LOW VOLTAGE CONTINUOUS DIMMING DALI OUTDOOR PHOTO/MOTION PIR SENSOR

FDP-301

PRODUCT OVERVIEW

The FDP-301 sensor works with intelligent drivers utilizing the DALI 2 protocol or 0–10v (with Dim OFF) drivers. This sensor family features bi-directional communication between sensor and control device, enabling connected systems for smarter, more energy efficient and data-driven applications. The FDP sensor series is compatible with various intelligent drivers such as SR compatible drivers. By connecting to an intelligent driver, the FDP sensor series does not need its own power supply which will save the OEM cost and space inside the fixture.

Suitable Applications: Parking Lots, Plazas, Pedestrian Street Lighting, Public Parks.

Not suitable for Roadway Detection

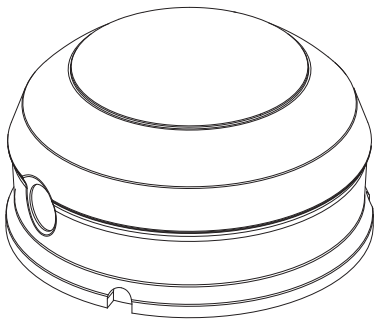
Configuration is possible through the Sensor Configuration App for iOS® or Android® (Search for Wattstopper Sensor Configuration App) or through compatible DALI devices and outdoor lighting controllers conforming to DiiA standards (103 and 303*) remotely.

Bluetooth communication ranges can vary depending on the device, as well as mobile carrier. Wattstopper recommends devices with Bluetooth 5.0. iPhone 8 and Samsung Galaxy S8 and later devices are recommended for optimal performance.

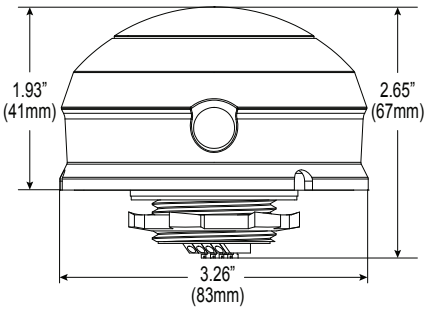
GET IT ON Google Play

Download on the App Store

FDP-301 sensor

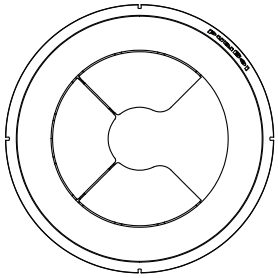


FDP-301 dimensions



FDP-M1 sensor mask

The included FDP-M mask provides the ability to limit coverage areas for example, in hallways or multi-use environments. The mask has three 90° sections. One or two of the sections can be removed, to provide different coverage patterns. Snap the mask onto the lens and rotate to the desired position.



MODELS

FDP-301, 12-20 VDC (Input Voltage)

SPECIFICATIONS & FEATURES

- Threaded mount design installed into standard 1" KO's (use with high bays, parking lots and street parking)
- DALI Bus Current Consumption: 16 mA max.
- 2 Len Configurations
  L7: 40ft (12m)
  L2: 8–15ft (2.4–4.6m)
- Remote setup and adjustment with the Wattstopper Sensor Configuration App
- Adjustable high and low modes (high: 0 to 100%, low: off, 0 to 100%)
- Hold time (1 second, 0 seconds to 42 minutes)
- Adjustable cut off delay (none, 1 to 60 minutes, 1 to 5 hours)
- Adjustable sensitivity/service mode (low, med, max; on-fix, off-fix)
- Photocell: (Enable/Disable, 1 to 250 fc) †
- Adjustable ramp and fade times (1 to 60 seconds)
- Operating temperature: -40°F to +167°F (-40°C to +75°C)
- Storage temperature: -40°F to +167°F (-40°C to + 75°C)
- Operating Humidity: 5% to 95% non-condensing
- Weight: 2.12 oz (60 grams)
- UL and cUL listed, UKCA and CE certified
- IP65 rated
- Five year warranty

MATERIALS

Polycarbonate, flame retardant
UV resistant
Impact resistant (IK09 rated)
Recyclable
Meets materials restrictions of RoHS

FACTORY DEFAULTS

High mode:	100%
Low mode:	40%
Time delay:	5 minutes
Cut off:	Disabled
Setpoint:	Disabled
Sensitivity:	Max
Ramp up time:	Disabled
Fade down time:	Disabled
Photocell On/Off:	Disabled

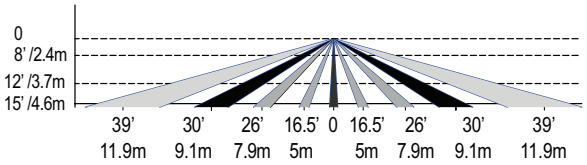
† The photocell can be configured between 1 to 250 fc. The light sensor can read up to 1,116 fc.

* DALI 303 features are continually released. Please consult Wattstopper for a list of current features.

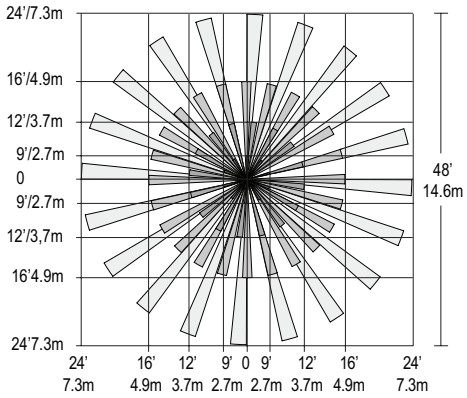
COVERAGE

FDP-301-L2

The FDP-L2 is designed for mounting at heights between 8′ to 15′. It provides a 48′ diameter coverage area when mounted at a height of 8′, or a 78′ diameter coverage area at 15′.

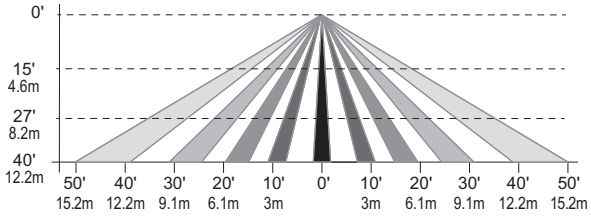


Top coverage pattern @8ft.

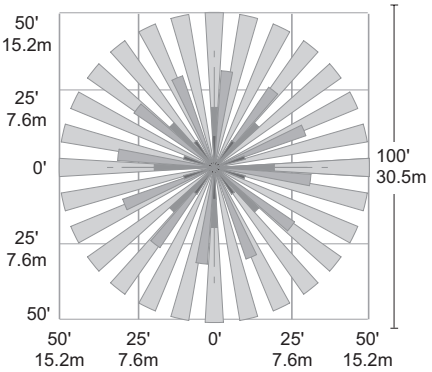


FDP-301-L7

The FDP-L7 has a lens that covers a 100' diameter area at a height of 40'.

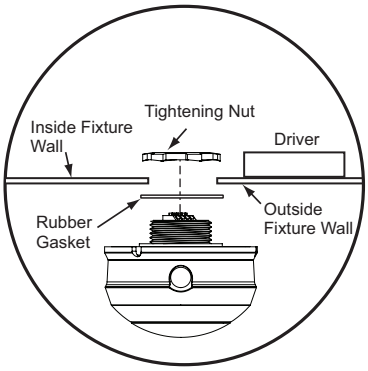


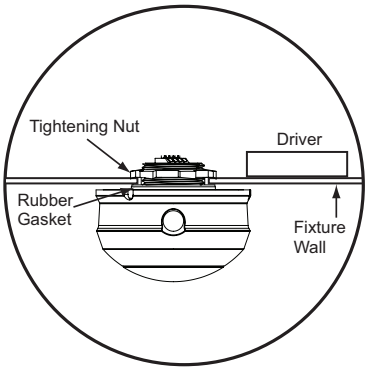
Top coverage pattern @40ft.



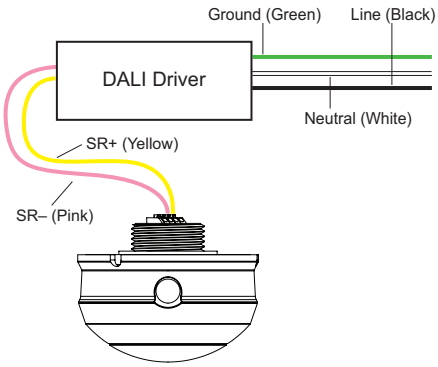
INSTALLING THE FDP-301 SENSOR IN A LIGHT FIXTURE

1. Determine an appropriate mounting location inside the light fixture minimizing the electric light contribution to the sensor's photocell. Allow a minimum distance of 0.2" (5.1mm) from the wiring end of the sensor to the wall of the fixture.
2. Drill a hole 1.30" (33.0mm) in diameter through the sheet metal in the bottom of the fixture.
3. Add the rubber gasket to the threaded collar, and install the sensor face down, parallel to the mounting surface. Ensure the rubber gasket touches the inside surface of the fixture. Install the plastic nut securely against the fixture to a torque of 25–30 in-lbs.
4. Connect wires as shown in wiring diagrams.
5. Restore power from the circuit breaker.
6. Commission the sensor settings using the Wattstopper Sensor Configuration App (including setting a recommended password).

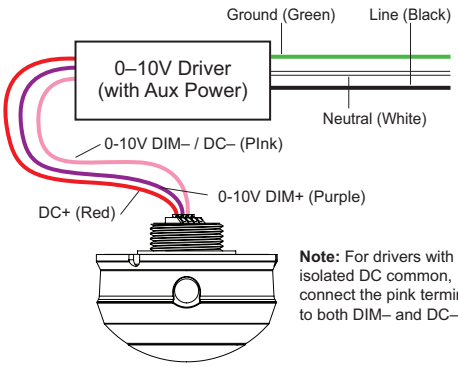




DALI Wiring



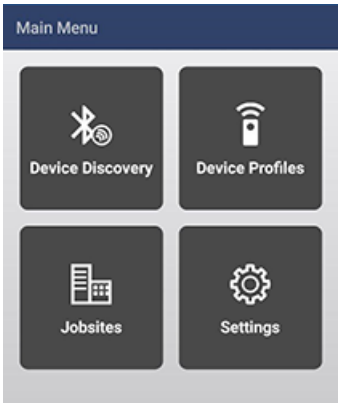
0-10V Wiring



Note: For drivers with an isolated DC common, connect the pink terminal to both DIM– and DC–.

NOTE: Per UL, the 0-10V negative dimming wire color has been changed from gray to pink.

ADJUSTABLE CONTROL PARAMETERS



The Sensor Configuration App is a convenient tool for setting up FDP-301 sensors. Adjustable settings can be changed as needed for specific applications.

Maximum recommended distance between mobile device running Sensor Configuration App and the sensor: 50 ft.

Bluetooth communication ranges can vary depending on the device, as well as mobile carrier. Wattstopper recommends devices with Bluetooth 5.0. Iphone 8 and Samsung Galaxy S8 and later devices are recommended for optimal performance.

NOTE: DALI drivers and 0-10V drivers use some different parameters. If you create an FDP profile, both the DALI and 0-10V parameters will appear in the profile. However, once an FDP-301 sensor is wired and powered up, when the sensor is discovered, the app will know which version is being used. If you view the parameters for that sensor, the app will display only the parameters appropriate for that particular sensor. Both sets of parameters are described below.

Fixed Mode Parameters

1. High Mode: When the sensor detects motion the dimming control output ramps up to the selected HIGH light level (default is 100%).
2. Low Mode: After the sensor stops detecting motion and the time delay expires the dimming control output fades down to the selected LOW light level (default is 40%).
3. Time Delay: The selected time period that must elapse after the last time the sensor detects motion for the electric lights to fade to LOW mode (Default: 0-10V – 5 min; DALI – 15 min).
4. Cut Off: The time period that must elapse after the lights fade to LOW mode and the sensor detects no motion for the electric lights to turn OFF (default is 1 hour).
5. Sensitivity: The response of the PIR detector to motion within the sensor's coverage area (default is High).
6. Setpoint: When enabled, the selectable ambient light level threshold that will hold the electric lights off or at LOW level when the sensor detects motion (default is Disabled).

   The Auto option invokes an automatic calibration procedure to establish an appropriate setpoint based upon the contribution of the electric light. As part of this procedure, the controlled load is turned on for two minutes to warm up the lamp, and then switched off and on eight times, terminating in an off state. After this process, a new setpoint value is automatically calculated.
7. Hold Off: The selectable ambient light level threshold that will hold the lights off or at LOW level when the sensor detects motion (default is Disabled). A switch allows you to Enable or Disable this feature. If enabled, select Auto Format or Custom Value. If Custom is selected, the Range is 1 fc to 250 fc.

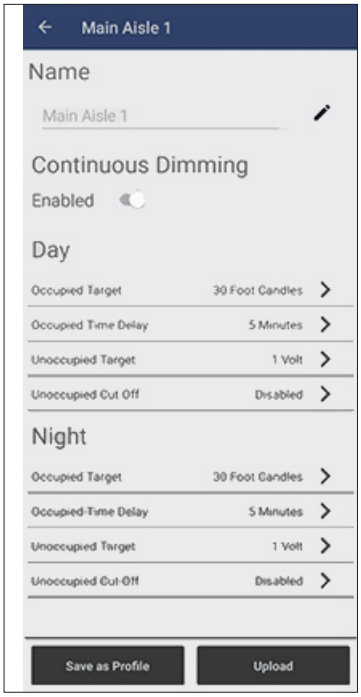
   The Auto option invokes an automatic calibration procedure to establish an appropriate setpoint based upon the contribution of the electric light. As part of this procedure, the controlled load is turned on to warm up the lamp, and then it is switched off and on eight times, terminating in an off state. After this process, a new setpoint value is automatically calculated. During this time, communication to the FSP-3x1 is disabled.
8. Ramp Up Time (0-10V only): Time period for light level to increase from LOW to HIGH (default is Disabled; lights switch instantly).
9. Fade Down Time (0-10V only): Time period for light level to decrease from HIGH to LOW (default is Disabled; lights switch instantly).
10. Photocell On/Off: When enabled, the sensor will force the load OFF after the light level has exceeded the selected photocell setpoint for at least a minute. It will also force the load ON when the light level goes below the setpoint, even if no motion is detected (Default is disabled).

Example of parameters for 01-10V wiring

Once ON (initially at High), the load will dim to Low following the Time Delay, and to OFF following the Cut Off time. To ensure dusk to dawn control, Cut Off must be disabled.

The photocell On/Off setpoint is automatically set to maintain a deadband of at least 10 fc above the Hold Off Setpoint to prevent cycling if the two features are used together.

11. Fade Time (DALI only): Time period for the light level to decrease from the current level to the new level
12. Fade Rate (DALI only): The number of steps per second that are performed to manually adjust the light level (default is 358 steps/second



Continuous Dimming Mode Parameters

If Continuous Dimming is enabled, the fixed parameters are replaced by Continuous Dimming parameters. There are two sets of parameters—one for day and one for night.

Occupied Target: During the day/night, and while the area is occupied, the sensor will attempt to maintain the light level specified. The range is 0-250 fc (default is 30 fc).

Occupied Time Delay: The time period that must elapse after the last time the sensor detects motions before the lights to fade to the specified 'Unoccupied Target' or 'Unoccupied Fixed Level' (default is 5 min).

Unoccupied Target: During the day/night, and while the area is unoccupied, the sensor will attempt to maintain the light level specified. The range is 0-250 fc (default is 30 fc). The Fixed 0-10V Level may be used instead.

Unoccupied Cut Off: The time period that must elapse after the last time the sensor detects motion before the lights to fade to Day/Night Unoccupied Target (default is 5 min).

TESTING THE FDP-301 WITH THE SENSOR CONFIG APP

1. The first time the sensor is installed and powered, there will be 50 seconds of warm-up. The load will turn OFF after the warm-up time if no motion is detected. To test functionality further, proceed to steps below
2. Log in to the Sensor Config App, then tap **Device Discovery**. The **Devices** screen opens and displays a list of sensors along with their signal strength.
3. Tap a sensor. The loads connected to that sensor will flash ON and OFF, to give a visual indication of which sensor you are communicating with. After a few seconds, the **Device Security** screen opens.
4. Turn the **Select Jobsite** switch Off. This allows you to test the sensor without having to store a password in the sensor. Then tap **Submit**.
5. Tap the **Controls** option. The parameters on this page are used for testing the sensor. Additionally, the current amount of light registered by the light level sensor, as well as the sensor's firmware version is displayed.
6. Tap **Test Mode**. This mode shortens timeouts for High/Low and Cut Off, to allow quick verification of settings. You can set the length for test mode (default is 3 minutes). Range: 1 to 5 minutes. Tap Start to enter test mode.
7. If you tap **Dimmer Level**, the screen shows the current dimming level (from 0V to 10V). You can temporarily change the dimming level for testing purposes by dragging the slider or tapping the "+" or "–" buttons. The level will change to the specified amount for several seconds, then revert to the previous amount.

Turn Select Jobsite Off

Select Controls

Controls Menu for Testing

SEQUENCE OF OPERATION

1. **Dimming:** When motion is detected within the sensor's coverage area, the sensor sends a signal to ramp the load up to the selectable High Mode level unless the ambient light level is higher than the selected setpoint. When no motion is detected for the duration of the time delay setting (factory preset at 5 minutes), the lights will go to the selectable Low Mode level based on the signal from the sensor. Low light level can be variable based on ambient light levels to satisfy daylight harvesting requirements dictated by local energy codes. If desired, a cut off time delay (factory preset at 1 hour) will trigger to eventually turn the lights OFF.
2. **Non dimming:** When motion is detected within the sensor's coverage area, the sensor sends a signal to turn the load ON unless the ambient light level is higher than the selected setpoint. When no motion is detected for the duration of the time delay setting (factory preset at 5 minutes), the lights will go OFF based on the signal from the sensor.
3. **Dusk to dawn control:** When photocell on/off is enabled, and the ambient light falls below the photocell setpoint, the sensor ramps the load up to the selectable High Mode level. If no motion is detected for the duration of the time delay setting (factory preset at 5 minutes), the lights will go to the selectable Low Mode level. If the cut off time delay is disabled, the load will remain on, at High or Low level, based on motion detection, until the ambient light increases above the photocell setpoint.

ORDERING INFORMATION

Catalog #	Master Pack Details					Inner Pack Details				
	Master Pack Quantity	Case dimensions (inches / mm)			Weight (lbs. / kg)	Inner Pack Quantity	Case dimensions (inches / mm)			Weight (lbs. / kg)
		Length	Width	Height			Length	Width	Height	
FDP-301SR-L2	50	22.6 / 575	19.4 / 494	10.4 / 264	22.2 / 10	N/A				
FDP-301SR-L7	50	22.6 / 575	19.4 / 494	10.4 / 264	22.2 / 10	N/A				

Catalog #		Color	Description	Input Voltage	Power Consumption from DALI Bus
☐	FDP-301-L2-W	White	Fixture mount, passive infrared motion sensor, low voltage 360° lens, maximum coverage 48' diameter from 8–15' height	12-20 VDC	16 mA
☐	FDP-301-L2-TG	Traffic Gray			
☐	FDP-301-L7-W	White	Fixture mount, passive infrared motion sensor, low voltage 360° lens, maximum coverage 100' diameter from 40' height	12-20 VDC	16 mA
☐	FDP-301-L7-TG	Traffic Gray			

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