Portable Digital Radio

User’s Manual

KNG Series
P150, P400, P500, P800
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Introduction

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

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 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.

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 numerique de la classe B est conforme à la norme NMB-003 Canada.

WARNING:
Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.
Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.
This radio transmitter KNG-P800C has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (identifier le dispositif par son numéro de certification ou son numéro de modèle s'il fait partie du matériel de catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

**Approved Antennas:**

1. **KAA0825**
   - Frequency Range: 746-870 MHz
   - Impedance: 50 Ohms
   - Gain: 2dBi
   - VSWR: ≤ 2.0:1
   - Radiation: Omni
   - Polarization: Vertical

2. **KAA0833**
   - Frequency Range: 760-870 MHz
   - Impedance: 50 Ohms
   - Gain: 0dBi
   - VSWR: 2:1 Max
   - Radiation: Omni/Dipolar
   - Polarization: Vertical

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.

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

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.bktechnologies.com.

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

Contact Information

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

Depending on model type, KNG radios operate in the VHF, UHF or 800MHz frequency band. Up to 5000 channels can be programmed into the radio. The channels may be divided into operating zones. Zones can be designated as standard operating zones or command zones. Command zones are made of up of channels selected from standard operating zones.

<table>
<thead>
<tr>
<th>Model</th>
<th>Frequency Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>P150</td>
<td>136 - 174Mhz</td>
</tr>
<tr>
<td>P400</td>
<td>380 - 470Mhz</td>
</tr>
<tr>
<td>P500</td>
<td>440 - 520HMz</td>
</tr>
<tr>
<td>P800</td>
<td>763 - 870Mhz</td>
</tr>
</tbody>
</table>
Options

Factory installed options are listed on a tag located on the back of your radio near the top.

<table>
<thead>
<tr>
<th>Number</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZA0558</td>
<td>Intrinsically Safe Certification</td>
</tr>
<tr>
<td>KZA0577</td>
<td>AES/DES Encryption</td>
</tr>
<tr>
<td>KZA0579</td>
<td>Over-the-Air Rekeying (OTAR)</td>
</tr>
<tr>
<td>KZA0579</td>
<td>P25 Trunking</td>
</tr>
<tr>
<td>KZA0581</td>
<td>Vote-Scan</td>
</tr>
<tr>
<td>KZA0582</td>
<td>Over-the-Air Programming (OTAP)</td>
</tr>
</tbody>
</table>

Battery Installation and Removal

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

Only BK Technologies approved batteries should be used to insure proper operation and specifications. Models with KZA0558, intrinsically safe certification, must use a KAA0100IS battery to meet certification requirements.

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 or debris that could prevent a good electrical contact with the charging base.

WARNING!
DO NOT DROP A BATTERY PACK INTO FIRE.
AN EXPLOSION MAY OCCUR

Antenna Installation and Removal

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

Use BK 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.

Radio Controls

- On/Off Volume
- Push-to-Talk
- Alphanumeric Display
- Programmable Buttons
- Keypad
- Programmable Side Buttons
- Channel/Zone Select
- Speaker
- Microphone
- Accessory Connector
- Antenna Connector
- Collar Switch
- Emergency Button
- Toggle Switches
- LED
- KNG

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

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

### Status Indicators

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Receiver Signal Strength" /></td>
<td>Receiver Signal Strength</td>
</tr>
<tr>
<td>RXD, RXA</td>
<td>Receive Digital, Receive Analog, Hold Time Active</td>
</tr>
<tr>
<td>TXD, TXA</td>
<td>Transmit Digital, Transmit Analog</td>
</tr>
<tr>
<td>L, H</td>
<td>Low or High transmit power</td>
</tr>
<tr>
<td><img src="image" alt="Selected channel is encrypted. Flashing when Tx is encrypted or when Rx incoming signal is encrypted" /></td>
<td>Selected channel is encrypted. Flashing when Tx is encrypted or when Rx incoming signal is encrypted</td>
</tr>
<tr>
<td><img src="image" alt="Battery Level Indicator" /></td>
<td>Battery Level Indicator</td>
</tr>
<tr>
<td>P1, P2</td>
<td>Priority 1 Channel, Priority 2 Channel</td>
</tr>
<tr>
<td><img src="image" alt="Scanned Channel" /></td>
<td>Scanned Channel</td>
</tr>
<tr>
<td><img src="image" alt="Channel Scan On" /></td>
<td>Channel Scan On</td>
</tr>
<tr>
<td><img src="image" alt="Dual Mode Scan On" /></td>
<td>Dual Mode Scan On</td>
</tr>
<tr>
<td><img src="image" alt="Zone Scan On" /></td>
<td>Zone Scan On</td>
</tr>
<tr>
<td><img src="image" alt="Priority Scan On" /></td>
<td>Priority Scan On</td>
</tr>
<tr>
<td><img src="image" alt="Repeater Talkaround Enabled" /></td>
<td>Repeater Talkaround Enabled</td>
</tr>
</tbody>
</table>
### Status Indicators

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🎤</td>
<td>Monitor Mode</td>
</tr>
<tr>
<td>🎤</td>
<td>Flashing indicates Normal Mode in digital operation</td>
</tr>
<tr>
<td>🔊</td>
<td>Open Audio</td>
</tr>
<tr>
<td>🎤</td>
<td>Voice Mute Enabled</td>
</tr>
</tbody>
</table>

### Alphanumeric Label Options

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

<table>
<thead>
<tr>
<th>Label Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Number</td>
<td>Channel Number of Currently Selected Channel or Active Scanned Channel</td>
</tr>
<tr>
<td>Channel Label</td>
<td>Alphanumeric Label of Currently Selected Channel or Active Scanned Channel</td>
</tr>
<tr>
<td>Channel Number and Zone Label</td>
<td>Currently Selected Channel number and Currently Selected Zone Label</td>
</tr>
<tr>
<td>Frequency*</td>
<td>Operating Frequency of Currently Selected Channel or Active Scanned Channel</td>
</tr>
<tr>
<td>Unit ID</td>
<td>Shows your P25 Unit ID</td>
</tr>
<tr>
<td></td>
<td>While receiving, the ID of the radio transmitting the message is displayed</td>
</tr>
<tr>
<td></td>
<td>If the received ID is programmed in your radio's Call List, the corresponding label will be displayed</td>
</tr>
<tr>
<td>Received Talk Group ID</td>
<td>P25 Talk Group ID of the radio transmitting the message currently being received</td>
</tr>
<tr>
<td>Pick List Selection*</td>
<td>NAC, TGID or Code Guard currently selected from the programmable Pick Lists</td>
</tr>
<tr>
<td>Zone Label</td>
<td>Label of Currently Selected Zone</td>
</tr>
<tr>
<td>Zone # and Channel #</td>
<td>Currently Selected Zone and Channel Numbers</td>
</tr>
<tr>
<td>Zone Number</td>
<td>Currently Selected Zone Number</td>
</tr>
<tr>
<td>RX/TX Key</td>
<td>Currently selected encryption key</td>
</tr>
<tr>
<td>Subaudible*</td>
<td>Displays CxCSS value of received signal</td>
</tr>
<tr>
<td>DTMF*</td>
<td>Displays the numeric DTMF tones of received signal</td>
</tr>
<tr>
<td>MDC*</td>
<td>Displays the numeric MDC ID of received signal</td>
</tr>
</tbody>
</table>

*Conventional Channels Only*
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.

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

Button Options and Labels

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.

Keypad Menu Operation

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

To select from the menu:

1. Press the programmed “Menu” button.
2. Scroll to the desired menu item with the up/down buttons ▲▼.
3. Press the button marked ENT □ to open the item.
<table>
<thead>
<tr>
<th>Options and Labels</th>
<th>Menu</th>
<th>Switch</th>
<th>Button</th>
<th>Label</th>
<th>Trunk</th>
<th>Conv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backlight</td>
<td></td>
<td></td>
<td></td>
<td>LITE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery Life</td>
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### Options and Labels (cont.)

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<td>x</td>
<td>ZONE</td>
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</tbody>
</table>

\(^1\)Emergency button can only be assigned to the orange button.

\(^2\)Works on a per-channel basis.

*Requires GPS option.

**Requires Encryption option.

***Requires Encryption and OTAR options.

****Requires P25 Trunking option.
Channel/Zone Selection Options

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

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

Channel/Zone Selector Knob

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

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

Button/Menu Item Selection

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

Use the Prev/Next buttons to scroll to the desired selection.

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

Press the square button marked ENT to go to the highlighted zone or channel.

Direct Keypad Entry

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

Select the desired channel or zone and press the square button marked ENT to go to the highlighted location.

Press the diamond button marked ESC to cancel the selection and return to the currently operating zone or channel.
Using Knob and Button Operations Together
When selected via the button, menu or keypad method, the entered channel or zone becomes active regardless of the knob position.
When the knob is turned, the radio leaves the keypad selected channel and goes to the selection indicated by the knob position.

Example: With the channel select knob on channel 1, selecting channel 12 from the keypad will switch the operating channel to channel 12.
Turning the channel knob to channel 2, switches the operating channel to channel 2.

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

Receive
Set the volume knob to approximately 50-60%.
When a signal is received, the unprogrammable top line of the display indicates the signal strength and operating mode of the incoming transmission. RXA = analog, RXD = digital.
The check radio volume when no signal is being received, put the Monitor mode in “Open Squelch” (see “Monitor”) and adjust the volume to a comfortable level.

Transmit
1. Press the PTT (Push-To-Talk) switch. When the radio is transmitting the indicator LED glows red and TXD or TXA appears in the display.
2. Talk in a normal voice with the microphone one to two inches from your mouth.
3. Release the PTT switch to stop transmitting.
If the length of your message is nearing the programmed Time-Out Timer setting, a tone sounds indicating 5 seconds left to transmit. At the end of the programmed time, the transmitter automatically shuts off and an alert tone sounds. To continue transmission, release the
PTT switch, then press it again and continue talking.

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

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

Command Zone Operation

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

Building a Command Zone [CHAN+]

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

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

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

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

Editing a Command Zone [CHAN-]

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

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

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

Conventional Channels

Code Guard Receive

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

Code Guard Transmit

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

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.

Analog Squelch Control

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

APCO Project 25 Digital Squelch Control

Network Access Codes (NACs) provide the digital equivalent of analog sub-audible signaling (CTCSS/CDCSS) allowing a group of radios to be selectively called within a system.
Users in the same area (using the same NAC) can be further divided into Talk Groups, with each group having its own Talk Group ID (TGID). Group Calls are made by designating both the users' NAC and TGID.

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

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

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

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

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

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

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

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

<table>
<thead>
<tr>
<th>Mode</th>
<th>RX</th>
<th>TX</th>
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<tbody>
<tr>
<td>Analog</td>
<td>Receive qualified analog signals only</td>
<td>Transmit analog signals only</td>
</tr>
<tr>
<td>Digital</td>
<td>Receive qualified digital signals only</td>
<td>Transmit digital signals only</td>
</tr>
<tr>
<td>Mixed</td>
<td>Automatically receive qualified analog or digital signals</td>
<td>Transmit analog or digital signal, depending on the status of “TX Digital” switch</td>
</tr>
</tbody>
</table>

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.

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.
Trunking Channel Basic Operation

Some KNG radios are equipped with optional P25 Trunking capability. To determine if your radio is trunking compatible, remove the battery and check the Options Label near the top of the radio. “KZA0579” indicates the trunking option is installed.

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

System Registration

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

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

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

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

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

After successful registration the programmed LCD display criteria is displayed.

Transmitting

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

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

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

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

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

Channel Scan [SCAN]
Conventional Channels

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

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

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

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

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

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

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

Scanning Code Guarded Channels
Conventional Analog Channels

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

Transmitting with Scan On

The radio transmits on the channel selected by the Channel Selector knob unless Talkback Scan is enabled (see Talkback Scan) or Priority Scan is on and Transmit on Priority 1 is enabled (see Priority Scan).
**Channel Scan List [SCN+]**  
*Conventional Channels*

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

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

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

When Channel Scan List is assigned to a button, press the button to add or remove the selected channel from the scan list.

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

**Talkback Scan**  
*Conventional and Trunking Channels*

If your radio is programmed for Talkback Scan, 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 (see Priority Scan).

**Vote Scan [Requires Option KZA0581]**  
*Conventional Channels*

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

See also Priority Scan and Zone Scan.
Dual Mode Scan [DSCN]  
*Conventional and Trunking Channels*

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

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

When Dual Mode Scan is turned on the $^{D}Z$ icon is displayed and the radio scans all channels in the dual mode scan list.

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

Enhanced Scan [ESCN]  
*Conventional Channels*

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

Priority Scan [PSCN]  
*Conventional Channels*

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

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

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

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

Channels designated as Priority channels are identified by the $^{P}Z$ symbol at the top of the LCD display. When Priority Scan is on, the $^{P}Z$ symbol will be shown.

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

*Trunked Channels*

When on trunked channels, Priority Scan is used to turn system scanning on or off.
Priority Channel Select [PRI]
Conventional Channels

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

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

Selecting a System Priority Channel
Open the menu and select the System Priority channel you wish to change.

Press “ENTER” to open System Priority Channel menu.

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

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

The Zone selection menu will be displayed.

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

The Channel selection menu will then be displayed.

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

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

Selecting a Zone Priority Channel
Open the menu and select the Zone Priority channel you wish to change.

Press “ENTER” to open Priority Channel menu.

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

To assign a specific channel as a Zone Priority Channel, highlight “Select” and press the “ENTER” button.
The Channel selection menu will be displayed.
Highlight the desired channel and press the “ENTER” button to set the priority channel.
The display will return to the main Priority Channel Select menu.

**Zone Scan [ZSCN]**
*Conventional Channels*

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

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

When Zone Scan is on, the $\text{Z}$ symbol will be shown at the top of the LCD display.

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

**Zone Scan List [ZSC+]**
*Conventional Channels*

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

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

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

When assigned as a menu item, open the menu and select the Zone you wish to add or remove from the scan list. Press “ENTER” to add or remove. Zones in the scan list will be indicated with the $\checkmark$ symbol.
Pick List Options

The KNG provides users the ability to select and assign Pick List functions to specific channels. Pick List Options can be assigned to a programmed button or as menu list items.

Available Pick List options include:
- Transmit Code Guards
- Receive Code Guards
- Transmit Network Access Codes
- Receive Network Access Codes
- Talk Group IDs
- Encryption Keys (see Encryption Operation)
- Encryption Keysets (see Encryption Operation)

**TX/RX CxCSS Picklist [TXCG] [RXCG]**

*Conventional Analog or Mixed Mode Channels*

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

User assigned Transmit and Receive Code Guards are selected independently.

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

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

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

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

*Conventional Digital or Mixed Mode Channels*

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

User assigned Transmit and Receive NACs are selected independently.

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

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

If allowed, picklist values can be changed through keypad programming.
Talk Group ID Picklist [TGID]
Conventional Digital Channels

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

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

Open the menu of available TGIDs.
Select the desired Talk Group ID or, to return the TGID to the pre-programmed value, select “Default”.
Press “ENTER” to set the selection.
If allowed, picklist values can be changed through keypad programming.

Encryption Key Picklist [KEY]
Digital or Mixed Mode Channels
Encryption equipped radios only.

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

Keyset Picklist [KSET]
Digital or Mixed Mode Channels
OTAR equipped radios only.

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

Individual Unit Call [UNIT]
Conventional Digital and Trunking Channels

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

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

Conventional Channels

Placing an Individual Unit Call
Open the Unit Call menu and select the desired “Unit Call” option.
- Last Call = Use the P25 ID of the last Call.
- Call List = Use the programmed P25 ID List.
- Enter ID = Enter a numeric P25 ID.

Press Enter to enter Unit Call Mode.

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

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

To exit the Individual Call mode press “Exit”.

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

Receiving an Individual Unit Call

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

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

To exit the Individual Call mode, press “Exit”

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

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

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

Call List Programming
If enabled with the PC radio editor, the P25 Call List for conventional channels can edited via the radio’s keypad programming function.

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

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

Receiving an Individual Unit Call
When receiving a unit call, an alert tone will be emitted and the LCD will display the Unit ID of the radio sending the call.
Press “Accept” to respond to the call or “Ignore” to remain in normal operation.
Emergency Signaling Options

Conventional Digital and Trunking Channels
The KNG portable radio supports P25 Emergency Operation. If emergency channel is assigned for digital operation, the emergency signal is broadcast using digital P25 protocol. If the assigned channel is analog, the emergency signal is broadcast using MDC protocol.

Placing an Emergency Call
Press and hold the button to initiate an Emergency Call mode. The radio will emit a series of beeps and "EMERGENCY" will flash on the display. The emergency transmission is not sent automatically.

Once Emergency Call is initiated, the PTT must be pressed to transmit the emergency message. Audio is also transmitted.

Receiving an Emergency Call
When the radio receives an Emergency Call, "EMERGENCY" and the incoming P25 ID or MDC number or label will be displayed during the reception. An alert tone will be emitted if the radio is programmed to do so. The RXD icon will also be lit.

Emergency Alarm (Emergency Alert)
Press and hold the button to initiate an Emergency Alarm mode.

Once Emergency Alarm is initiated, the emergency message is transmitted automatically. The radio will emit a series of beeps and "EMERGENCY" will flash on the display. "EMERGENCY" and the incoming P25 ID or MDC number or label will be displayed on the receiving radio. An alert tone will be emitted if the radio is programmed to do so.

NOTE: When the emergency alarm is broadcast for digital operation, the radio will not receive the signal while a scan is active (Priority, Channel, Zone) unless the following conditions are met: 1) the Data Mode for the Emergency Channel of the TX Radio (radio declaring the emergency) needs to be Repeated or Direct (not FNE); and 2) the Data Scan Hold Time on RX radios needs to be non-zero. Analog channels will work while scanning without any special settings on either radio.
Encryption Operation

Conventional Digital and Trunking Channels

The KNG may optionally be configured for Secure communication on channels operating in Digital Mode. No encryption is available for analog channels. To determine if your radio is encryption compatible, remove the battery and check the Options Label near the top of the radio. “KZA0577” indicates the encryption option is installed.

Required Setup

Radios that have the DES/AES factory option for encryption must have encryption keys loaded with an APCO Project 25 compatible key fill device such as the Motorola KVL 3000 Plus, using a BK 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.

Basic Operation

The receiver automatically detects both clear and secure signals.

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

The display indicates Secure Operation as follows:

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

When receiving or transmitting an encrypted signal, the encrypt icon flashes in the display.
Transmit Secure [SEC]

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

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

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

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

When transmitting or receiving an encrypted signal a flashing Ø symbol will be displayed.

Transmit Encryption Key Selection [KEY]

The radio can hold up to 128 DES or AES encryption keys. Each channel is assigned a default key for transmit. The key can be locked to the channel, or if programming allows, a transmit key other than the default key can be selected from the radio’s Key Pick List.

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

Select the desired key and press “ENTER”.

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

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

User Selectable Encryption Keyset [KEYST]

OTAR equipped radios only.

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

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

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

Select the desired keyset and press “ENTER”.
Rekey Request [RKEY]
OTAR equipped radios only.

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

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

To request a re-key:
Open the Rekey Request menu.
Press the “YES” button to Request Keys, or press “ESC” to cancel the operation.

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

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

Keyset Viewing and Selecting [KSET]
OTAR equipped radios only.

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

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

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

Zeroize can be assigned as a button or menu list item.
Open the “Zeroize Keys” menu.
Press “YES” to erase all encryption keys or “ESC” to cancel the action.

When successfully removed the “Keys Removed” message will momentarily be displayed.
Messaging

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

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

Status messages are pre-programmed only.

Text Messaging [TXT]
Conventional Digital Channels

Message types include predefined messages, manually entered messages or locally stored messages.

- **Predefined messages** - Predefined messages are programmed into the radio memory using the radio editor software.

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

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

Sending a Message

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

Select “Send” from the menu and press “ENTER”.

Select Message Type

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

- **Predefined List or Manual Entry List**

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

  Select the message to be sent and press “ENTER”.

NOTE: When sending a predefined message the message ID is transmitted. The receiving radio will display the message programmed with the corresponding ID. If the receiving radio has no programmed message with the transmitted ID, “Text Message X” is displayed, where “X” is the received ID number.
Manual Entry
When “Manual Entry” is selected use the keypad to enter the desired message (see keypad character table). Press “ENTER” to select the target radio.

Select Target Radio

Last Call - Select “Last Call” to send the message to same radio you last sent a text message. Press “Send” to send the message.

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

Unit ID - Select “Unit ID” to enter the P25 ID of the target radio. Use the keypad to enter the ID then press “Send” to send the message.

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

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

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

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

Press “RTRY” to resend the message.

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

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

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

The top programmed display line will alternate between the programmed setting and “Text Message” until the message is read.
**BK Technologies**

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

Select “Read” to view the message

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

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

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

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

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

**Short Message Update [MSG]**
*Conventional Digital Channels*

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

**User Status Messaging [STS]**
*Conventional Digital Channels*

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

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

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

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

- **Unit** - Send the message to an individual radio ID.
- **Group** - Send message to a group of radios using the Talk Group ID.
- **Dispatch** - Send the message to a dispatch console.
Unit Call

Select Target Radio

Last Call
Select “Last Call” to send the message to the same radio you last sent a status message.
Press “Send” to send the message.

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

Unit ID
Select “Unit ID” to enter the P25 ID of the target radio.
Use the keypad to enter the ID then press “Send”.

Group Call

Select Target Group ID
Selecting “Group” opens the menu to send a status message to a group of radios with matching talk group ID.
Select “Enter” to manually enter the ID or “Select” to choose and ID from the pre-programmed talk group pick list.

Dispatch
Select “Dispatch” to send a status message to a dispatch console.

Message Acknowledgement
If the message has been received by the targeted radio, an alert tone will sound and the acknowledgment message will be displayed.
If the targeted radio is unavailable, an alert tone will sound and the failed acknowledgement message will be displayed.
Press “OK” or wait for five seconds to return to normal radio operation.

Receiving a Status Update
When an incoming status update is received an alert tone is sounded and the status message is momentarily displayed before returning to normal operation.
Paging and Call Alert

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

Conventional Analog Channels

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

Receiving a page
Select an analog or mixed-mode receive channel.
Turn on “Voice Mute” from the programmed button or menu item.
When voice mute is activated the 📣 icon is displayed.
The radio ignores all voice traffic until the proper tone sequence is received.
When a proper signal is received the radio will emit an alert tone and allow the audio to pass.
If Auto Reset is programmed, the radio will return to the muted standby mode when the time conditions have been met.

Call Alert Paging [ALRT]

Digital Channels

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

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

Select Target Radio

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

Call List
Selecting “Call List” opens a list alias’ for the pre-programmed Unit IDs.
Select the desired target radio and press “Enter” to send the Call Alert.

Unit ID
Select “Unit ID” to enter the ID of the target radio.
Use the keypad to enter the ID then press “Enter” to send the Call.
Receiving a Call Alert

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

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

Select “Call Alert” to reset.

Radio Check [RCHK]

Conventional Digital Channels

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

Requesting a Radio Check

Press the “RCHK” button or open “Radio Check” from the menu.

Select Target Radio

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

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

Unit ID
Select “Unit ID” to enter the P25 ID of the target radio.

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

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

If no validation is received from the targeted radio, an alert tone will sound and the "No Response" message will be displayed for approximately five seconds.
Radio Inhibit/Enable [INH]/[UNINH]

Conventional Digital Channels

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

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

NOTE: Inhibited radios cannot be read with the Neovision radio editor.

Sending a command

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

Use the keypad to enter the User or Administrator password.

Press “ENTER” to open the menu.

Select Target Radio

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

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

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

Message Acknowledgement

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

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

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

Press “RTRY” to resend the message.

Press “OK” or wait for three seconds to return to normal radio operation.
Other Options and Functions

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

Backlight [LITE]

Conventional and Trunked Channels

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

Battery Life [LIFE]

Conventional and Trunked Channels

Battery Life information includes:
- % battery capacity available until depletion
- The full capacity of the battery
- Estimated time left before depletion

Busy Channel Operation

Conventional Channels

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

How the radio reacts to a busy channel is programmed with the following operation options:

- **Off** - No busy channel transmit limiting will occur.
- **Indicate** - This setting will display "Busy" momentarily and an alert tone will sound if conflicting traffic is present, but the radio is still allowed to transmit.
- **Lockout** - This setting prevents the radio from transmitting, "Busy" will be displayed and an alert will sound until the PTT is released.
- **Override** - This setting prevents the radio from transmitting. "Busy" will be displayed and an alert tone will sound until the PTT is released. However a rapid release and press of the PTT will allow the radio to transmit.
- **Automatic** - This setting will display "Busy" momentarily and an alert tone will sound. The radio will then revert back to receive mode and monitor the active receive traffic. (carrier mode only)
Busy Channel Conditions
With the PC radio editor, each channel is programmed for the conditions under which the channel is considered busy.

Conditions include:

- **Off** - Channel is never declared busy.
- **Carrier** - A busy condition is declared when carrier is present on the selected Rx frequency.
- **Non-Qualified** - A busy condition is declared when a non-qualified signal is present on the Rx frequency. (Non-qualified = Incorrect CTCSS/CDCSS, talk group or NAC)
- **Status Symbol** - *Digital Channels Only*. A busy condition is declared if the P25 busy status symbol is present on the Rx frequency.

Channel Select [CHAN]
*Conventional and Trunked Channels*

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

Cloning
*Conventional Zones*

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

Control Lockout [LCK]
*Conventional and Trunking Channels*

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

**Switch Assignment**
When assigned to a toggle switch, toggling the switch on locks all controls except the toggle switches, PTT and volume/off.

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

**Button/Menu Assignment**
When assigned as a button or menu item, users can select from two lockout settings, “Lock Keypad Only” and “Lock All Controls”.

“Lock Keypad Only” locks only front panel button operations.
“Lock All Controls” locks all buttons and switches as determined by radio programming. Any or all of the following function may be locked when “Lock All Controls” is selected: Front keypad, side top buttons, toggle switches, channel knob, collar switch and push-to-talk.

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

Select the desired lockout setting and press “ENTER”

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

Keypad Programming

Conventional Systems and Channels

Much of the information stored in the KNG can be edited using the keypad. Four separate programming functions can be enabled with the PC Radio Editor software.

Keypad programming selections can only be assigned as a menu item. Refer to the Keypad Programming section for detailed information on how to edit programmed radio information.

Minimum Volume [VOL]

Conventional and Trunking Channels

When pressed, changes the volume level at lower volumes. This allows the user to set their minimum volume to an audible level.

Monitor [MON]

Conventional Channels

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

Monitor Modes and Indicators

Selective - Digital channels only. Required for Unit-to-Unit calls and Talkgroup use. (No indicator)

Normal - Requires NAC or Tone. Ignores Talkgroup and Unit-to-Unit information on digital channels. Flashing ☢️ on.

Monitor - Monitors activity on selected channel. Steady ⏯️ on.

Open - Open Squelch. Solid ⏯️ on.

Button Operation - Press the button to cycle to the next mode. Press and hold for Open Squelch. Availability of “Selective” or “Normal” is determined by each channel’s programmed Squelch Operation setting.

Menu Operation - Open the Monitor menu, select the desired operation and press “Enter”.
Nuisance Channel Delete [DEL]  
*Conventional Channels*

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

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

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

Phone [PHN] and Hang Up [HANG]  
*Conventional Channels*

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

Radio Accountability Tone [RAT]  
*Conventional and Trunked Channels*

The Radio Accountability Tone transmits a preprogrammed sequence of DTMF tones when the RAT button is pressed and held.

Radio info  
*Conventional and Trunking Channels*

Radio information can be assigned as a menu item.

When selected, the LCD displays programmed radio settings.

Repeater Talkaround [T/A]  
*Conventional Channels*

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

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

Talkaround selection can be assigned to a switch, button or as a menu list item.
Squelch Adjust [SQL]
Conventional Channels

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

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

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

Press “ENTER” to set the level.

Site Display [STDS]
Trunking Channels

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

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

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

Site Lock [STLK]
Trunking Channels

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

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

Site Search [STSR]
Trunking Channels

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

Site Lock can be assigned as a button or menu list item.
**Surveillance Mode [SURV]**
*Conventional and Trunking Channels*

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

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

**Transmit Digital [TXAD]**
*Conventional Mixed-Mode Transmit Channels*

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

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

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

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

**Transmit Power [PWR]**
*Conventional and Trunking Channels*

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

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

Power selection can be assigned as a button, switch or menu list item.
**Versions**  
*Conventional and Trunking Channels*

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

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

Version information includes:

- **Date**: Date of release.
- **Release**: Overall release code.
- **Software**: Release code for ARM.
- **DSP**: Release code for DSP.
- **File Format**: Currently installed file format.
- **BSP**: Release code of installed BSP firmware.
- **PCB Revision**: Installed printed circuit board revision number.
- **Date of Manufacture**: Date of manufacture.
- **FIPSCOM Bootloader**: Revision required for encryption.
- **FIPSCOM Application**: Installed encryption source file.

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

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

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

The Zone Select operation can be assigned to a touch screen button, a menu list item, or to a top function button.

When Zone is assigned to the touch screen or as a top function button, press the button to open the menu of available zones.

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

Select the Zone you want to use.

Press “ENTER” select the Zone.

Also, If enabled, a zone can also be accessed directly from the touchscreen keypad.

(Refer to your radio editor software documentation.)

(See also, Channel/Zone Selection Options.)
Keypad Programming

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

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

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

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

Keypad Programming Navigation

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

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

Entering Keypad Programming Mode

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

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

Available programmable functions are:

- **Keypad** - Used to edit individual channel and zone information such as labels, frequencies, operating modes, etc.
- **Call List** - Used to edit the P25 ID Call List entries.
- **User Tones** - Used to edit the user selectable Code Guard entries.
- **User NACs** - Used to edit user selectable Network Access Codes.
- **User TGIDs** - Used to edit user selectable P25 Talk Groups

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

### Global, System, Zone and Channel Parameters

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

<table>
<thead>
<tr>
<th>Keypad Programming Sub-Menus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global</strong></td>
</tr>
<tr>
<td>Display Top</td>
</tr>
<tr>
<td>Display Middle</td>
</tr>
<tr>
<td>Display Bottom</td>
</tr>
<tr>
<td>User Password</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

| Displayed Information Lines |

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

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

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

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

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>No information is displayed.</td>
</tr>
<tr>
<td>Channel Label</td>
<td>Programmed label of current channel.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Current operating frequency.</td>
</tr>
<tr>
<td>Channel Number</td>
<td>Channel number of currently operating channel.</td>
</tr>
<tr>
<td>Rx’d Unit ID</td>
<td>P25 ID of a received digital signal. If the incoming ID is programmed in your Unit ID Call List list, the associated label will be displayed. During standby you radio ID number is displayed.</td>
</tr>
<tr>
<td>Rx’d TGID</td>
<td>Talk Group ID of a received digital signal.</td>
</tr>
<tr>
<td>Rx Picklist Selections</td>
<td>Current user selected receiver Code Guard, Network Access Code and Talkgroup.</td>
</tr>
<tr>
<td>Tx Picklist Selections</td>
<td>Current user selected transmit Code Guard, Network Access Code and Talkgroup.</td>
</tr>
<tr>
<td>Zone Label</td>
<td>Programmed label of current operating zone.</td>
</tr>
<tr>
<td>Zone and Channel #</td>
<td>Current operating zone and channel numbers.</td>
</tr>
<tr>
<td>Zone Number</td>
<td>Zone number of currently operating zone.</td>
</tr>
</tbody>
</table>

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

System Settings
To edit the programmable System settings, select “Keypad” from the programing menu then select “System” from the sub-menu.
Select the item you wish to edit from the System menu.

System Priority 1 or 2 Channel
Priority channels can be assigned on a system wide basis. If assigned, a system priority channel will be monitored during priority scan regardless of the currently operation zone priority channel.
When set to “Off”, the Priority 1 or Priority 2 Channel is designated by the selected zone setting.
When set to “Use Main” the channel selected by the channel knob operates as the priority channel.
To designate a specific priority channel choose “Select” from the priority channel menu.
Select the Zone and Channel.

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

**Zone Settings**
To edit the programmable Zone settings, select “Keypad” from the programing menu then select “Zone” from the sub-menu.
Select Add, Delete or Edit Zone from the Zone menu.

**Add Zone**
When selected, a new zone is added in the next available slot.
Example: If there are seven zones in the radio, the added zone will be zone eight.

**Delete Zone**
When selected the list of available zones is displayed. Choose the zone you wish to delete.
When a zone is removed all subsequent zones move up one spot.
Example: If there are seven zones in the radio and zone five is deleted, zone six now becomes zone five and zone seven becomes zone six.

**Edit Zone**
Select “Edit Zone” to change the programmable zone information.

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

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

When set to “Off”, the Priority 1 or Priority 2 Channel is designated by the selected zone setting.
When set to “Use Main” the channel selected by the channel knob
operates as the priority channel.

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

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

**Channel Settings**
To edit the programmable Channel settings, select “Keypad” from the programing menu then select “Channel” from the sub-menu.
Select Add, Delete or Edit Channel from the Channel menu.

**Add Channel**
Select to add a new channel.
Choose the zone to which the channel is to be added.
Enter a valid channel index number of 1-2048.
NOTE: To access channels about channel sixteen, the radio must be programmed via PC for keypad channel select or “Channel Select” must be assigned as a button or menu item.

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

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

**Channel Label**
Use the keypad to enter a label of up to sixteen characters.
(See keypad character table)
Rx Frequency
Enter a valid receive frequency in MHz. Frequencies must be divisible by 1.25kHz.

Rx Mode
Select Analog, Digital or Mixed Mode.

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

RX NAC
*Analog or Mixed Mode Receive Channels Only*
Select “Enter” to program a receive NAC via the keypad.
Enter the desired value in hexadecimal (000 - FFF).
NOTE: $F7F is an invalid receiver NAC.
Choose “Select” to use a receiver NAC from the programmed pick list.

Squelch Mode
*Digital or Mixed Mode Receive Channels Only*
**Normal** - Requires carrier and NAC only to unmute digital signals.
**Selective** - Required for Individual Calls and use of Talkgroup IDs.

Bandwidth
*Analog or Mixed Mode Channels Only*
**Narrowband** - 12.5kHz spacing when operating in analog.
**Wideband** - 25kHz spacing when operating in analog.

Tx Power
**Low Power** - Lock channel in low power mode.
**High Power** - Lock channel in high power mode.
**Selectable** - Allow high/low transmit power selection form assigned button, switch or menu item.
**Tx Frequency**
Enter a valid receive frequency in MHz. Frequencies must be divisible by 1.25kHz.

**Tx Mode**
Select Analog, Digital or Selectable.

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

**Tx NAC**
*Analog or Mixed Mode Transmit Channels Only*
Select “Enter” to program a transmit NAC via the keypad.
Enter the desired value in hexadecimal (000 - FFF).
NOTE: $F7E and $F7F are invalid transmit NACs.
Choose “Select” to use a transmit NAC from the pick list.

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

**P25 ID Unit Call/Receive List**
The 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.
Select “Call List” from the programing menu.
Select the P25 ID you wish to edit.
The display shows the label and P25 ID of the selected ID.
Select “Label” to edit or add an alphanumeric label
Select “Dest ID” to change the P25 ID

User Selectable Code Guards

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

Select “User Tones” from the programing menu.
Select the tone to edit.

To enter a CTCSS tone select “Tone” and enter the desired frequency in Hertz (67.0 - 254.1 Hz).
To enter a CDCSS (digital) tone select “Digital” then enter the three digit code. Use the INV button to invert the code.

<table>
<thead>
<tr>
<th>Valid Code Guard Tone Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong></td>
</tr>
<tr>
<td>67.0 (XZ)</td>
</tr>
<tr>
<td>77.0 (XB)</td>
</tr>
<tr>
<td>88.5 (YB)</td>
</tr>
<tr>
<td>*100.0 (1Z)</td>
</tr>
<tr>
<td>107.2 (1B)</td>
</tr>
<tr>
<td>114.8 (2A)</td>
</tr>
<tr>
<td>123.0 (3Z)</td>
</tr>
<tr>
<td>131.8 (3B)</td>
</tr>
<tr>
<td>141.3 (4A)</td>
</tr>
</tbody>
</table>

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

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<td>412</td>
<td>423</td>
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<td>445</td>
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<td>465</td>
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<td>503</td>
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<td>516</td>
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<td>654</td>
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<td>662</td>
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<td>732</td>
<td>734</td>
<td>743</td>
<td></td>
</tr>
<tr>
<td>754</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

User Selectable Network Access Codes

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

Select “User NACs” from the programing menu.

Select the NAC to edit.

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

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

User Selectable Talkgroup IDs

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

Select “User TGIDs” from the programing menu.

Select the Talk Group ID to edit.

Enter the desired value (1 - 65535).

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

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

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

Repairs may be sent to the address below.

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

Keypad Text/Programming Characters

<table>
<thead>
<tr>
<th>Keypad Text</th>
<th>Programming Characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2 &lt;ABC&gt;</td>
<td>A, B, C, a, b, c, 2</td>
</tr>
<tr>
<td>3 &lt;DEF&gt;</td>
<td>D, E, F, d, e, f, 3</td>
</tr>
<tr>
<td>4 &lt;GHI&gt;</td>
<td>G, H, I, g, h, i, 4</td>
</tr>
<tr>
<td>5 &lt;JKL&gt;</td>
<td>J, K, L, j, k, l, 5</td>
</tr>
<tr>
<td>6 &lt;MNO&gt;</td>
<td>M, N, O, m, n, o, 6</td>
</tr>
<tr>
<td>7 &lt;PQRS&gt;</td>
<td>P, Q, R, S, p, q, r, s, 7</td>
</tr>
<tr>
<td>8 &lt;TUV&gt;</td>
<td>T, U, V, t, u, v, 8</td>
</tr>
<tr>
<td>9 &lt;WXYZ&gt;</td>
<td>W, X, Y, Z, w, x, y, z, 9</td>
</tr>
<tr>
<td>0</td>
<td>0, Blank Space</td>
</tr>
<tr>
<td>*</td>
<td>*, ., ,, :, &quot;, !, %, &amp;, ~, @, _</td>
</tr>
<tr>
<td>#</td>
<td>#, $, +, -, =, ^, /, ,</td>
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</tbody>
</table>
## My Radio Settings

<table>
<thead>
<tr>
<th></th>
<th>Conv.</th>
<th>ID#</th>
<th>Trunked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #</td>
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<td>_______</td>
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</tr>
<tr>
<td>Collar Switch</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Left Toggle</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Right Toggle</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Orange Button</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Top Side</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Bottom Side</td>
<td>_______</td>
<td>_______</td>
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</tr>
<tr>
<td>Diamond</td>
<td>_______</td>
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</tr>
<tr>
<td>Up Arrow</td>
<td>_______</td>
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<td>_______</td>
</tr>
<tr>
<td>Down Arrow</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>Square</td>
<td>_______</td>
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</table>

### Menu Settings

<table>
<thead>
<tr>
<th></th>
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<th>Trunked</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>