



GR 2400-*i*TM Control Panel

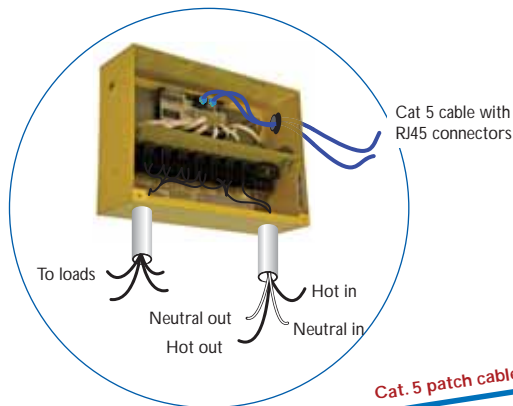
MicroPanel-*i*DH and -*i*DimTM

The Micro Panel -*i*Dim and -*i*DH have been specifically designed for daylight harvesting situations. This design guide is to help in the layout of such systems to achieve the proper balance of electric lighting and natural daylight.

As daylight levels decrease, electric lighting can be made to compensate through dimming or switching (step dimming).



The **MicroPanel-*i*DH or -*i*Dim**



Switches

- Chelsea Digital Switch
- Slider Local Switch



Photosensor

- Universal Indoor Photosensor



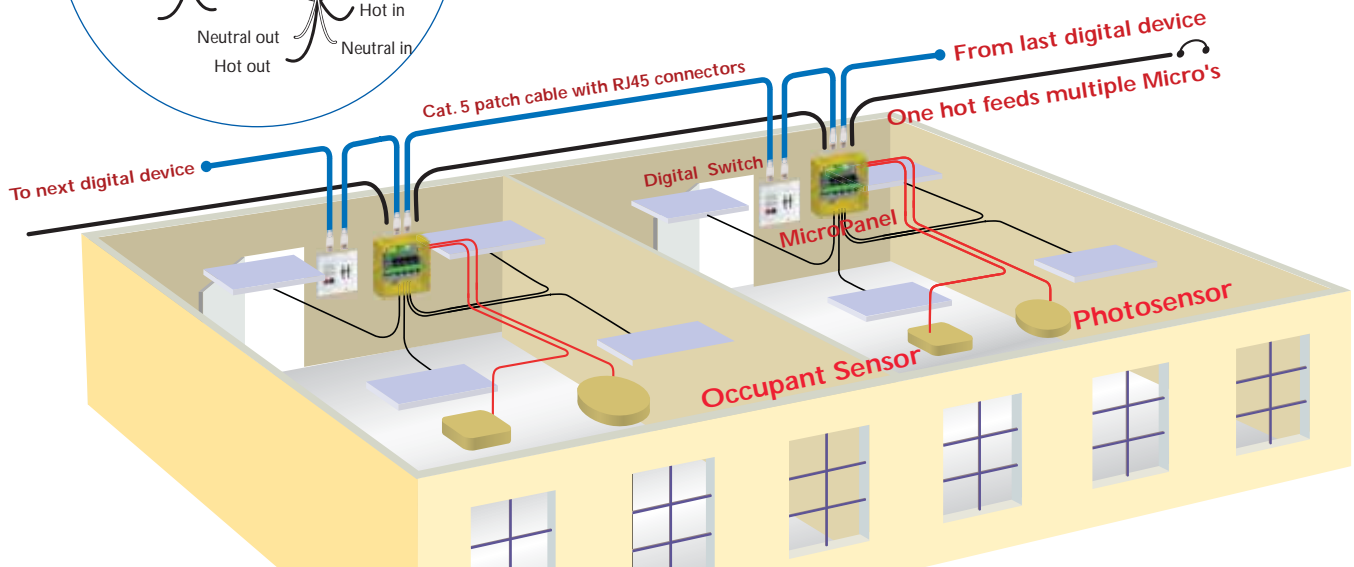
Also available as a global photosensor (see page 5)

Accessories

- Any 12 or 24v occupant sensor



3 Way Toggle Switch or any digital switch (see page 5)

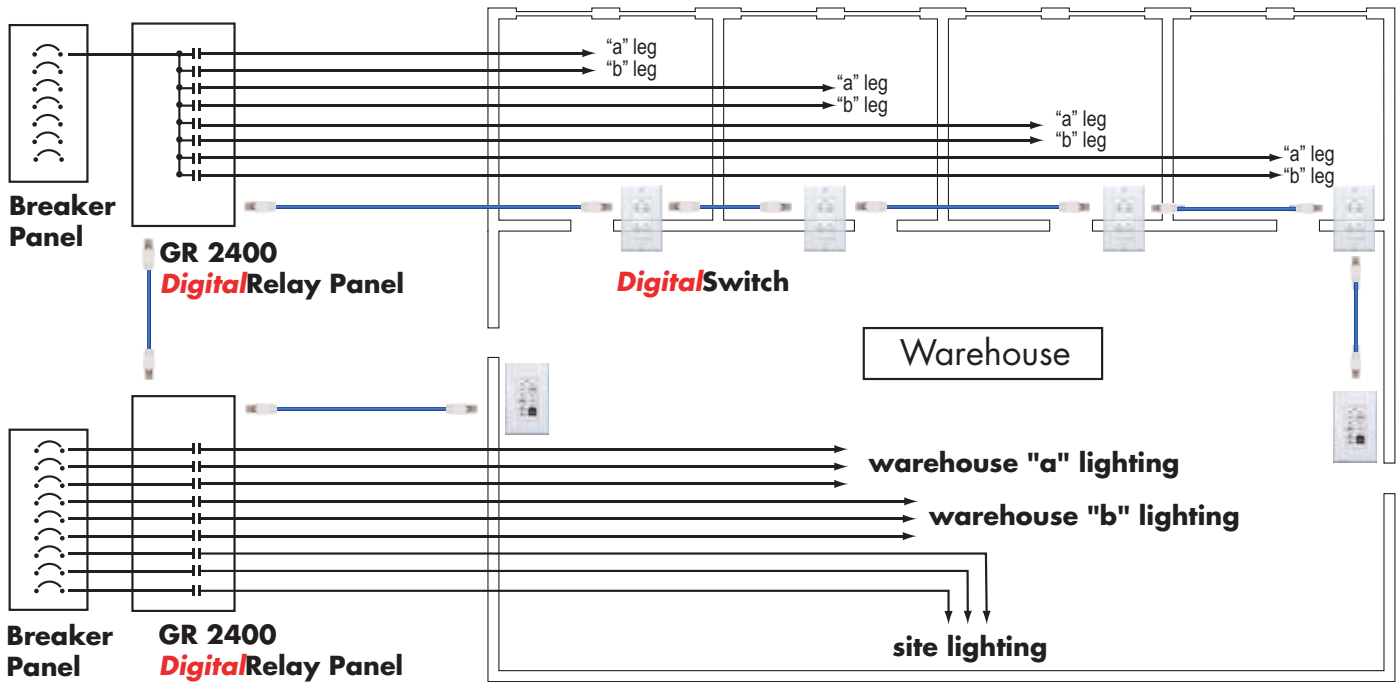


Digital Controls

Digital Centralized Controls

Traditionally, lighting control panels are located in electrical rooms and require "home-run" wiring to each load controlled.

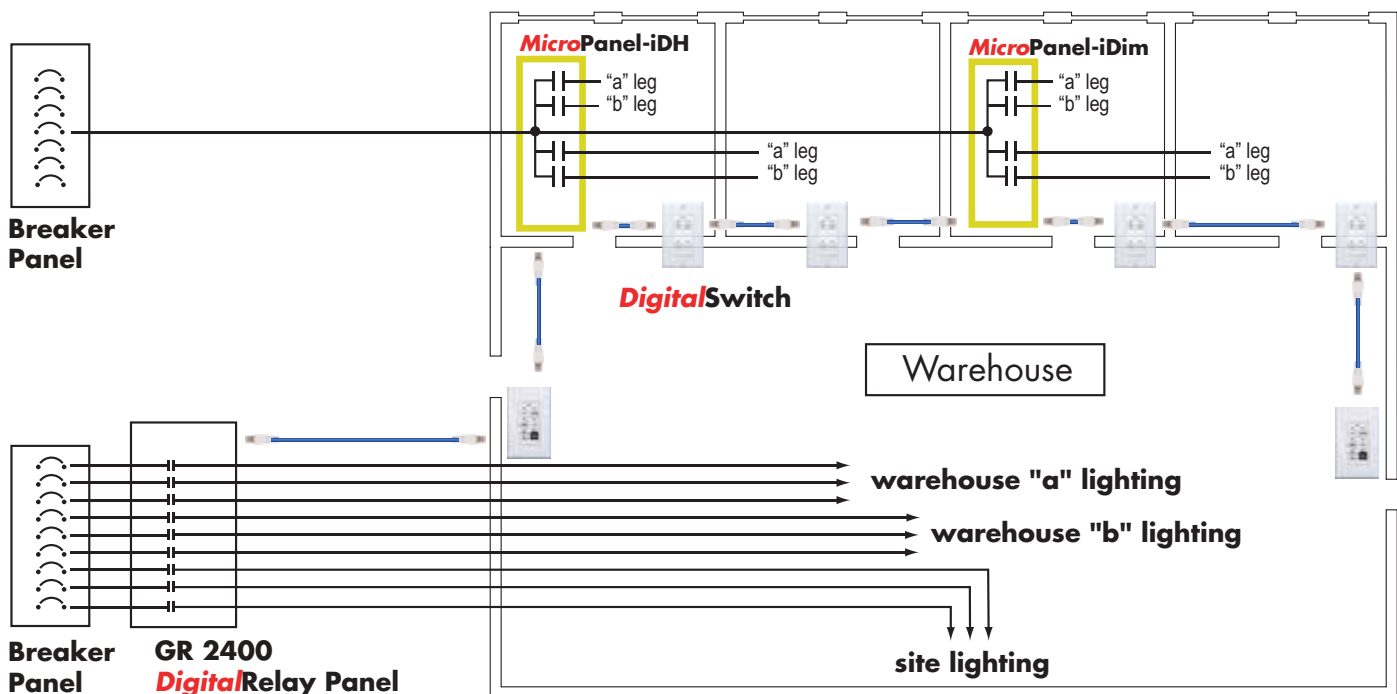
This is ideal for large areas such as sales floors and warehouses with 20a loads, but not for small areas with smaller loads.



Digital Distributed Controls

Distributed controls move the relay panels into the room, simplifying wiring, greatly lowering installation costs and increasing flexibility.

Most applications require both centralized and distributed controls. The GR 2400 system can integrate both into a building-wide solution.



Simplify with Integrated Lighting Controls

Disjointed Controls

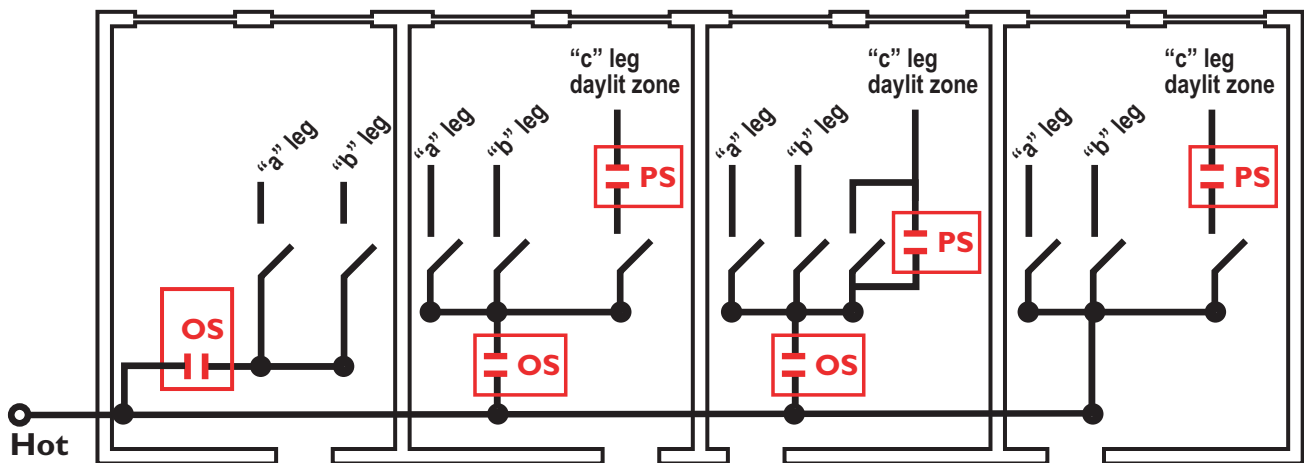
Since 1945 lighting control manufacturers have built lighting control panels effectively the same way - with the sole recent addition of programmability.

Contrasting this, occupant sensors and photosensors (a more "modern" development) are non-programmable autonomous controllers, often unable to interact with each other, even within the same room!

Possibly the most common customer complaint with autonomous lighting controllers is the inherent difficulty in changing automatic settings.

Because they are hard-wired, they cannot be reconfigured to meet changing client needs. Changes require a visit from an electrician.

OS = Occupant Sensor
PS = Photosensor

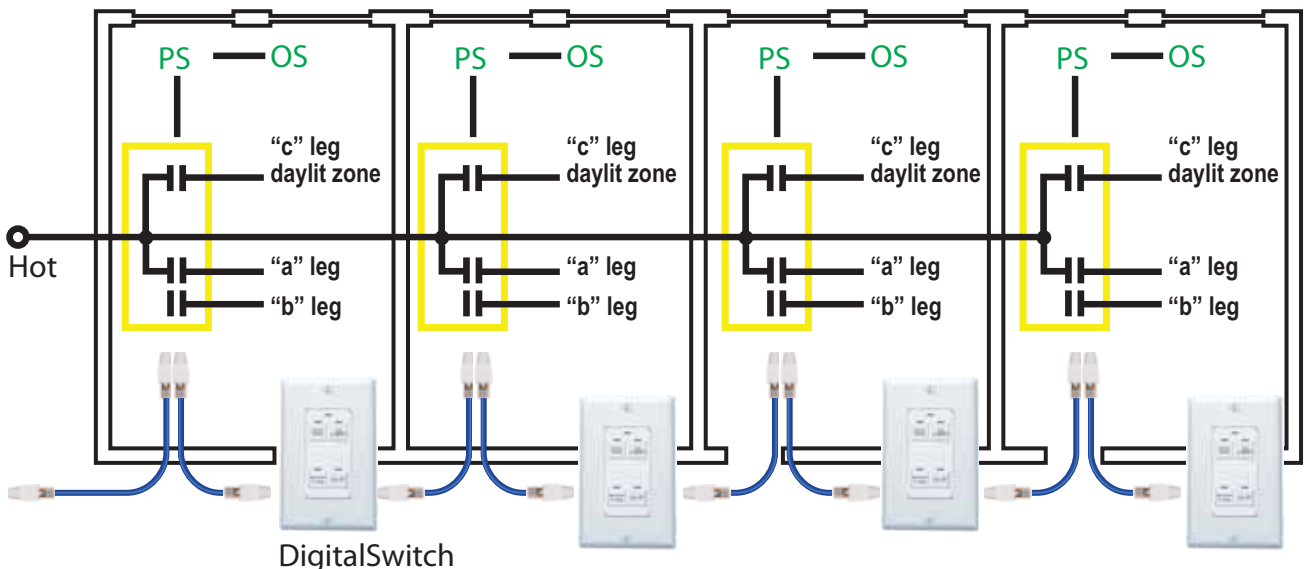


Integrated Controls

The GR 2400 Integrated series of lighting controls solves these basic issues and more. Integrate relay panels, occupant sensors, photosensors, switches and micro control panels into a building-wide lighting control solution.

Locally and remotely adjust, monitor, program and control every detail of every digital device. Changes are as simple as a phone call.

OS = Occupant Sensor
PS = Photosensor



GR 2400 "Integrator" Products

The *MicroPanel-iDH*

- Switch up to eight separate 30A lighting circuits.
- Advanced daylight harvesting features and settings are all adjustable remotely.
- Eight matrixed inputs, accepting contact closure switches and/or OCC sensors.
- Four analog (0-10V) inputs, accept local photosensors.
- Twelve scenes with daylight harvesting functions.
- Digital bus inputs for network based photosensors, digital switches and the rest of the GR 2400 bus.



RJ45
PLUG & PLAY

The *MicroPanel-iDIM*

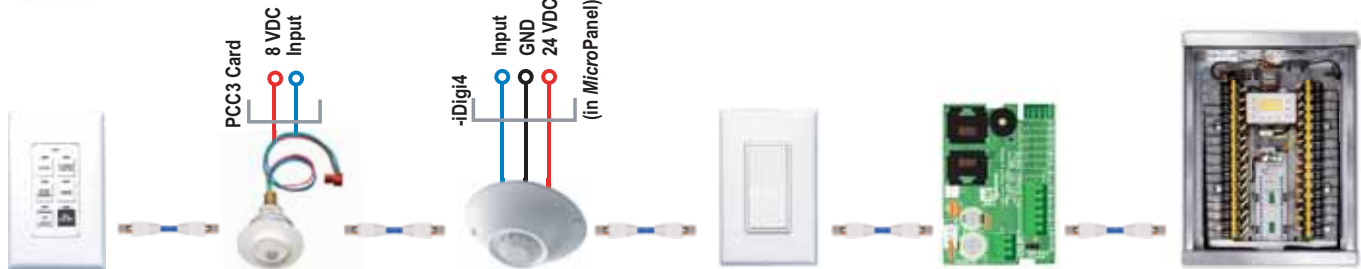
All of the features of the -iDH, plus:

- Dims (0-10V) up to four separate ballast loads (Optional: 4 extra dimming outputs are available).
- Optional 120V incandescent dimming unit now available.
- Scenes also accept daylight dimming with adjustable fade rates.
- Analog inputs also accept Four slider-switch.



RJ45
PLUG & PLAY

Digital (Global) Accessories



Chelsea *DigitalSwitch*

- 1-6 buttons
- Engraving and pilot status
- Press and hold raise/lower
- Scene controls

-iPC-G (global photosensor)

- May control each dimmer or relay separately in up to 64 *MicroPanels*

Occupant Sensor

- Any 12 or 24VDC contact closure occupancy sensor
- Power supplied by *MicroPanel*

Rocker *DigitalSwitch*

- Press and hold raise/lower
- On/off
- Scene controls

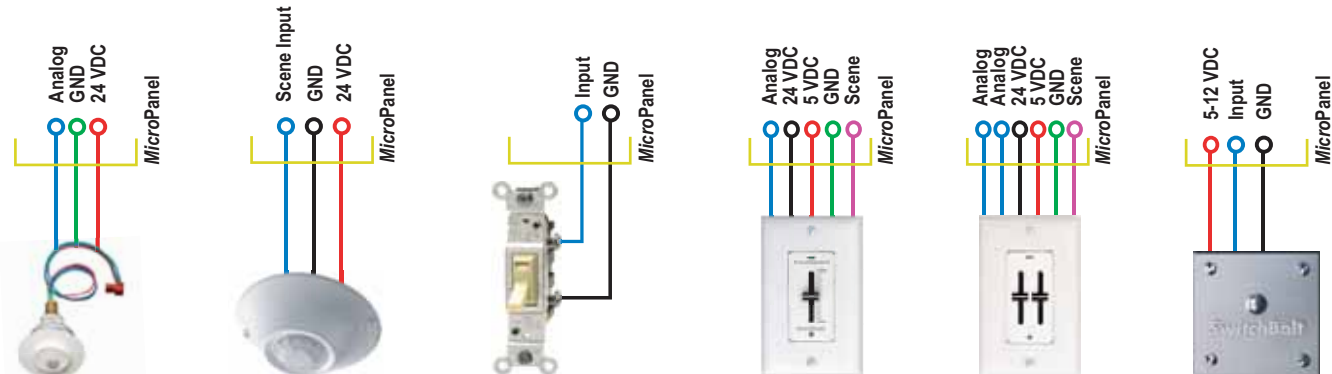
DI6

- Converts 6 contact closures to global connectors
- Mounts in low voltage compartment
- Enable/Disable feature

GR 2400 Panel

- 16, 32 or 48 relays
- or up to 42 Smart Breakers

Local Accessories



-iPC-L (local photosensor)

Plugs into one of the analog inputs of a *MicroPanel* and can control any dimmer or relay in that *MicroPanel*

Occupant Sensor

- Any 12 or 24VDC contact closure occupancy sensor
- Power supplied by *MicroPanel*

3 Way Switch

- On/off
- Scene/off
- 3 Way Action: Toggles on change in status

Occupant Adjustment

- Adjust (raise or lower) automatic lighting levels set by photosensor (limit adjustable)
- Optional digital version

Slider Switches

- Raise/lower
- Only 1-2 sliders per gang

Switch Bolt

- Mounted in custom plates
- Any switch function
- Vandal resistant
- Optional digital version

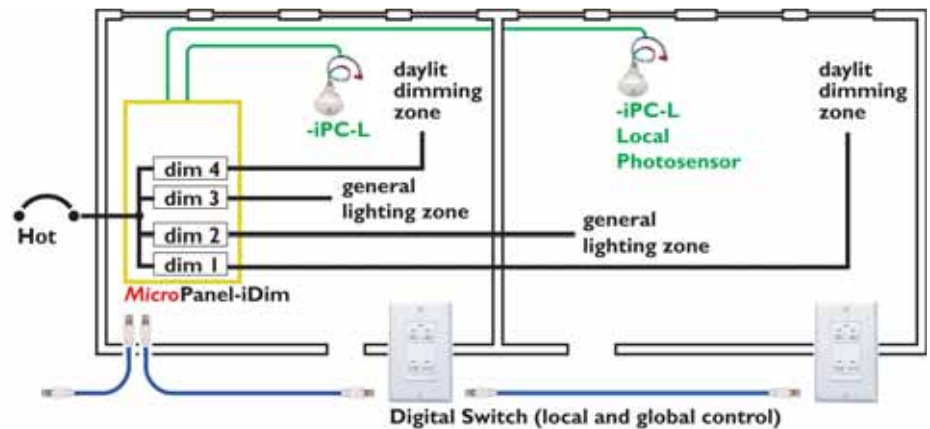
Local & Global Controls

Local photosensors are used when separate responses are required for each room to account for individual blinds or window treatments.

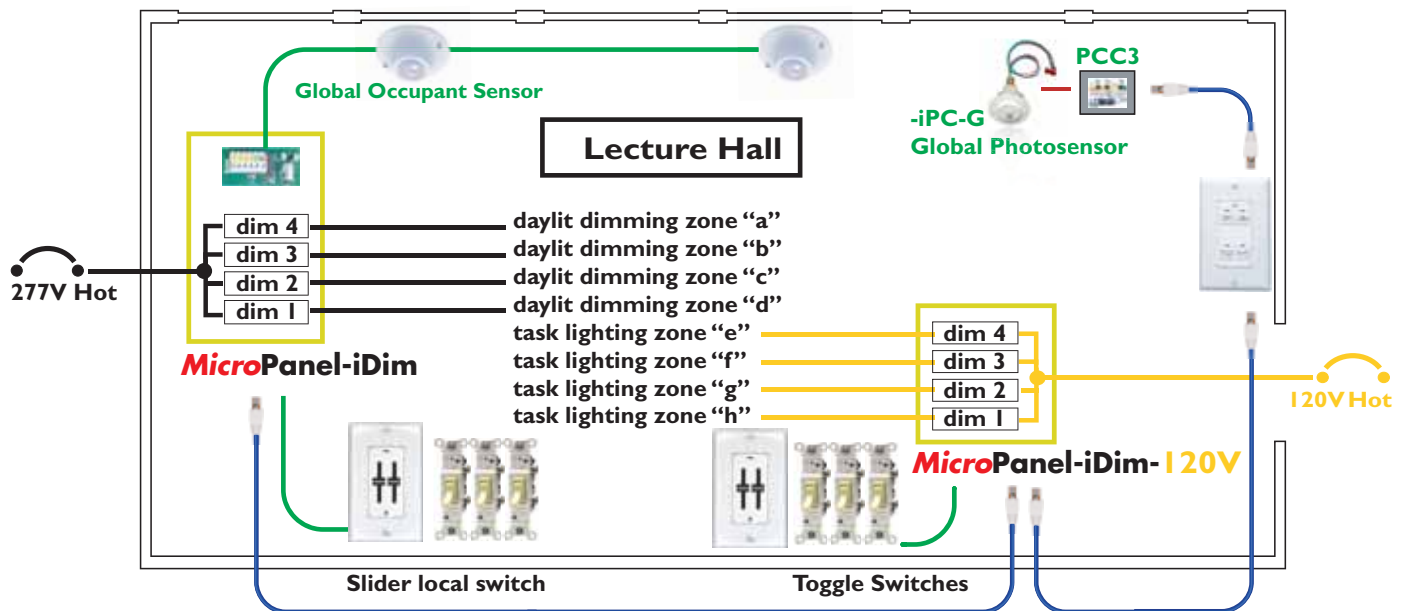
Multiple rooms that share the same exposure and window treatment can share the same **global photosensor** over the network.

Occupant sensors can be made global when wired to an **DI6** Room and exit pathway lighting may be controlled from a single sensor.

Local Photosensors & Global Switches



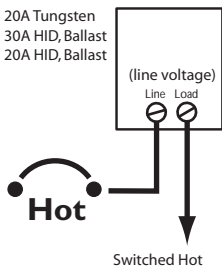
Global Photosensors & Occupant Sensors & Local Switches



Line Voltage Hook Up

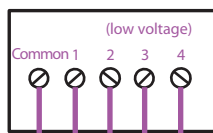
SnapLink

120V, 20A Tungsten
277V, 30A HID, Ballast
347V, 20A HID, Ballast



All SnapLink single pole relays are rated for 250,000 throws at rated load.

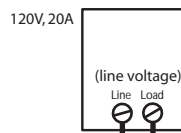
0-10V Dimming



Relay Hook Up left
4 X 0-10V Outputs

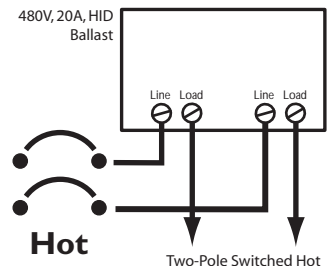
Line voltage and (0-10V) low voltage conductors may share the same conduit providing they meet NEC requirements for conductor insulation rating.

120V Phase Dimmer



Phase dimmer may only be installed with the MicroPanel-iDim-120V

Two-Pole(480V)Relay

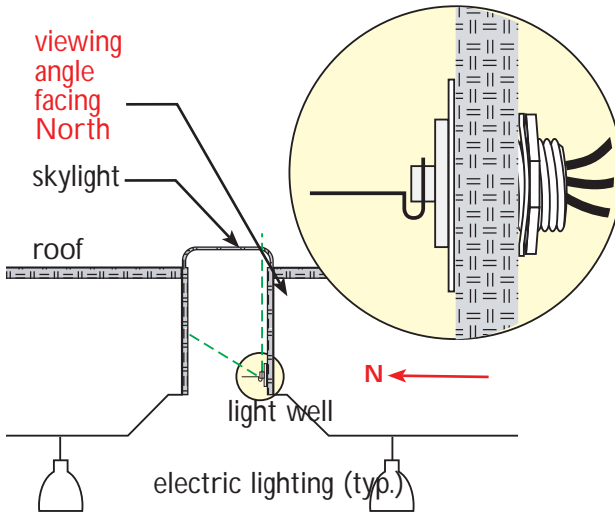


This relay uses the same footprint as two single-pole relays.

Photocell Placement

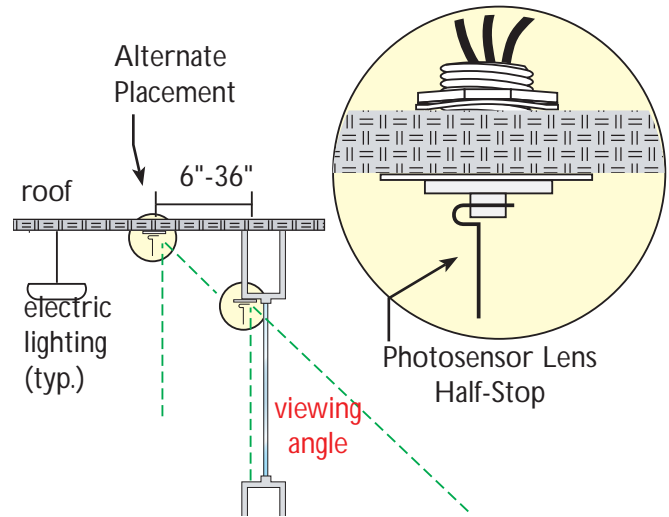
Open-Loop Applications

Def: "The photosensor views daylight directly and does not respond to or "see" the electric light that it controls."



Top Lit. To avoid direct exposure to sunlight, photocell placement shall be on the south face of the light well toward the bottom.

If placement cannot be isolated from electric light, then the contribution from electric light can be minimize with a **Photosensor Lens Half-Stop**.

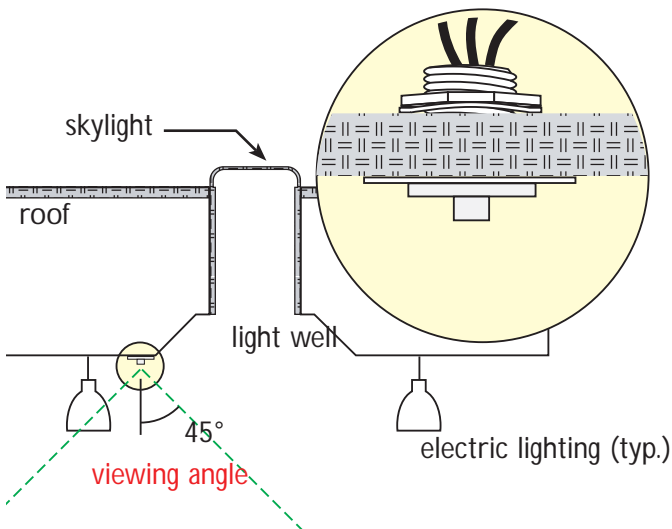


Side-Lit. Photocell placement should be as close as possible to vertical glazing. Window treatments, such as blinds, should be outside of the photocell.

Placement is usually in the window well or the ceiling mounted near the window. Placement from 6" - 36" is acceptable - with use of an **Photosensor Lens Half-Stop**.

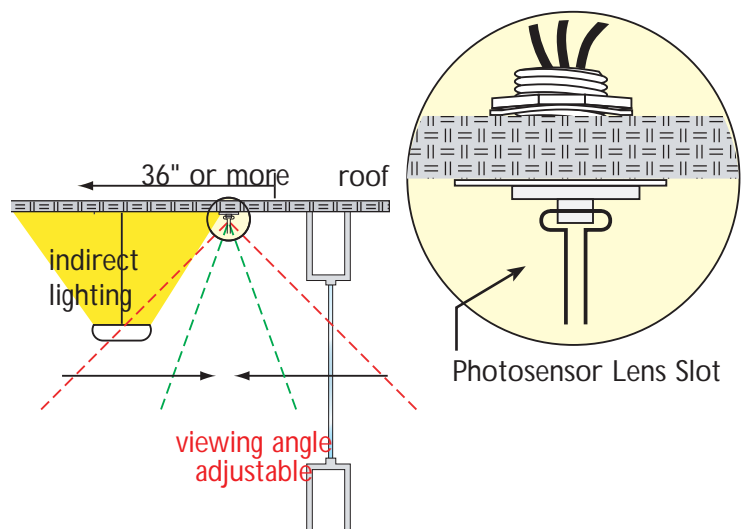
Closed-Loop Applications

Def: "The photosensor is exposed equally to daylight and electric light and mounted in an area that represents the brightness of the room."



Top Lit. Zone-based daylight harvesting such as aisle lighting is ideal for closed loop.

Photosensor placement does not need to be above every aisle, as long as a select number are placed strategically in each daylight zone (multi-zone dimming or step-dimming).



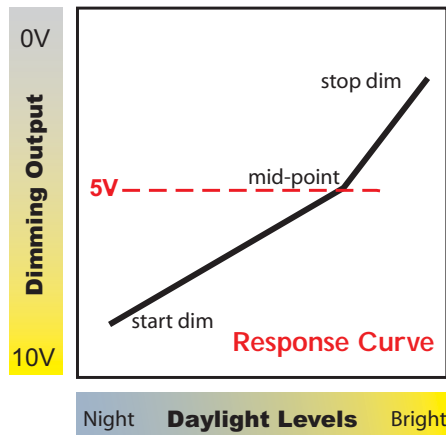
Side-Lit. Photocells are ceiling mounted in an area that represents both electric light and daylight.

Photosensors must avoid direct exposure to electric lighting. This is particularly important with indirect luminaires which can throw lighting upward at the photosensor. Use the -iPC Lens Slot to limit viewing angle.

Unprecedented Daylight Harvesting Controls

Eliminate on site adjustments and costly service calls with these locally and remotely programmable settings:

Response Curve. Individually set three points on the response curve: start dim level, mid-point and turn off point. This is a major breakthrough in daylight harvesting, for which any architectural setting can be compensated after photosensor placement.



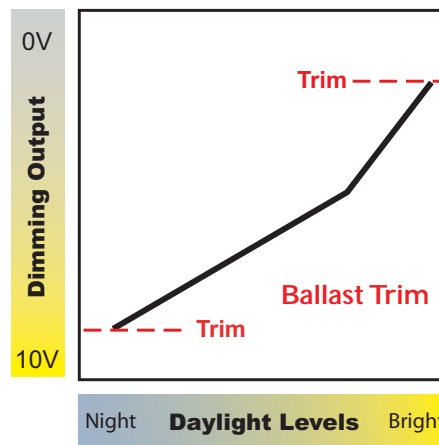
Fade Rates. Separate raise and lower fade rates (0 seconds to 100 minutes) in response to the photosensor helps accommodate human eye response.

Time Delay. Prevents nuisance cycling. Adjust from 0 seconds to 99 minutes.

Local Override. Room occupants may temporarily override automatic lighting levels. Operates with inexpensive "3 way" wall switches.

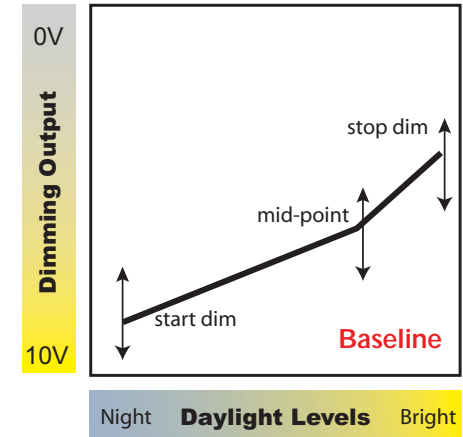


Trim. Individual trim levels may be set for each dimmer to compensate for manufacturers' ballast response (for example 2-8V instead of 0-10V).



12 Scenes. Accommodate daylight harvesting presets for seasonal changes or fixed level presets for architectural dimming.

Baseline. If room occupants feel the automatic settings are too bright or too dim, they can adjust the baseline with an optional slider switch. The adjustment range of the slider can be set remotely.



Occupants offered a degree of control are less likely to disable the system.

Must Turn On Level. A light level, below which electric lighting is switched on with no time delay (but with the proper fade rate).

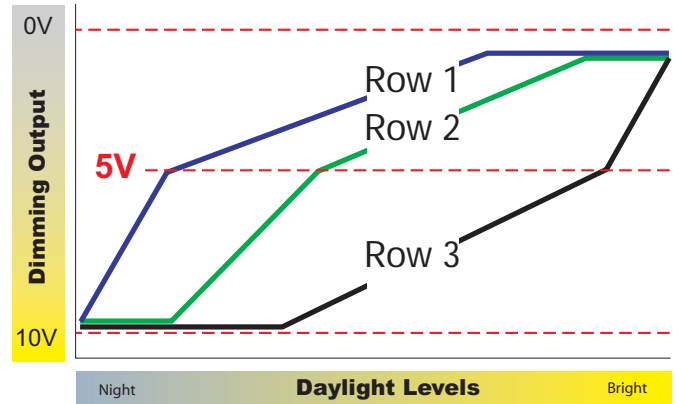
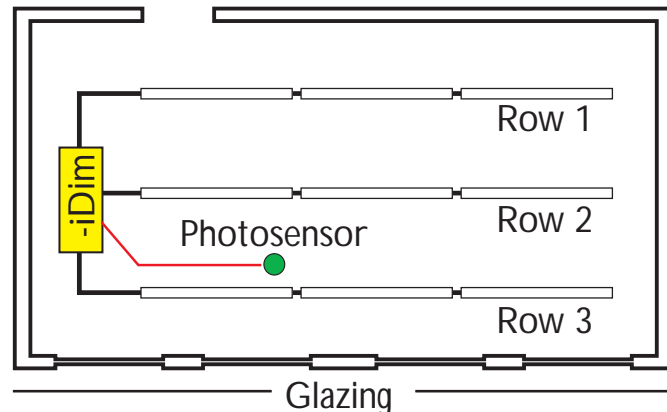
This is sometimes required when blinds are closed or dark clouds pass over head.

Multi-Zone Dimming & Switching

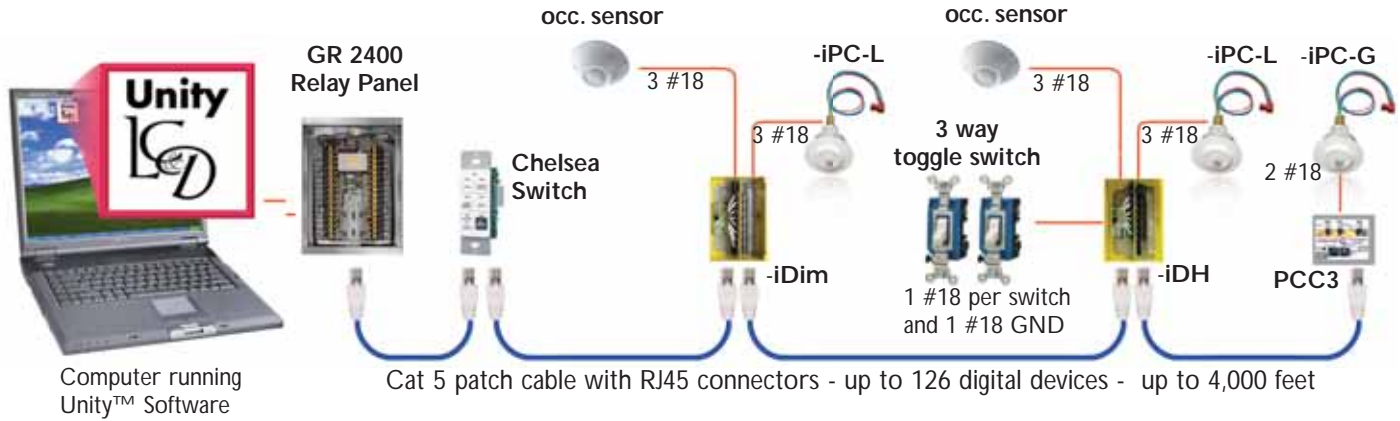
Most importantly, the *MicroPanel* is equipped to control multiple daylight harvesting zones (dimming or switching) with a single (local or global)

photocell. Each dimmer (or relay) may have its own dimming curve appropriate to its location in the room. These multiple dimming curves are

ideal for open loop or closed loop daylight harvesting. No matter the exposure (north, south, east or west) the right curve can be precisely set for any architectural setting.

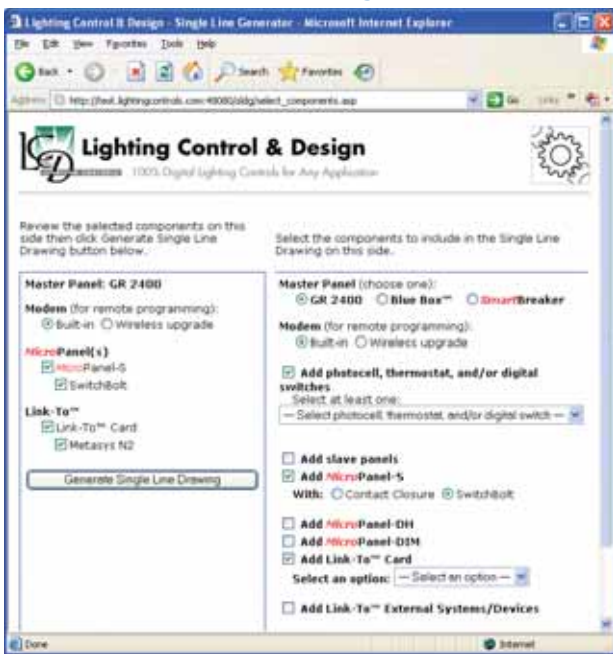


Single-Line Drawings

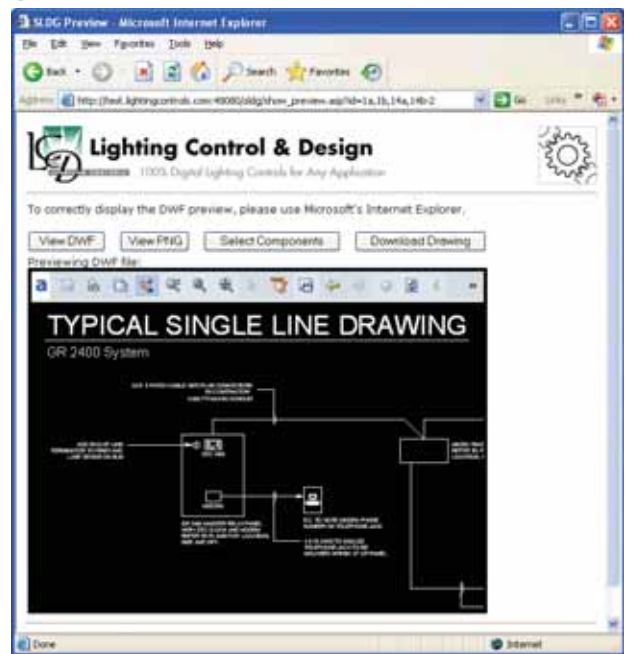


Single-Line Drawing Generator

1. Enter Your Criteria



2. Generate a Drawing



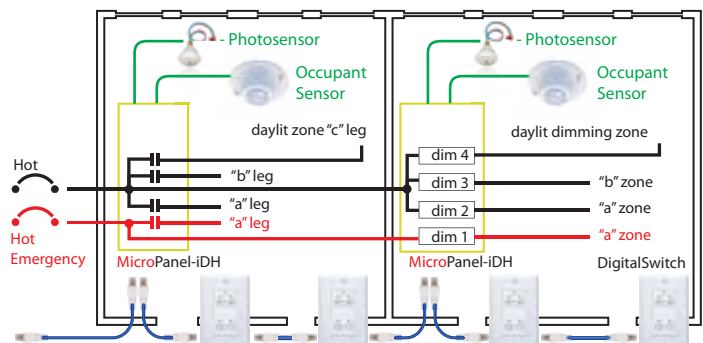
The Single-Line Drawing Generator is a web-based application that generates typical single-line drawings and details based on your criteria in AutoCAD format.

www.lightingcontrols.com/sldg

Normal & Emergency Power

The MicroPanel is ETL Listed to UL 924 (emergency systems) and may control mixed voltages (120V & 277V) and mixed sources (normal & emergency power).

In the event of a loss of normal power, emergency lighting will be switched on automatically until normal power is restored.



Lighting Control & Design, Inc., CA
www.lightingcontrols.com, (800) 345-4448