Datasheet

People counting sensor

An intelligent sensor device to accurately count people entering or leaving a room or area

The OfficeSense People counting sensor is an intelligent sensor device designed to accurately count people entering or leaving an area. It is placed above door openings, therefore only counting people entering or leaving a room and effectively ignoring passers-by and filtering other false positives – or negatives.

Sensor data is securely sent by using standard LoRaWAN wireless network technology.

The OfficeSense people counting sensor is developed as an 'overhead' counting device, installed above a door opening. Its combination of high-quality hardware and intelligent software result in accurate and reliable counting in both directions, even while walking closely together.

The sensor is equipped with several sophisticated features by default, including:

1. Only people going through the door are counted, not those passing by or standing close to the door for any reason
2. Door swings are nullified by periodic and automated installation height calibration
3. False-positive or -negative measurements (if any) are auto-corrected periodically, e.g. during night-time
4. Sending of absolute and relative counts for use in groups of sensors, e.g. for counting in rooms with multiple entrances
5. Configurable parameters enable fine-tuning according to local situation

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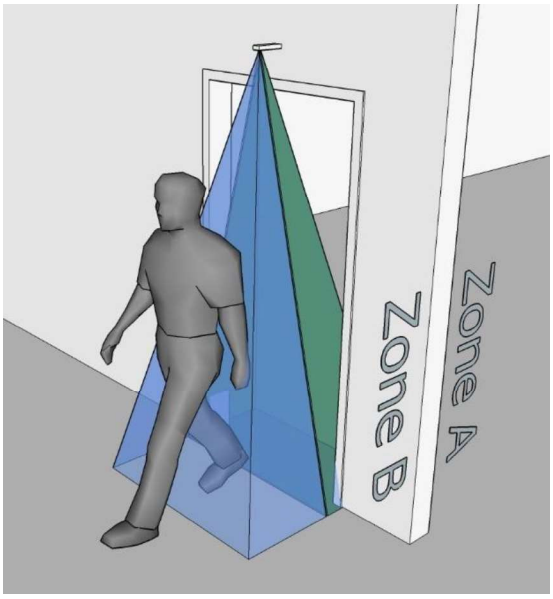
Design considerations

The design of the OfficeSense sensor products is a combination of reliable and first-class hardware and intelligent software that enables you to use the people counter effectively, efficiently and at a low cost.

By default, the sensor is optimized for regular office environments and it can be remotely configured to transmit updates in a defined time interval and/or when a certain amount of people have been counted, thus preserving bandwidth, data processing capacity and storage.

Detection and counting

The people counting functionality is based on a person crossing two different zones, zone A and B. After entering zone A, and then B, a person is counted as coming in after having left zone B. The same applies in the reverse direction for going out.



The benefit of this principle is that any person just leaning inwards is not counted, neither those people walking by, while not entering the room.

Installation and use

The sensor device is optimized for use above door openings with a maximum width of 1 meter. The sensor device can be installed right above the door, preferably at a height of between 2.40 and 2.70 meters to avoid tampering. It can be installed at the ceiling, or on the wall above the door by means of a bracket (included).

The sensor is powered by a micro-USB charger with a cable length of 2 meter (included).

Counter updates are sent by configurable time interval (every n minutes) and/or by every n counts.

Over the Air (OTA) Configurations

With the Over the Air Configurations option it is possible to adjust the behaviour of the sensor according to your own use case. Default settings have been optimized to accommodate most use cases.

Examples of configurable parameters are LoRa credentials, heartbeat intervals and application switches like sending time interval and n count interval.

Remote Monitoring

Parameters like the sensor ID, sensor data, sensor type, hardware version, software version, and many more can be retrieved and used for remote monitoring purposes.

Security

The sensor device itself is protected by erasing the firmware image on any attempt of tampering.

Wireless communications are encrypted with two unique keys, one for network level communications, the second one on application level. This prevents a hacker from gaining access to device communications and its (sensor) data.

Every sensor data message includes a message counter. This counter is used by the network to detect and prevent replay attacks and preventing the attacker from overloading the system. Security keys are renewed every (default) 2000 messages to make communications even more secure. Every (default) 12 hours the sensor transmits a heartbeat message which needs to be acknowledged by the server. If this acknowledgement is absent for (default) three attempts, the sensor will perform a new join request, enabling the sensor to renew the session keys and will reconnect to the network.

Privacy

The sensor device only measures counting of people and does not recognize any individual person or register personal data.

Caution

The OfficeSense sensors may be damaged by improper storage, handling, and battery orientation. The sensor components are particularly sensitive to external force, so please handle the sensor device with care.

Specifications

Functionality	LoRaWAN Class A, people counter
People counting sensor	Laser-assisted Time-of-Flight detection with Field of View of 27°
Detection area	Typically 100~120 cm width, dependent on installation height
Lighting conditions	Works in various ambient lighting conditions (dark to bright, high/low contrast)
Mounting height	210 to 270 cm
Power supply	Micro USB charger, cable length 2 m (included)
Power consumption	5V, <1A
Frequency plan	EU868, US915, IN865 (AU915, AS923) (*The band used depends on deployment region, contact your distributor for more information)
Recommended installation location	Indoor at the wall above a door opening, recommended height between 2.40-2.70 m (bracket included)
Dimensions	116 x 40 x 20 mm (4,56 x 1,57 x 0,79 in) (LxWxH), excl. bracket
Processor	STM32L0, ARM Cortex-M0+
Weight	<0,3 kg
Included accessories	Power adapter and mounting bracket

Declaration of Conformity

Hereby, the manufacturer declares that OfficeSense sensor device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. The product has been certified to meet the requirements of these standards and the requirements mentioned in the report means presumption of conformity in accordance with Radio Equipment Directive – 2014/53/EU.

Legal Note

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Customer Support

Users of OfficeSense hardware can receive assistance by contacting their sales representatives or by contacting technical support at info@head.nl

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