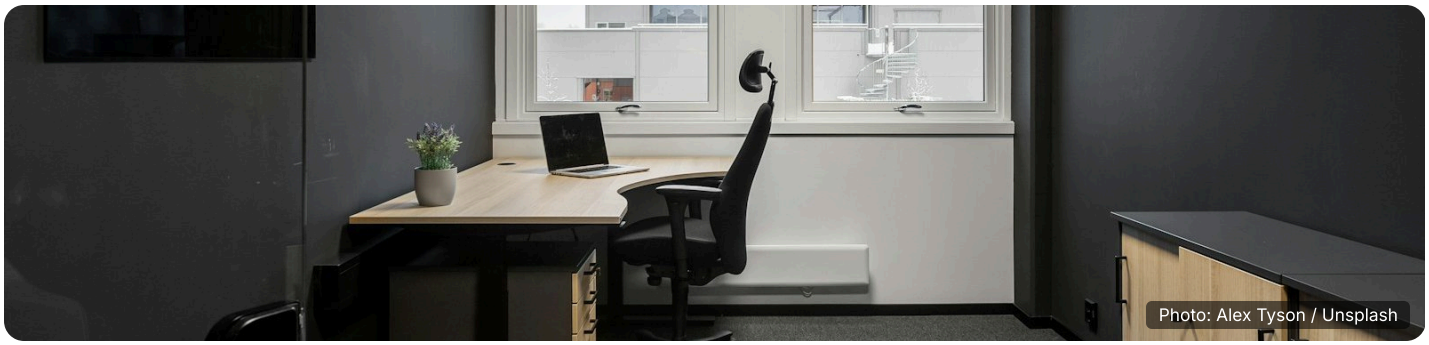
Private offices

Vacancy (manual-on) control for single-occupant rooms

Design guide



A private office is the simplest room on the drawings and the one codes look at most closely: the lights must go off on their own when the room empties, and they may not come on to full power by themselves. Three Energio Sensors solutions cover new construction, rooms where the switch location doesn't work, and retrofits with no new wire.

20 min
max. time-out to off

Manual-on
or auto-on to ≤ 50%

3
solutions in this guide

Design goals

- Manual-on, automatic-off (vacancy) operation
- Coverage of the desk, not the corridor outside
- A manual switch at the door
- Optional second relay for bi-level or a switched receptacle

Solutions in this guide

A Wall switch sensor
Line voltage · new or existing box

B Ceiling sensor + power pack
Low voltage · L-shaped or blocked rooms

C Battery-free wireless retrofit
No new wire · occupied buildings

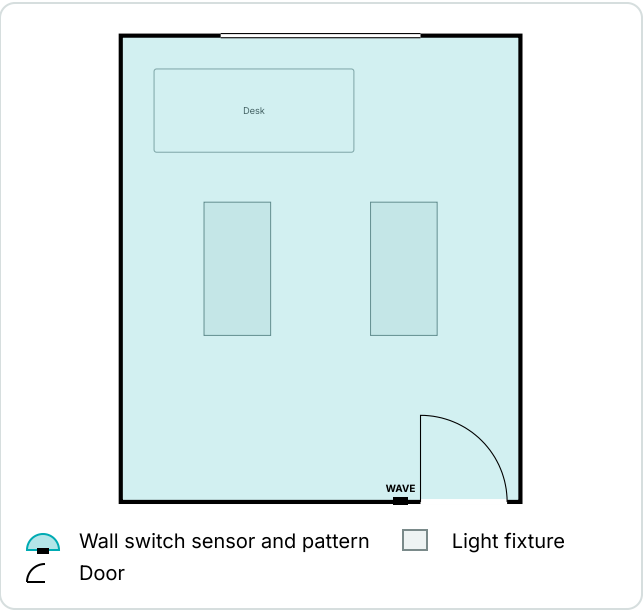
Code checklist

Requirement	Typical code target	How the solutions meet it
Automatic shutoff	Off within 20 minutes of vacancy	Sensor time-out set to 20 min or less
Restricted auto-on	Manual-on, or auto-on to no more than 50% of lighting power	Vacancy mode on every solution
Local manual control	A manual control in the room	WAVE button, low-voltage switch or battery-free rocker
Automatic receptacle control	50% of receptacles in private offices off within 20 min (ASHRAE 90.1)	Second relay (WAVE DR) or PP-A-J auxiliary relay

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: Wall switch sensor

Line voltage · new or existing box



One device replaces the light switch. The occupant presses the WAVE button to turn the lights on; the PIR turns them off after the room empties.

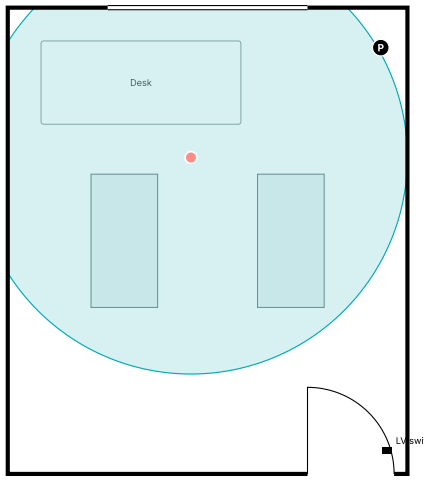
- Mount on the latch side of the door so it looks into the room
- Choose the -V model for vacancy-only operation
- Use the -DR dual-relay model for bi-level or a switched receptacle

Qty	Model	Description
1	**WAVE-PIR-V-120/277-N**	Vacancy-only PIR wall switch sensor
1	**Wall plate**	Decorator plate

Tech sheet: ES-TS-103

B Solution B: Ceiling sensor + power pack

Low voltage · L-shaped or blocked rooms



Ceiling sensor and pattern
P Power pack (above ceiling)
Low-voltage switch

A MINI ceiling sensor sees the whole desk area even when furniture blocks the view from the door. A low-voltage momentary switch gives manual-on; the power pack switches the load.

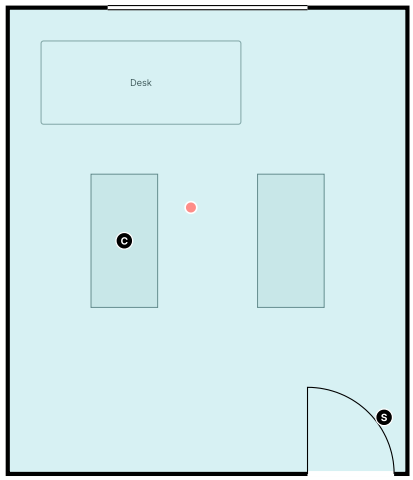
- Center the MINI over the work area, 13 ft Ø seated coverage
- Set the PP-A-J mode switch to manual (vacancy)
- Aux relay can drop a receptacle circuit or signal HVAC

Qty	Model	Description
1	**MINI-P-PP-A-FC-IP20**	Primary ceiling sensor, switching
1	**PP-A-J-120-277V**	Power pack with aux relay
1	**LV momentary switch**	Manual on/off at the door

Tech sheet: ES-TS-101 / 102

C Solution C: Battery-free wireless retrofit

No new wire · occupied buildings



Ceiling sensor and pattern
S Battery-free rocker
C Area controller

A self-powered ceiling sensor and a stick-on rocker talk to an area controller at the fixture. Nothing to fish through finished walls and no batteries to replace.

- Mount the E9T-OSC at 7–10 ft; it covers 34 ft Ø
- Stick the rocker where the switch belongs
- Land the controller in the fixture or a nearby box; set it to vacancy

Qty	Model	Description
1	**E9T-OSC**	Self-powered ceiling occupancy sensor
1	**E9T-S1A**	Battery-free rocker switch
1	**E9X-RUV-4IBTP**	20 A on/off area controller

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

Design tips

- One WAVE covers a typical private office up to about 20 ft deep.
- Use the dual-technology WAVE-DT-V where the occupant sits still for long periods.
- Keep any sensor clear of supply diffusers, heaters and direct sun on the lens.

Related tech sheets

ES-TS-103 WAVE wall switch sensors · **ES-TS-101** MINI ceiling & fixture sensors · **ES-TS-102** Power packs · **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.