



MinewSemi Connectivity Module Catalogue



To learn more about wireless connectivity modules,
please directly scan the QR code

Tel: 0086-755-2801-0353

Email: minewsemi@minew.com

Web: www.minewsemi.com

Address: 3rd Floor, Building I, Gangzhihong Science Park, Qinglong Road,
Longhua District, Shenzhen, 518109, China



Global Certification

MinewSemi connectivity modules have passed BQB, SRRC, FCC, CE, RoHS, TELEC, CE, IC, WPC, RCM, WEEE, KC, and other authoritative certifications.

COMPLETE CERTIFICATION

- IC
- CE
- TELEC
- UK CA
- Bluetooth®
- SRRC
- REACH
- RCM
- WEEE
- RoHS
- EN50498
- WPC
- 208-190043



PRODUCT ADVANTAGES

-  Advanced Production Capacity
-  Various Wireless Technology
-  Excellent Performance
-  High Cost Performance
-  Multiple Certifications
-  Small Size
-  Strong Compatibility
-  Ultra-compact & Low-power

About MinewSemi

MINEWSEMI The subsidiary of  MINEW

MinewSemi, a wholly owned subsidiary of Shenzhen Minew Technologies Co., Ltd., is an Innovative IoT Module Expert that integrates product R&D, technical application, and service support. The company independently develops a full range of IoT modules covering BLE, GNSS, LoRa, Wi-Fi, UWB, mmWave, and SparkLink technologies.

With a mission to empower partners with innovative IoT modules to co-create an intelligent ecosystem, MinewSemi delivers solutions with proprietary core technologies and serves customers in over 100 countries worldwide.

Product Lines

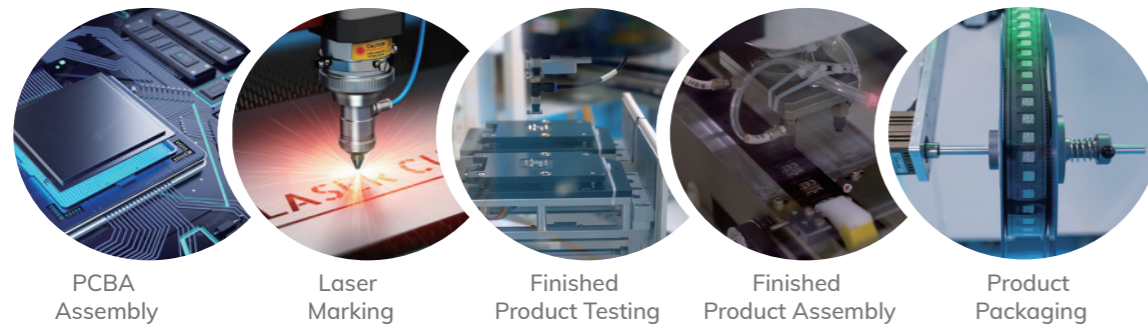


OEM/ODM Services

We have multiple fully automated module production lines and SMT production lines, enabling fully automated production processes from PCB splitting, labeling, programming, testing, quality inspection, to packaging. With a monthly production capacity of millions of units, MinewSemi also offers one-stop OEM/ODM services to swiftly respond to and meet diverse customer customization needs, providing embedded application solutions, complete SDK development, and one-on-one expert-level technical support efficiently with high quality.



Meet All Your Different OEM/ODM Projects



Product Advantages

MinewSemi wireless module empower customers to more than 80 countries and regions around the world with a varieties application and industries. We independently develop and produce a comprehensive range of wireless connectivity modules, including BLE, GNSS, LoRa, Wi-Fi, UWB, mmWave radar, etc., which have been widely recognized by our customers due to their state of the art features such as low power consumption, global certifications, stable connection, excellent compatibility, strong anti-interference capability, highly cost effective and so on. We can provide customized module products with multi-size specifications and different performance parameters according to customer's requirements, and also provide in-time technical support.



RF Circuit Design



Embedded Software Development



Wireless Connection Tech



Bluetooth Communication Tech



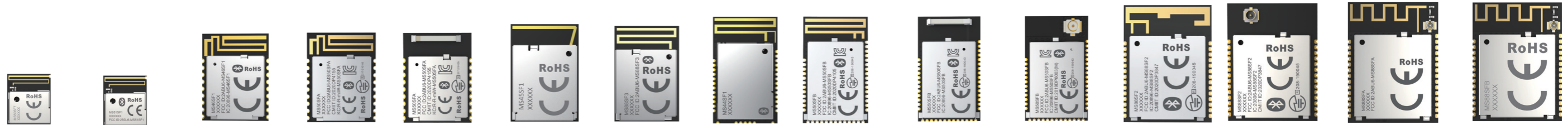
Mature IoT Technology

- Various Wireless Technology**
Different types of IoT Module including BLE, LoRa, GNSS, WIFI, UWB, mmWave Radar, and etc.
- Multiple Certifications**
RoHS, REACH, CE, FCC, BQB, IC, SRRC, TELEC, WPC, RCM, WEEE, AEC, KC
- Excellent Performance**
Help ease development, speed up time-to-market and improve ROI
- Advanced Production Capacity**
SMT/DIP/Injection/Assembly full line, automatic million-level production capacity
- MINEWSEMI**
MinewSemi Focus on Connectivity Module
- Ultra-compact & Low-power**
Extremely easy to use for IoT device solutions
Drive development of valuable IoT devices
- Small Size**
Overcoming keep-out Zones in antenna design
Great choices for small IoT devices
- Strong Compatibility**
Strong product compatibility, standard workmanship, great performance and the durability
- Highly Cost-effective**
Reduce the cost and get high performance, speed your new products development

Bluetooth® LE Module

MinewSemi has launched a series of low-energy Bluetooth modules based on Nordic nRF52 series and nRF53 series SoCs. These modules deliver ultra-low power consumption, robust interference resistance, and stable multi-device connectivity, enabling simple deployment and secure, reliable data transmission. Designed for high performance, they are ideal for IoT applications such as smart home, medical electronics, industrial instrumentation, and smart transportation, providing efficient and stable wireless connectivity solutions.

Nordic nRF52\53 Series Modules



Model Series	MS50SF7 Series	MS51SF1 Series	MS46SF1 Series	MS50SFA Series		MS45SF1 Series	MS88SF3 Series	MS44SF1 Series	MS50SFB Series			MS88SF2 Series		MS88SFA Series	MS88SFB Series
Model No.	MS50SF71	MS51SF11	MS46SF11	MS50SFA1	MS50SFA2	MS45SF11	MS88SF31	MS44SF11	MS50SFB1	MS50SFB2	MS50SFB3	MS88SF21	MS88SF23	MS88SFA8	MS88SFB8
Antenna	PCB	PCB	PCB	PCB	Ceramic	PCB	PCB	PCB	PCB	Ceramic	U.FL	PCB	U.FL	PCB/U.FL	PCB/U.FL
SoCset	Nordic nRF52832	Nordic nRF52833	nRF52805	nRF52832/810	nRF52832/810	nRF5340	nRF52840/833	nRF52820	nRF52832/810	nRF52832/810	nRF52832/811/810	nRF52840/833	nRF52840/833	Nordic nRF52833/840	Nordic nRF52833/840
Max Range	80M	80M	80M	80M	80M	300M	300M	600M	80M	80M	80M	300M	300M	600M	600M
Dimension(mm)	9.8*8.4*1.6	9.8*8.4*1.6	15.8*12*2	15.8*12*2	15.8*12*2	18.5*12.5*2	18.5*12.5*2	20*12*2	20*12*2	20*12*2	20*12*2	23.2*17.4*2	23.2*17.4*2	23.2*17.4*2	23.2*17.4*2
Flash	512KB	512KB	192KB	512/192KB	512/192KB	1 MB & 256 KB	1MB/512KB	256 KB	512/192KB	512/192KB	512/192/192KB	1MB/512KB	1MB/512KB	1MB/512KB	1MB/512KB
RAM	64KB	128KB	24KB	64/24KB	64/24KB	512KB & 64KB	256KB/128KB	32KB	64/24KB	64/24KB	64/24/24KB	256KB/128KB	256KB/128KB	256KB/128KB	256KB/128KB
Reception Sensitivity	-96dBm	-96dBm	-97dBm	-96dBm	-96dBm	-104/-98dBm	-103/-95dBm -103/-96dBm	-103/-95dBm	-96dBm	-96dBm	-96/-96/-104~-97dBm	-103/-95dBm -103/-96dBm	-103/-95dBm -103/-96dBm	-96dBm	-96dBm
Transmission Power	-40~+4dBm	-40~+8dBm	-40~+4dBm	-40~+4dBm	-40~+4dBm	-40~+3dBm	-40~+8dBm	-40~+8dBm	-40~+4dBm	-40~+4dBm	-40~+4dBm	-40~+8dBm	-40~+8dBm	~+20dBm	~+20dBm
Current(TX)	0dBm-5.3mA	0dBm-4.9mA	0dBm-4.6mA	0dBm-5.3mA /4.6mA	0dBm-5.3mA /4.6mA	0dBm-3.2mA	0dBm-4.9mA /4.8mA	0dBm-4.9mA	0dBm-5.3mA /4.6mA	0dBm-5.3mA /4.6mA	0dBm-5.3mA /4.6mA/4.6mA	0dBm-4.9mA /4.8mA	0dBm-4.9mA /4.8mA	Peak:150mA	Peak:200mA
Current(RX)	5.4mA	4.6mA	4.6mA	5.4mA/4.6mA	5.4/4.6mA	2.6mA	4.6mA	4.7mA	5.4/4.6mA	5.4/4.6mA	5.4/4.6/4.6mA	4.6mA	4.6mA	/	/
GPIO	24	20	6	13	13	48	48/42	16	30	30	30	20	20	29	29
Certification	/	BQB,FCC,CE,TELEC,RoHS,REACH	REACH,FCC,CE,IC,RoHS,BQB	BQB,FCC,CE,KC,RoHS,REACH,SRRC,TELEC,EN50498	BQB,FCC,CE,SRRC,RoHS,REACH,TELEC,KC,EN50498	FCC,CE	CE,FCC,BQB,RoHS,REACH	BQB	BQB,FCC,CE,IC,KC,TELEC,WPC,RCM,RoHS,REACH,SRRC,WEEE,EN50498	BQB,FCC,CE,IC,TELEC,WPC,RCM,KC,RoHS,REACH,UKCA,SRRC,WEEE,EN50498	BQB,FCC,CE,IC,KC,TELEC,WPC,RCM,RoHS,REACH,EN50498,WEEE	BQB,FCC,CE,IC,TELEC,WPC,RCM,RoHS,REACH,SRRC	BQB,FCC,CE,IC,TELEC,WPC,RCM,RoHS,REACH	CE,FCC,REACH,RoHS	REACH,RoHS

Firmware
 1. For module based on nRF52811/833/840, it is null module without any firmware preloaded in default.
 2. For module based on nRF52805/810/832, it has the UART-Slave/Master firmware preloaded in default.
 We can provide UART command list if needed.

Bluetooth® LE Module

MinewSemi's next-generation Bluetooth 6.0 modules, built on Nordic's nRF54 series SoCs, combine backward compatibility with nRF52 series and seamless protocol switching to future-proof IoT deployments. Available in multiple compact form factors with PCB antennas or optional U.FL connectors, these PSA Level 3-certified modules deliver ultra-low power consumption, -105dBm receiving sensitivity, and over 2x the processing power of previous Bluetooth solutions. With native support for Bluetooth Mesh, Thread, Zigbee and Matter, they redefine connectivity standards for industrial automation, smart home systems, medical devices, and wearables—enabling scalable, secure, and high-performance wireless networks.

Nordic nRF54 Series Modules

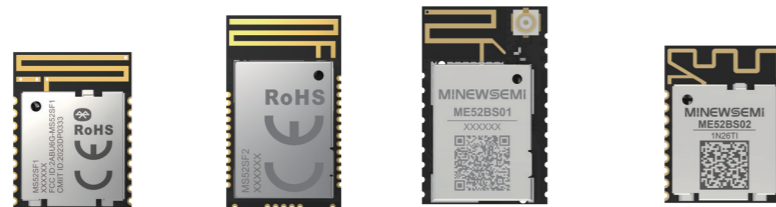


Model Series	ME54 Series								
Model No.	ME54BS01	ME54BS02	ME54BS03	ME54BS11	ME54BS12	ME54BS61	ME54BS62	ME54BS0A	ME54BS13
Antenna	PCB	PCB	U.FL	PCB	PCB	ANT PIN	PCB	PCB/U.FL	PCB
SoCset	nRF54L15/L10/L05	Nordic nRF54H20	nRF54L15/L10/L05	nRF54L15/L10/L05	nRF54L15/L10/L05	Nordic nRF54L15	Nordic nRF54L15	Nordic nRF54L15	Nordic nRF54LM20A
Max Range	170M	170M	170m	80M	/	/	10~70m	800m	/
Dimension(mm)	23.2x17.4x2mm	16.5x12.0x2.4mm	23.2x17.4x2mm	15.8x12x2mm	15.8x12x2mm	6x6x1.8mm	6x9x1.8mm	18x10x1.7mm	16.5x12.0x2.4mm
Flash	1.5MB/1.0MB/0.5MB	2MB MEAM	1.5MB/1.0MB/0.5MB	1.5MB/1.0MB/0.5MB	1.5MB/1.0MB/0.5MB	1.5MB	1.5MB	1.5MB	2MB
RAM	256KB/192KB/96KB	1MB RAM	256KB/192KB/96KB	256KB/192KB/96KB	256KB/192KB/96KB	256KB	256KB	256KB	512KB
Reception Sensitivity	-96dBm	-100dBm	-96dBm	-96dBm	-96dBm	-96dBm	-96dBm	-96dBm	-96dBm
Transmission Power	-40~+7dBm	-40~+10dBm	-40~+7dBm	-40~+7dBm	-40~+7dBm	-40~+8dBm	-40~+8dBm	~+20dBm	-40~+8dBm
Current(TX)	0dBm-5mA	0dBm-4.7mA	0dBm-5mA	0dBm-5mA	0dBm-5mA	0dBm-5mA	0dBm-5mA	20dBm-150mA	/
Current(RX)	3.2mA	1.7mA	3.2mA	3.2mA	3.2mA	3.2mA	3.2mA	7mA	/
GPIO	19	64	19	12	29	30	30	30	64
Certification	FCC,BQB,CE	/	FCC, CE	/	FCC,BQB,CE	/	/	/	/

Bluetooth® LE Module

Minewsemi Bluetooth Low Energy module collections have the advantages of multiple protocol functions, high flexibility and ultra-low power consumption. Global certifications and preloaded MinewSemi Uart firmware reduce customers' BOM cost and time-to-market for multi IoT applications. With multi high-tech SoCs, higher performance PCB/Ceramic and u.FL antenna type, integrated DC/DC and 32.768Khz crystal oscillator, MinewSemi module will meet your requirements in different IoT industries.

Other Chip Modules



Model Series	MS52SF1 Series	MS52SF2 Series	ME52 Series	
Model No.	MS52SF11	MS52SF21	ME52BS01	ME52BS02
Antenna	PCB	PCB	PCB/u.FL	PCB
SoCset	Telink TLSR8208G	Telink TLSR8208	Telink TLSR8258	OnMicro OM6626
Max Range	80M	80M	60M	80M
Dimension(mm)	15.8*12*2	20*12*2	20*12.7*2	15.8*12*2
Flash	512KB	128KB	512KB	1MB
RAM	20KB	16KB	64KB	80KB
Reception Sensitivity	-97dBm	-97dBm	-96dBm	-99dBm
Transmission Power	-45~+10dBm	-45~+10dBm	-45~+10dBm	-40~+7dBm
Current(TX)	0dBm-9.5mA	0dBm-9.5mA	0dBm-4.8mA	0dBm-4.2mA
Current(RX)	9.1mA	9.1mA	5.3mA	3.4mA
GPIO	14	15	14	15
Certification	SRRRC,BQB,FCC,CE REACH,RoHS	REACH,RoHS	REACH,RoHS	FCC,CE,BQB REACH,RoHS
Firmware	1. For module based on nRF52811/833/840, it is null module without any firmware preloaded in default. 2. For module based on nRF52805/810/832, it has the UART-Slave/Master firmware preloaded in default. We can provide UART command list if needed.			

GNSS Module

The GNSS module series integrate the latest generation of GNSS technology, delivering highly accurate positions with minimal power consumption. Combining high positioning accuracy and indoor sensitivity with powerful processing capabilities, our GNSS modules simultaneously support multiple global navigation systems including the U.S. GPS, European Galileo, Russian GLONASS, as well BeiDou, QZSS and NavIC. It's cost-competitive, and allows for easy integration and migration from existing product designs including trackers, telematics, portable, and tablets as well as marine and sports accessories.



Class	Standard Precision							Dual Band			High Precision		
Model No.	ME31GR01	ME31GR02	MS31SN1	MS32SN1	MS33SN2	MS37SN2	ME3AGR01	MS35SN1	MS35SN2	ME32GR01	MS34SN2	MS34SN3	MS34SNA
Satellite System	GPS L1 C/A BDS B1I+B1C GLONASS G1 GALILEO E1 QZSS L1 C/A SBAS: L1	GPS L1 C/A BDS B1I+B1C GLONASS G1 GALILEO E1 QZSS L1 C/A SBAS: L1	GPS L1 C/A BDS B1I (GLONASS G1) QZSS L1 C/A SBAS: L1	GPS L1 C/A QZSS L1 C/A	GPS L1 C/A BDS B1I GLONASS G1 GALILEO E1 QZSS L1 C/A SBAS: L1	GPS L1 C/A BDS B1I GLONASS G1 GALILEO E1 QZSS L1 C/A SBAS: L1	BDS: B1I, B1C GPS: L1C/A, L1C GLONASS: G1 Galileo: E1B/C QZSS: L1C/A	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 SBAS: L1 IRNSS L5*	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 SBAS: L1 IRNSS L5*	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 SBAS: L1 IRNSS L5	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 SBAS: L1 IRNSS L5*	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 SBAS: L1 IRNSS L5*	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 SBAS: L1 IRNSS L5*
Ranging Accuracy	≤1.5m (CEP)	≤1.5m (CEP)	≤2.5m (CEP)	≤3.0m (CEP)	≤2.0m (1σ)	≤2m (1σ)	≤1.5m (CEP)	≤1.2m (CEP)	≤1.2m (CEP)	≤1.2m (CEP)	≤1.2m (CEP) RTK: ≤1cm(CEP)	≤1.2m (CEP) RTK: ≤1cm(CEP)	≤1.2m (CEP) RTK: ≤1cm(1σ) INS: 2%*D(1σ)
Dimension(mm)	10.5*9.7*2	10.5*9.7*2	10.5*9.7*2	10.1*9.7*2	16.0*12.2*2.6	16.0*12.2*2.6	6.0*8.0*2.0	10.1*9.7*2	16.0*12.2*2.6	16.0*12.2*2.6	16.0*12.2*2.6	17*22*3	17*22*3
Supply Voltage	3.3V	3.3V	3.3V	3.3V	3.3V	3.3V	1.8~3.3V	3.3V	3.3V	3.3V	3.3V	3.3V	3.3V
Operating current	Acq: 33mA Track: 28mA	Acq: 19mA Track: 17.5mA	Acq: 36mA Track: 32mA	Acq: 21mA Track: 18mA	Acq: 33mA Track: 30mA	Acq: 12mA Track: 9mA	Powered by 3.3V (without external DCDC) Acq: 45mA Track: 33mA Powered by 3.3V with external 0.9V DCDC Acq: 9mA Track: 9mA	Acq: 28mA Track: 25mA	Acq: 11mA Track: 9mA	Acq: 23mA Track: 21mA	Acq: 13mA Track: 10mA	Acq: 11mA Track: 9mA	Acq: 200mA Track: 160mA
Pin Package	LCC-18pin	LCC-18pin	LCC-18pin	LCC-18pin	LCC-24pin	LCC-24pin	LGA-10pin	LCC-18pin	LCC-24pin	LCC-24Pin	LCC-24pin	LGA-54pin	LGA-54pin
Output Mode	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)
Channel	Acq: 96 Track: 120	Acq: 96 Track: 120	Acq: 64 Track: 32	Acq: 66 Track: 22	Acq: 127 Track: 47	Acq: 127 Track: 47	Acq: 32 Track: 22	Acq: 217 Track: 135	Acq: 217 Track: 135	Acq: 200 Dual Track: 200 Dual	Acq: 217 Track: 135	Acq: 217 Track: 135	Acq: 217 Track: 135
Tracking Sensitivity	-165dBm	-165dBm	-162dBm	-165dBm	-165dBm	-165dBm	-165dBm	-165dBm	-165dBm	-163dBm	-165dBm	-165dBm	-165dBm
Algorithm	PVT	PVT	PVT	PVT	PVT	PVT	PVT	PVT	PVT	PVT	RTK, PVT	RTK, PVT	PVT, RTK, INS (Optional)
Serial ports	1	1	1	1	1	1	1	1	2	1	2	3	3
Ex-LNA enabled	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N
Feature	Single-band All-constellation Low Power	Single-band All-constellation Low Power	High cost-effective Multi-constellation Low-power	MTK platform High sensitivity Ultra-low Power	Single-band Multi-constellation MTK platform High sensitivity Ultra-low power	Single-band Multi-constellation High sensitivity Ultra-low power	Single-band Multi-constellation Ultra-low power Ultra-small size	Simultaneous multi-constellation positioning MTK platform High sensitivity All-constellation GNSS Support Original Observation Data Output	Simultaneous multi-constellation positioning MTK platform High sensitivity All-constellation GNSS Support Original Observation Data Output	Simultaneous multi-constellation positioning High cost-effective High sensitivity	Simultaneous multi-constellation positioning MTK platform High sensitivity All-constellation GNSS RTK position 1-5Hz RTK output	Simultaneous multi-constellation positioning MTK platform High sensitivity All-constellation GNSS RTK position 1-5Hz RTK output	Simultaneous multi-constellation positioning MTK platform High sensitivity All-constellation GNSS RTK position Ultra-long baseline 40km+ 1-10Hz RTK output Support combined navigation function

GNSS Module

The GNSS module series integrate the latest generation of GNSS technology, delivering highly accurate positions with minimal power consumption. Combining high positioning accuracy and indoor sensitivity with powerful processing capabilities, our GNSS modules simultaneously support multiple global navigation systems including the U.S. GPS, European Galileo, Russian GLONASS, as well BeiDou, QZSS and NavIC. It's cost-competitive, and allows for easy integration and migration from existing product designs including trackers, telematics, portable, and tablets as well as marine and sports accessories.



Class	Integrated Antenna			Dead Reckoning
Model No.	MS32SN4	MS38SN4	ME3GGR31	MS36SN4
Satellite System	GPS L1 C/A QZSS L1 C/A	BDS: B1I、B1C* GPS: L1C/A、L1C* GLONASS: G1 Galileo: E1B/C QZSS: L1C/A SBAS: L1	GPS L1 C/A BDS B1I+B1C GLONASS G1 GALILEO E1 QZSS L1 C/A SBAS: L1	GPS: L1 C/A, L5 BDS: B1I, B2a GLONASS: L1 GALILEO: E1, E5a QZSS: L1 C/A, L5 SBAS: WAAS, EGNOS, MSAS, GAGAN, SDCM
Ranging Accuracy	≤3.0m (CEP)	≤2m (1σ)	≤1.5m (CEP)	≤1.2m (CEP) RTK: ≤1cm (1σ)
Dimension(mm)	18.2*18.2*6.8	15.3*13*6.5	16*16*6.95	16*21*2.6
Supply Voltage	3.3V-5.5V	3.3-5.5V	3.3-5.5V	3.3V
Operating current	Acq: 25mA Track: 22mA	Acq: 9mA Track: 7mA	Acq: 19mA Track: 17.5mA	Acq: 25mA Track: 30mA
Pin Package	PADs-4pin	PADs-7Pin	LCC-12pin	LGA-48pin
Output Mode	UART(TTL)	UART(TTL)	UART(TTL)	UART(TTL)
Channel	Acq: 66 Track: 22	Acq: 96 Track: 96	Acq: 96 Track: 120	Acq: 217*2 Track: 135*2 Dual Engine
Tracking Sensitivity	-165dBm	-165dBm	-165dBm	-165dBm
Algorithm	PVT	PVT	PVT	PVT
Serial ports	/	/	/	3
Ex-LNA enabled	/	/	LNA	N
Feature	G_Mouse Module (with Ceramic Antenna) MTK platform High sensitivity Ultra-low Power	Single-band Multi-constellation Ultra-small size Ultra-low power	Single-band All-constellation Integrated module antenna SMD1616 Low power	Simultaneous multi-constellation positioning MTK platform High sensitivity GNSS All-constellation GNSS RTK position 1-5Hz RTK output

GNSS Antenna

MinewSemi's GNSS antenna supports the full constellation of GNSS and has a built-in high-gain low-noise amplifier with low noise coefficient and large gain. It has the characteristics of small size, low power consumption, high gain, anti-interference, and good waterproofness. It can work outdoors for a long time. It is widely used in application scenarios such as IoT devices, vehicle navigation, positioning tracking, security, and wearable devices.



Model No.	AH10b	AH124-N01	AH201a	AH201b	AH202	AH203	AH301H	AN10a	AH106	AN254
Product Type	Dual-band high-precision active antenna	Dual-band high-precision active antenna	Multi-constellation multi-band ultra-low power helical antenna	Multi-constellation multi-band helical antenna	Multi-constellation multi-band helical antenna	Multi-constellation multi-band helical antenna	Multi-constellation multi-band helical antenna	Active antenna	Measuring antenna	Built-in active antenna
Satellite System	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 IRNSS L5	BEIDOU: B1/B2a GPS: L1/L5 Galileo: E1/E5a GLONASS: G1 QZSS L1/L5 IRNSS L5	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 IRNSS L5	BDS: B1/B2a GPS: L1/L5 Galileo: E1/E5 GLONASS: G1 QZSS L1+L5 IRNSS L5	BEIDOU: B1/B2a GPS: L1/L5 Galileo: E1/E5a GLONASS: G1 QZSS L1+L5 IRNSS L5	GPS L1+L5 BDS B1I+B2a GLONASS G1 GALILEO E1+E5 QZSS L1+L5 SBAS: L5	GPS L1+L2+L5 BDS B1+B2+B3 GLONASS G1+G2 GALILEO E1+E5 IRNSS L5	GPS L1 BDS B1 GALILEO G1 QZSS L1	GPS: L1/L2/L5 BDS: B1/B2/B3 GLONASS: G1/G2/G3 Galileo: E1/E5a/E5b/E6 L-Band	GPS L1 BDS B1 GLONASS G1 QZSS L1
Receive Frequency	1176.45±10.23MHz 1559MHz~1606MHz	/	1176.45±10.23MHz 1559MHz~1606MHz	1176.45±10.23MHz 1559MHz~1606MHz	1176.45±10.23MHz 1559MHz~1606MHz	1176.45±10.23MHz 1559MHz~1606MHz	1164MHz~1278MHz 1559MHz~1606MHz	1559MHz~1606MHz	1164MHz~1300MHz 1525MHz~1621MHz	1559MHz~1606MHz
Ranging Accuracy	RTK: ≤1cm (1σ)	≤1.5m (1σ) RTK: ≤10cm (1σ)	RTK: ≤1cm (1σ)	RTK: ≤1cm (1σ)	RTK: ≤1cm (1σ)	RTK: ≤1cm (1σ)	RTK: ≤0.8cm (1σ)	≤2.5m (1σ)	RTK: ≤0.8cm (1σ)	≤2.5米 (1σ)
Dimension(mm)	56*64*23	25.1*25.1*12mm Φ1.13mm, L=100mm	H: 55.6 Φ: 23.0	H: 55.6 Φ: 23.0	H: 53 Φ: 20	H: 50 Φ: 18.5	H: 55.6 Φ: 25.0	38.5*45*13.5mm L=2m	Φ: 106mm H: 55.0mm	32.4*25.4*6.8mm
Antenna Element	L1: 25*25*4mm L5: 38*38*6mm	L1: 18*18*4mm L5: 25*25*4mm	Four-arm spiral	Four-arm spiral	Four-arm spiral	Four-arm spiral	Four-arm spiral	25*25*4mm	Multi-feed point stack	25*25*4mm
Supply Voltage	3.0-5.0V 3.3V Type	3.0V ~ 5.0V 3.3V Type	1.6-3.6V 3.3V Type	3.0~12V 3.3V or 5.0V Type	2.5~16.0V 3.3V or 5.0V Type	2.5~16.0V 3.3V or 5.0V Type	3.0~6.0V 3.3V or 5.0V Type	3.0-5.0V 3.3V Type	3.0-16V 3.3V or 5.0V Type	1.8-3.3V
Operating current	≤15mA	12 mA Avg	≤10mA 1.8V ≤15mA 3.3V	≤45mA	≤10mA	≤10mA	≤45mA	12mA	≤45mA	4.5mA AVG
Antenna Gain	≥3.5Bi@Fc	≥2.0 dBi	≥1.5dBi	≥1.5 dBi	≥0 dBi	≥1.5dBi	≥2.0dBi	≥2.0dBi	≥5.0Bi@Fc	/
LNA Gain	30±3dB	18dB±2dB	25±3.0dB	25±3.0dB	25±3.0dB	25±3dB	35±3dB	30±3dB	40±3.0dB	18dB±2dB
Output VSWR	≤1.8:1 typ. 2.0:1max	≤2.0	≤1.8:1 typ. 2.0:1max	≤1.8:1 typ. 2.0:1max	≤1.8:1 typ. 2.0:1max	≤1.8:1 typ. 2.0:1max	≤1.8:1 typ. 2.0:1max	≤1.8:1 typ. 2.0:1max	≤1.8:1 typ. 2.0:1max	≤2.0
Interface	SMA-J	U.FL 1 Male	SMA-J	SMA-J	SMA-J	SMA-J	SMA-J	SMA-J	TNC	U.FL 1 Male
Cable Length	3.0m	100mm	/	/	/	/	/	3.0m	/	60m
Waterproof Rate	IP67	/	IP67	IP67	IP67	IP67	IP67	IP65	IP67	/

LoRa Module

The LoRa modules are specifically designed for long-range wireless applications, offering excellent battery life with low active receive current consumption. It is not only ultra-low power and compact but also remarkably easy to use.



Model Series	MS21SF1 Series	MS23SF1 Series	MS24SF1 Series	ME25 Series			
Model No.	MS21SF13	MS23SF14	MS24SF18	ME25LS01	ME25LS02	ME25LS03	ME25LS04
Antenna	U.FL	/	PCB+U.FL	/	2.4G:PCB/U.FL LoRa:ANT PIN	2.4G: PCB/U.FL LoRa: ANT PIN	2.4G/S-band: PCB/U.FL LoRa: ANT PIN
ChipSet	SX1262 / LLCC68	STM32WLE5CCU6	nRF52840+SX1262	nRF52840+LR1110	nRF54L15+LLCC68/SX1262	nRF54L15+LLCC68/SX1262	LR1121
Dimension(mm)	16.4*15*3	20.72*19.13*3.2	27*23.5*2.8	25.5*20*2.6	25*15*3.2	25*15*3.2	25*16.8*3.6
Transmission Range	5KM	5KM	5KM	5KM	LLCC68: 4KM SX1262: 5KM	SX1262: 3.5KM LLCC68: 2.5KM (PCB antenna)	SubGHz: 4KM 2.4GHz: 200M
Transmission Power	+22dBm	+20.5dBm	BLE: +8dBm LoRa: +22dBm	BLE: +8dBm LoRa: +22dBm	BLE: +8dBm LoRa: +22dBm	BLE: +8dBm LoRa: +22dBm	SubGHz: +22dBm 2.4GHz: +13dBm
Reception Sensitivity	-146dBm	-146dBm	BLE: -96dBm LoRa: -146dBm	BLE: -96dBm LoRa: -125.6dBm	BLE: -96dBm, 1Mbps -104dBm, 125Kbps LoRa: -125dBm(LLCC68) -146dBm(SX1262)	BLE: -96dBm, 1Mbps -104dBm, 125Kbps LoRa: -146dBm(SX1262) -125dBm(LLCC68)	SubGhz: -126dBm@SF7
Emission Current	118mA	120mA	122.8mA	118mA	156mA	159mA	118mA
Receiving Current	4.7mA	4.2mA	9.3mA	10.7mA	15mA	16.95mA	12mA
GPIO	5	24	35	44	27	25	2
Characteristic	SPI interface Ultra-low power consumption Ultra-long distance	Internal RAM: 64KB Flash: 256KB LoRaWAN protocol 1.0.3 Multiple I/O interfaces	Internal RAM: 512KB Flash: 1M LoRaWAN protocol 1.0.3 Multiple I/O interfaces	Internal RAM: 512KB Flash: 1M LoRaWAN protocol 1.0.3 WiFi protocol, GNSS protocol, BLE protocol Multiple I/O interfaces	Internal RAM is 256KB, Flash is 1.5M. It supports LoRaWAN protocol 1.0.3 and BLE5.4, and has multiple IO interfaces such as UART/ADC/SP.	Internal RAM is 256KB, Flash is 1.5M. It supports LoRaWAN protocol 1.0.3 and BLE5.4, Butil-in 32.768kHz XTAL andTXCO and has multiple IO interfaces such as UART/ADC/SP.	SPI interface, multi-band, ultra-long distance, support LR-FHSS image transmission, Sub-GHz and 2.4G interoperable communication

UWB Module

With its integration of an ultra-wideband transceiver and low-energy Bluetooth 5.2, this module incorporates the latest door position technology. It effectively caters to the needs of various sectors, including ITIS, logistics, smart cities, and public divisions.



Model Series	MS01SF1 Series
Model No.	MS01SF17
Antenna	PCB/Ceramic
SoCset	UWB:DW3120 BLE:nRF52833
Dimension(mm)	26.12*19.13*3.2
Ranging Accuracy	10-30cm
Flash	512KB
RAM	128KB
Transmission Power	-40~+8dBm
UWB Emission Current	60mA
UWB Receives Current	78mA
BLE emission Current	0dBm-4.6mA
BLE receiving Current	4.8mA
GPIO	BLE : 23 + UWB : 4
Characteristic	UWB+BLE, dual channel support, Support the FIRA

WiFi Module

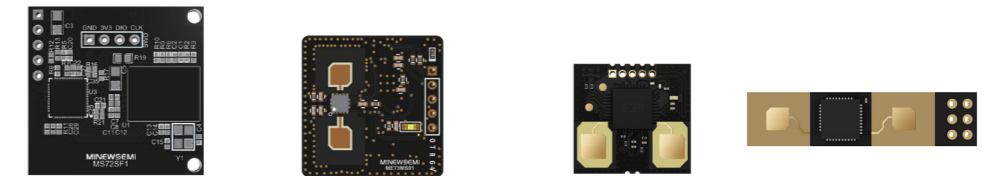
The WiFi modules supports Wi-Fi 4/6 and Bluetooth® 5, making it highly versatile in applications such as smart homes, consumer electronics, wearable devices, and more.



Model Series	MS12SF1 Series	MS14SF1 Series	ME16 Series			
Model No.	MS12SF18	MS14SF18	ME16WS01	ME16WS02	ME16WS03	ME16WS04
Antenna	PCB+U.FL	PCB/U.FL	PCB/U.FL	PCB/U.FL	U.FL	PCB/U.FL
SoCset	nRF7002+nRF5340	nRF7002	RTL8720DN	BK7238	nRF7002+nRF5340	BK7239N
Dimension(mm)	27*23.5*2.8	22.9*15*3	24*16*3.4	20.9*15*3	23.2*16*3.6	23*15*3
Wi-Fi Version	Wi-Fi 6 (802.11 ax)	Wi-Fi 6 (802.11 ax)	Wi-Fi 4 (802.11 b/g/n)	Wi-Fi 4 (802.11 b/g/n)	Wi-Fi 6 (802.11 ax)	Wi-Fi 6 (802.11 ax)
Bluetooth Version	BLE 5.3	/	BLE5.0	BLE5.2	BLE 5.3	BLE5.4
Flash	1MB+256KB	/	2MB	2MB	1MB+256KB	4MB
RAM	512kB+64KB	/	512KB+64KB	288KB	512KB+64KB	512KB
Emission Current	2.4G-191mA 5G-260mA	191mA-2.4G 260mA-5G	2.4G-48mA	270mA	2.4G-191mA 5G-260mA	2.4G- 75mA 5G- 90mA
Receive Current	2.4G-56mA 5G-58mA	2.4G-60mA 5G-56mA	/	42mA	2.4G-56mA 5G-58mA	2.4G-9mA 5G-16mA
Sleep Current	11.3µA	15µA	/	47µA	11.3µA	19µA
GPIO	29	13	11	19	23	19
Characteristic	Wi-Fi 6 + BLE Dual independent antennas Low power consumption	WiFi6 QSPI/SPI Interface STA Mode	WiFi4 2.4G+5G BLE5.0 Uart Interface support STA/AP/STA+AP Mode	WiFi4 2.4G, BLE5.2, Uart communication interface, support STA/AP/STA+AP working mode	Wi-Fi 6 + BLE Dual independent antennas for IPEX Low power, Small dimensions	Wi-Fi 6 2.4G+5G dual-band, 1T1R+ BLE5.4, PCB/IPEX antenna optional interface, low power consumption, high cost performance, support for 802.15.4 multi-protocol, 4MB SIP Flash

Millimeter Wave Radar Module

The millimeter wave radar (mmWave Radar) is an extremely valuable sensing technology ideal for detection of objects and providing information on range, velocity and angle of these objects. MinewSemi's mmWave radar module uses a contactless system which operates in the spectrum between 60GHz and 64GHz.



Model Series	MS72SF1 Series	ME73 Series		
Model No.	MS72SF11	ME73MS01	ME73MS02	ME73MS03
Dimension(mm)	29.36*28*2.4	20*20	15*14	30*7
Antenna	AiP	PCB	PCB	PCB
Installation Method	"ceiling mount"	"ceiling mount" "wall mount"	"ceiling mount" "wall mount"	"wall mount"
Peak Power Consumption	1.7w	0.4w	0.2w	0.21w
Detection Distance	0.5~8m	0.5~6m	0.5~8m	0.5~9m
Tracking Number	≤10	/	/	/
Operation Frequency	60-64GHz	24-24.25GHz	24-24.25GHz	24-24.25GHz
Processing Cycle	≤30ms	Real time	Real time	Real time
Average Power Consumption	0.3w	0.1w	0.07w	0.06w

Application

Smart Cities



Application Areas/Products



Smart Agriculture



Application Areas/Products



Automotive Peripheral



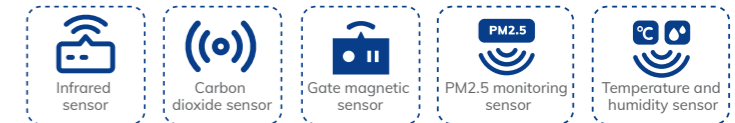
Application Areas/Products



Intelligent sensor



Application Areas/Products



Smart Home



Application Areas/Products



Intelligent Healthcare



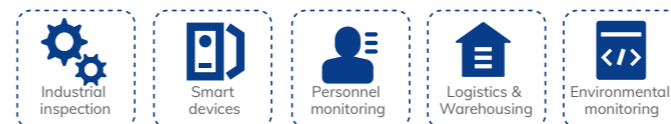
Application Areas/Products



Industrial intelligence



Application Areas/Products



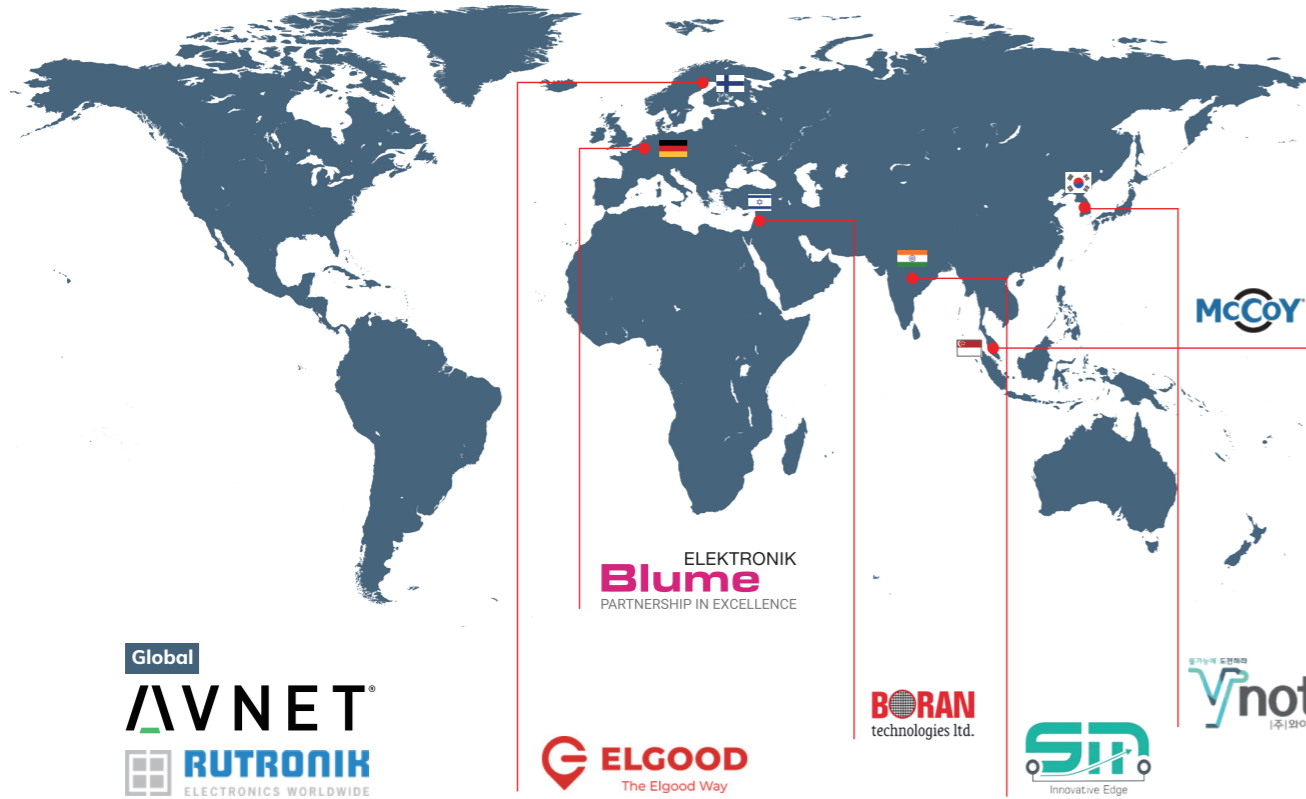
Consumer Electronics



Application Areas/Products



Worldwide Presence



Technology Partners



COPYRIGHT STATEMENT

This manual and all the contents contained in it are owned by Shenzhen Minewsemi Co., Ltd. and are protected by Chinese laws and applicable international conventions related to copyright laws. The company has the right to change the content of this manual according to the technological development, and the revised version will not be notified otherwise. Without the written permission and authorization of the company, any individual, company, or organization shall not modify the contents of this manual or use part or all of the contents of this manual in other ways. Violators will be held accountable in accordance with the law.

INFORMATION

The marking on the product shield will be updated with the change of certification. It will only be added on the basis of existing information. For the actual marking content, please refer to the final product you received. In addition, the change of marking content will not affect the performance of product, and there will be no further notification from MinewSemi. If you have customization requirements, please contact our sales for details.

Version Update Record

Number	Update Time	Update Content
V 2.0	2024.04.08	New Version Modify GNSS module parameters Added GNSS antenna section Added new GNSS module ME32GR02 and ME32GR03 Added new WIFI module MS14SF1 and ME16WS01
V 2.1	2024.06.12	Added new Bluetooth® LE Module MS56SFA and MS56SFB
V 2.2	2024.07.26	Updated certification for Bluetooth® LE Module MS50SFB2/MS50SFB3
V 2.3	2024.09.09	Added new Bluetooth® LE Module ME52BS02 and ME54BS01 and ME54BS02 Added new Wi-Fi Module ME16WS02 and ME16WS03 Added new mmWave Module ME73MS01
V 2.4	2024.12.12	Added new GNSS module ME31GR01 and ME3GGR31 Adjusted the classification of GNSS products Updated certification for Bluetooth® LE Module ME54BS01
V 2.5	2025.03.13	Added new Bluetooth® LE Module ME54BS03 / ME54BS0A / ME54BS11 / ME54BS61
V 2.6	2025.03.25	Added new GNSS Module ME31GR02 / ME34GR01 Added new LoRa Module ME25LS02
V 2.7	2025.04.14	Added new Bluetooth® LE Module ME54BS12 Updated LoRa Module ME25LS02 Updated Bluetooth® LE Module ME54BS02 Updated WiFi Module MS15SF1
V 2.8	2025.05.06	Delete Wi-Fi Module MS11SF1, MS13SF1, MS15SF1
V 2.9	2025.09.18	Added new WIFI Module ME16WS01 Added new mmWave Module ME73MS02

Number	Update Time	Update Content
V 3.0	2025.10.17	Added new GNSS Module ME3AGR01 Updated GNSS Antenna AH254 Added new BLE Module MS52SF1
V 3.1	2026.02.08	Added new BLE Module ME54BS62 / ME54BS0A / ME54BS13 Added new LoRa Module ME25LS03 / ME25LS04 Added new WiFi Module ME16WS04 Added new mmWave Module ME73MS03