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Model 3850

Shared Repeater Tone Panel

USER'S INSTRUCTION MANUAL

Made in U.S.A.

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INTRODUCTION

Now that you've purchased the most versatile shared repeater tone panel in the industry, please take a moment and read through this instruction manual carefully. We have covered every aspect from installation to programming to trouble shooting with great care. We have included 'Quick Start' programming sections for local and remote programming for those of you who just can't wait to get started. However, it would benefit you to read all sections before testing the 3850. For those of you interested in connecting your 3850 to a telephone interconnect please see the enclosed brochure on the powerful 8200 Duplex Interconnect.

INSTALLATION

The 3850 contains all the audio processing and control logic needed for a shared (or private) repeater system. You supply the receiver and transmitter, the 3850 does the rest. Only four connections are required.....

3850	**SYSTEM**
1. Disc.	Connect directly to the receiver's discriminator. Be sure to connect <u>before</u> de-emphasis.
2. Audio Out	Connect to the transmitter mic input or other audio input port.
3. CTCSS Out	Connect directly to the transmitter modulator. Be sure to connect <u>after</u> the deviation control and deviation limiters
4. PTT	Connect directly to the transmitter's PTT keying line.
5. +12VDC	Connect to a well regulated source of 12-14 VDC that can deliver up to 250 MA.
GND	Power supply return.
GND	Signal shields.

Be sure to use shielded wire for all connections to help keep RF out. Connect the shields to the terminal labeled 'GND'.

JUMPER STRAP OPTIONS

The 3850 has four factory installed straps that can be removed (cut) to alter operating characteristics.

The factory installed straps assume that your installation will use flat (no pre-emphasis) CTCSS, regenerated DTMF and voice audio and that closure to ground transmitter keying will be used.

Cutting straps will individually pre-emphasize the CTCSS, regenerated DTMF and voice audio. The transmitter keying can be connected from ground keying, to +12VDC keying.

JP-0   Regenerated DTMF. Straps in = Flat.
                  Strap removed = Pre-emphasized.

JP-1   CTCSS. Strap in = Flat.
                  Strap removed = Pre-emphasized.

JP-2   Voice audio. Strap in = Flat.
                  Strap removed = Pre-emphasized.

JP-3   PTT keying. Center pad to GND pad = Ground
                  keying. Center pad to +12 pad = +12 UDC keying.

ADJUSTMENTS

It will be necessary to have a signal source (service monitor preferred) that can transmit any CTCSS tone, DTMF, and test tones at required deviation levels.

The 3850 is shipped with all CTCSS tones pre-enabled. Therefore, no programming will be required to perform the following adjustments. Please adjust in the following order...

POT	PCB NAME	FUNCTION
P2	Squelch	Begin fully CCW. Advance CW until the receive led goes out. Adjust 1/8 - 1/4 turn past threshold. When a signal is received, the front panel receive led should illuminate.
P6	Pre-Amp	Transmit a signal with approximately 650 HZ of CTCSS deviation (100.0 HZ CTCSS frequency) into the repeater. Using a VOM (set to AC Volts) adjust until a reading of 1.0V RMS is obtained on TP-1 (just to the left of the large electrolytic capacitor C27). P6 should never require re-adjusting unless a new receiver is installed.
P5	RPT Audio	Transmit a 1KHZ tone at a deviation of 3KHZ. Adjust until the repeater output achieves a similar 3KHZ deviation.
P1	CTCSS	Transmit a carrier with 100.0HZ CTCSS only. (No Audio). The front panel CTCSS led should be illuminated. Adjust until the desired level of regenerated CTCSS tone is obtained. (Usually 500 - 800 HZ deviation).P4 DTMF Transmit a signal containing any DTMF digit. The front panel DTMF led should be illuminated. Adjust for the desired level of regenerated DTMF. (We recommend 2.5KHZ).
P3	CW ID	When CW ID occurs, adjust for the desired audio level. We recommend setting the CW ID to a low level that can be copied, but does not overwhelm voice communication in progress.

The 3850 is shipped with 38 decodable CTCSS frequencies programmed to operate in a typical repeater installation. If a particular frequency is not set up how you would like it to be (for example, the hang time is too short) you may wish to modify it. The following Quick Start is intended to give you an introduction to local programming. For the full explanation of programming and a complete list of programmable features, please consult the sections titled **'PROGRAMMING THE 3850 USING THE FRONT PANEL KEYBOARD'** and **'REMOTELY PROGRAMMING THE 3850 OVER THE AIR'**.

Quick Start - Local Programming

Programming the 3850 locally is accomplished by pressing combinations of the front panel keys.

1) Press the **'C'** key once. This will turn on the display.

2) Press the programming mode access code followed by **'P'** (factory set to '123456'). Enter **123456P** the display will show the digits as you press them. If it doesn't, wait 10 seconds and start at step 1 again.

3) The display will now show (-.-.) and the   PROGRAM LED will illuminate on the front panel. This indicates that you are in the programming mode.

4) Now we will modify a couple of the 100.0 Hz user parameters as an example.

5) Press **'1000'** (without a decimal point) followed by **'P'**. If you wish to modify another frequency, enter it instead. For example, for 79.7 Hz press **'797'** followed by **'P'**.

6) The display will now show (U.U.).

7) We will modify the hang time to be 6 seconds.
   a) Press **'P'** display will show (0.1.)
   b) Press **'P'** display will show (0.2.)
   c) We are now on the hang time line number. Press **'60P'** (hang time increments are .1 seconds each)
   d) Display will show (0.3.)

8) Now modify the squelch tail to be 50 milliseconds.
   a) Press **'P'** several times until (1.0.) shows on the display. If you go past (1.0.) hold the **'C'** key down until (U.U.) shows on the display release the **'C'** key and press **'10P'**.
   b) Press **'50P'** (squelch tail increments are 1 ms each)
   c) Display will show the next programming line (1.1.).

9)   We are done modifying this frequency. Hold down the **'C'** key until (U.U.   ) shows on the display. Release the **'C'** key then hold down the **'C'** key again until (-.-.   ) shows on the display. We are now back where we were in step 3 above.   Press **'0P'** to return to operate mode. Or you may press a new CTCSS frequency as in steps 4 and 5 to change another user's custom parameters.

PROGRAMMING THE 3850 USING THE FRONT   PANEL KEYBOARD

The 3850 has two easy access programming areas: 1. All Users (A.U.) Operating Parameters. (Selections made in this area affect all users globally). 2. Unique Per User (U.U.) Operating Parameters. The selections made in this area affect only a specified user. Users are specified by entering their CTCSS tone frequency less the decimal point. For example: **670,1000,1318** etc. for 67.0 Hz,100.0 Hz, 131.8 Hz.

To enter the programming mode, enter the six digit programming access code followed by a **'P'** (e.g. **'123456P'** using the factory supplied code). The PROGRAM LED on the front panel will illuminate when programming and will go off when you exit programming. The display will now show (-.-.   ). To enter the A.U. (All Users Operating Parameters) programming area simply press **'P'**. To enter the U.U. (Unique Per User) programming area enter the CTCSS code for the user you wish to modify and press **'P'**. You can only exit from the programming mode by returning to (-.-.   ) and pressing **'0P'** (zero P).

The programming flowchart presented in Figure 1 will provide a visual understanding of the programming procedure.

Each programming area has the following features in common:

1) Programming line numbers are displayed with the dots illuminated on the displays. e.g. **0.1.**, **1.5.** etc.

2) Data values are displayed without the dots illuminated. e.g. **00, 30, 100** etc.

3) Data is entered at a line number by pressing the desired digits followed by the **'P'** key. Consider the **'P'** key as the enter key.

4) The GOTO lines are displayed as **(A.U.   )** and **(U.U.   )** These lines are used to branch to any programmable line number in the current programming area. For example, the current line is **A.U.**   and you wish to goto line 6. Enter **'6P'** on the keypad and the display will read **(0.6.   )**

5) Pressing only **'P'** at the **(A.U.   )** or **(U.U.   )** line will advance to the first programming line **(0.1.   )**. Pressing **'P'** at any other line will advance to the next sequential programming line.

6) To view the stored data at a given line number, briefly press **'C'** on the keypad and then release it. The display will then show the data for a few seconds and then re-display the current line number. Consider **'C'** the 'see' data key.

7) At any point during programming, you may return to the **(A.U.)** or **(U.U.)** line by holding down the **'C'** key until **(A.U.)** or **(U.U.)** appears on the display (approximately three seconds).

8) To return to the (-.-.) location hold down the **'C'** key at the (A.U.) or (U.U.) line for approximately 3 seconds until the (-.-.) appears on the display.

9) To exit programming mode enter **'0P'** from the (-.-.) line.

PROGRAMMING THE <u>ALL</u> <u>USERS</u> (GLOBAL) OPERATING PARAMETERS
(Programming Area A.U.)

To enter the (A.U.) programming mode, press the six digit programming access code followed by **'P'** (e.g. **'123456P'**). The display wiil show (-.-.) indicating that the 3850 is in program mode. Then simply hit P again. The display will show (A.U.) Indicating that global parameter programming may begin...

(A.U.)
Press **'P'** to start at line (0.1.), or enter the line number   you wish to go to and then press **'P'**. All line numbers and their associated parameters are listed below starting with ALL USER (GLOBAL) PARAMETERS.

Viewing or Changing Parameter Values
A quick tap on **'C'** will reveal (for a moment) the currently selected parameter of the displayed program line. If the parameter is acceptable, press **'P'** to advance to the next program line, or, enter a new parameter and press **'P'** to advance to the next program line.

Parameter Checking
If an out of range parameter is entered (eg. 6 on line   0.2.) pressing **'P'** will not cause an advance to the next   program line. This prevents you from accidentally entering   an unuseable choice.

Returning to A.U.
Programming is finished when you arrive back at A.U. If necessary, you can return to a previously programmed line by holding down **'C'** for several seconds. This will return you to A.U. Now enter the line number you wish to return to and press **'P'**. Line sequential programming will always flow forward from the current line.

Returning to (-.-.)
     When (A.U.) is displayed, press the **'C'** key for about three
     seconds until (-.-.) appears.

To Exit Program Mode.
     If you are finished programming and wish to return to operate,
     press **'0P'** (zero then P) whenever (-.-.) is displayed.

ALL USER (GLOBAL) PARAMETERS

0.1. 38 Or 50 Tone Operation
     1 = 38 Tone EIA
     0 = 50 Tone Format
     DEFAULT: 1= 38 Tone EIA

     Entering 1 will allow the 3850 to recognize the 38 standard
     EIA tones. Entering 0 will allow the 12 additional tones
     marked by * in the frequency table to be used also.

0.2. Disabled Tone Transmit
     Enter: 0 = Disable
            1 = Enable
     DEFAULT: 0 = Disable

     If a zero is entered, disabled tones will not bring up the
     repeater. If a one is entered, disabled tones with U.U. line
     2.8. set to 1 will bring up the repeater, but no audio will be
     passed. If U.U. line 2.8. is set to 0, setting this parameter to
     1 will have no effect.

     This feature will prevent other repeaters from using your unused
     tone slots that you have reserved per user by setting U.U. line
     2.8. to 1. Consider this line as enabling the feature and U.U.
     line 2.8. as selecting which tones to reserve.

0.3. Anti-Kerchunking Time
     Enter: 50-250
     .01 Second Increments Per Step
     DEFAULT: 175 = 1.75 Seconds

     Sets the minimum amount of time the mobile must press the MIC
     button before the 3850 will acknowledge CTCSS. Enter the time
     desired in seconds times one hundred. eg. enter 150 for 1.5
     seconds.

0.4. Repeater CW ID Interval
     Enter: 0 = Disable Station ID Or,   [1.3.]
             1-250   Interval Time   [0.5.]
     30 Second Increments Per Step
     DEFAULT: 0 = Disable

Determines how often the CW (morse) ID will send the system station call sign. Enter O if CW ID is not required. Or, enter the desired interval in half minutes. eg. enter 50 for ID every 25 minutes.

0.5. Repeater CW ID Sequence 1st Character
Enter: 0-38
DEFAULT: 2 = C

There are 8 characters maximum that may be sent as the repeater station ID. If you wish to send less than 8 characters, you must terminate the sequence with the termination value of 38. Consult Figure 5, CW ID character codes for the proper letter codes. e.g. 0 = A, 1 = B, 2 = C, etc.

0.6. Repeater CW ID Sequence 2nd Character
Enter: 0-38
DEFAULT: 18 = S

0.7. Repeater CW ID Sequence 3rd Character
Enter: 0-38
DEFAULT: 8 = I

0.8. Repeater CW ID Sequence 4th Character
Enter: 0-38
DEFAULT: 38 = Termination of sequence

The value 38 will indicate the end of the sequence. The last character heard will be the one before the 38. In this case CW ID Sequence 3rd Character.

0.9. Repeater CW ID Sequence 5th Character
Enter: 0-38
DEFAULT: 38 = Termination of sequence

1.0. Repeater CW ID Sequence 6th Character
Enter: 0-38
DEFAULT: 38 = Termination of sequence

1.1. Repeater CW ID Sequence 7th Character
Enter: 0-38
DEFAULT: 38 = Termination of sequence

1.2. Repeater CW ID Sequence 8th Character
Enter: 0-38
DEFAULT: 38 = Termination of sequence

1.3. CTCSS Decoder Hold Delay
Enter: 5-99
.1 Second Increments Per Step
DEFAULT: 10 = 1.0 Second

Determines how long CTCSS can drop out without loss of voice path. Effective system sensitivity is increased as the time is increased. This will not affect the squelch tail heard in the mobile. Enter the time desired in seconds times ten. eg. enter 15 for 1.5 seconds.

1.4. Courtesy Tone

```
Enter: 0 = No Courtesy Beep
       1 = Single Beep
       2 = Double DTMF Beep ->  (Let   the 3850  remote DEFAULT:
                                 1     =     Single    Beep
                                 programmer  display   who's
                                 currently using the system)
```

Selects the type of courtesy beep to use for all users globally. Note, that the courtesy tone can also be enabled or disabled per user in the U.U. programming area.

1.5. Programming Mode Access Code

```
Enter: One To Six Digits (X -> XXXXXX)
DEFAULT: 123456
```

Selects the access code used to enter the programming mode. Be sure to use the **'C'** key to verify what you programmed. If you forget your code, or accidentally enter the wrong code the 3850 will have to be returned to the factory to re-establish a known code. We STRONGLY recommend that you use all six digits in your programming access code, any fewer digits may result in a 'pirate' modifying your repeater setup.

1.6. Aux. Relay Control Code

```
Enter: One To Four Digits (X -> XXXX)
DEFAULT: 1234
```

```
Format: #xxxx Turns the Aux. Relay On.
        ##xxxx Turns the Aux. Relay Off.
```

The Aux Relay can be used to remotely control anything at the site you desire. Note: the relay contact current must not exceed .25 AMP.

1.7. Aux. Relay Mode

```
Enter: 1 = Latched                              [1.9.]
       0 = Momentary                            [1.8.]
DEFAULT: 1 = Latched
```

In latched mode, the relay will remain in its present state until the opposite state code is received (1.6.). For example, press #1234, the relay will remain on until the code ##1234 is received. In momentary mode, the relay will remain on until the momentary hold time (1.8. below) expires.

1.8. Momentary Hold Time
     Enter: 1-250
     .1 Second Increments Per Step
     DEFAULT: 20 = 2.0 Seconds

1.9. Total Repeater Accumulated Time - Hours
     Enter: X -> XXXX
     DEFAULT: 0000

     The purpose of lines 1.9. and 2.0. is to display the
     accumulated air time of the repeater. This time will not
     equal the sum of the individual accumulated air times. The
     individual times include hang time whereas the total
     repeater time does not include hang times. This may be used
     to compute system loading factors. The only purpose to
     setting this value would be to set it to 0 to start re-
     accumulating time.

2.0. Total Repeater Accumulated Time - Minutes and Seconds
     Enter: XX YY
              XX = Minutes
              YY = Seconds
     DEFAULT: 0000

2.1. Data Transfer Rate
     Enter: 5 - 10 Digits Per Second
     DEFAULT: 8 = 8 Digits Per Second

     This paramter is used as the data transfer rate between the
     3850 and a remote display/programmer such as the 3850RP.
     You may adjust it between 5 and 10 digits per second to suit
     your particular remote programmer.

2.2. Response Delay for Data Recall
     Enter: 1-250
     .1 Second Increments Per Step
     DEFAULT: 10 = 1.0 Second

     This parameter deals strictly with remote programming. Enter the
     amount of time that you wish the 3850 to delay before sending
     data after it receives a data recall command. This will allow
     the transmitting programmer to switch to receive before the 3850
     starts sending data. e.g. with the factory setting of 1 second,
     the programmer may request data by sending *** 12 #** the 3850 will
     wait for 1 second and then reply with the time and hit
     information for all subscribers. (See the section titled Remote
     Programming).

Gang Programming

Programming lines (2.3. through 4.1.) are used to "Gang Program"
parameters which are also individually programmable per user in the
U.U. programming areas. This capability saves time if you wish to set
a particular parameter to the same value for most or all users. After

gang programming a parameter, you may wish to customize some
parameters per user in the the appropriate U.U. area.

NOTE: You can not view gang programmed parameters by tapping the **'C'**
key. It would be far too confusing to watch 50 different values flash
before you. If you wish to view a gang programmed parameter view them
individually in the appropriate U.U. areas.

2.3. Global CTCSS Control
```
    Enter:  1 = All Users Enabled
            0 = All Users Disabled
    DEFAULT: 1 = All Users Enabled
```

    Setting this line to 1 will allow all CTCSS codes (38 or 50) to
    be decoded. Setting this line to 0 will effectively disable the
    repeater, since no one will be allowed to carry on a
    conversation. If 0 is selected here and 1 is selected on line
    0.2., the transmitter will key on decode, but no audio will pass
    through.

2.4. Global Repeater Hang Time Control
```
    Enter: 0-250
    .1 Second Increments Per Step
    DEFAULT: 30 = 3.0 Seconds
```

    Simultaneously sets all subscribers to the same hang time.
    Enter the time desired in seconds times ten. eg. enter 50
    for 5.0 seconds.

2.5. Global CTCSS During Hang Time
```
    Enter:  1 = Enable
            0 = Disable
    DEFAULT: 1 = Enable
```

    Enables or disables the regenerated CTCSS from going out on
    the hang time. Effects all users simultaneously.

2.6. Global Barge in Control
```
    Enter:  1 = Enable
            0 = Disable
    DEFAULT: 0 = Disable (Other users can not break-in)
```

    Enables or disables the ability for another tone to break in
    on the hang time of the currently decoding subscriber.
    Effects all users simultaneously.

2.7. Global Cross Tone Control
```
    Enter:  XXX or XXXX (Disired Cross Tone) or,
            0 (Global Cross Tone Disabled)
    DEFAULT: 0 = No Cross Tone
```

    Allows setting all users to the same output CTCSS tone at once.
    Or, enter 0 for normal same tone in same tone out operation.

2.8. Global Courtesy Tone Control
```
     Enter:  1 = Enable
             0 = Disable
     DEFAULT: 1 = Enable
```

Enables or disables the courtesy tone selected on line 1.4.
for all subscribers simultaneously. If the courtesy tone on
line 1.4. was disabled, this will not enable a tone. Either
a 1 or 2 will have to be programmed on line 1.4. for this
line to have an effect.

2.9. Global Stuck MIC Activity Timer Control
```
     Enter:  0 = Disable
             1-250
     1 Second Increments Per Step
     DEFAULT: 60 = 60 Seconds
```

This parameter programs the Stuck MIC activity timer for all
users simultaneously. The stuck MIC time is the maximum
amount of time that a single transmission may occur without
a drop in carrier. Upon timeout, the transmitter will be
dropped.

3.0. Global DTMF Regeneration Control
```
     Enter:  1 = Enable
             0 = Disable
     DEFAULT: 1 = Enable
```

This parameter enables or disables DTMF regeneration. It
effects all subscribers simultaneously. If DTMF
regeneration is disabled, the incoming DTMFs will be
stripped from the audio. If enabled, incoming DTMFs
will be regenerated and sent out the audio output.

3.1. Global Aux. Relay CTCSS Tracking
```
     Enter:  1 = Enable
             0 = Disable
     DEFAULT: 0 = Disable
```

If enabled, the Aux. relay will turn on when an enabled
subscriber (line 2.3. in this section or U.U. line 0.1) has
been decoded and will turn off when the subscriber's hang
time expires. If for any reason the subscriber would like
to shut off the relay before his hang time expires, he may
still use the Aux. Relay Control Code (line 1.6.) to do so.

3.2. Global Squelch Tail Length
```
     Enter: 1-99
     1 Millisecond Increments Per Step
     DEFAULT: 60 = 60 Milliseconds
```

Simultaneously   sets   the   squelch   tail   length   for   all
subscribers.

3.3. Global Prepaid Airtime Accounting
```
Enter:  1 = Enable
        0 = Disable
DEFAULT: 0 = Disable
```

This enables the prepaid airtime accounting feature for all subscribers simultaneously. If enabled, a subscriber may only use the repeater while there is Prepaid Airtime (lines 3.4. and 3.5.) available. When the Prepaid Airtime falls below 30 minutes, the subscriber will get a short beep every 15 seconds. If disabled, the prepaid accounting feature is not used.

3.4. Global Prepaid Airtime Hours Set
```
Enter: X -> XXXX
DEFAULT: 0000
```

In conjunction with line 3.5. sets the Prepaid Airtime for all subscribers simultaneously. Since the 3850 has the ability to keep track of an enormous amount of time, you will need to set the hours and minutes:seconds separately. Using this method, you may enter up to 9999 hours, 59 minutes and 59 seconds. The most common use would be to reset all users to zero hours, minutes and seconds.

3.5. Global Prepaid Airtime Minutes and Seconds Set
```
Enter: XX YY
        XX = Minutes
        YY = Seconds
DEFAULT: 0000
```

3.6. Global Accumulated Airtime Hours Set
```
Enter: X -> XXXX
DEFAULT: 0000
```

3.7. Global Accumulated Airtime Minutes and Seconds Set
```
Enter: XX YY
        XX = Minutes
        YY = Seconds
DEFAULT: 0000
```

3.6. and 3.7. are used to set all users to a common accumulated airtime setting. The most common use would be to reset all users to zero hours, minutes and seconds.

3.8. Global Hog Time Monitor
```
Enter: 0              Disable
       1-250          Hog Time
.1 Minute Increments Per Step
DEFAULT: 0 = Disabled
```

Using the Hog Time Monitor, you may control the maximum amount of time that a single conversation may take place without incurring a penalty. This will prevent overly talkative subscribers from tying up the system for extended periods of

time. Entering 0 on this line will disable the Hog Time Monitor.
Enter the time desired in .1 minute steps. e.g. enter 100 for a
maximum conversation time of 10.0 minutes.

NOTE: The subscriber will hear a series of annoying beeps
near the end of his hog time.

3.9. Global Hog Penalty
```
Enter:  0-250
        0 = No penalty
.1 Minute Increments Per Step
DEFAULT: 0 = No penalty
```

If you entered a time on line 3.8. you may enter a penalty value
on this line. If a subscriber reaches his hog time alotment, he
may not use the repeater again until the Hog Penalty expires. To
disallow a user for 2 minutes, enter 20.

4.0. Global Hits (Thousands Units)
```
Enter: X -> XXXX
DEFAULT: 0000
```

4.1. Global Hits (Ones Units)
```
Enter: X -> XXX
DEFAULT: 000
```

4.0. and 4.1. are used to set all users to a common hits
accumulation. The most common use would be a reset all users to
zero accumulated hits. (Line 4.0. = 0000 and line 4.1. = 000).

4.2. Aux Relay Polarity
```
Enter:  0 = Open
        1 = Closed
DEFAULT: 0 = Open (See Appendix A)
```

4.3. Factory Reset Line
```
Enter: See description below
DEFAULT: None
```

This line is used to return the 3850's programmable information
to it's original factory default settings. This line will only
accept 37 as the data value that will reset the programming
parameters and set all accounting information to 0. After 37 has
been entered, the display will show 2 sets of double bars while
it is resetting the information (approx. 7-10 seconds). Do not
attempt to continue programming until the display shows (-.-.).
If a value other than 37 is entered, it will have no effect.

WARNING: All user programming will be lost!

PROGRAMMING THE <u>U</u>NIQUE PER <u>U</u>SER (INDIVIDUAL) OPERATING PARAMETERS
(Programming Area U.U.)

To enter the U.U. programming mode, press the six digit programming security code followed by **'P'** (e.g. **'123456P'**). The display wiil show (-.-.) indicating that the 3850 is in program mode. Then enter the users CTCSS tone you wish to edit followed by **'P'**. (For example: **'670P'** or **'1318P'** etc.). The display will show (U.U.) Indicating that per user programming for the selected CTCSS tone may begin...

(U.U.)
> Press **'P'** to start at line 0.1., or enter the line number you wish to go to and then press **'P'**. All line numbers and their associated parameters are listed below starting with UNIQUE PER USER (INDIVIDUAL) PARAMETERS.

Viewing or Changing Parameter Values
> A quick tap on **'C'** will reveal (for a moment) the currently selected parameter of the displayed program line. If the parameter is acceptable, press **'P'** to advance to the next program line, or, enter a new parameter and press **'P'** to advance to the next program line.

Parameter Checking
> If an out of range parameter is entered (eg. 6 on line 0.1.) pressing **'P'** will not cause an advance to the next program line. This prevents you from accidentally entering an unuseable choice.

Returning to U.U.
> Programming is finished when you arrive back at U.U. If necessary, you can return to a previously programmed line by holding down **'C'** for several seconds. This will return you to U.U. Now enter the line number you wish to return to and press **'P'**. Line sequential programming will always flow forward from the current line.

Returning to (-.-.)
> When U.U. is displayed, press the **'C'** key for about three seconds until (-.-.) appears.

To exit program mode.
> If you are finished programming and wish to return to operate, press **'0P'** (zero then P) whenever (-.-.   ) is displayed.

UNIQUE PER USER (INDIVIDUAL) PARAMETERS

Note: A.U. lines 2.3. through 4.1. are the gang program counterparts of U.U. lines 0.1. through 1.9. Any programming on these A.U. lines affects all 38 or 50 U.U. counterpart lines simultaneously.

In the programming lines that follow, the term 'subscriber' is the CTCSS frequency that you entered at the (-.-.) prompt.

0.1. Deadbeat Control (Subscriber on/off control)
```
     Enter:  1 = Enable Specified Tone
             0 = Disable Specified Tone
     DEFAULT: 1 = Enable Specified Tone
```

If enabled the subscriber will be allowed to use the repeater.

0.2. Repeater Hang Time Control
```
     Enter: 0-250
     .1 Seconds Increments Per Step
     DEFAULT: 30 = 3.0 Seconds
```

Sets the hang time for the subscriber. This is the amount of time the PTT stays on after the mobile has unkeyed.

0.3. CTCSS During Hang Time
```
     Enter:  1 = Enable
             0 = Disable
     DEFAULT: 1 = Enable
```

If enabled, allows the regenerated CTCSS to continue during the subscriber's hang time.

0.4. Barge In Control
```
     Enter:  1 = Enable
             0 = Disable
     DEFAULT: 0 = Disable
```

If enabled, a different subscriber may pick up the repeater during the current subscriber's hang time. If disabled, the different subscriber will not be allowed to pick up the repeater until after the current subscriber's hang time has expired.

0.5. Cross Tone
```
     Enter:  ToneFrq. or,
             0 = If Same Tone Out As In
     DEFAULT:: 0 = Same Out As In
```

The **'ToneFrq.'** is one of the subscriber tone frequencies like **'670'** for 67.0 Hz, **'1966'** for 196.6 Hz, etc. This parameter determines what CTCSS frequency will be regenerated out for the current subscriber. Setting the Cross Tone to 0 will regenerate the incoming CTCSS. Setting it to a different tone is useful for crossing between two subscribers' frequencies. e.g. Subscriber A is 67.0 Hz in 136.5 Hz out, Subscriber B is 136.5 Hz in 67.0 Hz out. This will allow subscriber A to talk to subscriber B.

0.6. Courtesy Tone
```
Enter:  1 = Enable
        0 = Disable
DEFAULT: 1 = Enable
```

Enables or disables the use of section A.U. line 1.4. courtesy tone for this subscriber. If section A.U. line 1.4. is set to 0, this line will have no effect.

0.7. Stuck Mic Activity Timer
```
Enter: 0-250
1 Second Increments Per Step
DEFAULT: 60 = 60 Seconds
```

Sets the maximum time the subscriber may have a continuous transmission. If set to 0, there is no limit to the transmission time. If set to another value, the subscriber will be allowed to transmit for that many seconds continuously and then the transmitter will drop.

0.8. DTMF Regeneration
```
Enter:  1 = Enable
        0 = Disable
DEFAULT: 1 = Enable
```

If enabled, the subscriber's DTMF tones will be regenerated to the audio output. If disabled, the DTMF tones will be stripped from the audio.

0.9. Aux Relay CTCSS Tracking
```
Enter:  1 = Enable
        0 = Disable
DEFAULT: 0 = Disable
```

If enabled, the Aux Relay will close while the subscriber is transmitting (including hang time).

1.0. Squelch Tail Length
```
Enter: 1-99
1 Millisecond Increments Per Step
DEFAULT: 60 = 60 Milliseconds
```

Allows individually tailoring the squelch tail to the subscriber's preference.

1.1. Prepaid Airtime Accounting
```
Enter:  1 = Enable
        0 = Disable
DEFAULT: 0 = Disable
```
If enabled, the subscriber will be governed by the Prepaid Airtime accounting method. When the Prepaid Airtime for the subscriber expires, the subscriber will become a deactivated tone. Please see the discussion in the section **Prepaid Airtime Accounting.**

1.2. Prepaid Airtime Hours Set
```
     Enter: X -> XXXX
     DEFAULT: 0000
```

1.3. Prepaid Airtime Minutes and Seconds Set
```
     Enter:  XX YY
             XX = Minutes
             YY = Seconds
     DEFAULT: 0000
```

     If 1.1.   is enabled, lines 1.2. and 1.3. set the prepaid airtime
     for the subscriber. The maximum time settable is 9999 hours 59
     minutes 59 seconds.

1.4. Accumulated Airtime Hours Set
```
     Enter: X -> XXXX
     DEFAULT: 0000
```

1.5. Accumulated Airtime Minutes and Seconds Set
```
     Enter:  XX YY
             XX = Minutes
             YY = Seconds
     DEFAULT: 0000
```

     1.4. and 1.5. are generally used to individually reset each
     subscriber's accumulated airtime. They will also show the
     currently accumulated airtime for that subscriber if the **'C'** key
     is pressed briefly.

1.6. Hog Time Monitor
```
     Enter:  0              Disable            [1.8.]
             1-250          Hog Time           [1.7.]
     .1 Minute increments per step
     DEFAULT: 0 = Disabled
```

     Please see the discussion under A.U. line 3.8.

1.7. Hog Penalty
```
     Enter: 0-250
     .1 Minute Increments Per Step
     DEFAULT: 0 = No penalty
```

1.8. User Hit's (Thousands Units)
```
     Enter: X -> XXXX
     DEFAULT: 0000
```

1.9. User Hit's (Ones Units)
```
     Enter: X -> XXX
     DEFAULT: 000
```

     1.8. and 1.9. are generally used to individually reset each
     subscriber's accumulated hits. They will also show the
     accumulated hits for the subscriber if the **'C'** key is briefly
     pressed. The maximum accumulated hits is 65,535.

2.0. Subscriber CW ID Sequence 1st Character
      Enter: 0-38
      DEFAULT: 38 = Termination of sequence
                        (no subscriber CW ID)

      Lines 2.0. thru 2.7. contain the 8 character Subscriber CW ID.
      Please see Figure 5 'CW ID Character Codes' for the letter codes
      to enter.

      The Subscriber CW ID is sent once when a communication is
      initiated. The ID will only be sent again if the time
      between successive communications exceeds 30 seconds. This
      will prevent 'machine gun' ID'ing.

      NOTE: To differentiate, Subscriber ID (section U.U. lines 2.0.
      thru 2.7.) is sent during subscriber communications. Repeater ID
      (section A.U. lines 0.5. thru 1.2.) is only sent when the
      repeater is idle and the channel is clear.

2.1. Subscriber CW ID Sequence 2nd Character
      Enter: 0-38
      DEFAULT: 38 = Termination of sequence

2.2. Subscriber CW ID Sequence 3rd Character
      Enter: 0-38
      DEFAULT: 38 = Termination of sequence

2.3. Subscriber CW ID Sequence 4th Character
      Enter: 0-38
      DEFAULT: 38 = Termination of sequence

2.4. Subscriber CW ID Sequence 5th Character
      Enter: 0-38
      DEFAULT: 38 = Termination of sequence

2.5. Subscriber CW ID Sequence 6th Character
      Enter: 0-38
      DEFAULT: 38 = Termination of sequence

2.6. Subscriber CW ID Sequence 7th Character
      Enter: 0-38
      DEFAULT: 38 = Termination of sequence

2.7. Subscriber CW ID Sequence 8th Character
      Enter: 0-38
      DEFAULT: 38 = Termination of sequence

2.8. User Disable Tone Transmit (See discussion under A.U., 0.2.)
      Enter: 1 = Reserve tone
              0 = Do not reserve tone

This completes the programming for the CTCSS tone subscriber you
specified. The display should read (U.U.).   To edit another tone
hold the **'C'** key down until (-.-.) is displayed. Then enter the

CTCSS subscriber frequency that you wish to program (followed with **'P'**) and continue as above. Or, if you are finished, hold down the **'C'** key until (-.-.   ) is displayed and then press **'0P'** to exit the program mode and return to normal system operation.

REMOTE PROGRAMMING

In addition to being locally keyboard programmable, all programmable parameters can be remotely programmed using the 3850-RP (Remote Programmer), DTMF or a compatible programmer.
This manual will cover programming with DTMF and programming with compatible programmers. A complete How-To programming guide is supplied with the 3850-RP. Programming with the 3850-RP will guarantee accurate transmissions using a high-speed protocol.

CAUTION: When programming remotely, be very careful to only press the buttons you intend to press. Unlike local programming, when remote programming with DTMF you do not have a display to look at. Therefore if a mistake is made, it may be difficult to correct because you will not be able to review the data to see what has gone wrong. For the most part it may be wise to try and confine remote programming to enabling and disabling CTCSS user tones.

Quick Start - Remote Programming
Programming the 3850 remotely is accomplished by pressing combinations of DTMF digits over the air.

1) Press a ***** followed by the programming mode access code followed by **#**. e.g. if using the factory default program mode access code (123456), enter *123456#. The PROGRAM LED will illuminate on the front panel.

2) Now we will modify a couple of the 100.0 Hz user parameters as an example.

3) We will modify the hang time to be 6 seconds.

   a) Press **'*01# 1000# 60#'**.
      If you wish to modify another frequency, press it instead of 1000. For example to change 79.7 Hz hang time press **'*01# 797# 60#'**.

   b) The *01# indicates the hang time parameter, 1000# or 797# indicates the CTCSS subscriber to affect, the 60# indicates 60 hang time increments of .1 seconds each (6.0 seconds).

4) Modify the squelch tail length to 50 milliseconds.

   a) Press **'*02# 1000# 50#'**.
      Again, if you wish to modify another CTCSS frequency, press it instead of the 1000#. For example to change 79.7 Hz squelch tail length press **'*02# 797# 50#'**.

   b) The *02# indicates the squelch tail parameter, 1000# or 797# indicates the CTCSS subscriber to affect, the 50# indicates 50 squelch tail timer increments of 1 ms each (50 milliseconds).
5) We are finished with remote programming. Press # three times **'###'** to exit remote programming and return to operate mode

NOTE: Refer to Figure 6 for a complete list of the remotely programmable features. For further explanation read the following section.


REMOTELY PROGRAMMING THE 3850 OVER THE AIR

To enter the remote programming mode, enter a ***** followed by the programming mode access code followed by a **#**. (e.g. ***123456#**). You must send a DTMF digit at least every 30 seconds or the 3850 will assume you are finished, and automatically exit the program mode. The PROGRAM LED on the front panel will illuminate when in programming mode. When finished press **#** three times (**###**) to exit the program mode and resume normal operation with the changes you have made. When you exit programming mode, the PROGRAM LED will turn off.

Now press *****. The ***** is used to tell the 3850 that you are ready to issue a programming command. It will instruct the 3850 to start with a clean slate and listen for a command. You may also use the ***** at any time during a sequence if you lose track of where you are in the sequence. This will tell the 3850 to start over.

The **#** is used to separate pieces of information. Some instructions require more than one piece of data, so the **#** tells the 3850 where the data pieces end.

The remote programming DTMF codes are separated by function into 5 groups: System Test, Repeater Configuration, Accounting Information, Global Setting of All Subscribers' Parameters, Individual Setting of a Subscriber's Parameters. Please see Figure 6 for a complete list of remotely programmable parameters.
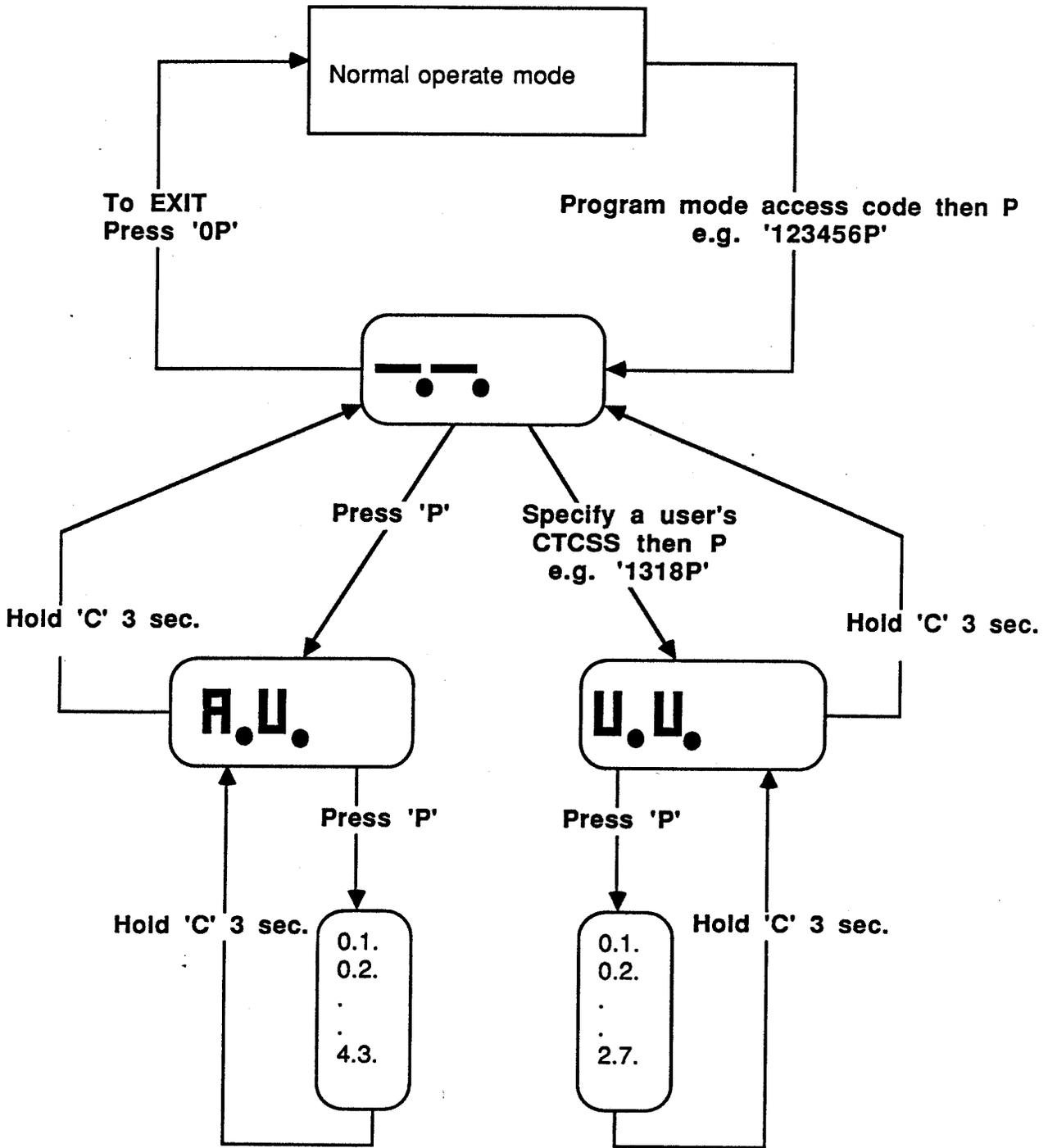
Figure 1

Navigating Through the Programming Areas

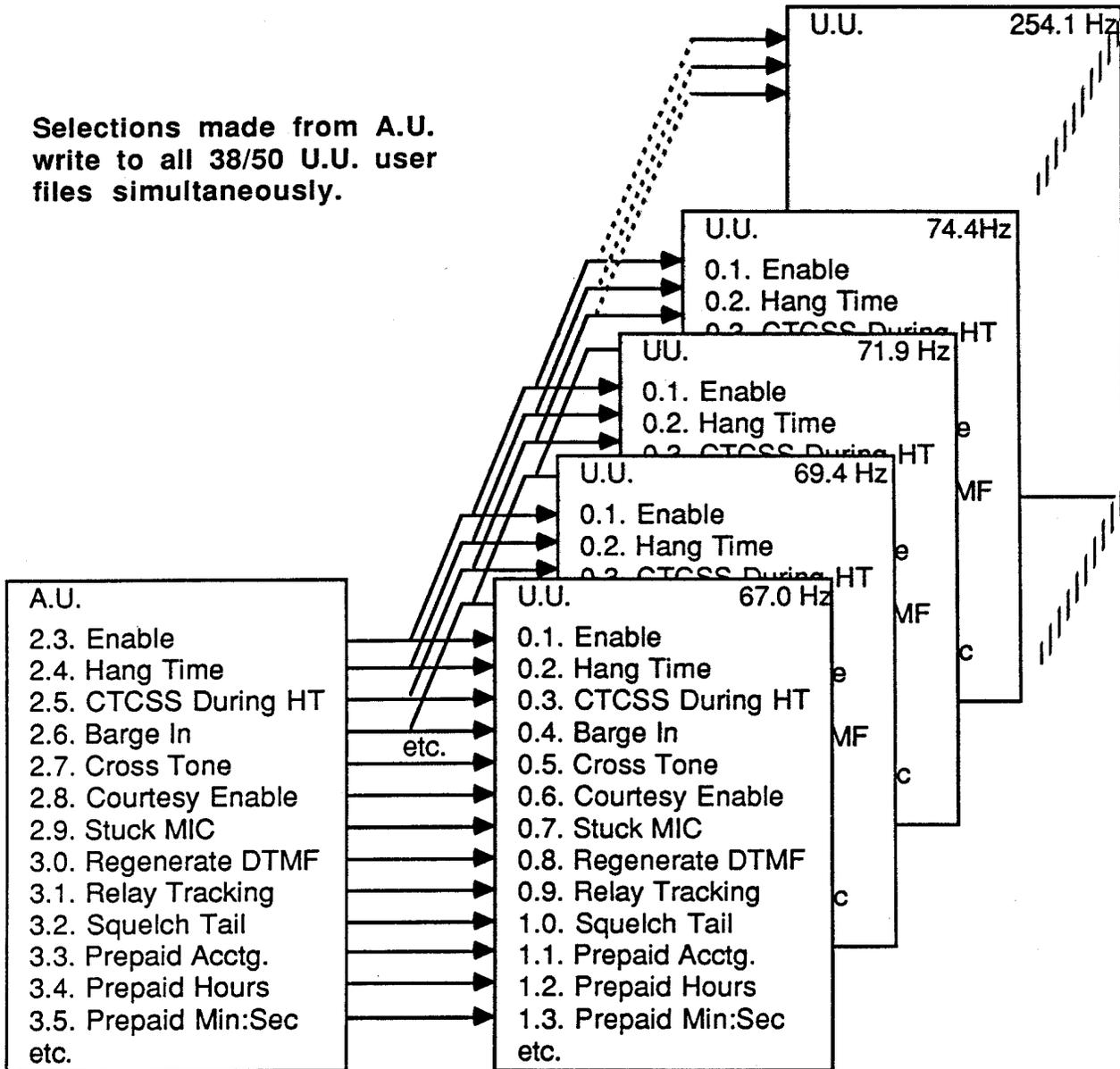Selections made from A.U. write to all 38/50 U.U. user files simultaneously.

U.U.   254.1 Hz

U.U.   74.4Hz
0.1. Enable
0.2. Hang Time
0.3. CTCSS During HT

UU.   71.9 Hz
0.1. Enable
0.2. Hang Time
0.3. CTCSS During HT

U.U.   69.4 Hz
0.1. Enable
0.2. Hang Time
0.3. CTCSS During HT

A.U.
2.3. Enable
2.4. Hang Time
2.5. CTCSS During HT
2.6. Barge In
2.7. Cross Tone
2.8. Courtesy Enable
2.9. Stuck MIC
3.0. Regenerate DTMF
3.1. Relay Tracking
3.2. Squelch Tail
3.3. Prepaid Acctg.
3.4. Prepaid Hours
3.5. Prepaid Min:Sec
etc.

U.U.   67.0 Hz
0.1. Enable
0.2. Hang Time
0.3. CTCSS During HT
0.4. Barge In
0.5. Cross Tone
0.6. Courtesy Enable
0.7. Stuck MIC
0.8. Regenerate DTMF
0.9. Relay Tracking
1.0. Squelch Tail
1.1. Prepaid Acctg.
1.2. Prepaid Hours
1.3. Prepaid Min:Sec
etc.

etc.

Figure 2

Global Subscriber Programming Visualization

Description	**Range**	**Default**

SYSTEM OPERATING SELECTIONS

0.1. 38 or 50 Tone Operation	1 =38, 0=50	1
0.2. Disabled Tone Transmit	1 =enabled, O=disabled	0
0.3. Anti-Kerchunking Time	50-250: .01 sec increments	100
0.4. Station CW ID Interval	O=disable, 1-250: 30 sec increments	0
0.5. thru 1.2. Station CW ID	0-38: O=a, 1 =b, etc. 38=end	2,18,8,38
1.3. CTCSS Decoder Delay	5-99: .1 sec increments	10
1.4. Courtesy Tone	1 =beep, 2=DTMFs	1
1.5. Programming Mode Access Code	x-xxxxxx	123456
1.6. Aux Relay Control Code	#Xxxx=on, ##Xxxx=off	1234
1.7. Aux Relay Mode	1 =Iatched, O=momentary	1
1.8. Momentary Hold Time	1-250: .1 sec increments	20
1.9. Repeater Accum. Time hrs.	0-9999	0000
2.0. Repeater Accum. Time min.sec.	0000-5959: min sec	00 00
2.1. Data Transfer Rate	5-10 digits per sec	8
2.2. Response Delay	1-250: .1 sec increments	10

Description	**Range**	**Default**

SUBSCRIBER GANG PROGRAMMING

2.3. Global CTCSS enable	1=enable, O=disable	1
2.4. Global Repeater Hang Time	0-250: .1 sec increments	50
2.5. Global CTCSS During Hang Time	1=enable, O=disable	1
2.6. Global Barge In	1=enable, O=disable	0
2.7. Global Cross Tone	O=none, xxxx=670-2541: Hz	0
2.8. Global Courtesy Tone	1=enable, O=disable	1
2.9. Global Stuck MIC Activity Timer	O=disable, 1-250: 1 sec increments	60
3.0. Global DTMF Regeneration	1=regen, O=don't	1
3.1. Global Aux Relay CTCSS Tracking	1 =track, O=don't	0
3.2. Global Squelch Tail Length	1-99: 1 ms increments	60
3.3. Global Prepaid Airtime	Enable 1=enable, O=disable	0
3.4. Global Prepaid Airtime	hrs. 0-9999 hrs	0000
3.5. Global Prepaid Airtim min.sec	00 00-59 59:min sec	00 00
3.6. Global Accumulated Airtime hrs.	0-9999 hrs	0000
3.7. Global Accumulated Airtime min.sec.	0000-59 59:min sec	00 00
3.8. Global Hog Time	O=disable, 1-250: .1 min increments	0
3.9. Global Hog Penalty	0-250: .1 min increments	0
4.0. Global Hits thousands	0-9999:thousand	0
4.1. Global Hits ones	0-999:ones	000
4.2. Relay Polarity	O=open; 1 =closed	0
4.3. Factory Reset Line	37 = reset	n/a

FIGURE 3

Abreviated Global (A.U.) Programming List

Description   **Range**

Default

0.1. User CTCSS	enable 1=enable, O=disable	1
0.2. Repeater Hang Time	0-250: .1 sec increments	30
0.3. CTCSS During Hang Time	1=enable, O=disable	1
0.4. Barge In	1=enable, O=disable	0
0.5. Cross Tone	O=none, xxxx=670-2541 :Hz	0
0.6. Courtesy Tone	1=enable, O=disable	1
0.7. Stuck MIC Activity Timer	O=disable, 1-250:.1 sec increments	60
0.8. DTMF Regeneration	1 =regen, O=don't	1
0.9. Aux Relay CTCSS Tracking	1=track, O=don't	0
1.0. Squelch Tail Length	1-99: 1ms increments	60
1.1. Prepaid Airtime	Enable 1 =enable, O=disable	0
1.2. Prepaid Airtime hrs.	0-9999 hrs	0000
1.3. Prepaid Airtim min.sec	0000-59 59:min sec	00 00
1.4. Accumulated Airtime hrs.	0-9999 hrs	0000
1.5. Accumulated Airtim min.sec.	00 00-59 59:min sec	00 00
1.6. Hog Time	O=disable, 1-250: .1 min increments	0
1.7. Hog Penalty	0-250: .1 min increments	0
1.8. Hits thousands	0-9999:thousand	0
1.9. Hits ones	0-999:ones	000
2.0. thru 2.7. CW ID	0-38: O=a, 1=b, 38=end.	38
2.8. Disabled Tone Transmit	1=enable, O=disable	0

Figure 4
Abreviated User (U.U.) Programming List

A = 0	G = 6	M = 12	S = 18	Y = 24	5 = 30	WORD SPACE = 36
B = 1	H = 7	N = 13	T = 19	Z = 25	6 = 31	SLANT BAR = 37
C = 2	I = 8	O = 14	U = 20	1 = 26	7 = 32	MESSAGE END = 38
D = 3	J = 9	P = 15	V = 21	2 = 27	8 = 33	
E = 4	K = 10	Q = 16	W = 22	3 = 28	9 = 34	
F = 5	L = 11	R = 17	X = 23	4 = 29	0 = 35	

Figure 5
CW ID Character Codes

```
System Test              Remote Code         xxxx Range
Key Xmitter              *31#
Unkey Xmitter            *32#
Enable RPT audio         *34#
Disable RPT audio        *35#
Generate CTCSS           *37# xxxx#            670-2541: Hz
Stop Generate CTCSS      *39#
e.g. Generate CTCSS Frequency 100.0 Hz: *36 # 1000 #


Repeater Configuration   Remote Code         xxxx Range
38 Tone Mode             *38#
50 Tone Mode             *50#
Disable Tone Xmit off    *40#
Disable Tone Xmit on     * 41 #
Relay Polarity Open      *62#
Relay Polarity Closed    * 63#
Kerchunk Time            *21# xxx#            50-250: .01sec increments
CW ID Period             *23# xxx#            O=disable, 1-250: 30sec increments
CTCSS Decode Delay       *24# xx#             5-99: .1 sec increments
Courtesy Tone Mode       *25# x#              O=none, 1 =beep, 2=DTMFS
Data Xfer Rate           *26# xx#             5-10: digits per second
Response Delay           *27# xx#             1-250: .1 sec increments
e.g. Set CW ID Period to 15 minutes: * 23 # 30 #


Accounting               Remote Code         xxxx Range
Recall time/hit all      *12#
Recall total time        *13#
Recall enabled users     *14#
Reset time/hit all       *15#
Recall user time/hit     *10# xxxx#           670-2541: Hz
Reset user time/hit      *16# xxxx#           670-2541: Hz
Global Prepaid Enable    *57#
Global Prepaid Disable   *56#
Global Prepaid hrs.      *78# xxxx#           0-9999:hrs
Global Prepaid min.sec   *79# xx xx#          00 00-59 59:min sec
User Prepaid Enable      *47# xxxx#           670-2541: Hz
User Prepaid Disable     *46# xxxx#           670-2541: Hz
User Prepaid hrs.        *08# xxxx# xxxx#   670-2541 #0-9999 :hrs
User Prepaid min.sec.    *09# xxxx# xx xx# 670-2541#00 00-59 59:min sec
e.g. Recall 1 00.0 Hz subscriber's time/hit information: * 10# 1000 #
```

<div align="center">

Figure 6
Remote Programming Codes
(continues)

</div>

Figure 6 continued...

Global Setting of User Parameters	Remote Code	xxxx Range
Global Enable	*91#	
Global Disable	*90#	
Global CTCSS During Hang Time Enable	*93#	
Global CTCSS During Hang Time Disable	*92#	
Global DTMF Regeneration Enable	*95#	
Global DTMF Regeneration Disable	*94#	
Global Barge In Enable	*97#	
Global Barge In Disable	*96#	
Global Courtesy Beep Enable	*53#	
Global Courtesy Beep Disable	*52#	
Global CTCSS Relay Tracking Enable	*59#	
Global CTCSS Relay Tracking Disable	*58#	
Global Hang Time	*71# xxx#	0-250: .1 sec increments
Global Squelch Tail Length	*72# xx#	1-99: 1 ms increments
Global Cross Tone	*73# xxxx#	670-2541: Hz
Global Stuck MIC Timer	*74# xxx#	O=disable, 1-250: .1 sec increments
Global Hog Time Timer	*75# xxx#	0-250: .1 min increments
Global Hog Time Penalty	*76# xxx#	0-250: .1 min increments

e.g. Set all subscribers hang time to 10 seconds: * 71 # 100 #

Individual User Parameters	Remote Code	xxxx Range
Enable	*81# xxxx#	670-2541: Hz
Disable	*80# xxxx#	670-2541: Hz
CTCSS During Hang Time Enable	*83# xxxx#	670-2541: Hz
CTCSS During Hang Time Disable	*82# xxxx#	670-2541: Hz
DTMF Regeneration Enable	*85# xxxx#	670-2541: Hz
DTMF Regeneration Disable	*84# xxxx#	670-2541: Hz
Barge In Enable	*87# xxxx#	670-2541: Hz
Barge In Disable	*86# xxxx#	670-2541: Hz
Courtesy Beep Enable	*43# xxxx#	670-2541: Hz
Courtesy Beep Disable	*42# xxxx#	670-2541: Hz
CTCSS Relay Tracking Enable	*49# xxxx#	670-2541: Hz
CTCSS Relay Tracking Disable	*48# xxxx#	670-2541: Hz
Dis. Tone Xmit Enable (Reserve)	*61# xxxx#	670-2541: Hz
Dis. Tone Xmit Disable (No Reserve)	*60# xxxx#	670-2541: Hz
Hang Time	*01# xxxx# xxx#	670-2541: Hz #0-250: .1 sec increments
Squelch Tail Length	*02# xxxx# xx#	670-2541: Hz #1-99: 1 ms increments
Cross Tone	*03# xxxx# xxxx#	670-2541: Hz #670-2541: Hz
Stuck MIC Timer	*04# xxxx# xxx#	670-2541: Hz #O=disable, 1-250:.1sec inc
Hog Time Timer	*05# xxxx# xxx#	670-2541: Hz #0-250: .1 min increments
Hog Time Penalty	*06# xxxx# xxx#	670-2541: Hz #0-250: .1 min increments

e.g. Set the Hog Time Timer for 67.0 Hz subscriber to 10 minutes: * 05 # 670 # 100 #

FRONT PANEL DISPLAY

The front panel display is turned off at the factory. It may be turned on by pressing any key on the front panel. After a key has been pressed, the display will remain active for 15 minutes. At the end of 15 minutes, the display will automatically turn off. At any time during the 15 minutes you may press the 'C' key to manually turn off the display. The display will remain on throughout local programming until programming is exited. When enabled in operate mode, the display will show the currently decoding CTCSS frequency.

PREPAID AIRTIME ACCOUNTING

The 3850 will perform two types of billing. Accumulated Airtime and Prepaid Airtime. Accumulated airtime accounting is done by querying the 3850 for the accumulated airtime (section 0.0. line 1.4 and 1.5.) and multiplying by a cost factor. e.g. 67.0Hz has 2 hrs. accumulated time at $10/minute so he would owe $1200 (120 minutes times $10/minute). You may also use the Prepaid Airtime Accounting built into the 3850. You should enable Prepaid Airtime Accounting in section 0.0. line 1.1. for the subscriber and then set the number of hours (section 0.0. line 1.2.) and minutes and seconds (section 0.0. line 1.3.) that your subscriber has already paid for. This will ensure bill collections since they have already paid. As the subscriber uses the repeater his prepaid time is decremented until it gets to 0. When the Time is below 30 minutes, the subscriber will hear a brief tone every 15 seconds letting him know he needs to pay for more time. When the time reaches 0, the subscriber becomes a disabled subscriber. He may no longer use the repeater until A.) he pays for more airtime or B.) the prepaid Airtime Accounting (section 0.0. line 1.1) is set to 0.

TROUBLE SHOOTING

A) RECEIVE LED flickers, wont come on.

    1) Be sure the 3850 is connected directly to the discriminator output. Before de-emphasis.

    2) Be sure the squelch pot P2 is sufficiently clockwise past threshold. See the adjustment section for proper adjustment.

B) DTMF LED will not come on.

    1) Check Pre-Amp level setting P6.

    2) Check for excessive DTMF tone twist.

C) Display is blank.

    1) The display is intentionally disabled from the factory as a power saving feature. To enable the display, press any numbered key on the keyboard. To disable after viewing, simply press the 'c' key.

D) My CTCSS tone is decoding, but there is no audio output.

    1) Is the PTT connected?, power on?

    2) Check the RPT AUDIO level control P5.

    3) Is the CTCSS tone enabled. Section 0.0. line 0.1. should show a 1.

YES IT'S ENABLED:

        Is the prepaid airtime feature on (section 0.0. line 1.1)? If so, is there any prepaid airtime left (section 0.0. line 1.2 and 1.3)? If not, add airtime or disable prepaid airtime feature.

        Is the Hog Time monitor enabled (section 0.0. line 1.6.)? If it's not 0, you may be exceeding your hog time. Extend the hog time or reduce the penalty (section 0.0. line 1.7.).

        Is your stuck MIC activity timer too short (section 0.0. line 0.7.)? If it's too short the transmitter will drop out before your conversation is finished. Extend the activity timer.

NO IT'S NOT ENABLED:

        If you're keying the transmitter and there still is no audio it could be because you have enabled the Disabled Tone Transmit (section A.U. line 0.2.) feature. Enable the subscriber.

E) Transmitter is turning on and off.

1) You may have the hang time (section U.U. line 0.2.) set too low and you have a weak signal.

2) You may have the CTCSS Decode Hold Time (section A.U. line 1.3.) set too low. (1 Second is typically about right). Or, you may have a weak or marginal signal.

3) You may have the Anti-Kerchunk Filter (section A.U. line 0.3.) set too long. If your key up transmissions are less than the anti-kerchunk time, the 3850 will not enable hang time. 1.75 Seconds anti-kerchunk is typically sufficient.

F) System keys periodically without anyone on channel and transmits a series of tones.

1) More than likely you have enabled the Repeater CW ID (section A.U. line 0.4.). Disable it with a 0 or change the ID message to something you want to hear.

WARRANTY

We guarantee the Model 3850 to be free from defects in material and workmanship for one year from purchase. Tampering, misuse or modification shall void this agreement.

Several components in the 3850 are mounted in sockets. We reserve the right to not cover these parts under warranty if failure is traceable to removal/re-insertion.
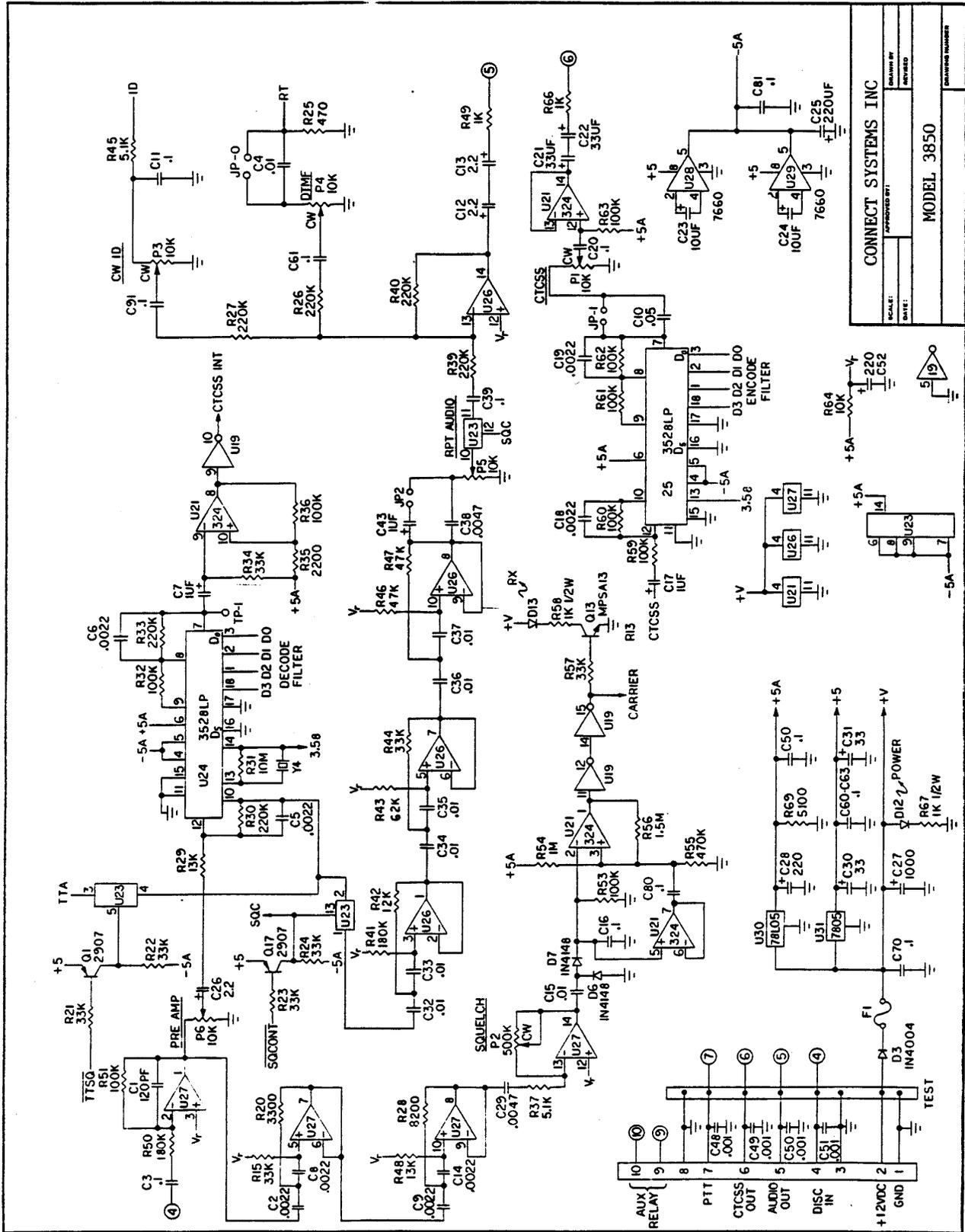
The quality of components used in the 3850 is excellent. It should give many years of trouble-free service. Should it fail, we shall repair it at our factory, and return it to you within one day if possible.

We reserve the right to not repair units which have been "modified".

This warranty does not cover damage caused by external overloads such as lightning or power source surges. Further, the warranty does not cover damage caused by any acts of GOD.

Should repair become necessary, please send a copy of your sales invoice together with the 3850 Tone Panel.

Address repairs to: **Connect Systems Inc.**
                        1802 Eastman Ave. Suite 116
                        Ventura, Ca. 93003