



Shenzhen Sinosun Technology Co.,Ltd.

Technical Specification

File Number: SINOSUN-DDL1×2/2×2/10×2/20×2

Product Name: Airborne Radio

Compilation/Date:

Review/Date:

Approval/Date:

Amendment No.	Modify The Content	Modified Date

1. Airborne Radio

The new DDL series wireless digital data link is a low-cost long-distance video&data transmission product with small size, light weight, 2X2 MIMO, complete functions and rich frequency bands. DDL series based on SDR software defined radio platform with 2X2 MIMO, It adopts Beamforming, Maximal Ratio Combining (MRC), Maximal Likelihood(ML) algorithm, low density parity check (LDPC) coding, intelligent frequency selection and autonomous frequency hopping technology to achieve strong radio frequency performance and strong anti-jamming. DDL series data link radio provides ultra-long distance, low latency, bidirectional multi-channel network video&data&voice integrated wireless transmission. The world's leading code-modulated physical layer waveform technology and flexible anti-jamming and secure encryption design for the unmanned field are applied to reliable remote data links for UAVs, helicopters, robots, unmanned ships, unmanned vehicles and special vehicles.

The application system is mainly composed of the airborne radio with the airborne camera, and the ground radio with the ground computer, as well as the necessary accessories (including power supply, antenna feed system, connection lines and connectors, etc.).

The system can simultaneously transmit three IP/HDMI/SDI/CVBS HD video and multiple two-way transparent data (such as flight control/pod, Beidou /GPS, voice, etc.). AES encryption ensures transmission security.

Radio the transmission power of the station can reach up to 40W, providing a stable and reliable communication link.

Features

- 400M/600M/800M/900M/1.4G/2.3G/2.4G/5.8GHz, transmitting power can be change, support NLOS high speed mobile transmission, open transmission distance of more than 50 km.
- 70Mbps data stream, adaptive dynamic bit allocation technique. Support one way 4K, multi way 1080P or 720P HD video.
- 3 serial port and 2 video interface running at the same time, flight controller, voice, GPS and other data can transmit with video.
- Support PtoP, PtoMP, MPtoMP technique, centerless of no-master/slave. Support VLAN.
- Local diagnostic interface, telnet, network management. Local and remote wireless firmware update through FTP.
- Low power consumption. Tiny volume, lightweight structure, body building for UAV.



(1Watts×2/2Watts×2
IP/RS232)



2Watts×2/4Watts×2
IP&WiFi&HDMI(or SDI)/RS232&Sbus



(10Watts×2/20Watts×2
IP/RS232)

2. Airborne Radio Specifications

Wireless Specifications	
Frequency Range	320-450/450-550/550-700MHz, 1000-1300/1300-1500MHz, 1.8-2.2/2.2-2.5GHz, 4.4-5.0/5.0-6.0GHz, 70M-6GHz Customized
Channel Bandwidth	1.25/2.5/5/10MHz Adjustable
Modulation Mode	COFDM, DSSS-CCK/BPSK/QPSK/16QAM/64QAM (Adaptive)
Throughput	70Mbps@10MHz/25Mbps@5MHz/10Mbps@2.5MHz/ 4Mbps@1.25MHz
Sensitivity	-102dBm@5MHz
Transmission Distance (line-of-sight)	over 80 km (1Watts x 2), over 100 km (2Watts x 2), over 150 km (10Watts x 2), over 200 km (20Watts x 2)
Transmission Power	1Watts x2/2Watts x2 10Watts x2/20Watts x2
Networking Capabilities	
Communication Mode	Point-to-point, point-to-multipoint and multipoint-to-multipoint, Reapter
Network Topology	Centerless of no-master/slave to MPtoMP
Wireless Protocol	HTDMA
Network Protocol	IPv6, QoS, DNS, HTTPS, IP, ICMP, NTP, DHCP, VLAN
Encryption	DES56/AES128/AES256
Anti-jamming	Intelligent frequency selection/Autonomous frequency hopping
Mobility	Support movement speed greater than 200 km/h
Transmission Delay	Less than 10 ms

System Parameters	
Interface	Network port (IP/WiFi), Serial port (232/485/422/TTL, Sbus/USB/Bluetooth), Audio port (MIC-SP-PTT/VoIP), 4G-5G Public Network Routing/4G LTE/Satellite/Fibe
Video Interface	IP, HDMI/SDI, CVBS
Local/Remote Management	PC terminal Web browsing, Mobile APP: topology, node and link status, distance monitoring, whole network parameter configuration, software upgrade and other functions
System Upgrade	Support one-click upgrade, remote upgrade
Positioning Function	GPS/BDS
Power Supply	12-36VDC, 1Watts×2/2Watts×2 14.8-36VDC, 10Watts×2 18-36VDC, 20Watts×2
Power Consumption	Operation 1-2A/Standby 0.5-0.7A@12V, 1Watts×2/2Watts×2 Operation 3-6A/Standby 0.7-0.9A@16.8V, 10Watts×2 Operation 6-10A/Standby 0.7-0.9A@20V, 20Watts×2
Physical Properties	
Operating Temperature	-40°C ~ 80°C
Protection Level	IP65, IP66/IP67 (Customized)
Size/Weight	11.7x6.2x1.9cm/149g (1Watts×2/2Watts×2 Airborne Radio-Lron Gray) 11.7x6.2x4.2cm/364g (1Watts×2/2Watts×2 Airborne Multi-interface Radio-Black) 12.7x11.0x3.3cm/635g (10Watts×2/20Watts×2 Airborne Radio-Lron Gray)

3. Airborne Radio Hardware Interfaces

3.1 Airborne Radio (Lron Gray)



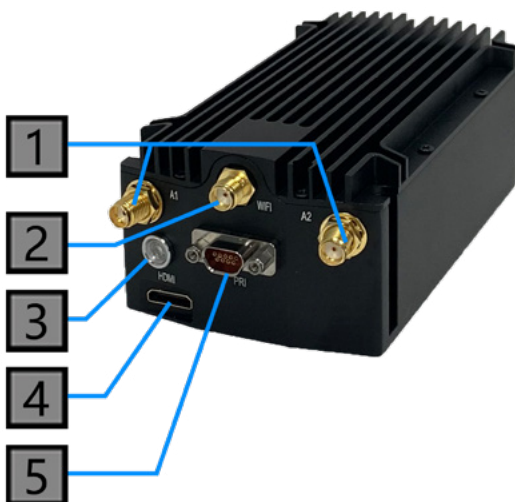
- 1** RF Channels 1-2 Connectors [SMA Female]
- 2** Power/Communication Ports

- 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

3.2 Airborne Radio (Black)

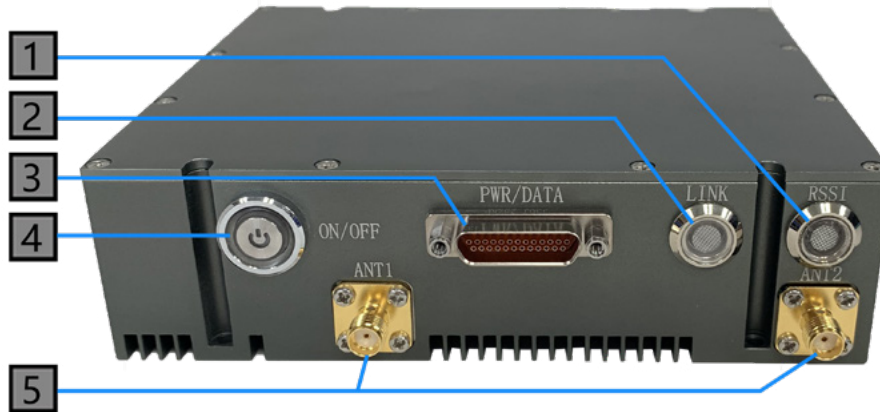


- 1** RF Channels 1-2 Connectors [SMA Female]
- 2** WiFi Antenna
- 3** Power/Communication Ports
- 4** Link Status Indicator
 - Steady red: The network is not connected
 - Blinking red: Starting/not connected to the network
 - Steady green: The network is connected
 - Blinking green: Voice PTT is down



- 1** RF Channels 1-2 Connectors [SMA Female]
- 2** WiFi Antenna
- 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
- 4** HDMI Port
- 5** Power/Communication Ports

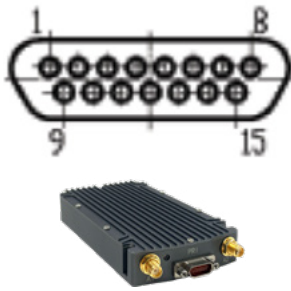
3.3 High-power Airborne Radio (Lron Gray)



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|--|--|
| <p>1 RSSI Link Indicator</p> <ul style="list-style-type: none"> • 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 | <p>3 Power (14.8-24V), Ethernet, and Serial Port Connector</p> |
| <p>2 Link Status Indicator</p> <ul style="list-style-type: none"> • 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 | <p>4 Radio switch</p> <p>5 RF Channels 1-2 Connectors [SMA Female]</p> |

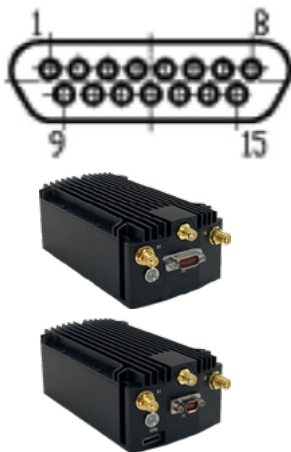
4. Airborne Radio Connection Port Pin Definition

4.1 Airborne Radio (Lron Gray/Black-J30J-9)



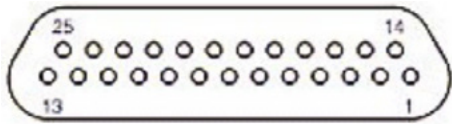
Power/Ethernet/Serial Connector Pinout	
J30J-15ZKN-J	Signal
1	RS232_RXD0
2	RS232_TXD0
3	RS232_GND0
4	RS232_GND1
5	RS232_RXD1
6	RS232_TXD1
7	5V Output
8	ETH RX+
9	ETH RX-
10	ETH TX+
11	ETH TX-
12	/
13	/
14	GND IN
15	VCC IN

4.2 Airborne Radio (Black-J30J-15ZKP)



Power/Ethernet/Serial Connector Pinout	
J30J-15ZKP	Signal
1	RS232_RXD
2	RS232_TXD
3	RS232_GND
4	5V Output
5	100-Base T ETHO M1P
6	100-Base T ETHO M1N
7	100-Base T ETHO M2P
8	100-Base T ETHO M2N
9	Sbus
10	Sbus_VCC
11	Sbus_GND
12	GND IN
13	GND IN
14	VCC IN
15	VCC IN

4.3 High-power Airborne Radio (Lron Gray-J30J-25)



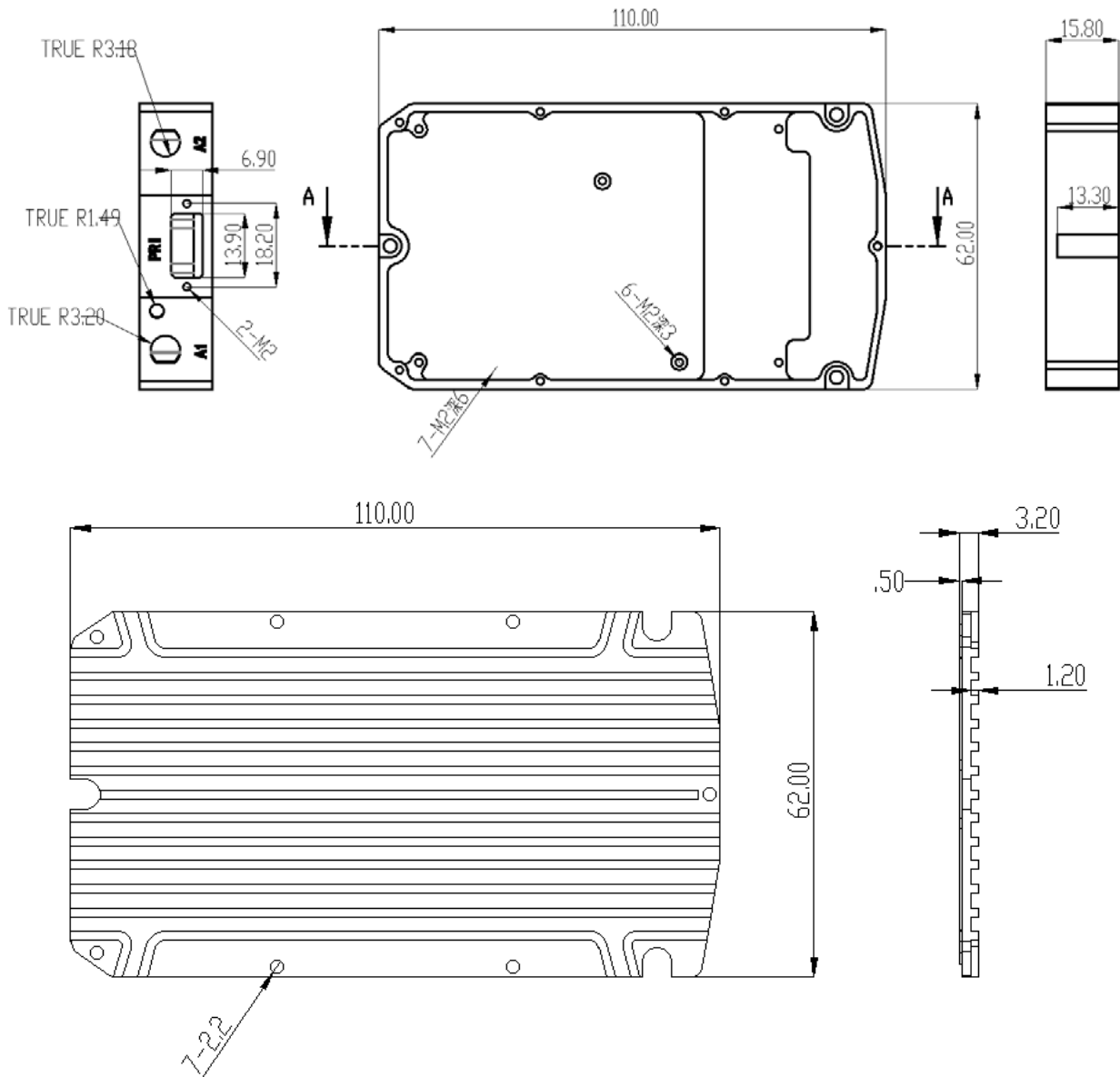
J30J-25 芯



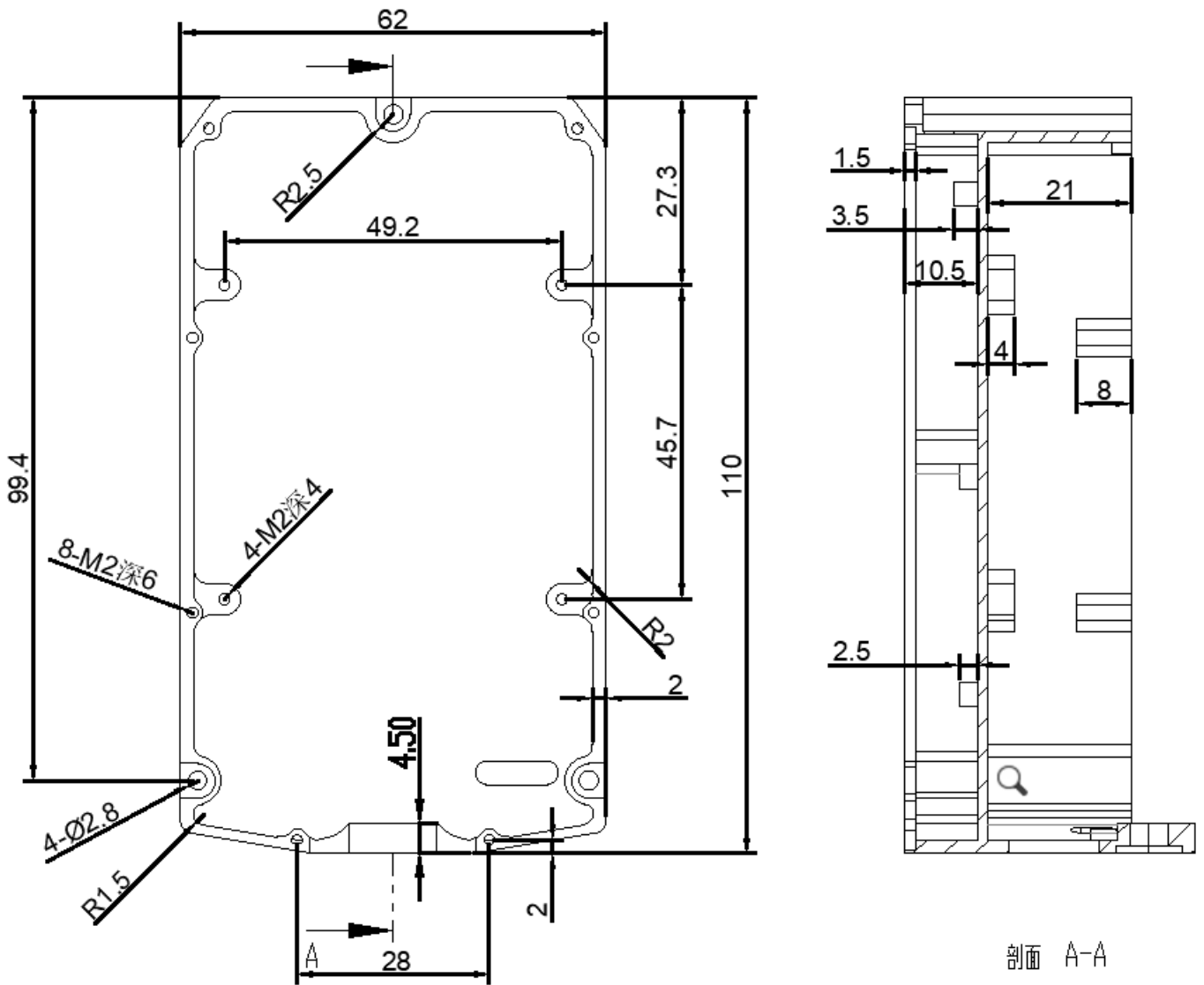
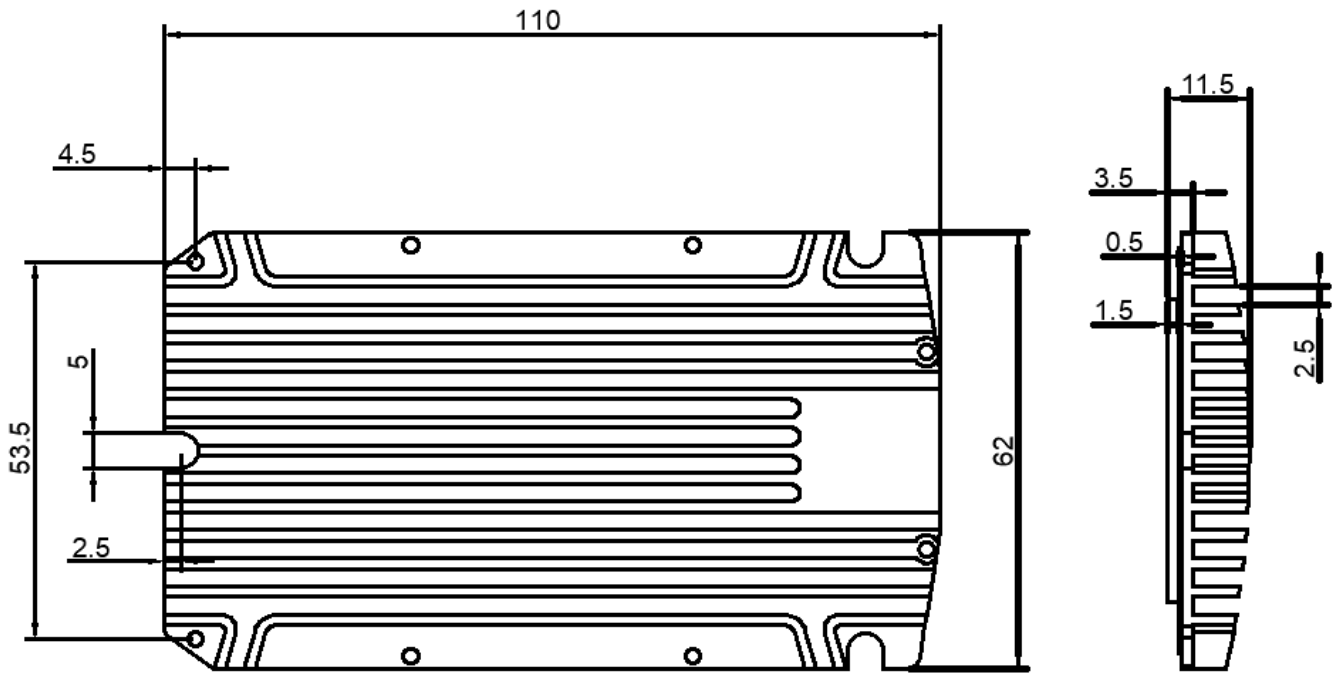
Power/Ethernet/Serial Connector Pinout	
J30J-25ZKP	Signal
1	ETH_RX-
2	ETH_RX+
3	ETH_TX-
4	ETH_TX+
5	VCC IN
6	
7	
8	
9	
10	
11	
12	
13	
14	RS232_TXD
15	RS232_RXD
16	RS232_GND
17	5V OUT
18	GND IN
19	
20	
21	
22	
23	
24	
25	

5. Airborne Radio Dimension Figure

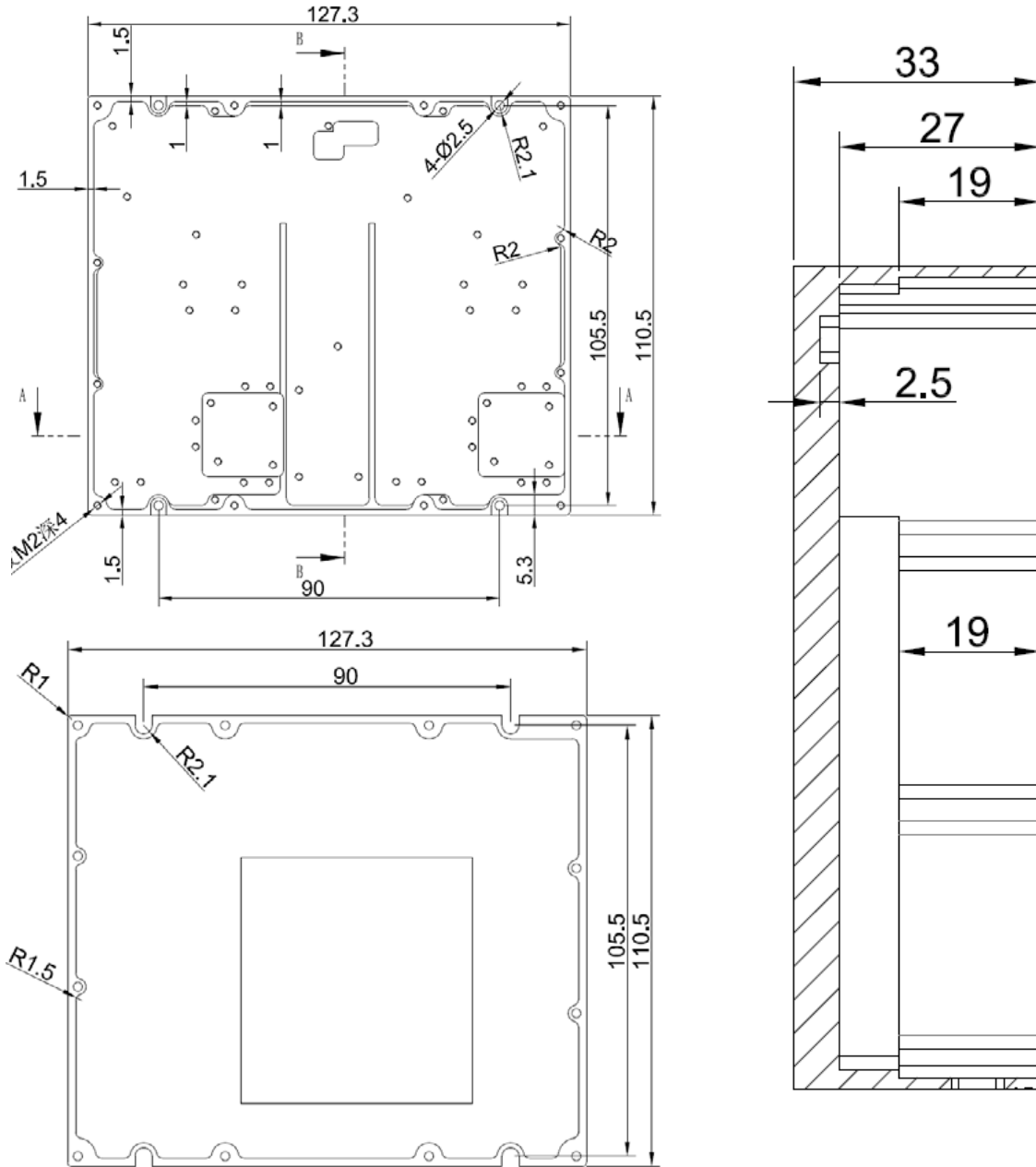
5.1 Airborne Radio (Lron Gray)



5.2 Airborne Radio (Black)

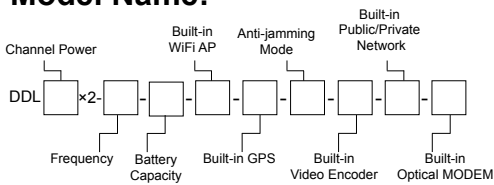


5.3 High-power Airborne Radio (Lron Gray)



6. Airborne Radio Model Name

Model Name:



Channel Power (W)	Frequency (MHz)	Battery Capacity (AH)	Built-in WiFi AP	Built-in GPS	Anti-jamming Mode	Built-in Video Encoder	Built-in Public/Private Network	Built-in Optical MODEM
0.5,1	600,U	0(N)	0(N)	0(N)	0(Single Frequency)	0(N)	0(N)	0(N)
2,4	1400,L	6.8,10.2	1(Y)	1(Y)	1(Intelligent Channel Selection)	HDMI	4G/5G	1(Y)
10	2300,S	9.6,28.8			2(Autonomous Frequency Hopping)	SDI/AV	4G LTE CPE	
20	4500,C							

DDL2×2-1400-10-0-0-1-0-0-0, Express: 2W×2, L Band, Maximum Channel Bandwidth 10MHz, with intelligent frequency selection Airborne Radio.