iSBC 655
SYSTEM CHASSIS
HARDWARE REFERENCE MANUAL

Manual Order Number: 9800709A

Intel Corporation, 3065 Bowers Avenue, Santa Clara, California 95051

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PREFACE

This manual provides general information, installation instructions, principles of operation, and service information for the iSBC 655 System Chassis. Additional information is available in the following documents:

- *Intel iSBC 635 Power Supply Hardware Reference Manual,* Order No. 9800298.
- *Intel iSBC 604/614 Cardcage Hardware Reference Manual,* Order No. 9800708.

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ILLUSTRATIONS

CHAPTER 1
GENERAL INFORMATION

1-1. INTRODUCTION

The iSBC 655 System Chassis (figure 1-1) is packaged as a completely assembled microcomputer chassis. It consists of a power supply, a four slot cardcage/backplane, dual fans, and a front panel. This chapter provides a general description of the chassis in addition to a specifications table.

1-2. CHASSIS DESCRIPTION

The iSBC 655 System Chassis is designed to be rack mounted, using RETMA compatible components. The 19 inch front panel has the following switches and indicators: a power ON/OFF indicator switch; a RESET switch; an INTERRUPT switch; a RUN indicator; and a HALT indicator. The rear panel is easily removed for quick access to the cardcage.

The two cooling fans are located on the left side of the chassis, one directed toward the power supply and the other directed toward the cardcage. These fans supply adequate ventilation to keep the fully loaded chassis within temperature tolerance (<55°C).

The chassis utilizes the iSBC 604 Cardcage-Backplane for housing a maximum of four Intel iSBC compatible boards. The backplane may be extended to additional external cardcages or monitored through a Multibus plug located on the backplane.

Output power is furnished by the modular iSBC 635 Power Supply. The supply is mounted directly behind the front panel and is easily removed or calibrated. Accepting either 100, 115, 215, or 230 Vac, the supply provides fully regulated and protected +12, +5, −12 and −5 volt outputs. A power line monitor signal is also provided for use with power-down subroutines.

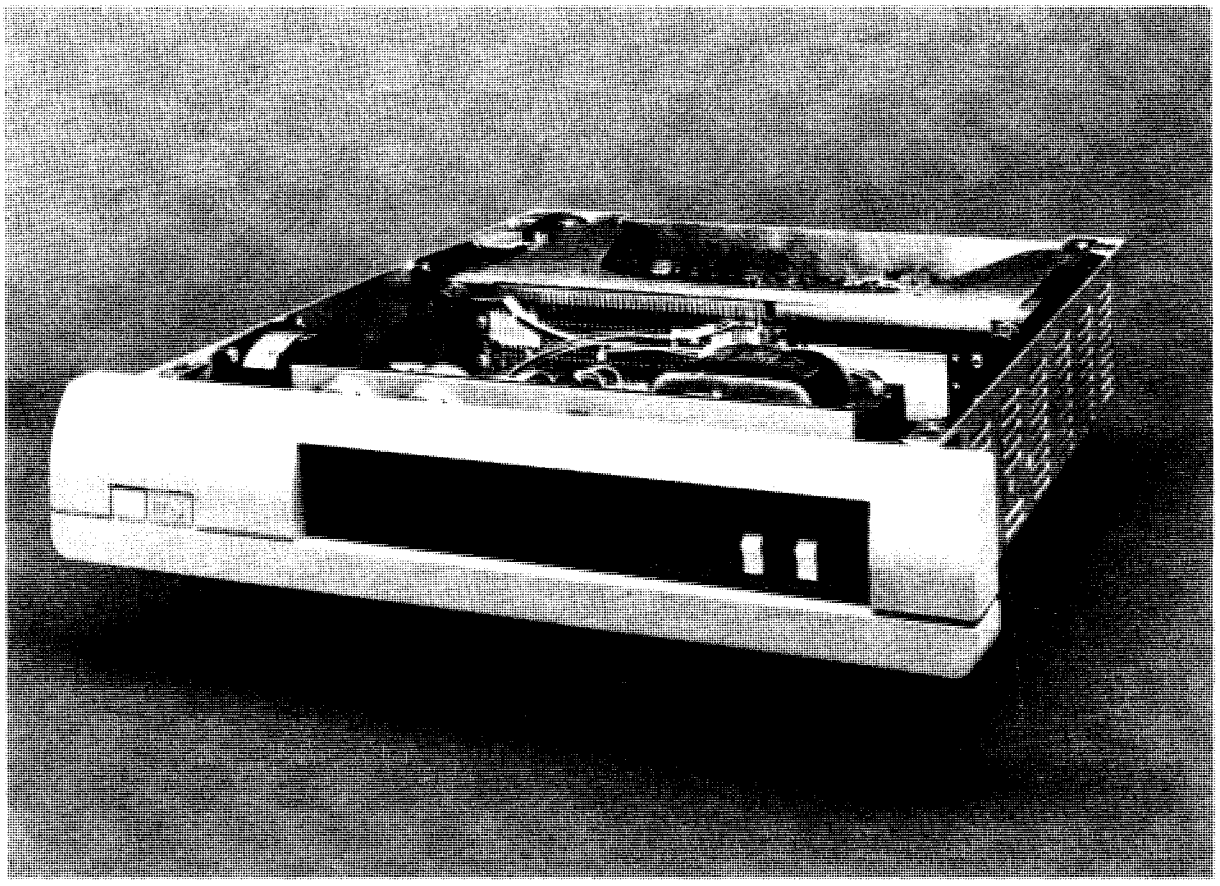

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Figure 1-1. iSBC 655 System Chassis

1-3. DOCUMENTATION SUPPLIED

The following Hardware Reference Manuals are supplied with the iSBC 655 System Chassis:

1. *iSBC 655 System Chassis Hardware Reference Manual* Order Number 9800709.
2. *iSBC 604/614 Cardcage Hardware Reference Manual* Order Number 9800708.
3. *iSBC 635 Power Supply Hardware Reference Manual* Order Number 9800298.

A chassis wiring diagram, front panel logic diagram, and replacement parts listing are located in Chapter 4 of this manual. Similar diagrams and parts listings pertaining to the power supply and cardcage are located in the "Service Information" chapters of the other manuals.

1-4. EQUIPMENT SUPPLIED

The following equipment is supplied with the iSBC 655 System Chassis: front panel with switches and indicators, two fans, power supply, cardcage-backplane, fuse, line filter, 115 Vac power cord, and one 25 inch RS232 I/O cable.

1-5. USER SUPPLIED EQUIPMENT

All rack mounting hardware is user supplied. Chapter 2 describes procedures for mounting and lists recommended parts. If the chassis is optioned for 230 volt operation, the power cord is not supplied. Any I/O cables, with the exception of the RS232 cable described in section 1-4, are also user furnished. The hardware reference manual for each iSBC board will provide a table of compatible I/O connectors recommended by Intel (not all boards require I/O cables, however).

1-6. SPECIFICATIONS

Specifications of the iSBC 655 System Chassis are listed in table 1-1.

Table 1-1. Specifications

PHYSICAL CHARACTERISTICS

Height	8.9 cm (3.5 in.)
Width	48.3 cm (19 in.) at front panel 43.2 cm (17 in.) behind front panel
Depth	50.8 cm (20 in.) with all protrusions
Weight	16 Kg (37 lb.)

ELECTRICAL CHARACTERISTICS

Input Frequency	47-63 Hz
Input Voltage	100, 115, 215, or 230 Vac ±10%

Voltage	Output Current (Max)	Current Limit (Max)	Over-Voltage Protection
+12	2.0 amp	2.4 amp	+14 to +16 volts
+ 5	14.0 amp	16.8 amp	+5.8 to +6.6 volts
− 5	0.9 amp	1.1 amp	−5.8 to −6.6 volts
−12	0.8 amp	1.0 amp	−14 to −16 volts

Line Regulation	±0.1% for 10 % line change
Load Regulation	±0.1% for 10% load change

Table 1-1. Specifications (Continued)

	ENVIRONMENTAL CHARACTERISTICS
Operating Temperature	0° to 50°C (32° to 131°F)
Non-operating Temperature	−40° to 85°C (−40° to 185°F)
Humidity	Up to 90%, non-condensing
Stability	±0.05% for eight hours after 30 min. warmup
Temperature Coefficient	±0.02% per degree centrigrade maximum

CHAPTER 2
PREPARATION FOR USE

2-1. INTRODUCTION

This chapter provides instructions for unpacking, installation and initial setup of the iSBC 655 System Chassis. The user should be thoroughly familiar with the contents of this chapter before applying power to the chassis.

2-2. UNPACKING AND INSPECTION

Inspect the shipping carton immediately upon receipt for evidence of mishandling during transit. If the shipping carton is severely damaged or waterstained, request that the carrier's agent be present when the carton is opened. If the carrier's agent is not present when the carton is opened and the contents of the carton are damaged, keep the carton and packing material for the agent's inspection.

For repairs to a product damaged in shipment, contact the Intel Technical Support Center (see paragraph 4-2) to obtain a Return Authorization Number and further instructions. A purchase order will be required to complete the repair. A copy of the purchase order should be submitted to the carrier with your claim.

It is suggested that salvageable shipping cartons and packing material be saved for future use in the event the product must be shipped.

2-3. INSTALLATION CONSIDERATIONS

The iSBC 655 chassis is designed for 19 inch RETMA rack mounting. Figure 2-1 illustrates all relevant outline dimensions. Before chassis installation, the user should be familiar with paragraphs 2-4 through 2-8.

2-4. POWER REQUIREMENTS

The chassis is equipped with the iSBC 635 Power Supply. This power supply requires one of the following four AC input voltages: 100, 115, 215, or 230, all ±10%. Frequency range of the power supply is 47 to 63 Hz. The chassis is shipped in the 115 volt configuration. Instructions for converting the power supply to one of the other voltages are given in chapter 2 of the *iSBC 635 Power Supply Hardware Reference Manual* (Order No. 9800298). The power supply is designed to handle up to four fully loaded iSBC boards. Refer to the above mentioned manual for complete specifications.

2-5. COOLING REQUIREMENTS

The chassis, without expansion boards dissipates about 4.13 kilogram calories of heat per minute following warmup. Adequate cooling (maintain temperature below 55 °C) for the chassis and four iSBC boards is provided by the two chassis fans. Care should be exercised during installation to prevent obstruction of chassis air flow openings.

2-6. RACK MOUNTING

The chassis is designed for installation in standard 19" RETMA racks using Chassis-Track C-300-D-122 Pivot Slides with alternate T-bar handles, or equivalent.

CAUTION

When using slides other than Chassis-Track C-300-D-122, the maximum slide width is 1.7 inches. Failure to comply may result in damage to the System.

To mount Chassis-Track slides on the iSBC 655 chassis proceed as follows:

1. Remove and reinstall the front fan using four 1/4 × 7/16 inch spacers under the fan. (Spacers used should be Amatom Electronic Hardware, Part No. 9227-A140 or equivalent.)
2. Mount the slides on the chassis using mounting hardware supplied with the slide.
3. When using slides other than Chassis-Track drill holes according to the manufacturer's instructions.

CAUTION

When drilling new holes, ensure all metal filings and chips are removed from the interior of the chassis before turn-on. Use a vacuum cleaner for optimum results.

4. After the chassis has been mounted, secure it in the cabinet with two No. 10-32 round head machine screws.

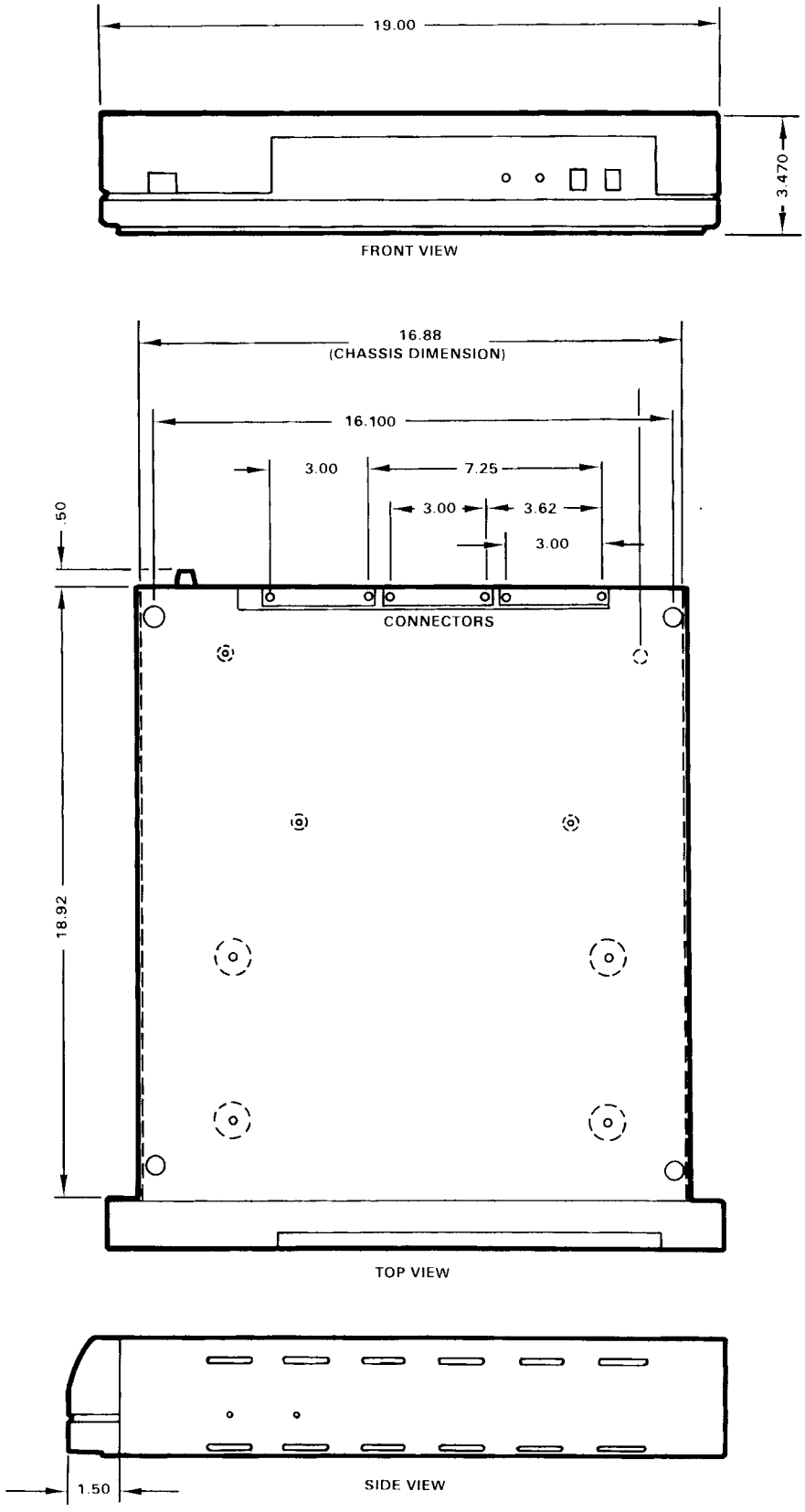

Figure 2-1. iSBC 655 Dimensions (Inches)

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2-7. PHYSICAL DIMENSIONS

The physical dimensions of the iSBC 655 System Chassis are shown in figure 2-1.

2-8. MULTIBUS DESCRIPTION

The iSBC 655 System Chassis is equipped with the iSBC 604 Cardcage/Backplane. This cardcage accomodates up to four iSBC boards and has an extension plug for attachment to additional external cardcages. The backplane conforms to the Intel Multibus specification. These signals and pin numbers are referenced in table 2-1. Some Intel Single Board Computers use connector P2 for additional signals and battery backup. These assignments are listed in table 2-2.

2-9. MULTIBUS PRIORITY

The iSBC 655 can be used with master boards in either a serial or parallel priority scheme. A master board is defined as a board which is capable of acquiring and controlling the Multibus. One of the two priority methods must be implemented, or the boards in the cardcage will not interact.

In the serial method, priority is resolved by board placement. Slot J2 (top slot) has the highest priority and J5 the lowest. To implement this method, a jumper must be installed between wire wrap posts B and N on the etch side of the backplane. This is illustrated in figure 2-2. In this scheme a maximum of three master boards may be used.

To initiate a parallel priority scheme, a priority resolver network is required. Boards such as the iSBC 80/20 and 80/30 may use this network. A typical hookup of this type is shown in figure 2-3.

2-10. MULTIBUS AND AUXILIARY CONNECTORS

Recommended compatible bus connectors for P1 and P2 are listed in table 2-3.

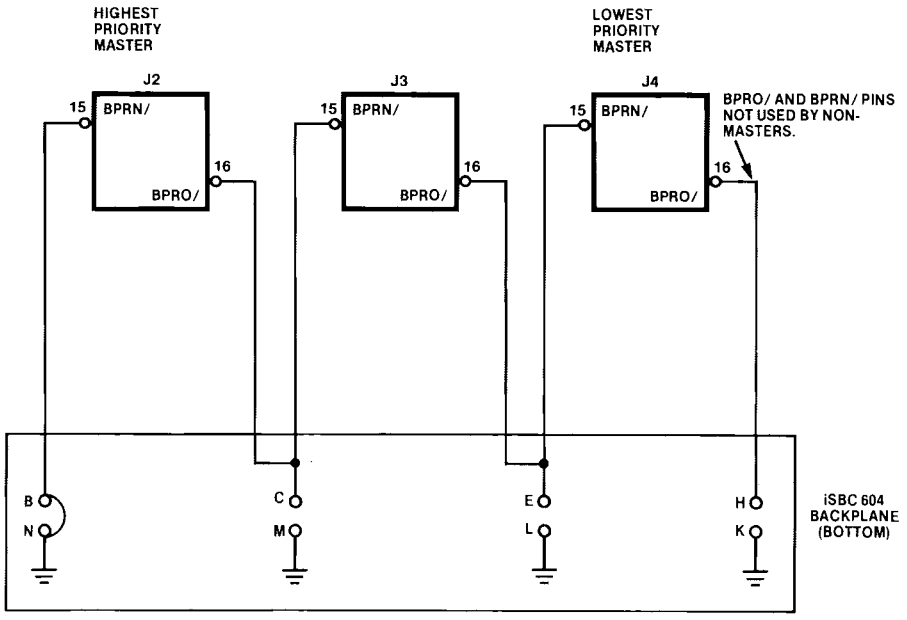

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Figure 2-2. Serial Priority

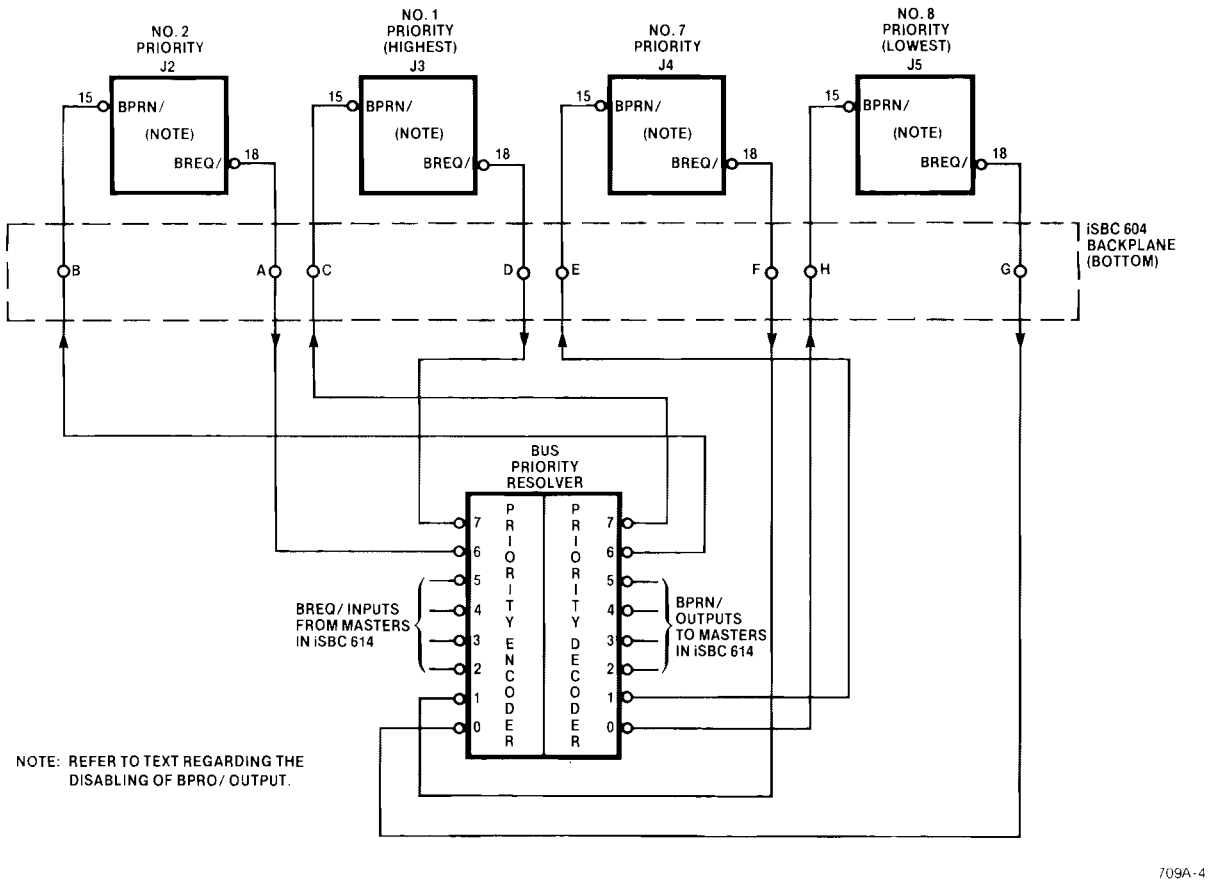


Figure 2-3. Parallel Priority

Table 2-1. Multibus Connector Pin Assignment

	(COMPONENT SIDE)			(CIRCUIT SIDE)		
	PIN	MNEMONIC	DESCRIPTION	PIN	MNEMONIC	DESCRIPTION
POWER SUPPLIES	1	GND	Signal GND	2	GND	Sig GND
	3	+5V	+ 5Vdc	4	+5V	+ 5Vdc
	5	+5V	+ 5Vdc	6	+ 5V	+ 5Vdc
	7	+12V	+12Vdc	8	+12V	+12Vdc
	9	−5V	− 5Vdc	10	−5V	− 5Vdc
	11	GND	Signal GND	12	GND	Signal GND
BUS CONTROLS	13	BCLK/	Bus Clock	14	INIT/	Initialize
	15	BPRN/	Bus Pri. In	16	BPRO/	Bus Pri. Out
	17	BUSY/	Bus Busy	18	BREQ/	Bus Request
	19	MRDC/	Mem Read Cmd	20	MWTC/	Mem Write Cmd
	21	IORC/	I/O Read Cmd	22	IOWC/	I/O Write Cmd
	23	XACK/	XFER Acknowledge	24	INH1/	Inhibit 1 disable RAM
	25	AACK/	Advance Acknowledge	26	INH2/	Inhibit 2 disable ROM
	27	BHEN/	Byte High Enable	28	AD10/	
	29	CBRQ/	Common Bus Request	30	AD11/	Address
	31	CCLK/	Constant Clk	32	AD12/	Bus
	33	INTA/	Intr Acknowledge	34	AD13/	

Table 2-1. Multibus Connector Pin Assignment (Continued)

	(COMPONENT SIDE)			(CIRCUIT SIDE)		
	PIN	MNEMONIC	DESCRIPTION	PIN	MNEMONIC	DESCRIPTION
INTERRUPTS	35	INT6/	Parallel	36	INT7/	Parallel
	37	INT4/	Interrupt	38	INT5/	Interrupt
	39	INT2/	Requests	40	INT3/	Requests
	41	INT0/		42	INT1/	
ADDRESS	43	ADRE/		44	ADRF/	
	45	ADRC/		46	ADRD/	
	47	ADRA/	Address	48	ADRB	Address
	49	ADR8/	Bus	50	ADR9/	Bus
	51	ADR6/		52	ADR7/	
	53	ADR4/		54	ADR5/	
	55	ADR2/		56	ADR3/	
	57	ADR0/[1]		58	ADR1/	
DATA	59	DATE/		60	DATF/	
	61	DATC/		62	DATD/	
	63	DATA/	Data	64	DATB/	Data
	65	DAT8/	Bus	66	DAT9/	Bus
	67	DAT6/		68	DAT7/	
	69	DAT4/		70	DAT5/	
	71	DAT2/		72	DAT3/	
	73	DAT0/		74	DAT1/	
POWER SUPPLIES	75	GND	Signal GND	76	GND	Signal GND
	77	−10V[2]	−10Vdc	78	−10V[2]	−10Vdc
	79	−12V	−12Vdc	80	−12V	−12Vdc
	81	+5V	+ 5Vdc	82	+5V	+ 5Vdc
	83	+5V	+ 5Vdc	84	+5V	+ 5Vdc
	85	GND	Signal GND	86	GND	Signal GND

Notes:
1. ADR0/ is equivalent to BLEN (positive true) when used on 16 bit systems.
2. Not used on MULTIBUS.

Table 2-2. P2 Connector Pin Assignment

(COMPONENT SIDE)		(CIRCUIT SIDE)			
PIN	MNEMONIC	DESCRIPTION	PIN	MNEMONIC	DESCRIPTION
1	GND	Signal GND	2	GND	Signal GND
3	VCCB	+ 5V Battery	4	VCCB	+ 5V Battery
5	VCCPP	+ 5V Pulsed Power	6	VCCPP	+ 5V Pulsed Power
7	VBBB	− 5V Battery	8	VBBB	− 5V Battery
9	PUPO/	Pulsed Power Off	10	Reserved	
11	VDDB	+12V Battery	12	VDDB	+12V Battery
13	PFSR/	Power Fail Sense Reset	14	Reserved	
15	VAAB	−12V Battery	16	VAAB	−12V Battery
17	PFSN/	Power Fail Sense	18	ACLO	AC Low

Table 2-2. P2 Connector Pin Assignment (Continued)

(COMPONENT SIDE) PIN	MNEMONIC	(CIRCUIT SIDE) DESCRIPTION	PIN	MNEMONIC	DESCRIPTION
19	PFIN/	Power Fail Interrupt	20	MPRO/	Memory Protect
21	GND	Signal GND	22	GND	Signal GND
23	+15V	+15V	24	+15V	+15V
25	−15V	−15V	26	−15V	−15V
27			28	HALT/	Bus Master HALT
29			30	WAIT/	Bus Master WAIT STATE
31			32	ALE	Bus Master ALE
33			34	Reserved	
35			36	Reserved	
37			38	RESET/	Reset switch
39			40		
41	Reserved		42		
43			44		
45			46	Reserved	
47			48		
49			50		
51			52		
53			54		
55			56		
57			58		
59			60		

Notes:
1. If possible, on slave boards, PFIN should be connected to INT0/.
2. All undefined pins are reserved for future use.

Table 2-3. Compatible Bus Connectors

Function	# Of Pins	Centers Inches	Connector Type	Vendor	Vendor #	Intel #
Multibus Connector (P1)	43/86	0.156	Soldered[1]	CDC MICRO PLASTICS ARCO VIKING	VPB01E43D00A1 MP-0156-43-BW-4 AE443WP1 Less Ears 2VH43/1AV5	N/A
Multibus Connector (P1)	43/86	0.156	Wire wrap[2]	CDC CDC VIKING	VFB01E43D00A1 VPB01E43A00A1 2VH43/1AV5	MDS 985
Auxiliary Connector (P2)	30/60	0.1	Soldered[1]	TI VIKING	H312130 3VH30/1JN5	N/A
Auxiliary Connector (P2)	30/60	0.1	Wire wrap[2]	CDC TI	VPB011B30A00A2 H311130	N/A

Notes:
1. Connector heights are not guaranteed to conform to Intel packaging equipment.
2. Wirewrap pin lengths are not guaranteed to conform to Intel packaging equipment.
3. **CAUTION:** Ensure the connector you are ordering fits your design needs. Verify part numbers with vendors.

CHAPTER 3
PRINCIPLES OF OPERATION

3-1. INTRODUCTION

This chapter describes the basic functional operation of the iSBC 655 System Chassis. Most of the information in this chapter centers around the opertion of the front panel. Discussion of the power supply is covered in a separate publication, the *iSBC 635 Power Supply Hardware Reference Manual,* Order Number 9800298.

3-2. FUNCTIONAL DESCRIPTION

The chassis functional components include the front panel with switches and indicators, two cooling fans, power supply, four slot cardcage/backplane, and a domestic (115 volt) power cord. The following paragraphs describe the major components of the chassis.

3-3. FRONT PANEL SWITCHES AND INDICATORS

Three switches reside on the iSBC 655 front panel: the power ON/OFF indicator/switch, the RUN switch, and the HALT switch.

The power ON/OFF indicator/switch (S1) is located on the left side of the front panel. When power is applied, the indicator will illuminate. The illuminator bulb is accessed by pulling off the translucent switch cap.

The other two front panel switches are momentary rocker types, labeled RESET (S3) and INTERRUPT (S4). The RESET switch is wired to pin 14 of the backplane. When depressed, the switch generates the RESET/ signal, which is synonymous with INIT/ on the backplane. The flip-flop which actually generates RESET/ is located on the front panel printed circuit board (PCB), and is shown in figure 4-5.

The INTERRUPT switch functions in a similar manner. When the switch is depressed, circuitry on the front panel PCB generates the INT1/ signal, which is wired to pin 42 of the backplane (refer to figure 4-2).

The RUN and HALT indicators are light emitting diodes mounted on the front panel PCB. The RUN and HALT indicators illuminate as a function of three status signals: WAIT/, HALT/, and ALE. The RUN indicator illuminates when the CPU is executing an instruction. The indicator will be off when the CPU is in the WAIT state or a HALT instruction has been executed.

The HALT indicator illuminates after the CPU has executed a HALT instruction. A front panel RESET or an INTERRUPT will remove the HALT state. Notice that when the CPU is in the WAIT state neither the RUN nor the HALT indicators are on. The illuminator circuitry is shown in figure 4-5.

3-4. LINE VOLTAGE SELECT SWITCH AND LINE FUSE

The line voltage select switch is adjacent to the cardcage fan, and is shown schematically in figure 4-2. The switch has two positions, corresponding to the two usable line voltages; 115 VAC and 230 VAC. A keyed switch locking plate secures the switch in one position. The switch can be set to the other position, only by loosening the two plate hold-down screws, and flipping the plate over. Each side of the plate is labeled.

Fuse F1 is located on the rear chassis panel, right side. A 2.5 ampere fuse should be used for 230 volt operation and a 5 ampere fuse is used for 115 volt operation.

The line filter is located directly below the fuse. The line filter hardware also functions as the power cord connector.

3-5. FANS

The chassis utilizes two fans for cooling purposes. Both are located on the power ON/OFF switch side of the chassis. Air flow is directed into the chassis, with one fan cooling the power supply and the other cooling the cardcage. Power for each fan is derived directly from the line voltage.

3-6. iSBC 604 CARDCAGE AND BACKPLANE

The cardcage houses a total of four iSBC boards. Considered part of the cardcage, the backplane is a printed circuit board with Multibus and other connectors attached. Operating voltages reach the boards via the backplane and all interboard communication occurs on the Multibus.

Signal terminator resistors are located on the backplane PCB, and are shown schematically in figure 4-7.

An additional connector, J5A, is installed on the backplane to accommodate several status signals and auxiliary RAM refresh power.

3-7. iSBC 635 POWER SUPPLY

This power supply provides regulated DC voltages (+12, −12, +5, & −5) from 100, 115, 215 or 230 VAC power sources. Output levels are delivered through keyed connectors which mate directly to the front panel and backplane. All outputs have current limiting and overvoltage protection. These tolerances are listed in the Specifications section of the *iSBC 635 Hardware Reference Manual.*

3-8. POWER FAIL STATUS. The power supply is equipped with an AC line monitor which will generate AC LOW signal, when the source falls below 90% of its nominal value. The AC LOW signal is wired to pin 19 on J5A of the backplane. Pin 19 is typically connected to an interrupt matrix or controller on the Single Board Computer.

3-9. OUTPUT VOLTAGE ADJUSTMENTS. Each output voltage level is individually adjustable. Procedures for these adjustments are given in Chapter 3 of the *iSBC 635 Hardware Reference Manual.*

CHAPTER 4
SERVICE INFORMATION

4-1. INTRODUCTION

This chapter provides service and repair assistance instructions, removal and replacement information, and service diagrams.

4-2. SERVICE AND REPAIR ASSISTANCE

United States customers can obtain service and repair assistance from Intel by contacting the MCSD Technical Support Center in Santa Clara, California at one of the following numbers:

Telephone:

From Alaska or Hawaii call —
(408) 987-8080
From locations within California call toll free —
(800) 672-3507
From all other U.S. locations call toll free —
(800) 538-8014
TWX: 910-338-0026
TELEX: 34-6372

Always contact the MCSD Technical Support Center before returning a product to Intel for service or repair. You will be given a "Repair Authorization Number", shipping instructions, and other important information which will help Intel provide you with fast, efficient service. If the product is being returned because of damage sustained during shipment from Intel, or if the product is out of warranty, a purchase order is necessary in order for the MCSD Technical Support Center to initiate the repair.

In preparing the product for shipment to the MCSD Technical Support Center, use the original factory packaging material, if available. If the original packaging is not available, wrap the product in a cushioning material such as Air Cap TH-240 (or equivalent) manufactured by the Sealed Air Corporation, Hawthorne, N.J., and enclose in a heavy-duty corrugated shipping carton. Seal the carton securely, mark it "FRAGILE" to ensure careful handling, and ship it to the address specified by MCSD Technical Support Center personnel.

NOTE

Customer outside of the United States should contact their sales source (Intel Sales Office or Authorized Intel Distributor) for directions on obtaining service or repair assistance.

4-3. REMOVAL AND REPLACEMENT

The removal and replacement of most components in the iSBC 655 is obvious. Only those procedures that are critical or are not considered obvious will be discussed in this section.

4-4. POWER SUPPLY REMOVAL

The power supply can be partially removed from the chassis for access to the backplane. With partial removal, the cables are not disconnected and the power supply is still operational.

CAUTION

Do not operate the iSBC 655 under load with the power supply partially removed any longer than 15 minutes for installation or maintenance. The power supply can overheat if under load and is not cooled by the internal fans.

For partial removal of the power supply proceed as follows:

a. Set POWER switch to OFF and disconnect AC power cord from its receptacle.
b. Remove top cover, front panel cover, and front panel.
c. Be sure the main chassis is level and remove the four power supply retaining screws.
d. Pull power supply out of chassis through front panel access, until the two large posts on lower rear corners of power supply contact the brackets in lower corners of front panel cutout. These posts will support power supply so it can hang below front panel.

For complete removal of the power supply, proceed as follows:

a. Perform steps (a) through (c) above.
b. Disconnect and tag power supply cables.
c. Lift power supply out through top of chassis.

4-5. CARDCAGE/BACKPLANE REMOVAL

To remove the cardcage/backplane, proceed as follows:

a. Disconnect AC power cord.

b. Remove top cover and the four screws that secure cardcage to bottom panel.

c. Move cardcage away from power supply to gain access to the two backplane connectors.

d. Tag and disconnect the two connectors.

e. Lift cardcage and backplane out of chassis.

f. Reverse the steps for replacement.

4-6. INDICATOR LAMP REPLACEMENT

The POWER switch has an integral incandescent indicator lamp. To replace the lamp, proceed as follows:

a. Set POWER switch to OFF and remove front panel cover.

b. Pull rectangular switch cover assembly straight out from panel.

c. The indicator lamp is recessed in a sleeve in the cover assembly. Remove lamp and replace with a No. 387 lamp, size T1 3/4, 28V.

d. Replace switch cover and front panel.

4-7. SERVICE DIAGRAMS

The iSBC 655 Service Diagrams are given in figures 4-1 through 4-8. A signal mnemonic that ends with a slash denotes the signal is active low ($\leq$0.4V). Conversely, a signal mnemonic without a slash denotes the signal is active high ($\geq$2.4V).

4-8. REPLACEMENT PARTS LISTING

Table 4-1 lists the replacement parts for the iSBC 655 chassis. The table is grouped according to chassis modules. Abbreviations used in the parts listing are identified in table 4-2. Parts for the power supply are listed in the iSBC 635 Hardware Reference Manual.

Table 4-1. Replacement Parts Listing

Figure & Index No.	Description	Part No.	Mfr. Code	Qty
4-1	Main Frame Assembly			
5	Tray, chassis	3000626-01	Intel	1
6	Cover, top	3000628-01	Intel	1
7	Panel, rear	3000654-01	Intel	1
8	Bracket, mounting switch	3000659-01	Intel	1
9	Clamp, cable	3000651-01	Intel	1
10	Cardcage/Backplane assembly	4000681-07	Intel	1
12	Plate, switch locking	3000997-01	Intel	1
14	Harness, AC power	4000761-01	Intel	1
15	Power mounting bracket assembly	4000768-01	Intel	1
16	Subpanel assembly (see figure 4-3)	4002000-01	Intel	1
17	Front panel cable assembly	4001998-01	Intel	1
18	Lamp, miniature 28v, .04 amp T 1.75 inch	387	GTE	1
30	Fan, 3.125 in. square by 1.64 in. wide	SU 243	ROT	2
31	Fuse, 5A 125V or 2.5A 250V	OBD	CML	1
27	Holder, fuse	342048	LIT	1
24	Filter, line 3A	3EF1-E1-1	CC	1
21	Switch, DPDT, illuminated (S1)	572-8115-11	ILL	1
22	Switch, DPDT, slide (S2)	46206LR	SWI	1
23	Connector, 60 pin	H312130	TI	1-4
18	Power Supply (use either vendor)	CP-174	POI	1
		76863400	CDC	
4-3	Subpanel Assembly	3000655-01	Intel	1
7	Display overlay	4102001-01	Intel	1
1	Display subpanel	3001086-01	Intel	1
12	Switch, DPDT momentary (S3)	7208-J12EBX	C & K	1
13	Switch, SPDT momentary (S4)	7108-J12EBX	C & K	1
4-4	Display Printed Circuit Board	1001994-01	Intel	1
	Nand gate IC, 7438 (A1,A3,A4)	SN7438	TI	3
	Monostable multivibrator (A2)	9602	FAI	1
	Diode, Light Emitting Red (DS1, DS2)	MV5053	MON	2
	Connector (J1)	87528-1	AMP	1
	Resistor, 33K ± 5%, .25W (R6)	OBD	CML	1
	Resistor, 240 ohm, ± 5%, .25W (R18, 19)	OBD	CML	2
	Resistor, 2.2K ± 5%, .25W (R1-5, R7-17)	OBD	CML	16

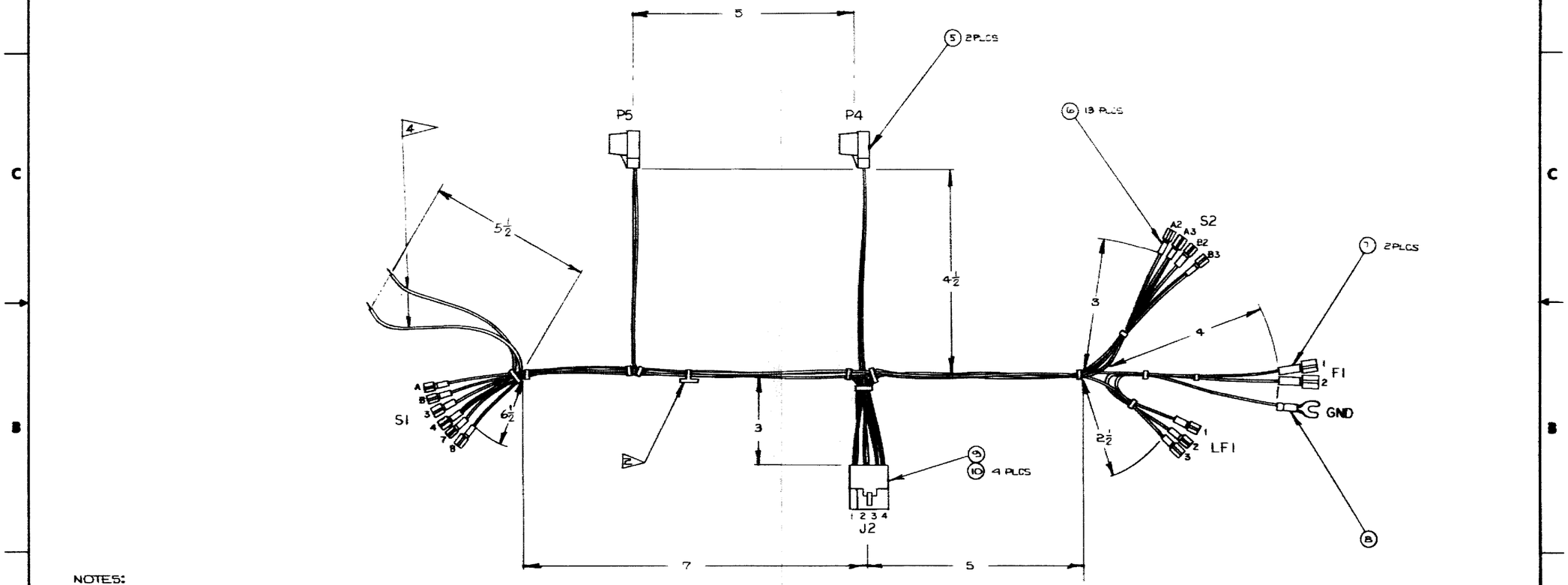
Table 4-1. Replacement Parts Listing (Continued)

Figure & Index No.	Description	Part No.	Mfr. Code	Qty
	Capacitor, ceramic .0047 uf 100V ± 10% (C3)	OBD	CML	1
	Capacitor, solid tantalum, 4.7 uf, 10V± 10% (C1)	OBD	CML	1
	Capacitor, ceramic, .01 uf 25 V +80% −20% (C2, C4-6)	OBD	CML	4
	Terminal, turret mini (E1-5)	OBD	CML	5
4-6	Card Cage Assembly	4000681-07	Intel	RF
1	Card Cage	3000636-01	Intel	1
3	Clamp, Cardcage	3000638-01	Intel	2
5	Backplane, Terminal, iSBC-604	1000664-03	Intel	1
4-8	Harness, AC Power	4000761-01	Intel	RF
7	Lug, Terminal, Insulated, 22 AWG (F1)	SO9856	HOL	2
9	Connector, male, 4-contact (J2)	03-09-1042	MOL	1
10	Pin, female, 14-20 AWG (J2)	1189	MOI	4
5	Cord, fan, 2 conductor, 18 AWG, 24''	428022	ROT	2
6	Lug, termination, female, insulated, 18-22 AWG (S1,S2,LF1)	SO9855	HOI	13
8	Lug, space #6 (GND)	OBD	CML	1

Table 4-2. Manufacturers Codes

MFR. CODE	Manufacturer	Address	MFR. CODE	Manufacturer	Address
INTEL	Intel Corporation	Santa Clara, CA	GTE	GTE Sylvania Mini Lamp	Hillsboro, NH
TI	Texas Instruments	Dallas, TX	HOL	Hollingsworth, Inc.	Phoenixville, PA
			ILL	Illuminated Products	Santa Ana, CA
FAI	Fairchild Semiconductor	Mountain View, CA	LIT	Littlefuse Co.	Des Planes, IL
AMP	AMP, Inc.	Harrisburg, PA	MOL	Molex, Inc.	Lisle, IL
AUG	Augat, Inc.	Attleboro, MA	MON	Monsanto, Inc.	Palo Alto, CA
CC	Cor-Com	Chicago, IL	ROT	Rotron, Inc.	Woodstock, NY
CDC	Control Data Corporation	Minneapolis, ML	SCA	Scanbe, Incorporated	El Monte, CA
C+K	C+K Corporation	Watertown, MA	SWI	Switchcraft, Inc.	Chicago, IL
CTS	CTS Corp.	Elkhart, IN	POI	Power One, Inc.	Camarillo, CA
			COML	Any Commercial Source; Order By Description (OBD)	

LTR	DESCRIPTION	ECO # AND DATE
A	PRODUCTION REL	
B	SEE ECO # 00744	
B1	ADDED NEXT ASSY	
C	SEE ECO # 00845-1	
D	SEE ECO # 00914	
E	SEE ECO # 01076	



NOTES:
UNLESS OTHERWISE SPECIFIED,

1. ASSY NO IS 4000761-02.
2. INK STAMP PIN & REV LTR ON TIE WRAP & PLACE APPROX WHERE SHOWN.
3. DIMENSIONS ARE IN INCHES.
4. HAND SOLDER WIRE NO (4) AND (3) TO ASSY 4001040 AS SHOWN ON TOP ASSY 4000767.

NEXT ASSY	USED ON
4001111	SYS 655
4001147	SYS 80/24-4
[illegible]	[illegible]
4000767	SYS 80/10

QUANTITY PER DASH NO.

SCALE: NONE
TOL ± : 2 PLC 1/4" | 3 PLC | ANGLE

MATERIAL: SEE PARTS LIST
FINISH: —

ITEM NO.	PART NUMBER	DESCRIPTION

PARTS LIST

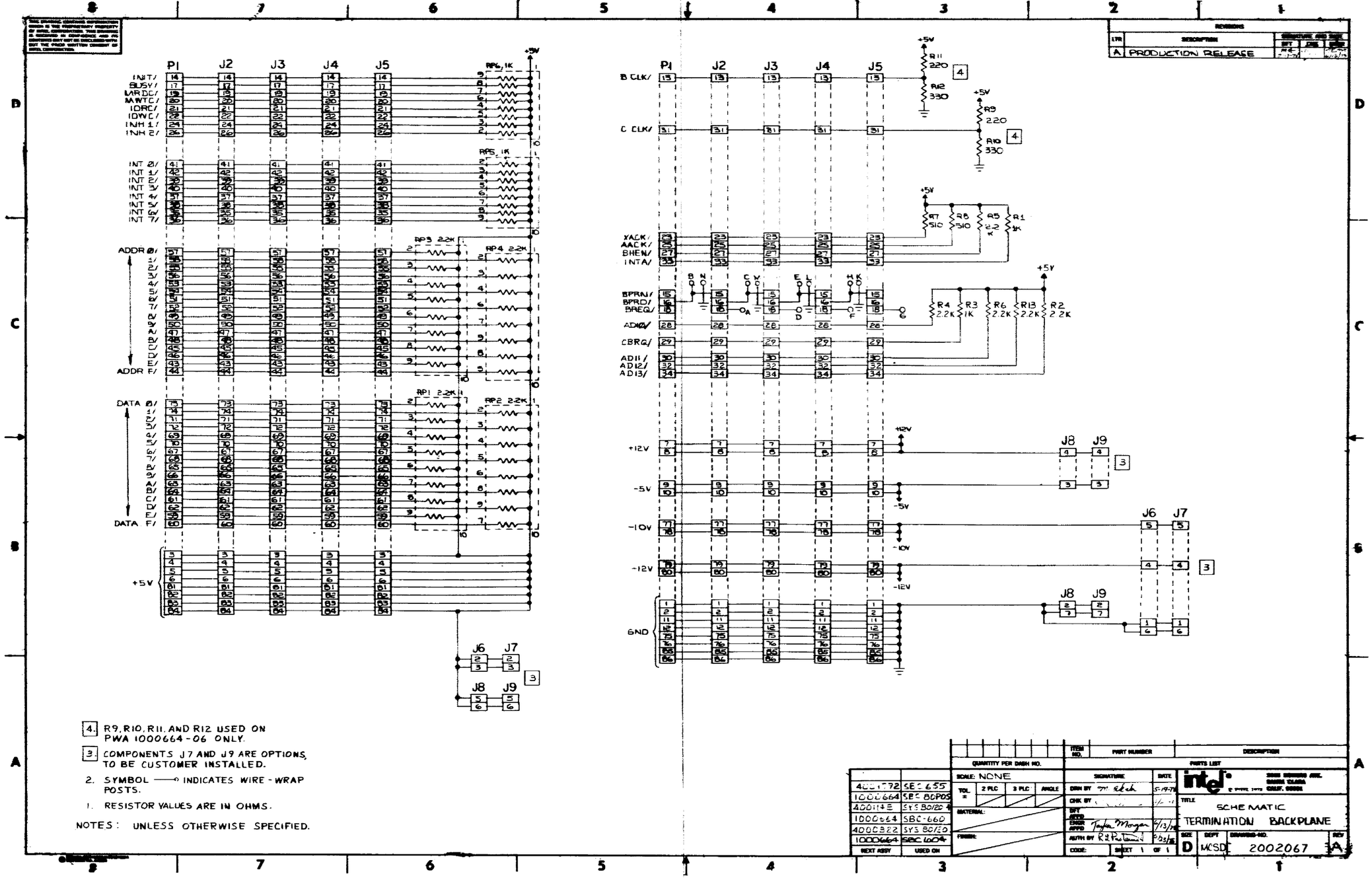
	SIGNATURE	DATE
DRN BY	[illegible]	6/76
CHK BY	[illegible]	6/8/76
APPD BY	[illegible]	6/8/76
AUTH BY	[illegible]	6/8/76
CODE:	SHEET 1 OF 1	

intel

TITLE
HARNESS
A.C. POWER

SIZE	DEPT	DRAWING NO.	REV
D	940	4000761	E

Figure 4-8. iSBC 655 AC Power Harness



4. R9, R10, R11, AND R12 USED ON PWA 1000664-06 ONLY.

3. COMPONENTS J7 AND J9 ARE OPTIONS, TO BE CUSTOMER INSTALLED.

2. SYMBOL —o INDICATES WIRE-WRAP POSTS.

1. RESISTOR VALUES ARE IN OHMS.

NOTES: UNLESS OTHERWISE SPECIFIED.

LTR	DESCRIPTION	SIGNATURE AND DATE
A	PRODUCTION RELEASE	

SCALE: NONE	
TITLE	SCHEMATIC TERMINATION BACKPLANE
SIZE	D
DEPT	MCSD
DRAWING NO.	2002067
REV	A

Figure 4-7. iSBC 604 Backplane Schematic

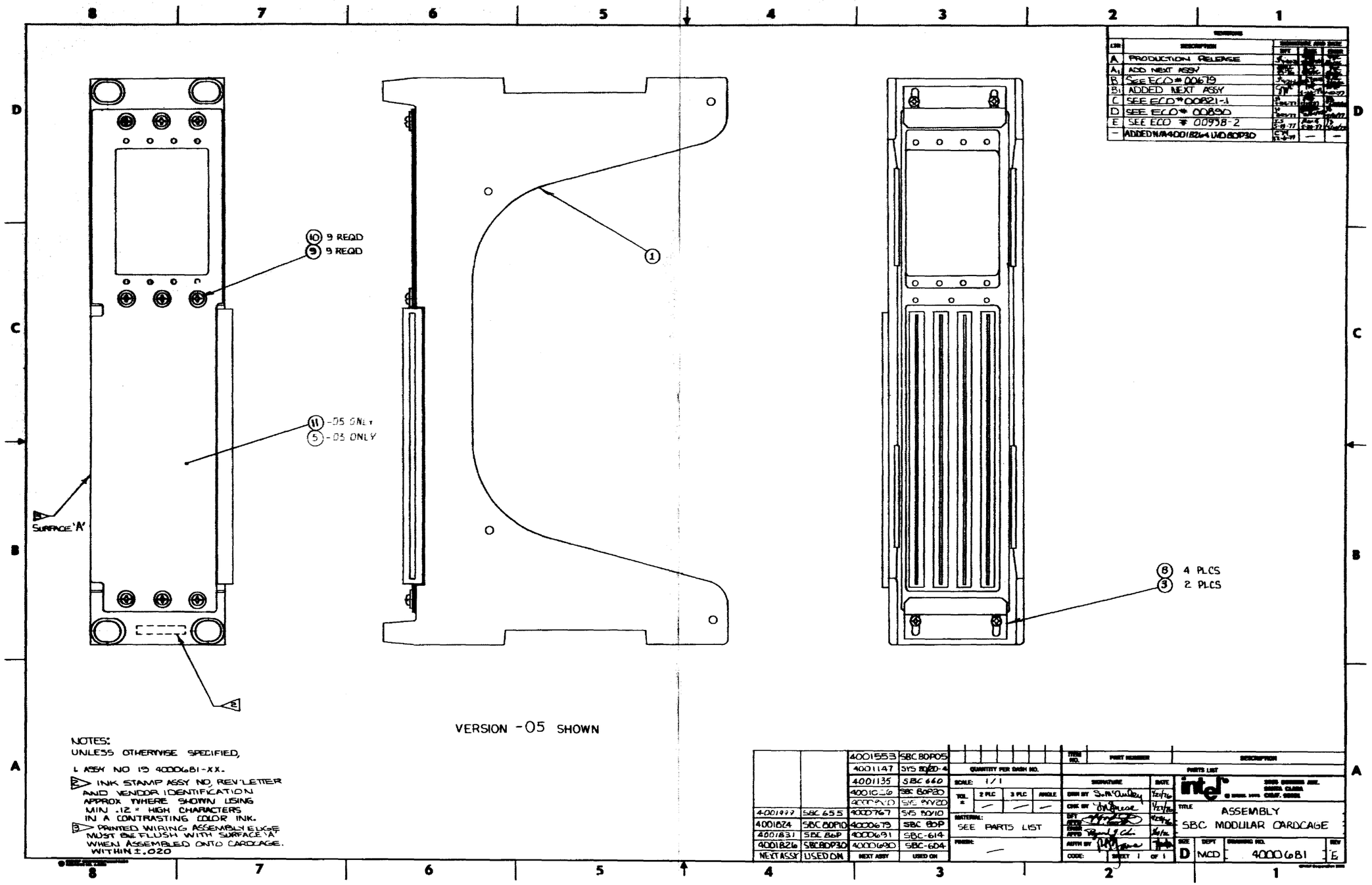


Figure 4-6. iSBC 604/614 Modular Cardcage Assembly

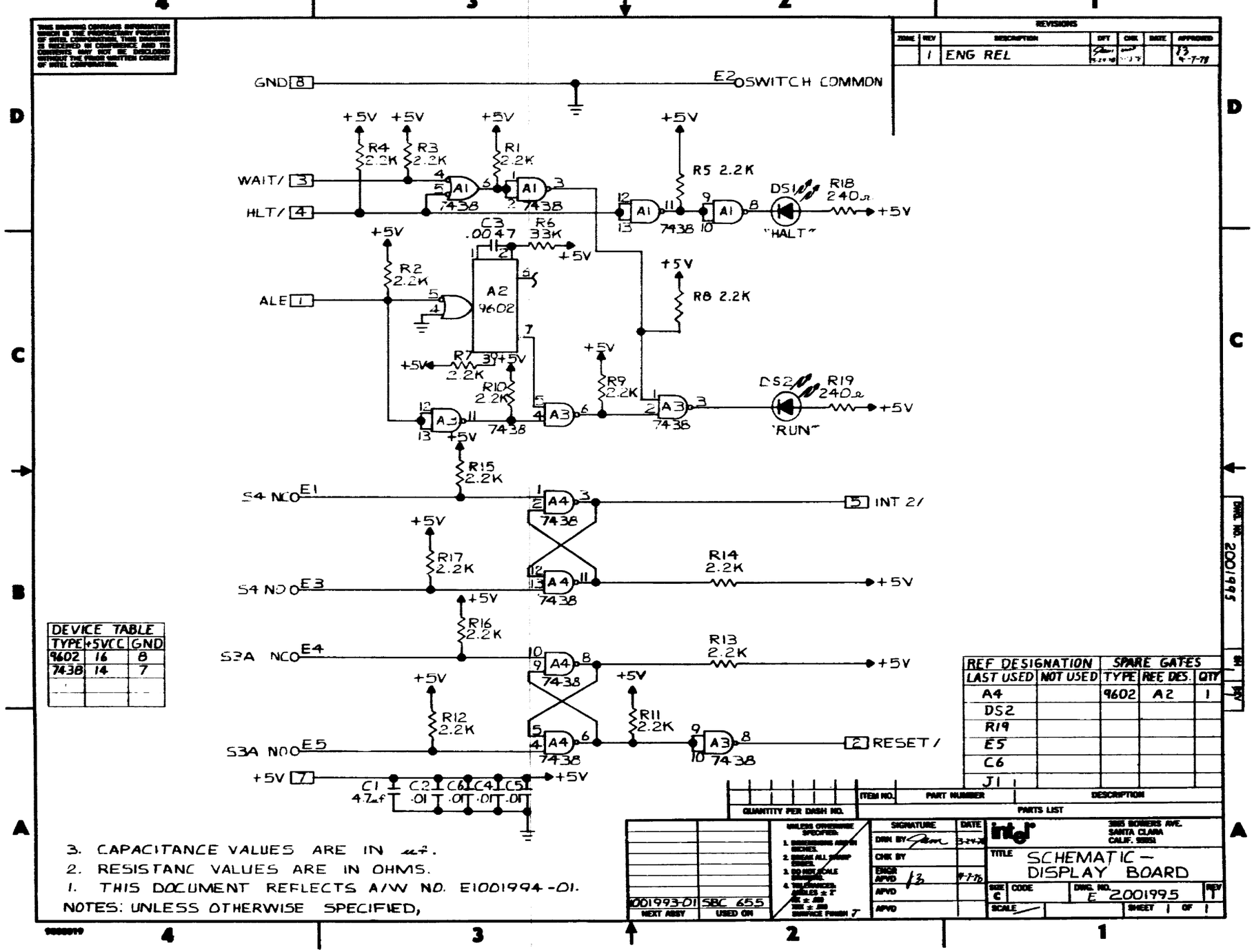
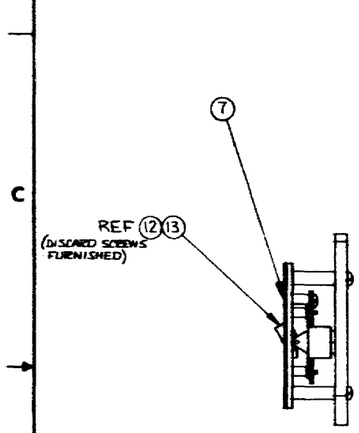
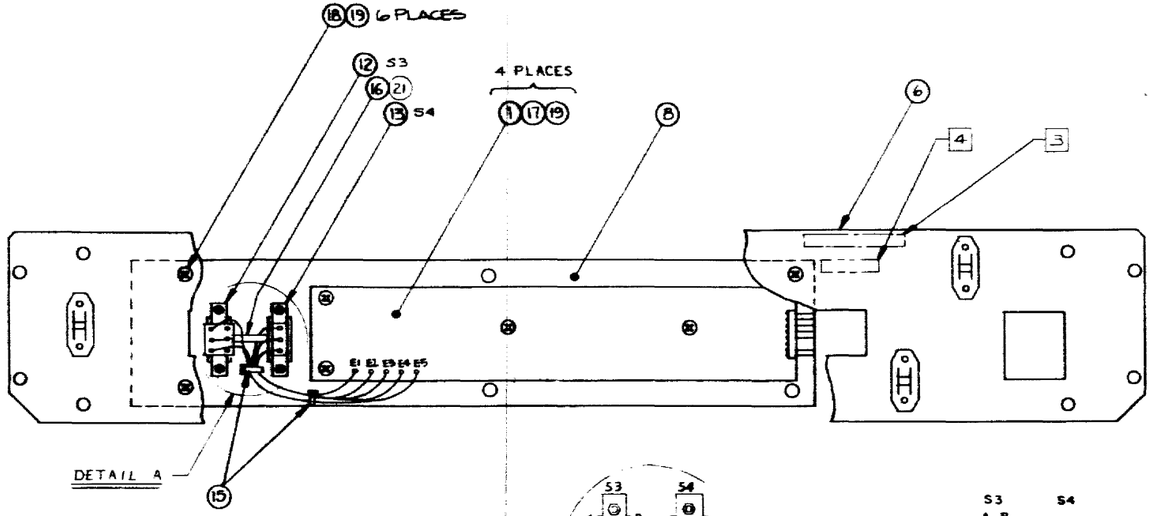
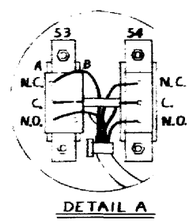


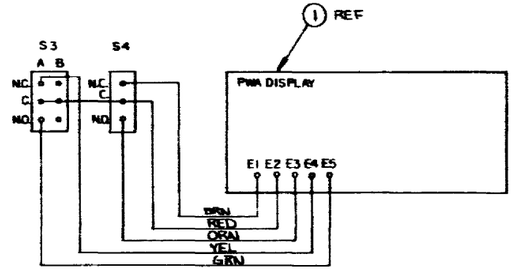
Figure 4-5. iSBC 655 Display Board Schematic

LTR	DESCRIPTION	SIGNATURE AND DATE
1	ENG. RELEASE	









WIRING DIAGRAM

SEE SEPARATE PARTS LIST

4. MARK VENDOR ID WITH CONTRASTING PERM COLOR, APPROX WHERE SHOWN.
3. MARK PART NO. AND REV LEVEL WITH CONTRASTING PERM COLOR, .12 HIGH, APPROX WHERE SHOWN.
2. WORKMANSHIP PER MCSD QAW 007.
1. ASSY PART NO. IS 4002000-01. ASSY DWG AND PL ARE TRACKING DOCUMENTS.

NOTES: UNLESS OTHERWISE SPECIFIED,

4 001999 NEXT ASSY	SBC 655 USED ON

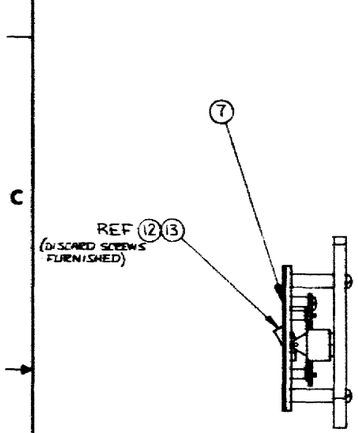
QUANTITY PER DASH NO.			
SCALE: 1/1			
TOL ±	2 PLC ~	3 PLC ~	ANGLE ~
MATERIAL: SEE PARTS LIST			
FINISH: ~			

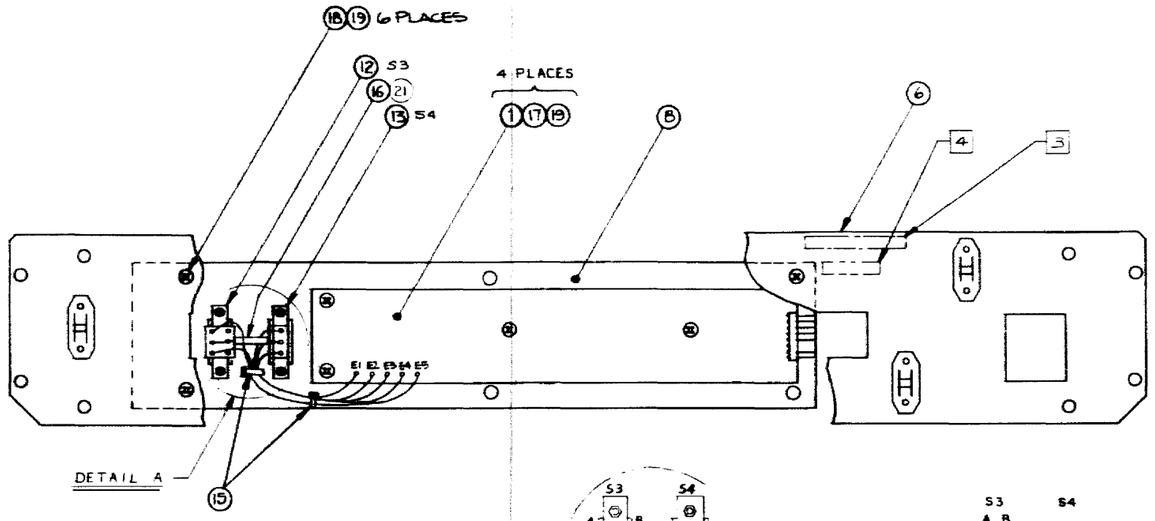
ITEM NO.	PART NUMBER	DESCRIPTION
PARTS LIST		

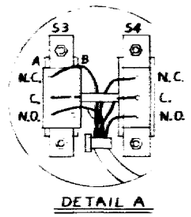
SIGNATURE	DATE	intel 3065 GOWER AVE. SANTA CLARA CALIF. 95051
DRN BY Sam	3-22-78	
CHK BY		TITLE SUB PANEL ASSY
ENGR APPD		
QUAL APPD	4-7-78	
MFG APPD		
MATL APPD BY		SIZE D DEPT MCSD DRAWING NO. E 4002000 REV 1
CODE:	SHEET 1 OF 1	

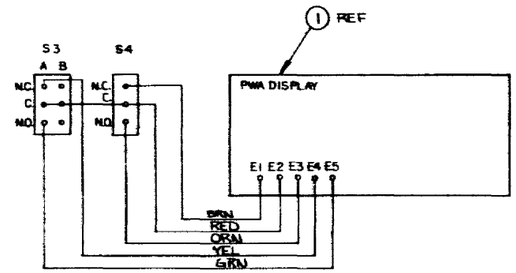
Figure 4-3. iSBC 655 Sub Panel Assembly

LTR	DESCRIPTION	SIGNATURE AND DATE
1	ENG RELEASE	









WIRING DIAGRAM

SEE SEPARATE PARTS LIST

4. MARK VENDOR ID WITH CONTRASTING PERM COLOR, APPROX WHERE SHOWN.

3. MARK PART NO. AND REV LEVEL WITH CONTRASTING PERM COLOR, .12 HIGH, APPROX WHERE SHOWN.

2. WORKMANSHIP PER MCSD QAW DD7.

1. ASSY PART NO. 15 4002000-01. ASSY DWG AND PL ARE TRACKING DOCUMENTS.

NOTES: UNLESS OTHERWISE SPECIFIED,

ITEM NO.	PART NUMBER	DESCRIPTION
	PARTS LIST	

QUANTITY PER DASH NO.			
SCALE: 1/1			
TOL. ±	2 PLC	3 PLC	ANGLE
	~	~	~
MATERIAL: SEE PARTS LIST			
FINISH: ~			
4001999	SBC 655		
NEXT ASSY	USED ON		

SIGNATURE	DATE	
DRN BY Jam	3-22-79	
CHK BY		
SPT		
APPD	4-7-79	
AUTH BY		
CODE:	SHEET 1 OF 1	

intel 3065 RUNNING AVE. SANTA CLARA CALIF. 95051

TITLE: SUB PANEL ASSY

SIZE D | DEPT MCSD | DRAWING NO. E 4002000 | REV 1

Figure 4-3. iSBC 655 Sub Panel Assembly

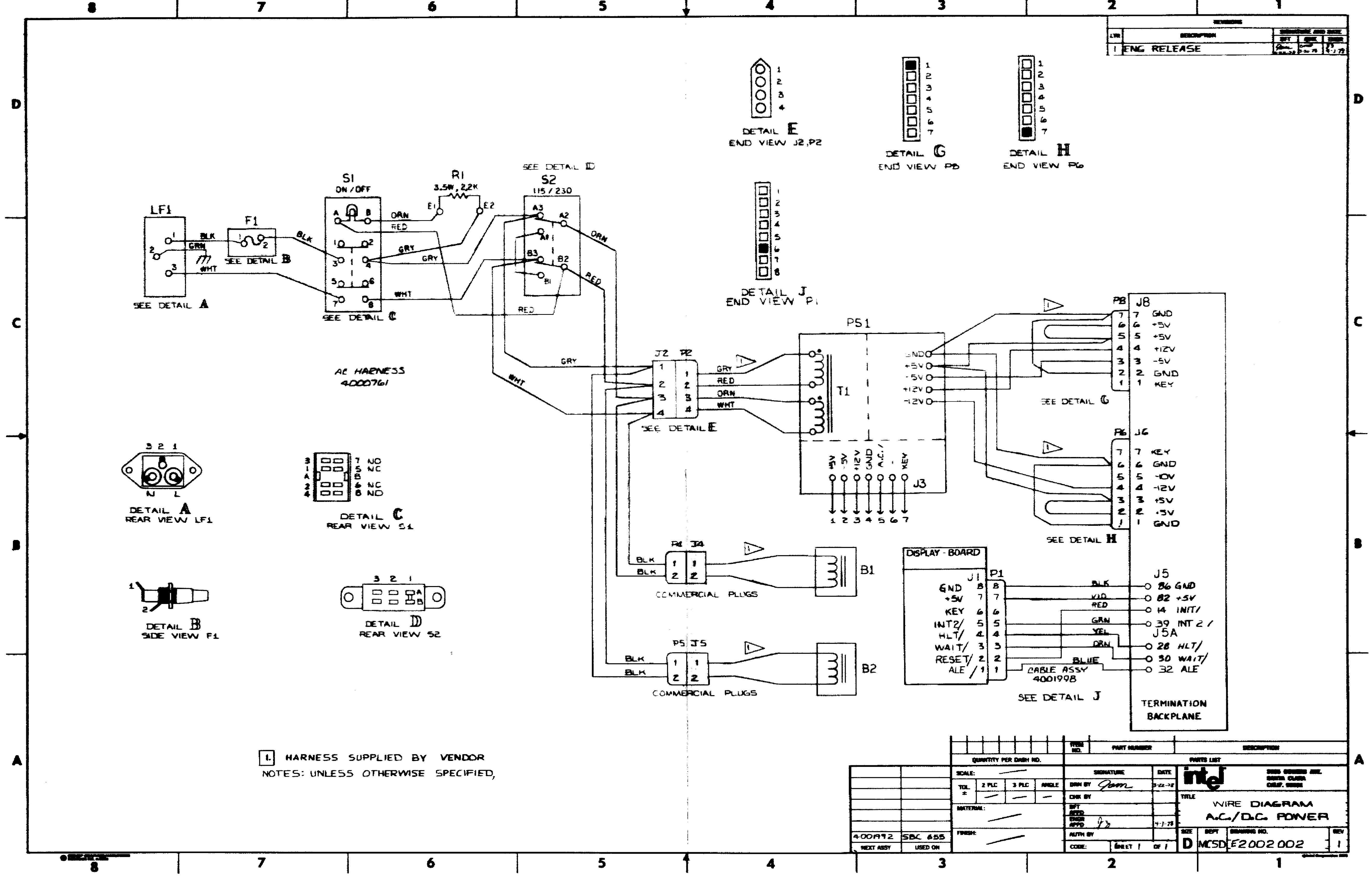


Figure 4-2. iSBC 655 Wiring Diagram

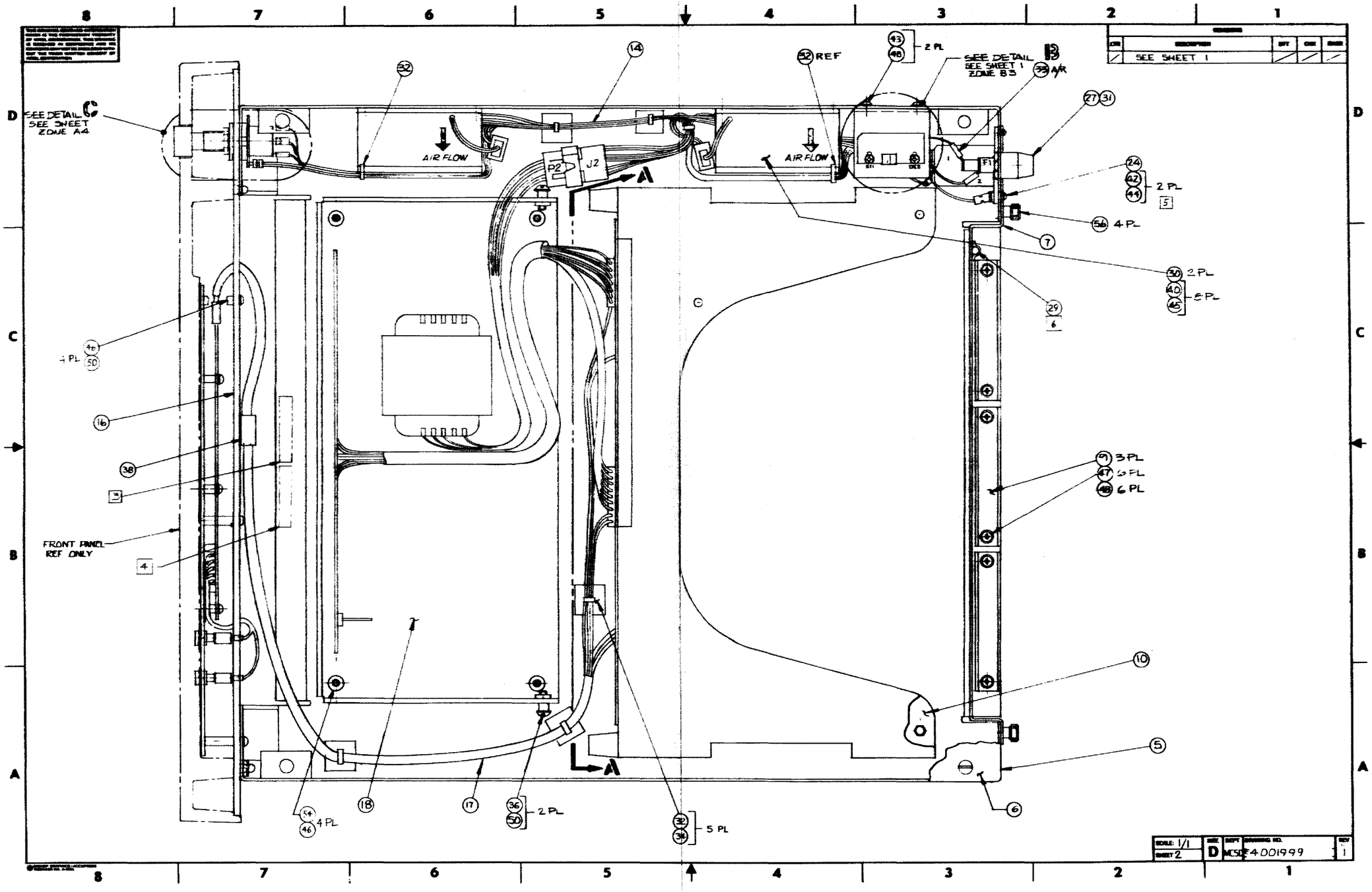


Figure 4-1. iSBC 655 Mainframe Assembly (Sheet 2 of 2)

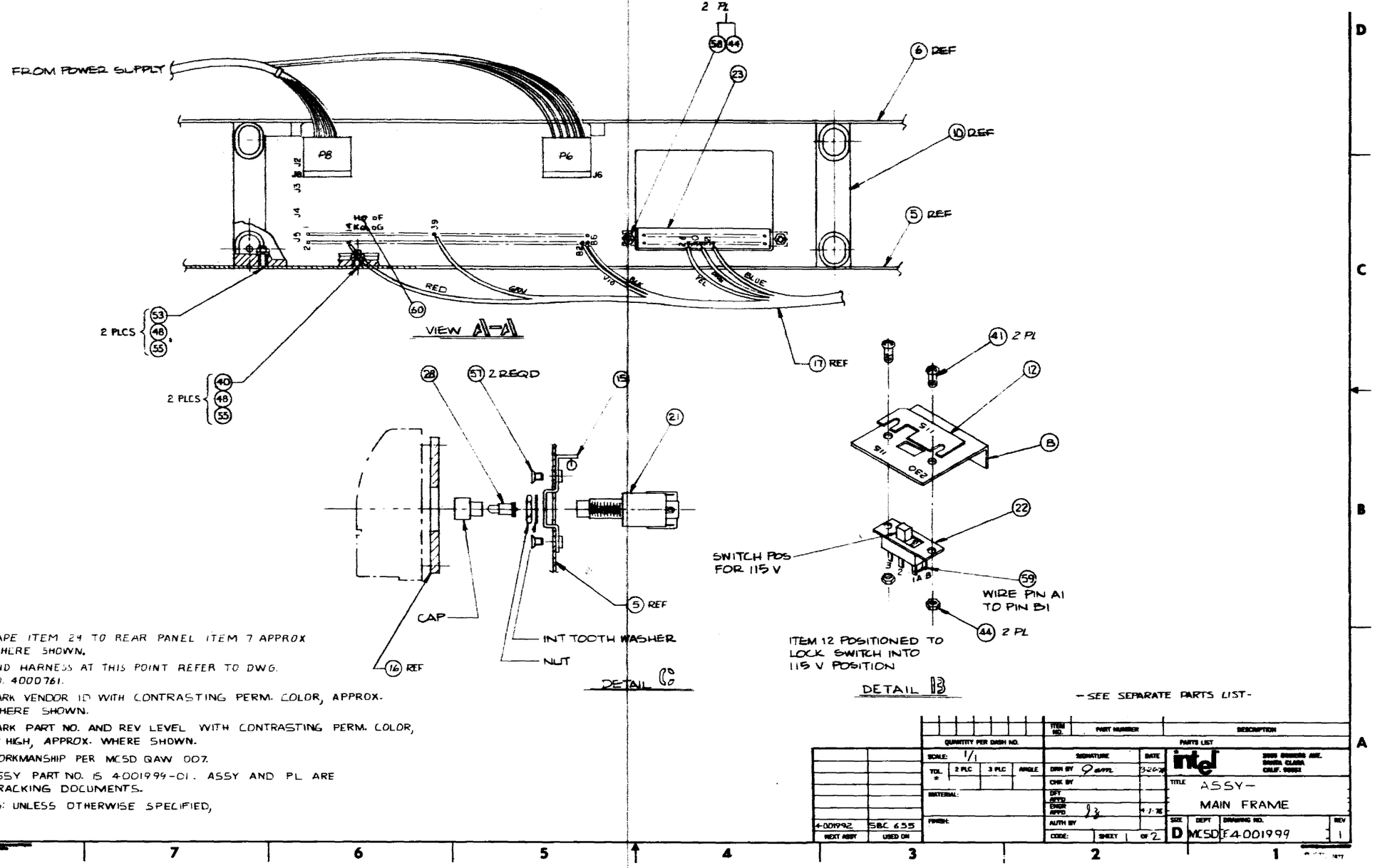


Figure 4-1. iSBC 655 Mainframe Assembly (Sheet 1 of 2)