63GHz Radar Sensors

WENSHING introduced 63GHZ-3X3 Radar Sensors in August 2024. These sensors feature high-precision distance measurement with a resolution of up to 3 centimeters, enabling accurate measurement of object distances with stable performance.
The wireless measurement angle is less than 3 degrees. The sensors have strong anti-interference capabilities and are unaffected by environmental factors such as light, sound, and dust.
They can be applied to distance measurement, speed detection, object identification, and other uses, offering wide applicability.

Advantages

High Resolution: The 63GHz Radar Sensor offers higher resolution, allowing for more precise detection and identification of object position and shape, making it especially suitable for applications requiring precise measurements.
Strong Penetration: Capable of penetrating smoke, fog, dust, and other obstructions, ensuring normal operation in various harsh weather conditions and environments.
Low Power Consumption: Compared to radars of other frequencies, the 63GHz Radar Sensor has lower power consumption, helping to extend the device's lifespan and reduce energy consumption.
Strong Anti-Interference: Due to the higher 63GHz frequency band, it is less likely to be interfered with by other radio devices, ensuring data accuracy and stability.
Real-Time Detection: Capable of real-time detection and data feedback, which is crucial for applications requiring immediate response.
Miniaturization: The compact size is suitable for use in space-constrained devices, such as automotive collision avoidance systems and drone obstacle avoidance systems.

Applications

- Smart toilet microwave control
- Smart parking
- Charging pile parking space determination
- Restroom personnel fall detection
- Industrial robotic arms
- Automotive industry, aerospace, security systems

Version History

Version	Date	Changes
V1.01	06, August, 2024	1st. Edition

Features

Frequency: 63GHz

Distance measurement resolution: 3cm

Built-in control for electronic water valve

Distance measurement angle: less than 3 degrees

UART/I²C interface

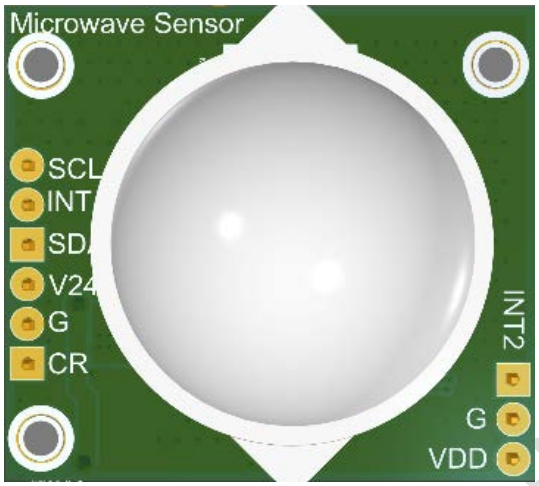
(function selected by DIP switch)

Configurable via DIP switch

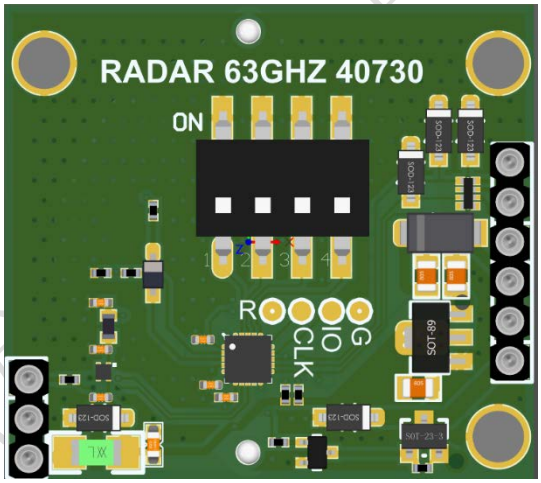
Operating voltage: 3.6 to 5.5V

Ultra-compact size: 33 x 30mm

Front view



Bottom view

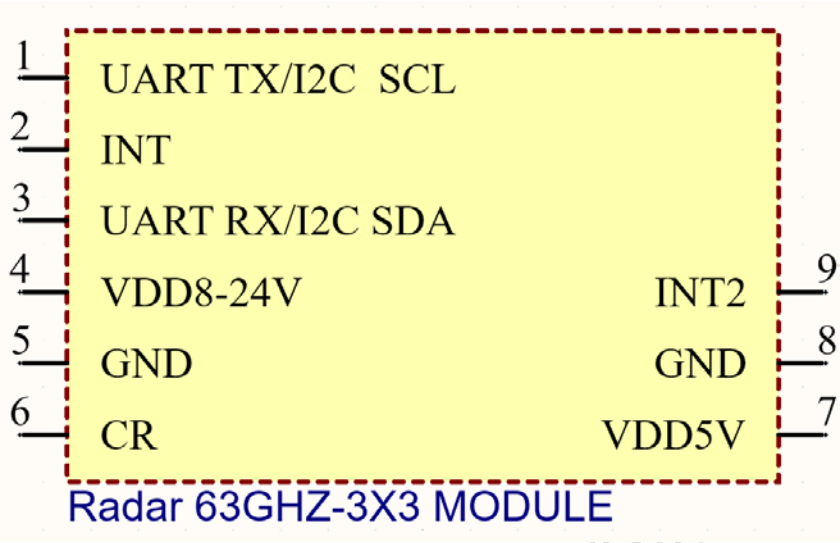


Specifications

Model：**Radar 63GHZ-3X3**

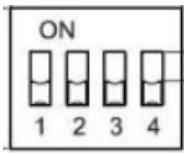
Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Frequency Range	60		64	GHz	
Transmit Power		10		dBm	
Supply Voltage	3.7		24	V	DC
Current		18		mA	
Power up time	1.5			s	
Operating Temperature	-30		+85	°C	

Pin Assignment



Pin	Name	Description
1	UART TX/I2C SCL	UART or I²C interface
2	INT	Interrupt, HI when movement is detected, with a 0.5second pulse.
3	UART RX/I2C SDA	UART or I²C interface
4	VDD8-24V	Power input, 8~24V, for use with independently controlled flushing functions.
5	GND	Power ground
6	CR	Independently controlled electronic water valve contact: Outputs voltage when activated, same as the 4th pin.
7	VDD5V	For simple distance measurement: Power supply 3.6 to 5V.
8	GND	Power ground
9	INT2	When an object is detected within the set distance, the output is HI; if no object is detected, it will be LOW after 3 seconds.

Function Description

DIP Switch 	Function Description
1XXX	DIP Switch 1=OFF，Measures distances of 15 cm or more. DIP Switch 1=ON，Measures distances of 30 cm or more.
X00X	DIP Switch 2、3=OFF，No detection for distances exceeding 0.5 meters.
X10X	DIP Switch 2=ON、3=OFF，No detection for distances exceeding 0.7 meters.
X01X	DIP Switch 2=OFF、3=ON，No detection for distances exceeding 0.9 meters.
X11X	DIP Switch 2、3=ON，No detection for distances exceeding 1.1 meters.
XXX0	DIP Switch 4=OFF，UART Communication Mode
XXX1	DIP Switch 4=ON，I²C Communication Mode

Note 1: After toggling the DIP switch to reset the test mode, the device must be powered on again.

Note 2**:** When UART or I²C communication is configured, the DIP switch functions become inactive, and external configuration controls will handle the functionality.

Command	Address	Data	Function Description
0xA0	0x01	1byte	**01**: Detection range set within 10 to 50 cm **02**: Detection range set within 50 to 500 cm
0xA1	0x01	00	Read Detection Distance Setting Value
0xA0	0x02	1byte	INT Action Time, Unit is 100ms. When set to 0x05, the INT action duration is 0.5 seconds.
0xA1	0x02	00	Read INT Action Time Setting Value
0xA0	0x03	1byte	INT2 Action Time, Unit is 100ms. When set to 0x0A, the INT2 action duration is 1 second.
0xA1	0x03	00	Read INT2 Action Time Setting Value
0xA0	0x05	1byte	Pre-Flush Time, Unit is 100ms. When set to 0x03, the first stage OUT duration is 0.3 seconds.
0xA1	0x05	00	Read Pre-Flush Time Setting Value

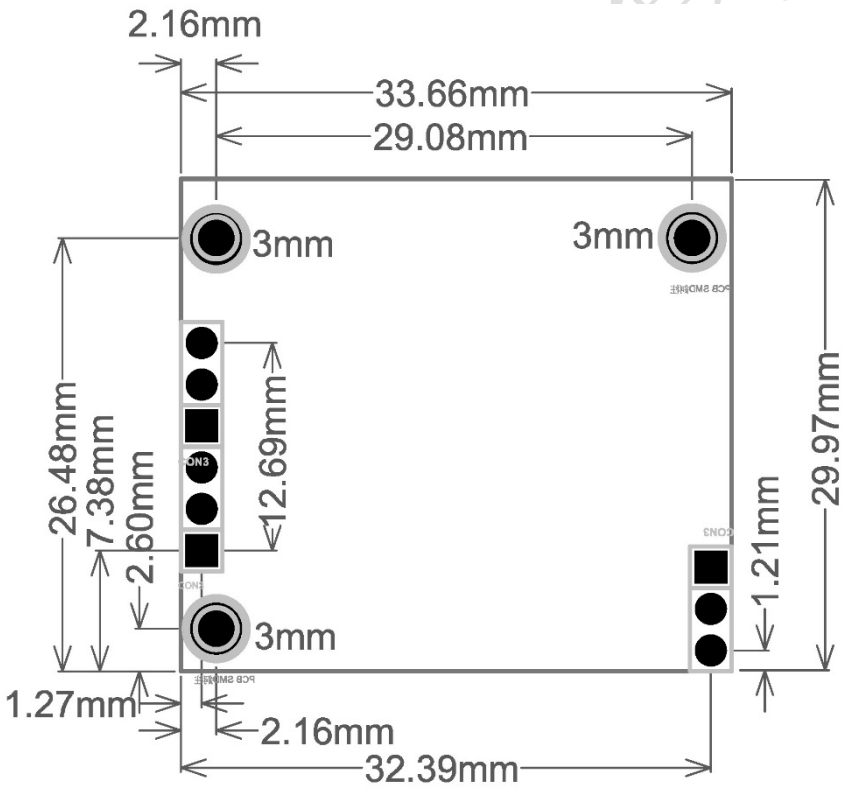
0xA0	0x06	1byte	Post-Flush Time, Unit is 100ms. When set to 0x1E, the second stage OUT duration is 3 seconds.
0xA1	0x06	00	Read Post-Flush Time Setting Value

LED Indicator Description

Yellow LED: Indicates detection within the range is triggered.

Blue LED: Indicates water valve control.

Dimensions *(UNIT: mm)*



PCB Library Files

Radar 63GHZ-3X3 MODULE.PcbLib, Radar 63GHZ-3X3 MODULE.SchLib