SINOSUN-MM2×2/4×2

Handheld Radio

Technical Specification

(WiFi)

(WiFi/HDMI)

(WiFi/HDMI/5G)

(WiFi/4"Display Screen)

2.Handheld Radio Specifications

General

Waveform	Mobile Network MIMO (MN-MIMO)
MIMO Technology	Space-time coding、Space Diversity、TX /RX beamforming、Spatial multiplexing
Receive Sensitivity	-103dBm@5MHz BW
Channel Bandwidth	2.5/5/10/20MHz, 40MHz optional; FDD by dual-antennas with two-frequencys transceiver (Carrier Aggregation) optional
Data Rate	1-100Mbps(20MHz BW)/180Mbps (40MHz BW) Adaptive,QoS
Modulation Mode	TD-COFDM,BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM Adaptive (Fixed setting optional)
RF Output Power (Support TPC, transmisson power control)	2Watts×2 4Watts×2
Single Hop Communication Distance	100-300 KM (visible), 1-30 KM (urban area)
Mode	Distributed centerless Point-to-point/Point-to-multipoint/Multipoint-to-multipoint, Layer 2 or 3 of Dynamic routing、Multi-hop relay, Star/Line/Network/Hybrid
Single Hop Delay	Average 7mS (20MHz BW)
Encryption	DES, AES128/256, SNOW3G/ZUC optional，Chip/TF card encryption customized or external encryption machine
Anti-jamming Mode	Manual spectrum scanning channel selection, Full band enhanced intelligent frequency selectting(spectrum awareness)/Full band adaptive frequency hopping/ Roaming mode optional
Local/Remote Management	Operating frequency, channel bandwidth, network ID, transmit power and other parameter settings, spectrum scanning, real-time display and statistical records of network topology, link field strength signal-to-noise ratio, upload and download traffic,node distance, GPS/Beidou electronic map, temperature/voltage/jamming Monitoring, software upgrade. Remote silence and wake-up optional
Others	The startup time is less than 28 seconds, and the network access/update/switchover time is less than 1 second. There is no limit on the user capacity of a single system (256 nodes or more) and the number of hops in Mesh networks (Data 15+ hops, voice 10+ hops, video 8+ hops). The total bandwidth loss of multiple hops is less than 70%. Automatic carrier tracking, adapted to a Doppler frequency deviation of ± 6kHz frequency offset, supports mobile communication at speeds above 7200 kilometers per hour (6 Mach, 2000 meters per second).

Bands(70M-6GHz. 2T2R at single band, or 1T2R at dual band selectable/smart change*)

BAND	Frequency range (MHz)	BAND	Frequency range (GHz)
UHF	430-550/570-700/ 800-950,225-400/320-470*	S Band	1.6-1.8/1.8-2.0/2.0-2.2/2.2-2.5/ 2.5-2.7/2.7-2.9, 1.6-2.3/1.9-2.7*
L Band	1000-1200/1300-1500, 1200-1700*	C Band	4.4-5.0/5.25-5.85, 4.2-5.2/5.5-6.0*
MIIT	336-344/512-582/566-626/606-678/1420-1520/1430-1444		

Environmental

Operation Temperature	-40℃ ~+80℃
Protection Level	IP66, IP67/IP68 Customized

Mechanical

Size/Weight	19x6.8x3.8cm/0.769kg(with 11.1V/76Wh battery and WiFi Handheld Radio) 22x6.8x3.8cm/0.982kg(with 11.1V/114Wh battery Handheld Radio) 20.5x6.8x3.8cm/0.799kg(with 11.1V/76Wh battery and WiFi/HDMI Handheld Radio) 20.7x6.9x5.5cm/1.30kg(with 11.1V/76Wh battery and WiFi/HDMI/5G Handheld Radio) 19x6.8x3.8cm/0.789kg(with 11.1V/76Wh battery and Display Screen Handheld Radio)
Installation/Color	4 Mounting Holes/Black，Lron Gray、Army Green Optional

Power

Supply Voltage	9-28VDC (2Watts×2/4Watts×2)
Power consumption	Operation 1-2A/Standby 0.4-0.6A@12V (2Watts×2) Operation 2-4A/Standby 0.5-0.7A@12V (4Watts×2)
Power Selection	Power Supply by Twist-Lock Battery or Main Cable
Batteries	10/6 hours for 114/76Wh

Interface

Basic interface	2xTNC RF, 1-3xRJ45 Ethernet 100/1000BaseT, WiFi AP,GPS/BD,RS232/ TTL(UART), Sbus/Bluetooth, 1.2-230.4Kbps, DC Input
Push to talk/Auxiliary interface	MIC, SP, PTT, GND, RS485/422, USB2.0 OTG
Network Extension Optional	Public Network Routing/4G LTE, WB-NB integration, Fiber, Satellite
Video Extension Optional	Low Delay HDMI/SDI/CVBS, 4K/2K/1080P/720P/D1
Link Status Indicator	Steady red - The network is not connected Blinking red - Starting/not connected to the network Steady green - The network is connected Blinking green - Voice PTT is down
RSSI Link Indicator	Steady green - The link quality is excellent Steady Blue - The link quality is good Steady yellow - The link quality is medium Steady purple - The link quality is slightly worse Steady red - The link quality is poor or link is down
Management Interface/Control Interface	Web-based network management/GUI, API for secondary development interface/ SNMP

OEM

Size/Weight	10.1x5.4x1.9cm/123.5g
RF	SMP

2. Handheld Radio Hardware Interfaces

2.1、Built WiFi

1 Radio Switch

3 Link Status Indicator
- Steady red：The network is not connected
- Blinking red：Starting/not connected to the network
- Steady green：The network is connected
- Blinking green：Voice PTT is down
RSSI Link Indicator
- Steady green：The link quality is excellent
- Blue Steady：The link quality is good
- Steady yellow：The link quality is medium
- Steady purple：The link quality is slightly worse
- Steady red：The link quality is poor or link is down
- Off：The link is interrupted

2 Power (EB Version Only, 9-24V), Ethernet, and Serial Port Connector [LF10WBRB-12PD]

4 RF Channels 1-2 Connectors [TNC Female]

5 WiFi Antenna

6 Auxiliary Interface[LF10WBRB-12SD]

2.2、Built WiFi/HDMI

1 Radio Switch

3 Link Status Indicator
- Steady red：The network is not connected
- Blinking red：Starting/not connected to the network
- Steady green：The network is connected
- Blinking green：Voice PTT is down
RSSI Link Indicator
- Steady green：The link quality is excellent
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- Steady purple：The link quality is slightly worse
- Steady red：The link quality is poor or link is down
- Off：The link is interrupted

2 Power (EB Version Only, 9-24V), Ethernet, and Serial Port Connector [LF10WBRB-12PD]

4 WiFi Antenna

5 HDMI Switch

6 RF Channels 1-2 Connectors [TNC Female]

7 HDMI Port

8 Auxiliary Interface[LF10WBRB-12SD]

2.3、 Built WiFi/HDMI/5G

1 HDMI Switch

2 RF Channels 1-2 Connectors [TNC Female]

3 SIM Card Slot

4 Power (EB Version Only, 9-24V), Ethernet,
   and Serial Port Connector[LF10WBRB-12PD]

5 Link Status Indicator
   • Steady red： The network is not connected
   • Blinking red： Starting/not connected to the network
   • Steady green： The network is connected
   • Blinking green： Voice PTT is down

6 WiFi Antenna[SMA Female]

7 Radio Switch

8 5G Antenna[SMA Female]

9 Auxiliary Interface[LF10WBRB-12SD]

10 HDMI Port

RSSI Link Indicator
   • Steady green： The link quality is excellent
   • Blue Steady： The link quality is good
   • Steady yellow： The link quality is medium
   • Steady purple： The link quality is slightly worse
   • Steady red： The link quality is poor or link is down
   • Off： The link is interrupted

3. Handheld Radio Connection Port Pin Definition

Power/Ethernet/Serial Connector Pinout	
Enclosure PWR/COMM (LF10WBRB-12PD)	Signal
1	5V OUT (For External GPS Puck)
2	GND IN
3	GND IN
4	VCC IN
5	VCC IN
6	100-Base T ETH0 M2N
7	100-Base T ETH0 M2P
8	100-Base T ETH0 M1P
9	RS232_RXD
10	RS232_TXD
11	RS232_GND
12	100-Base T ETH0 M1N

Table 1 Power/Ethernet/Serial Connector Pinout

RS-232 and PS/2 (GPS) Pinout		
RS-232	DB9 (GPS)	Signal
3	2	TxD
2	3	RxD
NC	NC	NC
NC	9	5V OUT
NC	NC	NC
5	5	Ground

Table 2 Serial and GPS Pinout

USB/GPIO Connector Pinout		
Enclosure USB/GPIO (LF10WBRB-12SD)	Signal	Voice interface definition
1	NA	/
2	NA	/
3	RS458 D-	/
4	USB2_VBUS	AUDIO_GND
5	GPIO1 (PA Enable 3.3V)	/
6	USB2_D+	MIC IN
7	USB2_D-	SPEAKER_OUT
8	RESERVED (Do Not Connect)	PTT
9	GND	/
10	RS458 D+	/
11	NA	/
12	USB2_GND	AUDIO_GND

Table 3 USB/GPIO Connector Pinout
(USB1 is USB 2.0 OTG, USB2 is USB 2.0 Host Mode Only)
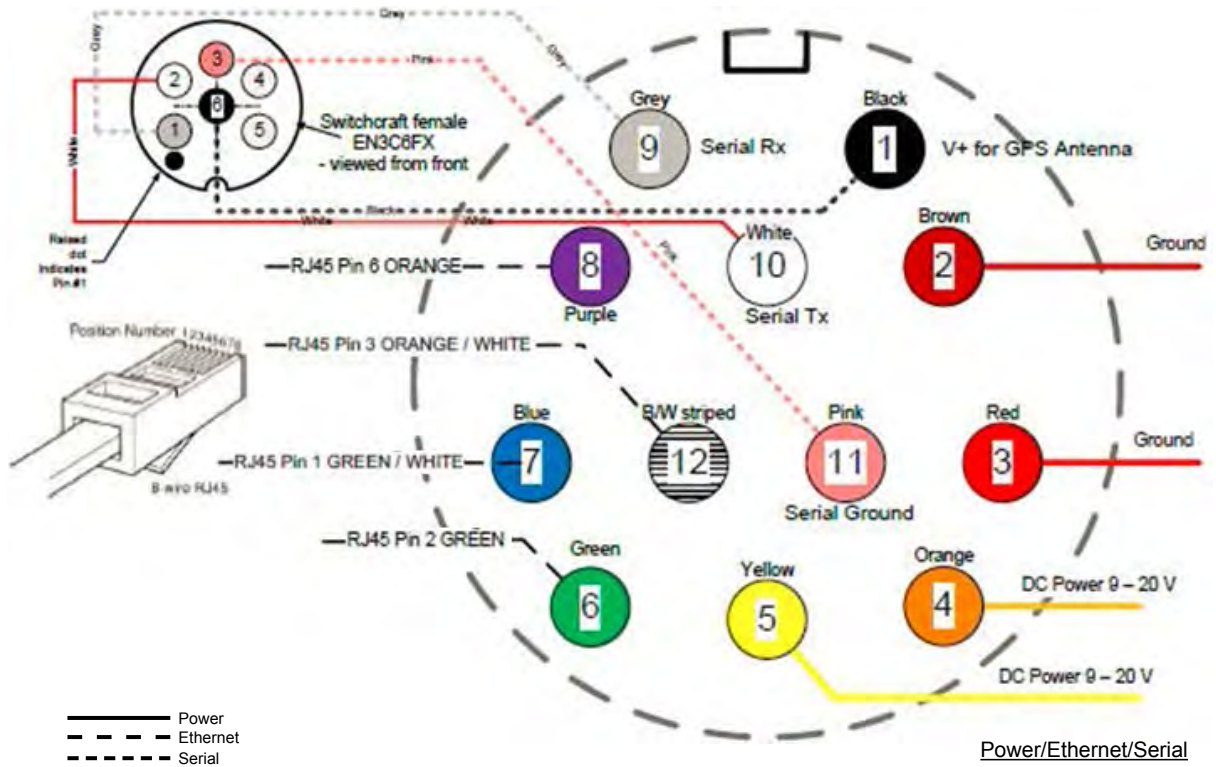
Power/Ethernet/Serial

Figure1 Power (Optional)/Serial/Ethernet Pinout Diagram (Cable Side)
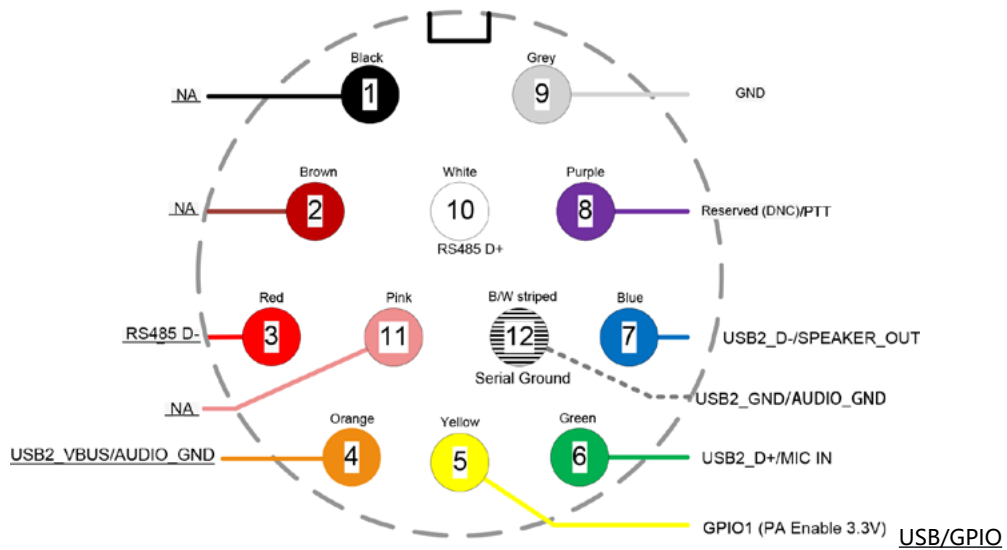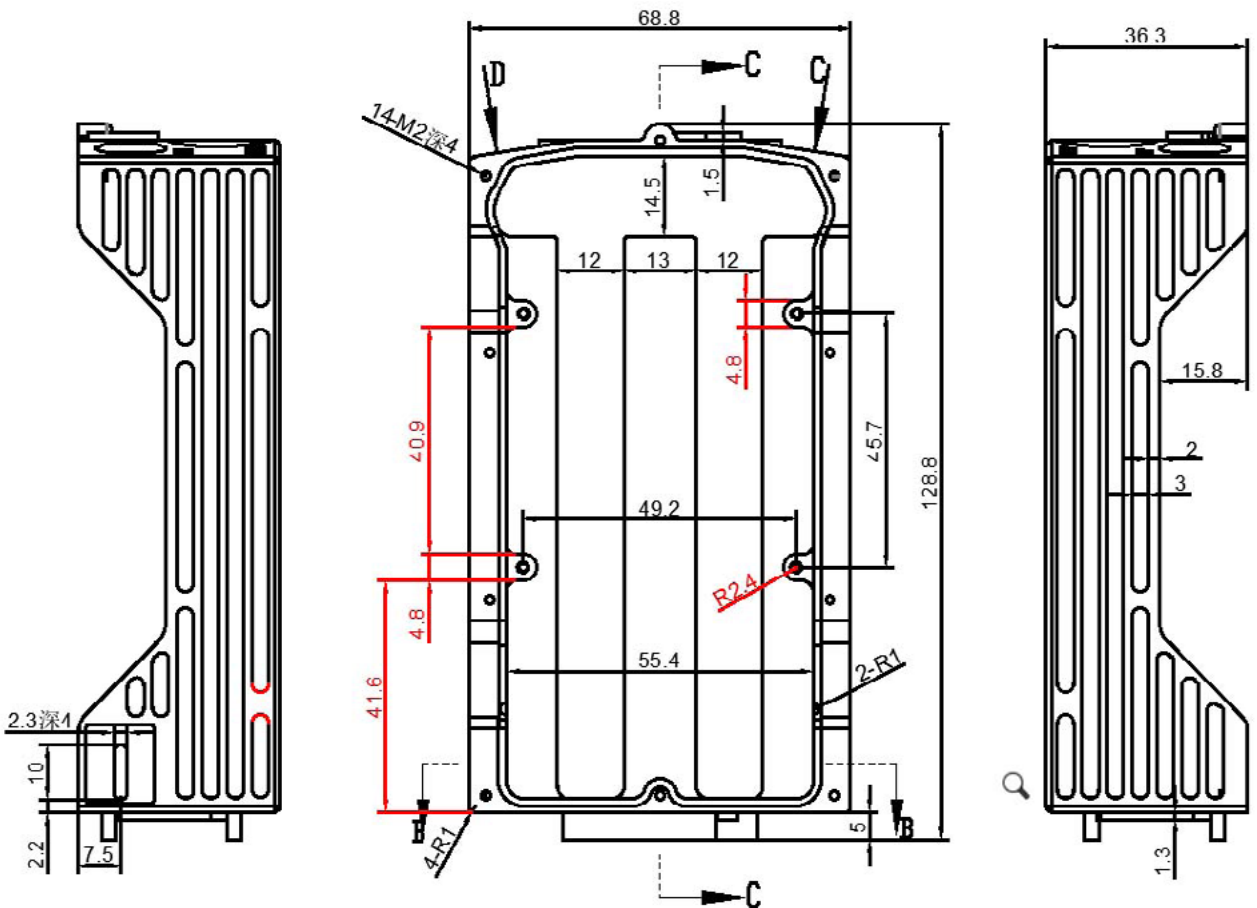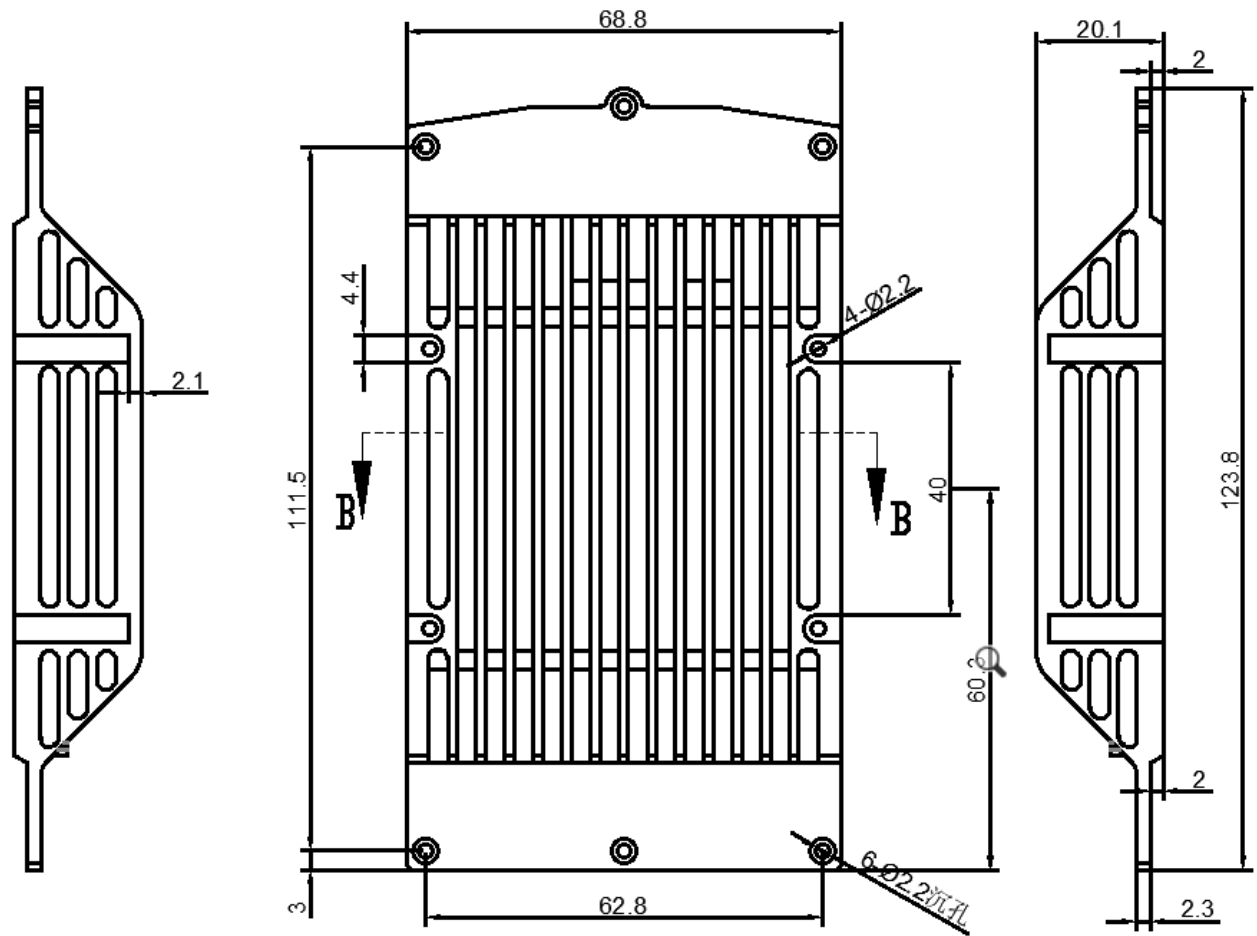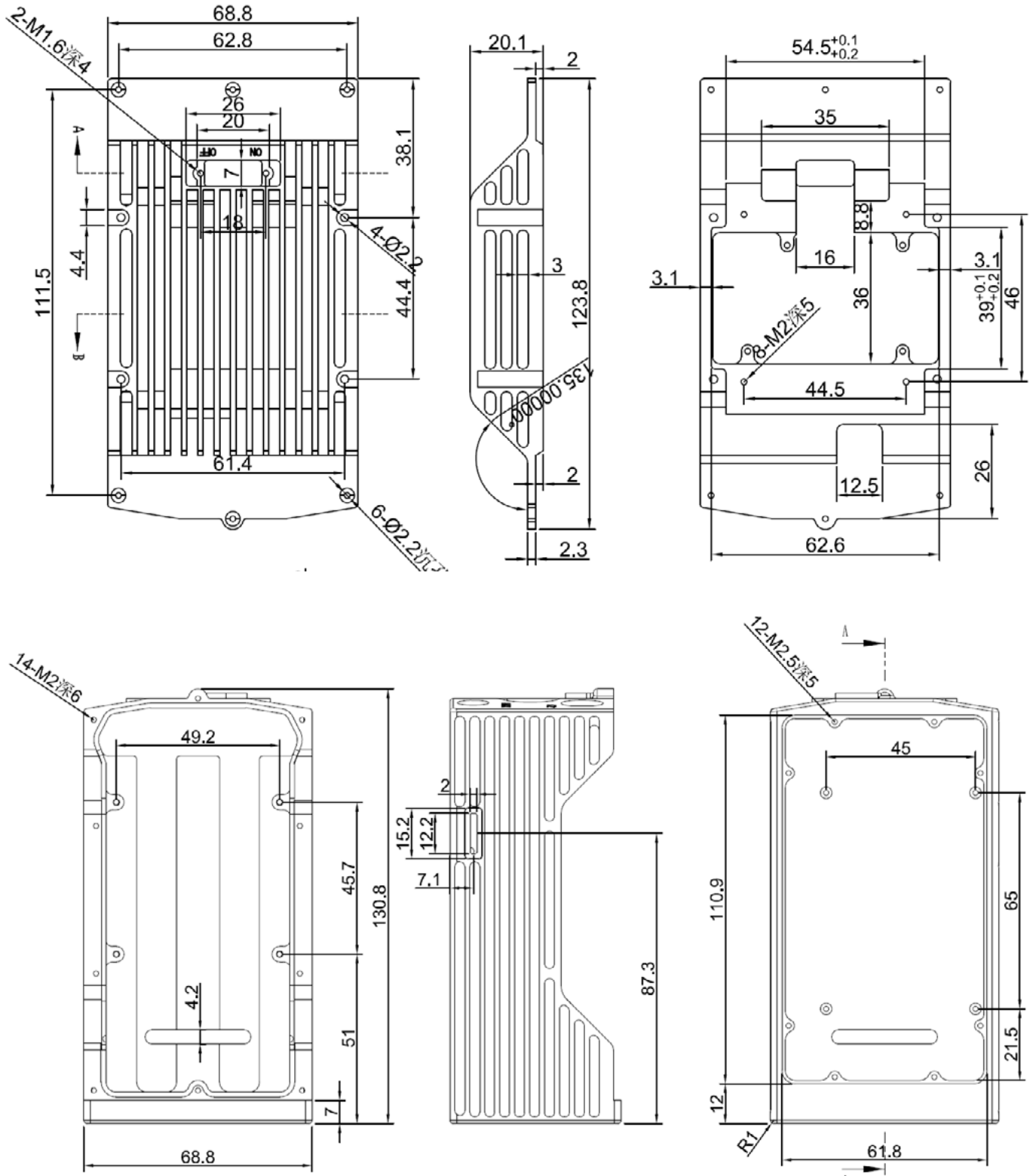

USB/GPIO

Figure 2 USB/GPIO Pinout Diagram (Cable Side)

4. Handheld Radio Dimension Figure

4.1、Built WiFi、Built WiFi/HDMI

4.2、Built WiFi/HDMI/5G

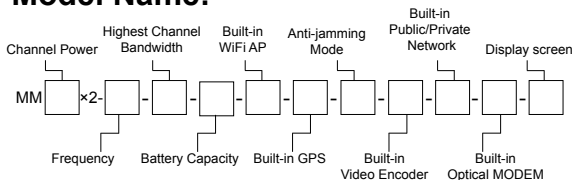# 5. Handheld Radio Model Name

Model Name:

Channel Power — Highest Channel Bandwidth — Built-in WiFi AP — Anti-jamming Mode — Built-in Public/Private Network — Display screen

MM□×2-□-□-□-□-□-□-□-□-□-□

Frequency — Battery Capacity — Built-in GPS — Built-in Video Encoder — Built-in Optical MODEM

Channel Power (W)	Frequency (MHz)	Highest Channel Bandwidth(MHz)	Battery Capacity (Wh)	Built-in WiFi AP	Built-in GPS	Anti-jamming Mode	Built-in Video Encoder	Built-in Public/Private Network	Built-in Optical MODEM	Display Screen
2	600,U	20	0(N)	0(N)	0(N)	0(Single Frequency)	0(N)	0(N)	0(N)	0(N)
4	1400,L	40	76,114	1(Y)	1(Y)	1(Intelligent Channel Selection)	HDMI	4G/5G	1(Y)	2(2")
10	2300,S		214,427			2(Autonomous Frequency Hopping)	SDI/AV	4G LTE CPE		3(3.2")
20	4500,C									4(4")

MM2×2-1400-40-6.8-1-1-0-HDMI-4G/5G-0-0，Express：2W×2, L Band, Maximum Channel Bandwidth 40MHz, With 76Wh Battery, With WiFi AP, With Positioning Module, Single Frequency, Built-in HDMI Coding, Built-in 4G/5G Public Network Module Handheld Radio.