

75ZT Community

How I Fitted the Digital Temperature Gauge By T-Cut

Here's one way to install the digital temperature gauge designed by Hans Schaaper.

I decided to fit mine into the redundant slot above the CD-80 radio in my 2004 Connoisseur. Other interiors will have different alternatives and possibilities and some of the steps I took may be unnecessary. Anyway, here's a photo of my intended location.

Image 1



The slot is originally fitted out with a small rubber mat which is dispensed with. The available space is the ideal shape and size to take the PCB mounted on a support board, together with a plastic fascia to take the display screen and bezel. The slot is slightly smaller than a standard single DIN fascia panel, which I bought for around a fiver from one of the eBay shops.

I

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mage 2



Using a fine saw, a file and abrasive sheet, I cut down the DIN panel and cleaned it up so it was a nice close fit into the slot. This is nicely shaped so you can seat the fascia just inside.

Below shows the size I needed. Notice the useful lugs on the back. The lower bit is the offcut which came in handy later.

Image 3



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Before cutting a hole for the display, I figured the best way to support the PCB was a small board of some kind fastened to the lugs on the rear. All I had available was hardboard, but plastic would be nicer. Since doing all this, I've acquired some eighth inch thick Perspex which I'll swap in due course. The display sits across the edge of the mounting board, so you have to cut some clearance for this as shown below.

Image 4 (Top side)

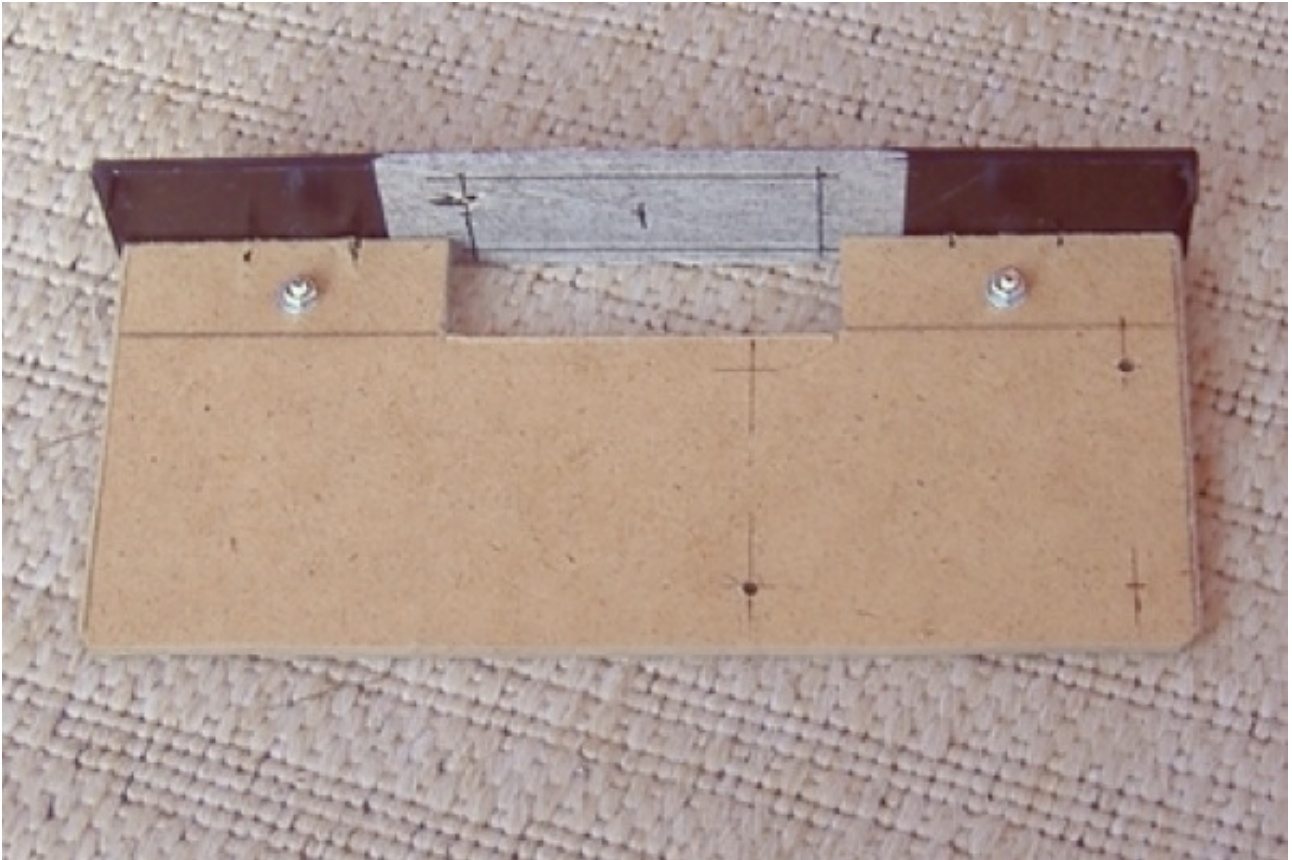
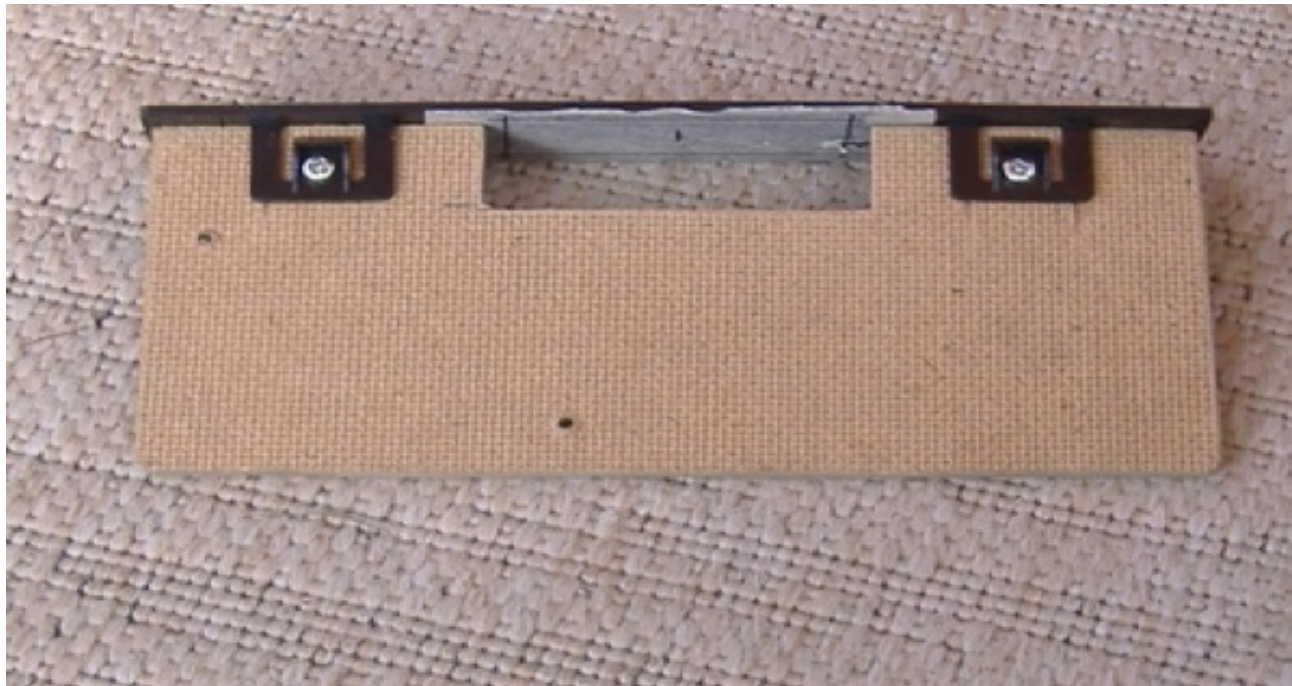


Image 5 (Under side)



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I had to cut the board to take the gussets supporting the mounting brackets, but it all fits very nicely and is held with a couple of nuts and bolts.

The next job was to cut out the window to take the display bezel. I guess this could be cut out using a Stanley knife, but I used a Dremmel with a fine abrasive disc. Some care is needed with this. Even at slow speed, the Dremmel cuts like a hot knife through butter, so ensure the blade doesn't go too far and spoil the job. Here's the window after trimming to fit the bezel.

Image 5

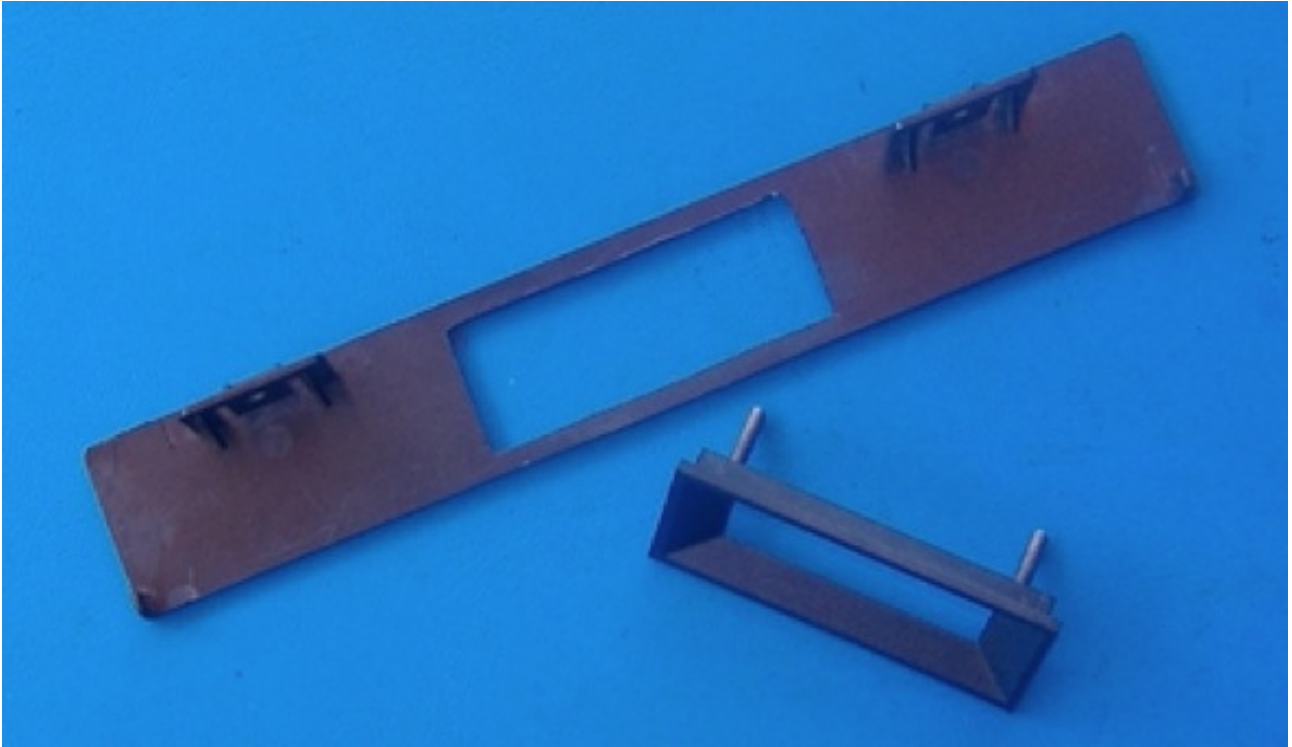
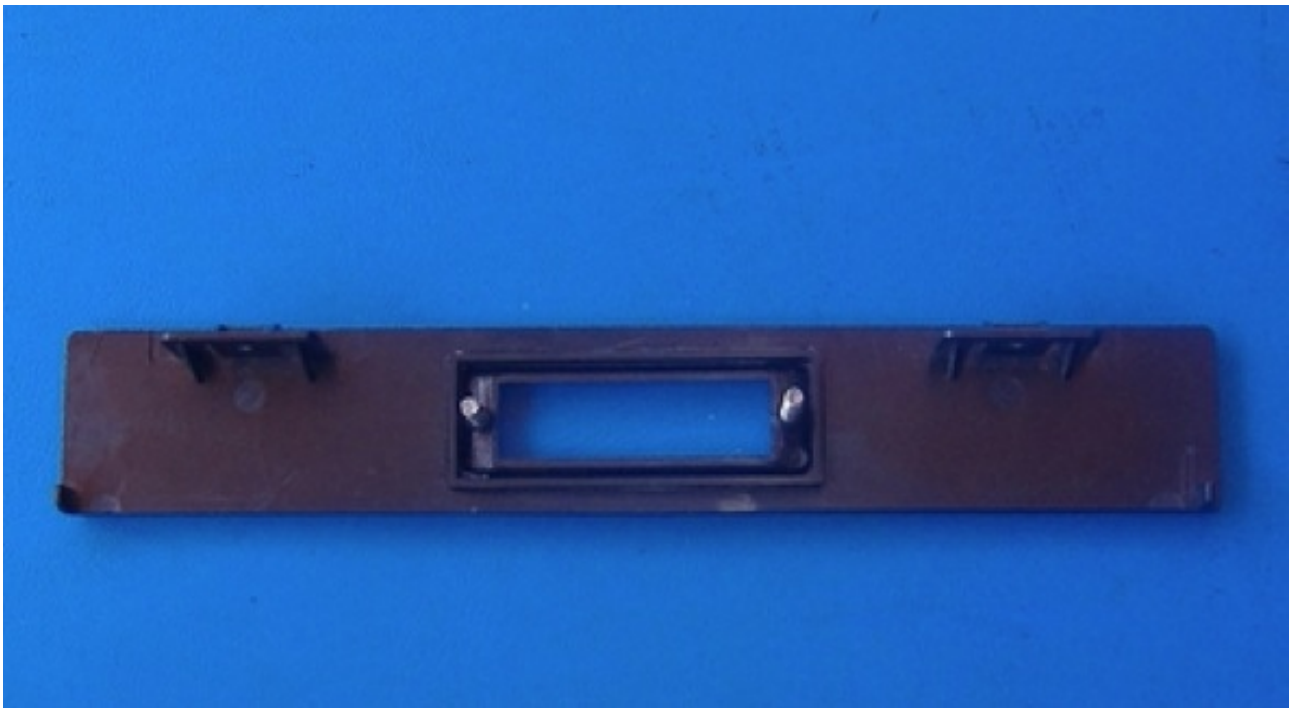


Image 6



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Image 7



I looked at ways of mounting the bezel with the integral studs, but it was too involved. The simplest way is to stick it permanently to the fascia using super glue. The studs then mount the display screen without complications. Here's the result.

Image 8

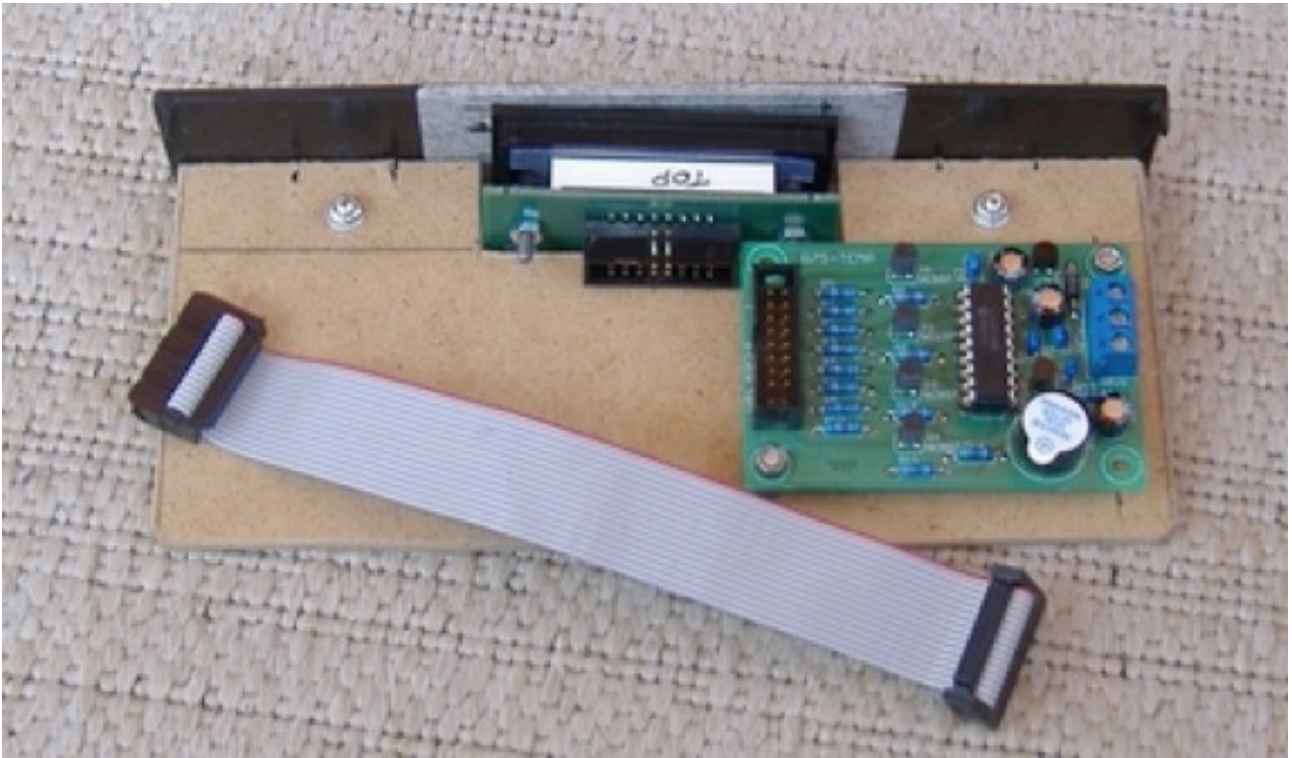


Super glue gives off a powerful vapour which stains the plastic. This can be difficult to remove without marring the finish, so the absolute minimum of adhesive should be used. Don't get any on the visible fascia surface or it will look a mess.

I decided to mount the PCB to one side of the board to give me room to make additions like the LED fan indicators described later. I drilled two mounting holes and used the screws and spacers included with the kit. Here it is in position. Notice I labelled the display so I won't fit it upside down, which is easily done.

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Image 9



Before permanently installing the display, I decided to modify the screen a bit. The red screen piece allows the unlit LED matrix to be seen through it. Here's what I mean.

Image 10



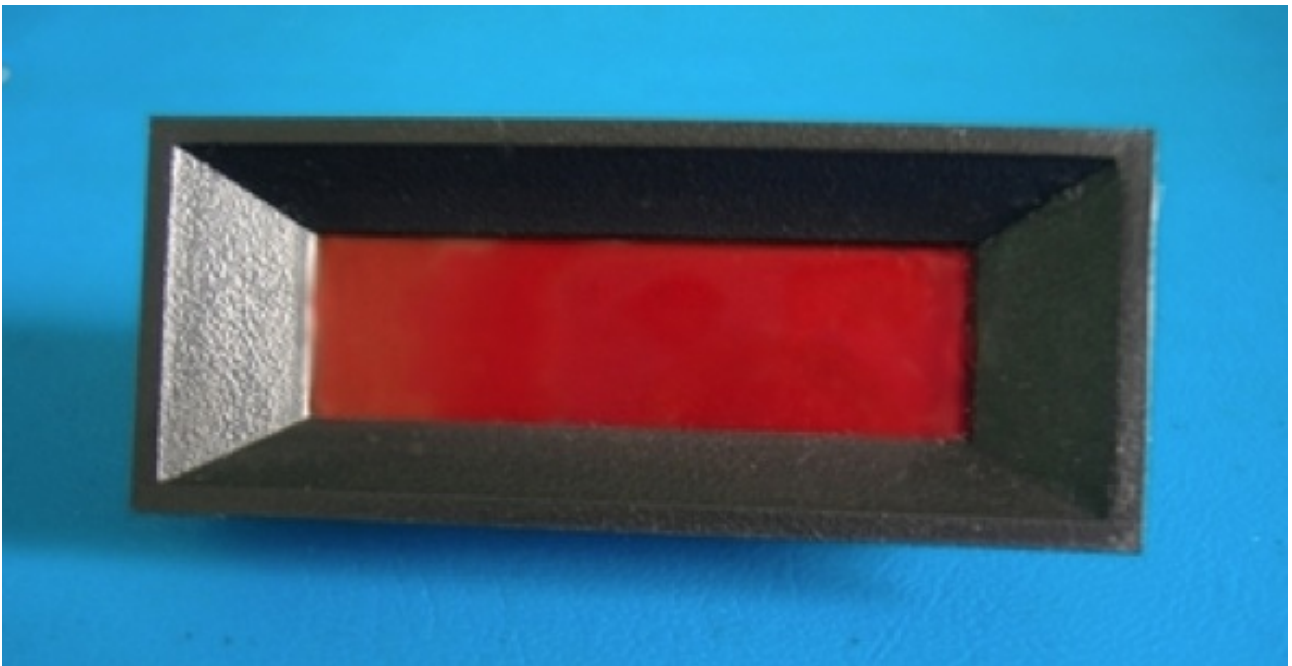
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To eliminate see-through, I cut some additional filters from bits of plastic sheet I had in my Odds & Sods drawer. In the event, I used the single grey one seen on the right.



I added this between the LED unit and the red screen so when it's all fastened together the unlit LED matrix isn't visible.

Image 12



A further benefit (in my opinion anyway) is a reduction of the display intensity. This is a personal thing and a dimmer display is less easy to read in bright sunlight. Anyway, I liked the result using the grey filter. Here's the with and without views.

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Image 13 (No additional filter)



Image 14 (With the grey filter)



Having got so far, I then decided to add some indicators to tell me when the cooling fan is running. Mine's a 2-speed type and the simplest thing I could think of was a couple of LEDs wired into the slow and fast speed supplies to the motor. I thought green would be a logical colour and matches those on the climate control panel.

There are hundreds of LED types to choose from and after experimenting with some ultra-bright ones, I decided on the lower candlepower ones. They show the best colour when throttled down to operating voltage using the resistors supplied (470 ohm I think). I chose the 3mm cylindrical type, which have a nice flat face and are long enough to be self-supporting in the fascia. The first thing to do was solder the resistors to the LEDs. You can put them on either electrode, but my logic said anode. The anode (positive) is always the longer lead from the unit.

Image 15 (LEDs with resistors attached)

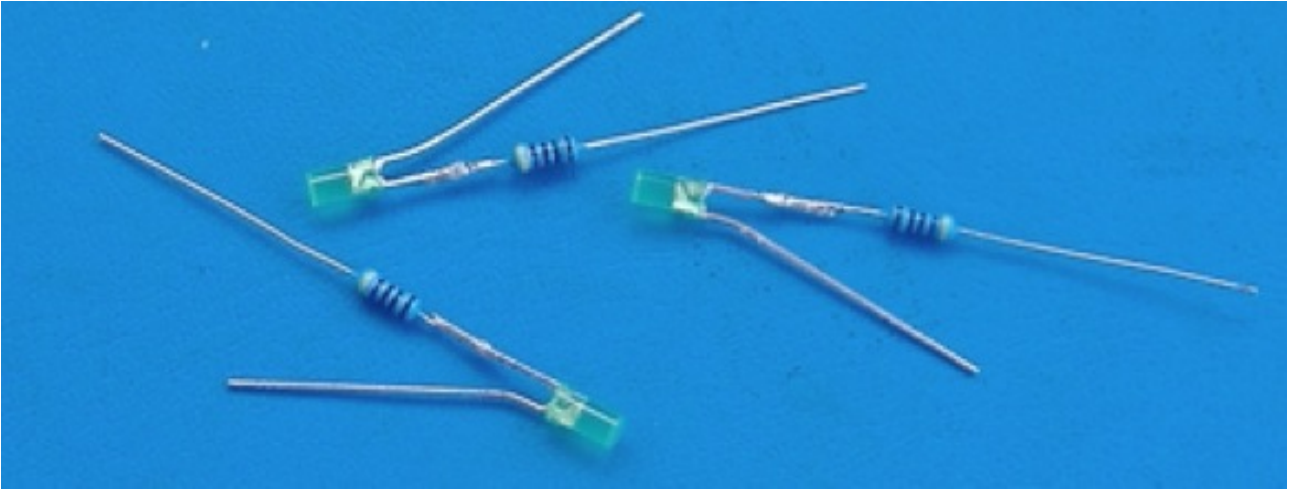


Image 16 (Shrink wrap insulated)



I'd already decided on a scheme for the indicators. One LED for slow speed and two for high speed. These are fitted to the right of the display in 3mm holes drilled through the fascia. To support the LED units and stop them poking out, I stuck a strip of that spare DIN fascia on the rear of the panel to thicken it. This also gives it some extra strength. Here's the drillings.

Image 17

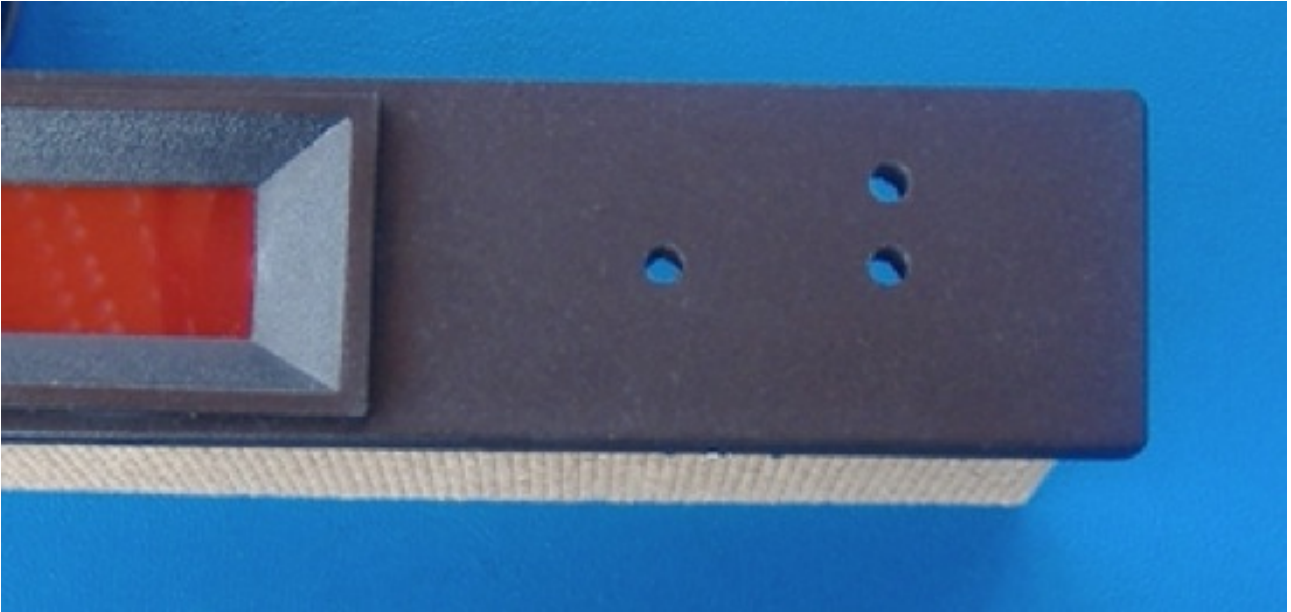
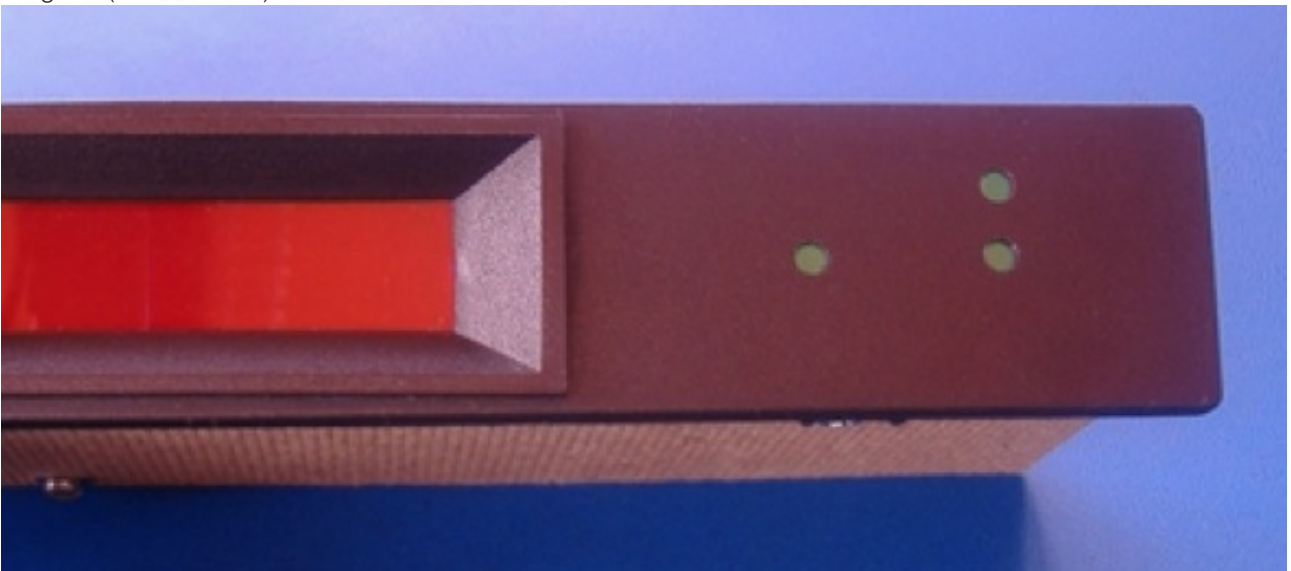


Image 18 (LEDs in Place)



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Here's how they look when powered up (test).

Image 19 (Low Speed Fan)



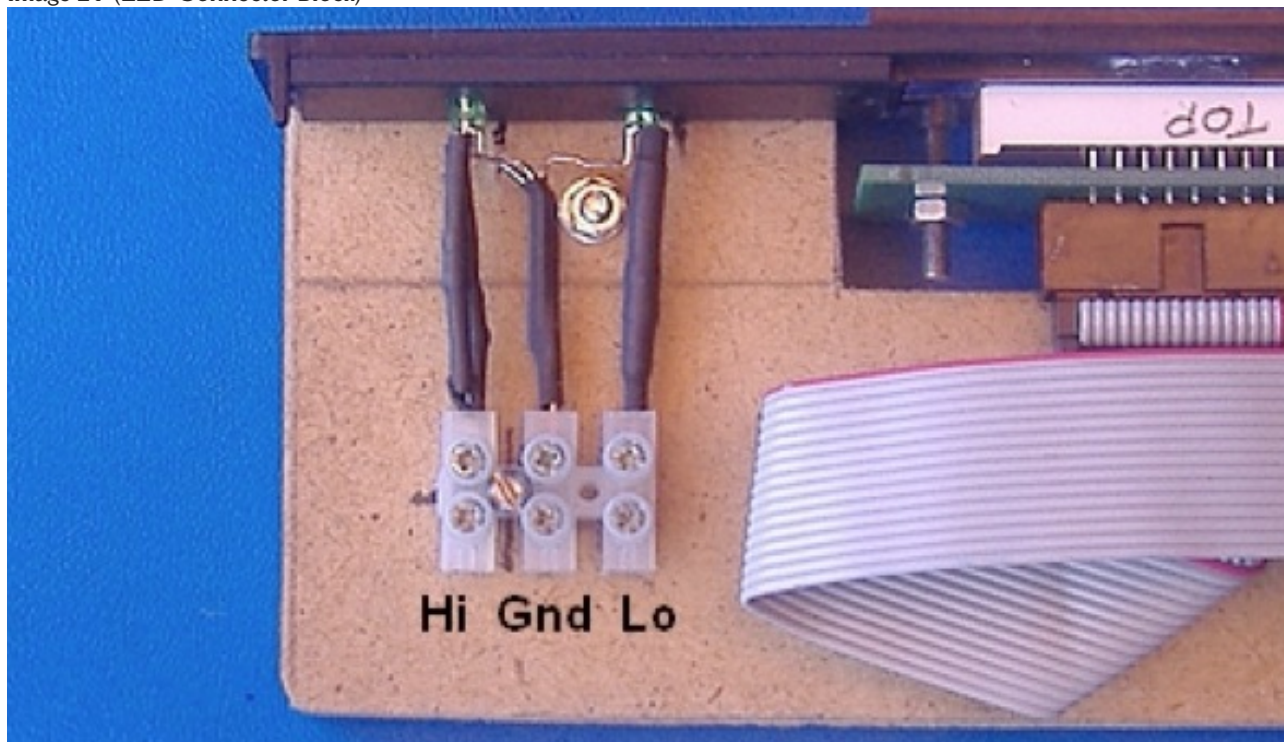
Image 20 (High Speed Fan)



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To connect up the LEDs, I soldered all three cathodes together and put them into a 3-place connector block screwed to the board. The anode from the low speed LED goes to one connector and both anodes from the high speed pair going into another.

Image 21 (LED Connector Block)



The gizmo was now ready to install in the car. This required removal of the 'eyebrow' above the slot. This is held by two self-tappers which you can access after unclipping the finisher panel on its underside. It just flips out using a fine screwdriver. The mounting screws can be slippery critters so I used one of those spring loaded grabber things to hold the heads and ease 'em out. After pulling out the eyebrow, the radio mounting panel can now be unscrewed. There's self-tapper at each upper corner and these can be devils to retain. Use a grabber to stop them disappearing down the back.

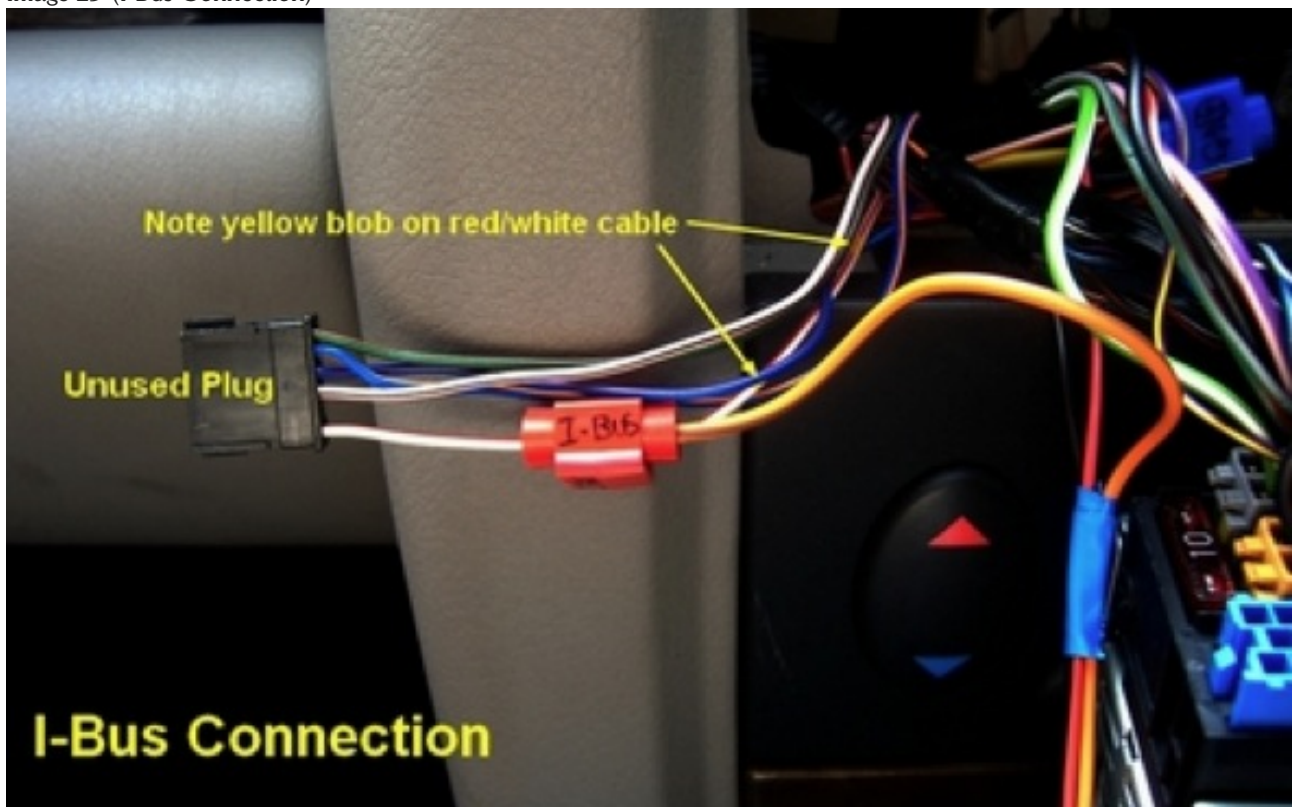
The radio fascia can then be manoeuvred out with radio attached. It comes out a good way so you can get at the wiring behind. You need to locate a suitable earth/ground wire (usually black), a switched live supply and an I-bus wire. There were several unconnected plugs with umpteen leads amongst the spaghetti of wiring. I found what I needed on these using a multi-meter.

Using short lengths of suitable cable, I connected the 12v supply, ground and I-bus terminals on the PCB to the corresponding wires using standard crimp connectors. Each was marked to identify them.

Image 22 (12v Supply and Ground)



Image 23 (I-Bus Connection)



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Usefully, the rear end of the slot has some access holes, through which I fed the wires to the PBC. At this stage I haven't connected up the LEDs to the fan supply. This requires removal of the front bumper and that's scheduled for later this summer. I'll connect the low speed supply to the motor side of the slow speed resistor. That will allow me to monitor that it's still OK. If the resistor blows, the LED won't light up when the A/C is running.

Image 24



I left the label on the beeper unit. I thought it was too loud without it. The unit is simply a push fit in the slot. The fascia holds it in nicely and it only needs a thin blade to withdraw it. After locating the unit, all the retaining screws were refitted along with the eyebrow piece.

Image 25

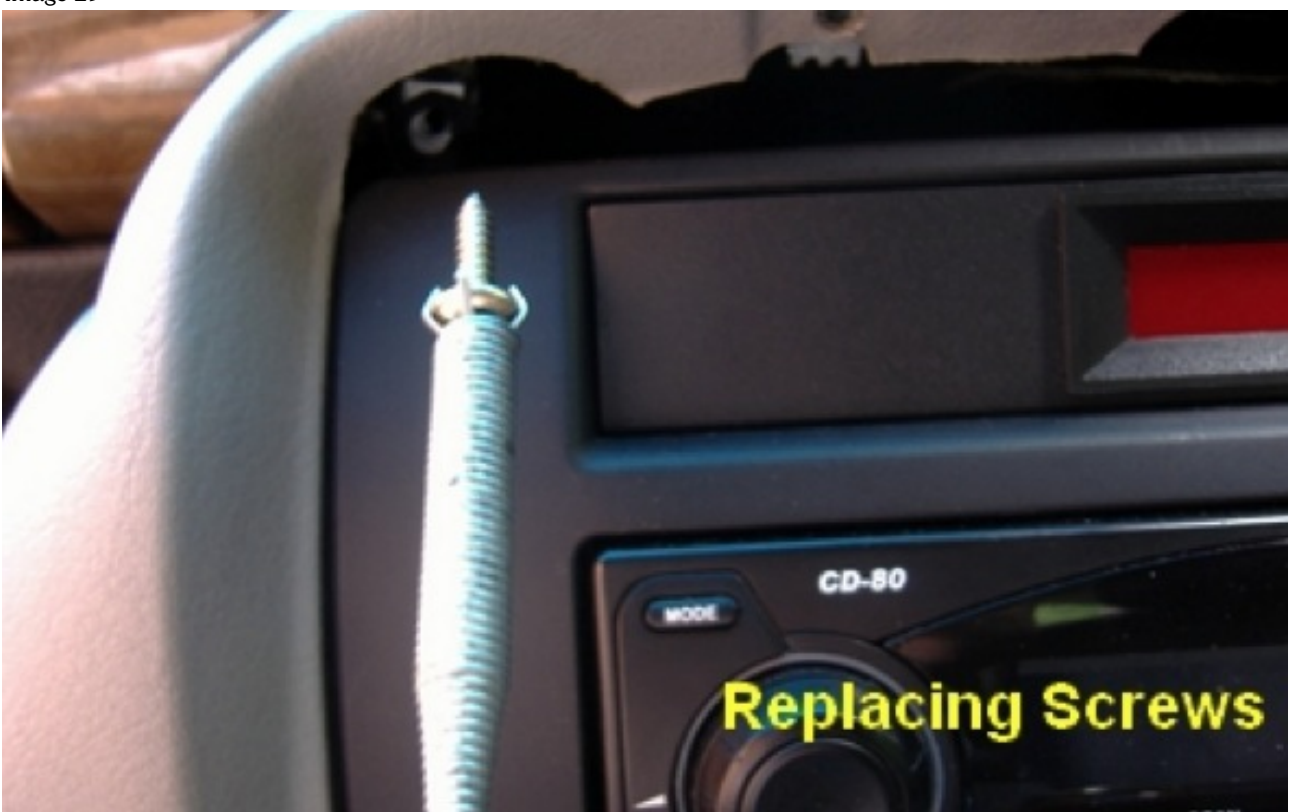


Image 26



Image 27



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This is how it looks in action. This photo was taken before I fitted the fan LEDs.

Image 28



Image 29



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