ICS
REPEATER
CONTROLLERS

BASIC S USER MANUAL

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General Description of the ICS Basic S Repeater Controller

Here at ICS we strive to make products that have new, innovative, easy to use features and excellent quality at a reasonable cost. We believe the Basic S is such a product. The Basic S has such innovative features such as remote base control, a full featured control receiver input (has priority), programming with actual values (i.e. Volts, Hertz, Seconds, wpm) and a very easy to use 3 level command access feature which has over 130 functions available. When designing the Basic S we worked hard to provide a product that is easy to use, durable and of excellent quality at a reasonable cost.

The Basic S has many unique features. One such feature is the control receiver input. This input is unique in that it provides a level of control normally only provided on more expensive controllers. It is optional to use the Control receiver input as the repeater receiver input (port 1) will provide full access to control the repeater. The control receiver gives you control over the repeater even if the repeater's receiver is inaccessible. With the addition of a jumper, you can pass the control receiver audio to the repeaters transmitter audio output (TX1) and the audio level can be adjusted with the control receiver input audio pot. The control receiver's COS input can be set to operate with either active high or active low signals. The polarity can be easily set with a simple jumper change. When the control receiver COS becomes active all the port 1 DTMF signals are ignored and the Basic S only listens to the control receiver for DTMF codes.

The Basic S CTCSS control feature gives a wide range of control over CTCSS decode and encode signals. The Basic S gives you DTMF on and off control over CTCSS decode, encode and the encode hang timer. Also the CTCSS encode hang timer is programmable. The encode hang timer starts from the time the repeater receiver becomes non-active. This will allow a reverse burst or courtesy tone to be heard after the receiver becomes inactive.

The ever growing set of easy to use features can be accessed by a secure Setup mode (program mode), a Control operator mode and a User mode. If desired the Setup mode (program mode) can be accessed only by a hardware jumper from the factory. A DTMF sequence (up to 10 digits) can be programmed to give access to the Setup mode if desired. This provides the highest level of security. In the Setup mode (program mode) all the commands are accessible by DTMF using their 2 or 3 digit function codes. This makes the controller programming easy. The User and Control operator levels use from 1 to 5 digits to access these same functions if setup to do so. From 0 to 25 DTMF codes can be setup for the User and Control operator levels allowing easy programming, total flexibility and an extremely secure system for controlling the Linker IIa and its functions.

It can be difficult at times to work on a repeater without knowing what the incoming and outgoing signals are doing. Connecting voltmeters, scopes and other monitoring equipment can sometimes be difficult. We have provided many LEDs to help make the setup of the repeater easier. The Linker IIs has 9 of them. Most of the input and output signals are indicated. The controller will also indicate when it recognizes a DTMF code. When not being used the LEDs can be disabled with a jumper. We have found these indicators to be a big help when working with repeaters.

The control inputs and outputs of the repeater controller are very simple to use. There are 2 COS inputs, 1 CTCSS input and 1 open collector type output. The inputs include a Control receiver COS input, the repeater input with COS and CTCSS inputs. All of the COS and CTCSS inputs can be set to either active high or active low by choosing the correct jumper location on the corresponding jumper block. You may select between the repeater receivers COS and CTCSS inputs or select both for 'AND' or 'OR' control. This allows for the switching back and forth between carrier squelch and CTCSS squelch for the 'receiver active' signal.

The auxiliary output of the Basic S is easy to use. The auxiliary output can be used for several different functions. It can be programmed to send a short pulse or either be locked on or off. The Auxiliary output also has a programmable timer that can be enabled or disabled to control a timed transmitter fan. There is an open collector output for the repeater push to talk. All of the inputs are buffered and the outputs are protected to greatly reduce any chance of damage.

SPECIAL FEATURES OF THE ICS Basic S

CTCSS Encode / Decode Control

The Basic S gives you the option of having the repeater receiver control transmitter tone encode. The Basic S has commands to enable and disable these functions. The commands are Enable RX 1 CTCSS encode activate (function #110), Disable RX 1 CTCSS encode activate (function #111).

Beacon Mode

The Linker IIs has a Beacon mode. When the Linker IIa is in Beacon mode it will send the ID when the IDer pending ID timer times out (see function #68). The polite ID timer will still operate holding off the ID until the polite ID timer times out or until the receiver becomes non-active.

Programmable Tones

Another feature the Linker IIs has is programmable tones. There are currently 5 programmable tones and 40 different tones available to put in the each of the programmable tones. The 5 programmable tones are as follows;

1. Port 1 programmable tone
2. Setup mode programmable tone
3. Change memory programmable tone

See Function #127 for further details. The available programmable tones and the available tones are at the end of the manual, you can find the page number in the table of contents.

Antikerchunker Filter

The Basic S has an antikerchunker filter that can help eliminate the kerchunking of your repeater. The operation is simple, when the antikerchunker filter is enabled (see the Enable antikerchunker filter (command #118) and the Disable antikerchunker filter (command #119)). When the repeater receiver is active the Basic S will wait a programmed period of time (see the Set antikerchunker filter delay (command #120)) before it recognizes the repeater receiver as receiving a valid signal. When the repeater receiver stays active for the preprogrammed period of time the Linker IIs will then recognize the repeater receiver as being active. Once the Basic S recognizes the repeater receiver is active it will temporarily disable the antikerchunker filter for a preprogrammed period of time (see the Set antikerchunker filter interval time (command #121).

Hardware Reset Jumper

The reset jumper is meant to allow the Basic S to be set back to the factory parameters. With the use of the reset jumper the "Set parameters to factory default" (function #66) will be activated. The reset jumper is located on the top of the controller board and is marked "RESET".

To use the reset jumper to reset the controller to the factory default first power down the controller. Put both the Setup mode jumper and reset jumpers in place. When the jumpers are in place then power up the controller.

The DV LED will flash for 15 seconds. This is a warning that a controller reset to factory defaults is about to occur. Removal of either the reset jumper or the Setup mode jumper will stop the DV LED from flashing and cancel the controller reset.

After the 15 seconds are completed the controller will reset itself to factory defaults (except for the ID and the DTMF command line memories). The controller will do a warm start and if the Setup mode and reset jumpers are still in place the DV LED will again start flashing. This is because both jumpers are in place and the controller software is starting from fresh.

There will be a noticeable delay between the series of LED flashing. When the DV LED begins to flash again is the best time to power down the controller. Once the controller is powered down remove the reset jumper, power up and the controller will operate normally with the factory defaults in place.

COMMAND STRUCTURE

The command structure of the Basic S is easy to use and very versatile. It includes Setup mode for programming, Control op mode and User mode for control. The structure of these levels gives needed security and still provides a very easy system to setup and program. The Setup mode gives you access to all the functions directly. In Setup mode the function codes are entered directly with your DTMF pad. The Control op and User modes are very similar to each other. To access a function in either of these modes you need to have programmed (from Setup mode) a DTMF sequence (1 to 5 DTMF digits) followed by the function in a DTMF memory. When you enter the DTMF codes in Control op or User mode that are in a DTMF memory the function in the DTMF memory will be called. A condition code can be added to the DTMF memory to restrict that DTMF memory (and its function) to the Control op mode only, the function will then not be accessible in the User mode.

The Setup mode (program mode) allows access to all the functions directly. All the functions can be activated just by entering the 2 or 3 digit code for that function. When the Basic S controller leaves the factory the only way to access the Setup mode is with the hardware jumper. It initially can not be accessed any other way. Normally if the Setup mode jumper is in you are in Setup mode and if it is not in you are not in Setup mode. There are two functions that can be used to enter and exit the Setup mode in a DTMF command line, 'Exit Setup mode' (see function #59)and 'Enter Setup mode' (see function #58). The Setup mode can be accessed by putting the 'Enter Setup mode' function in the Control op or User modes using a DTMF command memory (see function #78). The 1 to 5 digits you program in will give you access to the Setup mode. If you only allow access to the DTMF code for the Setup mode in Control op mode the Linker IIa can be setup to require up to 10 digits to access the Setup mode, 5 digits to go from the User mode to the Control op mode and 5 digits to access the DTMF memory you programmed the "Enter Setup" function into. Remote access to the Setup mode is only available if you make it so.

When the controller is in the Setup mode (program mode) you will hear the special courtesy tone, which is 3 dits or a Morse code "S" to indicate being in Setup mode. If the repeater is left in the Setup mode and the repeater can not be physically accessed to remove the Setup jumper the Setup mode can be exited using the 2 digit 'Exit Setup mode' function. This is true even if the Setup jumper is still installed.

The Control op mode is intended to give access to control functions that only a few people should have. In the Control op mode all the preprogrammed DTMF memories (DTMF command lines) are available. In the User mode you can provide limited access to the DTMF memories. Only the DTMF memories that have not been setup as Control op level, will be accessible in User mode. Any, some or none of the controller's commands can be enabled on this level. You program any of the functions you want to give access to and on what level.

To give access to a function in the Control Operator or User modes a DTMF code and a function must be entered in a DTMF memory (DTMF command line). To start the entry use the "ENTER DTMF COMMAND LINE" function (#78). First you select a DTMF memory 0 – 24, then enter 1 to 5 DTMF code digits, then indicate if this DTMF memory is to be only available in the Control op level and of course the function you wish to give access to (see the ENTER DTMF COMMAND LINE (#78) function in the function descriptions). All 16 DTMF digits can be used in a DTMF code including A, B, C, D, * and #. An example of the DTMF code layout for a few DTMF memories is shown below;

DTMF Memory number	DTMF codes, 1 to 5 digits	Control Op?	function
0	2 # 0	N	33 (DISABLE TX 1)
1	2 # 1	Y	32 (ENABLE TX 1)
2	3 9 0 B #	N	60 (SET CONTROL OPERATOR MODE)
3	C	Y	61 (CLEAR CONTROL OPERATOR MODE)
4	A # 4 B 2	Y	58 (ENTER SETUP MODE)
5	B	N	48 (ACTIVATE KEYPAD TEST)

Any of the functions can be used in a DTMF memory. There is a chart at the end of this manual that is similar to the above and can be copied and used to keep track of your DTMF settings. Note: The Linker IIs controller comes with all DTMF memories empty, you must use Setup mode (program mode) initially for access to the Linker IIs's functions.

QUICK CONNECT FOR THE CONTROL RECEIVER

NOTE: ***You do not need to use this input, it is optional, it is only for use with a separate control receiver. If you do not plan to use a separate control receiver then please skip this page. The repeater receiver port has access to all the same control functions (the control receiver has priority). Do not connect the repeater receiver to this input.***

1. ***If you decide to use a control receiver*** you should have the control receiver COS and audio signal already wired to the proper connections according to the plug layout in this manual before you start. These signals should be suitable to drive a 100K ohm load. ***It is not necessary to use a control receiver to operate the repeater controller.***

2. Check to see what the control receiver's COS on and off voltages are and write them down. For proper operation the polarity jumper on JP12 should be on Pins 1&2 for active High and on Pins 2&3 for active low.

3. The control receiver audio input amplifier jumper JP16 setting needs to be determined. For flat or pre-emphasized audio do not install the jumper. For de-emphasized or discriminator audio install the jumper on pins 1 & 2.

4. Too much audio or too little audio level may cause the DTMF decoder to not recognize the tones properly.

5. If you have a scope or an audio voltmeter available, monitor the signal on pin 72 of JP16, if not skip to step 7.

6. Send a DTMF digit through the control receiver. Set R16 (CONTROL RX AUDIO) until you get about a 300Mv P-P or 100Mv RMS reading. You should now see the VALID DTMF LED steadily lit up (no flickering). If not it should be close.

7. If you do not have a scope or meter available start by sending a DTMF digit tone through the control receiver.

8. Adjust R16 (CONTROL RX AUDIO) until you see the VALID DTMF LED light up. Try to find a center point so you are not on the edge of operation.

9. The control receiver should now be ready to perform control functions

QUICK CONNECT FOR THE REPEATER RECEIVER

This is a procedure that will help connect up the repeater's receiver. It is not the only way to do it but one that we have used that works well.

1. You should have a repeater receiver COS/CTCSS and audio signals already wired to the proper connections according to the plug layout in this manual before you start. The Port 1 receiver audio input amplifier jumper JP14 setting needs to be determined. For flat or pre-emphasized audio do not install the jumper. For de-emphasized or discriminator audio install the jumper on pins 1 & 2.

2. Check to see what the Port 1 receiver's COS and if used the CTCSS on and off voltages are and write them down. For proper operation the COS polarity jumper on JP10 should be on Pins 1&2 for active High and on Pins 2&3 for active low. The CTCSS polarity jumper JP5 should be on Pins 1&2 for active High and on Pins 2&3 for active low.

3. Too much audio or too little audio level may can cause the DTMF decoder to not recognize the tones properly.

4. Here are two methods to correctly set the receiver audio levels on both Ports 1 and 2.

5. If you have a scope or an audio voltmeter available, monitor the signal on pin 2 of JP16, if not skip to step 7.

6. Send a DTMF digit through the Port 1 receiver. Set R66 (Port 1 RX AUDIO) until you get about a 300Mv P-P or 100Mv RMS reading. You should now see the VALID DTMF LED steadily lit up (no flickering). If not it should be close.

7. If you do not have a scope or meter available, start by sending a DTMF tone through the receiver.

SPECIFICATIONS

SUPPLY VOLTAGE	13.8V
IDLE CURRENT	@13.8V 50mA LEDs disabled
MAXIMUM CURRENT TX 1PTT OUTPUT	.5 A
MAXIMUM CURRENT ON AUXILIARY 1 OUTPUT	.5 A
VOLTAGE IN ON REPEATER RECEIVER AUDIO INPUT	20mVpp to 10Vpp
VOLTAGE IN ON THE CONTROL RECEIVER AUDIO INPUT	20mVpp to 9Vpp
MAX VOLTAGE OUT ON TRANSMITTER AUDIO OUTPUT	4Vpp
VOLTAGE IN ON THE RX 1 COS	0 to 15V
VOLTAGE IN ON THE CONTROL RX COS	0 to 15V
VOLTAGE IN ON THE REPEATER RX CTCSS	0 to 30V
OUTPUT IMPEDANCE FOR TRANSMITTER AUDIO OUTPUT	< 300 ohms
INPUT IMPEDANCE ON REPEATER RECEIVER AUDIO INPUT	~100K ohms
INPUT IMPEDANCE ON CONTROL RECEIVER AUDIO INPUT	~100K ohms

CONNECTIONS FOR BASIC S CONTROLLER

Repeater Port 1

Pin 1. Encode Control
Pin 2. CTCSS Input
Pin 3. PTT to Transmitter
Pin 4. Audio Out to Transmitter
Pin 5. Audio input from Receiver
Pin 6. Ground
Pin 7. COS Input
Pin 8. Ground
Pin 9. Ground

Control/Aux Port

Pin1. +12 Volts
Pin 2. +5 Volts
Pin 3. Aux1 / Fan Output
Pin 4. N/C
Pin 5. Control RX Audio Input
Pin 6. Ground
Pin 7. Control RX COS Input
Pin 8. Ground
Pin 9. Ground

FUNCTION LIST FOR THE ICS BASIC S CONTROLLER

1. Transmitter enable / disable functions

Enable TX 1	32
Disable TX 1	33
Force TX 1 on	85
Force TX 1 on clear	86

2. Receiver enable / disable functions

Use only RX 1 COS input	35
Use only RX 1 CTCSS input	36
AND RX 1 COS and CTCSS inputs	93
Enable RX1	154
Disable RX1	155

3. Auxiliary output functions

Turn auxiliary output 1 off	39
Turn auxiliary output 1 on	40
Pulse auxiliary 1 output	45
Set auxiliary 1 output timeout time	69
Turn auxiliary timer off	37
Turn auxiliary timer on	38
Enable timed TX fan on auxiliary 1 output	88
Disable timed TX fan on auxiliary 1 output	89

4. DTMF command setup functions

Enter new DTMF command line	78
Clear all DTMF command lines	74
Clear one DTMF command line	75
Turn DTMF muting on	91
Turn DTMF muting off	92

5. IDer commands / settings

Force ID	34
Enable IDer	62
Disable IDer	63
Set IDer polite ID time	67
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Enter new ID	76
Activate Beacon mode	114
Deactivate Beacon mode	115
ID cancel enable	134
ID cancel disable	135
Program ID delay timer	156
TX1 on for ID delay	159
TX1 off for ID delay	160

6. Tone control

7. System control functions

8. Transmitter settings

9. Receiver settings

10. Functions for TX 1 CTCSS encode

11. Antikerchunker functions

Definition of Terms used

1. Key up – To activate the Control or Repeaters receiver COS (The repeaters receiver needs to be allowed to do DTMF control)
2. Unkey – To deactivate The Control or Repeaters receiver COS
3. COMMAND ACCEPTED indication – The controller sends a CW letter "K" for "OK"
4. ENTER NEXT DATA code – The controller sends a CW letter "M" for "ready for MORE information"
5. TX 1 = Transmitter 1 (typically the repeaters transmitter)
6. TX 2 = Transmitter 2 (typically the remote base / link transmitter)
7. RX 1 = Receiver 1 (typically the repeaters receiver)
8. RX 2 = Receiver 2 (typically the remote base / link receiver)
9. FUNCTION = "command / function" as described in the previous text
10. A decimal point can be entered on some functions by using the '*' key on your touch pad

FUNCTION: ENABLE TX 1

FUNCTION CODE: 32

PURPOSE: Enables the TX 1 output

HOW TO USE:

1. Key up
2. Enter the ENABLE TX 1 function code.
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The TX 1 output is now enabled.

The ENABLE TX 1 command will enable TX 1. If TX 1 was disabled on power up TX 1 will again be disabled on power up (or warm reset) unless you use SAVE STATUSES (function number 87). If you ENABLE TX 1 and then use the SAVE STATUSES function TX 1 will always be enabled when a power or warm reset occurs.

FUNCTION: DISABLE TX 1

FUNCTION CODE: 33

PURPOSE: Disables the TX 1 output

HOW TO USE:

1. Key up
2. Enter the DISABLE TX 1 function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The TX 1 output is disabled.

The DISABLE TX 1 command will disable TX 1. If TX 1 was enabled on power up TX 1 will again be enabled on power up (or warm reset) unless you use SAVE STATUSES (Function number 87). If you DISABLE TX 1 and then use the SAVE STATUSES function TX 1 will always be disabled when a power or warm reset occurs.

FUNCTION: FORCE ID

FUNCTION CODE: 34

PURPOSE: To force the controller to send the CW ID

HOW TO USE:

1. Key up
2. Enter FORCE ID function code
3. Unkey
4. When the command is accepted the controller will send the preprogrammed CW ID.

When the controller sends a forced ID the ID interval timer is not reset.

FUNCTION: USE ONLY RX 1 COS INPUT

FUNCTION CODE: 35

PURPOSE: Changes the receiver 1 input to use the RX 1 COS input only

HOW TO USE:

1. Key up
2. Enter USE ONLY RX 1 COS INPUT function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. Receiver 1 will now only use the receiver 1 COS input

This function switches control for RX 1 only to the RX 1 COS input for receiver 1.

FUNCTION: USE ONLY RX 1 CTCSS INPUT

FUNCTION CODE: 36

PURPOSE: Changes the receiver 1 input to use the RX 1 CTCSS input only

HOW TO USE:

1. Key up
2. Enter USE ONLY RX 1 CTCSS INPUT function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. Now only the RX 1 CTCSS input will activate RX 1.

This function switches control for RX 1 to only the RX 1 CTCSS input

FUNCTION: TURN AUXILIARY TIMER OFF

FUNCTION CODE: 37

PURPOSE: Disables the timer for the auxiliary 1 output

HOW TO USE:

1. Key up
2. Enter the TURN AUXILIARY TIMER OFF function code
3. Unkey
4. The controller will send a COMMAND ACCEPTED indication
5. The auxiliary 1 output timer will no longer affect the auxiliary 1 output.

FUNCTION: TURN AUXILIARY TIMER ON

FUNCTION CODE: 38

PURPOSE: Enables the timer for the auxiliary 1 output

HOW TO USE:

1. Key up
2. Enter the TURN AUXILIARY TIMER ON function code
3. Unkey
4. The controller will send the COMMAND ACCEPTED indication
5. The auxiliary output timer is now enabled

The auxiliary 1 output timer will start when the auxiliary output is on. When the timer times out the auxiliary 1 output will be turned off.

FUNCTION: TURN AUXILIARY 1 OUTPUT OFF

FUNCTION CODE: 39

PURPOSE: Turns off the auxiliary 1 output

HOW TO USE:

1. Key up
2. Enter the TURN AUXILIARY 1 OUTPUT OFF function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The auxiliary 1 output will now be turned off.

FUNCTION: TURN AUXILIARY 1 OUTPUT ON

FUNCTION CODE: 40

PURPOSE: Turns on the auxiliary 1 output ON

HOW TO USE:

1. Key up
2. Enter the TURN AUXILIARY OUTPUT ON function code
3. Unkey
4. The controller will send the COMMAND ACCEPTED indication
5. The auxiliary 1 output will be latched on.

If the auxiliary 1 output timer is enabled, the timer will turn the auxiliary 1 output off when the timer times out.

UNCTION: PULSE AUXILIARY 1 OUTPUT

FUNCTION CODE: 45

PURPOSE: Pulses the auxiliary 1 output

HOW TO USE:

1. Key up
2. Enter the PULSE AUXILIARY OUTPUT 1 function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The auxiliary 1 output will be pulsed

FUNCTION: ACTIVATE KEYPAD TEST

FUNCTION CODE: 48

PURPOSE: Allows testing of users radio touch pad

HOW TO USE:

1. Key up
2. Enter the ACTIVATE KEYPAD TEST function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Push the digit to be tested
7. Unkey
8. The controller will report which DTMF digit it heard in CW

The controller will wait for another DTMF digit to be sent. If it you wish to cancel the function key up without sending a DTMF digit and unkey. The controller will cancel the keypad test with no acknowledge tone.

If a DTMF tone is not heard in a minute's time the function will be canceled. The maximum time a function can be active and waiting for DTMF input is 1 minute. After a minute of waiting for a DTMF tone and not hearing one the function will be canceled.

FUNCTION: WARM RESET

FUNCTION CODE: 55

PURPOSE: Resets all statuses to power up condition.

HOW TO USE:

1. Key up
2. Enter the WARM RESET function code
3. Unkey
4. There will be no direct acknowledging from the controller.

When you unkey after entering the WARM RESET code the transmitter will drop immediately as the controller does a reset and does not remember that the receiver was active.

FUNCTION: COURTESY TONE ENABLED

FUNCTION CODE: 56

PURPOSE: Enables the all of the courtesy tones.

HOW TO USE:

1. Key up
2. Enter the COURTESY TONE ENABLED function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. All the courtesy tones will enabled

To make this function permanent (Function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: COURTESY TONE DISABLE

FUNCTION CODE: 57

PURPOSE: Disables the all of the courtesy tones.

HOW TO USE:

1. Key up
2. Enter the COURTESY TONE DISABLE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. All the Courtesy tones will be disabled.

This function does not affect the acknowledge codes. The remote base, Setup mode and normal courtesy tones will be disabled. The COMMAND ACCEPTED and ENTER NEXT DATA indications will still operate.

FUNCTION: ENTER SETUP MODE

FUNCTION CODE: 58

PURPOSE: Puts the controller in the Setup mode – to be used in a DTMF Command Line

HOW TO USE:

1. Key up
2. Enter the ENTER SETUP MODE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller will be in the Setup mode

Entering the Setup mode with this command will occur regardless of the position of the setup jumper.

FUNCTION: EXIT SETUP MODE

FUNCTION CODE: 59

PURPOSE: Takes the controller out of the Setup mode

HOW TO USE:

1. Key up
2. Enter the EXIT SETUP MODE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller will not be in the Setup mode.

Exiting the Setup mode with this command will occur regardless of the position of the Setup mode jumper.

FUNCTION: SET CONTROL OPERATOR MODE

FUNCTION CODE: 60

PURPOSE: Puts the controller in the Control operator mode

HOW TO USE:

1. Key up
2. Enter the SET CONTROL OPERATOR MODE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller will be in the Control operator mode..

If the Control operator mode is enabled during the Setup mode it will have no effect until exiting the Setup mode. Upon exiting the Setup mode the controller will be in Control operator mode. The controller can be both in Setup mode and Control operator mode at the same time but the Setup mode has priority.

The Control operator mode operates exactly like the User mode except it will allow access to DTMF command lines that are set to be accessible only in the Control operator mode.

FUNCTION: CLEAR CONTROL OPERATOR MODE

DTMF CODE: 61

PURPOSE: Takes the controller out of the control operator mode

HOW TO USE:

1. Key up
2. Enter the CLEAR CONTROL OPERATOR MODE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller will not be in the Control operator mode.

If the control operator mode is enabled during the Setup mode it will have no effect until exiting the Setup mode. Upon exiting the Setup mode the controller will be in Control operator mode. The controller can be both in Setup mode and Control operator mode at the same time but the Setup mode has priority.

The Control operator mode operates exactly like the user mode except it will allow access to DTMF command lines that are set to be accessible only in the Control operator mode.

FUNCTION: ENABLE IDER

FUNCTION CODE: 62

PURPOSE: Enables the IDer

HOW TO USE:

1. Key up
2. Enter the ENABLE IDER function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller's IDer will now be enabled...

If the IDer was not enabled on power up the save statuses function will need to be run. This will store the new IDer status along with others. This needs to be done or the IDer status will return to the way it was the last time the controller was powered up when a warm reset or power on reset occur.

To make this function permanent (function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: DISABLE IDER

FUNCTION CODE: 63

PURPOSE: To keep IDer from IDing

HOW TO USE:

1. Key up
2. Enter the DISABLE IDER function code
3. Unkey
4. The controller will send the COMMAND ACCEPTED indication
5. The controller's IDer will now be disabled...

If the IDer was enabled on power up the save statuses function will need to be run. This will store the new IDer status (along with others). This needs to be done or the IDer status will return to the way it was the last time the controller was powered up.

To make this function permanent (function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: TURN ON TEST TONE

FUNCTION CODE: 64

PURPOSE: To provide an audio test signal from the controller

HOW TO USE:

1. Key up
2. Enter the TURN ON TEST TONE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller will send a continuous tone at the frequency that is currently set.

This function will not cause the transmitter to stay on. It only provides the tone from the tone output. The transmitter can be locked on by using the TX 1 force on function (#85).

The test tone frequency will be the same as the IDer tone frequency.

FUNCTION: TURN OFF TEST TONE

FUNCTION CODE: 65

PURPOSE: To turn off the test tone signal from the controller

HOW TO USE:

1. Key up
2. Enter the TURN OFF TEST TONE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller will stop sending the test tone

FUNCTION: SET PARAMETERS TO THE FACTORY DEFAULT

FUNCTION CODE: 66

PURPOSE: Reset the listed parameters to the factory defaults

HOW TO USE:

1. Key up
2. Enter the SET PARAMETERS TO THE FACTORY DEFAULT function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The Parameters are now set to the Factory Defaults

The factory defaults are as follows:

1. Words per minute 10 WPM
2. CW frequency 1000Hz
3. TX 1 timeout time 600 seconds
4. TX 1 Hang time 2 seconds
5. Auxiliary 1 output timer time 600 seconds
6. IDer polite ID time 150 seconds
7. IDer pending ID time 600 seconds
8. Statuses are set to defaults (See SAVE STATUSES Function (#87))

FUNCTION: SET IDER RX POLITE ID TIME

FUNCTION CODE: 67

PURPOSE: Sets the time to hold off the ID if the pending ID timer has timed out and the RX is active

HOW TO USE:

1. Key up
2. Enter the SET IDER RX ACTIVE HOLD OFF TIME function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the time in seconds for the hold off time
7. Unkey
8. The controller sends the COMMAND ACCEPTED indication
9. The new time value is stored

The time range is from 30 seconds to 2500 seconds. If a value is entered outside these limits the controller will not save the entered value, it will give the ERROR indication (B in CW) and the function will be ended.

FUNCTION: SET IDER PENDING ID TIMER

FUNCTION CODE: 68

PURPOSE: Sets the time the IDer will wait before it tries to ID

HOW TO USE:

1. Key up
2. Enter the SET IDER PENDING ID function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the time in seconds for the pending ID time
7. Unkey
8. The controller sends the COMMAND ACCEPTED
9. The value is changed.

The time range is from 30 seconds to 2500 seconds. If a value is entered outside these limits the controller will not save the entered value, it will give the ERROR indication (B in CW) and the function will be ended.

FUNCTION: SET AUXILIARY 1 OUTPUT TIMEOUT TIME

FUNCTION CODE: 69

PURPOSE: Changes the time for the auxiliary 1 timer

HOW TO USE:

1. Key up
2. Enter the SET AUXILIARY 1 OUTPUT TIMEOUT TIME function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the time in seconds for the auxiliary 1 timeout timer
7. Unkey
8. The controller sends the COMMAND ACCEPTED indication
9. The timer value is changed.

The time range is from 10 seconds to 2520 seconds. If a value is entered outside these limits the controller will not save the entered value, it will give the ERROR indication (B in CW) and the function will be ended.

FUNCTION: SET WORD PER MINUTE RATE

FUNCTION CODE: 70

PURPOSE: Changes the word per minute rate for the IDer CW output

HOW TO USE:

1. Key up
2. Enter the SET WORD PER MINUTE RATE function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the time in seconds for the new wpm rate
7. Unkey
8. The controller sends the COMMAND ACCEPTED indication
9. The word per minute value is changed for the IDer

The time range is from 5 wpm to 30 wpm. If a value is entered outside these limits the controller will not save the entered value, it will give the ERROR or BAD VALUE indication (B in CW) and the function will be ended.

FUNCTION: SET HANG TIME

FUNCTION CODE: 72

PURPOSE Sets the time TX 1 is on after the receivers activating it become inactive

HOW TO USE:

1. Key up
2. Enter the SET HANG TIME code
3. Unkey
4. The controller sends the ENTER NEXT DATA code
5. Key up
6. Enter the hang time in seconds
7. Unkey
8. The controller sends the COMMAND ACCEPTED indication
9. The new hang time value is stored

The range of the timer is from 0.1 seconds to 25 seconds. If a value is entered outside these limits the controller will not save the entered value, it will give the ERROR or BAD VALUE indication (B in CW) and the function will be ended. The timer is accurate to about 0.2 seconds and has a minimum of about a quarter of a second

To enter a decimal point use the ' * ' key. To enter the value 1.2 sec enter ' 1*2 ' on your DTMF keypad.

FUNCTION: SET TX 1 TIMEOUT TIME

FUNCTION CODE: 73

PURPOSE Sets the time TX 1 is allowed to be on

HOW TO USE:

1. Key up
2. Enter the SET TX 1 TIMEOUT TIME function code
3. Unkey
4. The controller sends the ENTER NEXT DATA code
5. Key up
6. Enter the time out time in seconds
7. Unkey
8. The controller sends the COMMAND ACCEPTED indication
9. The new timeout time value is stored

The time range is from 10 seconds to 1200 seconds in 10-second increments. The accuracy is about 10 seconds. If a value is entered outside these limits the controller will not save the entered value, it will give the ERROR or BAD VALUE indication (B in CW) and the function will be ended.

If "0" is entered the TX 1 timer is disabled. TX 1 will not time out.

FUNCTION: CLEAR ALL DTMF COMMAND LINES

FUNCTION CODE: 74

PURPOSE: To clear all the DTMF memories

HOW TO USE:

1. Key up
2. Enter the CLEAR ALL DTMF COMMAND LINES function code
3. Unkey
4. The controller will send the COMMAND ACCEPTED indication
5. All of the DTMF codes are now cleared from the controller's EEPROM

If it is only necessary to clear one or a few DTMF command lines / memories the CLEAR ONE DTMF COMMAND LINE function can be used.

FUNCTION: CLEAR ONE DTMF COMMAND LINE

FUNCTION CODE: 75

PURPOSE: To clear only one DTMF command line

HOW TO USE:

1. Key up
2. Enter the CLEAR ONE DTMF COMMAND LINE function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the memory number of the DTMF line to clear
7. Unkey
8. The controller will send the COMMAND ACCEPTED indication
9. The DTMF codes in the DTMF selected line / memory are now cleared from the EEPROM

If it is desired to clear all of the DTMF command lines / memories from the EEPROM the CLEAR ALL DTMF COMMAND LINES function may be used.

FUNCTION: ENTER NEW ID

FUNCTION CODE: 76

PURPOSE: To set the information the IDer sends

HOW TO USE:

1. Key up
2. Enter the ENTER NEW ID function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Hold the key while entering in a series of 0's, 1's and 2's.
7. The 0's will enter a space, the 1's will enter a DIT and the 2's will enter a DAH.
8. When all the information is entered unkey.
9. The controller sends the COMMAND ACCEPTED indication
10. The new ID is stored

There is enough room to store as much as two call signs. If the controller did not like the information it received the controller will not save the entered data and it will give the ERROR or BAD VALUE indication (B in CW) and the function will be ended.

FUNCTION: SET NEW CW FREQUENCY

FUNCTION CODE: 77

PURPOSE: To set the frequency at which the controller sends any tone

HOW TO USE:

1. Key up
2. Enter the SET NEW CW FREQUENCY function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the new frequency for the controller to send (from 400Hz to 1500Hz)
7. Unkey
8. The controller will send the COMMAND ACCEPTED indication
9. The DTMF codes in the selected line / memory are now cleared from the EEPROM

The frequency range is from 400Hz to 1500Hz. If a value is entered outside these limits the controller will not save the entered value, it will give the ERROR indication (B in CW) and the function will be ended.

FUNCTION: ENTER DTMF COMMAND LINE

FUNCTION CODE: 78

PURPOSE: To enter a DTMF code that when entered will do a function

HOW TO USE:
1. Key up
2. Enter the ENTER DTMF COMMAND LINE function code
3. Unkey, the controller sends the ENTER NEXT DATA indication
4. Key up
5. Enter the DTMF line memory number 0 to 24. (a total of 25 DTMF memories)
6. Unkey, the controller sends the next ENTER NEXT DATA indication
7. Key up
8. Enter the DTMF digits for the DTMF code, do not unkey while entering the 1 to 5 DTMF digits
9. Unkey, the controller sends the next ENTER NEXT DATA indication
10. Key up,
11. If this DTMF command line is to be used only at the Control operator's level (and only if) enter in "16"
12. Unkey, the controller sends the next ENTER NEXT DATA indication
13. Enter in the numerical value of the function for this DTMF command line to do
14. Unkey, the controller sends the COMMAND ACCEPTED indication
15. The new DTMF command line is now stored in EEPROM

If the controller did not like the information it received the controller will not save the entered data and it will give the ERROR or BAD VALUE indication (B in CW) and the function will be ended. This can occur from step 4 to step 14

PLEASE NOTE: You must now Unkey after entering in the Control operator code (16) if you enter it.

FUNCTION: FORCE TX 1 ON

FUNCTION CODE: 85

PURPOSE: Forces TX 1 on

HOW TO USE:

1. Key up
2. Enter the FORCE TX 1 ON function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. TX 1 will be locked on.

The FORCE TX 1 ON will be cancelled when either the TX 1 FORCE CLEAR is used or when the TX 1 timeout timer times out.

FUNCTION: FORCE TX 1 ON CLEAR

DTMF CODE: 86

PURPOSE: Cancels the command FORCE TX 1 ON

HOW TO USE:

1. Key up
2. Enter the FORCE TX 1 ON CLEAR function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication

If the FORCE TX 1 ON CLEAR command is active, the FORCE TX 1 ON command will now be canceled.

FUNCTION: SAVE STATUSES

FUNCTION CODE: 87

PURPOSE: Makes the current statuses permanent

HOW TO USE:

1. Key up
2. Enter the SAVE STATUSES function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller's selected statuses will now be stored in EEPROM

The statuses need to be changed before using Save statuses. Save statuses just stores them the way it finds them from the controllers temporary RAM memory to the controllers permanent EEPROM memory.
This command will put the value of the statuses listed below in EEPROM memory so they are as currently in RAM when the controller is powered up again. If the Save statuses function is not used and any of these values are changed the values will go back to what they were before power up. The factory defaults are also shown below;

1.	TX ENABLED	Default = TRUE
2.	ID ENABLED	Default = TRUE
3.	BEEP ENABLED	Default = TRUE
4.	AUXILIARY 1 TIMER ENABLED	Default = FALSE
5.	DTMF MUTING ENABLED	Default = TRUE
6.	ENABLE TX FAN	Default = FALSE
7.	RX 1 COR IN AND / OR MODE	Default = FALSE
8.	FORCE CTCSS ON	Default = FALSE

FUNCTION: ENABLE TIMED TX FAN ON AUXILIARY 1 OUTPUT

FUNCTION CODE: 88

PURPOSE: To enable control for a transmitter fan for TX 1 on auxiliary 1 output

HOW TO USE:

1. Key up
2. Enter the ENABLE TIMED TX FAN ON AUXILIARY 1 OUTPUT function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The TX 1 fan output is now enabled on the auxiliary 1 output

This function will turn on its output when TX 1 comes on and remain on for a preset time after TX 1 goes off. The output used for this function is the auxiliary 1 output. The auxiliary 1 output timer is used for the fan timer. It starts when TX 1 goes off. To set the time for this function use the SET AUXILIARY 1 OUTPUT TIMEOUT TIME function (function code 69).

The ENABLE TIMED TX FAN ON AUXILIARY 1 OUTPUT command will enable the TX fan. If the TX fan was disabled on power up the TX FAN will again be disabled on power up (or warm reset) unless you use the SAVE STATUSES (function #87). If you ENABLE TIMED TX FAN ON AUXILIARY 1 OUTPUT and then use the SAVE STATUSES function the TX fan will always be enabled when a power or warm reset occurs.

FUNCTION: DISABLE TIMED TX FAN ON AUXILIARY 1 OUTPUT

FUNCTION CODE: 89

PURPOSE: To disable control for a transmitter fan for TX 1 on the Auxiliary 1 output

HOW TO USE:

1. Key up
2. Enter the DISABLE TIMED TX FAN ON AUXILIARY 1 OUTPUT function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The fan output is now disabled

The DISABLE TIMED TX FAN ON AUXILIARY 1 OUTPUT command will disable the TX fan. If the TX fan was enabled on power up the TX FAN will again be enabled on power up (or warm reset) unless you use the SAVE STATUSES (Function number 87). If you DISABLE TIMED TX FAN ON AUXILIARY 1 OUTPUT and then use the SAVE STATUSES function the TX fan will always be disabled when a power or warm reset occurs.

FUNCTION: TURN DTMF MUTING ON

FUNCTION CODE: 91

PURPOSE: Tell the controller to mute audio when DTMF tones are heard

HOW TO USE:

1. Key up
2. Enter the TURN DTMF MUTING ON function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The DTMF tones will now be muted

The TURN DTMF MUTING ON function will enable DTMF muting. If DTMF muting was disabled on power up the DTMF muting will again be disabled on power up (or warm reset) unless you use the SAVE STATUSES (function #87). If you TURN DTMF MUTING ON and then use the SAVE STATUSES function the DTMF muting will always be enabled after a power up or warm reset occurs.

FUNCTION: TURN DTMF MUTING OFF

FUNCTION CODE: 92

PURPOSE: Set the controller not to mute RX1 or RX2 audio when DTMF tones are heard

HOW TO USE:

1. Key up
2. Enter the TURN DTMF MUTING OFF function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The DTMF tones will now not be muted

The TURN DTMF MUTING OFF command will disable DTMF muting. If DTMF muting was enabled on power up the DTMF muting will again be enabled on power up (or warm reset) unless you use the SAVE STATUSES (function #87). If you TURN DTMF MUTING OFF and then use the SAVE STATUSES function the DTMF muting will always be disabled after a power up or warm reset occurs.

FUNCTION: AND RX 1 COS AND CTCSS INPUTS
*****
FUNCTION CODE: 93

PURPOSE: Requires an AND condition for a valid RX1 ACTIVE condition

HOW TO USE:

1. Key up
2. Enter the SET RX1 COS TO AND function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller is now in AND mode on receiver 1 (RX1, port 1)

This function when enabled will set the receiver #1 input (RX1) to require both the RX1 main input and the RX1 CTCSS input to be active (AND condition) before an active receiver condition is recognized by the controller.

To make this function permanent (Function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: ACTIVATE CTCSS ENCODE HANG TIMER

FUNCTION CODE: 100

PURPOSE: Tells the controller to keep the CTCSS encode on after the receiver goes off while the CTCSS hang timer is running

HOW TO USE:

1. Keyup
2. Enter the ACTIVATE CTCSS ENCODE HANG TIMER function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication.
5. The CTCSS encode will now stay on after the receiver goes off while the CTCSS hang timer is running

The CTCSS encode has to be enabled (command #103) before the encode tone will be sent.

FUNCTION: DEACTIVATE CTCSS ENCODE HANG TIMER

FUNCTION CODE: 101

PURPOSE: Tells the controller to disable the CTCSS encode hang time timer function
HOW TO USE:

1. Keyup
2. Enter the DEACTIVATE CTCSS ENCODE HANG TIMER function code
3. Unkey
4. The controller send the COMMAND ACCEPTED indication.
5. The CTCSS encode will now not stay on after the receiver goes off.

FUNCTION: SET CTCSS ENCODE HANG TIME

FUNCTION CODE: 102

PURPOSE: Sets the amount of time the CTCSS stays on after the receiver goes off if enabled

HOW TO USE:

1. Keyup
2. Enter the ACTIVATE CTCSS ENCODE HANG TIMER function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Keyup
6. Enter the number of seconds (from 0s to 25s) in seconds.
7. Unkey
8. The controller send the COMMAND ACCEPTED indication.
9. The newly entered CTCSS encode hang time is now used

FUNCTION: ACTIVATE CTCSS ENCODE

FUNCTION CODE: 103

PURPOSE: Turns on the CTCSS encode function

HOW TO USE:

1. Keyup
2. Enter the ACTIVATE CTCSS ENCODE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication.
5. The CTCSS encode will now be active when the repeater or link receiver is active.

FUNCTION: DEACTIVATE CTCSS ENCODE

FUNCTION CODE: 104

PURPOSE: Turns off the CTCSS encode function

HOW TO USE

1. Keyup
2. Enter the DEACTIVATE CTCSS ENCODE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication.
5. The CTCSS encode will now be disabled.

This function will disable any CTCSS tone on the TX 1 output.

FUNCTION: ENABLE RX 1 CTCSS ENCODE ACTIVATE

FUNCTION CODE: 110

PURPOSE To allow activation of the CTCSS encode on TX 1 when RX 1 is active

HOW TO USE:

1. Keyup
2. Enter the ENABLE RX 1 CTCSS ENCODE ACTIVATE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication.
5. RX 1 will now activate the CTCSS encode on TX 1 when RX 1 is active.

To make this function permanent (function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: DISABLE RX 1 CTCSS ENCODE ACTIVATE

FUNCTION CODE: 111

PURPOSE To not allow RX 1 to activate the encode on TX 1 when RX 1 is active

HOW TO USE:

1. Keyup
2. Enter the DISABLE RX 1 CTCSS ENCODE ACTIVATE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication.
5. RX 1 will now not activate the CTCSS encode on TX 1 when RX 1 is active.

To make this function permanent (function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: ACTIVATE BEACON MODE

FUNCTION CODE: 114

PURPOSE Sets the IDer to operate in 'Beacon Mode"

HOW TO USE:

1. Key up
2. Enter the ACTIVATE BEACON MODE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller is now in Beacon Mode mode

To make this function permanent (function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

In Beacon mode the IDer will ID whether or not the transmitter has been activated. The time in-between IDs will be what the pending ID timer (See Function #68) is set to. If a receiver input is active when the pending ID timer times out the IDer will start the polite ID timer (See Function #67). The IDer will not ID until the polite ID timer times out or the receiver input is no longer active.

FUNCTION: DEACTIVATE BEACON MODE

FUNCTION CODE: 115

PURPOSE Sets the IDer back to normal mode – disables the Beacon function

HOW TO USE:

1. Key up
2. Enter the DEACTIVATE BEACON MODE function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller will now not be in Beacon mode

To make this function permanent (function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used. This is a factory default (see set factory defaults, function #66)

FUNCTION: ENABLE ANTIKERCHUNKER FILTER

FUNCTION CODE: 118

PURPOSE Enables the Antikerchunker filter

HOW TO USE:

1. Key up
2. Enter the ENABLE ANTIKERCHUNKER FILTER function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. Now the Antikerchunker filter is enabled

To make this function permanent (Function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: DISABLE ANTIKERCHUNKER FILTER

FUNCTION CODE: 119

PURPOSE Disables the Antikerchunker filter

HOW TO USE:

1. Key up
2. Enter the DISABLE ANTIKERCHUNKER FILTER function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. Now the Antikerchunker filter is enabled

To make this function permanent (Function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: SET ANTIKERCHUNKER FILTER DELAY

FUNCTION CODE: 120

PURPOSE Allows changes to the Antikerchunker delay time

HOW TO USE:

1. Key up
2. Enter the SET ANTIKERCHUNKER FILTER DELAY function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the time in seconds
7. Unkey
8. The controller sends the COMMAND ACCEPTED indication
9. Now the Antikerchunker filter is set to the entered value

The range of the delay timer is 0.1s to 25s. This timer sets the amount of time the receiver needs to be active before the antikerchunker filter stops filtering. .Use the '*' key for the decimal point. You can only enter 4 digits (the decimal point counts as a digit).

FUNCTION: SET ANTIKERCHUNKER FILTER INTERVAL TIME

FUNCTION CODE: 121

PURPOSE: Allows changes to the interval timer - the time before the Linker IIs restarts the Antikerchunker filter

HOW TO USE:

1. Key up
2. Enter the SET ANTIKERCHUNKER FILTER INTERVAL TIME function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the time in seconds
7. Unkey
8. The controller sends the COMMAND ACCEPTED indication
9. Now the Antikerchunker filter interval time is set to the entered value

The range of the interval timer is 10s to 2500 seconds. This timer starts after the antikerchunker times out. When this timer times out the antikerchunker filter is again started.

FUNCTION: SET PREBEEP TIME

FUNCTION CODE: 122

PURPOSE Sets the time from when RX1 is determined to be off and the courtesy tone starts

HOW TO USE:

1. Key up
2. Enter the SET PREBEEP TIME function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the time in seconds
7. Unkey
8. The controller sends the COMMAND ACCEPTED indication
9. Now the Prebeep time is set to the entered value

The minimum Prebeep time that can be set is 0.1 seconds, the maximum Prebeep time that can be set is 25 seconds. If a value is entered outside this range the controller will send a Morse code "B" (for Bad data) and the bad data will not be saved. .Use the '*' key for the decimal point. You can only enter 4 digits (the decimal point counts as a digit).

FUNCTION: OR RX 1 COS AND CTCSS INPUTS

FUNCTION CODE: 123

PURPOSE: Requires an OR condition for a valid RX1 ACTIVE condition

HOW TO USE:

1. Key up
2. Enter the SET RX1 COS TO OR function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller is now in OR mode on receiver 1 (RX1, port 1)

This function when enabled will set the receiver #1 input (RX1) to require both the RX1 main input and the RX1 CTCSS input to be active (OR condition) before an active receiver condition is recognized by the controller.

To make this function permanent (Function stays active after power up or reset) the SAVE STATUSES function (function # 87) must be used.

FUNCTION: FORCE CTCSS ENCODE ON

FUNCTION CODE: 125

PURPOSE: Turns on the CTCSS encode and keeps it on

HOW TO USE:

1. Key up
2. Enter the FORCE CTCSS ENCODE ON function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller now forces on the CTCSS encode

When the CTCSS encode is forced on it will stay on independent of any other condition. The CTCSS encode will remain on regardless of the status of the transmitters, receivers or the CTCSS encode hang time.

FUNCTION: CANCEL FORCE CTCSS ENCODE ON

FUNCTION CODE: 126

PURPOSE: Cancels the force CTCSS encode force on

HOW TO USE:

1. Key up
2. Enter the CANCEL FORCE CTCSS ENCODE ON function code
3. Unkey
4. The controller sends the COMMAND ACCEPTED indication
5. The controller will no longer force the CTCSS encode on

If the FORCE CTCSS ENCODE ON is active and this function is used the controller will stop forcing the CTCSS encode to be on. The CTCSS encode will operate according to the statuses of the CTCSS encode and the CTCSS encode hang time.

FUNCTION: CHANGE A PROGRAMMABLE TONE

FUNCTION CODE: 127

PURPOSE: Allows you to change one of the programmable tones

HOW TO USE:

1. Key up
2. Enter the CHANGE A PROGRAMMABLE TONE function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the programmable tone number you wish to change
7. Unkey
8. The controller sends the ENTER NEXT DATA indication
9. Key up
10. Enter the tone number you with to use for the selected programmable tone.
11. Unkey
12. The controller sends the COMMAND ACCEPTED indication

The available programmable tones and the available tones are at the end of the manual, you can find the page number in the table of contents.

FUNCTION: PLAY A TONE

FUNCTION CODE: 128

PURPOSE: This function will play one of the available tones

HOW TO USE:

1. Key up
2. Enter the PLAY A TONE function code
3. Unkey
4. The controller sends the ENTER NEXT DATA indication
5. Key up
6. Enter the tone to play
7. Unkey
8. The controller sends the selected tone

The available tones are at the end of the manual, you can find the page number in the table of contents.

FUNCTION: SET COURTESY TONE SPEED

FUNCTION CODE: 133

PURPOSE: This function is used for changing the courtesy tone speed..

HOW TO USE:

1. Key up
2. Enter the SET COURTESY TONE SPEED function code
3. Unkey
4. The controller sends ENTER NEXT DATA indication
5. Enter the desired courtesy tone speed in words per minute, 5wpm to 30wpm
6. Unkey
7. The controller sends the COMMAND ACCEPTED indication
8. The courtesy tone speed is now the newly entered value.

PROGRAMMABLE TONES AND AVAILABLE TONES

1. Programmable tones (See function #127)

A. Port 1 programmable tone	0
B. Setup mode programmable tone	2
C. Change memory programmable tone	3

2. Available Morse code tones

Zero	0
One	1
Two	2
Three	3
Four	4
Five	5
Six	6
Seven	7
Eight	8
Nine	9
A	10
B	11
C	12
D	13
E	14
F	15
G	16
H	17
I	18
J	19
K	20
L	21
M	22
N	23
O	24
P	25
Q	26
R	27
S	28
T	29
U	30
V	31
W	32
X	33
Y	34
Z	35
Slash	36
Empty (no tone)	37
K	38
Beep	39
Short beep	40

REPEATER CONTROL CODES

Memory #	DTMF Codes	Control Op ?	Function code	Function Description
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24