

DuaLED Recessed LED with SpaceWise Technology

LED lighting with integrated occupancy sensing and daylight harvesting
Affordable, Automated, Wireless

The Lighting Source

Philips Lighting Solutions NA

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PHILIPS

DuaLED with SpaceWise Technology

System Review and Discussion

- Definition
- DuaLED Review
- System Components
- Literature Details
- SpaceWise Technology
Commissioning Guide
- Retrofit Installations
- Via “Example,” Review System
Functionality
- Financial Discussion and Energy
Savings
- Q and A



What is DuaLED with SpaceWise?

Affordable, Automated, Wireless LED lighting for open plan offices

- DuaLED with SpaceWise Technology is a stand alone LED lighting system with integrated occupancy sensing & daylight harvesting and a wireless controller designed specifically for large open office spaces.
- Ideal for Retrofits* and New Construction,*
 - Replacement-in-place fixture for typical office layouts
 - For retrofits, NO new wiring is required

Embedded controls in each fixture combine presence detection and daylight dimming to save energy.



Designed with a minimalist strategy to achieve sustainable objectives.



DuaLED Architectural Recessed

LED Only

- Source: LED only
- Housing:
 - 2 11/16"
 - 1x4, 2x2, 2x4, Surface Mount
 - IC Listed, EM IC Listed
 - Below ceiling access is standard
- Optics:
 - High Angle Light
 - Minimize apparent brightness
- Lumen Output:
 - 2700 – 4900*
 - Up to 86 LPW
- Options:
 - SWZ



- Competition:
 - Cree: CR Series
 - Lithonia: RT-LED
 - Cooper: Accord-LED
 - Hubbell: L-E-P

PHILIPS DAYBRITE

DUALED SERIES

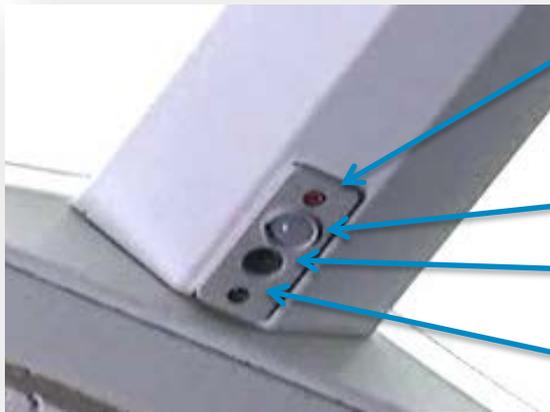
- AVAILABLE IN 1X4, 2X2 & 2X4
- MULTIPLE LUMEN PACKAGES UP TO 7300 LUMENS
- COLOR TEMPERATURE 35K & 40K
- 10 VOLT DIMMING DRIVER-STANDARD
- DLC LISTED
- WARRANTY 5 YEARS
- RATING 50,000 HOURS L70
- ONLY 2-3/4" DEEP FOR SHALLOW PLENUM
- 1.3 SPACING/MOUNTING HEIGHT RATIO
- EFFICACY UP TO 105 L/PW (Lumens Per Watt)
- AVAILABLE WITH SPACEWISE TECHNOLOGY
- OPTIONS-BATTERY, HARVESTING OC SENSING

- PERFORMANCE PRODUCT- BUDGET \$\$



What's in a "SWZ" Fixture?

Components: Driver + Wireless Controller + Sensor in DualLED luminaire



LED indicator:

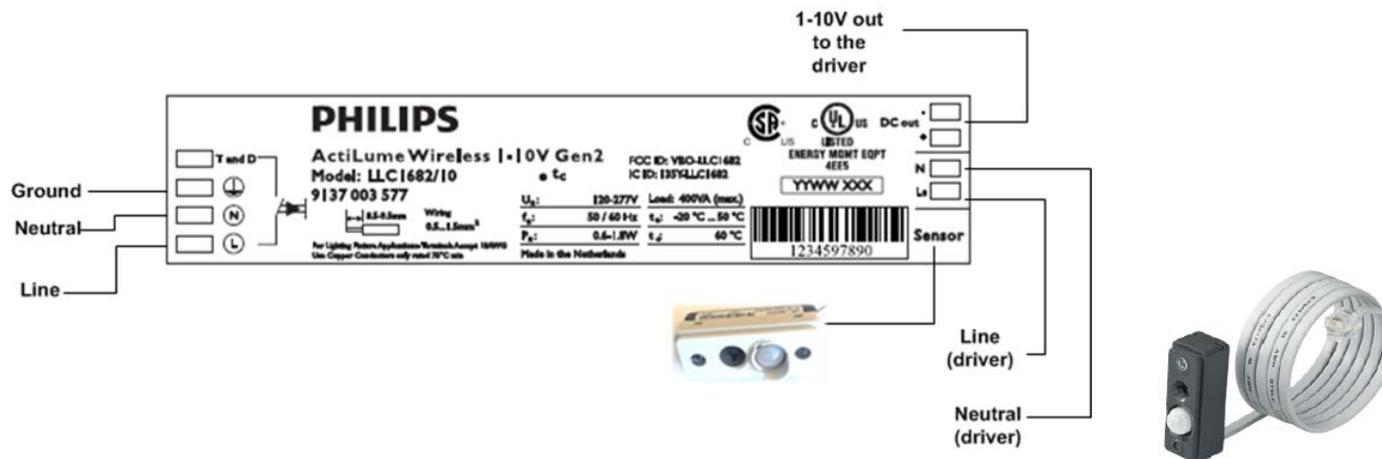
Red = Motion detected

Yellow = No motion detected

PIR: Occupancy sensor

Closed Loop Light Sensor: For daylighting and automatic light level calibration

IR Receiver: For receiving signals from the commissioning remote



What makes it different?

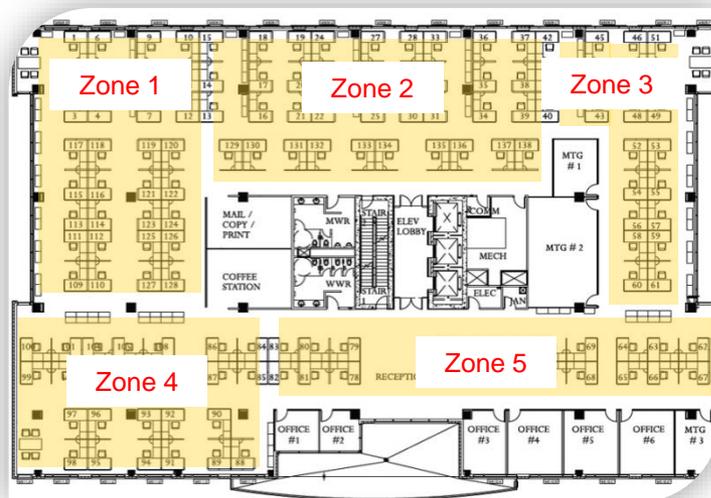
Innovation, Quality, Simplicity

- 1st offering of embedded intelligence, it's **wise** about your space, knows how to behave
- Combination of **wireless** technology and embedded **intelligent algorithms** offering granular dimming based on occupancy and daylight harvesting
- **Plug and play** - automated intelligence functions after turn on and a very simple grouping with a handheld remote
- Auto **re-calibrating** light sensors automatically adapt to changes in the environment by accommodating changes in reflectivity that occur with churn and space re-use
- R&D process has included extensive testing including occupant **validation studies**
- Philips system offers benefits of deep energy savings, scalability, and commitment to quality to ensure **tenant satisfaction**
- **Energy Savings:** from a baseline of 3x32W luminaire to a SpaceWise luminaire, savings are typically 60-70% (~45% from LED and 25% from occupancy/daylight)
- **Maintenance** costs are reduced, LED's have longer usable life– 60,000 hours for LED's vs. 30,000 hours for fluorescent

Existing Conditions and Granular Dimming

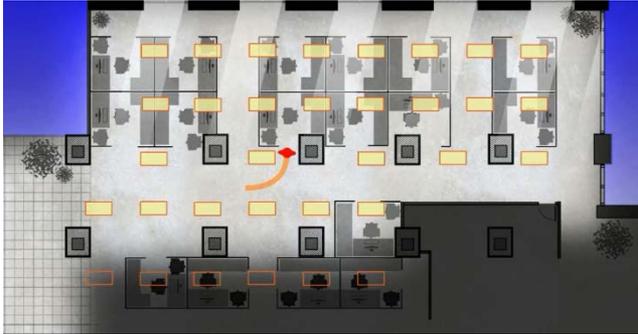
Wireless with embedded intelligence is a game changer

- Existing Buildings are plagued with pre-existing zones and circuits, which has been a primary barrier to deep energy savings in open plan offices.
- Unfortunately, traditional energy savings strategies have sometimes compromised acceptability to the occupants (e.g., reflectors, de-lamping, low light levels)
- SpaceWise granular dimming breaks through pre-existing zones to allow layered and application appropriate dimming.



How it Works

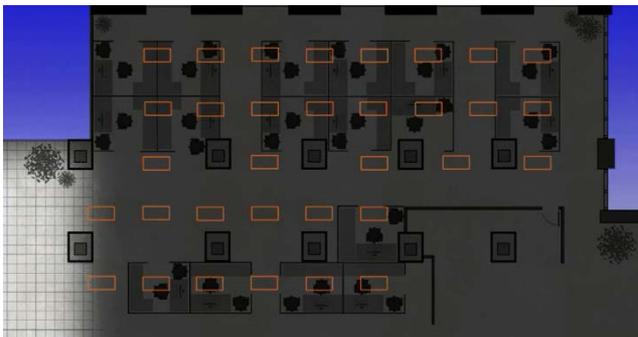
System automated dimming behavior



- When the first occupant enters, the dimmed light increases to background level



- As each occupant arrives at their workstation, fixtures in the immediate area increase to full brightness. Fixtures gently dim as occupants leave workstations.



- The lighting zone turns off after the last person leaves.

Video animation shows the way the system behaves:
<http://www.youtube.com/watch?v=d8nL-Jz3-Uc&feature=youtu.be>

How Does a “Retrofit” Install Proceed?

1. Shut off power supply to the space.
2. Disconnect the supply connections to the existing ballast.
3. Remove the fixture from the ceiling.
4. Place the DuaLED with SpaceWise fixture into the ceiling.
5. Reconnect the supply connections to the SpaceWise driver.
6. Repeat the process until all fixtures are replaced.
7. Restore power supply to the space.
8. Use the SpaceWise handheld remote control to “create groups” and “set levels.”



Simple Install and Setup

- Stand alone system (luminaires speak to each other but not to the BMS)
- Plug and play with easy grouping
- No network, computer, or light meter required
- Auto calibration, no daylight commissioning
- Each luminaire has an integrated sensor and wireless controller which can be commissioned with the system remote, enabling that fixture to be a part of a wireless network of up to 50 luminaires



Grouping is a 2-step process

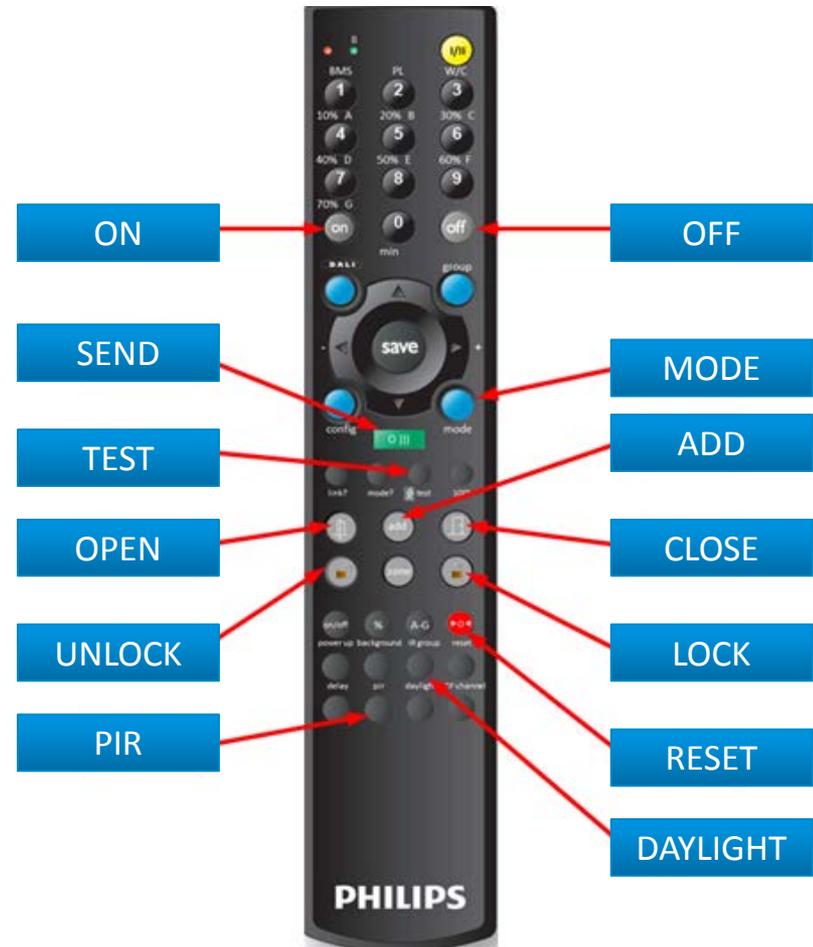
STEP 1. Create a group: select 1st luminaire, and add up to 50, then close the group.

STEP 2. Select high, medium and low max output per group (based on partition heights, reflectances, user preferences)

Handheld IR Remote (IRT 9090)

Troubleshooting Features

- Refer to the SpaceWise Technology Quick Start Guide and User Manual
- Typical setup is 2 step process, but in some cases additional functionality or troubleshooting is needed
- All features involve
 - Unlocking a Group
 - Locking a Group
- Features list:
 - Modifying a Group
 - Manual Light Level Calibration
 - Activate/Deactivate Daylight Regulation
 - Activate/Deactivate Occupancy Sensing
 - Factory Reset
 - Adding OccuSwitch Wireless Ceiling Sensor
 - Walk Test
 - Emergency Applications



Code Requirements

ASHRAE 90.1-2010 and CA Title 24

- Requirements vary depending on whether the project is an existing building retrofit or a new construction or major renovation
- Under ASHRAE 90.1, the requirement for retrofit is to meet the new LPD and have auto shutoff, so DualLED with SpaceWise Technology in typical layouts does meet that requirement.
- Under Title 24, change outs of 40 luminaires or more triggers renovation requirements.
- New construction/renovation requirements for both codes requires manual on switch with auto shutoff. At this time a wired manual-on switch would be necessary, but we will have a wireless switch to meet new construction requirements by late summer.
- Additionally, our next firmware release will have additional applications dimming behaviors suitable for corridors, private offices, and conference rooms.

Q & A

How do I set up the groups and how do they operate?

The groups can be thought of like “mini rooms” within an open plan space and there should be 35-50 luminaires per group. The importance of the group is that the occupancy sensors will wait for the entire group to be unoccupied before turning off the group. In addition to the group auto-off, each luminaire has its own occupancy and daylighting sensor, so it will dim to a pre-defined background level if the space is not occupied or if there is sufficient daylighting to reduce the electric light. This means that the lights will appear on as long as there is anyone in the group area, but won't be at max light output unless it's needed.

What happens if we have churn in our space, resulting in new reflectances or workstations?

The intelligence in the SpaceWise system includes automatic recalibration of the sensors, so the delivered light will adjust to new conditions after the 1st off and on cycle each day.

Q & A

Will I get enough light?

The designed light levels are based on IES recommended ranges for open plan offices, using 2x2 or 2x4 luminaires within typical office lighting layouts. Our system allows you to choose a high, medium or low maximum light output (similar to ballast tuning) to adjust for variables such as partition height, reflectances, and ceiling heights. The max light output can be chosen at the end of defining each group with the handheld IR remote. The dimming behavior only occurs when there is vacancy within the space or sufficient daylight, so background light levels will not impact occupant needs.

The system is marketed for Open Plan Offices, can I use this system in other applications?

Yes, but the system behavior will be the same as for an open office.

DuaLED with SpaceWise is designed to be suitable for typical offices considering light levels, aesthetics, dimming behavior, energy savings needs, and space usage. Different applications have different needs. If your application is not an office, but has similar lighting and occupant needs, please contact Philips to confirm suitability.

Q & A

Photo Sensor Auto Calibration: How long does the SW fixture stay at 100% output during “first-on”? What is the fade time back to ‘background’ level?

The luminaires stay ON at 100% light level during calibration for 5 seconds.

If occupancy is detected by the luminaire for 10 seconds (Dwell time or time to acknowledge that it is a stable occupancy) then the luminaire will go to its task level (level determined by daylight harvesting algorithm).

If no occupancy is detected for the Dwell time then the luminaire will fade to background level in 10 seconds.

What is the fade rate for the dim-down while a SW fixture is harvesting? What is the fade rate for the dim-up while a SW fixture is harvesting?

The daylight algorithm works differently than the occupancy sharing algorithm. The daylight harvest algorithm has accounted for a dead band where any changes in external lighting (e.g. dark cloud movement) within that dead band are ignored.

The fade timing between different light level is dependent on the range or the gap between the calibrated set point and the actual measured light level.

Q & A

The details for the motion sensors indicate that at a mounting height of 9' AFF, the sensor can detect “major” motion in a 17' diameter circle and “minor” motion in a 8' diameter circle. What is the difference between major and minor motion?

The major and minor motion are defined by the IEC standard. But in simple language, minor motion is similar to an arm movement by 90 degrees while major motion is similar to a person normally walking.

Last Person to Leave the Office: At the end of the day all but one fixture in a Group is at background level. As the last employee departs for the evening, does it take 20 min for the fixture group to “shut-off”, or 10 min?

10 min (The timer starts from the last luminaire that detected motion).

Is an app to “group” fixtures via tablet or smart phone available?

Yes, an app is currently in development. The expected release is Q1, 2017.

