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HP Pavilion PCs - Motherboard Layout and Information: Trigem Cognac

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Introduction


The motherboard information in this document applies to the following HP Pavilion PC models:

Pavilion model	Model number	Pavilion model	Model number

Pavilion model	Model number	Pavilion model	Model number
6530	D9294A	6738	P1287A
6632	D9221A	6740C	P1333A
6634U	P1514A	6745C	P1442A
6635	D9947A	6746C	P2908A
6636	D9968A	7840	P2939A
6638	D9986A	7850	P2940A
6642D	P1353A	XE732	P1493A
6642F	P1313A	XE736	P1356A
6645C	D9948A	XE744	P2913A
6648C	D9955A	XE746	P1357A
6649F	P1471A	XE749	P2914A
6683	D9946A	XE763	P1447A
6730	P1332A	XE793	P1459A
6734KR	P3001A	XG823	P2987A
6735KR	P1441A	XT846	P3896A
6736KR	P2907A	XT856	P3897A

System board layout

Figure 1: System board

 example

1 - COM 2 connector	10 - IT8702
2 - CPU fan connector	11 - Speaker

3 - CPU socket 370	12 - IDE connectors
4 - 82810-DC100	13 - JP-6 clear CMOS
5 - DIMM sockets	14 - Front panel connector
6 - RTC battery	15 - 82802AP (ROM)
7 - PS fan connector	16 - 82801AA
8 - Power connector	17 - CD-ROM connector
9 - Floppy drive connector	18 - PCI slots

Features

- The flexible design of the motherboard will accept processors operating at speeds up to 800 MHz.
- The memory subsystem is designed to support up to 512 MB of SDRAM (for improved performance) in the form of two DIMM sockets that support 16-128 MB 168-pin 3.3 Volt SDRAM memory modules.
- The motherboard features Intel's 810 chipset with I/O subsystem. Onboard VGA features 11 MB Dynamic Video Memory (DVM).
- Connectors on the motherboard support the PCI expansion slots. The motherboard comes with 3 PCI slots.
- In addition to superior hardware capabilities, a full set of software drivers and utilities are available to allow advanced operating systems such as Windows '98 to take full advantage of the hardware capabilities.
- Features such as bus mastering IDE, Windows '98-ready Plug 'N' Play, and glitchless bidirectional audio are all provided by available software.

About the Intel Celeron Processor with MMX Technology

These systems are designed to operate with the Intel® Celeron® Processor running at speeds up to 800 MHz. The microprocessor implements MMX® technology and maintains full backward compatibility with the 8086, 80286, Intel 386, Intel 486, Pentium® processor, and Pentium Pro processors.

The processor, in addition to its expanded data and addressing capabilities, includes the following features:

- Ready for the next generation OverDrive processor
- On-chip numeric co-processor
- 32 KB Level 1 cache (16 KB for data, 16 KB for code)
- 128 KB Pipeline Burst Level 2 cache
- Read and write burst mode bus cycles
- Intel 810 chipset
- Integrated 230 MHz RAMDAC Graphics Controller configured for 8M or 11M of Dynamic Video Memory

- SDRAM memory expandable to 512 Mbytes

Warnings when working with system components

CAUTION: Make sure to unplug the power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both the motherboard and expansion.

CAUTION: Electrostatic discharge (ESD) can damage the processor, the disk drives, the expansion boards, and other components. Always observe the following precautions before installing a system component. 1. Do not remove a component from its protective packaging until ready to install it. 2. Wear a wrist-grounding strap and attach it to a metal part of the system unit before handling components. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.

CAUTION: Integrated circuits are extremely susceptible to electrostatic discharge. Do not handle ICs unless you are a qualified service technician using tools and techniques that conform to accepted industry practices.

Jumper locations and functions

Clear RTC RAM (CLEAR)

CMOS Real Time Clock (RTC) RAM. To erase the RTC RAM:

1. Unplug the computer.
2. Short the solder points
3. Turn ON the computer
4. Turn OFF the computer
5. Remove the short
6. Turn ON the computer
7. Hold down the F1 key during start up and enter BIOS setup to re-enter user preferences.

Figure 2: Real Time Clock Clear jumper

 example

There is no other jumper blocks to set on this motherboard. Intel Socket 370 Celeron processors have locked frequency multiples and use an external frequency of 66 MHz.

About system memory

The motherboard has two dual in-line memory module (DIMM) sockets. Minimum memory size is 16 MB; maximum memory size is 512 MB. The BIOS automatically detects memory type, size, and speed.

The motherboard supports the following memory features:

- 168-pin DIMMs with gold-plated contacts
- 66 MHz SDRAM or 100 MHz SDRAM depending on system
- Non-ECC (64-bit) and ECC (72-bit) memory
- 3 V memory only
- Single- or double-sided DIMMs

SDRAM

Synchronous DRAM (SDRAM) improves memory performance through memory access that is synchronous with the memory clock. This simplifies the timing design and increases memory speed because all timing is dependent on the number of memory clock cycles.

NOTE: To function properly, SDRAM DIMMs must meet the Intel 4-clock, 66 MHz, unbuffered SDRAM specification for either 64-bit or 72-bit SDRAM.

System memory (DIMM)


This motherboard uses only DIMMs. Sockets are available for 3.3 Volt (power level) unbuffered Synchronous Dynamic Random Access Memory (SDRAM) of 16, 32, 64, 128 MB, or 256 MB.

This chipset does not support ECC. However, ECC memory modules may still be used, but the ECC function will not be available.

The DIMMs must be 3.3V unbuffered for this motherboard. To determine the DIMM type, check the notches on the DIMMs.

NOTE: No hardware or BIOS setup is required after adding or removing memory.

Figure 3: DIMM slot and 168-pin DIMM

 example

1 - DIMM Slots

2 - 88 pins

3 - 60 pins

4 - 20 pins

5 - DIMM lock

6 - Front view

System memory configuration

SDRAM in bank 0	SDRAM in bank 1	Total system memory
Empty	16 MB	16 MB
Empty	32 MB	32 MB
Empty	64 MB	64 MB
Empty	128 MB	128 MB
Empty	256 MB	256 MB
16 MB	Empty	16 MB
16 MB	16 MB	32 MB
16 MB	32 MB	48 MB
16 MB	64 MB	80 MB
16 MB	128 MB	144 MB

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This document:

- » Was helpful
- » Was not helpful
- » Does not apply

SDRAM in bank 0	SDRAM in bank 1	Total system memory
16 MB	256 MB	272 MB
32 MB	Empty	32 MB
32 MB	16 MB	48 MB
32 MB	32 MB	64 MB
32 MB	64 MB	96 MB
32 MB	128 MB	160 MB
32 MB	256 MB	288 MB
64 MB	Empty	64 MB
64 MB	16 MB	80 MB
64 MB	32 MB	96 MB
SDRAM in bank 0	SDRAM in bank 1	Total system memory
64 MB	64 MB	128 MB
64 MB	128 MB	192 MB
64 MB	256 MB	320 MB
128 MB	Empty	128 MB
128 MB	16 MB	144 MB
128 MB	32 MB	160 MB
128 MB	64 MB	192 MB
128 MB	128 MB	256 MB
128 MB	256 MB	384 MB

SDRAM in bank 0	SDRAM in bank 1	Total system memory
256 MB	16 MB	272 MB
256 MB	32 MB	288 MB
256 MB	64 MB	320 MB
256 MB	128 MB	384 MB
256 MB	256 MB	512 MB

IDE Support

The motherboard provides two independent high performance bus-mastering PCI IDE interfaces capable of supporting PIO Mode 3, Mode 4, and ATAPI devices (e.g., CD-ROM). The system BIOS supports logical block addressing (LBA) and extended cylinder sector head (ECSH) translation modes. IDE device transfer rate and translation modes are automatically detected by the system BIOS.

Usually, programmed I/O operations require a substantial amount of processor bandwidth. However, in multitasking operating systems, the bandwidth freed by bus mastering IDE can be devoted to other tasks while disk transfers are occurring.

Universal Serial Bus (USB) Support

The motherboard features 2 USB ports that permit the direct connection of 2 USB peripherals, one to each port. For more than 2 USB devices, an external hub can be connected to either of the built-in ports. The motherboard fully supports the universal host controller interface (UHCI) and uses software drivers that are UHCI-compatible.

Features of USB include:

- Self-identifying peripherals that can be hot-plugged
- Automatic mapping of function to driver and configuration
- Support for isochronous and asynchronous transfer types over the same set of wires
- Support for up to 127 physical devices
- Guaranteed bandwidth and low latencies appropriate for telephony, audio, and other applications
- Error-handling and fault-recovery mechanisms built into the protocol

Replacing the Battery

The Setup information is stored in CMOS RAM and is backed up by a battery when power to the system is off. The battery also keeps the system clock current. As long as the internal battery remains good and is connected, the clock continues to keep the date and time accurately and the Setup information will remain intact.

WARNING: Danger of explosion if the battery is not correctly replaced.

Replace the battery with the same manufacturer's 3V Lithium battery, which is type CR2032. Discard the used battery according to the manufacturer's instructions. The location of the battery on the motherboard can be found in the system board layout (Figure 1).

Connectors

Power supply connectors

Primary power supply

Pin	Signal name	Pin	Signal name
1	+3.3 V	11	+3.3 V
2	+3.3 V	12	-12 V
3	Ground	13	Ground
4	+5 V	14	PW_ON
5	Ground	15	Ground
6	+5 V	16	Ground
7	Ground	17	Ground
8	PWRGD (Power Good)	18	-5 V
9	+5 VSB (Standby for real-time clock)	19	+5 V
10	+12 V	20	+5 V

Power supply fan connector

Pin	Signal name
1	Rotation
2	+12 V (suspend)
3	Ground

CPU fan connector


Pin	Signal name
1	Rotation
2	+12 V

Pin	Signal name
3	Ground

Front panel connector

The front panel connector includes headers for the following connections: Power LED, Speaker, Reset switch, Power switch, Sleep switch.

Figure 4: Front panel connectors (See Figure 1, call-out 14)

 example

- 1 - Keyboard lock
- 2 - Message LED
- 3 - External SMI lead
- 4 - Speaker connector
- 5 - ATX power switch *
- 6 - Hard drive LED
- 7 - Reset switch
- 8 - Power LED

Back Panel I/O Connectors

PS/2 keyboard and mouse ports

Pin	Signal name
1	Data
2	No connect
3	Ground
4	+5 Vcc (fused)
5	Clock
6	No connect

USB connectors

Pin	Signal name
1	Power

Pin	Signal name
2	USBP0# (USBP1#)
3	USBP0 (USBP1)
4	Ground

Serial port connector

Pin	Signal name
1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring indicator

Parallel port

Signal name	Pin	Pin	Signal name
STROBE-	1	14	AUTO FEED
Data Bit 0	2	15	ERROR*
Data Bit 1	3	16	INIT*
Data Bit 2	4	17	SELECT IN*

Signal name	Pin	Pin	Signal name
Data Bit 3	5	18	Ground
Data Bit 4	6	19	Ground
Data Bit 5	7	20	Ground
Data Bit 6	8	21	Ground
Data Bit 7	9	22	Ground
ACK*	10	23	Ground
BUSY	11	24	Ground
Error	12	25	Ground
SELECT	13		

Peripherals

IDE connectors

Signal name	Pin	Pin	Signal name
Reset IDE	1	2	Ground
Host Data 7	3	4	Host Data 8
Host Data 6	5	6	Host Data 9
Host Data 5	7	8	Host Data 10
Host Data 4	9	10	Host Data 11
Host Data 3	11	12	Host Data 12
Host Data 2	13	14	Host Data 13
Host Data 1	15	16	Host Data 14

Signal name	Pin	Pin	Signal name
Host Data 0	17	18	Host Data 15
Ground	19	20	Key
DDRQ0(DDRQ1)	21	22	Ground
I/O Write	23	24	Ground
I/O Read	25	26	Ground
IORDY	27	28	Vcc pull-up
DDACK0(DDACK1)	29	30	Ground
IRQ14(IRQ15)	31	32	Reserved
Addr 1	33	34	Reserved
Addr 0	35	32	Addr 2
Chip Select 1P(1S)	37	38	Chip Select 3P (3S)
Activity	39	40	Ground

Floppy connector

Signal name	Pin	Pin	Signal name
Ground	1	2	DENSEL
Ground	3	4	Reserved
Key	5	6	FDEDIN
Ground	7	8	Index
Ground	9	10	Motor Enable A
Ground	11	12	Drive Select B

Signal name	Pin	Pin	Signal name
Ground	13	14	Drive Select A
Ground	15	16	Motor Enable B
MSEN1	17	18	DIR
Ground	19	20	STEP
Ground	21	22	Write Data
Ground	23	24	Write Enable
Ground	25	26	Track 00
MSEN0	27	28	Write Protect
Ground	29	30	Read Data
Ground	31	32	Side 1 Select
Ground	33	34	Diskette Change

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