



New columnist **SIMON WOOLLEY** will review weird and wonderful new technology each week. He begins with a look at the latest in timekeeping, the Atomic Clock . . .

Time to take a new look at watches

THIS is the present for the man who has everything – an atomic watch. Sounds like a gadget that “G” would make for James Bond, doesn’t it. In fact it is the latest in watchmaking technology.

No, it doesn’t play music, take pictures, or make phone calls. What an atomic watch does is keep extremely accurate time, all the time. How accurate?

How close one second in every one million years second? Pretty good compared with one second in ten thousand years for your good quality Swiss wristwatch.

While there may be several different brands available, the ones I’m talking about are made by Junghans of Germany. They’ve been producing timepieces since 1881, and their range includes watches that are solar powered, keep track of rail passes, or even open your front door electronically. But some of their most impressive watches are the atomic models.

It all goes back to what is called an atomic clock. Rather than use a wound spring and gears or the vibrations of a quartz crystal, an atomic clock bases its time on the vibrations of the caesium atom.

In 1967, the 13th General Conference of Weights and Measures redefined the second as “9192631770 periods of the radiation corresponding to the transition between the two hyper fine levels of the ground state of the caesium-133 atom”. Doesn’t that sound impressive?

Unlike quartz crystals, the caesium atoms don’t wear out and they can oscillate forever without any disturbance.

Furthermore, each atom of caesium oscillates at exactly the same frequency as all others so they make great little timekeepers. Now the US Government operates an “atomic clock” in Colorado. This clock

keeps precise time, to put it very simply, by dropping caesium atoms, and is hooked up to a huge radio antenna that sends out a strong signal across the US.

Atomic clocks and watches tune into that radio signal’s frequency, double the signal, and set the time to the US atomic clock.

They even adjust for time zones and Daylight Savings Time.

Recently, the government upgraded the signal strength of this station from 27,000 watts to 50,000 watts so that it covers the entire continental US plus Mexico and parts of the Caribbean. So much for all the satellite stuff. What matters is that my Junghans Carbon watch keeps extremely accurate time, all the time and automatically resets itself at 11pm, Central Standard Time. During the rest of the 24 hours it keeps time via a quartz crystal. You can reset it manually at any time during the day. Should I travel to another time zone, all I have to do is set the small digital display at the bottom of the clock dial to that zone and the watch will automatically reset to the correct time, after synchronising itself with the radio signal from Colorado. Pretty cool. Besides all that, these watches look great as well. The case is made from carbon fibre, and in addition to the clock face has a digital display for month and day.

It has a very nice ribbed leather band, a carbon fibre case with a crown on back, a metal top ring, illuminated hands and nice accents on a black face. The watch sells for \$3,000.

If you’re not happy with the base model, you might also check out the Junghans ceramic atomic watches. These watch-cases are made of titanium and high-tech ceramics. They also cost in the \$2,000-\$3,500 range. But they don’t keep time any more accurately.

www.junghans.com



MOTHERBOARD

THE motherboard is the heart of all PCs. It links all the other components together. Motherboards are basically a large circuit board with many connectors and are permanently attached to the inside of the case.

You need to co-ordinate the type of CPU with the type of motherboard. There are three main types of motherboard at the moment – Slot A (AMD), Slot 1 (Pentium II and below) and Socket 370 (Pentium III). Popular brands include ABIT and AOPEN.

Tech Talk

CENTRAL PROCESSING UNIT

The CPU is the brain of the computer. This is where the majority of the work is done inside the computer.

Common brands are Intel and AMD and models include Pentium III and Athlon.

A CPU’s speed is measured in Megahertz, and the higher the number the better.

— SIMON WOOLLEY