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Model CS-700

VOX Enhanced
or
VOX Controlled

Sampling Interconnect

USER'S INSTRUCTION MANUAL

Made in U.S.A.

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PURPOSE

The CS-700 provides everything necessary to interface any FM transceiver to the telephone network. Once connected to the base radio, mobile and portable radios can initiate and receive phone calls fully automatically when in range of the base station.

The CS-700 is the only interconnect available that gives the user a choice of VOX Enhanced or VOX Controlled Sampling. Each choice offers distinctly unique advantages. Each method is microcomputer controlled and uses an advanced telephone VOX as a control reference.

No other low cost interconnect provides advanced high tech features such as Autodialing, Redial, Hookflash, User programmable CW ID, Fully regenerated DTMF dialing, Automatic sample set-up, Built-in programming keyboard and display etc. etc.

INSTALLATION AND ADJUSTMENTS

The CS-700 requires only three connections to most radios. Use shielded wires with the shields at each end connected to chassis ground. (The rear panel barrier strip terminals labelled "GND" are chassis ground). We recommend using spade type crimp-on connectors for ease and reliability. Connect the center wires as follows:

AUDIO IN: Connect directly to the discriminator output. Be sure to connect before the de-emphasis network.

AUDIO OUT: Connect to the Mic. high line. If Mic loading occurs install a resistor in series with the Audio Out lead, and cut JP-1. The resistor should be large enough (try 10k) to prevent Mic loading but small enough to achieve adequate land to mobile audio.

PTT: Connect to the transceiver PTT line.

POWER: Connect to a source of 12-14 VDC that can supply up to 300 MA. The CS-700 is reverse polarity protected, so a polarity mistake will not damage your CS-700.

ADJUSTMENTS

Initial settings: Set P1, and P2, fully counterclockwise.
Set P3, P5 and P10 to mid rotation.

POT	PCB Name	Function

P1 M->L: **Mobile to land level:** Initially adjust until mobile DTMF decodes as indicated on front panel DTMF LED. Later, adjust for proper mobile level as heard on telephone.

P2 NOISE: **Noise (squelch) control:** Advance clockwise to a point just beyond where the front panel noise LED lights without any flickering.

Note: The noise LED must be operating but will only light if 'Audio In' is properly connected to the discriminator output. No other point will work!

P3 TEL VOX: **Telephone VOX Sensitivity:** Both VOX enhanced and VOX controlled sampling depend on the VOX adjustment for land line audio sensitivity. Clockwise rotation increases the sensitivity. For most applications mid rotation should be about right.

P5 BEEPS/CW ID: **Status beeps & CW ID level:** Adjust for desired modulation level of status beeps or CW ID.

P10 L->M: **Land to mobile level:** Press the C/D (Connect/Disconnect) switch so that a dialtone is heard. Adjust P10 until the dialtone produces about 3-4 Khz. of modulation deviation. Cut JP-1 if required.

JP-1 Audio output range strap. Strap in = (0-1V), out = (0-5V).

PROGRAMMING THE CS-700

The CS-700 has three easy-access programming areas: Operating Parameters, CW ID and Auto-Dial Phone Numbers. To enter one of the programming areas, turn the power off, press and hold the corresponding programming area button (No. 1 for Operating Parameters, No. 2 for CW ID or No. 3 for Auto-Dial Phone Numbers) and simultaneously turn on the power. The display will show **0.x.**, where x is the number of the programming button that is being pressed. Release the button, and programming may begin.

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., 2.5.** etc.

2) Data values are displayed without the dots illuminated. e.g. **00, 30,** 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 **A**ny **A**ddress line is displayed as **A.A.** This line is used to branch to any line number in the current programming area. For example, the current line is **A.A.** and you wish to goto line 25. Enter 2 5 P on the keypad and the display will read **2.5.**

5) Pressing only **P** at the **A.A.** line will advance the line to **0.1.** Pressing only **P** at any other line will advance to the next available programming line. NOTE: In CW ID and Auto-Dial Phone Number programming, the next line will be the next numeric line number. In Operating Parameters programming the next line is not necessarily the next numeric line (see the 'Programming the Operating Mode and Parameters' section).

6) To view the 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 data 'see' key.

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

PROGRAMMING THE OPERATING MODE AND PARAMETERS
(Programming area No. 1)

To enter the parameter programming mode, press and hold button No. 1 on
the internal keypad and then simultaneously turn on the power switch. At
this point, the display will read 0.1. When you release the No. 1
button, you will see **A.A.**

A.A. (GOTO Any Address)
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 OPERATING MODE.

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. 87 on line
0.3.) pressing 'P' will not cause an advance to the next
program line. This prevents you from accidentally entering
an unuseable choice.

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

Line numbers shown in braces e.g. [0.3.] indicates where
programming will continue after a selection.

When you finish programming, simply turn the power off, and back on
to return to the operate mode.

OPERATING MODE   **[Branch to]**

0.1. Operating Mode
0 = VOX Enhanced Sampling   [0.2.]
1 = VOX Controlled Sampling   [0.3.]
DEFAULT: 1 = Vox Controlled Sampling

VOX Enhanced Sampling: The sampling rate is reduced by a factor
selected on line 0.2. while the telephone party is talking. This
allows the mobile to maintain full control.

VOX Controlled Sampling: Sampling stops completely while the land
party is speaking. In fact, sampling will never be heard if the

mobile presses the mic. button immediately upon hearing the turn-around beep.

0.2. VOX Enhanced Sampling Factor
Select 1-9
DEFAULT: 3 = 3:1

The VOX enhancement ratio can be varied from 1 to 9. One is equivalent to no enhancement. Nine is maximum enhancement. Pick the enhancement ratio that slows the sample rate the desired amount while the telephone party is speaking.

0.3. Sample Width
Select 1-85 (3-255 ms)
Enter 0 for automatic set-up
3 ms increments per step
DEFAULT: 85 = 255 ms (milliseconds)

Optimum performance will occur when the sample width is made as small as your radio will tolerate. The sample width may be set manually or with the built-in automatic set-up feature.

The sample width can only be adjusted if the CS-700 is properly connected to your radio, and the noise light is illuminated.

Note: The display will flash on and off if the noise light is not working or adjusted properly. You can not proceed until the noise light is illuminated. See page 3, "P2 noise:".

Automatic Set-up: Press 0 P (zero then P). This starts the auto set-up procedure. Then press the Mic button on your mobile or portable radio. The noise light should go out. Then hold the # key on the radios' touch pad until the auto-set sample width is displayed on the digital display. Your CS-700 should now be ready to use. In rare cases it may be necessary to manually fine tune the sampling width for best results.

Manual Set-up: Check to see if the mobile can seize control. Remove the phone cord and press the front panel C/D pushbutton. The C/D LED should illuminate and the XMT LED should periodically flash off indicating sampling. The mobile is able to seize control if the XMT LED goes out when the mobile transmits.
Go back into program mode and reduce the sample width a little at a time. Each time checking to see if the mobile can still seize control. The final setting should be 10 - 20 percent higher than the point where mobile control was lost.

0.4. Sample Rate
    Select 1-9 (.25-2.25 seconds)
    .25 sec increments per step
    DEFAULT: 3 = .75 sec

    Select a sample rate to suit your preference. One sample each .75
    second is a good starting point. The sample rate in seconds is
    equal to .25 seconds times the number you enter.

OUTGOING CALLS

0.5. Line in Use Detect
    1 = Enable
    0 = Disable
    DEFAULT: 1 = Enable

    When enabled, mobiles are prevented from cutting in on calls that
    are already in progress on the same line. A special busy tone lets
    the mobile know that the line is in use. At the same time beeps let
    the telephone user know that a mobile unit would like to use the
    line. Upon hanging up, a set of beeps lets the mobile know that the
    line is now free to make a call. (Call waiting feature).

0.6. Connect Code
    0 = * Up
    x - xxxx = Multi Digit Access
    Protocol: *xxxx
    DEFAULT: 0 = * up

    Selects the phone patch access code. Enter 0 for * up operation.
    Otherwise enter a one to four digit code. To access the patch press
    * plus the selected code. For example: Enter 89 if you want the
    access code to be *89.

0.7. Secret Toll Override Code
    x - xxxx = Multi Digit Override
    Protocol: *xxxx
    DEFAULT: 1234

    A separate secret code that overrides the programmed toll
    protection. The access code (0.6.), and the secret toll override
    code cannot start with the same sequence. e.g. An access code of *2
    would not be compatible with a secret code of *2567. Select codes
    that are distinctly different. Such as access code = *56 and secret
    code = *3927.

    NOTE: The secret Toll Override Code is inoperable if * up is
    selected on 0.6. At least one additional digit must be programmed.

0.8. Disconnect Code

```
0 = # Down
1 = # Plus Connect Code
DEFAULT: 0 = # Down
```

Choose the patch disconnect code. Enter 0 to select # down in most
applications. Or enter 1 to select # plus the connect code digits
that were selected on line 0.6.

0.9. Dialing Mode

```
1 = Tone
0 = Pulse
DEFAULT: 1 = Tone
```

Choose how the CS-700 will dial your phone calls. Select tone if
you are in a touchtone telephone exchange, because dialing is much
faster. Note that the CS-700 has fully regenerated touchtone unlike
most other products available.

1.0. Access Delay

```
Select 1-9 (1-9 seconds)
1 sec increments per step
DEFAULT: 2 = 2 secs
```

Access Delay is a user selectable delay to compensate for DTMF-PTT
delay built into your mobile DTMF microphone. Select a value that
allows you to hear all of the CW ID and/or dialtone without
clipping.

1.1. Manual Dialing

```
1 = Enable                              [1.2.]
0 = Disable                             [1.7.]
DEFAULT: 1 = Enable
```

Select 'Disable' if dialing should only be allowed from the
autodialer memory.

1.2. Toll Restrict Digit Counting

```
1 = Enable
0 = Disable
DEFAULT: 0 = Disable
```

Enables/disables toll restrict digit counting. If enabled, a number
exceeding ten digits cannot be dialed.

1.3. Prefix Restrict A

```
0000 = None (display reads ' -')
x - xxxx = Multi Digit Prefix Restriction
DEFAULT: 1 = 'One' Digit Prefix Restriction (Long Distance)
```

1.4. Prefix Restrict B

```
0000 = None (display reads ' -')
x - xxxx = Multi Digit Prefix Restriction
DEFAULT: 0 = 'Zero' Digit Prefix Restriction (Operator)
```

1.5. Prefix Restrict C
    0000 = None (display reads ' -')
    x - xxxx = Multi Digit Prefix Restriction (e.g. 976)
    DEFAULT: - = None

1.6. Prefix Restrict D
    0000 = None
    x - xxxx = Multi Digit Prefix Restriction (e.g. 411)
    DEFAULT: - = None

    Lines 1.3., 1.4., 1.5., and 1.6. allow selecting any four single
    digit or multi-digit sequences as restricted. Four digits in
    sequence maximum. eg. to restrict 0 (operator), 1 (long distance),
    976 and 411 enter 0 on line 1.3., enter 1 on line 1.4., enter 976
    on line 1.5. and enter 411 on line 1.6.

1.7. Activity Timer
    0 = Defeat
    Select 10-99 (10-99 seconds)
    1 sec increments per step
    DEFAULT: 30 = 30 secs

    Enter the patch activity timer time directly in seconds or press 0
    to defeat.

1.8. Timeout Timer
    0 = Defeat
    Select 1-99 (.5-49.5 minutes)
    .5 minute increments per step
    DEFAULT: 6 = 3 minutes

    Select the maximum call limit time. The time is equal to .5 minutes
    (30 seconds) times the number you enter. Or, enter 0 to defeat.

1.9. CW ID
    1 = CW ID at connect and disconnect.
    0 = CW ID at disconnect only.
    DEFAULT: 0 = At disconnect only.

    See page 11 for details about programming the CW ID message.

2.0. Automatic Busy Signal Disconnect
    1 = Enable
    0 = Disable
    DEFAULT: 1 = Enable

2.1. Automatic Dialtone Disconnect
    1 = Enable
    0 = Disable
    DEFAULT: 1 = Enable

    See page 16 for details about auto-busy/dialtone disconnect.

2.2. **Aux. Relay**
        0 = Connect   [2.4.]
        1 = Key   [2.4.]
        2 = Remote Function   [2.3.]
        DEFAULT: 0 = Connect

        0. In connect mode, the relay is on whenever the patch is in
           connect.
        1. In key mode, the relay is on whenever the PTT is activated.
        2. Remote Function provides a remotely controllable contact
           closure/opening which can be used for any purpose.

           NOTE: Option 701 (Aux. Relay) is required for the above.

2.3. **Remote Function Access Code**
        Enter any three digits; xxx
        DEFAULT: 789
        Protocol: #xxx relay ON
                   ##xxx relay OFF

        Sets the control code for the Aux. Relay Remote Function. Enter any
        three digits. To turn on the relay press #xxx. To turn off the
        relay press ##xxx. (If you entered 2 on line 2.2.) Note: Do not
        operate the remote function while in connect. The # will cause a
        disconnect.

INCOMING CALLS

2.4. **Busy Channel Monitor**
        1 = Enable
        0 = Disable
        DEFAULT: 0 = Disable

        Determines whether the CS-700 will ringout or auto-answer if the
        channel is busy (Enter 0). Or only when the channel is clear (Enter
        1).

2.5. **Ringout on Ring Number**
        0 = Disable   [2.8.]
        Select 1-9 (1-9 ring)   [2.6.]
        DEFAULT: 1 = First Ring

        Selects which incoming ring starts the ringout alert. Enter 1-9 or
        enter 0 to disable ringout.

2.6. **Ringout Alert**
        1 = CW ID
        0 = Ring Tone
        DEFAULT: 0 = Ring Tone

        Select whether the ringout alert will be CW ID or ringtone.
        Whichever you choose this lets you know that there is an incoming
        call for you.

2.7. Ringout Once or on Alternate Rings

```
1 = Once
0 = Alternate
DEFAULT: 1 = Once
```

Only a single ringout alert is allowed in most business radio applications.

2.8. Turnaround Beeps

```
1 = Enable                          [A.A.]
0 = Disable                         [A.A.]
DEFAULT: 1 = Enable
```

Turnaround beeps (also known as courtesy beeps), keep your conversation moving back and forth without confusion by letting each party know when it is their turn to speak. If you prefer, enter 0 to disable turnaround beeps.

MODE AND PARAMETER PROGRAMMING IS NOW COMPLETE.

PROGRAMMING THE CW ID
(Programming area No. 2)

To enter the CW ID programming mode, press and hold button No. 2 on the internal keypad and then simultaneously turn on the power switch. At this point, the display will read 0.2. When you release the No. 2 button, you will see **A.A.**

A.A. (GOTO Any Address)
Press 'P' to start at character position 0.1., or enter the character position number you wish to go to and then press 'P'.

Viewing or Changing Character Codes
A quick tap on 'C' will reveal (for a moment) the currently selected character code for the displayed character position. If the character code is acceptable, press 'P' to advance to the next character position, or, enter a new character code and press 'P' to advance to the next character position.

Character Code Range Checking
If a number greater than 38 is entered, pressing 'P' will not cause an advance to the next character position. This prevents you from accidentally entering an unuseable choice.

Returning to A.A.
If desired, you can return to a previously programmed character position by holding down 'C' for several seconds. This will return you to A.A. Now enter the character position (line number) you wish to return to and press 'P'.

PROGRAMMING THE CALLSIGN

The CW ID message (usually the station callsign) sent from the CS-700 may consist of up to 15 characters. To program the message, enter the desired character codes (from Table 1) starting at character position **0.1.** through the length of the string. If the message is less than 15 characters, it must be terminated with code 38 (Message End). For example, to program the CW ID message 'CSI':

    0) Enter CW ID Programming Mode as explained above
       (Hold down key No. 2 and switch on the power)
    1) From the **A.A.** line hit 'P'
    2) From **0.1.** enter: ' 2 P' for the character "C"
    3) From **0.2.** enter: '18 P' for the character "S"
    4) From **0.3.** enter: ' 8 P' for the character "I"
    5) From **0.4.** enter: '38 P' to end the message.
    6) Turn off the power and then back on to return to operate mode
       with the newly programmed CW ID message.

```
|-------------------------------------------------------------------|
|TABLE 1            CW ID CHARACTER CODES                           |
|-------------------------------------------------------------------|
|                                                                   |
|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                            |
|-------------------------------------------------------------------|
|e.g.  CW ID message desired 'CSI' enter: 2, 18, 8, 38 (see text)  |
|-------------------------------------------------------------------|
```

TABLE 1
CW ID CHARACTER CODES

AUTODIAL PHONE NUMBER PROGRAMMING
    (Programming area No. 3)

To enter the autodial phone number programming mode, press and hold button No. 3 on the internal keypad and then simultaneously turn on the power switch. At this point, the display will read 0.3. When you release the No. 3 button, you will see A.A.

A.A. (GOTO Any Address)
    Press 'P' to start at autodial location 0.1., or enter the autodial location you wish to go to and then press 'P'.

Viewing or Changing Phone Numbers

A quick tap on 'C' will reveal the currently selected phone number for the displayed autodial location. The phone number is displayed digit by digit until all digits in the number have been shown. If the phone number is acceptable, press 'P' to advance to the next location, or, enter a new phone number and press 'P' to advance to the next location.

NOTE: If there is no number at the current location, pressing 'C' will flash the current location number once instead of showing a phone number.

Programming *, Pause or

The No. 1, 2 and 3 keys on the keypad are used as dual input keys. To program a phone number which contains any of these digits, briefly press the key and continue with the number, as you would with any other digit. To program a *, press the No. 1 key until a single bar '| ' is added to the display (approx. 3 seconds) then release the key. To program a pause, press the No. 2 key until a dash ' -' is added to the display. To program a #, hold down the No. 3 key until a double bar '||' is added to the display.

NOTES: 1. A single bar '| ' will look like the digit one ' |', except that the single bar is shifted to the left a little.

2. Autodial memory locations can be overwritten with new phone numbers, or cleared by entering three zeros (000P).

3. A maximum of 16 digits may be entered in autodial locations 1 through 9.

Returning to A.A.

If desired, you can return to a previously programmed auto-dial location by holding down 'C' for several seconds until A.A. shows on the display. Now enter the autodial location you wish to return to and press 'P'.

Returning to Operate

To return to normal operation, switch off the power and then back on. You can now use your newly programmed autodial numbers!

NOTE: The DTMF digits * and # are shown on the internal display as a '| ' and '||' respectively (same as 'p' and 'c'on the internal keypad). This is because the displays used can not display the * and # symbols.

PLACING OUTGOING CALLS

DIALING A CALL MANUALLY: From the mobile press *, then enter the access code (if any) that was selected on line 0.6. or, enter the secret toll override access code that was set on line 0.7. If the access delay on line 1.0. is properly set, you will hear dialtone or CW ID start without clipping or delay. Wait until the dialtone drops off before you start to dial.

After dialing, the next thing heard will either be ringing or a busy signal. The CS-700 will automatically disconnect if the number that was called is busy. (2.0. 2.1.).

LINE IN USE DETECTION: If line in use detection has been enabled, (0.5.), the CS-700 checks to see if the line is in use when a mobile attempts access. If the line is free the mobile will hear dialtone and he can proceed with his call. If the line was in use, the CS-700 will send a special busy signal to the mobile and revert to the stand-by condition. At the same time, Call Waiting beeps let those using the line know that a mobile unit would like to use the line. When the telephone users hang-up, beeps let the mobile know that the line is now free to use.

The mobile can cut-in on the call if desired by using the secret toll override code (0.7.) <u>after</u> hearing the line in use busy signal. A three way conversation can now take place.

PROGRAMMING THE AUTODIALER FROM THE MOBILE: Writing a phone number into the autodialer memory from the mobile is accomplished with a slight variation on ordinary manual dialing. Before you enter your access code, send 9 followed by the desired memory location number. e.g. You wish to place a call to 277-1463 and simultaneously add the number to autodial memory location 6. From the mobile, enter 9 6 then the access code. When the dialtone is heard, dial 277-1463 just as you would in ordinary manual dialing. You will never have to manually dial 277-1463 again!

  Note: The 9 as used above means **WRITE** the phone number that is to be dialed into the memory location specified immediately following the 9.

You can program a *, pause or # as part of an autodial sequence if desired. The digits 1,2 and 3 are interpreted as *, pause and # if held down for 4-5 seconds during the dialing process. For example: you wish to program; 8 pause 472-8197 into memory location No. 3. Enter in order; 9 3 then your access code. Then after dialtone enter 8, long 2, 472-8197. The number you have dialed is now properly loaded into memory

location No. 3. However the long 2 will cause a misdial of the immediate call. When a *, pause or # has been used, do not let the call go through. Send the disconnect command after the number has been dialed and call back using the autodialer. The call will now dial properly.

PLACING A CALL WITH THE AUTODIALER: Once a phone number has been stored, calling back is a snap! Simply preceed the access code with the appropriate memory location number. Soon, your intended number will be ringing. Example: Your access code has been set as * only. You wish to call a friend whose phone number has been previously stored in location 6. Simply enter 6 * on your mobile keypad. Another example: Your access code is *391, and you wish to autodial the number in memory location No. 7. Enter 7*391, thats all there is to it!

   NOTE: If you attempt to autodial from a memory location that has not been previously loaded, the CS-700 will send an error message consisting of a string of beeps, and then return to the stand-by condition.

LAST NUMBER REDIAL: The last phone number called is always automatically stored at autodial memory location NO. 0. To redial the last number called, simply preceed the access code (0.6.) with 0. Similar to using the autodialer. e.g. 0*, 0*391 etc.

HOOK FLASH: The CS-700 has built-in hook flash logic to operate certain phone company provided features such as call waiting. To flash, simply press * three times (***).

   Note: Using hook flash can cause a disconnect on some phone lines.

ACTIVITY TIMER: The activity timer measures how long its been since the last mobile transmission. If the time set on line 1.7. is exceeded, the CS-700 will disconnect. A short warning is emmited once per sample during the final 10 seconds. Pressing the Mic. button will reset the activity timer.

   Note: Normal speed sampling will occur during the final 10 seconds to facilitate mobile reset if desired.

TIMEOUT TIMER: Calls will automatically disconnect at the end of the time you selected on line 1.8. Two quick beeps heard during each sample cycle in the final 30 seconds warn that timeout is imminent.

   Note: Normal speed sampling will resume during the final 30 seconds to facilitate mobile reset if desired. To reset the activity timer, the mobile simply presses the mic. button and sends *.

DISCONNECTING WHEN THROUGH: If a "0" was entered on line 0.8. simply press # to disconnect. If a "1" was entered, press # plus the connect digits that were selected on line 0.6.

RECEIVING INCOMING CALLS

RINGOUT: Lines 2.4. through 2.7. allow you to customize ringout for your application. Ringout is how the CS-700 alerts you to the presence of an incoming call.

When a call comes in, the CS-700 first checks to see if the channel is in use (2.4.). The incoming rings are counted (2.5.) before a mobile alert is sent. The alert can consist of CW ID, or a ring tone (2.6.). The type of alert selected can be set to occur only once or on alternate rings (2.7.) of the incoming call.

To answer your call from the mobile, simply enter your access code (0.6.). When you complete your call, send the disconnect code (0.8.).

CALL PROGRESS TONE DETECTION

The CS-700 incorporates very sophisticated software algorithms that automatically sense the presence of dialtone and/or busy signals. The method used will function with any tone frequencies. There is nothing to adjust or maintain, it's completely automatic!

Busy signal disconnect will automatically cause a disconnect if the number you call is busy. Thus relieving the mobile of pressing # to disconnect.

Dialtone disconnect is useful on exchanges that automatically return to dialtone when your called party hangs up. Again, relieving the mobile of pressing # to disconnect.

Programming lines 2.0. and 2.1. give the user independent control of disconnecting automatically on busy signals and dialtone.

Disabling tone squelch: Many of the new microprocessor controlled radios will not transmit when the microphone is on hook. The auxiliary relay can be used to fool the radio into thinking the MIC is off-hook.

Enter 0 (Connect) on line 2.2. This will energize the relay whenever the CS-700 is in use. Connect the normally closed contacts (W and NC) in series with the radios' hook switch.

Key System Compatability: In order to simulate a keyset phone, the A Leads (black and yellow) must be shorted whenever the CS-700 is in use (connected).

Enter 0 (Connect) on line 2.2. Connect the two "KEYSYS" pads (adjacent to the modular phone jack) to NO and W respectively.

Relay Switched PTT: If the radios'unkeyed PTT voltage exceeds 16 VDC or if inverted keying is required (closure to 12V) the auxiliary relay must be used to key the transmitter.

Enter 1 (KEY) on line 2.2. Connect the radios' PTT line to Aux. relay W. For sink to ground keying connect N.O. to GND. For pull to 12 VDC keying connect N.O. to 12 VDC.

Remote Relay Function: In some installations it may be desireable to remotely control (switch) something from the mobile. e.g. change channels, change antennas etc.

Enter 2 (REMOTE FUNCTION) on line 2.2. Then select a three digit control code on line 2.3. If the code selected was 789, you would turn on the Remote Relay by sending #789. To turn off the relay send ##789.

Connect the device requiring remote control to the AUX. RELAY W and N.O. or N.C. as required.

Installation: Insert the relay (Potter Brumfield part No. JWD 107-3 or equivalent) into the empty IC socket labelled 'Aux. Relay'. Be sure to orient the cutout end toward the key board. The relay contacts are available on the rear panel barrier terminal block.

How to order: Send check, bank check or money order for $7.00 ($9.00 if outside the U.S.A.) made payable to Connect Systems Inc. Please remit to the address shown on the front cover of this manual. Specify part No. 701. Your relay will be shipped postpaid.

TELEPHONE COUPLER
(Option 702 - no longer available)

U.S.A. customers wishing to make direct connection to the public switched telephone system must use an FCC approved telephone coupler. A coupler is not required on private phone systems.

You can either use your own coupler, or the popular Morey coupler.

When requesting a line, the following information must be given the phone company: FCC registration: AB3985-62455-PC-E
Ringer equivalence No. 0.4A, 1.0B

You must notify the phone company when discontinuing use. Also, connection to coin or party lines is prohibited.

Installation: Remove the CS-700 PC board and solder the six position terminal block to the PC board. Connect the six leads per illustration below.

If your interconnect uses the Morey coupler, do not plug anything into the rear panel modular phone jack. Use the phone cord which exits from the coupler.

LIMITED WARRANTY

We guarantee the Model CS-700 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 CS-700 are mounted in sockets. We reserve the right to not cover these parts under warranty if failure is traceable to removal/re-insertion.

The PTT transistor (Q19) is not covered under warranty. Failure can only be caused by incorrect connection of the PTT output to the radio. Usually to a hard voltage such as 12 VDC.

The quality of components used in the CS-700 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 act of GOD.

The CS-700 utilizes two metal oxide varistors connected from phone line to ground. These "MOV's" should protect the CS-700 from all but the most severe lightning strikes. However, we reserve the right to not repair a unit which in our opinion is too extensively damaged. Further the warranty of a unit which has been hit by lightning is terminated. This is because of latent damage which can surface at a future date.

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

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

Model CS-700

Connect Systems Inc.