

KENWOOD


INSTRUCTION MANUAL



VHF FM TRANSCEIVER TK-2185

NOTIFICATION

This equipment complies with the essential requirements of Directive 1999/5/EC.

The use of the warning symbol  means the equipment is subject to restrictions of use in certain countries.

This equipment requires a licence and is intended for use in the countries as below.

AT	BE	DK	FI	FR	DE	GR	IS
IE	IT	LI	LU	NL	NO	PT	ES
SE	CH	GB	CY	CZ	EE	HU	LV
LT	MT	PL	SK	SI	BG	RO	

ISO3166

Kenwood Corporation

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THANK YOU

We are grateful you chose **Kenwood** for your land mobile radio applications.

NOTICES TO THE USER

- ◆ Government law prohibits the operation of unlicensed radio transmitters within the territories under government control.
- ◆ Illegal operation is punishable by fine and/or imprisonment.
- ◆ Refer service to qualified technicians only.

Safety: It is important that the operator is aware of and understands hazards common to the operation of any transceiver.

Information on Disposal of Old Electrical and Electronic Equipment and Batteries (applicable for EU countries that have adopted separate waste collection systems)



Products and batteries with the symbol (crossed-out wheeled bin) cannot be disposed as household waste.

Old electrical and electronic equipment and batteries should be recycled at a facility capable of handling these items and their waste byproducts. Contact your local authority for details in locating a recycle facility nearest to you.



Proper recycling and waste disposal will help conserve resources whilst preventing detrimental effects on our health and the environment.

Notice: The sign "Pb" below the symbol for batteries indicates that this battery contains lead.

PRECAUTIONS

- Do not charge the transceiver and battery pack when they are wet.
- Ensure that there are no metallic items located between the transceiver and the battery pack.
- Do not use options not specified by **Kenwood**.
- If the die-cast chassis or other transceiver part is damaged, do not touch the damaged parts.
- If a headset or headphone is connected to the transceiver, reduce the transceiver volume. Pay attention to the volume level when turning the squelch off.
- Do not place the microphone cable around your neck while near machinery that may catch the cable.
- Do not place the transceiver on unstable surfaces.
- Ensure that the end of the antenna does not touch your eyes.
- When the transceiver is used for transmission for many hours, the radiator and chassis will become hot. Do not touch these locations when replacing the battery pack.
- Do not immerse the transceiver in water.
- Always switch the transceiver power off before installing optional accessories.
- The charger is the device that disconnects the unit from the AC mains line. The AC plug should be readily accessible.



WARNING

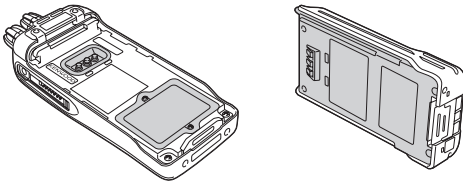
Turn the transceiver power off in the following locations:

- In explosive atmospheres (flammable gas, dust particles, metallic powders, grain powders, etc.).
- While taking on fuel or while parked at gasoline service stations.
- Near explosives or blasting sites.
- In aircrafts. (Any use of the transceiver must follow the instructions and regulations provided by the airline crew.)
- Where restrictions or warnings are posted regarding the use of radio devices, including but not limited to medical facilities.
- Near persons using pacemakers.



CAUTION

- Do not disassemble or modify the transceiver for any reason.
- Do not place the transceiver on or near airbag equipment while the vehicle is running. When the airbag inflates, the transceiver may be ejected and strike the driver or passengers.
- Do not transmit while touching the antenna terminal or if any metallic parts are exposed from the antenna covering. Transmitting at such a time may result in a high-frequency burn.
- If an abnormal odor or smoke is detected coming from the transceiver, switch the transceiver power off immediately, remove the battery pack from the transceiver, and contact your Kenwood dealer.
- Use of the transceiver while you are driving may be against traffic laws. Please check and observe the vehicle regulations in your area.
- Do not expose the transceiver to extremely hot or cold conditions.
- Do not carry the battery pack (or battery case) with metal objects, as they may short the battery terminals.
- Danger of explosion if the battery is incorrectly replaced; replace only with the same type.
- The orange seal on the reverse side of the transceiver is important with respect to the waterproof efficiency of the transceiver. Do not place stickers or other materials on or around the seal shown in the figure, or on the reverse side of the battery pack. Doing so will impair the waterproof efficiency of the transceiver and may cause it to break down. Additionally, in order to prevent damage to the seal, do not allow it to come in contact with foreign materials.



Information concerning battery packs:

The battery pack includes flammable objects such as organic solvent. Mishandling may cause the battery to rupture producing flames or extreme heat, deteriorate, or cause other forms of damage to the battery. Please observe the following prohibitive matters.



DANGER

- **Do not disassemble or reconstruct battery!**

The battery pack has a safety function and protection circuit to avoid danger. If they suffer serious damage, the battery may generate heat or smoke, rupture, or burst into flame.

- **Do not short-circuit the battery!**

Do not join the + and – terminals using any form of metal (such as a paper clip or wire). Do not carry or store the battery pack in containers holding metal objects (such as wires, chain-necklace or hairpins). If the battery pack is short-circuited, excessive current will flow and the battery may generate heat or smoke, rupture, or burst into flame. It will also cause metal objects to heat up.

- **Do not incinerate or apply heat to the battery!**

If the insulator is melted, the gas release vent or safety function is damaged, or the electrolyte is ignited, the battery may generate heat or smoke, rupture, or burst into flame.

- **Do not use or leave the battery near fires, stoves, or other heat generators (areas reaching over 80°C/ 176°F)!**

If the polymer separator is melted due to high temperature, an internal short-circuit may occur in the individual cells and the battery may generate heat or smoke, rupture, or burst into flame.

- **Do not immerse the battery in water or get it wet by other means!**

If the battery's protection circuit is damaged, the battery may charge at extreme current (or voltage) and an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not charge the battery near fires or under direct sunlight!**

If the battery's protection circuit is damaged, the battery may charge at extreme current (or voltage) and an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

**DANGER**

- **Use only the specified charger and observe charging requirements!**

If the battery is charged in unspecified conditions (under high temperature over the regulated value, excessive high voltage or current over regulated value, or with a remodelled charger), it may overcharge or an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not pierce the battery with any object, strike it with an instrument, or step on it!**

This may break or deform the battery, causing a short-circuited. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not jar or throw the battery!**

An impact may cause the battery to leak, generate heat or smoke, rupture, and/or burst into flame. If the battery's protection circuit is damaged, the battery may charge at an abnormal current (or voltage), and an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not use the battery pack if it is damaged in any way!**

The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not solder directly onto the battery!**

If the insulator is melted or the gas release vent or safety function is damaged, the battery may generate heat or smoke, rupture, or burst into flame.

- **Do not reverse the battery polarity (and terminals)!**

When charging a reversed battery, an abnormal chemical reaction may occur. In some cases, an unexpected large amount of current may flow upon discharging. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not reverse-charge or reverse-connect the battery!**

The battery pack has positive and negative poles. If the battery pack does not smoothly connect with a charger or operating equipment, do not force it; check the polarity of the battery. If the battery pack is reverse-connected to the charger, it will be reverse-charged and an abnormal chemical reaction may occur. The battery may generate heat or smoke, rupture, or burst into flame.

**DANGER**

- **Do not touch a ruptured and leaking battery!**

If the electrolyte liquid from the battery gets into your eyes, wash your eyes out with fresh water as soon as possible, without rubbing your eyes. Go to the hospital immediately. If left untreated, it may cause eye-problems.

**WARNING**

- **Do not charge the battery for longer than the specified time!**

If the battery pack has not finished charging even after the regulated time has passed, stop it. The battery may generate heat or smoke, rupture, or burst into flame.

- **Do not place the battery pack into a microwave or high pressure container!**

The battery may generate heat or smoke, rupture, or burst into flame.

- **Keep ruptured and leaking battery packs away from fire!**

If the battery pack is leaking (or the battery emits a bad odor), immediately remove it from flammable areas. Electrolyte leaking from battery can easily catch on fire and may cause the battery to generate smoke or burst into flame.

- **Do not use an abnormal battery!**

If the battery pack emits a bad odor, appears to have different coloring, is deformed, or seems abnormal for any other reason, remove it from the charger or operating equipment and do not use it. The battery may generate heat or smoke, rupture, or burst into flame.

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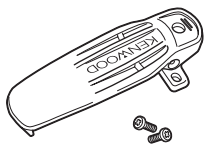
UNPACKING AND CHECKING EQUIPMENT

Note: The following unpacking instructions are for use by your **Kenwood** dealer, an authorized **Kenwood** service facility, or the factory.

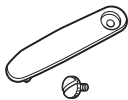
Carefully unpack the transceiver. We recommend that you identify the items listed in the following table before discarding the packing material. If any items are missing or have been damaged during shipment, file a claim with the carrier immediately.

SUPPLIED ACCESSORIES

Item	Quantity
Belt clip	1
Screw for belt clip	2
Univeral connector cap	1
Screw for connector cap	1
Instruction manual	1



Belt clip
+ screws



Univeral connector cap
+ screw

PREPARATION

BATTERY PACK PRECAUTIONS

Do not use battery packs or battery chargers not recommended by **Kenwood**.



CAUTION

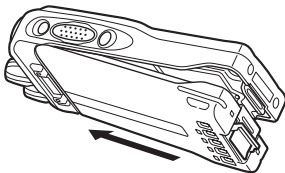
- ◆ Do not recharge the battery pack if it is already fully charged. Doing so may cause the life of the battery pack to shorten or the battery pack may be damaged.
- ◆ After charging the battery pack, disconnect it from the charger. If the charger power is reset (turned ON after being turned OFF), recharging will start again and the battery pack will become overcharged.
- ◆ Do not use the transceiver while charging the battery pack. We recommend you switch the transceiver power OFF while charging is taking place.
- ◆ Do not charge the battery pack when the battery pack or transceiver is wet, to avoid the risk of fire or damage. Wipe the water from the battery pack or transceiver using a dry cloth before charging.
- ◆ Do not short the battery terminals or dispose of the battery by fire.
- ◆ Never attempt to remove the casing from the battery pack.

■ Charging a Battery Pack

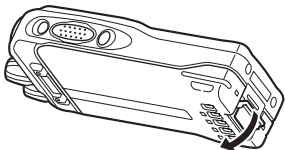
For charging procedures, refer to the battery charger Instruction Manual.

INSTALLING/ REMOVING THE (OPTIONAL) BATTERY PACK

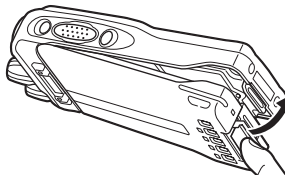
- 1 Match the guides of the battery pack with the corresponding grooves on the upper rear of the transceiver, then firmly press the battery pack to lock it in place.



- 2 Lock the safety catch to prevent accidentally pressing the release latch and removing the battery pack.



- 3 To remove the battery pack, lift the safety catch, press the release latch, then pull the battery pack away from the transceiver.



Note:

- ◆ To lift the battery pack safety catch, use a piece of hardened plastic or metal, such as a screwdriver, that is no more than 6 mm wide and 1 mm thick. It is imperative that you place the implement under only the lip of the safety catch so that you do not damage the release latch.
 - ◆ Before charging a battery pack that is attached to the transceiver, ensure that the safety catch is firmly closed.
 - ◆ While operating the transceiver using a Li-ion or Ni-MH battery pack in areas with an ambient temperature of $-10^{\circ}\text{C}/ +14^{\circ}\text{F}$ and lower, operating time may be shortened.
-

INSTALLING THE (OPTIONAL) ANTENNA

Screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure.

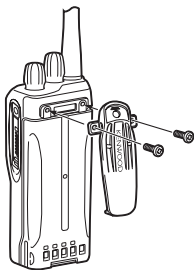
Note: The antenna is neither a handle, a key ring retainer, nor a speaker/ microphone attachment point. Using the antenna in these ways may damage the antenna and degrade your transceiver's performance.



INSTALLING THE BELT CLIP

If necessary, attach the belt clip using the two supplied 3 x 8 mm screws.

Note: If the belt clip is not installed, its mounting location may get hot during continuous transmission or when left sitting in a hot environment.

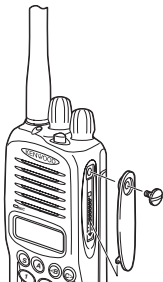


CAUTION

Do not use glue which is designed to prevent screw loosening when installing the belt clip, as it may cause damage to the transceiver. Acrylic ester, which is contained in these glues, may crack the transceiver's back panel.

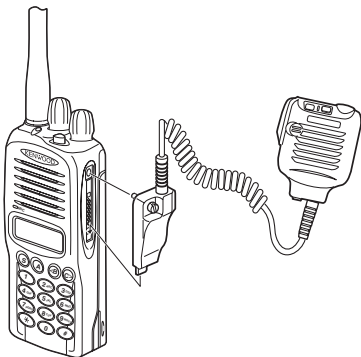
INSTALLING THE CAP OVER THE UNIVERSAL CONNECTOR

If you are not using an optional speaker/ microphone or headset, install the cap over the universal connector using the supplied 4 x 6 mm screw. Ensure that the cap fits tightly over the connector.



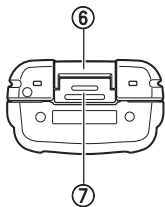
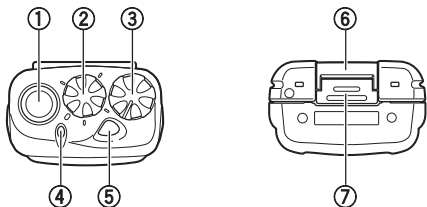
INSTALLING THE (OPTIONAL) SPEAKER/ MICROPHONE OR HEADSET

- 1 Insert the guide of the speaker/ microphone connector into the groove of the universal connector.
- 2 Secure the connector in place using the attached screw.



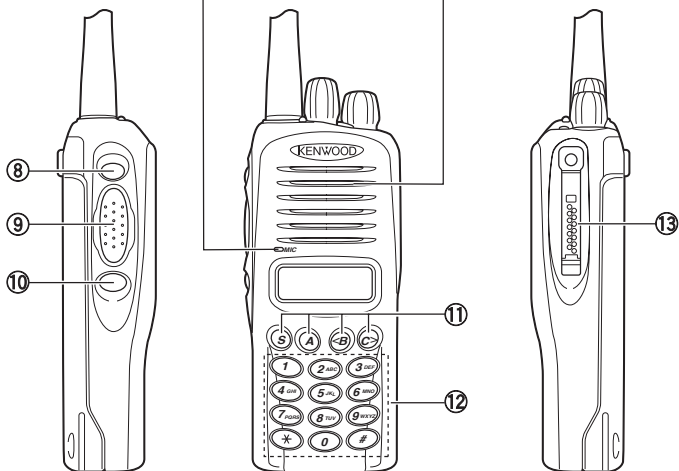
Note: When not using an optional speaker/ microphone or headset, install the cap over the universal connector.

GETTING ACQUAINTED



Microphone

Speaker



① **Antenna connector**

Connect an antenna here {page 4}.

② **Selector**

Rotate to select your desired channel/ call address (voice calls) or status (status calls).

- ③ **Power switch/ Volume control**
Turn clockwise to switch ON the transceiver. Rotate to adjust the volume. Turn counterclockwise fully to switch OFF the transceiver.
- ④ **Transmit/ Busy indicator**
This LED lights red while transmitting and green while receiving a call.
- ⑤ **Auxiliary (orange) key**
Press to activate its programmable function*.
- ⑥ **Safety Catch**
Lock this catch to avoid accidentally pressing the release latch and removing the battery pack {page 3}.
- ⑦ **Release Latch**
Press the release latch to unlock and remove the battery pack {page 3}.
- ⑧ **Side 1 key**
Press to activate its programmable function*.
- ⑨ **PTT (Push-To-Talk) switch**
Press this switch, then speak into the microphone to place a call.
- ⑩ **Side 2 key**
Press to activate its programmable function*.
- ⑪ **S, A, <B, and C> keys**
Press to activate their programmable functions*.
- ⑫ **DTMF keypad**
Press the keys on the keypad to make DTMF calls and to enter ID numbers and messages.
- ⑬ **Universal connector**
Connect a speaker/ microphone or headset here {page 5}. Otherwise, keep the supplied cap in place.

* Programmable functions vary, depending on the transceiver operating mode. Refer to Trunking Mode {page 9} or Conventional Mode {page 22} for applicable functions.

BASIC OPERATIONS

SWITCHING POWER ON/ OFF

Turn the **Power** switch/ **Volume** control clockwise to switch the transceiver ON.

- A beep sounds and the display momentarily lights up.
- If the Transceiver Password function is programmed, "PASSWORD" appears on the display. If a key has been programmed as **Transceiver Password**, you must press this key first, before "PASSWORD" appears on the display. You must enter the password to unlock the transceiver. Refer to "Transceiver Password", below.

Turn the **Power** switch/ **Volume** control counterclockwise to switch the transceiver OFF.

■ Transceiver Password

To enter the transceiver password:

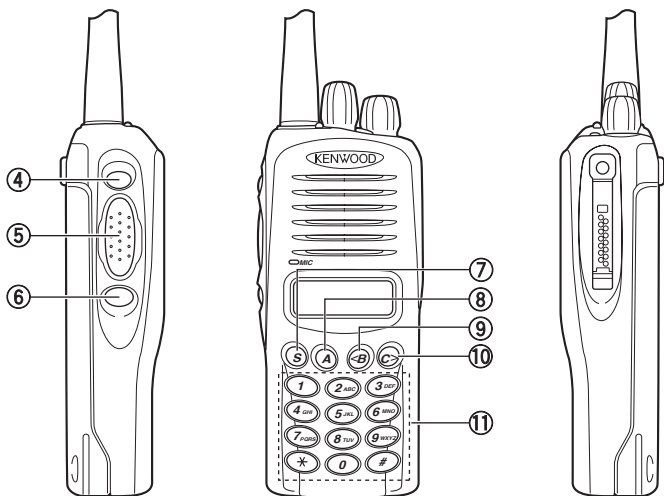
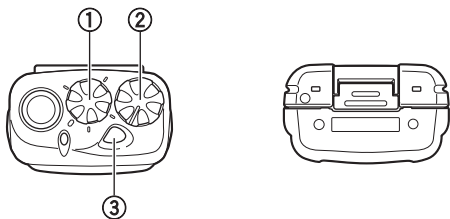
- 1 Press the DTMF keys corresponding to the password digits.
 - Alternatively, you can enter the password by rotating the **selector** to select a digit, followed by pressing the **C>** key to accept the entered digit and move to the next digit.
 - Press the **A** or **#** key to delete an incorrect character. Press and hold the **A** or **#** key to delete all entered characters.
- 2 Press the **S** or ***** key to confirm the password.
 - If you enter an incorrect password, an error tone sounds and the transceiver remains locked.

ADJUSTING THE VOLUME

Rotate the **Power** switch/ **Volume** control to adjust the volume. Clockwise increases the volume and counter-clockwise decreases it.

TRUNKING MODE

KEY OPERATIONS



- ① **Selector**
Rotate to select your desired call address or status.
- ② **Power switch/ Volume control**
Turn clockwise to switch ON the transceiver. Rotate to adjust the volume. Turn counterclockwise fully to switch OFF the transceiver.
- ③ **Auxiliary (orange) key**
Press to activate its programmable function {page 13}.
The default setting is None.
- ④ **Side 1 key**
Press to activate its programmable function {page 13}.
The default setting is Call.
- ⑤ **PTT (Push-To-Talk) switch**
Press this switch, then speak into the microphone to call a station.
- ⑥ **Side 2 key**
Press to activate its programmable function {page 13}.
The default setting is Clear.
- ⑦ **S key**
Press to activate its programmable function {page 13}.
The default setting is Status/Stack.
- ⑧ **A key**
Press to activate its programmable function {page 13}.
The default setting is Redial.
- ⑨ **<B key**
Press to activate its programmable function {page 13}.
The default setting is Lamp.
- ⑩ **C> key**
Press to activate its programmable function {page 13}.
The default setting is Clock.
- ⑪ **DTMF keypad**
Press these keys to enter ID numbers and messages.

DISPLAY



Indicator	Description
	Displays call addresses, received messages, and transceiver status messages.
	Displays received call types, transceiver functions, status numbers, and output power.
	Displays the strength of received signals. An antenna and all 3 strength bars represents strong signals while the antenna by itself (no strength bars) represents weak signals.
	Flashes when you receive a message. Lights when a message is stored in the queue memory.
	Appears when call diversions on your transceiver have been set up.
	Appears when the Scrambler function is activated.
	Displays the battery power status as high, sufficient, low, or very low.
	Appears when the Auto Recording function on the VGS-1 option is activated.
	Appears when an Auto Reply Message on the VGS-1 option is activated.
	Appears when the Vibrator function is activated.
	Appears when the AUX function has been activated.

MPT Status Messages

Display	Transceiver status
<<NO REPLY>>	No Reply
<<NU>>	Call Address Invalid
<<INVALID>>	Calling Invalid
<<HOLDING>>	Waiting for response from calling address
<<ENGAGED>>	Calling address is engaged
<<PARTY BUSY>>	Party Busy
<<QUEUED>>	System Queued
<<I-PREFIX>>	Call received from Inter-Prefix
<<I-FLEET>	Call received from Inter-Fleet
<<PABX>>	Received PABX Call
<<PSTN>>	Received PSTN Call

PROGRAMMABLE FUNCTIONS

The **Auxiliary**, **Side 1**, **Side 2**, **S**, **A**, **<B**, and **C>** keys can be programmed with the functions listed below. Please contact your dealer for further details on these functions.

- Auto Reply Message ¹
- AUX
- Call
- Call Address Down ²
- Call Address Up ²
- Clear
- Clock
- Conventional
- Dialing
- Dialing Mode ³
- Emergency ⁴
- GPS Position Display ⁵
- Home Address
- Key Lock
- Lamp
- Network Select
- None
- Playback ¹
- Redial
- Scrambler
- Send the GPS Data
- Site Lock
- Status/Stack ⁶
- Sub LCD Display
- Transceiver Password
- Vibrator ⁷

¹ “Auto Reply Message” and “Playback” can be programmed only when the optional VGS-1 board has been installed.

² “Call Address Down” and “Call Address Up” can be programmed only on the optional microphone PF1, and PF2 keys.

³ “Dialing Mode” can be selected when Keypad Operation is set to Programmable.

⁴ “Emergency” can be programmed only on the Auxiliary (orange) key.

⁵ “GPS Position Display” can be assigned only if one of the COM ports is configured for GPS.

⁶ “Status/ Stack” can be programmed only on the S key.

⁷ “Vibrator” can be set up only when it is configured for Universal Connector Pin No. 11.

SEARCHING FOR A CONTROL CHANNEL

After switching the power ON, press any key while the power-on text or unit number is displayed to begin searching for a control channel.

- If no action is performed for 2 seconds, the transceiver will automatically begin searching for a control channel.
- “---” appears on the sub-display and an arrow scrolls across the main display while the transceiver is searching for a control channel.
- If more than one network is available, press the key programmed as **Network Select** to manually change networks.

VOICE CALLS

■ Making a Voice Call

- 1 Rotate the selector or press the keys programmed as **Call Address Up** and **Call Address Down** to select your desired call address.
- 2 Press the **Call** key (default: **Side 1** key) or the **PTT** switch to initiate the call.
 - “CALLING” appears on the main display and “SVC” appears on the sub-display.
- 3 When the call is connected, a timer appears on the display.
 - The timer can be set to either count up (increasing number) or down (decreasing number).
- 4 Press the **PTT** switch to transmit; release it to receive.
 - The LED lights red while transmitting.
 - The sub-display shows your transmit power. A single triangle (▲) represents low power and dual triangles (▲▲) represents high power.
- 5 Press the **Clear** key (default: **Side 2** key) to end the call. If the call time expires before you press the **Clear** key, the call will be automatically terminated.
 - “END” momentarily appears on the display before returning to the call address of the call you just made.

■ Receiving a Voice Call



- 1 When a call is received, the caller's unit number appears on the main display.
 - If you have the caller's address set up in your transceiver, the call address is displayed instead of the unit number.
 - Depending on the type of call being received, a code will appear on the sub-display:
 - CAL*: An individual call is being received.
 - GRP*: A group conference call is being received.
 - BCC*: A group broadcast call is being received.
 - Special calls are denoted as follows:
 - I-FLEET*: A call from a different fleet (Inter-Fleet).
 - I-PREFIX*: A call from a different prefix (Inter-Prefix).
 - PABX*: A call from a PABX telephone system.
 - PSTN*: A call from a PSTN telephone system.
- 2 Press the **PTT** switch to respond to the call.
 - The remaining call time appears on the display.
- 3 When the call ends, the display returns to the call address that was previously displayed. However, if you end the call by pressing the **Clear** key, "END" momentarily appears on the display before returning to the call address.

STATUS CALLS

■ Making a Status Call

- 1 Rotate the selector or press the keys programmed as **Call Address Up** and **Call Address Down** to select your desired call address.
- 2 Press the **Status/ Stack** key (default: **S** key), then rotate the selector to select your desired status.
 - The status number appears on the sub-display.
- 3 Press the **Call** key (or **PTT** switch if “PTT to Initiate Call” has been programmed) to send the status.
 - “CALLING” appears on the display.
- 4 When the status has been received by the called party, “COMPLETE” momentarily appears on the display before returning to the previously selected call address.

■ Receiving a Status/Short Data Message Call

- 1 When a call is received, the  icon appears on the display and flashes.
 - The  icon remains on the display when there is data in the stack.
- 2 To view the status or message, refer to “VIEWING THE STACK”, on page 18.

DATA CALLS

■ Making a Data Call

- 1 Enter control code ***2** to make a SDM (Short Data Message) call.
- 2 Press the ***** key, then enter your message.
 - Enter characters using the keypad or by rotating the selector. When rotating the selector, press the **<B** or **C>** key to set the selected character.
 - To clear a character, press the **Clear** key. To clear all entered characters, press and hold the **Clear** key.

- 3 Press the * key to end your message.
- 4 Enter the ID number of the unit you want to send the message to.
- 5 Press the **PTT** switch, the **Call** key, or the # key to transmit.

■ Receiving a Data Call

- 1 When a call is received, the ☑ icon appears on the display and flashes.
 - The ☑ icon remains on the display when there is data in the stack.
- 2 To view the message, refer to “VIEWING THE STACK”, on page 18.

CALL DISPLAYS

The following messages may appear on the display under certain circumstances:

- *ENGAGED*: The called party is in another call.
- *HOLDING*: The transceiver is confirming the call made by the base station.
- *INVALID*: You entered an invalid call address.
- *NU*: The called party could not be reached (Number Unobtainable).
- *NO REPLY*: The called party has been called, but they did not respond to the call.
- *PARTY BUSY*: The called party is temporarily prohibited from making calls.
- *QUEUED*: All communication channels are currently in use; your call will be connected when a channel becomes free.


VIEWING THE STACK

- 1 Press the **Status/ Stack** key twice to enter the stack.
 - If there is no data in the stack, “-----” appears on the main display and “-00” appears on the sub-display.
- 2 Rotate the selector to view the stack entries.
 - “NEW” momentarily appears on the sub-display if the message has not yet been viewed.
 - In the sub-display, “S” represents a status stack entry, “V” represents a voice stack entry, and “D” represents a data stack entry.
- 3 Press the **<B** and **C>** keys to scroll through the selected entry, to view the entire entry. Press the **A** key to toggle between the time/date of the received call and the caller ID.
- 4 To erase an entry, select the desired entry and press the **Clear** key.
 - “DELETE?” appears on the display. Press the **S** or ***** key to confirm the deletion. Press the **A** or **#** key to cancel.
- 5 To erase all entries, select press and hold the **Clear** key.
 - “DELETE?” appears on the main display and “ALL” appears on the sub-display. Press the **S** or ***** key to confirm the deletion. Press the **A** or **#** key to cancel.

CALL DIVERTING

■ Diverting Your Own Calls

- 1 Enter control code *** 41** to divert your calls to a different transceiver.
- 2 Press the ***** key, then enter the ID number of the unit to where you want your calls diverted.
- 3 Press the **PTT** switch, the **Call** key, or the **#** key to set up the call diversion.
 - “CALLING” appears on the display.

- When the call divert is set, “COMPLETE” momentarily appears on the display. Additionally, the  icon appears on the display and flashes.
- 4 To end the call diversion, enter control code **#41**, then press the **PTT** switch, the **Call** key, or the **#** key.
 - “CALLING” appears on the display.
 - When the call divert is cleared, “COMPLETE” momentarily appears on the display.

■ Diverting Third Party Calls

- 1 Enter control code ***44** to divert third party calls.
- 2 Press the ***** key, then enter the ID number of the unit from which you want calls diverted.
- 3 Press the ***** key, then enter the ID number of the unit to where you want the calls diverted.
- 4 Press the **PTT** switch, the **Call** key, or the **#** key to set up the call diversion.
 - “CALLING” appears on the display.
 - When the call divert is set, “COMPLETE” momentarily appears on the display.
- 5 To end the call diversion, enter control code **#44** followed by the ***** key and the ID number of the unit from which calls are being diverted, then press the **PTT** switch, the **Call** key, or the **#** key.
 - “CALLING” appears on the display.
 - When the call divert is cleared, “COMPLETE” momentarily appears on the display.

DIALING MODE

Press the key programmed as **Dialing Mode** to enter a dialing number using the keypad.

Note: You can select **Dialing Mode** when Keypad Operation is set to Programmable.

KEYPAD ENTRY

Besides using the selector, you can enter dialing codes manually, by entering the numbers using the keypad.

- Refer to the dialing codes listed in the appendix, starting on page 36.

■ Redialing

If a key has been programmed with **Redial**, you can easily redial previously dialed call addresses.

- 1 Press the key programmed as **Redial**.
- 2 Rotate the selector to select 1 of the 3 last dialed numbers.
- 3 Press the **Call** key or the **PTT** switch to initiate the call.

EMERGENCY CALLS

If your transceiver has been programmed with the Emergency function, you can make emergency calls.


Note: Only the Auxiliary (orange) key can be programmed with the Emergency function.

Press and hold the key programmed as **Emergency**.

- Depending on the delay time programmed into your transceiver, the length of time you must hold the **Emergency** key will vary.

AUXILIARY PORT

If a key has been programmed with the **AUX** function, you can press that key to turn the Auxiliary Port on and off.

- When the Auxiliary Port is activated, the AUX indicator () appears on the display.

GPS REPORT

If a GPS unit (NMEA-0183 format) is installed on your transceiver and the **Send the GPS Data** function has been programmed onto a key by your dealer, press the this key to send your location data.

HOME ADDRESS

If a key has been programmed with the Home Address function, you can press that key to jump to the pre-programmed call address.

- “HAD” appears in the sub-display when the selected call address is the Home Address.

Press **Home Address** a second time to return to the previous call address you were using.

SITE LOCK

Press and hold this key for 1 second to lock the Site. “SITE LOCKED” momentarily appears on the display. Press and hold this key again for 1 second to cancel Site Lock.

SUB-LCD DISPLAY

If a key has been programmed with the **Sub-LCD Display** function, you can press that key to jump to the toggle the sub-display between “SVC”, the current control channel number, and the signal strength readout.

SWITCHING TO CONVENTIONAL MODE

Depending on how your transceiver is programmed, you can enter Conventional Mode in one of two ways:

Manual: When in Trunking Mode, press the key programmed as **Conventional** to change the operating mode. This function only works when no signals are currently being received.

Auto: The transceiver automatically changes to Conventional Mode when you are outside the network area.

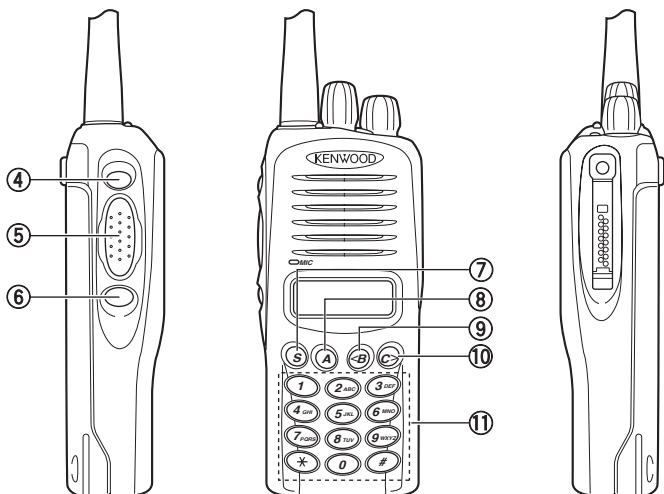
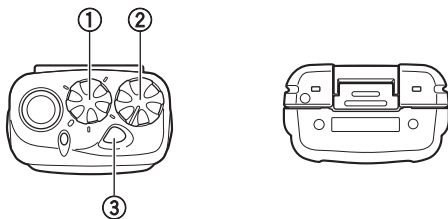
VIBRATOR

Press and hold this key for 1 second to toggle the vibrator function ON and OFF. When the vibrator is on, the transceiver will vibrate when a voice call (Individual/GroupPSTN/PABX) is received and when a status message, SDM, or NPD is in the stack.

- When the Vibrator function is activated, the Vibrator indicator (■■■■■■■■■■) appears on the display.

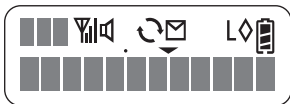
CONVENTIONAL MODE

KEY OPERATIONS



- ① **Selector**
Rotate to select your desired channel.
- ② **Power switch/ Volume control**
Turn clockwise to switch ON the transceiver. Rotate to adjust the volume. Turn counterclockwise fully to switch OFF the transceiver.
- ③ **Auxiliary (orange) key**
Press to activate its programmable function {page 25}.
The default setting is None.
- ④ **Side 1 key**
Press to activate its programmable function {page 25}.
The default setting is Squelch Off.
- ⑤ **PTT (Push-To-Talk) switch**
Press this switch, then speak into the microphone to call a channel.
- ⑥ **Side 2 key**
Press to activate its programmable function {page 25}.
The default setting is Clear.
- ⑦ **S key**
Press to activate its programmable function {page 25}.
The default setting is Scan.
- ⑧ **A key**
Press to activate its programmable function {page 25}.
The default setting is Scan Delete/Add.
- ⑨ **<B key**
Press to activate its programmable function {page 25}.
The default setting is Lamp.
- ⑩ **C> key**
Press to activate its programmable function {page 25}.
The default setting is Clock.
- ⑪ **DTMF keypad**
Press these keys to make DTMF calls {page 29}.

DISPLAY



Indicator	Description
	Displays channel numbers (or names) and received messages.
	Displays channel numbers and transceiver functions.
	Displays the strength of received signals. An antenna and all 3 strength bars represents strong signals while the antenna by itself (no strength bars) represents weak signals.
	Appears when the Squelch Off function has been activated (squelch has been turned off).
	Appears while scanning.
	Flashes when you receive a message. Lights when a message is stored in the queue memory.
	Appears when the Scrambler function is activated.
	Displays the battery power status as high, sufficient, low, or very low.
	Appears when the Auto Recording function on the VGS-1 option is activated.
	Appears when the selected channel is added to the scanning sequence.

PROGRAMMABLE FUNCTIONS

The **Auxiliary**, **Side 1**, **Side 2**, **S**, **A**, **<B**, and **C** keys can be programmed with the functions listed below. Please contact your dealer for further details on these functions.


- Channel Down
- Channel Up
- Clear
- Clock
- Emergency (Trunking) ¹
- GPS Position Display ²
- Key Lock
- Lamp
- None
- Playback ³
- Scan
- Scan Delete/Add
- Scrambler
- Squelch Off

¹ “Emergency (Trunking)” can be programmed only on the Auxiliary (orange) key.

² “GPS Position Display” can be assigned only if one of the COM ports is configured for GPS.


³ “Playback” can be programmed only when the optional VGS-1 board has been installed.

CONVENTIONAL OPERATION

- 1 Rotate the selector or press the keys programmed as **Channel Up** and **Channel Down** to select your desired channel.
- 2 Press the **Squelch Off** key (default: **Side 1** key) to turn the Squelch function OFF, in order to monitor any activity on the channel.
 - The  icon appears on the display.
 - The LED lights green and you will hear background noise.
- 3 Press the **PTT** switch and speak into the microphone. Release the **PTT** switch to receive.
 - For best sound quality at the receiving station, hold the microphone approximately 3 ~ 4 cm from your mouth.

SCANNING

Press the **Scan** key (default: **S** key) to begin scanning.

- While scanning, the  icon and "SCAN" appear on the display.
- When a call is received, scanning stops and the channel number (or channel name if a name has been set up) appears. Press the **PTT** switch and speak into the microphone to respond to the call. The transceiver will continue scanning after an adjustable time delay if the **PTT** switch is released and no further signal is received.

To stop scanning, press the **Scan** key again.

■ Add to Scan/ Delete from Scan

Press the **Scan Delete/Add** key (default: **A** key) to add or remove each channel to or from the scan sequence.

- The channel add indicator () will appear on the display when the selected channel is added to the scan sequence.

■ Scan Revert

During scan, when pressing the **PTT** switch, you can transmit on the revert channel. Four types of Scan Reverts which can be programmed by your dealer are available.

- **Last Called:** The last channel on which you received a call.
- **Last Used:** The last channel to which you responded.
- **Selected:** The channel you selected prior to activating Scan.
- **Selected + Talkback:** The channel you selected prior to activating Scan is the revert channel. However, you can respond (talkback) to a call if you are currently receiving on a different channel.

EMERGENCY (TRUNKING)

The Emergency (Trunking) function will place an Emergency Call (page 20) when entering Trunking mode.


- This function can be configured only when Trunking Search Delay Time is not set to "Off" and Automatic Mode Change is set to "Alert".
- Emergency (Trunking) cannot be used if the Trunking Search has not found a Control Channel.

Note: Only the Auxiliary (orange) key can be programmed with the Emergency function.

Press and hold the key programmed as **Emergency (Trunking)**.

SQUELCH OFF

Press the **Squelch Off** key to listen to weak signals that you cannot hear during normal operation and to adjust the volume when no signals are present on your selected channel.

- The  icon appears and the Busy LED lights green while Squelch Off is activated.

Press **Squelch Off** again to return to normal operation.

QUIET TALK (QT)/ DIGITAL QUIET TALK (DQT)

Your dealer may have programmed QT or DQT signaling on your transceiver channels. A QT tone/ DQT code is a sub-audible tone/code which allows you to ignore (not hear) calls from other parties who are using the same channel.

When a channel is set up with a QT tone or DQT code, squelch will open only when a call containing a matching tone or code is received. Likewise, signals you transmit will be heard only by parties whose QT/ DQT signaling matches your transceiver. If a call containing a different tone or code is made on the same channel you are using, squelch will not open and you will not hear the call. Although it may seem like you have your own private channel while using QT/ DQT, other parties can still hear your calls if they set up their transceiver with the same tone or code.

TIME-OUT TIMER (TOT)

The purpose of the Time-out Timer is to prevent any caller from using a channel for an extended period of time.

If you continuously transmit for a period of time that exceeds the programmed time set by your dealer (default is 1 minute), the transceiver will stop transmitting and an alert tone will sound. To stop the tone, release the **PTT** switch.

Your dealer can program the TOT time in the range of 15 seconds to 20 minutes.

BUSY CHANNEL LOCKOUT (BCL)

When activated, BCL prevents you from interfering with other parties who may be using the same channel that you selected.

Pressing the **PTT** switch while the channel is in use will cause your transceiver to emit an alert tone and transmission will be inhibited (you cannot transmit). Release the **PTT** switch to stop the tone and return to receive mode.

SWITCHING TO TRUNKING MODE

Depending on how your transceiver is programmed, you can return to Trunking Mode in one of three ways:

Manual: Press the **Clear** key to change the operating mode.

Auto: While in Conventional Mode, the transceiver periodically searches for the network. When it finds the network, the transceiver automatically changes to Trunking Mode. An alert tone sounds to notify you when the operating mode changes.


Alert: While in Conventional Mode, the transceiver periodically searches for the network. When it finds the network, an alert tone sounds. Press the **Clear** key to change the operating mode.

SCRAMBLER

Although the scrambler function does not offer complete privacy with your calls, it does prevent others from easily listening in on your calls. When activated, the transceiver distorts your voice so that anybody listening to your call will be unable to clearly hear what you are saying.

In order for members of your own group to clearly hear your call while you are using the scrambler, all other members must also activate the scrambler functions on their transceivers. This distorts everybody's voice while transmitting and corrects the voice message on your own transceiver when you receive the call.

To activate the scrambler, press the key programmed as **Scrambler**.

- The  icon appears on the display while the scrambler is active. To deactivate the scrambler, press the **Scrambler** key again.

Note: There are 2 options for using the scrambler. Your dealer can activate or deactivate the built-in scrambler function of the transceiver, or they can add a more secure optional scrambler board to your transceiver. Ask your dealer for details.

DTMF (DUAL TONE MULTI FREQUENCY) CALLS

Press and hold the **PTT** switch, then enter the desired digits using the front panel keypad.

- If you release the **PTT** switch, transmit mode will end even if the complete number has not been sent.

GPS POSITION DISPLAY

If a GPS unit (NMEA-0183 format) is installed on your transceiver and the GPS Position Display function has been programmed onto a key by your dealer, press the **GPS Position Display** key to display latitudinal, longitudinal and altitudinal values on the main display of the transceiver.

BACKLIGHT

To turn the transceiver display backlight on, press the key **Lamp**.

- Once activated, the backlight remains on for 5 seconds.
- Pressing any key other than the **PTT** switch, the **Power** switch/**Volume** control, and the **Lamp** key while the backlight is on will reset the backlight timer, allowing it to remain lit for an additional 5 seconds.

To turn the transceiver backlight off immediately, press the **Lamp** key while the backlight is on.

KEY LOCK

This function is used to help prevent any accidental operation of the transceiver.

To lock the transceiver keys, press and hold the key programmed as **Key Lock** for approximately 1 second.

- "LOCKED" momentarily appears on the display.
- In Conventional Mode, you can continue to use the **Key Lock**, **Lamp**, and **Squelch Off** keys.
- In Trunking Mode, you can continue to use the **Call**, **Clear**, **Emergency**, **Key Lock**, and **Lamp** keys.

To unlock the keys, press and hold the **Key Lock** key again.

CLOCK

If activated by your dealer, your transceiver can track the time and date with its built-in clock. To view the clock any time, press the key programmed as **Clock**.

If programmed by your dealer, the time will display momentarily when the transceiver power is turned ON.

Note: Removing the battery pack or leaving the battery pack uncharged for extended periods will cause the clock time to clear.

■ Clock Setup

To set the year, month, day, and time:

- 1 With the transceiver power OFF, press and hold the **C>** key while turning the transceiver power ON.
 - The current year setting appears.



- 2 Rotate the selector to select the year, then press the **S** key to cycle to the month setting.
 - Repeat this step, to cycle through the day, hour, and minute settings.
- 3 Press the **S** key again, to return to the year setting.
 - A triple beep will sound, indicating that your selections have been set into the transceiver memory.
- 4 Turn the transceiver power OFF and then back ON to return to normal operation.

BACKGROUND OPERATIONS

BATTERY POWER INDICATOR

The battery power indicator displays the battery power remaining, as illustrated below:



High



Sufficient



Low



Very Low

When the battery power is “Very Low”, replace or recharge the battery pack.

If activated by your dealer, an alert tone will sound every 30 seconds and the LED indicator will blink red when the battery power is “Low”.

SIGNAL STRENGTH INDICATOR

The signal strength indicator displays the strength of received calls:



Strong



Medium



Weak



Very Weak

When using the optional VGS-1 voice guide & storage unit, you gain access to the voice recorder and voice announcement functions. Ask your dealer for details.

VOICE RECORDER

The voice recorder function allows you to record your conversations and create voice memos and automated message responses.

■ Auto Recording

If activated, the auto recording function will continuously record all transmitted and received signals. The recording storage area retains 30 seconds of recording, so all transmitted and received signals are simultaneously recorded and erased, leaving only the last 30 seconds of recording in memory.

- The auto recording indicator () appears when this function is activated.

■ Voice Memos

To record a voice memo, for later playback:

- 1 Press and hold the key programmed as **Playback** for approximately 1 second.
 - The duration of recording memory will appear on the display and begin counting down.
- 2 Speak into the transceiver to record your voice memo.
- 3 Press the **Side 2, S,** or ***** key to end the recording at any time and store it into the transceiver memory.
 - If the memory becomes full, recording will stop automatically and store the voice memo to memory.
 - “WRITING” appears on the display while the recording is being stored to memory.

■ Playback

To play back a recorded conversation, memo, or message:

- 1 Press the key programmed as **Playback** to enter Playback mode.
 - If the last action on your transceiver was to auto record your conversation, “STORE?” will appear on the display, otherwise a recording channel with the time of the recording will appear.
 - To store the conversation record in the next available recording channel, press the **Side 2** key. To clear the conversation, press the **A** or **#** key. To skip to the stored recording channels, press the **S** or ***** key. To skip back 5 seconds, press the **<B** key. To skip ahead 5 seconds, press the **C>** key.
- 2 Rotate the selector to select the channel which you want to play back.
 - “RM” represents automated reply messages.
 - “AR” represents auto-recorded conversations.
 - “VM” represents voice memos.
- 3 The transceiver will announce the channel, then the recording will automatically play back.
 - When the entire recording has been played, “END OF MSG” is displayed.
 - To delete the selected recording, press the **A** or **#** key. To clear all the recorded data, press and hold the **A** or **#** key. A confirmation message will appear on the display; press the **S** or ***** key to delete the recording(s) or the **A** or **#** key to cancel.

VOICE GUIDE

When pressing a transceiver key, an audio voice will announce the key function. If programmed by your dealer, an audio voice will also announce the selected call address, when changing call addresses.

APPENDIX

2 Digit Dialing

Function	Dial String
Individual number	20 ~ 89
Group number	90 ~ 99

3 Digit Dialing

Function	Dial String
Individual number	200 ~ 899
Group number	900 ~ 998
Emergency operator	112, 999
Enter the open channels	101 ~ 110
Network operator services	100, 111, 121, 131, 141, 151, 161, 171, 181, 191

4 Digit Dialing

Function	Dial String
PABX call	1000 ~ 8999

5 Digit Dialing

Function	Dial String
PABX call (single address word calls)	First string (3 ~ 6) + Second string (1000 ~ 8999)
PABX call (extended addressing protocol)	First string (0, 7, or 8) + Second string (0000 ~ 9999)

6 Digit Dialing

Function	Dial String
Common prefix Inter-fleet individual call	Fleet # (2001 ~ 6050) + Individual # (20 ~ 89)
Common prefix Inter-fleet group call	Fleet # (2001 ~ 6050) + Group # (90 ~ 99)
PABX call (extended addressing protocol)	First string (0, 7, or 8) + Second string (00000 ~ 99999)

7 Digit Dialing

Function	Dial String
Common prefix Inter-fleet individual call	Fleet # (2001 ~ 6050) + Individual # (200 ~ 899)
Common prefix Inter-fleet group call	Fleet # (2001 ~ 6050) + Group # (900 ~ 998)
PABX call (extended addressing protocol)	First string (0, 7, or 8) + Second string (000000 ~ 999999)

8 Digit Dialing

Function	Dial String
PSTN call	First string (0) + Second string (0000000 ~ 9999999)
PABX call (extended addressing protocol)	First string (7 or 8) + Second string (0000000 ~ 9999999)

9 Digit Dialing

Function	Dial String
Inter-prefix Inter-fleet individual call	Prefix # (200 ~ 327) + Fleet # (2001 ~ 6050) + Individual # (20 ~ 89)
Inter-prefix Inter-fleet group call	Prefix # (200 ~ 327) + Fleet # (2001 ~ 6050) + Group # (90 ~ 99)
PSTN call	First string (0) + Second string (00000000 ~ 99999999)
PABX call	First string (7 or 8) + Second string (00000000 ~ 99999999)

10 Digit Dialing

Function	Dial String
Inter-prefix Inter-fleet individual call	Prefix # (200 ~ 327) + Fleet # (2001 ~ 6050) + Individual # (200 ~ 899)
Inter-prefix Inter-fleet group call	Prefix # (200 ~ 327) + Fleet # (2001 ~ 6050) + Group # (900 ~ 998)
PSTN call	First string (0) + Second string (000000000 ~ 999999999)

11 ~ 31 Digit Dialing (Common)

Function	Dial String
PSTN call	First string (0) + Second string (0000000000 ~ 999999999999999999999999999999)

Note: A maximum of 31 digits consisting of a 1-digit first string and a 10- to 30-digit second string can be used for a dial string.

Control Codes

Function	Dial String
Call setup abandoned, call complete	*#
Send status for dispatcher (status 0)	*0
Send status for dispatcher (status nn)	*0nn
Group call (Conference call)	*1
Group call (Broadcast call)	*11
Priority voice system-wide-call	*1981#
Emergency voice system-wide-call	*1982#
Priority np data system-wide-call	*1983#
Emergency np data system-wide-call	*1984#
Short data system-wide-call	*1985#
Standard voice system-wide-call	*1987#
Short data on the control channel	*2
Divert own calls (voice & data, voice only, data only)	*41,*411,*412
Divert third party calls (voice & data, voice only, data only)	*44,*441,*442
Queue incoming calls	*48#
Don't disturb (voice & data, voice only, data only)	*49#,*491#,*492#
Priority call	*8
Emergency call	*9
Abbreviated Dialing	**nn (nn: 01 ~ 49)

Function	Dial String
End dialed string	#
Send status for dispatcher (status 31)	#0
Cancel divert own calls (voice & data, voice only, data only)	#41#, #411#, #412#
Cancel divert third party calls (voice & data, voice only, data only)	#44, #441, #442
General cancellation by recipient	#45#, #451#, #452#
Cancel queue incoming calls	#48#
Cancel don't disturb (voice & data, voice only, data only)	#49#, #491#, #492#