



Vertex Standard

CE27 EEPROM PROGRAMMING SOFTWARE REFERENCE MANUAL

The CE27 is used to program the VXR-7000 Desktop Repeater. With the CE27 Programming Software, you can quickly and easily program the Vertex VXR-7000 repeater's channels and configuration from your personal computer. In the event of an accidental memory failure, repeater memory and configuration data may be re-loaded in a matter of minutes.

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Important Note!

Do not work directly with the CE27 programming diskette. Make a copy of it and use the copy when programming the VXR-7000. Keep it and the original distribution diskette in a safe place in case you need to make another copy of it later.

INSTALLING THE PROGRAM

The CE27 programming diskette contains the following files:

- ☐ CE27.EXE
- ☐ CE27.HLP

Before connecting the VXR-7000 for programming, turn off both the computer and the VXR-7000. Now connect the VPL-1 Connection Cable to the computer's serial port and the VXR-7000 front panel **MIC** jack.

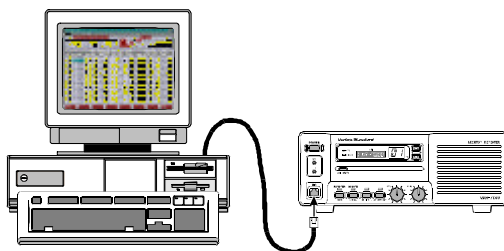
Then it will be safe to restart the computer; turning off the equipment during interconnection avoids the potential for damage to the electronics caused by voltage spikes.

Insert the distribution diskette into your 3½" drive (after booting DOS), and make a copy of the diskette; use the distribution diskette for archive purposes, and use the disk copy for programming.

Place the CE27 (copy) diskette into your 3½" drive (usually "Drive A"), and log onto this drive by typing "**A:** [**ENTER**]", then load the contents of the CE27 diskette into a directory named CE27, using the COPY command (e.g. "**COPY A:*. * C:\CE27**").

Now type "**CE27** [**ENTER**]" to start the program. The introductory screen will appear, and you may press any key to enter the main screen.

Choose the "Help" contents option ([**F1**] key) from the program's Menu for assistance with channel programming or setting of parameters.



VXR-7000 Programming Setup

Important Note!

Before creating the programming data via the CE27 programming software, upload the current hardware environment data from the repeater by [**F5**] (ReadRom) key, first time. See page 9 for details regarding the [**F5**] (ReadRom) key.

THE CHANNEL PROGRAMMING SCREEN

The main Screen consists of four major sections: **Common Data Items**, **Key Help**, **Channel Data**, and **Function Key Selections**.

Common Data Items

At the upper left are found the **Edit**, **Band**, **Serial No.** and **COM Port** items, which are “Common” Data items that you may need to refer to when making entries in the Channel Data.

The **Edit** entry is the name of the current data file being edited, if any. If no file has been read (via the [F3] key, “**DiskLoad**” function) or Saved (via the [F4] key, “**DiskSave**” function), “**noname.rpt**” is displayed here.

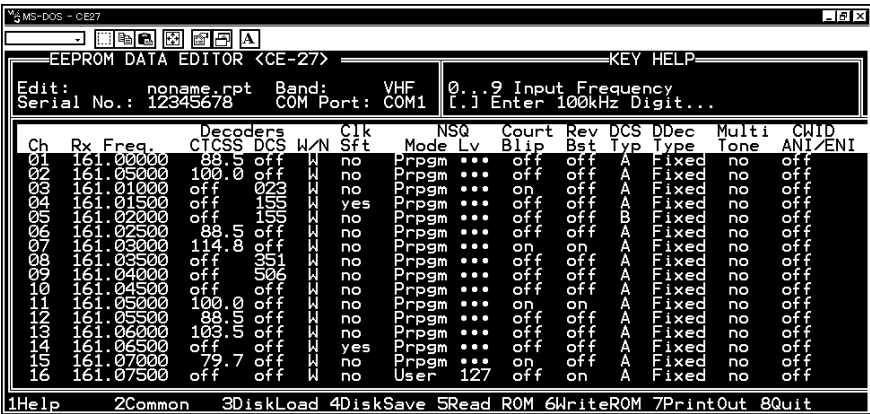
The **Band** entry indicates the operating frequency band of your repeater. “**VHF**” or “**UHF**” are automatically set and should *not be altered* unless you change repeaters.

The **Serial No.** entry indicates your repeater’s product identification number. The product number is entered from the “**HARDWARE ENVIRONMENT**” window. See page 19 for details.

The **COM Port** entry indicates which Serial Port on your computer is to be connected to the **VPL-1** Control Cable.

Common Data cannot be changed from this screen.

CE27 Main Screen (Left)



THE CHANNEL PROGRAMMING SCREEN

Ch: *Channel Number.*

This 2-digit number (“01” ~ “16”) is used to identify the channel. Channel numbers occur in sequence, and their order can not be changed.

Rx Freq.: *Edit Receive (or simplex) Frequency.*

Use the [0] ~ [9] keys to enter the desired channel frequency directly, and press the [ENTER] key.

Decoders CTCSS: *Toggle CTCSS Decoder ON/OFF, set CTCSS Frequency.*

Press the [SPACE] bar to toggle the CTCSS Decoder “on” or “off,” or press the [ENTER] key to display the “**TONE SELECT**” window, from which you may select a CTCSS frequency using the [ARROW] key; press [ENTER] again to accept the selected tone, or press [Esc] key to cancel.

| Tone | Select | 71 | 74 |
|-------|--------|-------|-------|
| 67.0 | 69.3 | 71.9 | 74.4 |
| 77.0 | 79.7 | 82.2 | 85.4 |
| 88.0 | 91.1 | 94.4 | 97.4 |
| 100.0 | 103.3 | 107.7 | 110.0 |
| 114.0 | 118.8 | 123.3 | 127.7 |
| 131.0 | 136.6 | 141.1 | 146.6 |
| 151.0 | 156.6 | 162.2 | 167.9 |
| 173.0 | 179.9 | 186.6 | 192.8 |
| 205.0 | 210.7 | 218.1 | 225.7 |
| 233.0 | 241.8 | 250.3 | 259.8 |
| 183.5 | 189.9 | 196.6 | 199.5 |
| 206.5 | 229.1 | 254.1 | |

THE CHANNEL PROGRAMMING SCREEN

NSQ Lv: *Noise Squelch threshold level.*

Use the [0] ~ [9] keys to enter the desired Squelch threshold level directly, and press the [ENTER] key. Available Values are 0 (min.) ~ 255 (max.).

Court Blip: *Courtesy Blip.*

When this parameter select “**on**,” this function causes the VXR-7000 to send out a “blip” on the portable/mobile radio is frequency each time the portable radio is unkeyed. This provides audible confirmation to the user that the VXR-7000 was able to receive the transmission from the portable/mobile.

Press the [SPACE] bar to toggle “**on**” or “**off**.”

Rev Bst: *Reverse Burst.*

When this parameter is set to “**on**,” the CTCSS tone’s phase will be inverted just before the repeater returns to receive.

Press the [SPACE] bar to toggle “**on**” or “**off**.”

DSC Typ: *DCS Format.*

This command is effective only when DCS is chosen for squelch control.

A = “Normal” DCS

B = “Inverted” (complement) DCS

Press the [SPACE] bar to select the desired DCS Type.

DDec Type: *DCS Decoder Type.*

This command selects the manner in which DCS is to be decoded.

Fixed = Decodes only the type selected in the above parameter (**DCS Typ:** Normal or Inverted).

Auto = Both types (Normal and Inverted) will be decoded.

Press the [SPACE] bar to select the desired DCS Decoder Mode.

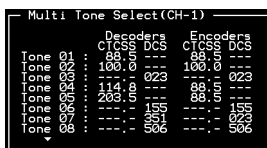
Multi Tone: *Enable/disable the Multi Tone Operation.*

Press the [SPACE] bar to toggle the Multi Tone Operation between selections “**yes**” and “**no**.”

Press the [ENTER] key to display the “**MULTI TONE SELECT**” window, from which you may select a CTCSS tone or DCS code; move the cursor to the appropriate field you using the [ARROW] key, then press the [ENTER] key to open the “**TONE SELECT**” or “**CODE SELECT**” window. Now select the desired CTCSS tone or DCS code using the [ARROW] key, then press the [ENTER] key again to accept the selected tone or code, or press [Esc] key to cancel.

You may set as many as 16 CTCSS tones and/or DCS codes.

Note that, if you do not yet program a CTCSS tone or DCS code in the “**MULTI TONE**



| Decoders | | Encoders | |
|----------|-------|----------|-----|
| CTCSS | DCS | CTCSS | DCS |
| Tone 01 | 88 | 88 | --- |
| Tone 02 | 100.0 | 100.0 | --- |
| Tone 03 | 114.0 | 023 | --- |
| Tone 04 | 114.0 | 88 | 001 |
| Tone 05 | 203.0 | 88 | 001 |
| Tone 06 | --- | 155 | --- |
| Tone 07 | --- | 561 | --- |
| Tone 08 | --- | 506 | --- |

THE CHANNEL PROGRAMMING SCREEN

LOUT: *Select the Lock Out Feature's mode.*

Press the [**SPACE**] bar to toggle the Lock Out Feature between “**BCLO**,” “**BTLO**,” or “**off**,” then press the [**ENTER**] key to accept the setting. “**BCLO**” inhibits transmitting while there is carrier present. “**BTLO**” inhibits transmitting while there is carrier present unless there is also valid tone present.

TX Pwr: *Transmitter Power Output Selection.*

This parameter selects the desired power output from the VXR-7000 on the current channel. The available values are **HIGH** and **LOW**.

Press the [**SPACE**] bar to select “**Hi**” or “**Lo**.”

TOT Mute: *Enable/disable the TOT beep monitoring.*

When this parameter is set to “**on**,” the alert beep will sound from the front panel speaker before the repeater turns itself off.

RptTOT Use: *Enable/disable the Time-Out Timer while operating in the repeater mode.*

Press the [**SPACE**] bar to toggle the Repeater TOT selections “**yes**” or “**no**.”

The TOT time is determined via the “**EDIT COMMON DATA**” window; see page 13 for details.

RptTOT Beep: *Enable/disable the TOT beep transmission.*

Press the [**SPACE**] bar to toggle the TOT beep selections “**yes**” or “**no**.”

When this parameter is set to “**yes**,” the alert beep will be sent out on the air before the repeater turns itself off, while operating in the “Repeater” mode.

RPT HT: *Enable/disable the Repeater Hang-on Timer.*

Press the [**SPACE**] bar to toggle the Repeater Hang-on Timer selections “**yes**” or “**no**.”

When this parameter is set to “**yes**,” the repeater will remain keyed for a desired number of seconds after a receiving carrier is dropped.

The Hang-on time is determined via the “**EDIT COMMON DATA**” window; see page 13 for details.

RPT GT: *Enable/disable the Repeater Guard.*

When this parameter is set to “**yes**,” the transmitter will be inhibited a desired number of seconds before the repeater is unkeyed.

The inhibit time is determined via the “**EDIT COMMON DATA**” window; see page 13 for details.

THE CHANNEL PROGRAMMING SCREEN

Function Key Selections

The main features of the program are indicated along the bottom of the screen, and are accessible by pressing the corresponding function keys ([F1] to [F8], located along the left side or top of your keyboard). You will always return to this screen after completing one of the actions listed, and can then edit channel data, select another feature, or quit.

1Help 2Common 3DiskLoad 4DiskSave 5Read ROM 6WriteROM 7PrintOut 8Quit

[F1]: Help

Pressing this key anywhere in the program will invoke the on-line help feature. The help displayed will depend on where the cursor is when the [F1] key was pressed. Pressing the [Esc] key returns you to normal program operation. If more help is available, press [F1] or [ENTER] to switch to the next help window.

```
HELP 1
(Edit Rx/Simplex Frequency & Hide/Unhide Channel Data)

Use 0 - 9 to enter the desired channel frequency, and press
Enter. This frequency will be adjusted if it does not match
the Channel Step parameter, and will also appear in the TX
Freq field. You do not need to enter all 8 digits; empty
digits to the right are zero-filled. Pressing [.] (period)
after several digits forces them to MHz. Press period first
to change only kHz.

Pressing only the Space Bar without entering a number
toggles the data for the entire channel between hidden and
unhidden (except the first channel, which cannot be hidden).
Hidden channels display "--" in place of field entries, and
are not used for operation (although they are still stored in
hidden form for possible recall later).
[ Enter/F1 ] for MORE Help, [ Esc ] to resume --
```

[F2]: Common

Press this key to display the “**EDIT COMMON DATA**” window. If you intend to edit any parameter in this window, execute the CE27 programming software with the “**D**” option (type “**CE27-D**” [ENTER]).

```
EDIT COMMON DATA
Band Select: VHF          IF:
Duplexer Installed: no    RX Reference: 21.40 MHz
Beep Enable: yes         TX Reference: 14.40 MHz
Monitor Enable: yes      TX Power Type: 14.40 MHz
1st Local Offset: Lower  DC TX Power Low: yes 50 W
2nd Local Offset: Lower  HI-Temp TX Pwr Low: no
Accessory: High/Low      Base I.O.T:
MIC, Moni Enable: yes    Base Guard Time: 3.0 Min
Fan Alert Enable: yes    Repeat I.O.I: 3.0 Min
HI-Temp Alert: yes       Repeat HangOn Time: 2.0 Sec
Hang On Audio: Quiet     Repeat Guard Time: 10 Sec
CH Step: S/6.25 KHz      CH ID:
COM Port: COM1           DTMF ANI/ENI:
                       S-Tone ANI/ENI: off RX Enable
```

See page 19 for details. Pressing the [Esc] key returns you to normal program operation.

[F3]: DiskLoad

Pressing this key displays the “**FILE DIRECTORY**” window, which downloads the data available from the disk file. Select the desired file using the [ARROW] key, then press the [ENTER] key, to download the data file. Pressing the [Esc] key returns you to normal program operation.

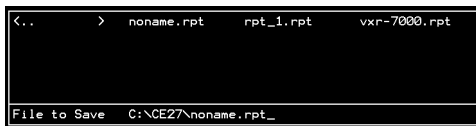
```
<.. > noname.rpt rpt_1.rpt vxr-7000.rpt

File to Load C:\CE27\*.rpt
```

THE CHANNEL PROGRAMMING SCREEN

[F4]: DiskSave

Pressing this key displays the “**FILE DIRECTORY**” window, which saves the Data to a disk file. To save the Data, type the file name (up to eight letters) with the extension “**.rpt,**” then press the **[ENTER]** key.



[F5]: Read ROM

Pressing this key uploads data from the repeater. Make the proper connections and turn on power before pressing this key.



[F6]: Write ROM

Pressing this key downloads data to the repeater.



[F7]: Print Out

Pressing this key prints a copy of the current data. Or you may use this command to view data without making any changes.

To print a displayed page on the printer, just press the **[PRINT SCREEN]** key.



[F8]: Quit

Press this key to quit the CE27 Programming Software.

“EDIT COMMON DATA” WINDOW

To open the “EDIT COMMON DATA” window, just press the [F2] (Common) key. If you intend to edit a parameter in this window, execute the CE27 programming software with the “/D” option (type “CE27-D” [ENTER]).

Band Select: *VHF/UHF Operating Band Selection.*

Press the [SPACE] bar to toggle the operating band between “VHF” or “UHF,” so as to match to your repeater’s version (VHF or UHF).

Duplexer Installed: *Duplexer Status.*

Press the [SPACE] bar to toggle the (internal Antenna) Duplexer status between “yes” and “no.” When you install the Antenna Duplexer into the repeater, this parameter must be set to “yes.”

Beep Enable: *Enable/disable the keypad beeper.*

Press the [SPACE] bar to toggle the keypad beeper selections between “yes” and “no.” When this parameter is set to “no,” the keypad beeper is disabled.

Monitor Enable: *Enable/disable the Front Panel Monitor Switch.*

Press the [SPACE] bar to toggle the Front Panel MONITOR switch function selections between “yes” and “no.” When this parameter is set to “no,” the MONITOR switch is disabled.

1st Local Offset: *Select the 1st IF Heterodyne Shift Direction.*

Press the [SPACE] bar to toggle the repeater’s 1st IF heterodyne shift direction between “Upper” and “Lower.” This parameter should not be changed (to Upper) unless your repeater is modified.

2nd Local Offset: *Select the 2nd IF Heterodyne Shift Direction.*

Press the [SPACE] bar to toggle the repeater’s 2nd IF heterodyne shift direction between “Upper” and “Lower.” This parameter should not be changed (to Upper) unless your repeater is modified.

“EDIT COMMON DATA” Window

| EDIT COMMON DATA | | | |
|---------------------|------------|---------------------|-----------|
| Band Select: | VHF | IF: | 21.40 MHz |
| Duplexer Installed: | no | RX Reference: | 14.40 MHz |
| Beep Enable: | yes | TX Reference: | 14.40 MHz |
| Monitor Enable: | yes | TX Power Type: | 50 W |
| 1st Local Offset: | Lower | DC TX Power Low: | yes |
| 2nd Local Offset: | Lower | HI-Temp TX Pwr Low: | no |
| Accessory: | High/Low | Base T.O.T: | 3.0 Min |
| MIC. Moni Enable: | yes | Base Guard Time: | 3.0 Sec |
| Fan Alert Enable: | yes | Repeat T.O.T: | 3.0 Min |
| Hi-Temp Alert: | yes | Repeat HangOn Time: | 2.0 Sec |
| Hang On Audio: | Quiet | Repeat Guard Time: | 10 Sec |
| CH Step: | 5/6.25 KHz | CW ID: | on |
| COM Port: | COM1 | DTMF ANI/ENI: | RX Enable |
| | | 5-Tone ANI/ENI: | off |

“EDIT COMMON DATA” WINDOW

Accessory: *Select the Front Panel Accessory Switch Function.*

Press the [SPACE] bar to toggle the front panel's **ACCESSORY** Switch function between “**High/Low**” and “**ACC.**”

MIC. Moni. Enable: *Enable/disable the Microphone's Monitor Button.*

Press the [SPACE] bar to toggle the microphone's Monitor Button feature between “**yes**” or “**no.**”

When using the optional Base Microphone, this parameter is set to “**yes**” to enable the microphone's Monitor Button.

Note: When this parameter is set to “**yes**,” the repeater's **MONITOR** LED glows green continuously when you unplug the Base Microphone.

Fan Alert Enable: *Enable/disable the Fan Alert Feature.*

Press the [SPACE] bar to toggle the Fan Alert feature selections between “**yes**” and “**no.**”

When this parameter is set to “**yes**,” the Channel Indicator will display an Alert Message (“**FE**”) should the cooling fan have a mechanical (accumulated dirt and dust) and/or electrical (such as a broken fan motor coil) problem.

HI-Temp Alert: *Enable/disable the HI-Temp Alert Feature.*

Press the [SPACE] bar to toggle the HI-Temp Alert feature selections between “**yes**” and “**no.**”

When this parameter is set to “**yes**,” the Channel Indicator will display an Alert Message (“**Hi**”) if the final transistor should overheat.

Hang On Audio: *Select the Hang On Audio Feature mode.*

Press the [SPACE] bar to toggle the Hang On Audio Feature between “**Quiet**” and “**Noise.**”

When this parameter is set to “**Quiet**,” the repeater's speaker will be quiet when no signal is being received.

When this parameter is set to “**Noise**,” the repeater's speaker will put out muted (20 dB down) noise when no signal is being received.

CH Step: *Select the Channel Step Size.*

Press the [SPACE] bar to toggle the channel step size between “**2.5/6.25**” and “**5/6.25.**” This allows you to select the channel step size which matches your repeater's channel step size requirements.

Selection is available in VHF repeaters only. UHF repeaters are fixed at “**5/6.25**” only.

COM Port: *Select the computer's COM Port.*

Press the [SPACE] bar to toggle the COM Port between “**COM1**” and “**COM2**,” corresponding to the COM Port to which your **VPL-1** Connection Cable is connected.

“EDIT COMMON DATA” WINDOW

IF: *1st IF Frequency.*

Use the [0] ~ [9] and [•] keys to enter the 1st IF frequency directly, and press the [ENTER] key. This parameter must not be changed (from 21.40 MHz) unless your repeater is modified.

RX Reference: *RX Reference frequency.*

Use the [0] ~ [9] and [•] keys to enter the RX Reference frequency directly, and press the [ENTER] key. This parameter must not be changed (from 14.40 MHz) unless your repeater is modified.

TX Reference: *TX Reference frequency.*

Use the [0] ~ [9] and [•] keys to enter the TX Reference frequency directly, and press the [ENTER] key. This parameter must not be changed (from 14.40 MHz) unless your repeater is modified.

TX Power Type: *Select the Maximum TX Output Power.*

Press the [SPACE] bar to toggle the maximum TX output power between “50W” and “25W.”

You can adjust the TX output power for each operating channel individually via the [F3] (TXP Adj) key.

DC Power Low:

Enable/disable the TX Power Reduction while operating on a DC Power Supply or Battery.

When this parameter is set to “yes,” the TX output power will automatically be reduced to the “LOW” power selection when a DC power source is detected. Power output will return to “HIGH” when AC power is restored.

HI-Temp TX Pwr Low:

Enable/disable the TX Power Reduction if the Final Amplifier is Overheating.

When this parameter is set to “yes,” the TX output power will automatically be reduced to the “LOW” power selection if the final amplifier is overheating.

Base T.O.T.: *Base Time-Out Timer Time Setting.*

Use the [0] ~ [9] and [•] keys to enter the desired Time-Out Timer (TOT) time (while operating in the “BASE” mode) directly, and press the [ENTER] key. Available values are 0.0 (Min) ~ 60.0 (Min) in 0.5 minute multiples.

Base Guard Time: *Base Guard Time Setting.*

Use the [0] ~ [9] keys to enter the desired Base Guard time (while operating in the “BASE” mode) directly, and press the [ENTER] key. Available values are 0 (Sec) ~ 360 (Sec) in 2 second multiples.

“EDIT COMMON DATA” WINDOW

Repeat T.O.T: *Repeater Time-Out Timer Time Setting.*

Use the [0] ~ [9] and [.] keys to enter the desired Time-Out Timer (TOT) time (while operating in the “**REPEATER**” mode) directly, and press the [ENTER] key. Available values are 0.0 (Min) ~ 60.0 (Min) in a 0.5 second multiples.

Repeat HangOn Time: *Repeater Hang-On Time Setting.*

Use the [0] ~ [9] and [.] keys to enter the desired Hang-On time (while operating in the “**REPEATER**” mode) directly, and press the [ENTER] key. Available values are 0.0 (Sec) ~ 60.0 (Sec) in a 0.5 minute multiples.

Repeat Guard Time: *Repeater Guard Time Setting.*

Use the [0] ~ [9] keys to enter the desired Guard time (while operating in the “**REPEATER**” mode) directly, and press the [ENTER] key. Available values are 0 (Sec) ~ 360 (Sec) in a 2 second multiples.

CW ID: *Enable/disable the CW Identifier feature.*

Press the [SPACE] bar to toggle the repeater’s CW Identifier “**on**” or “**off**.”

When this parameter set to “**on**,” details of the settings may be set via the [F5] key. See page 18 for details.

DTMF ANI/ENI: *Enable/disable the DTMF ANI/ENI feature*

Press the [SPACE] bar to toggle the DTMF ANI/ENI feature selections “**RX Enable**,” “**TX Enable**,” “**TRX Enable**,” or “**off**.”

When the Identifier is set to “**on**,” details of the settings may be set via the [F4] key. See page 14 for details.

5-Tone ANI/ENI: *Enable/disable the 5-TONE ANI/ENI feature*

Press the [SPACE] bar to toggle the 5-TONE ANI/ENI feature “**RX Enable**,” “**TX Enable**,” “**TRX Enable**,” or “**off**.”

When the Identifier is set to “**on**,” details of the settings may be set via the [F4] key. See page 16 for details.

Note: The DTMF ANI/ENI feature and 5-TONE ANI/ENI feature are exclusive; only one may be active at any time.

“EDIT COMMON DATA” WINDOW

Function Key Selections on the “EDIT COMMON DATA” Window

[F1]: Help

Pressing this key anywhere in the program will invoke the on-line help feature. The help displayed will depend on where the cursor is when [F1] key was pressed. Pressing the [Esc] key returns you to normal program operation. If more help is available, press [F1] or [ENTER] to switch to the next help window.

[F2]: Enviro

Pressing this key displays the “**HARDWARE ENVIRONMENT**” window. These parameters can not be edited in the field. If adjustments to any of these parameters are required, the repeater must be returned to Yaesu.

| HARDWARE ENVIRONMENT | | | | |
|----------------------|----------------------|----------|----------|----------|
| Serial: 12345678 | | Lowest | Low | High |
| TX Power Display | | | | Highest |
| High: 50W | RX Freq: 150.0MHz | 160.0MHz | 170.0MHz | 174.0MHz |
| Low: 10W | SOL Level: 48(30h) | 48(30h) | 48(30h) | 48(30h) |
| Squelch W/N Adjust | RX Tune: 44(2Ch) | 128(80h) | 186(8Ah) | 218(DAh) |
| Value: 0(00h) | TX Freq: 150.0MHz | 160.0MHz | 170.0MHz | 174.0MHz |
| Squelch Hysteresis | TX Pwr Hi: 195(C9h) | 199(C7h) | 203(CBh) | 206(CEh) |
| Value: 20(14h) | Lo: 75(4Bh) | 75(4Bh) | 76(4Ch) | 77(4Dh) |
| NSQ Threshold | Max Dev Hi: 157(9Dh) | 156(9Ch) | 155(9Bh) | 154(9Ah) |
| Level: 110(6Eh) | Lo: 146(92h) | 145(91h) | 143(8Fh) | 142(8Eh) |
| | CTC Dev Hi: 163(9Fh) | 161(9Dh) | 159(9Bh) | 158(9Ah) |
| | Lo: 153(99h) | 150(96h) | 154(9Ah) | 158(9Eh) |
| | DCS Dev Hi: 149(95h) | 148(94h) | 146(92h) | 145(91h) |
| | Lo: 149(95h) | 147(93h) | 146(92h) | 145(91h) |

[F3]: TXP Adj

Pressing this key displays the “**TX POWER ADJUST VALUE**” window, which individually sets the adjusting values for the TX output power (determined from the “TX Pwr” parameter, described previously) for each operating channel. Select the desired operating channel using the [ARROW] key, then use the [0] ~ [9] keys to enter the adjusting values for the TX output power to be you want, then press the [ENTER] key. Available values are -128(80h: maximum reducing) ~ 127(7Fh: maximum increasing). Alternately, the values can be incremented by the [SPACE] bar or decremented by the [BACK SPACE] key.

| TX Power Adjust Value | | | |
|-----------------------|----------|--------|----------|
| CH 01: | 127(7Fh) | CH 09: | 120(78h) |
| CH 02: | 127(7Fh) | CH 10: | 125(7Dh) |
| CH 03: | 127(7Fh) | CH 11: | 125(7Dh) |
| CH 04: | 120(78h) | CH 12: | 127(7Fh) |
| CH 05: | 127(7Fh) | CH 13: | 127(7Fh) |
| CH 06: | 125(7Dh) | CH 14: | 127(7Fh) |
| CH 07: | 125(7Dh) | CH 15: | 127(7Fh) |
| CH 08: | 120(78h) | CH 16: | 127(7Fh) |

Pressing the [Esc] key closes the “TX POWER ADJUST VALUE” window.

[F4]: DTMF

This function key appears when DTMF ANI/ENI is set to “**Enable**.”

Pressing this key displays the “**DTMF SETTINGS (COMMON DATA)**” window, which allows editing of the DTMF identifier parameters.

| DTMF SETTINGS(COMMON DATA) | |
|----------------------------|---------|
| Mark Time: | 50 ms |
| Space Time: | 50 ms |
| ANI On: | Both |
| Delay Time: | 300 ms |
| Delay Time: | 1200 ms |
| TX Time: | 2 sec |
| TX Time: | 2 sec |
| TX Dead Time: | 2 sec |
| Repeat Count: | N |
| Header Code: | B |
| Header Code: | B |
| Code: | 1234 |
| Code: | ABCD |

Select the item to be you need via the [UP/DOWN] Arrow keys.

Mark Time programs the “Mark” Weight for the DTMF ANI/ENI feature. Use the [0] ~ [9] keys to enter the desired “Mark” Time directly, then press the [ENTER] key. Available values are 1 (ms) ~ 600 (ms).

Space Time programs the “Space” Weight for the DTMF ANI/ENI feature. Use the [0] ~ [9] keys to enter the desired “Space” Time directly, then press the [ENTER]

“EDIT COMMON DATA” WINDOW

key. Available values are 1 (ms) ~ 600 (ms).

ANI on programs the ANI transmit timing. Press the [SPACE] bar to toggle the ANI transmit timing “TX off,” “TX on,” “Both,” or “None.”

TX off: The ANI transmits when the repeater is unkeyed.

TX on: The ANI transmits when the repeater is keyed.

Both: The ANI transmits when the repeater is keyed and unkeyed.

None: ANI is not transmitted.

ANI Delay Time programs envelope delay for the ANI feature. This setting allows shifting of the entire ANI transmission string in time. Use the [0] ~ [9] keys to enter the desired “Delay” Time directly, then press the [ENTER] key. Available values are 20 (ms) ~ 1275 (ms) in 5 ms multiples.

ENI Delay Time programs envelope delay for the ANI feature. This setting allows shifting of the entire ENI transmission string in time. Use the [0] ~ [9] keys to enter the desired “Delay” Time directly, then press the [ENTER] key. Available values are 20 (ms) ~ 1275 (ms) in 5 ms multiples.

ENI TX Time programs repeater transmit time when the ENI feature is activated. The repeater keeps transmit mode until this period expires when ENI feature is activated. Use the [0] ~ [9] keys to enter the desired “Transmit” Time directly, then press the [ENTER] key. Available values are 1 (sec) ~ 255 (sec), however, this time must be more than (Mark Time + Space Time) x 5 (digits) (sec).

ENI RX Time programs receive time when the ENI feature is activated. The repeater keeps receive mode until this period expires after the ENI code is transmitted. Use the [0] ~ [9] keys to enter the desired “Receive” Time directly, then press the [ENTER] key. Available values are 1 (sec) ~ 255 (sec).

ENI RX Dead Time programs receiver dead time when the ENI feature is activated. Use the [0] ~ [9] keys to enter the desired “Receiver Dead” Time directly, then press the [Enter] key. Available values are 0 (sec) ~ 255 (sec).

ENI Repeat Count programs the number of times for the ENI code transmitting. The repeater repeatedly transmits the ENI code sequence this many times. Use the [0] ~ [9] keys to enter the desired number directly, then press the [ENTER] key. Available values are 1 ~ 255 (times).

ANI Header Code programs the Header Code for the ANI feature. The character to be used is 0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #).

ENI Header Code programs the Header Code for the ENI feature. The character to be used is 0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #).

ANI Code programs the ANI code for the ANI feature. The character to be used is 0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #) (four digits).

ENI Code programs the ENI code for the ANI feature. The character to be used is

“EDIT COMMON DATA” WINDOW

0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #) (four digits).

Pressing the [Esc] key closes the “DTMF SETTINGS (COMMON DATA)” window.

[F4]: 5-TONE

This function key appears when 5-TONE ANI/ENI is set to “Enable.”

Pressing this key displays the “5-TONE SETTINGS (COMMON DATA)” window, which allows editing of the 5-tone identifier parameters.

Select the item to be you need the [Up/Down] Arrow keys.

Mark Time programs the “Mark” Weight for the 5-TONE ANI/ENI feature. Use the [0] ~ [9] keys to enter the desired “Mark” Time directly, then press the [ENTER] key. Available values are 1 (ms) ~ 600 (ms).

Space Time programs the “Space” Weight for the 5-TONE ANI/ENI feature. Use the [0] ~ [9] keys to enter the desired “Space” Time directly, then press the [ENTER] key. Available values are 1 (ms) ~ 600 (ms).

ANI on programs the ANI transmit timing. Press the [SPACE] bar to toggle the ANI transmit timing “TX off,” “TX on,” “Both,” or “None.”

TX off: The ANI transmits when the repeater is unkeyed.

TX on: The ANI transmits when the repeater is keyed.

Both: The ANI transmits when the repeater is keyed and unkeyed.

None: ANI is not transmitted.

ANI Delay Time programs envelope delay for the ANI feature. This setting allows shifting of the entire ANI transmission string in time. Use the [0] ~ [9] keys to enter the desired “Delay” Time directly, then press the [ENTER] key. Available values are 20 (ms) ~ 1275 (ms) in 5 ms multiples.

ENI Delay Time programs envelope delay for the ENI feature. This setting allows shifting of the entire ENI transmission string in time. Use the [0] ~ [9] keys to enter the desired “Delay” Time directly, then press the [ENTER] key. Available values are 20 (ms) ~ 1275 (ms) in 5 ms multiples.

ENI TX Time programs repeater transmit time when the ENI feature is activated. The repeater keeps transmit mode until this period expires when ENI feature is activated. Use the [0] ~ [9] keys to enter the desired “Transmit” Time directly, then press the [ENTER] key. Available values are 1 (sec) ~ 255 (sec), however, this time must be more than (Mark Time + Space Time) x 5 (digits) (sec).

ENI RX Time programs receive time when the ENI feature is activated. The repeater keeps receive mode until this period expires when after the ENI code is

“EDIT COMMON DATA” WINDOW

transmitted. Use the [0] ~ [9] keys to enter the desired “Receive” Time directly, then press the [ENTER] key. Available values are 1 (sec) ~ 255 (sec).

ENI RX Dead Time programs receiver dead time when the ENI feature is activated. Use the [0] ~ [9] keys to enter the desired “Receiver Dead” Time directly, then press the [ENTER] key. Available values are 0 (sec) ~ 255 (sec).

ENI Repeat Count programs the number of times for the ENI code transmitting. The repeater repeatedly transmits the ENI code sequence this many times. Use the [0] ~ [9] keys to enter the desired number directly, then press the [ENTER] key. Available values are 1 ~ 255 (times).

ANI Header Code programs the Header Code for the ANI feature. The character to be used is 0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #).

ENI Header Code programs the Header Code for the ENI feature. The character to be used is 0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #).

ANI Code programs the ANI code for the ANI feature. The character to be used is 0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #) (four digits).

ENI Code programs the ENI code for the ENI feature. The character to be used is 0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #) (four digits).

5-Tone Repeat Code programs the 5-Tone Repeat Code for the 5-TONE ANI/ENI feature. The character to be used is 0 ~ 9, A, B, C, D, E (=DTMF *), or F (=DTMF #).

Frequency selects/programs 5-Tone Set for the 5-TONE ANI/ENI feature. To change the 5-Tone Set, then press the [TAB] key to switch the cursor to the “FREQUENCY” section, press the [SPACE] bar to select the 5-Tone set among the “ZVEI1,” “ZVEI2,” “ZVEI3,” “PZVEI,” “DZVEI,” “EEA,” “CCIR,” “EIA,” and “User,” and then press the [ENTER] key.

When set to “User,” select the tone you wish to change via the [Up/Down] Arrow keys. Now, enter the desired Tone Frequency directly via the [0] ~ [9] keys, then press the [ENTER] key.

Pressing the [Esc] key closes the “5-TONE SETTINGS (COMMON DATA)” window.

[F5]: CW-ID

This function key appears when CW ID parameter is set to “on”

Pressing this key displays the “CW-ID SETTINGS (COMMON DATA)” window, which sets the status of some CW identifier items (“Dot Time,” “Interval Timer,” “Tone Freq,” and “CW-ID”).

Select the item to edit using the [ARROW] keys, then use the [0] ~ [9] and [.] keys to enter the desired directly, then press the [ENTER] key.



“EDIT COMMON DATA” WINDOW

Dot Time programs the CW Dot Weight for the CW Identifier. Available values are 20 (ms) ~ 255 (ms). 50 ms = approx. 25 WPM.

Interval Timer programs the Polling Interval for the CW Identifier. Available values are 30 (sec) ~ 4800 (sec).

Tone Freq programs the CW pitch and CW sidetone for the CW Identifier. Available values are 300 (Hz) ~ 3000 (Hz).

CW-ID allows programming of the repeater’s callsign. It may contain up to 16 characters.

Pressing the [Esc] key closes the “**CW-ID SETTINGS (COMMON DATA)**” window.

[F6]: AlphaTag

Pressing this key displays the “**ALPHA TAG**” window, which programs the ANI message when an ANI code is received.

Use the [0] ~ [9] keys to enter the ANI code and press the [ENTER] key, then press the [RIGHT (ARROW)] key momentarily to switch the cursor to the right area. Type the message (up to 8 characters) corresponding to the ANI code.

You can program up to 48 ANI messages.

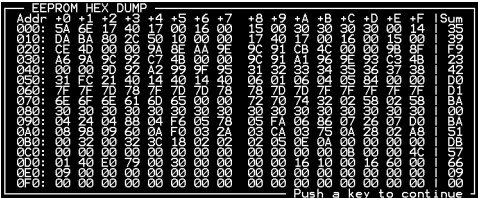
Pressing the [Esc] key closes the “**ALPHA TAG**” window.



[F7]: Data Dump

Pressing this key displays the “**EEPROM HEX DUMP**” window.

Pressing the [Esc] key closes the “**EEPROM HEX DUMP**” window.



[F8]: CH Edit

Pressing this key returns you to the “**Channel Programming**” Screen.

“**HARDWARE ENVIROMENT**” **WINDOW**

To open the “**HARDWARE ENVIROMENT**” window, just press the [**F2**] (**Enviro**) key while the “**EDIT COMMON DATA**” window is open.

Left Section

The following six parameters provide to the of the repeater.

Serial:

Use the [**0**] ~ [**9**] keys to enter the your repeater’s serial number directly, then press the [**ENTER**] key.

TX Power Display “High”:

Use the [**0**] ~ [**9**] key to enter your repeater’s actual TX “HIGH” power directly, then press the [**ENTER**] key. This parameter is just a memorandum.

TX Power Display “Low”:

Use the [**0**] ~ [**9**] key to enter your repeater’s actual TX “LOW” power directly, then press the [**ENTER**] key. This parameter is just a memorandum.

Squelch W/N Adjust Value:

The revised value of the squelch noise level (the difference between the setting for Wide operation and Narrow operation) appears here.

Squelch Hysteresis Value:

The Squelch Hysteresis value appears here.

NSQ Threshold Level:

The front panel’s **SQL** knob Squelch Threshold value appears here.

“**HARDWARE ENVIROMENT**” **Window**

| HARDWARE ENVIRONMENT | | Lowest Low High Highest | | | | |
|----------------------|--|--|----------|----------|----------|----------|
| Serial: 12345678 | | RX Freq: | 150.0MHz | 160.0MHz | 170.0MHz | 174.0MHz |
| TX Power Display | | SQL Level: | 48(30h) | 48(30h) | 48(30h) | 48(30h) |
| High: 50W | | RX Tune: | 44(2Ch) | 128(80h) | 186(BAh) | 218(DAh) |
| Low: 10W | | | | | | |
| Squelch W/N Adjust | | TX Freq: | 150.0MHz | 160.0MHz | 170.0MHz | 174.0MHz |
| Value: 0(00h) | | TX Pwr Hi: | 195(C3h) | 199(C7h) | 203(CBh) | 206(CEh) |
| | | Lo: | 75(48h) | 75(48h) | 76(4Ch) | 77(4Dh) |
| | | Max Dev W: | 157(9Dh) | 156(9Ch) | 155(9Bh) | 154(9Ah) |
| | | N: | 146(92h) | 145(91h) | 143(8Fh) | 142(8Eh) |
| Squelch Hysteresis | | CTC Dev W: | 162(A2h) | 161(A1h) | 166(A6h) | 170(AAh) |
| Value: 20(14h) | | N: | 153(99h) | 150(96h) | 154(9Ah) | 158(9Eh) |
| NSQ Threshold | | DCS Dev W: | 159(9Fh) | 158(9Eh) | 156(9Ch) | 156(9Ch) |
| Level: 110(6Eh) | | N: | 149(95h) | 147(93h) | 146(92h) | 145(91h) |

“HARDWARE ENVIRONMENT” WINDOW

Right Section

The following 12 parameters individually provide to the four partition (“*Lowest*,” “*Low*,” “*High*,” and “*Highest*”) of the repeater’s bandwidth.

RX Freq.: *Displays test frequencies.*

You can change these test frequencies using the [0] ~ [9], and [•] keys, or enter the frequency directly using the [0] ~ [9] keys.

SQL Level: *Displays the Squelch level when the repeater transmitter is activated.*

You can adjust this level using the [SPACE] bar (increment) or [BACK SPACE] key, or enter the value directly using the [0] ~ [9] keys.

RX Tune: *Displays the tuning voltage for the IF stage alignment.*

You can adjust this setting using the [SPACE] bar (increment) or [BACK SPACE] key, or enter the value directly using the [0] ~ [9] keys.

TX Freq.: *Displays test frequencies.*

You can change these test frequencies using the [0] ~ [9], and [•] keys, or enter the frequency directly using the [0] ~ [9] keys.

TX Pwr Hi: *Displays the TX “HIGH” power output level.*

You can change this level using the [SPACE] bar (increment) or [BACK SPACE] key, or enter the value directly using the [0] ~ [9] keys.

TX Pwr Lo: *Displays the TX “LOW” power output level.*

You can change this level using the [SPACE] bar (increment) or [BACK SPACE] key, or enter the value directly using the [0] ~ [9] keys.

Max Dev W: *Displays the Maximum deviation level while in WIDE FM operation.*

You can change this level using the [SPACE] bar (increment) or [BACK SPACE] key, or enter the value directly using the [0] ~ [9] keys.

Max Dev N: *Displays the Maximum deviation level while in NARROW FM operation.*

You can change this level using the [SPACE] bar (increment) or [BACK SPACE] key, or enter the value directly using the [0] ~ [9] keys.

CTC Dev W: *Displays the Maximum deviation level for the CTCSS tone encoder while in WIDE FM operation.*

You can change this level using the [SPACE] bar (increment) or [BACK SPACE] key, or enter the value directly using the [0] ~ [9] keys.

“HARDWARE ENVIRONMENT” WINDOW

CTC Dev N: *Displays the Maximum deviation level for the CTCSS tone encoder while in NARROW FM operation.*

You can change this level using the [**SPACE**] bar (increment) or [**BACK SPACE**] key, or enter the value directly using the [**0**] ~ [**9**] keys.

DCS Dev W: *Displays the Maximum deviation level for the DCS encoder while in WIDE FM operation.*

You can change this level using the [**SPACE**] bar (increment) or [**BACK SPACE**] key, or enter the value directly using the [**0**] ~ [**9**] keys.

DCS Dev N: *Displays the Maximum deviation level for the DCS encoder while in NARROW FM operation.*

You can change this level using the [**SPACE**] bar (increment) or [**BACK SPACE**] key, or enter the value directly using the [**0**] ~ [**9**] keys.



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