

Space Utilization Measurement with SENSE SENSOR

Overview

The Sensor unit is a small, discrete, easy to affix, standalone wireless device which uses a dedicated stand-alone network to gather utilization data via a series of passive infrared signals.

The key components listed below are combined to create a wireless mesh network on the client's site to capture, store and transmit occupancy data to the Sense servers.



Sense
Occupancy Sensor



Sense
Repeater

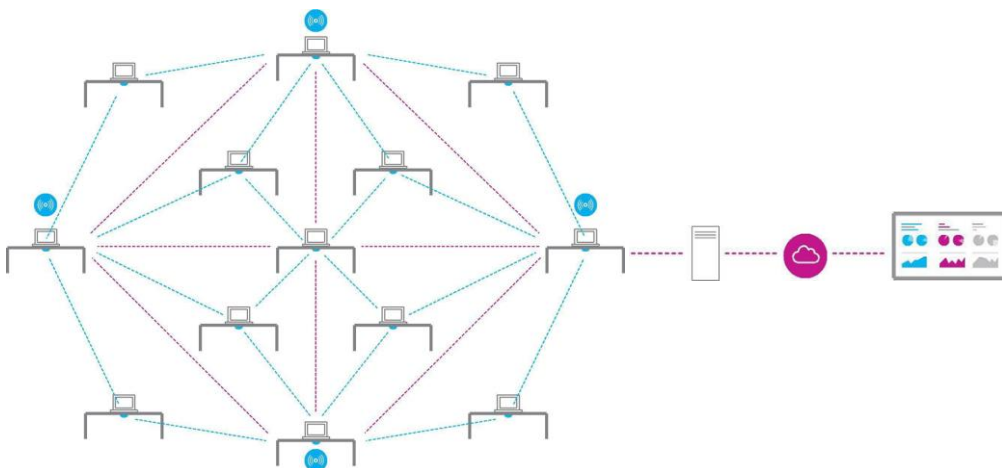


Sense
Gateway/Data Collector

The **Sense Occupancy Sensor**, **Sense Repeaters** and **Sense Gateway** combine to create a secure, robust wireless, self-healing, multi-hop, mesh network using IEEE 802.15.4 standard.

Sense occupancy sensors are permanently collecting motion activity and at pre-determined intervals will wake the radio component of the device. The Sensor will connect to its closest repeater or gateway and transmit the collected data.

All data that is collected at the Gateway / Data collector is then sent over the internet to the Sense hosted environment using Web service calls and XML over HTTP.



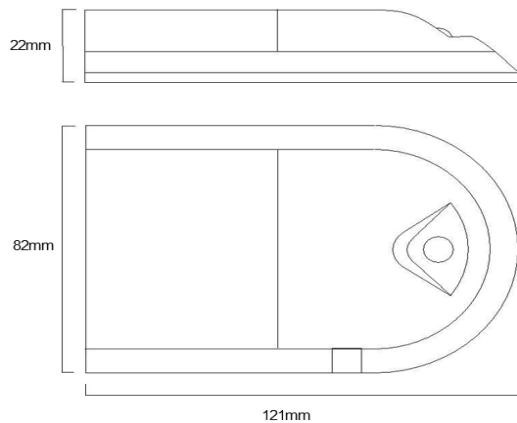
Connectivity

The Sense gateway can be connected via a 3G wireless network connection although for large deployments a fixed line is recommended. The gateway needs to connect to the internet to transmit its collected data using HTTP/ HTTPS on port 80 or 443.

Security

Even though the data transmitted across the wireless network does not contain any sensitive information all data is AES 128-bit encrypted.

Data transmitted to the Sense Servers uses HTTPS on port 443 to protect the data. This data is a combination of ID and reference numbers and does not contain any data directly decipherable to the customer or their location.



Key Features

- Fast and simple installation, and low-cost, designed for single, small or large scale occupancy sensor networks
- Watchdog for automatic recovery
- Simple to mount using high performance self-adhesive pad
- Compact low-profile enclosure
- Internal tamper switches for security, with real-time reporting to management dashboard
- Low-cost yet powerful, IEEE 802.15.4 standards based wireless occupancy sensor
- Integrated dual element PIR (Passive Infrared Detector)
- Sense reports delivered with 64-bit unique serial number, battery level, wireless signal strength and node diagnostic data
- 2 internal LED indicators for set-up, diagnostics and network joining
- 1 button for network join and validation to gateway – internal to device, hidden to avoid unintentional tampering

Wireless Networking

- Secure, robust, wireless, self-healing, multi-hop, mesh network
- Network, device and service discover
- Packet duplicate filtering
- Very high reliability through automatic retries
- IEEE 802.15.4 standard compliant on-chip transceiver/modem
- 2.4 GHz ISM Band operation, 16 channels
- 32-bit ARM processor on each sensor
- 128 Kbyte serial FLASH memory
- 96 Kbyte SRAM
- 80 Kbyte ROM
- On-board 2 kHz oscillator for wake-up timer.
- Wake-up through programmable timer, external real-time interrupts, or ADC timer