

KNG Series

Portable Digital Radio

User's Manual



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FEDERAL COMMUNICATIONS COMMISSION REGULATIONS

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 BK Radio 2-way radio has a RF exposure product label. Also, your BK Radio owner's and service manuals include information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

COMPLIANCE WITH RF EXPOSURE STANDARDS

Your BK Radio 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 BK Radio 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

INDUSTRY CANADA COMPLIANCE

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 Canada.

Introduction

Congratulations on your purchase of the BK Radio KNG Portable radio from RELM Wireless.

The KNG 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 RELM/BK Radio 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 BK Radio KNG Portable radio. The KNG 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 Radio 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.

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 Radio approved clip, holder, holster, case, or body harness for this product. Using approved body-worn accessories is important because the use of BK Radio 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.
- Use only BK Radio approved supplied or replacement antennas, batteries, and accessories. Use of non-BK Radio approved antennas, batteries, and accessories may exceed the FCC RF exposure guidelines.

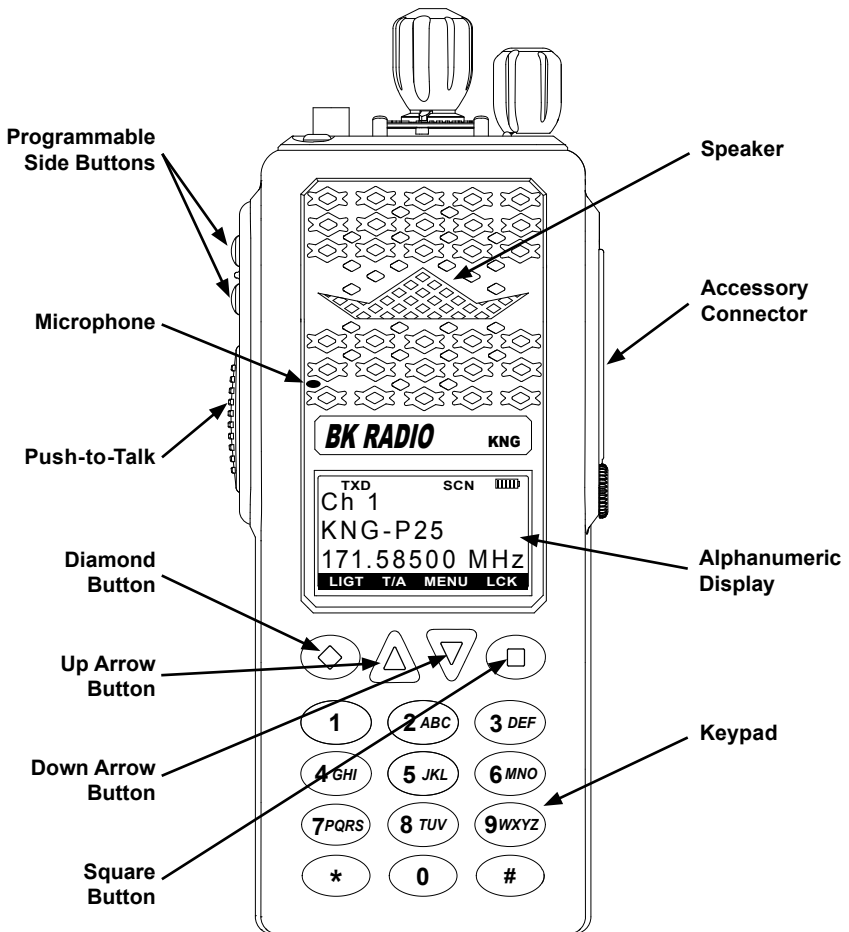
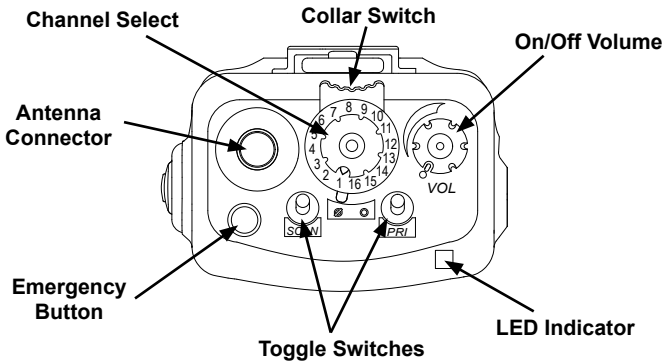
For a list of BK Radio approved accessories visit the following website: <http://www.relm.com>.

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.

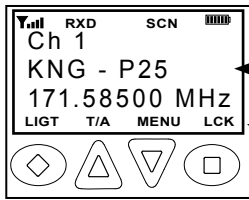
CONTACT INFORMATION

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

Radio Controls



LCD Display



- **Status Indicators**
- **Programmable Alphanumeric Labels**
- **Programmed Button Labels**

The KNG display can be programmed for a variety of options and functionality. Check with your RELM/BK Radio dealer or communications officer for information on the programmed functions of your radio.

Status Indicators

	Receiver Signal Strength
RXD, RXA	Receive Digital, Receive Analog, Hold Time Active
TXD, TXA	Transmit Digital, Transmit Analog
P1, P2	Priority 1 Channel, Priority 2 Channel
Ø, O	Encrypted, Clear
SCN	Scan Channel, Flashing 'SCN' = Scan in Progress.
RTA	Repeater Talkaround enabled
	Unit-to-Unit operation active
	Battery Level Indicator

Alphanumeric Label Options

NOTE: Three channel information lines are programmable with PC Radio Editor.

Channel Number	Channel Number of Currently Selected Channel or Active Scanned Channel
Channel Label	Alphanumeric Label of Currently Selected Channel or Active Scanned Channel
Frequency	Operating Frequency of Currently Selected Channel or Active Scanned Channel
Received Unit ID	P25 ID of the radio transmitting the message currently being received If the received ID is programmed in your radio's Call List, the corresponding label will be displayed
Received Talk Group ID	P25 Talk Group ID of the radio transmitting the message currently being received
Pick List Selection	NAC, TGID or Code Guard currently selected from the programmable Pick Lists
Zone Label	Label of Currently Selected Zone
Zone and Channel	Currently Selected Zone and Channel Numbers

Buttons and Labels

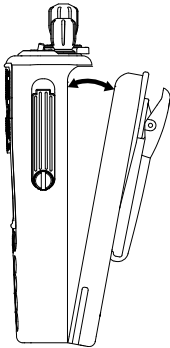
NOTE: The Diamond, Up Arrow, Down Arrow, and Square buttons are programmable with PC Radio Editor Software. The programmed functions are activated by pressing the associated button. Active functions are indicated by a highlighted background. **SCN** = Active, **SCN** = Inactive.

EMR	Emergency Operation
LCK	Keypad Lockout
LIGT	Keypad and Display Backlight
LPW	Transmit in Low Power Mode
MENU	Open the programmed radio menu
MON	Monitor
NUIS	Nuisance Channel Delete
PRI	Set Priority Channels
PSCN	Priority Scan
RKY	Request OTAR Encryption Rekey
RNAC	User Selectable Receive NAC
RCG	User Selectable RX CTCSS/CDCSS Code Guard (Analog or Mixed Mode Operation)
SCN	Channel Scan
SURV	Surveillance Mode
SQL	Squelch Adjust
T/A	Repeater Talkaround
TXD	Transmit Digital (Mixed Mode Operation)
TXS	Transmit Secure (Encrypted Models)
U2U	Unit-to-Unit Call (Digital Operation Only)
UKEY	User Selectable Encryption Key (Encrypted Models)
UKST	User Selectable Encryption Keyset (Encrypted OTAR Models)
TNAC	User Selectable TX NAC (Digital or Mixed Mode Operation)
UTG	User Selectable Talk Group (Digital or Mixed Mode Operation)
TCG	User Selectable TX CTCSS/CDCSS Code Guard (Analog or Mixed Mode Operation)
ZER	Zeroize Encryption Keys and Password (Encrypted Models)
ZON	Channel Zone Select
ZSCN	Zone Scan

Battery Installation and Removal

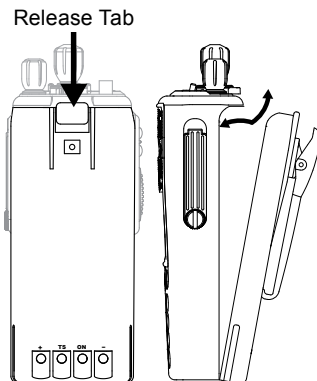
NOTE: For safety reasons, rechargeable battery packs are shipped uncharged or only partially charged. Therefore, a rechargeable battery pack should be properly charged in an approved battery charger before use.

Installing the Battery



1. Turn the radio off.
2. Align the tabs on the bottom of the battery with the slots on the radio.
3. Push the top of the battery toward the radio until release tab "clicks" into place.

Removing the Battery



1. Slide the release tab toward the bottom of the radio.
2. Pull the top of the battery out. (Approximately 30°)
3. Pull up to remove the battery pack.

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

Battery Care and Maintenance

BK Radio 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 that could prevent a good electrical contact with the charging base.



WARNING!

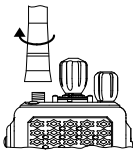
Do not drop a battery pack into fire.
An explosion may occur

Antenna Installation and Removal

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

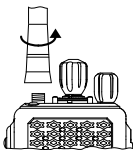
Use RELM/BK Radio approved antennas only. Use of non-qualified or mismatched antennas could result in diminished radio operation. Published radio specifications cannot be guaranteed with non-approved antennas. Bent, broken or damaged antennas should be replaced.

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

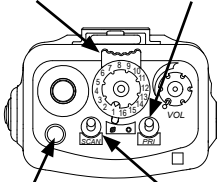


Holding the base, turn the antenna counterclockwise until released.

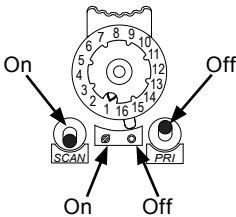
Programmable Switch and Button Functions

The KNG portable radio is equipped with seven programmable control buttons and three programmable switches. Switch and button functions are assigned via PC programming.

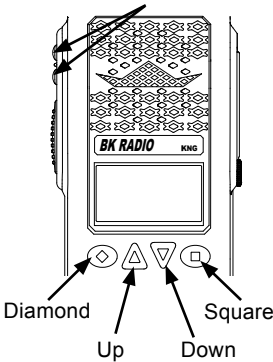
Collar Switch Right Toggle



Orange Button Left Toggle



Side Buttons



Switch Options

Channel Scan	Priority Scan	Zone Scan
Backlight	Talkaround	Tx Power
Monitor	Tx Digital	Tx Secure*
Keypad Lock		

Buttons Options

Channel Scan	Priority Scan	Keypad Lock
Zone Scan	Menu	Backlight
Tx Power	Monitor	Tx Digital
Tx Secure*	Unit Call	Zeroize Keys*
Rekey Request**	PRI CH Select	Picklist-CxCSS
Picklist-NAC	Picklist-TGID	Picklist-Key*
Picklist-Key Set**	Zone Select	Squelch Set
Repeater Talkaround	Surveillance Mode	Nuisance Channel
Emergency		

Menu Options

Channel Scan	Priority Scan	Keypad Lock
Zone Scan	Backlight	Tx Power
Monitor	Tx Digital	Tx Secure*
Unit Call	Zone Select	Zeroize Keys
Keypad Programming	Surveillance Mode	Picklist-CxCSS
Picklist-NAC	Picklist-TGID	Picklist-Key*
Picklist-Key Set**	Squelch Set	PRI CH Select
Repeater Talkaround	Channel Scan List	Zone Scan List
Cloning	Tactical OTAR***	Rekey Request**

Preset Menu Items

Version	Radio Status	
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* Requires Encryption option.

** Requires Over-the-Air rekeying option.

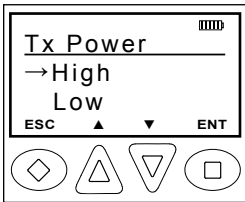
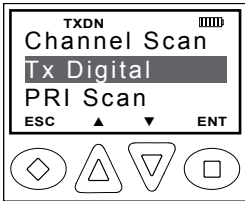
*** Requires Tactical OTAR option.

Functions assigned to the diamond, square or up/down buttons will be highlighted on the display when turned on.

Keypad Menu Operation

One button can be programmed as 'Menu'. Items shown in the previous table can be programmed and arranged via PC programming. These items can then be accessed with the 'Menu' button.

To select from the menu:

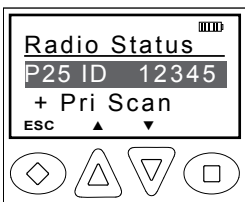


1. Press the programmed "Menu" button.
2. Scroll to the desired menu item using the up/down buttons.
3. Press the square button marked 'ENT' to open the selected item.
4. Use the up/down buttons to highlight the desired operation.
5. Press the square button marked 'ENT' to set the selection.
6. Press and hold the diamond button marked 'ESC' to return to normal radio operation.

Preset Menu Items

Version - Selecting "Version" from the menu list will display information on the installed radio firmware.

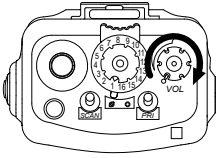
Radio Status - selecting "Radio Status" displays the programmed P25 unit ID number and current radio functions status.



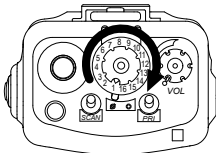
Currently active functions will be indicated by a "+" icon next to the function.

Basic Radio Operation

Receive



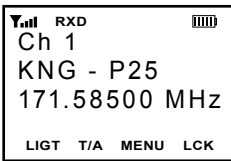
1. Turn power on by turning the Volume knob clockwise. A beep sounds, indicating the radio is operational. The LCD display shows the programmed information of the currently selected channel. Programmable channel information options include channel number, channel label and channel frequency.



2. Select a channel by rotating the Channel Selector knob.

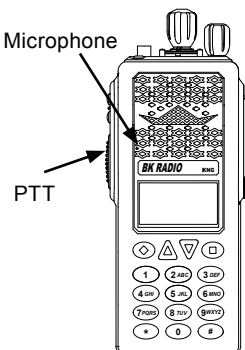
3. Open the squelch to adjust the volume

(Open squelch can be achieved by selecting the programmed Monitor function.)



When a signal is received, the unprogrammable top line of the display indicates the current channel's operating mode. RXA = analog, RXD = digital.

Transmit

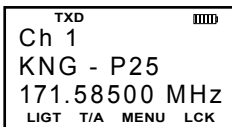


1. Press the PTT (Push-To-Talk) switch. When the radio is transmitting the indicator LED glows red and TXD or TXA appears in the display.

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

3. Release the PTT switch to stop transmitting.

If the length of your message exceeds the programmed Time-Out Timer setting, the transmitter automatically shuts off and a 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.

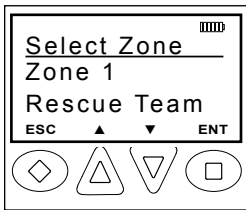
NOTE: When using a channel programmed for mixed mode transmit the signal will be transmitted in the mode selected by the TX Digital selection. Or if programmed for Mixed Mode Talkback, the radio will transmit in the mode of the last received channel while the "RX" icon is displayed. (See Mixed Mode Operation.)

Channel Zone Selection

The KNG P-150 can be programmed with up to 512 individual channels. These 512 channels can be divided into up to 32 zones of one or more channels. Zone selection can be assigned to any of the programmable buttons or as a menu item.

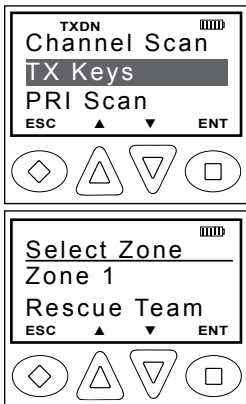
Use the following steps to access the Zones.

If programmed to a button:



1. Press the button programmed for Zone Selection (**ZON**). The display shows the active Zone Number and its programmed label.
2. Use the up/down arrows to scroll to the desired zone or use the numeric keypad to enter the desired zone number.
3. Press the ENT button to select the group.
4. Press the ESC button to return to normal operation.

If programmed to the Menu button:



1. Press the Menu button.
2. Use the up/down buttons to highlight the "Zone Select" selection. The display shows the active Zone Number and its programmed label.
3. Press the ENT to open the menu.
4. Use the up/down arrows to scroll to the desired zone or use the numeric keypad to enter the desired zone number.
5. Hold the 'ESC' button to return to normal operation..

Code Guard Operation

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 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 = 3966(\$F7E hex). The radio will unmute when a digital signal with any NAC is detected. The 3966 (\$F7E hex) 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

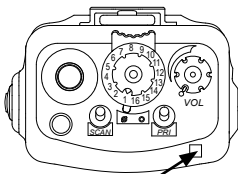
receive NAC and TGID for the radio to unmute. The default TGID is 1.

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.

Code Guard Receive

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

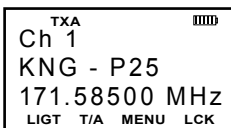
Code Guard Transmit



Busy Channel/Transmit Indicator

The frequency must be clear prior to transmitting on a Code Guarded channel. If the LED Indicator is yellow 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 microphone one to two inches from your mouth.
3. Release the PTT switch to stop transmitting.

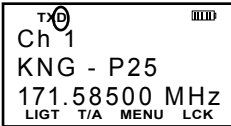


Mixed Mode Operation

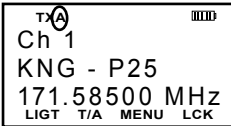
The receiver and transmitter are capable of operating in analog wide-band (25 kHz channel spacing), analog narrow-band (12.5 kHz channel spacing) and APCO Project 25 Digital Mode.

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' soft switch



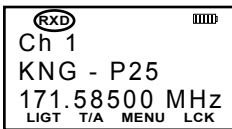
Digital receptions and transmissions will be indicated by illuminating the D annunciator in addition to the RX or TX annunciator.



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, if the signal was received on the Ready to Transmit (RTX) channel. Depending on programming, 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.

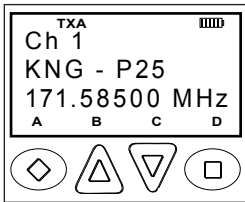


Press the PTT while the RX indicator is shown

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.

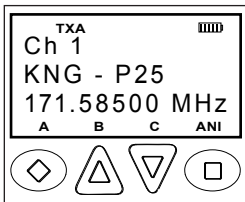
DTMF/ANI Operation

The KNG portable radio can be programmed, on a zone-by-zone basis, to send DTMF tones manually via the keypad and/or send a DTMF ID automatically (ANI).



ANI Only - If the zone is programmed to for 'ANI Only' the programmed ANI ID number will be sent with each PTT.

DTMF Only - If the zone is programmed to for 'DTMF Only' the alphanumeric keys are used to transmit DTMF tones while holding the PTT. The square, up/down and diamond buttons are used to send A, B, C and D characters.



ANI and DTMF - If the zone is programmed for 'Both', the ANI is transmitted when the square button is pushed during transmit. DTMF tones are sent by pressing the alphanumeric keys during transmit. NOTE: The "D" DTMF tone is only available after the ANI has been sent.

Encryption Operation

The radio may optionally be configured for Secure communication on channels operating in Digital Mode. No encryption is available for analog channels.

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 Radio keyloader cable. The radio can hold up to 32 AES and/or DES keys.

After loading keys in the radio, the KNG PC programming software 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). The KNG PC programming

software 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 Radio keyloader cable.

Operation

The receiver can be programmed to automatically detect 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.

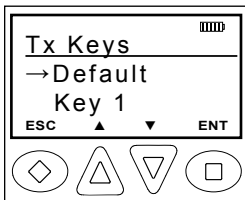
When receiving or transmitting an encrypted signal, the encrypt icon flashes in the display.

Transmit Encryption Key Selection

The radio can hold up to 32 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. If a key is selected from the pick list, it will be used during transmit on every channel that allows selectable keys.

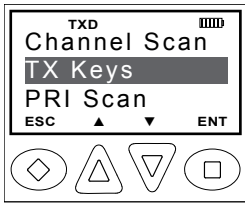
Follow the steps below to select the encryption key.

If programmed to a button:



1. Press the button programmed for the Key Pick List (**UKEY**).
2. Use the up/down buttons to highlight the desired key. Or, using the keypad, press the number of the desired key. 'Default' = Key assigned to channel via programming.
3. Press the 'ENT' button to select the key.
4. Hold the 'ESC' button to return to normal operation.

If programmed to the Menu button:



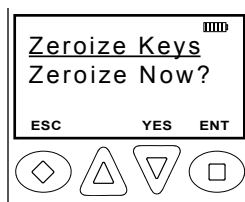
1. Press the Menu button.
2. Use the up/down buttons to highlight "Tx Keys" selection.
3. Press the 'ENT' button to open the key menu.
4. Use the up/down buttons to highlight the desired key. Or, using the keypad, press the number of the desired key. 'Default' = Key assigned to channel via programming
5. Press the 'ENT' button to select the key.
6. Hold the 'ESC' button to return to normal operation.

If a key is selected that has not been programmed, the radio will not transmit but will beep and display 'NO KEY' when PTT is pressed.

Zeroization

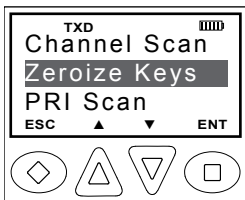
The radio provides a method for the user to panic-zeroize all encryption keys. This service also sets all touchpad passwords to 'FFFFFF'. The zeroization service can be invoked with the steps below.

If programmed to a button:

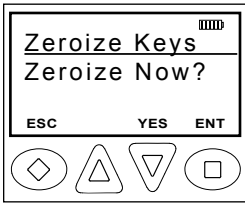


1. Press the button programmed for Zeroizing. **(ZER)**
2. Press the 'YES' button to zeroize encryption or press ESC to abort the operation.
3. Hold the 'ESC' button to return to normal operation.

If programmed to the Menu button:



1. Press the Menu button.
2. Use the up/down buttons to highlight 'Zeroize Keys' selection.
3. Press the 'ENT' to open the menu.



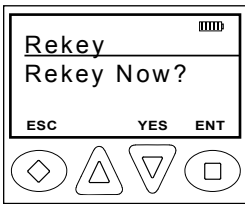
4. Press the 'YES' button to zeroize encryption or press 'ESC' to abort the operation.
5. Hold the 'ESC' button to return to normal operation.

The LCD will display "Keys Zeroized" after a successful operation.

Over-the-Air-Rekeying (OTAR)

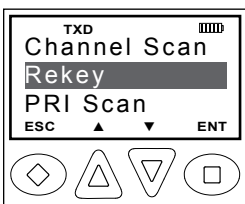
If the radio has OTAR the radio optionally provides a method for the user to manually request a rekey from the KMF (Key Management Facility). If manual rekeying is enabled, the rekey service can be invoked with the following steps.

If programmed to a button:

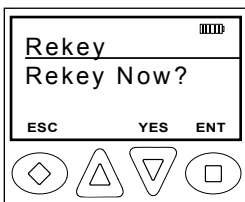


1. Press the button programmed for Rekey. **(RKY)**
2. Press the 'YES' button to request a key or press ESC to abort the operation.
3. Hold the 'ESC' button to return to normal operation.

If programmed to the Menu button:



1. Press the Menu button.
2. Use the up/down buttons to highlight "Rekey" selection.
3. Press the 'ENT' to open the menu.
4. Press the 'YES' button to request a key or press 'ESC' to abort the operation.
5. Hold the 'ESC' button to return to normal operation.



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

If the rekey attempt fails, a descending tone will sound, and the display will momentarily show "NO_REKEY".

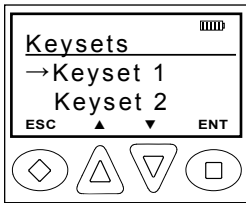
If the selected channel has not been marked as an OTAR channel, the radio will boop and "NON-OTAR" will appear on the display.

Keypset Viewing and Selecting

The radio can hold up to 8 encryption keysets. 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.

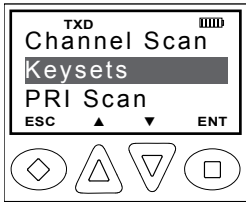
Follow the steps below to view/select the Keypset.

If programmed to a button:

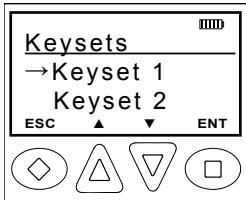


1. Press the button programmed for the Keypset (**UKST**).
2. Use the up/down buttons to highlight the desired keyset.
3. Press the 'ENT' button to select the highlighted keyset.
4. Hold the 'ESC' button to return to normal operation.

If programmed to the Menu button:



1. Press the Menu button.
2. Use the up/down buttons to highlight the "Keypsets" selection.
3. Press the 'ENT' button to open the keyset menu.
4. Use the up/down buttons to highlight the desired keyset.
5. Press the 'ENT' button to select the keyset.
6. Hold the 'ESC' button to return to normal operation.



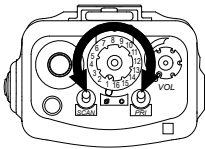
Tactical OTAR Option (KZA0584)

Tier III KNG portables may be equipped with Tactical Over-the-Air Rekeying option KZA0584. The tactical OTAR option allows a key source KNG radio to send individual encryption keys to OTAR equipped target radios without the need for a full Key Management Facility (KMF).

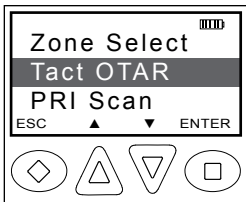
For proper operation the Source and Target radios require specific control key loads and PC editor settings. See the programming section of this manual for required setup details.

Sending Keys

OTAR Key Source Radio

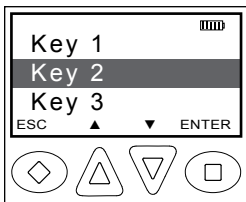


Select the channel designated as the OTAR channel.



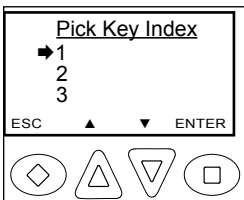
Press the programmed “Menu” button.

Use the Up/Down buttons to scroll to “Tact. OTAR” and press the enter button.



Use the Up/Down buttons to select the desired encryption key. Programmed key labels are displayed. To view the label and key index press the “#” button.

Alternatively the key can be selected directly via the keypad by pressing 1-32.

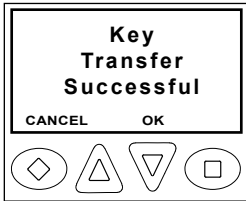


If the “Key Pick List Target” is programmed (see “Target Radio Options” under “Key Source Radio Configuration”) the pick list target screen is displayed.

Use the Up/Down buttons to select the desired target key slot. This is the key pick list slot where the target radio will store the transferred key.

Alternatively a key can be selected directly via the keypad by pressing 1-32.

Press the enter key to begin the key transfer.
 When the key information has been sent the radio will momentarily display “Key Transfer Successful”.



If the radio is not programmed for Tactical OTAR operation or is on a non-OTAR channel the display will read “Non-Tact., OTAR Channel”.

Should the key transfer fail for any other reason a failure message with a two digit error code will be displayed.

(See table below.)

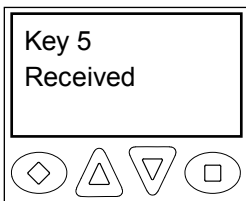
Tactical OTAR Error Code Table

Code	Description
01	General Failure
02	DTEK Not Found or Not AES
04	MTEK Not Found or Not AES
F0	General Failure during Key Wrap
F1	Key Not Found for Key Wrap
F4	Key to Wrap Key is Not identified as a KEK

Receiving Keys

OTAR Key Target Radio

Select the channel designated as the OTAR channel to receive the rekey information.



Upon successful key transfer the radio will show the received key’s programmed label and “Key Received”. The key received message remains displayed until radio power is cycled.

The radio will operate normally even while the message is displayed.

If the key transfer is unsuccessful no message will be displayed.

General Options

Backlight (LIGT)

When the Backlight function is programmed to a switch the display and keypad will illuminate when the switch is on.

If the backlight function is programmed to a button the display and keypad will illuminate for the programmed duration. (1-6 seconds or ON)

Toggle switch operation

On - Slide the programmed switch toward the front of the radio.

Off - Slide the switch up toward the channel select switch.

Button Operation

On - Press the programmed button. **LIGT**

Off - Press the button again. **LIGT**

Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'Backlight'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select 'On' or 'Off'.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

Keypad Lock

The Keypad Lock function can be programmed as a radio menu item. Enabling Keypad Lock the programmable keypad buttons.

NOTE: Programmable side buttons are not lockable.

Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select Lock.
3. Press the 'ENT' button.
4. Use the up/down buttons to select 'On' or 'Off'.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

Monitor (MON)

When MON is on, the radio will unmute. The LCD display will show the receive indicator along with the signal strength indicator. If the

channel is not in use the signal strength indicator will show no bars and you will hear white noise, sometimes called squelch noise.

Toggle switch operation

On - Slide the programmed switch toward the front of the radio.

Off - Slide the switch up toward the channel select switch.

Button Operation

On - Press the programmed button. **MON**

Off - Press the button again. **MON**

Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'Monitor'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select 'Off' or 'On'.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

Repeater Talkaround (TA)

When TA is turned on the radio will transmit on the programmed receive frequency of the selected channel.

Toggle switch operation

On - Slide the programmed switch toward the front of the radio.

Off - Slide the switch up toward the channel select switch.

Button Operation

On - Press the programmed button. **T/A**

Off - Press the button again. **T/A**

Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'Talk Around'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select 'Repeater' or 'Direct'.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

Surveillance Mode (SURV)

When SURV is on all audible indicators (button beeps etc.) and lighting functions (LED and Display) are disabled.

Button Operation

On - Press the programmed button. **SURV**

Off - Press the button again. **SURV**

Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'Silent'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select 'On' or 'Off'.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

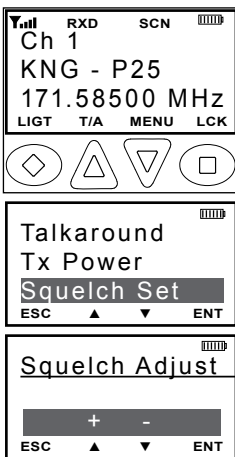
Squelch Adjust (SQL)

Squelch adjust can be assigned to the keypad or a radio menu item.

Button Operation

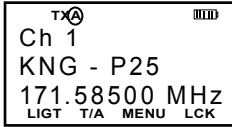
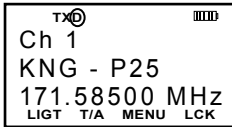
1. Press the programmed button.
2. Use the up/down arrows to select the desired squelch point.
3. Press 'ENT' to set the selection.
4. Hold the 'ESC' button to return to normal operation.

Menu Operation



1. Press the Menu button.
2. Use the up/down buttons to select 'Squelch Set'.
3. Press the 'ENT' button.
4. Use the up/down arrows to select the desired squelch point.
5. Press 'ENT' to set the selection.
6. Hold the 'ESC' button to return to normal operation.

Tx Digital (TXD)



When the TXD 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.

Toggle switch operation

- On - Slide the programmed switch toward the front of the radio.
- Off - Slide the switch up toward the channel select switch.

Button Operation

- On - Press the programmed button. **TXD**
- Off - Press the button again. **TXD**

Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'TX Digital'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select 'Digital' or 'Analog'.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

Tx Power (LPW)

If Tx Power selection is enabled, transmit power can be switched between the high power and the pre-programmed low power setting.

Toggle switch operation

- High - Slide the programmed switch toward the front of the radio.
- Low - Slide the switch up toward the channel select switch.

Button Operation

- High - Press the programmed button. **LPW**
- Low - Press the button again. **LPW**

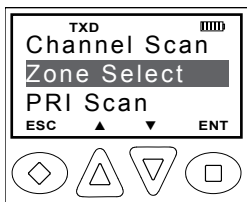
Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'TX Power'.
3. Press the 'ENT' button.

4. Use the up/down buttons to select High or Low.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

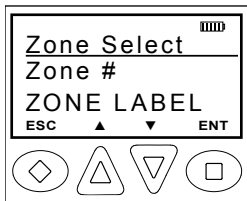
Zone Select (ZON)

The 512 channels available in the KNG can be divided into multiple operating zones. Switching between zones is accomplished via a programmed button or menu item. Optionally, zone labels or numbers can be displayed on the LCD. (See Alphanumeric Label Options.)



Button Operation

1. Press the programmed button. **ZON**
2. Use the up/down buttons to select the desired zone.
3. Press 'ENT' to set the zone.
4. Press the 'ESC' button to return to normal operation.

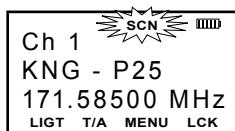


Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select the desired zone.
3. Press 'ENT' to set the zone.
4. Hold the 'ESC' button to return to normal operation.

Scan Options

Channel Scan (SCAN)



The display indicates scan operation by flashing SCAN.

Scan operates only while the radio is not transmitting. The radio checks for signals on channels in the preset Scan List, as well as the channel selected by the Channel Selector knob.

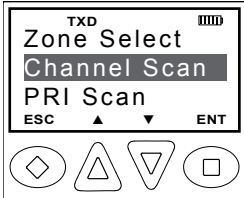
When a signal is detected, scanning stops and the message is received. The received channel is shown in place of the selected channel.

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

Toggle switch operation

On - Slide the programmed switch toward the front of the radio.

Off - Slide the switch up toward the channel select switch.



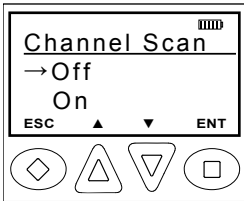
Button Operation

On - Press the programmed button. **SCAN**

Off - Press the button again. **SCAN**

Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'Scan'.
3. Press the ENT button.
4. Use the up/down buttons to select 'On' of 'Off'.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.



Scanning Code Guarded 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.

Nuisance Channel Delete

If your radio is programmed for Nuisance Channel Delete and Channel Scan is assigned to a top toggle switch, a Nuisance Channel can be temporarily removed from the Scan List by sliding up and then back down. Turn off Scan for at least five seconds or cycle radio power to revert to programmed scan list.

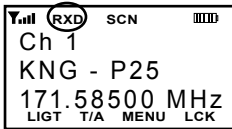
Transmitting with Scan On

The radio transmits on the channel selected by the Channel Selector knob unless Talkback Scan is enabled or "Transmit on Priority 1" is enabled (see Priority Scan).

When the PTT switch is released, the radio continues to monitor the

selected channel for the preset scan delay time before it resumes scanning.

Talkback Scan



If your radio is programmed for Talkback Scan, press PTT while a channel is active or while scan delay time remains, you will be responding on the transmit frequency of the received channel. The 'RX' indicator will be shown in the display while scan delay time remains.

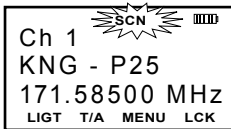
Talkback Scan will not work if Priority Scan is on and your radio is also programmed to transmit on the Priority 1 channel.

Priority Scan (PRI)

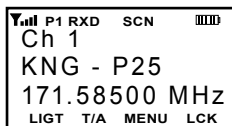
Priority Scan enables the radio to receive on any channel while monitoring for a message on the designated priority channel(s). The radio samples each priority channel at a preset rate (.25-2.0 seconds) regardless of activity on any other channel. Priority Scan operates only while the radio is not transmitting and can be used in combination with scan operation.

Up to two priority channels can be on a radio wide (Global) or per-zone basis. When Global Priority channels are enabled, zone priority selections are disabled.

If priority channels are assigned on a per-zone basis, the radio monitors the priority channels in the currently selected zone. If priority channels are programmed on a Global basis the radio will monitor the assigned channels regardless of the currently selected zone.



When Priority Scan is on, the display flashes SCN. If a message is received on a priority channel, the Priority Indicator appears, and the radio receiver locks onto that channel for the duration of the transmission, unless a higher priority channel interrupts.



The two channels, designated as PR1 and PR2, are periodically sampled for activity, even if a different transmission is being monitored. Activity on PR2 preempts activity

on any of the non-priority channels. Receptions on PR1 have priority over any other channel, including PR2.

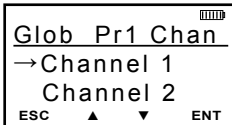
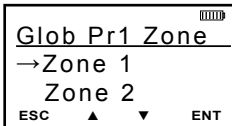
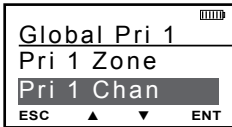
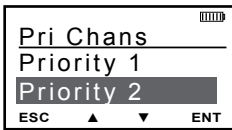
Either priority channel can be programmed as a fixed channel, tied to the Channel Selector knob, or programmed OFF. If the radio is programmed to transmit on PR1, transmissions will occur on the first priority channel when operating in Priority Scan Mode.

Priority Scan can be used in combination with Code Guard. If a message is received on a priority channel, the radio receiver locks on to the priority channel and checks to see if the proper Channel Guard value is present. If the signal contains the proper Channel Guard value, the radio receives the message. Otherwise, the radio will re-check the channel every 4 seconds, until the activity on the channel ceases.

If enabled the user can use the keypad to change the priority channels. The Priority Channel selection can be programmed to a programmed button or as a menu item.

To select a new Priority Channel:

Button Operation

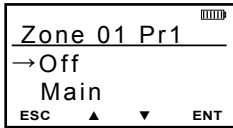


Press the programmed button. **PRI**

1. Use the up/down buttons to select 'Pri. Channels'.
2. Press 'ENT'.
3. Use the up/down buttons or to select the desired priority channel.
4. Press 'ENT'.
5. Select 'Use Global' to assign a radio wide priority channel or 'Use Per Zone' to assign a zone priority channel.

Use Global

- 6a. Select "Priority 1 Zone"
- 6b. Use the up/down buttons to select the zone.
- 6c. Press 'ENT' to set the zone.
- 6d. Select "Priority 1 Channe"
- 6e. Use the up/down buttons to select the channel.
- 6f. Press 'ENT' to set.



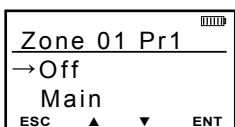
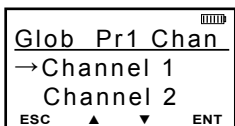
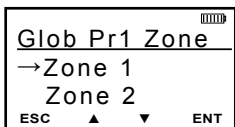
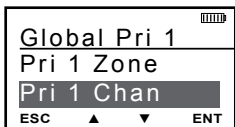
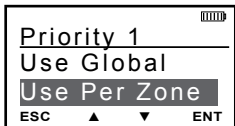
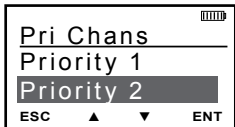
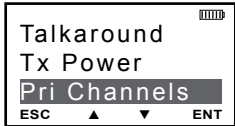
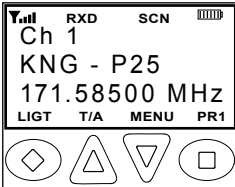
Use Per Zone-

6a. Use the up/down buttons to select the priority channel for the zone.

6b. Press 'ENT' to set.

7. Hold 'ENT' to return to normal operation

Menu Operation



1. Press the Menu button.

2. Use the up/down buttons to select 'Pri. Channels'.

3. Press 'ENT'.

4. Use the up/down buttons or to select the desired priority channel.

5. Press 'ENT'.

6. Select 'Use Global' to assign a radio wide priority channel or 'Use Per Zone' to assign a zone priority channel.

Use Global -

7a. Select Priority Zone

7b. Use the up/down buttons to select the zone.

7c. Press 'ENT' to set.

7d. Select Priority Channel

7e. Use the up/down buttons to select the channel.

7f. Press 'ENT' to set.

Use Per Zone -

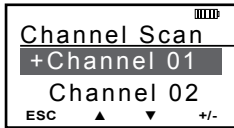
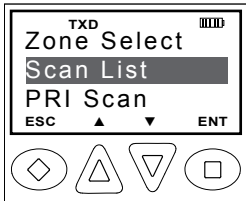
7a. Use the up/down buttons to select the zone.

7b. Press 'ENT' to set.

8. Hold 'ENT' to return to normal operation

Scan List Add/Delete

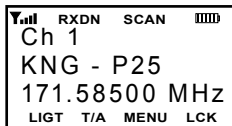
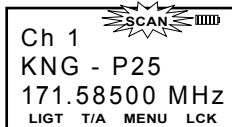
A menu item can be programmed to add or remove channels from the scan list. Channels currently in the scan list will show 'SCN' in the top line of the display.



To edit the Scan List:

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'Scan List' add or delete.
3. Press 'ENT'
4. Use the up/down buttons to select the desired channel. Or enter the channel number with the numeric keypad.
5. Use the +/- button to add or delete the channel from the Scan List. Channels preceded by '+' are Scan List channels
6. Press 'ENT'
7. Hold 'ESC' to return to normal radio operation.

Zone Scan (ZSCN)



When Zone Scan is turned on, the radio scans all programmed scan channels in zones programmed as Zone Scan zones.

Toggle switch operation

On - Slide the programmed switch toward the front of the radio.

Off - Slide the switch up toward the channel select switch.

Button Operation

On - Press the programmed button. **ZSCN**

Off - Press the button again. **ZSCN**

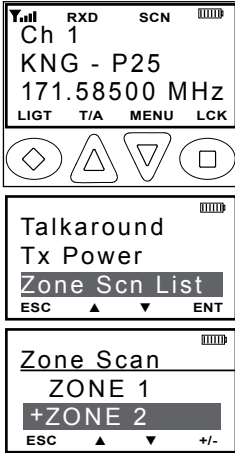
Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'Zone Scan'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select On or Off.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

Zone Scan List Add/Delete

A menu item can be programmed to add or remove Zones to the Zone Scan List.

To add a zone to the Scan List:



1. Press the Menu button.
2. Use the up/down buttons to select 'Zone Scan List'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select the zone to add or delete.
5. Press the +/- button to toggle the selection. Zones in the scan list will be preceded by a '+' symbol.
6. Hold the 'ESC' button to return to normal operation.

Vote Scan (KZA0581)

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 and selects the channel with the best signal.

If enabled vote scanning takes place whenever the channel scan switch is 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.

Emergency Signalling Options

The KNG 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.

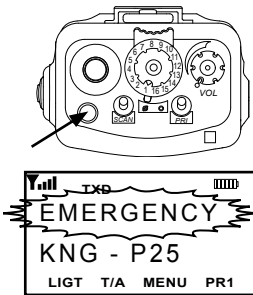
On channels programmed for analog transmissions, pressing PTT in Emergency Mode will result in a normal analog transmission.

On channels programmed for Mixed Mode transmissions, pressing PTT will result in a digital transmission, regardless of the position of the 'TX Digital' switch.

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 selected or 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 the display will flash the word 'EMERGENCY' and the P25 ID of the radio sending the signal for the duration of the reception, and during any hold time. The RXD icon will also be lit.

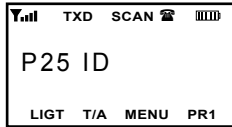
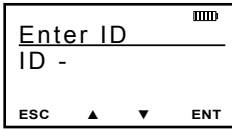
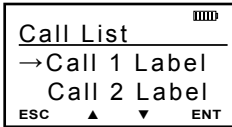
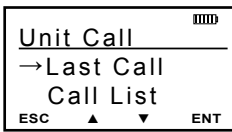
Unit-to-Unit Call Options

Individual Call (U2U)

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.

Button Operation



1. Press the programmed button. 'U2U'
2. Use the up/down buttons to select the desired Unit 'Call' option.
3. Press 'ENT' to enter Unit Call Mode
Display shows phone icon and P25 ID in use.

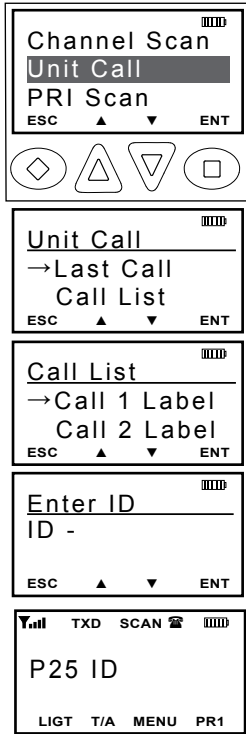
Last Call = Use the P25 ID of the last Call.
'ENT' initiates call.

Call List = Use the programmed P25 ID List.
'ENT' brings up programmed Call List.
Use the up/down button to select the desired ID.
Press 'ENT' to initiate the call.

Enter ID = Enter a numeric P25 ID.
'ENT' brings up 'Enter ID' menu.
Use the keypad to enter the desired ID.
Press 'ENT' to initiate the call.

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

Menu Operation



1. Press the 'Menu' button.
2. Use the up/down buttons to select 'Unit Call'
3. Use the up/down buttons to select the desired Unit 'Call' option.
4. Press 'ENT' to enter Unit Call Mode. Display shows phone icon and P25 ID in use.

Last Call = Use the P25 ID of the last Call. 'ENT' initiates call.

Call List = Use the programmed P25 ID List. 'ENT' brings up programmed Call List. Use the up/down button to select the desired ID. Press 'ENT' to initiate the call.

Enter ID = Enter a numeric P25 ID. 'ENT' brings up 'Enter ID' menu. Use the keypad to enter the desired ID. Press 'ENT' to initiate the call.

5. Press the 'ESC' button to return to normal operation.

Unit-to Unit Callback

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

Call List Programming

If enabled with the PC radio editor, the P25 Call List can be edited via the radio's keypad programming function. (See Keypad Programming)

Encryption Options

Tx Secure (TXS)

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 or Clear Only channels.

Toggle switch operation

On - Slide the programmed switch toward the front of the radio.

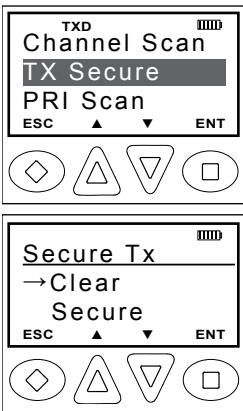
Off - Slide the switch up toward the channel select switch.

Button Operation

On - Press the programmed button. **TXS**

Off - Press the button again. **TXS**

Menu Operation

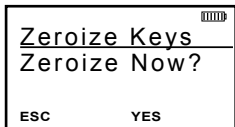
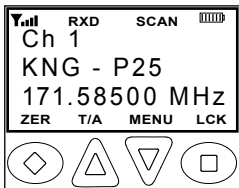


1. Press the assigned Menu button.
2. Use the up/down buttons to select 'TX Secure'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select Secure or Clear.
5. Press the 'ENT' button to set the selection.
6. Hold the 'ESC' button to return to normal operation.

Zeroize Keys (ZER)

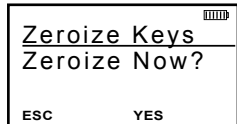
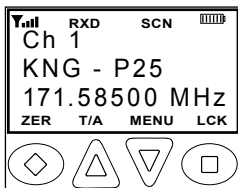
The radio provides a method for the user to zeroize all encryption keys. The Zeroize Keys function can be assigned to a button or the radio menu.

To initiate the Zeroize Function:



Button Operation

1. Press the programmed button. **ZER**
2. Press the 'YES' button to erase the Encryption Keys, or press 'ESC' to cancel the operation.



Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select Zeroize Keys.
3. Press the 'ENT' button.
4. Press the 'YES' button to erase the Encryption Keys, or press 'ESC' to cancel the operation.
5. Hold the 'ESC' button to return to normal operation.

Wait for the radio to start beeping and for the 'ZERO ALL' message to appear on the LCD.

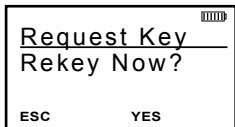
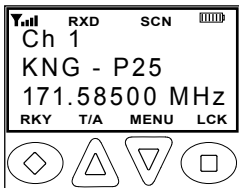
The radio will stop beeping and the 'ZEROIZED' message will appear on the LCD after all keys are destroyed.

Rekey Request (RKY) (OTAR equipped radios)

The radio optionally provides a method for the user to manually request a rekey from the KMF (Key Management Facility). Rekey Request can be assigned to a button or the radio menu.

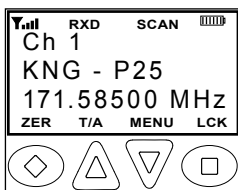
If the button is pressed while on a channel that has not been marked as an OTAR channel, the radio will boop and 'NON-OTAR' will appear on the display.

If manual rekeying request is enabled, the rekey service is invoked as follows:



Button Operation

1. Select an OTAR enabled channel.
2. Press the programmed button. **RKY**
3. Press the 'YES' button to Request Keys, or press 'ESC' to cancel the operation.



Menu Operation

1. Select an OTAR enabled channel.
2. Press the assigned Menu button.
3. Use the up/down buttons to select 'Request Key'.
4. Press the 'ENT' button.
5. Press the 'YES' button to Request Keys, or press 'ESC' to cancel the operation.
6. Hold the 'ESC' button to return to normal operation.

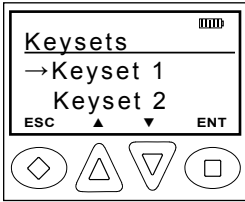
If a successful rekey occurs, a tone will sound, and the display will momentarily show 'REKEYED'.

Keyslot Viewing and Selecting

The radio can hold up to 8 encryption keyslots. Only one keyslot can be active at any time. The radio will receive messages encrypted with any of the keys in any of the keyslots, but transmit keys can only be selected from the active keyslot.

Follow the steps below to view/select the Keyslot.

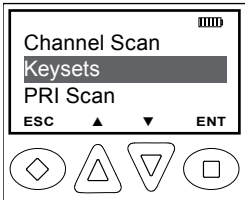
If programmed to a button:



1. Press the button programmed for the Keystet (UKST).
2. Use the up/down buttons to highlight the desired keystet.
3. Press the 'ENT' button to select the highlighted keystet.

4. Hold the 'ESC' button to return to normal operation.

If programmed to the Menu button:



1. Press the Menu button.
2. Use the up/down buttons to highlight the "Keystets" selection.
3. Press the 'ENT' button to open the keystet menu.
4. Use the up/down buttons to highlight the desired keystet.
5. Press the 'ENT' button to select the keystet.
6. Hold the 'ESC' button to return to normal operation.

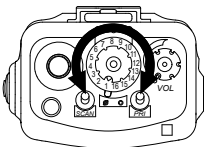
3.4.7 Tactical OTAR Option (KZA0584)

Tier III KNG portables may be equipped with Tactical Over-the-Air Rekeying option KZA0584. The tactical OTAR option allows a key source KNG radio to send individual encryption keys to OTAR equipped target radios without the need for a full Key Management Facility (KMF).

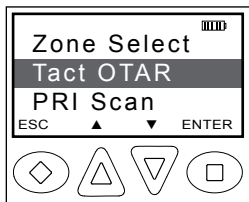
For proper operation the Source and Target radios require specific control key loads and PC editor settings. See the programming section of this manual for required setup details.

Sending Keys

OTAR KEY SOURCE RADIO

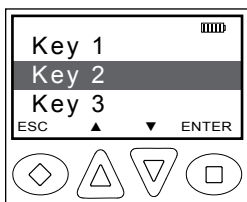


Select the channel designated as the OTAR channel.



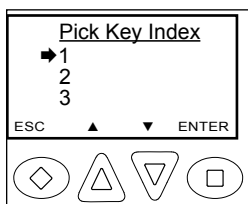
Press the programmed “Menu” button.

Use the Up/Down buttons to scroll to “Tact. OTAR” and press the enter button.



Use the Up/Down buttons to select the desired encryption key. Programmed key labels are displayed. To view the label and key index press the “#” button.

Alternatively the key can be selected directly via the keypad by pressing 1-32.



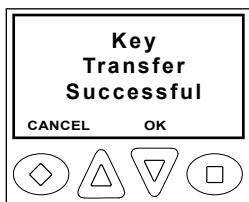
If the “Key Pick List Target” is programmed (see “Target Radio Options” under “Key Source Radio Configuration”) the pick list target screen is displayed.

Use the Up/Down buttons to select the desired target key slot. This is the key pick list slot where the target radio will store the transferred key.

Alternatively the key can be selected directly via the keypad by pressing 1-32.

Press the enter key to begin the key transfer.

When the key information has been sent the radio will momentarily display “Key Transfer Successful”.



If the radio is not programmed for Tactical OTAR operation or is on a non-OTAR channel the display will read “Non-Tact., OTAR Channel”.

Should the key transfer fail for any other reason a failure message with a two digit error code will be displayed. (See table)

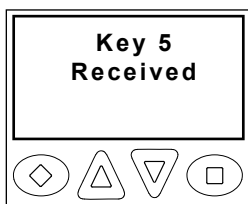
Tactical OTAR Error Code Table

Code	Description
01	General Failure
02	DTEK Not Found or Not AES
04	MTEK Not Found or Not AES
F0	General Failure during Key Wrap
F1	Key Not Found for Key Wrap
F4	Key to Wrap Key is Not identified as a KEK

RECEIVING KEYS

OTAR Key Target Radio

Select the channel designated as the OTAR channel to receive the rekey information.



Upon successful key transfer the radio will show the received key's programmed label and "Key Received". The key received message remains displayed until radio power is cycled.

The radio will operate normally even while the message is displayed.

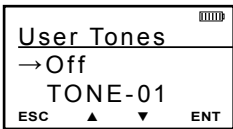
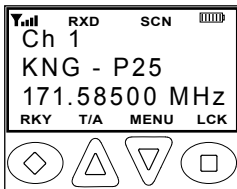
If the key transfer is unsuccessful no message will be displayed.

Pick List Options

The KNG provides users the ability to select and assign Pick List functions to specific channels. Pick List options include: Transmit Code Guards, Transmit NACs, Talk Group IDs and Encryption Keys. Pick List Options can be assigned to a programmed button or a radio menu item.

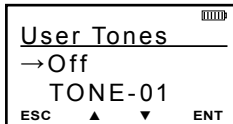
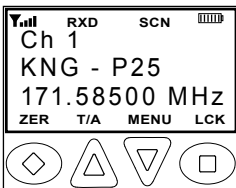
Picklist- TX CxCSS (UTON)

Selecting a CTCSS/CDCSS tone from the Pick List will assign the tone to the transmit function of the currently select channel. Receive tones will not be effected.



Button Operation

1. Turn to the channel you wish to assign the Tone to.
2. Press the programmed button. **UTON**
3. Use the up/down buttons to select the desired tone (1-32) or select the tone using the numeric keypad.
4. Press the 'ENT' button to set the selection.
5. Press 'ESC' to return to normal operation.



Menu Operation

1. Press the assigned Menu button.
2. Use the up/down buttons to select 'User Tones'.
3. Press the 'ENT' button.
4. Use the up/down buttons to select the desired tone (1-32) or select the tone using the numeric keypad.

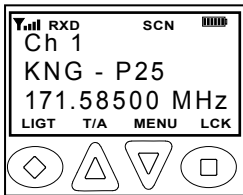
Keypad Programming Options

If enabled via PC programming, the radio's Picklists and Individual Call List information can be edited using the keypad. In addition, programmed channel, zone and some global settings can also be programmed. Check with your RELM/BK Radio dealer or communications officer for information on the programmed functions of your radio.

Programmable categories include Individual P25 ID Quick Call/Receive List, User Tone List, User NAC List, User Talk Group ID List and Keypad Programming of Channel, Zone and Global radio parameters.

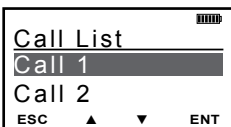
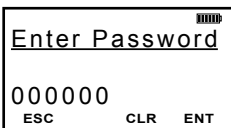
Programming P25 ID Unit Call/Receive List

The KNG can be pre-programmed with up to 100 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.

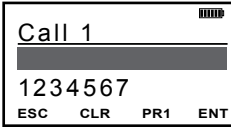
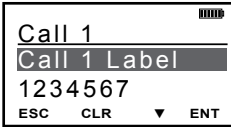


To enter P25 Call List programming:

1. Press the Menu button.
2. Use the up/down buttons to highlight Keypad Prog.
3. Press the ENT button.
- 4 Use the up/down buttons to highlight Call List.
5. Press ENT.
6. Use the keypad to enter the six digit password.
7. Press ENT.
8. Use the up/down buttons to highlight the P25 ID you wish to edit.
9. Press ENT. The display shows the alphanumeric label and P25 ID of the selected ID.

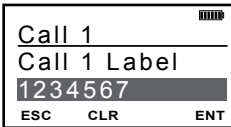
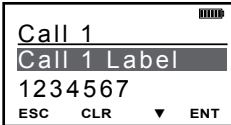


Editing the label



1. Use the down arrow button to highlight the label.
2. Press the CLR button to clear the label.
3. Use the keypad to select the desired character. (See Keypad Character Chart.)
4. Press the PR1 button to move to the next character. Labels can contain up to thirteen characters.
5. Press the ENT button to save the label.

Editing the ID Number

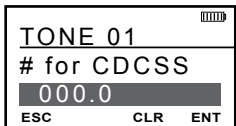
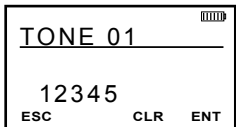
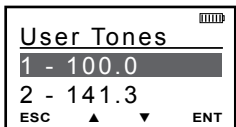
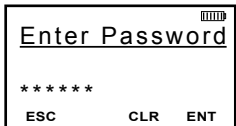
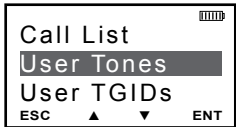
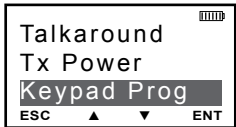
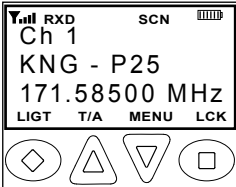


1. Use the down arrow button to highlight the ID.
2. Press the CLR button to clear the ID.
3. Use the keypad to select the desired ID number. (Up to seven digits.)
4. Press the ENT button to save the ID.

Programming User Selectable Transmit Tones

The KNG can be pre-programmed with up to 32, user selectable, CTCSS or CDCSS subaudible transmit tones. Tones are selected with the programmed buttons. If enabled, the tones can be programmed via the radio's keypad.

To enter Tone List programming:

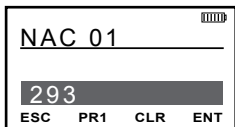
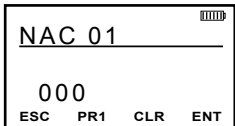
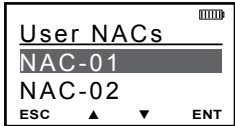
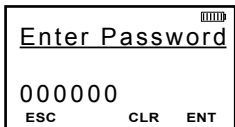
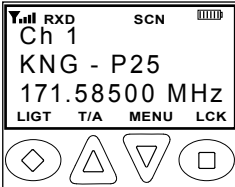


1. Press the Menu button.
2. Use the up/down buttons to highlight 'Keypad Prog'.
3. Press the 'ENT' button.
4. Use the up/down buttons to highlight 'User Tones'.
5. Press 'ENT'.
6. Use the keypad to enter the six digit password.
7. Press 'ENT'.
8. Use the up/down buttons to highlight the User Tone you wish to edit.
9. Press 'ENT'.
10. Press the 'CLR' button to clear the currently programmed tone.
11. To enter CTCSS tones use the keypad to enter the tone in Hertz (67.0 - 255 Hz). To enter CDCSS tones press the # key then enter the three digit code. (000 - 999)
12. Press the 'ENT' button to set the tone.

Programming User Selectable Network Access Codes

The KNG can be pre-programmed with up to 32, user selectable NACs. NACS are selected with the programmed buttons. If enabled, the NACs can be programmed via the radio's keypad.

To enter NAC List programming:

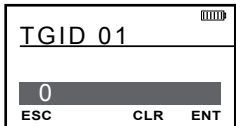
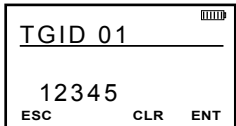
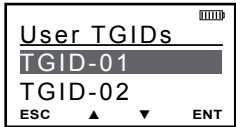
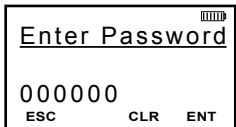
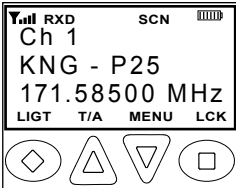


1. Press the Menu button.
2. Use the up/down buttons to highlight 'Keypad Prog'.
3. Press the 'ENT' button.
4. Use the up/down buttons to highlight 'User NACs'.
5. Press 'ENT'.
6. Use the keypad to enter the six digit password.
7. Press 'ENT'.
8. Use the up/down buttons to highlight the NAC you wish to edit.
9. Press the 'ENT' Button.
10. Press the 'CLR' button to clear the currently programmed NAC.
11. Use the keypad to select the first digit.
12. Press the 'NXT' button to move to the next character. NACs are programmed as three digit hexadecimal numbers. (000 - FFF)
13. Press the 'ENT' button to set the NAC.

Programming User Selectable Talkgroup IDs

The KNG can be pre-programmed with up to 32, user selectable TGIDs. TDIDs are selected with the programmed buttons. If enabled, the TGIDs can be programmed via the radio's keypad.

To enter TGID List programming:

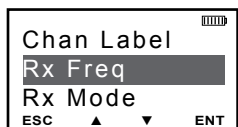
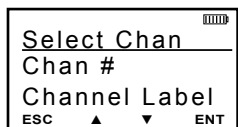
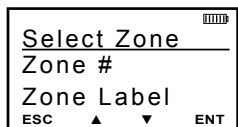
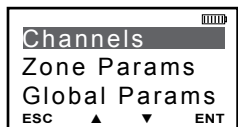
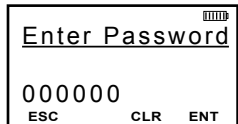
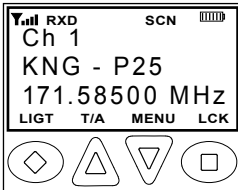


1. Press the Menu button.
2. Use the up/down buttons to highlight Keypad Prog.
3. Press the ENT button.
4. Use the up/down buttons to highlight User TGIDs.
5. Press ENT.
6. Use the keypad to enter the six digit password.
7. Press ENT.
8. Use the up/down buttons to highlight the TGID you wish to edit.
9. Press the ENT Button.
10. Press the 'CLR' button to clear the currently programmed TGID.
11. Use the keypad to select the desired Talkgroup number. (0-65355)
13. Press the 'ENT' button to set the Talkgroup.

Keypad Programming

If enabled, channel, zone and global parameters can be programmed using the radio's keypad. Individual parameters may be blocked from programming access. Check with your RELM/BK Radio dealer or communications officer for information on the programmed functions of your radio.

Programming Channel Information

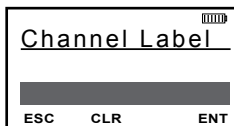
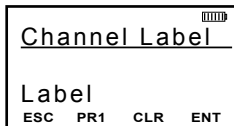
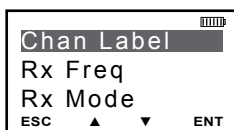


To enter the Channel Programming mode:

1. Press the MENU button.
2. Use the up/down arrows to highlight 'Keypad Prog'.
3. Press 'ENT'.
4. Use the up/down arrows to highlight 'Keypad Prog'.
5. Press 'ENT'.
6. Use the keypad to enter the six digit password.
7. Press 'ENT'.
8. Use the up/down arrows to highlight 'Channels'.
9. Press 'ENT'.
8. Use the up/down arrows to select the Zone of the desired channel.
9. Press 'ENT'.
10. Use the up/down arrows to select the desired channel.
11. Press 'ENT'.
12. Use the up/down arrows to select the function you wish to edit.

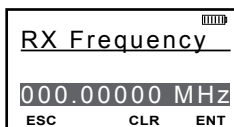
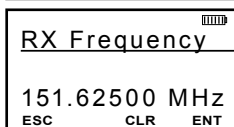
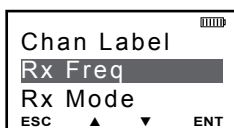
Programmable Channel functions include: Channel Label, Receive Frequency, Receive Mode, Receiver Code Guard, Squelch Mode, Transmit Frequency, Transmit Mode, Bandwidth, Transmit Code Guard, Transmit NAC, Talkgroup ID, Secure Mode selection, Encryption Key Lock and Low Power Lock.

Channel Label



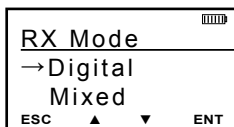
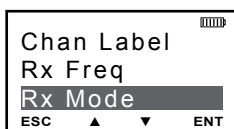
1. With 'Chan Label' highlighted, press the ENT button.
2. Press the 'CLR' button to clear the label.
2. Use the keypad to select the desired character. (See Keypad Character Chart.)
3. Press the 'NXT' button to move to the next character. Labels can contain up to thirteen characters.
4. Press the 'ENT' button to save the label.
5. Press the 'ESC' button to return to the Channel Programming menu.

Receive Frequency



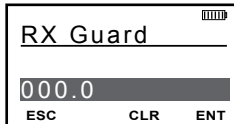
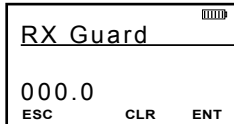
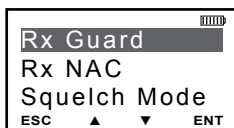
1. With 'Rx Freq' highlighted, press the 'ENT' button.
2. Press the 'CLR' button to clear the current frequency.
3. Use the keypad to select the desired Receive Frequency.
4. Press the 'ENT' button to set the frequency.
5. Press the 'ESC' button to return to the Channel Programming menu.

Receive Mode



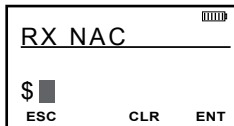
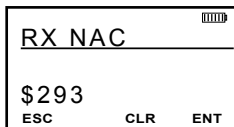
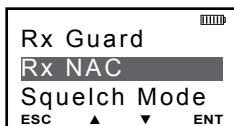
1. With 'Rx Mode' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired Receiver Mode. (Analog, Digital or Mixed)
3. Press the 'ENT' button to set the mode.
4. Press the 'ESC' button to return to the Channel Programming menu.

Receive Code Guard



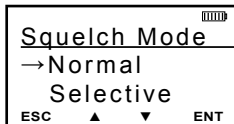
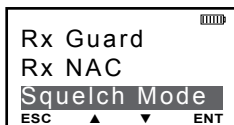
1. With 'Rx Guard' highlighted, press the 'ENT' button.
2. Press the 'CLR' button to clear the currently programmed tone.
3. To enter CTCSS tones use the keypad to enter the tone in Hertz. (67.0 - 255 Hz) To enter CDCSS tones press the # key then enter the three digit code. (000 - 999)
4. Press the 'ENT' button to set the tone.
5. Press the 'ESC' button to return to the Channel Programming menu.

Receive Network Access Code



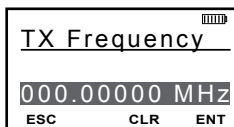
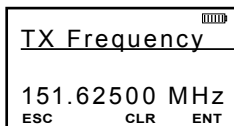
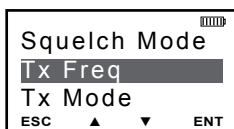
1. With 'Rx NAC' highlighted, press the 'ENT' button.
2. Press the 'CLR' button to clear the currently programmed NAC.
3. Use the keypad to select the first digit.
4. Press the PR1 button to move to the next character. NACs are programmed as three digit hexadecimal numbers. (000 - FFF)
5. Press the 'ENT' button to set the NAC.
6. Press the 'ESC' button to return to the Channel Programming menu.

Squelch Mode



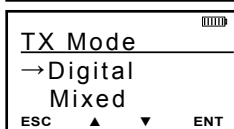
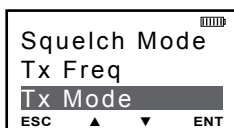
1. With 'Squelch Mode' highlighted, press the 'ENT' button.
2. Use the up/down arrows to select Normal or Selective. (Selective squelch is required for Individual Calls and use of Talkgroup IDs.)
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Channel Programming menu.

Transmit Frequency



1. With 'Tx Freq' highlighted, press the 'ENT' button.
2. Press the 'CLR' button to clear the current frequency.
3. Use the keypad to select the desired Receive Frequency.
4. Press the 'ENT' button to set the frequency.
5. Press the 'ESC' button to return to the Channel Programming menu.

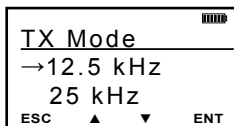
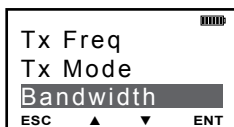
Transmit Mode



1. With 'Tx Mode' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired Transmit Mode. (Analog, Digital or Mixed)
3. Press the 'ENT' button to set the mode.
4. Press the 'ESC' button to return to the Channel Programming menu.

Channel Bandwidth

Bandwidth selection applies only to Analog operation.



1. With 'Bandwidth' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired Analog Bandwidth. (12.5 kHz = narrowband, 25 kHz = wideband)
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Channel Programming menu.

Transmit Code Guard

Bandwidth
Tx Guard
Tx NAC
ESC ▲ ▼ ENT

TX Guard
000.0
ESC CLR ENT

TX Guard
000.0
ESC CLR ENT

1. With 'Tx Guard' highlighted, press the 'ENT' button.
2. Press the 'CLR' button to clear the currently programmed tone.
3. To enter CTCSS tones use the keypad to enter the tone in Hertz. (67.0 - 255 Hz) To enter CDCSS tones press the # key then enter the three digit code. (000 - 999)
4. Press the 'ENT' button to set the tone.
5. Press the 'ESC' button to return to the Channel Programming menu.

Transmit Network Access Code

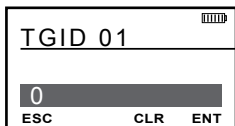
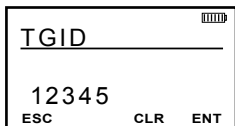
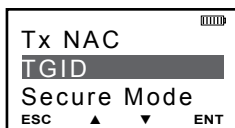
Tx Guard
Tx NAC
Squelch Mode
ESC ▲ ▼ ENT

TX NAC
\$293
ESC CLR ENT

TX NAC
\$
ESC CLR ENT

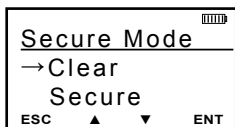
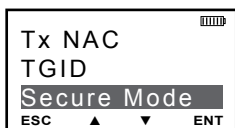
1. With 'Tx NAC' highlighted, press the 'ENT' button to edit the Guard Tone.
2. Press the 'CLR' button to clear the currently programmed NAC. (The NAC returns to the Project 25 default NAC of 293)
3. Use the keypad to select the first digit.
4. Press the PR1 button to move to the next character. NACs are programmed as three digit hexadecimal numbers. (000 - FFF)
5. Press the 'ENT' button to set the NAC.
6. Press the 'ESC' button to return to the Channel Programming menu.

Talkgroup ID



1. With 'TGID' highlighted, press the 'ENT' button.
2. Press the 'CLR' button to clear the currently programmed TGID.
3. Use the keypad to select the desired Talkgroup number. (0-65355)
4. Press the 'ENT' button to set the Talkgroup.
5. Press the 'ESC' button to return to the Channel Programming menu.

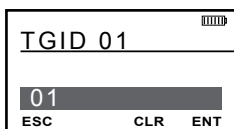
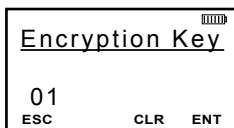
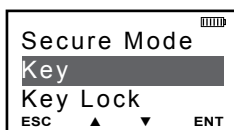
Encryption Secure Mode (Encrypted models)



1. With 'Secure Mode' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired Encryption Selection.
Clear = channel always transmits unencrypted.
Secure = channel always transmits encrypted.
Selectable = encryption selected via programmed switch or button
3. Press the 'ENT' button to set the mode.
4. Press the 'ESC' button to return to the Channel Programming menu.

Encryption Key (Encrypted models)

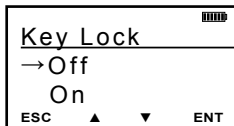
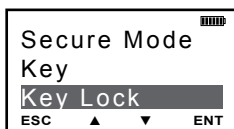
Encryption keys must be loaded with a compatible key fill device. The radio can hold up to 32 AES and/or DES keys. (See Encryption Operation)



1. With 'Key' highlighted, press the 'ENT' button.
2. Press the 'CLR' button to clear the currently selected encryption key.
3. Use the keypad to select the desired Encryption Key number. (01-32)
4. Press the 'ENT' button to set the Encryption Key.
5. Press the 'ESC' button to return to the Channel Programming menu.

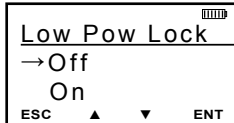
Encryption Key Lock (Encrypted models)

Encryption Keys can be locked to a channel or selected via a programmed button.



1. With 'Key Lock' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired setting. *Off* = Selectable Key, *On* = Locked Key.
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Channel Programming menu.

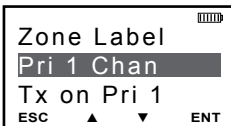
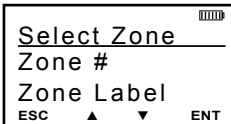
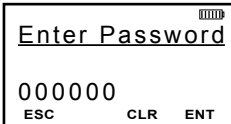
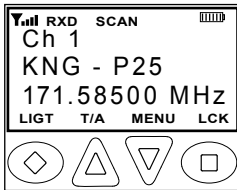
Low Power Lock



Channels with Low Power Lock enabled ignore the Hi/Lo power switch and operate in Low Power only.

1. With 'Low Pow Lock' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired setting. *Off* = Selectable Power, *On* = Low Power Only.
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Channel Programming menu.

Programming Zone Parameters

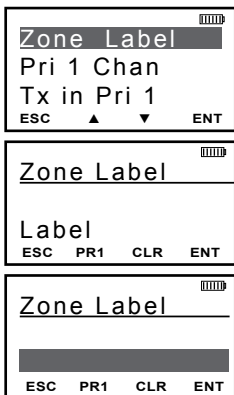


To enter the Zone Programming mode:

1. Press the MENU button.
2. Use the up/down arrows to highlight 'Keypad Prog'.
3. Press 'ENT'.
4. Use the up/down arrows to highlight 'Keypad Prog'.
5. Press 'ENT'.
6. Use the keypad to enter the six digit password.
7. Press 'ENT'.
8. Use the up/down arrows to highlight 'Zone Params'
9. Press 'ENT'.
8. Use the up/down arrows to select the desired Zone.
9. Press 'ENT'.
10. Use the up/down arrows to select the function you wish to edit.

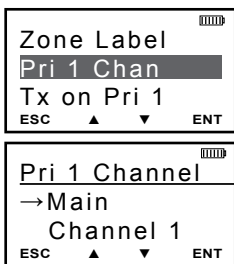
Programmable Zone functions include: Zone Label, Priority 1 Channel, Transmit on Priority 1 Channel, Priority 2 Channel, Automatic-Number-Identification (ANI) settings and Allow/Disallow Cloning.

Zone Label



1. With 'Zone Label' highlighted, press the ENT button.
2. Press the 'CLR' button to clear the label.
2. Use the keypad to select the desired character. (See Keypad Character Chart.)
3. Press the 'NXT' button to move to the next character. Labels can contain up to thirteen characters.
4. Press the 'ENT' button to save the label.
5. Press the 'ESC' button to return to the Zone Programming menu.

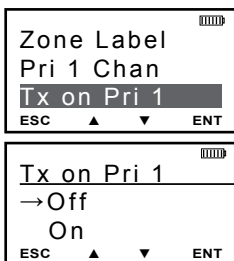
Priority 1 Channel



1. With 'Pri 1 Chan' highlighted, press the ENT button.
2. Use the up/down buttons to highlight the desired Priority Channel.
Off = No Zone Priority Channel.
Main = Priority 1 Channel follows channel select knob.
Channel Label = Assign as Priority 1 Channel.
4. Press the 'ENT' button to set the selection.
5. Press the 'ESC' button to return to the Zone Programming menu.

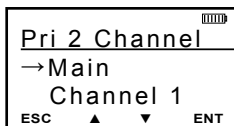
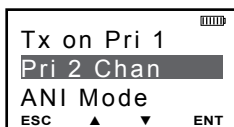
Transmit on Priority 1 Channel

If enabled, the radio transmits on the Priority 1 Channel when PRI is turned on.



1. With 'Tx on Pri 1' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired setting.
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Zone Programming menu.

Priority 2 Channel



1. With 'Pri 2 Chan' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired Priority Channel.

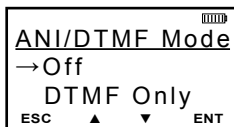
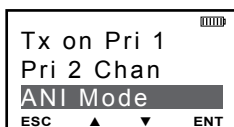
Off = No Zone Priority Channel.

Main = Priority 2 Channel follows channel select knob.

Channel Label = Assign as Priority 2 Channel.

4. Press the 'ENT' button to set the selection.
5. Press the 'ESC' button to return to the Zone Programming menu.

Automatic Number Identification (ANI) Mode



1. With 'ANI Mode' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired setting.

Off = No ANI operation.

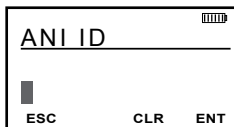
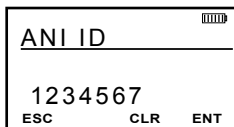
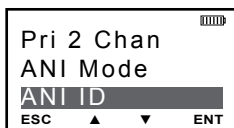
DTMF Only = Transmit DTMF Tones with keypad.

ANI Only = Send DTMF ANI on PTT.

BOTH = Keypad Tones and manual ANI.

3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Zone Programming menu.

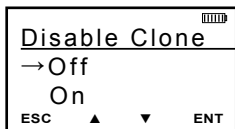
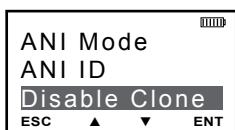
Automatic Number Identification (ANI) ID



1. With 'ANI ID' highlighted, press the ENT button.
2. Press the 'CLR' button to clear the ID.
3. Use the keypad to select the desired numeric ID. (Up to seven digits.)
4. Press the 'ENT' button to save the ID.
5. Press the 'ESC' button to return to the Zone Programming menu.

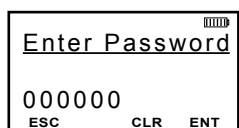
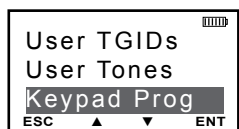
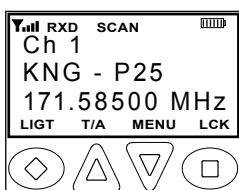
Disable Zone Cloning

If enabled, the Zone will not accept incoming clone from another radio.



1. With 'Disable Clone' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired setting.
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Zone Programming menu.

Programming Global Parameters

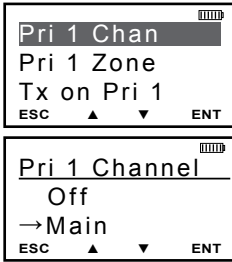


To enter the Global Programming mode:

1. Press the MENU button.
2. Use the up/down arrows to highlight 'Keypad Prog'.
3. Press 'ENT'.
4. Use the up/down arrows to highlight 'Keypad Prog'.
5. Press 'ENT'.
6. Use the keypad to enter the six digit password.
7. Press 'ENT'.
8. Use the up/down arrows to highlight 'Global Params'
9. Press 'ENT'.
10. Use the up/down arrows to select the function you wish to edit.

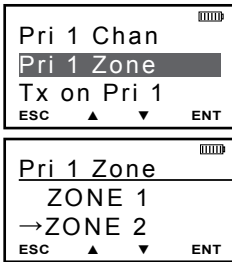
Programmable Global functions include: Priority 1 Channel, Priority 1 Zone, Transmit on Priority 1 Channel, Priority 2 Channel, Priority 2 Zone, Scan Hold Time, Busy Channel Mode, Transmit Time-out-Timer, Backlight Mode, Backlight Duration, Battery Saver, and Radio Password.

Global Priority 1 Channel



1. With 'Pri 1 Chan' highlighted, press the ENT button.
2. Use the up/down buttons to highlight the desired Priority Channel.
Off = No Global Priority Channel.
Main = Global Priority 1 Channel follows channel select knob.
Channel Label = Assign as Priority 1 Channel.
4. Press the 'ENT' button to set the selection.
5. Press the 'ESC' button to return to the Global Programming menu.

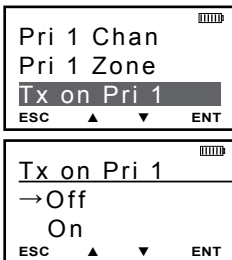
Global Priority 1 Zone



1. With 'Pri 1 Zone' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the Zone of desired Global Priority Channel.
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Global Programming menu

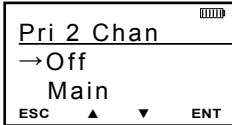
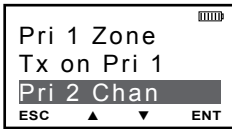
Tx on Global Priority 1 Channel

If enabled, the radio transmits on the Global Priority 1 Channel when PRI is turned on.



1. With 'Tx on Pri 1' highlighted, press the 'ENT' button.
2. Use the up/down buttons to highlight the desired setting.
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Global Programming menu.

Global Priority 2 Channel



1. With 'Pri 2 Chan' highlighted, press the 'ENT' button.

2. Use the up/down buttons to highlight the desired Priority Channel.

Off = No Global Priority Channel.

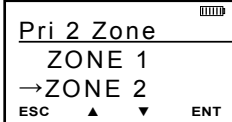
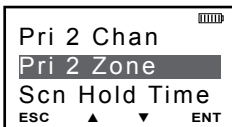
Main = Global Priority 2 Channel follows channel select knob.

Channel Label = Assign as Priority 2 Channel.

4. Press the 'ENT' button to set the selection.

5. Press the 'ESC' button to return to the Global Programming menu.

Global Priority 2 Zone



1. With 'Pri 2 Zone' highlighted, press the 'ENT' button.

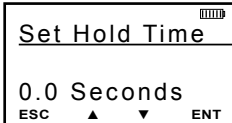
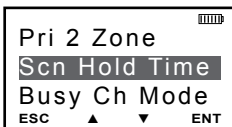
2. Use the up/down buttons to highlight the Zone of desired Global Priority Channel.

3. Press the 'ENT' button to set the selection.

4. Press the 'ESC' button to return to the Global Programming menu

Scan Hold Time

Scan Hold Time is also used as the Hold Time for programmed talkback functions.



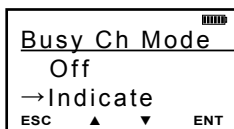
1. With 'Scn Hold Time' highlighted, press the 'ENT' button.

2. Use the up/down buttons to select the desired Hold Time.(0.0 - 7.5)

3. Press the 'ENT' button to set the selection.

4. Press the 'ESC' button to return to the Global Programming menu

Busy Channel Mode



1. With 'Busy Ch Mode' highlighted, press the 'ENT' button.

2. Use the up/down buttons to highlight the desired Busy Channel Operation.

Off = No Busy Channel indication.

Indicate = Indicator LED glows yellow when the selected frequency is in use.

Lockout = Prevents transmitting when selected frequency is in use.

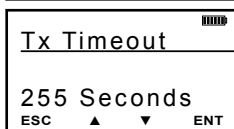
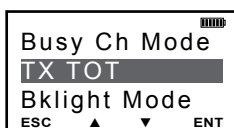
Override = Lets the user override the Lockout function and transmit while frequency is busy.

4. Press the 'ENT' button to set the selection.

5. Press the 'ESC' button to return to the Global Programming menu.

TX Time Out Timer

The TX Time Out Timer Limits the length of transmissions to the programmed time.



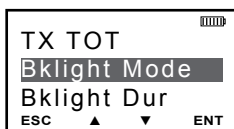
1. With 'TX TOT' highlighted, press the 'ENT' button.

2. Use the up/down buttons to select the desired transmission time Limit. (0 - 225 seconds. Zero seconds = No Time Out Time.)

3. Press the 'ENT' button to set the selection.

4. Press the 'ESC' button to return to the Global Programming menu.

Backlight Mode



1. With 'Bklight Mode' highlighted, press the 'ENT' button.

2. Use the up/down buttons to highlight the desired Backlight setting.

Off = No Backlight.

Keypress = Display and keypad light whenever the keypad is used.

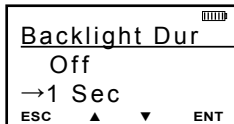
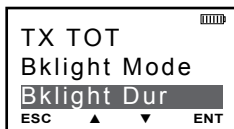
Display Chan = Display and keypad light whenever displayed information changes

Both = Display and keypad light whenever

displayed information changes or the keypad is used.

3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Global Programming menu.

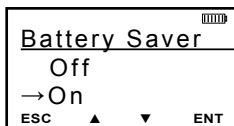
Backlight Duration



1. With 'Bklight Dur' highlighted, press the 'ENT' button.
2. Use the up/down buttons to select the desired Backlight Time Limit. (1 - 6 seconds, Off or Always On)
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Global Programming menu.

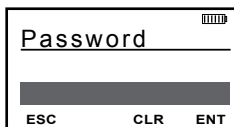
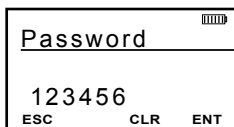
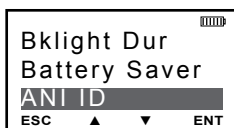
Battery Saver

It is recommended that Battery Saver be used for normal radio operation.



1. With 'Battery Saver' highlighted, press the ENT button.
2. Use the up/down buttons to select 'On' or 'Off'.
3. Press the 'ENT' button to set the selection.
4. Press the 'ESC' button to return to the Global Programming menu.

Password



1. With 'Password' highlighted, press the 'ENT' button.
2. Press the 'CLR' button to clear the current Password.
3. Use the keypad to select a desired six digit numeric Password.
4. Press the 'ENT' button to set the new Password.
5. Press the 'ESC' button to return to the Global Programming menu.

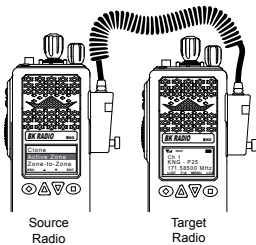
Keypad Programming Characters	
1	1
2 ABC	A, B, C, a, b, c, 2
3 DEF	D, E, F, d, e, f, 3
4 GHI	G, H, I, g, h, i, 4
5 JKL	J, K, L, j, k, l, 5
6 MNO	M, N, O, m, n, o, 6
7 PQRS	P, Q, R, S, p, q, r, s, 7
8 TUV	T, U, V, t, u, v, 8
9 WXYZ	W, X, Y, Z, w, x, y, z, 9
0	0, Blank Space
*	*, ., ,, ;, :, ", ' !, ?,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

Radio Cloning

If "Cloning" is programmed a menu item, any "Source" radio (a KNG with the desired radio frequencies and settings) is capable of transferring its program to another KNG of the same frequency range.

The radio receiving the program is referred to as the "target" The KAA0700 cloning cable will be required in the following procedure.

NOTE: Some groups may be blocked by PC programming to prevent them from being overwritten. Only unlocked groups will accept incoming clones. Target radios with one or more zones blocked will not accept an "Entire Radio" clone.



Connect the KAA0710 Cloning Cable to the side connector of the Source and target radios and power up both radios.

On the Source radio:

1. Press the Menu button.
2. Use the up/down buttons to select "Cloning".
3. Press the 'ENT' button.
4. Use the up/down buttons to select the cloning type:

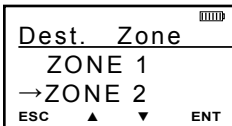
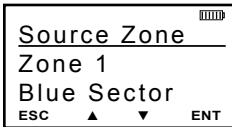
a. Active Zone - Copies the information in the Source radio's active zone to the Target radio's active zone.

b. Zone-to-Zone - Allows for selection of any zone in the source radio to be copied into any non- blocked zone in the Target radio.

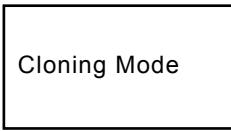
The following additional steps are required for Zone-to-Zone cloning:

- Press the Enter button.
- Use the up/down buttons to select the desired source radio zone.
- Press the Enter button.
- Use the up/down buttons to select the desired target radio zone.

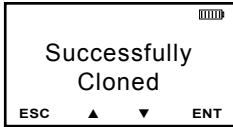
c. Entire Radio - Copies all non radio specific data from the Source radio to the Target radio. Radio specific data includes P25 ID, serial number, encryption keys and passwords



5. Press the Enter button to send the cloning information.



While sending or receiving information 'Cloning Mode' will be shown on the Target radio display.



After successful information is transferred 'Cloning Successful' is briefly displayed on the Source radio before reverting normal operating mode.

Cycle the Target radio power before operating.

Zone Cloning

Clone zoned information includes:

Channel and Zone Labels	Scan List
Frequencies	Bandwidth
Operating Modes	Low Power Selection
Code Guards (CG)	ANI Settings
Network Access Codes (NAC)	Zone Priority Settings
Squelch Operation	Zone Scan List Selection
Talk Groups	

NOTE: Some groups may be blocked by PC programming to prevent them from being overwritten. Only unlocked groups will accept incoming clones.

Entire Radio Cloning

When 'Entire Radio' is selected from the cloning menu, information from the all zones is sent to the corresponding zones of the radio being cloned.

NOTE: Radios programmed with any zones blocked from receiving cloning information will not accept an 'Entire Radio' clone.

Entire Radio cloning transfers all radio information except the following:

Radio Serial Number	P25 Identification Number
Encryption Keys	Passwords

Warranty

The KNG portable radio is covered by a two-year warranty. Extended warranties may be available. For information about your warranty contact RELM/BK Radio at (800) 648-0947. Email; sales@relm.com

Service

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

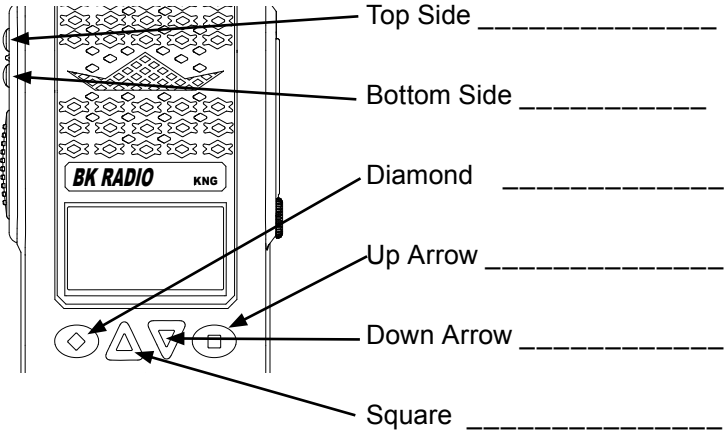
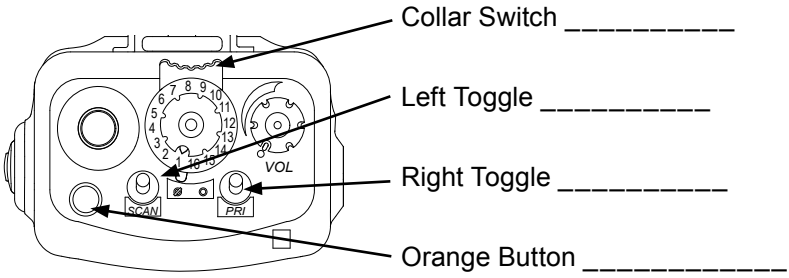
Repairs may be sent to the address below.

RELM Wireless Corporation
Attention: Customer Service
7100 Technology Drive
West Melbourne, FL 32904

Definitions and Acronyms

AES	APCO Project 25 Advanced Encryption Standard
ANI	Automatic Numeric Identification
CG	Code Guard
CLR	Clear
Code Guard	A sub-audible tone, a code (analog) or a Network Access Code (digital) for selective calling and receiving
DES	APCO Project 25 Encryption Standard
Detent	The click/hesitation you feel as you turn a knob from one position to another.
DTMF	Dual Tone Multiple Frequency
DTMF Tones	Tones that sound like those used by a standard push-button telephone.
ENT	Enter
Individual Personality	The information programmed with a PC on both a global and by-channel basis that tells the radio exactly how to operate
LCD	Liquid Crystal Display
Mixed Mode	Allows Analog & Digital operation on same channel.
NAC	Network Access Code for digital channel.
PR	Priority Channel
PRI	Priority
PTT	Push To Talk
RTA	Repeater Talk Around
RTX	Channel Ready to Transmit Channel
RX	Receive
SCN	Scan
SQ	Squelch
Squelch	A control that eliminates background noise.
Talkback	Programmed response to a call.
TGID	Talk Group ID
TOT	Time-Out Timer
Time-Out Timer	Limits the duration of calls.
Talk Group ID	P25 Talk Group Identification

Your Radio Settings



Menu Settings

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____