

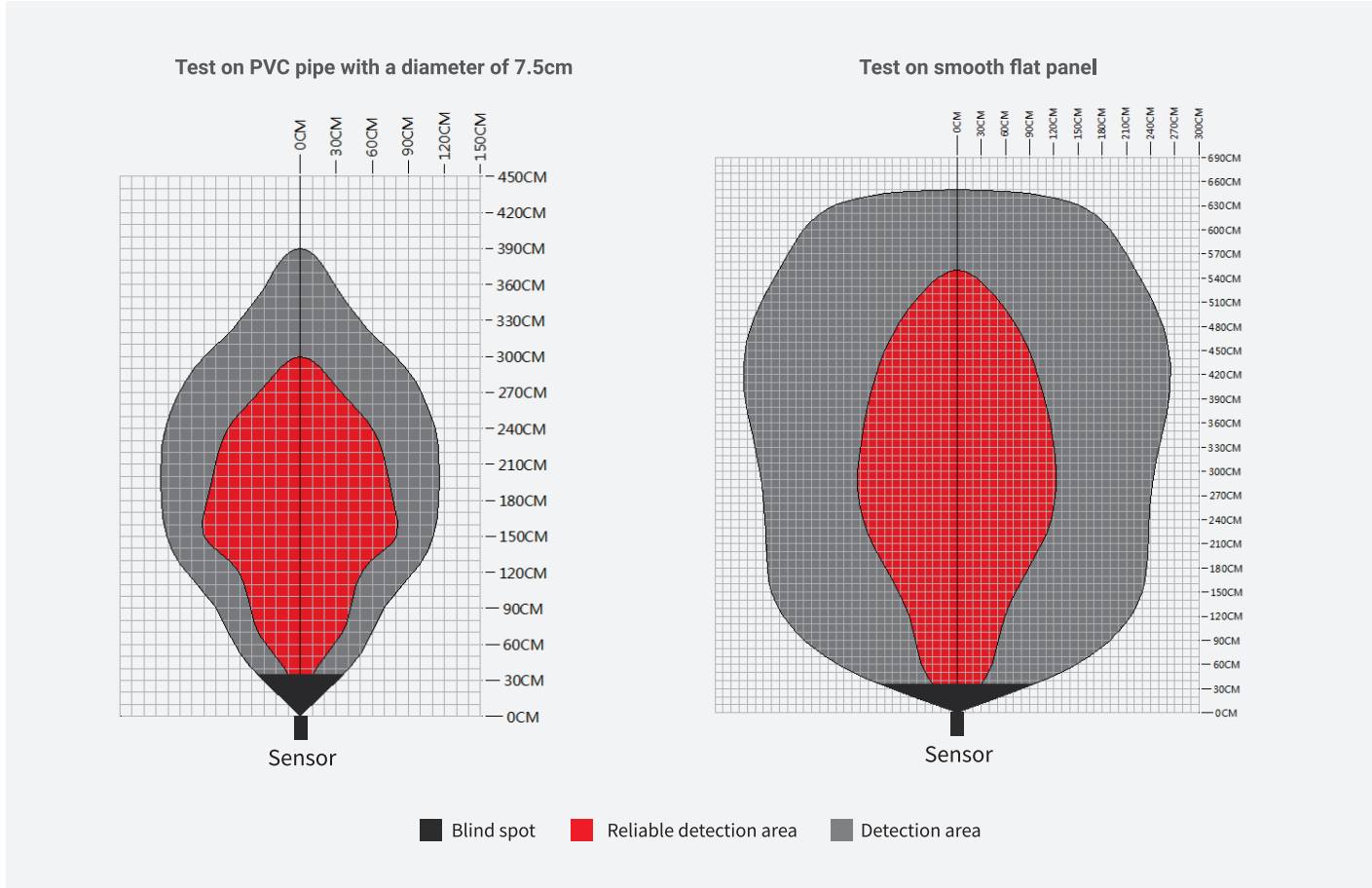
URM08 - Industrial Waterproof Ultrasonic Sensor
(60°, 35–550 cm, ModBus-RTU)

SKU:SEN0246



Specification

- Operating Voltage: 6.0 ~ 12.0V DC
- Operating Current: 250mA
- Effective Range: 35 ~ 550 cm
- Distance Resolution: 10 mm
- Range Accuracy: ±1%
- Temperature Resolution: 0.1°C
- Temperature Accuracy : ±1°C
- Measurement Frequency: 10 Hz
- Operating Temperature Range: -10 ~ 70 °C
- Operating Humidity: RH < 75%
- Acoustic Frequency: 38 ~ 42 KHz
- Directional Angle: 60°
- Protection Grade: IP65
- Sensor Diameter (φ): 24 mm
- Communication Interface: RS485 (ModBus-RTU)



Features

- Built-in temperature compensation.
- Fully sealed metal housing, offering waterproof, dustproof, and corrosion-resistant properties.
- RS485 interface supporting ModBus-RTU protocol.
- Effective measurement range: 35–550 cm.

Advantages

- Small blind zone and wide measurement range.
- Stable data output with high measurement accuracy.

Benefits

- Reduces the impact of temperature changes on measurement results.
- Easy integration into existing industrial control systems.

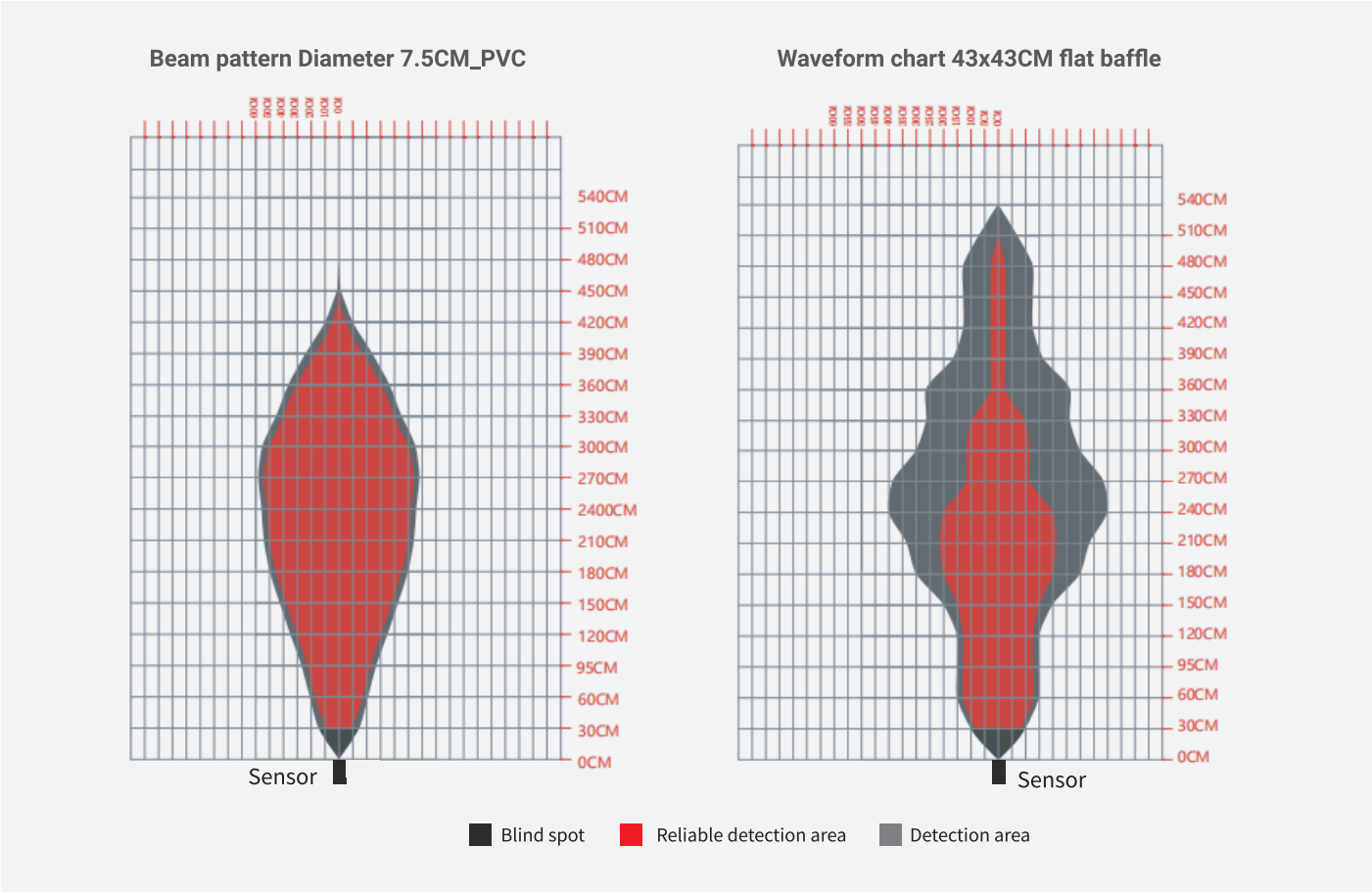
URM15 - 75KHz Ultrasonic Sensor (20°, 30–500 cm, RS485)

SKU:SEN0519



Specification

- Operating Voltage: 5 ~ 12V DC
- Operating Current: 350mA (max instantaneous)
- Effective Range: 30 ~ 500 cm
- Distance Resolution: 10 mm
- Range Accuracy: ±1%
- Temperature Resolution: 0.1°C
- Temperature Accuracy : ±1°C
- Measurement Frequency: 10 Hz
- Operating Temperature Range: -10 ~ 70 °C
- Operating Humidity: RH < 75%
- Acoustic Frequency: 75 KHz ±2%
- Directional Angle: 20° ±2° (-6 dB)
- Protection Grade: IP65
- Sensor Diameter (φ): 30 mm
- Communication Interface: RS485 (ModBus-RTU)



Features

- High sensitivity with a narrow detection angle(20°).
- Effective measurement range: 30–500 cm.
- Measurement frequency: 10 Hz.

Advantages

- Optimized for industrial control devices.
- Adjustable slave address and serial parameters for compatibility with various systems.
- Built-in temperature compensation with support for onboard or external compensation.

Benefits

- Reliable distance measurement in industrial environments.
- Minimizes temperature effects on measurement precision.
- Facilitates seamless integration with industrial systems, improving measurement efficiency.

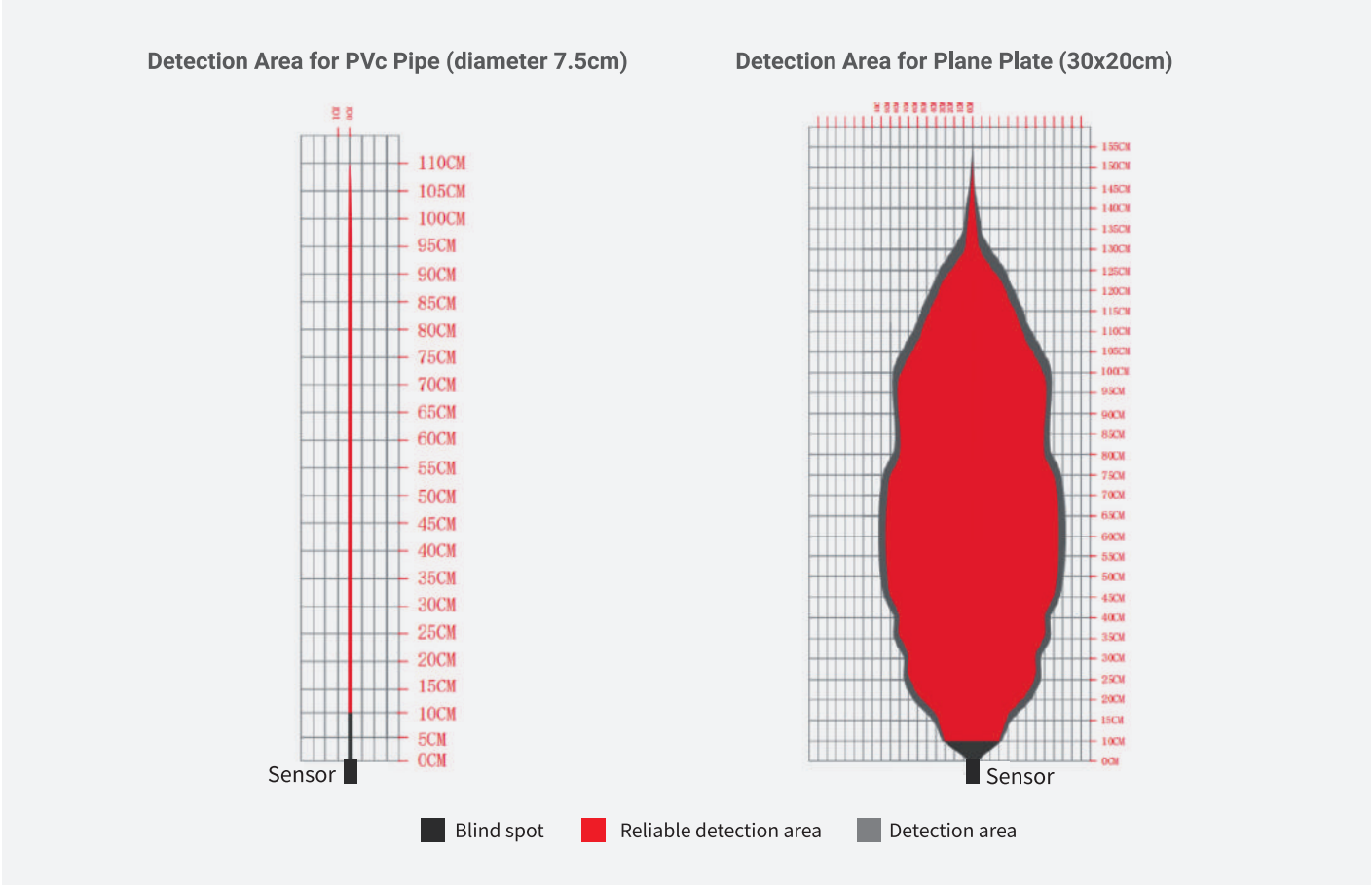
URM14 - Industrial Ultrasonic Distance Sensor
(12°, 10–150 cm, 1mm Accuracy, RS485)

SKU:SEN0358



Specification

- Operating Voltage: 7 ~ 15V DC
- Operating Current: 350mA (max instantaneous)
- Effective Range: 10 ~ 150 cm
- Distance Resolution: 1 mm
- Range Accuracy: ±0.3%
- Temperature Resolution: 0.1°C
- Temperature Accuracy : ±1°C
- Measurement Frequency: 30 Hz
- Operating Temperature Range: -20 ~ 80 °C
- Acoustic Frequency: 200 KHz ±4%
- Directional Angle: 12° ±2° (-6 dB)
- Protection Grade: IP65
- Sensor Diameter (φ): 18 mm
- Communication Interface: RS485 (ModBus-RTU)



Features

- RS485 communication interface with ModBus RTU protocol.
- High precision with minimal error margin (1 mm accuracy).
- Built-in temperature compensation to minimize environmental effects.
- Effective measurement range: 10–150 cm.
- Measurement frequency: 30 Hz.

Advantages

- Designed for high-precision industrial applications.
- Narrow detection angle for directional measurements similar to laser distance sensors.
- Real-time noise detection with automatic parameter adjustments.

Benefits

- Reliable distance measurement in industrial environments.
- Minimizes temperature effects on measurement precision.
- Facilitates seamless integration with industrial systems, improving measurement efficiency.

Comparison Table

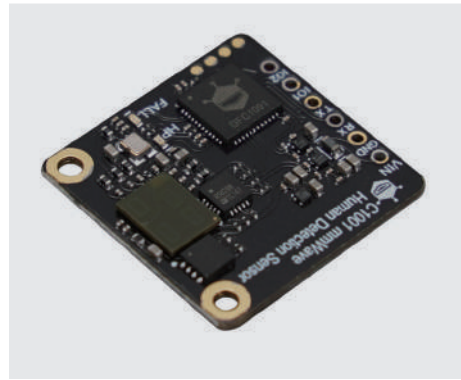
Parameter	URM08 (SEN0246)	URM15 (SEN0519)	URM14 (SEN0358)
Operating Voltage (V DC)	6.0 ~ 12.0	5 ~ 12	7 ~ 15
Operating Current (mA)	250	350(max instantaneous)	350(max instantaneous)
Effective Range	35 ~ 550 cm	30 ~ 500 cm	10 ~ 150 cm
Distance Resolution	10 mm	10 mm	1 mm
Range Accuracy	±1%	±1%	±0.3%
Temperature Resolution	0.1 C	0.1 C	0.1 C
Temperature Accuracy	±1 C	±1 C	±1 C
Measurement Frequency	10 Hz	10 Hz	30 Hz
Operating Temp. Range	-10 ~ 70 °C	-10 ~ 70 °C	-20 ~ 80 °C
Operating Humidity	RH < 75%	RH < 75%	RH < 75%
Acoustic Frequency	38 ~ 42 KHz	75 KHz ±2%	200 KHz ±4%
Directional Angle	60°	20° ±2° (-6 dB)	12° ±2° (-6 dB)
Protection Grade	IP65	IP65	IP65
Sensor Diameter (φ) (mm)	24	30	18
Communication Interface	RS485 (ModBus-RTU)	RS485 (ModBus-RTU)	RS485 (ModBus-RTU)
Material	Fully enclosed metal housing, waterproof, dustproof, corrosion-resistant.	Fully enclosed metal housing, waterproof, dustproof, corrosion-resistant.	Fully enclosed metal housing, waterproof, dustproof, corrosion-resistant.
Applications	Liquid level, material level, obstacle detection.	Long-distance and narrow-angle logistics scenarios, etc.	High-precision industrial applications, directional measurements similar to laser sensors.
Key Features	Built-in temperature compensation. Fully sealed metal housing, offering waterproof, dustproof, and corrosion-resistant properties. Effective measurement range: 35–550 cm.	High sensitivity with a narrow detection angle. Effective measurement range: 30–500 cm. Measurement frequency: 10 Hz.	High sensitivity with a narrow detection angle. Effective measurement range: 30–500 cm. Measurement frequency: 10 Hz.

Ultrasonic Ranging and Millimeter-Wave Radar Modules Catalog



C1001 60GHz Millimeter Wave Radar Sensor (11 Meters, UART)

SKU:SEN0623



Specification

- Operating Voltage: 5V
- Operating Current: $\leq 100\text{mA}$
- 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



Features

- High-precision 60GHz millimeter-wave radar sensor.
- Supports fall detection and sleep monitoring.
- Recognizes human postures with point cloud imaging.
- Detects stationary and moving human presence.
- Compatible with Arduino, ESP32 and more.



Advantages

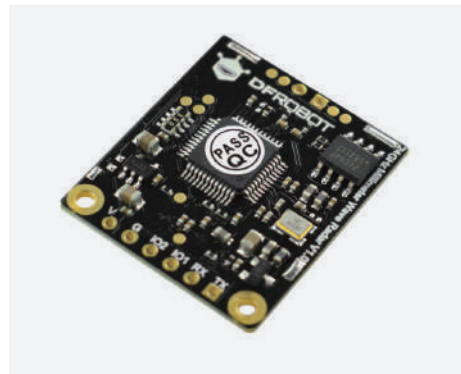
- Advanced human detection features like fall detection and sleep monitoring.
- Recognizes both stationary and moving humans with high accuracy.
- Works with multiple development platforms for easy integration.

Benefits

- Enhances safety and health monitoring, especially for elderly care.
- Provides detailed activity information to improve user experience.
- Simplifies integration into existing systems, accelerating development.

24GHz Millimeter Wave Human Presence Sensor (9 Meters, UART)

SKU:SEN0395



Specification

- Power Supply: 3.6~5V
- Operating Current: 90mA
- Detection Distance: 9m
- Equivalent Transmit Power: 9-12dBm
- Beam Angle: 100°40°
- Modulation Mode: FMCW, CW
- Operating Frequency: 24GHz
- Operating Temperature Range: -40~85°C
- Baud Rate: 115200
- Dimension: 24*28mm

Features

- 24GHz millimeter-wave radar technology.
- Detects both stationary and moving human presence.
- Strong anti-interference, unaffected by temperature or light.
- Compact design, easy to integrate.



Advantages

- Accurate human detection in complex environments.
- Unaffected by environmental changes, providing stable performance.
- Compact design for space-constrained applications.

Benefits

- Improves human presence detection in smart home and security systems.
- Reduces false positives, enhancing user experience.
- Easily integrates into various devices, expanding application range.

C4001 24GHz mmWave Human Presence Detection Sensor (25 Meters, UART)

SKU:SEN0609



Specification

- Operating Voltage: 3.3/5V
- Maximum Detection Range: 25m
- Beam Angle: 100°40°
- Modulation Mode: FMCW
- Operating Frequency: 24GHz
- Operating Temperature: -40~85°C
- Baud Rate: 9600
- Size: 26*30mm

Features

- 24GHz millimeter-wave radar technology.
- Supports FMCW modulation for distance and speed measurement.
- Detects both stationary and moving human presence.
- Strong anti-interference, suitable for complex environments.

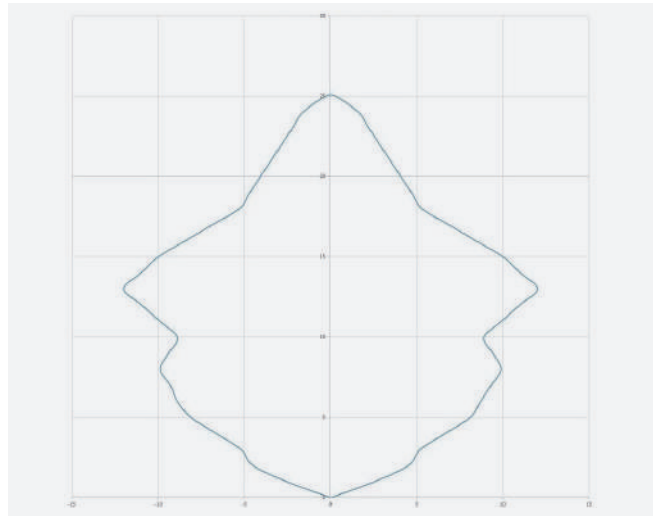


Advantages

- Offers distance and speed measurement for various scenarios.
- Accurate detection of human presence and motion in complex environments.
- Unaffected by environmental changes, providing stable performance.

Benefits

- Enhances detection capabilities for smart monitoring and automation.
- Provides real-time motion data, enhancing system functionality.
- Easy integration into existing systems, adding product value.



Horizontal Detection Range Unit (m)

Gravity: C4001 24GHz mmWave Human Presence Detection Sensor (12 Meters, I2C & UART)

SKU:SEN0610



Specification

- Operating Voltage: 3.3V/5V
- Maximum Detection Range: 12m
- Beam Angle: 100°80°
- Modulation Mode: FMCW
- Operating Frequency: 24GHz
- Operating Temperature: -40~85°C
- Baud Rate: 9600
- I2C Address: 0x2A/0x2B
- Size: 22*30mm

Features

- Communication Methods: Supports I2C and UART.
- Interface: Gravity interface (PH2.0).
- Human Detection: Detects human presence up to 8m, motion up to 12m.
- Distance Detection: Measures distances from 1.2m to 12m.
- Speed Detection: Detects speeds from 0.1m/s to 10m/s.
- Strong anti-interference capability, unaffected by environmental factors.
- Compact size and easy integration.

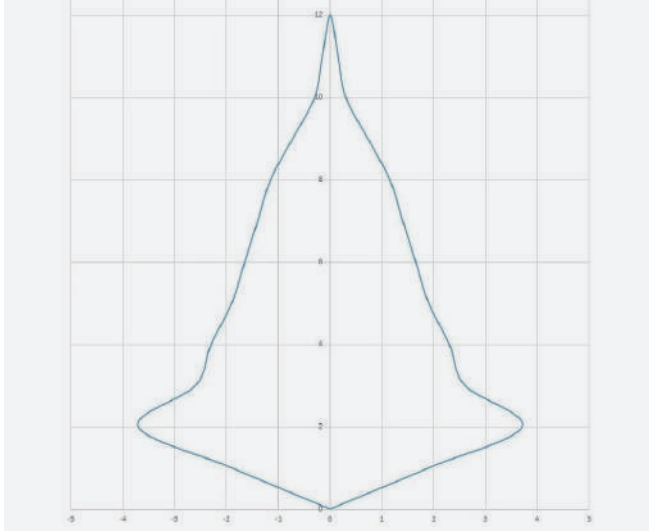


Advantages

- Provides dual communication options (I2C & UART) for flexible integration.
- Strong anti-interference capability ensures reliable detection.
- Optimized for smart home and automation projects.

Benefits

- Enhances real-time monitoring and automation in smart environments.
- Offers precise human presence detection, reducing false positives.
- Easily integrates with multiple platforms, improving development efficiency.



Horizontal Detection Range Unit (m)

Comparison Table

Parameter	SEN0623 (C1001)	SEN0395	SEN0609 (C4001)	SEN0610 (C4001)
Operating Voltage	5V	3.6~5V	3.3/5V	3.3/5V
Maximum Detection Range	11m	9m	25m	12m
Beam Angle	100×100°	100×40°	100×40°	100×80°
Modulation Mode	CW	FMCW, CW	FMCW	FMCW
Operating Frequency	61~61.5GHz	24GHz	24GHz	24GHz
Temperature Range	-20~60 C	-40~85 C	-40~85 C	-40~85 C
Communication Interface	UART	UART	UART	I2C, UART
Human Presence Detection	Yes	Yes	Yes	Yes
Speed Detection	No	No	Yes	Yes
Application Areas	Health/Safety	Smart Home	Security	Automation
Key Features	High-precision 60GHz millimeter-wave radar sensor Supports fall detection (up to 11 meters) Measures breath frequency and heart rate from a distance of 1.5 meters	24GHz millimeter-wave radar technology Detects both stationary and moving human presence Compact design, easy to integrate (24*28mm)	24GHz millimeter-wave radar technology Supports FMCW modulation for distance and speed measurement Strong anti-interference, suitable for complex environments	Interface: Gravity interface (PH2.0) , Supports I2C and UART Human Detection: Detects human presence up to 8m, motion up to 12m Speed Detection: Detects speeds from 0.1m/s to 10m/s

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