

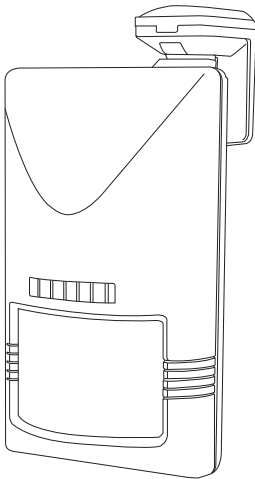


Specializing in Building Sensors

## OS-551DT

Low Voltage Dual-Tech Occupancy Sensor

## INSTALLATION INSTRUCTIONS



Indoor dry location use only

Utilisation a L'interieur Uniquement

### ⚠ WARNING & CAUTION

- Turn power OFF at circuit breaker before connecting Power Pack or Sensor.
- Wire all Class 2 circuits using types CL3, CL3P, CL3R, or equivalent conductors.

### ⚠ AVERTISSEMENT & PRUDENCE

- Coupez l'alimentation au disjoncteur avant d'installer Power Pack ou capteurs.
- Câble toute classes 2 circuits CL3, CL39, CL3R ou conducteur équivalent.

## OVERVIEW

The OS-551DT is a low voltage dual technology occupancy sensor designed to signal the occupancy status for area lighting, or HVAC control, for energy efficient building management. The sensor combines a cutting edge Passive Infrared (PIR) sensor, a state-of-the-art High Frequency Doppler (HFD) sensor, and advanced signal processing firmware into one unit to perform superior occupancy sensing capability. The OS-551DT is ideal for the areas where motion may not be easily detectable by a single technology sensor.

The OS-551DT is operated by 24V low voltage power. When PIR sensor detects the presence of occupant within its coverage, the sensor will activate a form C dry contact for a period of OFF-delay time as programmed. The delay timer will be reset if any motion is detected by either PIR or HFD sensor before delay time elapsed. An ON-delay can be enabled to prohibit short-cycle restart or unwanted load activation if the sensor is used to control HVAC operation. Both ON and OFF delays can be easily set via two rotary DIP switches on board. A potentiometer allows the HFD sensitivity adjustment. The sensor output can be set to inhibit when ambient light level is higher than the threshold programmed. The ECG analog output is available for Continuous Dimming of your lighting via a 0-10V control.

This sensor offers numerous control options which can be enabled, or disabled via a 6-pole DIP switch on board. 3 LED's are available to indicate the sensing status which can be disabled if necessary. A built-in buzzer can be enabled to provide audible Delay-End Warning (DEW) at the end of OFF-delay. The SmartDelay can be enabled to automatically adjust the OFF-delay based on the duration of previous occupancies. Walk-Through mode can be enabled to turn the light off 3 minutes after the area is initially occupied but with no motion detected in the next 30 seconds. The FORCE-OFF delay can also be applied if HFD sensor may detect the out-of-range motions thus result in unwanted OFF-delay extensions. The sensitivity of PIR sensor can be reduced for harsh environment.

### Federal Communication Commission Interference Statement FCC ID: VECB190

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

#### Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Install the sensor at least 1ft. away from any occupant.

## APPLICATION NOTES

1. PIR sensor is more sensitive to the movements “crossing” the detection zones than “toward” or “away” the sensor unit. Avoid placing the sensor in line with the path of occupant, if possible. In general, mounting the sensor at corner area gives better detection.
2. PIR sensor cannot “see” the movements behind obstacles, such as furniture, shelf, glass or partitions. As a general rule, ensure to place the sensor at where the occupant could have clear view of the sensor.
3. HFD sensor may penetrate through certain types of non-metallic partition material (glass, plaster, plywood...etc) and detects the traffics outside of desired range. Ensure to adjust the HFD sensitivity to achieve optimal detection range.
4. Place the sensor at least at 5 ft. (1.5m) away from air supply duct and fluorescent lighting to avoid false activating.
5. For open office areas with partition which could block the sensor view to occupant movements, it is recommended to place the sensors over the intersection of multiple workstations. For large areas of open office or space, place multiple sensors so that there is overlap coverage with each adjacent sensor.

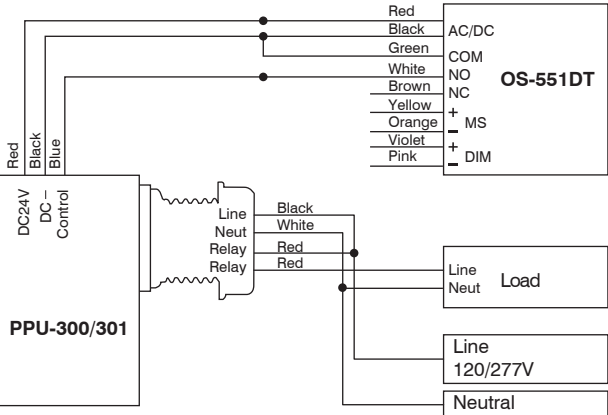
## SPECIFICATIONS

Power supply	22~26 VAC/DC
Current drain	24/50 mA @ 24 VDC, vacant/occupied
Output contact	Form C, max. 5A resistive load
Infrared sensor	Dual element pyroelectric sensor
HFD sensor	10.525GHz DRO type, patch antenna
Detectable speed	0.33 ~ 10 ft/sec. (0.1 ~ 3 m/sec.)
Mounting height	6 ~ 12 ft (1.8 ~ 3.6 m)
Detection range	110°, 50 ft @ 77°F (25°C)
ON-delay setting	0(disabled)/5"/10"/20"/30"/1'/3'/5'
OFF-delay setting	10"/1'/3'/5'/10'/20'/30'/60'
ALS level setting	4-level, 2~2,000 lux
Manual override	Momentary contact
FORCE-OFF delay	5 times of OFF-delay set, if enabled
Walk-thru mode	3 min. if no motion within 30 sec.
Op. humidity	Max. 95% RH
Op. temperature	-14°F ~ 122°F (-10°C ~ 50°C)
Dimensions	4.4"x2.6"x1.8" (112 x 66 x 45 mm)

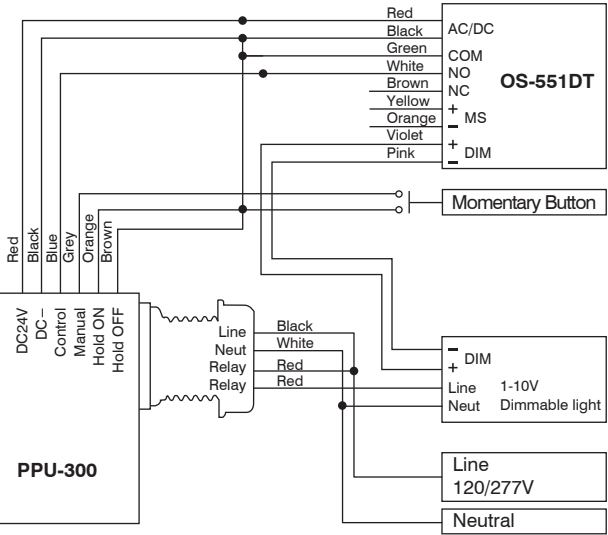
## WIRING DIAGRAM

The OS-551DT comes with pigtail wires for connection to the corresponding wires of IR-TEC power pack or BMS control. Each IR-TEC PPU-300/301 power pack can supply power for up to 3 OS-551DT sensors. When more sensors are connected, multiple power packs may be required.

### A. Auto-ON/Auto-OFF



### B. Manual-ON/Auto-OFF and Auto-DIM with PPU-300



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This product may be covered by one or more U.S. patents or patent applications. Please visit [www.irtec.com](http://www.irtec.com) for more information.

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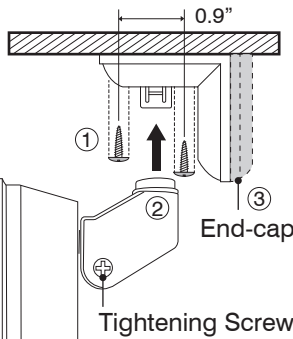
MOUNTING THE SENSOR

The OS-551DT comes with the bracket assembled which allows it to be mounted on wall or ceiling with two screws. To achieve optimal coverage, sensor angle can be adjusted horizontally or vertically by loosening the tightening screw on the bracket. Ensure to tighten the tightening screw to hold the sensor position.

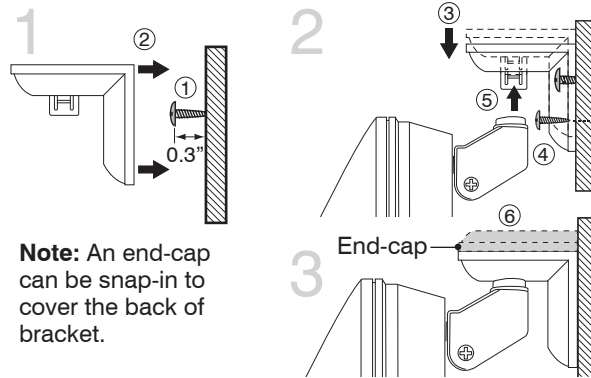
- 1. Mount the bracket base to the mounting surface with screws.
- 2. Drill a proper hole on the mounting surface to lead the sensor wires through.
- 3. Refer to the wiring diagram and connect the sensor wires to the power pack or BMS control.

Ceiling mount

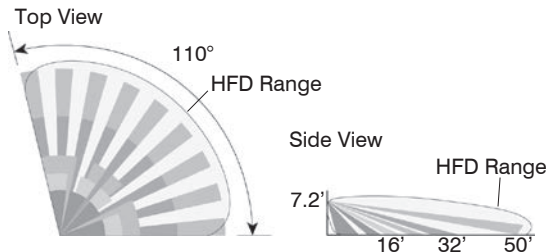
It is best to leave approximately 6 inches between the sensor and the wall so that the tightening screw can be accessed.



**Wall mount** Mount the first screw with approximately 0.3" head-off the wall for ease of base mounting.



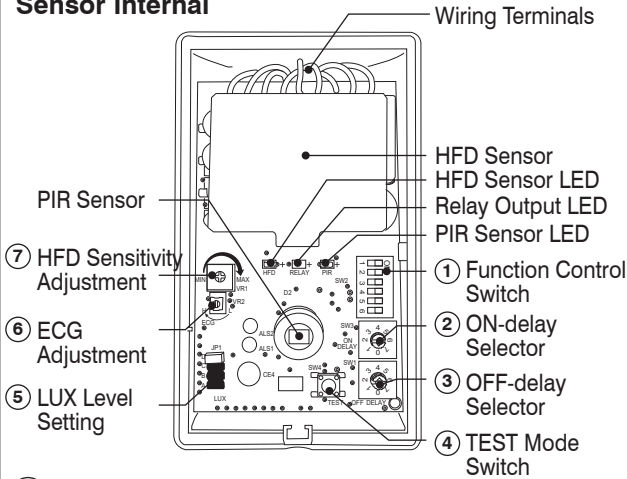
DETECTION PATTERNS



SENSOR SETTINGS

The OS-551DT offers numerous function controls and operation settings available on board. To set the sensor operation, remove the front cover by loosening the locking screw at the sensor bottom.

Sensor Internal



1 Function Control Switch

The Function Control Switch is a 6-pole DIP switch for controlling the sensor operations as below.

No.	Control	OFF	ON
1	LED indication	disabled	enabled
2	Buzzer output	disabled	enabled
3	SmartDelay	disabled	enabled
4	Walk-Through	disabled	enabled
5	FORCE-OFF	disabled	enabled
6	PIR sensitivity	Normal	Low

1. LED indication

3 LED's are available on sensor board to indicate the status of sensor operation. The LEFT one indicates HFD sensor detection, the RIGHT one indicates PIR sensor detection, and the CENTER one indicates sensor output active.

2. Buzzer output

The buzzer on board can be enabled to provide audible indication for Delay-End Warning (DEW) and TEST mode.

3. SmartDelay

SmartDelay can be enabled to automatically adjust the OFF-delay from 3 to 30 minutes according to the duration of previous occupancies. The OFF-delay time will be constantly calibrated based on the history data collected.

4. Walk-Through

With Walk-Through (WT) mode enabled, the sensor will deactivate its relay 3 minutes after the area is initially occupied, if no activity is detected after the first 30 seconds. If activity is detected within the first 30 seconds, the selected OFF-delay applies.

**NOTE:** The WT mode will not operate if OFF-delay is set shorter than 3 minutes. ON-delay will be inhibited if the WT mode is enabled.

5. FORCE-OFF

As HFD sensor may detect traffics behind certain type of partition and result in unwanted OFF-delay extension. Thus, the FORCE-OFF function can be enabled to disengage the relay at 5 times of OFF-delay set, if only the HFD sensor detects the movements during OFF-delay duration.

6. PIR sensitivity

Lower PIR sensitivity can be achieved by setting the DIP switch to ON position to eliminate unwanted activation.

2 ON-delay Selector

ON-delay is the time given for sensor to avoid unwanted load activation caused by short occupancy or pass through traffics. Factory set ON-delay is disabled at "0".

3 OFF-delay Selector

OFF-delay is the duration that relay contacts remain engaged after the last motion sensed. Factory set is 10 minutes at "4".

Set	0	1	2	3	4	5	6	7
ON Delay	0	5"	10"	20"	30"	1'	3'	5'
OFF Delay	10"	1'	3'	5'	10'	20'	30'	60'

4 TEST Mode Switch

Pressing this button will activate a 5-minute TEST mode (buzzer will beep twice). During TEST mode, the ON-delay will be inhibited and the OFF-delay will be shortened to 10 seconds for test convenience. Sensor will return to normal operation automatically after times up.

5 LUX Level Setting

4 different LUX levels can be set by placing the jumper head at respective position, to inhibit the relay output if ambient light level is higher than the threshold set.

A	10 lux (approx. 1 fc)	C	50 lux (approx. 5 fc)
B	30 lux (approx. 3 fc)	D	24H (ALS disabled)

6 ECG Adjustment for Continuous Dimming

The ECG analog output is available for Continuous Dimming of your lighting via a 0-10V control. This miniature potentiometer can be adjusted to regulate the output of connected ECG lighting fixture to the desired level to allow continuous dimming over a smaller range.

7 HFD Sensitivity Adjustment

HFD sensor could detect the out-of-view traffics behind partition. Ensure to adjust the potentiometer counterclockwise to reduce the sensitivity if any of the following situations occurred;

- 1. Walk around outside of desired range and the LEFT LED is ON.
- 2. If the sensor is installed in a small room, and the LEFT LED remains ON all the time even with no any movement outside of desired range.

TESTING THE SENSOR

After the sensor is mounted and wiring completed, it is necessary to conduct a walk test to verify sensor operation normal and detection coverage optimum. When power is first applied to the sensor, the RIGHT LED will blink about 1 minute for PIR sensor to warm up. The sensor will be ready for testing after warm up expires.

Walk around within the desired coverage and observe the LED indicators. The CENTER one should remain ON as long as the relay is activated. The RIGHT one will light on when PIR sensor detects the movement, and the LEFT one will light on when HFD sensor detects.

Adjust the PIR sensor angle or apply the masking label supplied on the lens to block the unwanted detection. Adjust the HFD sensitivity as above-instructed to achieve optimal coverage.

