

*Clive Thompson*

**PRELIMINARY**

Note: This excerpt contains only Section 4 - Programming Instructions.

**CSI-Super 32**  
**Community Repeater Tone Panel**  
**With TONE TRAK™**

**Instruction and Service Manual**

**Second Edition**

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**16429 Evergreen Place, Lynnwood, Washington 98037**

**Phone: (206) 745-1100 FAX: (206) 745-6060**

**Sales: (800) 222-5570 Customer Service: (206) 745-2200**

*Product Service: (206) 745-1100*

*Nick*

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# Section 4

## Programming Instructions

### 4.1 Introduction

The following is an explanation of the CSI-SUPER 32 Tone Panel manual conventions:

- [T/C] Appears in all section headings which are applicable to both CTCSS Tones and Digital Codes. To program Digital Code information, move the Tone/Code Switch, Command Code 22#, to the Digital Code position and insert a digital code in place of the CTCSS Tone frequency. For additional information regarding these codes, refer to Section 4.20.
- [RDU] Appears only with the Data Retrieval Commands that are compatible with the Original CSI Remote Display Unit (Command Codes 27, 28, 29, and 30). The Original CSI Remote Display Unit does not function with any other Data Retrieval commands. All other Data Retrieval commands are only compatible with the CSI-12.
- [SYS] Appears with the Programming Command Codes that are System Level Parameters, or Per Tone Parameters (see Section 4.1.1).
- [SAT] Status Acknowledgement Transponder appears with those features that can be remotely interrogated for their On/Off status.
- 123.0 Is used in all examples which require a CTCSS Tone.
- # Is used in place of ENTER in all of the examples.

## 4.1.1 System Level/Per Tone Parameters

The following Programming Commands are available as Per Tone Parameters, or System Level Parameters:

- |                                      |                |
|--------------------------------------|----------------|
| • Courtesy Tone On/Off               | Section 4.5    |
| • Busy Channel Lock Out On/Off       | Section 4.6    |
| • Air Time Traffic Controller On/Off | Section 4.13   |
| • Maximum Access Timer               | Section 4.13.1 |
| • Standby Timer                      | Section 4.13.2 |
| • Penalty Timer                      | Section 4.13.3 |
| • Tone Encode Extension Timer        | Section 4.48   |

### Per Tone Parameter

These commands allow the individual selection of the CTCSS Tone or Digital Code affected by a particular programming sequence. For example, if the Courtesy Tone is to be activated for just a few tones on the system, enter the programming command sequence once for each CTCSS Tone or Digital Code that is to have Courtesy Tone. The Tone/Code Switch, Command Code 22#, must be moved to the digital input position in order to program information pertaining to Digital Codes (See Section 4.20).

### System Level Parameter

Unlike a Per Tone Parameter, a System Level Parameter does not allow an *individual* CTCSS Tone or Digital Code to be affected by a programming sequence. Regardless of the total number of active CTCSS Tones or Digital Codes in the panel, when a System Level Parameter is selected, the Programming Command sequence need only be entered once. For example, to turn the Courtesy Tone on for all of the active tones on the system, select the System Level Parameter for the Courtesy Tone, rather than a particular tone frequency, or Digital Code. The Tone/Code Switch, Command Code 22#, may be in either position, as it has no effect on programming command sequences.

### Selecting System Level Parameters

To select a System Level Parameter, enter three zeros (000) in place of a specific CTCSS Tone or Digital Code. Courtesy Tone is used as an example in the following description.

To enable the Courtesy Tone on a Per Tone basis:

Keystrokes: 03# 1230# 1#

To enable the Courtesy Tone as a System Level Parameter:

Keystrokes: 03# 000# 1#

In the first example the Courtesy Tone will be enabled, but only for the single CTCSS Tone, 123.0 Hz. In the second example, the Courtesy Tone will be enabled for all CTCSS Tones or Digital Codes in the panel's Tone Table.

To disable the Courtesy Tone on a Per Tone basis:

Keystrokes: 03# 1230# 0#

To disable the Courtesy Tone as a System Level Parameter:

Keystrokes: 03# 000# 0#

In the first example the Courtesy Tone will be disabled, but only for the single CTCSS Tone, 123.0 Hz. In the second example, the Courtesy Tone will be disabled for all CTCSS Tones or Digital Codes in the panel's Tone Table.

Executing a Programming Command sequence as a System Level Parameter does not preclude changing the setting on a per tone basis at a later time. For example, if there were 10 active CTCSS Tones or Digital Codes in the panel with the Courtesy Tone enabled on a System Level basis, and a customer requested that their Courtesy Tone be turned off, the programming command sequence would be entered as a Per Tone Parameter for that customer's individual CTCSS Tone or Digital Code. In this way the Courtesy Tone may be disabled for the selected tone without affecting the other tones on the system.

The following table lists the keystrokes for the commands that are programmable as Per Tone Parameters, or System Level Parameters. For specific information on these commands, refer to the individual sections.

### **Courtesy Tone On/Off (Section 4.5)**

System Level Parameter Enable: 03# 000# 1#

System Level Parameter Disable: 03# 000# 0#

Per Tone Parameter Enable: 03# 1230# 1#

Per Tone Parameter Disable: 03# 1230# 0#

### **Busy Channel Lock Out On/Off (Section 4.6)**

System Level Parameter Enable: 04# 000# 1#

System Level Parameter Disable: 04# 000# 0#

Per Tone Parameter Enable: 04# 1230# 1#

Per Tone Parameter Disable: 04# 1230# 0#

### **Air Time Traffic Controller On/Off (Section 4.13)**

System Level Parameter Enable: 11# 000# 1#

System level Parameter Disable: 11# 000# 0#

Per Tone Parameter Enable: 11# 1230# 1#

Per Tone Parameter Disable: 11# 1230# 0#

### **Maximum Access Timer (Section 4.13.1)**

System Level Parameter Set: 12# 000# Time#

Per Tone Parameter Set: 12# 1230# Time#

### **Standby Timer (Section 4.13.2)**

System Level Parameter Set: 13# 000# Time#

Per Tone Parameter Set: 13# 1230# Time#

### **Penalty Timer (Section 4.13.3)**

System Level Parameter Set: 14# 000# Time#

Per Tone Parameter Set: 14# 1230# Time#

### **Tone Encode Extension Timer (Section 4.48)**

System Level Parameter Enable: 53# 000# 1#

System Level Parameter Disable: 53# 000# 0#

Per Tone Parameter Enable: 53# 1230# 1#

Per Tone Parameter Disable: 53# 1230# 0#

*Super 5.0 current tone*

## 4.2 Accessing The Program Mode

The panel is shipped from the factory with the Program Access Code set to 12345. When the Access Code has been entered, the Optional Front Panel Display LED will respond with the prompt **Pt**. The repeat function of the panel is disabled while in the Program Mode. To exit the Program Mode, returning the panel to the Ready Mode, enter 99#.

## 4.3 Activate/Inactivate CTCSS Tones [T/C][SAT]

Before the panel will Encode a CTCSS Tone, the tone must be activated. When the panel decodes an activated tone, the received audio is passed to the transmitter and the tone is regenerated. The hit accumulator is advanced by one increment and the transmitter time accumulator is updated. When a tone is *inactivated* it remains in the Tone Table and time use data continues to accumulate. The panel is shipped from the factory with all tones inactivated.

Activate CTCSS Tone: 01# 1230# 1#

Inactivate CTCSS Tone: 01# 1230# 0#

*Note:* CTCSS Tones or Digital Codes must be present in the Tone Table before they can be activated.

## 4.4 Insert/Delete Tones In Tone Table [T/C][SAT]

The Tone Table is used to customize the panel to suit individual system requirements. Non-standard CTCSS Tones and Digital Codes may be entered or removed, as needed eliminating factory programming of non EIA tones. The Tone Table contains 32 tones (31 EIA & 97.4) from 67.0 Hz. to 250.3 Hz. and no Digital Codes. To insert Digital Codes the Tone/Code Switch, Command Code 22#, must be set to the digital input position.

When a CTCSS Tone or Digital Code is deleted from the Tone Table, all information relating to that tone is erased and the Tone Table is reduced in size by one tone entry. The panel will no longer decode or accumulate data for the deleted tone. A deleted tone must be placed back into the table before it may be activated. The maximum size of the Tone Table containing all tones or all codes is 46 users. The maximum size using both tones and codes is 45 users.

To Insert Tones or Codes: 02# 1230# 1#

To Delete Tones or Codes: 02# 1230# 0#

## 4.5 Courtesy Tone On/Off [T/C][SYS][SAT]

The Courtesy Tone is a single short beep sent at the end of a transmission when the CTCSS Tone is no longer being received by the panel. The Courtesy Tone is used as a roger/over tone to signal the receiving party that it is their turn to talk. The Courtesy Tone is enabled on a per tone basis. This feature is disabled as shipped from the factory.

To Enable Courtesy Tone: 03# 1230# 1#

To Disable Courtesy Tone: 03# 1230# 0#

*Note:* See Section 4.51 to set the Courtesy Tone Pitch.

## 4.6 Busy Channel Lock Out [T/C][SYS][SAT]

Busy Channel Lock Out has been changed from previous software versions. The CTCSS Tone is no longer generated during the carrier delay time. This feature provides positive control of the repeater by the CTCSS Tone that has current access. Control is retained during the carrier delay time and will not terminate until the transmitter drops, at which time any user may access the repeater. When a new or, different tone is decoded during the carrier delay time, the Optional Front Panel Display will indicate the tone frequency, but *will not regenerate it or repeat the new audio, thus locking out the second user.* Busy Channel Lock Out is activated on a per tone basis. This feature is disabled as shipped from the factory.

To Activate: 04# 1230# 1#

To Inactivate: 04# 1230# 0#

*Note:* See Section 4.48, Tone Encode Extension Timer to set CTCSS tone during the carrier delay period. Extending the Carrier Delay Timer will automatically increase the amount of time a CTCSS tone can control the repeater.



## 4.7 Set Community Station ID [T/C]

Community Station ID allows station identification on a per tone basis for up to 45 individual radio systems. Each time a CW-ID is programmed for a tone, the Community Station ID is automatically turned on. Community Station ID may be turned on or off without altering the ID. (See section 4.8)

Up to eight characters may be entered for each Station ID. If an ID of seven characters or less is required, press # twice on the last entry. A zero may not be set in the first position, since a zero is interpreted as a blank code.

### ASCII CONVERSION CHART

0 = 48	9 = 57	I = 73	R = 82
1 = 49	A = 65	J = 74	S = 83
2 = 50	B = 66	K = 75	T = 84
3 = 51	C = 67	L = 76	U = 85
4 = 52	D = 68	M = 77	V = 86
5 = 53	E = 69	N = 78	W = 87
6 = 54	F = 70	O = 79	X = 88
7 = 55	G = 71	P = 80	Y = 89
8 = 56	H = 72	Q = 81	Z = 90

The example below outlines the required steps for programming the call sign KYP636 for the tone frequency 123.0 Hz. Enter the keystrokes 05# and 1230#, followed by the ASCII value for each character in the call sign. Press # after each entry.

05#		w	87
1230#	= Tone	N	78
75#	= (K)	w	87
89#	= (Y)	Q	81
80#	= (P)	9	57
54#	= (6)	5	53
51#	= (3)	8	54
54#	= (6)		
#	= Signifies the end of the ID.		

*Note:* To reset the ID code for a particular tone, program ASCII code 48 in the first position, 05#, 1230#, 48#. This keystroke is disabled if a valid Private Carrier CW-ID is set.

## 4.8 Community Station ID Switch On/Off [T/C][SAT]

The Community Station ID Switch turns a Station ID on or off after an ID has been assigned to a CTCSS tone. Community Station ID may be turned on or off without altering the ID. It is not necessary to turn an ID on after assigning an ID to a CTCSS tone. (See section 4.7). The Community Station ID feature begins the identification cycle for each tone at the beginning of a conversation if the following conditions have been met:

- A valid ID has been set for that tone.
- Station ID is turned on for that tone.
- Approximately 2 minutes have lapsed since the last transmission by the same user, or a different tone has accessed the system.
- The CW-ID time interval has lapsed for the given tone. See section 4.42 to set the CW-ID Time Interval.

To turn the Community Station ID Switch on, enter the keystrokes 06#, followed by 1230#, then 1#. To turn the Community Station ID Switch off, enter keystrokes 06#, followed by 1230#, then 0#.

Switch On: 06# 1230# 1#

Switch Off: 06# 1230# 0#

*Note:* This keystroke is disabled if a valid Private Carrier CW-ID is set.

## 4.9 Test Station ID [T/C]

Both Community and Private Carrier Station CW-ID's may be tested by entering this command. This test will key the transmitter and broadcast the CW-ID requested. In order to use this feature, a valid CW-ID must be programmed.

The Community Station ID Switch need not be enabled in order to test a particular tone's ID. To test the Community Station ID for 123.0 Hz., enter the keystrokes 07#, followed by 1230#.

To Test: 07# 1230#

To test the Private Carrier Station ID, enter the keystrokes 07#.

To Test: 07#

## 4.10 Cross Tone Encoding [T/C]

Cross Tone Encoding allows a different CTCSS tone or Digital Code, to be generated than the one that is being received. For example, the panel can be programmed to encode 67.0 Hz. when 250.3 Hz. is being decoded. Any tone frequency between 62.0 Hz. and 255.9 Hz. may be programmed for regeneration as an encode tone. If no encode tone is desired, enter 000 for the encode tone. The decode tone of a crossed pair must be in the Tone Table and have been previously activated. The encode tone does not have to be activated nor does it have to be present in the Tone Table. During Cross Tone operation, the Optional Front Panel Display XFER LED is illuminated. As shipped from the factory, the panel is programmed for same tone decode/encode.

To Cross Tone 123.0 Hz. to 88.5 Hz., enter the keystrokes 08# followed by 1230# and 885#. In order to cross Digital Codes to Digital Codes, the Tone/Code Switch, Command Code 22#, must be moved to the digital input position (See Section 4.20).

Tone to Tone: 08# 1230# 885#

Code to Code: 22# 08# 023# 025#

The above examples show the crossing of the CTCSS tone 123.0 Hz. to 88.5 Hz. and the crossing of the digital code 023 to the digital code 025 .

Crossing a CTCSS tone or digital code to itself will cause the XFER light to continue to function and is therefore not recommended. To reset a CTCSS tone or digital code to its normal encode/decode status, see Section 4.12.

*Note:* Using Busy Channel Lock Out with Cross Tone Encoding *will cause interference* and is not recommended.

## 4.11 Crisscross Encoding [T/C]

With Crisscross Encoding the crossing of CTCSS tones to Digital Codes or Digital Codes to CTCSS tones may be performed. For example, the panel can be programmed to encode digital code 023 when CTCSS tone 146.2 Hz. is being decoded or the panel can encode tone 146.2 Hz. when code 356 is being decoded. The decode tone of a crossed pair must be in the Tone Table and have been previously activated. The encode tone does not have to be activated, nor need it be present in the Tone Table. As shipped from the factory, the panel is programmed for same tone decode/encode. In order to cross a Digital Code to a tone, the Tone/Code Switch, Command Code 22#, must be moved to the digital input position (See Section 4.20).

To Crisscross CTCSS tone 123.0 Hz. to digital code 315, enter the keystrokes 09#, followed by 1230#, then 315#.

Tone To Code: 09# 1230# 315#

Code to Tone: 22# 09# 315# 1230#

The above examples show the crossing of CTCSS tone 123.0 Hz. to the digital code 315 and the crossing of the digital code 315 to the CTCSS tone 123.0 Hz. Crossing a CTCSS tone or digital code to itself will cause the XFER light to continue to function and is not recommended. To reset a CTCSS tone or digital code to its normal encode/decode status, see Section 4.12.

*Note:* Using Busy Channel Lock Out with Crisscross Encoding *will cause interference* and is not recommended.

## 4.12 Reset Cross Tone Encoding [T/C]

Reset Cross Tone Encoding is used to restore the normal encode/decode status of a tone or digital code that has been assigned to the Decode Tone of a crossed, or crisscrossed pair. To reset 123.0 Hz., enter the keystrokes 10# followed by 1230#. In order to reset a Crossed, or Crisscrossed Digital Code, the Tone/Code Switch, Command Code 22#, must be moved to the digital input position (See Section 4.20).

Reset CTCSS Tone: 10# 1230#

Reset Digital Code: 22# 10# 315#

The above examples show how to reset the CTCSS tone 123.0 Hz. and the digital code 315 to their normal encode/decode status. This need only be done for the decode tone or code of the crossed pair, as the encode tone or code has not been affected.

## 4.13 Air Time Traffic Controller On/Off [T/C][SYS][SAT]

The Air Time Traffic Controller is comprised of three, separate, programmable timers. This feature permits individual radio systems equal allowance by inhibiting repeater access to users who exceed the Maximum Access Time. Warning beeps are transmitted every 4 seconds, starting 30 seconds prior to Time-Out, notifying overly active users that they will be temporarily barred from accessing the repeater if they continue transmitting. This 30 second time period allows the user ample time to terminate the conversation prior to being cut off. The Air Time Traffic Controller is programmable on a per tone basis with the factory default being off.

### EXAMPLES:

1. Maximum Access Time is set for 3 minutes, the Standby Time is set for 20 seconds and the Penalty Time is set for 1 minute. Company A uses the repeater for 2.5 minutes and ignoring the Warning Beeps, continues to use the repeater. At the end of three minutes, the repeater drops out, inactivating Company A's tone for one minute.
2. Maximum Access Time is set for 3 minutes, the Standby Time is set for 30 seconds and the Penalty Time is set for 1 minute. Company A uses the repeater continuously for 2.5 minutes, hears the Warning Beeps and decides to clear the channel. Company B uses the repeater for twenty seconds and then clears the channel. As soon as the repeater drops, Company A again has access to the repeater for 3 minutes.
3. Maximum Access Time is set for 3 minutes, the Standby Time is set for 20 seconds and the Penalty Time is set for 1 minute. Company A uses the repeater for 2 minutes and stands by for 15 seconds while the dispatcher looks up some information. Company A again transmits and the Warning Beeps begin after 15 seconds. Had they waited 21 seconds before transmitting again, or if another CTCSS Tone used the repeater during Company A's standby, Company A would have 3 more minutes of air time. Company A must now clear the channel and wait for 20 seconds or be barred from accessing the repeater for one minute, allowing other subscribers to use the repeater.

To enable the Air Time Traffic Controller, enter the keystrokes 11#, followed by 1230#, then 1#. To disable the Air Time Traffic Controller, enter 11#, followed by 1230#, then 0#.

To Enable: 11# 1230# 1#

To Disable: 11# 1230# 0#

*Note:* Busy Channel Lock Out (Section 4.6) must be enabled whenever the Air Time Traffic Controller is used. The Transmitter Time Out Timer (Section 4.16) should be set at least one minute longer than any of the three timers in the Air Time Traffic Controller.

### **4.13.1 Maximum Access Timer [T/C][SYS]**

The Maximum Access Timer regulates the total amount of time that a single user may access the repeater. The time is counted from the initial decode and continues during Carrier Delay Hang Time. The timer follows the last user after the carrier drops and runs for the duration of the Standby Time. The Maximum Access Timer is programmable on a per tone basis, from 30 to 600 seconds in one second increments. The factory default is 180 seconds (3 minutes). Enter the keystrokes 12#, followed by 1230#, then the new setting, 240#.

To Set: 12# 1230# 240#

The above example would set the Maximum Access Time to 240 seconds.

### **4.13.2 Standby Timer [T/C][SYS]**

The Standby Timer mandates that the last user tone wait at least the duration of the time that has been set, thereby allowing other users access to the repeater. The Standby Timer immediately begins accumulating time whenever the carrier drops between transmissions. This time period prevents the last user from resetting the Maximum Access Timer by letting the carrier drop. The Standby Timer is programmable from 0 to 300 seconds in 1 second increments on a per tone basis. The factory default is 20 seconds. Enter the keystrokes 13#, followed by 1230#, then the new time, 30#.

To Set: 13# 1230# 30#

The above example would set the Standby Timer to 30 seconds.

### **4.13.3 Penalty Timer [T/C][SYS]**

The Penalty Timer determines the duration of the barred time before a penalized subscriber tone may again access the repeater. The Penalty Timer will remember a penalized user and will prevent that tone from accessing the system for the full duration of Penalty time. The Penalty Timer is programmable from 30 seconds to 600 seconds in 1 second increments on a per user basis. The factory default is 60 seconds.

To Set: 14# 1230# 45#

The above example would set the Penalty Timer to 45 seconds.

## 4.14 Audio Gate Delay Timer [T/C]

The Audio Gate Delay Timer determines the time during which the audio gate remains open after the panel has decided that the received signal no longer contains the proper tone. It is intended to be used in those applications where the equipment being used, or the particular RF environment, might cause the audio to be chopped as the panel quits decoding the CTCSS Tone. This feature is useful for systems containing portable radios and situations where the radio operator might over-modulate due to shouting into the microphone.

The Audio Gate Delay Timer is programmable on a per tone basis, with each increment of one being equal to 50 milliseconds (For example, 01 x 50 = 50 milliseconds; 10 x 50 = 500 milliseconds; 20 x 50 = 1 second). The maximum setting is 4.95 seconds (99 x 50 milliseconds = 4.95 seconds). The minimum setting is 0 time. The factory default setting is 50 milliseconds for all tones. To change the Audio Gate Delay Timer, enter the keystrokes 15#, followed by 1230# and then a new value, 10#.

To Set: 15# 1230# 10#

The above example would set the Audio Gate Delay Time for 123.0 Hz. to 500 milliseconds.

## 4.15 Transmitter Carrier Delay Timer

The Carrier Delay Timer holds the transmitter on for a period of time after the last received signal in order to prevent the transmitter from dropping between exchanges of conversation. The Transmitter Carrier Delay Timer is programmable from 0 to 9 seconds in 1 second increments. The factory default is 3 seconds.

To change the Transmitter Carrier Delay Timer, enter the keystrokes 16#, followed by the single-digit time in seconds 3#.

To Set: 16# 3#

The above example would set the Carrier Delay Timer to 3 seconds.

## 4.16 Transmitter Time Out Timer

The Transmitter Time Out Timer checks for continuous input activity from one CTCSS Tone. If any one tone is decoded without a break for the length of the Time Out Timer setting, the transmitter is temporarily shut down. The Time Out Timer will reset when this tone disappears. The Timer is programmable from 1 to 9 minutes in 1 second increments. The factory default is 3 minutes.

To change the Transmitter Time Out Timer, enter the keystrokes 17#, and then the new value in seconds, 180#.

To Set: 17# 180#

The above example would set the Transmitter Time Out Timer to 180 seconds, or 3 minutes.

*Note:* When using the Air Time Traffic Controller, the Transmitter Time Out Timer should be set at least one minute longer than any of the three Air Time Traffic Controller timers (See Sections 4.13 - 4.13.3).

## 4.17 Data Transpond Timing

Data Transpond Timing is the rate at which the panel transponds DTMF data. For manual logging of the transponded data, the Data Transpond Timing must be set slow enough to allow the user to read the received data. However, the maximum setting allows rapid data retrieval when the panel is interrogated using the CSI-12 Remote Display Unit. The Data Transpond Timing is programmable from 1 to 20 digits per second. The factory default is 10 digits per second.

To change the Data Transpond Timing, enter the keystrokes 18#, followed by a new value (1-20)#.

To Set: 18# 10#

The above example would set the Data Transpond Timing to 10 digits per second.



## 4.18 Display On/Off (*Optional*)[SAT]

The front panel LED display may be disabled, reducing the current consumption of the panel in the normal Ready Mode. Nevertheless, the Front Panel LED Display will continue to function whenever the panel is placed in the Program Mode. The factory default is on. The DC Power LED cannot be disabled.

To turn the front panel display on, enter the keystrokes 20#, followed by 1#. To turn the front panel display off, enter 20#, followed by 0#.

Display On: 20# 1#

Display Off: 20# 0#

## 4.19 Programming Acknowledgement Transponder [SAT]

When programming the panel remotely in the CTCSS Tone Mode, two short audible tones are transmitted upon completion of a given command, signalling the programmer that the panel is ready to accept a Programming Command Code. In the Digital Mode the panel will transmit one long tone. In either mode, the panel will transmit a high/low error tone whenever an error message (indicating incorrect keystrokes) is generated by the panel. The programming steps should be re-entered when this occurs, beginning with the Command Code. The factory default is on.

To turn the Programming Acknowledgement Transponder on, enter the keystrokes 21#, followed by 1#. To turn the transponder off, enter 21#, followed by 0#.

On: 21# 1#

Off: 21# 0#

## 4.20 Tone/Code Switch

When programming the CSI-SUPER 32, the panel default setting is for CTCSS Tones. In the Tone Input Mode, all input pertaining to individual user functions, such as activating a tone, enabling the Courtesy Tone, displaying individual time and hit information, etc., is assumed to be CTCSS Tone input. In this mode, the Optional Front Panel Display LED indicates Pt, and any tone input is prompted by a display of "\_\_\_." in anticipation of tone frequency input. When programming remotely, the Programming Acknowledgement Transponder will emit two short audible tones between programming steps.

When Digital Code information is to be input to the panel, it must be placed into the Digital Input Mode. This is done entering the keystrokes 22#, which will switch the panel from the CTCSS Tone Mode to the Digital Code Mode. In this mode, all input pertaining to individual user functions is assumed to be assigned to a Digital Code. The Optional Front Panel Display LED indicates Pd, and any digital code input is prompted by a display of "\_\_\_". When programming remotely, the Programming Acknowledgement Transponder will emit one long audible tone between programming steps. When entering a Digital Code, if more than three digits are entered, the leading digit will be scrolled off the display and disregarded. No digit greater than 7 will be accepted by the panel as a Digital Code.

Commands which require the Tone/Code Switch to be set to the Digital Mode position for Digital input, are indicated by [T/C] in all Programming Command headings and in the Program Command Code Summary (Section 4.66). In the Digital Mode for example, Command Code 32 (Display Tone Table) will display all the entries in the Digital Code Table only.

In the Tone Mode position, the Display Tone Table command will display all entries in the CTCSS Tone Table only. The Display Last User command (Command Code 40), on the other hand, will display the last user, either CTCSS Tone or Digital Code, regardless of what position the Tone/Code Switch is in. Likewise, the Display Active User Time and Hits command will display (and transpond) both CTCSS Tone and Digital Code user data. The Tone/Digital Code Switch defaults to the Tone Mode position whenever the Program Mode is entered. The panel will remain in the Digital Mode until it is switched back, or until exiting the Program Mode.

To Switch: 22#

## 4.21 Digital Input Polarity Switch On/Off [SAT]

For proper repeater operation, the correct polarity of the Digital Code must be preserved. The Digital Input Polarity Switch will correct inverted Digital Code input. In order to determine the polarity of the received Digital Code, perform the following test: Insert one of the Digital Codes available for customer use (see Section 2.5, Digital Squelch Code Table) into the Tone Table. Make sure that the Digital Input Polarity Switch is in the Normal (0) position. Key a radio on the channel frequency with the Digital Code entered above. If no inversion has taken place, the CSI-SUPER 32 will decode the Digital Code and key the repeater transmitter. If the repeater is not accessed, set the Digital Input Polarity Switch to the inverted (1) position.

To invert Digital Codes received by the panel, enable the Digital Input Polarity Switch by entering the keystrokes 23#, followed by 1#. To disable the Digital Input Polarity Switch, enter the keystrokes 23#, followed by 0#.

To Enable: 23# 1#

To Disable: 23# 0#

*Note:* The Digital Input Polarity Switch is a system level adjustment and is used to correct polarity inversion of *all* codes.

## 4.22 Digital Output Polarity Switch On/Off [SAT]

In order to determine if a transmitted Digital Code is inverted, enter the Program Mode and with the transmitter on, generate a normal Digital Code. If a muted radio on the repeater channel responds to this code, there is no inversion and the Digital Output Polarity Switch may be left in the Normal (0) position. If the radio does not respond, the Digital Code has been inverted during transmission. The Digital Output Polarity Switch must be set to the Inverted (1) position. The position of the Digital Output Polarity Switch will correct polarity inversions for *all* Digital Code output.

To invert Digital Codes generated by the panel, enter the keystrokes 24#, followed by 1#. To disable the Digital Output Polarity Switch, enter the keystrokes 24#, followed by 0#.

To Enable: 24# 1#

To Disable: 24# 0#

*Note:* The Digital Output Polarity Switch is a system level adjustment and is used to correct polarity inversion of *all* codes.

## 4.23 Program Access Code Security Tone [T/C]

The Access Code Security Tone is a user selected Tone or Code which, once assigned, must be used when remotely programming the panel. If a tone has been assigned, before the panel will allow entrance to the Program Mode, it will require that the tone selected be decoded before it receives the Access Code.

In addition, upon decoding this tone, the panel will look for a pattern match in any incoming DTMF. If the first DTMF digit received by the panel matches the first digit of the Program Access Code, all repeated audio is shut down.

To cause the panel to require that a specific tone or code be decoded along with the reception of the Program Access Code, enter keystroke 25#, followed by the Tone or Digital Code desired.

To Establish a Security Tone: 25# 1230#

The above example would cause the Panel to expect the Tone Frequency 123.0 Hz. to be received in association with the Program Access Code. Without the correct Tone Frequency, access to the Program Mode will be denied.

## 4.24 Clear Program Access Code Security Tone

Upon execution of this command, the panel will no longer require that a specific tone be decoded in association with the Program Access Code. DTMF pattern matching will also be disabled.

Clear Security Tone: 26#

## 4.25 Interrogating The Tone Time Accumulator [T/C][RDU]

The amount of time a tone is received by the panel is accumulated for each individual subscriber frequency in the Tone Table. The CSI-SUPER 32 will track up to 254 hours, 59 minutes, 59 seconds. This command is used to display or transpond the accumulated time of a particular tone. Once the time is interrogated, the accumulator may be reset to zero, or left with the current reading so that additional time will accumulate. To display the total time accumulated for a specific tone, enter the keystrokes 34#, followed by 1230#.

To Display: 27# 1230#

The above example would cause the time accumulation for 123.0 Hz. to be displayed. The panel will only accumulate data for those tones present in the Tone Table. To clear individual, or all Time and Hit Accumulators, see Sections 4.38 and 4.39, respectively.

## 4.26 Interrogating The Tone Hit Accumulator [T/C][RDU]

The Panel accumulates Hit information for all standard CTCSS tones on the repeater channel. To display the number of accumulated Hits for a particular tone, enter the keystrokes 28#, 1230#.

To Display: 28# 1230#

The Panel will now display the number of accumulated Hits recorded for 123.0 Hz. To clear individual, or all Time and Hit Accumulators, see Sections 4.38 and 4.39, respectively.

## 4.27 Display Total Transmit/COS Time [RDU]

The panel accumulates and stores the total repeater transmitter and COS time up to 254 hours, 59 minutes, 59 seconds. When interrogated, the Panel will first display the Total Transmit time followed by the Total COS time. This information is helpful for channel loading studies, or scheduling preventative maintenance. To display this information, enter the keystrokes 29#.

To Display: 29#

To clear the Total Transmit/COS Time Accumulator, see Section 4.40.

## 4.28 Display Active Tones [RDU]

To display the current list of activated CTCSS Tones and Digital Codes, enter the keystrokes 30#.

To Display: 30#

## 4.29 Display Tone Table [T/C]

This command will cause the panel to display a list of the CTCSS Tones which are currently in the Tone Table. This command is influenced by the Tone/Code Switch, Command Code 22# (See Section 4.20). In the Code position, all Digital Codes located in the Tone Table are displayed.

To display the list of CTCSS Tones or Digital Codes present in the Tone Table, enter the keystrokes 32#.

To Display: 32#

## 4.30 Display Active Tones

This command will display, or transpond the activated CTCSS Tones followed by the activated Digital Codes.

To display the current list of activated CTCSS Tones and Digital Codes, enter the keystrokes 33#.

To Display: 33#

## 4.31 Display Individual Tone Time [T/C]

The amount of time a tone is received by the panel is accumulated for each individual tone in the Tone Table up to 254 hours, 59 minutes, 59 seconds. This command is used to display, or transpond the accumulated time of a particular tone. Once the time is interrogated the accumulator may be reset to zero, or left with the current reading to accumulate additional time.

To display the total time accumulated for a specific tone, enter the keystrokes 34#, followed by 1230#.

To Display: 34# 1230#

The above example would cause the time accumulation for 123.0 Hz. to be displayed. The panel will only accumulate data for those tones present in the Tone Table. To clear individual, or all Time and Hit Accumulators, see Sections 4.38 and 4.39, respectively.

## 4.32 Display Individual Tone Time And Hits [T/C]

The total accumulated time and number of accumulated hits for a particular tone will be displayed, or transponded with this command. One hit is registered each time a tone is decoded by the panel regardless of how long the tone is received. The panel will store up to 9999 activations, and accumulate time up to 254 hours, 59 minutes, 59 seconds. For example, if a radio encoding CTCSS Tone 123.0 Hz. is keyed and un-keyed 16 times, the tone panel will register 16 hits for 123.0 Hz., provided this tone is present in the Tone Table. When the panel is interrogated with this command, the CSI-12 (*Optional*) will display the time, followed by the number of hits for the particular user requested.

To display the total accumulated time and hits for a specific tone, enter the keystrokes 35#, followed by 1230#.

To Display: 35# 1230#

In the example above, the accumulated time and number of hits for the tone frequency 123.0 Hz. will be displayed. The panel will only accumulate data for those tones present in the Tone Table. To clear individual, or all Time and Hit Accumulators, see Sections 4.38 and 4.39, respectively.

### **4.33 Display All Time And Hits [T/C]**

This command will display or transpond a sequential listing of the time and hit accumulation of each CTCSS Tone and Digital Code located in the Tone Table. The repeater frequency, if programmed, will be displayed at the beginning of the listing. Next, the tone frequency is displayed, followed by its respective time, followed by the number of hits accumulated for that tone. The panel will continue in this mode, giving a complete listing of time and hit accumulation for all CTCSS Tones and Digital Codes present in the Tone Table.

Enter the keystrokes 36# to display this table. To clear individual, or all Time and Hit Accumulators, see Sections 4.38 and 4.39, respectively.

To Display: 36#

### **4.34 Display Active Tone Time And Hits [T/C]**

This command will display, or transpond a sequential listing of the time and hit accumulation of all activated CTCSS Tones and Digital Codes. First, the tone frequency is displayed, followed by its respective time, followed by the number of hits accumulated for that tone. The panel will continue in this manner giving a complete listing of the time and hit accumulation for all activated CTCSS Tones and Digital Codes.

Enter the keystrokes 37# to display this table. The repeater frequency (if programmed), will be displayed at the beginning of the listing. To clear individual, or all Time and Hit Accumulators, see Sections 4.38 and 4.29, respectively.

To Display: 37#

### **4.35 Display Total Transmitter/COS Time**

The panel accumulates and stores the total repeater transmitter time up to 254 hours, 59 minutes, 59 seconds. When interrogated, the Panel will first display the Total Transmit time followed by the Total COS time. This information is helpful for channel loading studies or scheduling preventative maintenance.

To display this information, enter the keystrokes 38#.

To Display: 38#

To clear the Transmit/COS Time Accumulator, see Section 4.40.



## 4.36 Display Timed Out User

When a user times out the repeater by exceeding the Transmitter Time Out Time, the CTCSS Tone frequency or Digital Code of the last tone, or code to time out the repeater will be displayed.

To display the CTCSS Tone or Digital Code which caused the repeater to Time Out, enter the keystrokes 39#. To clear this register, see Section 4.41.

To Display: 39#

## 4.37 Display Last User

The CTCSS Tone frequency or Digital Code of the last user to activate the repeater is recorded by the panel and may be displayed with this command. This information is updated each time a user activates the repeater.

To display the last CTCSS Tone or Digital Code to activate the repeater, enter the keystrokes 40#.

To Display: 40#

## 4.38 Clear Each Tone Time And Hit Accumulator [T/C]

The Time and Hit Accumulators of a selected tone will be reset to zero using this command. The Tone/Code Switch, Command Code 22#, must be in the digital input position to clear time and hit accumulations of individual Digital Codes (See Section 4.20).

To clear Individual Tone Time and Hit Accumulators, enter the keystrokes 41#, followed by 1230#.

To Clear: 41# 1230#

The above example would clear the Time and Hit Accumulators for the tone frequency 123.0 Hz. to zero.

*Note:* This command will also turn off the user pre-pay function (Section 4.49).

## 4.39 Clear All Time And Hit Accumulators

The Time and Hit Accumulators of *all* CTCSS Tones and Digital Codes present in the Tone Table will be reset to zero using this command. To prevent accidental erasure of this information the keystroke command sequence must be entered twice in succession.

To Clear: 42# 42#

## 4.40 Clear Transmitter/COS Time Accumulator

To clear the Transmitter/COS Time Accumulator, enter the keystrokes 43#.

To Clear: 43#

## 4.41 Clear Timed Out User

When a user times out the repeater by exceeding the Transmitter Time Out Time, the CTCSS Tone frequency or Digital Code of the user is recorded by the panel. This command clears the register holding that information.

To clear the Timed Out User register, enter the keystrokes 44#.

To Clear: 44#

## 4.42 CW-ID Time Interval

The CW-ID Time Interval is used to set the time interval between CW-ID transmissions for both Private Carrier and Community ID, and is programmable from 1 to 255 minutes, in one minute increments. The factory default is every 15 minutes. To set the CW-ID time interval, enter the keystrokes 47#, followed by the time in minutes.

Set CW-ID Time Interval: 47# 30#

*Note:* The above example would cause CW-ID to transmit every 30 minutes either automatically or with activity depending on the configuration that has been set.

## 4.43 Set Private Carrier CW-ID

This command is similar to setting an ID for an individual user. However, when this setting is initiated, the ID feature of the tone panel will be set for a single call sign only. A call sign is programmed using the ASCII conversion chart below. The first digit of the CW-ID Code may *not* be a zero, since a zero in the first position is interpreted as a blank code. The CW-ID Code may be changed at any time. Up to eight characters may be entered for each ID. If an ID of less than seven characters is required, press # twice on the last entry.

### ASCII CONVERSION CHART

0 = 48	9 = 57	I = 73	R = 82
1 = 49	A = 65	J = 74	S = 83
2 = 50	B = 66	K = 75	T = 84
3 = 51	C = 67	L = 76	U = 85
4 = 52	D = 68	M = 77	V = 86
5 = 53	E = 69	N = 78	W = 87
6 = 54	F = 70	O = 79	X = 88
7 = 55	G = 71	P = 80	Y = 89
8 = 56	H = 72	Q = 81	Z = 90

The example below outlines the required steps to program the call sign, KYP636. Enter the keystrokes 48#. Next, enter the ASCII value for each character in the call sign. Press # after each entry.

48#	
75# =	(K)
89# =	(Y)
80# =	(P)
54# =	(6)
51# =	(3)
54# =	(6)
# =	Signifies the end of the ID.

To turn-off this call sign function, enter the keystrokes 48# followed by ASCII code 48# in position one.

## 4.44 Set Private Carrier CW-ID Operation [SAT]

This command is used to determine if the CW-ID will be sent automatically, or only when there has been activity. In the With Activity mode, the CW-ID will be sent once when the system is first used, and again at each time interval (see Section 4.42) as set by the system operator. If the conversation is less than the timed interval, the panel will, at the next interval, ID again. The default setting from the factory is With Activity.

In the Automatic mode, the ID will be broadcast once each time interval as set by the system operator, regardless of activity.

To enable Automatic CW-ID, enter the keystrokes 49#, 1#. To reset the panel to the factory default setting, enter the keystrokes 49#, 0#.

Automatic CW-ID: 49# 1#

With Activity: 49# 0#

*Note:* This feature is used in conjunction with Sections 4.42, CW-ID Time Interval and 4.43, Set Private Carrier CW-ID

## 4.45 TX Hold Delay [SAT]

This feature drops the repeater transmitter immediately if the tone panel sees Tx activity for less than one second. The mobile will not hear repeater hang-time unless the MIC is keyed for one second or longer. This feature is only recommended in HAM or amateur applications. To set the TX Hold Delay, enter the keystrokes 50#, followed by 1#. To turn it off, enter keystrokes 50#, followed by 0#.

TX Hold Delay On: 50# 1#

TX Hold Delay Off: 50# 0#

## 4.46 Tone Reserve (Soft Off) [SAT]

Tone Reserve is used to Soft Off or inactivate a CTCSS Tone without losing custody of the tone. When the Soft Off function is enabled for a particular tone, reception of that tone will key the transmitter and generate the individual CTCSS Tone, but no audio will be repeated. This feature allows the system operator to disable a repeater subscriber without losing the tone to a competing repeater system. Tone Reserve is programmable on a per tone basis.

To reserve a tone, enter the keystrokes 51#, followed by 1230# and 1#. To restore a tone to normal repeat operation, enter keystrokes 51#, followed by 1230# and 0#.

Tone Reserve On: 51# 1230# 1#

Tone Reserve Off: 51# 1230# 0#

In the first example, the tone 123.0 Hz. is set with Tone Reserve on. In this condition, if the tone 123.0 Hz. is received by the tone panel, the repeater transmitter will key up and the CTCSS Tone will be generated. However, the audio for 123.0 Hz. will not be repeated. The second example, would set the tone for normal repeat operation.

## 4.47 Tone Reserve Masking Tone [SAT]

This feature will enable the panel to generate an annoying tone for as long as that tone is set for Tone Reserve. The masking tone will remind the radio user that the repeater system is not available for use at that time. To initiate the Tone Reserve Masking Tone, enter the keystrokes 52#, followed by 1230# and 1#. To turn off the Tone Reserve Masking Tone, enter the keystrokes 52#, followed by 1230# and 0#.

Tone Reserve Masking Tone On: 52# 1230# 1#

Tone Reserve Masking Tone Off: 52# 1230# 0#

## 4.48 Tone Encode Extension Timer [T/C][SYS]

The Tone Encode Extension Timer is an adaption of the previous Tone Lock Out feature. This feature provides continuous regenerated CTCSS Tone during the carrier delay time. It can be used in conjunction with Busy Channel Lock Out (see Section 4.6), or as a stand-alone feature. This feature is disabled as shipped from the factory. To enable the feature, determine the setting for the carrier delay timer and set the CTCSS encode tone to expire 350 milliseconds before the transmitter drops. The Tone Encode Extension Timer is programmable from 0 to 9 seconds (1 to 180) in 50 millisecond increments. For example,  $10 \times 50$  milliseconds = .5 seconds, or  $53 \times 50$  milliseconds = 2.65 seconds. Enter the keystrokes 53#, followed by the Encode Tone#, then a value from 1 to 180. Follow the last numerical entry with #.

To Activate: 53# 1230# 53#

To Inactivate: 53# 1230# 0#

The above example would set the Tone Encode Extension Timer for  $53 \times 50 = 2.65$  seconds which will drop the tone 350 milliseconds before the transmitter drops.

*Note:* The following is an example of how the feature will improve system operation. When on, the CTCSS Tone is generated during carrier delay and is set to turn off 350 milliseconds prior to the carrier delay timer dropping the transmitter. This enables the mobile tone decoders to reset, thus eliminating the mobile squelch burst normally heard by the vehicle occupant. Another use for the feature is to provide CTCSS tone during the carrier delay time for mobile radios equipped with Busy Channel Lock Out boards.

## 4.49 Add Time To Pre-pay User Time Block [T/C]

With this feature, the system owner may offer individual users the option of pre-paying for the repeater service. When activated, the operation of the pre-paid user's time accumulator is reversed. Air time is subtracted from and not added to the accumulator. When first initiating this feature, clear the Individual Tone Time accumulator (Section 4.38) for the given tone and then insert the time, in hours, allotted to the repeater user. The maximum number of hours that may be assigned to each subscriber is 254. Any additional time added to the user's time block will be added to the existing time. To recall a user's remaining time, see Section 4.31, Display Individual Tone Time. The CSI-SUPER 32 Tone Panel is shipped from the factory with this feature turned off. To access the Pre-paid user function, enter the keystrokes 54#, followed by 1230# and then the Time in Hours#.

When two hours, or less, remain in the user's time block, a tone is generated during the carrier delay time, reminding him that he is soon to lose repeater service. When the pre-paid user's allotted time is up, he is considered an invalid subscriber and not allowed access to the repeater.

Add Time To Pre-pay User: 54# 1230# 100#

The above example would allow subscriber frequency 123 Hz. 100 hours of repeater use.

*Note:* This function is disabled for a specific Tone by Clearing its Time And Hit accumulators. (see Section 4.38)

## 4.50 Set Repeater Audio Delay Time

The CSI-SUPER 32 contains an analog delay circuit which is used for squelch-tail elimination. With this circuit, the panel is able to determine when the tone is gone and close the audio gate before the repeater receiver's squelch burst is passed to the transmitter. This feature is unique to this product. The delay timer is programmable from zero to 100 milliseconds in 10 millisecond increments (ie: 1 = 10 milliseconds, 2 = 20 milliseconds, etc.). The factory default setting is 70 milliseconds.

To set the Audio Delay Time period, enter the keystrokes, 55# time#.

Set Audio Delay: 55# 5#

This example would set the delay to 50 milliseconds.

*Note:* An echo will be heard on a receiver if the radio is physically located within ear shot of the transmitted audio source. This is normal operation caused by the delayed transmission of the repeated audio and is *not* a malfunction. However, if an echo is heard and the transmitter is clearly *not* within ear-shot of the audio source, (ie. 5 miles away in a vehicle) check the installation for a second audio path and disable it. Remove the audio output from the CSI panel and try the repeater. Some repeaters (ie. MICOR) have their own audio processing between the receiver and the transmitter, and this second path must be disabled.

Remove U25 Jump Pin 6 → Pin 4

Remove C60, C61, (C70?)(C59?)



## 4.51 Courtesy Tone Pitch

A different frequency maybe set for the Courtesy Tone. The factory setting is 1336 Hz. (Setting 6). There are eight different tones available:

1	=	697 Hz.	5	=	1209 Hz.
2	=	770 Hz.	6	=	1336 Hz.
3	=	852 Hz.	7	=	1477 Hz.
4	=	941 Hz.	8	=	1633 Hz.

To set a new pitch frequency for the Courtesy Tone, enter the keystrokes 56# followed by the setting (1-8)#.

To set Courtesy Tone Pitch: 56# 1#

This example would set the Courtesy Tone frequency to 697 Hz.

### 4.51.1 Warning Tone Pitch

A different frequency may be set for the Warning Tone. The factory setting is 770 Hz. (Setting 2). There are eight different tones available: See section 4.51 (Courtesy Tone Pitch) for available tone settings.

To set the frequency of the Warning Tone, enter the keystrokes 57# followed by the setting (1-8)#.

Warning Tone Pitch Set: 57# 8#

This example would set the Warning Tone Pitch to 1633 Hz.

### 4.51.2 CW-ID Tone Pitch

A different frequency may be set for the CW-ID broadcasts. The factory setting is 941 Hz. (Setting 4). There are eight different tones available: See section 4.51 (Courtesy Tone Pitch) for available tone settings.

To set a new CW-ID Tone pitch, enter the keystrokes 58# followed by a setting (1-8)#.

CW-ID Tone Pitch Set: 58# 5#

This example would set the CW-ID Tone frequency to 1209 Hz.

## 4.52 CSI-12/SUPER Programming Mode

This command is for use with the CSI-12 Remote Display Unit and the CSI-SUPER 32 *without display*. When programming locally, enter the keystrokes 59# and the CSI-12 will be activated. The CSI-12 Mode will remain active throughout the time the system operator is making use of this programming option. To exit the CSI-12 programming mode, enter the keystrokes 99# (Exit Program Mode), and the CSI-SUPER 32 will return to normal repeat operation.

CSI-12 Programming Mode: 59#

Exit Program Mode: 99#

### 4.52.1 Back Door Access

If the Program Access code is not available for any reason, this feature will allow the system operator to enter the Program Mode so that a new Access Code may be set. With the CSI-12 Remote Display Unit connected to the CSI-SUPER 32 without display, set the CSI-12 to generate DTMF digit 5. Turn the power off on the CSI-SUPER 32 without display. When the Panel is powered-up again, it will be in the Programming Mode. Turn off the DTMF generator in the CSI-12. At this point, it is recommended that the system operator enter a new Program Access Code (see Section 4.61).

## 4.53 DTMF Regeneration Mode On/Off

DTMF signalling can be significantly affected by twist when passed through a repeater. To prevent this from happening, the panel has a DTMF regeneration mode. When off, the receiver passes all DTMF signals directly through the panel and into the transmitter, thereby passing any distortion that may have occurred. When on, immediately upon detecting DTMF, the panel opens the Audio Gate, preventing the received audio (DTMF) from passing. The panel then regenerates the DTMF audio and passes it to the transmitter. To initiate this feature, enter the keystrokes 92#. The default setting from the factory is off.

DTMF Regeneration On: 92# 1#

DTMF Regeneration Off: 92# 0#

# Set Up Commands

The following commands (Sections 4.54 - 4.54.7) are used during initial installation and set up of the panel. The panel will default to normal operation when the Program Mode is exited. Any audio gates or tone generators inadvertently left on will be shut off. For detailed information on set up procedures both with and without a display, see Section 3.9 or 3.10.

## 4.54 Access/Exit Set Up Commands

While in the Programming Mode, enter 45# to access all Set Up Commands. Enter 99# to return to Programming Commands.

Access Set Up Commands: 12345 45#

Exit Set Up Menu: 99#

### 4.54.1 Transmitter On/Off

This command will latch the repeater transmitter on and is primarily used in conjunction with the various Setup Commands described in the following sections.

To turn the transmitter on, enter the keystrokes 01#, followed by 1#. To turn the transmitter off, enter 01#, followed by 0#.

Transmitter On: 01# 1#

Transmitter Off: 01# 0#

### 4.54.2 Audio Gate On/Off

To open the Audio Output Gate, enabling audio to be passed to the repeater transmitter, enter the keystrokes 03#, followed by 1#. To close the Audio Gate, enter 03#, followed by 0#. The transmitter must be keyed to transmit this audio.

Audio Gate On: 03# 1#

Audio Gate Off: 03# 0#

### 4.54.3 Generate CTCSS Tone On/Off [T/C]

The panel will generate a CTCSS Tone or Digital Code, with this command to allow adjustment of the tone output level and to check for Digital Code inversion. The repeater transmitter must be keyed to transmit a tone frequency. The polarity of the transmitted Digital Code is determined by the Digital Output Polarity Switch (see Section 4.22). To generate a CTCSS Tone, enter the keystrokes 07#, followed by 1230#. To turn the tone off enter 07#, followed by 0#.

To Generate 123.0 Hz.: 07# 1230#

To Turn Tone Generator Off: 07# 0#

### 4.54.4 Generate DTMF Tone (D) On/Off

To allow adjustment of the DTMF Tone Output Level, the panel will generate DTMF Tone (D) when this command is entered. The repeater transmitter must be keyed to transmit this tone.

To generate DTMF Tone enter the keystrokes 08#, followed by 1#. To turn the DTMF Tone off, enter 08#, followed by 0#.

DTMF On: 08# 1#

DTMF Off: 08# 0#

### 4.54.5 DTMF Keypad Mode (*Optional*)

The DTMF Keypad Mode allows DTMF generated by the RDU or the optional Front Panel Key-Board to pass through to the repeater transmitter. When pressed, any of the numeric keys will generate their corresponding DTMF Tone, which will be transmitted, providing the transmitter is on.

To place the panel in the DTMF Keypad Mode, enter the keystrokes 09#. To exit this mode, press #.

DTMF Keypad Mode On: 09#

DTMF Keypad Mode Off: #

## 4.54.6 Courtesy Tone On/Off

The panel will generate the Courtesy Tone continuously when this command is enabled. The DTMF Output Level adjustment, when set properly, will automatically set the Courtesy Tone level at approximately 1000 Hz. deviation to produce a soft unobtrusive tone.

To generate the Courtesy Tone, enter the keystrokes 10#, followed by 1#. To turn the Courtesy Tone off, enter 10#, followed by 0#.

Courtesy Tone On: 10# 1#

Courtesy Tone Off: 10# 0#

## 4.54.7 Set COS Level (*Optional*)

This command will place the panel in the COS Setup Mode allowing adjustment of the COS level. This adjustment is only necessary when using the Internal COS Circuit (see Section 3.9.5).

Enter the keystrokes 11# when adjusting the COS Level. Press # upon completion of this adjustment.

Enter Set COS Mode: 11#

Exit Set COS Mode: #

## 4.55 Group Control Tone Assignment [T/C]

This command is used to enter, or delete tones for group control. Any CTCSS Tone assigned to the group must be in the panel's Tone Table. This feature can be used in emergency situations to disable the regular repeater users, leaving only one or more special tones activated for emergency communications. Another use would be Hot Standby for a backup community repeater. To insert a tone into an assigned group, enter the keystrokes 62#, followed by 1230# and 1#. To delete a tone from the group, enter 62#, followed by 1230# and #0.

To Insert: 62# 1230# 1#

To Delete: 62# 1230# 0#

## 4.56 Group Control On/Off [SAT]

The Group Control On/Off function allows an entire group of tones to be collectively turned on or off with a single command. A tone must first be assigned to this control group before the Group Control On/Off Command will affect it. This command will collectively turn on or off all tones assigned for group control.

To turn an assigned group of tones on, enter the keystrokes 63#, followed by 1#. To turn the same group off, enter 63#, followed by 0#.

Group On: 63# 1#

Group Off: 63# 0#

## 4.57 Display Group Tones

This command will display all CTCSS Tones followed by Digital Codes assigned for group control.

Enter the keystrokes 64# 1# to display the tones assigned to the Group Tone Table.

To Display: 64#1#

## 4.58 Initialize All Variables To Factory Defaults

**Warning:** *This Command will reset all programmable functions and all accumulators to zero (see Section 4.65 for factory default settings). Before clearing the memory, interrogate the panel for any data accumulation.*

To initialize the panel and re-build the factory default Tone Table, enter the keystrokes 91# twice in succession.

To Initialize and Re-build Tone Table: 91# 91#

To initialize the panel and leave the Tone Table empty of any tone or Digital Code, enter the keystrokes 91#, 90#.

To Initialize and *Not* Re-build the Tone Table: 91# 90#

## 4.59 Site Alarm Address

The Site Alarm input senses an alarm condition at the repeater site. When the Alarm Input is grounded, the panel keys the repeater transmitter and sends the Site Alarm Address. The factory default for the Alarm Address is 0000. The Site Alarm will not function when the panel is in the Program Mode. To change the Site Alarm Address, enter the keystrokes 93#, followed by a four digit address. Press # after the last entry.

To set: 93# 3456#

The above example would set the Site Alarm Address to 3456.

## 4.60 Site Alarm Tone [T/C]

As shipped from the factory, the Site Alarm Address is transmitted without a CTCSS Tone or Digital Code. Any tone frequency between 62.0 Hz. and 255.9 Hz. may be programmed to accompany the transmission of the Site Alarm Address in the event of an alarm condition.

To change the Site Alarm Tone, enter the keystrokes 94#, followed by 1230#.

To Set: 94# 1230#

The above example would change the Site Alarm Tone to 123.0 Hz.

## 4.61 Program Access Code

This Command is used to change the Program Access Code. The current access code must first be entered correctly before the panel will allow a new access code to be entered. Be sure to record the new access code for future reference. The 5-digit access code can contain numbers from 0 to 9. The DTMF Digits A, B, C and D cannot be programmed for use in the access code.

To change the Program Access Code, enter the keystrokes 95#, followed by a new Five Digit Code#. When programmed remotely, the panel will transpond the new Program Access Code upon completion of the command sequence. Only the digits 0 through 9 may be used in the Program Access Code, letters and symbols will not be accepted.

To Set: 95# New Access Code#

Example: 95# 67890#

The example, above, would set the Program Access Code to 67890.

## 4.62 Store Repeater Frequency

Repeater Frequency storage has no active participation in panel operation and is only used as part of the CSI-12 protocol. The CSI-12 is capable of printing reports, date-stamping and labeling these reports with the Repeater Frequency for identification purposes. The Repeater Frequency is transponded, first as a seven-digit number, followed by the requested data.

To change the Stored Repeater Frequency, enter the keystrokes 96# followed by the Repeater Frequency#. Seven digits must be entered, so if the Repeater Frequency to be input is 468.400 add an extra zero to the end of the number (For example, 468.4000).

To Set: 96# 4684000#

The above example would store the Repeater Frequency of 468.4000 in the tone panel.



## **4.63 Display Version Number**

Enter the keystrokes 97# to display the current Version Number of the software installed in the Panel.

To Display: 97#

## **4.64 Exit Program Mode**

This command is used to exit the Program Mode and return the panel to the Ready Mode.

To Exit the Program Mode: 99#

## 4.65 Factory Default Settings

The CSI-SUPER 32 Tone Panel is shipped with the following default settings:

- The Tone Table contains the 32 standard EIA tones from 67.0 to 250.3 Hz.
- All CTCSS Tones and Digital Codes are inactivated.
- No Digital Codes are in the Tone Table.
- The Courtesy Tone on all tones is disabled.
- Busy Channel Lockout on all tones is disabled.
- Community Station ID on all tones is disabled.
- Community CW-ID to follow Receiver is set to not follow COS.
- CW-ID Time Interval is set for every 15 minutes.
- No Cross Tone or Crisscross Encoding set.
- Private Carrier CW-ID is not set.
- Private Carrier CW-ID Operation is set With Activity.
- Air Time Traffic Controller is not set.
- Maximum Access Timer is set for 180 seconds.
- Standby Timer is set for 20 seconds.
- Penalty Timer is set for 60 seconds.
- Audio Gate Delay Timers are set for 0 delay.
- The Transmitter Carrier Delay Timer is set for 3 seconds.
- The Transmitter Time Out Timer is set for 3 minutes.
- The Data Transpond Timing is set to 10 digits per second.
- The Display is on.
- The Programming Acknowledgement Transponder is on.
- The Tone/Code Switch is in the Tone position.
- The Digital Polarity Switches are disabled.
- Program Access Code Security Tone is set to 000.0
- All Time and Hit Accumulators are set to zero.
- TX Hold delay is disabled.
- Tone Reserve and Tone Reserve Masking Tone are disabled.
- Tone Encode Extension Timer is disabled.
- Pre-pay User Time Block is disabled.
- Audio Delay Time is set for 70 milliseconds.
- Courtesy Tone Pitch is code 6, or 1336 Hz.
- Warning Tone Pitch is code 2, or 770 Hz.
- CW-ID Tone Pitch is code 4, or 941 Hz.
- DTMF Tone Regeneration is disabled.
- The Site Alarm Address is set to 0000.
- The Site Alarm Tone is set to 000.0 Hz.
- The Program Access Code is set to 12345.
- Auxiliary Functions on all tones are disabled.
- Repeater Frequency is set to 000.0000.

## 4.66 Program Command Code Summary

### Programming Commands

<u>Command Codes</u>	<u>Description</u>
[SAT] [T/C]	01 Activate/Inactivate CTCSS Tones
[SAT] [T/C]	02 Insert/Delete CTCSS Tones
[SAT] [T/C] [SYS]	03 Courtesy Tone On/Off
[SAT] [T/C] [SYS]	04 Busy Channel Lock Out On/Off
[T/C]	05 Set Community Station ID
[SAT] [T/C]	06 Community Station ID Switch On/Off
[T/C]	07 Test Station ID
[T/C]	08 Cross Tone Encoding
[T/C]	09 Crisscross Encoding
[T/C]	10 Reset Cross Tone Encoding
[SAT] [T/C] [SYS]	11 Air Time Traffic Controller On/Off
[T/C] [SYS]	12 Maximum Access Timer
[T/C] [SYS]	13 Standby Timer
[T/C] [SYS]	14 Penalty Timer
[T/C]	15 Audio Gate Delay Timer
	16 Transmitter Carrier Delay Timer
	17 Transmitter Time Out Timer
	18 Data Transpond Timing
[SAT]	20 Display On/Off ( <i>Optional</i> )
[SAT]	21 Programming Acknowledgement Transponder
	22 Tone/Code Switch
[SAT]	23 Digital Input Polarity Switch On/Off
[SAT]	24 Digital Output Polarity Switch On/Off
[T/C]	25 Program Access Code Security Tone
	26 Clear Program Access Code Security Tone

### Data Retrieval Commands

[T/C] [RDU]	27 Interrogating The Tone Time Accumulator
[T/C] [RDU]	28 Interrogating The Tone Hit Accumulator
[RDU]	29 Display Total Transmit/COS Time
[T/C] [RDU]	30 Display Active Tones
	32 Display Tone Table
	33 Display Active Tones
[T/C]	34 Display Individual Tone Time
[T/C]	35 Display Individual Tone Time and Hits
[T/C]	36 Display All Time and Hits
	37 Display Active Tone Time and Hits
	38 Display Total Transmit/COS Time
	39 Display Timed Out User
	40 Display Last User

## Programming Commands Continued

- [T/C] 41 Clear Individual Tone Time and Hit Accumulators
- 42 + 42 Clear All Time and Hit Accumulators
- 43 Clear Total Transmitter Time Accumulator
- 44 Clear Timed Out User

## Set Up Commands

- 45 Access Set Up Commands
  - 01 Transmitter On/Off
  - 03 Audio Gate On/Off
  - [T/C] 07 Generate CTCSS Tone On/Off
  - 08 Generate DTMF Tone (D) On/Off
  - 09 DTMF Keypad Mode On/Off (*Optional*)
  - 10 Courtesy Tone On/Off
  - 11 Set COS Level
  - 99 Exit to the Program Mode

## Programming Commands Continued

- 47 CW-ID Time Interval
  - 48 Private Carrier CW-ID set
  - 49 Set Private Carrier CW-ID Operation
  - [SAT] 50 TX Hold Delay
  - [SAT] [T/C] 51 Tone Reserve (Soft Off)
  - [SAT] [T/C] 52 Tone Reserve Masking Tone
  - [SYS] 53 Tone Encode Extension Timer
  - 54 Add Time To Pre-pay User Time Block
  - 55 Set Audio Delay Time
  - 56 Courtesy Tone Pitch
  - 57 Warning Tone Pitch
  - 58 CW-ID Tone Pitch
  - 59 CSI-12/Super Programming Mode
  - [SAT] [T/C] 62 Group Control Tone Assignment
  - [SAT] 63 Group Control On/Off
  - 64 Display Group Tones
  - 91 + 90 Initialize all Variables to Factory Defaults and *Not* Re-build Tone Table
  - 91 + 91 Initialize all Variables to Factory Defaults and Re-build Tone Table
  - [SAT] 92 Enable/Disable DTMF Regeneration Mode
  - 93 Site Alarm Address
  - [T/C] 94 Site Alarm Tone
  - 95 Change Program Access Code
  - 96 Store Repeater Frequency
  - 97 Display Version Number
  - 99 Exit Program Mode
- [T/C] Tone/Code Switch required for Digital Codes.  
[RDU] Original CSI Remote Display Unit only.  
[SYS] System Level Parameters or Per Tone Parameters.  
[SAT] Status Acknowledgement Transponder