

# Product Details: Doc

## Function:

- Communications gateway
- Environmental parameters measurement

## Typical use:

- Gateway for Pebble occupancy sensors
- Measure environmental wellness of indoor work environments

## Operation:

- Environmental data is recorded continuously
- Data from Pebbles received at 15 minute intervals
- Pebble occupancy data and environmental data is transmitted to cloud-based Solutions Hub
- Transmission takes place at predetermined intervals (standard 15 minutes)
- The transmission interval configurable based on requirement
- Data Buffering prevents data loss when connectivity is disrupted

## Dimensions:

100mm x 90mm x 25mm

## Weight:

70g

## Views:



## Measures:



Occupancy



People  
Counting



CO2



TVOC



Temperature



Humidity



Ambient  
Sound

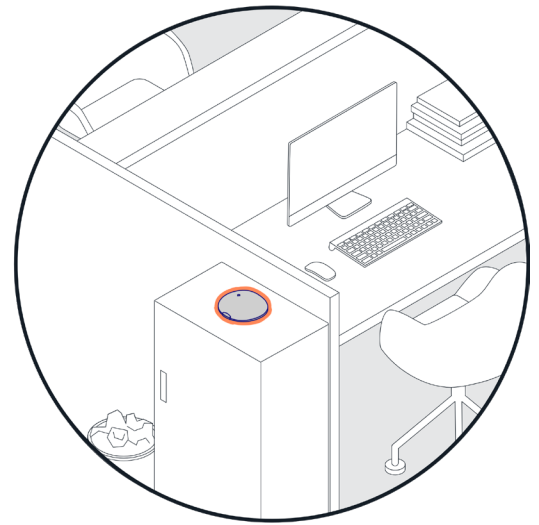


Light  
Lux



Particulate  
Matter

## Placement Example:



### Communication:

- Data from Pebbles received via Bluetooth connectivity
- On board SIM (swappable) enables 4G transmission to cloud-based analytics platform
- Protobuf encoded with schemas available
- MQTT protocol used for data transmission
- Meta Data includes Device Type & ID, Firmware version, SIM ID
- Low volumes ensure cost effective communications
- No other gateway or integration with client network infrastructure required

### Power:

- 5 Volt PSU with Micro USB

### Specifications:

|                       |              |
|-----------------------|--------------|
| Operating Voltage     | 4-5V         |
| Operating current     | 100mA-2.1A   |
| Power Supply          | 5V micro USB |
| Operating Temperature | -5C-50C      |
| Storage Temperature   | -20C-85C     |

### General Sensor Operation:

|                           |                       |
|---------------------------|-----------------------|
| User input                | Single push button    |
| Microphone sensitivity    | >40dBA                |
| Temperature sensor range  | -10C-85C              |
| Humidity sensor range     | 0-80%                 |
| CO2 sensor range          | 400ppm up to 32768ppm |
| VOC sensor range          | 0ppb up to 32768ppb   |
| Lux sensor range          | 0.01-64k lux          |
| Battery power measurement | N/A                   |
| Occupancy/People counting | N/A                   |

### Occupancy Sensor:

|                              |                                    |
|------------------------------|------------------------------------|
| GSM operating frequencies RX | EGSM900: 925-960MHz                |
|                              | DCS1800: 1805-1880MHz              |
| LTE Bands                    | 1,3,5,7,8,20,38,40                 |
| GSM operating frequencies TX | EGSM900: 880-915MHz                |
|                              | DCS1800: 1710-1785MHz              |
| LTE Bands                    | 1,3,5,7,8,20,38,40                 |
| GSM antenna                  | Ceramic dual band monopole antenna |
| Sim card                     | Standard size Sim card             |

### Bluetooth Low Energy:

|                           |                                                           |
|---------------------------|-----------------------------------------------------------|
| BLE version               | ver 4.1                                                   |
| RF frequency              | 2.4GHz                                                    |
| TX power                  | +4dBm                                                     |
| RX sensitivity            | -88dBm                                                    |
| BLE Module FCC Compliance | Part 15                                                   |
| BLE Module certification  | CE qualified                                              |
|                           | FCC, IC modular approval certified                        |
|                           | TELEC                                                     |
|                           | BQE qualified                                             |
| BLE antenna               | Onboard chip antenna                                      |
| Range                     | 5-10m individual node range in BLE mesh non line of sight |

### Bluetooth Low Energy Mesh:

|                 |                                                                                                                                                             |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Provisioning    | Devices added to a network are provisioned using proven security algorithms using 256-bit elliptic curves                                                   |
|                 | Provisioning and network layer based on Mesh profile v1.0                                                                                                   |
| Communication   | All messages in the network are encrypted with AES-128 CCM mode                                                                                             |
| Privacy         | Privacy through obfuscation                                                                                                                                 |
| Data protection | Protected against security attacks like Brute-force, Bit-Flipping, Eaves Dropping, Replay, Trashcan, Man in the middle and physical insecure device attacks |