Part No. 070-4459-00
Product Group 14

FIRMWARE INSTRUCTIONS

4052/4054 Version 5.1
4052A/4054A Version 1.3

INFORMATION

Version 5.1/1.3 firmware for the 4052/4054 and 4052A/4054A is an upgrade to the pre-existing firmware. The new firmware has additional data communications capability. A new Data Communications Manual (4050 Series Option 1) is available.

In some cases, the new release of firmware corrects earlier problems. However, as in any complex software product, some unexpected results have been observed during the course of testing. The following problems have been noted:

PROBLEM: If a 4052 or 4054 performs a BREAK or PAGE while the computer is doing an INIT, abnormal behavior may result. The cursor may return to an unexpected location, an extraneous carriage return may be seen, or the BREAK may be missed.

SOLUTION: This should not be a problem in most applications.

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First Printing SEPT 1982

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PROBLEM: During POINTER, HOME will not work. PAGE will erase the screen, but not home the cursor.

SOLUTION: Enter any character to terminate POINTER before attempting to HOME or PAGE.

PROBLEM: Typing too far ahead causes FIND to fail.

SOLUTION: Overflowing the Type-Ahead Buffer causes this problem. Do not continue typing past the sound of the bell.

PROBLEM: When drawing on a plotter, MOVEs that are outside the screen window are sent to the plotter causing movements of the pen carriage.

SOLUTION: To curb these extraneous motions, substitute DRAW @ U,21: (the Secondary Address of MOVE) for MOVEs. These DRAW/MOVES are then clipped where strict MOVES aren't. However, these DRAW/MOVES will be output in GDU's rather than user units.

PROBLEM: On a 4054/4054A, the following program causes a "Page Full" before execution is completed. A mysterious digit is printed just before the "Page Full" condition. The program continues to execute after the "Page Full" is cleared, but the cursor is not visible after execution is complete.

```
100 MOVE 130,0
110 INIT
120 MOVE 0,95
130 LIST
140 END
```

SOLUTION: Do not do an INIT with the cursor at the extreme right edge of the screen. If this problem does occur, an INIT will restore the cursor.

PROBLEM: A user program will terminate followin the ON SIZE error handling routine if a PRINT USING statement causes the SIZE error.

Example: The size error handling routine will not return to the main program after the size error in line 110.

```
100 ON SIZE THEN 200
110 PRI USI "FD.2D":1/0
120 PRI "AFTER SIZE ERROR"
130 END
200 PRI "INTERRUPT HANDLER"
210 RETURN
```

SOLUTION: When using an "ON SIZE" routine, do all calculations outside of the PRINT USING statement. The following rework of the program executes correctly.

```
100 ON SIZE THEN 200
105 N=1/0
110 PRI USI "FD.2D":N
120 PRI "AFTER SIZE ERROR"
130 END
200 PRI "INTERRUPT HANDLER"
210 RETURN
```

PROBLEM: In the 4052A and 4054A, if an RBYTE statement times out while reading a numeric array, an extra value of -256 is placed in the array following the last valid data byte.

Example: The following code will leave an extra byte in the buffer.

```
100 CALL "TIMSET",1
110 DIM A(100)
120 ON TIMEOUT THEN 200
130 WBYTE @<SomeTalkAddress>
140 RBYTE A
150 END
200 PRINT A
210 RETURN
```

SOLUTION: (1) Use indexing with RBYTE to read into numeric arrays.

SOLUTION: (2) Initialize the array to all zeros, then scan for the last value that is not equal to zero, and set that byte equal to zero.

Example:

```
200 I=UBOUND (A,1)
210 DO
220 EXIT IF A(I)<>0
230 I=I-1
240 UNTIL I=0
250 IF(I>0)THEN
260 IF A(I)=-256 THEN
270 A(I)=0
280 ENDIF
290 ENDIF
300 RETURN
```

PROBLEM: The old version of the 4907 File Manager ROMPACK may cause the system to hang (appear to "go to sleep") in several ways.

SOLUTION: Use the new File Manager ROMPACK. This ROM PACK also has several valuable new features.

PROBLEM: Some illegal commands (CALL "BAPPEN",40; 100 and CALL "LINK",40: 100) will cause the system to hang.

SOLUTION: These are illegal commands. Do not use them.

PROBLEM: With several ROM Packs in the computer, executing an OLD @40: with a baud rate of 2400 or greater may cause loss of data.

EXPLANATION: An OLD command will cause some ROM PACKS to initialize themselves. During this initialization, the processor interrupts are disabled. Since the communication interface uses interrupts to detect an incoming character (which is then transferred to the communications. buffer), disabling the interrupts can cause loss of characters from the communications port.

SOLUTION: There are several ways to work around this:

1. Remove unneeded ROM PACKS from the computer.
2. Use a lower baud rate.
3. Use APPEND @40: rather than OLD @40:
4. Insert a software delay into the user program between PRI@40,30: (turn on the communication buffer in the application program), and the OLD@40: statement, if you are using soft flagging. The delay should be long enough to allow the 4052/4054 input buffer to fill before executing the OLD statement.

CAUTION

The use of <BREAK><BREAK> to terminate a hung I/O operation may leave the GPIB in a state where the first byte of the next INPUT from the GPIB can be lost.

PLOT 50 SYSTEM SOFTWARE TAPE UPDATE INSTRUCTIONS

If you are using Version 2 Level 2 of the SYSTEM SOFTWARE TAPE (part number 020-0160-03) and you are using a 4054A or a 4054 with the Field Upgrade Kit to Version 5.1, program 8, "Special 4054 Features", will not work until you make the following corrections.

SYSTEM SOFTWARE TAPE UPDATE

1. Check that the SYSTEM SOFTWARE TAPE is not on SAFE.
2. Insert the tape into the 4054 or 4054A.
3. enter the following commands, following each with a <RETURN>.

a. FIND 103

b. OLD

c. 110 IF INT(RND(0)*10)<>8 AND INT(RND(0)*10)<>5 THEN 140

d. FIND 103

e. SAVE

Program 8 will now function on both a 4054 and 4054A.