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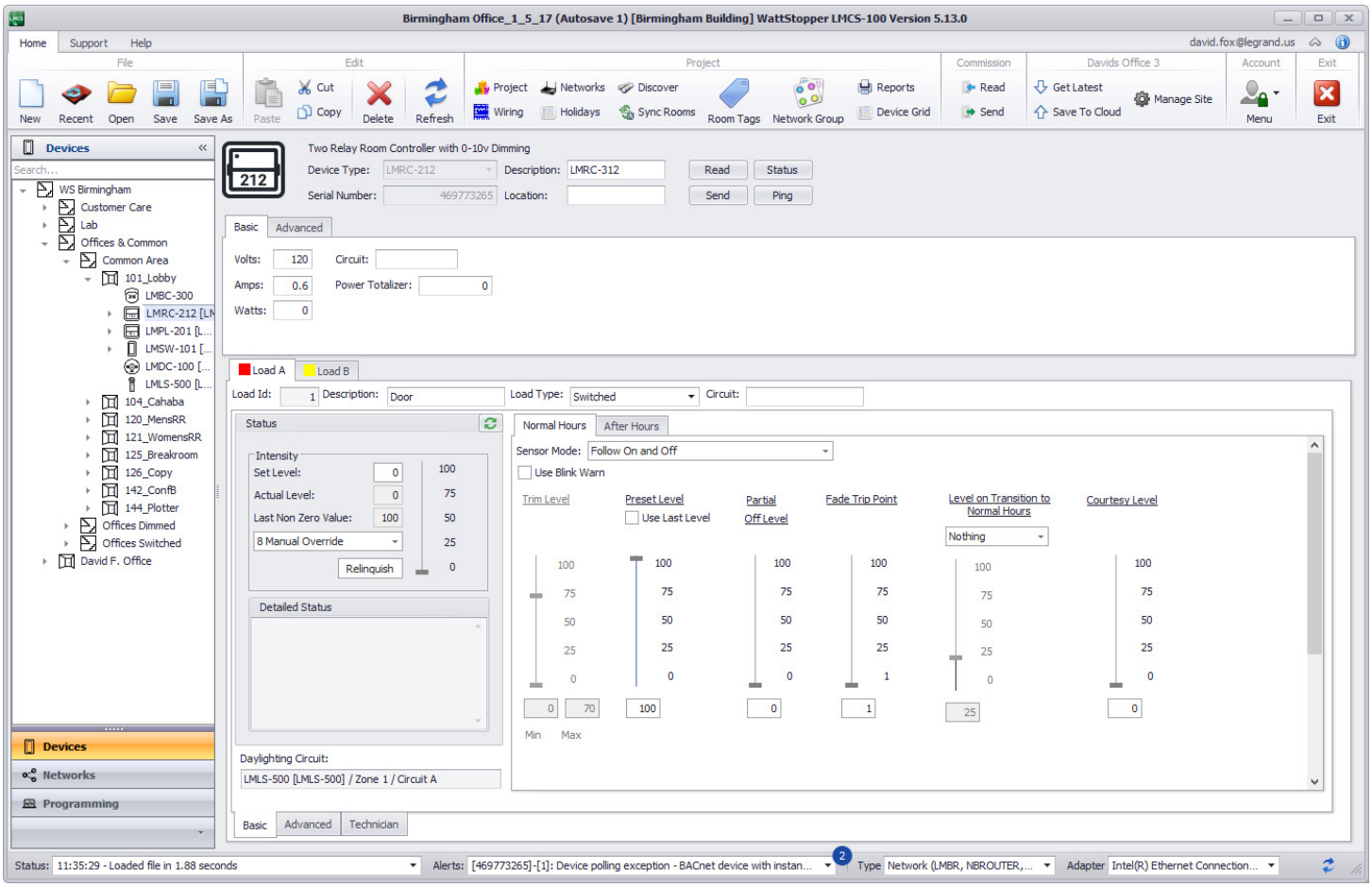
LMCS-100

Digital Lighting Management Configuration Software Version 5.15



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INTRODUCTION

DESCRIPTION

The Wattstopper LMCS-100 Configuration Software allows users to read and modify DLM parameters for easy computer based configuration. Configurations are stored within an LMCS-100 project file. For wireless DLM projects using an LMBR-650 border router, LMCS project data is also stored on the Wattstopper cloud within a “site”.

LMCS can communicate with a wireless DLM network by connecting to an LMBR-650 via the standard network ports on the PC, or connect remotely provided there is a wireless modem and a switch connected to the LMBR-650.

For wired DLM network projects, LMCS can communicate with a BACnet network via the standard network ports on the PC, provided there is a BACnet compatible router or switch connected to the DLM network. Each room in the network is connected via an LMBC-300 bridge. Additionally, LMCS can communicate with a wired DLM individual room network using the LMCI-100 Interface, which is a USB dongle that connects a computer’s USB port to the DLM local network through its RJ45 connector, using LMRJ cables.

LMCI-100

NOTE: LMRJ cables should never be plugged into an Ethernet port on a computer or wall.

LMCS-100 provides the capability to view and change DLM device parameters either while **online** with the devices on the local network or **offline** (not connected). The software may be used to configure a site for later download or directly connect to the local network in a room to read and write directly to the devices.

- While online and connected to a DLM network changes can be made to an existing site file and saved, or using the Discover feature, LMCS can automatically gather and populate LMCS with the current devices and parameters in each device
- While offline, new site files can be created and modified on or off the job site for ease of use.

LMCS-100 software features intuitive graphics to identify current DLM system settings, allowing users to easily store or modify settings. With the software, users can also reconfigure DLM devices by changing parameters and/or setting operational values. LMCS software may also be used to load new firmware with enhanced features into DLM devices without removing installed products.

This document will guide the user in installing and accessing the features of the LMCS-100 software. It is not intended to provide detailed information about the function or operation of the DLM room devices nor their parameters.

Target Audience

Users of LMCS-100 include:

- **Project Managers** – who document large projects (pre-commissioning) to help generate submittals and parameter sets that can be used in later field commissioning
- **Field Service/Installers** – who configure DLM devices on the job site, perform field firmware updates, and diagnose issues
- **Designers** – who can create reports for their contract documents
- **Sales/Sales Support/Sales Representatives** – who present DLM features and best practices
- **Commissioning Agents** – who will document (and modify) the field configuration of devices and generate reports based on those configurations
- **Building Owners/Operators** – who want to configure rooms after installation and maintain device configuration information

Applications

Designers can take advantage of these computer interface tools to simplify project design, startup and documentation. The LMCS software can be used to set up many advanced features of DLM devices that are beyond the scope of Plug n’ Go, Push n’ Learn, the LMCT-100 configuration tool for wired DLM devices, and the DLM Config App for wireless DLM devices. Furthermore, the LMCI-100 and LMCS-100 facilitate preparation of commissioning documentation, which is especially helpful for LEED projects.

KEY FEATURES

The key features in LMCS include:

- Design DLM systems and export a full suite of documentation including riser diagrams, room wiring details, sequence of operations and bills of material
- Configure wired, wireless, or hybrid DLM rooms, floors, and buildings
- Set and modify device parameters to meet code and enhance the user experience
- Update firmware of DLM devices
- Manage standard DLM loads, relay panels, and HCL tunable white dimming systems
- Create and modify time of day event schedules (requires LMBR-650, LMCP-xx, or LMZC-301)
- Full set of reports provide details and summary of rooms and DLM networks
- Connect to DLM network via LMCI-100 or BACnet network (requires BACnet compatible router or switch)
- Connect to wireless DLM networks via IP connection to an LMBR-650
- LMCS freely available from Wattstopper website

WHAT'S NEW IN THIS VERSION

New Features added in 5.15 include:

- Added support for new Color Control and CCT Control slider buttons on LMGS-150
- Added Configuration Alerts control to LMGS-150 Basic tab to display compatibility and configuration warning messages
- Added Lock Theme on Device checkbox for LMGS-150
- Improved Add New tab for LMGS-150 sliders to allow adding specific button and slider types directly
- Updated Scene button defaults to match firmware/PNG defaults and enable scene recording on LMGS-150
- Changed "Theme Colors" section of LMSI-DMX color selector dialog to display a palette of full saturation colors
- Set default Selected Color for LMSI-DMX to Red to prevent issues with luminance value of 0 when black is default
- Added Warm and Cool channel types and set as default for LMSI-DMX CCT (Warm/Cool) operating mode
- Removed Opacity, Calibration Trim, and Reversed Output settings from LMSI-DMX

New Features added in 5.14 include:

- Added support for LMSI-DMX
- Added Standby Time Delay feature, which enables setting High, Low, and Off levels with or without "Blink Warn" for Room Controllers
- Added LMBR schedule monitoring feature to enable short term advanced logging
- The LMGS-150 Home Screen is now fully customizable, as with other screens
- Additional device details are shown in the wireless room Connection Strength Diagnostic
- Added ability to Cancel a running Firmware Sync and resume where you left off
- Added ability to Relinquish Access to single/multiple sites in the "My Sites" form
- The Update Account dialog now displays the User Name
- The LMIN-104 BACnet points are now included on BACnet reports

New Features added in 5.13.6 include:

- Added LMGS-150 support to dim screen to 50% and dim screen to off after time out in minutes (requires LMGS UI 1.1+)
- Added LMGS-150 support to allow two description lines on slider buttons (requires LMGS UI 1.1+)
- Added LMGS-150 support to allow drag-drop reordering of buttons on a screen
- Added LMGS-150 support to copy/paste LMGS devices to another room

New Features added in 5.13.3 include:

- Added support for the LMRC-111-20M.
- Added support for the LMGS-150 touchscreen.
- Added support for the LMAC-131-M phase adaptive controller.
- Added support for the LMJA-9125-SM and LMJA-9300-SM.

- A Scene Cycle button type has been added to the LMIN-104, for use with pillow speaker buttons in a hospital, allowing the user to cycle through pre-selected scenes.
- The device grid now shows only relevant parameters for wired vs. wireless controllers.
- The Network Discovery form now sorts by IP address by default.
- On the Astro events tab, the “Photocell” column has been renamed to “Input” to reflect all supported input types.
- Device icons have been redesigned for a consistent look and feel.
- A Radio Status button has been added to the LMBR-650 window, providing the ability to check the Contiki server to make sure it is configured properly, and reconfigure it if it is not.

New Features added in 5.12 include:

- The Unassigned Devices tab has been removed. The Unassigned Devices selection in the Devices Tree remains as it is still used as part of discovery flow.
- Firmware files are no longer included as part of the LMCS install file. Instead the current versions must be downloaded from the cloud once the user signed in to his account.
- The Remove Leaf Device checkbox on the Wireless Device Discovery and Commissioning form has been removed, so all devices are always shown.
- A Button Events tab has been added for panels and bridges, and allows you to create events that will trigger actions based on pressing/releasing a button on a switch.
- The Dark/Light and Occupancy Groups tabs for panels and bridges have been redesigned and now include an Included Loads parameter, which provides the ability to add/remove loads from this panel whether or not they are included in the selected group.
- The Irb Occupancy Action in the wireless scene editor now can be set to “Go to Level” or “Last Non Zero”.
- Load descriptions can now be sent and read from Wireless Load Controllers with firmware version 10.89 or later.
- A new Courtesy Level parameter has been added to the Load/Relay Basic tab. This parameter provides the ability for a load that is not bound to a specific sensor in a room to go to a specified level if any sensor in the room detects occupancy.
- The Detailed Status section on the Load Basic tab now continually updates the status when connected to the controller and a time stamp shows the time of the most recent update. If the controller is not connected, this section will be blank.
- Volts and Amps values used to calculate power consumption for controllers will now only be editable for the appropriate controller types from the controllers Basic settings tab.
- Added a Send button to the Wireless Schedules editor.
- Added “Reset Password” link to Update Account form to allow resetting account passwords without having to completely log out.
- The Ctrl+F shortcut is now enabled for initiating searches while using the Device Grid.
- The “Turn Off” value for the Level on Transition to Normal Hours/After Hours drop-down has been renamed to “Relinquish” to more accurately represent what it does.

New Features added in 5.11 include:

- Added support for LMDW-220 and LMDW-211.
- LMCS has been upgraded to .NET 8.0 and the latest DevExpress library.
- Users can now deselect a wired device from the queue of devices to be firmware updated.
- The Device Grid has been reworked and now allows for easier filtering between wired and wireless devices, copying columns and rows of data more easily, and the saving of the grid view.
- Device bindings are now copy/pasted with wired rooms.
- When selecting an LMBC-650 for a scene, all the loads connected to that bridge are automatically added to the scene.
- A new GoTo Level with Priority action has been added to the wireless scene editor.
- Added support for replacing wired devices in hybrid room wired networks.
- The Room Reboot button can now be used for wireless rooms as well as wired rooms.
- Network Groups created in LMCS are now mapped to the same numbered button the LMPI board of an LMCP panel.
- Added ability to adjust TX Power for the LMFS-601 (on the Advanced tab).
- The Room Profile parameter has been added to the LMIN-104.

New Features added in 5.10 include:

- There is a new workflow for configuring wireless daylight sensors.
- Daylight harvesting parameters can now be set on LMFS-601 outside of calibration.
- The Daylight Harvesting switch on the Technician Load tab for wireless loads is now enabled but read only for all wireless loads—it can no longer be changed.
- Some default values in LMCS for wireless devices have been updated, to match changes in the firmware for those devices.
- Debug logging is disabled by default and can now be toggled in the Advanced Preferences dialog.
- Toggle Dim is no longer an option in the wireless scene editor.
- Channel and Network ID fields are now disabled when a site's only wireless devices are LMBC-650.

New Features added in 5.9 include:

- Implemented a new wireless uncommissioned discovery wizard.
- Added a "Run Multi-LMBR Config" button to primary LMBR.
- LMCS now informs the user of an LMBR-650 commissioning failure and allows retries.
- LMCS shows BACnet point counts on the wireless BACnet export table tabs.
- Changed wired firmware update form "Stop" Button to "Close" to accurately represent what it does.
- Updated all the CAD symbols for the 200 series switches.
- Renamed "Daylighting Graphs" tab to "Daylighting Preview".

New Features added in 5.8 include:

- Added support for configuring BACnet Broadcast Management Devices (BBMD) including the ability to register them as a foreign device.
- Added support for OTA updating the LMBC-650 and connected wireless devices via MS/TP in wired network hybrid rooms.
- My Sites is now sorted with the most recently modified sites at the top of the list by default.
- When setting latitude and longitude values in the site creation form, users can now copy and paste values that are formatted with a degree symbol and direction.
- Time zone can now be set on the LMBR during commissioning.
- A Get LMBR Logs button has been added to the Building control. When clicked, LMCS will pull the logs from all the LMBR-650s contained in that building, name the files appropriately, and zip them together in a single file.

New Features added in 5.7.2 include:

- Added support for LMSW-632-S

New Features added in 5.6.2 include:

- Added support for 200 series shade switches: LMSH-SW211, LMSH-SW222, and LMSH-SW241
- Added support for LMSW-220 and LMSW-241-CCT
- Added Allow Active Dim parameter on Rocker Advanced tab for all 200 series switches
- LMCS now copies all profile configurations when syncing devices/rooms.
- LMCS no longer warns about updating firmware over MSTP if there is an LMBC-650 in the room.
- Shades are no longer added to wireless occupancy scenes in hybrid rooms.
- Optimized wireless switch control loading times.
- Improved security for cloud communication.

New Features added in 5.5.2 include:

- Added/updated wireless diagnostics (table list and device details) to work with wired network hybrid rooms.
- Wired network hybrid rooms now support ping and reboot commands for the wireless battery devices.
- Allow Sync Room form to work in wired network hybrid rooms.
- Updated LMBR Network and Network Creation forms to only allow network IDs of 4-65,280.
- Added hybrid Toggle Dim.

New Features added in 5.4.1 include:

- Added support for wireless switches to trigger wired scenes in hybrid rooms.
- Added support for controlling DLM shades with wireless switches using new wireless IRB scenes.
- Partitioning profiles can now be enabled without a partitioning device in the room.
- Copy Log button added to Status form of LMBR-650.

New Features added in 5.3.8 include:

- Added support for slim switches: LMSW-610-S, LMSW-611-S, LMSW-622-S, and LMSW-641-S.
- Added support for 200 series switches: LMSW-210, LMSW-211, LMSW-222, LMSW-241, and LMSW-250.
- Added support for Wired Hybrid style rooms (programming wireless devices through a BACnet connection).
- Added support for Pulsed+ load type.
- Added support for shading loads controlled by LMIN-104.

New Features added in 5.2.4 include:

- Added support for shading devices
- LMCS now reads wireless load IDs from the data dictionary of devices

New Features added in 5.1.2 include:

- Added support for the LMFS-601
- The Read and Send functions have been greatly improved. There is now more control around which processes are running, more detail provided about what is happening while each process runs, and the ability to cancel processes in the middle of running.
- Added a Discover button to the LMBC-300. This makes discovering newly added devices to rooms much easier.
- Status and Error boxes have been added to the bottom of the LMCS window, to provide more information about what is happening behind the scenes.
- The LMBR-650 now allows the user to set a window of time that the LMBR will firmware update devices.
- The LMBR OTA update form and multi-LMBR OTA update form show more detail to the user.
- You can now send wireless scene information to the LMBR-650 directly from the wireless scene editor.
- The Diff Tool now allows you to pull specific changes from the cloud into the local site file.
- A Firmware Sync has been added to the Support tab. This allows you to download current firmware from the Cloud.
- The Preferences dialog has been expanded to include a number of new options.

New features added in 4.11.1 include:

- Added the ability to select/deselect all displayed devices in the BACnet firmware update form.
- Added firmware encryption when downloading firmware from the cloud.
- Added firmware verification.
- Added downgrading device firmware prevention.
- Updated LMEQ firmware to 1.1.8

New features added in 4.10.3 include:

- Added support for LMCPx-10V dimming panels.

New features added in 4.9.2 include:

- The LMBR-650 will now handle firmware updates for wireless devices. The new tool can be found in the Support tab by clicking the “OTA Updates” button.
- The “Add to Existing Network” feature has been improved. The wizard will no longer re-pair the room automatically which allows custom scenes set up outside of LMCS (PnL or Config App) to be preserved after bringing the devices into LMCS.
- The Wireless Device Pairing tool has been improved with a “Soft Re-pair” option that will pair the room without removing custom actions.
- Reports drop down menu is now sorted alphabetically.
- A Low Current load type has been added for LMRC-22X devices.
- Added support for the new BACnet modes on the LMBR-650.
  - Router mode: The LMBR-650 routes BACnet messages to the LMBC-650 devices. BACnet export tables on the LMBR-650 are disabled for LMBC-650 devices but are still enabled for the wireless LMRC and LMPL devices.
  - Export Table mode: The LMBR-650 does not route BACnet messages to the LMBC-650 devices. All BACnet interaction with wireless devices must happen through the BACnet export tables on the LMBR-650.

New features added in 4.8.0 include:

- Support for OpenADR 2.0b added for wireless controllers
- A new form allows registration of a public utility provider with a site to support automated demand response.
- BACnet Export table for wireless room/plug load controllers
- Ability to filter the list of items in the tree to display only specific devices

- Streamlining of Wireless Discovery wizard
- An LMBR replacement process has been added. On a site with multiple LMBRs, an LMBR can be replaced with a new uncommissioned one, provided at least one LMBR is still functioning on the site.

New features added in 4.7.7 include:

- Support for LMEQ-41 and LMTI-100

New features added in 4.7.6 include:

- BACnet network group support to LMBC-650s

New features added in 4.7.5 include:

- Support for LMRC-111-16M and LMPL-111-20M devices.
- LMBR-650 log retrieval, sensor and schedule event history.

New features added in 4.7.4 include:

- Wireless and hybrid room syncing support
- Bi-weekly (5-4-9) wireless schedule support
- Support for the LMJA-8xxx

New features added in 4.7.3 include:

- Default OTA support
- Daylighting calibration overview graphs added for wireless loads

New features added in LMCS 4.7.2 include:

- Support for LMDL-600, LMRC-611-16M, and LMPL-611-20M
- Load Advanced tab for wireless controllers is now identical to wired controllers
- Firmware update for LMBR-650

New features added in LMCS 4.7.0 include:

- Configure wireless DLM system parameters
- Design wireless DLM systems and export as riser diagrams
- Advanced configurations, options, and networks
- For single or multiple LMBR projects
- Create schedules (new to wireless)
- Create room and floor scenes (new to wireless)
- Always available latest device firmware through the Legrand Cloud
- Enables configuration of hybrid rooms
- Implement wireless DLM solution to interact with wired rooms and take full advantage of a hybrid project environment
- Riser diagrams for wireless rooms (including 120-277v connections)
- Create a project using an energy code template or user defined template (wired DLM only)

SUPPORTED PRODUCTS

Currently, LMCS supports the following DLM products:

Room Controllers and Panels

Wired Small Room Controllers

- LMRC-101, 102

Wired Fixture Controllers

- LMFC-011 – Integrated Fixture Room Controller w/ 0-10v Dimming
- LMLM-101 – Integrated CCT Fixture Room Controller
- LMPB-100 – DLM Local Network Power Booster

Wired Enhanced Room Controllers

- LMRC-111, LMRC-111M, LMRC-112, LMRC-112M – 0-10v Dimming Controllers
- LMRC-111-16M, LMRC-111-20M – 0-10v Dimming Controller
- LMRC-211, 212, 213 – 0-10v Dimming Controllers
- LMRC-221, 222 – Universal Dimming Controllers

Wireless Enhanced Room Controllers

- LMRC-611MCC – 0-10v Dimming Controller
- LMRC-611-16M – 0-10v Dimming Controller

Phase Adaptive Auxiliary Controller

- LMAC-131-M – Phase Adaptive Auxiliary Controller w/ Metering (found under Interfaces in the Device drop-downs)

DMX Controller

- LMSI-DMX – -channel DMX controller

Network Room Controllers (LMRCs w/ built in LMBC-300 – obsolete)

- LMRC-311, 312, 313 – 0-10v Dimming Controllers w/ built in LMBC-300

Wired Plug Load Room Controllers

- LMPL-101 – Digital Plug Load Room Controller
- LMPL-201 – Digital Plug Load Room Controller w/ Current Monitoring
- LMPL-111-20M – Digital Plug Load Room Controller w/ Current Monitoring
- LMPL-201DK – Digital Dekko Plug Load Room Controller (obsolete)

Wired Fixture Controller

- LMFS-601 – Integrated Fixture Sensor and Controller with Occupancy and Daylighting Sensors

Wireless Plug Load Room Controllers

- LMPL-611-20M – Digital Plug Load Room Controller w/ Current Monitoring

Panels

- LMCP-8 – 8 Relay Panel
- LMCP-24 – 24 Relay Panel
- LMCP-48 – 48 Relay Panel
- LMCP-8-10V – 8 Relay Dimming Panel
- LMCP-24-10V – 24 Relay Dimming Panel
- LMCP-48-10V – 48 Relay Dimming Panel

Occupancy Sensors

Wired Occupancy Sensors

- LMDC-100 – Digital Dual Technology Ceiling Mount
- LMPC-100 – Digital PIR Ceiling Mount
- LMUC-100 – Digital Ultrasonic Ceiling Mount
- LMDX-100 – Digital Dual Technology Corner Mount
- LMPX-100 – Digital PIR Corner Mount

Wireless Occupancy Sensors

- LMPC-600 – Wireless Digital PIR Ceiling Mount
- LMPX-600 – Wireless Digital PIR Corner Mount

Switches

Wired Switches

- LMSW-101 – 1-Button Digital Wall Switch
- LMSW-102 – 2-Button Digital Wall Switch
- LMSW-103 – 3-Button Digital Wall Switch
- LMSW-104 – 4-Button Digital Wall Switch
- LMSW-108 – 8-Button Digital Wall Switch
- LMSW-210 – 1-Button Digital Wall Switch
- LMSW-220 – 2-Button Digital Wall Switch
- LMSW-250 – 5-Button Digital Wall Switch
- LMGS-150 – Touchscreen
- LMEQ-41 – Equinox Touchscreen (found under Interfaces in the Device drop-downs)

Wired Dimmers

- LMDM-101 – 1 Rocker Digital Dimming Wall Switch
- LMSW-105 – 4-Button, 1-Rocker Digital Scene Switch
- LMSW-211 – 1-Button, 1-Rocker Digital Wall Switch
- LMSW-222 – 2-Button, 2-Rocker Digital Wall Switch
- LMSW-241 – 4-Button, 1-Rocker Digital Scene Switch

Wireless Dimmers

- LMDM-601 – Wireless 1 Rocker Digital Dimming Wall Switch
- LMSW-605 – Wireless 4-Button, 1-Rocker Digital Scene Switch
- LMSW-610-S – Wireless 1-Button Digital Slim Switch
- LMSW-611-S – Wireless 1-Button, 1-Rocker Digital Slim Switch
- LMSW-622-S – Wireless 2-Button, 2-Rocker Digital Slim Switch
- LMSW-641-S – Wireless 4-Button, 1-Rocker Digital Slim Switch

CCT Control Devices

- LMSW-105-CCT – 4-Button, 1-Rocker Digital CCT Switch
- LMSW-241-CCT – 4-Button, 1-Rocker Digital CCT Switch
- LMTS-101-CCT – 1-Button CCT Timer Switch

Wall Switch Sensors

- LMDW-101 – 1-Button Digital Dual Tech Wall Switch Occupancy Sensor
- LMDW-102 – 2-Button Digital Dual Tech Wall Switch Occupancy Sensor
- LMDW-220 – 2-Button Digital Dual Tech Occupancy Sensing Standard Switch
- LMDW-211 – 1-Button, 1-Rocker Digital Dual Tech Occupancy Sensing Standard Switch
- LMPD-102 – 2-Button Dekko Digital PIR Wall Switch Occupancy Sensor (obsolete)
- LMPW-101 – 1-Button Digital PIR Wall Switch Occupancy Sensor
- LMPW-102 – 2-Button Digital PIR Wall Switch Occupancy Sensor

Daylighting

Wired

- LMLS-400 – Single Zone Switching & Dimming Closed Loop Digital
- LMLS-500 – Three Zone Switching & Dimming Open Loop Digital
- LMLS-600 – Single Zone Switching & Dimming Dual-Loop Digital

Wireless

- LMDL-600 – Wireless Digital Photosensor

Interfaces

- LMBC-300 – Digital Network Bridge for wired rooms
- LMBC-600 – Wireless Digital Network Bridge (Discontinued and replaced by LMBC-650)
- LMBC-650 – Wireless Digital Network Bridge
- LMZC-301 – Zone Controller
- LMAC-131-M – Phase Adaptive Controller
- ELCU-100 – Emergency Lighting Control Unit (Non-DLM Device for Documentation)
- ELCU-200 – Emergency Lighting Control Unit (Non-DLM Device for Documentation)
- LMDI-100 – Digital RS-232 Interface
- WRC-TX-LM – RF Plug Load Controller
- LMIN-104 – Digital Input Interface
- LMIO-101 – Digital Input/Output Interface
- LMIO-201 – Analog Sensor Interface
- LMIO-301 – Digital Photocell Input Module
- LMIO-102 – Digital Partition Device
- LMOR-102 – Low Voltage Dual Relay Interface

- LMPS-104 – Digital Partition Switch
- LMTI-100 – DLM Touchscreen Injector (for LMEQ-41)

Shading

- LMSH-PS602 – 2 Shade DLM Shade Controller
- LMSH-PS610 – 10 Shade DLM Shade Controller
- LMSH-MCA140 – DLM Motor Control Assembly, 40:1 Gear Ratio
- LMSH-MCA173 – DLM Motor Control Assembly, 73:1 Gear Ratio
- LMSH-SW101 – 1-Button Shade Switch
- LMSH-SW102 – 2-Button Shade Switch
- LMSH-SW104 – 4-Button Shade Switch
- LMSH-SW105 – 1-Button Shade Scene Switch
- LMSH-SW211 – 1-Button, 1-Rocker Shade Switch
- LMSH-SW222 – 2-Button, 2-Rocker Shade Switch
- LMSH-SW241 – 4-Button, 1-Rocker Shade Scene Switch

Additional Components Displayed in Networks View

- LMSM-3E or LMSM-6E – Segment Manager
- LMJA-8125 or LMJA-8300 – Network Controller
- LMJA-9125-SM, LMJA-9300-SM – Network Controller
- LMNC- (3, 4, 5, 6, 7, 8, 9, or, MT) – Enclosures
- NB-SWITCH, NB-SWITCH-8, or NB-SWITCH-16 – Switches
- NB-ROUTER
- LMBR-600 Wireless Router (Discontinued and replaced by LMBR-650)
- LMBR-650 Wireless Router
- LMTI-100 Touchscreen Injector
- Modems

INSTALLING THE LMCS-100 SOFTWARE

OPERATING SYSTEM ACCESS RIGHTS

The LMCS-100 software is recommended for installation on standard notebook or desktop computers running Microsoft Windows 10 or later. .

In order to install the software the installer must have local administrator access rights to the computer. If your computer is administrated by your company's IT department, a qualified IT representative may need to perform the installation.

INSTALLATION FROM THE WEB

Using any of the common browsers, download the installer by going to "www.legrand.us/wattstopper" and searching for LMCS, or from the following address:

https://www.legrand.us/wattstopper/software

If you will be using the LMCI-100 device then you will need to download both the LMCI-100 Device Driver and the LMCS-100 installer. The LMCI-100 Device Driver should be installed before inserting the USB device into the computer and before running LMCS-100.

If LMCS-100 is to be used for documentation purposes only, or if you will be accessing a DLM network using and LMBR Border Router or a Network Controller, then you may skip the LMCI-100 installation and proceed directly to the LMCS-100 installation.

After the download is complete, do the following to install the software:

Follow the instructions on the screen by first installing the LMCI-100 driver (if needed) and then installing the application. The software will start up automatically once the installation is complete, a new Icon (called LMCS-100) will appear on the desktop and a new program link will be created on the Windows Startup menu.

NOTE: Your browser may be configured to warn you upon the installation software that the publisher cannot be verified. This is expected and you should simply continue by clicking on "Run".

LMCI-100 Device Driver

Install the device driver by double clicking the downloaded driver file. The software will normally pop up a temporary command line window and automatically install the driver. No other indication will be given that the installation has finished. If a command line window is not displayed then the device installer needs to be run again.

LMCS-100 Application

Double click the LMCS-100 .exe file downloaded from the web page above. The installer will automatically determine the prerequisite software and install necessary packages as needed.

GETTING STARTED

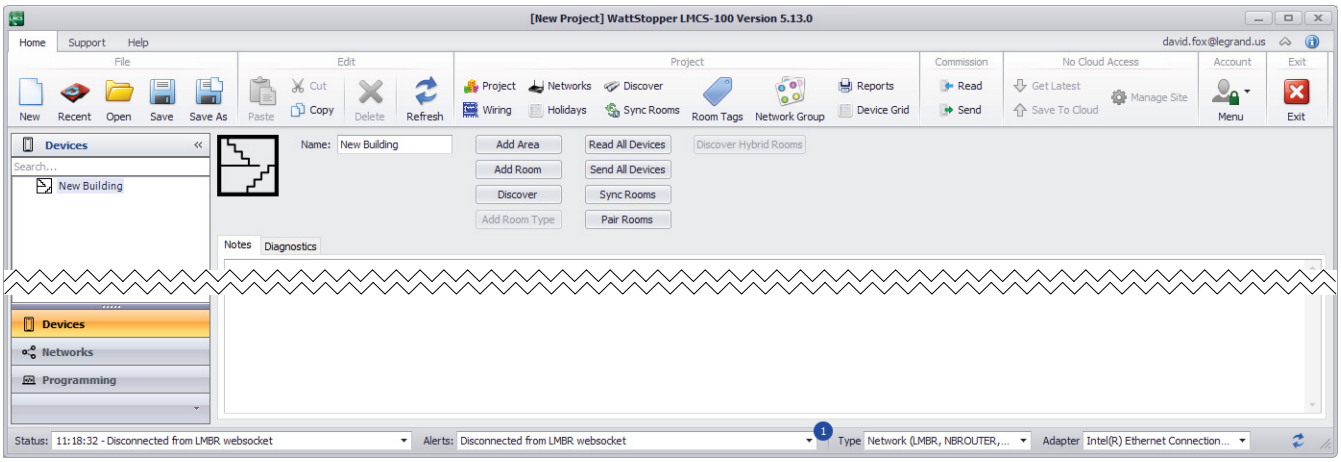
There are multiple ways that the LMCS-100 application can be used:

- LMCS can be used to create a Project file prior to the equipment being installed in a building. In this way, device parameters can be defined before the start up technician arrives at the site. Those parameters can then be loaded into all the devices after start up.
- LMCS can connect directly to a room controller and all connected devices in a single room, by using the LMCI-100.
- LMCS can connect to a wired DLM network that includes LMBC-300 network bridges and an NB Router or other BACnet compatible router.
- LMCS can connect to a wireless DLM network that includes an LMBR-650 border router and wireless room controllers.
- If both wired and wireless rooms exist within a building, the wired rooms can be added to the wireless network through the use of an LMBC-650 network bridge in conjunction with the LMBR-650, or an LMBC-600 with an LMBR-600.

Depending on the intended use of LMCS the initial step after booting up LMCS will differ. This section provides a summary of the steps you must take for each application.

Start the LMCS-100 software by either double clicking on the green LMCS-100 icon on your desktop or by selecting the program via the Windows Start menu.

The LMCS-100 application will automatically start up on the Home Tab and a 'New Project' is automatically opened. A project consists of the settings for one or more of the devices in the DLM network. Normally, all of the devices would be included in the project, either by adding them manually when offline, or discovering them when online. Only a single project can be open at a time.



NOTE: When you first open a project, a dialog appears asking if you want to set an Energy Code for the project. If you click **Yes**, the **Project** dialog opens where you can select from pre-defined templates set up for specific energy codes. For details, see "Project Dialog" on page 40. **If you choose to save a default code in the Project dialog, then this opening dialog will not appear when you open a project.**

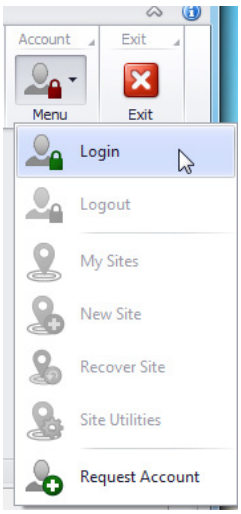
The ribbon at the top of the window contains three tabs: **Home**, **Support**, and **Help**. Two sections are found below the ribbon. On the left you can switch between viewing **Devices**, **Networks**, and **Programming** (for wireless scenes and scheduling). The right side will display information on the currently selected device, network, scene or schedule.

CREATING AN ACCOUNT AND LOGGING IN

Creating an account and logging in allows you to connect to the cloud, where you can store site files and also download current firmware files for all DLM devices.

Logging in to Your Account or Requesting an Account

1. To log in to your account, click **Menu** in the Account section of the ribbon and select Log In.



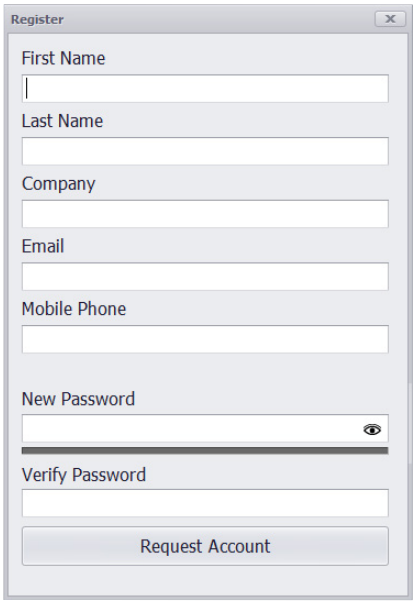
2. Enter your User Name and Password. Once logged in, the "lock" in the Account icon will change from red to green. If you select **Login Automatically**, the next time you open LMCS it will log you in and you won't have to go to this screen.

NOTE: You must be connected to the internet the first time you log in to your account on a specific PC. This will download the needed security certificates that will be used with the site. Once this is done, it is possible to log in while off-line, create sites, and then upload them to the cloud at a later point. If you log in on a different PC at a later time, you will once again need to be initially connected to the Internet.

If you do not already have an account, you can request one from within LMCS (you must be connected to the internet). Note that it is also possible to request an account through the DLM Config App for mobile devices.

1. Select “Request Account” from the menu to open the **Register** dialog.

Register Dialog



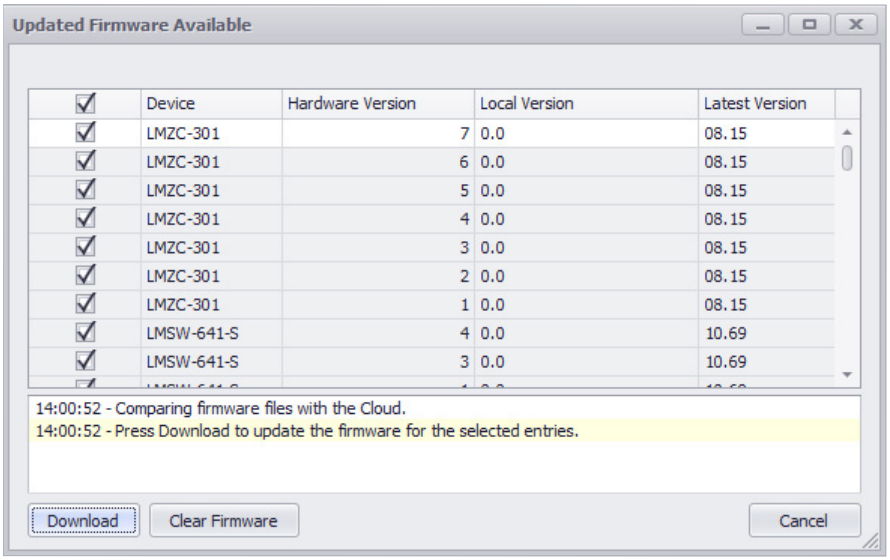
2. Enter information in all fields. Passwords must follow these rules: at least 8 characters long, containing at least one capital letter and one number.
3. After requesting an account, an email will be sent to the address entered here once the account has been authorized. LMCS will not provide any indication that the account has been authorized.

Downloading Firmware Files

Once you have logged in and are connected to the cloud, LMCS automatically checks for updated firmware files for both wired and wireless devices. If the software was just installed, no firmware files exist yet in the local LMCS files on the PC, and therefore should be downloaded.

Once the files are on the local LMCS install, they can then be transferred to any devices in the site that are in need of an update. For details on updating wired devices, see “Update Firmware” on page 134. For wireless devices, see “OTA Updates for Wireless Devices” on page 138.

Updated Firmware Available



By default, all files for which there is an update are selected, but you can select or deselect individual files. Click **Download** to begin the download process. Once completed, the Status bar will inform you that all files are synced.

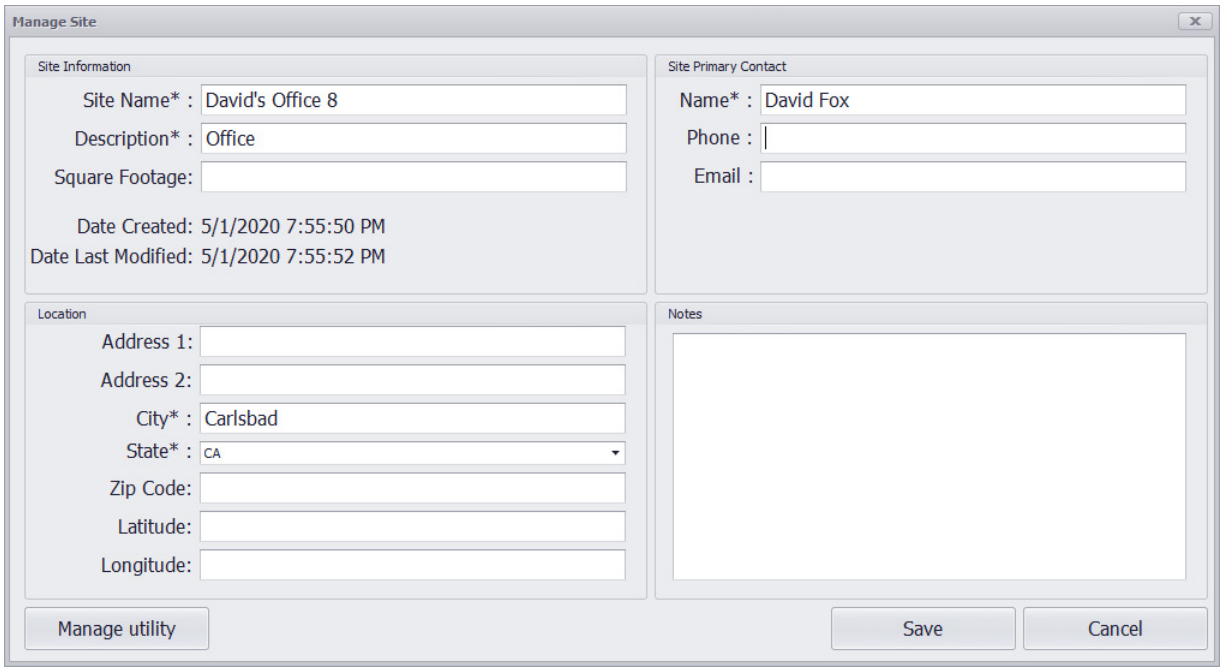
If you click **Clear Firmware**, LMCS will delete **all** firmware files stored on the PC, and is not dependent on which files are selected within the window. Using this option will allow you to re-download all firmware files, the next time LMCS is opened.

Creating a Site

After logging in, the next step is to create a Site. A site allows you to save all Project parameters onto the cloud, so they can easily be accessed from more than one computer. Additionally, the Site provides security, as only the user who creates the site and any other users who are specifically authorized will be able to access the site data as well as the devices themselves.

1. From the **Menu** in the Account section of the ribbon, select “New Site”. The **Manage Site** dialog opens.

Manage Site



2. You must enter all fields marked with an asterisk. Others are optional.

   The Site Primary Contact section is used if you need to recover site information. A code can be sent to the user from Wattstopper support, to unlock the site information.

   The **Latitude** and **Longitude** fields are for informational purposes only. (There are other Latitude and Longitude fields, in the **Set Site Time** dialog (see page 141) which are used for Astro scheduling, to determine the exact times of sunrise and sunset. But any information entered here does not affect the fields in that dialog.)

   If you click **Manage Utility**, the **Register Site With Utility** dialog opens, for use with Automated Demand response (ADR). For details, see “Account Section” on page 25.

3. Click **Save**. LMCS will create the site on the cloud. Only the site is created at this point, with no project attached. Once you have created a project, or begun partial work on it, clicking **Save** will save that project to disk. To save the project to the site, click **Save To Cloud**.

   NOTE: If you leave LMCS open for more than an hour, you will need to login/logout in order to enable saving to the cloud again.

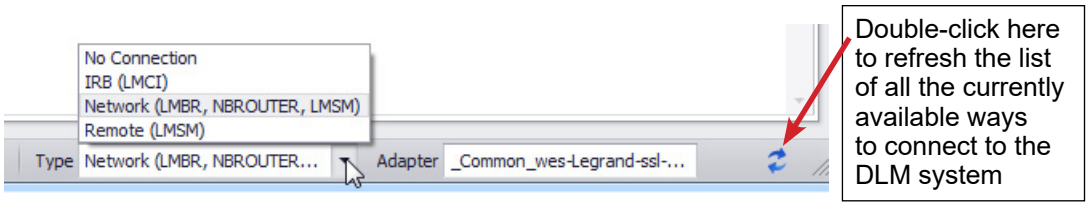
SETTING THE NETWORK CONNECTION

Working Off-Line

At the bottom of the window are the **Type** and **Adapter** drop-downs. If working off-line, set **Type** to “No Connection”. At this point, you can begin to create your project. See “Methods for Creating a Project Off-line” on page 40 for details.

Connecting to a Network or Room

If connecting to a room or network, select the connection appropriate to the project you are working on. If you select “Network” or “Remote”, select the **Adapter** that provides the connection to that network.



For applications with multiple rooms networked together using BACnet, the available BACnet networks will show up in the list. The “Remote Connection” value allows you to remotely connect to a Network Controller via an Internet connection for remote discovery, read, and send commands.

CONNECTING TO A SINGLE WIRED ROOM

If connecting to an individual wired room, plug the LMCI-100 into an available USB port on the computer running the LMCS-100 software. Plug an LMRJ cable from the DLM Local Network into the RJ45 port on the LMCI-100.

Next, select “IRB (LMCI)” from the **Type** drop-down. At this point, you can discover the devices in the room and load their parameters, send parameter values to the room that were already created in an off-line project, or modify current parameters in real time and send them to the devices. See “Discovering Devices on a DLM Room Network” on page 93 and “Transferring Project Data Into Site Devices” on page 115 for details.

CONNECTING TO A WIRED ROOM NETWORK

If connecting to a network of wired rooms, connect the PC to a BACnet compatible router via Ethernet. Each will require an LMBC-300 network bridge, for BACnet connection to the room. In larger networks, you may connect to a switch and from the switch to a router. In the case of a smaller network using an LMSM-3E Segment Manager, you can connect directly to the Segment Manager and use the routing capabilities built into the Segment Manager.

As mentioned previously, for **Type**, select “Network” or “Remote”, then select the **Adapter** that provides the connection to that network. Once connected, you can discover the devices in the room and load their parameters, send parameter values to the room that were already created in an off-line project, or modify current parameters in real time and send them to the devices. See “Discovering Devices on a Wired BACnet/IP Network” on page 93 and “Transferring Project Data Into Site Devices” on page 115 for details.

CONNECTING TO A WIRELESS ROOM NETWORK

When connecting to a wireless network, several steps are required to ensure the commissioned network is secure and accessible only to those with proper permissions.

The following is a basic summary of these steps:

- Create a site, or open a previously created site.
- Select the connection **Type** and **Adapter** use to connect to the network. (This can be done before or after logging in and creating a site.)
- Discover the LMBR-650s or LMBR-600s used in this site. This will lock the LMBRs so that they can only be accessed by your account or other authorized accounts.
- Discover all wireless DLM devices within range of the LMBR. Only devices with the same Network and Channel settings as the LMBR will be found. New devices all ship with default values, so in a new site all devices should be found.
- Select the devices that you want to be part of the network with the LMBR. After selection they will migrate to a new Network with the LMBR. In a scenario with multiple LMBRs, each LMBR will have its own Network and Channel settings, so each group of devices you select will migrate to the Network of that LMBR.
- For each room pair the wireless devices together so that they only communicate with each other and not with devices in other rooms.

Once these steps are complete, can you adjust device parameter values for rooms that were already creating using an off-line project, or modify current parameters in real time and send them to the devices.

Discovery and Device Pairing

Once the site has been created, the next steps are to discover the LMBRs, then to discover the DLM devices communicating with the LMBRs. In a case where there are multiple LMBRs, you will also assign which devices will be on a network with a specific LMBR.

Finally, for each room, you pair the wireless devices together so that they only communicate with each other and not with devices in other rooms. For details on the wireless discovery and pairing process, see "Creating a Project While Connected to A Wireless Network" on page 61.

CONNECTING TO A NETWORK WITH BOTH WIRED AND WIRELESS ROOMS

In the case of a network with both wired and wireless rooms, the wired rooms will include an LMBC-650 network bridge. The process of connecting to this network is identical to the process for an all wireless network. However, during the wireless discovery process, for rooms with wired devices you will only discover the wireless bridge in each room. After that, from within the page for the bridge itself, you can run a separate discovery to discover the wired devices connected to that bridge. Additionally, an LMBC-650 can support a hybrid room with both wired and wireless devices. In this case, the wireless devices are discovered along with the LMBC-650, and the wired devices discovered separately.

THE LMCS-100 USER INTERFACE

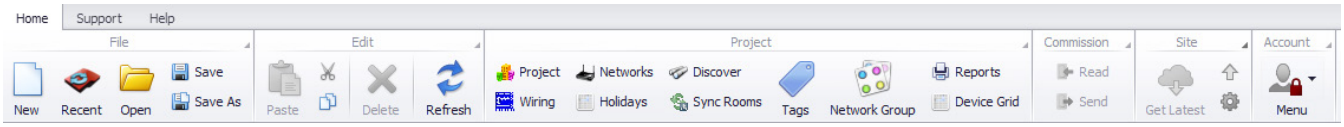
This section provides an overview of the different sections of the LMCS user interface.

Home Tab

The **Home** tab is divided into six sections. The first two, File and Edit provide the typical file and editing functions found in most applications. The rest provide access to specialized functions, commissioning, and the cloud.

NOTE: As you resize the window, the icons will change in size to accommodate the available space, so your ribbon may look different than the screenshot below.

Home Tab



Project Section

The **Project** section contains a number of specialized functions related to a project.

- **Project** – Enter details about the project. In addition, you can document the need for specific firmware versions for the various devices used in the project. For details, see "Project Dialog" on page 40.
- **Wiring** – Document specific DLM Device details as they relate to the project drawings. For details, see "Documenting Wiring Diagrams for Rooms" on page 54.
- **Networks** – Document BACnet router information. See "Network Documentation" on page 124.
- **Holidays** – Specify holidays, used for scheduling normal hours/after hours with the LMCP or LMZC. See "Setting Up Holidays For Use With Schedules" on page 58.
- **Discover** – Discover devices connected to the network. This option is only enabled if you are connected to a network. The connection type (LMCI-100, BACnet/IP, or Remote) will determine the Discovery process and the steps that must be taken. See "Discovering Devices on a DLM Room Network" on page 93 and "Discovering Devices on a Wired BACnet/IP Network" on page 93.
- **Sync Rooms** – Synchronize the project file with the devices in multiple rooms in an area. This option is only enabled if you are connected to a BACnet network. See "Synchronizing an Area" on page 120. Note that there is a separate **Sync Devices** option for synchronizing devices for a single room,via BACnet or the LMCI-100. See "Synchronizing a Room" on page 117.
- **Tags** – Create tags and assign rooms to the tags. When an LMCS-100 file is imported into the LMSM-3E and LMSM-6E Segment Manager, these tags are used to create Custom Groups. Tags are also displayed when viewing a specific room in LMCS. See "Creating Tags for a Project" on page 51.
- **Network Group** – In this dialog, you create groups and assign loads (or relays in a panel) to these groups. Network Group ID's can be assigned to Switches, Occupancy Sensors, and Schedules for control functions. This feature is designed to operate in conjunction with the LMCP, LMZC, and LMBC product lines. See "Creating Network Groups" on page 54.
- **Reports** – Allows you to select and run a report. See "Reports" on page 235.
- **Device Grid** – In the device grid, all devices in the project are listed in a grid similar to a spreadsheet. This provides the ability to quickly view settings for multiple devices, and copy and paste settings from one device to another. See "Using the Device Grid to View & Program Parameters" on page 230.

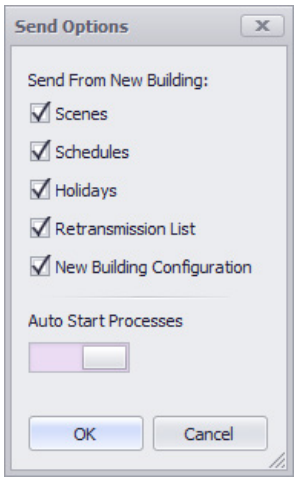
Commission Section

The **Commission** section is used to send project data to all the devices in the project or read the current parameter values from those devices and load them into the project file. Note that this is global for all devices in the project. In addition to sending/reading parameter data for each device, the buttons in this section also send/read wireless scenes and schedules. There are also read and send options available for individual rooms or even individual devices, which are described in the related sections of this guide.

This section is only enabled after you have run the discovery process for either wired or wireless DLM devices.

When you click the **Read** or **Send** buttons, a dialog opens which allows you to select what information is read/sent. The “Scenes” option applies only to wireless scenes and the “Schedules” options applies specifically to wireless schedules. The “Holidays” option applies to the holidays set in the Holidays editor. The “Retransmission List” option is for use when you to pair devices that are on different networks (LMBRs) and the messages for devices on the list will be rebroadcast to other LMBR networks. The last option will show the building name and applies to device data for all devices in the building.

Send Options



Site Section

The **Site** section will be disabled until you have logged in to your user account and created or opened an existing site. Once enabled, **Save To Cloud** will save the current project settings to the cloud and **Get Latest** will download the values saved on the cloud into your current project file. **Manage Site** opens the Manage Site dialog to allow you to edit the values you entered when creating the site.

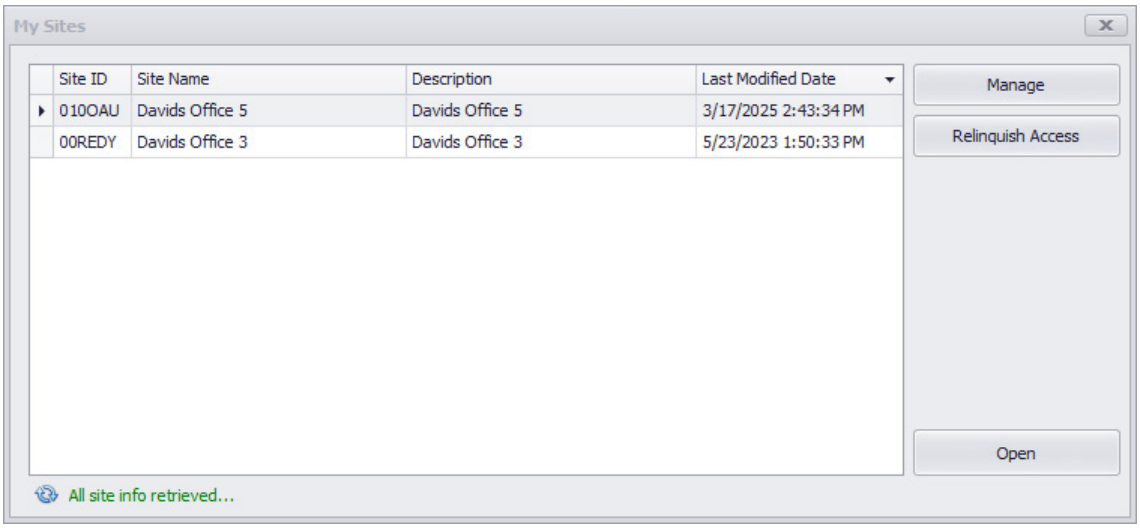
Account Section

The **Account** section contain a single drop-down menu with the following options:

- **Login** and **Logout** – enables or disables connection to your account in the cloud
- **My Sites** – Once logged in, selecting this option opens the My Sites dialog, which displays a list of all sites you have created or have access to. Select the desired site and click **Open**. LMCS downloads the project data and then you are asked to choose a location to save the project on the PC. Click **Manage** to open the Manage Site dialog and edit information for the currently highlighted site.

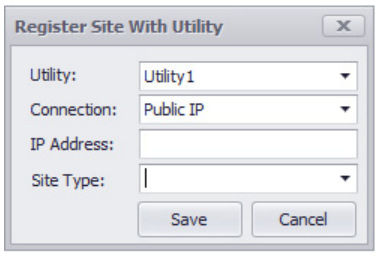
  NOTE: If you click **Relinquish Access**, you will lose access to the this site.

My Sites



- **New Site** – This option is only enabled if you do not have a project file open that is already associated with a site. For details on creating sites, see "Connecting to a Wireless Room Network" on page 23.
- **Recover Site** – This option is used if something happens to the access key that is downloaded into your computer from the cloud when a site is created. This key is also used to secure the LMBR-650 for the site. If something happens to the computer and the access key is lost or corrupted, this wizard will recover the key. You will need to be connected to the internet to do this. You will also need both the name of the site and the name (ID) of the computer you used when you created the site in order to recover the key. The recovered key can be downloaded to the same computer, or even to a new computer if the old one no longer functions or is not in use. For details, see the following page.
- **Site Utilities** – This option opens a dialog that allows you to set up the system for connection to your local utility so that the system can respond to Automated Demand Response (ADR) commands.

Register Site With Utility

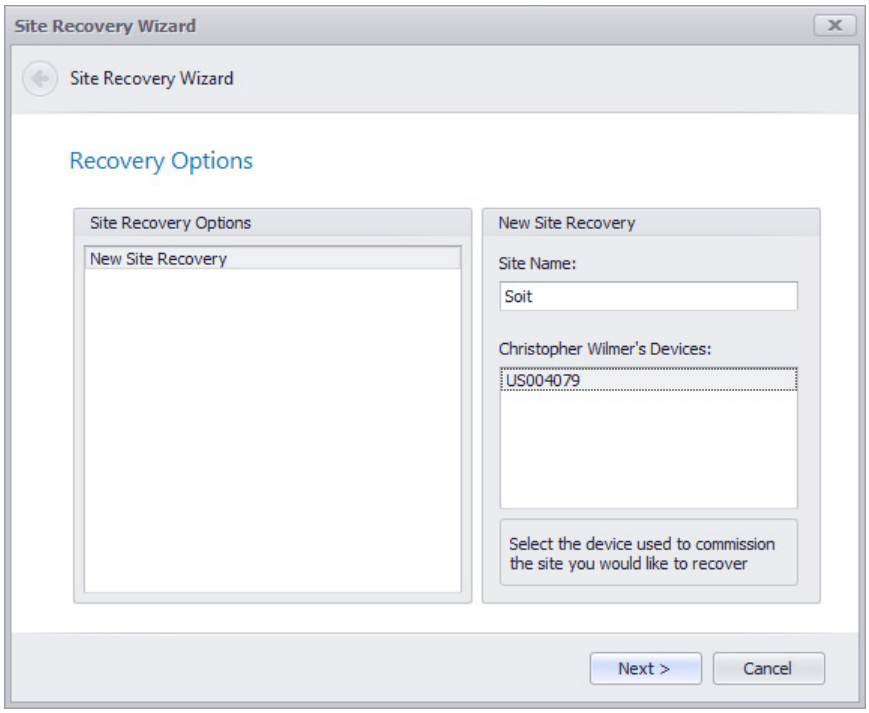


1. Select the local **Utility** from the drop-down list.
2. Select the **Connection**. There are two options, "Public IP" and "Cradlepoint Modem", which is for use with RACCESS.
3. If you selected "Public IP", enter the **IP Address** of the VPN that the customer provides for connection to the internet. If you entered "Cradlepoint Modem", the third parameter changes to **MAC Address**. Enter the MAC address of the RACCESS modem.
4. Select the **Site Type**. This will be either "Wired" or "LMBR-650". For a hybrid system, select "LMBR-650".
5. Click **Save**. The site is now set up to receive ADR commands from the utility.

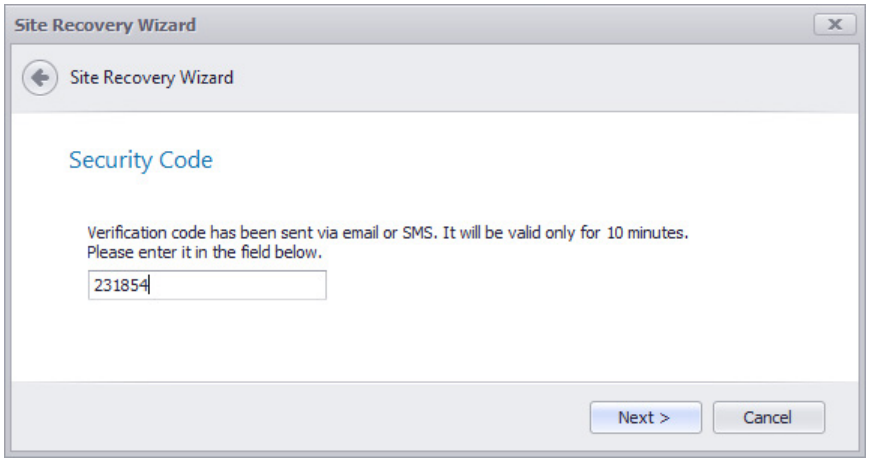
- **Update Account** – This opens a dialog that allows you to update your name, company, and phone number.

Site Recovery

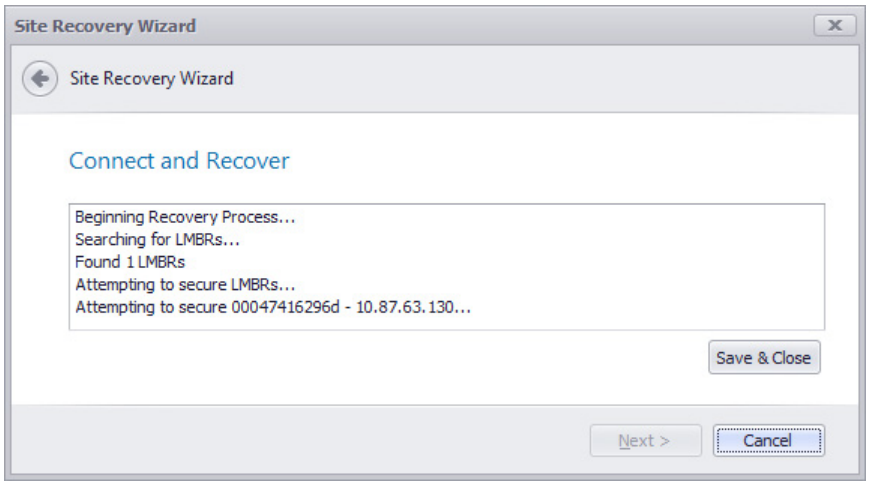
When you select **Site Recovery** from the menu, the Site Recovery Wizard opens.



1. Enter the name of the site. The devices section will show the names of computers you have used when commissioning sites. If more than one is displayed, you must select the computer you used when the site was created. Click **Next**.

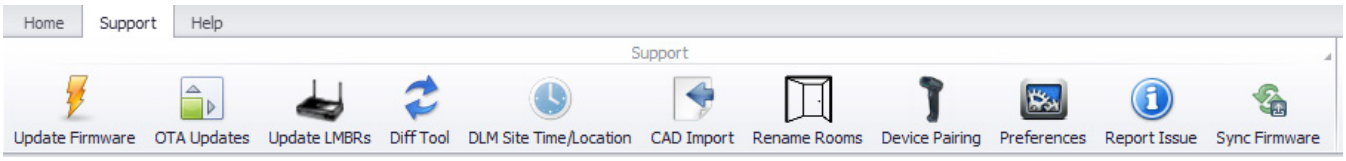


2. A verification code will be sent to you via text or email, using the information you entered when creating your account. The code is sent via text unless you selected the **Prefer Email** check box. Enter the code and click **Next**.



3. The access key will be downloaded to your computer and LMCS will begin reestablishing contact with the LMBR-650 and securing it with the access key. When finished, click **Save & Close** to exit the wizard.

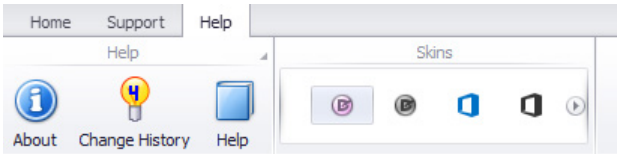
Support Tab



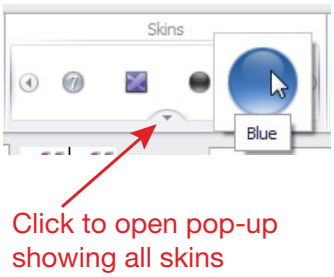
The **Support** tab contains a number of specialized functions, including upgrading firmware, setting user preferences, and comparing two different project files.

- **Update Firmware** – Update the firmware of DLM devices in the network. See "Update Firmware" on page 134.
- **OTA Updates** – This function will update firmware in multiple wireless devices. You can select which types of devices to update. See "OTA Updates for Wireless Devices" on page 138.
- **Update LMBRs** – Update the firmware in a one more LMBR-650s in the network. See "OTA Updates for Wireless Devices" on page 138.
- **Diff Tool** – This utility provides the ability to compare two different LMCS project files. For example, at a site where rooms are not functioning as designed anymore, you can discover the entire site into another LMCS file, save it, and then compare it to the original LMCS file used during start-up. See "Difference Tool" on page 140.
- **DLM Site Time** – Set the time and location for any LMBR-650s and LMCP panels in the project. The location is used to determine sunrise and set times, for use with scheduling. For LMCPs, this function also allows you to define a "Master Panel". Other panels will then synchronize their clocks to that panel. See "DLM Site Time/ Location" on page 141.
- **CAD Import** – Imports a .CSV file that was generated from AutoCAD drawings. This feature requires the AutoCAD drawings to be developed utilizing the Wattstopper CAD resources and BIM objects. The imported rooms can then be associated with a template room to automate setup of device parameters. See "Importing Rooms From a CAD File" on page 50.
- **Rename Rooms** – Imports Room Names, Room Sq. Ft., and Load Shed Percent from a .CSV file. This function makes mass changes to the DLM file and is useful for removing unwanted characters from Room names or to easily make changes to the names. See "Rename Rooms" on page 144.
- **Device Pairing** – With this utility, you can scan the label from a specific device (using a USB scanner) and assign that device's serial number to a specific device in a specific room. See "Automating Serial Number Entry with the Device Pairing Utility" on page 116.
- **Preferences** – Edit LMCS preferences. See "Preferences" on page 145.
- **Report Issue** – Selecting this option opens a dialog where you can submit a report of any problems you encounter to the LMCS engineering team at Legrand. The following information is sent: the text you enter in the form, the version of LMCS being used, your username and site (if you are logged into the cloud), and the LMCS logs. This form is **not** for technical support.
- **Sync Firmware** – This Utility provides the ability to check for the most current firmware files on the Cloud, and to download any files that are not the most recent. See "Sync Firmware" on page 146.

Help Tab



- **About** – Displays the welcome screen, which shows the version number of this installation of LMCS.
- **Change History** – Opens a browser window displaying information about features and changes in the current and previous versions.
- **Help** – Opens a dialog providing a link to the current version of this guide.
- **Skins** – You can change the look and feel of the application screens by selecting different skins. Click the left or right arrows to cycle through the skins. Or, when you hover the mouse over the skins area, a small arrow appears at the bottom of that area. Click that arrow to open a pop-up dialog which displays all the skins. Click on a skin to select it.



Devices, Networks, Unassigned, and Programming View Tabs (Navigation Trees)

Under the ribbon, on the left side of the window, is a dynamic interface that displays different types of information depending on the option that is selected. The buttons underneath this section act as tabs, allowing you to switch views. This section of the window can be resized by dragging the right edge.

- The **Devices** tab provides a view of all devices in the project, in a tree format.
- The **Networks** tab displays the LMBRs and their networks. For wired network, it lists the routers and their networks. It also provides device counts of the various network related devices.
- The **Programming** tab displays a list of all scenes and schedules that have been created for the project, and allows you to create new scenes and schedules.

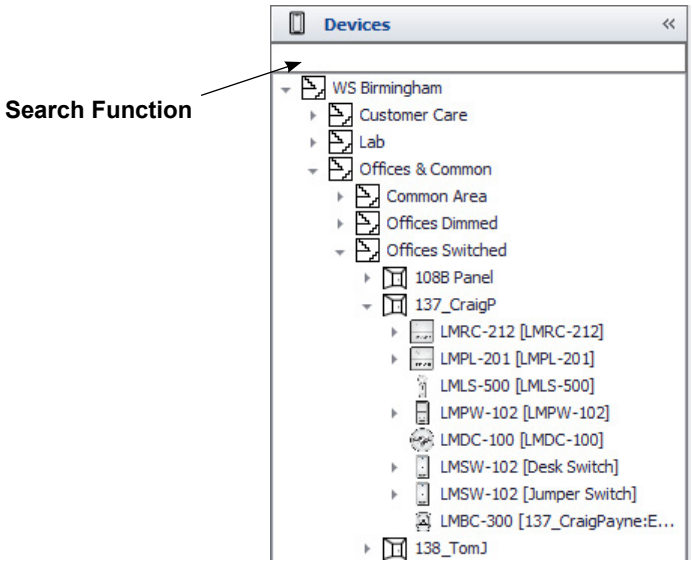
Devices Navigation Tree

When a new project is opened, the Devices navigation tree will consist of only a single icon, New Building. Once a project is developed, the tree provides a hierarchical view of all areas, rooms, and individual devices in the DLM network, as shown below.

NOTE: While the default name for the top level icon is “New Building”, it is possible to have multiple buildings networked together and configured within a single project.

Click on the arrows next to the icons to expand or contract the tree. Click on an icon or name to select that area/room/device.

Example of the Navigation Tree for a Completed Project



NOTE: For wired devices, the **Description** will show up next to the device name, in brackets. For wireless devices, it will also show the **Description** but if there is no description, LMCS will display the last four characters of the MAC address. But there is an option on the UI tab of the **Preferences** dialog that allows you to always show the MAC address even if there is a description.

NOTE: A Search box directly above the tree allows you to filter the list of devices. Simply type in text and the list immediately filters. For example, type in “LMRC” to view a list of room controllers only. All rooms and areas will remain visible, but if you expand a room, you will see only the filtered devices in that room.

Rick-Click Options in the Navigation Tree

If you right-click on the description next to an icon in the tree, a number of editing and other functions are available. The functions are context sensitive, and will vary, depending on the item you select.

Available for all items:

- Cut, Copy, Paste, Delete
- Read parameters from device
- Send parameters from Device
- Refresh, which updates the Information section for that item back to its initial view.

Available for Rooms, Area, and the Building:

- Expand All and Collapse All (expands/collapses everything within the selected room, area, or building)
- Sort areas/rooms
- Tag Editor – opens the Tag Editor only for the devices in the selected room, area or building
- Device Grid – opens the Device Grid only for the devices in the selected room, area or building
- Sync Devices/Sync Rooms – provides the same functionality as clicking the associated button in the Information section of the window
- Send Demand Response –
- Send Static MAC –
- Send Scene Command – allows you to send a wired scene command to all wired devices in the room or area. Note that this does not apply to wireless devices.
- Room Operating Mode – allows you to transition the room or all rooms in the area to normal Hours or After Hours
- Autocommission Devices – Will automatically commission all LMLS-400s in the room or area
- Reports – runs the selected report for that room or area only (as opposed to selecting a Reports in the **Home** tab, which will be run for the entire project)

Available for Areas and Buildings only:

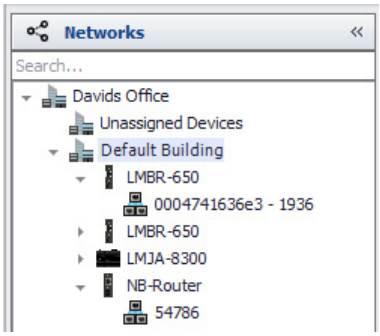
- Add Room or Area (you can add an area under another area to create a sub-area)
- Add Room Type – provides the same functionality as clicking the **Add Room Type** button in the Information section (only enabled if you are using an Energy Code or User Template)

- After Hours Support – allows you to enable or disable After Hours for all rooms in the area or building (only enabled if you are using an Energy Code or User Template)
- Discover/Discover Hybrid Rooms – provides the same functionality as clicking the associated button in the Information section of the window

Networks View

The **Networks** tab provides the ability to document the network components used to communicate with the DLM network, including modems, switches, routers (both wired NB-Routers and wireless LMBRs), and a Network Controller. Once added on the Networks tab, they are included in the Line Riser Diagram (see page 242).

When a new project is opened, the Networks navigation tree will display a New Project icon. Once a project is developed, the tree provides a hierarchical view of all network components, as shown below.



NOTE: There is an option on the UI tab of the **Preferences** dialog that allows you to display the IP address of each Network device next to the Device name

NOTE: As with devices, you can use the search box to filter the list to show only one type of network component, for example, only LMBRs.

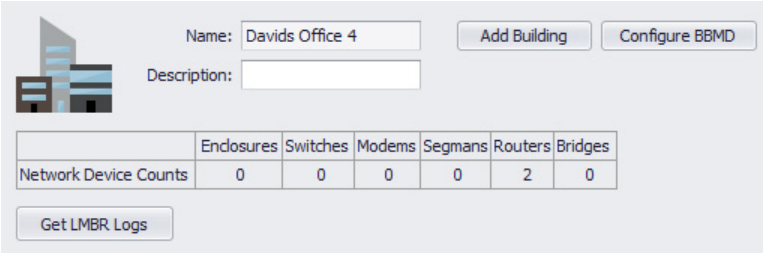
Device Information

To the right of the tree is the Network/Area/Room/Device/Programming Information section. This section is context sensitive, and changes depending on the currently selected tab, and what is highlighted in the navigation tree.

Network Information

On the **Networks** tab, when selecting the top level project icon, this section consists of a set of parameters that show the number of each type of device.

Info Section with Project Highlighted



If you created a site, the **Project** displays the name of the site used when opening the project. You can add a **Description**, if desired. If no site was created, it will just display “New Project”.

Click **Add Building** to add additional buildings (a project can consist of multiple buildings and multiple networks).

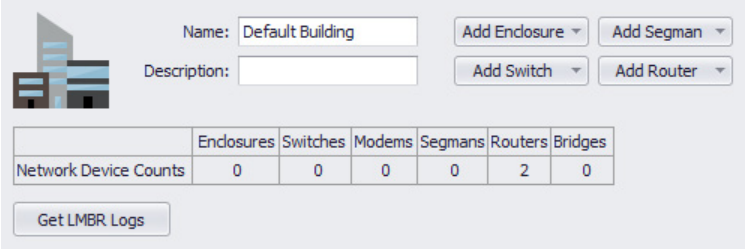
If you click **Configure BBMD**, a dialog opens allowing you to configure a BACnet Broadcast Management Device. For details on BBMDs, see “Configuring a BACnet Broadcast Management Device” on page 34.

If you click **Get LMBR Logs**, LMCS will pull the logs from all the LMBR-650s contained in that building, name the files appropriately, and zip them together in a single file.

If you highlight a building icon, the display changes. Buttons appear that allow you to add network components. See “Manually Adding Network Components” on page 41 for information on adding specific components.

NOTE: You cannot enter numbers in the Network Device Counts section. Instead these increment when you click the buttons that appear depending on the type of network device highlighted in the tree.

Info Section with Building Highlighted

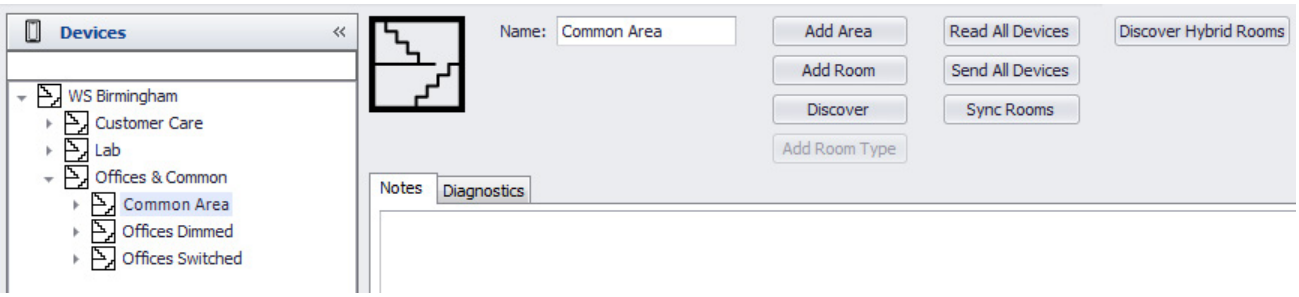


Building/Area/Room/Device Information

On the **Devices** tab, when selecting the top level building icon or an area icon, this section consists of a set of buttons for adding areas and rooms. If the software is connected online to a network, buttons for discovering devices and sending/receiving information from devices are enabled. The **Notes** tab is available for adding comments. Additionally, the **Diagnostics** tab applies to wireless devices,and provides functions to check signal strength and other data.

The **Add Room Type** button will only be enabled if you have selected an Energy Code for the project. For details, see "Project Dialog" on page 40.

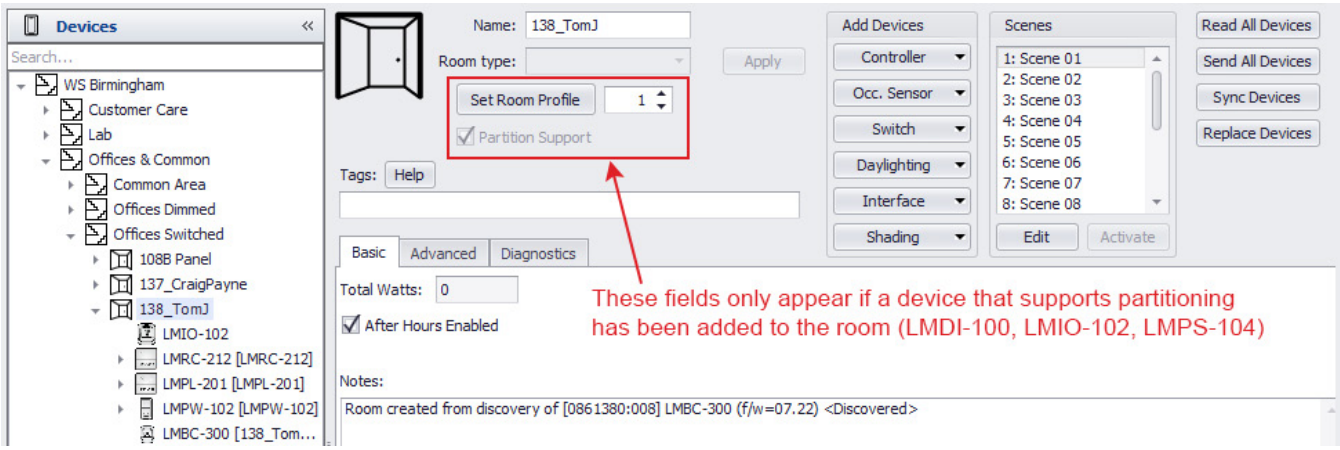
Info Section with Area Highlighted



If you select a room, this section consists of buttons allowing you to add devices to the room. Similar to an area, buttons for discovering devices and sending/receiving data are also available if the software is online with the DLM network. Additionally, functions specific to rooms are available under the **Advanced** tab and the **Scenes** section. As with an area, a **Diagnostics** tab is provided for wireless devices.

The **Diagnostics** tab that appears when a building, area, or room is selected is also found on the **Networks** tab. For details on these diagnostics, see "Viewing LMBR-650 and Wireless Network Information" on page 72.

Info Section with Wired Room Highlighted

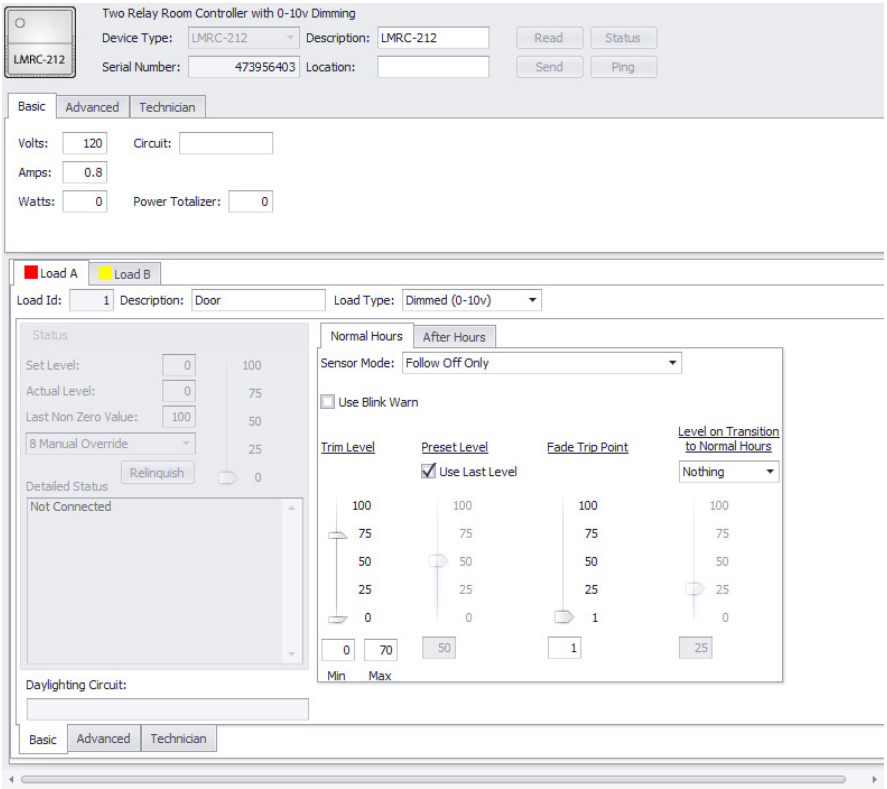


If you select an individual device within a room, this section displays the programmable parameters for that device. For most devices, there are two different sets of tabs. Typically, the top section contains the settings global to the device, while the bottom part contains separate tabs for the individual parts of the device—for example, buttons in a switch or loads in a room controller, as shown in the following example. Tabs for Normal Hours and After Hours are also found here, for devices that can be programmed to respond differently to normal/after hours modes, provided the **After Hours Enabled** checkbox is selected.

Because many devices have a large number of programmable parameters, and to improve readability on the screen, parameters are normally divided into a **Basic** tab and **Advanced** tab, with the most commonly used parameters found on the **Basic** tab. Additionally, a **Technician** tab contains additional parameters intended for use only by a Wattstopper technician or other expert with LMCS software.

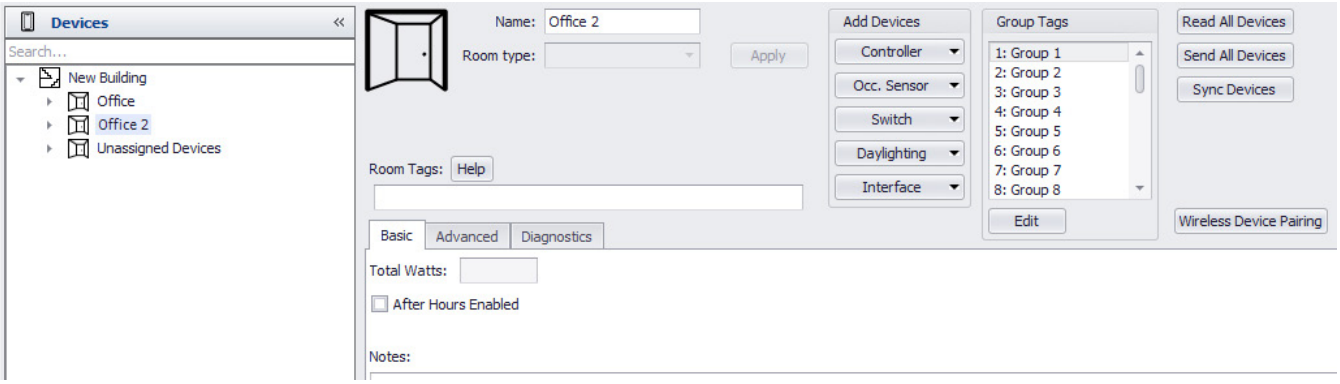
NOTE: The Technician tab is displayed only if the **Show Technician Pages** option in the **Preferences** dialog. Only some devices include a **Technician** tab.

Device Information for a Wired Room Controller



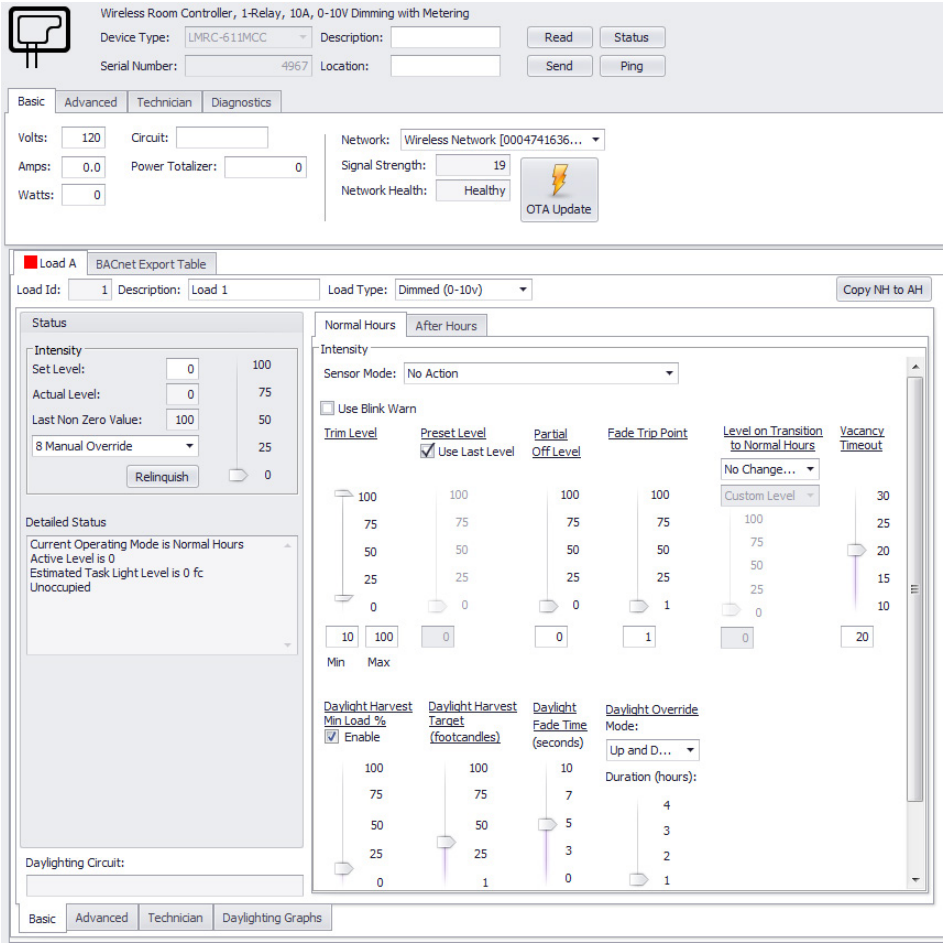
If you have selected a wireless device, a **Diagnostics** tab also appears, but has different functionality than when an area or room is selected. See "Diagnostics Tab" on page 152. Additionally, the **Scenes** table is replaced by a **Group Tags** table.

Info Section with Wireless Room Highlighted



Additionally, parameters related to wireless functionality will display on the **Basic** tab. These additional wireless parameters are found when viewing any wireless device.

Device Information for a Wireless Room Controller



Configuring a BACnet Broadcast Management Device

A BACnet Broadcast Management Device (BBMD) is a device that allows BACnet messages to span across subnets. By configuring a network of BBMDs, you can have very large BACnet networks. This feature in LMCS allows you to configure BBMDs within LMCS instead of relying on other BACnet tools such as YABE.

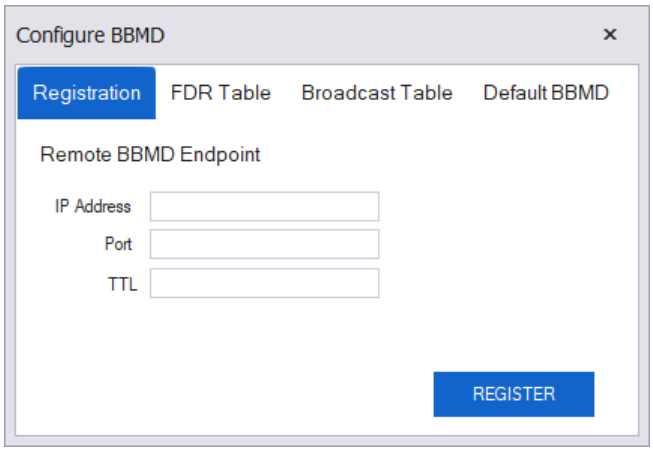
When you click **Configure BBMD** in the Info section for project, the following dialog opens:

The **Configure BBMD** dialog consists for four tabs: Registration, FDR Table, Broadcast Table, and Default BBMD.

Registration

This tab is for foreign device registration. Registering as a foreign device grants temporary access to the subnet of the BBMD whose address and port you enter into the form without requiring a BBMD to exist on the subnet LMCS is running on. Registering as a foreign device will allow discovery of devices while the registration is active but the user will need to re-register in LMCS any time they wish to access devices that are on the other subnet. The IP address of the device running LMCS will be added to the FDR table in the next tab.

Configure BBMD – Registration Tab



IP Address – This is the IP address of the BBMD that you want to register with as a foreign device.

Port – This is the BACnet UDP port of the BBMD

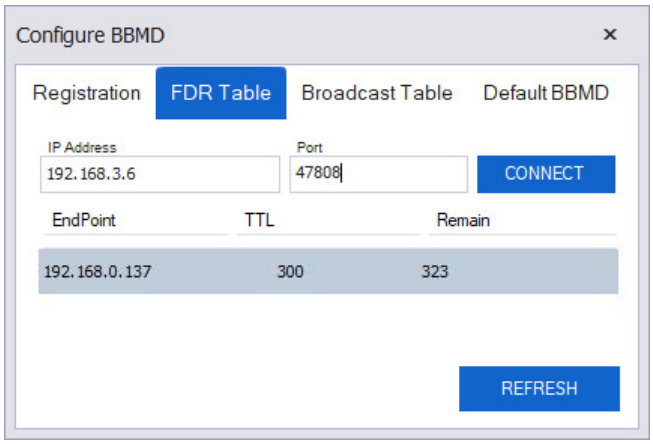
TTL – This is the Time-to-live parameter. This is how long (in seconds) the BBMD will keep your IP address in the FDR (foreign device registration) table.

After everything is entered, click **Register** to send the request to the device. You will see a “Success” message if the request was successful.

FDR Table

This tab is for viewing the Foreign Device Registration table. Any devices that have registered as a foreign device will show up here. For convenience, LMCS will pull the IP address and Port from the Registration tab into this tab.

Configure BBMD – FDR Table Tab



There are two text boxes for user input:

IP Address – This is the IP address of the BBMD you want to read the table from.

Port – This is the UDP port of the BBMD.

Click **Connect** to read the FDR table from the device. Upon success, You will see 3 columns in the table.

EndPoint – The IP address of the foreign device

TTL – The time, in seconds, sent in the registration request.

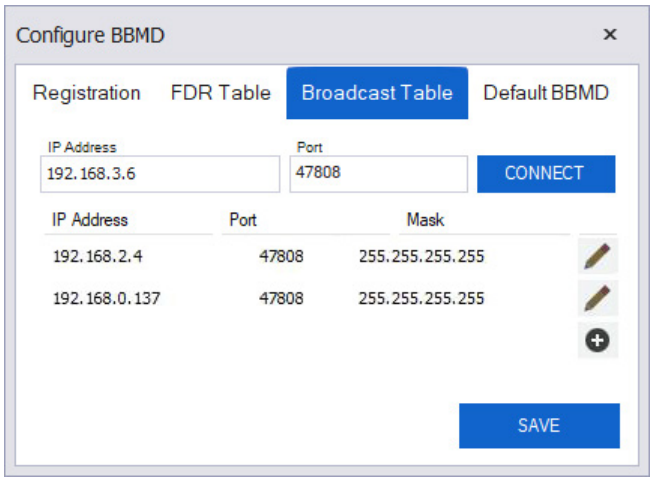
Remain – The time, in seconds, remaining until the registration expires. This is the TTL sent in the request plus a 30 second grace period.

If you click **Refresh**, LMCS pulls the table from the device again.

Broadcast Table

This tab is for viewing and editing the BACnet Distribution Table (BDT). This table should contain the other BBMDs on the other subnets that you want this device to broadcast messages to. One common way to set them up for small networks is to have each BBMD contain all other BBMDs in the network. There are more complex topologies that can be set up but they are beyond the scope of this user guide.

Configure BBMD – Broadcast Table Tab



There are two text boxes for user input, they are identical to the FDR Table tab. Click **Connect** to read the BDT from the device. Upon success, you will see 3 columns in the table.

Those columns are defined below.

IP Address – The IP address of the other BBMD to broadcast to.

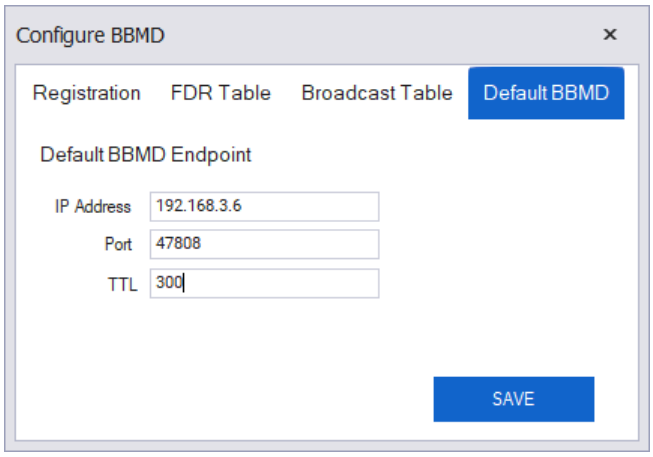
Port – The UDP port of the other BBMD.

Mask – The subnet mask of the BBMD. The most common setting will be 255.255.255.255.

Default BBMD

This tab is for saving the BBMD information of the most commonly used BBMD to the site file. If this has been saved to the site file, the values will be populated automatically upon opening the Configure BBMD form.

Configure BBMD – Default BBMD Tab



Click **Save** to save to the site file.

Filtering Lists in LMCS

There are a number of places in LMCS where you may be viewing a list of items formatted as a table with columns and rows. Some examples are the **Device Grid**, the wired **Scene Editor**, the **Tag Editor**, and the **Network Group** dialog. All of these lists can be filtered to limit the rows you are viewing. Two different filtering methods are available: the **Auto Filter** and **Standard Filter Editor**. Additionally the **Find Panel** allows you to quickly find rows containing a specific value.

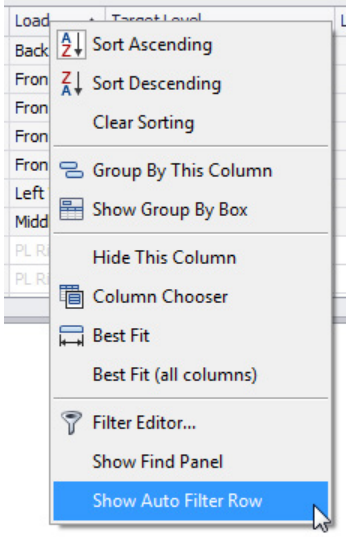
Auto Filter

To use the Auto Filter, right-click on a column header and select **Show Auto Filter Row** from the pop-up menu. An empty row below the column headers is added. (Note that in some lists the auto filter may be shown by default).

NOTE: In the **Device Grid**, the Auto Filter is selected by default. You can revert to the regular Filter Editor by selecting right-clicking on a column header and selecting **Hide Auto Filter Row**.

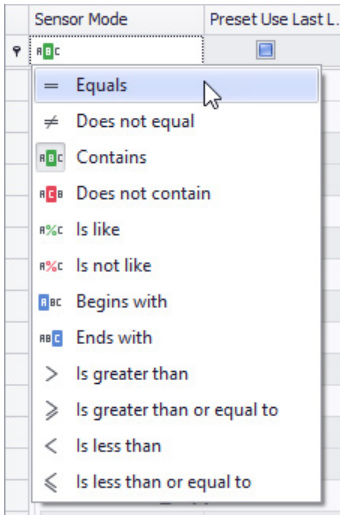
NOTE: For lists with multiple tabs, such as the **Device Grid**, can tab can be set independently to show or hide the Auto Filter.

Column Header Menu Options



If you click on the symbol in the Auto Filter row, a list of conditional operators is displayed. The available icons displayed will vary, depending on the type of parameter, (alpha-numeric, numeric only, or check box). For a checkbox, you can select checked or unchecked or both (a filled in blue box).

Auto-Filter Conditional Operators

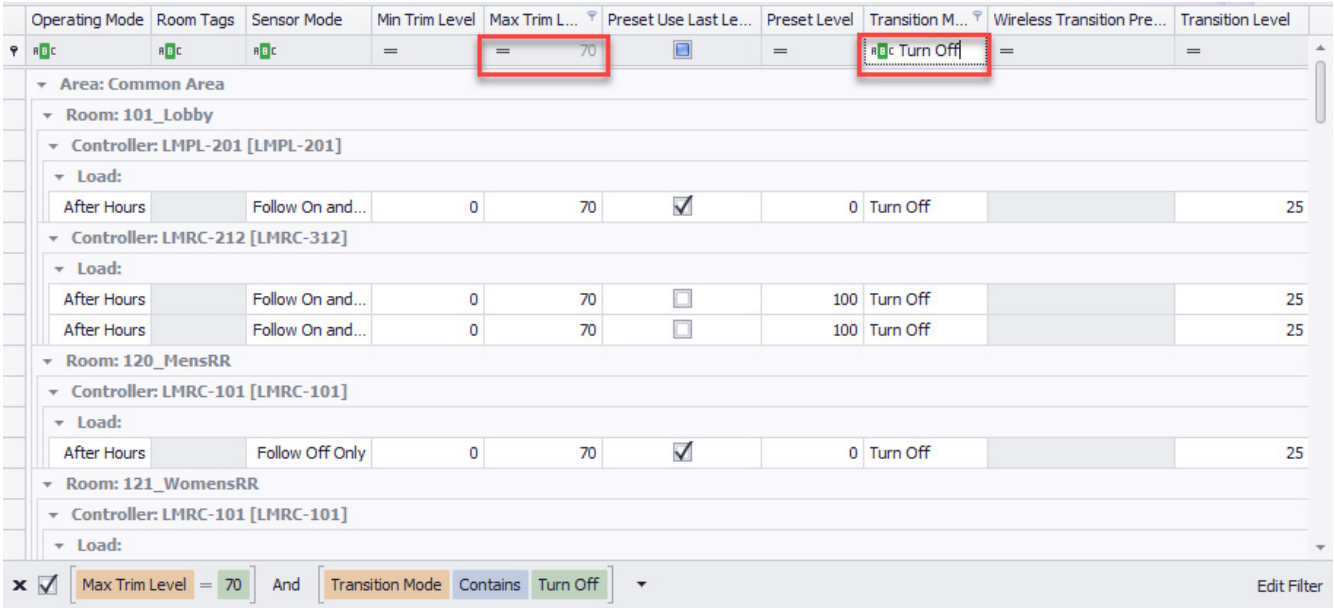


Type a value in a cell in that row and the rows will immediately filter by that value. You can enter values in more than one column.

Once the filter is applied you can then change the values of any parameter in the filtered list.

NOTE: If you change the value of the filtered parameter for a specific device, that device will vanish from the list, since it no longer fits the filtering criteria.

Using the Auto Filter Row

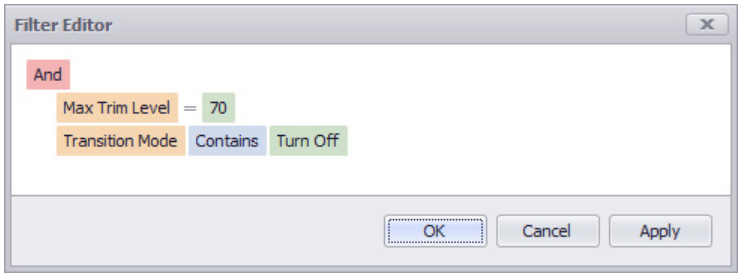


The “%” or “*”character is used as a wild card for searching. So, for example, in a project where all rooms on the first floor have a description field that ends with “-1st”, you could enter %-1st to display all rooms on that floor.

Once you select a filtering value, the filter conditions are displayed at the bottom of the list. You can remove a filter by hovering the mouse over that parameter. A small “x” appears to the right of the parameter value. Click it to remove that filter.

If you click **Edit Filter** at the bottom right, the **Filter Editor** dialog opens. Note that since Filter Editor can only edit a single parameter at a time, if filtering on more than one parameter, only the right most parameter shown in the filter list will be displayed.

Filter Editor for the Auto Filter



At this point, clicking on any of the colored boxes will allow you to change what you are filtering:

- The “And” can be changed to “Or”, “Not And”, or “Not Or”
- Change the selected parameter to a different parameter
- Change the conditional operator
- Change the parameter value.

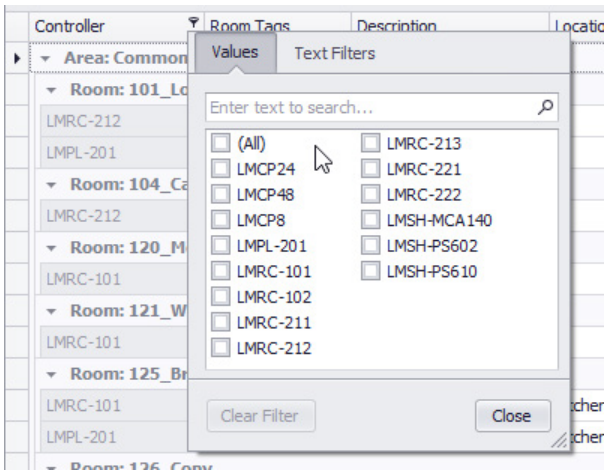
If you change any values, click **OK** or **Apply** to close the dialog and display the new filtered values.

Standard Filter Editor

If you hover the mouse on a column header, a small icon appears in the upper right corner, allowing you to select the Standard Filter Editor. If you click the icon,a dialog pops up.

NOTE: The Standard Filter Editor is available whether or not the Auto Filter row is shown.

Standard Filter Editor



There are two tabs. The first tab varies depending on the type of parameter:

- An alpha-numeric parameter shows all available values for that parameter, based on the rows currently in the list.
- A numeric only parameter allows you to enter a range of values (from low to high)
- A checkbox parameter allows you to toggle between checked, unchecked, or both.

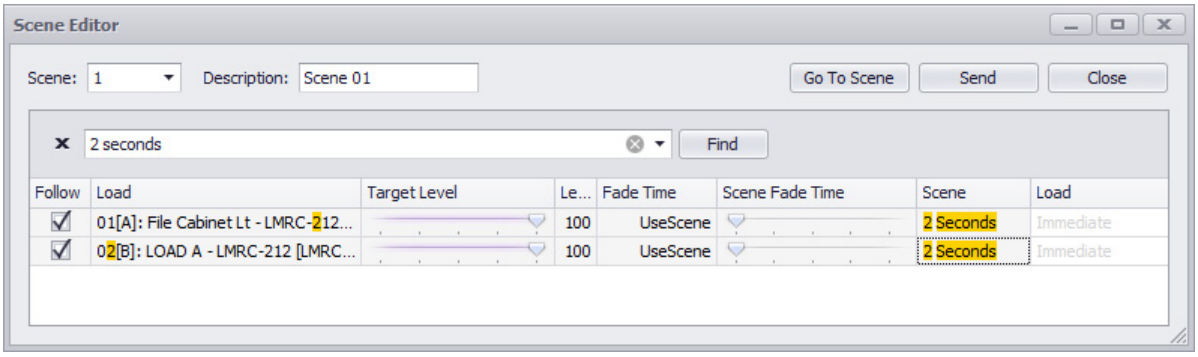
The second tab allows you to type in a value to filter on that specific value. For numeric parameters, you can select a conditional operator and then enter a value.

Find Panel

If you right-click on a column header and select **Show Find Panel**, the Find Panel is displayed above the columns.

NOTE: The Find Panel is not available for the **Device Grid**.

Find Panel displayed on the Scene Editor



The Find Panel will search all displayed parameters instead of a just a single column, and similar to searching in other programs, highlights the values you are searching.

CREATING A PROJECT OFF-LINE

Projects can be created off-line or while connected to the DLM network. Many projects are typically initially created off-line, then the project is used by the technician to synchronize devices and make final adjustments. However, it is also possible to create a project by connecting to the network and then discovering the devices. This might be done with a small installation. Off-line creation is discussed in this section. For details on on-line discovery, see "Creating a Project Through On-Line Discovery" on page 61.

NOTE: Currently, only wired DLM projects can be created off-line. If you are using wireless DLM products or are adding wired DLM products to a wireless DLM environment (for a hybrid wired/wireless room), you must use on-line discovery.

Methods for Creating a Project Off-line

There are two main methods for creating a project offline:

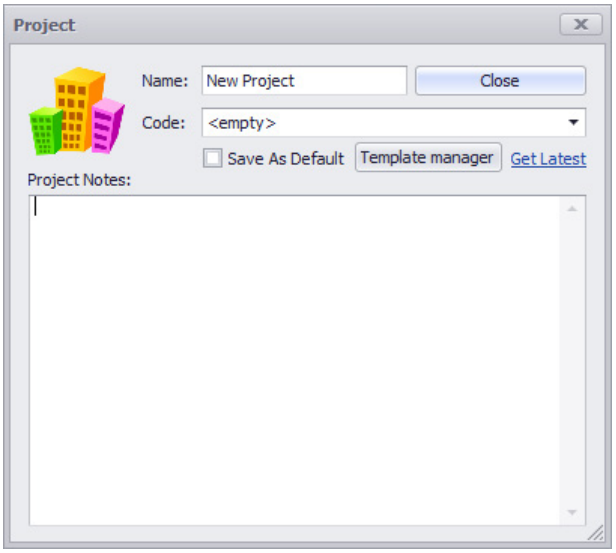
- Manually add areas and rooms, then assign individual DLM devices to the rooms. Once a room is created and the devices configured, you can copy and paste that room to create additional rooms. So, if there are multiple rooms set up in a similar manner, you can quickly configure them. Network components are also added manually.
- Import a .CSV file that was generated from AutoCAD drawings. This feature requires the AutoCAD drawings to be developed utilizing the Wattstopper CAD resources and BIM objects. The imported rooms can then be associated with a template room to automate setup of device parameters. See "Importing Rooms From a CAD File" on page 50. This feature does not apply to network components.

Naming a Project

When you first open a project, a dialog appears asking if you want to set an Energy Code for the project. If you click **Yes**, the **Project** dialog opens where you can select from pre-defined templates set up for specific energy codes. If you answer no, you can still open this dialog by clicking the **Project** icon on the **Home** tab.

NOTE: If you choose to save a default code in the Project dialog, then this opening dialog will not appear when you open a project.

Project Dialog



1. Enter a **Name** for the project. By default, this name is selected when you save the project file, but it is possible to change the name of the file to something different from the name defined here.

   NOTE: The name you give to the project will appear on various reports. It also appears at the top of the LMCS window.

2. If the project conforms to an energy code, select the appropriate value from the **Code** drop-down. The drop-down has two sections—one for a standard set provide by Wattstopper and one for any user created templates. Once a code is selected, the **Room Type** parameter (displayed when a room is selected in the devices tree) will be enabled. At this point, you can select a room type and that will set parameters to predefined values that meet the code.
3. If you chose an energy code and select the **Save As Default** checkbox, whenever you subsequently open a new project file, that code will be applied.

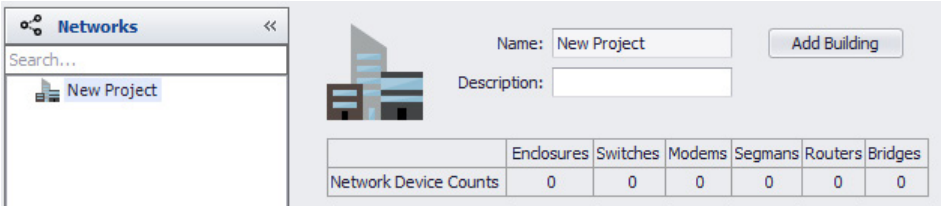
4. If you click **Template Manager**, the **Custom codes file manager** dialog opens. From this dialog, you can launch the template creation wizard to create your own templates, or download existing templates that you previously created and are on your cloud account. For details, see "Creating Project Templates" on page 128.
5. If you click **Get Latest** and are currently connected to the internet, LMCS will automatically download any new templates in your user account. It will also update any existing templates if they have been changed. This applies to both Wattstopper and user created templates.
6. If desired, enter **Project Notes**.
7. Close the dialog and return to the main window.

Manually Adding Network Components

NOTE: Adding network components is not necessary for LMCS to read from and send information to the various DLM devices in a project. Its purpose is to provide a more complete view of the project, including the ability to generate riser diagrams (see page 242).

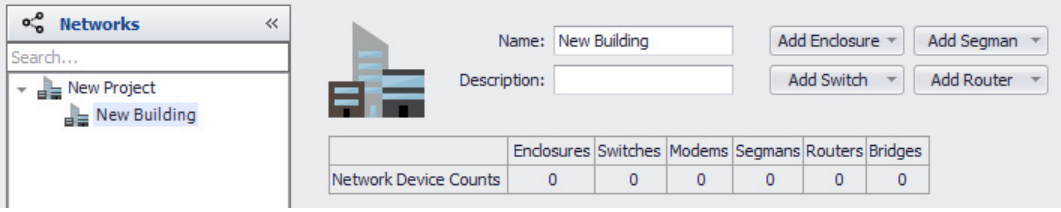
On the Networks tab, the top level icon in the tree is named " New Project", if no site has been created. If a site was created for the project file, it will display the site name.

Top Level of the Networks Tab



1. Click **Add Building**. Then highlight the building icon in the tree.

Networks Tab with Building Highlighted

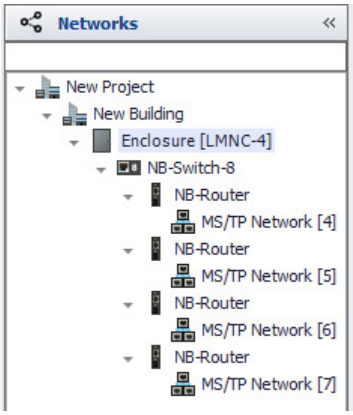


2. At this point you can add Enclosures, Network Controllers, Switches, and Routers (both wired NB-Routers and wireless LMBRs) to the building. A drop-down allows you to select the specific model.

   When adding an Enclosure, Switches and Routers are added automatically as children of the enclosure, based on the model, as shown in the following screenshot. The exception to this is the LMNC-MT which is an empty cabinet.

   NOTE: For wireless DLM installations, although it is possible to add an LMBR-650 here, adding the LMBR and all wireless devices will be done automatically during the wireless discovery wizard, so it is unnecessary to do it here.

   NOTE: While the Network Controller can be installed in an enclosure, it is not automatically added because it is ordered separately. Additionally, while it is possible to add a Segment manger manually, if you perform a remote discovery, it will be added automatically along with any connected routers. For details on remote connection see "Discovering Devices Remotely" on page 112.



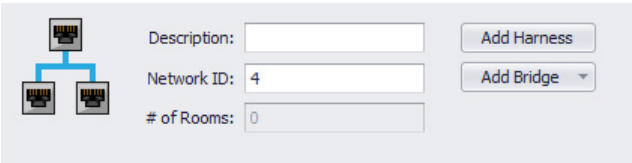
Parent/Child Relationships in the Tree

Depending on the component highlighted in the tree, different buttons appear allowing you to add certain items as children of that item in the tree. Once added to the tree, a network device can be dragged to another spot, as long as it follows the parent/child rules.

- Buildings can be added under the root Project. (Note that the root project is represented with a building icon in the tree, but is in fact the project itself.)
- Enclosures can only be added under a Building
- Switches can be added under a Building, an Enclosure, or another Switch.
- Network Controllers can be added under a Building, Enclosure, or Switch. Note that while it is possible to add multiple Network Controllers under a single Enclosure, in practice an Enclosure would normally contain only one Network Controller.
- Routers can be added under a Building, Enclosure, Switch, or Network Controller.
- A single Modem can be added under an Enclosure, Switch, or Network Controller. Only one modem can be added per building.
- When you add a Network Controller or Router, a Network icon is automatically added underneath the Network Controller or Router. For an LMSM-3E, three Network icons are added since it can communicate with three separate MS/TP wired networks.
- When you add any lighting controller (room, fixture, plug load, or zone) or a panel, individual loads are added to the tree as children of that controller. Note that when clicking on the Load in the tree, the Device Information section remains the same as when you click on the controller—they are included in the tree specifically for visual reference. They will display the Description field, allowing a quick reference as to which load is which.
- For shade controllers, when you add a motor to the controller, it will appear as a child of that shade controller. The load then appears as a child of the motor, similar to loads as children of lighting controllers.
- For Wired networks:
  - A Bridge Harness can be added under a Network icon.
  - A Bridge can be added under a Network icon or Bridge Harness. Up to 6 Bridges can be connected to a single harness. If Bridges are added within the **Devices** tab as part of a room, they will show up under a “building” named Unassigned Devices on the **Networks** tab, at which point they can be moved to the correct spot on the tree. A drop-down allows you to choose the model of the bridge. Bridges include the LMBC-300 Bridge and LMBC-600 or LMBC-650 Wireless Bridge, all panel models, and the LMZC-301, all of which include a bridge.

NOTE: The availability of the bridge model depends on the router that was selected. An LMBC-600 is the only selection for an LMBR-600. An LMBC-650 is the only selection for an LMBR-650. The LMBC-300, all panels, and the LMZC-301 are available when selecting a wired NB-Router.

Wired Network Information

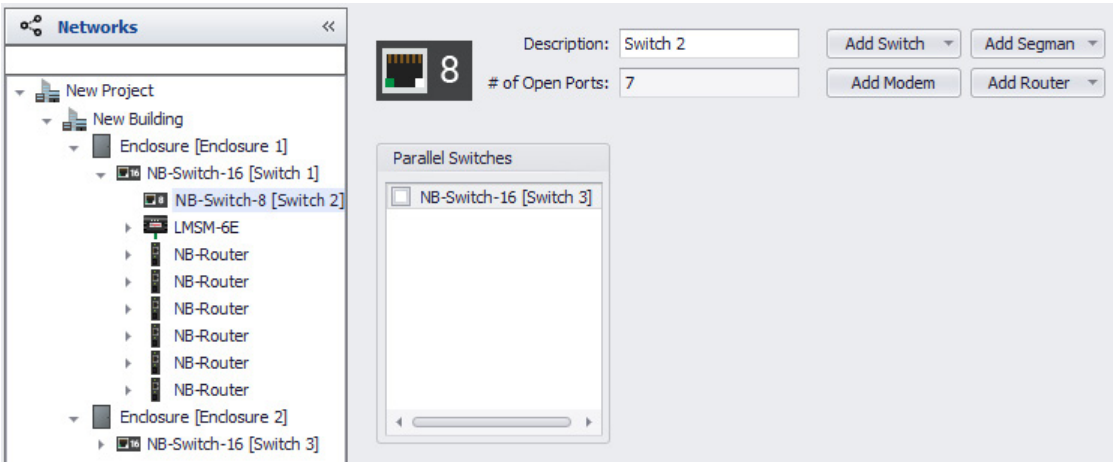


- For Wireless Networks, see “Viewing LMBR-650 and Wireless Network Information” on page 72.

Indicating Switches Connected in Parallel

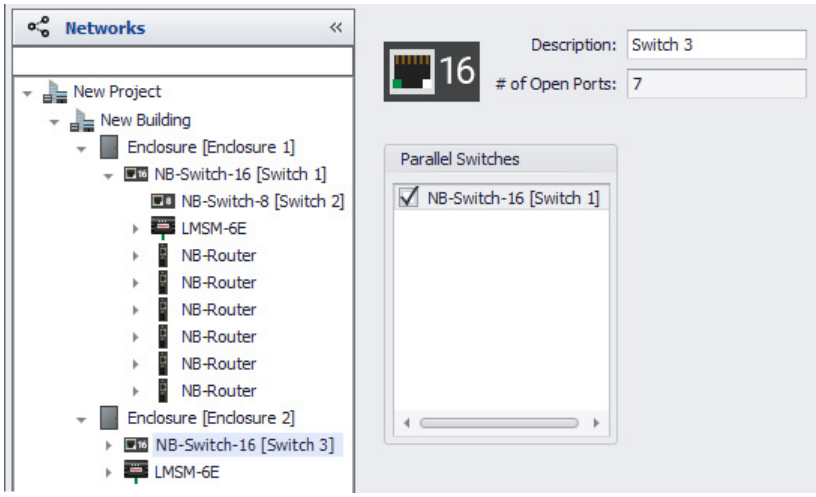
Switches that are in different enclosures (or even outside of enclosures), may or may not be directly connected together. LMCS provides the ability to indicate whether or not these switches are connected. When a switch is highlighted a box appears on the right hand side title **Parallel Switches**.

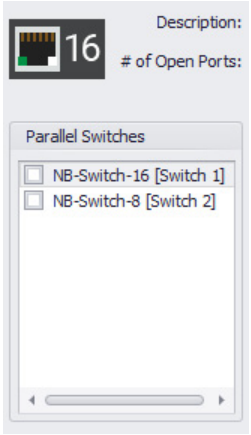
In the following example, There are two enclosures. One enclosure (Enclosure 2) has a single 16 port switch (Switch 3), while the other (Enclosure 1) has a 16 port switch (Switch 1) with an 8 port switch (Switch 2) as a child. When Enclosure 1 is selected,the Parallel Switches box shows only Switch 3. Switch 2 is not shown because the fact that it is a child implies that they are directly connected.



If you select the checkbox, that indicates that Switch 1 and Switch 3 are connected. If you then view Switch 3, it will show Switch 1 connected, as shown in the screenshot below on the left. Switch 2 is not shown because if you connect to Switch 1, then you will also automatically connect to Switch 2 since it is a child.

But if you deselect Switch 1, both Switch 1 and Switch 2 are available options, since you can physically connect to either one of them, as shown in the diagram to the right. Once you select one of them, the other one will disappear from the list.



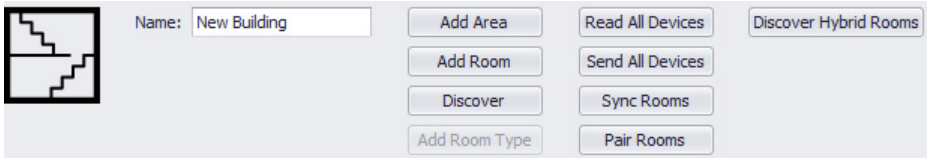


Manually Adding Areas, Rooms, and Devices

When LMCS starts up, it automatically opens a new project. By default, the top level of the **Devices** tab is named “New Building”, but can be changed to something more meaningful.

NOTE: The name entered here is used to label the top level of the tree, but is not used for anything else.

Top Level of the Devices Tab

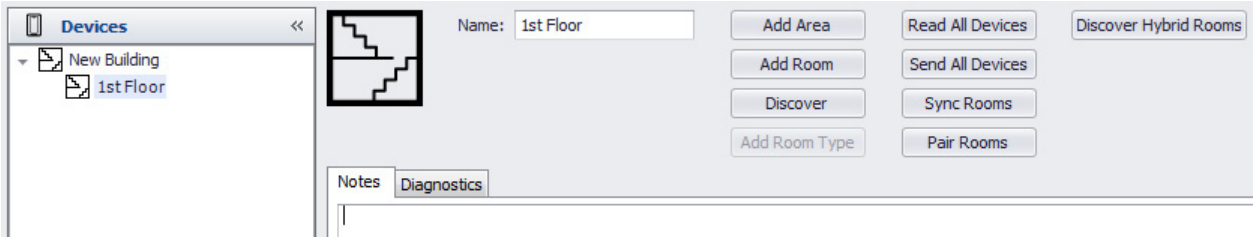


A single LMCS file can include the information on all rooms and devices in a building. However, in larger projects, it can be more practical to create a project for each wing or each floor in a building, in which case you would want to rename the top level. This can speed up performance. Note that it is also possible for multiple buildings to be part of a single project, if they are connected via BACnet. But best practice is to use separate project files for each building.

Adding an Area

A project can consist simply of a set of rooms and their devices. But for larger spaces, it is often practical to divide the building into areas such as floors, wings, or sections.

Click **Add Area**. A dialog opens asking you to enter a **Name** for the room and click **OK**. A maximum of 32 characters are allowed. A new area is added to the tree. (If it is not displayed in the tree, click the arrow to expand the tree.) Add any **Notes**, if desired.



It is possible to create sub-areas within an area. Simply highlight an area in the tree and click **Add Area** again. This is no limit to the number of areas or sub-areas you can create.

NOTE: Just like a file/folder tree, you can rearrange the areas and rooms in the tree by highlighting and dragging them to a different location.

NOTE: If using the LMSM-3E or LMSM-6E Segment Manager, areas are used to create Location Groups.

The **Add Room Type** button will be enabled if you selected an energy code or template in the **Project** dialog.

Adding Rooms

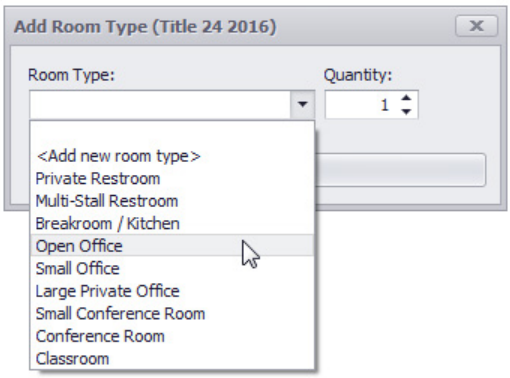
There are two ways to add rooms to a project: You can add rooms manually, and then manually add devices to that room, or you can add a room type. By adding a room type, you can add multiple rooms at the same time and automatically populate those rooms with devices, based on the template settings. Additionally, each device will have various parameters set to specific values, again based on the template.

Adding Rooms from a Template

Specific room types are available based on the energy code or user created template you select in the **Project** dialog.

1. With an area or the top level icon highlighted in the tree, click **Add Room Type** to open the **Add Room Type** dialog.
2. Select a **Room Type** from the drop-down and select a **Quantity**, then click **Done**.

Add Room Type



LMCS will automatically add the number of rooms you selected and then add devices to each room, based on the settings for that room type within the template. A template can specify multiple devices, including more than one of the same device. Further, each device can bet set to predetermined parameter values. For details on creating or editing templates, see "Creating Project Templates" on page 128.

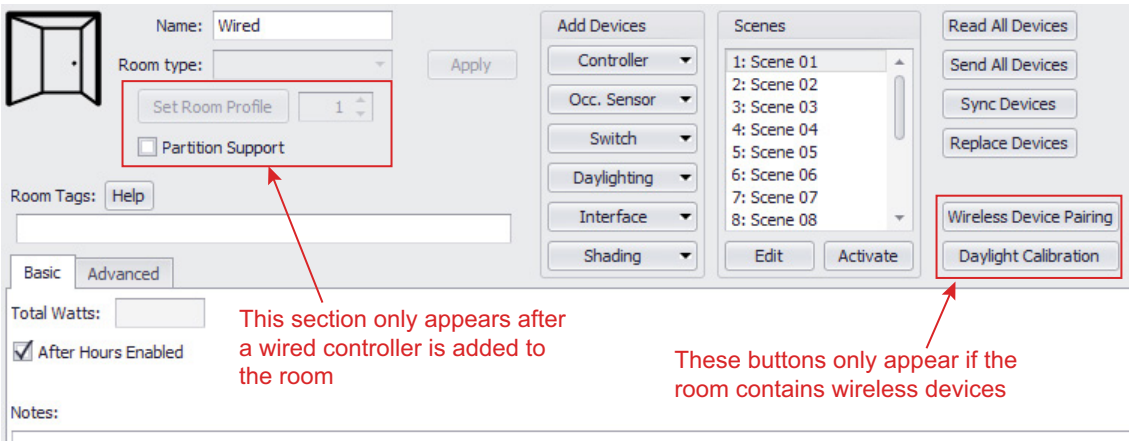
Adding a Room Manually

1. Highlight an area (or the building) in the tree and click **Add Room**.
2. A dialog opens asking you to enter a **Name** for the room and click **OK**. A maximum of 32 characters are allowed.

Room Parameters and Functions

1. Expand the tree to show the room and click on the room to display the room parameters in the information section.

Room Parameters



2. Once a wired controller or panel is added to the room, the **Room Profile** parameter and **Partition Support** checkbox will appear. For details on this functionality, see "Profile and Partitioning Support for a Room" on page 48.

   NOTE: These parameters will not appear for rooms with wireless controllers.
3. If desired, enter a **Tag** for the room. Tags are used with the LMSM-3E or LMSM-6E Segment Manager. When an LMCS file is imported into the Segment Manager, the tags are used to create Custom Groups (for example, bathrooms, lab, 1st floor, etc.). All rooms within a custom group can then be viewed together for power monitoring purposes.

   There are two ways to create tags. You can enter any text in the field here and once you tab or click out of the field, the tag is created. Or you can create tags and assign rooms to them in the **Tags** editor. See "Creating Tags for a Project" on page 51 for details. One advantage of using the **Tags** editor is that an additional description field is available for each tag.

   A room can have more than one tag. If you enter a space between two words in this field, a tag is created for each word. (A tag cannot include a space.) Or if you click out of the field and back into it, you can enter another tag. To delete a tag, click the "X" next to it.

   Tags should only contain letters, numbers, or the underscore character—no other special characters or spaces. They should be entered in camelCase—the first letter should be lower case, with the subsequent first letter of additional words in uppercase. For example, southWing or south_Wing.
4. The **Read All Devices** / **Send All Devices** will read all parameter values from all devices into the room and load them into LMCS or send all current parameter values in LMCS to the devices.
5. The **Sync Devices** button is used to ensure that the serial numbers of each device in the room match the devices in LMCS. For details, see "Synchronizing a Room" on page 117.
6. The **Replace Devices** button is used situations where a device was physically replaced because it was non-functional, and you want the replacement to inherit all the programming of the original. For details, see "Transferring Data to a Device that has Replaced Another Device" on page 122.
7. The **Wireless Device Pairing** button appears only if the room contains wireless devices. It allows you to pair devices that were not originally paired within the wireless configuration wizard, or to re-pair devices if they have been moved from one room to another. For details, see "Adding Unassigned Devices to a Room and Pairing Them" on page 69.
8. The **Daylight Calibration** button appears only if the room contains wireless devices. If a room contains one or more LMDL-600s or LMFS-601s, clicking this button opens the calibration wizard. Daylight sensors must be calibrated before they can function properly. For details on the wizard, see "Calibrating Wireless Daylighting Sensors" on page 86.

NOTE: If the room is a hybrid room, with a wired controller plus an LMBC-650 bridge and wireless switches or occupancy sensors, this button will appear. However, hybrid rooms do **not** support wireless daylight controllers, so even though the button appears the wizard will not function.

9. The **Total Watts** field is a calculated field that adds the total amount of watts used by each room controller assigned to the room.
10. If the **After Hours Enabled** checkbox is selected, any device which responds to normal hours/after hours scheduling commands (for example, occupancy sensors) will have both a **Normal Hours** tab and **After Hours** tab. If this checkbox is not selected the **After Hours** tab will not be visible.
11. Enter any Notes needed for documentation purposes.

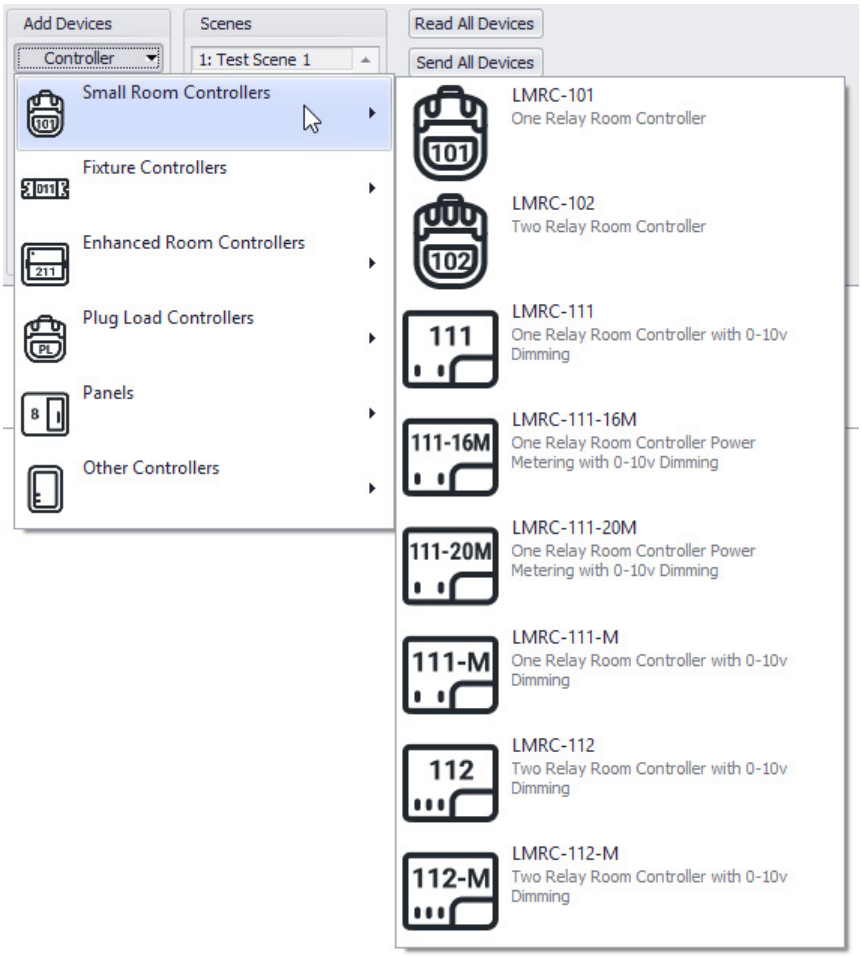
    NOTE: If the room is created by using the Discovery process instead of manually creating it, information about the discovery will appear here.

NOTE: The section above describes the parameters on the **Basic** tab only. The **Advanced** tab applies once LMCS is online and communicating with the devices in the room. See "Real Time Room Control – The Advanced Tab For Rooms" on page 125 for details. The **Diagnostics** tab applies only to wireless devices, and is found no matter what is highlighted in the tree, whether or not there are any wireless devices in a room or area. For details, see "Diagnostics Tab" on page 152.

Adding Devices to a Room

The Add Devices menu provides access to all of the available DLM room devices that can be added to a room. With a room selected in the tree, use the drop-down menus to add the devices to the room.

Add a Device

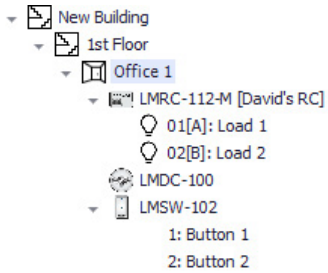


Once the device is added, it shows up in the Tree. A small icon shows the device type, with the device name next to it. Some devices such as Room Controllers and Switches have additional elements that can be displayed by clicking the down-arrow beside the device.

If you enter a **Description** in the Device Information section, it is included in the tree in brackets, as shown below.

NOTE: By default, when an LMBC bridge is added, the room name is copied into the description field.

Devices added to a Room



NOTE: If you add a wired room controller, then only wired devices will show up in the other categories. Likewise, if you add a wireless room controller, only wireless devices will show up in the other categories.

The exception to this is the LMBC-650 bridge. The LMBC-650 allows wired devices in wired or hybrid room to communicate with the LMBR-650, as part of a wireless network. However, when you add an LMBC-650, you can't add the wired devices directly to the room. Instead, you must highlight the bridge in the tree to add the wired devices. For details, see "Discovering Wired Devices Connected to an LMBC-650" on page 71.

NOTE: While multiple controllers can be added to a room, only a single Panel can be added to a room. Therefore once you add a panel to the room, the Panels category will no longer display under controllers.

Once a device is added to the room, highlight that device in the tree to access the parameters for that device. A complete description of all device parameters is described in the section "Programming Parameters for Individual Devices" on page 147.

NOTE: When working off-line, some fields are not available and will be grayed out. These fields will be active either while LMCS is connected live to the room or after an installed room has been discovered by LMCS.

Copying and Pasting Areas, Rooms, and Devices in the Tree

If you click on an item in the tree and then copy that item, you can paste the copy to another spot in the tree. If you copy a room, all associated devices are copied. If you copy an area, all rooms within that area and the associated devices are copied.

All of the device parameters are copied, with the exception of the serial number (and the device ID in the case of bridges, panels, and zone controllers). The serial numbers are set to a default value of 0 and the device ID to -1 in the copy.

NOTE: If you **move** devices from one room to another by dragging, serial numbers and device IDs are retained. Also, if you have the **Show Technician Pages** option selected on the **Preferences** dialog, then if you right-click on a new room, you will see a **Paste Special** menu option in addition to the normal paste option. This option will also copy serial numbers.

In this way, it is easy to set-up a room's device parameter, and then copy all of the programming to other rooms quickly. Be sure to change the **Description** after pasting the new room to avoid confusion.

Copying and pasting is available using the buttons on the **Home** tab, right-clicking on an item in the tree, and with the standard Ctrl+C and Ctrl+V keyboard shortcuts.

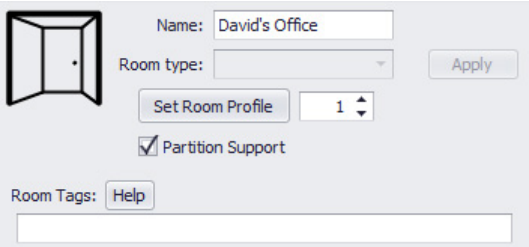
Adding Bridges, Zone Controllers, or Panels

When creating a project file that will connect with more than one room via a BACnet based Segment network, each room will require an LMBC-300 wired network bridge, LMBC-600 or LMBC-650 wireless network bridge, or an LMCP panel or LMZC-301 zone controller, which both have built in wired network bridges. A room can have only a single bridge. Therefore, if you add any one of these models to a room, you will not be able to add the other models (they will be disabled from selection in the drop-down menu).

Profile and Partitioning Support for a Room

Once a wired controller or panel is added to the room, additional parameters appear under the **Name** parameter, as shown below:

Profile and Partitioning Parameters



If you select the **Partition Support** checkbox, the **Room Profile** selection will be enabled.

Many DLM devices (controllers, occupancy sensors, switches, and some others) will keep track of up to 16 different sets of their programmable parameters. Each parameter set is a profile. Each of the 16 profiles can also have unique load levels for the room's scenes.

Beyond configuration tools, there two different ways the room profiles can be changed:

- Using DLM devices that support profile control (currently, the LMIN-104, LMPS-104, LMIO-102, and LMDI-100). A profile allows the DLM system to work with up to 4 partitions/movable walls. When configured as a partition interface, the LMIN-104 will automatically change the room's profile upon reconfiguration of movable walls in the space. The partition switch LMPS-104 can be used to simulate movable walls in place of a partition interface. The LMDI-100 allows third party systems to send commands including profile changes via RS-232 connection.
- Using BACnet to change profiles in networked DLM rooms. For example, profiles can be changed based on the time of day. This requires external programming outside of LMCS and should be discussed with a Wattstopper Application Engineer.

To choose a profile as the current profile for the room, enter the profile number and then click **Set Room Profile**. All devices that can store profile data will display the current profile on the **Basic** tab for the device. Additionally, the Scene editor will show the current profile and scene programming will be associated with that profile. Once you set the parameter values for the various devices for a profile, you can go back and set a new room profile, then return to the various devices and set the parameter values for the new profile. When you click **Send** to send device parameters from LMCS to the devices, all profiles are sent, not just the currently selected profile.

NOTE: PnG settings only apply to profile 1. All other profiles must be setup manually or through LMCS.

NOTE: Enabling profiles in a room greatly increases the read/write time during configuration. Room profiles should only be enabled if the room requires them.

Creating and Editing Scenes for Wired DLM

Scenes allow you to set multiple loads to different levels and control the transition time to those levels. Scenes can be triggered from a button, occupancy sensor, scheduled event, or dark/light event.

There are two different types of scenes—one for wired devices and one for wireless devices.

- The **Scene Selection** and **Scene Editor** found in the Info section when a Room is selected in the tree applies **only** to **wired** devices.
- For **wireless** devices, a separate scene editor, found under the **Programming** tab is used. Additionally, you can access the wireless scene editor from within the programming info section when you select a wireless switch. If a wireless room controller is added to a room, the wired Sene Selection and Scene Editor will be disabled.

NOTE: This section applies only to wired scenes. For details on wireless scenes, see "Creating and Editing Scenes for Wireless DLM" on page 78.

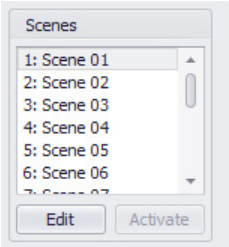
There are a few differences to be aware of between the wired and wireless scene editors:

- The wired scene editor can control only wired loads. However, the wireless scene editor can control both wireless and wired loads (if the wired load is connected to an LMBC-600 or LMBC-650).
- Scene information for wired products is stored on the room controller (or panel, zone controller, etc.) and there is a limit of 16 scenes for each room profile per controller. Therefore Scene 1 stored on one controller has no relation to Scene 1 stored on a different controller. Scenes can't control loads in other rooms since they apply only to one In Room Bus with one or more room controllers (the exception to this is a Panel which might be controlling loads in multiple rooms). However, it is possible to control loads across room with Network Groups. See "Creating Network Groups" on page 54.

- Scenes for wireless devices are global and can be applied to any wireless devices in any rooms in the project. There is no limit to the number of scenes. Once a scene is created, it can be assigned to any wireless room.

As mentioned previously, there are sixteen scenes available per wired room. However, **if profiles are enabled for the room, each profile can have its own set of sixteen scenes**, allowing a total of 256 scenes. Scene parameters for each load are stored in the room controller, zone controller, or panel in which the load exists.

Scene Selection

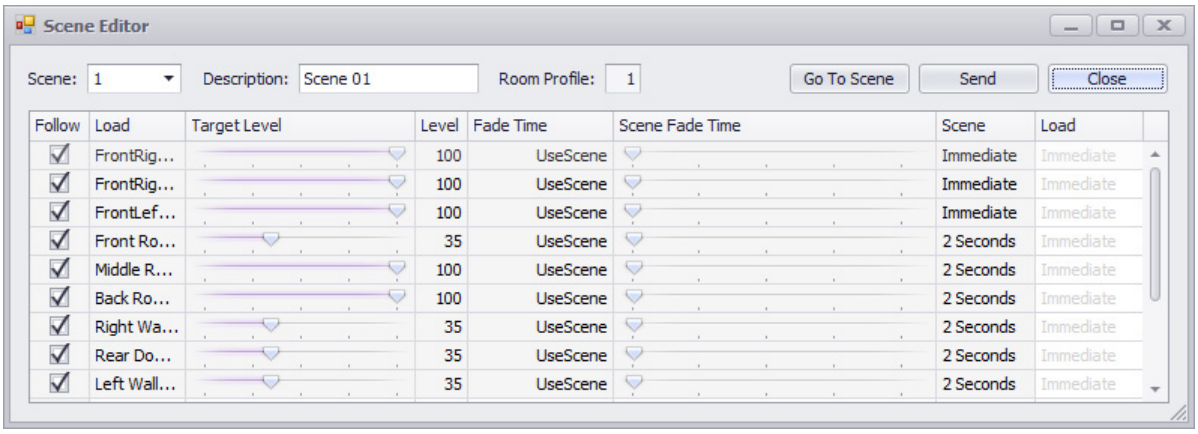


If you are currently connected to the room, the **Activate** button will be enabled. If you select a scene and click this button, the command to call up that scene is sent to the controller(s) and the loads in that room will change to the values associated with that scene.

Select a scene and click **Edit** to open the **Scene Editor** dialog, where you edit the values for each load. The editor opens with the current scene selected, but you can switch between scenes in the editor, so you can program multiple scenes without having to return to the room dialog. Changes in the editor are sent in real time to the associated controllers, if connected to the system. Note that the changes to the scene are not stored unless you click **Send**.

Clicking the **Go To Scene** button simulates the currently selected scene by sending the associated values to the various devices, without the need to send the scene to the controller. This allows you to test if scene behaves as desired before sending the scene data to the controller.

Scene Editor



NOTE: If there is an LMSI-DMX controller in the room and the **Operating Mode** for that controller is set to “RGB” or “RGBW”, and additional column labeled “Color” is added to this dialog. See “Advanced Tab” on page 150 for details.

Description – Provides a description shown whenever viewing a list of scenes for the room.

Follow – Select the checkbox if you want the load to be included in the scene. If a load should not follow the scene (for example, a light at a whiteboard), leave its checkbox unchecked, and all settings for that row will be disabled.

Load – The load **Description** is displayed.

Target Level – The level the load will go to when the scene is selected.

Level – This is the numerical value that matches the position of the **Target Level** slider.

Fade Time – There are two possible values: “Use Scene” will use the amount of time specified with the **Scene Fade Time** slider. “Use Load” will use the amount of time specified with the **Fade Time** parameter on the load’s **Advanced** tab.

Scene Fade Time – The amount of time it will take to go from the load’s current level to the **Target Level**. Applies only if “Use Scene” is selected in the **Fade Time** column.

The **Scene** and **Load** columns show the current value of the two different fade times, but only one of them will be enabled at a time, depending on the value of the **Fade Time** column.

Importing Rooms From a CAD File

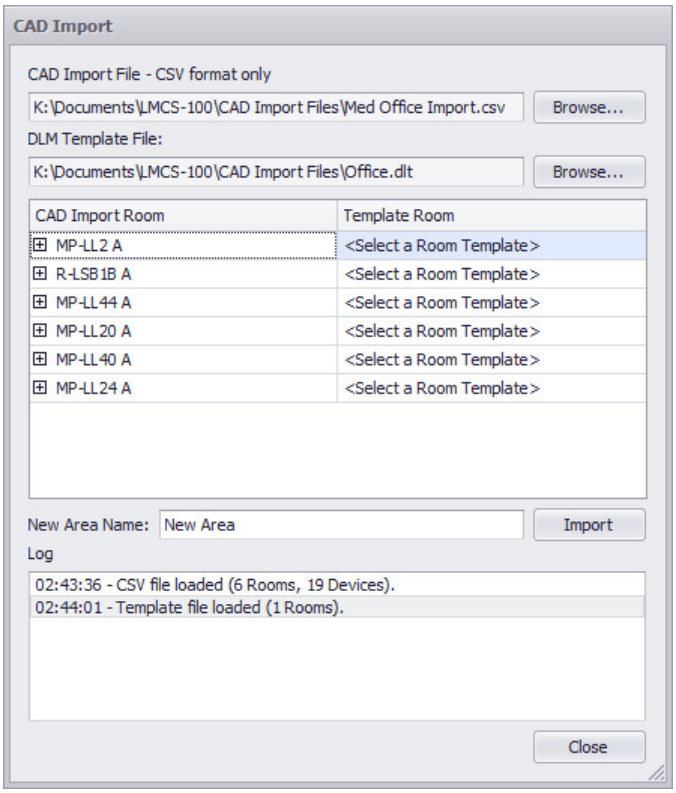
Instead of manually creating rooms and assigning devices, you can import a .CSV file that was generated from AutoCAD drawings. This feature requires the AutoCAD drawings to be developed utilizing the Wattstopper CAD resources and BIM objects, and a .csv export created within the program using an AutoCAD list routine.

Normally each floor (or other grouping of rooms) is exported as a separate .CSV file.

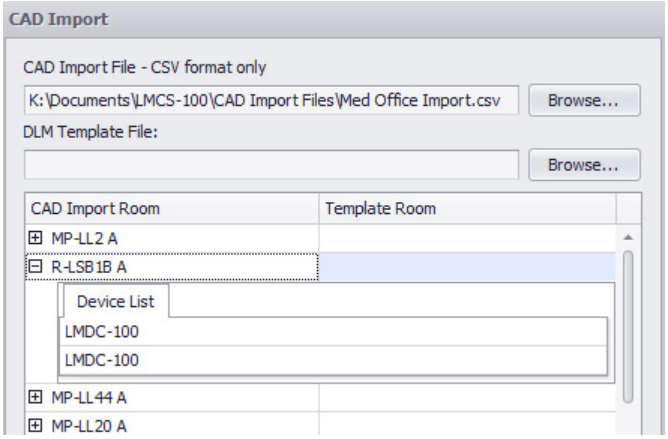
Each .CSV file is imported into an area, created during the import process. If you have two .CSV files that you want to combine into a single area within LMCS, you must import each file into a differently named area, then drag the rooms from one area to another to combine them.

In addition to importing the rooms and assigned devices, LMCS provides the ability to associate those rooms with parameter values stored in a template. The template file will contain the various types of rooms, for example, office, conference room, open office area, and so on.

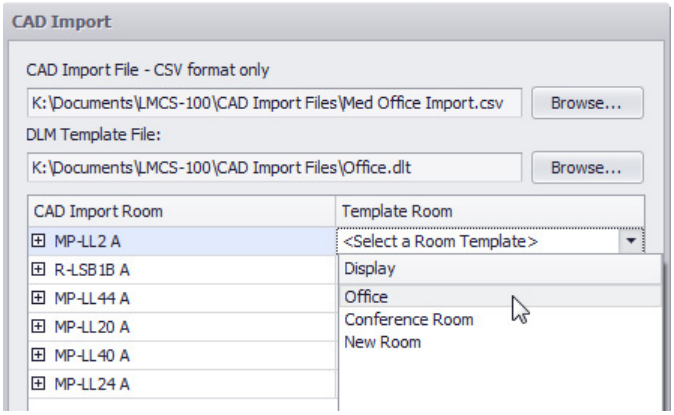
CAD Import



1. Click **CAD Import** on the **Support** tab to open the **CAD Import** dialog.
2. Click the top **Browse** button and select the .CSV file to import. The left side of the window displays a list of the rooms in the file. If you want to view the devices assigned to that room, click the “+” next to that room.



3. Enter the **New Area Name**.
4. If not using a template file, click **Import**. A warning message will appears stating that the rooms are not associated with a template. Click **Yes**. The log section of the window reports the status of the import.
5. If using a template file, click the bottom browse button and select the template file. To associate a room with a room type, click a room in the left side of the window to select it, then select the **Room Type** from the corresponding drop-down. Repeat this process for the other rooms, then click **Import**. If not all of the rooms in the imported CAD file are matched with a room type, a warning message will appear. If you click **Yes**, those rooms will import with default values while the other import the values from the template file. The log section at the bottom will indicate the number of rooms imported.



6. Once the import is complete, you can select another file to import and repeat the import process. Once all files are imported, click **Close**. The areas you created and associated imported rooms will show up in the tree on the left.

Limitations When Using Templates to Populate Device Parameters

A template file can contain multiple rooms, and each room can include settings for multiple devices, but you can only have one instance of each type of device. So for example, you can't have two LMSW-101 switches included in a room. Therefore, if the room being imported from the CAD file does have two of those switches, both of those switches will be set to the same parameter values.

When importing the .CSV file, LMCS will check to see if a device in the imported file is also in the selected room in the template file. If there is, it will copy and paste all the device parameter values into the imported room. If a device in the imported file does not exist in the template file, LMCS will use the default values for that device and no error will occur.

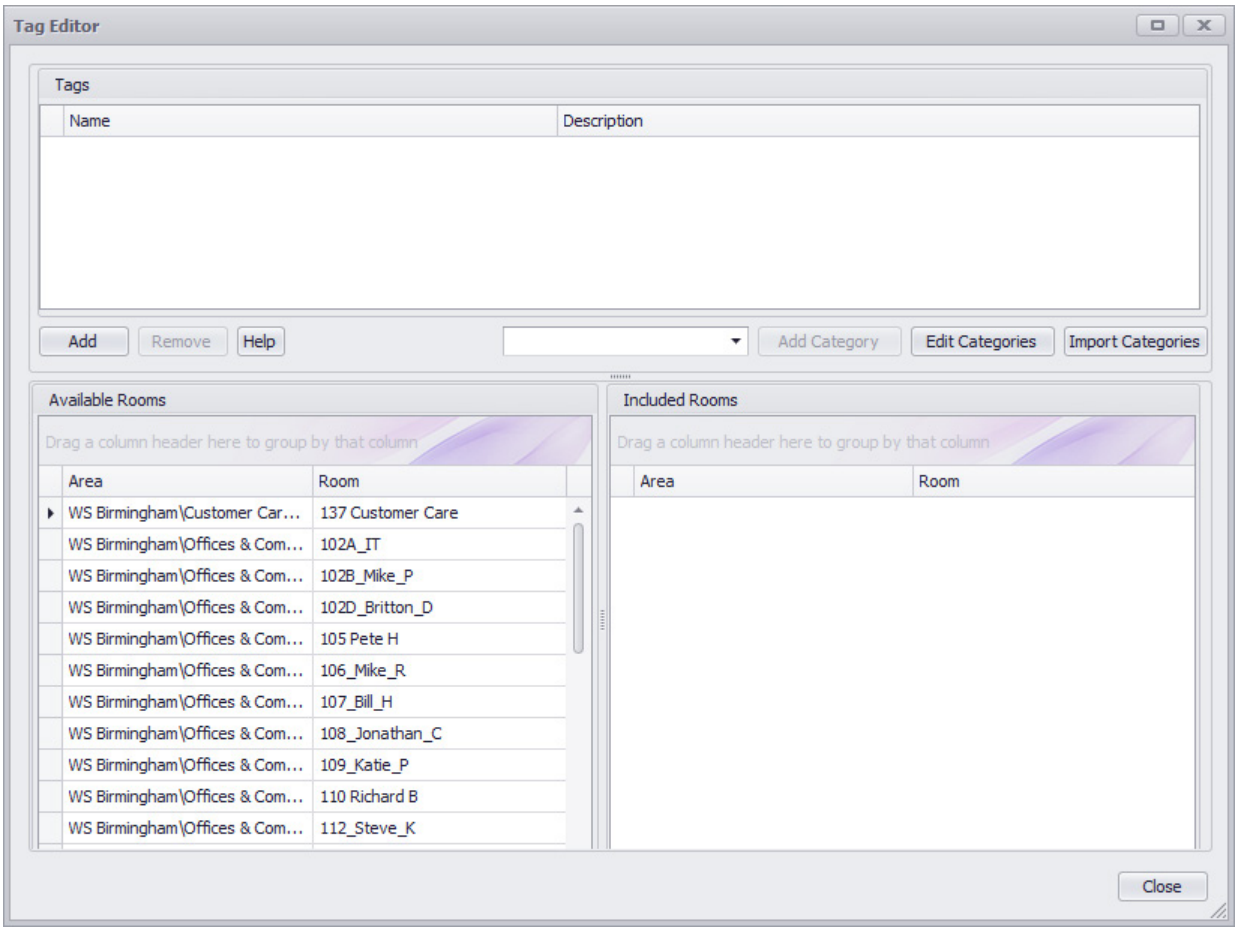
NOTE: If the template file happens to include device serial numbers, they are **not** copied since each device must have a unique number.

When creating the template file, select "DLM Template file" from the **Save as type** drop-down in the Save dialog.

Creating Tags for a Project

As mentioned in the section on manually creating a project, you can assign tags to a room for use with Segment Manager's Custom Groups. You can enter these tags individually for each room. But a more efficient way of assigning tags is available. First, manually enter or import all rooms in the project. Then click **Tags** on the **Home** tab to open the **Tag Editor** dialog.

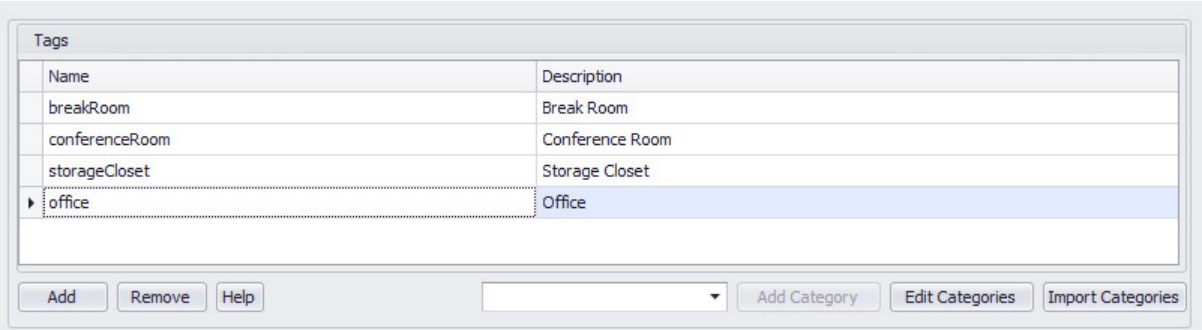
Tag Editor



Adding Tags and Assigning Them to Rooms

1. Click **Add** in the top section of the dialog to add a tag **Name**. Enter a **Description**, if desired. Tags should only contain letters, numbers, or the underscore character—no other special characters or spaces. They should be entered in camelCase—the first letter should be lower case, with the subsequent first letter of additional words in uppercase. For example, southWing or south_Wing. There are no restrictions on the **Description**.

   When an LMCS project is imported into the Segment Manager, the Segment Manager will use the tag **Description** to create a Custom Group. If no **Description** is available, the Segment Manager will use the tag **Name**, but will convert it from the camelCase format. So for example, “southWing” will be converted to “South Wing”.
2. Repeat to add more tags.



3. To assign rooms to a tag, select that tag in the list, then select the rooms in the Available Rooms list to assign to that tag. Like any typical list, you can Shift+click to select a range or Ctrl+click to select multiple individual rooms. Then click **Add Selected** to move those rooms to the Included Rooms list.

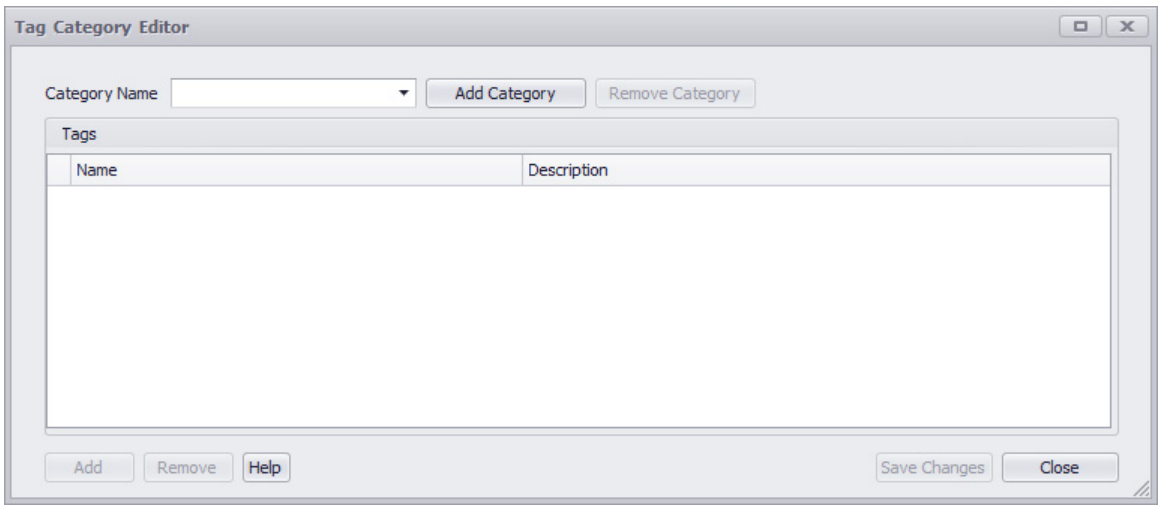
4. Select another tag from the top list and repeat the process. Once tags are assigned, you can click on any tag in the list and the Included Rooms list will show the assigned rooms. When complete, click **Close**. Tags assigned in the tag editor will appear in the **Tag** field when viewing a room's parameters.

Working With Tag Categories

Tag Categories provide a set of standardized tags which can be added to the project. This allows for consistency between projects as well as a quick way to add tags. There are two ways to add categories and tags—you can enter them within LMCS, or you can import an xml file with previously created categories and tags.

1. To add or edit tags in an existing category, click **Edit Categories** to open the **Tag Category Editor**.

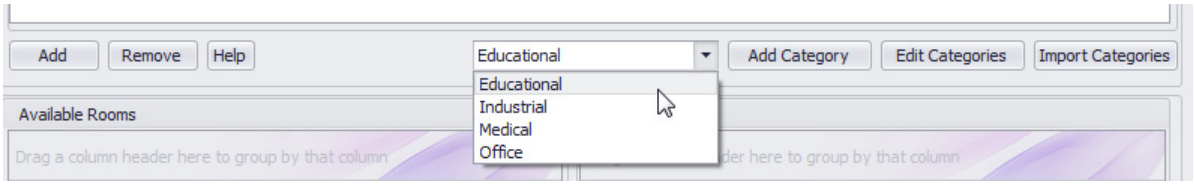
Tag Category Editor



2. Click **Add Category** and type the category name in the pop-up dialog, then click **Add** to return to the category editor. The category you created is now shown in the drop-down
3. Click **Add** to add a tag to the current category and enter the **Name** and **Description**. Add more tags to the category as needed.

   Add more categories and associated tags as needed. If you need to change the name or description of a tag in a category, select that category from the drop-down, highlight the tag and make changes as needed.
4. Click **Save Changes** to save the categories and associate tags.

   NOTE: You can't change the name of an existing category. Instead you must remove the category, the create a new category and recreate the associated tags.
5. Once you close the **Tag Category Editor**, the categories will show up in the drop-down list of the **Tag Editor**:



6. Select a category from the drop-down and click **Add Category**. The tags related to that category are added to the list.
7. The second way to add categories is to import them from a previously created custom file. Click **Import Categories** and select the file. The categories and tags will be stored in the 'TagLibraryDb.xml' file contained in the C:\ProgramData\LMCS system folder. Importing data from a new file will **append** the entries from the new file into the TagLibraryDb file. Note that if a category or tags within that category already exists in the file, they can not be in the file you are importing or the import will fail.

   If you want to create your own categories/tags file to import, the format is as follows:

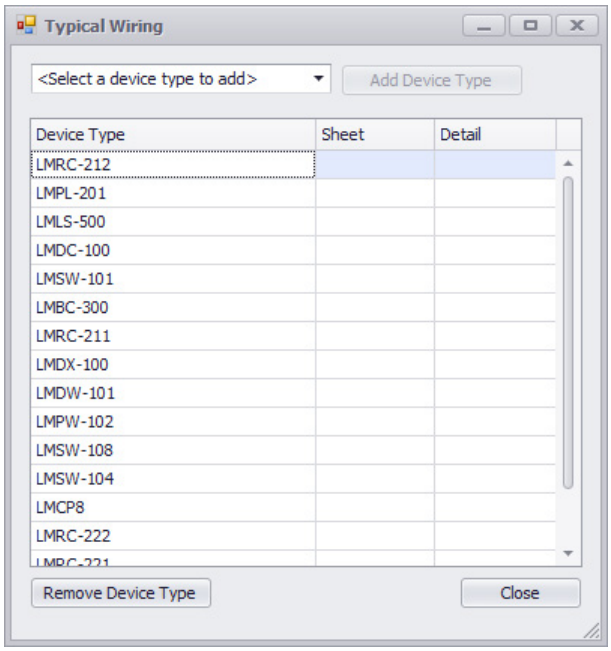
```
<TagLibraryDb>
   <TagCategory>
         <Name>Medical</Name>
         <Tag>
```

```
                <Category>Medical</Category>
                <Name>DoctorOffice</Name>
                <Description>Doctors Office</Description>
        </Tag>
        <Tag>
                <Category>Medical</Category>
                <Name>WaitingRoom</Name>
                <Description>Waiting Room</Description>
        </Tag>
                        ...(more tags)
    </TagCategory>
                        ...(more categories)
</TagLibraryDb>
```

Documenting Wiring Diagrams for Rooms

LMCS provides the ability to document specific DLM Device details as they relate to the project drawings. This information is printed in the **Typical Wiring** report. Click **Wiring** on the **Home** tab to open the **Typical Wiring** dialog.

Typical Wiring



All device types currently assigned to rooms in the project will be included in the list. You can also add device types by selecting them from the drop-down and clicking **Add Device Type**. Enter the **Sheet** number and **Detail** number for each device type. To delete a device type from the list, highlight the item and click **Remove Device Type**.

Creating Network Groups

If you have panels, zone controllers, or LMBC-300/LMBC-600/LMBC-650 bridges included in your project, you have the ability to create network groups. If multiple panels/bridges are networked together, all loads from different panels/bridges that are assigned to the same group will respond to commands sent to that group. So, for example, you might have panels on three different floors and assign the relays controlling the corridors on each floor to the same group number. You can then control all corridors on those floors together.

NOTE: Network Groups do **not** apply to wireless DLM devices (with the exception of the LMBC-600 and LMBC-650 for connection to wired devices). Instead the wireless scenes provide cross-room functionality.

NOTE: Any reference to panels in the text below also applies to the LMZC-301 zone controller, which has the same capabilities as a LMCP panel, but without any included relays. Instead it controls multiple connected LMFC-011 fixture controllers or other load controllers, via the DLM network.

Each group includes parameters that allow control of normal hours/after hours behavior of the load(s). You can use groups to turn loads on or off, go to normal or after hours, or control how sensors function. Additionally, you can assign switches or occupancy sensors to control a network group instead of specific loads, so a single switch could control loads in different rooms.

Each panel has 99 memory slots and each bridge has 16 memory slots for storing group parameters. However, there are 65,534 group numbers available. You select any group number and save it (along with values for the parameters) into the panel or bridge. The group number and associated values are stored in any available slot in memory. In this way multiple panels/bridges can be networked together and allow both coordinated load behavior (when the group numbers match between panels/bridges) and independent behavior (when the group numbers are unique to a panel or bridge). So, for example, if Group 1 includes loads 1, 2, and 3 in Panel A and loads 4, 5, and 6 in Panel B, then Group 1 parameters will be stored in a memory slot in both Panels A and B. On the other hand, if Group 1 include only loads in Panel A, then the group will be stored only in a Panel A memory slot.

NOTE: If you are using an LMCT-100 remote controller to do any programming or editing of parameters on site, be aware that the LMCT-100 can only access group numbers 0-99.

Once you have created enough groups so that the memory locations in a specific panel or bridge have reached the maximum, then the loads in that panel or bridge cannot be assigned to any more groups.

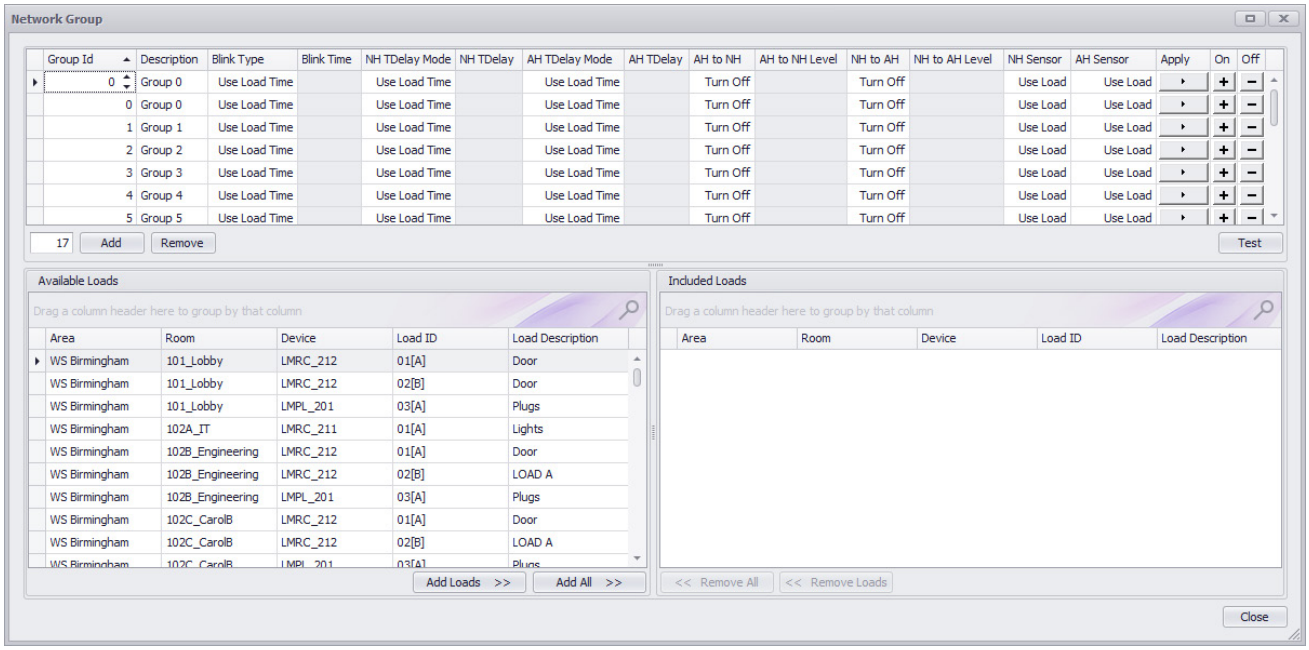
NOTE: If you want to use network groups to control loads in room controllers, they must be connected to an LMBC-300 bridge with version 7.xx or later firmware, or to an LMBC-600 or LMBC-650 wireless bridge. To update firmware, see "Update Firmware" on page 134.

NOTE: In order to create a network group, you must assign at least one load to that group on the global **Network Group** dialog. However, once the group has been created, there are **two places** where you can assign loads to the group and set the parameter values. The first is in this dialog. In this dialog, you have the ability to select loads from different panels or room controllers connected to bridges. There is also a **Network Groups** tab in the Information section when viewing an LMCP panel, LMBC-300, LMBC-600, LMBC-650, or LMZC-301. That tab will only display groups associated with that device. It is important to note that if you create a group on the global **Network Group** dialog and then go to view the group on a **Network Groups** tab that includes loads that are part of the group, the parameter values are **not** automatically transferred to the tab unless you have Applied the group, as described in the step 5 below.

NOTE: A maximum of 32 occupancy sensors can be assigned to control a load. This applies whether the sensor is controlling the load directly or if it is assigned to control a group.

1. To assign loads to groups, click **Network Group** on the **Home** tab to open the **Network Group** dialog.

Network Group



2. By default, the first group is set to **Group ID** "1" but can be changed to any number.
3. Enter values for all the programmable parameters (described in the next section).

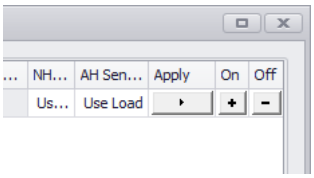
4. Select one or more of the loads from the **Available Loads** list and click **Add Loads** to move those loads to the **Included Loads** list. Like any typical list, you can Shift+click to select a range or Ctrl+click to select multiple individual loads. Or click **Add All** to assign all the loads to the group. You can filter either list to show loads with specific criteria. See "Filtering Lists in LMCS" on page 36 for details on filtering.
5. Click the arrow in the **Apply** column. This will copy the parameter values selected for this group to the **Network Groups** tab for any panels or bridges associated with the assigned loads. It will also copy the parameter values to the Normal Hours/After Hours tabs for the associated relays and room controllers.
6. To add another group, click **Add** in the top section and repeat the process.
7. Once multiple groups are assigned, you can view the loads assigned to them by clicking in the first column so that it has a " ▸ ". The **Included Loads** list changes to show the loads for that group. While the group is selected, you can edit any of the parameter values, or click **Remove** to delete that group.
8. If you click **Test**, a dialog opens allowing you to specify a group or scene along with an action. The selected action will be sent to the selected group or scene when you click **Send**.

NOTE: Once the groups are setup and applied, you must still send the information to the devices. See "Sending Project Data to Devices" on page 121 for details.

If you are currently connected to the panel or bridge via BACnet, you will see two additional columns on the right hand side of the parameters table, labeled **On** and **Off**. Click the buttons in those columns to send a Group On or Group Off message to the panel or bridge. When the group is turned On, all the loads assigned to that group will respond, based on the programming for that group. This allows you to test group behavior. Note that you must have first sent the group parameters to the panels or bridges.

NOTE: Keep in mind that values displayed on this window are not necessarily the current values for the individual loads. Once the group parameters have been sent to the panel or bridge, then if a message to select this group is sent via BACnet, the panel or bridge will call up those values. But if another device then sends a value to a load (for example, if a user presses a switch that selects a scene), the new value will be in effect.

Group On/Off buttons for Network Groups



Network Group Parameters

Group ID – This can be any number between 1 and 65,534.

Description – Enter any meaningful description for the group, if desired. By default, the description lists the group ID.

Blink Type – Blink is the amount of minutes load stays ON, when a scheduled event occurs that switches the load OFF when transitioning from Normal Hours to After Hours. Blink provides a warning to the user that load is going to turn off. The load will turn off and then quickly turn back on, then the Override LED for that load (on the room controller or panel) will blink continuously for the time period. The LEDs for all switches bound to loads that are part of that group will also blink continuously. Pressing the button will keep the load ON and the time delay countdown will start. When the countdown reaches 0, the blink function reoccurs.

The Blink Type has four values:

- None – No blink is used.
- Use Time – Blink is set to the amount entered in the **Blink Time** column.
- Use Load Time – Blink is set to the value of the **Standby Time Delay** parameter on the **Advanced** tab/ **Normal Hours** tab for each load. Note that this only applies if the **Standby Mode** is set to "Blink Warn" or "Blink Warn and Dim Level".
- Reset to Load Time – This is identical to the "Use Load Time" value.

NOTE: Blink does not apply when transitioning from After Hours to Normal Hours.

Blink Time – Amount of time before the load turns off, if **Blink Type** is set to "Use Time".

NH TDelay Mode – If a load is commanded to turn ON when the schedule switches to Normal Hours, the load will automatically turn OFF after the time delay expires. If the load is turned on manually by a switch after the schedule switches to Normal Hours, the load will again automatically turn OFF after the time delay expires.

The Time Delay Mode has four values:

- None – No delay occurs (the load will not time out during normal hours).
- Use Time – Time Delay is set to the amount entered in the **NH TDelay** column.
- Use Load Time – Time Delay is set to the amount of time specified in the **Override Time Till Off** parameter on the **Advanced** tab/**Normal Hours** tab for the load.
- Reset to Load Time – This is identical to the “Use Load Time” value.

NH TDelay – Amount of time delay if **NH TDelay Mode** is set to “Use Time”. If set to “0”, the load will not time out during normal hours

AH TDelay Mode – Identical to **NH TDelay Mode**, but the behavior occurs when the schedule switches to After Hours. (The “Use Time” value applies to the **AH TDelay** column and the “Use Load Time” value applies to the **After Hours** tab .)

This works in conjunction with **Blink**.

AH TDelay – Amount of time delay if **AH TDelay Mode** is set to “Use Time”.

AH to NH – Behavior of the relay when Normal Hours begins. Available values:

- Go To Level – Sets loads to the level specified in the **AH to NH Level** column
- Last Non-Zero – Returns to load to the last value that was not 0 (completely off)
- Do Nothing – No change occurs
- Last Non-Zero Occupied – Returns to load to the last value that was not 0 (completely off) if the room has an occupancy sensor and the sensor indicates the room is occupied. If the room is unoccupied or if there no sensor in the room, there is no change to the load.
- Use Loads – Sets loads to the value of the **Preset Level** parameter on the **Basic** tab/**Normal Hours** tab. Note that if the **Use Last Level** checkbox on that tab is not selected, then the last non-zero value is used.
- Turn Off – Turns load off

AH to NH Level – Level the load goes to if **AH to NH** is set to “Go To Level”

NH to AH – Identical to **AH to NH**, but the behavior occurs when the schedule switches to After Hours. (The “Go To Level” value applies to the **NH to AH** column and the “Use Loads” value applies to the **After Hours** tab.)

NH to AH Level – Level the load goes to if **NH to AH** is set to “Go To Level”

NH Sensor – Determines how the relay responds to sensor input during Normal Hours. Possible values are:

- Nothing – Load does not respond to occupancy sensor
- Off Only – Responds to sensor input when vacancy is detected but not when occupancy is detected
- On Only – Responds to sensor input when occupancy is detected but not when vacancy is detected
- On/Off – Responds to sensor input for both occupancy and vacancy detection
- Off Only Internal – Responds to vacancy commands only. Applies if the **Sensor Mode** parameter on the **Advanced** tab/**Normal Hours** tab for the load or relay is set to “Follow Off Only With Standby Time Delay”. Instead of using the default value of one minute for the blink warn feature, the sensor will use the amount of time entered in the **Standby Time Delay** parameter.
- On Only Internal – The load responds only to Occupancy commands and once the load is on, it will not shut off for the length of time entered in the Override Time Till Off parameter. If the sensor registers vacancy and then back to occupancy, the time delay period restarts the countdown. (This is labelled “Follow On Only With Override Time Delay” in the **Sensor Mode** parameter on the **Basic** tab/**Normal Hours** tab for the load or relay.)

NOTE: The **Override Time Till Off** parameter has its own functionality related to responding to a switch. If you select this option the amount of time specified in that parameter will apply both to its own functionality and to this option.

- On/Off Internal – Responds to both occupancy and vacancy commands. Applies if the **Sensor Mode** parameter on the **Advanced** tab/**Normal Hours** tab for the load or relay is set to “Follow On and Off With Standby Time Delay”. Instead of using the default value of one minute for the blink warn feature, the sensor will use the amount of time entered in the **Standby Time Delay** parameter.
- Use Loads – Response to sensor is determined by the value of the **Sensor Mode** parameter on the **Basic** tab/**Normal Hours** tab for the load or relay. There are some values available for the **Sensor Mode** parameter that are a not available in this field, so to use those values as part of a group, you must choose “Use Loads”, and then select the desired value for each load that is part of the group.

NOTE: Keep in mind that this determines whether the loads assigned to the group will respond to sensor input. It does not determine whether the loads will turn on or off. That is set within the sensor programming (either on the sensor itself, or by using LMCS or the LMCT-100 remote). In LMCS, this determined by the **Preset Value On** and **Preset Value Off** parameters on the **Advanced** tab for sensors.

AH Sensor – Determines how the relay responds to sensor input during After Hours. Possible values same as above. If set to “Use Loads”, it follows the value on the **After Hours** tab.

Setting Up Holidays For Use With Schedules

The **Holiday Editor** allows you to determine holidays to be used with schedules. There are two types of Schedules—those that work with wireless devices and those that work with wired devices.

Wireless schedules are created and edited on the **Programming** tab in LMCS. See “Creating and Editing Schedules for Wireless DLM” on page 83 for details.

For wired devices, if there are panels or an LMZC-301 included in the project, schedules can be created within the Panel or LMZC-301.

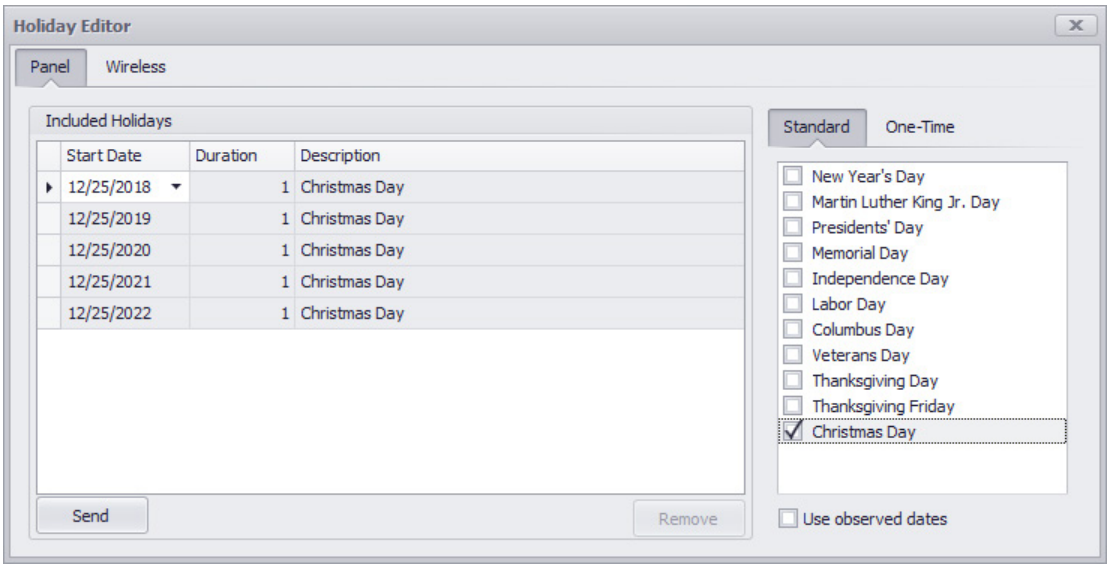
Schedules can trigger events, including switching between normal and after hours. The **Holiday Editor** dialog provides the ability to specify holidays for use with schedules. In a schedule you can choose “holidays” as one of the criteria when the scheduled event occurs. Every day designated as a holiday will then follow that schedule.

Click **Holidays** on the **Home** tab to open the **Holiday Editor** dialog. The editor opens with the **Panel** tab selected, for use with wired devices.

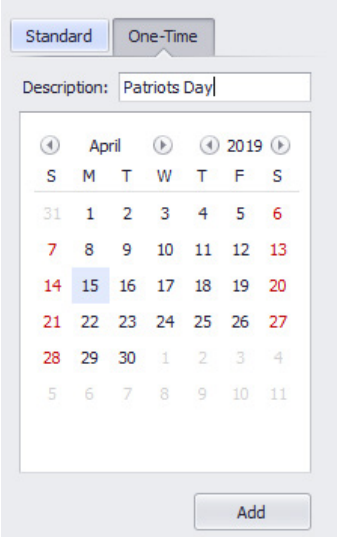
Panel (Wired) Holidays

Select one or more of the **Standard** holidays to add it to the Included Holidays list. A separate holiday row will be added for each of the next five years for that holiday. By default, each holiday has a **Duration** of 1 day, but this can be edited if desired. If you select **Use Observed Dates**, LMCS will adjust the day if the holidays falls on a weekend. So for example, if July 4th falls on a Saturday, July 3rd will be designated as a holiday.

Holiday Editor



For non-standard or one time holidays, click the **One Time** tab, enter a **Description** for that holiday and select a date on the calendar. Then click **Add** to add it to the list. Although you can only select a single day at time, the **Duration** can be increased once the row is added.



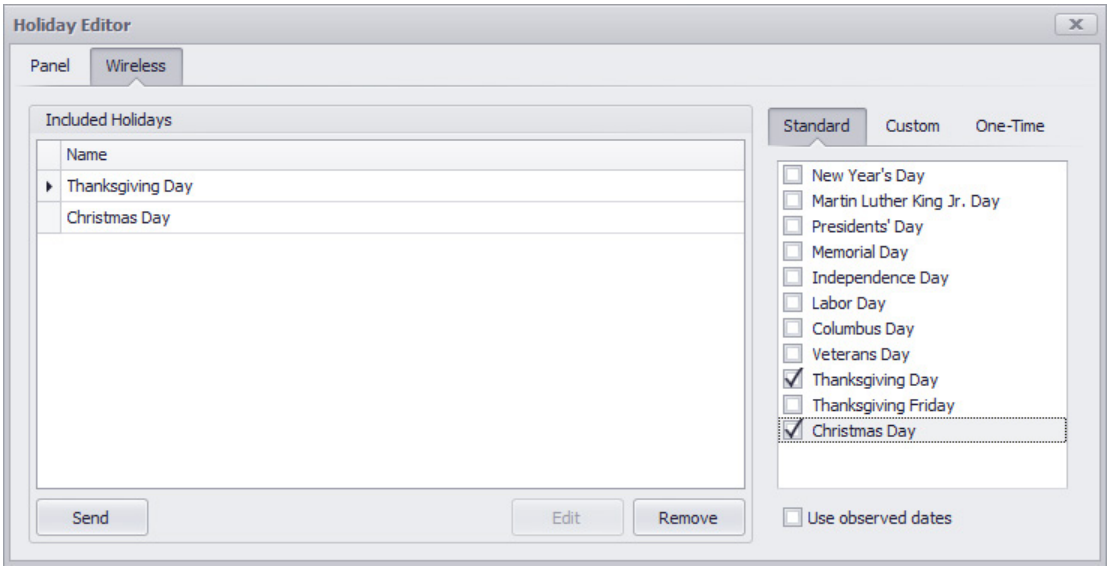
If you want to delete a holiday from the list, highlight that row and click **Remove**.

The **Send** button allows you to send holiday info without having to send from the Schedule editor.

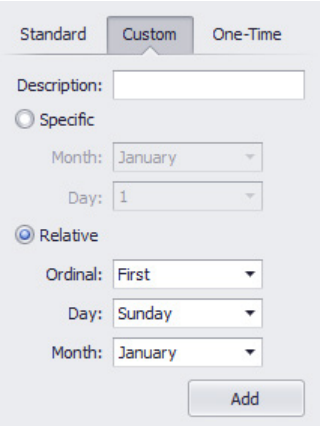
Wireless Holidays

Click the **Wireless** tab to create and edit holidays for wireless schedules. The editor looks very similar as when editing wired holidays, but there are a couple of differences.

When you select a standard holiday, only a single row is added and applies to all years.



In addition to the **One Time** tab, a **Custom** tab is available for wireless holidays.



While the **One Time** tab allows you to select a specific date in a specific year, the **Custom** tab allows you to select that date for all years. Additionally, the **Relative** option allows you to select a calendar day based on a specific week in a month. For example, Patriot's Day is a holiday in Massachusetts which always falls on the third Monday in April.

CREATING A PROJECT THROUGH ON-LINE DISCOVERY

Wired projects are typically created off line and then the project data is transferred into the DLM devices at the site, while wireless project are typically created online. It is also possible to create a wired project while directly connected to the devices. This is more likely to be done in a small installation, especially if the individual rooms are not connected via BACnet. This process involves connecting to a DLM or BACnet network, discovering the DLM devices on the network, making any needed programming changes, and sending the data back to the devices.

The process of online discovery is different depending on the type of network you are discovering:

- A wireless Network using the LMBR-650. This process also applies to wired or hybrid room which connect to the LMBR-650 through an LMBC-650. See the section starting below for details.
- A wired network. See "Creating a Project While Connected to A Wired Network" on page 93.
- A wired Network with a wireless network connection using the LMBC-600 and LMBR-600. See "Discovery Using an LMBR-600 Wireless Router and LMBC-600 Wireless Bridges" on page 96.

Additional Information in this section:

- "Discovering New Rooms or Devices in a Previously Discovered Network" on page 98
- "Discovering Devices Remotely" on page 112

CREATING A PROJECT WHILE CONNECTED TO A WIRELESS NETWORK

IMPORTANT – Wattstopper recommends always using the latest LMBR-650 firmware when starting a new project. New firmware can be downloaded and applied using LMCS Software.

LMBR-650 firmware 10.147 and later introduces a Self Addressing feature that automatically assigns a unique static IP address and eliminates the need to use a temporary DHCP Router. The default LAN Port is set to Static IP by default to support self addressing. LMCS or the LMBR-650 reset button can be used to configure DHCP support when required.

Wattstopper recommends the following steps for setting up communication between LMCS and all LMBR-650s in your project:

1. The Self Addressing feature is enabled by default on all LMBR-650 with firmware version 10.147 or later and is the easiest way to set a unique static IP address on a **factory default/uncommissioned** LMBR using the following process:
   a. Connect the uncommissioned LMBR-650 to a wired local area network and power on the device.
   b. Self Addressing will select and assign an available Static IP address between 192.168.5.189 and 192.168.5. 240.
   c. Once Self Addressing is complete the Blue LED status will be solid ON. If Self Addressing fails, the Blue LED status will be FLASHING and the LMBR will have a default IP Address of 192.168.5.241.

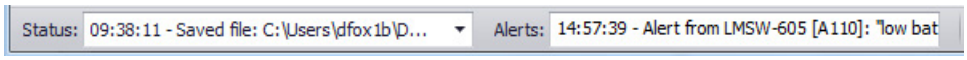
   NOTE: Note: Self Addressing requires firmware version 10.147 or later and is only active when the LMBR is in a factory default/uncommissioned state. Prior to 10.147, DHCP was the default LAN Port setting. In all LMBR with 10.147 and later the default LAN Port setting is Static IP. Upgrading a **commissioned** LMBR to 10.147 or later will not change any IP Settings.

   NOTE: It is Wattstopper best practice that the Primary LMBR be used only for communication with other LMBRs and not have any wireless devices assigned to its network. Therefore, the Primary LMBR will often be mounted in a network enclosure and will only communicate via Ethernet cable and not with its wireless radio. Because of this, it is important to note the MAC address of that LMBR to make sure that it is designated the primary LMBR.
2. If the LMBR-650, will be permanently connected to a router, you may want to switch it to DHCP. See "Switching between Static IP and DHCP" on page 64 for details on configuring DHCP with LMCS.
3. Follow the Network Discovery wizard, described in "Network Discovery Wizard" on page 62.
4. Change the Primary LMBR, if needed, as described in step "Changing the Primary LMBR" on page 64.
5. Check the firmware version in the LMBRs and update them, if needed. There are two different methods for updating the firmware - update a single LMBR, or update multiple LMBRs in the same process.
   - To update a single LMBR,highlight the LMBR in the Network Tree and click **Update Firmware**. A dialog opens displaying the version of firmware that was included when the current version of LMCS was installed, as well as the version in the LMBR itself.
   - To update multiple LMBRs, use the **Update LMBRs** function on the Support Tab. See "Update LMBRs" on page 139.
6. Discover all wireless devices and pair them. See "Discovering and Pairing Wireless Devices" on page 65.

NOTE: It is also possible to run through the entire discovery process first, then go back and change to static IP addresses.

Status and Error Drop-Downs at the Bottom of the LMCS Window

The bottom of the window has two drop-downs showing **Status** and **Errors**. Status updates show when autosaves happen, which polling processes are running, or when anything is happening in the background. The Errors drop-down displays errors that happen while commissioning processes are running, misconfiguration of the firewall, and any exception that occurs. A numbered badge pops up on the errors box if you have unread errors in there. The last message output in the box is always displayed, even if it occurred days ago, but timestamps are included to help avoid confusion.



Network Discovery Wizard

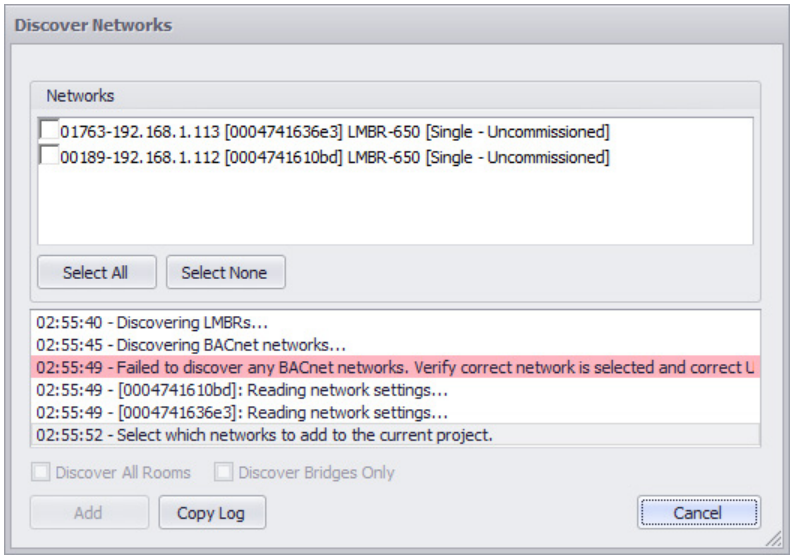
A wizard walks you through the process of discovering LMBR-650s and assigning network IDs.

1. In order to discover devices in a wireless network, you must first log in to your cloud account and create a site or open a site previously created for the project. For details on this process, see "Connecting to a Wireless Room Network" on page 23.
2. Once this is complete, click **Discover** on either the **Home** tab or the information section for the New Building. The **Discover Networks** dialog opens and the discovery starts automatically. All routers found on the network are listed. This will include both LMBRs and NB Routers. Each router displays its current IP address. An LMBR-650 will also display its MAC address after the IP address.

   The status box indicates the process in the discovery. LMCS first will attempt to discover LMBRs, then discover other BACnet Networks on other routers. Finally, it will display the message "Select which networks to add to the current project." If there is a problem with discovery the message is highlighted in pink, as shown below. In this example, LMCS at first failed to discover any LMBRs before finally discovering them.

   Once the LMBR-650 is found, if it has never been configured, it will display "[Single - Uncommissioned]", indicating it is at the default values and that each LMBR is treated as a separate wireless router.

Discover Networks



3. Select one or more of the LMBR-650s.

   NOTE: Wattstopper recommend that you select all the LMBRs that will be used in the site, to simplify the commissioning process

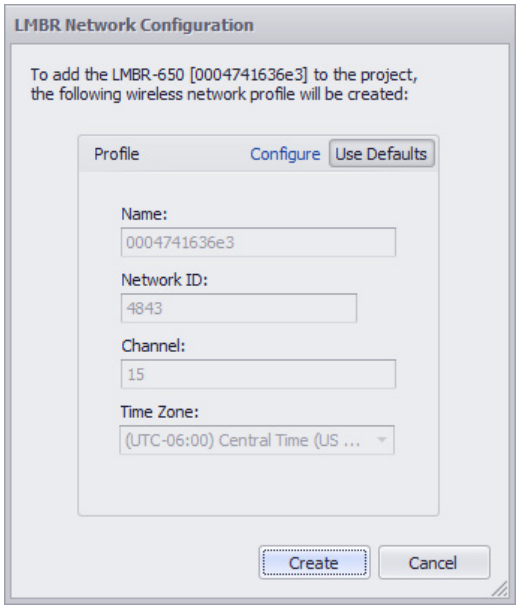
4. Click **Add**. A new dialog pops up that allows you to select the **Network ID** and **Channel** the LMBR will use to communicate with the wireless DLM devices. It will pick a couple of numbers automatically. The **Name** used to identify the LMBR will be set to the MAC address of the LMBR. If you want to change either or both of the numbers or create a custom name, click **Configure** and the fields will be enabled for editing. If you click **Use Defaults**, the fields are disabled and set to the values chosen by LMCS.

   The **Time Zone** parameter allows you to set the time zone during the discovery process. The time zone is used for schedules. The value defaults to he time zone currently the on the PC.

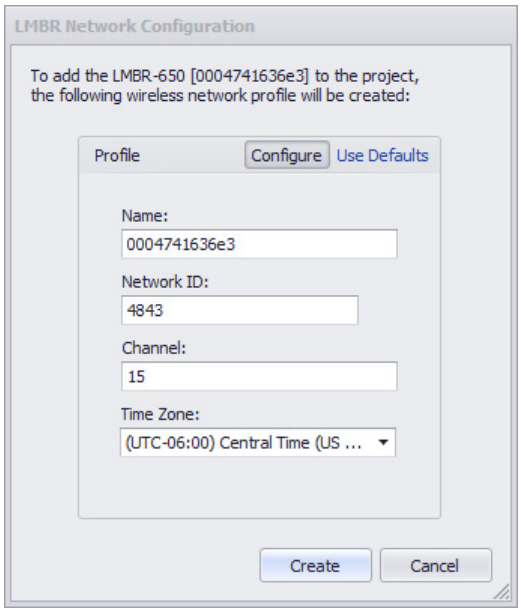
   NOTE: Available values for the Network ID are 4 through 65 and 280.

   NOTE: If there are multiple LMBR-650s, each one must be set to a different **Network ID**. The **Channel** can be the same on multiple LMBRs, but Wattstopper recommends that each one use a different channel.

LMBR Network Configuration

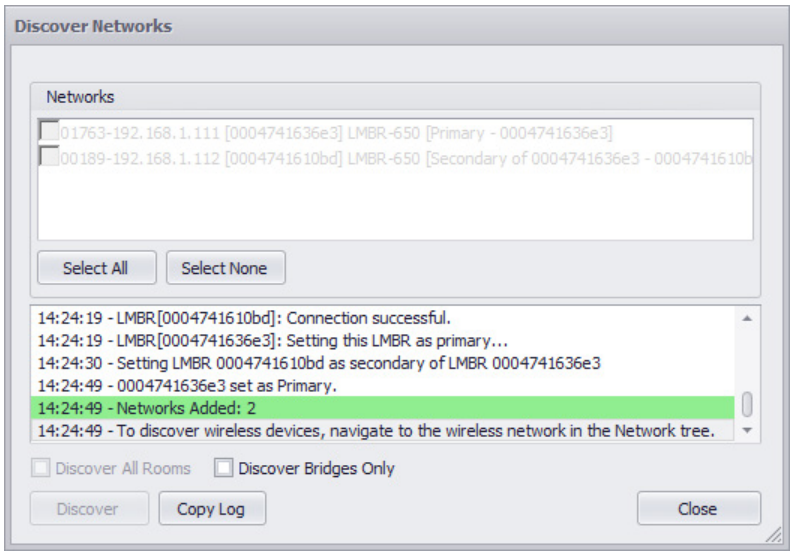


Network Configuration with fields enabled



5. Click **Create**. The LMBR will be configured for the chosen **Network ID** and **Channel**.
6. If you have selected more than one LMBR, once the network configuration is complete, the process will repeat for each subsequent LMBR, with different default values for each LMBR network. Once all networks are configured, all LMBRs are grayed out and the Discover Networks log shows the number of Networks added.
   - If there is only a single LMBR, it will show that LMBR with “Single” in the description.
   - If there are multiple LMBRs, LMCS will configure the first one in the list to be the Primary LMBR and the others will be considered secondary LMBRs. Although the first LMBR is picked as primary by default, it is likely that a specific LMBR will be intended to be the primary by virtue of where it is installed. You may therefore need to change the Primary LMBR, as discussed in “Changing the Primary LMBR” on page 64.

Added Networks



7. Click Close to exit the Network Discovery wizard.

   IMPORTANT: Wattstopper strongly recommends that you update the firmware in the LMBRs to the most current version, if they are not current. There are two different methods for updating the firmware - update a single LMBR, or update multiple LMBRs in the same process.
   - To update a single LMBR, highlight the LMBR in the Network Tree and click **Update Firmware**. A dialog opens displaying the version of firmware that was included when the current version of LMCS was installed. It will also check and display the version in the LMBR itself, allowing you to update if a newer version has become available.

- To update multiple LMBRs, use the **Update LMBRs** function on the Support Tab. See "Update LMBRs" on page 139.

Switching between Static IP and DHCP

If you highlight the LMBR in the tree and click the **Configure** button, a dialog open that allows you switch between DHCP or Static IP and configure IP Address settings.

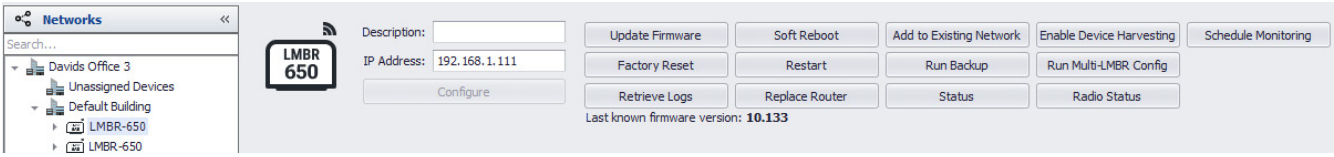
NOTE: LMBR-650s with firmware 10.147 and later are set to Static IP by default and use the Self Addressing feature to assign an address between 192.168.5.189 and 192.168.5.240. LMBR with firmware prior to 10.147 may be set to DHCP by default.

When the LMBR-650 is configured for DHCP, DNS is required to provide an IP address before you will be able to connect. Therefore, all LMBR-650s (as well as the computer) must be connected to a router if you are going to switch to DHCP. If you do not plan to have the router permanently connected to the network, the LMBR should be configured for Static IP. If there are multiple LMBR-650s, set each one to a different IP address and they will all be able to communicate both with LMCS and with each other.

You can configure the LMBR-650 for a specific IP address, as shown in the following steps.

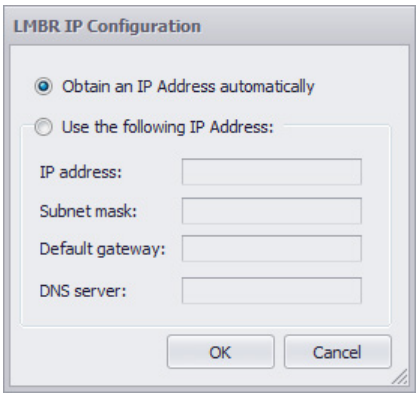
1. Click the **Networks** tab. Expand the tree and highlight the first LMBR in the tree.

LMBR-650 Information

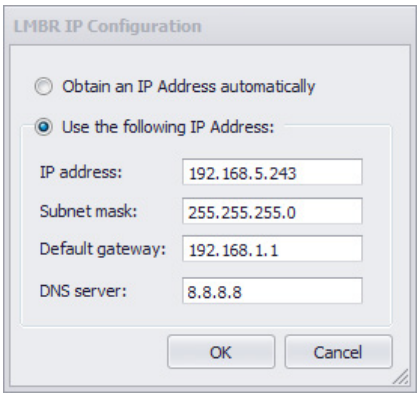


2. Click **Configure**. The **LMBR IP Configuration** dialog opens and will display the current LMBR-650 IP configuration—either DHCP or Static IP.
3. To change the IP configuration from Static IP to DHCP, select "Obtain and IP Address automatically".
   To change the IP configuration from DHCP to Static IP, select "Use the following IP Address:". The fields are enabled and populated with the current or default values.

IP Configuration Set To DHCP



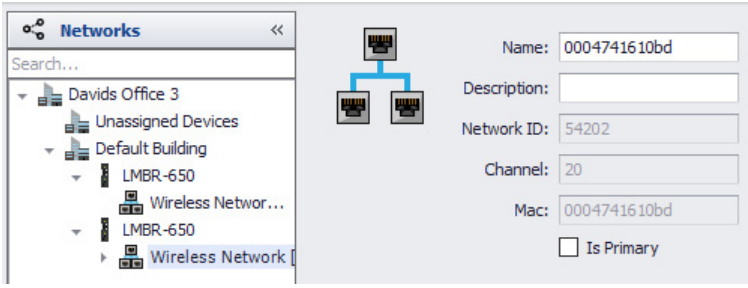
IP Configuration Set To Static IP



4. Change the values of the different parameters, if needed. Note that the default IP address will be different from the value assigned through DHCP. Click **OK** to change the LMBR to the new values.
5. If there are additional LMBRs, repeat steps 1 through 4 for each LMBR. Each LMBR must be set to a **different** IP address.

Changing the Primary LMBR

If you need to change the Primary LMBR, highlight the network under the intended LMBR in the tree, and click the **Is Primary** checkbox. (If you highlight the network of the current primary LMBR, the checkbox will be selected and disabled—you can deselect it only by selecting a different LMBR.)



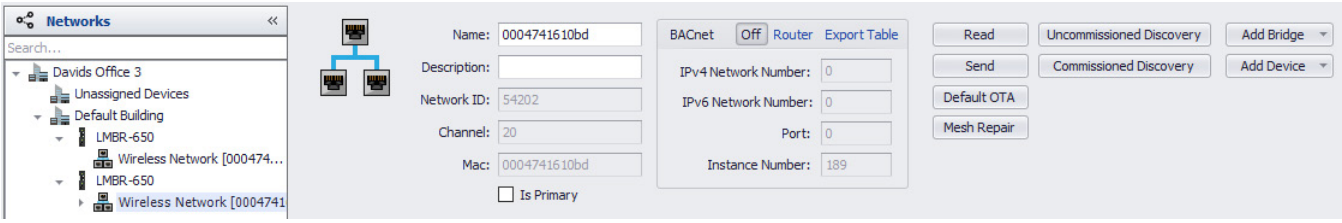
Discovering and Pairing Wireless Devices

Once all LMBRs have been discovered and updated (if needed), you can begin the process of discovering all wireless devices, assigning them to rooms and pairing them so they communicate with each other. In a multi-LMBR site, you will assign devices to only a single LMBR.

NOTE: As mentioned previously, it is Wattstopper best practice that the Primary LMBR be used only for communication with other LMBRs and not have any wireless devices assigned to its network.

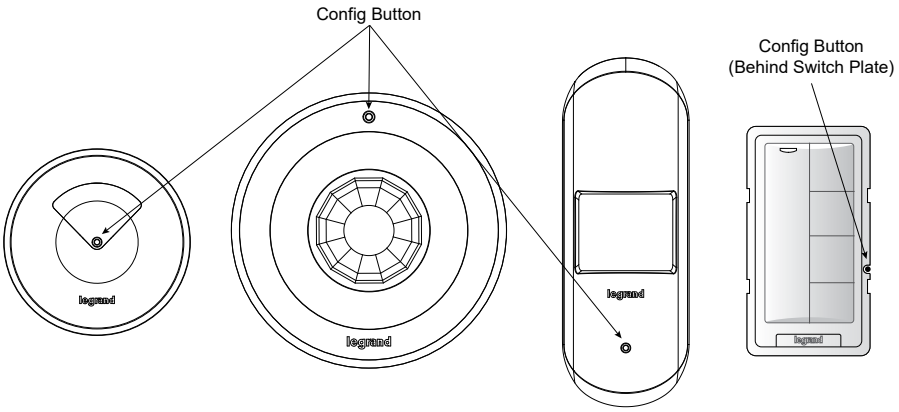
1. With the **Networks** tab selected, expand the desired LMBR in the tree to display its Wireless Network and highlight the network.

Wireless Network Information Section



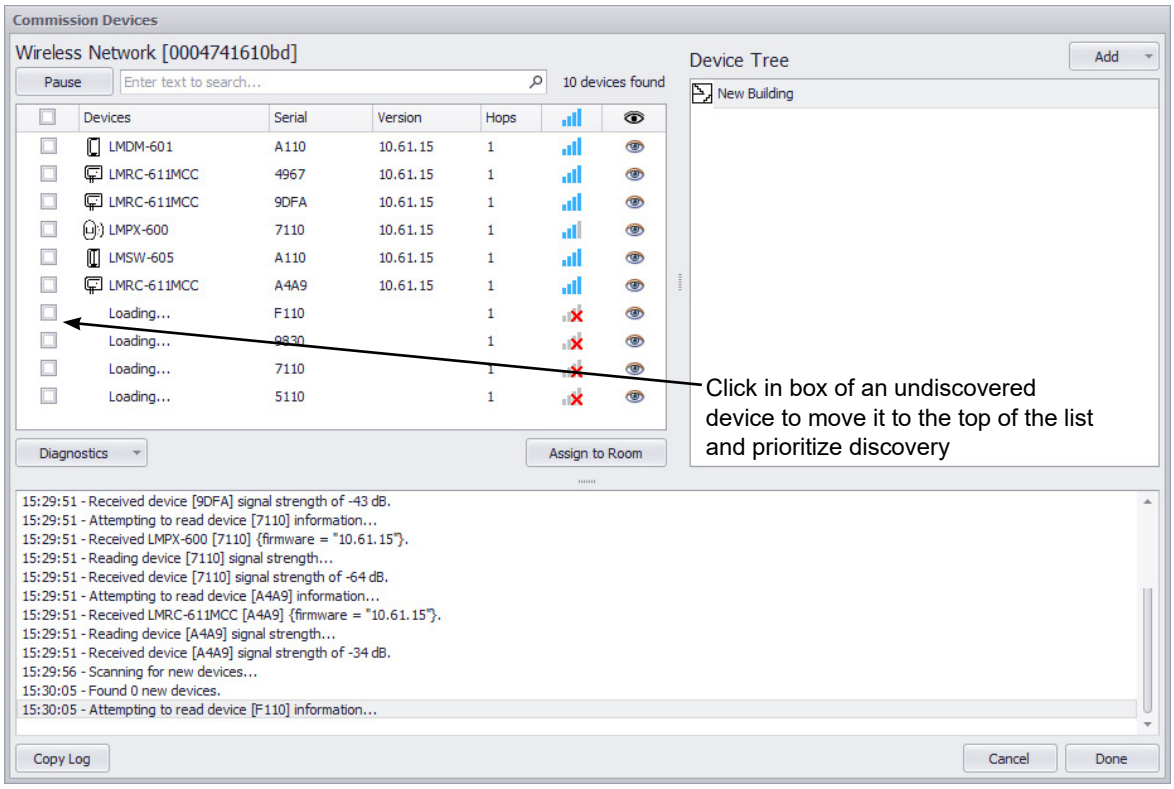
2. Click **Uncommissioned Discovery**. The **Commission Devices** dialog opens and LMCS temporarily returns that LMBR to the default Network ID and Channel, so the LMBR can communicate with the wireless DLM devices still at default configuration.. Depending on the number of devices, this can take a little bit of time.

   Any wireless room or plug load controllers and LMBC-650 bridges will automatically display once found. But for all battery devices (sensors and switches), you must wake up the device by pressing the Configure button. This is located on the front cover for sensors. For switches, it is behind the switch plate cover and will require a small tool or paper clip.



   Once woken up, the battery devices will remain awake for five minutes while the LMBR establishes contact. However, once you begin the next series of steps, LMCS takes control of the devices and they will remain awake for as long as is needed for LMCS to complete the process of moving the devices to the LMBR's network and pairing the devices in rooms.

Commission Devices



As the LMBR finds the various devices, they are initially displayed as an unknown device, and once the LMBR has retrieved enough information, the **Devices** and **Serial** number columns will display that information. The signal strength column shows a red X until all device information has been retrieved. The signal strength icon then changes to blue to indicate that the device is fully discovered.

While the devices are being discovered, clicking on the checkbox next to that device that has not been fully discovered will move it to the top of the list to prioritize discovery of that device. So in situations in which there are a large number devices, and you are only looking for certain ones, you can speed up the process by clicking on the devices you know that you want to discover. You can click **Pause** so that the list will not reorder while you attempt to click on devices, then resume the scan.

NOTE: The **Serial** column displays the last four digits of the MAC address. Although every MAC address is unique, because the MAC is 12 digits long, it is possible for the last four digits to be the same on more than one device, as shown in the example above.

NOTE: If you have a room with an LMBC-650 wireless bridge and wired devices, you will only discover the LMBC-650 at this point. After wireless discovery is complete, you will discover the wired devices from the LMBC-650 window, as described later in this section. See "Discovering Wired Devices Connected to an LMBC-650" on page 71.

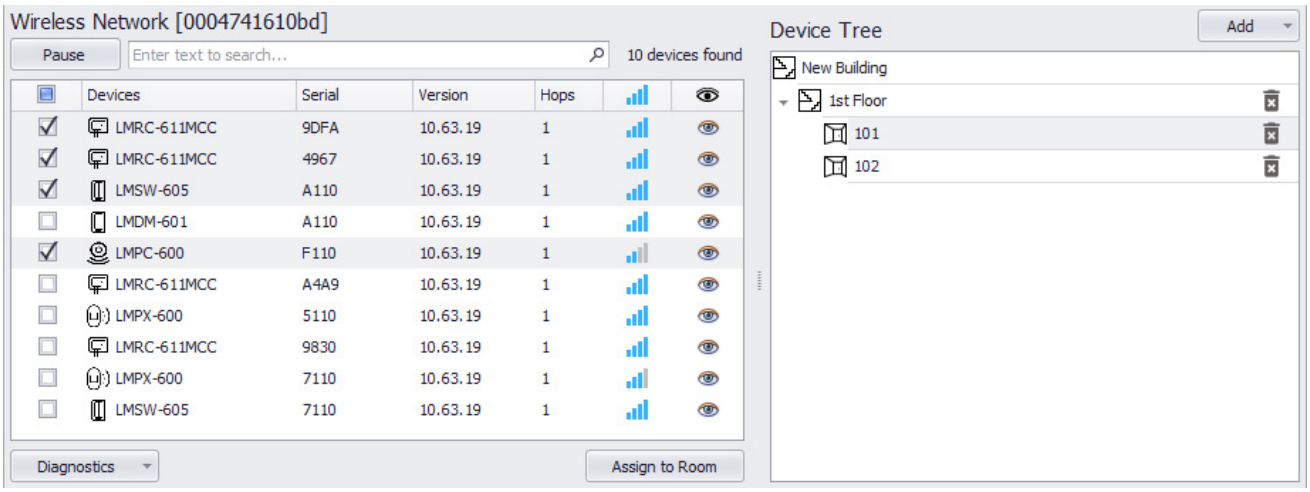
NOTE: If devices are not showing up in the list or are taking a long time to connect, clicking **Mesh Repair** may help. This will cause the devices to build new communication routes back to the LMBR-650.

NOTE: If you click **Copy Log**, the log messages displayed at the bottom are copied into your edit buffer and can then be pasted to a text editor.

3. The right side of the dialog allows you to create areas and rooms, using the **Add** button. If you add an Area and then add a Room while the area is highlighted, the room will be placed within that area. You can name the rooms or areas as they are added.

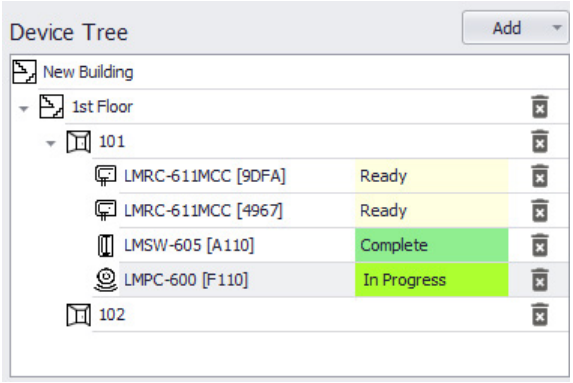
NOTE: You can work on adding rooms and areas while the device discovery process is going on—LMCS continues searching for devices while this dialog is open.

4. Highlight a specific room and then check the box next to each device that you want to move into that room.



IMPORTANT: If you have more than one LMBR, be sure to select **only** the devices that you want to assign to this particular LMBR. After completing assigning devices to this LMBR, you will repeat the process for each additional LMBR.

5. Once you have selected the desired devices, click **Assign to Room**. As devices are added to the room, they are removed from the list on the left. Room and Plug controllers and bridges will display “Ready”. Battery devices will initially display “In Progress” and then “Complete.



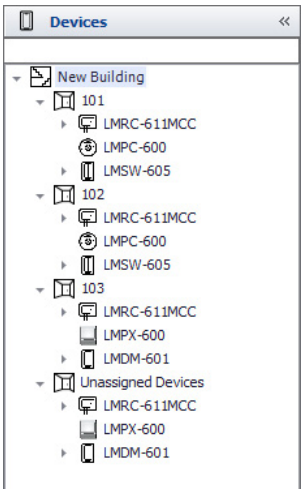
6. Repeat the previous step for each room. Once all rooms have the desired devices assigned to them, click **Done**. The **Transfer** dialog opens. And the LMBR begins the process of syncing the devices in the room, pairing them, and then reading the data dictionary in the controllers.

Processes 8 processes selected

	Display ID	Type	Time (s)	Status
☑	LMPX-600 [5110]	Sync with Room [102]	0.14	Completed
☐	LMRC-611MCC [9830]	Sync with Room [102]	0.15	Completed
☐	LMSW-605 [7110]	Sync with Room [102]	0.14	Completed
☑	LMRC-611MCC [9DFA]	Pair with Room 101	0.00	In Progress
☑	LMRC-611MCC [4967]	Pair with Room 101	0.00	Pending
☑	LMRC-611MCC [A4A9]	Pair with Room 102	0.00	Pending
☑	LMRC-611MCC [9830]	Pair with Room 102	0.00	Pending
☑	LMRC-611MCC [9DFA]	Read Data Dictionary	0.00	Pending
☑	LMRC-611MCC [4967]	Read Data Dictionary	0.00	Pending
☑	LMRC-611MCC [A4A9]	Read Data Dictionary	0.00	Pending
☑	LMRC-611MCC [9830]	Read Data Dictionary	0.00	Pending

☑ auto-retry

7. Once everything is completed, click **Close**. If there are further LMBRs that need to have devices assigned to them, highlight the wireless network of that LMBR and repeat the entire process.
8. If you click the **Devices** tab and expand the Tree now, you will see the rooms you created and the devices assigned to those rooms. If any devices were not assigned to a room during discovery, they will be included in a special “room” labeled Unassigned.



Discovering Previously Commissioned Devices

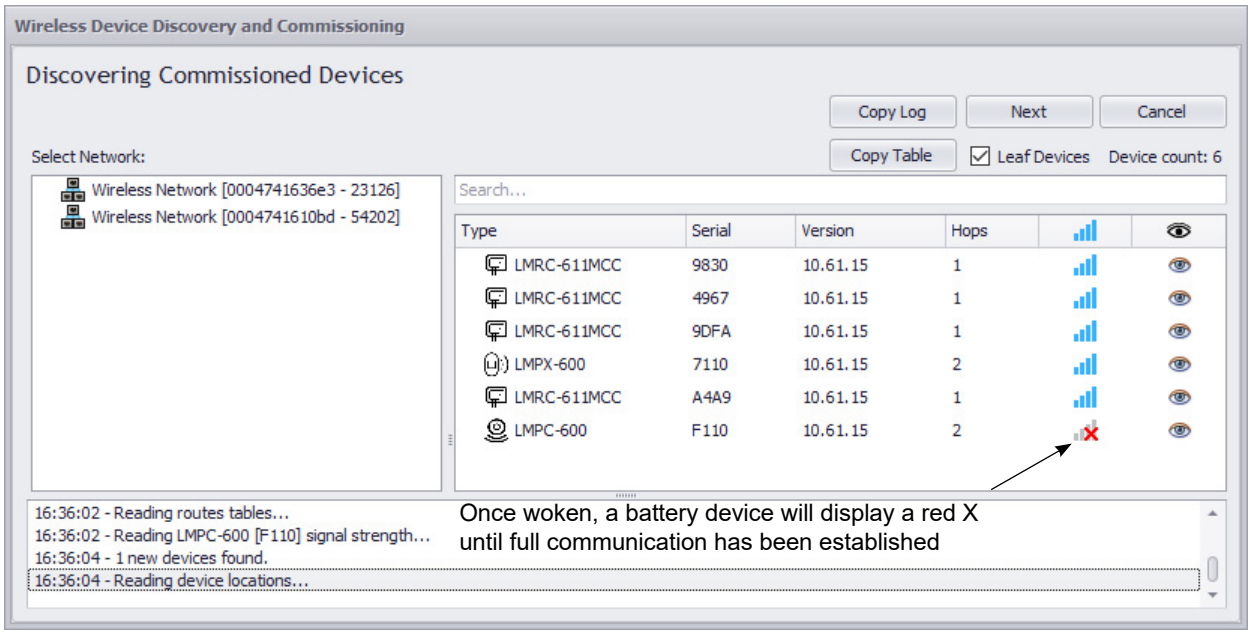
If you are on a site in which devices were previously discovered but for some reason they are not in the currently LMCS site file (for example, they were deleted by accident), you can rediscover those devices and re-pair them without having to reset those devices From the Wireless Network Information section, click **Commissioned Discovery.**

1. The **Discovering Commissioned Devices** dialog opens and the LMBR begins searching for wireless devices set to the same Network ID and Channel as the LMBR. As with discovering uncommissioned devices, you will need to wake up any battery devices by pressing their Config buttons in order for them to appear on the list.

   If you disable the Leaf Devices checkbox, it will only list controllers and bridges (non-battery devices). This is for display purposes only—LMCS will continue to discover the battery devices as long as they are awake.

   LMCS searches for and lists all found wireless devices on all networks. However, you can filter the list for single network by clicking on the network in the left hand side of the dialog.

Discovering Commissioned Devices



2. Once the device you are trying to add back into the site is displayed, click **Next**. The dialog closes. LMCS asks the LMBR which room that device belongs in and places it back in the Device tree in that room. In the very rare circumstance in which the LMBR does not know where the device belongs, it will show up under Unassigned Devices so that you can assign it to the correct room.

   NOTE: If you click **Copy Table**, the Type, Serial, Firmware version, Hops, and RSSI (Signal Strength) for each discovered device will be copied to the clipboard, for documentation purposes. Fields are comma delineated. For example:

   LMRC-611MCC, A4A9, 10.03, 1, -22

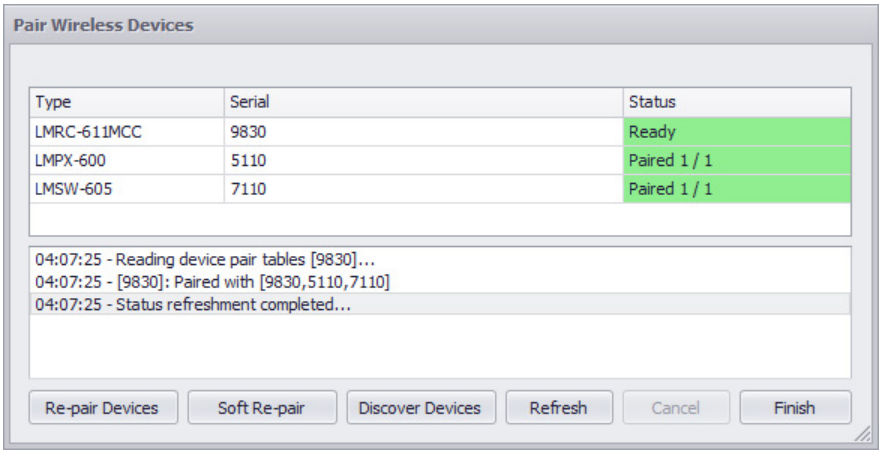
   LMPX-600, 5110, 10.03, 1, -24

Adding Unassigned Devices to a Room and Pairing Them

If you did not assign all devices to a room during the discovery wizard, or if you have added additional devices and discovered them after having assigned other devices, you can easily add them to a room and pair them.

1. Highlight the desired devices within the Unassigned Devices “room” and drag them into the desired room. This can be an existing room or a room you just created in the tree.
2. Highlight the room you just dragged the devices into and click the **Wireless Device Pairing** button in the top section. A dialog opens and LMCS checks the status of the devices. While checking the status, the **Status** column will display “Unknown” in yellow. Once the check is complete, the status changes to green for paired devices, the controller status will display “Ready” and the battery devices will show that they are paired.

Pair Wireless Devices



3. If any devices are not paired and the status displays as yellow or red, click **Re-pair**. The status of the controllers will turn yellow, then red, as they are unpaired, and then pairing process starts. Once all devices are green, pairing is complete.

   Clicking the **Discover Devices** button will allow you to discover devices that were previously paired using the manual Push-to-Pair method or the DLM Config App, so you can re-pair them.

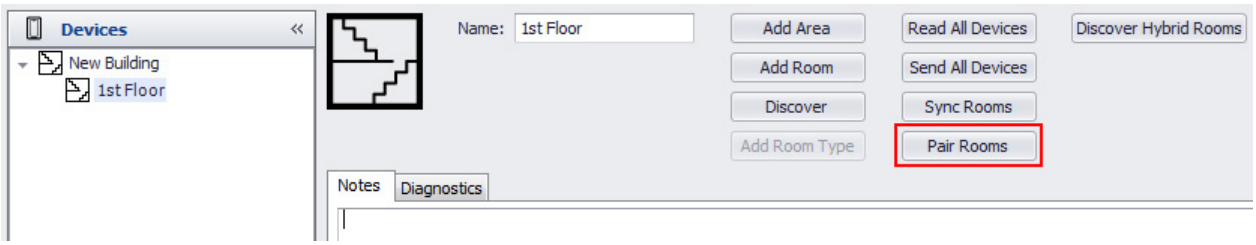
   NOTE: When you use **Re-pair,** any custom actions (for example wireless scenes) will be removed. If you use the **Soft Re-pair** function, this re-pairs the devices without removing any custom actions that were set up. Use this function to pair a new device into a room that already had custom actions on other devices.

NOTE: It is also possible to move previously paired devices from one room to another, by using the same process of dragging them to the new room and then clicking **Wireless Device Pairing**. For the LMBR to harvest the BACnet points from the wireless LMRC or LMPL devices, they must be paired.

Pairing Room Devices in More Than One Room at a Time

If you have more than one room in which there are devices that need pairing, you can use the **Pair Rooms** function found when an Area or the Building is selected in the tree.

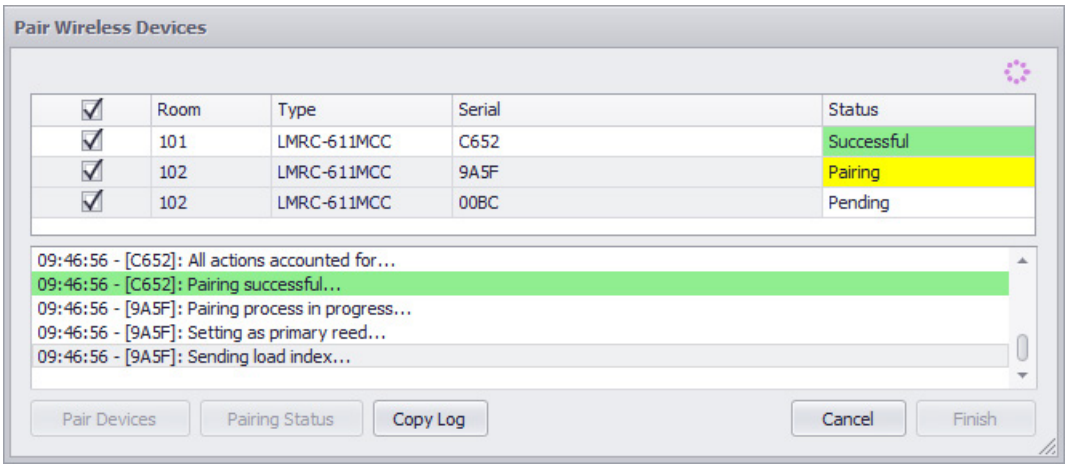
Pair Rooms Button for an Area



When you click the button, the following dialog opens. All rooms in the area are listed. Unlike pairing devices in a single room, in this dialog, only controllers and bridges (powered devices, also referred to as REED devices) are displayed—no battery devices are listed.

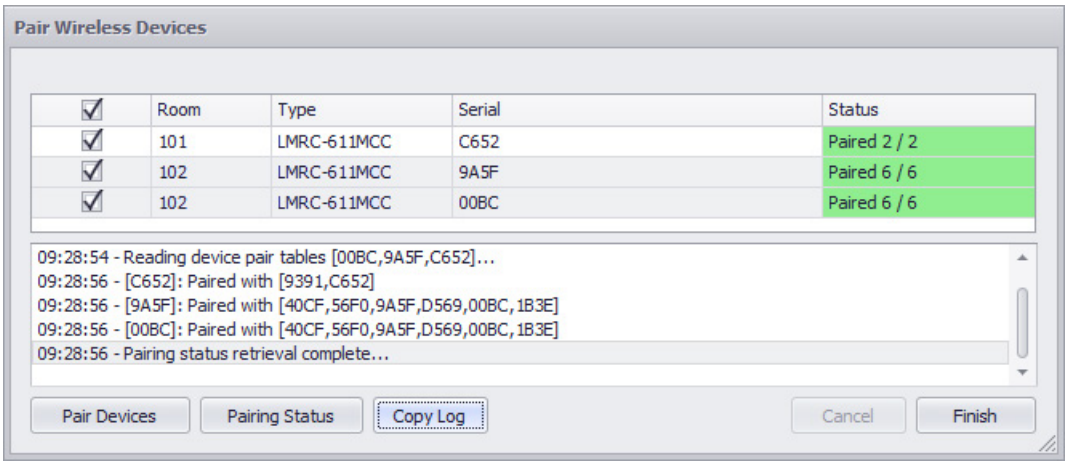
1. By default, all rooms in the area are selected. If you want to only pair devices in certain rooms, you can deselect the checkboxes for the other rooms. The **Status** column will initially display “Unknown” in yellow.
2. Click **Pair Devices**. LMCS looks at all the devices in a room and sends the serial number of each device to each REED device in the room, to be stored in its pairing table. If there is more than one REED device in a room, one device will be chosen as the primary. Once the check is complete, the status changes to green for paired devices

Pairing Devices for Multiple Rooms



If you click **Pairing Status**, LMCS will read the pairing table for each selected REED device and compare it to the list of devices currently in that room in LMCS. This allows you to determine which rooms are correctly paired, so you can deselect before beginning the pairing process, or to troubleshoot various problems. Note that for a large site, this process can take a while. Once the pairing table has been read and compared to the assigned to that room in LMCS, the **Status** displays the number of devices that are currently paired. If you click **Copy Log**, the information is copied to the clipboard and can be pasted into another application.

Pairing Status



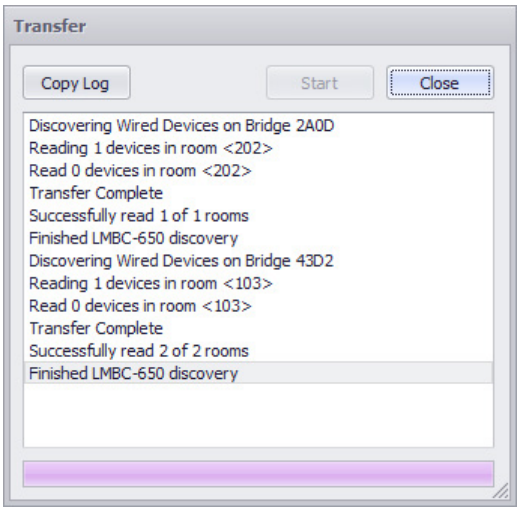
Discovering Wired Devices Connected to an LMBC-650

If you have one or more LMBC-650 bridges in your network, the wired devices connected to those bridges are not discovered during the wireless discovery process. There are two possible methods for discovering the wired devices.

- Discover all wired devices connected to all LMBC-650s within a single area or within the entire building, in one process
- Discover the wired devices connected to a single LMBC-650

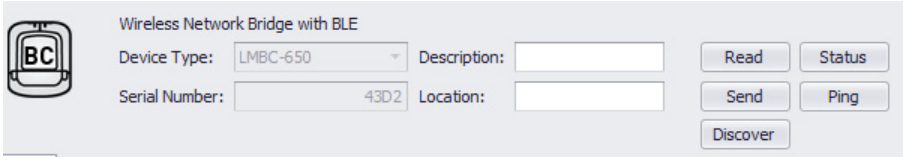
To discover all the wired devices, highlight the building or an area in the Devices tree, then click **Discover Hybrid Rooms** in the information section. A dialog opens and discover begins immediately.

Discover Wired Devices



Once the “Finished LMBC-650 discovery” message displays, click **Close**. The wired devices will now show up under the LMBC-650 in the tree and can be edited like any other wired DLM devices.

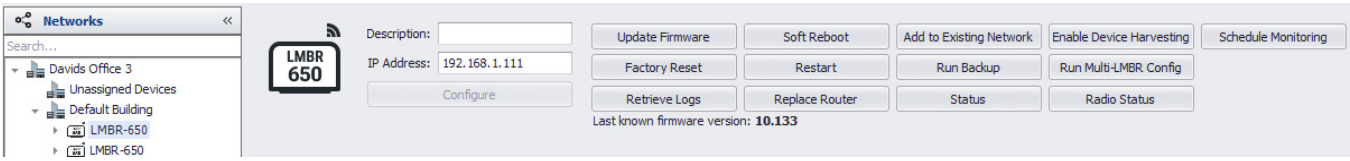
To discover wired devices that are connected to a single LMBC-650, select the LMBC-650 in the Devices tree and click **Discover** in the information section.



Viewing LMBR-650 and Wireless Network Information

If you select the **Networks** tab, each LMBR-650 that has been discovered will display in the Networks tree. If you highlight an LMBR-650 in the tree, several different functions are available in the Device Information section

LMBR-650 Information



You can enter a **Description** and it will display in the tree. The **IP Address** can be edited, but if you do so, it would need to be changed on the LMBR, so it is recommended you do not change it here.

If you click **Update Firmware**, a dialog opens displaying the version of firmware that was included when the current version of LMCS was installed. It will also check and display the version in the LMBR itself, allowing you to update if a newer version has become available. Note that you can update the firmware in multiple LMBRs in a single process, using the **Update LMBRs** function on the **Support** tab.

IMPORTANT: If you click **Factory Reset**, the LMBR will be reset back to default values. Not only will the Network ID and Channel be set to defaults, but the security certificate will also be deleted. You must then create a **new** Site and rediscover the LMBR—you will **not** be able to use your existing site. Therefore, use caution with this function.

The **Retrieve Logs** button will display the most recent logs from the border router. It shows profile assignments, tag attributes, multi-LMBR data, the route table, routes, the most recent 20 events from event.log, the last 200 lines of callLog.txt, and the last 50 lines from lighttpd_error.log. You can then copy this information to the clipboard or save it as a text file.

The **Soft Reboot** button will reboot Contiki on the border router. It is most useful if the LMBR stops communicating with devices but is otherwise responsive.

The **Restart** button will restart the LMBR-650. It is essentially the same as power cycling the LMBR-650.

The **Replace Router** button is used if you need to replace a router in a site with **multiple** LMBR-650s. There must be at least one functioning router on the site that contains the backup files for the other routers. For details, see "If Replacing or Resetting an LMBR-650" on page 105.

The **Add to Existing Network** button has two separate functions:

- It is used if you have a wireless room that was originally paired using the manual Push-to-Pair method or the Quick Pair method in the DLM Config App. For details, see "Adding Devices Previously Paired with Push-to-Pair or the DLM Config App" on page 98.
- It can also be used if you need to replace the router for a site that has only a **single** LMBR-650, for situations in which the original router has developed a problem or was reset. By using this function, you won't need to reset the other devices and re-run discovery. Note that the new LMBR-650 cannot already have any devices attached to it before you run this function. For details, see "Replacing the LMBR-650 in a Single LMBR Network" on page 106.

The **Run Backup** button is only displayed for the primary (master) border router in a multi-LMBR setup (or in a single LMBR setup). On a weekly basis, every Sunday at 3 AM, the border routers will run a backup of each other in order to make replacement possible. However, you can use this function to manually initiate the backup for all routers. LMCS only reports that the backup command was successfully sent. It does not wait for the backup to successfully complete.

NOTE: Wattstopper **strongly** recommends that an initial backup is run after the site has been commissioned and before the startup technician leaves.

When you click **Radio Status**, LMCS will check to make sure the Contiki Servers operating mode was configured properly as a border router when the device was commissioned. If it is, the message "LMBR radio is operating normally" is displayed in the Status/Alerts bar at the bottom of the window. If the Contiki Server was not configured correctly, the error will be displayed in the Status/Alerts bar. LMCS will then attempt to reconfigure Contiki and each step will be displayed along with any errors if they are encountered.

The **Status** button runs a series of checks on the LMBR-650 and opens a screen to display the results. It is a quick way to see if the LMBR is functional. You should see "OK" and "INFO" messages in the **Status** column. If there is anything that says ERROR then you likely have a problem and should contact technical support. Click the icon in the upper right hand corner to copy the status information to the clipboard and paste into a text editor, if needed.

LMBR-650 Status

LMBR Status Information

Summary: healthcheck.sh completed with 1 errors, 0 warnings, 27 passes, 68 infos

Drag a column header here to group by that column

Step	Time Stamp	Name	Status	Detail
1	2021-08-10 15:38:31.811...	START	INFO	begin healthcheck.sh
2	2021-08-10 15:38:31.899...	DISK	OK	Disk is good
3	2021-08-10 15:38:31.937...	DEVNULL	OK	/dev/null is a character device.
4	2021-08-10 15:38:31.974...	DEVNULL	OK	after double check, /dev/null is a character device.
5	2021-08-10 15:38:32.150...	6LOWPAN	OK	6lowpan interface up
6	2021-08-10 15:38:32.188...	MSGPIPE	OK	messagepipe FIFO /tmp/messagepipe exists
7	2021-08-10 15:38:32.312...	THROTTLE	OK	throttelRWphp.php is alive
8	2021-08-10 15:38:32.434...	CONTIKI	OK	contiki is alive
9	2021-08-10 15:38:32.558...	HARVEST	OK	instance of PHP harvest alive
10	2021-08-10 15:38:32.614...	UPTIME	INFO	uptime=71008
11	2021-08-10 15:38:32.753...	DISK	INFO	/dev/mmcblk0 on /mnt/sdRW type ext4 (rw,relatime,data=ordered)
12	2021-08-10 15:38:32.831...	DISK	OK	/mnt/sdRW is not read-only
13	2021-08-10 15:38:32.934...	DISK	OK	/mnt/sdRW/sqlLog/healthcheck.log write success
14	2021-08-10 15:38:33.038...	DISK	OK	/mnt/sdRW/sqlLogUpDated/healthcheck.log write success
15	2021-08-10 15:38:33.452...	CONTIKI	OK	contiki responded to ping
16	2021-08-10 15:38:33.539...	CONTIKI	OK	contiki is ticking!

Clicking **Schedule Monitoring** opens a dialog that allows you to enable more detailed logging, for diagnostic purposes. Detailed logging will be active for one week, although you can extend the duration or deactivate the logging by returning to this dialog. You can set up the logging for just the current LMBR or all of them.

Schedule Monitoring

Schedule Monitoring

To help diagnose scheduling issues, you can temporarily enable rigorous logging, active for one week. See the resulting log files at /mnt/sdRW/contiki_coap_acks.Wed.log (one file for each day of the week). You can refresh the duration at any point, or deactivate early, which also clears these advanced logs.

Activate monitoring | All LMBRs

Deactivate monitoring | Only this LMBR

Send | Cancel

The **Enable Device Harvesting** button is a way to manually run the device harvesting process if something happens and it fails to run after a firmware update of the LMBR. The Device Harvesting process is what allows the LMBR websocket to push updates to LMCS.

Device Harvesting

Transfer

Processes | 0 processes selected

Display ID	Type	Time (s)	Status
0004741636e3	Enable Harvest And On Change	0.01	Completed

auto-retry

10:46:45 - [0004741636e3]: Update Complete.

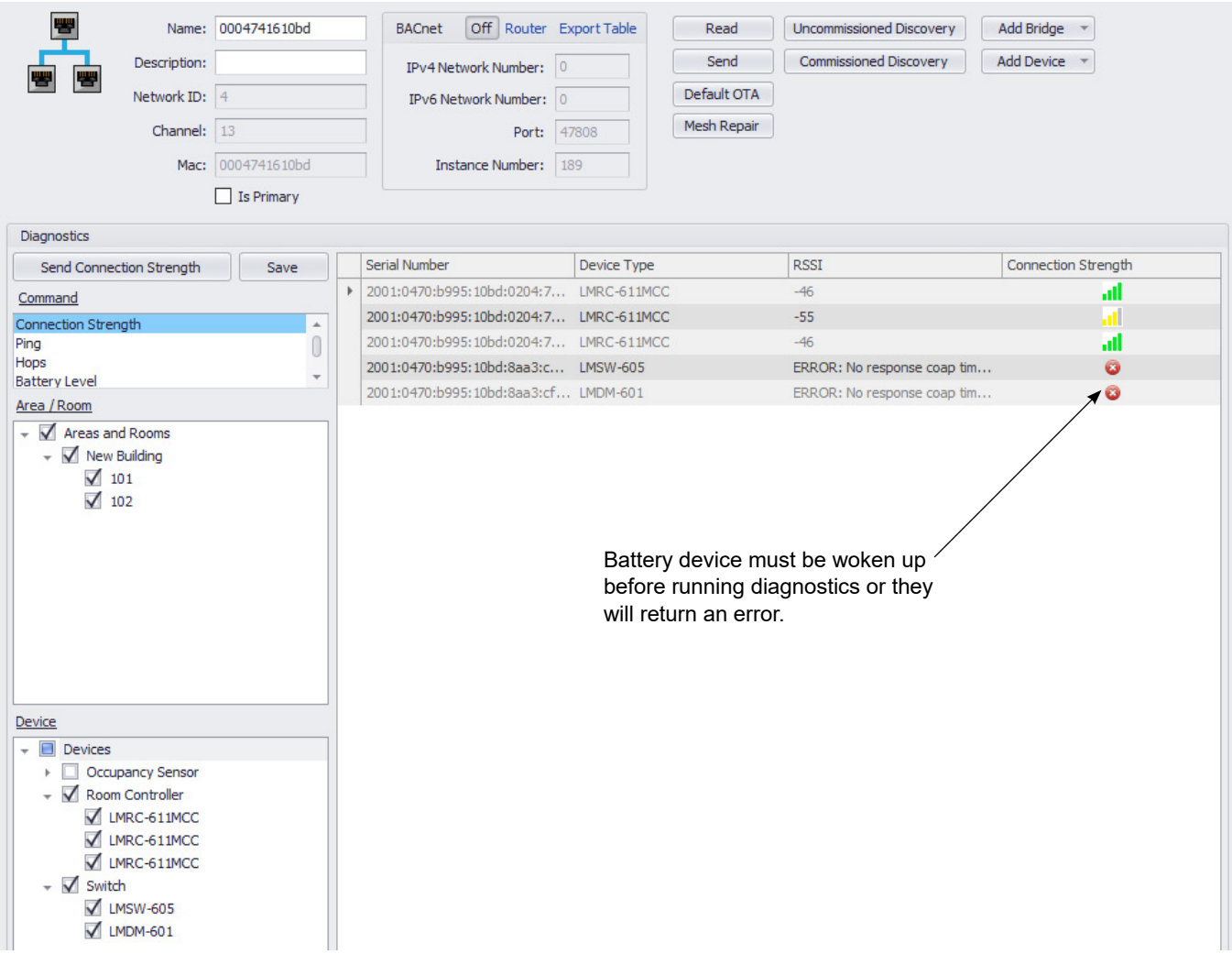
10:46:46 - Transfer Complete: 1 process succeeded, 0 processes cancelled, 0 processes failed.

Start | Copy Log | Cancel | Close

Clicking **Run Multi-LMBR Config** will reestablish the Primary LMBR as primary, for situations in which that info has been lost by the LMBRs.

If you expand the tree to show a wireless network and highlight it, the Info section displays information about the network and provides a few useful tools.

Wireless Network Information



You can enter a **Description** for the network and it will display in the tree. The **Network ID** and **Channel** used for wireless communication are set during the wireless configuration wizard and cannot be changed here.

It is possible to manually add wireless devices to a network with the **Add Bridge** and **Add Device** buttons. However, at this time, there is no practical use for this function because wireless devices must be added through discovery in order to work properly.

Changing the Primary LMBR-650 in an existing Multi-LMBR Project

In a project with multiple LMBRs, one LMBR will be designated as the primary LMBR. If viewing the network of the primary LMBR, the **Is Primary** checkbox will be selected and disabled. To choose a different LMBR to be the primary, highlight the Network of that LMBR. In this case, the **Is Primary** checkbox will be enabled. Simply click the checkbox to make the change.

NOTE: The primary LMBR is used to store wireless schedules, so if you change the primary from one LMBR to another, you must resend the schedules from LMCS to the new primary LMBR. See "Creating and Editing Schedules for Wireless DLM" on page 83 for details.

BACnet Information Section

By default, BACnet is disabled, on the LMBR, but if you click **Router** or **Export Table**, you can enable BACnet and edit the values of the parameters.

If you select **Router,** the LMBR-650 routes BACnet messages to the LMBC-650. BACnet export tables on the LMBR-650 are disabled for LMBC-650 devices but are still enabled for the wireless LMRC and LMPL devices.

If you select **Export Table**, the LMBR-650 does not route BACnet messages to the LMBC-650 devices. All BACnet interaction with wireless devices must happen through the BACnet export tables on the LMBR-650.

NOTE: When you click **Router** or **Export Table**, a security disclaimer pops up, which you must agree to before proceeding.

NOTE: When setting up the BACnet settings on the LMBR, the **IPv4 value and IPv6 value should not be the same**. If they are the same, the LMBR-650 will not be able to properly access the points from an LMBC-650 for the BACnet export tables.

IPv4 Network Number – BACnet number for IPv4 communication. The default value is 0 but can be changed. However, all LMBRs and all profiles in the installation must use the same number if there is a single Segment Manager or the Segment Manager is not used. If there is more than one Segment Manager, each one will have its own BACnet number. All profiles assigned to routers and bridges must use the same number that has been configured on the Segment Manager.

IPv6 Network Number – BACnet number for IPv6 communication. Each LMBR must use a unique number.

Port – This number must match the number you set in the **Preferences** dialog, accessed from the **Support** tab See "Preferences" on page 145. The default number is 47808.

Instance Number – This number must be unique for each individual device in a BACnet network.

NOTE: You must click **Send** after enabling BACnet and setting the parameters in order for BACnet to be enabled on the LMBR.

Once you have enabled either the Router or Export Table capability, a **BACnet Export Table** tab will be added to for each wireless Controller, in the Load section. See "BACnet Export Table Tab" on page 165 for details.

Additional Features in the Information Section

The **Default OTA** function provides a way to update firmware in wireless devices that have not been commissioned by the LMBR and are at their default settings. This feature is useful if the LMBR is having difficulty communicating with and commissioning a wireless device, and that device requires a firmware update in order to fix the communication issue. When you click **Default OTA**, LMCS sets the LMBR temporarily back it its default Network ID and Channel, and then the LMBR searches for all wireless devices which are at default settings, then proceeds to update the firmware in those devices.

Clicking **Mesh Repair** will cause the wireless devices to build new communication routes back to the LMBR-650. This may help if devices are not showing up in the list or are taking a long time to connect.

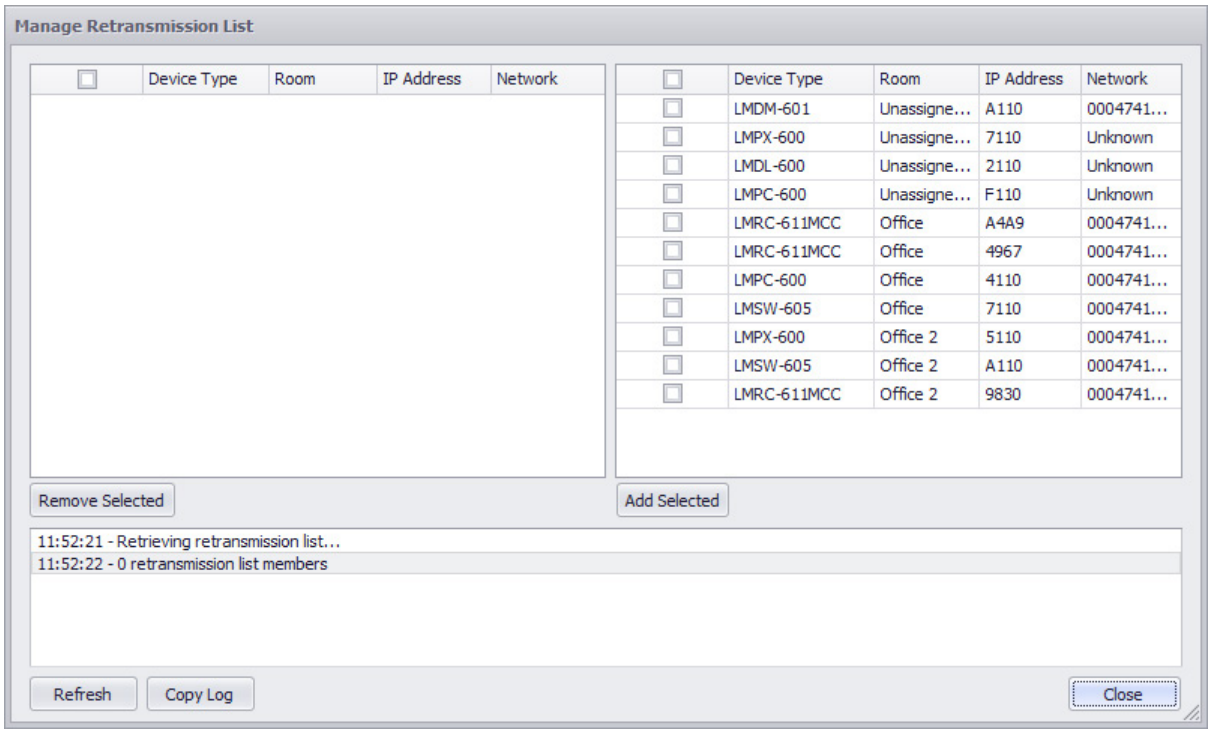
For details on **Uncommissioned Discovery** and **Commissioned Discovery**, see "Discovering and Pairing Wireless Devices" on page 65 and "Discovering Previously Commissioned Devices" on page 68.

The **Add Bridge** and **Add Device** buttons allow you to manually add a specific device outside of the discovery process. This is typically used by Application Engineers when rating a site in advance of discovery. Note that devices can also be added to a specific room when the room is highlighted in the tree.

The **Retransmission List** button appears only for the Primary LMBR. The retransmission list keeps track of paired devices that are on different networks (LMBRs) in the same room, so that messages sent on one network will be sent to the other network for those paired devices. If you click this button, the **Manage Retransmission List** dialog opens.

NOTE: The screenshot on the previous page shows a network which is not primary, so this button is not shown.

Manage Retransmission List



If you have already paired devices that are on different networks, they will automatically appear on the left side of the dialog. This dialog gives you the ability to remove them, from the list if desired, by selecting them and clicking **Remove Selected**. Or you can add additional devices to the list by selecting them on the right side of the dialog and clicking **Add Selected**.

Using the Diagnostics Section to Check and View Network Information

This section is also displayed in the Information section when you highlight a Building, Area, or Room within the Devices Tab in the tree. In that case, this section is found under a tab labelled Diagnostics

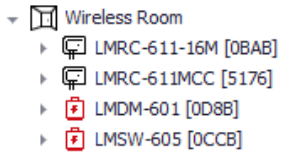
The bottom section of the window provides the ability to check network information for one or more devices in the network.

1. Choose a network test to run. These include:
   - **Connection Strength** – Returns the RSSI value and shows signal strength in number of bars.
   - **Ping** – Returns the serial number of the device and shows the response time in milliseconds.
   - **Hops** – Returns the serial number of the device, the network ID, and the number of devices the signal passes through to reach the target device.
   - **Battery Level** – Returns the serial number, device type and battery level. Room controllers and bridges will display a value of 0% since they have no battery.
   - **Last Known Battery Level** – Battery levels of the devices are stored in the room controller, and this diagnostic will show the battery level that is stored in the room controller. Therefore, to run this test, **select the room controller and not the battery devices**. Returns the serial number, device type and battery level.
2. Expand the **Area/Rooms** tree and Select one or more areas or rooms. Then expand the **Devices** tree and select either a device type or individual devices within the device type.

   NOTE: If you are accessing this from the Devices tab with a Room highlighted in the tree, then the **Area/ Rooms** section will not display.
3. Once you have selected at least one device type, the **Select Devices** button at the top of the Diagnostics tab will change to say **Send xxx** (where xxx is the name of the diagnostic you selected, for example Send Connection Strength, as shown in the screenshot on the previous page). Once you click the button, messages are sent to the devices and the information is displayed once received.
4. Click **Save** if you want to save the results to a text file, for diagnostic purposes.

NOTE: Battery Devices must be woken up before they will respond to these tests.

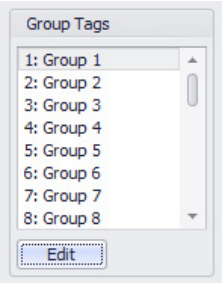
NOTE: If the Battery Level test returns a value below 40%, the icon next to that device in the list will change to show a low battery level.



Creating and Editing Group Tags for Wireless DLM

Wireless rooms have feature not found in wired rooms—the ability to create Group Tags and assign them to specific devices. Each room can have up to 31 groups.

Group Tags



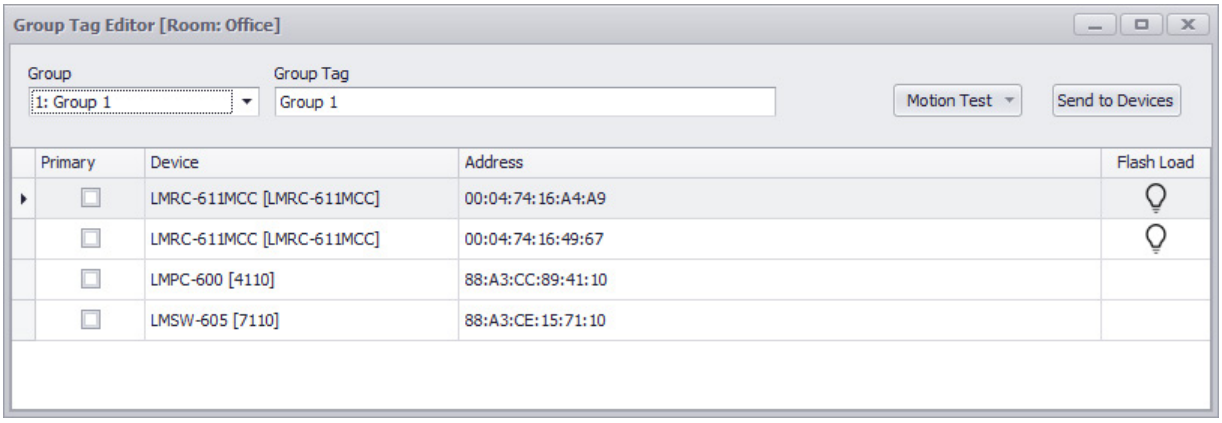
Group tags allow you to add assign loads and sensors/switches within that room to a specific group. This provides an easy way to assign switches and sensors to a set of loads, and is particularly useful in a room with a large number of loads, for example with a number LMFS-601 fixture controllers.

Loads and sensors/switches can belong to more than 1 group but the loads will respond the last command that was sent to them. For example, if you have loads set up in an L shape with group 1 being one leg of the L and group 2 being the other leg of the L, you will have the one load in the corner of the L as members of both groups. In this scenario, if you turn on group 1 then turn off group 2, then the load in the corner of the L would be off since it takes the last command sent to it.

NOTE: These groups are specific to a room. All devices in the group must be in the same room, unlike Network Groups (found on wired bridges, zone controllers, and panels) which can combine devices from multiple rooms.

Highlight a Group and click **Edit** to open the **Group Tag Editor**.

Group Tag Editor



By default Groups are named Group 1, Group 2, etc. By editing the **Group Tag** parameter, you can rename the group. Once you have sent the group info to the devices and exited the editor, you will see the new group name in the list.

Select the Devices you want to include in the group, then click **Send to Devices**. The **Transfer** dialog opens (similar to clicking **Read All Devices** or **Send All Devices**) and provides status information on the data transfer.

NOTE: If you select loads without any switches or sensors, or select switches/sensors without any loads, a warning message will appear indicating both need to be selected.

If you select “Enable” from the **Motion Test** drop-down, all sensors assigned to the currently selected group will enter Test Mode. The Time Delay on those sensors will be set to five seconds (they will turn off five seconds after no motion is detected), allowing you to walk around the room and test the various sensors. If you do not disable Test Mode, after ten minutes, it will expire and revert to normal operation.

Creating and Editing Scenes for Wireless DLM

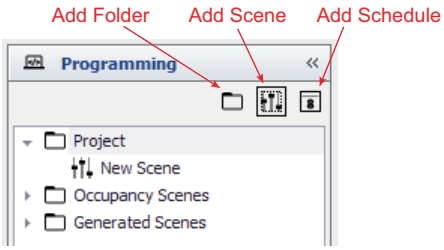
Wireless scenes are very different from wired scenes. Wired scenes allow you to assign a target level and fade time for each load controlled by that scene. Wireless scenes, on the other hand, allow you to choose multiple types of actions, and then assign each action to a load. Additionally, an unlimited number of wireless scenes can be stored as part of a project, and then can be assigned to any device in the project, whereas wired scenes are independently stored in a room (or plug load) controller, with a limit of 16 scenes per controller. Wireless scenes can control multiple loads in different rooms, whereas wired scenes can’t control loads in other rooms since they apply only to one room.

Once you have created your wireless scenes in LMCS, you must send them to the wireless controllers, where they are stored, as described in Step 6 of the following instructions.

The wireless scene editor (as well as the wireless schedule editor) is accessed from the **Programming** tab. Additionally, the scene editor can be accessed from the individual rocker and button tabs when editing a wireless switch or sensor.

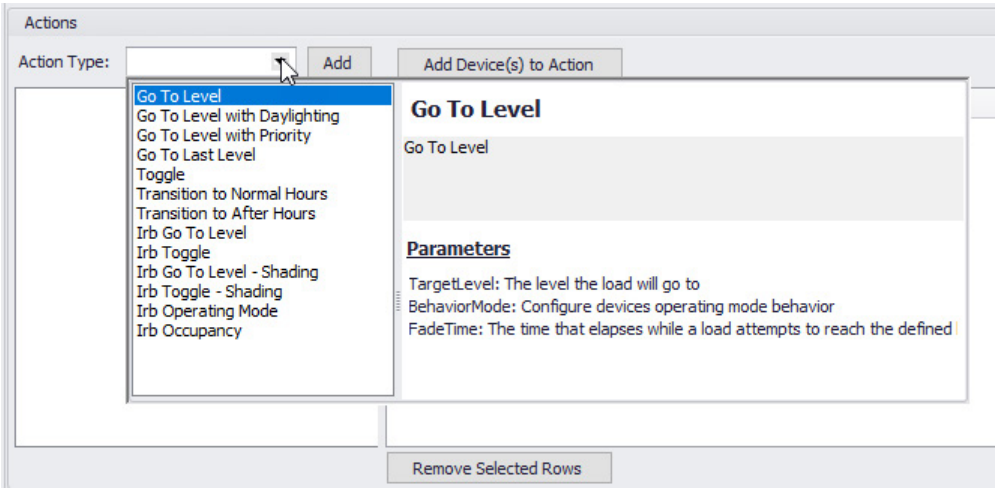
1. Click **Programming** to select the **Programming** tab. There are three folders in the tree. The **Generated Scenes** folder will include scenes that are automatically created when wireless devices are paired in a room and Plug n’ Go functionality occurs. If you are creating a project Off-Line, this folder will be empty. You can’t add new scenes to this folder. Instead they are added under the **Project** folder.
2. Click the **Project** folder to highlight it, then click the **Add Scene** icon to add a new scene under that folder. It is also possible to create sub-folders under the Project folder and organize scenes and schedules with those folders. Both scenes and schedules can be stored in the same sub-folder. Click the **Add Folder** icon to add new folders under the Project folder. You can then drag and drop scenes into those folders.

Programming Tab



3. Click on a scene under project folder to open the **Scene Editor**. Enter a **Scene Name** to identify it. You can also enter a **Description** to document the functionality of the scene. The decryption is also is specifically for use when enabling the scene on BACnet. It will show up as a BACnet point on the LMBR with the link ID and the description entered for that scene. Note that the default value for **Description** is the Link ID. Click on the **Action Type** drop-down to select an action.

Scene Editor



As you select different values from the drop-down. The action type is defined in text and a list of programmable parameters for that action. Select the desired action and click **Add**. The action will appear in the list below the drop-down.

You can multiple action types into a scene. But each action type can only be added once.

NOTE: Six of the actions listed below include “IRB” in the action name. These actions apply to wired room controllers that are being controlled by a wireless switch or sensor via an LMBC-650 bridge in hybrid wired/wireless rooms, and therefore only appear in the list if there is an LMBC-650 in the room. These actions apply only to those wired controllers while all the other actions apply only to wireless devices. The action can be used to control only wired lighting loads or wired shade loads, **but not both**. The two with the word “Shading” in them can only be used to control shades, while all others can only be used to control lighting.

Action types include:

- **Go To Level** – Changes the level of a load when the action is triggered.
- **Go To Level with Daylighting** – Changes the level of a load when the action is triggered, but won’t override daylight harvesting. (It can dim a load but won’t go above the maximum amount determined by the daylighting settings.)
- **Go To Level with Priority** – Changes the level of a load but allows you to set the priority level, and therefore is determined by priority messages that might take control of a load’s settings.
- **Go To Last Level** – Sets the level back to the previous non-zero level
- **Toggle** – Toggles the load between full On and either full Off or the last Non-zero level.
- **Transition to Normal Hours** – Switches the room controller mode to Normal Hours
- **Transition to After Hours** – Switches the room controller mode to After Hours
- **IRB Go To Level** – Identical to Go To Level, but used for controlling a wired load from a wireless device.
- **IRB Toggle** – Identical to Toggle, but used for controlling a wired load from a wireless device.
- **IRB Go To Level Shading** – Identical to Go To Level, but used for controlling a wired shade from a wireless device.
- **IRB Toggle Shading** – Identical to Toggle, but used for controlling a wired shade from a wireless device.
- **IRB Operating Mode** – Used to switch a wired load to Normal or After Hours when the action is triggered. If there are more than 16 loads that need to be switched, you will need to have one IRB Operating Mode action per 16 loads. See the section on this function in the list of action parameters in step 5 for more details.
- **IRB Occupancy** – Changes the level of a wired load when an occupancy message is received from a wireless sensor

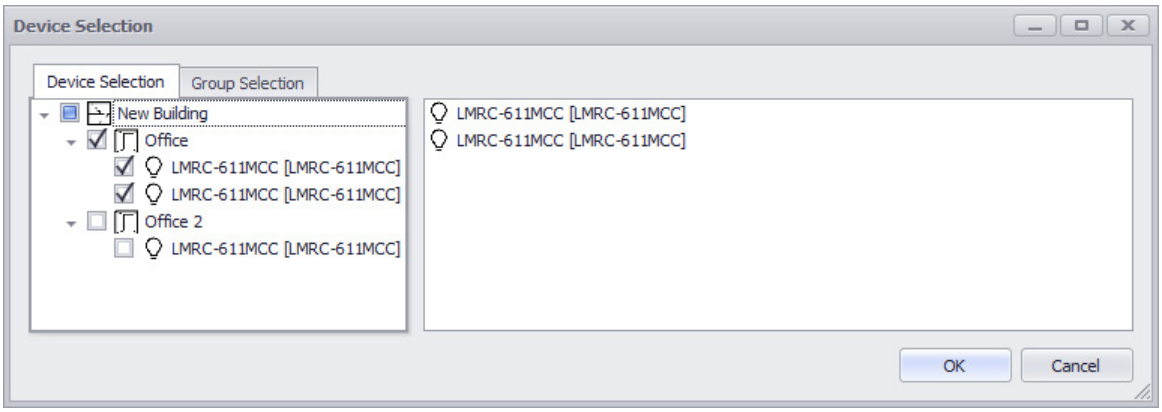
NOTE: While it is actually possible to select a shading load for the IRB Operating Mode and IRB Occupancy actions, shades are not supported for these actions. The reason they are displayed is that if you combine two rooms together without re-running PnG, it is possible to end up with shades in the load tables of the scenes. Displaying shade loads for these two actions allows you to deselect them if they somehow get mistakenly added.

NOTE: If you accidentally add the wrong action or decide not to include it after adding it, the only way to delete the action from the scene is to highlight that action and press the Delete key on the keyboard. (The Delete icon on the ribbon can only be used to delete the scene, and not an action. Also, Ctrl +X will not work.)

4. After adding an action, click **Add Device(s) to Action**. A dialog opens which allows you to select specific loads controlled by that action. You can select multiple loads to be controlled by the same action, and each load can have separate values for that action. Expand the tree to select the loads or rooms you want, and click **OK**.

   NOTE: If you select an action that works with wired room controllers, you will select the LMBC-650 connected to those room controllers here. Then within the editable parameters for this action, you will select the individual loads.

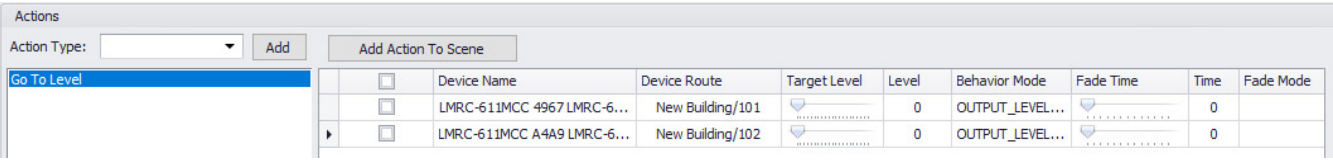
Select Devices



NOTE: The loads are automatically named during the Discovery process.

5. You return to the scene editor and the loads now show in the right hand side, along with their editable parameters. Parameters change based on the action type.

   NOTE: If you accidentally add the wrong controlled load or decide not to include it after adding it, the only way to delete the load from the action is to highlight that load and press the Delete key on the keyboard. There must be at least two added loads in order for this to work. (The Delete icon on the ribbon can only be used to delete the scene, and not an action or load. Also, Ctrl +X will not work.)



Double-click the numerical value or slider for a parameter to change its value.

NOTE: For each load, in addition to the **Device Name**, you will also see a column labeled **Device Route**. It shows the “route” to the device from the device tree, making it easier to identify where the device is located.

Available parameters, by action type:

Go To Level and **Go To Level with Daylighting**

- **Target Level** and **Level** – The level the load will go to when the action is triggered.
- **Behavior Mode** – Defines the action that will be performed
- **Fade Time** and **Time** – The number of seconds it takes to go from the current level to target level.
- **Fade Mode** – If blank, the load will use the Fade Time set here. You can also select “Use Load Fade Time” or “Use Load Fade Rate” in which case it will use the **Fade Time** or **Fade Rate** value set for that load on the **Load Advanced** tab

Go To Level with Priority – Same as **Go To Level** plus

- **Priority** – Determines the priority level for the action, thereby allowing it to override or be overridden by the settings for a different priority level

Go To Last Level and **Toggle**

- **Fade Time** – The number of seconds it takes to go from the current level to target level.

Transition to Normal Hours and **Transition to Normal Hours**

- There are no editable parameters for these functions. They simply switch the mode when the scene is triggered.

IRB Go To Level

- **Reserved Values** – This drop-down has four possible values: “Go To Level”, will change the lighting load to the amount set in the Level column. “Ramp Stop” will stop a ramp that is currently occurring.“Last Non Zero” jumps to the previous non-zero value. “Relinquish” will send a relinquish command to the load.
- **Level** – The level the load will go to when the action is triggered.
- **Fade Time** – The number of seconds it takes to go from the current level to target level.

- **Participant Loads** – This drop-down allows you to select the specific lighting loads to be controlled. Loads will show up in the list based on which wired room controllers are connected to the LMBC-650(s) you selected when clicking **Add Controlled Loads**. You can select multiple loads.
- **Timeout Minutes** – The number of minutes before a load relinquishes its priority.
- **Priority** – Sets the priority level at which the real time level change is sent. If some other device has sent a command at a higher priority level, the loads will not respond to the real time change (the lowest number, which is 1, has the highest priority). By default, all DLM devices are set to a priority level of 8) except LMLS photocells which are set to 7).

  The controller stores the most recent message sent at each priority, and will follow the highest priority until a relinquish command is sent on that priority, which clears that message. The controller then looks at the next highest priority to determine what to do.
- **Override Priority** – If this checkbox is selected, the current Priority of the load will be ignored and the Priority set in this action will be used instead.
- **Load Range Selection** – In a room with multiple wired room controllers and a large number of loads, loads must be grouped, with 32 loads per group. If you have more than 32 loads connected to the LMBC-650, you will need to select the group of 1-32 or 33-64, and then select the related **Participant Loads**.

  NOTE: If you select no value here, **Participant Loads** will use the default of 1-32.
- **Use Fade Rate** – If this is selected, the Fade rate selected on the Advanced tab for the LMRC controlling the load will be used instead of the Fade time set here.

IRB Toggle

- **Load Range Selection** – In a room with multiple wired room controllers and a large number of loads, loads must be grouped, with 32 loads per group. If you have more than 32 loads connected to the LMBC-650, you will need to select the group of 1-32 or 33-64, and then select the related **Participant Loads**.
- **Participant Loads** – This drop-down allows you to select the specific lighting loads to be controlled. Loads will show up in the list based on which wired room controllers are connected to the LMBC-650(s) you selected when clicking **Add Controlled Loads**. You can select multiple loads.
- **Min** and **Max** – Not currently used
- **Fade Type** – If set to “Immediate”, there will be no fade and the load will jump directly to the new value. If set to “Use Fade Time or “Use Fade Rate”, it will use the **Fade Value** set in this screen. You can also select “Use Load Fade Time”, in which case it will use the **Fade Rate** value set for that load on the **Load Advanced** tab. For an explanation of the difference between Fade Rate and Fade Time, the
- **Fade Value** – This value will be either Fade Time or Fade Rate, dependent on the **Fade Type** value.
- **Priority** – Sets the priority level at which the real time level change is sent. If some other device has sent a command at a higher priority level, the loads will not respond to the real time change (the lowest number, which is 1, has the highest priority). By default, all DLM devices are set to a priority level of 8) except LMLS photocells which are set to 7).

  The controller stores the most recent message sent at each priority, and will follow the highest priority until a relinquish command is sent on that priority, which clears that message. The controller then looks at the next highest priority to determine what to do.
- **Override Priority** – If this checkbox is selected, the current Priority of the load will be ignored and the Priority set in this action will be used instead.

IRB Go To Level – Shading and **IRB Toggle – Shading**

- **Target Level** and **Level** (for the Go To Level action only) – The level the shade will go to when the action is triggered.
- **Participant Loads** – This drop-down allows you to select the specific shade loads to be controlled. Loads will show up in the list based on which wired room controllers are connected to the LMBC-650(s) you selected when clicking **Add Controlled Loads**. You can select multiple shade loads.
- **Load Range Selection**– In a room with multiple wired room controllers and a large number of shade loads, shade loads must be grouped, with 32 loads per group. If you have more than 32 shade loads connected to the LMBC-650, you will need to select the group of 1-32 or 33-64, and then select the related **Loads**.

  NOTE: If you select no value here, **Participant Loads** will use the default of 1-32.

IRB Operating Mode

- **Participant Loads** – This drop-down allows you to select the specific loads to be controlled. Loads will show up in the list based on which wired room controllers are connected to the LMBC-650(s) you selected when clicking **Add Controlled Loads**. You can select multiple loads.
- **Room Mode** – Select whether this action sets the room controller to Normal Hours or After Hours.

- **Load ID Range** – In a room with multiple wired room controllers and a large number of loads, loads must be grouped, with 16 loads per group. If you have more than 16 loads connected to the LMBC-650, you will need to select the group of 1-16, 17-32, 33-48 or 49-64, and then select the related **Participant Loads**. If you want to control more than one load group for the scene, click **Add Action To Scene** again to add a second row to the list, then select a different load ID range.

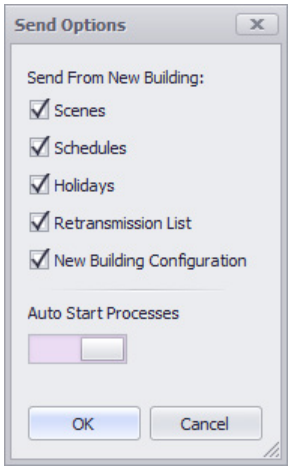
  NOTE: If you select no value here, **Participant Loads** will use the default of 1-16.

IRB Occupancy

- **Sensor** – Selects which wireless sensor will send occupancy messages to the LMBC-650. If you want more than one sensor to control wired loads, create multiple actions and assign each one to a different sensor.
- **Loads** – Select which loads will receive the occupancy messages. Loads will show up in the list based on which wired room controllers are connected to the LMBC-650(s) you selected when clicking **Add Controlled Loads**. You can select multiple loads.
- **Reserved Value** – This drop-down determines whether the sensor will go to a predetermined level ("Goto Level") or the "Last Non Zero" level, once occupancy is detected
- **Target Level** – The level the load will go to when the sensor detects occupancy, if the **Reserved Value** is "Goto Level".
- **Load Range** – In a room with multiple wired room controllers and a large number of loads, loads must be grouped, with 16 loads per group. If you have more than 16 loads connected to the LMBC-650, you will need to select the group of 0-16, 17-32, 33-48 or 49-64, and then select the related **Loads**.

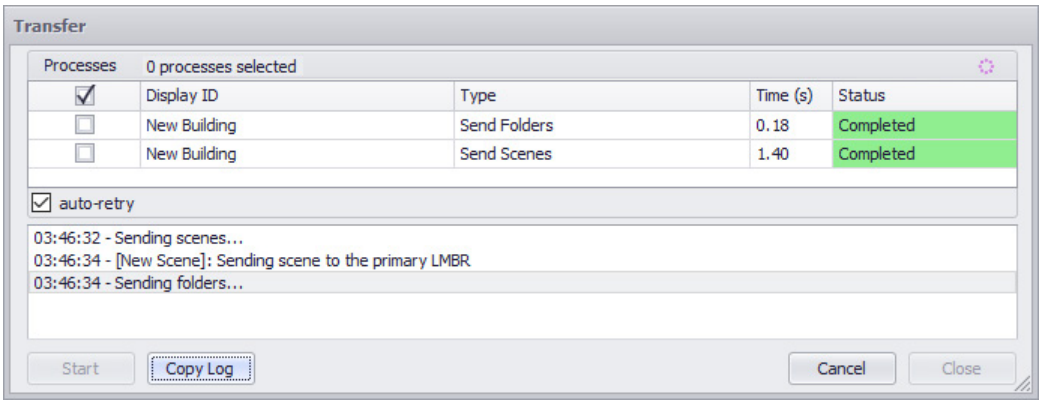
6. Once you have finished creating all the desired scenes, click **Send** in the **Commission** section of the ribbon on the **Home** tab. A dialog opens which allows you to select the type of information that is sent. Leave the "Scenes" option selected. If you do not need to send any other information deselect the other options, which will speed up the data transmission process.

Send Options



7. If **Auto Start Processes** is enabled, the data transfer will begin as soon as you click **OK**. The **Transfer** dialog displays the progress of the send and a log provides information. When the send is complete click **Close**.

   NOTE: If **Auto Start Processes** is disabled, you must choose which processes to execute (none are selected by default) and then click **Start**.



Another option is to click the **Devices** tab, then select a specific room controller in the tree, and click Send in the **Information** section. In this case, only scenes that affect the load of this specific room controller will be sent. Again, this can speed up the process, especially if you have added or edited scenes affecting only a few room controllers.

NOTE: If a previously created and sent wireless scene is deleted on a wireless switch, be sure to send the scene information to the LMBR-650 and LMBC-650 before creating/sending a new Scene.

Creating and Editing Schedules for Wireless DLM

You can create wireless schedules to trigger wireless scenes, based on a specific time and day, or based on Astro (Light/Dark) event triggered by Sunrise and Sunset. Each schedule consists of either a single starting event, or a starting and ending event. When an event triggers a scene, it will remain in place until another scheduled event replaces that scene with a new one.

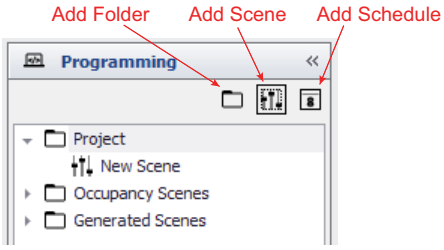
Once you have created your wireless schedules in LMCS, you must send them to the LMBR-650, where they are stored, as described in Step 7 of the following instructions. In a case in which there is more than one LMBR-650 in the project, the schedules are stored in the primary LMBR. Therefore, in a situation in which the primary LMBR is changed or replaced, you must resend the schedules to the new primary LMBR.

Since schedules depend on determining the current time (and in the case of an Astro event the location of the LMBR), you must configure the LMBR with this information. See "DLM Site Time/Location" on page 141 for details.

The wireless schedule editor (as well as the scene schedule editor) is accessed from the **Programming** tab.

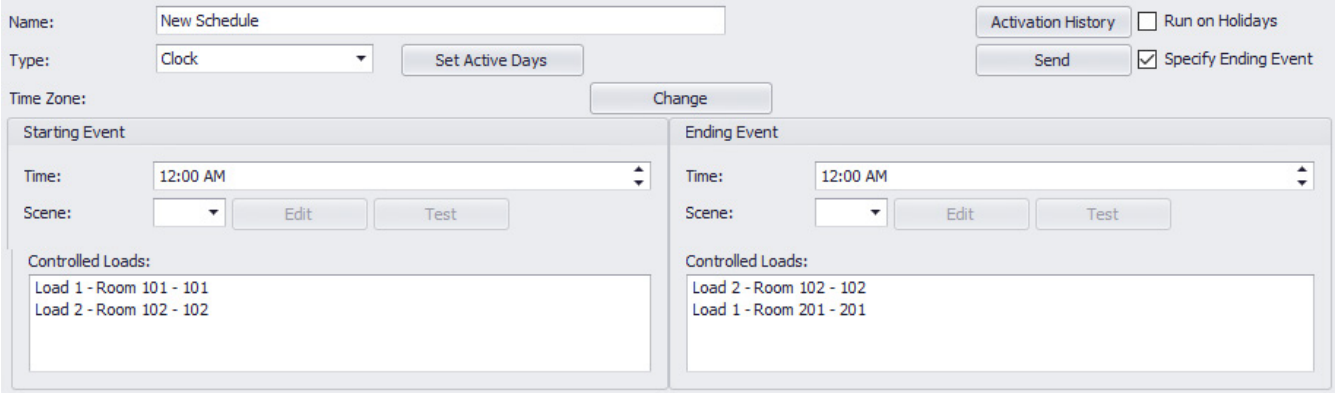
1. Click **Programming** to select the **Programming** tab.
2. Click the **Project** folder to highlight it, then click the **Add Schedule** icon to add a new schedule under that folder. It is also possible to create sub-folders under the Project folder and organize scenes and schedules with those folders. Both scenes and schedules can be stored in the same sub-folder. Click the **Add Folder** icon to add new folders under the Project folder. You can then drag and drop schedules into those folders.

Programming Tab



3. Click on a schedule under project folder to open the **Schedule Editor**. Enter a **Name** to identify it.

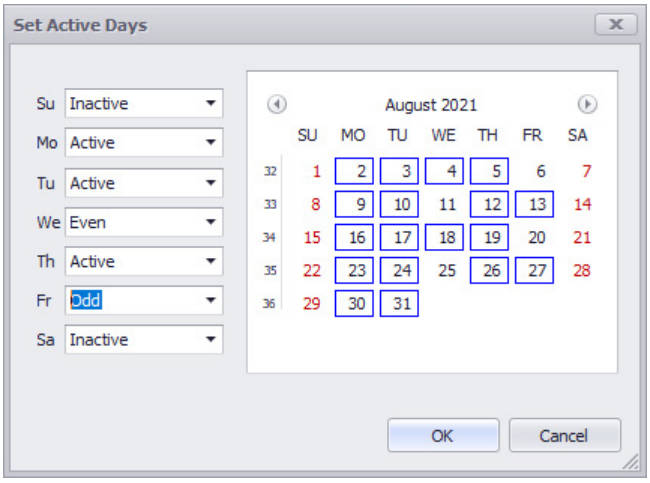
Wireless Schedule Editor



4. Click **Set Active Days** to choose which days of the week the schedule will occur. A dialog opens displaying each day of the week. In addition to setting the day to be “Active” or “Inactive”, you can also choose “Odd” or “Even” to run the schedule on that day every other week. The Calendar shows which days are active.

   If the day falls on a holiday, the schedule will be ignored unless **Run On Holidays** is selected. To set up holidays, use the **Holidays** editor. Note that there are separate holiday lists for wired and wireless DLM. See “Setting Up Holidays For Use With Schedules” on page 58.

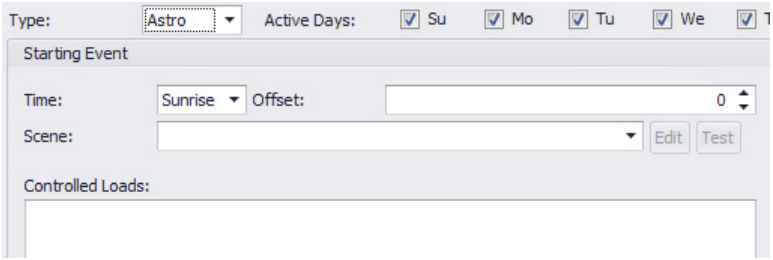
Set Active Days



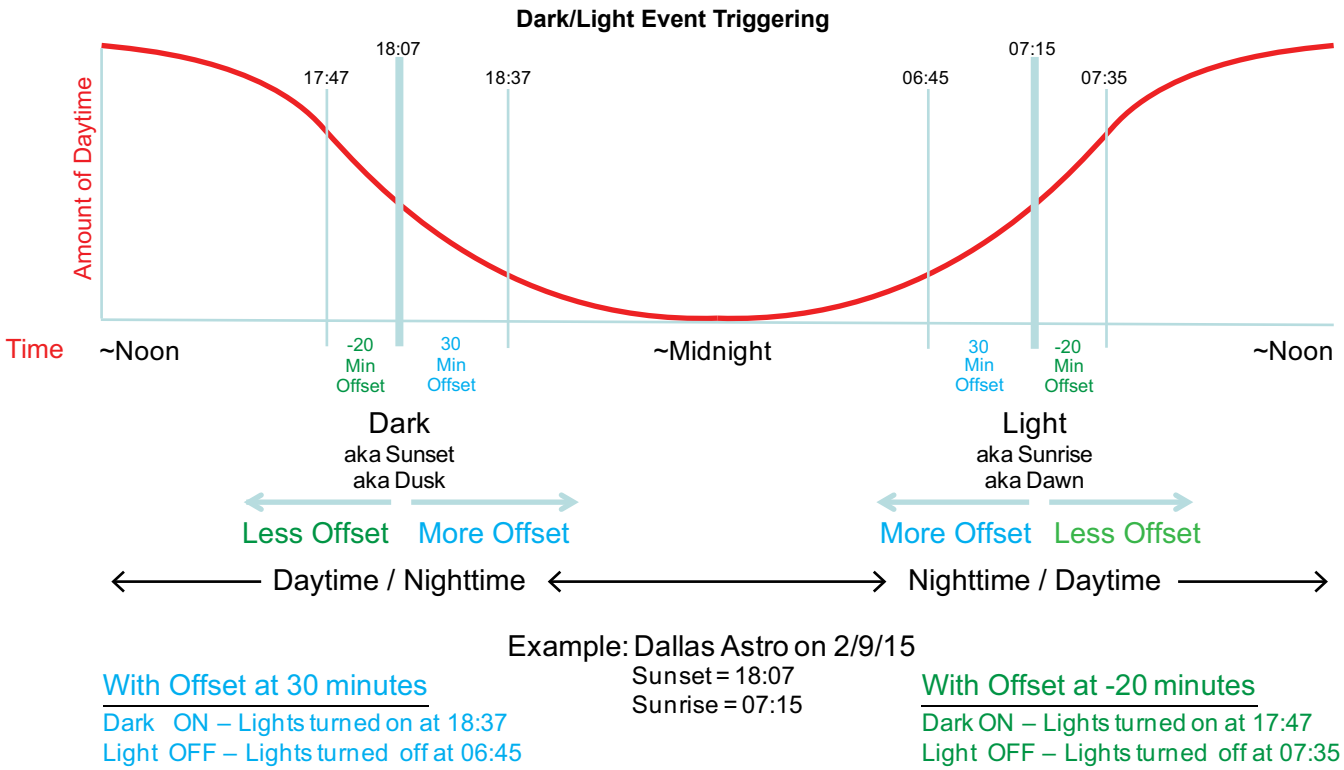
5. If **Specify Ending Event** is deselected, the Ending Event section will disappear an only the Starting Event will be programmable.
6. Click on the **Type** drop-down to select whether the schedule is triggered at a specific time (“Clock”) or “Astro”.
7. If **Type** is set to “Time”, enter a **Time** for both starting and ending events. Then select a **Scene** to be activated by the event.
8. Click **Change** if you need to edit the time zone for the schedule. This opens the **Set Site Time** dialog. For details, see “DLM Site Time/Location” on page 141.
9. The **Controlled Loads** section provides details about which load will be affected by the schedule, based on the selected scene.

   If you click **Edit**, the Wireless Scene Editor opens in a pop-up dialog. Note that if you make a change here, any other occurrence of this scene within the project will also be affected.

   If you click **Test**, the scene is immediately activated and any changes, such as changing the level of a load will occur.
10. If **Type** is set to “Astro”, the display changes as shown in the following screenshot.

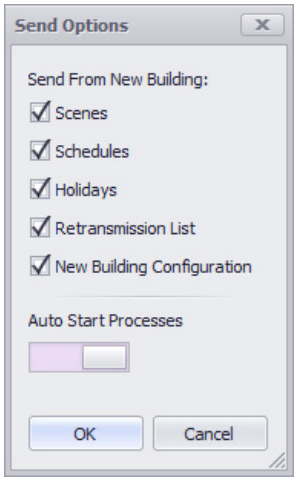


In this case, **Time** is a drop-down where you can select “Sunrise”, “Morning”, “Mid-Day”, “Evening”, or “Sunset”. The “Morning”, “Mid-Day”, and “Evening” values select a time based on the actual sunrise and sunset, with a preset Offset (so for example, mid-day would be halfway between sunrise and sunset). Additionally, you have the ability to select an **Offset**. This parameter determines when the event will be triggered in relation to the actual sunrise and sunset time. A positive offset acts as if the time between sunrise and sunset was longer (more daytime), and a negative offset acts as if there were less time between sunrise and sunset (less daytime). So if you select -20 minutes, the Dark event will trigger 20 minutes before sunset and the Light event will trigger 20 minutes after sunrise. The diagram below shows the exact time the events will be triggered based on different offset values.



11. Once you have finished creating all the desired schedules, click **Send** to send the schedule to the LMBR-650.

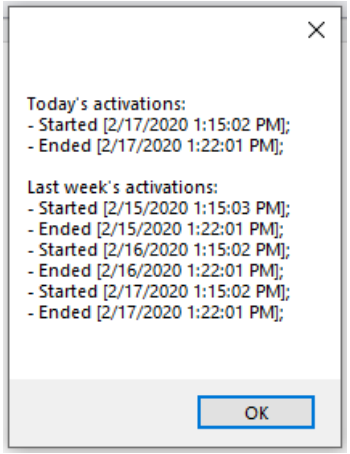
Send Options



12. If **Auto Start Processes** is enabled, the data transfer will begin as soon as you click **OK**. The **Transfer** dialog displays the progress of the send and a log provides information. When the send is complete click **Close**.

    NOTE: If **Auto Start Processes** is disabled, you must choose which processes to execute (none are selected by default) and then click **Start**.

Once you have created a schedule and it has been running, if you return to the Schedule Editor and click **Activation History**, a pop-up dialog will display recent times when that schedule was activated. The times are shown using the Time Zone set in the LMBR-650.



Calibrating Wireless Daylighting Sensors

The LMDL-600 and LMFS-601 daylight sensors must be calibrated before they can work properly.

To access the Calibration Wizard, click **Daylight Calibration** when a room is selected in the tree. This provides an easy way to calibrate all daylight sensors in the room.

The first time you enter the Calibration wizard, a dialog appears which provides a link to a video tutorial. You can watch the video on the PC or use the QR code to view it on a mobile device. You can also elect that this dialog not be displayed again. To continue onto the wizard, click **Next**.

NOTE: Devices must have 10.65 or later firmware to work with the wizard. If the devices have an older version installed a pop-up warning will inform you that you need to update the firmware.

Daylighting Zones

In a larger area such as an open office, the area can be divided into zones, with specific room controllers assigned to a zone. A control can only be assigned to one zone. The LMFS-601 can only control a single zone, but the LMDL-600 can control up to three zones. Since the amount of natural light might be different in each zone, you will have to calibrate each zone for the LMDL-600 separately.

The zones for an LMDL-600 are always numbered 1 through 3. If there is more than one LMDL-600 in a room, each one will have zones numbered 1 through 3. Therefore can be useful to name the LMDL-600s based on the area they control so there is no confusion about which zone is which (for example Zone 1 (LMDL 6A01, Window) and Zone 1 (LMDL 090F, Aisle).

Zone numbering is different for the LMFS-601. Zones start with Zone 4 (reserving 1-3 for the LMDL-600) and all LMFS-601 zones in the entire sight will have a unique number, starting with the lowest available number. Therefore an open office with two zones that was calibrated first would have zones 4 and 5, while a second open office with three zones that was calibrated next would have zones 6, 7, and 8.

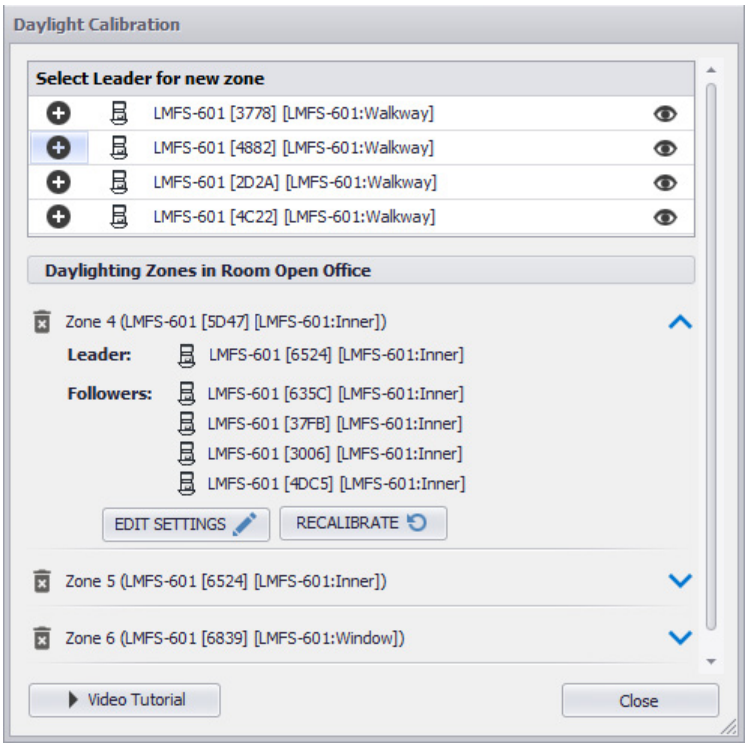
Running the Calibration Wizard

You will need a light meter to measure the amount of light with and without the loads turned on, in order to calibrate the daylight sensors. Ensure that the light meter is placed in the appropriate area of the daylighting zone (typically a desk). This is your task level lighting. The light meter should be set to measure footcandles, not lux. **Ensure the light level reading is above 5 fc** before beginning calibration.

For an LMDL-600 that will be controlling more than one zone, be sure to place the light meter in the appropriate area for that particular zone, for each zone you calibrate.

NOTE: You must wake up the LMDL-600 by pressing on the sensor before beginning calibration. (The LMFS-601 does not need to be woken up since it is not a battery device).

1. After clicking **Daylight Calibration** (clicking **Next** on the QR Code dialog), the **Daylight Calibration** dialog opens.

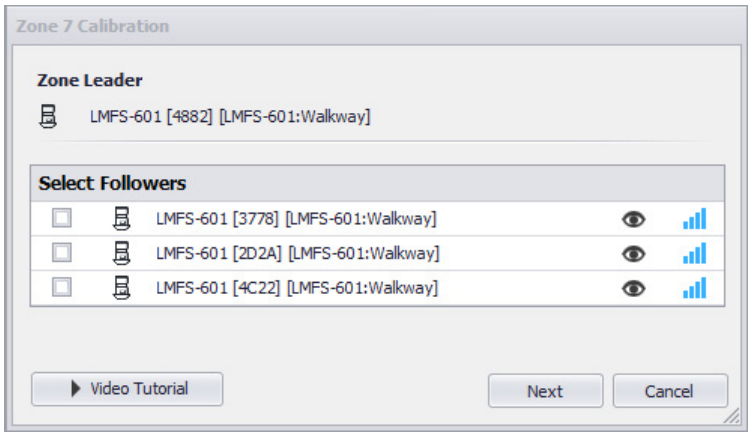


The top section of the dialog displays all of the LMDL-600s and LMFS-601s that are not currently assigned and are therefore available to be selected as a Leader. The Leader is the daylight sensor that is sending daylight information to the controller.

The bottom section of the dialog displays the daylight sensors that have already been assigned as the Leader of a zone. In the example above, there are already three zones which have been calibrated. If no zones have been calibrated, this section would be blank. The each zone can be expanded or collapsed by clicking on the arrow. When expanded, the Followers for that zone are displayed.

NOTE: If you previously had assigned the wrong sensor as the Leader or assigned a wrong follower to a that zone, you can delete the zone by clicking the trash can icon to the left side of that zone, then reassign and recalibrate.

2. Click the ⊕ next to the sensor that you want to calibrate. The **Zone Calibration** dialog opens. The zone number in the title will be the lowest available zone number. Note that if you had just previously deleted a zone, LMCS will reuse that number since it will be the lowest available number.



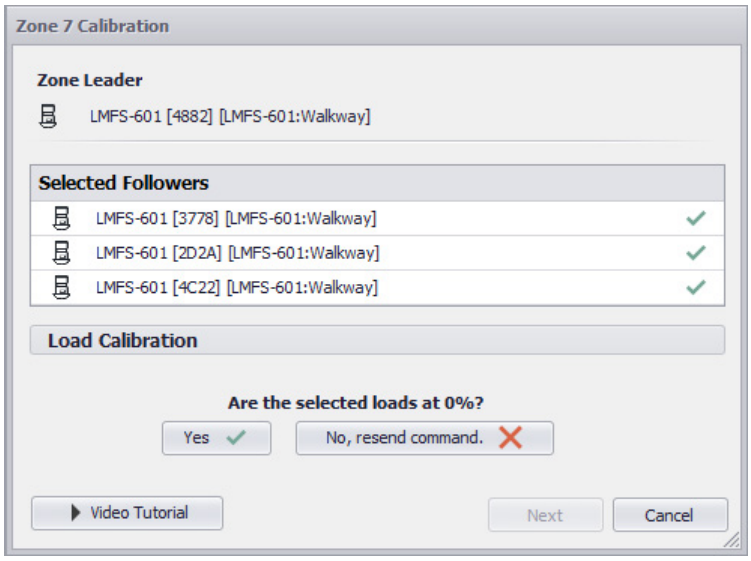
The dialog displays a list of all available controllers that can be assigned as Followers. Followers are room controllers that can be assigned to respond to the sensor messages sent by the Leader. Since the LMFS-601 is both a controller and sensor, it will show up in the list if not already assigned.

NOTE: If you assign an LMFS-601 as a follower, it will not function as a daylight sensor, but only as a room controller responding to the Leader. And of course, the controller part of the Leader LMFS-601 will always respond to its own sensor and will therefore not show up in the list of Followers.

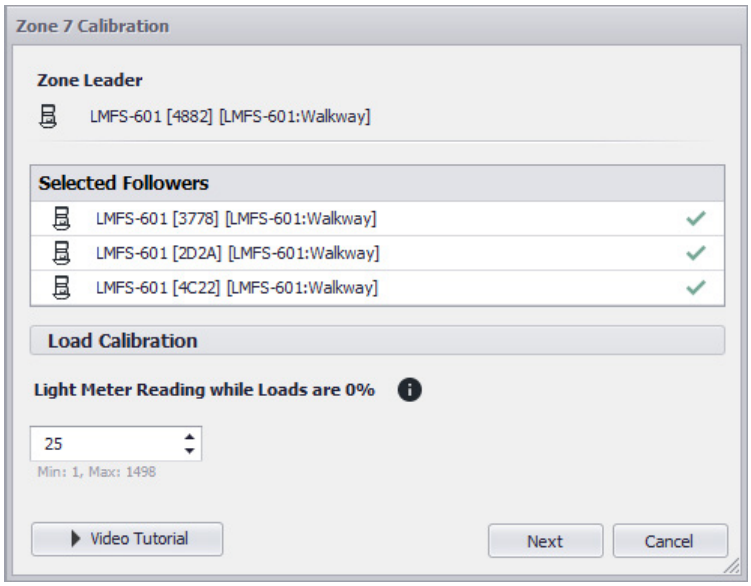
NOTE: In the unlikely situation where a room has both an LMDL-600 and one or more LMFS-601s, the LMFS-601s will show up in the list and can be selected to follow the LMDL-600. However, a regular room controller (LMRC-611) cannot be assigned as a follower to an LMFS-601, but only to an LMDL-600.

NOTE: If the Leader is an LMDL-600, any LMPL-611 plug load controllers in the room will show up in the list of followers. However, in practical terms, the LMPL-611 should never be selected as a follower.

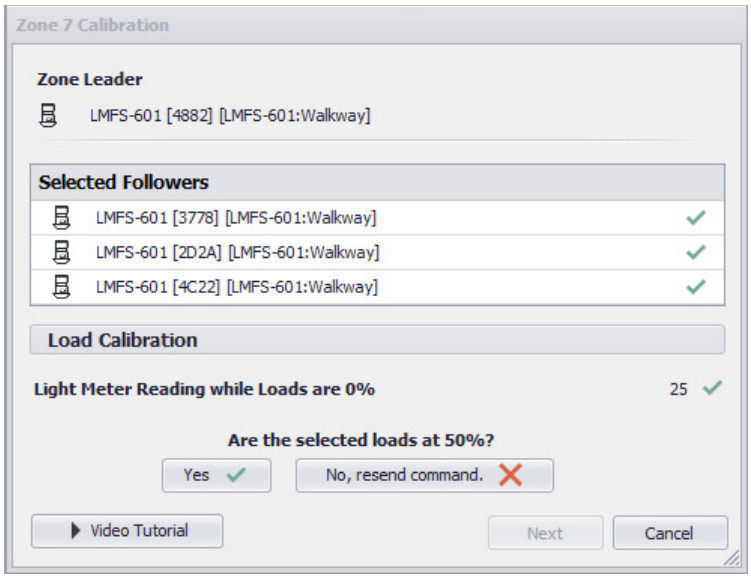
3. Select the desired followers by clicking their checkboxes, then click **Next**. LMCS attempts to connect with the LMDL-600, and if it does, the next dialog opens. LMCS will turn off the loads for all room controllers assigned as followers). LMCS asks you to confirm that the loads are off. If they are, click **Yes**. If they are not, click **No** and LMCS will resend the command to turn the loads off. (This provides and opportunity to confirm that you have the correct loads assigned as followers. If some are not correct or missing, you can cancel and restart the process.



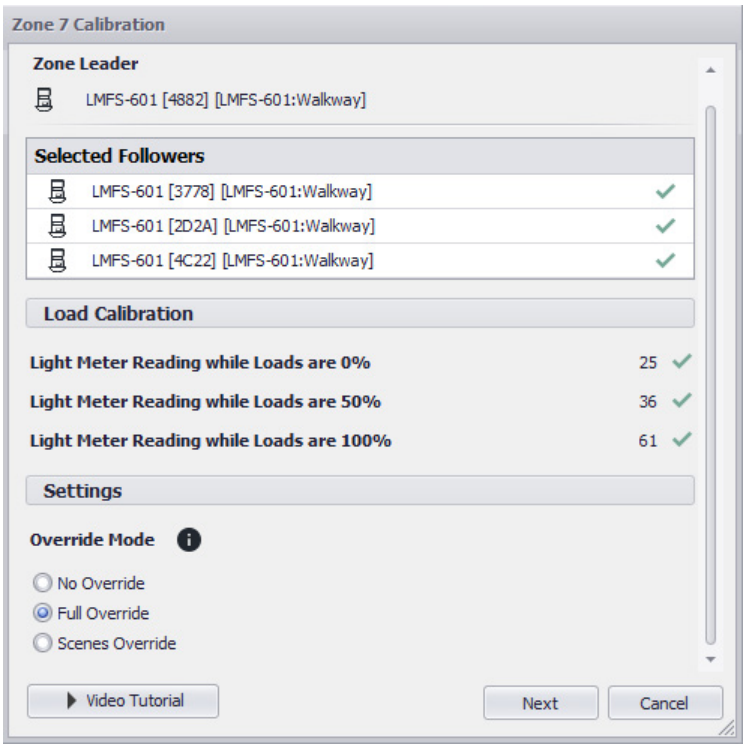
4. If you click **Yes**, the dialog changes to allow you to enter the light level. Measure the light level with all loads off and enter the result in the dialog. Then click **Next**.



5. LMCS reads the light levels from the LMDL-600 again and then the next dialog opens. The display shows the amount you just entered. LMCS now sets the load to 50% dimming level. You are then asked to confirm that loads are set to 50%.



6. The process described before repeats itself, entering the light level with the loads at 50% then repeating the process and entering the light level with the loads at 100%. Once all load levels have been entered, click **Next**. The three light levels you entered are displayed and a new Settings section is added below to enter editable parameter values.



The first editable parameter is **Override Mode**.

Override Mode determines whether the user can override the control of the daylight sensor, to increase or decrease the dimming level above the daylight cap. The daylight cap is the appropriate light level determined by the room controller and daylight sensor, which is based on the setting of the Target Footcandle Reading (the target light level).

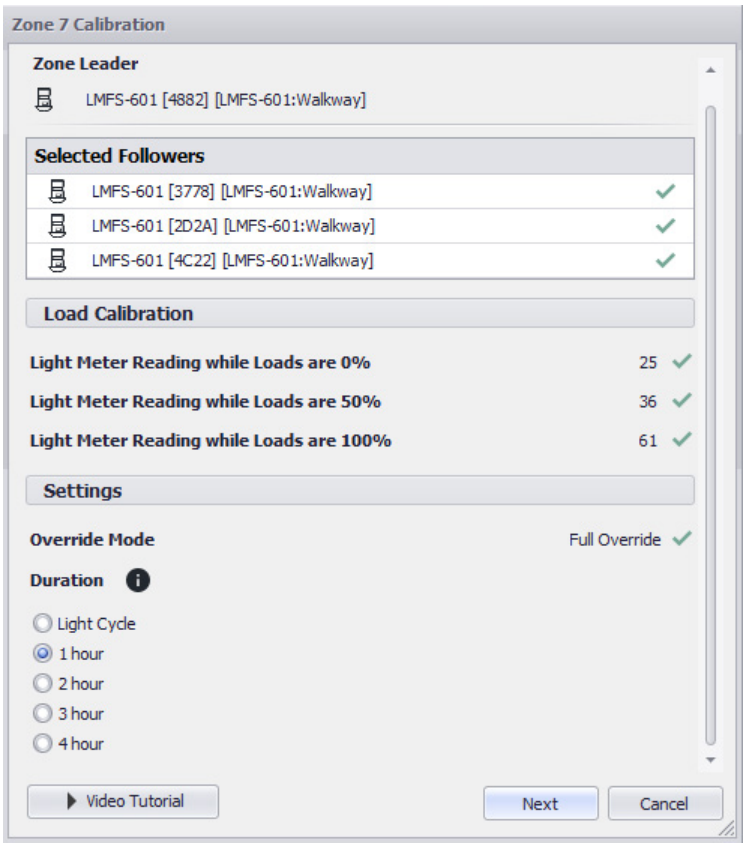
No Override – Allows the user to dim up and down below the daylight cap.

Full Override – You can fully adjust the load regardless of the daylight cap (including going above the daylight cap).

Scene Override – Scenes can be sent to override the recommended load level determined by the daylight sensor and room controller.

NOTE: If the lights are turned OFF due to control by an occupancy sensor or a switch, when the lights are turned back ON again, they will revert to the level determined by the LMDL-600.

7. Select the desired value, then click **Next**. The Settings section changes to show **Duration**.

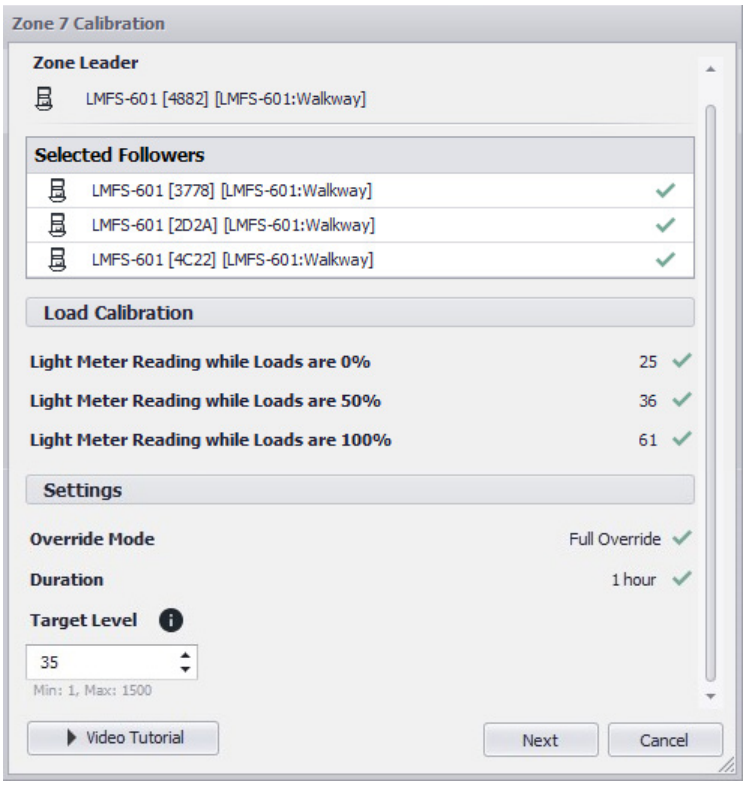


Duration is the time it takes after the light level is raised or lowered by manual control (dependent on the value of the Override Mode parameter, before the room reverts back to the normal daylighting operation. For example, when you select “Full Override” and a 1 hour light cycle, if you adjust the load manually with a dimmer and there is no further manual intervention for 1 hour, the room will revert back to the normal automated daylighting setting.

You can set a value of 1–4 hours, or “Light Cycle”. The “Light Cycle” value is 0 hours, or No Override Duration, which means the override never expires (unless the lights are turned OFF, as noted above).

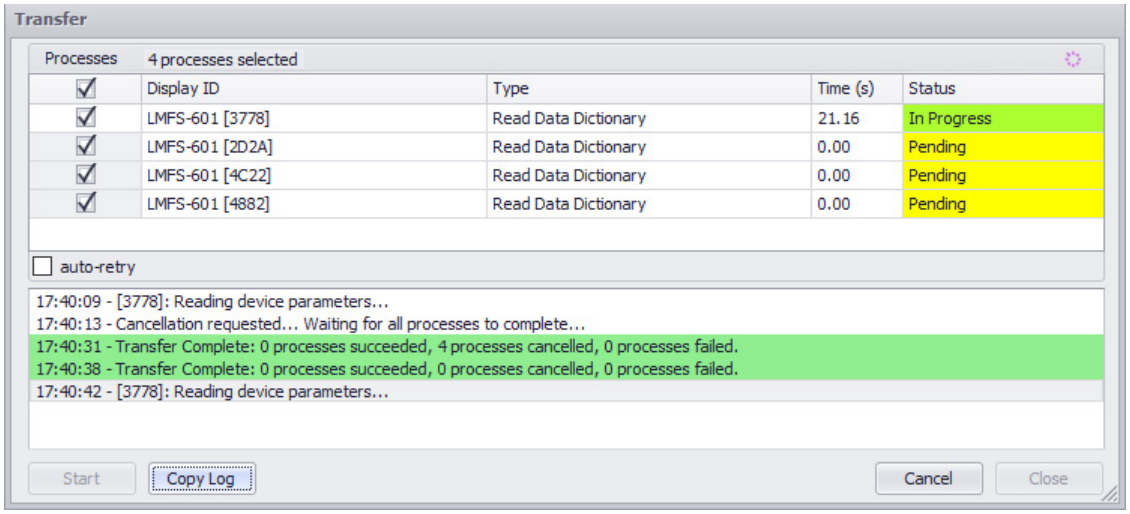
NOTE: If you chose “No Override” for **Override Mode**, leave the Duration at the default of “Light Cycle”. If you choose a different value it will be ignored since Duration does not apply if there is no override.

8. Select the desired value, then click **Next**. The Settings section changes to show **Target Level**.



Target Footcandle Reading is the total light level at the task level (determined by placement of the light meter during calibration) that the daylight sensor and room controller will maintain.

9. LMCS completes calibration. The Transfer dialog displays as LMCS completes the process.



10. If there is more than one zone, repeat for each zone, moving the light meter to the appropriate position for that zone.
11. Once calibration is complete, final adjustment of daylighting parameters is required for **each** room controller assigned to a zone, on the **Load Basic** tab. See "Wireless Controllers" on page 158 for details.

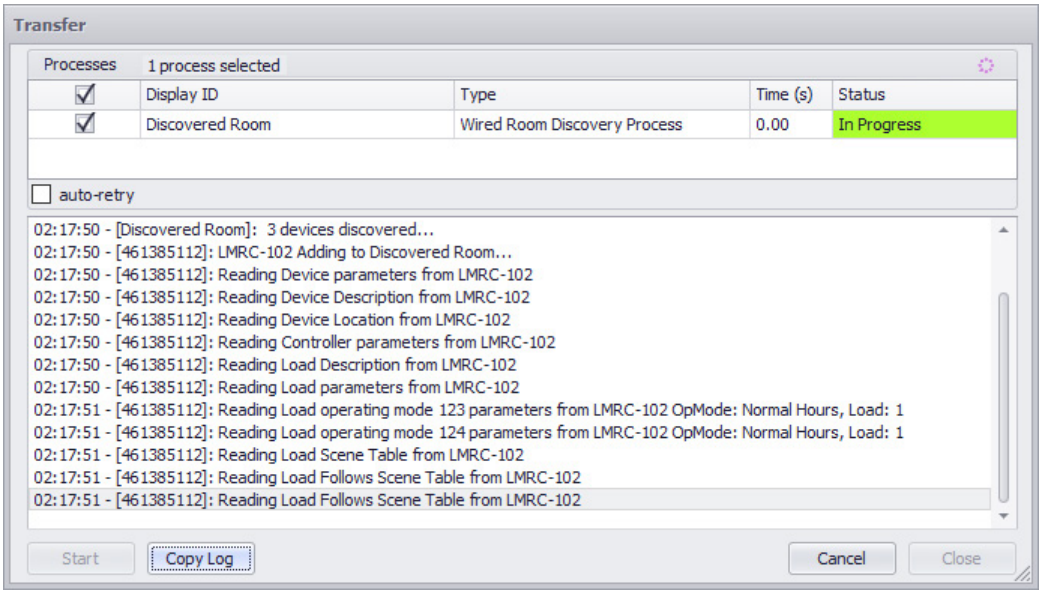
After calibration, the calibration light levels for each Leader will be displayed in the Zone tab(s) when selecting the LMFS-601 or LMDL-600 in the tree.

Discovering Devices on a DLM Room Network

In a small installation without a BACnet network, you will connect using an LMCI-100 via USB.

1. Before opening the LMCS application, connect the LMCI-100 to the PC, and connect an LMRJ cable from the LMCI-100 to any DLM device in the room.
2. Open LMCS. In the **Connection** drop-down at the bottom of the window, select the LMCI-100 option. If the DLM Com connection is not shown (which can occur if the LMCI-100 was connected after LMCS was booted up), double click where it says “Not Connected” next to the drop down, and try again.
3. Click **Discover** on either the **Home** tab or the information section for the New Building. The **Transfer** dialog opens and discovery starts automatically. The **Status** field shows the progress of the discovery and will change to “Complete” once done. A status window displays the number of devices found and a list of each device along with its serial number, as well as the parameter values it is reading. During discovery, LMCS loads all device parameter values (which will be the default values unless manual changes were made on the devices during installation).

Transfer – Discover Devices



4. After discovery is complete, close the **Transfer** dialog. An arrow now appears next to New Building in the tree section. If you expand the tree, you will see a new room has been created and the devices placed in that room.

   NOTE: If the room does not contain an LMBC-300 or LMBC-600 bridge, the room will have a default name of “Discovered Room”. If it contains a bridge, the room is named the same as the **Description** field for the bridge.
5. If you want to document the list of discovered devices and their serial numbers, click **Copy Log**. The information is copied to the clipboard and can be pasted into another application.
6. At this point, you can make any edits to device parameters. Once that is complete, send the parameter data back to the devices. For details on sending parameter data, see “Sending Project Data to Devices” on page 121.

Once discovery is complete, you can connect to a different room and run through steps 3 - 6 again. Each room can be saved as a separate project file, or for convenience, they can all be saved in one file. Be sure to label each room clearly so that the correct room is easy to select if you need to go back to that room and connect to it again.

Discovering Devices on a Wired BACnet/IP Network

In an installation with a BACnet network you will connect using either a wired or wireless connection to one or more NB Routers (or other BACnet compatible router). To connect to the router, you will need to know the UDP Port number set on the router. By default, BACnet devices are set to UDP Port 47808.

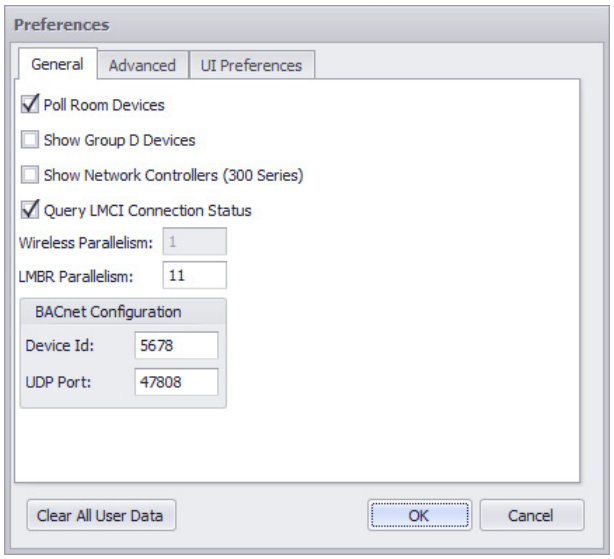
There is a three step process that happens when running discovery on devices connected via BACnet:

- Discover the Routers
- Discover the Rooms (bridges) connected to the routers

- Discover the devices connected to the bridges

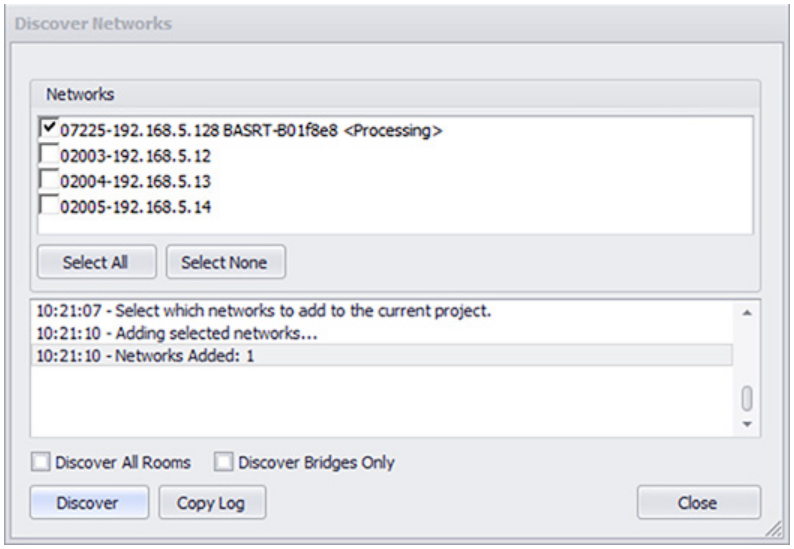
1. Before opening the LMCS application, connect to a BACnet/IP network, either via a network cable or wireless connection.
2. Open LMCS. In the **Connection** drop-down at the bottom of the window, select the BACnet network.
3. Click **Preferences** on the **Support** tab to open the **Preferences** dialog. Check the **UDP Port** to make sure that matches the number set on the router. You may also need to change the Device ID if the integrator for the site provides one, for communication with other routers.

Preferences



4. Click **Discover** on either the **Home** tab or the information section for the New Building. The **Discover Networks** dialog opens and the discovery starts automatically. All routers found on the network are listed. This will include both LMBRs and NB Routers.

Discover Networks

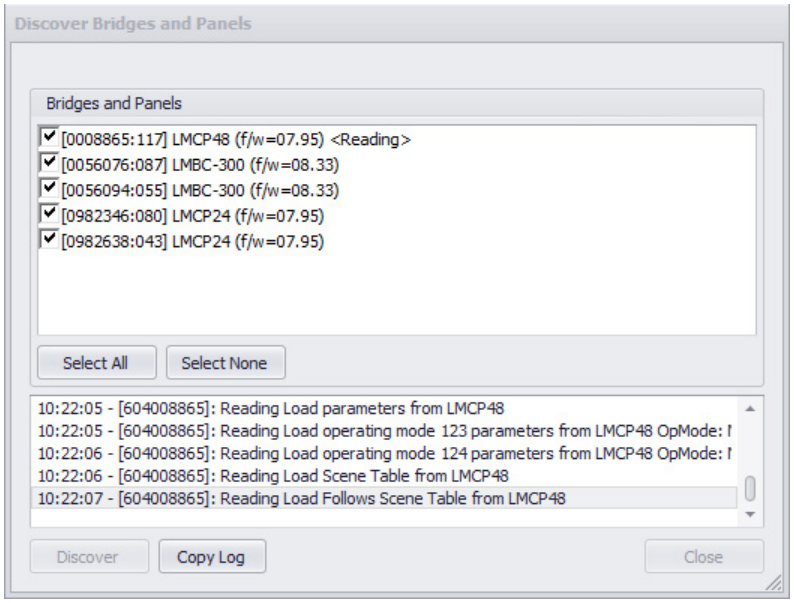


5. Select the routers for which you want to discover devices. If it is a large network, you may want to select individual routers so that the discovery process is broken up into shorter pieces.
6. As mentioned previously, there is a three step process for discovery. The next step is to discover the rooms and the final step is to discover the devices in those rooms. If you select the **Discover All Rooms** checkbox, then once the room discovery is complete, LMCS will automatically start discovering the devices. But if it is left unchecked, you will have the chance to select specific rooms before proceeding with device discovery.

   If you select the **Discover Bridges Only** checkbox, then bridge parameters only will be loaded into LMCS during the device discovery step.

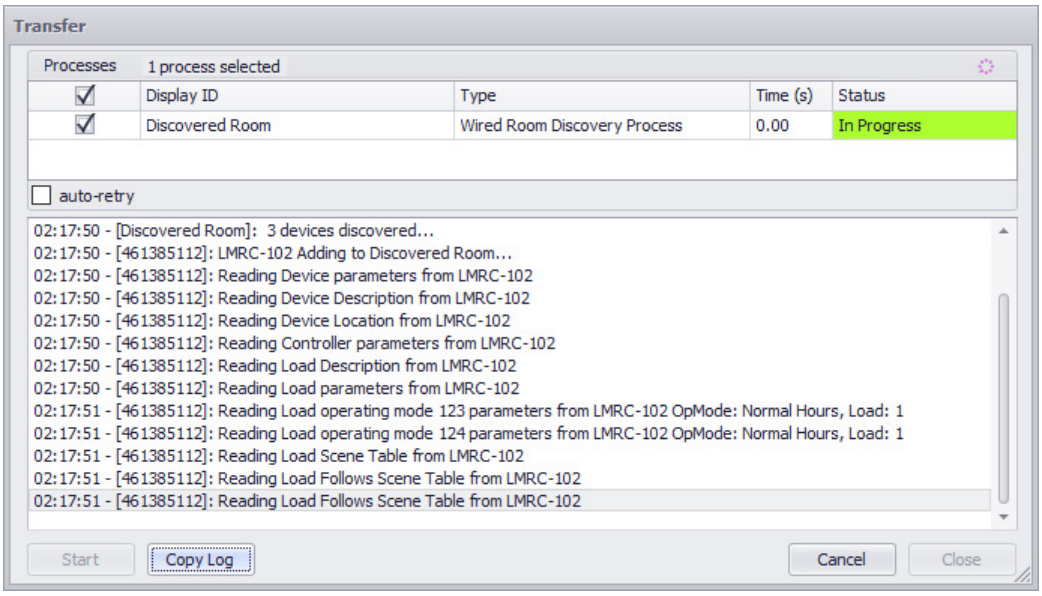
7. Click **Discover**. The **Discover Bridges and Panels** dialog opens with all bridges and panels selected.

Discover Bridges and Panels



8. If you selected the **Discover All Rooms** checkbox, the **Discover Devices** dialog automatically opens. Otherwise, choose which rooms you want to discover and click **Discover**. The **Transfer** dialog opens and discovery starts automatically. The **Status** field shows the progress of the discovery and will change to "Complete" once done. A status window displays the number of devices found and a list of each device along with its serial number, as well as the parameter values it is reading. During discovery, LMCS loads all device parameter values (which will be the default values unless manual changes were made on the devices during installation).

Transfer – Discover Devices



9. Once all devices are discovered, click **Close** to return to the **Discover Bridges and Panels** dialog.
10. If you want to document the list of discovered devices and their serial numbers, click **Copy Log**. The information is saved to the clipboard and can be pasted into another application.
11. At this point, you can make any edits to device parameters. Once that is complete, send the parameter data back to that devices. For details on sending parameter data, see "Sending Project Data to Devices" on page 121.

DISCOVERY USING AN LMBR-600 WIRELESS ROUTER AND LMBC-600 WIRELESS BRIDGES

The process of discovering devices on a wireless network is similar to that of discovering on a wired IP network. However, there are few extra steps you must take during the initial steps.

While the LMBR-600 and LMBC-600 communicate wirelessly, each LMBR-600 in the network must be connected to the PC via Ethernet cable (using a switch).

Before device discovery can begin, the LMBR-600 router and all LMBC-600 bridges must be configured to communicate on a Personal Area Network (PAN), by assigning a PAN Profile to the router and bridges. If the system uses multiple LMBR-600s, each LMBR-600 must be configured with a different PAN Profile, and the various bridges are set to use different profiles based on which bridges are located near a specific router.

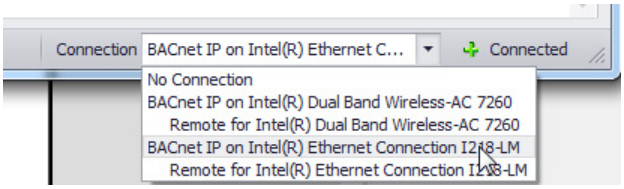
A configuration application, which can be accessed within LMCS is used to create and assign PAN Profiles to devices.

NOTE: The configuration application can also be accessed by using a web browser, without LMCS. However, accessing within LMCS has advantages because it is easy to then immediately continue on with discovery of all the DLM devices connected to the wireless bridge.

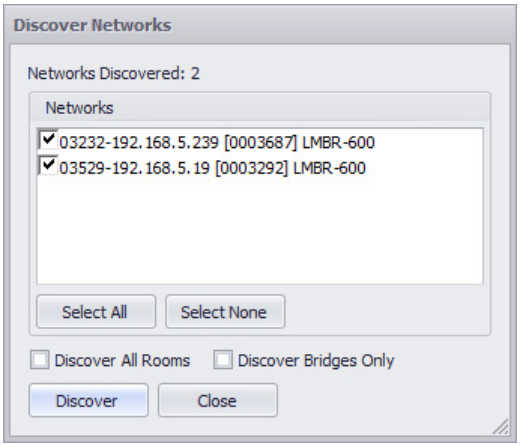
The following steps describe how to discover the LMBR-600 and access the configuration application. Details on using the configuration application are not described in this document. See the *Wireless DLM Setup and Implementation Guide* for those details.

1. Select the appropriate network from the **Connection** drop-down in the lower right corner of the LMCS window and make sure the display indicates you are connecting to the correct adapter, and that LMCS is connected. Be sure to select the Base Ethernet Connection as shown in the illustration, and not the “Remote” option since that is used by technicians when setting their LMCS software to communicate to the system remotely using a cellular modem included in the optional DLM RACCESS product.

   NOTE: This uses a BACnet connection, using a network cable, and cannot be done using the LMCI.



2. Click the **Discover** icon or button at the top of the window to open the Discover Networks screen. LMCS will search all available BACnet networks for the LMBR-600 and will display each one it finds. Once network discovery is complete (the screen will say “Networks Discovered:x”, click **Close.**



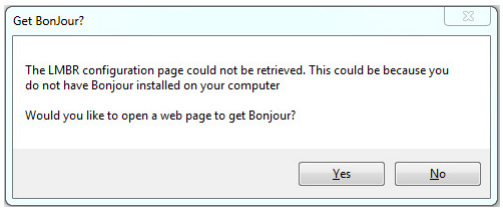
   IMPORTANT: At this point you should only discover the Networks, and not proceed to discover the bridges and DLM devices.

   Once the configuration process is complete for the router and bridges, you will go back and rediscover the network and then discover all bridges and DLM devices.

3. Click the **Networks** tab in the tree section. Expand the tree to show the LMBRs, then click one of the LMBR icons. The login screen for the LMBR configuration application will open in the right side of the window (it may take up to 30 seconds before the configuration application opens).

NOTE: If there is more than one LMBR-600, you will not be aware of which router you are connecting to until you have entered the configuration application (unless you already know the IP addresses of the routers), at which point the router's Device ID will be shown.

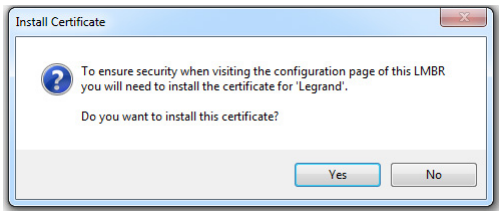
4. To use the configuration application within LMCS, the Bonjour service from Apple must be installed on the PC. If it is not currently installed, a warning dialog appears, which will open a browser page that will allow you to download it.

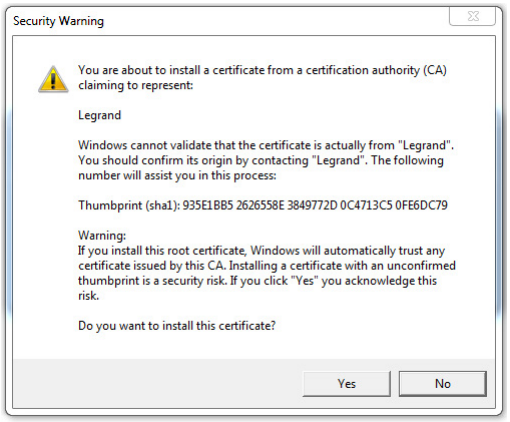


Clicking yes opens the following link: https://support.apple.com/kb/dl999?locale=en_US

Once Bonjour is installed, you can return to LMCS and proceed as before.

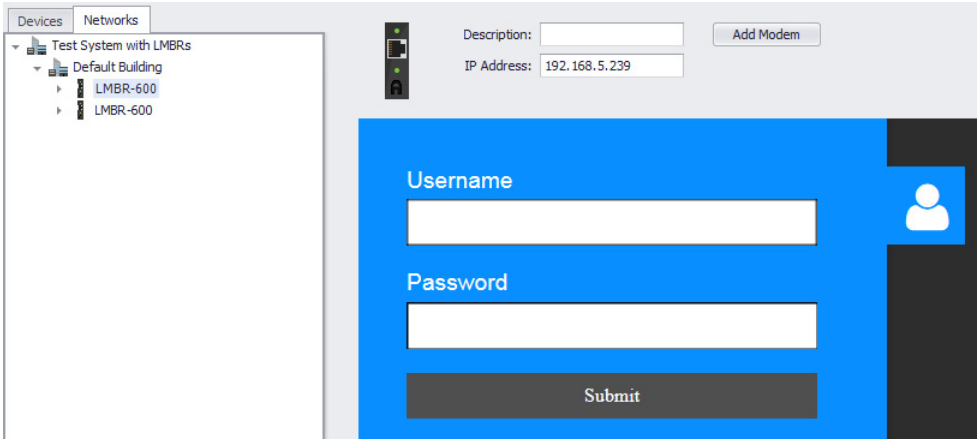
5. If this is the first time you have attempted to use the LMBR configuration application on this PC, when you click the LMBR icon, two warning dialogs will appear which require you to install security certificates for the LMBR. Click **Yes** on both dialogs.





6. Once the certificate is installed, click on the LMBR icon to open the Configuration Application. Enter the **Username** and **Password**, then click **Submit**.
Username: admin

Password: lmbrpass



7. Once you login in to the LMBR, you can begin the PAN configuration process, described in the *Wireless DLM Setup and Implementation Guide*.

DISCOVERING NEW ROOMS OR DEVICES IN A PREVIOUSLY DISCOVERED NETWORK

Another application in which online discovery might be used is in a situation where a large project was previously created, but a room has been added at a later point, or extra devices added to an existing room, or a malfunctioning device is replaced with a different device.

NOTE: For wireless networks, if you are adding devices that were previously paired using the manual Push-to-Pair method or with the DLM Configuration App, you must use a special process to add them to the network. See the following section for details.

NOTE: If replacing an LMBR-650 as opposed to replacing a malfunctioning room controller, sensor or switch, the process is different. See "If Replacing or Resetting an LMBR-650" on page 105.

For Wireless Networks

For a wireless network, you must run the Wireless Discovery process again to discover the new or replaced devices, but a few steps are left out. For full step by step detail on wireless discovery, see "Creating a Project While Connected to A Wireless Network" on page 61.

When discovering an already configured wireless network, you skip the step where you select the Network, ID and Channel, since they were previously chosen. Once you get to the step where you can view uncommissioned devices, any new devices which are set to the default network ID and channel will be listed. Select the desired devices to move them to the network. You then proceed assigning the new devices to rooms, where you can assign them to an existing room or create a new room for the devices. Once discovery is complete, delete any replaced devices from the devices tree.

NOTE: You can also use the process above to re-connect existing devices to the network if they had to be reset (which results in the network ID and channel being set back to defaults). Once the devices have been reassigned to the network, there is no need to do any room assignment since they already exist in the room in the project file. If the device you reset is one of the switches or sensors, there is no need to re-pair the device in the room, because the pairing information is stored in the room controller. But if the room controller was reset, then you will need to re-pair all devices in the room.

For Wired Networks

If adding a room to an existing wired BACnet network, run the Discovery process and make sure that the **Discover All Rooms** checkbox is **not** selected. Once the **Discover Bridges and Panels** dialog opens, the dialog will list all rooms on the BACnet network, and any rooms that were not previously discovered will be selected. Click **Discover** to complete the process.

If additional devices have been added to an existing (previously discovered) room, the discovery process should **not** be run. Doing so will result in an additional room being added to the project, which will be identical to the room as it was previously discovered, but with the new device added. Instead, the **Synchronize Devices** process should be run. This will find all the devices in the room and indicate which device is not currently in the project. You can then load the device parameters for that device into the project. For details on synchronizing devices, see "Synchronizing a Room" on page 117.

ADDING DEVICES PREVIOUSLY PAIRED WITH PUSH-TO-PAIR OR THE DLM CONFIG APP

This section covers a situation in which a room was previously paired using Push-to-Pair or the DLM Config App and you now want to add those devices to your LMCS project by connecting an LMBR to those devices.

NOTE: If you used the DLM Config App to pair devices in a room, this process will **only** work if you used the **Quick Pair** function, which creates an unsecured network. If you created a secured site with the DLM Config App, this process will not work. To bring the devices from that site into LMCS, you will have to reset all those devices and then use the regular discovery process to add them into the LMCS project.

NOTE: In order to perform this process you will need physical access to one of the devices in the room in order to manually put all the devices in the room into Push-to-Pair mode, or you can use the DLM Config App to do the same.

You must have an additional, temporary LMBR-650 to complete this process. The temporary LMBR, which you will use to connect to the previously paired network, must **not** have any devices currently assigned to it. After bringing in the new devices into LMCS, you will move them from the temporary LMBR to one of the permanent LMBRs in the site.

Since each room created using PtP or the DLM Config App is a separate network, if there are multiple rooms that you want to add to LMCS, you must repeat this process for each room.

For the temporary LMBR, you must first Discover that LMBR and add it to the LMCS project so that it will appear in the Networks view in the tree. See steps 1-4 in the section "Creating a Project While Connected to A Wireless Network" on page 61. Once the LMBR has been added, click **Close** to end the Discover wizard. You can then proceed with the following steps.

IMPORTANT: When configuring the LMBR during Discovery, you **must** use the **Default** settings (do **not** select Configure to enter custom values for the Network ID and Channel on the **LMBR Network Configuration** dialog).

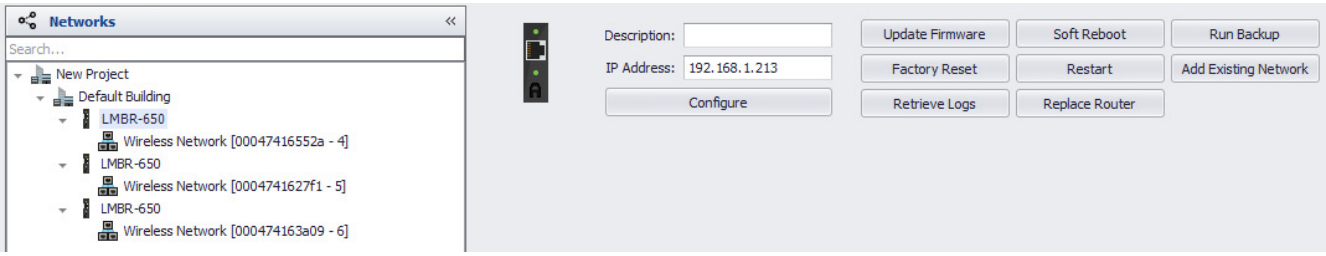
Bringing Previously Paired Devices into LMCS

There are two different situations that apply when adding an existing network:

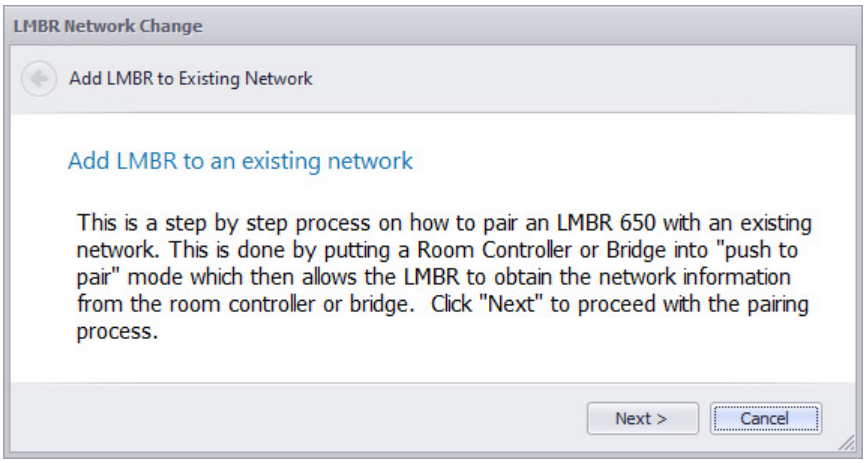
- You want to retain the load binding programming in the room originally created using Push n' Learn or Quick Pair in the DLM Config App.
- You do not need to retain the original load binding and instead will do this in LMCS.

The first set of steps are identical in both situations. Following those steps, the additional steps are separated for each of the two options.

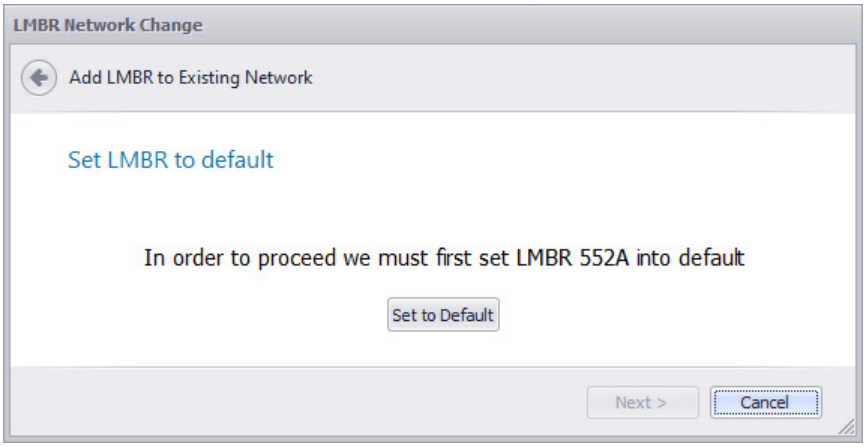
1. In the Network View of the tree, select the LMBR to be used for adding the existing network. As mentioned above, this LMBR must **not** have any devices currently assigned to it. Then click **Add Existing Network**.



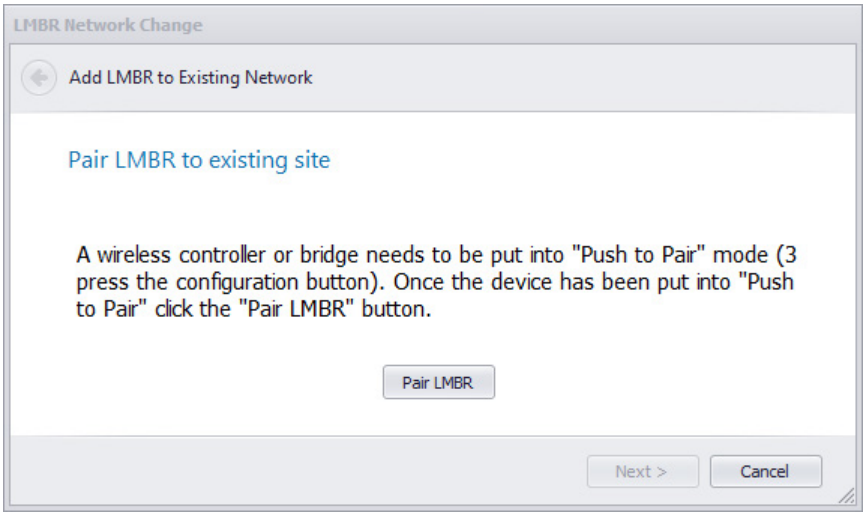
2. A wizard opens that walks through the steps necessary to connect the LMBR to the existing network. Click **Next**.



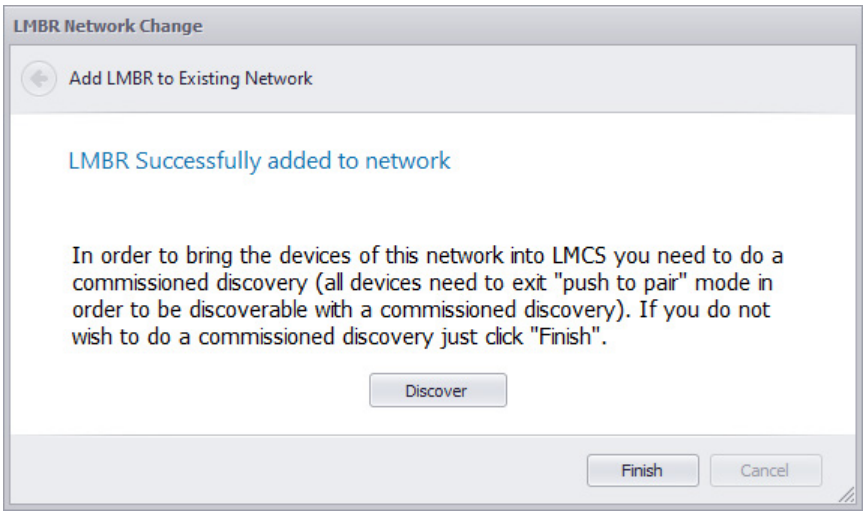
3. A prompt informs you that LMCS will put the LMBR on to the default network. Click **Set to Default**.



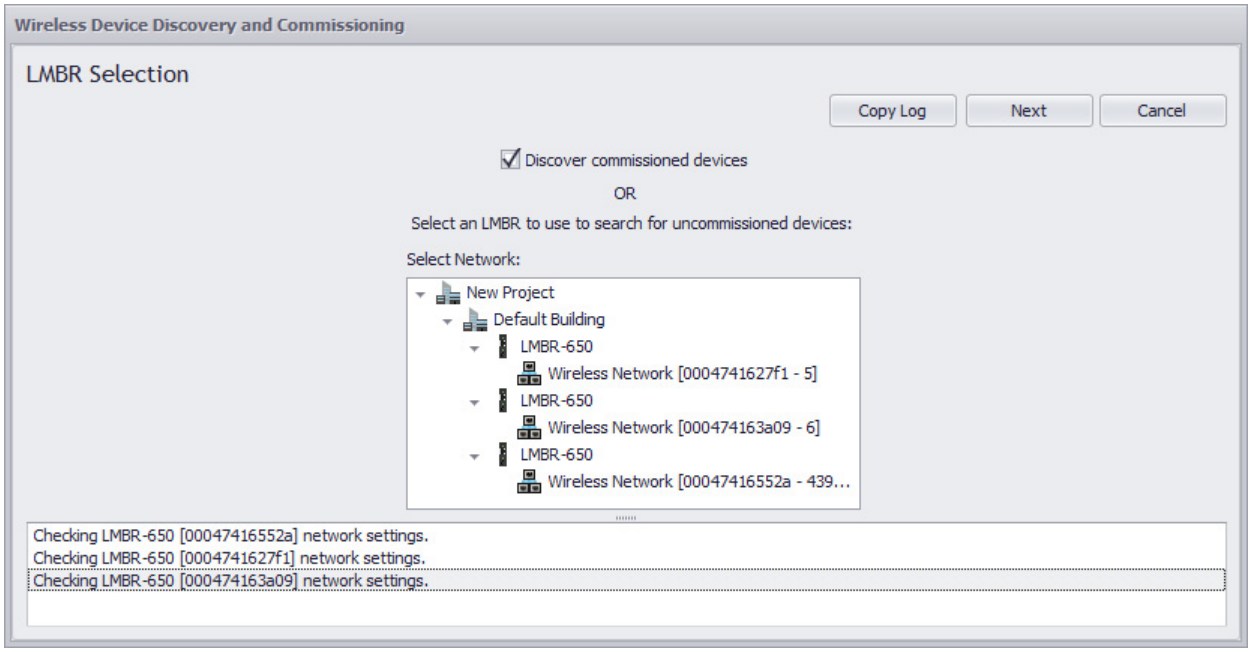
4. The wizard display the status as it attempts to set the LMBR to default. When complete, click **Next**.
5. At this point a prompt appears informing you that you must put the room controller into Push-to-Pair mode, by pressing the Config button on **any** device in the room three times (within three seconds). The LED on the room controller and all other paired devices in the room that are awake will flash green. Then click **Pair LMBR**.



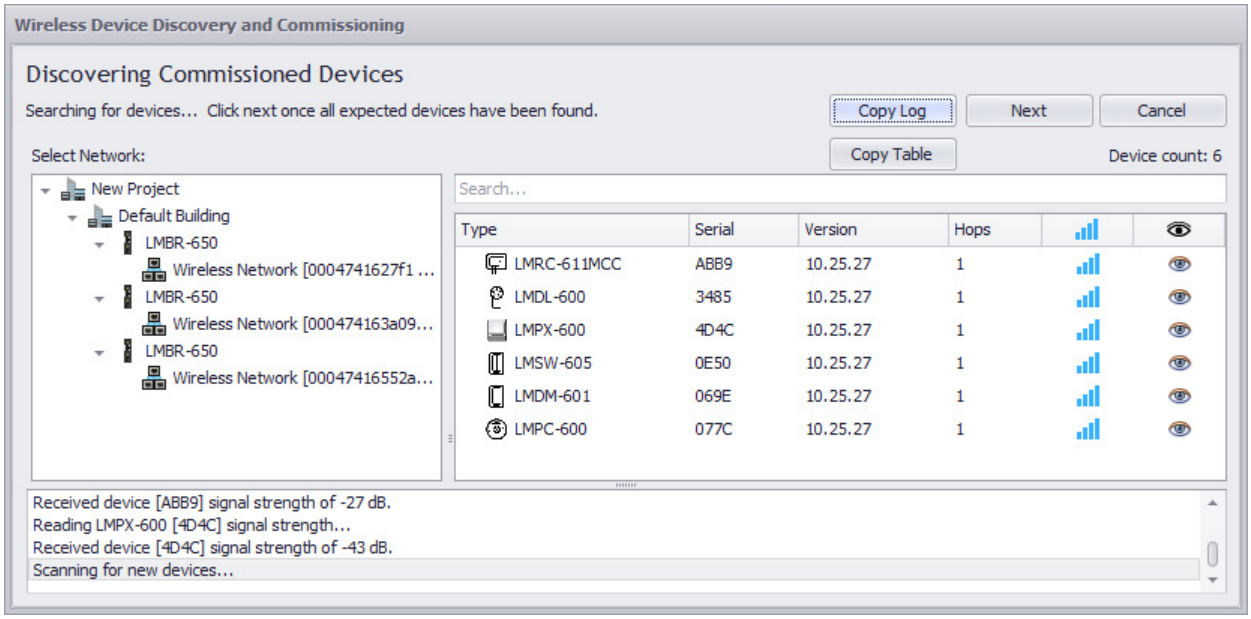
6. LMCS will then attempt to obtain the network key from the room controller and a message displays showing the status. When complete, click **Next**.
7. The prompt now informs you that the devices will need to be discovered. Before that can occur, the devices must exit Push-to-Pair mode. From any device, press the Config button 3 times. Once the devices exit Push-to-Pair, click **Discover**.



8. The **LMBR Selection** dialog opens. Make sure the **Discover commissioned devices** checkbox is selected, then click **Next**.



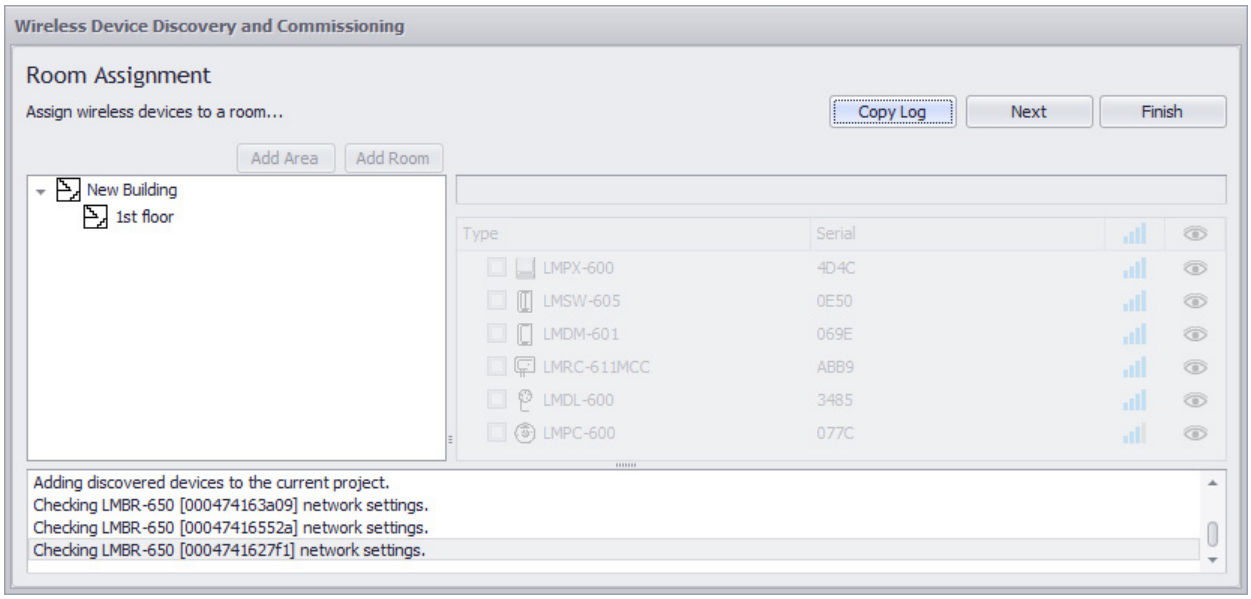
9. The **Discovering Commissioned Devices** dialog opens. The window will populate with all devices in the room. If any switch or sensor devices are not awake, you must wake them by pressing the Config button before they will appear in the list. Once all devices have been found, click **Next**.



Once you click **Next**, the **Room Assignment** dialog appears. At this point, the process varies, depending on whether you want to retain the load binding programming currently in the room or will do this in LMCS. The following two sections detail the steps for each option. If you are going to create load binding using LMCS, see page 103.

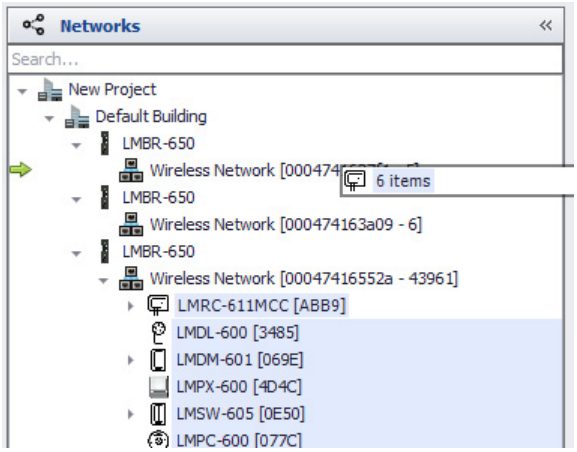
If Retaining the Load Binding from PnL or the DLM Config App

1. From the **Room Assignment** dialog, click **Finish**.

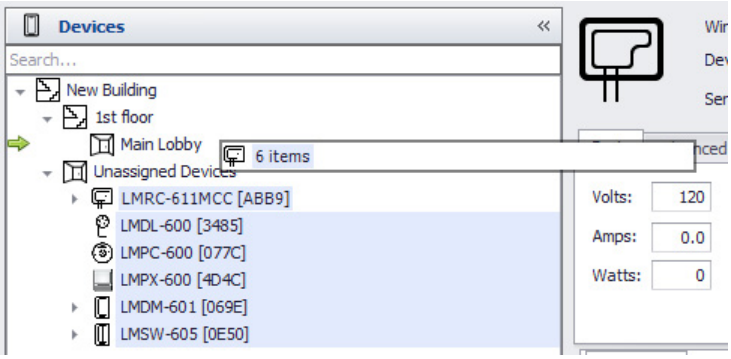


2. The dialog will close and all of the devices will be assigned to the Unassigned Devices category in the Devices View in the tree. The new devices also appear under the temporary LMBR in the Networks View.
3. You now need to move the devices to a different LMBR before you can discover and bring in the next network (room). Highlight each of the devices to be moved, then click and drag them on to the LMBR network that you would like to move them to. When prompted, select Yes.

   NOTE: If you receive a warning that LMCS is unable to move a device, select **No**. Wake up the device and try moving it again.

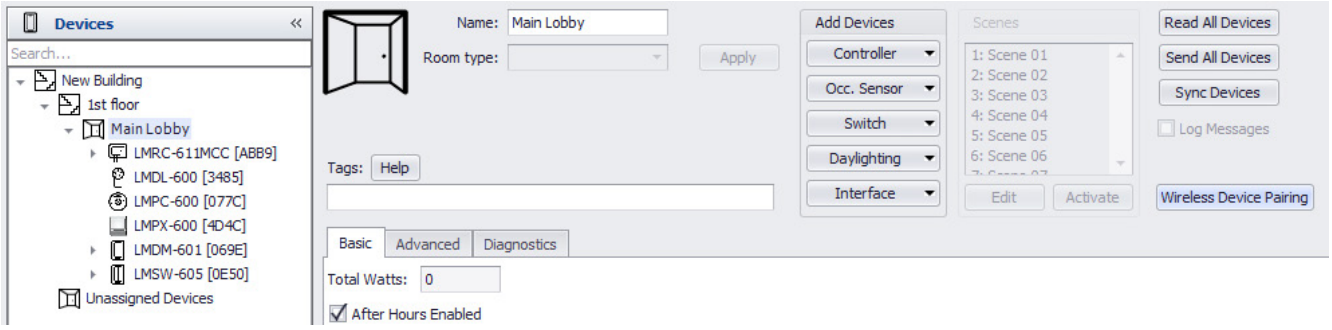


4. Go to the Devices view. Add a new room in the tree (if needed, add an area and a room within that area). Then select all the devices under Unassigned devices and drag them into the new room.



5. Highlight the new room in the tree and click **Read All Devices**. The **Transfer** dialog opens up and begins reading parameter data from all devices in the room. The **Transfer** dialog displays the progress of the read and a log provides information. When the read is complete click **Close**.

6. When complete, all of the binding will now be loaded into LMCS.

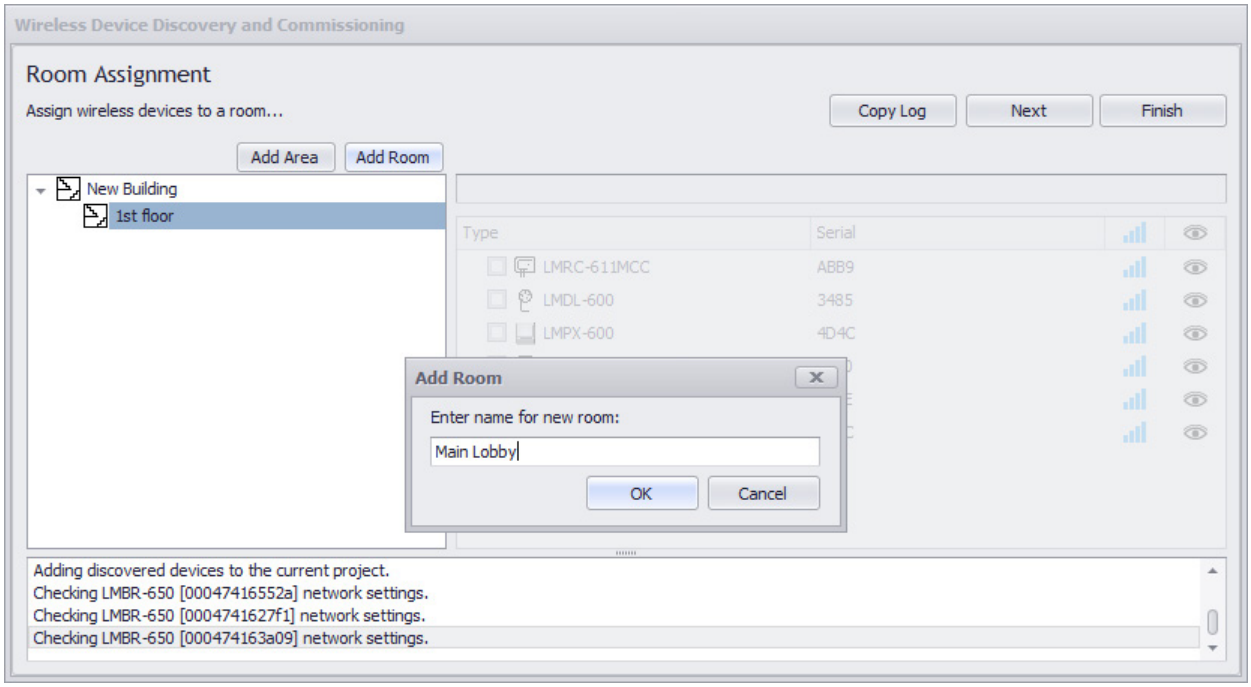


7. Repeat the entire process for each additional room that needs to be added, going back to the first LMBR and clicking **Add Existing Network**.

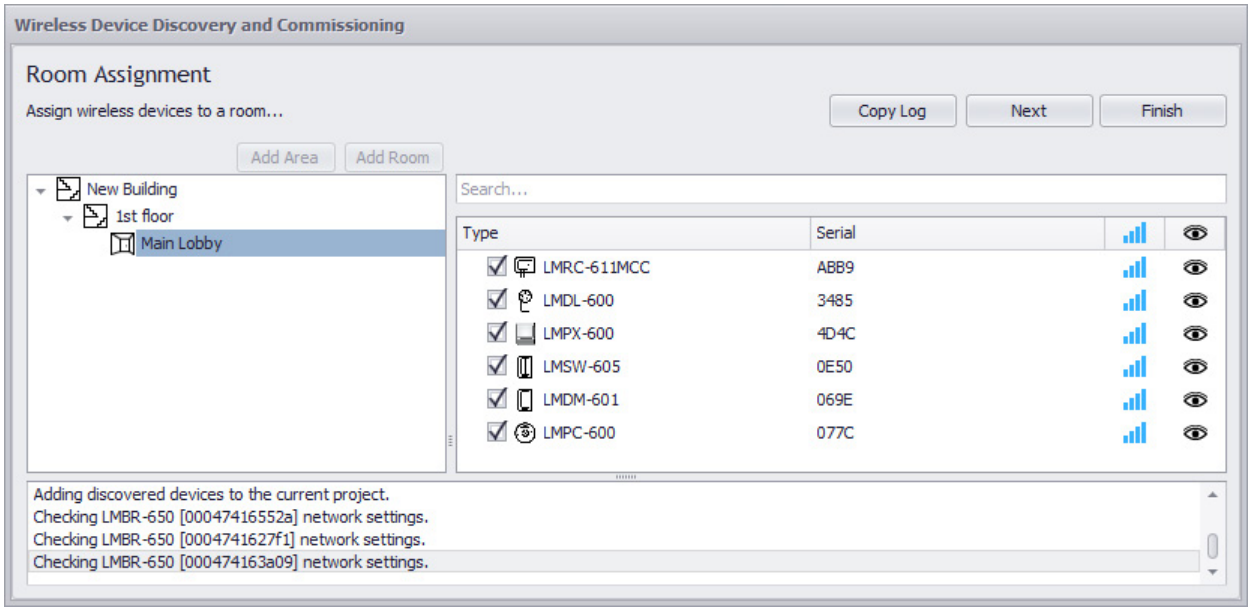
NOTE: For the temporary LMBR, you should perform a reset on it before disconnecting it so that it is uncommissioned and available for another use in the future.

If Creating Load Binding in LMCS

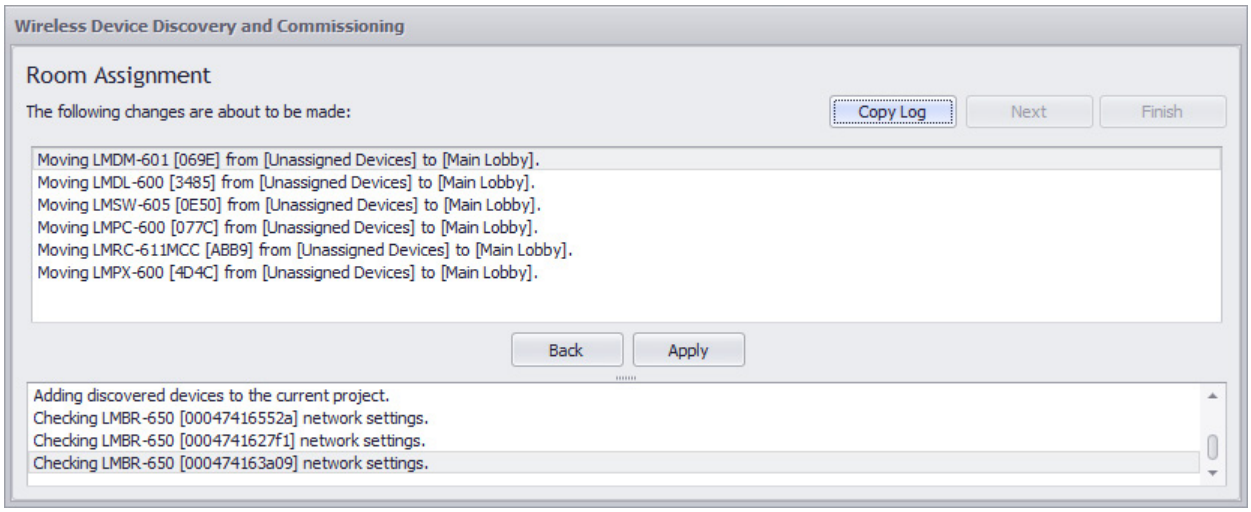
1. Continuing from step 9 in the first part of this process, once the **Room Assignment** dialog opens, click **Add Room**. Then enter the name for the room you want to place the new devices into and click **OK**. If needed you can create more than one room if you want to split the devices between rooms.



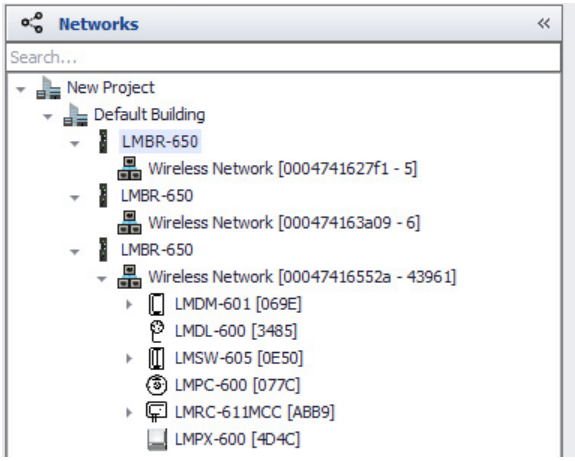
2. Highlight the room then select the devices to be moved to that room. If you created more than one room and selected only some of the devices, when you select the next room only the unselected devices will be available to move into the second room. Once all devices have been selected. Click **Next**.

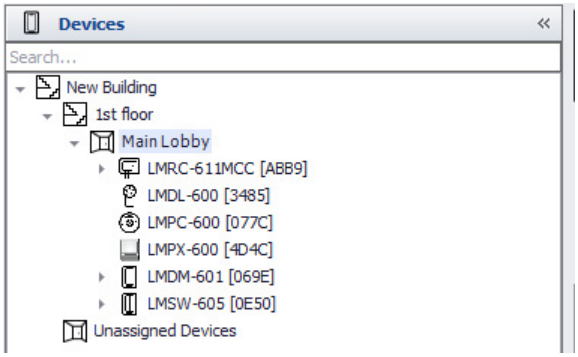


3. Click **Apply**. LMCS will move the devices into the room. The status bar at the bottom shows the progress of the move. Once the process is complete and all devices have been moved, the **Next** and **Finish** buttons are enabled. Click **Finish**.



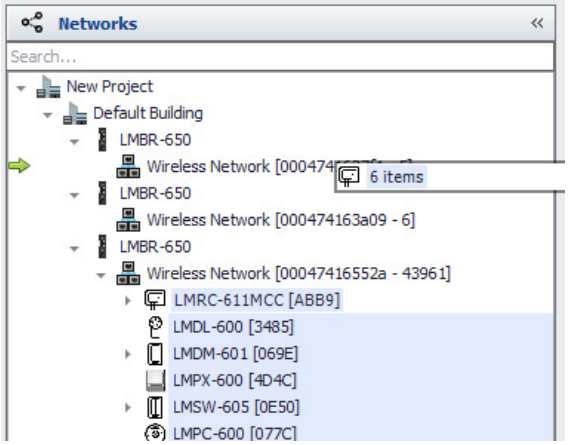
4. The new devices will now appear under the network of the temporary LMBR you used to add the existing network in the **Networks** view. They will also appear under the newly created room in the **Devices** view.





5. Now that the room has been added to LMCS, you will need to move the devices to a different LMBR before you can discover and bring in the next network (room). Highlight each of the devices to be moved, then click and drag them on to the LMBR network that you would like to move them to. When prompted, select Yes.

   NOTE: If you receive a warning concerning LMCS being unable to move a device, select **No**. Wake up the device and try moving it again.



6. Repeat the entire process for each additional room that needs to be added, going back to the first LMBR and clicking **Add Existing Network**.

NOTE: For the temporary LMBR, you should perform a reset on it before disconnecting it so that it is uncommissioned and available for another use in the future.

IF REPLACING OR RESETTING AN LMBR-650

If you need to replace a commissioned LMBR-650 for any reason (or if that LMBR was reset), highlight that specific LMBR in the tree, then click **Replace Router** if it is a multi-LMBR site or **Add Existing Network** if it is a single LMBR site. For a multi-LMBR site, you can replace either the primary or any secondary LMBR.

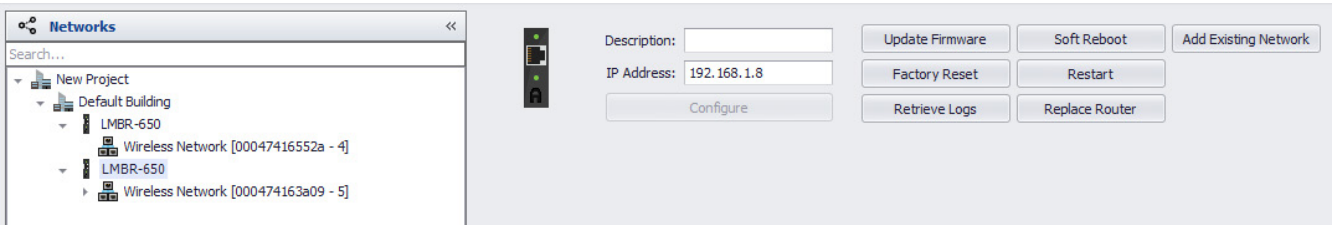
NOTE: Prior to 10.147, DHCP was the default LAN Port setting. All LMBR with 10.147 and later the default LAN Port setting is Static IP with Self Addressing. Upgrading a commissioned LMBR to 10.147 or later will not change any IP Settings.

Replacing an LMBR-650 in a Multi-LMBR Network

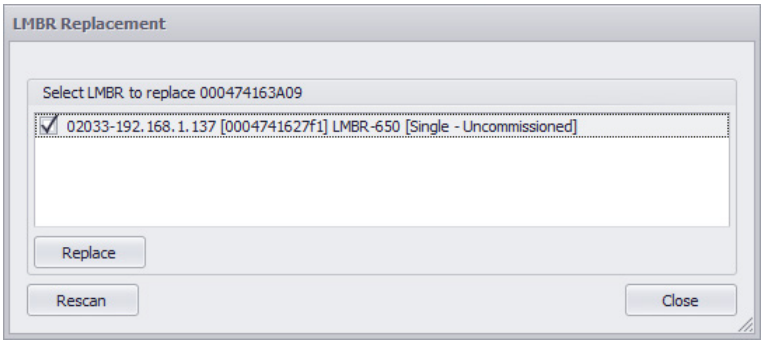
NOTE: All LMBRs in a multi-LMBR network automatically create a backup of the data in the other LMBRs every Sunday at 3 AM. So if you replace an LMBR, it will be loaded with the data from that previous backup. If any changes were made to that particular LMBR since the backup, the settings will need to be reprogrammed. This applies to things such as wireless schedules and scenes which are stored in the LMBR-650. You can manually run an LMBR network backup by selecting the Primary LMBR in the tree and then clicking **Run Backup**. This process takes about a minute to complete. Wattstopper recommends that you run a backup after the replacement process is complete.

NOTE:

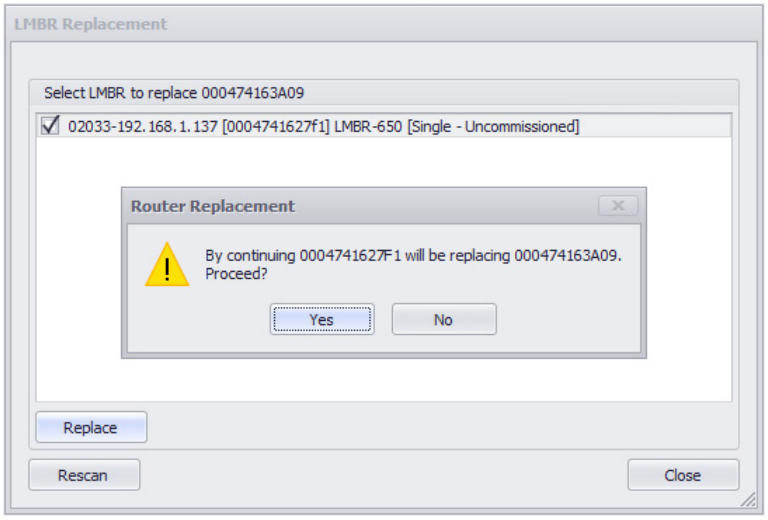
1. If an LMBR-650 needs to be replaced, disconnect it from the network and then connect an **uncommissioned** LMBR to the network. If an LMBR has been reset, it is now uncommissioned.
2. Select the **Networks** tab in the tree and highlight the LMBR that has been removed or reset (identified by its MAC address.



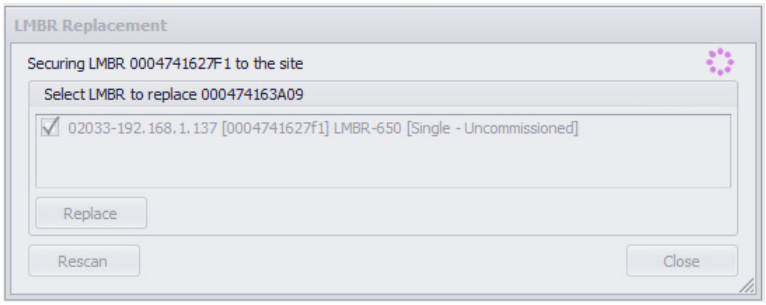
3. Click **Replace Router**. A dialog pops up and displays any uncommissioned LMBRs found on the network.



4. Select the LMBR if it is not automatically selected, and click **Replace**. A confirmation dialog pops up, identifying the two LMBRs by MAC address. Click **Yes**.



5. The dialog changes to show the status of the replacement process. Initially it will says “Securing LMBR xxx” and eventually says “Success” upon completion. When finished, click **Close**.



NOTE: If you are replacing the primary LMBR, the new LMBR will automatically become the primary. After replacing a primary LMBR-650, sometimes a secondary LMBR-650 may show as not being a part of the network. If this occurs, run another LMBR discovery to bring the LMBR onto the Network.

NOTE: You can use this same process if an LMBR was reset but not replaced. The only difference is that the same MAC address will display for the original and “replacement” LMBR.

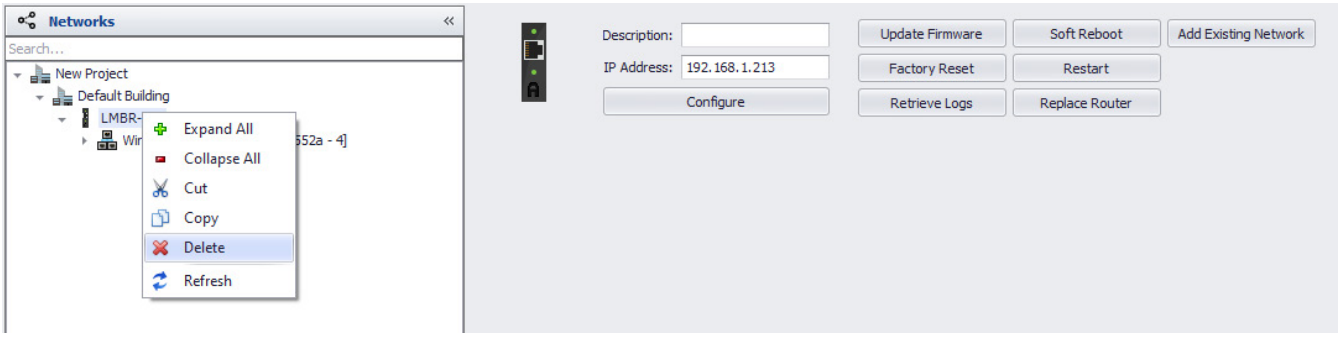
NOTE: If you had created a custom name for the network of the LMBR, it is set back to the default name and you will need to reenter the custom name.

Replacing the LMBR-650 in a Single LMBR Network

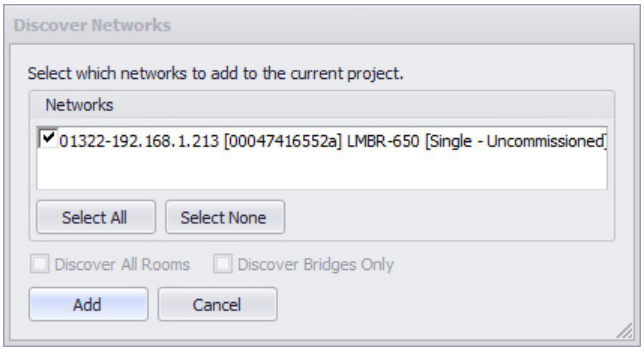
There are two parts to this procedure. The first part is to discover the new LMBR-650 or the existing LMBR if it was reset. The second part is to use the Add Existing Network function to connect the existing devices with the new/reset LMBR.

1. Highlight the current LMBR in the **Networks** view, then right-click and select **Delete**. Then click **Yes** to confirm.

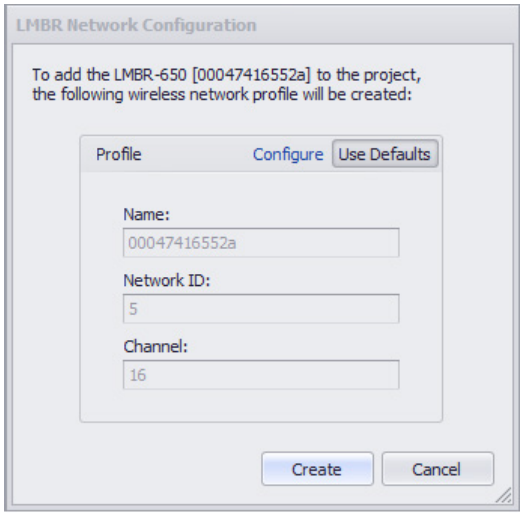
   NOTE: You must do this step even if you are going to rediscover an existing LMBR that was reset.



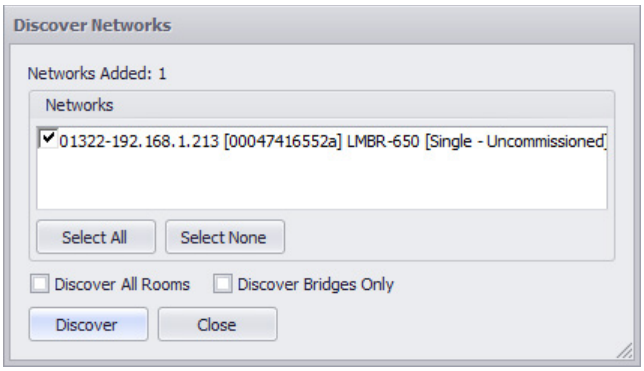
2. If replacing the LMBR, connect the **uncommissioned** LMBR to the network. (This can be done before step 1 if desired.)
3. Return to the **Devices** view and click **Discover**. LMCS will display the uncommissioned LMBR.



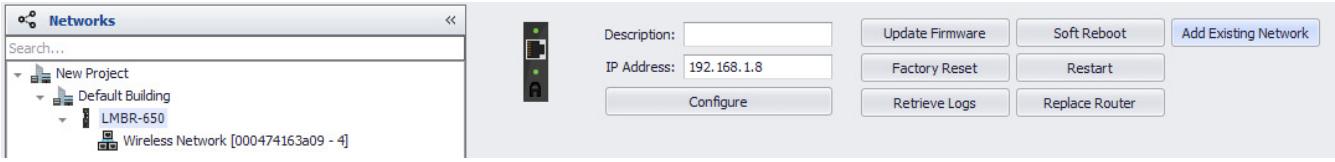
4. Click **Add**. A new dialog pops up that allows you to select the **Network ID** and **Channel** the LMBR will use to communicate with the wireless DLM devices. It will pick a couple of numbers automatically. The **Name** used to identify the LMBR will be set to the MAC address of the LMBR. If you want to change either or both of the numbers or create a custom name, click **Configure** and the fields will be enabled for editing. If you click **Use Defaults**, the fields are disabled and set to the values chosen by LMCS. You do **not** need to use the Network ID and Channel that was previously used.



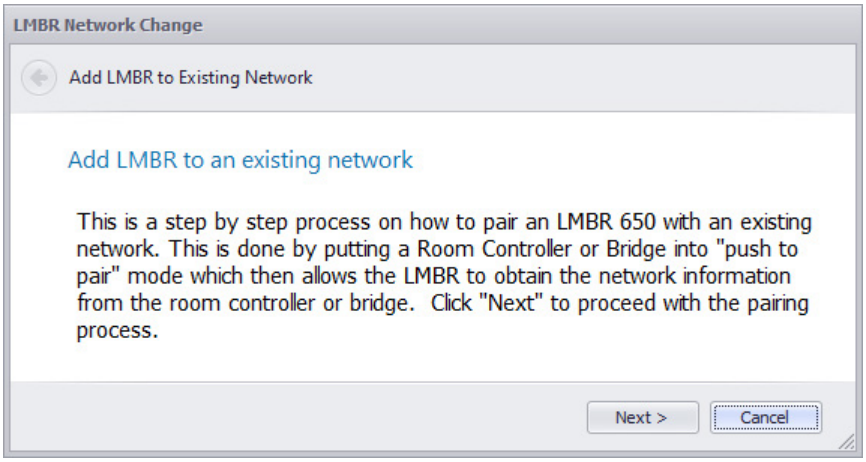
5. Click **Create**. You return to the **Discover Networks** dialog. Click **Close**.



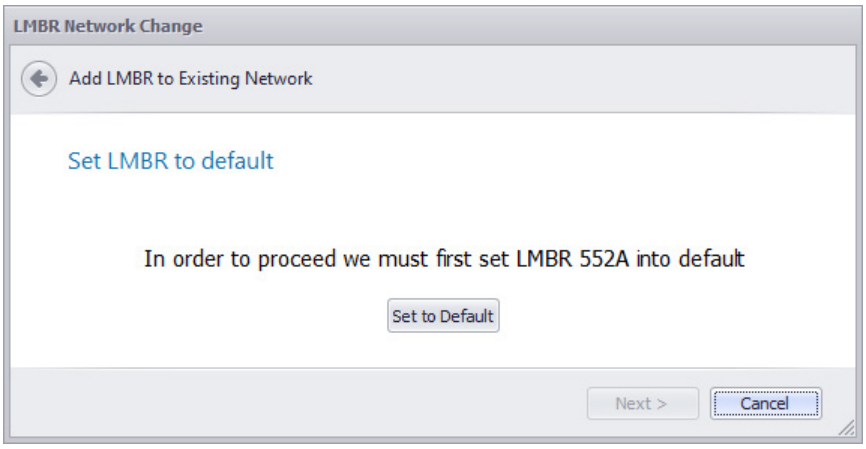
6. Return to the **Networks** view. Select the LMBR and click **Add Existing Network**.



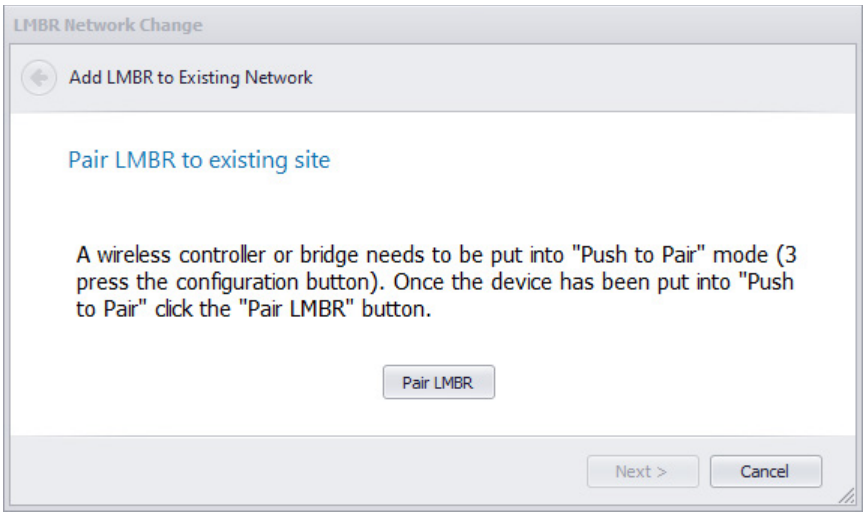
7. A wizard opens that walks through the steps necessary to reconnect the LMBR to your devices. Click **Next**.



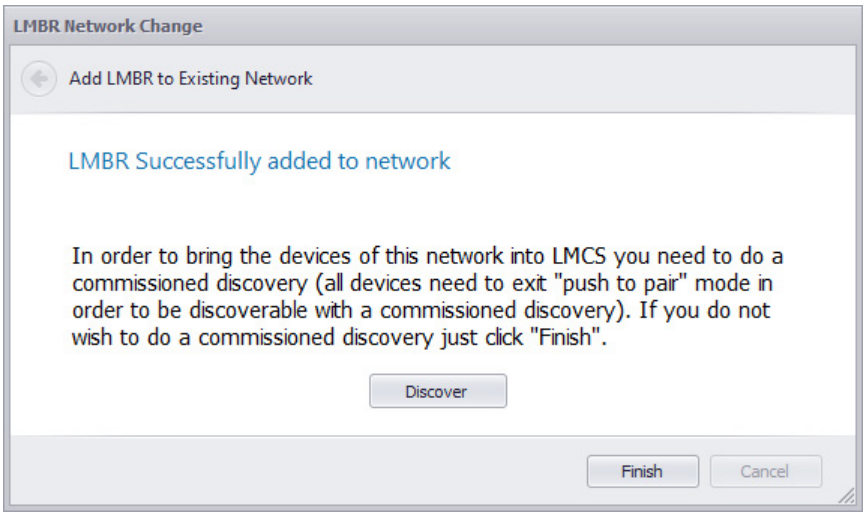
8. A prompt informs you that LMCS will put the LMBR on to the default network. Click **Set to Default**.



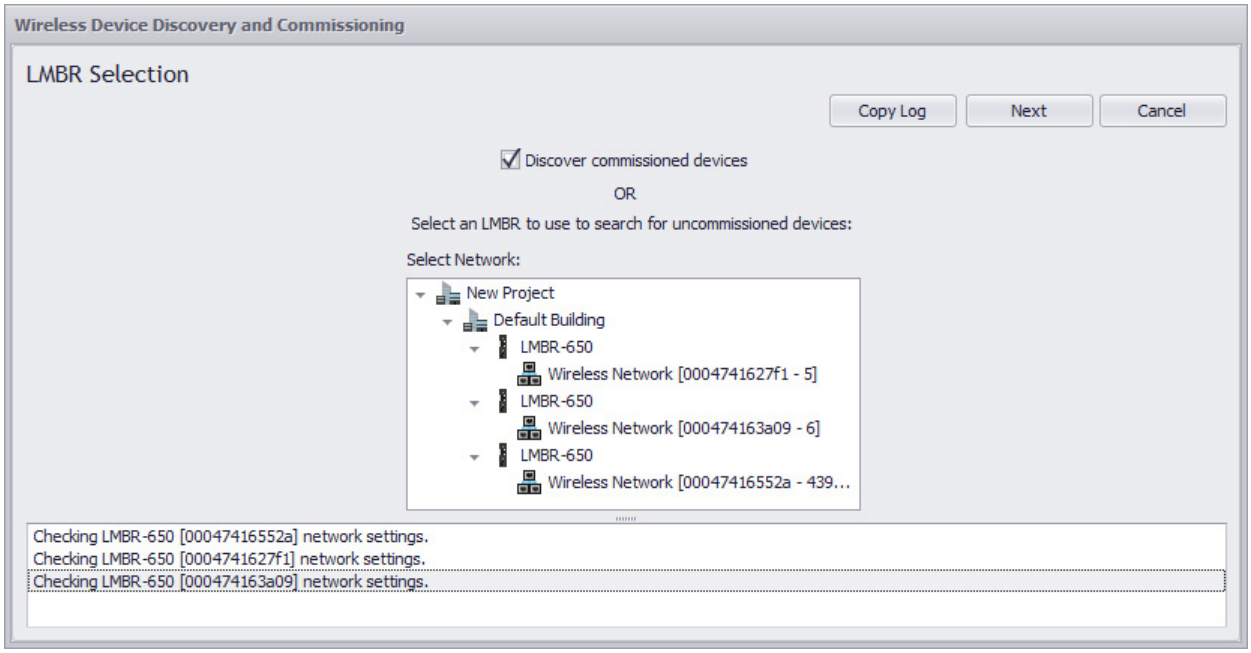
9. The wizard display the status at it attempts to set the LMBR to default. When complete, click **Next**.
10. At this point a prompt appears informing you that you must put the room controller into Push-to-Pair mode, by pressing the Config button on **any** device in the room three times (within three seconds). The LED on the room controller and all other paired devices in the room that are awake will flash green. Then click **Pair LMBR**.



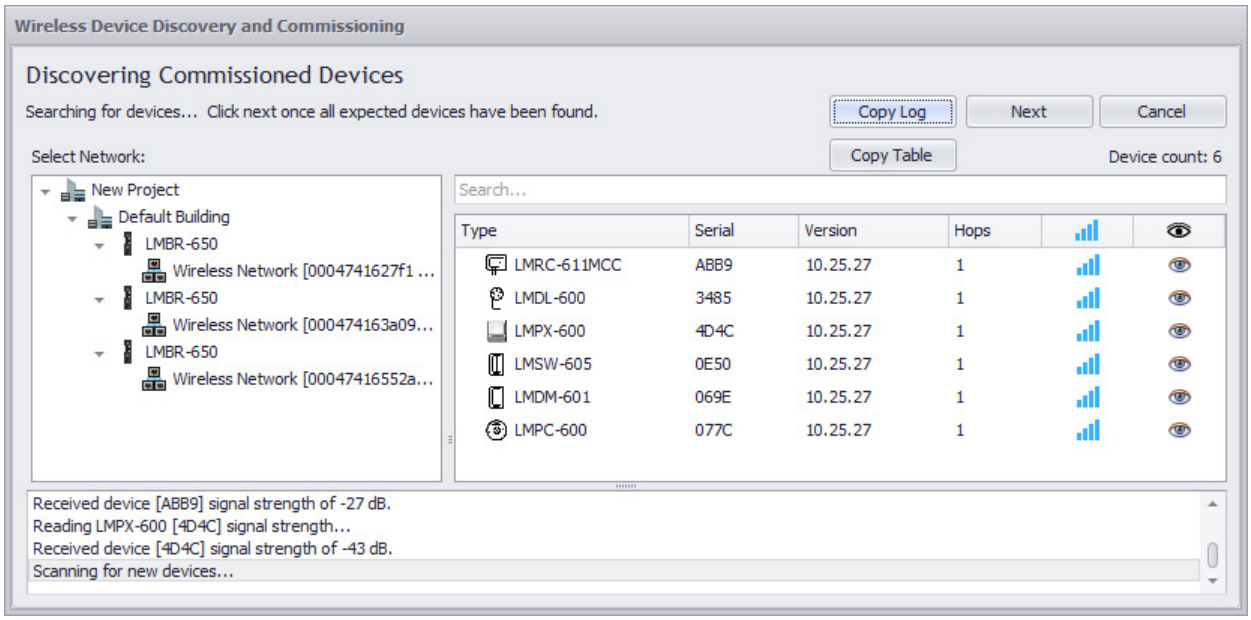
11. LMCS will then attempt to obtain the network key from the room controller and a message displays showing the status. When complete, click **Next**.
12. The prompt now informs you that the devices will need to be discovered. Before that can occur, the devices must exit Push-to-Pair mode. From any device, press the Config button 3 times. Once the devices exit Push-to-Pair, click **Discover**.



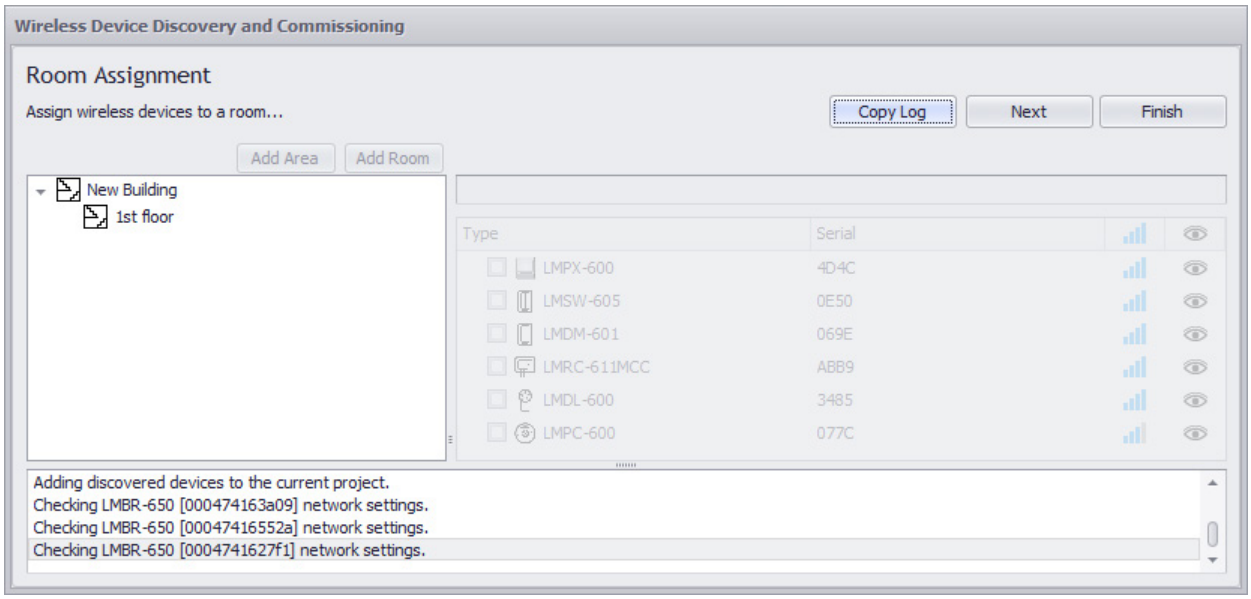
13. The **LMBR Selection** dialog opens. Make sure the **Discover commissioned devices** checkbox is selected, then click **Next**.



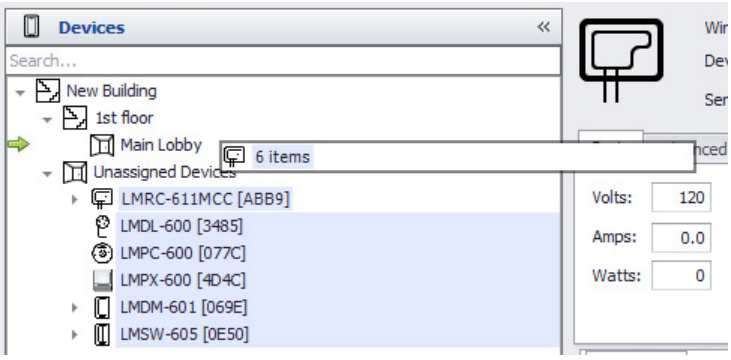
14. The **Discovering Commissioned Devices** dialog opens. The window will populate with all devices in the room. If any switch or sensor devices are not awake, you must wake them by pressing the Config button before they will appear in the list. Once all devices have been found, click **Next**.



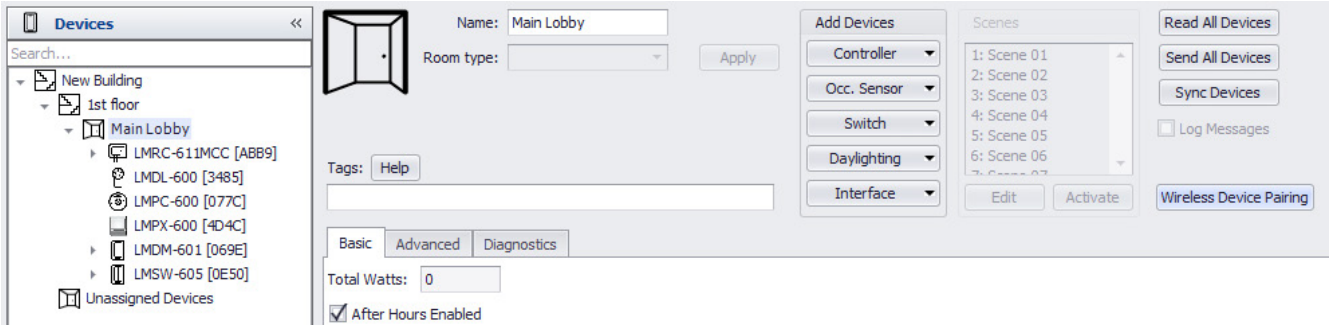
15. The **Room Assignment** dialog appears. Click **Finish**.



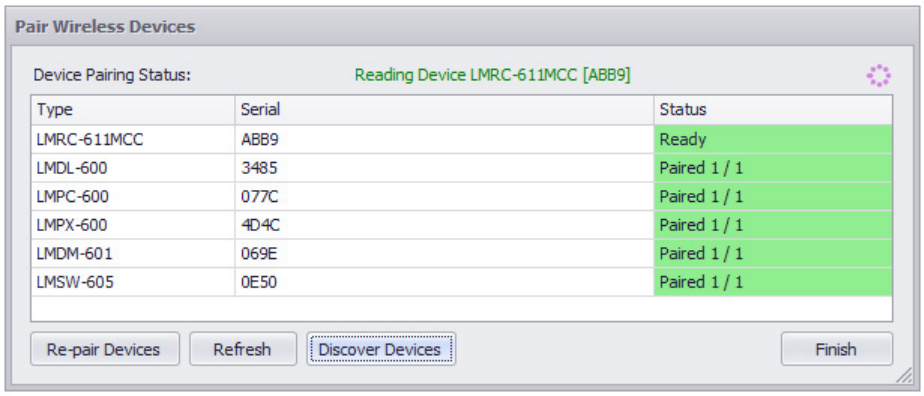
16. The dialog will close and all of the devices will be assigned to the Unassigned Devices category in the tree. Go to the Devices area. Then select all the devices under Unassigned devices drag them into the room that they were originally placed in.



17. The final step in this process is to reconnect wireless scenes and schedules to the LMBR and devices. For **each** room in the tree, highlight the room and click **Wireless Device Pairing**.



18. The **Pair Devices** dialog opens. Click **Discover Devices**.



19. LMCS reads in all the pairing and binding info. Once complete, click **Finish**. Then click **Send All Devices** to send the wireless scene information back to the devices. You must repeat the last three steps for each room in the project.

    NOTE: Instead of clicking **Send All Devices** separately for each room, you may instead highlight the Building in the tree and click the same button from there to send to all devices in all rooms.

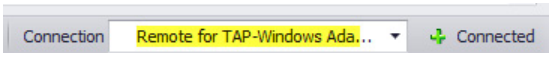
DISCOVERING DEVICES REMOTELY

You can discover a network remotely, via the internet, provided the network contains at least one Segment Manager and access is permitted to the IP address of the Segment Manager(s). You can discover devices connected to multiple Segment Managers in a single process, but each Segment Manager must have a separate IP address. The Segment Manager must have version 2.2.1 or later installed, and version 2.3.0 or later is preferred.

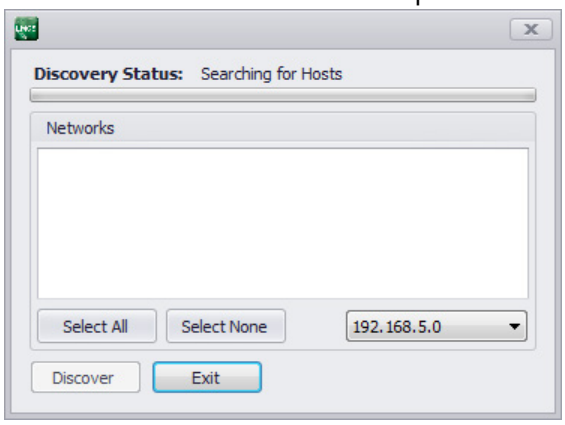
In a system with multiple LMNC cabinets/Segment Managers, you can discover all of them but each one must have its own IP address. Each Segment Manager will also be pre-configured with a different UDP port number.

In a typical application for remote connection, the system will include a RACCESS cellular modem. In order to access the Segment Manager through the modem, you will need the Open VPN application installed on the PC.

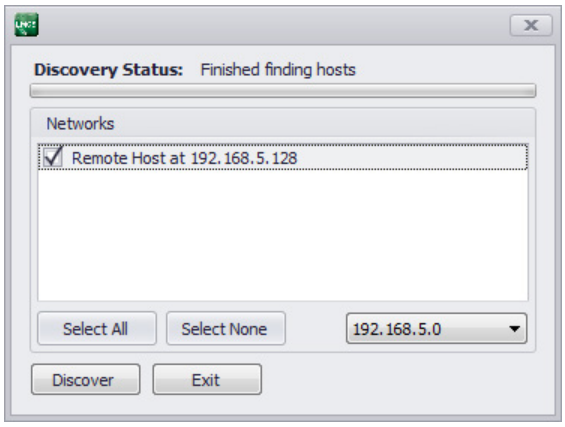
1. Using a valid Open VPN cert file (create a new one if needed), connect to the remote system using the LMCS Remote for TAP connection option.
2. Open a new LMCS file.
3. In a setup with multiple Segment Managers, make sure to set the correct UDP port number in the **Preferences** dialog to match the Segment Manager you want to discover.
4. Select the Remote for “TAP-Windows Adapter” connection option in the **Connection** drop-down.



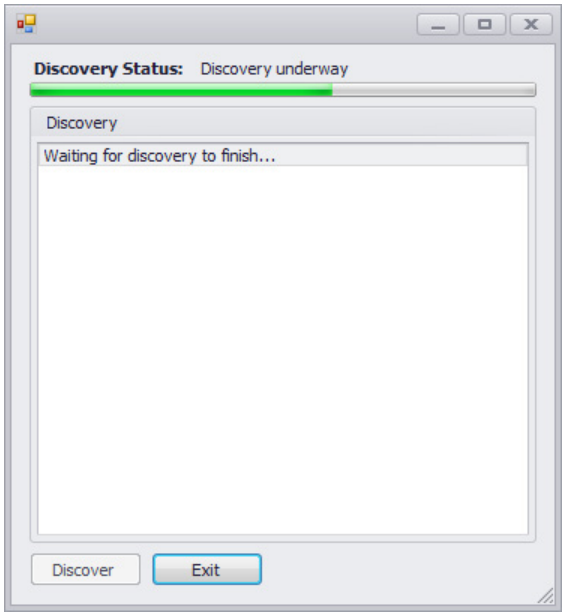
5. Click **Discover**. The Discovery dialog opens and discovery begins automatically. The **Discovery Status** will display “Searching For Hosts” and the progress bar will show the progress. A drop-down shows the IP address range that LMCS will search. By default this is set to 192.168.5.0, since the Segment Managers are normally set in the range of 192.168.5.1 to 192.168.3.254. If you know the Segment manager has been set to a different number, you can select a different value from the drop-down.



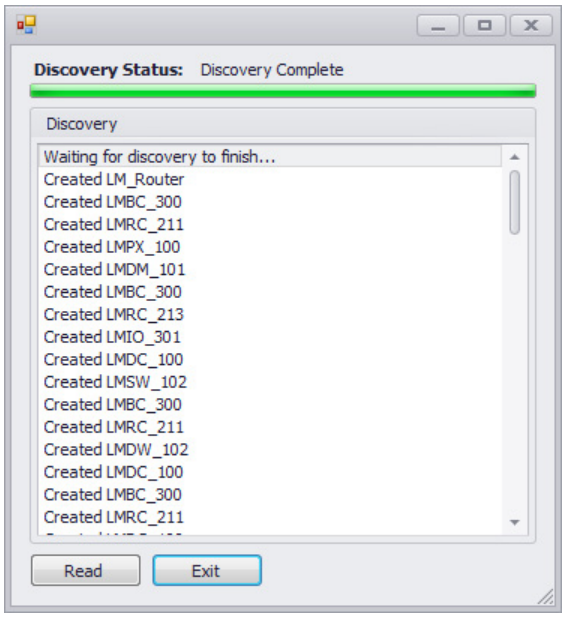
6. If the Segment manager is found, it will display in the dialog. Select the checkbox and click **Discover**



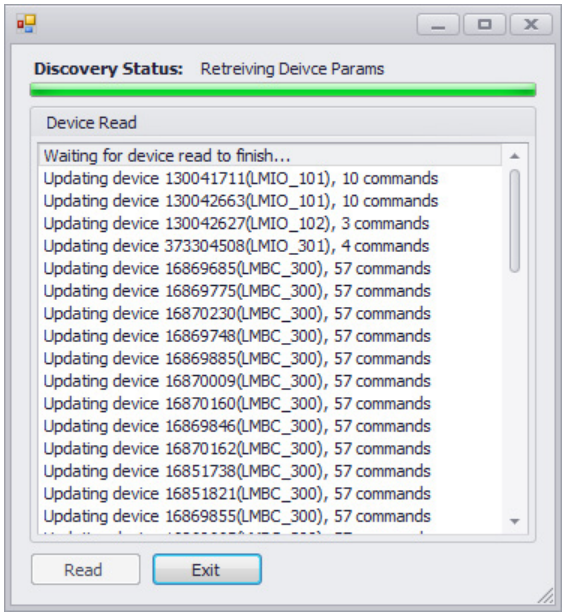
7. LMCS will then begin discovery of all DLM devices connected to that Segment Manager



8. Once Discovery is complete, the **Discover** button changes to say **Read**. LMCS displays a list of all devices discovered.



9. Click **Read** and LMCS will begin importing all device parameters. Once communication is established, the **Discover Status** will display “Read underway” and the progress bar will show the progress. Once the process is complete, LMCS will display a list of all devices along with the device ID



10. Click **Exit**. The **Devices** tab will populate with all devices.

TRANSFERRING PROJECT DATA INTO SITE DEVICES

When a project is created offline, the data must be transferred to the rooms after the project has been programmed. Note that this process can be done connecting to a single room via the DLM network, or connecting to the site as a whole or an area via BACnet. If connecting via BACnet, you still have the option of working on an individual room, or can transfer to multiple rooms in one process. The following steps must be taken to transfer the data from project file into the devices:

1. Enter the serial numbers/device IDs of the installed devices into LMCS. This process is critical because this is how LMCS distinguishes between one device and another. There are two ways this can be done—manually enter the numbers into LMCS or use the Device Pairing utility. Both methods are described below. You can choose to enter only the serial numbers/device IDs for bridges, panels, and zone controllers. In that case, you must synchronize the rooms, as mentioned in the next step.
2. Synchronize the rooms with the project file. If serial numbers are entered for every DLM device, synchronization is not required. However, it is still a very good idea to do so, because this ensures that the serial numbers are correct, and that there are no devices installed in the room that are missing from the project. If serial numbers have been entered for bridges, panels, and zone controllers only, synchronization is mandatory.

   You can run the synchronization process on the entire project, or an area within the project, or you can synchronize individual rooms one at a time. In general, if the rooms are simple, with only one room controller per room and no duplicates of a specific device in a room (for example, two single button switches), you can synchronize the entire project or an area in one process. But if there is more than one room controller or duplicate devices in a room, it may be helpful to synchronize on a per room basis so that you can make sure that each device is correctly paired with the intended device in the project.

NOTE: If connecting to an individual room via the DLM network, it is possible to skip the step of entering the serial numbers, and just use the synchronization process to get the serial numbers of all devices in the room. But this is not very practical for any type of large scale installation, and if there are duplicates of the same device in the room, is also impractical.

Entering Serial Numbers and Device IDs in LMCS

To communicate properly with each DLM device, LMCS must have its serial number. Each device comes with a serial number on a sticker on the device, plus additional stickers with the same number than can be placed on a form documenting the devices in each room. These numbers are then entered into the project file.

For bridges, panels and zone controllers connected via BACnet, the Device ID is used to distinguish different devices on the network. When a unit comes from the factory, the device ID is set to the last six digits from the serial number. However, the number can be set to any number desired. For example, when working with an integrator, the integrator may specify a range of numbers reserved for the lighting network. Another example of a situation in which the numbers might be different is if a bridge needed to be replaced after the network was configured and it is preferred that the Device ID remain the same. To change the device ID on the panel or bridge, you must use an LMCT-100 remote. (This is done on the Network Settings Menu. See the LMCT-100 or LMCP user manuals for details.)

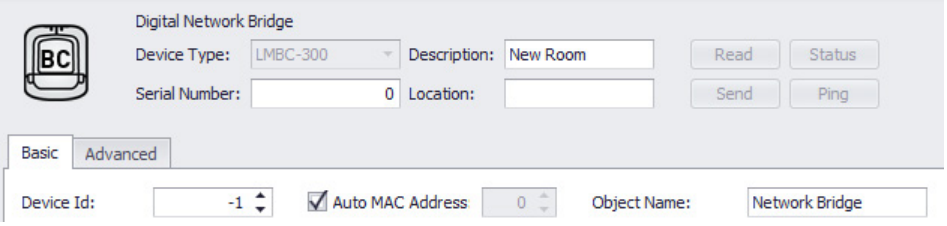
NOTE: Since the device ID is used only in BACnet communications, it applies only to bridges, panels, and zone controllers. All other devices communicate using the DLM network. Also, if connecting to the room with an LMCI-100 instead of via BACnet, the device ID is not used and a bridge, panel, or zone controller uses the serial number instead.

At a minimum, you must enter the serial numbers and device IDs for **each bridge, panel, or zone controller**, since they are a basis for a “room”. Once they are entered, the synchronization process can get the serial numbers for all other devices connected to a specific bridge or panel. However, if there is more than one room controller in a room, or there are duplicates of individual devices, it is best to enter the serial numbers of those devices to ensure that the device is paired with the correct device entered in the project. This is particularly critical for room controllers, since they will be controlling different loads. Note that if you do not enter the serial numbers it is still possible to match the device in the room with the device in the project during the synchronization process. However, this requires an extra step, as described in step 4 in the section Synchronizing A Room (see page 117).

Manually Entering Serial Numbers

The **Serial Number** parameter is found in the top area of the information section for each device, and the **Device ID** in the **Basic** tab, as shown in the screenshot from an LMBC-300, below:

Manually Entering a Serial Number



When you enter the **Serial Number** of a bridge, panel, or LMZC-301 the first time, the **Device ID** will automatically be set to the last six digits (following the factory setting for the device). However, once the number has been entered and you click or tab out of the field, the **Device ID** will no longer automatically update. So, for example, if you type an incorrect **Serial Number** and click out of that field, then go back and fix it, you must also manually fix the **Device ID**.

NOTE: The serial number can also be entered on the **Advanced** tab for the bridge or panel. If you enter the serial number there and then change it, a dialog opens asking if you want to change the Device ID. Click **Yes** and the **Device ID** will be automatically updated.

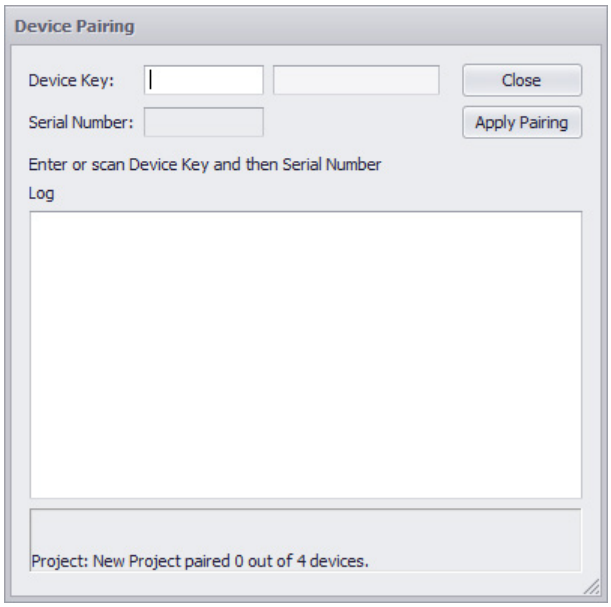
Automating Serial Number Entry with the Device Pairing Utility

The **Device Pairing** utility provides the ability to quickly enter many serial numbers by connecting a hand-held USB scanner.

The first step in this process is to print out the **Device Pairing** report. This prints a report of each device in the project, by room, with a bar code for each device. When the devices are installed in the room, the installer attaches the serial number stickers next to the bar code for that device. As an alternative, as mentioned above, only the bridges, panels and zone controllers can be scanned. A separate **Bridge Pairing Report** is available for this purpose. For examples of these reports, see "Pairing Reports" on page 249.

To run the utility, click **Device Pairing** on the **Support** tab to open the **Device Pairing** dialog.

Device Pairing



The **Device Pairing** report has two columns. With a USB scanner connected to the PC, scan the **Device Key** column, and then the **Serial Number** column. When you scan each bar code, the number is entered in the appropriate field. For the **Device Key**, the name of the device is displayed in the field to the right of the number.

Once both the device key and serial number are scanned, they are automatically paired and the fields clear to allow scanning the next device.

Serial numbers for DLM products are assigned in ranges based on the type of device. Therefore, LMCS is able to determine valid serial numbers for a device. If the serial number on the sticker does not match the type of device scanned for the device key (for example, if the sticker was pasted on the wrong row on the report), an error message will display.

NOTE: While LMCS will return an error if the serial number doesn't match the device type, if there is more than one of a device in a room, it is possible to associate the wrong serial number with a specific device in the project file. While this doesn't matter much for occupancy sensors, it does make a difference for room controllers, since the controllers will be connected to specific loads, and for switches, if the switches are set to control different loads. To help prevent possible errors, Wattstopper strongly recommends clearly labeling the different devices (using the **Description** field) in the project to clearly indicate the location of the device.

Numbers for either field can also be entered by hand if there is a problem scanning a bar code (for example, if a label becomes torn or illegible). If you enter a number by hand, you must click **Apply Pairing** to complete the process and clear the fields for the next device.

Synchronizing a Room

If the project includes only serial numbers/device IDs for the bridges, panels, and zone controllers, synchronization is required, to input the serial numbers for all other devices into the project. But as mentioned previously, running the synchronization process is not mandatory. As long as the serial numbers and device IDs match the ones in the project file, LMCS can communicate with all DLM devices. However, it is still a very good idea to synchronize. If a device has been installed in a room but is not in the project, that device will be discovered during synchronization. Additionally, if there are any mismatches of serial numbers, this process makes it easy to troubleshoot the problem.

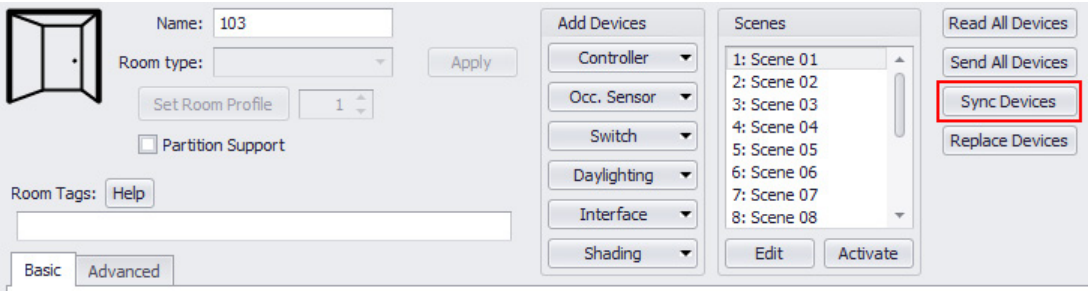
The process of synchronizing a room includes the following:

- Discover the devices in a room
- Check to see that the devices in the project file match the devices found in the room. If a device found in the room is not in the project, a message indicates this.
- The synchronization window includes the ability to "ping" a device, allowing someone located in the room to verify communication with the device. This can be useful in situations where there is more than one type of a device, for example if there are two room controllers and you are not certain which controller is controlling specific loads.
- Finalize the synchronization. If the serial number for a device in the project was not previously entered, the serial number is copied from the device into the project.

NOTE: With one exception, mentioned in the following steps, the device parameters are not sent to or read from the devices during the synchronization process. That is done afterwords, using the **Send All Devices** or **Read All Devices** buttons.

1. Highlight the room to be synchronized in the tree to open the room information on the right side of the window.

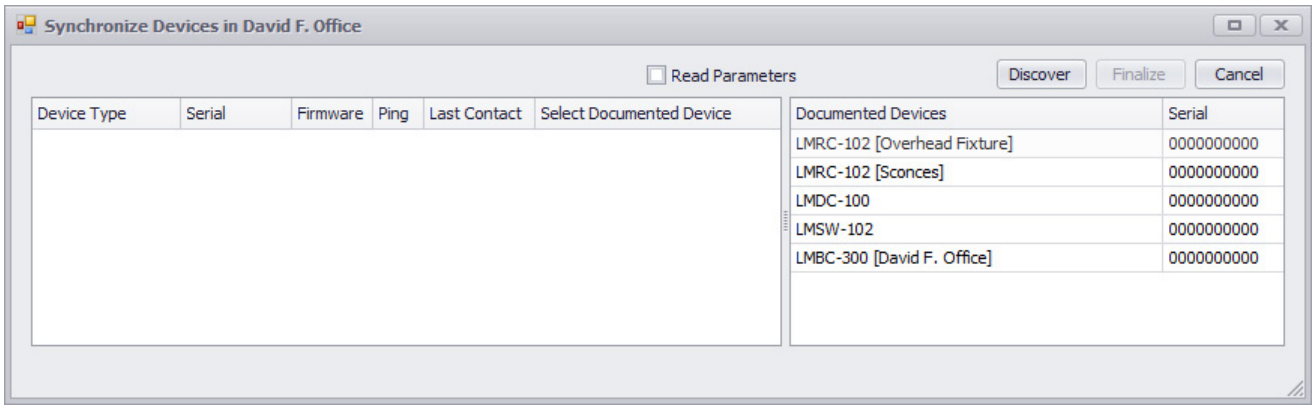
Room Information Section



2. Click **Sync Devices** to open the **Synchronize Devices** dialog. The right side of the dialog shows the devices in the project file that are included in the room. Serial numbers for documented devices that haven't been entered or previously synchronized will be displayed as "0000000000"

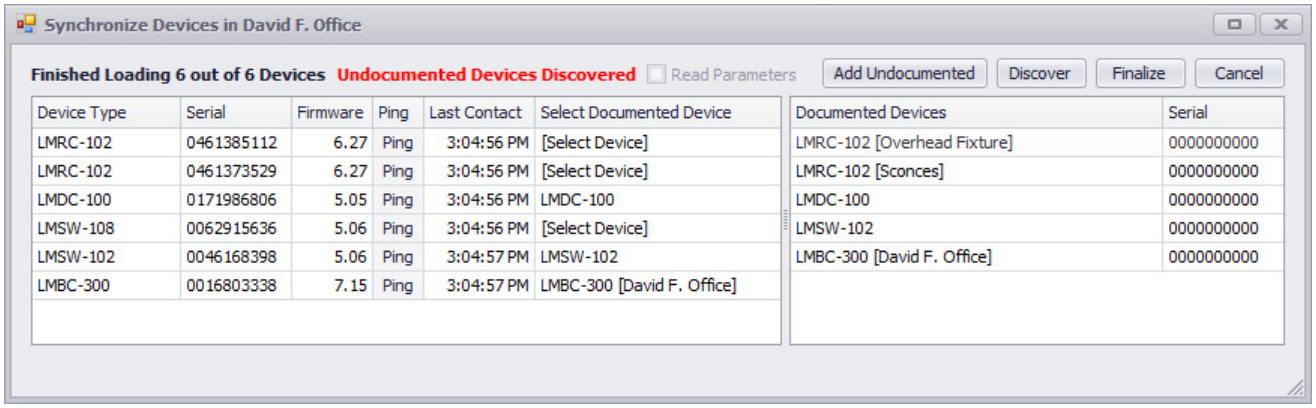
   Under normal circumstances, do **not** select the **Read Parameters** checkbox. This will cause LMCS to load the current device parameters into the project, overwriting any custom programming that has been done for the project.

Synchronize Devices



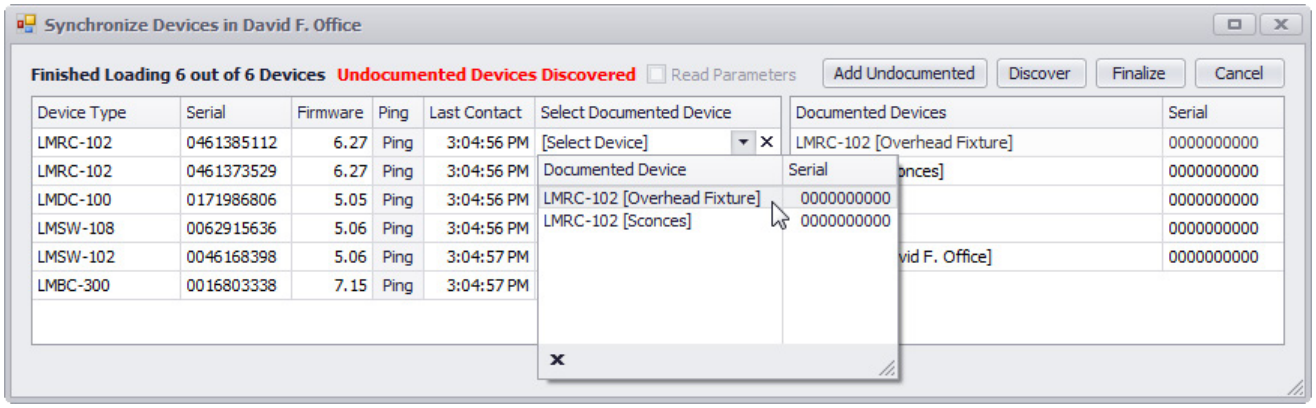
3. Click **Discover**. LMCS runs a discovery on the room and lists all found devices in the left side of the dialog. In the following example, an extra device (the LMSW-108) has been discovered which was not documented in the project.

Synchronize Devices Dialog After Discovery



4. If two instances of the same device exist in the room, LMCS has no way of knowing how to match the two devices to the two devices in the project, unless the serial numbers of those devices were previously entered (either manually or using the Device Pairing utility). In this case, a drop-down appears in the **Select Documented Device** column, as shown in the example above with two LMRC-102 room controllers. Select the correct value for each device, as shown in the example below. Notice in the screenshot that a description shows up square brackets after the device name. This highlights the importance of adding a identifying description when editing the device parameters.

Selecting a Device Location



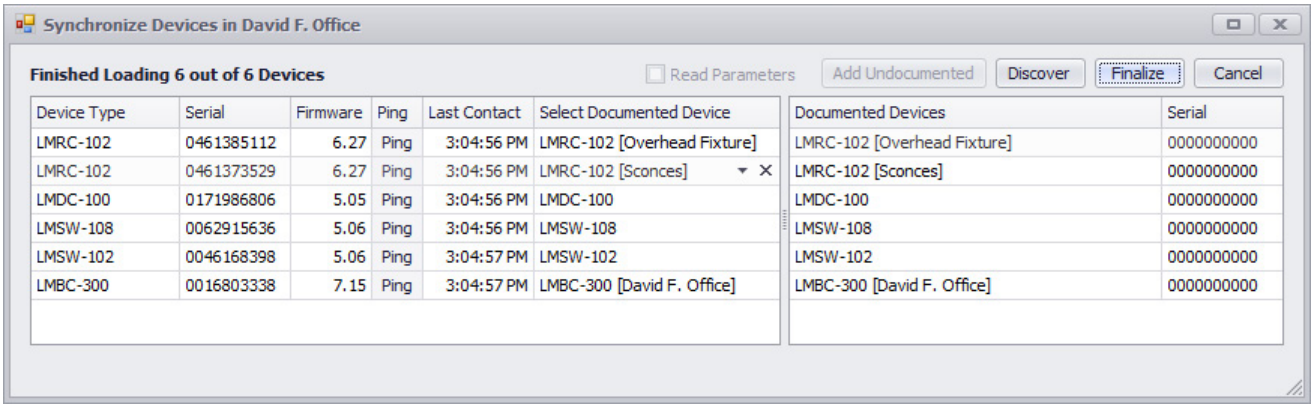
If you are unsure which device is which (for example, which controller controls a specific load), while communicating with someone in the room, click **Ping** in the row for that device. For a room controller, if a load is off, it will turn on briefly, then off again. If the load is on, it will turn off briefly then back on again. For other devices, the blue LEDs will blink for several seconds. On LMCS, that row will flash green and yellow, indicating the ping is being sent.

Device Type	Serial	Firmware	Ping	Last Contact	Select Documented Device
LMRC-102	0461385112	6.27	Ping	9:12:46 AM	LMRC-102
LMDC-100	0171986806	5.05	Ping	9:11:20 AM	LMDC-100
LMSW-102	0046168398	5.06	Ping	9:11:21 AM	LMSW-102
LMBC-300	0016803338	7.15	Ping	9:11:21 AM	LMBC-300 [David F. Office]

NOTE: This step is not needed if the serial numbers were previously entered. For this reason, Wattstopper recommends using the Device Pairing utility or manually entering the serial numbers for all devices instead of just the bridges, when a room has multiple occurrences of the same device.

5. As mentioned in Step 3, in this example, an LMSW-108 was found that does not occur in the project. Notice that the **Select Documented Device** column for that device displays "[Select Device]", but in this case, nothing can be selected from the drop-down because nothing exists for that device in the project. An additional button, **Add Undocumented** also appears at the top of the dialog. If you click that button, the undocumented device will be added to the project, and the warning in red disappears, as shown below. The new device will contain default values for all device parameters. If you do **not** add the device, you can still complete the synchronization, and that device will be ignored.

Device Discovery After Adding the Undocumented Device



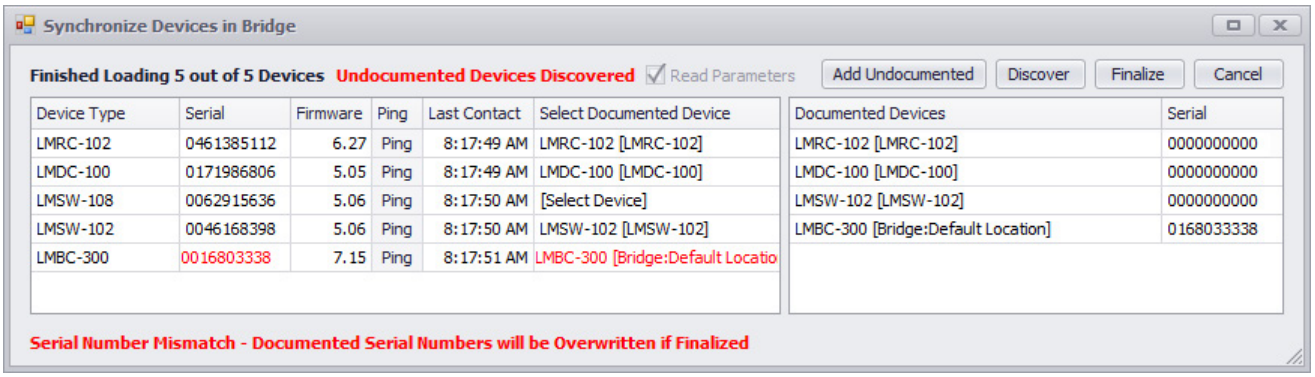
6. To complete the synchronization process, click **Finalize**. This matches the devices in the room to the devices in the project. If a serial number does not exist for a device in the project, it is loaded into the project.

   WARNING: If the **Read Parameters** checkbox is selected, all parameters for each device are loaded into the project, overwriting any custom programming, so be careful not to select the checkbox unless that is desired.

Example of Synchronization Where the Serial Numbers Do Not Match

If a serial number entered in the project does not match the one found during discovery, a warning is displayed at the bottom of the dialog and the serial number of the actual device is displayed in red, as shown in the example below. In this case, once you click **Finalize**, the serial number in the project will be updated to the correct number.

Serial Number Does Not Match

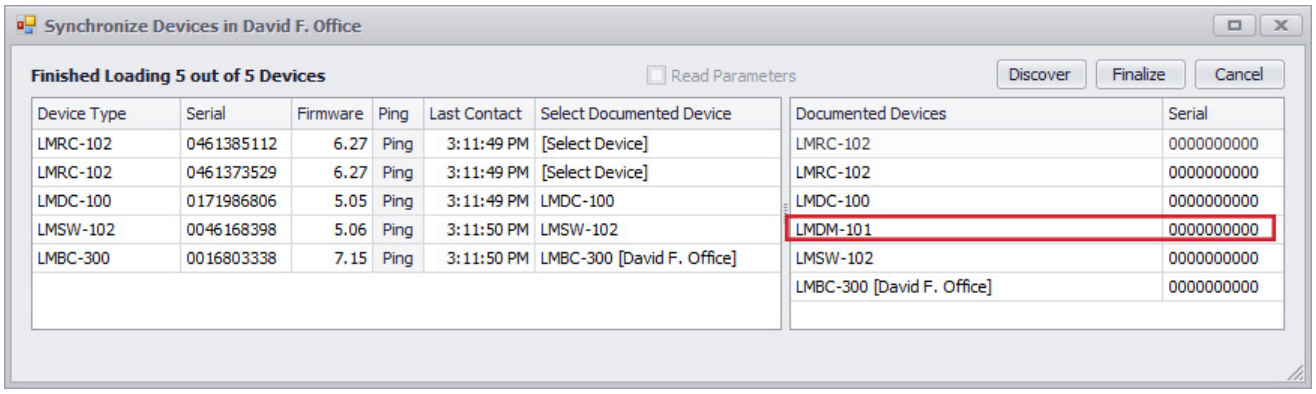


NOTE: While the serial number for a bridge, panel, or zone controller does not have to match for the discovery process, if connected via BACnet, the device ID **must** match or there will be an error during discovery.

Example of Synchronization Where the Discovered Room is Missing Devices Included in the Project

If the discovery process does not find a device included in that room for the project, no warning message is displayed. However, it is still easy to identifying this issue, because the number of rows on the right side of the dialog will be greater than the number on the left side. This problem may be caused because that device has not yet been installed or is not properly communicating in the DLM network, in which case, check that the LMRJ cable is properly connected.

Device Not Found During Discovery



Even if the device can't be found in the room, you can still complete the synchronization process—LMCS will simply ignore the missing device.

Synchronizing an Area

You can synchronize all the rooms in an area or even the entire building in one process. (For larger sites, it is more practical to limit discoveries to an area rather than the entire building, due to the processing/communication time involved.)

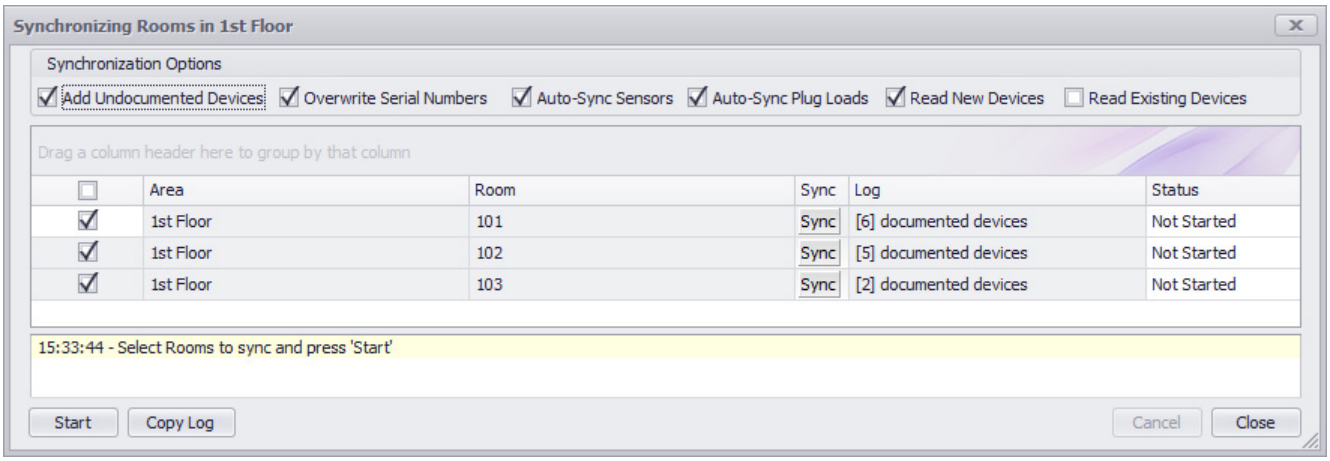
Synchronizing rooms in an area is only available if connected via BACnet, since the only way to access more than one room at a time is through BACnet. If connected via the LMCI-100, this option is disabled.

NOTE: As described in the section "Entering Serial Numbers and Device IDs in LMCS" on page 115, at a minimum you must have previously entered the device ID for all bridges, panels, and zone controllers, so that LMCS match each room it discovers to the correct one in the project.

NOTE: If a room has more than one of a specific device, then the room will not be able to completely synchronize unless the serial numbers of those devices are already in the project. If these device do not have serial numbers, the room will be partially synced and you can then go back and manually select those room to finish the synchronization, as described below. An exception to this occurs if you select the **Auto-Sync Sensors** and **Auto-Sync Plug Loads** checkboxes, as described below.

1. With an area or the building selected in the tree, click **Sync Rooms** to open the **Synchronizing Rooms** dialog. LMCS proceeds to discover all rooms in that area and lists them.

Synchronizing Rooms in an Area



2. Select the desired options and click **Start** to begin the synchronization process. Options are as follows:
   - **Add Undocumented Devices** – If any devices are found in the room that are not in the project, they will be automatically added to the project and the device parameters set to defaults.
   - **Overwrite Serial Numbers** – If a device is found in the room with a serial number different from the one in the project, the serial number in the project will be updated to the serial number from the device without any notification. If this option is not selected and there is a serial number mismatch, the device will not be synced. You can then go back to the individual room sync dialog to investigate the different numbers.
   - **Auto-Sync Sensors** – If there is more than one of a specific model occupancy sensor in a room, and the serial numbers have not been entered in the project, selecting this checkbox will cause LMCS to automatically assign the serial numbers to the different devices in the project, eliminating the need to manually match a device into the room to a device in the project. Since occupancy sensors are often set to the same parameter values when multiple sensors exist in a room, this option can speed up the synchronization process.

     NOTE: Do not select this option if sensors in a room are set to control different loads.
   - **Auto-Sync Plug Loads** – This option functions in the same manner as **Auto-Sync Sensors**, but for plug load controllers.
   - **Read New Devices** – With this option selected, LMCS selects and reads new devices that have are discovered during the sync.
   - **Read Existing Devices** – With this option selected, LMCS selects and reads devices that were in the site file before **Sync Rooms** was clicked.
3. Once synchronization begins, a status message indicates the progress. As each room completes processing, the **Status** column will change from “None Synced” to “Fully Synced”, or if some of the devices were not able to sync, the status will say “Partially Synced”.
4. Once the process is complete for all rooms, for any rooms that are partially synced, click the **Sync** button for that room. This will open the same **Synchronizing Devices** dialog that opens if you are synchronizing individual rooms. The dialog will help diagnose the issue, such as a device missing from the project, or a serial mismatch.
5. Once all rooms have been fully synced, close the **Synchronize Rooms** dialog. You are now ready to send project data to the devices.

NOTE: If the **Status** for a room remains set to “None Synced” after synchronization completes, it is likely that the **Device ID** assigned in the project file for the bridge, panel,or zone controller does not match the device ID in actual device. You can double check the ID in the device by using the LMCT-100. The Device ID is displayed on the Network Settings menu. See the LMCT-100 or LMCP user manuals for details. It is also possible to find the ID using LMCS, by running a Discovery on the room. If doing this, make sure that the **Discover All Rooms** checkbox is **not** selected and the **Discover Bridges Only** checkbox **is** selected. Once the **Discover Bridges and Panels** dialog opens, scroll through the list of rooms to find the bridge or panel that did not sync (this may require some effort if the list is long) and click **Discover**. LMCS will discover the bridge and add it to the project as a **new** room. Expand that new room in the tree and select the bridge to view the device ID. Make note of the ID from that bridge and enter it into the original bridge that did not sync. You must change the **Connection** drop-down to “Not Connected” in order to manually enter the device ID. Be sure to delete the newly created room from the project, so you don’t have two bridges with the same device ID. Then return the **Connection** drop-down to your network.

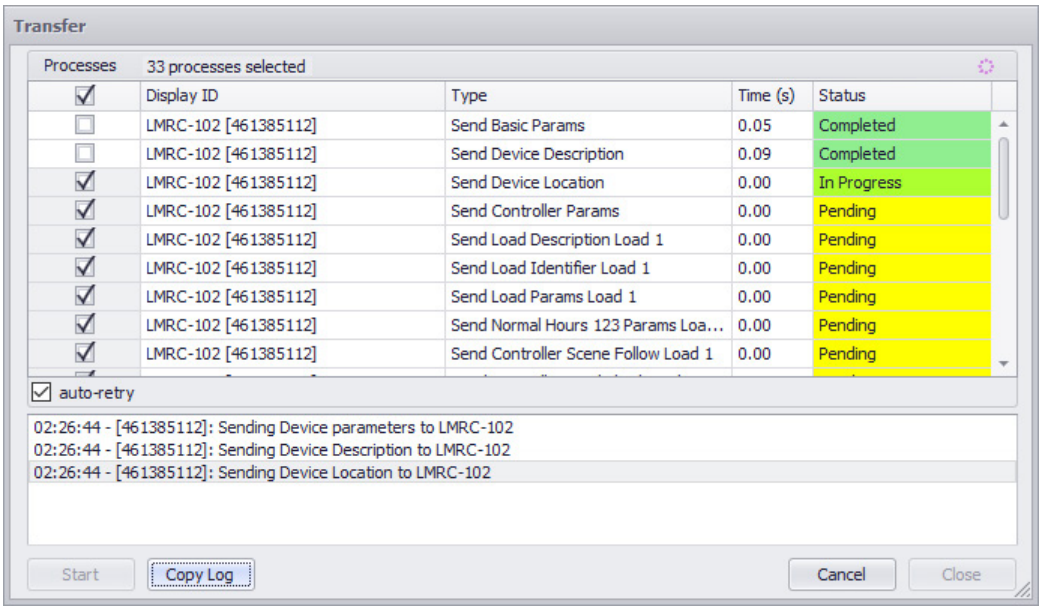
Sending Project Data to Devices

Once a room has been synchronized, device parameters that have been programmed in the project can be sent to the devices in the room. Project parameters can be sent on a per room basis, or per area (or even the entire building) basis.

1. Click the Area or Room in the tree to select it. In the information section, click **Send All Devices**.
2. The **Transfer** dialog opens and LMCS immediately begins sending parameter data. A log displays a list of each device and its serial number as data is sent to it. If there are any errors, the log will indicate failure in sending to that device. If you click **Copy Log**, the log is copied to the clipboard and can be pasted to another application, so you can reference a list of devices that did not receive the parameter data.

   NOTE: As with remote discovery, you can send data to devices via a remote connection, provided the network has a Network Controller (see “Discovering Devices Remotely” on page 112 for details).

Send All Devices

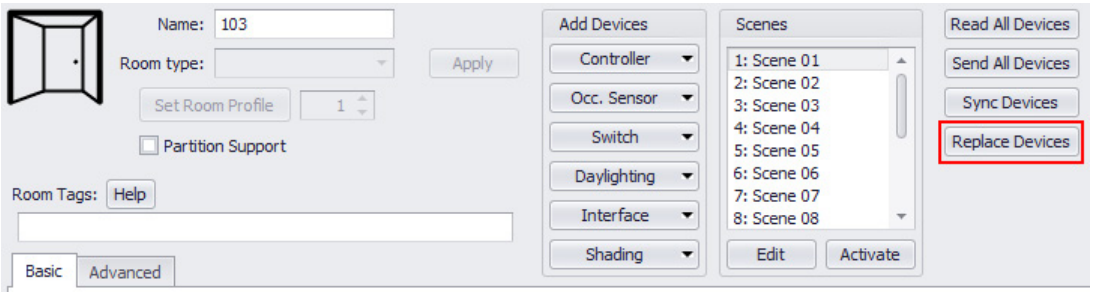


NOTE: It is also possible to send parameter data to an individual device by selecting that device in the tree and clicking **Send**.

Transferring Data to a Device that has Replaced Another Device

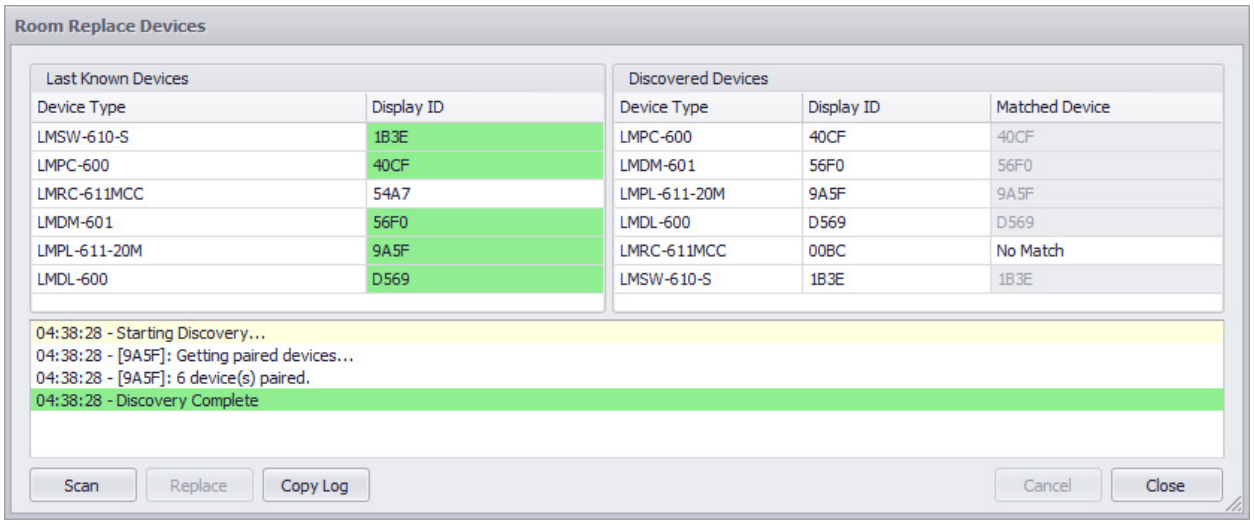
If a device in a room was replaced because it was non-functioning and you want to populate the new device with the parameter values of the original device, click the **Replace Devices** button in the Room Information section.

Replace Devices Button

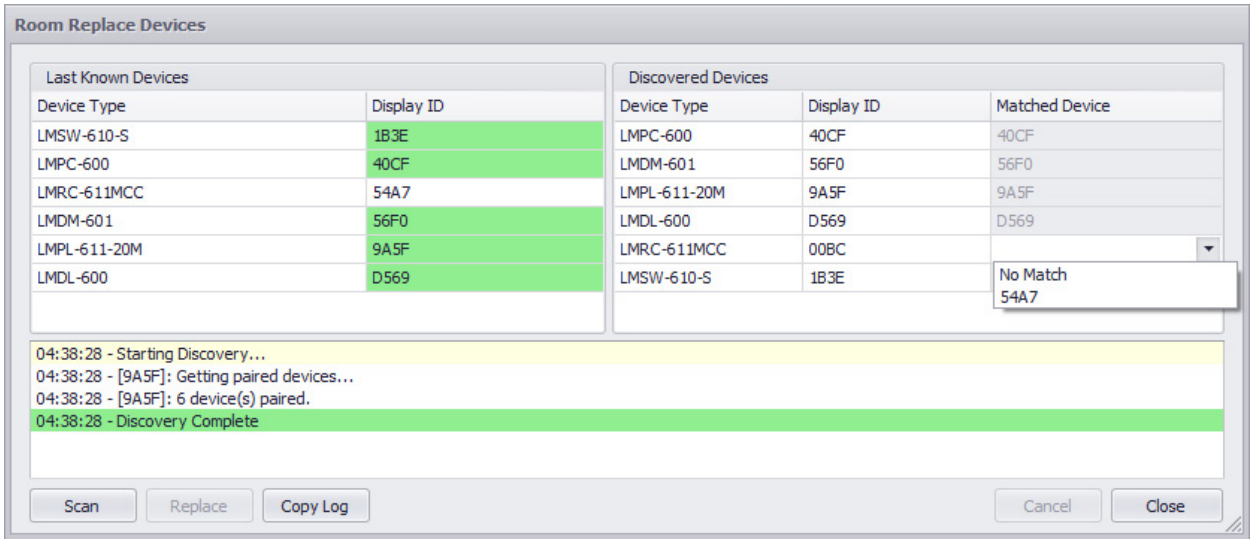


1. When you click **Replace Devices**, the **Room Replace Devices** dialog opens.
2. LMCS immediately begins a Discovery process and lists all devices that are found. On the left side of the display, any devices that don't match what is in LMCS are shown in white. All those that match are shown in green. The **Display ID** column shows the last four digits of the MAC ID for each device. The **Matched Device** column shows the same for the devices in LMCS and indicates if it does not match.

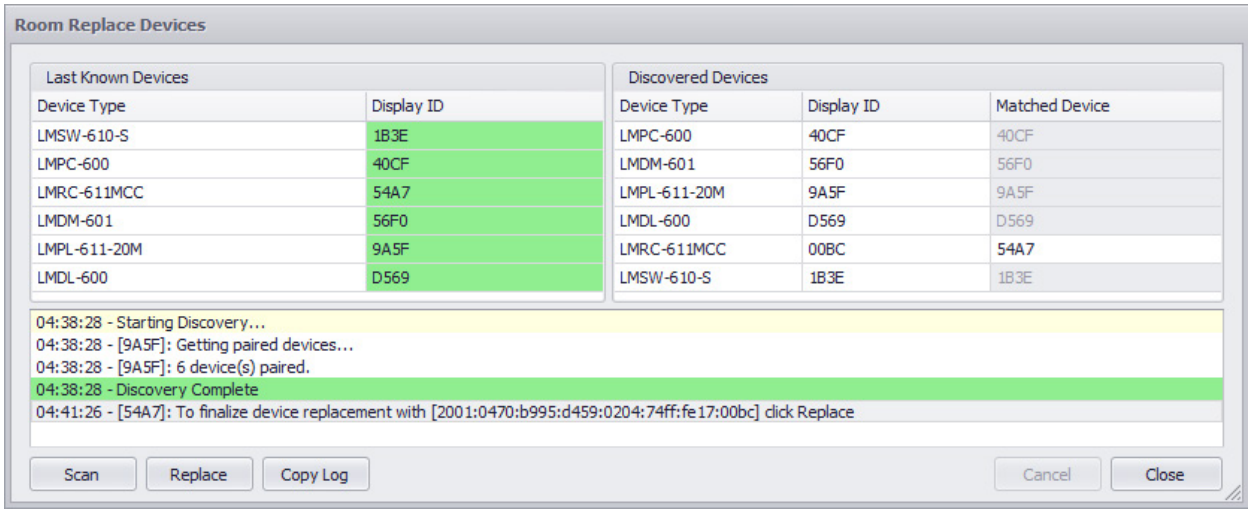
Room Replace Devices



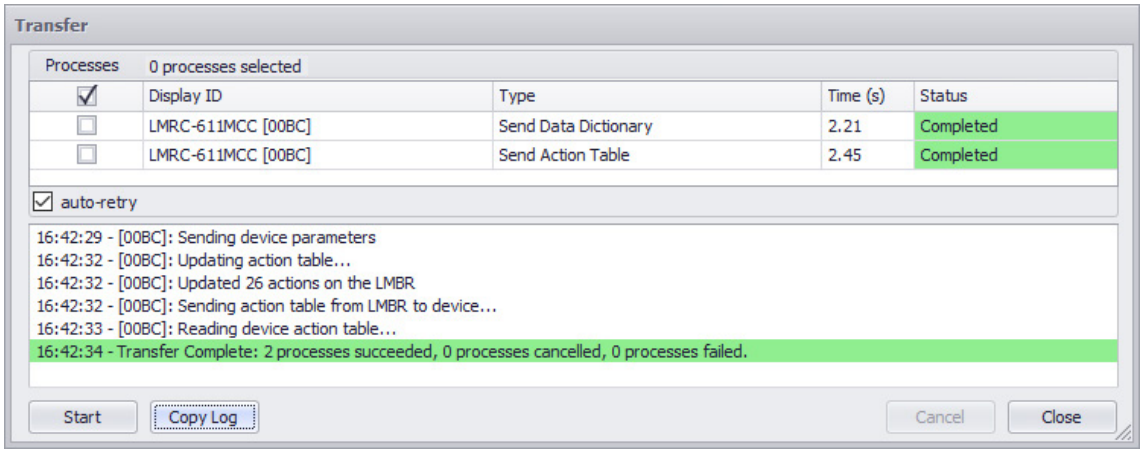
3. Click on the cell where it displays “No Match” and a pop-up will display the value of the MAC ID of the device in LMCS that is missing. Typically there will be one value, but in instances where more than one device of the same type was replaced, you will see an entry for each device.



4. Select the MAC ID of the device that has been replaced, then click **Replace**. If more than one device has been replaced, you can select all replacements and then click **Replace** only once.



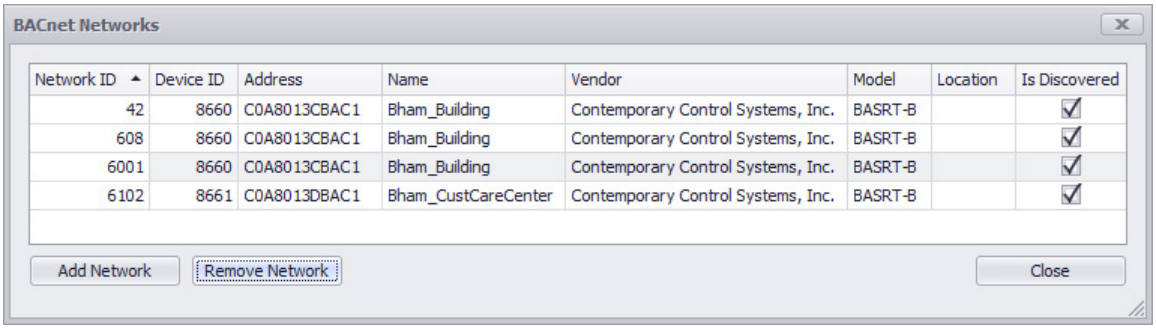
5. The **Transfer** dialog opens and the data from the original device are sent to the replacement device.



Network Documentation

Click **Networks** in the **Home** tab to open the BACnet Networks dialog. This dialog provides documentation of the BACnet routers used for connection with the rooms in the project.

BACnet Networks



Initially this dialog is blank. Once you run discovery or sync rooms, the next time you open the dialog, it displays info on all the routers found, based on the Connection Drop-down and UDP value. The fields are populated based on info obtained from the routers and the Is Discovered checkbox is selected.

When the project is saved, it saves all of the information on this dialog. That means if the project is opened at a later time when not connected to BACnet, you will still see the connection information.

Although the fields on this dialog can be edited to reflect changes made to the routers (for example a change to a device ID), the changes affect internal documentation only - this information is not sent to the routers.

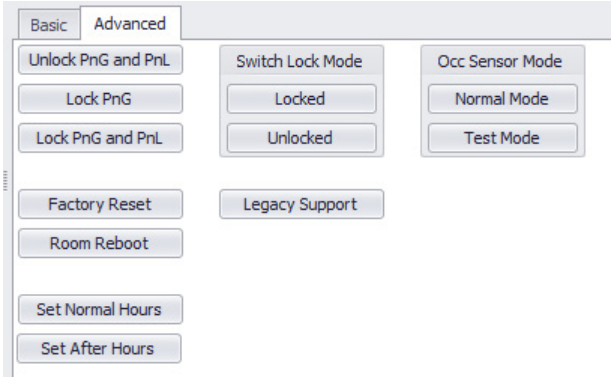
Additionally, you can remove a router from the list by clicking on that row and then clicking **Remove Network**. You can also manually input information about a new router by clicking **Add Network**. Again, these actions only affect this documentation and not the routers.

REAL TIME ROOM CONTROL – THE ADVANCED TAB FOR ROOMS

Once a room has been synchronized, highlight that room in the tree and select the **Advanced** tab to access several features that provide real time control of the room and its devices. (You must be connected to the network to utilize these features.)

NOTE: The features on this tab apply to wired DLM rooms only, with the exception of **Room Reboot, Set Normal Hours**, **Set After Hours, and** the two **Occ Sensor Mode** buttons. For wireless (battery powered) sensors, they must be woken up before entering Test Mode.

Room Functions – Advanced Tab



Unlock PnG and PnL – This will unlock Plug n' Go (PnG) and Push n' Learn (PnL) functionality in all devices in the room. (PnG is locked once any custom programming is sent to any device in the room by LMCS, or if PnL is initiated on any device in the room. PnL can only be locked using the **Lock PnG and PnL** button in this dialog.) An example of why you might want to use this button is a situation in which there are a number of switches in a room with a more complex button binding scheme, and it is helpful to have someone in the room program the bindings so they have immediate visual feedback.

Lock PnG – This will lock the PnG functionality in all devices in a room. Keep in mind that PnG locks automatically once any custom programming is sent to any device in the room by LMCS, or if PnL is initiated on any device in the room.

Lock PnG and PnL – This will lock PnG and PnL functionality in all devices in the room. An example of why you might want to lock PnL is to prevent anyone from reprogramming switch functionality in a public area such as a classroom or lobby.

NOTE: The three buttons described above affect all devices in the room. In addition, these functions are available on a per device basis, using the **Lock Level** drop-down, on the **Advanced** tab for each device.

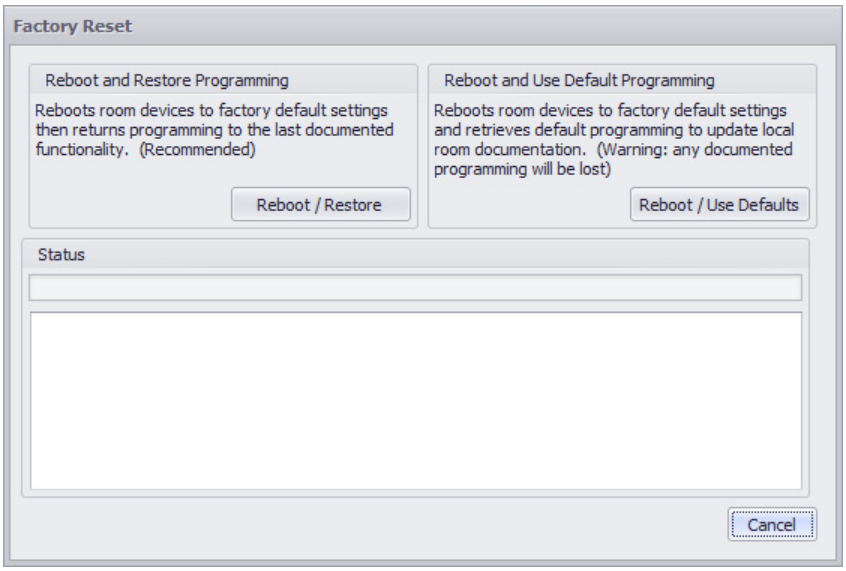
Factory Reset – Click this button to open the **Factory Reset** dialog. There are two possible options:

- **Reboot/Restore** – This performs a factory reset and then resends all of the parameter settings from the project into all devices in the room.
- **Reboot/Use Defaults** – This performs a factory reset, which sets all devices to their default parameter values. It then loads those default parameter settings into the project.

Warning—this overwrites all settings for those devices in the project file.

Once you begin the reset, a status bar indicates the progress and the log provides details of reset process. If you select "Reboot/Restore", the **Send All Devices** opens during the send process, providing a status bar and log of the send status. If you select "Reboot/Use Defaults", the same process happens, but the **Read All Devices** dialog opens instead of the send dialog.

Factory Reset



Room Reboot – This function causes all device in the room to reset as if power was turned off and then back on again. Any loads currently on will shut off momentarily and return to their previous level. (This does not apply for the LMPL plug load controllers, and the LMFC-011, which use latching relays.) The bridge or panel will also recheck the devices connected on the DLM Network. So if a device was connected to the room while the DLM Network is powered, and then later disconnected (for example, if a device was installed that was not supposed to be in that room), you should reboot the room to remove references to that previously connected device.

Set Normal Hours – For all devices which have separate settings for normal and after hours, this causes those devices to go to their normal hours settings.

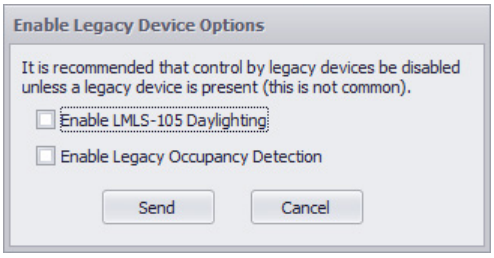
Set After Hours – For all devices which have separate settings for normal and after hours, this causes those devices to go to their after hours settings. When you click this button, a warning pops up to ensure you want to do this.

Switch Lock Mode – Click “Locked” to lock all of the buttons, in all of the switches in a room, at their current status. A warning pops up to ensure that you want to do this. Click “Unlocked” to return the buttons to their normal function. Note that while this locks the buttons in the room, it is still possible to send On or Off commands to the loads controlled by the switch.

NOTE: There is a parameter on the **Advanced** tab for each switch named **Key Lock Mode Enabled**. If this is not selected, that switch will not respond to Switch Lock Mode. In this way, you can choose to lock out only certain switches. For example, in a classroom with multiple switches, you might choose to lock out the switches where the students sit but not the one closes to the teacher. This command can also be sent from a switch lock device connected to an LMIO-101, or from the Network Controller or other BAS application.

Legacy Support – Click this button to open the **Enable Legacy Device Options** dialog. This dialog allows you to enable support for the LMLS-105 photosensor and various non-DLM occupancy sensors equipped with an RJ45 jack. Although these occupancy sensors are not DLM and therefore cannot be added to project, a DLM room controller will respond to their input if you enable support on this dialog.

Enable Legacy Device Options



NOTE: In addition to the legacy occupancy sensors, the current WRC-TX-LM wireless plug load controller utilizes this feature and therefore, you must select the **Enable Legacy Occupancy Detection** checkbox when using the WRC-TX-LM.

Wattstopper recommends that you do not enable these features unless you have these devices connected to the room.

Select the desired options and click **Send** to enable the features in LMCS.

NOTE: For legacy occupancy sensors to control a load, you must enable the **Legacy Occupancy Sensor** checkbox on the **Technician** tab of the load parameters section of the window when a room controller is selected in the tree. If using the WRC-TX-LM, you must enable the same checkbox for the plug load controller.

Occ Sensor Mode – If you click “Test Mode”, all sensors in the room turn the load(s) off after 5 seconds and a 10 minute test period begins. During the test period, the time delay is 5 seconds. This short time delay allows performing a sensor walk test to define the optimum sensitivity settings and product orientation. After the 10 minute period all sensors return to normal operation mode. Or, click “Normal Mode” to return them immediately.

CREATING PROJECT TEMPLATES

LMCS comes with several energy code templates, designed to help you set up rooms that conform to parameter values for those codes. You can also create you own templates. Besides allowing you to conform to specific codes, you can use your own templates to speed up the creation of rooms and device settings, when creating a project off-line.

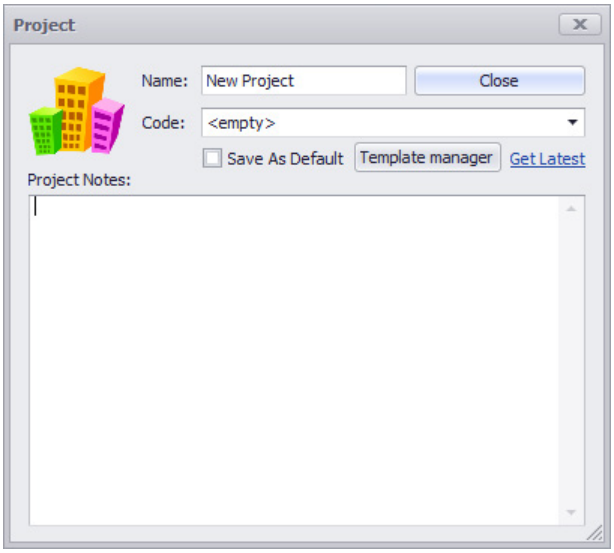
To create your own template, you will be starting from an existing energy code template or one you have previously created, so you will want to be familiar with those templates before starting so you can customize settings with the least amount of effort.

Each template consists of a set of room types. For each room type, you can specific which devices exist in that room and how many. Then for each device, you can specify individual operations. Each operation can will have specific settings for various parameters.

NOTE: Because they are intended for use when creating projects off-line, templates are designed for use with wired DLM devices only.

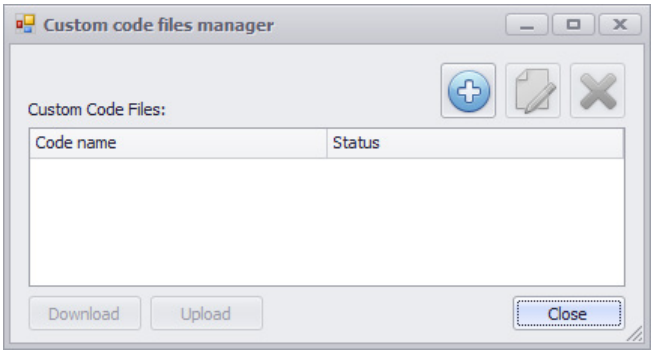
1. Click **Project** in the top ribbon to open the **Project** dialog.

Project



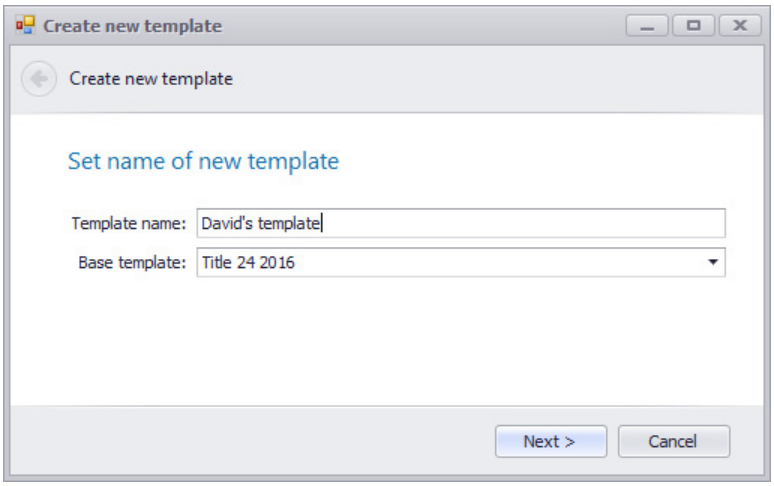
2. Click **Template Manager** to open the **Custom Code Files Manager.**

Custom Code Files Manager



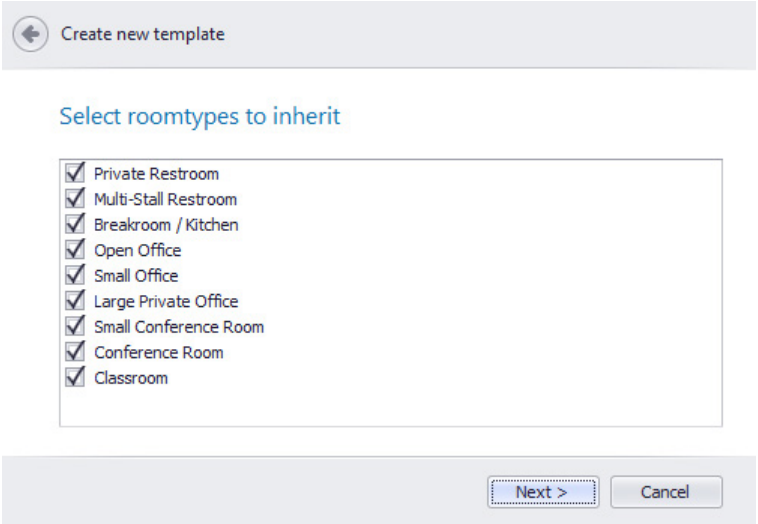
3. Click the **+** icon to open the **Create New Template** dialog.

Set Template Name



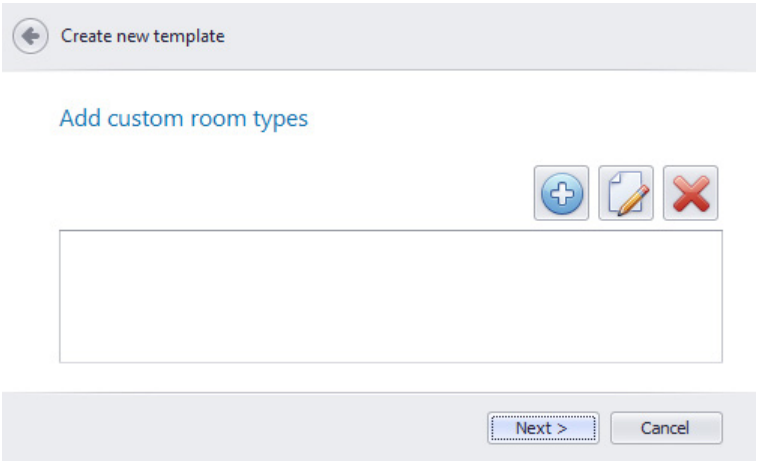
4. Enter a **Template Name**. Then select a **Base Template** as a starting point for your template. Click **Next**.

Select Room Types



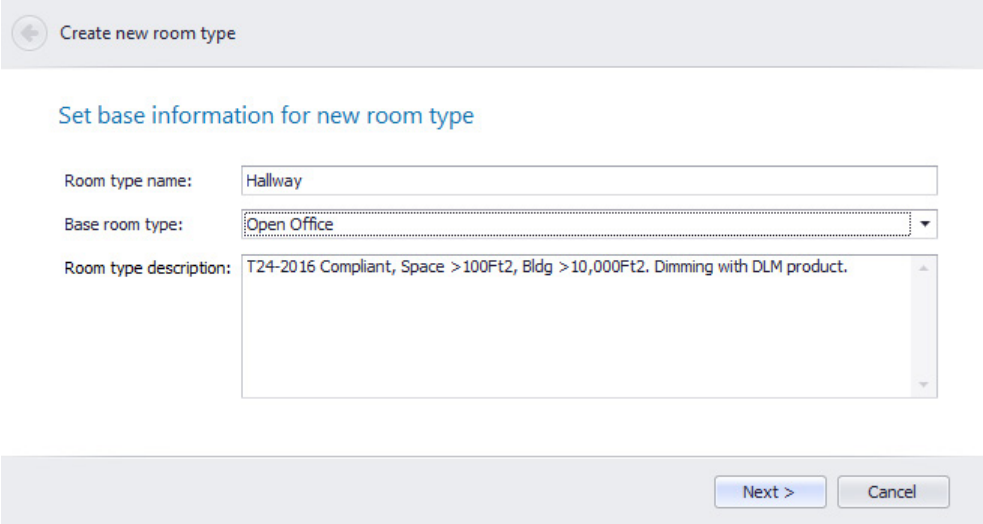
5. A list of room types is displayed. By default all are selected, but you can choose which room types you want to use as a starting point in your new template, by selecting or deselecting the checkboxes. Click **Next**.

Add Custom Room Types



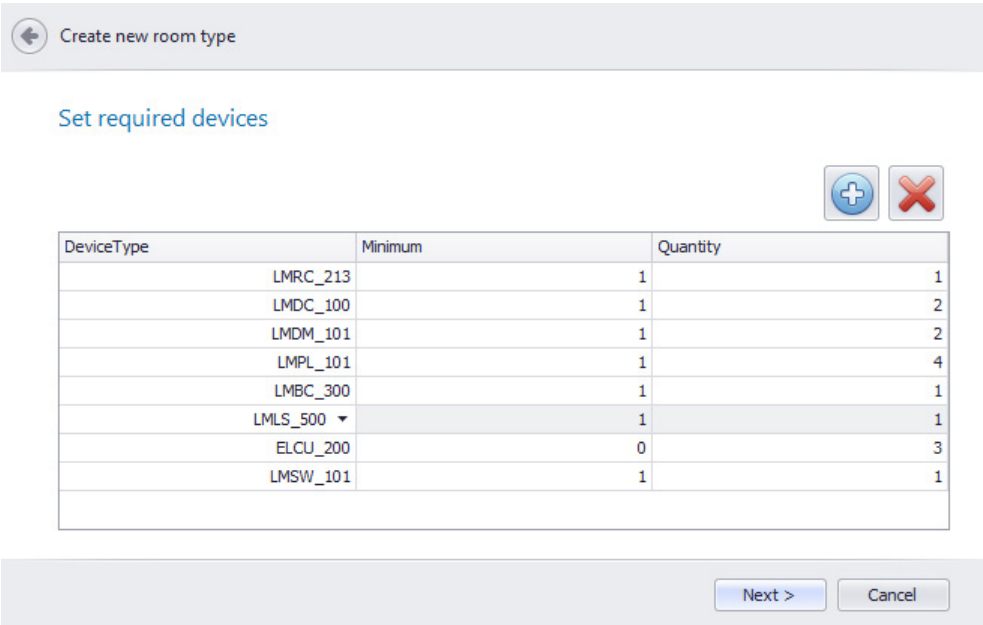
6. Click the **+** icon to begin creating your own room types.

Set Base Information for New Room Type



7. Enter a **Room Type Name** for the new room type. Then select a **Base Room Type** from the drop-down. The available values will be the room types you selected in step 5. A basic description of the room type is displayed. Click **Next**.

Set Required Devices

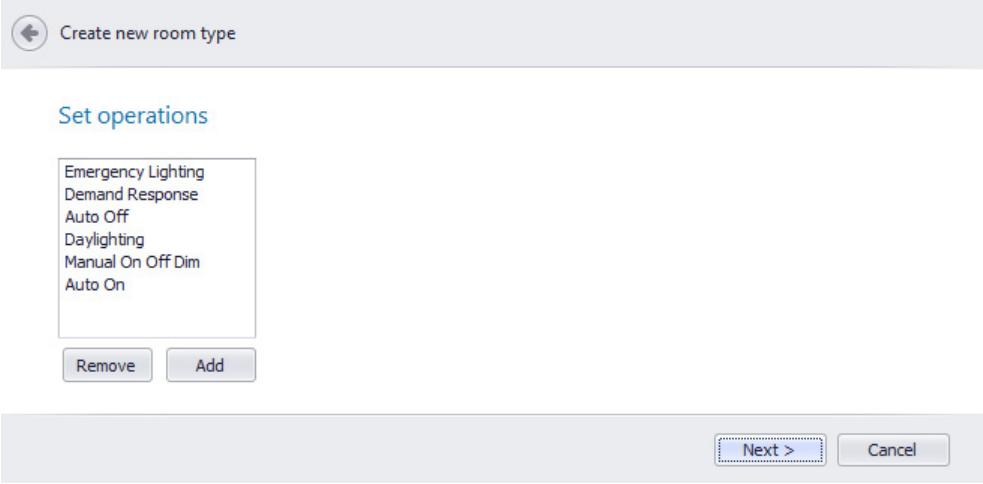


8. A list of required devices for the room is displayed. For each device, the minimum and total number of each device is displayed. When creating a new project that uses a custom or energy code template, if you add a room based on a room type, LMCS will automatically add the number of devices from the **Quantity** column. If you then decide to delete some devices from that room, you will receive an error if you try and delete a device so the number of that device drops below the **Minimum**, you will receive a warning.

   You can edit both values for each device, by clicking on the appropriate cell in the table. You can also add additional devices by clicking the **+** icon. Or, highlight a device and click the **X** icon to delete that device from the list.

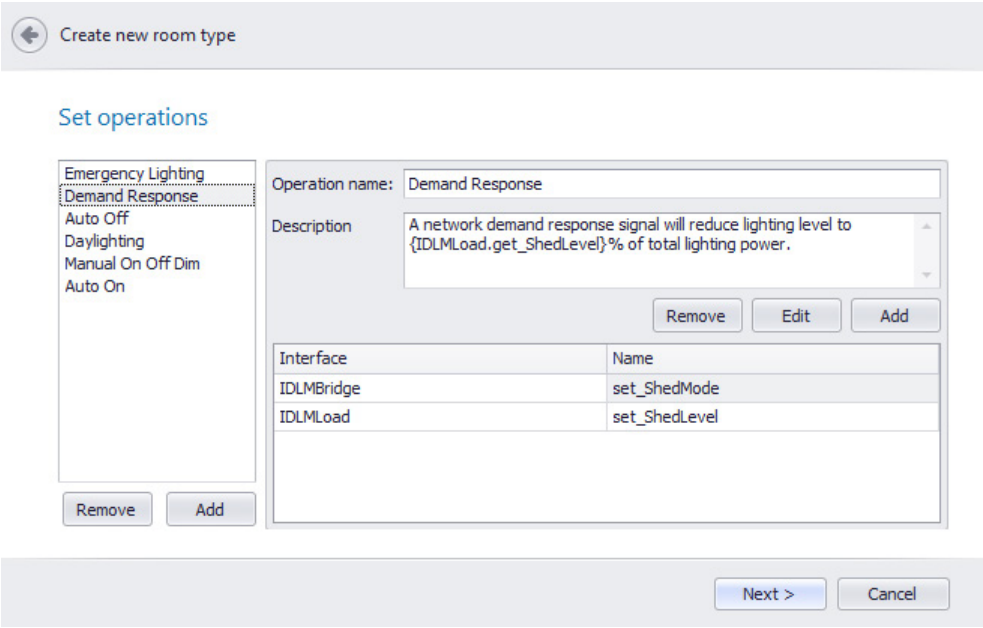
   After making any needed changes, click **Next** to set the operations that control the DLM devices in the room.

Set Operations



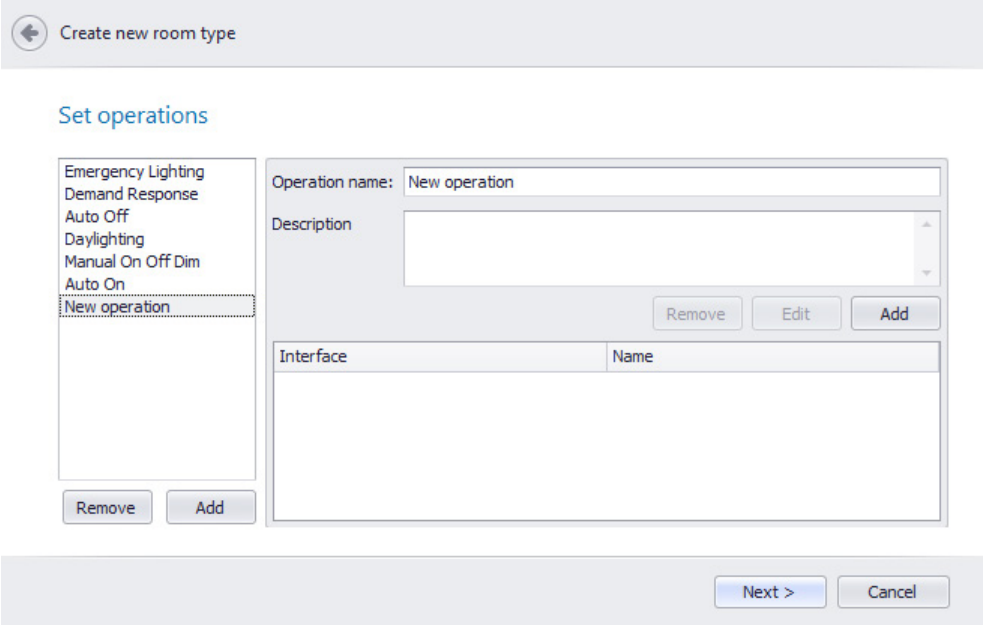
9. A list of operations that apply to that room type (from the base room type you selected in step 5) is displayed. You can **Add** more operations, or delete an existing operation by highlight it and clicking **Remove**. To modify the programming parameters for an existing operation, highlight it in the list. The right side of the dialog displays the details of the parameters controlled by that operation.

Edit an Existing Operation



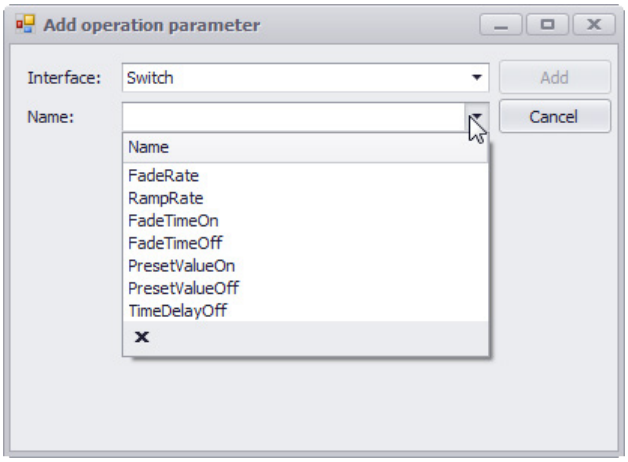
If you added a new operation and highlight that operation, the operation details are blank.

Editing a New Operation



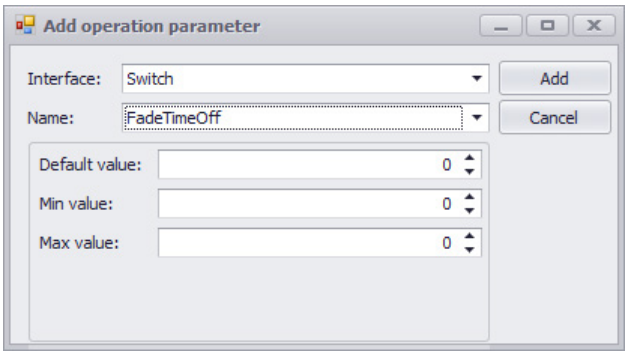
10. If starting a new operation, or if you want to add additional parameters to an existing operation, click **Add** in the operation details section.

Adding Operation Parameters

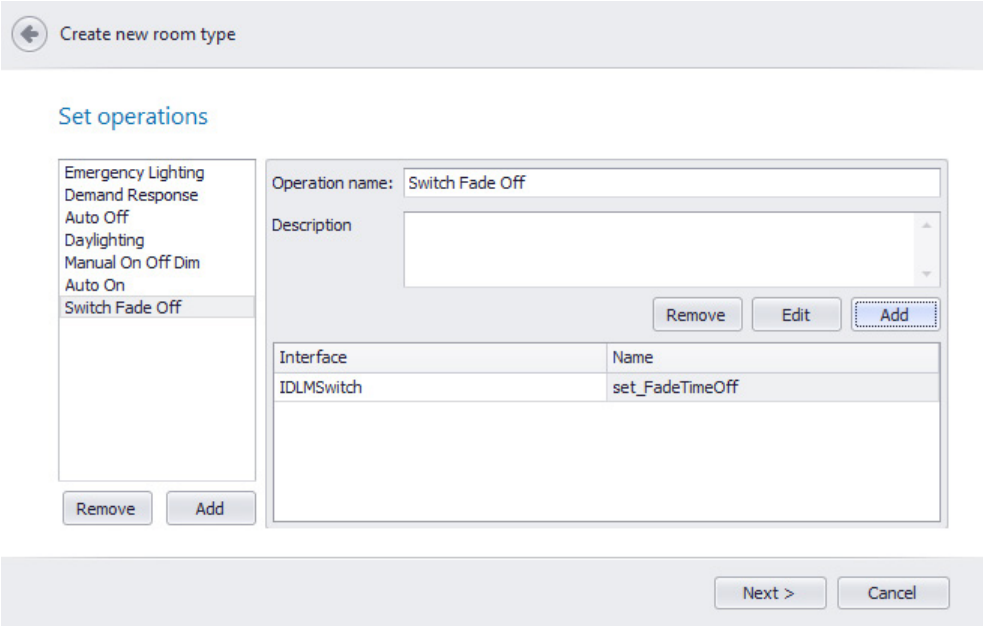


11. First select the type of **Interface** you are editing. Possible values include: Bridge,Load, Occupancy Sensor, Photocell, Room Controller, or Switch. Then select the **Name** of the parameter you want to edit. The list of available parameters changes based on the type of interface you select. Once you select the parameter, the display changes to show the editable values for that parameter. For details on all of the parameters and their values, see the individual device descriptions in the section "Programming Parameters for Individual Devices".

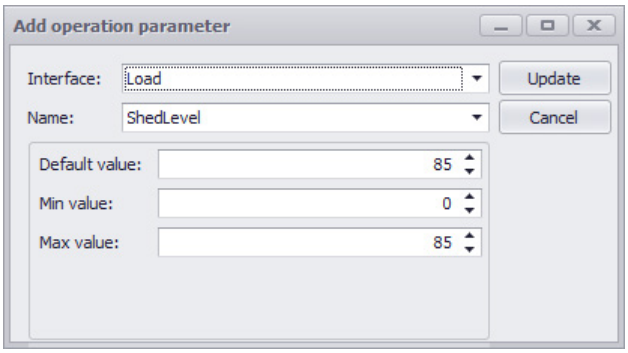
Editing Parameter Values



12. Once you have edited the parameter values, click **Add**. You return to the **Set Operations** dialog with the new operation highlighted and the parameter displaying in the details section. At this point you can click **Add** in the details section if you want to add existing parameters to the operation, or click **Add** under the list of operations to create another one and repeat the process.



NOTE: If you want to edit an existing parameter instead of adding a new one, highlight that parameter in the details section, then click **Edit**. The **Add Operation Parameter** dialog opens with the details displayed, and with an **Update button.**



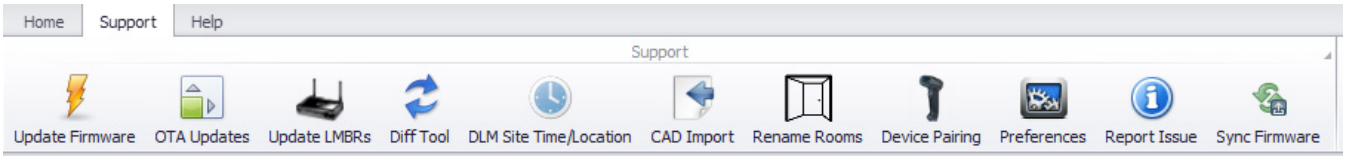
13. Once you have created or edited all desired operations, click **Next**, then click **Finish** in the next screen to complete creating the operation. You return to **Add Custom Room Type**. At this point you can create another room type by repeating the process. Of , if finished, click **Next**, then click **Finish** in the next screen to return to the **Custom Codes Manager**.

THE SUPPORT TAB

This section provides details on the features available on the support tab, with the exception of the following two features documented previously:

- **CAD Import** – see "Importing Rooms From a CAD File" on page 50.
- **Device Pairing** – see "Automating Serial Number Entry with the Device Pairing Utility" on page 116.

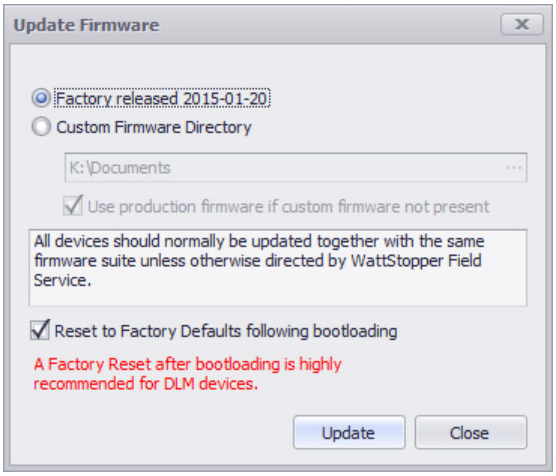
Support Tab



Update Firmware

This utility allows you to update the firmware for one or more **wired** device models in the Network. Click **Update Firmware** to open the **Update Firmware** dialog. (Note that wireless devices are updated using the **OTA Updates** utility.)

NOTE: Wired devices connected to a wireless room via an LMBC-650 bridge can also be updated with this utility. The LMBC-650 must have 10.31 firmware or later and you must set the LMBR-650 to enable BACnet as a Router. See "BACnet Information Section" on page 74 for details.



By default the **Factory Released** option is selected. This option accesses a folder included in the LMCS installation, which contains the most recent firmware for all DLM devices at the time of the release of your version of LMCS.

You can also choose a **Custom Firmware Directory**. In this case, you specify a folder that contains firmware for one or more DLM devices. This might occur in a situation where Wattstopper updates the firmware for one or more devices and distributes a file with those updates. If you select this option, the **Use production firmware if custom firmware not present** checkbox is enabled. If selected, then if firmware for a specific device is not included in the custom directory, LMCS will display the version of firmware for that device that is included in the default folder.

NOTE: If you specify project firmware on the **Project** dialog on the **Home** tab, the **Custom Firmware Directory** option will be selected and the pathway to the firmware folder will be preset and disabled so it can't be changed. The **Use production firmware if custom firmware not present** checkbox will also be selected but disabled. You also will not be able to select the **Factory Released** option. In this way, the firmware is "locked down" for the project. The **Update** button will still work, so you can load those versions into any devices that don't currently have them.

By default, the **Reset to Factory Defaults following bootloading** checkbox is selected. Wattstopper highly recommends resetting to factory defaults after updating the firmware.

Click **Update**. One of two possible dialogs will open, depending on the type of connection. There is one dialog for connecting to a single room via the LMCI-100, and a different dialog if connecting via BACnet. While there are similar functions in the two different screens, the BACnet version has more options, due to the nature of working with multiple rooms. Additionally, while the table of devices shows the same information, the columns are laid out in a different order.

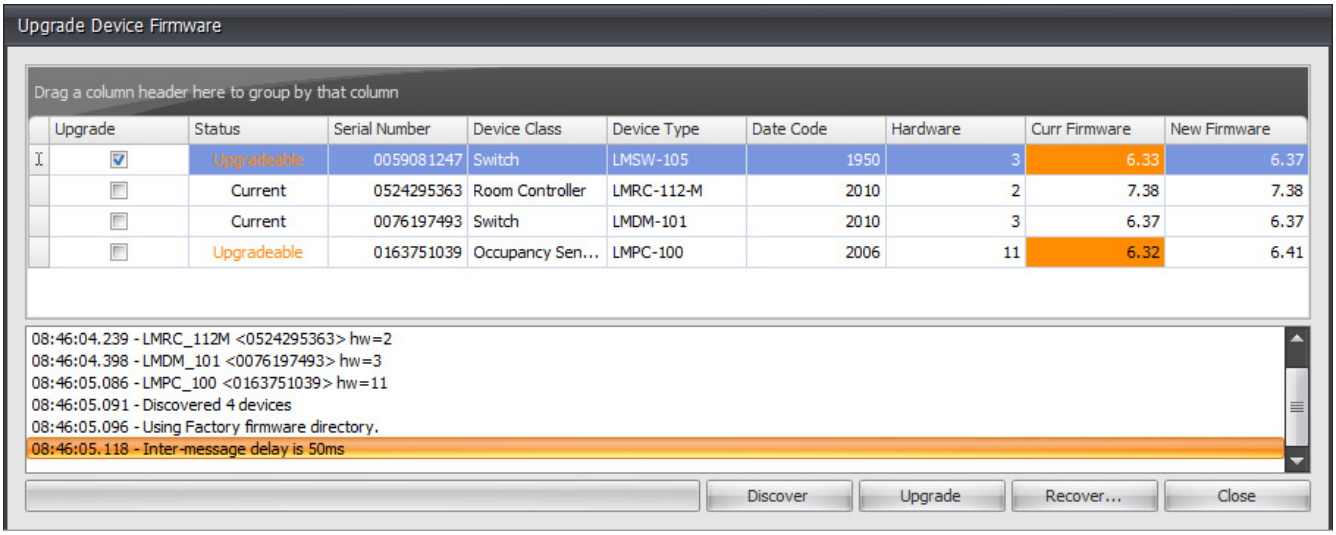
The following sections show the differences between the two.

NOTE: The LMEQ-41 can only be updated via BACnet, and not via the LMCI-100, as described on page 137.

Updating Firmware with an LMCI-100 Connection

When connected to an LMCI-100, once the dialog opens, the discovery process starts automatically. Once complete, all devices in the room are displayed in a table. While discovery happens automatically, a **Discover** button is included in the dialog for cases where a device is connected after the dialog was opened and you need to rediscover devices in the network (for example in a case where a device was not initially seen because of an improper connection).

Update Firmware Dialog When Connected to a Single Room via LMCI-100



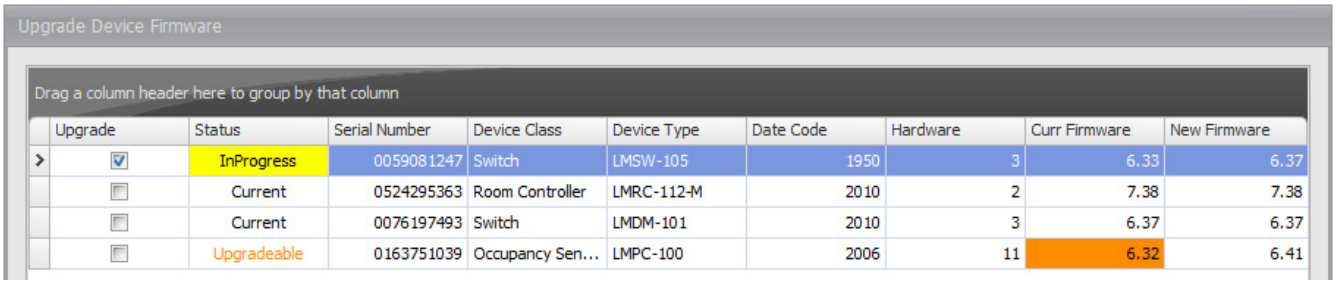
The last two columns show the **Current** version of firmware in each device and the **New** version found in the folder chosen in the previous dialog. Note that the “new” version could actually be older, if that device was previously updated from a custom folder and you are looking at the default firmware. In this case, if you select that device, the firmware will downgrade to the older version.

If a device currently has an older version, its **Status** displays “Upgradeable” in orange text. Select the checkbox for each device you want to update and then **Upgrade**.

NOTE: You may see one or more devices with a status of “Unsupported” in red text. This is caused by one of two reasons. The first is that the folder selected in the previous dialog does not contain firmware for that particular device. Additionally, some devices, such as panels and bridges cannot upgrade their firmware via the LMCI-100 connection. You must use a BACnet connection to update the firmware with those devices.

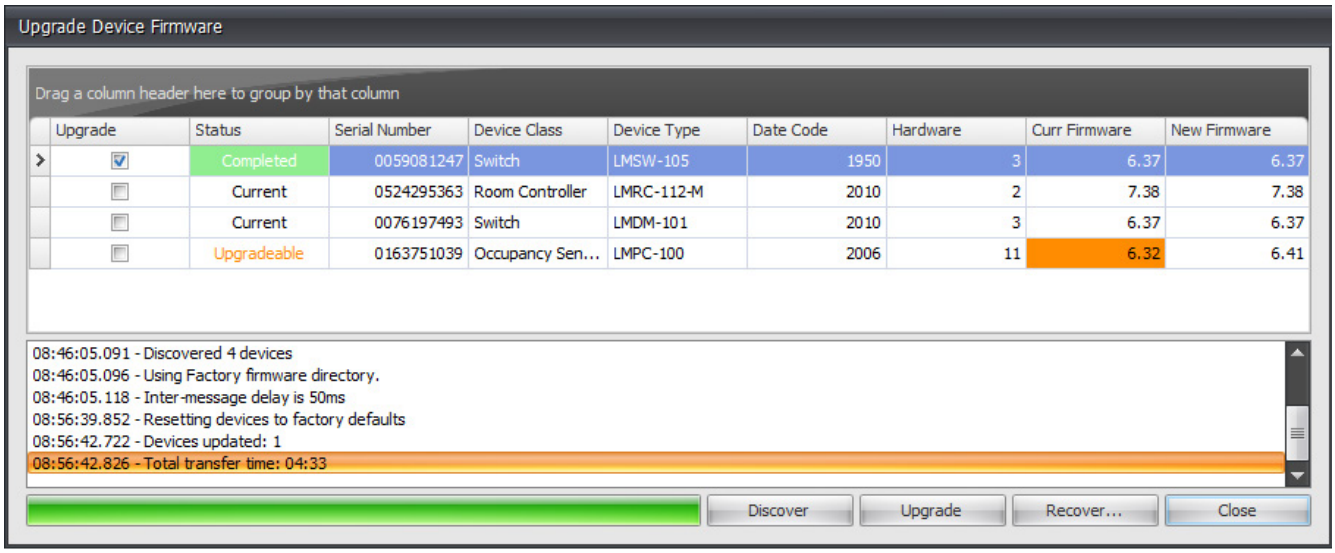
Once the upgrade starts, each selected device will update, one at a time. While the upgrade is in occurring the **Status** displays “In Progress” for that device. A status bar at the bottom of the dialog indicates how far the upgrade has progressed.

Update in Process



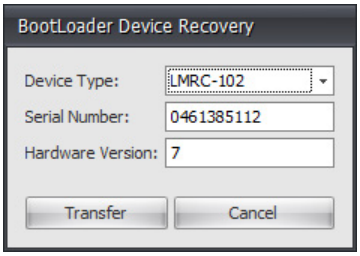
Once a device finishes updating, the **Status** displays “Complete”. If a problem occurs, it will display “Failed”. The log at the bottom includes details that may be helpful for a technician to diagnose the reason for the failure, so you should copy that text and paste it into another application for reference.

Update Complete



During the upgrade process, the device is locked so that it does not respond to any other commands on the DLM network. If a problem occurs during the updating process (for example power is lost), the device can remain locked, and therefore cannot respond to communication after power is restored. In this case, click **Recover**. The **BootLoader Device Recovery** dialog opens.

BootLoader Device Recovery



You must select the correct **Device Type**, and enter the **Serial Number** and **Hardware Version** for the locked device, then click **Transfer**. The device will be unlocked and you can reattempt the firmware upgrade.

Updating Firmware via BACnet

When updating via BACnet, no discovery takes place when the dialog opens. Instead, it lists all rooms that have been configured in the project. Each room in the list can be expanded to show the devices in that room.

Updating a project consisting of multiple rooms via BACnet is similar to updating a single room via the LMCI, with a few significant additions.

Beginning with version 4.11 of LMCS, certain products have signed firmware files for security purposes. The products using signed firmware files are:

- LMBC-300 (version 7 hardware or later)
- All LMCP models
- LMZC-301
- LMDI-100

(Note that all wireless devices also have signed firmware files, but they are not updated via BACnet.)

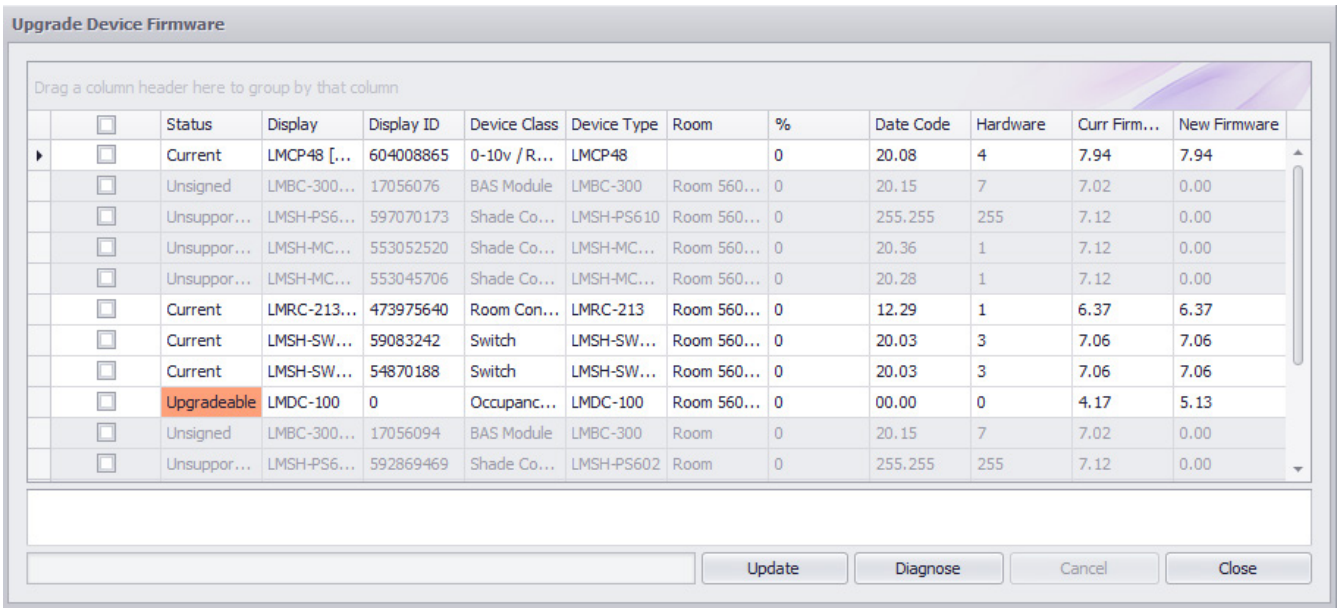
If the firmware file you are selecting is not signed you will be unable to update that device. So if you have been using a custom folder to store firmware versions and have an older unsigned version, you will not be able to use it.

NOTE: For an LMBC with hardware previous to version 7, you can update the firmware with an unsigned file. This is a different file than the one used for an LMBC with version 7 or later hardware.

In the following example, the LMBC-300 firmware file that is in the selected folder is unsigned. Therefore, the two LMBC-300 rows are disabled and the **Status** displays as “Unsigned”.

Notice in the same example that the rows for the LMSH-PSxxx shade power supply and LMSH-MCAxxx shade motor are also disabled and display “Unsupported” because these products cannot be upgraded via wired DLM.

Update Firmware Dialog When Connected to Multiple Rooms in a BACnet Network



	Status	Display	Display ID	Device Class	Device Type	Room	%	Date Code	Hardware	Curr Firm...	New Firmware
	Current	LMCP48 [...	604008865	0-10v / R...	LMCP48		0	20.08	4	7.94	7.94
	Unsigned	LMBC-300...	17056076	BAS Module	LMBC-300	Room 560...	0	20.15	7	7.02	0.00
	Unsuppor...	LMSH-PS6...	597070173	Shade Co...	LMSH-PS610	Room 560...	0	255.255	255	7.12	0.00
	Unsuppor...	LMSH-MC...	553052520	Shade Co...	LMSH-MC...	Room 560...	0	20.36	1	7.12	0.00
	Unsuppor...	LMSH-MC...	553045706	Shade Co...	LMSH-MC...	Room 560...	0	20.28	1	7.12	0.00
	Current	LMRC-213...	473975640	Room Con...	LMRC-213	Room 560...	0	12.29	1	6.37	6.37
	Current	LMSH-SW...	59083242	Switch	LMSH-SW...	Room 560...	0	20.03	3	7.06	7.06
	Current	LMSH-SW...	54870188	Switch	LMSH-SW...	Room 560...	0	20.03	3	7.06	7.06
	Upgradeable	LMDC-100	0	Occupanc...	LMDC-100	Room 560...	0	00.00	0	4.17	5.13
	Unsigned	LMBC-300...	17056094	BAS Module	LMBC-300	Room	0	20.15	7	7.02	0.00
	Unsuppor...	LMSH-PS6...	592869469	Shade Co...	LMSH-PS602	Room	0	255.255	255	7.12	0.00

Select the checkbox for each device you want to update or click the checkbox in the column header to select all devices and then click **Update**.

The **Diagnose** button checks if the device is in bootloader mode and if it is, it attempts to switch it to application mode. If a device is unresponsive following an update, there is a chance that it didn't move into application mode successfully after the update. The diagnose button provides the ability to move it to application mode manually.

If you have selected multiple devices but need to stop the updating process while it is occurring, click **Cancel**. LMCS will finish attempting to update the device it is now working on, and then stop without updating any further devices.

Filtering and Sorting the List Devices

You can filter the display to show only specific rooms or devices allow you to more easily selected desired devices in a large project. For details on the Filter editor and sorting, see "Filtering Lists in LMCS" on page 36.

Note that filtering is also available when updating a single room via the LMCI-100, but less likely to be useful since the list will be short.

Updating the LMEQ-41 and LMTI-100 Firmware

Updating the LMEQ-41 and LMTI-100 firmware requires an additional connection not needed for updating other devices via BACnet.

The only way to communicate between the LMEQ-41 and another DLM device or LMCS is via the LMTI-100. When discovering the LMEQ-41 or sending and receiving data, the LMTI-100 must be connected to a room controller using IRB connection and LMRJ cable, the same as a room controller communicating with a sensor or switch. The LMTI-100 then communicates with the LMEQ-41 via the PoE

But when performing a firmware update for either the LMTI-100 or LMEQ-41, the LMTI-100 must be connected via Ethernet to the PC running LMCS. Typically you will connect a cable between the Ethernet port on the LMTI-100 and a network switch that is also connected to the PC.

NOTE: BACnet must be enabled on the LMTI-100 in order to perform the update. It is disabled by default, You can enable BACnet by selecting the LMTI-100 in the tree and clicking the **Enable** button. See "Interfaces – LMTI-100" on page 223 for details.

NOTE: The IP address of both the LMTI-100 and the LMEQ-41 must be populated on the Basic tab of the respective devices in LMCS. These fields are automatically populated when discovery is originally run. But you may want to double check the IP addresses to confirm they are correct, in case they may have changed since discovery. Both IP addresses are displayed on the LMEQ-41 when you go to the Settings screen.

Once the proper connection is made, the updating process is the same as updating other devices via BACnet.

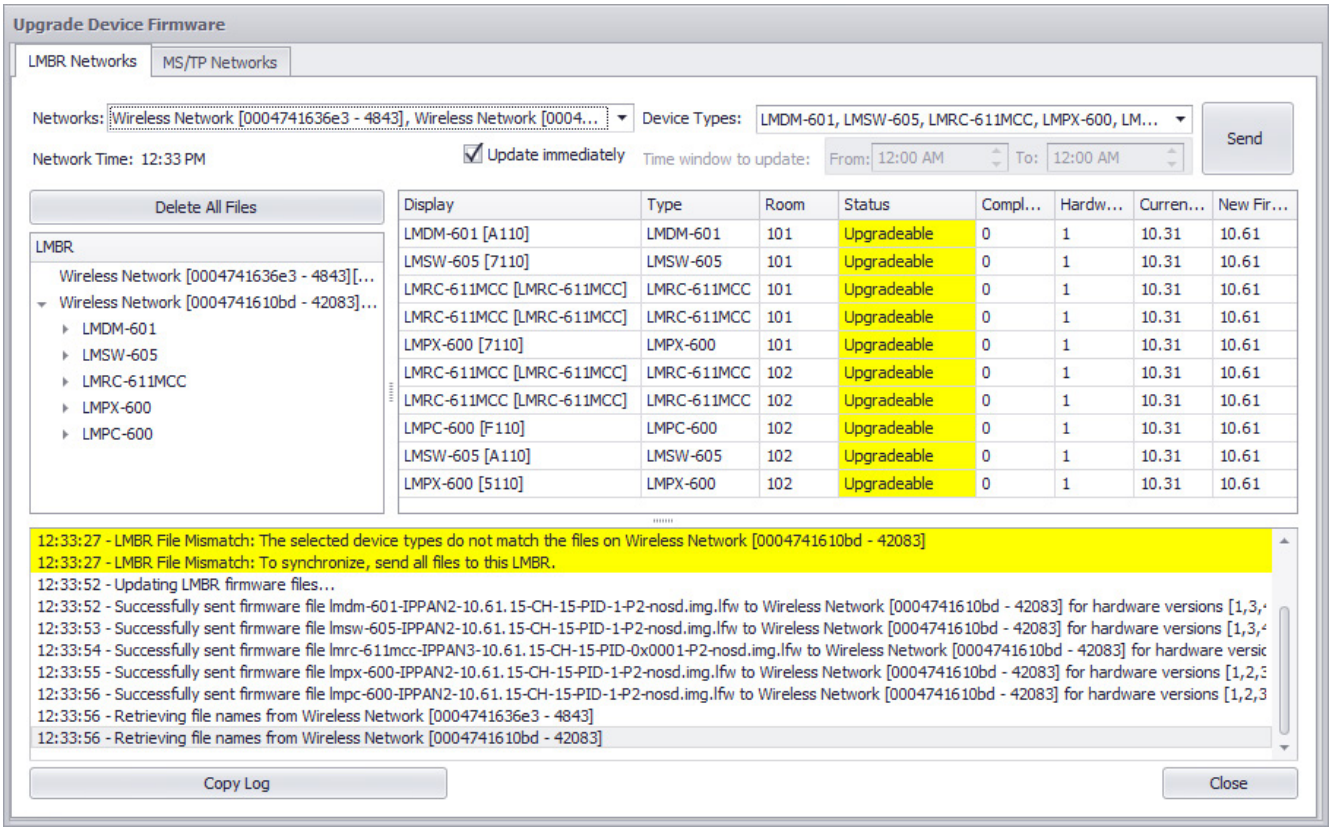
OTA Updates for Wireless Devices

The OTA (Over the Air) feature allows you to update firmware in multiple wireless devices. You can select which devices (by type) to update. To use this feature, you must first load the firmware into the LMBR. The LMBR then takes charge of updating the devices and runs the updates in the background.

Click **OTA Updates** to open the **Upgrade Device Firmware** dialog.

There are two tabs on this dialog. The **LMBR Networks** tab displays all devices connecting through an LMBR-650. The **MS/TP Networks** tab is for wireless devices connecting to a wired room through an LMBC-650. (The wired room then connects to the wired network via an LMBC-300.)

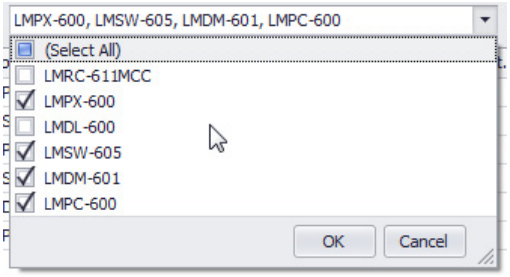
Update Device Firmware – LMBR Networks



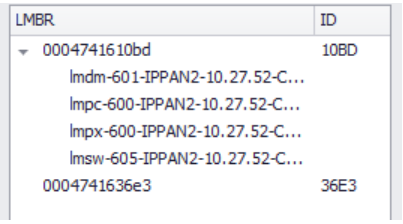
The left side of the window displays all LMBRs that have been discovered and commissioned in the site. The **Networks** drop-down allows you to limit which LMBRs are included in the list by selecting or deselecting each LMBR. If no firmware files are currently stored within an LMBR (or if the files stored don't match all the devices shown on the right side, the display will show as above and the "LMBR File Mismatch" status message in yellow will be displayed.

The right side of the window displays the wireless devices in the site and shows both the firmware currently in those devices and the most recent version stored in LMCS. If a device can be upgraded that is indicated.

In order for the LMBR to begin the OTA update, you must load firmware files into the LMBR if they are not already there. To limit which files are sent to the LMBR, click the **Device Types** drop-down and select the desired devices and click **OK**. This will change the list on the right to show only those devices.



Click **Send**. The left side of the display will refresh and then show the files under the specific LMBR or LMBRs that have those devices connected to it.



NOTE: If files already exist in the LMBR(s) and you want to make sure you are loading the most recent files into it, you can click **Delete All Files**, then select the desired devices and load the most recent files.

Once the files are sent to the LMBR, if the **Update Immediately** checkbox is selected, it will attempt to start upgrading immediately. If this is deselected, you can selected a time frame in which the update is to be performed. Regardless of which option you choose, click **Close** to exit the window and the upgrade will still proceed.

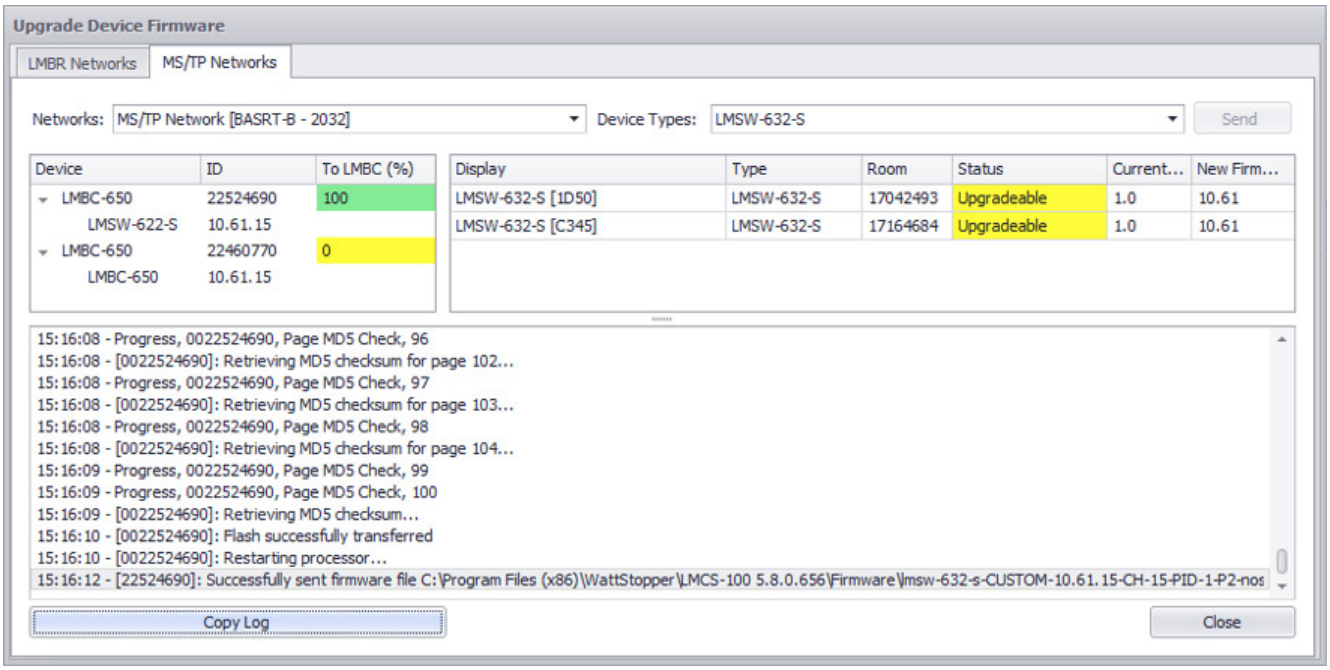
For powered devices such as room/plug load controllers or the LMBC-650, no further action is necessary.

For battery devices, they will need to be woken up before upgrading can begin.

NOTE: The OTA Updates process is limited for battery devices because they must be awake to start the update. Since the LMBR will only update one device at a time, and since devices only remain awake for several minutes after being woken up, once the LMBR has finished updating one battery device, any other devices that you woke previously must be woken again. Therefore, if updating several devices you will need to be in close proximity to them so you can wake another device after the previous one has finished updating. However the advantage of using this method is that you can continue to perform other tasks in LMCS while this update is occurring, since the process runs in the background. You can re-open up this window at any time to check the progress of the current update.

While the update is proceeding, the right side of the display will show which device is begin updated and the progress of completion.

Update Device Firmware – MS/TP Networks



This process is similar to sending via an LMBR, but in this case the files are first sent to the LMBC-650, which then sends them to the wireless devices. The display shows the progress of sending to the LMBC.

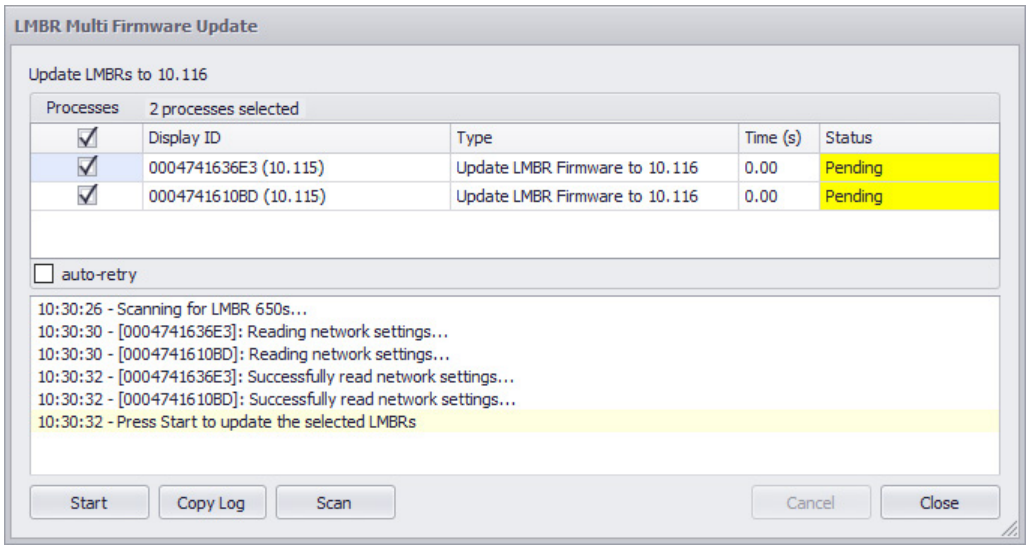
WARNING: The process can take many minutes to transmit files to LMBC-650 devices, and days to finalize updates to wireless devices.

Update LMBRs

This feature allows you to update the firmware of all connected LMBRs regardless of whether they have been discovered and moved off of the default Network ID and Channel.

Click **Update LMBRs** to open the **LMBR Multi Firmware Update** dialog. LMCS will immediately start searching for all LMBR-650s connected to the network. Once found they are displayed in the list as shown below.

LMBR Multi Firmware Update



Each LMBR is identified by its MAC address. The firmware version currently installed in each LMBR is displayed. The most recent version (the one installed when LMCS was installed) is shown at the top. Select any individual LMBRs or click the checkbox at the top to select them all. Then click **Start**. The **Status** will change to “In Progress” and the log will display each step through the update process. If successful, the **Status** will change to “Completed”

LMCS will first send the updated firmware to the LMBR, then a series of steps occur including extracting the zipped file, verifying it and running the update. Note that the last step, “Attempting to run update script” can take a long time.

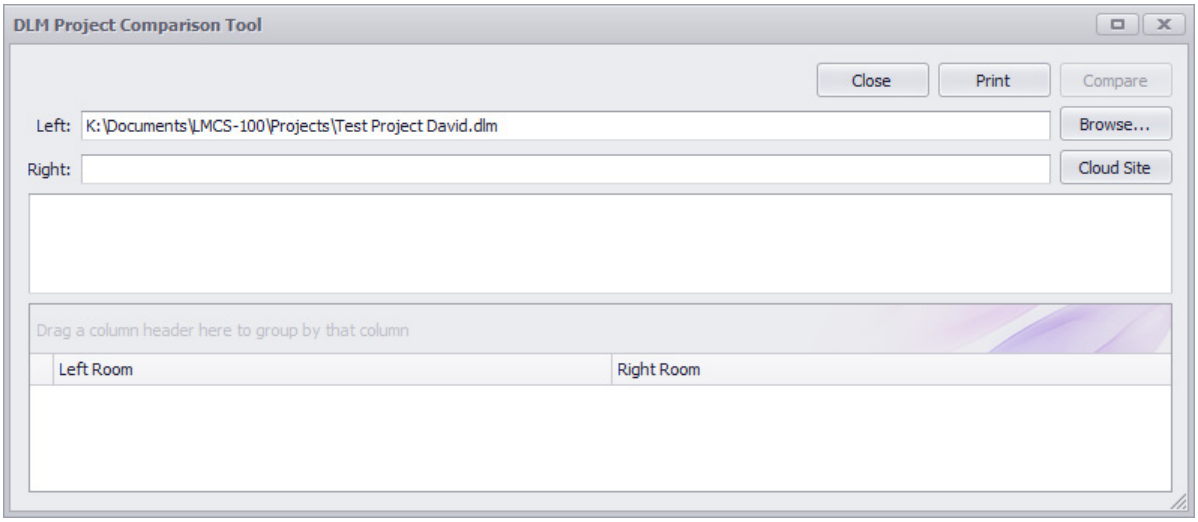
NOTE: If more than two LMBRs are selected, the LMCS will update up to two LMBRs concurrently, and then continue with the next selected LMBRs.

Difference Tool

This utility allows you to compare two project files. It will provide a list of the difference in parameters values for the two files.

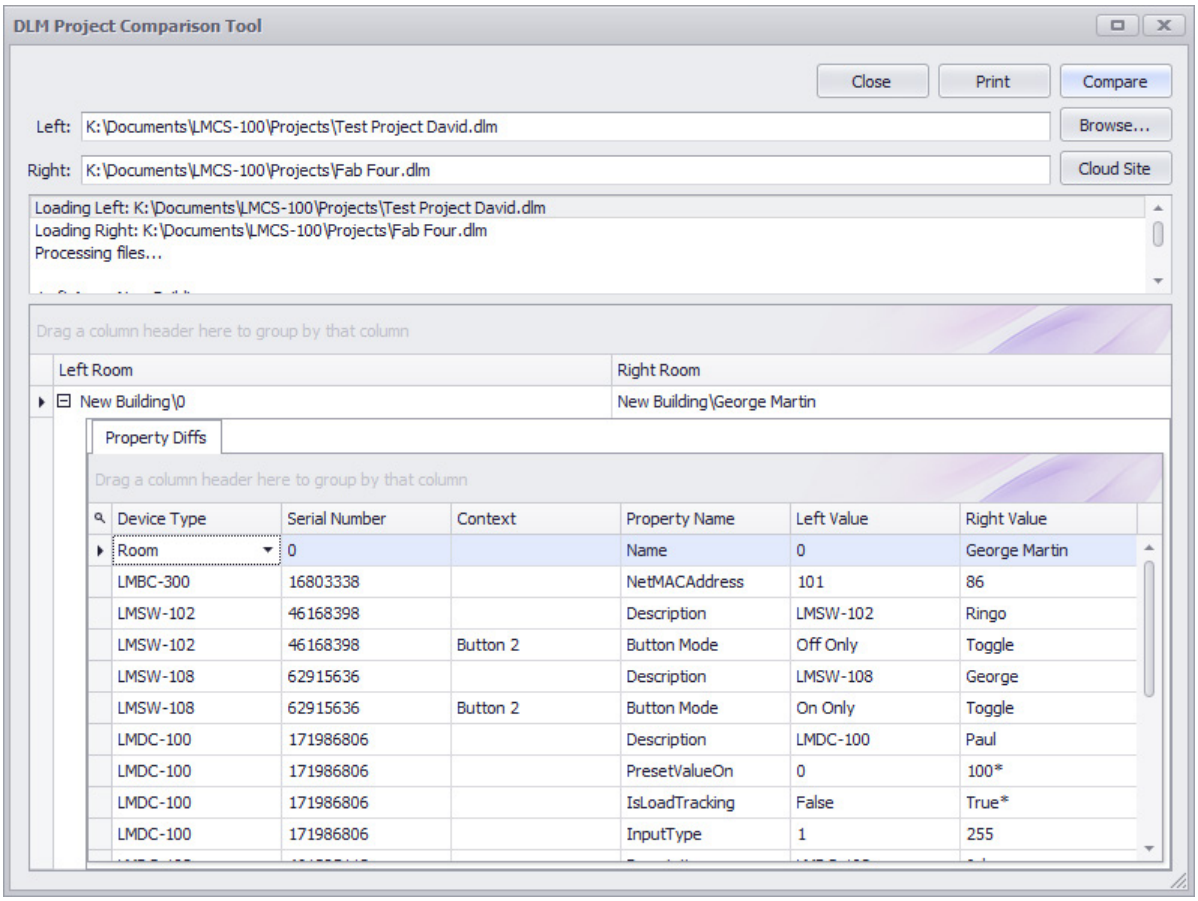
Click **Diff Tool** to open the **DLM Project Comparison Tool** dialog.

DLM Project Comparison Tool



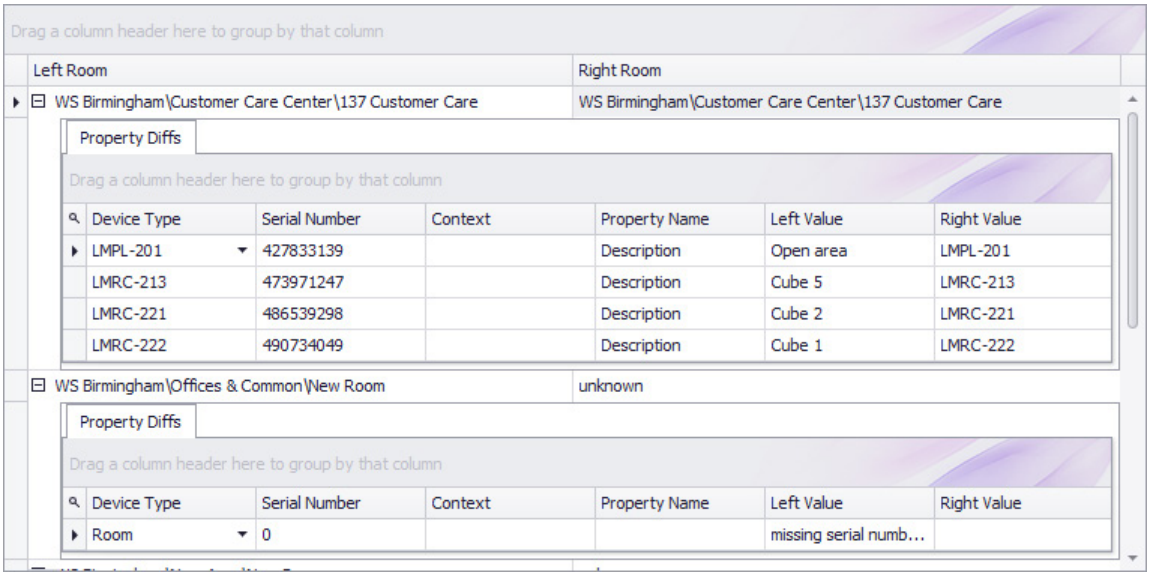
Click the two **Browse** buttons to select the two project files to compare. Click **Compare**. A report is generated in the bottom section of the window. Only the parameters in which there is a difference are displayed.

Comparison Data



In the example above the two project files contained only a single room. If the project contains multiple rooms, the list is broken out by room, as shown in the following example.

Comparison Data with More than One Room



DLM Site Time/Location

This utility is used to set and synchronize the clocks in all LMBR-650 border routers, LMCP Panels, Shade Controllers, and LMTS-101-CCT Schedule Switches in the project, for controlling schedule events. Additionally, you set the location, used for calculating sunrise and sunset times, which can be used to trigger dark/light events and Astro schedules.

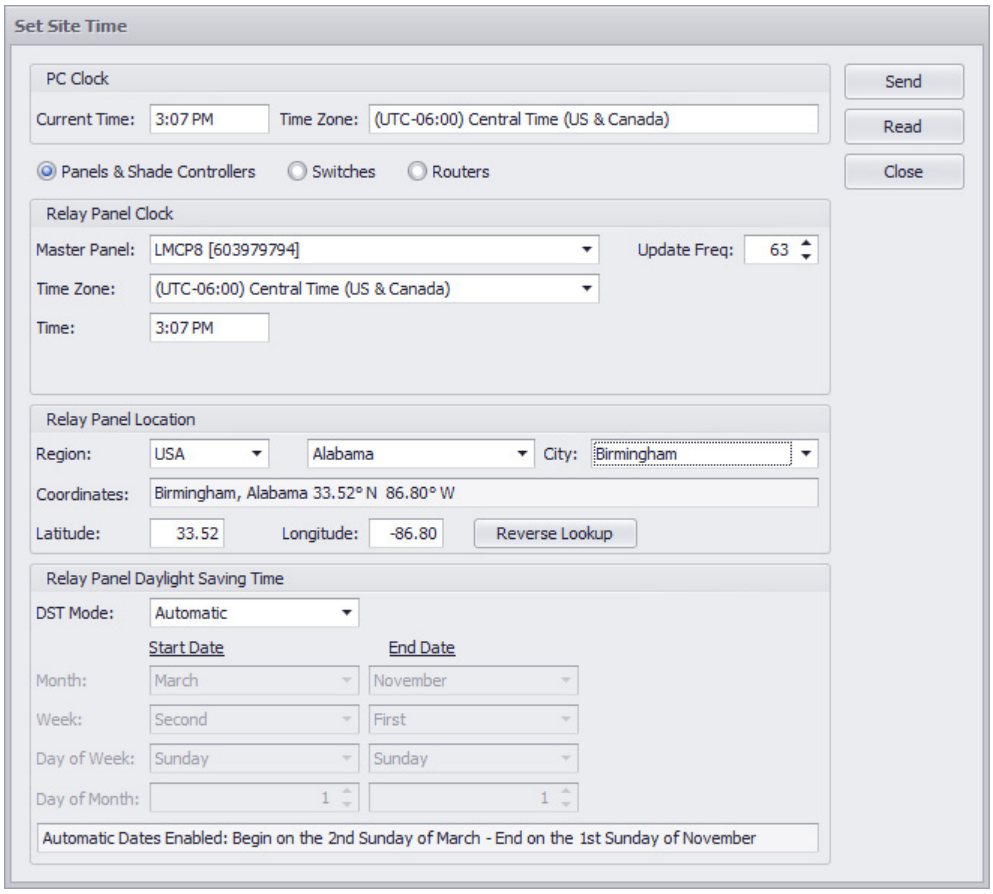
If you have more than one panel networked together, any panel can be set to be the master clock. It will periodically send out clock information to the other panels so that they remain synchronized. This also applies when you have multiple LMBR-650s—one LMBR will be designated the master. For panels, you can set how often the master sends the clock message. The advantage of having any panel act as a master is that if the master panel is taken offline for any reason, any other panel can be easily set to be master and all panels will still remain in sync. (Note that if the original panel is put back online, you will want to revert the replacement master or the original panel to back to being a slave, so that you don't have two master clocks on the network.)

NOTE: The LMTS-101-CCT will also respond to clock sync messages sent from a master panel.

NOTE: For shade controllers, you can use LMCS to set the Date, Time,.and Location parameter values. However, currently shade controllers are not BACnet enabled, so they must be connected to an LMBC-300 or LMBC-650 in order to send this information. Furthermore, unlike the LMTS-101-CCT, the shade controllers can **not** sync to a master clock.

Click **DLM Site Time/Location** to open the **Set Site Time** dialog.

Set Site Time



The radio buttons beneath the PC Clock section determine whether you are viewing parameters for a panel or shade controller, schedule switch (currently only the LMTS-101-CCT), or router (currently only the LMBR-650).

If you click **Read**, LMCS will import the current settings from the selected master panel, switch, or router, depending on which radio button is selected.

Once you have set the parameters as desired, click **Send**. This will send parameter values either to all panels, and shade controllers, all LMTS-101-CCT switches, or all routers, depending on which option is selected. If you have more than one type of device in your project, you need to select each option and click Send, even if using a master panel, because the LMTS-101-CCT and LMBR-650 have some parameters not found on a panel.

PC Clock

Current Time and **Time Zone** – These fields display the current time and time zone set in the PC's Date and Time control panel. They cannot be edited.

Panel Settings

Relay Panel Clock

Master Panel – If you have multiple panels, you can select the panel to be used as a master. If set to “None”, each panel will control its own clock unless it receives a clock message from another BACnet enabled device or software.

NOTE: If there are any shade controllers in the network, they will show up in this drop-down, and clicking Send will send the date, time, and location to them. However, a shade controller is **not** BACnet enabled. Therefore a shade controller should never be selected as a Master.

Time and **Time Zone** – By default, these are set to the PC’s values, but you can edit them if needed.

Update Freq – If you designate a panel as a Master clock, this is the frequency (in minutes) that the master panel will send a clock message to the other panels.

NOTE: If you are using a Network Controller on the project as a scheduler, you should choose “None” since you want that to be the master time clock for all panels on the network.

Relay Panel Location

Region and **City** – When you select a region and city, the **Coordinates** field is automatically set, and is used to calculate sunrise and sunset.

Latitude and **Longitude** – If the list of cities does not contain the city you are looking for, and you know the latitude and longitude of your location, enter the coordinates in this field and click **Reverse Lookup** to populate the other fields.

Relay Panel Daylight Saving Time

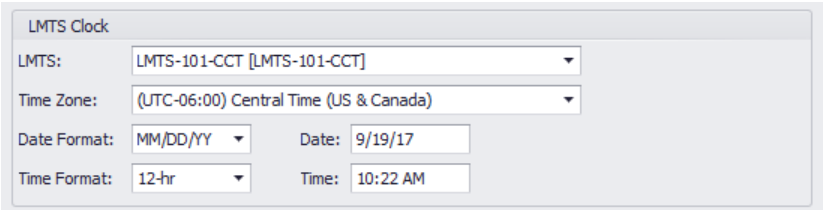
DST Mode – If you select “Automatic”, Daylight Saving Time is followed based on the current standard rules. If you select “Manual”, you can enter the specific **Month** and **Day of the Month** for spring and fall, to start and end daylight saving time. Select “Disabled” to ignore daylight saving time.

Switch (LMTS-101-CCT) and LMBR-650 Settings

Clock Section

This section is different from the panel parameters. It is identical for both the LMTS-101-CCT and LMBR-650, except that the section labels change between LMTS and LMBR

LMTS-101-CCT Clock Settings



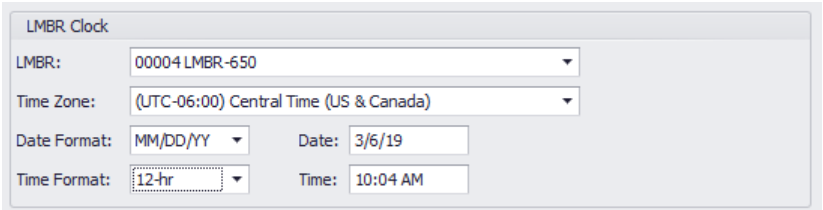
LMTS – If there is more than one LMTS in the building, each one will be available from this drop-down. In order to determine which is which, you will need to edit the **Description** for each switch. You will need to select each one and click **Send** to send the setting to each one separately.

Time Zone, **Date**, and **Time** – By default, these are set to the PC’s values, but you can edit them if needed. Both the **Date** and **Time** are shown in the LMTS display.

Date Format – Determines the format the date is shown in the LMTS display

Time Format – Determines whether the time shown in the display is 12 hour or 24 hour format.

LMBR-650 Clock Settings



LMBR – Unlike with panels, you will only see a single LMBR in the drop-down, which is the LMBR selected as the primary LMBR during the configuration process. It is possible to change which LMBR is the primary by highlighting the wireless network for that LMBR in the tree and clicking the **Is Primary** checkbox. For details, see "Changing the Primary LMBR-650 in an existing Multi-LMBR Project" on page 74.

NOTE: While the LMBR section includes the Date and time format parameters, they do not apply to the LMBR, which has no display.

Location and Daylight Saving Time Sections

These two sections have identical parameters as the panel option.

Rename Rooms

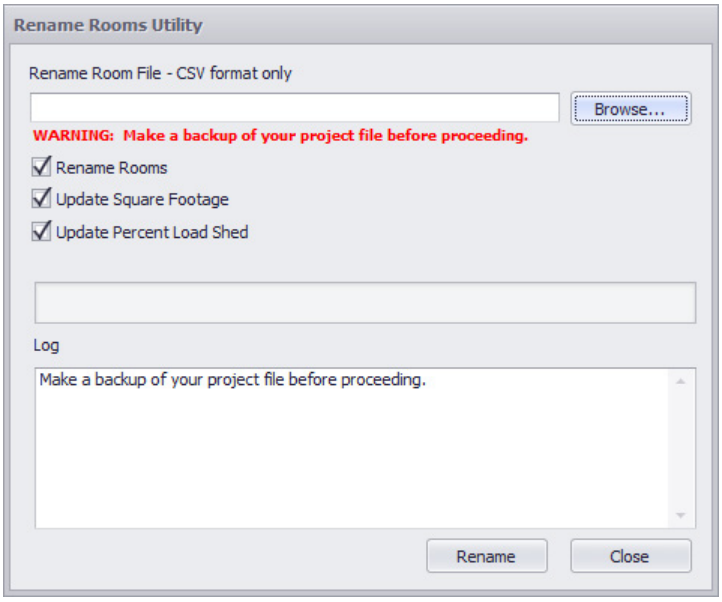
This utility is provided for projects in which initial work was begun on the project using room names based on the construction specifications, or where rooms were imported from a CAD file. If the rooms are renamed for occupant usage and you want the project to reflect the new names, this utility provides a simple way to update all the name. You might also use the this feature to remove unwanted characters in room names that were imported from the CAD file. Additionally, it can be used to import square footage for each room and load shed percentage amounts.

This utility requires a .csv file, with the data arranged in the following order: Old Room Name, New Room Name, Square Footage, Load Shed Percentage.

NOTE: You have the option as to which information you want import, but the .csv file must be set up for all four columns of information, even if a column is blank. (The Old Room Name must always be included and must exactly match the name currently in the project.)

Click **Rename Rooms** to open the **Rename Rooms Utility** dialog.

Rename Rooms



Click **Browse** and select the .csv file to import. By default, **Rename Rooms**, **Update Square Footage**, and **Update Percent Load Shed** are all selected, but you can deselect any option you do not want to import.

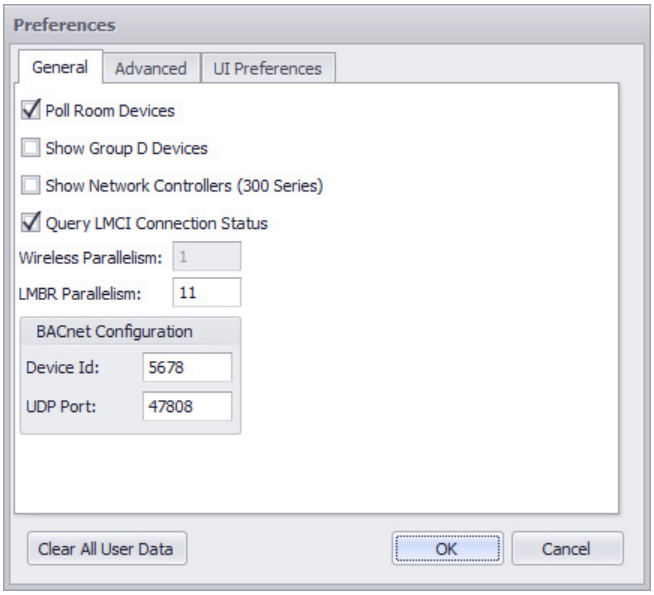
Click **Rename** to begin the process. The **Log** shows the status of the import.

NOTE: Wattstopper recommends that you make a backup copy of the project before beginning the renaming process.

Preferences

This dialog includes BACnet configuration, as well as a few preference settings. There are three tabs.

General Preferences



Poll Room Devices – Deselect this checkbox to prevent LMCS from trying to poll rooms while other actions like Area Syncing are being performed. Wattstopper recommends leaving this parameter disabled.

Show Group D Devices – If this checkbox is selected, the following Dekko models will be included within the drop-downs under the **Add Devices** section: LMPL-201DK (within Controllers/Plug Load Controllers), and LMPD-102 Wall Switch Occupancy Sensor (an OEM product). These OEM products are both obsolete.

Show Network Controllers (300 Series) – If this checkbox is selected, An additional menu option, Network Room Controllers, will appear within the **Add Devices** Controllers drop-down. Selecting this menu open a submenu containing the LMRC-311, LMRC-312, and LMRC-313 (legacy products).

Query LMCI Connection Status – Selecting this checkbox will cause LMCS to poll the connection status of the in-room bus when connected via an LMCI.

Wireless Parallelism – This controls the amount of wireless processes that are run simultaneously when possible. This is set at a value of 1 and can't be changed.

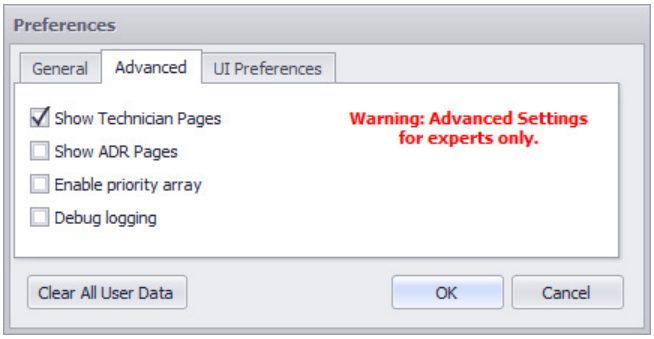
LMBR Parallelism – This determines the number of LMBRs that LMCS will attempt to communicate with simultaneously. It is used during multi-LMBR firmware updating, setting the time, and reading the network info during discovery. The default is 11. Most users won't need to worry about changing it unless they are connecting remotely through a raccess modem.

Device ID – This is the BACnet device ID for LMCS. This Device ID must be unique on the BACnet/IP network. No two communicating devices can have the same BACnet Device ID

UDP Port – This is the UDP port used by LMCS for BACnet communications. This Hexadecimal number must match the UDP Port of the NB-ROUTERs (BAC0 = 47808.)

Clear All User Data – If you click this button, LMCS clears the user name, password, and permissions that have been previously saved and logs the user out of the cloud.

Advanced Preferences



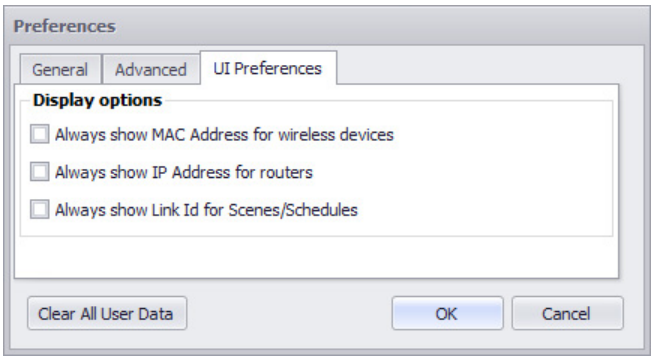
Show Technician Pages – If you select this checkbox, a **Technician** tab will show up in the Device Information section in many (but not all) of the devices. The fields on these tabs are intended for use by technicians and product experts and are not normally used.

Show ADR Pages – If you select this checkbox, an Automated Demand Response (ADR) section will display at the bottom of the **Load Advanced** tab for wireless room controllers, plug load controllers, and the LMFS-601.

Enable Priority Array – Selecting this checkbox allows the you to change the priority of setting load levels on load devices.

Debug Logging – If selected, it increases the amount of information put into LMCS log files.

UI Preferences



Always show MAC address for wireless devices – If selected, the last four characters of the MAC address will display next to the device name in the Devices tree. If not selected, this only displays when no Description has been added for that device.

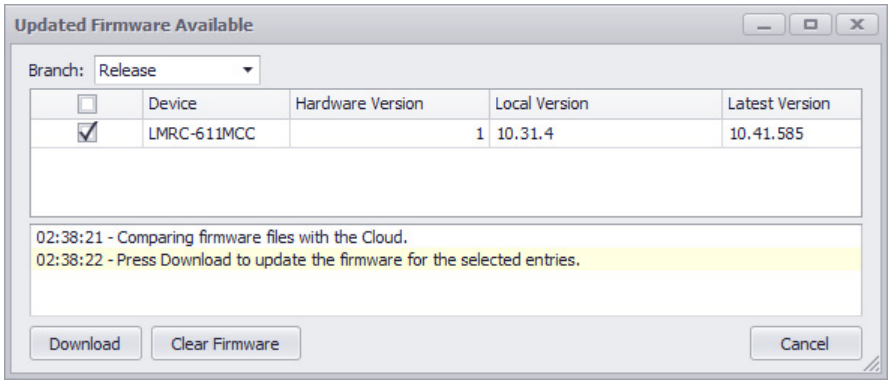
Always show IP address for routers – If selected, the IP address will display next to the router name in the Networks tree. If not selected, this only displays when no Description has been added for that router.

Always show Link ID for Scenes/Schedules – If selected, the Link ID for each wireless scene and schedule will display next to the scene/schedule name. Note that by default, the Link ID appears in the Description field, but if you edit that field to create your own description, there is no other way to see the Link ID.

Sync Firmware

If connected to the cloud, LMCS automatically checks for updated firmware files for both wired and wireless devices when you open LMCS. If there are any updated files, a dialog asks if you want to download firmware at that time. If you answer No, then this Utility provides a way to go back at a time of your choosing to download those files.

Sync Firmware



LMCS automatically compares the firmware files on the PC with the files on the cloud and lists each file for which there is a newer version. Select the files you want to download (if they are not already selected), then click **Download**.

The **Clear Firmware** button provides the ability to clear the Local versions of the device firmware contained in the LMBR-650 Device Manifest. At that point you would need to download all new versions from the Cloud.

Branch – This drop-down only appears for users with a legrand.us or legrand.com email address and allows the user to choose between released firmware versions and those that are still in testing, for example in Alpha or Beta stages.

PROGRAMMING PARAMETERS FOR INDIVIDUAL DEVICES

This section lists and defines all of the programming parameters for each device category. Click on a device in the tree to view its parameters in the Device Information section of the window. In general, different models of the same type of devices will contain the same parameters (for example, the different room controllers or different switch models). For some devices, different parameters are available on different models (for example, daylighting photosensors). In those cases, separate sections are included for each model.

For room controllers, which have per load parameters, and switches, which have per button parameters, the load and button parameters are documented separately.

NOTE: There are some **differences** between **wired** and **wireless** DLM devices. Wherever there are difference, this guide has separate sections for each version.

NOTE: Many devices have a Technician tab. This tab is visible only if the **Show Technician Pages** option is selected in the **Preferences** dialog. The fields on these tabs are intended for use by technicians and product experts and are not normally used. The technician tab is included in all of the screenshots in this section.

Parameter information for each device starts on the following pages:

- “Controllers and Panels” on page 148
- “Controllers – Loads and Relays” on page 153
- “Controllers - DMX Loads” on page 166
- “Controllers – CCT Loads” on page 168
- “Controllers – Tabs Unique to the LMFS-601” on page 170
- “Controllers – Parameters Unique to Panels and Zone Controllers” on page 171
- “Occupancy Sensors” on page 179
- “Switches” on page 184
- “Wired Switches – Button Parameters” on page 187
- “Wired Switches – Rocker Parameters” on page 192
- “Wired Switches – Sensor Parameters” on page 194
- “Wired Switches – Schedule Parameters” on page 194
- “LMGS-150 Touchscreen” on page 195
- “LMEQ-41 Equinox Touchscreen” on page 199
- “Wireless Switches – Button and Rocker Assignment” on page 202
- “Wireless Daylight Photosensor – LMDL-600” on page 205
- “Wired Daylight Photosensors” on page 206
- “Interfaces – LMBC-650 Bridge” on page 214
- “Interfaces – LMBC-300 and LMBC-600 Bridges” on page 216
- “Interfaces – LMZC-301 Zone Controller” on page 217
- “Interfaces – ELCU-100 and ELCU-200” on page 217
- “Interfaces – LMIO-101” on page 218
- “Interfaces – LMIO-201” on page 218
- “Interfaces – LMIO-301” on page 220
- “Interfaces – LMIN-104” on page 220
- “Interfaces – LMOR-102” on page 223
- “Interfaces – LMDI-100, LMIO-102, LMPS-104, WRC-TX” on page 223
- “Interfaces – LMTI-100” on page 223
- “Shading – Shade Controllers” on page 224
- “Shading – Shade Motors” on page 225
- “Shading – Shade Switches” on page 228

PARAMETERS COMMON TO ALL DEVICES

The top part of the Device Information section is the same for all devices, containing four parameters and four buttons.

Device Type – This read only field displays the model of the device.

Serial Number – If working offline, this value can be entered manually. If not, it is entered automatically during discovery or syncing. Once discovery or syncing occurs, it becomes a read only field (but can be changed using the **Advanced** button).

A second **Serial Number** parameter is found on the **Advanced** tab for each device. It is identical to this field. You can manually enter the serial number in either field and the other will update automatically.

NOTE: For wireless devices, the serial will display as the last four digits of the MAC address.

Description – Text entered here will appear within square brackets next to the model name for the device, in the tree in LMCS. It also is used to identify the device in the Devices tab in the Segment Manager or Network Controller application.

Location – Text entered in this field can be used to provide information about the exact location of a device within the room.

The four buttons are enabled only if LMCS is connected to the room.

Read – Loads all parameters values from the device into LMCS. This will overwrite and custom LMCS programming.

Send – Sends the all parameters values from LMCS into the device.

Status – This reads the status of certain parameters within various devices and displays that information. For a room/plug load controllers and panels, for each load/relay it displays information such as load state and normal/after hours. For occupancy sensors, it displays information such as occupancy state and mode. For photosensors, it displays the current light level.

Ping – Helps to confirm communication with the device. For a room controller, if a load is off, it will turn on briefly, then off again. If the load is on, it will turn off briefly then back on again. For other devices, the blue LEDs will blink for several seconds.

CONTROLLERS AND PANELS

This section documents the tabs for Small Room, Fixture, Enhanced Room, Plug Load, LMAC-131-M, and CCT Fixture Controllers. These parameters also apply to LMPB-100 Power Booster.

LMCP Panels and the LMZC-301 Zone Controller also contain the same parameters, but they contain an extra tab in the top area for bridge parameters. In addition, panels and zone controllers contain several tabs in the bottom area for features unique to panels. See "Controllers – Parameters Unique to Panels and Zone Controllers" on page 171.

The LMSI-DMX controller is a unique interface for controlling DMX loads and is described separately in "Controllers - DMX Loads" on page 166.

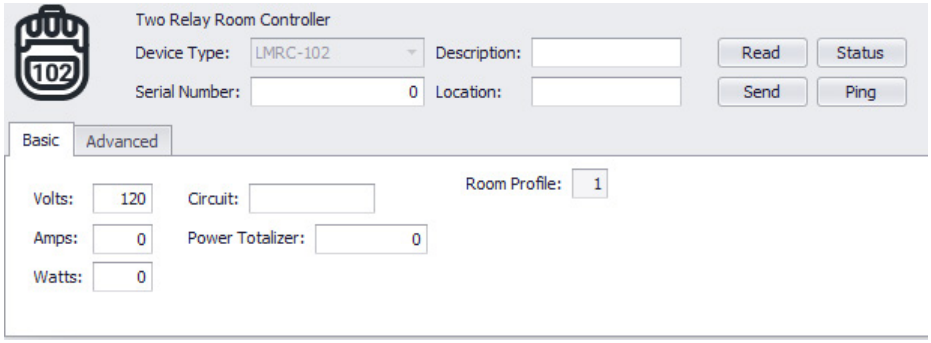
Directly below the controller tabs, you will see tabs for one or more Loads (depending on the number of loads handled by the controller). The only exceptions to this, are the LMPB-100 Power Booster and LMZC-301 Zone Controller, which have no loads. If viewing a panel, the loads are labelled Relays, but they have the same parameters. The load parameters are documented in the next section, "Controllers – Loads and Relays" on page 153.

The LMLM-101 fixture controller provides control over Correlated Color Temperature (CCT) and therefore has additional parameters in the Loads tab. See "Controllers – CCT Loads" on page 168.

Basic Tab

Wired Controllers

Wired Room Controller Basic Tab



Watts, amps, and volts parameters are found on both the **Basic** and **Technician** tabs, but the behavior of the volts and amps fields differs slightly on the two tabs, based on the model

Volts – Volts must be manually entered. Since watts are calculated based on this value, Wattstopper recommends measuring the voltage at the room controller feed rather than simply entering the expected amount of volts.

For the 100 series room and plug load controllers, and for the LMFC-011, this field on the **Basic** tab is read only and must be entered on the **Technician** tab. For the 200 and 300 series room and plug load controllers and for the LMPB-100, this amount can be entered on either tab.

Amps – For the 200 and 300 series, this amount is measured by the controller, and therefore the field is read only. For the 100 series and LMFC-011, this field on the **Basic** tab is read only and must be entered on the **Technician** tab.

NOTE: The LMRC-111-M LMRC-112-M, LMRC-111-16M, LMRC-111-20M, and LMPL-111-20M room controllers have metering capabilities and therefore follow the 200 and 300 series rules for both **Volts** and **Amps**.

Watts – This amount is calculated: Watts = Volts * Amps * (Power Factor/100). **Power Factor** is shown on the **Advanced** tab. It is read only.

NOTE: For the LMRC-102, which has two loads, the Wattage amount is based on both loads being on. Individual loads are not calculated separately.

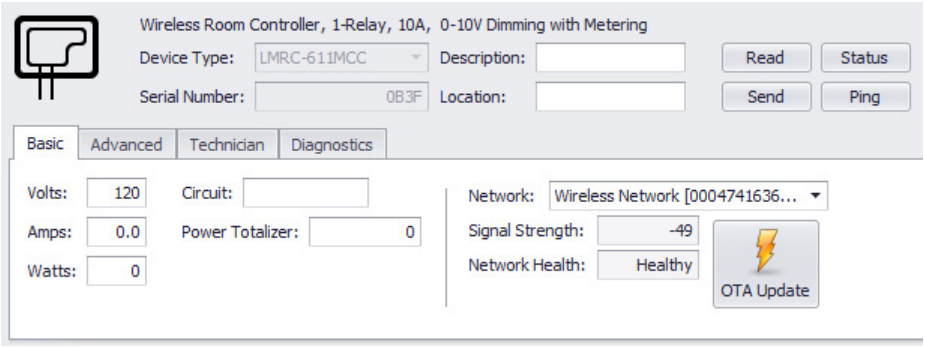
Circuit – This field provides a place to document the specific circuit used for the loads, based on CAD drawings. Note that for panels, there is also a separate **Circuit** parameter available for each relay, in the Relays section.

Power Totalizer – This field functions as a meter, showing the total watt hours consumed by the controller's loads. **Volts** and **Amps** must have valid values for this field to function.

Room Profile – This read only parameter indicates the current profile selected at the room level. This parameter is displayed only if the room includes a device that supports profiles (currently, the LMIN-104, LMDI-100, LMIO-102, and LMPS-104). You must also select the **Partition Support** checkbox in the Room info before this parameter is displayed.

Wireless Controllers

Wireless Room Controller Basic Tab



On wireless controllers, the **Volts**, **Amps**, **Watts**, and **Power Totalizer** parameters are all read only. They are refreshed to current values by clicking **Read.**

Wireless devices have an extra section of addition parameters

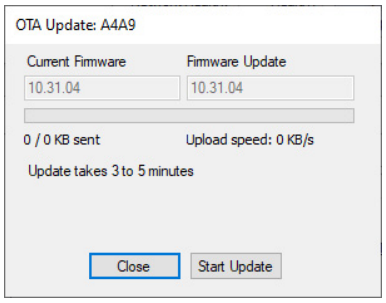
Network – The Network (and therefore the LMBR-650) that the LMRC is communicating with. This will initially be the network that you originally selected during the discovery process. It can be changed to a different network, if desired. However, the **LMRC must be within communication distance of the LMBR**. It is possible for paired devices in a room be on different networks.

Signal Strength – Displays the Received Signal Strength Indicator (RSSI) value

Network Health – This will display as “UnHealthy” if the signal is less than -75

OTA Update – Click this button to update the firmware of the device “over the air”. A dialog opens. It displays the current version in the device and the most recently available version, which is the version stored in the Firmware folder within the LMCS application on the PC. If a newer version is available on the cloud, a dialog will inform you of this and allow you to download that version. Click **Start Update** to update the device. After the device completes updating it will restart. This can take a minute before it begins communicating with other devices again.

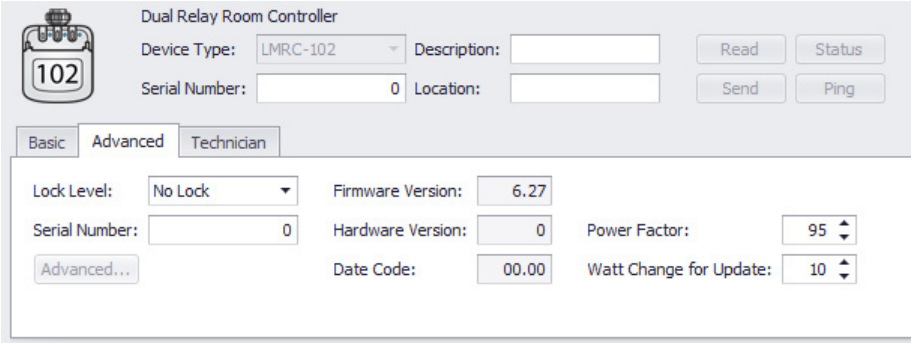
OTA Update



NOTE: Occasionally LMCS may not be able to establish communication with the device in order to update it. If you get an error, try clicking **Start Update** to try the update again.

Advanced Tab

Room Controller Advanced Tab



Parameters on the Advanced Tab Common to All Devices

Lock Level – Available values:

- No Lock – This value does **not** currently function properly. If you want to unlock. PnG, use the **Unlock PnG and PnL** function on the Advanced tab for Rooms. See “Real_Time_Room_Control – The_Advanced_Tab_For_Rooms” on page 125.
- Lock PnG – This will lock the PnG functionality in the device.
- Lock PnG and PnL – This will lock PnG and PnL functionality in the device. An example of why you might want to lock PnL is to prevent anyone from reprogramming switch functionality in a public area such as a classroom or lobby.

NOTE: This drop-down affects only the individual current device. In addition, these messages can be sent to all devices in a room, on the **Advanced** tab for the room. One significant difference—these functions are separate buttons on the room window, so they occur as soon as you click the button, whereas for an individual device, you must click **Send** before the change takes effect.

Serial Number – Identical to the same field in the common parameters section.

Firmware Version – If working offline, this is set to the most recent version of firmware, based on the version of LMCS. Once discovery or syncing occurs, it is updated to the actual version in the device. This field is read only (but can be changed using the **Advanced** button).

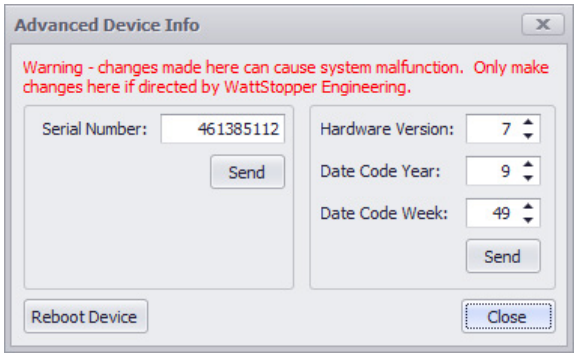
Hardware Version – If working offline, this is set to 0. Once discovery or syncing occurs, it is updated to the actual version in the device. This field is read only (but can be changed using the **Advanced** button).

Date Code – If working offline, this is set to 0. Once discovery or syncing occurs, it is updated to the actual version in the device. This field is read only (but can be changed using the **Advanced** button).

If you click the **Advanced Button**, an additional dialog opens that allows you to change the **Serial Number**, **Hardware Version**, and **Date Code**. This button is only enabled after the device has been discovered or synced.

WARNING: Changing these fields can cause problems with LMCS communication with the device or other general network problems, and should only be done under the direction of a Wattstopper technician.

Advanced Device Info



If a change for any of the parameters is required, enter the new values and click the appropriate **Send** button. Once the send process is complete, click **Reboot Device**.

Parameters Unique to Controllers

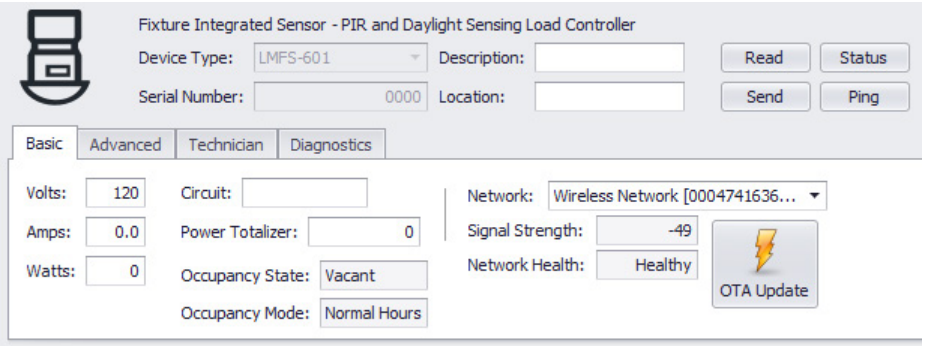
Power Factor – Used in the calculation of Watts. By default this is 95%. If you know the specific power factor for the loads connected to this controller, enter that value.

Watt Change for Update – This field applies to 200 series and 300 series controllers only. Controllers send status messages regarding Watts currently consumed. If there is no change, this message is sent during a random time frame of between 5 and 10 minutes. If the amount changes, then if the amount of change equals or exceeds the amount set in this field, the message is sent immediately. If the amount of change is less than this amount, the message is sent every 30 seconds. This message is used by ADR to determine whether the controller should adjust the wattage.

LMFS-601 Fixture Controller

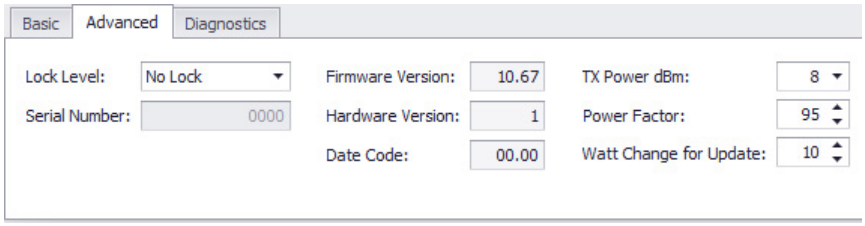
The LMFS-601 wireless fixture controller is unique and includes a PIR and a daylight sensor. As a result, there are two additional parameters found on the **Basic** tab and one on the **Advanced** tab.

LMFS-601 Basic Tab



The **Occupancy State** and **Occupancy Mode** parameters show the current or recent values of the LMFS-601. These values are updated regularly by the LMBR-650, but you can view the current values by clicking **Read**.

LMFS-601 Advanced Tab

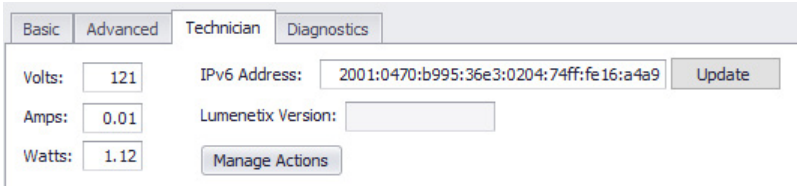


The **Tx Power dBm** parameter allows you to control the strength of the radio transmitter. Options are 8 dBm (High) or 4 dBm (Low).

Technician Tab

This tab only displays for wireless controllers.

Wireless Room Controller Technician Tab



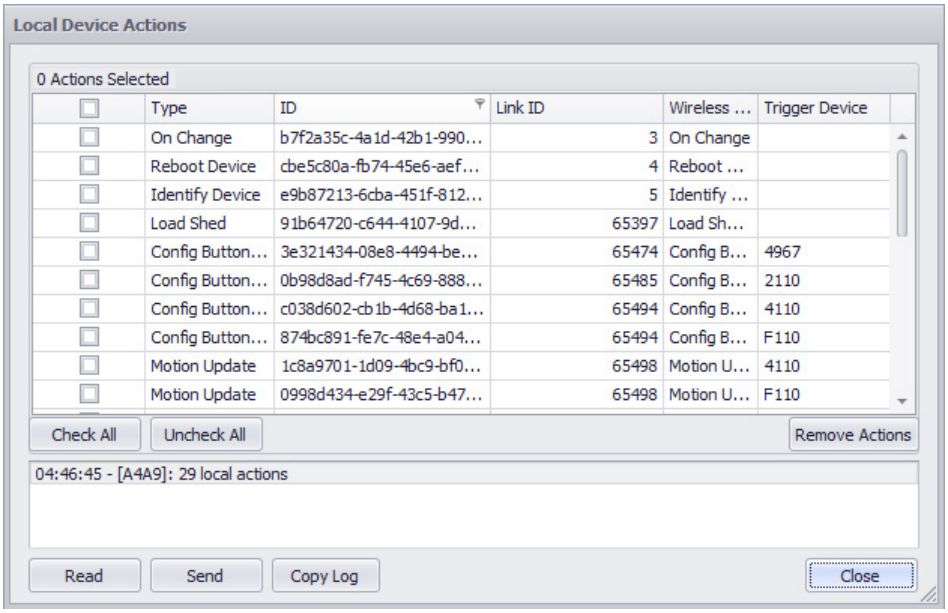
IPv6 Address – Wireless room controllers include this extra parameter.

Lumenetix Version – This parameter applies only to the LMFS-601 fixture controller. It shows the version information of the Lumenetix driver within the controller.

Manage Actions – This function allows you to directly manage the action table of a device. Click this button to open the **Local Device Actions** dialog.

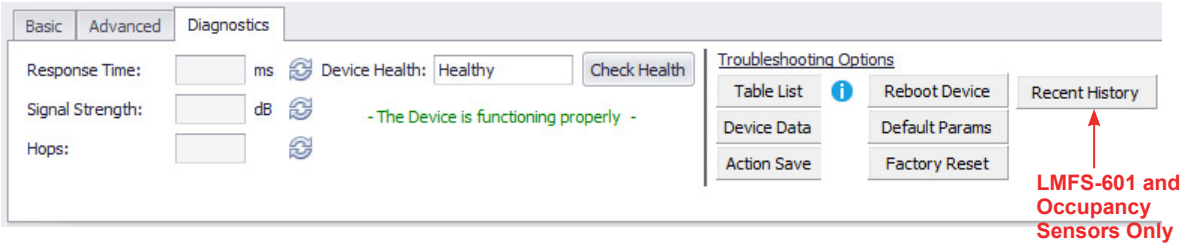
WARNING: This function should only be used by technicians with detailed knowledge of how to edit these actions. Incorrect changes can affect the way the devices will function.

Local Device Actions



Diagnostics Tab

Diagnostics Tab



This tab only displays for wireless devices, and is identical for all devices. Click on the icon to the right of the Response Time, Signal; Strength, or Hops parameter to get test that parameter and display the result. Or, click **Check Health** to test all three parameters.

NOTE: For the battery devices, if not currently awake, they must be woken up before they will respond to the Check Health inquiry. Press the Config button on the device to wake it up.

Response Time – The amount of milliseconds it takes to send a message from the LMBR-650 to the device and receive a response.

Signal Strength – Displays the Received Signal Strength Indicator (RSSI) value

Hops – The number of devices that a message passes through from the LMBR to that device

Device Health – This will display as “UnHealthy” if the signal is less than -75

Recent History – Shows the history of the scenes that are triggered from that sensor

Troubleshooting Options

This section has two columns of buttons. The column on the left has a set of diagnostic test. If you click on one of the buttons on the left, that device performs that test. If it is successful, the icon to the right of the button will change to green check mark, as in the example below.

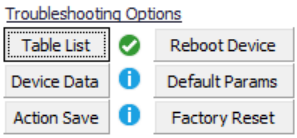


Table List – A device’s table list defines the list of actions it will perform on the network. Issues with the table list could cause the device to perform erratically as well as cause device commissioning to be unsuccessful. A successful response to this test means the device is correctly returning its list of actions.

Device Data – This function pulls the full data dictionary from the device. When the icon to the right turns into a green checkbox, click that icon to copy the data to the clipboard.

Action Save – This test will send the list of actions from the LMBR to the device.

The column on the right are actions that you can perform on the device

Reboot Device – If you click this button, the device will reboot (similar to a power cycle).

Default Params – If you click this button, the device will have all of its programming parameters set back to their defaults. However, the Network ID and Channel will **not** be changed so that the device will still remain communicating within the network.

Factory Reset – **IMPORTANT:** Clicking this button will put the device back to its factory defaults, including the Network ID and Channel. This means that once the reset is complete, the device will no longer be part of the current network, and you will therefore have to go through the Discovery process again to add the device back to the network, and then re-pair it with other devices in the room. Furthermore, because of the way information is stored in the device, you cannot simply send any custom parameter settings from LMCS back into the device. You will first have to read the parameter values from the device into LMCS, then reprogram the parameters in LMCS and send them back into the device. So use this option with caution.

CONTROLLERS – LOADS AND RELAYS

Each load in a controller has its own tab in the bottom part of the Information Section. For panels, each relay has its own sub-tab, in groups of up to 12 under one more grouping tabs. All parameters are identical for both loads and relays. For each **Load** or **Relay** tab, there are **Basic**, **Advanced**, and **Technician** tabs.

Additionally for wireless room controllers, there are two additional tabs, which display based on specific circumstances:

- The **Daylighting Preview** tab displays only if you enable **Daylight Harvesting** on the **Technician** tab. (Note that this is enabled automatically if you calibrate the LMDL-600.))
- The **BACnet Export Table** tab allows you to determine the read/write status for all BACnet points in the controller. The **BACnet Export Table** tab only appears if you enable BACnet when on the Networks tab with the network highlighted in the tree. See "BACnet Information Section" on page 74 for details.

For the LMFS-601, there are two additional tabs. **Occupancy** and **Daylighting**.

Parameters Appearing On All Tabs (except for the LMSI-DMX)

These parameters display no matter whether the **Basic**, **Advanced**, or **Technician** tab is selected.

Load ID – This read only field displays the load ID assigned to the load. Note that the ID can be changed on the **Technician** tab. Load IDs are sequentially numbered, from 1 to a maximum of 64.

Description – The description entered here is shown in the tree in both LMCS and the Segment Manager or Network Controller application.

Load Type – Available values:

- Switched – Indicates a switched load. Note that if a load is capable of dimming, selecting this value will not prevent the load from dimming. However, selecting this value does disable the **Trim Level** parameters in the **Normal Hours/After Hours** section.
- Dimmed (0-10v) – Appears for LMRC-11x and LMRC-21x controllers and dimming panels only. Indicates a dimmed load.
- Dimmed (1-10V)/LED 4WA17 – Appears for the LMAC-131-M controller only. Sets a dimming curve optimized for these types of loads. This value can also be used for ELV loads.
- Incandescent – For LMRC-22x controllers and the LMAC-131-M only:
  - For LMRC-22x controllers: This should be used with Low Current LED, Incandescent, Magnetic Low Voltage, Cold Cathode, or Neon ballasts. It provides a direct (straight line) reduction of voltage from 100% to minimum, with a commensurate reduction of light from the fixture.
  - For the LMAC-131-M controller: Sets a relatively wide dimming curve optimized for incandescent loads.
- Low Current LED/Incandescent – Appears for the LMAC-13-M controller only. Sets a narrow dimming curve for LEDs, to avoid flickering. This value can also be used for ELV loads.
- Mark X – Appears for LMRC-22x and LMAC-131-M controllers only. This is used for 2 wire dimming ballasts such as the Phillips Advance X. These ballasts can't use a straight line voltage reduction because at some point there isn't enough voltage to power the electronics in the ballast itself. This value provides a smaller range of voltage change, resulting in an output from 100% to minimum %.
- Fluorescent/CreeIR6 – Appears for the LMAC-13-M controller only. Sets a dimming curve optimized for these types of loads.
- MLV – Appears for the LMAC-131-M controller only. Sets a dimming curve optimized for these types of loads. For MLV loads the **Dim Phase** should be set to "Forward" or "Auto". If set to Reverse, the load will protect itself and force a shutdown.
- HiLume – Appears for LMRC-22x controllers only. This is used for 3 wire dimming ballasts that have both a dimming hot wire and a switched hot wire, such as the HiLume fixtures.
- HID – No Blink Warn – This turns off the Blink Warn feature. It is intended for use with High Intensity Discharge loads, since they cannot immediately turn back on after turning off.
- Pulsed – When this value is selected, and On value for the controller will trigger the load for a specified amount of time and then turn Off. The length of the pulse is set on the **Technician** tab. This is useful for integration with non-DLM devices such as shades For example, if it takes about 5 seconds to raise/lower the shades you would set to pulse for 5 seconds. Then when a connected button is pressed, the load turns on for 5 seconds and then turns off automatically. Values are in 1 second increments.

  NOTE: This feature requires firmware versions of 7.82 or later for panels, 6.17 or later for the LMRC-111/112, or 6.29 or later for all other controllers.
- Pulsed+ – This feature is identical with Pulsed, but has increments in 0.1 seconds. It is available for wired and wireless room and plug load controllers (but not for panels).
- AS-100 – This value is for use with the AS-100 Automatic Control Switch. The AS-100 is a switch that controls the line voltage (instead of sending a low voltage control message to the room controller). Instead, the AS-100 responds to timed power interrupt signals coming from the controller, providing automatic shutoff with a blink warning when transitioning between normal hours and after hours. Other timed interrupt signals can turn the power on or off.

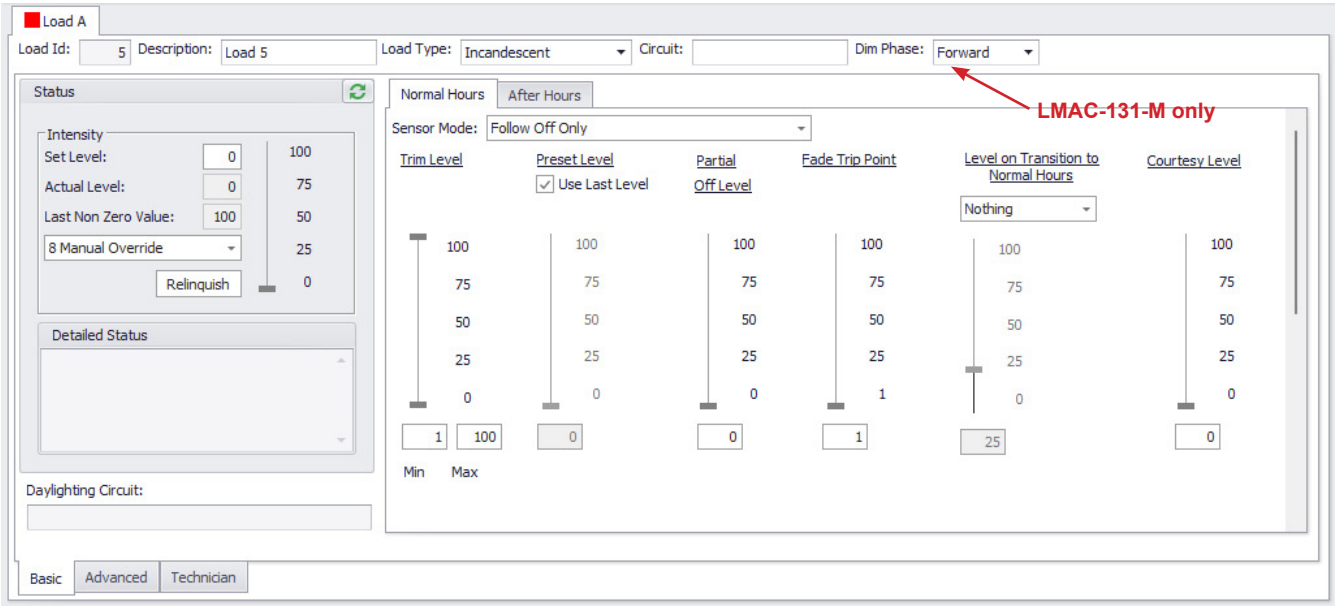
Circuit – This text field is available to document the specific circuit for the load.

Dim Phase – Appears for LMAC-131-M only and determines the type of phase dimming for the load. Available values are Forward, Reverse, and Automatic (the default). If set to Automatic the controller will select the correct dimming type based on the connected load when PnG occurs. A minimum 50W load is required for Automatic load detection to operate correctly. The other values allow you to force forward phase or reverse phase dimming, if needed.

Basic Tab

Wired Controllers

Wired Load Basic Tab



Daylighting Circuit – If a daylighting device in the room has been assigned to the load, it will display here.

Status Section

The parameters in this section provide real time control of the loads and also provides summarized information on the current load status. This is useful for testing purposes. If not currently connected to the controller, the fields in this section will be disabled.

There are three parts to this section: Intensity, CCT, and Detailed Status.

Intensity – This applies to dimming level or ON/Off status in switched loads.

Set Level – Enter an amount and tab out of the field, or move the slider, to change the level of the load.

Actual Level – This read only field displays the same value as the set value, unless a **Trim Level** has been set which affects the maximum value. So for example, if the Trim Level is set to 85%, then the Actual Level will not go above 85% even if the Set Level is higher.

Last Non-Zero Value – This read only field display the last non-zero level.

BACnet Priority Level – Sets the priority level at which the real time level change is sent. If some other device has sent a command at a higher priority level, the loads will not respond to the real time change (the lowest number, which is 1, has the highest priority). By default, all DLM devices except LMLS photocells are set to a priority level of 8.

The controller stores the most recent message sent at each priority, and will follow the highest priority until a relinquish command is sent on that priority, which clears that message. The controller then looks at the next highest priority to determine what to do.

NOTE: This parameter is only enabled if you select the **Enable Priority Array** checkbox on the Advanced tab of the **Preferences** dialog.

Relinquish – Click this button to send the relinquish command for the current **BACnet Priority Level**. If no other command exists at any priority level, the load will go to the **Partial Off Level** (0 by default).

CCT – This applies to CCT levels. This section is only displayed for the LMLM-101 fixture controller.

Set Level – Enter an amount and tab out of the field, or move the slider, to change the CCT level of the load.

Actual Level – This read only field displays the same value as the set value, unless a **CCT Trim Level** (on the **Advanced** tab) has been set which affects the maximum value. So for example, if the CCT Trim Level is set to 4000K, then the Actual Level will not go above 4000K even if the Set Level is higher.

Detailed Status

If not currently connected to the controller, this section will be blank. If connected, this section shows the current values for various parameters that affect the controller. The data updates automatically. The time frame is based on the network, so can vary in time depending on network traffic, number of devices, etc. The most recent update time is displayed.

Normal Hours/After Hour Section

This section contains two sets of identical parameters, for normal hours and for after hours.

Sensor Mode – Determine how the load will respond to occupancy/vacancy commands. Available values:

- No Action – Ignores sensor commands
- Follow On and Off – Responds to both occupancy and vacancy commands. Also referred to as Auto On.
- Follow Off Only – Responds to both vacancy commands only. Also referred to as Manual On.

NOTE: This parameter also appears on the **Advanced** tab, but with many more available values.

Trim Level – Determines the minimum and maximum levels that the load can go to. For switched loads, this field is read only, but can be set on the **Technician** tab. For dimming loads, values can be edited on this tab.

NOTE: For a dimming capable room controller, if the **Load Type** is set to “Switched”, it will be read only.

Preset Level – The level a load will go to when it receives the Last Non-Zero command. If the **Use Last Level** checkbox is selected, the load will return to whatever level it was at before it was turned off. If the checkbox is not selected, you can set a specific amount for the load. Note that this can be set for both dimmed and switched loads, but a switched load will simply turn on or off, depending on where the **Fade Trip Point** is.

Use Last Level – see **Preset Level**

Partial Off Level – The amount the load goes to when turned off or all priority levels are relinquished (nulled out). By default, it is 0, but for a dimming load if you set it to a higher amount you can specify a minimum level for the load. This is helpful when you want to keep the lights from turning completely off when a space is empty.

Fade Trip Point – The level at which a switched load will toggle on. Any value sent below that number will turn the load off. By assigning different values to a set of switched loads controlled by the same dimming switch, you can create a “stepped” ramp up/fade down.

NOTE: This field is disabled for a CCT controller.

Level on Transition to Normal Hours/After Hours – The level the load will go to when transitioning between normal hour and after hours or vice versa. This slider is only enabled if After Hours is enabled for the room. Available values:

- Nothing – No change occurs.
- Go To Level – When this value is selected, the slider and text entry field are enabled and you can use either to select a specific value
- Keep Timer – If a load is set to turn off when a timer expires and the transition occurs, this value will retain the timer value. So for example, if during After Hours, a load was turned on manually at 6:00 AM and the **Override Time Till Off** parameter on the **Advanced** tab is set to 2 hours, and during that time period it transitions to Normal Hours, the load will retain that time amount and will then turn off at 8:00 AM.
- Last Non-Zero – The load goes to the amount specified by the Preset Level and Use Last Level parameters.
- Relinquish – Relinquishes the load at the level specified by the **Occupancy Sensor Priority** parameter on the **Technician** tab. The controller then looks at the next highest priority to determine what to do. If no other command exists at any priority level, the load will go to the **Partial Off Level** (0 by default).

Courtesy Level – This parameter provides the ability for a load that is not bound to a specific sensor in a room to go to a specified level if any sensor in the room detects occupancy. For example, in an open office that has 3 LMRC-111s and 3 LMDC-100s:

- 1st LMRC-111 (Load 1) is bound to Sensor 1
- 2nd LMRC-111 (Load 2) is bound to Sensor 2
- 3rd LMRC-111 (Load 3) is bound to Sensor 3
- Preset Level for each LMRC-111 is 75% and Courtesy Level for each LMRC-111 is 20%

The following will occur:

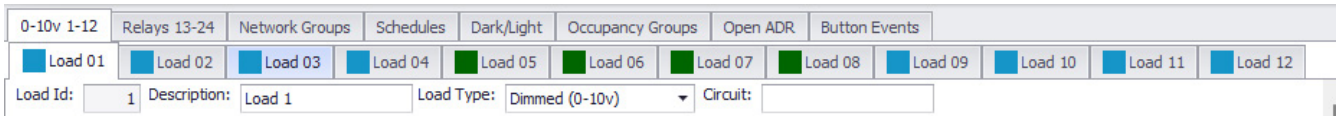
- Sensor 1 detects occupation – Load 1 goes to 75%, Load 2 and 3 go to 20%

- Sensor 1 remains occupied, Sensor 2 detects occupation – Load 1 remains at 75%, Load 2 goes to 75%, and Load 3 remains at 20%
- Sensor 1 and 2 remain occupied, Sensor 3 detects occupation – Load 1 and 2 remain at 75% and Load 3 goes to 75%
- Sensor 1 switches back to an unoccupied state, Sensor 2 and 3 remain occupied – Load 1 goes to 20% and Load 2 and 3 remain at 75%
- Sensor 1 remains unoccupied, Sensor 2 switches back to an unoccupied state and Sensor 3 remains occupied – Load 1 remains at 20%, Load 2 goes to 20% and Load 3 remains at 75%
- Sensor 1 and 2 remain unoccupied, Sensor 3 switches back to an unoccupied state – All Loads turn off

Panels

As mentioned previously, for panels loads are in a sub-tab, in groups of 12. A shown below, the label will change depending on the setting of the **Load Card** parameter in the **Panel Basic** tab. If set to “Switched”, the tab in section will be labeled “Relays x-x” but if set to “Dimming (0-10v)” the tab will be labeled “0-10v x-x”. See “Basic Tab” on page 173 for details.

Panel Loads Tab

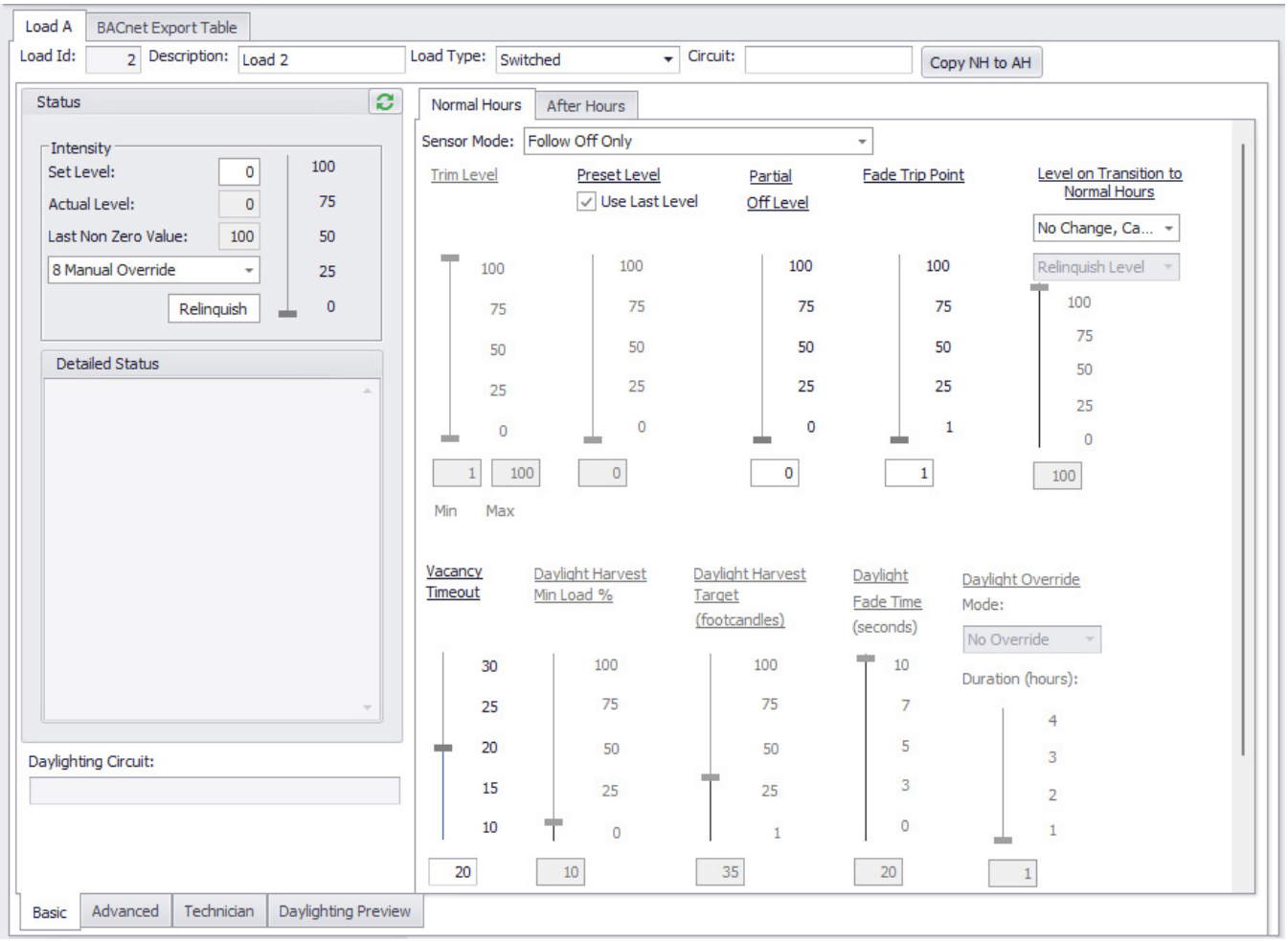


When you choose “Switched” or “Dimming (0-10v)” in the **Load Card** drop-downs, the **Load Type** parameter on each individual load connected to that drop-down will switch to that value. However, it is then possible to change the value for each individual load here. If the **Load Card** drop-down is set to Switched, the “Dimmed (010-v)” value will not be available for the **Load Type**.

NOTE: All parameters in the **Load Basic** tab for panels are identical for as for wired controllers. However, the **Courtesy Level** parameter is not displayed if the **Load Card** is set to “switched”.

Wireless Controllers

Wireless Load Basic Tab



Wireless controllers contain many of the same parameters as wired controllers, with the following differences noted below.

Normal Hours/After Hour Section

For the **Level on Transition to Normal Hours/After Hours** slider, the initial drop-down has different values than for wireless controllers, and an extra drop-down has been added. First drop-down values:

No Change, Cancel Override Timeout – No change occurs.

Go To Level – Will go to a specific level when the transition occurs.

No Change, Allow Override Timeout – If a load will is set to turn off when a timer expires and the transition occurs, this value will retain the timer value. So for example, if during After Hours, a load was turned on manually at 6:00 AM and the **Override Time Till Off** parameter on the **Advanced** tab is set to 2 hours, and during that time period it transitions to Normal Hours, the load will retain that time amount and will then turn off at 8:00 AM.

Go To Level If Occupied – Will go to a specific level when the transition occurs, only if the room is occupied.

If the first drop-down is set to either “Go To Level” or “Go To Level If Occupied”, then the second drop-down is enabled, with the following values:

Custom Level – This enables the slider, allowing you to choose a specific level the controller will go to.

Last Non-zero Level – The last level before the current level, other than Off

Last Non-zero Level If Occupied – If room is occupied, the last level before the current level, other than Off

NOTE: If the first slider is set to “Go To Level If Occupied”, then both “Last Non-zero” options will yield the same result.

Blink – Flashes the load off and on prior to a load turning off, If a load is commanded to turn OFF when the schedule switches From Normal Hours to After Hours (or vice versa). It blinks for the amount of time specified in the **Standby Time Delay** parameter (found on the **Advanced** tab).

Relinquish Level – Relinquishes the load at the level specified by the **Occupancy Sensor Priority** parameter on the **Technician** tab. The controller then looks at the next highest priority to determine what to do. If no other command exists at any priority level, the load will go to the **Partial Off Level** (0 by default).

The **Courtesy Level** slider found on the **Basic** tab for wired controllers is moved to the **Advanced** tab.

There are five additional sliders, a check box, and a drop-down for wireless controllers:

Vacancy Timeout – The amount of time the before the load turns off once a room is unoccupied.

The rest of the parameter have to do with the response from messages sent by the LMDL-600 daylight sensor (or in the case of the LMFS-601, its own daylight sensor or the sensor from another LMFS-601).

Daylight Harvest Min Load % – Determines the lowest level the lights will be dimmed to due to daylight conditions.

Daylight Harvest Target – The amount of light (in footcandles) the LMRC will try to create in the event that there is not sufficient daylight in the space. This is also called the daylight cap.

Daylight Fade Time – The number of seconds for the transition from the current level to the new target level will take, after a change in the amount of daylight has been detected.

Daylight Override Mode – The amount of time delay before daylighting control resumes, after daylighting control has been disabled due to a manual action such as a button or dimmer press. This works in conjunction with the value of the drop-down:

- Full Override – Allows the user to raise or lower the load (including going above the daylight cap).
- No Override – Allows the user to dim up and down below the daylight cap (you cannot adjust light above the daylight cap).
- Scene Override – Allows the user to change the load level only by using the LMSW-605 scene switch and not the LMDM-601 Dimmer.

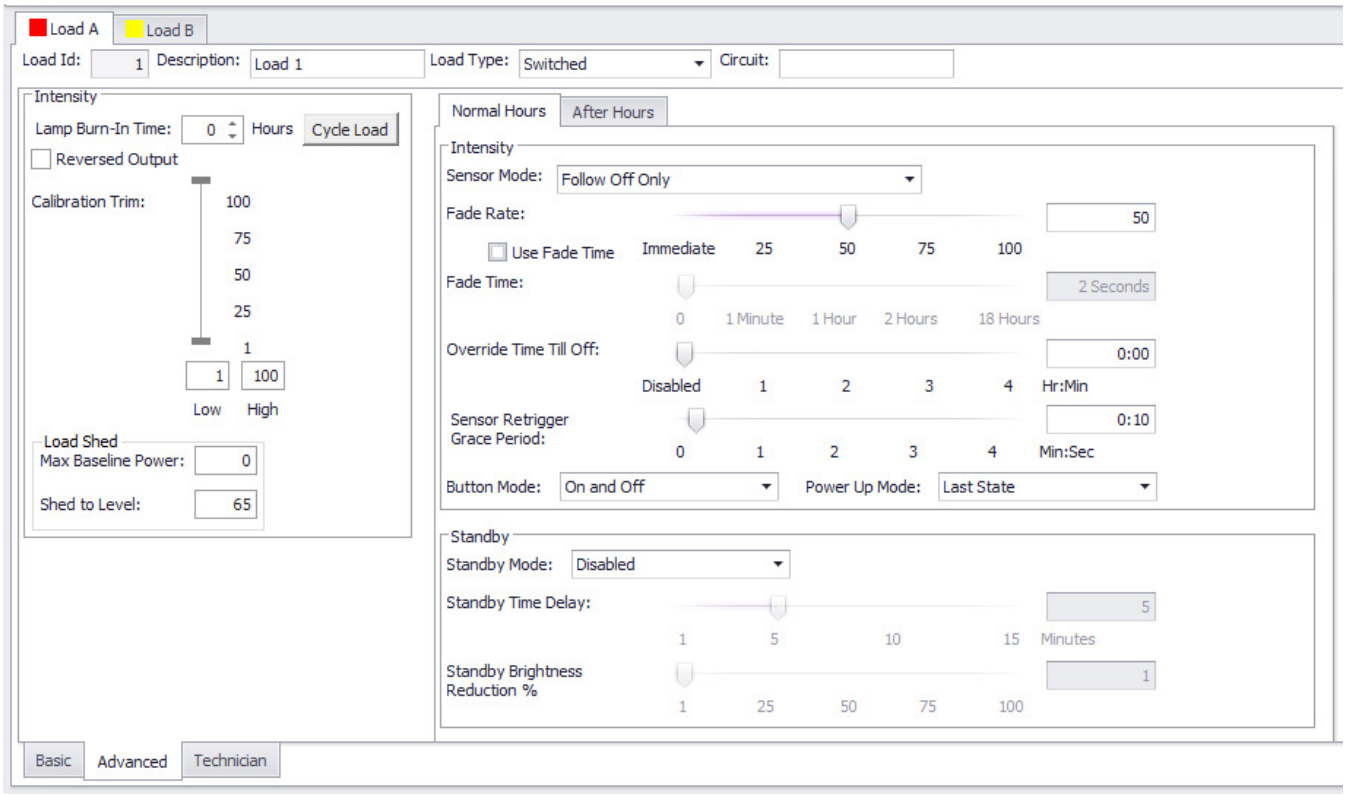
NOTE: This parameter is only enabled if the Daylight Harvesting switch on the Load **Technician** tab is enabled.

NOTE: If the lights are turned OFF due to control by an occupancy sensor or a switch, when the lights are turned back ON again, they will revert to the level determined by the LMDL-600 or LMFS-601.

Advanced Tab

Wired Controllers

Wired Load Advanced Tab



Intensity Section

Lamp Burn-in Time – Used for ballasts that require a burn-in period. Enter a time in hours. Once you click **Send**, the controller turns the load on and all other control of the load is disconnected so that the load remains on and can't be turned off for that time period (other than with a power cycle).

NOTE: Once the burn-in is complete, be sure to come back and set the time back to 0, or the next time you click send, it start the burn-in again.

Cycle Load – Click this button to toggle between an On state (it will be orange) and an Off State. While enabled, the load will continue to turn on and off every few seconds.

Reversed Output – This will reverse the levels so that a value of ON will turn the load OFF, and OFF will turn the load ON. Dimmed level values are also reversed, so for example, a value of 80 will send a value of 20 to the load.

Calibration Trim – This parameter allows you to specify a minimum and maximum level, which should be based on the specifications for the lamps being used for the load. These minimum and maximum amounts scale the response to the regular 0-100 level commands. So for example, if the **Low** amount here is set to 10 and the **High** to 92, then a Level value of 0 would actually set the load to 10 and a value of 100 would set it to 92. If you are also using a **Trim Level**, that amount is applied after scaling. So, in this example, setting the trim level to 85 would be equivalent to an actual amount of 69.7, since .85 * (92-10) = 69.7

NOTE: If the load is higher than this level and is shed, it will go to this level. If at or underneath this level, it will stay there during a shed.

Max Baseline Power – Currently, this parameter has no function.

Shed To Level – The maximum level the load will go to when it receives a Load Shed command. If the load is currently at a higher level, it will reduce to this amount. If it is currently at a lower level, it will remain at that level.

Normal Hours/After Hour Section

Sensor Mode – Determine how the load will respond to occupancy/vacancy commands. Available values:

- No Action – Do not respond to sensor
- Follow Off Only – Responds to vacancy commands only. Also referred to as Manual On.
- Follow On and Off – Responds to both occupancy and vacancy commands. Also referred to as Auto On.
- Follow On Only With Override Time Delay – The load responds only to Occupancy commands and once the load is on, it will not shut off for the length of time entered in the Override Time Till Off parameter. If the sensor registers vacancy and then back to occupancy, the time delay period restarts the countdown.

  NOTE: The **Override Time Till Off** parameter has its own functionality related to responding to a switch. If you select this option the amount of time specified in that parameter will apply both to its own functionality and to this option.
- Follow Off Only With Standby Time Delay – Responds to vacancy commands only. Instead of using the default value of one minute for the blink warn feature, the sensor will use the amount of time entered in the **Standby Time Delay** parameter.
- Follow On and Off With Standby Time Delay – Responds to both occupancy and vacancy commands. Instead of using the default value of one minute for the blink warn feature, the sensor will use the amount of time entered in the **Standby Time Delay** parameter.

Fade Rate – When the load changes values, the amount specified here will fade down/up using percentage per second. So if you specify a value of 50, it will take two seconds (50% per second).

Use Fade Time – If this is selected, **Fade Time** will be used instead of **Fade Rate**.

Fade Time – When the load changes values, it will fade down/up in the amount of time specified.

Override Time Till Off – If a load is commanded to turn OFF when the schedule switches From Normal Hours to After Hours (or vice versa), this is the amount of time the load will remain ON after manually being turned ON from a switch. When the amount of time expires, the load switches back to OFF.

If you want this to occur when switching to Normal Hours, set this value on the Normal Hours tab. If you want it to occur when switching to After Hours, set it on the After Hours tab.

Sensor Retrigger Grace Period – If the **Sensor Mode** is set to "Follow Off Only" (Manual), the load will turn back ON if the sensor registers occupancy during the amount of time specified here. This enables the sensor to function in Auto On mode for a temporary period of time. The default is 10 seconds. If set to 0, then this function is disabled.

Button Mode – Determines whether the load responds to commands from a button. Available values:

- Nothing – Do not respond to button
- Off Only – Respond only when the button is turned off

- On Only – Respond only when the button is turned on
- Off and On – Respond to both on and off messages

Power Up Mode – Determines the level will go to after power is restored following a power loss. Note that this amount will still be affected by the **Calibration Trim** and **Trim Level** settings. Available values:

- Last State – Return to the level the load was at before the power loss.
- Off – Load remains off (value of 0).
- On – Load turn on to full amount (value of 100).

Standby Mode – Once the sensor's time delay expires, Standby Mode determines what happens next.

- **Disabled** – The load turns off, if a load is commanded to turn OFF when the schedule switches From Normal Hours to After Hours (or vice versa), or if a load has been turned on by a switch during the override time and the override time expires.
- **Blink Warn** – Flashes the load off and on prior to a load turning off, if a load is commanded to turn OFF when the schedule switches From Normal Hours to After Hours (or vice versa), or if a load has been turned on by a switch during the override time and the override time expires. It blinks for the amount of time specified in the **Standby Time Delay** parameter.

  The load will also flash if a Blink Warn command is received from a wireless sensor. The blinking will begin one minute before the sensor turns the load off, unless you select one of the two **Sensor Mode** options that uses the **Standby Time Delay**, in which case it blinks for the amount of time specified in that parameter.
- **Dim Level** – After the sensor's time delay expires, light level will reduce by the amount specified in the **Standby Brightness Reduction** and then will turn off after the **Standby Time Delay** amount.
- **Blink Warn and Dim Level** – This option enables both the Blink Warn and Dim Level functionality, so the loads will both flash and dim by the specified amount before turning off.

Standby Time Delay – If "Blink Warn" or "Blink Warn and Dim Level" is selected, this is the amount of time that the load will flash.

Standby Brightness Reduction % – Determines the amount the load will dim when Standby Mode is set to "Dim Level" or "Blink Warn and Dim Level". For example if the light load is at 50% and the Standby Brightness Reduction % is set to 50%, after the occupancy sensor's time delay expires, the standby time delay begins, dimming the light load to 25%.

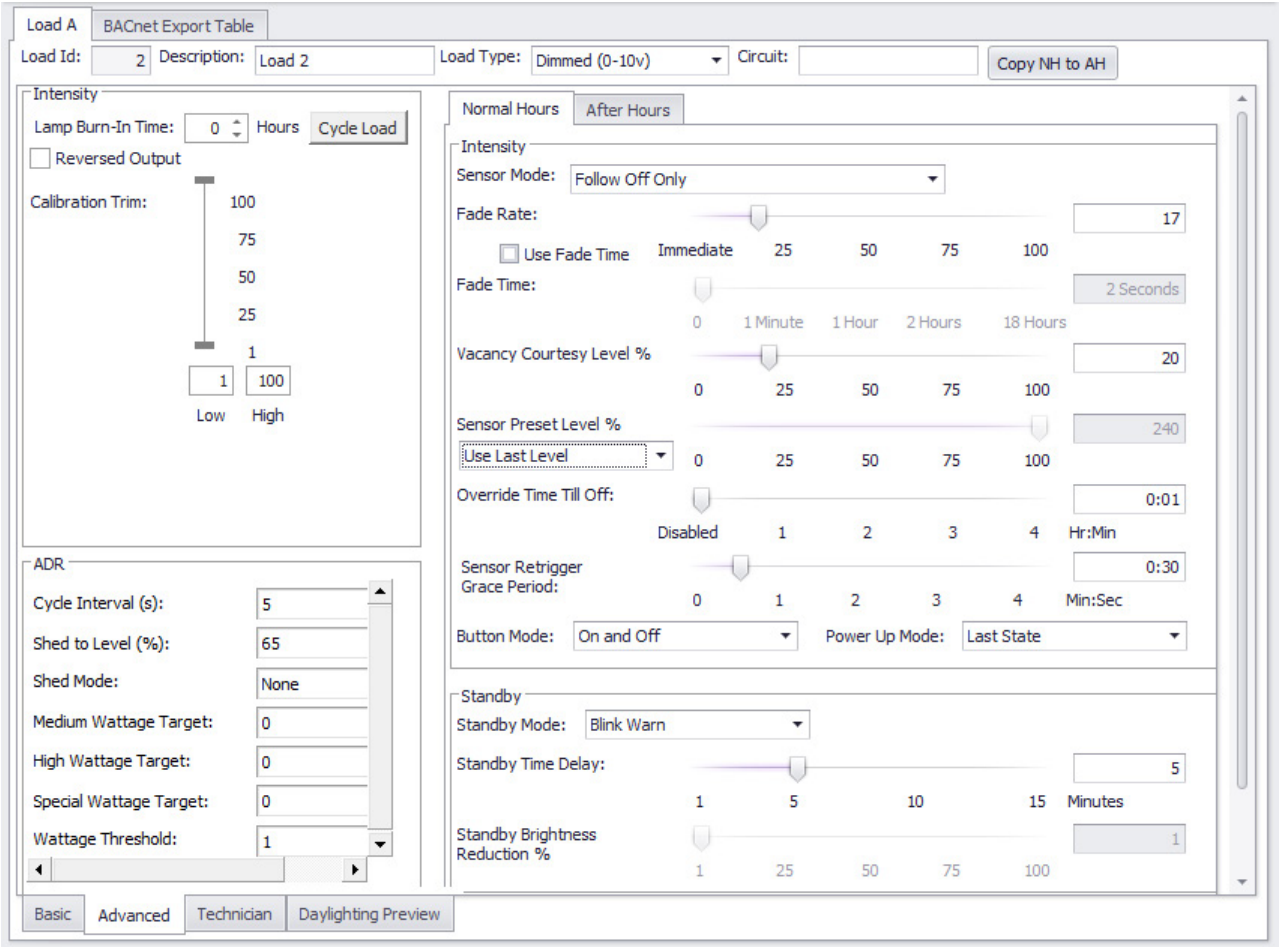
NOTE: For panels, if the **Load Card** parameter is set to "Switched", the Disabled and Blink Warn values are available since the load will not dim.

Wireless Controllers

Wireless controllers have an additional section on this tab for Automated Demand Response (ADR). As a result, the two Load Shed parameters found on this tab for wired controllers are removed and are replaced by the ADR section.

NOTE: The ADR section appears **only** if you select the "Show ADR Pages" check box on the Advanced tab of the **Preferences** dialog.

Wireless Load Advanced Tab



Cycle Interval(s) – The amount of time, in seconds, before the controller will check the wattage level to see if it should adjust the level

Shed to Level (%) – The initial amount that the load will shed to when it receives an ADR command. After shedding to that amount, the controller will adjust to raise or lower the level based on the specific command it receives (Medium, High, or Special) and the wattage amount specified for those values below. The rate of the change is fixed to approximately 3% per second.

NOTE: This parameter must be set to less than 100%. If set to 100% the Shed/OpenADR event is disabled.

Shed Mode – Available Values:

- None – the controller will not respond to ADR
- Override Forbidden – Occupants cannot override the ADR command
- Override Allowed – Occupants can override the ADR command with local dimmers are switches.

  IMPORTANT: If set to Override Allowed, when the ADR command is relinquished, the load will not return to the previous level, **even if the value was not overridden by an occupant.** You must select Override Forbidden in order for the level to return when the relinquish command is sent.

Medium Wattage Target – The target wattage for a medium response command.

High Wattage Target – The target wattage for a high response command.

Special Wattage Target – The target wattage for a special response command.

Wattage Threshold – The minimum amount of watts that the load can register to respond to ADR.

IMPORTANT: This setting needs to be set accurately in order for ADR to work. You should dim the load to the lowest setting (either by using the LMDM-601, the dimmer on the LMSW-605, or by pressing the Load button on the room controller). Then check the **Watts** parameter on the controller's **Basic** tab, and enter that amount for this parameter. You should set the value to at least 1.

Additionally two additional parameters are found on this tab that are not the **Advanced** tab for wired controllers.

Vacancy Courtesy Level % – This parameter is identical to the **Courtesy Level** parameter on the **Basic** tab for wired controllers. See page 156 for details.

Sensor Preset Level % – The level the load will go to when the sensor triggers occupancy.

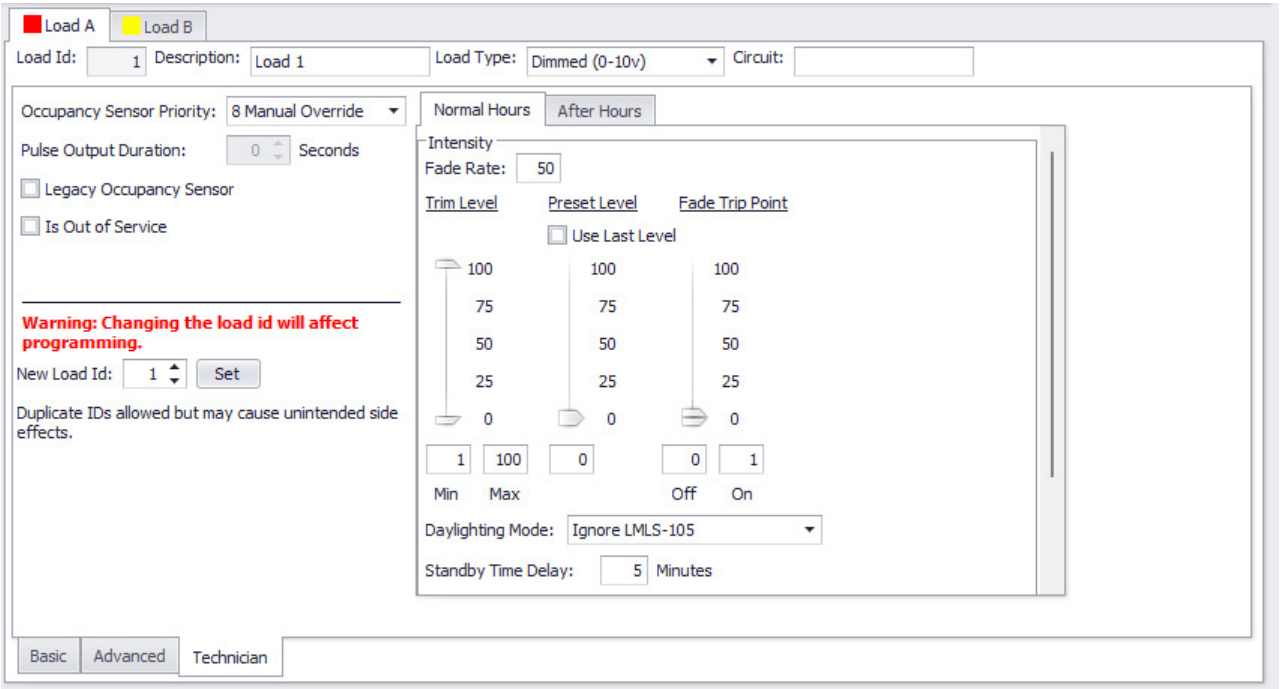
- - (dash) – This value enables the slider and text box so you can set a specific level.
- Use Last Level –
- Use Last Level When Occupied –

For **Standby Mode**, only the Disabled and Blink Warn values are available. The Dim value is not supported for wireless controllers.

Technician Tab

Wired Controllers

Wired Load Technician Tab



Occupancy Sensor Priority – This is the BACnet priority for all commands sent by a sensor.

Pulse Output Duration – This is used when **Load Type** is set to “Pulsed” or “Pulsed+”. It determines the amount of time a load will stay On before shutting Off, once an On command is sent. If set to “Pulsed”, it will increment in 1 second values. If set to “Pulsed+”, it will increment in 0.1 second values.

Legacy Occupancy Sensor – Select this checkbox if using Legacy sensor models that are not DLM products but do have a CAT5 connection capable of connection to a DLM system. This checkbox should be left unchecked unless it is specifically needed.

Is Out Of Service – If this checkbox is selected, all control of the load by the controller is disabled. The load will remain in its current state and will not change. (You must click **Send** before this occurs.)

New Load ID – This allows you to change the load ID of a specific load. When a controller is added to a room in LMCS, either manually or by discovery, load IDs are assigned to each room consecutively, starting with 1 for load 1, 2 for load 2, and so on. If a second controller is added, the first load is assigned the next available number, and so on. Once LMCS initiates communication with the room, it locks the room so the IDs can’t be changed, except by using this parameter.

There is normally no reason to change a load ID, but if a room controller that already has its load IDs locked ends up being moved to a different room, there could be a conflict with duplicate IDs. In this case, you can change the number to an unused ID. You must click **Set** after changing the number to change the ID within the controller.

Normal Hours/After Hour Section

The **Fade Rate**, **Preset Level**, **Fade Trip Point**, **Standby Time Delay** parameters are identical to those on the **Basic** and **Advanced** tabs, and are provided here for convenience.

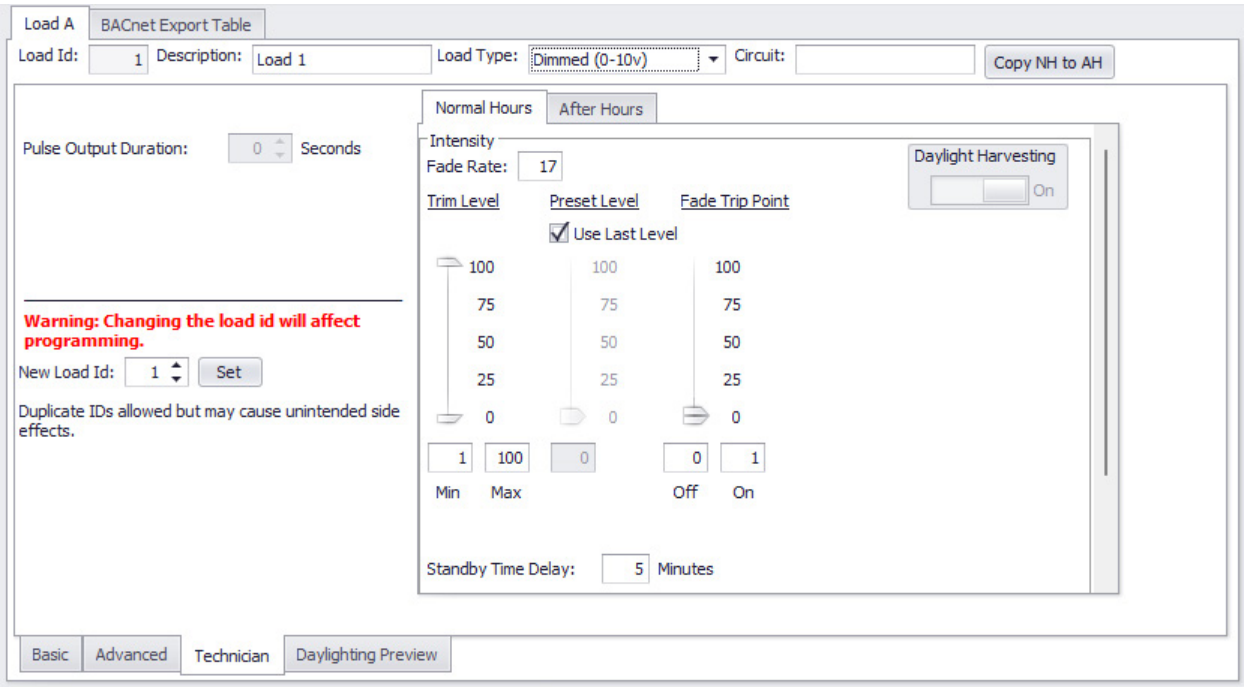
Trim Level – This parameter is the same as the one shown on the **Basic** tab. However, if the **Load Type** is “Switched”, trim level is a read only parameter on the **Basic** tab and can only be edited on this tab. The parameter has both a high trim (maximum amount) and low trim (minimum amount).

Daylighting Mode – This parameter is needed for use with the legacy LMLS-105. Available values:

- Ignore LMLS-105 – This value should be used unless an LMLS-105 is connected to the room.
- Follow LMLS-105 – If using an LMLS-105, this will cause the room controller to shut OFF the load if the LMLS-105 registers light above the defined threshold.
- Follow if not occupied – If using an LMLS-105 along with a legacy occupancy sensor, this will cause the room controller to shut OFF the load if sensor detects vacancy AND the LMLS-105 registers light above the defined threshold.

Wireless Controllers

Wireless Load Technician Tab



This tab has identical parameters as for wired loads, but with two changes.

- There is no **Daylighting Mode** parameter.
- A **Daylight Harvesting** switch shows whether Daylight Harvesting is turned on or off. When you calibrate the LMDL-600 or LMFS-601 for which this controller is a Follower, this switch will be automatically turned on and cannot be turned off. If the sensor has not been calibrated it will be off. If it is On, the **Daylighting Preview** tab will appear.

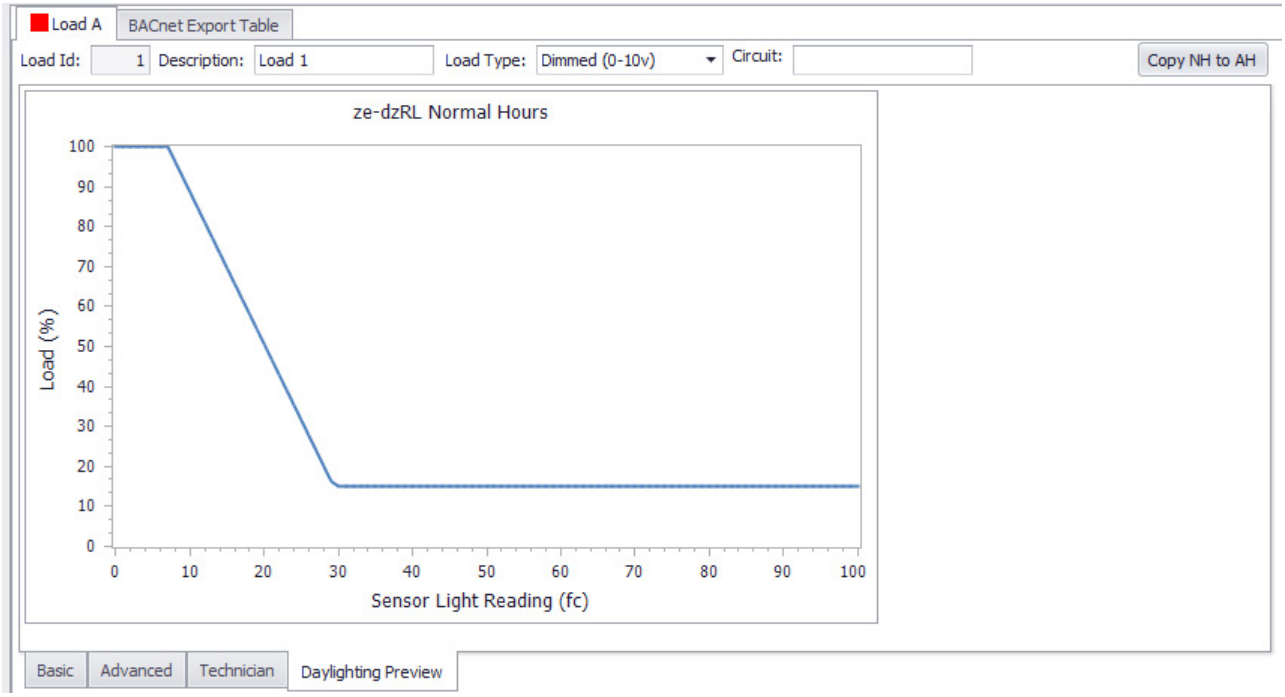
Daylighting Preview Tab

This tab appears for wireless room controllers only and displays what the load level will be at any given sensor reading (in foot-candles).

NOTE: This tab only appears if the **Daylight Harvesting** switch on the Load **Technician** tab is On (see above).

NOTE: This tab does not appear for wireless plug load controllers.

Wireless Load Daylighting Preview Tab



BACnet Export Table Tab

This tab displays a list of all BACnet points available on the room/plug load controller. You must first click **Read** for the room controller (or for the room or area) in order to load the Bacnet points list into LMCS.

NOTE: Before you can read in the BACnet points, BACnet must be enabled on the LMBR that is connected to the room controller/plug load controller. (BACnet is disabled by default.) For details on enabling BACnet, see "BACnet Information Section" on page 74.

BACnet Export Table Tab

Load A | BACnet Export Table

Total: 142 # Read Only: 11 # Read and Write:

Drag a column header here to group by that column

Name	Object Instance	Object Type	Units	Access Type	Write Priorities
5_9dfa.RSSI	50000	OBJECT_ANALOG_VALUE	dBm	Not Shown	-
5_9dfa.REED Master	50090	OBJECT_MULTI_STATE_VALUE	state	Read and Write	-
5_9dfa.Load Index	50091	OBJECT_CHARACTERSTRING_VALUE	state	Read Only	-
5_9dfa.Room	50093	OBJECT_CHARACTERSTRING_VALUE	state	Read Only	-
5_9dfa.StChan Cmd	50002	OBJECT_CHARACTERSTRING_VALUE	state	Read Only	-
5_9dfa.Run Time	50004	OBJECT_ANALOG_VALUE	hr	Not Shown	-
5_9dfa.Antenna Sel	50005	OBJECT_MULTI_STATE_VALUE	state	Read and Write	-
5_9dfa.Voltage	50010	OBJECT_ANALOG_VALUE	V	Read Only	-
5_9dfa.Current	50011	OBJECT_ANALOG_VALUE	A	Read Only	-
5_9dfa.Power	50012	OBJECT_ANALOG_VALUE	W	Read Only	-
5_9dfa.Energy	50013	OBJECT_ANALOG_VALUE	Wh	Read Only	-
5_9dfa.POST Status	50019	OBJECT_CHARACTERSTRING_VALUE	state	Read Only	-
5_9dfa.Dim Mode A	50020	OBJECT_CHARACTERSTRING_VALUE	state	Read Only	-
5_9dfa.Dim Max A	50021	OBJECT_ANALOG_VALUE	%	Read Only	-
5_9dfa.Dim Min A	50022	OBJECT_ANALOG_VALUE	%	Read Only	-
5_9dfa.Load A	50023	OBJECT_ANALOG_VALUE	%	Not Shown	-

Once the points are read into LMCS are displayed in the list, you can set the **Access Type** for each BACnet point, to either "Read Only", "Read and Write", or "Not Shown".

A Read Only point can be viewed by any software or device that is set up to communicate via BACnet. A Read and Write point can have its value changed by that software or device. If set to "Not Shown", that point will not be visible to the software or device.

CONTROLLERS - DMX LOADS

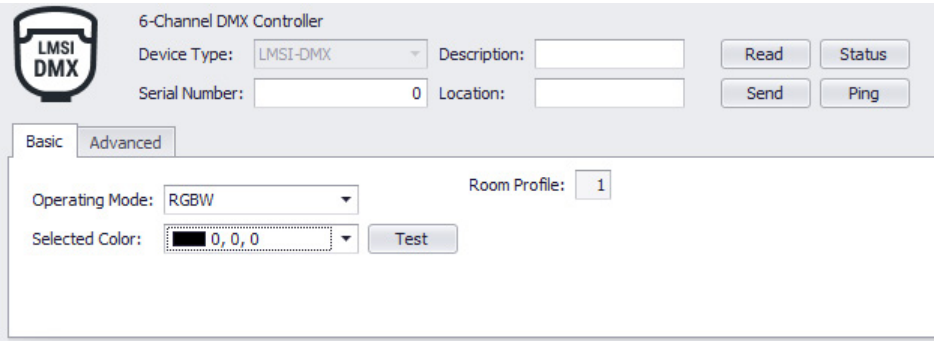
The LMSI-DMX is a controller specifically designed for controlling DMX loads. DMX fixtures can have up to 6 channels. Each channel is considered a separate load, but the loads combine to create a single light source. For example, an RGB fixture would have three separate LEDs for red, green,and blue, so controlling the value of each load will determine the end color of the light in the fixture.

For most practical applications, scenes will be used to send the desired values to each channel, as described below.

NOTE: DLM sends values between 1 and 100 while DMX has values from 0 to 255. For this reason, the DLM values are converted to specific DMX values, as described below in the Channel (Load) Section.

The **Basic** tab for the LMSI-DMX does not have most of the parameters found for regular controllers, but instead has parameters related to DMX control.

LMSI-DMX Basic Tab



Operating Mode – The value of this parameter should be selected based on the type of DMX fixture it will be controlling. This parameter determines the available value of the **Channel Type** for each of the six channel tabs. For info on Channel Type, see "Basic Tab" on page 155.

NOTE: The **Selected Color** parameter and **Test** button only display if the **Operating Mode** is set to "RGBW" or "RGB".

- Custom – If this is selected, each channel can be set to any **Channel Type**. This value is mostly intended for fixtures with additional functionality, such as rotating a fixture via DMX control.
- RGBW – If this is selected, channels 1-4 are set to Red, Green, Blue, and White respectively and channels 5 and 6 are disabled. Channel tabs 1-4 also have their respective colors shown within the tab.
- RGB – If this is selected, channels 1-3 are set to Red, Green, and Blue, respectively and channels 4-6 are disabled. Channel tabs 1-3 also have their respective colors shown within the tab
- CCT (Intensity/Temp) – If this is selected, channels 1 is set to Intensity, channel 2 is set to Temperature (the Kelvin value), and channels 3-6 are disabled.
- CCT (Warm/Cool) – If this is selected, channel 1 is set to Warm, Channel 2 is set to Cool, and channels 3-6 are disabled. This setting is intended for fixtures with Warm CCT and Cool CCT LEDs, allowing control of the final light color by balancing the two.

Selected Color – Allows you to assign a specific RGB color setting to the load for testing purposes. Note that when you select a specific color, you are selecting the values of the Red,Green, and Blue channels (and also white for an RGBW fixture), so selecting a color will change the value on all of those channels. Clicking the drop-down opens a dialog where you can select theme or standard colors, or click on a Color Picker to select from an RGB or HSB (Hue, Saturation, Brightness) palette.

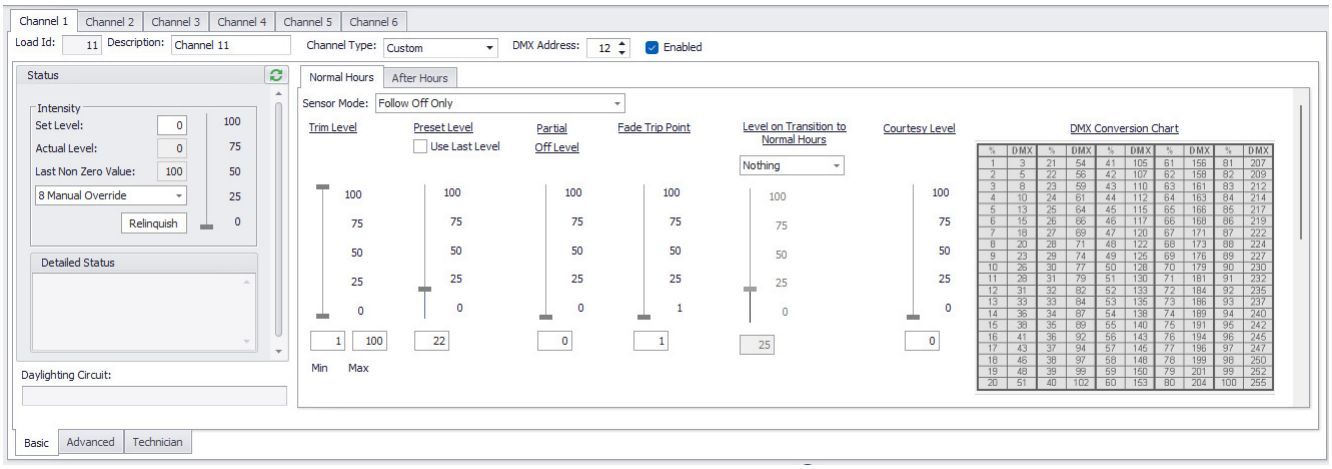
NOTE: Currently the drop-down only shows the R, G, and B values. However, for RGBW fixtures, the W value **is** still set, you just don't see it in the display.

When you click **Test**, that color is sent to the DMX load so it can be viewed in the actual setting. Since different DMX fixture respond to DMX values differently, the same RGB value may appear different on different fixtures.

Channel (Load) Section

For the LMSI-DMX, the top part of this section is different from regular loads. There are six tabs for the DMX Channels.

LMSI-DMX Channel Basic Tab



The **Load ID** and **Description** function the same as for all other controllers.

Channel Type – This parameter functions essentially as a label. For all **Operating Modes** except “Custom”,this parameter will be disabled and preset to the value expected for that fixture type (for example, “Red” on Channel 1 for an RGB fixture). If you select the “Custom” value for **Operating Mode**, then you can set the value for each channel. However, it is important to note that this is merely a label. The **fixture determines what each channel controls**, so when you send adjust that channel, that predetermined function will be controlled.

DMX Address – Each channel on a DMX fixture has a DMX address, which can typically be set on the fixture or by using a tool for that purpose. The DMX Address number set here **must** match the number on the fixture or the LMSI-DMX will not communicate with the fixture.

Enabled – This appears only if **Operating Mode** is set to “Custom”, and allows you to disable unneeded channels.

The **Channel Basic** tab looks identical to the Load Basic tab for regular controllers, but with the addition of the DLM to DMX conversion chart. As noted previously, DMX has 256 values while DLM percentages are from 1-100%. The conversion chart shows the exact DMX values sent when a DLM percentage is selected.

The parameters on this tab function identically to those for a regular DLM load. However, in terms of a practical application, the only parameter likely to be used is the preset level, and that will likely be set by a scene.

Keep in mind that unlike a regular load, where the level is the dimming amount, for DMX the value determines the amount of that particular channel function. For example, when you raise or lower a red, green, or blue value, you are changing the amount of that specific color in the mix, and **not** dimming the light.

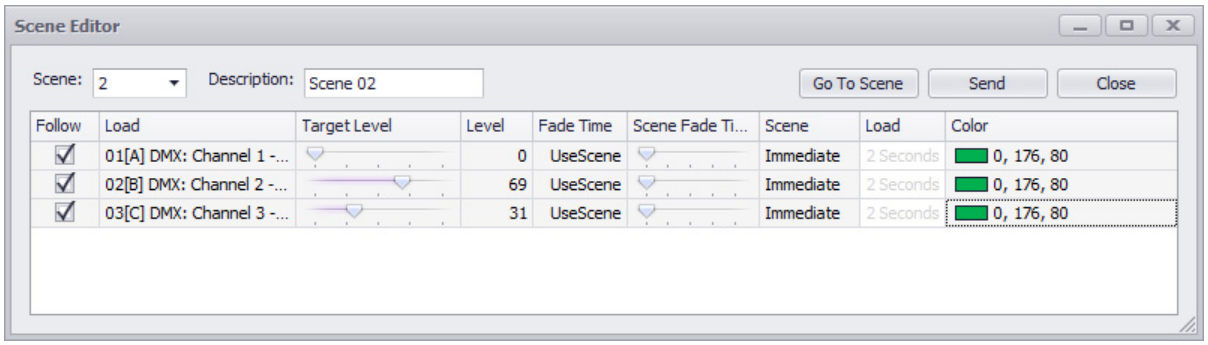
The **Channel Advanced** tab is also identical to the Load Advanced tab, but the only parameter in the Intensity section on the left side is **Lamp Burn-In Time**. The other parameters are removed because they do not apply.

Using Scenes With The LMSI-DMX

As mentioned previously, the most practical way to control a DMX fixture is by using scenes, which can be triggered by a switch, sensor ,or event. This provides the ability to easily send values to all used DMX channels. Scenes work the same as for regular loads, with the Level parameter setting the value for the channel. However, when the **Operating Mode** is set to “RGB” or “RGBW”, an additional column, for **Color**, is added to the Scene Editor. Clicking on that parameter in any of the Load rows will call up the color picker. As with the **Selected Color** drop-down on the **Basic** tab, selecting a color will change the value on all of three (or four) channels.

You must make sure that all channels used by that DMX fixture are enabled.

Scene Editor with Color Column



CONTROLLERS – CCT LOADS

The LMLM-101 fixture controller provides control over Correlated Color Temperature (CCT) and therefore have additional parameters in the Loads tab. These additional parameters and any differences between CCT loads and regular loads are documented in the following sections. If functionality is identical with regular loads, those parameters are not included here to avoid duplication. Please refer to the previous section on loads and relays for definitions of those parameters.

Parameters Appearing On All Tabs

The only difference between a CCT Load and regular load is the available values of the **Load Type**. CCT loads have the following values only: Lumenetix, Blanco 1, Blanco 2-1, Blanco 2-2, and Blanco 2-3. These correspond to the driver being used by the fixture controller. If the controller has been added to the room through Discovery, this parameter will be automatically set to the correct value. The “Lumenetix” value is used if the driver is not one of the standard Blanco drivers.

The **Load Type** value determines the settings of the **CCT Range** and **CCT Trim** on the **Advanced** tab, so if you are manually creating the project, be sure to select the correct driver.

NOTE: It is not possible to send the value you select in LMCS to the fixture controller—the fixture controller automatically knows what driver is connected to it. But since the CCT range and trim can be edited in LMCS based on the load type, it is still important that the value in LMCS be correct.

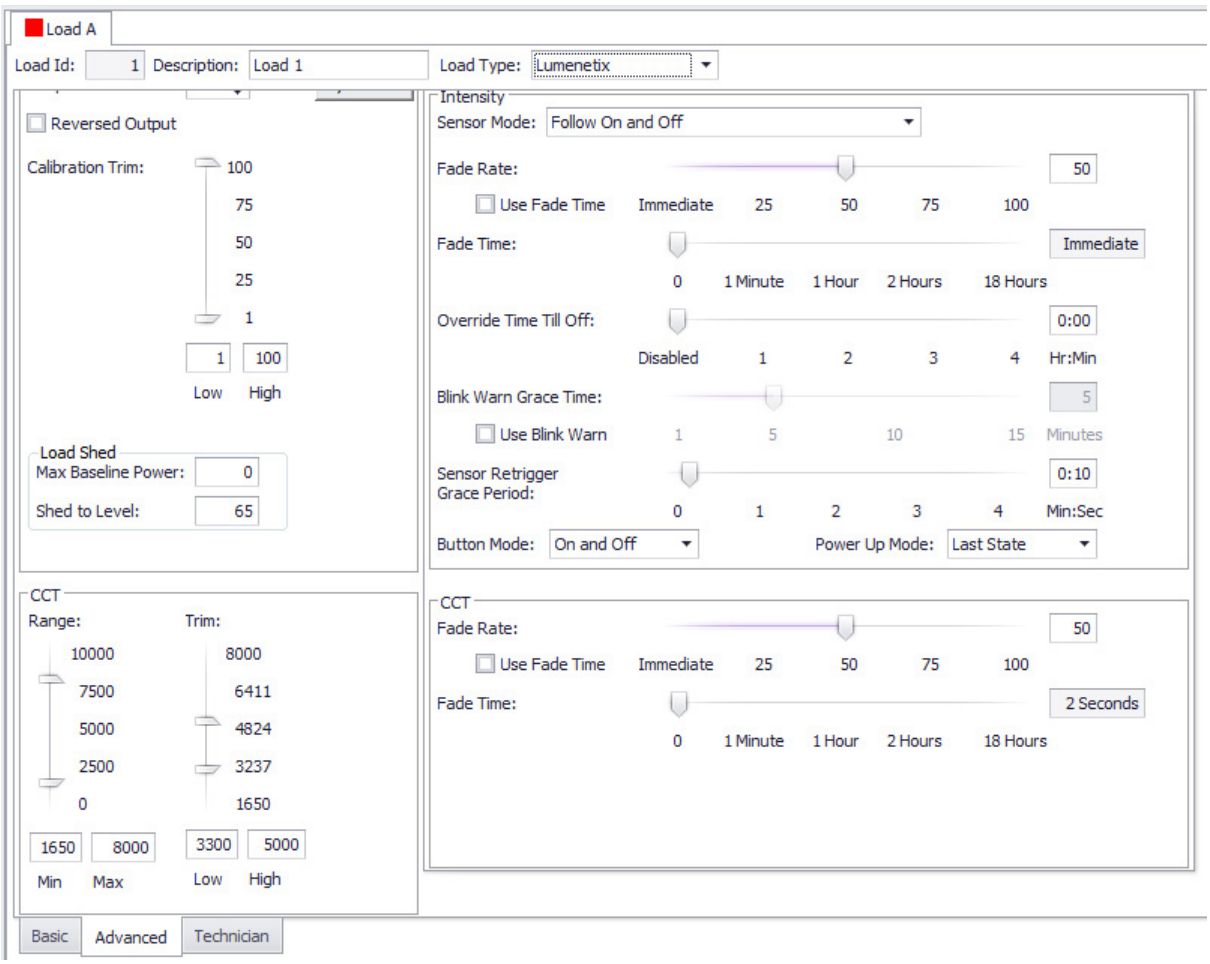
Basic Tab

For a CCT controller, a **CCT** section is enabled, containing **Set Level** and **Actual Level** parameters, These function similar to the same parameters in the **Intensity** section, but control the CCT level rather than the dimming level.

Additionally, the **Fade Trip Point** slider is disabled for CCT controllers.

Advanced Tab

CCT Load Advanced Tab



Two extra CCT Sections are added to the **Advanced** tab.

Range – If **Load Type** is set to anything other than “Lumenetix”, this parameter is read only and the Minimum and Maximum amounts are set based on the specific load type. If set to “Lumenetix”, the parameter becomes editable and you can set minimum and maximum values

Trim – Determines the minimum and maximum CCT levels that the load can go to, allowing you to limit the range of CCT change to an amount less than the range that the CCT driver is capable of. If you set the range outside of the **Range** amounts, the trim will have no effect.

Normal Hours/After Hour Section

Fade Rate – When the load changes CCT values, the amount specified here will fade down/up using percentage per second. So if you specify a value of 50, it will take two seconds (50% per second).

Use Fade Time – If this is selected, **Fade Time** will be used instead of **Fade Rate**.

Fade Time – When the load changes CCT values, it will fade down/up in the amount of time specified.

NOTE: These parameters only apply when the controller receives CCT change values from the LMSW-105-CCT. Fade time in CCT level cause by schedule events in the LMTS-101-CCT is determined by the start and end times of the schedule event

Technician Tab

The only addition on this tab is that a CCT section is added at the bottom containing the **Fade Rate** parameter. This parameter is identical to the one on the **Advanced** tab is included here for convenience

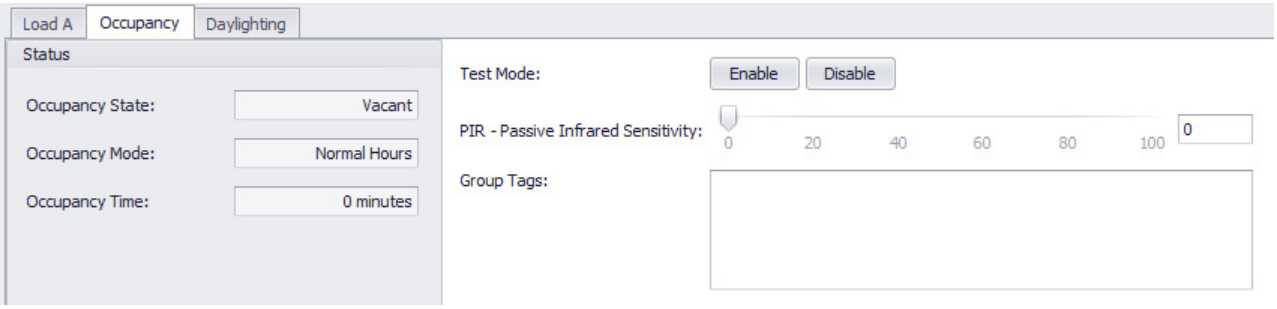
CONTROLLERS – TABS UNIQUE TO THE LMFS-601

The LMFS-601 is a fixture controller that includes occupancy and daylighting sensors. As a result, two additional tabs are added to the lower section.

Occupancy Tab

The left side of this tab include the **Occupancy Status** and **Occupancy Mode** parameters included on the LMFS-601 **Basic** tab. In addition, the **Occupancy Time** parameter shows how long the sensor has indicated occupancy. These values are updated regularly by the LMBR-650, but you can view the current values by clicking **Read**.

LMFS-601 Occupancy Tab



Test Mode – When you click **Enable**, the sensor will enter Test Mode. The Time Delay will be set to five seconds, allowing you to walk around the room and test the sensor. If you do not click **Disable**, after ten minutes, it will expire and revert to normal operation.

Passive Infrared Sensitivity – Sensitivity for the PIR detection. Setting the sensitivity to zero (0) will disable PIR detection in the sensor.

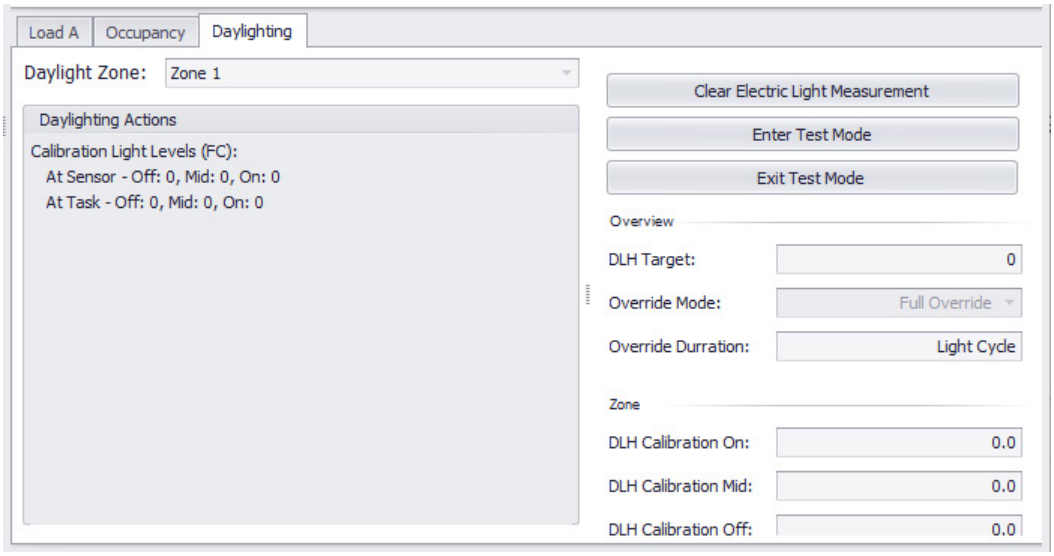
Group Tags – This will display the name of each Group the LMFS-601 has been assigned to in the room . See. "Creating and Editing Group Tags for Wireless DLM" on page 77 for details.

Daylighting Tab

The left side of this tab displays the calibration values for the LMFS-601. The LMFS-601 must be calibrated before it will operate correctly. See "Calibrating Wireless Daylighting Sensors" on page 86 for details.

On the right side, under the buttons the operational parameter values are displayed. These parameter values are selected during calibration.

LMFS-601 Daylighting Tab



NOTE: Unlike the LMDL-600 which has three zones, the LMFS-601 has only a single zone, so no other daylight zones can be selected.

NOTE: Actual values are displayed only for the Zone Leader. If the LMFS-601 has been designated as a Follower, then it is not functioning as a daylight sensor and will display a default or "0" value.

Once calibration has been completed, an automatic Electric Light Measurement will begin after 30 minutes, when all of the following is true:

- Sensor detects less than 1fc threshold for 30 mins
- Unoccupied for 30 mins
- No daylight test mode for 30 mins

If you re-enter calibration, the LMFS-601 will wait for 30 minutes after that calibration has been completed.

Daylight Test Mode

If you click **Enter Test Mode**, the following will occur, based on whether the unit has done Electric Light Measurement.

Daylighting Test Mode Before Electric Light Measurement

- If the LMFS-601's sensor reading is less than 1 footcandle, the connected loads will go to 100%.
- If the LMFS-601's sensor reading is greater than 50 footcandles, the connected loads will go to 10%.
- If the LMFS-601's sensor readings fail to reach the above 2 conditions, the connected loads will go to 50%.

Daylighting Test Mode After Electric Light Measurement

Light level control is based on the estimated light level at the task. So, if the estimated task light level is less than/greater than target level, it will dim the electric light up/down to bring it closer to the target level. By covering the sensor, the lights will go to an estimated level that will provide target level lighting at night (i.e. Target Level). By shining a beam of light into the sensor, the controller will go to DLH min (10% default).

Clicking **Exit Test Mode** will cause LMCS to quit test mode immediately. Because Test Mode takes about 5 minutes, this can be useful for situations in which if you're done testing but other people want to use the room and you don't want the lights turning on and off for even those few minutes more.

If the daylighting sensor is not behaving properly, click **Clear Electric Light Measurement**. This will clear the measurement of electric device and begin another Electric Light Measurement once the conditions are met..

CONTROLLERS – PARAMETERS UNIQUE TO PANELS AND ZONE CONTROLLERS

Panels and Zone Controllers contain the identical parameters as found on other controllers, but contain an extra tab for the bridge functionality. (Parameters on the **Basic**, **Advanced**, and **Technician** tabs are described in the section "Controllers and Panels" on page 148.)

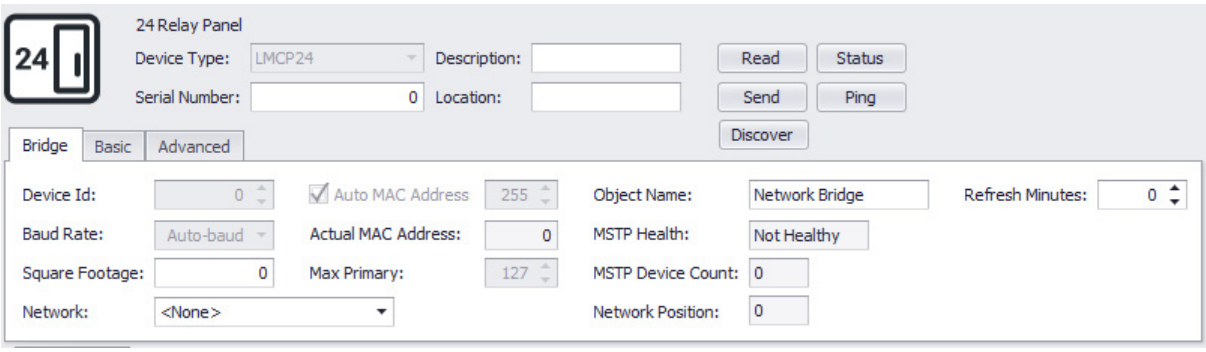
NOTE: The **Basic** tab for panels contains extra parameters, as described on the next page.

NOTE: The LMBC-300 is a stand alone bridge and as such contains the same bridge parameters documented here. The LMBC-650 and LMBC-600 also contain many of these parameters, but several of them do not appear. There are however, some differences between panels and the stand alone bridges. See "Interfaces – LMBC-650 Bridge" on page 214 and "Interfaces – LMBC-300 and LMBC-600 Bridges" on page 216 for details.

Bridge Tab

The parameters on this tab apply to communication with the bridge functionality, via BACnet.

Panels and Zone Controllers – The Bridge Tab



Device ID – The ID used for BACnet communication. This is set automatically during discovery, or when the **Serial Number** is entered if working off-line. (The ID defaults to the last six digits of the serial number.) For more details on the Device ID, see "Entering Serial Numbers and Device IDs in LMCS" on page 115.

Baud Rate – Set the baud rate for communication. DLM systems use 38400 by default. (Note that the default "Auto-baud" does not currently function—you must select a baud rate.)

Square Footage – Enter the square footage of the area controlled by all loads in the panel, or by all fixture controllers connected to the zone controller. This is used to calculate energy usage per square foot when monitoring using the Segment Manager or Network Controller application.

Network – If there are multiple BACnet networks (in situations with multiple routers), select the correct network that this device is connected to.

NOTE: If Network Devices have been added to the tree in the **Networks View** tab and the bridge has already been assigned to a network, that network will appear here. Conversely, if you select a network value here, the bridge will appear under that network in the tree.

Auto MAC Address – If you select this checkbox, the panel or zone controller will automatically select the **MS/TP MAC Address**. The MS/TP MAC address is an additional identifier, used by the devices on the network to communicate with each other. It is a number between 0 and 127. It is important to understand the difference between the device ID and the MAC Address. The Device ID is, in essence, a number that identifies “who” the devices is, while the MAC address identifies its “location”.

In a BACnet network, all the devices pass a token to each other to determine which device has control of communication over the network. The MAC address is used to “locate” other devices. When a device receives the token, it will take control of the communication and send messages to other devices as needed. It then passes the token to the device with the next highest MAC address. In order to do this, it sends an “Are you there?” message on the MAC address one higher than its own. If it receives a response, it passes the token. If it does not receive a response, it tries again on the next highest number, continuing in this manner until it receives a response. This “Are you there?” message is referred to as a Poll For Master.

NOTE: In order to send and respond to this Poll For Master message, a device must be designated as a master device. Other devices (slave devices) on the network will not respond, and cannot take control of the communication.

While the Device ID is fixed and should not change, the MS/TP MAC address can change as devices come on or drop off the network. By default, with the Auto MAC Address checkbox selected, the panel or zone controller will automatically assign a MAC address. When the panel or zone controller is powered up, it will check the network for other devices to determine if its current MAC address is being used by another device. If, not it will keep the same address, but if it is, and will assign an unused number between 32 and 127.

You can manually assign an MS/TP MAC address instead of having the panel or zone controller automatically assign the number. To do this, deselect the checkbox and enter a value. This can be useful, especially in larger networks where response time is important. Since the Poll For Master message checks the next highest address number and then increments that number until it finds a device, having devices with gaps between numbers can increase latency. If you have 10 devices, numbered 0–9, you will have optimal performance since no time is wasted sending the Poll For Master message to an unused number.

Actual MAC Address – This will display the MAC Address currently being used by the bridge.

Max Primary – The Max Primary parameter is another parameter that will cut down on latency. The value you set for this parameter is the highest number the LMCP will check when sending a Poll For Master message, before returning to 0. So, in the previous example, where there are 10 devices numbered 0–9, if you set the Max Primary to 9, it will never check addresses 10–127.

NOTE: If using the LMCP with a global controller such as a router, BAS or Network Controller, the global controller will always default to a MAC address of 0.

Object Name – This is a second identifier, along with the **Device ID**, and can be used to identify a device in a BACnet communication. By default this is set to the type of device. You can edit it to make it unique (for example, by adding a number to the existing text name). But this is not required and does not affect programming applications with Wattstopper products.

MSTP Health – This will display as “Unhealthy” if LMCS can’t find the BACnet network, or if devices on network drop off and then reappear while polling the network (indicating connection problems). If devices show up consistently, or if they disappear and do not show up again (which would indicate the device was disabled or disconnected), the status will display as “Healthy”.

MSTP Device Count – The number of devices on the BACnet network.

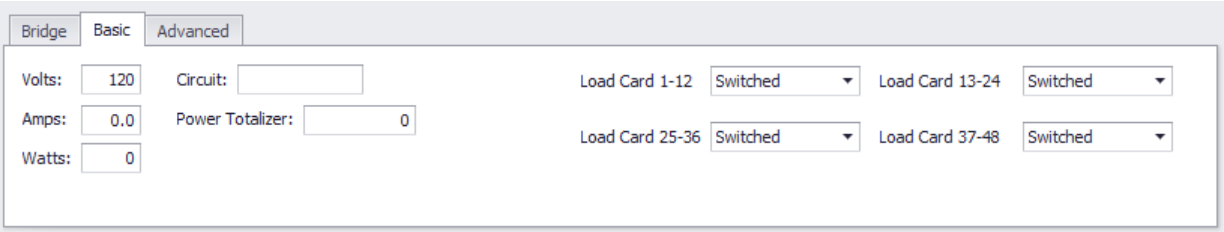
Network Position – This parameter is not used.

Refresh Minutes – If this is set to a value other than 0 (the default), the device will check the network once per number of minutes set here, to see if other devices known to be connected are still online.

Basic Tab

The **Basic** tab for panels is similar to the same tab for room controllers, but with up to four extra parameters added.

Basic Tab for Panels



The Load Card parameter(s) allow you to specify whether the LMCP panel is a switched or dimming panel. For the LMCP8 and LMCP8-10V, a single parameter will show Load Card 1-8. The LMCP24 and LMCP24-10V will have 2 parameters for relays 1-12 and relays 13-24. The LMCP48 and LMCP48-10V is shown above.

When you choose “Switched” or “Dimming (0-10v)” for these drop-downs, the **Load Type** parameter on each individual **Relay Basic** tab will switch to that value.

NOTE: This parameter is useful when setting up project off-line. However, once the panel is connected to LMCS, the available values for the **Load Type** parameter will reflect the actual panel card. In other words, if it is a switching panel, the “Dimming (0-10v)” value will not be available.

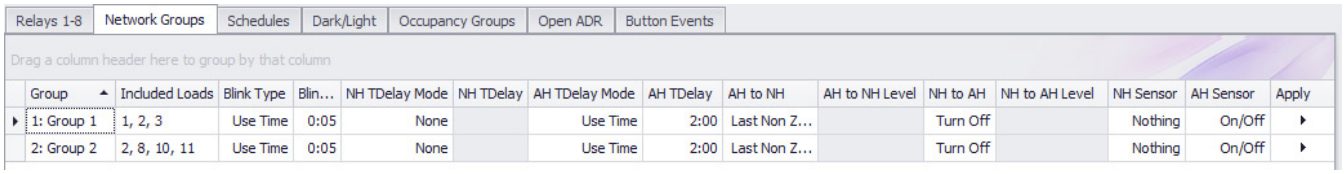
NOTE: It is possible to set some load cards to “Switched and others to “Dimming 0-10V”, however once you set a load card to “Dimming (0-10v)” all lower numbered cards will be set to the same value and cannot be changed.

Network Groups Tab

If any relays (loads) in a panel have been assigned to a network group in the **Network Group** dialog (or by using the LMCT-100), each of those groups will display on the **Network Groups** tab. For a zone controller, if you assign an LMFC-011 fixture controller (or a room controller) to a network group, and that controller is in the same room as a specific zone controller, then the groups will display on the tab for that zone controller.

NOTE: You can modify an existing group on this tab, changing parameter values or adding/removing loads. But you cannot create a group. That must be done on the **Network Group** dialog.

Network Groups Tab



Group	Included Loads	Blink Type	Blin...	NH TDelay Mode	NH TDelay	AH TDelay Mode	AH TDelay	AH to NH	AH to NH Level	NH to AH	NH to AH Level	NH Sensor	AH Sensor	Apply
1: Group 1	1, 2, 3	Use Time	0:05	None		Use Time	2:00	Last Non Z...		Turn Off		Nothing	On/Off	
2: Group 2	2, 8, 10, 11	Use Time	0:05	None		Use Time	2:00	Last Non Z...		Turn Off		Nothing	On/Off	

The parameters on this tab are identical to those on the **Network Group** dialog, with a few exceptions, as follows:

- The **Group** column displays the group number and description. It cannot be edited on this tab.
- If you click the **Included Loads** field in a specific row, a pop-up opens which allows you to add or remove loads in the panel or bridge.

  NOTE: If you remove all loads from the group, it will be removed from the tab. (If that group includes loads from another panel or bridge, it will still display when viewing that other panel or bridge.) Removing all loads does not delete the group—it will still exist on the **Network Group** dialog, but with no loads assigned to it.
- Clicking **Apply** functions the same as it does on the **Network Group** dialog, but in this case only sends the parameter values to the tabs for the included loads within this panel or bridge only. So if the group includes loads from more than one panel or bridge, changing parameter values on this tab and clicking Apply will not affect those other panels or bridges.

For details on all other parameters, see “Network Group Parameters” on page 56.

Schedules Tab

You can schedule up to 254 date and time based events per panel or zone controller. Each event is assigned to a group or scene, and determines one action for that group or scene. For each event, you specify the time the event occurs. You also specify the days of the week in which the event will occur. Additionally, you specify whether the event will occur on any day designated as a holiday.

If panels are networked and multiple panels/zone controllers use the same group number to control relays/fixture controllers, then any events scheduled in one panel will affect the other panels (since events are always assigned to a group number). By using different group numbers in different panels, you can limit which panels will respond to those scheduled events.

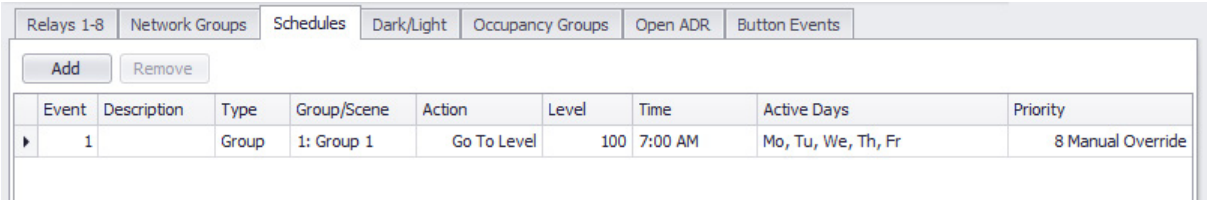
Timing for the events is controlled by the clock in the panel or zone controller where the events are stored. You can also designate a single panel/zone controller to function as a master clock for the entire network. See "DLM Site Time/Location" on page 141 for details.

Click **Add** to add an event to the table. To remove an existing event, click the arrow in the left column to highlight that row and click **Remove**.

To edit an event click in a field in the row for that event.

NOTE: If using a Network Controller, it is recommended that all scheduling be done in the Segment Manager or Network Controller application, to avoid possible conflicts.

Schedules Tab



Event – This designates the event number and can't be edited.

Description – This field is provided for documentation purposes.

Type – This determines whether the scheduled event controls a Network Group or a Scene.

Group/Scene – The number of the Group or Scene that the event controls. For a group, the drop-down displays all groups that include loads for this panel/zone controller. For scenes, the drop-down displays 16 scenes. Both the number and the description of the group/scene is displayed.

NOTE: While group commands can affect any networked panel, scene commands affect only the panel's "Room".

Action – Determines the action triggered by the event. Actions will affect all loads that are part of the selected Network Group or Scene. The available values change depending on whether the event controls a scene or group:

For Scenes, you have the choice of "Scene On" or Scene Off". For "Scene" On", all loads go to the levels set for the scene. For "Scene Off", all loads (that are part of the scene) are turned OFF.

For Groups:

- Go To Level – Set the load to the value of the **Level** parameter.
- Last Non-Zero – Set the load to the last non-zero level.
- Do Nothing – No change to the load.
- Normal Hours Override – Set the load to Normal Hours. All settings for Normal Hours within the group (programmed in the group editor) will be applied.
- After Hours Override – Set the load to After Hours. All settings for After Hours within the group (programmed in the group editor) will be applied.
- Normal Hours – Set the load to Normal Hours. All settings found on the Normal Hours tab for loads and sensors will be applied.
- After Hours – Set the load to After Hours. All settings found on the After Hours tab for loads and sensors will be applied.
- Relinquish – If the **Partial Off Level** for the load is a value other than 0. The load will go to that level. Or, if sensors are in the room, the loads will still wait for the sensor delay timers to expire before turning off. (The only exception is if the **Reversed Output** checkbox on the load's **Advanced** tab is selected, in which case the load would turn ON.)

If you require that the load turn off completely no matter the settings of other parameters and devices, use the "Go To Level" option and then set the **Level** parameter to "0".

NOTE: It is important to remember the difference between NH/AH values and the NH/AH Override values. If you select the Override options, the load will go to the values specified for the group, while the regular options will use the values specified for the loads and sensors. Also, be aware that the Override values are not available when programming from an LMCT-100.

Level – Value the load will go to, if **Action** is set to "Go To Level". This field is disabled for all other actions.

Time – Time the event occurs.

Active Days – Days the event occurs. In addition to selecting individual days of the week, you can also select “Holidays”. Holidays are assigned in the **Holidays** dialog. See “Setting Up Holidays For Use With Schedules” on page 58 for details.

Priority – Assigns the BACnet priority for the action. If a command at a higher priority (lower number) currently exists for the load, then this action will be ignored until all higher priority commands are relinquished. The default value is “8”.

Dark/Light Tab

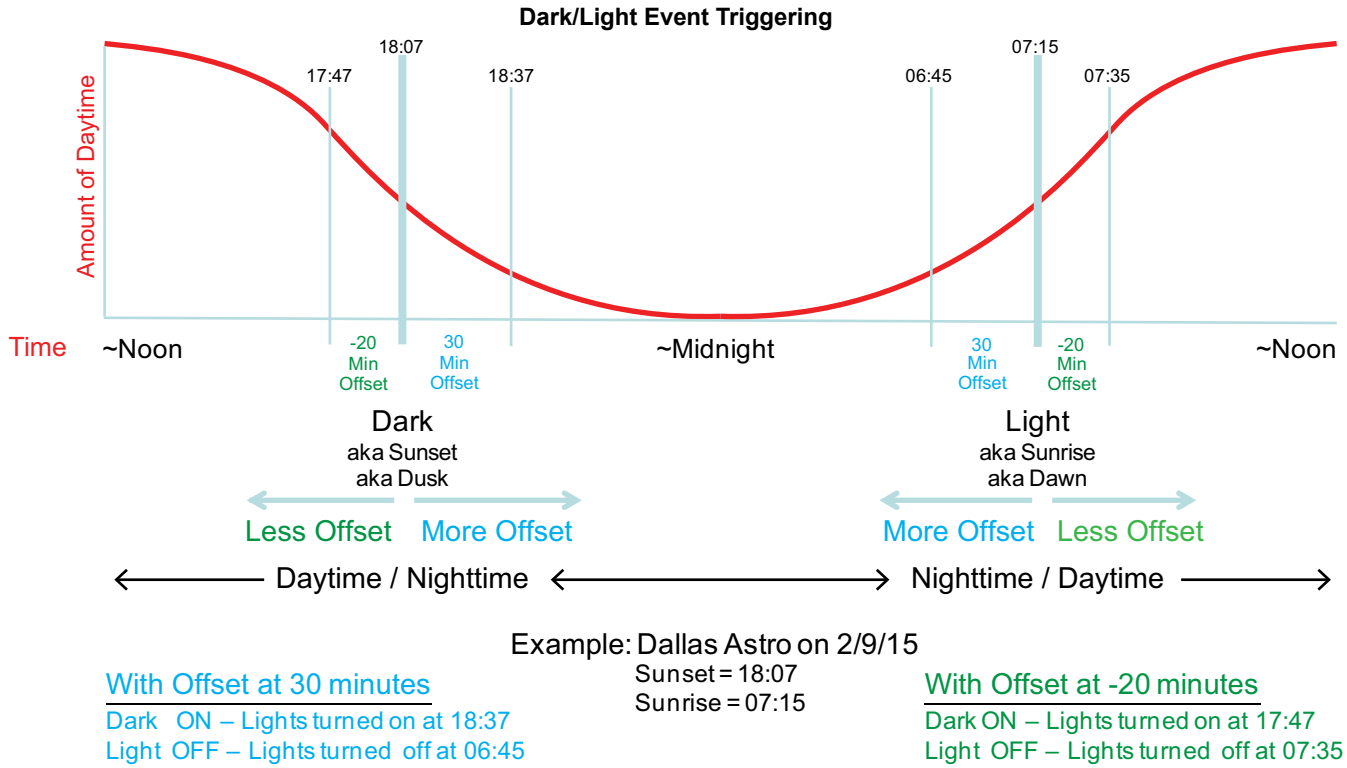
Similar to Schedules, the Dark/Light tab allows you to create events that will trigger actions. But these events are based on when it becomes dark outside (night) or light (day). You can program up to 32 separate dark/light events, and each event is assigned to a group or scene. For each event, you can select whether to base the change from dark to light and light to dark on either an astronomical calculation of sunrise and sunset, or from a photocell connected to an LMIO-301 or an LMIN-104 in Photocell mode. You can have multiple LMIO-301s/LMIN-104s connected to the network and assign different groups to different LMIO-301s/LMIN-104s, or you can have a singe LMIO-301/LMIN-104 but assign different light thresholds to different groups.

Each Dark/Light event has a **Dark Action** parameter and **Light Action** parameter. For each action you have the same choices as for scheduled events. While a typical application would be to turn lights on when it gets dark outside, you could also choose to have a specific group of lights turn off when it gets dark.

Astronomical Dark/Light Switching

When you use astronomical control of dark/light events, Dark is triggered by sunset and Light is triggered by sunrise, based on your location. Additionally, you have the ability to select an **Offset**. This parameter determines when the event will be triggered in relation to the actual sunrise and sunset time. A positive offset acts as if the time between sunrise and sunset was longer (more daytime), and a negative offset acts as if there were less time between sunrise and sunset (less daytime). So if you select -20 minutes, the Dark event will trigger 20 minutes before sunset and the Light event will trigger 20 minutes after sunrise. The diagram below shows the exact time the events will be triggered based on different offset values.

NOTE: Since sunrise and sunset time are determined by both your location and the date, you must configure the panel or zone controller with this information. See “DLM Site Time/Location” on page 141 for details.



Switching Based on Input From an LMIO-301/LMIN-104 and a Photocell

If you control dark/light events from an LMIO-301 or from an LMIN-104 set to Photocell mode, you can select the amount of light, in footcandles that will trigger the events. If the light rises above the footcandle amount, a light event will trigger, and if it drops to the exact footcandle amount, a dark event will trigger.

A **Delay** parameter allows you to set the number of minutes after the specified footcandle amount is reached before triggering the event. This helps prevent unwanted event triggering, for example, when the light temporarily gets darker because of a cloud passing over the sun.

Dark/Light Tab

Relays 1-8 | Network Groups | Schedules | Dark/Light | Occupancy Groups | Open ADR | Button Events

Add | Remove

Event	Type	Group/Scene	Included Loads	Input	Dark Action	Dark Load Level	Light Action	Light Load Level	Active Days	Setpoint	Delay	Offset	Priority
1	Group	1: Group 1	1, 2, 3, 4, 5,...	Astro	Go To Level	100	Relinquish		Mo, Tu, W...			0	8 Manual Override

Event – This designates the event number and can't be edited.

Type – This determines whether the scheduled event controls a Network Group or a Scene.

Group/Scene – The number of the Group or Scene that the event controls. For a group, the drop-down displays all groups that include loads for this panel/zone controller. For scenes, the drop-down displays 16 scenes. Both the number and the description of the group/scene is displayed.

Included Loads – Provides the ability to add/remove loads from this panel whether or not they are included in the selected group.

Input – Determines whether the event is controlled by Astro, LMIO-301 or LMIN-104. The LMIO-301 option will only display if an LMIO-301 has been added to the room. LMIN-104 option will only display if an LMIN-104 has been added to the room **and** its operating mode has been set to "Photocell". If there is more than one LMIO-301 or LMIN-104 in the "room", each one will be available in the drop-down separately. If a **Description** is added for an LMIO-301 or LMIN-104, it will show up in the drop-down with square brackets, to help identify each unit.

NOTE: Although dark/light events are typically associated with outside lighting control, the panel plus any other loads connected to the panel via the DLM network is considered a "room" for the purposes of LMCS.

Dark Action – Determines the action triggered by a Dark event. Actions will affect all loads that are part of the selected Network Group or Scene. The available values change depending on whether the event controls a scene or group:

For Scenes, you have the choice of "Scene On" or Scene Off". For "Scene" On", all loads go to the levels set for the scene. For "Scene Off", all loads (that are part of the scene) are turned OFF.

For Groups:

- Go To Level – Set the load to the value of the "Level" parameter.
- Last Non-Zero – Set the load to the last non-zero level.
- Do Nothing – No change to the load.
- Normal Hours Override – Set the load to Normal Hours. All settings for Normal Hours within the group programmed in the group editor) will be applied.
- After Hours Override – Set the load to After Hours. All settings for After Hours within the group programmed in the group editor) will be applied.
- Normal Hours – Set the load to Normal Hours. All settings found on the Normal Hours tab for loads and sensors will be applied.
- After Hours – Set the load to After Hours. All settings found on the After Hours tab for loads and sensors will be applied.
- Turn Off – Set the load to a value of 0. This turns the load OFF. (The only exception is if the **Reversed Output** checkbox on the load's **Advanced** tab is selected, in which case the load would turn ON.)

Dark Load Level – Value the load will go to, if **Dark Action** is set to "Go To Level". This field is disabled for all other actions.

Light Action – Determines the action triggered by a Light event. Available values are the same as for **Dark Action**.

Light Load Level – Value the load will go to, if **Light Action** is set to "Go To Level". This field is disabled for all other actions.

Active Days – Days the event occurs. In addition to selecting individual days of the week, you can also select “Holidays”. Holidays are assigned in the **Holidays** dialog. See “Setting Up Holidays For Use With Schedules” on page 58 for details.

Setpoint – The amount of foot candles that will determine when the Dark and Light events are triggered. (When the light becomes brighter than the Setpoint, it triggers the Light event, and when it becomes darker, it triggers the Dark event.) Enabled only for an LMIO-301 or LMIN-104 event.

Delay – Determines the amount of time after the Setpoint is reached that the event is actually triggered. This helps prevent unwanted event triggering, for example, when the light temporarily gets darker because of a cloud passing over the sun. Enabled only for an LMIO-301 or LMIN-104 event.

Offset – Determines when the event will be triggered in relation to the actual sunrise and sunset time. See the previous section on **Astronomical Dark/Light Switching** for more details. Enabled only for an Astro event.

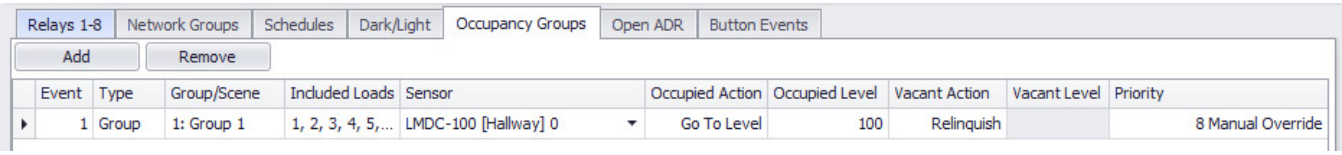
Priority – Assigns the BACnet priority for the action. If a command at a higher priority (lower number) currently exists for the load, then this action will be ignored until all higher priority commands are relinquished. The default value is “8”.

Occupancy Groups Tab

Similar to Schedules, the Occupancy Groups tab allows you to create events that will trigger actions. But these events are based on when the sensor registers a status of occupancy or vacancy. You can program up to 99 separate occupancy group events, and each event is assigned to a group or scene.

NOTE: A sensor must be assigned to the room before an Event can be added.

Occupancy Groups Tab



Event – This designates the event number and can’t be edited.

Type – The is determines whether the scheduled event controls a Network Group or a Scene.

Group/Scene – The number of the Group or Scene that the event controls. For a group, the drop-down displays all groups that include loads for this panel/zone controller. For scenes, the drop-down displays 16 scenes. Both the number and the description of the group/scene is displayed.

Included Loads – Provides the ability to add/remove loads from this panel whether or not they are included in the selected group.

Sensor – Determines which sensor controls the group

Occupied Action – Determines the action triggered when the sensor registers occupancy. Actions will affect all loads that are part of the selected Network Group or Scene. The available values change depending on whether the event controls a scene or group:

For Scenes, you have the choice of “Scene On” or Scene Off”. For “Scene” On”, all loads go to the levels set for the scene. For “Scene Off”, all loads (that are part of the scene) are turned OFF.

For Groups:

- Go To Level – Set the load to the value of the “Level” parameter.
- Last Non-Zero – Set the load to the last non-zero level.
- Do Nothing – No change to the load.
- Normal Hours Override – Set the load to Normal Hours. All settings for Normal Hours within the group programmed in the group editor) will be applied.
- After Hours Override – Set the load to After Hours. All settings for After Hours within the group programmed in the group editor) will be applied.
- Normal Hours – Set the load to Normal Hours. All settings found on the Normal Hours tab for loads and sensors will be applied.
- After Hours – Set the load to After Hours. All settings found on the After Hours tab for loads and sensors will be applied.
- Turn Off – Set the load to a value of 0. This turns the load OFF. (The only exception is if the **Reversed Output** checkbox on the load’s **Advanced** tab is selected, in which case the load would turn ON.)

Occupied Level – Value the load will go to, if **Occupied Action** is set to “Go To Level”. This field is disabled for all other actions.

Vacant Action – Determines the action triggered when the sensor registers vacancy. Available values are the same as for **Occupied Action**.

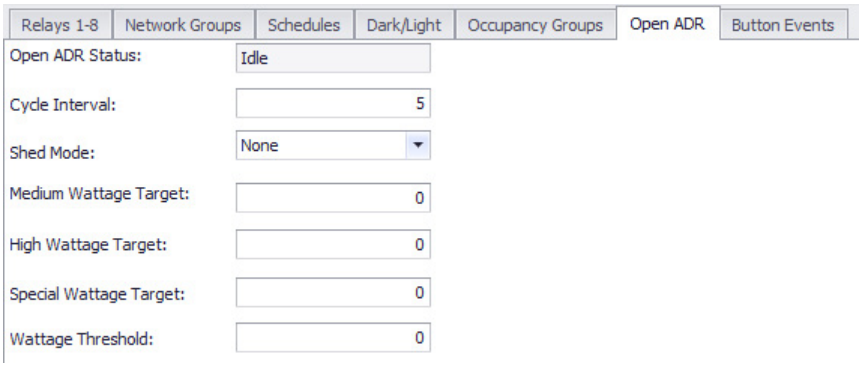
Vacant Level – Value the load will go to, if **Vacant Action** is set to “Go To Level”. This field is disabled for all other actions.

Priority – Assigns the BACnet priority for the action. If a command at a higher priority (lower number) currently exists for the load, then this action will be ignored until all higher priority commands are relinquished. The default value is “8”.

OpenADR Tab

The parameters on this tab are used with a Network Controller (or other BACnet application) to support Open Automated Demand Response.

OpenADR Tab



OpenADR Status – Indicates the current OpenADR status in the room. This will always be “Idle” unless it receives a command from the Network Controller.

Cycle Interval – The amount of time, in seconds, that the bridge or panel will check the wattage

Shed mode – Available Values:

- None – the controller will not respond to ADR
- Override Forbidden – Occupants cannot override the ADR command
- Override Allowed – Occupants can override the ADR command with local dimmers are switches.

  IMPORTANT: If set to Override Allowed, when the ADR command is relinquished, the load will not return to the previous level, **even if the value was not overridden by an occupant.** You must select Override Forbidden in order for the level to return when the relinquish command is sent.

Medium Wattage Target – The target wattage for a medium response command.

High Wattage Target – The target wattage for a high response command.

Special Wattage Target – The target wattage for a special response command.

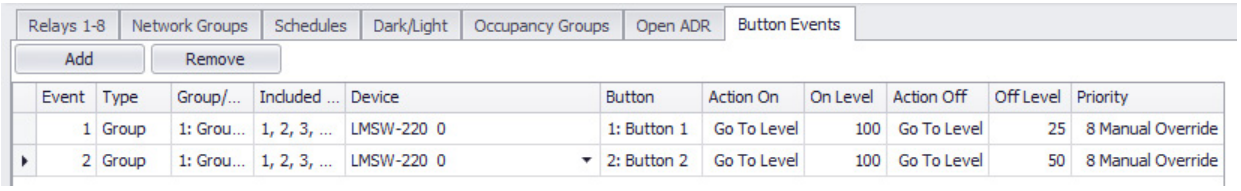
Wattage Threshold – The amount of wattage (plus or minus) that the loads in the room must meet the target. If the wattage exceeds the target, the bridge will dim or turn loads ON/OFF to meet the target.

IMPORTANT: This setting needs to be set accurately in order for ADR to work. You should dim the load to the lowest setting (either by using the LMDM-601, the dimmer on the LMSW-605, or by pressing the Load button on the room controller). Then check the **Watts** parameter on the controller’s **Basic** tab, and enter that amount for this parameter. You should set the value to at least 1.

Button Events Tab

The Occupancy Groups tab allows you to create events that will trigger actions based on pressing/releasing a button on a switch. You can assign any DLM switch, or a non-DLM switch connected to an LMIN-104 or LMIO-101.

Button Events Tab



Event	Type	Group/...	Included ...	Device	Button	Action On	On Level	Action Off	Off Level	Priority
1	Group	1: Grou...	1, 2, 3, ...	LMSW-220 0	1: Button 1	Go To Level	100	Go To Level	25	8 Manual Override
2	Group	1: Grou...	1, 2, 3, ...	LMSW-220 0	2: Button 2	Go To Level	100	Go To Level	50	8 Manual Override

Event – This designates the event number and can’t be edited.

Type – This determines whether the scheduled event controls a Network Group or a Scene.

Group/Scene – The number of the Group or Scene that the event controls. For a group, the drop-down displays all groups that include loads for this panel/zone controller. For scenes, the drop-down displays 16 scenes. Both the number and the description of the group/scene is displayed.

Included Loads – Provides the ability to add/remove loads from this panel whether or not they are included in the selected group.

Device – Selects the DLM switch or LMIN-104/LMIO-101 assigned to the event. The LMIO-104 must be set to Normal mode in order to show up in the drop-down

Button – Selects the button on the switch assigned to the event

Action On – Determines the specific action that will happen when the load is turned ON. Available values:

- Go To Level – Set the load to the value of the **Level** parameter.
- Last Non-Zero – Set the load to the last non-zero level.
- Do Nothing – No change to the load.
- Normal Hours Override – Set the load to Normal Hours. All settings for Normal Hours within the group (programmed in the group editor) will be applied.
- After Hours Override – Set the load to After Hours. All settings for After Hours within the group (programmed in the group editor) will be applied.
- Normal Hours – Set the load to Normal Hours. All settings found on the Normal Hours tab for loads and sensors will be applied.
- After Hours – Set the load to After Hours. All settings found on the After Hours tab for loads and sensors will be applied.
- Relinquish – If the **Partial Off Level** for the load is a value other than 0. The load will go to that level. Or, if sensors are in the room, the loads will still wait for the sensor delay timers to expire before turning off. (The only exception is if the **Reversed Output** checkbox on the load's **Advanced** tab is selected, in which case the load would turn ON.)

If you require that the load turn off completely no matter the settings of other parameters and devices, use the "Go To Level" option and then set the **Level** parameter to "0".

NOTE: It is important to remember the difference between NH/AH values and the NH/AH Override values. If you select the Override options, the load will go to the values specified for the group, while the regular options will use the values specified for the loads and sensors. Also, be aware that the Override values are not available when programming from an LMCT-100.

On Level – The level the load will go to when the button turns the load ON. Only enabled if **GoToLevel** is selected.

Action Off – Determines the specific action that will happen when the is turned OFF. Available values are the same as **Action Off**.

Value Off Level – The level the load will go to when the button turns the load OFF. Only enabled if **GoToLevel** is selected.

Priority – Assigns the BACnet priority for the action. If a command at a higher priority (lower number) currently exists for the load, then this action will be ignored until all higher priority commands are relinquished. The default value is "8".

OCCUPANCY SENSORS

This section documents the tabs for all occupancy sensor models. Depending on the type of sensor (PIR only, Ultrasonic only, or Dual technology), the parameters on the **Normal Hours** and **After Hours** tabs will change, as noted in the field descriptions. Additionally, the **Network Groups** tab only appears under certain circumstances, as described below.

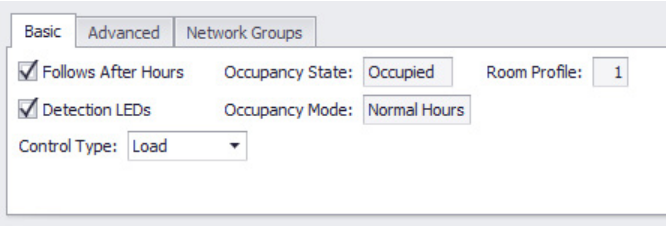
For wireless sensors, the only programmable parameters are found on the **Basic**, **Advanced**, and **Technician** tabs. All other control is done through wireless scenes, accessed from the wireless **Scene Editor**. For details, see "Creating and Editing Scenes for Wireless DLM" on page 78.

NOTE: A maximum of 32 occupancy sensors can be assigned to control a load. This applies whether the sensor is controlling the load directly or if it is assigned to control a group.

Basic Tab

Wired Sensors

Wired Sensor Basic Tab



Follows After Hours – This is selected by default. If it is not selected, the sensor will ignore the settings on the After Hours tab and use the Normal Hours settings all the time.

NOTE: If the **After Hours Enabled** checkbox on the **Basic** tab for a **Room** is not selected, then this parameter will not be visible, since the after hours feature is not being used for the room.

Detection LEDs – Enables or Disables the visible LED indicators on the face of the occupancy sensor. Note that disabling the LEDs will not affect the operation of the sensor.

Control Type – Determines whether the sensor controls individual loads or scenes. The Load/Scene Binding section of the window changes depending on the value selected here.

NOTE: Sensors can also control a group, but that is assigned in the **Occupancy Groups** tab for a panel or LMZC-301.

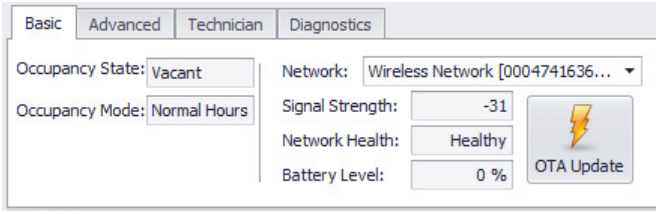
Occupancy State – If LMCS is connected to the room and you click **Read**, this field displays the current state of the sensor. An “Occupied” state does not necessarily mean that the lights in the space are on since the loads might be set to Manual On.

Occupancy Mode – If LMCS is connected to the room and you click **Read**, this field displays whether the Sensor is set to Normal Hours or After Hours.

Room Profile – This read only parameter indicates the current profile selected at the room level. This parameter is displayed only if the room includes a device that supports profiles (currently, the LMDI-100, LMIO-102, and LMPS-104). For the LMDI-100, you must also select the **Partition Support** checkbox before this parameter is displayed.

Wireless Sensors

Wireless Sensor Basic Tab



Wireless sensors contain identical parameters as wired sensors, but also include additional parameters related to the wireless Network.

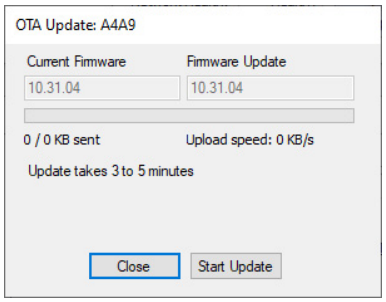
Network – The Network (and therefore the LMBR-650) that the LMRC is communicating with. This will initially be the network that you originally selected during the discovery process. It can be changed to a different network, if desired. However, the **sensor must be within communication distance of the LMBR**. It is possible for paired devices in a room be on different networks.

Signal Strength – Displays the Received Signal Strength Indicator (RSSI) value

Network Health – This will display as “UnHealthy” if the signal is less than -75

OTA Update – Click this button to update the firmware of the device “over the air”. A dialog opens. It displays the current version in the device and the most recently available version, which is the version stored in the Firmware folder within the LMCS application on the PC. If a newer version is available on the cloud, a dialog will inform you of this and allow you to download that version. **You must wake up the sensor by pressing the Configuration button before starting the update.** Click **Start Update** to update the device. After the device completes updating it will restart. This can take a minute before it begins communicating with other devices again.

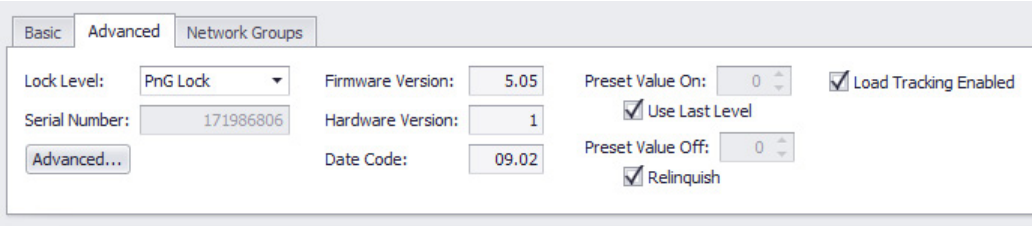
OTA Update



NOTE: Occasionally LMCS may not be able to establish communication with the device in order to update it. If you get an error, try clicking **Start Update** to try the update again.

Advanced Tab

Wired Sensor Advanced Tab



Parameters from **Lock Level** to **Date Code** are common to all devices. See "Parameters on the Advanced Tab Common to All Devices" on page 150 for details on these parameters.

For **wired sensors only**, the following additional parameters appear

Preset Value On – If this is enabled, this is the level all loads bound to the sensor will go to when the sensor registers occupancy. This parameter is disabled if **Use Last Level** is selected.

Use Last Level – If this is selected, each load bound to this sensor will return to its previous non-zero level when the sensor registers occupancy.

Preset Value Off – If this is enabled, this is the level all loads bound to the sensor will go to when it registers vacancy. This parameter is disabled if **Relinquish** is selected.

Relinquish – If this is selected, the Relinquish command will be sent to each load bound to this sensor, at the priority specified by the **Occupancy Sensor Priority** parameter on the **Technician** tab for the load. The load's controller then looks at the next highest priority to determine what to do. If no other command exists at any priority level, the load will go to the **Partial Off Level**, set on the **Basic** tab for the load (0 by default).

Load Tracking Enabled – If the sensor is bound to a room controller, this checkbox should always be selected. This allows for the sensor to understand which loads are ON/OFF in order to properly manage presentation mode, and create error messages in the event that the sensor is not bound to any loads.

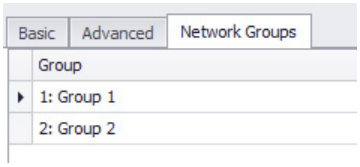
If the sensor is bound to a panel, this checkbox should not be selected. For panels, the Load IDs are not handled the same way. Instead of the sensor telling the panel which loads should turn on and when, the panels listen for certain MAC addresses from the sensors in order to determine if that sensor should control it's loads.

Network Groups Tab

The Network Groups tab is only visible if the sensor has been selected and assigned to a network group, on the **Occupancy Groups** tab for bridges, panels, and zone controllers. This tab is read only and simply lists the network groups assigned to the sensor.

NOTE: This only applies for wired sensors.

Sensor Network Groups Tab



Technician Tab

This tab is found for all wireless devices. For sensors, it contains only a single parameter, **IPv6 Address**. For details see "LMFS-601 Fixture Controller" on page 151.

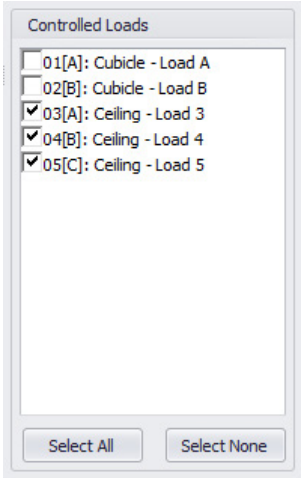
Diagnostics Tab

This tab is found for all wireless devices. For details, see "Diagnostics Tab" on page 152.

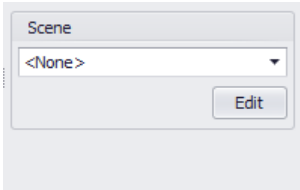
Sensor Load/Scene Binding (Wired Sensors Only)

This section changes to select loads or scenes, depending on the value of the **Control Type** parameter in the **Basic** tab.

Sensor Load Binding



Sensor Scene Binding



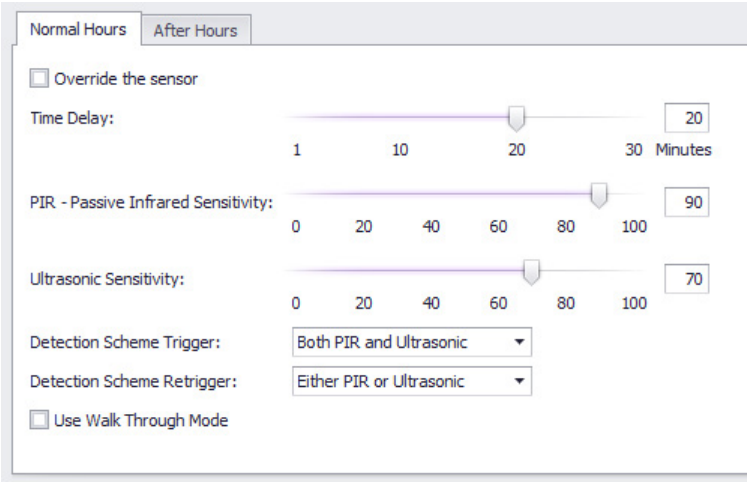
If the sensor is set to control loads, select one or more of the Controlled Loads to bind to the sensors. If a **Description** has been entered for each load on the **Load/Relay** tab for the room controller/panel, it is displayed here to help in identifying the loads. This is especially useful in situations where a room contains more than one controller.

If the sensor is set to control a scene, select the scene number from the drop-down. Click **Edit** to open the **Scene Editor**, if needed. This is identical to the editor accessible when view the Room parameters. For details on this editor, see "Creating and Editing Scenes for Wired DLM" on page 48.

Normal Hours/After Hours Tabs (Wired Sensors Only)

These tabs contain sets of identical parameters, for normal hours and for after hours.

Normal Hours/After Hours Tabs



Override the Sensor – Selecting this checkbox turns off sensor control over the loads the sensor is bound to. This parameter allows the sensor to control the loads only during Normal Hours (or only during After Hours). If it is selected for both Normal Hours and After Hours, then the sensor will have no effect on the loads.

Time Delay – The amount of time the load remains ON after no motion is detected.

PIR Sensitivity – Sensitivity for the PIR detection. Setting the sensitivity to zero (0) will disable PIR detection in the sensor. This parameter is displayed only if the selected sensor model has PIR technology.

Ultrasonic Sensitivity – Sensitivity for the ultrasonic detection. Setting the sensitivity to zero (0) will disable ultrasonic detection in the sensor. This parameter displayed only if the selected sensor model has ultrasonic technology.

Detection Scheme Trigger – Indicates whether to use PIR, Ultrasonic, Either, or Both technologies for initial detection of occupancy. This parameter is displayed only if the sensor model is dual technology. For “Either”, the sensor will register occupancy if either of the two technologies senses movement, whereas for “Both”, both technologies must detect movement.

Detection Scheme Retrigger – Indicates whether to use PIR, Ultrasonic, Either, or Both technologies will be used to keep the lights on once the sensor has initially been triggered. This parameter is displayed only if the sensor model is dual technology. For “Either”, the sensor will register occupancy if either of the two technologies senses movement, whereas for “Both”, both technologies must detect movement.

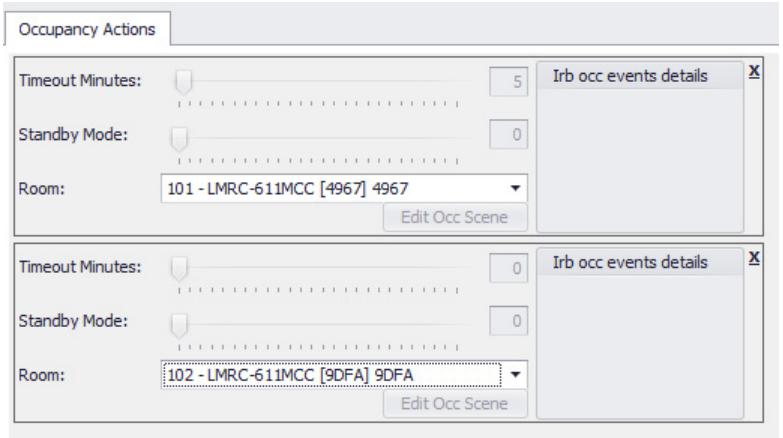
Use Walk Through Mode – Walk Through mode shortens the time delay to reduce the amount of time the load is ON after a brief moment of occupancy, such as returning to an office to pick up a forgotten item then immediately exiting. When enabled, the load turns OFF three minutes after the area is initially occupied if no motion is detected after the first 30 seconds. If motion continues beyond the first 30 seconds, the selected time delay applies.

Occupancy Actions (Wireless Sensors Only)

This tab allows you to assign the sensor to any load in the project. Multiple loads can be assigned to the same sensor. Note that you can assign the sensor to loads in different rooms.

When you first go to this tab, it will be blank except for the **Add New** button. Click that button once for each load you wish to be controlled by that sensor.

Occupancy Actions Tab



Timeout Minutes – The amount of time the load remains ON after no motion is detected. This parameter is enabled only for a wired load connected to an LMBC-650.

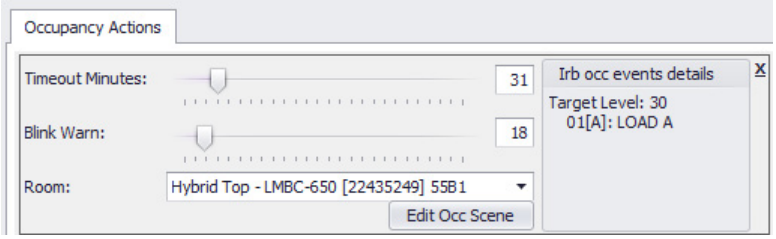
Standby Mode – If **Standby Mode** on the Load Advanced Normal/After Hours tab is set to either “Blink Warn” or “Blink Warn and Dim Level”, this is the amount of time that the load will flash. This parameter is enabled only for a wired load connected to an LMBC-650.

Room – The room and controller that the sensor is assigned to. The room name is displayed followed by the wireless controller or LMBC-650 within that room. If there are multiple controllers in a room, each one will be available for selection.

Assigning a Wireless Sensor in a Hybrid Room

If you select a hybrid room with an LMBC-650, the **Edit Occ Scene** button will be enabled. Click that button to open a dialog that allows you to assign the sensor to a specific load in that room. This is done by using a wireless scene. For details on wireless scenes, see “Creating and Editing Scenes for Wireless DLM” on page 78. The IRB Occupancy function is the one used in order for a wireless sensor to control a wired load. You can also set the **Target Level**. Once you return to the Occupancy Actions tab, the details are displayed in the **Irb occ events details** section.

Occupancy Actions Tab with the Sensor Assigned to a Wired Load



SWITCHES

This section documents tabs for all switch models. Switches are divided into five categories: Standard Switches, Dimming Switches, CCT Switches, Wall Switch Sensors, and Timer Switches. All switches contain identical parameters on the **Advanced** tab. For wired switches, parameters on the **Basic** tab apply for Wall Switch Sensors only. Wall Switch Sensors also contain an additional tab, **Advanced Sensor**. The LMTS-101-CCT also contains an additional tab, **Advanced LMTS**.

The bottom section of the window changes, depending on the type of switch; See the following for details:

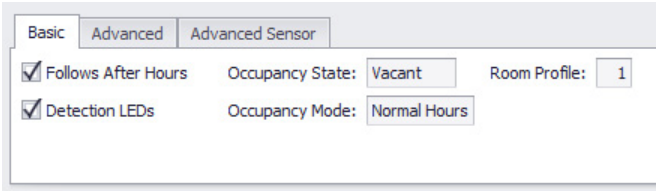
- Wired Switches – Button Parameters, page 187
- Wired Switches – Rocker Parameters, page 192
- Wired Switches – Sensor Parameters, page 194
- Wired Switches – Schedule Parameters (for the LMTS-101-CCT), page 194
- LMGS-150 Touchscreen – page 195
- LMEQ-41 Equinox Touchscreen – page 199
- Wireless Switches – Button and Rocker Scene Assignment, page 202

Basic Tab

Wired Switches

Parameters on this tab appear only for Wall Switch Sensors and relate to sensor functionality. For other switches, the tab is empty, unless an interface that supports profiles has been added to the room. In that case, the tab will contain a single parameter, **Room Profile**.

Wired Switch Basic Tab



Follows After Hours – This is selected by default. If it is not selected, the sensor will ignore the settings on the After Hours tab and use the Normal Hours settings all the time.

Detection LEDs – Enables or Disables the visible LED indicators on the face of the occupancy sensor. Note that disabling the LEDs will not affect the operation of the sensor. This parameter does not affect the LEDs built into the buttons—only those used by the sensor.

Occupancy State – If LMCS is connected to the room and you click **Read**, this field displays the current state of the sensor. An “Occupied” state does not necessarily mean that the lights in the space are on since the loads might be set to Manual On.

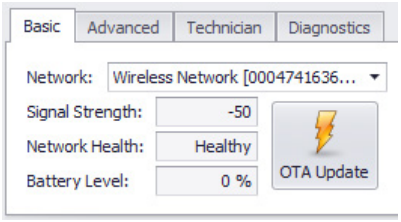
Occupancy Mode – If LMCS is connected to the room and you click **Read**, this field displays whether the Sensor is set to Normal Hours or After Hours.

Room Profile – This read only parameter indicates the current profile selected at the room level. This parameter is displayed only if the room includes a device that supports profiles (currently, the LMDI-100, LMIO-102, and LMPS-104). For the LMDI-100, you must also select the **Partition Support** checkbox before this parameter is displayed.

Wireless Switches

Parameters on this tab relate only to the wireless network.

Wireless Switch Basic Tab



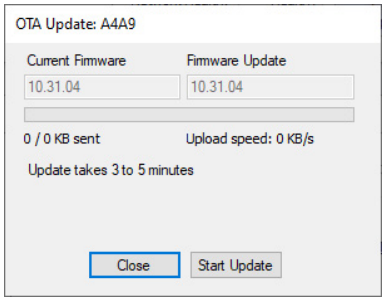
Network – The Network (and therefore the LMBR-650) that the LMRC is communicating with. This will initially be the network that you originally selected during the discovery process. It can be changed to a different network, if desired. However, the **switch must be within communication distance of the LMBR**. It is possible for paired devices in a room be on different networks.

Signal Strength – Displays the Received Signal Strength Indicator (RSSI) value

Network Health – This will display as “UnHealthy” if the signal is less than -75

OTA Update – Click this button to update the firmware of the device “over the air”. A dialog opens. It displays the current version in the device and the most recently available version, which is the version stored in the Firmware folder within the LMCS application on the PC. If a newer version is available on the cloud, a dialog will inform you of this and allow you to download that version. **You must wake up the switch by pressing the Configuration button before starting the update.** Click **Start Update** to update the device. After the device completes updating it will restart. This can take a minute before it begins communicating with other devices again.

OTA Update

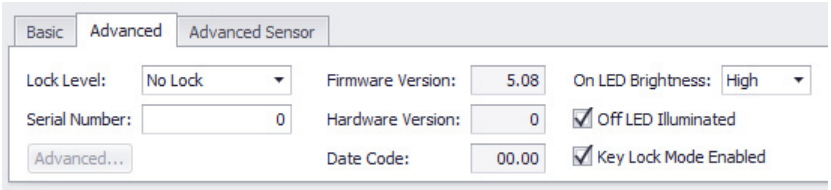


NOTE: Occasionally LMCS may not be able to establish communication with the device in order to update it. If you get an error, try clicking **Start Update** to try the update again.

Advanced Tab

Wired Switches

Wired Switch Advanced Tab



Parameters from **Lock Level** to **Date Code** are common to all devices. See “Parameters on the Advanced Tab Common to All Devices” on page 150 for details on these parameters.

For **wired switches only**, the following additional parameters appear

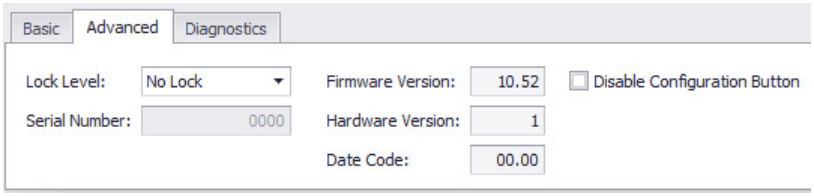
On LED Brightness – Sets the brightness level of the LEDs on each button. Available values: “Dim”, “Medium”, “High”, “Full”.

Off LED Illuminated – If this is selected, the LEDs will be illuminated at a very low level when the load is off. This allows the user to see the individual buttons at night, if all lights are off.

Key Lock Mode Enabled – If this is selected, the switch will respond to a switch lock command. This command can be sent from a switch lock device connected to an LMIO-101, or from the Network Controller or other BAS application. If a switch is locked, then pressing any of the buttons on the switch has no effect. If the checkbox is not selected, the switch will ignore the lock message.

Wireless Switches

Wireless Switch Advanced Tab



As with wired switches, parameters from **Lock Level** to **Date Code** are common to all devices. However, wireless devices do not have the **Advanced** button.

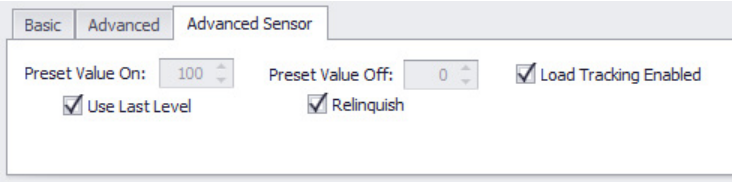
Disable Configuration Button – This parameter appears for the wired slim switches (LMSW-6xx-S) **only**. On these models, the Configuration button is under the right side of the Legrand badge at the bottom of the switch, instead of a recessed button on the cover plate. To prevent a user from accidentally entering Push-to-Pair or Push-n'-Lean modes, the Configuration button can be disabled by selecting this checkbox. Click **Send** to lock. Once disabled, the only action available via the Config button is to wake the device for radio communication. To do this, press and holding the Config button and the top-most button on the switch for 3 seconds. The LED flashes red 3 times to signal a successful wake up, but does not unlock

NOTE: The LMSW-6xx-S Configuration button is "soft-locked "12-hours after a manual Push-to-Pair has been engaged. A soft-lock can be unlocked using the same button push method, but in that case flashes green, not red. But if **Disable Configuration Button** is selected, that overrides soft-lock, and it can only be unlocked by deselecting this parameter and clicking **Send**.

Advanced Sensor Tab

This tab only appears for Wall Switch Sensors.

Switch Advanced Sensor Tab



Preset Value On – If this is enabled, this is the level all loads bound to the sensor will go to when the sensor registers occupancy. This parameter is disabled if **Use Last Level** is selected.

Use Last Level – If this is selected, each load bound to this sensor will return to its previous non-zero level when the sensor registers occupancy.

Preset Value Off – If this is enabled, this is the level all loads bound to the sensor will go to when it registers vacancy. This parameter is disabled if **Relinquish** is selected.

Relinquish – If this is selected, the Relinquish command will be sent to each load bound to this sensor, at the priority specified by the **Occupancy Sensor Priority** parameter on the **Technician** tab for the load. The load's controller then looks at the next highest priority to determine what to do. If no other command exists at any priority level, the load will go to the **Partial Off Level**, set on the **Basic** tab for the load (0 by default).

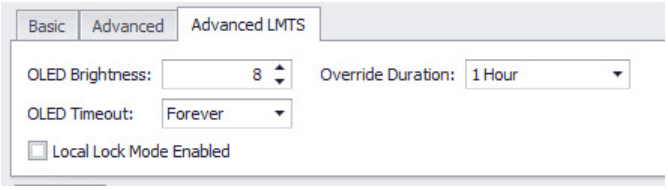
Load Tracking Enabled – If the sensor is bound to a room controller, this checkbox should always be selected. This allows for the sensor to understand which loads are ON/OFF in order to properly manage presentation mode, and create error messages in the event that the sensor is not bound to any loads.

If the sensor is bound to a panel, this checkbox should not be selected. For panels, the Load IDs are not handled the same way. Instead of the sensor telling the panel which loads should turn on and when, the panels listen for certain MAC addresses from the sensors in order to determine if that sensor should control it's loads.

Advanced LMTS Tab

This tab appears only for the LMTS-101-CCT.

Switch Advanced LMTS Tab



OLED Brightness – Controls the brightness of the display on the LMTS-101-CCT. Values are 0-10, which equates with 0%-100%.

OLED Timeout – This determines whether the display will shut off after a period of time during which no button on the LMTS-101-CCT has been pressed. Available values: 10 seconds, 20 seconds, 30 seconds, 40 seconds, 50 seconds, 1 minute, 5 minutes, 10 minutes, or Forever (never turns off).

Local Lock Mode Enabled – If selected, the button will never switch the load On/Off, and instead only the schedules within the LMTS-101-CCT will function.

Override Duration – This parameter determines how long a schedule event is overridden, after the On/Off button is pressed (when the Button Function is set to Override or Override/Resume). Available values: 1,2, 3, or 4 hours, All Day (ends when Event 1 occurs the next day), or Next Schedule (ends when the next event occurs)

Technician Tab

This tab is found for all wireless devices. For switches, it contains only a single parameter, **IPv6 Address**. For details see "LMFS-601 Fixture Controller" on page 151.

Diagnostics Tab

This tab is found for all wireless devices. For details, see "Diagnostics Tab" on page 152.

WIRED SWITCHES – BUTTON PARAMETERS

The **Button** tabs appear for all models except the LMDM-101, which only has a rocker. Each button on the switch has its own tab of identical parameters.

This section changes depending on whether the button is bound to a load, a Correlated Color Temperature (CCT) load, a scene, or a network group, using the **Button Type** drop-down. A **Description** parameter is provided for documentation purposes. The description also appears when viewing the button in the Segment Manager or Network Controller application.

NOTE: The CCT button type appears only for the LMSW-105-CCT, LMTS-101-CCT, and LMSW-241-CCT, and is the only possible value for these models, which is used to control Correlated Color Temperature. For this to function, the switch must be bound to a controller capable of CCT, such as the LMLM-101.

For the LMSW-105-CCT and LMSW-241-CCT, the editable parameters on the **Basic** Tab are identical to those when the button is bound to a load (with one exception that there is no **Button Fade Time Off**), but affect **change in color temperature instead of the dimming or On/Off value**. The **Advanced** Tab is unique for CCT loads.

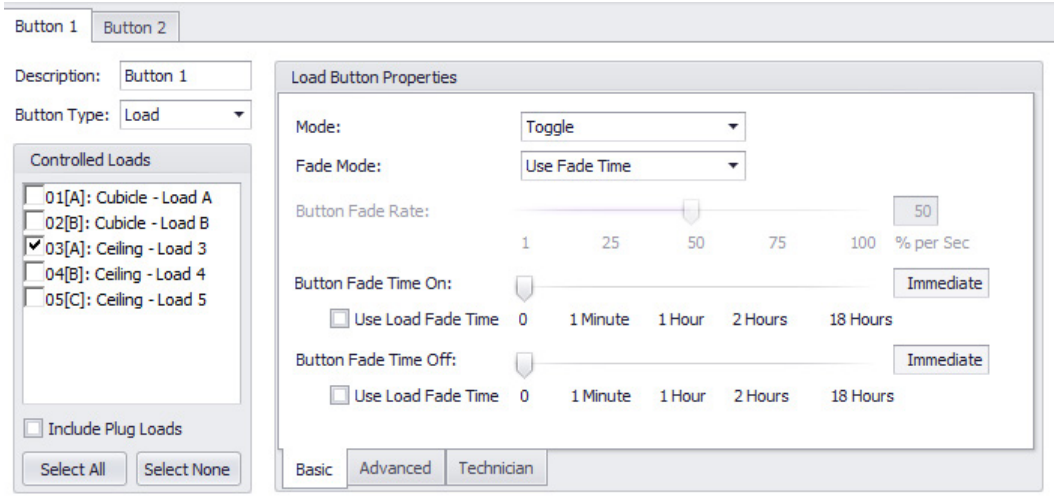
For the LMTS-101-CCT, the **Basic** Tab is different from a button bound to a regular load, and there is no **Advanced** Tab.

Binding to a Load or a CCT Load – Load Binding Basic Tab

If you select "Load" for the **Button Type,** select one or more of the Controlled Loads to bind to the button. If a **Description** has been entered for each load on the **Load/Relay** tab for the room controller/panel, it is displayed here to help in identifying the loads. This is especially useful in situations where a room contains more than one controller.

Include Plug Loads – If this checkbox is enabled, any loads from plug load controllers included in the room will be included in the list of loads. This field is not available for a CCT button type.

Load Binding Basic Tab



Mode – Indicates how the button functions. Available values: “Toggle”, “On Only”, “Off Only”, “Toggle Nontracking”, “Toggle Dim”.

NOTE: For the LMSW-105-CCT and LMSW-241-CCT, Mode is always set to “On Only”.

In “Toggle” mode, if there are multiple loads bound to a button and any load is ON, the LED will be lit. Pressing the button turns OFF all loads and the LED on the button turns OFF. Pressing the button again turns ON all loads bound to the button. Additionally, if the button was pressed to turn a load OFF, and then later the load is turned ON from another source such as a sensor, the button will track that the load is ON and the LED will be lit. Therefore, pressing the button at that point will turn the load OFF.

If set to “On Only” or “Off Only”, pressing the button will always perform that function. However, the LED will always reflect the current status of the load. So if a button is set to “Off Only” and a sensor turns the load ON, the LED will be lit, but will go OFF when the button is pressed.

If set to “Toggle Nontracking”, the button will toggle, but the LED will not light. Additionally, the button will not track if another source such as a sensor turns the load ON. Although it is an available value here, it has limited application when the button is assigned to a load. This is normally the value to choose if the button is assigned to a Network Group, since the button can’t track the status of all loads in the group.

If set to “Toggle Dim”, the behavior changes depending on whether user **presses** the button or **presses and holds** the button.

- Pressing the button: If loads are OFF, the load goes to the last non-zero value. If loads are ON, the loads turn OFF.
- Pressing and Holding the button: This ramps the load up or down until either the limit is reached or the button is released. Each subsequent press and hold reverses the direction of the ramp.

Fade Mode – Determines the amount of **time** it will take to change from the current value to the newly selected value (either ON or OFF, or a change in Kelvin for a CCT switch), once the button is pressed. Note that the on and off levels that the load goes to are set on the **Advanced tab.** Available values:

- Immediate – Changes to the new value immediately
- Use Fade Rate – Uses the value determined by the **Button Fade Rate** parameter
- Use Fade Time – Uses the value determined by the **Button Fade Time On** and **Button Fade Time Off** parameters.
- Use Load Fade Rate – Uses the value determined by the **Fade Rate** parameter on the **Advanced** tab for the load. Note that there are two separate values—for Normal Hours and After Hours.

Button Fade Rate – The amount specified here will fade down/up using percentage per second. So if you specify a value of 50, it will take two seconds (50% per second).

Button Fade Time On – The amount of time it will take to fade to the new value when the button is turned ON.

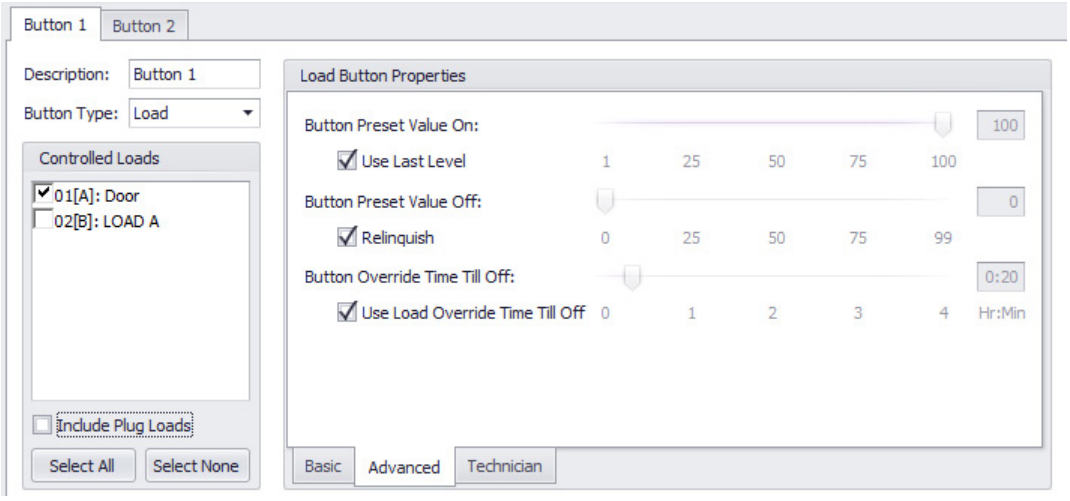
Button Fade Time Off – The amount of time it will take to fade to the new value when the button is turned OFF.

NOTE: For the LMSW-105-CCT and LMSW-241-CCT, the **Button Fade Time Off** does not exist because buttons on the CCT switches change the CCT level and do not turn the load on and off.

Use Load Fade Time – There are two checkboxes - one for the ON time and one for the OFF time. When selected, uses the value determined by the **Fade Time** parameter on the **Advanced** tab for the load (instead of the values selected in the **Button Fade Time On/Off** parameters). Note that there are two separate values—for Normal Hours and After Hours.

Binding to a Load – Advanced Tab

Load Binding Advanced Tab



Button Preset Value On – The level the load will go to when the button turns the load ON. Disabled if **Use Last Level** is selected.

Use Last Level – If selected, the load will return to the most recent non-zero level .

Button Preset Value Off – The level the load will go to when the button turns the load OFF. Disabled if **Relinquish** is selected.

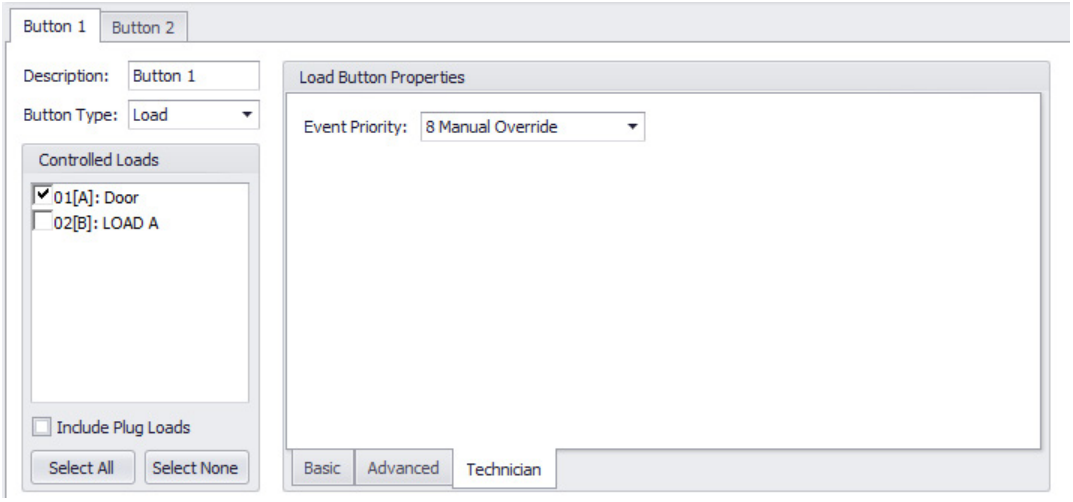
Relinquish – If selected, relinquishes the load at the level specified by the **Event Priority** parameter on the **Technician** tab. The room controller for the load then looks at the next highest priority to determine what to do. If no other command exists at any priority level, the load will go to the **Partial Off Level** set in the **Basic** tab for the load (0 by default).

Button Override Time Till Off – If a load is commanded to turn OFF when the schedule switches from Normal Hours to After Hours (or vice versa), this is the amount of time the load will remain ON after manually being turned ON from a switch. When the amount of time expires, the load switches back to OFF. Disabled if **Use Load Override Time Till Off** is selected.

Use Load Override Time Till Off – This functions the same as **Button Override Time Till Off,** but uses the amount of time specified with the **Override Time Till Off** parameter in the **Advanced** tab for the load. Note that for the load there are two sperate values—one for Normal Hours and one for After Hours, whereas if you use the time set on this tab, there is only a single value.

Binding to a Load – Technician Tab

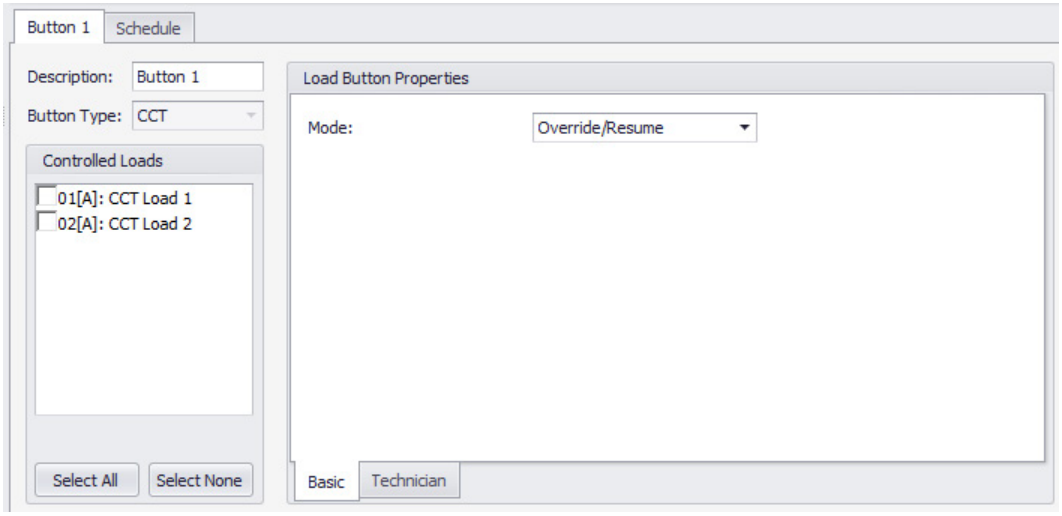
Load Binding Technician Tab



Event Priority – Sets the BACnet priority at which the button commands are sent.

Binding to a CCT Load (LMTS-101-CCT Only) – Basic Tab

CCT Load Binding Basic Tab



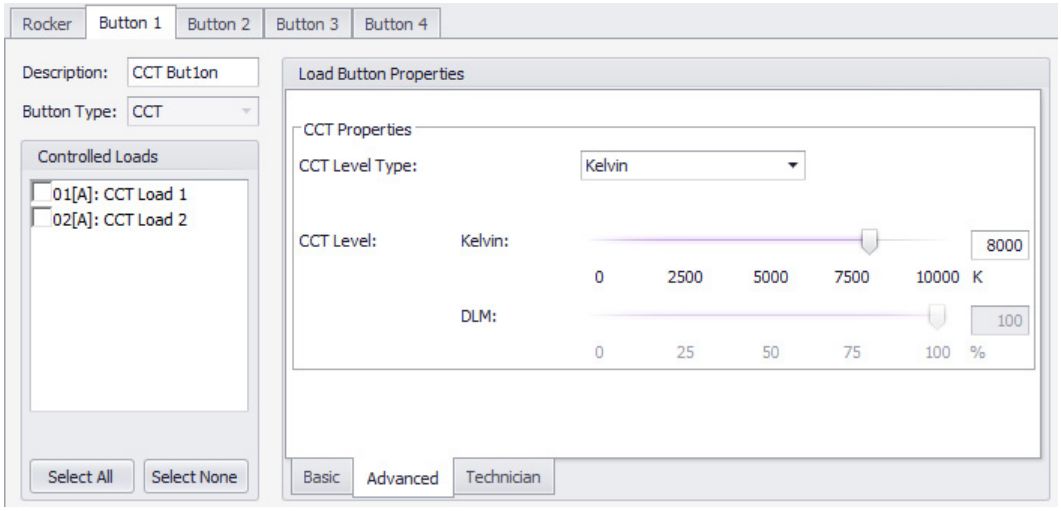
Mode – This determines how the button will affect the load.

- Toggle Load – Turns all bound loads in the DLM network ON or OFF.
- Override – Will override all schedule events for a period of time based on the Override Duration parameter (on the next Preferences screen). Once the button is pressed, the override can't be turned off until the duration is ended.
- Override/Resume – Similar to Override, but in this case, pressing the button a second time will turn off the override.

Binding to a CCT Load (LMSW-105-CCT and LMSW-241-CCT only) – Advanced Tab

As mentioned previously, the **Basic** Tab for a CCT Load is essentially identical to a regular load. But the Advanced tab provides the ability to determine the CCT level the load will go to when the button is pressed.

CCT Load Binding Advanced Tab

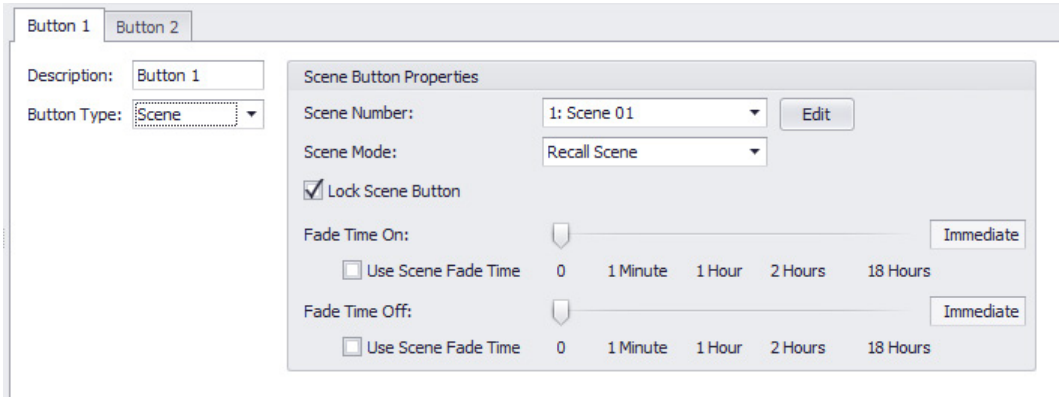


CCT Level Type – This drop-down determines whether you will set a specific Kelvin value, or a level that is a percentage based on the range of minimum to maximum Kelvin values that the controller is capable of.

CCT Level – If **CCT Level Type** is set to “Kelvin”, select the specific Kelvin amount. If **CCT Level Type** is set to “DLM”, select the percentage.

Binding to a Scene

Scene Binding



Scene Number – Select the scene assigned to the button. Click **Edit** to open the **Scene Editor**, if needed. This is identical to the editor accessible when view the Room parameters. For details on this editor, see “Creating and Editing Scenes for Wired DLM” on page 48.

Scene Mode – Determines what happens when the button is pressed. Available values:

- Recall/Off – Pressing the button toggles between selecting the scene and turning it OFF. When the scene is selected, all loads go to the levels set for the scene. When turned off, all loads (that are part of the scene) are turned OFF.
- Recall Scene – Sends the scene command each time the button is pressed.
- Scene Off – Send the OFF command each time the button is pressed.

Lock Scene Button – If this is **not** selected, a user can record a new scene by pressing and holding a scene button for 7 seconds. If you select this feature the button still can select or turn off the scene, but it can’t manually record a new scene.

Fade Time On – Amount of time for each load to transition between its current level and the Scene ON level. Note that while each load has its own level, the amount of time set here will apply to all levels.

Fade Time Off – Amount of time for each load to transition between its current level and the Scene OFF level. Note that while each load has its own level, the amount of time set here will apply to all levels.

Use Scene Fade Time – There are two checkboxes - one for the ON time and one for the OFF time.

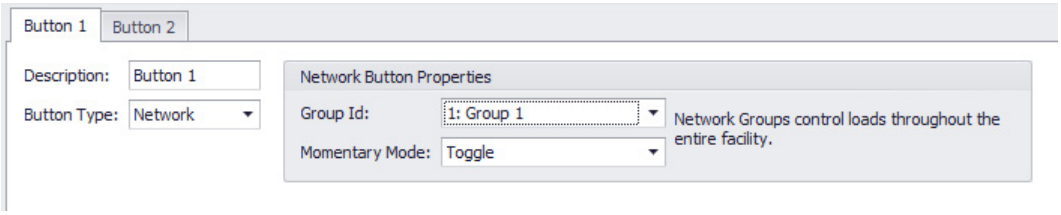
If selected, LMCS checks the **Fade Time** parameter for the selected scene in the **Scene Editor**. If that parameter is set to a value of “Use Scene”, it will use the **Scene Fade Time** in the scene editor. If that parameter is set to a value of “Use Load”, it will use the **Fade Time** parameter on the **Advanced** tab for the load. Remember that there are two separate values for loads—for Normal Hours and After Hours.

If the checkbox is not selected, the **Fade Time On** (and/or **Fade Time Off**) values set in this screen are used.

Binding to a Network Group

If you select “Network” for the **Button Type**, the button will send on and off commands to all loads that are members of the network group. This allows a switch to control loads in multiple rooms or areas, for example, one switch that controls lights for all corridors. For details on creating network groups, see “Creating Network Groups” on page 54.

Network Group Binding



Group ID – Select the group number the button is assigned to control. The group **Description** is also shown for reference.

Momentary Mode – Indicates how the button functions. Available values: “Toggle”, “On Only”, “Off Only”, “Toggle Non-Tracking”

The value most useful when a button controls a group is “Toggle Non-Tracking”. With this value, the button will toggle, but the LED will not light. Additionally, the button will not track if another source such as a sensor turns the loads ON. Since the button is used in this situation to issue group commands, and not directly control the loads, it makes little sense to track the loads in the button.

The rest of the values are available but less likely to be used when the button is assigned to a group.

In “Toggle” mode, if there are multiple loads bound to a button and any load is ON, the LED will be lit. Pressing the button turns OFF all loads and the LED on the button turns OFF. Pressing the button again turns ON all loads bound to the button. Additionally, if the button was pressed to turn a load OFF, and then later the load is turned ON from another source such as a sensor, the button will track that the load is ON and the LED will be lit. Therefore, pressing the button at that point will turn the load OFF.

If set to “On Only” or “Off Only”, pressing the button will always perform that function. However, the LED will always reflect the current status of the load. So if a button is set to “Off Only” and a sensor turns the load ON, the LED will be lit, but will go OFF when the button is pressed.

NOTE: It will take a minute or two for this to start working properly as the bridge or panel needs to discover that the button was set up this way and this takes time.

WIRED SWITCHES – ROCKER PARAMETERS

Switches that contain a rocker (the LMDM-101, LMSW-105, LMSW-105-CCT, LMSW-211, LMSW-222, LMSW-241, and LMSW-241-CCT) contain a tab for the rocker (two rocker tabs for the LMSW-222). The majority of parameters on this tab are identical to those for a regular button assigned to a load, so the following sections only define the differences found on the rocker tab. For definitions of all other parameters, see the previous sections on Binding to a Load, starting on page 187. Note that the **Technician** tab for rockers is identical and so is not shown in the following sections.

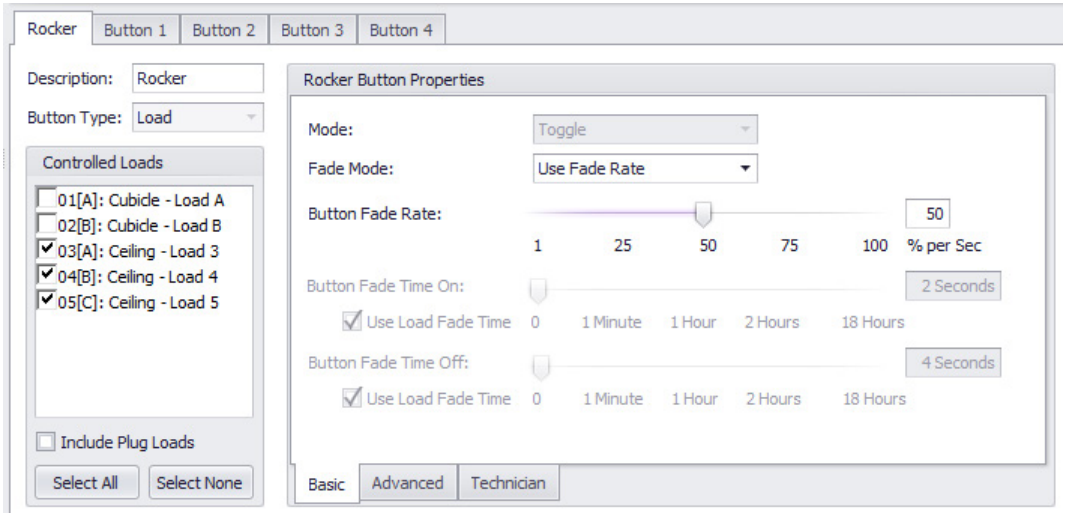
Rockers function in two different ways. If you **press and hold** the rocker, the load value will ramp up or fade down, depending on which end of the rocker you press, stopping when you release the rocker. But if you **press and release**, the rocker acts like a regular switch button, turning the load ON or OFF, again depending on which end of the rocker you press. For this reason, the Rocker **Advanced** tab contain the same parameters found for a button, which apply to the switch function, and also two additional parameters which apply to the rocker function.

Active Dim function: When a button on a scene switch is pressed, the rocker will temporarily be assigned to the loads assigned to that button (if the rocker is not already assigned to them), thereby allowing the user to dim the selected scene. After five seconds, the rocker reverts to its normal load assignments. In a room with multiple switches, if you double tap a button on one switch, all rockers in that room will go into active dim mode as well (again for 5 seconds). On the 200 series switches, this feature can be disabled, but is always enabled for the 100 series.

Rocker Load Binding and Basic Tab

NOTE: None of the parameters on the **Basic** tab apply to the LMSW-105-CCT and LMSW-241-CCT, so this tab does not appear when viewing those models.

Rocker Load Binding and Basic Tab



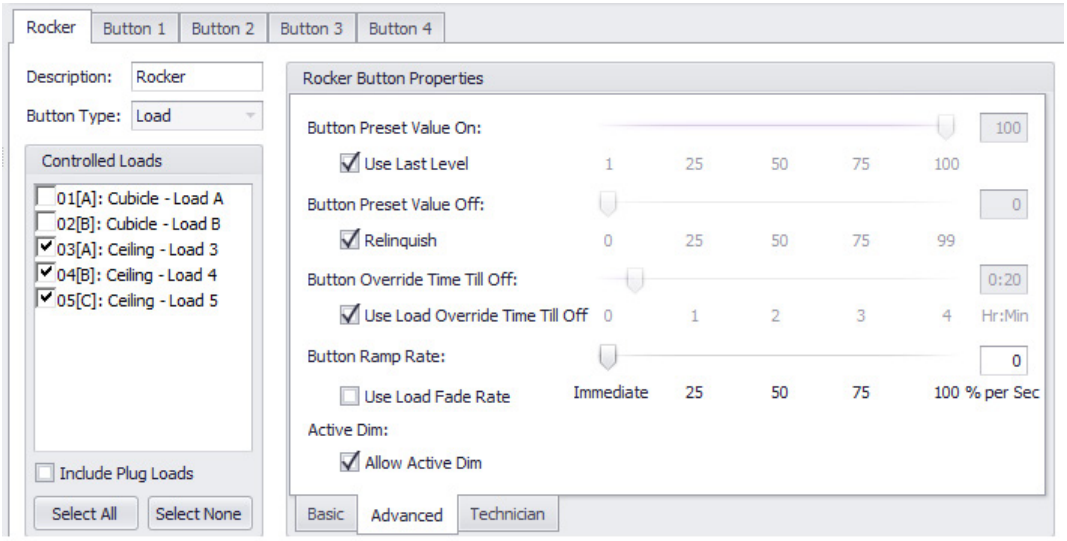
Rocker parameters on the **Basic** tab are identical to those for a button, with the exception that a rocker is always assigned to a “Load” for the **Button Type** and the **Mode** is always set to “Toggle”.

NOTE: The **Button Fade Rate** parameter applies only when the button is **pressed and released**, and the button is acting like a regular switch. When using the button as a rocker, the **Button Ramp Rate** on the **Advanced** tab is used.

NOTE: If **no loads** are assigned to a rocker, it will raise and lower **all** loads in the room, but can’t be used to turn them on or off (by tapping the top/bottom).

Rocker Advanced Tab

Rocker Advanced Tab



The first six parameters on the **Advanced** tab are identical to those for a button, and function when the rocker is used as a switch. See “Binding to a Load – Advanced Tab” on page 189 for details.

NOTE: None of these six parameters are displayed for an LMSW-105-CCT and LMSW-241-CCT because they do not apply for CCT control.

Three additional parameters are added for rocker functionality.

Button Ramp Rate – Determines the speed (or rate) at which the light level of bound loads increases or decreases when the top or bottom of the rocker is **pressed and held**. The default value is 17%/second which means that it takes approximately 6 seconds to ramp from 0-100%.

Use Load Fade Rate – If this checkbox is selected, the value of the **Fade Rate** parameter on the **Advanced** Tab for the load will be used for the **Button Ramp Rate**. Note that there are two separate values—for Normal Hours and After Hours.

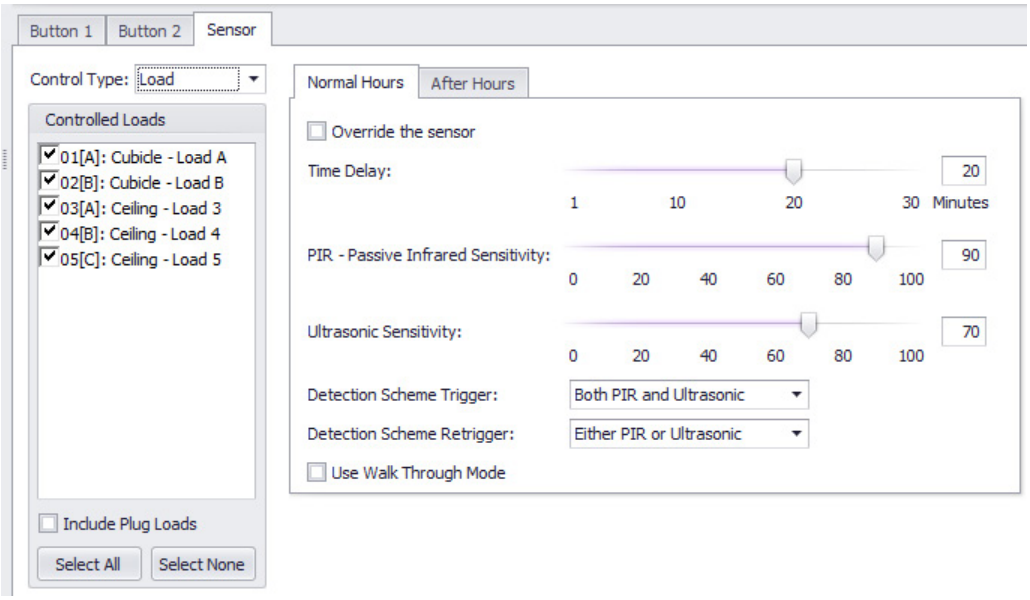
Allow Active Dim – Active Dim was described previously, in the paragraph at the beginning of the Rocker Parameters section. This checkbox allows you to enable or disable Active Dim.

NOTE: This parameter is displayed for **200 series switches only**. The Active Dim function exists on the 100 series switches, but it can't be disabled. Active Dim does not apply for LMGS-150 sliders.

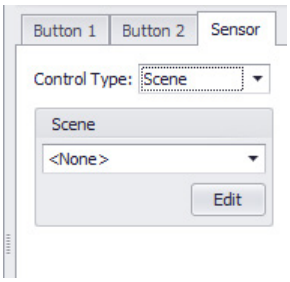
WIRED SWITCHES – SENSOR PARAMETERS

Switches that contain a sensor (the LMDW and LMPW series) contain a tab for the sensor functionality

Sensor Controlling a Load



Sensor Controlling a Scene



All parameters on this tab are identical to those in the Load/Scene Binding section for a sensor. See "Sensor Load/Scene Binding (Wired Sensors Only)" on page 182 for details.

WIRED SWITCHES – SCHEDULE PARAMETERS

This tab is found only on the LMTS-101-CCT and controls the schedule for change Color Correlated Temperature values on the loads. The schedule parameters change depending on whether you select an Astro or a Custom schedule. Astro events are based on the current sunrise and sunset times, which is based on the date and location. You specify the time and location and send this information to the LMTS-101-CCT on the **Set Site Time** window. See "DLM Site Time/Location" on page 141.

When the **Start** time of the event occurs, the CCT value of the load will begin gradually changing from the Target CCT value of the previous event to the value of the current event. It will reach the new value at the **End** time. Therefore, the longer the amount of time between start and finish, the more gradual the change. Events cannot overlap. However, you can have a gap in time between events. If there is a gap of time between the finish of one event and the start of the next event, the CCT level will remain the same during that period of time.

Event Type – This drop-down will switch between "Astro" and "Custom" schedules. Note that if you change any values away in one type of schedule and then switch to the other type of schedule, all the edited values will be lost and will switch back to defaults if you revert to the original schedule type.

Astro Schedules

Schedule Tab for the LMTS-101-CCT – Astro Schedule

Button 1 | Schedule

Add | Remove | Help | Event Type: Astro

Event	Description	Start Time	Start Offset	End Time	End Offset	Target CCT Type	Target CCT Level	Target DLM Level
6		Sunset	30	Sunset	90	DLM	2000	10
1		Sunrise	-90	Sunrise	30	DLM	3750	35
5		Sunset	-30	Sunset	30	DLM	3750	35
2		Sunrise	30	Morning	0	DLM	5500	65
4		Evening	0	Sunset	-30	DLM	5500	65
3		Morning	0	Mid Day	0	DLM	8000	100

Astro Schedules have 6 predefined events. There are always 6 events, therefore the **Add** and **Remove** buttons are disabled. The six events are pre-programmed to specific general categories of the day for the **Start** and **End** of the event. These categories can't be changed. However, for the Events that occur around Sunrise or Sunset, you can modify the number of minutes plus or minus the sunrise/sunset time for that event to begin or end. Each event can be set independently to use a specific Kelvin amount or a percentage that is based on the minimum and maximum capabilities of the load.

Description – If desired, you can enter a description for the event.

Start Offset and **End Offset** – As mentioned above, if the **Start** or **Finish** is set "Sunrise" or "Sunset", you can select an offset amount, which is the number of minutes before or after

Target CCT Type – Determines whether to use the exact Kelvin amount or the DLM level, which translates to a percentage.

Target CCT Level – Enabled if **Target CCT Type** is set to Kelvin. This is the specific Kelvin amount the load will end up at the **End** time.

Target DLM Level – Enabled if **Target CCT Type** is set to DLM. This is the percentage amount the load will end up at the **End** time.

Custom Schedules

Schedule Tab for the LMTS-101-CCT – Custom Schedule

Button 1 | Schedule

Add | Remove | Help | Event Type: Custom

Event	Description	Start Time	End Time	Target CCT Type	Target CCT Level	Target DLM Level
1		12:00 AM	6:00 AM	Kelvin	2000	100
4		5:00 PM	7:00 PM	Kelvin	2000	100
5		7:00 PM	11:55 PM	Kelvin	2000	100
2		6:00 AM	9:00 AM	Kelvin	5500	100
3		9:00 AM	5:00 PM	Kelvin	5500	100

Custom Schedules start with a default of 5 events. You can add up to 3 more for a total of 8. The **Start Time** and **End Time** parameters replace the Astro Start and Finish parameters and all times can be edited. Changing the end time of one event will automatically change the start time of the next event if they would overlap. Times are selectable in 5 minute increments (with the exception of 11:59 PM) and if you enter a value in between, it will automatically round up or down, depending on the number you enter.

All events must occur in a time frame between 12:00 AM and 11:59 PM. However, you do not have to start event 1 at 12:00 AM and end the last event at 11:59 PM. There can be a gap of time between the end of one day and the start of the next. The other parameters are the same as for Astro schedules, but there are no offset parameters.

You can only add events to the end of the schedule. Therefore, the last event must have a value of less than 11:59 PM before the **Add** button is enabled. To remove an event, click on the row in the schedule so the first column shows an arrow, then click **Remove**.

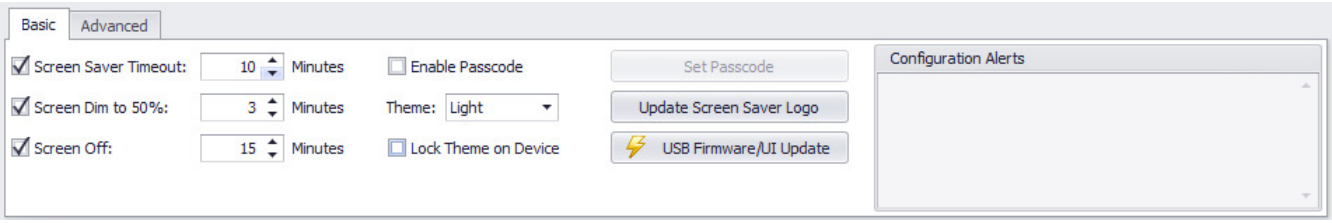
LMGS-150 TOUCHSCREEN

The LMGS-150 is a touchscreen interface that functions like a switch or dimmer, providing the ability to turn load on or off or dim them, or to select scenes. The LMGS-150 requires connection to an LMPB-100 via an IRB cable, to provide power to the LMGS-150.

Basic Tab

Unlike other switches, the Basic tab for the LMGS-150 contains parameters and buttons.

LMGS-150 Basic Tab



Screen Saver Timeout – The Screen Saver will only display if this checkbox is selected. If the screen is not touched in the amount of time specified in the drop-down, the screen saver is displayed. At this point, pressing and holding an icon the screen will restore the screen to its previous display. If this checkbox is not selected, the **Enable Passcode** check box and **Set Passcode** button will be disabled.

Screen Dim to 50% – When selected, the screen will dim its brightness to 50% after the specified amount of time. Tapping the screen will restore full brightness.

Screen Off – When selected, the screen will dim its brightness to 0% after the specified amount of time. Tapping the screen will restore full brightness.

Enable Passcode – When selected,the **Set Passcode** button is enabled.

Theme – Allows you to choose a dark or light theme for the display.

Lock Theme on Device – If the theme can't be changed on the LMGS-150 itself.

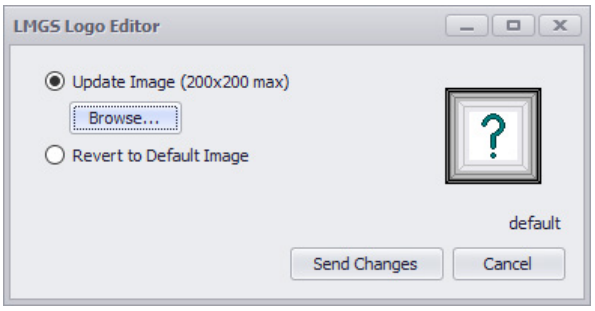
Set Pass Code – Clicking this button opens a dialog in which you can enter a six digit numeric code. Touching the screen will require the user to enter the passcode before the controls are displayed. This button is disabled if LMCS is not currently connected to the LMGS-150 or **Screen Saver Timeout** is not selected.

In addition, when the **Screen Saver Timeout** occurs, the user must enter the passcode to unlock the screen. Note that if the **Enable Screen Saver** checkbox is not selected, the timeout will never occur so the screen will not lock.

Update Screen Saver Logo – Click this button to open the LMGS Logo Editor dialog, where you can select a file to use in place of the default screen saver logo. Files must be in jpg, gif, bmp, or png, format, with a maximum of 200 x 200 pixels.

NOTE: To update the logo on the LMGS-150, you must connect a USB cable from the PC directly to the USB-C port on LMGS-150—the LMGS-150 logo cannot be updated via the LMCI or a BACnet connection.

LMGS Logo Editor



The Screen Saver will only display if the **Enable Screen Saver** checkbox is selected. If the screen is not touched in the amount of time specified by the **Screen Saver Timeout**, the screen saver is displayed. At this point, pressing and holding an icon on the screen will restore the screen to its previous display.

USB Firmware/UI Update – This button opens a dialog allowing you to update the firmware of the LMGS-150. Like other firmware, the current version of the LMGS-150 firmware can be downloaded from the cloud.

NOTE: The LMGS-150 has two files that can be updated. Both the device firmware and device UI updates are downloaded from the cloud.

- Device firmware can be updated using the **Update Firmware** button on the **Support** menu via IRB, similar to other wired devices.
- Device UI can only be updated via the USB Firmware/UI Update button.

NOTE: To update the UI on the LMGS-150, you must connect a USB cable from the PC directly to the USB-C port on LMGS-150—the LMGS-150 firmware cannot be updated via the LMCI or a BACnet connection. The USB cable **must support data transfer**, a USB charging only cable will show a “failed connecting to device error”. Although the dialog that opens looks identical to the one that opens when you click **Update Firmware** on the **Support** tab, this dialog will only update the LMGS-150.

Configuration Alerts – This section will display messages detailing the required firmware on the LMGS-150 as well as additional information, when adding specific features such as Color Control and CCT Control sliders.

Home and Load Button Screen Section

The bottom section of the LMGS-150 window, in addition to assigning loads and programming them as is done for a typical switch, allows you to name the various screens and buttons, and associate logos with those screens and button.

The LMGS-150 can have up to eight different screens in which to assign buttons or sliders (plus a settings screen). By default there is a Home screen, plus screens labeled Scenes, Lights, and Shades, with the rest simply numbered. On the LMGS-150, you can select the different screens by tapping the hamburger icon ≡ to open a menu listing the screens.

For each screen you can assign one or more buttons/sliders. If no buttons/sliders are assigned, then that Screen will not appear on the LMGS-150 as a selectable screen under the menu. By default in LMCS, if there are only lighting controllers, only the Home, Scenes, and Lights tabs have buttons assigned to them. If there are both lighting and shading controllers, the Shades tab will also have default buttons. In the rare scenario that are only shades with no lights, then only the Home and Shades screens will have default buttons.

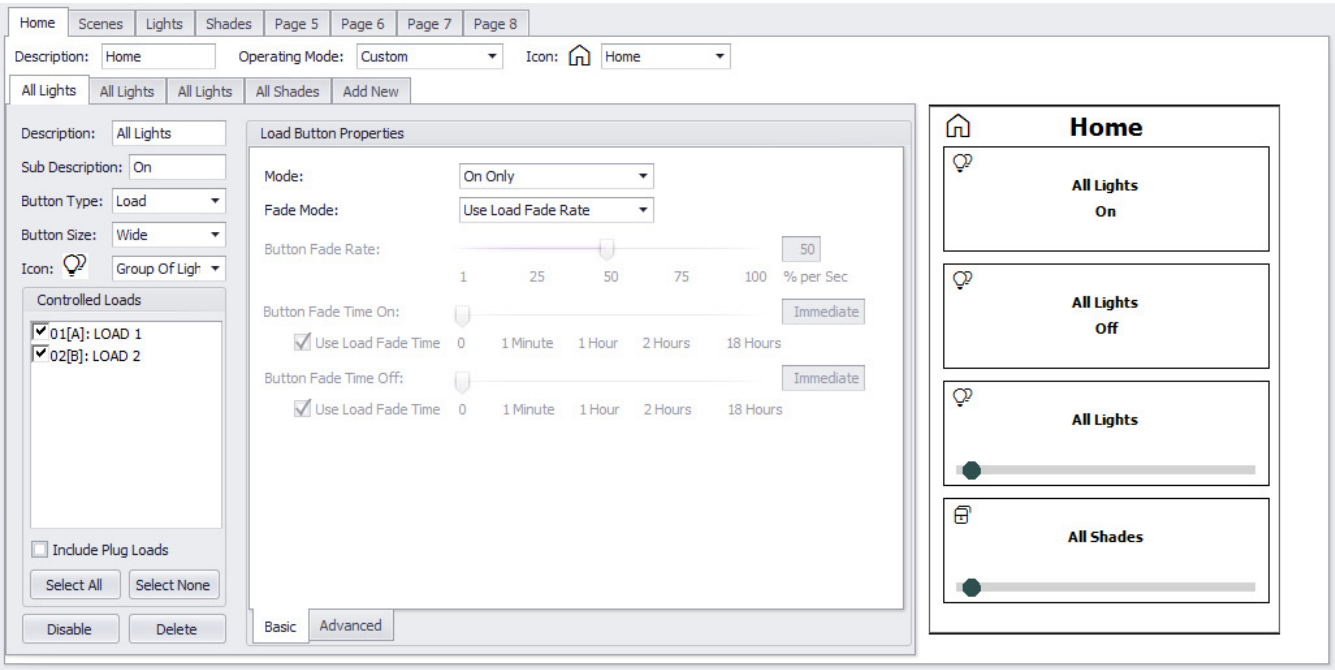
When you select a screen tab, the section on the right side will display a visual representation of what the screen will look on the LMGS-150. This is for visual reference only—nothing can be selected or changed by click in that section.

With the exception of the Home screen, all other tabs can be reordered, by clicking and holding on the tab and dragging it to the left or right. This will change the order the screens are displayed under the hamburger menu. This allows you to reorder the screens after they have been programmed without having to redo the programming for each screen.

NOTE: After programming all screens and associated button parameters, there are two options for sending the data to the LMGS-150:

- From the Room Level, send all parameters to all devices in the Room.
- If sending to individual devices in the room, make sure you send to the LMGS-150 last.

LMGS-150 Home Screen with Load Selection and Load Basic Tab



Screen Parameters

Directly below the screen tabs are parameters defining the screen appearance

Description – Text entered here will be displayed at the top of the screen. All screens, including the Home screen can be renamed. So for example, the Home screen could display “Conference Room” instead of “Home”. The maximum number of characters is 16. Text on the tab in LMCS will also change to match the Description

Operating Mode – This appears only for the Home screen,and affects only the Home screen. It determines what types of buttons/sliders are selected and the number of buttons and/or sliders that appear on that screen. Available values are “Lights”, “Shades”, “Lights and Shades”, or “Custom”. When the device first enters PnG, it will automatically choose the value based on the types of controllers connected in the room.

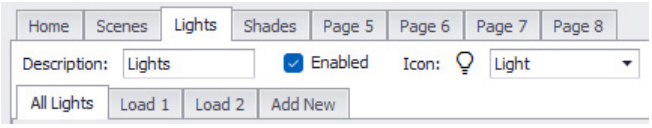
If you select “Lights”, “Shades”, “Lights and Shades”, the buttons/sliders are fixed and cannot be deleted and the **Button Type** cannot be modified. However, you can still change the **Description** and **Icon** for each button/slider.

If you select “Custom”, then you can modify the Home screen and the **Add New** tab is added to the button/slider tabs, allowing you to delete any of the default buttons/sliders and add new ones as needed.

Icon – Click the drop-down to select an icon to display to the left of the Screen Description text.

Enabled – This checkbox appears for all tabs except the Home Screen tab. If the checkbox is not selected, the Screen will not appear on the LMGS-150. This allows you to program a screen but temporarily disable it if needed.

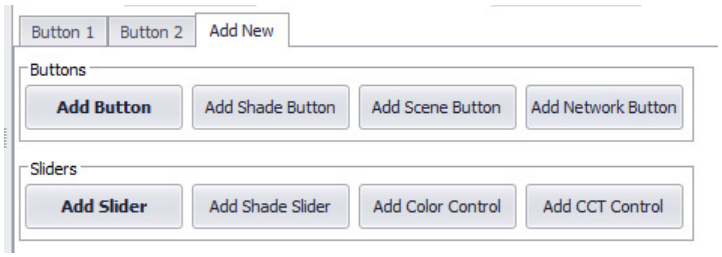
Example of Lights Screen Parameters



Button and Load Selection Parameters

Directly below the Screen parameters are tabs for each of the buttons/sliders on that screen. For all screens you can have a maximum of 24 buttons. If adding sliders, this number will decrease. By default, the Scenes screen has five buttons and the Lights screen has a slider and 2 buttons. All other screens have no buttons assigned by default. To add a button click the **Add New** tab.

Add New Tab



Each button is defined as either a switch or slider when the button is added. Once added, the button type can’t be changed. So if you add a button as a slider and determine it needs to be a switch, you must delete the button and add it again for the correct type. (Another option is to disable the button, thereby hiding it, as described below and then add a new button.) Like regular switches, Switch buttons can be set to control a Load, Scene, Shade or Network Group with the **Button Type** drop-down. Sliders can be set to control Loads or Shades, like standard rocker. Additionally, they can be used for color control and CCT control when using an LMSI-DMX to control DMX loads.

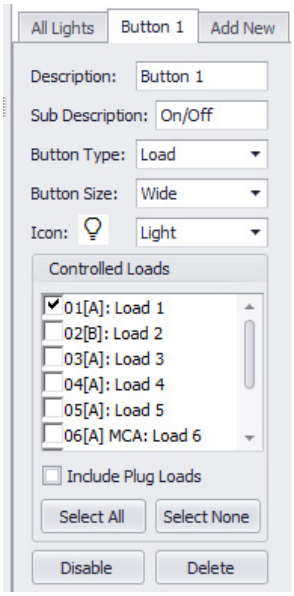
For existing buttons, you can easily see whether it is a Switch or Slider from the label in the Basic/Advanced tab section. It will say “Load Button Properties” or “Slider Button Properties”.

NOTE: While there are separate buttons for each button/slider type on this tab, they are merely shortcuts. Once the button or slider is added, you can always change its functionality with the **Button Type** parameter described below.

For each button tab, there are several button display parameters, a load selection section, and Basic and Advanced tabs for programming the buttons. The load selection and programming parameters are identical to those found on other switches. See “Binding to a Load or a CCT Load – Load Binding Basic Tab” on page 187 and “Binding to a Load – Advanced Tab” on page 189 for switch buttons, and “Rocker Load Binding and Basic Tab” on page 193 and “Rocker Advanced Tab” on page 193 for sliders.

You can reorder the buttons on the screen by dragging the Button tabs in LMCS to reorder them.

Example of Button Tabs



Description – Text entered here will be displayed as the main button text on the LMGS-150. The maximum number of characters is 16. Text on the tab in LMCS will also change to match the Description.

Sub Description – Text entered here will display below the **Description** text on the LMGS-150. Again, the maximum number of characters is 16.

Button Type – Determines the parameters that will be displayed on the **Basic** and **Advanced** tabs. Available values are “Load”, “Scene”, “Shade” or “Network for buttons and “Load”, “Shade”, “Color Control”, or “CCT Control” for sliders.

Button Size – Determines whether the button will take up a full or half horizontal space. Available values are “Wide” and “Small”. For sliders, this is set to “Wide” and can’t be changed.

Icon – Click the drop-down to select an icon to display on the left side of the button.

Controlled Loads Section – Assigning loads to a button functions identically as for all other switches. If the switch is controlling a Scene or Network Group, this section does not display as load selection is done within the scene or group.

Disable/Enable – If you click Disable, the button parameters are grayed out and the button disappears from the display to the right and will not display on the LMGS-150. This allows you to program a button but temporarily prevent it from displaying. It can also be useful to remove a slider or switch from the screen so it can be added to the bottom, thereby reordering the buttons and sliders, without having to delete it. Click the button again to re-enable it.

Delete – Click to permanently delete the button from the Screen and delete its load assignments and programming parameters.

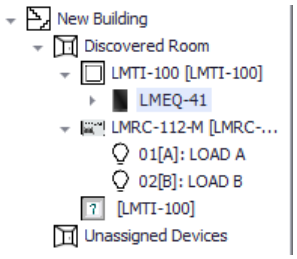
Copying LMGS-150 Buttons from one room to another

By selecting the LMGS-150 in the tree and then selecting Copy, you can paste the LMGS-150 settings to a different LMGS-150 in another room. This feature copies all the screens, buttons, icons, text descriptions, and button configuration types. Load bindings are **not** copied.

LMEQ-41 EQUINOX TOUCHSCREEN

The LMEQ-41 is a touchscreen interface that functions like a switch or dimmer, providing the ability to turn load on or off or dim them, or to select scenes. To interface with DLM, the LMEQ-41 must be connected to an LMTI-100 Touchscreen injector. For this reason, once discovered, the LMEQ-41 will appear in the tree as a child of the LMTI-100, as shown in the following screenshot:

LMEQ-41 in Devices tree



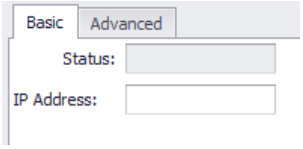
NOTE: Because it is child of the LMTI-100, if adding an LMEQ-41 manually to a room, it will be found under the Interfaces category instead of the Switches category.

NOTE: Updating firmware in the LMEQ-41 requires a special connection different from updating other DLM devices. See "Updating the LMEQ-41 and LMTI-100 Firmware" on page 137.

Basic Tab

Unlike other switches, the Basic tab for the LMEQ-41 does contain 2 parameters.

LMEQ-41 Basic Tab



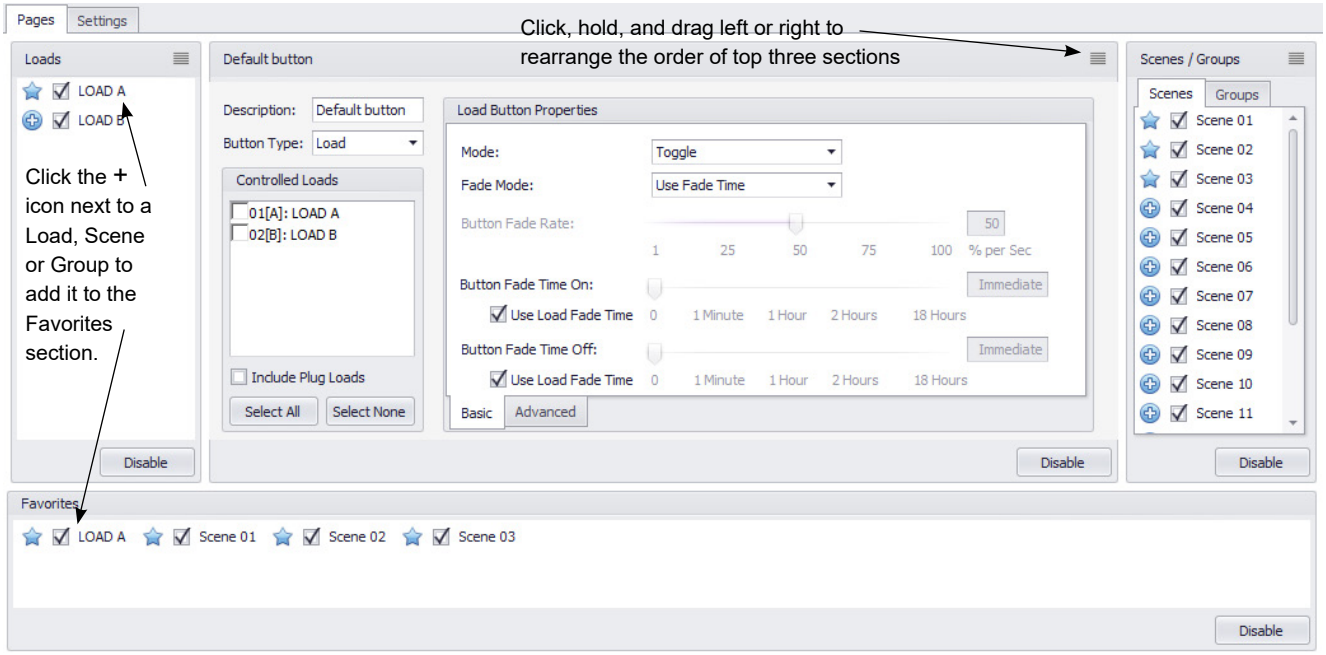
IP Address – Displays the IP address of the LMEQ.

The programming parameter tabs for the LMEQ-41 are different than for other switches. The **Pages** tab allows you to control aspects how the software interface and default hardware button work on the LMEQ-41, The **Settings** tab contains parameters found in the Settings menu of the LMEQ-41.

Pages Tab

This is divided into four sections: Loads, Scenes/Groups, Default Button, and Favorites. The top three sections can be reordered by clicking on the icon in the top right corner and dragging left or right. Once you send data from LMCS to the LMEQ, this will change the order of the widget icons on the LMEQ-41.

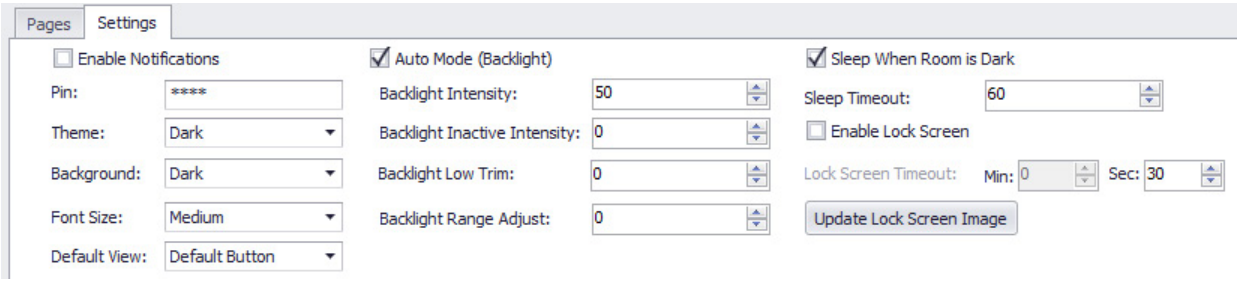
Pages Tab



In the Loads and Scenes/Groups section, click the checkboxes to enable/disable individual loads, scenes or groups. Once disabled, they will not appear on the screen of the LMEQ-41.

The parameters in the Default Button section are identical to that of other switches.

Settings Tab



Enable Notifications – If selected, this allows various messages such as “Communications Failure”, “load controlled by sensors”, etc. to briefly show up on the display on the LMEQ-41 when those conditions occur.

Pin – A four digit number is required for his parameter. The number entered here, once sent to the LMEQ-41, must then be entered on the LMEQ-41 in order to access the Settings menu in the LMEQ-41.

Theme – Changes the basic colors of the display. Choose between Light and Dark.

Background – Changes the color of the background when in normal operation mode. Available values change depending on the selected value of **Theme**.

Font Size – Determines the size of the text on the LMEQ-41 screen

Default View – Determines which window will display when you press the physical “Home” button the LMEQ-41 (not when you press the Home icon on the display).

Auto Mode (Backlight) – If selected, the LMEQ-41 will vary the brightness of the display based on the amount of ambient light in the room.

Backlight Intensity – The brightness of the display once it is touched. It will remain at that brightness until a specified amount of time occurs in which the display is not touched, at which point the brightness changes to the level set with the **Backlight Inactive Intensity** parameter. The amount of time is set with the **Sleep Timeout** parameter.

Backlight Inactive Intensity – The brightness of the display when not being used.

Backlight Low Trim – The backlight level when the screen is inactive

Backlight Range Adjust – The backlight level when the screen is active and **Auto Mode** is turned on.

Sleep When Room is Dark – If selected the screen will turn completely off if the ambient light drops to an amount low enough that the room is considered to be dark.

Sleep Timeout – The amount of time, in seconds, after the last touch on the screen, in which the display will switch to **Backlight Inactive Intensity**.

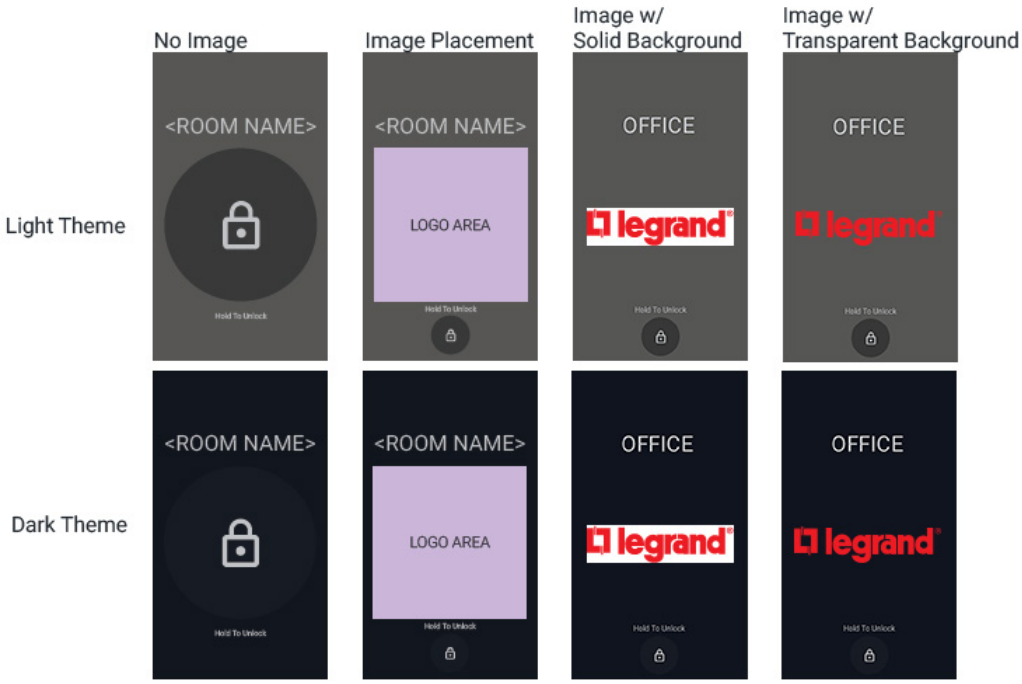
Enable Lock Screen – If selected, this will lock the screen on the LMEQ-41 so that once a user touches the screen, the **Pin** must be entered in order to access any features.

Lock Screen Timeout – If **Enable Lock Screen** is selected, this is the amount of time after the screen was unlocked and last touched before the screen will automatically lock again. The maximum time is 59 minutes and 59 seconds (3599 seconds).

Update Lock Screen Image – Click this button to select a custom file to be used if **Enable Lock Screen** is selected. The file must be in png format, 400 pixels x 400 pixels. Use of a transparent background is suggested.

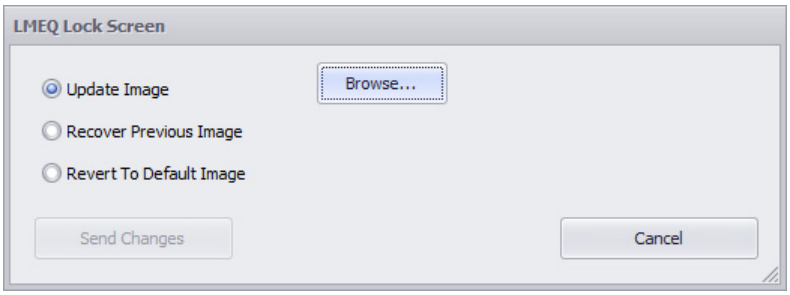
NOTE: As with updating the LMEQ-41 firmware, the LMTI-100 must be connected to an Ethernet connection in order to send a graphic file to the LMEQ-100. For details on this connection ,see “Updating the LMEQ-41 and LMTI-100 Firmware” on page 137.

Examples of custom screen images



When you click **Update Lock Screen Image**, the **LMEQ Lock Screen** dialog opens. Select one of the options, then, click **Send Changes** to send the update to the LMEQ-41.

LMEQ Lock Screen



Update Image – If selected, click **Browse** to select the file you want to send to the LMEQ-41.

Revert to default image – If selected, the display will switch from the custom image to the default lock screen image.

Recover previous image – If a custom image was previously loaded into the LMEQ-41, but it is currently using the default image, this will recall the custom image. If no custom image was previously uploaded, a message displays stating this.

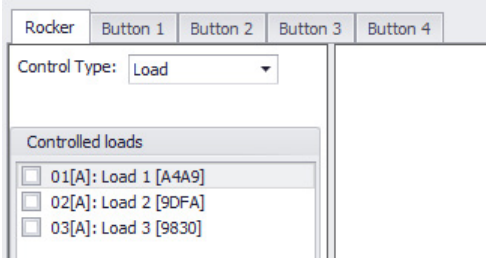
WIRELESS SWITCHES – BUTTON AND ROCKER ASSIGNMENT

For wireless switches, this section allows you to assign Loads, Scenes, or Group Tags to each button and the rocker for wireless switches, by selecting the desired value in the **Control Type** drop-down.

Assigning a Load to a Button or Rocker

With “Load” selected, the Controlled Loads section will appear.

Controlling a Load with a Wireless Button or Rocker



Select the load(s) you want controlled by the button or rocker. There are no additional programming parameters. Instead, the button or rocker will use the default Plug n' Go behavior for the button/rocker.

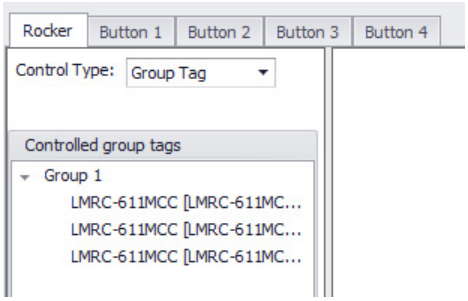
For a rocker, it will have the standard tap, double tap, and press and hold PnG behavior.

For buttons, the LMSW-605 and LMSW-641-S will send the standard scene values, based on the button number: Button 1 = 100, 2 = 75, 3 = 50, 4 = 25. For the other slim switch models (LMSW-610-S, LMSW-611-S, and LMSW-622-S), the buttons will use Toggle Dim behavior.

Assigning a Group Tag to a Button or Rocker

With "Load" selected, the Controlled Group Tags section will appear.

Controlling a Group Tag with a Wireless Button or Rocker



Any previously created Group tags which include the switch you are editing will be displayed, along with the loads that are part of that Group Tag.

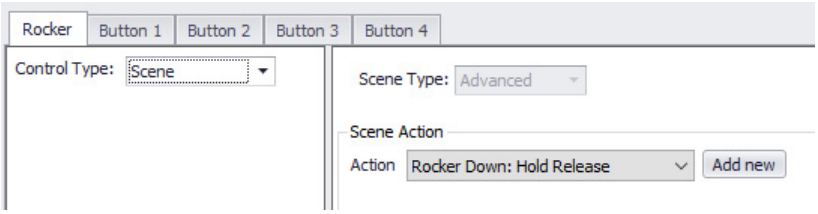
As with assigning a rocker or button to a switch, the behavior of the rocker or button will be the default PnG behavior.

Assigning a Scene to a Rocker

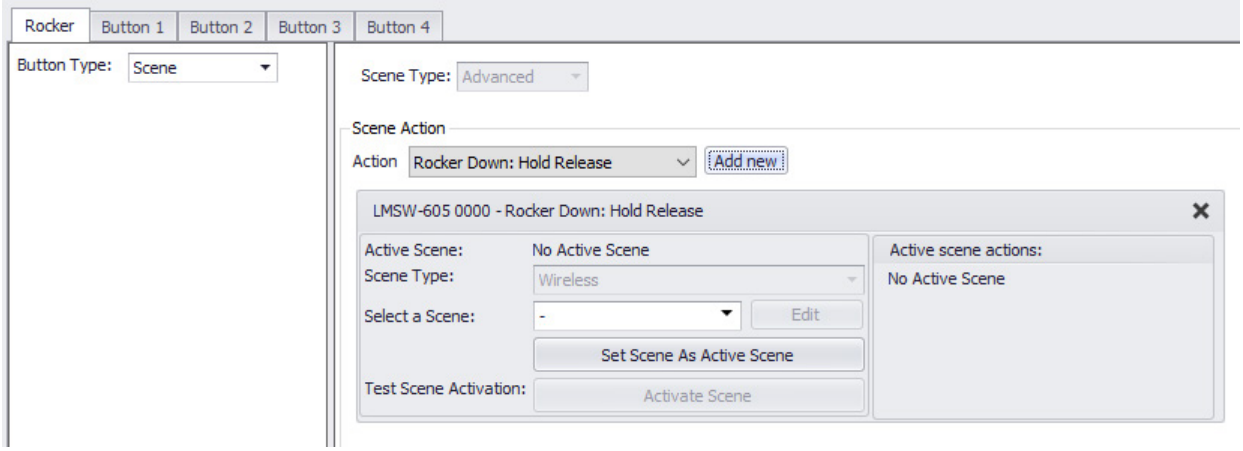
For rockers, eight separate actions are available, including, Short Press, Double Short Press, Hold and Hold Release, with separate options for the top and bottom of the rocker. Each action can have a different scene assigned to it.

For details on how to create wireless scenes, see "Creating and Editing Scenes for Wireless DLM" on page 78.

Rocker Tab Initial View



Rocker Scene Assignment

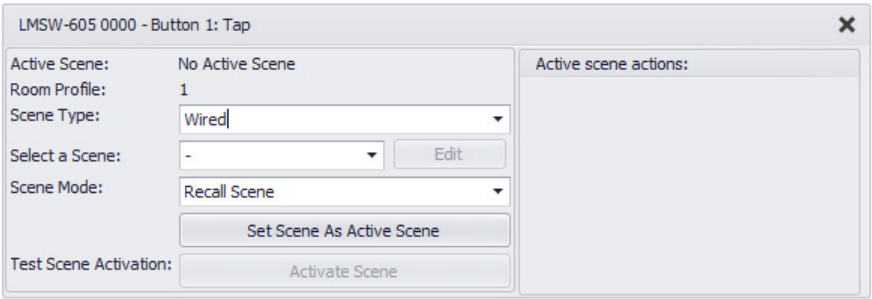


1. Select an **Action** from the drop-down.
2. Click **Add New** to add a scene dialog, as shown above.
3. Select a **Scene** to assign to the action. Once a scene is selected, if you click **Edit**, the wireless **Scene Editor** will open in a pop-up dialog. Note that if you make a change here, any other occurrence of this scene within the project will also be affected. Note also that a scene can control multiple loads in one or more rooms. You can also select “Create New Scene” from the drop-down to open the **Scene Editor**.
4. Click **Set Scene As Active Scene** to save the scene assignment. The scene action(s) and assigned loads will display in the **Active scene actions** section. Note that you must click this button or the scene will not be triggered by the button.
5. You can add additional scenes, for additional actions to be triggered by the button press. Conversely, you can assign multiple actions to a single scene.
6. If editing the rocker, repeat steps 1-5 for each desired action type.
7. If you click **Activate Scene**, the scene parameter values will be sent to the controlled loads immediately.

Assigning a Wired Scene to a Wireless Rocker or Button

In a hybrid room, with a wired controller, an LMBC-650 wireless bridge, and a wireless switch, once you click **Add New**, the same dialog opens, but the **Scene Type** drop-down is enabled and you can choose to have the switch control either wired or wireless switches.

Scene Assignment in a Hybrid Room



If you choose “Wired” for the **Scene Type**, the dialog changes, as shown above. The current **Room Profile** is displayed, since specific wired scene settings can be associated with a room profile.

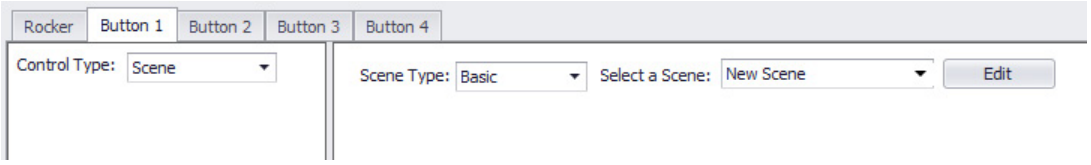
1. Select a **Scene**. Once a scene is selected, if you click **Edit**, the wired **Scene Editor** will open in a pop-up dialog.
2. Select a **Scene Mode**. This determines what happens when the button is pressed. Available values:
   - Recall/Off – Pressing the button toggles between selecting the scene and turning it OFF. When the scene is selected, all loads go to the levels set for the scene. When turned off, all loads (that are part of the scene) are turned OFF.
   - Recall Scene – Sends the scene command each time the button is pressed.
   - Scene Off – Send the OFF command each time the button is pressed.
3. Follow the rest of the steps described above in the section on assigning a wireless scene.

NOTE: Since it is possible for a wireless button or rocker to be assigned to more than one scene, it is possible to assign the same button or rocker to both wired and wireless scenes. It is also possible to assign the button or rocker to more than one wired scene (this feature is not possible with a wired switch).

Assigning a Scene to a Button

For buttons, there are two options for scene assignment—Basic and Advanced, selected with the **Scene Type** drop-down.

Basic Scene Assignment



In Basic mode, you simply select an existing scene to assign it to the button. To make modifications, click **Edit** to open the Wireless Scene Editor. As mentioned previously, see "Creating and Editing Scenes for Wireless DLM" on page 78 for details on creating wireless scenes.

In Advanced Mode, the interface is identical to assigning a scene to a rocker. However, there is only a single action available for buttons.

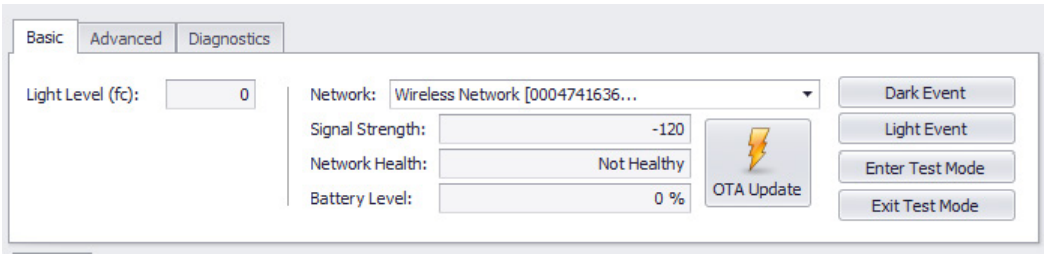
WIRELESS DAYLIGHT PHOTOSENSOR – LMDL-600

Of the four main tabs, the Basic tab is the only one with parameters unique for this device. For the Advanced and Diagnostics tabs, see "Parameters on the Advanced Tab Common to All Devices" on page 150 and "Diagnostics Tab" on page 152. The Technician tab contains only a single parameter, **IPv6 Address**. For details see "LMFS-601 Fixture Controller" on page 151.

The LMDL-600 must be calibrated before it will function properly. For details on calibration, see "Calibrating Wireless Daylighting Sensors" on page 86. Once calibrated the values will display on the Zone tabs in this window.

Basic Tab

LMDL-600 Basic Tab



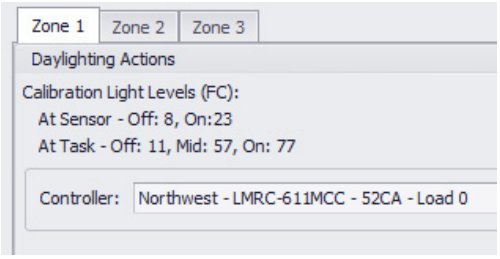
Light Level – This read-only parameter displays the current amount of light (in foot candles) read by the sensor. It will initially display 0. The value does not update automatically. You must click **Read** to update the value.

NOTE: If not awake already, you must wake up the LMDL-600 by pressing on the sensor before clicking **Read**.

Zone Tabs

As mentioned above, the zone tabs will display the calibration values for each zone. Additionally, the room controller that the LMDL-600 is assigned to is displayed. A zone not being used will have values of 0.

Zone Tabs



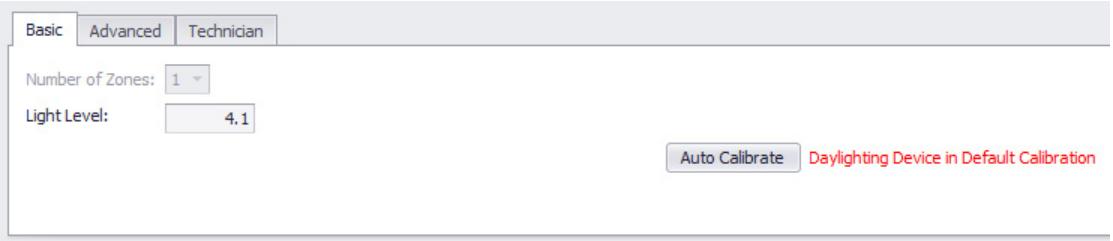
WIRED DAYLIGHT PHOTOSENSORS

This section documents the tabs for all daylight photosensor models. There are three different models, and each has a slightly different set of parameters, as described in the following sub-sections. The LMLS-600 has an extra tab in the top section, and one less tab in the zone section.

Basic Tab – LMLS-400 and LMLS-500

The **Basic** tab for the LMLS-400 and LMLS-500 similar, but there are a couple of differences, described below.

Daylighting Basic Tab – LMLS-400 and LMLS-500



Number of Zones – This parameter applies to the LMLS-500 only. (It is visible but disabled for the LMLS-400). You can select up to 3 zones, each of which has separate programmable parameters. Each zone is assigned to different loads. Additional Zone tabs are added to the bottom of the window if you add zones.

Light Level – This read-only parameter displays the current amount of light (in foot candles) read by the sensor.

Auto Calibrate – This button is displayed for the LMLS-400. Click to start the Auto Calibration process. This is only enabled when connected to the network.

Calibrating the LMLS-400 and LMLS-600

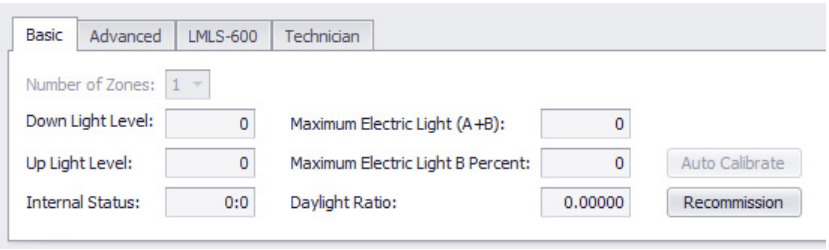
There are two ways to calibrate the LMLS-400 and LMLS-600—manually and automatically. (The LMLS-500 can only be calibrated manually). Calibrating manually involves setting the parameters on the **Basic** tab within the **Zone** tab.

To calibrate automatically:

1. Remove any objects that may affect the LMLS-400 light level reading (ladder or temporary objects).
2. Click **Auto Calibrate**. Then click **Yes** in the pop-up dialog.
3. The Blue LED will start flashing once every 4 seconds.
4. Daylighting controlled loads will automatically turn ON for 2 minutes to allow controlled lamps to warm up and reach a stable full output.
5. Lights will cycle eight times for automatic setpoint selection.
6. The photosensor is in Test Mode when the blue LED starts flashing once per second. For the next 5 minutes the sensor will be in Test Mode.
7. Verify the setpoints automatically selected by the photo sensor with the LMCT-100. If the automatic selected setpoints are not acceptable, proceed to manual calibration.

Basic Tab – LMLS-600

Daylighting Basic Tab – LMLS-600



Number of Zones – This parameter is disabled and set at 1, since the LMLS-600 only allows one zone.

Down Light Level – Displays the current amount of light (in foot candles) read by the sensor looking down towards the room.

Up Light Level – Displays the current amount of light (in foot candles) read by the sensor looking up towards the skylight.

Internal Status – This value indicates the current status of the sensor. The value is shown as two numbers with a colon between them. The number to the **left** of the ":" is the only number that provides useful information for a user. Note that if the sensor is bound to a load and is functioning normally, this should display a value of "3" or "4".

- 0 – Sensor is not controlling loads because no successful calibration has yet been done.
- 1 – Sensor is presently in the midst of an automatic calibration sequence.
- 2 – Sensor is presently in the midst of a manual calibration sequence.
- 3 – Normal operation—loads are being controlled based on closed-loop (down-looking) light levels.
- 4 – Loads are being temporarily controlled on the basis of open-loop (up-looking) light levels, due to some changes in the space below the sensor.
- 5 – Sensor is presently performing a nightly automatic recommissioning process, and will automatically return to normal operation afterwards.
- 6 – Load control is temporarily disabled by a configuration option.

Maximum Electric Light (A+B) – Displays the maximum output of all of the controlled electric lights, as seen in the closed-loop (down-looking) sensor.

Maximum Electric Light B Percent – Displays the measured percentage of the total electric light contributed by Circuit B loads; for on/off or dimming this is 0; ideally, for bi-level it is 50, and for tri-level it is 67. This value is set by the auto calibration process.

Daylight Ratio – Displays the latest average ratio between the daylight contribution seen in the closed-loop (down-looking) sensor and that measured by the open-loop (up-looking) sensor.

Auto Calibrate – Click to start the Auto Calibration process. This is only enabled when connected to the network. See the previous section for information on auto calibration.

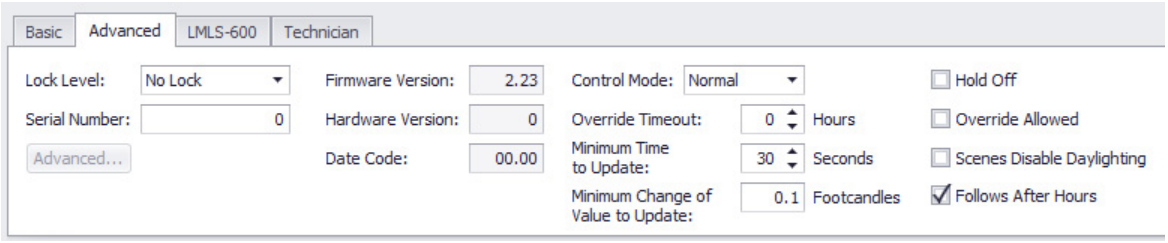
Recommission – Click to manually start the Recommissioning process. During Recommissioning, the sensor will turn all of the configured loads on, to full output, until they reach their maximum intensity (typically, about 2-3 minutes), then make some measurements and return the loads to their state prior to recommissioning.

NOTE: The sensor performs an automatic recommissioning, typically once per day, to adjust to changes in electric light output and to alterations in décor. This process starts when the daylight (as measured by the open-loop sensor) drops below the **Recommissioning Threshold** and stays there for at least the **Recommissioning Delay**. These two parameters are set on the **LMLS-600** tab.

Advanced Tab

This tab is identical for all three photosensor models.

Daylighting Advanced Tab



Parameters from **Lock Level** to **Date Code** are common to all devices. See "Parameters on the Advanced Tab Common to All Devices" on page 150 for details on these parameters.

Control Mode – Determines the control status of the photosensor"

- Normal – Allows the photosensor to take control of the daylighting loads. The sensor should be operated in this mode at all times, except when Test, Demo, or Disable function is explicitly needed.
- Test – Shortens time-outs for switching operation, and speeds ramp rates for dimming operation, to allow quick verification. Test Mode cancels automatically after 5 minutes.
- Demo – Operates identically to Test mode in the LMLS-600 except that it does not time out after 5 minutes.
- Disable – Allows you to temporarily prevent the LMLS-600 from controlling its assigned loads. While in this mode, the sensor will continue to report light levels, but will not adjust any loads. This value is mostly used for troubleshooting purposes.

Override Timeout – The amount of time delay before daylighting control resumes, after daylighting control has been disabled due to a manual action such as a button press. Applies only if the **Override Allowed** checkbox is selected.

Minimum Time to Update – The minimum period of time before the photosensor sends the current light level to the bridge. A smaller number will give you more accurate readings, but will increase the amount of messages sent on the DLM network.

Minimum Change of Value to Update – The minimum change of light level (in foot candles) before the photosensor sends the current light level to the bridge. A smaller number will give you more accurate readings, but will increase the amount of messages sent on the DLM network.

Hold Off – Determines the behavior of daylighting loads when they are turned ON, by a switch or occupancy sensor:

- If not selected, the loads can always be turned on to their previous level, and then will begin to adjust based upon daylight.
- If selected, the sensor will limit the loads to the level presently allowed by daylight contribution. This means that the loads may not initially turn ON (if the ambient light level is high - above the ON or Dimming Setpoint), but will become active for daylighting control, and will turn ON or dim up as daylight contribution drops.

Override Allowed – If selected, the **Override Timeout** parameter will be in effect.

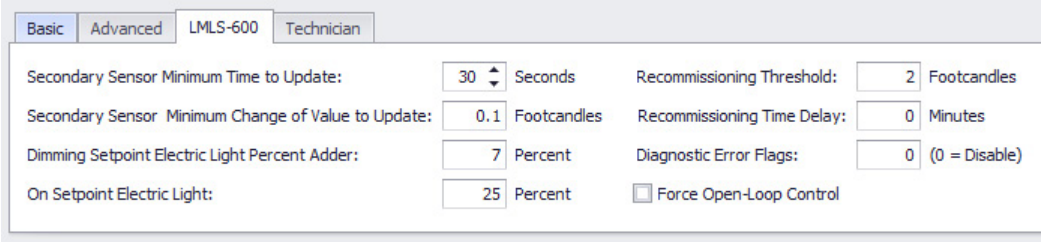
Scenes Disable Daylighting – If selected, daylighting control is disabled for any loads on which a scene is recalled until a change is manually made to the level of the load (including turning off the scene), or until the next cycle of occupancy.

Follow After Hours – If selected, the loads that are set to After Hours are removed from daylighting control for the duration of the After Hours period. If not selected, the photosensor will ignore After Hours and will continue to operate as normal.

LMLS-600 Tab

This tab appears only for the LMLS-600

Daylighting LMLS-600 Tab



Secondary Sensor Minimum Time to Update – The minimum period of time before the open loop (up looking) photosensor sends the current light level to the bridge. A smaller number will give you more accurate readings, but will increase the amount of messages sent on the DLM network.

Secondary Sensor Minimum Change of Value to Update – The minimum change of light level (in foot candles) before the open loop photosensor sends the current light level to the bridge. A smaller number will give you more accurate readings, but will increase the amount of messages sent on the DLM network.

Dimming Setpoint Electric Light Percent Adder – Percentage of maximum electric light to be added to that value, to create the Dimming Setpoint, after auto calibration.

On Setpoint Electric Light – Percentage of maximum electric light to be added to that value, to create the ON Setpoint, after auto calibration.

Recommissioning Threshold – The open-loop light level below which the LMLS-600 enters recommissioning mode. If this parameter is set to 0, automatic daily recommissioning is disabled.

Recommissioning Time Delay – The time that must elapse, with the open-loop light level remaining below the Recommissioning Threshold, before Recommissioning starts.

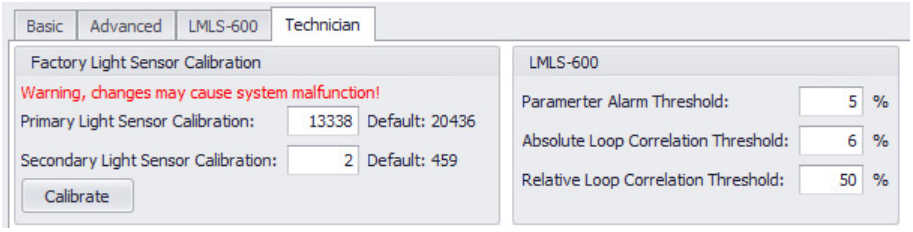
Diagnostic Error Flags – Controls reporting of diagnostic information, visually and over the DLM network. This should be left at a value of 0 unless instructed by a Wattstopper technician.

Force Open-Loop Control – When selected, this parameter causes the sensor to always reference the Open-Loop sensor during control operations, and use the Closed-Loop sensor only for Automatic Calibration process. For true dual-loop control, this parameter must **not** be selected.

Technician Tab

There are two sections on this tab. The **LMLS-600** section is displayed only for the LMLS-600.

Daylighting Technician Tab



Factory Light Sensor Calibration

WARNING: These parameters are used to calibrate the sensor at the factory. They should **never** be changed, except by a technician (for circumstances where the sensor was incorrectly calibrated at the factory).

LMLS-600

Parameter Alarm Threshold – This parameter is not currently in use.

Absolute Correlation Threshold – Determines how closely, on an absolute basis, the closed-loop and open-loop daylight level changes must track, for the closed-loop sensor to be selected for control.

WARNING: This field should not be adjusted unless directed by Wattstopper.

Relative Loop Correlation Threshold – Determines how closely, on a relative basis, the closed-loop and open-loop daylight level changes must track, for the closed-loop sensor to be selected for control.

WARNING: This field should not be adjusted unless directed by Wattstopper.

Load Binding to Zones

In this section, you choose which loads will be bound to the photosensor. In large room situations with many separate loads, such as an atrium, cafeteria, etc., you may have multiple photosensors. If using an LMLS-500, it may be configured for up to three separate zones. Each load can be bound to only a single sensor and zone.

There are two parts to this section. The operation of the two parts changes, depending on value of the Operation Mode (on the **Zone Basic** tab). For “Switched” and “Dimming” operation, it works one way and “Bi-Level” or “Tri-Level” operation, it works another.

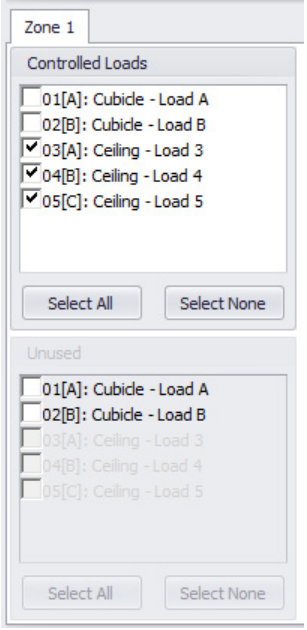
Switched and Dimming Load Binding

For Switched operation, the load will simply turn ON or OFF as the amount of daylight decreases or increases past the trip point. For Dimming operation, the load will continuously increase or decrease based on the amount of daylight and the expected target amount.

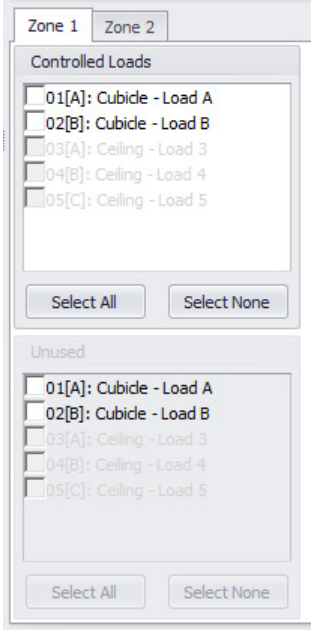
For Switched and Dimming operation, the two parts are labeled “Controlled Loads” and “Unused”. Both sections show all loads in the room. All load selection is done in the top part. When you click the checkbox next to a load in the Controller Loads part, the same load in the Unused part is grayed out, providing a visual indication of which loads are not yet controlled by a photosensor. You cannot click in the Unused section, it is provided as a reference only.

If you have multiple sensors or zones, if a load is already bound to a different sensor or zone, that load will be grayed out, as shown in the example below on the right. You **can** click on a grayed out load in the Controlled Loads section. This will bind that load to the current sensor/zone. Since a load can only be bound to a single sensor/zone, that load will be unbound from the previously assigned sensor/zone.

Switched/Dimming Load Binding



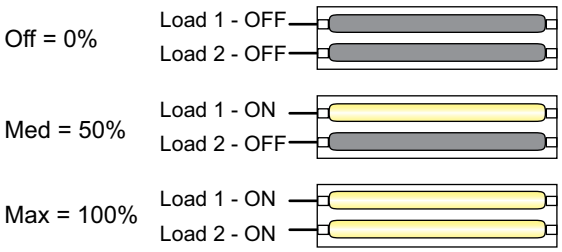
Switched/Dimming with Loads Selected on Another Sensor



Bi-Level and Tri-level Load Binding

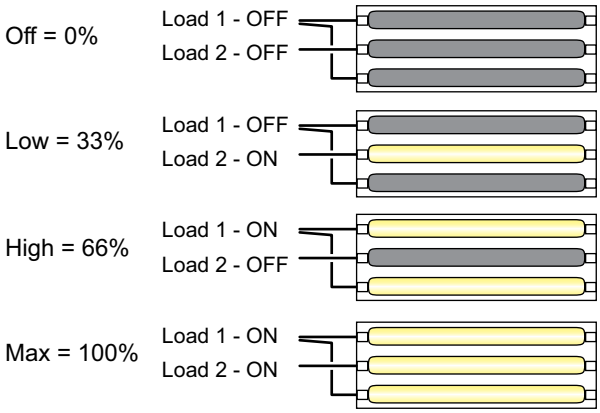
Bi-level mode provides three light levels within the daylighting zone controlled by the photosensor by using 2 load circuits.

Bi-Level Operation



Tri-level mode provides four light levels within the daylighting zone controlled by the photosensor by using 3 load circuits.

Tri-Level Operation

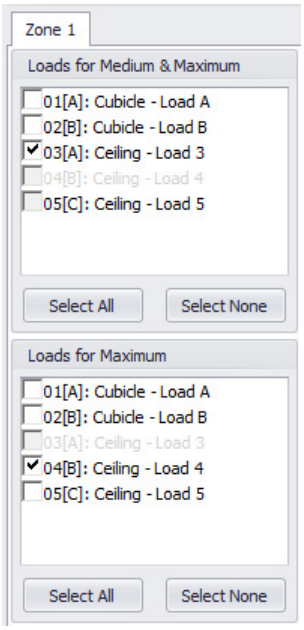


For Bi-Level and Tri-Level, the two parts allow you to select the load that are combined to create the different levels. Selecting a load in one part grays out that load in the other part. You can click on a grayed out load. This will bind that load to the current part and gray it out in the other part. As with Switched or Dimming operation, loads bound to other sensors or zones are also grayed out, but can be selected.

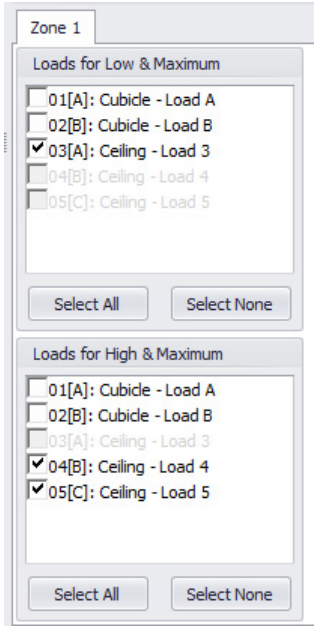
For Bi-Level operation, any loads selected in the top section will turn ON when set to the Medium value and remain ON when set to the Maximum value. Loads in the bottom section will turn ON only when set to the Maximum value.

For Tri-Level Operation, loads selected in the top section will turn ON when set to the Medium value, turn OFF for the High value, then back ON for the Maximum value. Loads selected in the bottom section will turn ON for the High value and remain ON for the Maximum value.

Bi-Level



Tri-Level



Zone Parameter Tabs – Advanced and Basic

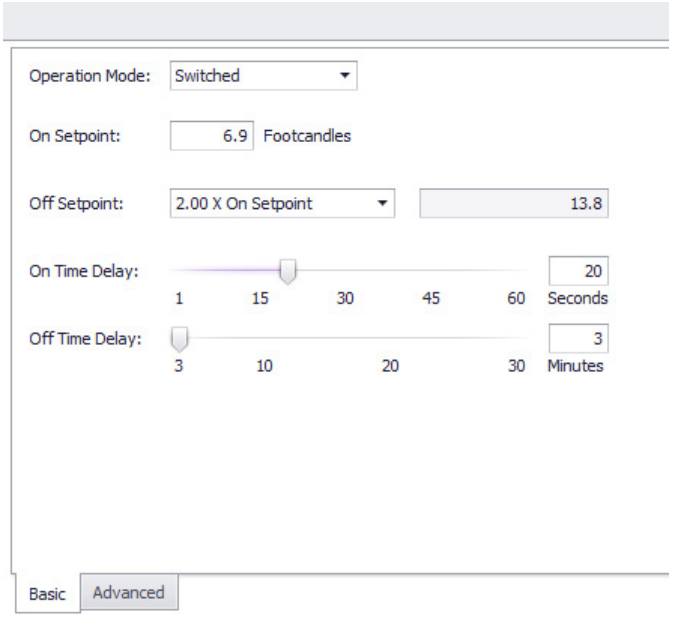
The parameters on the **Zone Basic** tab change depending the value of the **Operation Mode** drop-down and the model of the photosensor. For “Switched”, “Bi-Level”, or “Tri-Level” operation, all models, have the same parameters. For “Dimming” operation, the LMLS-400 has one set of parameters, and the LMLS-500 and LMLS-600 have a slightly different set of parameters.

The parameters on the **Zone Advanced** tab change depending on the model.

NOTE: There is no **Advanced** tab for the LMLS-600.

Zone Basic Tab – Switched/Bi-Level/Tri-Level

Zone Basic Tab Switched Load



On Setpoint – The target illuminance level below which the sensor turns the lights ON.

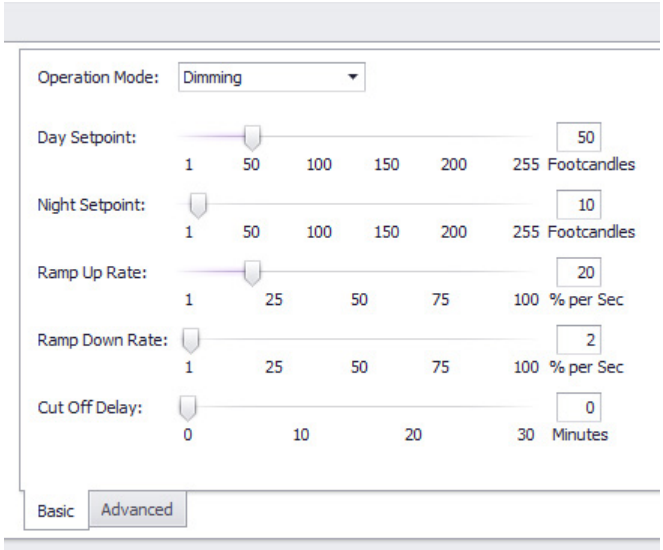
Off Setpoint – The target illuminance level above which the sensor turns the lights OFF.

On Time Delay – The time interval that must elapse, with the measured level below the ON Setpoint, before the controlled lights turn ON.

Off Time Delay – The time interval that must elapse, with the measured level above the OFF Setpoint, before the controlled lights turn OFF.

Zone Basic Tab – Dimming for LMLS-400

Zone Basic Tab – Dimming Load – LMLS-400



To determine the correct dimming level for any given photocell reading, the LMLS-400 calculates the level based on the slope between the day setpoint and night setpoint.

Day Setpoint – The desired light level at the sensor during daytime.

Night Setpoint – The desired light level at the sensor during nighttime. This takes into account that when no light is coming in from a window, the amount of light registered at the sensor (mounted in a ceiling) is lower than the amount of light in the working area because it reads only the light reflected from the floor/furniture surfaces back up to the sensor.

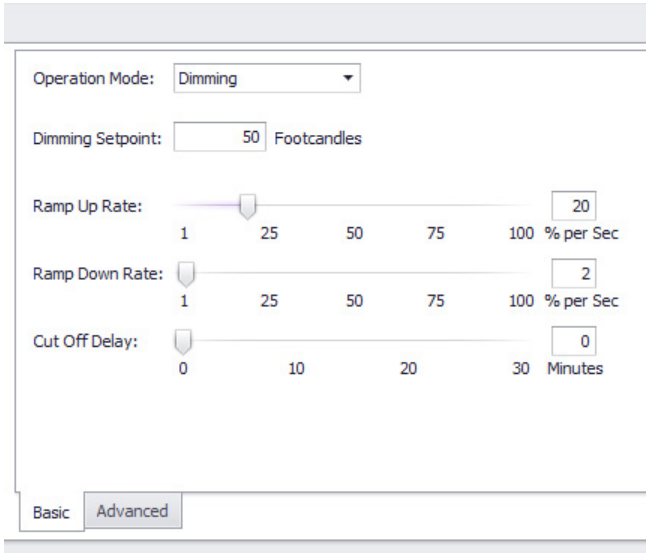
Ramp Up Rate – Determines the speed (or rate) at which the light level of bound loads increases.

Ramp Down Rate – Determines the speed (or rate) at which the light level of bound loads decreases.

Cut Off Delay – The time that the controlled lighting will remain at a minimum dimmed level, even with high daylight contribution, before the lights will be switched OFF.

Zone Basic Tab – Dimming for LMLS-500 and LMLS-600

Zone Basic Tab – Dimming Load – LMLS-500 and LMLS-600



Dimming Setpoint – For the LMLS-500, this is the desired light level to be maintained by daylighting control, as measured at the workplane.

For the LMLS-600, this is the desired light level to be maintained by daylighting control, as measured at the closed loop (down looking) sensor.

For both models, when the present measured light level differs significantly from this setpoint, the sensor will attempt to adjust the electric lighting to compensate.

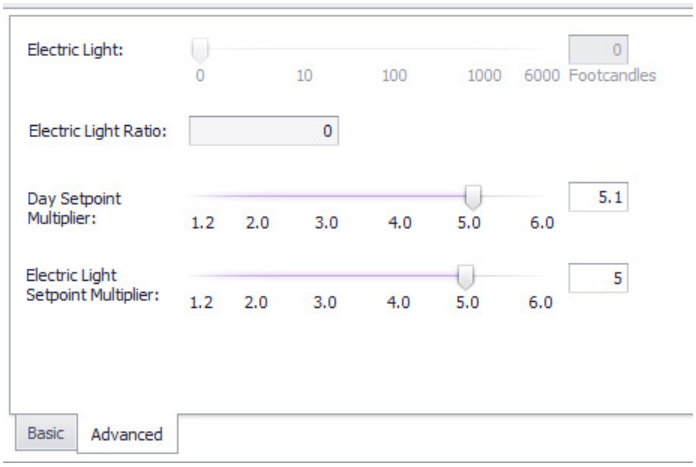
Ramp Up Rate – Determines the speed (or rate) at which the light level of bound loads increases.

Ramp Down Rate – Determines the speed (or rate) at which the light level of bound loads decreases.

Cut Off Delay – The time that the controlled lighting will remain at a minimum dimmed level, even with high daylight contribution, before the lights will be switched OFF.

Zone Advanced Tab – LMLS-400

Zone Advanced Tab – LMLS-400



Electric Light – The calculated maximum electric light contribution, as seen at the sensor.

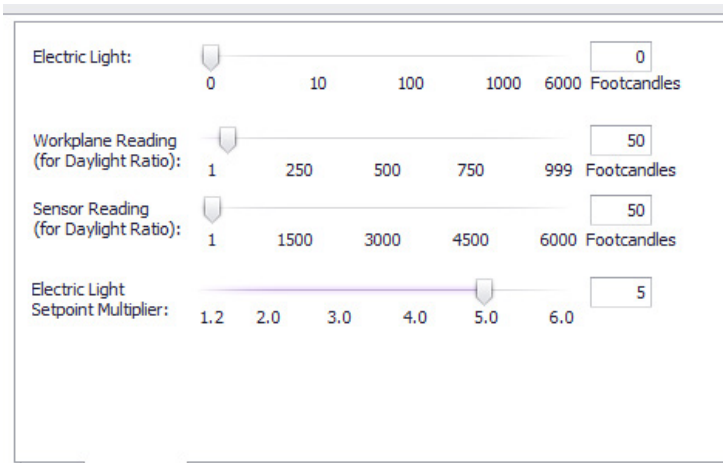
Electric Light Ratio – This parameter is currently not used.

Day Setpoint Multiplier – This parameter affects how the day setpoint is calculated during automatic commissioning. The higher the multiplier, the higher the light level must occur before loads are dimmed to minimum.

Electric Light Setpoint Multiplier – Determines how the **ON Setpoint** (for On/Off, Bi-Level, or Tri-Level operation only) is derived, after auto calibration. It defaults to 5.0, so by default, the **ON Setpoint** will be initialized to 5 times the Electric Light value computed in calibration.

Zone Advanced Tab – LMLS-500

Zone Advanced Tab – LMLS-500



Electric Light – The maximum electric light contribution at the workplane for this zone. This amount is set during commissioning, but can be adjusted here. At night, with no daylight contribution, this is the maximum of electric light.

Workplane Reading and **Sensor Reading** – These two amounts are used to calculate the Daylight Ratio, which is then used to calculate how much daylight is in the zone, based on the sensor reading.

- Daylight Ratio = Workplane Reading / Sensor Reading (at time of Workplane reading)
- Daylight (amount calculated at Zone) = Daylight Ratio x Sensor Reading

Workplane Reading – Daylight contribution measured at the workplane with a light meter during the commissioning process.

Sensor Reading – The level of daylight detected by the sensor (looking out the window) at the time the work plane measurement was made.

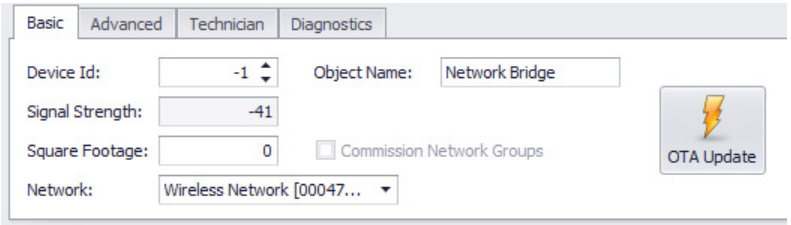
Electric Light Setpoint Multiplier – Determines how the **ON Setpoint** (for On/Off, Bi-Level, or Tri-Level operation only) is derived, after manual calibration. It defaults to 5.0, so by default, the **ON Setpoint** will be initialized to 5 times the Electric Light value computed in calibration.

INTERFACES – LMBC-650 BRIDGE

Basic Tab

This tab is similar to the **Basic** tab for other wireless devices, but also has a couple of parameters that are found on Panels, which have a bridge built in.

LMBC-650 Basic Tab



Device ID – The ID used for BACnet communication. This is set automatically during discovery.

Signal Strength – Displays the Received Signal Strength Indicator (RSSI) value

Square Footage – Enter the square footage of the area controlled by all loads in the room controllers that are part of this room. This is used to calculate energy usage per square foot when monitoring using the Segment Manager or Network Controller application.

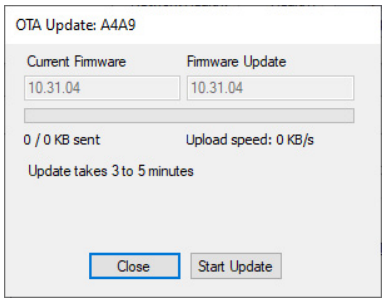
Commission Network Groups – If enabled, selecting this checkbox allows sending and reading of the astro, occupancy, and network groups messages. (If not currently communicating with the bridge, the parameter will be disabled.)

Network – The Network (and therefore the LMBR-650) that the LMRC is communicating with. This will initially be the network that you originally selected during the discovery process. It can be changed to a different network, if desired. However, the **LMBC-650 must be within communication distance of the LMBR**. It is possible for paired devices in a room be on different networks.

Object Name – This field is used by BACnet and will always say “Network Bridge”.

OTA Update – Click this button to update the firmware of the device “over the air”. A dialog opens. It displays the current version in the device and the most recently available version, which is the version stored in the Firmware folder within the LMCS application on the PC. If a newer version is available on the cloud, a dialog will inform you of this and allow you to download that version. Click **Start Update** to update the device. After the device completes updating it will restart. This can take a minute before it begins communicating with other devices again.

OTA Update

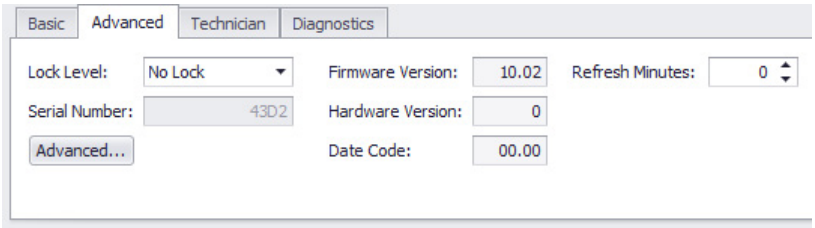


NOTE: Occasionally LMCS may not be able to establish communication with the device in order to update it. If you get an error, try clicking **Start Update** to try the update again.

Advanced Tab

Parameters from **Lock Level** to **Date Code** are common to all devices. See "Parameters on the Advanced Tab Common to All Devices" on page 150 for details on these parameters. The only remaining parameter on this tab is **Refresh Minutes**.

LMBC-650 Advanced Tab



Refresh Minutes – If this is set to a value other than 0 (the default), the device will check the network once per number of minutes set here, to see if other devices known to be connected are still online.

Technician Tab

This tab is found for all wireless devices. For the LMBC-650, it contains only a single parameter, **IPv6 Address**. For details see "LMFS-601 Fixture Controller" on page 151.

Diagnostics Tab

This tab is found for all wireless devices. For details, see "Diagnostics Tab" on page 152.

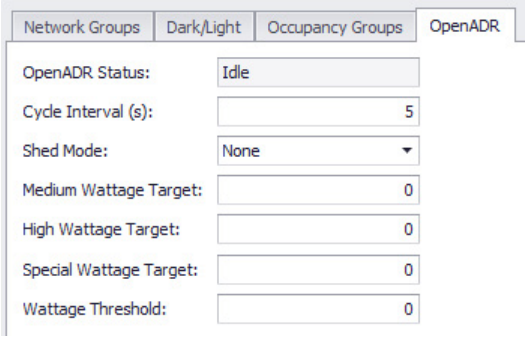
Bottom Section

The bottom section of the window for the LMBC-650 is similar to a panel but with the following differences:

- The LMBC-650 has no loads of its own, so, of course there are no **Relay** tabs.
- There is no **Schedule** tab since the LMBC-650 has no internal clock and so can't initiate clock based events.
- You can only store 16 **Network Groups** in the LMBC-650, as opposed to 99 in a panel.
- The **Dark/Light** and **Occupancy Groups** tabs are similar to a panel, but the Photocell column does not include the Astro value, and the **Dark/Light** tab does not include the **Active Days** column, again because there is no clock.

For details on the parameters in this section, see "Network Groups Tab" on page 173, "Dark/Light Tab" on page 175, "Occupancy Groups Tab" on page 177, and "OpenADR Tab" on page 178.

LMBC-650 Bottom Section



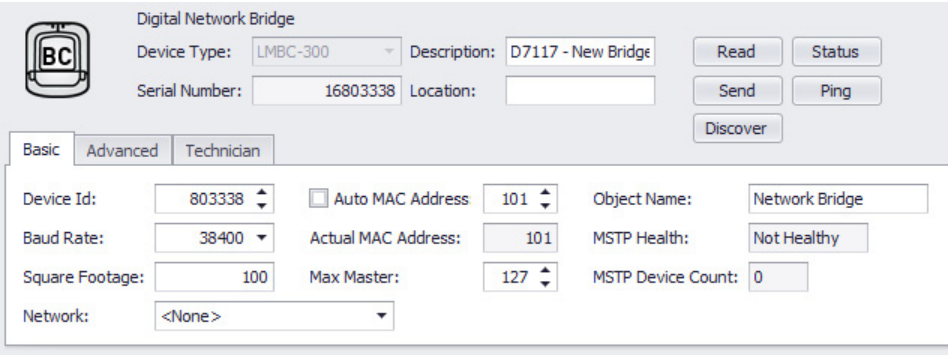
INTERFACES – LMBC-300 AND LMBC-600 BRIDGES

This section documents the tabs for the LMBC-300 and LMBC-600. The LMBC-300 and LMBC-600 have very similar functionality as a Panel, which has a bridge built in. To avoid duplication, identical parameters are not described here, and only unique parameters are defined. Differences between the bridge and panels is described below

LMBC-300 Basic Tab

This tab is nearly identical to the **Bridge** tab for panels, with one exception—the **Refresh Minutes** parameter from the **Bridge** tab is not on this tab and is instead on the **Advanced** tab. For details on these parameters, see "Bridge Tab" on page 171.

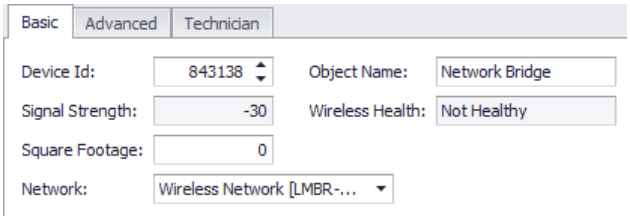
LMBC-300 Basic Tab



LMBC-600 Basic Tab

The LMBC-600 **Basic** tab is similar but several of the parameters are not included.

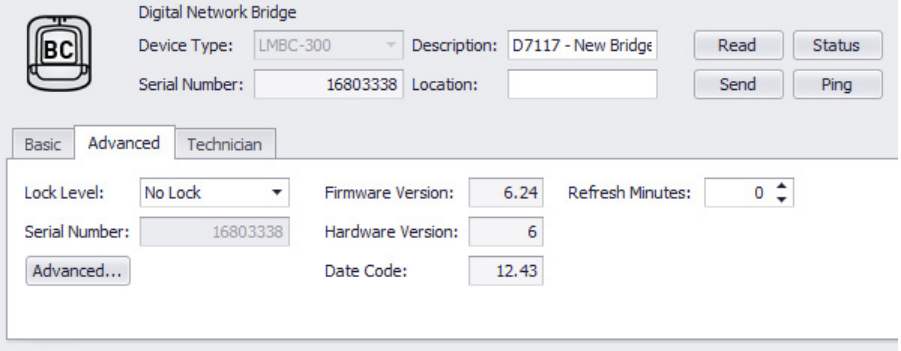
LMBC-600 Basic Tab



Advanced Tab

Parameters from **Lock Level** to **Date Code** are common to all devices. See "Parameters on the Advanced Tab Common to All Devices" on page 150 for details on these parameters. The only remaining parameter on this tab is **Refresh Minutes**.

LMBC-300/LMBC-600 Advanced Tab



Refresh Minutes – If this is set to a value other than 0 (the default), the device will check the network once per number of minutes set here, to see if other devices known to be connected are still online.

Technician Tab

This tab is found for all wireless devices. For the LMBC-300/LMBC-600, it contains only a single parameter, **IPv6 Address**. For details see "LMFS-601 Fixture Controller" on page 151.

Bottom Section

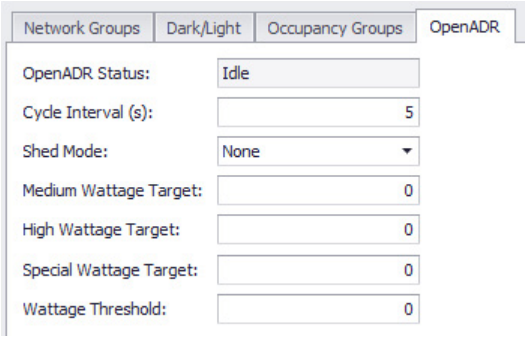
The bottom section of the window for the LMBC-300/LMBC-600 is similar to a panel but with the following differences:

- The LMBC-300 has no loads of its own, so, of course there are no **Relay** tabs.
- There is no **Schedule** tab since the LMBC-300 and LMBC-600 have no internal clock and so can't initiate clock based events
- You can only store 16 **Network Groups** in the LMBC-300/LMBC-600, as opposed to 99 in a panel.
- The **Dark/Light** and **Occupancy Groups** tabs are similar to a panel, but the Photocell column does not include the Astro value, and the **Dark/Light** tab does not include the **Active Days** column, again because there is no clock.

For details on the parameters in this section, see "Network Groups Tab" on page 173, "Dark/Light Tab" on page 175, "Occupancy Groups Tab" on page 177, and "OpenADR Tab" on page 178.

NOTE: You must have firmware 7.xx or later installed in the LMBC-300 in order for the **Network Groups**, **Dark/Light**, and **Occupancy Groups** tabs to appear.

LMBC-300/LMBC-600 Bottom Section



INTERFACES – LMZC-301 ZONE CONTROLLER

The LMZC-301 Zone Controller has identical features as a panel, but without any internal relays/loads. For details on all LMZC-301 parameters, see "Controllers – Parameters Unique to Panels and Zone Controllers" on page 171.

INTERFACES – ELCU-100 AND ELCU-200

Both the ELCU-100 and ELCU-200 have only two sets of parameters, which are used for documentation purposes.

ELCU-100 Basic Tab

Attribute – The text in this parameter is imported from the CAD drawings, for both Normal and Emergency conditions.

Description – This parameter is available to provide further detail for both Normal and Emergency conditions, if needed.

INTERFACES – LMIO-101

The LMIO-101 allows integration with third party devices to provide additional control over loads in a DLM system. It provides the same switch functionality as DLM switches. Therefore, the parameters are identical to those found for switches. See "Switches" on page 184 for details. The LMIO-101 provides for 2 inputs, similar to a two button switch.

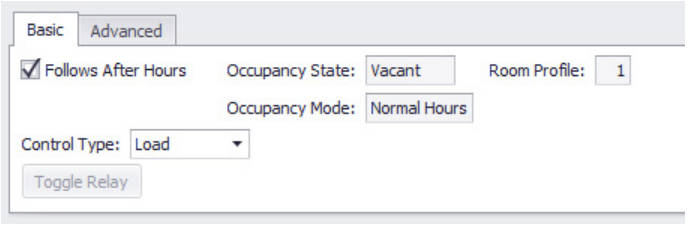
INTERFACES – LMIO-201

The LMIO-201 provides a DLM interface for analog occupancy sensors. Available parameters are similar to those for standard DLM sensors.

Basic Tab

This tab is identical to that for a regular DLM sensors, with two exceptions—A **Toggle Relay** button has been added, and the **Detection LEDs** parameter does not apply for analog sensors.

LMIO-201 Basic Tab



Follows After Hours – This is selected by default. If it is not selected, the sensor will ignore the settings on the After Hours tab and use the Normal Hours settings all the time.

Control Type – Determines whether the sensor controls individual loads or scenes. The Load/Scene Binding section of the window changes depending on the value selected here.

Occupancy State – If LMCS is connected to the room and you click **Read**, this field displays the current state of the sensor. An "Occupied" state does not necessarily mean that the lights in the space are on since the loads might be set to Manual On.

Occupancy Mode – If LMCS is connected to the room and you click **Read**, this field displays whether the Sensor is set to Normal Hours or After Hours.

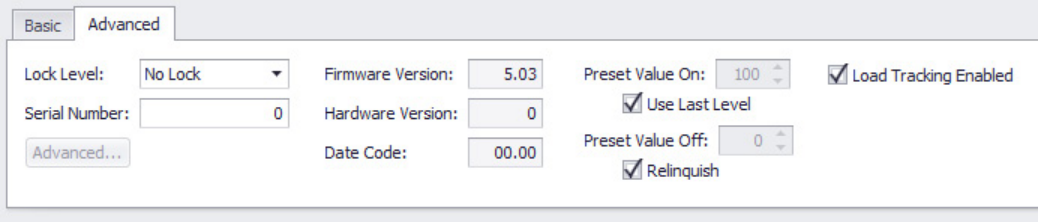
Room Profile – This read only parameter indicates the current profile selected at the room level. This parameter is displayed only if the room includes a device that supports profiles (currently, the LMDI-100, LMIO-102, and LMPS-104). For the LMDI-100, you must also select the **Partition Support** checkbox before this parameter is displayed.

Toggle Relay – Clicking this button is the same as clicking the **Ping** button in the top section.

Advanced Tab

This tab is identical to that for regular DLM sensors.

LMIO-201 Advanced Tab



Parameters from **Lock Level** to **Date Code** are common to all devices. See "Parameters on the Advanced Tab Common to All Devices" on page 150 for details on these parameters.

Preset Value On – If this is enabled, this is the level all loads bound to the sensor will go to when the sensor registers occupancy. This parameter is disabled if **Use Last Level** is selected.

Use Last Level – If this is selected, each load bound to this sensor will return to its previous non-zero level when the sensor registers occupancy.

Preset Value Off – If this is enabled, this is the level all loads bound to the sensor will go to when it registers vacancy. This parameter is disabled if **Relinquish** is selected.

Relinquish – If this is selected, the Relinquish command will be sent to each load bound to this sensor, at the priority specified by the **Occupancy Sensor Priority** parameter on the **Technician** tab for the load. The load's controller then looks at the next highest priority to determine what to do. If no other command exists at any priority level, the load will go to the **Partial Off Level**, set on the **Basic** tab for the load (0 by default).

Load Tracking Enabled – If the sensor is bound to a room controller, this checkbox should always be selected. This allows for the sensor to understand which loads are ON/OFF in order to properly manage presentation mode, and create error messages in the event that the sensor is not bound to any loads.

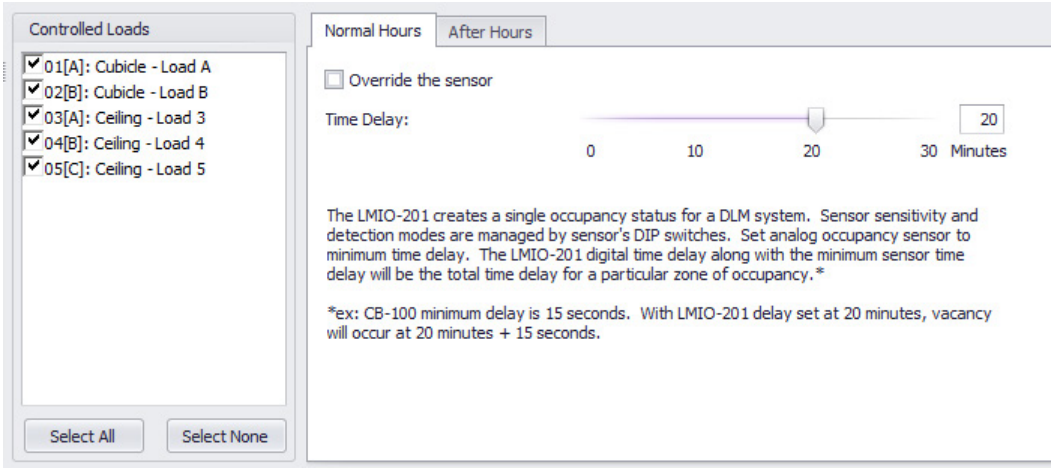
If the sensor is bound to a panel, this checkbox should not be selected. For panels, the Load IDs are not handled the same way. Instead of the sensor telling the panel which loads should turn on and when, the panels listen for certain MAC addresses from the sensors in order to determine if that sensor should control its loads.

Load Binding and Normal/After Hours

Load binding is identical for analog sensors as for DLM sensors. For details on load binding, see "Sensor Load/Scene Binding (Wired Sensors Only)" on page 182.

The Normal/After Hours tabs are very different for analog sensors, because analog sensors don't have the detailed control available in DLM sensors. Consequently, there are only two programmable parameters.

LMIO-201 Bottom Section



Override the Sensor – Selecting this checkbox turns off sensor control over the loads the sensor is bound to. This parameter allows the sensor to control the loads only during Normal Hours (or only during After Hours). If it is selected for both Normal Hours and After Hours, then the sensor will have no effect on the loads.

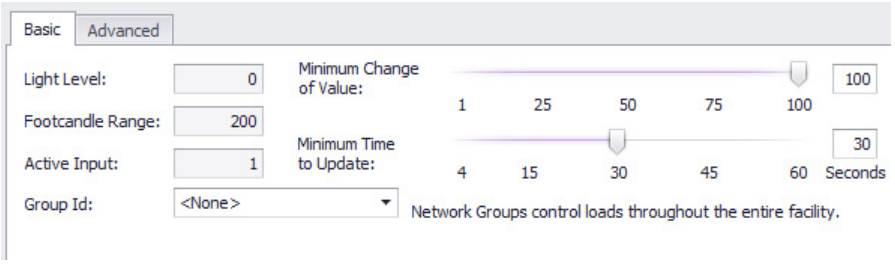
Time Delay – The amount of time the load remains ON after no motion is detected.

NOTE: Set the analog occupancy sensor to minimum time delay. The LMIO-201 digital time delay will be added to the minimum sensor time delay. So for example, if a sensor has a minimum time delay of 15 seconds and the LMIO-201 is set to 20 minutes, as in the screenshot above, the total delay time will be 20 minutes and 15 seconds.

INTERFACES – LMIO-301

The LMIO-301 provides an interface for analog photocells.

LMIO-301 Basic Tab



Light Level – This displays the current light level (in foot candles) read by the photosensor.

Footcandle Range – This displays the maximum range of the analog photosensor. This value is based on the dip switch settings in the LMIO-301.

Active Input – This displays which input wiring slots on the LMIO-301 are being used to connect to the photosensor. This value is based on the dip switch settings in the LMIO-301.

Group ID – This determines which network group will receive input from the photosensor.

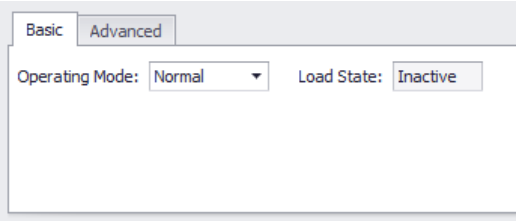
Minimum Time to Update – The minimum period of time before the LMIO-301 sends the current light level to the bridge. A smaller number will give you more accurate readings, but will increase the amount of messages sent on the DLM network.

Minimum Change of Value to Update – The minimum change of light level (in foot candles) before the LMIO-301 sends the current light level to the bridge. A smaller number will give you more accurate readings, but will increase the amount of messages sent on the DLM network.

INTERFACES – LMIN-104

LMIN-104 is a digital input interface that provides the same input functionality as the LMIO-101, LMIO-102, LMIO-201, and LMIO-301. An **Operating Mode** parameter allows you to choose which of the functions it will perform.

LMIN-104 Basic Tab

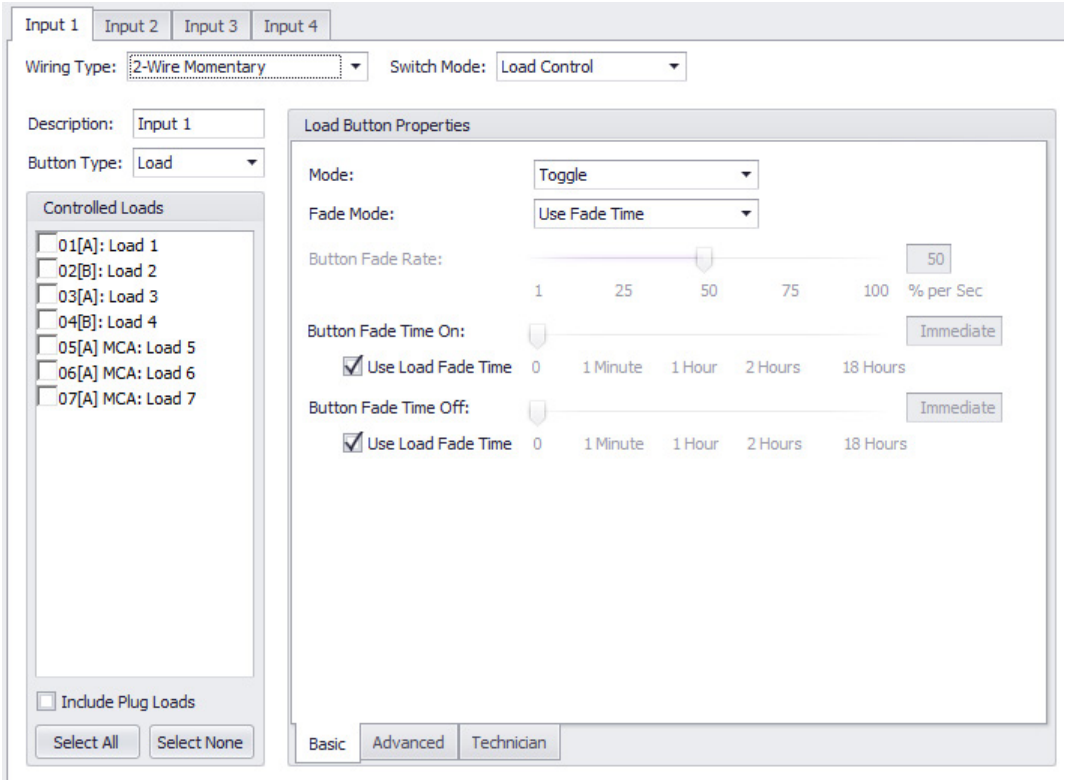


Operating Mode – This drop-down selects the functionality of the LMIN-104.

- If set to “Normal”, the LMIN-104 functions similarly to an LMIO-101 or LMIO-201 (depending on whether the input is from a switch or occupancy sensor) and therefore provides the same functionality as DLM switches or sensors. The parameters are identical to those found for switches or sensors, with the addition of a few more described below.
- If set to “Partition”, the LMIN-104 functions identically to the LMIO-102. Like the LMIO-102, there are no other parameters on the **Basic** tab and the standard parameters are found on the **Advanced** tab.
- If set to “Photocell, the LMIN-104 functions identically to LMIO-301. The basic tab will have the same parameters described in the section on the LMIO-301.

Load State – This parameter appears only when **Operating Mode** is set to “Normal”. It is a read only value that is tied to the currently selected input if that input is a switch. It will show “Inactive” if the switch’s level if 0 (Off), “Active” if between 0-100 (On), and “Unknown” if LMCS can’t determine the state.

Bottom Input Section When Mode is “Normal”



As mentioned above, when set to “Normal” mode, the LMIN-104 provides inputs for non-DLM switches or sensors and the parameters are identical to those found for switches or sensors. This section changes depending on whether you select a switch or a sensor in the **Wiring Type** drop-down. Additionally, for switches, the display changes depending on the **Button Type** drop-down.

Wiring Type – This parameter indicates the wiring used by the input device, which indicates which input terminals are being used and the type of functionality. Wiring diagrams for the various input types are included in the *LMIN-104 Installation Instructions*. Available values as follows:

- Switches: 2 Wire Maintained, 2 Wire Momentary, 3 Wire Rocker Dimmer (The 3 Wire Rocker Dimmer is only available on Inputs 1 and 3)
- Occupancy Sensor: 2 Wire Occupancy Sensor

NOTE: The **Operating Mode** is global to the LMIN-104. In other words, if set to “Partition” or “Photocell”, it will perform only that function. However, when set to “Normal”, each input is independent and can be set to a different value. For example, you could use inputs 1 and 2 for momentary switches, input 3 for a maintained switch, and input 4 for an occupancy sensor. However, since a 3 Wire Rocker Dimmer switch uses two input wires, it requires use of either inputs 1 and 2, or 3 and 4. Therefore, when selecting that value for input 1 or 3, the corresponding input 2 or 4 will be disabled.

Switch Mode – Displayed only when the **Wiring Type** is set to one of the switch values. See the section below for details.

Control Type – Displayed only when the **Wiring Type** is set to “2 Wire Occupancy Sensor”. Determines whether the sensor controls individual loads or scenes. The Load/Scene Binding section of the window changes depending on the value selected here.

Button Type – Displayed for all Switch wiring types (not displayed for 2 Wire Occupancy Sensor). The **Button Properties** section of the display changes based on the button type.

- Load – With this value selected, you select individual lighting loads in the **Controlled Loads** section. The available parameters in the **Load Button Properties** section are identical to those you see when programming a wired DLM switch. See “Wired Switches – Button Parameters” on page 187 for details.
- Scene – With this value selected, available parameters in the **Scene Button Properties** section are identical to those you see when programming a wired DLM scene switch. See “Binding to a Scene” on page 191 for details.

- Shade – With this value selected, you select individual shade loads (MCA loads) in the **Controlled Loads** section. Available parameters in the **Shade Button Properties** section are identical to those you see when programming a wired DLM shade switch. See "Shading – Shade Switches" on page 228 for details.
- Network – With this value selected, available parameters in the **Network Button Properties** section are identical to those you see when programming a wired DLM switch to trigger a network group. See "Binding to a Network Group" on page 192 for details.

NOTE: A switch can have only a single button type. Therefore a switch can't be used to control both a lighting load and shade load at the same time.

NOTE: The **Controlled Loads** section will show **all** loads in the room. If you select a shade load when the **Button Type** is set to "Load", it will turn red indicating that it is not the correct load type. Conversely, selecting a lighting load when **Button Type** is set to "Shade" will do the same thing.

Shade behavior for different switch types

Wattstopper recommends the use of Momentary switches instead of Maintained switches for shades. The behavior for each Mode based on the switch type is documented in the following table.

Switch Type	Mode	Press (Tap) Action	Press & Hold Action
2-Wire Maintained	Open Only	N/A	Shade moves up, stops when released
	Close Only	N/A	Shade moves down, stops when released
	Toggle	N/A	Hold to raise, release to stop, hold to lower, release to stop, repeat
	Open Preset	N/A	Shade moves towards preset %, stops when released
2-Wire Momentary	Open Only	Full Open	Shade moves up, stops when released
	Close Only	Full Close	Shade moves down, stops when released
	Toggle	Presses toggle through: Open, Stop, Close Stop	Hold to raise, release to stop, hold to lower, release to stop, repeat
	Go To Preset	Shade goes to preset %	7-second hold reprograms preset %
	Open Preset	Shade goes to preset %	Shade moves towards preset %, stops when released
3-Wire Rocker	N/A	Mimics LMSH-SW101 behavior	Mimics LMSH-SW101 behavior

Note that there is no "Go To Preset" Mode for maintained switches.

Switch Mode

By default for lighting loads, **Switch Mode** is set to "Load Control". When set this way, a non-DLM low voltage switch can turn any loads bound to that switch ON and OFF. However, there are several other specialized commands that can be triggered from a switch input.

NOTE: If **Button Type** is set to "Shade", **Switch Mode** is set to "Shade Control" and can't be changed.

The commands sent out are basic ON/OFF commands with different priorities. The higher priority command overrides lower priority commands given by the system. Below is the list of priorities for these commands. For example: a Force-On (highest priority) command overrides any **OFF** command given by any device in the system making sure that the lights remain on. When the Force-**ON** command is released, the next highest priority command is followed.

↑ Highest Priority

- **Force-On** – Turns all bound loads **ON**.

  NOTE: Turning Off the Force On command is **not** the same as sending a Force Off command. Instead it relinquishes the Force On command so that a lower priority command from a different device can turn a load off. If the device was Off before the Force On command was initiated, it will turn back Off unless another switch or an occupancy sensor has been used to turn the load On.
- **Force-Off** – Turns all bound loads **OFF**. As with the Force On command, turning this command Off relinquishes the command, and whether it turns back on or not is determined by the previous state of that load along with commands from other devices.
- **Shed** – The Shed command is broadcast to all loads in a room, causing them to reduce their level to the value specified by each load's "Shed Level" parameter. By default, the "Shed Level" is set to 65% because for most driver/ballast combinations this will result in at least a 15% power reduction. However, you can set the amount of shed on a per load basis in LMCS.
- **Load Control** –Turns Loads **On/Off**.

- **Clean Switch** – Turns Loads **ON**. This is intended for use by cleaning crews. A switch assigned to cleaners can be used to turn all bound loads ON regardless of occupancy, but since it has a low priority, an On or OFF command with a higher priority will override this command.

↓ Lowest Priority

The following two additional actions are used for functionality outside of the priority hierarchy.

- **Normal/After Hours** – Turning this function ON puts all bound loads into After Hours mode where individual load parameters switch to the assigned After Hours parameters of that load. These parameters can be different than the normal hours mode parameters. For example, Blink warning may be active in After Hours for the load but not active in normal hours. After Hours parameters are programmed via the LMCS-100 application or through network systems where a Network Controller or BACnet BAS is used to set After Hours schedules for a load or device. When the function is turned OFF, the bound devices revert to Normal Hours.
- **Key-Switch** – The Key-switch command puts the entire local DLM network into Key-switch mode, where no DLM wall switches can control any loads. When the command is released, the system returns to normal operation so that DLM switches again control loads. Individual switch stations can be set to ignore this message using LMCS, enabling a subset of switches in a room to stay active. A typical use for this is to keep switches in secure locations active while disabling other publicly accessible switches.

INTERFACES – LMOR-102

The LMOR-102 provides DLM control over 3rd party devices via low voltage contact closures. Its two isolated relays can be bound to and controlled by DLM occupancy sensors, push button switches, photocells, or other DLM devices that can control loads in a space. While most DLM loads are line voltage, this unit allows the use of “dry” (unpowered) low voltage contacts.

Therefore, the LMOR-102 functions similarly to a room controller, and the available parameters are identical to that of a room controller. See “Controllers – Loads and Relays” on page 153 for details.

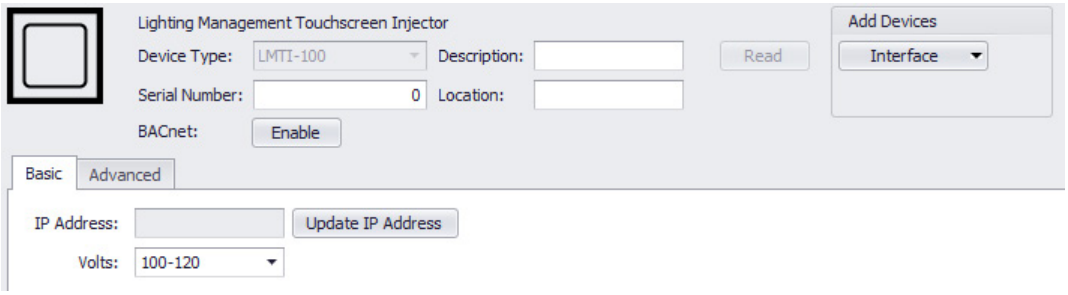
INTERFACES – LMDI-100, LMIO-102, LMPS-104, WRC-TX

These devices have no unique parameters. There are no parameters on the **Basic** tab. The LMDI-100, LMIO-102, and LMPS-104 have the standard parameters on the **Advanced** tab. See “Parameters on the Advanced Tab Common to All Devices” on page 150 for details on these parameters. The WRC-TX has no parameters on the **Advanced** tab. This device is included for documentation purposes when added to a room.

INTERFACES – LMTI-100

The LMTI-100 provides a connection to the LMEQ-41. It provides power to the LMEQ-41 and also transfers messages between the LMEQ-41 and a wired room controller.

LMTI-100



If you are adding the LMTI-100 to a project manually (as opposed to running Discovery), you can then add the LMEQ-41 manually by selecting it from the **Interface** drop-down.

NOTE: If you are going to update the firmware in the LMTI-100 or the connected LMEQ-41, you must first enable BACnet by clicking the **Enable** button. For details, see “Updating the LMEQ-41 and LMTI-100 Firmware” on page 137.

The LMTI-100 has only two unique parameters, on the **Basic** tab.

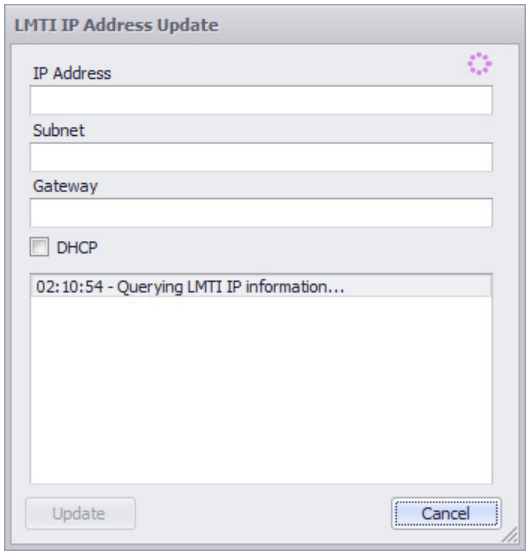
IP Address – The LMTI-100 uses DHCP, so this field will only populate if the LMTI-100 is connected to a network via an Ethernet cable. This network connection is used only to update the firmware in the LMTI-100 or LMEQ-41.

NOTE: The LMTI-100 must be connected to the network before it is powered up in order to get an IP address.

Volts – Indicates whether the LMTI-100 operates at 120V or 277V. This is for information only and has no effect. The default is 120V,and if you have a 277V model, you must manually change it.

If you click **Update IP Address**, the **LMTI IP Address Update** dialog opens.

LMTI IP Address Update



LMCS will query the LMTI-100 for the current IP values and display them. You can then edit the **IP Address**, **Subnet**, and **Gateway** values. You can also select whether the LMTI-100 will be set to **DHCP**. Once editing is complete, click **Update** to set the values.

SHADING – SHADE CONTROLLERS

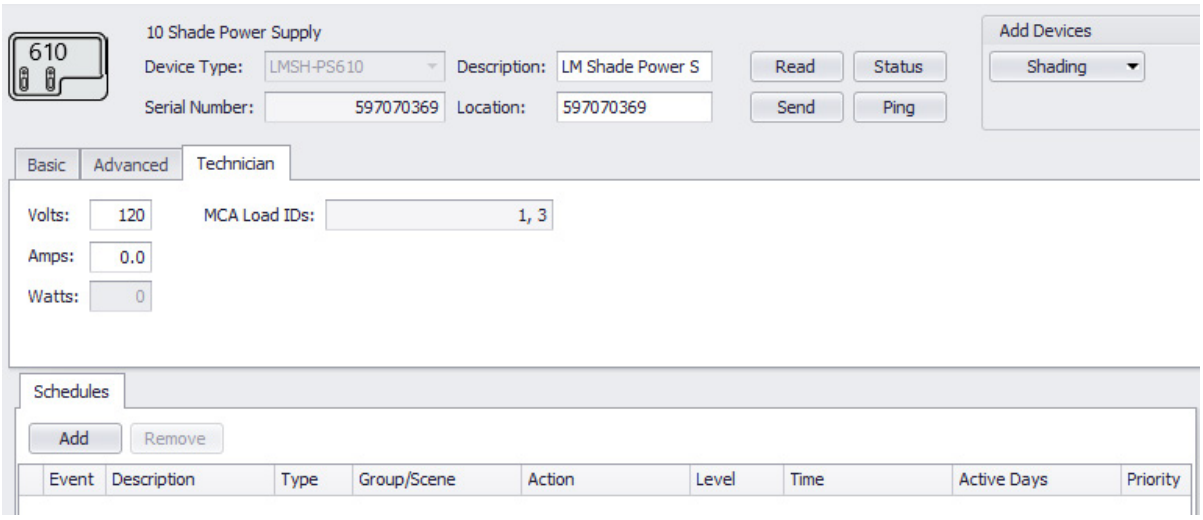
The two Shade Controller models are the LMSH-PS602 and LMSH-PS610. The fundamental difference between the two models is that the LMSH-PS602 can support two shade motors and the LMSH-PS610 can support ten.

Shade Controllers are similar to the LMZC-301 zone controller in that they provide power to other DLM shading devices and route DLM messages to the various devices in the room but do not have their own loads. However, while DLM zone and room controllers store lighting load information, for shades that control is maintained by the shade motors. Additionally, Shade Controllers have their own clock and location information, and can therefore be used to store schedules and send schedule events, similar to panels.

For these reasons the Shade Controller menu contains a Schedules tab, but no Load Tabs. Additionally, they have an **Add Devices** section where you add LMSH-MCA motors to the shade controller.

NOTE: If you use Discovery to add a shade controller to a project, LMCS will also discover the shade motor and add it as well.

LMSH-PS610



If adding devices manually, click the **Shading** drop-down in the **Add Devices** section to select a shading motor to add to the controller. Once you have reached the limit that the shade controller supports (either two or ten), the drop-down will no longer allow you to add another motor.

Once you have added a shade motor the to the shade controller, it will show up as a child of the shade controller in the device tree.

The **Basic** tab is identical to the same tab for a wired room controller. See "Basic Tab" on page 148 for details.

The **Technician** tab is similar to the same tab for a wired controller, but with the addition of the **MCA Load IDs** parameter, which lists the shade motors that are children of the shade controller. This is also reflected in the device tree. See "LMFS-601 Fixture Controller" on page 151 for details on the other parameters.

The **Schedule** tab is identical to the same tab for a panel. See "Schedules Tab" on page 173 for details.

NOTE: Although a shade controller has its own clock and location information, it is not BACnet enabled. Therefore, a shade controller can only send schedule events to devices within the in-room network, via IRB. If you want to send schedule events to shades in multiple rooms you will need to set up those schedules on a panel.

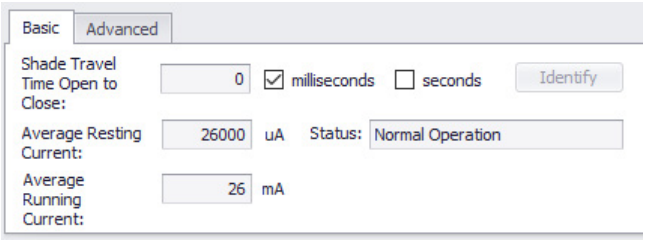
SHADING – SHADE MOTORS

There are two different motors, the LMSH-MCA140 and LMSH-MCA173. They differ only in their gear ratio and have identical screens in LMCS. Unlike room controllers, a shade motor will always have just a single load, so there are no Load tabs in the bottom section of the screen.

When viewed in the tree, the LMSH-MCAxxx will have its load listed as a child in the tree. If you click on the Load in the tree, the Device Info section remains the same as clicking on the motor.

Basic Tab

LMSH-MCA140 Basic Tab



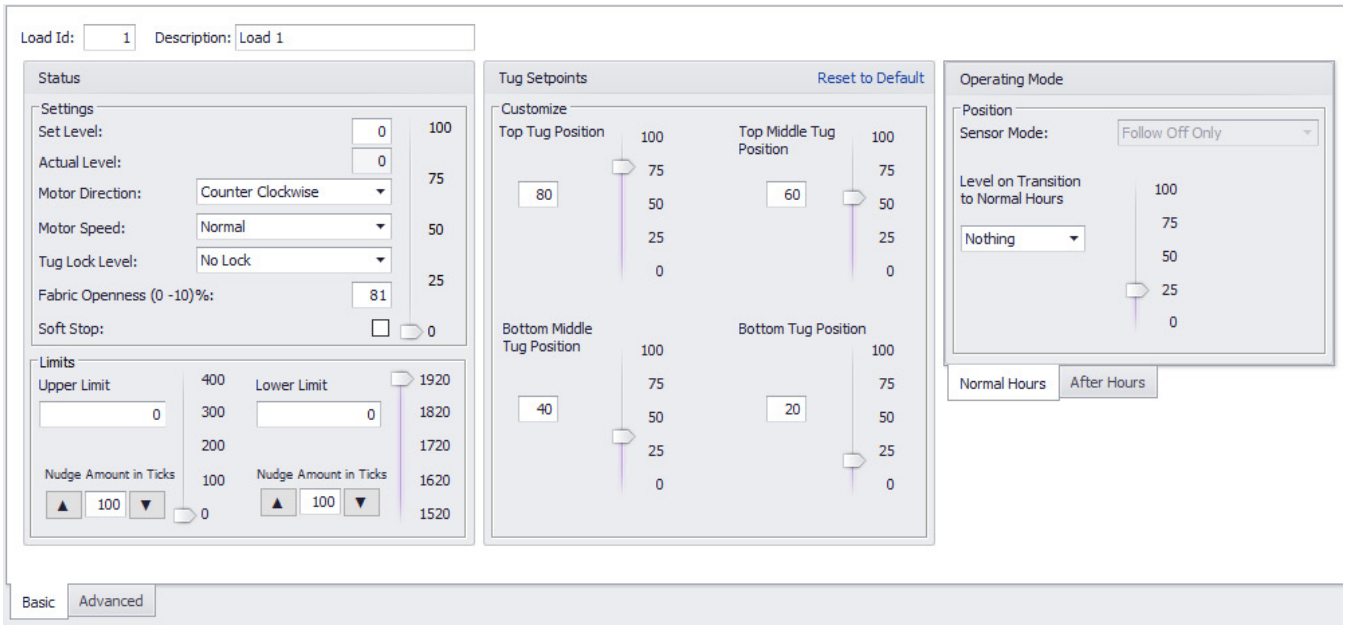
The **Basic** tab provides some basic status information on the motor. If LMCS is currently connected to the motor it will get the values of these parameters when you select the motor in the tree.

If you click **Identify**, the shade will jog, to help identify which shade is which if you are in the room with the shades.

Shade Load Basic Tab

The **Basic** tab for shade loads contains all of the parameters used to set up the shade motor.

Shade Load Basic Tab



Settings Section

Set Level – This sets the current level of the shade.

Actual Level – This is the level returned from the motor when the set level response comes back to LMCS.

Motor Direction – Determines whether the motor is set to move clockwise or counter-clockwise.

A standard roll shade will turn clockwise while lowering, when viewed from the motor end.

A reverse roll shade will turn counter-clockwise while lowering, when viewed from the motor end.

Motor Speed – This determines the speed at which the shade will move

- Normal speed (quiet and efficient); Ideal for commercial office.
- Fast speed (noisier and faster response); Ideal for meeting rooms, patient rooms, etc. for more time sensitive periods.
- Slow speed (ultra-quiet); Ideal for healthcare patient rooms, hotels, or public spaces.

Tug Lock Level – By default, both installers and users can tug the shade to set limits. (Installers can use the Pull n' Save functionality when setting up the shades.) This parameter allows you to lock the tugging ability so that shades cannot be tugged to set those limits.

- No Lock – Both installer and user tugs are enabled.
- PnS Lock – Tugs are locked so that the Pull n' Save (PnS) functionality cannot be used to change the limits.
- PnS & Tug Lock – In addition to PnS being unavailable, user tugs will not function in normal operation mode.

Fabric Openness – Fabric Openness is used to indicate the amount of Opacity in the fabric, with 0% blocking all light and 100% letting all light in. If this needs to be adjusted, check with Commercial Shading support regarding the appropriate value for the specific fabric.

Soft Stop – If enabled, the shade will slow down as it reaches the target position.

Limits Section

This section is used to set the upper and lower limits of the shade. When moving these sliders, the shade will move to the selected value. To make it easier for fine adjustment, you can set a nudge amount, and then each time you click the up or down button, the shade will move only that many "ticks".

NOTE: This setting is pre-configured at the factory to set initial upper and lower shade positions used during the Plug n' Go process.

Tug Setpoints Section

Tug presets are used to allow users to change to specific preset levels by tugging on the hembar. When the user tugs the hembar (up to approximately 6 inches), the shade will move to the first preset (starting with Top Tug). Once it stops moving, if the user tugs again, it will cycle to the next preset. 100% is all the way open to the upper limit.

NOTE: If **Tug end user** is disabled, the user will not be able to cycle through the presets by tugging.

Operating Mode Section

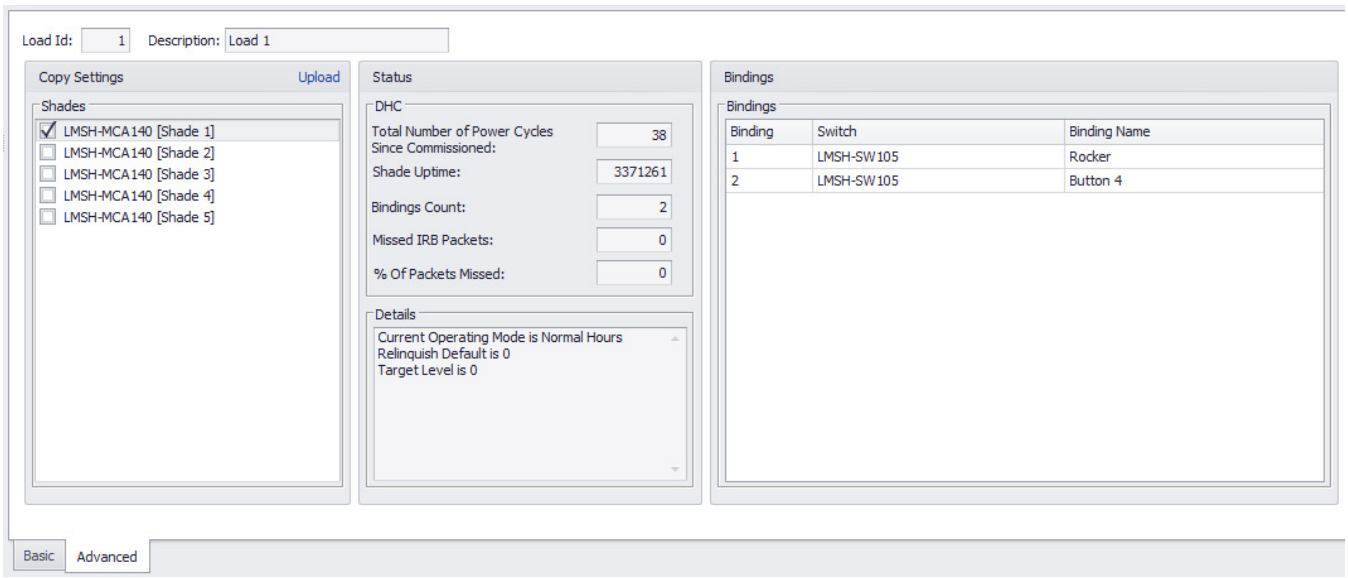
Sensor Mode – Currently, shades do not respond to sensors, so this parameter is disabled.

Level on Transition to Normal/After Hours – Determine the level the shade will move to when you transition to Normal or After Hours (depending on tab). Available Values are Nothing (shade will not change from current level) and Go To Level, in which case it will go the level set in the slider.

Shade Load Advanced Tab

This tab provide the ability to copy shade settings, and displays button bindings and some status fields.

Shade Load Advanced Tab



Copy Settings Section

This section allows you to copy the setting of the currently selected motor to other shade loads. It displays all shade loads included in the room. If a Description is entered in the top of the Device Info section, it will be displayed, allowing you to distinguish between the shades. Select the desired Shades and click **Upload**. The parameter values are copied to the other loads in LMCS and also sent to the shade motors.

Status Section

Total Number of Power Cycles Since Commissioned – This is the sum of how many times the device has powered on and off since it was set up.

Shade Uptime – Number of seconds since the MCA last rebooted.

Bindings Count – The number of buttons bound to this shade motor. This reflects the bindings shown in the next section

Missed IRB Packets – The number of data packets that have been lost on the network.

% of Packets Missed – The number of data packets that have been lost on the network divided by the total number of data packets.

Details Section

This section provides current status information on the shade load. (This section will be blank if LMCS is not currently connected.)

Bindings Section

This lists the individual buttons bound to the shade motor. Button binding is done when you select the switch in the tree.

SHADING – SHADE SWITCHES

Similar to lighting switches there are several models of switches for shading, with various numbers of buttons. The LMSH-SW105 also includes a rocker.

There are no parameters on the **Basic** tab for switches.

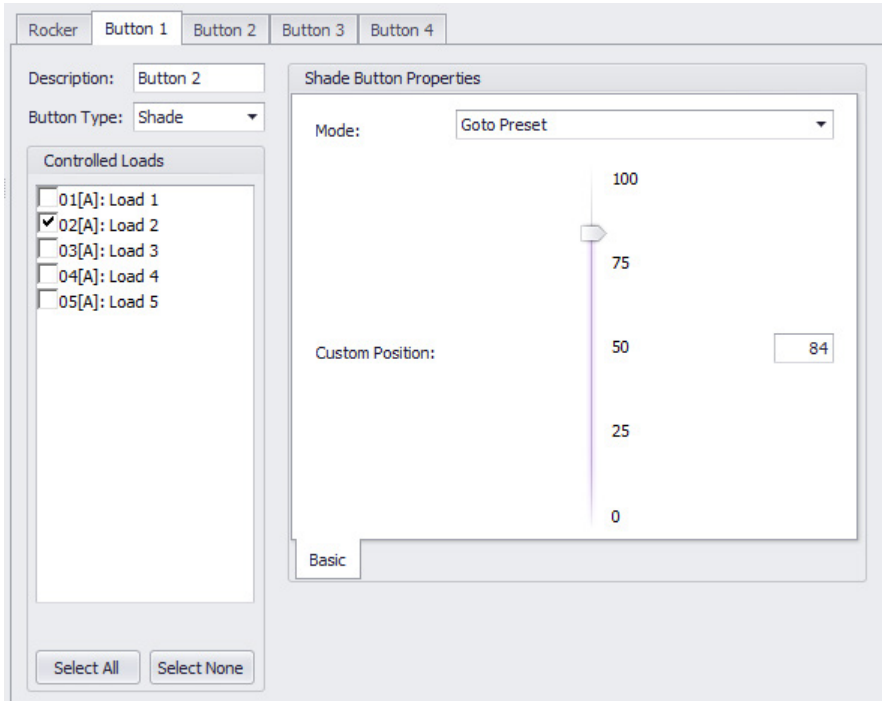
The number of tabs in the lower section changes depending on the model. The parameters in this section allow you to bind the button/rocker to specific shade motors and set the functionality of the button/rocker.

This section changes depending on whether the button or rocker is bound to a shade load, a scene, or a network group, using the **Button Type** drop-down. A **Description** parameter is provided for documentation purposes.

If binding the button/rocker to a scene or network group, the parameters are identical to binding a lighting load to the same. See "Binding to a Scene" on page 191 and "Binding to a Network Group" on page 192.

Binding a Button to a Shade Load

Shade Switch Button Tab



The **Controlled Loads** section displays all shade loads included in the room. If a Description is entered in the top of the Device Info section for the shade motor, it will be displayed, allowing you to distinguish between the shades.

Mode – Determines how the button functions. Values:

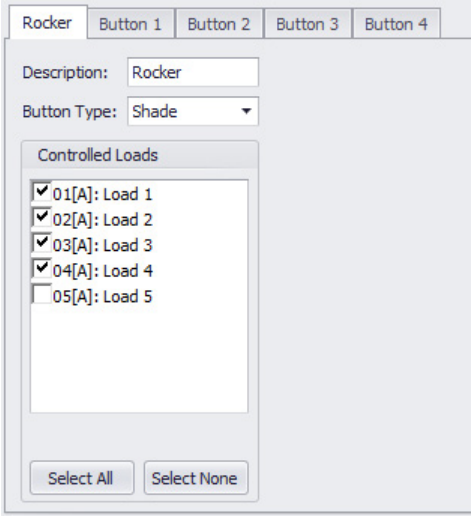
- **Open** – Tap to open shade to upper limit. Press and hold to open shade to desired position; release to stop.
- **Close** – Tap to close shade to lower limit. Press and hold to close shade to desired position; release to stop.
- **Toggle** – Each tap toggles between open, stop, close, stop, open, etc. Press and hold toggles between opening and closing; release to stop.
- **Goto Preset** – Tap to go to the level set using the Preset Level value, or to the level set manually. If a user adjusts the position using a button set to Open, Close, or Toggle, and the presses and holds the button set to Goto Preset for five seconds, the current level of the shade will become new preset level and override the previous value.
- **Open Preset** – Tap to go to the level set using the Preset Level value. Press and hold to open shade to desired position; release to stop (identical to pressing and holding if the button is set to Open).

Binding a Rocker to a Shade Load

There are no editable parameters for a rocker assigned to a shade load.

Rockers function in two different ways. If you **press and hold** the rocker, shade will raise or lower, depending on which end of the rocker you press and stop when you release the rocker. But if you **press and release**, the rocker acts like a regular button, fully opening or closing the shade, again depending on which end of the rocker you press.

Shade Switch Rocker Tab

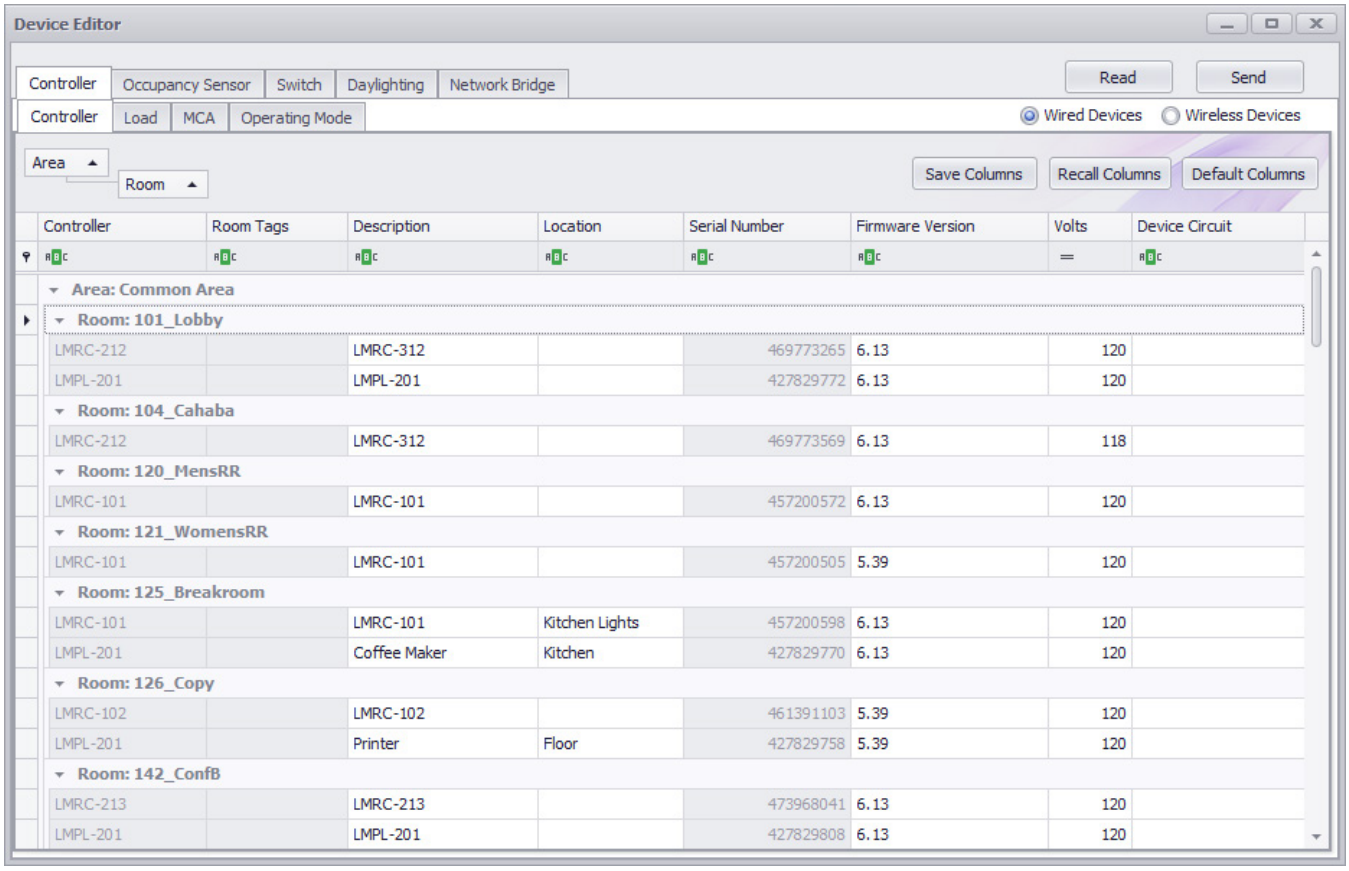


USING THE DEVICE GRID TO VIEW & PROGRAM PARAMETERS

The **Device Grid** displays programming parameters for various device types in a spreadsheet format, providing the ability to easily view parameter values for multiple rooms, and to quickly make changes to multiple devices.

Click **Device Grid** on the **Home** tab to open the grid.

Device Grid



The grid has separate tabs for **Controller**, **Occupancy Sensor**, **Switch**, **Daylighting**, and **Network Bridge**. All of these tabs, with the exception of the bridge tab have sub-tabs. In general the sub-tabs are organized similar to the different tabs when viewing individual devices in LMCS. For example, the parameters found on the **Operating Mode** tab for controllers and occupancy sensors will contain the same parameters found on the **Normal Hours/ After Hours** tabs when viewing an individual device.

Buttons in the upper right allow you to display only wired devices or only wireless devices, but not both at the same time.

Just about all programmable parameters are available in the device grid. However, due to space limitations, all are not shown by default. You have the ability to show or hide parameters in the grid, as described later in this section.

NOTE: This section does not define the parameters, since they are defined in the section "Programming Parameters for Individual Devices". Instead, this section covers use of the device grid along with some practical applications.

If you customize the parameter list by adding or hiding columns, you can save that configuration by clicking **Save Columns**. You can return to the default parameters listing by clicking **Default Columns**. If you alter a saved configuration or revert to the default settings, you can return to your saved configuration by clicking **Recall Columns**.

The device grid has the ability to send parameter values to all devices on the grid or read values from those devices, if LMCS is connected to the network via BACnet or the LMBR-650. (You can't read or send from the device grid if connected via the LMCI-100.)

NOTE: You can only read parameter values if the **Show Technician Pages** option on the **Preferences** dialog is enabled.

Filtering Devices in the Grid

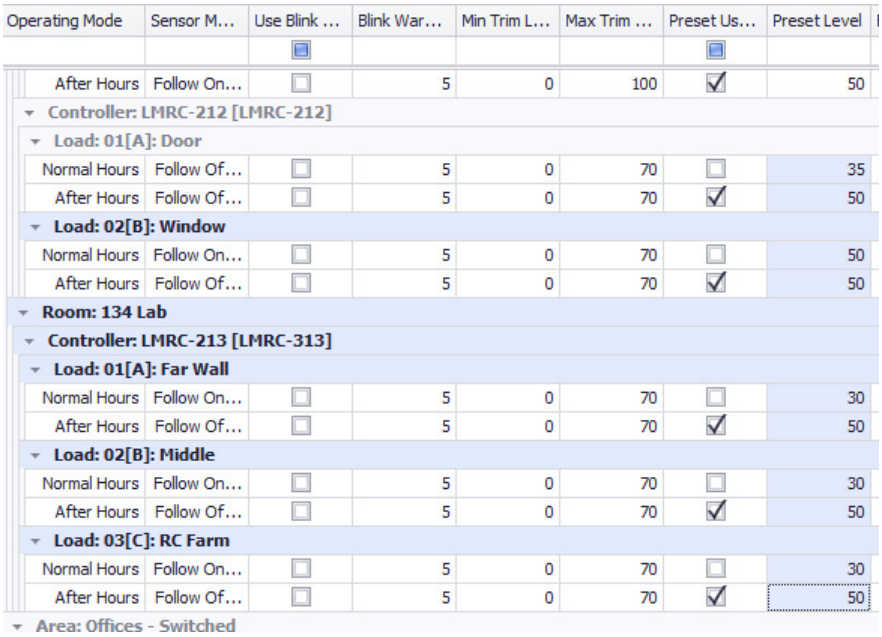
There are two options for filtering the list to show only desired devices. For details, see "Filtering Lists in LMCS" on page 36.

Copying and Pasting Parameter Values

The most common application for the device grid is to easily change a parameter value for multiple devices. Like any typical spreadsheet application, you can edit the value of a parameter in a single row, copy that value, highlight the other rows in the same column, and then paste that new value. You can also highlight a row, to copy all the parameter values, then paste all value into other rows.

Unlike a typical spreadsheet application, you can't click in a cell and then drag down to highlight multiple cells in that column. Instead you must **click the first row you want to change, then scroll down to the last row and shift-click to highlight all the rows between the first and last selected rows**. Or you can ctrl-click to select multiple non-consecutive rows. When you shift-click to select consecutive rows, any rows that contain sort headers will appear to be selected but no data is pasted into that row.

Selecting Multiple Rows to Paste a New Value

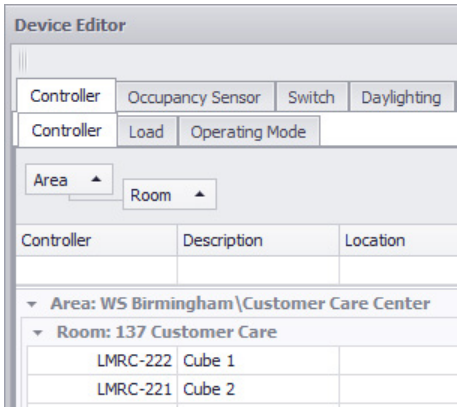


Operating Mode	Sensor M...	Use Blink ...	Blink War...	Min Trim L...	Max Trim ...	Preset Us...	Preset Level
After Hours	Follow On...	☐	5	0	100	☑	50
Controller: LMRC-212 [LMRC-212]							
Load: 01[A]: Door							
Normal Hours	Follow Of...	☐	5	0	70	☐	35
After Hours	Follow Of...	☐	5	0	70	☑	50
Load: 02[B]: Window							
Normal Hours	Follow On...	☐	5	0	70	☐	50
After Hours	Follow Of...	☐	5	0	70	☑	50
Room: 134 Lab							
Controller: LMRC-213 [LMRC-313]							
Load: 01[A]: Far Wall							
Normal Hours	Follow On...	☐	5	0	70	☐	30
After Hours	Follow Of...	☐	5	0	70	☑	50
Load: 02[B]: Middle							
Normal Hours	Follow On...	☐	5	0	70	☐	30
After Hours	Follow Of...	☐	5	0	70	☑	50
Load: 03[C]: RC Farm							
Normal Hours	Follow On...	☐	5	0	70	☐	30
After Hours	Follow Of...	☐	5	0	70	☑	50
Area: Offices - Switched							

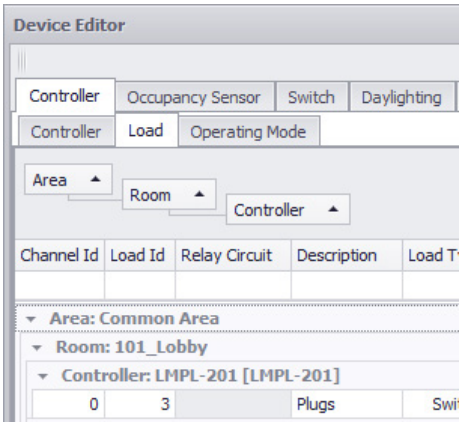
Sorting Devices in the Grid

Directly below the tabs is the sorting structure for the devices in the grid. LMCS automatically adds or subtracts sorting parameters based on the tab selection, to provide a default logical sort. For example, selecting the **Controller** sub-tab sorts first by Area, then by Room. But if you select the Load tab, a third sort by Controller is added.

Sort by Area and Room



Sort by Area, Room and Controller

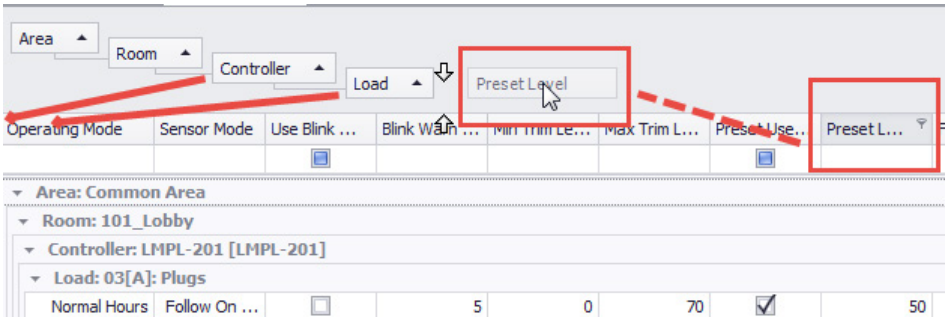


You can switch between ascending and descending sort by clicking on the box for the sorting category. You can also alter the sort by grabbing the sort parameter box and dragging it to a different spot.

Additionally, you can sort by any other parameter by simply grabbing the column header for that parameter and dragging into the sort area. You can also remove a parameter from sort and drag it back into the columns.

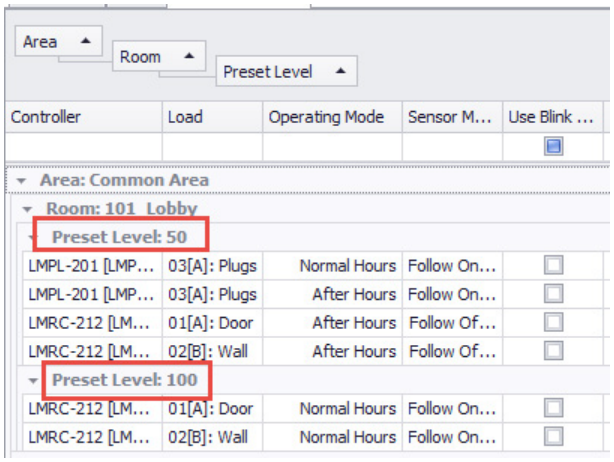
In the following example, the **Preset Level** for a load is added to the sort. The **Controller** and **Load** parameters are removed from the sort and placed in the two left most columns.

Changing the Sort



You can now easily identify different values for the preset level.

Newly Sorted Data

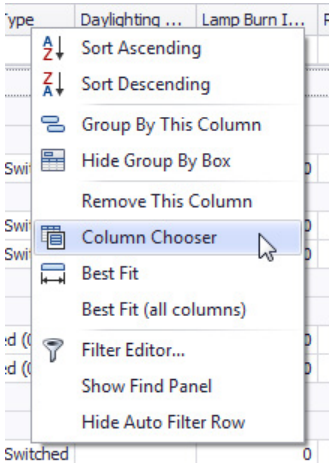


You can also sort the rows, within the sorting structure, by the values in any column. Click the column header to switch between ascending or descending order for that column. The rows will sort within the final level of the sorting structure above the column header, but will not resort outside of that structure.

Modifying Columns in the Device Grid

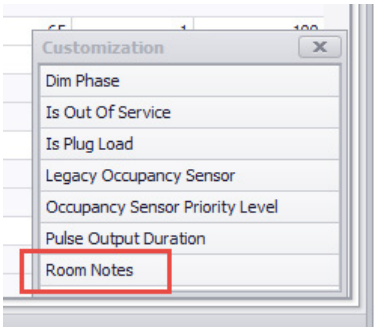
By default, the device grid displays most of the commonly edited parameters. However, almost all editable parameters are available to be included in the grid. To add a parameter to the grid, right-click on any column header and select the **Column Chooser**.

Column Header Menu Options

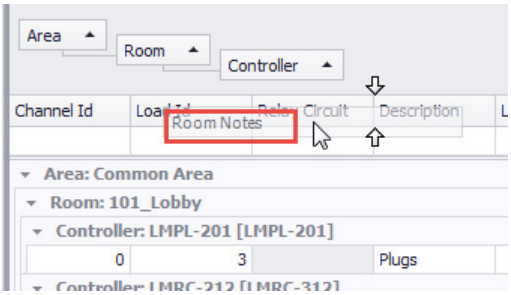


The **Customization** window opens in the lower right hand corner of the device grid. Click and hold a parameter, and drag it to the column header row. You can place the new parameter between any two columns.

Customization Window



Dragging a Parameter to the Grid



To remove a column from the grid, right-click on the column header for that parameter and select **Remove Column**.

You can also rearrange the column order by dragging a column header to the left or right.

NOTE: Changes to the columns in the device grid are not saved. If you close the device grid and reopen it, the order and display of columns will revert to the defaults.

Sending and Receiving Data from Devices in the Device Grid

If you are connected via BACnet, you can send and receive data from/to the device grid. One advantage of sending data to devices from the device grid is that only the devices currently shown in the grid will have data sent to them. So if you have filtered the list to show only a sub set of devices, data is sent to only that subset. This can greatly reduce the amount of time needed to send data.

WARNING: You should be careful when reading from the Device Grid. (Reading is disabled unless the **Show Technician Pages** option on the **Preferences** dialog is enabled.) If you read rooms and devices at a global level when they are at their default states (which would occur when they are connected and automatically set to PnG after being powered up), the LMCS project data is overwritten with the PnG data from the devices. So you should be sure that only the desired devices are selected if you select the Read function. The most common use for the Read function is to read Daylighting configurations and Setpoints from LMLS sensors that were commissioned in the field with the LMCT-100

When viewing the first sub-tab for one of the main tabs in the grid (for example, the **Sensors** sub-tab under the **Occupancy Sensors** tab), the last column is labeled **Last Transfer Time**. This notes the last time that data was sent to the device from LMCS (or received by LMCS from the device). This can be useful in determining whether changes have been made to some devices but not others.

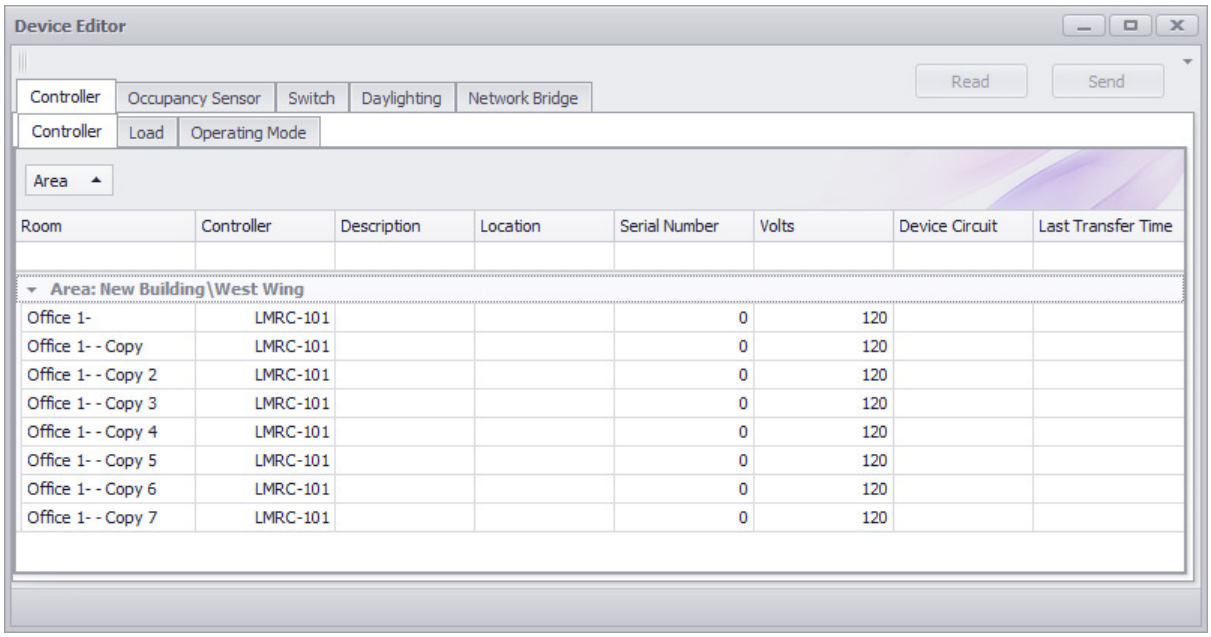
NOTE: The **Last Transfer Time** is not stored in the device itself, only in LMCS. Therefore, you must save the project file after sending/receiving data in order for this field to be accurate the next time the project file is opened. Additionally, the date of any changes made by the LMCT would not be recorded, unless the device parameters were read by LMCS after the LMCT editing.

Renaming Rooms Using the Device Grid

One very useful application for LMCS is to quickly rename rooms. Often when creating a project with many similar rooms, the fastest way to build the project is to create a single room with all assigned devices, edit the values as needed, then copy and paste that room multiple times in the tree.

By going to the device grid and dragging the room from the sorting structure into the columns, you have quick and easy access to all the rooms names without having open rooms in the tree one at a time.

Renaming Rooms in the Device Grid



Finding Serial Numbers and Associated Rooms

Another useful application for the device grid is to find serial numbers associated with specific rooms. This can be very helpful in troubleshooting situations where devices are not functioning as intended. This is particularly helpful with room controllers. Often room controllers might be grouped together and placed in a common physical space, such as above the ceiling in a hallway, with cables leading from each controller to a separate room. If a room is not functioning as intended, you can use the device grid to find that room and view the serial number of all controllers for that room, so that a technician can easily determine which controller to examine.

REPORTS

LMCS provides a suite of reports designed to help document the project, for planning and maintenance purposes. Additionally the Device Pairing reports are used to aid in entering serial numbers for all DLM devices in the network. Click the **Reports** button on the **Home** tab and select the desired report from the menu.

All reports can be printed. In addition, they can be exported or sent via email in any of the following formats, by selecting the appropriate option under the **File** menu in the report window:

- PDF
- HTML – This option not available for sending via email
- MHT
- RTF
- XLS
- XLSX
- CSV
- Text
- Image File – You can choose BMP, EMF, WMF, GIF, JPEG, PNG, or TIFF

NOTE: The Sequence of Operations report is unique and is exported in either .dxf or .pdf format.

Once you select the export type, a pop-up opens that allows you to customize that option. For many of the options, you can choose to save the entire report as a single file or save each page as a separate file. Once you select the desired options, a standard file save dialog opens.

Some of the reports are intended to print on 8.5” x 11” paper, either in portrait or landscape. But many of the reports require 11” x 17” paper, and are identified as such in the reports menu.

If you right-click on an area or room in the devices tree, there will be a Reports option in the pop-up menu. Select that to open a list of reports. When you choose a report this way, the report will run only for the selected area or room.

The following is a list of available reports:

- “BACnet Points” on page 236
- “Daylighting Report” on page 237
- “Device List” on page 238
- “Device Notes Only” on page 238
- “Equinox Report” on page 239
- “BACnet Simulator Export” on page 239
- “Bill of Materials Export” on page 240
- “Firmware Version Report” on page 241
- “Holiday Report” on page 242
- “Line Riser Diagram” on page 242
- “LMCT Report” on page 245
- “Load Binding” on page 246
- “Network Bridge Report” on page 247
- “Network Groups Report” on page 248
- “Occupancy Sensor Report” on page 249
- “Pairing Reports” on page 249
- “Relay Panel Insert” on page 251
- “Relay Panel Settings” on page 251
- “Room Controller Report” on page 252
- “Room Summary” on page 253
- “Scene Report” on page 254
- “Schedule and Control” on page 255
- “Sequence of Operations” on page 256
- “Simplified Bridge Report” on page 258
- “Simplified Room Summary” on page 258
- “Switch Report” on page 259
- “Typical Wiring” on page 260
- “Wireless Battery Levels” on page 261
- “Wireless Device List” on page 261
- “Wireless Scene Report” on page 262
- “Wireless Schedule Report” on page 263

BACNET POINTS

This report provides a list of all exposed BACnet points for the projects that require integration but do not have a Network Controller or LMBR-650. It is designed to be sent to an integrator, for the purposes of integrating the DLM network into a BAS. Since it includes serial numbers and network IDs, this is not normally run until all devices have been discovered and configured.

BACnet Points

WS Birmingham\Customer Care Center\137 Customer Care

Device Id=861371 MAC Address=36 Baud Rate=38400

Object	Product	Serial	Point Description
AO1	LMRC-222 Cube 1	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO10	LMPL-201	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO11	LMPL-201 Open area	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO12	LMPL-201	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO13	LMPL-201	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO2	LMRC-222 Cube 1	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO3	LMRC-221 Cube 2	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO4	LMRC-213 Cube 5	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO5	LMRC-213 Cube 5	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO6	LMRC-213 Cube 5	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO7	LMRC-213	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO8	LMRC-213	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AO9	LMRC-213	490734049	Dimming level, internally linked to the Binary Output objects by the trip point parameter. Range = 0 to 100%.
AV1	LMRC-222 Cube 1	490734049	Calculated based on the input voltage and measured current for room controller 1 to 48.
AV101	LMDX-100 Back Left	490734049	For occupancy sensor 1 to 48 in seconds, 0 to 30 minutes.
AV102	LMDX-100	490734049	For occupancy sensor 1 to 48 in seconds, 0 to 30 minutes.

DAYLIGHTING REPORT

This provides a list of all daylighting sensors on a per room basis. The report is broken out first by sensor model, then by room. The values of most of the programmable parameters are shown.

Daylighting Settings for Bham

Room	Daylighting Device	FWVersion	Control Mode	Override Timeout (Hrs)	Minimum Time to Update (Sec)	Minimum COV to Update (fc)	Hold Off	Override Allowed	Scenes Disable Daylighting	Follows After Hours	Lighting Zone	Operation Mode	On Setpoint (fc)	Off Setpoint (fc)	On Time Delay (Sec)	Off Time Delay (Min)	Ramp Up Rate (% / Sec)	Ramp Down Rate (% / Sec)	Cut Off Delay (Min)	Day Setpoint (fc)	Night Setpoint (fc)	Electric Light Setpoint Multiplier	Day Setpoint Multiplier
105 Pete H	LMLS-400	2.24	Normal	0	30	5	False	True	False	True	1	Dimming	N/A	N/A	N/A	N/A	20	2	0	25	5	5	5.1
134 Lab	LMLS-400	2.24	Normal	0	30	10	False	False	False	True	1	Dimming	N/A	N/A	N/A	N/A	20	2	10	50	10	5	5
	LMLS-400	2.24	Normal	0	30	10	False	False	False	True	1	Dimming	N/A	N/A	N/A	N/A	20	2	10	50	10	5	5
	LMLS-400	2.24	Normal	0	30	10	False	False	False	True	1	Dimming	N/A	N/A	N/A	N/A	20	2	10	50	10	5	5

Room	Daylighting Device	FWVersion	Control Mode	Override Timeout (Hrs)	Minimum Time to Update (Sec)	Minimum COV to Update (fc)	Hold Off	Override Allowed	Scenes Disable Daylighting	Follows After Hours	Lighting Zone	Operation Mode	On Setpoint (fc)	Off Setpoint (fc)	On Time Delay (Sec)	Off Time Delay (Min)	Ramp Up Rate (% / Sec)	Ramp Down Rate (% / Sec)	Cut Off Delay (Min)	Dimming Setpoint (fc)	Electric Light (fc)	Electric Light Setpoint Multiplier	Daylight Ratio Workplane	Daylight Ratio Sensor
101_Lobby	LMLS-500	2.24	Normal	1	30	10	True	False	False	True	1	Switched	23.4	35.1	20	10	N/A	N/A	N/A	N/A	19.5	1.2	105	120
											2	Switched	35	52.5	20	3	N/A	N/A	N/A	N/A	19.5	1.2	105	120
127_Scotty_J	LMLS-500	2.09	Normal	0	30	10	False	True	False	True	1	Dimming	N/A	N/A	N/A	N/A	20	2	1	15	21.1	1.2	5	17
											2	Dimming	N/A	N/A	N/A	N/A	20	2	0	11	17.4	1.2	9	17
128_Craig_P	LMLS-500	2.24	Normal	4	30	10	False	True	False	True	1	Dimming	N/A	N/A	N/A	N/A	10	5	0	15	35.5	1.2	12	143
											2	Dimming	N/A	N/A	N/A	N/A	10	5	0	11	34.3	1.2	29	143

DEVICE LIST

This report lists all devices included in the project (both wired and wireless), sorted by Area, Room, and Device Type. Also included is the IP address for the network, the Device ID of the bridge or panel for the room, the BACnet MAC address for the bridge, and the Max Master parameter. See the section on Bridge parameters for details on these fields.

Project Devices for Bham

IP Address	Area	Room	Bridge	MAC	Max Master	Device	Serial
192.168.1.61:47809	WS Birmingham\Customer Care Center	137 Customer Care	861371	36	127	LMRC-222 [Cube 1] (Two Relay Room Controller with Phase Dimming)	490734049
192.168.1.61:47809	WS Birmingham\Customer Care Center	137 Customer Care	861371	36	127	LMRC-221 [Cube 2] (One Relay Room Controller with Phase Dimming)	486539298
192.168.1.61:47809	WS Birmingham\Customer Care Center	137 Customer Care	861371	36	127	LMRC-213 [Cube 5] (Three Relay Room Controller with 0-10v Dimming)	473971247
192.168.1.61:47809	WS Birmingham\Customer Care Center	137 Customer Care	861371	36	127	LMRC-213 [LMRC-213] (Three Relay Room Controller with 0-10v Dimming)	473970963
192.168.1.61:47809	WS Birmingham\Customer Care Center	137 Customer Care	861371	36	127	LMPL-201 [LMPL-201] (Digital Plug Load Controller with Current Monitoring)	427833141
192.168.1.61:47809	WS Birmingham\Customer Care Center	137 Customer Care	861371	36	127	LMPL-201 [LMPL-201] (Digital Plug Load Controller with Current Monitoring)	427833133
192.168.1.61:47809	WS Birmingham\Customer Care Center	137 Customer Care	861371	36	127	LMPL-201 [LMPL-201] (Digital Plug Load Controller with Current Monitoring)	427833123
192.168.1.61:47809	WS Birmingham\Customer Care Center	137 Customer Care	861371	36	127	LMPL-201 [Open area] (Digital Plug Load Controller with Current Monitoring)	427833139

DEVICE NOTES ONLY

This report lists the text typed into the Notes area when a room is highlighted in the tree.

Area/Room Notes for David's Office 5

New Building
101 Room Notes: Example Notes for room 101
102 Room Notes: Example notes for Room 102
103
201
202
Unassigned Devices

EQUINOX REPORT

This report is not yet functional.

BACNET SIMULATOR EXPORT

This export is used for internal Wattstopper purposes.


```xml
<?xml version="1.0" encoding="UTF-8"?>
- <devices>
  - <deviceobject vendorIdentifier="86" objectName="LMBC-300" network="101" mac="1" id="861371">
    - <property>
        <name>objectName</name>
        <value>LMBC-300</value>
      </property>
    - <property>
        <name>vendorIdentifier</name>
        <value>86</value>
      </property>
    - <property>
        <name>description</name>
        <value>137 Customer Care</value>
      </property>
    - <property>
        <name>vendorName</name>
        <value>WattStopper</value>
      </property>
    - <property>
        <name>firmwareRevision</name>
        <value>6.24</value>
      </property>
    - <property>
        <name>applicationSoftwareVersion</name>
        <value>6.24</value>
      </property>
    - <property>
        <name>modelName</name>
        <value>LMBC-300</value>
      </property>
  </deviceobject>
```

BILL OF MATERIALS EXPORT

This utility will export a list of the total number of each device in the project, in XML format.


```xml
<?xml version="1.0" encoding="UTF-8"?>
- <project export_timestamp="11/3/2015 1:12:08 PM">
  - <bom>
    - <treeHierarchy>
      - <space name="WS Birmingham">
        - <product name="LMCP24" quantity="1" code="LMCP24 115/277-24HD">
            <product name="LENC24S"/>
          </product>
        - <product name="LMCP8" quantity="1" code="LMCP8 115/277-8HD">
            <product name="LENC8S"/>
          </product>
          <product name="LMRC-222" quantity="1"/>
          <product name="LMRC-221" quantity="1"/>
          <product name="LMRC-213" quantity="8"/>
          <product name="LMRC-212" quantity="22"/>
          <product name="LMRC-211" quantity="3"/>
          <product name="LMRC-102" quantity="1"/>
          <product name="LMRC-101" quantity="3"/>
          <product name="LMPL-201" quantity="30"/>
          <product name="LMLS-500" quantity="10"/>
          <product name="LMLS-400" quantity="4"/>
          <product name="LMPW-102-W" quantity="6"/>
          <product name="LMDW-102-W" quantity="1"/>
          <product name="LMDW-101-W" quantity="3"/>
          <product name="LMDX-100" quantity="17"/>
          <product name="LMDC-100" quantity="14"/>
          <product name="LMUC-100-2" quantity="1"/>
          <product name="LMDM-101-W" quantity="5"/>
          <product name="LMSW-108-W" quantity="1"/>
          <product name="LMSW-105-W" quantity="11"/>
          <product name="LMSW-104-W" quantity="3"/>
          <product name="LMSW-102-W" quantity="6"/>
          <product name="LMSW-101-W" quantity="10"/>
          <product name="LMBC-300" quantity="34"/>
        </space>
      </treeHierarchy>
    </bom>
  </project>
```

FIRMWARE VERSION REPORT

This report lists the firmware version of each device in each room.

Firmware Version Report

Device Class	Device Type	Version
Relay Panel	LMZC-301	7.75
	LMCP-08	7.69
	LMCP-12	7.69
	LMCP-24	7.69
	LMCP-48	7.69
Wall Mounted Sensor	LMDW-101	5.08
	LMDW-102	5.08
	LMPW-101	5.08
	LMPW-102	5.08
	LMPD-102	5.08
Partition Module	LMPS-104	1.03
	LMIO-102	3.02
BAS Module	LMDI-100	1.14
	LMBC-300	7.22
IR Transceiver	LMIR-100	3.02
Room Controller	LMPB-100	6.27
	LMRC-101	6.27
	LMRC-102	6.27
	LMRC-211	6.27
	LMRC-212	6.27
	LMRC-213	6.27
	LMRC-221	6.27
	LMRC-222	6.27
	LMFC-011	6.04
	LMCP	7.69
Plug Load Controller	LMPL-101	6.27
	LMPL-201	6.27

HOLIDAY REPORT

This report lists all selected standard holidays plus any custom entered holidays in the Holiday Editor. Holidays are listed in calendar order, starting with the one closest to the date the report is run.

Holiday Report

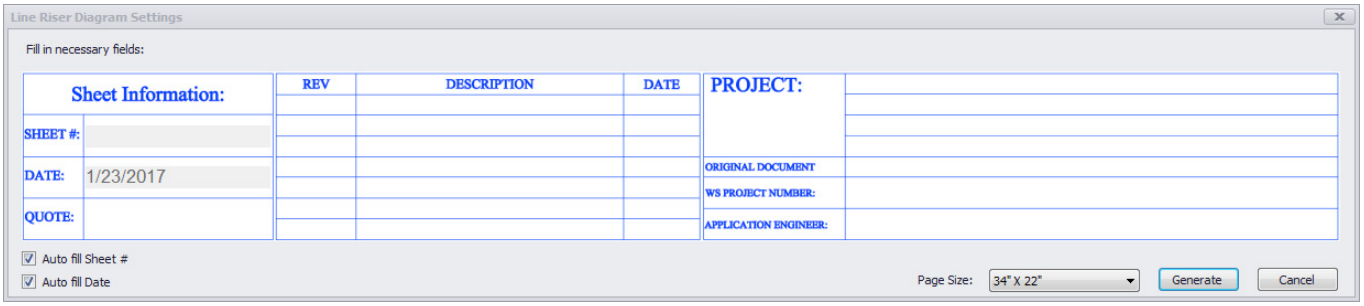
Date	Duration	Description
11/11/2015	1	Veterans Day
11/26/2015	1	Thanksgiving Day
11/27/2015	1	Thanksgiving Friday
12/25/2015	1	Christmas Day
1/1/2016	1	New Year's Day
1/18/2016	1	Martin Luther King Day
2/15/2016	1	Presidents' Day
4/18/2016	1	Patriot's Day
5/30/2016	1	Memorial Day
7/4/2016	1	Independence Day
9/5/2016	1	Labor Day
10/10/2016	1	Columbus Day
11/11/2016	1	Veterans Day

LINE RISER DIAGRAM

The Line Riser diagram generator provides a quick way to generate network diagrams of the project, based on the setup of their networks in the Networks View tab. Line Riser diagrams show how devices in rooms can be wired up, and also how those rooms are networked relative to one another. The diagrams display one network per page, or pages if the network is too large for a single page. The items on the diagrams are color coded in order to distinguish between the types of items. These diagrams can be exported to either PDF or DXF.

Generating a Line Riser Diagram

When this report is selected from the Reports menu, the **Line Riser Diagram Settings** dialog will pop up.

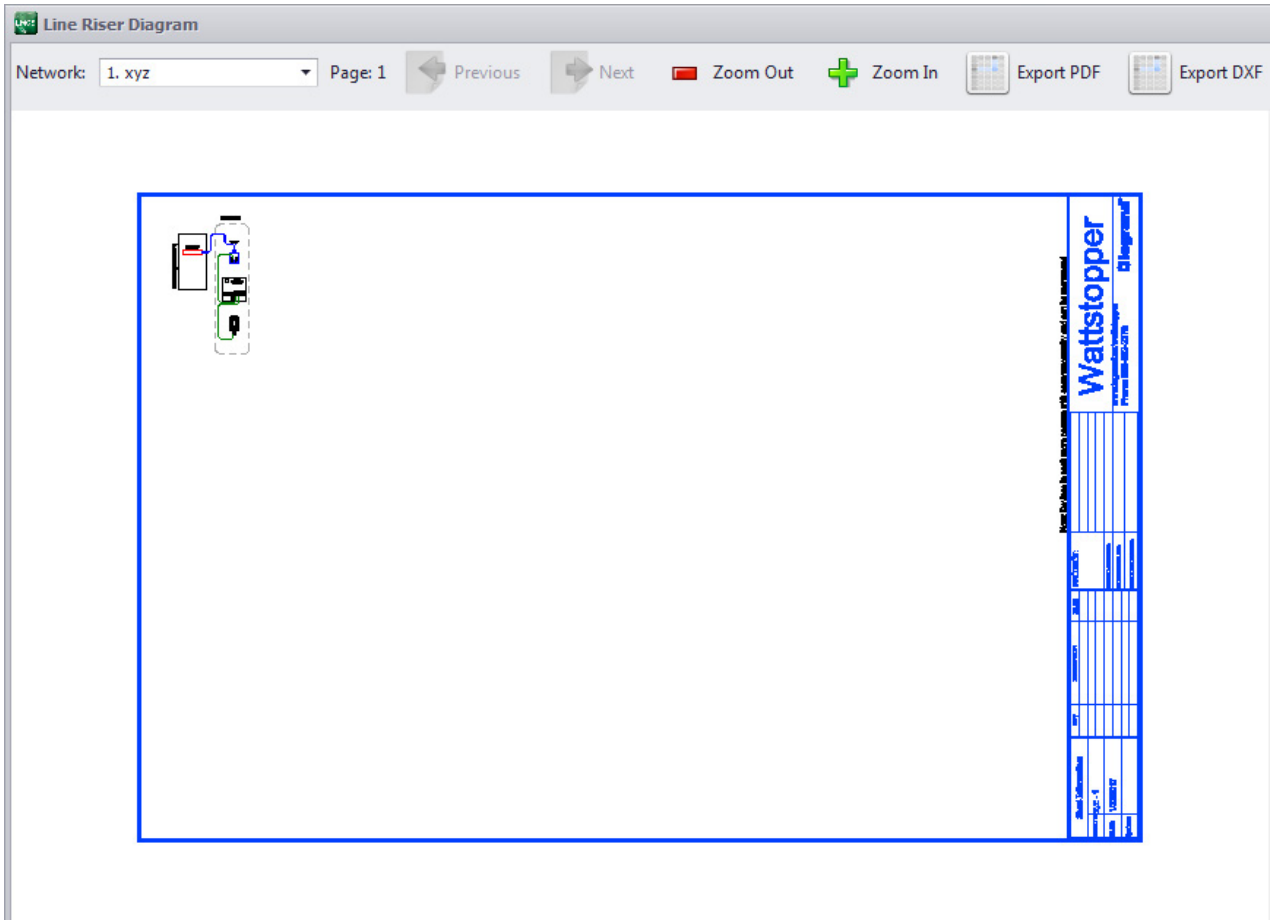


1. Enter the appropriate text in various text fields within the table.
   - Leave the **Auto Sheet #** selected to have LMCS automatically enter the Name and Page number for that particular page. If you deselect the box, you can enter this information manually.
   - Leave the **Auto Date** checkbox selected to auto fill the current date, or deselect it if you need to enter a different date.
   - You can choose between two page sizes in the **Page Size** drop-down: 48” x 36” or 34” x 22”.
2. Once the information is entered, click **Generate**. If there is only a single network in the project, the diagram will immediately generate. If there is more than one network, a pop-up dialog appears. Select an individual network from the drop-down or leave the default of “All Networks” to generate diagrams for all networks in the project. Then click **Generate**.

   NOTE: If you select “All networks” and the combined number of devices in all of the networks is more than 300, a red error icon displays. Hovering over the icon displays the following message: “This project is too large to export All Networks to one PDF. If you need to export as PDF generate the networks individually.“ You will then have to generate diagrams for networks individually, if you need to export to a PDF.

3. Depending on the size of the project and how many networks were selected in the previous step, it can take from a few seconds up to few minutes to generate the diagram. When it is finished a new preview window will appear and will display the first page of the first network.

Line Riser Diagram Preview



Using the Line Riser Diagram Preview Window

Along the top of the window is a toolbar.

- The **Network** drop-down allows you to specify the network to view.
- If the selected network is too large to fit on one page, it will span multiple pages. If this is the case, the **Next** and **Previous** page buttons, will be enabled and you can use those to navigate between the pages.
- You can zoom in and out and scroll in order to see the details of the diagrams.
- The **Export PDF** button is enabled, provided the generated diagram fits within the memory limits for pdf export. Click to open a “Save As” dialog.
- The **Export DXF** button will always be enabled as there is no memory limitations on DXF exports. DXF file can be opened by in a CAD program and edited for any custom changes, such as altering the default connection layout.

The diagrams are all generated with a Wattstopper template border, which is filled with the information entered in the **Line Riser Diagram Settings** dialog.

The network diagram begins in the top left of the page stemming from which ever network device was specified in the Network View tab. Devices such as routers and Network Controllers and are colored red on the diagram.

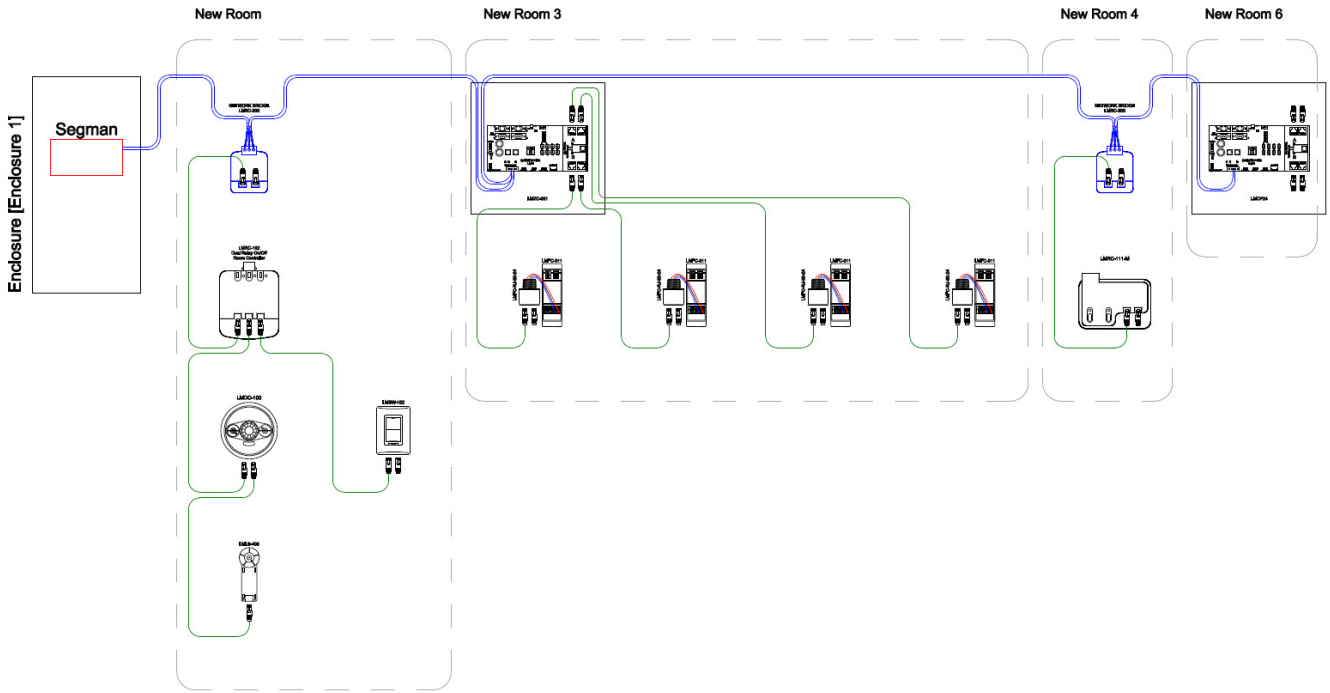
The MS/TP network cable is then drawn connecting the network device to all of the rooms’ bridges which are a part of this particular network. These rooms are ordered by their Network Position which is a property that is set on the bridges. The network cable and the bridges are colored blue on the diagram.

Inside each room, which can be distinguished by the dotted gray line surrounding it, is a suggested wiring layout for each device inside the room. There is a note on each page of a diagram along the right side which states: “Devices in each room operate with open topography and can be rearranged”. This is a feature of the DLM devices, but the diagram suggests a viable option for the wiring, based on open ports and device types. These “in room networks” are different from the MS/TP network and to distinguish between them these network cables are

colored green on the diagram.

The MS/TP network will continue drawing rooms until it reaches the side of the page and then it will “zig-zag” down the page drawing rooms as it goes. If it reaches the bottom of the page and still has additional rooms to draw then it will show a note saying that it continues on the next page. The network diagram will then resume drawing on the next page in the same fashion.

Example of a pdf export of a single network



LMCT REPORT

The LMCT report is similar to the Room Summary report, but it includes only parameters that can be programmed using an LMCT-100.

LMCT Report for Bham

Room

WS Birmingham\Offices & Common\Common Area: 144_Plotter

After Hours Enabled Network Bridge Present

Load Bindings

Device	Control Sequence
LMRC-212 [LMRC-212]	
01[A]: File Cabinet Lt	LMDX-100; LMSW-101 Btn 1;
02[B]: Printer Light	LMDX-100; LMSW-101 Btn 1;
LMPL-201 [LMPL-201]	
03[A]: Plugs	LMDX-100;
LMDX-100 [LMDX-100]	Load 01[A]: File Cabinet Lt; Load 02[B]: Printer Light; Load 03[A]: Plugs;
LMSW-101 [LMSW-101]	
1: Button 1	Load 01[A]: File Cabinet Lt;
LMSW-101 [LMSW-101]	
1: Button 1	Load 02[B]: Printer Light;
LMBC-300 [144_Plotter:West Hall]	

Controller

Controller	Load	Load Type	Lamp Burn-In Time	Operating Mode	Sensor Mode	Fade Trip Point Up (%)	Fade Trip Point Down (%)	High Trim Level (%)	Low Trim Level (%)	Blink Warn	Preset Level
LMRC-212	01[A]: File Cabinet Lt	Switched	0	Normal Hours	Follow Off Only	1		70	0	False	Use Last Level
				After Hours	Follow Off Only	1		70	0	False	Use Last Level
	02[B]: Printer Light	Switched	0	Normal Hours	Follow On and Off	1		70	0	False	Use Last Level
				After Hours	Follow Off Only	1		70	0	False	Use Last Level
LMPL-201	03[A]: Plugs	Switched	0	Normal Hours	Follow On and Off	51		70	0	False	Use Last Level
				After Hours	Follow On and Off	1		70	0	False	Use Last Level

Occupancy Sensor

Occupancy Sensor	Operating Mode	Time Delay (Min)	PIR Sensitivity (%)	UltraSonic Sensitivity (%)	Detection Scheme Trigger	Detection Scheme Retrigger	Walk Through Mode
LMDX-100	NormalHours	5	80	50	Both PIR and Ultrasonic	Either PIR or Ultrasonic	False
	AfterHours	5	80	40	Both PIR and Ultrasonic	Either PIR or Ultrasonic	True

Switch

Switch	Button	Button Type	Fade Time On	Fade Time Off	Ramp Rate (%/Sec) (Rocker Only)	Momentary Mode	Scene Number	Scene Mode	Scene Locked
LMSW-101	1: Button 1	Load	00:00	00:00	N/A	Toggle	N/A	N/A	N/A
LMSW-101	1: Button 1	Load	00:00	00:00	N/A	Toggle	N/A	N/A	N/A

LOAD BINDING

This report lists each room controller, plug load controller, fixture controller, and panel, by room. Descriptions are included, so if the loads and controllers have descriptions, the loads will be easy to identify.

Load Binding Report for Bham

137 Customer Care

Load 01[A]: FrontRight Spot in LMRC-222 [Cube 1]
Load 02[B]: FrontRight Spot in LMRC-222 [Cube 1]
Load 03[A]: FrontLeft Spots in LMRC-221 [Cube 2]
Load 04[A]: Front Row Flo. in LMRC-213 [Cube 5]
Load 05[B]: Middle Row Flo. in LMRC-213 [Cube 5]
Load 06[C]: Back Row Flo. in LMRC-213 [Cube 5]
Load 07[A]: Right WallWash in LMRC-213 [LMRC-213]
Load 08[B]: Rear Down Lights in LMRC-213 [LMRC-213]
Load 09[C]: Left WallWash in LMRC-213 [LMRC-213]
Load 10[A]: PL RightCube D in LMPL-201 [LMPL-201]
Load 11[A]: PL RightCube A in LMPL-201 [Open area]
Load 12[A]: PL RightCube B in LMPL-201 [LMPL-201]
Load 13[A]: PL RightCube C in LMPL-201 [LMPL-201]

Panel

Load 01[R01]: Load 1 in LMCP8 [Panel]
Load 02[R02]: Load 2 in LMCP8 [Panel]
Load 03[R03]: Load 3 in LMCP8 [Panel]
Load 04[R04]: Load 4 in LMCP8 [Panel]
Load 05[R05]: Load 5 in LMCP8 [Panel]
Load 06[R06]: Load 6 in LMCP8 [Panel]
Load 07[R07]: Load 7 in LMCP8 [Panel]
Load 08[R08]: Load 8 in LMCP8 [Panel]

NETWORK BRIDGE REPORT

This report lists each panel, bridge, and zone controller which is assigned to a network group. In addition to basic information about the bridge, a second section displays the network group parameters.

NOTE: Panels and zone controllers are also included on this report because they have a bridge built into them. Only bridge related parameters for these devices are found on this report.

Network Bridge Settings for Bham

Bridge or Panel Device

Room	Network Bridge	FW Version	Device Id	MAC Address	Baud Rate	Max Master	Serial Number	Network	Medium Wattage Target	High Wattage Target	Special Wattage Target	Wattage Threshold	Cycle Interval (seconds)	Shed Mode
New Room	LMCP8			Auto 0	Auto-baud	127	0		N/A	N/A	N/A	N/A	N/A	N/A

Group NH/AH Control Channels

Channel	Group	Loads	Blink Warn Type	Blink Warn Time	Normal Hours			After Hours			Transition	
					Time Delay Type	Time Delay	Sensor Behavior	Time Delay Type	Time Delay	Sensor Behavior	To Normal Hours	To After Hours
1	1: Group 1	01[R01]: Load 1, 04[R04]: Load 4, 07[R07]: Load 7	Use Time	5	None	120	Nothing	Use Time	120	On/Off	Last Non Zero	Turn Off

Bridge or Panel Device

Room	Network Bridge	FW Version	Device Id	MAC Address	Baud Rate	Max Master	Serial Number	Network	Medium Wattage Target	High Wattage Target	Special Wattage Target	Wattage Threshold	Cycle Interval (seconds)	Shed Mode
New Room	LMCP24			Auto 0	Auto-baud	127	0		N/A	N/A	N/A	N/A	N/A	N/A

Group NH/AH Control Channels

Channel	Group	Loads	Blink Warn Type	Blink Warn Time	Normal Hours			After Hours			Transition	
					Time Delay Type	Time Delay	Sensor Behavior	Time Delay Type	Time Delay	Sensor Behavior	To Normal Hours	To After Hours
2	2: Group 2	21[R21]: Load 21, 24[R24]: Load 24	Use Time	5	None	120	Nothing	Use Time	120	On/Off	Last Non Zero	Turn Off

NETWORK GROUPS REPORT

This report lists each Network Group along with the loads assigned to it.

Network Groups for Test Project

1: Group 1

Birmingham\Customer Service\0

Load 01[A]: Cubicle - Load A;

2: Group 2

Birmingham\Customer Service\0

Load 02[B]: Cubicle - Load B; Load 04[B]: Ceiling - Load 4;

3: Group 3

Birmingham\Customer Service\0

Load 01[A]: Cubicle - Load A; Load 02[B]: Cubicle - Load B;

4: Group 4

Birmingham\Customer Service\0

Load 02[B]: Cubicle - Load B; Load 05[C]: Ceiling - Load 5;

5: Group 5

Birmingham\Customer Service\0

Load 01[A]: Cubicle - Load A;

6: Group 6

Birmingham\Customer Service\0

Load 01[A]: Cubicle - Load A; Load 02[B]: Cubicle - Load B;

7: Group 7

Birmingham\Customer Service\0

Load 01[A]: Cubicle - Load A;

8: Group 8

Birmingham\Customer Service\0

Load 02[B]: Cubicle - Load B;

11: Group 11

Birmingham\Customer Service\0

Load 01[A]: Cubicle - Load A; Load 02[B]: Cubicle - Load B;

14: Group 14

Birmingham\Customer Service\0

Load 02[B]: Cubicle - Load B;

OCCUPANCY SENSOR REPORT

This provides a list of all occupancy sensors on a per room basis. The values of most of the programmable parameters on the Normal Hours and After Hours tabs are shown.

Occupancy Sensor Settings for Bham

Room	Occupancy Sensor	FW Version	Operating Mode	Time Delay (Min)	PIR Sensitivity (%)	UltraSonic Sensitivity (%)	Detection Scheme Trigger	Detection Scheme Retrigger	Walk Through Mode
137 Customer Care	LMDX-100	5.04	Normal Hours	10	90	70	Both PIR and Ultrasonic	Either PIR or Ultrasonic	False
			After Hours	5	80	40	Both PIR and Ultrasonic	Either PIR or Ultrasonic	True
	LMDX-100	5.04	Normal Hours	10	90	70	Both PIR and Ultrasonic	Either PIR or Ultrasonic	False
			After Hours	5	80	40	Both PIR and Ultrasonic	Either PIR or Ultrasonic	True
	LMDX-100	5.04	Normal Hours	10	90	70	Both PIR and Ultrasonic	Either PIR or Ultrasonic	False
			After Hours	5	80	40	Both PIR and Ultrasonic	Either PIR or Ultrasonic	True
	LMDX-100	5.04	Normal Hours	10	90	70	Both PIR and Ultrasonic	Either PIR or Ultrasonic	False
			After Hours	5	80	40	Both PIR and Ultrasonic	Either PIR or Ultrasonic	True
101_Lobby	LMDC-100	5.04	Normal Hours	5	70	60	Both PIR and Ultrasonic	Either PIR or Ultrasonic	False
			After Hours	5	80	40	Both PIR and Ultrasonic	Either PIR or Ultrasonic	True
104_Cahaba	LMDX-100	5.01	Normal Hours	5	90	50	Both PIR and Ultrasonic	Either PIR or Ultrasonic	True
			After Hours	22	90	70	Both PIR and Ultrasonic	Either PIR or Ultrasonic	False

PAIRING REPORTS

The Device Pairing Reports are intended for use with the Device Pairing Utility, to simplify entry of device serial numbers into LMCS. The report prints out a list of all devices in each room, along with a bar code that identifies that device and the specific room it is in. A column on the report is used to place stickers with the bar code of the serial number for each installed unit. By scanning the serial number along with the bar code of the device in the project, you can import the serial numbers of each device into the proper place in LMCS.

A standard hand-held USB bar code reader is used to scan the bar codes.

Each room is printed on a separate page in the report, to make it easier for contractors to work with the report while installing devices. The CAD symbol is included as an aide to matching devices with drawings. If **Description** and **Location** are entered for individual devices and loads, they are displayed on the report to help in matching the correct serial number sticker with the device on the report. This is especially useful when more than one of the same device exists in a room.

For more details on the Device Pairing utility, see "Automating Serial Number Entry with the Device Pairing Utility" on page 116.

There are two reports. The **Device Pairing Report** includes all devices in the room.

Device Pairing Report for New Project

Area: North Wing
Room: Conference Room
Notes:

CAD Symbol	Icon	Description	Location	Device Type	Device Key	Serial Number
		Sconce Loads		LMRC-222	DK000010021	*Place Serial No. Label Here*
		Red 01[A]: Load 1				
		Yellow 02[B]: Load 2				
		Ceiling Loads		LMRC-213	DK000010001	*Place Serial No. Label Here*
		Red 03[A]: Load 3				
		Yellow 04[B]: Load 4				
		Blue 05[C]: Load 5				
				LMLS-400	DK000010013	*Place Serial No. Label Here*
				LMDC-100	DK000010002	*Place Serial No. Label Here*
				LMSW-105	DK000010022	*Place Serial No. Label Here*
		Conference Room		LMBC-300	DK000010004	*Place Serial No. Label Here*

The **Bridge Pairing Report** includes only bridges, panels, and zone controllers. Once the bridges are correctly matched with serial numbers, running the Sync Devices utility will discover all other devices in the room and allow you to import the serial numbers.

Bridge Pairing Report for New Project

Area: North Wing
Room: Customer Care
Notes:

CAD Symbol	Icon	Description	Location	Device Type	Device Key	Serial Number
		Customer Care		LMBC-300	DK000010001	*Place Serial No. Label Here*

RELAY PANEL INSERT

The Relay Panel Insert is intended to be placed in the panel, as a reference for technicians regarding circuit and load assignments. If information was entered in the **Circuit** field on each Load tab, it will appear on this sheet.

Relay Panel Insert Report

Description	Location	Circuit
Panel 2		

Load Id	Relay Circuit	Description
1		Load 1
2		Load 2
3		Load 3
4		Load 4
5		Load 5
6		Load 6
7		Load 7
8		Load 8
9		Load 9
10		Load 10
11		Load 11
12		Load 12

Load Id	Relay Circuit	Description
13		Load 13
14		Load 14
15		Load 15
16		Load 16
17		Load 17
18		Load 18
19		Load 19
20		Load 20
21		Load 21
22		Load 22
23		Load 23
24		Load 24

RELAY PANEL SETTINGS

This report provides basic details about each panel in the project, including location and click settings.

Relay Panel Settings for Bham

Relay Panel

Room	Relay Panel	Firmware Version	Location	City	Time Zone	DST	Master
Panel 1	LMCP8 [Panel 1]	0.00	33.52° N 86.80° W	Birmingham, Alabama	-6.00 hours GMT	Automatic Dates Enabled: Begin on the 2nd Sunday of March - End on the 1st Sunday of November	Yes Update Frequency = 63

Relay Panel

Room	Relay Panel	Firmware Version	Location	City	Time Zone	DST	Master
Panel 2	LMCP24 [Panel 2]	0.00		Birmingham, Alabama			No

ROOM CONTROLLER REPORT

This provides a list of all room controllers, fixture controllers, and panels on a per room basis. Each controller is broken out by load, and the values of most of the programmable parameters on the Normal Hours and After Hours tabs are shown.

Room Controller Settings for Bham

Room	Controller	FW Version	Line Voltage (Volts)	Load	Load Type	Relay Circuit	Operating Mode	Fade Time	Fade Rate %	Fade Trip Up %	Fade Trip Dn %	High Trim %	Low Trim %	Sensor Mode	Button Mode	Blink Warn	Grace Time (Min)	Override Time Delay (Min)	Temp Auto-On (Sec)	Power Up Mode	Transition State	Transition Level	Relinquish Default
104_Cahaba	LMRC-212	6.13		02[B]: Table Lts - Window & Cans	Dimmed (0-10v)	N/A	Normal Hours	00:00	0	51	50	70	0	Follow On and Off	On and Off	False	5	0	10	Last State	Nothing	25	0
							After Hours	00:00	50	1	0	100	0	Follow Off Only	On and Off	False	5	120	10	Last State	Turn Off	25	0
120 Mens RR	LMRC-101	6.13		01[A]: LOAD A	Switched	N/A	Normal Hours	00:00	0	51	50	70	0	Follow On and Off	On and Off	False	5	0	10	Last State	Nothing	25	0
							After Hours	00:02	50	1	0	70	0	Follow Off Only	On and Off	False	5	120	10	Last State	Turn Off	25	0
121 Womens RR	LMRC-101	5.39		01[A]: LOAD A	Switched	N/A	Normal Hours	00:00	0	51	50	70	0	Follow On and Off	Nothing	False	5	0	0	Last State	Nothing	25	0
							After Hours	00:02	50	1	0	70	0	Follow Off Only	On and Off	False	5	120	10	Last State	Turn Off	25	0
125_Breakroom	LMRC-101	6.13		01[A]: Overhead Lights	Switched	N/A	Normal Hours	00:00	0	1	0	70	0	Follow On and Off	On and Off	False	5	0	10	Last State	Go To Level	0	0
							After Hours	00:02	50	1	0	70	0	Follow Off Only	On and Off	False	5	120	10	Last State	Turn Off	25	0
	LMPL-201	6.13		02[A]: Coffee Maker	Switched	N/A	Normal Hours	00:00	0	1	0	70	0	N/A	On and Off	False	5	0	10	Last State	Go To Level	100	0
							After Hours	00:02	50	1	0	70	0	N/A	On and Off	False	5	120	10	Last State	Turn Off	0	0
126_Copy	LMRC-102	5.39		01[A]: Mailbox Light	Switched	N/A	Normal Hours	00:00	0	51	50	100	0	Follow On and Off	On and Off	False	5	0	10	Last State	Nothing	25	0
							After Hours	00:00	0	51	50	100	0	Follow On and Off	On and Off	False	5	120	10	Last State	Turn Off	25	0
				02[B]: Printer Light	Switched	N/A	Normal Hours	00:00	0	51	50	100	0	Follow Off Only	On and Off	False	5	0	10	Last State	Nothing	25	0
							After Hours	00:00	0	51	50	100	0	Follow Off Only	On and Off	False	5	120	10	Last State	Turn Off	25	0

ROOM SUMMARY

The Room Summary report provides a comprehensive overview of each room and all devices in that room. The report is broken out by room. The first section, “Schedule and Control”, displays a list of all loads, by room controller, fixture controller, and panel, with a summary of all devices and schedules bound to each load.

After the first section, each device type (with at least one occurrence of that device type) is listed in separate tables. For each device, settings for most of the common programming parameters are listed. Parameters are broken out by Normal Hours and After Hours, if After Hours is enabled .

Device Types are listed in the following order: Controllers (with details per load), Occupancy Sensors, Switches (with details per button), Daylighting, Scene parameters, Emergency Control Lighting (ELCU).

NOTE: The LMIO-201 is included in the Occupancy Sensors section. The LMIO-101 is included in the Switches section. Devices with no programmable parameters (the LMDI-100, LMIO-102, LMPS-104, and WRC-TX) are not included on the report.

Room Summary for Bham

Room

WS Birmingham\Offices & Common\Offices - Dimmed: 102A_IT

After Hours Enabled Network Bridge Present

Schedule and Control

Device	TW Sheet	TW Detail	Control Sequence
LMRC-211 [LMRC-311]			
01[R01]: Lights			LMDX-100; LMSW-105Rocker - Dimmer; Normal Hours Sensor Mode: Follow On and Off; After Hours Sensor Mode: Follow Off Only;
LMDX-100 [LMDX-100]			Load 01[A]: Lights;
LMSW-105 [Server Room]			
Rocker - Dimmer			Load 01[A]: Lights;
1: 30%			
2: 50%			
3: 70%			
4: Off			
LMBC-300 [102A_IT:West Hall]			

Controller

Controller	Line Voltage (Volts)	Load	Load Type	Relay Circuit	Operating Mode	Fade Time	Fade Rate %	Fade Trip Point Up (%)	Fade Trip Point Down (%)	High Trim Level (%)	Low Trim Level (%)	Sensor Mode	Button Mode	Blink Warn	Grace Period (Min)	Override Time Delay (Min)	Sensor Retrigger Grace Period	Power Up Mode	Transition State	Transition Level	Relinquish Default
LMRC-211		01[A]: Lights	Dimmed (0-10v)	N/A	Normal Hours	00:00	50	1	0	70	0	Follow On and Off	On and Off	False	5	0	10	Last State	Nothing	25	0
					After Hours	00:02	50	1	0	70	0	Follow Off Only	On and Off	False	5	120	10	Last State	Turn Off	25	0

Occupancy Sensor

Occupancy Sensor	Operating Mode	Time Delay (Min)	PIR Sensitivity (%)	UltraSonic Sensitivity (%)	Detection Scheme Trigger	Detection Scheme Retrigger	Walk Through Mode
LMDX-100	NormalHours	5	70	60	Both PIR and Ultrasonic	Either PIR or Ultrasonic	False
	AfterHours	5	80	40	Both PIR and Ultrasonic	Either PIR or Ultrasonic	True

Switch

Switch	Button	Button Type	Fade Rate	Fade Time On	Fade Time Off	Ramp Rate (%/Sec) (Rocker Only)	Preset Value On	Preset Value Off	Override Time Till Off	Momentary Mode	Scene Number	Scene Mode	Scene Locked	Network Group Id
LMSW-105	Rocker - Dimmer	Load	Use Load Fade Rate	Use Load Fade Rate	Use Load Fade Rate	17	Use Last Level	Relinquish	Use Load Override Time	Toggle	N/A	N/A	N/A	N/A
	1: 30%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A	1: On at 30%	Recall Scene	False	N/A
	2: 50%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A	2: On at 50%	Recall Scene	False	N/A
	3: 70%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A	3: On at 70%	Recall Scene	False	N/A
	4: Off	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A	4: Off	Recall Scene	False	N/A

Scene

Scene	Load	Target Level	Fade Time To Use	Scene Fade Time
1: On at 30%	01[A]: Lights	30	Use Scene	00:02
2: On at 50%		50	Use Scene	00:02
3: On at 70%		70	Use Scene	00:02
4: Off		0	Use Scene	00:02

SCENE REPORT

This report lists the wired DLM Scene Editor settings on a per room basis.

Scene Settings for Bham

Room	Scene	Load	Target Level	Fade Time To Use	Fade Time
137 Customer Care	1: Customer Care	01[A]: FrontRight Spot	0	Use Scene	00:00
		02[B]: FrontRight Spot	0	Use Scene	00:00
		03[A]: FrontLeft Spots	0	Use Scene	00:00
		04[A]: Front Row Flo.	0	Use Scene	00:02
		05[B]: Middle Row Flo.	20	Use Scene	00:02
		06[C]: Back Row Flo.	30	Use Scene	00:02
		07[A]: Right WallWash	0	Use Scene	00:02
		08[B]: Rear Down Lights	0	Use Scene	00:02
		09[C]: Left WallWash	0	Use Scene	00:02
	2: Conference	01[A]: FrontRight Spot	0	Use Scene	00:00
		02[B]: FrontRight Spot	0	Use Scene	00:00
		03[A]: FrontLeft Spots	0	Use Scene	00:00
		04[A]: Front Row Flo.	65	Use Scene	00:02
		05[B]: Middle Row Flo.	20	Use Scene	00:02
		06[C]: Back Row Flo.	30	Use Scene	00:02
		07[A]: Right WallWash	0	Use Scene	00:02

SCHEDULE AND CONTROL

This report lists each device, on a per room basis. Included, for reference is the Typical Wiring Sheet and Detail numbers, from the submittal for the project. These numbers are imported when the **CAD Import** utility is run.

For each controller, a list of all devices and schedule controlling loads in that controller is listed. For devices that send control signals such as switches and sensors, each load controlled by that device is listed.

Schedule and Control Documentation for Bham

WS Birmingham

Notes: UDP = 47809

137 Customer Care

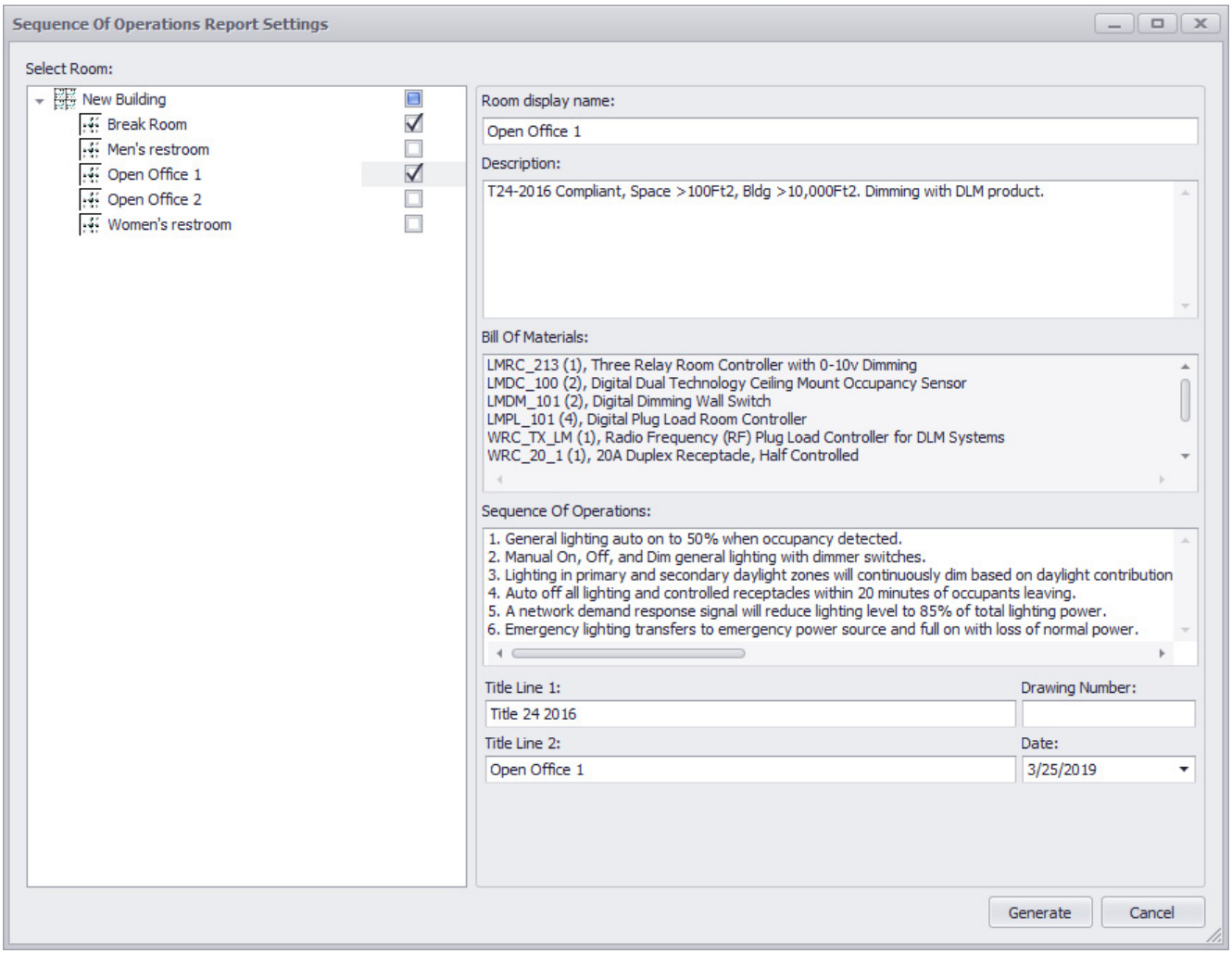
Notes: Room created from discovery of [0861371:036] LMBC-300 (f/w=06.12) <Discovered>

Device	TW Sheet	TW Detail	Control Sequence
LMRC-222 [Cube 1]		.	
01[A]: FrontRight Spot			LMDX-100; LMDX-100; LMDX-100; LMDX-100; Normal Hours Sensor Mode: Follow Off Only; After Hours Sensor Mode: Follow Off Only;
02[B]: FrontRight Spot			LMDX-100; LMDX-100; LMDX-100; LMDX-100; Normal Hours Sensor Mode: Follow Off Only; After Hours Sensor Mode: Follow Off Only;
LMRC-221 [Cube 2]		.	
03[A]: FrontLeft Spots			LMDX-100; LMDX-100; LMDX-100; LMDX-100; Normal Hours Sensor Mode: Follow Off Only; After Hours Sensor Mode: Follow Off Only;
LMRC-213 [Cube 5]		.	
04[A]: Front Row Flo.			LMDX-100; LMDX-100; LMDX-100; LMDX-100; LMSW-105Rocker - Spots; LMSW-105Rocker - Spots; Normal Hours Sensor Mode: Follow On and Off; After Hours Sensor Mode: Follow Off Only;
05[B]: Middle Row Flo.			LMDX-100; LMDX-100; LMDX-100; LMDX-100; LMSW-105Rocker - Spots; LMSW-105Rocker - Spots; Normal Hours Sensor Mode: Follow On and Off; After Hours Sensor Mode: Follow Off Only;
06[C]: Back Row Flo.			LMDX-100; LMDX-100; LMDX-100; LMDX-100; LMSW-105Rocker - Spots; LMSW-105Rocker - Spots; Normal Hours Sensor Mode: Follow On and Off; After Hours Sensor Mode: Follow Off Only;
LMRC-213 [LMRC-213]		.	
07[A]: Right WallWash			LMDX-100; LMDX-100; LMDX-100; LMDX-100; LMSW-105Rocker - Spots; LMSW-105Rocker - Spots; Normal Hours Sensor Mode: Follow Off Only; After Hours Sensor Mode: Follow Off Only;
08[B]: Rear Down Lights			LMDX-100; LMDX-100; LMDX-100; LMDX-100; LMSW-105Rocker - Spots; LMSW-105Rocker - Spots; Normal Hours Sensor Mode: Follow On and Off; After Hours Sensor Mode: Follow Off Only;
09[C]: Left WallWash			LMDX-100; LMDX-100; LMDX-100; LMDX-100; LMSW-105Rocker - Spots; LMSW-105Rocker - Spots; Normal Hours Sensor Mode: Follow Off Only; After Hours Sensor Mode: Follow Off Only;
LMPL-201 [LMPL-201]		.	
10[A]: PL RightCube D			
LMPL-201 [LMPL-201]		.	
12[A]: PL RightCube B			
LMPL-201 [LMPL-201]		.	
13[A]: PL RightCube C			
LMPL-201 [Open area]		.	
11[A]: PL RightCube A			

SEQUENCE OF OPERATIONS

This report can only be run if the project was set up using an energy code, with rooms created by selecting a room type. When you select the report to run, a dialog opens allowing you to select which rooms you want to include in the report and to customize the included information.

Sequence of Operations Report Settings



1. For the list on the left, select the rooms you want to include in the report, or select the building to include all rooms.
2. For each room you select, if you click on that room in the list, the information on the right side of the dialog will change. This information is taken from the energy code file. However, you can edit any of the fields with the exception of the Bill of Material field, which is based on the devices currently included in that room. This allows you to add additional information or edit existing information based on the specific requirements of this project.
3. Once you complete all edits, click **Generate.** A report preview dialog opens, where you can select whether to export report in .pdf or .dxf format. A separate file is generated for each room you selected.

Open Office 1

T24-2016 Compliant, Space >100Ft2, Bldg >10,000Ft2.
Dimming with DLM product.

BILL OF MATERIALS

LMRC_213 (1), Three Relay Room Controller with 0-10v Dimming

LMDC_100 (2), Digital Dual Technology Ceiling Mount Occupancy Sensor

LMDM_101 (2), Digital Dimming Wall Switch

LMPL_101 (4), Digital Plug Load Room Controller

WRC_TX_LM (1), Radio Frequency (RF) Plug Load Controller for DLM Systems

WRC_20_1 (1), 20A Duplex Receptacle, Half Controlled

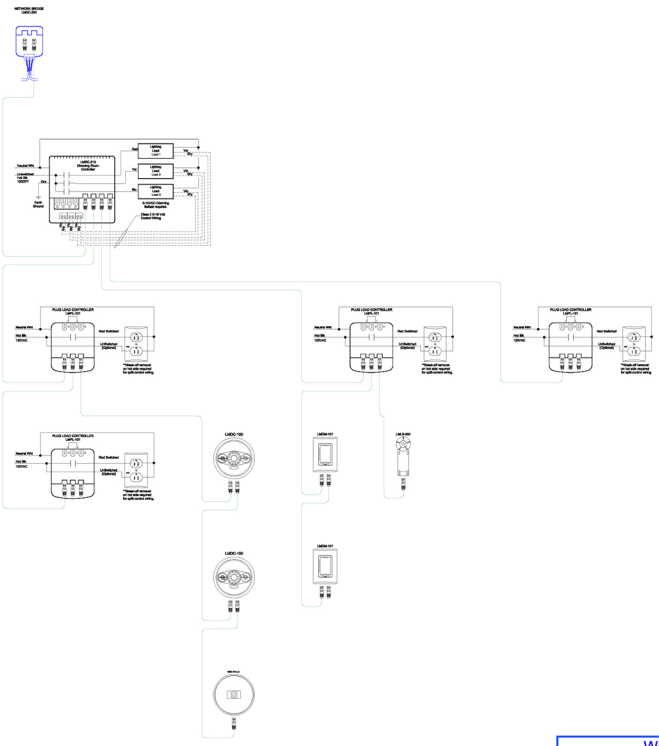
LMBC_300 (1), Digital Network Bridge

LMLS_500 (1), Multi-zone Switching and Dimming Open Loop Digital Photosensor

ELCU_200 (3), Emergency Lighting Control Unit

SEQUENCE OF OPERATION

1. General lighting auto on to 50% when occupancy detected.
2. Manual On, Off, and Dim general lighting with dimmer switches.
3. Lighting in primary and secondary daylight zones will continuously dim based on daylight contribution to maintain at least 35FC at task level. *Note: When general lighting power in the sidelight daylight area is 120w or greater, automatic daylight responsive controls are required.
4. Auto off all lighting and controlled receptacles within 20 minutes of occupants leaving.
5. A network demand response signal will reduce lighting level to 85% of total lighting power.
6. Emergency lighting transfers to emergency power source and full on with loss of normal power.



Wattstopper
www.legrand.us/wattstopper
Phone: 888-932-2275
legrand

Title: Title 24 2016
Open Office 1

Scale	Drawing#	Date	Rev.
None		3/25/2019	

SIMPLIFIED BRIDGE REPORT

This report lists each panel, bridge, and zone controller in the project, along with the values for most of the programmable parameters for the bridge.

NOTE: Panels and zone controllers are also included on this report because they have a bridge built into them. Only bridge related parameters for these devices are found on this report.

Network Bridge Settings for Bham

Bridge or Panel Device

Room	Network Bridge	FW Version	Device Id	MAC Address	Baud Rate	Max Master	Serial Number	Network	Medium Wattage Target	High Wattage Target	Special Wattage Target	Wattage Threshold	Cycle Interval (seconds)	Shed Mode
137 Customer Care	LMBC-300	6.24	861371	36	38400	127	16789440	06102 Bham_CustCareCenter	0	0	0	0	5	None
New Room	LMCP8			Auto 0	Auto-baud	127	0		N/A	N/A	N/A	N/A	N/A	N/A
New Room	LMCP24			Auto 0	Auto-baud	127	0		N/A	N/A	N/A	N/A	N/A	N/A
101_Lobby	LMBC-300	6.24	861010	35	76800	127	18885902	06001 Bham_Building	0	0	0	0	5	None
104_Cahaba	LMBC-300	6.24	861040	21	76800	127	18886662	06001 Bham_Building	0	0	0	0	5	None
120 Mens RR	LMBC-300	6.24	861200	32	76800	127	16787849	06001 Bham_Building	0	0	0	0	5	None
121 Womens RR	LMBC-300	6.24	861210	33	76800	127	16787822	06001 Bham_Building	0	0	0	0	5	None
125_Breakroom	LMBC-300	6.24	861250	17	76800	127	16787815	06001 Bham_Building	0	0	0	0	5	None
126_Copy	LMBC-300	6.24	861260	16	76800	127	16787836	06001 Bham_Building	0	0	0	0	5	None
142_Conf_B	LMBC-300	6.24	861420	4	76800	127	16788374	06001 Bham_Building	0	0	0	0	5	None
144_Plotter	LMBC-300	6.24	861440	2	76800	127	16788172	06001 Bham_Building	0	0	0	0	5	None
102A_IT	LMBC-300	6.24	861021	19	76800	127	18886231	06001 Bham_Building	0	0	0	0	5	None
102B_Mike_P	LMBC-300	6.24	861022	18	76800	127	16788456	06001 Bham_Building	0	0	0	0	5	None
102C_Carol	LMBC-300	6.24	861023	20	76800	127	16788207	06001 Bham_Building	0	0	0	0	5	None
102D_Britton_D	LMBC-300	6.24	861024	34	76800	127	18885847	06001 Bham_Building	0	0	0	0	5	None

SIMPLIFIED ROOM SUMMARY

The Simplified Room Summary is similar to the Room Summary report but does not provide details on the values of most parameters. For each device, it does indicate which loads the device is bound to. A small number of key parameters, such as Time Delay for occupancy sensors, and Operation Mode for buttons is included.

Room Summary for Bham

Room

WS Birmingham\Offices & Common\Common Area: 101_Lobby

Schedule and Control

Device

Controllers

	Load	Description	Load Type	Sensor Mode		Override Time Delay (Min)		Transition Level	
				Normal Hours	After Hours	Normal Hours	After Hours	Normal Hours	After Hours
LMRC-212	1	Door	Switched	Follow On and Off	Follow Off Only	0	120	25	25
	2	Wall	Switched	Follow On and Off	Follow Off Only	0	120	25	25
LMPL-201	3	Plugs	Switched	Follow On and Off	Follow On and Off	0	120	25	25

Occupancy Sensors

	Controlled Loads	Time Delay (Min)	
		Normal Hours	After Hours
LMDC-100	01[A]: Door, 02[B]: Wall, 03[A]: Plugs	5	5

Daylighting

	Zone	Controlled Loads	Operation Mode	On Setpoint (FC)
LMLS-500	1	01[A]: Door	Switched	20
	2	02[B]: Wall	Switched	50

Switches

	Button	Mode	Description	Controlled Loads
LMSW-101	1: Button 1	Toggle	N/A	01[A]: Door, 02[B]: Wall

Networking

LMBC-300	Present	LM-MSTP Required

SWITCH REPORT

This provides a list of all switches on a per room basis. Each switch is broken out by button, and the values of most of the programmable parameters on the Normal Hours and After hours tabs are shown.

Switch Settings for Bham

Room	Switch	FWVersion	Button	Button Type	Fade Rate	Fade Time On	Fade Time Off	Ramp Rate (%/Sec) (Rocker Only)	Preset Value On	Preset Value Off	Override Time Till Off	Momentary Mode	Scene Number	Scene Mode	Scene Locked	Network Group Id
137 Customer Care	LMSW-105	5.03	Rocker - Spots	Load	Use Load Fade Rate	Use Load Fade Rate	Use Load Fade Rate	17	35	Relinquish	Use Load Override Time	Toggle	N/A	N/A	N/A	N/A
			1: Present	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			2: Dimmed 75%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			3: Dimmed 50%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			4: All Off	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
	LMSW-105	5.03	Rocker - Spots	Load	Use Load Fade Rate	Use Load Fade Rate	Use Load Fade Rate	17	35	Relinquish	Use Load Override Time	Toggle	N/A	N/A	N/A	N/A
			1: Present	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			2: Dimmed 75%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			3: Dimmed 50%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			4: All Off	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
101_Lobby	LMSW-101	5.03	1: Button 1	Load	Use Fade Time	00:00	00:00	N/A	Use Last Level	Relinquish	Use Load Override Time	Toggle	N/A	N/A	N/A	N/A
104_Cahaba	LMSW-105	5.02	Rocker - Rocker 1	Load	Use Load Fade Rate	Use Load Fade Rate	Use Load Fade Rate	17	Use Last Level	Relinquish	Use Load Override Time	Toggle	N/A	N/A	N/A	N/A
			1: All On	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			2: 50%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			3: 30%	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A
			4: All Off	Scene	N/A	Use Load Fade Time	Use Load Fade Time	N/A	N/A	N/A	N/A	N/A		Recall Scene	False	N/A

TYPICAL WIRING

For each device model in the project, this report displays the Typical Wiring Sheet and Detail numbers, from the submittal for the project. These numbers are imported when the **CAD Import** utility is run. The CAD symbol for that device is also included.

Typical Wiring Documentation for Bham

CAD	Catalog No.	TW Sheet	TW Detail	Description
	LMRC-212			Two Relay Room Controller with 0-10v Dimming
	LMPL-201			Digital Plug Load Controller with Current Monitoring
	LMLS-500			Multi-zone Switching and Dimming Open Loop Digital Photosensor
	LMDC-100			Digital Dual Technology Ceiling Mount Occupancy Sensor
	LMSW-101			1-Button Digital Wall Switch
	LMBC-300			Digital Network Bridge
	LMRC-211			One Relay Room Controller with 0-10v Dimming
	LMDX-100			Digital Dual Technology Corner Mount Occupancy Sensor
	LMSW-105			5-Button Digital Scene Switch
	LMDM-101			Digital Dimming Wall Switch
	LMSW-102			2-Button Digital Wall Switch
	LMRC-213			Three Relay Room Controller with 0-10v Dimming
	LMLS-400			Single Zone Switching and Dimming Closed Loop Digital Photosensor
	LMUC-100-2			Digital Ultrasonic Ceiling Mount Occupancy Sensor
	LMRC-101			Single Relay Room Controller
	LMRC-102			Dual Relay Room Controller
	LMDW-102			2-Button Digital Dual Tech Wall Switch Occupancy Sensor
	LMDW-101			1-Button Digital Dual Tech Wall Switch Occupancy Sensor
	LMPW-102			2-Button Digital PIR Wall Switch Occupancy Sensor

WIRELESS BATTERY LEVELS

This report list all wireless devices that use batteries and displays the current known level.

Wireless Device Battery Levels for David's Office 6

Network	Area	Room	Device	Battery Level
Wireless Network [0004741636a3 - 4]	New Building\1st Floor	101	LMPC-600 (Wireless Ceiling Mount PIR Occupancy Sensor, Extended Range Lens)	unknown
			LMSW-605 (Wireless Digital 5-Button Scene Switch)	unknown
		102	LMPC-600 (Wireless Ceiling Mount PIR Occupancy Sensor, Extended Range Lens)	unknown
			LMSW-605 (Wireless Digital 5-Button Scene Switch)	unknown
	New Building\2nd Floor	201	LMPX-600 (Wireless PIR Corner/Wall Mount Sensor, Wide Angle Lens)	unknown
			LMDM-601 (Wireless 1-Button Dimming Wall Switch)	unknown
		202	LMPX-600 (Wireless PIR Corner/Wall Mount Sensor, Wide Angle Lens)	unknown
			LMDM-601 (Wireless 1-Button Dimming Wall Switch)	unknown

WIRELESS DEVICE LIST

This report lists all wireless devices in the project, sorted by Area and Room.

Project Wireless Devices for David's Office 6

Network	Area	Room	MAC	Device	Serial
Wireless Network [0004741636a3 - 4]	New Building\1st Floor	101	4967	LMRC-611MCC (Wireless Room Controller, 1-Relay, 10A, 0-10V Dimming with Metering)	0
			4110	LMPC-600 (Wireless Ceiling Mount PIR Occupancy Sensor, Extended Range Lens)	0
			A110	LMSW-605 (Wireless Digital 5-Button Scene Switch)	0
		102	9DFA	LMRC-611MCC (Wireless Room Controller, 1-Relay, 10A, 0-10V Dimming with Metering)	0
			F110	LMPC-600 (Wireless Ceiling Mount PIR Occupancy Sensor, Extended Range Lens)	0
			7110	LMSW-605 (Wireless Digital 5-Button Scene Switch)	0
	New Building\2nd Floor	201	9830	LMRC-611MCC (Wireless Room Controller, 1-Relay, 10A, 0-10V Dimming with Metering)	0
			7110	LMPX-600 (Wireless PIR Corner/Wall Mount Sensor, Wide Angle Lens)	0
			6110	LMDM-601 (Wireless 1-Button Dimming Wall Switch)	0
		202	A4A9	LMRC-611MCC (Wireless Room Controller, 1-Relay, 10A, 0-10V Dimming with Metering)	0
			5110	LMPX-600 (Wireless PIR Corner/Wall Mount Sensor, Wide Angle Lens)	0
			A110	LMDM-601 (Wireless 1-Button Dimming Wall Switch)	0

WIRELESS SCENE REPORT

This report lists all wireless scenes created for the project, including both user created scenes and scenes generated automatically by Plug n' Go, provided they have been read into LMCS.

Wireless scenes report

LMBC-650 Scene 1

Set Manual IRB

Name	Level	Fade Time	Load Mask	Override Time	Priority	Override	HighLoadMask	Use Fade Rate
LMBC-650	0	0	1,2	0	8	False	0	False

PnG Scene 3

PnG Scene 4

PnG Scene 5

LMSW-605 Scene 1

Go To Level

Name	Level	Time
Load 1	75	2
Load 2	75	2

LMSW-605 Scene 2

Go To Level

Name	Level	Time
Load 1	50	2
Load 2	50	2

David's Office 5 **03-25-2019 11:19 GMT -05:00**

Wireless Schedule Report

Wireless Schedule	
Normal Hours/After Hours	
ID:	2d0c3b05-eeee-4630-8f6a-6c25dad05c8c:01cb87bc-dc4b-4ce2-930f-f2139eec0dcf
Start Time:	07:00 AM
End Time:	06:00 PM
Start Event:	Normal Hours/After Hours-Start
End Event:	Normal Hours/After Hours-End

Type	Holidays	Days
Clock	N	Mo, Tu, We, Th, Fr

Controlled Loads (Start Event)

Controlled Loads (End Event)

Wireless Schedule	
Saturday Schedule	
ID:	116d0e7d-2e55-499a-9285-b3b796f2169f:3b1d83a9-68f1-4045-a035-04dee30a695e
Start Time:	08:00 AM
End Time:	04:00 PM
Start Event:	Saturday Schedule-Start
End Event:	Saturday Schedule-End

Type	Holidays	Days
Clock	N	Sa

Controlled Loads (Start Event)
LMBC-650
LMBC-650
LMBC-650
LMBC-650
LMBC-650

Controlled Loads (End Event)

David's Office 5 **Monday, March 25, 2019**

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