

SINOSUN-MM10×2/20×2

Vehicular Radio

Technical Specification



1.Vehicular 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	18.3x15.4x6.3cm/1.56kg
Color	Black, Iron Gray, Army Green Optional
Installation	4 Mounting Holes

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	Main Cable

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

2. Vehicular Radio Hardware Interfaces



1 Auxiliary Connection Port [LF10WBRB-12SD]

2 Radio switch

3 WiFi Antenna [SMA Female]

4 Power Switch

5 Power supply port(13.8-24V,13.8/10A)

6 Push-to-Talk (PTT) Connector HGG.0B.304

7 RS232, Ethernet, and Serial Port Connector [LF10WBRB-12PD]

9 RF Channels 1-2 Connectors [TNC Female]

8 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

3. Vehicular 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	
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)

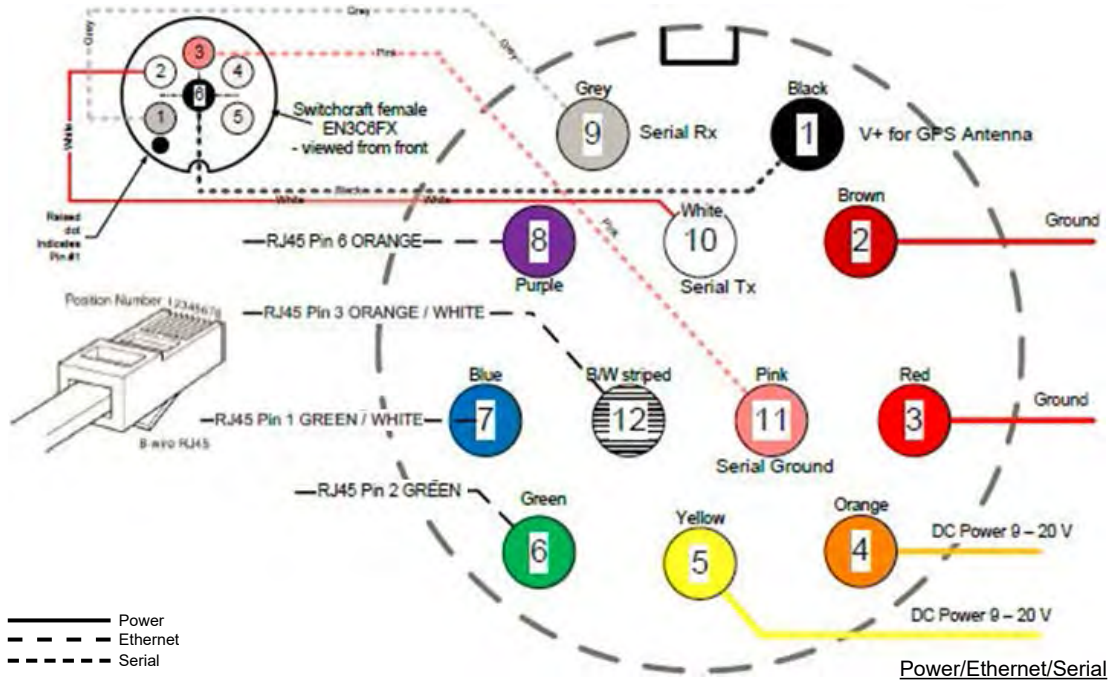


Figure 1 Power (Optional)/Serial/Ethernet Pinout Diagram (Cable Side)

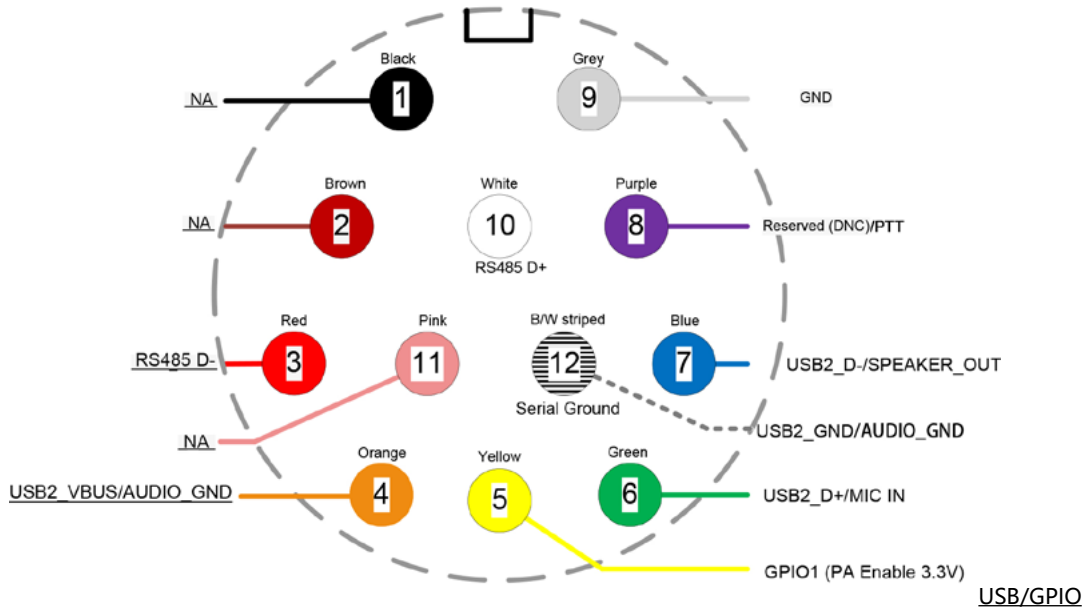


Figure 2 USB/GPIO Pinout Diagram (Cable Side)

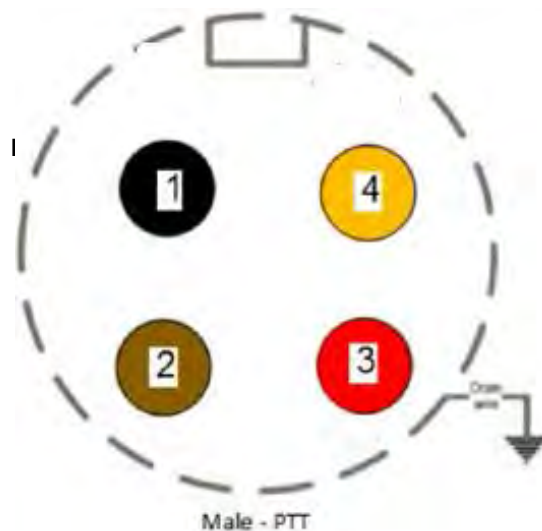
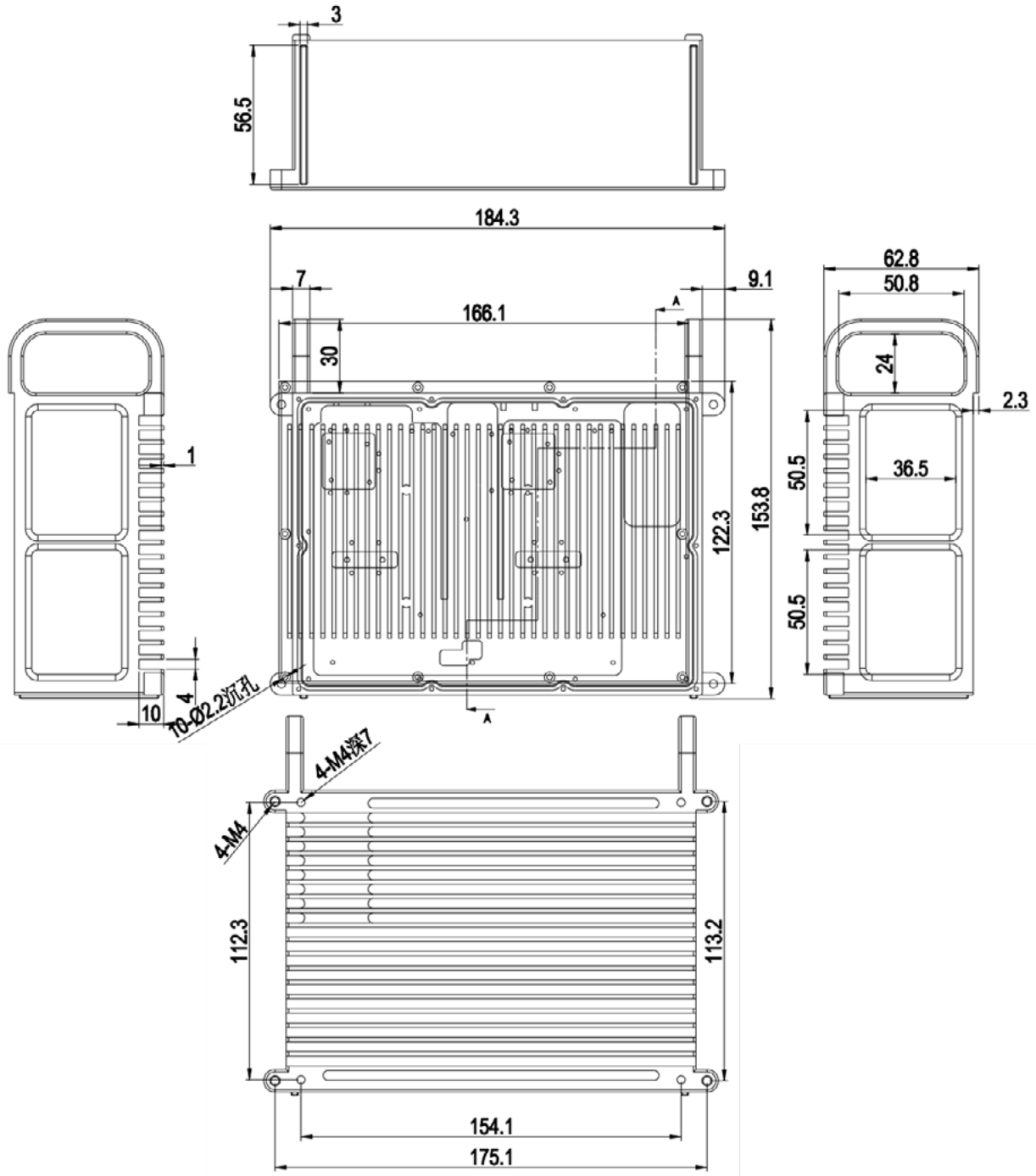
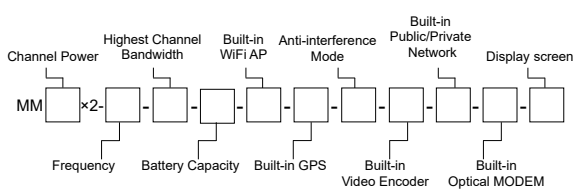


Figure 3 PTT Pinout Diagram (Cable Side)

4. Vehicular Radio Dimension Figure



5. Vehicular Radio Model Name



Channel Power (W)	Frequency (MHz)	Highest Channel Bandwidth(MHz)	Battery Capacity (Wh)	Built-in WiFi AP	Built-in GPS	Anti-interference 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")

MM20×2-600-20-0-1-1-1-SDI-4G LTE-0-0, Express: 20W×2, UHF, Maximum Channel Bandwidth 20MHz, With WiFi AP, With Positioning Module, With Autonomous Frequency Hopping, Built-in SDI Coding, Built-in 4G LTE Private Network Module Vehicular Radio.