MODEL 9400 DISK STORAGE SYSTEM

(FOR VAX-11/780 COMPUTERS)

TECHNICAL MANUAL

PRELIMINARY SUPPLEMENT

WITH RM03 OR RP04 EMULATORS

GENERAL INFORMATION

INSTALLATION

DIAGNOSTICS AND CHECKOUT

LOGIC DIAGRAMS

System Industries

5 AUGUST 1980

CHAPTER 1

GENERAL INFORMATION

1-1. **INTRODUCTION.** This technical manual provides installation, operating, and maintenance information on the System Industries 9400 Disk Storage System for Digital Equipment Corporation's VAX-11/780 computers. The manual is divided into ten chapters as follows: Chapter 1, General Information, describes the organization of the manual, the physical configuration of the system, a brief functional description, and general product information such as product warranty and manufacturer services. Chapter 2, Installation, provides instructions for unpacking, installation, and initial checkout. Chapter 3, Operation, gives descriptions of the controls and indicators, instructions for system startup, and operating procedures. Chapter 4, Diagnostics and Checkout, gives procedures for running diagnostic programs that are used for initial checkout, preventative maintenance, and troubleshooting. Chapter 5, Theory of Operation, gives a technical description of the system architecture, the functions of the subsystems, and some of the circuitry that implements the logic for the various functions. Chapter 6, Option Features, describes options and upgrades available for the standard 9400 Disk Storage System for VAX-11/780 computers. Chapter 7, Periodic Maintenance gives periodic maintenance requirements for the system. Chapter 8, Alignment and Calibration, provides calibration and alignment procedures for the system. Chapter 9 contains parts location drawings and parts lists for the Outerface and its major subassemblies. Chapter 10, Difference Data, details model differences created by factory and field engineering changes.

1-2. **GENERAL DESCRIPTION.**

a. DEC RH780. The DEC VAX-11/780 Synchronous Bus Interconnect (SBI) is designed to connect the VAX-11/780 to high performance, large capacity memory subsystems and disk and tape I/O subsystems. The SBI has a data path width of 32 bits and a physical address space of 28 bits. Disk and tape I/O devices are connected to the SBI by means of the DEC RH780 Massbus Adapter (MBA). The DEC MBA is a device that interfaces between the SBI and the disk or tape controllers. (Refer to Figure 1-2, "VAX-11/780 System Architecture.") Massbus Adapters plug into four SBI backplane slots that can be provided in a VAX-11/780 system. Each DEC MBA can support up to eight disk or tape controllers. In a standard DEC configuration, each disk controller supports only one drive. The DEC MBA performs the following functions:

1. Maps address for virtual to physical addresses.
2. Buffers between main memory and memory devices connected to the MBA.
3. Transfers interrupts from the memory controller to the SBI.

b. 9400 System. The 9400 Disk Storage System for the VAX-11/780 replaces and emulates a DEC RH780 MBA in conjunction with an RM03 disk system. Each 9400 system can provide access for up to four drives connected radially or in a daisy chain. As an option, up to eight drives can be connected in a daisy chain/radial configuration. (Each CDC 9766 drive has a capacity of 300 Mbytes; each CDC 9762 drive has a capacity of 80 Mbytes; the CDC 9775 Fixed Module Drive (FMD) provides up to 675 Mbytes of storage.) A multiport option allows two to four VAX-11/780s, PDP-11/34s, PDP-11/70s in any combination, to share the 9400 system. A dual channel drive option can provide a single CPU with two 9400 Controllers connected to the same set of dual channel drives. The 9400 Controller can transfer data from the drives to the 9400 Interface at approximately 1.2 Mbytes per second (the transfer rate of the drive). The Interface buffers the data and transfers to the SBI at the bus speed of 13.3 Mbytes/sec.

1.3 **PHYSICAL CONFIGURATION.** The System Industries 9400 Disk Storage System for the VAX-11/780 computers consists of three major components: the 9400 VAX-11/780 Interface, the 9400 Controller, and the disk drives.

a. 9400 VAX-11/780 Interface. The Interface is made up of four PCBs that are installed in a System Industries backplane and cardcage assembly or a DEC RH780 MBA backplane assembly. The System Industries backplane PCB (9400-6206) and cardcage (9400-7203) are installed in one of the four-inch slots in the VAX cabinets. Devices in these slots can be connected to the SBI. There are two such slots in the system cabinet and two more in an optional expansion cabinet. (The system cabinet houses the CPU and memory.) The VAX-11/780 cabinet configuration is shown in Figure 1-3. A hex high paddleboard PCB (9400-6205) is plugged into the rear panel of the Interface backplane. (Hex-high means six DEC card edge connectors fit on the size board used.) Two standard 9400 cables connect the paddleboard to the 9400 Controller cabinet. A System Industries power supply (9400-7210) is available if the compatible DEC MBA power supply already has two MBA devices to support. The four logic boards that make up the Interface are designated as follows:

- SBI Interface PCB (9400-6201)
- Internal Registers PCB (9400-6202)
- Data Path PCB (9400-6203)
- MPU Interface PCB (9400-6204)

Four similar boards constitute the original DEC RH780 MBA. The DEC boards will not run in a System Industries backplane because their TR and BR levels must be set

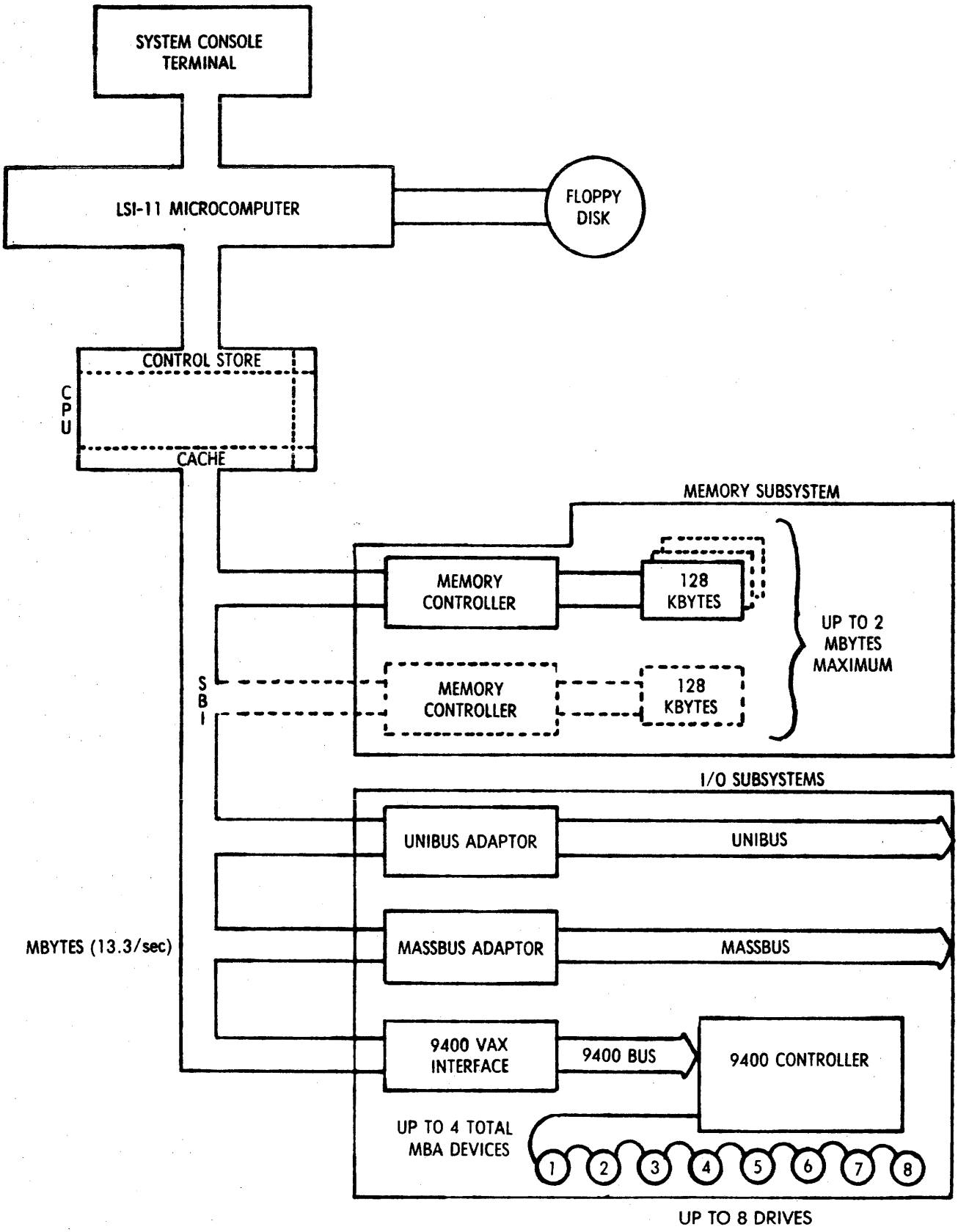


Figure 1-2. VAX-11/780 System Architecture

through backplane signals. The System Industries TR and BR are set by switches on the boards, and they will run in a DEC backplane.

b. 9400 Controller. The 9400 Controller is a standard System Industries product also used in PDP-11 systems. It is a rackmounted device with its own power supply. It is described in the System Industries technical manual: 9400 Disk Storage System with RP04 or RM03 Emulators for PDP-11 Computers (9400-11-01), Vol, 1. (Vol 2 contains the schematic diagrams.). Those sections of the manual containing information on the Computer Port Adapter (CPA) and the RH70 Cache Bus Interface do not apply to the Controller's use in the 9400 system for VAX-11/780 computers. The 9400 VAX Interface takes the place of the CPA.

c. Disk Drives. Each disk drive is packed in its own free-standing cabinet. The disk packs are removeable from the CDC models.

1-4. 9400 SYSTEM ARCHITECTURE.

a. Software. RM03 disk handler can run on systems using different size drives in either mapped or direct formats. Depending on how these factors are combined in a 9400 system, RM03 will run under the VMS (Virtual Memory System) with either no changes or a few software modifications to the operating system. Mostly these patches adjust size parameter to support larger capacity drives (300 Mbytes 9766s and 675 Mbyte 9775s).

b. VAX-11/780 Interface. (Refer to the block diagram for the 9400 VAX-11/780 Interface, Figure 1-4.) A bus internal to the 9400 system connects the 9400 Controller to the MPU Interface PCB and Data Path PCB. Another internal bus interconnects the four PCBs that make up the Interface. Both buses use the SBI backplane to communicate.

1. SBI Interface PCB. The SBI Interface board interfaces the 9400 VAX Interface to the SBI. It contains bus transceivers, SBI parity and confirmation logic, and other decoders and encoders for various SBI signal groups. A tristate bus, internal to the Interface, connects the SBI Interface board to the other logic boards in the Interface.

2. Internal Registers PCB. This board contains the eight RH780 internal registers that control the operation of data transfers. This board also contains 256 map registers that allow transfers to and from contiguous or non-contiguous physical memory.

3. Data Path PCB. This board contains logic to accomodate the transfer of data between the 9400 controller and the SBI. Transfers on the SBI occur in 64-bit increments; therefore, there are four transfers of 16 bits each to or from the 9400 Controller for each SBI transaction. The Data Path PCB communicates with the 9400 Controller via a bus shared with the MPU Interface PCB.

4. MPU Interface PCB. This board contains the drive-dependent registers and control logic to communicate with the MPU in the 9400 controller. This communication is via a bus shared with the Data Path PCB. There are two versions of this board: -6204-01 is for RP04 systems: -6204-02 is for RM03 systems.

1-5. REFERENCE LITERATURE.

a. Drive Manufacturers's Manuals. Applicable manuals are shipped with the drives when ordered from System Industries in a 9400 system. For names and part numbers of these manuals, refer to the 9400 Disk Storage System Manual for PDP-11 Computers, Vol. 1, (9400-11-01), Table 1-2, "Equipment, Accessories, and Documents Supplied."

b. System Industry Manuals.

1. Installation and Maintenance Instructions, 9400 Disk Storage System with RP04 and RM03 Emulators for PDP-11 computers (9400-11-01), Vol 1. This technical manual contains installation, maintenance, and theory of operation for the 9400 Controller.

2. Model 9400 Disk Storage System, Servicing Diagrams. This is volume 2 of the manual referenced in item 1. The part number is the same. This is a book of 11" x 17" diagrams.

3. Software Modifications to DEC Operating Systems, RSTS, RSX, IAS and VMS for the 9400 Disk Storage System (9400-11-03).

4. Introduction and Presite Instructions, 9400 Disk Storage System with RP04 or RM03 Emulator for PDP-11 Computers.

5. 9400 Disk LStorage Systaem with RP04 or RM03 Emulators for VAX-11/780 Computers (9400-11-04, Vol 1 - this manual).

6. Model 9400 Disk Storage System, Servicing Diagrams. This is volume 2 of the manual referenced in item 5; the title and part number is the same. This is a book of 11" x 17' drawings.

c. DEC® Manuals. DEC® literature related to the 9400 system for VAX-11/780 computers is as follows: (These manuals are not supplied by System Industries; they are listed here for reference.)

1. VAX-11/780 Technical Summary. This is a brief summary and overview of the entire VAX-11/780 system.

2. VAX11 780 Hardware Handbook. This book contains descriptions of the structure of the computer registers, descriptions of the console subsystem and central processor, the process structure, interrupts, memory management, the SBI, the Massbus subsystem,

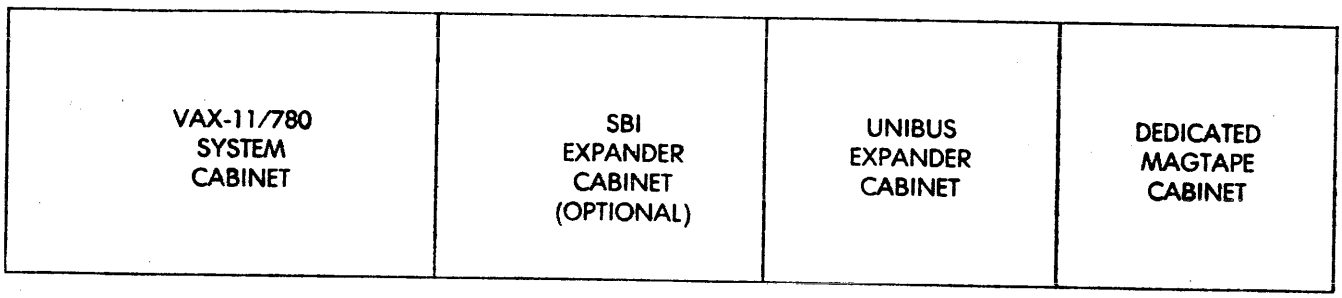


Figure 1-3. VAX-11/780 Cabinet Configuration (Front View)

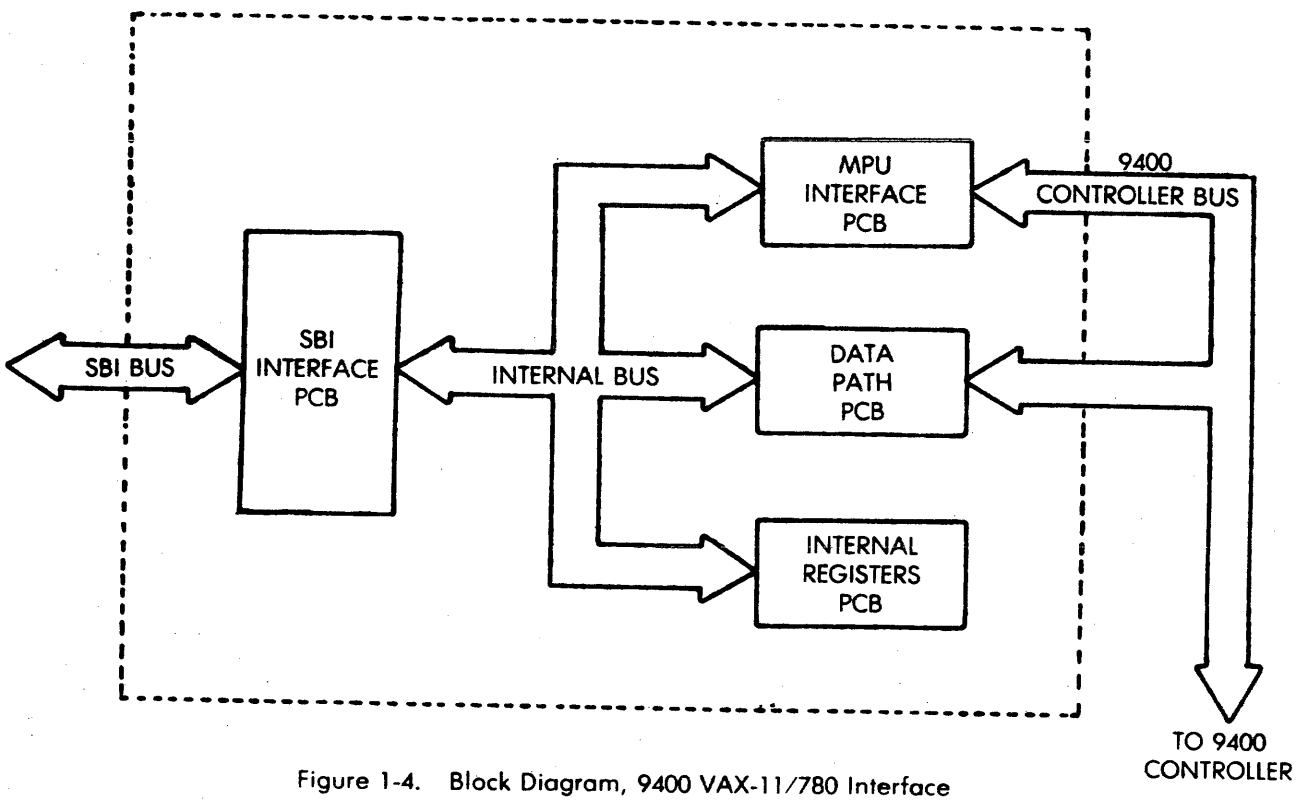


Figure 1-4. Block Diagram, 9400 VAX-11/780 Interface

mnemonics, and other aspects of the VAX-11/780.

3. RH780 MBA, Technical Description (EK-RH780-TD-001). This book is especially applicable to the 9400 VAX Interface because the Interface is a hardware and software compatible RH780 MBA device. The book gives specifications and a theory of operation of the DEC RH780 MBA.

4. VAX-11/780 Diagnostic System User's Guide (EK-DS780-UG-002). This book is a guide for running DEC® diagnostic programs. Three DEC® diagnostics can be run on the 9400 system for the VAX-11/780. Refer to Chapter 4, Diagnostics and Checkout, for details.

5. VAX11 Software Handbook. This book contains information on the conventions used to manipulate the operating system, on command language, system services, programming languages, drivers, handlers, and other aspects of the system software.

6. VAX11 Architecture Handbook. This book is a detailed software handbook that describes how the instructions work; it describes the instruction formats and adressing modes, applications programming guidelines for memory, general registers, stacks, status, and types of instructions.

7. VAX-11/780 System Maintenance Guide (EK-11780-PG-001). This book provides information valuable to those responsible for troubleshooting the system when necessary.

There are many other DEC® manuals on the VAX-11/780. A catalog of the literature is available from DEC.

d. CDC Manuals.

1. CDC Fixed Module Drive, FBZ7E1, BZ7E2, Hardware Reference Manual (83323550). This manual contains a general description, operational information, and a theory of operation.

2. CDC Fixed Module Drive, BZ87E1, BZ7E2, (9775) Hardware Maintenance Manual, is in two volumes. Volume 1 (83323560) contains sections on installation and checkout, maintenance, and parts. Volume 2 (83323570) contains logic diagrams and wire lists.

e. Fujitsu Manuals.

1. M228X, Fixed Disk Unit (FDU) Engineering Specification.

2. Maintenance manuals.

1.6 **FUNCTIONAL CHARACTERISTICS.** The system specifications are given in the following subsections.

a. Performance. System performance specifications are given in Table 1-1, "9400 System Storage Specifications," and Table 1-2, "9400 System Transfer Specifications."

b. 9400 VAX-11/780 Interface. The backpane and cardcage assembly and the four PCBs that make up the Interface are DEC compatible devices; they are designed to operate in a DEC MBA slot position and are therefore subject to the same temperature, humidity, and altitude conditions. The backplane and Interface cards consume approximately 25 A from the +5 Vdc power supply. The 70 A System Industries power supply can provide DC power for two System Industries 9400 VAX Interfaces or one Interface and one DEC MBA.

c. 9400 Controller. The power and environmental characteristics of the 9400 Controller are listed in the Model 9400 Disk Storage System Technical Manual, (9400-11-01), Vol. 1, Table 1-1.

d. Disk Drives. The functional characteristics of the disk drives are listed in their respective manuals.

1-7. **LIMITED WARRANTY.** Refer to Model 9400 Disk Storage System, Technical Manual (9400-11-01), Vol. 1, paragraphs 1-6 and following, for information on the following:

Limited Warranty
Safety Practices
Reference Data
Manufacturer Services

Table 1-1. 9400 System Storage Specifications

	9400-62	9400-66	9400-FMD	9400-Fujitsu
Data surfaces per disk unit	5	19	22	
Cylinders per disk unit	823	823	843	816
Sectors per track	33	33	33	
Words per sector (16 bits/word)	256	256		
Total data capacity per disk unit	80 Mbytes[1]	300 Mbytes[1]	675 Mbytes[1]	1686 Mbytes[1]
Maximum system capacity, 4 disk units (words)	134,676,480	511,770,624		

Notes: [1]Unformatted.

Table 1-2. 9400 System Transfer Specifications

	9400-62	9400-66	9400-FMD	9400-Fujitsu
Disk rotation speed (rpm)	3600 rpm	3600 rpm	3600 rpm	2964 rpm
Bit transfer rate	9.677 MHz	9.677 MHz	9.677 MHz	
Byte transer rate[1]	1.2 MHz	1.2 MHz	1.21 MHz	1.02 MHz
Average latency time	8.33 ms	8.33 ms	8.33 ms	10.12 ms
Head movement times				
• cylinder to cylinder (max)	7 ms	10 ms	10 ms	6 ms
• average	30 ms	30 ms	25 ms	27 ms
• maximum (track 0 to max)	55 ms	55 ms	50 ms	55 ms

Notes: [1]For multi-sector transfers on disk whose sectors are interleaved, the byte transfer will be a fraction of the values listed.

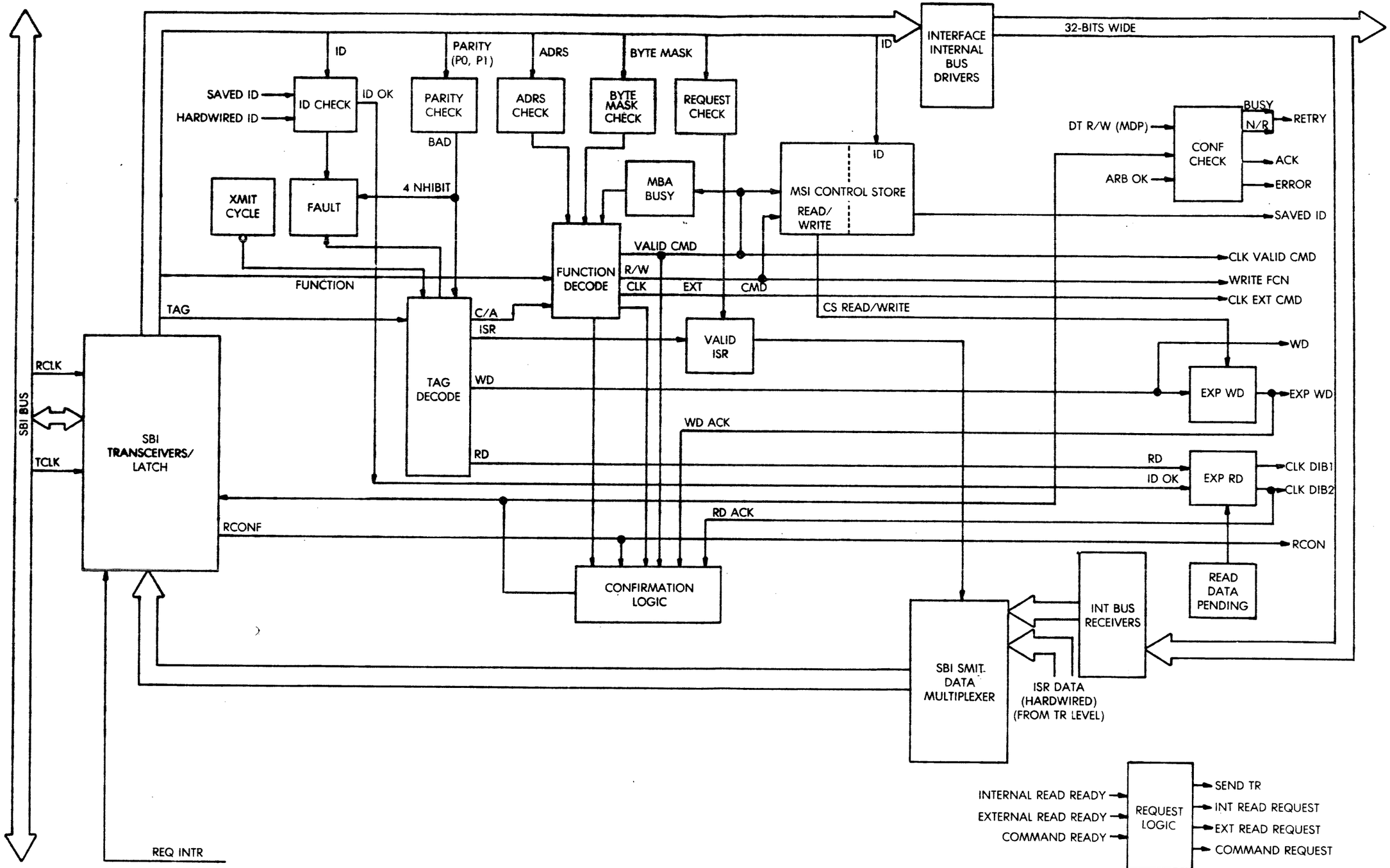


Figure 11-2. SBI Interface PCB, Block Diagram

CHAPTER 2
INSTALLATION
S.I. RH780 EMULATOR INSTALLATION PROCEDURE

Overview

Four different types of installation may be encountered:

a) No MBA's currently installed in system.
b) One MBA currently installed in system.
c) Two MBA's currently installed in system.
d) Three MBA's currently installed in system.

For type a) or b) the SI RH780 Emulator is installed in the CPU System Cabinet. For type c) or d) the SI RH780 Emulator is installed in the SBI Expander Cabinet.

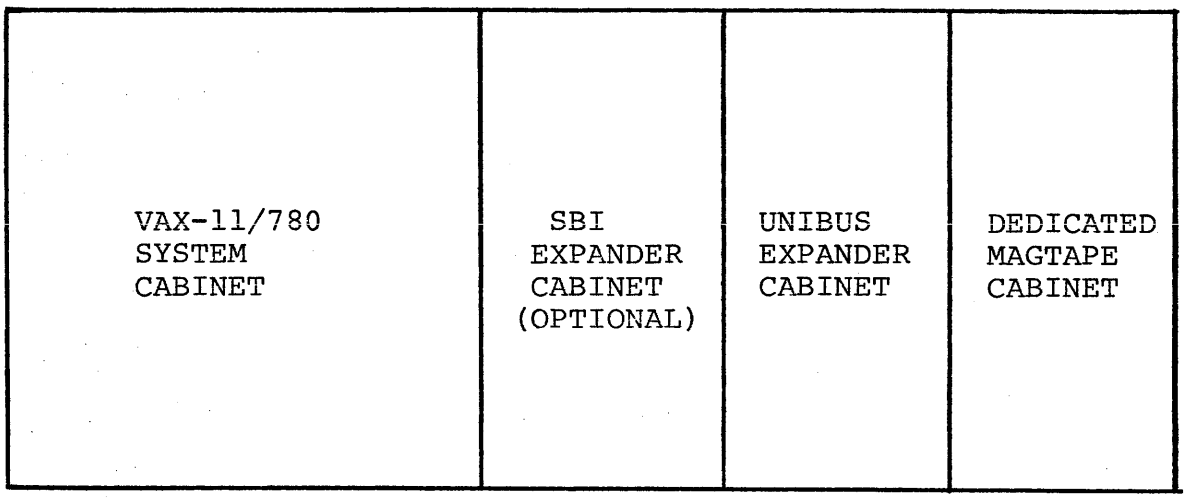


Figure 1 VAX-11/780 CABINET CONFIGURATION (FRONT VIEW)

NOTE: Before starting installation on types c) or d) ensure that the SBI Expander Cabinet has already been fully installed by the customer or D.E.C.

Type a) -

Typically, this is the RK07-based system with no massbus devices i.e. no magtape or large disks (RM03/RP05/RP06). The SI RH780 Emulator is installed in the first space reserved for a massbus adaptor (MBA) in the system cabinet. An S.I. power supply is also required, and this is installed in the space reserved for an MBA power supply in the system cabinet (see figure 2).

Type b) -

Typically, this is an RK07-based system with a magtape, or a system based around a large disk (RM03/RP05/RP06) and no magtape. The SI RH780 Emulator is installed in the second space reserved for an MBA in the system cabinet. Power for the device is obtained from the D.E.C. MBA power supply (see figure 3).

Type c) -

Typically this is a large-disk based system (RM03 or RP05/6) with a magtape. The S.I. RH780 Emulator is installed in an SBI Expander Cabinet, in the first space available for an MBA (4 inch slot).

An S.I. power supply is also required, and this is installed in the space reserved for an MBA power supply in the Expander Cabinet (see figure 4).

Type d) -

This would be a very large system with a magtape and either two types of large disks (e.g. RM03 or RP05/6), or more than 8 drives of one type.

The SI RH780 Emulator is installed in the SBI Expander Cabinet in the second space available for an MBA (4 inch slot). Power is taken from the D.E.C. MBA power supply in the expander cabinet (see figure 5).

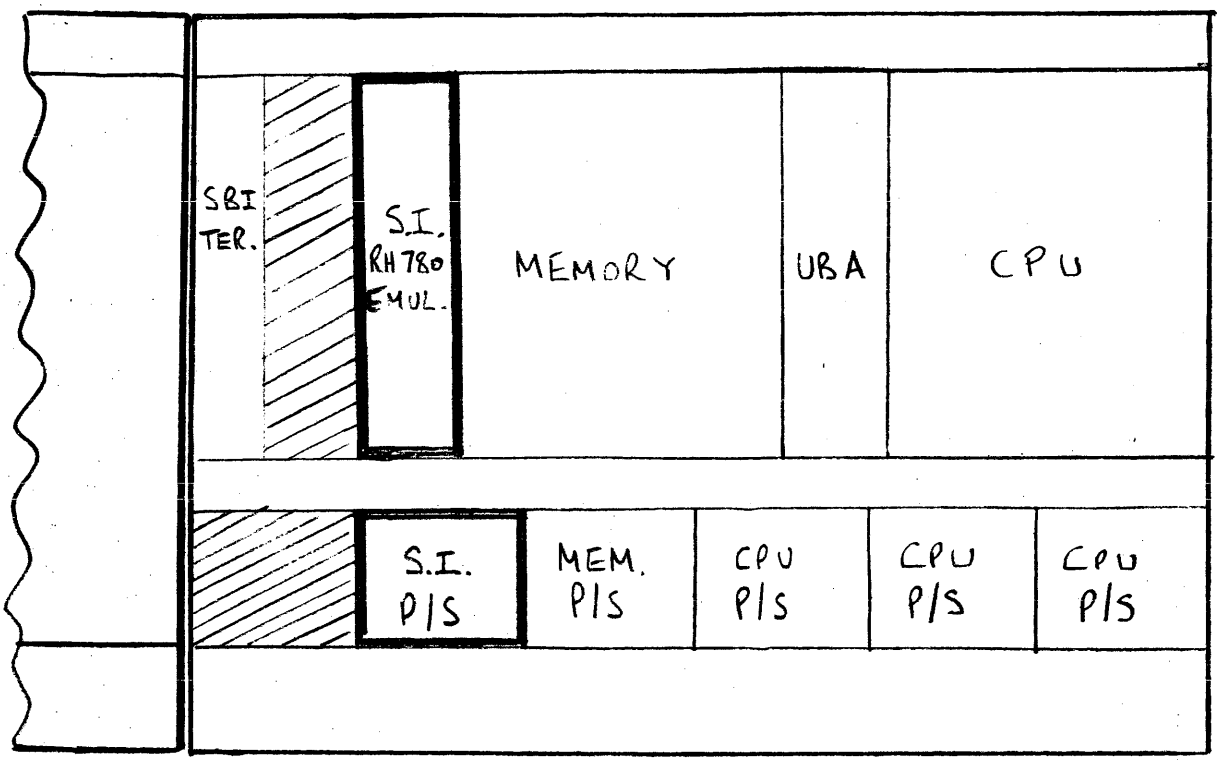


FIGURE 2 (REAR VIEW)

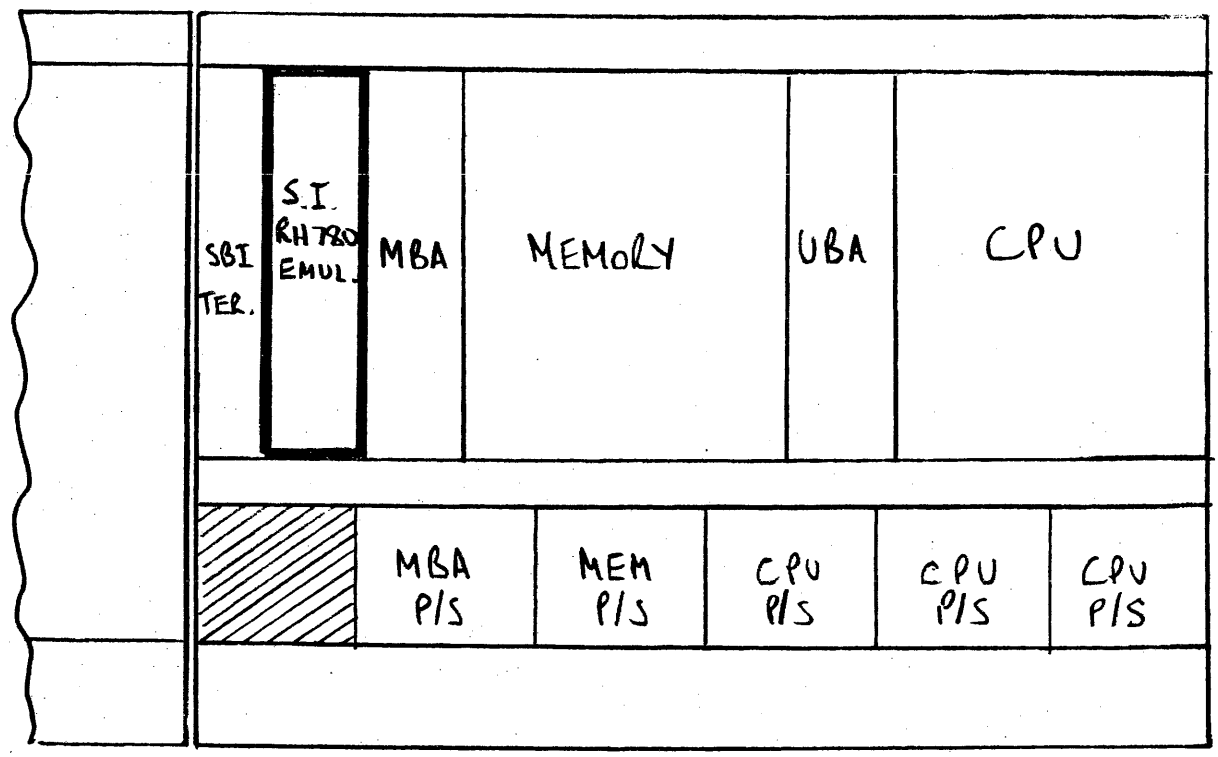


FIGURE 3 (REARVIEW)

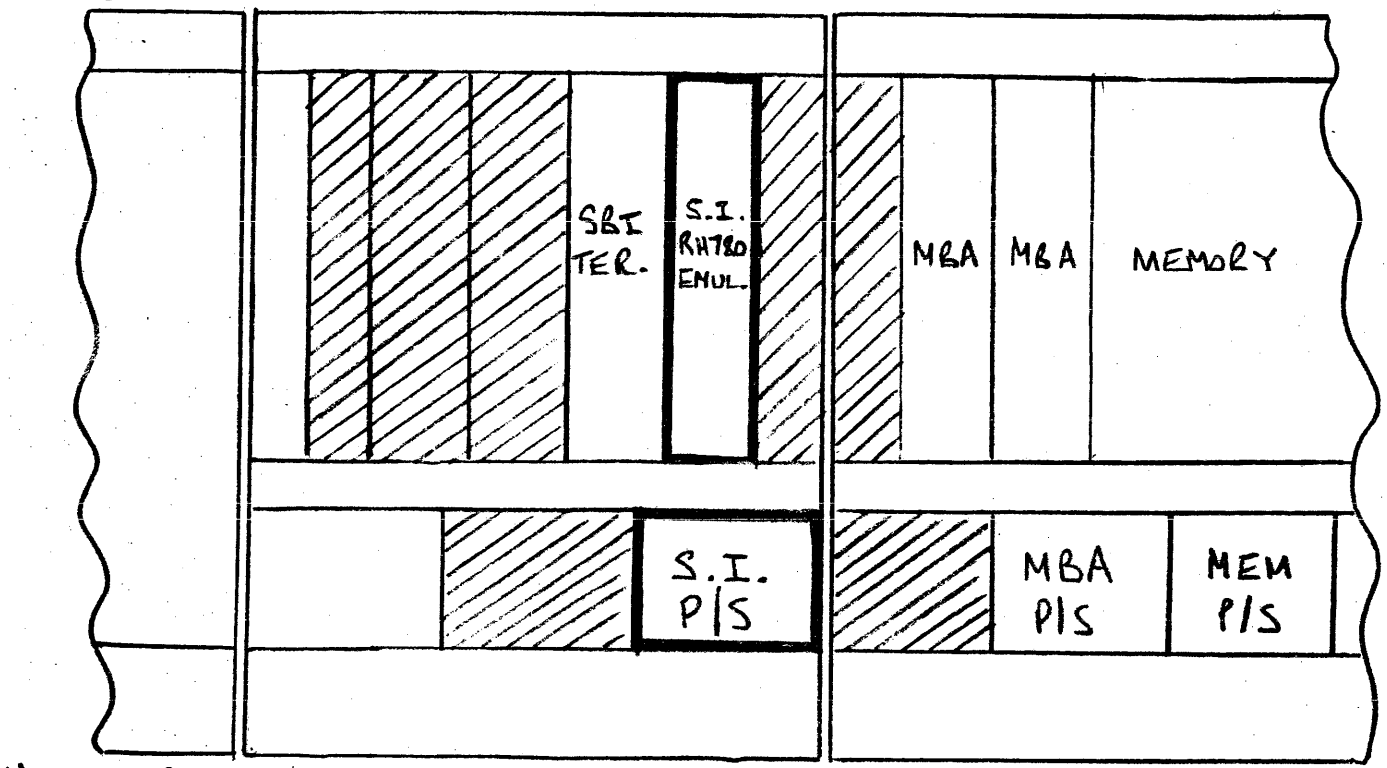


FIGURE 4 (REAR VIEW)

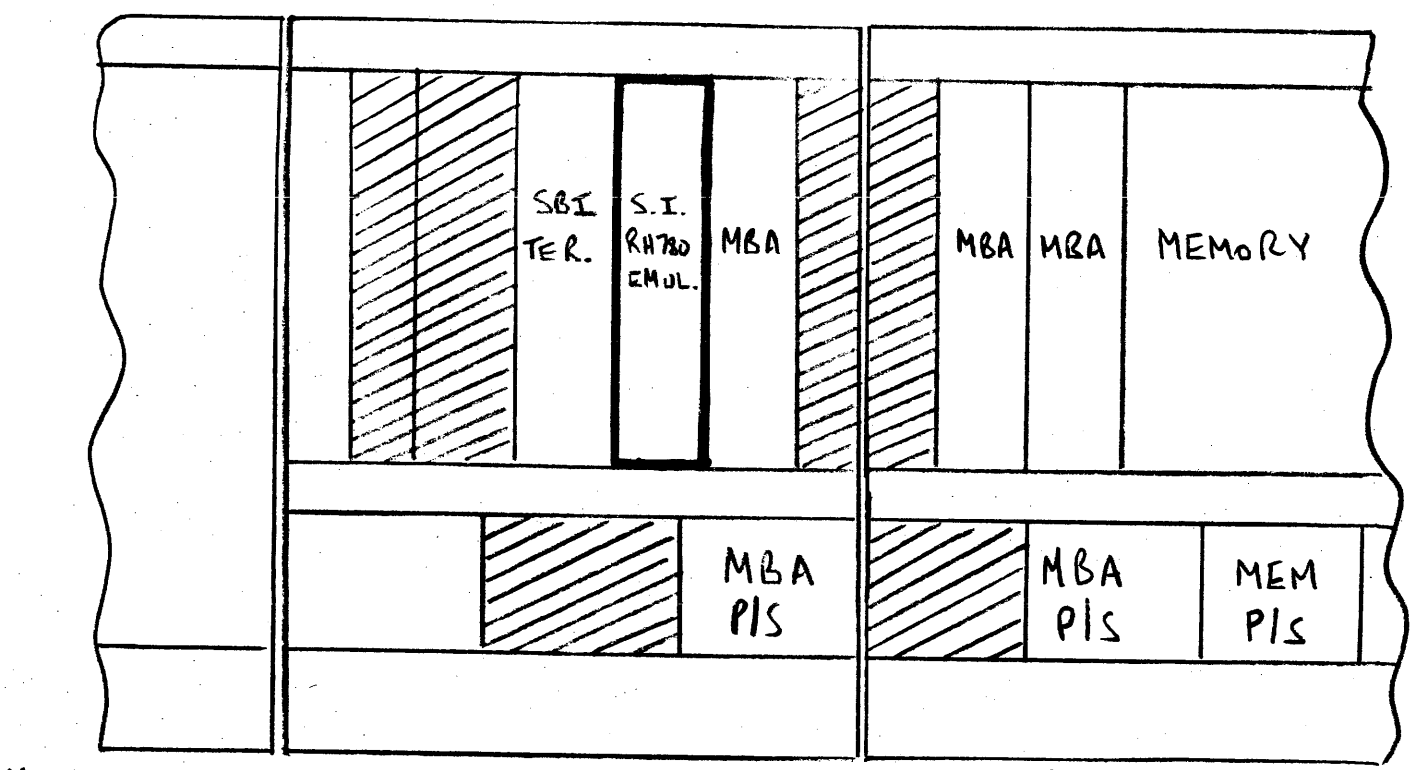


FIGURE 5 (REAR VIEW)

Installation Details

1. Install new disk drives in position as required by customer.
2. Get customer to bring down operating system, and remove all disks and tapes from drives.
3. Set five-position key switch on VAX control panel to OFF (CAUTION: This will turn off power to the CPU cabinets with the exception of the memory backplane and blowers).
4. Install 9400 Controller in the Unibus Expander Cabinet (or other position as required by customer). Connect cabling to drives, but do not yet cable up connectors J1 & J2 on C.I. board (see 9400 Manual for details).
5. Unpack S.I. RH780 emulator backplane and remove P.C. cards.
6. Determine TR level at which RH780 emulator is to be operated. Check that the wire-wrap jumper on the backplane has been installed correctly, for the required TR level (see table 1).
7. Remove the 6 SBI Cables going to the SBI terminator board (pull them off evenly to avoid bending the pins).
8. If SBI terminator is already in its correct final position in the system, go to step 18. Otherwise continue at step 9.
9. Remove power connector going to J7 on terminator board.
10. Remove AC/DO LO connectors going to J8 (& J9 if in System Cabinet) on terminator board.
11. Remove 6 8-32 screws retaining the terminator and simulator panel assembly and carefully slide out assembly from the rear of machine.
12. Remove the blank 4 inch simulator panel from the 4 inch slot in the expander cabinet where the terminator is to be installed.
13. If the terminator is being moved from a 3 inch slot in the system cabinet to a 4 inch slot in the expander cabinet, go to step 14. If the terminator is being moved from one 4 inch slot to another 4 inch slot in the expander cabinet, refit terminator and blank simulator panels in their correct final positions and go to step 17.

14. Transfer the terminator printed circuit card from the 3 inch panel to the 4 inch panel, taking care to assemble the spacers and plexiglass cover plate correctly.

15. Refit the 3 inch simulator panel in the last slot of the system cabinet to maintain uniform air flow.

16. Fit the terminator and simulator panel into the correct final position in the expander cabinet.

17. Reconnect J7 and J8 connectors to the terminator board. If the terminator has been moved from the system cabinet to the SBI expander cabinet, plug the three connectors removed in steps 9 and 10 into the sockets of the extension cables in the system cabinet. (See figure 6 for details of this cabling).

18. Remove simulator panel from position where SI RH780 emulator is to be installed, saving the 6 8-32 screws and washers.

19. Install SI RH780 emulator backplane and cardcage assembly, using 4 of the screws and washers removed in step 18.

20. If required install SI power supply by first removing dummy power supply simulator box and then sliding in SI power supply. Secure with snap clip at rear first and finally 8-32 screw & washer at front top center. Plug the "switched" A.C. power cord into the receptacle on the front of the power supply. (In the SBI Expander Cabinet there are 2 power cords; one is switched, the other unswitched. Be sure to use the switched one).

21. Connect power supply leads from SI RH780 emulator backplane to power supply using 10-32 screws and washers supplied. (Red leads are +5V, black leads are 5V return).

22. As viewed from the rear of the machine connect six SBI cables between right side of SI RH780 emulator (J7-J12) and left side of SBI backplane immediately right of it (J1-J6). These will be 18 inch cables if SI RH780 emulator is being installed as the first backplane in the expander cabinet, otherwise they will be 4 inch cables). CAUTION: Signal side of cable must connect to the inside row of pins on each backplane connector (i.e. signal side on outside radius of cable).

23. Connect six SBI cables between left side of SI RH780 Emulator backplane and right side of SBI backplane immediately left of it. In most cases this will be the SBI terminator board, and the cables to be used will be 12 inch cables removed in step 7. (See CAUTION note in step 22).

24. Connect the -5V J15 connector to the SI RH780 emulator backplane (blue and black wires).

25. For type a) and c) installations connect the AC/DO LO cable between J3 on the power supply and J13 on the SI RH780 emulator backplane. For type b) and d) installations, connect the AC/DO LO Cable between J13 on the SI RH780 emulator backplane and J14 on the previous RH780 backplane. (This cable has yellow, violet and black wires).

26. Insert p.c. boards into SI RH780 emulator backplane, ensuring first that switches for TR level and interrupt priority have been set correctly on 6201 and 6202 boards (see table 2), and switches for the "last drive number" have been set up on 6204 board (see table 3). As viewed from the front of the machine the order of the boards from left to right is 6204, 6203, 6202, 6201.

27. Plug the paddle-board card (6205) into the connector at the rear of the SI RH780 emulator. (The J1 and J2 connectors are on the right of the board as viewed from the rear). If the paddle board needs to be removed for any reason take care to pull it out evenly, otherwise the connector blocks will be damaged.

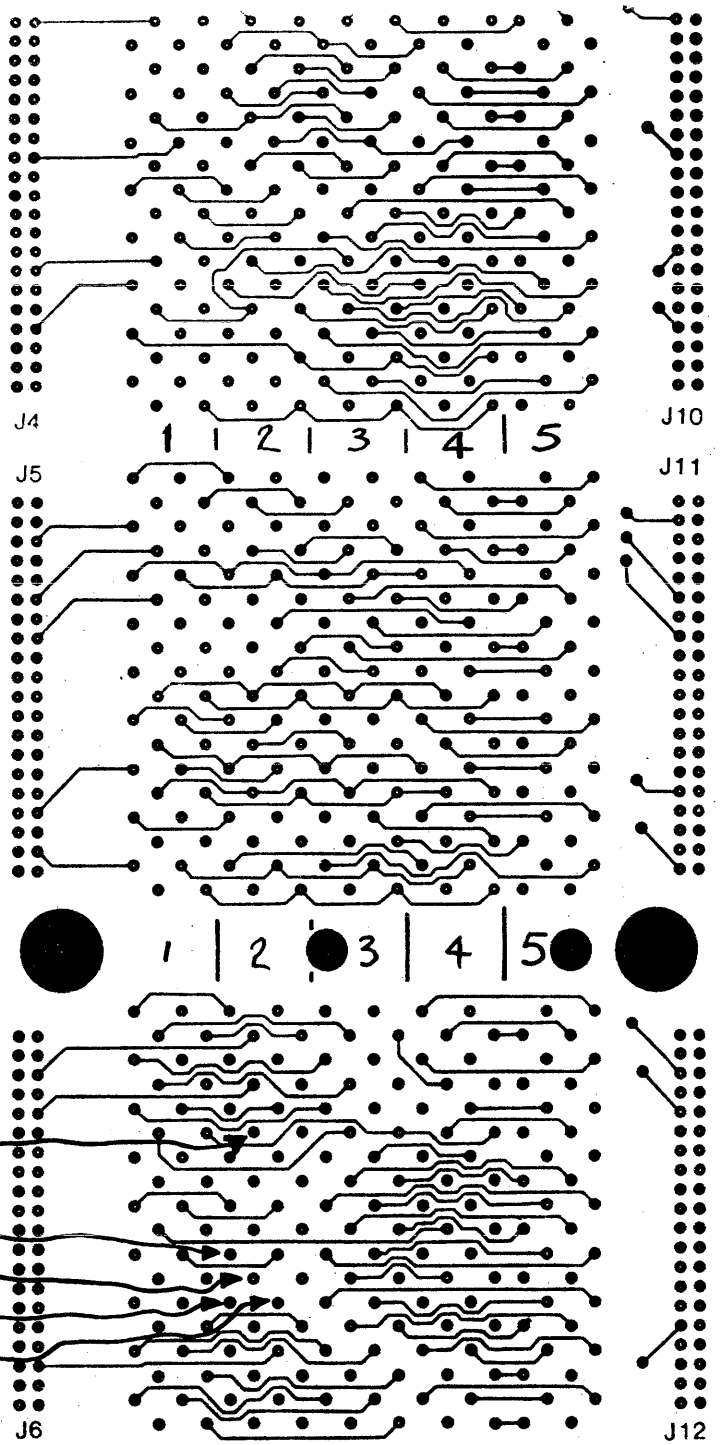
28. Mark both ends of J1 and J2 cables and connect to J1 and J2 on the paddle-board. Route cables up and around left-hand side of cabinet, securing them in the upper cable hangers and on the cabinet side with wire-wraps supplied.

29. Feed J1 and J2 cables out through bottom left of cabinet, into the Unibus expander cabinet and up to the 9400 Controller. Ensure that there is enough slack in all the cables to allow the 9400 to be pulled out of the rack when necessary. Connect J1 and J2 cables to CI board.

30. After re-checking all installation and cable work, power system up and run diagnostics (see "SI RH780 Emulator Diagnostic Procedure" for details).

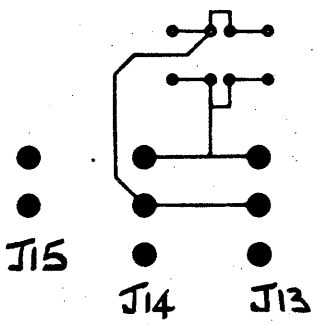
TR ARBITRATION LEVEL WIREWRAP

TR#	FROM	TO
8	2-FF1	2-FM1
9	2-FF1	2-FN1
10	2-FF1	2-FP1
11	2-FF1	2FP2



FROM : 2-FF1

TO ONE OF THESE :
- 2-FM1
- 2-FN1
- 2-FP1
- 2-FP2



GND

TABLE 1.

TR LEVEL WIREWRAP

TR#	SW1	SW2	SW3	SW4
8	OFF	ON	ON	ON
9	OFF	ON	ON	OFF
10	OFF	ON	OFF	ON
11	OFF	ON	OFF	OFF

BR#	SW5	SW6	SW7	SW8
4	ON	ON	ON	OFF
5	ON	ON	OFF	ON
6	ON	OFF	ON	ON
7	OFF	ON	ON	ON

SBI I/F BOARD (6201) SWITCH 9A

TR#	SW1	SW2	SW3	SW4
8	ON	ON	ON	OFF
9	OFF	ON	ON	OFF
10	ON	OFF	ON	OFF
11	OFF	OFF	ON	OFF

INTERNAL REGISTERS BOARD (6202) SWITCH 17D

TABLE 2 : TR AND BR LEVEL SWITCHES

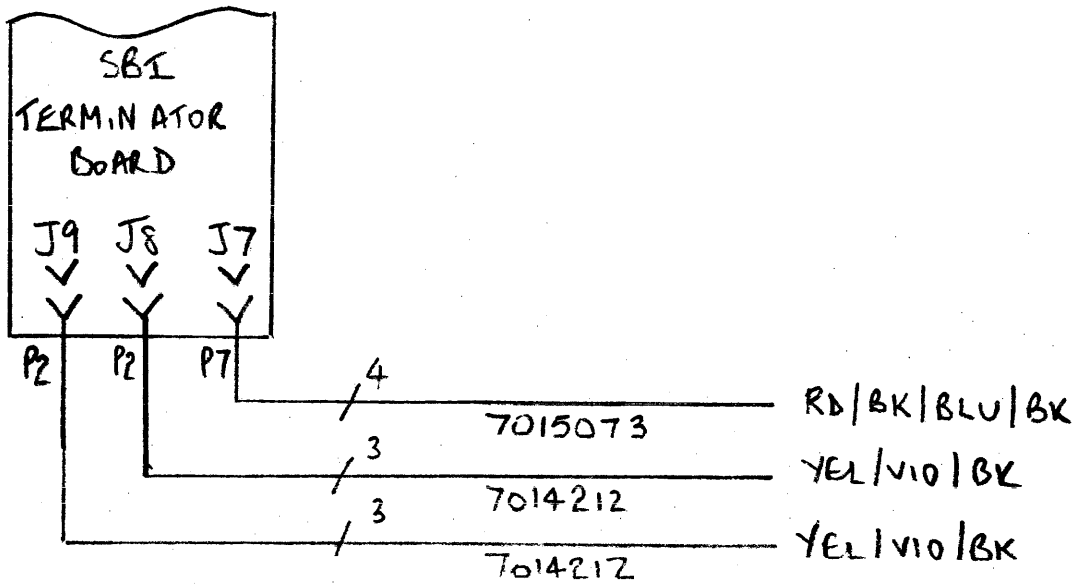
LAST DRIVE	SW1	SW2	SW3
0	ON	ON	ON
1	OFF	ON	ON
2	ON	OFF	ON
3	OFF	OFF	ON
4	ON	ON	OFF
5	OFF	ON	OFF
6	ON	OFF	OFF
7	OFF	OFF	OFF

(SW4 IS UNUSED)

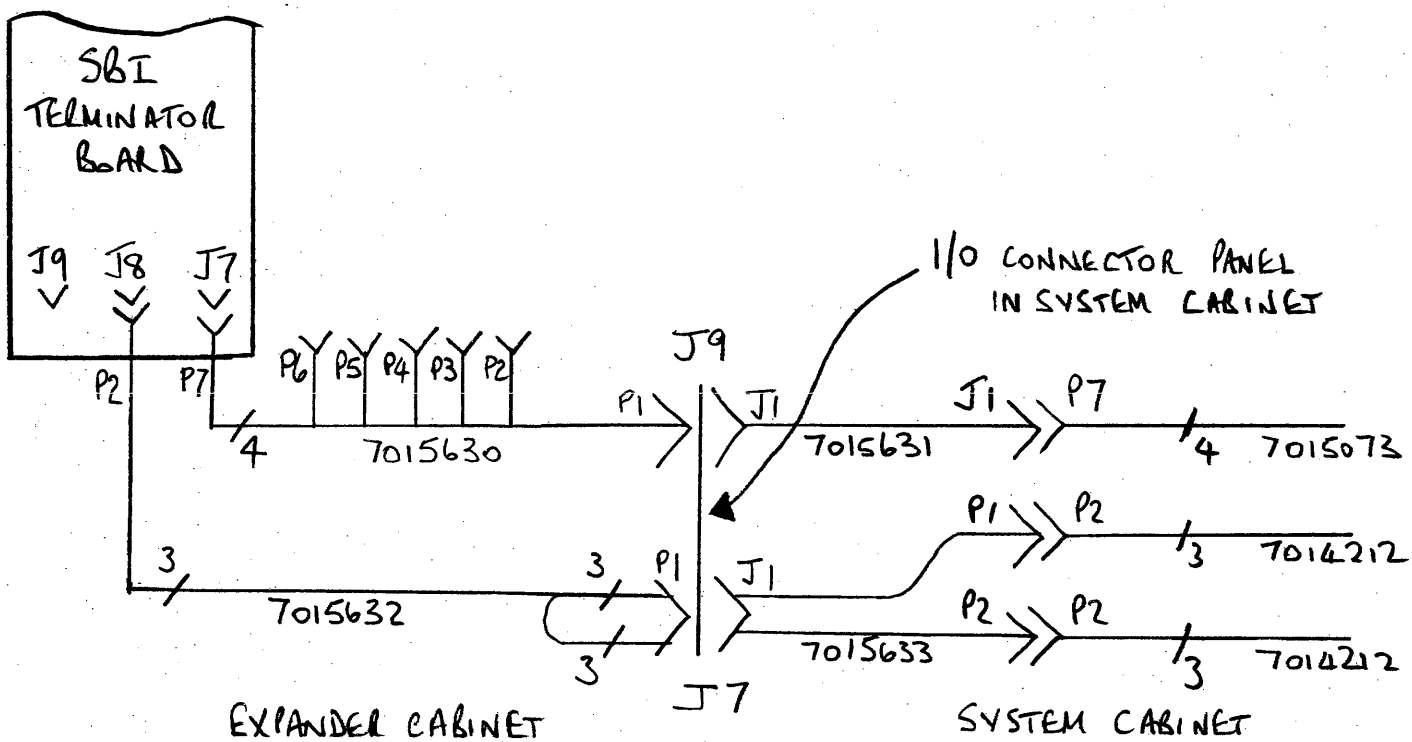
MPU INTERFACE BOARD (6204) SWITCH 15E

NOTE: "LAST DRIVE" MEANS HIGHEST LOGICAL DRIVE NUMBER CONNECTED TO THE 9400.

TABLE 3 : "LAST DRIVE" SWITCHES



CABLING TO SBI TERMINATOR IN SYSTEM CABINET



CABLING TO SBI TERMINATOR IN EXPANDER CABINET

FIGURE 6: SBI TERMINATOR CABLING

CHAPTER 3

DIAGNOSTICS AND CHECKOUT

The System Industries 300 megabyte SBI Installation floppy is in the same format as DEC system update floppies. The operating instructions for system updates in the VAX-11 Software Installation Guide apply.

After the installation DB/DRDRIVER.EXE, VMOUNT.EXE, INIT.EXE, SYSINIT.EXE in directory [SYSEXE] have been patched to reflect the new 300 megabyte RP04/RM03 configuration. The VMB.EXE file on the consol floppy has been patched. A new file EXOR.EXE has been added to the directory [SYSEXE] . If the installation is an RM03, a new BAD utility has been patched in directory [SYSEXE] .

Before installing the patches it is recommended that the controller, interface, and drive be tested as an 80 megabyte RM03 or 100 megabyte RP04, whichever is appropriate. This should be done to keep the variables to a minimum. To do this it is necessary to copy EXOR from the floppy to a system device.

```
DISM DX1:                              Dismount console floppy
```

Take out consol floppy and install SI floppy.

```
MOU DX1:/OV=ID                         Mount SI floppy
COPY DX1:[SYSUPD]EXOR.EXE ?:[?]        Copy file
DISM DX1:                              Dismount SI floppy
```

Take out SI floppy and put consol floppy back into drive.

After everything is tested to satisfaction, install the 300 megabyte patches and change the switches on the disk interface board(s) to reflect 300 megabyte drives.

Now you are ready to use the Drive.

A recommended procedure is:

1. Format pack
2. Bad pack
3. Either DSC or INIT pack depending on usage.
4. Now the pack is ready to be used by the system.

EXOR

EXOR prompts for the drive to be tested and for the tests to run; it will do all the tests given, in the order given and then return to ask for more tests. The tests are all indicated by a single letter as follows:

Ci:j	(Cylinder)	Restrict the cylinder range to i to j inclusive (i and j are decimal numbers). If i is omitted 0 is used as the limit. If j is omitted the last cylinder on the disk is used as the limit. The limits remain in effect until altered by another C command. Note: C by itself means use whole disk.
S	(Seek)	Seek to Ø, then maxcyl, then Ø then maxcyl-1...and then seek to 0,1...maxcyl.
F	(Format)	Format the pack. Formatting is done a track at a time. The data area contains zeroes.
R	(Read)	Read the disc (this can be done with a good disc, write protected). (35 sector transfers).
W	(Write)	Write each sector with a pattern, then writecheck each sector. Then software check each sector. If a mismatch is detected, then the following 12 bytes are printed to enable one to spot patterns. (35 sector transfers).
L	(Last-track)	Write a last track descriptor saying all blocks are good. (Applicable to RMOX only).
X	(Exit)	Leave the program and return to command level.

Ctrl/C abandon current set of tests, and ask for more.

eg; R EXOR

Drive:	DR:A1	Name of drive to be tested.
Tests:	F	(Format disc).
Tests:	SCØ:1W	(Seek test, then write test and verify cylinders Ø & 1).
Tests:	CR	(Now, read the whole disc).
Tests:	X	(Exit from the program).

Memorandum

System Industries 525 Oakmead Parkway, P.O. Box 9025, Sunnyvale, CA 94086, (408) 732-1650, Telex 346459

To: All Customers **Date:** Dec. 6, 1979

From: Spare Sales **cc:**

Subject: Procedure and Policy for Pass Thru Packs

Packs are warrantied by CDC to be free from defects in workmanship, for one year from date of shipment.

CDC 877/9877 DISK PACK P/N 101-0158 (80 Megabyte)

Read Acceptance Specification for:
Storage Module Drive Model 9762 or equivalent drives.

Read Error Acceptance Criteria

- No read errors of any type at cylinder 000, head 00, and head 01.
- Not more than 30 error tracks per pack.

CDC 9/883-91 DISK PACK P/N 101-0196 (300 Megabyte)

Read Acceptance Specification for:
Storage Module Drive Model 9764/66 or equivalent drives.

Read Error Acceptance Criteria

- No read errors of any type at cylinder 000, head 00, and head 01.
- Not more than 100 error tracks per pack.

Both packs are designed to operate with systems having error correction capabilities of up to 11 bits of errors within one burst location providing the rest of the track is error free. Tracks which contain errors that exceed 11 bits are considered uncorrectable.

Cause For Pack Rejection

To reject a pack it must exceed the above specifications. Suggested method of testing is to use one of the following programs or equivalent:

For DEC users of System Industries 9500 system
Pack Certification

For Data General users of System Industries 9500 system
DK Init.

For DEC users of System Industries 9400 system
DEC Program Bad

Exchange Policy

When a pack does exceed the read acceptance specification, a no-charge exchange will be initiated.

All warranty claims must be initiated within seventy-five days after shipment by System Industries.

A Return Authorization Number must be obtained from Spare Sales before returning a pack.

Information required for Return Authorization:

- Purchase order number
- "Ship to" & "Bill to" address(es)
- Type of system
- Quantity
- Type of pack(s)
- Serial numbers
- Date of delivery (approximate month/year)
- Reason for rejection

System Industries will make every effort to immediately replace the defective pack from stock available.

A copy of the test results showing that the pack has exceeded the read specification, must be enclosed with the pack. Without the test results the pack will be returned to you. System Industries will then invoice you for the replacement.

Purchase Orders issued to System Industries must include the following information:

- Purchase Order Number
- Return Authorization Number
- Description of Pack
- Quantity Requested

Customers will be invoiced at current selling prices if the pack to be returned is not received within fifteen days of Return Authorization date or if System Industries determines that the pack is out of warranty to CDC. Lead time of thirty days is required to validate warranty claims. All shipping charges for packs returned to System Industries will be the responsibility of the customer.

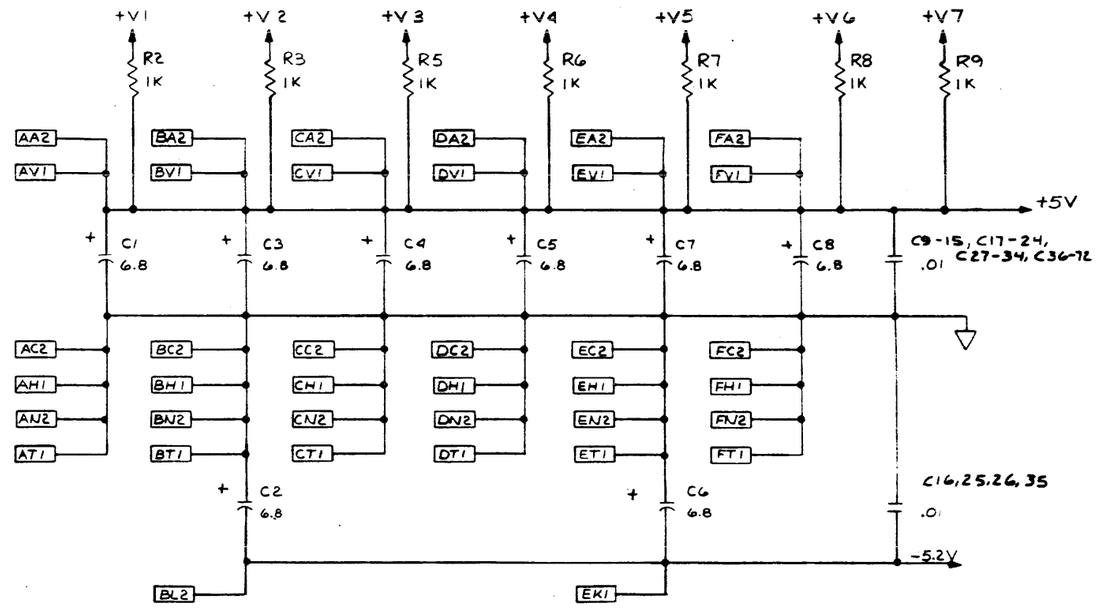
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
1	ENG CONTROL	4/1/80	
A	REL PER PCO 883.	5/9/80	
A1	REL PER PCO 914 SCT6	7/9/80	

NOTES: UNLESS OTHERWISE SPECIFIED:

1. THIS SCHEMATIC REPRESENTS ASSY 9400-6201 AT DATE CODE ~~A01C~~ 0:8
2. ALL RESISTORS VALUES ARE IN OHMS, 1/4W, ± 5%.
3. ALL CAPACITORS VALUES ARE IN MICROFARADS.

74S37	3F		14	7
74LS10	7F,9G		14	7
2907	12A,13A,14A,15A 1A,2A,3A,4A,5A,6A,7A,8A,10A,11A		20	5/15
10216	16A		1/16	8 (8=VEE)
10125	16C,17B,17C		9	16
10105	15B	15B-7,15	1/16	8 (8=VEE)
10101	16B,17A		1/16	8 (8=VEE)
74S373	2B,4B,6B,8B		20	10
74S288	4E		16	8
74S287	18C,19C		16	8
74S280	1C,3C,5C,7C,7E,8E,10B,11B,12B,		14	7
74S260	1D,5D		14	7
74S241	1B,3B,5B,7B,14F		20	10
74LS240	2C,4C,6C,8C,		20	10
74LS195	17D,18D,19D		16	8
74LS193	12G,13G		16	8
74LS175	10C,10E		16	8
74S175	7D,15C,15F,18B,19B		16	8
74LS174	14D		16	8
74S174	5E,14C		16	8
74LS399	12C,13C		16	8
74LS153	18A,19A		16	8
74S140	15D		16	8
74S138	6D,9D,12E		16	8
74S112	14G,15G,16G		16	8
74S86	11C		14	7
74LS85	14B		16	8
74S85	12D,13B,13D		16	8
74LS74	1F,10F,17G,		14	7
74S74	4F,6G,8F,9F,16E,17E,18E,5G		14	7
74LS42	9B,9C		16	8
74S30	9D		14	7
74LS27	2F,10D		14	7
74LS20	7G	7G-6	14	7
74S20	6E,9E		14	7
74S10	2D,11D,12F,16F,19E	16F-12,	14	7
74LS08	13F		14	7
74S08	5F,8G,14E,19F	8G-6,	14	7
74LS04	1E	1E-2,4,6,12,	14	7
74S04	3E,11E,11G,17F,13E	11G-2,12,	14	7
74S02	2E,16D	2E-9,	14	7
74LS00	10G,18G,19G		14	7
74S00	3D,6F,8D,11F,15E,18F,4G	8D-11,18F-8,	14	7
IC TYPE	POSITION	UNUSED ELEMENTS	+5V	GND

IC STATUS TABLE



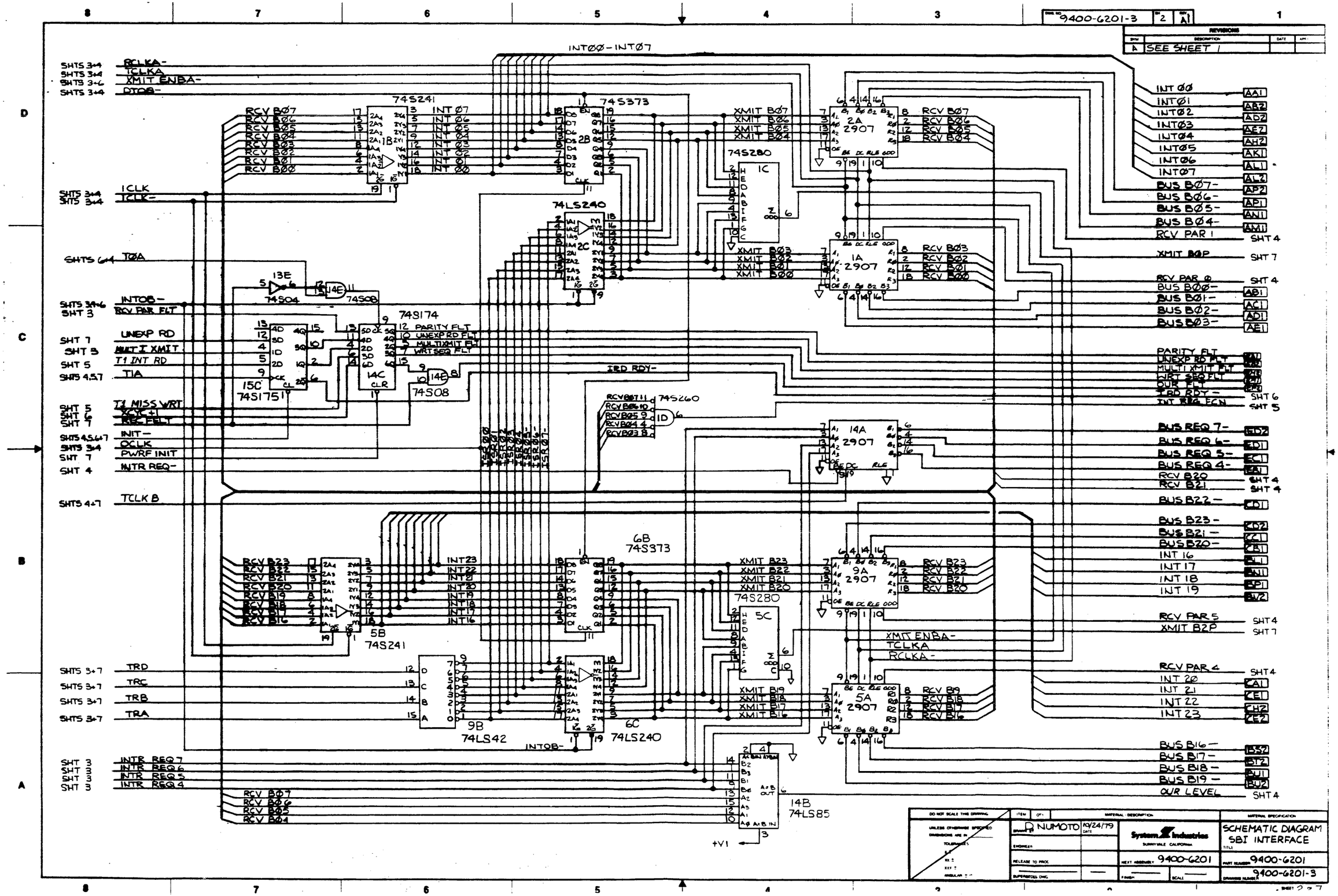
REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
C72	
R11	
RP4	

TRP	SW1	SW2	SW3	SW4
8	OFF	ON	ON	ON
9	OFF	ON	ON	OFF
10	OFF	ON	OFF	ON
11	OFF	ON	OFF	OFF

9A DIP SWS (SEE SHT3)

BRD	SW5	SW6	SW7	SW8
4	ON	ON	ON	OFF
5	ON	ON	OFF	ON
6	ON	OFF	ON	ON
7	OFF	ON	ON	ON

DO NOT SCALE THIS DRAWING	ITEM / QTY	MATERIAL / DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN TOLERANCES: .X ±, .XX ±, .XXX ±, ANGULAR ±°		D. NUMOTO 10/24/79 DRAWN BY / DATE ENGINEER 4/1/80 RELEASE TO PROD SUPERSEDES DWG	System Industries SUNNYVALE CALIFORNIA NEXT ASSEMBLY 9400-6201 FINISH / SCALE
			SCHEMATIC DIAGRAM SBI INTERFACE (TITLE) PART NUMBER 9400-6201 DRAWING NUMBER 9400-6201-3


9400-6201-3
REVISIONS
A SEE SHEET 1
INTØØ-INTØ7
74S241
74S373
74LS240
74S280
74S174
74S260
74S504
74S508
74S1751
74S42
74S85
2A 2907
1A 2907
14A 2907
9A 2907
5A 2907
1C
5C
14C
13E
14E
15C
1B
2B
2C
5B
6B
6C
9B
14B
SHTS 3+4 RCLKA-
ICLKA
XMIT ENBA-
DTØB-
ICLK
ICLK-
TØA
INTØB-
RCV PAR FLT
UNEXP RD
MULTI XMIT
T1 INT RD
T1A
T1 MISS WRT
XCVC +1
REC FELT
INIT-
OCLK
PWRF INIT
INTR REQ-
TCLK B
TRD
TRC
TRB
TRA
INTR REQ7
INTR REQ6
INTR REQ5
INTR REQ4
IRD RDY-
XMIT ENBA-
TCLKA
RCLKA-
+V1
INTØ Ø
INTØ1
INTØ2
INTØ3
INTØ4
INTØ5
INTØ6
INTØ7
BUS BØ7-
BUS BØ6-
BUS BØ5-
BUS BØ4-
RCV PAR !
XMIT BØP
RCV PAR Ø
BUS BØØ-
BUS BØ1-
BUS BØ2-
BUS BØ3-
PARITY FLT
UNEXP RD FLT
MULTI XMIT FLT
WRT SEQ FLT
OUR FLT
IRD RDY-
INT REQ ECN
BUS REQ 7-
BUS REQ 6-
BUS REQ 5-
BUS REQ 4-
RCV B20
RCV B21
BUS B22-
BUS B23-
BUS B21-
BUS B20-
INT 16
INT 17
INT 18
INT 19
RCV PAR 5
XMIT B2P
RCV PAR 4
INT 20
INT 21
INT 22
INT 23
BUS B16-
BUS B17-
BUS B18-
BUS B19-
OUR LEVEL
NUMOTO
System Industries
SUNNYVALE CALIFORNIA
SCHEMATIC DIAGRAM
SBI INTERFACE
9400-6201
9400-6201-3

D-9400-6201-3 | 3 | A1

REVISIONS			
DWG	DESCRIPTION	DATE	APPROVAL
A1	SEE SHEET 1		

SHTS 2+4 DTOB-
SHTS 2+4 OCLK
SHTS 2+4 ICLK
SHTS 2+4 ICLK-
SHTS 2+4+6 INTOB-
SHTS 2+4+6 XMIT ENBA
SHTS 2+4 TCLKA
SHTS 2+4 RCLKA-

INT ØB - INT 15
INT 24 - INT 31

RCV B15 RCV B14 RCV B13 RCV B12 RCV B11 RCV B10 RCV B09 RCV B08
INT 15 INT 14 INT 13 INT 12 INT 11 INT 10 INT Ø9 INT Ø8
3B 74S241
4B 74S373
13E 74S04
9C 74LS42
4C 74LS240
IRS 15- IRS 14- IRS 13- IRS 12- IRS 11- IRS 10- IRS 09 IRS 08

XMIT B15 XMIT B14 XMIT B13 XMIT B12
3C 74S280
XMIT B11 XMIT B10 XMIT B09 XMIT B08
4A 2907
3A 2907
RCV B15 RCV B14 RCV B13 RCV B12
RCV B11 RCV B10 RCV B09 RCV B08

INT Ø8 AM2
INT Ø9 AR2
INT 10 AR1
INT 11 AV2
INT 12 BF1
INT 13 BE2
INT 14 BX1
INT 15 BX2
BUS B15- BY2
BUS B14- BJ1
BUS B13- BH2
BUS B12- BF2
RCV PAR 3 SHT 4
XMIT B1P SHT 7
RCV PAR FLT SHT 2
MULTI XMIT SHT 2
MULTI XMIT- SHT 5
RCV PAR 2 SHT 4
BUS B08- AS2
BUS B09- AT2
BUS B10- AU1
BUS B11- AU2

TRD SHTS 2+7
TRC SHTS 2+7
TRB SHTS 2+7
TRA SHTS 2+7
INTR REQ 7 SHT 2
INTR REQ 6 SHT 2
INTR REQ 5 SHT 2
INTR REQ 4 SHT 2
BUS B31- CU2
BUS B30- CU1
RCV B08 SHT 5
RCV B09 SHT 5
RCV B10 SHT 5
RCV B11 SHT 5
BUS B29- CT2
BUS B28- CS2
INT 24 CK1
INT 25 CL1
INT 26 CK1
INT 27 CK2
RCV B14 SHT 7
RCV PAR 7 SHT4
RCV B13 SHT 7
RCV B12 SHT 7
XMIT B3P SHT 7
RCV B11 SHT7
RCV PAR 6 SHT4
INT 28 CL2
INT 29 CR2
INT 30 CS1
INT 31 CV2
PARITY ERR- SHT5
BUS B24- CM1
BUS B25- CN1
BUS B26- CP1
BUS B27- CP2
PARITY ERR SHT 5

RP1 3K
R1 1K
9A
TRD TRC TRB TRA INTR REQ7 INTR REQ6 INTR REQ5 INTR REQ4

8B 74S373
7B 74S241
8C 74LS240
74S280
7C
8A 2907
7A 2907
RCV B31 RCV B30 RCV B29 RCV B28
RCV B27 RCV B26 RCV B25 RCV B24
XMIT B31 XMIT B30 XMIT B29 XMIT B28
XMIT B27 XMIT B26 XMIT B25 XMIT B24
ICLK- ICLK
OCLK
TCLKA RCLKA

+5V +V6
SHT 4 D PAR ERR-
SHT 4 C PAR ERR-
SHTS 4,5+6 T2
SHTS 5+7 PF/PGM INIT-
SHTS 4,5+6 SBI OK
SHTS 5+6 XCYC
SHT 7 ID BAD
SHT 6 XMIT ENB B
11F 74S00
5G 74S74
74S08 8G
4G 74S00
MULTI XMIT- 11G 74S00
PARITY ERR

DO NOT SCALE THIS DRAWING. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN TOLERANCE .X ± .XX ± .XXX ± ANGULAR ± ° '	ITEM	QTY	MATERIAL - DESCRIPTION		MATERIAL SPECIFICATION
	D. NUMOTO DRAWN	10/24/79 DATE	System Industries SUNNYVALE CALIFORNIA		SCHEMATIC DIAGRAM SBI INTERFACE TITLE
	ENGINEER				
	RELEASE TO PROD		NEXT ASSEMBLY 9400-6201		PART NUMBER 9400-6201
	SUPERSEDES DWG		FINISH	SCALE NONE	D-9400-6201-3 DRAWING NUMBER

SHEET 3 OF 7

REVISIONS			
REV	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		

SHT 5 ISR
SHT 2 OVR LEVEL
DA1 INTERRUPT-
SHT 2 RCV BZØ
SHT 2 RCV BZ1
SHTS 4-6 TØB
SHTS 2,5-6 SBI OK
SHTS 2,5,6-7 INIT-
SHTS 2,4,5-7 T1A
SHTS 4,5-6 T2
EJ1 SBI PCLK-
EH2 SBI PCLK
SHT 2 RCV PAR Ø
SHT 2 RCV PAR 1
SHTS 3-5 RCV PAR 2
SHT 3 RCV PAR 3
SHT 2 RCV PAR 4
SHT 2 RCV PAR 5
SHT 3 RCV PAR 6
SHT 3 RCV PAR 7
SHT 7 RCV D PAR
EL1 EXT DONE/TO
EH1 DT READ B
SHTS 5,6-7 CMD REQ
SHTS 5-7 READ PND
SHT 5 TO CNT
EF2 SBI TP-
EF1 SBI TP
SHT 6 CMD REQ-
SHTS 6-7 ARB OK
SHTS 6-7 EXT DONE/TO
SHT 7 REM WRT
BS1 SBI PGM ERR-
EK2 SBI PD CLK-
EJ2 SBI PD CLK
SHT 7 RCV TAG PAR
SHT 7 RCV ID PAR
SHT 7 RCV MASK PAR
SHT 7 RCV C PAR
DV2 ICLK-

74S00 74S280 74S10 74S74 74S08 74S04 74S86 74LS10 74LS74 74LSØØ 74LSØ8 74S14 74S02 10125 10101 10216 330

D PARR ERR-
INTR REQ-
T3
T1B
+V4 +V5 +V6 +V3 +V2
-5.2V
100Ω R4

GEN MAP PAR DK1
TCLKA SHTS 2-3
TCLKB SHTS 2-7
TØA SHTS 2-6
TØB SHTS 4,5-6
DTDB- SHTS 2-3
INTOB- SHTS 2,3-6
INTR REQ- SHT 2
INT TØ EU2
INT TØ- EV2
D PARR ERR- SHT 2
RCLKA- SHTS 2-3
EXT DONE/TO SHTS 6-7
RCLKB- SHT 7
DISC READ SHT 6
T2 SHTS 4,5-6
DISK WRITE SHT 6
INT T2 ER1
INT T2- ER2
SET IS TO- ES1
TO CLK SHT 5
SET RD TO- EA1
T1A SHTS 2,4,5-7
T1B SHT 5
OCLK DS1
OCLK SHTS 2-3, SHTS 6-6
T1- CLR BUSY- SHT 5
INT T1 EE1
INT T1- EE2
T3 SHTS 6-7
T3- SHT 6
INT T3 EL1
INT T3- EL2
STROBE MAP DR1
C PARR ERR- SHT 2
ICLK SHTS 2-3
ICLK- SHTS 2-3

DO NOT SCALE THIS DRAWING	ITEM / QTY / MATERIAL - DESCRIPTION			MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES: .X ±, .XX ±, .XXX ±, ANGULAR ±°	O. NUMOTO DRAWN BY	10/24/73 DATE	System Industries SUNNYVALE CALIFORNIA	SCHEMATIC DIAGRAM GBI INTERFACE TITLE
	ENGINEER		NEXT ASSEMBLY 9400-6201	PART NUMBER 9400-6201
	RELEASE TO PROD		FINISH / SCALE	DRAWING NUMBER 9400-6201-3
	SUPERVISOR ENG			

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		

SHT 7 UNEXP READ-
SHTS 6+7 PF/UNAM -

SHTS 2,4+6 SBI OK

SHTS 2+6 XCYC
SHT 3 PARITY ERR
SHTS 3+4 RCV PAR 2
SHT 7 RCV TAG 1
SHT 7 RCV TAGØ

SHT 7 OWN ID
SHTS 4+7 READ PND

SHT 3 PARITY ERR-
SHT 3 MULTI XMIT-
SHTS 2,4,6+7 INIT -
SHTS 2,4+7 TIA
SHT 7 SELECTED

12E 74S138

11E 74S04

11E 74S04

11E 74S04

11E 74S04

11F 74S00

11D 74S10

10E 74S175

13 74S10 11D

SEND ERR

SEND BUSY

74S00 15E

74S00 15E

CMD-
MSR
READ DATA-
READ DATA
WRT DATA-
XMIT CNFO
XMIT CNFI
XMIT SBI FAULT

SHT 5
SHT 4
SHT 7
SHT 7
DM2
SHT 7
SHT 7
SHT 7

RCV B27
RCV B26
RCV B25
RCV B24
RCV B23
RCV B22
5D 74S260

RCV B21
RCV B20
RCV B19
RCV B18
RCV B17
5D 74S260

RCV B16
RCV B15
RCV B14
RCV B13
1D 74S260

SHT 3 RCV B15
SHT 3 RCV B14
SHTS 2+3 RCV B16-RCV B31

SHT 5 BUSY
SHT 3 RCV B09

SHT 3 RCV BØB

SHT 5 CMD-

SHT 4 CLR BUSY-
SHTS 4+6 TI-
SHT 2 INT REG FCN

SHT 7 PF/PGM INIT-
SHT 7 CLK DIAG-
SHT 7 REG CMP
SHT 6 CMD REG
SHTS 4,6+7 RCV MSK 3
SHT 7 RCV MSK 2
SHT 7 RCV MSK 1

SHT 7 RCV MSKØ

AF1 INIT COND B-
SHTS 4+6 TØB
SHTS 6+7 SEND TR
SHTS 4+6 TE
SHT 7 RD PDI
SHT 4 TIB

FE2 RD TØB

FB2 IS TØB

SHT 4 TO CLK

4D 74S30

+5V R10 1K 74LS04

745288 4E
VALID CMD
INT READ
EXT CMD
EXT READ
SEND CMD

5E 745174

74S08 5F

3E 74S04

74S08 5F
MISSING WRT

74S00 6F

74S00 6F

74S00 6F

SET BUSY

+V7

14G 74S112

74S20 6E

CLK VALID CMD
TI INT RD
CLK EXT CMD
CLK EXT READ
EXPECT WRT
TI MISS WRT

SHT 7
SHT 2
CU1
CU2
SHT 7
SHT 2

3D 74S00

2D 74S10

3E 74S04

2D 74S10

3D 74S00
INTV MSK

74S10 11D

6D 74S138
RCV 31
RCV MSKØ
RCV B30
RCV B29
RCV B28

3D 74S00

6E 74S20
VALID FCN

74S08 5F

74S00 3D

74S00 10G

BUSY

SHT 5

WRT FCN

SHT 7

CLR BUSY-

11G 74S04

7G 74LS20

18G 74LS00

19G 74LS00

18G 74LS00

18G 74LS00

TØB

17G 74LS74

+V7

+V7

+V7

13G 74LS193

12G 74LS193

TO CNT

SHT 4

MASK A

SHT 7

CLR TMR

SHT 6

9F 74S74

13F 74LS08

9G 74LS10

9G 74LS10

RD TO CLR-

SHT 7

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN TOLERANCES .X ± .XX ± .XXX ± ANGULAR ± °	D. NUMOTO 10/24/79		System Industries SUNNYVALE CALIFORNIA	SCHEMATIC DIAGRAM SBI INTERFACE
	ENGINEER		NEXT ASSEMBLY 9400-6201	PART NUMBER 9400-6201
	RELEASE TO PROD.		FINISH	SCALE NONE
	SUPERVISOR ENG.			DRAWING NUMBER D-9400-6201-3

DRG NO 9400-6201-3 | SH 6 | REV N

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		

SHTS 4+5 ARB OK-
SHTS 5+7 T2
SHTS 4+5 BRTN JAM-
SHTS 4+5 T0B

SHT 7 REQ CNF1
SHT 7 REQ CNF0
SHT 6 CCYC +2
SHT 6 CCYC +3
SHT 6 CCYC +2
SHT 6 XCYC +2
SHT 6 DISK WRITE

SOCKET 19C 74S287 (9400-8914A)
SOCKET 18C 74S287 (9400-8915A)
19B 74S175
18B 74S175
RETRY-
2F 74LS27
C/A BUSY CNF
CMD REQ
+5V R11 1K
18F 74S00
T0A
16D 74S02
74S02
16E 74S74
+V5
1F 74LS74
+V3

SHTS 4+5 T1-
SHT 7 INIT
SHT 4 DISK READ
SHT 2 IRD RDY-

14G 74S112 (9400-8615A)
74S08 14E
74S08 14G
15F 74S175
CMD REQ
16F 74S74
16E 74S10
10D 74LS27
INIT-

SHTS 2,4,5+7 INIT-
SHTS 4+7 T3
SHTS 4+7 EXT DONE/TO
SHT 7 REM WRT-
19G 74S00
16G 74S112
+V7
17E 74S74
13E 74S04
12F 74S10
T0B

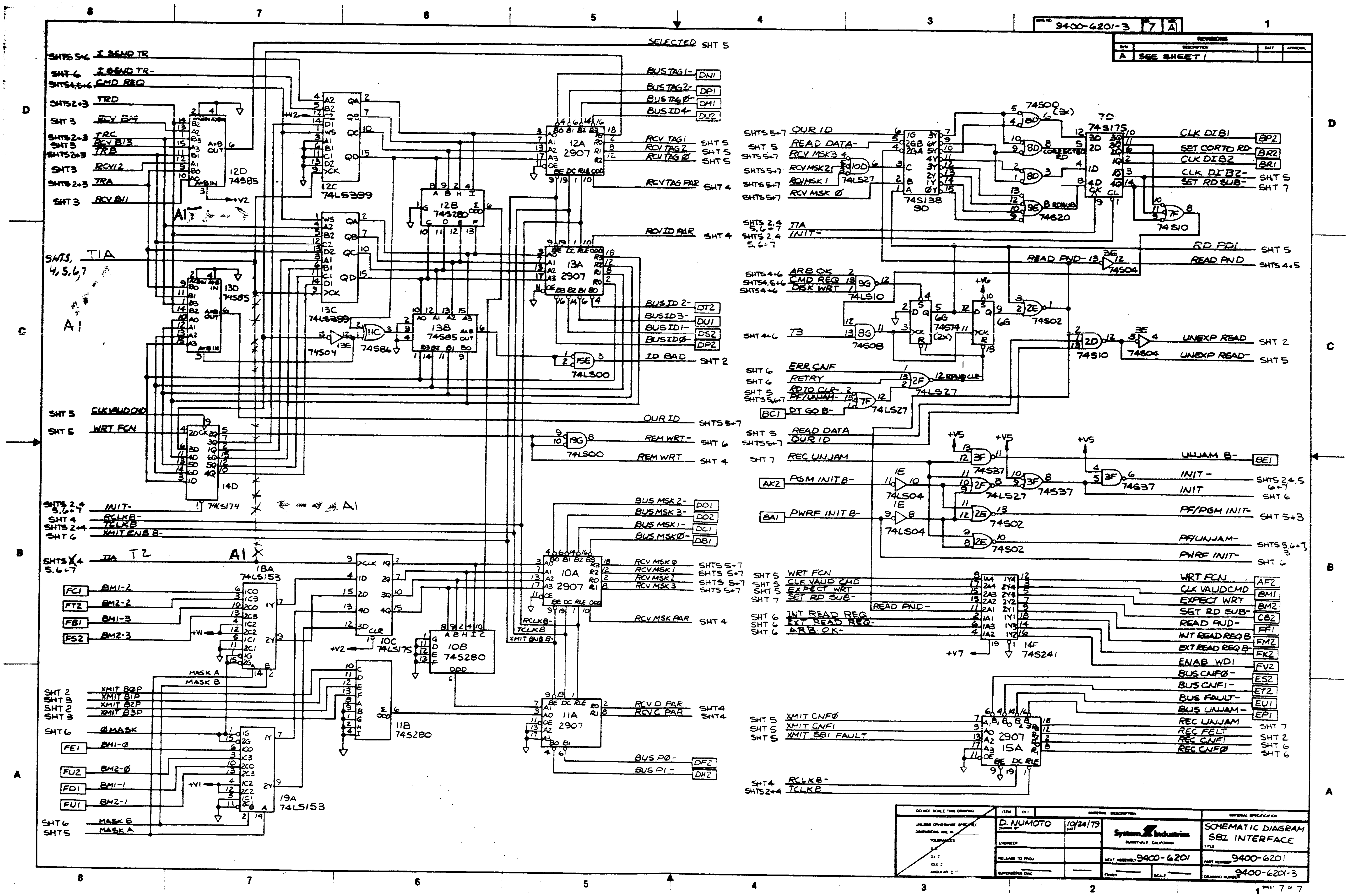
SHT 5 CLR TMR
FF2 SET CMD RDY-
SHT 4 T3-
15G 74S112
CMD REQ
INIT-

SHTS 4,6+7 ARB OK
SHT 6 NO SBI
SHTS 2,4+5 SBI OK
SHTS 2,3+4 INTOB-
SHTS 2+4 T0A

ERR CNF
SET ERR CNF- DL2
REQ CMP- SHT 5
WORD 2 ACK FF2
SET N/R CNF- DK2
RETRY
SBI OK
NO SBI
ARB OK

17F 74S04
17D 74LS195
18D 74LS195
18E 74874
3F 74S37
+V4
CCYC +4 SHT 6
HOLD TRB CM2
ENAB WD 2 FS1
CCYC +3 SHT 6
CCYC +2 SHT 6
MASK B SHT 7
Ø MASK SHT 7
ARB OK- SHT 7
CMD REQ SHTS 4,5+7
CMD REQ- SHT 4
CMD REQ B- DE1
SEND TR HOLD FR1
19F 74S08
18F 74S00
19E 74S10
19D 74LS195
XCYC +2 SHT 6
XCYC +1 SHT 2
XCYC SHTS 2+5
9E 74S20
8F 74S74
+V6
XMIT ENBA- SHTS 2+3
SEND TR B DL1
SEND TR- SHT 7
SEND TR SHTS 5+7
XMIT ENB B SHT 3
XMIT ENB B- SHT 7+3
EXT READ REQ- SHT 7
INT READ REQ SHT 7

DO NOT SCALE THIS DRAWING	ITEM / QTY	MATERIAL DESCRIPTION		MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN TOLERANCES X ± XX ± XXX ± ANGULAR ±	DRAWN D. NUMOTO	10/24/79 DATE	System Industries SUNNYVALE CALIFORNIA	SCHEMATIC DIAGRAM SBI INTERFACE (TITLE)
	ENGINEER		NEXT ASSEMBLY 9400-6201	PART NUMBER 9400-6201
	RELEASE TO PROD		FINISH — SCALE —	DRAWING NUMBER 9400-6201-3
	SUPERSEDES DWG			SHEET 6 OF 7



9400-6201-3 7 A1
REVISIONS
A SEE SHEET 1
SELECTED SHT 5
I SEND TR
I SEND TR-
CMD REQ
TRD
RCV BI4
TRC
RCV BI3
TRB
RCV BI2
TRA
RCV BI1
12D 74S85
12C 74LS399
13C 74LS399
12B 74S280
13B 74S85
13D 74S85
14D 74S174
12A 2907
13A 2907
BUS TAG1- DN1
BUS TAG2- DP1
BUS TAGØ- DM1
BUS ID4- DU2
RCV TAG1 SHT 5
RCV TAG2 SHT 5
RCV TAG Ø SHT 5
RCV TAG PAR SHT 4
RCV ID PAR SHT 4
BUS ID 2- DT2
BUS ID3- DU1
BUS ID1- DS2
BUS IDØ- DP2
ID BAD SHT 2
74LS00
74S04
74S86
OUR ID SHTS 5+7
REM WRT- SHT 6
REM WRT SHT 4
CLK VALID CMD
WRT FCN
INIT-
RCLKB-
TCLKB
XMIT ENB B-
T2
18A 74LS153
19A 74LS153
10C 74LS175
10B 74S280
11B 74S280
10A 2907
11A 2907
BUS MSK2- DD1
BUS MSK3- DD2
BUS MSK1- DC1
BUS MSKØ- DB1
RCV MSK Ø SHTS 5+7
RCV MSK 1 SHTS 5+7
RCV MSK 2 SHTS 5+7
RCV MSK 3 SHTS 5+7
RCV MSK PAR SHT 4
RCV D PAR SHT 4
RCV C PAR SHT 4
BUS PØ- DF2
BUS P1- DH2
FC1 BM1-2
FT2 BM2-2
FB1 BM1-3
FS2 BM2-3
MASK A
MASK B
XMIT BØP
XMIT B1P
XMIT B2P
XMIT B3P
Ø MASK
FE1 BM1-Ø
FU2 BM2-Ø
FD1 BM1-1
FU1 BM2-1
OUR ID
READ DATA-
RCV MSK3
RCV MSK2
RCV MSK 1
RCV MSK Ø
10D 74LS27
9D 74S138
74S00 (3x)
8D
9E 74S20
7D 74S175
CLK DIB1 BP2
SET CORTO RD- BR2
CLK DIB2 BR1
CLK DIB2- SHT 5
SET RD SUB- SHT 7
7F 74S10
RD PD1 SHT 5
READ PND SHTS 4+5
READ PND-
3E 74S04
ARB OK
CMD REQ
DSK WRT
9G 74LS10
6G 74S74 (2x)
2E 74S02
T3
8G 74S08
2D 74S10
UNEXP READ SHT 2
UNEXP READ- SHT 5
ERR CNF
RETRY
RDTO CLR-
PF/UNJAM-
BC1 DT GO B-
2F 74LS27
7F 74LS27
READ DATA
OUR ID
REC UNJAM
AK2 PGM INIT B-
BA1 PWRF INIT B-
1E 74LS04
3F 74S37
UNJAM B- BE1
INIT- SHTS 2,4,5 6+7
INIT SHT 6
PF/PGM INIT- SHT 5+3
PF/UNJAM- SHTS 5,6+7
PWRF INIT- SHT 6
WRT FCN AF2
CLK VALID CMD BM1
EXPECT WRT BM2
SET RD SUB- CB2
READ PND- FF1
INT READ REQ B FM2
EXT READ REQ B FK2
ENAB WD1 FV2
BUS CNFØ- ES2
BUS CNF1- ET2
BUS FAULT- EU1
BUS UNJAM- EP1
INT READ REQ
EXT READ REQ-
ARB OK-
14F 74S241
XMIT CNFØ
XMIT CNF1
XMIT SBI FAULT
15A 2907
REC UNJAM SHT 7
REC FELT SHT 2
REC CNF1 SHT 6
REC CNFØ SHT 6
DO NOT SCALE THIS DRAWING
D. NUMOTO 10/24/79
System Industries SUNNYVALE, CALIFORNIA
SCHEMATIC DIAGRAM SBI INTERFACE
NEXT ASSEMBLY 9400-6201
9400-6201
9400-6201-3
SHEET 7 of 7

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
1	ENG CONTROL WINDOW	11/89	[illegible]
A	REL PER PCO 865	3/90	[illegible]

ICLK-
DV2
BX2 INT15
BX1 INT14
BE2 INT13
BE1 INT12
5A 74S374
REC15 REC14 REC13 REC12 REC11 REC10 REC09 REC08
WRT MAP-
+V4
REC11 REC10 REC09 REC08
MAP11 MAP10 MAP09 MAP08
4D 93L422
MAP12 MAP13 MAP14 MAP15
REC12 REC13 REC14 REC15
5D 93L422
REC00-REC13 ST. 2 7
REC08 REC09 REC10 REC11 REC12 REC13
3 6 6 6 3 3
ST 7 RA2-RA7
RD CMD/ADRS-
RD MAP-
WRT MAP-
MAP 16
MAP16 MAP15 MAP14 MAP13 MAP12 MAP11 MAP10 MAP09
5B 74LS240
XMIT16-XMIT23 ST.4
XMIT16 XMIT17 XMIT18 XMIT19 XMIT20 XMIT21 XMIT22 XMIT23
RD CMD/ADRS-
RD MAP-
INT BUS ICLK ST. 4
MAP08 MAP09 MAP10 MAP11 MAP12 MAP13 MAP14 MAP15 MAP16
5C 74LS280
EVEN ODD
PARA
PAR A ST.4
MAP15 MAP14 MAP13 MAP12 MAP11 MAP10 MAP09 MAP08
4B 74LS240
XMIT08 XMIT09 XMIT10 XMIT11 XMIT12 XMIT13 XMIT14 XMIT15
R2 1K
+5V
RP2 1K (7X)
4A 74S240
ENB 15/00-
AV2 INT11
AR1 INT10
AR2 INT09
AM2 INT08
ST. 2-7 XMIT08-XMIT15
ST. 6 XMIT09-XMIT11
ST. 3 XMIT08, 12, 13
REC00 REC01 ST. 2,7
REC00 REC01 REC02 REC03 REC04 REC05 REC06 REC07
4,5 4,5 4,5 3,5,6 3 3 6 6
AL2 INT07
AL1 INT06
AK1 INT05
AH2 INT04
3A 74S374
REC07 REC06 REC05 REC04 REC03 REC02 REC01 REC00
+V4
REC03 REC02 REC01 REC00
MAP03 MAP02 MAP01 MAP00
2D 93L422
MAP04 MAP05 MAP06 MAP07
REC04 REC05 REC06 REC07
3D 93L422
MAP00 MAP01 MAP02 MAP03 MAP04 MAP05 MAP06 MAP07
3B 74LS240
XMIT15 XMIT14 XMIT13 XMIT12 XMIT11 XMIT10 XMIT09 XMIT08
RD CMD/ADRS-
PAR B ST. 4
INV MAP PAR
MAP00 MAP01 MAP02 MAP03 MAP04 MAP05 MAP06 MAP07
3C 74LS280
EVEN ODD
PAR B
RD MAP-
MAP07 MAP06 MAP05 MAP04 MAP03 MAP02 MAP01 MAP00
2B 74LS240
XMIT07 XMIT06 XMIT05 XMIT04 XMIT03 XMIT02 XMIT01 XMIT00
R1 1K
+5V
RP1 1K (7X)
2A 74S240
AE2 INT03
AD2 INT02
AB2 INT01
AA1 INT00
ST. 6 ENB 15/00
ST. 4 INV MAP PAR
ST. 7 VAR03-VAR08
ST. 4 XMIT00-XMIT02
ST. 3 XMIT03-XMIT05
ST. 6 XMIT06-XMIT07
ST. 5 XMIT01-XMIT05
ST. 2-7 XMIT00-XMIT07
VAR08 VAR07 VAR06 VAR05 VAR04 VAR03
1C 74LS240
XMIT07 XMIT06 XMIT05 XMIT04 XMIT03 XMIT02 XMIT01 XMIT00
RD CMD/ADRS-

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS00	12E,13E,18F,18G	18F-2 18G-3,4	14	7
74S00	15D,19E,10F,15G,1E	19E-1 10F-3,4 15D-[illegible]	14	7
74S02	17C	17C-1	14	7
74LS02	11F,12G		14	7
74S04	17E,13F,1D		14	7
74LS04	11D,16E,9F	16E-5 11D-1,2	14	7
74S08	18C		14	7
74LS08	19C,12D,13D,9E		14	7
74S10	15E,9G	15E-3	14	7
74LS10	10D,13G	13G-2,3	14	7
74LS11	10E		14	7
74S20	9D		14	7
74LS20	18E,12F,17G	17G-1	14	7
74LS30	14D,11E,2G,3G		14	7
74S37	19F,14G	14G-3,4	14	7
74LS51	16G		14	7
74S74	16B,16C,14E,14F,15F		14	7
74LS74	19B,16F,17F	16F-2	14	7
74S85	18D		16	8
74LS112	12B,13B,14B,15B,10C,11C, 12C,13C,14C,15C,19D	15C-1	16	8
74S138	8F		16	8
74LS138	8E,10G		16	8
74148	17B,18B		16	8
74S157	6E,7E		16	8
74LS161	2E,3E,4E,5E,2F,3F,4F,5F		16	8
74LS174	7F,9B,10B		16	8
74S175	11G		16	8
74LS193	4G,5G,6G,7G,8G		16	8
74S240	2A,4A,6A,8A		20	10
74LS240	11A,12A,13A,14A,1B,2B,3B,4B, 5B,6B,7B,8B,11B,1C,2C,4C, 6C,8C,9C,8D		20	10
74S241	1A,10A,16A,17A,18A		20	10
74LS280	3C,5C,7C		14	7
74S374	2A,5A,7A,9A		20	10
10125	F5A		9	16
26S12	16D		16	8
93L422	2D,3D,4D,5D,6D,7D		22	8
DIP SWITCH	17D		—	[illegible]
74LS175	6F		16	8

REF DESIGNATION LAST USED	REF DESIGNATION NOT USED
R17	
C72	
Q6	
RP5	

SEE NOTES ON SHEET 2.
SEE SWITCH TABLE ON SHEET 3

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN [illegible] TOLERANCES X ± XX ± XXX ± ANGULAR ± °	DRAWN B. SE. MITH	DATE 4/6/90	System Industries SUNNYVALE CALIFORNIA	LOGIC: INTERNAL REGISTERS
	ENGINEER [signature]	1/17/90		
	RELEASE TO PROD G. A. Nielsen	4/11/90	NEXT ASSEMBLY 9400-6202	PART NUMBER 9400-6202
	SUPERSEDES DWG —	—	FINISH -- SCALE NONE	DRAWING NUMBER D-9400-6202-3

DWG NO D-9400-6202-3 | SH 2 | REV A

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		

ST. 1 REC00 - REC07

ST. 1 REC08 - REC15

ST. 6 LD BCTR-

ST. 5 CLR CNTRS-

ST. 6 RD BCNTR-

ST. 6 CLK BCNTR-

ST. 7 VAR BCNT B-

ST. 5 CLR CNTR=Ø-

BH2 RUN

EB1 CLK DBC

4E, 5E, 4F, 5F, 2F, 3F, 2E, 3E — 74LS161

4C, 8C, 6C, 2C — 74LS240

3B, 2G — 74LS30

12G — 74LS02

15D — 74S00

15G — 74S00

15E — 74S10

15F, 14F — 74S74

13F — 74S04

XMIT00 - XMIT15 ST. 1

XMIT24 - XMIT31 4

XMIT16 - XMIT23 4

XMIT00 - XMIT07 1

BLK DATA LATE- DD1

DISK BCTR=Ø- DJ1

SBI BCTR=Ø DH2

UPROVF

LWROVF2

CLK UPR

CLK LWR

MB BCNT-

+V1 +V2 +V3 +V4 +V5 +V6

R9 R10 R11 R12 R13 R14 3K (6X)

+5V

-5.2V

GND

C1 6.8μfd, C2 6.8μfd, C3 6.8μfd, C4 6.8μfd, C5 6.8μfd, C6 6.8μfd, C7 6.8μfd, C8 6.8μfd

C10-C72 .01μfd

C9 .01μfd

AA2 AV1 AC2 AH1 AN2 AT1

BA2 BV1 BC2 BH1 BN2 BT1 BL2

CA2 CV1 CC2 CH1 CN2 CT1

DA2 DV1 DC2 DH1 DN2 DT1

EA2 EV1 EC2 EH1 EN2 ET1 EK1

FA2 FV1 FC2 FH1 FN2 FT1

NOTES:

1. THIS SCHEMATIC REPRESENTS ASSY 9400-6202 AT DATE CODE A 004.
2. UNLESS OTHERWISE SPECIFIED; ALL UNMARKED RESISTOR VALUES ARE IN OHMS, 1/4 W, ± 5%.
3. UNLESS OTHERWISE SPECIFIED, ALL UNMARKED CAPACITOR VALUES ARE IN MICROFARADS.

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION		MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES: .X ± .XX ± .XXX ± ANGULAR ± 1°	DRAWN B. SESMITH	DATE 10-16-79	System Industries SUNNYVALE CALIFORNIA		LOGIC: INTERNAL REGISTERS
	ENGINEER				TITLE
	RELEASE TO PROD		NEXT ASSEMBLY 9400-6202		PART NUMBER 9400-6202
	SUPERSEDES DWG —	—	FINISH —	SCALE NONE	DRAWING NUMBER D-9400-6202-3

SHEET 2 OF 7

DWG NO	SH	REV
D-9400-[illegible]	[illegible]	A

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		

ST. 6 RD STATUS-
ST. 6 DT BUSY
DK2 SET N/R CNF-
ST. 6 CLR STATUS-
ST. 4 REC 32
ST. 5 PWRF/PGM INIT-
ST. 4 ATTN-
BR2 SET CORTD RD-
ST. 4 REC 29
ST. 5 PWR DN-
ST. 6 SET PGE-
ST. 4 REC 19
ST. 5 PWR UP-
EU1 SET NED-
ST. 4 REC 18
BS2 SET MXF-
ST. 1 REC Ø8
CF1 SET MCPE-
ST. 4 REC 17
ST. 4 SET MAP PE-
ST. 1 REC Ø5
AE1 SET DT COMP-
ST. 1 REC 13
ST. 5 CLR STATUS-
ST. 4 SET INV MAP-
ST. 1 REC Ø4
DR2 SET DT ABORT-
ST. 1 REC 12
DL2 SET ERR CNF-
ST. 1 REC Ø3

74LS112: 14B, 15B, 12B, 13B, 11C, 10C, 14B, 13B, 11C, 10C

RD STATUS
DT BUSY
N/R CNF
CORRECTED READ
PROGRAM ERROR
NON EX. STANT DISC
MB CONTROL PARITY
DATA XFER CMP
DATA XFER ABORTED

74LS240: 13A (XMIT3, XMIT30, XMIT29, XMIT28, XMIT19, XMIT18, XMIT17, XMIT16, XMIT13, XMIT12)

ATTN-
PWR DN-
PWR UP-
D14 74LS30 → TRY RUPT

MISSED XFER
RD STATUS-

74LS240: 11A (XMIT08, XMIT05, XMIT04, XMIT03)

XMIT29-XMIT31
XMIT17-XMIT19
XMIT08; XMIT12; XMIT13
XMIT02-XMIT05
TRY RUPT
MAP PE-
→ ST. 4 4 1 1 1 5 6

FJ2 TRØ7-
FJ1 TRØ6-
FH2 TRØ5-
FF2 TRØ4-
FE1 TRØ3-
FD1 TRØ2-
FC1 TRØ1-
FB1 TRØØ-
ST. 5 TRØØ-

17A 74S241 → +V1

17B 74148

74S00, 74S04 (17E), 74S08 (x3), 18C, 15D

RP5 3KΩ
T2 LEVEL
SW4
SW3
SW2
SW1

18D 74S85 (A=B) → ST. 5

18B 74148

18A 74S241 → +V1

FM1 TRØ8-
FN1 TRØ9-
FP1 TRIØ-
FP2 TRI1-
FS2 TRI2-
FT2 TRI3-
FU1 TRI4-
FU2 TRI5-

TR#	SW1	SW2	SW3	SW4
8	ON	ON	ON	OFF
9	OFF	ON	ON	OFF
10	ON	OFF	ON	OFF
11	OFF	OFF	ON	OFF

INV MAP- → ST. 6
ERR CNF- → ST. 6

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL - DESCRIPTION		MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ——— TOLERANCES X ± XX ± XXX ± ANGULAR ± 1°	DRAWN BY SECM TH	DATE 10-16-79	System Industries SUNNYVALE CALIFORNIA		LOGIC: INTERNAL REGISTERS
	ENGINEER				
	RELEASE TO PROD		NEXT ASSEMBLY 9400-[illegible]		PART NUMBER 9400-6202
	SUPERSEDES DWG —	—	FINISH —	SCALE NONE	D-9400-6202-3 DRAWING NUMBER

SHEET 3 OF 7

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		

ST.5 PWRF/PGM INIT-
BT2 MB ATTN
CB2 SET RD SUB-
ST.6 RD STATUS-
CLR STATUS-
CLK STATUS-
REC Ø1
REC Ø2
REC ØØ
RD DIAG-
WRT MAP-
ES1 SET IS TO-
FA1 SET RD TO-
DK1 GEN MAP PAR
CV2 INT 31
CS1 INT 30
CR2 INT 29
CL2 INT 28
ST.1 INT BUS ICLK
CK2 INT 27
CR1 INT 26
CL1 INT 25
CK1 INT 24
ST.2 XMIT 24 - XMIT 31
ST.5 XMIT 26 - XMIT 31
ST.5 XMIT 29 XMIT 31
CE2 INT 23
CH2 INT 22
CE1 INT 21
CA1 INT 20
ST.7 RA6-RA7
ST.5 DT READ
RD CMD/ADRS-
RD MAP-
PAR A
PAR B
CLK DIAG
EE1 INT T1
EE2 INT T1-
ST.6 ENB 31/20-
BV2 INT 19
BP1 INT 18
BN1 INT 17
BL1 INT 16
ST.5 XMIT 22 - XMIT 23
ST.6 ENB 19/16-
ST.1&2 XMIT 16 - XMIT 23
ST.6 TØ
ST.5 MNT MD
ST.7 XMIT16
ST.3 XMIT17 - XMIT19
ST.5 CMD REQ-
ST.5 CMD COND

18F 74LS00
ATTN-
16E 74LS04
ATTN
15C 74LS112 — RD SUB
RD SUB-
14C 74LS112 — IS TO
IS TO-
14C 74LS112 — RD TO
RD TO-
14E 74S74
12A 74LS240
XMIT16
XMIT02
XMIT01
XMIT00
RD SUB- ST.6
ATTN- ST.3
XMIT02 - XMIT02 ST.1
17E 74S04
IS TO B FB2
IS TO- ST.6
17E 74S04
RD TO B FE2
RD TO- ST.6
9A 74S374
8A 74S240
+5V
RP1 1K (7x)
1K, P9
+V2
WRT MAP-
INT BUS ICLK
REC 29 ST.3
REC 30 ST.3
INV MAP PAR ST.1
7A 74S374
6D 93L422
7D 93L422
+V4
REC19 REC18 REC17 REC16
MAP 20 MAP19 MAP18 MAP17
RA7 RA6 RA5 RA4 RA3 RA2 RA1 RA0
9B 74LS174
REC 31 REC 30 REC 29 REC 28 REC 27
CLK DIAG
PWRF/PGM INIT-
RD CMD/ADRS-
RD MAP-
BLK CMD
MAP VALID
MAP 16
7B 74LS240
8B 74LS240
12A 74LS240
6B 74LS240
7C 74LS280
10B 74LS174
10A 74S241
REC 16 ST 7
REC 17 ST. 3
REC 18 ST. 3
REC 19 ST. 3
REC 22 ST. 6
REC 23 ST. 6
RD DIAG-
9 XMIT23
7 XMIT22
5 XMIT21
TEST OB CLK DE1
SIM ATTN CC1
SIM OCC BU2
TEST D OUT DF2
INVDATA PAR EN1
SIM LOAD FAR AC1
TEST D REQ DJ2
MAP 16 ST. 1
SET CMD RDY FR2
SET MAP PE- ST. 3
SET INV MAP- ST. 3
12E 74LS00
10E 74LS11
11D 74LS04
9D 74S20
10D 74LS10
10D 74LS10

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES X ± .1 XX ± .03 XXX ± .010 ANGULAR ± 1°	DRAWN BY SE SMITH	DATE 10:16 79	System Industries SUNNYVALE CALIFORNIA	LOGIC: INTERNAL REGISTERS
	ENGINEER			
	RELEASE TO PROD		NEXT ASSEMBLY 9400-6202	PART NUMBER 9400-6202
	SUPERSEDES DWG ——	—	FINISH — SCALE NONE	D-9400-6202-3 DRAWING NUMBER

DWG NO D-9400-6202-3 | SH 5 | REV A

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		

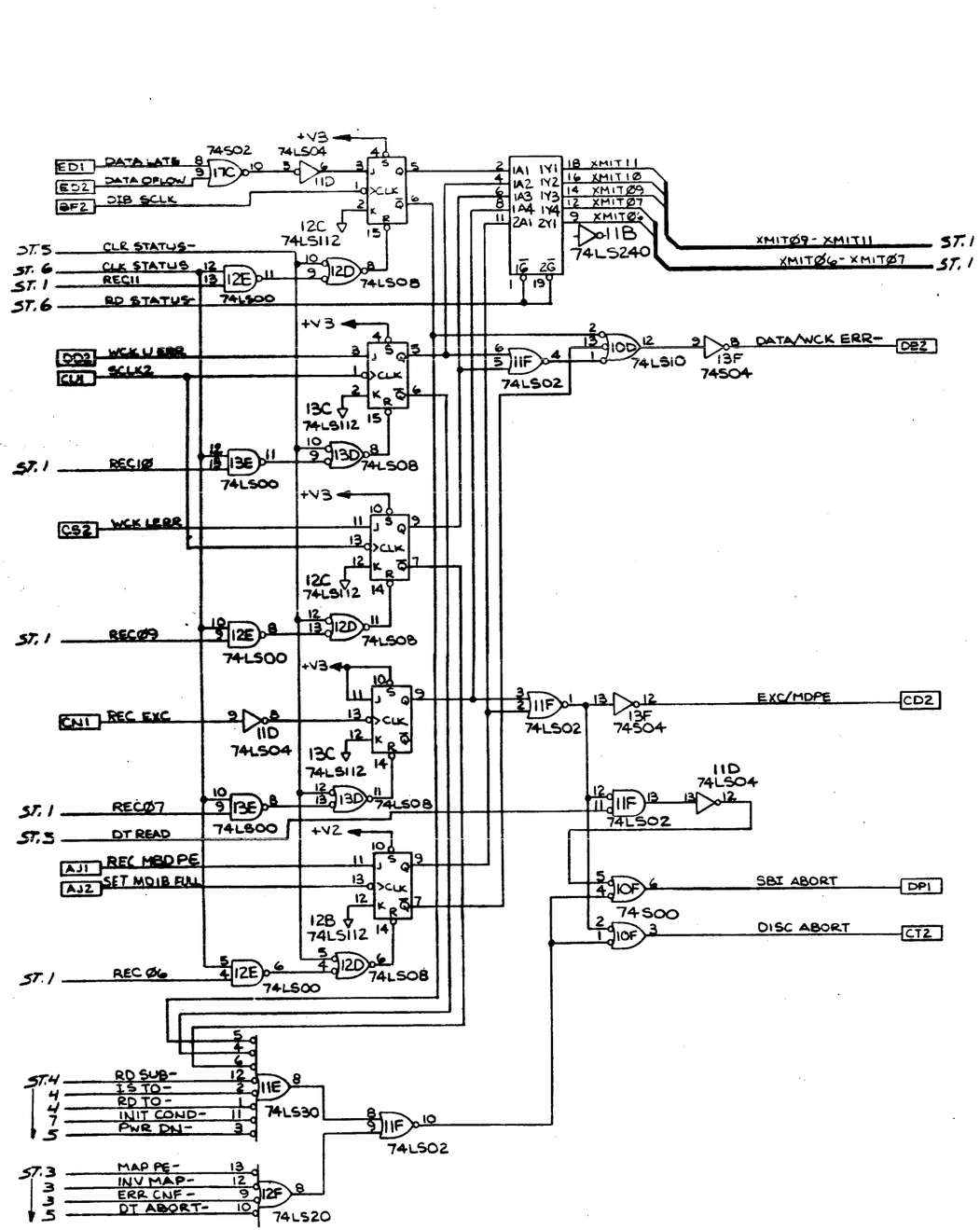
ST. 3 A=B
EL1 INT T3
EL2 INT T3-
15A 10125
DA1 SBI DEAD-
FR1 SEND TR HOLD
DL1 SEND TR B
FK2 EXT READ REQ B-
DF1 CMD REQ B-
FM2 INT READ REQ B
EP1 DT READ B
EJ2 CMD COND B
16A 74S241
ST. 7 HOLD TR
74S02 17C
16B 74S74
16C 74S74
T2
T3
16D 26S12
16B 74LS04
74S00 19E
17E 74S04
74LS20 INIT COND-
TRY RUPT
UNJAM-
DT BUSY-
MSTR INIT-
74S37 19F
74S08 18C
14G 74S37
15G 74S00
RUPT ENB
74LS00 (x2) 18F
74LS08 13D
16F 74LS04
16E 74LS04
16F 74LS74
14E 74S74
ST. 1 REC ØØ
6 CLK CONT
7 UNJAM-
7 INIT COND-
7 DT GO-
3 TRY RUPT
6 DT BUSY-
ST 1 REC Ø2
ST 1 REC Ø3
EA1 PARITY FLT
EM1 WRT SEQ FLT
EP2 UNEXP RD FLT
EM2 MULTI XMIT FLT
EP2 OUR FLT
FS1 +5V DCLO
FV2 -5V DCLO
ST. 6 CLR PWR DN-
R7 1K
R8 1K
Q4 Q6 Q3 Q5 2N5433 (4X)
+5V R16 DCLO-
+5V R17 1K
ST. 6 T2
ST. 6 CLR PWR UP-
ST. 6 RD CONFIG-
+5V R15 1K
FL1 +5 ACLO
FL2 -5 ACLO
R6 1K
R5 1K
Q1 Q2 2N5433
74LS74 19B
74LS08 19C
19D
74LS112 (2x)
PARITY FLT
WRT SEQ. FLT
UNEXP RD FLT
MULTI XMIT FLT
OUR FLT
PWR DN
PWR UP
RD CONFIG
74LS240 14A
74LS74 17F
74LS240 11A
REC Ø1
ST. 6 TØ
ST. 6 RD CONTROL-
ST. 1 REC Ø1

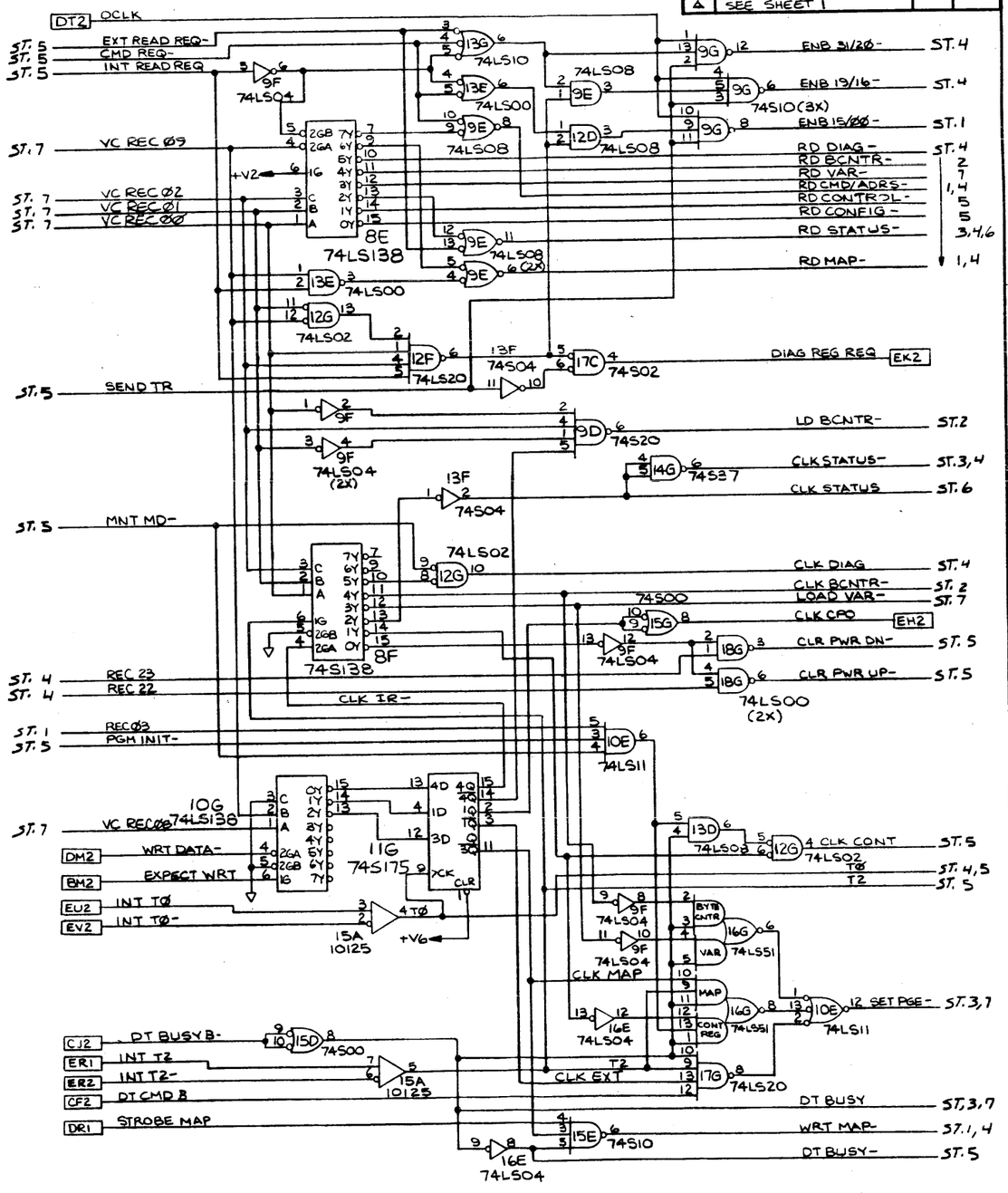
ARB OK- FK1
SEND TR ST. 6
EXT READ REQ- ST. 6
CMD REQ- 4.6
INT READ REQ 6
DT READ 6
CMD COND 4
XMIT TR- FF1
TRØØ- ST. 3
PWRF INIT B- BA1
PWRF INIT- ST. 7
PWRF/PGM INIT- ST. 3,4
CLR CNTRS- ST. 2
CLR CNTR = Ø - ST. 2
CLR STATUS- ST. 3,4,6
74S37 PGM INIT B- AK2
INTERRUPT- DB1
PGM INIT- ST. 6
MNT MD ST. 4
MNT MD- ST. 6
XMIT26 - XMIT31 ST. 4
XMIT22 - XMIT23 ST. 4
XMITØ1 - XMITØ5 ST. 1
DT ABORT- ST. 6
PWR DN- ST. 3,6
PWR UP- ST. 3
DISK FAIL DN1

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL / DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES X ± XX ± XXX ± ANGULAR ± 1°	DRAWN BY SE SMITH	DATE 10-16-79	System Industries SUNNYVALE CALIFORNIA	LOGIC: INTERNAL REGISTERS
	ENGINEER		NEXT ASSEMBLY 9400-6202	PART NUMBER 9400-6202
	RELEASE TO PROD		FINISH —	SCALE NONE
	SUPERSEDES DWG —	—		DRAWING NUMBER D-9400-6202-3

SHEET 5 OF 7

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		





DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN _____ TOLERANCES x ± xx ± xxx ± ANGULAR ± 1°				
DRAWN BY S.E. SMITH	DATE 10/16/79		System Industries SUNNYVALE, CALIFORNIA	TITLE LOGIC: INTERNAL REGISTERS
ENGINEER				
RELEASE TO PROD			NEXT ASSEMBLY 9400-6202	PART NUMBER 9400-6202
SUPERSEDES DWG			FINISH — SCALE NONE	DRAWING NUMBER D-9400-6202-3

DWG NO D-9400-6202-3 | SH 7 | REV A

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	SEE SHEET 1		

BMI CLK VALID CMD
ST. 6 DT BUSY
ST. 6 RD VAR-
ST. 1 REC Ø0-Ø7
ST. 5 PWRF INIT-
ST. 6 LOAD VAR-
ST. 4 REC16
ST. 1 REC Ø8-15
ABI VAR BCNT-
ADI DT REV
API VAR CNT
ST. 6 SET PGE-

REC Ø9, REC Ø8, REC Ø7, REC Ø6 → 6F 74LS175 (3D 3Q, 4D 4Q, 2D 2Q, 1D 1Q, CLK, CLR)
REC Ø5, REC Ø4, REC Ø3, REC Ø2, REC Ø1, REC Ø0 → 7F 74LS174 (3D 3Q, 4D 4Q, 2D 2Q, 1D 1Q, 5D 5Q, 6D 6Q, CLK, CLR)
REC16 → 4G 74LS193 (D, C, B, A, QD, QC, QB, QA, CO, LD, CP)
REC15 → 5G 74LS193
REC14, REC13, REC12, REC11 → 5G 74LS193 (VAR14, VAR13, VAR12, VAR11)
REC1Ø → 6G 74LS193
RECØ9, RECØ8, RECØ7 → 6G 74LS193 (VARØ9, VARØ8, VARØ7)
RECØ6, RECØ5, RECØ4, RECØ3 → 7G 74LS193 (VARØ6, VARØ5, VARØ4, VARØ3)
RECØ2, RECØ1, RECØØ → 8G 74LS193 (VARØ2, VARØ1, VARØØ)

VAR BCNT B- → 1D 74S04 → 1E 74S00 (4x)
VAR BCNT- → 1D 74S04 (3x)
DT REV → 1D 74S04 (2x)
VAR CNT, SET PGE- → 1D 74S04 → 1E 74S00 (4x)

+V2 → 9C 74LS240 (1A1 1Y1, 1A2 1Y2, 1A3 1Y3, 1A4 1Y4)
VAR16 → XMIT16
VAR15 → XMIT15
RD VAR-

VAR16, VAR15, VAR14, VAR13 → 6E 74S157 (1B 1Y, 1A, 2B 2Y, 2A, 4B 4Y, 4A, 3B 3Y, 3A, S STB)
DT BUSY → S STB
VAR12, VAR11, VARIØ, VARØ9 → 7E 74S157
RD VAR-
VAR14, VAR13, VAR12, VAR11, VARIØ, VARØ9, VARØ7 → 8D 74LS240 (1A1 1Y1, 2A1 2Y1, 2A2 2Y2, 2A3 2Y3, 2A4 2Y4)
VARØ8, VARØ7, VARØ3, VARØ4, VARØ5, VARØ6
VARØ6, VARØ5, VARØ4, VARØ3, VARØ2, VARØ1, VARØØ → 1B 74LS240 (1A2 1Y2, 1A3 1Y3, 1A4 1Y4, 2A1 2Y1, 2A2 2Y2, 2A3 2Y3, 2A4 2Y4)
+V4 → 1B 74LS240 (1A1 1Y1)
RD VAR-
VARØ2, VARØ1, VARØØ, SET PGE- → 1A 74S241 (1A1 1Y1, 1A2 1Y2, 1A3 1Y3, 1A4 1Y4, 2A1 2Y1, 2A2 2Y2, 2A3 2Y3, 2A4 2Y4)

VC RECØ9 → ST. 6
VC RECØ8 → ST. 6
XMIT16 → ST. 4
VC RECØØ → ST. 6
VC RECØ1 → ST. 6
VC RECØ2 → ST. 6
RAØ - RA7 → ST. 1, 4
XMITØ8 - XMIT15 → ST. 1
XMITØØ - XMITØ7 → ST. 1
VARØ3 - VARØ8 → ST. 1
VARØ2 B → AP2
VARØ1 B → AS2
VARØØ B → AT2
SET PGM ERR- → BSI
INIT COND- → ST. 5, 6
DT GO- → ST. 5
UN JAM- → ST. 5
HOLD TR → ST. 5
HOLD TR B → CMI
UNJAM B- → BEI
DT GO B- → BCI
INIT COND B- → AFI
VAR BCNT- → ST. 2

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES x ± xx ± xxx ± ANGULAR ± 1°	DRAWN BY SESMITH	DATE 10-16-79	System Industries SUNNYVALE CALIFORNIA	TITLE LOGIC: INTERNAL REGISTERS
	ENGINEER		NEXT ASSEMBLY 9400-6202	PART NUMBER 9400-6202
	RELEASE TO PROD		FINISH — SCALE NONE	DRAWING NUMBER D-9400-6202-3
	SUPERSEDES DWG —	—		SHEET 7 OF 7

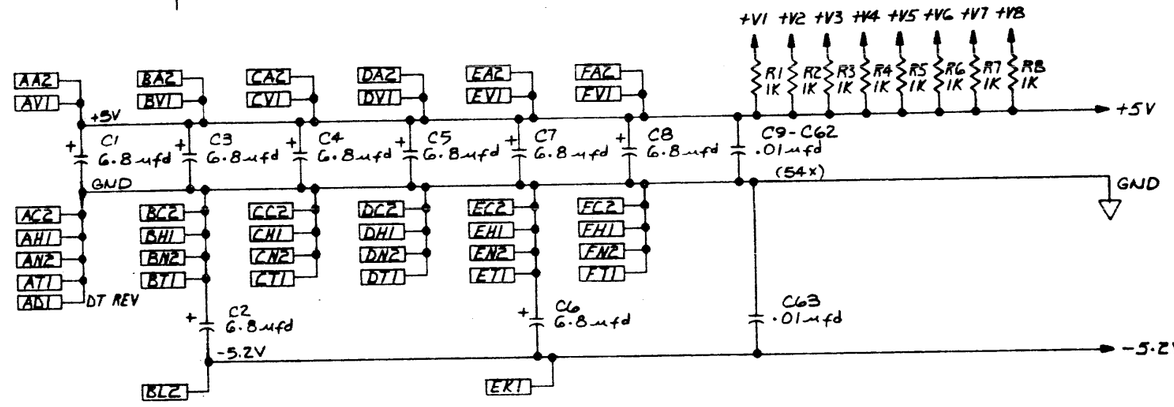
TYPE	POSITION	UNUSED ELEMENTS (OUTPUT PINS SHOWN)	+5V	GND	-5.2V
74S00	6D, 4E, 17E, 19E, 6F, 12F	4E-3; 19E-3,11; 12F-3,8,11	14	7	
74LS00	14C, 17C, 15C, 1E, 10F	17C-8; 1E-3,11; 10F-8,11	14	7	
74S02	5D	5D-10	14	7	
74LS02	16B, 12C, 16C, 12D, 5E, 6E, 17G	16B-1,13; 12C-1,4 17G-1,10,13	14	7	
74S04	17A, 14D, 10E	17A-2,8,10,12; 14D-2,10,12; 10E-6,12	14	7	
74LS04	12B, 3D, 17D, 12E	17D-6,12; 12B-6	14	7	
74S08	3E, 7F	3E-3,6	14	7	
74LS08	10D, 15D, 13E, 19G	10D-6; 19G-11	14	7	
74S10	16A	16A-6,12	14	7	
74LS10	14B, 13C		14	7	
74LS14	14A	14A-10	14	7	
74S20	13D, 18E		14	7	
74LS20	15C	15C-8	14	7	
74LS27	13B, 2E	2E-8	14	7	
74S37	17B		14	7	
74S38	15B	15B-6	14	7	
74S74	7D, 18D, 19D, 8E, 8F, 11F	8E-5	14	7	
74LS74	18B, 19B, 18C, 4D, 8D, 9D, 11D, 11E, 14E, 15E, 16E, 16F, 17F, 18F, 19F, 16G		14	7	
74LS193	9E, 13F		16	8	
74S112	16D, 9F, 18G		16	8	
74LS240	12A, 13A, 18A, 19A, 2D		20	10	
74S241	1B, 3B, 5B, 7B, 1D, 5F		20	10	
74LS259	7E, 15F		16	8	
74S260	14F		14	7	
74S374	1A, 3A, 5A, 7A		20	10	
74LS374	2A, 4A, 6A, 8A, 2B, 4B, 6B, 8B, 1C, 2C, 3C, 4C, 5C, 6C, 7C, 8C		20	10	
			20	10	
2905	9B, 11B, 9C, 11C		24	6-18	
10125	15A		9	16	8

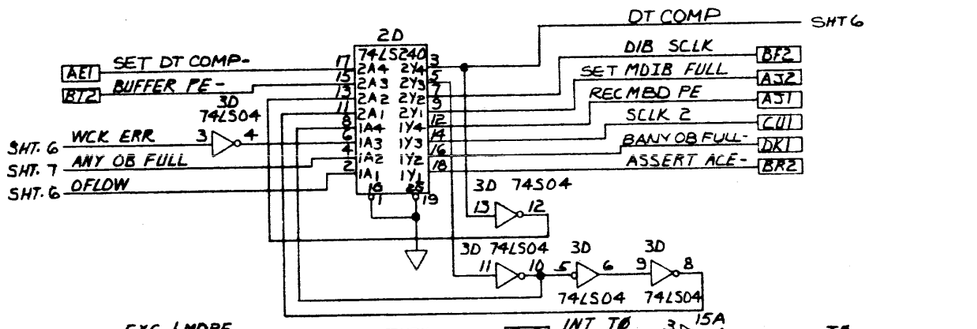
REF DESIGNATION LAST USED	REF DESIGNATION NOT USED
C63	
RP6	
R10	

W1 A2

NOTES: UNLESS OTHERWISE SPECIFIED:

1. THIS SCHEMATIC REPRESENTS ASSY 9400-6203 AT DATE CODE ~~A004~~ A016 A019
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4 W, ±5%.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS.





REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
1	ENG CONTROL	4/21/80	
A	REL PER PCD 869	5/14/80	
A1		7/8/80	
A2		7/8/80	

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION		MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES x ± xx ± xxx ± ANGULAR ± 1°			DRAWN BY C. [illegible]	3-7-80 DATE	SCHEMATIC DATA PATH
			ENGINEER [illegible]	4/21/80	System Industries SUNNYVALE CALIFORNIA
			RELEASE TO PROD [illegible]	4/21/80	NEXT ASSEMBLY
			SUPERSEDES DWG ——	——	FINISH —— SCALE ——

TITLE: SCHEMATIC DATA PATH
PART NUMBER: 9400-6203
DRAWING NUMBER: 9400-6203-3

DWG NO 9400-G203-3 | SH 2 | REV A1

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A2	SEE SHEET 1		

SHT. 6 OUT ENB-
SHT. 6 RCVR LTCH

SHT. 7 UPROE-
SHT. 5 UPA DRCP
SHT. 5 UPA SEL

SHT. 5 IB3-
SHT. 5 IB1-
SHT. 5 IB2-
SHT. 5 IB0-

CV2 INT 31
CS1 INT 30
CB2 INT 29
CL2 INT 28
CK2 INT 27
CA1 INT 26
CL1 INT 25
CK1 INT 24

74LS374 8C — RCVR 7 … RCVR Ø
74S241 7B
74S374 7A
74LS374 8A — ODD 7 … ODD Ø
74LS374 8B — ODD 7 … ODD Ø
74LS374 7C — RCVR 7 … RCVR Ø
74LS374 6C — RCVR 7 … RCVR Ø
74LS374 6A — EVN 7 … EVN Ø
74LS374 5C — RCVR 7 … RCVR Ø
74S241 5B — INT 23 … INT 16
74S374 3A
74LS374 6B — EVN 7 … EVN Ø

SHT. 7 CLK OB3
SHT. 7 CLK OB1
SHT. 7 CLK OB2
SHT. 6 WDIOE-
SHT. 7 CLK ØB6
SHT. 6 INT ENB
SHT. 6 INT ENB-
DV2 I CLK-

SHT. 6 INT 16
SHT. 6 INT 17
SHT. 6 INT 18
SHT. 6 INT 19

CE2 INT 23
CH2 INT 22
CE1 INT 21
CA1 INT 20
DV2 INT 19
BP1 INT 18
BN1 INT 16
BL1 INT 16

RCVR Ø - RCVR 7
INT16 - INT23

SHT. 4 CLK DI1
SHT. 4 CLK DI2

ODD 4-7 SHT. 3
RCVR ØØ-Ø7 SHT. 3

9C 2905 — S DRCP OE — A0 A1 A2 A3 B0 B1 B2 B3 — R0 R1 R2 R3 — BE RLE
9B 2905 — S DRCP OE — A0 A1 A2 A3 B0 B1 B2 B3 — R0 R1 R2 R3 — B3 RLE

ODD 7 / ODD / EVN 7 / EVN 4
ODD 3 / ODD Ø / EVN 3 / EVN Ø

RCVR Ø7 Ø6 Ø5 RCVR Ø4
RCVR Ø3 Ø2 Ø1 RCVR ØØ
RCVR Ø4-Ø7

+5V 180Ω RP6 RP5 390Ω
+5V 180Ω RP2 RP1 390Ω

DB15- CD2
DB14- CB1
DB13- BU2
DB12- AS1
DBN- DU2
DB10- AS1
DB09- DR2
DB08- DP1

EVN 4-7 SHT. 3
EVN Ø-3 SHT. 3
ODD Ø-3 SHT. 3
I CLK- SHT. 3

DO NOT SCALE THIS DRAWING	ITEM QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN — TOLERANCES: .X ±, .XX ±, .XXX ±, ANGULAR ± 1°	DRAWN BY C. Lynd — DATE 3-7-80	System Industries SUNNYVALE, CALIFORNIA	SCHEMATIC DATA PATH
	ENGINEER		TITLE
	RELEASE TO PROD	NEXT ASSEMBLY	9400-6203 PART NUMBER
	SUPERSEDES DWG ——	FINISH —— SCALE ——	9400-6203-3 DRAWING NUMBER

SHEET 2

5400-6203-3 | SH 3 | REV A2

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A2	SEE SHEET 1		

SHT. 7 LWR OE-
SHT. 5 LWR DRCP
SHT. 5 LWR SEL
SHT. 2 EVN 4-7
SHT. 2 EVN Ø-3
SHT. 2 ODD 4-7
SHT. 2 ODD Ø-3
SHT. 4 CLK DI1
SHT. 5 IA1-
IA2-
IA4-
SHT. 5
BE2 INT 15
BE1 INT 14
AE2 INT 13
AE1 INT 12
AD2 INT 11
AD1 INT 10
AB2 INT Ø9
AA2 INT Ø8

74LS374 4C — RCVR 7, RCVR Ø3
74S241 3B — INT ENB, INT ENB-
74S374 3A
74LS374 4A — ODD 7, ODD Ø
74LS374 4B — ODD 7, ODD Ø
74LS374 3C — RCVR 7, RCVR Ø3
74LS374 2C — RCVR 7, RCVR Ø3
74LS374 2A — EVN 7, EVN Ø
74LS374 2B — EVN 7, EVN Ø
74LS374 1C — RCVR 7, RCVR Ø3
74S241 1B
74S374 1A
74S241 1D — INT Ø7, INT ØØ

SHT. 7 CLK OB1
SHT. 6 WD1OE-
SHT. 7 CLK OB5
SHT. 6 WD2OE-
SHT. 7 CLK ØB3
SHT. 4 CLK DI2
SHT. 7 CLK ØB4
SHT. 6 INT ENB
SHT. 6 INT ENB-
SHT. 2 I CLK-

AL2 INT Ø7
AL1 INT Ø6
AK1 INT Ø5
AH2 INT Ø4
AE2 INT Ø3
AD2 INT Ø2
AB2 INT Ø1
AA1 INT ØØ

INTØØ - INTØ7

SHT. 2 RCVR Ø8 - Ø7
SHT. 6 INT DIAG MD
SHT. 6 INT DIAG MD-
SHT. 6 OUT ENB-
SHT. 6 RCVR LTCH

LWR OE-
LWR DRCP
LWR SEL
ODD 7
ODD Ø
EVN 7
EVN Ø
OUT ENB-
RCVR LTCH

IIC 2905 — DRCP OE, BE, RLE, RCVR Ø7, RCVR Ø4
IIB 2905 — DRCP OE, BE, RLE, RCVR Ø3, RCVR ØØ

+5V
RP6 180Ω
RP5 390Ω
RP4 180Ω
RP3 390Ω

DBØ7- DH2
DBØ6- DL1
DBØ5- DH2
DBØ4- CM1
DBØ3- FH2
DBØ2- FL1
DBØ1- FR2
DBØØ- FS1

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL - DESCRIPTION		MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES x ± .xx ± .xxx ± ANGULAR ± 1°	DRAWN BY		DATE 3-7-80	System Industries SUNNYVALE CALIFORNIA	TITLE SCHEMATIC DATA PATH
	ENGINEER			NEXT ASSEMBLY	PART NUMBER 5400-6203
	RELEASE TO PROD			FINISH ____ SCALE ____	DRAWING NUMBER 5400-6203-3
	SUPERSEDES DWG ____		____		

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A2	SEE SHEET 1		

SHT. 5 CLK 1/2
SHT. 2 READ REQ-
SHT. 1 T2
SHT. 1 INHIBIT LWR
SHT. 5 FF1 READ PND-

DF1 CMD REQ B-
ES2 BLK CMD-
EP1 DT READ B
DH2 SBI BCTR = Ø
DK1 MAINT MODE B
DJ2 TEST DREQ
DF2 TEST D OUT
DK2 DT FWD
SHT. 7 BM2-3-

SHT. 7 ANY OB FULL-

CH2 DT BUSY B
DE1 TEST OB CLK
KP2 CLK DI B1
BA1 CLK DI B2
AP2 VAR ØZ B
AS2 VAR Ø1 B
AT2 VAR ØØ B
DJ1 DISK BCTR = Ø -

SHT. 6 A INIT -
SHT. 5 IBT-
SHT 5 CLK1
SHT 5 CLK2-
SHT 5 CLK2

SHT 6 WRITE STB-
SHT. 1 T2-
SHT. 6 B INIT-
SHT 5 CLK1-
SHT. 5 CLR REQ-

MAINT MODE- SHT. 6
TEST DREQ SHT. 6
TEST D OUT- SHT. 6
SBI BC=0 SHT. 5,6
DISC WRITE SHT. 3,6,7
CMD REQ SHT. 6
DISC READ SHT. 5,6,7

CMD COND B ES2

DATA VALID- SHT. 5
DATA VALID SHT. 6

CLK DBC EA1

DT BUSY SHT. 6
TEST OB CLK- SHT. 6
CLK DI1 SHT. 2,3
CLK DI B2 SHT. 7
CLK DI2 SHT. 2,3,5

DBC = 0 SHT. 6
DIZ FULL SHT. 6

VAR ØZ SHT. 5,7
VAR Ø1 SHT. 5,7
VAR ØØ SHT. 5,7

MOVE REQ SHT. 5

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES .x ± .xx ± .xxx ± ANGULAR ± 1°	DRAWN BY C. [illegible]	DATE 3-7-80	System Industries SUNNYVALE CALIFORNIA	TITLE SCHEMATIC DATA PATH
	ENGINEER			PART NUMBER 9400-6203
	RELEASE TO PROD		NEXT ASSEMBLY	DRAWING NUMBER 9400-6203-3
	SUPERSEDES DWG ——	——	FINISH —— SCALE ——	SHEET 4 OF 7

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A2	SEE SHEET 1		

SHT. 4 SBI BC = 0-
SHT. 4 DISC WRITE
SHT. 4 DISC READ
SHT. 7 RDV BCNT-

SHT. 1 TØ
SHT. 7 SET REQ
SHT. 4 MOVE REQ
SHT. 1 T2
SHT. 1 T1
SHT. 1 T3
SHT 4 CLK DI2
SHT. 4 DATA VALID-
SHT 4 VAR ØØ
SHT. 4 VAR Ø2
SHT. 4 VAR Ø1
SHT. 6 B INIT-
SHT. 6 A INIT-

+5V
+V5
+V4
+V3
R9 1K

74574 7D
74574 9D
74574 4D
74574 8E
74574 11E
74574 14E
74574 15G
74LS574
74LS527
74S02
74LS02
74S00
74LS00
74S04
74LS04
74S08
74LS08
74S20
74LS10
74LS193
74LS259

CLK1
CLK2
INHIBIT UPR CLK1-
INHIBIT LWR
INH LWR-
INHIBIT LTCH
DRCP-

CLK 2 - SHT. 7,4
CLK 1/2 SHT. 4
CLK1 - SHT. 4
UPR DRCP SHT. 2
LWR DRCP SHT. 3
CLK 2 SHT. 7,4
11 VAR BCNT- AB1
CLR REQ- SHT. 4,6
CLR REQ SHT. 7
CLK1 SHT. 4,6,7
IB7- SHT. 2,4
IB6- SHT. 2
IB5- SHT. 3
IB4- SHT. 3
IB3- SHT. 2
IB2- SHT. 2
IB1- SHT. 3
IBØ- SHT. 3
UPR SEL SHT. 3
LWR SEL SHT. 2
INHIBIT LWR SHT. 4

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES x ± .xx ± .xxx ± ANGULAR ± 1°	DRAWN BY C. [illegible] DATE 3-7-80		System Industries SUNNYVALE CALIFORNIA	SCHEMATIC DATA PATH
	ENGINEER			TITLE 9400-6203
	RELEASE TO PROD		NEXT ASSEMBLY	PART NUMBER 9400-6203-3
	SUPERSEDES DWG ———	———	FINISH ——— SCALE ———	DRAWING NUMBER

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A7	SEE SHEET 1		

SHT. 4 DI2 FULL
DI2 OCLK
SHT 7 CLK LATCH
SHT. 5 CLK 1

EJ1 DMA OUTPUT-
DATA VALID
SHT. 4 DISC WRITE
SHT. 4 DISC READ
FH2 DB LOCK-
SHT. 4 DT BUSY
EF2 DATA REQ-
SHT. 5 CLR REQ-
SHT. 4 SBI BC = Ø
SHT. 4 DBC = Ø
SHT. 4 MAINT MODE-
SHT. 4 TEST DREQ-
SHT. 4 TEST D OUT-
SHT. 4 TEST OB CLK-
BC1 DT GO B-
AR2 PGM INIT B-
BA1 PWRF INIT B-
FF2 WORD 2 ACK
SHT. 1 DT COMP
DA1 WCK ERR-
EA2 SET MXF-
EK2 DIAG REG REQ.
EY2 ENAB WD1
FS1 ENAB WD2
SHT. 1 T3
SHT. 4 CMD REQ

14A 74LS14 · 14B 74LS10 · 16B 74LS02 · 17D 74LS04 · 15B 74538 · 16C 74LS02 · 16A 74S10 · 17B 74S37 · 17A 74S04 · 15C 74LS10 · 15E 74LS08 · 17C 74LS00 · 18B 74LS74 · 18C 74LS74 · 19B 74S74 · 18A 74LS240 · 5F 74S241 · 6F 74S00 · 7F 74S08 · 10E 74S04 · 9F 74S112 · 8F 74S74 · RP1 390Ω · RP2 180Ω · RP3 390Ω · RP4 180Ω · RP5 390Ω · RP6 180Ω · +V1 · +V2 · +V5 · A1

ACCEPT INPUT
CLK LATCH

OUT ENB - SHT. 2,3
WRITE STB - SHT. 4
INT 19 SHT. 2
INT 18 SHT. 2
INT 17 SHT. 2
INT 16 SHT. 2
DATA STB- ET2
READ REQ SHT. 4,7
INT DIAG RD- SHT. 3
INT DIAG RD SHT. 3
DIAG RD- AN1
DIAG RD AM1
INT ENB - SHT. 2,3
INT ENB SHT. 2,3
RCVR LTCH SHT. 2,3
DATA AVAILABLE SHT. 7
OFLOW SHT. 1
A INIT - SHT. 4,5,7
B INIT - SHT. 4,5,7
DATA OFLOW ED2
WCK UERR DD2
WCK LERR CS2
DATA LATE ED1
WCK ERR SHT. 1
WD1OE - SHT. 2,3
WD2OE - SHT. 3
CLR AM - SHT. 7
WD2 ACK - SHT. 7
CLK OB
WD2 ACK SHT. 7

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES x ± xx ± xxx ± ANGULAR ± °	DRAWN BY C.	DATE 3-7-80	System Industries SUNNYVALE CALIFORNIA	SCHEMATIC DATA PATH
	ENGINEER		NEXT ASSEMBLY	PART NUMBER 9400-6203
	RELEASE TO PROD		FINISH ____ SCALE ____	DRAWING NUMBER 9400-6203-3
	SUPERSEDES DWG			SHEET G OF 7

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A2	SEE SHEET 1		

SHT. 6 READ REQ-
SHT. 6 WDR ACK-
SHT. 5 CLK 1
SHT. 5 CLK 2-
SHT. 5 CLK 2
SHT. 6 WD2 ACK
SHT. 6 DATA AVAILABLE
SHT. 5 CLR REQ
SHT. 4 DISC READ
SHT. 4 DISC WRITE
SHT. 4 CLK DIB2-
SHT. 6 CLR BM-
SHT. 4 VAR Ø2
SHT. 4 VAR Ø1
SHT. 4 VAR Ø0
SHT. 6 B INIT-
SHT. 6 T CLK OB
SHT. 6 A INIT-

+V8 +V7 +V1 +V6

18G 74LS112
17G 74LS02
17D 74LS04
INH 2ND CLK
BPLIT WRD REQ-
13C 74LS10
18E 74S20
CLK LATCH
19E 74S00
16G 74LS74
INH 1ST CLK-
19G 74LS08
STACKED WRT
CLK ØB7
19D 74S74
18D 74S74
STACKED REQ-
15D 74LS08
19C 74LS00
17E 74S00
12E 74LS04
74LS193 13F
74LS259 15F
74S74
74LS240 19A
ANY OB FULL SHT. 1
ANY OB FULL- SHT. 4
BM2-3- SHT. 4
BM2-3 ES2
BM2-2 ES1
BM2-1 FU1
BM2-Ø FU2
BM1-3 FB1
BM1-2 FC1
BM1-1 FD1
BM1-Ø FE1
16F 17F 18F 19F 74LS74
SET REQ SHT. 5
RDV BCNT- SHT. 5
10F 74LS00
UPRDE- SHT. 2
LWRDE- SHT. 3
11F 74S74
10E 74S04
CLK ØB7 ØB6 ØB5 ØB4 ØB3 ØB2 ØB1 ØB0 CLK ØB0
14F 74S260
12F 74S00
CLK ØB7 SHT. 2,6
ØB6 SHT. 2,6
ØB5 SHT. 3
ØB4 SHT. 3
ØB3 SHT. 2
ØB2 SHT. 2
ØB1 SHT. 3
ØB0 SHT. 3
CLK LATCH SHT. 6
VAR CNT API

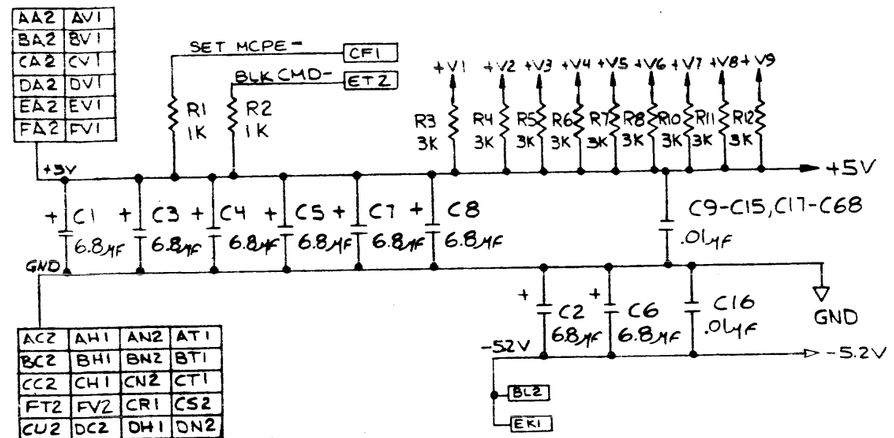
DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES x ± xx ± .xxx ± ANGULAR ± °	DRAWN BY C.	DATE 3-7-80	System Industries SUNNYVALE CALIFORNIA	TITLE SCHEMATIC DATA PATH
	ENGINEER			PART NUMBER 9400-6203
	RELEASE TO PROD		NEXT ASSEMBLY	DRAWING NUMBER 9400-6203-3
	SUPERSEDES DWG		FINISH ____ SCALE ____	SHEET 7 OF 7

9400-6204-3	"1	A1

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
1	ENG CONTROL	9/23/80	
A	REL PER PCO 866	5/11/	
A1	[illegible]	7/1/8	

A1

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND	-5.2V
2905	5C, 7C, 5D, 7D		24	9/8	
10125	15A		9	16	8
74S00	2G, 10C, 13F, 11F	2G-12, 10C-[illegible]	14	7	
74LS00	10C, 10E, 11F, 13A, 13F, 14E, 17A, 18A	10C-12 13F-12 14E-4, 17A-2, 3	14	7	
74S02	12D	12D-2	14	7	
74LS02	10G, 13D, 19C	19C-1,2	14	7	
74LS04	9D, 11A, 11D, 15C, 18B	11A-4 11D-2, 15C-1,2,5	14	7	A1
7408	16F	16F-1,2,4	14	7	
74S08	1G	1G-1,4	14	7	
74LS08	8B, 16A, 17B, 12C, 14C, 8E, 12E	8B-4 17B-3 12C-1 14C-2,4	14	7	
74LS10	9E, 18E, 11G	18E-1 11G-1,3	14	7	
74LS11	9B, 19B, 17F	19B-2,3 17F-1	14	7	
7414	5E, 5F, 15F, 19A A1	5E-2,3,4,5, 15F-12,3,5,6	14	7	
74LS27	10D, 15B, 18C	10D-2	14	7	
74S38	9A	9A-2,4	14	7	
74LS51	16B		14	7	
74S74	10B, 11B, 12F		14	7	
74LS74	11C, 12A, 12F, 12G, 13G, 11E, 14D, 14F	13G-2	14	7	
74LS85	15D		16	8	
74S112	8C		16	8	
74LS138	8D, 7E, 17E, 7G, 8G		16	8	
74S140	13B		14	7	
74LS151	18D, 19E, 18G, 19G		16	8	
74LS157	14B, 9G		16	8	
74LS158	12B, 13C, 16C, 16D, 13E, 10F		16	8	
74LS174	8F		16	8	
74S175	9C		16	8	
74LS175	5A, 7F		16	8	
74S225	6A, 7A		20	10	
74LS240	10A, 14A, 4G		20	10	
74S241	1F, 3F, 3G		20	10	
74LS241	8A, 6G		20	10	
74LS253	1D, 2D, 3D, 4D, 1E, 2E, 3E, 4E		16	8	
74LS257	1B, 2B, 3B, 4B, 6E		16	8	
74LS259	19D, 16E, 18F, 19F		16	8	
74LS260	9F	9F-1	14	7	
74S288	6F		16	8	
74S374	1A, 3A		20	10	
74LS374	2A, 4A, 2F, 4F, 5G		20	10	
93L14	17C, 17D		16	8	
93L422	1C, 2C, 3C, 4C		22	8	



A1

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R12	
RP6	
C68	
19G	14G-17G, 5-7B, 6C, 6D

TABULATION TABLE			
P/N	OPTION	JUMPERS	POSITION
-01	RP04	W1, W2, W3	1
-02	RM03	W1, W2, W3	2

A1

NOTES: UNLESS OTHERWISE SPECIFIED
1. THIS SCHEMATIC REPRESENTS A0/6. ASSY. 9400-6204 AT DATE CODE ~~A004~~.
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4W, ± 5%.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS.
4. THIS SYMBOL (T) REPRESENTS A RESISTOR NETWORK WITH 180Ω TO +5V AND 390Ω TO GND.

A1

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION		MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES: x ± .xx ± .xxx ± ANGULAR ± .5°			PAT KELLY DRAWN 4.21 -80	System Industries SUNNYVALE CALIFORNIA	SCHEMATIC DIAGRAM MPU INTERFACE
			ENGINEER [illegible] 7/23/80		9400-6204 PART NUMBER
			[illegible] 1 4/23/80	NEXT ASSEMBLY	9400-6204-3 DRAWING NUMBER
			SUPERSEDES DWG ____	FINISH ____ SCALE ____	SHEET 1 OF 8

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A1	SEE SHEET 1		

SHT. 3 INT ØØ-Ø7
AL2 INT Ø7
AL1 INT Ø6
AK1 INT Ø5
AH2 INT Ø4
AE2 INT Ø3
AD2 INT Ø2
AB2 INT Ø1
AA1 INT ØØ

SHT. 6 CLK IR
SHT. 3 OUT ØØ-Ø7
SHT. 7 CMD RDY
SHT. 5 PWRF INIT
SHT. 8 ICLK-
SHT. 7 XMIT SEL-
SHT. 6 MDIN -
SHT. 6 GRLE LO-
SHT. 7 DRCP-
SHT. 6 GBE LO-
SHT. 5 MAINT MODE
SHT. 5 PGM RST
SHT. 5 SYS RST
SHT. 8 ACE
SHT. 5 G LOAD FAR-
SHT. 7 RSHFT
SHT. 6 CDIN-
SHT. 4 INT Ø8-15
BK2 INT 15
BK1 INT 14
BE2 INT 13
BE1 INT 12
AV2 INT 11
AR1 INT 10
AR2 INT Ø9
AM2 INT Ø8

74S374 A REC Ø7 REC Ø6 REC Ø5 REC Ø4 REC Ø3 REC Ø2 REC Ø1 REC ØØ
74LS374 2A
74LS257 2B IN Ø7 Ø6 Ø5 IN Ø4
74LS257 1B IN Ø3 Ø2 Ø1 IN ØØ
2905 7D IN Ø7 Ø6 Ø5 IN Ø4 MPD 7- 6- 5- MPD 4-
2905 7C IN Ø3 Ø2 Ø1 IN ØØ MPD 3- 2- 1- MPD Ø-
RP4 RP3 MPD 7 6 5 4 3 2 1 MPD Ø
74LS374 5G
74LS04 MP WRT-SHTS 6,7,8 MP READ-SHTS 6,7 FAR Ø-6 SHT. 7
FAR 6 5 4 3 2 1 FAR Ø

REC ØØ-Ø7 SHTS. 7,8
IN Ø4-Ø7 SHT. 3
IN ØØ-Ø3 SHT. 3
IN ØØ-Ø5 SHT. 7
IN ØØ-Ø7 SHT. 5
IN ØØ, Ø4 SHT. 8
REC ØØ-REC Ø2 SHT. 6
REC ØØ-REC Ø5 SHT. 8

74S374 3A INT 15 INT Ø8 18
74LS374 4A
74LS257 4B IN 15 14 13 IN 12
74LS257 3B IN 11 10 Ø9 IN Ø8
2905 5D OUT 15 14 13 OUT 12 MPD 7- 6- 5- MPD 4-
2905 5C OUT 11 10 Ø9 OUT Ø8 MPD 3- 2- 1- MPD Ø-
+V5 +V3
SHTS. 4,7 OUT Ø8-15
SHT. 6 GRLE HI-
SHT. 6 GBE HI-
MPD Ø- THRU MPD 7-

MPD Ø-7 SHT. 4
REC Ø8 SHT. 6
REC Ø9 SHT. 6
IN 12-15 SHT. 4
IN Ø8-11 SHT. 4
IN 15 SHT. 5
IN Ø9, 12, 14 SHT. 8

MPD 7 - CR2
6 - CS1
5 - CU1
4 - DD2
3 - DE1
2 - DF2
1 - DN1
MPD Ø - DK2

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES x ± xx ± xxx ± ANGULAR ± 1°	PAT KELLY (DRAWN)	4-21-80 (DATE)	System Industries SUNNYVALE CALIFORNIA	SCHEMATIC DIAGRAM MPU INTERFACE (TITLE)
	ENGINEER		NEXT ASSEMBLY	9400-6204 (PART NUMBER)
	RELEASE TO PROD		FINISH / SCALE	9400-6204-3 (DRAWING NUMBER)
	SUPERSEDES DWG			SHEET 2 OF 8

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A1	SEE SHEET 1		

SHT. 7 OMUX B
SHT. 7 OMUX A
SHT. 5 DRY
SHT. 5 VV
SHT. 5 ATN Ø-7

SHT. 7 RAM WE -
SHT. 2 IN Ø4-Ø7

SHT. 7 RSEL Ø-6

SHT. 7 CLKOR

SHT. 2 IN Ø0-Ø3

SHT. 5 GO

DL1 SEND TRB
FK2 EXT READ REQ B-
DT2 OCLK

+V3

93L422 2C
93L422 1C

74LS253 2D
74LS253 2E
74LS253 1D
74LS253 1E

ATN 7
ANT 6
ATN 5
ANT 4
ATN 3
ATN 2
ATN 1
ATN Ø

OUT Ø7
OUT Ø6
OUT Ø5
OUT Ø4
OUT Ø3
OUT Ø2
OUT Ø1
OUT Ø0

OUT Ø0-Ø7 SHT. 2

74LS374 2F
74S241 1F

INT Ø0-Ø7 SHT. 2

W1

A1 2 1

74S08 1G
74S08 1G
74S00 2G
74S00 2G
+V7

R9 100

OEN SHT. 4
OEN- SHT. 4

W1	RP04	RM03
POSN	1	2

A1

DO NOT SCALE THIS DRAWING	ITEM / QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN TOLERANCES X ± XX ± FFF ± ANGULAR ±	DRAWN BY Pat Kelly 4-21-80	System Industries SUNNYVALE CALIFORNIA	SCHEMATIC DIAGRAM MPU INTERFACE
	ENGINEER		TITLE
	RELEASE TO PROD	NEXT ASSEMBLY	PART NUMBER 9400-6204
	SUPERSEDES DWG	FINISH — SCALE —	DRAWING NUMBER 9400-6204-3

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A1	SEE SHEET 1		

SHT. 7 OMUX A
SHT. 7 OMUX B
SHT. 6 OUT UPR-
SHT. 5 ATA

SHT. 7 RAM WE-
SHT. 2 IN12-15
SHT. 7 RSEL Ø-6
SHT. 7 CLKOR-
SHT. 3 OEN
SHT. 3 OEN-

+V3

93LS422 4C
93LS422 3C

74LS253 4D
74LS253 4E
74LS253 3D
74LS253 3E

OUT 15
OUT 14
OUT 13
OUT 12
OUT 11
OUT 10
OUT Ø9
OUT Ø8

OUTØ8-15 SHT. 2

74LS374 4F

74S241 3F
74S241 3G

INT Ø8-15 SHT. 2

SHT. 2 IN Ø8-11

SHT. 2 MPD Ø-7

AH1 DIAG RD
AN1 DIAG RD-

DO NOT SCALE THIS DRAWING	ITEM QTY	MATERIAL - DESCRIPTION		MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES x ± xx ± xxx ± ANGULAR ± 1°	DRAWN BY PAT KELLY	DATE 4-21-80	System Industries SUNNYVALE CALIFORNIA	TITLE SCHEMATIC DIAGRAM MPU INTERFACE
	ENGINEER			PART NUMBER 9400-6204
	RELEASE TO PROD		NEXT ASSEMBLY	DRAWING NUMBER 9400-6204-3
	SUPERSEDES DWG		FINISH SCALE	

9400-6204-3 | 5 | A1

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A1	SEE SHEET 1		

AK2 PGM INIT B-
BA1 PWRF INIT B-
BE1 UNJAM B-
CC1 SIM ATTN
BS1 ASSERT ACE-
DM1 ANY OB FULL-
AC1 SIM LOAD FAR
DC1 MAINT MODE B
LOAD FAR-
SHT. 6

74LS240 10A
SIM LOAD FAR-

+V4
74LS00 13A
74LS04 11A
74LS08 12C
74S140 13B
74LS02 3D
74LS04 18B
74LS00 17A
74LS08 16A
+V2
74LS74 12A
+V1
74S38 9A
+V2
74LS74 12A
74LS00 13A
74S38 9A
74LS04 11A
74LS04 18B
74LS00 17A
74LS08 16A

RP3
MP INTR- EP2

RP2
ES2 MDB LOCK-

DIAG ATTN

7414 15F
7408 16F

74LS27 15B
74LS00 17A
74LS02 19C
74LS10 18E
74LS11 17F
74LS02 19C

PWRF INIT-

74LS259 19D
74LS151 19E
74LS259 19F
74LS151 19G
74LS259 18F
74LS151 18G
74LS74 14F

RSEL Ø
RSEL 3

W2	RP04	RP03
POSN	1	2

WR RPDS

74LS08 17B
74LS04 18B
74LS51 16B
74LS11 17F
74LS04 18B
74LS51 16B

74LS138 17E
74LS259 16E
74LS158 16D
74LS158 16C

93L14 17D
93L14 17C
74LS151 18D
74LS27 18C
74LS10 18E
74LS27 18C

PWRF INIT SHT. 2
INIT- SHTS. 6,7,8
SYS RST SHT. 2
PGM RST SHT. 2
ASSERT ACE SHT. 8
ANY OB FULL SHT. 8
GLOAD FAR- SHTS. 2,6
DB LOCK SHT. 8
MAINT MODE SHTS. 2,7
PWRF INIT- SHT. 6
MAINT MODE- SHT. 6
VV SHT. 3
DRY SHT. 3
GO SHT. 3
WR RPDS SHT. 8
ATA SHT. 4
ATTN SHT. 8
ATTN Ø-7 SHT. 3

SHT. 7 RSEL Ø-3
SHT. 7 WR RPCS 1
SHT. 2 IN 15
SHT. 7 WR RPDS-
SHT. 7 WR RPCS 1-
SHT. 7 MPW RAS
SHT. 6 MPU CYC
SHT. 6 CLK 1-
SHT. 7 CPW RAS
SHT. 6 CPU CYC
SHT. 6 CLK 2-
SHT. 2 IN ØØ-Ø7

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ___ TOLERANCES .x ± .xx ± .xxx ± ANGULAR ± 1°			P.K.KELLY 10-21-80 DRAWN BY DATE; ENGINEER; RELEASE TO PROD; SUPERSEDES DWG	System Industries SUNNYVALE CALIFORNIA; NEXT ASSEMBLY; FINISH ___ SCALE ___

TITLE: SCHEMATIC DIAGRAM MPU INTERFACE
SHEET NUMBER 9400-6204
DRAWING NUMBER 9400-6204-3
SHEET 5 OF 8

REVISIONS			
DIV	DESCRIPTION	DATE	APPROVAL
A1	SEE SHEET 1		

RP2

FB1 MP RD-
FE1 MP VMA-
FU2 MP Ø2-
FU1 MP FAR-
FS1 MP FDRW-
FB2 MP FDRL-

7414 19A

74LS08 17B
74LS00 17A
74LS00 18A
74LS11 19B
74LS08 16A
74LS08 88
74LS00 10E
74LS00 11F
74LS10 11G
74LS04 11D
74LS00 12E
74LS08 12E
74LS00 10C
74LS00 11C
74LS00 10B
74LS08 88
74LS00 11B
74LS02 12D
74LS74 11E
74LS74 12F
74LS74 13F
74LS74 12G
74LS74 10B
74LS74 11C
74LS74 11B
74LS74 13G
74LS112 8C
74LS260 9F 9E
74LS174 8F
74LS158 13E

SHT. 5 MAINT MODE-
BU2 EXPECT WRT
DM2 WRT DATA-
SHT. 2 REC D3
REC D0
BU1 CLK VALID CMD
SHT. 5 PWRF INIT-
CT2 CLK EXT READ
SHT. 5 IN
SHT. 8 T2·CLK CPO

SHT. 5 GLOAD FAR-
SHT. 2 MP READ-
SHT. 7 MRPAS-
SHT. 2 MP WRT-

-5.2V RP6 150 RP1 120
EU2 INT TØ
EV2 INT TØ
ER2 INT T2
ER1 INT T2-
10125 4 TØ
10125 12 T2

+V8 +V6 +V9 +V1

LOAD FAR- SHT. 5
GBE HI- SHT. 2
GBE LO- SHT. 2
GRLE HI- SHT. 2
GRLE LO- SHT. 2
CLK IR SHT. 2
CPU CYC SHTS. 5, 7, 8
MPU CYC SHT. 5
MPU CYC- SHT. 8
WDCNT SHT. 7
WDCNT- SHTS. 7, 8
CPU READ SHT. 7
CPU WRT SHT. 7
OUT UPR- SHT. 4
CDIN- SHT. 2
MDIN- SHT. 2
SEL FIFO- SHT. 7
CLK 1- SHTS. 5, 7
CLK 2- SHTS 5, 7, 8
TO SHT. 8
T2 SHT. 8

BE HI-
BE LO-
RLE HI-
RLE LO-

A1

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ____ TOLERANCES: .x ±; .xx ±; .xxx ±; ANGULAR ± .5°	DRAWN BY PAT Kelly	11-21-80 DATE	System Industries SUNNYVALE, CALIFORNIA	SCHEMATIC DIAGRAM MPU INTERFACE
	ENGINEER			TITLE 9400-6204 PART NUMBER
	RELEASE TO PROD		NEXT ASSEMBLY	9400-6204-3 DRAWING NUMBER
	SUPERSEDES DWG		FINISH — SCALE —	SHEET 6 OF 8

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A1	SEE SHEET 1		

SHT. 2 FAR Ø-6

SHT. 2 IN ØØ-Ø5

OUT Ø8-15

OUT Ø8-15 SHT. 2

RSEL Ø-6 SHTS. 3, 4

RSEL Ø-3 SHT. 5

WR RPCS1 SHT. 5

CMD RDY SHT. 2

MRPAS- SHT. 6

MRPCS2- SHT. 8

CS Ø5-Ø7 SHT. 8

10 MR PDC-

12 MR PERI-

14 MRPDS-

15 MRPCS-

INVALID ADD SHT. 8

R SHFT SHT. 2

OMUX B SHTS. 3,4

OMUX A SHTS. 3,4

MP WRAS SHT. 5

BPE- SHT. 8

WR RPAS- N.C.

WR RPDS- SHT. 5

WR RPCS1- SHT. 5

CRP CS1- SHT. 8

CP WRAS SHT. 5

XMIT SEL- SHT. 2

RAM WE- SHTS. 3,4

CLK OR- SHTS. 3,4

DRCP- SHT. 2

SHT. 6 SEL FIFO-

SHT. 2 REC ØØ-Ø7

SHT. 5 INIT-

SHT. 6 WD CNT-

SHT. 6 WD CNT

SHT. 6 CLK 1-

SHT. 6 CPU CYC

SHT 2 MP READ-

SHT. 6 CPU WRT

SHT. 8 INH RAM WE-

SHT. 6 CPU READ

SHT 5 MAINT MODE

SHT. 6 CLK 2-

SHT. 8 INH RPCS1

SHT. 2 MP WRT-

CJ1 CLK EXT CMD

SEL CPU-

SEL WDCNT-

SEL FAR

SEL FAR-

CRPDS-

CRPAS-

CRPCS1-

IN Ø3

DUMP FIFO-

ECF-

CS Ø4

CS Ø3

CS Ø2

CS Ø1

CS Ø Ø

CS Ø5-Ø7

74LS225

74LS175

74LS240

74LS241

74LS08

74LS257

74LS288

74LS138

74LS158

74LS157

74LS00

74LS04

74LS27

74LS02

74LS11

74LS61 58

DO NOT SCALE THIS DRAWING	ITEM	QTY.	MATERIAL DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ..... TOLERANCES .X ± .XX ± .XXX ± ANGULAR ± 1°	PAT KELLY DRAWN BY	4-21-80 DATE	System Industries SUNNYVALE, CALIFORNIA	SCHEMATIC DIAGRAM MPU INTERFACE TITLE
	ENGINEER			9400-6204 PART NUMBER
	RELEASE TO PROD		NEXT ASSEMBLY	9400-6204-3 DRAWING NUMBER
	SUPERSEDES DWG	—	FINISH — SCALE —	

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A1	SEG SHEET 1		

DP1 SBI ABORT
FF2 DISC ABORT
SHT. 5 ASSERT ACE
SHT. 6 CLK2-
SHT. 6 CPU CYC
SHT. 6 WD CNT-
SHT. 7 MR PCS2-
SHT. 2 MP WRT-
SHT. 6 MPU CYC-
SHT. 7 INVALID ADD
CS Ø7
CS Ø6
CS Ø5
SHT. 7 CS Ø5-Ø7
SHT. 2 IN 14
IN 12
IN Ø9
IN Ø4
SHT. 2 IN Ø Ø
SHT. 5 WR RPDS
SHT. 5 DB LOCK
SHT. 5 ANY OB FULL
SHT. 6 T Ø
SHT. 7 BPE-
SHT. 5 ATTN
SHT. 7 CRP C31-
SHT. 2 REC Ø4-Ø5
SHT. 6 T2
FH2 CLK CPO
SHT. 5 INIT-
FE2 INT T1
FE1 INT T1-
FL1 INT T3
FL2 INT T3-

74LS00 74LS04 74LS27 74LS85 74LS08 74LS02 74LS74 74LS157 74LS240 74LS241 74LS138 74LS04 74LS10 74LS11 74LS175 74LS112 74LS140

W3 | RP04 | RN03
POSN | 1 | 2

ACE SHT. 2
INH RPCS! SHT. 7
EXT DONE-
WCK
NED
MXF
DT READ-
DT FWD-
DB LOCK
EVT DONE/TO FL1
WCK ERR- DA1
SET NED- EU1
SET MXF- FL1
BS2
SET DT ABORT- DR2
DT READ EF1
DT FWD DL2
DB LOCK- FW2
INH RAM WE- SHT. 7
BUFFER PE- CA1
DT CMD B CF2
DT BUSY B CV2
DT BUSY B- CK2
DT GO B- BC1
INIT COND B AF1
REC ATTN BY2
SET DT COMP AE1
DT CMD
DT BUSY
DT BUSY-
DT GO-
INIT-
DT COMP-
DT GO
T2 CLK CPO SHT. 6
T1 NC.
I CLK- DV2 SHT. 2
T3 NC

DO NOT SCALE THIS DRAWING	ITEM	QTY	MATERIAL DESCRIPTION	MATERIAL SPECIFICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN ..... TOLERANCES .x ± .xx ± .xxx ± ANGULAR ± 1°	DRAWN BY PAT KELLY	4-21-80	System Industries SUNNYVALE, CALIFORNIA	SCHEMATIC DIAGRAM MPU INTERFACE
	ENGINEER			9400-6204
	RELEASE TO MOD		NEXT ASSEMBLY	9400-6204-3
	SUPERSEDES DWG	—	SCALE —	SHEET 8 OF 8

DWG NO 9400-6205-3 | SH 1 | REV A

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
1	ENG. CONTROL 253-72	3/7/79	
A	REL PER PCO 867	4/2/80	

EDGE CONNECTOR — J1

FA 1	MP RD GND	1
FB 1	MP RD –	2
FS 2	MP FDRH GND	3
FS 1	MP FDRH –	4
FE 2	MP VMA GND	5
FF 1	MP VMA –	6
FC 1	MP FDRL GND	7
FB 2	MP FDRL –	8
FT 2	MP FAR GND	9
FU 1	MP FAR –	10
FV 2	MP ϕ2 GND	11
FU 2	MP ϕ2 –	12
ES 1	MDB LOCK GND	13
ES 2	MDB LOCK –	14
EN 1	MP INTR GND	15
EP 2	MP INTR –	16
CC 2	GND C	17
	N.U.	18
DC 2	GND D	19
	N.U.	20
EC 2	GND E	21
	N.U.	22
FC 2	GND F	23
	N.U.	24
DE 2	MPD3 GND	25
DE 1	MPD3 –	26
DD 1	MPD4 GND	27
DD 2	MPD4 –	28
CU 2	MPD5 GND	29
CU 1	MPD5 –	30
DJ 2	MPD1 GND	31
DJ 1	MPD1 –	32
CR 1	MPD7 GND	33
CR 2	MPD7 –	34
CS 2	MPD6 GND	35
CS 1	MPD6 –	36
DF 1	MPD2 GND	37
DF 2	MPD2 –	38
DK 1	MPD ϕ GND	39
DK 2	MPD ϕ –	40

EDGE CONNECTOR — J2

EU 1	DATA STB GND	1
ET 2	DATA STB –	2
BU 1	DB 13 GND	3
BU 2	DB 13 –	4
BS 2	DB 12 GND	5
BS 1	DB 12 –	6
CB 2	DB 14 GND	7
CB 1	DB 14 –	8
CD 1	DB 15 GND	9
CD 2	DB 15 –	10
DR 1	DBϕ9 GND	11
DR 2	DBϕ9 –	12
DP 2	DBϕ8 GND	13
DP 1	DBϕ8 –	14
DS 2	DBϕ GND	15
DS 1	DBϕ –	16
DU 1	DB 11 GND	17
DU 2	DB 11 –	18
EF 1	DATA REQ GND	19
EF 2	DATA REQ –	20
EH 2	DMA OUTPUT GND	21
EJ 1	DMA OUTPUT –	22
CJ 1	XFER COMP GND	23
CJ 2	XFER COMP –	24
CM 2	DBϕ4 GND	25
CM 1	DBϕ4 –	26
DM 1	DBϕ7 GND	27
DM 2	DBϕ7 –	28
DB 1	DBϕ5 GND	29
DB 2	DBϕ5 –	30
DL 2	DBϕ6 GND	31
DL 1	DBϕ6 –	32
FL 2	DBϕ2 GND	33
FL 1	DBϕ2 –	34
FM 1	DBϕ3 GND	35
FM 2	DBϕ3 –	36
FK 1	DBϕ1 GND	37
FK 2	DBϕ1 –	38
FJ 2	DBϕϕ GND	39
FJ 1	DBϕϕ –	40

NOTE:
1. THIS SCHEMATIC REPRESENTS ASSY 9400-6205 AT DATE CODE A 004.

DO NOT SCALE THIS DRAWING — UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN TOLERANCES .x ± .xx ± .xxx ± ANGULAR ± 1°

ITEM	QTY	MATERIAL - DESCRIPTION	MATERIAL SPECIFICATION
DRAWN BY L LAPPIN	DATE 10-16-79	System Industries SUNNYVALE, CALIFORNIA	SCHEMATIC DIAGRAM PADDLE BOARD
ENGINEER	3/7/80		TITLE
RELEASE TO PROD		NEXT ASSEMBLY 9400-6205	PART NUMBER 9400-6205
SUPERSEDES DWG	—	FINISH — SCALE —	DRAWING NUMBER 9400-6205-3

SHEET 1 OF 1