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.

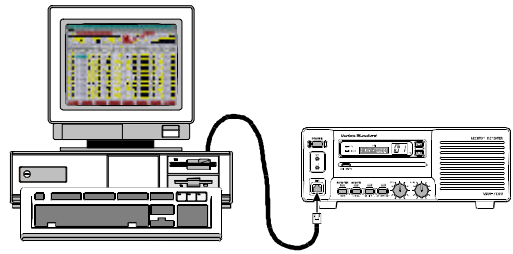
Then it will be safe to restart the computer; turning off the equipment during interconnection avoids the potential for damage to the electronics caused by voltage spikes.

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.

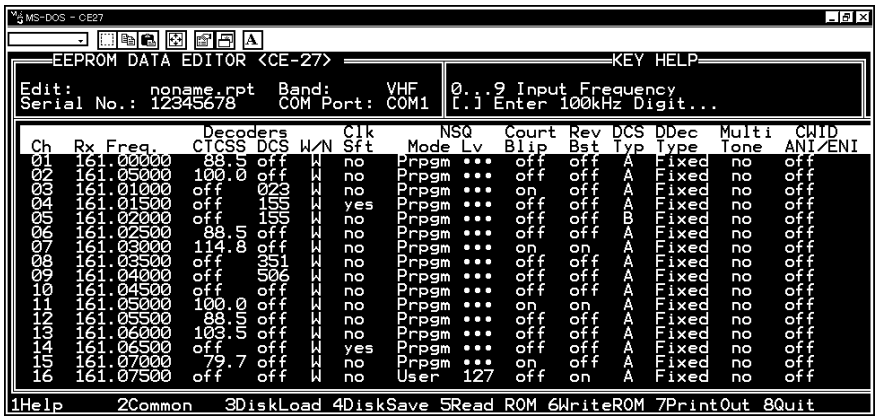
The **Band** entry indicates the operating frequency band of your repeater. "**VHF**" or "**UHF**" are automatically set and should *not be altered* unless you change repeaters.

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

Key Help Box

The **Key Help** box at the upper right indicates the keyboard keys that can be used to edit data at any given moment. The contents of this box change according to the location of the cursor in the Channel Data table, so you will need to watch this box while becoming familiar with the channel editor. For example, when the program first starts, you will see "**Rx Freq.**" (Receiving Frequency) field, which indicates that you can enter the receiving frequency into the current channel from the [**0**] ~ [**9**] and [•] keys on the PC's keyboard.

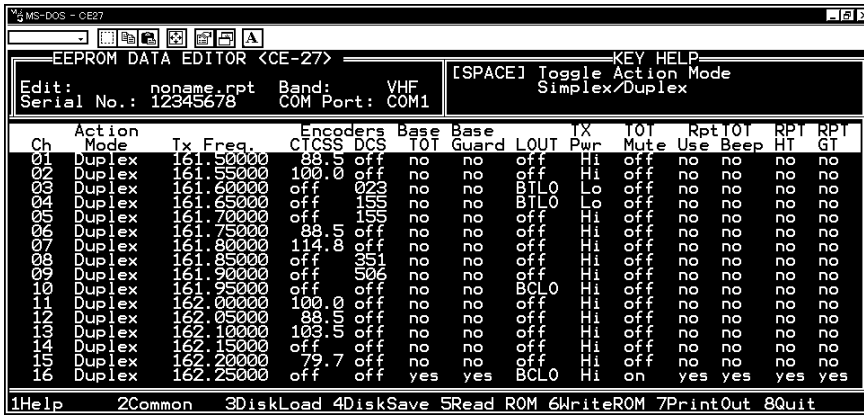
You can press the [**F1**] key for more detailed help on the functions of particular keys in the current cursor field. Of course, you can always use the cursor keys to select another field (unless you are in the middle of entering new field data).

Channel Data Table

The largest section of the screen is the Channel Data table. Press the [**UP**], [**DOWN**], [**LEFT**] and [**RIGHT**] arrow keys on the PC's keyboard to move the cursor around the table (you may have to press the [**NUM LOCK**] key to switch the keypad from numeric to cursor movement mode if your keyboard does not have separate cursor keys). Each line in the editing table represents one channel, with the columns indicating the current setting of each parameter that can be set for that channel. Hyphens indicate that a parameter is not currently being used. If all of the fields on a line are hyphens, the channel is currently blanked (hidden from use).

Note that, to access the right-most columns ("**Action Mode**," "**Tx Freq.**," "**Encoders CTCSS**" etc.), just move the cursor to the right from the right-most edge of the screen. The table will scroll sideways to reveal the additional columns.

CE27 Main Screen (Scrolled Right)



THE CHANNEL PROGRAMMING SCREEN

Ch: *Channel Number.*

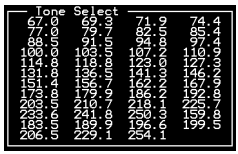
This 2-digit number ("01" ~ "16") is used to identify the channel. Channel numbers occur in sequence, and their order can not be changed.

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

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

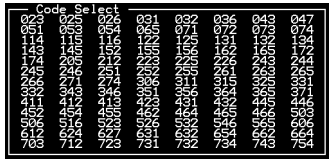
Decoders CTCSS: *Toggle CTCSS Decoder ON/OFF, set CTCSS Frequency.*

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.



Decoders DCS: *Toggle DCS Decoder ON/OFF, set DCS Code number.*

Press the [**SPACE**] bar to toggle the DCS Decoder "**on**" or "**off**," or press the [**ENTER**] key to display the "**CODE SELECT**" window, from which you may select a DCS code using the [**ARROW**] key; press [**ENTER**] again to accept the selected code, or press [**ESC**] key to cancel.



W/N: *Wide/Narrow Channel Spacing.*

This function selects the channel spacing environment in which the VXR-7000 operates.

W (Wide) = 25 kHz Channel Spacing, ±5 kHz Deviation.

N (Narrow) = 12.5 kHz Channel Spacing, ±2.5 kHz Deviation.

Press the [**SPACE**] bar to select the desired channel spacing environment.

Clk Sft: *Enable/disable the CPU Clock Shift.*

This function is only used to move a spurious response "birdie" should it fall on a current frequency.

Press the [**SPACE**] bar to toggle "**yes**" or "**no**."

NSQ Mode: *Noise Squelch Mode.*

This command selects the manner of setting of the Squelch threshold level.

User = The squelch threshold level is fixed via the **NSQ Lv** parameter (below) (**NSQ Lv**: 0 [min.] ~ 255 [max.]).

Prpgm = The squelch threshold level is fixed to the programmed values which is determined via the "**HARDWARE ENVIRONMENT**" window; see page 19 for details.

Press the [**SPACE**] bar to select the desired NSQ Mode.

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).

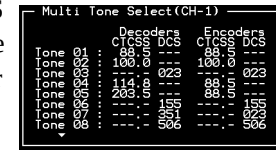
Auto = Both types (Normal and Inverted) will be decoded.

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**

THE CHANNEL PROGRAMMING SCREEN

SELECT" window (when the "**MULTI TONE SELECT**" window data is not programmed), press the [**SPACE**] bar to display the "**MULTI TONE SELECT**" window directly.

CWID ANI/ENI: *Select the Identifier mode.*

Press the [**SPACE**] bar to toggle the selections "**CW ID**," "**ANI/ENI**," or "**off**." To select this feature to the "**CW ID**" or "**ANI/ENI**," the "**CW ID**" parameter must be enabled via the "**EDIT COMMON DATA**" window; see page 13 for details.

Action Mode: *Select the repeater operation mode.*

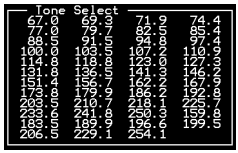
Press the [**SPACE**] bar to toggle between "**Duplex**" operation or "**Simplex**" operation.

Tx Freq.: *Edit Transmit Frequency.*

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

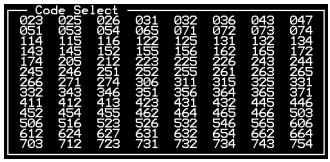
Encoders CTCSS: *Toggle CTCSS Encoder ON/OFF, set CTCSS Frequency.*

Press the [**SPACE**] bar to toggle the CTCSS Encoder "**on**" or "**off**," or press [**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 the [**ESC**] key to cancel.



Encoders DCS: *Toggle DCS Encoder ON/OFF, set DCS Code #.*

Press the [**SPACE**] bar to toggle the DCS Encoder "**on**" or "**off**," or press [**ENTER**] key to display the "**CODE SELECT**" window, from which you may select a DCS code using the [**ARROW**] key; press [**ENTER**] again to accept the selected code, or press the [**ESC**] key to cancel.



Base TOT: *Enable/disable the Time-Out Timer while in the "BASE" station mode.*

Press the [**SPACE**] bar to toggle the TOT feature selections "**yes**" or "**no**."

The TOT time is determined via the "**EDIT COMMON DATA**" window; see page 12 for details.

Base Guard: *Enable/disable the Base Guard Feature.*

When this parameter is set to "**yes**," the transmitter will be inhibited a desired number of seconds before the repeater is unkeyed while operating in the ***"BASE"*** mode.

The inhibit time is determined via the "**EDIT COMMON DATA**" window; see page 12 for details.

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.

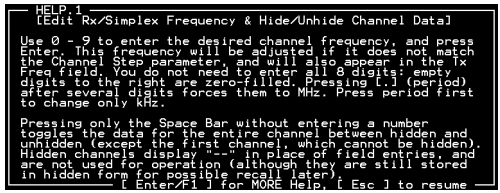
The inhibit time is determined via the "**EDIT COMMON DATA**" window; see page 13 for details.

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.

[**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.

[**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**]). 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.

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
DuplexerInstalled:	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:	2 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
		DTMF ANI/ENI:	RX Enable
COM Port:	COM1	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

		Lowest	Low	High	Highest
Serial: 12345678					
TX Power Display	RX Freq:	150.0MHz	160.0MHz	170.0MHz	174.0MHz
High: 50W	SQL Level:	48(30h)	48(30h)	48(30h)	48(30h)
Low: 10W	RX Tune:	44(2Ch)	128(80h)	186(BAh)	218(DAh)
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(4Bh)	76(4Ch)	77(4Dh)	
Squelch Hysteresis	Max Dev W:	157(9Dh)	156(9Ch)	155(98h)	154(9Ah)
Value: 20(14h)	N:	146(92h)	145(91h)	143(8Fh)	142(8Eh)
	CTC Dev W:	162(A2h)	161(A1h)	166(A6h)	170(AAh)
NSQ Threshold	N:	159(9Fh)	159(96h)	154(9Ah)	158(9Eh)
Level: 110(6Eh)	DCS Dev W:	159(9Fh)	158(9Eh)	156(9Ch)	156(9Ch)
	N:	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: 125(7Dh)	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
ANI Delay Time:	300 ms
ENI Delay Time:	1200 ms
ENI TX Time:	2 sec
ENI RX Time:	2 sec
ENI RX Dead Time:	2 sec
ENI Repeat Count:	5
ANI Header Code:	A
ENI Header Code:	B
ANI Code:	1234
ENI 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

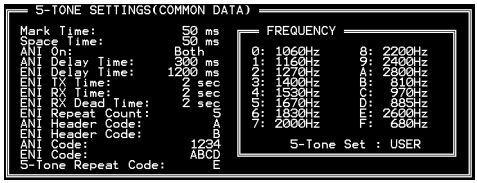
0 ~ **9**, **A**, **B**, **C**, **D**, **E** (=DTMF ✳), or **F** (=DTMF #) (four digits).

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.

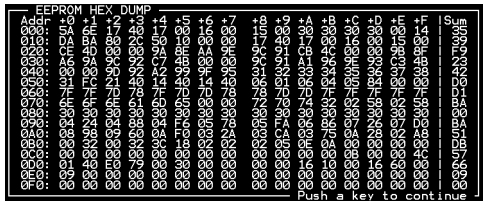
You can program up to 48 ANI messages.

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 ENVIRONMENT" 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

Serial: 12345678

TX Power Display
High: 50W
Low: 10W

Squelch W/N Adjust
Value: 0(00h)

Squelch Hysteresis
Value: 20(14h)

NSQ Threshold
Level: 110(6Eh)

	Lowest	Low	High	Highest
RX Freq:	150.0MHz	160.0MHz	170.0MHz	174.0MHz
SQL Level:	48(30h)	48(30h)	48(30h)	48(30h)
RX Tune:	44(2Ch)	128(80h)	186(BAh)	218(DAh)
TX Freq:	150.0MHz	160.0MHz	170.0MHz	174.0MHz
TX Pwr Hi:	195(C3h)	199(C7h)	203(CBh)	206(CEh)
Lo:	75(4Bh)	75(4Bh)	76(4Ch)	77(4Dh)
Max Dev W:	157(9Dh)	156(9Ch)	155(9Bh)	154(9Ah)
N:	146(92h)	145(91h)	143(8Fh)	142(8Eh)
CTC Dev W:	162(A2h)	161(A1h)	166(A6h)	170(AAh)
N:	153(99h)	150(96h)	154(9Ah)	158(9Eh)
DCS Dev W:	159(9Fh)	158(9Eh)	156(9Ch)	156(9Ch)
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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