## Sensor Technologies

### Passive Infrared (PIR) Technology

- Designed to detect motion from a heat-emitting source (such as a person entering a room) within its field-of-view and automatically switch lights ON and OFF
- PIR sensors are considered line-of-sight sensors, meaning that the sensor must be able to have a direct line-of-sight to the person making the motion.

### Ultrasonic (US) Technology

- Ultrasonic sensors use the Doppler Principle. These sensors produce low intensity, inaudible sound an detect changes in sound waves caused by motion.
- They are volumetric in nature and therefore not line-of-sight dependent.
- They are much more sensitive to smaller motions.

### Dual Technology

- Dual Technology is the combination of PIR and Ultrasonic into one sensor and is the ultimate sensing solution available today.
- This pairing helps to eliminate false activations (both ON and OFF) thus saving additional energy use.
- Dual Technology sensors ensure the greatest sensitivity and coverage for tough applications without the threat of false triggers.

### Daylighting

When enabled, the Daylighting feature (-R/MV/DMV Units only) prevents lights from turning ON when the room is adequately illuminated by natural light.

- Full Logic Mode (-R Units Only) - should the ambient light level exceed the preset foot-candle level, the lights turn OFF. The lights will remain OFF until the ambient light level falls below the set point.
- Half Logic Mode - If the amount of natural light available rises above the setpoint, the daylight sensor will not turn the lights OFF wile occupancy is being detected.

### Surge Protection

- The device can withstand surges up to 6KV without getting damaged, resulting in longer lifespan.

## Color Change Kits

Color change kits come with three interchangeable color faceplates. This allows the device color to be changed in the field, offering design flexibility within one product.

| LA | W | V |
|---|---|---|

**C2 Color Kit**
Light Almond, White, Ivory

| BK | W | GY |
|---|---|---|

**C5 Color Kit**
Black, White, Gray

**Lighting Product Lines**
Halo
Halo Commercial
Portfolio
Iris
RSA
Metalux
Corelite
Neo-Ray
Fail-Safe
MWS
Ametrix
Shaper
io
Lumark
McGraw-Edison
Invue
Ephesus
Lumière
Streetworks
AtLite
Sure-Lites

**Controls Product Lines**
Greengate
iLumin
Zero 88
Fifth Light Technology
iLight (International Only)

**Connected Lighting Systems**
LumaWatt Pro
WaveLinx
Distributed Low-Voltage Power
ConnectWorks

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**Eaton**
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.eaton.com/lightingsystems
For service or technical assistance:
1-800-553-3879

**Canada Sales**
5925 McLaughlin Road
Mississauga, Ontario L5R 1B8
P: 905-501-3000
F: 905-501-3172


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# Wallbox Lighting Controls Line Card

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## Energy Codes

Energy costs and consumption continue to rise in the United States. Today, many energy codes and energy policies either require or incentivize the use of energy efficient lighting controls on commercial projects.

**NOTE:** This document is intended to provide a brief overview and design professionals should consult the appropriate standards documentation, and authority having jurisdiction, for project-specific requirements and interpretation

### ANSI/ASHRAE/IES Standard 90.1-2016

Commonly known as ASHRAE 90.1, this standard is recognized by the U.S. Department of Energy (DOE) as the national energy reference standard. This code significantly fine-tunes the design requirements for code-compliant lighting controls systems, mechanical systems, and the building envelope.

### International Energy Conservation Code (IECC) 2015

This standard establishes minimum energy efficiency requirements for new and renovated buildings. ASHRAE 90.1 is recognized by the DOE as the national reference standard; however IECC is adopted by many states.

### California Title 24

These are California's Building Energy Efficiency Standards for new construction of, and additions and alterations to, residential and nonresidential buildings.

| | Energy Code Section | | |
|---|---|---|---|
| **Top Energy Code Requirements** | **ASHRAE 90.1 (2016)** | **IECC (2015)** | **Title 24 (2016)** |
| **Local Control** | 9.4.1(a) | C405.2.2.3 | 130.1(a), (b) |
| **Manual ON** | 9.4.1.1(b) | C405.2.2.3 | 130.1(a), (b) |
| **Partial Automatic ON** | 9.4.1.1(c) | C405.2.1.1 | 130.1(b) |
| **Multi/Bi-Level Lighting** | 9.4.1.1(d) | | 130.1(a) |
| **Daylighting Side Lighting** | 9.4.1.1(e) | C405.2.3.2 | 130.1(d) |
| **Daylighting Top Lighting** | 9.4.1.1(f) | C405.2.3.1 | 130.1(d) |
| **Automatic Partial OFF** | 9.4.1.1(g) | C405.2.1.2 | 130.1(c).6 |
| **Automatic Full OFF** | 9.4.11.1(h) | C405.2.1.1 | 130.1(c).5 |

**Local Control**
The lights can be turned ON/OFF locally

**Manual ON**
The lights can be turned ON only through manual operation; auto-ON is restricted

**Partial Automatic ON**
The lights can be turned ON automatically, when occupancy is sensed, only at a power level less than or equal to 50%

**Multi/Bi-Level Lighting**
At least one control step is provided between 30% and 70% power levels

**Daylighting Side/Top Lighting**
Electric lighting is controlled when side/top daylight is available

**Automatic Partial OFF**
The light level will be reduced, when no occupancy is detected over a period

**Automatic Full OFF**
The lights will turn OFF, when no occupancy is detected over a period

| | WALLBOX SENSORS | | | | | | | | | | | | | | | | | 0-10V DIMMER SENSOR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OSW-P-0801-120-* | OSW-P-1001-MV-* | ONW-P-1001-MV-* | ONW-P-1001-DMV-* | ONW-P-1001-347-* | ONW-P-1001-D347-* | ONW-P-1001-SP-* | ONW-P-1001-RR7-* | VNLW-P-1001-MV-N-* | OSW-U-0721-MV-* | ONW-D-1001-MV-* | ONW-D-1001-347-* | ONW-D-1001-DMV-* | ONW-D-1001-DMV-N* | ONW-D-1001-MV-N-* | ONW-D-1001-SP-* | ONW-D-1001-RR7-* | OSW-P-010-* |
| **AESTHETICS** |  |  |  |  |  |  |  |  |  |  |  | |  |  | |  | |  |
| Vacancy Version | VSW-P-0801-120-* | | VNW-P-1001-MV-* | VNW-P-1001-DMV-* | | | | | | | VNW-D-1001-MV-* | | VNW-D-1001-DMV-* | | | | | VSW-P-010-* |
| Technology | Passive Infrared | | | | | | | | | Ultrasonic | Dual Technology | | | | | | | Passive Infrared |
| Coverage (Sq. ft) | 800 | 1000 | | | | | | | | 720 | 1000 | | | | | | | 1000 |
| Input Voltage | 120V | 120/277V | 120/277V | | 347V | | 10-30VDC | 24VAC | 120/277V | | | 347V | 120/277V | | | 10-30VDC | 24VAC | 120/277V |
| Switchpack/Power Pack | | | | | | | Required | RR7 Relay | | | | | | | | Required | RR7 Relay | |
| Photocell | Included | | | | | | | | | | Included | | | | | | | |
| BAS/HVAC Relay | | | | | | | Included | | | | | | | | | Included | | |
| Colors | W, V, LA, G, B | | | | | | | | W, V, LA | | W, V, LA, G, BK | | | | | | | |
| 3-Way on Single Pole | 3-Way | | | | | | Single Pole | | 3-Way | | | | | | | | Single Pole | 3-Way |
| Neutral | | | | | | | | | Required | | | | | Required | | | | Required |
| Special Feature | | | | Dual Relay | | Dual Relay | | | Night Light | | | | Dual Relay | Dual Relay | | | | Isolated Relay |
| Other Info | | Light Icon, EcoMeter | | | | | | | | | Light Icon, EcoMeter | | | | | | | Surge Protected |
| **APPLICATIONS** | | | | | | | | | | | | | | | | | | |
| Closet/Utility | ✔ | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Computer Room | | | | | | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | |
| Storage Room | ✔ | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Hallway | | | | | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | |
| Private Office | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Conference Room | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Partitioned Restroom | | | | | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | |
| Non-Partitioned Restroom | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Vending Room | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Break Room | | | | | | | | | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | |

| | LINE VOLTAGE DIMMERS | | | | | | |
|---|---|---|---|---|---|---|---|
| | WBSD-010SLD-* | WBSD-010DEC-* | WBSD-SLD-* | WBSD-DEC-* | WBSD-TOG-* | WBSD-SMT-* | WBSD-SMTACC-* |
| **AESTHETICS** |  |  |  |  |  |  |  |
| Technology | 0-10V | | Universal Phase Cut | | | | |
| Low-End Trimming | | | Yes | | | | N/A |
| High-End Trimming | Yes | | | | | Yes | N/A |
| Input Voltage | 120/277V | | 120V | | | | N/A |
| Rapid Start | | | Fixed | Adjustable | | Selectable | N/A |
| LED/CFL Wattage | 120v/1200W | | 300W | | | | N/A |
| INC/HAL/FLR Wattage | 277V/1600W | | 600W | | | | N/A |
| Colors | Color Change Kits Included (Except for SLD) | | | | | | |
| 3-Way or Single Pole | 3-Way | | | | | Multi-Location | |
| Neutral | | | | | | Required | N/A |
| Special Feature | | | Low-end trimming | | | | |
| Other Info | | | | | | High-end trimming | |
| **APPLICATIONS** | | | | | | | |
| Classroom | ✔ | ✔ | | | | | |
| Computer Room | ✔ | ✔ | | | | | |
| Warehouse | ✔ | ✔ | | | | | |
| Hallway | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Private Office | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Conference Room | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Banquet Hall | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Hotel Lobby | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Restaurant | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Cafeteria | ✔ | ✔ | | | | | |

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