

MIMOMesh Wireless MESH/Data Link
Standard Vehicular/Rack-mounted Series

Technical Specification



10Watts×2/20Watts×2



50Watts×2/150Watts×2



Dual-band Operation Simultaneously



Four-band Selection Operate



19" 1U Standard Rack



19" 2U Standard Rack With Display

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)	10Watts×2/20Watts×2 50Watts×2 150Watts×2 (Customization)		
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*
<small>(Note: RF power, Dimensions, Weight is different)</small>			
MIIT (MHz)	336-344/512-592/566-626/606-678/1420-1520/1430-1444		
Mechanical		Interface	
Size/Weight	19.1x18.6x6.3cm/2.16kg, 10W×2/20W×2 25.8x21.3x6.5cm/3.95kg, 50W×2 19.0x23.0x6.5cm/3.0kg, Dual-band Operation Simultaneously 22.1x21.1x6.3cm/2.16kg, Four-band Selection Operate 48.2x42.0x4.5cm/3.9kg, 19" 1U Standard Rack Radio 48.2x42.0x8.8cm/5.9kg, 19" 2U Display Screen Standard Rack Radio	Basic interface	2xTNC RF, 1-2xRJ45 Ethernet 100/1000BaseT, RS232, WIFI AP, DC input. GPS/BD, GPS/BD, TTL (UART)/SBus/Bluetooth 1.2-230.4Kbps 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
		Network Extension Optional	Public Network Routing/4G LTE, WB-NB integration, Fiber, Satellite
Color	Black, Iron Gray (Army Green Optional)	Video Extension Optional	Low Delay HDMI/SDI/CVBS, 4K/2K/1080P/720P/D1
Installation	4 Mounting Holes	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
Power		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
Supply Voltage	18-24VDC, 10Watts×2 18-36VDC, 20Watts×2/50Watts×2	Management Interface/Control Interface	Web-based network management/GUI, API for secondary development interface/SNMP
Power consumption	Operation 3-6A/Standby 0.7-0.9A@24V, 10Watts×2 Operation 6-7A/Standby 0.7-0.9A@24V, 20Watts×2/50Watts×2		
Power Selection	Power Supply by Main Cable		
Environmental			
Operation Temperature/	-40°C ~+80°C		
Protection Level	IP66 (IP67/IP68 Customized)		

2. Hardware Interfaces

2.1 10Watts×2/20Watts×2



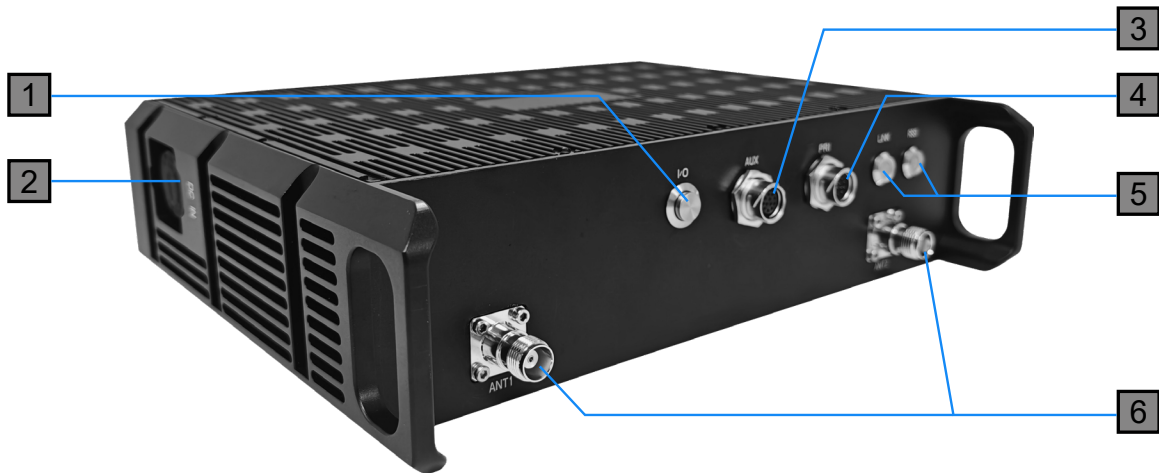
- 1 Auxiliary Connection Port [LF10WBRB-12SD]
- 2 WIFI Antenna Connection Port [SMA Female]
- 3 GPS Antenna Connection Port [SMA Female]
- 4 Power Switch
- 5 Power Connection Port
- 6 Push-to-Talk (PTT) Connection Port [FGG.0B.305]
- 7 Communication Connection Port [LF10WBRB-12PD]
- 9 1-2 RF Antenna Connection Port [TNC Female]

- 8 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 50Watts×2



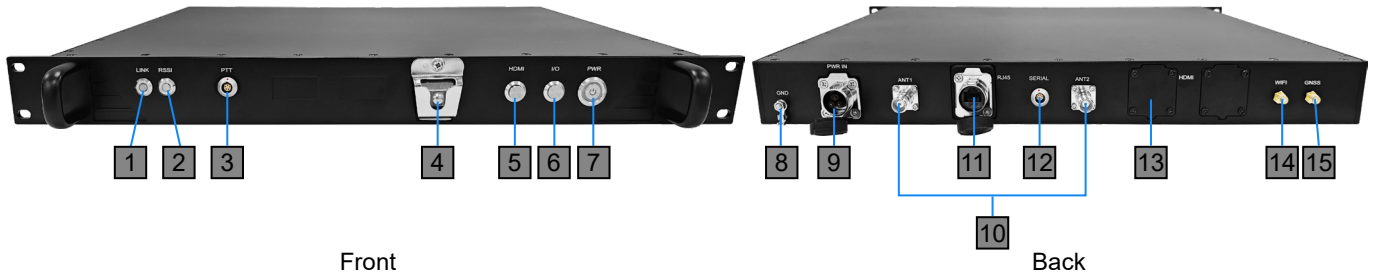
- 1 Power Switch
- 2 Power Connection Port
- 3 Auxiliary Connection Port [LF10WBRB-12SD]
- 4 Communication Connection Port [LF10WBRB-12PD]
- 6 1-2 RF Antenna Connection Port [TNC Female]

- 5 LINK Indicator
 - **Steady red:** The network is not connected
 - **Blinking red:** Starting/not connected to the network
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RSSI Indicator

- **Steady green:** The link quality is excellent
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- **Off:** The link is interrupted

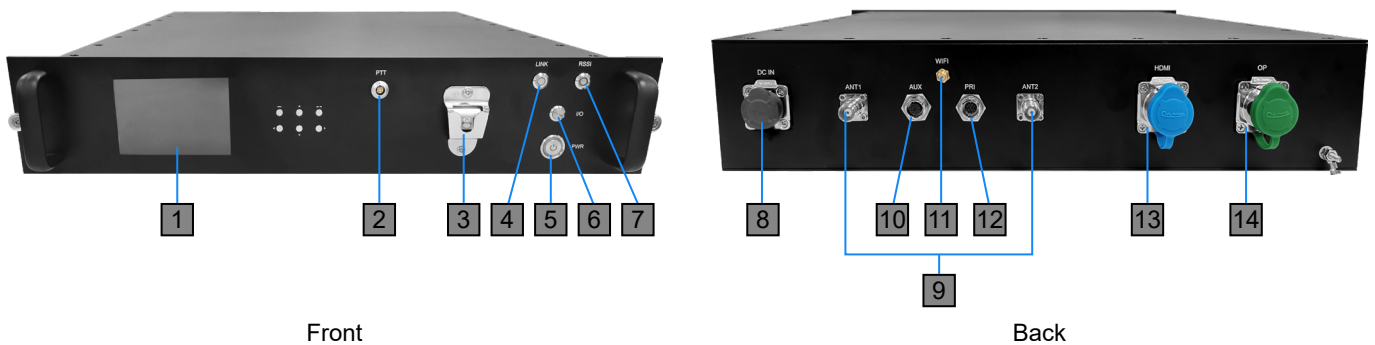
2.3 19" 1U Standard Rack



- 1** Network indicator light
- 2** 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
- 3** Push-to-Talk (PTT) Connection Port [FGG.0B.305]
- 4** Microphone Hook
- 5** HDMI Switch
- 6** Base Station Switch

- 7** Power Switch
- 8** Ground Connection
- 9** Supply Port
- 10** 1-2 RF Antenna Connection Port [TNC Female]
- 11** Ethernet Port
- 12** Serial Port
- 13** HDMI
- 14** WIFI Antenna Connection Port [SMA Female]
- 15** 4G/5G Antenna Connection Port [SMA Female]

2.4 19" 2U Standard Rack With Display



- 1** Display Screen
- 2** Push-to-Talk (PTT) Connection Port [FGG.0B.305]
- 3** Voice Hook
- 4** 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
- 5** Radio Switch
- 6** Power Switch

- 7** 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
- 8** Power supply port
- 9** 1-2 RF Antenna Connection Port [TNC Female]
- 10** Auxiliary Connection Port [LF10WBRB-12SD]
- 11** WIFI Antenna Connection Port [SMA Female]
- 12** Communication Connection Port [LF10WBRB-12PD]
- 13** HDMI
- 14** Optical port [LC interface]

3. Connection Port Pin Definition



PRI: Power/Ethernet/Serial Connector Pinout-7Z020/7Z030	
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)	7Z020 Signal	7Z030 Signal
1	RS232_RXD	NC
2	NC	RS422_RX+/RS485_D+ (Parallel With PIN10)
3		RS422_TX-/RS485_D-(Parallel With PIN11)
4		USB2_VBUS
5		GPIO1 (PA Enable 3.3V)
6		USB2_D+
7		USB2_D-
8	RS232_GND	RESERVED (Disable)
9	NC	GND
10	RS232_TXD	RS422_TX+/RS485_D+(Parallel With PIN2)
11		RS422_RX-/RS485_D-(Parallel With PIN3)
12	NC	USB2_GND

Table 2 USB/GPIO Connector Pinout
(USB1 is USB 2.0 OTG, USB2 is USB 2.0 Host Mode Only)

PTT Connector Pinout-7Z020/7Z030	
Enclosure PTT Connector (FGG.0B.305)	Signal
1	PTT
2	SPK+
3	SPK-
4	AUDIO_GND
5	MIC

Table 3 PTT Connector Pinout*(Generally Adopted)

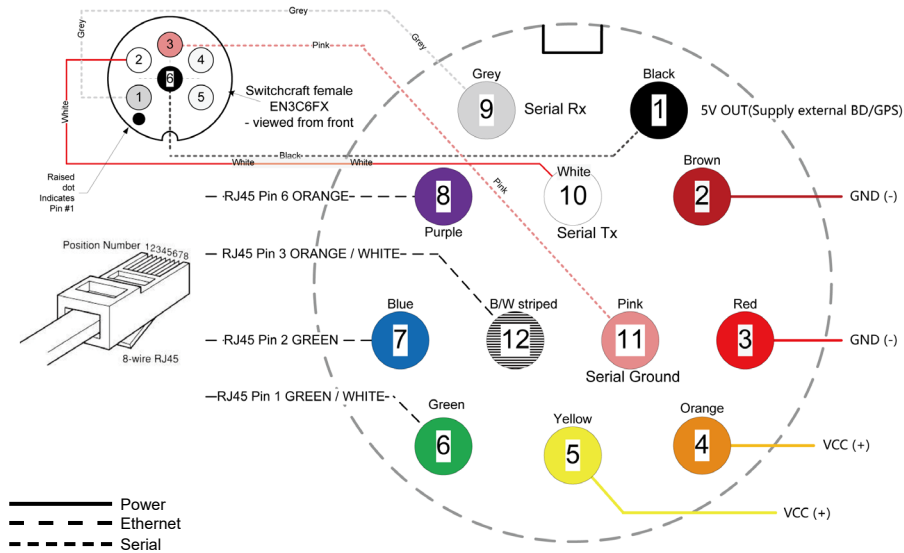


Figure 1 Power Supply (Optional)/Ethernet/Serial Pinout (Cable Interface Front View, Non-Solder Side)

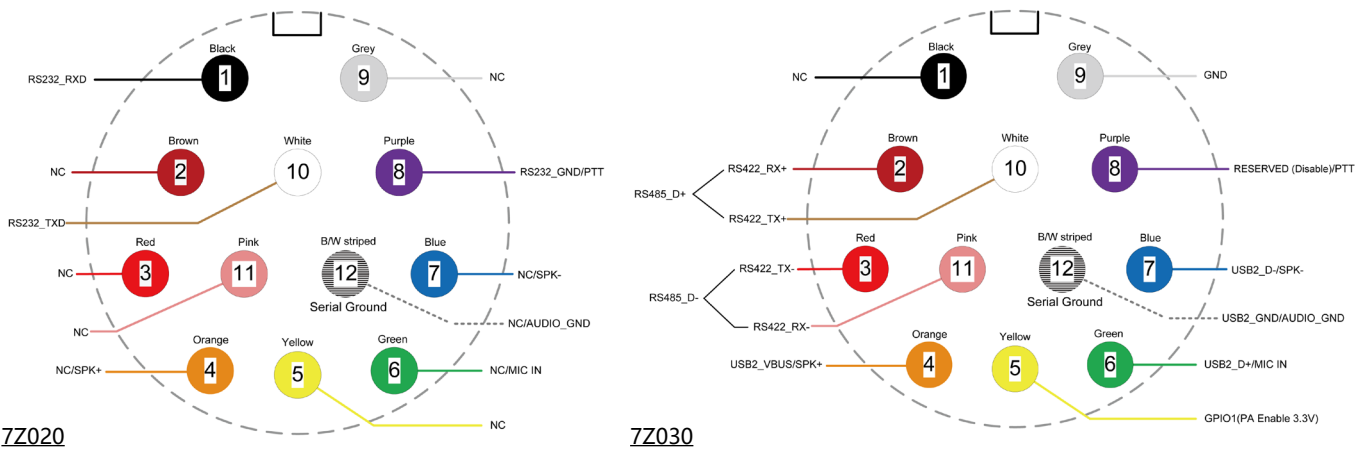


Figure 2 USB/GPIO Pinout (Cable Interface Front View, Non-Solder Side)

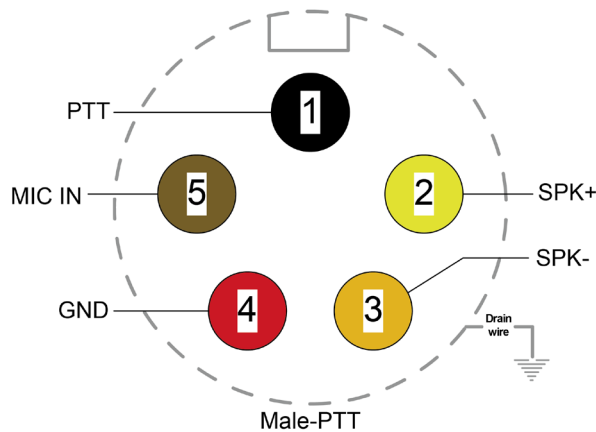
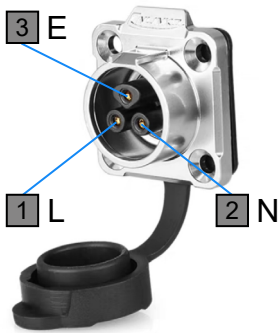


Figure 3 PTT Pinout (Front View Of The Cable Interface, Non-soldering Side)



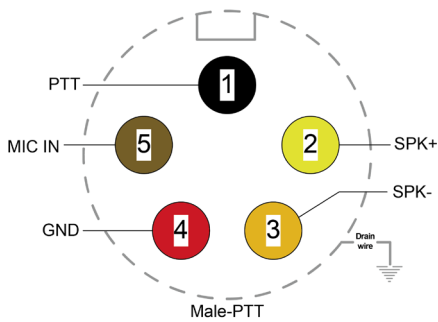
PWR IN: Power Connector Port Pin-7Z020/7Z030	
Enclosure PWR IN (LP-16-J03SX-03-401)	Signal
1	LIVE
2	NEUTRAL
3	EARTH (GND)

Table 1 PWR IN: Power Connection Port Pin



RJ45: Network Port Connector Port Pin-7Z020/7Z030	
Enclosure RJ45 (DH-24-J/RJ45/213/SX-43-403)	Signal
1	RJ45_PIN1_TX+
2	RJ45_PIN2_TX-
3	RJ45_PIN3_RX+
4	NC
5	NC
6	RJ45_PIN6_RX-
7	NC
8	NC

Table 2 RJ45: Network Port Connector Port Pin

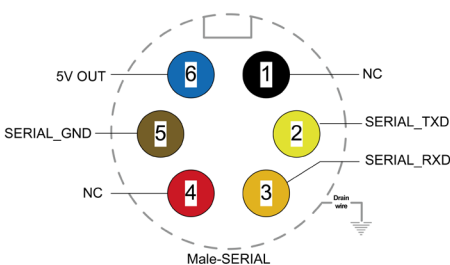


PTT Connector Pinout

(Front view of cable interface, non-welding side)

PTT Connection Port Pin-7Z020/7Z030	
Enclosure PTT Connector (FGG.0B.305)	Signal
1	PTT
2	SPK+
3	SPK-
4	AUDIO_GND
5	MIC_IN

Table 3 PTT Connection Port Pin*(Generally Adopted)



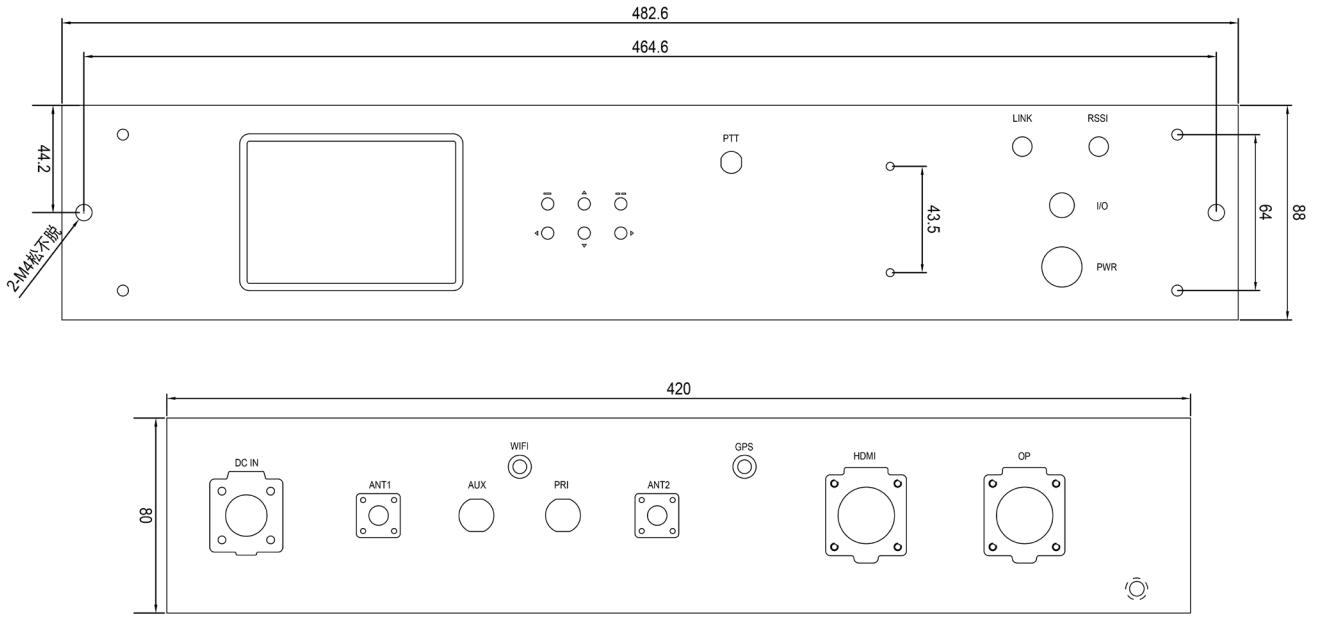
SERIAL: Serial Connector Pinout

(Front view of cable interface, non-welding side)

SERIAL:Serial Port Connection Port Pin-7Z020/7Z030	
Enclosure SERIAL Connector (FGG.0B.306)	Signal
1	NC
2	RS232(Default)/TTL(UART)_TXD
3	RS232(Default)/TTL(UART)_RXD
4	NC
5	RS232(Default)/TTL(UART)_GND
6	5V OUT (Supply external BD/GPS)

Table 4 SERIAL: Serial Port Connection Port Pin

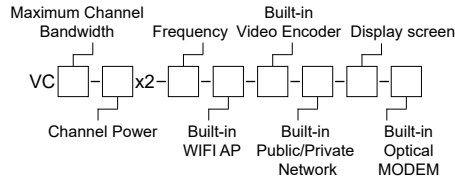
4.3 19" 2U Standard Rack With Display



5. Application scenarios and Installation display



6. 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")	

VC20-40x2-1400-1-HDMI-4G/5G-0-0 Express: Maximum channel bandwidth 40MHz, 20Watts×2, 1400MHz, With WIFI AP, Built-in HDMI Coding, Built-in 4G/5G Public Network Module, Without display screen and without optical MODEM Vehicular/Rack-mounted Radio.