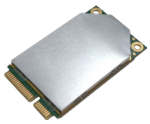
Shenzhen Sinosun Technology Co.,Ltd.

MIMOmesh Wireless MESH/Data Link

Lightweight Airborne(SWaP-C) Series

Technical Specification



0.25Watts×2 (7Z020)

0.5Watts×2 (7Z020)

1Watts×2 (7Z020)

1Watts×2/2Watts×2
(7Z020)

4Watts×2/5Watts×2
(7Z020)

2Watts×2/4Watts×2/5Watts×2
(7Z030/7Z035/7Z100)

1Watts×2/2Watts×2
Extended WIFI/SBUS/(HDMI/SDI)
(7Z020/7Z030)

2Watts×2/4Watts×2
Extended WIFI/HDMI/SDI
(7Z035/7Z100)

1Watts×2/2Watts×2
(7Z020/7Z030)

30Watts×2/40Watts×2
(7Z020/7Z030)

2W×1/4W×1 (Dual-band)

10W×1/20W×1 (Dual-band)

1. Specifications

General	
SDR Platform, Waveform	AD936X+FPGA (7Z020、7Z030、7Z035、7Z100), Mobile network MANET+MIMO
MIMO Technology	Space-time coding、Receive Diversity、TX /RX beamforming、Spatial multiplexing
Receive Sensitivity	-103dBm@5MHz BW
Channel Bandwidth	1.25/2.5/5/10/20MHz (7Z020, 7Z030)/40MHz (7Z035)/80MHz (7Z100, 40MHz+40MHz dual antenna frequency transceiver of carrier aggregation), configurable
Data Rate	1-70Mbps (20MHz BW, 7Z020)/1-130Mbps (20MHz BW, beamforming by 7Z030)/1-252Mbps (40MHz BW)/1-350Mbps (80MHz 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, 1dBm adjustable)	0.25Watts×2; 0.5Watts×2; 1Watts×2; 2Watts×2; 4Watts×2; 5Watts×2; 10Watts×2; 20Watts×2; 30Watts×2; 40Watts×2
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 6ms (Unidirectional, 20MHz BW)
Encryption	DES, AES128/256 (SM4/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 FHSS/Roaming mode, Multi-level anti-interference
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, BD/GPS(GNSS) positioning 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 transmission rate loss for more than three 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/Uper C-X-Ku customizable. Same frequency or different frequency of TDD, 2T2R at single band or 1T2R at dual-band)**

BAND	Frequency range	BAND	Frequency range
VHF/UHF (MHz)	360-450/450-550/570-700/800-950, 225-400/225-678/320-470*	S Band (GHz)	2.0-2.2/2.2-2.4/2.3-2.5/2.5-2.7/2.7-2.9/3.2-3.4/3.4-3.6/3.6-3.8, 1.9-2.7/2.0-2.7/2.1-2.7/2.7-3.6*
L Band (GHz)	1.0-1.2/1.1-1.3/1.3-1.5/1.5-1.7/1.6-1.8, 1.0-1.5/1.1-1.6/1.2-1.7/ 1.3-1.8/1.6-2.3/1.7-2.4/1.8-2.5*	C Band (GHz)	4.4-5.0/5.25-5.85, 4.2-5.2/5.5-6.0/6.4-7.2*
	(Note: RF power, Dimensions, Weight is different)		
MIIT (MHz)	336-344/512-592/566-626/606-678/1420-1520/1430-1444		

Mechanical	
Size/Weight	5.1x3.0x0.7cm/14g, 0.25Watts×2-Iron Gray 6.0x4.8x1.1cm/46g, 0.5Watts×2-Iron Gray 6.0x5.8x1.3cm/60g, 0.5Watts×2-Iron Gray 9.6x5.8x1.9cm/120g, 1Watts×2-Iron Gray 11.7x6.2x2.0cm/160g, 1Watts×2/2Watts×2-Iron Gray 11.7x6.2x3.8cm/349g, 1Watts×2/2Watts×2-Black 11.7x6.2x4.2cm/364g, 1Watts×2/2Watts×2-Multi-interface Black 11.7x6.2x3.8cm/380g, 2Watts×2/4Watts×2-Fan Black 11.7x6.2x3.2cm/287g, 2Watts×2/4Watts×2/5Watts×2-Iron Gray 13.8x6.2x2.7cm/225g, 4Watts×2-Iron Gray 13.8x6.2x3.1cm/271g, 5Watts×2-Fan Iron Gray 12.8x13.4x3.8cm/598g, 10Watts×2/20Watts×2-Iron Gray 14.2x13.7x5.7cm/1.08kg, 10Watts×2/20Watts×2-Black 14.2x13.7x6.0cm/1.11kg, 30Watts×2/40Watts×2-Dark Gray 23.0x14.8x3.5cm/1.25kg, 30Watts×2/40Watts×2-Thin Iron Gray
Installation/Color	4 Mounting Holes/Black, Iron Gray (Army Green Optional)

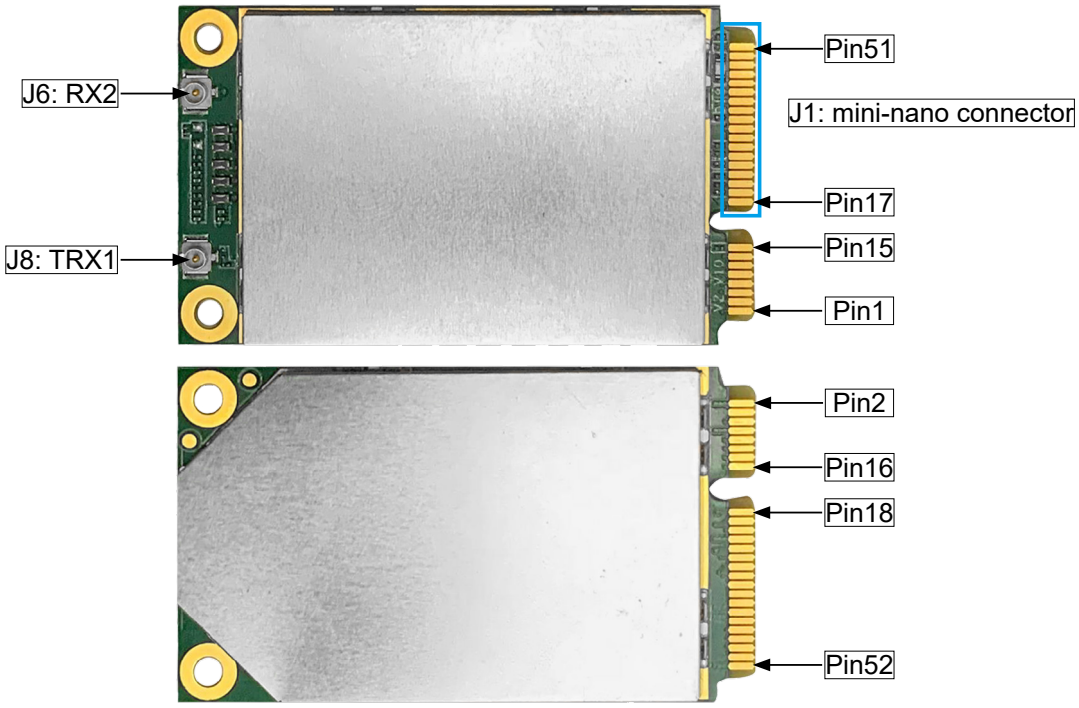
Power	
Supply Voltage	3.5-5VDC, 0.25Watts×2 9-32VDC, 0.5Watts×2 9-39VDC, 1Watts×2 12-36VDC, 2Watts×2/4Watts×2/5Watts×2 18-32VDC, 10Watts×2/20Watts×2/30Watts×2/40Watts×2
Power consumption	Operation 1-2A/Standby 0.5-1A@3.5-5V, 0.25Watts×2 Operation 0.3-0.5A/Standby 0.2-0.3A@12V, 0.5Watts×2 Operation 1-2A/Standby 0.5-0.7A@12V, 1Watts×2/2Watts×2 Operation 2-4A/Standby 0.5-0.7A@12V, 4Watts×2/5Watts×2 Operation 3-6A/Standby 0.7-0.9A@16.8V, 10Watts×2 Operation 6-10A/Standby 0.7-0.9A@20V, 20W×2/30W×2/40W×2
Power Selection	Power Supply by Main Cable

Interface	
Basic interface	2xIPEX/2xMMCX/2xSMP/2xSMA RF, 1-2xRJ45 Ethernet 100/1000BaseT, RS232, DC input. TTL (UART), SBUS, and Bluetooth 1.2-230.4Kbps, Wi-Fi access point, and BD/GPS (GNSS) are available. Supports transparent transmission over Ethernet and serial ports, and all communication protocols, including MAVLink. Selectable service priority
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
Power Indicator	Steady green - Powered on
LINK Indicator	Steady red - The network is not connected Blinking red - Starting/not connected to the network Steady green - The network is connected
RSSI 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 Off - The link is interrupted
Management Interface/ Control Interface	Web-based network management/GUI, API for secondary development interface/SNMP

Environmental	
Operation Temperature/	-40℃ ~+80℃
Protection Level	IP66 (IP67/IP68 Customized)

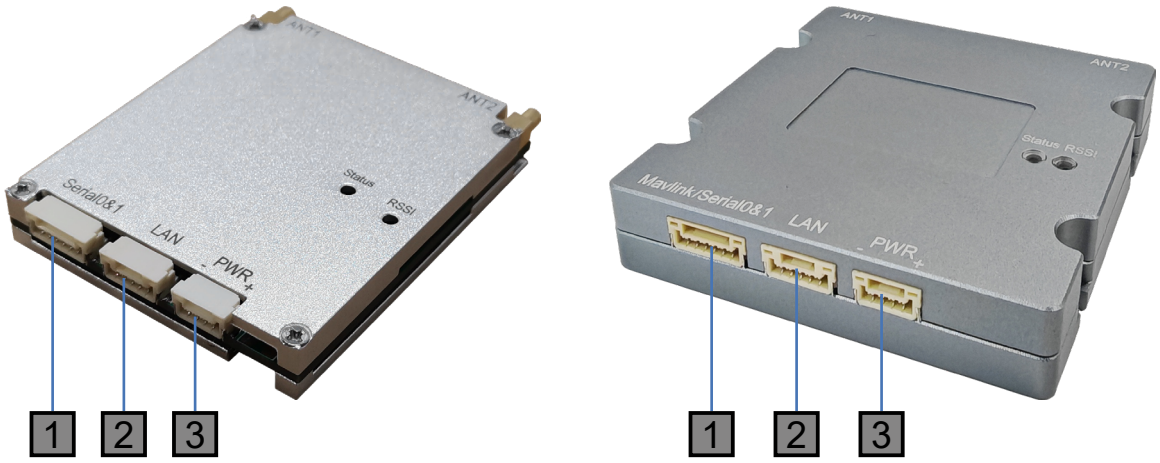
2. Hardware Interfaces

2.1 0.25Watts×2 (Iron Gray)



Interface name	Interface function	Connector specification
J1: mini-pcie interface	USB, serial port, LED indication and power supply interface	mini-pcie interface
J6: RF port RX2	RF receiving channel 2	IPEX MHF Ⅱ
J8: RF port TRX1	RF transmitting and receiving channel 1	IPEX MHF Ⅱ

2.2 0.5Watts×2 (Iron Gray)



1 Mavlink/Serial 0&1 (SM06B-GHS)

Pin1: RS232(Default)/TTL(UART)_GND0&1
Pin2: RS232(Default)/TTL(UART)_RXD0
Pin3: RS232(Default)/TTL(UART)_TXD0
Pin4: RS232(Default)/TTL(UART)_RXD1
Pin5: RS232(Default)/TTL(UART)_TXD1
Pin6: 5V OUT

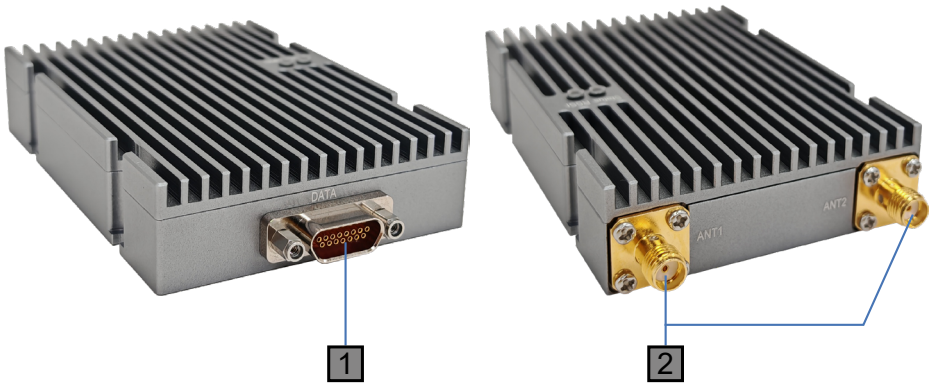
2 LAN (SM05B-GHS)

Pin1: GND
Pin2: ETH_RX+
Pin3: ETH_RX-
Pin4: ETH_TX+
Pin5: ETH_TX-

3 PWR (SM04B-GHS)

Pin1: GND (-)
Pin2: GND (-)
Pin3: VCC (+)
Pin4: VCC (+)

2.3 1Watts×2 (Iron Gray)



1 Power/Communication Connection Port

2 1-2 RF Antenna Connection Port [SMA Female]

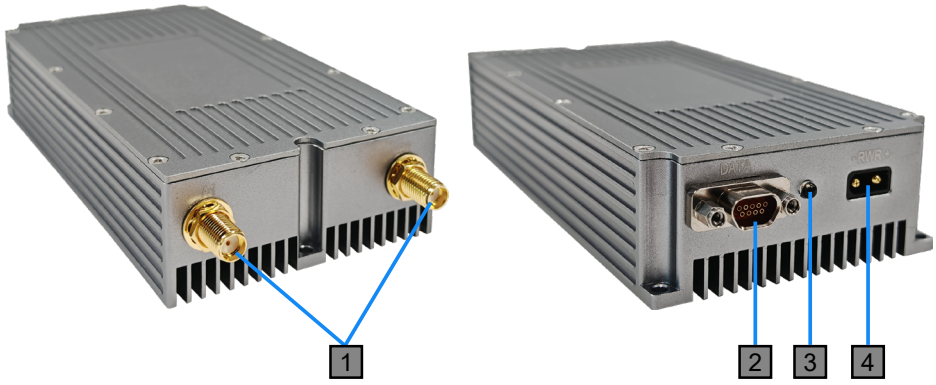
2.4 1Watts×2/2Watts×2 (Iron Gray)

1 1-2 RF Antenna Connection Port [SMA Female]

2 Power/Communication Connection Port

3 Power Indicator
- Steady green: Powered on

2.5 4Watts×2 (Iron Gray)



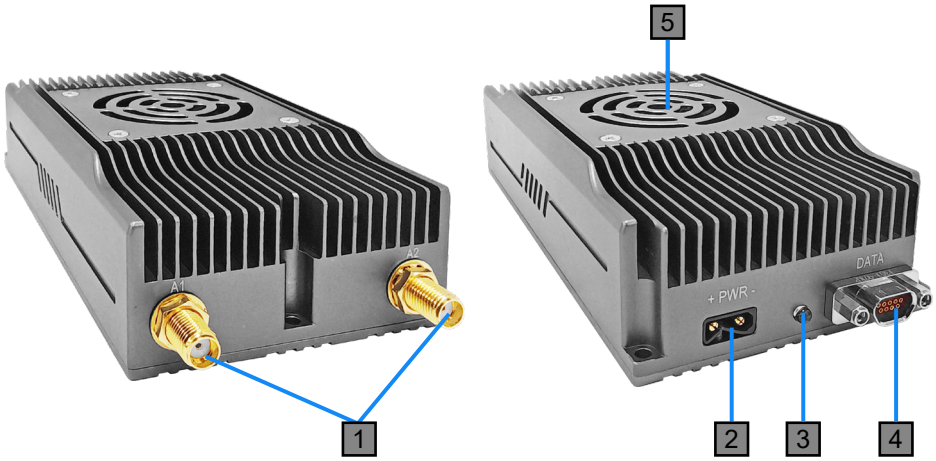
1 1-2 RF Antenna Connection Port [SMA Female]

2 Communication Connection Port

3 Power Indicator
- Steady green: Powered on

4 Power Connection Port

2.6 5Watts×2 (Dark Gray)



1 1-2 RF Antenna Connection Port [SMA Female]

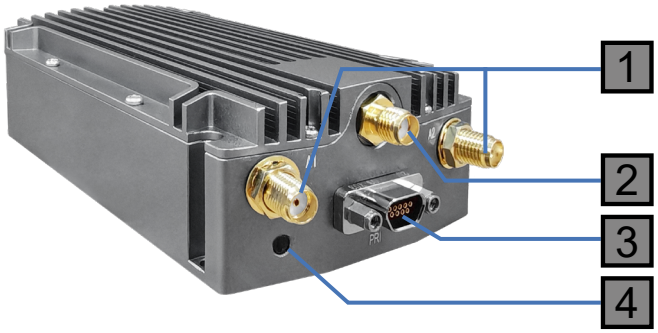
2 Communication Connection Port

3 Power Indicator
- Steady green: Powered on

4 Power Connection Port

5 Fan

2.7 2Watts×2/4Watts×2/5Watts×2 (Iron Gray)



1 1-2 RF Antenna Connection Port [SMA Female]

2 WIFI Antenna Connection Port [SMA Female]

3 Power/Communication Connection Port

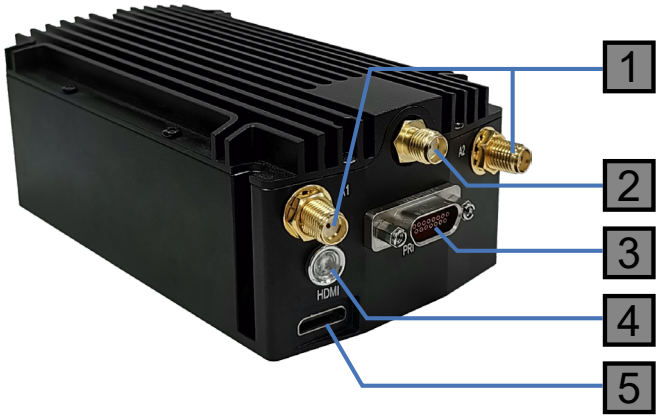
4 LINK Indicator
- Steady red: The network is not connected
- Blinking red: Starting/not connected to the network
- Steady green: The network is connected

2.8 1Watts×2/2Watts×2 (Black)

1 1-2 RF Antenna Connection Port [SMA Female]

3 Power/Communication Connection Port

3 LINK Indicator
- Steady red: The network is not connected
- Blinking red: Starting/not connected to the network
- Steady green: The network is connected



1 1-2 RF Antenna Connection Port [SMA Female]

2 WIFI Antenna Connection Port [SMA Female]

3 LINK Indicator
- Steady red: The network is not connected
- Blinking red: Starting/not connected to the network
- Steady green: The network is connected

4 HDMI Connection Port

5 Power/Communication Connection Port

2.9 2Watts×2/4Watts×2 (Fan Black)

1 Fan

2 1-2 RF Antenna Connection Port [SMA Female]

3 WIFI Antenna Connection Port [SMA Female]

4 LINK Indicator
- Steady red: The network is not connected
- Blinking red: Starting/not connected to the network
- Steady green: The network is connected

5 Communication Connection Port

6 Power Connection Port

2.10 10Watts×2/20Watts×2 (Iron Gray/Black)

1 Power/Communication Connection Port

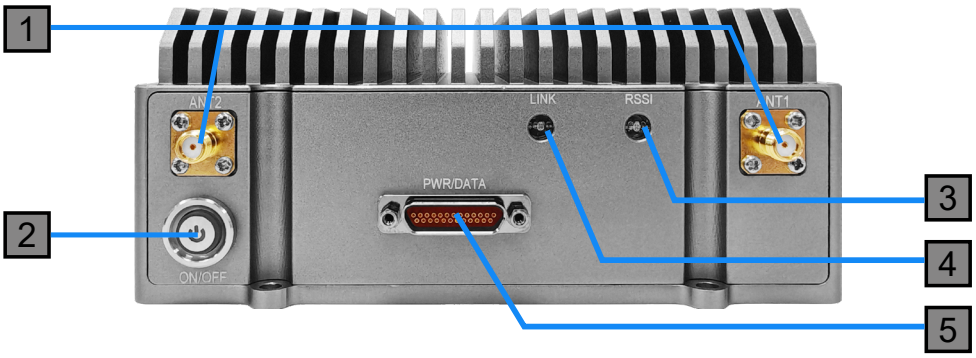
2 Radio Switch

3 1-2 RF Antenna Connection Port [SMA Female]

4 LINK Indicator
- Steady red: The network is not connected
- Blinking red: Starting/not connected to the network
- Steady green: The network is connected

5 RSSI 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
- Off: The link is interrupted

2.11 30Watts×2/40Watts×2 (Dark Gray)



1 1-2 RF Antenna Connection Port [SMA Female]

2 Radio Switch

3 LINK Indicator
- Steady red: The network is not connected
- Blinking red: Starting/not connected to the network
- Steady green: The network is connected

4 RSSI 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
- Off: The link is interrupted

5 Power/Communication Connection Port

2.12 30Watts×2/40Watts×2 (Thin Iron Gray)

1 Radio Switch

2 LINK Indicator

- Steady red: The network is not connected
- Blinking red: Starting/not connected to the network
- Steady green: The network is connected

3 RSSI Indicator

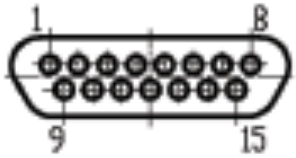
- Steady green: The link quality is excellent
- Steady blue: The link quality is good
- Steady yellow: The link quality is medium
- Steady purple: The link quality is slightly worse
- Steady red: The link quality is poor
- Off: The link is interrupted

4 Power/Communication Connection Port

5 1-2 RF Antenna Connection Port [SMA Female]

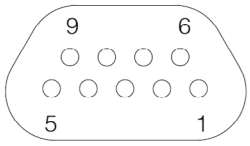
3. Connection Port Pin Definition

3.1 1Watts×2/2Watts×2 (Iron Gray-J30J-15ZKN-J)



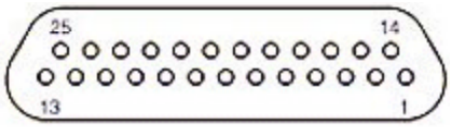
Power/Ethernet/Serial Connector Pinout-7Z020	
J30J-15ZKN-J	**Signal**
1	RS232(Default)/TTL(UART)_RXD0
2	RS232(Default)/TTL(UART)_TXD0
3	RS232(Default)/TTL(UART)_GND0
4	RS232(Default)/TTL(UART)_GND1
5	RS232(Default)/TTL(UART)_RXD1
6	RS232(Default)/TTL(UART)_TXD1
7	5V OUT (Supply External BD/GPS)
8	ETH_RX+
9	ETH_RX-
10	ETH_TX+
11	ETH_TX-
12	GND (-)
13	
14	VCC (+)
15	

3.2 4Watts×2 (Iron Gray-J30J-9)



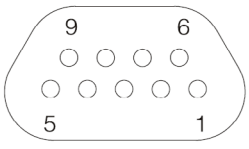
Ethernet/Serial Connector Pinout-7Z020	
J30J-9ZKNP5-J	**Signal**
1	RS232(Default)/TTL(UART)_RXD0
2	RS232(Default)/TTL(UART)_TXD0
3	RS232(Default)/TTL(UART)_GND0&1
4	RS232(Default)/TTL(UART)_RXD1
5	RS232(Default)/TTL(UART)_TXD1
6	ETH_RX+
7	ETH_RX-
8	ETH_TX+
9	ETH_TX-

3.3 5Watts×2 (Iron Gray-J30J-25)



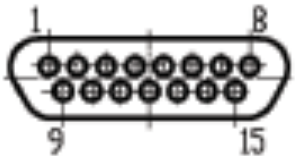
Power/Ethernet/Serial Connector Pinout-7Z020	
J30J-25ZKP	**Signal**
1	ETH_RX+
2	ETH_RX-
3	ETH_TX+
4	ETH_TX-
5	VCC (+)
6	
7	
8	
9	
10	
11	
12	
13	
14	RS232(Default)/TTL(UART)_RXD0
15	RS232(Default)/TTL(UART)_TXD0
16	RS232(Default)/TTL(UART)_GND0
17	5V OUT (Supply External BD/GPS)
18	RS232(Default)/TTL(UART)_RXD1
19	RS232(Default)/TTL(UART)_TXD1
20	RS232(Default)/TTL(UART)_GND1
21	GND (-)
22	
23	
24	
25	

3.4 2Watts×2/4Watts×2/5Watts×2 (Iron Gray/Black-J30J-9)



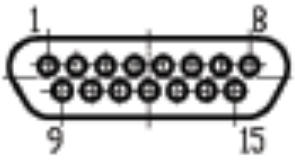
Power/Ethernet/Serial Connector Pinout-7Z030	
J30J-9ZKNP5-J	**Signal**
1	RS232(Default)/TTL(UART)_RXD
2	ETH_RX-
3	ETH_RX+
4	ETH_TX-
5	ETH_TX+
6	RS232(Default)/TTL(UART)_TXD
7	RS232(Default)/TTL(UART)_GND
8	GND (-)
9	VCC (+)

3.5 1Watts×2/2Watts×2 (Black-J30J-15ZKP)



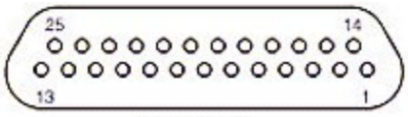
Power/Ethernet/Serial Connector Pinout-7Z020/7Z030		
J30J-15ZKP	**7Z020 Signal**	**7Z030 Signal**
1	RS232(Default)/TTL(UART)_RXD0	RS232(Default)/TTL(UART)_RXD0
2	RS232(Default)/TTL(UART)_TXD0	RS232(Default)/TTL(UART)_TXD0
3	RS232(Default)/TTL(UART)_GND0	RS232(Default)/TTL(UART)_GND0
4	RS232(Default)/TTL(UART)_GND1	5V OUT (Supply External BD/GPS)
5	RS232(Default)/TTL(UART)_RXD1	ETH_RX-
6	RS232(Default)/TTL(UART)_TXD1	ETH_RX+
7	5V OUT (Supply External BD/GPS)	ETH_TX-
8	ETH_RX-	ETH_TX+
9	ETH_RX+	NC(Default)/RS232_RXD/TTL_RXD1
10	ETH_TX-	NC(Default)/RS232_TXD/TTL_TXD1
11	ETH_TX+	NC(Default)/RS232_GND/TTL_GND1
12	GND (-)	GND (-)
13		
14	VCC (+)	VCC (+)
15		

3.6 1Watts×2/2Watts×2 (Black-J30J-15ZKP)



Power/Gigabit Ethernet/Serial Port Connector Pinout-7Z035/7Z100	
J30J-15ZKP	**Signal**
1	RJ45_PIN1_TX+
2	RJ45_PIN2_TX-
3	RJ45_PIN3_RX+
4	RJ45_PIN4_BI_D3+
5	RJ45_PIN5_BI_D3-
6	RJ45_PIN6_RX-
7	RJ45_PIN7_BI_D4+
8	RJ45_PIN8_BI_D4-
9	NC(Default)/RS232_TXD0/TTL(UART)_TXD0
10	NC(Default)/RS232_RXD0/TTL(UART)_RXD0
11	NC(Default)/RS232_GND0/TTL(UART)_GND0
12	5V OUT (Supply External BD/GPS)
13	NC(Default)/RS232_TXD1/TTL(UART)_TXD1
14	NC(Default)/RS232_RXD1/TTL(UART)_RXD1
15	NC(Default)/RS232_GND1/TTL(UART)_GND1

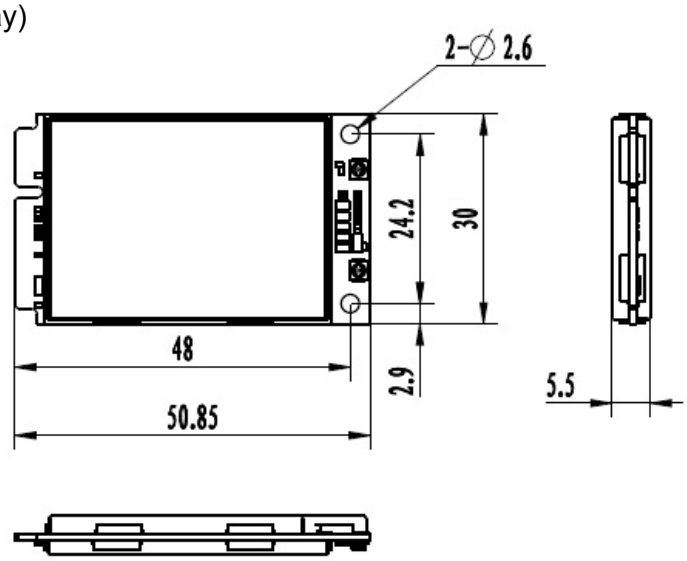
3.7 10Watts×2/20Watts×2/30Watts×2/40Watts×2 (Iron Gray/Black/Dark Gray/Thin Iron Gray-J30J-25)



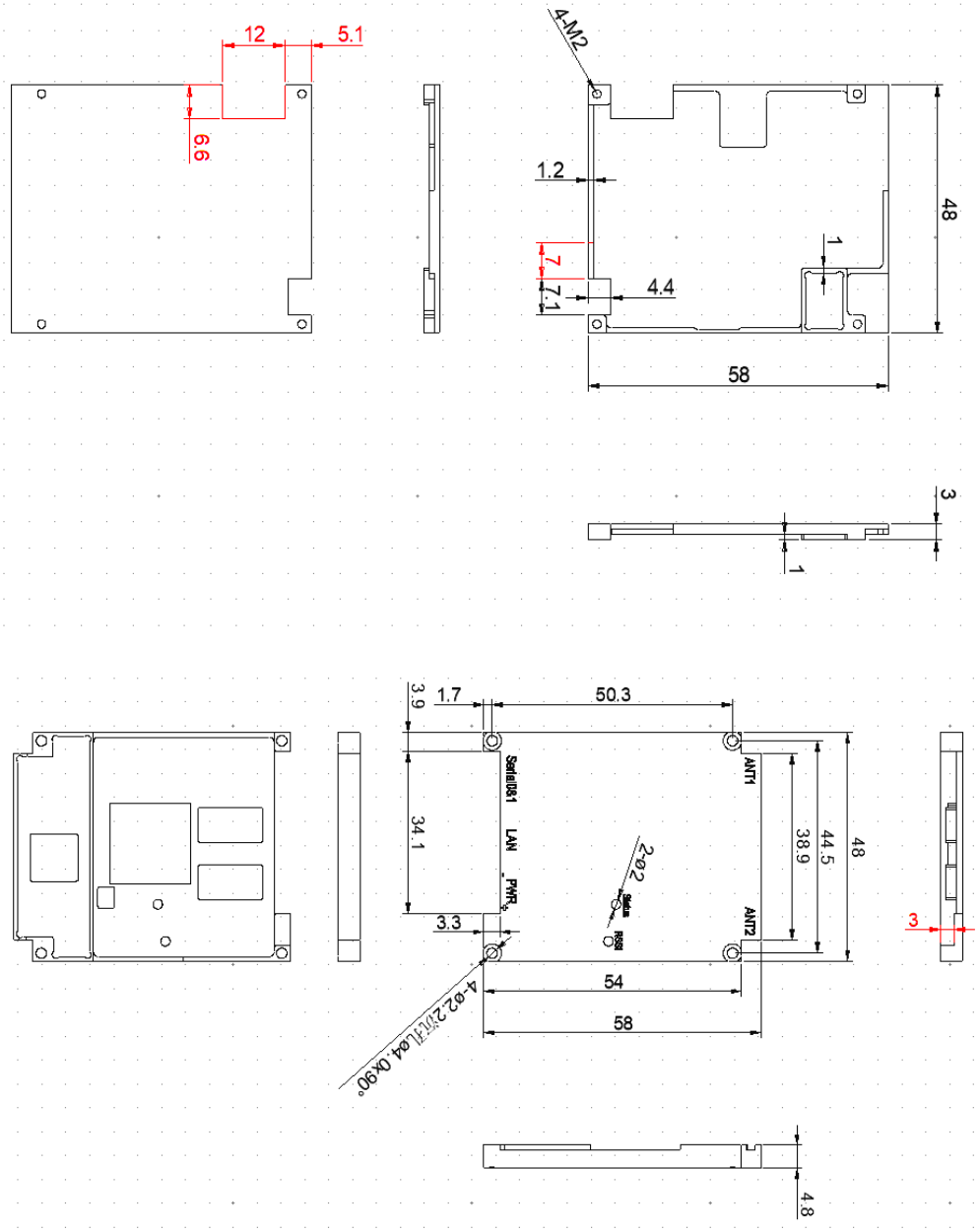
Power/Ethernet/Serial Connector Pinout-7Z020/7Z030		
J30J-25ZKP	**7Z020 Signal**	**7Z030 Signal**
1	ETH_RX+	ETH1_RX-
2	ETH_RX-	ETH1_RX+
3	ETH_TX+	ETH1_TX-
4	ETH_TX-	ETH1_TX+
5	VCC (+)	NC(Default)/ETH2_RX-
6		NC(Default)/ETH2_RX+
7		NC(Default)/ETH2_TX-
8		NC(Default)/ETH2_TX+
9		VCC (+)
10		
11		
12		
13		
14	RS232(Default)/TTL(UART)_RXD0	RS232(Default)/TTL(UART)_RXD0
15	RS232(Default)/TTL(UART)_TXD0	RS232(Default)/TTL(UART)_TXD0
16	RS232(Default)/TTL(UART)_GND0	RS232(Default)/TTL(UART)_GND0
17	5V OUT (Supply External BD/GPS)	5V OUT (Supply External BD/GPS)
18	RS232(Default)/TTL(UART)_RXD1	NC(Default)/RS422_RX+/RS232_RXD/TTL_RXD1
19	RS232(Default)/TTL(UART)_TXD1	NC(Default)/RS422_RX-/RS232_TXD/TTL_TXD1
20	RS232(Default)/TTL(UART)_GND1	NC(Default)/RS422_TX+/RS232_GND/TTL_GND1
21	GND (-)	NC(Default)/RS422_TX-
22		GND (-)
23		
24		
25		

4. Dimension Figure

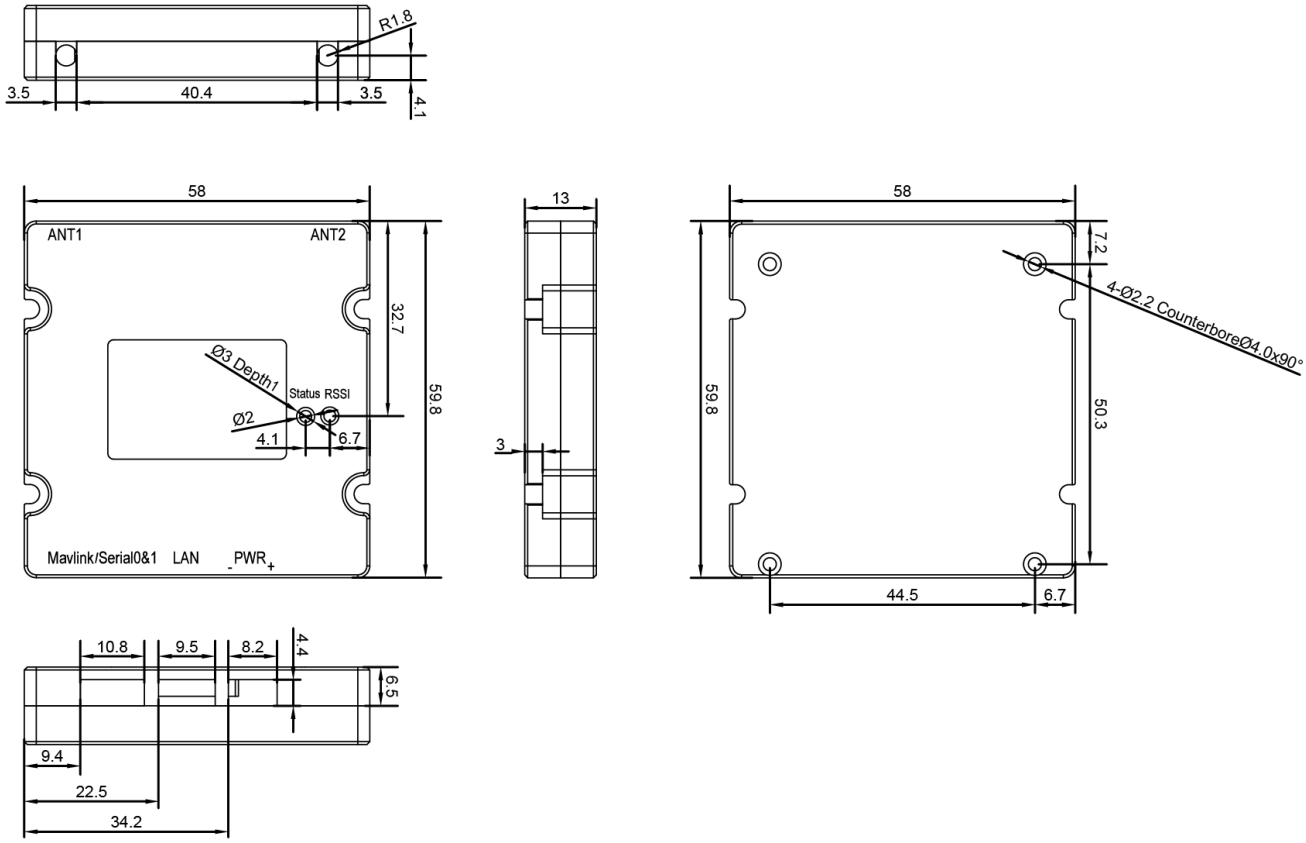
4.1 0.25Watts×2 (Iron Gray)



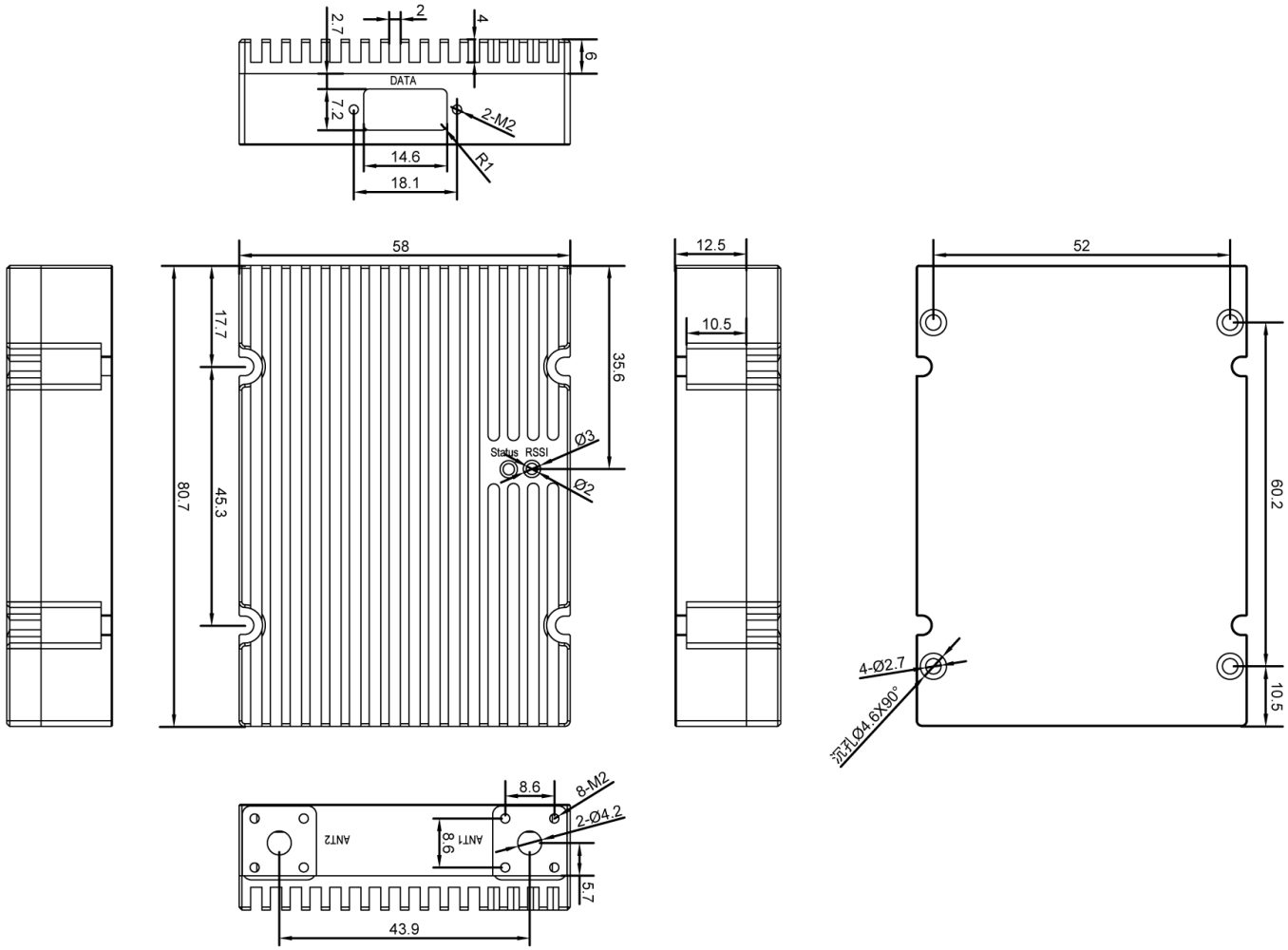
4.2 0.5Watts×2 (Iron Gray)



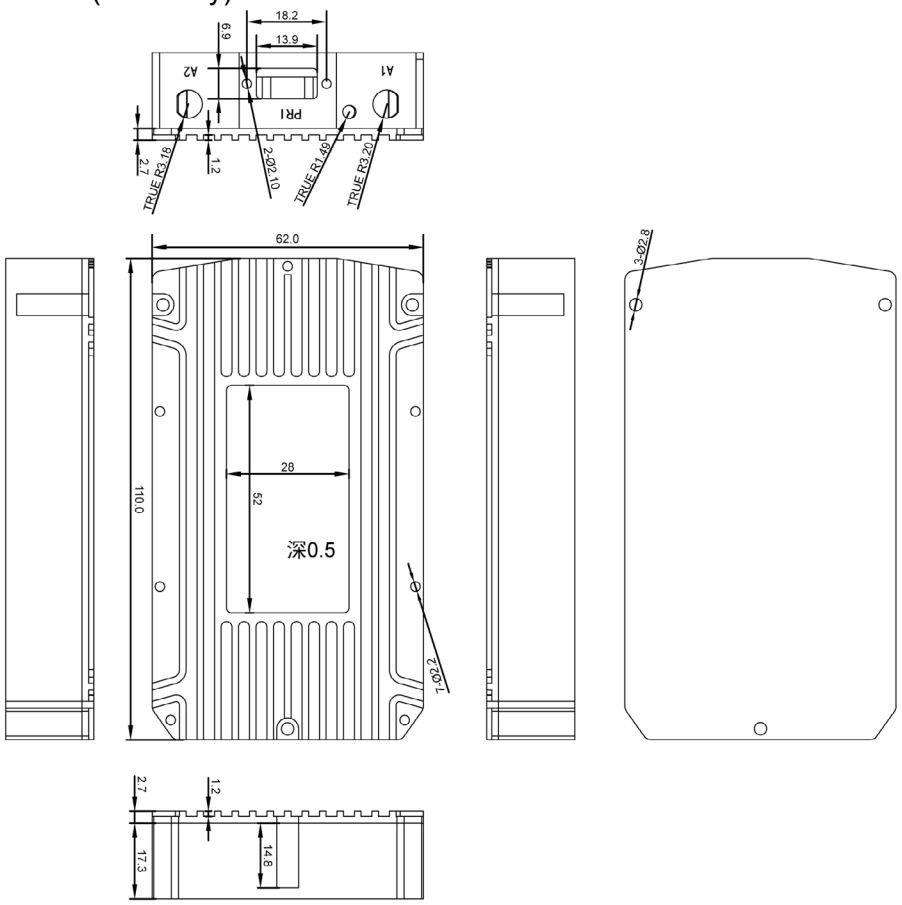
4.3 0.5Watts×2 (Iron Gray)



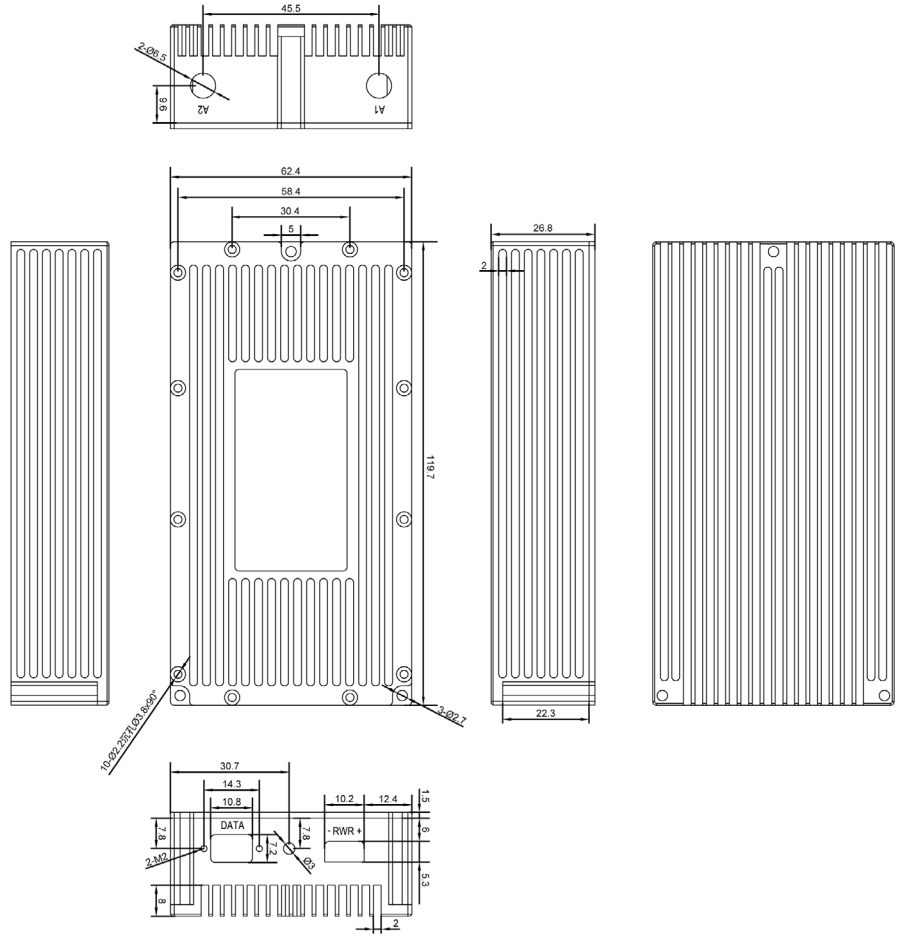
4.4 1Watts×2 (Iron Gray)

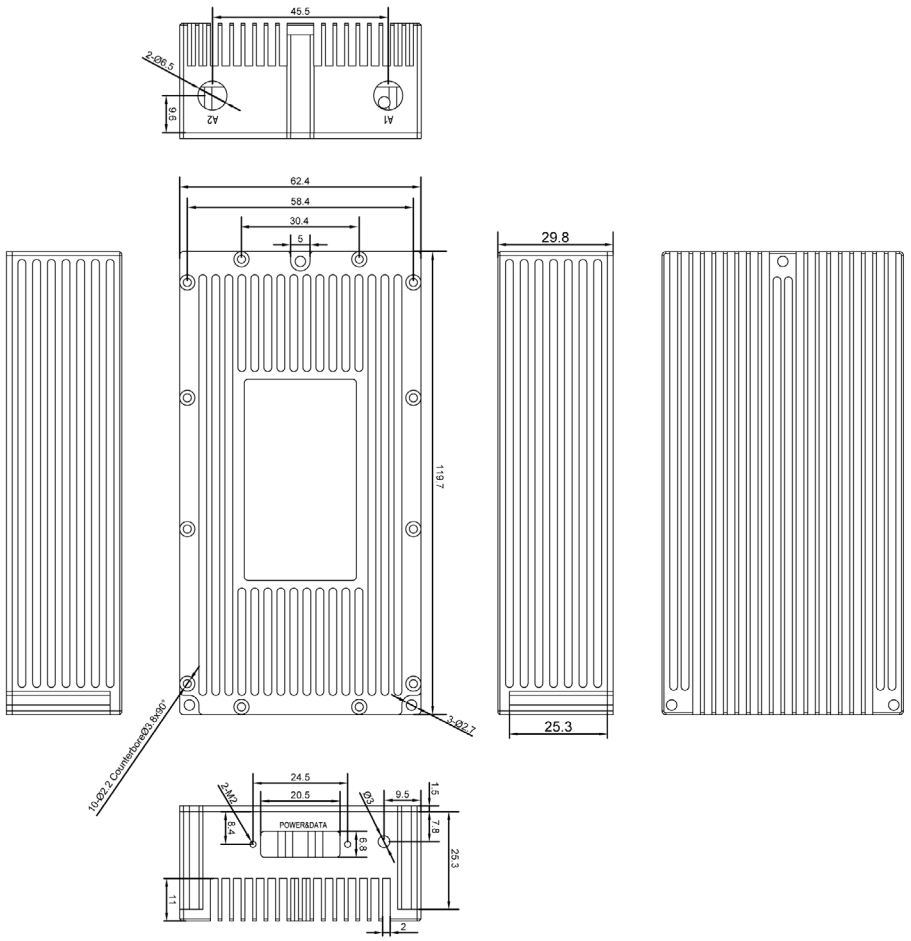


4.5 1Watts×2/2Watts×2 (Iron Gray)

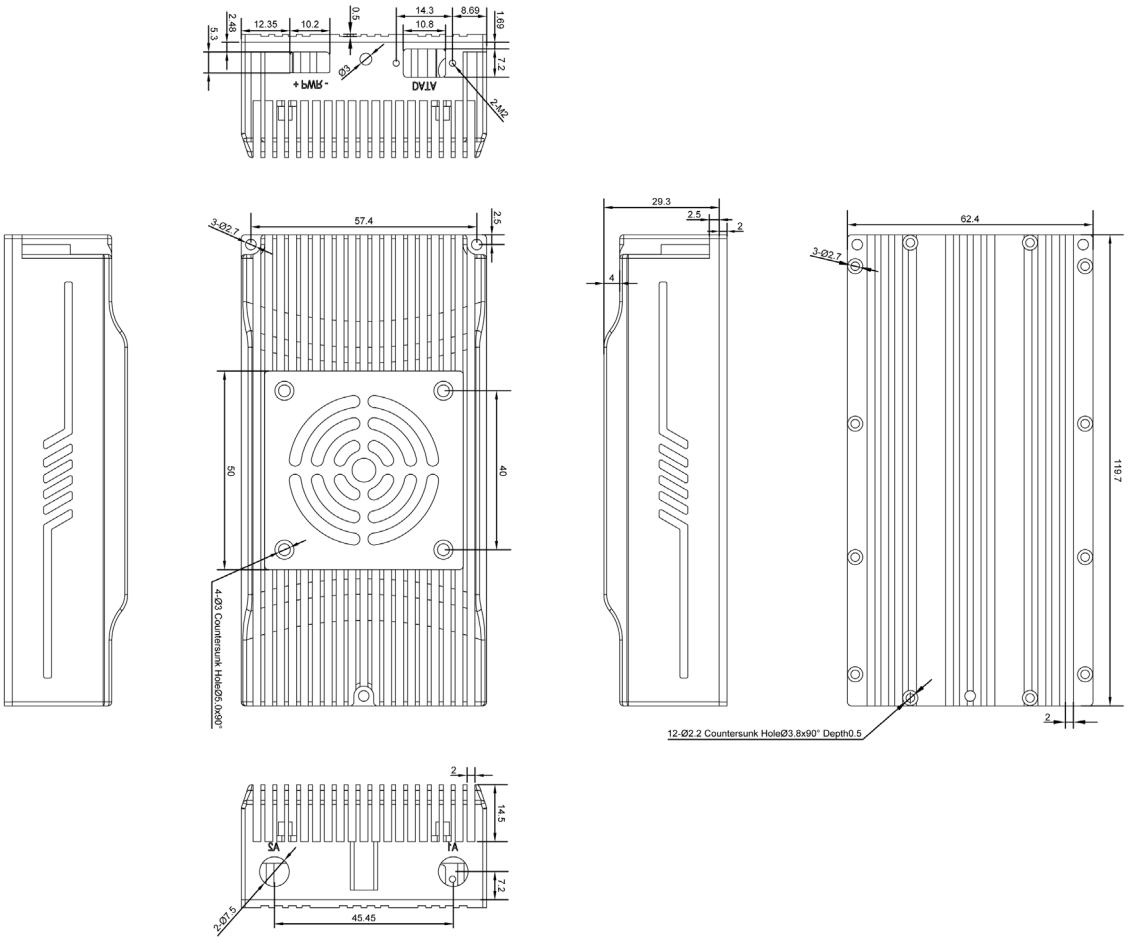


4.6 4Watts×2 (Iron Gray)

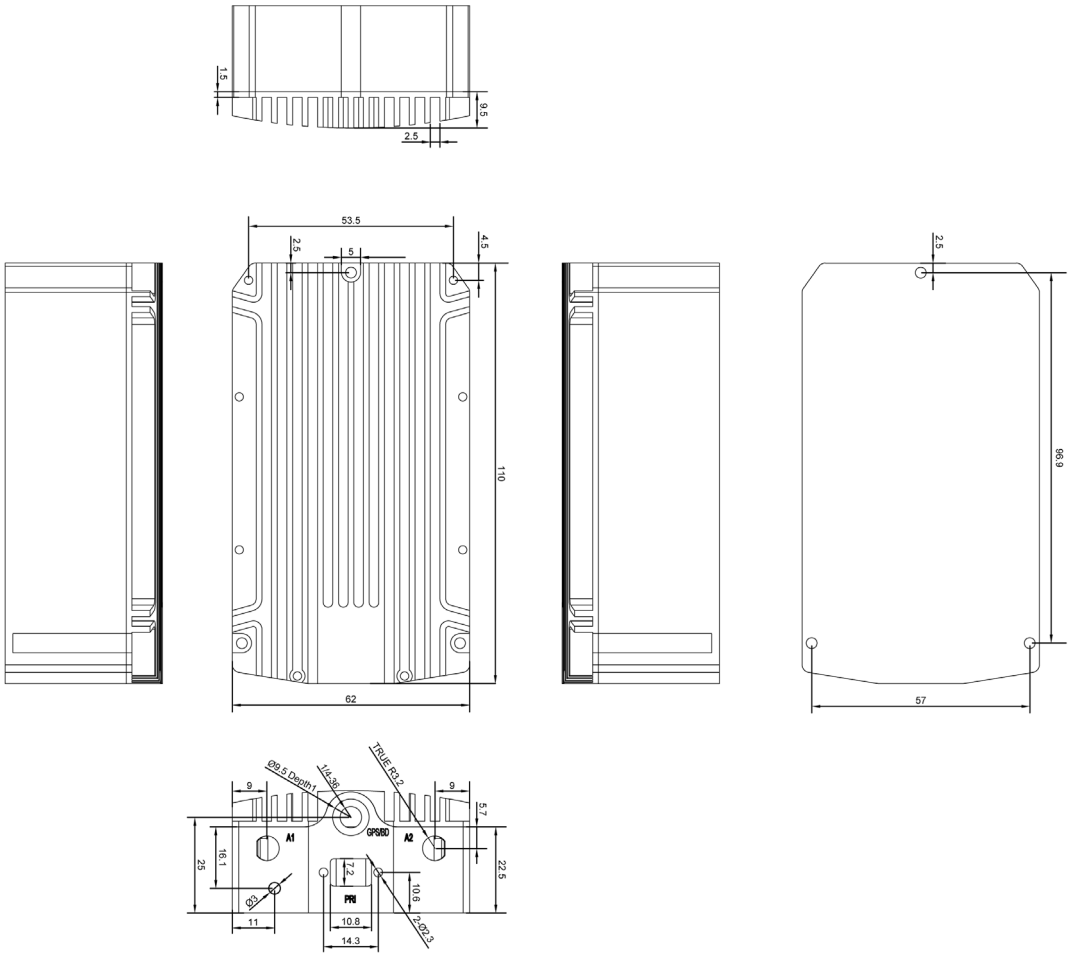




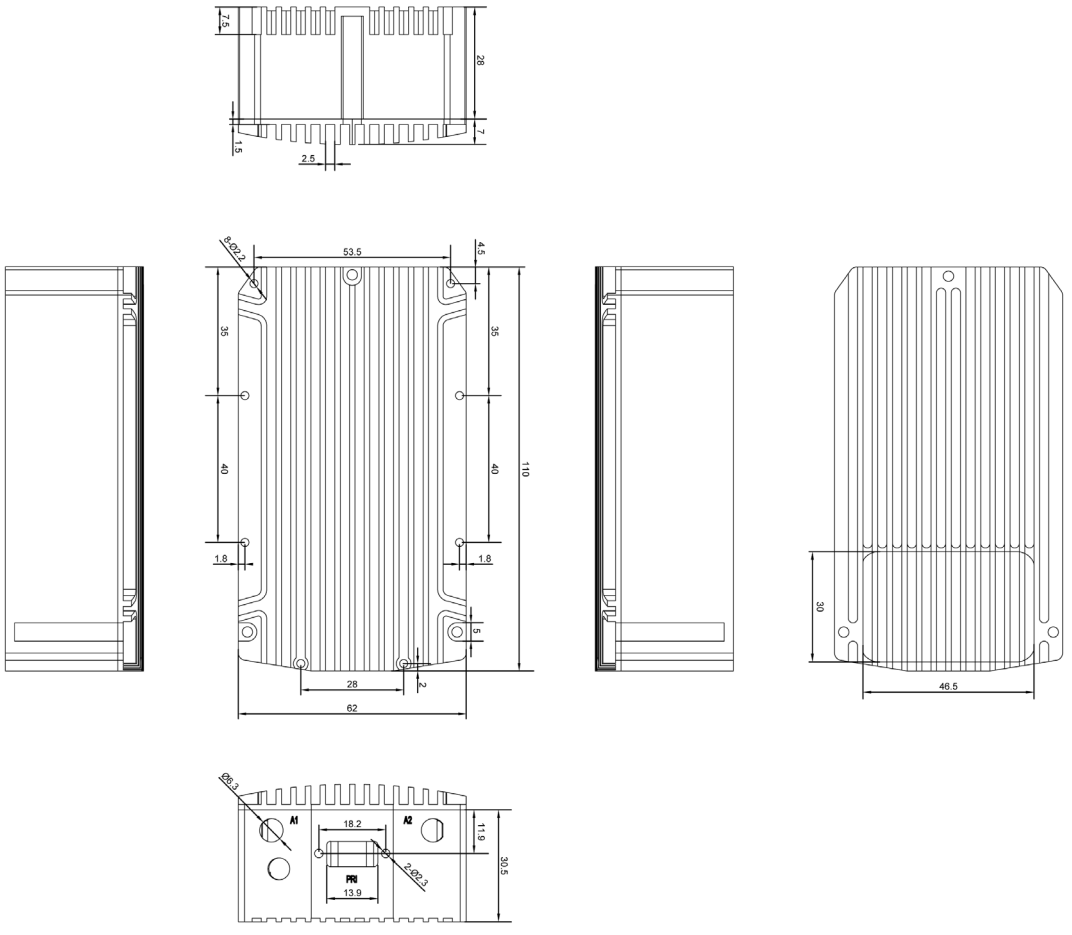
4.7 4Watts×2/5Watts×2 (Dark Gray)



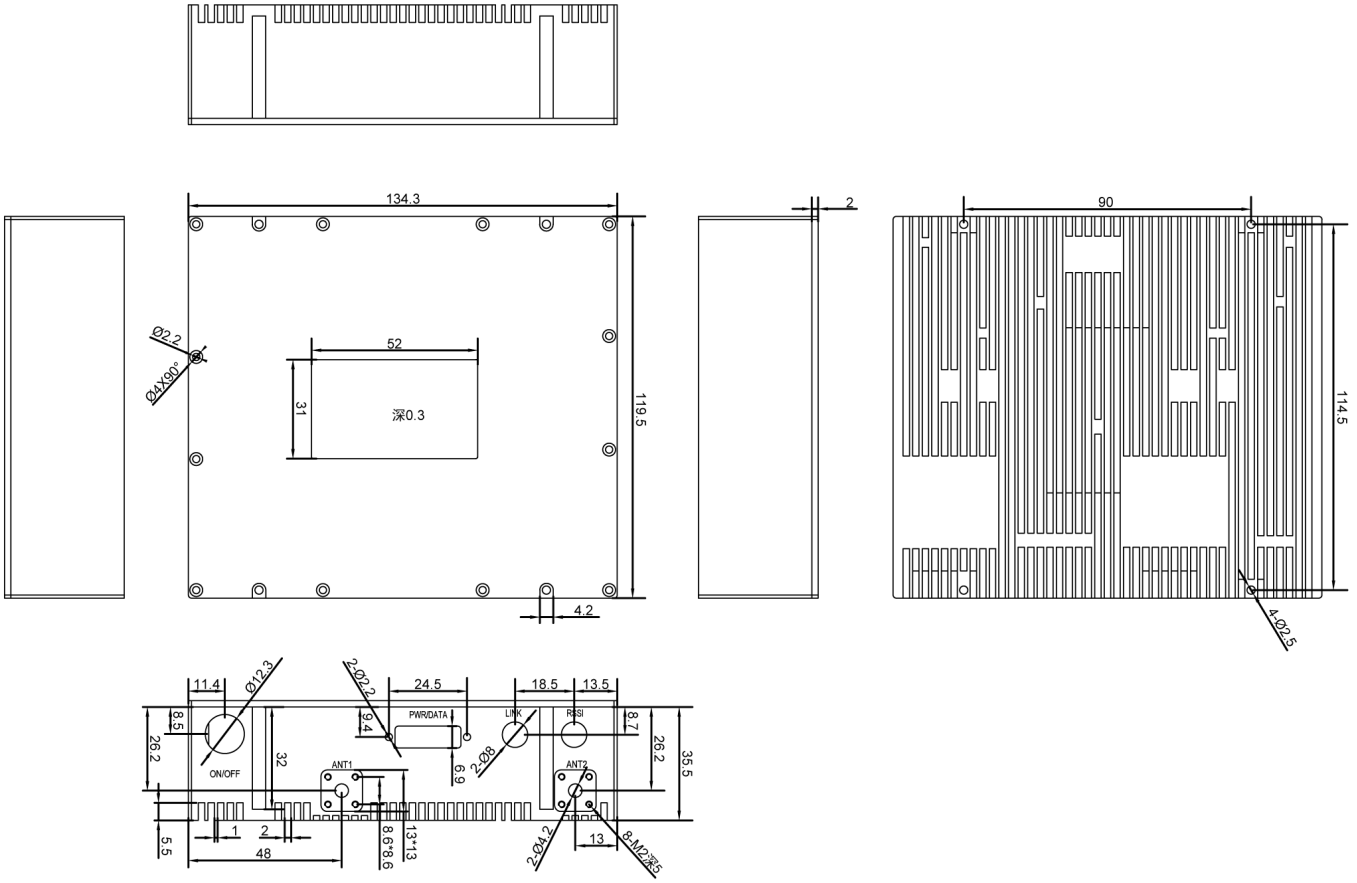
4.8 2Watts×2/4Watts×2/4Watts×2 (Black)



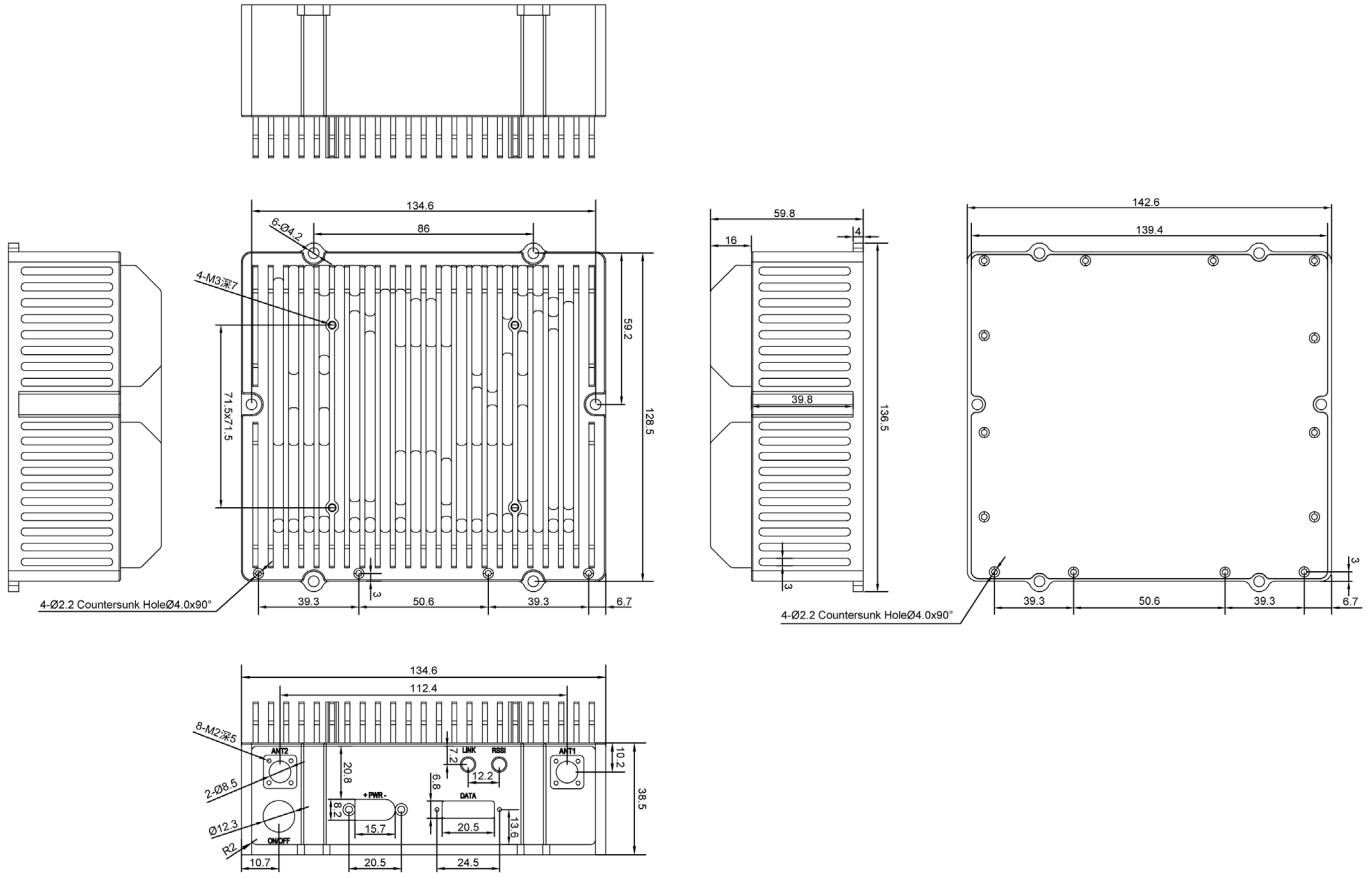
4.9 1Watts×2/2Watts×2 (Black)



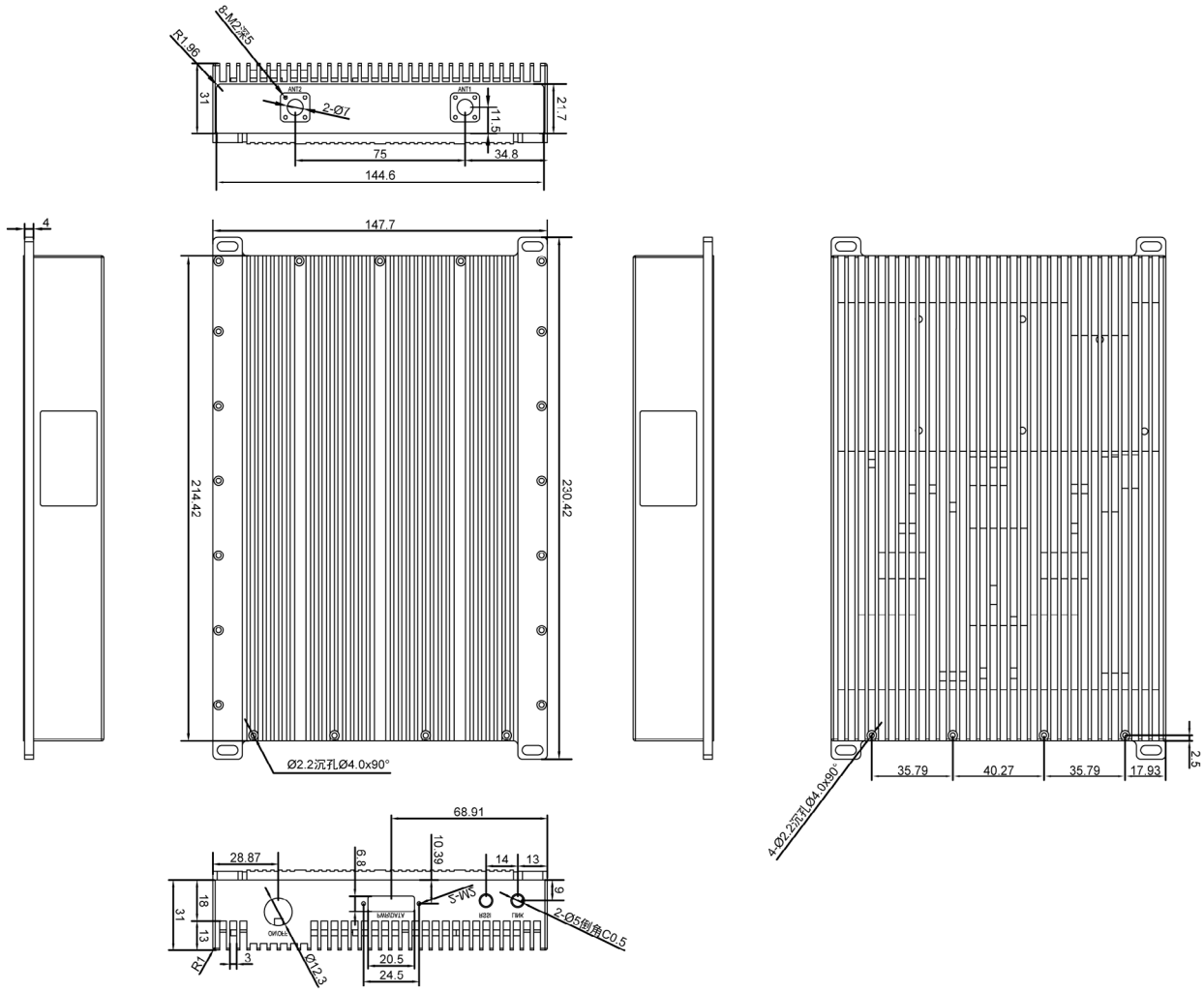
4.10 10Watts×2/20Watts×2 (Iron Gray/Black)



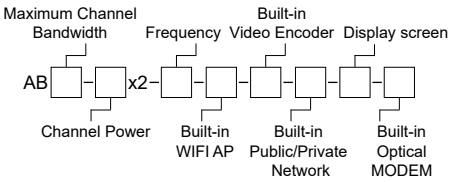
4.11 30Watts×2/40Watts×2 (Dark Gray)



4.12 30Watts×2/40Watts×2 (Thin Iron Gray)



5. Model Name



Maximum Channel Bandwidth	Channel Power (W)	Frequency (MHz)	Built-in WIFI AP	Built-in Video Encoder	Built-in Public/ Private Network	Display Screen	Built-in Optical MODEM
20	2	600, U	0(N)	0(N)	0(N)	0(N)	0(N)
40	4, 5	1400, L	1(Y)	HDMI	4G/5G	2(2")	1(Y)
80	10	2300, S		SDI/AV	4G LTE CPE	3(3.2")	
	20, 40	4500, C				4(4")	

AB20-2x2-1400-1-HDMI-4G/5G-0-0 Express: Maximum channel bandwidth 20MHz, 2Watts×2, 1400MHz, With WIFI AP, Built-in HDMI Coding, Built-in 4G/5G Public Network Module, Without display screen and without optical MODEM Airborne Radio.

6. Comparison of Airborne Radio Product Types and Specifications

Product Images								
RF Output Power (Support TPC, transmission power control, 1dBm adjustable)	0.25Watts×2	0.5Watts×2	1Watts×2	1Watts×2/2Watts×2	4Watts×2/5Watts×2	2Watts×2/ 4Watts×2/5Watts×2	10Watts×2/20Watts	30Watts×2/40Watts×2
Single Hop Communication Distance	Air to G. 3-15KM	Air to G. 10-30KM	Air to G. 20~50KM	Air to G. 20~50KM, 1Watts×2 Air to G. 50~100KM, 2Watts×2	Air to G. 100~150KM, 4Watts×2 Air to G. 100~200KM, 5Watts×2	Air to G. 50~100KM, 2Watts×2 Air to G. 100~150KM, 4Watts×2 Air to G. 100~200KM, 5Watts×2	Air to G. 150~300KM, 10Watts×2 Air to G. 250~500KM, 20Watts×2	Air to G. 250~500KM
Size/Weight	5.1x3.0x0.7cm/14g	6.0x4.8x1.1cm/46g 6.0x5.8x1.3cm/60g	9.6x5.8x1.9cm/120g	11.7x6.2x3.8cm/160g	13.8x6.2x2.7cm/225g 13.8x6.2x3.1cm/271g	11.7x6.2x3.2cm/287g	12.8x13.4x3.8cm/598g 14.2x13.7x5.7cm/1.08kg	14.2x13.7x6.0cm/1.11kg 23.0x14.8x3.5cm/1.25kg
Supply Voltage	3.5-5V DC	9-39V DC	9-39V DC	9-39V DC, 1Watts×2 12-36V DC, 2Watts×2	12-36V DC	12-36V DC	18-32V DC	28-32V DC
Power consumption	Operation 1-2A/ Standby 0.5-1A@3.5-5V	Operation 0.3-0.5A/ Standby 0.2-0.3A@12V	Operation 1-2A/ Standby 0.5-0.7A@12V	Operation 1-2A/ Standby 0.5-0.7A@12V	Operation 2-4A/ Standby 0.5-0.7A@12V	Operation 2-4A/ Standby 0.5-0.7A@12V	Operation 3-6A/Standby 0.7-0.9A@16.8V, 10W×2 Operation 6-10A/Standby 0.7-0.9A@20V, 20W×2	Operation 6-10A/ Standby 0.7-0.9A@20V
Transmission rate	1-70Mbps (20MHz BW, 7Z020)/1-130Mbps (20MHz BW, beamforming by 7Z030)/1-252Mbps (40MHz BW, 7Z035)/1-350Mbps (80MHz BW, 7Z100)							
Frequency range	70M-6GHz/Uper C-X-Ku customizable. Same frequency or different frequency of TDD, 2T2R at single band or 1T2R at dual-band							
Service interface	IP, RS232+UART or SBUS, PTT voice							