Automatic Daylight Dimming Option

Saving Energy with Daylight
Automatic daylighting controls allow you to convert the light of the sun into energy cost savings, but the controls can be complex to design and start up.

Now Peerless Lighting offers its most popular luminaires with an automatic daylighting dimming option—simplifying design and installation, eliminating ceiling clutter and reducing the amount of time required for commissioning. Because saving energy should be as simple as sunlight.
Daylighting is a regular feature in LEED-certified and other green buildings due to the many documented advantages of daylight, such as increasing user satisfaction and performance as well as the value and marketability of commercial property. Daylight also enables opportunities to boost energy savings by 35-60% using automatic daylighting controls, according to the New Buildings Institute.

The idea is simple: With daylighting controls, electric light decreases as daylight increases. And the potential energy savings and impact on sustainability are huge.

In practice, however, it can be a complex undertaking. Traditional control systems including photosensors, dimming ballasts and controllers are often complicated to specify, prone to installation error and a hassle to commission—while adding more hardware to an increasingly cluttered ceiling plane.

Peerless Lighting has simplified daylighting by taking a complete automatic daylighting dimming system and making it small and simple enough to integrate within a single luminaire.

Now you can specify Peerless luminaires with the automatic daylighting dimming option to turn your daylight designs into energy savings—while simplifying design, installation and commissioning and eliminating ceiling clutter.
Dims lamps precisely to maintain desired light level
- 0-10VDC electronic dimming ballast
- Operation of T5, T5HO or T8 lamps
- Specify major ballast brands

Provides lighting quality
- Visually comfortable, high-quality illumination
- Lower power density easily achieved
- Small integral photosensor preserves luminaire aesthetic

Monitors light levels to detect daylight contribution
- Closed-loop: measures daylight and artificial light, excellent for dimming
- Maintains constant light level as daylight conditions change
- Uses photopic curve to measure light as it’s perceived by human eye

Enables toolless commissioning
- Simple handheld remote with no tools, no ladders
- Raise/Lower buttons used to adjust target light levels/setpoints
- LEDs confirm startup decisions

BENEFITS

Cost Savings
Reduces lighting energy costs by up to 60% or more in daylighted spaces

Simple to Specify
Almost as simple as specifying a luminaire, with no stand-alone devices or low-voltage wiring design required

Simple to Commission
Handheld remote provides quick, easy setup and readjustment at any time without tools or ladders

Affordable
Big energy cost savings, availability with cost-effective luminaires, and lower installation costs combine to create an economical daylighting control solution
Daylighting Control is Best Practice

Daylighting and daylighting control is recognized as best practice in energy codes and industry standards. LEED-NC v.2.2 encourages the introduction of daylight into at least 75% of regularly occupied building areas. California’s Title 24 energy code requires daylighting control in qualifying spaces receiving daylight. The Advanced Buildings Benchmark requires that lighting in daylit areas be controlled by a daylighting control system. The ASHRAE Advanced Energy Design Guide for Small Office Buildings requires daylight dimming controls for luminaires within 12 ft of North/South window walls and within 8 ft of skylight edges. And the Northeast Collaborative for High Performance Schools encourages daylighting throughout school buildings and automatic daylighting controls controlling at least 40% of the connected lighting load.

People-Compliant
Smooth dimming, with setpoints easily tuned to occupant preferences

Simple to Design
Simply indicate which luminaires in the lighting plan require the daylighting dimming option based on the control zones

Sustainability
Supports sustainable building practices by reducing wasted energy

Ideal for Indirect
Luminaire-mounted photosensors avoid false readings that can occur in suspended indirect/direct installations

Easy Installation
Control system comes installed inside the luminaire, with no added low-voltage wiring required

Aesthetics
Adds control without ceiling clutter, as the photosensor is integrated within the luminaire
Design Considerations

Luminaire Alignment

Because the alignment of luminaires can affect control zones as well as the number of photosensors per row, it's the first step in designing an integrated photocontrol system. Luminaires can run parallel or perpendicular to the daylight aperture. In some cases, alignment is determined by the architectural space.

Control Zones

A control zone is a group of luminaires simultaneously controlled by a single control device, in this case a photosensor. Group luminaires that receive similar daylight levels and should be controlled simultaneously to produce the same light levels, and assign them a photosensor to create a control zone. In cases where daylight availability is low among luminaires mounted farther from the daylight aperture, these luminaires can be grouped into a non-dimmed control zone.

Photosensor Placement

Peerless makes locating the photosensor simple. Photosensors can be placed in 4-ft, 8-ft and 12-ft sections and be used to create control zones as small as a single luminaire and as large as an entire row. If the luminaires are mounted perpendicular to windows, photosensors can be placed at the end of the row, close to the daylight source. If the luminaires are mounted parallel, a photosensor can be placed in the middle of the row.

Sensor Placement Options

Traditional setup: photosensors are placed at the end of the row, close to the daylight source. The luminaires are mounted parallel to windows.
Photosensor Placement

Photosensor placement is an important design factor influenced by sensor sensitivity and location as well as row alignment. The photosensor can be placed in the center of a row to control an entire row running parallel to a window or control luminaires in different rows running perpendicular to a window. Multiple sensors can be used to increase the number of control zones. Optimal placement for a 10-ft ceiling is 6-14 ft from the window.

Other Situations

Typical daylight dimming applications include open offices and classrooms, but special situations can occur, such as a private office (left) or spaces with clerestories (right). If daylight is available, sensor placement and zoning can accommodate any situation where daylight dimming is desired.
Planning Guide

Peerless luminaires with the automatic daylight dimming option are simple and straightforward to install and use. Follow these steps and send the information to Peerless for Submittal Drawings and luminaire Bill of Materials.

1. **Luminaire Selection**
   Choose your Peerless luminaire. The integrated photosensor is available standard on the luminaires shown below. For other luminaires, contact Peerless Lighting. Specify the lamp type and number.

![Diagram of luminaires](image)

<table>
<thead>
<tr>
<th>Lightedge</th>
<th>Cerra 10</th>
<th>Envision</th>
<th>Prima</th>
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</tbody>
</table>

Contact Peerless Lighting for other luminaires and specific models.
2 **Row Length**

A row is defined as a number of connected luminaire sections. Define overall row length.

3 **Number of Dimming Zones**

Determine the total number of dimming zones in the row.

4 **Number of Non-Dimming Zones**

Identify the total number of zones not controlled by a photosensor.

5 **Number of Photosensors**

Determine how many photosensors are in each row. In some cases, the photosensor controlling the row may be located in another row; if this is the case, there will be zero photosensors in this row.

6 **Specify**

Once the previous steps are completed, specification nomenclature can be defined. The nomenclature is defined as the number of photosensors for the row along with the designation “DPC.”

For each project, you will also need at least one handheld calibrator to commission and adjust the lighting system in the space. To specify the remote, just enter “DPC REM” as a separate line as shown in the example on the right.

This order has two photosensors as well as a single handheld calibrator.
Specifications

Ballast Control

Peerless luminaires with the automatic daylight dimming option require an electronic dimming ballast using a 0-10VDC control signal.

Power Supply
24VDC from supplied power pack

Current Consumption
30mA@24VDC

Ballasts
0-10VDC dimming ballast

Wire Length, Photosensor to Ballast and Power Pack
6 ft (182cm)

Maximum Ballasts Controlled
50

Maximum Sink Current
50mA

Minimum Signal to Ballast
0.2VDC

Maximum Signal to Ballast
10VDC

General Specs

- Operating voltage: 24VDC
- Current Consumption: 9mA typical, 30mA peak
- Maximum sink current: 50mA
- Enclosure material: ABS
- Color: White
- Operating temperature: 0-40°C (32-104°F)
- Operating humidity: 5-95%, non condensing
- Full range dimming: 0.2 VDC (minimum) to 10VDC (100% lighting) output voltage
- Sliding setpoint control algorithm
- Five-year warranty

Photosensor Spatial Response

The peak sensitivity of the sensor is a 70° field of view.

Calibration

The DPC REM handheld calibrator facilitates quick and easy setup from ground level without tools, while preventing tampering. Raise and lower buttons are used to adjust target light levels for the day and night setpoints in the presence and absence of daylight. LEDs confirm setup operations.