



blackbox<sup>TM</sup>  
2-way radios

# User Manual

*for Blackbox<sup>TM</sup> Bantam<sup>TM</sup> Series*



# RUGGED COMPACT RADIO!



- 16 Channels
- 4 watts / 2 watts
- Scanning
- Lithium Ion Battery
- Rapid Rate Charger
- PC Programmable Freqs
- Customizable Voice Channels
- Rugged & Compact
- NARROWBAND COMPLIANT



Racing      Engine Ring      ATHLETIC  
Hunting      Crowd Control      Manufactur  
Retail      Volunteer      Construction  
Facilities      Security      Health Care  
Warehousing

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## Safety

**Please read rules below. Nonobservance of these rules may cause danger or violation of law.**

- Using this radio must comply with regulations of local government.
- Please turn off the radio before entering a potentially explosive or flammable environment.
- Do not replace or charge battery pack in a potentially explosive or flammable environment.
- Turn off the radio before approaching blast area and detonator area.
- Do not use damaged antenna. Damaged antenna may cause burns.
- Only qualified technicians are allowed to maintain this two-way radio. Do not disassemble the radio.
- To avoid problems caused by electromagnetic interference or electromagnetic compatibility, please turn off the radio in places with a Wireless Communication Transmit Equipment Prohibited ± mark, such as hospitals or other health care facilities. When in a plane, turn off the radio if required.
- Do not put the radio within the possible range of an air bag in a car.
- Do not expose the radio to direct sunlight or near heating devices for a long time.
- Keep the radio vertical and speak near the microphone during transmitting.
- If you carry the radio on the body, please keep the antenna 1 inch (2.5cm) away from the body when transmitting.

## Unpack and Check

Before use, we recommend that you check the packing and identify the items listed below. If any damages has occurred during shipment, please contact your local dealer.

Items	Radio	Antenna	Battery	Charger w/adaptor	Adaptor	Belt Clip	Strap	Warranty Card
Quantity	1	1	1	1	1	1	1	1

Note: For frequency band of antenna, please refer to the label on the bottom of the antenna.

Optional accessories are available according to your requirements. All Blackbox™ Bantam™ accessories with good quality will ensure you clear communication and outstanding performance.

## Get Acquainted

### Battery Information

#### Applicable Battery Model:

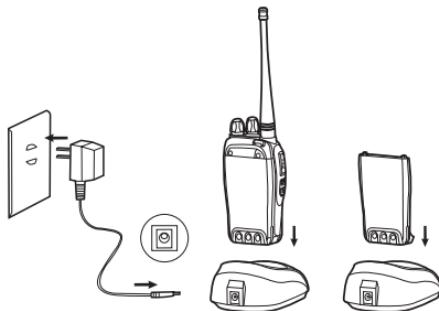
Please charge with Blackbox™ Bantam™ branded battery; Charging with other types of batteries may cause explosion, personal injury, or cause radio to become defective.

#### Note:

1. Do not short-circuit the battery terminals or dispose the battery into fire. Do not disassemble the battery casing.
2. Charging should be done in -0°C ~45°C environment. If temperature is beyond the range, the battery may not be fully charged.
3. Please turn off the radio before charging.
4. Do not pull/plug the adaptor and the battery during charging. This will interfere with the charging procedure.
5. When the battery power is consumed quickly, even after a full charge, please replace with new battery.
6. Do not charge when the battery or radio is wet. Dry it with cloth to avoid possible electric shock.

#### Warning:

Please prevent the battery electrode from contacting with any metal conductors such as jewels or keys. Treat any battery carefully especially when placing it into pocket, wallet or other metal container.



## Charging Steps:

Please charge as follows:

1. Connect the adapter with the charger.
2. Plug the adapter into an AC outlet.
3. The charger is ready for charging if the indicator lights red for one second and goes off. If the indicator flashes, the charger is not ready.
4. Place the battery into the charger slot.
5. The indicator lights red when charging. If the battery power is too low, the indicator flashes. The battery is first trickle charged and turns to normal charging automatically.
6. The battery is fully charged when indicator light is green. The charger stops charging automatically.

## Precautions in Charging

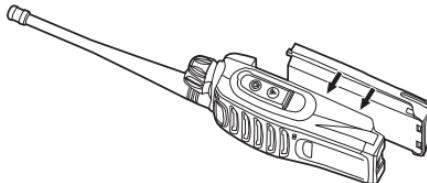
Please charge the battery before initial use or after long storage. Please charge or charge the battery if the power is low. If the battery power is consumed quickly, even after a normal charge, the battery life is finished. Please replace the battery pack.

## Attaching and Removing

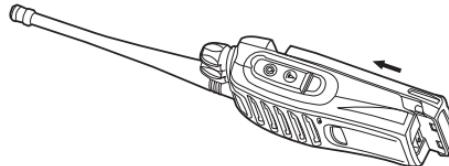
### Attaching and Removing the Battery

#### Attaching the Battery

Match the two grooves of the battery with corresponding guides on the back of the radio. Make sure the full connection and parallel between battery and aluminum chassis.

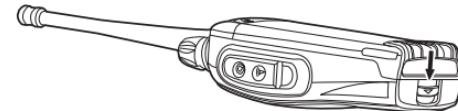


Then push the battery along the guide until the battery latch locks.

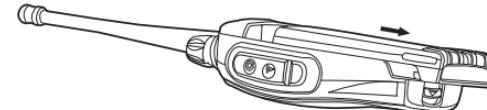


#### Removing of Battery:

Before removing, make sure that the radio is switched off. Then push downwards on the battery latch.



Slide the battery away from the radio.



## Attaching/Removing the Antenna

### Attaching the Antenna (Figure 1)

Screw the antenna into the connector at the top of the radio by holding the bottom of the antenna, and turn it clockwise until secure.

### Removing the Antenna (Figure 2)

Rotate the antenna counter clockwise by holding the bottom of antenna.



Figure 1

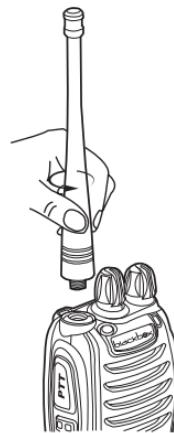


Figure 2

## Attaching/Removing Belt Clip

### Attaching Belt Clip (Figure 3)

Align the screw eyelets of the belt clip with those on the rear of radio and fasten the belt clip with enclosed screws.

### Removing Belt Clip (Figure 4)

Loosen the screws to remove the belt clip.

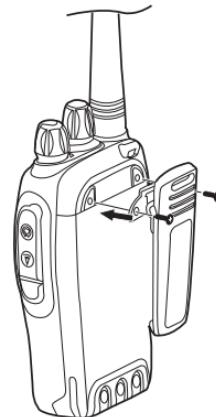


Figure 3



Figure 4

## Attaching External Earphone/Microphone

1. Unclose the cover of Earphone/Microphone jack. No need to remove it. (Figure 5)
2. Insert the Earphone/Microphone into the Earphone/Microphone jack. (Figure 6)

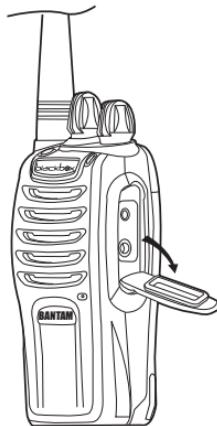


Figure 5

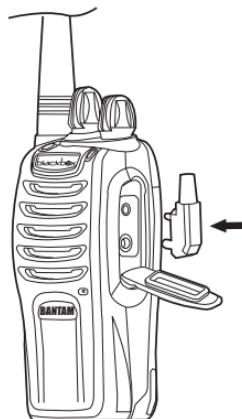
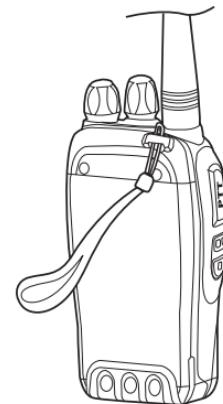


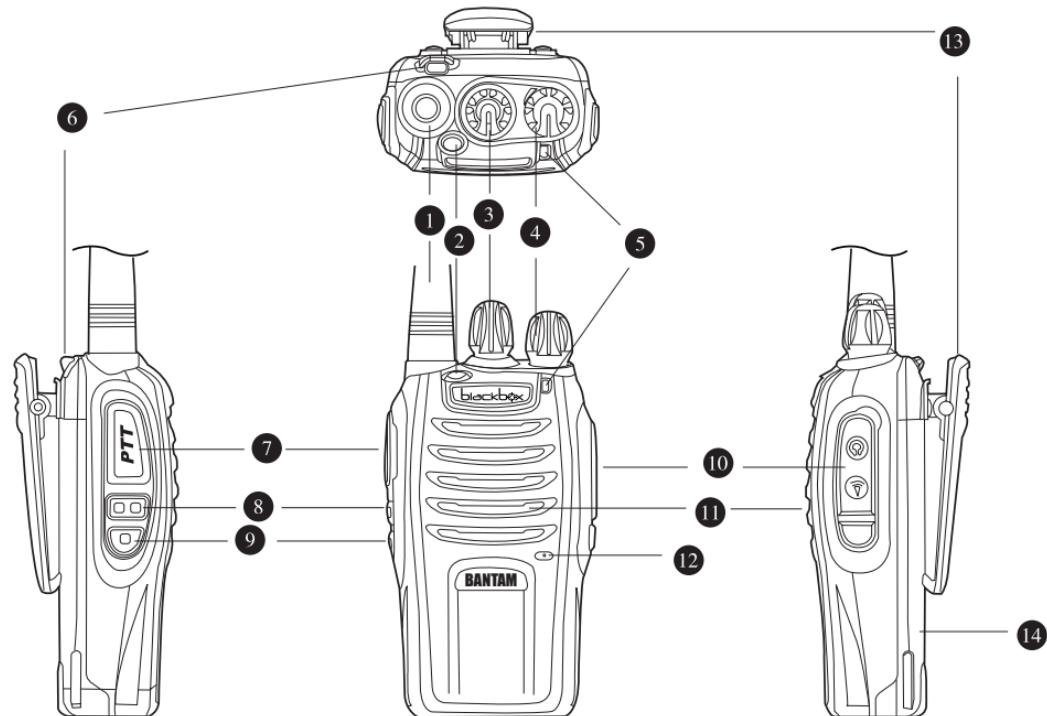
Figure 6

## Attaching the Strap

Thread the strap into the hole at the back of the radio and fasten it.



## Radio Overview



① **Antenna**

Antenna with helical plug is used to transmit and receive signals.

② **Top Key: Programmable Key**

The default setting is special function key.

③ **Channel Selector**

Choose channel and the channel annunciation is available if the voice prompt is on.

④ **Power Switch/Volume Control**

This knob is to turn on/off the radio and adjust volume. Rotate the knob clockwise until a click sounds to turn on the radio. Rotate it further to adjust the volume. Rotate the knob counter clockwise until a click sounds to turn off the radio.

⑤ **LED Indicator**

The LED indicator glows red during transmitting; glows green during receiving; flashes red when the battery power is insufficient; flashes green during scanning.

⑥ **Strap Hole**

The hole is to fasten the strap.

⑦ **PTT (Push-To-Talk) Key**

To transmit, press down the PTT key and speak into the microphone; release it to receive.

⑧ **Side Key 2: Programmable Key**

The default setting is power management.

## Over View (continued)

⑨ **Side Key 1: Programmable Key**

The default setting is conversation management.

⑩ **MIC-SP Jack/ Data Port**

To connect the earphone/microphone or programming cable

⑪ **Speaker**

Output voice.

⑫ **Microphone**

Input voice.

⑬ **Belt Clip**

The radio is easy to carry for you can clip it on your belt.

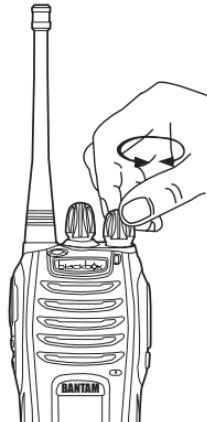
⑭ **Li-ion Battery**

## Basic Operation

### Turning the Radio ON/OFF

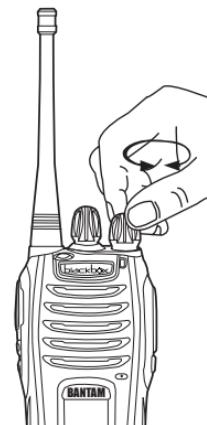
Rotate the Power Switch/Volume Control knob clockwise until a click sounds to turn on the radio. At the same time, a voice indication of the current channel is heard.

Rotate the Power Switch/Volume Control knob counter clockwise until a click sounds to turn off the radio.



### Volume Adjustment

After the radio is turned on, rotate the Power Switch/Volume Control knob to adjust volume.



Tip: you can listen to background noise in monitor mode and adjust the volume.

## Channel Selecting

Rotate the channel to choose your desired channel from 1~16 channels.

You can select the channel according to the number or symbol mark at the bottom of the knob. Also, you can operate according to channel annunciation.



## Make a Call

To make a call, hold down the PTT key and speak into the microphone with normal voice. Please keep the microphone 2 inches away from your mouth.

Tip:

1. Hold down the PTT button and the LED indicator glows red, the radio begins to transmit.
2. If the LED indicator flashes red, the battery power is insufficient. The radio can not transmit when the battery power is not enough for normal operation.

## Receive a Call

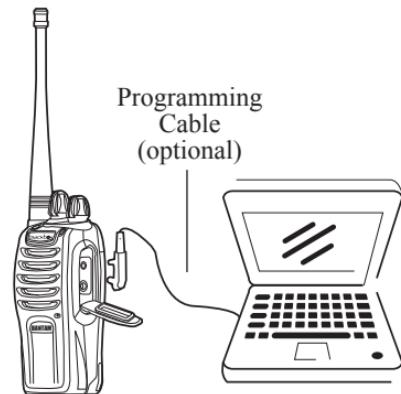
Release the PTT button, the radio begins to receive. You can hear the other voice if you receive a call on your current work channel. If call signal is too weak or you set very high squelch level, you can not hear the call.

## Auxiliary Functions

Auxiliary Functions need to be set through PC software or contact your dealer for programming.

### PC Programming

1. Visit [blackboxradios.com](http://blackboxradios.com) to download the Bantam™ programming software (you can also contact your dealer for programming).
2. Turn off the radio and connect it and PC with the programming cable (see figure on the right).
3. Run the programming software and center operation interface, then turn on the radio. Press “Read” button and write parameter data into the radio.
4. For parameter setting and operation, please refer to the help documents of the software.



## **Programmable Key Settings**

Key Setting menu. The default setting is as follows:

- The default long press duration is 2 seconds. Long press (Top Key) is Alarm
- Short press (Top Key) is Whisper.
- Long press (Side Key 2) is to switch high/low power
- Short press (Side Key 2) is electricity demand.
- Long press (Side Key 1) is sound of encrypt
- Short press (Side Key 1) is monitor.
- You can change the functions of both long key and short key of (Top Key), (Side Key 2) and (Side Key 1) with programming software.
- Those keys can be set as: off/monitor/monitor momentary/sound of encrypt/alarm/electricity demand/whisper/VOX/power.

## **Battery Power**

- The default operation of this function is short press (Side Key 2). Short press (Side Key 2) and the radio will report the battery power by audible indication: Power High, Power Middle, Power Low, Please Charge Battery. You can change corresponding key of this function by yourself through “Key Setting” menu.

## **High/Low Power Switching**

You can set operation power of each channel separately according to your work environment to make maximum use of battery power. When set as low power, the current gets smaller, thus battery operating time is prolonged. High power is 5W and low power is 1W.

1. You can select “Power Select” in “Channel Information” menu to set the operation power as high/low power of each channel separately.
2. The default operation of this function is long press (Side Key 2). You can switch high/low power by long press (Side Key 2).

During standby mode, long press the key and the radio will report power state by audible indication “High/Low”. That means operation power of the channel is successfully changed.

### **Monitor**

The default operation of this function is short press (Side Key 1) and can be set as (Top Key) / (Side Key 2) / (Side Key 1) by “Key Setting” menu. Press (Side Key 1) to hear a weak signal and to help you adjust the volume when no signal is received. Press again to cancel monitor.

### **Sound Encrypt (Voice Encryption)**

The default operation of this function is long press (Side Key 1). When this function is available, the sound is transmitted after encryption. The other side needs to decrypt the voice and hear the sound. Otherwise, the sound received is noise or unintelligible audio.

1. Long press (Side Key 1) and the radio sends voice prompt “Voice Encrypt On”. Long press (Side Key 1) again and the radio sends voice prompt “Voice Encrypt Off”.
2. You can change corresponding key of this function by yourself through “Key Setting” menu according to your needs.
3. You can turn this function on/off by “Sound of Encryption” option in “Optional Feature”. Select it to turn on the function and unselect it to turn off the function.

### **Whisper**

The default operation of this function is short press (Top Key).

With this function, you can be clearly hear even if you speak into the radio with a very low voice.

1. Short press (Top Key) and the radio sends voice prompt “Whisper On”. Short press (Top Key) again and the radio sends voice prompt “Whisper Off”.
2. You can change corresponding key of this function by yourself through “Key Setting” menu according to your needs.

3. Whisper level can be set as 1, 2 and 3. Setting whisper level will set corresponding microphone receiving volume level. For example, 1 is most sensitive, 3 is least sensitive (the default is set as 2). Select Whisper Function” to turn on Whisper and unselect to turn off Whisper.

### **Alarm**

The default operation of this function is long press (Top Key).

With this function turned on, long press (Top Key) and the radio alarms and LED glows red. At the same time it sends emergency signal to partners on the same channel and the partner radio will sound alarm tone after receiving the signal. The radio will sound alarm tone after transmitting the signal.

1. To stop local alarm, press (PTT) key to return to normal operating status. Partner radio resumes stand by mode when pressing (PTT) key after receiving emergency signal.
2. If the radio gets feedback of emergency signal from partner radio, emergency signal will be cancelled when you press (PTT) key to talk back. Partner radio needs to press (PTT) key to talk after receiving emergency signal.
3. After sending the emergency signal, if the radio wants to receive from the partner radio, you must press (PTT) key or the radio can not receive from the partner radio and sends emergency signal every 5 seconds.
4. You can turn this function on/off by “Alarm” option in “Optioanl Feature”. Select it to enable the function and unselect it to disable the function.

### **VOX**

With VOX you can directly speak into the microphone without holding down (PTT) key. LED glows red and your voice will be transmitted.

You can change corresponding key of this function by yourself through “VOX” menu in the software.

1. VOX level: The default level setting of VOX is 2. VOX level can be set as 1, 2, 3. Voice control sensitivity of VOX can be set by changing the VOX level.
2. Whisper VOX (using earphone): The default setting of this fuction is off. Select it to enable whisper VOX and unselect it to disable whisper VOX.

3. VOX function: The default setting of this function is off. Select it to enable VOX and unselect it to disable VOX. During the VOX operation, press (PTT) and VOX is cancelled. Restart the radio and VOX is enabled. Moreover, if the radio operates in whisper VOX mode with earphone equipped, the radio beeps when VOX is enabled.

Note: If you select both “whisper VOX” and the “VOX Function” item, the VOX is disabled.

## **Other Function Settings**

### **Voice Prompts**

The default setting for this function is voice prompts in English. You can know current work status through voice prompts.

1. In the “Voice/Beep Tone” in “Optional Feature” menu, you can set indication tone as OFF/English/Tone. E.g. Select “off” to disable voice prompts.
2. Channel Annunciation: The radio will report the current channel number when you switch to another channel.
3. Low Battery Alert: The radio will alert you by voice prompts when the battery power becomes low.
4. Scan On Indication: If current channel is set as scan channel, the radio will inform you by voice prompts.

### **Low Battery Alert**

The default setting of this function is voice prompts in English. When battery power reaches preset value when Tx/Rx, the LED flashes red and the radio will indicate user as preset procedure. Voice indication can be set as “Beep/Please change the battery”. The radio stops transmitting after low battery alert. Please replace new battery or charge the battery.

You can select your required language through “Voice/Beep Tone” in “optional Feature” menu.

### **Battery Save**

The radio automatically enters battery save mode 5 seconds after no signal is received or transmitted and no key operation is conducted. The battery save mode is off when a signal is received or key operation is conducted. The default save scale is 1:3. You can change save scale as off, 1:1 1:2 1:3 1:4 through “save scale” option in “Optional Feature”. Selecting “off” can cancel auto battery save.

## **DTMF (PTT ID/ANI)**

According to TX/Rx needs, you can pre-input DTMF code (up to 8 digits, consisted with 1234567890ABCD\*#) in “PTT ID” item in “Optional Feature” menu. Also you can decide DTMF code is sent at “Begin of Tx” or “End of Tx”. These two items are not chosen in default setting.

You can edit DTMF code setting through “DTMF” item in “Optional Feature” menu.

DTMF Speed (digit/s): Setting Range is 4-15. Default is 6.

First Digit Time (ms): Setting Range is 0~100ms. Default is 0ms.

First Digit Delay (ms): Setting Range is 100~1000ms. Default is 100ms.

## **Lock Check**

The default setting of this function is on. You can change it in “Lock Check” in “Optional Feature” menu.

When this items is set as “Check”, the radio will sound a continuous “Beep” when PLL overclocks or is unable to work normally. When this item is set as “Off”, the radio will not make lock check of PLL.

## **Busy Channel Lock**

This function can prevent other radios using the same channel from interfering with you.

The default setting of this function is off. If the function of selected channels enabled by programming software or by local dealer, press (PTT) key while the channel is in use, the radio will generate alert tone and transmission is prohibited. Release (PTT) key to stop the alert tone. When channel is not in use, press (PTT) key again and transmission is enabled.

## Scan

The default setting of this function is off. When this function is enabled, rotate channel selector knob to 16th channel, LED flashes green and the radio will check all conversations from CH1 to CH15. The radio automatically stops at the channel on which a signal is received.

You can set through “Scan Information” item in “Optional Feature”:

1. Scan Type: Selecting “off”, CH16 is a normal operating channel. Selecting “Carrier Operate” when rotate the channel selector to 16th channel, when radio starts scan.
2. Dropout Delay Time: The Dropout Delay Time is the time from the end of a received call to the time scanning automatically resumes. Setting range is 0.5~64.5s or scan pauses. The default setting of this item is 3.5s.
3. TX Dwell Time: TX Dwell Time is the time from the end of transmission to the time scanning automatically resumes. Setting range is 0.5~64.5s or scan pauses. The default setting of this item is 3.5s.

## Squelch

Set squelch level to decide how strong the signal is to unmute the speaker. The lower the squelch level the stronger the background noise to unmute the speaker the larger the talk range and the weaker the Rx anti-interference ability.

The default setting of this function is Level 4. You can set through “Squelch Level” option in “Optional Feature”. Setting range is 0~9. Selecting “0” causes the squelch open. The higher the squelch level, the harder to open the squelch.

## Time Out Timer (TOT)

Time out timer is used to prevent someone from using the same channel for a long time. At the same time to avoid radio damage, the cause of long time transmission. If the transmission exceeds the preset time, transmission will be inhibited and alert tone will sound. To stop the alert tone, release the (PTT) key. Press (PTT) key again and transmission is enabled.

The default setting of this function is 180s. You can set through “Time Out Timer” item in “Optional Feature” menu. The maximum time is 5 minutes.

## **25KHz/12.5KHz**

The default setting is 25KHz. You can decide whether the channel works as 25KHz or 12.5KHz through “W/N” item in “Channel Information” menu.

## **CTSS/CDCSS**

CTSS/CDCSS is a sub-audio signal, mainly used to avoid unwanted conversations on the same channel. With CTSS/CDCSS set, you can only hear conversations with matched CTSS/CDCSS within effective talk range. Without CTSS/CDCSS, you will receive all conversations on the same channel within effective talk range. You can preset CTSS/CDCSS signaling through “CTC/DCS ENC” item in “Channel Information” menu or by your local dealer.

## **Invalid Channel Indication**

If current operating channel is invalid channel, the radio will send continuous “Dududu” as alert tone, which means current channel is unable to transmit or receive.

## **Battery Power Indication**

This function enables you know residual battery power at any time and place.

Turn on the radio and LED will indicate residual battery power L1, L2, L3 and L4 by flash times: 1, 2, 3 and 4. L4 means the battery power is full. L1 means the battery power is lower than minimum normal operating power capacity and should be replaced in time.

## **Power Protection**

During use or maintenance, transmission is prohibited if the power source is improper or working voltage is higher or lower than normal working voltage.

If the work voltage is lower than 6.2v or higher than 9.5v, transmission is disabled.

## Specification

### General

Frequency Range	UHF: 400-470MHz VHF: 136-174MHz
Channel Capacity	16 (15+S)
Channel Spacing	25.0kHz / 12.5kHz
Frequency Stability	±2.5PPM
Operating Temperature	-25~+55°C
Antenna Impedence	50Ω
Li-ion Battery	1500mAh
Operating Voltage	7.5V
Dimension (W×H×D)	2.3" × 4.5" × 1.34" or 59mm x 115mm x 34mm
Weight (with antenna & battery)	6.98 oz. or 198g

### Transmitter

RF Power (H/L)	UHF: 4W/1W VHF: 5W/1W
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### Receiver

Audio Distortion	≤5%
Reference Sensitivity	0.15uV/ 0.18uV
Adjacent Channel Selectivity	65dB / 55dB
Intermediation Reject Ratio	55dB
Audio Power Output	Maximum: ≥0.6W

## Appendix: Technical Terms

Name	Description
CTCSS / CDCSS	CTCSS / CDCSS is a kind of signaling attached to audio signal. If CTCSS / CDCSS of transmitter is the same as that of Receiver, the speaker is unmuted and sound comes out. Otherwise sound can not come out.
Monitor	This function enables you to hear all calls even with unmatched CTCSS / CDCSS.
Scan	A way to hear conversations on all channels.
BCL	When this channel is in use by others, your radio is prohibited to transmit on the channel to avoid interference.
Wired Clone	This is a way to clone parameters from one radio to another one.
TOT	Time out timer is used to prevent someone from using the same channel for a long time. At the same time to avoid radio damage because of long time transmission.
Squelch	This is to solve problems of talk quality and noise. Squelch is to suppress the background noise and keep the radio quiet when no signal is received. Squelch mutes the radio when no signal is received. Turn on the Squelch, and you will hear the sound from the speaker.
Squelch Level	Noise strength is inversely proportional with signal strength. The stronger the signal, the weaker the noise is. The noise is divided to several levels according to its strength. User can select it as practical work needs.
VOX	VOX enables user to speak into the radio without pressing (PTT) key and the sound is transmitted.
Whisper	With whisper function on and the radio equipped with earphone, you can speak into the microphone even with any weak noise and your voice still can be clearly heard.
Alarm/Emergency Alert	This function enables user to send emergency alert to other users on the same channel. Other radios on the same channel will sound emergency alert after received emergency signal.
PTT ID	With this function on, the radio will send ID code when pressing or releasing (PTT) key, easy for the other radio to identify and management of control center.

## **Warranty and Return Policy 2011**

Defects in material or workmanship under normal use and service, items will be repaired or replaced free of charge for 2 Years from date code on product. Simply contact your salesperson for repair or replacement.

Blackbox Radios warrants all products against **manufacturer's** defects as long as the product is still under warranty. The forgoing warranty is limited and is not applicable to: (i) normal wear and tear; (ii) defects or damage caused by misuse, accident (including without limitation collision, fire and the spillage of food or liquid), neglect, abuse, alteration, unusual stress, modification, improper or unauthorized repair, installation, alteration, wiring, or testing, improper storage, use in an unapproved device or if the serial number has been removed; (iii) use not in accordance with the documentation; and (iv) damage caused by the equipment with which the product is used. Visible physical damage invalidates warranty. Incomplete product kits will not be accepted for replacement or repair.

Shipment errors must be reported within **3 days** of receipt of goods in order to get replacements.

Blackbox Radios does not accept returns on custom orders. All custom orders are final. Items may only be returned for credit if they are unused, in original packaging and purchased within the last thirty (30) days. There will be a 20% restocking fee to ALL items returned for credit that meet the above stipulations. **Blackbox Radios does not issue refunds** and we reserve the right to not issue credits.

### **Non-Warranty Repairs**

Blackbox Radios standard labor rate is \$60.00 an hour with a minimum requirement of thirty minutes. This does not apply to water-damaged units. If a water-damaged unit is deemed repairable, the fee may be up to \$85.00 per unit. The cost of parts varies and is in addition to the labor chargers. Radio Programming fees are set at \$5.00 per unit. All goods repaired will require a signature for authorization to do the labor.

#### RETURN TO CUSTOMER (RTC ITEMS)

Items returned that are deemed "non manufacturers defect," have the date code missing, or are not within the proper warranty time-period may be repaired with a labor fee at the sole discretion of Blackbox Radios. Items deemed "RTC" are not covered under Blackbox Radios, warranty policy and the customer will be responsible for paying the shipping costs to return the products back to the customer. If the customer does not want to receive the RTC items and pay the shipping costs, Blackbox Radios will dispose of the products.

By returning a product for repair, the owner grants Blackbox Radios permission to open and disassemble the product as required for evaluation. In all cases, Blackbox Radios has sole responsibility for determining the cause and nature of failure, and Blackbox Radios determination with regard thereto shall be final.

Customers pay for shipping to and from Blackbox Radios, the cost of the non-warranty repair will require payment in the form of Visa, MasterCard, American Express or COD. Customers with open account status may be billed directly, if a purchase order for the repairs and shipping is issued. If the customer does not approve the repairs through issuing a purchase order, the customer will be responsible for paying the freight charges to ship the product back.

## **FCC NOTICE:**

**This device complies with Part 15 and Part 90 of the FCC Rules and is listed.**

Operational 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.

This equipment generates RF energy and if not installed or used in accordance with the instructions, may cause harmful interference to radio communications and other devices . there is no guarantee that interference will not occur ,If this equipment does cause harmful interference which can be determined by turning the equipment on or off or transmitting momentarily ,the user is encouraged to try to correct the interference by one or more of the following methods:

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 that is different from that to the receiver is connected.
- Consult the dealer or an experienced radio/TV/communications technician

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