COMMERCIAL SPACES DESIGN GUIDE

TITLE 24 (2022)

ACHIEVING CODE COMPLIANCE WITH WATTSTOPPER PRODUCTS

legrand®

The Choice is Yours

Commercial energy codes are the foundation for a lighting control design specification. Every few years, the CA Title 24 energy code changes and these changes become the new required minimum standard design for buildings in California.

Legrand is an expert in education and training for code compliance. The Wattstopper® product line leads the way in simple, flexible, and scalable code compliant, energy efficient lighting controls solutions

Achieving energy code compliance can be challenging. The Energy Code Team at Legrand see changes in code compliance as an opportunity for innovation & improved energy efficiency.

The Commercial Spaces Design Guide for CA Title 24 (2022) provides designers and contractors with tools and design recommendations for common commercial spaces. Working together as partners, we can educate and simplify code compliant solutions for distribution and designers.

legrand®

CONTENTS

Commercial Spaces by Code: 2022 Title 24 Compliant

Wired Digital Lighting Management (DLM)

Our DLM system provides the greatest in lighting control flexibility and easy commissioning. Use it to control individual rooms or entire facilities.

Wireless Digital Lighting Management

Easy to install and commission, our wireless DLM system provide the same flexibility and scalability, without the complexity of wires.

DESIGNED SPACES

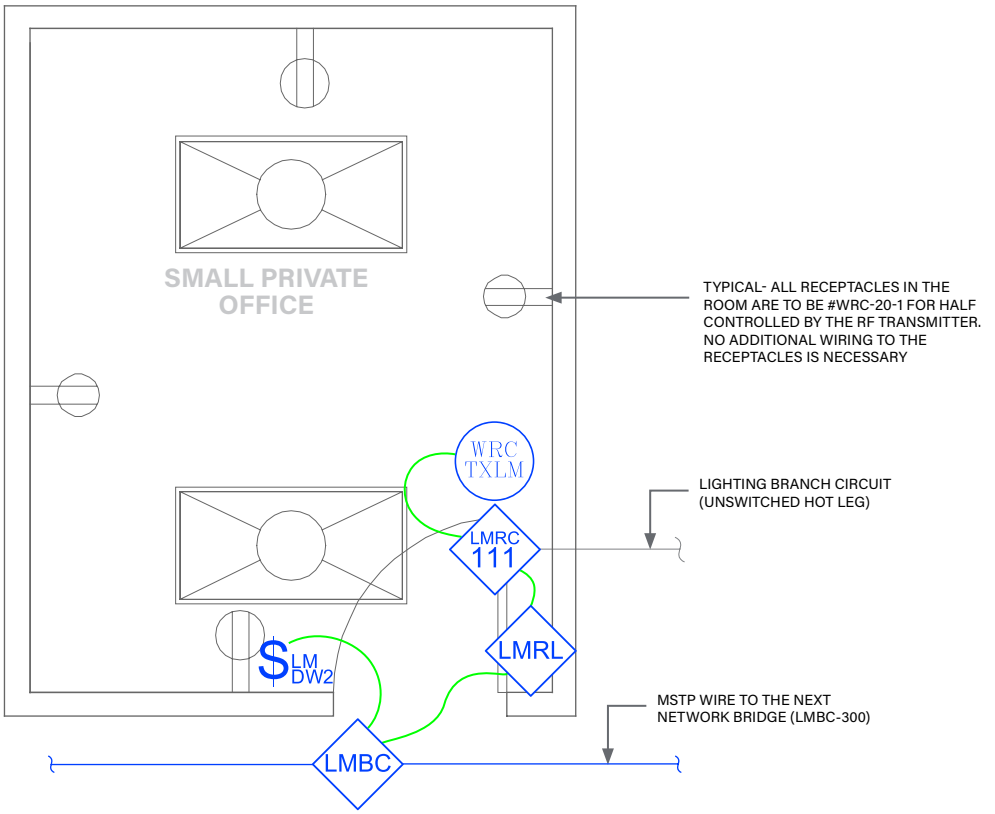
2022 TITLE 24 COMPLIANT

Download Legrand's Code Compliance Tools & Resources

https://legrand.us/solutions/energy-code

SMALL PRIVATE OFFICE

Dimming with Wired DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. Lighting auto On to 50%, controlled receptacles auto On and ventilation enters occupied when occupancy detected.
2. Manual On/Off/Dim lighting with wall switch occupancy sensor.
3. Auto off all lighting, controlled receptacles and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
4. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Receptacle control can be designed using either an RF transmitter with receptacle RF receivers, or can be hardwired to receptacles using an LMPL-101 Plug Load Room Controller.
- Demand Response, time scheduling and remote programming functions are enabled by the LMBC-300 Network Bridge connectivity. If Demand Responsive 15% lighting power reduction (Title 24 110.12) for this space is offset by more aggressive light reduction in other spaces, connection to the lighting control network may not be necessary, thereby not requiring the LMBC-300 Network Bridge and associated network wiring.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-111	1	1-Relay Room Controller, 0-10V Dimming
LMDW-102	1	2-Button Dual Tech Wall Switch Occupancy Sensor
WRC-TX-LM	1	Plug Load RF Transmitter
WRC-20-1	4	Plug Load Half Controlled Receptacle
LMBC-300	1	Wired Network Bridge
LMRL-100	1	Isolated Relay Interface
LMRJ	A/R	Pre-Terminated Cable

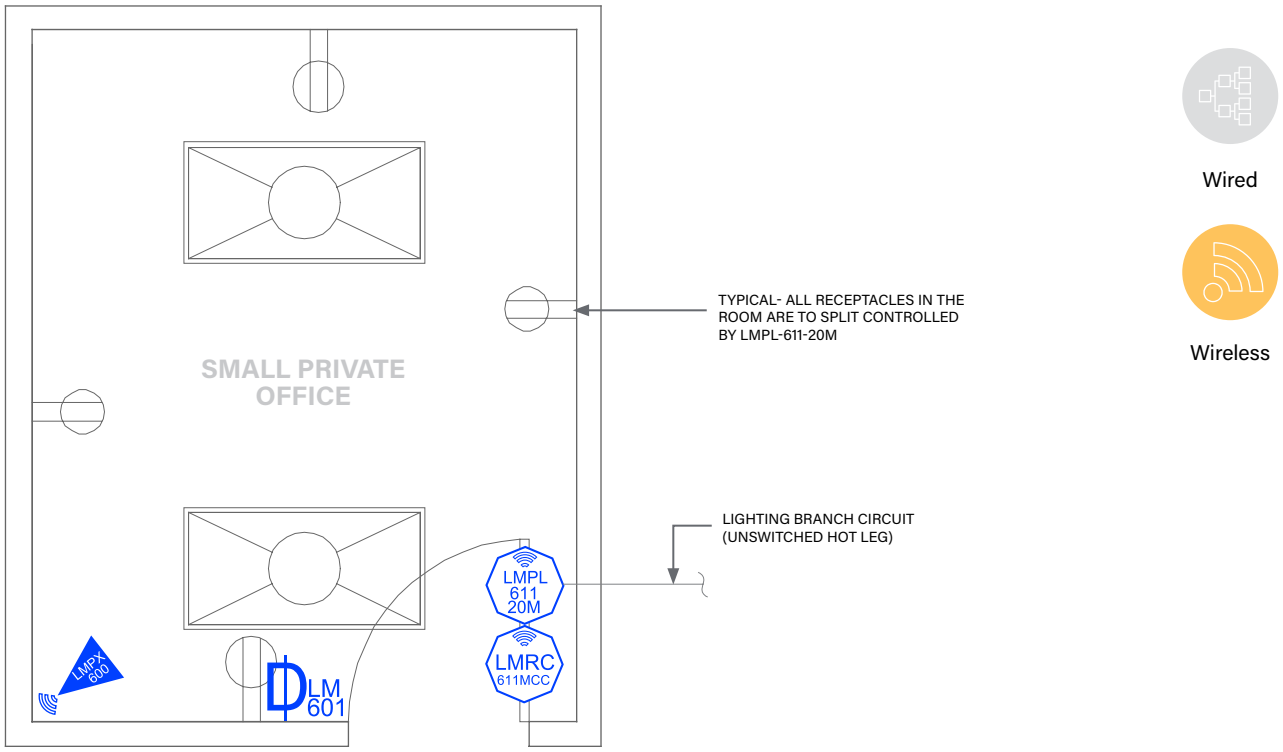
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

SMALL PRIVATE OFFICE

Dimming with Wireless DLM Product



SEQUENCE OF OPERATIONS

1. Lighting auto On to 50%, controlled receptacles auto On and ventilation enters occupied when occupancy detected.
2. Manual On/Off/Dim lighting with wall switch occupancy sensor.
3. Auto off all lighting, controlled receptacles and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
4. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless router.
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-611MCC	1	Wireless 1-Relay Room Controller, 0-10V Dimming Metering, Contact Closure
LMPX-600	1	Wireless PIR Corner/Wall Occupancy Sensor, Wide Lens
LMDM-601	1	Wireless 1-Button Dimming Switch
LMPL-611-20M	1	Wireless 1 Relay Plug Load Controller, Metering

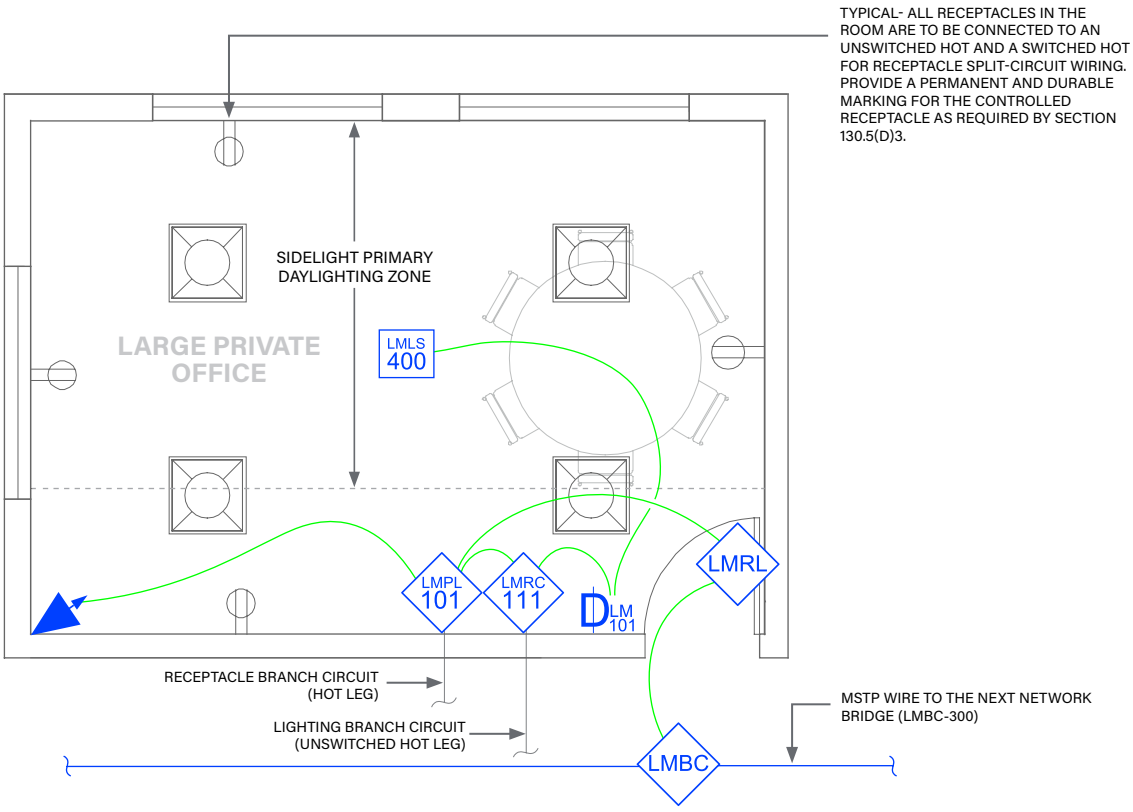
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

LARGE PRIVATE OFFICE

Dimming with Wired DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. Lighting auto On to 50%, controlled receptacles auto On and ventilation enters occupied mode when occupancy detected.
2. Manual On/Off/Dim lighting with dimmer switch.
3. Lighting in primary daylight zone will continuously dim based on daylight contribution to maintain at least 35FC at task level.
4. Auto off all lighting, controlled receptacles and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Receptacle control can be designed using either an RF transmitter with receptacle RF receivers, or can be hardwired to receptacles using an LMPL-101 Plug Load Room Controller.
- Demand Response, time scheduling and remote programming functions are enabled by the LMBC-300 Network Bridge connectivity. If Demand Responsive 15% lighting power reduction (Title 24 110.12) for this space is offset by more aggressive light reduction in other spaces, connection to the lighting control network may not be necessary, thereby not requiring the LMBC-300 Network Bridge and associated network wiring.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-111	1	1-Relay Room Controller, 0-10V Dimming
LMDX-100	1	Corner Mount Dual Tech Occupancy Sensor
LMDM-101	1	1-Button Dimming Wall Switch
LMLS-400	1	Photosensor, Closed Loop
LMPL-101	1	Plug Load Room Controller
LMBC-300	1	Wired Network Bridge
LMRL-100	1	Isolated Relay Interface
LMRJ	A/R	Pre-Terminated Cable

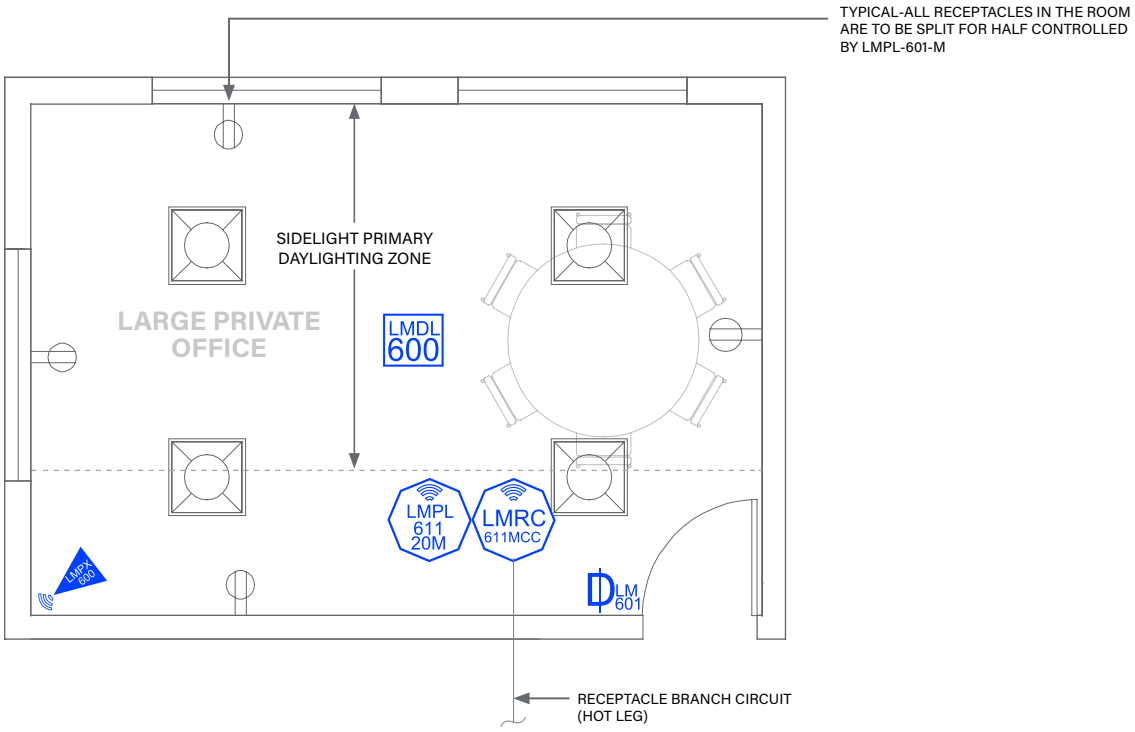
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

LARGE PRIVATE OFFICE

Dimming with Wireless DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. Lighting auto On to 50%, controlled receptacles auto On and ventilation enters occupied mode when occupancy detected.
2. Manual On/Off/Dim lighting with dimmer switch.
3. Lighting in primary daylight zone will continuously dim based on daylight contribution to maintain at least 35FC at task level.
4. Auto off all lighting, controlled receptacles and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless router.
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-611MCC	1	Wireless 1-Relay Room Controller, 0-10V Dimming Metering, Contact Closure
LMPX-600	1	Wireless PIR Corner/Wall Occupancy Sensor, Wide Lens
LMDM-601	1	Wireless 1-Button Dimming Switch
LMDL-600	1	Wireless Photosensor, Open Loop
LMPL-611-20M	1	Wireless 1 Relay Plug Load Controller, Metering
OPTIONAL		
LMDL-600-RPM		Recessed Plenum Mounting Kit

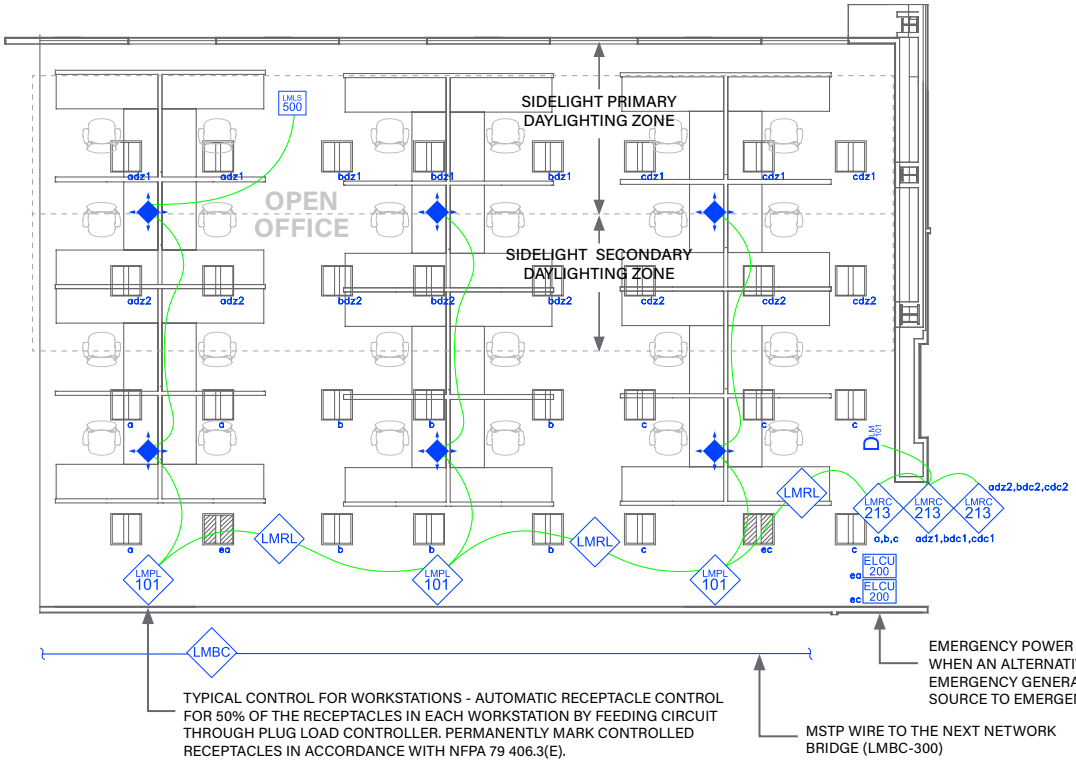
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

OPEN OFFICE

Dimming with Wired DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. General lighting in each ≤600 ft2/ zone (a, b, c) auto On to last set light level when occupancy detected in each independent light zone. Controlled receptacles auto On and ventilation enters occupied mode when occupancy detected in each lighting zone.
2. Manual On/Off/Dim and light reduction control of general lighting for all zones (a, b, c) in unison with dimmer switch.
3. Lighting in daylight area (adz1, bdz1, cdz1, adz2, bdz2, cdz2) will continuously dim based on daylight contribution to maintain at least 35FC at task level.
4. Auto Off all lighting, controlled receptacles and enter ventilation occupied standby mode in a lighting zone within 20 minutes of occupants leaving an individual zone.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.
6. Emergency lighting transfers to emergency power source and full On with loss of normal power.

DESIGN CONSIDERATIONS

- Time scheduling, demand response and remote programming/diagnostic functions are enabled with installation of the LMBC-300 Network Bridge or LMBC-650 Wireless Bridge for system connectivity.

BILL OF MATERIALS

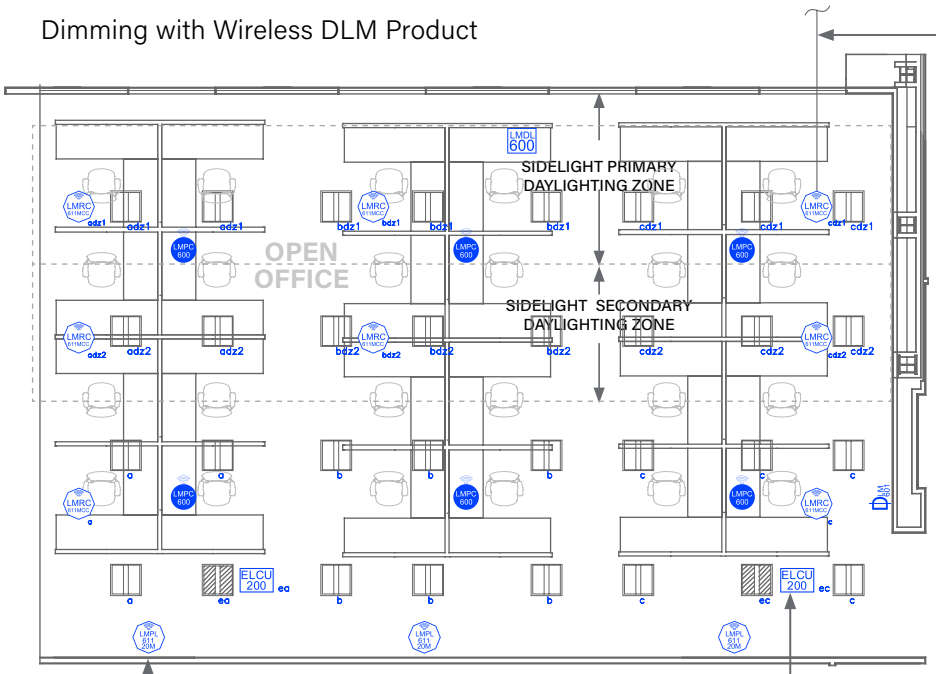
PART NO.	QTY	DESCRIPTION
LMRC-213	3	3-Relay Room Controller, 0-10V Dimming
LMDC-100	6	Ceiling Mount Dual Tech Occupancy Sensor
LMDM-101	1	1-Button Dimming Wall Switch
LMLS-500	1	Photosensor, Open Loop
LMPL-101	3	Plug Load Room Controller
ELCU-200	2	UL924 Emergency Control Unit
LMBC-300	1	Wired Network Bridge
LMRL-100	3	Isolated Relay Interface
LMRJ	A/R	Pre-Terminated Cable

CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)6	Occupancy Sensor Shut-Off Controls
130.1(d)	Auto Daylighting Control
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

OPEN OFFICE

Dimming with Wireless DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. General lighting in each ≤600 ft2/ zone (a, b, c) auto On to last set light level when occupancy detected in each independent light zone. Controlled receptacles auto On and ventilation enters occupied mode when occupancy detected in each lighting zone.
2. Manual On/Off/Dim and light reduction control of general lighting for all zones (a, b, c) in unison with dimmer switch.
3. Lighting in daylight area (adz1, bdz1, cdz1, adz2, bdz2, cdz2) will continuously dim based on daylight contribution to maintain at least 35FC at task level.
4. Auto Off all lighting, controlled receptacles and enter ventilation occupied standby mode in a lighting zone within 20 minutes of occupants leaving an individual zone.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.
6. Emergency lighting transfers to emergency power source and full On with loss of normal power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless router.
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-611MCC	9	Wireless 1-Relay Room Controller, 0-10V Dimming Metering, Contact Closure
LMPC-600-1	6	Wireless PIR Ceiling Occupancy Sensor, Hi-Density Lens
LMDM-601	1	Wireless 1-Button Dimming Switch
LMDL-600	1	Wireless Photosensor, Open Loop
LMPL-611-20M	3	Wireless 1 Relay Plug Load Controller, Metering
ELCU-200	2	UL924 Emergency Control Unit
OPTIONAL		
LMPC-600-RPM		Recessed Plenum Mounting Kit
LMDL-600-RPM		Recessed Plenum Mounting Kit

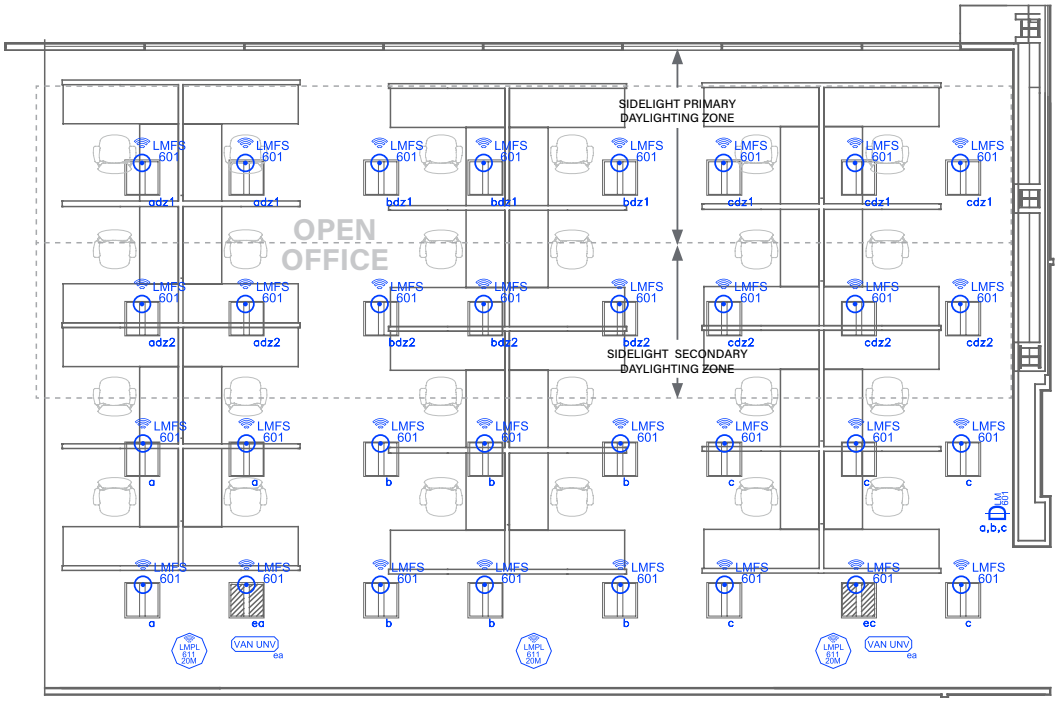
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)6	Occupancy Sensor Shut-Off Controls
130.1(d)	Auto Daylighting Control
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

OPEN OFFICE

Dimming with LLLC Wireless DLM Product



Wired

LLLC
Wireless

SEQUENCE OF OPERATIONS

1. General lighting in each ≤600 ft2/ zone (a, b, c) auto On to last set light level when occupancy detected in each independent light zone. Controlled receptacles auto On and ventilation enters occupied mode when occupancy detected in each lighting zone.
2. Manual On/Off/Dim and light reduction control of general lighting for all zones (a, b, c) in unison with dimmer switch.
3. Lighting in daylight area (adz1, bdz1, cdz1, adz2, bdz2, cdz2) will continuously dim based on daylight contribution to maintain at least 35FC at task level.
4. Auto Off all lighting, controlled receptacles and enter ventilation occupied standby mode in a lighting zone within 20 minutes of occupants leaving an individual zone.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.
6. Emergency lighting transfers to emergency power source and full On with loss of normal power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless boarder router.
- Ventilation system occupied standby mode signals provided by BACNet protocol integration through the LMBR-650 Border Router.
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMFS-601-W	32	Wireless Fixture Controller (DALI driver required), PIR Occupancy Sensor, Photosensor
LMDM-601	1	Wireless 1-Buttong Dimming Switch
LMPL-611-20M	3	Wireless 1 Relay Plug Load Controller, Metering
AD-RRU-X-UNV	2	UL924 Emergency Control Unit
OPTIONAL		
LMFI-111	32	0-10V Driver Interface

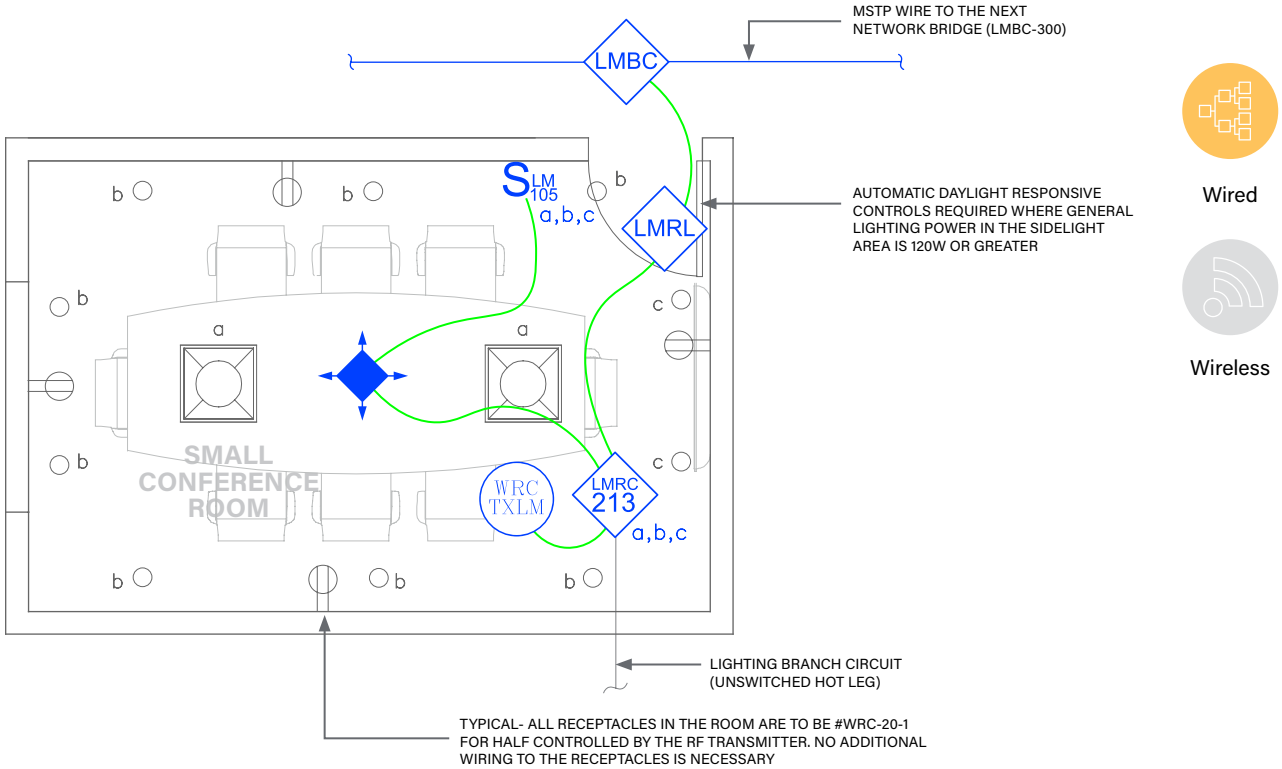
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)6	Occupancy Sensor Shut-Off Controls
130.1(d)	Auto Daylighting Control
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

SMALL CONFERENCE ROOM

Dimming with Wired DLM Product



SEQUENCE OF OPERATIONS

1. General lighting (a) auto On to 50%, controlled receptacles auto On and ventilation enters occupied mode when occupancy detected.
2. Manual On/Off/Dim of general lighting (a) and down lighting (b, c) with scene switch.
3. Scene settings
   - a. General Lighting (a) 100%, (b) 0%, (c) 0%
   - b. Presentation (a) 75%, (b) 50%, (c) 100%
   - c. Video (a) 50%, (b) 75%, (c) 0%
   - d. All Off (a) 0%, (b) 0%, (c) 0%
4. Auto off all lighting, controlled receptacles and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Receptacle control can be designed using either an RF transmitter with receptacle RF receivers, or can be hardwired to receptacles using an LMPL-101 Plug Load Room Controller.
- Demand Response, time scheduling and remote programming functions are enabled by the LMBC-300 Network Bridge connectivity. If Demand Responsive 15% lighting power reduction (Title 24 110.12) for this space is offset by more aggressive light reduction in other spaces, connection to the lighting control network may not be necessary, thereby not requiring the LMBC-300 Network Bridge and associated network wiring.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-213	1	3-Relay Room Controller, 0-10V Dimming
LMDC-100	1	Ceiling Mount Dual Tech Occupancy Sensor
LMSW-105	1	5-Button Scene Switch
WRC-TX-LM	1	Plug Load RF Transmitter
WRC-20-1	4	Plug Load Half Controlled Receptacle
LMBC-300	1	Wired Network Bridge
LMRL-100	1	Isolated Relay Interface
LMRJ	A/R	Pre-Terminated Cable

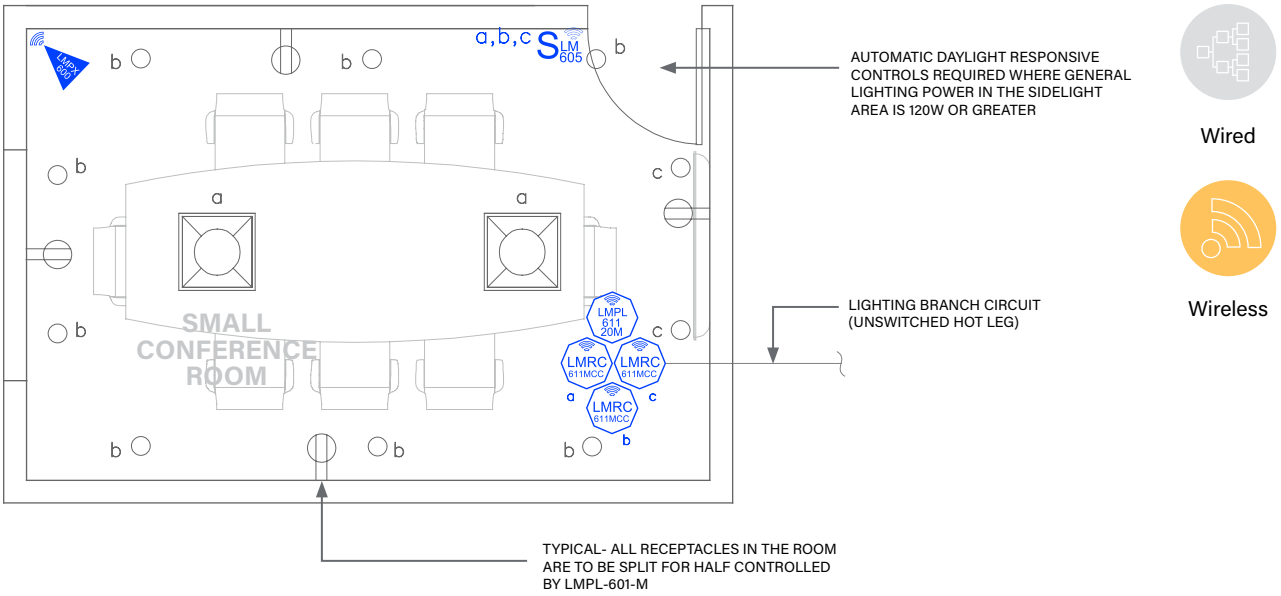
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(a)3	Separately Controlled Lighting
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

SMALL CONFERENCE ROOM

Dimming with Wireless DLM product



SEQUENCE OF OPERATIONS

1. General lighting (a) auto On to 50%, controlled receptacles auto On and ventilation enters occupied mode when occupancy detected.
2. Manual On/Off/Dim of general lighting (a) and down lighting (b, c) with scene switch.
3. Scene settings
   - a. General Lighting (a) 100%, (b) 0%, (c) 0%
   - b. Presentation (a) 75%, (b) 50%, (c) 100%
   - c. Video (a) 50%, (b) 75%, (c) 0%
   - d. All Off (a) 0%, (b) 0%, (c) 0%
4. Auto off all lighting, controlled receptacles and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless boarder router.
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-611MCC	3	Wireless 1-Relay Room Controller, 0-10V Dimming Metering, Contact Closure
LMPX-600-1	1	Wireless PIR Corner/Wall Occupancy Sensor, Extended Lens
LMSW-605	1	Wireless Digital 5-Button Scene Switch
LMPL-611-20M	1	Wireless 1 Relay Plug Load Controller, Metering

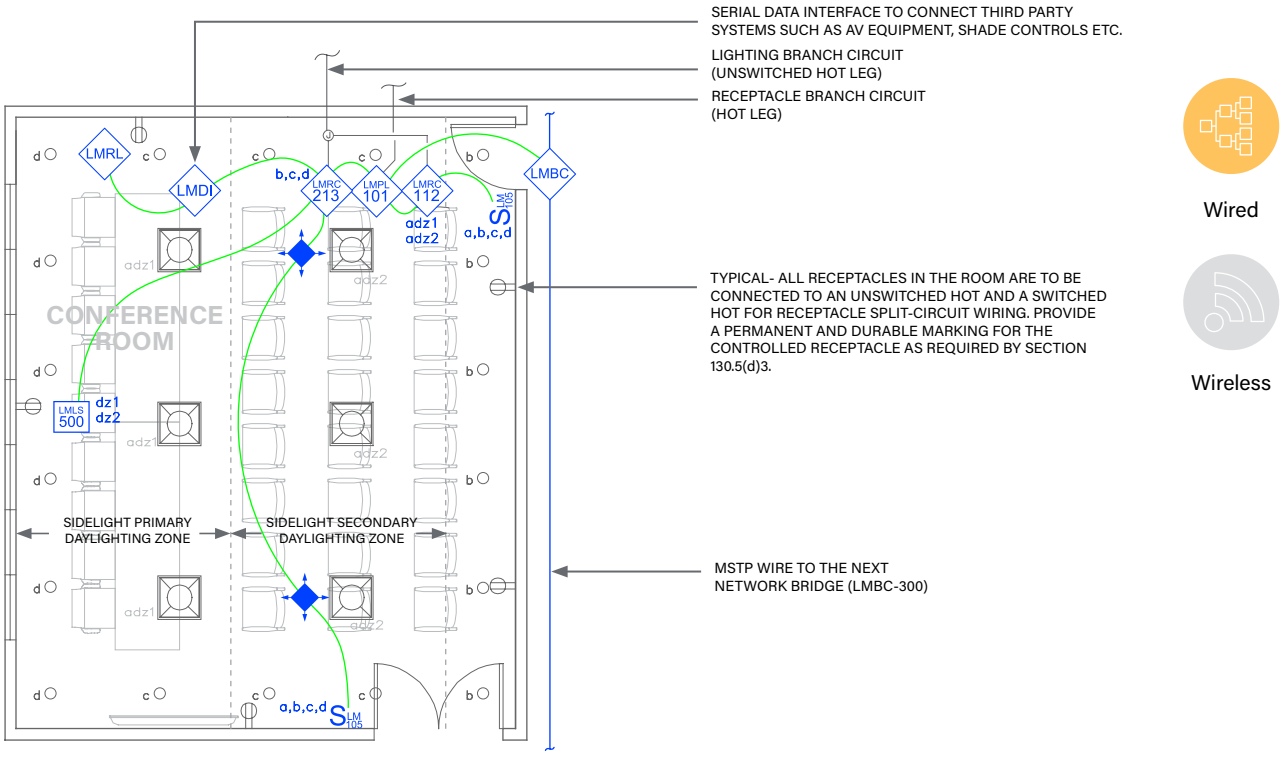
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(a)3	Separately Controlled Lighting
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

CONFERENCE ROOM

Dimming with Wired DLM Product



SEQUENCE OF OPERATIONS

1. General lighting (a, adz1, adz2) auto On to 50%, controlled receptacles auto On and ventilation enters occupied mode when occupancy detected.
2. Manual On/Off/Dim general lighting (a, adz1, adz2) and down lighting (b, c, d) with scene switches.
3. Scene settings
   - a. General Lighting (a, adz1, adz2) 100%, (b) 0%, (c) 0%, (d) 0%
   - b. Projection (a, adz1, adz2) 0%, (b) 75%, (c) 50%, (d) 0%
   - c. Conferencing (a, adz1, adz2) 50%, (b) 50%, (c) 25%, (d) 50%
   - d. All Off (a, adz1, adz2) 0%, (b) 0%, (c) 0%, (d) 0%
4. Lighting in primary (adz1) and secondary (adz2) daylight zones will continuously dim based on daylight contribution to maintain at least 35FC at task level.
5. Auto off all lighting, controlled receptacles, A/V systems and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
6. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Receptacle control can be designed using either an RF transmitter with receptacle RF receivers, or can be hardwired to receptacles using an LMPL-101 Plug Load Room Controller.
- Demand Response, time scheduling and remote programming functions are enabled by the LMBC-300 Network Bridge connectivity.
- If Demand Responsive 15% lighting power reduction (Title 24 110.12) for this space is offset by more aggressive light reduction in other spaces, connection to the lighting control network may not be necessary, thereby not requiring the LMBC-300 Network Bridge and associated network wiring.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-112	1	2-Relay Room Controller, 0-10V Dimming
LMRC-213	1	3-Relay Room Controller, 0-10V Dimming
LMDC-100	2	Ceiling Mount Dual Tech Occupancy Sensor
LMSW-105	2	5-Button Scene Switch
LMLS-500	1	Photosensor, Open Loop
LMPL-101	1	Plug Load Room Controller
LMBC-300	1	Wired Network Bridge
LMDI-100	1	Serial Data (A/V) Interface
LMRL-100	1	Isolated Relay Interface
LMRJ	A/R	Pre-Terminated Cable

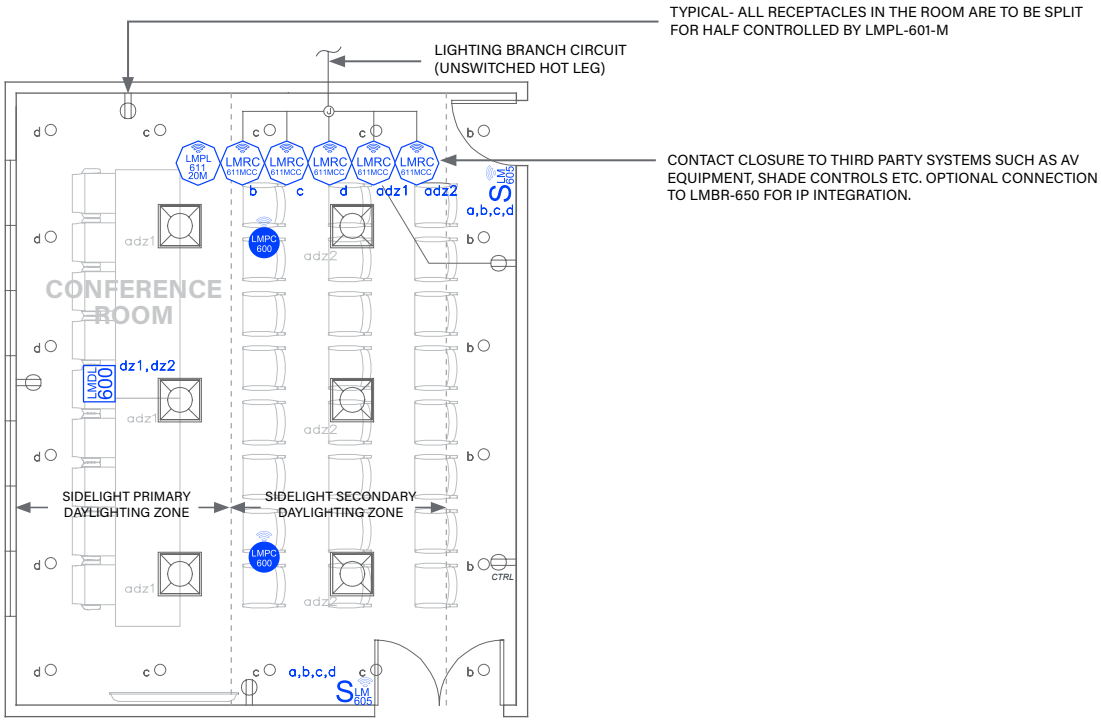
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(a)3	Separately Controlled Lighting
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.1(d)	Auto Daylighting Control
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

CONFERENCE ROOM

Dimming with Wireless DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. General lighting (a, adz1, adz2) auto On to 50%, controlled receptacles auto On and ventilation enters occupied mode when occupancy detected.
2. Manual On/Off/Dim general lighting (a, adz1, adz2) and down lighting (b, c, d) with scene switches.
3. Scene settings
   - a. General Lighting (a, adz1, adz2) 100%, (b) 0%, (c) 0%, (d) 0%
   - b. Projection (a, adz1, adz2) 0%, (b) 75%, (c) 50%, (d) 0%
   - c. Conferencing (a, adz1, adz2) 50%, (b) 50%, (c) 25%, (d) 50%
   - d. All Off (a, adz1, adz2) 0%, (b) 0%, (c) 0%, (d) 0%
4. Lighting in primary (adz1) and secondary (adz2) daylight zones will continuously dim based on daylight contribution to maintain at least 35FC at task level.
5. Auto off all lighting, controlled receptacles, A/V systems and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
6. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless boarder router.
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-611MCC	5	Wireless 1-Relay Room Controller, 0-10V Dimming Metering, Contact Closure
LMPC-600	2	Wireless PIR Corner/Wall Occupancy Sensor, Wide Lens
LMSW-605	2	Wireless 5-Button Dimming Switch
LMDL-600	1	Wireless 5-Button Dimming Switch
LMPL-611-20M	1	Wireless Photosensor, Open Loop
OPTIONAL		
LMPC-600-RPM		Recessed Plenum Mounting Kit
LMDL-600-RPM		Recessed Plenum Mounting Kit

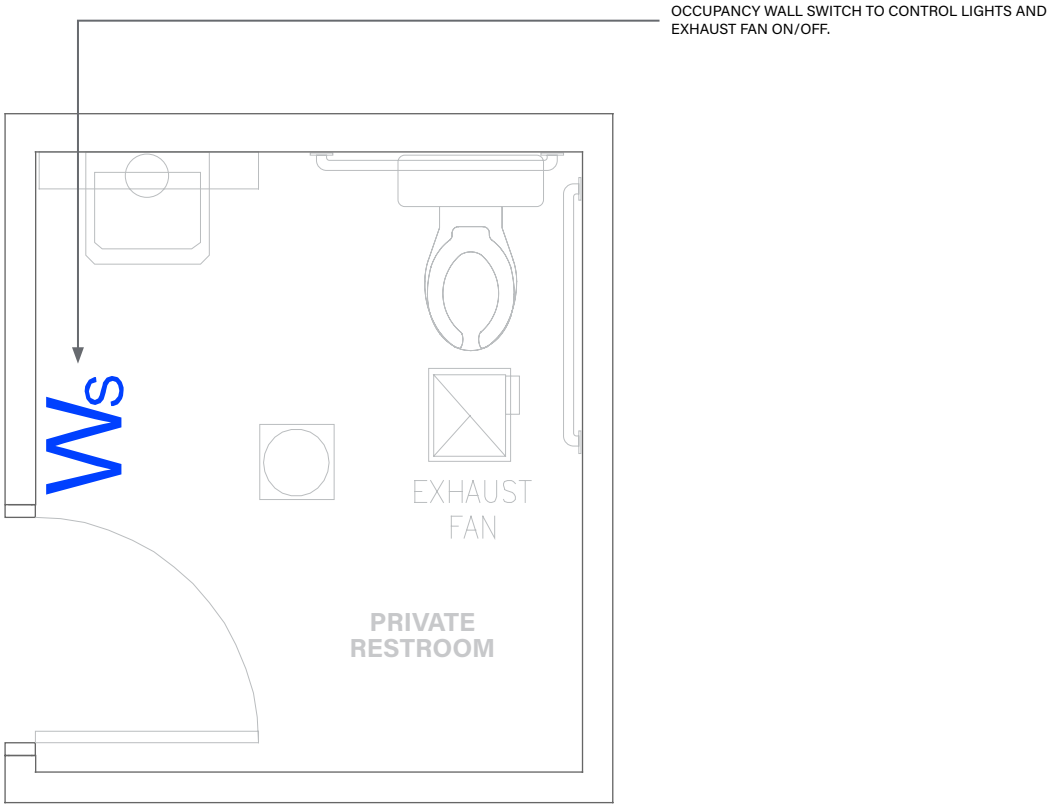
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(a)3	Separately Controlled Lighting
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.1(d)	Auto Daylighting Control
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

PRIVATE RESTROOM

On/Off Switching with Component Wallbox Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. Lighting and fan are manually controlled On/Off with occupancy sensor switch.
2. Lighting and fan will auto Off within 20 minutes of occupants leaving.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by the LMBC-300 Network Bridge connectivity. If Demand Responsive 15% lighting power reduction (Title 24 110.12) for this space is offset by more aggressive light reduction in other spaces, connection to the lighting control network may not be necessary, thereby not requiring the LMBC-300 Network Bridge and associated network wiring.

BILL OF MATERIALS

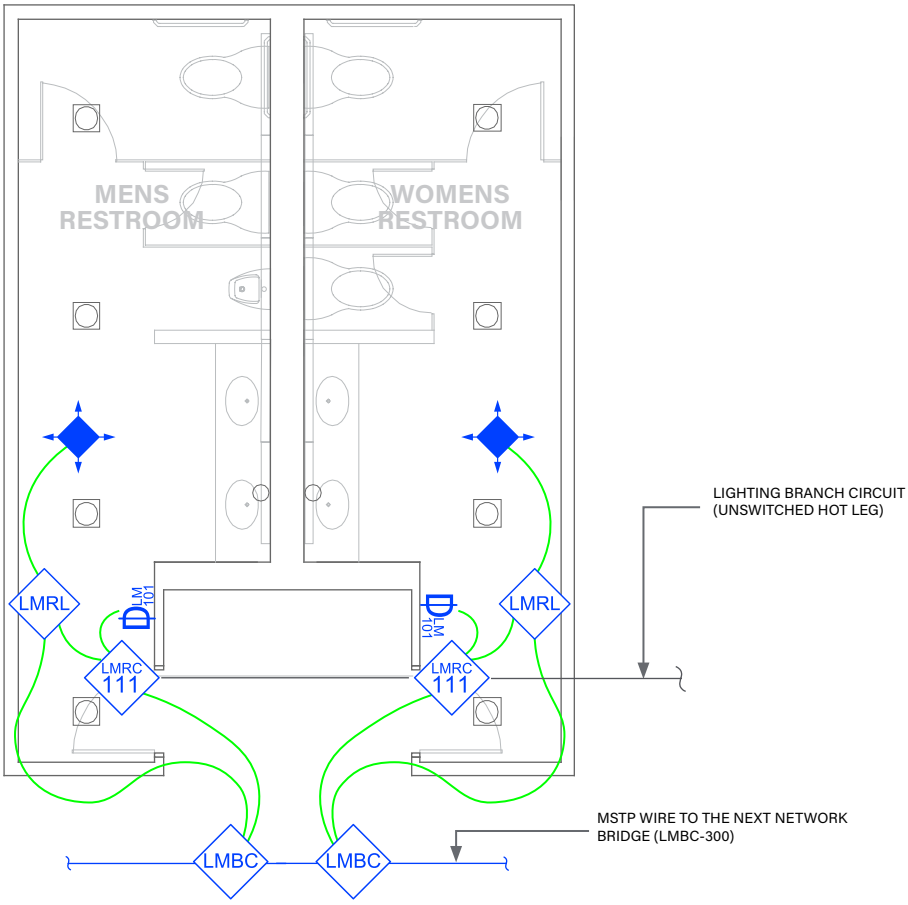
PART NO.	QTY	DESCRIPTION
PW-301	1	Wallbox PIR Occupancy Sensor with Neutral

CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(c)5	Occupancy Sensor Shut-Off Controls

MULTI-STALL RESTROOM

Dimming with Wired DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. For each restroom independently, lighting auto On to 50% and exhaust fan auto on when occupancy detected.
2. Manual On/Off/Dim lighting with dimmer switches.
3. Auto Off all lighting and exhaust fans for each restroom independently within 20 minutes of occupants leaving.
4. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- It is important that each restroom (men and women) operate independently and have its own connection to Wired Network Bridge to isolate them for correct auto configuration and operation of each independent exhaust fan.
- Demand Response, time scheduling and remote programming functions are enabled by the LMBC-300 Network Bridge connectivity. If Demand Responsive 15% lighting power reduction (Title 24 110.12) for this space is offset by more aggressive light reduction in other spaces, connection to the lighting control network may not be necessary, thereby not requiring the LMBC-300 Network Bridge and associated network wiring.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-111	2	1-Relay Room Controller, 0-10V Dimming
LMDC-100	2	Ceiling Mount Dual Tech Occupancy Sensor
LMDM-101	2	1-Button Dimming Wall Switch
LMRL-100	2	Isolated Relay Interface
LMBC-300	2	Wired Network Bridge
LMRJ	A/R	Pre-Terminated Cable

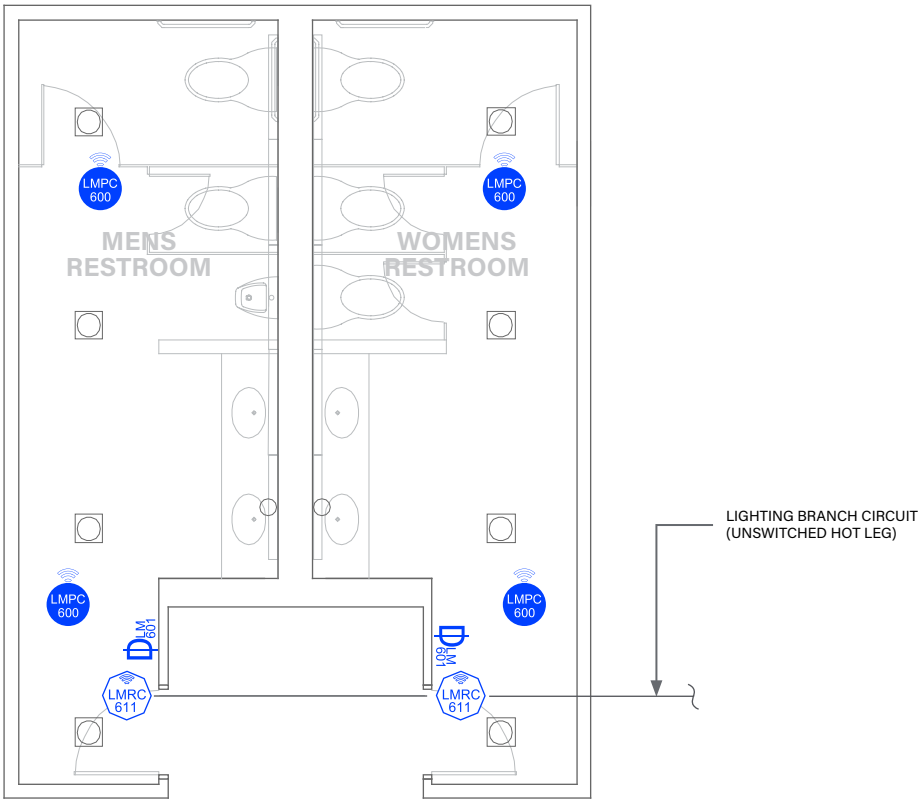
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
110.12	Demand Responsive Control

2022 TITLE 24 COMPLIANT

MULTI-STALL RESTROOM

Dimming with Wireless DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. For each restroom independently, lighting auto On to 50% and exhaust fan auto on when occupancy detected.
2. Manual On/Off/Dim lighting with dimmer switches.
3. Auto Off all lighting and exhaust fans for each restroom independently within 20 minutes of occupants leaving.
4. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless boarder route
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-611MCC	2	Wireless 1-Relay Room Controller, 0-10V Dimming Metering, Contact Closure
LMPC-600	4	Wireless PIR Ceiling Occupancy Sensor, Extended Lens
LMDM-601	2	Wireless 1-Button Dimming Switch
OPTIONAL		
LMPC-600-RPM		Recessed Plenum Mounting Kit

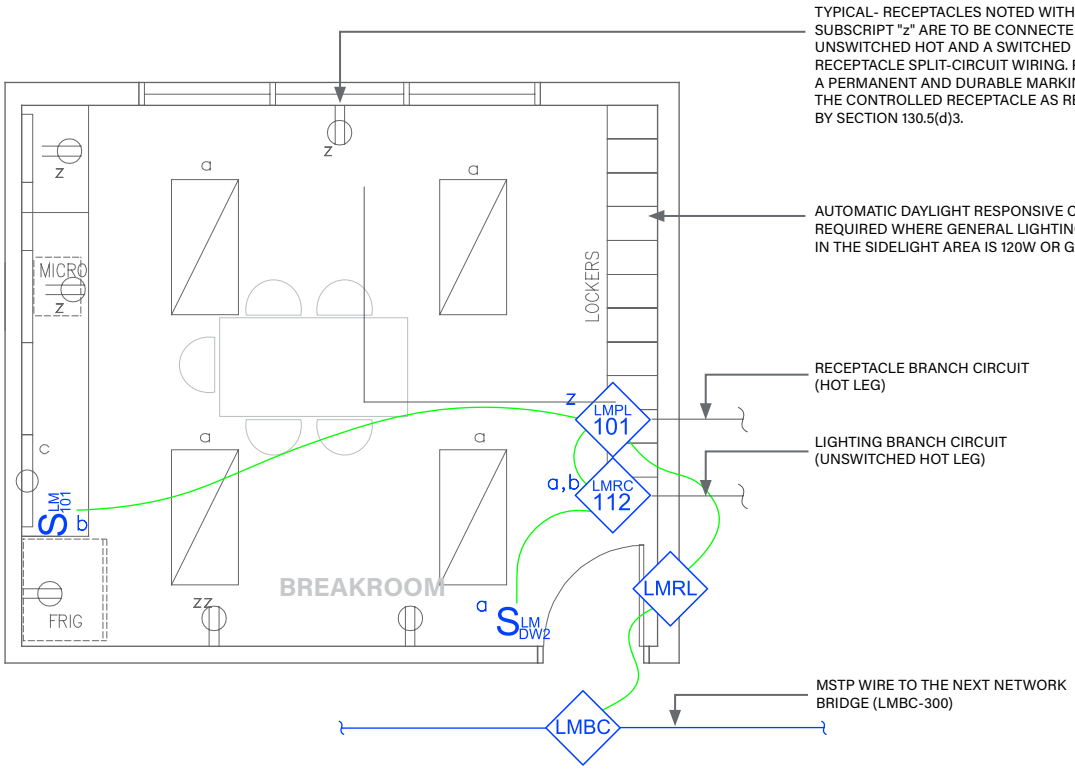
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
110.12	Demand Responsive Control

2022 TITLE 24 COMPLIANT

BREAKROOM/KITCHEN

Dimming with Wired DLM Product



SEQUENCE OF OPERATIONS

1. Lighting (a) auto On to 50%, controlled receptacles auto On and ventilation enters occupied mode when occupancy detected.
2. Manual On/Off/Dim of general lighting (a) with wall switch occupancy sensor.
3. Manual On/Off control under cabinet lighting (b) with switch.
4. Auto off all lighting, controlled receptacles and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- A ceiling or corner mount occupancy sensor can be used instead of the wall switch occupancy sensor for larger rooms or to achieve a more specific area of occupancy detection coverage.
- Receptacle control can be designed using either an RF transmitter with receptacle RF receivers, or can be hardwired to receptacles using an LMPL-101 Plug Load Room Controller.
- Demand Response, time scheduling and remote programming functions are enabled by the LMBC-300 Network Bridge connectivity. If Demand Responsive 15% lighting power reduction (Title 24 110.12) for this space is offset by more aggressive light reduction in other spaces, connection to the lighting control network may not be necessary, thereby not requiring the LMBC-300 Network Bridge and associated network wiring.

BILL OF MATERIALS

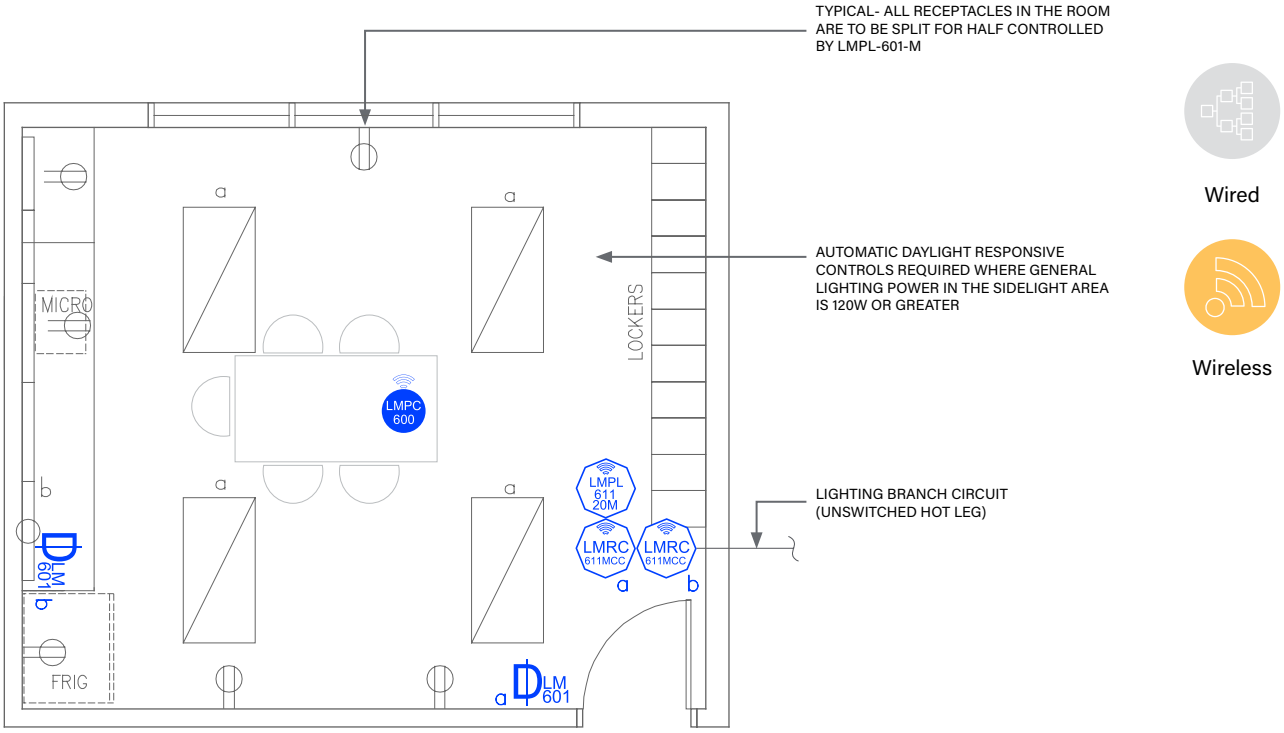
PART NO.	QTY	DESCRIPTION
LMRC-112	1	2-Relay Room Controller, 0-10V Dimming
LMDW-102	1	2-Button Dual Tech Wall Switch Occupancy Sensor
LMSW-101	1	1-Button Digital Wall Switch
LMPL-101	1	Plug Load Room Controller
LMBC-300	1	Wired Network Bridge
LMRL-100	1	Isolated Relay Interface
LMRJ	A/R	Pre-Terminated Cable

CODE REQUIREMENTS

4.2.2.1(3-5)	Manual Lighting Control Device
130.1(a)1-2	Manual Area Controls
130.1(a)3	Separately Controlled Lighting
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

BREAKROOM/KITCHEN

Dimming with Wireless DLM Product



SEQUENCE OF OPERATIONS

1. Lighting (a) auto On to 50%, controlled receptacles auto On and ventilation enters occupied mode when occupancy detected.
2. Manual On/Off/Dim of general lighting (a) with wall switch occupancy sensor.
3. Manual On/Off control under cabinet lighting (b) with switch.
4. Auto off all lighting, controlled receptacles and enter ventilation occupied standby mode within 20 minutes of occupants leaving.
5. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless boarder router.
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-611MCC	2	Wireless 1-Relay Room Controller, 0-10V Dimming Metering, Contact Closure
LMPC-600	1	Wireless PIR Ceiling Occupancy Sensor, Extended Lens
LMDM-601	2	Wireless 1-Button Dimming Switch
LMPL-611-20M	1	Wireless 1 Relay Plug Load Controller, Metering
OPTIONAL		
LMPC-600-RPM		Recessed Plenum Mounting Kit

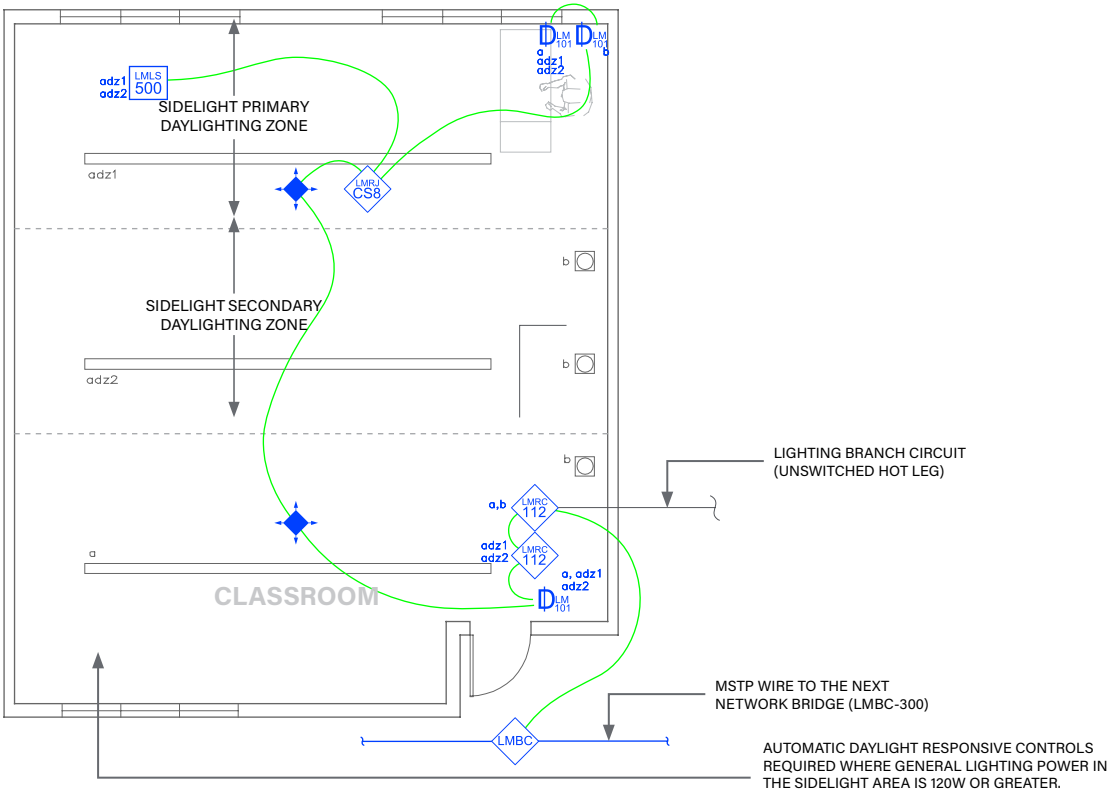
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(a)3	Separately Controlled Lighting
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.5(d)	Receptacle Control
110.12	Demand Responsive Control
120.1(d)5	Occupant Sensor Ventilation Control

2022 TITLE 24 COMPLIANT

CLASSROOM

Dimming with Wired DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. General lighting (a, adz1, adz2) auto On to 50% when occupancy detected.
2. Manual On/Off/Dim general lighting (a, adz1, adz2) with dimmer switches.
3. Manual On/Off/Dim white board lighting (b) with dimmer switch.
4. Lighting in primary (adz1) and secondary (adz2) daylight zones will continuously dim based on daylight contribution to maintain at least 35FC at task level.
5. Auto off all lighting within 20 minutes of occupants leaving.
6. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Although not required by code (Title 24 130.5(d)), receptacle control can be added to this space for additional energy savings using either an RF transmitter with receptacle RF receivers, or hardwired receptacles using an LMPL-101 Plug Load Room Controller.
- To integrate occupancy detection control with the HVAC System, use a LMRL-100 Isolated Relay Interface.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-112	2	2-Relay Room Controller, 0-10V Dimming
LMDC-100	2	Ceiling Mount Dual Tech Occupancy Sensor
LMDM-101	3	1-Button Dimming Wall Switch
LMLS-500	1	Photosensor, Open Loop
LMBC-300	1	Wired Network Bridge
LMRJ-CS8	1	RJ Room Bus Splitter
LMRJ	A/R	Pre-Terminated Cable

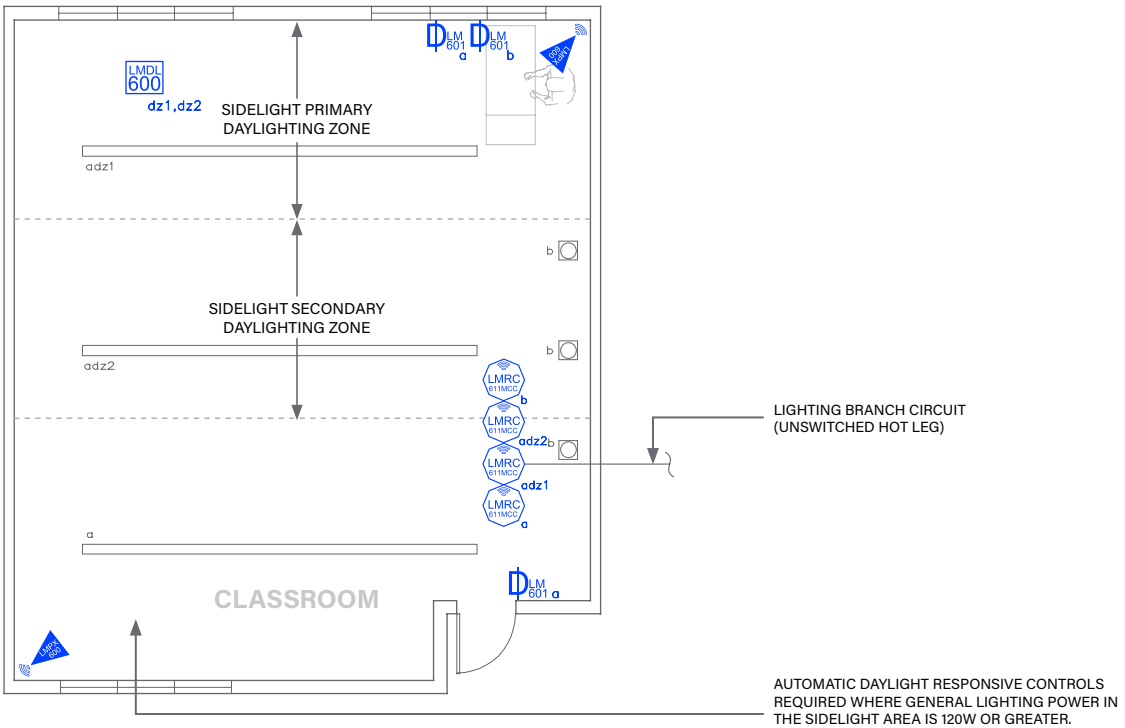
CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(a)3	Separately Controlled Lighting
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.1(d)	Auto Daylighting Control
110.12	Demand Responsive Control

2022 TITLE 24 COMPLIANT

CLASSROOM

Dimming with Wireless DLM Product



Wired

Wireless

SEQUENCE OF OPERATIONS

1. General lighting (a, adz1, adz2) auto On to 50% when occupancy detected.
2. Manual On/Off/Dim general lighting (a, adz1, adz2) with dimmer switches.
3. Manual On/Off/Dim white board lighting (b) with dimmer switch.
4. Lighting in primary (adz1) and secondary (adz2) daylight zones will continuously dim based on daylight contribution to maintain at least 35FC at task level.
5. Auto off all lighting within 20 minutes of occupants leaving.
6. A network demand response signal will reduce lighting level by a minimum of 15% of total lighting power.

DESIGN CONSIDERATIONS

- Demand Response, time scheduling and remote programming functions are enabled by network connectivity through the LMBR-650 wireless boarder router.
- Although not required by code (Title 24 130.5(d)), receptacle control can be added to this space for additional energy savings using the wireless LMPL-611-20M Plug Load Room Controller.
- To integrate occupancy detection control with the HVAC system, use contact outputs on the LMRC-611MCC.
- System Configuration Tools:
  - Standalone rooms use the configuration application (Apple or Android)
  - Networked rooms (with the LMBR-650) can be configured using LMCS-100.

BILL OF MATERIALS

PART NO.	QTY	DESCRIPTION
LMRC-611MCC	4	Wireless 1-Relay Room Controller, 0-10V Dimming Metering, Contact Closure
LMPX-600-1	2	Wireless PIR Corner/Wall Occupancy Sensor, Extended Lens
LMDM-601	3	Wireless 1-Button Dimming Switch
LMDL-600	1	Wireless Photosensor, Open Loop
OPTIONAL		
LMPC-600-RPM		Recessed Plenum Mounting Kit

CODE REQUIREMENTS

130.1(a)1-2	Manual Area Controls
130.1(a)3	Separately Controlled Lighting
130.1(b)	Multilevel Control and Uniformity
130.1(c)5	Occupancy Sensor Shut-Off Controls
130.1(d)	Auto Daylighting Control
110.12	Demand Responsive Control

2022 TITLE 24 COMPLIANT

2240 Campbell Creek Blvd. #110
Richardson, Texas 75082
Tel: 800.879.8585
www.legrand.us