

# Pipo<sup>®</sup> Communications

- ANI
- MEMORY DIAL
- STORE & SEND



***HIGH-SPEED SIGNALLING*** ————— ***DTMF***

**HIGH SPEED  
SIGNALLING**

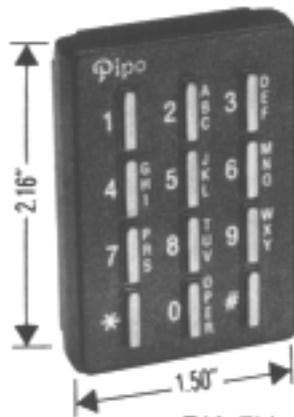
**> DTMF >**

- ANI
- MEMORY DIAL
- STORE & SEND

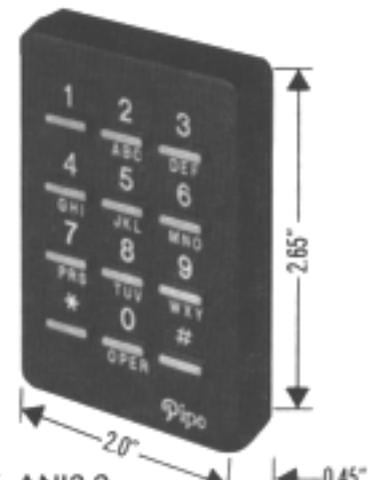
**STEEL KEYS  
SEALED GOLD CONTACTS**

An ultra high quality DTMF Encoder  
for absolute reliability and function.

- Software-Driven and Keyboard Programmable
- 25 Memories • High Capacity, 30 Digits per Location
- Non-Volatile Memory • Auto Test & PTT Disable
- 5-10-20 DPS, Pure Signalling—No "Pops"
- Speed Adj • Pause Adj • Digit Expand • Wait/Send
- Wide Operating Range: -22 +160°F / 6-26 VDC
- Tech Level Programming • Self-Contained Side Tone



PK-7V, ANI3.2  
PK-7H Horiz. Model



PK-1K, ANI3.2  
W/Relay

Over the past 17 years we've frequently found ways to improve our DTMF encoders — we're not sure how we'll ever top this one.

The new PIPO ANI Version 3.2 DTMF Encoder is based on an internal microprocessor programmed to generate the most precise, cleanest, transient-free (see the picture) DTMF signals . . . ever! Unlike tone chip encoders, Ver 3.2 has no switching delays, settling time, level shifts, transients or decay characteristics — just a precise sequence of crisp, low-distortion digits at 5, 10 or 20 DPS. Eliminating burps and pops really enhances the decoder's performance, particularly at high speeds.

Miniaturization is achieved with surface-mount components throughout the entire manufacturing process.

The Ver 3.2 encoder features 25 non-volatile, "user programmable" memories. Each will store sequences of up to 30 digits including speed adjustments, pauses, digit expanding, memory connect, PTT delays and drops all programmable from the keyboard. A built-in side tone confirms keystrokes and memory inputs.

Two fully programmable ANI memories are standard. "Tech Level" programming (also accessed from the keyboard) provides full control of timing parameters and the ANI. Memories can be cloned.

The keyboard is the usual High Quality, Gold contact PIPO product the industry has relied on for 17 years.

**ANI 3.2: SOFTWARE-DRIVEN,  
KEYBOARD PROGRAMMABLE**

- (★) & (#) ANI—30 DIGITS MAX
- MEMORY DIAL—25 PLACES, 30 DIGITS EACH
- LNR . . . LAST NUMBER REDIAL, 30 DIGITS
- AKS . . . ANY KEY STOP
- EXTERNAL INPUTS/OUTPUTS
- VERSION ID
- PTT DISABLE
- MANUAL STORE & SEND / AUTO STORE & SEND
- SPEED ADJUST
- PAUSE ADJUST
- DIGIT EXPAND
- MEMORY CONNECT
- LONG PAUSE ADJUST
- WAIT STATE
- 16 KEY OUTPUT FROM 12 KEY
- SINGLE TONE & 1Khz TEST TONE

**TECH-LEVEL PROGRAMMING . . .**

- TWIST ADJUST
- AUDIO OUTPUT DELAY
- KEYBOARD DTMF OUTPUT TIMED, ∞, 200ms & 500ms
- PTT AUDIO OUTPUT DELAY ADJUST
- PTT KEY HOLD DELAY ADJUST
- LNR SPEED ADJUST
- PAUSE DELAY ADJUST
- TONE & DTMF TEST
- ENABLE / DISABLE KEYBOARD FUNCTIONS
- MEMORY CLONING
- DEFAULT RESET / ERASE

. . . AND MORE . . . . .

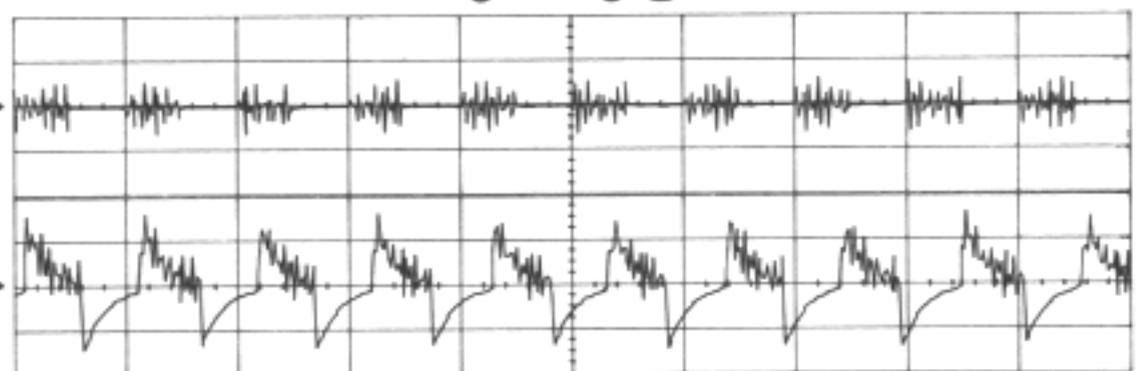
**DTMF Signalling @ 20 DPS**

**PIPO Ver 3.2 Signalling**

100 MV/DIV

**Tone IC Signalling**

(. . . switching, delays, settling time,  
level shifts, transients . . . . .)



50 MS/DIV

Mail  
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To:

**Pipo® Communications**

*Emphasis is on Quality & Reliability*

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1516 CASSIL PLACE  
HOLLYWOOD-CALIFORNIA 90028-7106  
323-466-5444

## PIPO COMMUNICATIONS DTMF ENCODER WITH MEMORY & ANI

### STEEL KEY MODELS

(with PTT relay)

PK-1K,ANI32  
 PK-2K,ANI32  
 PK-5VK,ANI32

### MINIATURE STEEL KEY MODELS

(with PTT transistor)

PK-7V,ANI32  
 PK-7H,ANI32  
 PK-8V,ANI32

### VERSION 3.2 SPECIFICATIONS

#### SPECIFICATIONS:

POWER & CURRENT .....	6-26 VDC, 8 to 14 ma max; w/relay, 8 to 25 ma; w/light, & w/relay 110 to 140 ma
TEMPERATURE .....	-22° to 160°+F
ANI .....	Programmable in two keypad locations, ★ and #, up to 30 digits each
MEMORY .....	25 Locations, up to 30 digits each
AUDIO OUTPUT .....	Adjustable -2DB max @ 600 ohms
DISTORTION .....	Less than 3.5%
HIGH SPEED SIGNALLING .....	5 dps (100/100ms), 10 dps (50/50ms), 20 dps (25/25ms)
RELAY CONTACT .....	SPST 3 watts (110 ma @ 28 VDC resistive)
TRANSISTOR OUTPUT .....	For PTT & AUDIO MUTE 100 ma @ 12 VDC
KEYBOARD DEBOUNCE .....	25ms
PCB-INPUT PAD DEBOUNCE . . .	50ms

#### INPUTS/OUTPUTS:

There are 6 Solder Pads on the PCB:  
 ★ Sends ★ ANI. Activated by low input (gnd), 50 ms minimum. Also for Cloning RECEIVE; tlp 97.  
 # Sends # ANI. Activated by low input (gnd), 50 ms minimum.  
 ★ and # ANI both have a 400 ms PTT SEND DELAY ..... (DEFAULT)  
 Adjustable from tlp; 17.  
 W Resumes sending after a WAIT command. Activated by low input (gnd).  
 D Disables keyboard. CAUTION Activated by low input (gnd) 1 second minimum. Manual reset  
 by a special code . . . reset from tlp; 950000. ★ and # ANI on PCB not disabled.  
 X Xmtr PTT, collector output goes low 100 ma max. Not available with relay models, (K-Series),  
 e.g., PP-1K & PK-1K.  
 M External audio mute, collector output goes low. Also for Cloning SEND; tlp 96.

## K-SERIES

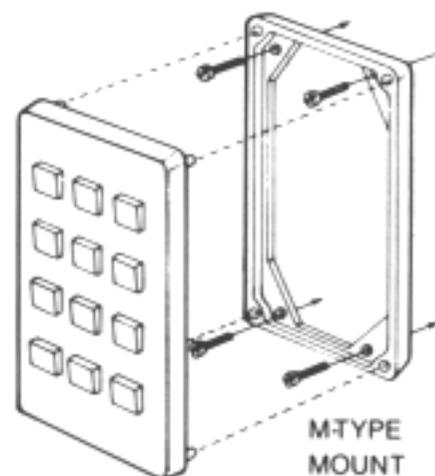
All PIPO Encoders with the K-Series option feature PTT, a built-in keying circuit to automatically key a transmitter or other system. The keying circuit uses a heavy duty SPST relay. The relay contacts close when any KEY, MEMORY or ANI is activated. Delay is adjusted via the "tlp", number 17 & 18.

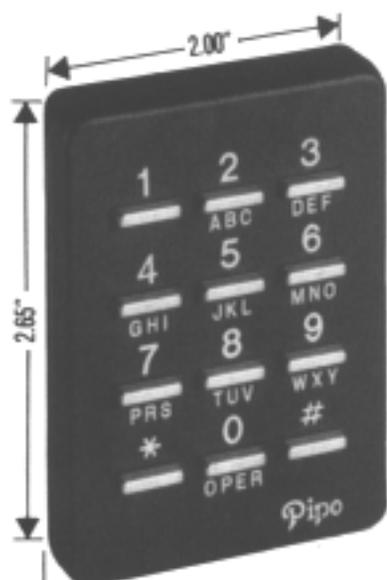
The K-Series option is available for the following Encoders: PK-1K, PK-2K, PK-5VK

## M-SERIES

The M-Series option is a special encoder package for mounting any PK-1K, PK-2K PIPO encoder to surfaces that are inaccessible from the rear, such as walls, mobiles, dashboards, panels, systems interface, test equipment, etc. The M-Series consists of a detached frame which is secured to the mounting surface. The encoder body is then press-fit into the frame.

When ORDERING specify "M-SERIES".

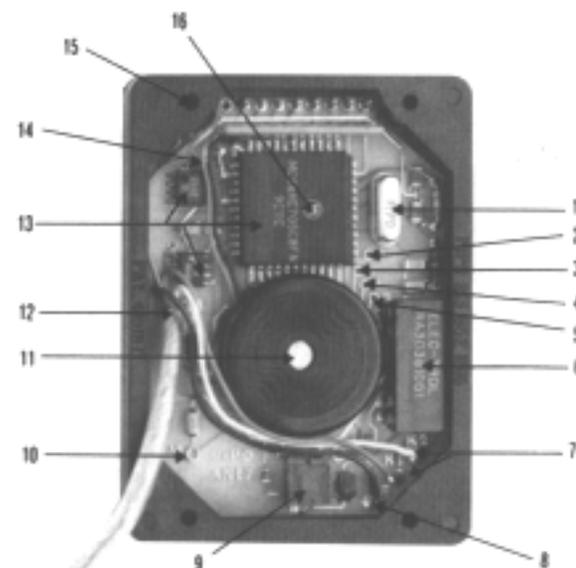




PK-1K,ANI32

- PK-1K,ANI32**
- DTMF ANI . . . . . VERSION 3.2
  - KEYBOARD PROGRAMMABLE
  - 12 KEY FORMAT • STEEL KEYS
  - MOUNTING SCREWS SUPPLIED
  - PTT RELAY • TX MIC MUTE
  - EXTERNAL INPUTS . . . . .

The PK-1K,ANI32 — featuring STEEL KEYS and SEALED GOLD-DOME CONTACTS — evolved from PIPO's traditional plastic keyboard (PP Series) and for years has proven to be very reliable in harsh environments where dust and moisture can cause contact failure. This model, in a 12 Key vertical format, includes a built-in SPST keying relay for PTT activation, as well as the numerous software features detailed in VERSION 3.2 SPECIFICATIONS. Power: 6 to 26 VDC @ 8 ma stby 25 ma oper.



BACK of the PK-1K,ANI32

- 1 . . . . . High Impact Crystal
- 2 . . . . . D . . . external DISABLE input
- 3 . . . . . W . . . external WAIT input
- 4 . . . . . # . . . external "#" ANI input
- 5 . . . . . \* . . . external "\*" ANI input
- 6 . . . . . PTT Relay (K-Series only)
- 7 . . . . . PTT Relay output contacts
- 8 . . . . . Audio output
- 9 . . . . . Audio output level adjust
- 10 . . . . . TX Mic Mute
- 11 . . . . . Sidetone "Beeper"
- 12 . . . . . Shield, GND
- 13 . . . . . Surface Mount Technology throughout
- 14 . . . . . 6 to 26 VDC
- 15 . . . . . Pre-drilled mounting holes. Screws and template supplied for easy mounting
- 16 . . . . . Industrial GRADE Microprocessor

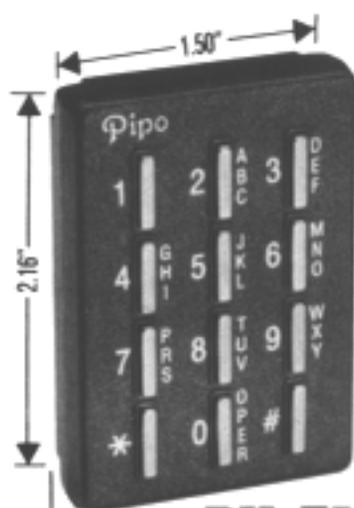
PK-1K,ANI32—Electronics only; measurements: 2.40" l x 1.70" w x .245" max height.



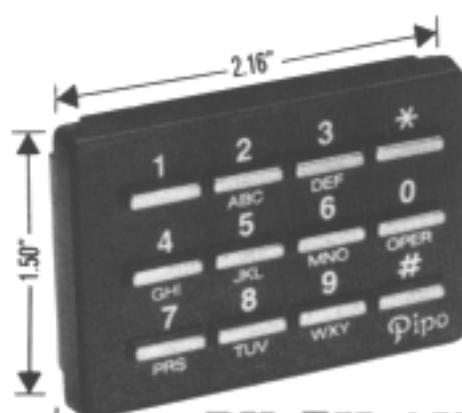
PK-2K,ANI32

- PK-2K,ANI32**
- DTMF ANI . . . . . VERSION 3.2
  - KEYBOARD PROGRAMMABLE
  - 16 KEY FORMAT • STEEL KEYS
  - MOUNTING SCREWS SUPPLIED
  - PTT RELAY • TX MIC MUTE
  - EXTERNAL INPUTS . . . . .

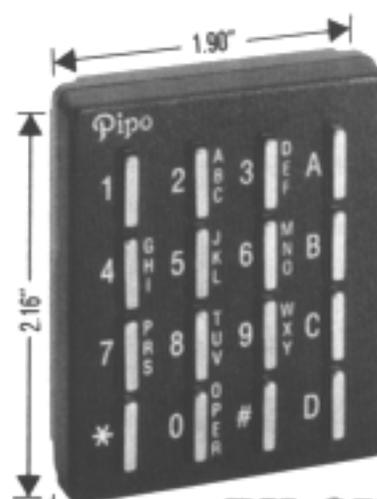
The PK-2K,ANI32 is the same rugged steel key, sealed contact encoder as PIPO's PK-1K,ANI32 model, packaged in a 16 Key vertical format, with an additional fourth column series of keys for the DTMF frequency 1633HZ. This model also includes a built-in SPST relay for PTT activation as well as the numerous software features detailed in VERSION 3.2 SPECIFICATIONS. Power: 6 to 26 VDC @ 8 ma stby 25 ma oper.



PK-7V,ANI32



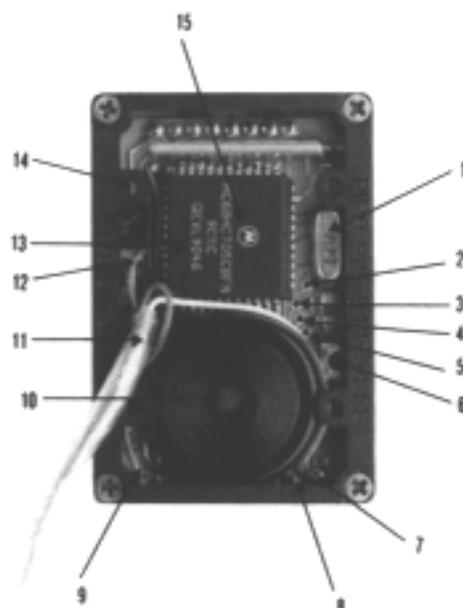
PK-7H,ANI32



PK-8V,ANI32

- PK-7V,ANI32 • PK-7H,ANI32 • PK-8V,ANI32**
- DTMF ANI . . . . . VERSION 3.2
  - KEYBOARD PROGRAMMABLE
  - MINIATURE STEEL KEY MODELS
  - 12 & 16 KEY FORMATS
  - MOUNTING SCREWS SUPPLIED
  - PTT & MUTE OUTPUT
  - EXTERNAL INPUTS . . . . .

The PK-7V/H & 8V Series are PIPO's MINIATURE-size STEEL KEY, SEALED CONTACT encoders, offered in three packages for the convenience of the OEM and special application designer. These are the same rugged, reliable encoders as PIPO's larger PK-1 & 2 Series. These models come in a 12 Key vertical or horizontal format and a 16 Key vertical format for expanded control needs. These MINIATURE encoders use a collector output for PTT & MUTE activation and include the numerous software features detailed in VERSION 3.2 SPECIFICATIONS. Power: 6 to 26 VDC @ 8 ma stby 14 ma oper.



BACK of the PK-7V/H,ANI32

- 1 . . . . . High Impact Crystal
- 2 . . . . . D . . . external DISABLE input
- 3 . . . . . W . . . external WAIT input
- 4 . . . . . # . . . external "#" ANI input
- 5 . . . . . \* . . . external "\*" ANI input
- 6 . . . . . Audio output level adjust
- 7 . . . . . Audio output
- 8 . . . . . XMTR PTT collector output
- 9 . . . . . TX Mic Mute
- 10 . . . . . Sidetone "Beeper"
- 11 . . . . . Shield, GND
- 12 . . . . . 6 to 26 VDC
- 13 . . . . . Surface Mount Technology throughout
- 14 . . . . . Pre-drilled mounting holes. Screws and template supplied for easy mounting
- 15 . . . . . Industrial GRADE Microprocessor

PK-7,ANI32—Electronics only; measurements: 1.95" l x 1.36" w x .210" max height.

## OPERATIONS and USER LEVEL PROGRAMMING

### PROGRAMMING KEYS:

THE \*, 0 and # ARE USED FOR: PROGRAMMING FUNCTIONS  
ACTIVATING PROGRAMMED FEATURES  
DTMF TONES

### REFERENCE:

m = Manual Dial  
tm = Temporary Memory  
ulp = User Level Programming  
tlp = Tech Level Programming

### TO USE:

... m (Manual Dial) DIRECT DTMF ENCODING, Keys 1-9 and A-D (16 Key version) instantly generate DTMF tones. \*, 0, and # must be pressed for at least a ½ second when it is the first key pressed. (Unit auto resets 2.3 seconds after the last keystroke.)

### SIDETONE:

Beeps Confirm:

**USER LEVEL OPERATION:** DTMF, Memory, ANI, Store & Send and LNR Outputs. Errors, Keyboard-Auto-Reset after 2.3 seconds. Version Announcement.

**USER LEVEL PROGRAMMING:** Memory Open, Entry, Full, Auto Close and Errors.

**TECH LEVEL PROGRAMMING:** Open, Entry, Errors, Auto Close and Forced Close.

### ANI SEND:

\*\* Sends the ANI \* position.  
## Sends the ANI # position.

### MEMORY SEND:

25 Places, 30 digits max.  
EXAMPLE: To program memory 01 . . . . #01. To send . . . 001.  
To program memory 25 . . . . #25. To send . . . 025.  
Press any key to stop, AKS.

### LNR:

... tm (Temporary Memory) . . . . LAST NUMBER REDIAL . . . 000 will send last manually dialed number. 10 DPS (DEFAULT). Adjustable from tlp; 31-33 (Tech Level Programming). Power off clears tm.

### AKS:

ANY KEY STOP. Any key pressed will stop sending.

### VERSION ID:

\*1 will announce Version by number of Beeps, 1 sec & 100 ms, e.g., " --- ." = ver3.2.

### PTT DISABLE:

tm . . . \*0 will Disable PTT & SIDETONE. All other functions and output remain normal.  
\*8 will Enable PTT. Power off, then on = PTT Enable.

### MANUAL STORE & SEND:

... tm . . . 30 digits max. Sends @ 10 dps. (DTMF MEMORY STRING ADJUSTABLE)  
0\* . . . ("Beep-Beep") . . . ENTER numbers -----, Auto Close ("Beep-Beep").  
0# . . . Sends numbers . . . Clears with 0\*.

### AUTO STORE & SEND:

... tlp . . . 30 digits max.  
Manually entered digits are stored and sent 2.3 seconds after the last digit entered. tlp; 00-01. Will send at the LNR speed, 10 DPS DEFAULT, adjustable from tlp; 31-33.

## PROGRAMMING EXAMPLE

### EXAMPLE 1:

—————> 1 213 852 1520 into MEMORY LOCATION 01

**PRESS** #01 . . . Wait for the SIDETONE ("Beep-Beep") . . . this confirms that the memory 01 is open and waiting for the number to be entered.

**ENTER** the desired numbers . . . e.g., 1 213 852 1520.  
After 2.3 seconds from the release of last keystroke the memory auto closes . . . confirmed by "Beep."

### TO SEND:

Press 001 . . . This sends memory location 01  
025 . . . This sends memory location 25  
Press any key to stop, AKS.

### EXAMPLE 2:

—————> #3 (5dps) 176 (PAUSE W/PTT drop) (10 dps) #4 #2 1 213 852 1520, (WAIT) #0 \*80# into MEMORY LOCATION 02.

For Memory Location 02 using SPEED ADJ, PAUSE ADJ and the WAIT state, the number and command sequence to be programmed is . . . #3 176 #4#2 1 213 852 1520 #0\* \*80##.

(Numbers preceded by # indicate DIAL SPEED, PAUSE and WAIT functions.)

(To enter a \* or # into the string, enter \* or # twice, e.g., \*\*80##; this will reproduce as a \*80#.)

**PRESS** #02 . . . Wait for the SIDETONE ("Beep-Beep") . . . this confirms that the memory 02 is open and waiting for the number to be entered.

**ENTER** the desired numbers . . . e.g., #3 176 #4#2 1 213 852 1520 #0 \* \*80##.  
After 2.3 seconds from the release of last keystroke the memory auto closes . . . confirmed by "Beep."

### TO SEND:

Press 002 . . . This sends your Memory Location 02.  
Press any key to stop, AKS.

**EXAMPLE 3:** → MEMORY CONNECT . . . Programming memory 03, LONG PAUSE and connecting to memory 04.

#9 #804

1 213 852 1520 (LONG PAUSE) 1 213 852 1520 (MEMORY CONNECT to MEMORY LOCATION 04).

Memory Connect (#8) is ENDLESS. This STRING ADJUSTMENT is limited by the system requirements and by your imagination. This Command (#8) will connect MEMORIES to MEMORIES in conjunction with any MEMORY STRING ADJUSTMENT and WILL LOOP.

**PRESS** #03 . . . Wait for the SIDETONE ("Beep-Beep") . . . this confirms that the memory 03 is open and waiting for the number to be entered.

**ENTER** the desired numbers . . . e.g., 1 213 852 1520 #9 1 213 852 1520 #804.  
After 2.3 seconds from the release of last keystroke the memory auto closes . . . confirmed by "Beep."

**PRESS** #04 . . . Wait for the SIDETONE ("Beep-Beep") . . . this confirms that the memory 04 is open and waiting for the number to be entered.

**ENTER** the desired numbers . . . e.g., 1 213 852 1520.  
After 2.3 seconds from the release of last keystroke the memory auto closes . . . confirmed by "Beep."

**TO SEND:** . . . . . Press 003 . . . This sends your Memory Location 03 and connects to memory 04.

**NOTE:** if a #803 were placed at the end of memory 04, a LOOP would occur.  
Press any key to stop, AKS.

**DTMF MEMORY STRING ADJUSTMENTS**

**SPEED ADJ:** . . . . . #1 (20dps 25/25 ms)  
ulp #2 (10dps 50/50 ms) . . . . . (DEFAULT)  
(User Level Programming) #3 (5dps 100/100 ms)

**PAUSE ADJ:** . . . . . #4 1 sec w/ptt drop, each #4 extends 1 sec, max pause=mem space . . . . .  
ulp #5 1 sec w/ptt on, each #5 extends 1 sec, max pause=mem space . . . . .  
tip; 34-36 . . . . . 1 sec (DEFAULT)  
tip; 34-36 . . . . . 1 sec (DEFAULT)

**DIGIT EXPAND:** . . . . . #6 Adds 200 ms for each #6 entered, max=mem space=2.8 sec.  
ulp #7 Adds 2 sec for each #7 entered, max=mem space=28 sec.

**MEMORY CONNECT:** . . . . . #8 Connects memories. Connects to any memory number, WILL LOOP; sends continuously.  
ulp #802 Connects to memory 02.  
#825 Connects to memory 25.  
#800 Connects to STORE & SEND.  
#8★ Connects to ★ ANI.  
#8# Connects to # ANI.

**LONG PAUSE ADJ:** . . . . . #9 1 minute w/ptt drop, each #9 extends 1 minute, max pause=mem space . . . . .  
ulp tip; 37-38 . . . . . 1 minute (DEFAULT)

**WAIT:** . . . . . #0 WAIT . . . Stop Send.  
ulp PTT drops.  
Resumes sending by any keypad depression.  
Resumes sending by low voltage (gnd) on W (pcb input).

**FOR MEMORY DIAL PROGRAMMING ONLY:**  
16 KEY OUTPUT FROM 12 KEY . . . . . Press ★3, produces "A" tone  
ulp Press ★6, produces "B" tone  
Press ★9, produces "C" tone  
Press ★#, produces "D" tone

**TECH LEVEL PROGRAMMING (tlp)**

**TO ACCESS:** . . . tlp . . . . . Press # and ★ simultaneously for 3 SECONDS. "Beep-Beep" confirms the Tech Level Program mode is OPEN. ENTER your options:

You may continue to enter as many options as you wish; "Beep-Beep" confirms each entry. AUTO CLOSE occurs 10 seconds after the last entry, or press # for instant closure.

- 00 . . . . . MANUAL SEND . . . . . (DEFAULT)
- 01 . . . . . AUTO STORE & SEND . . . . . Sends 2.3 sec after the last entry.
- 02 . . . . . HIGH TONE 0db
- 03 . . . . . HIGH TONE +2db . . . . . (-low) . . . . . (DEFAULT)
- 06 . . . m. AUDIO OUTPUT DELAY . . . . . DELAY between PTT & AUDIO OUTPUT . . . 06 sets to 0 . . . . . (DEFAULT)  
Each 6=200 ms 2 sec max. For MANUAL DIAL only. When pressing keys, the AUDIO OUTPUT DELAY occurs on the 1st digit only. Each digit thereafter has no delay. Resets to DELAY function after 2.3 seconds of no key action. Does NOT delay PTT.
- 07 . . . . . MANUAL DTMF OUTPUT TIME . . . Continuous . . . . . (DEFAULT)
- 08 . . . . . MANUAL DTMF OUTPUT TIME . . . 200 ms
- 09 . . . . . MANUAL DTMF OUTPUT TIME . . . 500 ms

17 . . . . . PTT; AUDIO OUTPUT  
 DELAY ADJ . . . . . AUDIO OUTPUT DELAY after PTT (for all ANIs, MEMORIES & LNR) 17 clears PTT Delay to  
 400 ms . . . . . (DEFAULT)  
 Each 7 adds 200 ms, max 3 sec†, next 7†† past 3 sec=00 ms PTT SEND DELAY. (†3 sec  
 max=13 strokes, ††00 ms=14 strokes, 200 ms=15 strokes). Reset 17=400 ms

18 . . . . . PTT; KEY HOLD  
 DELAY ADJ . . . . . MANUAL DIAL ONLY. Clears PTT Delay to 100 ms . . . . . (DEFAULT)  
 Each 8 adds .5 second, max 10 sec.

20 . . . . . Sounder Off  
 21 . . . . . Sounder Level Low  
 22 . . . . . Sounder Level High . . . . . (DEFAULT)  
 23 . . . . . Sounder Single Tone . . . . . (DEFAULT)  
 24 . . . . . Sounder DTMF

31 . . . . . LNR, AUTO STORE & SEND . . . . . 20 dps  
 32 . . . . . LNR, AUTO STORE & SEND . . . . . 10 dps . . . . . (DEFAULT)  
 33 . . . . . LNR, AUTO STORE & SEND . . . . . 5 dps  
 34 . . . . . PAUSE DELAY . . . . . 1 sec . . . . . (DEFAULT)  
 35 . . . . . PAUSE DELAY . . . . . 3 sec  
 36 . . . . . PAUSE DELAY . . . . . 5 sec  
 37 . . . . . LONG PAUSE DELAY . . . . . 1 minute . . . . . (DEFAULT)  
 38 . . . . . LONG PAUSE DELAY . . . . . 4 minute

80 . . . . . DTMF TONE TEST . . . . . SHORT  
 Each single DTMF tone lasts 2.3 sec.  
 Row 1,2,3,4 Column 1,2,3,4 Each digit 0-9 ABCD\*# for 2.3 sec each.  
 Press any key to stop, AKS.

81 . . . . . DTMF TONE TEST . . . . . LONG  
 Same as 80 except tones last 10 sec each. DTMF tones last 2.3 sec.  
 Press any key to stop, AKS.

82 . . . . . DTMF TONE TEST A . . . . . 0-9 ABCD\*# @ 5dps #4 @ 10 dps #4 @ 20dps

90 . . . . . Disables Keyboard  
 91 . . . . . Enables Keyboard . . . . . (DEFAULT)  
 950000 . Keyboard Enable . . . . . Enables keyboard operation after it has been DISABLED by the "D" input on the PCB.  
 CUSTOM CODE AVAILABLE UPON REQUEST.

96 . . . . . MEMORY CLONE SEND . . . . . Clone send from Mic Mute on PCB. \* will send. Upon completion of Cloning, TLP will not  
 AUTO CLOSE. # or Power off will close. Will not Clone \* # ANI.

97 . . . . . MEMORY CLONE RECEIVE . . . . . Clone receive into \* on PCB. "Beep-Beep" will acknowledge completion. Will not AUTO  
 CLOSE.

98 . . . . . DEFAULT . . . . . Defaults all functions.  
 99 . . . . . DEFAULT/MEMORY CLEAR . . . . . DEFAULTS all functions, clears all memories.

**SINGLE TONE OUTPUTS**

ROW/COLUMN	STANDARD DTMF TONES	PIPO	% DIFF
0+1= Row 1	697 hz	699 hz	+ .30%
0+2= Row 2	770 hz	770 hz	00%
0+3= Row 3	852 hz	850 hz	- .20%
0+4= Row 4	941 hz	943 hz	+ .20%
0+5= Col 1	1209 hz	1211 hz	+ .16%
0+6= Col 2	1336 hz	1340 hz	+ .29%
0+7= Col 3	1477 hz	1480 hz	+ .20%
0+8= Col 4	1633 hz	1631 hz	- .12%
0+9= 1khz test tone		1002 hz	+ .20%

**COMMAND INDEX**

*1 . . . . . Version ID	#1 . . . . . 20 DPS
*2 . . . . .	#2 . . . . . 10 DPS
*3 . . . . . "A"	#3 . . . . . 5 DPS
*4 . . . . .	#4 . . . . . PAUSE 1-3-5 SEC w/PTT Drop
*5 . . . . .	#5 . . . . . PAUSE 1-3-5 SEC w/PTT On
*6 . . . . . "B"	#6 . . . . . DIGIT EXPAND 200ms
*7 . . . . .	#7 . . . . . DIGIT EXPAND 2sec
*8 . . . . . PTT ENABLE	#8 . . . . . MEMORY CONNECT
*9 . . . . . "C"	#9 . . . . . LONG PAUSE ADJ 1-4 MIN w/PTT Drop
*0 . . . . . PTT DISABLE	#0 . . . . . WAIT
*★ . . . . . ANI SEND	#★ . . . . . tlp
*# . . . . . "D"	## . . . . . # ANI SEND

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