LMRC-110 SERIES ROOM CONTROLLERS

April, 2016

Product Launch Manual

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1. STRATEGY

Why Wattstopper?

Wattstopper, a product line of Legrand, offers the most comprehensive line of simple, scalable and flexible energy efficient lighting controls and solutions for commercial applications.

The Wattstopper range of products, programs, and services have been helping customers save energy, meet green initiatives and comply with energy codes for more than 30 years.

- Wattstopper pioneered room based controls with the introduction of Digital Lighting Management (DLM) by combining its controls expertise with room based load controllers.

What Problem In The Market Are We Solving?

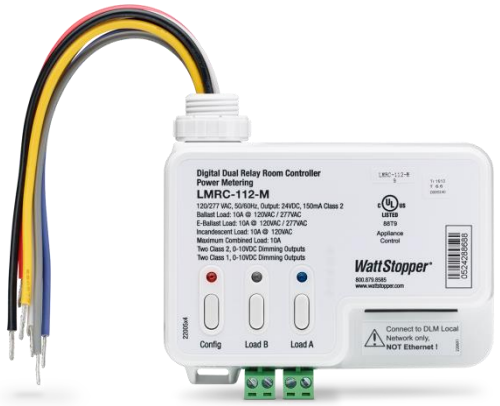
LMRC-110 series room controllers solves the following problems:

Contractors want products that are easy to install, wire, and help them get off the job site faster.

- **Install -** simple j-box knock out installation
- **Wire -** supports Class 1 or Class 2 0-10V wiring methods
- **Speed -** pre-terminated Cat 5e cabling and Plug n' Go™ requires minimal skills connect and startup

Specifiers want products that are safe, reliable, feature rich and easy to install.

- **Safe -** full isolation between 0-10V Class 1 & Class 2 eliminating potential for shock
- **Reliable -** 5 year warranty and proven product in the market
- **Features -** standard knock out mounting, metering capability, optional Buy America Act Compliant (or ARRA Compliant)



Benefits of the Wattstopper LMRC-110 Series

Design Engineer

- The LMRC-110 series room controllers are ideal for a broad set of specifications from room based to full networked projects.
- Simplifies compliance with ASHRAE 90.1 and Title 24 retrofit requirements.
- Metering option for voltage and current building performance monitoring.

Distributor

- New form factor and features will make this the preferred room controller to have on the shelf.
- New pull through opportunity for combined line voltage and control wire flex cabling.

Contractor

- Support for Class 1 0-10V wiring in single flex cable.
- Familiar knock out mounting reduces product installation and wiring time.

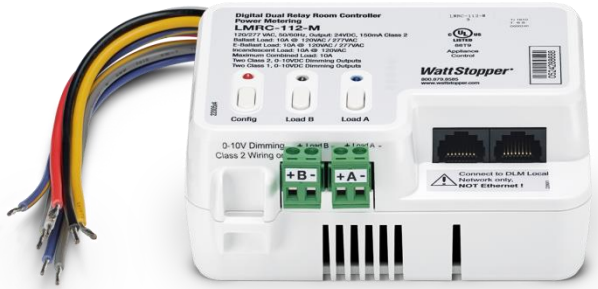
Owner/User

- Allows full range dimming to provide the amount of light that the occupant desires.
- Metering option for voltage and current building performance monitoring.

2. PRODUCT PRESENTATION

LMRC-110 Series Features & Benefits

- Small form factor KO mounting offers more flexibility and speed for contractor installations
- Multiple relay options to support small or larger spaces
- Galvanically isolated Class 1 pigtails and Class 2 terminals for 0-10VDC signal; sinks up to 50mA per output (Class 1/ Class 2) per channel for control of compatible ballasts (25 if each sources 2mA)
  - Class 1 0-10V support for a single conductor to the fixture
- Available with or without meeting (+/- 2% accuracy)



LMRC-110 Series Specifications

Input Voltage:

- 120/277 VAC, 50/60 Hz
- 347: 347 VAC, 50/60 Hz (planned Q4 2016)

Load Requirements:

- 10A maximum load per room controller
- Relay rated for up to 10@120/277VAC
  - Incandescent
  - Ballast
  - E-ballast

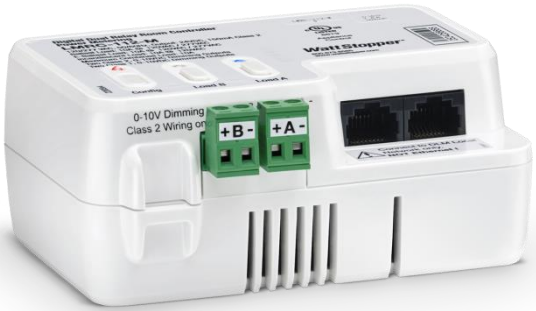
0-10V Class 1 & Class 2 Outputs

- Galvanically isolated
- Sinks up to 50mA per output (Class 1/ Class 2) per channel

LMRC-110 Series Specifications

DLM Network

- 24VDC up to 150mA across 2 RJ45 ports
- 800mA maximum current
- Supports up to 64 load addresses and 48 communicating devices
- CAT 5e wiring up to 150’ per device to 1000’ maximum
- Maximum 4 LMPB-100, LMPL-101, or LMRC-100 series room controllers

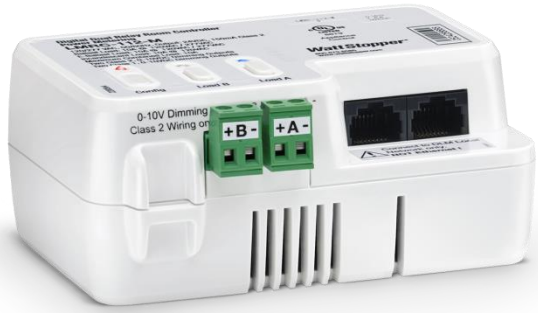


Metering (optional)

- Monitors voltage and current
- Accuracy of +/- 2%
- Power monitoring data with LMSM

LMRC-110 Series Specifications

DLM Load Parameters

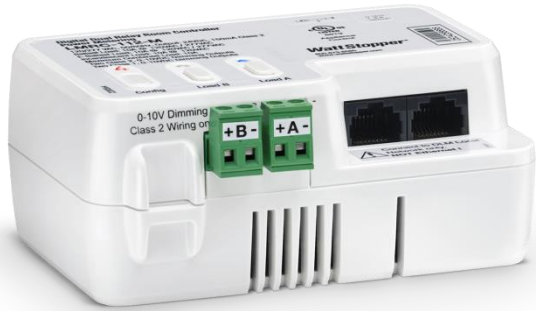


Load Parameter (for each dimmed output)	Default Setting	Available Options
High trim	85%	1-100%
Low trim	0%	0-99%
Preset level	60%	1-100% or Last
Scenes 1-16	1: 100%, 2: 75%, 3: 50%, 4: 25%, 5-16: 100%	All: 0-100%
Preset fade time	2 seconds	0 seconds – 18 hours
Lamp burn in time	0	0, 12, or 100 hours

LMRC-110 Series Specifications (cont'd)

Wires

- Line voltage: 16AWG
- Dimming: 18AWG



Regulatory

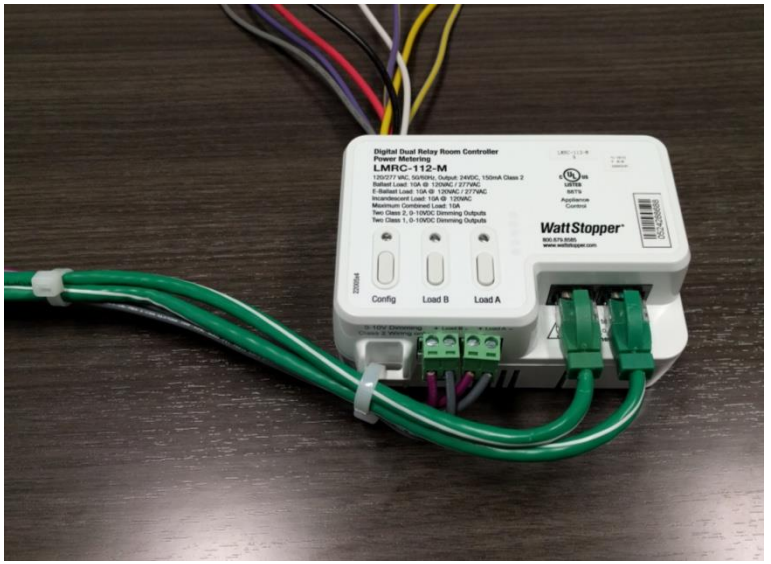
- Meets UL/CUL standards
- UL 2043 Plenum rated
- ROHS Compliant
- Environmental
  - Operating Temp: 32˚ to 131˚F (0˚ to 55˚C)
  - Storage Temp: 23˚ to 58˚F (-5˚ to 70˚C)
  - Relative Humidity: 5% to 95% (non-condensing)

Warranty

- Five years

Additional Features

- Cable tie ring for low voltage cable strain relief
- 0-10V Class 2 screw terminal plug-in connectors
  - Easy secure connections
  - Ideal for pre-fabrication
- Fits standard ½” knock-out



Compatible with LMCT

- LMCT hand tool support for:
  - Load configuration
  - Dimming
  - Adjust level
  - Shows as unknown device in “Identify Device” menu (update planned)

```
 Load Config <PnL>
Load:                1
Operation:   <Auto On>
Blink:       <Disable>
LMLS-105:    <Disable>
Load Type:     <0-10V>

SEND  BIND  NEXT EXIT
```

```
Load 1 Dim Config
Type:             <Dim>
Low Trim:          <0%>
High Trim:        <85%>
Preset Level      <60%>
Burn-in Hours:     <0>

  SEND  PRIOR  NEXT
```

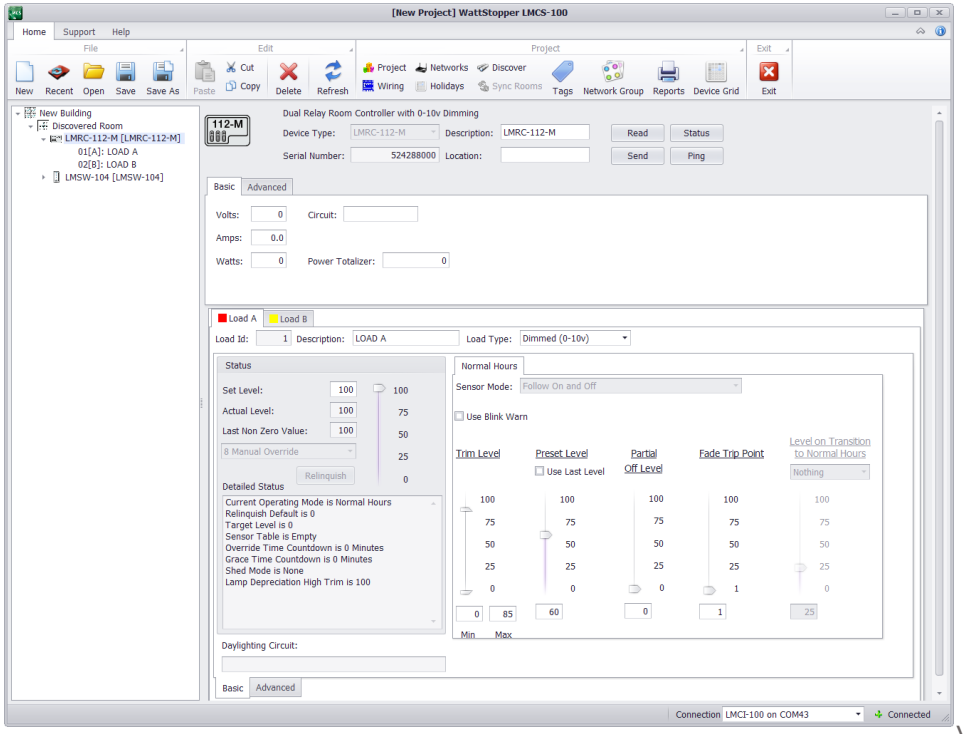
```
Adjust Light Level

Load <1>
LEFT/RIGHT picks load
UP/DOWN adjusts level


Press HOME when done
```

Compatible with Software Tools

- Soon LMCS-100 support (version 4.5.1 or later)
- Soon Compatible with LMSM (version 2.1.23 or later)

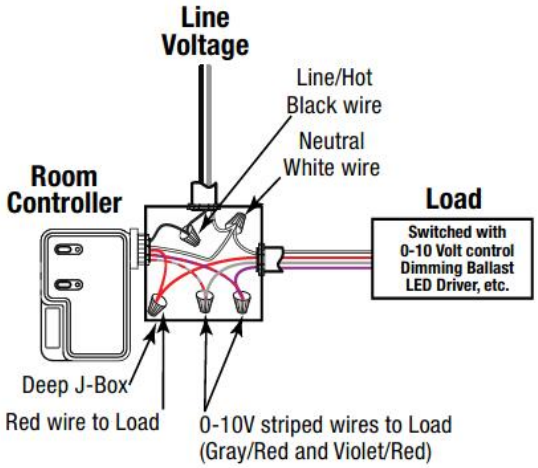


LMRC-111 Wiring Examples

Class 1

- Combined line voltage and control wire via knock out

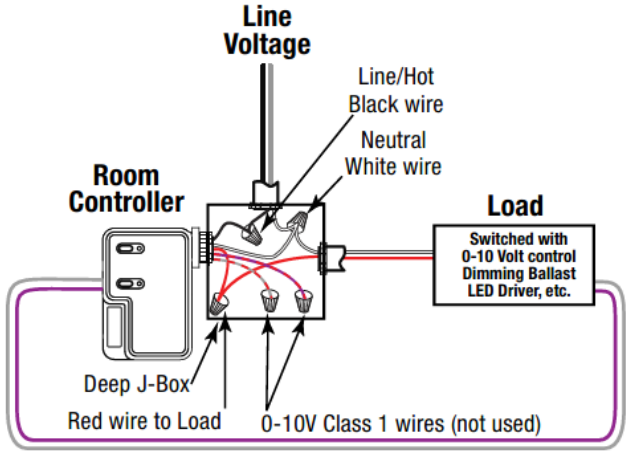
LMRC-111 with Class 1 Dimming



Class 2

- Separate 0-10V control wire terminals on front of room controller

LMRC-111 with Class 2 Dimming



0-10V Class 2 Dimming control wires

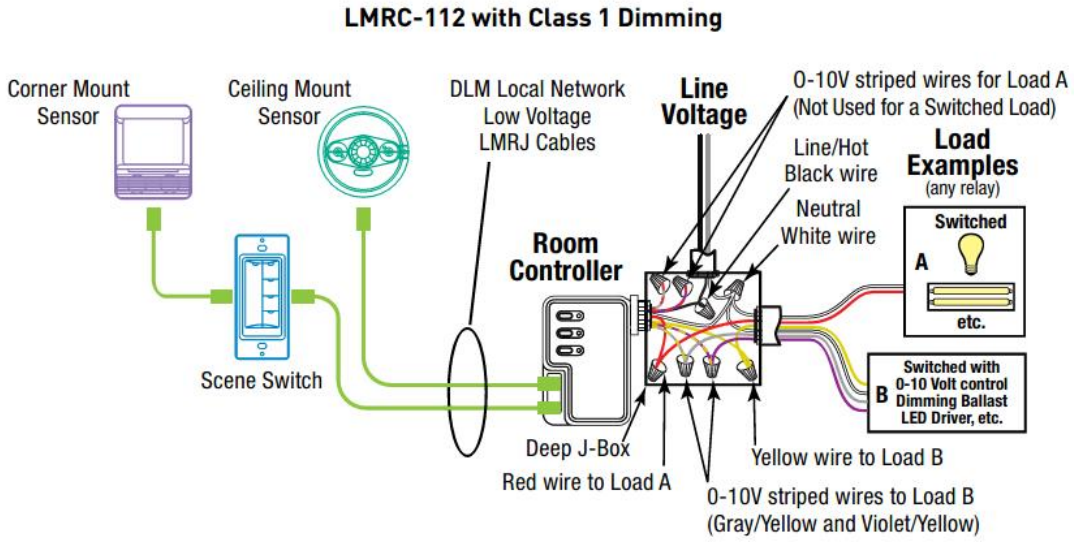
LMRC-112 Wiring Examples

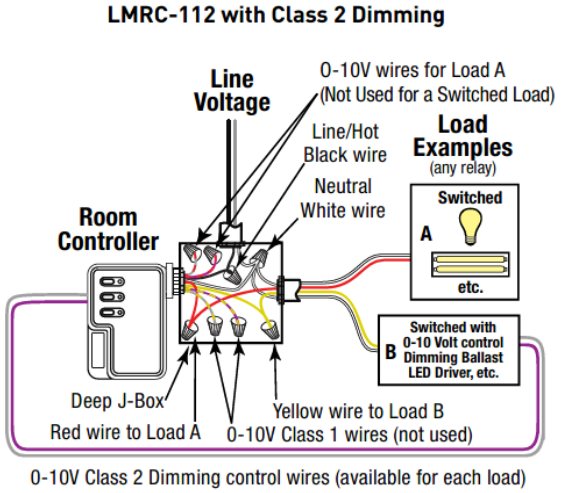
Class 1

- Combined line voltage and control wire via knock out

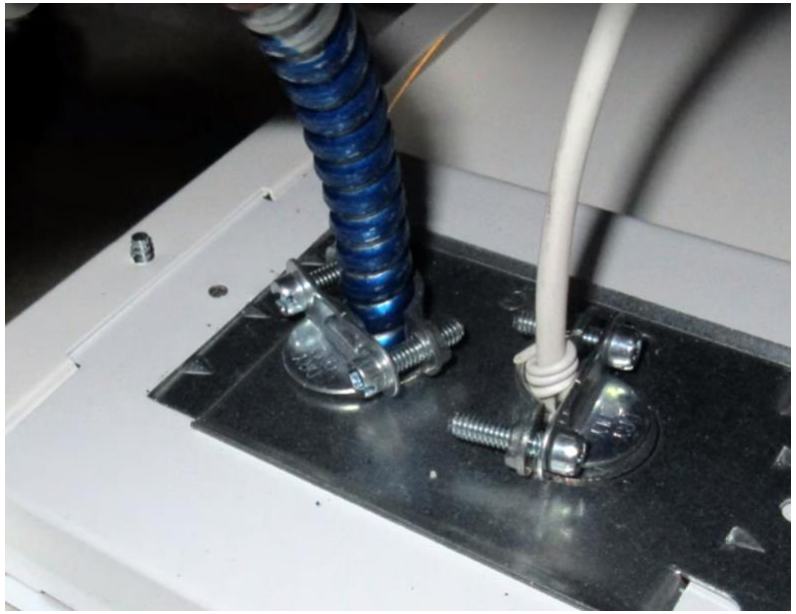
Class 2

- Separate 0-10V control wire terminals on front of room controller



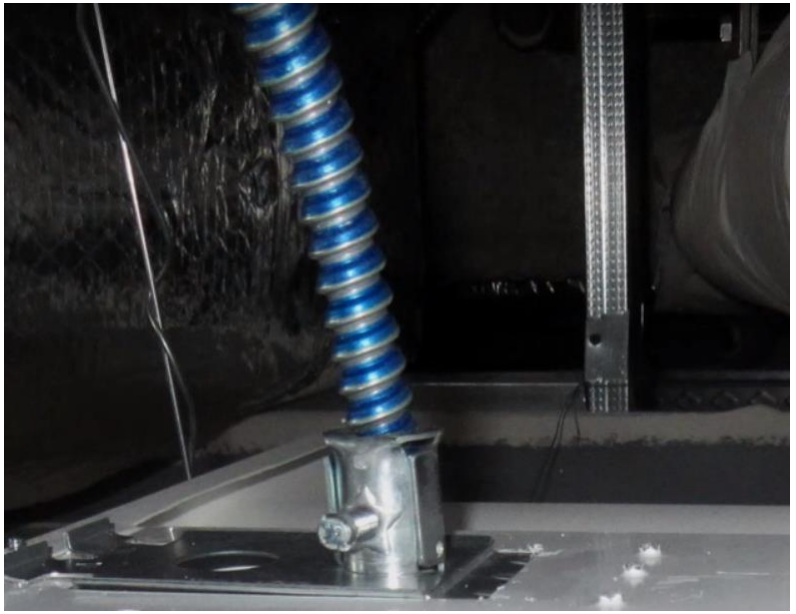


Class 1 & Class 2 0-10V Wiring Methods



Traditional Class 2 Method

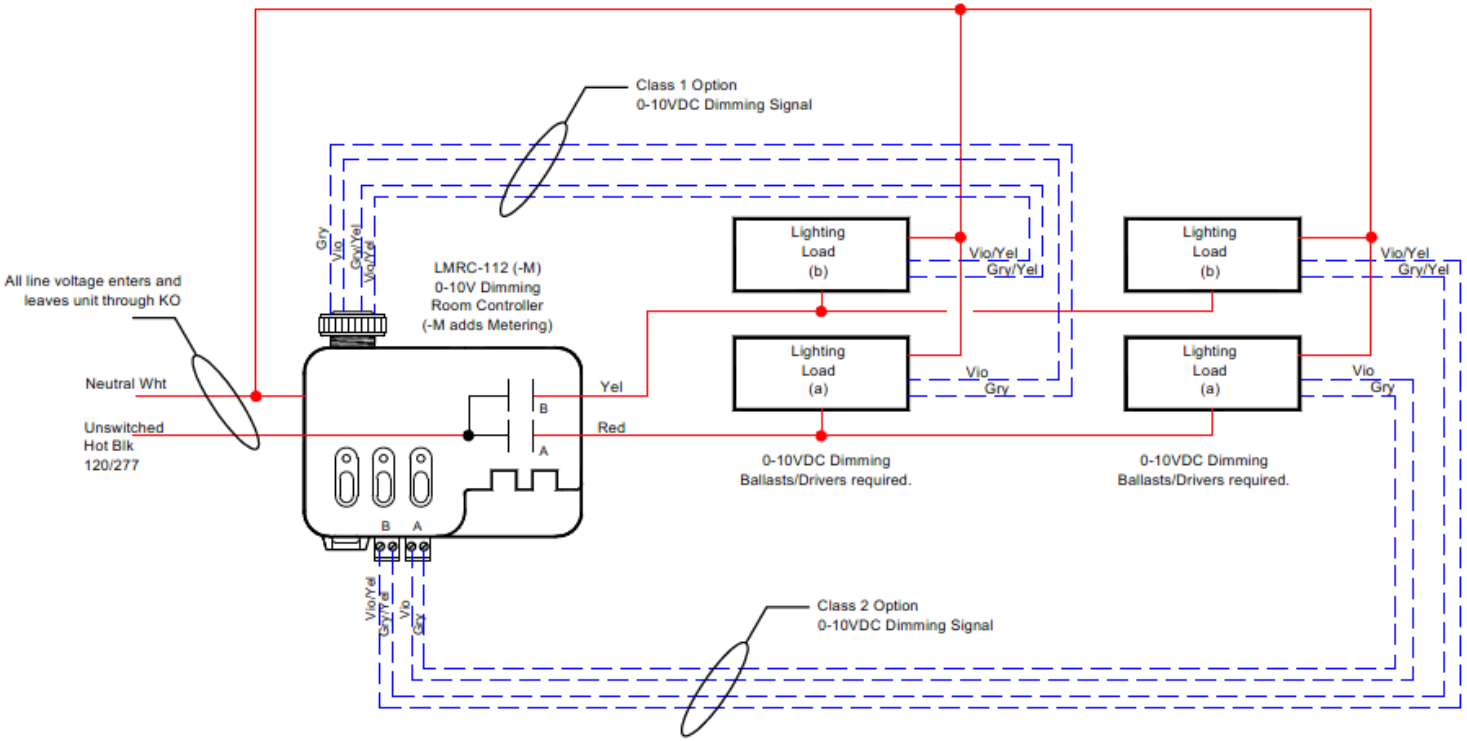
Line voltage and control wire separate



Class 1 Method

Line voltage and control wire combined in same flex cable

CAD Drawing

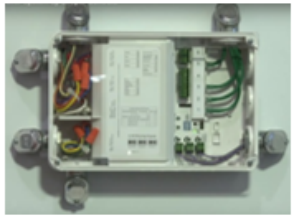


Notes:

- LMRC-11x units provide both a Class 1 and a Class 2 dimming signal for 0-10VDC Ballasts/Drivers. Either or both the Class 1 and Class 2 wires can be used at the same time.
- Class 1 is preferred in new installations when the violet & grey dimming signal wires are included in the fixture power cable.
- Class 2 is used for new or existing installation when it's easier to run the violet & grey dimming signal wires outside the fixture cable.
- Class 1 and Class 2 wiring should be maintained thoughout the installation and cannot be swapped - appropriate wiring practices should be used. Class 1 and Class 2 circuitry in the LMRC units are galvanically isolated.
- A "-M" suffix identifies units have an internal Voltage and Current monitoring capability.

3. COMPETITIVE ANALYSIS

Feature Comparison Chart



	Wattstopper	Acuity nLight	Cooper Greengate
Products	**LMRC-110 Series**	**NPP16 Series**	**RC3DE**
Room Controller Mounting	Knock-out	Knock-out	Enclosure
Dimensions	4.4"H x 3.2"W x 2"D	3.38"H x 2.53"W x 1.83"D	11 1/2"H x 7 1/2"W x 2 1/4"D
Voltage Input Specs			
120/277VAC	Y	Y	Y
347VAC	* Q4 2016	Y	N
# of Relays	1 or 2	1	3
Load Rating Per Relay	10A	16A	20A
0-10V Wiring Specs			
Class 1 Knock-out	Y	Y	N
Class 2 Terminals	Y (pluggable)	N	Y
Galvanic Isolation	Y	?	N
Per Channel Dimming Sink	50mA/output/channel	100mA	100mA
In-room Wiring			
CAT 5E cables	Y	Y	Y
Wiring Topology	Free	Daisy Chain	Daisy Chain (Couplers req'd)
Room Controller Bus Power	150mA(across 2 ports)	80mA(40mA per port)	not specified
Metering			
Optional	Y (-M)	Y (-IM)	N
Current	Y	Y	N/A
Voltage	Y	N	N/A
Accuracy	2% +/-	not specified	N/A
Warranty	5 years	5 years	5 years

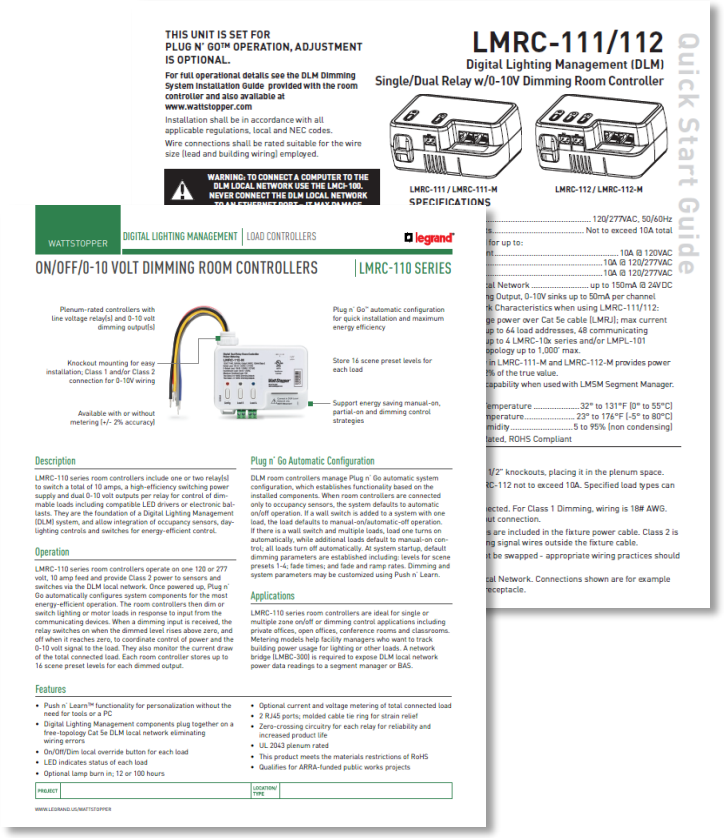
How to Sell Against Acuity nLight

- Legrand provides more key features
  - Class 1 or Class 2 0-10V Wiring
    - Contractor can use the same unit to support either wiring method on the job
    - nLight requires contractor to choose between nipple –D for Class 1 or –DS for Class 2
  - Plug n' Go™ and Push n' Learn™
    - Works just like all other room controllers for automatic configuration and easy personalization
  - Available in multiple versions
    - 1 or 2 relay
    - With or without metering
    - U Buy America compliant (ARRA)
- Current and voltage metering information automatically populates onto Segment Manager 2.1 tiles to provide performance information
  - nLight only provides current monitoring

4. Marketing Materials

Literature

- Cut sheet
- Installation instructions
- Press release
- CSI/AIA Specification (updated)
- Future Technical Bulletin (0-10V, Class 1 & 2 Wiring)



THIS UNIT IS SET FOR PLUG N' GO™ OPERATION, ADJUSTMENT IS OPTIONAL.

For full operational details see the DLM Dimming System Installation Guide provided with the room controller and also available at www.wattstopper.com

Installation shall be in accordance with all applicable regulations, local and NEC codes.

Wire connections shall be rated suitable for the wire size (lead and building wiring) employed.

WARNING: TO CONNECT A COMPUTER TO THE DLM LOCAL NETWORK USE THE LNCI-100. NEVER CONNECT THE DLM LOCAL NETWORK

LMRC-111/112

Digital Lighting Management (DLM)

Single/Dual Relay w/0-10V Dimming Room Controller

Quick Start Guide

LMRC-111 / LMRC-111-M

LMRC-112 / LMRC-112-M

SPECIFICATIONS

WATTSTOPPER | DIGITAL LIGHTING MANAGEMENT | LOAD CONTROLLERS

ON/OFF/0-10 VOLT DIMMING ROOM CONTROLLERS | LMRC-110 SERIES

Plenum-rated controllers with line voltage relay(s) and 0-10 volt dimming output(s)

Knockout mounting for easy installation; Class 1 and/or Class 2 connection for 0-10V wiring

Available with or without metering (+/- 2% accuracy)

Plug n' Go™ automatic configuration for quick installation and maximum energy efficiency

Store 16 scene preset levels for each load

Support energy saving manual-on, partial-on and dimming control strategies

Description

LMRC-110 series room controllers include one or two relay(s) to switch a total of 10 amps, a high-efficiency switching power supply and dual 0-10 volt outputs per relay for control of dimmable loads including compatible LED drivers or electronic ballasts. They are the foundation of a Digital Lighting Management (DLM) system, and allow integration of occupancy sensors, daylighting controls and switches for energy-efficient control.

Operation

LMRC-110 series room controllers operate on one 120 or 277 volt, 10 amp feed and provide Class 2 power to sensors and switches via the DLM local network. Once powered up, Plug n' Go automatically configures system components for the most energy-efficient operation. The room controllers then dim or switch lighting or motor loads in response to input from the communicating devices. When a dimming input is received, the relay switches on when the dimmed level rises above zero, and off when it reaches zero, to coordinate control of power and the 0-10 volt signal to the load. They also monitor the current draw of the total connected load. Each room controller stores up to 16 scene preset levels for each dimmed output.

Plug n' Go Automatic Configuration

DLM room controllers manage Plug n' Go automatic system configuration, which establishes functionality based on the installed components. When room controllers are connected only to occupancy sensors, the system defaults to automatic on/off operation. If a wall switch is added to a system with one load, the load defaults to manual-on/automatic-off operation. If there is a wall switch and multiple loads, load one turns on automatically, while additional loads default to manual-on control; all loads turn off automatically. At system startup, default dimming parameters are established including: levels for scene presets 1-4; fade times; and fade and ramp rates. Dimming and system parameters may be customized using Push n' Learn.

Applications

LMRC-110 series room controllers are ideal for single or multiple zone on/off or dimming control applications including private offices, open offices, conference rooms and classrooms. Metering models help facility managers who want to track building power usage for lighting or other loads. A network bridge (LMBC-300) is required to expose DLM local network power data readings to a segment manager or BAS.

Features

- Push n' Learn™ functionality for personalization without the need for tools or a PC
- Digital Lighting Management components plug together on a free-topology Cat 5e DLM local network eliminating wiring errors
- On/Off/Dim local override button for each load
- LED indicates status of each load
- Optional lamp burn in; 12 or 100 hours
- Optional current and voltage metering of total connected load
- 2 RJ45 ports; molded cable tie ring for strain relief
- Zero-crossing circuitry for each relay for reliability and increased product life
- UL 2043 plenum rated
- This product meets the materials restrictions of RoHS
- Qualifies for ARRA-funded public works projects

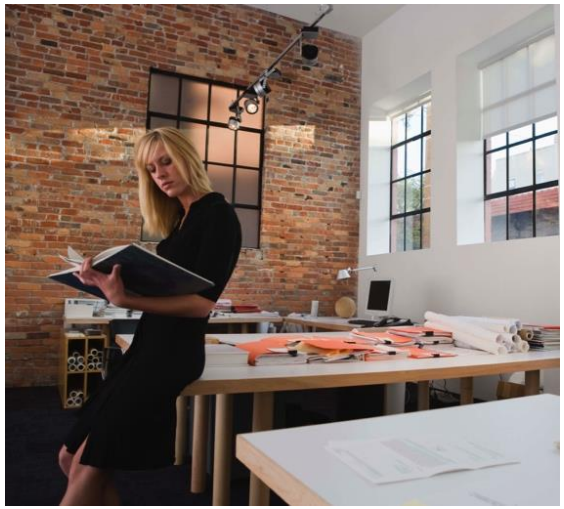
PROJECT | LOCATION/TYPE

WWW.LEGRAND.US/WATTSTOPPER

5. Product Application Examples

Typical Applications

Helps meet Title 24 requirements and exceeds ASHRAE 90.1 (2010)/IECC (2012) for dimming control, and power metering applications.



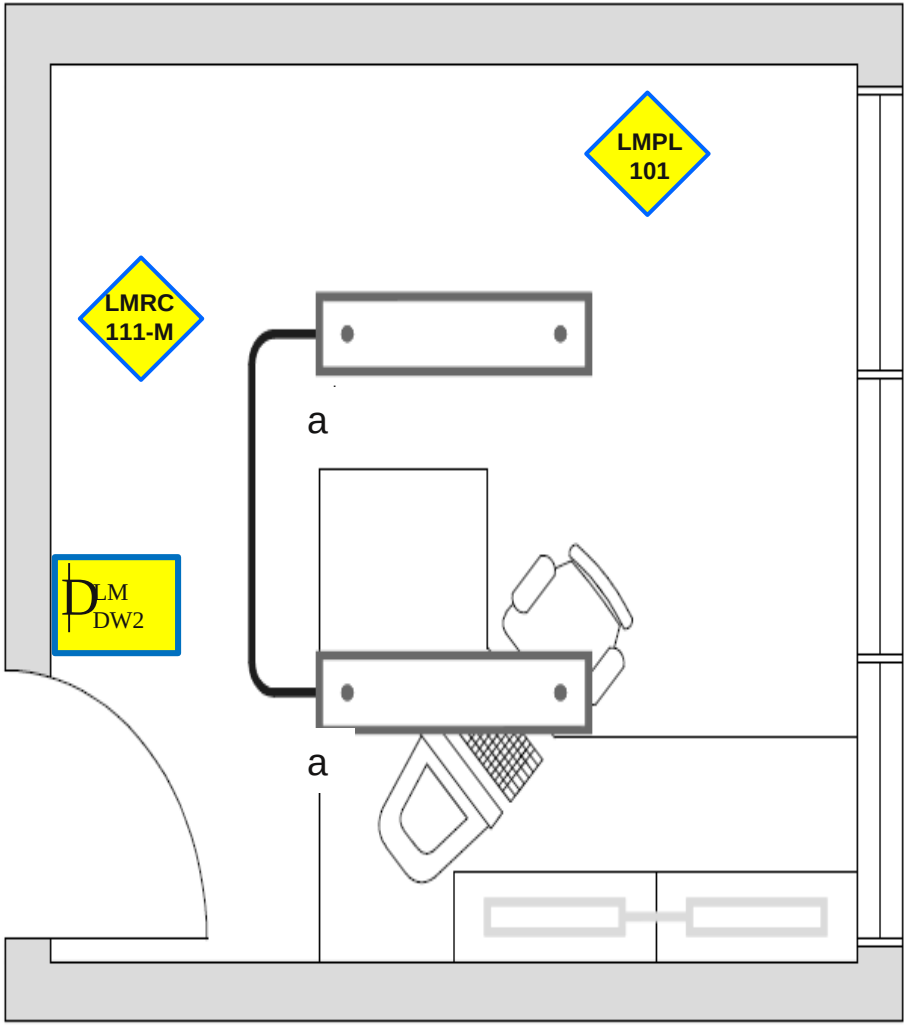
Typical Small Office Application

(1) LMRC-111-M
Dimming Room Controller
with meter

(1) LMDW-102
Wall Switch Occupancy Sensor
(Buttons set “On only / Off only”)

(1) LMPL-101
Plug Load Controller

(#) LMRJ-xx
Cat 5e Cables – as
needed



Typical Medium Office Application

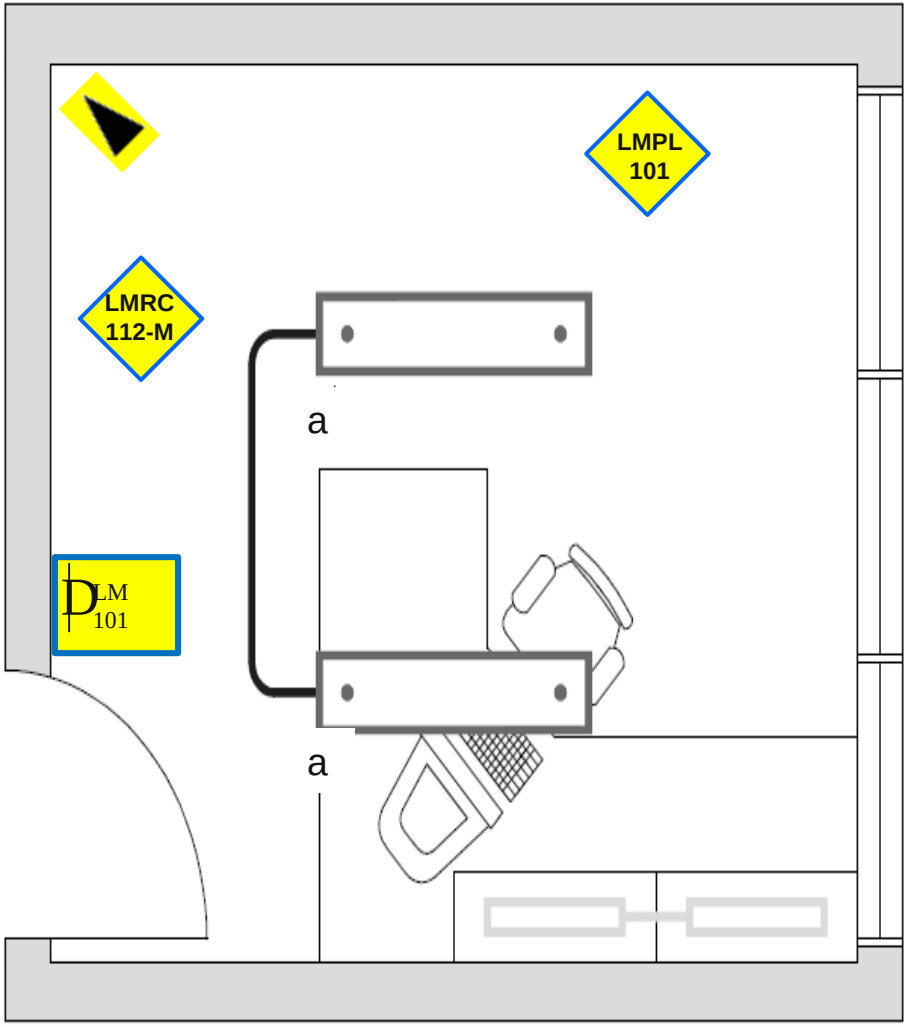
(1) LMRC-112-M
Dimming Room Controller
with two outputs and meter

(1) LMDM-101
Dimmer Rocker Switch

(1) LMPX-100
Corner Mount PIR
Occupancy Sensor

(1) LMPL-101
Plug Load Controller

(#) LMRJ-xx
Cat 5e Cables – as
needed



Open Plan Office Areas

Now you can eliminate installations that look like this with the new LMRC-110 series

- KO mounting allows installation in the open office area, or
- Multiple units can be installed in any enclosure via ½” KO

THANK YOU

www.legrand.us/wattstopper