

ALK300 Series Transceiver Operation Manual

Guangzhou VictelGlobal Communications Co., Ltd.

April, 2013

OUTLINE

1.1 Configuration	3
1.2 Functions	4
1.3 Working Environment	5
1.4 Power Supply Adaptation & Power Consumption	5
2 Operation Instruction	5
2.1 Introduction of Panels & Interfaces	5
2.1.1 Front Panel of ALK300 Series Transceivers	5
2.1.2 Back View of the ALK300 Series Transceiver.....	9
2.2 Wiring Method	11
2.3 Hopping.....	11
2.3.1 Coding Switch of the Transceiver	11
2.4 Power On the Equipment	13
3 NMS Settings	13
4 Maintenance	13
4.1 Installation Environment.....	13
4.2 Report & Solution of Equipment Failures.....	14
4.3 Equipment Usage	14
4.4 Cleaning of the Equipment Surface	14
4.5 Equipment Grounding	14
5 Transportation	14
6 Contact:	16

1. General Introduction

The ALK300 series transceiver of VictelGlobal adopts standard 19-inch 2U structure, fully modularized design and optimal design for heat dissipation. The front panel is equipped with high-speed bus line for connection between transceivers, the special wiring hole of which facilitates the installation, test and maintenance and makes the whole unit tidy. VictelGlobal has been granted the patent for structural design.



The ALK300 series transceiver adopts dual PA design, greatly reducing the unit temperature, improving the unit stability and prolonging the unit life. The two PAs can work separately as two PAs and work altogether as backup for each other.

1.1 Configuration

The digital transceiver is consisted of digital Rx & Tx module, power supply module, PA module, Carrier Control Module (CCM), hub board, satellite module and bus line board etc., which are connected via the bus line board.

1.2 Functions

- RF Transmission

The RF Tx module shall modulate the digitalized audio and digital/analogue signalling generated by CCM to the RF signal and then transmit it.

- RF Reception

The RF Rx module shall demodulate the digital/analogue signalling and audio signals after receiving the wireless signal and then send them to CCM for procession.

- Rx & Tx Information Display

The Rx field intensity and Tx power shall be displayed on the LED in the front panel. Together with the use of management software, the detailed parameters of the receiver and transceiver can be acquired.

- Local Audio

The local audio signal can be monitored via megaphone.

- Channel Cascading

Multiple transceivers can form one base station by connecting the interface of each transceiver via high-speed bus line. Usually the 1st channel shall act as the control channel and all the rest channels shall act as traffic channels, the quantity of which can be increased flexibly by connecting more transceivers.

1.3 Working Environment

- Working temperature: -30°C~60°C
- Storage temperature: -40°C~85°C

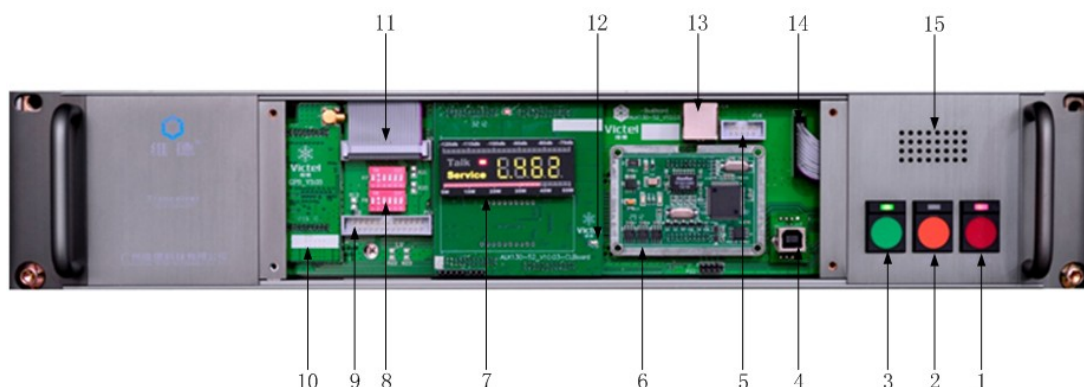
1.4 Power Supply Adaptation & Power Consumption

- AC: 90~260V (45~55Hz)
- Power consumption: <350W

2 Operation Instruction

2.1 Introduction of Panels & Interfaces

2.1.1 Front Panel of ALK300 Series Transceivers



1— Button of 'POWER' and Power Supply LED

Press the button 'POWER' to power on the transceiver with the power supply LED turned on. Press the button 'POWER' when the transceiver is under working status to power off the transceiver with the power supply LED turned off.

2— Button of 'GATE' & Rx LED

Press the button 'GATE' to switch on the megaphone and the user shall be able to monitor the audio information received by the receiver. Press the button 'GATE' when the transceiver is under monitoring to switch off the megaphone. The Rx LED shall be turned on when the receiver receives valid signal, or it shall be turned off.

3— Button of 'PTT' & Tx LED

Press the button 'PTT' to activate the PA long Tx. The PA long Tx can also be activated by touching the button 'PTT' twice. Touch the button 'PTT' once again to stop the PA long Tx. The Tx LED shall be turned on when the PA is under Tx status, or it shall be turned off.

4— Coordination Interface

The NMS shall do various operations to the transceivers via the coordination interface, including data monitoring, parameter configuration and software update, etc.

5— CCM Programming Port

This interface is used for the writing of the programs to the CCM. The ordinary users do not have access to the interface.

6— Carrier Control Module (CCM)

The CCM controls the work of the whole transceiver and processes such core work as digital/analogue signaling and audio switch, etc.

7— Hub board

The hub board displays various status information of the transceiver,

including Rx signal field intensity, Tx signal power, transceiver channel No. and whether the transceiver is undergoing conversation, etc.

The Tx signal power and Rx signal field intensity shall be displayed at the bottom and top of the board.

The channel No., Tx frequency, PA temperature and power supply temperature shall be displayed in the middle of board alternately. For example, the 'CH.02', 'L.050', 'C.032' and 'C033' displayed alternately, means that the channel No. is 2, the Tx frequency is 50, the PA temperature is 32°C and the power supply temperature is 33°C.

The board shall give corresponding alerts when alarms occur to the transceiver:

'-E.F1' means that the forward power of the PA on the left is too low;

'-E.F2' means that the forward power of the PA on the right is too low;

'-E.R1' means that the reflective power of the PA on the left is too high;

'-E.R2' means that the reflective power of the PA on the right is too high;

'-E.C1' means that the temperature of the PA on the left is too high;

'-E.C2' means that the temperature of the PA on the right is too high;

'-E.PS' means that the temperature of the power supply is too high.

In the mean time, the LED on the right of the 'talk' shall flash twice a second with red color.

'service' LED: constant green means that the audio service of the transceiver is normal, or it means that the service has been suspended.

'talk' LED: it is the conversation LED. The LED shall flash once a second when the transceiver assigns the 1st time slot for conversation, flash twice a second when assign the 2nd time slot for conversation, and shall be on steadily when both the 1st time slot and 2nd time slot are assigned for conversation at the same time or when it works as analogue channel. The LED shall be off when the transceiver is not involved in any conversations.

8— Coding Switch of the Transceiver

The transceiver can realize conversation via wired links by connecting the transceiver to the wired equipments. The data for wired conversation shall be fixed to the corresponding channels via hardware. The two red coding switches are the ones to realize the function. As long as the channel No. (1~6) is confirmed, just switch the two coding switches with the same No. to 'ON'.

9— Bus Line Interface

The bus line interface is used for the connection between transceivers, and between transceivers and wired equipments, realizing extension of traffic channels which can be maximum of 12.

10— Bus Line Interface

The bus line interface is used for the connection between transceivers, and between transceivers and wired equipments, realizing extension of traffic channels which can be maximum of 12.

11— Second Pulse LED

The second pulse LED shall flash once a second when the second pulse of the channel is normal, or it shall be off.

12— Ethernet Port

The Ethernet port is controlled independently by the CCM. It is used to connect the transceiver to PC or network switch via cable.

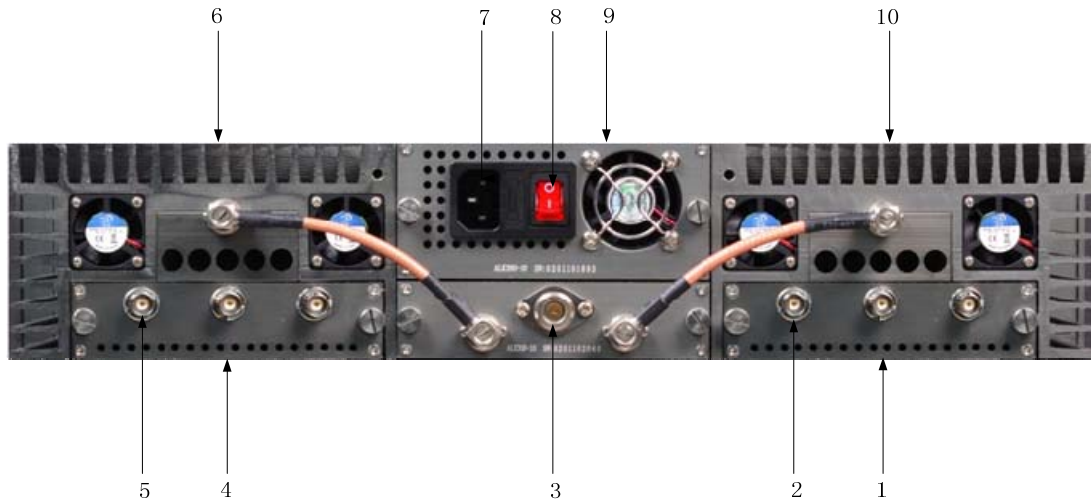
13— Side Board Interface

The side board interface is used to connect the side board to the transceiver. The side board refers to the board on the right of the transceiver where the 'red', 'yellow' and 'green' buttons rely.

14— Megaphone

The megaphone can be powered on and off. The user can monitor the audio signals demodulated from the receiver by powering on the megaphone.

2.1.2 Back View of the ALK300 Series Transceiver



1— Digital Rx & Tx Module (I)

The digital Rx & Tx module of VictelGlobal integrates both Rx and Tx. It is compatible with both digital and analogue working mode, and adopts diversity reception technology and digital simulcast excitation technology.

2— RF Rx Interface

Connect the RF input signal.

3— Digital Rx & Tx Module (II)

The transceiver can be equipped with two digital Rx & Tx modules to become one dual-mode transceiver, expanding channel capacity.

4— RF Input Interface

Connect the RF input signals.

5— PA Module (I)

Amplify the excited Tx signal, send it to combiner and output it after being combined.

6— Power Supply Socket

Socket for AC power supply.

7— Power Supply Switch

Switch on the power supply switch and the power supply module shall begin to work.

8— Power Supply Module

The highest power supply output is 300W. The features of the module is high-efficiency, superlow output wave and strong ability against lightning. The surge withstand voltage is above 3000V.

9— PA Module II

Equip the transceiver with two PAs which can work either independently or as backup for each other.

2.2 Wiring Method

The antenna interface of the combiner is used to collect the PA Tx singals of the transceiver and connect the Tx port of the duplexer.

The RF Rx interface of the digital Rx & Tx module is connected to the output interface of the front-end antenna amplifier, receiving Rx signals from the antenna amplifier.

2.3 Hopping

2.3.1 Coding Switch of the Transceiver

There are totally 1-6 pairs of coding switches on the digital

transceiver. The pair of coding switches switched to 'ON' decides the audio channel to be used. Currently, the E1 supports 12 logic audio channels, that is, 6 physical traffic channels (each physical traffic channel includes 2 logic channels).

For example, switch the 1st pair of coding switch to 'ON' if the 'channel No.' set in the NMS is '0', switch the 2nd pair of coding switch to 'ON' if the 'channel No.' is '2', switch the 3rd pair of coding switch to 'ON' if the 'channel No.' is '4' and switch the 4th pair of coding switch to 'ON' if the 'channel No.' is '6'.

- When the quantity of physical traffic channels is no more than 6, just refer to the default settings:

The channel addresses are 2, 4, 6, 8, 10...

The 1st pair of coding switch of the channel 0 is switched to 'ON';

The 2nd pair of coding switch of the channel 2 is switched to 'ON'.

For the audio conversation settings of the E1 link module, just refer to the default ones, that is, the 1st audio interface is for channel 1, and the 2nd audio interface is for channel 2...

- When the quantity of physical traffic channels is more than 6 but the quantity of the audio channels is no more than 6:

For example, there are 8 physical channels with channel addresses: 0, 2, 4, 6, 8, 10, 12, and 14. The channel 0 is set as the digital control channel, the channel 2 is set as the analogue control channel and all rest 6

channels are set as traffic channels, each of which includes 2 logic channels.

Configuration:

All the 8 channels are positioned above the base station controller.

The coding switches for channel 0 and channel 2 are OFF, the 1st pair of coding switch of channel 4 is ON, and the 2nd pair of coding switch of channel 6 is ON...

2.4 Power On the Equipment

After connecting the power supply wires, switch on the power supply switch at the back of the transceiver. If the power supply LED is turned on then it means that the power supply module works well. Then, press the button 'POWER' at the front panel to power on the transceiver.

3 NMS Settings

The user can configure the parameters and monitor the working of the transceiver via NMS, such as the working mode, working frequency and working status of the transceiver, etc.

4 Maintenance

4.1 Installation Environment

The equipments should be installed in places with good ventilation

and without corrosive gases.

4.2 Report & Solution of Equipment Failures

Please do not open the equipment for repair if any problems occur. Please call the technical service hotline to report the failure and ask the professional technical personnel to solve the problem.

4.3 Equipment Usage

Please keep the environment dry, clean and tidy, and protect the equipments from any strong shocks. If the equipments have not been used for long time, please regularly power on the equipments and check the status also.

4.4 Cleaning of the Equipment Surface

Please clean the equipment regularly. Keep the buttons, switches and external fans clean. Please use the wet soft cloth to do the cleaning.

4.5 Equipment Grounding

Please check the grounding status of the equipment regularly and keep the contact of the grounding point well.

5 Transportation

1. Please protect the equipments from rain and sun, and the ambient

temperature allowed should be within the range: $-30^{\circ}\text{C}\sim+55^{\circ}\text{C}$.

2. The equipments should be stored in dry warehouse with good ventilation and without corrosive gases.
3. Please refer to the shipment marks stated on the cartons strictly during load and transportation.
4. Please note that the heavy and big cartons should be placed at the bottom during load and transportation. And the load should not exceed the rated load of the truck.
5. The loading should comply with the regulations of width and height, and should be vertical and stable.
6. The speed when transporting the equipments with truck should not be so fast, protecting the equipments from any breakdown during transportation.
7. It is not allowed to be shipped together with flammable, explosive and corrosive items.
8. The equipments should be stored in vans or carriages during transportation by train.
9. Necessary measurements should be taken to protect the equipments from rain, dust, sun and shock during transportation.
10. The loading and transportation should be done under the supervision of the customers.
11. If the equipments are broken during transportation, please inform the

related person of the problem to solve the problem.

6 Contact:

- **Company Address:**

Guangzhou VictelGlobal Communications Co., Ltd.

17th Building, No. 161 Dongguanzhuang Rd., Tianhe District,

Guangzhou, China

- **CS Tel:** 86-800-830-9693
- **Fax:** 86-20-87222502
- **Website:** <http://www.victel.com>

Radio Frequency (RF) is a frequency of electromagnetic radiation in the range at which radio signals are transmitted. RF technology is widely used in communication, medicine, food processing and other fields. It may generate radiation during use.

RF Radiation Safety

In order to ensure user health, experts from relevant industries including science, engineering, medicine and health work with international organizations to develop standards for safe exposure to RF radiation.

These standards consist of:

- United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 2 sub-part J;
- American National Standards Institute (ANSI)/Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992;
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999;
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998.

FCC Regulations

Federal Communication Commission (FCC) requires that all radio communication products should meet the requirements set forth in the above standards before they can be marketed in the U.S, and the manufacturer shall post a RF label on the product to inform users of operational instructions, so as to enhance their occupational health against exposure to RF energy.

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate this 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.

Operational Instructions and Training Guidelines

To ensure the optimal performance and the compliance with occupational/controlled environment RF radiance limits in the above standards, please adhere to the following requirements:

- When you are installing the product antenna outside, set up the antenna according to the supplier's requirements with its Gain within 8.0dBi and keep it at least 1.70 meters away from human body.
- Not used duty cycle over 100%.

Canada Regulations

The device complies with SAR and/or RF field strength limits of RSS-102 requirement.

EU Regulatory Conformance

The equipment is in compliance with the essential requirements and other relevant provisions of the Directive 1999/5/EC.

