

Section 4

RADIO PROGRAMMING

Introduction

The Alpha Series radios can be programmed using the front panel or using the Customer Programming Software (CPS).

Programming Your Radio

Overview of the Programming Process

To prepare properly programmed radios for your customers, you should

1. program your radio with all the necessary parameters, as required by your customers, and then
2. clone these parameters over to all your customer's radios.

Cloning Radio Parameters to User Radios

Cloning duplicates the contents of Radio 1 (master radio) into Radio 2 (slave radio). However, tuning and alignment information are not affected by cloning.

Parameters which are cloned

- Radio Wide parameters
- Channel settings
- VFO settings

Parameters which are not cloned

- All hardware tuning and alignment parameters.
- Unit Serial Number.

To Clone a Radio

Cloning duplicates the contents of your radio (master radio) into your customer's radio (slave radio). Tuning and alignment information are not affected by cloning.

1. Turn off both the master and slave radios (if any of them are turned on).
2. Connect both radios with the cloning cable through the Programming Port (lower port of the Accessory Connector).
3. Turn on the slave radio.

4. Press and hold the **A** button, and turn on the master radio.
5. The master radio displays **CLONE** if cloning can proceed, otherwise an error message is shown.
6. The slave radio displays **PROG** while it is being programmed.
7. When cloning is completed, the master radio displays **END**, and the slave radio resets automatically.
8. Disconnect radios from the cloning cable. They are now ready for operation.

Error Conditions

An error may occur when cloning a radio. When this happens, an error message is displayed. The following lists the causes and the possible solutions for each error message.

Error Message	Description
TIME OUT	Data communications time-out. Please ensure that the slave radio is switched on, and the cloning cable is properly connected.
BCC ERR	Data communications checksum error.
TYPE ERR	Mismatch in model numbers. Please ensure that the master and slave radios are of the same model number.
CMD ERR	Data communications command error.

CPS Programming

The CPS is designed for use in the Windows 95/98/NT environment.

An Installation instruction manual is contained within each CPS&Tuner kit.

Description	Kit Number
Alpha Series CD-ROM CPS&Tuner Installation Kit	ENVN4061

Refer to online help files for the CPS Programming procedures.

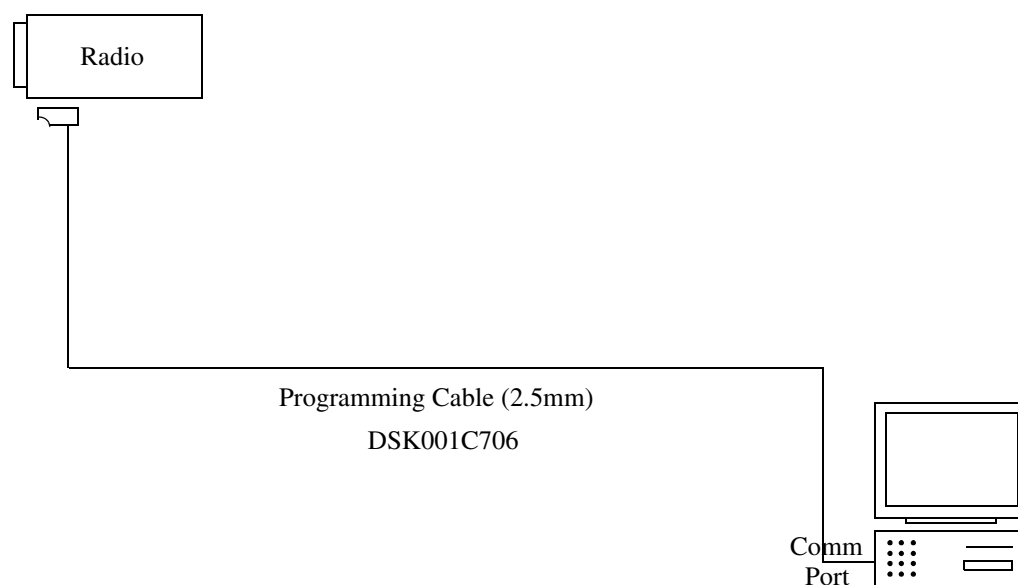


Figure 4-1 CPS Programming Setup

Front Panel Programming

Introduction

To program your radio using the front panel, you need to enter Programming Mode in Dealer Configuration. This configuration/mode allows you to edit a number of features to enhance the use of this radio.

NOTE: Some Alpha Series models cannot enable Dealer Configuration. Please use the CPS to program the radio.

Dealer and User Configurations

Your radio is shipped out from the factory configured according to the User Configuration. In this configuration, users can only access a limited number of features. Channels and other radio settings can **ONLY** be programmed when the radio is operating in Dealer Configuration.

To prepare radios for the users, the dealer should

1. Set the radio into Dealer Configuration (if the radio is configured in User Configuration).
2. Enter Programming Mode.
3. Program the radio with all the necessary parameters, according to the users' requirements.
4. Set the radio back to User Configuration.
5. Clone the radio's parameters to all the users' radios.

Switching between Dealer and User Configurations

From User to Dealer

1. Turn off the radio.
2. Press PTT, the *Monitor* button and the + button together, and turn on the radio.
3. LCD displays **PRO-CLR**.
4. To confirm switching to Dealer Configuration, press PTT. To cancel, press any other button.
5. Turn off the radio. The radio now operates in Dealer Configuration.

From Dealer to User

1. Turn off the radio.
2. Press PTT, the *Monitor* button and the + button together, and turn on the radio.
3. LCD displays **PROTECT**.
4. To confirm switching to User Configuration, press PTT. To cancel, press any other button.
5. Turn off the radio. The radio now operates in User Configuration.

IMPORTANT: If the radio is to be given to the customer, **REMEMBER** to switch it back to operate in User Configuration.

Entering Programming Mode

If the radio is turned on, turn it off. Press and hold the *MON*, and turn on the radio. A ringing tone is heard, which indicates that the radio is in Programming Mode. The *RW* and *K* indicators are displayed.

Exiting Programming Mode

To exit Programming Mode, turn off the radio.

Accessing Programming Mode Parameters

In Dealer Configuration, Programming Mode parameters are grouped into three main categories: *RW* (Radio Wide), Channel (001 to XXX¹) and *VFO* (Variable Frequency Operation).

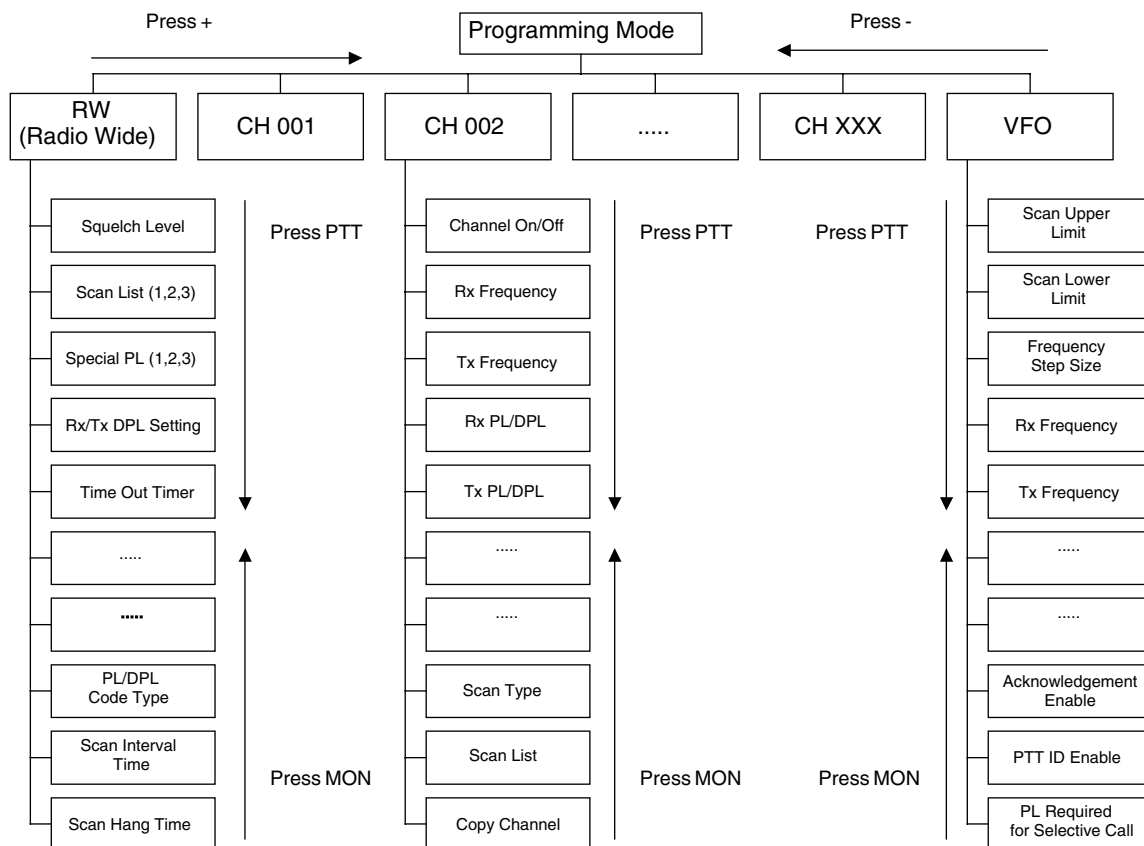
Use + or - buttons, to move from one category to another.

RW ?‡ CH 001 ?‡ CH 002 ?‡ ... ?‡ CH XXX¹ ?‡ VFO

NOTE: Radio operating in User Configuration is only restricted to *RW* parameters.

Once you have selected the category, and wish to view its parameters, use PTT or *MON* to move from one parameter to the other, as shown in the next diagram.

1. XXX denotes the maximum number of channels supported by your radio model.



Editing RW (Radio Wide) Parameters

Radio Wide parameters are common to the whole radio. They become effective after you press PTT or *MON*.

RW Parameter	Description	Range	Default from Factory	Remarks
SQL-XX	Squelch Level	SQL-00, ..., SQL-15	model dependent	<ul style="list-style-type: none"> Select low level when you need to receive very weak signal, and select high level when the communications distance is near, or your radio is receiving interference. Press + or - to select the desired squelch level.

RW Parameter	Description	Range	Default from Factory	Remarks
SCANLST1	Scan List 1	1-01-XXX, ..., 1-16-XXX, XXX denotes channel number.	1-01-001, 1-02-002, ..., 1-16-016	<ul style="list-style-type: none"> • Up to 16 members per scan list. First member is assigned as Priority Channel if Priority Scan is started. • When scanning is started, only these 16 members will be scanned. • Each channel can choose to use Scan List 1, 2 or 3. • By default, all your channels select Scan List 1. If there is special need to use the other two scan lists for some of your channels, please consult your dealer. • Press + and - to move from one scan list member to another. • To include a channel into the scan list, enter the desired channel number using the keypad. • To erase a channel number from the scan list, press #. • Refer to " Setting Up a Scan List" on page 4-21 for details.
SCANLST2	Scan List 2	2-01-XXX, ..., 2-16-XXX	2-01-001, 2-02-002, ..., 2-16-016	See Above.
SCANLST3	Scan List 3	3-01-XXX, ..., 3-16-XXX	3-01-001, 3-02-002, ..., 3-16-016	See Above.
PL1-XXX.X	Special PL Frequency 1	PL1-067.0, PL1-067.1, ..., PL1-254.9, PL1-255.0	PL1-120.0	<ul style="list-style-type: none"> • You may program any PL frequency from 067.0 Hz to 255.0 Hz, with 0.1 Hz resolution. This PL can then be used as receive and/or transmit PL for VFO or any channel. • Up to three special PL frequencies are available. • Use the keypad to enter the PL frequency directly. • Out-of-bound PL frequency will not be accepted. A negative tone is heard when attempted.
PL2-XXX.X	Special PL Frequency 2	PL2-067.0, PL2-067.1, ..., PL2-254.9, PL2-255.0	PL2-200.0	See above.
PL3-XXX.X	Special PL Frequency 3	PL3-067.0, PL3-067.1, ..., PL3-254.9, PL3-255.0	PL3-255.0	See above.

RW Parameter	Description	Range	Default from Factory	Remarks
RDPL-XXX	Rx DPL Setting	RDPL-NOR, RDPL-INV	RDPL-NOR	<ul style="list-style-type: none"> • Select RDPL-NOR to use the DPL codes listed under " DPL Codes" on page 4-19. • Select RDPL-INV to invert the received DPL before decoding it. • Inverted coding allows for more traffic/usage on frequencies. • DPL Invert must be set on both receiving and transmitting radios for communication to occur.
TDPL-XXX	Tx DPL Setting	TDPL-NOR, TDPL-INV	TDPL-NOR	<ul style="list-style-type: none"> • Select TDPL-NOR to use the DPL codes listed under " DPL Codes" on page 4-19. • Select TDPL-INV to encode DPL by inverting all the bits in the chosen DPL code, before sending it.
TOT-XXX	Time Out Timer	TOT-OFF, TOT-001, ..., TOT-010	TOT-001	<ul style="list-style-type: none"> • This determines the maximum duration that you can transmit continuously. • Press + or - to select the desired time out timer.
BS-XXXX	Battery Saver	BS-OFF, BS-NORM, BS-ENH	BS-ENH	<ul style="list-style-type: none"> • Battery Saver helps to extend your battery life. • When enabled, it turns off the radio receiver circuitry periodically when no activity is detected. • BS-NORM (Normal) turns off less frequently. Select this if you want to save battery and are expecting Selective Calls. • BS-ENH (Enhanced) turns off the receiver for a longer duration. Select this if you want to maximize battery saving, and do not expect to receive any Selective Call. • Press + or - to select the desired battery saver setting.
BT-XXXX	Battery Type	BT-NIMH, BT-NICD, BT-ALK	BT-NIMH	<ul style="list-style-type: none"> • Select the type of battery that your radio is using: NIMH (Nickel Metal Hydride), NICD (Nickel Cadmium) or ALK (Alkaline). • Press + or - to select the desired battery type. NOTE: Not all battery types are available at the time of printing. Please consult your dealer.
BEEP-X	Alert Tone Volume	BEEP-OFF, BEEP-1, BEEP-2, BEEP-3	BEEP-3	<ul style="list-style-type: none"> • Select the alert tone volume needed. Select BEEP-OFF if you require a quiet operation, or BEEP-3 if you are working in a noisy environment. • Press + or - to select the desired alert tone volume setting.
PRM-XXX	Prime Channel Select	PRM-OFF, PRM-001, ..., PRM-YYY, YYY denotes the highest channel number supported by your model.	PRM-OFF	<ul style="list-style-type: none"> • Prime Channel is a channel that you wish to spend most of your time monitoring. • The radio always powers up in the Prime Channel, if it is programmed. • The radio will always switch back to the Prime Channel if it is idle longer than the Prime Channel Return Hang Time (programmable) in other channel. • Press + or - to select the desired channel number as Prime Channel.

RW Parameter	Description	Range	Default from Factory	Remarks
PRMT-XXX	Prime Channel Return Hang Time	PRMT-OFF, PRMT-001, ..., PRMT-015	PRMT-010	<ul style="list-style-type: none"> This feature is only valid if a Prime Channel is programmed. XXX denotes the time that the radio will stay idle in a non-Prime channel before switching back to the Prime channel. Select OFF if you do not wish to switch to the Prime channel automatically. Unit is in seconds. Prime Channel Return Hang Time is therefore programmable from 1 second to 15 seconds in increments of 1 second.
PID-XXXX	PTT ID Transmit Manner	PID-OFF, PID-PRE, PID-POST, PID-BOTH	PID-PRE	<ul style="list-style-type: none"> Select how the PTT ID is transmitted: OFF (not transmitted), PRE (transmitted upon PTT press), POST (transmitted after PTT is released), BOTH (transmitted upon PTT press as well as after PTT is released). Press + or - to select the desired PTT ID transmit manner. NOTE: PTT ID has to be enabled on a per channel basis to enable transmission.
ST-XXX	PTT ID Sidetone	ST-OFF, ST-ON	ST-ON	<ul style="list-style-type: none"> When PTT ID Sidetone is enabled (ON), an alert tone is heard as soon as PTT is pressed, and when PTT ID is being sent. Press + or - to select ON or OFF.
SST-XXX	PTT ID Short Sidetone	SST-OFF, SST-ON	SST-OFF	<ul style="list-style-type: none"> When PTT ID short sidetone is enabled (ON), an alert tone is heard after PTT ID is sent. It indicates that the user is ready to start talking. Press + or - to select ON or OFF.
PTM-XXXX	Tx Pretime	PTM-0000, PTM-0025, ..., PTM-4000	PTM-0050	<ul style="list-style-type: none"> Pretime is the duration from which PTT is pressed to the time when PTT ID is ready to be sent. Adjust the pretime to suit the repeater's response time. Unit is in ms. Pretime is therefore programmable from 0 ms to 4000 ms in 25 ms steps. Press + or - to select the desired pretime.
LGT-XXXX	Backlight Select	LGT-AUTO, LGT-TOGL	LGT-AUTO	<ul style="list-style-type: none"> Selecting LGT-TOGL causes the <i>Backlight</i> button to toggle the ON/OFF status of the LCD backlight. Selecting LGT-AUTO causes the backlight to be turned off, if there is no keypress for more than 5 seconds. Press + or - to select the desired backlight setting.
PTT-ID	PTT ID	8 characters consist of 1,2, ..., 9, 0, A, B, C, D, *, # and Pause.	<i>Blank</i>	<ul style="list-style-type: none"> PTT ID is sent when PTT is pressed. It serves as the identity of your radio. Press + or - to move the cursor to the appropriate character. Use the keypad to enter the ID. <i>Pause</i> can be entered by pressing * followed by #. Enter # 8 times to erase ID. Refer to "Programming an ID" on page 4-21 for details.

RW Parameter	Description	Range	Default from Factory	Remarks
IND ID	Individual ID	8 characters consist of 1,2, ..., 9, 0, A, B, C, D, *, and #.	<i>Blank</i>	<ul style="list-style-type: none"> • IND ID is a unique ID for the radio. When the radio receives a Selective Call which matches its IND ID, the radio is said to have received an Individual Call. A ringing tone will sound. If ACK ID is enabled and programmed, the ACK ID will be sent. • Press + or - to move the cursor to the appropriate character. Use the keypad to enter the ID. Enter # 8 times to erase ID. • Refer to " Programming an ID" on page 4-21 for details.
GROUP ID	Group ID	8 characters consist of 1,2, ..., 9, 0, A, B, C, D, *, and #.	<i>Blank</i>	<ul style="list-style-type: none"> • GROUP ID is an ID for the group where the radio belongs. When the radio receives a Selective Call which matches its GROUP ID, the radio is said to have received a Group Call. • Press + or - to move the cursor to the appropriate character. Use the keypad to enter the ID. Enter # 8 times to erase ID. • Refer to " Programming an ID" on page 4-21 for details.
ALL ID	All ID	8 characters consist of 1,2, ..., 9, 0, A, B, C, D, *, and #.	<i>Blank</i>	<ul style="list-style-type: none"> • ALL ID is like an ID for all. When the radio receives a Selective Call which matches its ALL ID, the radio is said to have received an All Call. • Press + or - to move the cursor to the appropriate character. Use the keypad to enter the ID. Enter # 8 times to erase ID. • Refer to " Programming an ID" on page 4-21 for details.
ACK ID	Acknowledgement ID	8 characters consist of 1,2, ..., 9, 0, A, B, C, D, *, and #.	<i>Blank</i>	<ul style="list-style-type: none"> • ACK ID is sent when the radio receives an Individual Call and Acknowledgement is enabled. • Press + or - to move the cursor to the appropriate character. Use the keypad to enter the ID. Enter # 8 times to erase ID. • Refer to " Programming an ID" on page 4-21 for details.
ASP-XXXX	Button A Short Press Function	ASP-DISP, ASP-LGHT, ASP-LOCK, ASP-NDEL, ASP-NOP, ASP-OFS, ASP-PHN, ASP-PID, ASP-PL, ASP-PRM, ASP-PWR, ASP-SCAN, ASP-SQL, ASP-TA, ASP-VFO	ASP-PWR	<ul style="list-style-type: none"> • The four buttons (A, B, C and D) are programmable to meet the needs of the user. • The functions available include DISP (Channel Alias), LGHT (Backlight), LOCK (Keypad Lock), NDEL (Nuisance Channel Delete), NOP (No Operation), OFS (Offset Frequency), PHN (Phone Mode), PID (PTT ID Enable), PL (PL/DPL Enable), PRM (Prime Channel), PWR (Power Select), SCAN (Scan), SQL (Squelch Level), TA (Talkaround), VFO (VFO/Memory). • Press + or - to select the desired function for the button.

RW Parameter	Description	Range	Default from Factory	Remarks
ALP-XXXX	Button A Long Press Action	ALP-DISP, ... (See above)	ALP-PID	See above.
BSP-XXXX	Button B Short Press Action	BSP-DISP, ... (See above)	BSP-SQL	See above.
BLP-XXXX	Button B Long Press Action	BLP-DISP, ... (See above)	BLP-PHN	See above.
CSP-XXXX	Button C Short Press Action	CSP-DISP, ... (See above)	CSP-PL	See above.
CLP-XXXX	Button C Long Press Action	CLP-DISP, ... (See above)	CLP-LOCK	See above.
DSP-XXXX	Button D Short Press Action	DSP-DISP, ... (See above)	DSP-SCAN	See above.
DLP-XXXX	Button D Long Press Action	DLP-DISP, ... (See above)	DLP-NDEL	See above.
AC CODE	Access Code	16 characters consist of 1,2, ..., 9, 0, A, B, C, D, *, # and Pause.	<i>Blank</i>	<ul style="list-style-type: none"> • Access Code is dialed when you want to access the landline telephone network. • Once it is programmed, it can be sent by pressing PTT, followed by +, and then *. • <i>Pause</i> can be entered by pressing * followed by #. • Enter # 16 times, to completely erase entered code. • Refer to " Programming an Phone Number/Access Code/De-access Code" on page 4-22 for details.
DA CODE	De-access Code	16 characters consist of 1,2, ..., 9, 0, A, B, C, D, *, # and Pause.	<i>Blank</i>	<ul style="list-style-type: none"> • De-access Code is dialed when you want to disconnect from the landline telephone network. • Once it is programmed, it can be sent by pressing PTT, followed by +, and then #. • <i>Pause</i> can be entered by pressing * followed by #. • Enter # 16 times, to completely erase entered code. • Refer to " Programming an Phone Number/Access Code/De-access Code" on page 4-22 for details.
TELNO-X	Telephone Number	16 characters consist of 1,2, ..., 9, 0, A, B, C, D, *, # and Pause.	<i>Blank</i>	<ul style="list-style-type: none"> • Up to nine telephone numbers can be programmed. • Once programmed into the memory, phone number can be speed dialed by pressing PTT, + and then X, where X denotes the telephone number location. • <i>Pause</i> can be entered by pressing * followed by #. • Enter # 16 times, to completely erase entered code. • Refer to " Programming an Phone Number/Access Code/De-access Code" on page 4-22 for details.

RW Parameter	Description	Range	Default from Factory	Remarks
PL-XXXX	PL/DPL Display Type	PL-CODE, PL-FREQ	PL-CODE	<ul style="list-style-type: none"> • Select the display type of PL/DPL: FREQ and CODE. • If FREQ has been selected, then the PL and DPL will be displayed in frequency and octal code format respectively. • If CODE has been selected, then the PL and DPL will be displayed in Motorola code number format (see " PL Frequencies and Codes" on page 4-18 and " DPL Codes" on page 4-19). • Press + or - to select CODE or FREQ.
SIT-XXXX	Scan Interval Time	SIT-0250, SIT-0500,, SIT-5000	SIT-2000	<ul style="list-style-type: none"> • Scan Interval Time is the duration the radio will spend on the landed channel before switching to scan the Priority Channel in Priority Scanning. • Unit is in ms. Scan Interval Time is therefore programmable from 250ms to 5000ms in 250ms steps. • Press + or - to select the desired Scan Interval Time.
SHT-XXXX	Scan Hang Time	SHT-0500, SHT-1000,, SHT-9500	SHT-7000	<ul style="list-style-type: none"> • Scan Hang Time is the duration the radio will stay on the landed channel without detecting any activity before it resumes scanning. • Unit is in ms. Scan Hang Time is therefore programmable from 500ms to 9500ms in 500ms steps. • Press + or - to select the desired Scan Hang Time.

The parameter defaults are subject to change without notice.

Editing Channel Parameters

Channel parameters only affect the channel where the parameters are modified. They become effective after you press PTT or *MON*.

Channel Parameter	Description	Range	Default from Factory	Remarks
CH-XX	Channel On/Off	CH-OFF, CH-ON	CH-ON	<ul style="list-style-type: none"> • Select if the channel is enabled (ON) or disabled (OFF). • Disabled channel will not be accessible in Normal Mode. • Press + or - to select ON or OFF.
RXXX.XXXX	Channel Receive Frequency	Within the band limits of your model	model dependent	<ul style="list-style-type: none"> • This is the frequency that the channel will use to receive message. • You are not allowed to enter out-of-bounds frequencies. • Use the keypad to enter the frequency directly.

Channel Parameter	Description	Range	Default from Factory	Remarks
TXXX.XXXX	Channel Transmit Frequency	Within the band limits of your model	model dependent	<ul style="list-style-type: none"> This is the frequency that the channel will use to transmit message. You are not allowed to enter out-of-bounds frequencies. Use the keypad to enter the frequency directly.
RPL-XXXX	Channel Receive PL/DPL	When PL-FREQ is selected in RW: OFF, 067.0, ..., 254.1, 023.D, 025.D, ..., 754.D, PL1, PL2, PL3 <i>OR</i> When PL-CODE is selected in RW: 000, 001, ..., 126, PL1, PL2, PL3	RPL-000 or RPL-OFF	<ul style="list-style-type: none"> This is the PL or DPL code that the channel will use to unsquelch the receive message. Two display formats are available: FREQ and CODE, selectable in RW. OFF or 000 indicates that no PL/DPL is used for receive, i.e., radio operates in carrier squelch mode. Press + or - to select the desired PL/DPL.
TPL-XXXX	Channel Transmit PL/DPL	When PL-FREQ is selected in RW: OFF, 067.0, ..., 254.1, 023.D, 025.D, ..., 754.D, PL1, PL2, PL3 <i>OR</i> When PL-CODE is selected in RW: 000, 001, ..., 126, PL1, PL2, PL3	TPL-000 or TPL-OFF	<ul style="list-style-type: none"> This is the PL or DPL code that the channel will use to transmit the message. Two display formats are available: FREQ and CODE, selectable in RW. OFF or 000 indicates that no PL/DPL is used for transmit. Press + or - to select the desired PL/DPL.

Channel Parameter	Description	Range	Default from Factory	Remarks
TOC-XXX	Turn Off Code/ Reverse Burst	TOC-OFF, TOC-ON	TOC-ON	<ul style="list-style-type: none"> • TOC or Reverse Burst serves to cause the receiving radio to mute its speaker before a loss of carrier is detected. • If enabled (ON), Turn Off Code will be sent if Tx DPL is enabled for the channel (Reverse Burst for Tx PL). • Press + or - to select ON or OFF.
XXX-POWR	Power Level	HI-POWR, LOW-POWR, ECO-POWR, RX ONLY	HI-POWR	<ul style="list-style-type: none"> • Select the power level required for the channel. • HI-POWR transmits at the maximum tuned power. LOW-POWR is typically 1W and ECO-POWR, less than 500mW. Set to RX ONLY if the channel is intended as a Receive Only Channel. • Press + or - to select the desired Tx power level.
BCL-XXX	Busy Channel Lockout	BCL-OFF, BCL-ON	BCL-OFF	<ul style="list-style-type: none"> • Select if the channel is to enable Busy Channel Lockout (BCL). • If BCL is enabled, the channel will check for channel activity before you can transmit. Detection of channel activity which is not from the same group would prevent radio from transmitting. • Press + or - to select the desired BCL setting.
CH-TAG	Channel Alias	0,1,.....,9, A, B,, Z, +, -, /, *, #, Space.	001, 002, ..., 099	<ul style="list-style-type: none"> • Allows the channel number to be displayed as alias. • Press + or - to move to the character that needs to be edited. Enter the character using the keypad. • Refer to "Entering a Channel Alias" on page 4-20 for details.
CS – XX.X	Channel Spacing	CS – 12.5, CS – 25.0	CS – 25.0	<ul style="list-style-type: none"> • Select the channel spacing for the channel. • Press + or - to select the desired channel spacing.
SC-XXX	Selective Call	SC-OFF, SC-ON	SC-OFF	<ul style="list-style-type: none"> • Select if Selective Call is to be enabled or disabled. • If enabled, the channel would adopt Signaling Squelch Mode, i.e., unsquelch only if radio is receiving carrier AND Selective Call (matching ID). • Press + or - to select the desired Selective Call setting.
ACK-XXX	Acknowledgement Enabled for Individual Call	ACK-OFF, ACK-ON	ACK-OFF	<ul style="list-style-type: none"> • Select if Acknowledgement is to be sent upon receiving an Individual Call. • If enabled, the preprogrammed Ack ID will be replied once the Individual Call is received and carrier loss is detected. • Press + or - to select the desired acknowledgement setting.
PID-XXX	PTT ID	PID-OFF, PID-ON	PID-OFF	<ul style="list-style-type: none"> • Select if PTT ID is to be sent upon PTT press. • If enabled, PTT ID would be sent according to the PTT ID Transmit Type selected in RW. • Press + or - to select the desired PTT ID transmit setting.

Channel Parameter	Description	Range	Default from Factory	Remarks
SCPL-XXX	PL Required for Selective Call	SCPL-OFF, SCPL-ON	SCPL-OFF	<ul style="list-style-type: none"> • Select if the channel Rx PL/DPL is required for qualifying the incoming Selective Call. • If enabled, incoming Selective Call would be checked for matching Rx PL/DPL before radio would unscquelch. • Press + or - to select the desired setting.
SCN-XXXX	Scan Type	SCN-NORM, SCN-PRTY	SCN-NORM	<ul style="list-style-type: none"> • Select the type of scan to be started if <i>Scan</i> button is pressed. • Two types of scan are available: Normal (NORM) and Priority (PRTY). • Press + or - to select the desired scan type.
SCN-LSTX	Scan List	SCN-LST1, SCN-LST2, SCN-LST3	SCN-LST1	<ul style="list-style-type: none"> • Select the scan list to be used by the channel. • Press + or - to select the desired scan list.
CH-COPY	Copy Channel	C-01-XXX, C-02-XXX, ..., C-16-XXX	N/A	<ul style="list-style-type: none"> • Allows the same channel parameters to be copied to up to 16 channels at one time. • Press + or - to move to the channel holder and then enter the channel number using the keypad. • Refer to " Copying All Parameters from One Channel to Other Channel(s)" on page 4-19 for details.

The parameter defaults are subject to change without notice.

Editing VFO Parameters

VFO parameters are only valid when VFO is in use. They become active after you press PTT or *MON*.

Channel Parameter	Description	Range	Default from Factory	Remarks
UXXX.XXXX	VFO Scan Upper Limit	Within the band limits of your model	model dependent	<ul style="list-style-type: none"> • This is the upper-most frequency that VFO will scan. • You are not allowed to enter out-of-bound frequencies. • Use the keypad to enter the frequency directly.
LXXX.XXXX	VFO Scan Lower Limit	Within the band limits of your model	model dependent	<ul style="list-style-type: none"> • This is the lowest frequency that VFO will scan. • You are not allowed to enter out-of-bound frequencies. • Use the keypad to enter the frequency directly.

Channel Parameter	Description	Range	Default from Factory	Remarks
STEP XXX	Frequency Step Size	STEP 5, STEP 625, STEP 10, STEP 12.5, STEP 15, STEP 20, STEP 25	STEP 5	<ul style="list-style-type: none"> • Select the appropriate frequency step size for Rx/ Tx frequency entry. • This step size will dictate the increment or decrement size when + or - is pressed in VFO. • VFO scan will also use this step size to scan the frequency band. Available step sizes are 5, 6.25, 10, 12.5, 15, 20 and 25 kHz. • Press + or - to select the desired frequency step size.
RXXX.XXXX	VFO Receive Frequency	Within the band limits of your model	model dependent	<ul style="list-style-type: none"> • This is the frequency the VFO uses to receive messages. • You are not allowed to enter out-of-bound frequencies. • Use the keypad to enter the frequency directly.
TXXX.XXXX	VFO Transmit Frequency	Within the band limits of your model	model dependent	<ul style="list-style-type: none"> • This is the frequency the VFO uses to transmit messages, when repeater offset is set to OFS-PROG (User Defined Tx Frequency). • You are not allowed to enter out-of-bound frequencies. • Use the keypad to enter the frequency directly.
OFS-XXX	Repeater Offset Frequency	OFS 000, OFS 001,, OFS 100.	OFS 006 (VHF), OFS 050 (UHF)	<ul style="list-style-type: none"> • Select the repeater offset frequency to be used. • When repeater offset is set to OFS-POS, this offset frequency will be added to the VFO Rx frequency to transmit messages. • When repeater offset is set to OFS-NEG, this offset frequency will be deducted from the VFO Rx frequency to transmit messages. • Unit is in 100kHz. Repeater offset frequency therefore ranges from 0kHz to 10MHz in the increment of 100kHz. • Press + or - to select the desired repeater offset frequency.
RPT-XXXX	Repeater Offset	RPT-OFF, RPT-POS, RPT-NEG, RPT-PROG	RPT-OFF	<ul style="list-style-type: none"> • Selects the repeater offset to be used. • Select OFF if Tx frequency equals Rx frequency. • Select POS if Tx frequency is the sum of Rx frequency and the offset frequency. • Select NEG if Tx frequency is the difference of Rx frequency and the offset frequency. • Select PROG if Tx frequency equals the User Defined Tx frequency. • Press + or - to select the desired repeater offset.

Channel Parameter	Description	Range	Default from Factory	Remarks
RPL-XXXX	Channel Receive PL/DPL	When PL-FREQ is selected in RW: OFF, 067.0, ..., 254.1, 023.D, 025.D, ..., 754.D, PL1, PL2, PL3 <i>OR</i> When PL-CODE is selected in RW: 000, 001, ..., 126, PL1, PL2, PL3	RPL-000 or RPL-OFF	<ul style="list-style-type: none"> • This is the PL or DPL code that the VFO will use to unsquelch the receive message. • Two display formats are available: FREQ and CODE, selectable in RW. • OFF or 000 indicates that no PL/DPL is used for receive, i.e., radio operates in carrier squelch mode. • Press + or - to select the desired PL/DPL.
TPL-XXXX	Channel Transmit PL/DPL	When PL-FREQ is selected in RW: OFF, 067.0, ..., 254.1, 023.D, 025.D, ..., 754.D, PL1, PL2, PL3 <i>OR</i> When PL-CODE is selected in RW: 000, 001, ..., 126, PL1, PL2, PL3	TPL-000 or TPL-OFF	<ul style="list-style-type: none"> • This is the PL or DPL code that the VFO will use to transmit the message. • Two display formats are available: FREQ and CODE, selectable in RW. • OFF or 000 indicates that no PL/DPL is used for transmit. • Press + or - to select the desired PL/DPL.
TOC-XXX	Turn Off Code/Reverse Burst	TOC-OFF, TOC-ON	TOC-ON	<ul style="list-style-type: none"> • TOC or Reverse Burst serves to cause the receiving radio to mute its speaker before a loss of carrier is detected. • If enabled (ON), Turn Off Code will be sent if Tx DPL is enabled for the channel (Reverse Burst for Tx PL). • Press + or - to select ON or OFF.

Channel Parameter	Description	Range	Default from Factory	Remarks
XXX-POWR	Power Level	HI-POWR, LOW-POWR, ECO-POWR, RX ONLY	HI-POWR	<ul style="list-style-type: none"> • Select the power level required for the channel. • HI-POWR transmits at the maximum tuned power. LOW-POWR is typically 1W and ECO-POWR, less than 500mW. Set to RX ONLY if the channel is intended as a Receive Only Channel. • Press + or - to select the desired Tx power level.
BCL-XXX	Busy Channel Lockout	BCL-OFF, BCL-ON	BCL-OFF	<ul style="list-style-type: none"> • Select if the VFO is to enable Busy Channel Lockout (BCL). • If BCL is enabled, the VFO will check for activity before you can transmit. Detection of activity which is not from the same group would prevent radio from transmitting. • Press + or - to select the desired BCL setting.
CS – XX.X	Channel Spacing	CS – 12.5, CS – 25.0	CS – 25.0	<ul style="list-style-type: none"> • Select the channel spacing for the VFO. • Press + or - to select the desired channel spacing.
SC-XXX	Selective Call	SC-OFF, SC-ON	SC-OFF	<ul style="list-style-type: none"> • Select if Selective Call is to be enabled or disabled. • If enabled, the VFO would adopt Signaling Squelch Mode, i.e., unsquelch only if radio is receiving carrier AND Selective Call (matching ID). • Press + or - to select the desired Selective Call setting.
ACK-XXX	Acknowledgement Enabled for Individual Call	ACK-OFF, ACK-ON	ACK-OFF	<ul style="list-style-type: none"> • Select if Acknowledgement is to be sent upon receiving an Individual Call. • If enabled, the preprogrammed Ack ID will be replied once the Individual Call is received and carrier loss is detected. • Press + or - to select the desired acknowledgement setting.
PID-XXX	PTT ID	PID-OFF, PID-ON	PID-OFF	<ul style="list-style-type: none"> • Select if PTT ID is to be sent upon PTT press. • If enabled, PTT ID would be sent according to the PTT ID Transmit Type selected in RW. • Press + or - to select the desired PTT ID transmit setting.
SCPL-XXX	PL Required for Selective Call	SCPL-OFF, SCPL-ON	SCPL-OFF	<ul style="list-style-type: none"> • Select if the VFO Rx PL/DPL is required for qualifying the incoming Selective Call. • If enabled, incoming Selective Call would be checked for matching Rx PL/DPL before radio would unsquelch. • Press + or - to select the desired setting.

The parameter defaults are subject to change without notice.

PL Frequencies and Codes

PL Freq (Hz)	Motorola Code	Equiv. PL Code		PL Freq (Hz)	Motorola Code	Equiv. PL Code
67	001	XZ		136.5	022	4Z
69.3	002	WZ		141.3	023	4A
71.9	003	XA		146.2	024	4B
74.4	004	WA		151.4	025	5Z
77	005	XB		156.7	026	5A
79.7	006	WB		162.2	027	5B
82.5	007	YZ		167.9	028	6Z
85.4	008	YA		173.8	029	6A
88.5	009	YB		179.9	030	6B
91.5	010	ZZ		186.2	031	7Z
94.8	011	ZA		192.8	032	7A
97.4	012	ZB		203.5	033	M1
100	013	1Z		206.5	034	8Z
103.5	014	1A		210.7	035	M2
107.2	015	1B		218.1	036	M3
110.9	016	2Z		225.7	037	M4
114.8	017	2A		229.1	038	9Z
118.8	018	2B		233.6	039	M5
123	019	3Z		241.8	040	M6
127.3	020	3A		250.3	041	M7
131.8	021	3B		254.1	042	0Z
				PL1	PL1	
				PL2	PL2	
				PL3	PL3	

NOTE: PL1, PL2, PL3 are the User Defined PL Frequencies.

DPL Codes

DPL Code	Motorola Code	DPL Code	Motorola Code	DPL Code	Motorola Code	DPL Code	Motorola Code
23	043	152	065	343	087	606	109
25	044	155	066	346	088	612	110
26	045	156	067	351	089	624	111
31	046	162	068	364	090	627	112
32	047	165	069	365	091	631	113
43	048	172	070	371	092	632	114
47	049	174	071	411	093	645*	115
51	050	205	072	412	094	654	116
54	051	223	073	413	095	662	117
65	052	226	074	423	096	664	118
71	053	243	075	431	097	703	119
72	054	244	076	432	098	712	120
73	055	245	077	445	099	723	121
74	056	251	078	464	100	731	122
114	057	261	079	465	101	732	123
115	058	263	080	466	102	734	124
116	059	265	081	503	103	743	125
125	060	271	082	506	104	754	126
131	061	306	083	516	105		
132	062	311	084	532	106		
134	063	315	085	546	107		
143	064	331	086	565	108		

NOTE: The codes marked with an asterisk are not part of the 83 standard EIA/TIA-603 codes.

Examples

Copying All Parameters from One Channel to Other Channel(s)

Scenario: To copy the parameters in Channel 005 into the following channels - 029, 032, 045, 089

Steps:

1. Enter Programming Mode, by pressing *MON* and turning on the radio.
2. Press + or - to select **CH 005**.

3. Press PTT or *MON* until **CH-COPY** is displayed.
4. Press +. The first channel holder, **C-01-**, will be displayed. Use the keypad to enter **029**.
5. Press + again. When **C-02-** appears, use the keypad to enter **032**. Repeat this step for channels **045** and **089**.

NOTE: If a mistake is made, use + or - to move to the appropriate channel holder and press # to erase the channel number.

6. Press PTT or *MON*, when all the channel numbers have been entered. Radio will display **COPY OK**.
7. Press + to confirm channel duplication or - to exit without duplication.
8. Turn off your radio, if you have completed the programming, or proceed to the next parameter.

Entering a Channel Alias

Scenario: To give Channel 028 an alias *SECURITY*.

Steps:

1. Enter Programming Mode, by pressing *MON* and turning on the radio.
2. Press + or - until **CH 028** is displayed.
3. Press PTT or *MON* until **CH TAG** is displayed.
4. Press +. The cursor will be placed on the first character.
5. Press 7 five times. The display will change from **7** -> **P** -> **Q** -> **R** -> **S**.
6. Use the table below to enter the other characters.
7. Press PTT or *MON*, after the last character has been entered.
8. Turn off your radio, if you have completed the programming, or proceed to the next parameter.

Keypad Button	1 st Press	2 nd Press	3 rd Press	4 th Press	5 th Press	6 th Press	7 th Press
1	1						
2	2	A	B	C			
3	3	D	E	F			
4	4	G	H	I			
5	5	J	K	L			
6	6	M	N	O			
7	7	P	Q	R	S		
8	8	T	U	V			
9	9	W	X	Y	Z		
0	0	+	-	/	*	#	SPACE

Setting Up a Scan List

Scenario: To setup Scan List 2 with the following channels - CH 008, CH 036, CH 092, CH 083, CH 068.

Steps:

1. Enter Programming Mode, by pressing *MON* and turning on the radio.
2. Press + or - until **RW** is displayed.
3. Press PTT or *MON* until **SCANLST2** is displayed.
4. Press +. The first scan list member holder, **2-01-**, will be displayed. Use the keypad to enter 008.
5. Press + again. Enter 036, when **2-02-** appears, and subsequently in this manner, enter the other channels.

NOTE: If a mistake is made, use + or - to move to the appropriate scan list member holder and press # to erase the channel number.

6. Press PTT or *MON*, when all the channel numbers have been entered.
7. Turn off your radio, if you have completed the programming, or proceed to the next parameter.

Programming an ID

Scenario: To program PTT ID with the value "A1018".

Steps:

1. Enter Programming Mode, by pressing *MON* and turning on the radio.
2. Press + or - until **RW** is displayed.
3. Press PTT or *MON* until **PTT-ID** is displayed.
4. Press +. The cursor will be placed on the first character.
5. Use the keypad and the programmable buttons to enter **A1018**.

NOTE: If a mistake is made, use + or - to move to the appropriate location and then re-enter the correct character. To erase the complete ID, enter # 8 times.

6. Press PTT or *MON*, when the complete ID has been entered.
7. Turn off your radio, if you have completed the programming, or proceed to the next parameter.

Programming an Phone Number/Access Code/De-access Code

Scenario: To program the phone number, 9-72886338 (where “-” represents a Pause digit), at memory location 8.

Steps:

1. Enter Programming Mode, by pressing *MON* and turning on the radio.
2. Press + or - until **RW** is displayed.
3. Press PTT or *MON* until **TELNO-8** is displayed.
4. Press +. The cursor will be placed on the first character.
5. Use the keypad to enter **9**.
6. Enter a Pause digit, by entering * followed by #. These two characters will be converted into a Pause, represented by ‘-’.

NOTE: Each Pause digit entered shortens the overall length of the code/number by a digit.

7. Use the keypad to enter the rest of the phone number.

NOTE: If a mistake is made, use + or - to move to the appropriate location and then re-enter the correct character. To erase the complete phone number/code, enter # 16 times.

8. Press PTT or *MON*, when the complete phone number has been entered.
9. Turn off your radio, if you have completed the programming, or proceed to the next parameter.

Factory Reset

This feature allows you to erase certain programmable parameters and restore the radio to the factory default settings. The radio, upon reset, clears all memory channels, phone numbers, and restores the default settings of RW parameters.

1. Set the radio in Dealer Configuration (if it is operating in User Configuration).
2. Press and hold – and *MON* together, while turning on the radio. LCD displays **INIT OK**.
3. Press PTT to confirm factory reset, or turn off the radio to exit.

NOTE: When factory reset is in progress, LCD displays **INITIAL** for one second. When factory reset is completed, radio turns itself off, and back on again. The radio is now restored to its default factory settings.