



TDFM-136

VHF/FM DIGITAL AIRBORNE TRANSCEIVER

OPERATOR'S GUIDE

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SECTION 1 - Introduction

This section provides the user with a reference of the keypad accessible programming features of the Technisonic TDFM-136 VHF FM Digital Transceiver.

1.1 Command Methodology

This section describes how the TDFM-136 command structure is organized.

Command Levels

In order to accommodate the necessary commands, the commands have been divided into different levels, each command level has up to 12 commands numbered 0-9, # and *; the zero (0), and the ESC (*) key are functions for every level, they allow the user to move between levels as follows:



step **up** through command levels



step **down** through command levels

When stepping through command levels, the indicated level is shown in subscript in the 4th character position on the lower line of the display. Note that this display position is left blank for the default level (level1). Table 1 shows the command levels and the associated display character.

Table 1. Command Levels	
Level	Display
Operator L1	blank
Operator L2	'2'
Operator L3	'3'

The Figure below shows the front panel display for different Command levels.

0	0	1		M	a	i	n					D	1	3	6	.	0	0	0	0	R	g
G	D	2	3	G	u	a	r	d	2			w	1	7	4	.	0	0	0	0	R	t

Command Types

There are two basic command types: Inherent and Edit. An **Inherent** command is one that requires no additional input from the user, such as the 'memory brightness' or 'scroll memory' commands. An **Edit** command requires further input from the user.



Command Scope

Most, but not all, edit commands can affect either the Main or the Guard Channel. The channel to be edited depends on the position of the **MN/GD** and the **G1/G2** front panel switches. In this manual, the scope of the command is given on the command title line as follows:




(MN/GD)	for a command that is valid in both Main and Guard,
(MN)	for a command that is valid for Main only
Blank	for a command that is not subject to channel restrictions.

Command Conventions

After selecting the command, the system expects further input from the user. All edit commands may be terminated in the same way:

	accept the entry and return
	abandon the entry and exit

The commands that allow the user to choose an option from a list, will always use the up/down arrows: (key2 and key8) to step UP and DOWN – respectively - through the available choices. In addition, the key that was used to *enter* the function can be used to step UP through the available choices.

Example: the user selects the L1-3 (Op Mode) command, once the user has selected the command they can press  and , to step up, or  to step down through the choices. The advantage of the 'entry key' step method is that the user does not have to move their finger to a different key to make the choice once the command has been selected.

Command Reference

Table 2 below shows the commands divided into command levels: one, two, and three.

Table 2. Command Level Reference			
Key	Level 1	Level 2	Level 3
1 CHAN	Select Main Memory	Program New Memory	Select Boot Memory
2 up	Display – Brighter	Copy Guard to Main	n/u
3 MODE	Edit Mode	Lock Keypad	Select HEX/Decimal Edit
4 back	Scroll Memory Down	n/u	Display Software rev
5 SCAN	Scan ON/OFF	Edit Scan	Set Scan Parameters
6 fwd	Scroll Memory Up	Edit Description	Set PTT Timer
7 FREQ	Edit Frequency	Create Shadow Channel	Set Side-tone Audio
8 down	Display – Dimmer	Copy Main to Guard	PC Communications
9 SQL	Edit Squelch	Set Unit ID	Display Squelch Values
0 PROG	Go to next level	Go to next level	n/u
# ENTER	n/u	n/u	n/u
* ESC	n/u	Go to Previous level	Go to Previous level

NOTE: n/u indicates command keys that are not currently implemented.

SECTION 2 - Operator Commands

This section lists the commands available to the user, They are organized into three (3) levels.

2.1 Operator Level 1 Commands

Level 1 commands are accessed directly from the keypad by pressing the desired command key. The command level indicator will be blank. The available commands are described below:

1
CHAN

L1-1. Select the Operating Memory for the Main Channel (MN)

This command allows the user to select the MAIN channel that the radio is operating on. Upon selecting this command the cursor will appear at the first digit in the channel number as shown:

0	0	0																						
E	n	t	e	r		N	u	m	b	e	r		(0	-	9	,	#	*)				

Now, select a number from 001 to 230 as follows:

0
PROG

 to

9
SQL

 decimal mode: enter number, cursor automatically advances

#
ENTER

 accept the entry and return

*
ESC

 abandon the entry and exit

Note: If the channel number selected is out of range then the cursor will remain until the user enters a valid number. If there is no information programmed for the channel, the editor will return to the previously displayed channel.



L1-2. Increase Display Brightness

Press and hold the up arrow (2) key to increase the brightness of the LED display, it stops at maximum.



L1-3. Edit Channel Operating Mode (MN/GD)

This command will edit the Operating Mode of the selected channel, the available modes are shown in table 3. Upon selecting this command the cursor will appear at the MODE position:

0	0	1		M	a	i	n					D	1	3	6	.	0	0	0	0	R	g	
E	d	i	t		M	o	d	e		(↑	↓	3	,	#	*)						

You may now edit the Operating Mode as follows:



step through the available entries



accept the entry and return



abandon the entry and exit

Table 3 Channel Operating Modes	
Operating Mode	Indicator
Analog Wide (25 kHz)	'w'
Analog Narrow (12.5 kHz)	'n'
Digital (12.5 kHz)	'D'

Note: If an Operating Mode is selected that is incompatible with the current Squelch Mode, then the Squelch mode will automatically be changed to one that is acceptable for that Operating Mode (ie 'x' for analog, 'm' for Digital Rx and 'g' for Digital Tx).



L1-4. Scroll Backwards through Available Memories

This command will scroll the Main Channel BACK, or down, through the programmed memories until reaching the lowest memory programmed, it will then wrap around and restart from the top. Once the user releases the button the displayed characteristics will be programmed. The scroll speed will increase as the button is held.






L1-5. Start/Stop Scan (MN)

This command allows the user to start and stop Scan operation, the system will scan the channels that are in the same scan list that the currently displayed Main channel is a member of. Note that the channels in the scan list must have scan enabled (see command L2-5) to be scanned. If the memory scan has been enabled then the following screen appears:

0	0	1	1	M	a	i	n					D	1	3	6	.	0	0	0	0	R	g	
G	D	1	n	G	u	a	r	d	1				n	1	5	4	.	0	0	0	0	R	t

Once scan has started the scan list digit flashes to indicate that the unit is in SCAN mode. Also note that the key level indicator position has the lock symbol (n, this indicates that all keypad keys are disabled except for:

  stop scan

  display brightness

Front panel switch operation is modified as well: operation of **MN/GD** or **G1/G2** will terminate scan and restore normal operation of keys and switches. The front panel **Squelch** button is disabled. The **HI/LO** power switch is unaffected. If you try to start scan on a channel or memory that doesn't support scan, you will see:

0	0	1		M	a	i	n					D	1	3	6	.	0	0	0	0	R	g	
E	r	r	o	r	:		N	o	n	-	S	c	a	n	n	e	d		C	h	a	n	



L1-6. Scroll Forward through Available Memories (MN)



This command will scroll FORWARD, or up, through the programmed channels, scroll speed will increase as the button is held and the scroll will wrap around and restart from the bottom. Once the user releases the button the displayed characteristics will be programmed.


L1-7. Edit Channel Operating Frequency (MN/GD)


This command allows the user to edit the **Operating Frequency** of the selected channel. The frequency will be edited in duplex mode: first Receive, then Transmit. Once the receive parameter is entered, the 2nd last character in the display will switch from “R” to “T”, the user can now enter the transmit value. Note that the receive value is automatically entered, so to get simplex operation, simply accept this entry. The edit screen appears as follows:

0	0	1		M	a	i	n					D	1	3	6	.	0	0	0	0	R	g
E	d	i	t		F	r	e	q	u	e	n	c	y	(0	-	9	,	#	*)	

Upon start, the cursor appears at the second character in the Frequency field of the channel to be edited. The user may now enter the desired operating frequency as follows:

 to  decimal mode: enter number, cursor automatically advances

 accept the entry and return

 abandon the entry and exit

The editor will not accept a value outside the limits of 136.0000 MHz. to 174.0000 MHz. In addition frequency selection is limited to 2.5 kHz increments in all Operating modes.

L1-8. Decrease Display Brightness








Press and hold the down arrow (8) key to decrease the brightness of the LED display, it stops at minimum.

L1-9. Edit Channel Squelch Mode (MN/GD)

This command will edit the **Squelch Mode** of the selected channel, and then allow the user to edit the associated Squelch Mode Value. As with the Frequency Edit function above, the Squelch Edit is in duplex mode, Receive followed by Transmit. The edit screen appears as follows:

0	0	1		M	a	i	n					D	1	3	6	.	0	0	0	0	R	g
E	d	i	t		S	q	l		M	o	d	e	(↑	↓	9	,	#	*)		

Upon start, the cursor appears at the Squelch Mode indicator position of the channel to be edited. The user may now select the desired Squelch mode from the list, as follows:

-   step up through available Squelch modes (see table below)
-  step down through available Squelch modes
-   accept the entry and return
-   abandon the entry and exit

The available options are constrained by the operating mode, that is, different Squelch Modes are available for the analog Operating Modes (wide and narrow) than for the P25 operating mode. See table 4 below.



Table 4. Receive and Transmit Squelch Modes							
Analog	Rx	Analog	Tx	Digital	Rx	Digital	Tx
Noise	Rx	None	Tx	TalkGroup + NAC	Rg	TalkGroup + NAC	Tg
CTCSS Tones	Rt	CTCSS Tones	Tt	NAC Only	Rn	ID Call	Ti
DCS Code	Rc	DCS Codes	Tc	Monitor	Rm	Inhibit	T-
		Inhibit	T-				


Once the Squelch Mode has been selected, the user will be allowed to edit the value of the selected mode. The Squelch Modes that may be edited are: Noise, CTCSS Tones, and DCS Codes for analog operating modes, and TalkGroup, NAC, and ID Call for digital operating mode.


L1-9.1 Edit Noise Squelch Value analog only, receive only, range 0-16

If Noise (Rx) is chosen, the prompt line will display the current value for noise squelch level and place the cursor on the first digit, the value can be edited using the keys shown below.

0	0	5		T	e	s	t					n	1	5	6	.	0	0	0	0	R	x
N	o	i	s	e		L	e	v	e	l	:										1	0

 to  decimal mode: enter number, cursor automatically advances



 accept the entry and return


 abandon the entry and exit


L1-9.2 Select CTCSS Tone analog only, receive & transmit, 42 tones (67Hz to 254.8Hz)

If CTCSS Tones are chosen, the prompt line will display the current value for that tone, the user can select the tone using the keys shown below. Appendix A lists the available tones.

0	0	5		T	e	s	t					n	1	5	6	.	0	0	0	0	R	t		
C	T	C	S	S		T	o	n	e		(↑	↓	,	#	*)	:			6	7	.	0

  step up/down through available CTCSS Tones



 accept the entry and return


 abandon the entry and exit


L1-9.3 Select DCS Code Scope: analog only, receive only, 83 codes (23 to 754)

If DCS Codes are chosen, the prompt line will display the current value for that code, the user can select the code using the keys shown below. Appendix A lists the available choices.

0	0	5		T	e	s	t					n	1	5	6	.	0	0	0	0	R	c	
D	C	S		C	o	d	e		(↑	↓	,	#	*)	:						2	3

  step up/down through available DCS Codes

 accept the entry and return









 abandon the entry and exit

L1-9.4 Edit Project 25 Talkgroup Value digital only, receive & transmit, range 0-65535 (\$0000-\$FFFF)

If the P25 TalkGroup was chosen the, the prompt line will display the current TalkGroup value, the cursor will be on the first digit:

0	0	1		M	a	i	n					D	1	3	6	.	0	0	0	0	R	g
P	2	5		T	a	l	k	G	r	o	u	p	:					0	0	0	1	

This parameter may be edited in either HEX or in Decimal (see command L3-3). The edit keys are as follows:

-   hex edit: step up/down through hex digits (0-9, A-F)
-   hex edit: move cursor forward / backward
-   decimal mode: enter number, cursor automatically advances
-  #
ENTER accept the entry and return
-  *
ESC abandon the entry and exit



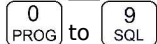


Note: If P25 Talkgroup was chosen, the editor will proceed to Edit NAC upon accepting the Talkgroup value.

L1-9.5 Edit Project 25 NAC Value Scope: digital only, receive and transmit, range 0-4095 (\$000-\$FFF)

If the P25 NAC was chosen (or after entering the P25 TalkGroup) the prompt line will display the current NAC value, with the cursor on the first digit:

0	0	1		M	a	i	n					D	1	3	6	.	0	0	0	0	R	n
P	2	5		N	A	C	:													0	0	1

This parameter may be edited in either HEX or in Decimal (see command L3-3). The edit keys are as follows:

-  hex edit: step up/down through hex digits (0-9, A-F)
-  hex edit: move cursor forward / backward
-  decimal mode: enter number, cursor automatically advances
-  accept the entry and return
-  abandon the entry and exit





L1-9.6 Edit Project 25 ID Call Value - Scope: digital only, transmit only, range 0-9,999,999

If the P25 ID Call is chosen, the prompt line will display the current ID Call value. This parameter may only be edited in decimal, as follows:

0	0	1		M	a	i	n					D	1	3	6	.	0	0	0	0	T	i
P	2	5		C	a	i	l		U	n	i	t		#	:		0	0	0	0	0	1

This transmit only mode allows the user to try to contact a specific radio by transmitting that radio's user ID. If no radio has that ID then this will fail.

The keys used to edit the ID call parameter are:

-  to  decimal mode: enter number, cursor automatically advances
-  accept the entry and return
-  abandon the entry and exit



L1-0. Command Level Up

This key selects the next HIGHER Command Level, the Command Level is indicated by a subscript digit in the 4th character position on the lower row of the display. See table 2-1.

Upon pressing this key, the radio will remain in the new Command Level for 5 seconds, if there is no further user input within this time then the radio will revert to Level 1. The Direct Command Level (level 1) is the normal operating mode for the radio and is indicated by a blank space.



L1. Not Used

2.2 Operator Level 2 Commands

Access the **Level 2 Commands** by pressing the '**PROG**' key from the **Operator Level 1** once, the Menu Level indicator will show a subscript '**2**'.

Note: the system is *time limited* in command levels above level 1. The system will *automatically* return to level 1 if a command has not been selected in five (5) seconds!

1
CHAN

L2-1. Create/Edit All Channel Information (MN/GD restricted)

This command allows the user to create a new memory position (for Main channel only) or to edit all the parameters of an existing memory position (Main or Guard channels). The editor steps through the channel parameters in sequence from left to right across the screen. The edit functions here match those used to edit an individual parameter; in this case however selecting the ENTER key accepts the data and proceeds to the next step, rather than returning. Only after the last step does selecting enter save the data and exit.. The ESC key will abandon the entire edit session without changing an existing channel or creating a new one.

ENTER

accept the entry and return

*
ESC

abandon the entry and exit

L2-1.1. Entering a Memory Number (refer to L1-1 for details)

When the Create/Edit All command is selected, the first step is to enter the number of the memory position that you wish to Create or Edit. Note that if the Radio is on a Guard channel then the editor starts at the "Edit Text" prompt (step 3 below) as the memory number and scan cannot be edited for Guard channels. The valid range is (001 to 230)

Once a number has been entered, the system checks to see if the memory location has already been programmed, if so, then the existing data will be loaded, if the location has NOT been previously programmed then the default template data will be loaded. In each case the user can edit the channel parameters in the same way as shown in the following steps.

L2-1.2. Enter a Scan Zone & Enabling/Disabling Scan (refer to L2-5 for details)

The cursor will move to the third (3rd) position on the top line, the default scan zone is shown in subscript. If there is a bar over top of the character, this indicates that scan is disabled for this memory, if there is no bar, then scan has been enabled. The 'PROG' key (key 0) toggles the scan enabled/disabled state.

L2-1.3. Enter a Text Description (refer to L2-6 for details)

After SCAN, the cursor moves to the first position in the text description field, the user may now edit the existing text as desired. The editor allows you to select all upper and lower (A-Z, a-z) case alphabetic characters, the numbers from zero to nine (0-9), and a selection of extra characters including the space.

L2-1.4. Enter an Operating Mode (refer to L1-3 for details)

After TEXT, the cursor is positioned on the one (1) character Operating Mode (Mode) field, this single character represents the operation of the radio: analog wide, analog narrow, or digital.

L2-1.5. Enter a Frequency (refer to L1-7 for details)

The frequency parameter is a seven (7) digit decimal parameter, though the first digit is always one so the user cannot edit that digit. The frequency parameter may be edited to any number between 136.0000 and 174.0000 in 2.5 kHz. steps. (ie 150.0025 is valid, 150.0046 is not).

This is a duplex parameter, that is, the user has a chance to edit both the receive value followed by the transmit value. Once the receive value has been accepted, pressing 'ENTER' again will accept the same value for transmit.

L2-1.6. Enter the Squelch Parameters (refer to L1-9 for details)

When the Create/Edit All command is selected, the first step is to enter the number of the memory position below) as the memory number and scan cannot be edited for Guard channels.

Once the user is finished and selects 'ENTER' then the newly edited channel parameters are selected and displayed for the appropriate channel. This may take a moment as the information is programmed into the appropriate RF module at this time as well.



L2-2. Copy Guard to Main

Copy the currently displayed Guard information UP to the Main channel. This is irreversible, so be sure you wish to do this. As a safety precaution this command is disabled from the factory.

3
MODE

L2-3. Lock Keypad

This command locks the keypad to prevent accidental change to parameters of the radio unbeknownst to the operator. This will disable all keyboard functions (except keyboard unlock and display luminance). To unlock the keyboard, press and hold the '**ESC**' key for two seconds.

3
MODE

Lock the keypad, display 'locked' until key release

*
ESC

unlock the keypad (after 2 secs), display 'unlocked' until key release

←
4

L2-4. Not Used.

5
SCAN






L2-5. Edit Scan List & Enable/Disable Scan (MN)

This command allows the user to select which of the **SCAN LISTS** - if any - that the selected channel is included in. The memory must be a member of one of the fifteen (15) scan lists that are supported. In addition, it allows the user to select whether or not the scan is enabled for the current memory.

The cursor will move to the fourth (4th) position on the top line, the default scan list is shown in subscript. If there is a bar over top of the character, this indicates that scan is disabled for this memory, if there is no bar, then scan has been enabled.

0	1	5	-	D	e	s	c					w	1	4	1	.	0	0	0	0	R	x
E	d	i	t		Z	o	n	e	/	S	c	a	n	(↑	↓	0	,	#	*)	

The user may select the scan list for the memory as follows:

-  step up through available scan lists
-  step down through available scan lists
-  toggle the scan enable / disabled (bar = disabled)
-  accept the entry and return
-  abandon the entry and exit

Note: If a scan list is full, it will NOT appear in the group of available scan lists. This includes the default list. When this happens, the unit will display the next higher available list, this will stop at list 15 and then loop back to list 1.

0	1	5	2	D	e	s	c					w	1	4	1	.	0	0	0	0	R	x
G	D	2		G	u	a	r	d	2			w	1	7	4	.	0	0	0	0	R	t



L2-6. Edit Channel Text Description (MN/GD)

This command allows the user to edit the text description for the selected channel. There are four groups of characters that may be used; upper case (A-Z), lower case (a-z), numbers (0-9), and 16 extra characters: {blank space ! “ # \$ % & ' () * + , - . /}. The user can change character groups *at any time* and as many times as desired during a description edit session.

0	0	6		D	e	s	c					w	1	4	1	.	0	0	0	0	R	x	
E	d	i	t		T	e	x	t		(↑	↓	←	→	3	,	#	*)			A	Z

The keys for the text editor operate as follows:



step through available edit groups (A-Z, a-z, 0-9, +extra characters – see tbelow)



scroll up/down through available characters



move cursor forward / backward



accept the entry and return



abandon the entry and exit

Note: for this command the up/down arrow keys are *scroll* enabled, that is, if you hold them you will scroll through the character set rather than having to press each time you want to advance.

L2-7. Create Shadow Channel

This command allows the user to create a shadow channel, the steps are the same as for creating a regular channel, except that the user must pick a primary channel on which to base the shadow channel first. Some parameters are not valid for shadow channels so the user is not given the opportunity to enter or edit these.

L2-7.1. Selecting a Primary Number to Base the Shadow On

Upon selecting the Create Shadow Channel command the user is prompted to enter the primary channel upon which the shadow channel is based, the screen displays the current memory number as a default:

0	0	6		P	r	i	m	a	r	y		C	h	a	n	n	e	l					
E	n	t	e	r		N	u	m	b	e	r		(0	-	9	,	#	*)			

Now, you must select an already existing channel from within the 001 to 230 limits as follows:

- | |
|------|
| 0 |
| PROG |

 to

9
SQL

 decimal mode: enter number, cursor automatically advances
- | |
|-------|
| # |
| ENTER |

 accept the entry and return
- | |
|-----|
| * |
| ESC |

 abandon the entry and exit

Assume that the user entered a primary of '006', then:

L2-7.2. Selecting a Primary Number to Base the Shadow On

Next, enter the number for the shadow channel, use the keys shown below:

0	0	6		S	h	a	d	o	w		C	h	a	n	n	e	l						
E	n	t	e	r		N	u	m	b	e	r		(0	-	9	,	#	*)			

0
PROG

 to

9
SQL

 decimal mode: enter number, cursor automatically advances

#
ENTER

 accept the entry and return

*
ESC

 abandon the entry and exit

Assume that the user entered '061' as the desired shadow channel number. The radio will now display the data from the chosen Primary channel.

0	6	1		C	h	a	n		6				D	1	6	6	.	0	0	0	0	R	g	
E	d	i	t		T	e	x	t		(↑	↓	←	→	3	,	#	*)				A	Z

The user may now edit those data fields that are valid for a shadow channel. These are:

- Text Description
- Operating Mode
- Squelch Mode and associated value

The editor functions and keys are the same as for any of the independent editor operation, the difference, as with Create New / Program All (L2-1), is that the ENTER key will advance to the next editor until all valid fields have been entered, then the ENTER key accepts an exits.

Note that there are some parameters that cannot be edited:

- Frequency is fixed to that of the Primary channel
- Shadow channels cannot be scanned.
- Shadow channels cannot use the Digital Squelch Mode IDcall (i).



L2-8. Copy Main to Guard



Copy the currently displayed Main information DOWN to the selected Guard channel. This is irreversible, so be sure you wish to do this. As a safety precaution this command is disabled from the factory. (see Command Permissions L4-2).





L2-9. Edit Unit ID Value (MN/GD)

The Unit ID is a number from 0 to 9,999,999 that is given to the RF module, this number should be unique within the operating group of radios, but this is NOT a universally mandated number (ie the number is NOT assigned by any P25 umbrella group, or even by the manufacturer), the user may edit this number as desired.

This command allows the user to Edit the Unit ID, note that the system has two (2) unit ID's one for the Main, and one for the Guard. The value is editable in decimal only.

 to  decimal mode: enter number, cursor automatically advances

 accept the entry and return

 abandon the entry and exit



L2-0. Command Level Up

This key selects the next HIGHER Command Level, the Command Level is indicated by a subscript digit in the 4th character position on the lower row of the display. See section 2.1 above.



L2-*. Command Level Down

This key selects the next LOWER Command Level, the command Level is indicated by a subscript digit in the 4th character position on the lower row of the display. See section 2.1 above.



L2-#. Not Used.

2.3 Operator Level 3 Commands

Access the **Level 3 Commands** by pressing the 'PROG' key (0) from **Level 1** twice, the Menu Level indicator will show a subscript '3'.

1
CHAN








L3-1. Select Boot Channel

This command allows the user to select which method will be used to determine the memory that will be used for the Main Channel when the unit is turned on. The available choices are: the *last Selected channel* or the *last Programmed channel*.

The default is: *last Selected channel*.

3	-	3		S	e	t		B	o	o	t		M	e	m	o	r	y					
B	o	o	t		O	n	:		L	a	s	t		S	e	l	e	c	t	e	d		

The user may select the boot memory for the main channel as follows:

-    toggle the boot mode
-   accept the entry and return
-   abandon the entry and exit



L3-2. Unused



L3-3. Select Hex/Decimal Edit Mode

This command allows the user to select whether to edit the TalkGroup and the NAC numbers as Hexadecimal (Hex) or as Decimal numbers. The other parameters are edited in decimal only.

The default is: *Hex Edit Mode (HEX is indicated by a preceding dollar sign: \$)*

3	-	3		S	e	t		H	e	x	/	D	e	c	e	m	a	l		E	d	i	t
E	d	i	t				:		H	e	x												

The user may select the TalkGroup and NAC Edit mode as follows:



toggle the Hex/Decimal edit mode



accept the entry and return



abandon the entry and exit

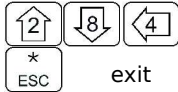


L3-4. Display Software Release and Version Information

This command allows the user to see the current software release and version number for both the Main code, and the Boot loader code. This information is displayed on the bottom row as follows:

0	0	1		M	a	i	n						D	1	3	6	.	0	0	0	0	R	n
M	a	i	n		C	o	d	e	:										2	.	0	.	0

The user may select which information is displayed as follows:



toggle the Main/boot loader code version display

exit

The number format is as follows: Release.Version.Revision

So the number: 2.0.0 reads as Release 2, Version 0, Revision 0



L3-5. Edit Scan Parameters (MN)






This command allows the user to edit the parameters that govern the SCAN operation. There are 4 (four) parameters that may be configured: Revert Mode, Reply Timer, Monitor Timer, and Delay Timer. As with the Create/Edit All command (L2-1), this command is sequential, allowing the user to move between parameters using the enter key, at the last parameter, this key accepts all and exits.

L3-5.1. Setting the Revert Mode default: last contacted

The Revert Mode refers to whether the radio will, when keyed, transmit on the *selected* memory channel, or on the last *contacted* memory channel. The radio will only respond on the last contacted channel for a time determined by the Delay timer setting, once the timer times-out, then the unit always transmits on the selected channel. The Revert Mode screen is as follows:

3	-	5		E	d	i	t		S	c	a	n		P	a	r	a	m	e	t	e	r	s
R	e	v	e	r	t		M	o	d	e	:		C	o	n	t	a	c	t	e	d		

The user can select the revert mode as follows:

-    toggle the revert mode
-  advance to next screen
-  abandon the entry and exit

L3-5.2. Setting the Reply Timer Range: 0-20s, Default: 3 seconds

The next screen allows the user to set the scan Reply time. This is the time that the radio will monitor a channel on which RF was received, after all activity on the channel has ended (Rx or Tx). If there is further receive or transmit activity on the channel, the timer will reset, and start again once the activity has ended. When the timer times-out the unit will resume scan. If set to zero (0), the unit will resume scan immediately upon end of channel activity.

3	-	5		E	d	i	t		S	c	a	n		P	a	r	a	m	e	t	e	r	s
R	e	p	l	y		T	i	m	e	r	:											0	3

The user can set the Scan Reply Timer value as follows:

- | |
|------|
| 0 |
| PROG |

 to

9
SQL

 decimal mode: enter number, cursor automatically advances
- | |
|-------|
| # |
| ENTER |

 advance to next screen
- | |
|-----|
| * |
| ESC |

 abandon the entry and exit

L3-5.3. Setting the Monitor Timer Range: 1-90s, Default: 10 seconds

The next screen allows the user to set the scan Monitor time, this is the time that the radio will monitor a channel on which RF was received, before resuming scanning. Once the timer expires, the unit will break and resume scan, if the value is set to zero (0) then the unit will monitor the signal as long as it is received. The edit screen is as follows:

3	-	5		E	d	i	t		S	c	a	n		P	a	r	a	m	e	t	e	r	s
M	o	n	i	t	o	r		T	i	m	e	r	:									1	0

The user can set the Scan Monitor Timer value as follows:

- | |
|------|
| 0 |
| PROG |

 to

9
SQL

 decimal mode: enter number, cursor automatically advances
- | |
|-------|
| # |
| ENTER |

 advance to next screen
- | |
|-----|
| * |
| ESC |

 abandon the entry and exit

L3-5.4. Setting the Delay Timer Range: 0-15s, Default: 5 seconds

The Delay time is the time that the radio will remain monitoring a channel after receiving on that channel has ended. If the timer is set to zero, (0), then the unit will resume scanning immediately after receive activity ends. This is the timer that affects the Revert Mode 'Contacted'.

3	-	5		E	d	i	t		S	c	a	n		P	a	r	a	m	e	t	e	r	s
D	e	l	a	y		T	i	m	e	r	:											0	5

The user can set the Scan Delay Timer value as follows:

- | |
|------|
| 0 |
| PROG |

 to

9
SQL

 decimal mode: enter number, cursor automatically advances
- | |
|-------|
| # |
| ENTER |

 advance to next screen
- | |
|-----|
| * |
| ESC |

 abandon the entry and exit








L3-6. Configure the PTT Timer

The PTT timer will run whenever the user holds PTT. The PTT timer duration may be set using this command: scroll through the available selections: OFF, 30 seconds, 60 seconds and 90 seconds.

3	-	6		S	e	t		P	T	T		T	i	m	e	r							
T	i	m	e	r		S	e	t	:		9	0		s	e	c							

The user can set the PTT Timer value as follows:

-   step up through available
-  step down through available
-  #
ENTER accept the entry and return
-  *
ESC abandon the entry and exit









7
FREQ

L3-7. Side tone Audio Level Adjust

This command allows the user to adjust the level of side tone. The screen shows the currently selected level as shown:

3	-	7		S	e	t		S	i	d	e	t	o	n	e		A	u	d	i	o		
A	u	d	i	o		L	e	v	e	l	:												

The user may edit the side tone audio level in either Hex or Decimal as follows:

-   hex mode: step up/down through available hex digits (0-9, A-F)
-   hex mode: move cursor forward / backward
-  0
PROG to  9
SQL decimal mode: enter number, cursor automatically advances
-  #
ENTER advance to next screen
-  *
ESC abandon the entry and exit



L3-8. PC Data Upload/Download

This command allows a user to exchange TDFM-136 channel memory files (records) between a PC and the transceiver. The unit must be connected to a PC running Windows 95, 98 or NT 4.0 and the TiL TDP-136 Radio Communications Software package. To exchange record data the Transceiver must be in this mode, then the communication is controlled by the PC software. The transceiver will wait for 25 seconds to receive a valid record before timing out. The radio will indicate which memory is being transferred, and when the transfer is complete.

C	o	m	m	u	n	i	c	a	t	e		w	i	t	h		P	C				
R	e	a	d	y																		

The transceiver may swap memory space during the download, if this happens the activity will be displayed on the front panel and the download will be completed after a SWAP and ERASE cycle is finished.



abandon the PC communication mode



L3-9. Display Channel Squelch Parameters

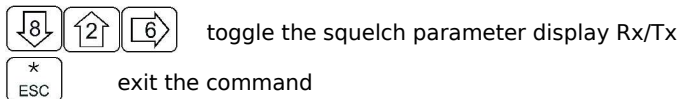
This command allows the user to quickly find out what the various Squelch parameters are for the channel, this displays all parameters except ID Call value. The data are displayed as follows:

R	x	:		T	o	n	e		C	o	d	e		T	a	I	k	G		N	A	C	
	A		1	6	7	.	0			2	3			\$	0	0	0	1	\$	2	9	3	

When displaying the receive parameters, the noise squelch level appears beneath the “Rx” that starts the line, this space is blank in the transmit parameters display:

T	x	:		T	o	n	e		C	o	d	e		T	a	l	k	G		N	A	C	
			1	6	7	.	0			2	3			\$	0	0	0	1	\$	2	9	3	

The user can switch between displaying receive and transmit parameters as follows:



L3-0. Command Level Up

This key selects the next HIGHER Command Level, the Command Level is indicated by a subscript digit in the 4th character position on the lower row of the display. See section 2.1 above.



L3-*. Command Level Down

This key selects the next LOWER Command Level, the command Level is indicated by a subscript digit in the 4th character position on the lower row of the display. See section 2.1 above.



L3-#. Unused

SECTION 3 - Appendix A

The table below shows the supported CTCSS tones.

CTCSS Tone Table		
67	107.2	173.8
69.3	110.9	179.9
71.9	114.8	186.2
74.4	118.8	192.8
77	123	203.5
79.7	127.3	206.5
82.5	131.8	210.7
85.4	136.5	218.1
88.5	141.3	225.7
91.5	146.2	229.1
94.8	151.4	233.6
97.4	156.7	241.8
100	162.2	250.3
103.5	167.9	254.8

The table below shows the supported DCS codes.

DCS Codes Table					
23	114	174	315	445	631
25	115	205	331	464	632
26	116	223	343	465	654
31	125	226	346	466	662
32	131	243	351	503	664
43	132	244	364	506	703
47	134	245	365	516	712
51	143	251	371	532	723
54	152	261	411	546	731
65	155	263	412	565	732
71	156	265	413	606	734
72	162	271	423	612	743
73	165	306	431	624	754
74	172	311	432	627	