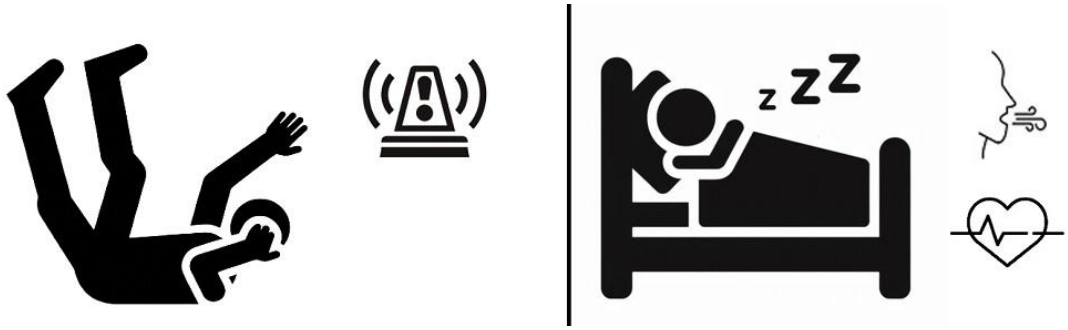
Introduction

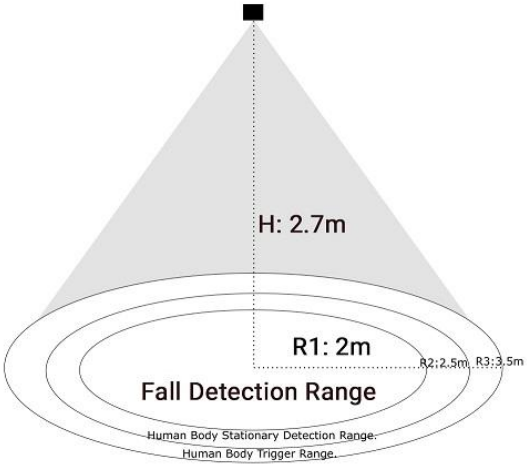
The C1001 mmWave Human Detection Sensor is a high-precision 60GHz millimeter-wave radar sensor engineered for advanced human detection. Unlike standard 24GHz millimeter-wave sensors that are limited to detecting presence, speed, and distance, the C1001 sensor offers enhanced detection capabilities, including **fall detection and sleep monitoring.** Its ability to recognize human postures using a point cloud imaging algorithm allows for the detection of whether someone is lying down and for the precise monitoring of life signs. This sensor can detect motion or even when a person remains static, making it superior to traditional sensors like PIR, which require movement to detect presence.

The C1001 sensor's comprehensive monitoring capabilities provide accurate and detailed insights into human activity, improving safety and health monitoring while enhancing the overall user experience. Compatible with ESP32, micro:bit, and Arduino UNO development boards, this sensor can be easily configured and used with the Arduino IDE.



Integrated Fall Detection Function

The C1001 sensor features a point cloud imaging algorithm that accurately recognizes human postures, including **detecting when a person is lying down**. It effectively reports fall incidents, the duration of immobility, and periods of physical inactivity. With the ability to detect motion over a wide area (up to 11 meters) when mounted on the ceiling at a height of 2.7 meters, the C1001 ensures precise fall detection. This capability enhances safety monitoring, particularly in elderly care, by providing timely alerts for fall incidents. Unlike other sensors that fail to detect static bodies, the C1001 excels in recognizing both motion and stillness, making it highly reliable.



Comprehensive Sleep Monitoring

In sleep monitoring mode, the C1001 tracks human presence and movement, analyzing variations in body movements and respiratory rates throughout the night. It accurately **measures breath frequency and heart rate from a distance of 1.5 meters**, offering valuable insights into sleep quality and overall health. By integrating these parameters, the sensor delivers a detailed sleep score, aiding in a better understanding of sleep patterns and health.

Comprehensive Setup and Configuration Support

The C1001 mmWave Human Detection Sensor comes with extensive and detailed usage and configuration tutorials. These guides cover everything from hardware setup to software integration, ensuring smooth implementation and optimal performance. The tutorials include:

Interface Definitions: Clear explanations of sensor pins and their functions for straightforward wiring and connection.

Installation Methods: Step-by-step instructions for top and side installations, with diagrams to ensure correct placement for both fall detection and sleep monitoring modes.

Sample Code: Ready-to-use code snippets for Arduino IDE, complete with examples for fall detection and sleep monitoring to facilitate quick setup and testing.

Practical Demonstration Steps: Detailed routines to help users access and interpret data for human presence, respiration rate, heart rate, and more.

Important Disclaimer: This product is not a certified medical device and is not intended to be used as a diagnostic or therapeutic aid. The manufacturer assumes no responsibility for any medical or health-related claims arising from the use of this product. Any reliance on the product for medical purposes is at the user's sole risk and discretion.

Applications

Indoor Fall Detection System

Sleep Tracker

Specification

Operating Voltage: 5V

Operating Current: ⩽100mA

Operating Frequency: 61~61.5GHz

Transmission Power: 6dBm

Maximum Detection Distance: 11m

Radar Detection Angle: 100×100 degrees

Sleep Detection Distance (Chest): 0.4-2.5m

Breath and Heart Rate Detection Distance (Chest): 0.4-1.5m

Breath Measurement Range: 10-25 breaths per minute

Heart Rate Measurement Range: 60-100 beats per minute

Operating Temperature: -20~60°C

Documents

Product wiki

Dimension Diagram

Interface Definition

Installation Method

Demonstration Routine

Library (Github)

Shipping List

C1001 mmWave Human Detection Sensor × 1