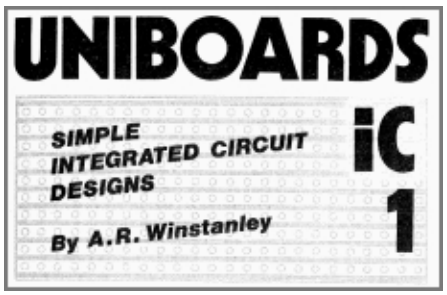
I.C. Uniboards

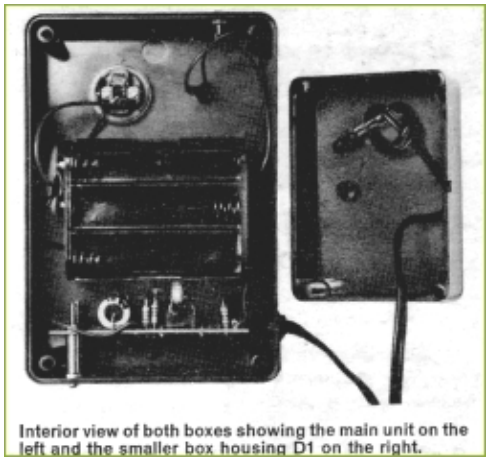


With my Simple Transistor Designs series (Uniboards, EE Nov. 79 onwards) in mind, I'd been asked about writing up some beginners' designs that used one integrated circuit. I bounced some vague ideas around and came up with a short-list in April 1980 that would, in the event, bear little resemblance to what I actually submitted for publication. EE didn't always like the idea of chopping or cutting down the standard 24 x 10 Veroboard, which I'd done in some projects – they lifted them out of the series and published them individually, yonks later. For IC Uniboards Fred Bennett said the Veroboard size didn't matter, but I hoped they'd do a better job of publishing everything sequentially, rather than every other month or whenever it fitted in. The IC Uniboard finalists, as published, were:

- IC Uniboards 1 - **No Entry Indicator** (EE Dec. '80)
- IC Uniboards 2 – **Car Ice Alarm** (EE Jan 81)
- IC Uniboards 3 – **6/7.5/9V PSU** (EE Feb '81)
- IC Uniboards 4 **– Mini Siren** (EE Mar. '81)

Although they'd wanted six projects in all, my *Soil Moisture Meter* and *Pressure Mat Trigger Alarm* were run separately. The schedule was a bit ad.hoc but I don't suppose it mattered by now.

Uniboards 1: No-Entry Indicator


Interior view of both boxes showing the main unit on the left and the smaller box housing D1 on the right.

← The **No Entry Indicator** in **December '80 EE** (a bumper issue as they also ran my **Christmas Lights Flasher** project) was just a 555 astable oscillator, flashing two LEDs.(!)

I guess EE wasn't keen on my first IC Uniboard effort. They didn't photograph the front view of the prototype at all. I built it into a black box using my standard Hekla low profile rocker switch that only needed a single round hole.

There isn't much more to say really, and the prototype went skywards long ago. Probably the best place for it… However, I've now noticed how it clashed with a project in March '81 EE 'Do Not Disturb' LED Flasher, a simple transistor astable instead, so take your pick.

At that was 1980 over and done with.

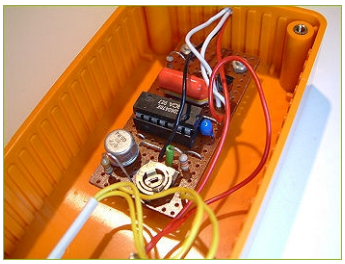
Uniboards 2: Ice Alarm

← My second one was more appealing, **Car Ice Alarm (Uniboards 2, EE Jan '81.**) EE made the article's header graphic more attractive. My

circuit used a CMOS CD4047 astable oscillator for a change, to flash a small 12V pilot light via a transistor. A thermistor disables the oscillator until icy temperatures were sensed, when the lamp would flash.

The prototype was built into a small orange BIMbox (as usual, my staple plastic enclosure by then) carrying a yellow push switch and amber warning light. EE added a Letraset car to the lid: (it's a French Citroën Ami, see http://en.wikipedia.org/wiki/Citro%C3%ABn_Ami) .

Here's the prototype, in its tangerine technicolour glory!


A terminal block carried the connections to the vehicle and the thermistor was housed in the smallest plastic box I could find: problem was, it needed to sense the outside airflow (eg behind the front bumper), so it needed holes to check the airflow, but it needed to be kept dry at the same time……

All pretty standard stuff but it was a neat and tidy little project that took 2½ pages. It would still be buildable today, although embedding the thermistor in resin or a small plastic tube would be a better idea.

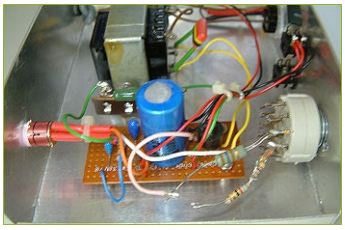
← Me, holding my Ice Alarm!

Uniboards 3: Power Supply

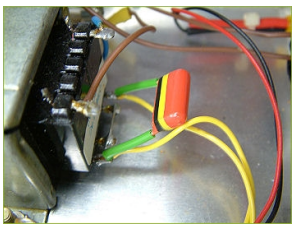
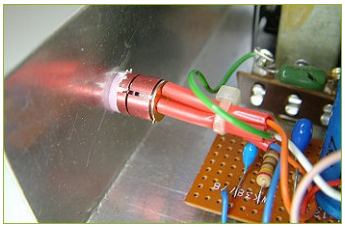
← IC Uniboards 3 was a **Power Supply Unit (EE Feb '81)** – I was doing well because the series had settled into a routine and was now being published every month as I'd hoped.

Trying to make a small and neat power supply was made easy by the advent of variable voltage three-terminal regulators and I was always keen on National Semiconductor's LM317. It offered 6, 7.5 or 9V and was inherently short-circuit proof. My previous 'In-Car PSU' project used a toggle switch to change output polarity which was quite a clumsy idea, so my Uniboard unit had two output sockets instead.

The case had a steel cover with wood effect plastic coating (!) and an aluminium chassis. It was quite crudely made and I used black sticky-backed plastic on the front panel, a yellow rocker switch and yellow l.e.d. (with lens clip of course) – the knob in the EE photos is different to the yellow one I added later. The prototype (illustrated) still works fine.

During development I recall I'd discovered what turned out to be "hole storage noise" in the bridge rectifier so I added a 0.22µF capacitor across the secondary (that's the red Mullard C280 photographed below). My Uniboard PSU used the unpopular TO-5 version (LM317H) which presented a few heatsinking challenges. I used a special TO-5 mounting kit to fit it to the rear panel, for all the good it probably did.

Uniboards 4: Mini Siren

The very last article was **IC Uniboards 4 – Mini Siren (EE Mar. '81)** which was a special issue of Everyday Electronics for me – it carried one my bigger projects too, the **Bench Power Supply** which featured a muscleman on the front cover (no resemblance whatsoever).

For the Mini Siren I used an NE556 dual 555 timer to generate a 'whooper' sounder effect driving a loudspeaker directly. I added a simple switch to alter the sound effect, so it could bleep or sound a twin-tone. The prototype was a bit crude and industrial-looking because I used a primitive aluminium box, with solid aluminium knob for the rotary switch. I avoided the temptation to add flashing LEDs (with series resistor) on pin 9! But it would have been a useful option to give it a visual appeal, and it's a pity I never thought of it at the time.

Making a neat speaker aperture was a drag, and I used aluminium mesh (Isopon car repair mesh) for a grille. It was a novel little circuit and I was surprised no-one had done it before. But it clashed in the same March '81 issue with a warbling doorbell circuit based on the same idea. A similar principle was also used in my **Siren Module**, **Jan. 82 EE** to be described. The circuit would work fine today without a problem. The prototype was junked, I guess I never found it particularly attractive.

I was 21-22 at the time and quite proud to see a short series of little projects in print. I hope you enjoyed reading about my 1979 and 1980/81 Uniboards series. You can download the constructional articles from www.alanwinstanley.com

ARW April 2012