MODEL 810 DTMF

PROGRAMMABLE MICROPHONE

USER MANUAL
MAN53

For Version 1.4

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Option List

Available	Unavailable	
_____	_____	Manual Dialing
_____	_____	Store & Send Dialing
_____	_____	Auto Dialing (Includes Last Number Redial)
_____	_____	Fixed Memory
_____	_____	Programmable Memory
_____	_____	Lock Code

1.0 INTRODUCTION

CES Wireless Technologies, Inc. wishes to thank you for purchasing the model 810 programmable DTMF microphone. Featuring rugged high impact plastic case and a silicone rubber gasket to seal out moisture and dust. The full featured 810 microphone can withstand harsh environmental condition. The microphone's unique shape and increased weight enhances the grip. The enlarged cord diameter and jacket material provides additional strain relief and durability. The model 810 is designed to MIL-STD-810 specifications for environmental testing procedures.

Functionally the 810 extends an unprecedented array of features. Three special keys allow easy access between four different modes of dialing. All timings associated with dialing are fully programmable. Several features are included to support trunked systems. Twenty memory locations are provided for frequently dialed phone numbers and two dedicated memory locations for ANI codes. There is an optional courtesy beet, programmable stuck PTT switch timeout feature, and microphone lock mode that allows you to secure the transmitter against unauthorized use when left unattended.

We are confident you will benefit from the extensive design and engineering that has gone into the 810 and we look forward to serving you again in the future.

2.0 OPERATION

2.1 Overview

Aside from the mechanical and electrical engineering that went into the 810 microphone CES called on its extensive knowledge to design simplicity into the operation of the microphone. By using the memory capability of the 810 microphones, you are able to direct your attention to driving rather than dialing numbers.

This manual covers all features of the 810 microphone. Some of the features are optional and may or may not be implemented. For a complete list of available options refer to the option list on the bottom of page 2.

The 810 microphone is used much like other microphones during normal communication. That is, the PTT (push to talk) switch on the side of the microphone must be held in while you are speaking into the microphone. While the PTT switch is held in, the red led at the top right of the microphone will be lit. When you finish speaking, release the PTT switch to listen. This is called *"keying"* and *"unkeying"* the radio.

The radio in your car is capable of transmitting and receiving, but not at the same time. Keying and unkeying the radio, switches between transmitting and receiving. While you are transmitting, the receiver is muted and nothing will be heard from the speaker of the radio. For this reason, it is important to synchronize the keying of the radio with your speech. With just a little practice you'll learn to key the radio just before you begin to speak, and unkey right after you finish speaking.

While speaking into the microphone, hold it about six inches from your mouth and speak into the top area.

2.2 Use of the microphone

The 810 has twenty general memory locations that may be used to store a sequence of numbers just as they would be manually dialed. These numbers could be often dialed phone numbers, calling card numbers, account numbers or any sequence you would rather not have to dial manually.

The 810 also has one temporary memory location called the buffer. The microphone makes use of the buffer to store numbers as they are entered from the keypad until some determination is made as to what to do with them. Information in the butter is not lost when power is removed, but again, this is for the microphone's use and should not be relied on for permanent memory.

Two other locations hold Automatic Number Identification (ANI) codes. These are usually set to hold the access codes to the communications system being used. These are set by the system owner/ operator and cannot be changed by the user.

The model 810 provides four basic dialing techniques for signaling or placing a call. These dialing techniques are optional and may or may not be implemented.

The four modes are called:

- Manual dialing
- Store and Send dialing
- Auto Dialing
- Last Number redial

The dialing mode used is determined by the particular use of one or more of the three dialing enhancement keys STOre. ReCaLI, and SeND

A detailed description of each mode will follow later, but in general, the use of these three keys are summarized as follows:

> Except for the manual dialing, the different modes use memory features of the microphone to do the dialing for you. The memory dialing modes are initiated by pressing the STOre, or ReCaLI key.

Pressing the STOre key instructs the 810 to accumulate and store all the numbers, which follow into the temporary buffer. Once in the buffer, these numbers may be stored in one of the twenty permanent memory locations, sent out immediately or both stored, then sent.

The ReCaLl key instructs the 810 to recall a sequence of previously saved numbers to be automatically dialed. The number sequence to be sent can come from one of the twenty memory locations, one of the two ANI locations or from the temporary buffer.

The SeND key initiates the actual keying of the radio and produces the DTMF tones to be transmitted. The tones sent are retrieved from one of the twenty memory locations if the ReCaLl key was used to start the dialing, or the temporary buffer if STOre was used to start the dialing procedure.

2.2.1 Manual Dialing

You may manually dial any of the twelve standard DTMF tones simply by pressing the corresponding key. Note that it is not necessary to hold the PTT switch in while dialing. The transmitter will be keyed automatically as you manually dial a number.

The twelve standard DTMF tones make up the three existing columns on the keypad. Your microphone has the ability to manually dial the fourth column DTMF tones (referred as "A", "B", "C", and "D" tones although the fourth column is not represented on the keypad. To do this you must first enter the "RCL" key. Then, enter the two-digit code signifying which fourth column tone you would like. Continue pressing the second key of the code as you would any normal single DTMF key in order to maintain the fourth column tone output.

The key sequence used to achieve fourth column tones are as follows:

FOURTH COLUMN TONE	KEY SEQUENCE
"A" Tone	RCL 22
"B" Tone	RCL 55
"C" Tone	RCL 88
"D" Tone	RCL 00

It may assist you to remember that these codes are positioned vertically on the center column of the keypad.

2.2.2 Store & Send Dialing

Store & Send mode cause the 810 to accumulate the digits you enter from the keypad into the buffer memory. Start a Store & Send call by pressing the STO button first to indicate to the microphone that it should collect the numbers but not send them yet. When the number is complete, press the "SND" key to send the stored buffer information. The entire sequence of digits you have entered is then transmitted in one continuous string. This feature is convenient because it allows you to take long pauses between digits without causing a misdial.

Special function codes may also be included in the stored sequence. See section 3.6 for a detailed discussion on the special function codes.

Example: STO <xxx..x> SND

Where <xxx..x> may be up to 21 standard DTMF digits or standard DTMF digits intermixed with special function codes.

2.2.3 Auto Dialing

The model 810 provides twenty general use memory locations to store frequently dialed numbers, to help dialing the number with minimum distraction. The twenty locations are addressed by the numbers 01 through 20. Note that for locations numbers less than 10, a leading 0 must be used as a place of marker.

To send a number stored in one of the memory locations, press the RCL (recall) button followed by the two digit number corresponding to the desired memory location. The microphone will key the transmitter and send the information stored in that location. Along with the numbers to be sent as described in the Store & Send dialing above, several special functions codes may be imbedded in the memory. See section 2.3 for a detailed discussion on special function codes.

If attempting to recall an empty memory location, the 810 will respond with an ERROR message (two beeps). The ERROR message will not be heard if the sidetones are disabled.

EXAMPLE: RCL <XX>

Where "XX is a two digit number between 01 and 20.

2.2.4 Programming the Auto Dial Memory Locations

Your microphone may not have the ability to change Auto Dial memory locations. This is the case if 'Auto Dial (fixed)' is checked on the OPTION LIST on the index page. To program the content of one of the twenty general-purpose memory locations follow these four easy steps.

1. Press the STO button to start accumulating the keystrokes.
2. Enter the digits and special function codes exactly as they would be manually dialed. During this process, the microphone will not key the radio.
3. Assign a two-digit address location.

Note: No distinction is made between the dialed numbers and the location numbers. The location numbers are simply the last two digits entered before the second "STO".

4. Terminate the process by pressing the STO button again.

The 810 will generate a triple beep to indicate the memory location has been successfully reprogrammed.

If you make a mistake end the process by pressing the "RCL" key twice. This will cause and error an the 810 will abort the process and reset itself. You may also end the process with the STO key and restart it again.

Caution! If the last two digits entered prior to pressing the STO key is a valid memory location, the 810 will treat this number as a good entry. You can force an error by entering an invalid location number, such as 88, before pressing the STO key.

The information stored may be up to 21 digits in length however; imbedded special function codes will occupy one memory location each and reduce the amount of digits capable of being stored.

EXAMPLE: *STO <xxx...xyy> STO*

Where <xxx...x> represents numbers and embedded function codes you wish to store.
<yy> represents the memory location you wish to store it into.

<xxx.x> may be up to 21 digits and may include special function codes. <yy> is the two digit number between 01 and 20.

Note: that no distinction is made between the dialed numbers and the location numbers. The location numbers are simply the last two digits entered before the second "STO"

To erase the contents of one of the 20 general purpose memory locations perform the following key sequence:

Example: STO <yy> STO

Where <yy> represents the memory location you wish to erase. This must be a two digit number between 01 and 20.

The 810 will generate a triple beep to indicate the memory location has been successfully erased.

2.2.5 Dialing the Up and Down ANI Codes

To auto dial either the up or down ANI code in one of the two dedicated memory locations perform the following key sequences.

RCL * To dial up ANI code (access or connect code).
RCL # To dial down ANI code (disconnect code)

Upon entering the asterisk (*) or pound (#) key, the information in the memory location will be transmitted in the same manner as the digits using Auto Dial mode.

2.2.6 Last Number Redial

The model 810 is equipped with a last number redial feature. It is designed only to redial numbers which were sent using Store & Send or Manual dialing. In short, this is the information stored in the temporary buffer. You may use this to your advantage when having to intermix ANI codes with phone numbers. If you dial ANI codes using only Auto Dialing, these codes will not corrupt the phone numbers retained by the last number redial function. Your phone number can then be conveniently reaccessed as many times as required to establish the connection.

To redial the last number dialed perform the following key sequence.

RCL SND

Upon entering the SeND key the last number dialed will be resent.

2.3 Special Function Codes

The 810 provides special functions which can be used to augment dialing. These special functions allows you to produce fourth column tones, change the dialing rate, perform pauses while dialing , and insert your ANI codes into programmed memory location. They are used by entering the function code, along with DTMF digits as they are stored in memory.

You may enter these codes during Store & Send dialing, programming of the twenty general purpose memory locations, and programming the two dedicated ANI memory locations in setup mode. The special function codes, which produce fourth column tones, may also be entered while manually dialing.

Each time a function code is used, it will take up one memory space. Thus, if three function codes are used in one of the twenty general memory locations, only eighteen spaces remain for the numbers to fill the 21 spaces available.

Codes used to perform special 810 functions are as follows.

Special functions

'A'	Tone	RCL	22
'B'	Tone	RCL	55
'C'	Tone	RCL	88
'D'	Tone	RCL	00

PAUSE TILL PTT:	RCL	70
PAUSE 1 SECOND:	RCL	71
PAUSE 2 SECONDS:	RCL	72
PAUSE 3 SECONDS:	RCL	73

UNKEY DURING PAUSES:	RCL	90
KEY DURING PAUSES:	RCL	91
INCREASE DIALING SPEED x 2	RCL	42
LOWER DIALING x 2	RCL	52
INCREASE DIALING x 4	RCL	44
LOWER DIALING SPEED x 4	RCL	54
INCREASE DIALING SPEED X 8	RCL	48
LOWER DIALING SPEED X8	RCL	58

INSERT UP ANI CODE	RCL	*
INSERT DOWN ANI CODE	RCL	#

Fourth Column Tones

The fourth column tones are generally referred as "A", "B", "C", and "D" tones. These tones are not usually used by customers of a telephone system, but in radio communication they may be used for several special purposes.

These tones may be manually dialed or imbedded in a string of numbers stored in memory by using the RCL key followed by the two digit code corresponding to the desired tone.

The key sequences used to achieve fourth column tones are as follows.

FOURTH COLUMN TONE	KEY SEQUENCE
'A' Tone	RCL 22
'B' Tone	RCL 55
'C' Tone	RCL 88
'D' Tone	RCL 00

Pauses

A pause in sending the tones is used in cases where time may be a factor for allowing equipment to switch. In the case of an interconnected call, the user may need to wait for access to the system prior to sending the phone number.

To enter a pause in memory, press the RCL key, followed by key 7 followed by 0, 1, 2, or 3 key depending on the type of pause desired. Key 7 is used because it has a "P" for pause on it.

For 1, 2, or 3 seconds, these are timed pauses and the tones will continue after the time has elapsed. The PAUSE TILL PTT function will cause the microphone to stop sending tones till the PTT switch is briefly pressed or the SeND key is pressed.

At the time of the pause, you may elect to abort the call by holding the PTT key continuously for at least 3 seconds. You know the call has aborted once the red PTT light illuminates.

In the case of an interconnect call, you may want to abort the call and disconnect the interconnect. Pressing the # key or RCL # will send either # tone or the programmed DOWN ANI code just as they would during normal operation.

Dialing Speeds

The 810 microphone sends tones out at the rate of one to twenty digits per second. This "base" rate is set by the installer. Use the INCREASE and LOWER dialing speed to change the base dialing rate by a factor of 2, 4, or 8.

Increase dialing speed x 2	RCL	42
Lower Dialing Speed x 2	RCL	52
Increase dialing speed x 4	RCL	44
Lower dialing speed x 4	RCL	54
Increase dialing speed x 8	RCL	48
Lower dialing speed x 8	RCL	58

INSERT ANI

The INSERT ANI codes are used to include the up or down ANI sequence with the data stored in a general purpose memory location, or a STOre & SeND dialing sequence. This function causes a PAUSE TILL PTT to occur automatically after the ANI code is sent. The user must therefore press the PTT key or the SeND key to resume dialing when using this function. If an ANI has not been programmed with 07# or 08#, nothing will be sent, but the 810 will still pause until it is keyed.

To insert the up ANI code	RCL	*
To insert the down ANI code	RCL	#

2. 4 Lock mode

The 810 will allow you to lock the microphone keypad to prevent unauthorized use. Find your Lock Code in the OPTIONS LIST on the index page.

To lock the 810 dial the lock code from the microphone keypad. The microphone will generate a short beep and will no longer respond to keypad input except to unlock it. To unlock the microphone, re-enter the same code again.

If you lock the microphone and forget your lock code, the installer or system operator can either provide you, the lock code, or, will change the code.

2. 5 Stuck PTT Timer

The 810 may be equipped with an optional stuck PTT timeout feature. If this feature is enabled, an alarm will sound if the PTT switch is detected to be continuously on for too long.

3. 0 Glossary

ANI	(Automatic Number identification). Identity number assigned to each user for selective signaling and access.
DTMF	(Dual Tone Multi-Frequency). Tones produced by the microphone for signaling, identifying or dialing.
INTERCONNECT	Equipment that passes audio between a radio system and the public phone system. It usually has the ability to control the radio equipment and type of calls made.
PTT	(Push To Talk). The switch on the microphone used to switch the radio between transmit and receive.

CES Wireless Technologies Corp Limited Warranty

CES Wireless Technologies Corp. Warrants its products to be free of defects in material and workmanship and extends this warranty under intended use and normal service conditions to be the original owner for the period on one year from the date of purchase.

This warranty does not apply to any product that has been repaired or altered in any manner and is void for any damage due to accident, neglect, unreasonable use, improper installation or any other cause not arising out of defects in material or workmanship.

The obligations of Ces Wireless Technologies Corp. are limited to repairing or replacing, at its option, any product of part that is returned to the factory all transportation charges prepaid, accompanied by proof of purchase and which examination reveals to have been defective within the warranty period stated above. CES Wireless Technologies Corp. does not assume, nor is any person authorized to assume for it, any obligation other than herein stated.

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