D.C. Hayes Associates, Inc.

MICROCOMPUTER PRODUCTS

Micromodem II   Application Note No.1

Getting into Terminal mode successfully from BASIC

From the keyboard:

```
PR#0              (be sure output goes to screen)
IN#3              (if Micromodem II is in slot 3)
CTRL-A  CTRL-F    (enter terminal mode in full duplex)
```

From a BASIC program: (assume DOS is loaded)

```
5 D$=CHR$(4) : REM D$=CONTROL D
10 PRINT D$;"PR#0"
20 PRINT D$;"IN#3"
30 POKE 2043,9 : REM  FSW  see page 37
40 POKE 1915,138 : REM ENTER TERM MODE  see page 73
```

Automatic log-on to a time share computer

Some Micromodem II users have had problems writing programs designed to automatically dial and log-on to a time share computer system. The task seems very simple yet these programs refuse to work. The root of the problem lies in timing. All modems have a carrier detection delay time which can be a few milliseconds to several seconds. When the Micromodem II firmware has finished dialing it waits for the other modem to send a carrier. When it detects the carrier it turns on its own carrier and instantly returns to BASIC where the next line will execute. Here is where we have the timing problem. The other modem has NOT detected our carrier yet. We must wait for 2 to 4 seconds before trying to send any data to the other modem. The following program fragment will show how this is done.

```
10 D$=CHR$(4) : REM  CONTROL D FOR DOS
30 PRINT D$;"PR#3"
40 PRINT CHR$(17);"394-4220"
50 FOR X=1 TO 3000
60 NEXT X            : REM 4 SECOND DELAY
70 POKE 2043,9 : REM 7 BITS, EVEN PARITY see page 37
80 PRINT "PASS WORD"
90 PRINT D$;"PR#0"
100 PRINT D$;"IN#3" : REM ENABLE FOR INPUT
110 INPUT A$         : REM GET REPLY
```

The "PASS WORD" and the remainder of the program will depend on the users application. Also, you should never have a "PR#3" and a "IN#3" in effect at the same time in this application.

Special note for Apple Serial Interface card owners

The Apple Serial Interface card (part # 600-0029) has an obscure bug in its firmware which causes it to malfunction when any other interface card with more than 256 bytes of PROM is installed in the next higher slot. For example if the Serial interface card is in slot 2 and the Micromodem II is in slot 3 the Serial Interface card will not work. You should install the Serial Interface card on the left side of an empty slot or one containing a card with 256 or less bytes of PROM memory on it.

```
11400 R = R + 1
11500  IF R < 128 THEN  GOTO 10500
11600  PRINT "TEST COMPLETED"
11700  PRINT E;" ERRORS DETECTED"
11800  RETURN
20000  POKE MDEM,8
20050  POKE ACIA,3
20100  IF  PEEK (ACIA) < 4 THEN  GOTO 20100
20150  PRINT : PRINT : PRINT "TESTING  ";
20210 MODE$ = "ORIGINATE"
20220  IF M = 1 THEN  GOTO 20240
20230 MODE$ = "ANSWER"
20240 BAUD = 300
20250  IF B = 1 THEN  GOTO 20270
20260 BAUD = 110
20270  PRINT BAUD;" BAUD ";MODE$;" MODE "
20300  POKE MDEM,154 + 4 * M + B
20400 M = M <  > 1
20500  IF M <  > 0 THEN  GOTO 20700
20600 B = B <  > 1
20700 DLY = 0
20710 DLY = DLY + 1
20720  IF  PEEK (ACIA) < 4 THEN  RETURN
20730  IF DLY < 500 THEN  GOTO 20710
20740  PRINT "NO CARRIER DETECT"
20750 E = E + 1: RETURN
20800  RETURN
30000  REM  EPROM TEST ROUTINE
30050  PRINT : PRINT
30100  PRINT "STARTING EPROM TEST"
30200  PRINT "PLEASE WAIT 20 SECONDS"
30300 RB = 778: REM  BYTE READ FROM EPROM
30400  POKE 768,173: REM  LDA
30500  POKE 769,0: REM   00
30600  POKE 770,192 + SLOT
30700  POKE 771,173: REM  LDA
30800  POKE 774,141: REM  STA
30900  POKE 775,10: REM   0A
31000  POKE 776,3: REM    03
31100  POKE 777,96: REM  RTS
32000 A =  PEEK ( - 12289): REM  TURN OFF OTHER ROMS
32100 X = 0: REM  CLEAR CHECKSUM
32200  FOR H = 200 TO 203
32300  FOR L = 0 TO 255
32400  POKE 772,L: POKE 773,H
32500  CALL 768:X = X +  PEEK (RB)
32600  NEXT L
32700  NEXT H
32800  CALL  - 198
32900  IF X = CK THEN  PRINT "EPROM IS OK"
33000  IF X <  > CK THEN  PRINT "EPROM IS DEFECTIVE"
33100  END
40000  REM  OUR THANKS TO ROBERT J. DENISON
40100  REM  FOR APPLESOFT CONVERSION.
```

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line 20700. This allows about 8 seconds for carrier detect before printing "NO CARRIER DETECT". Also, on line 10620, some code has been added to detect the complete lack of received characters. It now prints "NO DATA RECEIVED" instead of hanging forever. Lines 30000 to 33100 are an EPROM test program. This code will test the 1K EPROM or ROM which holds the Micromodem II firmware. It works by adding up all the bytes and comparing the result with the known correct value for the Rev. K EPROM which is 122440.

Each phase of the test takes about 10 seconds except the EPROM test which takes 20.

```
5   REM   SELFTEST PROGRAM IN APPLESOFT
10 CK = 122440: REM   REV K EPROM CHECKSUM
20   HOME : VTAB (4)
30   PRINT "SELF-TEST PROGRAM FOR THE"
40   PRINT "D.C.HAYES ASSOCIATES,INC"
50   PRINT "       MICROMODEM II"
60   PRINT : PRINT
100  INPUT "WHICH SLOT IS THE MICROMODEM II IN ? ";SLOT
110  PRINT : PRINT "UNPLUG THE MICROMODEM II"
112  PRINT "FROM THE MICROCOUPLER": PRINT
115  INPUT "PRESS RETURN WHEN THIS IS DONE ";MODE$
200 DTA =  - 16249 + 16 * SLOT
300 ACIA = DTA - 1:MDEM = DTA - 2:CHAR = 1912
400 T = 0:M = 0:B = 0: HOME
600  REM   SET UP MODEM FOR TEST
700  GOSUB 20000
800  REM   PERFORM TEST
900  GOSUB 10000
1000 T = T + E
1100  IF M OR B = 1 THEN  GOTO 700
1200  POKE MDEM,8: PRINT : PRINT
1300  PRINT "HARDWARE TEST COMPLETE"
1400  PRINT T;" ERRORS DETECTED"
1500  GOTO 30000: REM   NOW TEST EPROM
10000   PRINT "COMMENCING TEST"
10200 E = 0
10300  POKE ACIA,3
10400  POKE ACIA,21
10450 S = 0:R = 0
10500  REM
10550 L =  PEEK (ACIA)
10551 LMOD = L - ( INT (L / 2) * 2)
10552  IF LMOD = 1 THEN  GOTO 11100
10600  IF  PEEK (ACIA) < 2 THEN  GOTO 10500
10620  IF (S - R) < 4 THEN  GOTO 10700
10630  PRINT "NO DATA RECEIVED"
10650 E = E + 1: RETURN
10700  IF S > 127 THEN  GOTO 10500
10800  POKE CHAR,S
10850  CALL  - 16382 + 256 * SLOT
10900 S = S + 1
11000  GOTO 10500
11100 X =  PEEK (DTA)
11200  IF X = R THEN  GOTO 11400
11300 E = E + 1
```

Remote console operation with the disk

We have received many calls from people who wanted to call and use their Apple computer from a remote location. There has been much confusion about which options to use and how to bring up DOS with out disabling the Micromodem II. The following program should take care of most of the problems. It should replace your present INIT or HELLO program on the disk so that it will run each time the DOS is booted up. It will take care of all modem initialization and option settings.

Line 20 sets the Micromodem II slot number

Line 25 sets the data word format. See page 37 for details.

Line 110 sets a 70 millisecond delay after the CR-LF sequence to allow the print head on printing terminals to return.

Line 170 sets the following options:
> Line feeds after carrage returns
> Transparent mode (control characters won't affect modem)
> Local display and keyboard are enabled

```
  1 REM   THIS IS A "HELLO" PROGRAM
  2 REM   FOR THE APPLE II
  3 REM   AND THE MICROMODEM II
  4 REM   MODEM IS IN SLOT 3
 10 TEXT
 20 SLOT=3: REM   MODEM SLOT #
 25 FSW=9: REM   7 DATA BITS, EVEN PARITY
 30 D$="": REM   D$ = CNTRL D
 40 PRINT D$;"NOMONI,O,C"
 50 CALL -936
 60 VTAB 10
 70 PRINT D$;"IN#";SLOT
 80 PRINT D$;"PR#";SLOT
 85 REM
 90 REM   SET FOR 70 MS DELAY
100 REM   AFTER CR/LF SEQUENCE
110 POKE 1528+SLOT,7
115 REM
120 REM   SET OPTIONS ON MODEM
130 REM   LINE FEED INSERT
140 REM   TRANSPARENT MODE
150 REM   LOCAL DISPLAY
160 REM   LOCAL KEYBOARD ENABLE
170 POKE 1912+SLOT,16+4+2
175 POKE 2040+SLOT,FSW
180 PRINT "MICROMODEM II SETUP FOR REMOTE CONSOLE"
200 END
```

An improved self-test program for the Micromodem II

This is an Applesoft version of the self-test program on page 10 of the Micromodem II manual. It works as described on pages 9 and 10 but has some additional features. A time-out has been added to the wait for carrier logic on