

# **User Manual for Baicells mBS1100 Base Station Product**


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# 1 Product Overview

## 1.1 Product Orientation

Baicells is a high-tech company dedicated in wireless broadband access solutions and service operation. With the advent of the Internet+ era, the development of WBB is imminent. Through continuous innovation, Baicells launches the world first mobile broadband system based on the Internet architecture and unlicensed spectrum.

Baicells can provide a wide range of base stations, including Micro, Pico, Femto, SmartSite and other series to be applied in various scenarios, indoor and outdoor on different spectrums.

mBS1100 product is adopting TD-LTE technology, designed for implementing industry broadband data access. mBS1100 can support backbone network access by way of wired or wireless backhaul to realize various data service conversion and transmission functions. mBS1100 can be deployed outdoors, and widely used by telecom operators, broadband operators; in enterprise private network, power private network, port private network, video monitoring and wireless broadband coverage in rural areas and other fields.

## 1.2 Product Features

mBS1100 is designed according to the simplicity principle, which can evolve in a short period and realize fast customization, delivery and deployment as well. The main features of mBS1100 is as follows:

- Based on 3GPP international standard TD-LTE technology; provide high speed data service; support a maximum transfer rate of DL: 110Mbit/s, UL: 20Mbit/s;
- Support frequency spectrum 3.65GHz (spectrums can be customized);
- Support flexible uplink and downlink time slot ratio: 0(3:1), 1(2:2), 2(1:3), realize high speed data transmission;
- Support 10MHz, 20MHz operation bandwidth;
- Easy to deploy and install;
- Built-in DHCP Server, DNS Client and NAT function, provide a strong high speed routing ability;
- Rich security service to provide timely protection against potential security risks and illegal intrusion;
- Centralized network management, easy to maintain and realize automatic start after

installation;

- Adopt Web management, convenient and simple
- Small and exquisite in size, attractive and dedicate in appearance. The base station will draw people’s attention in the first sight with its outstanding industrial design, frosted shell and user friendly LED indicator light, making it easier to observe the device working condition;

### 1.3 Product Description

mBS1100 outdoor base station product is shown in Figure 1-1:

Figure 1-1 mBS1100 product description

Product	Description	Maximum Power
mBS1100	3.65G LTE TDD outdoor micro base station	2*1W

### 1.4 Product Appearance

Diagram 1-1 Appearance of mBS1100 outdoor base station



Interface specifications of mBS1100 outdoor base station are shown in Figure 1-2

Figure 1-2 Interfaces of mBS1100 outdoor base station

Interface	Description
PWR	Power interface: +48V DC (+42V~+58V)
LAN	Gigabit Ethernet debug port (not connected)
WAN	Gigabit Ethernet WAN port, used for external IP backbone transmission network
GPS	External GPS antenna, N-Female screw(not connected)
ANT1	External antenna interface 1, N-Female screw
ANT2	External antenna interface 2, N-Female screw
SNF	External sniffer interface, N-Female screw

mBS1100 outdoor base station has 3 indicators. The indicator functions are defined and described in Figure 1-3:

Figure 1-3 Function definition of mBS1100 outdoor base station indicator lights

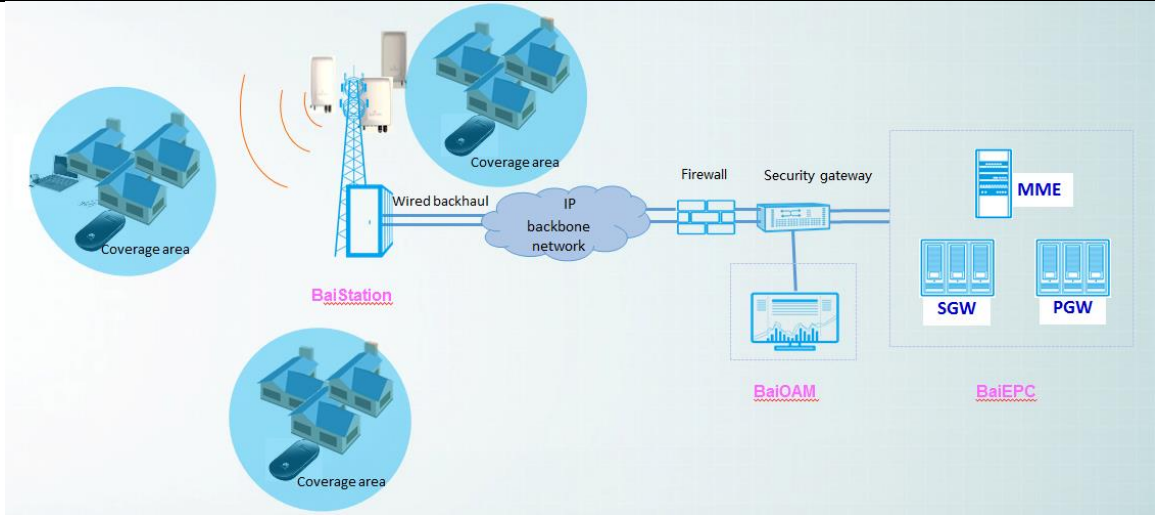
Indicator	Color	Status	Meaning
PWR	Green light	On	Base station power-on
		Off	No power input
RUN	Green light	On	Base station operation
		Off	No power input or power fault
ALM	Red light	On	Hardware alarm, e.g. VSWR alarm
		Off	No alarm
ACT	Green light	On	The transmitting channel works normally (Standard: The community can build channels or the transmitting channel is open).
		Off	The transmitting channel works abnormally (for example, the transmitting channel is closed).

## 2 Application Scenarios

### 2.1 Overview

mBS1100 outdoor base stations mainly offer wireless broadband data services. mBS1100 can support LTE-TDD wireless coverage and complete a variety of voice and data services.

Diagram 2-1 mBS1100 applied in outdoor wireless broadband solution



### 3 Technical Specifications

#### 3.1 Hardware Specifications

Figure 3-1 Hardware specifications of mBS1100 outdoor base station

Item	Description	
Working Mode	LTE TDD	
Working Frequency	3650MHz~3700MHz	
Working Bandwidth	10MHz/20MHz	
External Interfaces	PWR interface: 1	
	WAN interface	
	Electrical Port : 1, RJ45	
	LAN interface: 1, RJ45	
	GPS interface: 1 N-Female	
	Antenna interface: 2 N-Female	
Indicator	SNF interface: 1 N-Female	
	PWR	1, green light, Base station power status indicator
	RUN	1, green light, Base station operation status indicator
	ALM	1, red light, Base station alarm status indicator
Max Tx Power	33dBm	
	Receiving Sensitivity	
Synchronization Mode	1. 10MHz: -100dBm	
	2. 20MHz: -97dBm	
	Support GPS, 1588V2, OTA (same or different frequency)	

MIMO	2*2MIMO
Backhaul Mode	Wired backhaul: Ethernet
Installation Method	Tower-mounted
Antenna	External high-gain antenna
Power Consumption	<65W

### 3.2 Software Specifications

Figure 3-2 Software specifications of mBS1100 outdoor base station

Item	Description
Technical Standard	LTE TDD 3GPP Release 9
Business Capability	32concurrent users, 96 connection users
Maximum Throughput	DL: 110Mbps@20MHz UL: 20Mbps@20MHz DL: 55Mbps@10MHz UL: 7Mbps@10MHz
Scheduling Mode	Based on QoS scheduling
Modulation Mode	Support: BPSK, QPSK, 16QAM, 64QAM
Voice Solution	Support CSFB, VoLTE, SRVCC
Traffic Offload	Support LIPA/SIPTO, which is Local IP Access, Selected IP Traffic Offload for short(optional)
SON	Self-organizing network: support plug and play, automatic start, optimization and configuration
RAN Sharing	Support
Network Management Interface	Support TR069 interface protocol
Northbound Interface	Support: Web Service, Socket, FTP and other interface modes
Operation & Maintenance	<ol style="list-style-type: none"> <li>1. Support local maintenance</li> <li>2. Support remote maintenance</li> <li>3. Support online status management</li> <li>4. Support performance statistics</li> <li>5. Support failure management</li> <li>6. Support configuration management</li> <li>7. Support local or remote software upgrade and load</li> <li>8. Diary</li> <li>9. Support connectivity diagnosis</li> <li>10. Support automatic start and configuration</li> <li>11. Alarm reporting: support lower machine broken alarm, high and low temperature alarm, weak wireless signal alarm report</li> </ol>



### 3.3 Environment Specifications

Figure 3-3 Environment specifications of mBS1100 outdoor base station

Item	Description
Temperature	Working temperature: -35 °C to 55 °C Storage temperature: -40 °C to 70 °C
Humidity	5% ~ 100%
Temperature Change Rate	1 °C /min
MTBF	≥150000 hours
MTTR	≤1 hour

### 4 Product List

Figure 4-1 List of mBS1100 outdoor base station products

Accessories	Quantity	Notes
mBS1100	1	Standard configuration, check whether the frequency is consistent with the required.
Warranty	1	Standard configuration
User Manual	1	Standard configuration

### 5 Antennas Information

Following is the list of antennas certified for use. Customers can choose according to use environment of different antenna.

Antenna Type	Manufacturer	Model Number	Antenna Max Gain(dBi)
External Planar Antenna Dual Pole	Kenbotong Technology Co., Ltd.	KBT90DP16-3338AT0	16
External Planar Antenna Dual Pole	Kenbotong Technology Co., Ltd.	KBT90DP14-3338AT0	14
External Planar Antenna Dual Pole	Baicells Technologies Co., Ltd	ANT-3G11-R-65-EDT0	11
External Planar Antenna Dual Pole	Baicells Technologies Co., Ltd	ANT-3G7-R-65-EDT0	7
External Omnidirectional Antenna Single Pole	Kenbotong Technology Co., Ltd.	TQJ-3500AC10	10
External Omnidirectional Antenna Single Pole	Kenbotong Technology Co., Ltd.	TQJ-3500AC7	7
External Omnidirectional Antenna Single Pole	Kenbotong Technology Co., Ltd.	TQJ-3500AT6A	6

## 6 Maximum Output Power

The maximum output power can be set as follows:

Antenna Max Gain (dBi)	10Log(Number of antennas)	Channel BW (MHz)	Max output power (dBm)	EIRP (dBm)
16	3	10	21	40
		20	24	43
14		10	23	40
		20	26	43
11		10	26	40
		20	29	43
7		10	30	40
		20	33	43
10		10	27	40
		20	30	43
7		10	30	40
		20	33	43
6	10	30	39	
	20	33	42	

### FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### Warning

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 50 cm between the radiator & your body.

## IC Compliance

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) This device may not cause interference , and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radio électrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 50 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter, End-Users must be provided with transmitter operation conditions for satisfying RF exposure compliance.