

## Re: Variations on XTAL clock frequency

**Source:** <http://coding.derkeiler.com/Archive/General/comp.arch.embedded/2005-02/1558.html>

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**Date:** 02/27/05

Date: Sat, 26 Feb 2005 16:22:14 -0800

"mc" <mc\_no\_spam@uga.edu> wrote in message  
news:421b4fdc@mustang.speedfactory.net...  
> "MC" <MC@nonexistant.place> wrote in message news:cvf2bo\$msb\$1@news-02.connect.com.au...  
>  
>> *You're fortunate...*  
>> *I've only had one laptop out of 4 that didn't drift in time too much.*  
>> *My current one loses about 4 seconds per day., my previous one*  
>> *gained about 2 seconds per day.*  
>> *The PC battery-backed-up clock system was 'adequate' when it was*  
>> *created back in the mid 1980's, but unfortunately that part of*  
>> *the PC architecture hasn't changed much since then.*  
>  
> *Do they use crystals that are much lower-grade than even the cheapest RF crystals?*  
>  
> *Ceramic resonators, maybe?*  
>  
> *Do they have firmware that is incorrect? Maybe the problem isn't just frequency.*

The reason that PC clocks drift is that the crystal is cut for a different mode of vibration than most higher frequency crystals. To save power, the crystal oscillator that runs off of battery in your PC operates at 32768 Hz (or something nearby). The crystal vibrates in a flexing mode rather than the more stable shear modes because that is the only way to get the frequency down without having to make a truly huge device that would require more power to keep going.

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--Larry Brasfield  
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Above views may belong only to me.