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An introduction to BIOS beep codes

When you power on your computer, the motherboard's basic input/output system (BIOS) first detects the computer's internal hardware configuration and then performs the power-on self-test (POST). The POST executes several diagnostic tests that check the basic functionality of the power supply, motherboard, CPU, I/O Bus Controller, RAM, keyboard, and video components. If the computer passes the POST, it will usually return a single short beep or two short beeps, depending on the BIOS manufacturer. If the POST detects any problems, it will halt the boot process and return an error message either visually on the screen and/or audibly through a series of beeps.

Unfortunately, there is no official standard for beep codes. Depending on the BIOS manufacturer, a keyboard controller failure could be three, four, five, or six beeps. While this document lists common BIOS manufacturer beep codes, you should always consult your motherboard's documentation, the manufacturer's Web site, and the BIOS manufacturer's Web site for a definitive beep code list for your particular BIOS. The information contained in the following lists was gathered from various BIOS manufacturers' Web sites.

AMI BIOS beep codes http://www.ami.com/support/bios.html http://www.ami.com/support/doc/AMIBIOS-codes.pdf		
Number of beeps	Problem description	Troubleshooting recommendation
1	Memory refresh timer error	Reseat memory or replace with known good chips.
2	Parity error	Reseat memory or replace with known good chips.
3	Base 64K memory read/write test failure	Reseat memory or replace with known good chips.
4	Motherboard timer not operational	Repair/replace motherboard.
5	Processor error	Repair/replace motherboard.
6	8042—gate A20 failure/Keyboard controller BAT test error	Reseat keyboard controller chip, replace keyboard controller chip, check for a keyboard fuse, or try a different keyboard.
7	Processor exception interrupt error	Repair/replace motherboard.
8	Display memory read/write failure	Replace video card or video card memory.
9	ROM checksum error/Faulty BIOS chips	Replace chips or motherboard.

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10	CMOS shutdown register read/write error	Repair/replace motherboard.
11	Cache memory bad	Repair/replace motherboard.

AwardBIOS beep codes

<http://www.phoenix.com/en/Customer+Services/BIOS/AwardBIOS/Award+Error+Codes.htm>

Number of beeps	Problem description	Troubleshooting recommendation
1 long & 2 short	Video error	Check the video card.
Any other beeps	RAM problem	Reseat the RAM or replace with known good chips.

PhoenixBIOS beep codes

<http://www.phoenix.com/en/Customer+Services/BIOS/BIOS+FAQ/default.htm#Q12>

<http://www.phoenix.com/NR/rdonlyres/81E6C43C-93BD-4097-A9C4-62F05AAD6025/0/biospostcode.pdf>

Unfortunately, PhoenixBIOS beep codes are significantly more complicated than other BIOS manufacturers. Instead of a single beep code set, PhoenixBIOS codes consist of a series of beep code sets separated by a short pause. Older Phoenix BIOS Plus and PhoenixBIOS 1.x systems used a series of three sets, while the PhoenixBIOS 4.x systems use a series of four sets. The codes listed below are only some of the more than 100 codes for the PhoenixBIOS 4.x. For a complete list of Phoenix BIOS POST task routines and beep codes, please visit their Web site or review your motherboard's documentation.

Number of beeps	POST routine description/problem	Troubleshooting recommendation
1	One short beep before boot	Normal operation
1-1-1-3	Verify real mode	A problem exists with the CPU and/or motherboard. Check and replace if necessary.
1-1-2-1	Get CPU type	A problem exists with the CPU and/or motherboard. Check and replace if necessary.
1-1-2-3	Initialize system hardware	A problem exists with the motherboard. Check and replace if necessary.
1-1-3-1	Initialize chipset with initial POST values	A problem exists with the motherboard. Check and replace if necessary.
1-1-3-2	Set IN POST flag	A problem exists with the motherboard. Check and replace if necessary.
1-1-3-3	Initialize CPU registers	A problem exists with the CPU and/or motherboard. Check and replace if necessary.
1-1-4-3	Initialize I/O component	A problem exists with the I/O port hardware or a device connected to an I/O port. It could also be an expansion device in the PC or the motherboard.

1-2-2-1	Initialize keyboard controller	An error has occurred with the keyboard or keyboard controller. Try a new keyboard or replace the keyboard controller on the motherboard.
1-2-2-3	BIOS ROM checksum	Replace either the BIOS ROM chip or the motherboard.
1-2-3-3	8237 DMA controller initialization	Check the motherboard and any expansion cards that use DMA.
1-3-1-1	Test DRAM refresh	Check the first bank of memory and the motherboard.
1-3-1-3	Test 8742 keyboard controller	An error has occurred with the keyboard or keyboard controller. Try a new keyboard or replace the keyboard controller on the motherboard.
1-3-4-1	RAM failure on line xxxx	Check the first bank of memory and the motherboard.
1-3-4-3	RAM failure on data bits xxxx of low byte memory bus	Check the first bank of memory and the motherboard.
2-1-3-1	Check video configuration against CMOS	Check the video card or video card memory.
2-1-3-2	Initialize PCI bus and devices	A problem exists with the I/O port hardware or a device connected to an I/O port. It could also be an expansion device in the PC or the motherboard.
2-2-1-3	Test keyboard	An error has occurred with the keyboard or keyboard controller. Try a new keyboard or replace the keyboard controller on the motherboard.
2-2-3-1	Test for unexpected interrupts	Check for a faulty motherboard or expansion card.
3-1-2-1	Detect and install external parallel ports	A problem exists with the I/O port hardware or a device connected to an I/O port. It could also be an expansion device in the PC or the motherboard.
3-1-4-1	Initialize floppy controller	Check your hard drive(s), floppy drive(s), and motherboard.
3-2-1-1	Initialize hard-disk controllers	Check your hard drive(s), floppy drive(s), and motherboard.
3-2-1-2	Initialize local-bus hard-disk controllers	Check your hard drive(s), floppy drive(s), and motherboard.
3-3-1-1	Set time of day	Check the motherboard's real-time clock (RTC).
4-2-4-3	Keyboard controller failure	An error has occurred with the keyboard or keyboard controller. Try a new keyboard or replace the keyboard controller on the motherboard.

Dell BIOS beep codes

<http://support.dell.com/us/en/home.asp>

Because Dell uses motherboards and BIOSs from several manufacturers, their computers use a variety of beep codes. Instead of listing each model's beep codes, links are provided to the support pages of several popular Dell desktops.

Model	System codes and messages link
Dell Phoenix BIOS	http://support.dell.com/support/topics/global.aspx/support/kb/en/document?dn=1032259
Dimension 900	http://support.dell.com/support/edocs/systems/dcaydim2/codemess.htm
Dimension 2100	http://support.dell.com/support/edocs/systems/dim2100/codemess.htm
Dimension 2200	http://support.dell.com/support/edocs/systems/dim2200/codes.htm
Dimension 2300	http://support.dell.com/support/edocs/systems/dim2300/advanced.htm
Dimension 2300C	http://support.dell.com/support/edocs/systems/dim2300c/advanced.htm
Dimension 2350	http://support.dell.com/support/edocs/systems/dim2350/advanced.htm
Dimension 2400	http://support.dell.com/support/edocs/systems/dim2400/en/sm/advtshoo.htm
Dimension 3000	http://support.dell.com/support/edocs/systems/dim3000/en/sm/adtfoot.htm
Dimension 4100	http://support.dell.com/support/edocs/systems/dzuul/codemess.htm
Dimension 4200	http://support.dell.com/support/edocs/systems/dim4200/codes.htm
Dimension 4300	http://support.dell.com/support/edocs/systems/dim4300/codes.htm
Dimension 4300S	http://support.dell.com/support/edocs/systems/dim4300s/codes.htm
Dimension 4400	http://support.dell.com/support/edocs/systems/dim4400/codes.htm
Dimension 4450	http://support.dell.com/support/edocs/systems/dim4450/advanced.htm
Dimension 4500	http://support.dell.com/support/edocs/systems/dim4500/advanced.htm
Dimension 4500C	http://support.dell.com/support/edocs/systems/dim4500c/advanced.htm
Dimension 4500S	http://support.dell.com/support/edocs/systems/dim4500s/advanced.htm
Dimension 4590T	http://support.dell.com/support/edocs/systems/dim4590t/en/sm/adtfoot.htm
Dimension 4600	http://support.dell.com/support/edocs/systems/dim4600/en/4600i/sm/adtfoot.htm
Dimension 4600C	http://support.dell.com/support/edocs/systems/dim4600c/sm/adtfoot.htm
Dimension 4700	http://support.dell.com/support/edocs/systems/dim4700/sm/adtfoot.htm
Dimension 8100	http://support.dell.com/support/edocs/systems/dsleest/codemess.htm
Dimension 8200	http://support.dell.com/support/edocs/systems/dim8200/codes.htm
Dimension 8250	http://support.dell.com/support/edocs/systems/dim8250/advanced.htm
Dimension 8300	http://support.dell.com/support/edocs/systems/dim8300/sm/adtfoot.htm
Dimension 8400	http://support.dell.com/support/edocs/systems/dim8400/sm/adtfoot.htm
Dimension C	http://support.dell.com/support/edocs/systems/dcaydim/codemess.htm

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Dimension L	http://support.dell.com/support/edocs/systems/dmum/codemess.htm
Dimension Lxxx	http://support.dell.com/support/edocs/systems/dcol/codemess.htm
Dimension P133a, P166a, M166a, M200a, and M233a	http://support.dell.com/support/edocs/systems/dhanplus/post.htm
Dimension P133v, P166v, and P200v	http://support.dell.com/support/edocs/dta/_hannbl/00000343.htm
Dimension XPS	http://support.dell.com/support/edocs/systems/dimxpsg3/sm/adtsheet.htm
Dimension XPS Txxx and Txxxr	http://support.dell.com/support/edocs/systems/dkub/codemess.htm
Dimension Vxxx and Vxxx	http://support.dell.com/support/edocs/systems/dwill/post.htm
Dimension XPS B Series	http://support.dell.com/support/edocs/systems/dmag/codemess.htm
Dimension XPS Dxxx	http://support.dell.com/support/edocs/systems/dalex/post.htm
Dimension XPS H233 and XPS H266	http://support.dell.com/support/edocs/systems/dcor/post.htm
Dimension XPS P60 FS	http://support.dell.com/support/edocs/dta/xpsp60f/00000015.htm
Dimension XPS P60 M	http://support.dell.com/support/edocs/dta/xpsp60m/00000014.htm
Dimension XPS 50/66 FS	http://support.dell.com/support/edocs/dta/xps_f/00000021.htm
Dimension XPS 50/66 MDT (V4xxV)	http://support.dell.com/support/edocs/dta/xps_m/00000025.htm
Dimension XPS Rxxx	http://support.dell.com/support/edocs/systems/dkhan/post.htm
OmniPlex 5xx/ME	http://support.dell.com/support/edocs/dta/omni5xx/00000051.htm
OptiPlex E1	http://support.dell.com/support/edocs/systems/dape/beep.htm
OptiPlex 160L	http://support.dell.com/support/edocs/systems/op160/en/ug/solve.htm
OptiPlex 170L	http://support.dell.com/support/edocs/systems/op170/en/ug/solve.htm
OptiPlex G1	http://support.dell.com/support/edocs/systems/ddur/beep.htm
OptiPlex GC	http://support.dell.com/support/edocs/systems/opgc/en/ug/messages.htm
OptiPlex Gn and Gn+	http://support.dell.com/support/edocs/systems/dthred/beep.htm
OptiPlex Gs and Gs+	http://support.dell.com/support/edocs/systems/dalt/beep.htm
OptiPlex GX1	http://support.dell.com/support/edocs/systems/ban_gx1/beep.htm
OptiPlex GX1 Small-Form-Factor	http://support.dell.com/support/edocs/systems/ban_gx1/en/ug_sdt/messages.htm
OptiPlex GX1p	http://support.dell.com/support/edocs/systems/d_gx1p/beep.htm
OptiPlex GXi	http://support.dell.com/support/edocs/systems/dzer/beep.htm
OptiPlex GX50	http://support.dell.com/support/edocs/systems/opgx50/ena/ug/problems.htm
OptiPlex GX60	http://support.dell.com/support/edocs/systems/opgx60/en/ug/gethelp.htm

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OptiPlex GX100	http://support.dell.com/support/edocs/systems/opgx100/en/ug/messages.htm
OptiPlex GX110	http://support.dell.com/support/edocs/systems/opgx110/en/ug/messages.htm
OptiPlex GX115	http://support.dell.com/support/edocs/systems/opgx115/en/ug/messages.htm
OptiPlex GX150	http://support.dell.com/support/edocs/systems/opgx150/en/ug/problems.htm
OptiPlex GX200	http://support.dell.com/support/edocs/systems/opgx200/en/ug/messages.htm
OptiPlex GX220	http://support.dell.com/support/edocs/systems/opgx200/en/ug/basic.htm
OptiPlex GX240	http://support.dell.com/support/edocs/systems/opgx240/en/ug/problems.htm
OptiPlex GX260	http://support.dell.com/support/edocs/systems/opgx260/en/ug/solvprob.htm
OptiPlex GX270	http://support.dell.com/support/edocs/systems/opgx270/en/ug/solve.htm
OptiPlex GX280	http://support.dell.com/support/edocs/systems/opgx280/en/ug/tools.htm
OptiPlex GX300	http://support.dell.com/support/edocs/systems/opgx300/en/ug/messages.htm
OptiPlex GX400	http://support.dell.com/support/edocs/systems/opgx400/en/ug/ch5.htm
OptiPlex GXa	http://support.dell.com/support/edocs/systems/dfuj/beep.htm
OptiPlex GXpro	http://support.dell.com/support/edocs/systems/dstrmlk/postbeep.htm
OptiPlex L60	http://support.dell.com/support/edocs/systems/opl60/en/ug/solvprob.htm
OptiPlex N	http://support.dell.com/support/edocs/systems/dkill/beep.htm
OptiPlex NX	http://support.dell.com/support/edocs/systems/dfujnx/beep.htm
OptiPlex NX1	http://support.dell.com/support/edocs/systems/ban_nx1/beep.htm
OptiPlex SX260	http://support.dell.com/support/edocs/systems/opsx260/en/ug/solve.htm
OptiPlex SX270	http://support.dell.com/support/edocs/systems/opsx270/en/ug/solve.htm
OptiPlex SX280	http://support.dell.com/support/edocs/systems/opsx280/en/ug/tools.htm
OptiPlex XMT575/590/5100/5120/5133	http://support.dell.com/support/edocs/dta/586xmt/00000038.htm
Precision WorkStation 210	http://support.dell.com/support/edocs/systems/daftshk/beep.htm
Precision WorkStation 220	http://support.dell.com/support/edocs/systems/ws220/en/ug/basic.htm
Precision WorkStation 330	http://support.dell.com/support/edocs/systems/ws330/en/ug/html/solving.htm
Precision WorkStation 340	http://support.dell.com/support/edocs/systems/ws340/en/ug/codes.htm
Precision WorkStation 350	http://support.dell.com/support/edocs/systems/ws350/en/ug/advanced.htm
Precision WorkStation 360	http://support.dell.com/support/edocs/systems/ws360/en/ug/advanced.htm
Precision WorkStation 370	http://support.dell.com/support/edocs/systems/ws370/en/ug/client_h.htm
Precision WorkStation 400	http://support.dell.com/support/edocs/systems/dtor/beep.htm
Precision WorkStation 410	http://support.dell.com/support/edocs/systems/deqkmt/beep.htm
Precision WorkStation 420	http://support.dell.com/support/edocs/systems/ws420/en/ug/messages.htm
Precision WorkStation 450	http://support.dell.com/support/edocs/systems/ws650/en/ug/advanced.htm

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Precision WorkStation 470	http://support.dell.com/support/edocs/systems/ws670/en/ug/advtrbl.htm
Precision WorkStation 530	http://support.dell.com/support/edocs/systems/ws530/en/ug/html/2codes.htm
Precision WorkStation 610 Mini Tower	http://support.dell.com/support/edocs/systems/dvol/beep.htm
Precision WorkStation 620	http://support.dell.com/support/edocs/systems/ws620/en/ug/messages.htm
Precision WorkStation 650	http://support.dell.com/support/edocs/systems/ws650/en/ug/advanced.htm
Precision WorkStation 670	http://support.dell.com/support/edocs/systems/ws670/en/ug/advtrbl.htm
Precision WorkStation 730	http://support.dell.com/support/edocs/systems/ws730/ug/messages.htm

HP BIOS beep codes

<http://welcome.hp.com/country/us/eng/support.html>

Because Hewlett-Packard (HP) uses a variety of motherboards and BIOSs, their computers use a variety of beep codes. Instead of listing each model's beep codes, links are provided to the support pages of several popular Hewlett-Packard desktops.

Note: Hewlett-Packard and Compaq merged in 2002 and the new company dropped the Compaq name from all but a few consumer product lines--such as Presario desktops and notebooks. This table lists only HP-branded desktops, while the next table lists Compaq-branded machines.

Model	System codes and messages link
e-PC c10/s10	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=tis13707
Kayak	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=tis06334
Kayak XM600	http://h20000.www2.hp.com/bc/docs/support/SupportManual/lpv07804/lpv07804.pdf
Kayak XU800	http://h20000.www2.hp.com/bc/docs/support/SupportManual/lpv07804/lpv07804.pdf
HP Multimedia PC series	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=bp_h01686
Pavilion Desktops with Phoenix BIOS	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=bp_h07107
Pavilion 5010, 5030, and 5040	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=bp_h01004
Pavilion 7xxx (7010, 7020, 7030, 7050, and possibly others)	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=bp_h01053
Vectra PCs with Phoenix BIOS (VL4, VL5, VL7, VL8, VLi8, VE2, VE3, VEi7, XM4, XA5, and possibly others)	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=bp_v03305 http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=tis06108
e-Vectra	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=tis06446

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Vectra VE 5/xxx Series 4	http://h200004.www2.hp.com/bc/docs/support/SupportManual/bpv03974/bpv03974.pdf
Vectra VL600	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=tis01866
Vectra XA5	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=tis06112
Vectra XA 5/XXX	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=bpv03314
Vectra XE310	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=tis13051
Workstation i2000	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=tis07621
Workstation xw3100	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=c00038866

Compaq (Hewlett-Packard)

<http://h10025.www1.hp.com/ewfrf/wc/siteHomeC?lc=en&cc=us>

Because Compaq uses a variety of motherboards and BIOSs, their computers use a variety of beep codes. Instead of listing each model's beep codes, links are provided to support documentation for several popular Compaq desktops.

Note: Hewlett-Packard and Compaq merged in 2002 and the new company dropped the Compaq name from all but a few consumer product lines--such as Presario desktops and notebooks. Official Compaq support documentation is difficult to find on HPs Web site.

Model	System codes and messages link
Business Desktop d330 and d530	http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=c00274415
Multiple Models	http://forums1.itrc.hp.com/service/forums/questionanswer.do?admit=716493758+1107879885254+28353475&threadId=222666

IBM BIOS beep codes

<http://www.ibm.com/support/us/>

Because IBM uses a variety of motherboards and BIOSs, their computers use a variety of beep codes. Instead of listing each model's beep codes, links are provided to the support documentation of several popular IBM desktops.

Note: In December 2004, IBM announced plans to sell its PC division to China-based Lenovo Group. While the links listed here were accurate as of this document's publication, they may change due to the sale.

Model	System codes and messages link
Aptiva 2137, 2138	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=DETR-43VMUY
Aptiva 2140 and 2142	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=PMYS-3KWRR2

BIOS beep codes list for desktops

Aptiva 2144 and 2168	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=DETR-3SRSAB
Aptiva 2158, 2163 and 2164	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=DETR-42QQY6
Aptiva 2159	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=DETR-42JU2A
Aptiva 2170, 2171, and 2172	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-48UPZ9
Aptiva 2190	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-4CURG4
PC 300 Series Type 6268, 6278, 6288, 6338, 6563, 6564, 6565, 6566, 6574, and 6593 Aptiva Type 2173, 2178, and 2198 IntelliStation Type 6878	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-4B2JQP
IntelliStation E Pro Type 6867 IBM PC300PL Type 6584, 6594 and 6595	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-4DSQKY
IntelliStation	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-4B9PPW
IntelliStation E Pro Type 6204 and 6214	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-39494
IntelliStation E Pro Type 6216 and 6226	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-44191
IntelliStation M Pro Type 6219	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-45692
IntelliStation M Pro Type 6220 and 6230	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-52732
IntelliStation A Pro Type 6224	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-55657
IntelliStation M Pro Type 6229	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-41404
IntelliStation M Pro Type 6231 and 6849	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-4S6UYK
IntelliStation M Pro Type 6233, 6850	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-4ZSKLK
IntelliStation R Pro Type 8654	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-4WBPPT
IntelliStation Z Pro Type 6221	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-45139
IntelliStation Z Pro Type 6223 and 6227	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-56846
NetVista 6269, 6578, and 6579	http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-4L4TT5

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