

MODEL 8/32 CUSTOMER INSTALLATION MANUAL



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MODEL 8/32

CUSTOMER INSTALLATION MANUAL

1. INTRODUCTION

These specifications provide installation information for INTERDATA Model 8/32 Digital Systems.

The INTERDATA Model 8/32 Digital System features a highly modular structure which permits configuration to suit the user's exact needs. It provides the means for convenient expansion as the user's requirements increase. These specifications describe the Processor and Expansion chassis, power supply cabling and mounting, filler and Display Panel mounting, cooling, and the interconnecting cables. Integrated circuit boards are discussed with respect to cabling and location only. Circuit descriptions of these boards are provided in the appropriate maintenance or instruction manuals.

NOTE

The following discussion assumes that the equipment is mounted in standard INTERDATA cabinets.

2. UNPACKING

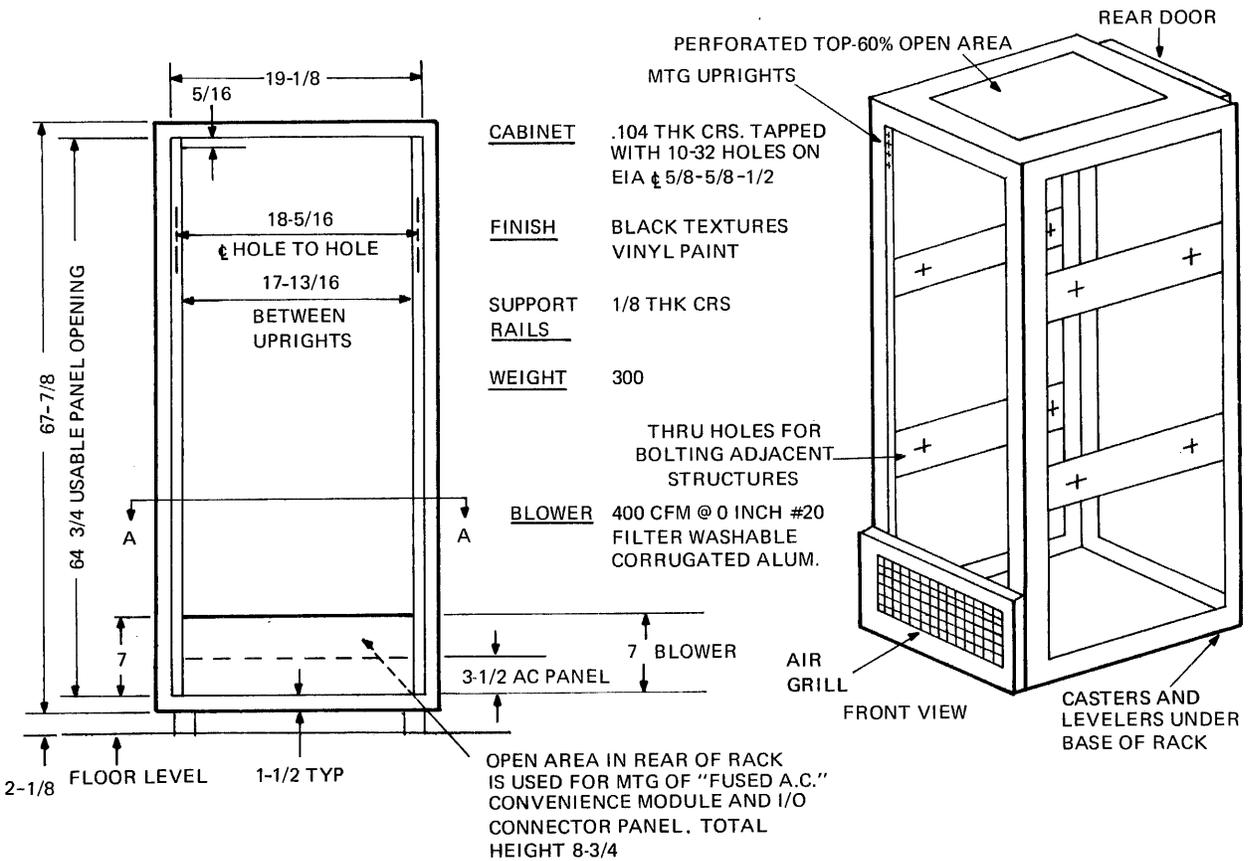
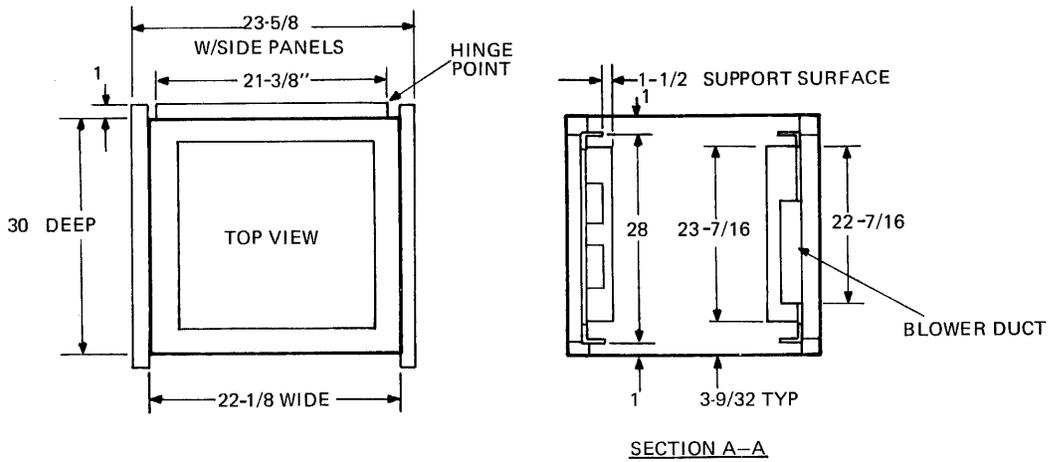
To avoid damage to the Model 8/32 or its peripherals, read the following procedures before starting an installation.

1. Carefully remove each component from its carton or crate, observing any special unpacking instructions included with the component.
2. Inspect all components for physical damage.
3. If the system is shipped from INTERDATA already rack mounted, check to insure that all terminals and connectors are secured properly.

3. MECHANICAL CONFIGURATION

3.1 Mechanical Components

Figures 1 and 2 illustrate the mechanical components of a typical INTERDATA Digital System. Dimensions and mounting information are provided for the System Cabinet, Chassis Support Rails, Display and Filler Panels. Note in Figure 2 that, while the 5¼ inch, 7 inch, 8¾ inch, 10½ inch Filler Panels, and the Display Panel mount the same way (via retaining brackets), the smaller 1¾ inch Filler Panel mounts with spring clips.



NOTE

All dimensions are in inches unless otherwise specified.

Figure 1. System Cabinet Physical Dimensions

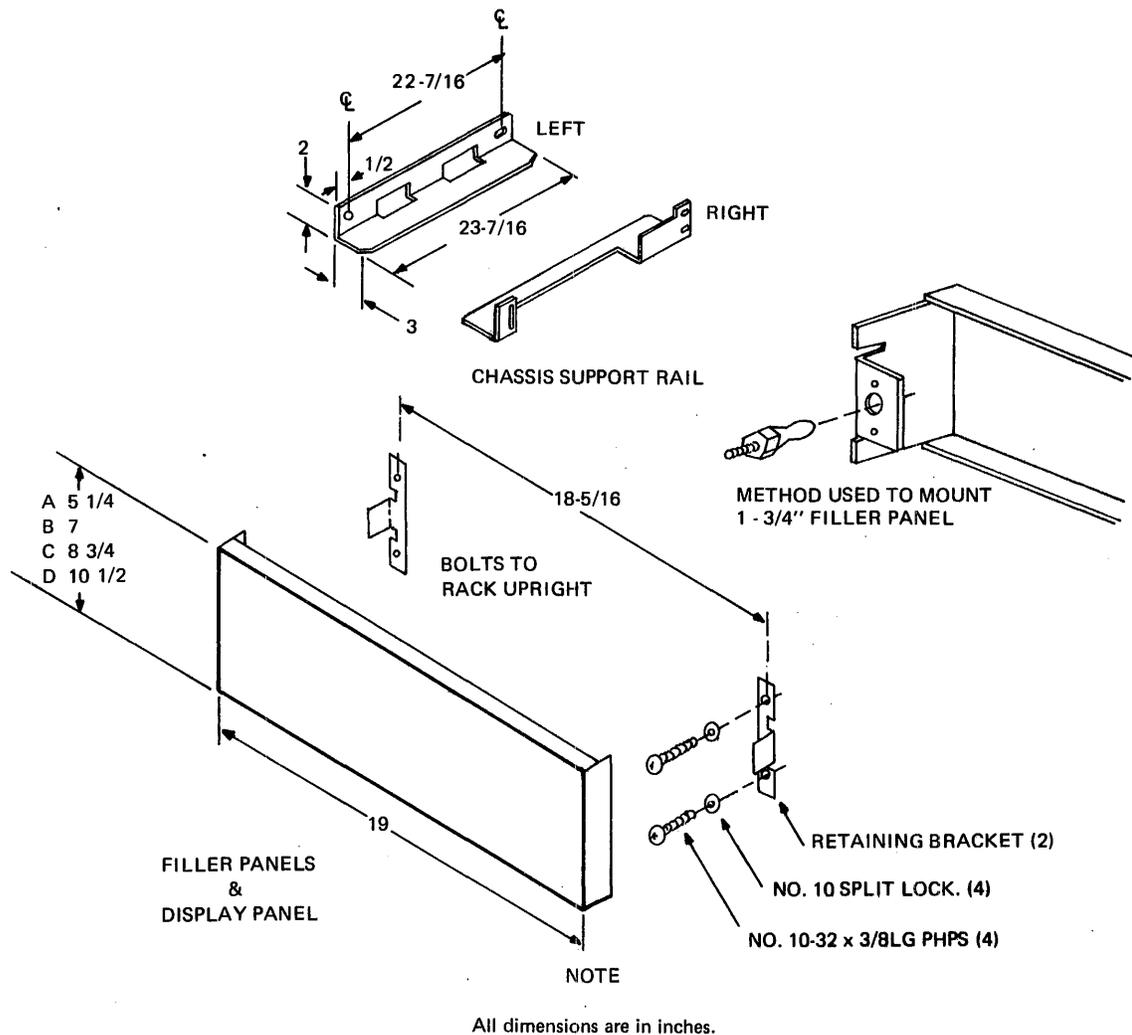


Figure 2. Typical Mounting Configuration for Display and Filler Panels

3.2 Cooling (See Figures 3 through 6.)

Cooling is accomplished by forced air at ambient room temperature, via a packaged blower located at the bottom of the cabinet (Figure 3). Distribution of air is accomplished by an internal plenum which is located along the right side of the cabinet opening (as viewed from the front). The air outlet from the blower enters directly into the bottom section of the plenum (Figure 4). The plenum contains seven removable covers located vertically in the appropriate spaces as illustrated by Figure 4.

The blower must be plugged into the AC panel at the rear of the cabinet, and the main circuit breaker on the AC panel must be in the ON position to power up the system.

The blower air switch located on the side of the plenum system (Figure 4) is wired per Figure 7.

It is recommended that the blower remain on for a minimum of five minutes after the Display Panel's LOCK-ON-OFF switch is turned to the OFF position.

The blower is shut off by the main circuit breaker on the AC power panel.

A removable and washable filter is located behind the air intake grille.

Two types of covers are provided, solid and perforated (see Figures 5 and 6). Solid covers are snapped in place at locations where there are no card files. Perforated covers are used in locations having an operating card file.

For the Basic Model 8/32 with no expansion, perforated covers are installed at Locations 4 and 5, and solid covers are installed in all other locations. If, at a later date, the first memory expansion is added, the solid covers at Locations 6 and 7 are replaced with perforated covers.

Two variations of blowers are available: 115VAC 50/60 Hz (36-025F01) and 220VAC 50 Hz (36-025F02).

NOTE

All dimensions are in inches.

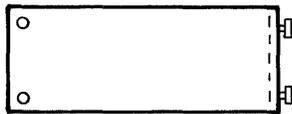
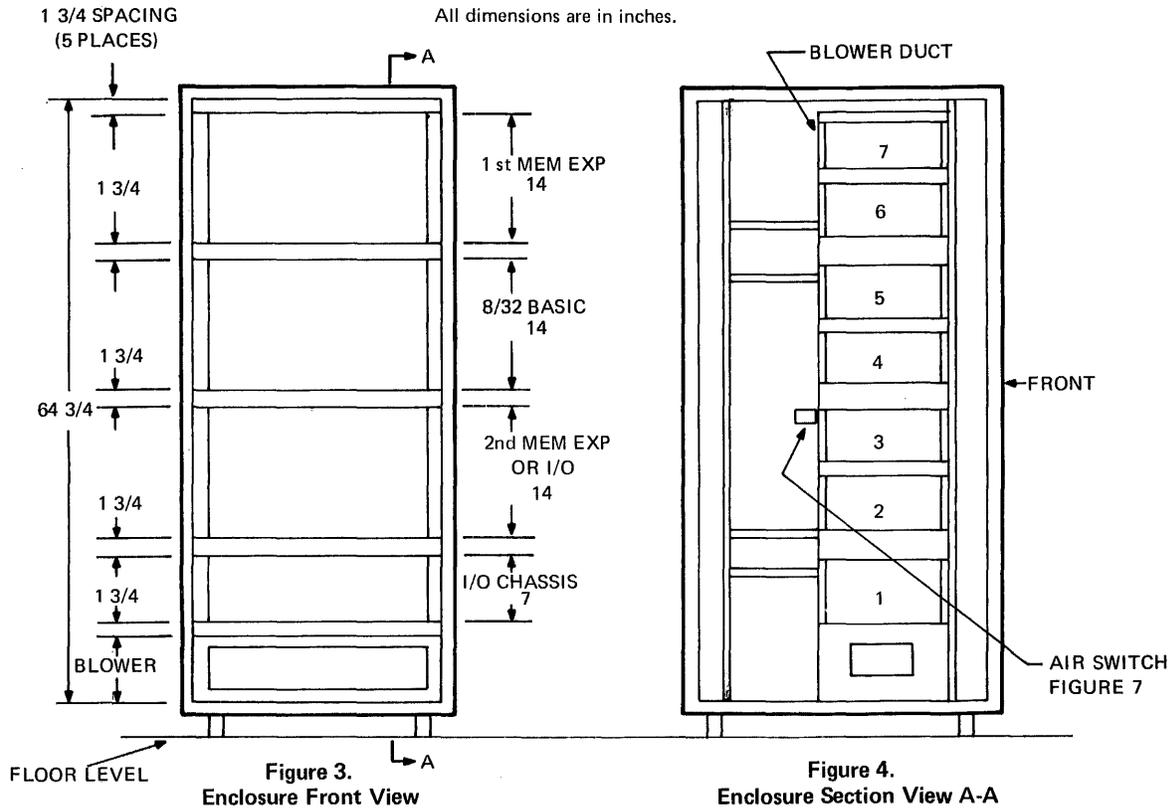
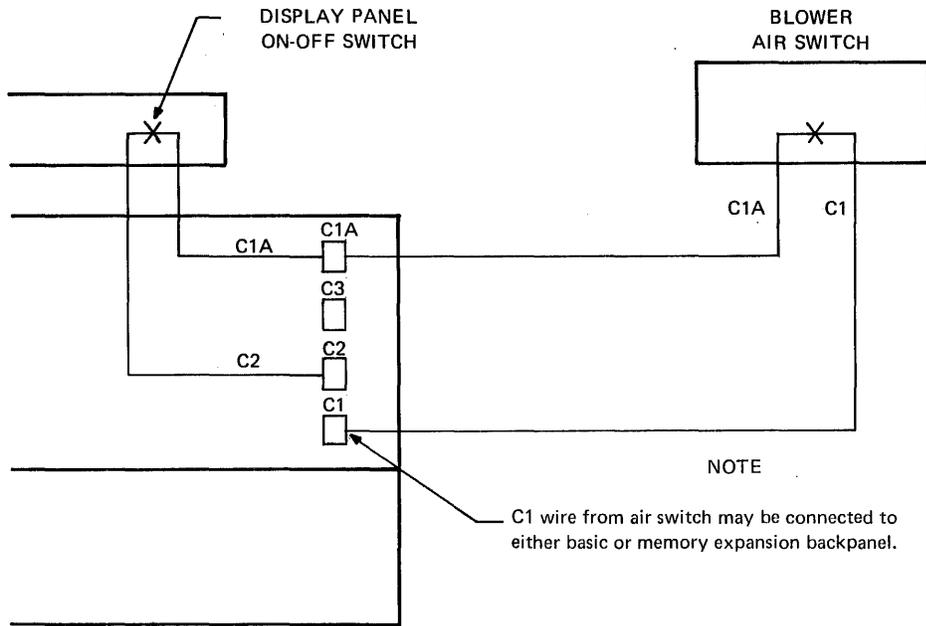


Figure 5. Blank Cover (Solid)



Figure 6. Duct Outlet Cover (Perforated)



4. POWER SUPPLY INSTALLATION

4.1 Introduction

This section describes the installation of the Model 8/32 Power Supply. Mounting information and cabling instructions are provided for the 34-024 Power Supply in various configurations.

4.2 Mounting

The power supplies mount directly behind the Processor and Expansion chassis (see Figure 8). They are attached to the right mounting upright (viewed from the rear). There is adequate slack in the power supply cable to allow the power supply to swing out. To prevent the cable from being pinched between the power supply and chassis support rails, a service loop is required.

WARNING

BEFORE SWINGING OUT THE POWER SUPPLIES, THE RACK LEVELING FEET SHOULD BE LOWERED. UP TO FIVE POWER SUPPLIES CAN BE SWUNG OUT AT ONE TIME AFTER THE LEVELERS ARE IN CONTACT WITH THE FLOOR SURFACE.

The power supplies may be swung in or out on their mounting pivots for easy access to the back plane. When they are in operating position, they are secured by two 10-32 screws which attach to the left mounting upright (viewed from the rear).

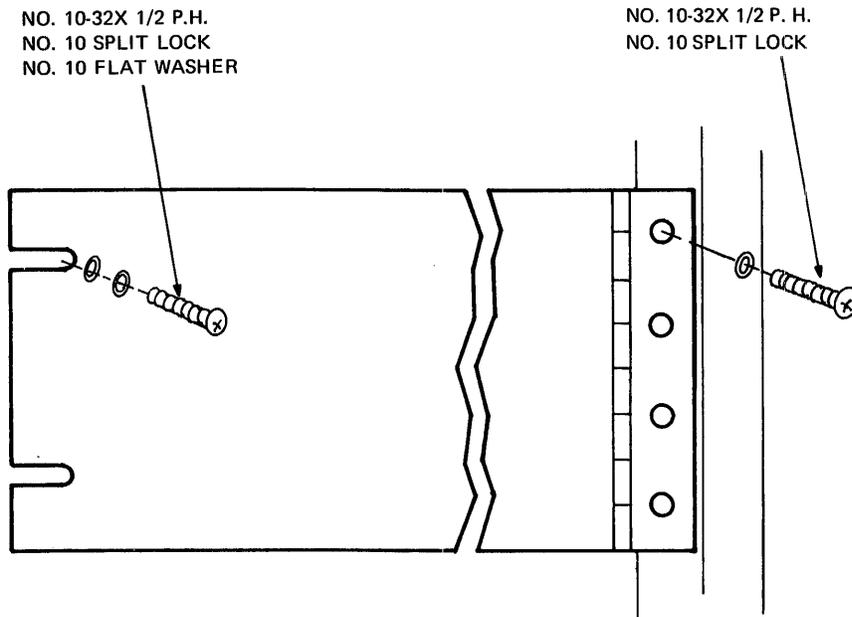


Figure 8. 34-024 Power Supply Mounting

4.3 Power Supply/Chassis Cabling

4.3.1 System Voltages. The Model 8/32 System requires three system voltages:

Mnemonic	Voltage
P5	+5V
P15	+16.5V
P15	-16.5V

Any other voltages locally generated are not considered system voltages.

4.3.2 34-024 System Power Supply. This standard INTERDATA Power Supply is used for all power requirements in the Model 8/32 System. All three outputs (P5, N15, and P15) are short circuit protected, and regulated to $\pm 1\%$ when normally loaded. P15 and N15 are overvoltage protected.

Refer to Switching Regulated Power Supply Manual, Publication Number 29-397 for installation and operating details.

4.3.3 Power Control. The power control circuit diagram for the Model 8/32 is shown in Figure 9. Leads C1 and C2 are the remote ON/OFF switch leads. All power supplies connected in this manner must be powered from the same AC phase. If different phases are used, it is not possible to turn OFF the supplies by the Display Panel ON/OFF/LOCK switch. In this event, additional control lines must be custom wired to the Display Panel ON/OFF/LOCK switch as shown in Figure 10 and power supply control lines must be grouped according to phase. C1 and C2 control one phase, C1B and C2B control a second phase, and C1C and C2C a third phase.

4.3.4 Primary Power Requirements. The 34-024 Power Supply is limited to operating at 115VAC or 230VAC $\pm 10\%$, 47 to 63 Hz.

NOTE

All supplies which power the Processor and memory expansion chassis must receive AC power of the same phase from a single circuit breaker.

Power requirements for each 34-024 Power Supply are:

- 115 VAC – 6.50 Amperes
- 230 VAC – 3.75 Amperes

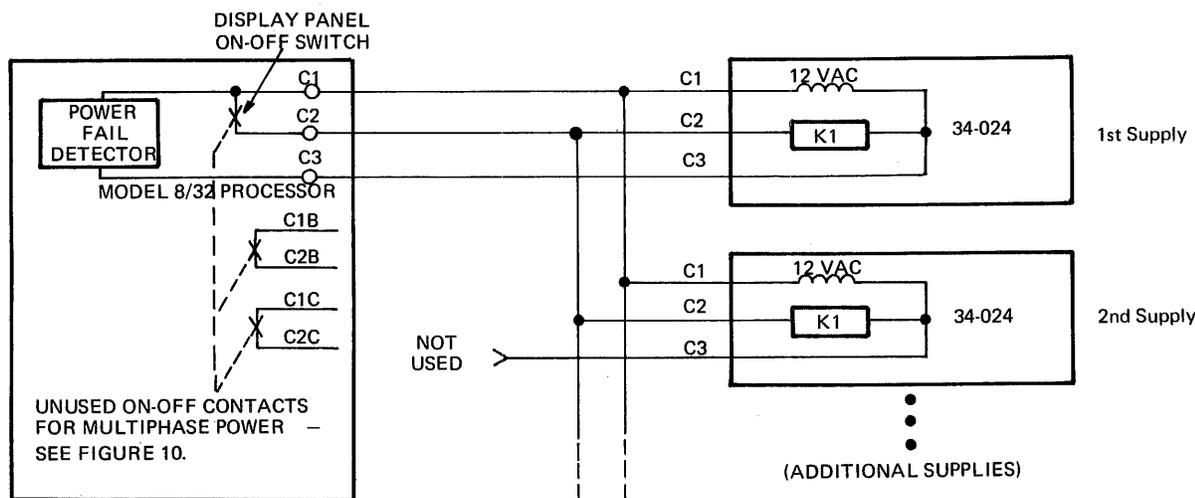


Figure 9. Power Control Circuit Diagram

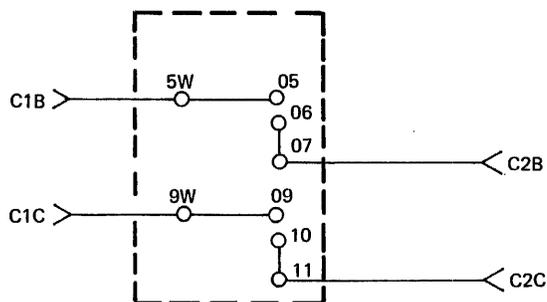


Figure 10. Wiring of the Second Deck of the Rotary Switch for Control of Different AC Phases

4.3.5 Conversion Procedure from 115 to 230 VAC Operation. The 34-024 Power Supply is shipped from the factory strapped for 115 VAC. To switch to 230 VAC operation, use the following procedure prior to mounting the Power Supply in the rack.

1. Remove the four screws and swing the hinged top and back panel open to expose Terminal Board 1 (TB1) on the front panel. (See Functional Schematic 34-024D08 in the Switching Regulated Power Supply Manual, Publication Number 29-397, for details.)

2. Ascertain that the TB1 terminals are strapped as indicated for 115 VAC operation.

1 to 2 3 to 4 5 to 6 8 to 9

3. Remove all four straps.

4. For 230 VAC operation, add the four straps to the following TB1 terminals:

2 to 3 (use two straps) and 4 to 5 (use two straps)

NOTE

Two straps are used for each connection to keep four straps available to convert back to 115 VAC operation, if required.

5. Reassemble the power supply by swinging the hinged top and back panel into place and replace the four screws.

4.3.6 Adjustments. All power system adjustments are made at the factory and should not require readjustment in the field. If readjustment becomes necessary, the recommended settings are given below.

Voltage Adjustments:

<u>Mnemonic</u>	<u>Voltage Setting</u>
P5	+ 5.1 Volts
P15	+16.5 Volts
N15	-16.5 Volts

Voltages should always be measured at the backpanel when making adjustments. These adjustments are made after disconnecting the tracking thermistors and placing a 1 K ohm $\pm 5\%$ resistor across the thermistor terminals.

Crowbar Adjustments (Overvoltage):

<u>Output Voltage</u>	<u>Firing Voltage Adjustment</u>
P15	19.5 Volts
N15	19.5 Volts

All firing voltages are measured at the back panel when making adjustments. These voltage adjusting potentiometers are accessed by removing the front panel of the power supply.

4.3.7 Configuration. In a Model 8/32 System, the minimum system configuration consists of one twin chassis and two standard INTERDATA 34-024 Power Supplies (Product Number M49-026). Figure 11 shows the power distribution of the basic system.

4.3.8 Installation. The installations for the various power systems are:

1. Connect the cables to the twin chassis; referring to one of the following figures, depending upon the configuration:
 - Basic 8/32 Processor with 128KB Memory (Figure 11).
 - Basic 8/32 Processor and First Memory Expansion Chassis with 256KB Memory (Figure 12).
 - Basic 8/32 Processor and First Memory Expansion Chassis with 384KB and 512KB Memory (Figure 13).
 - Basic 8/32 Processor, First and Second Memory Expansion Chassis with 640KB to 1024KB Memory (Figure 14).
 - Basic 8/32 Processor with Double Floating Unit and/or Writable Control Store (Figure 15).

Note that the memory expansion backpanel contains two sets of +15 and -15 VDC power busses, and in some configurations it is necessary to connect the busses with jumper cables.

2. Cables from the front of the chassis may be routed through the 1 3/4 inch space between chassis (see Figure 3). If there are any unused connectors, secure them to prevent shorting.

POWER SUPPLY LEADS	POWER SUPPLY NO. 1	POWER SUPPLY NO. 2				
CHASSIS BACK PANEL DESIGNATION						
P15	B	B				
N15	B	B				
(4) P5	A	B				
(3) GND	A	B				
GND (+15)	B	B				
TA	A	B				
TB	A	B				
C1	B	B				
C2	B	B				
C3	B	T. B.				
+L	A	T. B.				
LGND	A	T. B.				
FAN POWER	*T. B.	T. B.				

* T. B. - TIE BACK WIRE

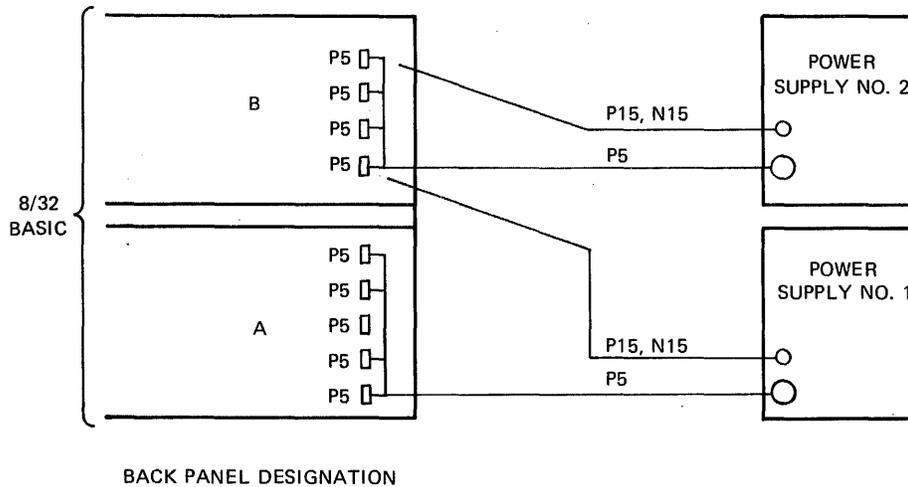
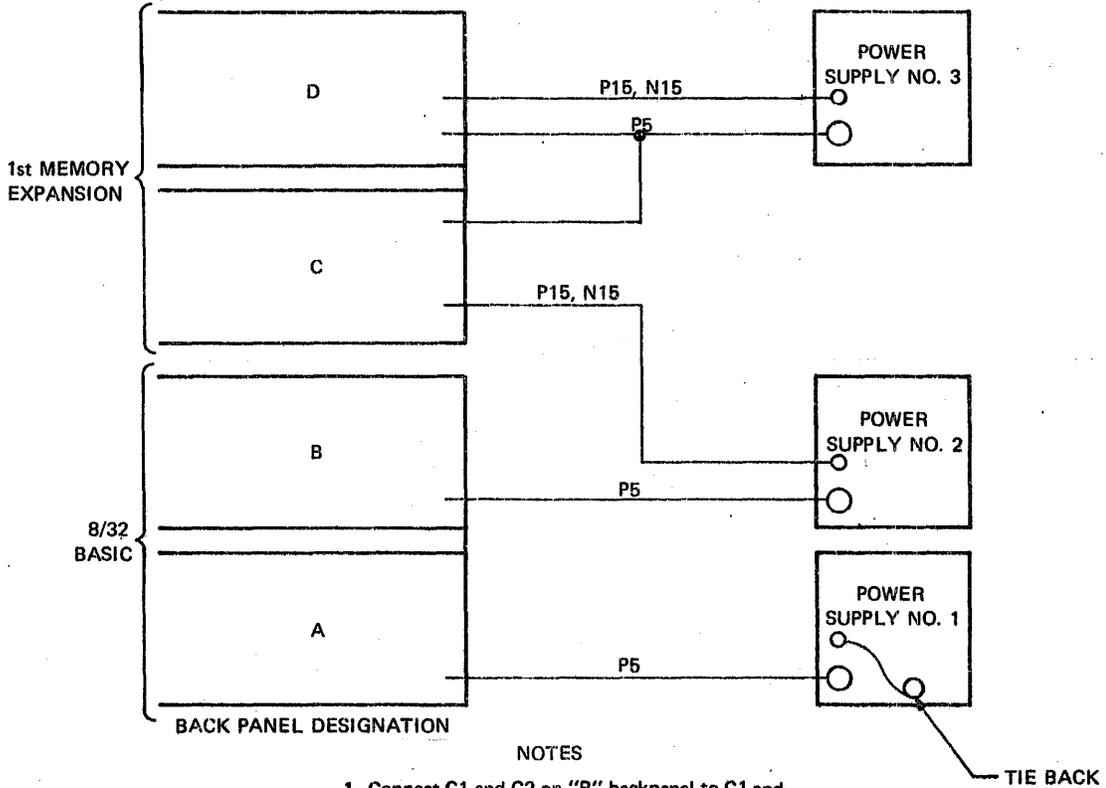


Figure 11. Basic 8/32 with 128 KB Memory Power Distribution

POWER SUPPLY LEADS	POWER SUPPLY NO. 1	POWER SUPPLY NO. 2	POWER SUPPLY NO. 3			
CHASSIS BACKPANEL DESIGNATION						
P15	T. B.	C	D			
N15	T. B.	C	D			
GND (I15)	T. B.	C	D			
P5	A	B	C			
P5	A	B	C			
P5	A	B	D			
P5	A	B	D			
GND	A	B	C			
GND	A	B	D			
GND	A	B	D			
TA	T. B. Note 2	C	D			
T.B.	T. B. Note 2	C	D			
C1 Note 1	B	B	D			
C2 Note 1	B	B	D			
C3	B	T. B.	T. B.			
+L	A	T. B.	T. B.			
LGND	A	T. B.	T. B.			
FAN POWER	T. B.	T. B.	T. B.			

* T. B. - TIE BACK WIRE



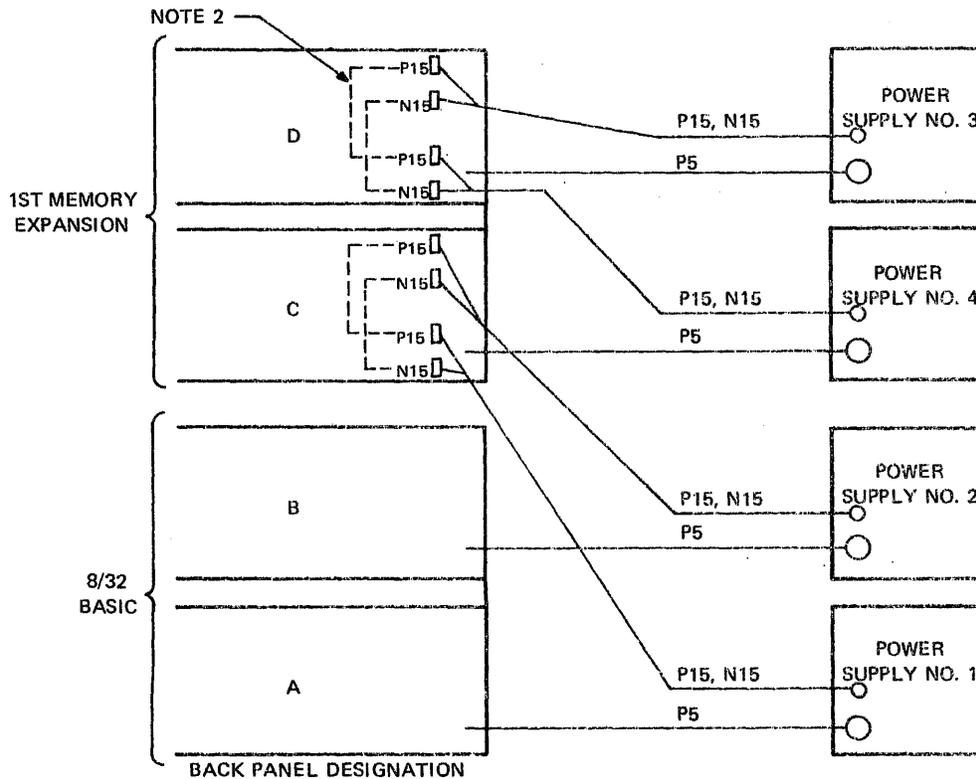
NOTES

1. Connect C1 and C2 on "B" backpanel to C1 and C2 on "D" backpanels with jumper wires 17-182.
2. P15 and N15 voltages on this Power Supply must be adjusted to within a range of 15 to 17.5 volts to prevent crowbars from triggering.

Figure 12. Model 8/32 with 256 KB Memory Power Distribution

POWER SUPPLY LEADS	POWER SUPPLY NO. 1	POWER SUPPLY NO. 2	POWER SUPPLY NO. 3	POWER SUPPLY NO. 4		
CHASSIS BACKPANEL DESIGNATION						
P15	C	C	D	D		
N15	C	C	D	D		
GND (I15)	C	C	D	D		
P5	A	B	D	C		
P5	A	B	D	C		
P5	A	B	D	C		
P5	A	B	D	C		
GND	A	B	D	C		
GND	A	B	D	C		
GND	A	B	D	C		
TA	C	C	D	D		
TB	C	C	D	D		
C1 Note 1	B	B	D	C		
C2 Note 1	B	B	D	C		
C3	B	T. B.	T. B.	T. B.		
+L	A	T. B.	T. B.	T. B.		
LGND	A	T. B.	T. B.	T. B.		
FAN POWER	T. B.	T. B.	T. B.	T. B.		

* T. B. - TIE BACK WIRE



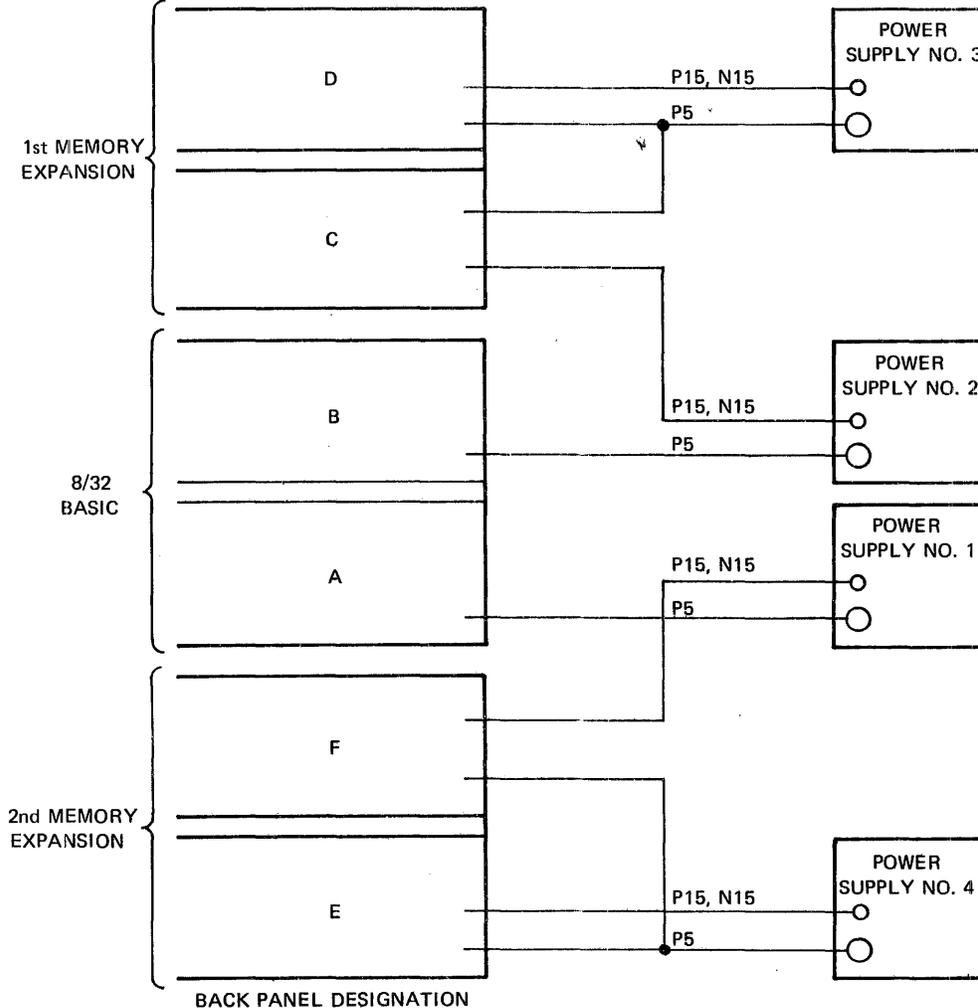
NOTES

1. Connect C1 and C2 on "B" backpanel to C1 and C2 on "C" and "D" backpanels with jumper wires 17-182.
2. Remove P15 and N15 jumpers on backpanel "C" and "D".

Figure 13. Model 8/32 with 384 KB and 512 KB Memory Power Distribution

POWER SUPPLY LEADS	POWER SUPPLY NO. 1	POWER SUPPLY NO. 2	POWER SUPPLY NO. 3	POWER SUPPLY NO. 4		
CHASSIS BACK PANEL DESIGNATION						
P15	F	C	D	E		
N15	F	C	D	E		
GND (+15)	F	C	D	E		
P5	A	B	D	E		
P5	A	B	D	E		
P5	A	B	C	F		
P5	A	B	C	F		
GND	A	B	D	E		
GND	A	B	C	F		
GND	A	B	C	F		
TA	F	C	D	E		
TB	F	C	D	E		
C1	B	B	D	E		
C2	B	B	D	E		
C3	B	T. B.	T. B.	T. B.		
+L	A	T. B.	T. B.	T. B.		
LGND	A	T. B.	T. B.	T. B.		
FAN POWER	*T. B.	T. B.	T. B.	T. B.		

*T.B. - TIE BACK WIRE



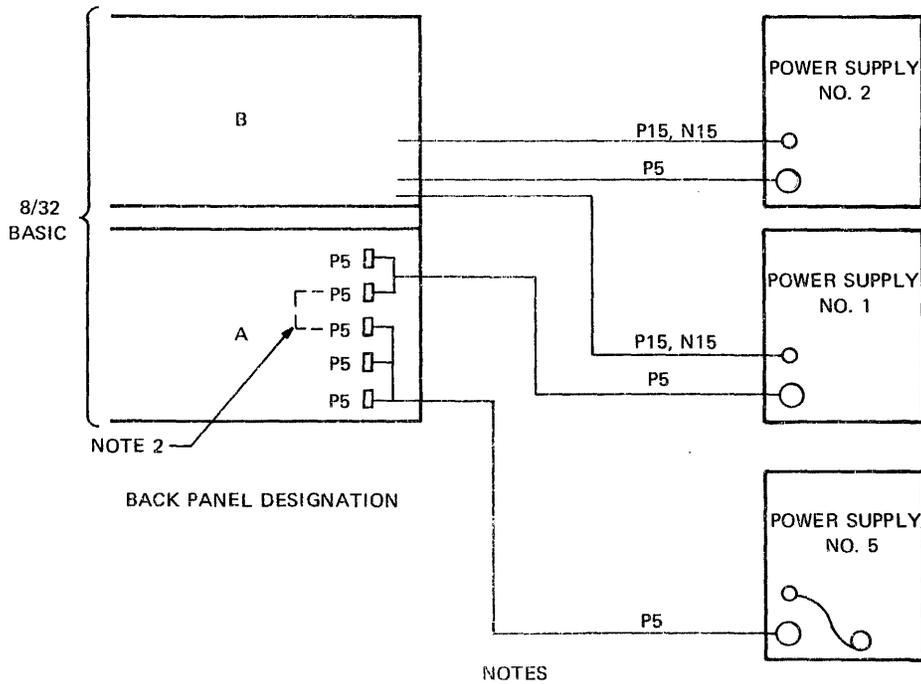
NOTE

Connect C1 and C2 on "B" backpanel to C1 and C2 on "D" and "E" backpanels with jumper wires 17-372.

Figure 14. Model 8/32 Power Wiring for 640KB to 1024KB Power Distribution

POWER SUPPLY LEADS	POWER SUPPLY NO. 1	POWER SUPPLY NO. 2	POWER SUPPLY NO. 3	POWER SUPPLY NO. 4	POWER SUPPLY NO. 5	
CHASSIS BACKPANEL DESIGNATION						
P15					T. B.	
N15					T. B.	
GND(I15)					T. B.	
P5					A	
P5					A	
P5					A	
P5					A	
GND					A	
GND					A	
GND					A	
TA					T. B. Note 1	
TB					T. B. Note 1	
C1					B	
C2					B	
C3					T. B.	
+L					T. B.	
LGND					T. B.	
FAN POWER					T. B.	

* T.B. - TIE BACK WIRE



NOTES

1. P15 and N15 voltages on this Power Supply must be adjusted to within a range of 15 to 17.5 volts to prevent crowbars from triggering.
2. Remove P5 jumper on backpanel "A".

Figure 15. Model 8/32 Basic with Double Floating Unit and/or Writable Control Store Power Distribution

5. PROCESSOR AND EXPANSION CHASSIS INSTALLATION

5.1 Installation

For different memory expansions, it is possible to have from one to three twin chassis in the Model 8/32 System (located as shown in Figure 3). Figures 11 through 15 show the three possible configurations.

Prior to mounting the chassis, replace the appropriate solid covers on the plenums with perforated covers (see Section 3.2).

The 8/32 Basic System and its memory expansions must always be mounted in a cabinet that is equipped with a blower and plenum. It must be configured as shown in Figure 3. These chassis do not have chassis fans. (Seven inch and 14 inch chassis with fans are not to be used.) When 7 inch I/O chassis without fans are to be mounted in this cabinet, they must be installed in positions where duct covers are located (see Figure 3).

CAUTION

IF A CABINET OTHER THAN AN 09-069 INTERDATA CABINET IS USED, THE USER MUST SUPPLY HIS OWN FORCED AIR COOLING SYSTEM.

To mount a chassis, slide the chassis into the rack on the chassis support rails from the front of the rack (see Figures 1 and 2).

CAUTION

NO CHASSIS SHOULD BE MOUNTED IN CANTILEVER FASHION. CHASSIS SUPPORT RAILS MUST BE USED. IF A RACK CABINET OTHER THAN AN INTERDATA IS USED, CONSULT THE RACK MANUFACTURER FOR PROPER SUPPORT RAILS.

The chassis support rails are fastened to the mounting uprights of the front and rear of the rack. The Expansion and Processor chassis are screwed in place at the mounting uprights in front of the rack.

5.2 Basic Processor Configuration and Cabling

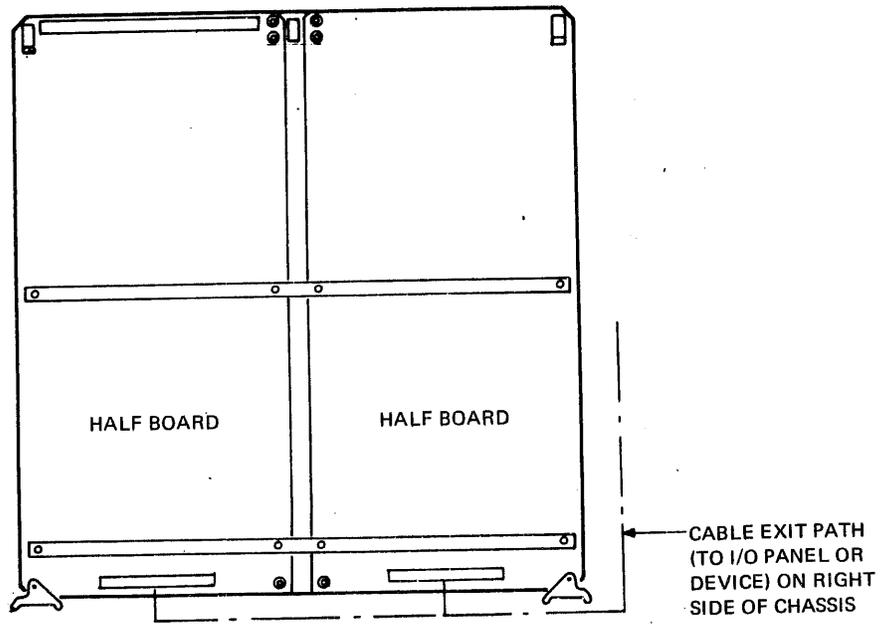
The basic Model 8/32 with 128KB of memory is comprised of:

1.	4 each 32-198 32KB core modules	Upper Slots 2, 4, 5, and 7
2.	2 each 35-534 LMI	Upper Slots 3 and 6
3.	1 each 35-535 MBC	Upper Slot 1
4.	1 each 35-536 CPA	Upper Slot 0
5.	1 each 35-537 CPB	Lower Slot 7
6.	1 each 35-555 CPC	Lower Slot 6
7.	1 each 35-538 ALU	Lower Slot 4
8.	1 each 35-539 IOU	Lower Slot 3

Lower Slot 5 is reserved for the optional Double/Precision Floating-Point Unit (DFU). Lower Slots 0, 1, and 2 are reserved for I/O. Either full or halfboard I/O may be plugged into these slots. One or two 7 inch halfboards may be inserted into the 15 inch chassis via the 16-398 Half Board Adaptor Kit (see Figure 16). The Half Board Adaptor Kit may hold two active 7 inch boards or one active and one blank 7 inch board, depending on requirements. A 10 inch I/O Controller (provided it does not use Connector 1) may be inserted via the 02-234 I/O Adaptor Kit (see Figure 17). No wiring takes place between the boards and the adaptors. The adaptors are assigned such that the connectors on the boards plug directly into the chassis.

Figure 18 is a configuration of the Basic Processor chassis as viewed from the Display Panel side. It correlates applicable cables to the associated Processor connectors and Table 1 lists the function of each cable.

Figure 19 depicts the Basic Processor Chassis as viewed from the back plane. Shown here are the 35-578 Local Memory Bus (LMB) Terminator, the 35-596 Control Address (CA) Terminator, the 17-336 EDMA Cable Assembly, and the 35-569 Processor Terminator. Note that one end of the 17-336 Cable Assembly has a terminator card. This end of the cable must always be installed on upper Slot 1, Connector 1 side. The other end of 17-336 is shown connected to lower Slot 2, Connector 1 side but may also be connected to lower Slots 0 or 1.



NOTE

35-398 half board can be located on either side.

Figure 16. 16-398 Half Board Adapter

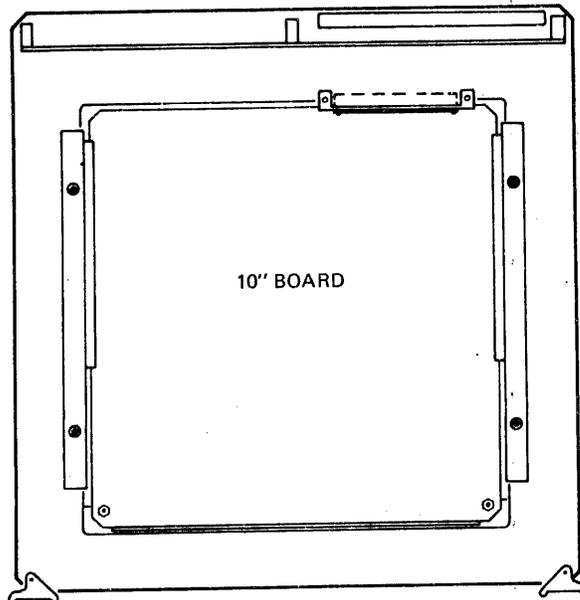
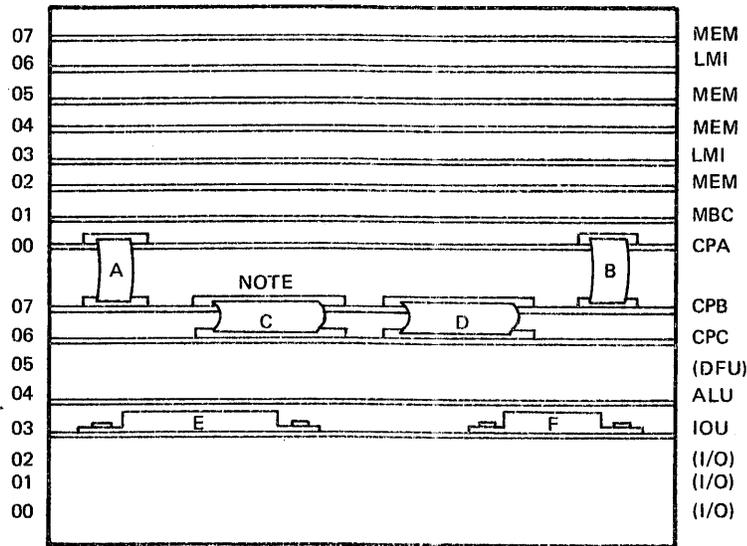


Figure 17. 02-234 I/O Adapter (Top View)



NOTE
Optional on Writable Control Storage (WCS)

Figure 18. Basic Processor; Front View

TABLE 1. PROCESSOR CABLES

LOC.	CONNECTOR #	CABLE	FUNCTION	TYPE
A	CPU5	17-361	USER SOURCE/DEST. REG. ADDR.	RIBBON
B	CPU2	17-361	B.S. REG. ADDR.: MC FIELD	RIBBON
C	CPU4	17-360	CONTROL STORE DATA	RIBBON
D	CPU3	17-360	CONTROL STORE ADDR.: A,B,S	RIBBON
E	IOU3	17-152 ASSY.	DISPLAY	BUNDLED WIRE
F	IOU2	17-180	TTY	BUNDLED WIRE

5.3 Processor Strap Options

Several Processor boards have strappable options which are described in the following paragraphs. Refer to Section 7 for information on memory system strap options.

5.3.1 35-536 CPA; Base Register Selection. The Base Register (BR) address is selected via three straps at IC location 05J on the CPA board. The following table indicates the possible starting locations and their respective strapping instructions. The standard address is X'300'.

STARTING LOCATION	05J11 TO	05J13 TO	05J15 TO
X'300'	05J06	05J03	05J01
X'500'	05J05	05J04	05J01
X'700'	05J06	05J04	05J01
X'900'	05J05	05J03	05J02

5.3.2 35-537 CPB; Privileged/Illegal Straps. Depending upon system options, one of three straps must be included to properly service the illegal instruction interrupt. The straps are located at IC location 03D and the following table indicates the proper strap for each option. The standard strap is 03D02 to 03D14.

OPTION	03D02 TO
BASIC 8/32	03D15
SGL. PREC. FLT. PT.	03D14
DBL. PREC. FLT. PT.	03D13

If the Writable Control Store (WCS) option is added, a different PRIV/ILLEG ROM must be used; however, the straps are the same.

Clock Switches. The Processor runs with two clock speeds and CPB is equipped with an octal switch at IC location 15E to accommodate marginal testing, nominal or normal mode, and extender board testing. Switch Positions 1 through 4 are for the faster Processor clock and Positions 5 through 8 for the slower clock. The following table indicates the use of each switch position. Boards should normally have Position 2 and Position 6 closed.

SWITCH POSITION	USE
1	MARGINS
2	NOMINAL
3	SLOW NOMINAL
4	EXTENDER BOARD
5	MARGINS
6	NOMINAL
7	EXTENDER BOARD
8	SLOW NOMINAL

5.3.3 35-538 ALU Clock. There are four wire wrap stakes located at the front of the ALU board which provide for three ALU clock speeds. The following diagram and table indicate the location of the stakes and the approximate clock rates for each tap respectively. The ALU should normally be strapped for nominal clocks (60 + 2 nanoseconds).

100 - 6	•	CLK		
101 - 6	•	MRG	MRG	56 nanoseconds
102 - 6	•	NOM	NOM	60 nanoseconds
103 - 6	•	NOMA	NOMA	62 nanoseconds

TTY Address. Normally strapped for X'02', the TTY address may be modified to X'82'. The following table correlates the strap position to the TTY address.

TTY ADDR	03J10 TO
X'02'	03J11
X'82'	03J09

6. DISPLAY PANEL INSTALLATION

The Model 8/32 Display Panel is electrically tied to the Processor via a connector and Faston lugs. The connector is installed on Connector 3 of the 35-539 IOU board and the terminal lugs mate into a terminal strip on the left side of the Processor chassis. The terminal lugs are identified at the Faston connector and are mated to their corresponding terminal pin (C1, C2, etc.) on the chassis. The Display Console is physically mounted to the brackets provided on the Processor chassis.

7. MEMORY INSTALLATION AND EXPANSION

7.1 First Memory Expansion (up to 512KB)/Cabling

Memory may be expanded beyond 128KB, in increments of 128KB, up to 512KB in one Expansion chassis. Each 128KB increment requires the addition of four 32-198 32KB memory modules. If expansion beyond 512KB is desired, a second Expansion chassis is required.

Refer to Figure 20. All memory modules up to a maximum of 512 KB are installed in the Expansion chassis above the Basic Processor chassis. The MBC is installed in upper Slot 1 of the Processor chassis and the two LMI modules are installed in upper Slots 3 and 6 of the Processor chassis. Upper Slots 2, 4, 5, and 7 remain blank. The first Memory Expansion chassis accommodates memory of 256KB, 384KB, and 512KB.

7.2 Second Memory Expansion

A second Memory Expansion chassis is required for memory size greater than 512KB. Up to 1MB of memory may be accommodated with two Expansion chassis.

Refer to Figure 14. All memory modules are installed in the two Memory Expansion chassis, one located above and one below the Basic Processor chassis. The MBC module is installed in upper Slot 1 of the Processor chassis and the two LMI modules are installed in upper Slots 3 and 6 of the Processor chassis. Upper Slots 2, 4, 5 and 7 remain blank.

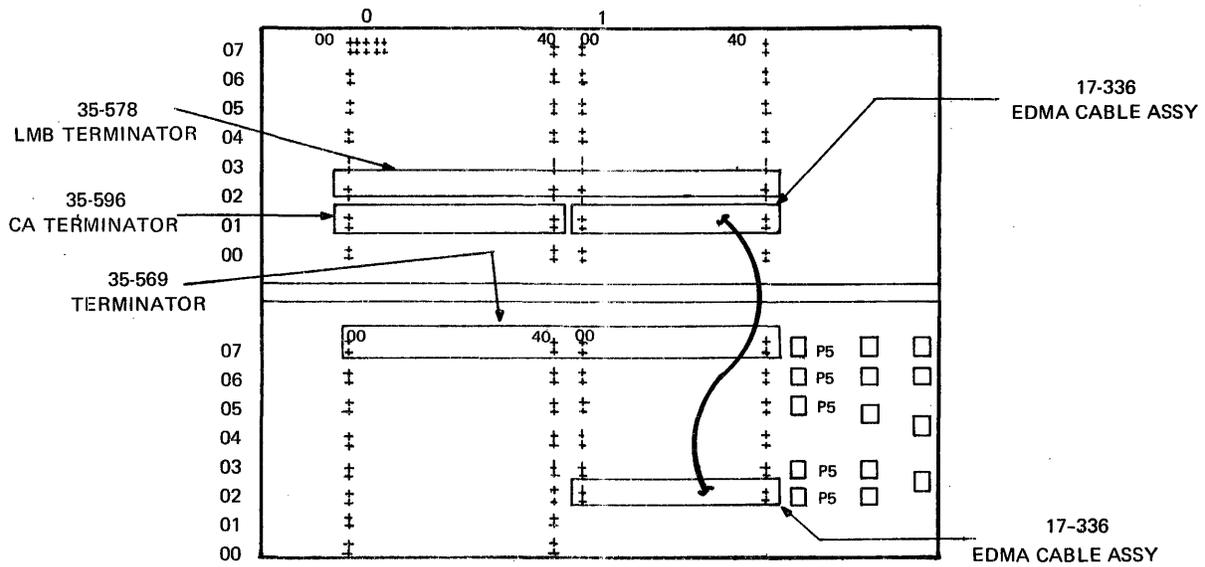


Figure 19. Basic Processor – Rear View

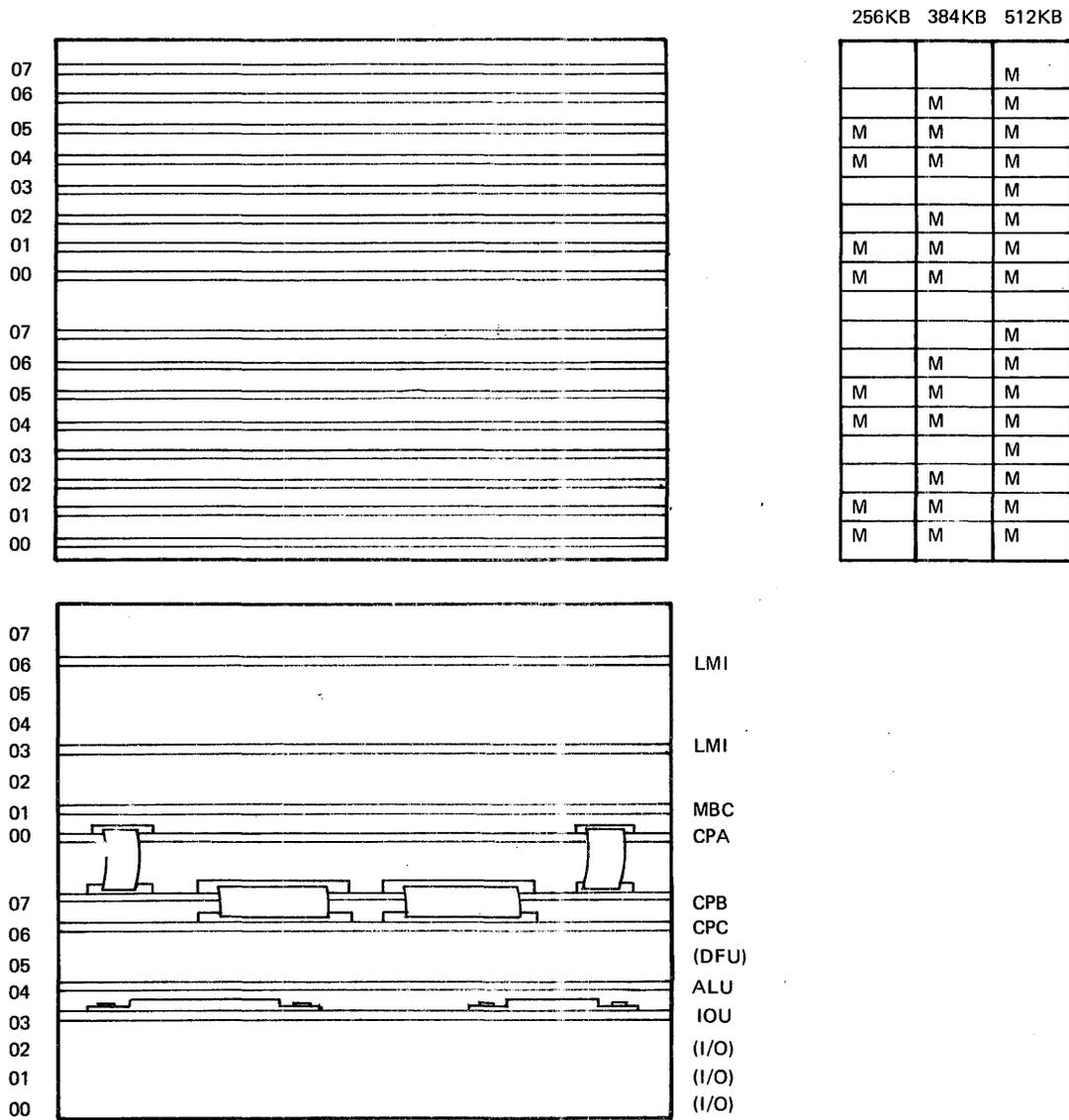


Figure 20. Front View of Processor Configuration with First Memory Expansion

8. CONFIGURATION

8.1 Basic Chassis I/O

The Processor Multiplexor Bus is capable of driving 14 loads (not including the built-in Teletype and Display interfaces). The overall length of the bus is not to exceed the three copper slots available in the basic chassis, plus a 36 inch cable, plus 16 copper slots, plus a 17-183 or a 17-224 or a 5 inch cable.

Within the Basic 8/32 chassis three I/O slots are available (lower Slots 0, 1, and 2). These have been defined as follows:

The Connector 1 side is reserved for private I/O only.

The Connector 0 side may contain half-board I/O, ESELCH, or Mux Bus Buffer.

Up to two ESELCHs/MBFRs may be installed in these three slots. However, if an ESELCH is installed in Slot 2, the controller must be installed in Slot 1. If an ESELCH is installed in Slots 1 and/or 0, the controllers may be anywhere within reach of a 36 inch cable.

Note that within the basic chassis, a fullboard I/O cannot run off of the Processor Mux Bus.

8.2 System Expansion Chassis

When configuring a multi-chassis system there are four rules that must be followed:

1. The system Expansion chassis must be mounted below the basic Processor chassis, or in an adjacent rack.
2. All chassis must be contiguous.
3. All 15 inch system Expansion chassis must be mounted above any 10 inch system Expansion chassis.
4. Multiboard peripheral device controllers (on 10 inch circuit boards) can only be used in the 10 inch system Expansion chassis.

8.3 Circuit Board Distribution

Model 8/32 Digital Systems may be configured in a variety of ways. However, the following factors must be considered when determining circuit board distribution within the basic Processor and the system Expansion chassis.

1. The Extended Selector Channel can be placed in Slots 6, 4, 2, or 0 of the system Expansion chassis, or Slots 0, 1, or 2 of the Basic Processor chassis. Use only the 35-508M00R12 or the 35-508M01R00 ESELCH Card.
2. All slots on Connector 1 below the position where the ESELCH is inserted become ESELCH Bus slots. (This only applies within the back panel containing the ESELCH.) The ESELCH Bus extends down the right side connectors (rear view). Note that all device controllers on 10" adapter boards connect the Multiplexor Bus from left side connectors (rear view). Therefore, these device controllers may be inserted in vacant ESELCH Bus slots, but are not on the ESELCH Bus. This also applies to all 7 inch boards on adapters, installed on the left side.
3. The ESELCH Bus can be extended by cable to any even numbered slot in an I/O chassis. In this case, the I/O Multiplexor Bus must be cut between the even numbered slot and the slot above it.
4. All device addresses are hard-wired on the device controller cards, (device addresses may be changed at option) so that the distribution of I/O device controllers in the chassis normally need be considered as a matter of priority in the RACK0/TACK0 "daisy-chain" and convenience.
5. The 7 inch system Expansion chassis, and the Basic Processor chassis may only be used for single board I/O device controllers unless the interconnection between boards takes place via cables installed on the outer edge of the board. For multi-board 10 inch device controllers, the 10 inch system Expansion chassis must be used.
6. The interrupt priority of a given device controller is determined by its physical location on the serial RACK0/TACK0 line. Refer to 8.3 Interrupt Priority Back Panel Wiring to determine which physical location has what priority. When deciding which devices should have a higher or lower priority, devices that must be serviced in a specific amount of time or loss of data access occurs, should be given a higher priority than a device with a high interrupt rate but no data loss if not serviced.

8.4 Interrupt Priority Back Panel Wiring

The Acknowledge Control line from the Processor carries the interrupt Acknowledge (ACK) signal. This line breaks up into a series of short lines to form the "daisy-chain" priority system. The ACK signal must pass through every controller that is equipped with interrupt control circuits. Back plane wiring for interrupt control at a given position is: The Received ACK (RACK0) at Pin 122-0 or 1 and the Transmitted ACK(TACK0) at Pin 222-1 or 0. The daisy-chain bus is formed by a series of isolated lines which connect Terminal 222-1 or 0 of a given position to Terminal 122-1 or 0 of the next position (lower priority). On unequipped positions, a jumper shorts 122-1 or 0 and 222-1 or 0 of the same connector to complete the bus. Back panels are wired with jumpers on all positions. Whenever a card chassis position is equipped with a controller that has an interrupt capability, the jumper from 122-1 or 0 and 222-1 or 0 must be removed from the back plane at that position.

On the IOU board location in the Processor chassis, the daisy-chain starts at one of 127-0, 128-0, 129-0 or 130-0 terminals (Slot 3) and normally goes to the Console TTY RACK0, Terminal 137-1 of the same slot. The TTY TACK0 (237-1) is wired to Pin 122-0 at Slot 2 and continued through the I/O slots as described previously.

Figure 22 shows the standard interrupt priority wiring to resolve conflicts in attention requests, queued on the same RACK0/TACK0 "daisy chain." The arrows indicate the direction of priority from the highest priority to the lowest. By changing the wires crossing from Side 0 to Side 1 of the Processor and/or Expansion panels, interrupt priorities may be rearranged. An example of this is shown in Figure 23, Modified Interrupt Priority. Slot 3 on Side 1 of the Processor panel has the highest priority. When Extended Selector Channels (ESELCHs) are installed, the standard interrupt priority must be modified. Refer to Figure 24 Interrupt Priority with ESELCH installed. The Multiplexor Bus may be restored to the remaining slots on Side 1 that are not used for the private ESELCH Bus. This may be accomplished by using the 17-183 cable. To prevent this, install the ESELCH as low as possible in the chassis.

For controllers that occupy several positions, the jumper is removed only at the position where the controller board has ATN/ACK circuits. For details on the various devices, see the appropriate installation specification.

8.5 Terminators

35-433: I/O Bus Terminator. Install one on the transmit end of a 36 inch cable and install one at the end of the Processor Mux Bus.

35-548: EDMA Bus Terminator, Connector 1. Install at the end of the EDMA Bus.

35-572: EDMA Bus Terminator, Connector 1. Install at the end of the EDMA Bus.

8.6 Multilevel External Interrupts

1. The 8/32 is capable of acknowledging four levels of external interrupts. Associated with each interrupt level is an Attention (ATN) line and a priority chain (RACK0/TACK0).
2. The four Attention lines (ATN000:030) located on CPB (lower Slot 7) are wired to the OR-tied Attention lines of the device controllers (or external Processor).
3. The four Acknowledge lines (ACK000:030) located on the IOU (lower Slot 3) are the source of the priority chain.
4. ATN/ACK levels must not be crossed. That is, ATN000 must be OR-tied to ATN line of those devices in the ACK000 priority chain. Similarly, ATN010 must be in the ACK010 priority chain, etc.
5. Standard 8/32 backplane wiring is as follows:
 - ATN000 on CPB is wired to ATN0 on IOU
 - ACK000 on IOU is wired to TTY RACK0 on IOU
 - TTY TACK0 on IOU is wired to RACK0 on Connector 0, I/O Slot 2

NOTE

ATN0 from I/O slots must be wired to one of ATN00:03 on CPB slot. (137-1, 138-1 or 237-1, 238-1).

For example: ATN01 must be used if ACK01 is used for driving RACK0/TACK0 "daisy chains".

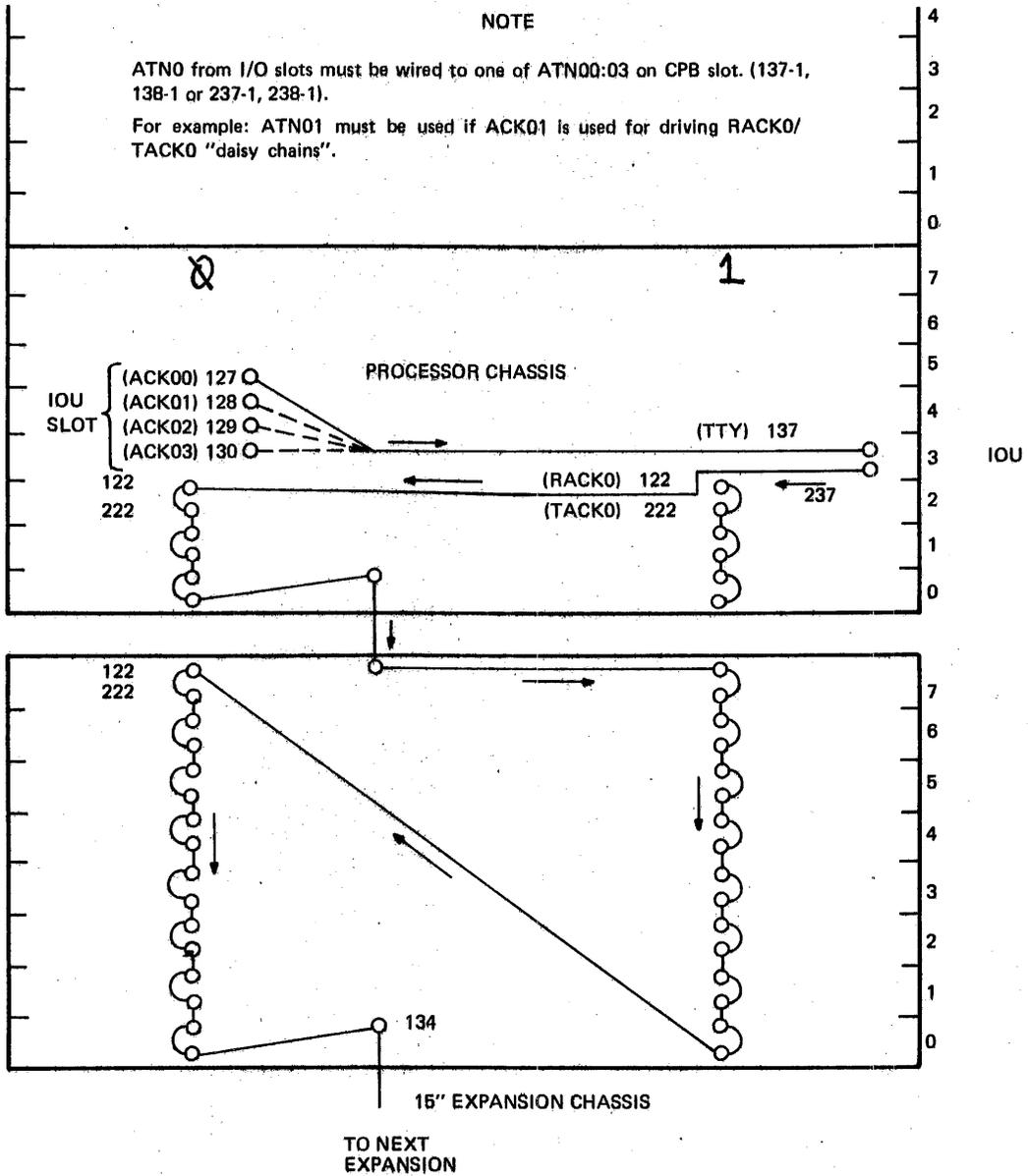


Figure 22. Standard Interrupt Priority

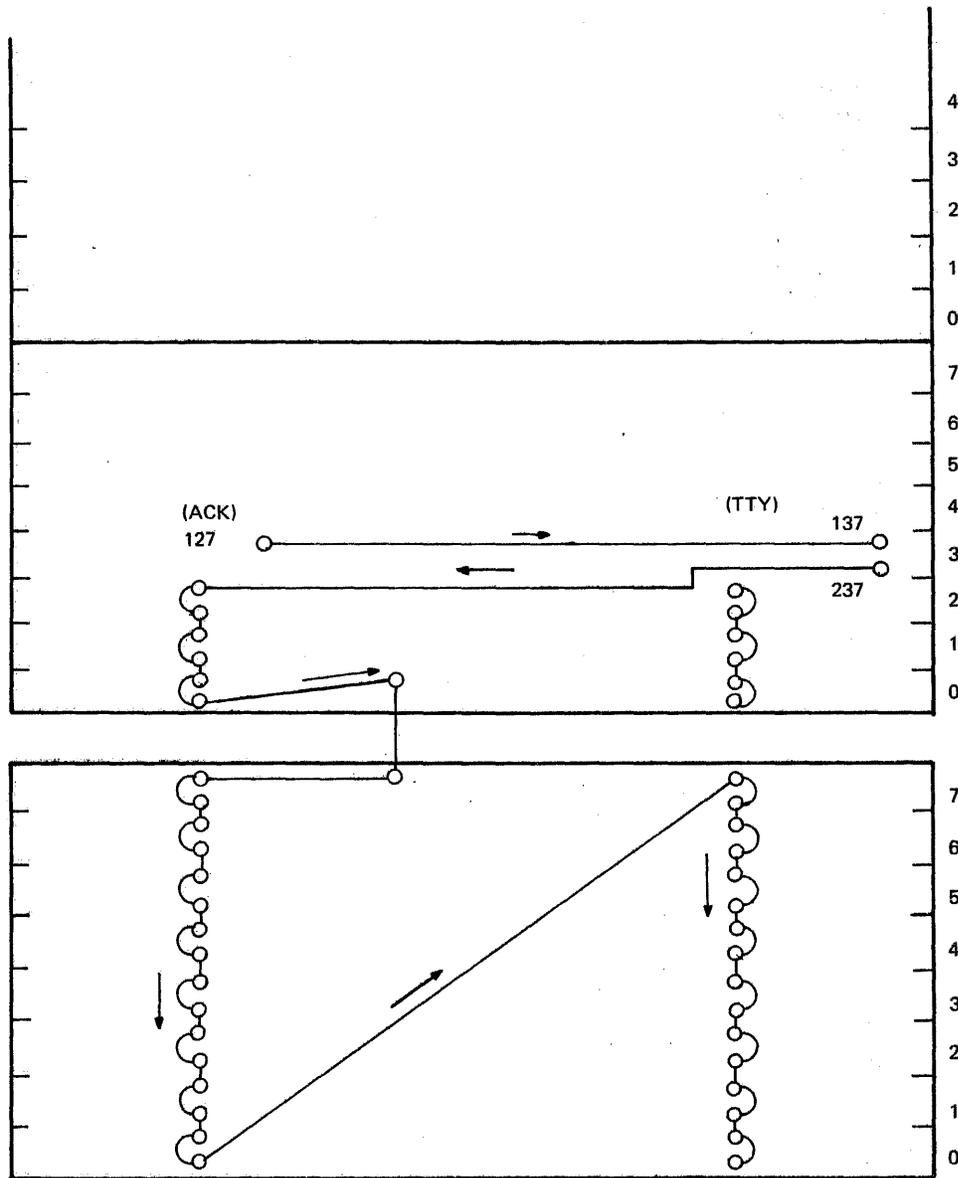


Figure 23. Modified Interrupt Priority

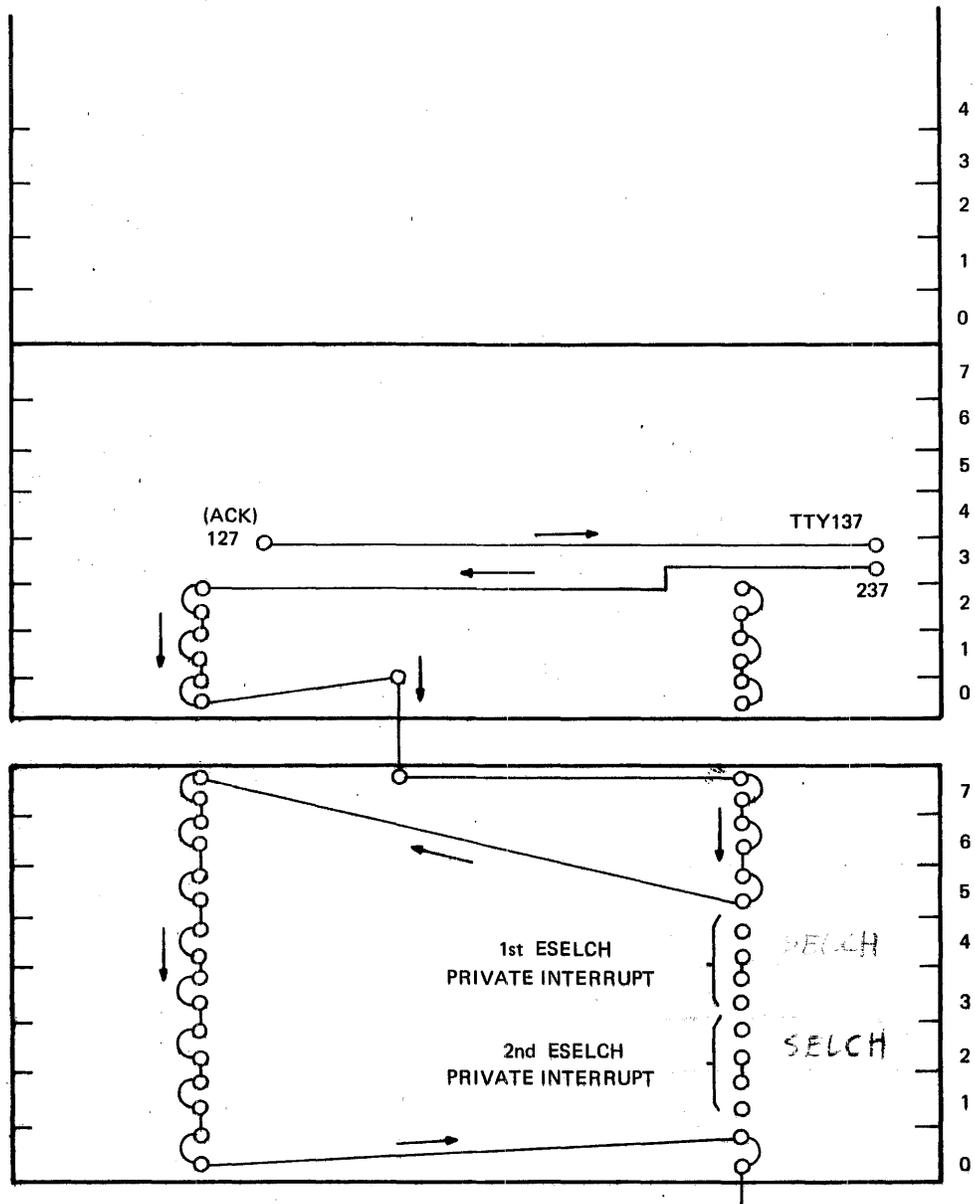


Figure 24. Interrupt Priority with ESELCH Installed

9. CABLES

9.1 Power Cable

The standard INTERDATA cabinet is wired for 30 Ampere service. On the main power cable (part of the AC Distribution Panel), there is a three-wire, twist-lock, grounding, 125VAC, 30 Ampere, UL, (Hubbel #2610) plug. A three-wire grounding, 30 Ampere, 125 VAC receptacle (Hubbel #2611 or equivalent) is required to accept this plug.

9.2 System Expansion Cable

A number of standard cables are available for configuring systems made up of the INTERDATA Expansion chassis discussed in Section 4. The choice of cables is dependent upon system configuration. The following cables are always used in pairs:

1. 17-193: I/O Expansion Cable, Connector 0.

This cable is used to connect the "0" connector field between two adjacent 15 inch card files.

2. 17-194: I/O Expansion Cable

This cable is used to connect the "1" connector I/O fields between two adjacent 15 inch card files.

3. 17-216: I/O Expansion Cable, 36 inches long

This is a 36 inch long cable. It can be used to connect two 15 inch files that are not adjacent.

4. 17-214: 15 inch to 10 inch Expansion Cable

This cable is used to connect the "0" connector field of a 15 inch card file to a lower adjacent 10 inch card file. It provides an 8-bit I/O bus to the 10 inch card file.

5. 17-166: 15 inch to 10 inch I/O Expansion Cable, 36 inches long

This cable is used to connect the "1" side of a 15 inch expansion file to a 10 inch expansion file. It provides an 8-bit I/O bus to a 10 inch card file. It must not be connected to the Basic Processor Multiplexor Bus. It may be driven either by an Extended Selector Channel or a bus buffer. It can be used on the older 10 inch card file (13 I/O slot).

6. 17-183: "0" to "1" Connector

This cable can be used to interconnect the I/O Multiplexor Bus of the "0" field and the "1" field within a 15 inch card file.

There is no RACK0/TACK0 wire in this cable.

It can also be used to connect a "0" side (Slot 0) of a file, to the "1" side (Slot 7) of the next adjacent file, or vice versa.

7. 17-215: 10 inch to 10 inch I/O Expansion Cable

This cable is used to connect two adjacent 10 inch card files.

8. 17-326: EDMA/I/O Connector 0

9. 17-327: EDMA/I/O Connector 1

10. 17-328: EDMA only Connector 0 36-inches

11. 17-329: EDMA only Connector 1 36-inches

12. 17-336: EDMA Connector 1

13. 17-335: Memory Data/Memory Sense Cable

14. 17-334: Memory Address Expansion Cable

15. 17-359: EDMA/I/O Connector 1 36-inches

16. 17-360: Processor Connector 2/5

17. 17-361: Processor Connector 3/4

18. 17-374: I/O/EDMA, Connector 0, 36-inches

9.3 Typical Configurations

Refer to Figure 25 for typical system configuration.

10. TESTING

10.1 Standard Test Software

The following software is supplied with the basic Processor to insure that the system is operational:

- | | |
|----------------------------|------------------------|
| 1. Processor Test Programs | 06-154, 155, 178 |
| 2. Memory Test Program | 06-156 (F01, F02, F03) |
| 3. Floating Point Test | DR320005 |
| 4. TTY Test Program | 06-004 |
| 5. MAC Test Program | 06-160 (F01 and F02) |

10.2 Additional Software

In addition to the test software mentioned above, appropriate test software is supplied with each peripheral.

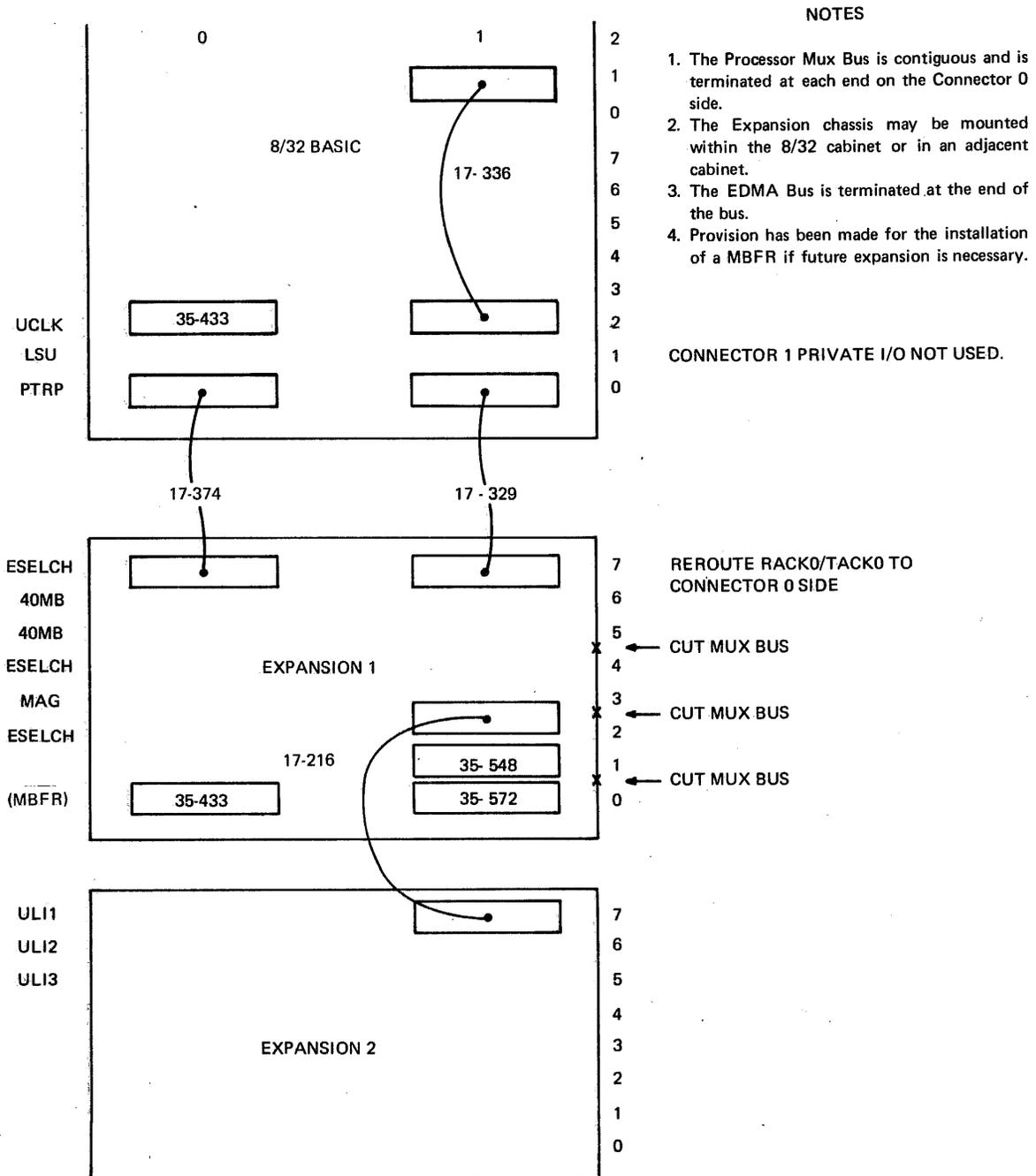


Figure 25. Typical System Configuration (Back Panel)

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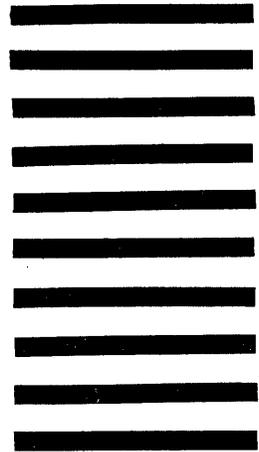
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