Engineering Division
W/OSO321:RFM

M003 MODIFICATION NOTE 3
(for Electronics Technicians)

SUBJECT : SixPakPlus Multifunction Board Installation

PURPOSE : Improve the M003 microcomputer system reliability.

EQUIPMENT AFFECTED: M003 Microcomputer System

PARTS REQUIRED : 1 AST SixPakPlus multifunction board

1 Station master set of MicroART system software diskettes

MOD PROCUREMENT : The required parts will be mailed to each station without station action.

SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED : None

TIME REQUIRED : 1 hour

EFFECT ON OTHER INSTRUCTIONS : EHB-9, Section 3.6, M003 Modification Note 1. Remove figures 1, 2, 4, and 5 and insert with the figures contained in this note. Discard the remainder of M003 Modification Note 1 and delete the note from the index.

EHB-9, Section 3.6, M003 Modification Note 2, page 2. Delete the reference to EHB-9, Section 3.6, M003 Modification Note 1 in the second paragraph of the general information section.

EHB-9, Section 2.6, M003 Maintenance Note 2. Delete figures 2 and 3 and all references to the 7-pack contained in the note. Insert the following note at the top of pages 1 and 3. "Refer to EHB-9, Section 3.6, Modification Note 3 for multifunction board information."

CERTIFICATION STATEMENT : This modification was successfully tested for operational integrity by the National Weather Service Office, Huntington, West Virginia.

General

During MicroART field tests on the M003 microcomputer system several problems with the 7-pack multifunction board were discovered. To improve system reliability, we are replacing the 7-pack board with the AST SixPakPlus multifunction board.

All upper air stations will receive a SixPakPlus multifunction board. A few stations have experienced a 7-pack failure and have already installed a SixPakPlus. These stations should check proper installation by completing this modification and return the SixPakPlus received for this modification to:

National Weather Service
Engineering Division W/OSO321
1325 East-West Highway, 3rd Floor
Silver Spring, MD 20910
Attn: Fred Peters

Procedure

A. Installation

To perform the installation, proceed as follows:

1. Complete the "Effect on Other Instructions" before proceeding with the modification. Several figures from other notes are combined with this note and are referenced during the modification.

2. Turn off AC power to the M003 and ART systems.

3. Remove the cover from the CPU as shown in figure 1.

4. Locate and identify the multifunction board installed in slot 3 of your system. Identify all card slots by looking down at the system board from the front of the system chassis. Count slots from left (slot 1) to right (slot 8). If your system has a SixPakPlus multifunction board installed, proceed to step 13.

5. Disconnect the following external cables from the back of the CPU: printer, modem, and color monitor.

6. Remove the parallel port ribbon connector from J3 on the 7-pack multifunction board. Remove the cable and bracket from slot 4.

7. Remove the 7-pack multifunction board from slot 3.

8. Install the new ribbon cable to the parallel port (J2) of the SixPakPlus board. Plug the connector onto the SixPakPlus board so pin 1 of the rectangular connector (shown by the triangle and the stripe on the ribbon cable) is closest to pin 1 of J2 (shown by the "1" silkscreened in white on the board).

9. Refer to figure 2 and verify proper system board switch settings.

10. There are two versions of AST SixPakPlus multifunction boards stocked at the NSLC. The latest version is a short board, the earlier version is a full length board.

    If you receive a short board, refer to figure 3A and verify the switch settings and jumpers.

    If you receive a full length board, refer to figure 3B and verify the switch settings and jumpers.

    NOTE: If S1 switch settings are wrong, the amount of memory enabled on the multifunction board will be incorrect. This will cause an erroneous memory countup during the power on self test and intermittent system operation.

11. Install the SixPakPlus board in slot 3.

12. Install the bracket end of the ribbon cable connected in step 8 in slot 4 of the CPU.

13. Refer to figures 4 and 5 to identify the color graphics board used in your system.

    Connect the printer cable to either the SixPakPlus or Hercules color card as determined by the following:

    If your system has a Hercules color card, connect the printer cable to the parallel output connector on the color card. The Hercules color card has a built-in parallel port that takes priority as LPT1. The SixPakPlus looks for conflicting ports and will reassign the multifunction board port as LPT2, even if the jumpers are set for LPT1.

    If your system has an IBM color card, the parallel port of the SixPakPlus will be LPT1. Connect the printer cable to the output connector in slot 4.

14. Reconnect the modem cable to the serial output port on the SixPakPlus board (slot 3).

15. Reconnect the color monitor to the monitor output of the color graphics board.

16. Replace cover removed in step 3.

This completes the installation. Dispose of the 7-pack multifunction board locally. It will not be repaired by the NRC or stocked at the NLSC.

B. System Start-up

After the SixPakPlus is installed in the CPU, the MicroART system software must be reconfigured. Use the station master MicroART system program diskettes and proceed as follows:

1. Insert MicroART system diskette #1 in drive A.

2. Turn on AC power to the M003 system. The monitor should display a count of 640K of memory.

3. Carefully follow the instructions on the screen.

   Answer "N" to the prompt in step #4. Answering "Y" would cause the hard drive to be reformatted and all existing flight data to be lost.

   When the installation procedure is ready to copy files from system diskette #1, it prompts, "Is your system configured with a CPI 7-Pack (Y/N)?:". Answer "N". The files required for proper SixPakPlus operation will be copied from system diskette #1 to the hard drive. When the system responds with the prompt "Insert system diskette #2", abort the installation procedure by pressing the "Esc" key.

   Software reconfiguration must be done in this manner to leave all data files and subdirectories intact.

4. Remove system diskette #1 from drive A.

This completes the system software reconfiguration.

C. System Checkout

1. Perform either a warm or cold system boot. Follow the instructions on the screen and set the date and time on the multifunction board.

NOTE: Set the time to Universal Time Coordinated (UTC), formerly GMT. DO NOT USE LOCAL TIME.

2. Upon completion of the above steps, the monitor will display the MicroART main menu.

3. Turn off AC power to the CPU.

4. Turn on AC power to the CPU. Confirm that the screen displays the current date and UTC time. This verifies that the battery backup for the real-time clock on the multifunction board is functioning. If the date and time do not hold, the clock battery should be replaced. Batteries are stocked at the NLSC under WSN 017-B-3-9, NSN 6135-01-210-8715.

5. Use the cursor control keys and select "ART Options".

6. Use the cursor control keys and select "Check System Status" on the ART Options menu.

   Perform the ART interface board tests. During the printer test a character should echo to the printer. Proper test operation indicates that the printer is connected and that parallel port LPT1 was properly selected and is working.

   During the modem test a character should also echo to the modem. Proper test operation indicates that the modem is connected and that serial port COM1 was properly selected and is working.

   If either the printer or modem test fails, check the multifunction board settings and system connections.

This completes the system checkout. Restore the M003 and ART systems to normal operation.

Reporting Modification.

Target date for completing this modification is 30 days after receiving the modification kit. Report completed modifications on WS Form H-28, Engineering Progress Report, according to instructions in EHB-4, part 2, using reporting code M003.

J. Michael St. Clair
Chief, Engineering Division

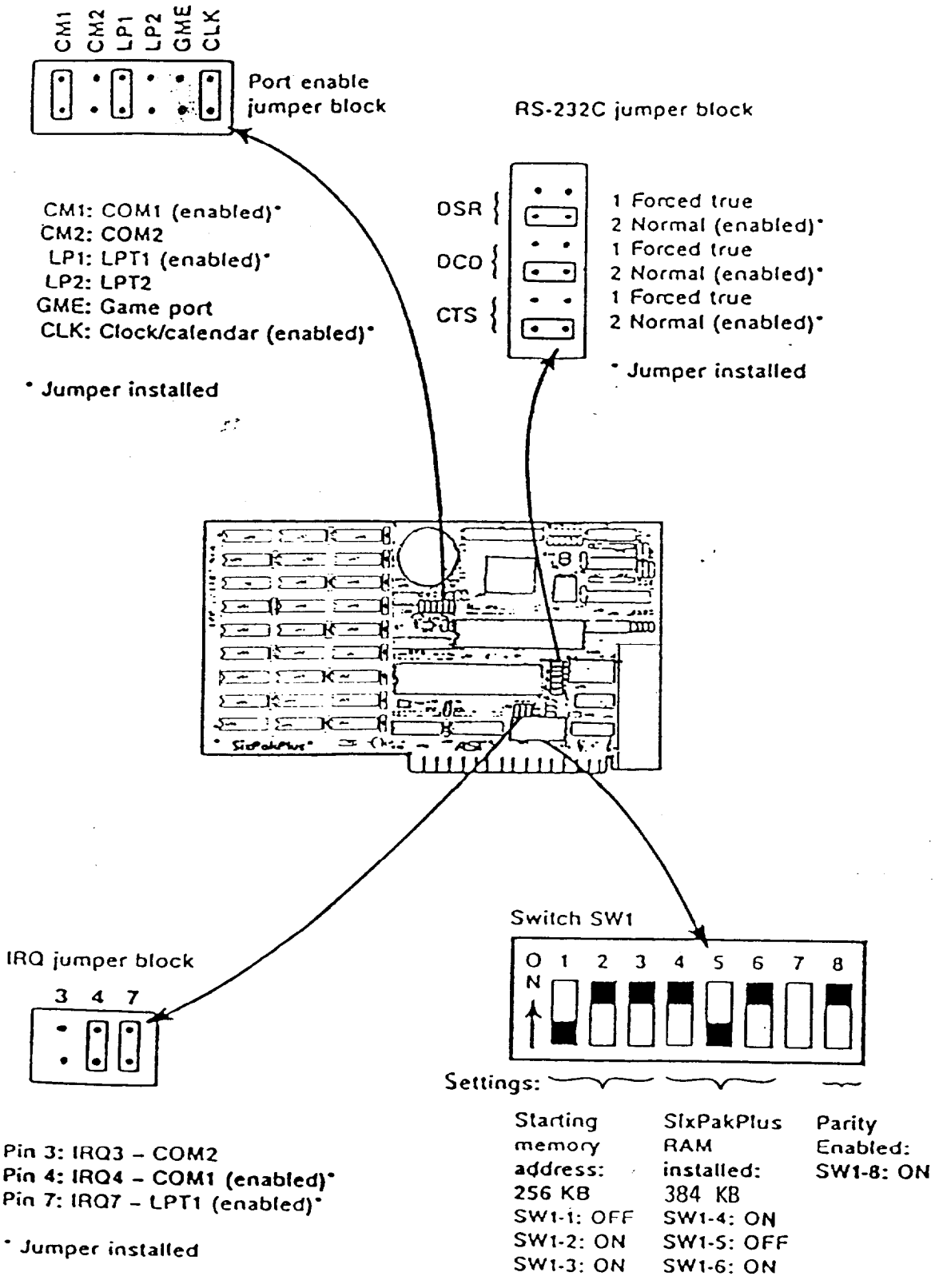
CM1
CM2
LP1
LP2
GME
CLK
Port enable jumper block
CM1: COM1 (enabled)*
CM2: COM2
LP1: LPT1 (enabled)*
LP2: LPT2
GME: Game port
CLK: Clock/calendar (enabled)*
* Jumper installed
RS-232C jumper block
DSR
DCD
CTS
1 Forced true
2 Normal (enabled)*
1 Forced true
2 Normal (enabled)*
1 Forced true
2 Normal (enabled)*
* Jumper installed
IRQ jumper block
3 4 7
Pin 3: IRQ3 – COM2
Pin 4: IRQ4 – COM1 (enabled)*
Pin 7: IRQ7 – LPT1 (enabled)*
* Jumper installed
Switch SW1
ON
1 2 3 4 5 6 7 8
Settings:
Starting memory address:
256 KB
SW1-1: OFF
SW1-2: ON
SW1-3: ON
SIxPakPlus RAM installed:
384 KB
SW1-4: ON
SW1-5: OFF
SW1-6: ON
Parity Enabled:
SW1-8: ON

Figure 3A

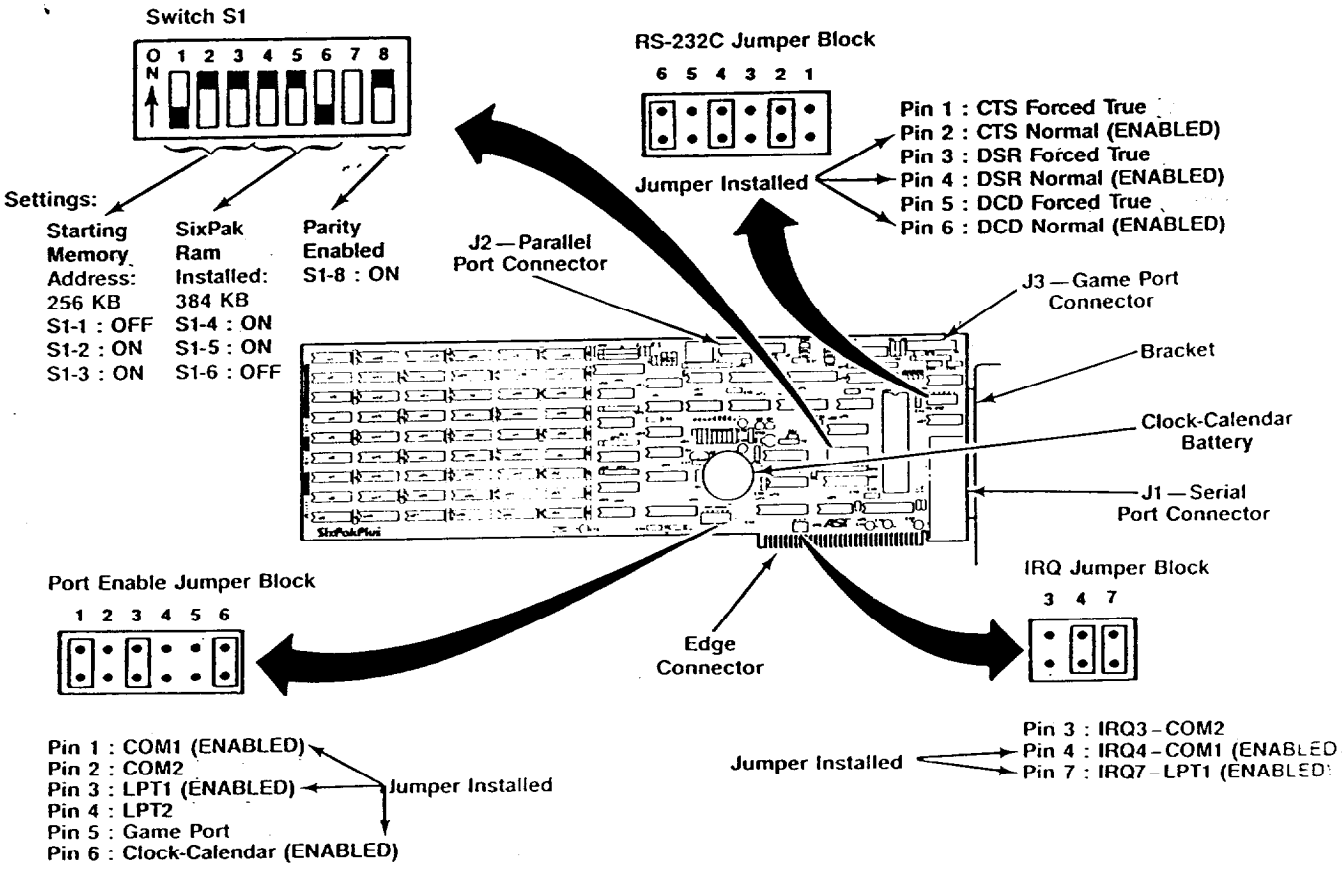
Switch S1
O N 1 2 3 4 5 6 7 8
Settings:
Starting Memory Address:
256 KB
S1-1 : OFF
S1-2 : ON
S1-3 : ON
SixPak Ram Installed:
384 KB
S1-4 : ON
S1-5 : ON
S1-6 : OFF
Parity Enabled
S1-8 : ON
RS-232C Jumper Block
6 5 4 3 2 1
Jumper Installed
Pin 1 : CTS Forced True
Pin 2 : CTS Normal (ENABLED)
Pin 3 : DSR Forced True
Pin 4 : DSR Normal (ENABLED)
Pin 5 : DCD Forced True
Pin 6 : DCD Normal (ENABLED)
J2 — Parallel Port Connector
J3 — Game Port Connector
Bracket
Clock-Calendar Battery
J1 — Serial Port Connector
Port Enable Jumper Block
1 2 3 4 5 6
Edge Connector
IRQ Jumper Block
3 4 7
Pin 1 : COM1 (ENABLED)
Pin 2 : COM2
Pin 3 : LPT1 (ENABLED)
Pin 4 : LPT2
Pin 5 : Game Port
Pin 6 : Clock-Calendar (ENABLED)
Jumper Installed
Jumper Installed
Pin 3 : IRQ3 – COM2
Pin 4 : IRQ4 – COM1 (ENABLED)
Pin 7 : IRQ7 – LPT1 (ENABLED)

Figure 3B