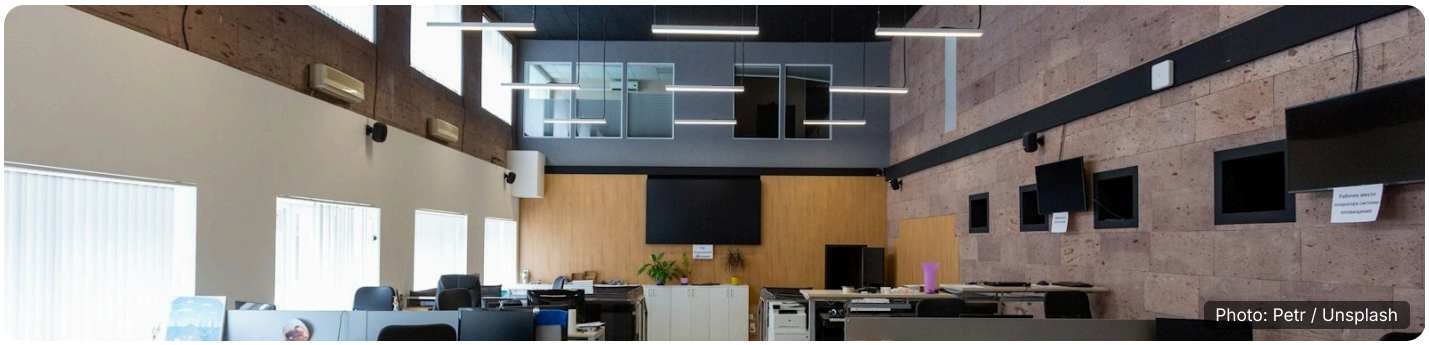
Open offices & classrooms

Zoned occupancy control with daylight harvesting at the windows

Design guide



Large rooms have two problems a single sensor can't solve: people sit still for long stretches, and the windows supply much of the light for part of the day. Each solution below splits the room into zones no larger than 600 ft², gives every zone its own occupancy control, and dims the window zone to the daylight.

600 ft²
max. zone size (IECC open plan)

20 min
max. time-out

3
solutions in this guide

Design goals

- Control zones no larger than about 600 ft² each
- Seated-level coverage wherever people work
- Daylight dimming in the zone next to the windows
- Each zone turns off or dims on its own

Solutions in this guide

A MINI sensors on dimming power packs
Low voltage · new construction

B App-configured smart sensors
No power packs · set up from a phone

C Battery-free wireless
Retrofit · no new control wiring

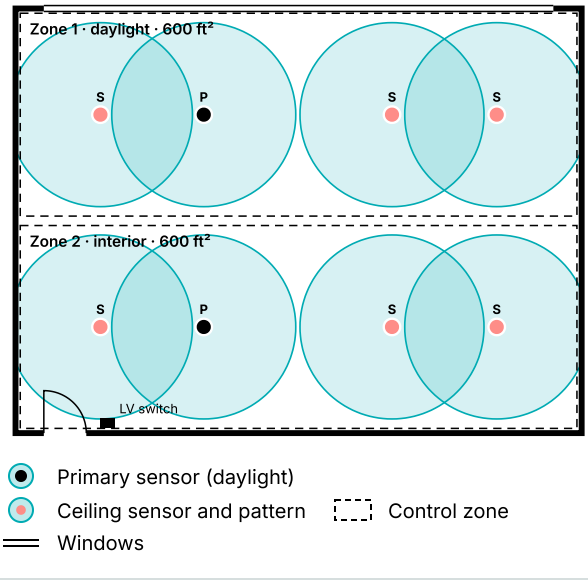
Code checklist

Requirement	Typical code target	How the solutions meet it
Control zones	Open plan offices: zones of no more than 600 ft² (IECC)	One control group per zone in every solution
Shutoff / partial-off	Off, or reduced by at least 80% (IECC) / 50% (90.1), within 20 min of the zone emptying	Time-out 20 min or less; unoccupied level set per zone
Restricted auto-on	Manual-on or auto-on to no more than 50%	Manual switch per zone, or auto-on to a reduced level
Daylight-responsive control	Continuous dimming in primary sidelighted zones	Daylight sensor in the window zone drives 0-10V / 1–10 V dimming

Typical requirements of ASHRAE 90.1-2019 and the 2021 IECC. Local amendments and other code editions differ; the adopted code for the project governs.

A Solution A: MINI sensors on dimming power packs

Low voltage · new construction



Each zone gets a primary MINI with a daylight sensor on its own PP-DIM-J, plus secondary MINIs to extend seated coverage. A low-voltage switch per zone gives manual control.

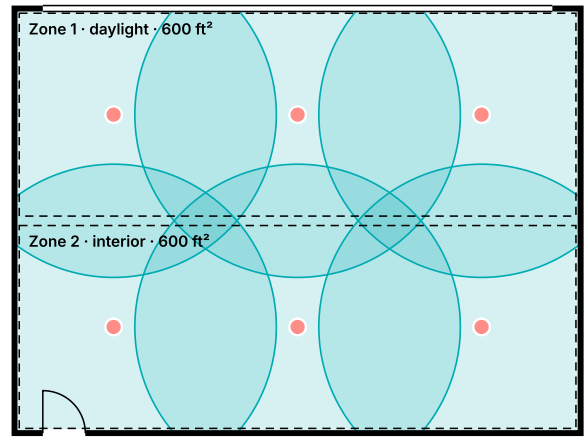
- Space MINIs about 10–13 ft apart over desks (13 ft Ø seated)
- Put the daylight primary about one-third back from the glass
- Wire secondaries to the primary with RJ-12 splitters

Qty	Model	Description
2	**MINI-P-PP-DIM-FC**	Primary with daylight sensor, one per zone
6	**MINI-S-PP-FC-IP20**	Secondary sensors, three per zone
2	**PP-DIM-J-120-277V**	Dimming power pack, one per zone
2	**LV momentary switch**	Manual control per zone

Tech sheet: ES-TS-101 / 102

B Solution B: App-configured smart sensors

No power packs · set up from a phone



DANLERS ISI ceiling sensors have a built-in photocell and 0-10V output, so each sensor dims its own fixture group. Time-out, levels and daylight targets are set from the ISI app.

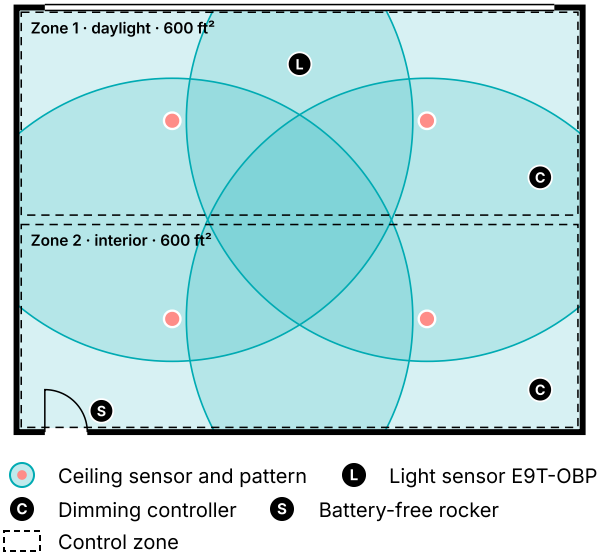
- Space ISI-CEFL sensors about 16 ft apart (16 ft Ø strong zone)
- Wire sensors with the same output in parallel to share a zone
- Power from a 12 V DC Class 2 supply (ISI-PSU12VDC)

Qty	Model	Description
6	**ISI-CEFL10V12V**	Ceiling flush sensor with photocell, 0-10V, three per zone
2	**ISI-PSU12VDC**	12 V DC supply, one per zone
—	**0-10V control wiring**	Sensor to drivers, per zone

Tech sheet: ES-TS-104

C Solution C: Battery-free wireless

Retrofit · no new control wiring



Self-powered ILLUMRA occupancy sensors and a light sensor link to one dimming controller per zone. Stick-on rockers give manual control without opening walls.

- Two E9T-OSC per zone (34 ft Ø each at 7–10 ft)
- An E9T-OBP light sensor in the window zone trims the lights
- One E9X-DUV-10VTP controller per zone, linked to its own sensors only

Qty	Model	Description
4	**E9T-OSC**	Self-powered ceiling occupancy sensors
1	**E9T-OBP**	Wireless PIR and light sensor, window zone
2	**E9X-DUV-10VTP**	20 A 0-10V dimming controller, one per zone
2	**E9T-S1A**	Battery-free rockers

Tech sheet: ES-TS-105 / 106 / 107

Design tips

- Use the seated pattern for desk areas; walking traffic is detected much farther out.
- Keep sensors away from supply diffusers; mask views into corridors and neighboring zones.
- Classrooms: put the primary or first sensor near the teaching wall, where everyone passes.

Related tech sheets

ES-TS-101 MINI ceiling & fixture sensors · **ES-TS-102** Power packs · **ES-TS-104** ISI smart sensors · **ES-TS-105** Self-powered wireless sensors · **ES-TS-106** Wireless switches & keypads · **ES-TS-107** Wireless load controllers

Starting points only: check every project against its adopted energy code, the reflected ceiling plan and current manufacturer data. Diagrams are illustrative. Send plans to info@energiocontrols.com for a project layout. Products by B.E.G., DANLERS and ILLUMRA. Photo: Unsplash License.