

# Pebble: Product Information

Pebbles are designed to specifically only detect human presence and will therefore not respond to the movement of other objects like chairs, vacuum cleaners, etc. It is placed underneath desks, and whilst occupancy detection is extremely accurate, it is also completely anonymous and unintrusive.

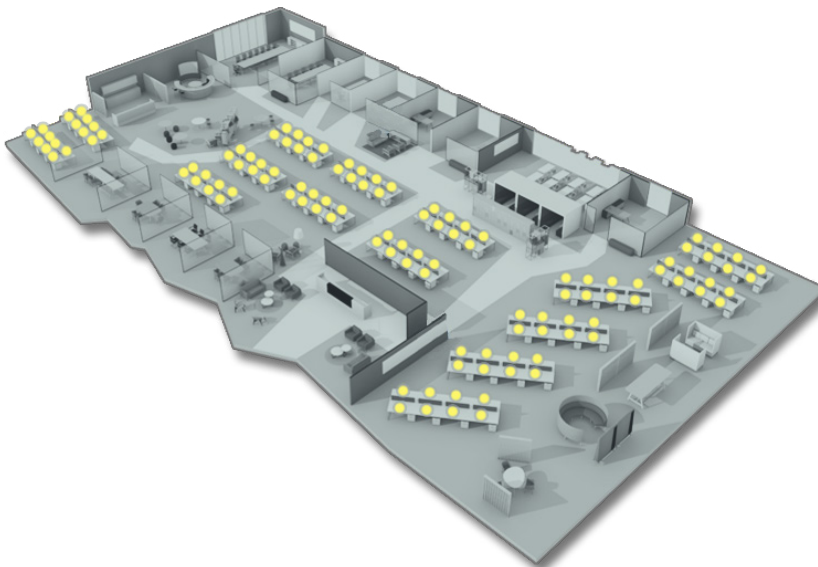
Most companies overestimate how much office space is really occupied in traditional working environments. The Pebble sensors can help organizations measure occupancy and desk usage, to assist you to decrease rental cost and utilize space more effectively.



**Dimensions:**

103mm x 90mm x 24mm

**Weight:**


98g


**Placement Example:**

**Measures:**


 Pebbles only detect human presence.

For example, they will not respond to the movement of chairs or vacuum cleaners. It is placed underneath desks with minimum intrusiveness.

**Power and Communication:**

 Pebbles have a 600mm diameter 360deg measurement field that detects through materials such as wooden desktops and seating foam. This means that the detection capability is much higher than traditional line-of-sight PIR motion detection devices. The detection is also completely anonymous.

 Pebbles are powered by rechargeable batteries, which last 12 to 18 months. Our solutions hub monitors battery levels and users will be notified when Pebbles need to be recharged.

 Sensor modules communicate via a BLE mesh network which is closed and securely provisioned. Pebbles always communicate with a Doc which functions as the gateway to delivering data to the Solutions Hub. A common ratio for deployment is 20 to 30 Pebbles to one Doc. The data is shared over a closed Bluetooth mesh network which needs no client connectivity or integration.

# Pebble: Specifications

Operating Voltage	3.3-7V
Operating current	< 1uA-30mA
Power Supply	5V micro USB or 1 x LiPO battery
Operating Temperature	-5C-50C
Storage Temperature	-20C-85C
<b>General Sensor Operation:</b>	
Battery power measurement	0-100% (3.4-4.2V)
Occupancy/People counting	Sub GHz Doppler module presence sensor
<b>Occupancy Sensor:</b>	
Sensor type	Microwave sensor
Transmitting frequency	3.2GHz
Nominal power output	11.1mW
Nominal current consumption	3mA
Nominal operating voltage	3.4-4.2V
Transmitting wave type	Non-ionising extremely low energy wave
<b>Bluetooth low energy:</b>	
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
<b>Bluetooth low energy mesh:</b>	
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