Smart Indoor Sensor

RMR241A

The RMR241A detects the movement of the target using the 24GHz radar and transmits and notify it. This functions can be deployed for a variety of applications. For example, it can be used for indoor lighting devices to detect human movements and also can be used to help fireman locate some one in need at fire. The RMR 241A can also measure a human's breathing and heart rate. Therefore, it can be configured for various applications, such as in room sensing or biosignals products(option).

24GHz mmWave Radar

By using high-frequency, short-wavelength radar, it is less affected by the surrounding environment and more reliable detection is possible.Accurate detection is possible even in environments that are difficult to detect, such as closed indoor situations full of smoke or dust, high-temperature kitchens, or fire situations.

Various Configuration Features

RMR241A can be applied to various applications by various configuration features. This is a sensor that can be applied to various applications by setting the operation of the sensor according to various conditions such ad the distance, speed, or size of the object to be detected.

Fast Detection

Unlike other types of sensors that detect motion for a certain period of time, instantaneous movement of a sensing target can be detected.
React to slight movements of the target, and can be utilized in situations where you need a faster response can be detected the instant motion.

Velocity Detection

It is possible to measure not only whether the object is moving, but also the speed of the object's approach and distance from the sensor.It is possible to extract the exact speed of the object from the instantaneous movement of the object to be detected.

Vital sign Detecting Algorithm

We have an algorithm that can measure a human's vital signs. With RMR241A, you can have raw data that can measure vital signs, and if you add an option, you can have a product that measures vital signs.

Application

It can be applied to "Home IoT" devices such as motion detection automatic lighting and wall pads, and it can also be applied to a fire detection system that finds rescuers in case of a fire.
It can also be applied to medical auxiliary devices such as beds or chairs for sleep detection using breathing and heart rate information.

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SPECIFICATIONS & FEATURES

Radar Sensor

- 24GHz Radar transceiver
- CW Radar
- 1 Transmit channel
- 1 Receive channel
- Homodyne quadrature receiver
- Single ended RF and IF terminals
- Fully integrated low phase noise VCO
- Built in temperature compensation circuit for VCO stabilization

MCU

- ARM cortex M0
  - Ultra low power consumption
- 32-bit processor core
- MATH Co-processor
  - CORDIC unit for trigonometric calculation
- 8 kbytes ROM
- 16 kbytes SRAM
- 16 kbytes Flash Memory
- 32 MHz running
- 12-bit ADC resolution

MCU(Option)

- ARM cortex M4
- 32-bit processor core
- MATH Co-processor
- 192 kbytes SRAM
- 1 MB Flash Memory
- 168 MHz running(210 DMIPS)
- 3 X 12-bit ADC resolutions

Peripherals

- 2 USIC
- UART
- GPIOs
- SWD for debugger

Vital Sign (Option)

- Breathing rate (Option)
  - Accuracy : more than 99%
- Heart rate (Option)
  - Accuracy : more than 90%

Features

- Min. Detection period : 100 ms
- GPIO output
  - Occupant detection result
  - Velocity detection result
- UART output
  - Occupant detection result
  - Velocity detection result
  - Detecting velocity
  - Detecting doppler frequency
  - Received ADC raw-data
  - Calculated Max. magnitude
- Configuration value
  - Activation time for motion detect and velocity detect
  - Detect time for motion detect and velocity detect
  - Threshold for motion detect and velocity detect
  - Minimum and Maximum velocity value for velocity detect
- Command list for configuration
  - Read configuration values
  - Write and activation configuration values
  - Save configuration values into the internal Flash Memory
  - Enable/Disable UART interface
- operating temperature : -40 ~ 105 degree
- Detecting distance : >8m
- Detecting angle : 120 degree
- Supply Voltage : 3.3 V
- Current consumption : < 60mAh

Detection data for Application

- Indoor moving detection
- Approaching detection
- Departing detection
- Velocity detection

General Availability : 2022. 1Q

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