Digital Audio Signal Generator (March-May 2010): the original software did not set up the crystal oscillator and PLL correctly. It worked on some dsPIC33 chips but not all. The updated source code and hex file has been provided to kit suppliers and is available on our website (0420310B.hex).

in parallel with the 0.1Ω 5W resistor. No other changes are needed.

Capacitors for fan speed controllers

I wish to know if it is possible to purchase the capacitor module that controls the speed of ceiling fans. I have six fans that need attention, mainly with the second speed setting. I have checked the capacitance of some units and found that the value of the unit in some cases is half of what it should be, eg, 2.5μF reads 1.2μF. I have checked the fan motor capacitors and they are within 5% of their rated value.

I visited a couple of electrical shops here and they want to sell me a complete controller for nearly the price of a new fan. There is nothing wrong with the fans or control switch. Only the capacitor block is faulty, so is it possible to just buy the module? The value required is 1.8μF and 2.5μF (I know that there are other values for other fans).

The fan I have is Wattmaster 3-speed ceiling model. I have checked on the web at Wattmaster but can't seem to find any info regarding these capacitors. (B. H., Mackay, Qld).

● Depending on the size of the fan, motor start capacitors could be used for large fans or the mains rated polypropylene X2 capacitors can be used for smaller fans. Ideally, use the same type of capacitor that is already in the fan speed controller.

Polypropylene X2 capacitors are available from Farnell (**www.farnell.com.au**) Cat. numbers 111-2847 for 1.5μF and 111-2849 for 2.2μF. You can add a 330nF across each to make up the values to 1.8μF and 2.5μF. A 330nF X2 capacitor is Cat. 111-2844.

For motor-start capacitors, see Cat. 119-0561 for 1.5μF and 119-0562 and 119-0563 for 2μF and 3μF values.

Idea for GPS computer

A major problem that I have with my car is that the speedo is significantly inaccurate (but apparently just not bad enough to trigger a warranty replacement). Whilst I know it is inaccurate and I know approximately by how much, it still makes it impossible to reliably know the speed I am travelling.

Your GPS car computer is a beautiful solution to this problem except that it requires a constant GPS lock to operate. My project suggestion is to use one of the general purpose I/Os to connect to a speed related input from the car. During GPS lock, the device could calculate the pulses per km for the input and then use the input during periods of GPS loss to continue running the computer, despite the loss of GPS sync.

Auto detecting the pulses per km during GPS lock has two advantages. First, there is no configuration to make the input work; no need to set the pulses per kilometre. Second, as tyre pressures change over time and tyres wear etc, the auto-configuration during GPS lock ensures accuracy over time regardless of a slight shifting in the pulse rate. You now have a device that allows your GPS computer to operate most of its current functions without constant GPS lock.

In a modern car I know of no reason this could not be done by the manufacturers in the engine computer with the addition of the GPS chip. The excuse of needing to over-read speed in order to protect the driver from breaking the law when tyres wear is a complete fallacy when it would be so simple (and cheap) to fix. (A. H., via email).

● There's another issue here. Although speedos are designed to be optimistic under the Australian Design Rules, the odometer is usually highly accurate. So if you correct the speedo's reading, you will actually reduce the reading of the odometer; not by much but it is there. In fact, if the ADRs were updated, it would be easy for car manufacturers to comply.

The ADRs should be updated because many people these days are using their GPS to accurately set their cruise control to travel exactly at the speed limit. SC