(2024: spelling and grammar errors are in the original document. Great care has been taken to keep the original format and content errors. This is the documentation supplied with the commercially sold product AS IS. It was somewhat lacking in clarity.)

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SOUND EXPERIMENT I   version 2.0 (copyright 1982 Data Force Incorporated)

The objectives of the SOUND EXPERIMENTI program are three fold

1) To give the user access to the cassette ports and other facilities not accessable from Console Basic or Extended Basic.

2) To provide the routines to digitize any sound, using the cassette player as a pre-amplifier, and the sound generator for playback

3) To provide a number of CONSOLE ROUTINES illustrating the use of the SOUND EXPERIMENTI functions.

PRELIMINARY CONSIDERATIONS

Since we will use the cassette microphone and pre-amp with the program, the user must determine what he must do to have the OPEN MICROPHONE we will need. The microphone and pre-amp will be active on all recorders when PLAY/AND and RECORD (record mode) are on. Since we need not record on tape, user should determine if his microphone stays open when PAUSE is used. If it does PLAY/RECORD/PAUSE would be a preferable setting for most of our examples. If you are fortunate enough to have a LOUDSPEAKER setting (DIRECT MIKE TO SPEAKER) you should be able to use that setting.

Are asumption will be that you PLAY/RECORD/PAUSE setting will work, if it does not, load a scratch tape and run without pause on

Since we are recording from audio input, and not computer program output, run with the MIKE jack (red wirel disconnected, this will make internal microphones active. If there is no internal mike on your recorder, plug in your remote microphone.

Experiment with tone and volume settings for change in quality of recording, but ALL settings which work for normal audio recording should produce digitized recordings.

1) Turn off computer.

2) Insert MINI MEMORY module into cartridge slot.

3) Turn on computer.

4) Put Sound Experiment tape into recorder

(before using check that write tab is removed to avoid accidental destruction of master)

5) Any key to obtain menu.

6) Select menu 2 (DEBUG).

7) Enter any key for DEBUG COMMAND MODE.

8) Enter L for LOAD MINIMEN cassette routine.

Your minimem should be loaded with program code now.

it tape does not load, retry, if tape continues to fail return to your dealer or Data Force Incorporated with all original documentation for immediate replacement.

FUNCTION FORMAT

The designer of this product intended it to be used from CONSOLE BASIC, while most of the commands not requiring arguments should work from MINI MEMORY command mode, this is not documented.

FUNCTIONS.

CASSETTE 1 MOTOR:

CALL LINK("ON1")   turn on CS1 motor

CALL LINK("OFF1") turn off CS1 motor

CASSETTE 2 MOTOR

CALL LINK ("ON2")

CALL LINK("OFF2")

SOUND FROM CS1 TO MONITOR AMPLIFIER

CALL LINK("OFFSND")

CALL LINK("ONSND")

RECORD FROM CS1 MIKE

CALL LINK("RECORD")

"RECORD" waits for sound to occur before it starts to digitize sound, if no sound occurs, will not return to BASIC. If sound occurs it is digitized, subsequent pauses in excess of aproximately 5 seconds will cause a return to BASIC.

LISTEN FOR SOUND

   CALL LINK("SNOOP")

Listens for sound, will return immediately to BASIC after first sound, no digitizing takes place.

PLAY BACK FROM MEMORY

CALL LINK ("PLAY")

GET SOUND MEMORY

CALL LINK ("GET", A$()) where A$ is any dimensioned string, option base 0

Requires array to be passed because size of speech data will invariably exceed 255 characters.

REPLAY FROM BASIC MEMORY

CALL LINK("SAY", A$())   SAY BASIC array obtained in CALL GET for

CALL LINK ("GETPAT", STRING$)   Gets a 32 character portion of digitized in STRING$, THIS string is:

POS 1) The highest frequency in 32 character string,

POS 2-31) 30 bytes from digitized memory starting aprx 1/2 through current digitized sound.

POS 32) The lowest frequency in string.

(BY FREQUENCY, IN THIS CONTEXT, WE MEAN OOUR OWN SCALE FROM 1 TO 127)

(PLAY AND RECORD WILL USE 32K IF TURNED ON, FOR OTHER COMMANDS IT MUST BE OFF)

***OBSERVATIONS

We made some attemp to use the "GETPAT" 32 characters to analize the whole sound, but have not had any impressive results, it appears a FILTER, perhaps a combination of electronics and software would be needed to achieve any RECOGNITION.

You will find that patterns generated by "SSSS" sound are high frequency and perhaps subject to recognition, while most patterns for sounds ("OOOO")("AAAA") seem to be consistant, they are too similar to call, unless user makes extreme attempt to make them recognizable, I have a feeling, most of us tend to average pour speech, and oour listening, until many sounds are very similar.

It might be interesting to see if this primitive BIO~FEEDBACK from our graphing example would be of any assistance to DEAF persons in practicing reproducing phonetic sounds.

TEST PROGRAM#1 **S N O O P** VOICE ACTUATED RECORDING

Example of remote controlled device reacting to sensory perception, IF the mechanism were to be designed, the output from the REMOTE jack could controll any motor or function.

This example should listen for sound, start up recorder when it occurs, and shut down recorder when it stops.
Your cassete reccorder will need remote jack for this experiment.
PLAY/RECORD should be on, release pause after starting program, red wire out.

enter RUN 2110 for program 1
****
line statement
****
2110 CALL SOUND(1,44733,1) !best results in play
2120 CALL LINK ("PLAY")   ! tape
2220 CALL L INK ("OFF1 ")
2230 CALL LINK("OFF2")
2240 CALL LINK ("OFFSND")
2250 CALL LINK("SNOOP")   ! wait for sound/record loop
2260 CALL LINK("ON1")
2270 CALL LINK("RECORD")
2280 CALL LINK ("OFF1 ")
2290 GOTO 2250
****
enter RUN 2450 for program 2 RECORD PLAYBACK digitally
     ! PLAY/REC/PAUSE on RED WIRE out
****
2450 CALL LINK("OFF")   !CS1 motor off, if your pause kills record, delete
                         !this statement
2460 FREQ=44733
2470 CALL SDUND(10,FREQ,2)
2540 CALL CLEAR
2550 PRINT "SPEAK IN .5 SECONDS"
2560 CALL LINK("RECORD")
2570 FOR Y=1 TO 10
2580 FOR X=1 TO 20
2590 NEXT X
2600 CALL LINK("PLAY")   !plays back with variance in
2610 FREQ=FREQ-4000   !frequency to show limitted control
2620 CALL SOUND (0, FREQ., 2)
2630 NEXT Y

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
enter RUN 2710 program.3 storing patterns locally in BASIC arrays
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
2710 OPTION BASE 0
2720 DIM A$(20)
2730 DIM B$ (20)
2740 CALL SOUND (10, 44733, 1)
2750 CALL LINK("OFF1 ")
2760 PRINT "SPEAK IN .5 SECCDNDS"
2770 CALL LINK ("RECDRD")
2780 FOR X=1 TO 100
2790 NEXT X
2800 CALL SOUND (10, 44733, 1)
2810 CALL LINK("PLAY")
2820 INPUT "SAVE WORDS?-":ANS$
2830 IF ANS$="N" THEN 2760
2840 CALL LINK ("GET" ,A$()))
2850 PRINT "SAY SOMETHING ELSE"
2860 CALL LINK ("RECORD")
2870 CALL SOUND (10, 44733, 2)
2880 CALL LINK("GET",B$())
2890 PRINT "SAY A$"
2900 FOR X=1 TO 10
2910 NEXT X
2920 CALL LINK("SAY",A$())
2930 PRINT "SAY B$"
2940 FOR X=1 TO 10
2950 NEXT X
2960 CALL LINK("SAY",B$())
2970 GOTO 2890
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
enter RUN 3070 for program 4 using small range GETPAT graphing sound
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
        BIO FEEDBACK
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
3070 PATA$=""
3080 PATB$=""
3090 PRINT "ENTER MASTER SOUND"
3100 CALL LINK ("RECORD")
3110 CALL SOUND(1,43733,1)
3120 CALL LINK ("PLAY")
3130 PRINT "GETPAT"
3140 CALL L INK ("GETPAT " , PATA$)
3150 PRINT "GET"
3160 CALL LINK("GET",A$())
3170 DIM A (32)
3180 FOR X=1 TO 3
3190 A(X)=ASC(SEG$(PATA$,X,1))
3200 PRINT A(X) ;

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3210 NEXT X
3220 PRINT "GRAPH"
3230 CALL CLEAR
3240 RESO=24/75
3250 FOR X=1 TO 3
3260 A2=A (X)*RESO
3270 IF A2?1 THEN 3290
3280 A2= 1
3290 IF A2<24 THEN 3310
3300 A2=24
3310 CALL VCHAR(A2,X,65,24-A2)
3320 NEXT X
3330 GOTO 3070
```