

DDLmesh Wireless MESH/Data Link

Multiple Handheld Series

Technical Specification



2Watts×2
Standard



2Watts×2
+HDMI



5Watts×2
Standard



1T2R
Dual-band Switching



2Watts×2/4Watts×2/5Watts×2
ULSC Modular Amplifier



Dual-band Operation Simultaneously/
ULSC Four-band Selection Operate



2Watts×2
+Camera&Display



2Watts×2
+5G routing



2Watts×2
+DMR&PDT

1. Specifications

General			
SDR Platform, Waveform	9363 or 9361+7Z020, Mobile Network MANET		
MIMO Technology	Space-time coding, Receive Diversity, TX/RX beamforming, Spatial multiplexing		
Receive Sensitivity	-103dBm@5MHz BW, -117dBm@250KHz		
Channel Bandwidth	1.25/2.5/5/10/20MHz Broadband, 250k/500k/1MHz Narrowband Setting		
Data Rate	1-70Mbps(20MHz BW) Broadband, 50-1000kbps narrowband Adaptive, QoS		
Modulation Mode	TD-COFDM, BPSK/QPSK/16QAM/64QAM Adaptive(Fixed setting optional)		
RF Output Power (Support TPC, transmission power control, 1dBm adjustable)	2Watts*2 4Watts*2 5Watts*2		
Mode	Decentralized P2P, P2MP and MP2MP communications with cross-connection, supporting small-scale (within 8 nodes) MESH networking with dynamic routing and multi-hop relay		
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/ 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, BD/GPS(GNSS) positioning electronic map, temperature/voltage/jamming Monitoring, software upgrade (remote silence and wake-up optional)		
Others	The boot time is less than 28 seconds, and the network access/update/switching time is less than 1 second; The network size is less than 8 nodes, and the total bandwidth loss over three hops is less than 70%; Automatic carrier tracking, adapting to Doppler frequency shift of ± 6 kHz frequency deviation, supporting mobile communications at speeds above 7200 kilometers per hour (Mach 6, 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*
<small>(Note: RF power, Dimensions, Weight is different)</small>			
MIIT (MHz)	336-344/512-592/566-626/606-678/1420-1520/1430-1444		
Environmental			
Operation Temperature	-40°C ~+80°C	Protection Level	IP66 (IP67/IP68 Customized)
Mechanical		Interface	
Size/Weight	19.0x6.8x3.8cm/769g, with 11.1V/77.7Wh battery 26.0x6.8x3.8cm/1.04kg, with 11.1V/114Wh battery 20.7x6.9x5.5cm/1.30kg, with 11.1V/114Wh battery (5G Routing) 21.0x6.8x5.2cm/972g, with 11.1V/77.7Wh battery (Four-band) 15.5x6.6x3.2cm/430g, Contains lithium battery, does not include antenna and back clip	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
		Push to talk/ Auxiliary interface	MIC, SPK, PTT, GND, RS485/422, USB2.0 OTG
Color	Black, Iron Gray (Army Green Optional)	Network Extension Optional	Public Network Routing/4G LTE, WB-NB integration, Fiber, Satellite
Installation	4 Mounting Holes	Video Extension Optional	Low Delay HDMI/SDI/CVBS, 4K/2K/1080P/720P/D1
Power		LINK Indicator	Steady red - The network is not connected Blinking red - Starting/not connected to the network Steady green - The network is connected Blinking green - Push-To-Talk has been pushed
Supply Voltage	9-24VDC, 2Watts*2 12-28VDC, 4Watts*2/5Watts*2	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 or link is down Off - The link is interrupted
Power consumption	Operation 1-2A/Standby 0.4-0.6A@12V, 2Watts*2 Operation 2-4A/Standby 0.5-0.7A@12V, 4Watts*2/5Watts*2	Management Interface/ Control Interface	Web-based network management/GUI, API for secondary development interface/SNMP
Power Selection	6-8 hours for 77.7Wh polymer lithium battery (Default); 8-10 hours for 114Wh polymer lithium battery		

2. Hardware Interfaces

2.1 2Watts×2 (Standard)



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

2 Radio switch

3 Power/Communication Connection Port [LF10WBRB-12PD]

4 WIFI Antenna Connection Port [SMA Female]

5 Auxiliary Connection Port [LF10WBRB-12SD]

6 LINK Indicator

- **Steady red:** The network is not connected
- **Blinking red:** Starting/not connected to the network
- **Steady green:** The network is connected
- **Blinking green:** Push-To-Talk has been pushed

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

2.2 2Watts×2 (WIFI/HDMI)



1 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
- **Blinking green:** Push-To-Talk has been pushed

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 or link is down
- **Off:** The link is interrupted

2 Power/Communication Connection Port [LF10WBRB-12PD]

4 WIFI Antenna Connection Port [SMA Female]

5 HDMI Switch

6 1-2 RF Antenna Connection Port [SMA Female]

7 HDMI Port

8 Auxiliary Connection Port [LF10WBRB-12SD]

2.3 2Watts×2 (WIFI/HDMI/5G)



- 1** HDMI Switch
- 2** 1-2 RF Antenna Connection Port [SMA Female]
- 3** SIM Card Slot
- 4** Power/Communication Connection Port [LF10WBRB-12PD]
- 5** Link Indicator
 - **Steady red:** The network is not connected
 - **Blinking red:** Starting/not connected to the network
 - **Steady green:** The network is connected
 - **Blinking green:** Push-To-Talk has been pushed

- 6** WIFI Antenna Connection Port [SMA Female]
- 7** Radio Switch
- 8** 5G Antenna Connection Port [SMA Female]
- 9** Auxiliary Connection Port [LF10WBRB-12SD]
- 10** HDMI Port

- 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 or link is down
 - **Off:** The link is interrupted

3. Connection Port Pin Definition

PRI: Power/Ethernet/Serial Connector Pinout	
Enclosure PWR/COMM (LF10WBRB-12PD)	Signal
1	5V OUT (Supply external BD/GPS)
2	GND (-)
3	
4	VCC (+)
5	
6	ETH_TX+
7	ETH_TX-
8	ETH_RX-
9	RS232(Default)/TTL(UART)_RXD
10	RS232(Default)/TTL(UART)_TXD
11	RS232(Default)/TTL(UART)_GND
12	ETH_RX+

Table 1 PRI: Power/Ethernet/Serial Connector Pinout

AUX: USB/GPIO Connector Pinout		
Enclosure USB/GPIO (LF10WBRB-12SD)	Signal	Voice interface definition
1	RS232_RXD	/
2	NC	/
3		/
4		SPK+
5		/
6		MIC
7		SPK-
8		RS232_GND
9	NC	/
10	RS232_TXD	/
11	NC	/
12		AUDIO_GND

Table 2 USB/GPIO Connector Pinout

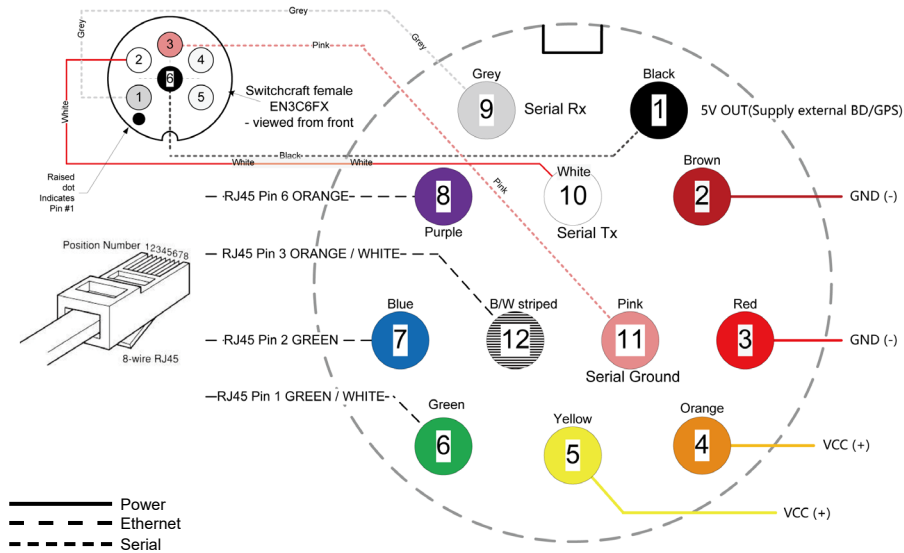


Figure 1 Power Supply (Optional)/Ethernet/Serial Pinout (Cable Interface Front View, Non-Solder Side)

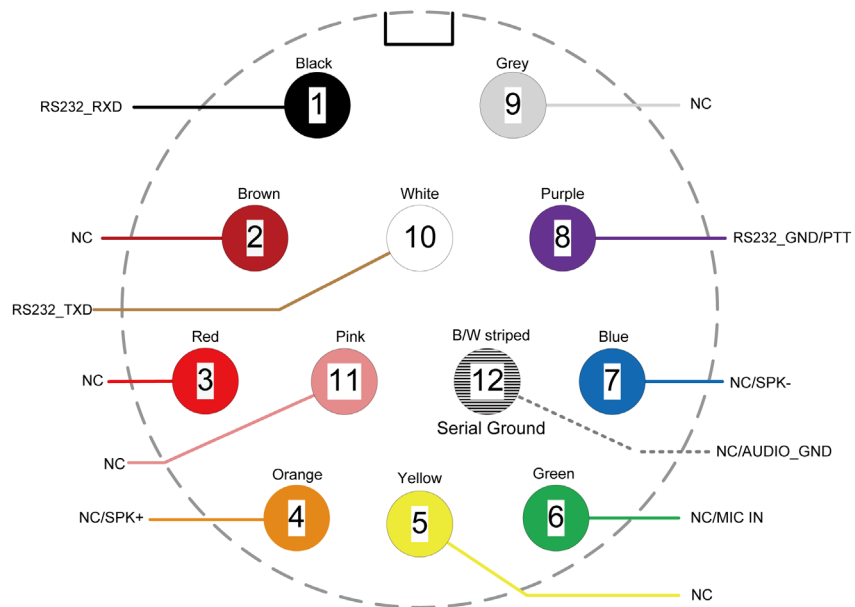
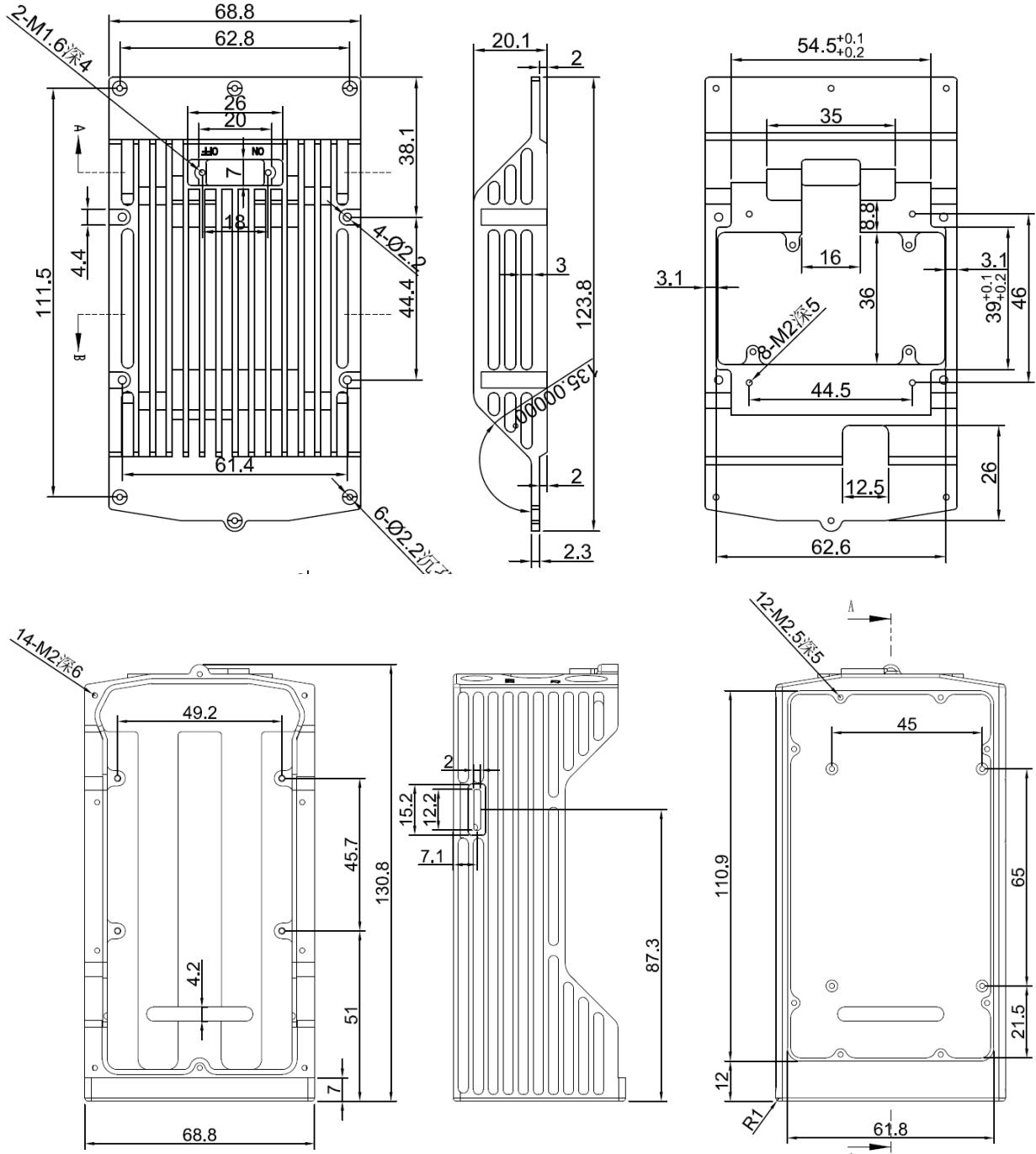
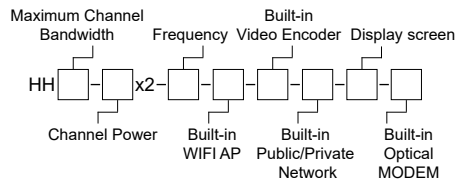


Figure 2 USB/GPIO Pinout (Cable Interface Front View, Non-Solder Side)

4.2 2Watts×2 (WIFI/HDMI/5G)



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")	

HH20-2x2-1400-1-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 Handheld Radio.