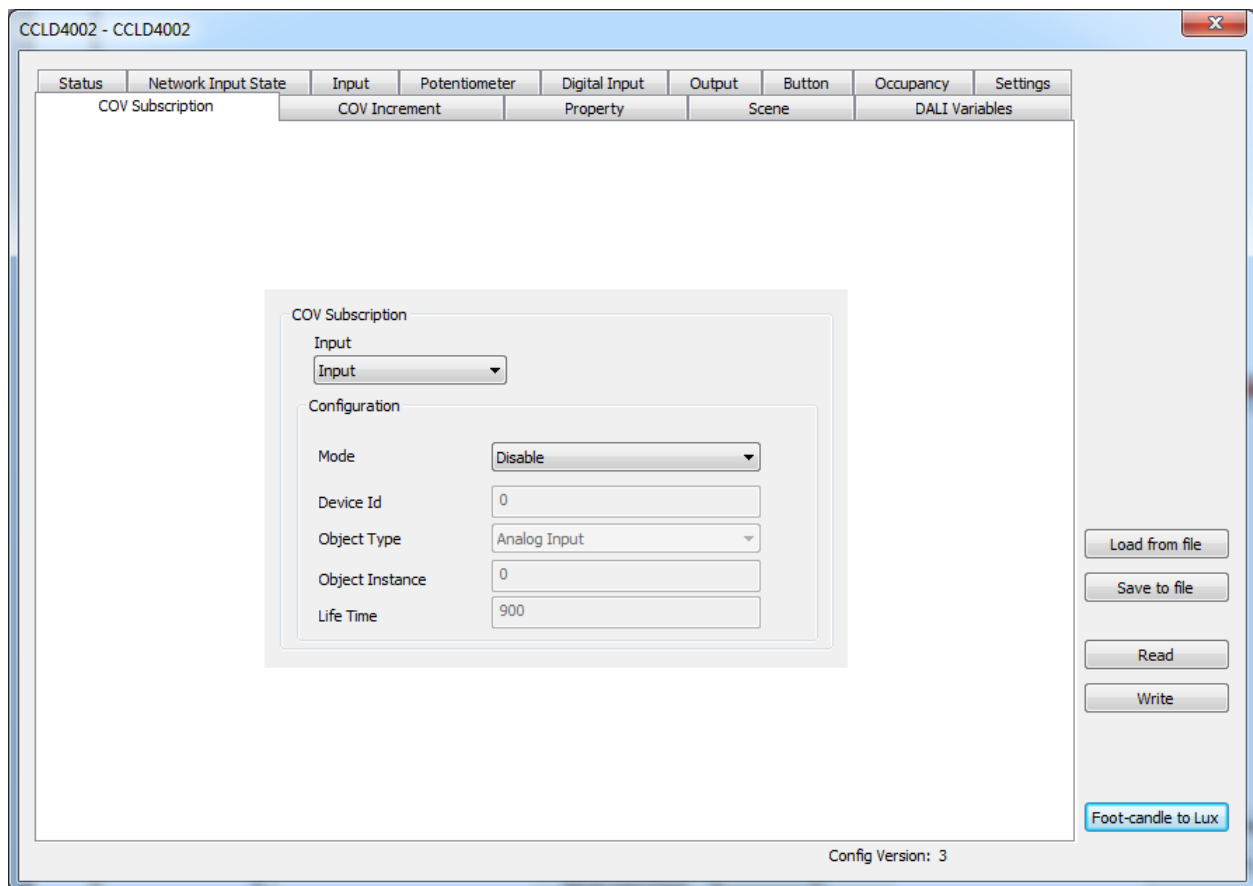
Settings window

This window is for the dimming controller settings.

CRISTAL

Item	Explanation
<i>On Delay</i>	Time in seconds the output is at its maximum before reaching the required level when the output turns from OFF to ON. This is warming up the tubes when turned ON. This value is usually 0 for LED lamps.
<i>Output Error Value</i>	Leniency for difference between 0-10V command and feedback. This setting adjusts sensitivity for 0-10V feedback. BACnet writes the reliability property to no output . DALI affects the Lamp failure status.
<i>Relay Delay Multiplier</i>	Delay in milliseconds between the activation of each relay of a same communication loop. This will avoid a lot of relays drawing current from the same transformer when turning ON or OFF at the same time.
<i>Warning Value</i>	Percentage value on the 0-10V signals before reaching the unoccupied mode. This is the lamp value for the warning before OFF.
<i>Warning Time</i>	Output remaining warning time before it reaches unoccupied mode.
<i>Allows override</i>	Allows buttons to turn ON the lights and suspend the unoccupied mode.
<i>Override Time</i>	Override period for the unoccupied mode.
<i>BACnet Output Priority</i>	BACnet priority internally used by the dimming controller.

7.12 COV Subscription



COV Subscription window

This window is to set the network values read.

Item	Explanation
<i>Input</i>	Choice between: Input, Occupancy, Button 1, Button 2, Button 3, Button 4, Button 5 and Button 6.
<i>Mode</i>	Choice between: Disable, Subscribe COV, Subscribe Unconfirmed COV, Polling / COV without subscription. This is the BACnet service for network updates.
<i>Device Id</i>	Instance number of the BACnet device source.
<i>Object Type</i>	BACnet object type. Choice between: Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Multi-state Input, Multi-state Output, Multi-state Value.
<i>Object Instance</i>	Instance number of the BACnet object.

Item	Explanation
<i>Life Time</i>	Time in seconds between COV subscriptions.
<i>Interval</i>	Time in seconds between polling.

7.13 COV Increment

CCLD4002 - CCLD4002

Status	Network Input State	Input	Potentiometer	Digital Input	Output	Button	Occupancy	Settings
COV Subscription		COV Increment		Property	Scenes	DALI Variables		

COV Update Increment

Setpoint Lux

Setpoint unoccupied Lux

Analog Input Control %

Output 0-10V Feedback %

Input 0-10V %

Input 24 VDC Feedback %

Output Feedback %

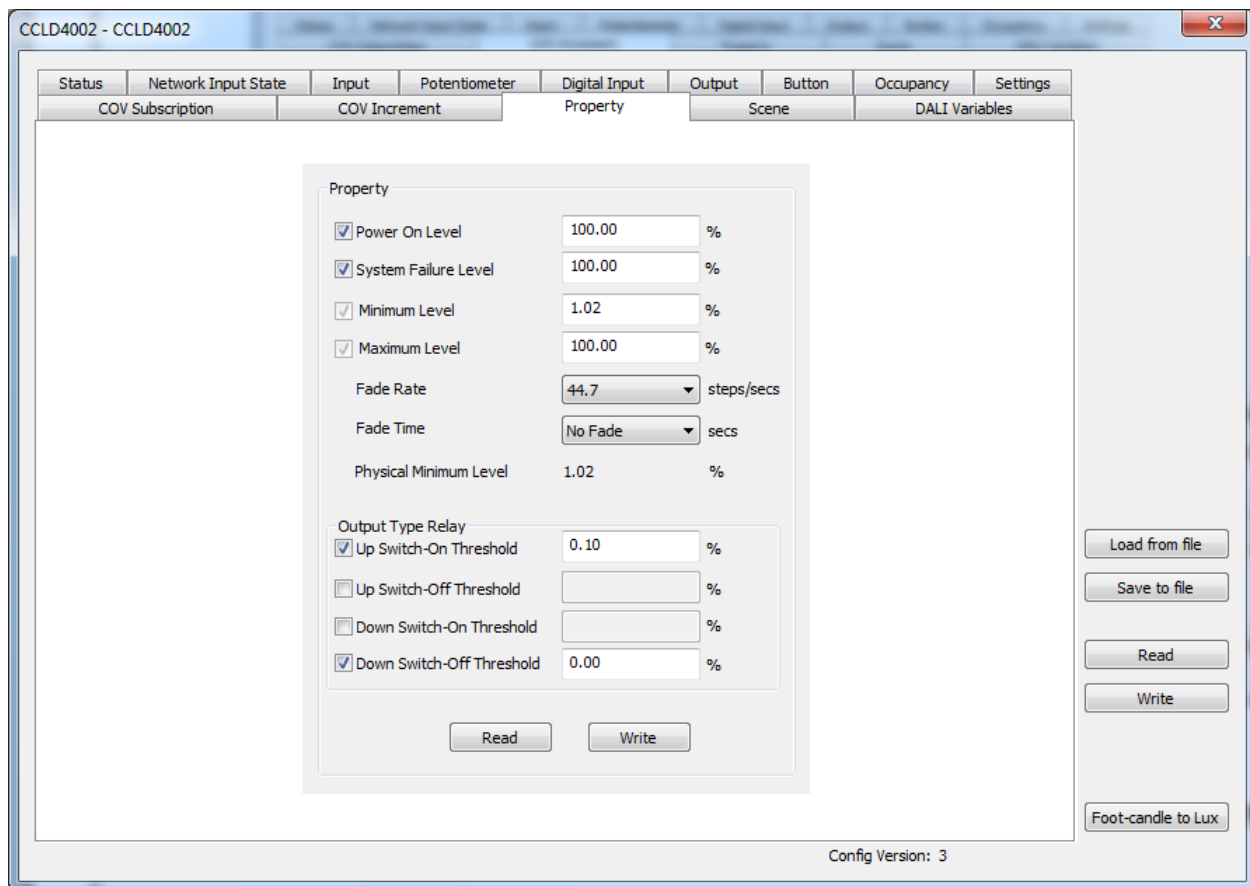
Lamp 2 Feedback %

Config Version: 4

COV Increment window

This window is to set the COV Increment of objects that can be subscribed by another BACnet device. These settings are the differences used to make new transmissions on status changes. These adjustments have an impact on network bandwidth. For example, if the 0-10V input is oscillating frequently by 1%, set **Analog input control** to 5% to get only significant changes and avoid continuous transmissions.

7.14 Property



Property window

This window is to set the DALI property.

7.14.1 Property

Item	Explanation
<i>Power On Level</i>	Is the lamp value when powered ON.
<i>System Failure Level</i>	Is the lamp value when power is lost on the DALI bus.
<i>Minimum Level</i>	Is the minimum adjustable lamp level.
<i>Maximum Level</i>	Is the maximum adjustable lamp level.
<i>Fade Rate</i>	Speed adjustment when ramping with “Up” and “Down” commands.
<i>Fade Time</i>	Speed adjustment when changing to another scene.

Item	Explanation
<i>Physical Minimum Level</i>	This is the minimum lamp value a DALI command can apply.

7.14.2 Output Type Relay

These values allow ON and OFF commands according to lamp value received. It can be used for hysteresis creation or proportional controls on a group of lamps.

Item	Explanation
<i>Up Switch-On Threshold and Up Switch-Off Threshold</i>	They generate ON and OFF commands when receiving UP DALI commands.
<i>Down Switch-On Threshold and Down Switch-Off Threshold</i>	They generate ON and OFF commands when receiving DOWN DALI commands.

7.15 Scene

CCLD4002 - CCLD4002

Status	Network Input State	Input	Potentiometer	Digital Input	Output	Button	Occupancy	Settings
COV Subscription	COV Increment	Property	Scene	DALI Variables				

Scene

☒ 1	100 %	☐ 5	%	☐ 9	%	☐ 13	%
☒ 2	80 %	☐ 6	%	☐ 10	%	☐ 14	%
☒ 3	40 %	☐ 7	%	☐ 11	%	☐ 15	%
☒ 4	20 %	☐ 8	%	☐ 12	%	☐ 16	%

Read Write

Scene Controller

Action Execute

Load from file

Save to file

Read

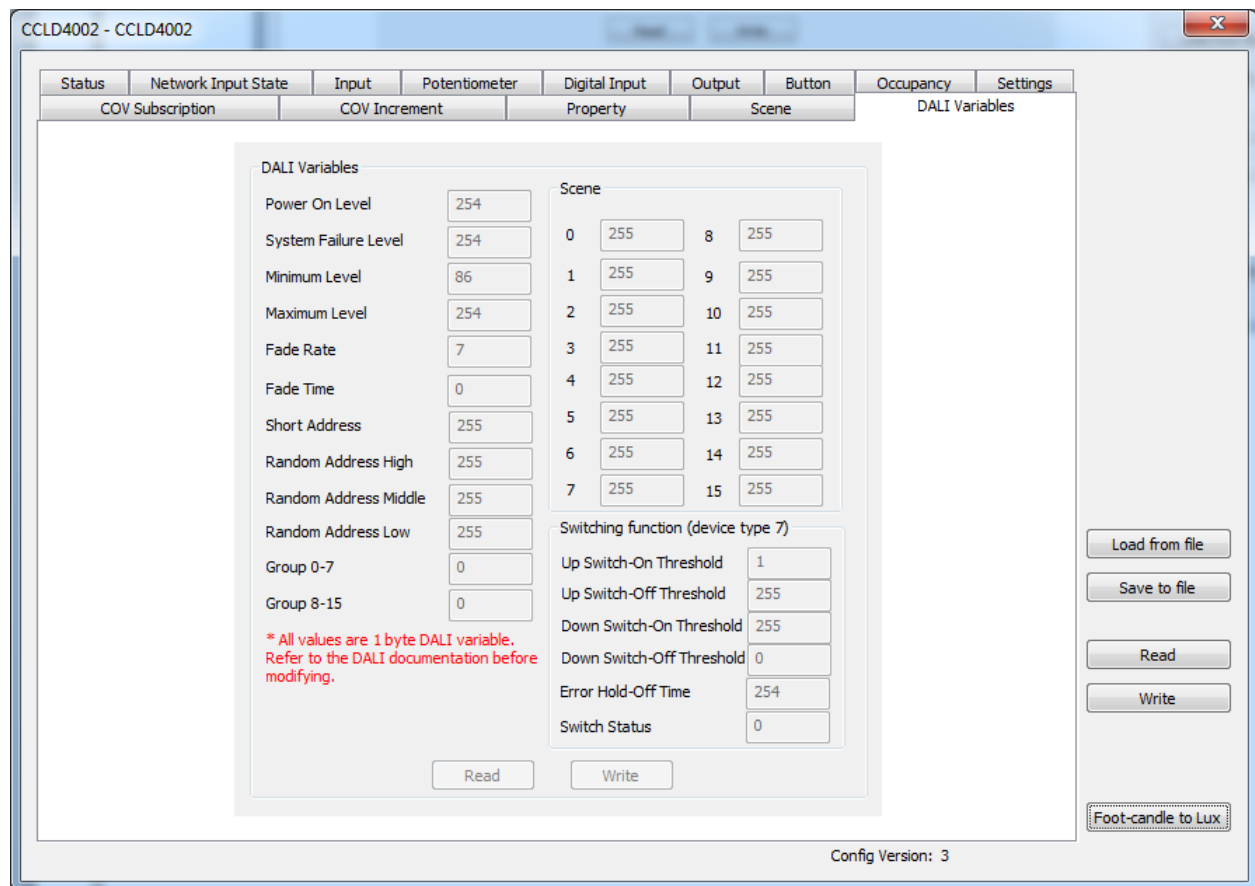
Write

Foot-candle to Lux

Config Version: 3

Scene window

7.16 DALI Variables



DALI Variables window

This window allows visualizing the DALI variables.

It is possible to change these RAW DALI values here, but only an experienced DALI protocol programmer should do it. The use of the **Property** and **Scene** tabs is preferable. To allow editing, double-click on the dimming controller in the list of cards of BACnet Browser while pressing the **Alt** key.

7.17 Firmware Upgrade

The dimming controller firmware can be updated over the BACnet network using the BACnet Browser. In the device list, select the dimming controller, then open the **Device > Firmware Upgrade** menu. You can also right-click the dimming controller in the device list and choose **Firmware Upgrade** from the context menu.

Warning

CRISTAL

Contact Cristal Controls before upgrading, as some firmware versions may not be compatible and could result in the BACnet MS/TP and other configuration being lost.

Step

- 1 Select the dimming controller in the device list and open **Device > Firmware Upgrade** (or right-click the dimming controller and choose **Firmware Upgrade**).
- 2 Click **Load ...** and select the firmware file (.S19) provided by Cristal Controls.
- 3 Click **Send** to start the transfer. The progress bar shows the upload progress.
- 4 Wait for the *Firmware upgrade completed* message. The dimming controller reboots automatically.

Do not power off the dimming controller during the transfer. Once the upgrade is complete, read the configuration back to confirm the device is operating normally.

8 Hardware specifications

- Microcontroller: Freescale MCF51QE128
- Communication: DALI, RS-485 / BACnet MSTP.
- Supply Voltage: 24 Vac
- Supply Current: 100 mA (excluding accessories)
- Operating temperature: 10 °C to 45 °C (50 °F to 113 °F)
- Storage temperature: -30 °C to 80 °C (-22 °F to 176 °F)

8.1 Inputs

- 3x Digital inputs (for 2 buttons and 1 occupancy sensor), 24 Vac or 24 Vdc signals.
- 1x Analog 0-10 Vdc input for a light sensor or a potentiometer.

8.2 Outputs

- 1x Rectified 24Vac for 3 Panasonic WR-6161 latching relays.
- 1x dry contact NO, 100 mA @ 24 Vac / 24 Vdc
- 1x Analog 0-10 Vdc
 - Sink: 50 Advance “Mark 7” ballasts
 - Source: max 10 mA
- 1x 24 Vdc output to provide the signal for the button inputs.

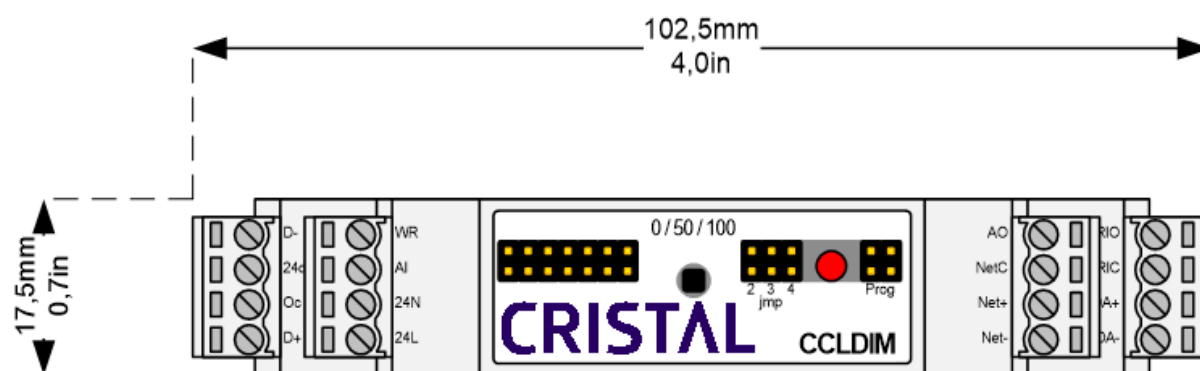
8.3 Jumpers

- Term.: 120Ω RS-485 terminations.
- JP2: Configuration.
- JP3: Configuration.
- JP4: Reset device configuration.

8.4 Communication

- DALI: 2 mA Load
- BACnet MSTP: Isolated RS-485, ¼ Load

8.5 Dimensions



Dimensions

9 Legal Notice

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