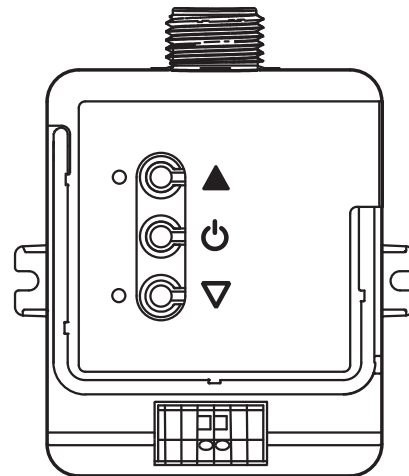# Vive™ PowPak® Fixture Controls

The PowPak® wireless fixture control is a radio-frequency (RF) device that controls either the Lutron® EcoSystem® or 0–10 V=== electronic fluorescent ballasts and LED drivers (depending on model). This is based on RF input from Pico® remote controls, Radio Powr Savr™ wireless sensors, or wired inputs from the PowPak® fixture sensor. The control module mounts to a fixture or a U.S.-style junction box. Communication with RF input devices is accomplished using Lutron® Clear Connect® RF Technology. See **Applications and Selecting the Right Control** for more details on selecting the appropriate controls for your application.

The PowPak® fixture sensor (optional) mounts to the ceiling or to a fixture and measures light in the space (daylighting) while detecting people moving within an area to determine passive infrared occupancy. The sensor controls the lights to balance light level in the space, combining convenience, exceptional energy savings, and ease of installation. The sensor contains two wires which connect to the PowPak® wireless fixture control.

These products are also compatible with the Vive™ hub which enables a simple setup process using a standard web browser on any Wi-Fi enabled phone, tablet or computer. It also enables control and monitoring of all Vive™ devices. The Vive™ hub can be added at any time and preserves existing system setup by extracting local programming from each device. For a complete list of features supported with the Vive™ hub, see specification submittal 369902.

Note for Replacement: FCJ<u>S</u> - the "S" model can replace the non-"S" model.

PowPak® Wireless Fixture Control

Models Available

Model Number	Description
FC-SENSOR	PowPak® fixture sensor (occupancy)
FC-VSENSOR	PowPak® fixture sensor (vacancy) [1]
FCJS-010	PowPak® wireless fixture control for 0-10 V=== ballasts and drivers
FCJS-ECO	PowPak® wireless fixture control for EcoSystem® ballasts and drivers

[1] Lights do not turn on automatically with a vacancy sensor. A Pico® remote control is needed to turn on the lights.

Job Name:	Model Numbers:
Job Number:	

Applications and Selecting the Right Control

Suggested applications:

PowPak® Fixture Sensor:

– Great for individual control in cubicles

– Maximize energy savings (fixtures in unoccupied spaces do not turn on)

– Simplifies the determination of what's needed for a job

Radio Powr Savr™ sensors:

- Cover large areas with a single sensor

- Sensor can mount anywhere in the space

- In order to turn on and off multiple fixtures together (known as "grouping"), a Radio Powr Savr™ occupancy sensor must be used.

- In order to have a row of fixtures dim up or down together in response to daylight, a Radio Powr Savr™ daylight sensor must be used.

Daylighting:

Radio Powr Savr™ vs. PowPak® Fixture Sensor

PowPak® wireless fixture controls have two options for daylighting. The PowPak® fixture sensor can be used for simple, out-of-the-box daylighting. The Radio Powr Savr™ wireless daylight sensor can be added for the ability to adjust and fine tune daylighting settings.

• Radio Powr Savr™ daylight sensors provide the ultimate flexibility in daylighting: target light level (tuning) and gain value (through calibration) can be adjusted independently. Daylighting rows/zones can be setup so that multiple fixtures dim in unison (also known as "grouping"). Radio Powr Savr™ daylight sensors can be placed anywhere since they are completely wireless, and performance can be optimized through placement and fine tuning.

• PowPak® fixture sensors are an easy way to add simple daylighting to a localized area without requiring setup. PowPak® fixture sensors are quick to install with a two-wire connection, and calibrate automatically. Each PowPak® fixture sensor should be mounted within 2 ft (0.6 m) of the fixture it is controlling.

The following can be used per each PowPak® wireless fixture control:
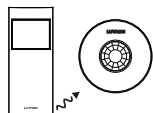
Wired:

- Maximum of 1 PowPak® fixture sensor.

  Note: Only 1 PowPak® wireless fixture sensor can be wired per PowPak® fixture control. Grouping more than 1 PowPak® wireless fixture sensor to control a group of PowPak® wireless fixture controls requires adding a Vive™ hub.
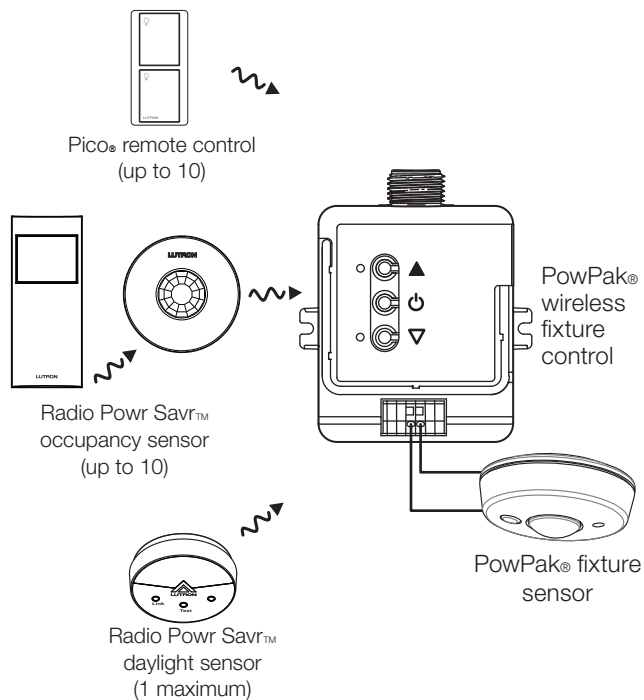
Wireless:

- Maximum of 10 Pico® remote controls

- Maximum of 10 Radio Powr Savr™ occupancy sensors

- Maximum of 1 Radio Powr Savr™ daylight sensor

Pico® remote control (up to 10)

Radio Powr Savr™ occupancy sensor (up to 10)

PowPak® wireless fixture control

PowPak® fixture sensor

Radio Powr Savr™ daylight sensor (1 maximum)

Notes:

- When using a Radio Powr Savr™ daylight sensor in conjunction with both a PowPak® wireless fixture control and PowPak® fixture sensor, the Radio Powr Savr™ daylight sensor will provide the daylighting input to the control module, and the PowPak® fixture sensor daylighting input will be ignored.

- When using a Radio Powr Savr™ occupancy sensor in conjunction with both a PowPak® wireless fixture control and PowPak® fixture sensor, occupancy data from both sensors is used; either one detecting occupancy will turn the lights on, and the lights turn off only when both sensors have gone vacant (no longer detect occupancy).

- Grouping can be accomplished by following the basic procedure described in the install guide found at www.lutron.com for putting multiple control modules into association mode. This enables a Radio Powr Savr™ occupancy sensor or Radio Powr Savr™ daylight sensor to group and control more than one fixture together.

- Radio Powr Savr™ occupancy sensors can be used with the PowPak® fixture sensor to add coverage area.

Job Name:	Model Numbers:
Job Number:	

Specifications

PowPak® Fixture Sensor

Regulatory Approvals
- FC-SENSOR, FC-VSENSOR:
  – cULus Listed
- Complies with requirements for use in other spaces used for environmental air (plenums) per NEC® 2014 300.22(C)(3)

Power/Load
- Operating voltage: 12 V⎓
- Operating current: 25 mA
- IEC SELV / NEC® Class 2

Environmental
- Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0%–90% humidity, non-condensing; indoor use only

Warranty
- 5 Year Limited Warranty. For additional Warranty information, please visit: www.lutron.com/TechnicalDocumentLibrary/Sensor_Warranty.pdf

Wiring
- Sensor wires are IEC SELV / NEC® Class 2 rated

Settings
- Occupancy sensor timeout (fixture sensor): 15 minutes
- Utilizes a green laser pointer (by others, not a Lutron® product) to associate Pico® remote controls and Radio Powr Savr™ sensors to PowPak® wireless fixture controls via RF. See Lutron® application note #407 (www.lutron.com/GreenLaserAppNote) for more information.
  – Green laser specifications:
    · Wave output: constant
    · Wavelength: 532 nm
    · Output power: 5 mW maximum
- 2-wire connection between a PowPak® fixture sensor and a PowPak® wireless fixture control
  – The wires are interchangeable to eliminate miswiring
  – The sensor comes with 2 ft (0.6 m) of wires
  – If hanging pendant fixtures, the maximum wire length between fixture sensor and fixture control is 12 ft (3.7 m). Sensor should be mounted no more than 2 ft (0.6 m) from the fixture.

Sensor

Green Laser
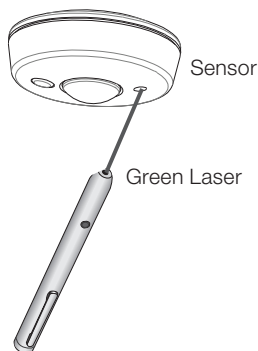
WARNING **DANGER**

Eye injury and/or blindness hazard; avoid direct eye exposure to laser beam.
- Use of laser pointer is NOT recommended for use with Lutron® products located near reflective surfaces.
- Do NOT aim or shine laser pointers at any person, pet, vehicle, or aircraft directly, or through reflection by mirrors or other shiny surfaces. Do NOT view the laser beam through binoculars, magnifying glass, or other optical devices.
- Do NOT allow children to use laser pointers.
- **Read and follow the laser pointer manufacturer's instructions on safe use.** In the event of injury, get medical attention immediately.

LUTRON® SPECIFICATION SUBMITTAL   Page

| Job Name: | Model Numbers: |
| Job Number: | |

Specifications *(continued)*

PowPak® Fixture Sensor (continued)

Features

Occupancy Sensor:

- Passive infrared motion detection with exclusive Lutron® XCT™ Technology for major and minor motion detection.
- 360° field-of-view.
- Up to 300 ft² (27.9 m²) major motion coverage and 150 ft² (13.9 m²) minor motion coverage.

Daylight Sensor:

- Daylight sensor has simple, automatic calibration out-of-the-box.
- Designed to give a linear response to changes in perceived light level.
- Detects ambient light level changes from 0 to 1600 lx (0 to 150 fc).
- Daylight compensation through Lutron® reliable closed loop proportional control. For more information, see www.lutron.com/TechnicalDocumentLibrary/daylighting_white-paper.pdf

Specifications *(continued)*

PowPak® Wireless Fixture Control

Regulatory Approvals

- Title 20/24 certified lighting control device. Complies with Title 20 and Title 24 section 110.9
- Enables compliance with lighting control requirements in ASHRAE 90.1 and IECC
- Complies with requirements for use in other spaces used for environmental air (plenums) per NEC® 2014 300.22(C)(3)
- Listed in accordance to CAN/ULC S102.2-2010 with a Flame Spread Rating of 0 and a Smoke Developed Classification of 40, with a minimum spacing of 6 ft (1.83 m) off center
- FCJS-010, FCJS-ECO:
  – cULus Listed
  – IC (Canada)
  – NOM Certified
  – FCC Approved. Complies with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rule

Power/Load

- Operating voltage: 120–277 V∼ 50/60 Hz
- Power measurement: Accurate to ±2%, or 0.5 W, whichever is higher
- 1 A switching maximum, electronic ballast or LED driver for 0–10 V⎓ load
- No more than 3 drivers or ballasts
- Standby power consumption < 1 W
- Works with all ballasts and drivers that provide a current source compliant to IEC 60629 Annex E.2, and whose inrush current does not exceed NEMA410 standards for electronic ballast/driver
- FCJS-010
  – Controls up to 6 mA of 0–10 V⎓ controlled fixtures.
    · Controls up to 3 ballasts or drivers (IEC 60929 Annex E.2 requires the ballast or driver to limit the current draw to 2.0 mA maximum)
  – 0–10 V⎓ control link on FC-010 automatically sources or sinks to third-party fixtures
- FCJS-ECO
  – Connects to Lutron® EcoSystem® LED drivers or ballasts.
    · Controls up to 3 EcoSystem® ballasts or drivers
    · Multiple ballasts or drivers control only one combined zone of lighting.

Environmental

- Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0%–90% humidity, non-condensing; indoor use only

Wiring

- Control wires can be run as either Class 1 or Class 2
  – FCJS-010 (gray and violet wires)
  – FCJS-ECO (violet wires)

※**LUTRON**® SPECIFICATION SUBMITTAL

Page

Job Name:	Model Numbers:
Job Number:	

Specifications *(continued)*

PowPak® Wireless Fixture Control (continued)

Warranty

- Please visit: www.lutron.com/TechnicalDocument Library/369-119_Wallbox_Warranty.pdf

Frequency

- 431.0– 437.0 MHz (U.S.A., Canada)

Range

- Wireless sensors and controls must be located within 60 ft (18 m) line of sight, or 30 ft (9 m), through walls, of the associated control module.
- Utilizes Lutron® Clear Connect® RF Technology

Settings

- Low-end trim adjustment (default is 1 V$\rightleftharpoons$ or ballasts/drivers minimum for Lutron® EcoSystem®).
- High-end trim adjustment (default is 10 V$\rightleftharpoons$ or 100 % for Lutron® EcoSystem® ballasts/drivers).
- Minimum Light Level Setting (optional). Certain applications, such as hallways, may require that the lights never turn off. For these areas, select the minimum light level option and the load will lower to programed low-end level.
- Daylighting dims lights down to OFF. Occupancy sensor must go unoccupied (vacant) in order for the PowPak® fixture sensor sensor to turn the lights off.
- Occupied light level can be changed via the Radio Powr Savr™ occupancy sensor.
- Favorite light level can be set using a Pico® remote control.
- Power failure memory: If power is interrupted, connected loads will return to the previous level prior to interruption
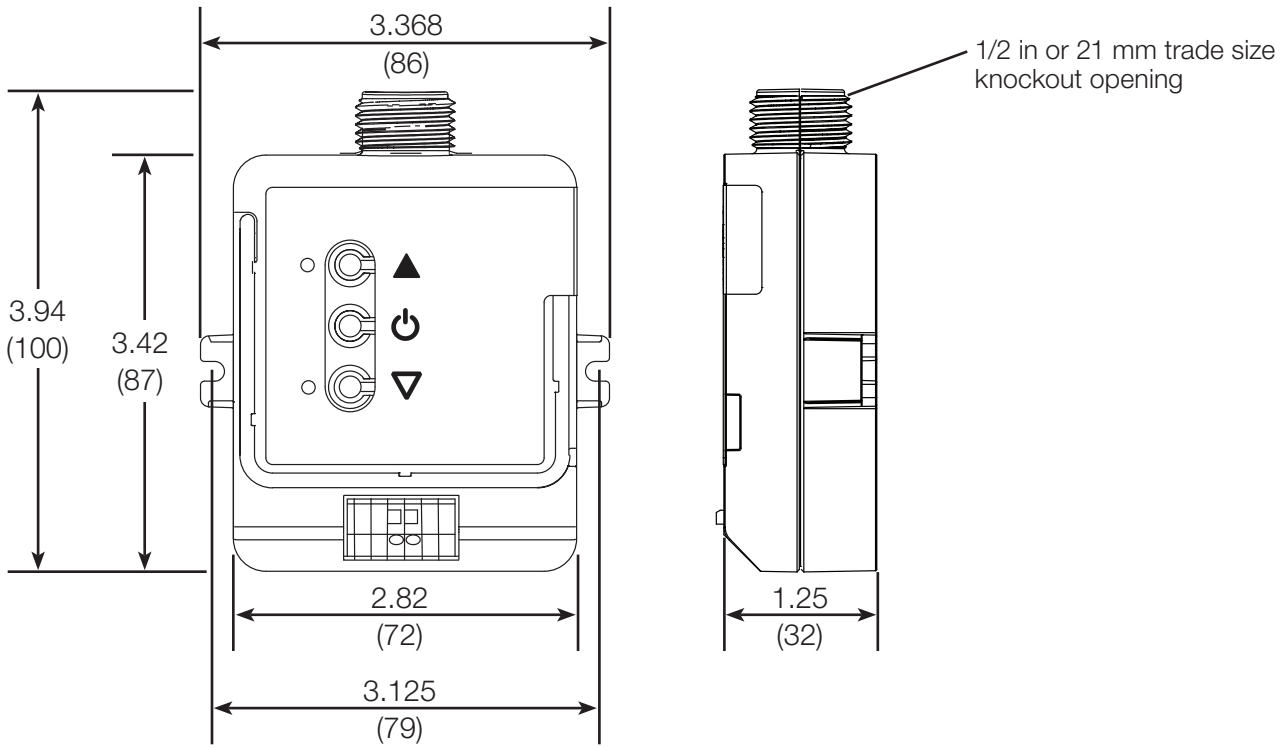
Mounting

- Wireless fixture control mounts to a fixture or a U.S.-style junction box through a standard 1/2 in (12.7 mm) knockout. **Note:** The wireless fixture control needs to be accessible for some programming steps. Record where it is mounted so that it can be easily located later.

Job Name:	Model Numbers:
Job Number:	

Dimensions

Wireless Fixture Control

Measurements shown as: in (mm)

3.368
(86)

3.94
(100)

3.42
(87)

2.82
(72)

3.125
(79)

1.25
(32)

1/2 in or 21 mm trade size
knockout opening

Sensor

Measurements shown as: in (mm)

1.5
(38)

0.65
(17)

22 AWG
(0.33 mm²)
solid wire

24
(610)

Job Name:	Model Numbers:
Job Number:	

Sensor Detection Range

Ceiling

9 ft
(2.7 m)

Recommended sensor
mounting height:
8-12 ft (2.4-3.7 m)

Floor

| 15 ft | 9 ft | 3 ft | 0 | 3 ft | 9 ft | 15 ft |
| (4.6 m) | (2.7 m) | (0.9 m) | | (0.9 m) | (2.7 m) | (4.6 m) |

300 ft² (28 m²) major motion

150 ft² (14 m²) minor
motion when mounted
on a 9 ft (2.7 m) ceiling

15 ft
(4.6 m)

9 ft
(2.7 m)

9.8 ft
(3 m)

3 ft
(0.9 m)

0

3 ft
(0.9 m)

6.9 ft
(2.1 m)

9 ft
(2.7 m)

15 ft
(4.6 m)

| 15 ft | 9 ft | 3 ft | 0 | 3 ft | 9 ft | 15 ft |
| (4.6 m) | (2.7 m) | (0.9 m) | | (0.9 m) | (2.7 m) | (4.6 m) |
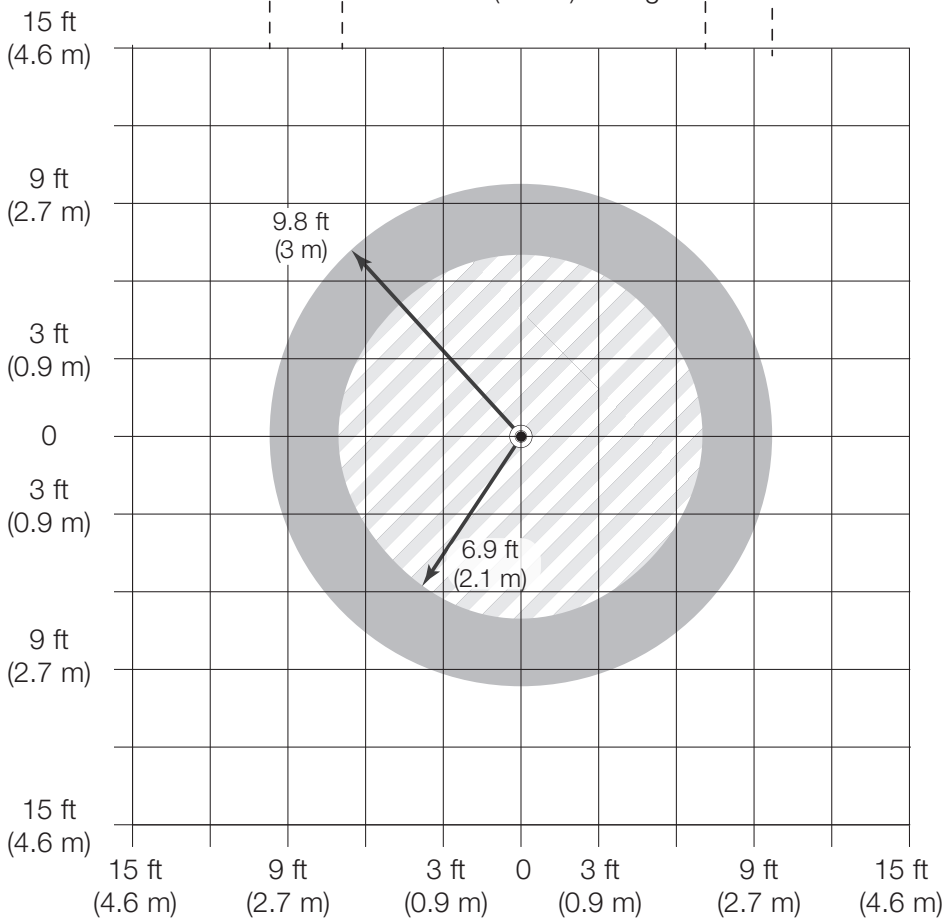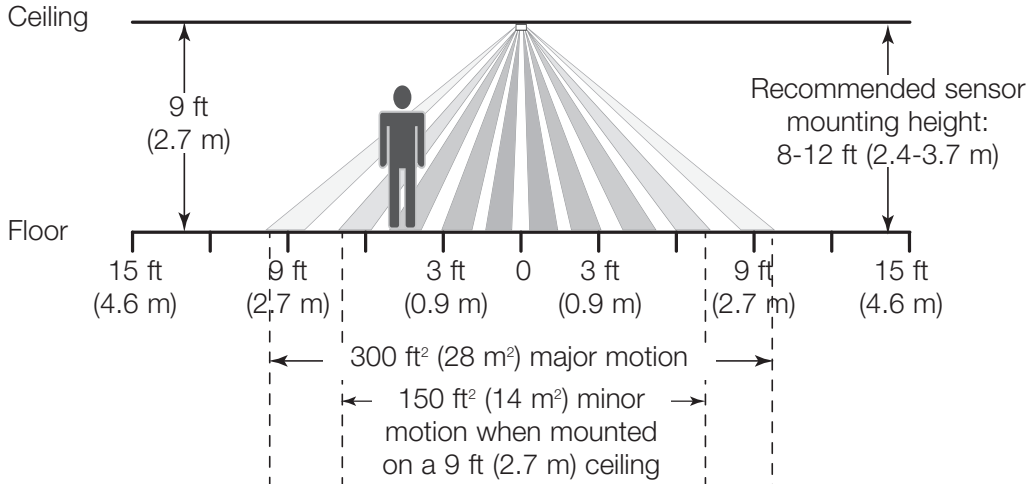
Definitions:

Major motion: Movement of a person entering or passing through an area.

Minor motion: Movement of a person occupying an area and engaging in small activities (e.g., reaching for a telephone, turning the pages of a book, opening a file folder, picking up a coffee cup).
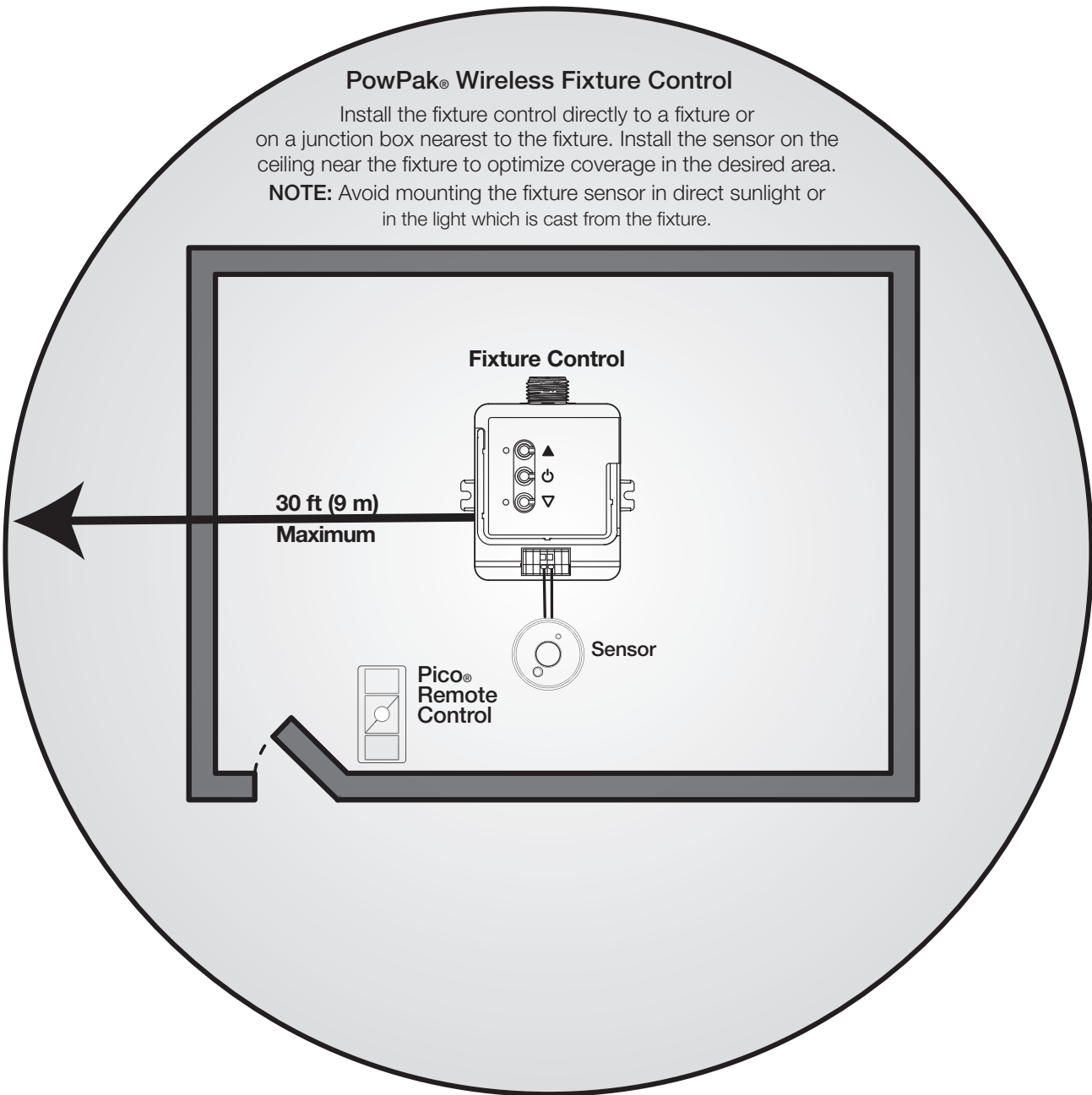
Job Name:	Model Numbers:
Job Number:	

Range Diagrams

PowPak® Wireless Fixture Control

Install the fixture control directly to a fixture or
on a junction box nearest to the fixture. Install the sensor on the
ceiling near the fixture to optimize coverage in the desired area.
NOTE: Avoid mounting the fixture sensor in direct sunlight or
in the light which is cast from the fixture.

Fixture Control

30 ft (9 m) Maximum

Sensor

Pico® Remote Control

NOTE: Wireless sensors and controls must be located within 60 ft (18 m) line of sight, or 30 ft (9 m), through walls, of the associated control module.

Job Name:	Model Numbers:
Job Number:	