



WCDMA Micro Repeater Datasheet

Maipu Communication Technology Co., Ltd
No. 16, Jiuxing Avenue
Hi-Tech Park
Chengdu, Sichuan Province
P. R. China
610041
Tel: (86) 28-85148850, 85148041
Fax: (86) 28-85146848, 85148139
URL: [http:// www.maipu.com](http://www.maipu.com)
Mail: overseas@maipu.com

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Overview

To meet the customer demands of the carrier, fulfill the service promise of “Call anytime and anywhere”, and improve the brand competition, the carrier should set up the base stations anytime and anywhere. But the mobile communication adopts the wireless media to transmit information. The electromagnetic waves are lost greatly after passing various complicated environment during the transmission, and as a result, the signal is weak, even no signal in many small areas. WCDMA micro repeater is one valid scheme of filling the blind zone of the indoor mobile communication coverage.

WCDMA micro repeater is one device of magnifying the mobile communication signal bi-directionally, mainly used to strengthen the indoor signals, magnify the uplink and downlink link signals bi-directionally, cover the blind area of the mobile communication efficiently, and expand the coverage, so as to improve the mobile communication service quality.

WCDMA micro repeater has the features of simple structure, low cost, small volume, light weight, convenient to install, flexible network design, simple networking mode, high system reliability, and convenient system capacity expansion. It can be widely used to the small areas hard to cover.

WCDMA micro repeater is applicable to the conference room, small supermarket, small shopping centers, offices, small public areas, residential homes, basements, high-rise elevators, enclosed entertainment, villa, underground parking, villages, and other areas.

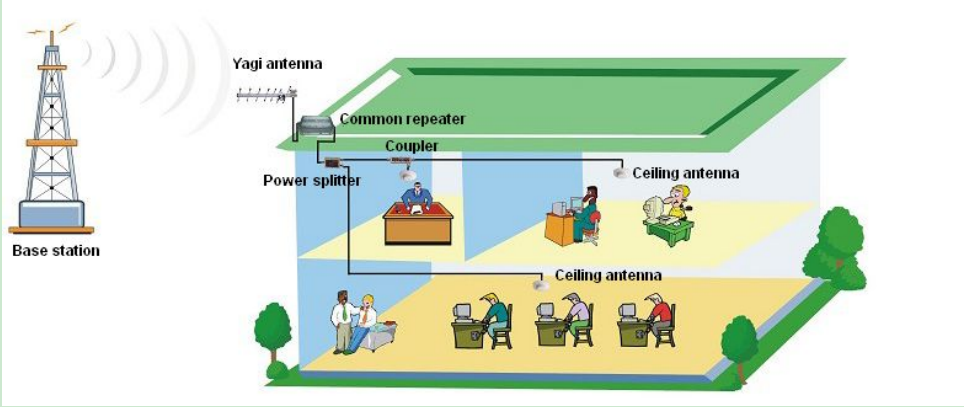


Figure1 WCDMA micro repeater work diagram

Product Principle and Features

Work Principle of WCDMA Micro Repeater

The WCDMA micro repeater product developed by Maipu is formed by the duplexer, uplink/downlink low-noise amplifier, uplink/downlink high linear power amplifier, filter, intelligent monitoring, and high-efficiency switch power module. The principle function frame is as follows:

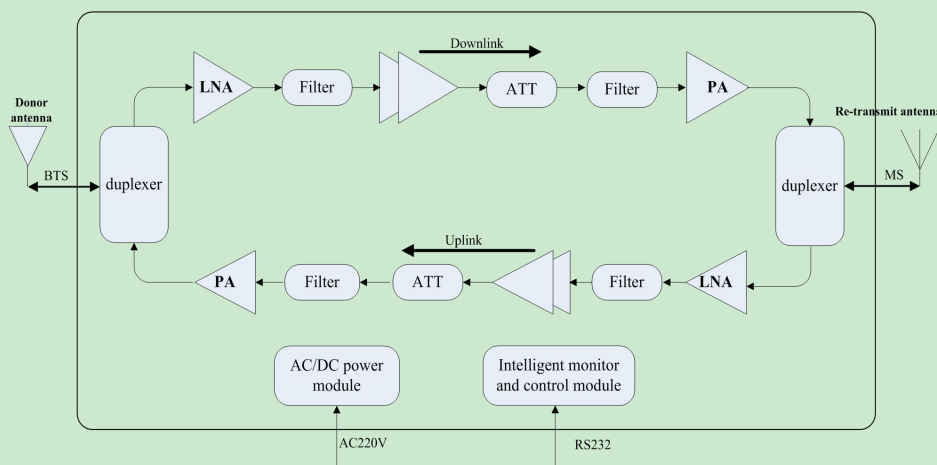


Figure 2 Work principle diagram of the micro repeater

WCDMA Micro Repeater Features

The output powers of WCDMA micro repeater series products include 0.02W, 0.05W, and 0.1W, meeting different environment requirements. The main features include:

1. Uplink and downlink auto gain balancing function

After the micro repeater is installed and powered on, the system automatically detects the input power and controls the output power. After calculating the downlink gain of the system, adjust the uplink again of the system automatically. Keep the amplifying balance of the system, realizing the uplink and downlink auto linkage debugging. The gain of the auto control system is smaller than the path attenuation of the signal, ensuring that the product has no interference noise for the network and one base station can carry multiple products.

2. Self-excitation detection eliminating function

After the micro repeater is installed, detect the isolation of the antenna automatically. If the antenna isolation does not meet the installation requirement of the system, the device has the indicator to provide indication and controls the device to reduce the gain automatically until the device does not amplification self-excitation. Through changing the antenna isolation, the system automatically opens the attenuation gain and recovers the best work status, so as to protect the device security and prevent the network from being interfered.

Technical Indexes

Main Technical Indexes of TD-LTE Micro Repeater

Work band	WCDMA: uplink 1940-1955MHz, downlink 2130-2145MHz
Gain	65 ± 3 dbm
Auto power control range	$\cong 30$ dB
Noise factor	$\cong 5$ dB
Inband flatness	$\cong 3$ dB (p-p),
Max. output power	UL: 10 ± 2 dBm DL: 10 ± 2 dBm
Downlink input power range	-53 dBm - -20 dBm
Delay	$\cong 1 \mu$ s
Adapter work voltage	AC 220V
Other functions	Inbuilt with the wireless remote monitoring module, confirming to the repeater network management monitoring protocol (optional); Inbuilt with the uplink squelch function, ensuring that the raise for the DANL of the base station is minimum.
Power	<6W
Dimension (mm)	162*188*28
Weight (kg)	0.9
Remarks	Contain the auto gain compensation function, meeting the index requirement of China Unicom

WCDMA Micro Repeater

Figure and Device Interface

TD-LTE Micro Repeater Figure

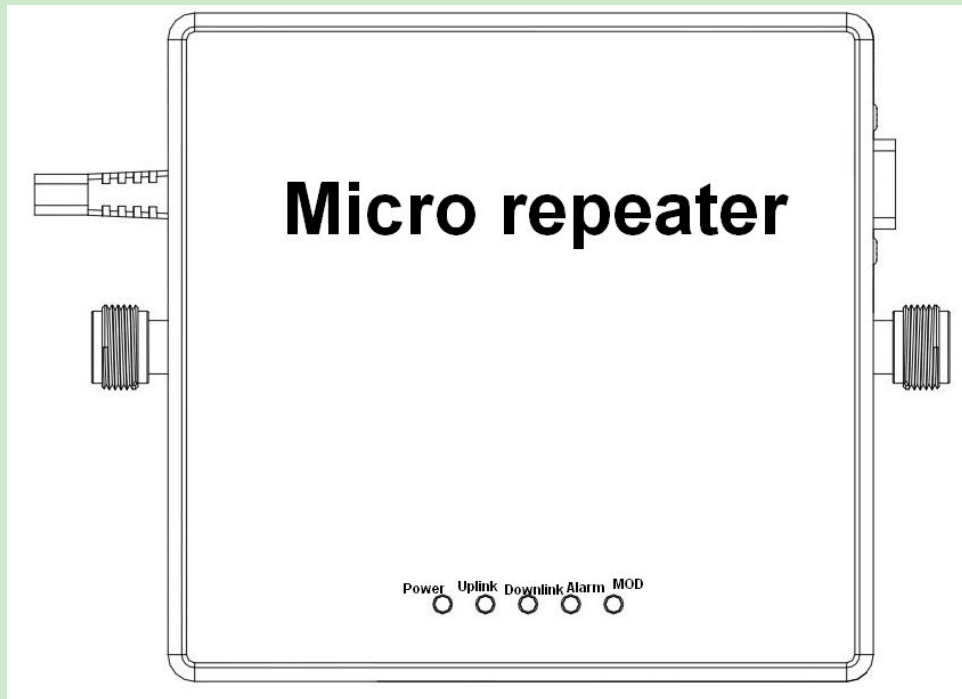


Figure 3 Micro Repeater Figure

External Interface Definition of TD-LTE Micro Repeater

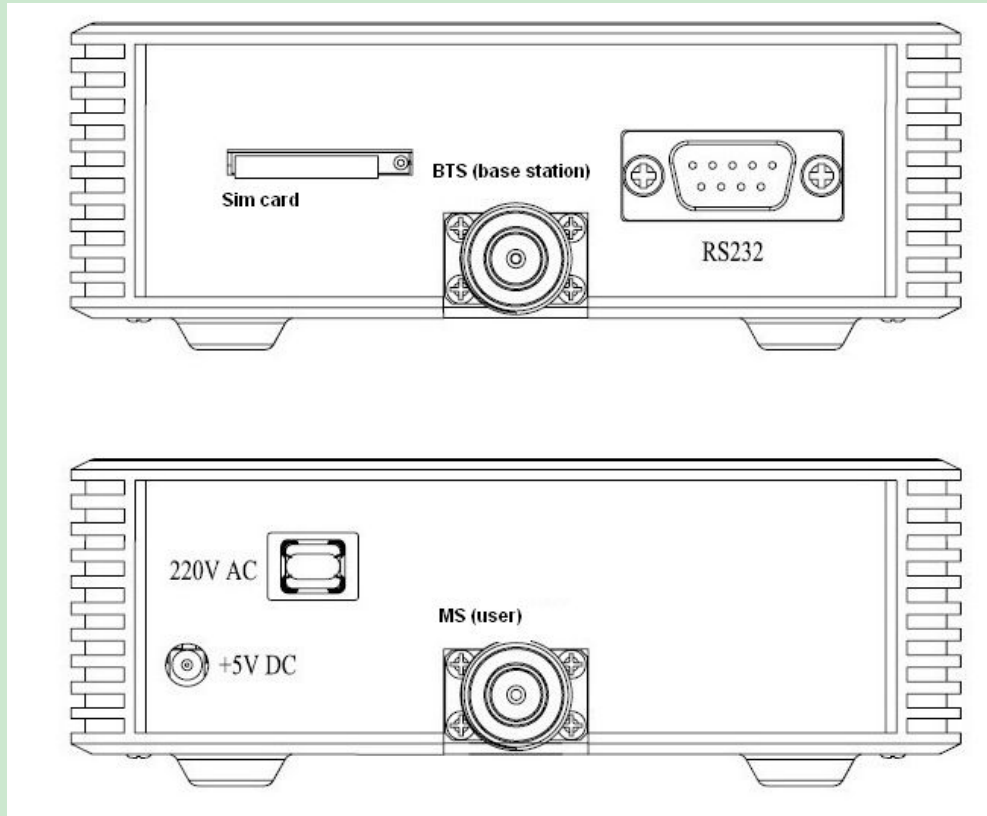


Figure 4 External interface

External interface definition

- | |
|--|
| 1: BTS/ANT——RF interface SMA-F |
| 2: +5V DC——Power socket (with the adapter) |

Indicator Definition of WCDMA Micro Repeater

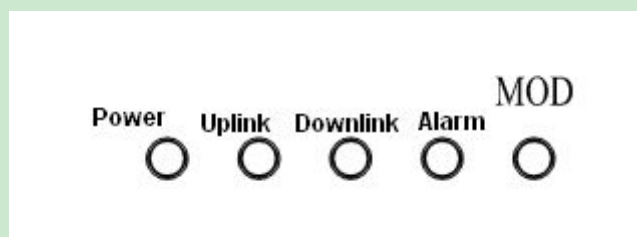


Figure 6 Micro repeater indicators

Indicator	Color	On	Off
PWR	Red	The power works normally	The power works abnormally or is not connected
STA	Green	The input is normal	The input signal of the device is small; you can adjust the BTS antenna to optimize the signal strength
ALARM	Green	Working normally	The input power is too large or generate the self-excitation; you need to adjust the antenna.

Device Installation Description

WCDMA micro repeater is small, light, and convenient to install. It can lay flat on the installation place, and also can be mounted on the wall via the installation hole on the device backplane. The dimension of the installation frame is as shown in Figure 7. Ensure that the installation frame and wall have the enough strength during the installation.

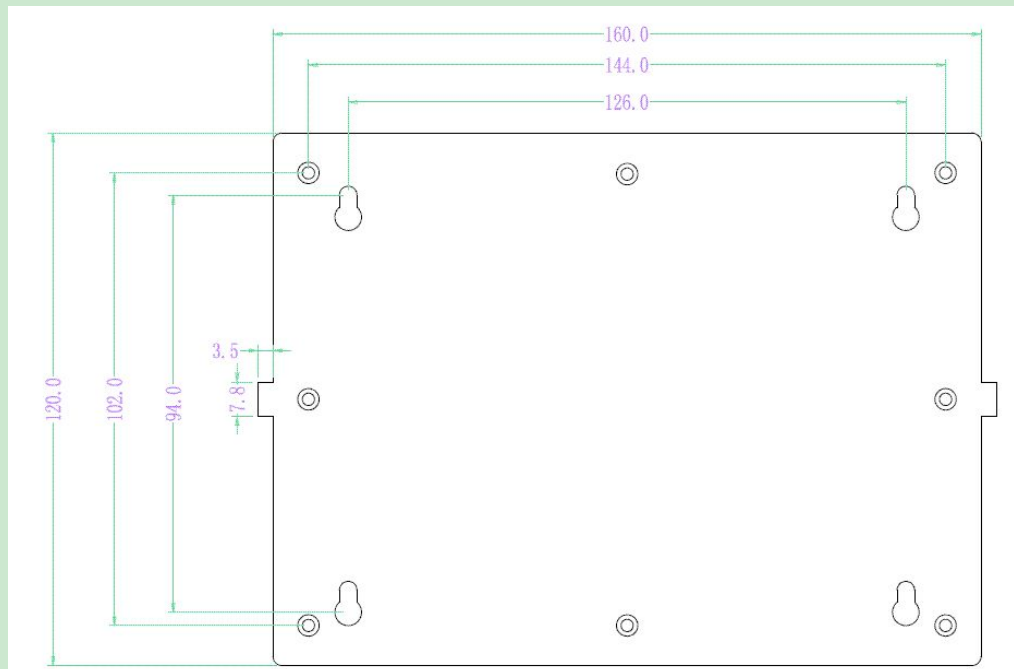


Figure 7 Installation dimension diagram

Installation Program of WCDMA Micro Repeater

1. The micro repeater is connected with the antenna port correctly;
2. The input power budget of the micro repeater BTS port meets the requirement of the minimum input power;

3. The installation location is close to the AC power interface and well grounded;
4. Before the micro repeater is powered on, the output end should be connected with 50 ohm load (antenna); if the output is open for a long time, it may result in the permanent damage of the device internal components;
5. The isolation between the re-transmit antenna and donor antenna should be larger than the actual work gain of the repeater plus 10dB redundant storage;
6. The donor antenna should use the directional antenna; the point and pitch angle conform to the requirement of the design scheme.

Installation Elements of WCDMA Micro Repeater

1. Open the packing box of the device and check the wireless repeater device and the installation accessories;
2. Mount the micro repeater on the wall;
3. Connect the ground wire well;
4. Connect the RF cables of the antenna port correctly;
5. Connect the BTS port of the device host with the donor antenna, the MS port with the re-transmit antenna; at last, connect the power plug with the 220V AC power socket.
- 6.

Common Problems and Solutions

Downlink power has no output or the output power is too low

1. Measure whether the power input to the BTS port reaches the budget requirement;
2. Check whether the cables of the re-transmit antenna and donor antenna are connected correctly;
3. Check whether the device is attenuated too large and as a result, the power output is not normal;
4. Check whether the isolation of the re-transmit antenna and the donor antenna meets the requirement.