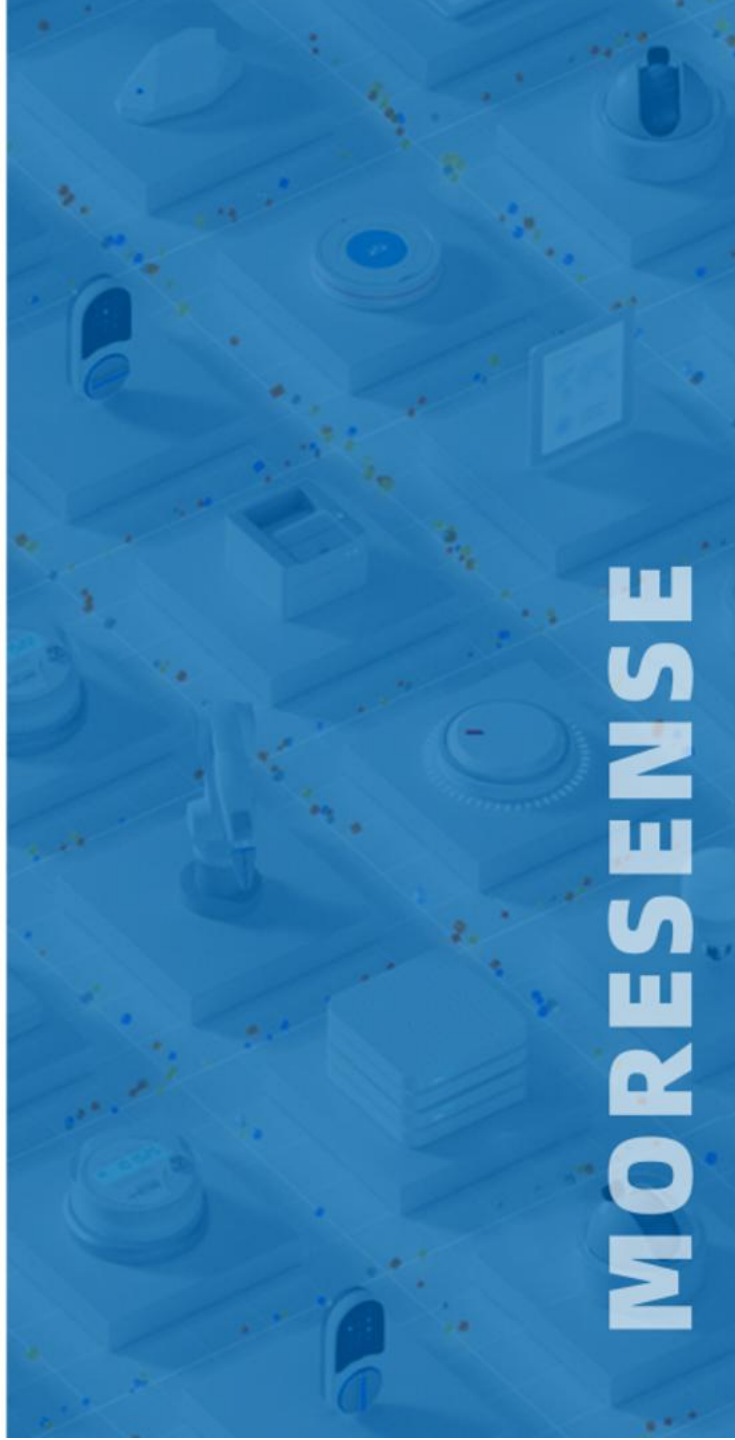
MoreSense - Product Introduction

IOT Communication and
Radar Sensing Module Provider

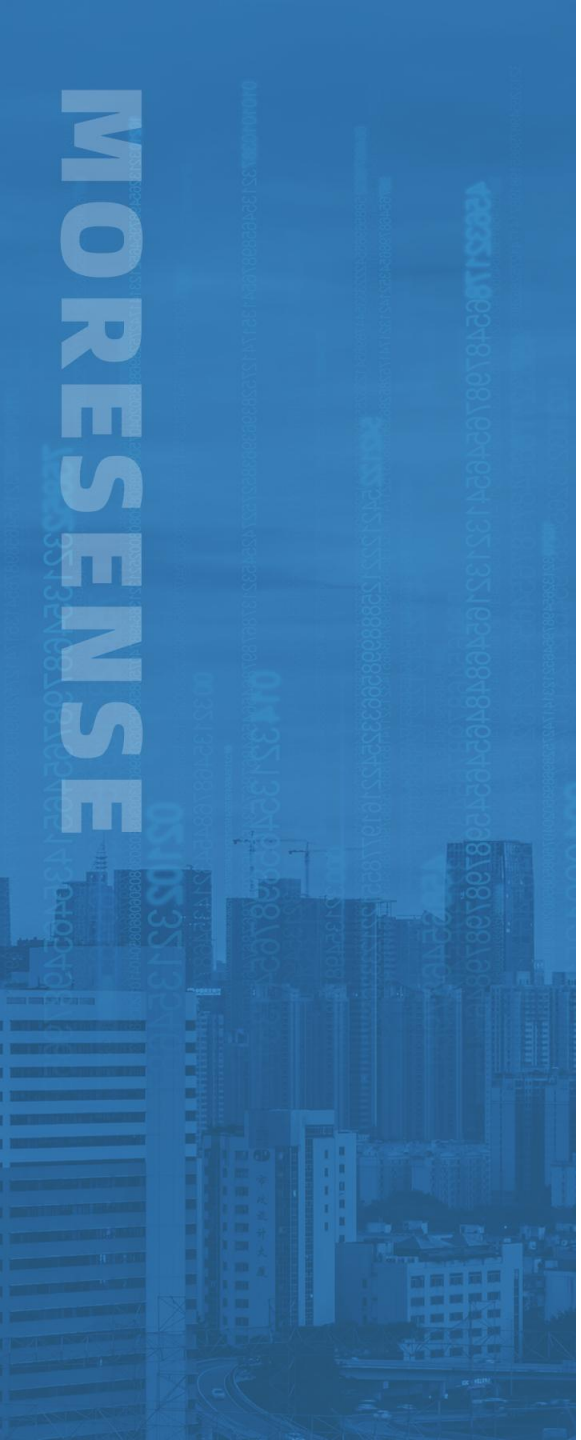


Shenzhen MoreSense Technology Co., Ltd.

Shenzhen MoreSense Technology Co., Ltd.,headquartered in Shenzhen,China,is a company that integrates R&D,production and sales to provide customers with radar sensing module and IOT communication total solutions.

The products cover 5.8G, 10G, 24G microwave/millimeter wave radar modules, WiFi/BLE and other wireless communication modules and supporting software solutions.

MoreSense has been deeply cultivating the industry for many years, serving many famous customers in the markets of smart lighting, smart home appliances, smart security, smart home, etc., with a shipment volume of 1 million pieces per month.



01

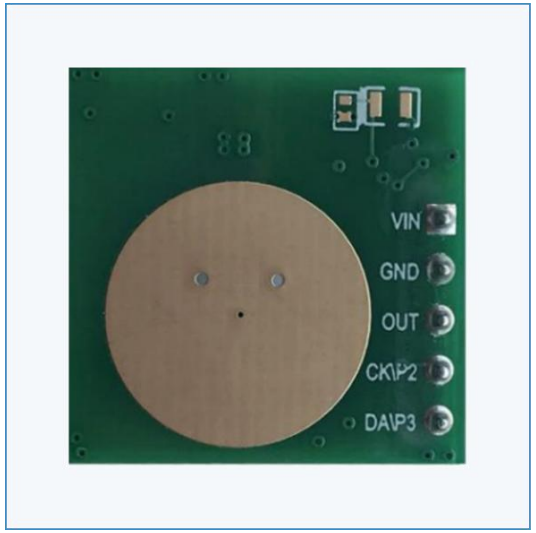
RADAR SENSING MODULE

MMRADAR - BASIC PRINCIPLES AND APPLICATIONS

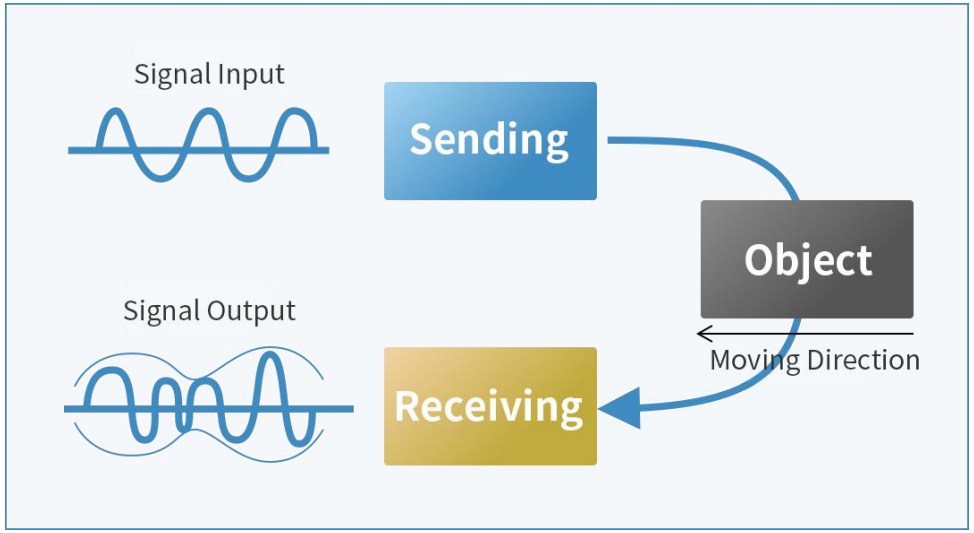
1.Radar is an electronic device that uses electromagnetic waves to detect objects.

2.The radar module detect the frequency difference between the transmitted and received signals by transmitting and receiving high-frequency electromagnetic waves and Doppler principle,which can be used to judge whether there are moving objects in the area.

3.It can be used to detect the presence of human body or various scenes of moving target induction,such as intelligent lighting,smart security,smart home,home appliances,access control,medical treatment.



Integrated patch antenna



Radar perceives objects by emitting electromagnetic waves,and then uses the reflection of objects to process and judge the information.

COMPARISON - MORESENSE 5.8G RADAR VS. INFRARED SENSOR

Item#	Infrared Sensor	MoreSense 5.8G Radar Sensor
Product Structure	There will be needed for a opening hole and lenses on structure	There will not be needed for a openingholeand can be installed concealed
Temp. Characteristics	Be sensitiveabout Temp.,easily triggered or failed in summer or outdoors	Sensing characteristics are not affected by ambient temp.
Light Characteristics	Performance will be affected by strong light or light intensity changes	Unaffected by light
Consistency	Poor consistency.Due to environmental influence	Good consistency.Single IC solution,andit willnot affected by environment
Sensing Distance	Small sensing range,3~5m	Large sensing range,1~30m
Sensitivity	Not high sensitivity,weak radial sensitivity	High sensitivity,adjustable at the same time
Power Consumption	<70uA,support to be battery powered	Low power version 29uA,battery powered
Dust	Affected by dust obstruction	Unaffected by dust obstruction

Comparison-Traditional 3G Radar Module,Discrete 5.8G,10G Radar Module VS. MoreSense 5.8G Radar Module

Item#	Traditional 2.4-3.9G Radar Module	Discrete 5.8G Radar Module	MoreSense 5.8G Radar Module	10G Radar Module
Volume	Small	Large&complex structure	Small	Small
Consistency	Poor	Poor Based on a hybrid integration scheme	Good Based on SoC solution	Good Based on SoC solution
Anti-Interference Ability	Poor easy to self-excite and ineffective	Poor easy to self-excite and ineffective	Good Single-chip solution. Using PLL frequency locking technology + random frequency when power-on,	Good Single-chip solution.Using PPL freq. locking technology+ random freq when power-on
Temp. Characteristics	Poor The frequency changes significantly with temp.	Poor The frequency changes significantly with temp.	Using PLL frequency locking technology,the frequency hardly changes with temp.	No freq. lock,easy to change temp.
Sensing Distance	1~12m	1~12m	1~30m	1-10m
Sensing Angle	360°	120°	120°	About 120°
Power Consumption	High power consumption,can not be battery powered	High power consumption,can not be battery powered	Low-power version achieves 40uA, battery-powered	Low-power version achieves 50uA, battery-powered
Certification	Unable to pass wireless certification, high harmonic content	Difficult to pass certification	Comply with FCC/CE/RS/SRRC and another wireless certification standards	Not support to pass SRRC,support to pass KC,TELEC,FCC...
Cost	Low cost with many electrical components	High cost	Low cost	Low cost

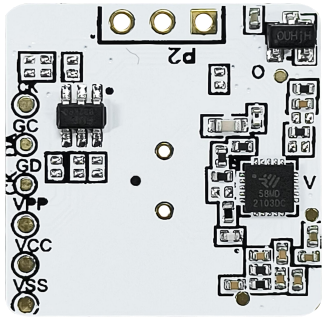
5.8G LOW-COST MICROWAVE RADAR MODULE

Module Features

Positioning lighting products routine needs, using low-cost radar chip, extreme cost-effective, optional light sensor function, can output PWM.

Module Parameters

- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  Assembly height 3 meters, radius 3-4 meters
- Supply Voltage: DC3.3~12V
- Power Supply Current: 9mA
- Size: 20*20mm



MS58-2020D9M4

Ceiling Light

Bulb Light

Down Light

Lamp

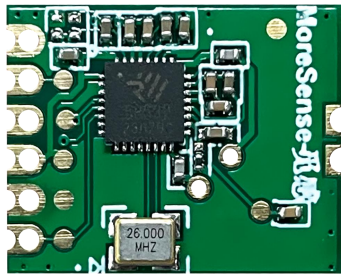
5.8G HIGH PERFORMANCE MICROWAVE RADAR MODULE

Module Features

High-performance SOC chip solution, support 2nd development and complex algorithms, stronger anti-interference ability; FMCW algorithm provides ranging assistance to make the sensing distance boundary clearer;
Ultra-small size SMD package, can do 0~15 meters motion sensing, can also be customized according to the application requirements to increase the micro-motion algorithm, multi-segment sensing logic to enhance the user experience.

Module Parameters

- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  Adjustable 0~15 meters in diameter
- Supply Voltage: DC3.3V/5V/12V
- Power Supply Current: 20mA
- Size: 14*17.2mm



MS58-14172S20M4

Panel Switch

Mirror Light

Air Conditioner

Toilet Lid

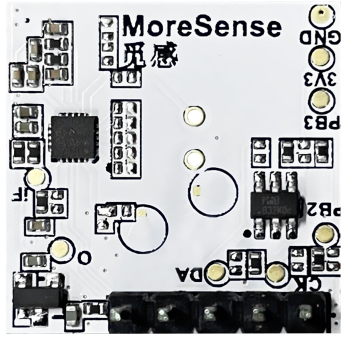
5.8G LOW POWER MICROWAVE RADAR MODULE

Module Features

The industry's lowest power consumption of 29uA, battery-powered use, instead of the current PIR, infrared tube and other human body sensing program.

Module Parameters

- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  0.5 meters~10 meters
- Supply Voltage: DC3.3V or 5~12V
- Power Supply Current: 29uA
- Size: 20*20mm



MS58-2020D13M4

Door Lock

Night Light

Solar Light

Camera

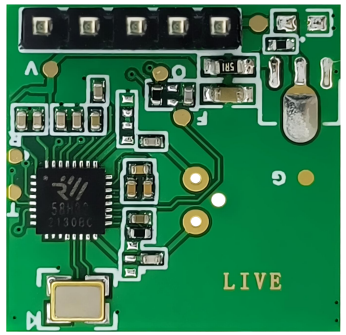
5.8G HUMAN PRESENCE INDUCTION MICROWAVE RADAR MODULE

Module Features

Based on the 5.8G solution to achieve motion, micro-motion, breathing multi-dimensional judgment which determine whether someone more accurately. FMCW algorithm support to provide range measuring assistance which can be better to avoid false triggers and interference outside the set range, 5.8G human presence detection is mainly focus on cost-effective solution.

Module Parameters

- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  Assembly height 3m , radius 3m (breathing detection)
- Supply Voltage: DC3.3V/5V/12V
- Power Supply Current: 20mA
- Size: 20*20mm



MS58-2020D20M4-LIVE

Human Presence Sensor

Desk Lamp

Smoke Alarm

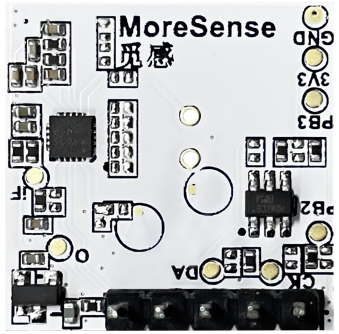
5.8G HAND SWEEPING INDUCTION MICROWAVE RADAR MODULE

Module Features

Based on 5.8G cost-effective chip solution, can do close distance hand waving induction or 1~2 meters wake up when objects close to the product, can support PWM output, on-off mode, low-power version of 29uA can support battery-powered

Module Parameters

- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  10~50cm adjustable for hand sweeping induction
- Supply Voltage: DC3.3V/5~12V
- Power Supply Current: 13mA/29uA
- Size: 20*20mm



MS58-2020D13M4

Cabinet Light

Intelligent Toilet Kick Switch

Panel Switch

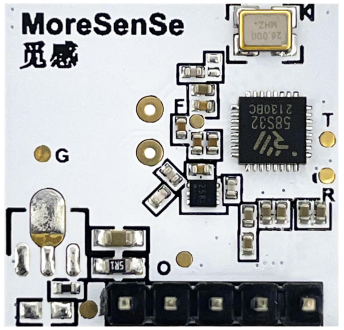
5.8G HIGH ALTITUDE OR LONG DISTANCE MICROWAVE RADAR MODULE

Module Features

Integrated LNA chip on the module, while optimizing the algorithm to enhance anti-interference and exclude common false triggering, the max. sensing distance up to 30 meters.

Module Parameters

- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  Assemly height 15 meters or straight line distance 30 meters
- Supply Voltage: DC3.3~12V
- Power Supply Current: 34mA
- Size: 20*20mm



MS58-2020D20M4-LNA

Industrial and Mining Lamp

Wall Lamp

Street Lamp

Garden Light

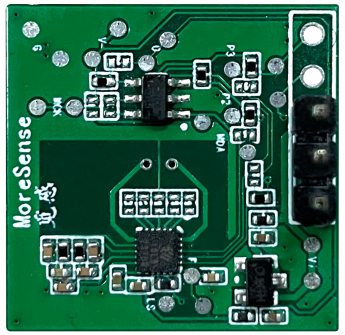
10G HIGH COST-EFFECTIVE MICROWAVE RADAR MODULE

Module Features

It adopts 10.525G fixed frequency low-cost radar chip, which can support PWM output, on-off mode, and the low-power version 51uA can support battery power supply.

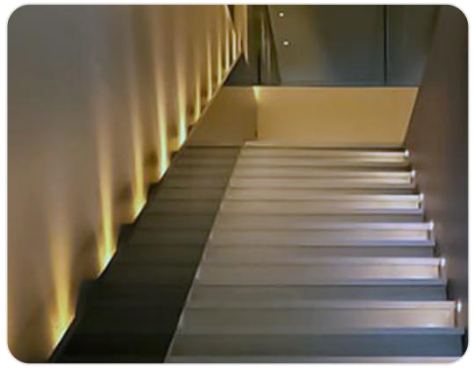
Module Parameters

- Working Frequency Band: 10500~10550MHz
- Sensing Distance Range:
  Adjustable 0~10m in diameter
- Supply Voltage: DC3.3~12V
- Power Supply Current: 51uA/26mA
- Size: 20*20mm



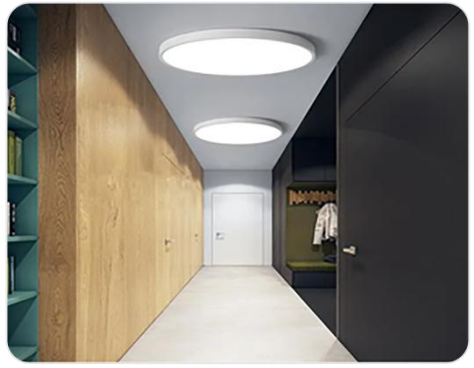
MS10-2020D26M4

Cabinet Light



Footer Lamp

Table Lamp



Entrance Lamp

10G LOW POWER MICROWAVE RADAR MODULE

Module Features

Extremely small size 22*11mm, with limit holes, wiring holder, flexible to adapt to a variety of compact structure, low power consumption 51uA which can support battery power, can support stay auxiliary detection.

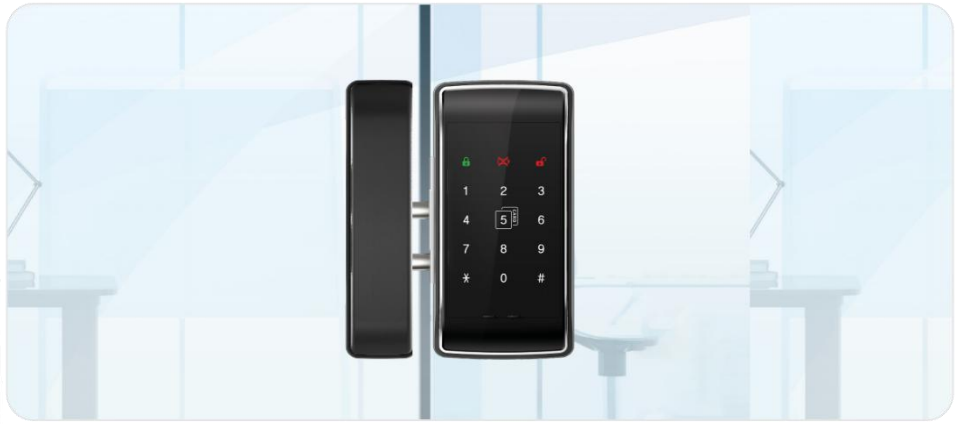
Module Parameters

- Working Frequency Band: 10500~10550MHz
- Sensing Distance Range:
  Adjustable 0~5 meter in diameter
- Supply Voltage: DC3.3V
- Power Supply Current: 51uA
- Size: 22*11mm

MS10-2211J26M4

Intelligent Door Lock

Visual Doorbell



Glass Door Lock

10G HAND SWEEPING INDUCTION MICROWAVE RADAR MODULE

Module Features

Extremely narrow edge 7mm, flexible adaptation of compact structure, hand sweeping solution can be done at the shortest distance of about 10cm, fast response, accurate distance, and in excess of the range of no false touch, can penetrate the thin wood panels, acrylic, glass and other products except metal material.

Module Parameters

- Working Frequency Band: 10500~10550MHz
- Sensing Distance Range:10cm~30cm
- Supply Voltage: 3.3V or 5~12V
- Power Supply Current: 51uA/26mA
- Size: 38*7mm

MS10-3807S26M4

Appliances with Screen

Panel Switch

Hood

Cabinet Light

24G MICRO-MOTION DETECTION MILLIMETER WAVE RADAR MODULE

Module Features

Low-cost and based on CW mode to realize motion and micro-motion detection. Compared with 5.8G,the back side has the shorter sensing distance,does not penetrate the wall, sensing range deviation is smaller, anti-interference performance is good.

Module Parameters

- Working Frequency Band: 24000~24250MHz
- Sensing Distance Range:
  Micro-movement of assemly height 3 meters, sensing radius is 2.5 meters
- Supply Voltage: DC5~12V
- Power Supply Current: 62mA
- Size: 20*20mm

MS24-2020D58M4

Human Presence Sensor

Mirror Lamp

Table Lamp

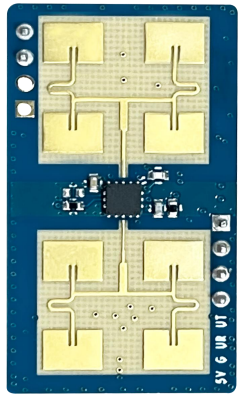
24G HUMAN PRESENCE INDUCTION MILLIMETER WAVE RADAR MODULE

Module Features

Based on the 24G radar chip solution to achieve motion, micro-motion, breathing multi-dimensional and more accurate detection of the presence of the human body, FMCW algorithm to support ranging, you can better avoid false triggers and interference outside the set range, support UART to adjust the parameters.

Module Parameters

- Working Frequency Band: 24000~24250MHz
- Sensing Distance Range:
  Assembly height 3 meters and the sensing radius is 2 meters (breathing detection)
- Supply Voltage: DC3.3~5V
- Power Supply Current: 63mA
- Size: 30*16mm



MS24-3016D63M4

Human Presence Sensor

Smoke Alarm

TV

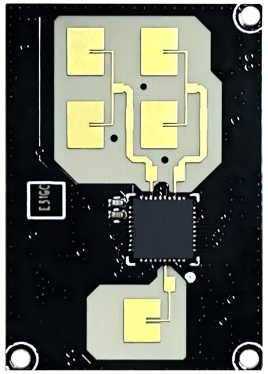
24G SPATIAL POSITION PRESENCE DETECTION MILLIMETER WAVE RADAR MODULE

Module Features

One signal transmitter and two signals receivers antenna design, can support breathing detection, distance measurement, angle measurement, so as to realize the position detection of human body. Through the application layer data processing, it can realize specific interference target filtering, sub-area linkage control, gesture recognition, human body trajectory and so on.

Module Parameters

- Working Frequency Band: 24000~24250MHz
- Sensing Distance Range:
  7 meters in diameter of movement detection,
  5 meters in diameter of breath induction
- Supply Voltage: DC5V
- Power Supply Current: 145mA
- Size: 32*22mm
- Angle Precision: ±10



MS24-3222GH145M4

Human Presence Sensor

Intelligent Toilet

Air Conditioner

TV

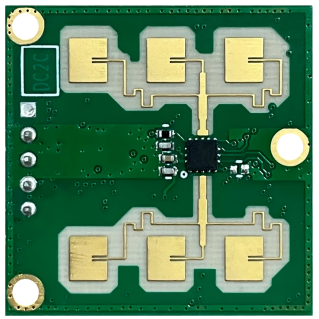
24G PARKING DETECTION MILLIMETER WAVE RADAR MODULE

Module Features

Based on the 24G radar chip solution to realize accurate ranging, low-power consumption applications, to realize parking space detection, and to circumvent false triggering and interference outside the set range.

Module Parameters

- Working Frequency Band: 24000~24250MHz
- Sensing Distance Range:
  6 meters in diameter
- Supply Voltage: 3.2-5.5V
- Power Supply Current:
  1mA average current (one second detecti
- Size: 25*25mm
- Accuracy: +/-0.2m



MS24-2525D58M4

Parking Space Detection

Parking Space Detection

Parking Space Detection

Intelligent Parking Space Lock

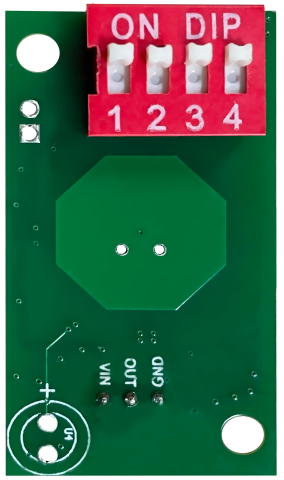
RADAR + DIP SWITCH

Module Features

MoreSense Radar + X series module, the module integrates 4-position dip switches for sensing distance, time and light-sensitive adjustment functions, users adjust the distance and other parameters according to their own use of the environment through the dial code.

Module Parameters

- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  Assembly Height 3 meters, sensing radius 3-4 meters
- Supply Voltage: DC5~12V
- Power Supply Current: 9mA
- Size: 38*20mm



MS58-3820D9M4

Ceiling Light

Flat Lamp

Dow Llight

RADAR + INFRARED REMOTE CONTROL

Module Features

MoreSense Radar + X Series Module, through the infrared remote control to set the radar sensing distance, output time, light sensor switch and PWM duty cycle and other parameters.

Module Parameters

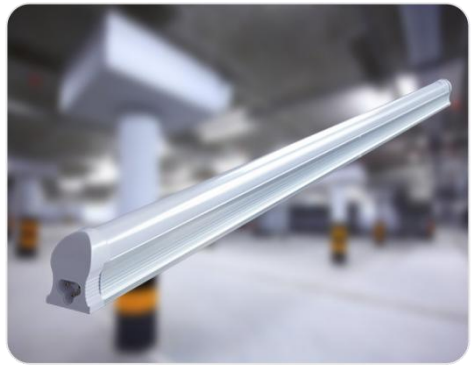
- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  Assembly Height 3 meters, Sensing Radius 3-6 meters
- Supply Voltage: DC5~12V
- Power Supply Current: 9mA
- Size: 22*20mm

MS58-2220D9M4

Square Ceiling Light

Industrial and Mining Lamp

Emergency Light



T8 Lamp

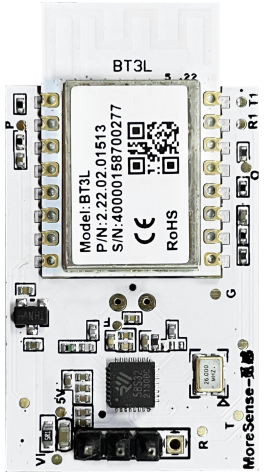
RADAR + BLE / ZIGBEE NETWORKING

Module Features

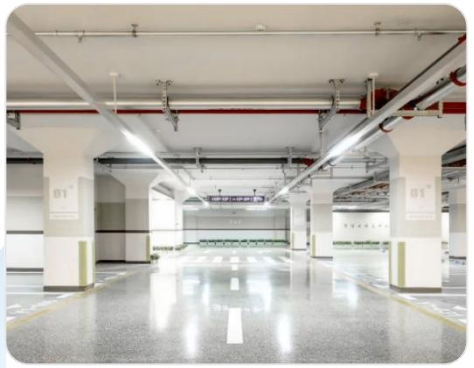
MoreSense radar + X series module, radar sensing + BLEMESH networking combination,designed to avoid the mutual interference of radar and IOT module, you can set the microwave radar sensing parameters and realize group control through APP.

Module Parameters

- Working Frequency Band: 5725~5875MHz
- Sensing Distance Range:
  Assembly height 3 meters, sensing radius 3-5 meters
- Supply Voltage: DC5~12V
- Power Supply Current: 20mA
- Size: 34*23mm



MS58-3423D20M4-TUYA



Garage Light

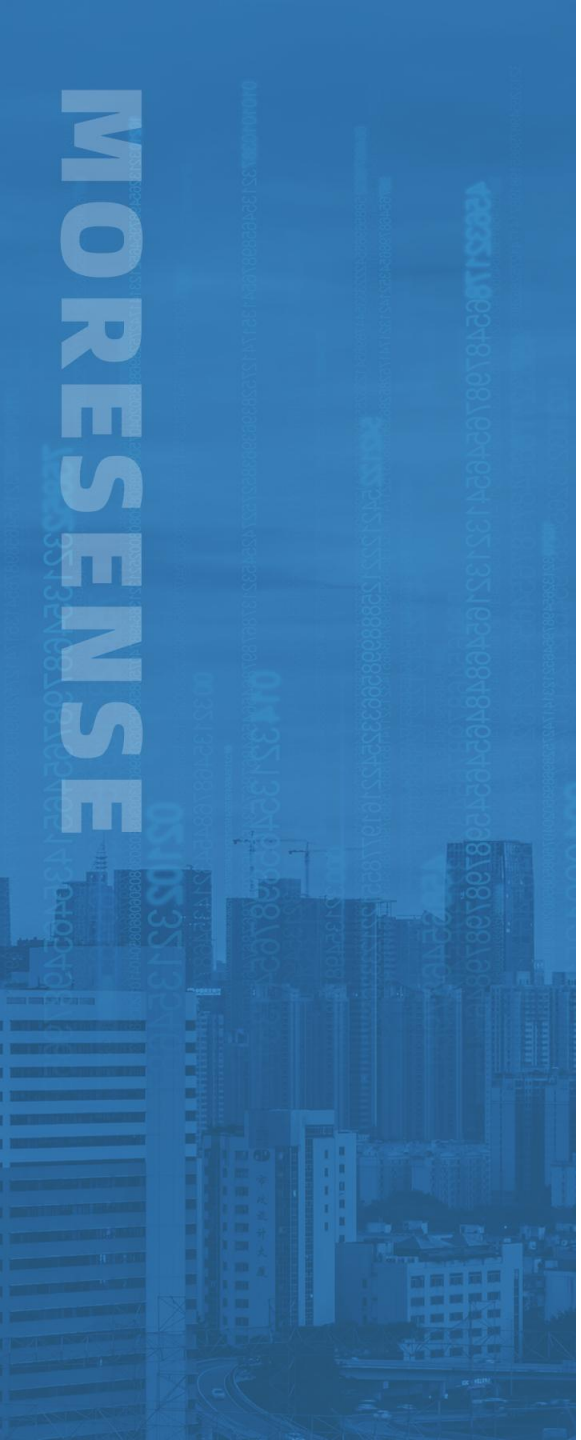
Industrial Light

Office Light

Garden Light

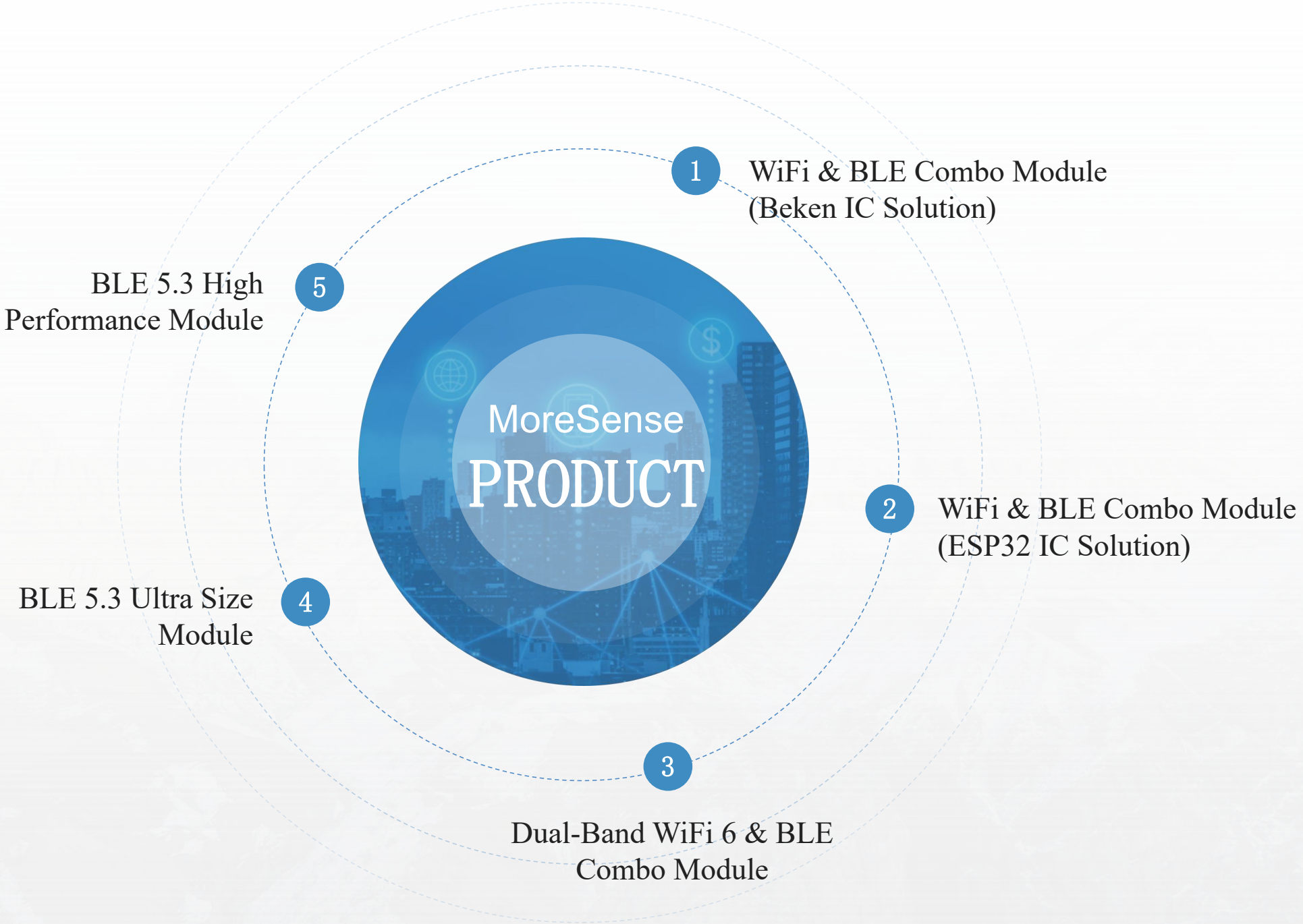
ABUNDANT PRODUCTION LINE

- 5.8G High Altitude or Long Range Series
- 5.8G Low Power Consumption Series
- 5.8G High Performance Series
- 5.8G Hand Sweeping Induction Series
- 5.8G Low Cost Series
- 5.8G Human Presence Series
- 24G Parking Detection
- 24G Micro-motion Detection CW
- 10G Cost-Effective Series
- 10G Hand Sweeping Induction Series
- 10G Low Power Consumption Series
- 24G Human Presence Detection FMCW
- 24G Spatial Position Presence Detection
- Radar + WiFi Networking
- Radar + DIP Switch
- Radar + BLE Networking
- Radar + Infrared Remote Control



02

IOT Communication Module


MoreSense
PRODUCT
1
WiFi & BLE Combo Module
(Beken IC Solution)
2
WiFi & BLE Combo Module
(ESP32 IC Solution)
3
Dual-Band WiFi 6 & BLE
Combo Module
4
BLE 5.3 Ultra Size
Module
5
BLE 5.3 High
Performance Module

WIFI & BLE COMBO MODULE (BEKEN IC SOLUTION)

MSWBT2213

Dual mode, support BLE distribution network, AP distribution network, small program and other kinds of distribution network, excellent antenna performance, support a variety of software development customization needs, can connect private cloud, Amazon, Ali IOT, Tencent IOT and so on. Applied to small home appliances, smart locks, blood pressure monitors, electronic scales and so on.

- Module Type: WiFi 2.4G & BLE
- Main Frequency: 120Mhz
- WIFI Protocol: 802.11b/g/n
- SRAM: 256KB
- BLE Protocol: BLE5.2
- Size: 22*13mm

Intelligent Door Lock

Blood Pressure Monitor

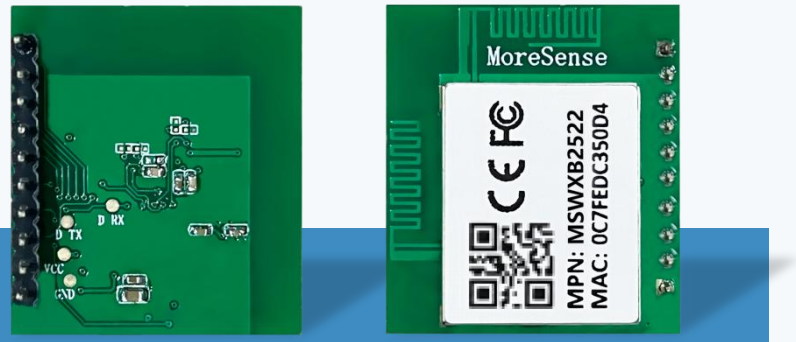
WIFI & BLE COMBO MODULE (ESP32 IC SOLUTION)

MSWB2213

Dual mode, support BLE distribution network, AP distribution network, small program and other kinds of distribution network, excellent antenna performance, support a variety of software development customization needs, can connect private cloud, Amazon, Ali IOT, Tencent IOT and so on.

- Module Type: WiFi 2.4G & BLE
- Main Frequency: 160Mhz
- WIFI Protocol: 802.11b/g/n
- SRAM: 400KB
- BLE Protocol: BLE5.2
- Size: 22*13mm

DUAL-BAND WIFI 6 & BLE COMBO MODULE

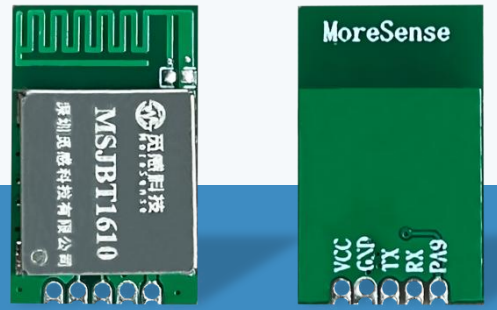


MSWXB2522

WiFi6, dual-frequency and dual-mode, support BLE distribution network, AP distribution network, excellent antenna performance, support a variety of software development customization needs, connecting private cloud, Amazon, Ali IOT, Tencent IOT and so on. Applied to energy storage devices, smart locks, massage chairs and so on.

- Module Type: Dual-band WiFi 6 & BLE
- Main Frequency: 480Mhz
- WIFI Protocol: 802.11b/g/n/ax@WiFi6
- SRAM: 992KB
- BLE Protocol: BLE5.0
- Size: 25*22mm

BLE 5.3 ULTRA SIZE MODULE



MSJBT1610

The industry's ultra-small size module, excellent antenna performance, UART transmission, support a variety of software development customization needs, support a variety of certifications. Applied to personal care products, sports health, small household appliances, sharing devices, etc..

- Module Type: BLE
- BLE Protocol: BLE5.2
- Main Frequency: 96Mhz
- SRAM: 73KB
- Size: 16*10mm

BLE 5.3 HIGH PERFORMANCE MODULE

MSJBT2213

Rich pin resources, excellent antenna performance, UART transmission, support for a variety of software development and customization needs, support for a variety of certifications. Used in security access control, time and attendance machine, industrial control, etc..

- Module Type: BLE
- BLE Protocol: BLE5.2
- Main Frequency: 96Mhz
- SRAM: 73KB
- Size: 22*13mm

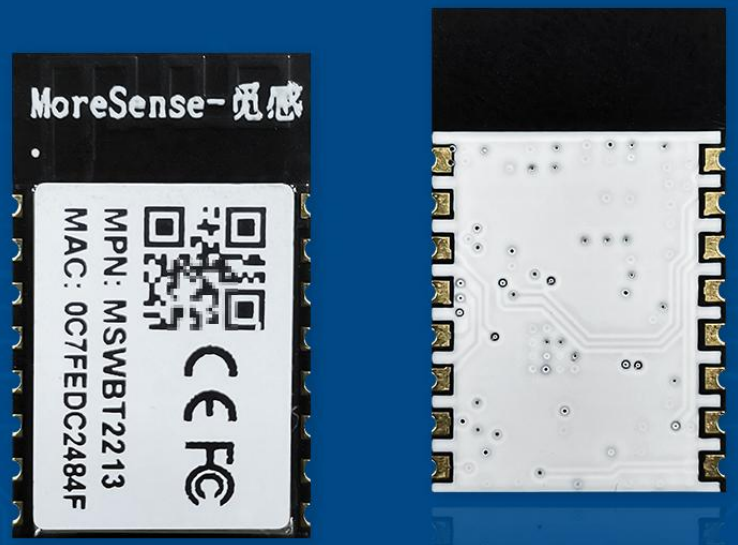
WIFI MODULE CATALOG

Item#	MSWBT2213	MSWBT2215	MSWBT2416	MSWBT3318	MSWBT1615	MSWB2213	MSWXB2522
Pic.							
WIFI Protocol	802.11 b/g/n@WIFI4						802.11 b/g/n/ax@WIFI6@Dual-band
BLE Protocol	BLE5.2					BLE5.0	BLE5.2&Classic BLE
Config Way	Smart Config/BLE/AP/Web Page						Smart Config/BLE/AP/Web Page
Comminucation Protocol	TCP/UDP/HTTP/HTTPS/MQTT/MQTTS						
Main Freq.	120MHz					160MHz	480MHz
SRAM	256KB					400KB	992KB
Available IOs Quantity	14	8	19	19	5	14	8
FLASH	2MB					4MB	4MB
Peripherals	SPI，UART，I2C，PWM，ADC，GPIO						SPI，UART，I2C，PWM，ADC，GPIO
Secure Encryption	WPS/WEP/WPA/WPA2Personal/WPA3						WPS/WEP/WPA/WPA2Personal/WPA3Personal
Power Supply Range	2.7~3.6V					3.0~3.6V	3.0~3.6V
Operating Temperature	-40℃~85℃						
Storage Environment	-40℃- 125℃						
Power Consumption	Peak (continuous transmit): 260mA Average (STA, networked standby): 14mA (DTIM10) Average (STA, 1KB/s): 70mA Average (AP): 80mA					Peak (continuous transmission): 260mA Average (STA, networked standby): 24mA (DTIM1) Average (STA, 1KB/s): 54mA Average (AP): 85mA	Peak (continuous transmission):300mA Average (STA, networked standby):112uA(DTIM10)
Size	22.5x13.5x3mm	22x15x3mm	24x16x3mm	33x18x3mm		22.5x13.5x3mm	25mm x 22mm x 3mm
Package Type	SMD-16	DIP-10	SMD-22	SMD-21	Gold Finger/Edge Connector	SMD-16	DIP-10
Antenna Type	On-Board PCB/External IPEX	On-Board PCB/External IPEX	On-Board PCB	On-Board PCB	Ceramic Antenna	On-Board PCB/External IPEX	On-Board PCB/External IPEX

BLE MODULE CATALOG

Item#	MSBT2213	MSJBT1610	MSJBT2213
Pic.			
Module Type	BLE Single Mode		
BLE Protocol	BLE4.2	BLE5.3	BLE5.3
AT Command	Supporting		
Master/Slave	Slave	Master-Slave	Master-Slave
Main Freq.	64MHz	96MHz	96MHz
SRAM	20KB	73KB	73KB
Available IOs Quantity	20	3	14
FLASH	160KB	128KB	256KB
Peripherals	SPI，UART，I2C，PWM，ADC，GPIO		
Power Supply Range	0.9~3.6V	1.8~3.4V	1.8~3.4V
Operating Temp.	-40℃~85℃		
Storage Environment	-40℃- 125℃		
Power Comsuption	Broadcast(100ms)：350uA Broadcast(1ms)：50uA Connect：1.5mA	Broadcast(100ms)：350uA Broadcast(1ms)：50uA Connect：1.5mA	Broadcast(100ms)：350uA Broadcast(1ms)：50uA Connect：1.5mA
Size	22.5x13.5mm	16*10mm	22.5*13.5mm
Package Type	SMD-16	SMD-5	SMD-16
Antenna Type	On-Board PCB	On-Board PCB	On-Board PCB

SOFTWARE SDK



Embedded Web Page

Support LAN and OTA Remote Upgrade

Integrated BLE/ AP/Smartconfig

Support Various IOT Protocols (TCP/UDP/HTTP/HTTPS /MOTT/MOTTS/COAP)

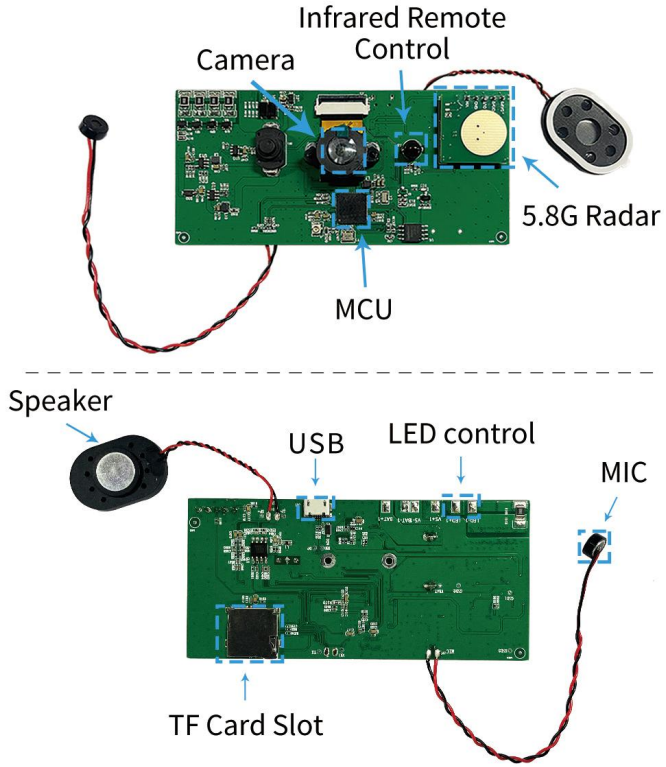
Integrated TRNG and security module

Generic AT Commands

Various API Interface

Radar Sensing Garage T8 Lamp Network Solution

Sensing Sensitivity | Extreme Energy Saving
Fast Networking

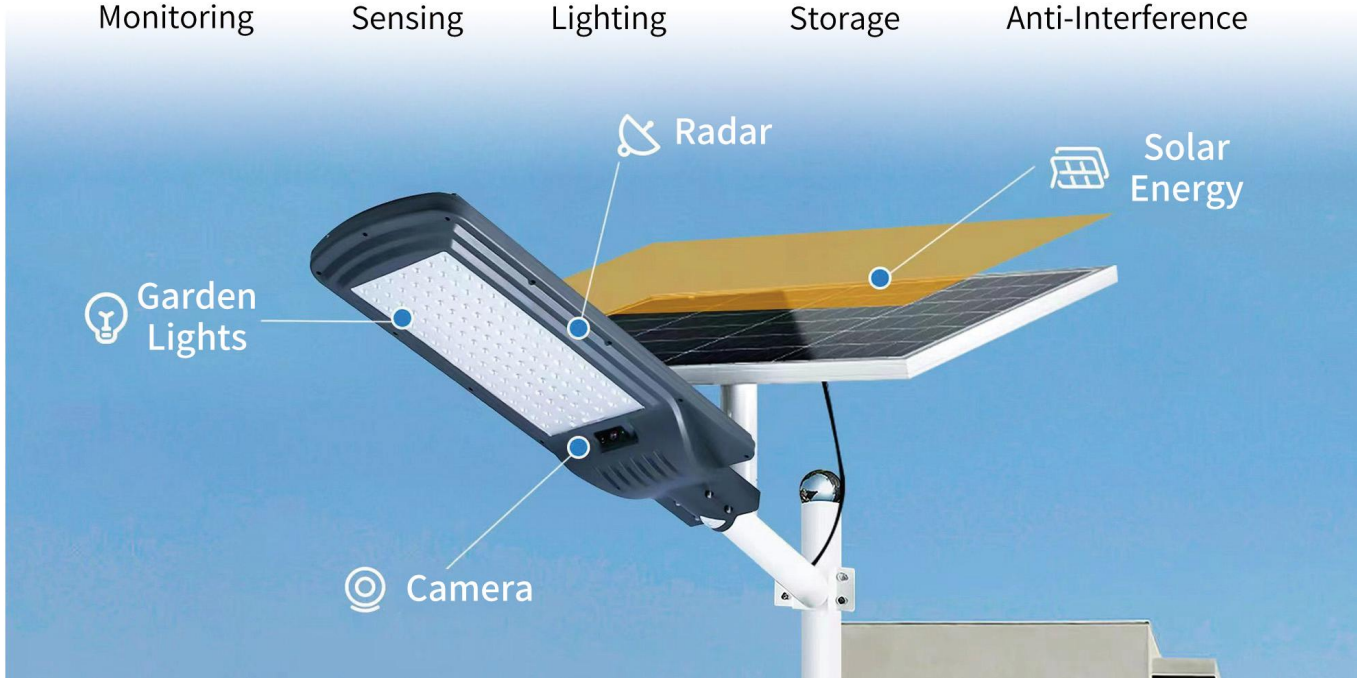


Video Parameters	Effective Resolution	1600*1200 (2MP)
	Video Frame Rate	15fps
	Video Stream	135kbps-2048kbps
	Minimum Illumination	Day Mode 300Lux,Night Mode 100Lux
	Day-Night Mode	Automatic Mode
Electrical Parameters	Working Voltage	3.3V
	Working Current	150mA ± 10mA
	Working Environment	-10°C --- 50°C
Network Protocols		802.11 b/g/n@WIFI4

Radar Solar Monitoring Garden Light Module —— Overall Solution

The radar solar monitoring garden light module solution launched by MoreSense which has the functions of monitoring and controlling through small program, and at the same time it supports radar human body sensing, WiFi & BLE networking function, camera monitoring, real-time intercom, intelligent dimming, etc , . The innovation of this solution is to meet the demand for energy-saving lighting of consumer's yard, and at the same time it supports the functions of smart sensing, smart monitoring, and smart lighting, and has the advantages of wireless transmission, easy wiring installation, and low cost.

WI-FI Remote Monitoring | Radar Sensing | Intelligent Lighting | Solar Energy Storage | Outdoor Anti-Interference



APPLICATION

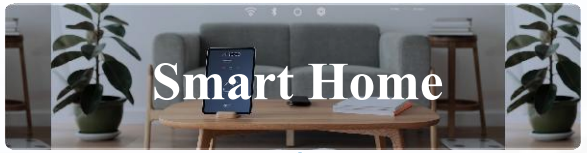
Application

Commercial Lighting

- Down Light
- Ceiling Light
- Tube Lamp
- UV Lamp
- Industrial Lighting
- Outdoor Wall Lamp
- Street Light

Indoor Lighting

- Bulb Light
- Night Light
- Cabinet Light
- Entrance Lamp
- Table Lamp
- Footer Lamp
- Bathroom Mirror Lamp



Home Appliances

- Refrigerator
- Water Heater
- Hood
- Appliances with Screen
- TV
- Air Conditioner
- Wall Switch

Security

- Door Lock
- Access Control
- Visual Doorbell
- Human Body Sensor
- Camera
- Alarms

Bathroom

- Toilet Seat
- Sterilized Towel Rack
- Toothbrush Holder
- Hand Washing Machine
- Fragrance Sprayer

APPLICATION-MICROWAVE RADAR SENSOR

Commercial Lighting

Center Control Screen

Cabinet Lighting

Doorbell

Pet Feeders

Door Lock

Intelligent Toilet

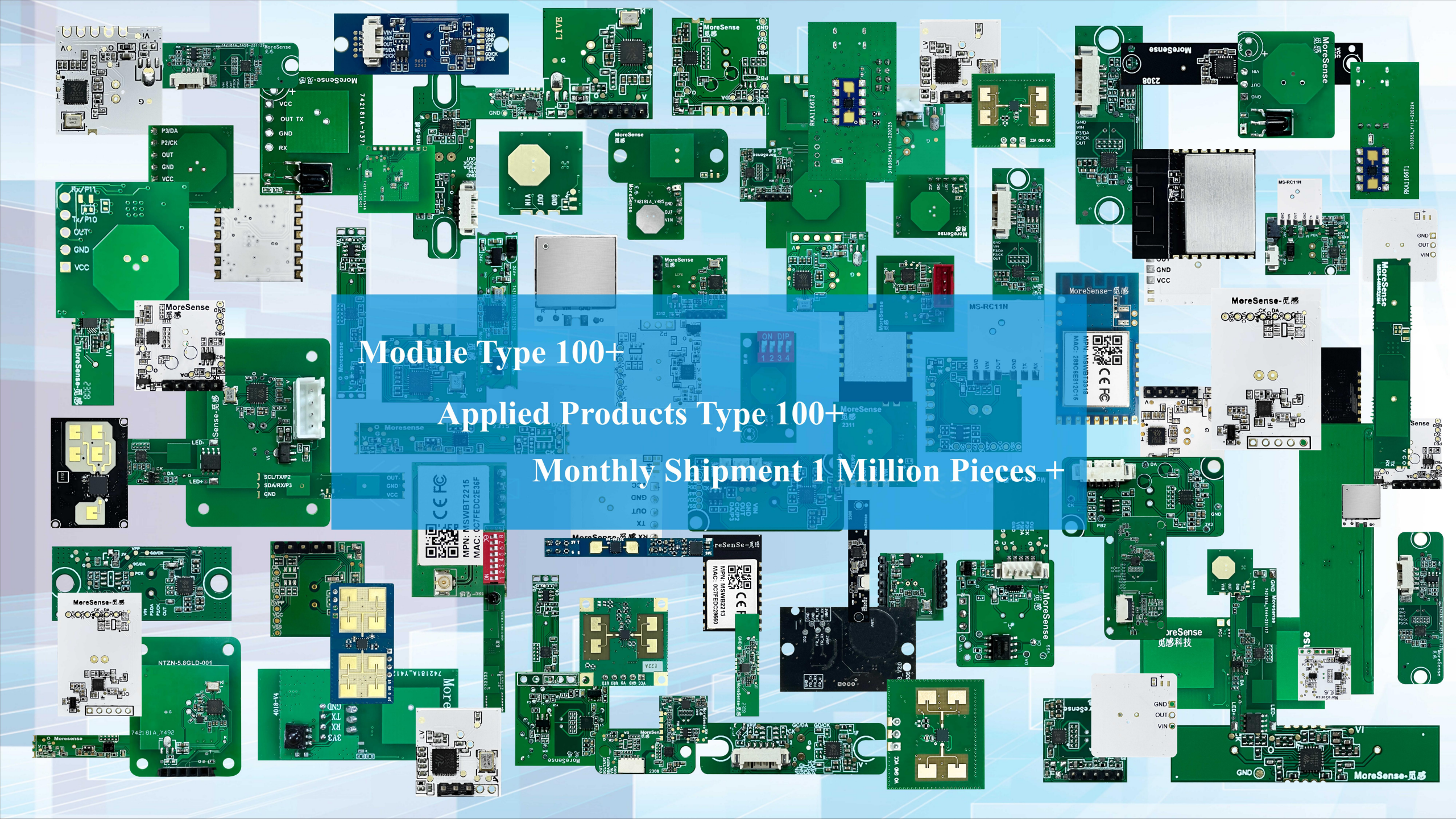
Camera

TV

Panel Switch

Human Presence Sensor

Air Conditioner


Module Type 100+
Applied Products Type 100+
Monthly Shipment 1 Million Pieces +

Canada
USA
Brazil
Sweden
Germany
Switzerland
France
Slovakia
Hungary
Turkey
Egypt
Russia
China
India
Vietnam
Singapore
South Korea
Australia

CONTACT US

Shenzhen MoreSense Technology Co., Ltd.

WhatsApp

WeChat

- URL： https://en.moresense-tech.com/
- ADD： #206 Building A1,#663 Bulong Road,Longgang District,518129,Shenzhen,GuangDong Province,China
- E-mail： hj@moresense-tech.com
- TEL. or Skype： +86 18902454165(Miss.Jennifer Huang)