Fixture-integrated sensing

Sensors built into the luminaire, in the field or at the factory

Design guide



Photo: Tsuyoshi Kozu / Unsplash

Putting the sensor in the fixture takes it off the ceiling plan: every luminaire controls itself, coverage grows with the fixture layout, and there is no separate device to locate or wire. All three solutions suit private-label Energio Lighting fixtures built with sensing at the factory.

Design goals

- One sensor per fixture, or per group wired in parallel
- Occupancy and daylight control with no ceiling devices
- Factory-installed option for private-label fixtures
- Field-installable in existing luminaires during retrofits

1 per fixture
sensor count

0-10V / DALI
outputs

3
solutions in this guide

Solutions in this guide

A Smart sensor module in each fixture
App-configured · 0-10V or DALI

B MINI sensor and power pack in the fixture
Low voltage · OEM bracket

C Networked fixture modules
INGY mesh · for networked projects

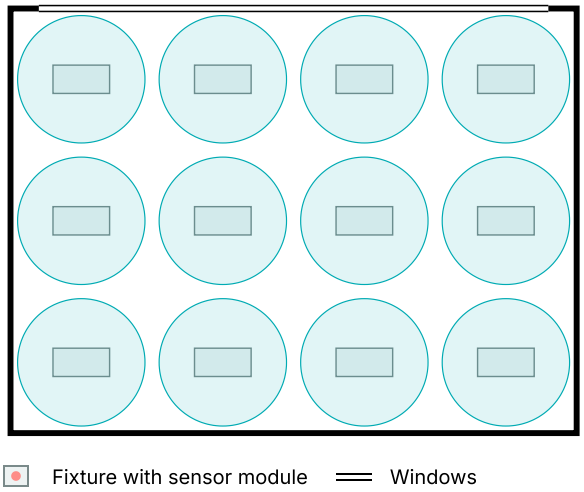
Code checklist

Requirement	Typical code target	How the solutions meet it
Shutoff / partial-off	Off or reduced within 20 min of vacancy	Each fixture's sensor time-out 20 min or less
Control zones	Zone size limits in open areas	One fixture or small group per zone is inherently within limits
Daylight-responsive control	Dimming in sidelighted and toplighted zones	Sensor photocell dims each fixture to the daylight
Restricted auto-on	Manual-on or auto-on to no more than 50% where required	Set the occupied level, or add a manual switch

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: Smart sensor module in each fixture

App-configured · 0-10V or DALI



A DANLERS ISI MOD17M module in each luminaire dims or switches that fixture from presence and daylight. Settings are made from the ISI app.

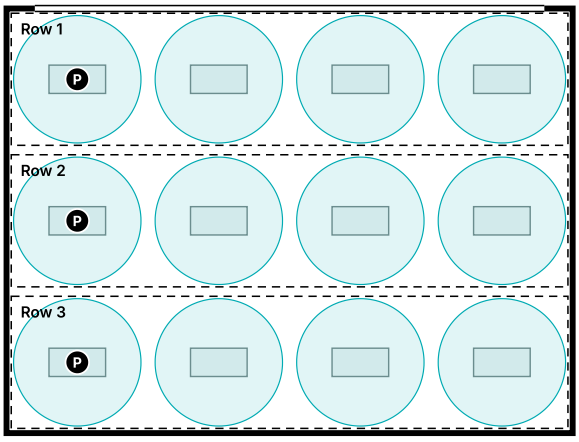
- One module per fixture, mounted where the optic doesn't shade the lens
- Wire modules with the same output in parallel to group fixtures
- 12 V DC from ISI-PSU12VDC or the driver's auxiliary supply

Qty	Model	Description
12	**ISI-MOD17M10V12V**	Luminaire sensor module, 0-10V
12	**12 V DC supply**	ISI-PSU12VDC or driver auxiliary

Tech sheet: ES-TS-104

B Solution B: MINI sensor and power pack in the fixture

Low voltage · OEM bracket



A MINI primary and power pack mount in or on the luminaire with B.E.G.'s OEM bracket; secondary MINIs in neighboring fixtures extend one zone across a row.

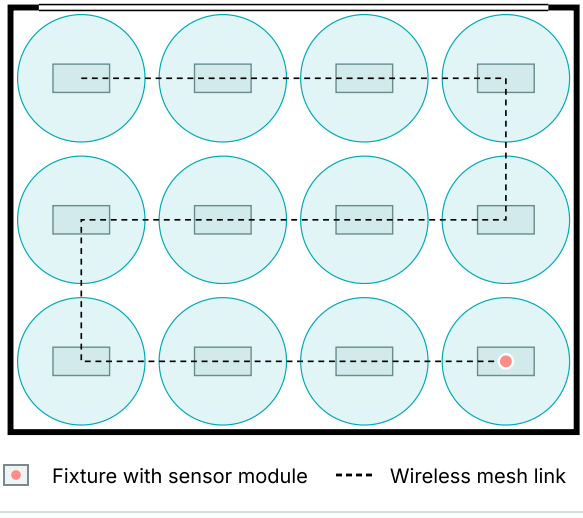
- One primary + PP-DIM-J per row or zone
- Secondary MINIs in the other fixtures of the row
- IP65 MINI suits wet and high-humidity fixtures

Qty	Model	Description
3	**MINI-P-PP-DIM-FC**	Primary sensor, one per row
9	**MINI-S-PP-FC-IP20**	Secondary sensors in the rest of the row
3	**PP-DIM-J-120-277V**	Dimming power pack, one per row

Tech sheet: ES-TS-101 / 102

C Solution C: Networked fixture modules

INGY mesh · for networked projects



When the building runs a networked system, INGY MOD17M modules build sensing into each fixture and share it across the network for grouping, scenes and reporting.

- Same MOD17M format as the stand-alone module
- Grouping and settings are done in the network's set-up tool
- Specify at fixture order for factory install

Qty	Model	Description
12	**INGY-MOD17M10V12V**	INGY luminaire sensor module, 0-10V
12	**12 V DC supply**	Per DANLERS wiring guide

Tech sheet: ES-TS-202

Design tips

- Specify modules at fixture order so they are installed and tested at the factory.
- Choose the output (0-10V or DALI) to match the driver.
- Keep modules out of the driver's and LED board's heat path.

Related tech sheets

ES-TS-104 ISI smart sensors · **ES-TS-101** MINI ceiling & fixture sensors · **ES-TS-102** Power packs · **ES-TS-202** INGY modules & thermal sensor

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.