TETRA800 Digital Wireless Repeater

Installation Manual

(Model: TP-WE-WR-DSL080B220P43Q-UK-MW)

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This instruction manual introduces the installation, use and maintenance methods of digital wireless equipment. Please read this manual carefully before installing and using this equipment.

Guidelines for safe use of equipment

1.   The device must be powered off before connecting the antenna to the device or disconnecting the cable. The RF signal interface is strictly prohibited from being unloaded.

2.   Do not disassemble the device or replace parts at will to avoid damaging the device.

3.   Do not touch the components on the chassis, the wiring, and the metal conductors in the plug socket with your hands. When it must be touched due to maintenance needs, electrostatic protection measures should be taken.

4.   Communication equipment must be protected against strong electricity and lightning strikes to avoid introducing strong electricity or lightning into the equipment.

5.   The battery switch is in the structural part of the indicator light. There is no need to open the chassis door to operate the battery switch. If this switch is not turned on, the monitoring board will not work.

6.   It is prohibited to insert or remove cards from the MODEM when it is powered on.

Signal booster advisory/warning label message:

> **Part 90 and Part 20 Signal Boosters**   **THIS IS A 90.219 CLASS B DEVICE**
>
> **WARNING**. This is **NOT** a **CONSUMER** device. It is designed for installation by **FCC LICENSEES** and **QUALIFIED INSTALLERS**. You **MUST** have an **FCC LICENSE** or express consent of an FCC Licensee to operate this device. You MUST register Part 90 Class B signal boosters (as defined in 47 CFR 90.219) online at www.fcc.gov/signal-boosters/registration. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of $100,000 for each continuing violation.

Note: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

WARNING!

Use only authorized and approved antennas, cables and/or coupling devices! The use of unapproved antennas, cables or coupling devices could cause damage and may be of violation of FCC regulations. The use of unapproved antennas, cables and/or coupling devices is illegal under FCC regulations and may subject the user to fines.

Any installation, adjustment, maintenance and repair of the equipment must only be carried out by trained, authorized personnel. At all times, personnel must comply with any safety notices and instructions.

The design of the antenna installation needs to be implemented in such a way so as to ensure RF radiation safety levels and non-environmental pollution during operation.

Note: Antennas, feeders and couplers are not included in the packing list; solution provider should consider these accessories according to site conditions.

WARNING! Antenna gain should not exceed 10dBi

To comply with FCC RF exposure compliance requirements, each individual antenna used for this transmitter must be installed to provide a separation distance greater than 211cm or more from all persons during normal operation and must not be co-located with any other antenna for meeting RF exposure requirements.

Contact information, i.e., licensee for Class B devices. the FCC at (https://signalboosters.fcc.gov/signal-boosters/) for Class B devices.

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1. Product Introduction

This wireless repeater is designed to expand mobile base station's service in indoor environment, such as houses, hotels, hot spots, shops, offices, meeting rooms, apartments, etc.. It is compact and light, it can be installed anywhere, with maximum discretion.

Features:
- ➢ Support TETRA800 Band
- ➢ Low power consumption
- ➢ Compact design
- ➢ Support easy installation, configuration

1.1 Specification

Electrical Data		
Item	**Uplink**	**Downlink**
Frequency Range (MHz)	806~824	851~869
Max. Total Output Power(dBm)@Center Frequency	27±2	40±2
Max. Gain (dB)@ Center Frequency at 25℃	90±3	95±3
ATT Adjustable Range (dB)/(Step)	0~30 @ 1 dB step	
ATT Adjustable Error (dB)	≤ |±1.5|	
ALC (dB)	0~25	
Noise Figure (dB) (Max. Gain)	≤ 5.0	≤ 7.0

Input VSWR(Power up, Min Gain, Pin=-30dBm)		≤ 1.5	
Ripple In Band (P-P) (dB) at +25℃		≤5.0	
Out of Band Rejection (dBc) at +25℃	±1MHz offset	≤ -15	≤ -15
	±2MHz offset	≤ -30	≤ -30
	±5MHz offset	≤ -55	≤ -55
Time Delay (us)		≤ 6.0	
EVM（%）		≤ 8 @ 64QAM	
Frequency Stability(ppm)		≤±0.05	
Spurious Emission (dBm) @ Out Of Band 2.5MHz Offset；	9kHz~150kHz	≤-36/1KHz	
	150kHz~30MHz	≤-36/10KHz	
	30MHz~1GHz	≤-15/100KHz	
	1GHz~12.75GHz	≤-10/1MHz	
Max. non-destructive input power (dBm)		≤-10	≤-10
Cancellation Performance (dB) @ ICS		25 (Gain ≤ Isolation + 10)	
Impedance(Ω)		50	
Power Consumption(W)		≤150	
Power Supply		AC120V	

Functions -Variable Multiple Sub-band		
ICS Mode	Bandwidth of Sub-band	5/10/MHz
	Number of Sub-band	1
Without ICS Mode	Bandwidth of Sub-band	0.2-20MHz
	Number of Sub-band	2

Environmental Data		
Operating temperature range		-25°C to +55°C
Storage temperature range		-40°C to +85°C
Relative humidity		5% - 95%
Applications		IP65(outdoor)
Monitoring and control	Local Control	RJ45 (by OMT)
	Remote Control	4G Modem
	LED indicator	Power, RUN, ALARM, etc.

Mechanical Data	
Dimensions	355*295*150.6mm
Weight	≤14Kg
Connectors type	4.3-10 Female
Mounting	Wall
Packing	1 Pie in box

1.2 Chassis Appearance

1.3 Outline Drawing
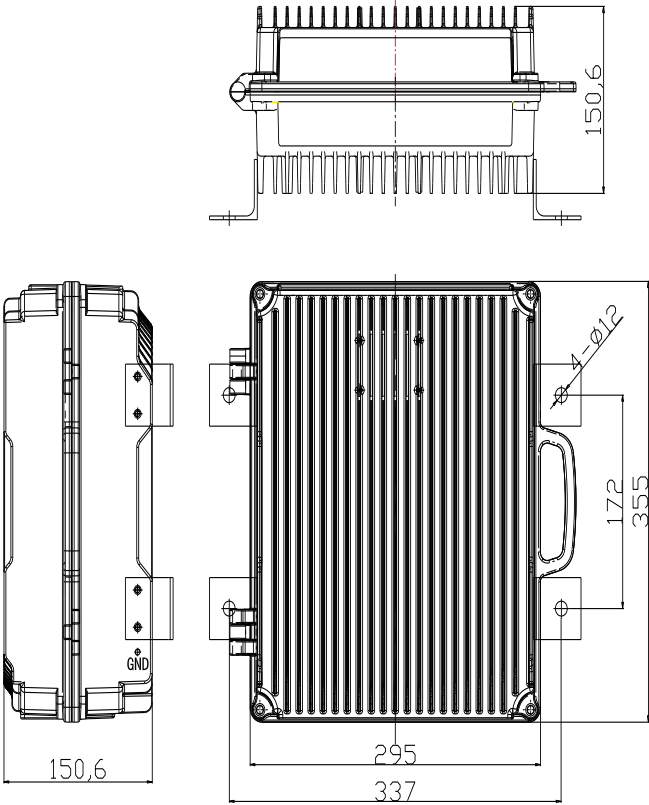
1.4 Interface Introduction
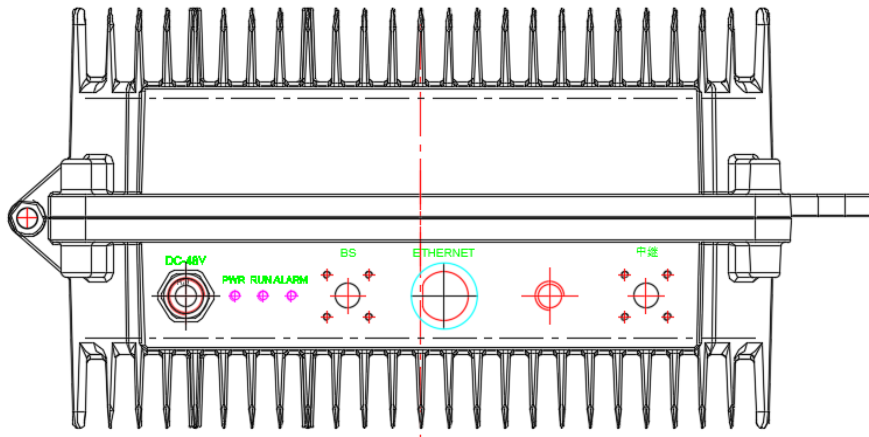
| Interface ID	Interface Type	Function
BS	4.3-10 Female	Connect to Donor Antenna
MS	4.3-10 Female	Connect to Distributed Antenna System
AC120V		Power Supply
ETHERNET	RJ45	Local Monitoring & Configuration

1.5 Status Indicator

LED ID	LED Description	Normal Status
RUN	Monitor the running	Normal: Flash
Power	Monitor the power supply	Normal: Green
Alarm	Alarm Indicator	Normal: Green, Alarm: Red

2. Hardware Installation

2.1 Wall - mounted installation

Steps:

1. Fix the mounting bracket to the wall with 4 expansion screws (M10×100)

2. Fix the mounting bracket of the main unit with expansion screws

3. Hang the host on the mounting bracket

4. Fasten the main unit and the side of the mounting bracket with installation screws

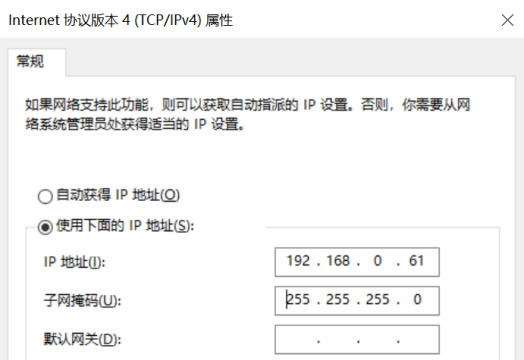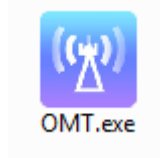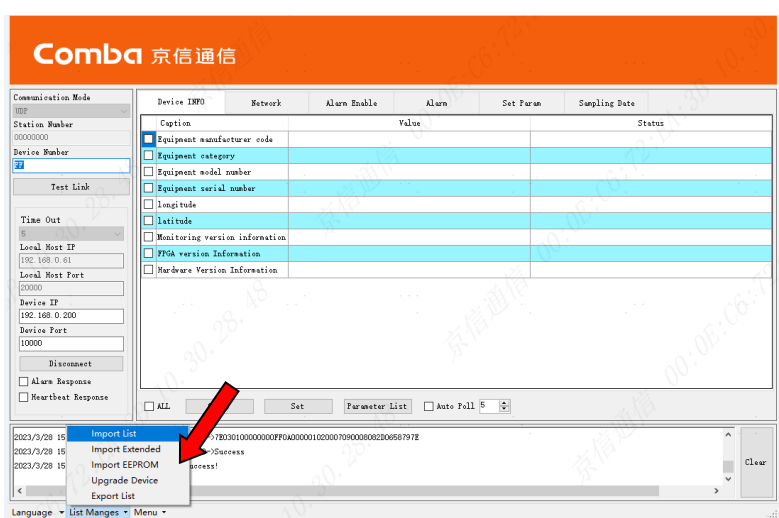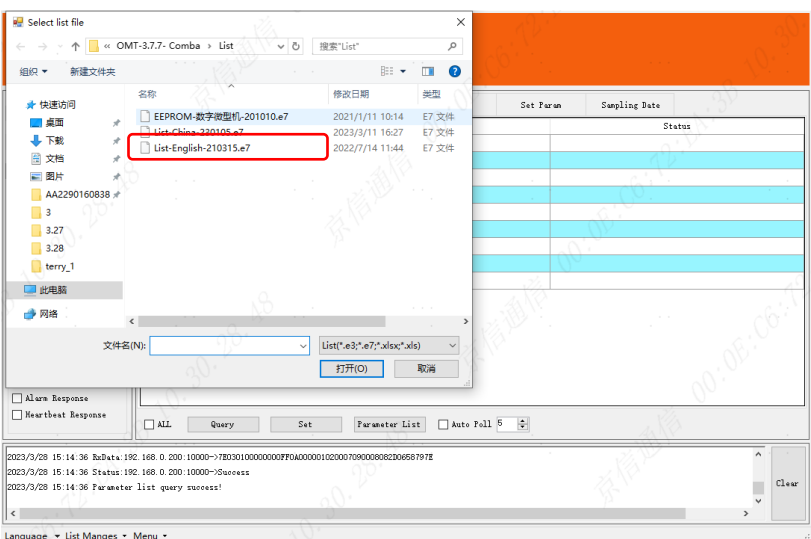5. Check and confirm that the equipment has been installed firmly and stably
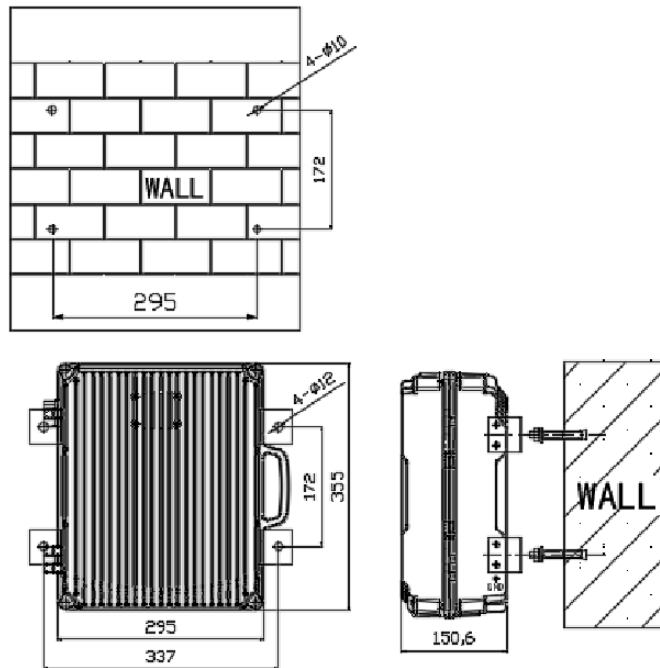
3. Local Configuration
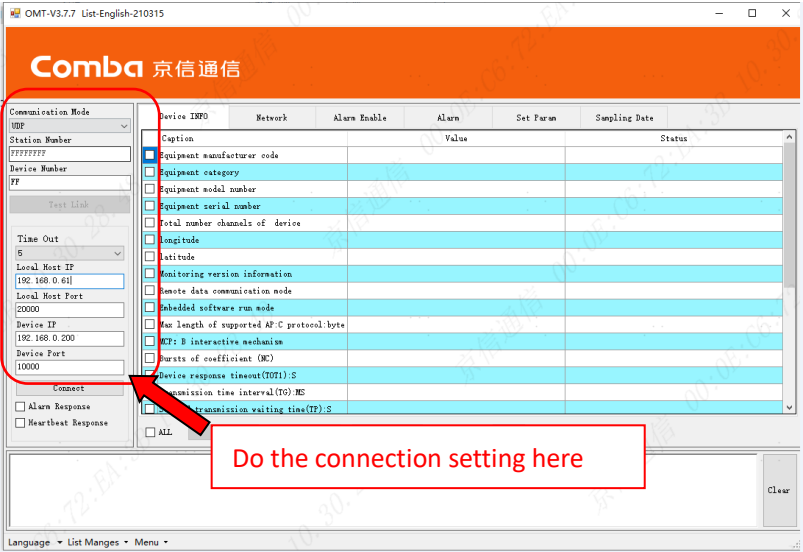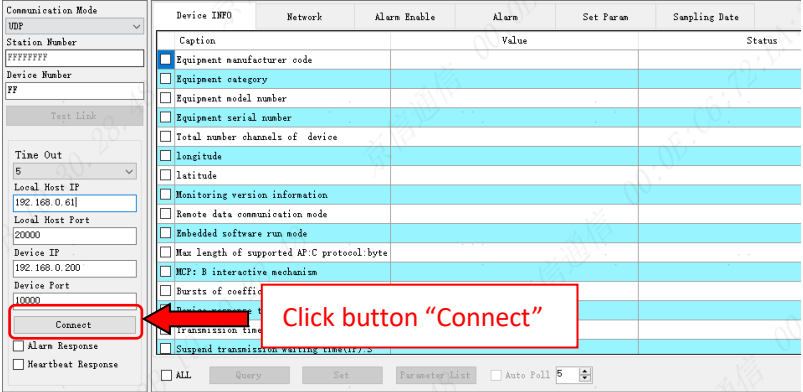
3.1 Connection for Local Configuration

No.	Description				
1	Device&Tool list	**No.**	**Item**	**QTY**	**Remark**
		1	Indoor Jammer	1 unit	Included in packing
		2	PC or Laptop	1 unit	Prepared by user
		3	Ethernet Jumper Cable	1 pcs	Prepared by user
2	Connection Diagram				
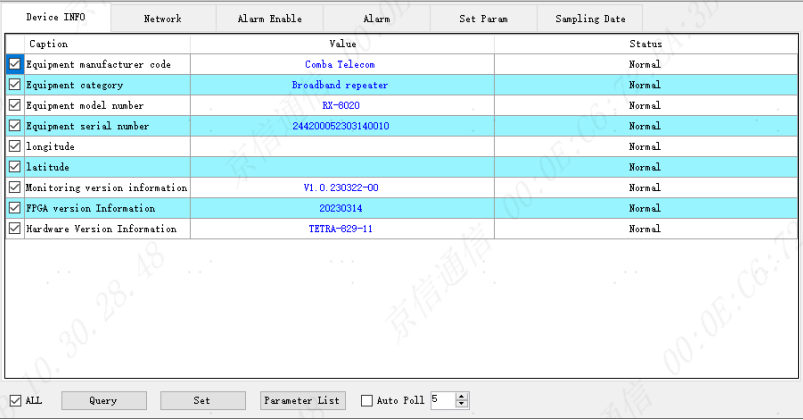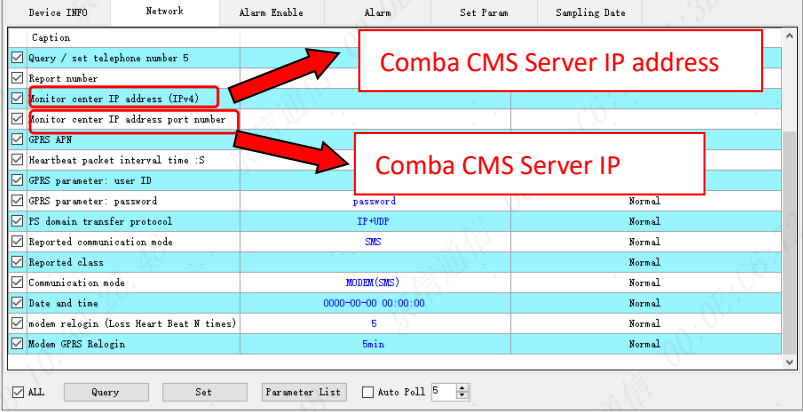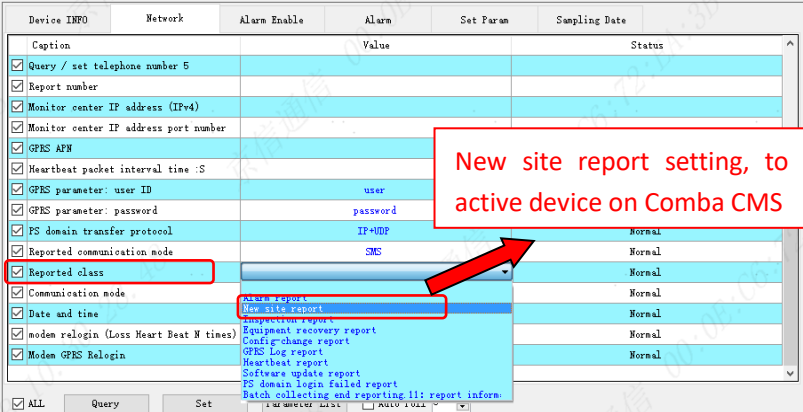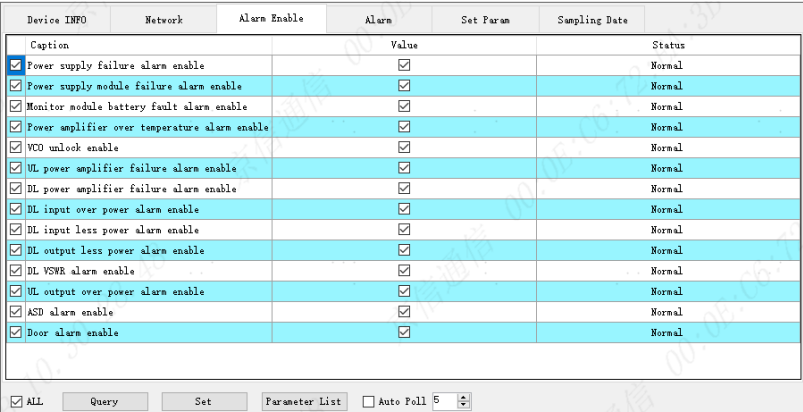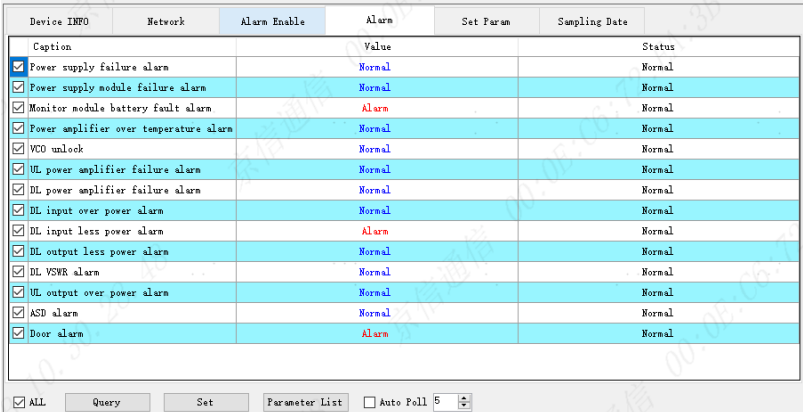
3.2 Login OMT
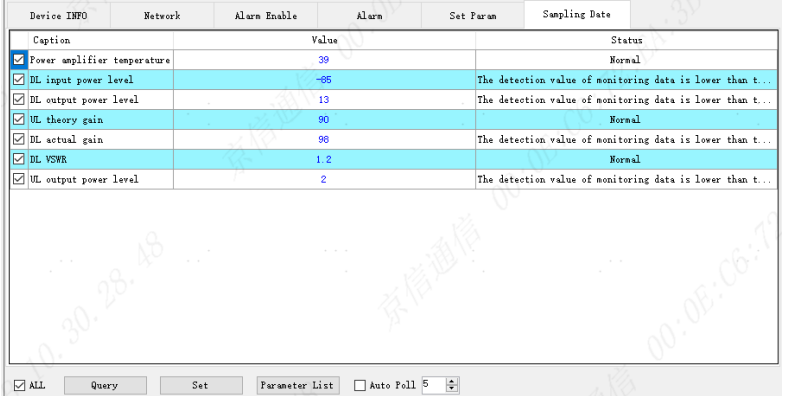
No.	Instructions	
1	Set PC/Laptop Local IP address: The same sub-network as Repeater, i.e.: 192.168.0.61	
2	Run "OMT.exe"	
3	Click "Import List", to choose the configuration view file	
4	Select file List-English-xxxxxx.e7 to show the configuration view Note: List-English-xxxxxx.e7 is under the folder "List"	

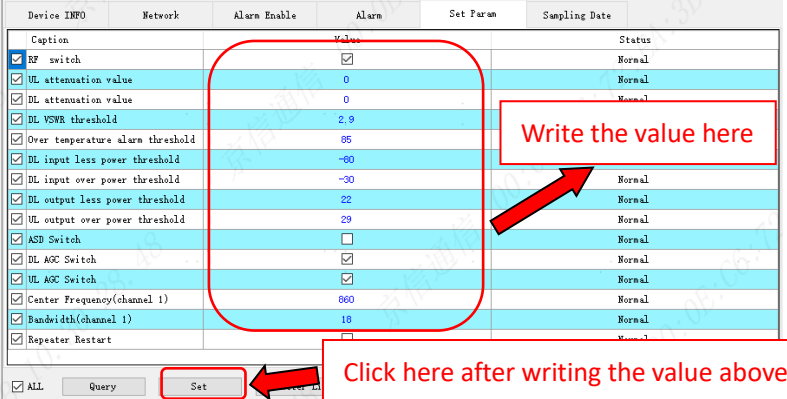|		
5	Do the following setting: 1. Communication Mode: UDP 2. Time Out: 5 3. Local Host IP: Local IP Address of PC/Laptop 4. Local Host Port: 20000 5. Device Port: 192.168.0.200 6. Device Port: 10000	 Do the connection setting here
6	Click button "Open Serial", and then click button "Test Link"	 Click button "Connect"

3.3 User Interface Introduction

No.	Menus Description	
1	Device Information Show the basic product information: Brand name, Model, software version, etc.	

2	**Network**
	
	 1. Comba CMS login setting
	
	     • CMS server IP
	
	     • CMS server IP Port
	
	 2. Choose "New site report" under "Reported class", to active device on Comba CMS	

3	**Alarm Enable** Allow user to enable or disable alarms individually	
4	**Alarm** User can check the status of all the alarms	

5	**Set Param** Allow user to set the device parameters, including: RF switch, DL & UL attenuation, related alarm thresholds, etc.	
6	**Sampling Data** Allow user to read the related parameters of the device in real time, such as: Power amplifier temperature, input/output power of DL & UL, etc.	

4. Common Problems and Solutions

No.	Problems	Possible Reasons	Solutions
1	Connection fail between OMT software and repeater	Incorrect software version	Update latest OMT software version
		Querying locally fail	Make sure the data cable can communicate normally
		Device IP address is incorrect	When connecting locally, please ensure that the IP address of the device itself is consistent with the IP address filled in by the software
2	Downstream output abnormal, can't cover the blind area	Downstream power amplifier switch is turned off	Use software to see if it is off, and if so, turn it on
		Higher attenuation	Use software to view and adjust attenuation values
		Input signal is abnormal	Use a spectrum analyzer to check whether the signal entering the BS port is normal
		Poor wiring at MS terminal	Use a spectrum analyzer to directly test the output power of the trunk amplifier. If the output is normal but still cannot cover the blind area, it indicates that the engineering wiring at the MS end is incorrect
3	Upstream output abnormal, can't cover the blind area	Poor interface or unstable uplink signal	Check whether each interface is in good condition; Connect the signal source to the BS port, and then use a spectrum analyzer to test whether the uplink output is normal and stable

		High uplink noise floor affects base station operation	Adjust uplink gain; Confirm that the correct coupler is selected
		Strong interference source nearby	Eliminate sources of interference
4	Remote communication failure	Device stops working	Return the device to normal operation
		MODEM is not working properly	Use a small antenna to connect the MODEM's antenna externally to test whether it can communicate normally. If not, replace it with a new MODEM
		SIM card failure or arrears	Put the SIM card into the phone and see if it can send text messages. If damaged, replace it with a qualified monitoring card
		The device number setting is different from the monitoring center	The site number, device number, and mobile phone number of the monitoring center must be consistent with those of the trunk amplifier
		The network is busy or communication failure	Wait until the network condition improves and try again
5	Alarm	Power failure alarm	Check whether the power module detection wiring is in good condition If the power module is damaged, please replace the module
		Monitoring module battery failure alarm	The backup battery voltage is low due to bad battery or discharge, replace the backup battery or recharge the battery
		Downlink input power shortage	The threshold value is set too high, adjust the threshold value. The input signal is too weak or there is no input signal, check whether the source and repeater have outputs or use a coupler with a small coupling degree
		Downlink input overpower	The threshold value is set too low, adjust the threshold value. The input signal is too strong, change the output power of the source or repeater or use a coupler with a large coupling degree
		Downlink output lack of power	Set the threshold value high and adjust the threshold value. If the attenuation is too large and the output is lower than the threshold, adjust the attenuation
		Amplifier over temperature alarm	The power amplifier temperature is higher than the threshold value. Set a higher threshold value or let the power amplifier temperature drop below the threshold value