








Dual Wide Band Repeater C17L Series User Manual



PLEASE KEEP APPROPRIATELY AND CAREFULLY READ THIS USER MANUAL BEFORE INSTALLATION

 <p>The power supply voltage of the repeater should meet the standards of security requirements.</p>	 <p>Ensure of grounding, waterproof and lightning protection when installing the repeater</p>
 <p>The repeater should be installed and initiated by professionals.</p>	 <p>The user had better not dismantle the repeater to maintain or replace the components by himself/herself.</p>
 <p>Keep the repeater away from heat source and do not install it in a confined space.</p>	

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Package Contents



C17L repeater: 1pc 5V2A power adapter: 1pc Installation screws: 5sets U-shape back holder:1pc

Product Description

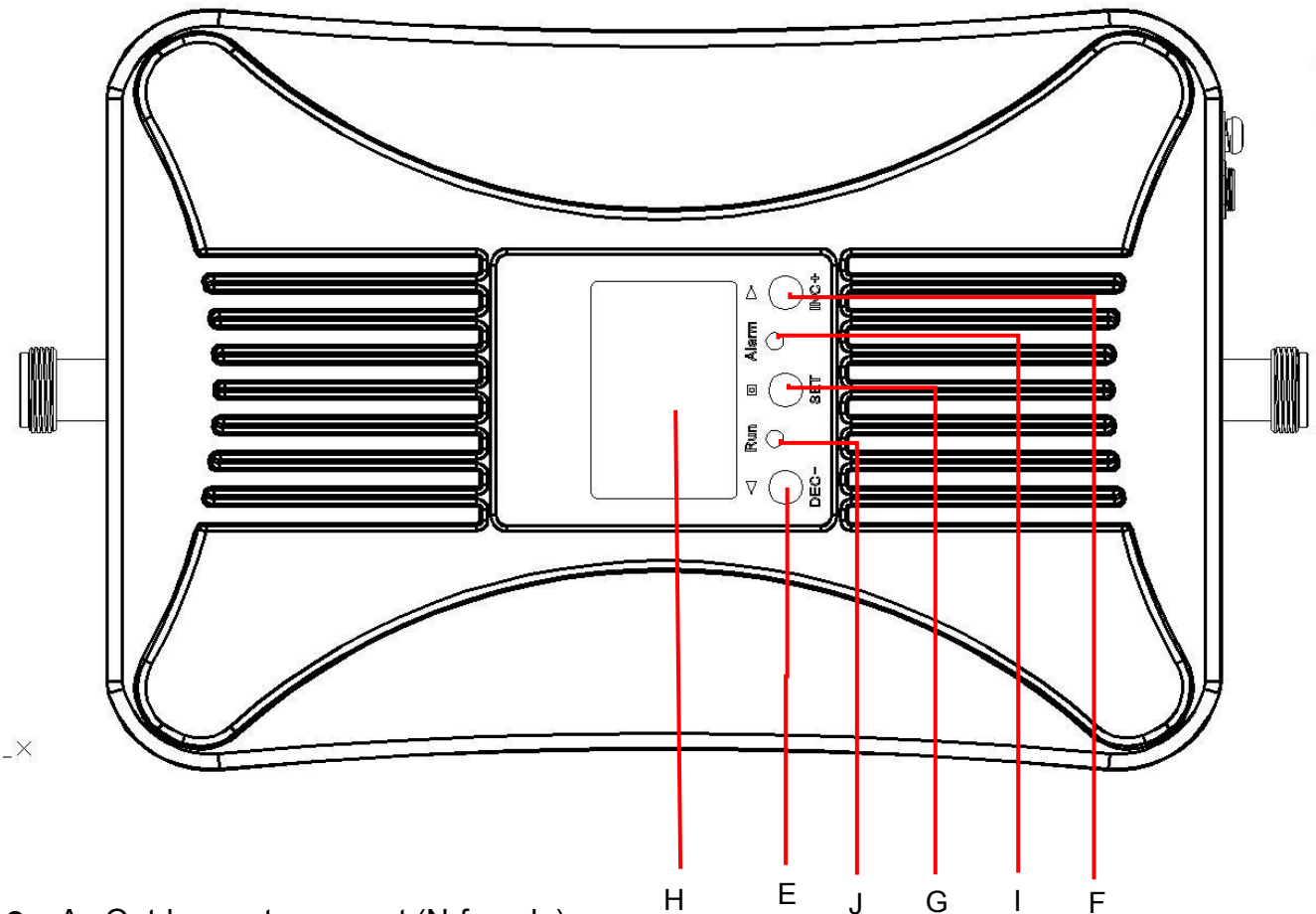
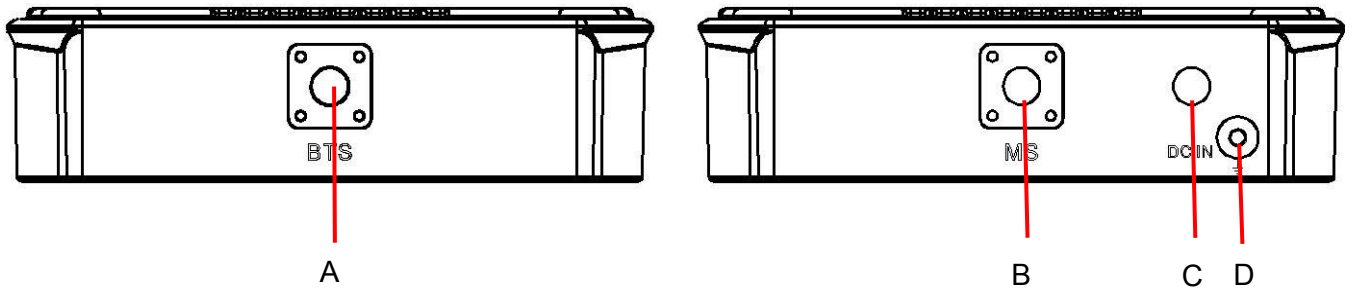
C17L series mobile phone signal repeater is a highly intelligent model. It is designed with digital ALC, anti-interference, and auto-adjustment functions. It can detect the real-time signal quality of the coverage area and adjust working status accordingly. The repeater can automatically adjust the gain of uplink and downlink to maintain link balance, according to the intensity of receiving signal. When the isolation between outdoor antenna and indoor antenna is insufficient, it will automatically decline the gain to match the isolation so as to eliminate self-oscillation. When there is no user in the coverage area, the repeater will automatically shut down, to save power consumption and reduce the interference to BTS.

Different models of C17L series support two different sets of frequency bandwidth. By choosing the appropriate model, it could support multiple 2G,3G,4G networks. The repeater features novel appearance, succinct structure, easy installation and maintenance. With proper installation, its coverage area could be up to 300 m², which makes it the perfect solution for signal coverage in houses, offices, elevators and basements etc.

Product Features

- Clear display of working status on the LCD screen and convenient push-button operation.
- Supporting multiple operators' network simultaneously.
- Low power consumption, low interference.
- Manual gain attenuation among the range of 1-31dB with 1dB step.
- Built-in digital ALC limits the output power automatically to ensure stable signal coverage.
- Anti-interference technology, real-time isolation detection and auto gain attenuation to avoid self-oscillation and interference to BTS.
- Uplink standby function. When there is no uplink signal from mobile phone in the coverage area, repeater's uplink will be automatically into stand-by mode.
- Downlink shutdown function. When there is severe self-oscillation or overloading, the device will automatically shut down downlink output and automatically restart when self-oscillation or overloading is eliminated.

Connector Description



- A : Outdoor antenna port (N-female)
- B : Indoor antenna port (N-female)
- C : DC 5V power supply port
- D : Grounding screw
- E : DECLINE button
- F : INCREASE button
- G : SELECT and SET button
- H : Display screen
- I : Alarm indicator
- J : Working indicator

Operation and Display Description

a. Function Buttons on the Control Panel

INC+: To increase the value

DEC-: To decline the value

SET: To select and confirm the operation

b. Screen display

After power-on and starting running, the device will display working frequency on the main menu (The frequency below is just for reference. The actual working frequency of the device will be customized as clients require.). It will scroll the real-time gain of UL and DL, output power of downlink, ISO and ALC alarm on the screen. (As Figure 1)



Figure 1

c. View the Working Frequency Bands

Keep pressing "SET" button until "Band 5: 850 MHz" on the main menu is flashing. Then press "INC+" or "DEC-" to switch to another frequency band. After that, press "SET" button to confirm and quit the settings (as Figure 2 and Figure 3).



Figure 2

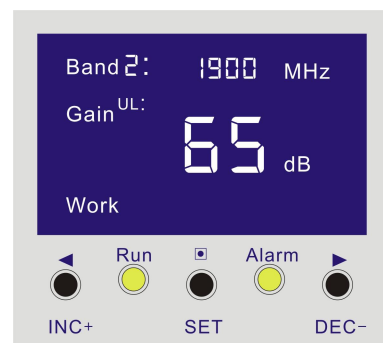


Figure 3

d. View the Output Power

Press “SET” button and have “Pout” light up on the screen. Then the real-time downlink output power will be displayed on the right side of the screen(as Figure 4).



Figure 4

e. View the Gain and Gain Attenuation Setting

First, select the frequency you want to set, according to precious guide of "c". Then press “SET” button to light up “Gain UL” on the screen and uplink gain will be displayed on the right side(as Figure 5). After that, press “INC+” or “DEC-” button to attenuate downlink gain(as Figure 6). Similarly, press “SET” button, light up “Gain DL” on the screen, and downlink gain will be displayed on the right side(as Figure 7). Then press “INC+” or “DEC-” button to attenuate downlink gain(as Figure 8).



Figure 5

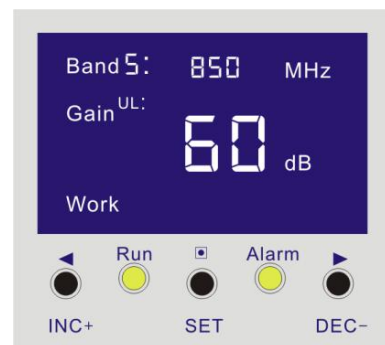


Figure 6



Figure 7

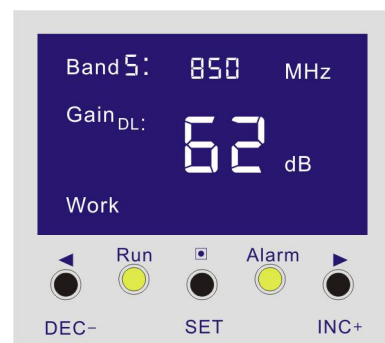


Figure 8

f. Uplink Auto Shutdown Function

When uplink input power is lower than -80dBm (there is no phone being used in the coverage area of the repeater), uplink signal output will be automatically shut down. “Work” at the left bottom corner of the screen will light off while LED indicator “Run” will be flashing (as Figure 9). However, when uplink input signal is higher than -75dBm , uplink will automatically restart and LED indicator “Run” will light up (as Figure 10)



Figure 9

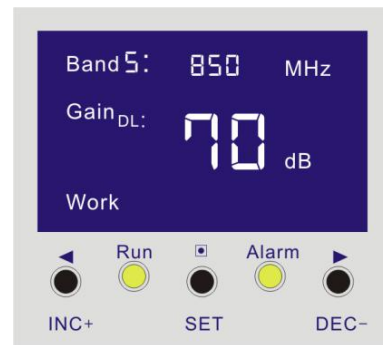


Figure 10

g. ISO Self-oscillation Elimination and Auto Shut Down

The device can detect isolation in real time. When the isolation between outdoor and indoor antenna is insufficient, the “I.S.O” at the middle bottom will light up and the device will automatically adjust gain to make it work normally (as Figure 11).

When severe self-oscillation occurs (the isolation between outdoor antenna and indoor antenna is lower than gain value of 15dB), signal output will automatically be shut down to avoid self-oscillation and causing interference to the BTS. Meanwhile, “I.S.O” at the middle bottom of the screen will be flashing (as Figure 12).

In this case, the user or technician is supposed to turn off the device and change the direction and height of the antennas so that there is enough isolation for the device to run normally.



Figure 11

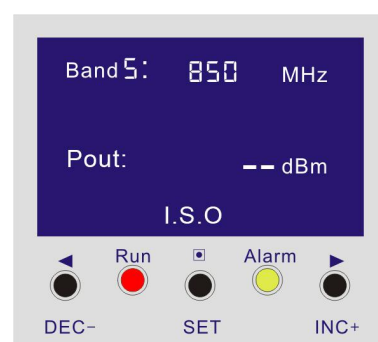


Figure 12

Technical Specification

Item		Uplink	Downlink
Model/ Frequency range	C17L-CP	824 ~ 849/1850 ~ 1910 MHz	869 ~ 894/1930 ~ 1990 MHz
	C17L-EW	880 ~ 915/1920 ~ 1980 MHz	925 ~ 960/2110 ~ 2170 MHz
	C17L-ED	880 ~ 915/1710 ~ 1785 MHz	925 ~ 960/1805 ~ 1880 MHz
	C17L-EL20	880 ~ 915/832 ~ 862 MHz	925 ~ 960/791 ~ 821 MHz
	C17L-L13P	776 ~ 787/1850 ~ 1910 MHz	746 ~ 757/1930 ~ 1990 MHz
	C17L-CA	824 ~ 849/1710 ~ 1755 MHz	869 ~ 894/2110 ~ 2155 MHz
	C17L-DW	1710 ~ 1785/1920 ~ 1980 MHz	1805 ~ 1880/2110 ~ 2170 MHz
Gain		65±3 dB	70±3 dB
Ripple in Band		CDMA≤8 dB /EGSM≤12 dB / DCS≤12 dB / WCDMA≤6 dB /	
VSWR		≤2.5	≤2.5
Output Power		12±2 dBm	17±2 dBm
ALC Range		Δ ≤2 dB	Δ ≤2 dB
Max. Input Power without Damage		0 dBm	0 dBm
Intermodulation Products(CW)		≤-30 dBm	≤-40 dBc
Spurious Emission	9KHz~1GHz	≤-36 dBm	≤-36 dBm
	1GHz~12.75GHz	≤-30 dBm	≤-30 dBm
ATT Step Error	1 ~ 10 dB	Δ ≤1 dB	Δ ≤1 dB
	10 ~ 20 dB	Δ ≤1.5 dB	Δ ≤1.5 dB
	20 ~ 25 dB	Δ ≤2 dB	Δ ≤2 dB
Noise Figure		≤8 dB	≤8 dB
PCDE (W)		≤ -35dB	≤ -35dB
ACRR(W)	5MHz	≥ 20dB	≥ 20dB
	10MHz	≥ 20dB	≥ 20dB
EVM		≤ 8~12.5%	≤ 8~12.5%
Time Delay		≤1.5 μs	≤1.5 μs
RUN Indicator	Normal working		Green on
	UL auto		Green flashing
	ISO derating		Orange
	Stop Running		Red
Alarm Indicator	Not active	—	Green
	Active 5~10dB	—	Orange
	Active 15~25dB	—	Red
SET button		To select and confirm the setting	
INC+ button		With step of 1dB to increase	
DEC- button		With step of 1dB to decline	

Item	Uplink	Downlink
LCD display	Band	Displaying working frequency
	Gain	Displaying gain of uplink and downlink
	Pout	Displaying downlink output power
	Work	Normal working: light up;
	ISO	Normal working: light off. Derating: light up; Auto shutdown for self-oscillation: light up and flash
	ALC	Not active: light off. Active 5-10dB: light up; Active 15-29dB: light up and flash
LCD control	Gain	
Idle Shutdown	At max gain when input uplink signal keeps lower than -80dBm(idle threshold value) for more than 5±1 continuous minutes, uplink PA will be OFF; when input uplink signal is -75dBm or above, uplink PA will auto be ON immediately.	
Real-time Self-oscillation Elimination	When downlink is tested and self-oscillation occurs (isolation is lower than gain), device will derate the gain; when there is severe self-oscillation (isolation is lower than gain value of -15dB or below, the device will be automatically shut down.	
Auto Shutdown	When severe self-oscillation occurs, it will automatically shutdown. When isolation is beyond ALC range, PA of UL and DL will be OFF in 5s. The device will automatically try to restart every 30±5s. If isolation is beyond ALC range for 5 times of auto re-starting, the device will be permanently OFF unless it is powered on again.	
Power Supply	DC: 5V	
Power Consumption	< 10 W	
RF Connector	N-Female	
IP Grade	IP40	
Operating Humidity	< 90%	
Operating Temperature	0°C ~ +50°C	

Installation Guides

Installation Requirements

- 1) With Stable and independent power supply.
- 2) The repeater should be installed in the space without corrosive gas, smokes and leaky liquids.
- 3) The repeater should be installed on the wall that is ventilated, waterproof, lightning-proof and without sunshine.
- 4) The height of the installation site should be safe and easy for cabling, maintaining, dissipating heat.

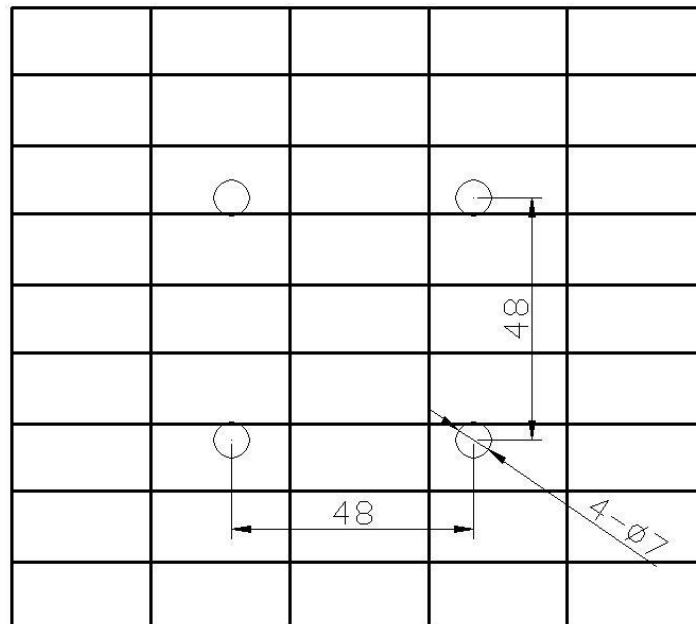
Installation tools

No.	Items	Quantity	Remarks
1	Impact drill	1	Drill holes on wall, self-provided
2	Wrench	1	Reinforce the interface connection, self-provided
3	Mobile phone for testing	1	Test installation effectiveness, self-provided
4	Multimeter	1	Test voltage and wiring connection, self-provided
5	Screwdriver	1	Tighten or fasten the device, self-provided
6	Waterproof tape	A few	Prevent liquid from leaking into the feeder interface, self-provided

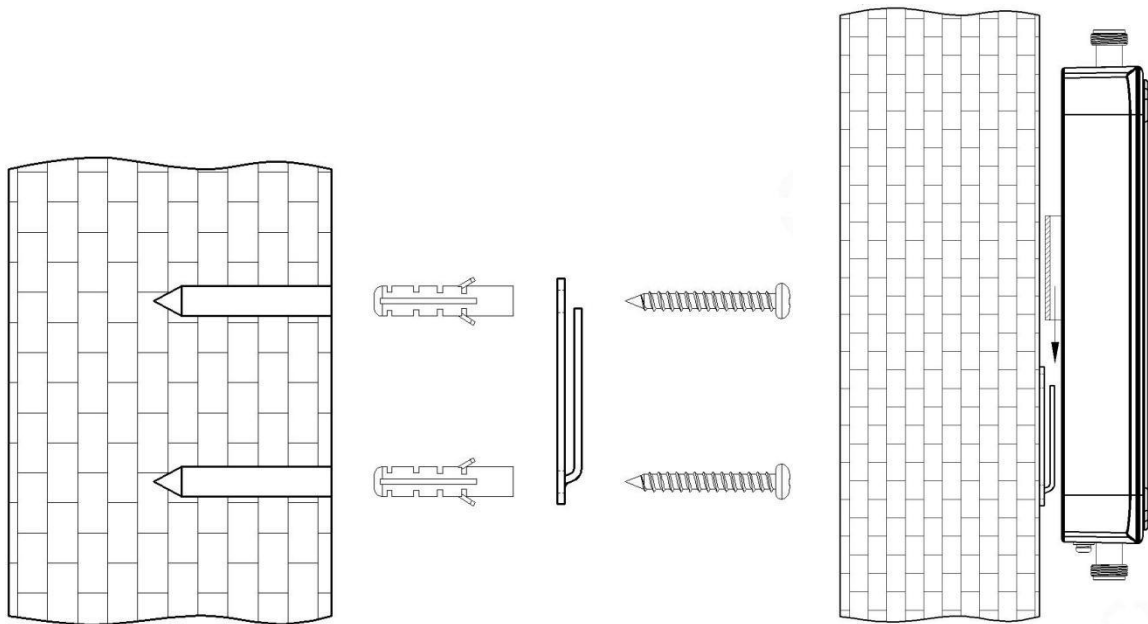
Installation Steps

The repeater should be installed on a solid wall. The installation steps are as follows:

- 1) Find a suitable site according to the installation requirements, size and dimension of the repeater.
- 2) Estimate and mark the sites of U-shaped back holder installation holes. Drill holes with the impact drill. Sizes of the holes are 7mm. The expected sites are as follow: (unit: mm)



- 3) Put the expansion plug(size: 8mm) into the 4 drilled holes.
- 4) As shown in the figure, align the fixing holes of the U-shaped back holder with corresponding holes on the wall. Then drive 4 pcs of M6*40 screws into the expand plugs with screwdriver. Finally, hang the repeater firmly on the U-shaped back holder.



Antenna Connection

Choose suitable outdoor and indoor antennas according to the characteristic of the coverage area. Installation and connection of the antennas should follow the requirements as following:

- 1) The outdoor antenna should be installed at the place with the strongest signal and aiming towards BTS.
- 2) The length of the cable, which connects the outdoor antenna and the repeater, should be less than 20 meters.
- 3) Wrap the waterproof tape around the connection part of the outdoor antenna and outdoor cable, keeping it away from water oxidation and corrosion.
- 4) The height difference between the indoor and outdoor antennas should be over 5m, and the transmit direction of indoor antenna should not aim at the outdoor antenna.
- 5) It will be better if there is a wall between outdoor and indoor antennas.
- 6) Outdoor antenna should connect to BTS port of the repeater, while indoor antenna to the MS port.

Trial Operation

- 1) If possible, please wire up the grounding screw of the repeater to the ground wire of the power line.
- 2) Make sure the feeder cables between repeater and antennas are firmly connected.
- 3) Connect the DC plug of the 5V/2A power adapter to the DC+5V port of the repeater. Then put AC plug connecting to the nearby 220V power outlet.
- 4) Check if the repeater can work normally or not, by checking the operation parameters on the screen, according to the guides of the previous “Operation and Display Description” part.
- 5) Test the signal intensity and call quality with a mobile phone in the coverage area.

Maintenance and Repairing

FRQ and Solutions

Problems	Possible causes	Solutions
Screen and indicator lights are off	Disconnected to power source	Check the power adapter and power outlet, and reconnect it
I.S.O on the screen flashes after power-on	Isolation between outdoor and indoor antennas is not enough	Change the distance and directions of outdoor and indoor antennas, until I.S.O is not flashing
Everything is okay after power-on, but no improvement in signal	The network of SIM card does not comply with that of the repeater	Replace SIM card or repeater
	The indoor antenna is not successfully connected	Fasten the connection of inside cable and connectors
	The indoor antenna is damaged	Replace the indoor antenna
Effectiveness of the repeater degrades after working for a while	The outdoor antenna is damaged	Replace the outdoor antenna
	The outdoor antenna get loose and is not aiming towards the BTS	Change the direction of outdoor antenna and fasten it
	Feeder is damaged	Replace the feeder

Notices

Power-off is recommended in any of the following situations:

- Power supply is abnormal.
- Liquid flows into the device or device is too close to the fire.
- Working conditions are abnormal when overheating or strange smells are founded.

Manufacturer: Foshan Amplitec Tech Development Co.,Ltd
Addr: 4th Floor, 4th Building, No. 60 of Langbao West Rd, Zhangcha Foshan, China,528000
Tel: 0757-83308238, Fax: 0757-83123923
Email: info@amplitec.cn, Website: www.amplitec.net