
APPENDIX D: TECHNICAL INFORMATION

This appendix contains information about hardware interrupt assignments, DMA channels, I/O addresses, memory usage, and expansion tray output specifications in the GRiDCASE 1535 EXP computer. This information may be needed if you are attaching expansion cards or external devices to the AT-compatible GRiDCASE 1535 EXP computer. For more detailed information about these and other technical topics related to the GRiDCASE 1535 EXP computer, refer to the *GRiDCASE 1500 Series Hardware Technical Reference Manual* (Order Number: 1500-50).

HARDWARE INTERRUPT ASSIGNMENTS

The GRiDCASE 1535 EXP supports 16 levels of hardware interrupts for the 80386 microprocessor. The hardware interrupt assignments are shown in table D-1 in decreasing level of priority.

Table D-1. Hardware Interrupt Assignments

Interrupt	Assignment
IRQ0	Timer Output
IRQ1	Keyboard (Output Buffer Full)
IRQ2	Cascade to Slave Controller
IRQ8	Real Time Clock
IRQ9	Software Redirected to INT 0Ah
IRQ10	Unused
IRQ11	Unused
IRQ12	Unused
IRQ13	Unused
IRQ14	Hard Disk Controller
IRQ15	Unused
IRQ3	Serial Port (COM2)
IRQ4	Modem, if installed (COM1)
IRQ5	Unused
IRQ6	Floppy Disk Drive Controller
IRQ7	Parallel Printer Port (LPT1)

DMA CHANNEL ASSIGNMENTS

The eight DMA channels available in the GRiDCASE 1535 EXP are assigned as shown in Table D-2.

Table D-2. DMA Channel Assignments

DMA Channel	8-bit/ 16-bit	System Function
0	8	Unused (Highest Priority)
1	8	Reserved (SDLC)
2	8	Floppy Disk Drive Controller
3	8	Unused
4	—	Cascade to Master Controller
5	16	Unused
6	16	Unused
7	16	Unused (Lowest Priority)

Channels 0-3 support 8-bit to 8-bit data transfers between I/O adapters and memory locations. Each channel transfers data in blocks of up to 64 KB throughout the 16M system address space.

Channels 5-7 support 16-bit transfers between 16-bit I/O adapters and memory locations. These channels cannot transfer data on odd byte boundaries. Each channel transfers data in blocks of up to 128 KB throughout the 16M system address space.

I/O ADDRESSES

The GRiDCASE 1535 EXP uses I/O registers to configure the system (including memory) and to control the computer input/output ports. The I/O registers can be used to bypass the ROM BIOS and provide direct access to the I/O device interfaces.

I/O addresses 100 to 3FF are available on the I/O bus (to the expansion tray and expansion cartridges). Table D-3 shows the I/O registers within this range that are used in the GRiDCASE 1535 EXP computer. The I/O registers are identified by their memory addresses, which are given in hexadecimal (h).

Table D-3. I/O Register Addresses

I/O Register Address (Hex)	Register Name
2F8 - 2FF	Serial port (COM2)
320 - 323	Hard disk interface
378 - 37A	Parallel port
379 - 37A	External device flags
3D0 - 3DF	Display controller
3F0 - 3F7	Floppy drive
3F8 - 3FF	Modem interface (COM1)

SYSTEM MEMORY

Main memory for the standard GRiDCASE 1535 EXP computer system is 1 MB of dynamic RAM. The main memory can be optionally increased to 2 MB (Option 302), 4 MB (Option 304), or 8 MB (Option 308).

Main memory is allocated starting at the low end of the available address space (address 0h). The standard 1024 KB (1 MB) of user memory is split into two sections, located from address 0h to FFFFh (640 KB) and from 100000h to 160000h (384 KB). This first 1 MB portion of main (user) memory is allocated in the same way for all configurations as shown in Figure D-1. (The 384 KB of memory mapped from address A0000h to FFFFFh is not user memory.)

Table D-4. Memory Map

Hex address	Decimal address (KB)
0	0
640 KB Conventional Memory	
A0000	640
64 KB EGA/VGA Display Memory (not used, except with VGA cartridge)	
B0000	704
32 KB Monochrome Display Memory (not used, except with VGA cartridge)	
B8000	736
32 KB CGA Display Memory (used for standard display and VGA cartridge)	
C0000	768
128 KB Memory for Expansion/Peripheral ROMs	
E0000	896
64 KB EMS Page Frame Memory (used by GRID386)	
F0000	960
64 KB System ROM BIOS	
100000	1024
384 KB - 7.4 MB Extended Memory	

Application ROMs are bank switched in this area

SYSTEM RESOURCES USED BY GRID EXPANSION CARTRIDGES

This section summarizes the system resources used by GRiDCASE 1500 Series expansion cartridges. Such system resources include DMA channels, hardware interrupts, and I/O register addresses. The information is shown in Table D-4.

Table D-5. System Resources Used by Expansion Cartridges

Cartridge	Hardware Interrupt	DMA Channel	I/O Register Addresses (hex)
Model 34010 High Speed Serial Cartridge	0		
Model 34012 3270 Interface Cartridge			3EE; 220-227 (with IRMA driver)
Model 34013 VGA Video Controller Cartridge	—	—	3C6-3C9
Model 34014 Ethernet Interface Cartridge	2	—	360

EXPANSION TRAY SPECIFICATIONS AND ENGINEERING DRAWINGS

This section provides DC/DC output specifications and environmental requirements for the expansion tray as well as detailed technical drawings of the various connectors on the tray for engineering purposes.

Input	9 to 18 VDC		
Output			
<u>Voltage</u>	<u>Current</u>	<u>Noise</u>	<u>Tolerance</u>
+5V	3.50 Amps	50MV	2%
-5V	.20 Amps	50MV	5%
+12V	.75 Amps	75MV	5%
-12V	.50 Amps	75MV	5%
Efficiency	>75%		
Over-voltage protection	5V output has over-voltage protection. The range for over-voltage protection to be activated is between 5.6V and 6.2V.		
Operating temperature	0° C to 50° C		
Storage temperature	-40° C to 75° C		
Operating humidity	-5% to 95% without condensation		
Storage humidity	-5% to 95% with minor condensation		

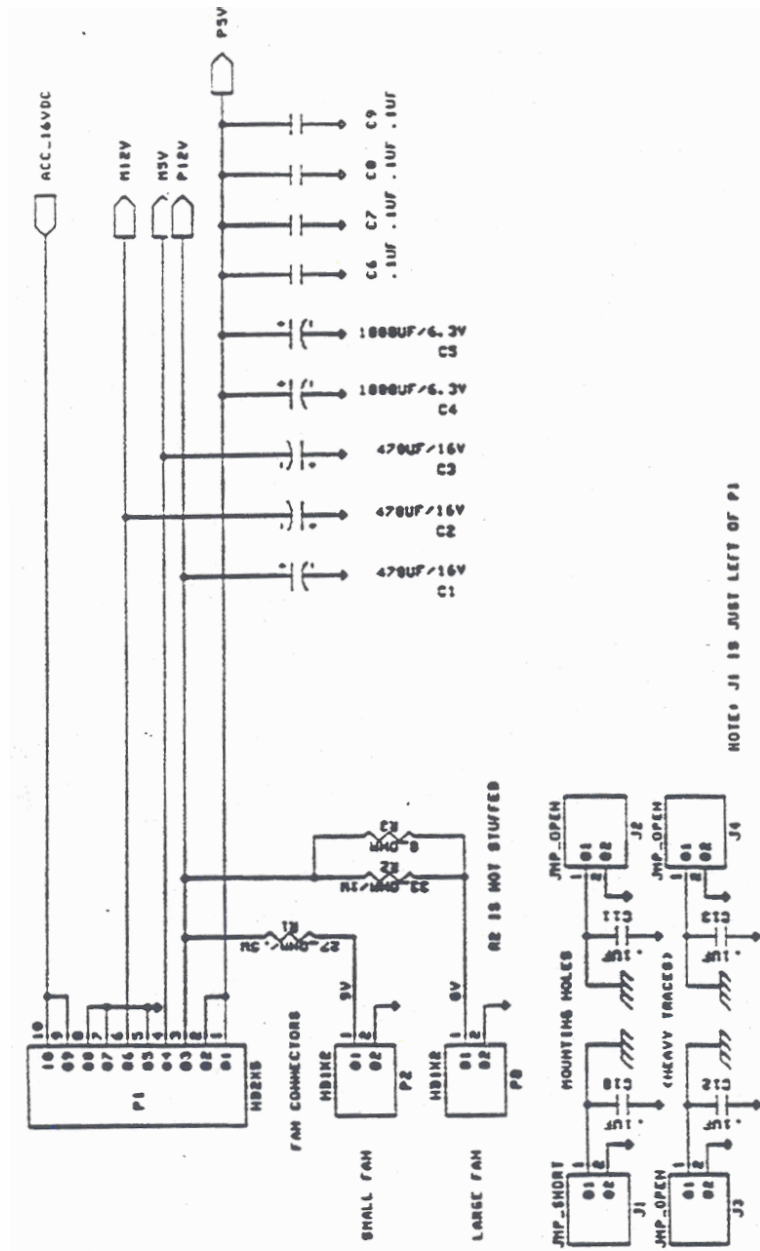


Figure D-1. Power Supply Connector within Expansion Area

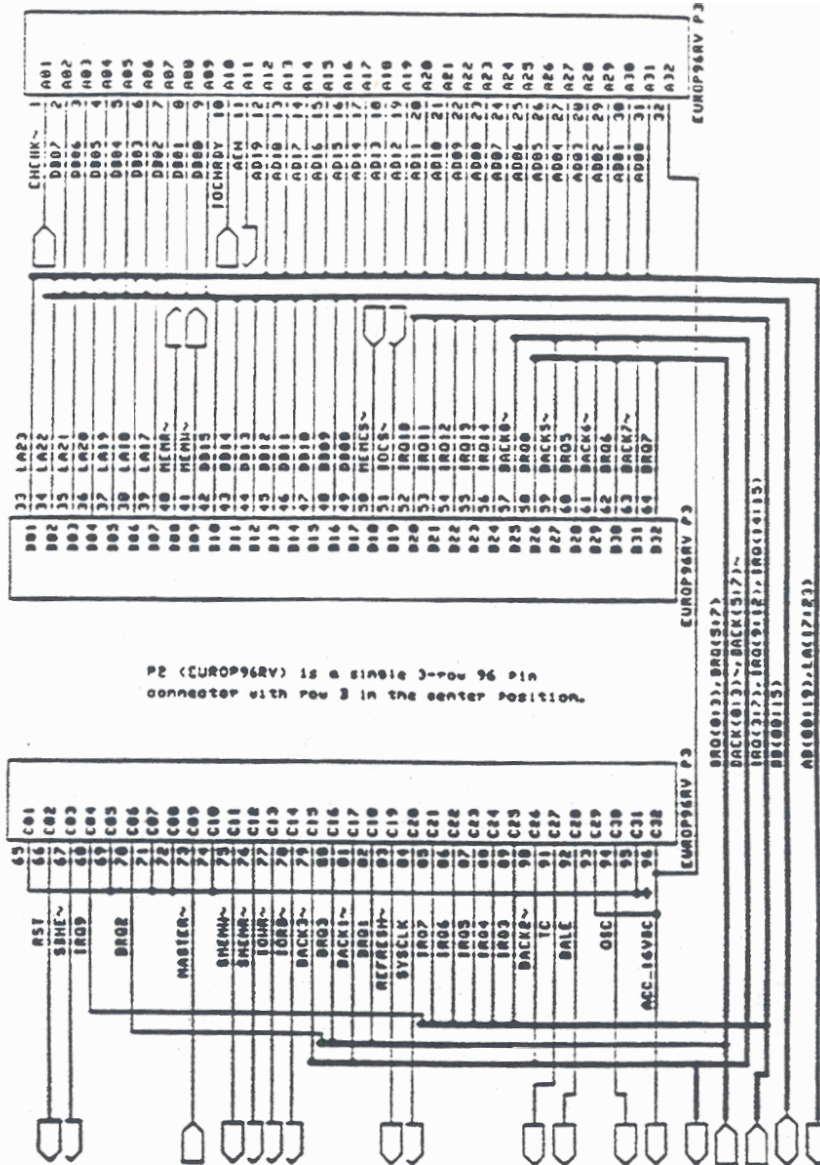


Figure D-2. Expansion Tray Connector to Host (External)

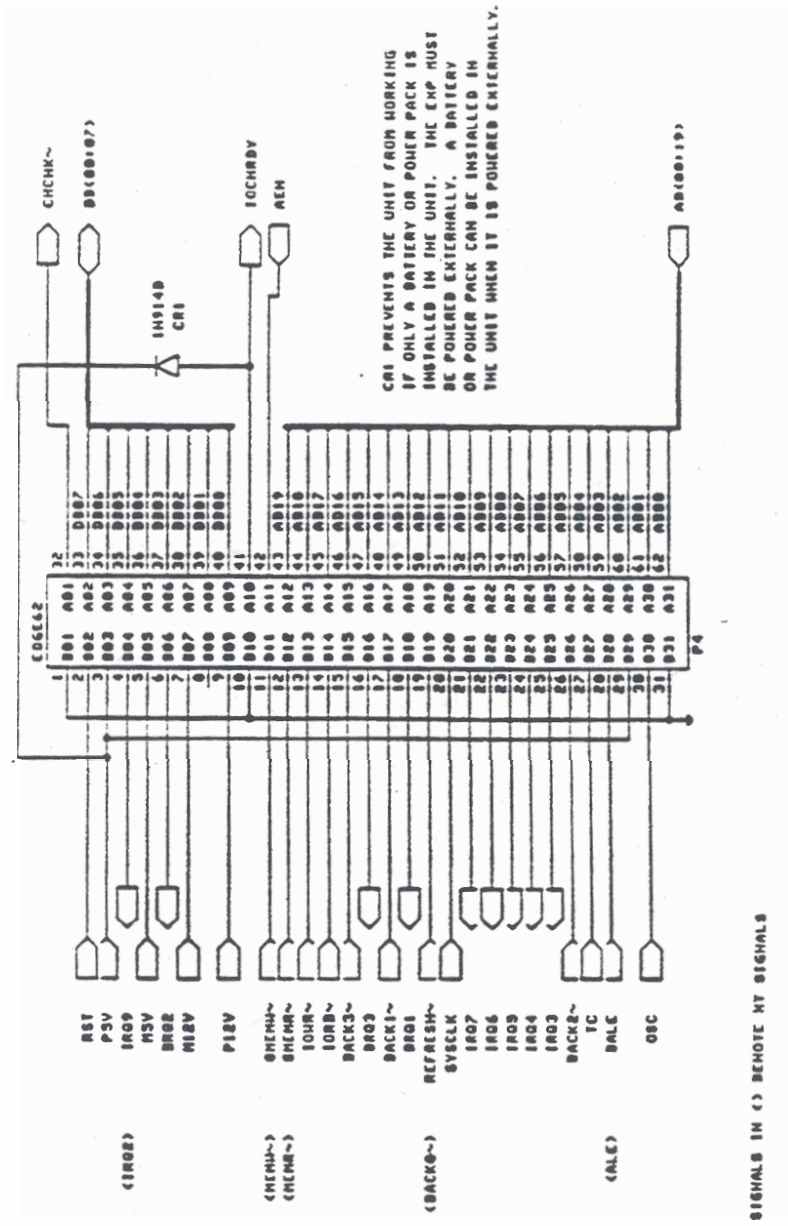


Figure D-3. XT Card Connector

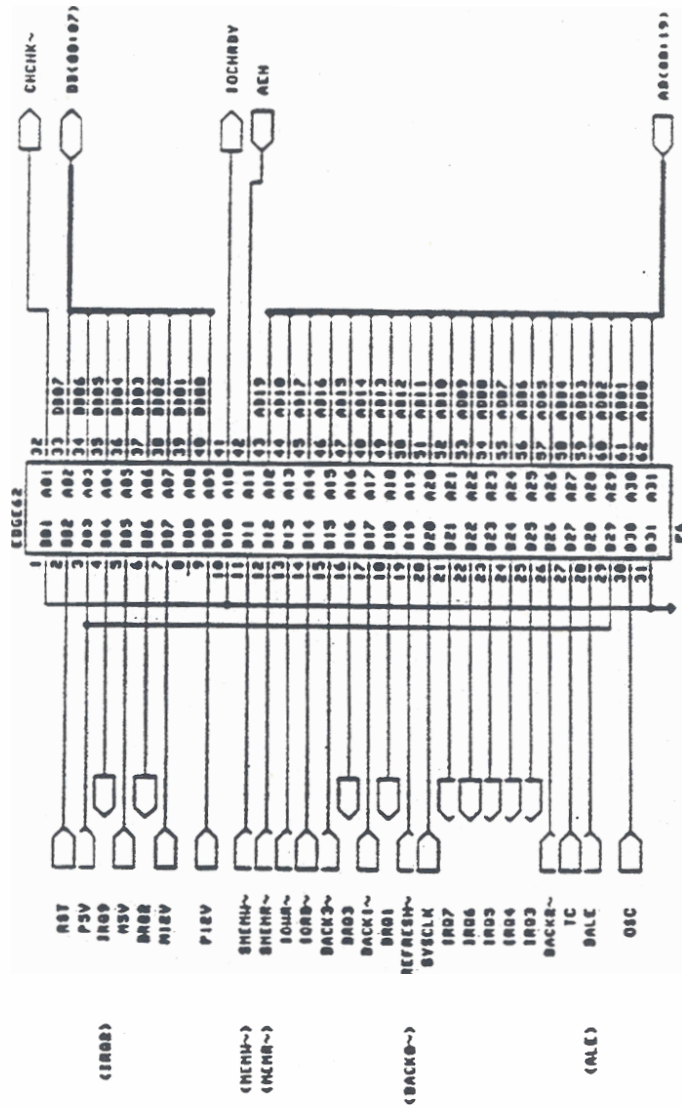


Figure D-4. AT Card Connector (Long Slot)

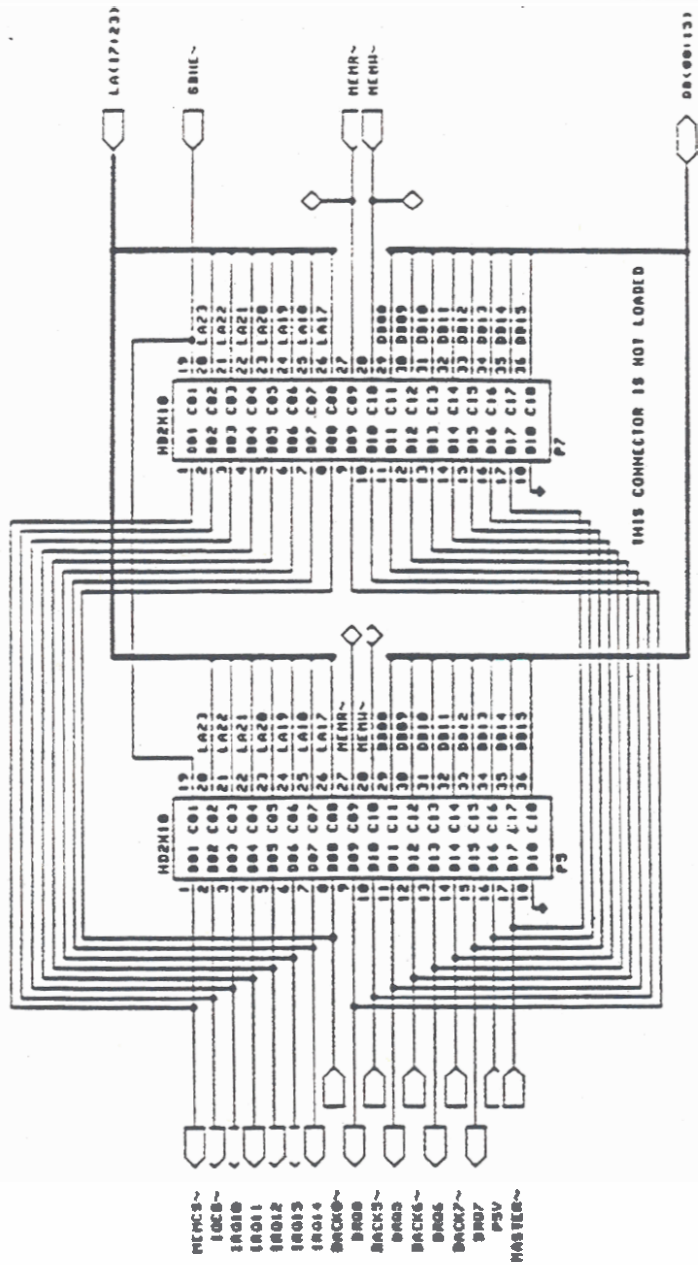


Figure D-5. AT Card Connector (Short Slot)

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