

2 INSTALLATION AND PROGRAMMING

2.1 General Information

This section contains information concerning the installation and programming of the RPV599 Series handheld radio.

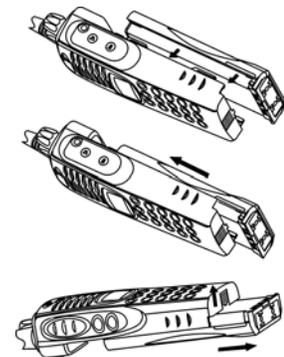
2.1.1. Unpacking and Inspecting Equipment

Exercise extreme care when unpacking the equipment. Make a visual inspection of the unit for evidence of damage incurred during shipment. If a claim for damage is to be made, save the shipping container to substantiate the claim. The claim should be promptly filed with the transportation company. It would be advisable to retain the container and packaging material after all equipment has been removed in the event that equipment storage or reshipment should become necessary.

2.1.2. Battery Installation

Align the four slots on the battery cover with the tabs on the aluminum cover and then push up the battery until the latch on the cover bottom locks in place.

To remove the battery, release the latch located at the bottom of the radio and slides the battery away from the radio.



WARNING: EXPLOSION HAZARD
Do not dispose of a battery pack in fire.
An explosion may occur.

2.2 Programming

You can program the RPV599A series in four different ways.

- A. Using the unit's keypad. See section 2.1.3.
- B. Cloning from unit to unit using a CCRP cloning cable. See section 2.1.4.1.
- C. Wireless cloning from unit to unit. See section 2.1.4.2.
- D. With a computer, RESRP99 programming software, and a PCRP programming interface cable. Contact Relm Communications for the software and cable. See section 2.1.5.

2.1.3. Keypad Programming

Using the unit’s keypad, soft keys, and control knobs, the unit can be placed into one of several different programming modes. It is important to note that only RELM authorized dealers with qualified technicians are allowed to operate the RPV599 series radios in the programming mode and to change any programming content. Figure 2.1 shows the different programming modes.

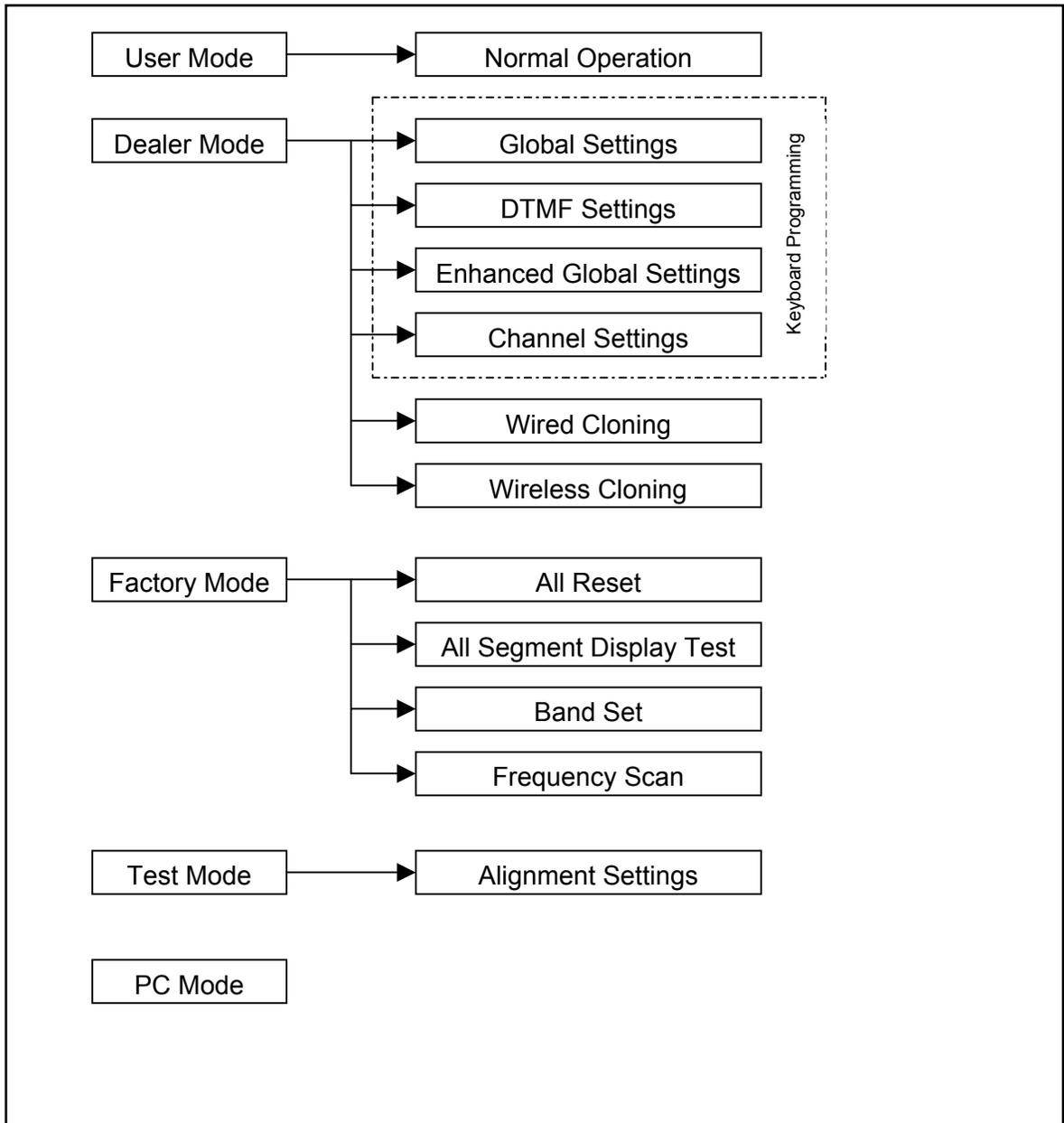


Figure 2.1 – Programming Modes

Table 2.1 shows the functions that can be set for each of the “Dealer Modes”. The dealer sets the operations functions, channel frequencies, signal modes in accordance to the customer’s needs.

Mode	Function
DEALER MODE	Global Settings, DTMF Settings, Enhanced Global Settings, Channel Settings, Wired Cloning, Wireless Cloning
GLOBAL SETTINGS The dealer sets the following functions ON/OFF according to the user's operating needs.	1. Monitor 2. Scan 3. Dial 4. Talk Around 5. Low Power 6. Priority 7. Priority Channel 8. Look Back A 9. Look Back B 10. Revert Channel 11. TX Scan Delay 12. Dropout Delay Time 13. Time Out Timer 14. Transmit Warning 15. TOT Resume Time 16. TOT Reset Time 17. Squelch Level 18. Beep 19. Signalling 20. Battery Save 21. Selectable CTCSS 22. Delete/Add 23. Test Mode
DTMF SET MODE The dealer set the following functions ON/OFF according to the user's operating needs.	24. Digit Time 25. Inter Digit Time 26. First Digit Time 27. Rise Time 28. Rise Time With CTCSS 29. PTT ID 30. Dial ID 31. Connect ID 32. Disconnect ID 33. No. Of DTMF Keys 34. DTMF Hold Time 35. Store & Send 36. D Key Assignment 37. DTMF Signaling 38. Intermediate Code 39. Group Code 40. SQ. Auto Reset Time 41. Call Alert/Transpond 42. Clear To Transpond
EXTENDED FUNCTION MODE	43. "A" Tone Duration 44. "B" Tone Duration 45. Gap Time 46. Auto Reset Time 47. Key 1, Key 2, Key 3, and Key 4 Assignment 48. Key 5 and Key 6 Assignment
CHANNEL SET MODE The dealers use this mode to set channel frequencies and signaling according to the user's operating needs.	1. Channel Selection 2. RX Frequency 3. RX Tone Signaling 4. TX Frequency 5. TX Tone Signaling 6. DTMF/2-Tone Signaling 7. ANI ID Enable 8. Scan Delete/Add 9. Busy Channel Lockout 10. Clock Frequency Shift 11. TX Power 12. Bandwidth 13. DTMF ID Code Enable 14. Two-Tone Signaling
WIRED CLONE MODE	In this mode, data is copied from one radio to another through a cable.
WIRELESS CLONE MODE	In this mode, data is copied from one radio to another without cable by means of the DTMF signaling.

Table 2.1 – Dealer Modes

2.1.3.1. Dealer Mode – Global Settings

To place the unit into the "Dealer Mode" for editing the global settings, do the following:

1. While pressing and holding the [LAMP] and [DIAL] buttons, switch the power "on". After 2 seconds the radio enters the dealer mode and "SEL" appears on the display.



2. While in dealer mode, press [SCN] to enter the global set mode.

Table 2.2 shows the function number and function options that can be selected while in this mode. While in this mode, the Channel Selector knob is used to set functions "ON" or "OFF" or to select the setting. After a function is set, pressing the [PTT] button stores the setting and increments the menu to the next function option. Also, when the [PTT] button is pushed, a beep will sound to confirm the setting.

Pressing the [SCN] button at any time while reviewing the function options will cause the unit to exit the selection mode and revert back to the dealer mode screen. The current function option will not be stored if it was changed. After the complete option list has been cycled through, "End" will appear on the display. To exit dealer mode, cycle the power "off" and then back "on".

To review or confirm the function settings while in the DTMF set mode, press and hold the [MONI] button and turn the channel select knob.

Function No.	Function Name	Option (Defaults are highlighted)	Display Left Char. Right Char.		Remarks
1	MONITOR	OFF	1	OFF	Disables the [MONI] button.
		Monitor Momentary	1	1	Signaling squelch (CTCSS, CDCSS, 2tone, or DTMF) is temporarily disabled when the MONI button is pressed.
		Monitor Lock	1	2	Toggles between signal squelch and monitor when the [MONI] button is momentarily pressed.
		SQ OFF Momentary	1	3	Unsquelsches the receiver while the [MONI] button is pressed.
2	SCAN	OFF	2	OFF	Disables SCAN mode.
		CO	2	CO	"Carrier Operated" SCAN.
		TO	2	TO	"Time Operated" SCAN.
3	DIAL	Disable	3	OFF	Disables the [DIAL] key.
		Enable	3	ON	Enables the [DIAL] key.
4	TALK AROUND	Disable	4	OFF	Disables the Talk Around feature
		Talk Around	4	TA	Enables the Talk Around feature. When selected in the user mode, the transmit frequency becomes the same as the receive frequency of the selected channel.
		Reverse	4	RE	Enables the Talk Around feature. When selected in the user mode, the transmit frequency becomes the same as the receive frequency and the receive frequency becomes the same as the transmit frequency of the selected channel.
5	LOW POWER	Disable	5	OFF	Disables the [LO] button so the user cannot select the low power mode.
		Enable	5	ON	Enables the [LO] button so the user can toggle between the low and high transmit power modes.
6	PRIORITY	OFF	6	OFF	Disables the Priority feature.
		Fixed	6	1	The Priority channel is a fixed channel selected by the dealer. The user cannot change it.
		Selected	6	2	The priority channel can be selected by the user while in the user mode.
7	PRIORITY CHANNEL	1 ~ 99	7	1	The fixed priority channel number. Note: "Fixed" must be selected under Priority to enable this feature.
			7	99	
8	LOOK BACK A	0.3s ~1.5s (0.1s steps)	8	0.3	Conditions: 1. The priority feature is enabled. 2. The Scan feature is enabled. 3. The radio is in the scan mode. 4. The radio stops on an active channel that is not the priority channel. Look Back A is the time intervals that the priority is checked for activity while receiving on a non-priority channel.
			8	1.5	

9	LOOK BACK B	0.5s ~ 5.0s (0.5s steps)	9 0.5 Default = 2 sec.	Conditions: 1. The priority feature is enabled. 2. The Scan feature is enabled. 3. The radio is in the scan mode. 4. The radio stops on an active channel that is not the priority channel. 5. A signal is detected on the priority channel, but the signaling squelch (CTCSS, CDCSS, 2-Tone, or DTMF) is not the same as the priority channel. Look Back B is the time intervals that the priority is checked for activity while receiving on the non-priority channel.
10	REVERT CHANNEL	Selected	10 1	Starts scanning or resumes scanning from the selected channel. When scanning and the PTT button is pressed, it will transmit on the last channel to be selected by the channel selector even if a call is being received on another channel.
		Last Call	10 2	Starts scanning or resumes scanning from the last channel that received a call. When scanning and the PTT button is pressed, it will transmit on the last channel that received a call.
		Last Used	10 3	Starts scanning or resumes scanning from the last channel that was transmitted on. When scanning and the PTT button is pressed, it will transmit on the last channel that was transmitted on even if a call is being received on another channel.
		Selected + Talk Back	10 4	Starts scanning or resumes scan from the selected channel. When scanning and the PTT button is pressed, it will transmit on the last channel to be selected by the channel selector; or if a call is received and the PTT button is pressed, it will transmit on the received channel (the PTT must be pressed before the Drop Out Delay Time ends, otherwise it will transmit on the last channel selected).
		Priority	10 5	Starts scanning or resumes scanning from the priority channel. When scanning and the PTT button is pressed, it will only transmit on the priority channel. When in the manual mode, the radio will transmit on the selected channel
		Priority + Talk Back	10 6	Starts scanning or resumes scanning from the priority channel. When scanning and the PTT button is pressed, it will transmit on the priority channel; or if a call is received on a non-priority channel and the PTT button is pressed, it will transmit on the received channel (the PTT must be pressed before the Drop Out Delay Time ends, otherwise it will transmit on the priority channel).
11	TX-SCAN DELAY TIME	0.5s ~ 5.0s (0.5s steps)	11 0.5 Default = 3 sec.	The period of time that the radio stays on a channel after a transmission has been made before it resumes scanning.
			11 5.0	
12	DROP OUT DELAY TIME	0.5s ~ 5.0s (0.5s steps)	12 0.5 Default = 3 sec.	The period of time before the radio resumes scanning after a received channel becomes inactive.
			12 5.0	

13	TIME OUT TIMER	OFF 30s~300s (30s steps)	13 OFF	The period of time that a user can transmit before it stops transmitting. The unit beeps until the user releases the PTT button to reset the TOT.
			13 30 Default = 60 sec.	
			13 300	
14	TRANSMIT WARNING	OFF 10s ~ 250s (10s steps)	14 OFF	No warning tone
			14 10	The period of time that a user can transmit before it starts beeping. The unit beeps until the user releases the PTT button to reset the timer.
			14 250	
15	TOT RESUME TIME	OFF 1s ~ 60s (1s steps)	15 OFF	Disabled
			15 1	After the TOT period, this is the period of time the radio must be in the receive mode before the PTT button is active.
			15 60	
16	TOT RESET TIME	OFF 1s ~15S (1s/1STRP)	16 OFF	Disabled - The PTT button can be pressed immediately after released upon TX TOT timing out
			16 1	After the TOT period, this is the period of time the radio must be un-keyed before the PTT button is active.
			16 15	
17	SQUELCH LEVEL	0 ~9 (1 level)	17 0 Default = 5	Squelch level adjustment - Zero is minimum squelch adjust and 9 is maximum squelch adjust.
			17 9	
18	BEEP	NO	18 OFF	No beeps will be heard when the keypad is pressed or the channel selector passes channel one.
		YES	18 ON	All beeps are enabled.
19	SIGNALIN G	AND	19 And	Requires all programmed signaling squelch (CTCSS, CDCSS, 2tone, or DTMF) to be decoded before the receiver opens.
		OR	19 Or	Requires only one form of signaling squelch (CTCSS, CDCSS, 2tone, or DTMF) to be decoded before the receiver opens.
20	BATTERY SAVE	Disable	20 OFF	Disables the battery saver feature.
		Enable	20 ON	Enables the battery saver feature
21	SELECTAB LE CTCSS	Disable	21 OFF	Disabled
		Enable	21 ON	Enables the user to toggle through all CTCSS tones when on a specific channel - affects RX and TX
22	DELETE/ ADD ENABLE (User)	Disable	22 OFF	Disabled
		Enable	22 ON	Enables the user to add or delete channels to or from the list of channels to be scanned.
23	DEALER MODE/ TEST MODE ENABLE	Disable	23 OFF	Prohibits Dealer and Test modes
		Enable	23 ON	Permits Dealer and Test modes

Table 2.3 – Dealer Mode Global Settings

2.1.3.2. Dealer Mode – DTMF Settings

To place the unit into the “Dealer Mode” for editing the DTMF settings, do the following:

1. While pressing and holding the [LAMP] and [DIAL] buttons, switch the power “on”. After 2 seconds the radio enters the dealer mode and “SEL” appears on the display.



2. While in dealer mode, press [DIAL] to enter the DTMF Settings mode.

Table 2.3 shows the function number and function options that can be selected while in this mode. While in this mode, the Channel Selector knob and keypad (0-9, *, #, A-D) are used to set DTMF functions “ON” or “OFF” or to select the setting. After a function is set, pressing the [PTT]¹ button stores the setting and increments the menu to the next function option. Also, when the [PTT] button is pushed, a beep will sound to confirm the setting.

Pressing the [SCN] button at any time while reviewing the function options will cause the unit to exit the selection mode and revert back to the dealer mode screen. The current function option will not be stored if it was changed. After the complete option list has been cycled through, “End” will appear on the display. To exit dealer mode, cycle the power “off” and then back “on”.

To review or confirm the function settings while in the DTMF Settings mode, press and hold the [MONI] button and turn the channel select knob.

Function No.	Function Name	Option (Defaults are highlighted)	Display Left Char. Right Char.	Remarks
24	DIGIT TIME	50ms ~ 200ms (10ms steps)	24 50	The period of time that each of the programmed DTMF ANI digits are transmitted.
			24 200	
25	INTER DIGIT TIME	50ms ~ 200ms (10ms steps)	25 50	The period of time between each of the programmed DTMF ANI digits
			25 200	
26	FIRST DIGIT TIME	50ms ~ 200ms (10ms steps)	26 50	The period of time that the first digit of the programmed DTMF ANI is transmitted.
			26 200	
27	RISE TIME ²	100ms~1000ms (50ms steps)	27 100	The period of time between un-modulated TX carrier and when the programmed DTMF ANI is transmitted.
			27 1000	
28	RISE TIME WITH CTCSS ²	100ms~1000ms (50ms steps)	28 100	The period of time between un-modulated TX carrier and when the programmed CTCSS is transmitted.
			28 1000	

¹ Except for functions 31 and 32, which are set with the keypad.

² When DTMF function is enabled together with the Battery Save mode, and when CTCSS is used, the transmit delay time should be set > 300 ms.

29	PTT ID	Disable	29 OFF	When transmitting, the programmed Connect or Disconnect DTMF ANI will not be sent when [DIAL] and the respective "*" or "#" key is pressed.
		Connect	29 1	When transmitting, the programmed Connect DTMF ANI will be sent when [DIAL] and "*" key is pressed.
		Disconnect	29 2	When transmitting, the programmed Disconnect DTMF ANI will be sent when [DIAL] and "#" key is pressed.
		Both	29 3	When transmitting, the programmed Connect or Disconnect DTMF ANI will be sent when [DIAL] and respective "*" or "#" key is pressed.
30	DIAL ID	Disable	30 OFF	Disabled
		ON	30 ON	When transmitting, a stored DTMF ANI code will be sent when [DIAL] and a memory location key is pushed. An ANI number must be programmed in the user mode. Up to 10 memory locations can be used (keys 0 through 9).
31	CONNECT ID	Blank	31-----	No Connect ID is programmed.
		0 × 1 ~ # × 16	31 0 31FFF FF	At least 1 digit and up to 16 digits can be programmed to be sent when [DIAL] and "*" key is pressed. Note: Only the last five digits of the ANI number will be displayed.
32	DISCONNECT ID	Blank	32-----	No Disconnect ID is programmed.
		0 × 1 ~ # × 16	32 0 32 FFFFF	At least 1 digit and up to 16 digits can be programmed to be sent when [DIAL] and "#" key is pressed. Note: Only the last five digits of the ANI number will be displayed.
33	NO. of DTMF KEYS	12keys (0 ~ 9,*,#)	33 12	Activates keys 0 through 9, plus * and #
		16keys (0 ~ 9,*,#,A ~ D)	33 16	Activates keys 0 through 9, plus A, B, C, D, * and #.
34	DTMF HOLD TIME	Disable	34 OFF	No Hold Time
		Enable	34 ON	Continues to key for 2 seconds after the last number on the DTMF key is manually selected, but only if the PTT button is released after the last number.
35	STORE & SEND	OFF	35 OFF	Does not allow Auto ID numbers to be stored.
		ON	35 ON	Allows Auto ID numbers to be stored.
36	D KEY ASSIGNMENT	D Code	36 d	Functions as a D key only
		1s ~ 16s (1s steps)	36 1 36 16	When transmitting, the radio transmits an un-modulated signal for the programmed time when [DIAL] and the D key is pressed.

37 ³	DTMF SIGNALING	Disabled	37 OFF	Disabled
		Code SQ	37 1	When the respective DTMF code is received on a channel, the radio will ring for approximately 10 seconds and receiver audio will open. The ringing can be terminated by the user responding with a transmission or by pressing the MON button.
		SEL CALL	37 2	Conditions: 1. The receiving radio must have a three digit DTMF ID Code programmed. 2. The transmitting radio must be programmed with a 3-digit DTMF ID code, a 1-digit Intermediate Code, and a 1-5 digit Message code. (i.e. <u>123 # 4567</u>). The whole message string is sent when the [DIAL] key is pressed.
38	INTERMEDIATE CODE	0 ~ 9	38 0 38 9	The digit that separates the 3 digit DTMF ANI code to be decode and the 1 to 5 digit message (Ex. 123 # 4567)
		A ~ D	38 A 38 d	
		*	38 E	
		#	38 F	
39	GROUP CODE	Disabled	39 OFF	Disabled
		A ~ D	39 A 39 d	Identifies that a DTMF Select call is for a group, not for an individual.
		*	39 E	
		#	39 F	
40	SQ AUTO RESET TIME	OFF	40 OFF	Disabled
		1s ~ 15s (1s steps)	40 1 Default = 10	After a DTMF signal is decoded, it is the period of time before the squelch is reset to the ready state of decoding another DTMF signal.
			40 15	

³ When changing and storing a “DTMF SIGNALING” option, the ID CODE setting in channel mode will be reset to “000”.

41	CALL ALERT/TRANSPOND	Disabled	41 OFF	Disabled
		Call Alert	41 1	The radio flashes the LED indicator and rings when it decodes a two-tone or DTMF signal.
		TRANSPOND (Call Alert).	41 2	The radio flashes the LED indicator and rings when it decodes a two-tone or DTMF signal; and it transmits the ring back to the sending radio.
		TRANSPOND (ID Code)	41 3	The radio flashes the LED indicator when it decodes a two-tone or DTMF signal. If DTMF is used, the receiving radio also transmits the DTMF ID code (listed in the Channel programming) back to the sending radio.
		TRANSPOND (Transpond Code)	41 4	The radio flashes the LED indicator when it decodes a two-tone or DTMF signal. If DTMF is used, the receiving radio also transmits the DTMF ID code (listed in the DTMF Auto ID that is stored in location 0) back to the sending radio. If no DTMF Auto ID is stored in location 0, the receiving radio will not transpond.
42	CLEAR TO TRANSPOND	No	42 OFF	Disabled - The radio will transpond
		Yes	42 ON	The radio will not transpond.

Table 2.3 – Dealer Mode DTMF Settings

If any of the functions in Table 2.2 and Table 2.3 are set to “Off”, the related setting shown in table 2.4 can be set, but the setting will not be recognized.

Function Name	Setting	Disable Condition
2-TONE/ DTMF	DTMF	37. DTMF signaling is OFF
2. [SCN]	TO	7. Priority is fixed or selected.
6. Priority	Fixed, Selected	2. [SCN] is OFF
7. Priority CH		6. Priority is OFF or fixed.
8. Look Back A		6. Priority is OFF
9. Look Back B		6. Priority is OFF
10. Revert CH	Priority, Priority + Selected	6. Priority is OFF
11. Dwell Time		2. [SCN] is OFF
12. Dropout Delay Time		2. [SCN] is OFF
14. TOT Pre-Alert		13. Time Out Time is OFF
15. TOT Rekey Time		13. Time Out Time is OFF
16. TOT Reset Time		13. Time Out Time is OFF
31. Connect ID		29. PTT ID is OFF or disconnected and 30. Dial ID is OFF
32. Disconnect ID		29. PTT ID is OFF or connected and 30. Dial ID is
38. Intermediate Code		37. DTMF signaling is OFF or is code SQ.
40. Unsquellch Time		37. DTMF signaling is OFF.
41. Call Alert/Transpond		37. DTMF signaling is OFF.

Table 2.4 – Disabled Function Conditions

2.1.3.3. Dealer Mode - Enhanced Global Settings

To place the unit into the “Dealer Mode” for editing the enhanced global settings, do the following:

1. While pressing and holding the [LAMP] and [DIAL] buttons, switch the power “on”. After 2 seconds the radio enters the dealer mode and “SEL” appears on the display.



2. While in dealer mode, press [LO] to enter the Enhanced Global Settings mode.

Table 2.5 shows the function number and function options that can be selected while in this mode. While in this mode, the Channel Selector knob is used to set functions “ON” or “OFF” or to select the setting. After a function is set, pressing the [PTT] button stores the setting and increments the menu to the next function option. Also, when the [PTT] button is pushed, a beep will sound to confirm the setting.

Pressing the [LO] button at any time while reviewing the function options will cause the unit to exit the selection mode and revert back to the dealer mode screen. The current function option

will not be stored if it was changed. After the complete option list has been cycled through, “End” will appear on the display. To exit dealer mode, cycle the power “off” and then back “on”.

To review or confirm the function settings while in the Enhanced Global Set mode, press and hold the [MONI] button and turn the channel select knob.

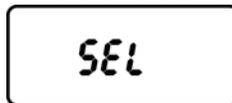
Function No.	Function Name	Option (Defaults are highlighted)	Display Left Char. Right Char.	Remark
43	A TONE DURATION	0.5~10s (0.1s steps)	43 0.5 Default = 0.5	A Tone transmit time.
44	B TONE DURATION	0.5~10s (0.1s steps)	44 0.5 Default = 0.5	B Tone transmit time.
45	GAP TIME	0~10s (0.1s steps)	45 0.5 Default = 0.5	Period of time of un-modulated carrier between A tone and B tone.
46	AUTO RESET TIME	OFF, 1~60s (1s steps)	46 OFF	Disabled
			46 5	The time allowed for the receiving unit to respond back to the sender before the unit resets back to signal decoding mode.
47	Key 1, Key2, Key3, Key 4 Assignment	There are 24 arrays	47 1234	The SCN (Scan), DIAL (DTMF Dial), TA (Talk Around), and LO (Low Power) keys can be assigned to 24 predetermined configurations.
			47 1324	
			47 4321	
48	Key 5 & Key 6 Assignment	There are 2 arrays	48 56	The Mon (Monitor) and LAMP keys can be assigned to 2 predetermined configurations.
			48 65	

Table 2.5 - Dealer Mode Enhanced Global Settings

2.1.3.4. Dealer Mode - Channel Settings

To place the unit into the “Dealer Mode” for editing the channel settings, do the following:

1. While pressing and holding the [LAMP] and [DIAL] buttons, switch the power “on”. After 2 seconds the radio enters the dealer mode and “SEL” appears on the display.



2. While in dealer mode, press [TA] to enter the Channel Setting mode.

Table 2.6 shows the function number and function options that can be selected while in this mode. While in this mode, the Channel Selector knob is used to set functions “ON” or “OFF” or to select the setting. After a function is set, pressing the [PTT] button stores the setting and increments the menu to the next function option. Also, when the [PTT] button is pushed, a beep will sound to confirm the setting.

Pressing the [TA] button at any time while reviewing the function options will cause the unit to exit the selection mode and revert back to the dealer mode screen. The current function option

will not be stored if it was changed. After the complete option list has been cycled through, “End” will appear on the display. To exit dealer mode, cycle the power “off” and then back “on”.

Function Name	Option (Defaults are highlighted)	Display Left Char. Right Char.	Remark
CHANNEL SELECT	1CH ~ 99CH	CH 1	Channel to be programmed.
		CH 99	
RX FREQUENCY	Blank	-- -----	No receive or transmit frequency
		150.0000o	Pressing the [LO] button toggles no frequency to the start of the receive frequency if the channel is blank.
		150.00 <u>25</u> o	Rotating the channel selector will raise or lower the frequency by 2.5KHz increments.
		150.1 <u>000</u> o	Pressing the [SCN] key will cause the 2nd, 3rd, and 4th digits past the decimal point to change to zeros.
		150.0 <u>625</u> o	Holding in the [SCN] key and rotating the channel selector will raise or lower the frequency by 6.25KHz increments.
		15 <u>1</u> .0000o	Holding in the lamp key and rotating the channel selector will raise or lower the frequency by 1MHz increments.
RX TONE	Disable	OFF	Disables CTCSS or DCS
	CTCSS 67.0 Hz – 250.3Hz	67.0	Selecting the [LO] key switches it from OFF to the first CTCSS tone. Rotate the channel selector to move the tone frequency up or down until the desired tone frequency is reached.
	CDCSS	023	Selecting the [LO] key again switches it from CTCSS to the first DCS tone. Rotate the channel selector to move the DCS code up or down until the desired code is reached.
TX FREQUENCY	Blank	-- -----	No transmit frequency. Receive only.
		150.0000o	Pressing the [LO] button toggles no frequency to the start of the transmit frequency if the channel is blank.
		150.00 <u>25</u> o	Rotating the channel selector will raise or lower the frequency by 2.5KHz increments.
		150.1 <u>000</u> o	Pressing the [SCN] key will cause the 2nd, 3rd, and 4th digits past the decimal point to change to zeros.
		150.0 <u>625</u> o	Holding in the [SCN] key and rotating the channel selector will raise or lower the frequency by 6.25KHz increments.
		15 <u>1</u> .0000o	Holding in the lamp key and rotating the channel selector will raise or lower the frequency by 1MHz increments.

TX TONE	Disable	OFF	Disables CTCSS or DCS
	CTCSS 67.0 Hz – 250.3Hz	67.0	Selecting the [LO] key switches it from OFF to the first CTCSS tone. Rotate the channel selector to move the tone frequency up or down until the desired tone frequency is reached.
	CDCSS	023	Selecting the [LO] key again switches it from CTCSS to the first DCS tone. Rotate the channel selector to move the DCS code up or down until the desired code is reached.
DTMF or TWO TONE SIGNALING	Disable	1 OFF	No DTMF or Two Tone signaling is required.
	DTMF	1 1	Allows DTMF signaling on selected channel.
	Two Tone	1 2	Allows Two Tone signaling on selected channel.
ANI	Disable	2 OFF	Disables this feature.
	Enable	2 2	Allows the DTMF ANI to be transmitted every time the PTT switch is pressed.
SCAN	Delete	3 dEL	Deletes the channel from the permanent scan list.
	Add	3 ADD	Adds the channel to the permanent scan list.
BUSY CHANNEL LOCKOUT	Disabled	4 OFF	Busy Channel Lockout is disabled.
	Enabled	4 On	Busy Channel Lockout is enabled.
CLOCK SHIFT	Disabled	5 OFF	Disabled
	Enabled	5 On	Used to shift the synthesizer clock frequency in order to reduce or resolve interference when a channel is experiencing a “self-quieting spur” or a “birdie frequency”.
TX POWER	High	6 H	High power is 5 watts. When set to Hi, pressing the [Lo] button toggles the power from 5 watts to 1 watt or from 1 watt to 5 watts.
	Low	6 L	Low power is 1 watt. The [Lo] button will not toggle the channel to high power. Always set to low power.
BANDWIDTH	Wide Band	7 b0	Receiver bandwidth is +/-25KHz, Transmit deviation is less than +/-5KHz.
	Narrow Band	7 b1	Receiver bandwidth is +/-12.5KHz, Transmit deviation is less than +/-2.5KHz.
DTMF ID CODE ⁴		8 12345	The DTMF code must have a minimum of 3 digits, but no more than 10 digits.

⁴ Step 8 will not show unless DTMF is selected in step 1 of this section.

TWO TONE SIGNALING ⁵	A Tone	9 400	From the chart below select a number that pertains to the tone frequency closest to the desired tone frequency for Tone A. Note: The tone frequencies listed in the chart can be changed using the PC software and programming cable. Also, steps 9 and 10 will not show unless two tone is selected in step 1 in this section.
	B Tone	10 456	From the chart below select a number that pertains to the tone frequency closest to the desired tone frequency for Tone B.

Table 2.6 - Dealer Mode Channel Settings

2.1.3.5. CTCSS Tone Frequencies

The CTCSS Tone Frequencies shown in table 2.7 are all possible CTCSS frequencies that can be programmed into the RP599A Series radios. The CTCSS frequencies listed are standard TIA/EIA-603-A frequencies.

No.	Frequency (Hz)						
1	67.0	11	94.8	21	131.8	31	186.2
2	69.3	12	97.4	22	136.5	32	192.8
3	71.9	13	100.0	23	141.3	33	203.5
4	74.4	14	103.5	24	146.2	34	210.7
5	77.0	15	107.2	25	151.4	35	218.1
6	79.7	16	110.9	26	156.7	36	225.7
7	82.5	17	114.8	27	162.2	37	233.6
8	85.4	18	118.8	28	167.9	38	241.8
9	88.5	19	123.0	29	173.8	39	250.3
10	91.5	20	127.3	30	179.9		

Table 2.7 – CTCSS Frequencies

2.1.3.6. DCS Codes

The CDCSS Codes shown in table 2.8 are all possible CDCSS Codes that can be programmed into the RP599A Series radios. The CDCSS Codes listed from 023 to 371 are standard TIA/EIA-603-A frequencies.

⁵ DTMF and CTCSS cannot be enabled simultaneously.

023	071	134	223	306	411	503	631	734
025	072	143	226	311	412	506	632	743
026	073	152	243	315	413	516	654	754
031	074	155	244	331	423	532	662	
032	114	156	245	343	431	546	664	
043	115	162	251	346	432	565	703	
047	116	165	261	351	445	606	712	
051	125	172	263	364	464	612	723	
054	131	174	265	365	465	624	731	
065	132	205	271	371	466	627	732	

Table 2.8 – CDCSS Codes

2.1.3.7. Two-Tone Frequencies

The Two-Tone Frequencies shown in table 2.9 are all possible frequencies that can be programmed through the front keypad of the RP599 Series radios.

No.	Frequency (Hz)						
1	400	5	675	9	1141	131	1927
2	456	6	770	10	1301	14	2197
3	520	7	878	11	1483	15	2504
4	593	8	1001	12	1690	16	2855

Table 2.9 – Two-Tone Frequencies

2.1.4. Cloning

Cloning allows the memory contents of one unit (master) to be transferred to another unit (slave). There are two methods that can be used for cloning the RPV599 series radio.

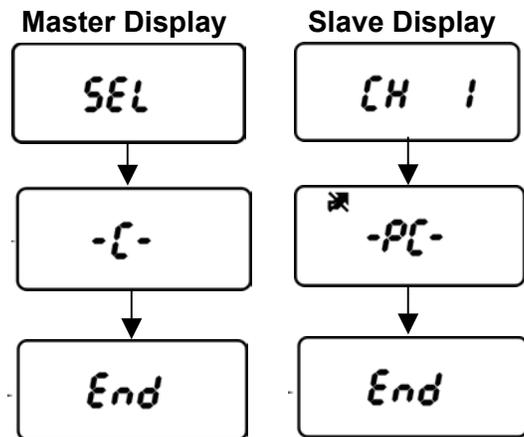
- Wired – Cloning using the CCRP cloning cable.
- Wireless – Over the air cloning.

2.1.4.1. Wired Cloning

1. Turn both the master and slave units “off”.
2. Connect each end of the CCRP cable into the respective microphone jacks of the radio.
3. Turn the slave unit “on”.

Do the following with the master radio:

4. While pressing and holding the [LAMP] and [DIAL] buttons, switch the power “on”. After 2 seconds the radio enters the dealer mode and “SEL” appears on the display.
5. Press the [LAMP] button to enter the clone mode. “-C-” will appear in the display.
6. Press the [MONI] button to transmit the data to the slave unit. While the data is being transferred, the red LED will light on the slave unit and the busy icon on the display will flash. When the transfer is complete. Both displays will show “End”.

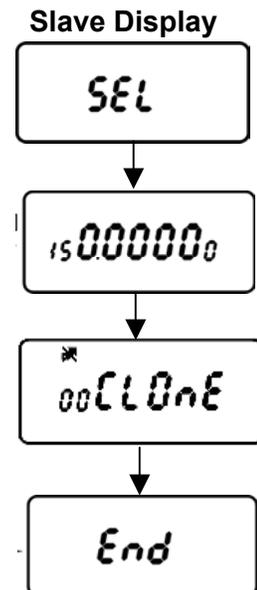


7. To clone another slave unit, turn off the slave unit, remove the CCRP cable from the slave unit, connect the CCRP to another slave unit, and switch the unit on.
8. Repeat steps 5 and 6 to clone more units.

2.1.4.2. Wireless Cloning

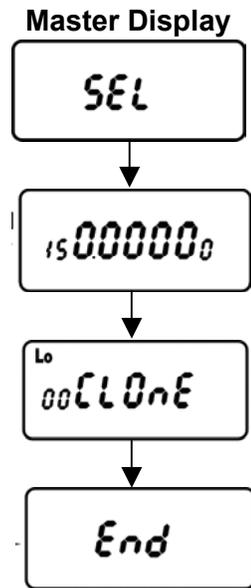
Do the following with the slave radio:

1. Remove the antenna.
2. While pressing and holding the [LAMP] and [DIAL] buttons, switch the power “on”. After 2 seconds the radio enters the dealer mode and “SEL” appears on the display.
3. Press the [MONI] button to enter the wireless clone mode. A frequency will appear in the display. Adjust the channel select knob to adjust the frequency to the desired frequency to receive data on. Note: Pressing the [LAMP] button while turning the channel selector, will change the frequency in 1 MHz steps.



Do the following with the master radio:

4. While pressing and holding the [LAMP] and [DIAL] buttons, switch the power “on”. After 2 seconds the radio enters the dealer mode and “SEL” appears on the display.
5. Press the [MONI] button to enter the wireless clone mode. A frequency will appear in the display. Adjust the channel select knob to adjust the frequency to the desired frequency to transmit data on. Note: Pressing the [LAMP] button while turning the channel selector, will change the frequency in 1 MHZ steps.
6. Press the PTT button to start cloning. “ooCL0nE” will appear in the displays of both the master and slave units. Also, the “Lo” power icon will be displayed on the mater unit and the receiver icon will be displayed on the slave unit. The master’s LED indicator will be red (indicating transmitting) and the slave’s LED indicator will be green (indicating receiving). During cloning, the two-digit counter will increment one digit at a time on each of the displays.



When cloning is successful, “End” will be shown on the displays. If “Err0r” is shown on the slave’s display, press the [MONI] button on the slave unit and repeat steps 4 – 6 with the slave radio. Make sure the master and slave units are in close proximity of each other.

2.1.5. Programming By Computer

Programming a radio from a computer is not covered in this manual. Contact RELM Communications for the programming cable (PCRP) and software (RESRP99).