

BK® TECHNOLOGIES

BKR 9000

Portable Digital Radio User Manual

P25

bktechnologies.com

Contents

Introduction **1**

FCC Requirements **1**

Innovation, Science and Economic Development Canada Compliance **3**

Safety Precautions **5**

Information and Options **8**

Battery Installation and Removal **9**

Battery Care and Maintenance **10**

Antenna Installation and Removal **10**

Radio Controls **11**

Main Display **12**

Top Display **14**

Programmable Switch and Button Functions **14**
Options and Labels 15

Channel/Zone Selection Options **18**
Channel/Zone Selector Knob 18
Button/Menu Item Selection 18
Direct Keypad Entry 18
Using Knob and Button Operations Together 19

Basic Radio Operation **19**

Command Zone Operation **20**
Building a Command Zone [CHAN+] 20
Editing a Command Zone [CHAN-] 20

Code Guard/NAC Operation **21**
Code Guard Receive 21

Code Guard Transmit....21
Analog Squelch Control....21
APCO Project 25 Digital Squelch Control....22

Mixed Mode Operation....23

Trunking Channel Basic Operation....24

Scan Options....25
Channel Scan [SCAN]....25
Channel Scan List [SCN+]....26
Talkback Scan....26
Vote Scan [Requires Option BKR0581]....26
Dual Mode Scan [DSCN]....27
Enhanced Scan [ESCN]....27
Priority Scan [PSCN]....27
Priority Channel Select [PRI]....28
Zone Scan [ZSCN]....29
Zone Scan List [ZSC+]....29

Pick List Options....30
TX/RX CxCSS Picklist [TXCG] [RXCG]....30
TX/RX Network Access Code Picklist [TNAC] [RNAC]....30
Talk Group ID Picklist [TGID]....31
Encryption Key Picklist [KEY]....31
Keyset Picklist [KSET]....31

Unit-to-Unit Call Options....32

Emergency Signaling Options....34

Encryption Operation....35
Required Setup....35
Basic Operation....35
Transmit Secure [SEC]....36
Transmit Encryption Key Selection [KEY]....36
User Selectable Encryption Keyset [KEYST]....36
Rekey Request [RKEY]....37
Keyset Viewing and Selecting [KSET]....37
Zeroizing [ZERO]....37

Messaging 38
Text Messaging [TXT].....38
Short Message Update [MSG].....40
User Update Messaging [STS].....40

Paging and Call Alert 42
Conventional Two-Tone/DTMF/MDC1200 Paging [MUTE] 42
Call Alert Paging [ALRT] 42
Radio Check [RCHK] 43

Radio Inhibit/Enable [INH]/[UNINH].....44

Other Options and Functions 45
Backlight [LITE].....45
Battery Life [LIFE] 45
Busy Channel Operation.....45
Channel Select [CHAN] 46
Cloning [CLON].....46
Contrast [CON].....47
Control Lockout [LCK].....47
Date and Time [DATE] 47
DMS List Edit [DSED] 48
Global Positioning [GPS].....48
Keypad Mute 48
Keypad Programming 49
Minimum Volume [VOL] 49
Monitor [MON].....49
Nuisance Channel Delete [DEL] 49
Phone [PHN] and Hang Up [HANG] 50
Power Down [PWRD].....50
Radio Accountability Tone [RAT] 50
Radio info 50
Repeater Talkaround [T/A] 50
RSM LEDs [LEDS] 51
RSM Speaker Attenuation [ATTN] 51
Send Alert Tone [SNDT] 51
Send Signal [SEND].....51
Squelch Adjust [SQL] 51
Site Display [STDS].....51
Site Lock [STLK] 52
Site Search [STSR].....52
Surveillance Mode [SURV] 52
System Test.....52

Transmit Digital [TXAD] 52
Transmit Power [PWR] 53
Two-Tone Select [TONE] 53
Versions 53
Voice Annunciation Mute [MUTE] 53
Zone Select [ZONE] *(Conventional and Trunked Channels)* *54*

Keypad Programming 55
Keypad Programming Navigation 55
Entering Keypad Programming Mode 55
Global, System, Zone and Channel Parameters 56
Global Settings 56
Displayed Information Lines 56
User Password 58
System Settings 58
System Priority 1 or 2 Channel 58
Tx on Priority 1 Channel 58
Zone Settings 58
Add Zone 58
Delete Zone 59
Edit Zone 59
Channel Settings 59
Add Channel 60
Delete Channel 60
Edit Channel 60
P25 ID Unit Call/Receive List 62
User Selectable Code Guards 62
User Selectable Network Access Codes 64
User Selectable Talkgroup IDs 64

BK Technologies Warranty Information 65

My Radio Settings 67

Introduction

Congratulations on your purchase of the BKR9000 Portable radio from BK Technologies.

The BKR9000 APCO Project 25 radio offers an array of programmable functionality to help radio users get the most out of their portable communications. Check with your BK Technologies dealer or communications officer for information on the programmed functions of your radio prior to operation.

This manual contains information concerning the operation procedures for the BKR9000 Portable radio. The BKR9000 has been designed to meet the tough requirements of today's communications environment. Please take a moment to read the information in this manual so you can get optimum performance from your new radio.

FCC Requirements

Your radio must be properly licensed by the Federal Communications Commission prior to use. Your BK Technologies dealer can assist you in meeting these requirements. Your dealer will program each radio with your authorized frequencies, signaling codes, etc., and will be there to meet your communications needs as your system expands.

The FCC rules require manufacturers to comply with the FCC RF energy exposure limits for portable 2-way radios before they can be marketed in the U.S. When 2-way radios are used as a consequence of employment, the FCC requires users to be fully aware of and able to control their exposure to meet occupational requirements. Exposure awareness can be facilitated by the use of a product label directing users to specific user awareness information. Your BKR9000 2-way radio has a RF exposure product label. Also, your BK5000 owner's and service manuals include information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

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 BK Technologies could void the user's authority to operate this equipment.

Note: 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.

Compliance with RF Exposure Standards

Your BKR9000 2-way radio is designed and tested to comply with a number of national and international standards and guidelines (listed below) for human exposure to radio frequency electromagnetic energy. This radio complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at operating duty factors of up to 50% transmitting and is authorized by the FCC for occupational use only. In terms of measuring RF energy for compliance with the FCC exposure guidelines, your radio radiates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in Standby Mode. Note: The approved batteries supplied with this radio are rated for a 5-5-90 duty factor (5% talk - 5% listen - 90% standby), even though this radio complies with the FCC occupational RF exposure limits and may operate at duty factors of up to 50% talk.

Your BKR9000 2-way radio complies with the following RF energy exposure standards and guidelines:

United States Federal Communications Commission, Code of Federal Regulations; 47 CFR §§ 1.1307, 1.1310, 2.1091 and 2.1093

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 Edition

Innovation, Science and Economic Development Canada Compliance

This device complies with Industry Canada's license-exempt RSSs. 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 radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

WARNING:

Under Innovation, Science and Economic Development Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

1.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée quivalente (p.i.r.e.) ne dépassepas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

The BKR9000 Radio Transmitter has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (identifier le dispositif par son numéro de certification ou son numéro de modèle s'il fait partie du matériel de

catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Operation in the 5150-5250 MHz band is for indoor use only.

Le fonctionnement dans la fréquence 5150-5250 MHz est réservé à une utilisation d'intérieur uniquement.

Approved Antennas:

Refer to www.bktechnologies.com for any updates to the approved accessories.

Antenna
BKR0893-148-E (All Band Antenna
BKR0892-180 (Dual Band Antenna)
BKR0813 (50 cm VHF-GPS Whip Antenna)

Please refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits.

http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01904.html

http://www.ic.gc.ca/eic/site/ceb-bhst.nsf/eng/h_tt00080.html

Safety Precautions



• Do not operate the transmitter in close proximity to blasting caps.

• Do not operate the radio in an explosive atmosphere (petroleum fuels, solvents, dust, etc.) unless your radio is an intrinsically safe model designed for such use.

RF ENERGY EXPOSURE AWARENESS AND CONTROL INFORMATION, AND OPERATIONAL INSTRUCTIONS FOR FCC OCCUPATIONAL USE REQUIREMENTS

BEFORE USING YOUR PORTABLE 2-WAY RADIO, READ THIS IMPORTANT RF ENERGY AWARENESS AND CONTROL INFORMATION AND OPERATIONAL INSTRUCTIONS TO ENSURE COMPLIANCE WITH THE FCC'S RF EXPOSURE GUIDELINES.

NOTICE: This radio is intended for use in occupational/controlled conditions, where users have full knowledge of their exposure and can exercise control over their exposure to meet FCC limits. This radio device is NOT authorized for general population, consumer, or any other use.

This 2-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy; other forms include electric power, radar, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material. The energy levels associated with radio waves from portable 2-way radios, when properly used, are not great enough to cause biological damage.

Experts in science, engineering, medicine, health and industry work with organizations to develop standards for exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection. All 2-way radios

marketed in North America are designed, manufactured and tested to ensure they meet government established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of 2-way radios.

These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it. Please refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits.

http://www.fcc.gov/oet/rfsafety/rf-faqs.html

http://www.osha.gov/SLTC/radiofrequencyradiation/index.html

RF Exposure Compliance and Control Guidelines and Operation Instructions

To control your exposure and ensure compliance with the occupational/ controlled environment exposure limits always adhere to the following procedures.

Guidelines:
Do not remove the RF Exposure Label from the device.

User awareness instructions must accompany device when transferred to other users. Do not use this device if the operational requirements described herein are not met.

Operating Instructions:

Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), push the Push-To-Talk (PTT) button. To receive calls, release the PTT button. Transmitting 50% of the time, or less, is important because this radio generates measurable RF energy exposure only when transmitting (in terms of measuring for standards compliance).

Hold the radio in a vertical position in front of face with the microphone (and the other parts of the radio, including the antenna) at least one inch (2.5 cm) away from the nose. Keeping the radio at the proper distance is important because RF exposures decrease with distance from the antenna. Antenna should be kept away from eyes.

When worn on the body, always place the radio in a BK Technologies approved clip, holder, holster, case, or body harness for this product. Using approved body-worn accessories is important because the use of BK Technologies or other manufacturer’s non-approved accessories may result in exposure levels which exceed the FCC’s occupational/ controlled environment RF exposure limits.

If you are not using a body-worn accessory and are not using the radio in the intended use position in front of the face, then ensure the antenna and the radio are kept at least one inch (2.5 cm) from the body when transmitting. Keeping the radio at the proper distance is important because RF exposures decrease with increasing distance from the antenna.

Changes or modifications to the radio and/or equipment that is not approved by BK Technologies could void the user's authority to operate the radio.

Use only BK Technologies approved supplied or replacement antennas, batteries, and accessories. Use of non-BK Technologies approved antennas, batteries, and accessories may exceed the FCC RF exposure guidelines.

For a list of BK Technologies approved accessories visit the following website: http://www.bktechnologies.com.

The AMBE® voice compression software included in this product is protected by intellectual property rights including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc. The user of this software is explicitly prohibited from attempting to decompile, reverse engineer, or disassemble the object code, or in any other way convert the object code into a human-readable form. This software is licensed solely for use within this product. US Patent Nos. #6,912,495 B2, #5,870,405, #5,826,222, #5,754,974, #5,715,365, #5,701,390, #5,649,050, #5,630,011, #5,581,656, #5,517,511, #5,491,772, #5,247,579, #5,226,084, and #5,195,166.

Contact Information

For additional information on exposure requirements or other information, visit website http://www.bktechnologies.com.

Information and Options

The BKR9000 is an All Band Land Mobile Radio. Up to 5000 channels can be programmed into the radio. The channels may be divided into operating zones.

Zones can be designated as standard operating zones or command zones. Command zones are made of up of channels selected from standard operating zones.

Band	Operating Frequency	RF Power Output (Low-Hi)
VHF	136 - 174MHz	1 - 6W
UHF	380 - 520MHz	1 - 5W
700	768 - 806MHz	1 - 3.0W
800	806 - 869MHz	1 - 3.0W

Features

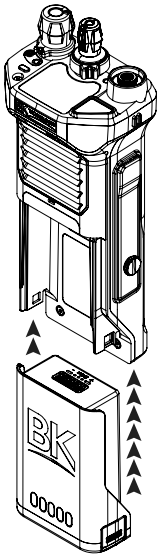
Factory installed options are listed on a label located on the speaker side of your radio with the battery removed.

Features	Comments
Encryption	FIPS 140-3 Level 3
OTAR	Support Encryption
Cloning	BKR, KNG2, Legacy
GPS	Receives GPS and GLONASS data
Soft Power Down	
P25 Trunking	P25 FDMA, P25 TDMA, P25 ISSI Roaming

Battery Installation and Removal

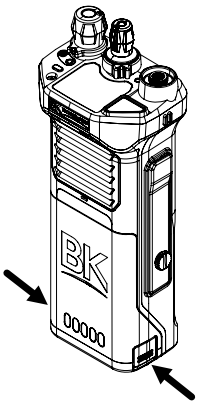
NOTE: For safety reasons, rechargeable battery packs are shipped uncharged or only partially charged. Therefore, a rechargeable battery pack should be properly charged in an approved battery charger before use.

Only BK Technologies approved batteries should be used to insure proper operation and specifications.



Installing the Battery

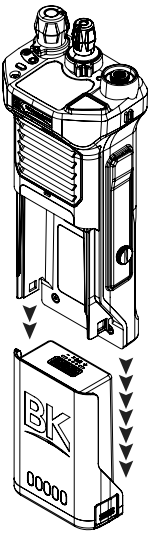
1. Turn the volume knob to the off position.
2. Align the battery with the radio as shown.
3. Push the battery upwards into the radio until release tabs "click" into place.



Removing the Battery

1. Push in the release tabs on each side of the battery.
2. Pull the battery downwards away from the radio.

NOTE: All information programmed into the radio is maintained even when the battery pack is removed.



Battery Care and Maintenance

BKR9000 battery packs are available in a variety of capacities and types for special applications. Rechargeable battery packs can be charged separately or while attached to a radio.

Periodically check the contacts on the battery pack for dirt or debris that could prevent a good electrical contact with the charging base.



WARNING!

DO NOT DROP A BATTERY PACK INTO FIRE.

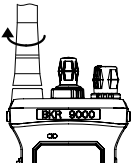
AN EXPLOSION MAY OCCUR

Antenna Installation and Removal

NOTE: Transmitting without an antenna could result in damage to your radio.

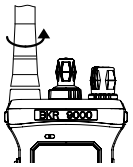
Use BK Technologies approved antennas only. Use of non-qualified or mismatched antennas could result in diminished radio operation. Published radio specifications cannot be guaranteed with non-approved antennas. Bent, broken or damaged antennas should be replaced.

Installing the Antenna



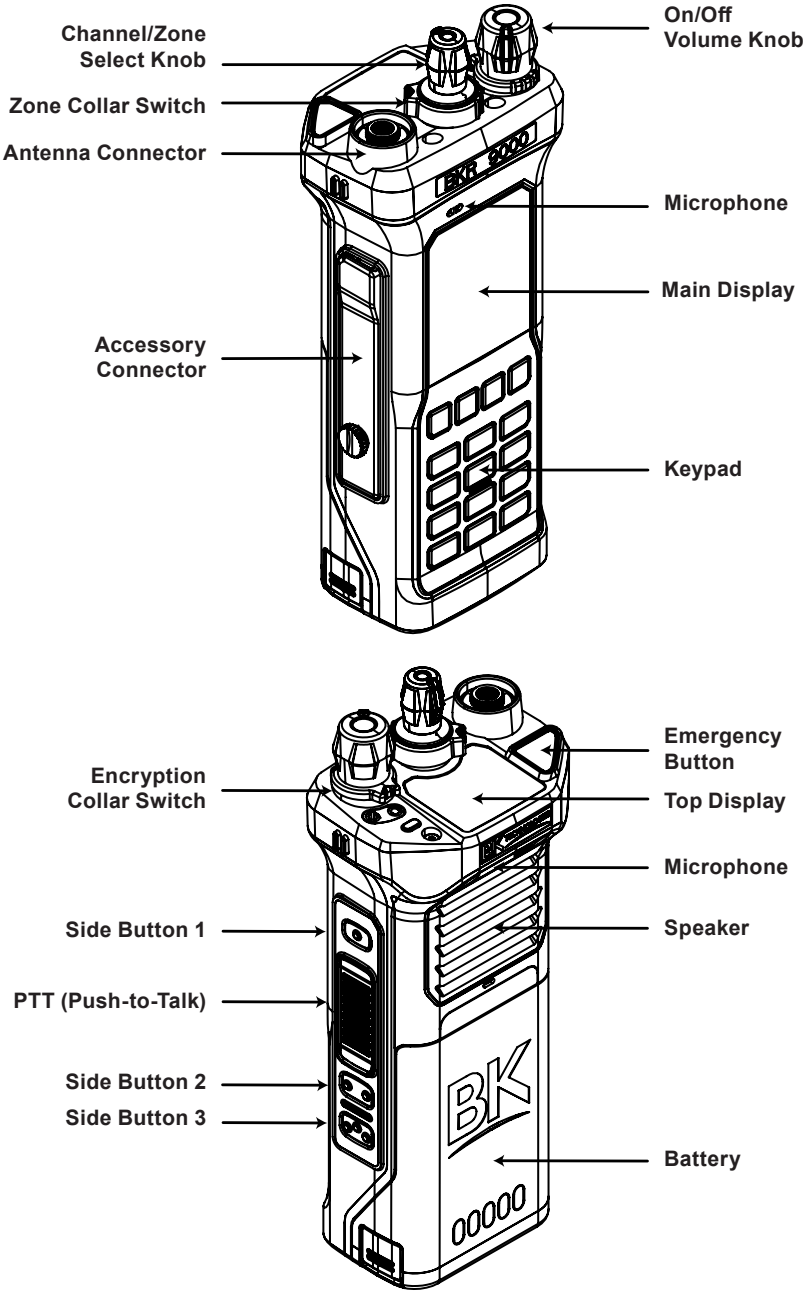
Insert the radio's antenna connector into the threaded connector of the antenna and turn it clockwise until it is firmly seated.

Removing the Antenna

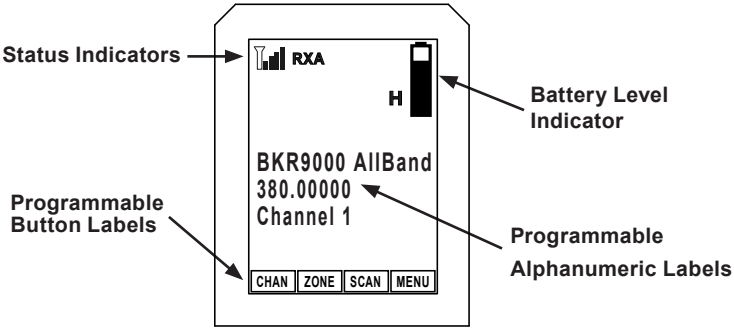


Holding the base, turn the antenna counterclockwise until released.

Radio Controls



Main Display



The BKR9000 main display can be programmed in RES (Radio Editor Software) for a variety of options and functionality. Check with your BK Technologies dealer or communications officer for information on the programmed functions of your radio.

NOTE: The BKR9000 main display can be programmed to display different information when a trunking or conventional channel is selected.

Status Indicators			
RXD, RXA	Receive Digital, Receive Analog, Hold Time Active	iP	Trunking IP Data Enabled
TXD, TXA	Transmit Digital, Transmit Analog		Monitor Mode
L , **H**	Low or High transmit power		Open Audio
CZ	Channel Scan On		Voice Mute Enabled
DZ	Dual Mode Scan On		GPS Enabled
ZZ	Zone Scan On		
PZ	Priority Scan On		
|→|	Repeater Talkaround Enabled		
∅	Selected channel is encrypted. Flashing means a reception is decrypted - solid means next TX will be encrypted.		

Alphanumeric Label Options	
NOTE: Three radio information lines are programmable with RES.	
None	No information is displayed.
Channel Label	Alphanumeric label of currently selected channel or active scanned channel.
Frequency*	Operating frequency of currently selected channel or active scanned channel.
Channel Number	Channel number of currently selected channel or active scanned channel.
Unit ID	Shows your P25 Unit ID While receiving, the ID of the radio transmitting the message is displayed If the received ID is programmed in your radio's Call List, the corresponding label will be displayed
Rx'd TGID	P25 Talk Group ID of the radio transmitting the message currently being received.
Rx Picklist Selections*	NAC, TGID or Code Guard currently selected from the programmable RX Pick Lists.
Tx Picklist Selections*	NAC, TGID or Code Guard currently selected from the programmable TX Pick Lists.
Zone Label	Label of currently selected zone.
Zone and Channel #	Currently selected zone and channel numbers.
Zone Number	Currently selected zone number.
Rx/Tx Key	Currently selected encryption key.
Rx Subaudible*	Displays CxCSS value of received signal.
Channel # and Zone	Currently selected channel numbers and zone.
Radio Name	Displays radio name.
Site Affiliation Alias**	Displays site afilliation alias.
Date & Time	Displays date and time.
GPS Peer Location	Displays the GPS location of a programmed peer.

*Conventional Channels Only **Trunking Channels Only

Top Display



The BKR9000 top display can be programmed in RES for a variety of options and functionality. The orientation can also be changed in RES or by using the Top Display Orientation menu item or Flip Top Display programmed button. The same Alphanumeric Label Options that are available for the Main Display are available for the Top Display.

Note: One radio information line is programmable with RES.

Programmable Switch and Button Functions

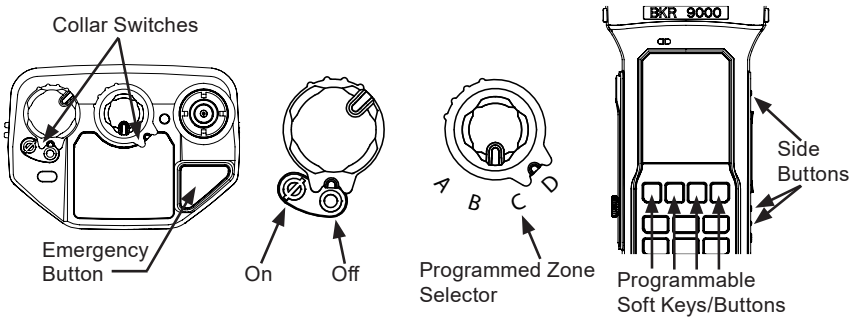
The BKR9000 portable radio is equipped with 10 programmable control buttons and two programmable switches. Switch and button functions are assigned using RES.

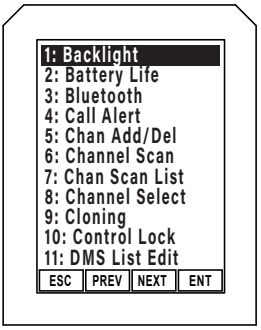
NOTE: Switches, keypad, buttons and menu items can be programmed for different functions when a trunking or conventional channel is selected.

Button Options and Labels

All buttons except PTT are programmable with RES. The programmed functions are activated by pressing the associated button. Active functions are indicated by a highlighted background.

SCN = Active, SCN = Inactive.







Keypad Menu Operation

A button can be programmed as "Menu". Items shown in the Options and Labels table can be programmed and arranged via PC programming. These items can then be accessed with the Menu button.

To select from the menu:

1. Press the programmed "Menu" button.
2. Scroll to the desired menu item with the PREV and NEXT buttons.
3. Press the ENT button to open the item.

Options and Labels	Menu	Switch	Button	Label	Trunk	Conv.
Backlight	x	x	x	**LITE**	x	x
Battery Life	x		x	**LIFE**	x	x
Call Alert	x		x	**ALRT**	x	x
Cancel Text Message Tone			x	**CTMT**	x	
Change Status	x	x	x	**CSTS**	x	
Channel Add/Delete	x		x	**CHAN+/-**	x	x
Channel Scan	x	x	x	**SCAN**		x
Channel Scan List	x		x	**SCN+**		x
Channel Select	x		x	**CHAN**	x	x
Cloning	x		x	**CLON**		x
Contrast	x		x	**CON**	x	x
Control Lock	x	x	x	**LCK**	x	x
DMS List Edit	x		x	**DSED**	x	x
Date and Time	x		x	**DATE**	x	x
Dual Mode Scan	x	x	x	**DSCN**	x	x
Emergency			x	**-**	x	x
Enhanced Scan	x	x	x	**ESCN**		x
Evacuation Tones	x		x	**-**		x
GPS*	x		x	**GPS**	x	x
Hang Up	x		x	**HANG**		x
Home Channel			x	**HOME**	x	x
Inhibit	x		x	**INH**		x

Options and Labels (cont.)						
	Menu	**Switch**	**Button**	**Label**	**Trunk**	**Conv.**
Interconnect Call	x		x	**INTC**	x	
Key Picklist**	x		x	**KEY**		x
Keypad Mute	x	x	x	**-**	x	x
Keyset Select	x		x	**KSET**	x	x
Menu			x	**MENU**	x	x
Message Update	x		x	**MSG**	x	
Minimum Volume	x		x	**VOL**	x	x
Monitor	x		x	**MON**		x
Nuisance Channel Delete			x	**DEL**	x	x
Phone	x		x	**PHN**		x
Power Down			x	**PWRD**	x	x
Priority Channel Select	x		x	**PRI**		x
Priority Scan	x	x	x	**PSCN**	x	x
Priority Scan List	x		x	**PSED**	x	
Quick Status Update 1/2/3/4			x	**-**	x	x
RSM LED	x	x	x	**LEDS**	x	x
RSM Speaker Attenuation	x	x	x	**ATTN**	x	x
Radio Accountability Tone			x	**RAT**	x	x
Radio Check	x		x	**RCHK**		x
Radio Info	x		x	**-**	x	x
Rekey Request***	x		x	**RKEY**	x	x
Send Alert Tone			x	**SNDT**	x	x
Send Signal			x	**SEND**		x
Site Display****	x		x	**STDS**	x	
Site Lock****	x		x	**STLK**	x	
Site Search****	x		x	**STSR**	x	
Squelch Adjust	x		x	**SQL**		x
Status Update	x		x	**-**	x	x
Surveillance Mode	x	x	x	**SURV**	x	x
System Test	x		x	**STS**	x	x
Talkaround[2] / Repeater Talkaround[2]	x	x	x	**T/A**		x
Talkback			x	**TKBK**		x
Text Message	x		x	**TXT**	x	x

Options and Labels (cont.)						
	Menu	**Switch**	**Button**	**Label**	**Trunk**	**Conv.**
Top Display Orientation / Flip Top Display	x	x	x	**RTOP**	x	x
Two-Tone Select	x		x	**TONE**		x
Tx Digital	x	x	x	**TXAD**		x
Tx Power	x	x	x	**PWR**	x	x
Tx Secure**	x	x	x	**SEC**	x	x
Uninhibit	x		x	**UNINH**		x
Unit Call	x		x	**UNIT**	x	x
User Rx NACs / Rx NAC Picklist	x		x	**RXNC**		x
User Rx Tones / Rx CxCSS Picklist	x		x	**RXCG**		x
User TGIDs / TGID Picklist	x		x	**TGID**		x
User Tx NACs / Tx NAC Picklist	x		x	**TXNC**		x
User Tx Tones / Tx CxCSS Picklist	x		x	**TXCG**		x
Version	x			**-**	x	x
Voice Annunciation Mute	x	x	x	**-**	x	x
Voice Mute[2]	x		x	**MUTE**	x	x
Vote Scan	x	x	x	**VSCN**		x
Zeroize Keys**	x		x	**ZERO**	x	x
Zone Scan	x	x	x	**ZSCN**		x
Zone Scan List	x		x	**ZSC+**		x
Zone Select	x	x	x	**ZONE**	x	x

[2]Works on a per-channel basis.
*Requires GPS option.
**Requires Encryption option.
***Requires Encryption and OTAR options.
****Requires P25 Trunking option.

Channel/Zone Selection Options

The BKR9000 can be programmed with up to 5000 individual channels. These channels can be divided into zones of one or more channels. Accessing a channel or zone depends on radio programming.

Channels or zones can be selected using the channel/zone select knob, by an assigned button or menu item or by direct keypad entry. More than one selection mode can be programmed.

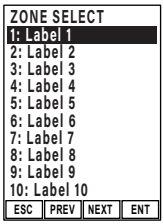
Channel/Zone Selector Knob

When programmed with the default setting, the channel/zone knob is used to select a channel (1-16) from the active zone. If programmed to select zones, zones (1-16) will be selected with the knob.

The A/B/C/D switch is used to cycle through different programmed zones.

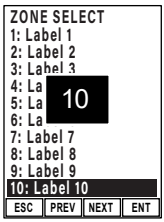
Channels or zones above sixteen can only be accessed via button, menu or keypad selection. See below.

Button/Menu Item Selection



If programmed to a button, pressing the button will display the list of available channels or zones. If programmed as a menu item, the lists can be displayed by selecting Zone or Channel select from the menu list. (See “Keypad Menu Operation”)

Use the PREV and NEXT buttons to scroll to the desired selection.

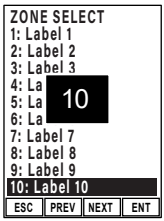


Alternatively, the number keys can be used to jump directly to the desired channel or zone.

Press the button marked ENTER to go to the highlighted zone or channel.

Direct Keypad Entry

The numeric keypad may also be programmed to directly select channels or zones. Pressing a number will activate the zone or channel list.



Select the desired channel or zone and press the button marked ENTER or the center navigation button to go to the highlighted location.

Press the button marked ESCAPE to cancel the selection and return to the currently operating zone or channel.

Using Knob and Button Operations Together

When selected via the button, menu or keypad method, the entered channel or zone becomes active regardless of the knob position.

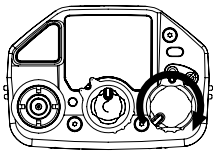
When the knob is turned, the radio leaves the keypad selected channel and goes to the selection indicated by the knob position.

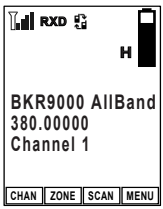
Example: With the channel select knob on channel 1, selecting channel 12 from the keypad will switch the operating channel to channel 12.

Turning the channel knob to channel 2, switches the operating channel to channel 2.

Basic Radio Operation

Turn power on by turning the Volume knob clockwise. A beep sounds, indicating the radio is operational. The LCD display shows the programmed display information of the currently selected channel.



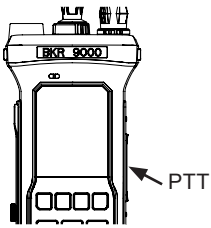


Receive

Set the volume knob to approximately 50-60%.

When a signal is received, indicators on the left side of the display show the signal strength and operating mode of the incoming transmission. RXA = analog, RXD = digital.

To check radio volume when no signal is being received, put the Monitor mode in "Open Squelch" (see "Monitor") and adjust the volume to a comfortable level.



Transmit

1. Press the PTT (Push-To-Talk) switch. When the radio is transmitting the indicator LED glows red and TXD or TXA appears in the display.

2. Talk in a normal voice with the radio one to two inches from your mouth.

3. Release the PTT switch to stop transmitting.

If the length of your message is nearing the programmed Time-Out Timer setting, a tone sounds indicating 5 seconds left to transmit. At the end of the programmed time, the transmitter automatically shuts off and an alert tone sounds. To continue transmission, release the



PTT switch, then press it again and continue talking.

If the Transmit Indicator does not glow and a tone sounds, you are on a receive-only channel or the channel is busy (see Busy Channel Lockout). Select an authorized transmit channel.

NOTE: When using a channel programmed for mixed mode transmit the signal will be transmitted in the mode selected by the TX Digital selection. Or if programmed for Mixed Mode Talkback, the radio will transmit in the mode of the last received channel while the “RX” icon is displayed. (See Mixed Mode Operation.)

Command Zone Operation

The BKR9000 portable radio allows construction of Command Zones drawn from any of the programmed channels in standard operating zones. Each zone is designated as a Standard Operating Zone or a Command Zone with RES.

Building a Command Zone [CHAN+]

To build a Command Zone the “Channel Add/Delete” function must be assigned to a programmable button.

While operating in a standard zone press the “CHAN+” button to add the currently selected channel to a command zone. The list of available command zones will be displayed. Use the up/down arrows to select the zone to add the channel or use the number keys to move directly to the desired zone.

Pressing the “Enter” button copies the channel information to the first available channel slot in the selected command zone.

Example: If the command zone has three channels, the newly added channel will be channel four.

Editing a Command Zone [CHAN-]

When operating in a Command Zone, press the “CHAN-” button to remove the selected channel from the zone.

When a channel is deleted, the display momentarily shows “Channel Deleted”, and the following channels move up in the list. For example, if channel 5 is deleted, channel 6 becomes the new channel 5, channel 7 becomes the new channel 6, etc.

NOTE: Modifications to a command zone channel, such as User Selected Tones, do not affect the original standard zone channel.

NOTE: Channels added by this method cannot be cloned.

Code Guard/NAC Operation

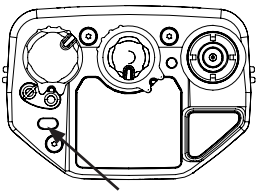
Conventional Channels

Code Guard Receive

Analog channels programmed with a receive code guard will be heard only when the proper carrier frequency and Code Guard value is received. Analog and mixed mode receive channels will also unmute when the radio is in monitor mode. This is also true of digital channels. Monitor mode is carrier squelch only.

Code Guard Transmit

Whenever transmitting on an analog channel, any programmed sub-audible Code Guard is transmitted. Depending on radio programming, the Code Guard can be the default tone assigned to the channel or a tone selected from the Code Guard Picklist (see Pick List Options).



Busy Channel/Transmit Indicator

The frequency must be clear prior to transmitting on a Code Guarded channel. If the LED Indicator is green or blinking green do not transmit. Busy Channel Lockout can be programmed to disallow transmitting while a channel is busy.

1. Press the PTT switch. When the transmitter is on, the LED Indicator glows red and TX appears in the display.
2. Talk in a normal voice with the radio one to two inches from your mouth.
3. Release the PTT switch to stop transmitting.

Analog Squelch Control

Sub-audible signaling (CTCSS/CDCSS) is used to allow a group of radios to be selectively called in an analog system. Programming the receive code guard equal to zero allows for Carrier Squelch operation, where the radio will unmute whenever a carrier is detected regardless of the transmitted Code Guard.

APCO Project 25 Digital Squelch Control

Network Access Codes (NACs) provide the digital equivalent of analog sub-audible signaling (CTCSS/CDCSS) allowing a group of radios to be selectively called within a system.

Users in the same area (using the same NAC) can be further divided into Talk Groups, with each group having its own Talk Group ID (TGID). Group Calls are made by designating both the users' NAC and TGID.

Each radio also has an individual P25 unit ID. A Unit-to-Unit call contains the addressee's NAC, and uses the addressee's P25 unit ID instead of the TGID.

When operating in Digital Mode, each channel can be programmed to use either Normal squelch or Selective squelch.

Normal squelch is used to mimic analog operation. Signals are only qualified with the programmed NAC. TGIDs and P25 Unit IDs are ignored. Each digital channel is programmed with a receive NAC and a transmit NAC. When an incoming signal's NAC matches the channel's programmed receive NAC, the radio unmutes. The default NAC is 0659 ($293 hex).

The digital equivalent of carrier squelch is achieved by programming the receive NAC = $F7E (3966 decimal). The radio will unmute when a digital signal with any NAC is detected. The $F7E (3966 decimal) NAC is reserved for receivers and is not allowed as a transmit NAC.

Selective squelch is used for processing Group Calls and Unit-to-Unit Calls. TGIDs are assigned on a per-channel basis. Users can be separated into Talk Groups with each group having its own TGID. Then, on channels programmed for Selective squelch, the incoming signal's NAC and TGID must match the channels programmed receive NAC and TGID for the radio to unmute. The default TGID is 1.

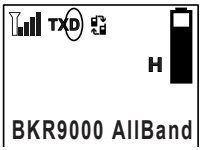
The TGID value 65535 ($FFFF hex) is used to effect an "All Call". If the radio receives a signal with a matching NAC and the TGID = 65535 ($FFFF hex), it will unmute. Also, if the radio's programmed TGID is 65535 ($FFFF hex), it will open on any signal with a matching NAC, ignoring the incoming TGID. A TGID = 0 means "no one". If the radio is programmed with the TGID = 0, it will accept incoming group calls containing the "All Call" TGID, and correctly addressed Unit-to-Unit calls only.

Mixed Mode Operation

The receiver and transmitter are capable of operating in analog wide-band (25 kHz channel spacing), analog narrow-band (12.5 kHz channel spacing) and APCO Project 25 Digital Mode.

Each channel's Receive and Transmit Mode can be set independently as follows:

Mode	RX	TX
Analog	Receive qualified analog signals only	Transmit analog signals only
Digital	Receive qualified digital signals only	Transmit digital signals only
Mixed	Automatically receive qualified analog or digital signals	Transmit analog or digital signal, depending on the status of "TX Digital" switch



Digital receptions and transmissions will be indicated by illuminating the D annunciator in addition to the RX or TX annunciator.



Analog receptions and transmissions will be indicated by illuminating the A annunciator in addition to the RX or TX annunciator.

Mixed Mode Talkback

If Mixed Mode Talkback is enabled, transmissions initiated while hold time remains will be in the same mode as the received signal, on the frequency of the Ready to Transmit (RTX) channel. Depending on radio state, the RTX channel can be the main channel, a held scan or priority channel if Talkback Scan is enabled, or the Priority 1 channel if "TX on PR1" is enabled. TX Mode on the RTX channel must be set to MIXED.

While hold time after a reception remains, transmissions will be in the same mode as the received signal, regardless of the status of the TX Digital switch. As in Talkback Scan, the RTX channel and receive annunciators will be displayed for the duration of the timer.



Press the PTT while the RX indicator is shown

Trunking Channel Basic Operation

Some BKR9000 radios are equipped with optional P25 Trunking capability. To determine if your radio is trunking compatible, remove the battery and check the Options Label. “BKR0579” indicates the trunking option is installed.

Trunking parameters and functions can only be programmed by qualified persons via PC. Contact your system administrator or radio dealer for information on how your radio is programmed.

System Registration

If the radio is powered on when a trunking channel is selected, the radio will attempt to register with the selected trunking system.

The LED will flash twice upon successfully registering with the system and setting talkgroup affiliation.

If the affiliation was unsuccessful the LED will continue to flash.

If the radio is not in range of the system “Out of Range” will be displayed and an alert tone will sound every ten seconds.

If registration is refused or denied, a denied message and tone will appear briefly before switching to “Out of Range” mode.

After successful registration the programmed LCD display criteria is displayed.

Transmitting

When the PTT is pressed, if the channel is available a three beep Talk Permit Tone will be heard and the radio will transmit.

If there is no channel available the radio will emit a tone and display “BUSY”. Release the PTT.

The radio will remain in busy mode until the channel is available.

When the channel becomes available the three beep Talk Permit Tone will be emitted. Re-press the PTT to continue your call.

If the PTT is not pressed within two seconds of the Talk Permit Tone, the radio will return to normal standby mode.

Scan Options

Channel Scan [SCAN]

Conventional Channels

When on, Channel Scan monitors activity on the scan list channels in the currently operating zone. Scan operates only while the radio is not transmitting.

Channels designated as scan channels are identified by the ✓ symbol at the top of the LCD display. If allowed, the scan list can be edited by the radio user. (See Channel Scan List).

When Channel Scan is on, the cZ symbol will be shown at the top of the LCD display.

When a signal is detected, scanning stops and the message is received. The received channel is shown in place of the selected channel.

Once the signal ends, the radio continues to monitor the channel for the preset scan hold time before it resumes scanning.

Channel Scan operation can be assigned to a switch or as a button or a menu list item.

Channel Scan may be used in conjunction with Priority Scan operation (see Priority Scan).

Scanning Code Guarded Channels

Conventional Analog Channels

When a signal is detected, scanning stops while the radio checks for the proper Code Guard value. If the signal contains the proper Code Guard value, the radio receives the message. Otherwise, the radio resumes scanning immediately.

Transmitting with Scan On

The radio transmits on the channel selected by the Channel Selector knob unless Talkback Scan is enabled, and PTT is pressed within the radio's scan hold time (see Talkback Scan) or Priority Scan is on and Transmit on Priority 1 is enabled (see Priority Scan).

Channel Scan List [SCN+]

Conventional Channels

The Channel Scan List allows the radio user to add or remove channels from the list of channels to be monitored while channel scanning.

Channels designated as scan channels are identified by the ✓ symbol at the top of the LCD display.

The Scan List operation can be assigned as a button or menu list item.

To edit the Channel Scan list, select the channel you wish to add or remove from the scan list. Press "+/-" to add or remove. Channels in the scan list will be indicated with the ☑ symbol.

If Vote Scan option is installed, pressing the "+/-" button will cycle the scan setting for the selected channel through checked (for scan on), "(V)" for Vote Scan, and Off.

When assigned as a menu item, open the menu and select the channel you wish to add or remove from the scan list. Press “+/-” to add or remove. Channels in the scan list will be indicated with the ☑ symbol.

Talkback Scan

Conventional and Trunking Channels

If your radio is programmed for Talkback Scan, any PTT transmission that occurs while a channel is active or while scan hold time remains, will be on the transmit frequency of the received channel. The ‘RX’ indicator will be shown in the display while scan hold time remains.

Talkback Scan will not work if Priority Scan is on and your radio is also programmed to transmit on the Priority 1 channel (see Priority Scan).

Vote Scan [Requires Option BKR0581]

Conventional Channels

Channels in a multicast conventional systems can be added to the scan list and designated as “voted” channels. When a signal is received on a voted channel the radio checks all voted channels in the vote scan group and selects the channel with the best signal.

If enabled, vote scanning takes place whenever the channel scan switch in on.

NOTE: Channel voting occurs only with Channel Scan and is disabled when Zone Scanning. Channels programmed as Vote channels are treated as normal scan list channels during Zone Scan operation.

Vote Scan groups can only be created in RES.

See also Priority Scan and Zone Scan.

Dual Mode Scan [DSCN]

Conventional and Trunking Channels

Dual Mode scan provides the ability to scan trunking and conventional channels simultaneously.

NOTE: The Dual Mode Scan list must be setup using RES and cannot be changed by the radio user.

When Dual Mode Scan is turned on the DZ icon is displayed and the radio scans all channels in the dual mode scan list.

Dual Mode Scan can be assigned to a switch or as a button or menu list item. For best operation, Dual Mode Scan should be assigned in both conventional and trunking global settings with RES.

Enhanced Scan [ESCN]

Conventional Channels

Enhanced Scan combines Priority Scan and Channel Scan to one switch/button. Enabling Enhanced Scan will turn on both Priority and Channel Scan.

Priority Scan [PSCN]

Conventional Channels

Two channels can be designated as priority channels. When Priority Scan is on, these channels are monitored for incoming traffic. When a qualified signal is detected the speaker is opened to listen to the message.

If a message is detected on the channel designated as Priority 2, the radio will continue to monitor Priority 1 channel for activity. If activity is detected the radio will switch to the Priority 1 channel.

When used in conjunction with Channel Scan, the radio monitors the Priority channels and will switch from a scanned channel to the Priority channel if a qualified signal is detected.

Depending on radio setup, priority channels can be tied to the currently operating zone or can be assigned to a specific channel regardless of the operating zone.

Channels designated as Priority channels are identified by the P1 or P2 symbol at the top of the LCD display. When Priority Scan is on, the PZ symbol will be shown.

Priority Scan operation can be assigned to a switch or as a button or a menu list item.

Trunked Channels

When on trunked channels, Priority Scan is used to turn system scanning on or off.

Priority Channel Select [PRI]

Conventional Channels

Depending on programming, priority channels can be radio-wide (System) or zone specific (Zone). Radio-wide priority channels are monitored regardless of the current operating zone. (See Priority Scan for more details.)

If enabled the user can use the keypad to change the priority channels. Priority Channel Select can be assigned to a switch or as a button or menu list item.

Selecting a System Priority Channel

Open the Priority Channel Select submenu using the assigned control. Highlight a System Priority Channel type from the list and press "ENTER". The System Priority Channel submenu will appear.

Options:
Off - Disables the priority channel.
Use Main - Uses the selected channel as the priority channel.
Select - Assigns a specific channel as the priority channel.

To assign a specific channel as a System Priority Channel, highlight “Select” and press the “ENTER” button.

The Zone selection menu will be displayed.

Highlight the zone of the desired priority channel and press the “ENTER” button.

The Channel selection menu will then be displayed.

Highlight the desired channel and press the “ENTER” button to set the priority channel.

The display will return to the main Priority Channel Select menu.

Selecting a Zone Priority Channel

Open the Priority Channel Select submenu using the assigned control. Highlight a Zone Priority Channel type from the list and press "ENTER". The Zone Priority Channel submenu will appear.

Options:
Off - Disables the priority channel.
Use Main - Uses the selected channel as the priority channel.
Select - Assigns a specific channel as the priority channel.

To assign a specific channel as a Zone Priority Channel, highlight “Select” and press the “ENTER” button.

The Channel selection menu will be displayed.

Highlight the desired channel and press the "ENTER" button to set the priority channel.

The display will return to the main Priority Channel Select menu.

Zone Scan [ZSCN]

Conventional Channels

When Zone Scan and Channel Scan are on, the radio scans all programmed scan channels in zones designated as Zone Scan zones.

If allowed, the scanned zone list can be edited by the radio user. (See Zone Scan List).

When Zone Scan is on, the ᶻZ symbol will be shown at the top of the LCD display.

Zone Scan operation can be assigned to a switch or as a button or a menu list item and may be used in conjunction with Priority Scan operation.

Zone Scan List [ZSC+]

Conventional Channels

The Zone Scan List allows the radio user to add or remove zones from the list of zones to be scanned.

The Zone Scan List operation can be assigned as a button or menu list item.

When Zone Scan List is assigned to a button [ZSC+], press the button to add or remove the currently operating zone from the scan list.

When assigned as a menu item, open the menu and select the Zone you wish to add or remove from the scan list. Press "ENTER" to add or remove. Zones in the scan list will be indicated with the ☑ symbol.

Pick List Options

The BKR9000 provides users the ability to use Pick List options to program specific channels. Pick List Options can be assigned to a programmed button or as menu list items.

Available Pick List options include:

- Transmit Code Guards
- Receive Code Guards
- Transmit Network Access Codes
- Receive Network Access Codes
- Talk Group IDs
- Encryption Keys (see Encryption Operation)
- Encryption Keysets (see Encryption Operation)

TX/RX CxCSS Picklist [TXCG] [RXCG]

Conventional Analog or Mixed Mode Channels

Selecting a CTCSS/CDCSS Code Guard from the Pick List will assign the tone to the currently select analog or mixed-mode channel.

User assigned Transmit and Receive Code Guards are selected independently.

To change a Code Guard, open the RXCG or TXCG menu, select the desired tone and press “ENTER”.

To return the tone to the pre-programmed value select “Default”.

If allowed, picklist values can be changed through keypad programming.

TX/RX Network Access Code Picklist [TNAC] [RNAC]

Conventional Digital or Mixed Mode Channels

Selecting a Network Access Code (NAC) from the Pick List will assign the NAC to the currently select digital or mixed-mode channel.

User assigned Transmit and Receive NACs are selected independently.

To change a NAC, open the RXNAC or TXNAC menu, select the desired NAC and press “ENTER”.

To return the NAC to the pre-programmed value select “Default”.

If allowed, picklist values can be changed through keypad programming.

Talk Group ID Picklist [TGID]

Conventional Digital Channels

Selecting a Talk Group ID from the Pick List will assign the TGID to the currently select channel. All other channels are unaffected.

Open the menu of available TGIDs.

Select the desired Talk Group ID or, to return the TGID to the pre-programmed value, select "Default".

Press "ENTER" to set the selection.

If allowed, picklist values can be changed through keypad programming.

Encryption Key Picklist [KEY]

Digital or Mixed Mode Channels
Encryption equipped radios only.

Selecting an Encryption Key from the Pick List will assign the key to all encrypted channels that do not have 'Key Lock' programmed. Locked key channels will continue to use the pre-programmed key.
(See Encryption Operation)

Keyset Picklist [KSET]

Digital or Mixed Mode Channels
OTAR equipped radios only.

Selecting a Keyset from the Pick List will cause the radio to use encryption keys from the selected Keyset.
(See Encryption Operation)

Unit-to-Unit Call Options

Individual Unit Call [UNIT]

Conventional Digital and Trunking Channels

P25 Unit IDs allow for Unit-To-Unit calls when the radio is operating in Digital Mode. The function must be enabled by radio programming to allow this mode of operation.

Channels programmed for analog only operation will not be able to transmit or receive Unit-To-Unit calls.

Conventional Channels

Placing an Individual Unit Call

Open the Unit Call menu and select the desired “Unit Call” option.

Last Call = Use the P25 ID of the last Call.
Call List = Use the programmed P25 ID List.
Enter ID = Enter a numeric P25 ID.

Press Enter to enter Unit Call Mode.

The LCD displays the ID number or associate label of the targeted radio.

Press the PTT button to send the unit-to-unit call.

To exit the Individual Call mode press “Exit”.

If there is no response to the call after 60 seconds, the radio exits the Unit-to-Unit mode and returns to normal operation.

Receiving an Individual Unit Call

When a properly addressed unit call is received, an alert tone sounds and the LCD displays the ID number or associated label of the radio placing the call.

Accept the call

To accept the call and respond in unit-to-unit mode, press “ACPT” and transmit as normal.

To exit the Individual Call mode, press “Exit”.

Ignore the call

To ignore the call and continue operating in normal mode, press “IGNR”.

Unit-to Unit Callback

If enabled, pressing PTT during the hold time results in a Unit-to-Unit call to the received unit ID.

If there is no response to the call after 60 seconds, the radio returns to normal operation.

Call List Programming

If enabled with RES, the P25 Call List for conventional channels can edited via the radio's keypad programming function.

Trunking Channels

Limitations on unit-to-unit calls may programmed in trunking systems. Options include disallowing unit-to-unit operation, limiting operation to only the programmed unit call list or 'response only' which allows the user to respond to incoming calls only. Check with your system administrator for information about your programmed features.

Placing a Call

When placing a unit-to-unit call on a trunking channel, a telephone-type ring tone will be emitted until the targeted radio acknowledges or responds to the call.

Receiving an Individual Unit Call

When receiving a unit call, an alert tone will be emitted and the LCD will display the Unit ID of the radio sending the call.

Press "Accept" to respond to the call or "Ignore" to remain in normal operation.

Emergency Signaling Options

Conventional Digital and Trunking Channels

The BKR9000 portable radio supports P25 Emergency Operation. When Emergency Operation is engaged the radio will transmit the P25 ID of the radio along with the required P25 Emergency bit. Emergency operation applies only to channels programmed for Digital or Mixed Mode transmissions.

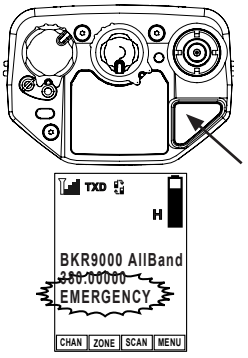
On channels programmed for analog or Mixed Mode transmissions, and not programmed for MDC Emergency Operation, the radio will not enter Emergency Mode.

The radio will enter Emergency Mode when programmed for analog operation, if it is also properly programmed with the correct MDC settings.

All scanning and priority functions will be disabled during Emergency operation.

Depending on the radio's PC programmable settings, emergency signal will be sent automatically or with each Push-to-Talk.

Placing an Emergency Call

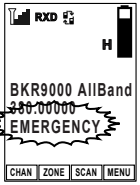


To place an emergency call, press and hold the programmed emergency button until the radio beeps and the display flashes "EMERGENCY".

Radio automatically sends the emergency signal on the pre-programmed emergency channel.

To return to normal operation press and hold the Emergency button or cycle radio power.

Receiving an Emergency Signal



To receive an emergency call, the radio's receive mode must be programmed to Digital or Mixed.

When receiving a qualified emergency call, the radio will beep. The display will flash the word "EMERGENCY" along with the P25 ID of the radio sending the signal, for the duration of the reception, as well as during any hold time. The RXD icon will also be lit.

Encryption Operation

Conventional and Trunking Channels

The BKR9000 may optionally be configured for Secure communication on channels operating in Analog or Digital Mode. To determine if your radio is encryption compatible, remove the battery and check the Options Label near the top of the radio. "BKR0574" indicates the encryption option is installed.

Required Setup

Radios that have the DES/AES factory option for encryption must have encryption keys loaded with an APCO Project 25 compatible key fill device such as the Motorola KVL 3000 Plus, using a BK Technologies keyloader cable. The radio can hold up to 64 AES and/or DES keys.

After loading keys in the radio, RES must be used to configure the radio's key table and to assign default transmit keys to each channel.

Radios that have the OTAR factory option support Over-the-Air Rekeying of encryption keys (OTAR). RES must be used to enable OTAR and to mark the channel(s) that will communicate with the Key Management Facility (KMF). In addition, the radio must have key encryption keys (used only to encrypt other keys) loaded with an APCO Project 25 compatible key fill device such as the Motorola KVL 3000 Plus, using a BK Technologies keyloader cable.

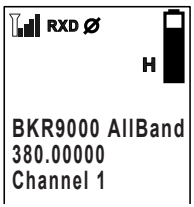
Basic Operation

The receiver automatically detects both clear and secure signals.

The transmitter selects clear or secure operation based on each channel's programming. Digital channels can be programmed to always transmit encrypted, always transmit clear, or to select the encryption mode with the TX Secure switch.

The display indicates Secure Operation as follows:

In Standby Mode, if the radio will transmit in Secure Mode when PTT is pressed, the encrypt icon is displayed.



When receiving an encrypted signal, the encrypt icon 'Ø' flashes in the display. When transmitting an encrypted signal, the LED alternates between red and blue.

Transmit Secure [SEC]

Channels programmed for selectable encryption can have “Transmit Secure” programmed as a switch, button or menu item. The default setting uses the collar switch to select Transmit Secure.
Ø = encrypted, O = clear

When SEC is on, encrypted channels programmed for switchable encryption will transmit an encrypted signal.

NOTE: The SEC switch has no effect on channels programmed as Encrypted Only or Clear Only.

Channels in the Ready-to-Transmit Encrypted mode will display the Ø symbol on the top line of the LCD.

Transmit Encryption Key Selection [KEY]

The radio can hold up to 64 DES or AES encryption keys. Each channel is assigned a default key for transmit. The key can be locked to the channel, or if programming allows, a transmit key other than the default key can be selected from the radio’s Key Pick List.

To change an encryption key, open the KEY menu. Programmed key labels will be displayed.

Select the desired key and press “ENTER”.

To return the key to the pre-programmed value select “Default”.

If a key is selected that has not been programmed, the radio will emit a three beep tone and display “Key Fail” before going to standby mode. The radio will not transmit but will beep and display “Key Fail” when PTT is pressed.

User Selectable Encryption Keyset [KEYST]

OTAR equipped radios only.

Selecting a keyset from the Pick List will cause the radio to use encryption keys from the selected keyset.

User selectable menu access can be assigned to a button or menu list item.

To change the encryption keyset, open the KEYST menu. Programmed Keyset labels will be displayed.

Select the desired keyset and press “ENTER”.

Rekey Request [RKEY]

OTAR equipped radios only.

On radios equipped with over-the-air rekeying (OTAR), a radio user can manually request an encryption rekey from the Key Management Facility (KMF).

For a radio to receive encryption keys or keysets over-the-air, the selected channel must be designated as an OTAR channel via PC programming. Refer to your PC programming documentation for more information.

To request a re-key:

Open the Rekey Request menu.

Press the "YES" button to Request Keys, or press "ESC" to cancel the operation.

If the "YES" button is pressed while on a channel that has not been marked as an OTAR channel, the radio will beep and "NON-OTAR" will appear on the display.

If a successful rekey occurs, a tone will sound, and the display will momentarily show "REKEYED".

Keyset Viewing and Selecting [KSET]

OTAR equipped radios only.

The radio can hold up to 8 encryption keysets. Each keyset is limited to a maximum of 64 keys. Only one keyset can be active at any time. The radio will receive messages encrypted with any of the keys in any of the keysets, but transmit keys can only be selected from the active keyset.

To change an encryption keyset, open the KEYST menu. Programmed keyset labels will be displayed. Select the desired keyset and press "ENTER".

Zeroizing [ZERO]

The radio provides a method for the user to "panic-zeroize" all encryption keys. Zeroizing removes all encryption keys from the radio, including keys used for OTAR and Tactical OTAR operation.

Zeroize can be assigned as a button or menu list item.

Open the "Zeroize Keys" menu.

Press "YES" to erase all encryption keys or "ESC" to cancel the action.

When successfully removed the "Keys Removed" message will momentarily be displayed.

Messaging

Digital Conventional P25 channels can be programmed to send and receive text messages and radio status messages.

Text messages can be selected from a pre-programmed list or manually entered using the radio keypad.

Status messages are pre-programmed only.

Text Messaging [TXT]

Conventional Digital Channels

Text Messaging needs to be configured in RES for both tx and rx radios. Message types include predefined messages, manually entered messages or locally stored messages.

Predefined messages - Predefined messages are programmed into the radio memory using RES.

Manually Entered Messages - Text messages can be manually entered via the radio's keypad.

Locally Stored Messages - Up to five manually entered messages can be stored in individual radios.

Sending a Message

To initiate a text message press the "TXT" button or select "Text Message" from the menu.

Select "Send" from the menu and press "ENTER".

Select Message Type

From the "Select Entry Type" menu, choose the type of message to send and press "ENTER".

Predefined List or Manual Entry List

When "Predefined List" or "Manual Entry List" is selected, a list of available messages is displayed.

Select the message to be sent and press "ENTER".

NOTE: When sending a predefined message the message ID is transmitted. The receiving radio will display the message programmed with the corresponding ID. If the receiving radio has no programmed message with the transmitted ID, "Text Message X" is displayed, where "X" is the received ID number.

Manual Entry
When "Manual Entry" is selected use the keypad to enter the desired message (see keypad character table). Press "ENTER" to select the target radio.

Select Target Radio

Last Call - Select "Last Call" to send the message to same radio you last sent a text message.

Press "Send" to send the message.

Call List - Selecting "Call List" opens a list aliases for the pre-programmed Unit IDs. Select the desired target radio and press "Send" to send the message.

Unit ID - Select "Unit ID" to enter the P25 ID of the target radio.

Use the keypad to enter the ID then press "Send" to send the message

Broadcast - Select "Broadcast" to send the text message to all text enabled radios regardless of unit ID. Press "Send" to send the message.

Message Acknowledgement
When the text message has been received by the targeted radio, an alert tone will sound and the acknowledgment message will be displayed.

Press "OK" or wait for five seconds to return to normal radio operation.

If the targeted radio is unavailable, an alert tone will sound and the failed acknowledgement message will be displayed.

Press "RTRY" to resend the message.

Press "OK" or wait for five seconds to return to normal radio operation.

When sending a "Broadcast" message, no "text received" notification is shown. Only confirmation that the text has been broadcast will be displayed.

Receiving a Message

When an incoming text message is received an alert tone is sounded and the Text Message Received message is momentarily displayed.

The top programmed display line will alternate between the programmed setting and "Text Message" until the message is read.

Reading the message
To read the message press the “TXT” button or select ‘Text Message” from the menu.

Select “Read” to view the message

Stored Messages
Up to five messages can be programmed into the “Manual Entry List” and are accessed from the “Select Entry Type” menu.

To store a manually entered text message press the “TXT” button or select “Text Message” from the menu.

Select “Store” from the menu an press “Enter”.

Use the keypad to enter the desired message then press “Enter”. (See keypad character table)

Select the storage slot for the message and press “Enter” to store the message.

Short Message Update [MSG]
Conventional Digital Channels

Short Message Update is a way for the radio to transmit an enumeration that corresponds to a predefined message that is stored in other radios.

User Update Messaging [STS]
Conventional and Trunking Digital Channels

Sending a Status Update
NOTE: When sending a message the message ID is transmitted. The receiving radio will display the message programmed with the corresponding ID. If the receiving radio has no programmed message with the transmitted ID “Status: Status X” is displayed, where “X” is the received ID number.

Select Status Message
Press the “STS” button or select “Status Update” from the menu.

From the “Select Status” menu, select the programmed message to send and press “Enter”.

Select Message Type
From the “Select Target Type” select the type of message to be sent.

Unit - Send the message to an individual radio ID.

Group - Send message to a group of radios using the Talk Group ID.

Dispatch - Send the message to a dispatch console.

Unit Call

Select Target Radio

Last Call

Select "Last Call" to send the message to the same radio you last sent a status message.

Press "Send" to send the message.

Call List

Selecting "Call List" opens a list aliases for the pre-programmed Unit IDs.

Select the desired target radio and press "Send" to send the message.

Unit ID

Select "Unit ID" to enter the P25 ID of the target radio.

Use the keypad to enter the ID then press "Send".

Group Call

Select Target Group ID

Selecting "Group" opens the menu to send a status message to a group of radios with matching talk group ID.

Select "Enter" to manually enter the ID or "Select" to choose and ID from the pre-programmed talk group pick list.

Dispatch

Select "Dispatch" to send a status message to a dispatch console.

Message Acknowledgement

If the message has been received by the targeted radio, an alert tone will sound and the acknowledgment message will be displayed.

If the targeted radio is unavailable, an alert tone will sound and the failed acknowledgement message will be displayed.

Press "OK" or wait for five seconds to return to normal radio operation.

Receiving a Status Update

When an incoming status update is received an alert tone is sounded and the status message is momentarily displayed before returning to normal operation.

Paging and Call Alert

Conventional Two-Tone/DTMF/MDC1200 Paging [MUTE]

Conventional Analog Channels

The BKR9000 can be programmed to receive two-tone, DTMF or MDC1200 pages on conventional analog channels.

Receiving a page

Select an analog or mixed-mode receive channel.

Turn on “Voice Mute” from the programmed button or menu item.

When voice mute is activated the icon is displayed.

The radio ignores all voice traffic until the proper tone sequence is received.

When a proper signal is received the radio will emit an alert tone and allow the audio to pass.

If Auto Reset is programmed, the radio will return to the muted standby mode when the time conditions have been met.

Call Alert Paging [ALRT]

Digital Channels

The BKR9000 can be programmed to send and receive Call Alert messages on digital channels.

Sending a Call Alert

Press the “ALRT” button or open “Call Alert” from the menu.

Select Target Radio

Last Call

Select “Last Call” to send the message to radio which you last sent or received a call alert. Press “Enter” to send the message.

Call List

Selecting “Call List” opens a list aliases for the pre-programmed Unit IDs.

Select the desired target radio and press “Enter” to send the Call Alert.

Unit ID

Select “Unit ID” to enter the ID of the target radio.

Use the keypad to enter the ID then press “Enter” to send the Call.

Receiving a Call Alert

When a Call Alert is received, an alert tone will sound and the incoming unit ID or alias is displayed for approximately 5 seconds.

The top display line will alternate between the programmed display information and a Call Alert Received message.

Select "Call Alert" to reset.

Radio Check [RCHK]

Conventional Digital Channels

The BKR9000 can be programmed to check the availability of a BKR9000 radio with a specific P25 ID.

Requesting a Radio Check

Press the "RCHK" button or open "Radio Check" from the menu.

Select Target Radio

Last Call
Select "Last Call" to send the request to the radio which you last sent a radio check request. Press "Enter" to send the query.

Call List
Selecting "Call List" opens a list aliases for the pre-programmed Unit IDs.
Select the desired target ID and press "Enter" to send the query.

Unit ID
Select "Unit ID" to enter the P25 ID of the target radio.
Use the keypad to enter the ID then press "Enter" to send the query.

If a successful handshake is performed, an alert tone will sound and the "Unit Available" message will be displayed for approximately five seconds.

If no validation is received from the targeted radio, an alert tone will sound and the "No Response" message will be displayed for approximately five seconds.

Radio Inhibit/Enable [INH]/[UNINH]

Conventional Digital Channels

With “Inhibit” is assigned to a button or menu function, a BKR9000 Radio can temporarily disable other BKR9000 radios using the targeted radio’s unit ID number.

The disabled radio can only be re-enabled by sending an “Unhibit” command.

NOTE: Inhibited radios cannot be read with RES.

Sending a command

To initiate an inhibit/uninhibit message press the programmed button or select from the menu.

Use the keypad to enter the User or Administrator password.

Press “ENTER” to open the menu.

Select Target Radio

Last Call

Select “Last Call” to send the message to same radio you last sent an inhibit or uninhbit message. Press “SEND” to send the message.

Call List

Selecting “Call List” opens a list aliases for the pre-programmed Unit IDs. Select the desired target radio and press “SEND” to send the message.

Unit ID

Select “Unit ID” to enter the P25 ID of the target radio.
Use the keypad to enter the ID and press “SEND” to send the message.

Message Acknowledgement

When the message has been received by the targeted radio, an alert tone will sound and the acknowledgment message will be displayed.

Press “OK” or wait for three seconds to return to normal radio operation.

If the targeted radio is unavailable, an alert tone will sound and the failed acknowledgement message will be displayed.

Press “RTRY” to resend the message.

Press “OK” or wait for three seconds to return to normal radio operation.

Other Options and Functions

Many operational features and functions can be programmed for user selection and control. Items can be programmed to the radio buttons or switches. In addition to these quick set buttons, a menu of multiple functions can be accessed with a "MENU" button.

Backlight [LITE]

Conventional and Trunked Channels

Backlight on/off control can be assigned to a switch, button or as a menu item. In addition, backlighting may be programmed with RES to illuminate when any key is pressed.

Battery Life [LIFE]

Conventional and Trunked Channels

Battery Life information includes:

% battery capacity available until depletion
The full capacity of the battery
Estimated time left before depletion

Busy Channel Operation

Conventional Channels

The radio can be programmed for different behavior when a conventional channel is busy.

How the radio reacts to a busy channel is programmed with the following operation options only accessible in RES:

Off - No busy channel transmit limiting will occur.

Indicate - This setting will display "Busy" momentarily and an alert tone will sound if conflicting traffic is present, but the radio is still allowed to transmit.

Lockout - This setting prevents the radio from transmitting, "Busy" will be displayed and an alert will sound until the PTT is released.

Override - This setting prevents the radio from transmitting. "Busy" will be displayed and an alert tone will sound until the PTT is released. However a rapid release and press of the PTT will allow the radio to transmit.

Automatic - This setting will display "Busy" momentarily and an alert tone will sound. The radio will then revert back to receive mode and monitor the active receive traffic. (carrier mode only)

Busy Channel Conditions

With RES, each channel is programmed for the conditions under which the channel is considered busy.

Conditions include:

Off - Channel is never declared busy.

Carrier - A busy condition is declared when carrier is present on the selected Rx frequency.

Non-Qualified - A busy condition is declared when a non-qualified signal is present on the Rx frequency. (Non-qualified = Incorrect CTCSS/CDCSS, talk group or NAC)

Status Symbol - *Digital Channels Only*. A busy condition is declared if the P25 busy status symbol is present on the Rx frequency.

Correct NAC - A busy condition is declared when receiving digital signal with the correct NAC, and declared not busy under all other conditions.

Channel Select [CHAN]

Conventional and Trunked Channels

Channel Selection can be assigned to a button or menu item. (See Channel/Zone Selection Options for details.)

Cloning [CLON]

Conventional Zones

BKR9000 radios can be set up to send or receive programmed information from other BK Technologies products via a cloning cable available from BK Technologies. Cloning can be assigned to a button. Refer to the cloning cable manual for cloning information.

Contrast [CON]

Conventional and Trunking Channels

Allows the user to adjust the contrast of the screen.

Select the desired contrast using the -/+ buttons.

Press "ENTER" to set the contrast.

Control Lockout [LCK]

Conventional and Trunking Channels

The BKR9000 portable offers a variety of control lock options. Control lock can be assigned to a collar switch or as a button or menu item.

Switch Assignment

When assigned to the collar switch, toggling the switch on locks all controls except the collar switch, PTT and volume/off.

Button/Menu Assignment

When assigned as a button or menu item, users can select from two lockout settings, "Lock Keypad Only" and "Lock All Controls".

"Lock Keypad Only" locks only keypad button operations.

"Lock All Controls" locks all buttons and switches as determined by radio programming. Any or all of the following function may be locked when "Lock All Controls" is selected: keypad, side top buttons, channel knob, collar switch and push-to-talk.

To enable the lock function press the assigned button or open the menu and select Control Lock from the list.

Select the desired lockout setting and press "ENTER"

To disable Control Lock press the diamond button twice, then the square button twice.

Date and Time [DATE]

Conventional and Trunked Channels

Displays the date and time. The edit button allows the user to change the date and time. The time will stay stored in the radio when powered off.

DMS List Edit [DSED]

Conventional and Trunking Channels

DMS List Edit can be assigned to a button or as a menu item. This will allow the user to view and edit the DMS List.

Global Positioning [GPS]

Conventional and Trunked Channels
(Requires GPS Option)

To access GPS functions press the “GPS” button or select “GPS” from the menu.

Viewing GPS information

To view current coordinates open the GPS menu and select “GPS Information”. After acquisition, the current location is displayed in degrees, minutes and seconds.

Sending GPS information

GPS information is sent by a variety of triggers only accessible in RES:

PTT - After a digital transmission, the GPS coordinates will be automatically transmitted.

Periodic - GPS coordinates are transmitted periodically using a programmed time.

Emergency - GPS coordinates are sent if the radio activates emergency.

Power on/off - GPS coordinates are sent once the radio powers up and acquires a position and also on power off.

User Request - To send GPS information, open the GPS menu and select “Transmit Request”. From the Request menu select the desired target ID and press “Enter”.

Home [HOME]

Conventional and Trunking Channels

When pressed, the radio returns to a preprogrammed channel that is configured in RES.

Keypad Mute

Conventional and Trunking Channels

Keypad Mute on/off control can be assigned to a switch, button or as a menu item. This will mute the keypad tones when on.

Keypad Programming

Conventional Systems and Channels

Much of the information stored in the BKR9000 can be edited using the keypad. Five separate programming functions can be enabled with RES.

Keypad programming selections can only be assigned as a menu item.

Refer to the Keypad Programming section for detailed information on how to edit programmed radio information.

Minimum Volume [VOL]

Conventional and Trunking Channels

Must be configured as "Customizable" in RES to access through the radio. When pressed, changes the volume level at lower volumes. This allows the user to set their minimum volume to an audible level.

Monitor [MON]

Conventional Channels

There are three settings available for monitoring traffic on a selected channel. "Monitor" can be assigned to a button or as a menu item.

Monitor Modes and Indicators

Off - Squelch works as configured. (No indicator)

On - Only carrier squelch is in effect. NAC and CxCSS and TGID are all ignored. Steady ◁ on.

Open - No squelch is taking place. If there is no signal, the audio will be static. Solid ◀ on.

Button Operation - A quick press will toggle between Off and On, while a long press will turn on "Open" mode and short press will return the radio to Off mode.

Menu Operation - Open the Monitor menu, select the desired operation and press "Enter".

Nuisance Channel Delete [DEL]

Conventional Channels

If enabled, a nuisance channel can be temporarily removed from the scan list. Nuisance Channel Delete can only be assigned to a button.

To temporarily remove a channel from the scan list, press the assigned button while the nuisance channel is being received.

To revert to the programmed scan list, turn off Scan, cycle radio power or select another zone or channel.

Phone [PHN] and Hang Up [HANG]

Conventional Channels

The Phone function is a way for a conventional radio to instruct the system to dial a phone number and begin a call with that radio. Using the Hang Up button allows the user to end that call.

Power Down [PWRD]

Conventional and Trunking Channels

When pressed, turns the radio completely off.

Radio Accountability Tone [RAT]

Conventional and Trunked Channels

The Radio Accountability Tone transmits a preprogrammed sequence of DTMF tones when the RAT button is pressed and held. Must be programmed with a Radio Accountability Tone ID in RES.

Radio info

Conventional and Trunking Channels

Information about your radio can be viewed via the “Radio Info” menu item.

To review the information, open the Radio Info menu. Use the NEXT or PREV to view individual items.

Radio Info information includes:

UID - P25 Unit ID.

IP - IP Address of the radio.

OTAR Registered - Acknowledges if radio is registered to an OTAR system.

Up Time - Amount of time the radio has been on.

Repeater Talkaround [T/A]

Conventional Channels

In Repeater Talkaround mode, the radio will transmit on the programmed receive frequency of the selected channel. When T/A is enabled the |→| icon will be displayed on the top line of the LCD.

NOTE: Channels programmed as receive only are not affected by the Talkaround selection.

Talkaround selection can be assigned to a switch, button or as a menu list item.

RSM LEDs [LEDS]

Conventional and Trunking Channels

RSM LED on/off control can be assigned to a switch, button or as a menu item. This will turn the LEDs on or off on the Radio Speaker Microphone.

RSM Speaker Attenuation [ATTN]

Conventional and Trunking Channels

RSM Speaker Attenuation on/off control can be assigned to a switch, button or as a menu item. This will toggle lower volume / higher volume on the Radio Speaker Microphone.

Send Alert Tone [SNDT]

Conventional and Trunking Channels

When pressed and held, the radio will transmit a 781.3Hz tone for the programmed duration. Duration can be set in the range from 0.5 to 5 seconds.

Send Signal [SEND]

Conventional Analog Channels

Activated by a long-press and is the 5-tone equivalent to emergency alarm. ANI Mode needs to be set to five-tone. Holding this button will send the five-tone signal.

Squelch Adjust [SQL]

Conventional Channels

Squelch Adjust is used to change the signal strength required for the radio's speaker to unmute.

Squelch can be assigned as a button or menu list item.

To adjust the squelch setting, open the squelch menu. Select the desired threshold using the -/+ buttons.

Press "ENTER" to set the level.

Site Display [STDS]

Trunking Channels

When selected, the Site Display functions shows information for the currently operating site.

Displayed information includes: Site ID, Site Alias and RSSI.

Site Display can be assigned as a button or menu list item.

Site Lock [STLK]

Trunking Channels

Site lock prevents the radio from searching for other sites by locking it to the currently selected site.

Site Lock can be assigned as a button or menu list item.

Site Search [STSR]

Trunking Channels

Site Search automatically searches and selects the best available trunking site.

Site Lock can be assigned as a button or menu list item.

Surveillance Mode [SURV]

Conventional and Trunking Channels

When Surveillance Mode is on, all audible indicators (beeps etc.) and lighting functions (LEDs and Display) are disabled.

Surveillance Mode can a switch, button or as a menu list item.

System Test

Conventional and Trunking Channels

The BKR9000 portable offers a variety of system tests when connected to the appropriate test equipment. Select the appropriate test and follow the onscreen prompts.

Transmit Digital [TXAD]

Conventional Mixed-Mode Transmit Channels

When Transmit Digital is on, channels programmed for mixed-mode transmit will transmit in digital mode. When off, mixed-mode channels transmit in analog mode.

When transmitting in digital mode the display shows ‘D’ behind the TX indicator. In analog transmit, ‘A” will follow the indicator.

Transmit Digital selection can be assigned as a button, switch or menu list item.

When assigned as a button function, the “TXAD” button will be highlighted when in the Transmit Digital mode.

Transmit Power [PWR]

Conventional and Trunking Channels

Transmit Power can be selected between the programmed high and low settings. The power output of the settings depend on radio options, model and editor settings.

When operating in the high power mode, "H" will be displayed on the top line of the LCD. In low power mode, "L" is displayed.

Power selection can be assigned as a button, switch or menu list item.

Two-Tone Select [TONE]

Conventional Analog Channels

Allows the user to select from their two-tone list (programmed with RES). Selecting an item will send the two-tone signal.

Versions

Conventional and Trunking Channels

Version information about your radio can be viewed via the "Versions" menu item.

To review the information, open the Versions menu. Use the NEXT or PREV to view the installed revisions of individual items.

Version information includes:

Radio Name (if programmed): Radio name.
Date: Date of release.
Release: Overall release code.
Software: Release code for ARM.
DSP: Release code for DSP.
File Format: Currently installed file format.
BSP: Release code of installed BSP firmware.
PCB Revision: Installed printed circuit board revision number.
Date of Manufacture: Date of manufacture.

Current version information can be found in the service section at www.bktechnologies.com.

Voice Annunciation Mute [MUTE]

Conventional and Trunking Channels

Voice Annunciation Mute on/off control can be assigned to a

switch, button or as a menu item. This will mute the radio's voice announcements.

Zone Select [ZONE] *(Conventional and Trunked Channels)*

Zone Select allows the radio user to switch between programmed channel zones.

The Zone Select operation can be assigned as a button, switch or menu list item..

When Zone is assigned to a button, press the button to open the menu of available zones.

When assigned as a menu item, open the menu as described in the Navigation section.

Select the Zone you want to use.

Press “ENTER” select the Zone.

Also, If enabled, a zone can also be accessed directly from the keypad. (Refer to the RES help file.)

(See also, Channel/Zone Selection Options.)

Keypad Programming

Radio programming is to be performed only by authorized personnel. Any or all functions may be password protected to prevent unauthorized access. Check with your communications officer for information on the programmed functions of your radio.

NOTE: Trunking channels and systems cannot be programmed via the radio keypad.

Keypad programmable categories include individual Channel, Zone and Global radio parameters, individual P25 ID Quick Call/Receive List, User Tone List, User NAC List and User Talk Group ID List.

Check with your BK Technologies dealer or communications officer for information on the programmed functions of your radio.

Keypad Programming Navigation

While in programming mode the diamond, arrow up, arrow down and square buttons are used navigate the programming functions. The following table shows possible button functions:

Keypad Programming Buttons	
ENT	Opens the highlighted function or enters the displayed information
ESC	Press once to go back to previous screen or hold to exit programming mode and return to normal radio operation
NEXT	Move to the next item in a displayed list or the next character in a displayed value
PREV	Move to the previous item in a displayed list
EDIT	Used to select and edit individual characters in a displayed value
BACK	Move to the previous character in a displayed value
CLR	Clears the displayed value
EDIT	Used to edit individual characters in a displayed value
INV	Inverts a displayed digital tone value (CDCSS)

Entering Keypad Programming Mode

To enter programming mode open the menu list by pressing the assigned "Menu" button and select "Keypad Prog" from the menu list.

Use the keypad to enter the six-digit user or master password and press the Enter button.

Select the item to program and press Enter.

Available programmable functions are:

Keypad - Used to edit individual channel and zone information such as labels, frequencies, operating modes, etc.

Call List - Used to edit the P25 ID Call List entries.

User Tones - Used to edit the user selectable Code Guard entries.

User NACs - Used to edit user selectable Network Access Codes.

User TGIDs - Used to edit user selectable P25 Talk Groups

NOTE: Depending on PC programming, not all functions may be accessible for keypad programming.

Global, System, Zone and Channel Parameters

The “Keypad” programming menu consists of four sub-menus for editing global, system, zone and channel parameters (see table).

Keypad Programming Sub-Menus				
Global	**System**	**Zone**	**Channel**	
Display Top	Sys Pri 1	Add/Delete	Add/Delete	Rx/Tx NAC
Display Middle	Tx on Pri 1	Label	Label	Sq Mode
Display Bottom	Sys Pri 2	Zone Pri 1	Rx/Tx Freq	Bandwidth
User Password		Tx on Pri 1	Rx/Tx Mode	Tx Power
		Zone Pri 2	Rx/Tx Guard	TGID

Global Settings

To edit the programmable Global settings, select “Keypad” from the programing menu then select “Global” from the sub-menu.

Select the item you wish to edit from the Global menu.

Displayed Information Lines

The three main display lines can be programmed with RES to display radio information. Select top, middle or bottom line to change its displayed information. Then select the desired setting from the list (see table).

NOTE: Display changes do not affect the display on trunked channels.

Conventional Display Line Options	
None	No information is displayed.
Channel Label	Alphanumeric label of currently selected channel or active scanned channel.
Channel Number	Channel number of currently selected channel or active scanned channel.
Channel # and Zone	Currently selected channel numbers and zone.
Date and Time	Displays date and time.
DTMF*	Displays the numeric DTMF tones of received signal.
Frequency*	Operating frequency of currently selected channel or active scanned channel.
MDC*	Displays the numeric MDC ID or received signal DTMF.
Radio Name	Displays radio name.
Received TGID	P25 Talk Group ID of the radio transmitting the message currently being received.
Rx'd Unit ID	P25 ID of a received digital signal. If the incoming ID is programmed in your Unit ID Call List list, the associated label will be displayed. During standby you radio ID number is displayed.
Rx/Tx Key	Currently selected encryption key.
Rx Picklist Selections*	NAC, TGID or Code Guard currently selected from the programmable RX Pick Lists.
Subaudible*	Displays CxCSS value of received signal.
Tx Picklist Selections*	NAC, TGID or Code Guard currently selected from the programmable TX Pick Lists.
Unit ID	Shows your P25 Unit ID While receiving, the ID of the radio transmitting the message is displayed If the received ID is programmed in your radio's Call List, the corresponding label will be displayed
Zone Label	Label of currently selected zone.
Zone and Channel #	Currently selected zone and channel numbers.
Zone Number	Currently selected zone number.

*Conventional Channels Only

User Password
Select “User Password” from the “Global” menu to edit the keypad programming password. Enter a six-digit numeric.
NOTE: Changing the user password does not affect the power-up or administrator password.

System Settings

To edit the programmable System settings, select “Keypad” from the programing menu then select “System” from the sub-menu.

Select the item you wish to edit from the System menu.

System Priority 1 or 2 Channel
Priority channels can be assigned on a system wide basis. If assigned, a system priority channel will be monitored during priority scan regardless of the current operation zone priority channel.

When set to “Off”, the Priority 1 or Priority 2 Channel is designated by the selected zone setting.

When set to “Use Main” the channel selected by the channel knob operates as the priority channel.

To designate a specific priority channel choose “Select” from the priority channel menu.

Select the Zone and Channel.

Tx on Priority 1 Channel
If on, the radio will transmit on the System Priority 1 channel whenever Priority Scan is on.

Zone Settings

To edit the programmable Zone settings, select “Keypad” from the programing menu then select “Zone” from the sub-menu.

Select Add, Delete or Edit Zone from the Zone menu.

Add Zone
When selected, a new zone is added in the next available slot.

Example: If there are seven zones in the radio, the added zone will be zone eight.

Delete Zone
When selected the list of available zones is displayed. Choose the zone you wish to delete.

When a zone is removed all subsequent zones move up one spot. Example: If there are seven zones in the radio and zone five is deleted, zone six now becomes zone five and zone seven becomes zone six.

Edit Zone
Select "Edit Zone" to change the programmable zone information.

Zone Label
Use the keypad to enter a label of up to sixteen characters. (See keypad character table)

Zone Priority 1 or 2 Channel
NOTE: If system priority channels are programmed, zone priority settings are ignored.

When set to "Off", the Priority 1 or Priority 2 Channel is designated by the selected zone setting.

When set to "Use Main" the channel selected by the channel knob operates as the priority channel.

To designate a specific priority channel choose "Select" from the priority channel menu and choose from the channel list.

Zone Tx Priority 1 Channel
If on, the radio will transmit on the Zone Priority 1 channel whenever Priority Scan is on and there is no system priority 1 programmed.

Channel Settings

To edit the programmable Channel settings, select "Keypad" from the programing menu then select "Channel" from the sub-menu.

Select Add, Delete or Edit Channel from the Channel menu.

NOTE: REFER TO THE COMMAND ZONE OPERATIONS SECTION FOR ADDING OR DELETING COMMAND ZONE CHANNELS.

DO NOT ADD OR DELETE COMMAND ZONE CHANNELS VIA THE KEYPAD PROGRAMMING METHOD.

Add Channel
Select to add a new channel.

Choose the zone to which the channel is to be added.

Enter a valid channel index number of 1-5000.

NOTE: To access channels above channel sixteen, the radio must be programmed via PC for keypad channel select or “Channel Select” must be assigned as a button or menu item.

Delete Channel
When selected the list of programmed zones is displayed. Choose the zone of the channel you wish to delete.

Select the channel from the list.

Edit Channel
Select “Edit Channel” to change the programmable channel information.
Select the zone and channel to be edited.

Channel Label
Use the keypad to enter a label of up to sixteen characters. (See keypad character table)

Rx Frequency
Enter a valid receive frequency in MHz. Frequencies must be divisible by 1.25kHz.

Rx Mode
Select Analog, Digital or Mixed Mode.

Rx Guard
Analog or Mixed Mode Receive Channels Only
Select “Off” for analog signals to operate in carrier squelch mode.
Select “Tone” to enter a CTCSS tone,
Select “Digital” to enter a DCS value.
Use “INV” to invert a DCS tone.

RX NAC
Digital or Mixed Mode Receive Channels Only
Select “Enter” to program a receive NAC via the keypad.
Enter the desired value in hexadecimal (000 - FFF).

NOTE: $F7F is an invalid receiver NAC.

Choose "Select" to use a receiver NAC from the programmed pick list.

Squelch Mode

Digital or Mixed Mode Receive Channels Only

Normal - Requires carrier and NAC only to unmute digital signals.

Selective - Required for Individual Calls and use of Talkgroup IDs. Requires a matching TGID to unsquelch.

Bandwidth

Analog or Mixed Mode Channels Only

Narrowband - 12.5kHz spacing when operating in analog.

Wideband - 25kHz spacing when operating in analog.

Tx Power

Low Power - Lock channel in low power mode.

High Power - Lock channel in high power mode.

Selectable - Allow high/low transmit power selection form assigned button, switch or menu item.

Tx Frequency

Enter a valid receive frequency in MHz. Frequencies must be divisible by 1.25kHz.

Tx Mode

Select Analog, Digital or Selectable.

Tx Guard

Analog or Mixed Mode Receive Channels Only

Select "Off" for analog signals to operate in carrier squelch mode.

Select "Tone" to enter a CTCSS tone,

Select "Digital" to enter a DCS value.

Use "INV" to invert a DCS tone.

Tx NAC

Digital or Mixed Mode Transmit Channels Only

Select "Enter" to program a transmit NAC via the keypad.

Enter the desired value in hexadecimal (000 - FFF).

NOTE: $F7E and $F7F are invalid transmit NACs.
Choose “Select” to use a transmit NAC from the pick list.

TGID
Digital or Mixed Mode Channels Only
Select “Enter” to program a transmit Talk Group ID via the keypad.
Enter the desired value (1- 65535).
NOTE: 0 is an invalid transmit Talk Group ID.
Choose “Select” to use a TGID from the pick list.

P25 ID Unit Call/Receive List

The BKR9000 can be pre-programmed with up to 512 Project 25 IDs and labels. If ‘RX’d Unit ID’ is designated as a display line, the P25 ID of the radio sending the call will be shown when receiving a digital signal. If the P25 ID of the received call is programmed in the Call List, the alphanumeric label associated with the ID will be displayed. If the P25 ID is not in the Call List, the numeric P25 ID will be displayed.

Select “Call List” from the programing menu.

Select the P25 ID you wish to edit.
The display shows the label and P25 ID of the selected ID.

Select “Label” to edit or add an alphanumeric label.

Select “Dest ID” to change the P25 ID.

User Selectable Code Guards

The BKR9000 can be pre-programmed with up to 32, user selectable, CTCSS or CDCSS subaudible tones. Tones are selected via a programmed button or menu item (see TX/RX CxCSS Picklist). If enabled, the tones can be programmed via the radio’s keypad.

Select “User Tones” from the programing menu.

Select the tone to edit.

To enter a CTCSS tone select “Tone” and enter the desired frequency in Hertz (67.0 - 254.1 Hz).

To enter a CDCSS (digital) tone select “Digital” then enter the three digit

code. Use the INV button to invert the code. The following tables show the standard values for tone and digital. Any value can be entered in keypad programming. The user is not restricted to these values.

Valid Code Guard Tone Values				
Group A		**Group B**		**Group C**
67.0 (XZ)	*151.4 (5Z)	71.9 (XA)	146.2 (4B)	74.4
77.0 (XB)	162.2 (5B)	82.5 (YZ)	156.7 (5A)	79.7
88.5 (YB)	173.8 (6A)	94.8 (ZA)	167.9 (6Z)	85.4 (YA)
*100.0 (1Z)	186.2 (7Z)	103.5 (1A)	*179.9 (6B)	91.5 (ZZ)
107.2 (1B)	203.5 (M1)	110.9 (2X)	192.8 (7A)	
114.8 (2A)	218.1 (M3)	*118.8 (2B)	210.7 (M2)	
123.0 (3Z)	233.6	127.3 (3A)	225.7 (M4)	
131.8 (3B)	250.3	136.5 (4Z)	241.8	
141.3 (4A)				

* 50/60 Hz power distribution systems could cause falsing.
The assignments in a given area should be made from within one of the Groups: A, B, or C.

Valid Digital Code Guard Values								
023	025	026	031	032	043	047	051	054
065	071	072	073	074	114	115	116	125
131	132	134	143	152	155	156	162	165
172	174	205	223	226	243	244	245	251
261	263	265	271	306	311	315	331	343
346	351	364	365	371	411	412	423	431
432	445	464	465	466	503	506	516	532
546	565	606	612	624	627	631	632	654
662	664	703	712	723	731	732	734	743
754								

User Selectable Network Access Codes

The BKR9000 can be pre-programmed with up to 32, user selectable NACs. NACS are selected via a programmed button or menu item (see TX/RX Network Access Code Picklist). If enabled, the tones can be programmed via the radio's keypad.

Select "User NACs" from the programing menu.

Select the NAC to edit.

Enter the desired value in hexadecimal (000 - FFF).

NOTE: $F7E and $F7F are invalid as user selectable NAC values.

User Selectable Talkgroup IDs

The BKR9000 can be pre-programmed with up to 32, user selectable TGIDs. TGIDs are selected via a programmed button or menu item (see Talk Group ID Picklist). If enabled, the TGIDs can be programmed via the radio's keypad.

Select "User TGIDs" from the programing menu.

Select the Talk Group ID to edit.

Enter the desired value (1 - 65535).

NOTE: A Talk Group ID value of 0 is not allowed.

BK Technologies Warranty Information

For the latest warranty information, visit:

https://www.bktechnologies.com/service-portal/factory-service/warranty

All repairs must be performed by an authorized BK Technologies service center during the life of the warranty. Except for duration and factory-only repair, extended warranties are identical to our standard 2 year warranty. Factory extended warranties cover all BK Technologies portables, mobiles and base stations and must be purchased at point of sale.

For information about your warranty contact BK Technologies:

Phone: (800) 648-0947

Email: care@bktechnologies.com

If you need service, contact your BK Technologies dealer. If you find it impractical to have service provided by your dealer, contact the BK Technologies Technical Service Department at (800) 422-6281.

Repairs may be sent to the address below:

BK Technologies
Attention: Customer Service
7100 Technology Drive
West Melbourne, FL 32904

Keypad Text/Programming Characters	
1	1
2 ABC	A, B, C, a, b, c, 2
3 DEF	D, E, F, d, e, f, 3
4 GHI	G, H, I, g, h, i, 4
5 JKL	J, K, L, j, k, l, 5
6 MNO	M, N, O, m, n, o, 6
7 PQRS	P, Q, R, S, p, q, r, s, 7
8 TUV	T, U, V, t, u, v, 8
9 WXYZ	W, X, Y, Z, w, x, y, z, 9
0	0, Blank Space
*	*, ., ,, ;, :, ", ', !, ?, %, &, ', ~, @, _
#	#, $, +, -, =, ^, /, \, |, <, >, {, }, [,]

My Radio Settings

Serial # _____ ID# _____

	Conv.	Trunked
Collar Switch		
Orange Button		
Top Side		
Middle Side		
Bottom Side		
Left Front		
Center Front		
Right Front		

Menu Settings

Conv.	Trunked