

WIRED DIGITAL LIGHTING MANAGEMENT

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

Optional networking for scheduled
control and remote system
management

Full suite of digital room controllers,
occupancy sensors, switches,
panels and more



Push n' Learn™ for simple
personalization and wireless tool for
ladder-free configuration

Plugs together using Cat 5e
cables with RJ45 connectors
eliminating wiring errors

Integrates plug load and lighting
control

DESCRIPTION

Digital Lighting Management (DLM) is an intelligent, distributed control system that automatically maximizes lighting energy efficiency. DLM includes room controllers, occupancy sensors, switches, daylighting sensors, plug load controls, lighting control panels, interfaces and accessories that provide convenient, energy- saving control of dimmed and switched loads. DLM can be used for stand-alone control of individual building spaces, or for centralized control of a floor, a building, or an entire campus.

OPERATION

Digital Lighting Management components operate on a free topology DLM local network. Each DLM local network is managed by one or more room controllers that, upon startup, automatically configure system components for the most energy-efficient sequence of operation using Plug n' Go technology. Devices may be personalized using Push n' Learn pushbutton programming. DLM sensors and switches feature two-way infrared (IR) communication that enables personal control from handheld remotes. An optional handheld IR wireless configuration tool may be used to view and modify system parameters, and store occupancy sensor settings. Additionally, multiple local networks may be connected to a BACnet-compatible segment network for centralized monitoring and management (see Segment Network section).

PLUG N' GO AND PUSH N' LEARN

Plug n' Go establishes default functionality based on the installed components. If a local network includes only a room controller and an occupancy sensor, it will default to auto-on/ auto-off operation. If it includes a single relay room controller, an occupancy sensor and a switch, it will default to manual-on/ auto-off operation. A dual relay room controller, an occupancy sensor and a switch will default to bi-level auto-on/auto-off operation; relay 1 turns on automatically while relay 2 defaults to manual-on (both automatically shut off). Push n' Learn mode allows any load to be selected and assigned to any sensor(s), switch(es) and switch button(s). It also allows load parameters such as operating mode (manual- or auto-on), blink warning and daylighting setpoints to be modified.

ENERGY SAVINGS BEYOND CODE

Digital Lighting Management has been engineered to meet and exceed energy codes, facilitate sustainable development and provide an unprecedented return on investment for both new construction and retrofit projects. Features, such as bi-level control, daylight harvesting, plug load control and dimming are provided by a range of room controllers, sensors and switches that control multiple lighting sources in a wide variety of applications. DLM simplifies designing for ASHRAE 90.1, IECC, EPCa, California Title 24 and LEED.

FEATURES

- Sensors and switches include infrared (IR) transceiver for bi-directional communication
- On/off and dimming control options
- Handheld remotes for personal control
- Digital sensors feature easy-to-read LCD displays
- Includes self-calibrating open loop daylighting sensor
- Components plug together in any configuration on free-topology Category 5e DLM local networks
- Boot loading capable for firmware upgrades
- All DLM products are RoHS compliant

PROJECT

LOCATION/
TYPE

WATTSTOPPER DLM LOCAL NETWORK PARAMETERS

- Communication and power delivered via Cat 5e cables with RJ45 connectors
- 24VDC power provided by room controller(s), zone controller, panel, or popwer booster
- Room controllers provide cumulative current output; maximum network capacity 800mA
- Free topology permits both star and daisy-chain connection patterns
- 150' per intelligent device on local DLM network, up to 1,000' max.
- Supports Plug n' Go (patented) and Push n' Learn technologies
- Up to 64 loads
- Communicating Device Limitation:
 - When all power supplies are 10X-Series: 24 Devices.
 - When other power supplies are present: 48 Devices
 - Maximum of (5) 10X-Series power supplies (LMRC-10X, LMPL-101, LMPB-100) per local network.

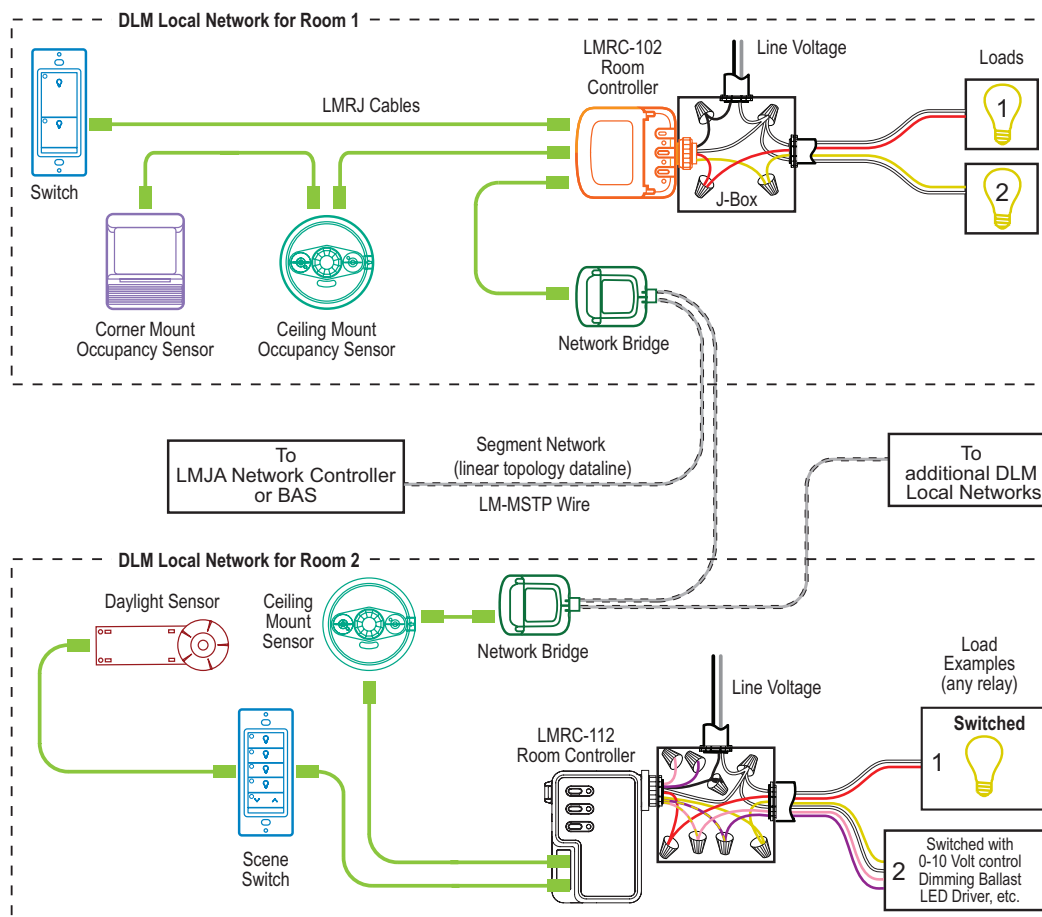
DLM SEGMENT NETWORK (MS/TP) PARAMETERS

- RS485 network, BACnet MS/TP twisted pair, baud rate 9600, 19200, 38400, 76800 or 115200 selectable
- Wattstopper LM-MSTP wire, rated for BACnet MS/TP (RS485)
- Linear topology (daisy chain wiring); 4,000' max per segment
- Up to 40 DLM local networks, or up to 300 DLM devices, connected via LMBC-300 Network Bridge. LMCP panels added via equivalency chart.

CONNECTING LOCAL NETWORKS

Two DLM local networks connected to optional DLM segment network

NOTE: Digital Lighting Management local network components plug together in any configuration (free topology)



SEGMENT NETWORK CONTROL OPTIONS

Description

Digital Lighting Management is designed to scale from individual rooms to whole buildings and campuses. For building-wide monitoring and management, multiple DLM local networks may be connected to an industry standard open protocol network for control by a segment manager or building automation system (BAS). Networking also allows lighting control panels to be incorporated into a DLM system.

Operation

Because DLM uses a robust bottom-up design architecture, based on individual rooms, segment network operation is simple; it builds on the Plug n' Go and Push n' Learn functionality of each local network. Building operators can create normal and after hours lighting control schedules and conveniently monitor and fine tune DLM operation for even greater energy savings. They can also monitor power consumption in real time (requires enhanced room controllers).

BACnet Compatibility

System integrators can quickly and easily incorporate new or existing DLM systems into BACnet MS/TP and BACnet/IP networks. DLM Network Bridge devices are standard MS/TP master devices, and the MS/TP MAC address is automatically configured through arbitration with other devices on the network.

Applications

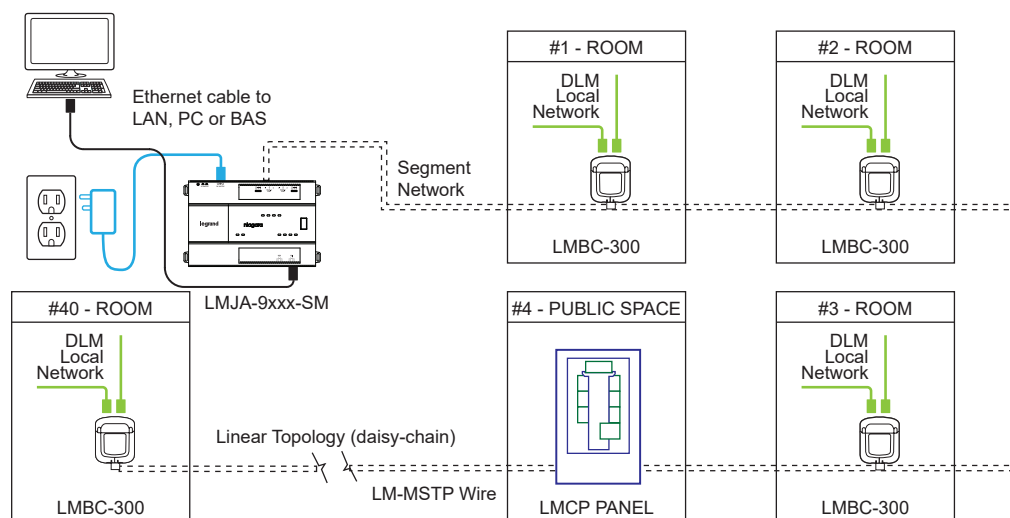
Network capability is an ideal solution when remote access to DLM local networks is desired. It can help energy managers take advantage of demand response opportunities and help cut operating costs. It is also recommended for control of lighting in areas best suited to schedule-based control, such as lobbies, corridors and exteriors. If enhanced Room Controllers or Plug Load Controllers are used, energy data can also be made available to a BAS.

SEGMENT NETWORK FEATURES

- Enables centralized control of individual DLM local networks
- Connects to LMCP lighting control panels
- Allows scheduling of DLM devices
- Enables remote system management that includes real-time current monitoring
- Web browser user interface can be accessed via direct TCP/IP connection, local LAN or via the Internet
- Easy integration with BAS through use of standard BACnet objects to represent DLM local network device settings and states

SEGMENT NETWORK FEATURES

DLM segment network with optional network controller



The network controller may be located at any point along the segment network so long as the linear topology (daisy chain wiring) is maintained.

However, the recommended best practice is to install the LMSM at the beginning of the network segment as shown above.

WIRED DLM COMPONENTS

Load Controllers

LMRC-101	20A On/Off Room Controller with 1 relay
LMRC-102	20A On/Off Room Controller with 2 relays
LMRC-111-20M	20A On/Off/0-10 Volt Dimming Room Controller with 1 relay and 0-10 volt Class 1 & 2 dimming outputs, with metering
LMRC-112	10A On/Off/0-10 Volt Dimming Room Controller with 2 relays and 0-10 volt Class 1 and Class 2 dimming outputs
LMRC-211	20A (also 15A, 347V) On/Off/0-10 Volt Dimming Room Controller with 1 relay and 0-10 volt Class 2 dimming output
LMRC-212	20A (also 15A, 347V) On/Off/0-10 Volt Dimming Room Controller with 2 relays and 0-10 volt Class 2 dimming outputs
LMRC-213	20A (also 15A, 347V) On/Off/0-10 Volt Dimming Room Controller with 3 relays and 0-10 volt Class 2 dimming outputs
LMPL-101	20A On/Off Plug Load Controller with 1 relay
LMPL-111-20M	20A On/Off Plug Load Controller with 1 relay with metering
LMFC-011	3A On/Off/0-10 Volt Dimming Fixture Controller with 1 relay and 0-10 volt Class 2 dimming output

Interface Controllers

LMAC-131-M	Single-Zone Phase Adaptive Auxiliary Controller with metering
LMSI-DMX	6-Channel DMX Fixture Controller

Lighting Control Panels

LMCPx	On/Off Lighting Control Panels, with 8, 24, or 48 relays
LMCPx-10V	On/Off/0-10 Volt Dimming Lighting Control Panels, with 8, 24, or 48 relays and 0-10 volt Class 2 dimming outputs

Occupancy Sensors

LMPC-100	PIR Ceiling Mount Occupancy Sensor, extended range lens
LMPC-100-1	PIR Ceiling Mount Occupancy Sensor, high density lens
LMPC-100-5	PIR Ceiling Mount Occupancy Sensor, extended height lens
LMPX-100	PIR Corner Mount Occupancy Sensor, high density lens
LMPX-100-1	PIR Corner Mount Occupancy Sensor, long range lens
LMPX-100-3	PIR Corner Mount Occupancy Sensor, two-sided aisle angle lens
LMPX-100-4	PIR Corner Mount Occupancy Sensor, one-sided aisle angle lens
LMDC-100	Dual Technology Ceiling Mount Occupancy Sensor
LMDX-100	Dual Technology Corner Mount Occupancy Sensor
LMDW-211	1-Button, 1-Rocker Dual Technology Standard Wall Switch Occupancy Sensor
LMDW-220	2-Button Dual Technology Standard Wall Switch Occupancy Sensor

Personal Controls

LMSW-210	1-Button Standard Wall Switch
LMSW-211	1-Button, 1-Rocker Standard Wall Switch
LMSW-220	2-Button Standard Wall Switch
LMSW-222	2-Button, 2-Rocker Standard Wall Switch
LMSW-241	4-Button, 1-Rocker Standard Wall Switch
LMSW-250	5-Button Standard Wall Switch
LMGS-150-PB	Graphic Switch Touchscreen with LMPB-100

Daylighting Sensors

LMLS-400	Single Zone On/Off and Dimming Closed Loop Photosensor
LMLS-500	Multi-zone On/Off and Dimming Open Loop Photosensor

Configuration Tools

LMCT-100-2	Wireless Configuration Tool
LMCS-100	DLM Computer Interface Software

All LMSW and LMDW switches available in White, Light Almond, Ivory, Gray, Black, Brown, and Red.
LMDC-100 and LMGS-150-PB available in White and Black.

WIRED DLM COMPONENTS (CONTINUED)

Network Components

LMBC-300	Wired Network Bridge
LMBC-650	Wireless Network Bridge, for integration of wired DLM rooms into a wireless DLM system
LMJA-9125-SM	DLM Network Controller with Segment Manager, 125 rooms maximum
LMJA-9300-SM	DLM Network Controller with Segment Manager, 300 rooms maximum
LMNC	Network component enclosure, various models available with pre-installed NB-ROUTERS and an NB-SWITCH
LMNC-ENC1	NEMA1 Small Enclosure for DLM Network Controller
NB-ROUTER	DLM Segment Network to BACnet IP Router
NB-SWITCH	DLM Global Network 5-Port Ethernet Switch
NB-SWITCH-8	DLM Global Network 8-Port Ethernet Switch
NB-SWITCH-16	DLM Global Network 16-Port Ethernet Switch

Interfaces

LMDI-100	RS-232 Serial Data Interface
LMIN-104	PIR Ceiling Mount Occupancy Sensor, high density lens
LMOR-102	PIR Ceiling Mount Occupancy Sensor, extended height lens
LMRL-100	Isolated Relay Interface
WRC-TX-LM	Wireless Receptacle Controls for DLM

Cables and Accessories

LMRJ Series	DLM In-Room Bus (IRB) Pre-Terminated Cables (available in 6', 3', 10', 15', 25', 35', 50', 75' and 100' lengths, in plenum and non-plenum rated versions)
LM-MSTP	Segment Network Wire (available by the foot or in 1000', 2000' or 4000' reel)
LMPB-100	Digital Power Booster
LMFC-RJ-50-24	DLM cable connector whip for LMFC-011 with one RJ45 port and 24" leads; fits 1/2" KO
LMFC-2RJ	DLM cable connector whip for LMFC-011 with two RJ45 ports and 24" leads; fits rectangular opening
LMPO-200	Analog Exterior Photocell Accessory, 0-200 footcandles
LMPS-6000	Analog Interior Photocell Accessory, 0-6000 footcandles

For additional Specification and Buy American Act details please visit <https://www.legrand.us/wattstopper/spec-tools>