50/144/430 MHz
TRIPLE-BAND HEAVY DUTY
SUBMERSIBLE TRANSCEIVER

VX-7R
OPERATING MANUAL
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The VX-7R is a miniature 3-band FM transceiver with extensive receive frequency coverage, providing leading-edge features for VHF and UHF two-way amateur communications, along with unmatched monitoring capability.

The VX-7R’s small size allows you to take it anywhere – hiking, skiing, or while walking around town – and its operating flexibility brings the user many avenues of operating enjoyment. Besides 50, 144, and 430 MHz transceive operation, the VX-7R provides 222 MHz QRP (0.3 Watts) transceive operation, receive coverage of the AM (MF) and FM broadcast bands, HF Shortwave Bands up to 16 MHz, VHF and UHF TV bands, the VHF AM aircraft band, and a wide range of commercial and public safety frequencies! Dual In-band Receive (V/V and U/U) lets you keep track of two active frequencies. And the optional Barometer pressure Sensor Unit provides readout of barometric pressure and altitude while mountain climbing or hiking, and it also generates a Weather Forecast based on measured data.

The transmitter section provides 5 Watts of clean power output on the FM operation on the 50 MHz, 144 MHz, and 430 MHz bands with the supplied FNB-80LI Battery Pack, and 0.3 Watts output on 222 MHz, and 1 Watt of carrier output for AM operation on 50 MHz. Both CTCSS and DCS tone signaling formats are built into the VX-7R, in addition to Yaesu’s exclusive ARTS™-(Auto-Range Transponder System), which “beeps” the user when you move out of communications range with another ARTS™-equipped station.

We appreciate your purchase of the VX-7R, and encourage you to read this manual thoroughly, so as to learn about the many exciting features of your exciting new Yaesu hand-held transceiver!
CONTROLS & CONNECTIONS

ANTENNA
Connect the supplied rubber flex antenna (or another antenna presenting a 50-Ohm impedance) here.

MIC/SP
This four-conductor miniature jack provides connection points for microphone audio, earphone audio, PTT, and ground.

DIAL
The main tuning Dial is used for setting the operating frequency, and also is used for Menu selections and other adjustments.

VOLUME
This control adjusts the audio volume level. Clockwise rotation increases the volume level.

PTT
(“Push To Talk”) Press this switch inward to transmit, and release it (to receive) after your transmission is completed.

MONI
Pressing this key disables the noise squelching action, allowing you to hear very weak signals near the background noise level.

(PWR) Switch
Press and hold this switch for 2 seconds to toggle the transceiver’s power on and off.

EXT DC
This coaxial DC jack allows connection to an external DC power source (10-16V DC). The center pin of this jack is the Positive (+) line.

MIC
The internal microphone is located at the bottom right-hand corner of the display.

SPEAKER
The internal speaker is located directly below the display.

STROBE
The STROBE is the unique indicator which indicates the transceiver’s status. You may customize the STROBE color setup via the Menu mode.

KEYBOARD
These 17 keys select many of the most important operating features on the VX-7R. This function of the keys are described in details on pages 4 and 5.
DISPLAY ICONS & INDICATORS

**FREQUENCY CONTROL**

VFO: VFO Mode (page 15)
MR: Memory Mode (page 45)
MT: Memory Tune Mode (page 49)
PMS: Programable Memory Scan Mode (page 61)
WX: Weather Channel (page 22)
Sea: Marine Channel (page 56)
HYP: Hyper Memory Mode (page 53)
OTM: One Touch Memory Mode (page 54)
LST: Short-wave Broadcast Station Memory (page 55)

**OPERATING MODE**

NFM: FM
WFM: Wide FM
AM: AM

**ICON**

Dual Watch Active (page 61)
Key Lock Active (page 23)
Repeater Shift Direction (page 27)
Minus (–) Shift
Plus (+) Shift
Odd Splits
CTCSS/DCS Operation (page 30)
Tone Encoder
Digital Code Squelch (DCS)
TX: Tone Encoder, RX: DCS Decoder
TX: DCS Encoder, RX: Tone Decoder
DCS Encoder
Automatic Power-Off Active (page 42)
Low TX Power Selected (page 18)
High Power
Low Power 3
Low Power 2
Low Power 1
Bell Alarm Active (page 33)
DTMF Autodialer Active (page 39)
Audio Mute Active (page 17)
VOX Active (page 18)
RF Front-end Attenuator Active (page 40)
Battery Saver Active (page 40)
Low Battery! (page 10)
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<td>Key**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activates the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Lock Feature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store the current</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>setting into the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyper Memory “7”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store the current</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>setting into the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyper Memory “8”</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Keypad Functions

<table>
<thead>
<tr>
<th>WX</th>
<th>BND DN</th>
<th>MAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency entry digit “3”</strong></td>
<td>Moves operation to the next-highest frequency band</td>
<td>Press Key</td>
</tr>
<tr>
<td><strong>Recall the “Weather” broadcast channel bank</strong></td>
<td>Moves operation to the next-lowest frequency band</td>
<td>Press +</td>
</tr>
<tr>
<td><strong>Store the current setting into the Hyper Memory “3”</strong></td>
<td>Moves operation to the next-highest frequency band</td>
<td>Press and Hold Key</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SP-ANA</th>
<th>SET</th>
<th>SUB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency entry digit “6”</strong></td>
<td>Frequency entry digit “0”</td>
<td>Press Key</td>
</tr>
<tr>
<td><strong>Activates the Spectrum Analyzer (Spectra-Scope™) Feature</strong></td>
<td>Enter the “Set” (Menu) Mode</td>
<td>Press +</td>
</tr>
<tr>
<td><strong>Store the current setting into the Hyper Memory “6”</strong></td>
<td>Store the current setting into the Hyper Memory “0”</td>
<td>Press and Hold Key</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPCL</th>
<th>WRITE MT</th>
<th>V/M</th>
</tr>
</thead>
</table>
| **Frequency entry digit “9”** | Switches frequency control between the VFO and Memory System | Press Key | USA Version: Enables the Noise and Tone Squelch System  
EXP Version: Activates T.CALL (1750 Hz) for repeater access |
| **Enters the “Special Memory” mode** | No Action | Press + | USA Version: Enters the Squelch level setting mode  
EXP Version: Activates T.CALL (1750 Hz) for repeater access |
| **Store the current setting into the Hyper Memory “9”** | Activates the “Memory Tune” mode while in the Memory Recall mode | Press and Hold Key | No Action |
**ACCESSORIES & OPTIONS**

**ACCESSORIES SUPPLIED WITH THE VX-7R**

- **FNB-80LI** Battery Pack (7.4V/1,300mAh)
- **NC-72B/C** Battery Charger
- Quick Draw Belt Clip
- Hand Strap
- Antenna
- Operating Manual
- Warranty Card

**AVAILABLE OPTIONS FOR YOUR VX-7R**

1. **CSC-88** Soft Case
2. **CD-15A** Rapid Charger (requires NC-72B/C)
3. **FBA-23** 2 x “AA” Cell Battery Case (batteries not supplied)
4. **FNB-80LI** Battery Pack (7.4V/1,300 mAh)
5. **E-DC-5B** DC Cable w/Noise Filter
6. **NC-72B/C** Battery Charger
7. **E-DC-6** DC Cable; plug and wire only
8. **CT-91** Microphone Adapter
9. **VC-27** Earpiece/Microphone
10. **MH-57A4B** Speaker/Microphone
11. **CMP460A** Waterproof Speaker/Microphone
12. **CN-3** BNC-to-SMA Adapter
13. **SU-1** Barometric Pressure Sensor Unit

Availability of accessories may vary. Some accessories are supplied as standard per local requirements, while others may be unavailable in some regions. Consult your Yaesu Dealer for details regarding these and any newly-available options. Connection of any non-Yaesu-approved accessory, should it cause damage, may void the Limited Warranty on this apparatus.
ANTENNA INSTALLATION

The supplied antenna provides good results over the entire frequency range of the transceiver. However, for enhanced base station medium-wave and shortwave reception, you may wish to connect an external (outside) antenna.

The supplied antenna consists of two sections: the “Base Antenna” (used for operation above 50 MHz), and the “Extender Element” (used for monitoring of frequencies below 50 MHz).

To install the supplied antenna

Hold the bottom end of the antenna, then screw it onto the mating connector on the transceiver until it is snug. Do not overtighten by use of extreme force.

When operating the VX-7R on the 50 MHz band and lower frequencies, disconnect the antenna cap from the base antenna, then screw the Extender Element onto the Antenna Base. Of course, the VX-7R may be operated on frequencies higher than the 50 MHz band while the Extender Element is still attached onto the Antenna Base.

Notes:

- Never transmit without having an antenna connected.
- When installing the supplied antenna, never hold the upper part of the antenna while screwing it onto the mating connector on the transceiver.
- If using an external antenna for transmission, ensure that the SWR presented to the transceiver is 1.5:1 or lower.
- Take care not lose the antenna cap when removing it from the Base Antenna.
**HOW TO INSTALL THE QUICK DRAW BELT CLIP**

1. Connect the hanger to the rear of the VX-7R, with the notch pointing directly up, using the supplied screw (Figure 1). *Use only the screw included with the clip to mount the clip to the back of the VX-7R!*  
2. Clip the Quick-Draw Belt Clip onto your belt (Figure 2).  
3. To install the VX-7R into the Quick-Draw Belt Clip, align the hanger with the Quick-Draw Belt Clip, and slide the VX-7R into its slot until a click is heard (Figure 3).  
4. To remove the VX-7R from the Quick-Draw Belt Clip, rotate the VX-7R 180 degrees, then slide the VX-7R out from the Quick-Draw Belt Clip (Figure 4).

**INSTALLATION OF FNB-80LI BATTERY PACK**

The FNB-80LI is a high-performance Lithium-Ion battery providing high capacity in a very compact package. Under normal use, the FNB-80LI may be used for approximately 300 charge cycles, after which operating time may be expected to decrease. If you have an old battery pack which is displaying capacity which has become diminished, you should replace the pack with a new one.

1. Install the FNB-80LI as shown in the illustration.  
2. Close the Battery Pack Latch on the bottom of the radio.
If the battery has never been used, or its charge is depleted, it may be charged by connecting the **NC-72B/C** Battery Charger, as shown in the illustration, to the **EXT DC** jack. If only 12 ~ 16 Volt DC power is available, the optional **E-DC-5B** or **E-DC-6** DC Adapter (with its cigarette lighter plug) may also be used for charging the battery, as shown in the illustration.

The display will indicate **now charging** while the battery is being charged. When charging is finished, the display will change to indicate **complete** and the **STROBE** indicator will glow blue.

### INSTALLATION OF FBA-23 ALKALINE BATTERY CASE (OPTION)

The optional **FBA-23** Battery Case allows receive monitoring using two “AA” size Alkaline batteries. Alkaline batteries can also be used for transmission in an emergency, but power output will only be selectable 300 mW and 50 mW, and battery life will be shortened dramatically.

**To Install Alkaline Batteries into the FBA-23**

1. Slide the batteries into the **FBA-23** as shown in the illustration, with the Negative [−] side of the batteries touching the spring connections inside the **FBA-23**.
2. Open the Battery Pack Latch on the bottom of the radio.
3. Install the **FBA-23** as shown in the illustration, with the [+] side facing the bottom of the transceiver.
4. Close the Battery Pack Latch on the bottom of the radio.

The **FBA-23** does not provide connections for charging, since Alkaline cells cannot be recharged. Therefore, the **NC-72B/C**, **E-DC-5B**, or **E-DC-6** may safely be connected to the **EXT DC** jack when the **FBA-23** is installed.

**Notes:**

- The **FBA-23** is designed for use only with AA-type Alkaline cells.
- If you do not use the **VX-7R** for a long time, remove the Alkaline batteries from the **FBA-23**, as battery leakage could cause damage to the **FBA-23** and/or the transceiver.
When the battery charge is almost depleted, a “Low Voltage” indicator will appear on the display. When this icon appears, it is recommended that you charge the battery soon.

<table>
<thead>
<tr>
<th>Operating Band</th>
<th>Battery Life (Approx.)</th>
<th>Low Voltage Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 MHz&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>6.5 hours</td>
<td>7.0 hours</td>
</tr>
<tr>
<td>144 MHz&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>6.0 hours</td>
<td>6.5 hours</td>
</tr>
<tr>
<td>430 MHz&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>5.5 hours</td>
<td>6.0 hours</td>
</tr>
<tr>
<td>Other Band&lt;sup&gt;(2)&lt;/sup&gt;</td>
<td>15 hours</td>
<td>15 hours</td>
</tr>
</tbody>
</table>

(1) TX 6 sec., RX 6 sec. and Squelched 48 sec.

(2) Continuous signal reception

The current battery voltage can be displayed manually on the LCD, by following the instructions on page 68.

Battery capacity may be reduced during extremely cold weather operation. Keeping the radio inside your parka may help preserve the full charge capacity.

**AC Operation Using NC-72B/C (Receiving only)**

The VX-7R may be operated from your house current by use of the supplied NC-72B/C Battery Charger. The NC-72B/C should only be used for reception, because it is not capable of supplying sufficient current to support transmission.

To use the NC-72B/C, turn the transceiver off, then plug the miniature connector of the Battery Charger into the **EXT DC** jack on the side of the radio. Now plug the Battery Charger into the wall outlet. You may now turn on the transceiver.
Interface of Packet TNCs

The VX-7R may be used for Packet operation, using the optional CT-91 microphone adapter (available from your Yaesu dealer) for easy interconnection to commonly-available connectors wired to your TNC. You may also build your own cable using a four-conductor miniature phone plug, per the diagram below.

The audio level from the receiver to the TNC may be adjusted by using the VOLUME knob, as with voice operation. The input level to the VX-7R from the TNC should be adjusted at the TNC side; the optimum input voltage is approximately 5 mV at 2000 Ohms.

Be sure to turn the transceiver and TNC off before connecting the cables, so as to prevent voltage spikes from possibly damaging your transceiver.
Hi! I’m R. F. Radio, and I’ll be helping you along as you learn the many features of the VX-7R. I know you’re anxious to get on the air, but I encourage you to read the “Operation” section of this manual as thoroughly as possible, so you’ll get the most out of this fantastic new transceiver. Now... let’s get operating!

**SWITCHING POWER ON AND OFF**

1. Be sure the battery pack is installed, and that the battery is fully charged. Connect the antenna to the top panel **ANTENNA** jack.

2. Press and hold in the **(PWR)** switch (on the left side of the front panel) for 2 seconds. Two beeps will be heard when the switch has been held long enough, and the opening message will appear on the display, then frequency display will appear. After another two seconds, the receive-mode Battery Saver function will become active, unless you have disabled it (see page 40).

3. To turn the VX-7R off, press and hold in the **(PWR)** switch again for 2 seconds.

*If you don’t hear the two “Beep” tones when the radio comes on, the Beeper may have been disabled via the Menu system. See page 24, which tells you how to reactivate the Beeper.*

**ADJUSTING THE VOLUME LEVEL**

Rotate the **VOLUME** control (inner knob) to set the desired audio level. Clockwise rotation increases the volume level.

**24-hour Clock**

The VX-7R has a 24-hour clock with a calendar which covers all dates from January 1, 2000 through December 31, 2099. Set the clock according to the “Clock Set” column on page 69.
**OPERATION**

**SQUELCH ADJUSTMENT**

The VX-7R’s Squelch system allows you to mute the background noise when no signal is being received. Not only does the Squelch system make “standby” operation more pleasant, it also significantly reduces battery current consumption.

The Squelch system may be adjusted independently for the FM and Wide-FM (FM Broadcast) modes.

1. Press the key, then press the MONI switch on the left side of the radio. This provides a “Short-cut” to Menu Item (Basic Setup #1: SQL NFM) or Menu Item (Basic Setup #2: SQL WFM).

2. Now, press the or key to set the background noise is just silenced (typically at a setting of about “3” or “4” on the scale); this is point of maximum sensitivity to weak signals.

3. When you are satisfied with the Squelch threshold setting, press the PTT key momentarily to save the new setting and exit to normal operation.

4. You may also adjust the Squelch setting by using the “Set” (Menu) mode. See page 82 for details.

1) The Squelch level may be set on the “Main” and “Sub” bands separately.

2) If you’re operating in an area of high RF pollution, you may need to consider “Tone Squelch” operation using the built-in CTCSS Decoder. This feature will keep your radio quiet until a call is received from a station sending a carrier which contains a matching (subaudible) CTCSS tone. Or if your friends have radios equipped with DCS (Digital Coded Squelch) like your VX-7R has, try using that mode for silent monitoring of busy channels.
**OPERATION**

**SELECTING THE OPERATING BAND**

In the factory default configuration, the VX-7R operates in the “Dual Receive” mode.

During Dual Receive operation, the “Main” band frequency will be displayed on the upper side of the LCD, and the “Sub” band frequency will be displayed on the lower side, with the “Operating” band (the band on which transmission and band/frequency change are possible) being indicated in *large* characters, and “Receive only” band being indicated in *small* characters.

To switch the “Operating” band, press the key momentarily to engage the “Main” band frequency as the “Operating” band. Alternatively, press the key momentarily to engage the “Sub” band frequency as the “Operating” band, described previously.

*Press and hold in the or key for 1/2 seconds to switch to Mono Band Operation with a double-size display.*

During Mono band operation, you may press the key, then press the key, to change the display to show only large characters.

*The “Sub” band frequency may only be used on the amateur bands, even if it is designated as the “Operating” band. Extended receiver coverage is only possible on the “Main” band.*

![Diagram showing the operation of the VX-7R](image-url)
The **VX-7R** covers an incredibly wide frequency range, over which a number of different operating modes are used. Therefore, the **VX-7R**’s frequency coverage has been divided into different operating bands, each of which has its own pre-set channel steps and operating modes. You can change the channel steps and operating modes later, if you like (see page 25).

<table>
<thead>
<tr>
<th>BAND</th>
<th>“Main” Band</th>
<th>“Sub” Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC Band</td>
<td>0.5-1.8 MHz</td>
<td>—</td>
</tr>
<tr>
<td>SW Band</td>
<td>1.8-30 MHz</td>
<td>—</td>
</tr>
<tr>
<td>FM BC Band</td>
<td>59-108 MHz (88-108 MHz)</td>
<td>—</td>
</tr>
<tr>
<td>AIR Band</td>
<td>108-137 MHz</td>
<td>—</td>
</tr>
<tr>
<td>VHF-TV Band</td>
<td>174-222 MHz</td>
<td>—</td>
</tr>
<tr>
<td>Action Band 1</td>
<td>225-420 MHz</td>
<td>—</td>
</tr>
<tr>
<td>UHF TV Band</td>
<td>470-729 MHz (470-800 MHz)</td>
<td>—</td>
</tr>
<tr>
<td>Action Band 2</td>
<td>800-999 MHz</td>
<td>—</td>
</tr>
<tr>
<td>50 MHz Ham Band</td>
<td>30-59 MHz (30-88 MHz)</td>
<td>50-54 MHz</td>
</tr>
<tr>
<td>144 MHz Ham Band</td>
<td>137-174 MHz</td>
<td>140-174 MHz</td>
</tr>
<tr>
<td>222 MHz Ham Band</td>
<td>222-225 MHz (—)</td>
<td>—</td>
</tr>
<tr>
<td>430 MHz Ham Band</td>
<td>420-470 MHz</td>
<td>420-470 MHz</td>
</tr>
</tbody>
</table>

**To Change Operating Bands**

1. Press the key repetitively. You will see the LCD indication move toward a higher frequency band each time you press the key.
2. If you wish to move the operating band selection downward (toward lower frequencies), press the key first, then press the key.
3. The **VX-7R** uses a dual VFO system (described previously). To switch TX/RX operation from the “Main” VFO to the “Sub” VFO instantly, press the key momentarily. Pressing the key will return the **VX-7R** to the “Main” VFO. The frequency band bearing the “Large” characters is the band on which transmission is possible; the band designated by “Small” characters may only be used for reception.
4. Once you have selected the desired band, you may initiate manual tuning (or scanning) per the discussions on the next page.

**Dual Receive Notice**

The **VX-7R** may receive very strong signals on the Image frequency, and/or the receiver sensitivity may be somewhat reduced by the combination of the “Main” and “Sub” band frequencies while Dual Receive operation is engaged.

If you experience interference that you suspect may be coming in via an “Image” path, you may calculate the possible frequencies using the formulas below. This information may be used in the design of effective countermeasures such as traps, etc.

- $3.579545 \text{ MHz} \times n$
- $11.7 \text{ MHz} \times n$ ($n$ is an integer: 1, 2, 3, …)
- “Main” band freq. = (“Sub” band freq. ± 46.35 MHz) × $n$
- “Main” band freq. = (“Sub” band freq. ± 47.25 MHz) × $n$ (@ “Main band = NFM”)
- “Main” band freq. = (“Sub” band freq. ± 45.8 MHz) × $n$ (@ “Main band = WFM”)
**Frequency Navigation**

The VX-7R will initially be operating in the “VFO” mode, as just described. This is a channelized system which allows free tuning throughout the currently-selected operating band.

Three basic frequency navigation methods are available on the VX-7R:

1) **Tuning Dial (Outer ring of dual control on Top Panel)**
   Rotation of the DIAL allows tuning in the pre-programmed steps established for the current operating band. Clockwise rotation of the DIAL causes the VX-7R to be tuned toward a higher frequency, while counter-clockwise rotation will lower the operating frequency.

   If you press the key momentarily, then rotate the DIAL, frequency steps of 1 MHz will be selected. This feature is extremely useful for making rapid frequency excursions over the wide tuning range of the VX-7R.

2) **Direct Keypad Frequency Entry**
   The desired operating frequency may be entered directly from the keypad.

   The operating mode will automatically be set once the new frequency is entered via the keypad.

   To enter a frequency from the keypad, just press the numbered digits on the keypad in the proper sequence. There is no “Decimal point” key on the VX-7R, so if the frequency is below 100 MHz (e.g. 15.150 MHz), any required leading zeroes must be entered. However, there is a short-cut for frequencies ending in zero - press the key after the last non-zero digit.

   **Examples:**
   - To enter 146.520 MHz, press .
   - To enter 15.255 MHz, press .
   - To enter 1.250 MHz (1250 kHz), press .
   - To enter 0.950 MHz (950 kHz), press .
   - To enter 430.000 MHz, press .

3) **Scanning**
   From the VFO mode, press the key, then press the key. The VX-7R will begin scanning toward a higher frequency, and will stop when it receives a signal strong enough to break through the Squelch threshold. The VX-7R will then hold on that frequency according to the setting of the “RESUME” mode (Menu Item: Scan Modes #3). See page 57 for details.

   If you wish to reverse the direction of the scan (i.e. toward a lower frequency, instead of a higher frequency), just rotate the DIAL one click in the counter-clockwise direction while the VX-7R is scanning. The scanning direction will be reversed. To revert to scanning toward a higher frequency once more, rotate the DIAL one click clockwise.

   Press the PTT switch momentarily to cancel the scanning.
The Audio Mute feature is useful in situations where it would be helpful to reduce the audio level of the “Receive Only” band (Small character display) whenever you receive a signal on the “Main” band (Large character display) during Dual Receive operation.

To activate the Audio Mute feature:

1. Press the SET key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Basic Operation #8: MUTE SET).
3. Press the or key to select “ON” (to enable Audio Mute feature).
4. Press the PTT switch to save the new setting and exit to normal operation.
5. To disable the Audio Mute feature, select “OFF” in step 3 above.

When the Audio Mute feature is activated, the “” icon will appear on the display.

**BAND Linking**

For split operation on Amateur bands, the BAND Link feature may be useful.

1. Set up dual receive operation, as just described.
2. Press the SET key, then press the key to enter the Set mode.
3. Rotate the DIAL to select the Menu Item labeled (Misc Setup #9: BAND LINK).
4. Press the or key to set this Menu Item to ON.
5. Press the PTT key to save the new setting and exit to Linked/Dual receive operation.

As you rotate the DIAL, you will observe that both bands’ frequencies are changing together. When you are done with this operating mode, re-enter the Set mode, and set (Misc Setup #9: BAND LINK) to OFF.

The BAND Link feature requires that (1) “Main” band and “Sub” band be set to same band (Dual In-band receive), (2) Menu Item (Misc Setup #10: VFO MODE) must be set to “BAND.” In other words, the BAND Link feature cannot activated if “Main” band and “Sub” band are not set to the same band, or if Menu Item (Misc Setup #10: VFO MODE) is set to “ALL.”
Once you have set up an appropriate frequency inside one of the three (or four) Amateur bands on which the VX-7R can transmit (50 MHz, 144 MHz, or 430 MHz, plus 222 MHz on the USA version), you’re ready to transmit. These are the most basic steps; more advanced aspects of transmitter operation will be discussed later.

1. To transmit, press the PTT switch, and speak into the front panel microphone (located in the upper right-hand corner of the speaker grille) in a normal voice level. The “STROBE” will glow red during transmission.

2. To return to the receive mode, release the PTT switch.

3. During transmission, the relative power level will be indicated on the LCD. Full power (5 Watts) is indicated by eight arrows below the frequency display. The three “Low Power” levels (L1, L2, and L3) are indicated by two, four, or six arrows, respectively. Additionally, the “L1,” “L2,” or “L3” icon will appear at the bottom of the display, corresponding with the “Low Power” Level setting.

If you’re just talking to friends in the immediate area, you’ll get much longer battery life by switching to Low Power operation. To do this, press the icon key, then press the icon key so that the “L” icon appears at the bottom of the display. And don’t forget: always have an antenna connected when you transmit.

Transmission is not possible on any operating bands other than the 50 MHz, 144 MHz, 222 MHz, and 430 MHz bands.

### Changing the Transmitter Power Level

You can select between a total of four transmitter power levels on your VX-7R. The exact power output will vary somewhat, depending on the voltage supplied to the transceiver. With the standard FNB-80LI Battery Pack and external DC source, the power output levels available are:

<table>
<thead>
<tr>
<th>Power Level</th>
<th>50/144/430 MHz</th>
<th>222 MHz FM</th>
<th>50 MHz AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>5.0 W</td>
<td>–</td>
<td>1.0 W</td>
</tr>
<tr>
<td>L2</td>
<td>2.5 W</td>
<td>–</td>
<td>0.3 W</td>
</tr>
<tr>
<td>L3</td>
<td>1.0 W</td>
<td>–</td>
<td>0.05 W</td>
</tr>
<tr>
<td>L1</td>
<td>0.05 W</td>
<td>0.05 W</td>
<td>1.0 W (Fixed)</td>
</tr>
</tbody>
</table>

To change the power level:

1. The default setting for the power output is “High;” in this configuration, the LCD shows no indication of the power output level. Pressing the icon key, followed by the icon key, causes the power level “L1,” “L2,” or “L3” to appear.

2. Press the icon key, followed by the icon key (repeatedly, if necessary) to make the “Low Power” icon disappear and restore High Power operation.

1) The VX-7R is smart! You can set up Low power on one band (like UHF), while leaving VHF on High power, and the radio will remember the different settings on each band. And when you store memories, you can store High and Low power settings separately in each memory, so you don’t waste battery power when using very close-in repeaters!
TRANSMISSION

2) When you are operating on one of the Low power settings, you can press the VOX key, then press the PTT switch, to cause the VX-7R to transmit (temporarily) on High power. After one transmission, the power level will revert to the previously-selected Low power setting.

VOX OPERATION

The VOX system provides automatic transmit/receive switching based on voice input to the microphone. With the VOX system enabled, you do not need to press the PTT switch in order to transmit, and it is not necessary to use a VOX headset in order to utilize VOX operation.

1. Press the SET key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Misc Setup #7: VOX SENS).
3. Press the or key to select the desired VOX Gain level (“HIGH” or “LOW”).
4. When you have made your choice, press the PTT key to save the new setting and return to normal operation.
5. Without pressing the PTT switch, speak into the microphone in a normal voice level. When you start speaking, the transmitter should be activated automatically. When you finish speaking, the transceiver should return to the receive mode (after a short delay).
6. To cancel VOX and return to PTT operation, just repeat the above procedures, selecting “OFF” in step 3 above.

When the VOX system is activated, the “X” icon will appear on the display.

The VX-7R provides for adjustment of the “Hang-Time” of the VOX system (the transmit-receive delay after the cessation of speech) via the Menu. The default delay is 1/2 second. To set a different delay time:

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Misc Setup #8: VOX DELAY).
3. Press the or key to select the delay time among “0.5sec,” “1sec,” and “2sec.”
4. When you have made your choice, press the PTT key to save the new setting and return to normal operation.
**OPERATION**

**AM BROADCAST RECEPTION**

The VX-7R includes provision for reception of AM broadcasts, either on the standard medium-wave (MW) broadcast band, or on the shortwave bands up to 16 MHz.

1. Set the **VX-7R** to the VFO mode on the “Main” band.
2. Press the **key (or press ➝ ➝ ) repetitively until you see a frequency in the frequency range desired. The MW coverage is 0.5 MHz to 1.8 MHz, while the shortwave broadcast coverage is 1.8 MHz to 16 MHz. In either case, the operating mode (displayed on the right edge of the LCD) should be shown as being “**AM**.”
3. Rotate the **DIAL** to tune across the broadcast band.
4. You may also use the keypad to enter frequencies directly. This method will be quicker for changing from the 49-meter broadcast band to the 31-meter band, for example.

   **1) If the operating mode is not correct, you may need to adjust the setting of the Menu Item labeled (**Basic Setup #4: RX MODE**). See page 26 for details.

   **2) The VX-7R includes a special memory bank into which the factory has stored 89 frequencies representing popular Short-wave Broadcast stations. See page 55 for details.**

**AM AIRCRAFT RECEPTION**

Reception of AM signals in the aeronautical band (108-137 MHz) is similar to that described in the previous section.

1. Be sure that the **VX-7R** is set to the VFO mode on the “Main” band.
2. Press the **key (or press ➝ ➝ ) repetitively until you see a frequency in the aeronautical band.
3. Rotate the **DIAL** to tune across the aeronautical band.
4. You may also use the keypad to enter frequencies directly. Remember that frequencies quoted by aircraft operators may be abbreviated, and that the “5” at the end of a frequency may be dropped. Since aeronautical channels are assigned in 25-kHz steps, therefore, a frequency announced as “thirty-two, forty-two” corresponds to an operating frequency of 132.425 MHz.
**FM BROADCAST/TV AUDIO RECEPTION**

The VX-7R also includes provision for reception in the FM broadcast band, utilizing a wide-bandwidth filter which provides excellent fidelity.

**To Activate FM Broadcast Reception**

1. Be sure that the VX-7R is set to the VFO mode on the “Main” band.
2. Press the key (or press ) repetitively until a frequency in the FM broadcast band appears on the display. The total frequency range included in the “FM” band is 59-108 MHz.
3. Rotate the DIAL to select the desired station. The default synthesizer steps for the W-FM mode are 100 kHz/step.

**To Activate VHF or UHF TV Audio Reception**

1. Be sure that the VX-7R is set to the VFO mode on the “Main” band.
2. Press the key (or press ) repetitively until a frequency in the VHF or UHF TV bands appears on the LCD.
3. Rotate the DIAL to select the desired station.

*Remember that the Wide-FM Squelch setting may be made independently from the Narrow-FM setting, using the Menu Item labeled (Basic Setup #2: SQL W FM). See page 84.*
Weather Broadcast Reception

The VX-7R includes a unique feature which allows reception of weather broadcasts in the 160-MHz frequency range. Ten standard Weather Broadcast channels are pre-loaded into a special memory bank.

To listen to a Weather Broadcast Channel or VHF Marine Channel:

1. Press the VOL key, then press the WX key to recall the Weather Broadcast channels.
2. Turn the DIAL knob to select the desired Weather Broadcast channel.
3. If you wish to check the other channels for activity by scanning, just press the PTT switch.
4. To exit to normal operation, again the VOL key, then press the WX key. Operation will return to the VFO or Memory channel you were operating on before you began Weather Broadcast operation.

In the event of extreme weather disturbances, such as storms and hurricanes, the NOAA (National Oceanic and Atmospheric Administration) sends a weather alert accompanied by a 1050 Hz tone and subsequent weather report on one of the NOAA weather channels. You may disable the Weather Alert tone via Menu Item (Misc Setup #20 WX ALERT), if desired.
KEYBOARD LOCKING

In order to prevent accidental frequency change or inadvertent transmission, various aspects of the VX-7R’s keys and switches may be locked out. The possible lockout combinations are:

- **KEY**: Just the front panel keys are locked out
- **DIAL**: Just the top panel DIAL is locked out
- **KEY+DIAL**: Both the DIAL and Keys are locked out
- **PTT**: The PTT switch is locked (TX not possible)
- **KEY+PTT**: Both the keys and PTT switch are locked out
- **DIAL + PTT**: Both the DIAL and PTT switch are locked out
- **ALL**: All of the above are locked out

To lock out some or all of the keys:

1. Press the SET key, then press the SET key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Basic Setup #10: LOCK MODE).
3. Press the or key to choose between one of the locking schemes as outlined above.
4. When you have made your selection, press the PTT switch to save the new setting and resume normal operation.
5. To activate the locking feature, **press and hold in** the key for 2 seconds. The “ ” icon will appear on the LCD.
   - To cancel locking, again **press and hold** the key for 2 seconds.

**Even when “ALL” keys have been locked out, one key actually is not locked out: the key remains available so you can unlock your keypad when you want to!**
Your VX-7R includes a reddish illumination lamp which aids in nighttime operation. The red illumination yields clear viewing of the display in a dark environment, with minimal degradation of your night vision. Three options for activating the lamp are provided:

**KEY** Mode: Illuminates the Keypad/LCD for 5 seconds when any key pressed.

**CONTINUE** Mode: Illuminates the Keypad/LCD continuously.

**OFF** Mode: Disables the Keypad/LCD lamp.

### Here is the procedure for setting up the Lamp mode:

1. Press the **Set** key, then press the **key** to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Display Setup #5: LAMP MODE).
3. Press the **or** key to select one of the three modes described above.
4. When you have made your choice, press the **PTT** key to save the new setting and return to normal operation.

### Disabling the Keypad Beeper

If the keypad’s Beeper creates an inconvenience (particularly when operating in a quiet room), it may easily be disabled.

1. Press **key**, then press the **key** to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Basic Setup #9: KEY BEEP).
3. Press the **or** key to change the setting from **ON** to **OFF**.
4. When you have made your selection, press the **PTT** key to save the new setting and exit to normal operation.
5. If you wish to re-enable the Beeper, just repeat the above procedure, pressing the **or** key to select **ON** in step “3” above.
Now that you’re mastered the basics of VX-7R operation, let’s learn more about some of the really neat features.

**Setting The Frequency Display Image Size**

### VFO Mode

When operating in the VFO mode during the “Mono” band operation, pressing the `` key, then pressing the `Main` or `Sub` key, causes the LCD to “toggle” between display of double-size characters and large characters. However, this feature does not work during Dual Receive operation, as two frequencies are displayed in that instance.

### Memory Mode

When operating in the Memory mode (see page 45), pressing the `` key, followed by the `Main` or `Sub` key, causes the LCD to “toggle” between display of the current memory’s frequency (in double-size characters) and the current memory’s frequency (in large characters) with its alpha-numeric Tag (small characters). This feature likewise does not activate during Dual Receive operation.

### Changing The Channel Steps

The VX-7R’s synthesizer provides the option of utilizing channel steps of 5/9/10/12.5/15/20/25/50/100 kHz per step, any number of which may be important to your operating requirements. The VX-7R is set up at the factory with different default steps on each operating band which probably are satisfactory for most operation. However, if you need to change the channel step increments, the procedure to do so is very easy.

1. Press the `` key, then press the `` key to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Basic Setup #3: VFO STEP).
3. Press the `Main` or `Sub` key to select the new channel step size.
4. Press the **PTT** key to save the new setting and exit to normal operation.

**9 kHz step is available on the BC band only.**
ADVANCED OPERATION

CHANGING THE OPERATING MODE

The VX-7R provides for automatic mode changing when the radio is tuned to different operating frequencies. However, should an unusual operating situation arise in which you need to change between the available operating modes (FM-Narrow, FM-Wide, and AM), here is the procedure for doing so:

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Basic Setup #4: RX MODE).
3. Press the or key to select the new channel step size. The available selections are:
   - AUTO: Automatic mode setting per default values for the selected frequency range.
   - N-FM: Narrow-bandwidth FM (used for voice communication)
   - W-FM: Wide-bandwidth FM (used for high-fidelity broadcasting)
   - AM: Amplitude Modulation
4. Press the PTT key to save the new setting and exit to normal operation.

Unless you have a compelling reason to do so, leave the Automatic Mode Selection feature on so as to save time and trouble when changing bands. If you make a mode change for a particular channel or station, you can always store that one channel into memory, as the mode setting will be memorized along with the frequency information.
Repeater Operation

Repeater stations, usually located on mountaintops or other high locations, provide a dramatic extension of the communication range for low-powered hand-held or mobile transceivers. The VX-7R includes a number of features which make repeater operation simple and enjoyable.

Repeater Shifts

Your VX-7R has been configured, at the factory, for the repeater shifts customary in your country. For the 50 MHz band, this usually will be 1 MHz, while the 144 MHz shift will be 600 kHz; on 70 cm, the shift may be 1.6 MHz, 7.6 MHz, or 5 MHz (USA version).

Depending on the part of the band in which you are operating, the repeater shift may be either downward (–) or upward (+), and one of these icons will appear at the bottom of the LCD when repeater shifts have been enabled.

Automatic Repeater Shift (ARS)

The VX-7R provides a convenient Automatic Repeater Shift feature, which causes the appropriate repeater shift to be automatically applied whenever you tune into the designated repeater sub-bands in your country. These sub-bands are shown below.

If the ARS feature does not appear to be working, you may have accidentally disabled it.

To re-enable ARS:
1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Basic Setup #5: ARS).
3. Press the or key to select “ON” (to enable Automatic Repeater Shift).
4. Press the PTT key to save the new setting and exit to normal operation.
Manual Repeater Shift Activation

If the ARS feature has been disabled, or if you need to set a repeater shift direction other than that established by the ARS, you may set the direction of the repeater shift manually.

To do this:
1. Press the \textit{Menu} key, then press the \textit{Set} key to enter the Set mode.
2. Rotate the \textit{DIAL} to select the Menu Item labeled (\textbf{Basic Setup #7: RPT SHIFT}).
3. Press the \textit{Main} or \textit{Sub} key to select the desired shift among “-RPT,” “+RPT,” and “SIMP.”
4. Press the \textit{PTT} key to save the new setting and exit to normal operation.

Changing the Default Repeater Shifts

If you travel to a different region, you may need to change the default repeater shift so as to ensure compatibility with local operating requirements.

To do this, follow the procedure below:
1. Press the \textit{Menu} key, then press the \textit{Set} key to enter the Set mode.
2. Rotate the \textit{DIAL} to select the Menu Item labeled (\textbf{Basic Setup #6: SHIFT}).
3. Press the \textit{Main} or \textit{Sub} key to select the new repeater shift magnitude.
4. Press the \textit{PTT} key to save the new setting and exit to normal operation.

\textbf{If you just have one “odd” split that you need to program, don’t change the “default” repeated shifts using this Menu Item! Enter the transmit and receive frequencies separately, as shown on page 46.}
Checking the Repeater Uplink (Input) Frequency

It often is helpful to be able to check the uplink (input) frequency of a repeater, to see if the calling station is within direct (“Simplex”) range.

To do this, just press the key. You’ll notice that the display has shifted to the repeater uplink frequency. Press the key again to cause operation to revert to normal monitoring of the repeater downlink (output) frequency.

The configuration of this key may be set either to “RV” (for checking the input frequency of a repeater, or “HM” (for instant switching to the “Home” channel for the band you are operating on). To change the configuration of this key, use Menu Item (Misc. Setup #2 HOM/REV). See page 49.
CTCSS Operation

Many repeater systems require that a very-low-frequency audio tone be superimposed on your FM carrier in order to activate the repeater. This helps prevent false activation of the repeater by radar or spurious signals from other transmitters. This tone system, called “CTCSS” (Continuous Tone Coded Squelch System), is included in your VX-7R, and is very easy to activate.

CTCSS setup involves two actions: setting the Tone Frequency and then setting of the Tone Mode. These actions are set up by using the key, or Menu Items (TSQ/DCS/DTMF #1: SQL TYPE) and (TSQ/DCS/DTMF #2: TONE SET).

1. Press the key, then press the key. This provides a “Short-cut” to Menu Item (TSQ/DCS/DTMF #1: SQL TYPE).

2. Press the or key so that “TONE” appears on the display; this activates the CTCSS Encoder, which allows repeater access.

You may notice an additional “DCS” icon appearing while you press the or key in this step. We’ll discuss the Digital Code Squelch system shortly.

3. Pressing the key in step “2” above will occasionally cause “SQL” to appear adjacent to the “TONE.” When “TONE SQL” appears, this means that the Tone SQuelch system is active, which mutes your VX-7R’s receiver until it receives a call from another radio sending out a matching CTCSS tone. This can help keep your radio quiet until a specific call is received, which may be helpful while operating in congested areas.

4. When you have made your selection of the CTCSS tone mode, rotate the DIAL one click clockwise to select Menu Item labeled (TSQ/DCS/DTMF #2: TONE SET). This Menu selection allows setting of the CTCSS tone frequency to be used.

5. Press the key to enable the adjustment of the CTCSS frequency.

6. Press the or key until the display indicates the Tone Frequency you need to be using (ask the repeater owner/operator if you don’t know the tone frequency).

7. When you have made your selection, press the key, then press the PTT switch to save the new settings and exit to normal operation.

Your repeater may or may not re-transmit a CTCSS tone - some systems just use CTCSS to control access to the repeater, but don’t pass it along when transmitting. If the S-Meter deflects, but the VX-7R is not passing audio, repeat steps “1” through “3” above, but rotate the DIAL so that “SQL” disappears - this will allow you to hear all traffic on the channel being received.
Another form of tone access control is Digital Code Squelch, or DCS. It is a newer, more advanced tone system which generally provides more immunity from false paging than does CTCSS. The DCS Encoder/Decoder is built into your VX-7R, and operation is very similar to that just described for CTCSS. Your repeater system may be configured for DCS; if not, it is frequently quite useful in Simplex operation if your friend(s) use transceivers equipped with this advanced feature.

**Just as in CTCSS operation, DCS requires that you set the Tone Mode to DCS and that you select a tone code.**

1. Press the **[ ]** key, then press the **[ ]** key. This provides a “Short-cut” to Menu Item (TSQ/DCS/DTMF #1: SQL TYPE).
2. Press the **[ ]** or **[ ]** key until “DCS” appears on the display; this activates the DCS Encoder/Decoder.
3. Now rotate the DIAL to select Menu Item (TSQ/DCS/DTMF #3: DCS SET).
4. Press the **[ ]** key to enable the adjustment of the DCS code.
5. Press the **[ ]** or **[ ]** key to select the desired DCS Code (a three-digit number). Ask the repeater owner/operator if you don’t know DCS Code; if you are working simplex, just set up the DCS Code to be the same as that used by your friend(s).
6. When you have made your selection, press the **[ ]** key, then press the PTT switch to save the new settings and exit to normal operation.

**Remember that the DCS is an Encode/Decode system, so your receiver will remain muted until a matching DCS code is received on an incoming transmission. Switch the DCS off when you’re just tuning around the band!**

<table>
<thead>
<tr>
<th>CTCSS TONE FREQUENCY (Hz)</th>
<th>DCS CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>67.0 69.3 71.9 74.4 77.0 79.7</td>
<td>023 025 026 031 032 036 043 047 051 053</td>
</tr>
<tr>
<td>82.5 85.4 88.5 91.5 94.8 97.4</td>
<td>054 065 071 072 073 074 114 115 116 122</td>
</tr>
<tr>
<td>100.0 103.5 107.2 110.9 114.8 118.8</td>
<td>125 131 132 134 143 145 152 155 156 162</td>
</tr>
<tr>
<td>123.0 127.3 131.8 136.5 141.3 146.2</td>
<td>165 172 174 205 212 223 225 226 243 244</td>
</tr>
<tr>
<td>151.4 156.7 159.8 162.2 165.5 167.9</td>
<td>245 246 251 252 255 261 263 265 266 271</td>
</tr>
<tr>
<td>171.3 173.8 177.3 179.9 183.5 186.2</td>
<td>274 306 311 315 325 331 332 343 346 351</td>
</tr>
<tr>
<td>189.9 192.8 196.6 199.5 203.5 206.5</td>
<td>356 364 365 371 411 412 413 423 431 432</td>
</tr>
<tr>
<td>210.7 218.1 225.7 229.1 233.6 241.8</td>
<td>445 446 452 454 455 462 464 465 466 503</td>
</tr>
<tr>
<td>250.3 254.1</td>
<td>506 516 523 526 532 546 565 606 612 624</td>
</tr>
<tr>
<td>627 631 632 654 662 664 703 712 723 731</td>
<td></td>
</tr>
</tbody>
</table>
| 732 734 743 754 | – – – – – – – – – –
Tone Search Scanning

In operating situations where you don’t know the CTCSS or DCS tone being used by another station or stations, you can command the radio to listen to the incoming signal and scan in search of the tone being used. Two things must be remembered in this regard:

1. You must be sure that your repeater uses the same tone type (CTCSS vs. DCS).
2. Some repeaters do not pass the CTCSS tone; you may have to listen to the station(s) transmitting on the repeater uplink (input) frequency in order to allow Tone Search Scanning to work.

To scan for the tone in use:
1. Set the radio up for either CTCSS or DCS Decoder operation (see the previous discussion). In the case of CTCSS, "TSQ" will appear on the display; in the case of DCS, "DCS" will appear on the display.
2. Press the key, then press the key to enter the Set mode.
3. Rotate the DIAL to select the Menu Item labeled (TSQ/DCS/DTMF #2: TONE SET) when TONE SQL is selected, or Menu Item labeled (TSQ/DCS/DTMF #3: DCS SET) during DCS operation.
4. Press the key to enable adjustment of the selected Menu Item.
5. Press the key, then press the key to start scanning for the incoming CTCSS or DCS tone/code.
6. When the radio detects the correct tone or code, it will halt on that tone/code, and audio will be allowed to pass. Press the key to lock in that tone/code, then press PTT to exit to normal operation.

If the Tone Scan feature does not detect a tone or code, it will continue to scan indefinitely. When this happens, it may be that the other station is not sending any tone. You can press the PTT switch to halt the scan at any time.

You also can press the MONI key during Tone Scanning to listen to the (muted) signal from the other station. When you release the MONI key, Tone Scanning will resume after about a second.

Tone Scanning works either in the VFO or Memory modes.
CTCSS/DCS BELL OPERATION

During CTCSS Decode or DCS operation, you may set up the VX-7R such that a ringing “bell” sound alerts you to the fact that a call is coming in. Here is the procedure for activating the CTCSS/DCS Bell:

1. Set the transceiver up for CTCSS Decode ("Tone Squelch") or DCS operation, as described previously.
2. Adjust the operating frequency to the desired channel.
3. Press the key, then press the key to enter the Set mode.
4. Rotate the DIAL to select the Menu Item labeled (TSQ/DCS/DTMF #5: BELL).
5. Press the or key to set the desired number of rings of the Bell. The available choices are 1, 3, 5, or 8 rings, CONTINUE (continuous ringing), or OFF.
6. Press the PTT key momentarily to save the new setting and exit to normal operation.

When you are called by a station whose transceiver is sending a CTCSS tone or DCS code which matches that set into your Decoder, the Bell will ring in accordance to this programming.

SPLIT TONE OPERATION

The VX-7R can be operated in a Split Tone configuration via the Set mode.

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (TSQ/DCS/DTMF #6: SPLIT TONE).
3. Press the or key to select ON (to enable the Split Tone feature).
4. Press the PTT key momentarily to save the new setting and exit to normal operation.

When the Split Tone feature is activated, you can see the following additional parameters after the “DCS” parameter while selecting the Menu Item (TSQ/DCS/DTMF #1: SQL TYPE):

- **D CODE**: DCS Encode only ("D" icon will appear while operating)
- **TONE DC**: Encodes a CTCSS Tone and Decodes a DCS code (the “T=D” icon will appear during operation)
- **DC TONE**: Encodes a DCS code and Decodes a CTCSS Tone (the “D=T” icon will appear during operation)

Select the desired operating mode from the selections shown above.
If the repeaters in your country require a 1750-Hz burst tone for access (typically in Europe), you can set the MONI key to serve as a “Tone Call” switch instead. To change the configuration of this switch, we again use the Menu to help us.

1. Press the MONI key, then press the SET key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Misc Setup #3 MON/T-CAL).
3. Press the MARK or CANCEL key to select “T-CALL” on the display.
4. Press the PTT key to save the new setting and exit to normal operation.
5. To access a repeater, press and hold in the MONI key for the amount of time specified by the repeater owner/operator. The transmitter will automatically be activated, and a 1750-Hz audio tone will be superimposed on the carrier. Once access to the repeater has been gained, you may release the MONI key, and use the PTT key for activating the transmitter.
ARTS (Automatic Range Transponder System)

The ARTS feature uses DCS signaling to inform both parties when you and another ARTS-equipped station are within communications range. This may be particularly useful during Search-and-Rescue situations, where it is important to stay in contact with other members of your group.

Both stations must set up their DCS codes to the same code number, then activate their ARTS feature using the command appropriate for their radio. Alert ringers may be activated, if desired.

Whenever you push the PTT, or every 25 (or 15) seconds after ARTS is activated, your radio will transmit a signal which includes a (subaudible) DCS signal for about 1 second. If the other radio is in range, the beeper will sound (if enabled) and the display will show “IN RANGE” as opposed to the out of range display “OUT RANGE” in which ARTS operation begins.

Whether you talk or not, the polling every 15 or 25 seconds will continue until you deactivate ARTS. Every 10 minutes, moreover, you can have your radio transmit your callsign via CW, so as to comply with identification requirements. When ARTS is de-activated, DCS will also be deactivated (if you were not using it previously in non-ARTS operation).

If you move out of range for more than one minute (four pollings), your radio will sense that no signal has been received, three beeps will sound, and the display will revert to “OUT RANGE.” If you move back into range, your radio will again beep, and the display will change back to the “IN RANGE” indication.

During ARTS operation, your operating frequency will continue to be displayed, but no changes may be made to it or other settings; you must terminate ARTS in order to resume normal operation. This is a safety feature designed to prevent accidental loss of contact due to channel change, etc.

Here is how to activate ARTS:

**Basic ARTS Setup and Operation**

1. Set your radio and the other radio(s) to the same DCS code number, per the discussion on page 31.
2. Press the ARTS key, then press the key. You will observe the “OUT RANGE” display on the LCD below the operating frequency. ARTS operation has now commenced.
3. Every 25 seconds, your radio will transmit a “polling” call to the other station. When that station responds with its own ARTS polling signal, the display will change to “IN RANGE” to confirm that the other station’s polling code was received in response to yours.
4. Press the key, then press the key to exit ARTS operation and resume normal functioning of the transceiver.

*ARTS won’t work if you have used the Lock feature to disable the PTT!*

**ARTS Polling Time Options**
The ARTS feature may be programmed to poll every 25 seconds (default value) or 15 seconds. The default value provides maximum battery conservation, because the polling signal is sent out less frequently. To change the polling interval:

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (ARTS #2: ARTS INTERVAL).
3. Press the or key to select the desired polling interval (15 or 25 seconds).
4. When you have made your selection, press the PTT key to save the new setting and exit to normal operation.

**ARTS Alert Beep Options**
The ARTS feature allows two kinds of alert beeps (with the additional option of turning them off), so as to alert you to the current status of ARTS operation. Depending on your location and the potential annoyance associated with frequent beeps, you may choose the Beep mode which best suits your needs. The choices are:

- **IN RANGE**: The beeps are issued only when the radio first confirms that you are within range, but does not re-confirm with beeps thereafter.
- **ALWAYS**: Every time a polling transmission is received from the other station, the alert beeps will be heard.
- **OFF**: No alert beeps will be heard; you must look at the display to confirm current ARTS status.

To set the ARTS Beep mode, use the following procedure:

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (ARTS #1: ARTS BEEP).
3. Press the or key to select the desired ARTS Beep mode (see above).
4. When you have made your selection, press the PTT key to save the new setting and exit to normal operation.
CW Identifier Setup

The ARTS feature includes a CW identifier, as discussed previously. Every ten minutes during ARTS operation, the radio can be instructed to send “DE (your callsign) K” if this feature is enabled. The callsign field may contain up to 16 characters.

Here’s how to program the CW Identifier:

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (ARTS #3: CW ID).
3. Press the key to enable changing of this Menu item. The “_” indicator will blink on the LCD.
4. Press the or key to set the CW ID function to ON.
5. Rotate the DIAL one click clockwise to begin entry of the letters and numbers in your callsign.
6. Press the key or keyboard to set the first letter or number in your callsign.
   Example 1: Press the key to select any of the 7 available characters (including the “slant bar” for portable stations); or
   Example 2: Press the key repeatedly to toggle among the seven available characters associated with that key: A → B → C → a → b → c → 2
7. When the correct character has been selected, rotate the DIAL one click clockwise to move on to the next character.
8. Repeat steps 6 and 7 as many times as necessary to complete your callsign. Note that the “slant bar” (– • • – •) is among the available characters, should you be a “portable” station.
9. Press the key to delete all data after the cursor that may have been previously stored erroneously.
10. When you have entered your entire callsign, press the key to confirm the callsign, then press the PTT key to save the settings and exit to normal operation.

You may check your work by monitoring the entire callsign. To do this, repeat steps 1 - 3 above, then press the key.
Advanced Operation

Dtmf Operation

The VX-7R’s 16-button keypad allows easy DTMF dialing for Autopatch, repeater control, or Internet-link access purposes. Besides numerical digits [0] through [9], the keypad includes the [*] and [#] digits, plus the [A], [B], [C], and [D] tones often used for repeater control.

Manual DTMF Tone Generation

You can generate DTMF tones during transmission manually.
1. Press the PTT switch to begin transmission.
2. While transmitting, press the desired numbers on the keypad.
3. When you have sent all the digits desired, release the PTT key.

Dtmf Autodialer

Nine DTMF Autodial memories are provided, allowing you to store telephone numbers for autopatch use. You can also store short autopatch or Internet-link access code streams so as to avoid having to send them manually.

Here is the DTMF Autodial storage procedure:
1. Press the ON key, then press the SET key to enter the Set mode.
2. Rotate the DIAL knob to select the Menu Item labeled (TSQ/DCS/DTMF #8: DTMF SET).
3. Press the ON key to enable adjustment of this Menu Item.
4. Press the ASC or SUB key to select the DTMF Memory register into which you wish to store this DTMF string.
5. Rotate the DIAL knob one click to begin DTMF Memory entry into the selected register.
6. Key in the DTMF digits you wish to store into this register. If needed, you may press the ASC key to store a “Pause” (rotate the DIAL one click clockwise to continue) or press the MAIN key again to delete the previously-stored data after the cursor.
7. If you make a mistake, rotate the DIAL knob counterclockwise to back-space the cursor, re-enter the correct number.
8. Press the PTT switch to save the setting. To store other numbers, repeat this process, using a different DTMF memory register.
**ADVANCED OPERATION**

**DTMF OPERATION**

To send the telephone number:
1. Press the [ ] key, then press the [ ] key to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled *(TSQ/DCS/DTMF #7: DTMF DIALER)*.
3. Press the [ ] or [ ] key to set the DTMF Autodialer function to the “ON” position.
4. Press the **PTT** switch to exit to normal operation and activate the DTMF Autodialer function (the “[ ]” icon will appear).
5. In the Autodialer function mode, first press the **PTT** key, then press the numerical key ([ ] through [ ]) corresponding to the DTMF memory string you wish to send. Once the string begins, you may release the **PTT** key, as the transmitter will be held “on the air” until the DTMF string is completed.

**EMERGENCY CHANNEL OPERATION**

The **VX-7R** includes an “Emergency” feature which may be useful if you have someone monitoring on the same frequency as your transceiver’s UHF “Home” channel. See page 47 for details on setting the Home channel.

The “Emergency” feature is activated by pressing the [ ] key for 1/2 seconds.

When this is done, (A) the radio is placed on the UHF amateur band Home channel, (B) it emits a loud “Alarm” sound (the volume is controlled by the **VOLUME** knob), (C) it flashes the **STROBE** in sequential colors, (D) if you press the **PTT** key, you will disable the Emergency feature temporarily; you can then transmit on the UHF Home channel, and (E) two seconds after the **PTT** release, the Emergency feature will resume.

To disable the “Emergency” feature, press the [ ] key for 1/2 seconds or turn the radio Off by pressing and holding in the [ ] (PWR) switch for 2 seconds.

Use this feature if you are out for a walk and want a quick way of alerting a family member as to a dangerous situation. The alarm sound may discourage an attacker and allow you to escape.

1) Be sure to arrange with a friend or family member to be monitoring on the same frequency, as there will be no identification sent via the Emergency alarm sound. And do not transmit the alarm tone except in a true emergency!

2) The **STROBE** may be changed to another function via Menu Item *(Misc Setup #5: EMG SET)*; see page 94.
**ADVANCED OPERATION**

**ATT (Front End Attenuator)**

The attenuator will reduce all signals (and noise) by 20 dB, and it may be used to make reception more pleasant under extremely noisy conditions.

1. Press the [ATT] key, then press the [ATT] key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Misc Setup #18: ATT).
3. Press the [ATT] or [ATT] key to change the setting from OFF to ON.
4. When you have made your selection, press the PTT key to save the new setting and exit to normal operation.
5. If you wish to disable the attenuator, just repeat the above procedure, pressing the [ATT] or [ATT] key to select OFF in step “3” above.

When the attenuator is activated, the “ATT” icon will appear on the display.

**Receive Battery Saver Setup**

An important feature of the VX-7R is its Receive Battery Saver, which “puts the radio to sleep” for a time interval, periodically “waking it up” to check for activity. If somebody is talking on the channel, the VX-7R will remain in the “active” mode, then resume its “sleep” cycles. This feature significantly reduces quiescent battery drain, and you may change the amount of “sleep” time between activity checks using the Menu System:

1. Press the [ATT] key, then press the [ATT] key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Save Modes #2: RX SAVE).
3. Press the [ATT] or [ATT] key to select the desired “sleep” duration. The selections available are 200 ms, 300 ms, 500 ms, 1 second, and 2 seconds, or OFF. The default value is 200 ms.
4. When you have made your selection, press the PTT key to save the new setting and exit to normal operation.

When you are operating on Packet, switch the Receive Battery Saver OFF, as the sleep cycle may “collide” with the beginning of an incoming Packet transmission, causing your TNC not to receive the full data burst.
**ADVANCED OPERATION**

**TX BATTERY SAVER**

The VX-7R also includes a useful Transmit Battery Saver, which will automatically lower the power output level when the last signal received was very strong. For example, when you are in the immediate vicinity of a repeater station, there generally is no reason to use the full 5 Watts of power output in order to achieve full-quieting access to the repeater. With the Transmit Battery Saver, the automatic selection of Low Power operation conserves battery drain significantly.

To activate the Transmit Battery Saver:
1. Press the **SET** key, then press the **SET** key to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled **(Save Modes #3: TX SAVE)**.
3. Press the **INC** or **DEC** key to set this Menu Item to “**ON**” (thus activating the Transmit Battery Saver).
4. When you have completed your selection, press the **PTT** key to save the new setting and exit to normal operation.

**DISABLING THE “STROBE”**

Further battery conservation may be accomplished by disabling the “**STROBE**” while receiving a signal (when the “**STROBE**” functions as a “**BUSY**” LED). Use the following procedure:

1. Press the **SET** key, then press the **SET** key to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled **(Display Setup #1: BUSY LED)**.
3. Press the **INC** or **DEC** key to set this Menu Item to “**OFF**” (thus disabling the BUSY lamp).
4. Press the **PTT** key to save the new setting and exit to normal operation.
**AUTOMATIC POWER-OFF (APO) FEATURE**

The APO feature helps conserve battery life by automatically turning the radio off after a user-defined period of time within which there has been no dial or key activity.

The available selections for the time before power-off are 0.5/1/3/5/8 hours, as well as APO Off. The default condition for the APO is OFF, and here is the procedure for activating it:

1. Press the **(ON)** key, then press the **(SET)** key to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Save Modes #1: APO).
3. Press the **(MAIN)** or **(SIDE)** key to select the desired time period after which the radio will automatically shut down.
4. Once you have made your selection, press the **PTT** key to save the new setting and exit to normal operation.

When the APO is activated, the “[ ]” icon will appear at the center bottom on the LCD. If there is no action by you within the time interval programmed, the microprocessor will shut down the radio automatically.

Just press and hold in the **(PWR)** switch for 2 seconds to turn the transceiver back on after an APO shutdown, as usual.

---

**TRANSMITTER TIME-OUT TIMER (TOT)**

The TOT feature provides a safety switch which limits transmission to a pre-programmed value. This will promote battery conservation by not allowing you to make excessively-long transmissions, and in the event of a stuck **PTT** switch (perhaps if the radio or a Speaker/Mic is wedged between car seats) it can prevent interference to other users as well as battery depletion. As configured at the factory the TOT feature is set to OFF, and here is the procedure for activating it:

1. Press the **(ON)** key, then press the **(SET)** key to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Save Modes #4: TOT).
3. Press the **(MAIN)** or **(SIDE)** key to set the Time-Out Timer to the desired “Maximum TX” time (1 minute, 2.5 minutes, 5 minutes, or 10 minutes).
4. Once you’re made the selection you wish to use, press the **PTT** key to save the new setting and exit to normal operation.

Since brief transmissions are the mark of a good operator, try setting up your radio’s TOT feature for a maximum transmission time of 1 minute. This will significantly improve battery life, too!
BUSY CHANNEL LOCK-OUT (BCLO)

The BCLO feature prevents the radio’s transmitter from being activated if a signal strong enough to break through the “noise” squelch is present. On a frequency where stations using different CTCSS or DCS codes may be active, BCLO prevents you from disrupting their communications accidentally (because your radio may be muted by its own Tone Decoder). The default setting for the BCLO is OFF, and here is how to change that setting:

1. Press the SET key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Misc Setup #1: BCLO).
3. Press the or key to set this Menu Item to “ON” (thus activating the BCLO feature).
4. Press the PTT key to save the new setting and resume normal operation.

MIC MONITOR

The MIC Monitor feature allows you to monitor your voice signal when using the optional VC-27 Earpiece/Microphone.

1. Connect the VC-27 Earpiece/Microphone to the MIC/SP jack.
2. Press the key, then press the key to enter the Set mode.
3. Rotate the DIAL to select the Menu Item labeled (Misc Setup #19: MIC MONITOR).
4. Press the or key to set this Menu Item to “ON” (thus activating the MIC Monitor feature). The VX-7R exit from the Set mode.
5. The VX-7R’s internal microphone will now pick up the sound around the transceiver, then output its to the VC-27 Earpiece/Microphone.
6. To disable the MIC Monitor feature, repeat steps 2 - 4, pressing the or key to select “OFF,” then press the PTT key.

When this feature is activated without the VC-27 Earpiece/Microphone connected, the VX-7R will develop a howling “feedback” condition.
ADVANCED OPERATION

CHANGING THE TX DEVIATION LEVEL

In many areas of the world, channel congestion has required that operating channels be closely spaced. In such operating environments, it often is required that operators use reduced deviation levels, so as to reduce the potential for interference to users on adjacent channels. The VX-7R includes a simple method of accomplishing this:

1. Press the \textit{SET} key, then press the \textbf{0} key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (\textbf{Misc Setup #6: HALF DEVIATION}).
3. Press the \textbf{INC} or \textbf{DNC} key to change this setting to \textbf{ON}. In this configuration (HALF DEVIATION active), the transmitter’s deviation will be approximately $\pm 2.5$ kHz.
4. When you have made your selection, press the \textbf{PTT} key to save the new setting and exit to normal operation.

\textit{The “normal” setting for the deviation (when this Menu Item is set to OFF) is $\pm 5$ kHz.}
The VX-7R provides a wide variety of memory system resources. These include:

- Regular Memory Channels, which made up of:
  - 450 “Standard” memory channels, numbered “1” through “450.”
  - 12 (USA version) or 11 (EXP version) Home channels, providing storage and quick recall of one prime frequency on each operating band.
  - 20 sets of band-edge memories also known as “Programmable Memory Scan” channels, labeled “L1/U1” through “L20/U20.”
  - Nine Memory Groups, labeled “MG1” through “MG9.” Each Memory Group can be assigned 48 channels from the “standard” memory channel bank.

- Ten One-Touch Memory Channels
- Ten “Hyper-Memory” Channels
- Ten “Weather Broadcast” Channels
- 89 popular Short-wave Broadcast Station Memory Channels.
- 280 VHF Marine Channels.
Memory Mode

Regular Memory Channel Operation

Memory Storage

1. Select the desired frequency, while operating in the VFO mode. Be sure to set up any desired CTCSS or DCS tones, as well as any desired repeater offset. The power level may also be set at this time, if you wish to store it.

2. Press and hold in the \( \text{MEM} \) key for 1/2 second.

3. Within five seconds of releasing the \( \text{MEM} \) key, rotate the DIAL to select the desired memory channel. The microprocessor will automatically select the next-available “free” channel (a memory register on which no data has been stored). If you see an Asterisk (*) by any channel number, it means that the channel currently has no data written on it (i.e. the channel is “free”).

4. Press the \( \text{MEM} \) key once more to store the frequency into memory.

5. You still will be operating in the “VFO” mode, so you may now enter other frequencies, and store them into additional memory locations, by repeating the above process.

You may change the automatic memory channel selection feature to select the “next-highest memory channel above the last-stored memory channel” by instead of the “next-available ‘free’ channel” via the Menu Item labeled (Basic Setup #12 MW MODE); see page 85.

Storing Independent Transmit Frequencies (“Odd Splits”)

All memories can store an independent transmit frequency, for operation on repeaters with non-standard shift. To do this:

1. Store the receive frequency using the method already described under MEMORY STORAGE (it doesn’t matter if a repeater offset is active).

2. Turn to the desired transmit frequency, then press and hold in the \( \text{MEM} \) key for 1/2 second.

3. Within five seconds of releasing the \( \text{MEM} \) key, rotate the DIAL to select the same memory channel number as used in step “1” above.

4. Press and hold in the PTT switch, then press the \( \text{MEM} \) key once more momentarily while holding the PTT switch in (this does not key the transmitter).

Whenever you recall a memory which contains independently-stored transmit and receive frequencies, the “\( \mathbb{E} \)” indication will appear in the display.
MEMORY MODE

REGULAR MEMORY CHANNEL OPERATION

Memory Recall
1. While operating in the VFO mode, press the MEMORY key to enter the Memory mode.
2. Rotate the DIAL to select the desired channel.
3. To return to the VFO mode, press the MEMORY key.

1) When the radio is already set to the Memory mode, an easy way to recall memories is to key in the memory channel number, then press the MEMORY key. For example, to recall memory channel #14, press 14 → 14.
2) Memory channels on which you may have stored frequencies outside the amateur bands cannot be recalled on the SUB band.

HOME Channel Memory
A special one-touch “HOME” channel is available (one for each of the 12 (USA version) or 11 (EXP version) operating bands: see page 15), to allow quick recall of a favorite operating frequency on each band. Memory storage is simple to accomplish:

1. Select the desired frequency, while operating in the VFO mode. Be sure to set up any desired CTCSS or DCS tones, as well as any desired repeater offset. The power level may also be set at this time, if you wish to store it.
2. Press and hold in the MEMORY key for 1/2 second.
3. While the memory channel number is blinking, just press the MEMORY key. The frequency and other data (if any) will now be stored in the special HOME channel register.
4. You may repeat this process on the other operating bands.
5. To recall the HOME channel, press the MEMORY key, then press the MEMORY key while operating either in the VFO or MR mode.

Note that the UHF HOME channel is the one used during “Emergency” operation. See page 39 for details regarding this feature.
Labeling Memories

You may wish to append an alpha-numeric “Tag” (label) to a memory or memories, to aid in recollection of the channel’s use (such as a club name, etc.). This is easily accomplished using the Set mode.

1. Recall the memory channel on which you wish to append a label.
2. Press the key, then press the key to enter the Set mode.
3. Rotate the DIAL to select the Menu Item labeled (Basic Setup #11: NAME SET).
4. Press the key momentarily to enable programming of the name tag.
5. Press the key, or one of the keyboard keys, to select the first digit of the desired label.
   Example 1: Press the key, then press the or key to select any of the 61 available characters.
   Example 2: Press the key repeatedly to toggle among the seven available characters associated with that key: A → B → C → a → b → c → 2
6. Rotate the DIAL one click clockwise to move to the next character.
7. Repeat steps 4 and 5 to program the remaining letters, numbers, or symbols of the desired label. A total of eight characters may be used in the creation of a label.
8. When you have completed the creation of the label, press the key to save the label and exit.

During “MR” (Memory Recall) operation, the alphanumerics Tag will appear below the frequency display. The alphanumerics Tag does not appear if you activate the Dual Receive Operation.
Memory Offset Tuning

Once you have recalled a particular memory channel, you may easily tune off that channel, as though you were in the “VFO” mode.

1. With the VX-7R in the “MR” (Memory Recall) mode, select the desired memory channel.
2. Now press and hold in the key for 1/2 second. The “MR” indicator will be replaced by one which says “MT” (“Memory Tuning”).
3. Rotate the DIAL, as desired, to tune to a new frequency. The synthesizer steps selected for VFO operation on the current band will be the steps used during Memory Tuning.
4. If you wish to return to the original memory frequency, press and hold in the key for 1/2 second. The “MT” indicator will be replaced by “MR.”
5. If you wish to store a new frequency set during Memory Tuning, just press and hold in the key for 1/2 second, per normal memory storage procedure. The microprocessor will automatically set itself to the next-available clear memory location, and you then press again to lock in the new frequency.

*If you want to replace the original memory contents with those of the new frequency, be sure to rotate the DIAL to the original memory channel number!*

Any required CTCSS/DCS changes, or repeater offset modifications, must be done before storing the data into the new (or original) memory channel location.
Masking Memories

There may be situations where you want to “Mask” memories so they are not visible during memory selection or scanning. For example, several memories used only in a city you visit infrequently may be stored, then “Masked” until you visit that city, at which time you can “Unmask” them for normal use.

1. Press the \text{RM} key, if needed, to enter the MR mode.
2. Press and hold in the \text{RM} key for 1/2 second, then rotate the \text{DIAL} to select the memory channel to be “Masked” from view.
3. Press the \text{RM} key. The display will revert to memory channel #1. If you rotate the \text{DIAL} to the location you just “Masked,” you will observe that it is now invisible.
4. To Unmask the hidden memory, repeat the above procedure: press and hold in the \text{RM} key for 1/2 second, rotate the \text{DIAL} to select the masked memory’s number, then press \text{RM} to restore the memory channel’s data.

\textit{Watch out! You can manually store data over a “Masked” memory, deleting previous data, if you’re not careful. Use the “next available memory” technique (look for the [*] icon) storage technique to avoid over-writing a masked memory.}
MEMORY MODE

REGULAR MEMORY CHANNEL OPERATION

Memory Group Operation

Memory Group Assignment
1. Recall the memory channel to be assigned to a Memory Group.
2. Press and hold in the key for 1/2 seconds, then press the numbered key ( ~ ) you want as the Memory Group for this channel.
3. Now memory channel data is copied into the Memory Group.

Memory Group Recall
1. Set the radio to the Memory mode on the “Main” Band by pressing the key, if necessary.
2. Press the key, then press the key to recall the Special Memory Menu.
3. Rotate the DIAL knob to select the “2 MR Group” mode.
4. Press the PTT switch to activate the “Memory Group” mode.
5. Rotate the DIAL knob to select the desired Memory Group (“MG1” ~ “MG9”).
6. Press the key momentarily to lock in the selected Memory Group.
7. In the Memory Group mode of operation, you can only select memory channels in the current memory group (up to 48 channels).
8. To change the Memory Group to another Group, press the key momentarily, then rotate the DIAL knob.
9. To exit from Memory Group operation, recall the Special Memory Menu (press + ) then change its setting to “1 OFF.”
**MEMORY MODE**

**Moving Memory Data to the VFO**

Data stored on memory channels can easily be moved to VFO, if you like.

1. Select the memory channel containing the frequency data to be moved to VFO.
2. Press and hold in the key for 1/2 second, then press the key. The data will now have been copied to VFO, although the original memory contents will remain intact on the previously-stored channel.

*If a Split Frequency Memory channel was transferred, the Tx frequency will be ignored (you will be set up for Simplex operation on the Receive frequency).*

**Memory Only Mode**

Once memory channel programming has been completed, you may place the radio in a “Memory Only” mode, whereby VFO operation is impossible. This may be particularly useful during public-service events where a number of operators may be using the radio for first time, and ultimate simplicity of channel selection is desired.

To place the radio into the Memory Only mode, turn the radio off. Now press and hold in the key while turning the radio on.

To return to normal operation, repeat the above power-on procedure.
HYPER MEMORY MODE

The VX-7R usually stores, into memory, the operating frequency and some aspects of operating status (such as CTCSS/DCS data, repeater shift, power level etc.). However, the “Hyper Memory” Mode allows you to store the total current configuration of the radio into a special “Hyper” memory bank.

For example, a Hyper Memory location may store the frequencies of both the “Main” and “Sub” bands, plus Spectrum Scope operational status, Scanning features, etc.

Hyper Memory Storage
1. Set up the transceiver according to the desired configuration, including parameters such as Spectrum Scope operation, PMS scanning, etc.
2. Press and hold in the numeric key ( through ), corresponding to the Hyper Memory channel into which you wish to store this configuration, for 2 seconds.

   *In order to prevent accidental storage, the Hyper Memory Storage feature may be locked out via Menu Item (Basic Setup #14 HYPER WRITE).*

Hyper Memory Recall
1. Press the key, then press the key, to recall the Special Memory Menu.
2. Rotate the DIAL knob to select the “4 HYP” mode.
3. Press the PTT switch to activate the “Hyper Memory” mode.
4. Press the appropriate numeric key ( through ) to recall the desired Hyper Memory channel.
5. To exit the Hyper Memory mode, recall the Special Memory Menu (press + ), then change its setting to “1 OFF.”
MEMORY MODE

ONE-TOUCH MEMORY MODE

The One-Touch feature allows you to recall up to ten favorite frequencies directly via the numeric (0 through 9) keys.

One-Touch Memory Storage

1. Select the desired frequency, while operating in the VFO mode. Be sure to set up any desired CTCSS or DCS tones, as well as any desired repeater offset. The power level may also be set at this time, if you wish to store it.

2. Press and hold in the MON key for 1/2 second.

3. Within five seconds of releasing the MON key, rotate the DIAL to select the desired One-Touch Memory channel, which will be labeled “OTM0” through “OTM9.”

4. Press the MON key once more to store the frequency into the selected One-Touch Memory.

5. You still will be operating in the “VFO” mode, so you may now enter other frequencies, and store them into additional One-Touch Memory locations, by repeating the above process.

One-Touch Memory Recall

1. Set the VX-7R to Mono band operation on the “Main” band.

2. Press the MON key, then press the key to recall the Special Memory Menu.

3. Rotate the DIAL knob to select the “3 OTM” mode.

4. Press the PTT switch to activate the “One-Touch Memory” mode.

5. Press the numeric key (0 through 9) corresponding to the One-Touch memory you wish to recall.

6. To exit the One-Touch Memory mode, recall the Special Memory Menu (press +), then change its setting to “1 OFF.”
**MEMORY MODE**

**SHORT-WAVE BROADCAST STATION MEMORY CHANNELS**

The Short-wave Broadcast Station Memory Channel Bank has been pre-programmed at the factory, for quick selection of broadcast stations.

1. Set the **VX-7R** to Mono band operation on the “Main” band.
2. Press the \[\text{DIAL}\] key, then press the \[\text{MODE}\] key, to recall the Special Memory Menu.
3. Rotate the **DIAL** knob to select the “5 BC Station” mode.
4. Press the **PTT** switch to activate the “BC Station” mode.
5. Rotate the **DIAL** to select any of the 89 available Broadcast Stations.
6. To exit the BC Station mode, recall the Special Memory Menu (press \[\text{DIAL} + \text{MODE}\]), then change its setting to “1 OFF.”

### Broadcast Station Frequency List

<table>
<thead>
<tr>
<th>LST No.</th>
<th>Freq. (MHz)</th>
<th>MODE</th>
<th>Tag</th>
<th>Station Name</th>
<th>LST No.</th>
<th>Freq. (MHz)</th>
<th>MODE</th>
<th>Tag</th>
<th>Station Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.030</td>
<td>AM</td>
<td>VOA</td>
<td>Voice of America</td>
<td>45</td>
<td>7.270</td>
<td>AM</td>
<td>Spain</td>
<td>Radio Exterior de Espana</td>
</tr>
<tr>
<td>3</td>
<td>9.760</td>
<td>AM</td>
<td>VOA</td>
<td>Voice of America</td>
<td>47</td>
<td>11.920</td>
<td>AM</td>
<td>Spain</td>
<td>Radio Exterior de Espana</td>
</tr>
<tr>
<td>4</td>
<td>11.930</td>
<td>AM</td>
<td>VOA</td>
<td>Voice of America</td>
<td>48</td>
<td>15.585</td>
<td>AM</td>
<td>Spain</td>
<td>Radio Exterior de Espana</td>
</tr>
<tr>
<td>5</td>
<td>5.995</td>
<td>AM</td>
<td>Canada</td>
<td>Radio Canada International</td>
<td>49</td>
<td>6.090</td>
<td>AM</td>
<td>Luxembourg</td>
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<tr>
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<td>7.235</td>
<td>AM</td>
<td>Canada</td>
<td>Radio Canada International</td>
<td>50</td>
<td>7.485</td>
<td>AM</td>
<td>Norway</td>
<td>Radio Norway International</td>
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<td>9.735</td>
<td>AM</td>
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<td>Radio Norway International</td>
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<td>9.410</td>
<td>AM</td>
<td>BBC</td>
<td>British Broadcasting Corporation</td>
<td>54</td>
<td>6.085</td>
<td>AM</td>
<td>Sweden</td>
<td>Radio Sweden</td>
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<tr>
<td>12</td>
<td>15.310</td>
<td>AM</td>
<td>BBC</td>
<td>British Broadcasting Corporation</td>
<td>56</td>
<td>13.625</td>
<td>AM</td>
<td>Sweden</td>
<td>Radio Sweden</td>
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<td>13</td>
<td>6.045</td>
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<td>France</td>
<td>Radio France International</td>
<td>57</td>
<td>17.505</td>
<td>AM</td>
<td>Sweden</td>
<td>Radio Sweden</td>
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<td>14</td>
<td>9.790</td>
<td>AM</td>
<td>France</td>
<td>Radio France International</td>
<td>58</td>
<td>6.120</td>
<td>AM</td>
<td>Finland</td>
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</table>
MEMORY MODE

VHF MARINE MEMORY CHANNELS

The VHF Marine Channel Bank has been pre-programmed at the factory, for quick selection.

1. Set the VX-7R to Mono band operation on the “Main” band.
2. Press the [ ] key, then press the [ ] key, to recall the Special Memory Menu.
3. Rotate the DIAL knob to select the “6 Marine” mode.
4. Press the PTT switch to activate the “VHF Marine Channel” mode.
5. Rotate the DIAL to select any of the 280 available VHF Marine Channels.
6. To exit the VHF Marine Channel mode, recall the Special Memory Menu (press [ ] and [ ]), then change its setting to “OFF.”

VHF MARINE CHANNEL FREQUENCY LIST

<table>
<thead>
<tr>
<th>CH No.</th>
<th>Frequency (MHz)</th>
<th>CH No.</th>
<th>Frequency (MHz)</th>
<th>CH No.</th>
<th>Frequency (MHz)</th>
<th>CH No.</th>
<th>Frequency (MHz)</th>
<th>CH No.</th>
<th>Frequency (MHz)</th>
<th>CH No.</th>
<th>Frequency (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>156.100</td>
<td>2</td>
<td>156.200</td>
<td>3</td>
<td>156.300</td>
<td>4</td>
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<td>156.450</td>
<td>7</td>
<td>156.550</td>
<td>8</td>
<td>156.650</td>
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</tbody>
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VX-7R OPERATING MANUAL
The **VX-7R** allows you to scan just the memory channels, the entire operating band, or a portion of that band. It will halt on signals encountered, so you can talk to the station(s) on that frequency, if you like.

Scanning operation is basically the same in each of the above modes. Before you begin, take a moment to select the way in which you would like the scanner to resume scanning after it halts on a signal.

### Setting the Scan-Resume Technique

Three options for the Scan-Resume mode are available:

- **3 SEC/5 SEC/10 SEC:** In this mode, the scanner will halt on a signal it encounters, and will hold there for the selected resume time. If you do not take action to disable the scanner within that time period, the scanner will resume even if the stations are still active.

- **BUSY:** In this mode, the scanner will halt on a signal it encounters. Two seconds after the carrier has dropped because the other station(s) ceased transmission, the scanner will resume. In the case of constant-carrier signals like Weather Station broadcasts, the scanner will likely remain on this frequency indefinitely.

- **HOLD:** In this mode, the scanner will halt on a signal it encounters. It will not restart automatically; you must manually re-initiate scanning if you wish to resume.

To set the Scan-Resume mode:

1. Press the **SET** key, then press the **ENT** key to enter the Set mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Scan Modes #3: RESUME).
3. Press the **INC** or **DEC** key to select the desired scan-resume mode.
4. When you have made your selection, press the **PTT** key to save the new setting and exit to normal operation.

The default condition for this Menu Item is “5 SEC.”

### Setting the Squelch Level during active Scanning operation

The **VX-7R** allows adjustment of the Squelch level “on the fly” while you are scanning.

1. While the scanner is engaged, press the **SET** key, then press the **ENT** key (the current squelch level will appear below the frequency display).
2. Rotate the **DIAL** to select the desired Squelch level.
3. Press the **PTT** switch momentarily to save the new setting and exit to normal operation. In this case, pressing the **PTT** switch this one time will not causing scanning to stop.
SCANNING

VFO SCANNING

This mode allows you to scan the entire current operating band.

1. Select the VFO mode by pressing the key, if necessary.
2. Press the key, then press the key to start scanning.
3. If and when the scanner encounters a signal strong enough to open the squelch, the scanner will halt temporarily; the decimal point of the frequency display will blink during this “Pause” condition.
4. The scanner will then resume according to the Scan-Resume mode selected in the previous section.
5. To cancel scanning, press the PTT or key.

When you start scanning, the VX-7R will be changing frequency in the upward direction. If you want to change direction of the scan while it is underway, rotate the DIAL one click in the opposite direction (in this case, one click counter-clockwise). You’ll see the scanner turn around and change frequency downward!

You may change the scanning operation so that the VFO frequency will jump to the low band edge of the next band when the VFO frequency reaches the high edge of the current band (or vice versa). See page 95 regarding Menu Item (Misc Setup #10 VFO MODE).

MEMORY SCANNING

Memory scanning is similarly easy to initiate:

1. Set the radio to the Memory mode by pressing the key, if necessary.
2. Press the key, then press the key to initiate scanning.
3. As with VFO scanning, the scanner will halt on any signal encountered that is strong enough to open the squelch; it will then resume scanning according to the Scan-Resume mode set previously.
4. To cancel scanning, press the PTT or key.

On the “Sub” band, Memory Channel scan will search through only the memory channels which are stored inside the amateur bands.
Temporary Memory Skip

If the scanner repeatedly stops on a channel due to temporary noise or interference, you can temporarily mark it to be skipped (except for Memory Channel “1”). The channel will be skipped until you manually stop the scan (by pressing the PTT switch, for example).

To skip a channel temporarily, press the key, then press the key while the scanner has stopped on the channel to be skipped. The scanner will instantaneously resume, and that channel will not be scanned during this scanning session.

How to Skip (Omit) a Channel During Memory Scan Operation

As mentioned previously, some continuous-carrier stations like a Weather Broadcast station will seriously impede scanner operation if you are using the “Carrier Drop” Scan-Resume mode, as the incoming signal will not pause long enough for the transceiver to resume scanning. Such channels may be “Skipped” during scanning, if you like:

1. Set the radio to the Memory Mode by pressing the key, if necessary.
2. Rotate the DIAL to select the Memory Channel to be skipped during scanning.
3. Press the key, then press the key to enter the Set mode.
4. Rotate the DIAL to select the Menu Item labeled (Basic Setup #13: MEMO SCAN MODE).
5. Press the or key so as to select “SKIP.” The current Memory Channel will now be ignored during scanning. The “PREFERENTIAL” selection is used for “ Preferential Memory Scan,” described in the next column.
6. When you have made your selection, press the PTT key to save the settings and exit to normal operation.

A small “!” icon will appear when you recall the “skipped” memory channel manually.

To re-institute a channel into the scanning loop, select “OFF” in step 5 above (the “Skipped” channel will, of course, still be accessible via manual channel selection methods using the DIAL in the MR mode, whether or not it is locked out of the scanning loop).
Preferential Memory Scan

The VX-7R also allows you to set up a “Preferential Scan List” of channels which you can “flag” within the memory system. These channels are designated by a “♪” icon when you have selected them, one by one, for the Preferential Scan List. When you initiate memory scanning on a channel with the “♪” icon appended, only those channels bearing the “♪” icon will be scanned. If you initiate scanning on a channel which does not have the “♪” icon appended, you will scan all channels including those with the “♪” icon appended.

1) Here is the procedure for setting up and using the Preferential Scan List:

1. Press the key momentarily to enter the Memory Recall mode, if you are not using memories already.
2. Rotate the DIAL to select the channel which you wish to add to the Preferential Scan List.
3. Press the key, then press the key to enter the Set mode.
4. Rotate the DIAL to select the Menu Item labeled (Basic Setup #13: MEMO SCAN MODE).
5. Press the or key so as to select “PREFERENTIAL.”
6. When you have made your selection, press the PTT key to save the settings and exit to normal operation.

2) To initiate Preferential Memory Scan:

1. Press the key momentarily to enter the Memory Recall mode, if you are not using memories already.
2. Rotate the DIAL to select any channel which has an “♪” icon appended to the channel number.
3. Press the key, then press the key to initiate Preferential Memory Scanning. Only the channels which have an “♪” icon appended to the channel number will be scanned.
PROGRAMMABLE (BAND LIMIT) MEMORY SCAN (PMS)

This feature allows you to set sub-band limits for either scanning or manual VFO operation. For example, you might with to set up a limit (in North America) of 144.300 MHz to 148.000 MHz so as to prevent encroachment into the SSB/CW “Weak Signal” portion of the band below 144.300 MHz. Here’s how to do this:

1. Set the radio to the VFO mode by pressing the key, if necessary.
2. Using the techniques learned earlier, store (per the above concept) 144.300 MHz into Memory Channel #L1 (the “L” designates the Lower sub-band limit).
3. Likewise, store 148.000 MHz into Memory Channel #U1 (the “U” designates the Upper sub-band limit).
4. Switch to the Memory mode by pressing the key once, then rotate the DIAL to select Memory Channel #L1.
5. Press and hold in the key for 1/2 second to start PMS operation; the “MR” label will be replaced by “PMS” in the upper left-hand corner of the display. Tuning and canning will now be limited within the just-programmed range.
6. 20 pairs of Band Limit memories, labeled L1/U1 through L20/U20 are available. You therefore can set upper and lower operation limits on a number of bands, if you like.

“PRIORITY CHANNEL” SCANNING (DUAL WATCH)

The VX-7R’s scanning features include a two-channel scanning capability which allows you to operate on a VFO or Memory channel, while periodically checking a user-defined Memory Channel for activity. If a station is received on the Memory Channel which is strong enough to open the Squelch, the scanner will pause on that station in accordance with the Scan-Resume mode set via Menu Item (Scan Modes #3: RESUME). See page 56.

Here is the procedure for activating Priority Channel Dual Watch operation:

1. Press the key momentarily to enter the Memory Recall mode, if you are not using memories already.
2. Press and hold in the key for 1/2 second, then select the memory channel you wish to be the “Priority” channel.
3. Press the key. When rotate the DIAL to select the “Priority” channel, a “P” icon (for the “Main” band priority channel) or “p” icon (for the “Sub” band priority channel) will appear to the right of the “MR” icon, indicating it is the Priority channel.
4. Now set the VX-7R for operation on another memory channel, or on a VFO frequency.
5. Press the key, then press the key. The display will remain on the VFO or memory channel selected, but every five seconds the VX-7R will check the Priority Channel for activity.
**AUTOMATIC LAMP ILLUMINATION ON SCAN STOP**

The VX-7R will automatically illuminate the LCD Lamp whenever the scanner stops on a signal; this allows you to see the frequency of the incoming signal better at night. Note that this will, of course, increase the battery consumption, so be sure to switch it off during the day (the default condition for this feature is “ON”).

The procedure for disabling the Scan Lamp is:

1. Press the \( \text{SET} \) key, then press the \( \text{RET} \) key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Scan Modes #4: SCAN LAMP).
3. Press the MAIN or SHF key to set this Menu Item to OFF.
4. When you have made your selection, press the PTT to save the new setting and exit to normal operation.

**BAND EDGE BEEPER**

The VX-7R will automatically “beep” when a band edge is encountered during scanning (either in standard VFO scanning or during PMS operation). You may enable this feature (band edge beeper) when the frequency reaches the band edge while selecting the VFO frequency by the DIAL.

The procedure for disabling the Band-Edge Beeper is:

1. Press the \( \text{SET} \) key, then press the \( \text{RET} \) key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Scan Modes #2: EDGE BEEP).
3. Press the MAIN or SHF key to set this Menu Item to ON.
4. When you have made your selection, press the PTT to save the new setting and exit to normal operation.
The Spectrum Analyzer allows viewing operating activity on channels above or below the current operating channel in the VFO mode.

The display indicates the relative signal strength on channels immediately adjacent to the current operating frequency.

*The Spectrum Analyzer feature can only be activated while the VX-7R is operating in the Mono band mode.*

Two basic operating modes for Spectrum Analyzer are available:

1: In this mode, the transceiver sweeps the current band once.

CONTINUOUS: In this mode, the transceiver sweeps the current band repeatedly until pressing the key, or the Spectrum Analyzer is turned off.

**Setting up the Spectrum Analyzer mode:**

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled *(Scan Modes 6: SPEC-ANALYZER 1).*
3. Rotate the DIAL to select the desired Spectrum Analyzer mode (see above).
4. When you have made your selection, press the PTT to save the new setting and exit to normal operation.

**To activate the Spectrum Analyzer:**

1. Set the radio to the VFO mode in the “Mono” band mode.
2. Press the key, then press the key to activate the Spectrum Analyzer.
3. When the Spectrum Analyzer is activated, press the or key to change the visible bandwidth. Available selections are ±5, ±8, ±14, ±29, and ±60 channels (default: ±5 channels). The visible bandwidth, however, depends on the selected channel step size, so match the default channel steps with the amateur band you are using.
4. To turn the Spectrum Analyzer off and operate on the centered (and displayed) channel, press the key to stop the sweep, if needed, then press the key followed by key.

Audio output normally is interrupted during Spectrum Analyzer operation. You may enable the audio output of the signal on the center frequency (▼) when the Spectrum Analyzer is activated in the Amateur band via Menu Item *(Scan Modes #7 SPEC-ANALYZER 2).* See page 90 for details.
SMART SEARCH OPERATION

The Smart Search feature allows you to load frequencies automatically according to where activity is encountered by your radio. When Smart Search is engaged, the transceiver will search above and below your current frequency, storing active frequencies as it goes (without stopping on them even momentarily); these frequencies are stored into a special Smart Search memory band, consisting of 31 memories (15 above the current frequency, 15 below the current frequency, plus the current frequency itself).

Two basic operating modes for Smart Search are available:

1: In this mode, the transceiver will sweep the current band once in each direction starting on the current frequency. All channels where activity is present will be loaded into the Smart Search memories; whether or not all 31 memories are filled, the search will stop after one sweep in each direction.

CONTINUOUS: In this mode, the transceiver will make one pass in each direction as with One-Shot searching; if all 31 channels are not filled after the first sweep, however, the radio will continue sweeping until they are all filled.

The Smart Search feature can only be activated while the VX-7R is operating in the Mono band mode.

Setting the Smart Search Mode

1. Press the \textit{MON} key, then press the \textit{SET} key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Scan Mode \#5: SMART SEARCH).
3. Press the \textit{INC} or \textit{DEC} key to select the desired Smart Search mode (see above).
4. When you have made your selection, press the PTT to save the new setting and exit to normal operation.
Storing Smart Search Memories

1. Set the radio to the VFO mode in the “Mono” band mode. Be sure that you have the Squelch adjusted properly (so that band noise is quieted).
2. Press the key, then press the key to enter the Smart Search mode.
3. Press the key to begin Smart Search scanning.
4. As active channels are detected, you will observe the number of “loaded” channels increasing in the regular memory channel window.
5. Depending on the mode you set for Smart Search operation (“1” or “CONTINUOUS”), the Smart Search scan will eventually terminate, and the LCD will revert to Smart Search Memory Channel “C.”
6. To recall the Smart Search memories, rotate the DIAL to choose from among the Smart Search memories.
7. To return to normal operation, press the key, then press the key.

Smart Search is a great tool when visiting a city for the first time. You don’t need to spend hours looking up repeater frequencies from a reference guidebook…just ask your VX-7R where the action is!
The Channel Counter allows measuring of the frequency of a nearby transmitter, without knowing that frequency in advance. The frequency can be measured by bringing the VX-7R close to the transceiver which is transmitting.

The VX-7R performs a high-speed search within a ±5 MHz range from the frequency displayed on the LCD. When the strongest signal in that range is identified, the VX-7R displays the frequency of that (strongest) signal, and writes it into the special “Channel Counter” memory.

Note: This Channel Counter is designed to provide an indication of the operating frequency of the incoming signal, one that is close enough to allow the user to tune precisely to the other station’s frequency. This feature is not, however, designed to provide a precise determination of the other station’s frequency.

The Channel Counter feature can only be activated while the VX-7R is operating in the Mono band mode.

1. Set the radio to the VFO mode in the predicted frequency range for the transmitter to be measured with the “Mono” band mode engaged.
2. Bring the VX-7R into close proximity to the transmitter to be measured.
3. Press the key, then press the key to activate the Channel Counter; the frequency of the nearby station will be displayed. When the channel counter is active, a 50 dB receiver front-end attenuator will be engaged. Therefore, only stations in close proximity may have their frequencies measured using this feature.
4. If it isn’t possible to determine the signal’s frequency, the transceiver will return to the frequency on which you were operating when you started Channel Counter operation.
5. When you are finished, press the key, then press the key. The radio will exit from Channel Counter operation.

Setting the Channel Counter Sweep Width
You may change the bandwidth of the Channel Counter. Available selections are ±5, ±10, ±50, and ±100 MHz (default: ±5 MHz).

Here is the procedure for setting the Channel Counter Bandwidth:
1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Scan Modes #1: CH COUNTER).
3. Press the or key to select the desired bandwidth.
4. When you have made your selection, press the PTT to save the new setting and exit to normal operation.
The **VX-7R** can be used to access the repeater which provide the Vertex Standard **WIRES™** (Wide-Coverage Internet Repeater Enhancement System).

1. Press the **INTERNET** key to activate the Internet Connection feature. The “**INTERNET**” icon will appear in the upper left corner of the display.

2. Rotate the **DIAL**, while pressing and holding in the **INTERNET** key, to select the access number corresponding to the **WIRES™** repeater to which you wish to establish an Internet link (ask your repeater owner/operator if you don’t know the access numbers in the network). Now press the **PTT** switch to exit from the selection mode.

3. With the Internet Connection feature activated (as in step 1 above), the **VX-7R** will generate a brief (0.1 second) DTMF tone according to your selection in step 2. This DTMF tone is sent at the beginning of every transmission to establish or maintain the link to the remote **WIRES™** repeater.

4. To disable the Internet Connection feature, press the **INTERNET** key again.
The VX-7R can display various information provided by internal sensors. Available selections are “Current Time,” “Battery Voltage,” “Temperature,” and “Audio Wave-form.” Also, when the optional Barometric Pressure unit (SU-1) is installed, you get the unique capability of providing readout of the current barometric pressure. This information is then used for calculation of your current altitude and weather forecast.

The Barometric Pressure unit requires calibration of the “offset” parameters, so that differences in pressure can be used to calculate altitude. This procedure requires that you have a calculated barometer, and that you know your current altitude. If you are at sea level, of course, the latter parameter requires no research.

The Sensor mode can only display while the VX-7R is operating in the Mono band mode (except the Weather Forecast mode). The internal sensor measures continuously unless the Sensor mode is disabled.

To display the sensor information:
1. Press the **me** key, then press the **key to enter the Set Mode.
2. Rotate the DIAL to select the Menu Item labeled **Measurements #1: SENSOR DISPLAY**.
3. Press the **or** key to select the sensor mode you wish to display.

   **TIME:** Indicates the current time.
   **DC:** Indicates the battery voltage and battery type.
   **TEMP:** Indicates the current temperature inside the transceiver’s case.
   **WAVE:** Depicts the (RX and TX) audio waveform.
   **BARO:** Indicates the Barometric Pressure and relative changes in the pressure (two bars per hours) (requires SU-1).
   **ALTI:** Indicates the Altitude (requires SU-1)
   **WX:** Indicates the Weather Forecast (requires SU-1).
   **OFF:** Disables the sensor information.
4. Press the PTT key momentarily to exit to normal operation and display the sensor information on the display.

To disable the display of sensor information, repeat the above procedure, pressing the or key to select **OFF** in step 3 above.
1) The VX-7R’s Weather Forecast feature will only work properly if the altitude remains constant.

2) The VX-7R’s Weather Forecast feature will not be accurate when in the immediate vicinity of an approaching hurricane/typhoon, on the boundary of a stationary front, etc.

3) The VX-7R’s Weather Forecast feature is designed to be a supplemental aid for the information of the user. It must not be relied upon as a primary weather forecasting tool, and Vertex Standard is not responsible for any damage or other liability arising from its use.

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**SENSOR MODE OPTIONS**

**Clock Set**

The VX-7R has a 24-hour clock with a calendar which covers all dates from January 1, 2000 through December 31, 2099 (accuracy: ±30 sec/month).

To set the clock:

1. Press the \( \text{SET} \) key, then press the \( \text{SET} \) key to enter the Set mode.
2. Rotate the DIAL knob to select the Menu Item labeled (Misc Setup #16: TIME SET).
3. Press the \( \text{SET} \) key to enable setting of this Menu Item.
4. Press the \( \text{SET} \) or \( \text{SET} \) key to select the “year” setting.
5. Rotate the DIAL one click clockwise, then press the \( \text{SET} \) or \( \text{SET} \) key to select the “month” setting.
6. Repeat the above step to set the “day,” “day of the week,” “hour,” and “minute” selections.
7. Rotate the DIAL one click clockwise, then press the \( \text{SET} \) or \( \text{SET} \) key to select “Timer Signal” On (SIG) or Off (-).
8. Rotate the DIAL one click clockwise, press the \( \text{SET} \) key to start the clock from “00” seconds.
9. When you have finished the time setup, press the PTT key to save the new setting and return to normal operation.

The VX-7R’s has a rechargeable Li-Ion battery cell used just for the clock. Therefore, the VX-7R can maintain its clock data for approximately two months without using the main battery pack or external DC power.
**Selecting the Wave-Form Display**

1. Press the \( \text{MON} \) key, then press the \( \text{SET} \) key to enter the Set Mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Measurements #2: WAVE MONITOR).
3. Press the \( \text{BAD} \) or \( \text{SUB} \) key to select the desired wave form (RX SIGNAL, TX MODULATION, or All).
4. Press the **PTT** key momentarily to save the new setting and exit to normal operation.

**Selecting the Units of Temperature Display**

1. Press the \( \text{MON} \) key, then press the \( \text{SET} \) key to enter the Set Mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Measurements #3: TEMP UNIT).
3. Press the \( \text{BAD} \) or \( \text{SUB} \) key to select the preferred unit (°C or °F).
4. Press the **PTT** key momentarily to save the new setting and exit to normal operation.

**Selecting the Unit of Atmospheric Pressure Meter (Barometer)**

1. Press the \( \text{MON} \) key, then press the \( \text{SET} \) key to enter the Set Mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Measurements #4: BARO UNIT).
3. Press the \( \text{BAD} \) or \( \text{SUB} \) key to select the preferred unit (hpa/mbar/mmHg/inch).
4. Press the **PTT** key momentarily to save the new setting and exit to normal operation.

**Correcting the Atmospheric Pressure Meter (Barometer Offset)**

1. Press the \( \text{MON} \) key, then press the \( \text{SET} \) key to enter the Set Mode.
2. Rotate the **DIAL** to select the Menu Item labeled (Measurements #5: BARO OFFSET).
3. Press the \( \text{BAD} \) key to enable setting of this Menu Item.
4. Press the \( \text{BAD} \) key to indicate the barometer data in “hpa” units.
5. Press the \( \text{BAD} \) or \( \text{SUB} \) key to adjust the **VX-7R** display to the **calibrated** barometer value in the “hpa” units.
6. Press the \( \text{BAD} \) key to save the new setting.
7. Press the **PTT** key momentarily to exit to normal operation.
Selecting the Units of Altitude

1. Press the \( \text{SET} \) key, then press the \( \text{SET} \) key to enter the Set Mode.
2. Rotate the DIAL to select the Menu Item labeled (Measurements #6: ALTITUDE UNIT).
3. Press the \( \text{MAN} \) or \( \text{AUTO} \) key to select the preferred unit (m or ft).
4. Press the PTT key momentarily to save the new setting and exit to normal operation.

Correcting the Altimeter Setting (Altimeter Offset)

1. Press the \( \text{SET} \) key, then press the \( \text{SET} \) key to enter the Set Mode.
2. Rotate the DIAL to select the Menu Item labeled (Measurements #7: ALTITUDE OFFSET).
3. Press the \( \text{SET} \) key to enable setting of this Menu Item.
4. Press the \( \text{MAN} \) key to indicate the altimeter data in “m” units.
5. Press the \( \text{MAN} \) or \( \text{AUTO} \) key to adjust the VX-7R display to the true altitude at your current location in “m” units.
6. Press the \( \text{MAN} \) key to save the new setting.
7. Press the PTT key momentarily to exit to normal operation.
The VX-7R includes the capability to turn itself on/off at preset time. If you use these features, you must first set the VX-7R’s clock, as described previously.

ON TIMER

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Save Modes #5: ON TIMER).
3. Press the key to enable setting of this Menu Item.
4. Press the or key to set the “hour” at which you want the radio to switch on.
5. Rotate the DIAL one click clockwise, then press the or key to set the “minute” at which you want the radio to switch on.
6. Rotate the DIAL one click clockwise again, then press the or key to set this Menu Item to “ON.”
7. Once you have made your selections, press the PTT key to save the new settings and exit to normal operation.

OFF TIMER

1. Press the key, then press the key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Save Modes #6: OFF TIMER).
3. Press the key to enable setting of this Menu Item.
4. Press the or key to set the “hour” at which you want the radio to switch off.
5. Rotate the DIAL one click clockwise, then press the or key to set the “minute” at which you want the radio to switch off.
6. Rotate the DIAL one click clockwise again, then press the or key to set this Menu Item to “ON.”
7. Once you have made your selections, press the PTT key to save the new settings and exit to normal operation.
**DISPLAY CUSTOMIZATION**

The VX-7R’s display includes several unique customization options which can expand your enjoyment of your transceiver.

**ICON MODE**

The display’s alphanumeric labels can be replaced by pictorial icons, which may be easier to remember during operation.

To activate the Icon mode:

1. Press the \[\text{ENT}\] key, then press the \[\text{SET}\] key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled \(\text{Misc Setup \#12: ICON SET}\).
3. Press the \[\text{MAIN}\] or \[\text{SUB}\] key to set this Menu Item to ON.
4. When you have made your selection, press the \[\text{PTT}\] to save the new setting and exit to normal operation.
5. The display will change to incorporate the default icons, as stored in the microprocessor’s firmware.

**ICON SELECTION**

1. Press the \[\text{ENT}\] key, then press the \[\text{SET}\] key to enter the Set Mode.
2. Rotate the DIAL to select the Menu Item labeled \(\text{Misc Setup \#14: ICON SELECT}\).
3. Press the \[\text{MAIN}\] key to enable modification of this Menu Item.
4. Press the \[\text{MAIN}\] or \[\text{SUB}\] key to select the desired band or mode on which you wish to utilize an Icon.
5. Turn the DIAL one click clockwise, then press the \[\text{MAIN}\] or \[\text{SUB}\] key to select the desired Icon to be displayed in place of the regular indicator.
6. Press the \[\text{PTT}\] key momentarily to save the new setting and exit to normal operation.

**ICON List**

![Icon List Image]
The VX-7R has three Icon memory channels which may be customized by the user. Using this feature, you may draw new Icons to be used in identifying features in a way easily recognizable by you.

1. Press the \texttt{[HOLD]} key, then press the \texttt{[SET]} key to enter the Set Mode.
2. Rotate the \texttt{DIAL} to select the Menu Item labeled (\textbf{Misc Setup #13: ICON EDITOR}).
3. Press the \texttt{[RED]} key to enable this Menu Item.
4. Press the \texttt{[CABLE]} or \texttt{[SIDE]} key to select the desired Icon memory channel (I1 - I3).
5. A blinking dot will appear in the upper left corner of the icon field.
6. Press the \texttt{[2CH]}, \texttt{[TONE]}, \texttt{[EVT]}, and \texttt{[SPANA]} key to move the dot to “upward,” “downward,” “leftward,” and “rightward” respectively. Bring the dot to desired point on the icon field, then press the \texttt{[YES]} key to set a dot at this point. Continue moving the dot around the field, pressing \texttt{[YES]} at each point where you wish a dot to appear (adjacent dots will have the effect of creating a line).
7. Turn the \texttt{DIAL} one click clockwise, then press the \texttt{[CABLE]} or \texttt{[SIDE]} key to select the desired Icon to be displayed in place of the regular indicator.
8. Press the \texttt{PTT} key momentarily to save the new setting and exit to normal operation.
When the VX-7R is turned off, the LCD may be set up to display one or more environmental measurements. These include temperature, barometric pressure, altitude, or combinations of these.

1. Press the SET key, then press the PTT key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Display Setup #4: DISPLAY MODE).
3. Press the or key to select the new setting. The options include
   - **NONE**: No display when the transceiver is off.
   - **TEMP**: Display of the current time plus temperature when the transceiver is off.
   - **BARO**: Display of the current time plus barometric pressure when the transceiver is off (requires optional SU-1).
   - **ALTI**: Display of the current time plus the current altitude when the transceiver is off (requires optional SU-1).
   - **TEMP+BARO**: Display of the current time, Temperature, and barometric pressure (requires optional SU-1).
   - **TEMP+ALTI**: Display of the current time, Temperature, and altitude (requires optional SU-1).
   - **ALL**: Display of the current time, temperature, barometric pressure, and altitude (requires optional SU-1).

   **Note**: the current time will always be displayed when the transceiver is off, except when “NONE” is selected.

4. When you have made your selection, press the PTT key to save the new setting and exit to normal operation.

   If any of the above settings (except “NONE”) is enabled, the current drain with the VX-7R turned off will be about 20 mA. We recommend that the Power-Off Display Mode be set to “NONE” if you plan to be away from the radio for an extended period of time.
**DISPLAY CUSTOMIZATION**

### S- and TX Power Meter Symbols

The VX-7R has six types of S- (Signal Strength) and TX Power Meter symbol formats available. You may change the default setting to any of the available symbols.

1. Press the **on** key, then press the **off** key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Display Setup #8: METER SYMBOL).
3. Press the **on** key to enable modification of this Menu Item.
4. Press the **on** or **off** key to select the desired meter symbol type.
   - S1: \[ \text{Symbol Image} \]
   - S2: \[ \text{Symbol Image} \]
   - S3: \[ \text{Symbol Image} \]
   - S4: \[ \text{Symbol Image} \]
   - S5: \[ \text{Symbol Image} \]
   - CHR: 12345678
5. When you have made your selection, press the PTT key to save the new setting and exit to normal operation.

*The S- and PO Meter Symbol may be changed to appear in the “Main” band and “Sub” band locations separately.*

### Modification of the Default the S-and TX Power Meter Symbol

The default “12345678” symbol which is used for last meter type may be replaced by several other symbols, if desired.

Here’s how to replace the default meter symbol:

1. Recall the last meter type, described previously.
2. Press the **on** key to enable modification of this Menu Item.
3. Rotate the DIAL one click clockwise, then press the **up**/**down** key or keypad to select the character in the first digit.
   - **Example 1**: Press the **up** or **down** key to select any of 61 available characters (including letters, numbers, and special symbols).
   - **Example 2**: Press the **right** key repeatedly to toggle among the seven available characters: \[ A \rightarrow B \rightarrow C \rightarrow a \rightarrow b \rightarrow c \rightarrow 2 \]
4. Rotate the DIAL to move to the next digit.
5. Repeat previous steps 3 and 4 as necessary to complete (up to 8 characters).
6. When you have made your choice, press the **on** key, then press the PTT key to save your selection and exit to normal operation.

*You can create an original font, as described in the next column.*
The VX-7R has five Font memory channels which may be created by the user.

1. Press the \( \text{key} \), then press the \( \text{key} \) to enter the Set Mode.
2. Rotate the DIAL to select the Menu Item labeled (Misc Setup #11: FONT EDITOR).
3. Press the \( \text{key} \) to enable this Menu Item.
4. Press the \( \text{or \ key} \) to select the desired Font memory channel (C1 - C5).
5. A blinking dot will appear in the upper left corner of the font field.
6. Press the \( \text{key}, \text{key}, \text{key}, \text{key} \) key to move the dot “upward,” “downward,” “leftward,” and “rightward” respectively. Bring the dot to the desired point on the font field, then press the \( \text{key} \) to set a dot at this point. Continue moving the dot around the field, pressing \( \text{key} \) at each point where you wish a dot to appear (adjacent dots will have the effect of creating a line).
7. Turn the DIAL one click clockwise, then press the \( \text{or \ key} \) key to select the font to be displayed in place of the regular indicator.
8. Press the PTT key momentarily to save the new setting and exit to normal operation.

The original fonts also can be used for the alpha-numeric tag.

\[\begin{array}{cc}
1 & 2 \\
3 & 4 \\
5 & 6 \\
7 & 8 \\
9 & 0
\end{array}\]
DISPLAY CUSTOMIZATION

DISPLAY CONTRAST

The LCD’s contrast may be adjusted using the Menu, as well.

1. Press the (key, then press the (key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Display Setup #2: CONTRAST).
3. Press the or key to adjust the contrast. As you make the adjustment, you will be able to see the effects of your changes.
4. When you have completed the adjustment, press the PTT key to save the new setting and exit to normal operation.

DISPLAY DIMMER

The LCD and keypad illumination may be adjusted using the Menu, as well.

1. Press the (key, then press the (key to enter the Set mode.
2. Rotate the DIAL to select the Menu Item labeled (Display Setup #3: DIMMER).
3. Press the or key to adjust the display illumination for a comfortable brightness level. As you make the adjustment, you will be able to see the effects of your changes.
4. When you have completed the adjustment, press the PTT key to save the new setting and exit to normal operation.
**DISPLAY CUSTOMIZATION**

**STROBE CUSTOMIZATION**

The VX-7R’s STROBE also includes customization options.

**COLOR Selection**

1. Press the STROBE key, then press the SET key to enter the Set Mode.
2. Rotate the DIAL to select the Menu Item labeled **(Display Setup #7: LED COLOR 2)**.
3. Press the key to enable modification of this Menu Item.
4. Press the or key to select the desired band or status which you wish to utilize. Available selections are:
   - **Main BUSY**: Sets the STROBE color displayed while the squelch is open on the “Main” band.
   - **Sub BUSY**: Sets the STROBE color displayed while the squelch is open on the “Sub” band.
   - **DUAL BUSY**: Sets the STROBE color displayed during Dual Receive operation.
   - **Main TX**: Sets the STROBE color displayed while transmitting on the “Main” band.
   - **Sub TX**: Sets the STROBE color displayed while transmitting on the “Sub” band.
   - **CHG Complete**: Set the STROBE color when battery charging is finished.
5. Turn the DIAL one click clockwise, then press the or key to select the desired color to be illuminated in place of the regular color.
6. Press the PTT key momentarily to save the your new setting and exit to normal operation.

**COLOR Editor**

The exact color mix of the “STROBE’s” color selections may be adjusted, providing you with a custom-designed color hue. The Red, Green, and Blue elements of each color’s composition may be adjusted individually.

1. Press the STROBE key, then press the SET key to enter the Set Mode.
2. Rotate the DIAL to select the Menu Item labeled **(Display Setup #6: LED COLOR 1)**.
3. Press the key to enable modification of this Menu Item.
4. Press the or key to select the desired color which you wish to edit.
5. Repeat above step to adjust the “R” (red) element in 10-step increments, allowing very quick selection.
6. Press the PTT key to save the new setting, then press the PTT key to exit to normal operation.
**RESET PROCEDURES**

In some instances of erratic or unpredictable operation, the cause may be corruption of data in the microprocessor (due to static electricity, etc.). If this happens, resetting of the microprocessor may restore normal operation. Note that all memories will be erased if you do a complete microprocessor reset, as described below.

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**MICROPROCESSOR RESETTING**

To clear all memories and other settings to factory defaults:

1. Turn the radio off.
2. Press and hold in the **,[**, and **,** keys while turning the radio on.
3. Press the **,** key momentarily to reset all settings to their factory defaults (press any other key to cancel the Reset procedure).

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**SET MODE RESETTING**

To reset the Set (Menu) mode settings to their factory defaults:

1. Turn the radio off.
2. Press and hold in the **,** and **,** keys while turning the radio on.
3. Press the **,** key momentarily to reset the Set (Menu) mode settings to their factory defaults (press any other key to cancel the Reset procedure).
The VX-7R includes a convenient “Clone” feature, which allows the memory and configuration data from one transceiver to be transferred to another VX-7R. This can be particularly useful when configuring a number of transceivers for a public service operation. Here is the procedure for Cloning one radio’s data to another:

1. Turn both radios off.
2. Connect the user-constructed cloning cable and two optional CT-91 Microphone Adapters (one on each end) between the MIC/SP jacks of the two radios.
3. Press and hold in the key while turning the radios on. Do this for both radios (the order of switch-on does not matter). “CLONE” will appear on the displays of both radios when the Clone mode is successfully activated in this step.
4. On the Destination radio, press the key (“CLONE WAIT” will appear on the LCD).
5. Press the key on the Source radio; “CLONE TX” will appear on the Source radio, and the data from this radio will be transferred to the other radio.
6. If there is a problem during the cloning process, “CLONE ERROR” will be displayed. Check your cable connections and battery voltage, and try again.
7. If the data transfer is successful, “CLONE” will reappear on both displays. Turn both radios off and disconnect the cloning cable and CT-91s. You can then turn the radios back on, and begin normal operation.
**Set Mode**

The **VX-7R** Set (Menu) mode, already described in parts of many previous chapters, is easy to activate and set. It may be used for configuration of a wide variety of transceiver parameters, some of which have not been detailed previously. Use the following procedure to activate the Set (Menu) mode:

1. Press the \(M\) key, then press the \(SET\) key to enter the Set mode.
2. Turn the **DIAL** to select the Menu Item to be adjusted. 
3. Press the **VAR**/**SET** key to adjust or select the parameter to be changed on the Menu item selected in above step.
4. After completing your selection and adjustment, press the **PTT** switch momentarily to exit the Set mode and exit to normal operation.

*Some Menu Items must be enabled for adjustment by pressing the \(RND\) on key before selecting the parameter to be adjusted.*

**“MY MENU” Short-cut Key Setup**

The **MY MENU** key function allows you to create a short-cut path for recall of one of Menu Items. The **TPD** key then serves as the “Short-Cut” key.

1. **Press and hold in** the **TPD** key while turning the radio on. This procedure switches the **TPD** key between the “Internet Connection” function and the “MY MENU” key function.
2. Recall the Menu Item which you wish to assign to the **TPD** key as a Menu short-cut.
3. Press and hold in the **TPD** key for 1/2 second to assign the Menu Item to the **TPD** key.

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<td>ENABLE/DISABLE</td>
</tr>
<tr>
<td>#1 [BUSY LED]</td>
<td>Enables/disables the BUSY LED (“STROBE”) while the Squelch is open.</td>
<td>ON/OFF</td>
</tr>
<tr>
<td>#2 [CONTRAST]</td>
<td>Setting of the Display contrast level.</td>
<td>LEVEL 1 ~ LEVEL 10 (LEVEL 7)</td>
</tr>
<tr>
<td>#3 [DIMMER]</td>
<td>Setting of the Display brightness level.</td>
<td>LEVEL 0 ~ LEVEL 12 (LEVEL 10)</td>
</tr>
<tr>
<td>#4 [DISPLAY MODE]</td>
<td>Selects the display while the transceiver’s power is off.</td>
<td>NONE/TEMP/BARO/ALT/TEMP+BARO/TEMP+ALT/ALL</td>
</tr>
<tr>
<td>#5 [LAMP MODE]</td>
<td>Selects the LCD/Keypad Lamp mode.</td>
<td>KEY/CONTINUE/OFF</td>
</tr>
<tr>
<td>#6 [LED COLOR 1]</td>
<td>Edits the “STROBE” color.</td>
<td>–</td>
</tr>
<tr>
<td>#7 [LED COLOR 2]</td>
<td>Selects the “STROBE” color for each operating status.</td>
<td>S1/S2/S3/S4/S5/CHR</td>
</tr>
<tr>
<td>#8 [METER SYMBOL]</td>
<td>Selects the S- &amp; TX PO meter Symbol.</td>
<td>–</td>
</tr>
</tbody>
</table>
### SET MODE

<table>
<thead>
<tr>
<th>Set Mode Item</th>
<th>Function</th>
<th>Available Values (Default: <em>Bold Italic</em>)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TSO/DCS/DTMF</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1 [SOL TYPE]</td>
<td>Selects the Tone Encoder and/or Decoder mode.</td>
<td>OFF/TONE/TONE SQL/DCS</td>
</tr>
<tr>
<td>#2 [TONE SET]</td>
<td>Setting the CTCSS Tone Frequency.</td>
<td>50 standard CTCSS tones (88.5 Hz)</td>
</tr>
<tr>
<td>#3 [DCS SET]</td>
<td>Setting of the DCS code.</td>
<td>104 standard DCS codes <em>(023)</em></td>
</tr>
<tr>
<td>#4 [DCS COMPLEMENT]</td>
<td>Enables/Disables “Inverted” DCS code decoding.</td>
<td>ENABLE/DISABLE</td>
</tr>
<tr>
<td>#5 [BELL]</td>
<td>Selects the CTCSS Bell ringer repetitions.</td>
<td>OFF/1/3/5/8/CONTINUE</td>
</tr>
<tr>
<td>#6 [SPLIT TONE]</td>
<td>Enables/disables split CTCSS/DCS coding.</td>
<td>OFF/ON</td>
</tr>
<tr>
<td>#7 [DTMF DIALER]</td>
<td>Enables/disables the DTMF Autodial feature.</td>
<td>ON/OFF</td>
</tr>
<tr>
<td>#8 [DTMF SET]</td>
<td>Programming of the DTMF Autodial.</td>
<td>–</td>
</tr>
<tr>
<td><strong>Misc Setup</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#9 [MON-F CHANGE]</td>
<td>Select the MON-F for the current band.</td>
<td>50 standard CTCSS tones</td>
</tr>
<tr>
<td>#10 [MON-F CAL]</td>
<td>Selects the MON-F key (just below the PTT switch) function.</td>
<td>MON/T-CAL*2</td>
</tr>
<tr>
<td><strong>Measurement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#11 [TOOL SET]</td>
<td>Setting of the Automatic Power-Off time.</td>
<td>OFF/30 min/1 hr/3 hrs/5 hrs/8 hrs</td>
</tr>
<tr>
<td>#12 [BARO OFFSET]</td>
<td>Correcting the Barometric Pressure*2.</td>
<td>m/ft*3</td>
</tr>
<tr>
<td>#13 [ALTIMETER UNIT]</td>
<td>Selecting the measurement units for the Altimeter.</td>
<td>m/ft</td>
</tr>
<tr>
<td><strong>Scan Modes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1 [EDGE BEEP]</td>
<td>Enables/disables the Band-edge beeper while scanning.</td>
<td>OFF/ON</td>
</tr>
<tr>
<td>#2 [SCAN RESUME]</td>
<td>Enables/disables the Scan Resumed mode.</td>
<td>OFF/ON</td>
</tr>
<tr>
<td>#3 [SCAN LAMP]</td>
<td>Enables/disables the Scan lamp while paused.</td>
<td>OFF/ON</td>
</tr>
<tr>
<td>#4 [ARTS INTERVAL]</td>
<td>Select the Polling Interval during ARTS operation.</td>
<td>1S/2S/CONTINUOUS</td>
</tr>
<tr>
<td><strong>Scan Modes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1 [ARTS BEEP]</td>
<td>Select the Beep option during ARTS operation.</td>
<td>IN RANGE/ALWAYS/OFF</td>
</tr>
<tr>
<td>#2 [ARTS INTERVAL]</td>
<td>Select the Polling Interval during ARTS operation.</td>
<td>15 SEC/25 SEC</td>
</tr>
<tr>
<td>#3 [CW ID]</td>
<td>Program and activate the CW Identifier (used during ARTS operation).</td>
<td>–</td>
</tr>
<tr>
<td><strong>Save Modes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1 [TIMES]</td>
<td>Setting the Clock time.</td>
<td>OFF/00:00/1 min/2.5 min/5 min/10 min</td>
</tr>
<tr>
<td>#2 [ON TIMER]</td>
<td>Set the ON Timer time.</td>
<td>OFF/00:00 ~ 23:59</td>
</tr>
<tr>
<td>#3 [OFF TIMER]</td>
<td>Set the OFF Timer time.</td>
<td>OFF/00:00 ~ 23:59</td>
</tr>
<tr>
<td><strong>ARTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1 [BCLO]</td>
<td>Enables/disables the Busy Channel Lock-Out feature.</td>
<td>ON/OFF</td>
</tr>
<tr>
<td>#2 [HOME/REV]</td>
<td>Selects the function of the [HM/REV(EMG)] key.</td>
<td>HOME/REV</td>
</tr>
<tr>
<td>#3 [MON-T-CAL]</td>
<td>Enables/disables the MON-F keys on the left side of the radio.</td>
<td>MON/T-CAL*3</td>
</tr>
<tr>
<td>#4 [MON-F CHANGE]</td>
<td>Exchange the functions between the MON-F&quot; key and the MON keys on the left side of the radio.</td>
<td>–</td>
</tr>
<tr>
<td><strong>Misc Setup</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1 [SQL TYPE]</td>
<td>Selects the SQL Type.</td>
<td>OFF/TONE/TONE SQL/DCS</td>
</tr>
<tr>
<td>#2 [SQL SET]</td>
<td>Setting of the SQL Tone Frequency.</td>
<td>50 standard SQL tones</td>
</tr>
<tr>
<td>#3 [SQL COMPLEMENT]</td>
<td>Enables/Disables “Inverted” SQL code decoding.</td>
<td>ENABLE/DISABLE</td>
</tr>
<tr>
<td>#4 [SQL BELL]</td>
<td>Selects the SQL Bell ringer repetitions.</td>
<td>OFF/1/3/5/8/CONTINUE</td>
</tr>
<tr>
<td>#5 [SQL SPLIT TONE]</td>
<td>Enables/disables split SQL/CSS/DCS coding.</td>
<td>OFF/ON</td>
</tr>
<tr>
<td>#6 [SQL DTMF DIALER]</td>
<td>Enables/disables the SQL Autodial feature.</td>
<td>ON/OFF</td>
</tr>
<tr>
<td>#7 [SQL DTMF SET]</td>
<td>Programming of the SQL Autodial.</td>
<td>–</td>
</tr>
</tbody>
</table>

**Basic Setup #1 [SQL NFM]**
*Function:* Sets the Squelch threshold level for the AM and FM-Narrow modes.
*Available Values:* 0 ~ 15
*Default:* 1

**Basic Setup #2 [SQL WFM]**
*Function:* Sets the Squelch threshold level for the FM-Wide mode.
*Available Values:* 0 ~ 8
*Default:* 2

**Basic Setup #3 [VFO STEP]**
*Function:* Setting of the synthesizer steps.
*Available Values:* 5/9/10/12.5/15/20/25/50/100 kHz
*Default:* Depends on the transceiver version.

**Basic Setup #4 [RX MODE]**
*Function:* Selects the Operating mode.
*Available Values:* AUTO/N-FM/AM/W-FM
*Default:* AUTO (Mode automatically changes according to operating frequency)

**Basic Setup #5 [ARS]**
*Function:* Enables/disables the Automatic Repeater Shift function.
*Available Values:* ON/OFF
*Default:* ON

**Basic Setup #6 [SHIFT]**
*Function:* Sets the magnitude of the Repeater Shift.
*Available Values:* 0.00 ~ 99.95 MHz
*Default:* Depends on the transceiver version.

**Basic Setup #7 [RPT SHIFT]**
*Function:* Sets the Repeater Shift Direction
*Available Values:* +RPT/+RPT/SIMP
*Default:* Depends on the transceiver version.

**Basic Setup #8 [MUTE SET]**
*Function:* Enables/disables the Audio Mute feature while using Dual Band reception.
*Available Values:* ON/OFF
*Default:* OFF

**Basic Setup #9 [KEY BEEP]**
*Function:* Enables/disables the Keypad beeper.
*Available Values:* ON/OFF
*Default:* ON
Basic Setup #10 [LOCK MODE]
Function: Selects the Control Locking lockout combination.
Available Values: KEY/DIAL/KEY+DIAL/PTT/KEY+PTT/DIAL+PTT/ALL
Default: KEY

Basic Setup #11 [NAME SET]
Function: Stores Alpha-Numeric “Tags” for the Memory channels. See page 48 for details.

Basic Setup #12 [MEMORY WRITE MODE]
Function: Selects the method of selection of channels for Memory Storage.
Available Values: LOWER CH/NEXT CH
Default: LOWER CH
LOWER CH: Stores in the next-available “free” channel
NEXT CH: Store in the memory channel which is next-highest from the last-stored memory channel.

Basic Setup #13 [MEMORY SCAN MODE]
Function: Selects what action will happen on a “flagged” Memory Channel.
Available Values: OFF/SKIP/PREFERENTIAL
Default: OFF
SKIP: The scanner will “skip” the flagged channels during scanning.
PREFERENTIAL: The scanner will only scan channels that are flagged (Preferential Scan List).

Basic Setup #14 [HYPER WRITE]
Function: Enables/disables the Hyper Memory Write feature
Available Values: ENABLE/DISABLE
Default: ENABLE

Display Setup #1 [BUSY LED]
Function: Enables/disables the BUSY LED (“STROBE”) while the Squelch is open.
Available Values: ON/OFF
Default: ON (“STROBE” lights up when the Squelch is open)

Display Setup #2 [CONTRAST]
Function: Setting of the Display contrast level.
Available Values: 1 ~ 10
Default: 7

Display Setup #3 [DIMMER]
Function: Setting of the Display brightness level.
Available Values: 1 ~ 12
Default: 10
**SET MODE**

**Display Setup #4 [DISPLAY MODE]**

**Function:** Selects the display while the transceiver’s power is off

**Available Values:** NONE/TEMP/BARO/ALTI/TEMP+BARO/TEMP+ALTI/ALL

**Default:** NONE

- **NONE:** No display when the transceiver is off.
- **TEMP:** Display of the current time plus temperature when the transceiver is off.
- **BARO:** Display of the current time plus barometric pressure when the transceiver is off (requires optional SU-1).
- **ALTI:** Display of the current time plus the current altitude when the transceiver is off (requires optional SU-1).
- **TEMP+BARO:** Display of the current time, Temperature, and barometric pressure.
- **TEMP+ALTI:** Display of the current time, Temperature, and altitude.
- **ALL:** Display of the current time, temperature, barometric pressure, and altitude.

1) *The current time will always be displayed when the transceiver is off, except when “NONE” is selected.*

2) *The barometric pressure and altitude information require the optional SU-1.*

**Display Setup #5 [LAMP MODE]**

**Function:** Selects the LCD/Keypad Lamp mode.

**Available Values:** KEY /CONTINUE/OFF

**Default:** KEY

- **KEY:** Illuminates the LCD/Keypad for 5 seconds when any key is pressed.
- **CONTINUE:** Pressing the LAMP key toggles LCD/Keypad lamp On/Off.
- **OFF:** Disables the LCD/Keypad Lamp.

**Display Setup #6 [LED COLOR 1]**

**Function:** Edits the “STROBE” color.

Individual adjustments of the Red, Green, and Blue color hue may be performed, on a numerical scale of 0 to 255. See page 79 for details.

<table>
<thead>
<tr>
<th>LED No.</th>
<th>COLOR</th>
<th>R</th>
<th>G</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green</td>
<td>0</td>
<td>45</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Blue</td>
<td>0</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>3</td>
<td>Orange</td>
<td>57</td>
<td>46</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Red</td>
<td>51</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Purple</td>
<td>50</td>
<td>0</td>
<td>44</td>
</tr>
<tr>
<td>6</td>
<td>Sky Blue</td>
<td>0</td>
<td>42</td>
<td>44</td>
</tr>
<tr>
<td>7</td>
<td>Yellow Green</td>
<td>47</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Milky White</td>
<td>50</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>9</td>
<td>Violet</td>
<td>50</td>
<td>0</td>
<td>49</td>
</tr>
<tr>
<td>0</td>
<td>White</td>
<td>255</td>
<td>255</td>
<td>255</td>
</tr>
</tbody>
</table>
**Display Setup #7 [LED COLOR 2]**

**Function:** Selects the “STROBE” color for each operating status.

- **Main BUSY:** Sets the STROBE color displayed while the squelch is open on the “Main” band (Default: 1).
- **Sub BUSY:** Sets the STROBE color displayed while the squelch is open on the “Sub” band (Default: 2).
- **DUAL BUSY:** Sets the STROBE color displayed during Dual Receive operation (Default: 3).
- **Main TX:** Sets the STROBE color displayed while transmitting on the “Main” band (Default: 4).
- **Sub TX:** Sets the STROBE color displayed while transmitting on the “Sub” band (Default: 5).
- **CHG Complete:** Set the STROBE color displayed when battery charging is finished (Default: 2).

*In this mode, press the key to enable the setting of the “STROBE” color, and press the key again to exit from this item. See page 79 for details.*

**Display Setup #8 [METER SYMBOL]**

**Function:** Selects the S- & TX PO meter Symbol.

**Available Values:** Six patterns

- **S1:**
- **S2:**
- **S3:**
- **S4:**
- **S5:**
- **CHR:** 12345678

**Default:** S1: 

The default “12345678” symbol which is used for last meter type may be replaced by several other symbols. See page 76 for details.

**TSQ/DCS/DTMF #1 [SQL TYPE]**

**Function:** Selects the Tone Encoder and/or Decoder mode.

**Available Values:** OFF/TONE/TONE SQL/DCS

**Default:** OFF

- **TONE:** CTCSS Encoder
- **TONE SQL:** CTCSS Encoder/Decoder
- **DCS:** Digital Coded Squelch Encoder/Decoder
SET MODE

TSQ/DCS/DTMF #2 [TONE SET]
Function: Setting of the CTCSS Tone Frequency
Available Values: 50 standard CTCSS tones
Default: 100.0 Hz

In this mode, press the key to enable the setting of the tone, and press the key again to exit from this item.

<table>
<thead>
<tr>
<th>CTCSS TONE FREQUENCY (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>67.0</td>
</tr>
<tr>
<td>82.5</td>
</tr>
<tr>
<td>100.0</td>
</tr>
<tr>
<td>123.0</td>
</tr>
<tr>
<td>151.4</td>
</tr>
<tr>
<td>171.3</td>
</tr>
<tr>
<td>189.9</td>
</tr>
<tr>
<td>210.7</td>
</tr>
<tr>
<td>250.3</td>
</tr>
</tbody>
</table>

TSQ/DCS/DTMF #3 [DCS SET]
Function: Setting of the DCS code.
Available Values: 104 standard DCS codes.
Default: 023

In this mode, press the key to enable the setting of the DCS code, and press the key again to exit from this item.

<table>
<thead>
<tr>
<th>DCS CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>023 025 026 031 032 036 043 047 051 053</td>
</tr>
<tr>
<td>054 065 071 072 073 074 114 115 116 122</td>
</tr>
<tr>
<td>125 131 132 134 143 145 152 155 156 162</td>
</tr>
<tr>
<td>165 172 174 205 212 223 225 226 243 244</td>
</tr>
<tr>
<td>245 246 251 252 255 261 263 265 266 271</td>
</tr>
<tr>
<td>274 306 311 315 325 331 332 343 346 351</td>
</tr>
<tr>
<td>356 364 365 371 411 412 413 423 431 432</td>
</tr>
<tr>
<td>445 446 452 454 455 462 464 465 466 503</td>
</tr>
<tr>
<td>506 516 523 526 532 546 565 606 612 624</td>
</tr>
<tr>
<td>627 631 632 654 662 664 703 712 723 731</td>
</tr>
<tr>
<td>732 734 743 754</td>
</tr>
</tbody>
</table>

TSQ/DCS/DTMF #4 [DCS COMPLEMENT]
Function: Enables/Disables “Inverted” DCS code decoding.
Available Values: ENABLE/DISABLE
Default: DISABLE

TSQ/DCS/DTMF #5 [BELL]
Function: Selects the CTCSS Bell ringer repetitions.
Available Values: OFF/1/3/5/8/CONTINUE
Default: OFF
TSQ/DCS/DTMF #6 [SPLIT TONE]
Function: Enables/disables split CTCSS/DCS coding.
Available Values: OFF/ON
Default: OFF
When this Menu Item is set to ON, you can see the following additional parameters after the “DCS” parameter while selecting the Menu Item (TSQ/DCS/DTMF #1: SQL TYPE):
D CODE: DCS Encode only (“D” icon will appear while operating)
TONE DC: Encodes a CTCSS Tone and Decodes a DCS code
   (the “T•D” icon will appear during operation)
DC TONE: Encodes a DCS code and Decodes a CTCSS Tone
   (the “D•T” icon will appear during operation)
Select the desired operating mode from the selections shown above.

TSQ/DCS/DTMF #7 [DTMF DIALER]
Function: Enables/disables the DTMF Autodial feature.
Available Values: ON/OFF
Default: OFF

TSQ/DCS/DTMF #8 [DTMF SET]
Function: Programming of the DTMF Autodialer. See page 38 for details.

Scan Modes #1 [CH COUNTER]
Function: Selects the Channel Counter Search Width.
Available Values: ±5 MHz/±10 MHz/±50 MHz/±100 MHz
Default: ±5 MHz

Scan Modes #2 [EDGE BEEP]
Function: Enables/disables the Band-edge beeper while selecting the frequency by the DIAL.
Available Values: ON/OFF
Default: OFF
When this Menu Item is set to “ON,” a beep will sound when the frequency reaches the band edge while selecting the VFO frequency by the DIAL.
Scan Modes #3 [RESUME]

**Function:** Selects the Scan Resume mode.

**Available Values:** 3SEC/5SEC/7SEC/10SEC/BUSY/HOLD

**Default:** 5 SEC

- **3SEC/5SEC/7SEC/10SEC:** The scanner will hold for the selected period (seconds), then resume whether or not the other station is still transmitting.
- **BUSY:** The scanner will hold until the signal disappears, then will resume when the carrier drops.
- **HOLD:** The scanner will stop when a signal is received, and will not restart.

Scan Modes #4 [SCAN LAMP]

**Function:** Enables/disables the Scan lamp while paused.

**Available Values:** ON/OFF

**Default:** ON

Scan Modes #5 [SMART SEARCH]

**Function:** Selects the Smart Search Sweep mode.

**Available Values:** 1/CONTINUOUS

**Default:** 1

- **1:** The transceiver sweeps the current band once in each direction starting on the current frequency. All channels where activity is present (up to 15 in each direction) are loaded into the Smart Search memories. Whether or not all 31 memories are filled, the search stops after one sweep in each direction.

- **CONTINUOUS:** The transceiver makes a sweep in each direction as with the “1(SINGLE)” mode, but if all 31 channels are not filled after the first sweep, the radio continues sweeping until they are all filled.

Scan Modes #6 [SPEC-ANALYZER 1]

**Function:** Selects the Spectrum Analyzer Sweep mode.

**Available Values:** 1/CONTINUOUS

**Default:** 1

- **1:** The transceiver sweeps the current band once.

- **CONTINUOUS:** The transceiver sweeps the current band repeatedly until the Spectrum Analyzer is turned off

Scan Modes #7 [SPEC-ANALYZER 2]

**Function:** Enables/disables the audio output of the center frequency (▼) when the Spectrum Analyzer is activated in the Amateur band.

**Available Values:** ON/OFF

**Default:** OFF
Measurement #1 [SENSOR DISPLAY]
Function: Selects the display of the sensor units’ information.
Available Values: TIME/DC/TEMP/WAVE/BARO/ALTI/WX/OFF
Default: TIME

*The barometric pressure (BARO), altitude (ALTI), and Weather (WX) information require the optional SU-1.*

Measurement #2 [WAVE MONITOR]
Function: Select the Wave Form to be monitored.
Available Values: ALL/RX SIGNAL/TX MODULATION
Default: ALL
ALL: Indicates the RX Audio wave form and TX Audio modulation wave form.
RX SIGNAL: Indicates the RX Audio modulation wave form.
TX MODULATION: Indicates the TX Audio modulation wave form.

Measurement #3 [TEMP UNIT]
Function: Selects the measurement units for the Temperature sensor.
Available Values: °C/°F
Default: Depends on the transceiver version

Measurement #4 [BARO UNIT]
Function: Selects the measurement units for the Barometric Pressure sensor (requires optional SU-1).
Available Values: hpa/mbar/mmHg/inch
Default: Depends on the transceiver version

Measurement #5 [BARO OFFSET]
Function: Correcting the Barometric Pressure (requires optional SU-1). See page 70 for details.

Measurement #6 [ALTITUDE UNIT]
Function: Select the measurement units for the Altimeter (requires optional SU-1).
Available Values: m/ft
Default: Depends on the transceiver version

Measurement #7 [ALTITUDE OFFSET]
Function: Correcting the Altimeter (requires optional SU-1). See page 71 for details.

Save Modes #1 [APO]
Function: Setting of the Automatic Power-Off time.
Available Values: OFF/30 min/1 hour/3 hours/5 hours/8 hours
Default: OFF
**SET MODE**

**Save Modes #2 [RX SAVE]**
Function: Selects the Receive-mode Battery Saver interval (“sleep” ratio).
Available Values: OFF/200mS(1:1)/300mS(1:1.5)/500mS(1:2.5)/1s(1:5)/2s(1:10)
Default: 200mS(1:1)

**Save Modes #3 [TX SAVE]**
Function: Enables/disables the Transmit Battery Saver.
Available Values: ON/OFF
Default: OFF

**Save Modes #4 [TOT]**
Function: Setting of the TOT time.
Available Values: OFF/1 min/2.5 min/5 min/10 min
Default: OFF
The time-out timer shuts off the transmitter after continuous transmission of the programmed time.

**Save Modes #5 [ON TIMER]**
Function: Set the ON Timer time.
Available Values: OFF/00:00 ~ 23:59
Default: OFF
The ON Timer turns on the radio at the programmed time.

**Save Modes #6 [OFF TIMER]**
Function: Set the OFF Timer time.
Available Values: OFF/00:00 ~ 23:59
Default: OFF
The OFF Timer turns off the radio at the programmed time.

**ARTS #1 [ARTS BEEP]**
Function: Select the Beep option during ARTS operation.
Available Values: IN RANGE/ALWAYS/OFF
Default: IN RANGE
RANGE: Beeps sound only when the radio first detects that you are within range.
ALWAYS: Beeps sound every time a polling transmission is received from the other station (every 15 or 25 seconds when in range).
OFF: No alert beeps sound.

**ARTS #2 [ARTS INTERVAL]**
Function: Select the Polling Interval during ARTS operation.
Available Values: 15 SEC/25 SEC
Default: 25 SEC
This setting determines how often the other station will be polled during ARTS operation.
**ARTS #3 [CW ID]**
**Function:** Program and activate the CW Identifier (used during ARTS operation). See page 37 for details.

**Misc Setup #1 [BCLO]**
**Function:** Enables/disables the Busy Channel Lock-Out feature.
**Available Values:** ON/OFF
**Default:** OFF

**Misc Setup #2 [HOME/REV]**
**Function:** Selects the function of the key.
**Available Values:** HOME/REV
**Default:** Depends on the transceiver version.
**HOME:** Pressing this key instantly recalls a favorite “Home” channel.
**REV:** Pressing this key reverses the transmit and receive frequencies during repeater operation.

**Misc Setup #3 [MONI/T-CAL]**
**Function:** Selects the MONI key (just below the PTT switch) function.
**Available Values:** MONI/T-CAL
**Default:** Depends on the transceiver version.
**MONI:** Pressing the MONI key causes the Noise/Tone Squelch to be over-ridden, allowing you to listen for weak (or non-encoded) signals.
**T-CAL:** Pressing the MONI key activates a 1750-Hz burst tone, used for repeater access in many countries.
**SET MODE**

**Misc Setup #4 [MON-F CHANGE]**

**Function:** Exchange the functions between the MON key and the MONI keys on the left side of the radio.

**Available Values:** FUNC/MONI

**Default:** FUNC

FUNC: The MON key is defined as the “Alternate” function key. Press the MON key to activate the “Secondary” key mode. Meanwhile, the MONI key is defined as the “Monitor” function, which overrides the Noise and Tone Squelch quieting systems.

MONI: The MONI key is defined as the “Monitor” function, which overrides the Noise and Tone Squelch quieting systems. Meanwhile, the MONI key is defined as the “Alternate” function key. The “Secondary” key mode is activated while pressing and holding in the MONI key.

**Important Note:** When you define the left side of the MONI key to be the “Alternate” function ("MONI" selected), the “Alternate” function is activated while pressing and holding in the MONI key, NOT by pressing and holding in the MONI key for 2 second.

**Example:**
(1) To enter the Set mode, press the MON key while pressing and holding in the MONI key.
(2) To store a frequency into a memory channel.
   1. Select the desired frequency.
   2. Press the MON key while pressing and holding in the MONI key.
   3. Rotate the DIAL to select the desired memory channel, as desired.
   4. Press the MON key to store the frequency into the selected memory.

**Misc Setup #5 [EMG SET]**

**Function:** Select the alarms utilized when the Emergency function is engaged.

**Available Values:** BEEP+STROBE/BEEP/STROBE1/STROBE2/STROBE3/STROBE4/STROBE5/BEAM

**Default:** BEEP+STROBE

BEEP+STROBE: Loud “Alarm” sounds along with flashing of the STROBE in sequential colors.

BEEP: Loud “Alarm” sounds.

STROBE1: Flashes the STROBE in sequential colors.

STROBE2: Continuation changes the STROBE in sequential colors.

STROBE3, STROBE4, & STROBE5: Flashes the STROBE in white (3: Slow flashing, 4: Medium flashing, 5: Rapid flashing)

BEAM: The STROBE glows continuously in white.
SMTP MODE

Misc Setup #6 [HALF DEVIATION]
Function: Reducing the Deviation level by 50%.
Available Values: ON/OFF
Default: OFF

Misc Setup #7 [VOX SENS]
Function: Enables/disables VOX operation; sets VOX sensitivity.
Available Values: OFF/HIGH/LOW
Default: OFF

Misc Setup #8 [VOX DELAY]
Function: Selects the VOX delay (“hang”) time.
Available Values: 0.5S/1S/2S
Default: 0.5S

Misc Setup #9 [BAND LINK]
Function: Enables/disables the BAND Link feature.
Available Values: ON/OFF
Default: OFF
When this feature is set to “ON,” the “Main” and “Sus” bands are “slaved” so that they change frequency together.

Misc Setup #10 [VFO MODE]
Function: Selects or disables the VFO Band edge for the current band.
Available Values: ALL/BAND
Default: BAND
ALL: When the VFO frequency reaches the high edge of the current band, the VFO frequency will jump to the low band edge of the next band (or vice versa).
BAND: When the VFO frequency reaches the high band edge of the current band, the VFO frequency will jump to the low band edge of the current band (or vice versa).

Misc Setup #11 [FONT EDITOR]
Function: Editing of the User font. See page 77 for details.

Misc Setup #12 [ICON SET]
Function: Enables/disables the Icon display.
Available Values: ON/OFF
Default: OFF

Misc Setup #13 [ICON EDITOR]
Function: Editing of the User Icon. See page 74 for details.

Misc Setup #14 [ICON SELECT]
Function: ICON selection. See page 73 for details.
SET MODE

Misc Setup #15 [CLOCK SHIFT]
Function: Shifting of CPU clock frequency.
Available Values: ON/OFF
Default: OFF
This function is only used to move a spurious response “birdie,” should it fall on a desired frequency.

Misc Setup #16 [TIME SET]
Function: Sets the Clock time. See page 69 for details.

Misc Setup #17 [LANGUAGE]
Function: Selects the language for the Set (Menu) mode selections.
Available Values: ENGLISH/JAPANESE
Default: ENGLISH

Misc Setup #18 [ATT]
Function: Enables/disables the Front-end Attenuator.
Available Values: ON/OFF
Default: OFF

Misc Setup #19 [MIC MONITOR]
Function: Enables/disables the Microphone Monitor feature.
Available Values: ON/OFF
Default: OFF

Misc Setup #20 [WX ALERT]
Function: Enables/disables the Weather Alert Feature
Available Values: ON/OFF
Default: OFF
Installation of the SU-1 (Option)

1. Make sure that the transceiver is off. Remove the hard or soft case, if used.
2. Remove the battery pack.
3. Locate the connector for the SU-1 under the caution seal in the battery compartment on the back of the radio, just peel off the caution seal.
4. Align the connector on the SU-1 with the transceiver’s connector and gently press the unit into place.
5. Affix the new (supplied) caution seal, and replace the battery.
6. Installation is now complete.

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Important note

The Barometric Pressure/Altitude features of the optional SU-1 are designed to be supplemental aids for the information of the user, and are not intended to be a substitute for accurate, calibrated Barometer or Altimeter devices used for navigation critical to personal safety.
SPECIFICATIONS

General

Frequency Ranges:  
MAIN Rx: 05-1.8 MHz (BC Band)  
1.8-30 MHz (SW Band)  
30-59 MHz (50 MHz HAM: USA version)  
30-76 MHz (50 MHz HAM: EXP version)  
59-108 MHz (FM: USA version)  
76-108 MHz (FM: EXP version)  
108-137 MHz (Air Band)  
137-174 MHz (144 MHz HAM)  
174-222 MHz (VHF-TV)  
222-225 MHz (220 MHz HAM: USA version)  
225-420 MHz (ACT1: Action Band 1: USA version)  
222-420 MHz (ACT1: Action Band 1: EXP version)  
420-470 MHz (430 MHz HAM)  
470-729 MHz (UHF-TV: USA version)  
470-800 MHz (UHF-TV: EXP version)  
800-999 MHz (ACT2: Action Band 2, cellular Blocked)  
SUB Rx: 50-54 MHz  
137-174 MHz  
420-470 MHz  

Tx: 50-54 MHz (MAIN & SUB)  
144-146 MHz or 144-148 MHz (MAIN & SUB)  
222-225 MHz (MAIN, USA version)  
430-440 MHz or 430-450 MHz (MAIN & SUB)  
470-729 MHz (UHF-TV: USA version)  
470-800 MHz (UHF-TV: EXP version)  
800-999 MHz (ACT2: Action Band 2, cellular Blocked)

Channel Steps: 5/9/10/12.5/15/20/25/50/100 kHz

Emission Type: F2, F3, A3

Frequency Stability: ±5 ppm (–10 °C to +50 °C [+14 °F to +122 °F])

Repeater Shift: ±600 kHz (144 MHz), ±1.6 MHz (222 MHz), ±1.6/5.0/7.6 MHz (430 MHz)

Emission Type: A3/F2/F3

Antenna Impedance: 50 Ohms

Supply Voltage: Nominal: 7.4 V DC, Negative Ground  
Operating: 10-16 V DC, Negative Ground (EXT DC jack)

Current Consumption:  
200 mA (Mono Band Receive)  
(Approx.)  
240 mA (Dual Band Receive)  
67 mA (Mono Band Receive, Standby, Saver Off)  
100 mA (Dual Band Receive, Standby, Saver Off)  
28 mA (Mono Band Receive, Standby, Saver On “Save Ratio 1:5”)  
34 mA (Dual Band Receive, Standby, Saver On “Save Ratio 1:5”)  
200 µA (Auto Power Off)  
1.6 A (50 MHz, 5 W Tx)  
1.7A (144 MHz, 5W Tx)  
1.0 A (220 MHz, 0.3 W Tx)  
1.9 A (430 MHz, 5W Tx)

Operating Temperature: –20 °C to +60 °C (–4 °F to +140 °F)

Case Size (W x H x D): 60 x 90 x 28.5 mm (2.4 x 3.5 x 1.1 inch) w/o knob & antenna

Weight (Approx.): 260 g (9.2 oz) with FNB-80LI & antenna
**Transmitter**

**RF Power Output:**  
5.0 W (@7.4 V & 13.8 V EXT DC IN)  
0.3W (@7.4 V & 13.8 V EXT DC IN, 222 MHz)  
1.0W (@7.4 V & 13.8 V EXT DC IN, 50 MHz AM)

**Modulation Type:**  
F2, F3: Variable Reactance (MAIN & SUB)  
A3: Low Level Amplitude Modulation (MAIN, 50 MHz)

**Maximum Deviation:**  
±5 kHz F2/F3

**Spurious Emission:**  
At least 60 dB down (@ Tx HI/L3)  
At least 50 dB down (@ Tx L2/L1)

**Microphone Impedance:** 2K Ohms

**Receiver**

**Circuit Type:**  
N-FM, AM: Double-Conversion Superheterodyne  
W-FM: Triple-Conversion Superheterodyne

**IF:**  
MAIN Rx  
1st: 47.25 MHz (N-FM, AM), 45.8 MHz (W-FM)  
2nd: 450 kHz (N-FM, AM), 10.7 MHz (W-FM)  
3rd: 1 MHz (W-FM)

SUB Rx  
1st: 46.35 MHz  
2nd: 450 kHz

**Sensitivity:**  
MAIN Rx:  
3.0 µV for 10 dB S/N (0.5-30 MHz, AM)  
0.5 µV (TYP) for 12 dB SINAD (30-50, N-FM)  
0.16 µV for 12 dB SINAD (50-54, N-FM)  
1.0 µV (TYP) for 12 dB SINAD (57-76, N-FM)  
1.0 µV (TYP) for 12 dB SINAD (76-108, W-FM)  
1.5 µV (TYP) for 10 dB SN (108-137, AM)  
0.2 µV for 12 dB SINAD (137-140, N-FM)  
0.16 µV for 12 dB SINAD (140-150, N-FM)  
0.2 µV for 12 dB SINAD (150-174, N-FM)  
0.3 µV for 12 dB SINAD (174-225, N-FM)  
0.5 µV for 12 dB SINAD (300-350, N-FM)  
0.2 µV for 12 dB SINAD (350-400, N-FM)  
0.18 µV for 12 dB SINAD (400-470, N-FM)  
0.35 µV for 12 dB SINAD (470-540, W-FM)  
3.0 µV (TYP) for 12 dB SINAD (540-800, W-FM)  
1.0 µV (TYP) for 12 dB SINAD (800-999, N-FM) (Cellular Blocked)

SUB Rx:  
0.18 µV for 12 dB SINAD (50-54, N-FM)  
0.18 µV for 12 dB SINAD (137-174, N-FM)  
0.2 µV for 12 dB SINAD (420-470, N-FM)

**Selectivity:**  
12 kHz/25 kHz (–6dB/–60dB: N-FM, AM)  
200 kHz/300 kHz (–6dB/–20dB: W-FM)

**AF Output:**  
200 mW @ 8 Ohms for 10 % THD (@ 7.4 V DC)  
400 mW @ 8 Ohms for 10 % THD (@ 13.8 V DC)

*Specifications are subject to change without notice, and are guaranteed within the 50/144/222/430 MHz amateur bands only.*
Using your VX-7R for Low-Earth-Orbit FM Satellite Communication

Several Low-Earth-Orbit satellites, such as UO-14 and AO-27, utilize a single-channel FM “repeater in the sky” transponder, affording low-power stations the opportunity to make contacts with other stations thousands of miles away. Communication generally is most easily possible when using a hand-held transceiver (like the VX-7R) in conjunction with a small beam antenna, so as to improve your uplink signal.

Because the satellites are moving rapidly, you must compensate for Doppler Shift on the satellite signal. This is best accomplished by utilizing five “split” memory channels, covering sufficient frequency combinations, on the 144 and 430 MHz bands, to allow complete frequency coverage with quick selection.

Example: Set up for operation on UO-14’s transponder:

Set up your VX-7R with five “odd split” memories as shown at the right, to compensate for Doppler Shift:

<table>
<thead>
<tr>
<th>CH #</th>
<th>Rx Freq</th>
<th>Tx Freq</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>435.080 MHz</td>
<td>145.9700 MHz</td>
<td>AOS</td>
</tr>
<tr>
<td>2</td>
<td>435.075 MHz</td>
<td>145.9725 MHz</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>435.070 MHz</td>
<td>145.9750 MHz</td>
<td>Mid Pass</td>
</tr>
<tr>
<td>4</td>
<td>435.065 MHz</td>
<td>145.9775 MHz</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>435.060 MHz</td>
<td>145.9800 MHz</td>
<td>LOS</td>
</tr>
</tbody>
</table>

AOS = Acquisition of Signal (Beginning of Pass)
LOS = Loss of Signal (End of Pass)

At the start of the pass, set to Channel 1. As the pass progresses, rotate the channel selector to choose the channel with the best downlink signal. The satellite moves fast (the optimum channel will change every three minutes!) so be alert. Keep calls short, as much of your continent will be calling on a single FM channel!

More information on UO-14 and other satellites may be found on the Web site of the Amateur Satellite Corporation: www.amsat.org (or on other satellite-based Web sites).
1. Changes or modifications to this device not expressly approved by VERTEX STANDARD could void the user’s authorization to operate this device.

2. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions; (1) this device may not cause harmful interference, and (2) this device must accept any interference including interference that may cause undesired operation.

3. The scanning receiver in this equipment is incapable of tuning, or readily being altered, by the User to operate within the frequency bands allocated to the Domestic public Cellular Telecommunications Service in Part 22.

This device complies with RSS-210 of Industry Canada. Operation is subject to the following two conditions; (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesirable operation of the device.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.