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ENGINEERING DOCUMENT

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☐ Requirement Specification
☐ Project Development Plan
☐ Test Requirements
☐ Software Design Description
☐ Software Development Standard
☐ Software Maintenance Manual
☐ Programmable Logic Description
☐ Product Performance Specification
☐ Software Verification & Validation Plan
☐ Test Reports
☒ Other

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OIS41 to OIS41 PLUS2 Upgrade Procedure
Project R2042X

24 September, 1996
Revision 1.0

Revision History

Date	Author	Changes Made	Revision
Sept. 1996	C. Albert	Original	1.0

A. Conversion Kit Contents AOHOIS4111, OIS41 PLUS2

DEC 255/233 Computer Assembly, p/n 6642865A1
IIMKM02A, Keyboard Electronics
IIAKB03A, Auxiliary (QWERTY) keyboard
IIAMS04A, PS/2 Mouse
6' VGA cable, p/n 1949138A1
9P-9S RS232 Cable, p/n 6639637A4
I/O to Mouse Port Cable, p/n 6642341A1
MKM to Keyboard Cable - p/n 6642339A1
Variable scan frequency CRT, p/n 1948623A9
3 ft. SCSI Adapter Cable, p/n 1949207A5
2.88MB Floppy Disk Drive Assembly, p/n 6638554A8
OIS43 SCSI Ribbon Cable, p/n 6641230A1
Note: Software must be ordered separately.

B. Conversion Kit Contents AOHOIS4112, OIS41 PLUS2 Upper CRT only

Same as AOHOIS4111 except the 6' VGA cable is replaced by a 10' cable, p/n 1949138A2

C. Conversion Kit Contents AOHOIS4113, OIS41 PLUS2 Dual CRT

Same as AOHOIS4111 with the following changes:
Add: 10' VGA cable, p/n 1949138A2
Substitute: DEC 255/233 Computer Assembly, p/n 6642865A2 (which includes a second 2D 8 plane Graphics Accel. Video Display Driver, p/n 1949514A4.) for 6642865A1.

D. Conversion Kit Contents AOHOIS410A, OIS41A PLUS2 Driver Cabinet

DEC 255/233 Computer Assembly, p/n 6642905A1
Mounting Plate Assembly, p/n 6642895A1
SCSI Adapter Cable, p/n 1949207A5

E. Conversion Kit Contents AOHOIS410D, OIS41D PLUS2 Driver Cabinet

Two sets of AOHOIS410A parts.

F. AOHOIS4111/2/3 (Consoles) Procedure

Before starting the following procedure, familiarize yourself with the software installation section of the File Utilities Manual, E96-192-3. **SAVE** the present software configuration onto a DAT tape. Then, turn off the power to the OIS41 unit.

1. Remove the OIS41 parts which are to be replaced as follows:

   1.1 Front and rear doors. Unlatch and lift off.

   1.2 Top cover plate. Remove hold down screws and place them and the cover in a safe place. A 1/8 inch Allen head wrench might be needed.

   1.3 Top fan shroud assembly. Unplug power to the three fans. Remove the two 10-32 screws which hold the bracket to the weldment in the front first then the two 10-32 screws which hold the shroud to the weldment at the back of the console. Lift the shroud off the CRT and save. **CAUTION** Use caution when working around CRT(s). High voltage is present.

   1.4 Identify cable connections and then disconnect all cables from the CPU, Floppy Disk Assembly and Monitor. Keep the tied cable bundles together as they will be used later to route the OIS43 (replacement) cables. The following cables will be replaced:

   SCSI Ribbon cable
   CRT Red, Green, Blue signal cable/s
   Computer to keyboard cable
   Computer to Mouse Port cable

   1.5 Remove video monitor. Note: This section only applies to OIS41 Consoles with Single Scan Frequency monitors. If the console CRT is either Intecolor, p/n EO-2154-20B or E20FFA-BCI, it is a multiscan frequency monitor and does not have to be replaced. The p/n's are on the right side of the CRT looking down from the rear. **CAUTION** Two people are required for this operation because of the weight of the CRT (approx. 80 lbs) and the potential for personal injury and/or damage to the console. While one person holds onto the CRT assembly, the other removes the two 1/4 X 20 bolts which hold the CRT mounting plate to the CRT Mounting Shelf (weldment). Carefully slide the CRT screen under the rear horizontal beam in the weldment. Use extreme caution if there is a touchscreen to make sure the touch screen is not damaged. Set the CRT aside. If there is a touchscreen, remove it now from the front of the CRT.

   1.6 Remove the DEC VAX 4000 Model 60 computer. There are two 10-32 screws in the rear and two in the front which hold the VAX mounting plate to the floor of the weldment. Remove these screws and slide the computer assembly out the back of the console. Save the screws.

   1.7 Remove the IIMKM02 board from the Computer Interface Unit (CIU) Card Cage.

   1.8 Remove the floppy disk assembly.

   All cables should have been removed and tagged. Now, looking in from underneath, locate two 10-32 screws on the bottom of the floppy disk assembly which hold it to the console weldment. Unscrew these screws and pull the unit down to clear a lip in the plastic bezel which holds the top of the assembly in place and pull the floppy disk unit out the rear of the console. Save the mounting screws.

   1.9 If there is a tail brace holding the old assembly in place, remove and discard it.

2. Installing the OIS41PLUS2 parts.

   Install the parts from the Console modification kits as follows:

2.1 IIMKM02A Board. Set up the IIMKM02A board per figure 1 below:

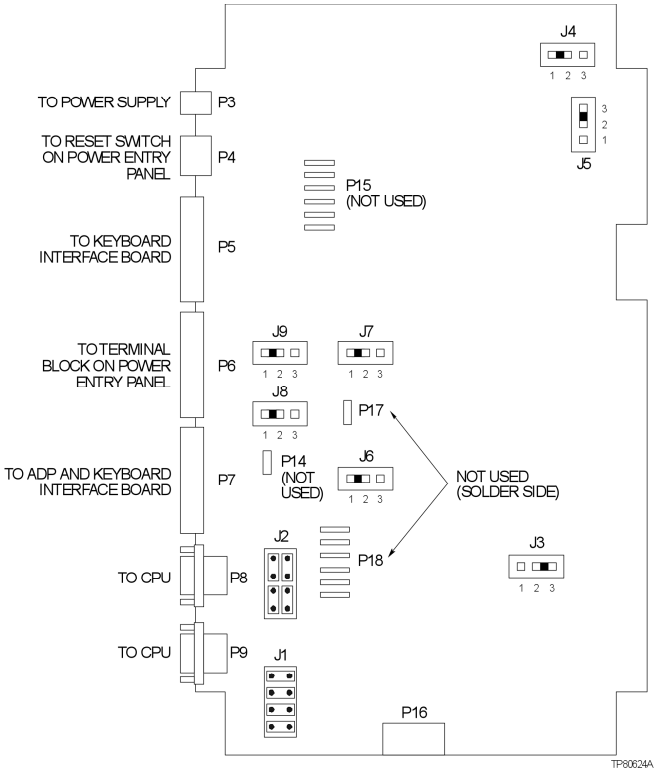

Figure 1

Install the board in the card cage where the IIMKM02 board was removed.

2.2 Floppy disk installation, p/n 6638554A8.

Remove the floppy disk from the assembly to make it lighter and easier to install. Set the SCSI address to 02, see Figure 2 below:

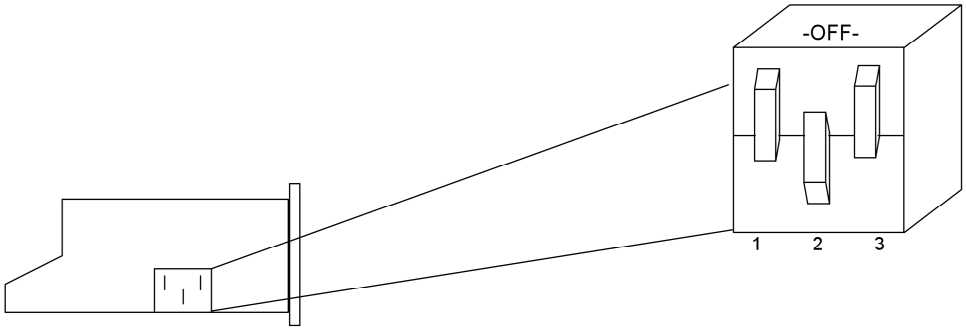

Figure 2

Lift the assembly into place from the rear of the console. Maneuver the outer bracket under the lip on the plastic bezel and line up the bottom with the two 10-32 tapped holes in the weldment. Attach the floppy disk assembly with two 10-32 X .500 lg sems screws. After the assembly has been mounted, slide the floppy disk in from the front.

2.3 SCSI Ribbon Cable Installation

Attach one end (Centronics 50 connector) to the PEP bracket by inserting it in the SCSI Peripheral port from the rear. Next, pull the cable up the left side (looking in from the back of the console) and connect the ribbon connector to the rear of the floppy disk circuit board. The next ribbon connector is routed back down and attached to the 50 pin connector, P17, on the IIMCP02 board in the CIU. The final Centronics connector is attached to SCSI adapter cable, p/n 1949207A5, connected to the SCSI port on the back of the computer.

2.4 19 Inch Color Monitor Installation

CAUTION Two people are required for this operation because of the tight clearance and the awkwardness of the heavy monitor.

2.4.1 Lower CRT (this applies to OIS41 units which have single scan frequency monitors).

Attach the new monitor to the old monitor's mounting plate using the screws which attached the single scan frequency monitor. If there is a touch screen, use the rear set of holes, otherwise, use the front set of holes. Each person grabs one side of the assembly and lifts it into the weldment from the rear by tipping the front screen forward and down to clear the rear horizontal stiffener in the weldment and then slide it on the CRT mounting shelf forward. If this is a touch screen unit, approx. .060" clearance should be left between the touch screen and the plastic bezel. Non touchscreen units can be pushed forward until the CRT touches the bezel. Install the two 1/4 X 20 bolts and washers in the rear mounting slots and tighten.

2.4.2 Upper CRT (this applies to all OIS41 units because the video cable has to be replaced).

2.4.2.1 If the unit is an OIS43 (dual boy), install the second video card, p/n 1949514A4 as follows:

Note: Computer assembly p/n 6642865A2 should be supplied for Dual CRT, OIS413 installations. This discussion is included for reference purposes.

Remove case hold down screw in the middle of the back of the computer assembly. Turn the key to unlock the top cover.

Pull the plastic top towards the rear approx. 2" and lift up to remove. Remove the right side panel (viewed from the front) by pulling it back and out.

Rotate the rotary video selection frequency switch on the card to setting 0 (see Figure 3). Remove jumper from the VGA enable/disable jumper pins. No jumpers are required on second or additional modules.

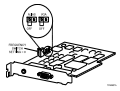

Figure 2

Remove second slot cover from top by removing the plate screw. Carefully remove the top video card and insert into the second slot from the top.

Insert the new video card into the top slot.

Reinstall the card retaining screws.
Replace the plastic sides, top and case hold down screw. Turn key to relock the top cover latch.

2.4.2.2 Video cable installation for the upper CRT.

The present video cables have to be replaced because the connectors on the rear of the new DEC Alpha 255/233 computer are for VGA cables.
Remove the rear cover over the top CRT by unscrewing the two 10-32 Phillips pan head screws in the rear and two on top. Then, remove the front cover mounting screws and carefully take off the front cover. Next, disconnect the power cord connectors from the fans mounted in the rear cover. Finally, lift off the rear cover.
Remove the four screws holding the CRT to its mounting plate. Detach the CRT video cable Red, Green and Blue BNC connections and slide the CRT forward. **CAUTION** Don't let the CRT fall. It weighs approx. 80 lbs. and will slide forward if not restrained.
Attach one end of the 10' long video cable, p/n 1949138A2, to the Red/Green/Blue connectors on the old cable and carefully pull the old cable down and through the upper CRT Mounting Tube Support.
Note: It may be necessary to cut several tie wraps holding the old cable to the OIS structure to facilitate removal of the old cable.
Detach the new cable from the old one. Complete removal of the old upper video cable and thread the new cable down the left inside of the console (viewed from the rear). Leave loose.
Reverse this procedure to reinstall the CRT and its cover. Make sure all the CRT cables are installed before remounting the cover. If the upper CRT has a touchscreen, it may be necessary to realign the touchscreen to insure clearance between the screen and the upper bezel.
If the monitor is a single scan frequency unit and must be replaced, remove the mounting plate from the old CRT and attach it to the replacement CRT in this kit. Refer to 2.4.1.

2.4.2.3 Touchscreen Installations.

If the OIS41 Console has a touchscreen, it must be removed from the front of the monitor being replaced by carefully peeling it away. The touchscreen is attached with Velcro hook/loop tape. Attach the touchscreen to the new CRT with the Velcro tape included in this kit. Refer to drawing 6638545 for specific details on cabling, etc.

2.5 CPU Installation: p/n 6642865A1/A2.

Remove the door that covers the CD ROM Drive. Install the new DEC 255/233 computer by inserting it into the console from the rear. Connect the SCSI ribbon cable to the SCSI adapter cable and place them on top of the computer. Align the mounting screw slots in the mounting plate with those in the console structure and install four 10-32 screws. Leave the screws loose. Adjust the mounting plate to align the computer with the opening below the card cage and tighten the mounting screws. There should be approx. .100" clearance between the front face of the computer and the console. The CD ROM cover door can be discarded if desired.

2.6 Installation of new cables. (Reference drawing C258614)
Connect the following cables to the rear of the computer:

p/n 6642341A1, I/O Mouse Port Cable to the Mouse port
p/n 6642339A1, MKM to Keyboard Cable to the Aux. Keyboard port
p/n 6639637A4, 9P-9S RS232 Cable to the COM port 2
p/n 1949207A5, SCSI cable to the SCSI port
p/n 1949138A1, 6' Video Cable - From the top video card to the lower or upper CRT if there is only one CRT. If there are two monitors, the upper CRT video cable is connected to the top port and the lower CRT is connected to the next port down from the top. The 10' long VGA cable, p/n 1949138A2, is used to connect the computer to the upper CRT.
The other end of these cables should be attached as shown on drawing C258614. Dress up the installation by tie wrapping these cables to existing ones in the console.

2.7 Reinstalling the fan shroud and top cover
Reinstall the top fan shroud assembly by reversing step 1.3. Reconnect the power cord to the three fans. Attach the top cover plate by reversing step 1.2.

2.8 Pull the IIMCP02 Multibus Communication Processor board and reset switch 3 as shown below. If the firmware (ROM SIMM) is not F1 or later, replace the firmware with that provided with the software. Reinsert the IIMCP02 board.

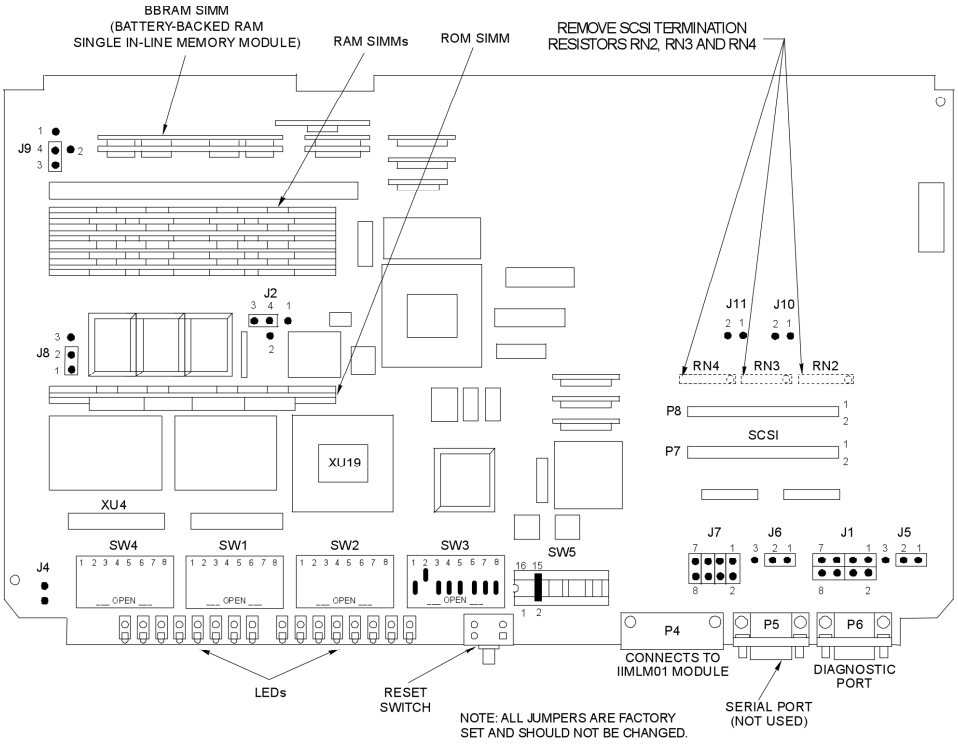

Figure 4

TABLE 1. SCSI Bus Hardware Addresses

Address	SCSI Bus Device
0	Hard disk drive (1.05 Gbyte system)
1	Hard disk drive (1.05 Gbyte application)
2	Floppy disk drive
3	IIMCP02 module
4	CD-ROM
5	DAT tape drive
6	Optical disk drive
7	CPU

2.9 Dress up all the cables and tie wrap them for neatness.

2.10 Install the new mouse and keyboard by connecting them into the I/O distribution board in the front of the console beneath the floppy drive.

2.11 **CAUTION** Before turning on the power, make certain that the voltage switch on the rear of the computer is set to the proper AC supply voltage (120 VAC ot 240 VAC).

3. Install the latest software CD ROM disks and reload the configuration by following the procedures in the software installation section of the File Utilities Manual, E96-192-3.

G. AOHOIS410A/D (Driver Cabinets) Procedure

Before starting the following procedure, familiarize yourself with the software installation section of the File Utilities Manual, E96-192-3. **SAVE** the present software configuration onto a DAT tape. Then, turn off the power to the OIS41 Driver Cabinet.

1. Installing Computer Assembly 6642905A1

1.1 Tag and disconnect all cables to the DEC VAX 4000 Model 60 computer(s).

1.2 Mark the location of the lower set of mounting holes in the mounting rails. There are four holes in the rear for Mounting Brackets, p/n 6639261A1.

1.3 The dual computer assembly in the cabinet weighs approx. 65 lbs. Each separate computer assembly weighs approx. 25 lbs. The DEC 4000/60 computers are mounted on a mounting plate which slides into a shelf which is in turn attached to the front and rear of the mounting rails. Each computer subassembly has to be removed before the rear mounting screws on the shelf can be accessed.

1.4 Remove the two middle 10-32 screws which hold the rear of the computer mounting bracket to the shelf in the front and the two screws in the front. Now, slide the computer subassembly out the front of the cabinet. If there are two computer subassemblies, (OIS41D) repeat this procedure for the second unit.

1.5 The mounting shelf consists of two pieces of the same part. The bottom shelf is mounted to the mounting rail with four 10-32 screws in the front and is attached to two mounting brackets in the rear. Unscrew the four 10-32 mounting screws in the rear first and then the four 10-32 screws in the front and remove the lower shelf. Leave the mounting brackets attached to the mounting rails. Now, remove the top shelf which is the same as the bottom except it is installed in the cabinet in the inverted position.

1.6 Remove the top two mounting brackets, p/n 6639261A1, as these are not used with the kit.

1.7 Move the bottom two mounting brackets down four holes. Remove the Block Off Plate, p/n 6640955A1, which is attached to the front of the mounting rail above the CIU card cage.

1.8 Move the four 10-32 cage nuts attached to the front of the mounting rails down 4 holes. Slide the shelf assembly from the upgrade kit in from the front and attach the front of the shelf to the four cage nuts with 10-32, .500 long pan head screws. Leave the screws loose. Attach the rear of the shelf to the mounting brackets. Level the shelf and tighten the mounting screws. Note: It is important that all the screws are used when mounting the shelf because they are needed for structural integrity.

1.9 Slide the new DEC ALPHA 255/233 computer assembly, p/n 6642905A1, onto the shelf and move it to the rear. The rear tongue on the computer mounting plate should slide under the retainer clip spot welded to the rear of the shelf. Slide the computer backwards until the front lip hits the front of the shelf. Lock in place with two, 10-32, .500 long pan head screws. The mechanical assembly is now completed. Repeat steps 1.8 and 1.9 to install a second computer. The second computer should be located as close as practical above the first one. Note: Use the two upper mounting brackets, p/n 6639261A1, for the second computer assembly.

1.10 Reconnect all cables. The SCSI cable is attached to the SCSI port and the diagnostic cable is attached to the COM1 port. This cable is used to connect either a monochrome terminal or a lap top computer to the new computer. Two null modem cables are included in the kit for hooking up either type of terminal. This is the terminal used to monitor start up and reconfiguration activities.

1.11 An ethernet converter is part of the DEC ALPHA 255/233 computer assembly and the Ethernet Coax cables should be connected to the BNC connection on the rear panel of the computer. The BNC tee and resistors can be retrieved from the replaced computer for this purpose.

2. **CAUTION** Before turning on the power, make certain that the voltage switch on the rear of the computer(s) is set to the proper AC supply voltage (120 VAC or 240 VAC).

3. Connect a diagnostic terminal to COM1 port and turn on the power.

4. Install the latest software CD ROM disks and reload the configuration by following procedures in the software installation section of the File Utilities Manual, E96-192-3. Note: You may need a small step ladder to access the CD ROM drives.