SA-H105

Small System Chassis

Manual

Σ Sigma Information Systems

SA-H105

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Manual

Anaheim, CA - March 1985

REV B

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Section 1 - General Information

1.1 INTRODUCTION

This manual provides the information needed to understand, install, and troubleshoot the SA-H105 processor chassis. The material is arranged into the following sections:

Section 1 - GENERAL INFORMATION - This section provides a general description of the SA-H105 and its components. Specifications are included.

Section 2 - INSTALLATION - This section describes the procedure for mounting the chassis into a standard rack, installing peripheral equipment into the chassis, and inserting modules into the backplane.

Section 3 - ADJUSTMENTS AND TROUBLESHOOTING - This section provides the adjustments, troubleshooting, and assembly/disassembly necessary for maintaining the SA-H105.

APPENDICES - The appendices includes the SA-H105 system schematic and DC power supply schematics for a complete understanding of the small systems chassis. Q bus pin assignments are also provided.

1.2 GENERAL DESCRIPTION

The SA-H105 is a small system chassis designed to provide full system capability in a compact space. The chassis includes an 8-row, dual-wide backplane with eight dual Q bus* slots. The chassis provides mounting and power for a 5¼" Winchester disc drive and:

One 8" floppy disc drive, or
One ¼" cartridge disc drive, or
Two 8" slimline NEC floppy disc drives.

1.3 VERSIONS

The SA-H105 is available in the following versions:

SA-H105 ___

- AC INPUT
  - 1 = 115VAC (3AG7, 3AG4 fuses)
  - 2 = 230VAC (3AG4, 3AG2 fuses)
- MOUNTING CONFIGURATION
  - T = Tabletop (tabletop cover, feet)
  - R = Rackmount (rackmount slides)
- POWER CABLING AND FRONT PANEL
  - A = Shugart SA801 single sided floppy drive
  - B = Shugart SA851 double sided floppy drive
  - C = Dual NEC FD-1165 double sided, double density floppy drives
  - D = Archive "Sidewinder" tape transport
  - E = Kennedy 6450 tape transport.

1.4 CHASSIS

The chassis contains the 8-row dual wide backplane, the power supply, two cooling fans and the front operators console. Refer to Figure 1-1. Chassis slides for rackmount installation are included with rackmount versions, and a dress cover is included with tabletop versions. A removable front bezel provides easy access to modules installed in the backplane, and removal of the top cover provides access for mounting peripherals. Cooling air inlets at the side and front, and exits at the opposite side and rear.

*Registered trademark of Digital Equipment Corporation.

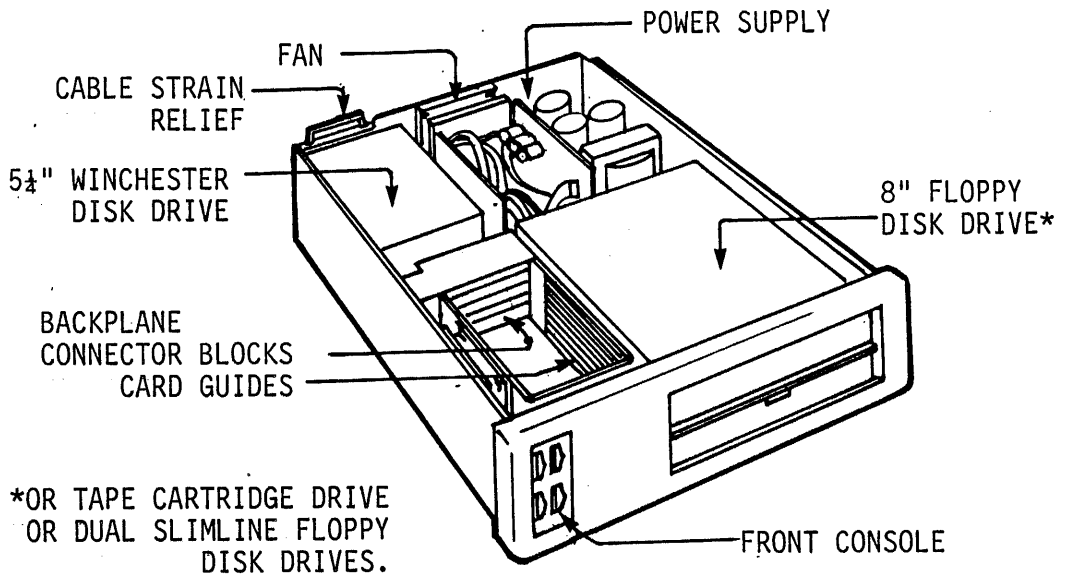


FIGURE 1-1: CHASSIS COMPONENTS

1.5 FRONT CONSOLE

The operators console assembly is mounted on the front of the chassis and consists of four switches and two LED indicators as shown in Figure 1-2 below.

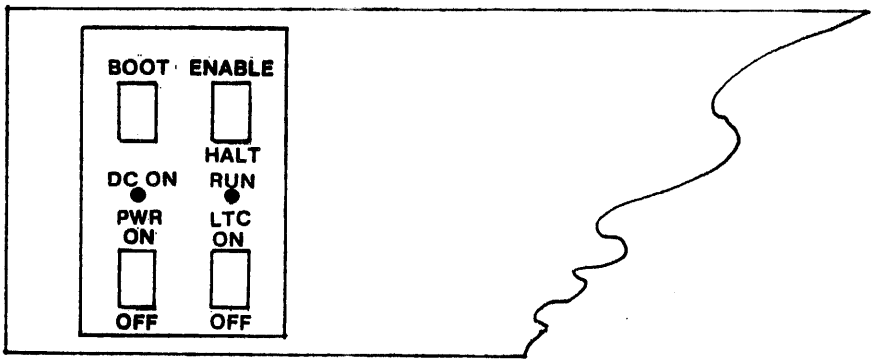


FIGURE 1-2: FRONT CONSOLE

ON-OFF SWITCH: The power supply includes a remote ON/OFF solid state relay. When the ON/OFF switch is in the ON position, the relay is enabled. AC is supplied to the power supply and fans and DC to the backplane is enabled.

LTC ENABLE SWITCH: When in the ON (up) position, a line frequency square wave is impressed upon the B EVENT line (BR1), causing the LSI-11 CPU to be interrupted at line frequency (50 or 60Hz).

BOOT SWITCH: This is a momentary two-position switch. When depressed, the BDCOK line (BA1) is momentarily asserted, causing the CPU to address the location of the bootstrap PROM (173000_8). Depending on the bootstrap option selected, the system will either boot to a specified device or enter a bootstrap monitor.

HALT/ENABLE SWITCH: When in the HALT position, the B HALT line (AP1) is asserted, causing the CPU to go into ODT mode. When in the ENABLE position, a high on the B HALT line is generated, allowing programs to be run.

DC ON LED: When on, this LED indicates +5V is applied to the front panel.

RUN LED: When on, this LED indicates that the SRUN line is asserted and a program is being executed from main memory. When off, either the CPU is in ODT or it is in a Programmed Wait state.

1.6 BACKPLANE

The 8-row dual-wide backplane supplied with the SA-H105 provides direct plug-in installation for Q bus compatible modules. The backplane contains eight dual Q bus slots. The PCBA overlays the pin side of the backplane and is recessed to permit wire wrapping if user modification is required.

The backplane provides optional 22-bit addressing for use with LSI-11/23 modules and a card frame assembly which supports installed modules and provides positive insertion alingment.

1.7 POWER SUPPLY

The power supply is designed for 50/60Hz operation and is strappable from 115VAC to 230VAC. The power outputs are +5VDC at 25A, +12VDC at 3.8A, +24VDC at 2.6A, and -5VDC at 0.5A.

Input power is applied via the power cord, through an IEC-compatible connector and fuse to the power supply voltage regulator PCBA. The input power is filtered at the transformer inputs by 0.01uf capacitors. Transient voltage suppressors protect the power supply from transient voltage spikes. The input also provides power to two fans located-in the chassis. Power for these fans is derived from the input windings on the power transformer, allowing the use of 115VAC fans for both 115VAC and 230VAC operation. Two AC outlets for user convenience are provided at the rear of the chassis. These fused outlets are unswitched and provide line voltage.

Power fail detect circuitry provides BPOKH and BDCOKH signals in the proper timing sequence. The power supply also provides the LTC signal which is connected to the BEVENT line (BR1) and controlled by the front panel switch, LTC. This signal is used by the Q bus as timing for a line time clock.

1.8 SPECIFICATIONS

Capacity: 8-row dual-wide backplane with eight dual slots.
Power and mounting space for 5¼" Winchester and
8" floppy drive or
¼" cartridge tape drive or
two 8" slimline floppy drives.

Installation: Rackmount version mounts in standard 19" RETMA rack and occupies 5.25" of vertical rack space. Rackmount version is 24" deep with 0.5" recommended for rear cable access.

Tabletop version occupies 19" wide by 24" deep desk area and is 5.25" high.

Power: Input: 115VAC or 230VAC ± 10%, 50/60Hz, 410VA MAX
Output: +5VDC @ 25A, +12VDC @ 3.8A (7A peak), +24VDC @ 2.6A (5A peak), -5VDC @ 0.5A.

Cooling: Forced air, side intake with rear exhaust. Separate fans for power supply and installed modules.

Accessibility: Access to backplane modules from the front; access for peripherals is from the top.

Environment:

	Temperature	Humidity	Altitude
Operating:	0° to 50°C	0% to 95% non-condensing	0 to 10,000 ft
Storage:	-45° to 85°C	0% to 95%	0 to 30,000 ft

Section 2 - Installation

2.1 UNPACKING AND INSPECTION

Unpack the SA-H105 chassis and visually inspect it for damage that might have occurred during shipment. Retain the shipping carton in case reshipment is necessary. Remove the chassis covers and inspect the backplane, power supply, etc., for component damage. If any damage has occurred, notify Sigma Information Systems immediately.

Each shipping container should include the following:

- An SA-H105 chassis assembly including backplane. Using Table 2-1, verify the nameplate on the chassis defines the correct part number for the model as described in Section 1.3.
- An SA-H105 manual and logic diagrams for power supply modules.
- An AC power cord.
- A hardware kit containing required hardware for rack-mounting the chassis (for rackmount versions only).

2.2 CHASSIS INSTALLATION

The tabletop SA-H105 can be conveniently placed on a desk/table surface. Allow sufficient room around the sides and rear for air cooling.

The rackmount SA-H105 installs into a standard 19" RETMA rack. The unit occupies 5.25" (with clearance) of vertical rack space. Using the supplied hardware, install the slides at the desired position in the rack. The chassis is 24" deep. Allow 0.5" at the rear of the unit for rear cable access.

PART NUMBER 900010-	MODEL NUMBER SA-H105-
100	AT1
101	AT2
102	AR1
103	AR2
104	BT1
105	BT2
106	BR1
107	BR2
108	CT1
109	CT2
110	CR1
111	CR2
112	DT1
113	DT2
114	DR1
115	DR2
116	ET1
117	ET2
118	ER1
119	ER2

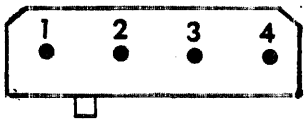
TABLE 2-1: SA-H105 MODEL/PART NUMBER NOMENCLATURE

2.3 DRIVE INSTALLATIONS

2.3.1 5¼" Winchester Drive Installation

The SA-H105 mounts the 5¼" Winchester drive at the left rear corner of the chassis. The 5¼" unit is elevated to allow air flow completely around the drive.

Install the drive in the chassis using four #8-32 x 3/8" screws inserted from the bottom of the chassis. Verify the voltages in the drive power cable are correct per the drive manufacturer's specifications. The standard configuration is shown in Figure 2-1.



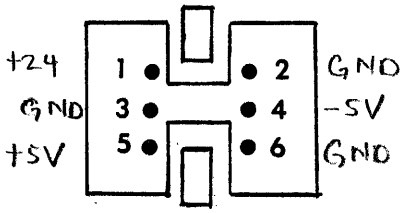
AC CONNECTOR
AMP 1-480424-0
PIN 60619-11

Pin 1 = +12VDC
Pin 2 = +12 RETURN
Pin 3 = + 5 RETURN
Pin 4 = + 5VDC

FIGURE 2-1: WINCHESTER 5¼" DRIVE POWER CONNECTOR

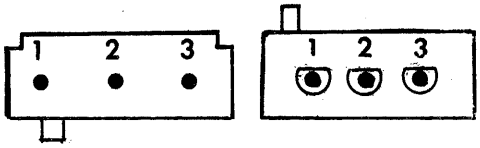
2.3.2 Shugart Floppy Disc Drives Installation

The SA-H105 provides mounting space for the Shugart SA801 or SA851 floppy disc drives at the front right of the chassis. The drive mounts from the bottom of the chassis using four #8-32 x 3/8" screws. Power to the drive is supplied via a DC power cable and a separate AC power cable. Refer to Figure 2-2 for voltage and pin configurations. Check all voltages to be correct with a DC or AC voltmeter prior to connecting the cables to the drive. The SA-H105 power supply provides 115VAC to the floppy disc drive for either 115VAC or 230VAC line voltage versions; therefore, no change to the floppy is required. However, if 50Hz AC is used, the floppy drive must use the 50Hz pulley. See drive manufacturer's specifications.



DC CONNECTOR
AMP 1-480270-1
PIN 60619-1

Pin 1 = +24VDC
Pin 2 = +24VDC RETURN
Pin 3 = GND
Pin 4 = - 5VDC
Pin 5 = + 5VDC
Pin 6 = NO CONNECTION



AC CONNECTORS

SA801	SA851
AMP 1-480303	AMP 1-480700
PIN 60619-1	PIN 350689-1

Pin 1 = AC (HOT)
Pin 2 = CHASSIS GND
Pin 3 = AC (NEUTRAL)

FIGURE 2-2: SA801 and SA851 POWER CONNECTORS

The floppy disc drive must be configured prior to installation according to the disc controller used. When using the Sigma disc controller, SDC-RXV21, refer to the appropriate controller manual for drive configuration information.

2.3.3 NEC FD-1165 Floppy Disc Drive Installation

The NEC FD-1165 double sided, double density slimline floppy disc drives can be mounted in the same space allocated to the Shugart floppy drive. When used with Sigma's SDC-RXV21 controller, the NEC drive is powered entirely from the DC power supply in the SA-H105. Therefore, no changes are required for 50Hz application.

The SA-H105 is supplied with a special front bezel for use when mounting the NEC drives. Two mounting brackets are also provided which tie the two drives together. Figure 2-3 illustrates the method of attaching the mounting brackets to the NEC disc drives. The two drives are then mounted using four #8-32 x 3/8 screws inserted from the bottom of the chassis.

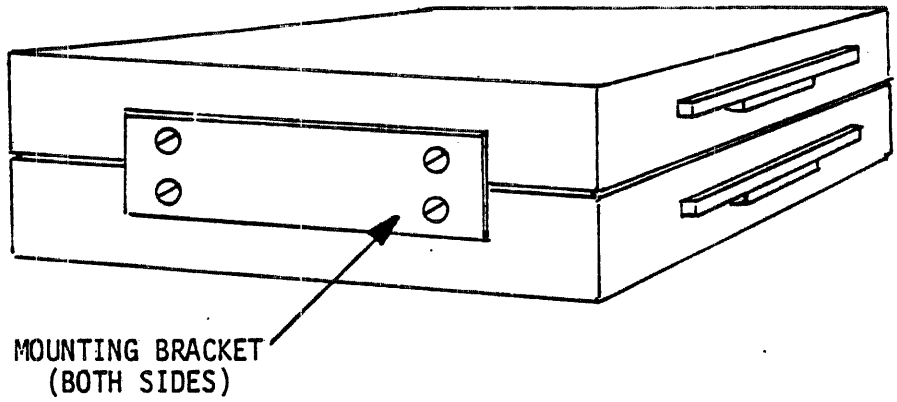
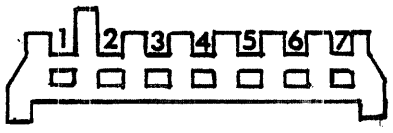


FIGURE 2-3: NEC FD-1165 MOUNTING BRACKETS

Figure 2-4 shows the power connector configuration for the NEC drives. Check the power at the connectors per the manufacturer's specifications before connecting power to the drives.



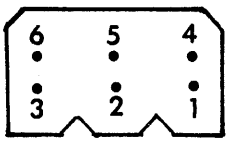
AC CONNECTOR
AMP 171822-7
PIN 170204-1

Pin 1 = +24VDC
Pin 2 = GND
Pin 3 = + 5VDC
Pin 4 = GND
Pin 5 = NO CONNECTION
Pin 6 = NO CONNECTION
Pin 7 = FG (CONNECTED TO GROUND IN THE DRIVE)

FIGURE 2-4: NEC FD-1165 POWER CONNECTOR

2.3.4 Kennedy 6450 ¼" Tape Transport Installation

The Kennedy 7450 ¼" tape transport is mounted with four #8-32 x 3/8" screws inserted from the bottom of the chassis. The transport is powered via a power cable from the SA-H105 power supply. Figure 2-5 illustrates the power connections. Verify the proper voltages per the manufacturer's specifications.



AC CONNECTOR
MOLEX 03-09-1063
PIN 02-19-1119

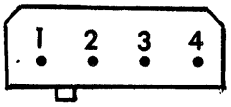
Pin 1 = NO CONNECTION
Pin 2 = + 5VDC RETURN
Pin 3 = +24VDC RETURN
Pin 4 = NO CONNECTION
Pin 5 = + 5VDC
Pin 6 = +24VDC

FIGURE 2-5: KENNEDY 6450 TAPE TRANSPORT POWER CONNECTOR

2.3.5 Archive "Sidewinder" Tape Transport Installation

The Archive "Sidewinder" tape transport can be mounted in the space allocated for the 8" floppy disc drive. A special front panel is required for use with the Archive unit. Therefore, the "Sidewinder" must be specified at the time of order.

The tape transport is mounted with four #8-32 x 3/8" screws inserted from the bottom of the chassis. The unit is powered via a power cable from the SA-H105 power supply. The power connector configuration is illustrated in Figure 2-6. Verify the proper power per the manufacturer's specifications before connecting power to the transport.



AC CONNECTOR
AMP 1-480424-1
PIN 60619-1

Pin 1 = +24VDC
Pin 2 = +24VDC RETURN
Pin 3 = + 5VDC RETURN
Pin 4 = + 5VDC

FIGURE 2-6: ARCHIVE "SIDEWINDER" POWER CONNECTOR

2.4 MODULE INSTALLATION

Modules plug directly into the backplane with priorities determined by the distance from the CPU. When more than one device requests interrupt service, the device that is closest to the CPU will receive the interrupt grant. When assigning device priorities, several factors should be considered.

2.4.1 Device Priorities

There are two separate priority channels in the Q bus backplane. One channel is for interrupting devices and the other is for DMA devices. A DMA device uses both priority channels whereas a programmed I/O (PIO) device uses only the interrupt priority channel.

When installing modules, consider the following:

1. All priorities are serial, i.e. the module closest to the processor has the highest priority.

2. When used with the LSI-11/23 CPU, interrupting devices can be assigned to one of three different priority levels. However, if two devices are assigned the same level, the device nearest the processor receives higher priority.

3. DMA devices such as rotating disc memory or real-time data acquisition devices must be serviced by the processor within their latency. For example, the disc memory rotates past the head at a certain rate, causing data to be read to memory or written from memory at the same data rate. If the CPU does not allow the disc memory to obtain the bus in order to complete a transfer before the disc rotates to position to start the next transfer, the latency of the disc has been exceeded and an error will occur. The system designer must place DMA devices on the bus such that the devices with the shortest latency have the highest priority.

4. In most systems, both DMA and PIO devices must exist in the same system. The normal rule is that DMA devices have highest priority and PIO devices have lower priority. Since both DMA and Interrupt Acknowledge lines are serial, each slot between a DMA or PIO device must be occupied in order for the signals to be passed through.

2.4.2 Backplane Priorities

The 8-row Dual Q bus backplane assembly is designed to be compatible with the LSI-11/2 and LSI-11/23 CPU modules. The backplane also includes 22 bit addressing (jumper option) to allow accessing of up to 4 mbytes of memory.

Figure 2-7 illustrates backplane priorities.

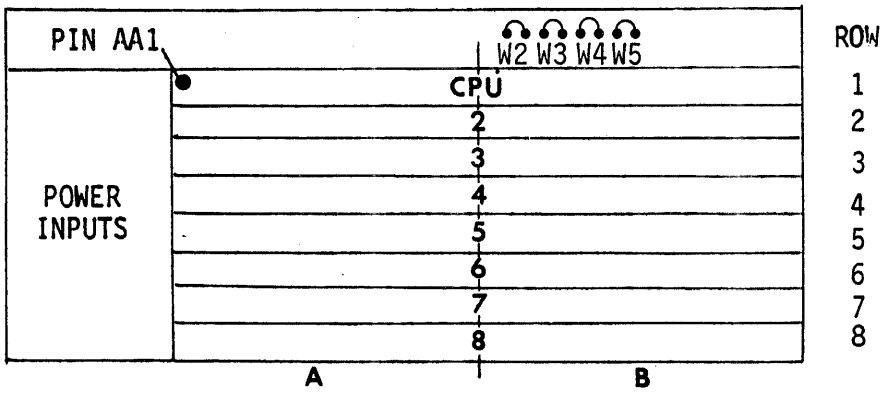


FIGURE 2-7: BACKPLANE PRIORITY ASSIGNMENTS (CONNECTOR SIDE VIEW)

2.4.3 Module Alignment

The backplane includes a card frame assembly which supports installed modules and provides positive pin alignment. The modules plug into the connectors with component side up. Take special care to ensure that the logic modules are not installed upside down.

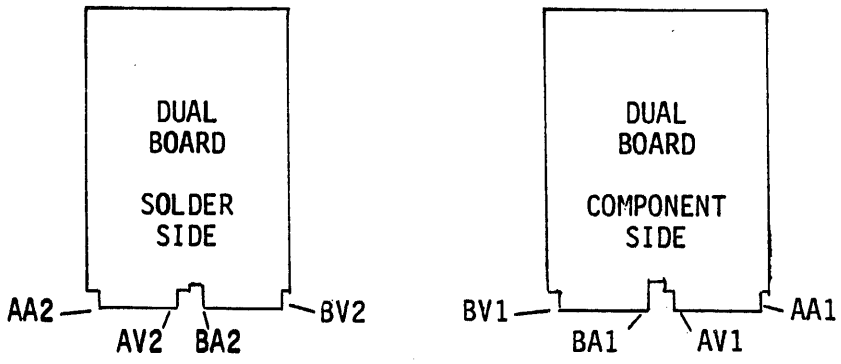


FIGURE 2-8: MODULE ALPHANUMERIC SLOT IDENTIFIERS

2.5 POWER SUPPLY

The power supply provides DC outputs and accepts 115VAC or 230VAC inputs. Output power is routed to the inner layers of the multi-layered PWB on the backplane. Input power is factory configured, but can be converted between 115VAC and 230VAC.

2.5.1 DC Backplane Power Connections

Attachment of DC power to the backplane is via power cables for +5VDC, +12VDC, -12VDC, +12V Battery, +5V Battery, and Ground. Figure 2-9 illustrates the backplane power connections.

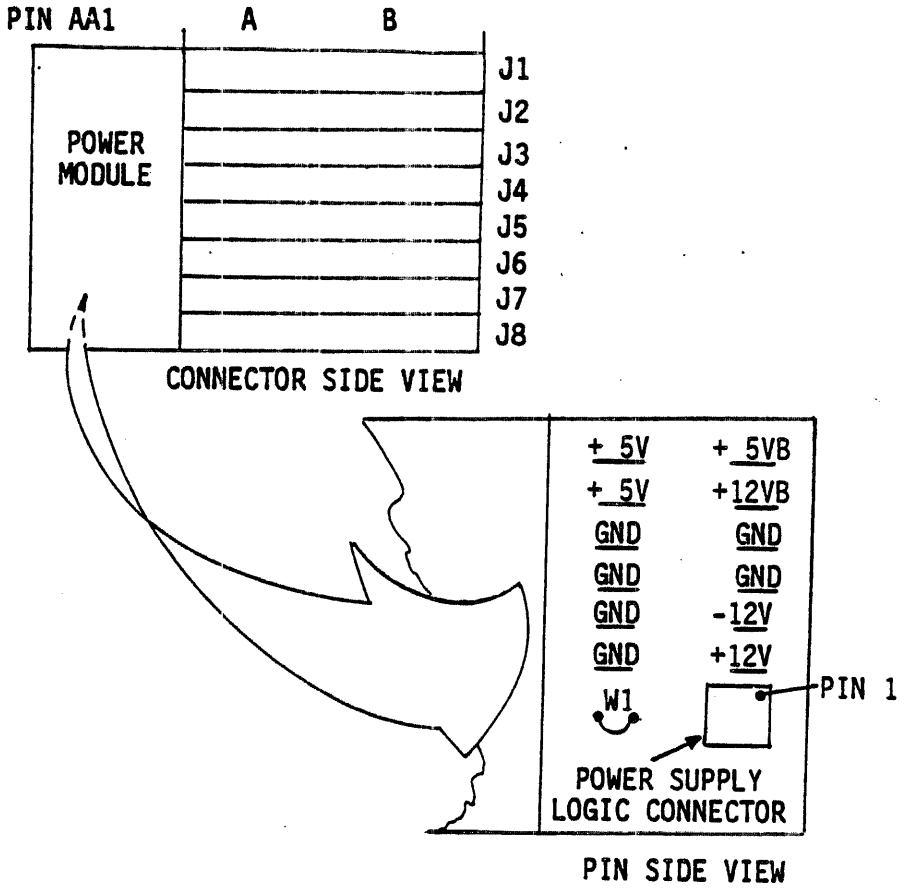
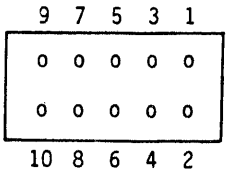


FIGURE 2-9: BACKPLANE POWER CONNECTIONS (VIEWED FROM BOTTOM OF BACKPLANE)

2.5.2 Power Supply Logic

A 10 pin connector is provided for connection of power supply and front panel control signals. The 10 pin connector pinout is illustrated in Figure 2-10 and defined in Table 2-2.



VIEWED FROM SOLDER SIDE OF BACKPLANE
WITH POWER TABS ON RIGHTHAND SIDE.

FIGURE 1-10: POWER CONNECTOR ILLUSTRATION

PIN	SIGNAL	DESCRIPTION
1	N/C	
2	N/C	
3	BDCOKH	Supplied by power supply to indicate DC voltage out of tolerance.
4	BHALT L	Supplied from front panel switch.
5	BEVENT L	Line frequency signal supplied by power supply to BEVENT line.
6	BPOKH	Supplied by power supply to indicate AC power condition.
7	N/C	
8	SRUN	From processor to indicate RUN status on front panel
9	GND	
10	GND	

TABLE 2-2: 10 PIN POWER CONNECTOR SIGNAL ASSIGNMENTS

Section 3 - Adjustments and Assembly/Disassembly

3.1 GENERAL INFORMATION

The SA-H105 consists of four major assemblies: display bracket, power supply, backplane and chassis. Service to any of these assemblies other than the power supply voltage adjustments requires disassembly. This section describes adjustments and assembly/ disassembly of the SA-H105

3.2 VOLTAGE ADJUSTMENTS

The SA-H105 provides +5V and power fail detect (PFD) adjustment potentiometers. Refer to Figure 3-1 for the location of these adjustment pots.

3.2.1 +5VDC ADJUSTMENT

The +5VDC power adjustment is made by turning the port indicated in Figure 3-1. Measure +5VDC $\pm$ 0.25VDC on backplane pin AA2, BA2 or BV1. If the output cannot be brought within limits, or if the voltage adjustment pot is near its extreme limit when obtaining proper output voltage, the module must be replaced.

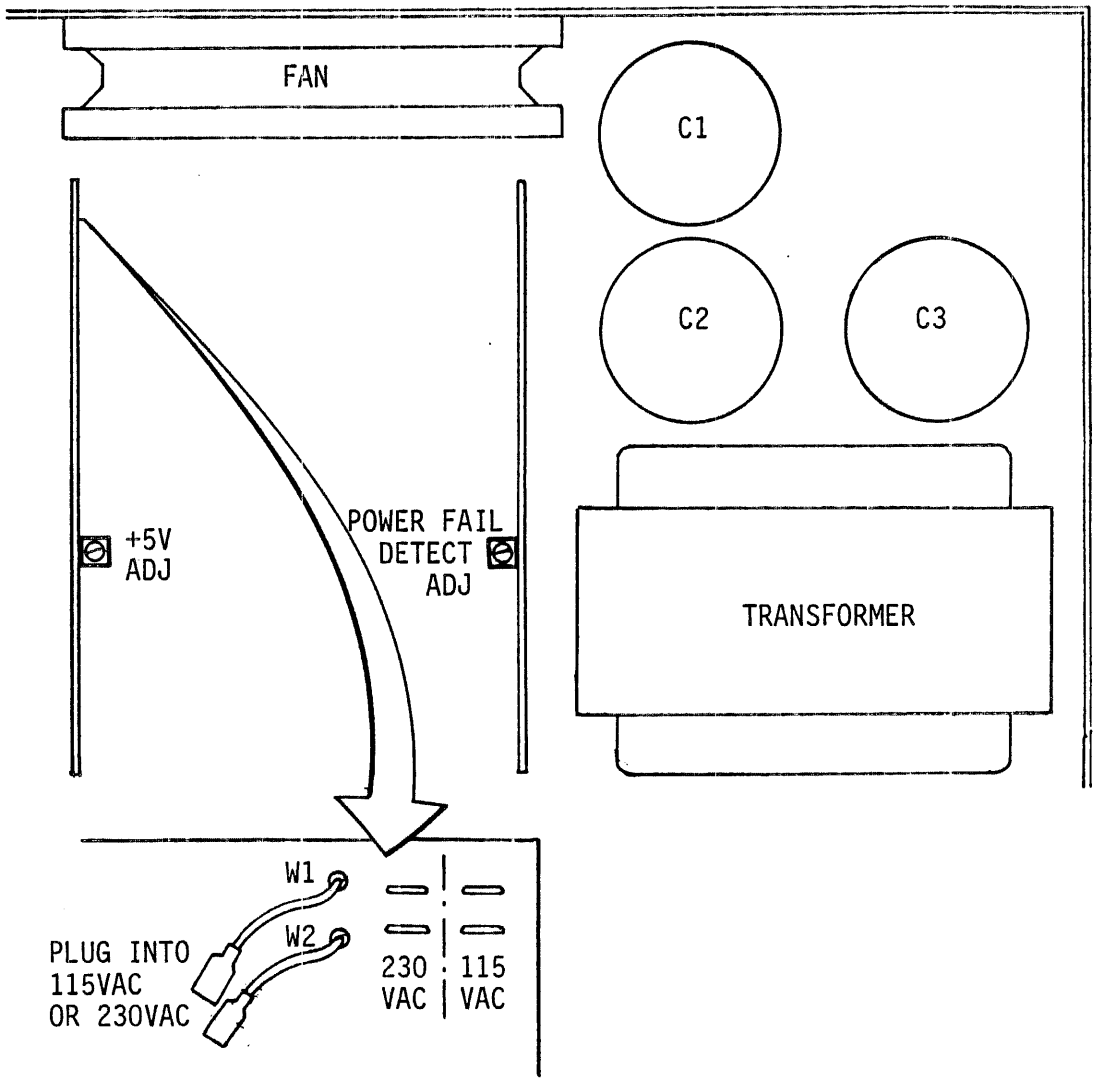


FIGURE 3-1: POWER SUPPLY COMPONENTS AND ADJUSTMENTS

3.2.2 Power Fail Detect Adjustment

The power supply includes a power fail detect circuit which provides BPOKH and BDCOKH signals in the proper timing sequence to the Q bus. The power fail circuitry is designed to detect a 1/2 cycle drop-out on the AC line. The detection is done via a retriggerable one-shot that is retriggered on zero crossing and whose dwell slightly exceeds the duration of 1/2 cycle line frequency. Since line frequency can be either 50Hz or 60Hz, adjustment of the power fail detect signal should be checked at time of installation.

Figure 3-1 shows the location of the power fail detect pot. Adjustment should be made by monitoring backplane pin BB1. Note that if +5VDC and +12VDC are present and within tolerance, BPOKH (pin BB1) should be high. If not, adjustment is necessary. Using a VOM, adjust the pot counter clockwise until pin BB1 can be observed going low. Then back off until pin BB1 remains high. Continue slightly beyond this point to provide extra margin.

Figure 3-2 shows the timing relationship of BPOKH and BDCOKH as provided by the power supply unit.

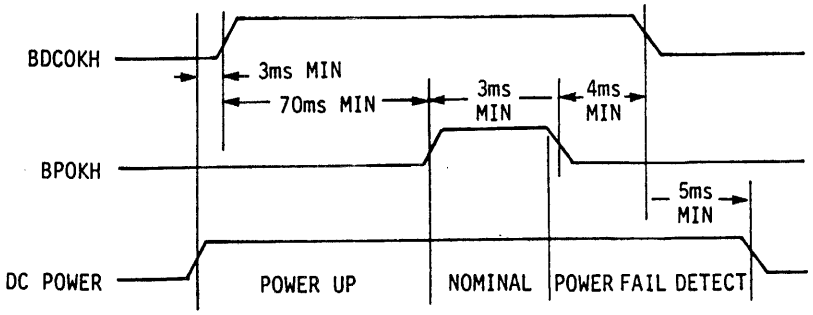


FIGURE 3-2: POWER FAIL DETECT TIMING

BPOKH: A signal signifying the status of AC power. If power fails in a 1/2 cycle drop-out or longer power outage, BPOKH is asserted on BB1. Both BPOKH and BDCOKH remain asserted (low) after power is off.

BDCOKH: A signal signifying the status of DC power on the Q bus, pin BA1. The signal must be asserted before DC power is lost and becomes valid after DC power is restored.

LTC: A line frequency signal used for timing on BR1.

3.3 ASSEMBLY/DISASSEMBLY

The SA-H105 consists of four major assemblies: the front panel display assembly, the power supply assembly, the backplane, and the chassis assembly. The chassis is designed such that each of these assemblies can be replaced independently using the following procedures, Replacement of components is in reverse order of the removal of the components.

3.3.1 Removal of Chassis Assembly from Rack

a. Disconnect the power cord.
b. Disconnect or unplug any cables to installed modules.
c. Slide chassis out until spring button latches engage. Depress springs to release and slide out completely.

3.3.2 Display Bracket

a. Pull out at bottom of front bezel and remove.
b. Disconnect the 10-pin cable and the remote ON/OFF cable plugged into the display bracket PCBA.
c. Remove screws holding bracket to chassis and remove bracket.

3.3.3 Power Supply Removal

a. Remove the four #6-32 x 3/8 screws at the rear. Remove the two #8-32 x 3/8 screws holding the power supply bracket to the chassis at the bottom.
b. Disconnect the fan cables at the fans.
c. Disconnect the 10-pin cable (J2 on the power supply module) that is connected to the backplane.
d. Disconnect the 10-pin front panel cable (J1 on the power supply module) that is connected to the front console.
e. Disconnect the power ON/OFF cable from the front panel.
f. Disconnect the +5V power cable at the backplane.
g. Disconnect the +12V power cable at the backplane.
h. Disconnect all drive cables at the drives.
i. Slide out the power supply assembly from the rear.

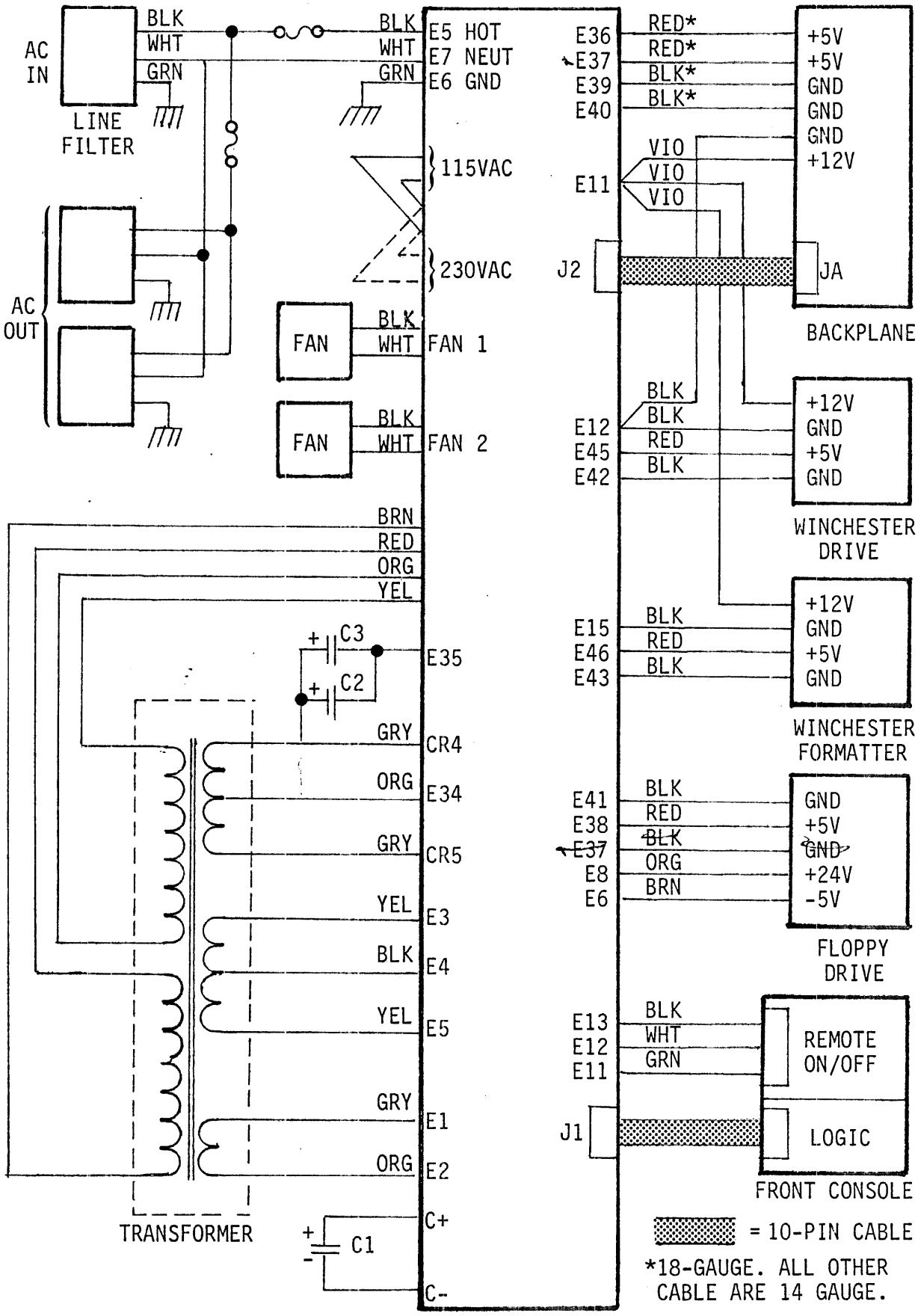
3.3.4 Backplane Removal

The backplane assembly can be removed by unscrewing the four #6-32 x 5/16 attaching screws from the bottom of the chassis. The backplane, card guides and fan are an integral assembly. Disconnect all attaching cables and lift out.

PIN	Q BUS	LSI-11/2	LSI-11/23	PIN	Q BUS	LSI-11/2	LSI-11/23
AA1	BIRQ5L			AA2	+5V		
AB1	BIRQ6L			AB2	-12V		
AC1	BDAL16L			AC2	GND		
AD1	BDAL17L			AD2	+12V		
AE1	*SS1	STOP L	SINGLE STEP	AE2	BDOUTL		
AF1	*SRUNL	SRUNL	SRUNL	AF2	BRPLYL		
AH1	*SRUNL	SRUNL	SRUNL	AH2	BDINL		
AJ1	GND			AJ2	BSYNCL		
AK1	*MSPAREA	MTOEL	NOT USED	AK2	BWTBTL		
AL1	*MSPAREB	GND	NOT USED	AL2	BIRQ4L		
AM1	GND			AM2	*BIAK1L	NOT USED	MMUSTRH
AN1	BDMRL			AN2	*BIAKOL		
AP1	BHALTL			AP2	BBS7L		
AR1	BREFL	NOT USED	NOT USED	AR2	*BDMG1L	NOT USED	UBMAAPL
AS1	+12VB			AS2	*BDMGOL		
AT1	GND			AT2	BINITL		
AU1	PSPARE1			AU2	BDALØL		
AV1	+5VB			AV2	BDAL1L		
BA1	BDCOKH			BA2	+5V		
BB1	BPOKH			BB2	-12V		
BC1	*SSPARE4	SCLK3H	MMUDAL18H	BC2	GND		
BD1	*SSPARE5	SWMIB18H	MMUDAL19H	BD2	+12V		
BE1	*SSPARE6	SWMIB19H	MMUDAL20H	BE2	BDAL2L		
BF1	*SSPARE6	SWMIB20H	MMUDAL21H	BF2	BDAL3L		
BH1	*SSPARE8	SWMIB21H	CLKDISL	BH2	BDAL4L		
BJ1	GND			BJ2	BDAL5L		
BK1	*MSPAREB	NOT USED	NOT USED	BK2	BDAL6L		
BL1	*MSPAREB	NOT USED	NOT USED	BL2	BDAL7L		
BM1	GND			BM2	BDAL8L		
BN1	BSACKL			BN2	BDAL9L		
BP1	BIRQ7L			BP2	BDAL1ØL		
BR1	BEVNTL			BR2	BDAL11L		
BS1	PSPARE4	PSPARE4	+12VB	BS2	BDAL12L		
BT1	GND			BT2	BDAL13L		
BU1	PSPARE2			BU2	BDAL14L		
BV1	+5V			BV2	BDAL15L		

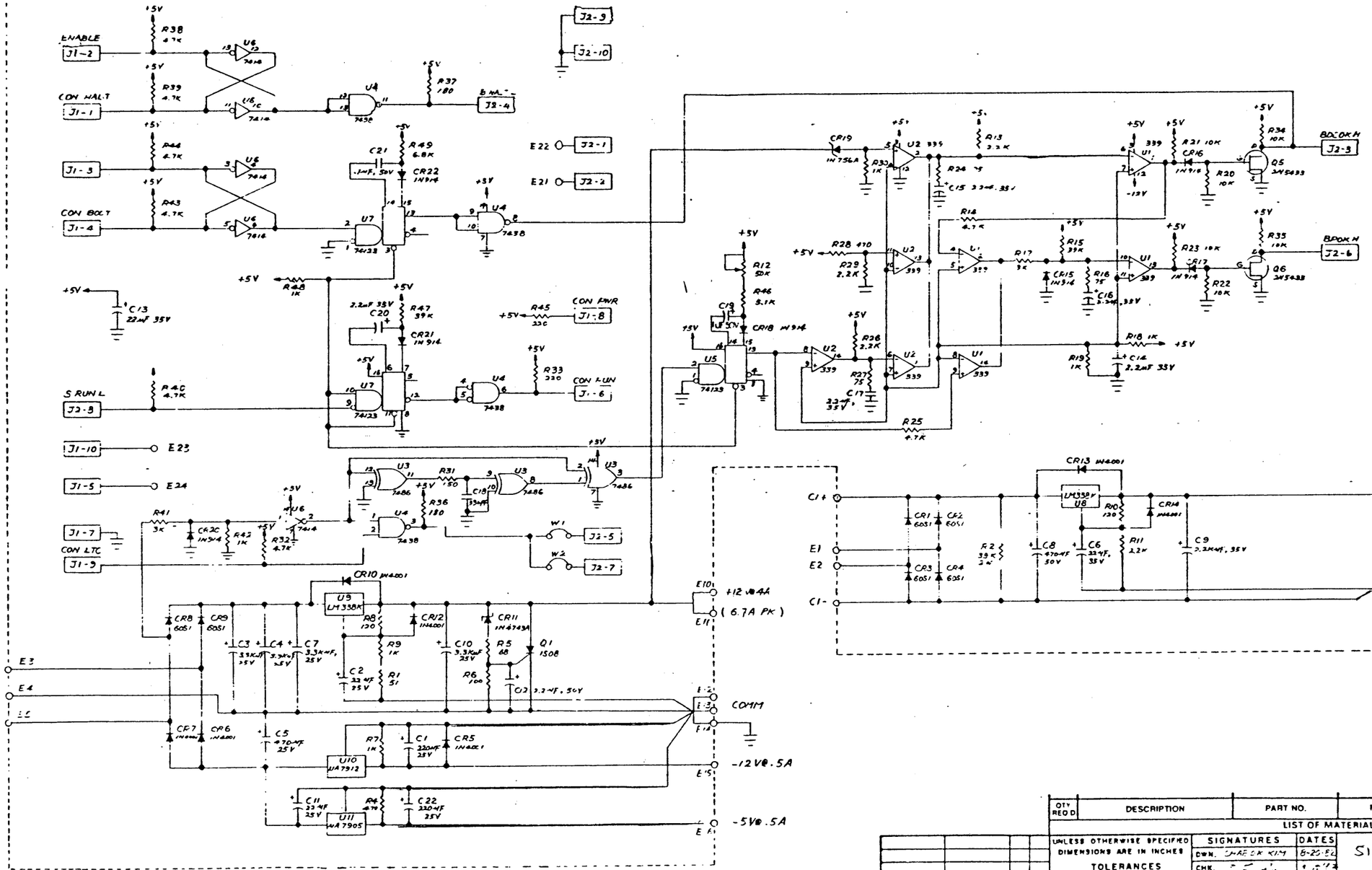
*NOT BUSSED

APPENDIX A: Q BUS PIN ASSIGNMENTS



SA-H105 SYSTEM WIRING DIAGRAM

REVISIONS				
REV.	BY	DESCRIPTION	APPR	DATE



QTY REQ'D	DESCRIPTION	PART NO.	REF. DES. OR MAT'L	MANUFACTURER	ITEM NO.

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ±1/32 DEC. .XX ±.02 .XXX ±.010 ANGLES ±1/2°

MATERIAL:

FINISH

NEXT ASSY. USED ON

APPLICATION

SIGNATURES	DATES
DWN. [illegible]	8-25-82
CHK. [illegible]	[illegible]
DSGN.	
ENGR.	
APPR. [illegible]	9/15/82

PROPRIETARY NOTICE

ALL PATENT OR OTHER PROPRIETARY RIGHTS PERTAINING TO THE ITEMS SOLD HEREUNDER SHALL REMAIN THE SOLE PROPERTY OF POWER CONDITIONING CO EXCEPT THAT THE PURCHASER SHALL HAVE THE RIGHT TO USE SUCH ITEMS FOR THEIR INTENDED PURPOSES

DO NOT SCALE DWG

SIGMA INFORMATION SYSTEMS

TITLE

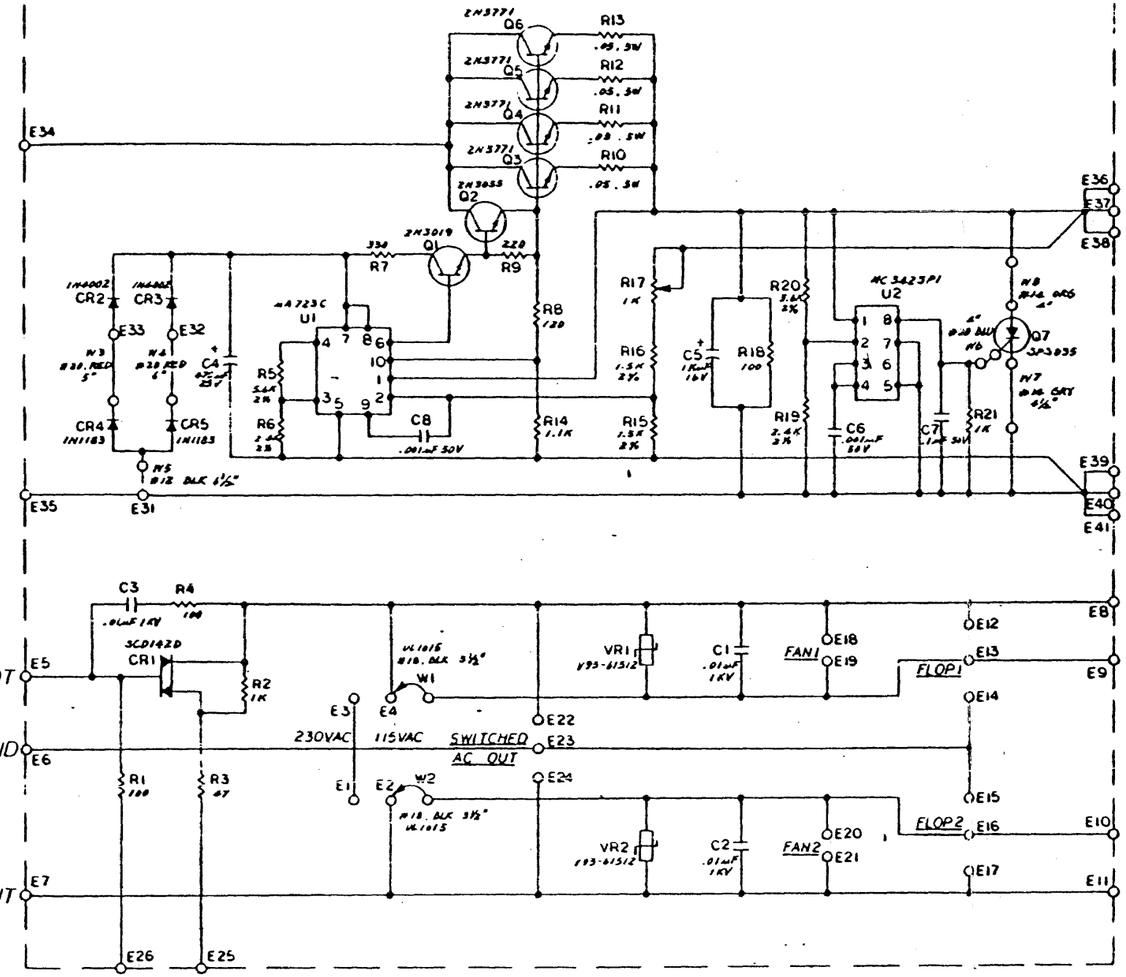
REG ASSY
(LOGIC CKT)

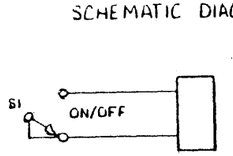
CODE IDENT	SIZE	DWG NO	REV
51279	D	3533	D

SCALE: WEIGHT: SHEET 3 OF 3

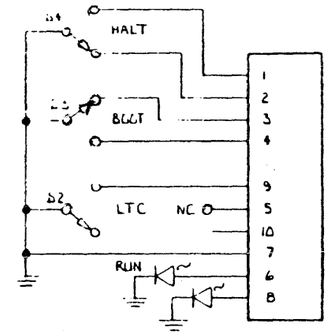
REVISIONS				
REV.	BY	DESCRIPTION	APPR	DATE

FRONT PANEL INPUT ASSY
SCHEMATIC DIAGRAM





REMOTE ON/OFF CONNECTOR



ITEM NO	MANUFACTURER	REF. DES. OR MAT'L	PART NO.	DESCRIPTION	Q'TY REQ'D
70					
69					
68					
67					
66					
65					
64		W8	ANG #14	UL 1429 . ORG	4"
63		W7	ANG #14	. GRY	6½"
62		W6	ANG #20	. BLU	4"
61		W5	ANG #12	. BLK	1½"
60		W3 . W4	ANG #20	UL 1429 . RED	11"
59		W1 . W2	ANG #18	UL1015 . BLK	7"
58					
57		MTG Q7 . CR4 . CR5	#¼ . SPLIT	WASHER . LOCK	3
56		MTG Q2 – Q6	#6 . INT-TH	. LOCK	10
55		MTG CR1	#4 . SP	WASHER . FLAT	1
54					
53		MTG Q7, CR4 . CR5	#¼-28	NUT . HEX	3
52					
51		MTG BRACKET	#8-32 X ¼"	SCREW . FLAT . PHIL	4
50		MTG Q2–Q6	#6-32 X ½"	. PAN . PHIL	10
49		MTG CR1	#4-40 X 5/16"	SCREW . PAN . PHIL	1
48	DENNISON	MTG W3,4,6	08432	CABLE TIE . 4"	1
47		MTG CR4 . CR5	ANG #14	BUSS WIRE . TINNED COPPER	5½"
46	GE	⚠	G-641	INSULGREASE	N/A

LIST OF MATERIAL

	SIGNATURES	DATES
DWN.	Tom Polk	1/13/82
CHK		
DSGN.		
ENGR.		
APPR.		11/5/82

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
FRAC. ±1/32 DEC .XX ±.05 .XXX ±.010 ANGLES ±1/2°

MATERIAL:

FINISH:

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DO NOT SCALE DWG

SIGMA INFORMATION SYSTEMS

TITLE
REG ASSY
(AC CONTROL)

CODE IDENT	SIZE	DWG NO	REV
51279	D	3584	B

SCALE: WEIGHT: SHEET 1 OF 2

C-625
NEXT ASSY USED ON
APPLICATION

NOTES:
1. RESISTORS ARE IN OHMS . ½W . 5% . UOS .