

Table 2: AMIBIOS beep codes.

Beeps	Message/meaning
1	POST test successful.
2	Parity error. Parity error in the first 54KB of memory.
3	Base 64KB memory failure.
4	Timer not operational. Memory failure in the first 64KB, or Timer 1 on the motherboard is not functioning.
5	Processor error. The CPU generated an error.
6	8042 - Gate A20 failure. The keyboard controller may be defective. The BIOS cannot switch to the protected mode.
7	Processor exception interrupt error. The CPU generated an exception interrupt.
8	Display memory read/write error. The video adaptor is missing or its memory is faulty. This is not a fatal error.
9	ROM checksum error. The ROM checksum value does not match the value encoded in the BIOS.
10	CMOS shutdown register read/write error. The shutdown register for CMOS RAM has failed.
11	Cache error/external cache bad. The external cache is faulty.

Table 3: Interrupts.

IRQ	Function
0	Reserved for interval timer.
1	Reserved, keyboard buffer full.
2	Reserved, cascade interrupt for slave PIC.
3	COM2*
4	COM1*
5	LPT2. Plug and play option/audio/user available.
6	Floppy disk drive.
7	LPT1*
8	Real time clock.
9	User available.
10	User available.
11	Windows sound system*/user available.
12	On-board mouse port (if present, otherwise user available).
13	Reserved, math coprocessor.
14	Primary IDE (if present, otherwise user available).
15	Secondary IDE (if present, otherwise user available).

*Default, but can be changed to another IRQ.

cables that supply the motherboard, the hard-disk drive (HDD), the floppy-disk drive (FDD) and other peripherals one by one. After each disconnection, turn on the power supply and check its DC outputs. When you do this, at least one set of power cables must remain connected - to either the motherboard or a peripheral. If necessary repeat this process, this time by removing the expansion cards one at a time. This process of elimination will enable the faulty item to be located.

Cooling fan failure: If the cooling fan doesn't rotate there will be absence of the turning noise and air flow at the back of the PC. When the cooling fan fails, the power supply overheats and the result is a thermal cut-out: the power supply shuts down and the computer remains 'dead'.

The fan can be checked by connecting a 12V supply to its terminals. If it works, check its connections.

Stage 2 failure (POST error codes): Faults that are detected during the Power On Self Test (POST) are generally indicated by one or more types of error message. These come in three possible forms: audible beeps, I/O POST codes, and displayed messages. To benefit from the latter, a video card and monitor in good working order are required.

Error beeps generated by the computer are coded in accordance with the BIOS manufacturer. Table 2 lists the beep codes produced by AMIBIOS. Other manufacturers, such as Phoenix, use more elaborate codes, with a combination of beeps to indicate a variety of errors encountered by the POST.

The I/O POST codes provide a more reliable and detailed error indication. As each POST test starts, a two-digit HEX code is entered into I/O port 0080H. It can be displayed by slotting a POST adaptor card into an ISA expansion bus. If the PC fails at any point during the start up process, the POST code present at port 0080H indicates the failed test. If you know the full sequence of POST codes generated by the BIOS in use, the displayed code will identify the fault area.

A more straightforward fault indication is provided by error messages on the screen, such as C: DRIVE ERROR or KEYBOARD ERROR.

The motherboard can be the source of a wide variety of faults, such as defective processor or support chips or a faulty expansion slot. There may be a faulty adaptor card. Before you replace the motherboard, try to isolate the defective device so that the fault can be cleared by replacing just the defective component or card. You may have to remove adaptor cards one at a time and replace the CPU and other pluggable components such as the keyboard controller chip, using known good units.

On-board options provided by the motherboard, such as serial/parallel ports and IDE (Integrated Drive Electronics) connectors, can be checked by first disabling the option (change the relevant part of the CMOS setup) then installing the peripheral (adaptor card such as an I/O or IDE controller).

Stage 3 failure - system configuration errors: Configuration errors invariably cause start-up failure. Some configuration errors, such as FDD or HDD types and parameters, may be recognised by careful observation of the displayed system configuration. Correct errors by carrying out the appropriate changes to the CMOS setup.

Stage 4 failure - no operating system: After a successful POST, indicated by a single beep, several factors can cause failure to boot up by loading the operating system. For example, a non-system floppy disc may be inserted in drive A:. In this case, remove the disc and attempt a reboot. Alternatively there may be absent system files in drive C:, a wrong configuration, or wrong cabling to drive C:.

First try to boot the system up from drive A:, using a known good system disk. If the start up is successful, check drive C: for hidden system files (IO.SYS and MSDOS.SYS) and the not-hidden file