XICATO

XICATO CONTROL PANEL USER MANUAL

Version 1.6.23a

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2 OVERVIEW OF THE XICATO GALAXI SYSTEM

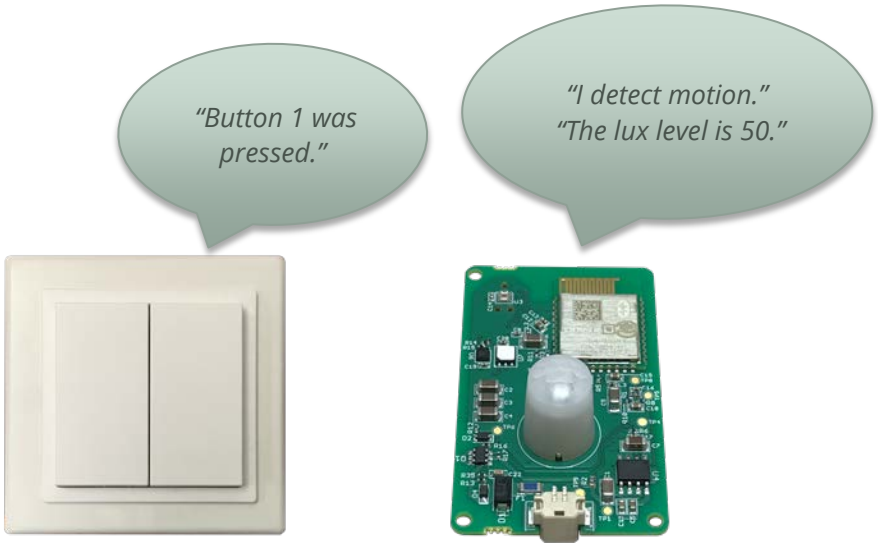
2.1 THE ROLES OF DEVICES AND SOFTWARE

XICATO GALAXI DEVICES

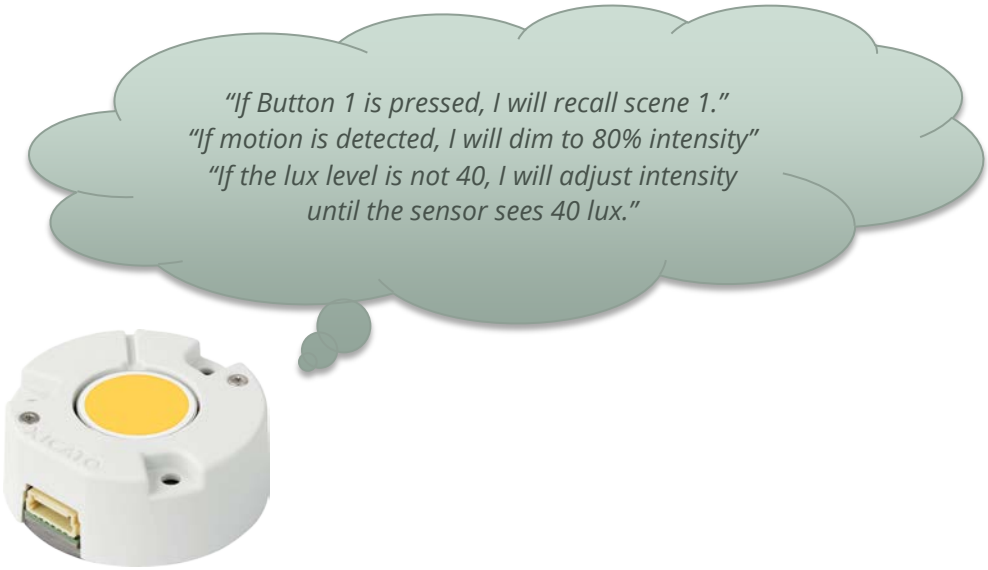
Xicato GalaXi devices (XIMs, XIDs, & 3rd party GalaXi powered devices) are intelligent lighting control components that are programmed to respond directly to inputs from sensors and switches. They don't have to wait for instructions from controllers or gateways. In fact, there is no central controller in the Xicato GalaXi System – the nodes, collectively, are the control system. Distributing intelligence to the lights means that there is no single point of failure – a failed node affects only that node.

SENSORS & SWITCHES

In the GalaXi system, sensors are dumb. They do not tell the XIMs or XIDs what to do; they only provide raw input. Some Switches behave this way as well while others can be configured to be "smart"; they can send intensity or recall scene commands to configurable destinations.



Each GalaXi node decides individually what to do in response to inputs from one or more sensors, switches, mobile devices, time clock, etc. These sensors and switches talk directly to the Xicato devices and do not pass through master controllers or gateways.



XICATO CONTROL PANEL

The purpose of the Xicato Control Panel software is simply to program the GalaXi nodes. – to number them, name them, and tell them what to do in response to different inputs. It is the access point into the brains of the GalaXi devices.

2.2 WHAT IS STORED IN GALAXI DEVICES VS THE CONTROL PANEL SOFTWARE

Category	Stored in GalaXi Node	Stored in Control Panel
Identification	Secure Network encryption key Unique Device ID Device name Serial number Part number FW versions	Secure Network names and associated encryption keys
Groups	Group membership numbers	Group names and mapping to group numbers
Scenes	Scene membership numbers	Scene names and mapping to scene numbers
Sensors & Switches	Rules about how to respond to sensor inputs	
Registry	Intensity histogram Temperature histogram LED forward voltage	Temporary storage of monitoring data as long as Control Panel remains open

2.3 PROVISIONING, NODES, RELAYS, AND GALAXI MESH NETWORKING

Xicato is a member of the Bluetooth Special Interest Group (SIG), a contributing member of the Bluetooth Mesh Working Group, and is dedicated to Bluetooth SIG Mesh (SIGMesh) compliant products as soon as possible. However, at this time, Xicato Galaxi devices have not converted to SIGMesh compliancy and instead use the Xicato GalaXi Mesh (XMesh) protocol. This allows GalaXi devices to act as mesh nodes and relays once provisioned.

Provisioning is a process of installing the device into a public or secure network and is a mandatory step for all GalaXi powered devices. In most instances, Galaxi devices are shipped from the factory un-provisioned. Provisioning is as simple as assigning the device a unique ID number or address. More information on assigning device IDs can be found in the *Device IDs and Names* section of this document.

Within this user guide, you will also find mesh terminology referring to nodes and relays. A **node** is a provisioned device (i.e a device assigned a unique ID) and **relays** are nodes that are able to retransmit messages. Detailed information on configuring nodes into relays can be found in the *Device Setup* section of this guide.

3 INSTALLATION

3.1 BEFORE YOU BEGIN

Download the Xicato Control Panel from the Xicato ShareFile *XIM Gen4 Tools* support folder

- Both PC and Mac versions are available. Please make sure to download the correct version for the system you are going to use.

If you do not have access to the folder, send a request to:

- Download@xicato.com with "Control Panel Support" in the subject line
- In the support request, please make sure to provide your name and company.
- Once you are signed up on the support site, you will be automatically informed of updates through the Xicato ShareFile system.

Silicon Labs' Bluegiga BLED112 Bluetooth Smart dongle (and associated driver) must be installed into an available USB port on your computer for the software to run. Your machine's native Bluetooth interface is not used by the XIM Control Panel. The dongle provides a flexible, more consistent interface than native BLE interfaces on PCs and Macs. The dongle is available for purchase through many electronics distributors such as Digi-Key or Mouser.

Digi-Key PN: 1446-1030-ND
Mouser PN: 603-BLED112

3.2 WINDOWS

MINIMUM SYSTEM REQUIREMENTS

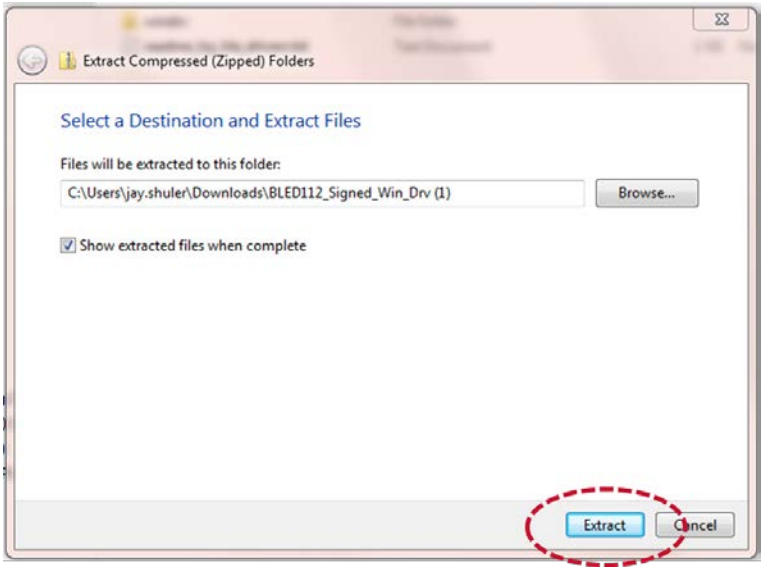
- PC or Surface tablet with Intel Core i3 or later
- 2 GB RAM
- 100 MB free hard drive space
- BlueGiga BLE USB dongle
- Windows 7 OS or later

BLED112 DRIVER DOWNLOAD & INSTALLATION

Note: Manual installation of the BLED112 driver (below) is necessary for machines running Windows 7. Windows 8 and later operating systems will auto detect the BLE dongle and install the appropriate drivers.

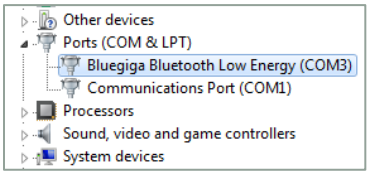
1. Download the BLED112 driver from the Xicato ShareFile site.
2. File will appear as a .zip file in your Downloads folder.

3. Right-click on the file and **Extract** it into the Downloads folder.



4. Plug in the BlueGiga BLE Dongle. It may take a few re-insertions, or switching USB ports, for your PC to see it.
5. Click **Start** Menu and right-click on **Computer**.
6. Click **Manage**.

7. Click **Device Manager** in left pane.
8. In Device Manager window, expand categories and locate the dongle. If you have never installed the driver, the dongle will appear under “Other”.



9. Right-click on the device name and select **Update Driver Software...**
10. Click **Browse my Computer for driver software**.
11. Click on **Browse** and navigate to the Downloads/BLED112.../windrv folder and click **Okay**.
12. Click on **Next** button to install the driver.

XICATO CONTROL PANEL INSTALLATION

1. Download the Xicato Control Panel Setup file from the Xicato ShareFile site.
2. File will appear as a .exe file in your Downloads folder.
3. Right-click on the file and select **Open**.
4. Read and accept License Agreement. Click **Next**.
5. Click **Next** to create desktop shortcut.
6. Click **Install** to begin installation process.
7. Select **Finish** to complete the installation. You may choose to view the Readme file or launch the Xicato Control Panel at this time. Note that the program will not work properly until the BLED112 Bluetooth® Smart USB dongle and drivers are installed on the machine.

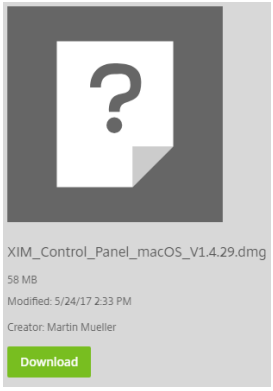
3.3 MACOS

MINIMUM SYSTEM REQUIREMENTS

- BlueGiga BLE USB Dongle
- Core2Duo processor or later
- macOS Sierra (version 10.12) or later
- 4GB RAM and 100MB hard drive space

XICATO CONTROL PANEL INSTALLATION

1. Download the Xicato Control Panel Setup file from the Xicato ShareFile site.



2. File will appear as a .dmg file in your Downloads folder.
3. Double-click the DMG file and a window will appear with a link to your Applications folder.
4. Drag the application icon to the Applications folder.
5. The first time you open the Xicato Control Panel, you'll see a warning. Agree to open the file.

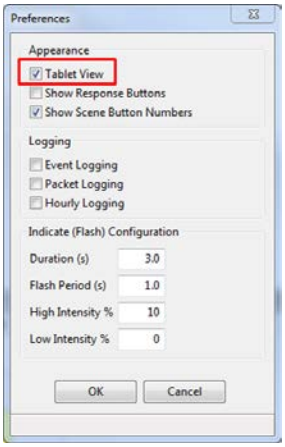
If the application does not start:

A. Go to **System Preferences > Security & Privacy** to tell your computer to open the application anyway (this is because our app is not signed yet).
B. If the above option isn't presented to you, you will need to follow the steps below.
    1. Open **Utilities** in the Applications folder.
    2. Open up **Terminal.**
    3. Run '**sudo spctl --master-disable**' (without the quotes)
    4. Open the Xicato Control Panel application.
    5. Run '**sudo spctl --master-enable**' (again, without quotes).

    This should only need to happen the first time.

3.4 INITIAL LAUNCH OF XICATO CONTROL PANEL

When you first launch the Xicato Control Panel, you will be greeted with the Xicato splash screen followed by the Control Panel opening in **Tablet View** mode. If you would like to change this setting, navigate to **Edit > Preferences** in the main Menu Bar.



Tablet View. Uncheck this box to disable Tablet View. In Tablet View, the contact size of controls is increased to improve convenience for tablet users. Disabling allows more content to be displayed.

To change your preferred language setting, navigate to **File > Language...** in the main Menu Bar to open the **Language Selection Screen**. Language settings will apply after an application restart.

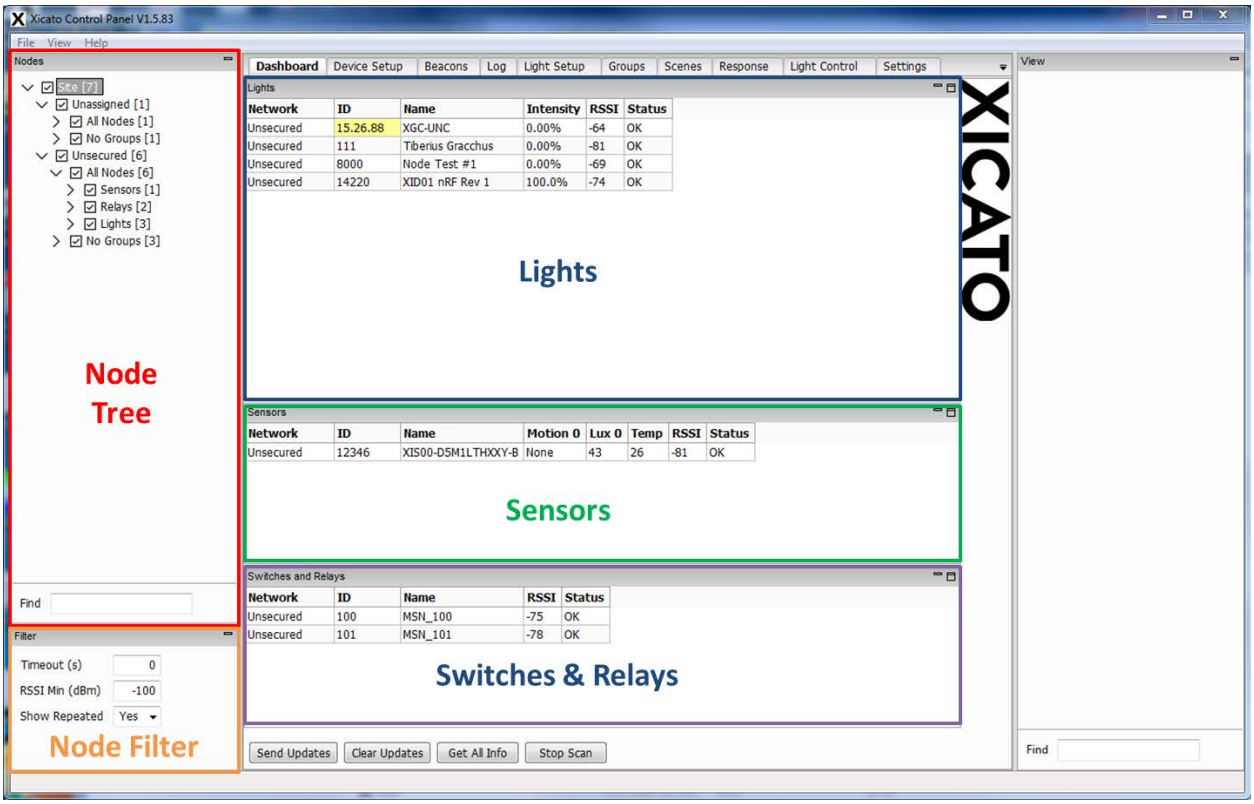
3.5 APPLICATION LAUNCH TROUBLESHOOTING

The BlueGiga BLE dongle driver is not natively supported in Windows 7, and Windows sometimes does not recognize it. If you are having issues launching the Xicato Control Panel or if the application becomes unresponsive at the splash screen, there may be an issue with Windows communicating with the dongle. Follow these steps to correct the problem (note that these steps are not exclusive to Windows 7 and can be used for any operating system).

- Check if there is another instance of the Xicato Control Panel already running. If so, close all instances and re-launch the Xicato Control Panel again.
- Unplug your BLE dongle for a few seconds, then plug it back in and try re-launching Xicato Control Panel.
- Unplug your BLE dongle and plug it into another USB port and try re-launching Control Panel.

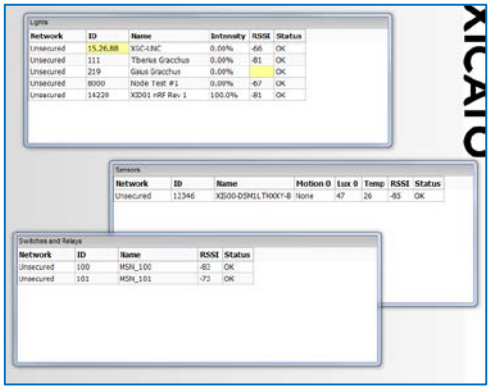
4 DASHBOARD TAB

The Dashboard appears after starting the Xicato Control Panel, and is the main window for monitoring all Xicato Bluetooth nodes in the space. XIM and XID devices will be listed in the top portion of the dashboard screen while XIS sensors and relays (if any) will be listed below.



4.1 POSITIONING THE WINDOWS

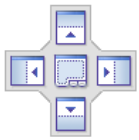
The *Lights*, *Sensors*, and *Switches and Relays* windows can be floating or docked. To undock a window and make it a floating window, do one of the following:



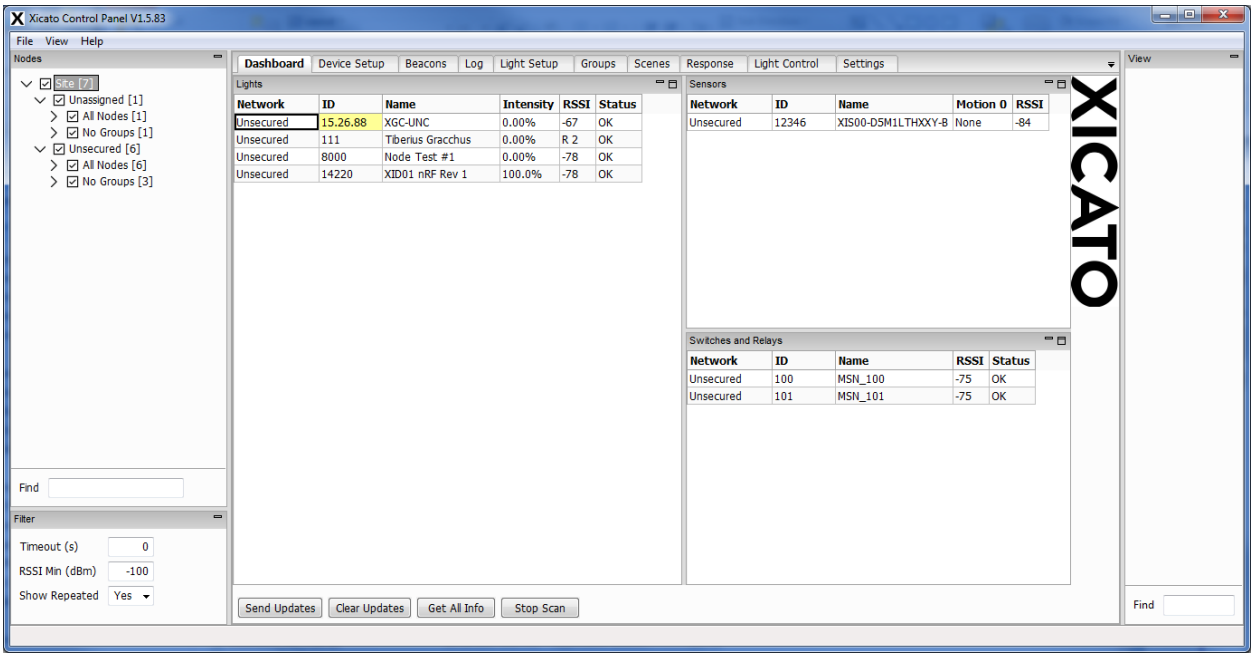
- Double-click the window's title bar.
- Drag a docked window by clicking its title bar. This action enables you to move the window to a different docked position or undock it.

To dock a floating window:

- Double-click the window's title bar.
- Drag the window to a docking location.



When you dock a window by dragging it, you can control its destination position. As you drag the window, you will see this docking icon appear. This icon shows where the window will be docked if you release the mouse button at that point.



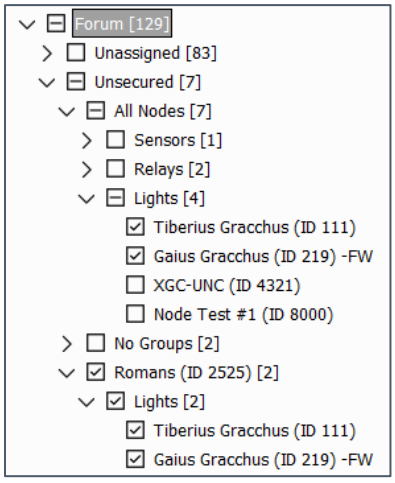
Dashboard Node Information Windows can be Resized and Rearranged

If you move the mouse pointer to the border between two docked windows, the mouse pointer becomes an arrow. By dragging this arrow, you can resize the two adjacent windows and leave them in the docked state.

4.2 NODE SELECTION TREE

The Node Selection Tree is a window that displays a variety of hierarchical views of the nodes in the site. Users can expand and collapse container nodes by clicking the arrow expander icons. Nodes are organized by Secure Network and sorted in the tree by their device type (Lights, Sensors, Relays, etc). Light nodes (XIMs, XIDS, etc.) that are members of a group are also located in the Group's parent folder. In the example below, the two nodes named Tiberius Gracchus and Gaius Gracchus are located in two node tree locations:

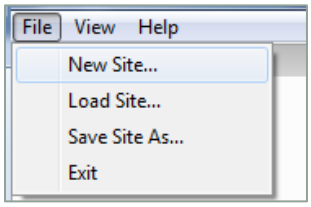
1. Forum/Unsecured/All Nodes/Lights
2. Forum/Unsecured/Romans (ID 2525)/Lights



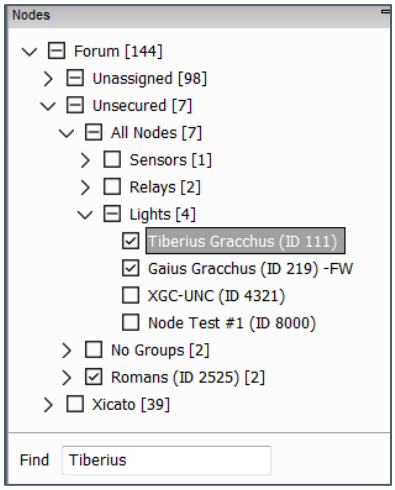
The brackets **[ ]** beside each container label displays the quantity of nodes within the container. Group and Device IDs are displayed in parentheses **( )** next to the Group or Node name, respectively.

Right-clicking certain containers in the Node Selection Tree allows users to access additional commands directly from the tree. Right-clicking a light shows the Indicate, 0%, 1%, 10%, 50%, 100% options. Right-clicking "Lights" will broadcast the selected intensity. Right-clicking a group also shows the Modify, Remove options in addition to the intensity options. Right-clicking a network shows the Modify, Remove options.

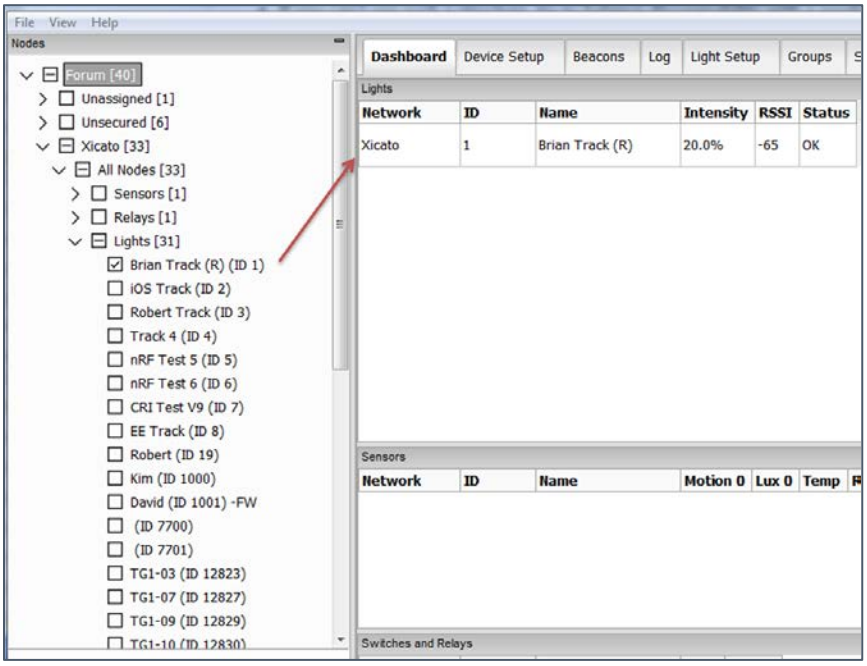
The top-most root container is the **Site** name. The Site is the configuration file that contains information for all of the networks. Each network has its own set of groups and scenes names that are stored in the Site configuration file. The option to save or load a Site configuration file is located in the File menu of the menu bar. Selecting **New Site** from the drop down menu will clear all Secure Networks and Group/Scene names from the current Node Selection Tree.



Beneath the Node Selection Tree is a search field for entering free text. If the user enters a term in the **Find** field and triggers the search by pressing Enter, the tree will find and highlight the next node in the tree, which contains the corresponding value.



Checkboxes beside each container or node in the tree controls which nodes are displayed on the Dashboard screen. Checking or unchecking a parent container of the tree will select all or clear all nodes. A mixed-state check box indicates partial selection of the nodes in the container.



4.3 NODE FILTER

Filters nodes in the Node Selection Tree based on the criteria displayed in this section.

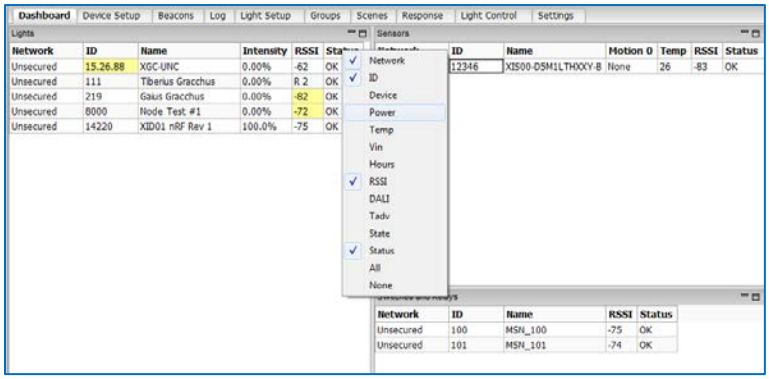
Timeout(s). If a node's advertisement hasn't been received within this window (in seconds), then the device will be removed. Press Enter to set the new value, which must be 0 (no timeout) or greater than or equal to 60. If blank, then the currently stored value will display.

RSSI Min (dBm). Minimum received signal strength (in dBm). Press Enter to set the new value, which must be between -127 to 0 or blank. If blank, then the currently stored value will display. Click Stop Scanning then Start Scanning to refresh the list.

Show Repeated. Enable/Disable showing repeated packets.

4.4 SELECTING NODE INFORMATION TO SHOW/HIDE

Each column of the *Lights*, *Sensors*, and *Switches and Relays* information windows can be toggled so that they are either displayed or hidden. Right-click any of the column headers to display a menu of available columns to select from.

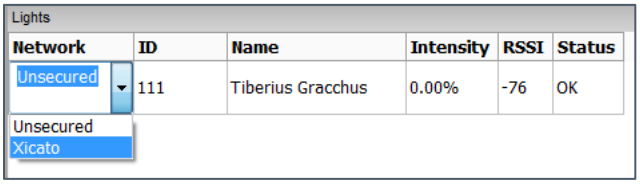


4.5 NETWORK

The **Network** column displays the name of the Secure Network the device is a member of.

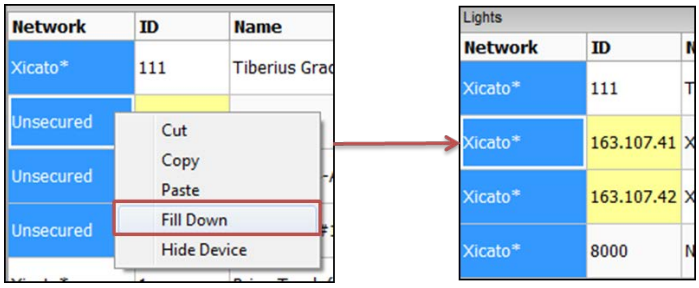
Before assigning a device to a Secure Network, a Secure Network must first be created or a Secure Network list must be imported into the Control Panel. See **Secure Network Management** section of this document for more information. Only provisioned nodes (Assigned Devices) may be allocated to Secure Networks.

To assign the Secure Network a node is on, start by clicking the field to open the drop-down menu, which contains a list of all available Networks. Then select the desired network. Click Send Updates to program the new Secure Network to the selected device.



To quickly assign the same Secure Network to multiple nodes in the Dashboard, hold down the shift key and highlight all devices in the Dashboard you wish to modify. Right-click the Secure Network

and select **Fill Down** from the menu. The highlighted devices will then match the top selected Secure Network. Click Send Updates to program the Secure Network to the selected devices.



4.6 DEVICE ID AND NAMES

The **Device ID** column displays the address of each device. The default address from the factory is in a 3-byte format (xxx.xxx.xxx). Addresses are considered unprovisioned **Unassigned Devices** in this format and their cells are highlighted in yellow indicating that the device has an unassigned ID and is waiting for the user to assign it a proper **Assigned** address. The device will become a provisioned **node** once the device is assigned an ID address. An Assigned address is a single integer between 1 and 32767. Assigned addresses must be unique and no two nodes can share the same Assigned address within the same Secure Network. Although it is not required, Xicato strongly suggests utilizing a taxonomy system when defining ID numbers. (e.g., lights are assigned IDs from 1 to 9999, sensors from 16000 to 23999 and 24000 to 32767 for interface nodes (XIGs, Control Panel, etc.)).

Device ID	Name	Device
2.224.37	XIM19803020A5A	XIM19803020A5A
3	Robert Track	XIM19803020A5A

Example of an Unassigned and Assigned Device IDs

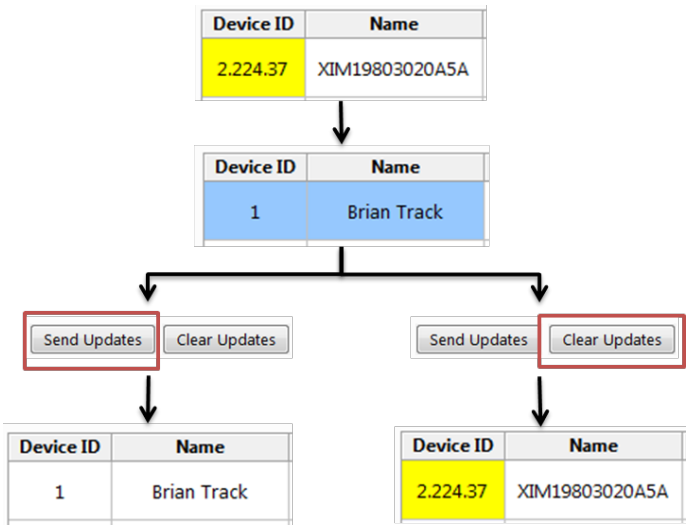
Assigning a device a proper Device ID should be the first task a user completes when introducing a new node into the network. A previously Assigned address can also be changed to an Unassigned address if needed. Moving a node from an Assigned address to an Unassigned address will restore the device back to its factory configuration by clearing all network security, groups and scenes.

The **Name** column displays the descriptive name of each Device. The default name is identical to the Device name. Like the Device ID column, this field is directly editable and can be changed to any text the user wishes. Unlike Device ID, however, the Name of the device does not need to be unique.

Device ID	Name	Device
3	Robert Track	XIM19803020A5A
3	Robert Track	XIM19803020A5A

Duplicate Names are acceptable but Device IDs must be unique.

To change the device ID address or name, click the cell and enter a new address or descriptive name. The cell background color will change to blue indicating that the value has changed but the new address or name has not been programmed into the device yet. To program the new values, click **Send Updates** (located on the bottom-left side of the Dashboard screen). A message will display confirming if the device was programmed successfully. To cancel the update of the device to a new device ID or name, click **Clear Updates**.



When assigning Device ID to certain types of **multi-channel devices**, the **master channel** will be given the ID entered into the Device ID field. All **sub-channels** will automatically be assigned a Device ID in sequential order after the master channel. For example, if a 4 channel device is assigned a Device ID of *122*, the master channel will be assigned to ID *122* and the 4 sub-channels will automatically be assigned IDs *123, 124, 125, & 126*. It is best practice to verify all potential sub-channel IDs are unassigned before assigning the master channel to prevent multiple devices sharing the same Device ID.

Unassigned Multi-channel Device

Network	Device ID	Name	Device	Intensity	Power	Temp	Vin	Hours	RSSI	Status
None	15.48.12	XCVD01-C4-A4	XCVD01-C4-A4	0.0%	N/A	35	N/A	19	-66	NS, OK

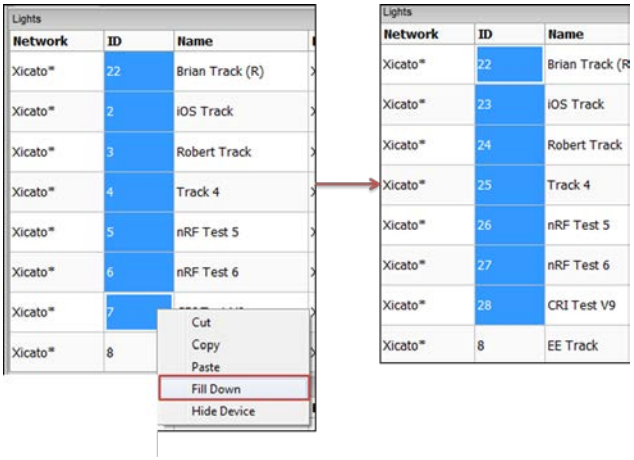
Multi-channel Device Assigned Device ID

Network	Device ID	Name	Device	Intensity	Power	Temp	Vin	Hours	RSSI	Status
None	42	XCVD01-C4-A4	XCVD01-C4-A4	0.0%	N/A	35	N/A	19	-68	NS, OK

Sub-channel Device IDs Automatically Assigned

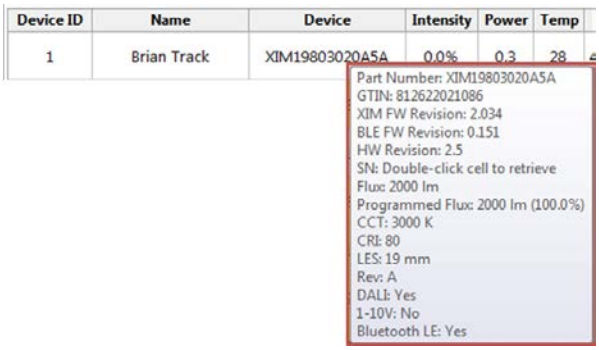
	Network	Device ID	Name	Device	Intensity	Power	Temp	Vin	Hours	RSSI	Status
Master Channel	None	42	XCVD01-C4-A4	XCVD01-C4-A4	0.0%	N/A	34	N/A	19	-68	NS, OK
Sub-channel 1	None	43	XCVD01-C4-A4	XCVD01-C4-A4	0.0%	N/A	34	N/A	17	-66	NS, OK
Sub-channel 2	None	44	XCVD01-C4-A4	XCVD01-C4-A4	0.0%	N/A	34	N/A	17	-65	NS, OK
Sub-channel 3	None	45	XCVD01-C4-A4	XCVD01-C4-A4	0.0%	N/A	34	N/A	17	-67	NS, OK
Sub-channel 4	None	46	XCVD01-C4-A4	XCVD01-C4-A4	0.0%	N/A	34	N/A	17	-65	NS, OK

To quickly assign multiple Device IDs to nodes in the dashboard, hold down the shift key and highlight all devices in the Dashboard you wish to modify. Right-click the first Device ID and select **Fill Down** from the menu. The highlighted devices will then be auto assigned Device IDs in sequential order starting with the first Device ID in the list. Click Send Updates to program the new Device IDs to the selected devices.



4.7 DEVICE INFO

The **Device** column displays the part number of the node. Hover the mouse pointer over the device part number to display more information about the device such as firmware revision numbers, programmed flux values, and OEM programmed data.



Not all device information is broadcast continuously by the XIM. The user may have to double-click the device part number to issue a command to the device to send this data. This command can also be sent to all devices by clicking **Get All Info** located on the bottom panel of the Dashboard screen.

4.8 INTENSITY AND LIGHT IDENTIFICATION

The **Intensity** column displays the current percent intensity of the device. For XIM, the percentage is related to the maximum programmed flux value. A 1300lm XIM at 65% intensity will output roughly 845lm. For XID, the percentage is related to the maximum programmed output current. A 700mA XID at 50% intensity will deliver 350mA to the connected light source.

Double-click the intensity value to toggle the light between 0% and maximum intensity.

Single-click the intensity value to identify or flash the selected light.

Right-click the intensity value to pull up the **Dim Level Control** box. Use the mouse pointer to drag the slider to any intensity between 0-100%. When you release the slider, the device will dim to that level. You can also manually type in the desired intensity in the Intensity field. Press “Enter” on your keyboard to dim.

When multiple users are commissioning a space, it is useful to have indicators unique to each user. Flash duration and frequency can be adjusted in the **Indicate (Flash) Configuration** section of the **Preferences** menu (*Edit* > *Preferences*).

4.9 REAL TIME DATA

The Dashboard tab displays some real time information about each device. For more detailed real time data collection, use the Log Tab.

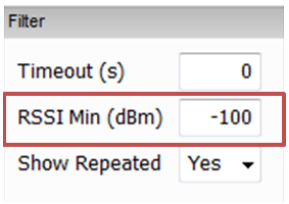
Power. Current power consumption of the device in Watts (W).

Temp. Current temperature reading of the device in °C.

Vin. Input voltage (V) into the device.

Hours. Operation hours of the device. Excludes time at 0% intensity.

RSSI. Signal strength detected by the BluGiga Bluetooth dongle. Value is displayed in decibels above a reference level of one milliwatt (dBm). Devices with poor RSSI values may be filtered out of the Dashboard through the **RSSI Min (dBm) field** in the Filter section below the Node Selection tree.



- **RSSI less than -85dBM**: Poor signal strength. Devices may be unresponsive to commands.
- **RSSI between -75 and -85dBm**: OK signal strength. Devices are generally responsive to intensity change commands but retrieving data from the device may be challenging.
- **RSSI greater than -75dBm**: Good signal strength. Devices are generally responsive to light intensity change commands, over-the-air updates, and programming new configuration settings.

In a similar way to light, BLE radio waves travel in straight lines and are affected by obstructions (people, walls, objects) which can alter the signal. RSSI of any non-line-of-sight signal can vary rapidly as that signal encounters different media and interacts with different objects. Bluetooth signals will be reflected by some materials such as metal and stone and absorbed by water or any material that is porous and absorbs water. In both cases, the signal strength is reduced (attenuated) and must be taken into account when choosing fixture designs and their placement in an installation.

4.10 DEVICE STATUS

Status of each Device is displayed in the column.

OK	Indicates: 1. the currently sampled LED Vf value is within its normal operating range 2. the average Vin has not dropped below the under-voltage threshold. 3. the LED is operating in its normal temperature range.
UVO	**Under-Voltage**. Indicates that the average Vin has gone to <38V and has not risen above the turn-on point of 40V. For XID, these voltage thresholds may be different if re-configured by the OEM.
UVL	**Under-Voltage Lockout.** Indicates that the device has entered the under-voltage state 5 times within 10 minutes. When in this state, the LED intensity will be reduced to 0 (off). It will stay off until the device is powered down (<30V) or the intensity is commanded to 0%.
TOV	**Thermal Overload**. Indicates that the LED temperature has gone to ≥93°C and has not dropped below the temperature restore point of 85°C. When in this state, the LED intensity is reduced by 15% of the commanded intensity over a period of 60 seconds. Condition is cleared when the LED temperature goes below 85°C and the commanded intensity level is restored.
TOL	**Thermal Overload Latch.** Indicates that the device has been in Thermal Overload for > 10 minutes. When in this state, the LED intensity is limited to a maximum of 10%.
TSD	**Thermal Shutdown.** Indicates that the LED temperature has gone to ≥98°C. This condition is cleared when intensity is commanded to 0 (off), or the module is power cycled, and the LED temperature is <93°C.
TCS	**Cold Start Protection.** Indicates that the LED temperature has dropped below -20°C and has not gone above 0°C. This condition is cleared when the LED temperature goes above 0°C.
TSF	**Temperature Sensor Failure.** Indicates that the temperature sensor is no longer operating correctly. When in this state, the LED intensity will be reduced to 0 (off).
LOC	**LED Open Circuit.**
LSC	**LED Short Circuit.**
LCG	**Load Change.** Vf is more than 5V higher or lower than the reference Vf.
EM	**Emergency Lighting Mode.** See *Section 8.4* for more information.

4.11 DALI

DALI enabled XIMs hold two addresses: A 6 bit short address (0-63) which is used for operational access and a 24 bit random address (0-FFFFFF hex) which is used to assign the short address.

The process of generating and assigning both DALI addresses is administered by DALI commands transmitted from the DALI master. The DALI Short Address of an XIM is displayed in the **DALI column** of the dashboard.

Non-DALI compatible XIMs and devices will display "N/A" in this field and DALI compatible XIMs will display "UNA" if the device has not been assigned a DALI Short Address by the DALI master.

A yellow cell indicates a DALI bus failure.

4.12 Tadv

The **Tadv** column will show the advertising interval of the device. The advertising interval value displayed on the Dashboard will be the greater value of the following:

- Time (seconds) between last two light status advertisements.
- Time (seconds) since last receiving the last light status advertisement.

4.13 SENSOR SPECIFIC COLUMNS

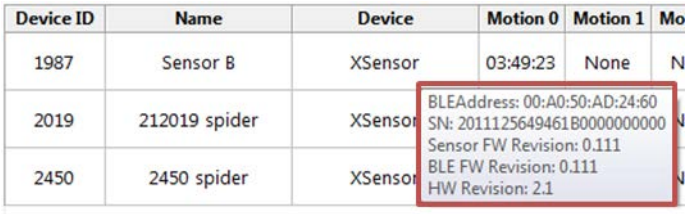
The Sensors window of the Dashboard is reserved for XIS sensor data. Columns unique to Sensors include the motion, lux, and relative humidity values. The timer in the three **Motion** columns represents the time since a motion event was last received by the Control Panel. If no motion event was received or if no PIR sensor is connected to the XIS (up to 3 PIR sensors can be used with some sensor boards), the column will display "None".

The two **Lux** columns display the illuminance values measured on the XIS lux meter. If a 2nd lux meter is not connected to the XIS, the column will display "N/A".

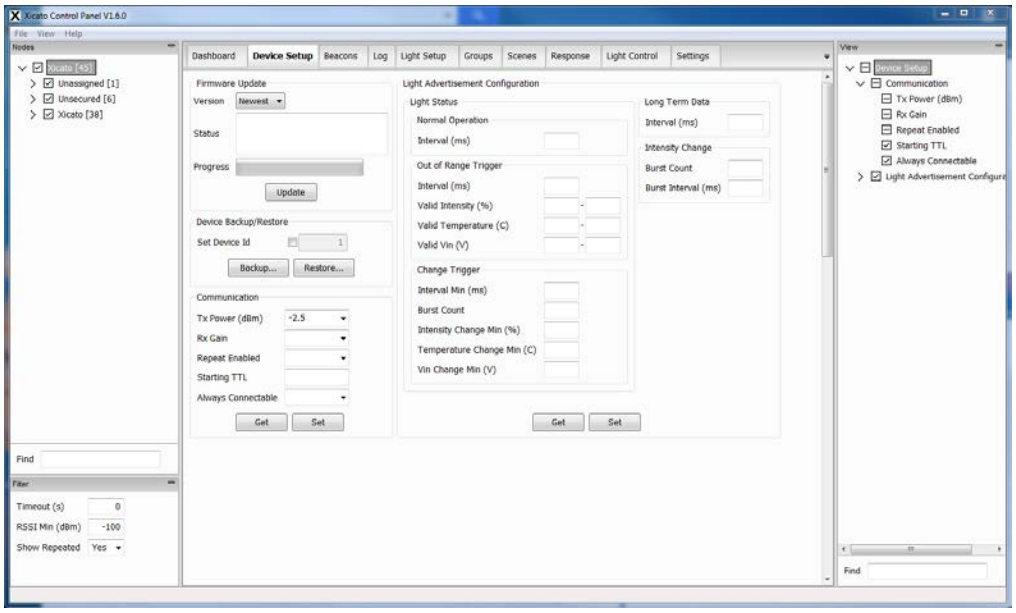
The XIS' onboard humidity sensor will report the percent relative humidity in the **RH** column.

Device ID	Name	Device	Motion 0	Motion 1	Motion 2	Lux 0	Lux 1	RH	Temp	Vin	RSSI
1987	Sensor B	XSensor	03:44:58	None	None	157	N/A	42%	28	6.08	-81

Double-click the XIS Device field to collect device information from the sensor.



5 DEVICE SETUP TAB



5.1 FIRMWARE UPDATE

HOW TO SEE THE CURRENT BLE FIRMWARE VERSION (FROM THE DASHBOARD TAB)

From the Dashboard tab, hover over the Device field and see BLE FW Revision.

Device ID	Name	Device	Intensity	Power	Temp	Vin	Hours	RSSI	Status	DSA
1	Brian Track	XIM19803020A5A	0.0%	0.3	25	48.35	4129	-69	SM, OK	UNA

Part Number: XIM19803020A5A
GTIN: 812622021086
XIM FW Revision: 2.034
BLE FW Revision: 0.145
HW Revision: 2.5
SN: Double-click cell to retrieve
Flux: 2000 lm
Programmed Flux: 2000 lm (100.0%)
CCT: 3000 K
CRI: 80
LES: 19 mm
Rev: A
DALI: Yes
1-10V: No
Bluetooth LE: Yes

XIS only: From the Dashboard tab, double-click the Device field and see BLE FW Revision.

Device ID	Name	Device	Motion 0	Motion 1	Motion 2	Lux 0	Lux 1	RH	Temp	Vin	RSSI	Status
24	Sensor A	XSensor	00:00:01	None	None	292	N/A	43%	28	8.58	-76	OK

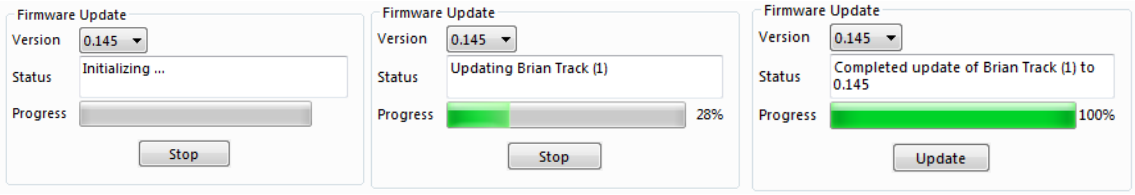
BLEAddress: 00:A0:50:38:48:5F
SN: 1F21049C7D460B0000000000
Sensor FW Revision: 0.110
BLE FW Revision: 0.111
HW Revision: 2.7

WHAT CAN BE UPDATED

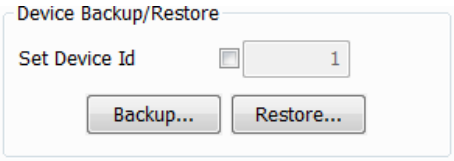
- Modules with **FW older than revision 0.097** cannot be updated Over the Air (OTA). They must be returned to Xicato to be updated through the physical wire interface.
- XIM that are **FW rev 0.097 or later** can be OTA updated. Device ID must be a valid Assigned address, i.e. a unique, integer between 1 and 32767.

UPDATE PROCESS

1. Select the node to be updated in the Node Selection Tree. Multiple nodes can be updated in succession by selecting a group name or device parent container from the Node Selection Tree.
2. Go to the Firmware Update panel and select the firmware revision from the **Version** drop down menu. If a group of devices are selected for FW updates, only the **Newest** FW version for each member of that group can be selected.
3. Click the **Update** button. Application firmware updates should take about 1 minute per device to complete.
4. Once the application update has completed successfully, the firmware update is complete. If a group was selected for updating, the next member of that group will then begin the update process.



5.2 DEVICE BACKUP/RESTORE



The Group, Scene, Beacon, Sensor, and Light Setup settings for any GalaXi device can be backed up using the Device Backup/ Restore panel. Backup files can be used to revert a device back to older settings or to clone a device based on the settings on another device. In order for the Backup/Restore function to work properly, it is important that the device to be restored shares the same part number and same BLE firmware as the device file to ensure that the update is successful since each BLE update typically includes new features that could create problems with the restore process if they don't match.

TO BACKUP A DEVICE

1. Select and highlight the node from the Node Selection Tree.
2. Click **Backup...**

3. Choose a location to place the Backup File and click **Save**. Default file name is **Backup_[*Network Name*]_[*Device ID*].txt.** You may choose to rename the file if you wish.

TO RESTORE A DEVICE

1. Select and highlight the node from the Node Selection Tree.
2. Click the checkbox to enable the **Set Device ID** field if you would like the restored device to have a different Device ID from the backup file. This is important when cloning devices since all Device IDs must be unique in the Secure Network. The Set Device ID field will display a red background if the Device ID is already in use by another device.
3. Click **Restore…**
4. Navigate to the directory where the Backup file is located.
5. Highlight Text file and click **Open**.

The Xicato Control Panel will then connect to the selected device and reprogram its settings based on the Backup file configuration.

5.3 COMMUNICATION

Note: Modifying GalaXi communication settings may impact network performance. Xicato does not recommend adjusting default communication settings for most installations.

Use this panel to configure how and when the individual device or selected group will broadcast their data stored within the device. Click **Get** to retrieve current communication configuration settings. Click **Set** to update configuration settings for the selected node(s).

Tx Power (dBm). Use drop-down menu to select transmission power of the device's BLE radio.

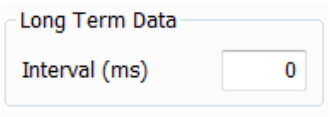
Rx Gain. Use drop-down menu to select Normal or High receive gain for the device's BLE antenna.

Always Connectable. For normal operation, Always Connectable should be disabled. Enabling Always Connectable can impact device performance by BLE scanners trying to connect with the lights. The device may also become non-responsive since the device cannot receive messages while it is connected. Enabling Always Connectable should only be used as a debugging tool.

5.4 LONG TERM DATA ADVERTISEMENT

Adjust the interval at which Long Term Data advertisement packets are transmitted. Long Term Data is device Information that does not change often or at all. Examples include:

- Power and LED Cycles
- Operation Hours
- Product ID Code
- Device Information
- DALI address & status (if applicable)



5.5 INTENSITY CHANGE ADVERTISEMENT

Advertise information about transitions between LED intensity levels. These advertisements are only transmitted when intensity levels change. This advertisement is primarily used when other lights are tracking a light's intensity. To reduce traffic, the burst count can be set to 0 if the light isn't being tracked.

The data contained in the Intensity Change advertisement include:

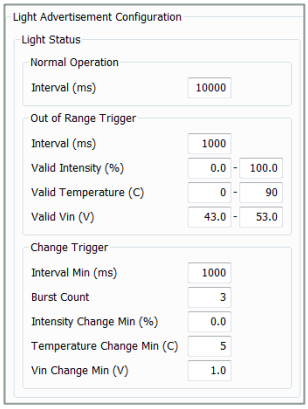
- Current intensity
- Destination Intensity
- Fade time remaining

Burst Count is the number of times Intensity Change information is advertised when there is a change in a device's intensity. **Burst Interval** is the time between burst advertisements.

5.6 LIGHT STATUS ADVERTISMENT

Use this section to configure how often Light Status data is broadcast. Light Status data is important device information that should be constantly monitored. It includes:

- Intensity
- Power
- Tc and PCB Temperature
- Supply Voltage and Ripple
- Device Status



Normal. Light Status data will be broadcast at this regularly set interval. Default is 10 seconds.

Out of Range Trigger. When intensity, temperature, or input voltage is outside of the specified valid range, Light Status device data will broadcast at this interval. Default is 1 second.

Change Trigger. When intensity, temperature, or input voltage change by a specified value or percentage, broadcast Light Status data at this interval. Burst count is the number of advertisements sent. Default is 1 second.

5.7 XIS CONFIGURATIONS

MOTION ADVERTISEMENT

Configure how often the sensor will broadcast information about motion.

Motion Burst. Number of advertisements sent when motion is detected in absent mode.

Motion Burst Interval (ms). Interval between burst advertisements.

Motion Continue Interval (s). Interval between motion advertisements until timeout.

Motion Timeout (s). Timeout to go into absent mode.

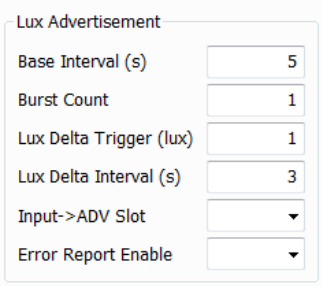
Motion Absence Burst. Number of advertisements sent when absent mode is entered.

ENVIRONMENT ADVERTISEMENT

Configure interval in which the sensor will advertise temperature, relative humidity, and input voltage. Default is 5 seconds.

LUX ADVERTISEMENT

Configure how often the sensor will broadcast illuminance information.



Base Interval (s). Interval in which the sensor will advertise lux data.

Burst Count. Number of advertisements sent.

Lux Delta Trigger (lux). If lux reading changes by entered value, the sensor will broadcast the new lux value at the interval defined in the **Lux Delta Interval (s)** field.

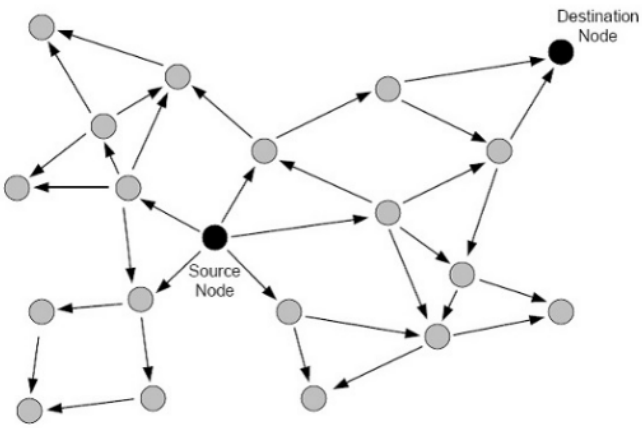
Input->ADV Slot. Select "Swap" from the drop down menu to swap the slot the lux value will be advertised on (Lux 0 or Lux 1). If "Normal", the selection is ignored and the device's value will not change.

Error Report Enable. When enabled, if the lux sensor reports an error, select whether it should be advertised or ignored for each input. When disabled, the selection is ignored and the device's value will not change.

5.8 DEVICE RELAY AND MESH NETWORKING

BASIC MESH OVERVIEW

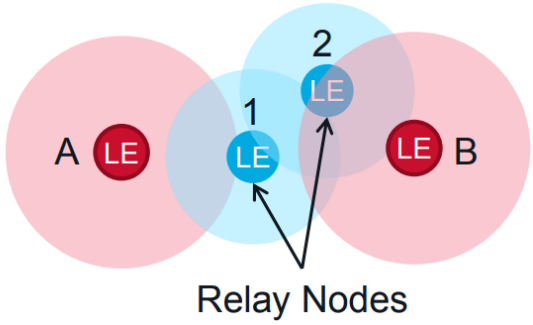
Xicato Galaxi devices can be configured to be relay nodes, i.e. nodes which are able to retransmit messages. This is used to extend networks by propagating messages to destination nodes outside the BLE radio transmission range of the source node. The Xicato GalaXi mesh network uses a flood technique where messages propogate along a path by hopping from node to node until it reaches its destination. Each relay node acts as both a transmitter and a reciever and each node tries to forward every message to every one of its neighbors.



Flood mesh diagram courtesy of "Trends in Telecommunications Technologies" (intechopen.com)

RELAY NODES

It is important that all relay nodes are within radio range of their neighbors in order to forward messages. In the example below, messages can pass from node A to B through relay nodes (LE 1 and LE 2), but cannot pass from node B to A. While Relay Node 1 can receive messages from Node A, the radio strength of relay node 1 is too weak to reach Node A.

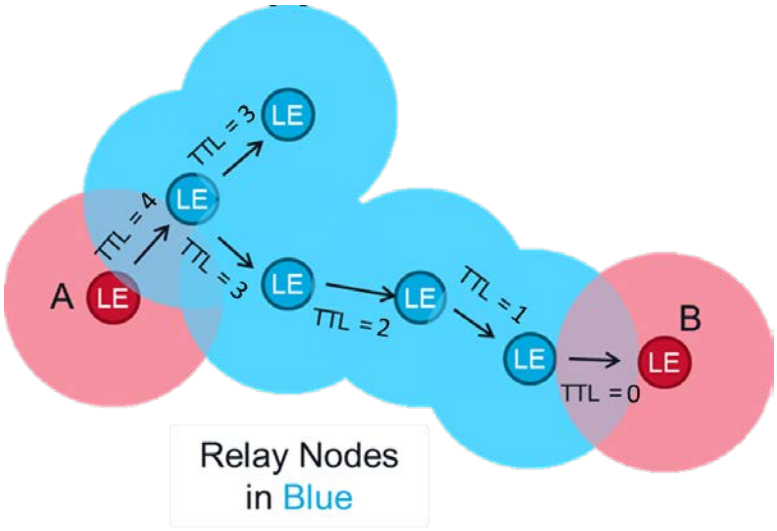


TIME TO LIVE (TTL)

Messages have a Time To Live (**TTL**) value. Its purpose is to control whether or not a received message should be relayed, and to limit the total number of hops over which a message is ultimately relayed within the network. Each time a message is received and retransmitted, TTL is decremented which limits the number of "hops". Every relay node that receives a network message with TTL ≥ 1 can retransmit it after decrementing the value by one using the formula TTLnew = TTLold-1.

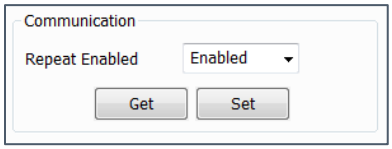
When a relay receives TTL = 1, it will re-transmit the message. A value of zero indicates that a message has not been relayed and should not be relayed.

In the example below, messages from Node A need a starting TTL value ≥ 4 in order for that message to propagate successfully to Node B. Nodes also keep track of every message seen and only forward each message once. This prevents duplicate packets from circulating forever.



TO CONFIGURE A RELAY NODE

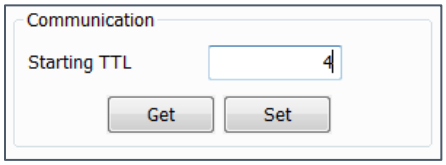
1. Select the node from the Node Selection Tree.
2. Verify **Repeat Enabled** is checked in the **View** window.
3. Click **Get** to retrieve current relay configuration settings.
4. Select **Enabled** from the drop-down menu.
5. Click **Set** to program the device as a relay node.



The node will now retransmit all received messages, depreciating the TTL by 1. If the received message has a TTL = 0, the message will not be retransmitted.

TO CONFIGURE THE STARTING TTL OF DEVICES MESSAGES

1. Select the node from the Node Selection Tree.
2. Verify **Starting TTL** is checked in the **View** window.
3. Click **Get** to retrieve current Starting TTL configuration settings.
4. Enter the Starting TTL number in the text box. Starting TTL cannot exceed 7.
5. Click **Set** to program the device as a relay node.



In the example above, any message originating from this source will have a starting TTL value of 4. Any relay nodes within communication range will depreciate the TTL value by 1 and retransmit the message.

Just like provisioned GalaXi lights and sensors, the Xicato Control Panel itself is a node and its broadcast messages can be assigned starting TTL values as well. Refer to the **Local Network Settings** section of this document for more details.

6 BEACONS TAB

WHAT IS A BEACON?

A BLE beacon is a short message that is advertised on a periodic basis from a Bluetooth device. It is like a lighthouse, constantly advertising its presence, without knowing how many ships are looking at it. It does not create a connection with a mobile device, but applications on the device – or web pages to which it points the user – can interpret the beacon to provide information or services to the user. BLE beacons are designed to provide services that are "location aware", meaning that the information is relevant to the physical location of the user. This may work like GPS, providing a location on a map, or it may present information about something that the user is close to, such as a museum exhibit, merchandise on a retail shelf, a check-out counter, or a historical monument. Beacons can be used indoor or outdoor, but they have special value indoors, where GPS satellite signals do not penetrate, or in dense urban environments where GPS has problems with tall buildings.

6.1 BEACON PROTOCOLS

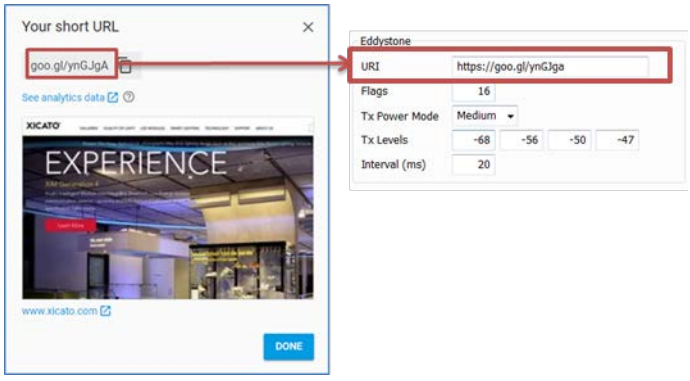
All GalaXi devices support the advertisement of three different BLE beacon protocols.

EDDYSTONE CONFIGURATION

Eddystone beacons are simply short URLs (Universal Resource Locator addresses… web addresses). They are designed to work with browsers, which must have an Internet connection to retrieve content or make meaning of the beacon.

To broadcast an Eddystone beacon:

1. Select a node from the Node Selection Tree.
2. Verify **Eddystone** is checked in the **View** window under **Beacon Configuration**.
3. Click **Get** to receive current configuration settings in the **Eddystone Configuration** Panel.
4. Type in **URI** to broadcast. The URI is the web address to be advertised. To create a URI, use any URL shortner such as https://bitly.com.



5. Select beacon transmission power (**Tx Power**) in the drop-down menu.
6. Type in the broadcast interval in the **Interval (ms)** field. To disable beacon broadcasting, set the period to **0**.
7. Click **Set** to program the device to advertise the Eddystone beacon.
8. Verify configuration was programmed successfully by clicking **Get**. Configuration settings should match the values you entered.

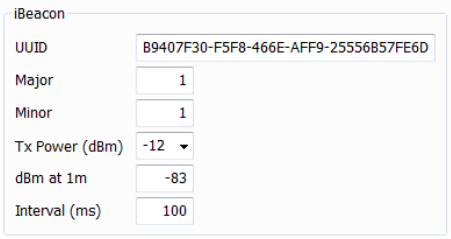
For more information on Eddystone, visit https://developers.google.com/beacons/eddystone.

IBEACON CONFIGURATION

Apple iBeacon messages are constructed of a UUID, a major and a minor identifier. The UUID is specific to a beacon, the major identifier is specific to (say) a region, like a store location; and a minor is specific to a sub-region, like a department within a store, or another very specific location. The identifier is recognized by an app, which is programmed either to present a screen of information such as a map, merchandise description, or museum exhibit information, or to perform some other location-specific task.

To broadcast an iBeacon:

1. Select a node from the Node Selection Tree.
2. Verify **iBeacon** is checked in the **View** window under **Beacon Configuration**.
3. Click **Get** to receive current configuration settings in the **iBeacon Configuration** Panel.
4. Type in **UUID** (universally unique identifier) and a **Major** and **Minor** pair.
5. Select beacon transmission power (**Tx Power**) in the drop-down menu.
6. Enter a value for **dBm at 1m**. This represents the average received signal strength at 1m from the device.
7. Type in broadcast interval in the **Interval (ms)** field. To disable beacon broadcasting, set the period to **0**.
8. Click **Set** to program the device to broadcast the iBeacon.
9. Verify configuration was programmed successfully by clicking **Get**. Configuration settings should match the values you entered.



For more information on iBeacon, visit https://developer.apple.com/ibeacon.

ALTBEACON CONFIGURATION

AltBeacon is an open source alternative to iBeacon.

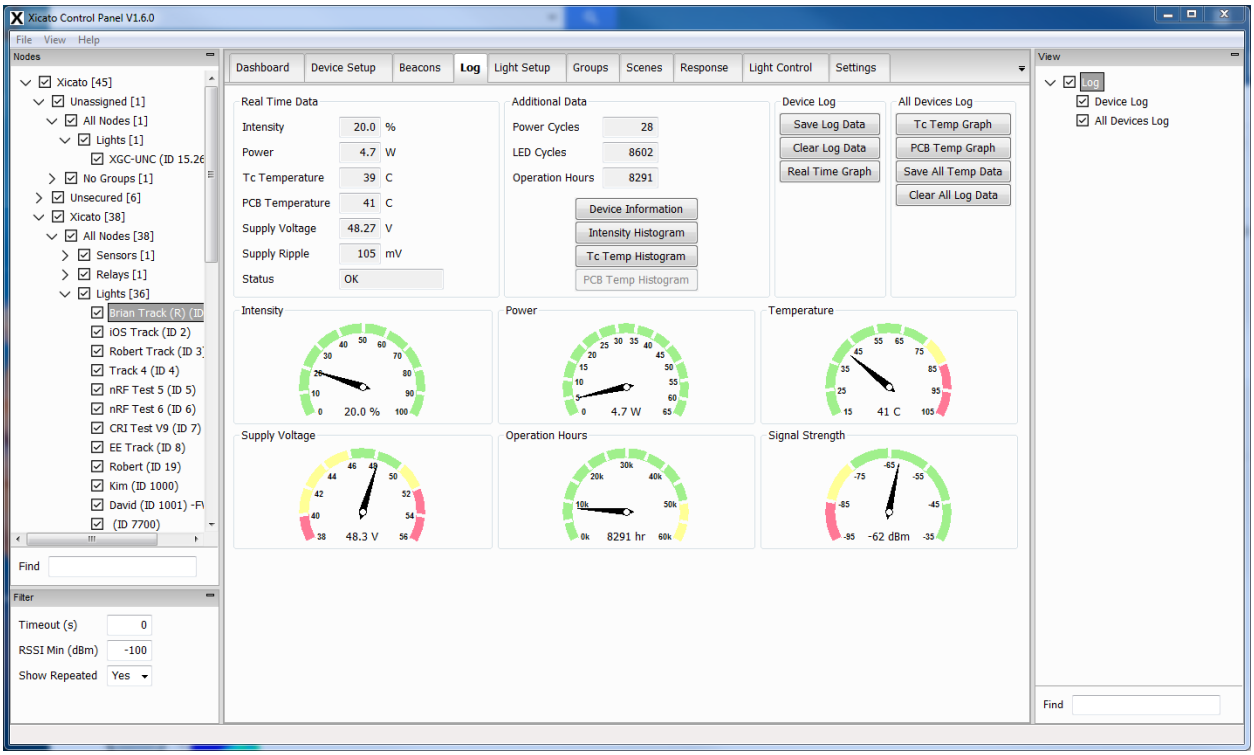
To broadcast an Altbeacon:

1. Select a node from the Node Selection Tree.
2. Verify **AltBeacon** is checked in the **View** window under **Beacon Configuration**.
3. Click **Get** to receive current configuration settings in the **AltBeacon Configuration** Panel.
4. Type in **Beacon ID**, **Mfg ID** and **Mfg Data**.
5. Enter a value for **dBm at 1m**. This represents the average received signal strength at 1m from the device.
6. Type in broadcast interval in the **Interval (ms)** field. To disable beacon broadcasting, set the period to **0**.
7. Click **Set** to program the device to broadcast the AltBeacon.
8. Verify configuration was programmed successfully by clicking **Get**. Configuration settings should match the values you entered.

For more information on AltBeacon, visit http://altbeacon.org/

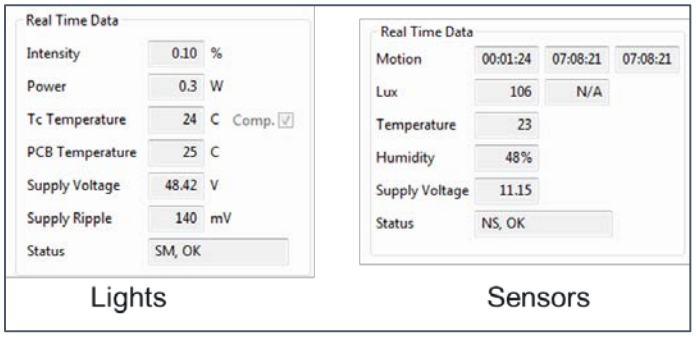
7 LOG TAB

The Log Tab allows the user to access Real Time and historic data for each device. Use the Node Selection Tree to choose the device you would like to see information on.

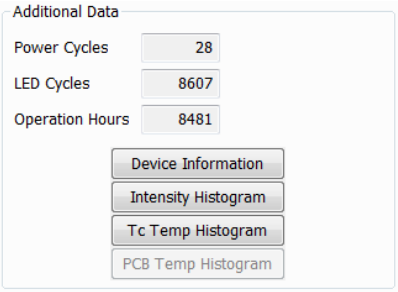


7.1 REAL TIME DATA

GalaXi devices provide real time operating/monitoring data from the multiple sensors integrated into their memory banks. This data is not stored as history data on the device. It is simply a continuous real time reading of the sensors.



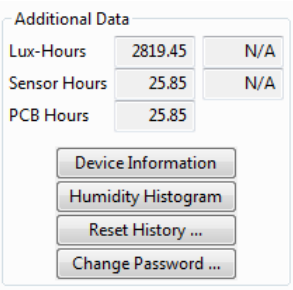
7.2 HISTORICAL DATA



Power Cycles. When the device detects a power-on event, the power cycle counter will be incremented.

LED Cycles. When the LED is driven from off (intensity = 0) to on (intensity ≥ 0.1%), the LED power cycle counter will be incremented. Any LED off to on event, both power cycles and commanded intensity from off to on , will cause the LED power cycle to be incremented.

Operation Hours. The counter will be incremented for each hour that the LED is turned on and operating (i.e., intensity ≥ 0.1%). The maximum value for operating hours that can be recorded is 200,000, which corresponds to ~23 years of operation.



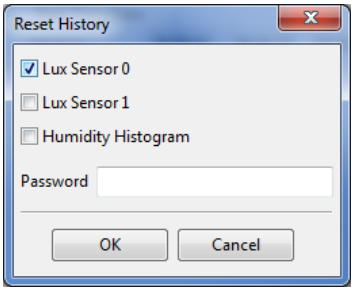
Lux-Hours (Sensors Only). The counter captures the accumulated exposure of light detected by the lux sensor over time.

Illumination Level (lux) x Number of hours = lux hours

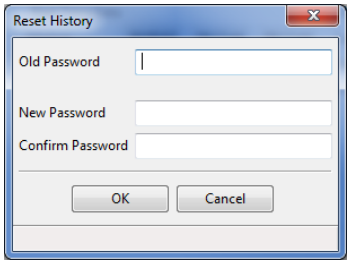
The Lux-Hour counter is resettable through the **Reset History...** button.

Sensor Hours (Sensors Only). Counter displays the amount of time elapsed since the Lux-Hour counter was last reset.

PCB Hours (Sensors Only). The counter will be incremented for each hour that the sensor board is turned on and operating. This value cannot be reset.

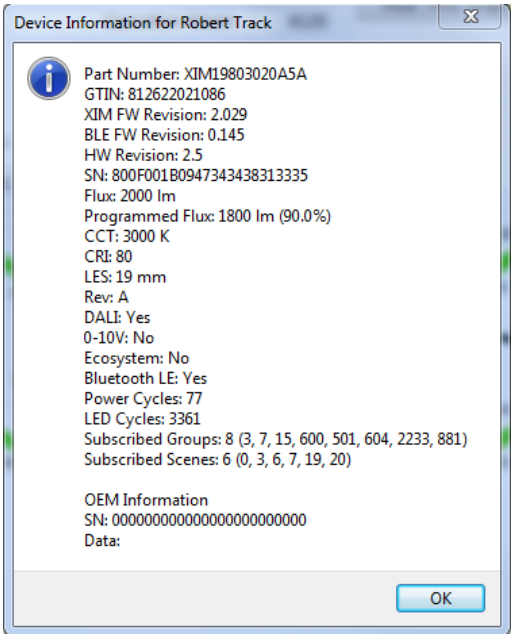


Reset History... (Sensors Only). Click to bring up the Reset History window. Click the box corresponding to the historical data to be reset on the XIS. If the XIS history data is pasword protected, enter the password in the Password field, otherwise leave the field blank.



Change Password (Sensors Only). Click to display the Change Password screen that allows the user to protect the historical data on the XIS sensor. If you are setting up a password for the first time, leave the Old Password field blank. Click OK to save the new password.

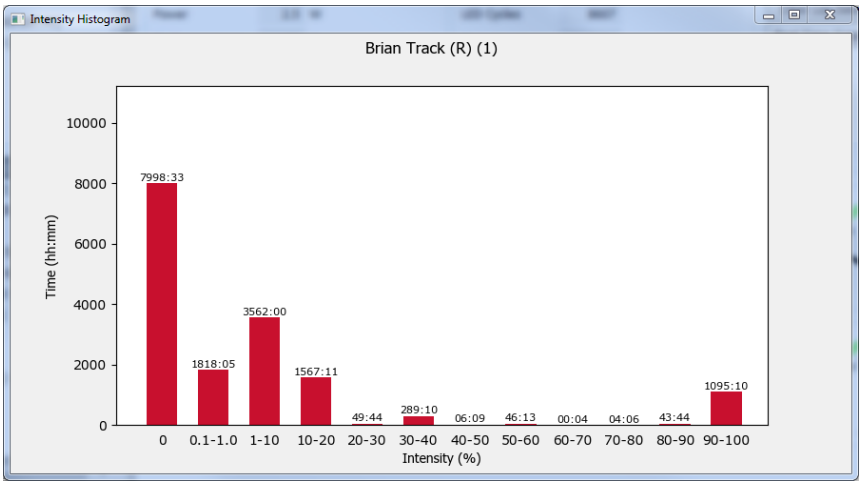
Device Information. Click to show the Device Information window which displays Xicato and OEM programed data in addition to Group and Scene number assignments for the device.



Intensity Histogram

XIMs, XIDs, and XCGs maintain a history of maximum LED intensity over each second that the device is operating (i.e., VIN ≥ 40.0V) whether the LED is turned on or turned off (i.e., intensity = 0). After each second, the maximum intensity of the LED during that second is recorded and the corresponding intensity range bucket is incremented.

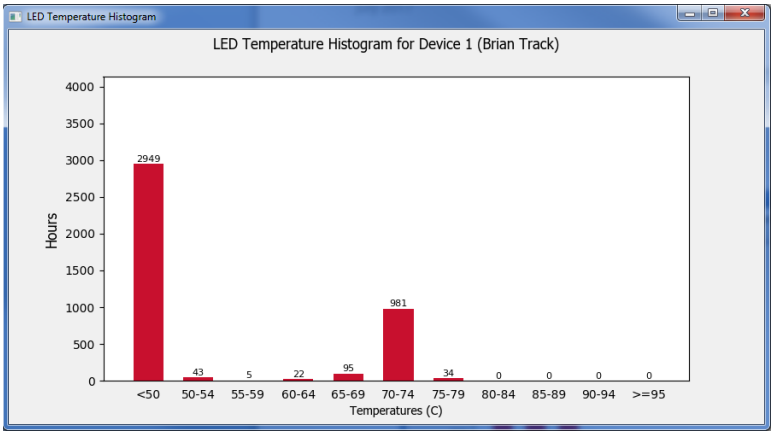
This data can be used to build a histogram of the LED Intensity.



Temperature Histogram (Tc & PCB)

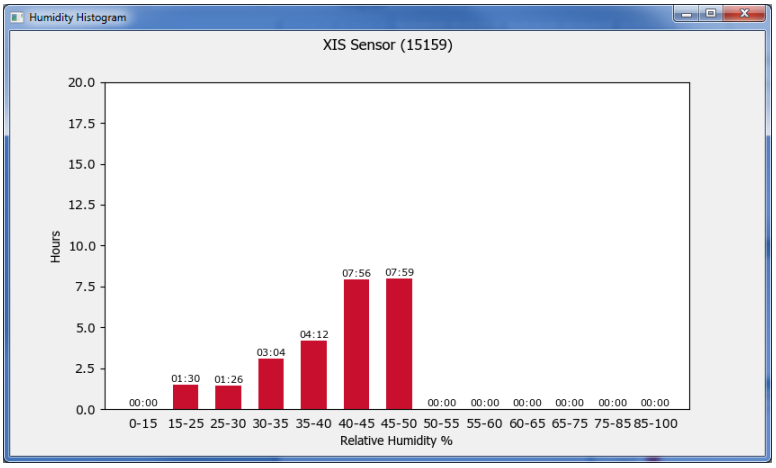
In addition to intensity, XIMs, XIDs, and XCGs maintain a history of operating temperature of the LED over each hour of use that the LED is turned on and operating (i.e., intensity ≥ 0.1%). The LED temperature recorded corresponds to the Tc measurement point of the XIM. This data can be used to build a histogram of the LED operating temperature.

After an hour in which the LED is operating elapses, the maximum temperature of the LED during that hour is recorded and the corresponding temperature range bucket is incremented.



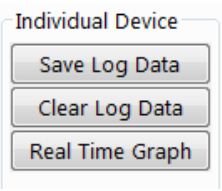
Humidity Histogram

The XIS maintains a history of relative humidity over each second of use that the sensor PCB is operating. This data can be used to build a histogram of the relative humidity. Every second, the humidity of the XIS is recorded and the corresponding humidity range bucket is incremented.



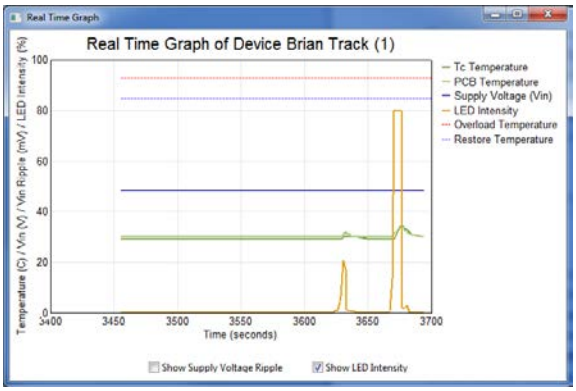
7.3 DEVICE GRAPHS AND LOG DATA

INDIVIDUAL DEVICE



To save all device data collected since the Control Panel was launched, click the **Save Log Data** button. An excel file containing intensity, temperature, voltage, and ripple voltage data with respect to time will be created. The file will be saved in the directory the Control Panel is installed in and can be found in the **C:\Xicato_Control_Panel_V1_6\logs** folder. Each individual Device file will be named [*Network Name*]\[*Device ID*].csv

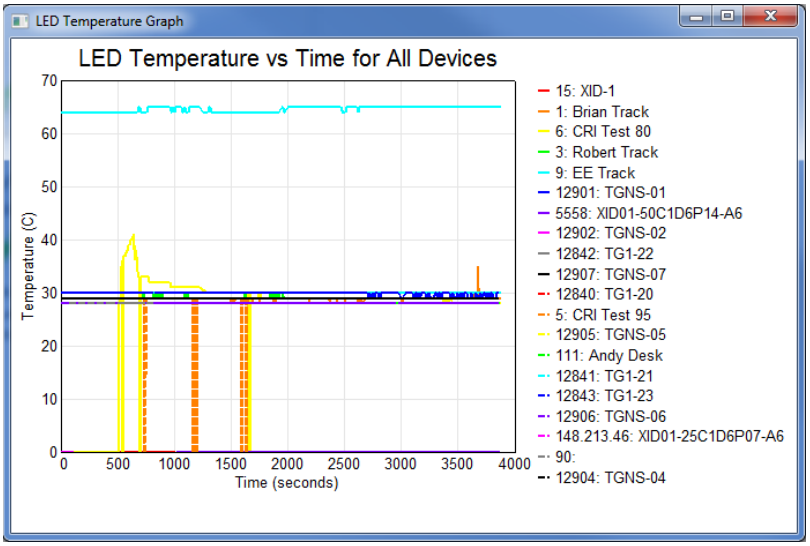
Click **Real Time Graph** to view a graph of the log data collected since the application was launched. Clicking **Clear Log Data** erases the cached log data and clears the Real Time Graph display.



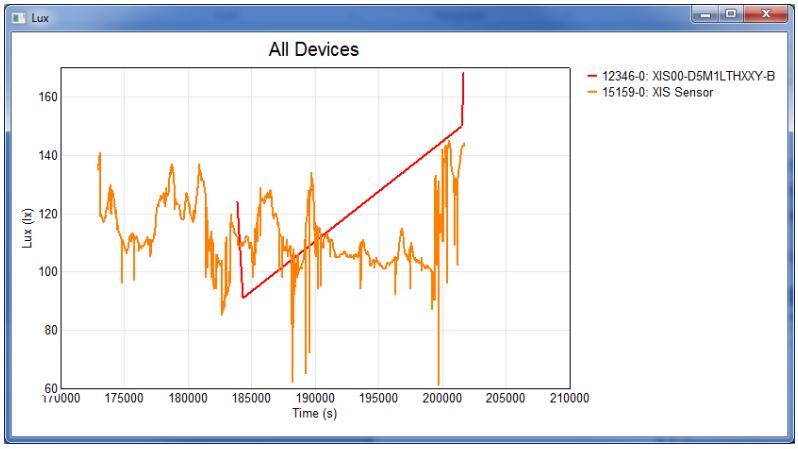
ALL DEVICES

To view the Real Time temperature graphs of all devices simultaneously, select either **LED Temp Graph** or **PCB Temp Graph**. To save this data to a log file, click **Save All Temp Data**. Two files, ledTemperatureHistory.csv and pcbTemperatureHistory.csv, will be created in the **C:\Xicato_Control_Panel_V1_6\logs** directory.

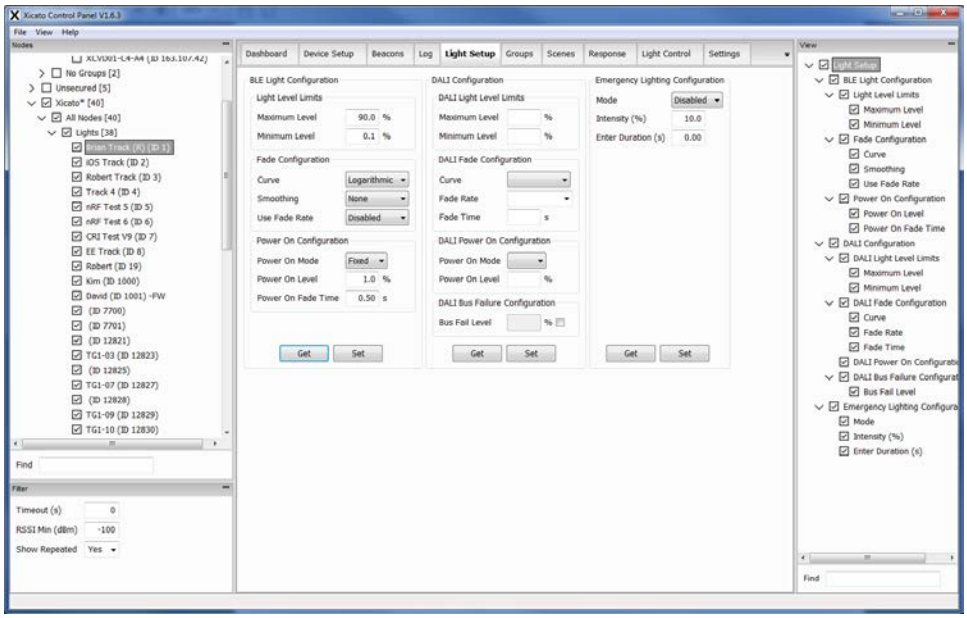
Click **Clear All Log Data** to clear cached log data and the temperature graphs.



If a Sensor is selected in the Log tab, click **Temperature Graph**, **Humidity Graph**, or **Lux Graph** to graph all respective sensors inputs simultaneously.



8 LIGHT SETUP TAB

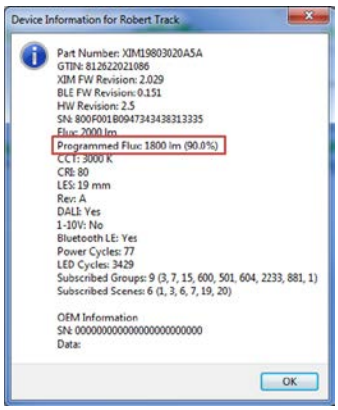


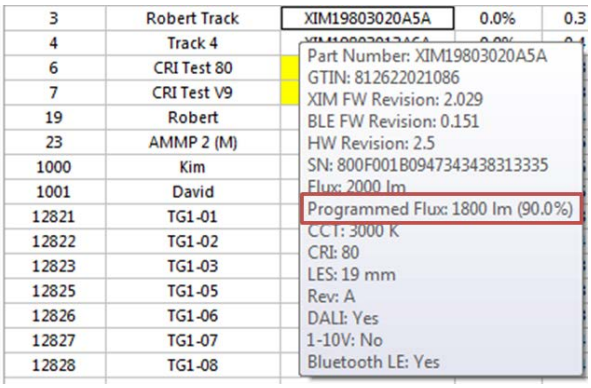
8.1 BLE LIGHT CONFIGURATION

LIGHT LEVEL LIMITS

Use these fields to adjust minimum and maximum intensity levels from BLE commands. These limits only apply to intensity commands sent through Bluetooth communication. They do not apply to 1-10V or DALI commands sent through the device's control wires.

Note that max level (%) should not be confused with the max flux (%) setting. Maximum & minimum intensity levels (%) can be modified in the Xicato Control Panel but the max flux (%) setting can only be set using the OEM's XCT (Xicato Configuration Tool). The programmed max flux (%) can be found in either the Device Information window in the Log tab or by hovering over the device name in the Dashboard tab.

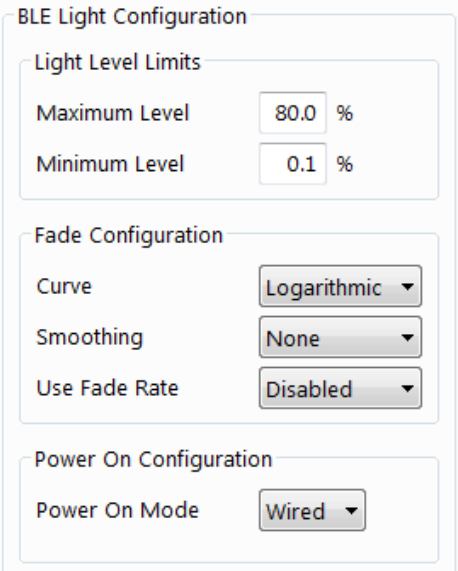




The following examples describe the differences between Max Flux and Max Level.

- **2000lm XIM module with Max. Flux (%) set to 80%.** At 100% intensity, XIM will emit 1600lm. XIM will follow standard dimming curve from 0% to 100%. This cannot be modified in the field.

- **2000lm XIM Module, with Max. Flux (%) set to 80% & Max. Level (%) set to 90%.** The XIM module's maximum flux is set to 80% and the maximum intensity level is capped at 90%. The unit will emit 1440lm (90% of 1600lm) at this level. The XIM will only follow the dimming curve from 0% to 90%. The maximum (and minimum) level can be modified in the field using the XIM Control Panel; however, Max Flux (%) values cannot be modified without the use of an XCT tool.



FADE CONFIGURATION

Choose between logarithmic or linear dimming. Linear dimming recommended when XIM is targeting a specific lux in sensor response mode. If **Fade Smoothing** is enabled, the module fade rate will slow down as intensity approaches target intensity.

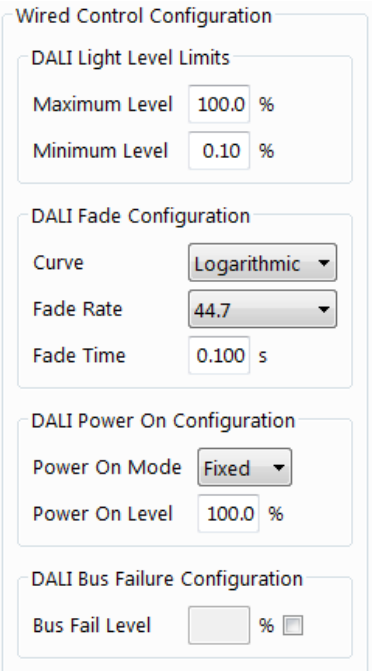
POWER ON CONFIGURATION

Wired. Intensity at power on is determined by wired control line.

Last. Intensity at power on is controlled by whichever system (wired or wireless) set the last intensity command.

Fixed. User may enter any value from 0-100%. Device will power on to that intensity regardless of whichever system set the last intensity command.

8.2 DALI WIRED CONTROL CONFIGURATION (DALI XIMS ONLY)



DALI LIGHT LEVEL LIMITS

Similar to BLE Light Level Limits. These fields adjust minimum and maximum intensity levels from DALI commands. Max level (%) should not be confused with max flux (%) setting.

DALI FADE CONFIGURATION

The XIM supports both the logarithmic dimming curve that is specified in IEC 62386-102 and the linear dimming curve that is specified in IEC 62386-207. The logarithmic curve is programmed as the default configuration.

The XIM supports all of the fade times and fade rates defined in section 9.5 of IEC 62386-102. In addition, when the fade time index value (X) is set to 0, the XIM will support fast fade times as defined in IEC 62386-207

The XIM supports a maximum fade rate of 1 DALI step per millisecond. This is the fade rate that is used for any DALI command that requires an immediate response without fading (e.g., OFF, STEP UP, STEP DOWN, RECALL MAX LEVEL, RECALL MIN LEVEL, etc.). In addition, this is the default fade rate factory programmed into the XIM, and it is the fade rate used if both the Fade Time and Fast Fade Time indexes are set to 0.

DALI POWER ON CONFIGURATION

Fixed. User may enter any value from 0-100%. Device will power on to that intensity regardless of whichever system set the last intensity command.

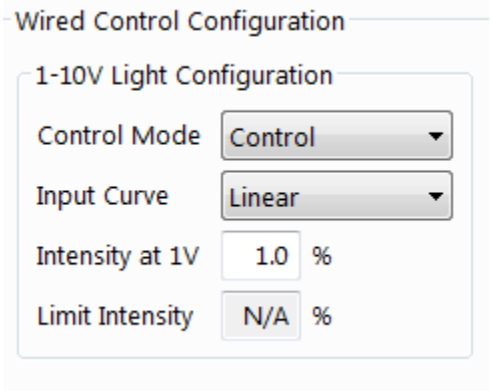
Last. Intensity at Power On is the intensity when the device last powered down.

DALI BUS FAILURE CONFIGURATION

If enabled, the XIM will go to this intensity if it detects a DALI bus failure.

8.3 1-10V WIRED LIGHT CONFIGURATION (1-10V XIM AND XIDS ONLY)

CONTROL MODES



Control. In this mode the light is controlled by whichever system (wired or wireless) set the last intensity command. This is the default operating mode.

Limit. In this mode, the 0-10V interface sets the upper intensity limit. The BLE interface can then adjust the intensity to any value up to the limit. If an intensity value above the limit is sent over the BLE interface, the XIM will simply stop at the limit. If the intensity limit is adjusted down the lamp intensity will track it. If the intensity limit is adjusted up there will be no change in the lamp intensity.

Control & Limit. When both boxes are checked, the 0-10V sets the upper intensity limit, but if the 0-10V control is adjusted the light will track the adjustment (up or down).

Disabled. 1-10V controls wires are disabled and any dimmers or switches connected have no effect on the module.

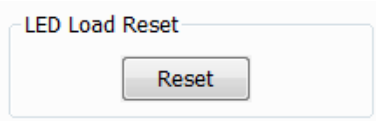
Input Curve. Select the dimmer type used on the control wires.

Intensity at 1V. Enter intensity value when voltage across control wires is 1V. This is typically the minimum intensity before module turns off.

Limit Intensity. Displays current intensity limit based on the 1-10V voltage. Only used when Limit or Control & Limit are set as the Control Mode.

8.4 LED LOAD RESET (XID ONLY)

Click the **Reset** button to reset to the forward voltage (V_F) reference of the XID. Use this function when modifying the load on the output of the XID (e.g. when swapping a COB for another with a different V_F). Resetting the LED Load will also clear a LCG (Load Change) status event on the Control Panel Dashboard.



8.5 EMERGENCY LIGHTING CONFIGURATION

Xicato XIMs and XIDs can be programmed to respond to input voltages between 36V and 40V (voltage from battery backup) and transition into Emergency Mode (EM). During this time, devices will broadcast their status but will not respond to light control commands. Devices will resume normal operation when input voltage goes above 41V.

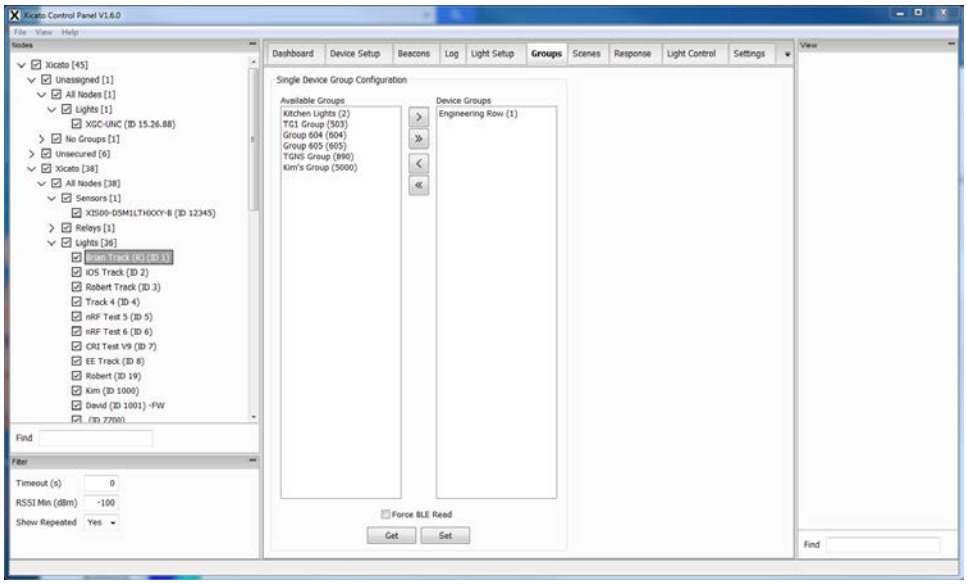
Important message for XID users - Forward voltage of the light source must be lower than the input voltage provided by the emergency battery backup for Emergency Mode to work properly. EM can only be enabled on XIDs configured for 48V operation.

Enabled/Disabled Mode. Use the drop down menu to choose to enable or disable Emergency Mode (EM). Disabling EM will turn off the light source completely if input voltage falls below 40V.

Intensity (%). Choose the intensity level the XIM or XID should go to in Emergency Mode.

Enter Duration (s). Specify the amount of time the XIM or XID needs to be within the 36V-40V input voltage range before EM mode is triggered. Note that if this time period is too short, the device may go into EM during power up as the device transitions through this range to 48V.

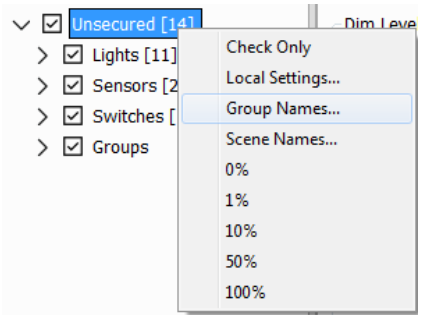
9 GROUPS TAB



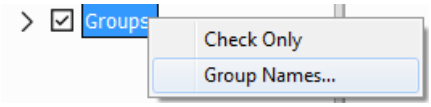
9.1 CREATING A GROUP

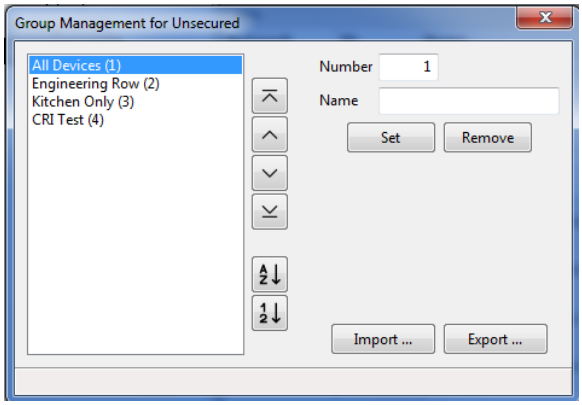
All group creation, modification, and removal may be achieved through the **Group Management Window**. To open the Group Management Window, either:

1. Right-click the name of the Secure Network and select "**Group Names…**" in the Node Selection tree.



2. Or, right-click "Groups" under a Secure Network and select "**Group Names…**" in the Node Selection tree.





ADD A GROUP IN THE GROUP MANAGEMENT WINDOW

In the Group Management Window,

1. Enter the **Number** of the Group you would like to add. Numbers must be unique within the same Secure Network.
2. Provide a **Name** for the Group you would like to add.
3. Click **Add**. The Group will be added to the list to the left.
4. Use the arrow buttons to manage the order in which the Groups are listed.

REMOVE A GROUP FROM THE GROUP MANAGEMENT WINDOW

1. Select and highlight the Group from the Group list.
2. Click **Remove**.

Any devices assigned to the removed Group will remain associated with that Group. The Group name will be removed from Group list and Node Selection Tree.

EXPORT GROUP LIST FROM THE GROUP MANAGEMENT WINDOW

1. Click **Export...**.
2. Choose a location to place the Group or Scene list and click **Save**. Default file name is **SavedGroups.txt**. You may choose to rename the file if you wish.

IMPORT GROUP LIST FROM THE GROUP MANAGEMENT WINDOW

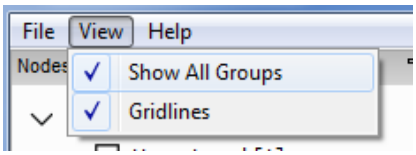
1. Click **Import...**
2. Navigate to the directory where the network list is located.

Highlight Text file and click **Open**.

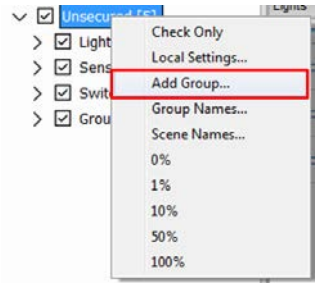
ADD A GROUP FROM THE NODE SELECTION TREE

Alternatively, Groups can also be added directly into the Node Selection Tree if **Show All Groups** is enabled. To add a group:

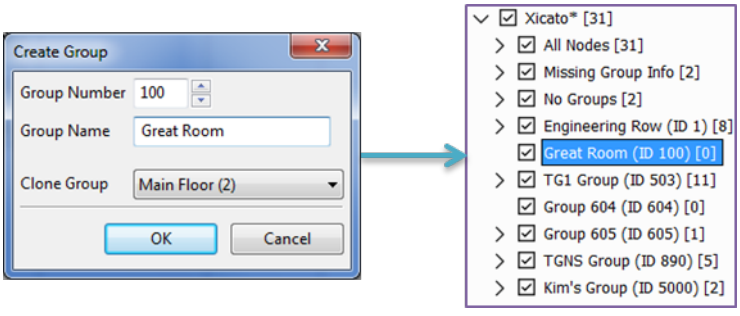
1. First, verify that **Show All Groups** is enabled in the View menu of the menu toolbar. When enabled, all groups will be shown in the Nodes tree. When disabled (default setting), only subscribed groups are shown.



2. Select the **Network** the new group will be a member of from the Node Selection Tree.
3. Right-click the Network name and select **Add Group...** (The "Add Group..." menu item will be only be available if View->Show All Groups is enabled. See Step 1.)



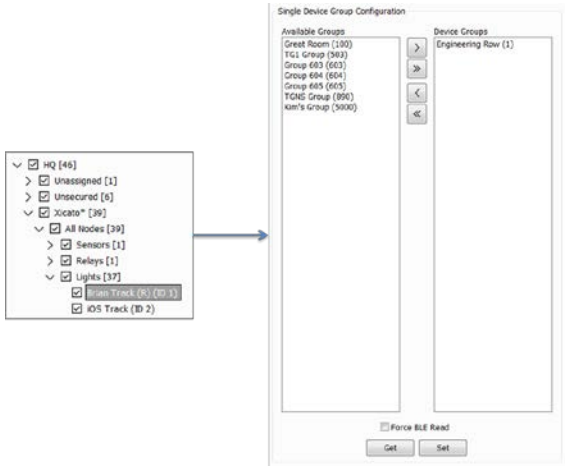
4. Select and enter the **Group Number** and **Group Name** of the new group you want to create. If you would like to clone an already existing group, select that group in the **Clone Group** drop-down menu; otherwise, select **None**. The created group is then added to the **Node Selection Tree**.



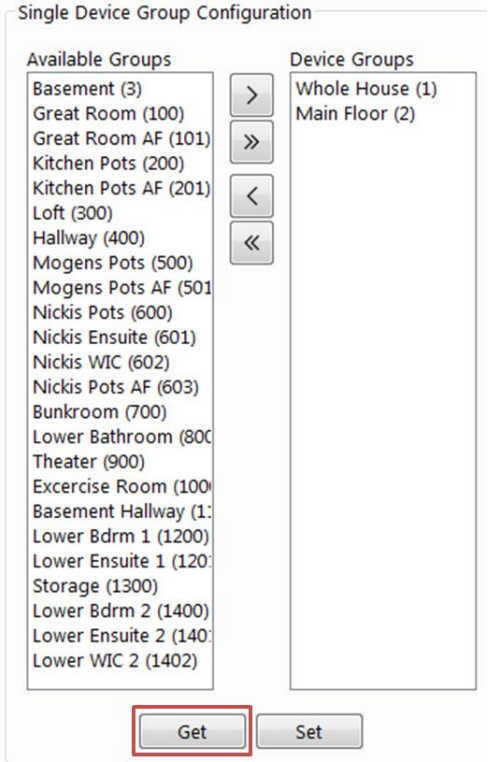
9.2 ASSINGING DEVICES TO GROUPS

ASSIGNING MULTIPLE GROUPS TO A SINGLE DEVICE

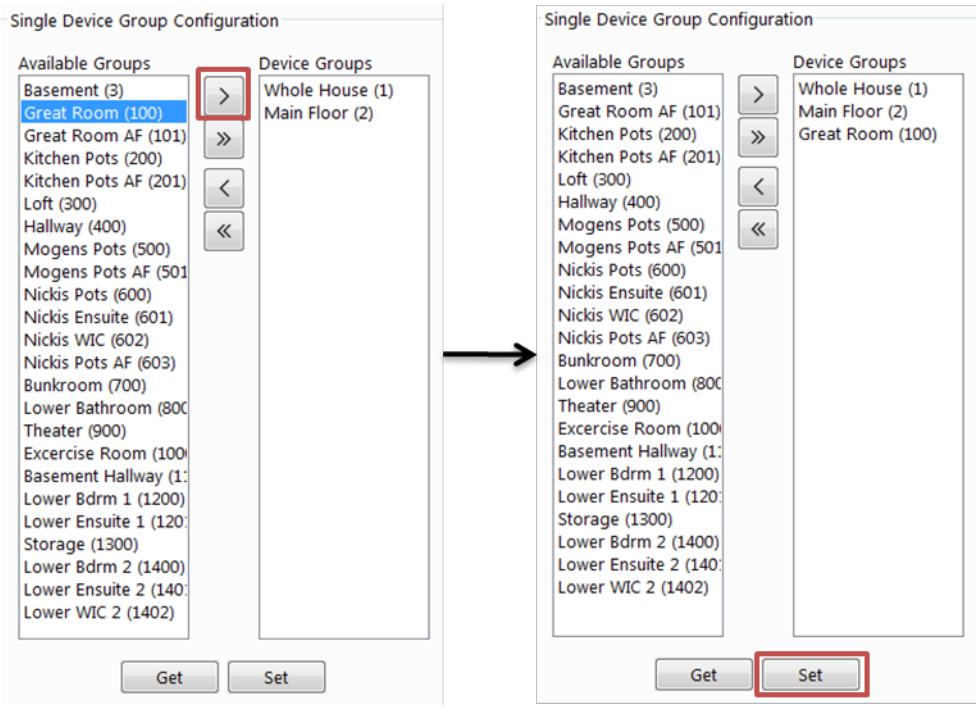
1. Select an individual light from the **Node Selection Tree**. The **Single Device Group Configuration** screen will appear in the Groups tab.



2. Click **Get** to see which groups the current device is a member of. The **Available Groups** column lists groups the device is not a member of. The **Device Groups** column shows groups the device is a member of.

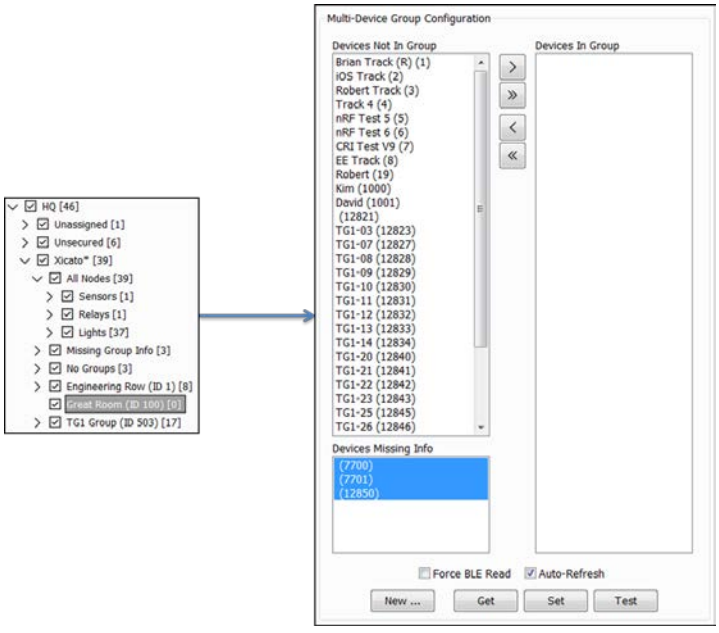


3. To assign or unassign groups for the device, click a group to highlight it and use the **arrow buttons** to move the group between columns. The double-arrow will move the entire column of groups. When finished, click **Set** to program the device and update which groups the device is a member of. After update, click **Get** to verify programming was successful.

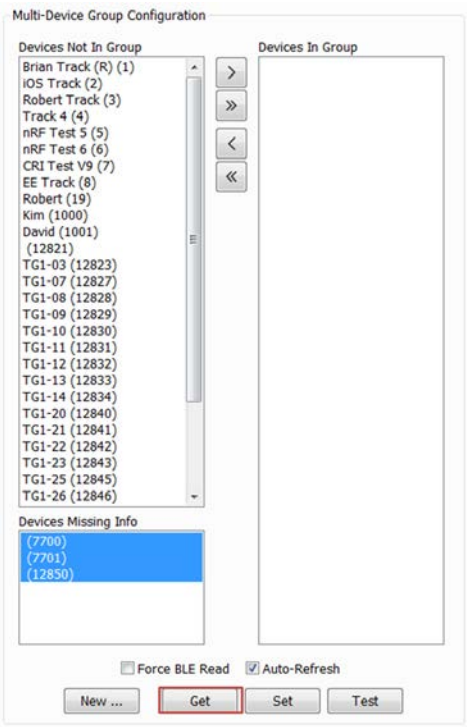


ASSIGNING MULTIPLE DEVICES TO A SINGLE GROUP

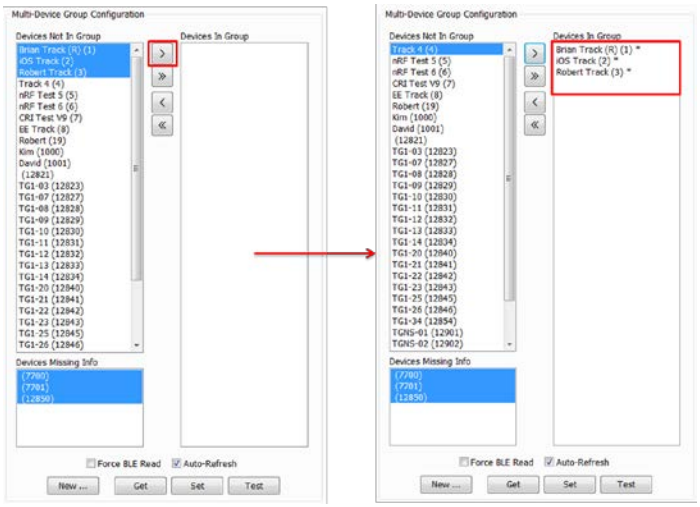
1. Select a group from the **Node Selection Tree**. The **Multi-Device Group Configuration** screen will appear in the Groups tab.



2. Click **Get** to see what devices are currently assigned to the Group.

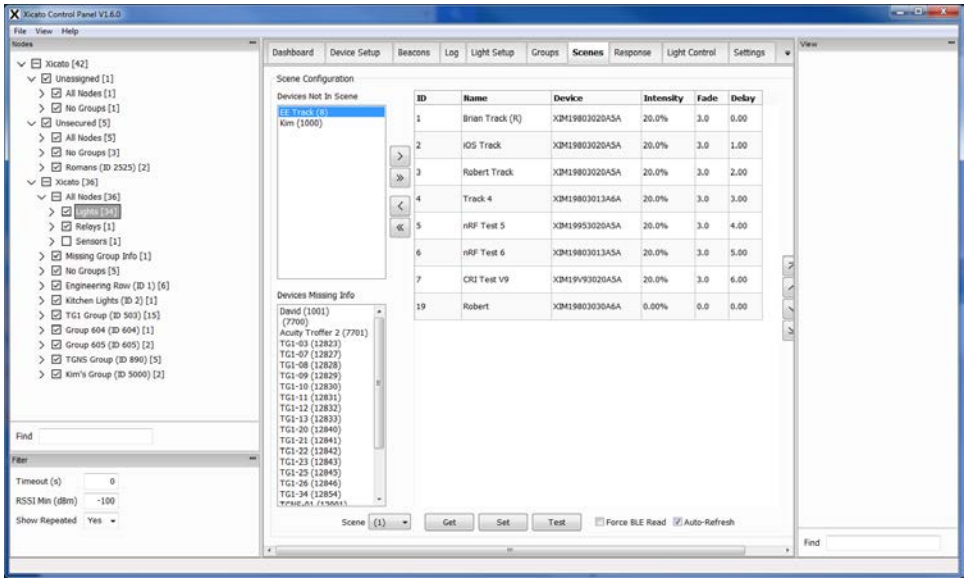


3. Highlight devices and use the arrow buttons to move devices from the **Devices Not In Group** column to the **Devices In Group** column (or vice versa).



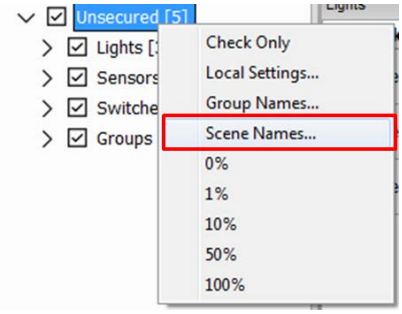
4. An asterisk (*) will appear next to moved devices to indicate that the groups these devices are assigned to has been modified. Click **Set** to program the device and update which devices are now members of the selected group. After updating, click **Get** to verify programming was successful.

10 SCENES TAB



10.1 CREATING A SCENE

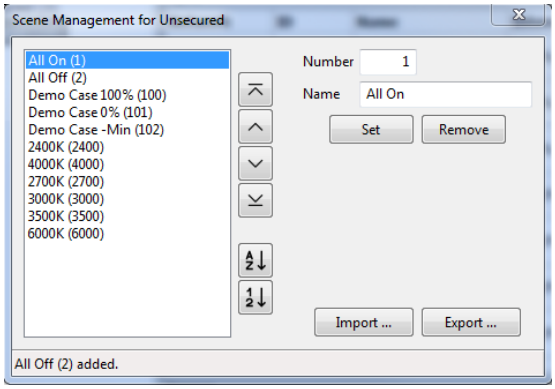
All scene creation, modification, and removal may be done through the **Scene Management Window**. To open the Scene Management Window, right-click the name of the Secure Network and select "**Scene Names…**" in the Node Selection tree.



ADD A SCENE IN THE SCENE MANAGEMENT WINDOW

In the Scene Management Window,

1. Enter the **Number** of the Scene you would like to add. Numbers must be unique within the same Secure Network.
2. Provide a **Name** for the Scene you would like to add.
3. Click **Add**. The Scene will be added to the list to the left.
4. Use the arrow buttons to manage the order in which the Scenes are listed.



REMOVE A SCENE FROM THE SCENE MANAGEMENT WINDOW

1. Select and highlight the Scene from the Scene Management list.
2. Click **Remove**.

Any devices assigned to the removed Scene will remain associated with that Scene. The Scene recall button for the removed scene will no longer be displayed in the Light Control tab.

EXPORT SCENE LIST

3. Click **Export…**.
4. Choose a location to place the Group or Scene list and click **Save**. Default file name is **SavedGroups.txt.** or **SavedScenes.txt**. You may choose to rename the file if you wish.

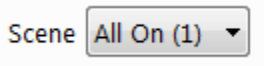
IMPORT SCENE LIST

3. Click **Import…**
4. Navigate to the directory where the network list is located.

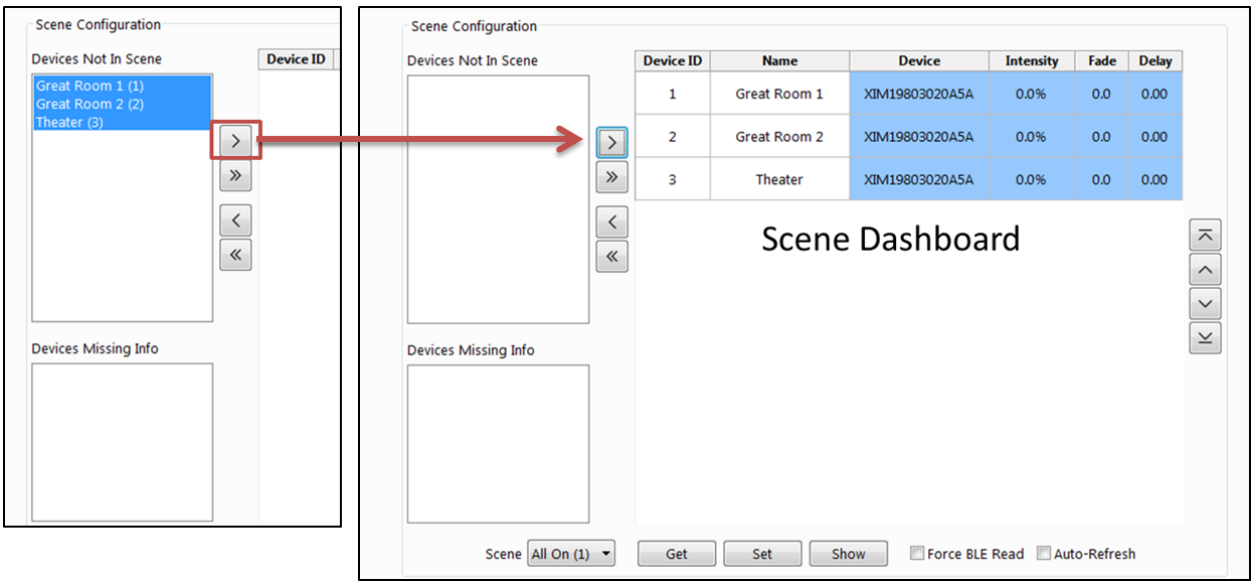
Highlight Text file and click **Open**.

10.2 ASSIGNING DEVICES TO SCENES

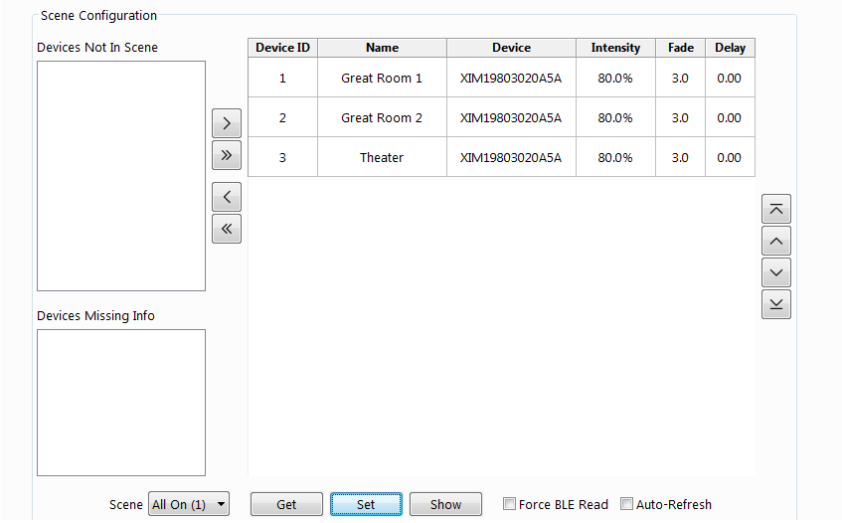
1. Select the scene you would like to add devices to.



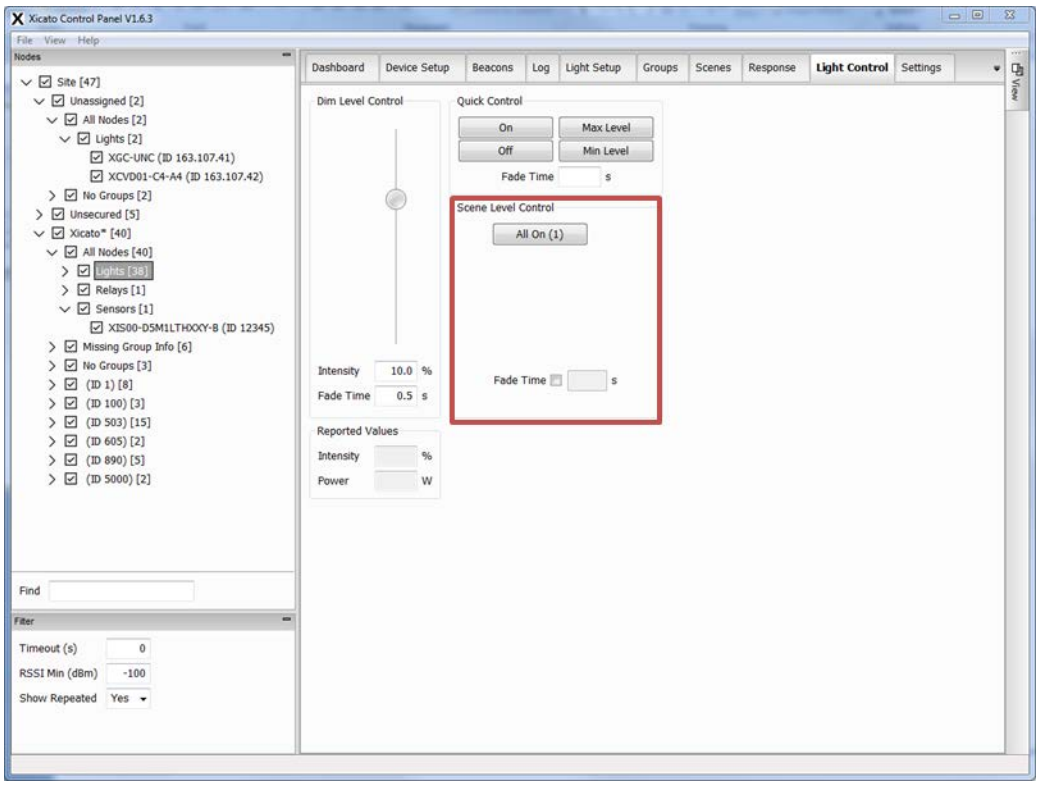
2. Select a node or group of lights from the Node Selection Tree.
3. Click **Get** to see what devices are currently assigned to the selected scene. The Control Panel will connect with each light in the group selected.
4. Highlight devices and use the arrow buttons to move devices from the **Devices Not in Scene** list to **Scene Dashboard**.



5. The **Intensity**, **Fade**, and **Delay** columns are editable. Type in a value for each device. Click **Show** to preview the Scene. Click **Set** when finished to program the devices with the new scene settings. Modified device rows will turn from blue to white indicating that device programing was successful.



6. To recall the scene, navigate to the **Light Control** tab. A button for each available scene will be visible on the **Scene Level Control** pane. Click the scene button to recall the corresponding scene.

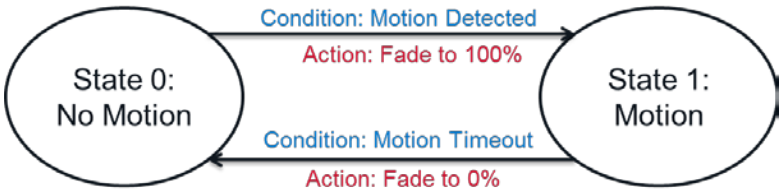

Xicato Control Panel V1.6.3
File View Help
Nodes
Site [47]
Unassigned [2]
All Nodes [2]
Lights [2]
XGC-UNC (ID 163.107.41)
XCVD01-C4-A4 (ID 163.107.42)
No Groups [2]
Unsecured [5]
Xicato* [40]
All Nodes [40]
Lights [38]
Relays [1]
Sensors [1]
XIS00-D5M1LTHXXY-B (ID 12345)
Missing Group Info [6]
No Groups [3]
(ID 1) [8]
(ID 100) [3]
(ID 503) [15]
(ID 605) [2]
(ID 890) [5]
(ID 5000) [2]
Find
Filter
Timeout (s) 0
RSSI Min (dBm) -100
Show Repeated Yes
Dashboard
Device Setup
Beacons
Log
Light Setup
Groups
Scenes
Response
Light Control
Settings
View
Dim Level Control
Intensity 10.0 %
Fade Time 0.5 s
Quick Control
On
Max Level
Off
Min Level
Fade Time s
Scene Level Control
All On (1)
Fade Time s
Reported Values
Intensity %
Power W

11 RESPONSE TAB

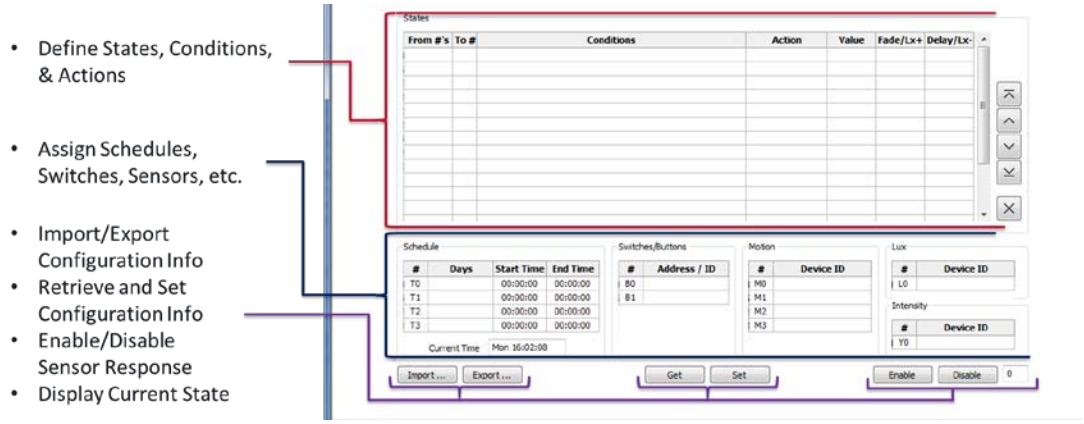
11.1 FUNCTIONAL OVERVIEW

The Sensor Intelligent Response Engine (SIRE) is a programmable state machine, where the user defines the transitions between states along with the associated action. A state transition is defined by the following:

- To State: The state number that it is going to.
  - For example: 2
- From State(s): One or more states that it can transition from.
  - For example: 0 and 1
- Condition(s): The conditions that would trigger this state transition.
  - For example: {Motion Sensor Event OR Schedule Start Time}; {Button 1 Press}.
- Action: The action to perform when the state transition occurs.
  - For example: direct intensity 1% with 1s fade; 100 lux with a slow response time.

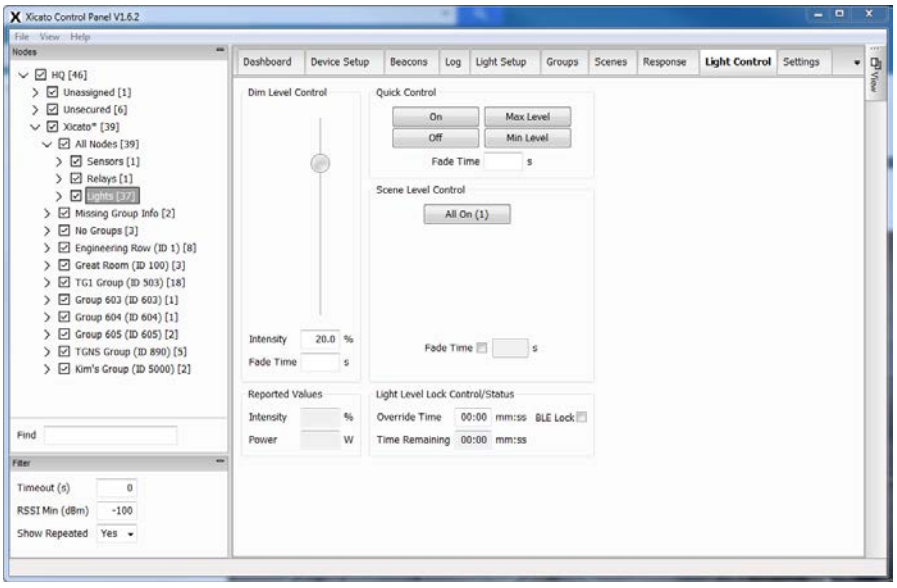


11.2 GENERAL RESPONSE PAGE SETUP



For a much deeper in-depth review of the Sensor tab with examples, refer to the **Xicato Sensor Programming Examples** document located in the **CP_Docs** folder of your Control Panel directory.

12 LIGHT CONTROL TAB

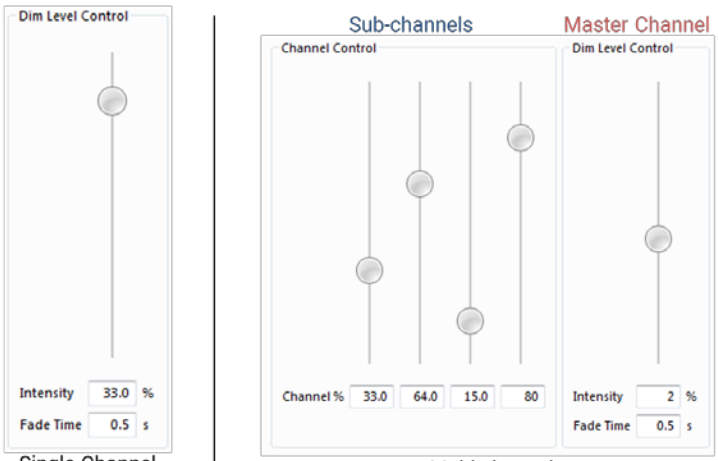


All buttons on the **Light Control** tab control either a single device or a group of lights. Use the **Node Selection Tree** to choose the single device or group of devices to control.

DIM LEVEL CONTROL

Use the mouse pointer to drag the slider to any intensity between 0-100%. When you release the slider, the device (or devices selected) will dim to that level over the fade time entered in the **Fade Time** field. You can also manually type in the desired intensity in the **Intensity** field. Press "Enter" on your keyboard to dim.

If the master channel of a multi-channel device is choosen in the device drop-down menu, sliders for all sub-channels will be availiable.

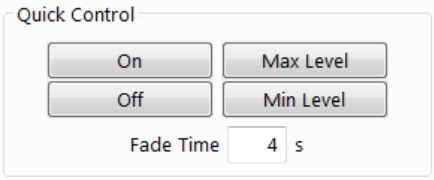


Single Channel Dimming Slider

Multi-channel Dimming Slider

QUICK CONTROL

On. Dim the device(s) to the intensity displayed in the **Intensity** field of the Dim Level Control pane.
Off. Dim the device(s) to off (0% intensity).
Max Level. Dim the device(s) to their programed maximum intensity level.
Min Level. Dim the device(s) to their programed minimum intensity level.
Fade Time. Selecting any of the four quick control buttons will dim the device(s) over the fade time entered in the check box.



SCENE LEVEL CONTROL

Click the scene button to recall the corresponding scene. Fade times are determined by what is programmed into each device from the Scenes tab. When **Fade Time** is enabled, the fade time in the text box will be used for all devices when recalling a scene.

13 SECURE NETWORKS

13.1 ABOUT SECURE NETWORKS

Device security is managed in a similar way to a Wi-Fi network; users gain access to a network of secured modules by entering a **Secure Network** name (ID) and password (PW) into the application. Through a complex algorithm, the application converts the ID and PW into a 128-bit encryption key with which it encodes all future communication with that device. The presence of a network is never broadcasted. Unless you are told of the existence of a particular secure zone and given the Secure Network ID and PW, you will not be able to see any of the data or control any of the lights in that zone.

Devices do not overlap networks. A device or sensor can only be Unsecured or in one Secure Network at a time. You can move a device between Secure Networks, but it will carry its Group and Scene numbers with it unless you delete the Groups and Scenes from the device. For more information on adding, removing, or transferring devices between networks, refer to the Device Setup tab section of this document.

BY THE NUMBERS

- The system supports over 4 billion (2^32) secure networks, each of which can support 2^15 – 1 = 32,767 individual nodes, for a theoretical total of over 140 trillion nodes.
- Each secure network can be configured with up to 16,383 groups and 65,535 scenes.

13.2 RESETTING SECURE NETWORKS

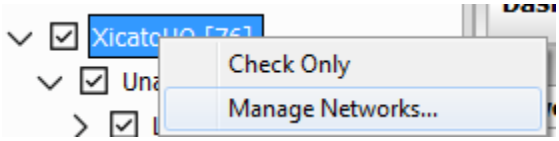
There is no way to wirelessly access a member of a Secure Network without the proper network ID and PW; therefore, Administrators must remember their IDs and passwords, or it will require physical (wired) access to the modules to reset the lights.

Resetting XIM. With physical access to the module, it is possible to restore the XIM to an Unsecure state by physically touching pins 3 and 4 together for 5 seconds while the unit is powered. These pins are not used for normal operation – they are the two pins that are neither the power wires nor the wired communications wires.

Resetting XID. With physical access to the driver, it is possible to restore the XID to an Unsecure state by inserting the end of a paper clip (or similar) into the hole on the bottom of the device closest to the output connector for 3 seconds while the device is powered.

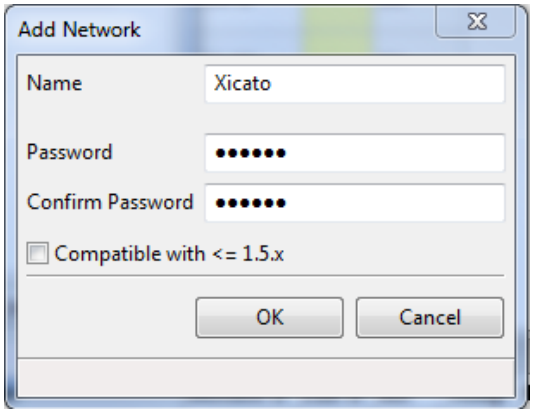
13.4 SECURE NETWORK MANAGEMENT WINDOW

To access the **Secure Network Management** window for your Site, right-click the Site name from the Node Selection Tree and select "Manage Networks…"



ADDING A SECURE NETWORK

1. Select **Add…** from the Secure Network Management window.
2. Enter the **Name** and **Password** for the Secure Network. Both fields are case-sensitive. Password must be at least 6 characters.



3. The pop-up box will have the **"Compatible with <= 1.5.x**" checkbox available, but unchecked. Leaving this box unchecked will use a new ID and key generation method than Networks, which were created in Xicato Control Panel versions 1.5.x and before. The previous ID and key generation method required the first four characters of the Network Name be unique (e.g Room 1 and Room 2 were not allowed). **If you are adding a Network that was previously created from a Control Panel version 1.5.x or earlier, check this box. Otherwise, newly created networks should leave this option unchecked.**

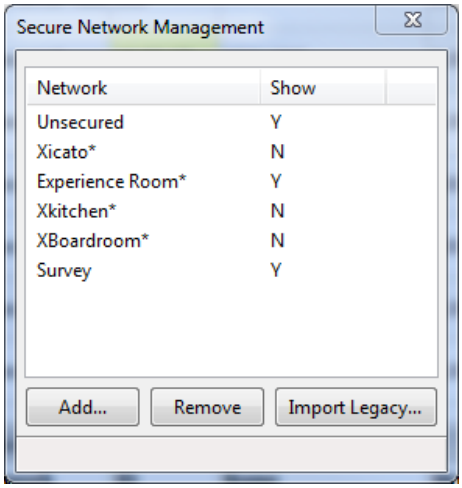
   Networks that are/were created with the old method will have an '*****' appended to their name.

Important! There is no way to wirelessly access a member of a Secure Network without the proper network ID name and password. Do not forget the credentials to the Secure Network you are creating!

4. Click **OK** to create the Secure Network.

SECURE NETWORK LIST

After creating a Secure Network, the network will automatically be added to the Network List. All Devices that are assigned to the Secure Network will now be visible. Double-click the Network name to enable/disable each Network. Devices on disabled Networks will be removed from the Dashboard. To remove Unsecure Devices or public nodes, disable the **Unsecured** network.



To add devices or nodes to a Secure Network, see *Dashboard Tab.* Individual devices and nodes cannot be assigned to multiple Secure Networks.

REMOVING A SECURE NETWORK

1. Select the network you wish to remove in the Network List in the Secure Network Management panel.
2. Click **Remove**.

The devices that were assigned to the removed Secure Network will still belong to that network; however, you will no longer be able to access or view any of the devices on that network until the network is added again.

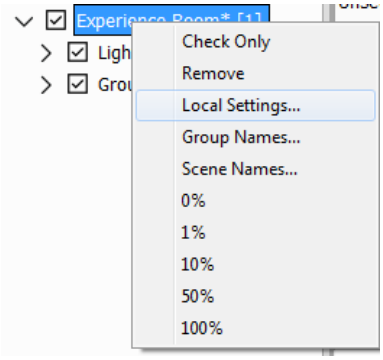
IMPORTING LEGACY SECURE NETWORK LIST

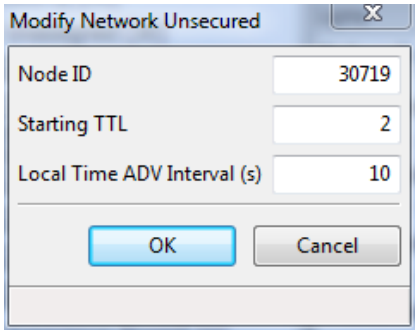
1. Click **Import Legacy…** in the Secure Network Management window.
2. Navigate to the directory where the network list is located.
3. Highlight Text file and click **Open**.

Also, note that Secure Networks can be imported when using the "**Load Site**" function from the File menu.

13.5 LOCAL NETWORK SETTINGS

Access **Local Network Settings** by right-clicking the name of the Secure Network in the Node Selection Tree and selecting "**Local Settings…"**

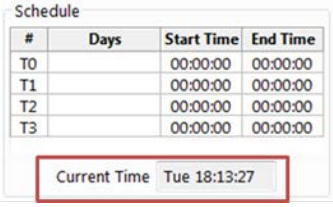




Node ID. The Device ID of the Control Panel on the selected Secure Network. The Control Panel Device ID can be different from one network to another.

Starting TTL. Messages sent from the Xicato Control Panel are retransmitted by relay nodes provided that the Time To Live (TTL) value is 2 or more. Enter the Time To Live value in the Starting TTL field. For more information on TTL and mesh networking, refer to the *Device Relay and Mesh Networking* section of this document (Device Setup Tab).

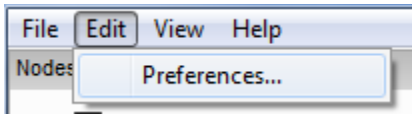
Local Time ADV Interval (s). For purposes of scheduling, the Xicato Control Panel can broadcast the local time and day of week to all devices within range. To advertise the local time (time and date settings of your PC or Mac), enter a non-zero **Local Time Advertising Interval** value.



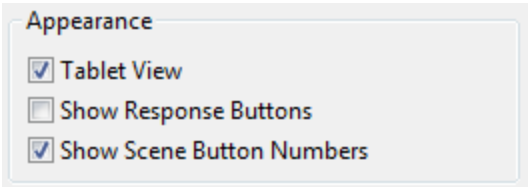
To confirm a device is receiving the local time, select the device in the Node Selection Tree, navigate to the **Response** tab, and click **Get All**. The current time and day of the week will display in the **Schedule** panel.

14 CONTROL PANEL PREFERENCES

To access the **Preferences** menu of the Xicato Control, select **Edit > Preferences…** in the main menu bar.



14.1 APPEARANCE



Tablet View. Uncheck this box to disable Tablet View. In Tablet View, the contact size of controls is increased to improve usability for tablet users. Disabling allows more content to be displayed. Enabling/disabling Tablet View requires an application restart to apply the change.

Show Response Buttons. Enable to show individual *Get/Set* buttons on section of the Response Tab.

Show Scene Button Numbers. When enabled, in the Light Control tab, the scene numbers will be included in the scene button labels.

14.2 LOGGING

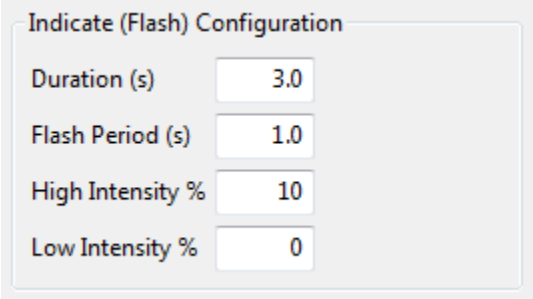
Event Logging. Enable to log Control Panel application events. Log file can be used for debugging CP application issues. Files will be created and saved to the Control Panel directory in the **Event_Logs** folder (C:\Xicato_Control_Panel_V1_6\Event_Logs). The date and time of when the log file was created will be in the file name.

Packet Logging. Enable to log BLE packets received and transmitted from the BluGiga BLE dongle. Log files will be created and saved to the Control Panel directory in the **Packet_Logs** folder (C:\Xicato_Control_Panel_V1_6\Packet_Logs). The date and time of when the log file was created will be in the file name.

Hourly Logging. Enable to log device information hourly. Log files will be created and saved to the Control Panel directory in the **Hourly_Logs** folder (C:\Xicato_Control_Panel_V1_6\Hourly_Logs). File name will be <Network Name>_<Device ID>.

14.3 INDICATE (FLASH) CONFIGURATION

Use this section to configure light indicator settings. To indicate (flash) a light, single-click the intensity column on the Dashboard Tab. The default configuration is set to flash the lights 3 times. When multiple users are commissioning a space, it is useful to have indicators unique to each user. For example, User A will flash their lights 3 times quickly while User B can flash their lights 4 times at a slower rate. This prevents the two users from accidentally mistaking their partner's indicator as their own.

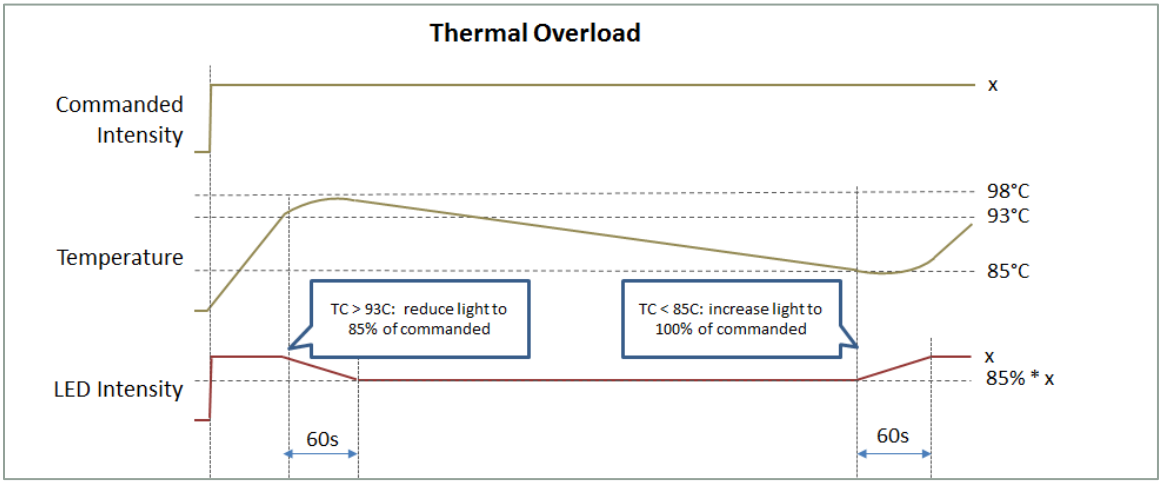


15 APPENDIX A - XIM PROTECTION

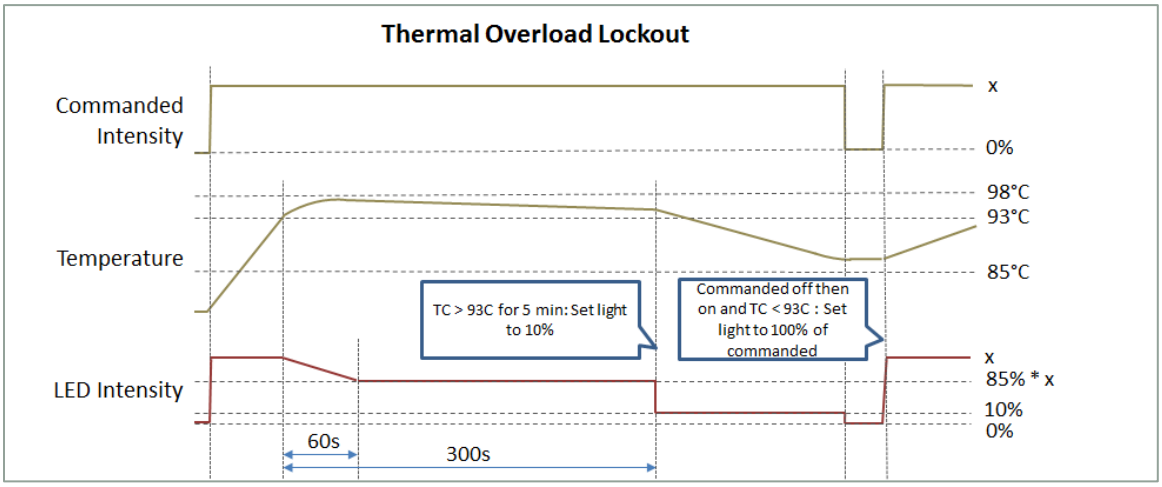
15.1 OVER-TEMPERATURE PROTECTION

LED luminaires are designed to operate within a specific ambient temperature range. Occasionally the ambient temperature will exceed the design temperature, for example, if insulation is unintentionally placed on or near the luminaire. Additionally, the thermal management system (e.g. heat sink) may get installed incorrectly, which could increase the LED module's temperature above the recommended limit. In these cases, the performance of the electrical components (LEDs and driver electronics) is placed at risk. To address this risk, XIM features over-temperature protection.

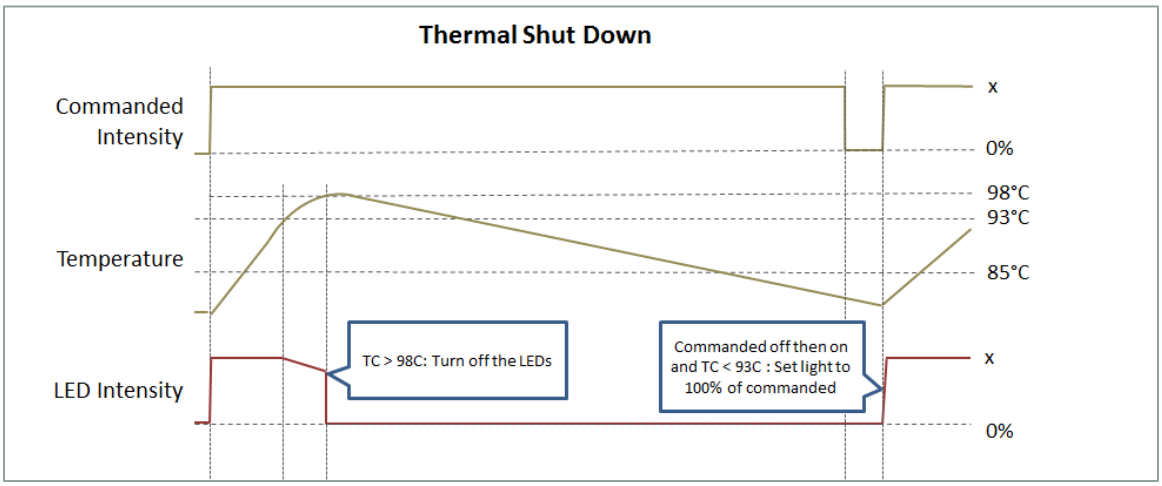
XIM contains a temperature sensor that monitors the Tc of the LEDs. If the temperature exceeds 93°C, XIM's integrated electronics reduce the intensity which then lowers both current and the temperature. The intensity is reduced to 85% of the commanded intensity over a period of 60 seconds. If the temperature drops below 93°C, but stays above 85°C, XIM will maintain the intensity at the reduced level. If the temperature drops below 85°C, XIM will increase intensity back to 100% of the commanded intensity over a period of 60 seconds. The "Thermal Overload" diagram below illustrates this behavior.



If the module temperature stays below 98°C, but stays above 93°C for 5 minutes, XIM will immediately limit the maximum intensity to 10%. The intensity limit will stay at 10% even if the temperature drops below 85°C. To remove the limit, the user must set the commanded intensity to 0% (turn off the light) and the temperature must be below 93°C. Then, when the user sets the commanded intensity to above 0% (turns on the light), XIM will set the light to the commanded intensity (no reduction). A power cycle of XIM will also remove the limit. The "Thermal Overload Lockout" diagram below illustrates this behavior.



If at any time, the module temperature exceeds 98°C, XIM will immediately turn off the LEDs. The LEDs will stay off even if the temperature drops below 85°C. To turn on the LEDs again, the user must set the commanded intensity to 0% (turn off the light) and the temperature must be below 93°C. Then, when the user sets the commanded intensity to above 0% (turns on the light), XIM will set the light to the commanded intensity (no reduction). A power cycle of XIM will also allow the LEDs to be turned on. The "Thermal Shut Down" diagram below illustrates this behavior.

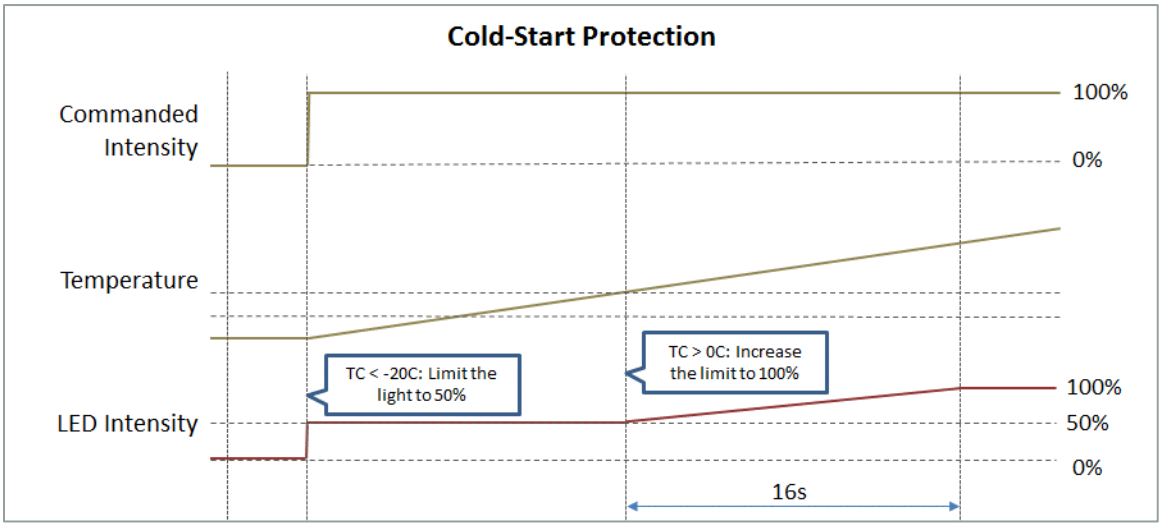


15.2 COLD-START PROTECTION

If the temperature is below -20°C, the current draw from XIM could be greater than the specified maximum current. In order to prevent overloading the power supply, XIM reduces the current by reducing the LED intensity.

If the temperature of the module is below -20°C, XIM will limit the maximum intensity to 50% until the temperature exceeds 0°C. During this time, if the commanded intensity is less than 50%, then XIM will set the LEDs to the commanded intensity. If the commanded intensity is greater than or equal to 50%, then XIM will set the LEDs to 50%. When the temperature exceeds 0°C, XIM will

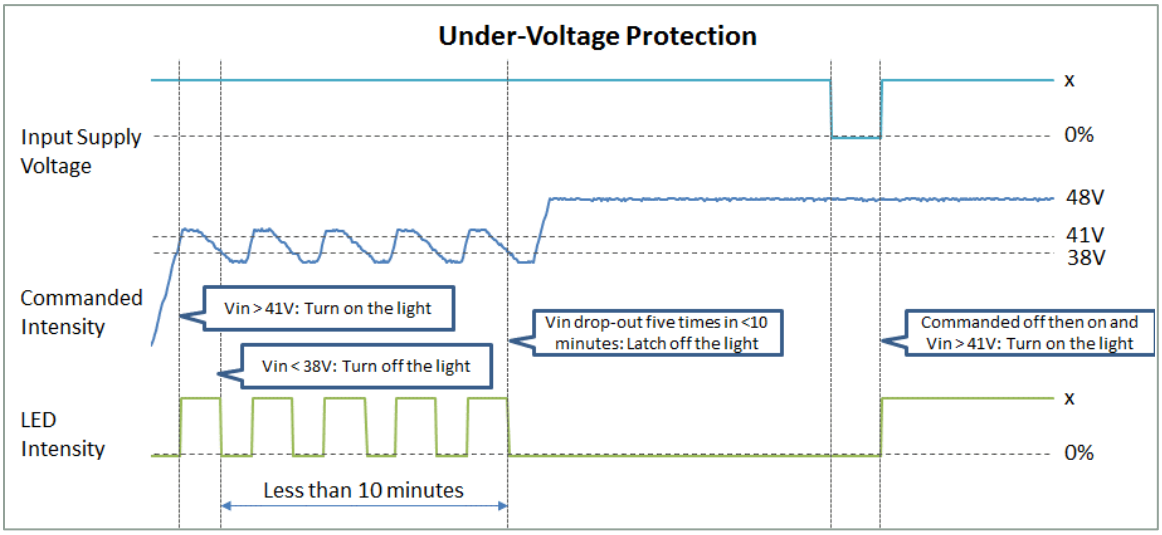
increase the limit to 100% over a period of 16 seconds. If the commanded intensity is greater than 50%, XIM will increase the LED intensity from 50% up until it reaches the commanded intensity. The "Cold-Start Protection" diagram below illustrates this behavior.



15.3 POWER SUPPLY UNDER-VOLTAGE PROTECTION

The input supply voltage must be above 41V in order for XIM to turn on the LEDs. If the input supply voltage drops below 38V, XIM will turn off.

If the current draw on the power supply is greater than the power supply's rating, the voltage may fluctuate between a voltage greater than 41V and a voltage less than 38V, which may cause XIM's to flash. If XIM detects this voltage drop-out 5 times within 10 minutes, it will shut off. In order to reset XIM, the commanded intensity must be set to off then on, or the supply voltage must drop below 5V. If the power supply voltage drop-out is so severe that the voltage drops below 5V, XIM will flash continuously until the power supply is turned off. The "Under-Voltage Protection" diagram below illustrates this behavior.



15.4 LED ARRAY SHORT-CIRCUIT PROTECTION

If there is a short circuit in the LED array assembly inside the module, it may be a safety risk. In this situation, XIM will shut off

16 APPENDIX B – SENSOR SUPPORTED CONDITIONS

Reference list of Sensor Conditions for use with the Control Panel Sensors tab.

Category	Name	Condition	Description
Condition Modifiers	AND	AND	Links multiple conditions. Value is true if both linked condition are true.
	OR	OR	Links multiple conditions. Value is true if either linked conditions is true.
	Always True	True	Condition is always true.
State Time	In State Duration Less Than	StateTime < *t*	Time in State < *t* seconds. Maximum time is 4 hours.
	In State Duration Greater Than	StateTime > *t*	Time in State > *t* seconds. Maximum time is 4 hours.
Switches & Buttons	Button Press	Bx.y Press	Button Press Event for Switch x Button y
	Button Release	Bx.y Release	Button Release Event for Switch x Button y
	Long Button Press	Bx.y PressTime > *t*	Button Press Time > (or <) *t* seconds for Switch x Button y
	Long Button Release	Bx.y ReleaseTime < *t*	Button Release Time > (or <) *t* seconds for Switch x Button y
	All Button Events Timeout	B& Time > *t*	Button Event > t seconds for all enabled Switch Buttons. Maximum time is 4 hours
Lux	Lux Less Than	Lx.y < *l*	Lux sensor x, sub-sensor y value is less than *l* lux
	Lux Greater Than	Lx.y > *l*	Lux sensor x, sub-sensor y value is greater than *l* lux
Light Control	Light Control Event	LC Evt	Direct Light Control (Direct Intensity or Scene Recall) Event
	Light Control Timeout	LC Time > *t*	Last Direct Light Control > (or <) t seconds ago. Maximum time is 4 hours.
Motion	Motion Event	Mx.y Evt	Motion Detection Event for Motion Sensor x, sub-sensor y
	Motion Timeout	Mx.y Time > *t*	Last Motion Detection > (or <) *t* seconds ago for Motion Sensor x, sub-sensor y. Maximum time is 4 hours.
	All Motion Timeout	M& Time > *t*	Last Motion Detection > *t* seconds ago for All Motion Sensors. Maximum time is 4 hours.
Schedule	Schedule Active	T0 Active	Current day is enabled and current time is between the defined start and end time. If start time is greater than end time (e.g. Start = 17:00:00, End = 08:00:00), then it will stay active into the next day. Only the day that the event starts needs to be enabled (e.g. if it starts Monday night and ends Tuesday morning, then only Monday should be enabled)

	Schedule Inactive	T0 Inactive	Opposite of T0 Active
	Schedule Start	T0 Start	Schedule has started Event. The current time has just reached the start time.
	Schedule End	T0 End	Schedule has ended Event. The current time has just reached the end time.
	Time Not Available	TNone	Current time is unknown. Condition is true when no local time advertisement has been received.
Intensity	Tracking Intensity Value Less Than	Y0 < *i*	Device Y0 intensity value is less than *i* percent.
	Tracking Intensity Value Greater Than	Y0 > *i*	Device Y0 intensity value is greater than *i* percent.
	Tracking Intensity Received Time Less Than	Y0 Time < *t*	Last light status or light change packet from device Y0 received < *t* seconds ago.
	Tracking Intensity Received Time Less Than	Y0 Time > *t*	Last light status or light change packet from device Y0 received > *t* seconds ago.