

SINOSUN-MM10×2/20×2

Backpack Radio

# Technical Specification



(WiFi)



(WiFi/HDMI/5G)

# 1.Backpack 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-frequencies 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, transmission power control)	10Watts×2 20Watts×2 (Power adaptive optional)
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 selecting(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°C ~+80°C
Protection Level	IP66, IP67/IP68 Customized

## Mechanical

Size/Weight	22.9x18.9x6.2cm/3.86kg (with 22.2V/214Wh battery Backpack Radio) 31.4x18.9x6.2cm/4.95kg (with 22.2V/427Wh battery Backpack Radio)
Installation/Color	4 Mounting Holes/Black, Iron Gray, Army Green Optional

## Power

Supply Voltage	14.8-36VDC (10Watts×2) 18-36VDC (20Watts×2)
Power consumption	Operation 3-6A/Standby 0.7-0.9A@16.8V (10Watts×2) Operation 6-7A/Standby 0.7-0.9A@20V (20Watts×2)
Power Selection	Power Supply by Twist-Lock Battery or Main Cable
Batteries	10-12/6-8 hours for 427/214Wh polymer lithium battery

## 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. Backpack Radio Hardware Interfaces

### 2.1 WiFi



- 1** WIFI Antenna [SMA Female]
- 2** Power Switch
- 3** Power supply port
- 4** Radio switch
- 5** Auxiliary Connection Port [LF10WBRB-12SD]
- 6** Push-to-Talk (PTT) Connector HGG.0B.304
- 7** 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
- 8** RS232, Ethernet, and Serial Port Connector[LF10WBRB-12PD]
- 9** RF Channels 1-2 Connectors [TNC Female]

### 2.2 WiFi/HDMI/5G



- |   |   |
|---|---|
| <p><b>1</b> Push-to-Talk (PTT) Connector HGG.0B.304</p> <p><b>2</b> WIFI Antenna [SMA Female]</p> <p><b>3</b> GPS Antenna [SMA Female]</p> <p><b>4</b> Link Status Indicator</p> <ul style="list-style-type: none"> <li>• Steady red: The network is not connected</li> <li>• Blinking red: Starting/not connected to the network</li> <li>• Steady green: The network is connected</li> <li>• Blinking green: Voice PTT is down</li> </ul> <p>RSSI Link Indicator</p> <ul style="list-style-type: none"> <li>• Steady green: The link quality is excellent</li> <li>• Blue Steady: The link quality is good</li> <li>• Steady yellow: The link quality is medium</li> <li>• Steady purple: The link quality is slightly worse</li> <li>• Steady red: The link quality is poor or link is down</li> <li>• Off: The link is interrupted</li> </ul> | <p><b>5</b> SIM/UM Card Reset Key</p> <p><b>6</b> SIM/UM Card Slot Push Button</p> <p><b>7</b> SIM/UM Card Slot</p> <p><b>8</b> 4G/5G Antenna [SMA Female]</p> <p><b>9</b> HDMI Port</p> <p><b>10</b> RF Channels 1-2 Connectors [TNC Female]</p> <p><b>11</b> Power supply port</p> <p><b>12</b> Radio switch</p> <p><b>13</b> Power Switch</p> <p><b>14</b> RS232, Ethernet, and Serial Port Connector[LF10WBRB-12PD]</p> <p><b>15</b> Optical Port</p> <p><b>16</b> Display Screen</p> |
|---|---|

### 3. Backpack 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

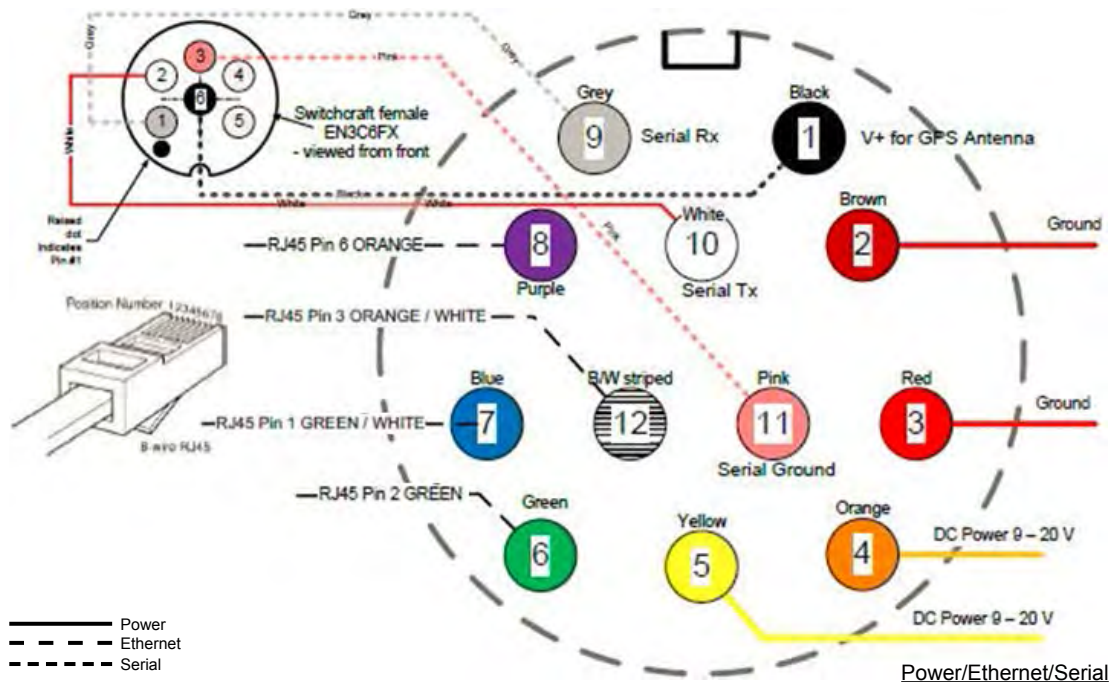
Table 2 Serial and GPS Pinout

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)

PTT Connector(Limited to Backpack Radio)	
Enclosure PTT Connector (ODU GKCWAM-P07UB00-000L)	定义
1	AUDIO_GND
2	PTT
3	SPEAEKR_OUT
4	MIC_IN

**Table4 PTT Connector Pinout\*(Generally Adopted)**



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

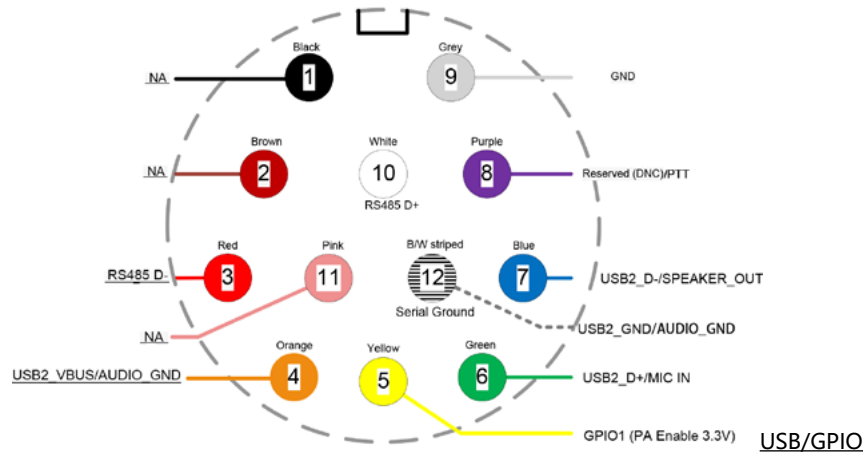


Figure 2 USB/GPIO Pinout Diagram (Cable Side)

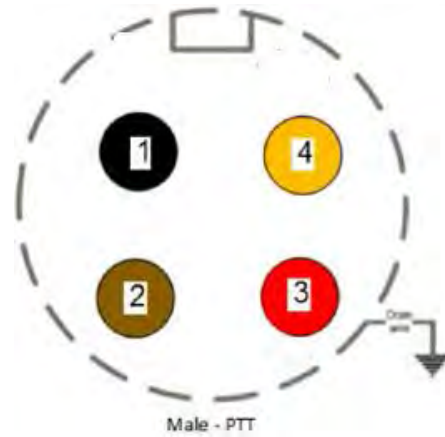
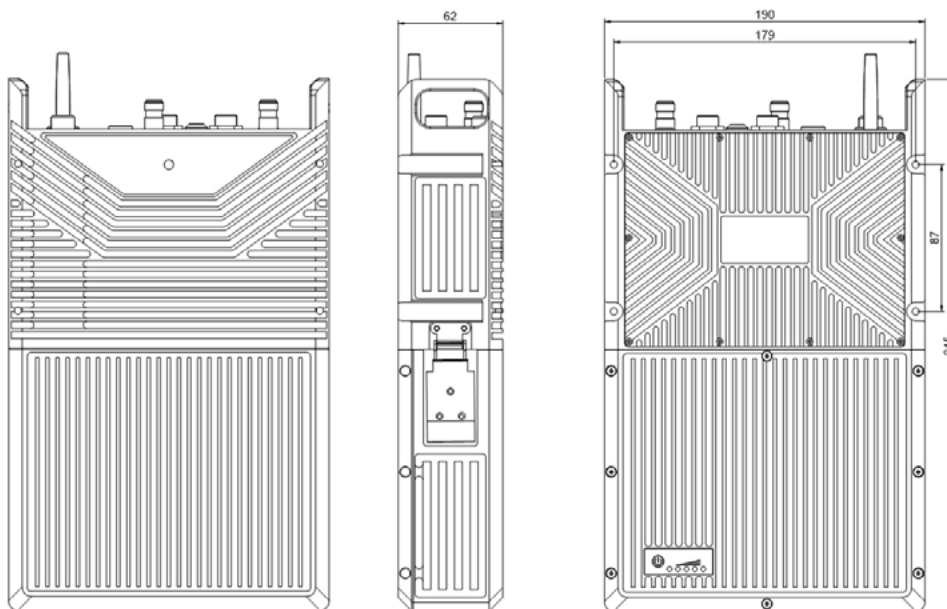


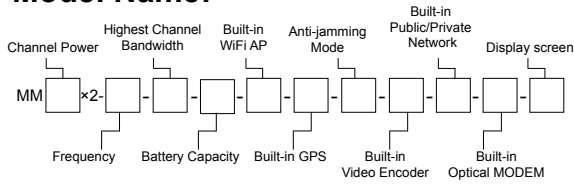
Figure 3 PTT Pinout Diagram (Cable Side)

#### 4. Backpack Radio Dimension Figure



## 5. Backpack Radio Model Name

### Model Name:



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")

MM10×2-600-20-28.8-1-1-1-SDI-4G/5G-0-0, Express: 10W×2, UHF, Maximum Channel Bandwidth 20MHz, With 427Wh Battery, With WiFi AP, With Positioning Module, With Autonomous Frequency Hopping, Built-in SDI Coding, Built-in 5G Public Network Module Backpack Radio.