ABELL®

Voice of Abell, Crisp as an Apple

A-510T
INSTRUCTION MANUAL

Introduction

Thank you for choosing ABELL DMR Digital Radio. We believe that
you made a wise choice for we applying the best technology, the most stable components and advanced
productive technology. ABELL radio will provide you
with stable performance and high quality.

Safety Instruction

Please comply with the following tips for fear of any accidents such as fire disaster, personal injury or radio damages.

1. Do not modify this radio or its charger in any way.

2. Do not leave the radio under direct sunlight for extended periods of time,nearby heaters or appliances.

3. Do not put the radios in any area that with much dust, moist or put it in the area not smooth and steady.

4. If the receive external interference，should keep the unit away from jamming devices (Such as TV，generator).

5. If the unit emitting smoke or strange smell, should cut off the power supply immediately , and send it to the closest repair service station.

6. This radio is with high power and little size, if there is a slight fever phenomenon please feel free to use.

If there is any problem with it, please contact with ABELL or the local distributor.

Overall View

Antenna

Channel Knob

Volume/Power knob

K3

LED indicator

PTT

K1

K2

Speaker
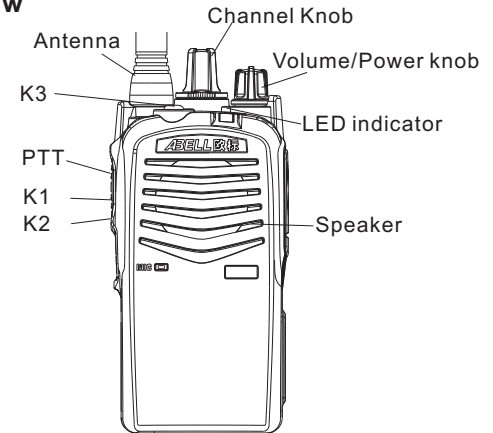
ABELL Radios quality warranty and liability

The warranty range and limitation

ABELL admitted to customer, during the quality warranty commitment , products are repaired or replaced by free, the radio which has been repaired or replaced is still in the quality warranty period, but the replaced components or circuit board are owned by ABELL.

The warranty policy not include the flowing conditions:

1.Defect or injuries caused by working in abnormal situation.

2.Defect or injuries caused by misuse, accident, or be into water.

3.Defect or injuries caused by the users test, operate, repair, install or adjustment.

4.The product information on the back aluminum board disappear, the series No. was changed or can not identify.

5.There is any damage or unsealed on the sealed battery case.

6.Appearance scratches or other decoration damages but not effect normally use.

General Items

This warranty policy ruled that all the liability of the product quality, ABELL has the right to decide to repair, replace, or refund according to the purchase price; it is the only way to reimbursement solution. This quality warranty replace all other public quality warranty, defaulted quality warranty, include not restrict to a specific purpose or use the defaulted warranty, limited to this warranty period.

Battery information

Battery protection

This product uses lithium batteries as a power source, with the lightweight,environmentally friendly, no memory, and some other advantages, the following battery tips that can help you to get the best performance and the most enduring cycle life when us ABELL batteries.

1. Be sure to use the original ABELL charger to charge the battery.
2. Battery with radios also can be charged, please switch off the radios to ensure battery can be fully and effectively charged.
3. The new batteries can be stored for long period, but should be stored in a cool, dry place. (Need to be recharged once every three months to active the electrical properties, otherwise it will be damaged and can not use.)
4. The stored battery need to be fully charged before use.
5. You can only use the battery charger and power supply specified by ABELL.
6. Extreme temperatures will effect capacity of the battery, should be stored in a dry warm environment.
7. The battery can not be placed in hot or cold place, otherwise it will reduce battery capacity and using life, the battery should always be stored at normal temperature, and radios equipped with cold batteries may not work temporarily, even if fully charged, lithium batteries will be apparently affected at subzero.
8. Do not let the battery short circuit, when metal objects(Such as metal bench, pins,ect.) directly connected to the battery positive（metal stripes on the battery). For example, the radios on metal table, while carrying batteries in pocket or bag, batteries may be accidental short circuit, damage to battery or the object caused by short circuit.
9. In accordance with local laws dispose of used batteries, usually recycling.
10. Do not discard the batteries into the fire, in order to avoid explosion damage.

Battery attention

1. Do not use the damaged charge or batteries.
2. Do not put the batteries to other use.
3. Battery charging time is determined by the remaining capacity of the battery, the battery type and charger type, the battery can be repeatedly charged and discharged more than 300 times, but gradually aging, when using time shorter than the normal time obviously, should buy a new battery.
4. Unused batteries for long time will discharged automatically.

Contents

Unpacking and device check

Please take the radio out of the package carefully, and before abandon the package material, we advise you to check the accessories according to the following list. If any part is lost ordamage, please give the claim letter to the carrier or deliverer.

Accessories

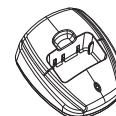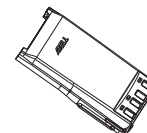| Items	Quantity
Antenna	1
Belt Clip	1
Power Supplier	1
Battery	1
Charger	1
Lanyard	1
Instruction Manual	1
Warranty Card	1
Quality Certification	1

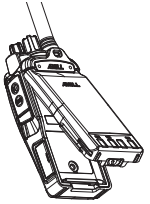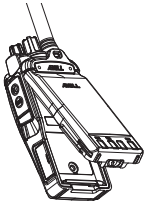Antenna   Belt Clip   Lanyard

Power Supplier   Charger   Battery

Getting Start

Install Battery

Align the battery with the rabbet, Push and press down until "click" in.

Disassemble the battery

Lift the metal cover, then press down the "lock" to release the battery to take the battery down.

Assemble the antenna
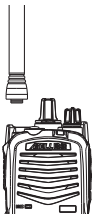
Lift the metal cover, then press down the "lock" to release the battery to take the battery down.

Assemble∕Disassemble the belt chip
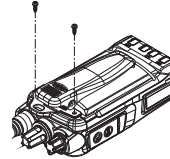
Assemble: Fix the belt clip in the upper end of rear side with two screws until they are screwed down.
Disassemble: Disassemble the two screws from the belt clip with a screwdriver.

Assemble Speaker/MIC

Fix the rubber cover when not use. Open the rubber cover to insert the earphone.

Insert the earphone
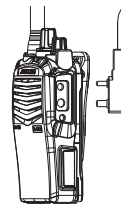
Open the rubber cover to insert the Earphone.

Familiar with the Radio

Channel Selector(1-16)

Antenna

Power/Volume Knob

K3

LED indicator

Speaker

MIC

Push to talk

SP/MIC Jack

K1

K2
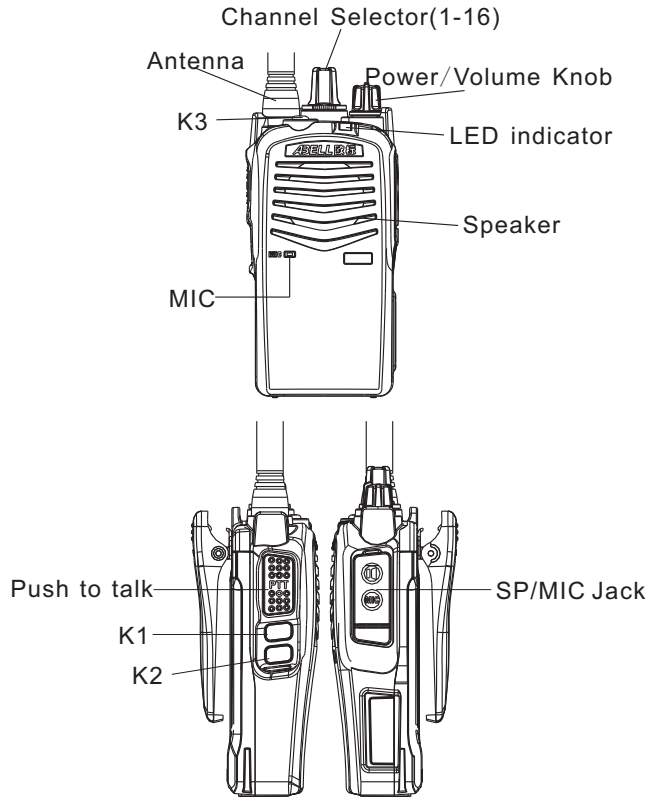
Charging

Please use original Abell charger to charge the battery, schematic diagram of charging below.
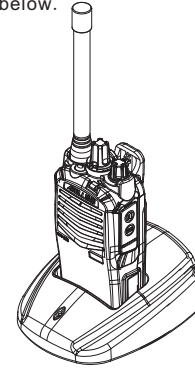
Indications:

1 Steady yellow: Ready to be charged.
2 Steady red: Rapid charging.
3 Steady green: Fully charged

LED Indications：

Indicator status	Radio
Green light on 2-3 seconds	Powering on
Steady Green Light	Receiving
Green Light Flashing	Signal Received
Steady Red light	Transmitting
Red light Flashing	Battery running low while transmitting

Programmable keys Function：

| Key		Functions
K1	Short Press	No Function, alarm, TOT, VOX, Emergency Call;Stable Monitoring（Analog）；scanning; Squelch on：squelch off;one key calling 1-5（DMR）；Channel annunciation ；Power annunciation; capacity annunciation; channel type annunciation;User ID annunciation
	Long Press	No Function, alarm, TOT, VOX, Emergency Call;Stable Monitoring（Analog）；scanning; Squelch on：squelch off;one key calling 1-5（DMR）；Channel annunciation ；Power annunciation; capacity annunciation; channel type annunciation;User ID annunciation
K2	Short Press	No Function, alarm, TOT, VOX, Emergency Call;Stable Monitoring（Analog）；scanning; Squelch on：squelch off;one key calling 1-5（DMR）；Channel annunciation ；Power annunciation; capacity annunciation; channel type annunciation;User ID annunciation
	Long Press	No Function, alarm, TOT, VOX, Emergency Call;Stable Monitoring（Analog）；scanning; Squelch on：squelch off;one key calling 1-5（DMR）；Channel annunciation ；Power annunciation; capacity annunciation; channel type annunciation;User ID annunciation
K3	Short Press	No Function, alarm, TOT, VOX, Emergency Call;Stable Monitoring（Analog）；scanning; Squelch on：squelch off;one key calling 1-5（DMR）；Channel annunciation ；Power annunciation; capacity annunciation; channel type annunciation;User ID annunciation
	Long Press	No Function, alarm, TOT, VOX, Emergency Call;Stable Monitoring（Analog）；scanning; Squelch on：squelch off;one key calling 1-5（DMR）；Channel annunciation ；Power annunciation; capacity annunciation; channel type annunciation;User ID annunciation

Function and basic operation

Turning your radio on and off

Turn the Volume/Power knob clockwise to turn the radio on and anticlockwise to turn off.A prompt tone will be announced after power on if the radios pre-programmed to have prompt tone, otherwise, no prompt tone.
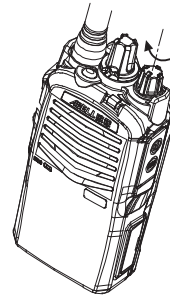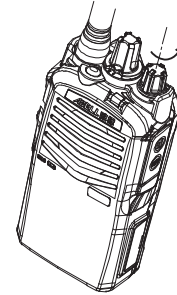
Switch On   Switch Off

Volume adjustment

Press and hold down the squelch off momentary key to hear the continuous beep and turn the volume/power knob to adjust.

Select District

District is a group of channels, this radio can provides three districts, each district has 16 channels.

Operations：

1. press the preprogrammed district button.
2. You will hear a confirmed prompt tone, indicates radio has transferred from district 1 to district 3, or you will hear a negative prompt tone, indicates radio has transferred from district 3 to district 1.

Push-to-talk operation

switch the channel selector to the channel needed.

Transmit：Hold the radio in a vertical position with the microphone 2 cm away from your lip, press PTT, speak to the MIC.

Receive：The LED Indicator turns in green when receive signals, while the speaker making sounds. Adjust Volume knob to change the audio volume.

Private Call：one radio make a call to another radio.

Group Call：The system allows groups of radios to remain muted while other users are talking on the channel.

All Call：The all call means one radio calls to all the other radios which at the same channel.

Digital Channel calling

You can do private call, group call and all call（The authority right of all call has to be opened by Agent）.

The operation method is the same of each call, the difference is that： When a Group Call is received, you hold down the PTT key within the preset time period to call back; When a private call is received, you can hold down the PTT key within the preset time period to call back； You cannot respond to an All Call.

Take single call user A and B for example, operation process as below：

1）A and B select the same digital channel

2）A press PTT to launch a call

3）LED indicator turn in red, A speak to the MIC, release the PTT after speaking.

4）B can receive the call without any operation, the LED is green during the broadcasting.

5）The operation of B calling back will be the same above.

Analog Channel Calling

The difference is that the call object is every radio on the channel, not the contacts who related to signal.

PTT
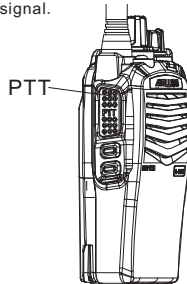
Select Channel

Rotate channel selector to choose channel. A prompt tone will be announced after openning the channel annunciation function. If you hear 'Dee' continuously which indicate that the channel has been programmed.

Channel Selector
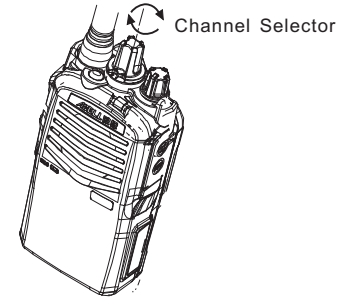
Output Power levels

Function description

When people talk about a power supply's output, they usually say it produces a certain number of watts.The more watts a radio has, the farther it can transmit. When a 2-way radio is used in for short range communication, it's always best to use the low power mode.The high-power mode should be reserved for long-range communication, or for when there are lots of obstacles to penetrate

Value range：Low power／High power

Default value：Low Power

Power rating table

Power Levels	Wattage
High Power	5W
Low Power	1W

Operation method：

Define the programmable key to adjust High／low power modes.

Time out timer(TOT)

The purpose of TOT is to prevent any user from occupying a channel for an extended period. If the preset time expires, the radio will automatically terminate transmission and keep beeping. To stop beeping, please release the PTT key. You must wait for a certain time period (preset by your dealer) to initiate another transmission.

Operation :

Use the Abell programming software to set this feature.
The default time is 60 seconds.

Busy channel lockout

Set or delete the function of busy channel lockout in the channel parameter by software. When the function is enable, no transmitting is permitted in the busy channel. The radio will have a beep sound to inform that the channel is busy when you press PTT.To stop beeping, please release the PTT key. When the channel is free, you can press and hold down the PTT key to transmit.

Scanning

This feature allows you to listen to communication activities on other channels so that you can keep a close track of your team members.
Operation :
1. To enable the feature, press the programmed Scan key in standby mode ; or Switch to a channel on which the feature "Auto Scan" is enabled via the programming software.
2. After the feature is enabled, your radio will scan according to the scan list set for the channel on which scanning starts. The scanning process is as follows : During scanning, the LED flashes red.

   When activities are detected on a channel, the radio will stay on the channel to receive current activities, and the LED glows green.
   To disable this feature, press the programmed Scan key again.

One Key calling

One key calning function including SMS, Voice call.

Operation :

To enable the feature, press the programmed key, then hold the PTT to launch the call.

Adjust Squelch Level

This feature allows you to adjust the squelch threshold required for the radio to unmute. Generally, "High" is used in high noise environment. Higher squelch level requires stronger signal for the radio to unmute. .
Operation:
Press the programmed Adjust Squelch Level key to switch among Normal, High and Low.

Monitor

To receive the weak signal, you can enable the feature "Monitor".
Operation:Press the programmed Monitor key to enable the feature.
To disable the feature, press this key again.

CTCSS/CDCSS Function

CTCSS is a circuit that is used to reduce the annoyance of listening to other users on a shared two-way radio communications channel. It is sometimes called tone squelch.
CDCSS is a circuit that is used to reduce the annoyance of listening to other users on a shared two-way radio communications channel. Where more than one user group is on the same channel , CDCSS mutes the other users if they are using a different CDCSS tone or no CDCSS.

Operation: Use the Abell programming software to set this feature.

Squelch Off

If the feature "Squelch Off" is enabled, the speaker will keep unmuted no matter whether carrier is present.
Operation:
　Press the programmed Squelch Off key to enable the feature, and the radio sounds background noise . To disable the feature, press this key again .
　Hold down the programmed Squelch Off Momentary key to enable the feature, and the radio sounds background noise . To disable the feature, release this key

Emergency Call

Press the Emergency Key to enable this feature, which k3 is always programed as this feature.
(Only can be set with short press, hold down has to be defined as disable Emergency Call)

Disable Emergency Call

Hold down the Emergency Key to enable this feature, which k3 is always programed as this feature.
(Only can be set with hold down, press has to be defined as Emergency Call)

Digital Channel Information

Group Call maintained Time
Users can extend group call status after calling by setting this feature via programming software. During this period, each member of this group can call back directly.

Private Call maintain Time
Users can extend group call status after calling by setting this feature via programming software. During this period,each unit can call back directly.

Receiving Groups List

This feature allows users receive several different groups calls on one Digital Channel.

Transmitting Groups List

Select the people you want to call from the contact list.

DMR

DMR uses TDMA technology which allows two simultaneous conversations within a 12. 5kHz Channel without any interference.

TDMA Direct Mode

Under TDMA direct mode one channel allows two simultaneous conversations. Every unit of one group has to use the same Time division which can avoid interference.
Operation
This feature has been turned on via programming software. After this featue been turned on, switch to Digital channel of TDMA select mode manually or turn on the unit at the Digital channel of TDMA select mode, which can enter TDMA Direct Mode.

Safety Information

Safety and convenient operation

This document provides users security and convenient to use ABELL Radios information.

If you need to know how to use the radios in a hazardous environment, please refer to the operate manual and instruction identified by the factory, the radios with this instruction card what with this function.

In order to ensure the user is always keep it in the above criteria and guidelines to allow it in range of the electromagnetic energy security please hold on the flowing operating procedures.

Radio operating and electromagnetic exposure
When the portable radios transmitting, keep it in vertical position, keep the distance between the speakers and mouse about 2.5-5 centimeters. Also make the radio antenna away from the body or the head about 2.5-5 centimeters when transmitting. If you keep the radios on users body, please confirm that when the radio is transmitting, keep the distance between the body and the antenna about 2.5-5 centimeters.

Electromagnetic interference/electromagnetic compatibility

Notice：If you do not take proper EMC compatibility protection，by design or EMC or internal structure design to ensure EMC compatibility, Almost all electronic devices are affected by electromagnetic interference.

In order to avoid the effect caused by electromagnetic interference or electromagnetic compatibility, please notice, wherever there is a mark "please shut down the radio", please comply with it, for example, hospital will use some of the RF energy sensitive equipment in hospitals and other health facilities.

If required to shut down the radio when you take airplane, please comply with it, please keep aware of the provision and the indicating when you use the radio on the airplane.

Operating warning

Cars with airbags

warning

Do not put the radios on the airbags or the region it may reached
when the airbags spread out, if it is in the region may reached when the airbags spread out, the radios may hurt people following the airbag spread out.

Potentially explosive environment.

If you are in the any potentially explosive environment, please shut down the radios, unless your radios were passed the special
authenticate (such as FM or Cenelec certificate), in that environment, electric Spark could cause an explosion or fire, Resulting in bodily injury or even death.

Battery

Please do not change the battery or charge the battery when you
are in the potentially explosive environment, it may result in explosion when you install or disassembly the batteries.

Blast area or Area with detonators

The environment close to blast area or area with detonators please shut down the radios in advance, in order to avoid the possibly explosive, in blast area or other area with the mark that
"please shut down the radios", be sure to comply with the relevant provisions.

Notice: Potentially explosive atmosphere environment mentioned include fueling areas, such as: the ship's hold, Fuels
and chemicals transport facility and storage sites, with chemicals or dust in the air, the area usually are reminded of shut off the engines, there always with the warning sign in the potentially explosive environment, but not necessarily.

Operate warning

⚠ Be careful

Broken antenna

Please do not use the broken antenna; it may hurt you if the broken antenna touches your skin.

Battery

If the metal conductor such as Jewelry, keys touches the bare electrode, all the batteries maybe cause into broken or personal injury, such as Combustion, metal conductor maybe cause into battery short-circuit and fever, please take care of the charged batteries, especially when it is loaded into a pocket, wallet, or other container with metal objects, need special care.

Radios general maintenance

⚠ Be careful

*Chemicals such as detergents, sprays, alcohol, oil, May cause damage to the housing surface and radios.

*Light to take and grabbing put radios, do not take by antenna.

*Please put on a dust cover when you don't use the accessories.

*When clean the radios, use the cloth dipped in water or neutral soap, Please be careful not make water flows into the interior of radios.

This device complies with 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.

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

‒ This radio is designed for and classified as "Occupational/Controlled Use Only", meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards; NOT intended for use in an General population/uncontrolled environment

‒ DO NOT operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio.

‒ DO NOT transmit for more than 50% of total radio use time, more than 50% of the time can cause RF exposure compliance requirements to be exceeded.

‒ This transmitter may operate with the antenna(s) documented in this filing in Push-to-Talk and body-worn configurations. RF exposure compliance is limited to the specific belt-clip and accessory configurations as documented in this filing and the separation distance between user and the device or its antenna shall be at least 2.5 cm from front face and 0cm from body..