GATEWAY

The Official Magazine of the Gippsland Gate Radio & Electronics Club Inc.

July 2016

Mid-Year Lunch

Set Top PC

Home Brew winner

And More

President's report
- page 3

Contents.

Event Queue

July:

15th	July General Meeting
16th	GGREC Hamfest.
17th	Club Net 8.00 pm - on VK3RLP
24th	Club Net 8.00 pm - on VK3RLP
31st	Club Net 8.00 pm - on VK3RLP

August:

5th	Prac night
6th, 7th	10-10 International Summer Contest
7th	Club Net 8.00 pm - on VK3RLP
14th	Club Net 8.00 pm - on VK3RLP
19th	August General Meeting
20th, 21st	19th International Lighthouse and Lightship Weekend
21st	Club Net 8.00 pm - on VK3RLP
27th, 28th	36th ALARA Contest
29th	Club Net 8.00 pm - on VK3RLP

PRESIDENTS REPORT (sort of)

Radios in movies.   We see them from time to time. Inevitably, they have overdubbed the actual receiver audio with a 'Hollywood' version of reality, so that you hear the regenerative feedback squawk of a TRF receiver, even though it is obviously a superheterodyne unit.

I am still reeling from the 1996 release of *Independence Day* where they use Morse keys with a half-inch gap and a wrist action more akin to pounding a countertop bell in a hotel lobby, in order to tell the world how to kill aliens.
(Clearly I need chicken wire in front of the telly to shield the screen from hurled cushions.)

In the movie '*Frequency'* we had Dennis Quaid and Jim Caviezel talking to each other over a 30 year time gap using the same HF radio at each end.
Somehow the time travelling DX bothered me less than how they managed to hold a full-duplex conversation using a Heathkit rig clearly incapable of it.   (no they weren't using VOX. I checked.)

In an old ABC tv series called '*Embassy'* kidnapers took Australian consular officials into the jungle for ransom. They communicated their demands using a Yaesu FRG7 radio.   Regrettably, we were supposed to overlook the fact that this was only a receiver. Plugging a microphone into the headphone socket doesn't actually make a general coverage HF receiver transmit-ready.

Which brings me to the latest incarnation of '*Independence Day, Resurgence*' now at a cinema near you. I can almost (but not quite) forgive the short wave radio scene where steady audio comes from the speaker while some kid continuously rotates the frequency dial.

However, when all of the satellites are shot out of the air by the aliens, a ship must use their 'Plan B' communications. They pull a Yaesu FT101E out of a locker and plonk it onto a table without so much as a filament warm-up, never mind dipping the anode or peaking the preselect. We are supposed to presume that the evil aliens don't listen to HF. Maybe these attackers from space only invented USB and we tricked them by switching to LSB.   I mean come on guys, what were you thinking?

My point is, (and I've been taking my time getting to it) that movie makers need to take much more care. We, the vocal and nerdy 0.0001 percent of the population are watching their every move and if they don't want us angrily shaking our fists at their movie trailers, they have to get their shit together and start using our technology the way it is intended to be used.

So with that out of the way, along with some calm-thought visualisations, I shall move onto more pressing topics…

Of course this weekend is our annual Hamfest Sale at the Cranbourne Community Hall. By all means come along and enjoy yourself, but if you can help out in some capacity for a few minutes during setup or clear down times, your assistance would be appreciated.   Brian, VK3FLEX would be your first point of contact if you are able to help.

On the Saturday, the 23rd of this month we shall have an evening meal out at the Thai restaurant in Beaconsfield. It should be both fun and tasty.   Look for the advert in this edition of Gateway.

By now most members would have seen the email being circulated about recommendations for a camping holiday for the 2016 Melbourne Cup Weekend.   If that is something that interests you, then please reply to that email if you wish to have some input into the final destination.

Lastly, I wanted to comment on the implementation of an Arduino interest group. This is a great way of introducing people into microprocessor electronics, without getting bogged down with chip-level software.   If you have ever wanted to make something that does something, this is your chance! Albert VK3BQO will briefly introduce the topic on Friday night.

Cheers, Ian, VK3BUF

SATURDAY the 23rd of JULY

Join GGREC members for a relaxing evening of fine food at the Beaconsfield Tulip Thai restaurant.

Tulip Thai
6/10 Princess Highway
Beaconsfield, VIC 3807
(03) 9707 0091

Operating Hours
7 Days / Week
5.00pm to 9.00pm

If you would like to be there, see Graeme VK3BXG at this Friday Night's meeting and provide a $5 per person deposit.   (you will get this back on the night.) The booking is from 6:30pm.

To get there, travel along the old Princes Highway in Beaconsfield. There is a small car park, almost opposite the start of the Beaconsfield – Emerald road. You will see the restaurant at the end of this car park.   See you inside!

From The Editor

The highlight - or should I say, lowlight of this month was probably my encounters with a dodgy website. When I recently upgraded my PC to windows 10, most of my software was deleted, the same as when I upgraded to Windows 8 - at least Microsoft is consistent, delete delete.

Now I can understand their being issues with some software, however they also uninstalled Microsoft office - crazy. However the biggest pain would have to be all those small utilities that you pick up along the way from various sources. You know the ones, program various radio's, convert files from one type to another, design antenna's etc etc. Quite often they come from a website, Hopefully you still have the original install source (Now who keeps them?) However some install directly from the web, with no save option. or you need to activate/register them before they can be used. Trouble is, down the track the website has disappeared, or the 'free' registration was only available for a limited time (ie computer magazine 'freebies'). Guess what, even if you can find the same file again, the free registration period is long gone, and your only option is to pay for a later version. That could be called lucky, at least you have something. (I just shake my head and say 'blast') - So, if you get an install program - keep it somewhere, you will probably need it sooner than later.

Anyway, to cut the story short, I went to process some disks the other day only to find I no longer had the appropriate utility anymore. So onto the web I went Googling away, I eventually found a site purporting to be the maintainers of it. Good, one down, many to go. Or so I thought until I saw two extra extra programs pop up on my desktop in quick succession. Bugga, now where have Microsoft put the uninstall function in Windows 10. After finding 'Control panel' I soon identified the two offenders and quickly deleted them. - so fixed?

A few moments later a window popped up saying windows did not know how to open 5385.tmp, so I aborted it. Several minutes later, up it comes again. So out with my virus scanner, of course it found nothing, quickly followed by another popup. So this time I told Windows to open it with Notepad - and what did I see, an executable program that had been renamed to a .tmp file. So I did a search of my HDD, and eventually found it, and deleted it. The end? No way, 2 minutes later up came a popup saying it could not find and launch the file I just deleted!

So I launched RegEdit, and started looking for it, and the extra program I uninstalled. After some deletions I had ended the popups. So is it all over????

So the upshot - be very wary, it seems there are more and more unscrupulous dealers out there every day. Once upon a time there was two types of software, paid for & free, Now there are many in between, and quite a few of them 'lie' and it is only later that you realise after your computer has been hijacked, wiped, its contents ransomed, or worse.

At least I'm not that poor ABC reporter whose computer was compromised, and her extremely extensive email contact list stolen, and then used to spread spam and malware – IN HER NAME!!!!

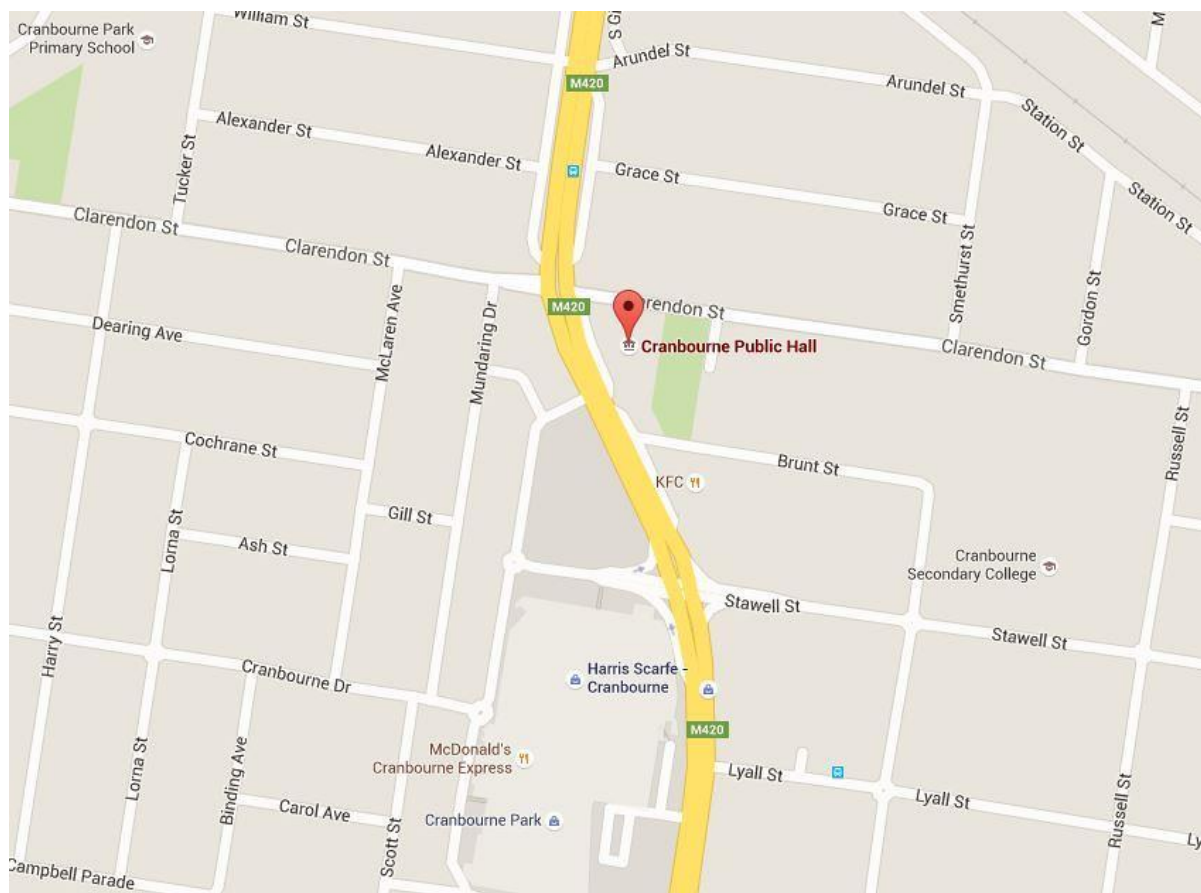 Imagine trying to keep face talking to the US president, or Hollywood A-listers, etc.

Paul VK3TGX

GGREC Hamfest

The Gippsland Gate Radio & Electronics Club will be conducting their annual Hamfest on **Saturday July 16th**, at Cranbourne Public Hall which is on the corner of Clarendon and High St, Cranbourne **-** Melway reference **133 K4**.

There will be 41 undercover tables presenting a mixture of new and used Electrical, Electronic and Amateur Radio Equipment so there should be something for everyone. Door will open at 10.00am

*Your Entry fee of $6 will go towards assisting the Club to promote Amateur Radio at the "Club Shack" facilities in Cranbourne. Hot and cold food, plus tea and coffee will be available. The entry fee includes a ticket in the Door Prize which will be drawn around 12:45pm. Additional tickets can be purchased during the day. *Please note you must be present at the time of the draw to collect your door prize.*

We expect this year's event to be just as big as previous years.

If you want to be a Stall Holder you can book a table by contacting our booking officer at: hamfest@ggrec.org.au. To see what tables are available just check the table layout below: (Note. tables coloured green are still available).

Tables cost $22 each, included is entry for the Stall Holder & 1 additional person, a ticket in the Door Prize & free Tea and Coffee (The maximum number of tables per Stall Holder is 4).

GGREC Would like to thank the following sponsors for their continued support.
Altronics, **RLP Communications**,
VK Ham, **PK Loop Antennas**

Who wants to learn about Microprocessors?

Following on from Paul VK3TGX's articles in the last couple of editions of Gateway, there seems to be some talk about microprocessors and how easy they are to build into simple or even complex projects these days.

Many hours in the past have been put in to teach or instruct individuals to get started with microprocessor hardware and software. I know how much work went in to preparing the lectures and saw the end results with only the real diehards (nerds like me) taking it further. Microprocessors was not an easy subject to teach (or learn) because there are several major sections that are needed to know before one can competently design the hardware and software for a project. In days past, one had to have a good grounding in electronics as well as learn the intricacies of the inner most workings of the processor chips before writing any software. Nowadays, starter kits and easy to learn software has made it easier to get involved. With this in mind, we envisage forming an "Interest Group" rather than a series of lectures. This would be where likewise interested participants would meet to swap ideas, help each other and hopefully design and build their own project. Their own project would be something that is useful to them not just flashing lights to look at. (unless that takes your fancy)

Although there are several platforms to use with each having their own good and perhaps better features, (no bad ones) and owing to the knowledge already existing with Club members, the best selection is perhaps the Arduino. This platform is based on ATMEL microprocessors and although nearly everyone has heard of a PIC chip, not everyone has heard of an AVR. (it's all about advertising) But that is of no matter because they will do the same thing unless you are like the Ford / Holden followers who believe that their selection is the best. (Incidentally I drive a Ford but I am a Holden follower - go figure) Anyway after discussion with the Committee, the consensus is to work with Arduino. Nobody will be disappointed if they do. I put forward a suggestion that an "Interest Group" could be formed to promote the learning of software and hardware required to design and build smart projects. Lectures would be mostly guest appearances covering topics as required but overall, participants will be helping each other and themselves. Several of us are willing to give a "kickstart" to the process by arranging some basic starter kits and showing how to connect the hardware and install and set up the software (or Integrated Development Environment (IDE)). The whole idea is a sanctioned Club Prac. activity with Rob VK3BRS as coordinator but I might possibly be the organiser at least to get things started.

The proposal includes a one evening session to show interested people an example of what we have to offer, then you can decide if you want to get started at very little cost.

A kit is envisaged to be around 10 - 20 dollars which will get you something working the first time you set it up (with our assistance). Then you would be expected to start work on a project of your own design to make it worthwhile. Special components would be purchased by the individual for their project (with our assistance) and then the real fun begins. The expectation is that there will be some smoke let out of the components as that is where the fun comes into it. Nothing is too expensive that will break your bank but you quickly learn what does and doesn't blow up easily. In fact I want to call the first kit of parts the "let the smoke out of it" kit. I think I destroyed 3 or 4 boards similar to the one in Paul's article before I started doing things the right way. Incidentally I have now been using these boards for about 3 years for simple projects but even though they are labelled as Arduino boards, they function as a straight

programmable processor with support circuitry and allows for software written in either C or one of the + variants or assembly language to be loaded if you so desire. So if you were lucky enough to be on the receiving end of one of Ian VK3BUF's prior courses, you can get started immediately.

To get things going, a list of possible projects is being compiled for interested people or you may have one that you have wanted to design yourself. Well here is your chance to learn with others and maybe we will see some different projects on the Home Brew competition table next year. The idea will be discussed at the upcoming General Meeting but if you want to throw your thoughts at me now, email me via the membership list address.

Albert VK3BQO

Simple Sampler – Traffic lights
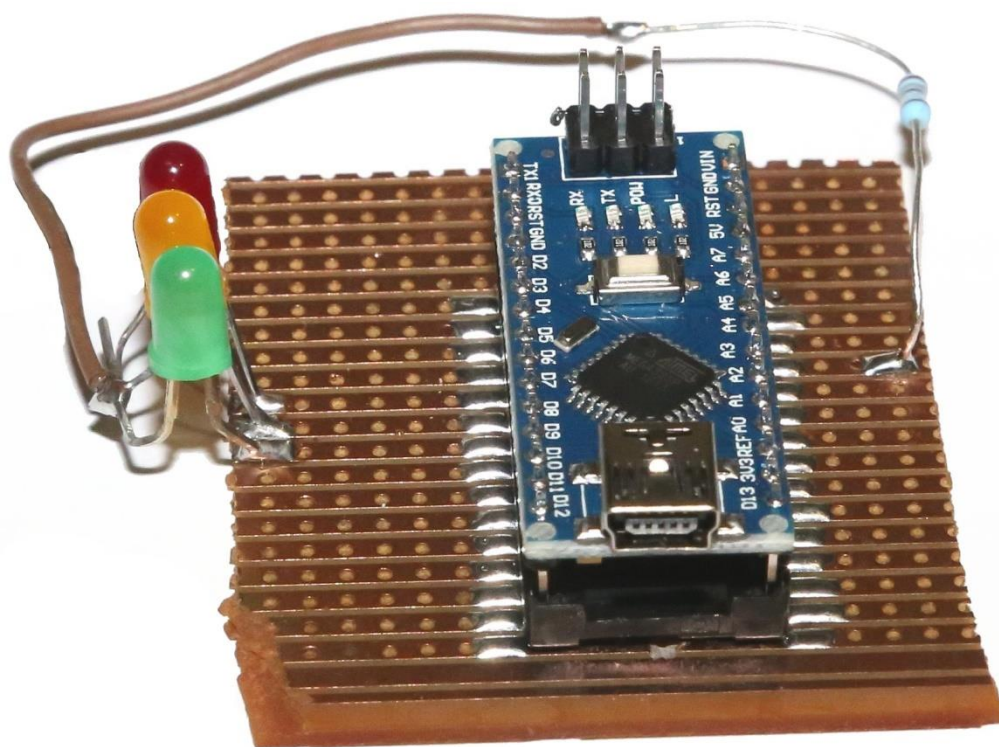
Yes, Albert didn't think flashing lights was a great use for an Arduino, however as a starters project it has a bit to offer.

First off, if you have never done this kind of things before, a lot can be said for keeping it simple.

Secondly, the code to make it all work is also very simple

No power required - other than a USB port (or 'charger')

Also, if you have an idea of controlling something a little larger than LED's, like some motors or lighting via a relays etc., then starting your project with a few LED's in place of the relays can make it a bit easier. Especially if you use that plug in proto board, relays don't usually fit.

One idea suggested for a future project was a 'Relay timer', well there is almost nothing different between the two, just what is connected to the pins of the micro.

If you are just setting up, this (or the 'Blink' sampler) are a good test that all is well in you setup. i.e. did I install the software correctly, have I selected the right board etc. etc.

```
/* Traffic lights Demo

For the GGREC

Paul Stubbs VK3TGX

*/

const int redled = 2;
const int amberled = 3;
const int greenled = 4;


void setup() {
  // set 3 digital pins as output:
  pinMode(redled, OUTPUT);
  pinMode(amberled, OUTPUT);
  pinMode(greenled, OUTPUT);
}

void loop() {

digitalWrite(redled, LOW);      // Red LED on
digitalWrite(amberled, HIGH);
digitalWrite(greenled, HIGH);

delay(10000);

digitalWrite(redled, HIGH);    // Red LED off
digitalWrite(greenled, LOW);   // Green LED on

delay(10000);

digitalWrite(greenled, HIGH);  // Green LED off
digitalWrite(amberled, LOW);    // Amber LED on

delay(2000);

}
```

Well here is the program – or sketch as the Arduino boys call it.

The first part basically just gives a name to what is connected to the pins. If you want to talk to the red LED, much easier to say 'redled' than to try and remember, oh that would be pin 2.

The next part, setup, configures the ports on the micro to be outputs – the usual default is input.

The 'void' bit means this chunk of code does not return any data back to whatever called it.
Also the () brackets just after the word setup are empty – this routine does not expect any input data

The next part 'void loop()' is where all the action happens.
One LED it turned on, the other 2 off, then we wait a few seconds, then swap what LED's are on etc etc.

After all is done, and the last delay expires, then it loops back to the top of the loop section to do it all again.
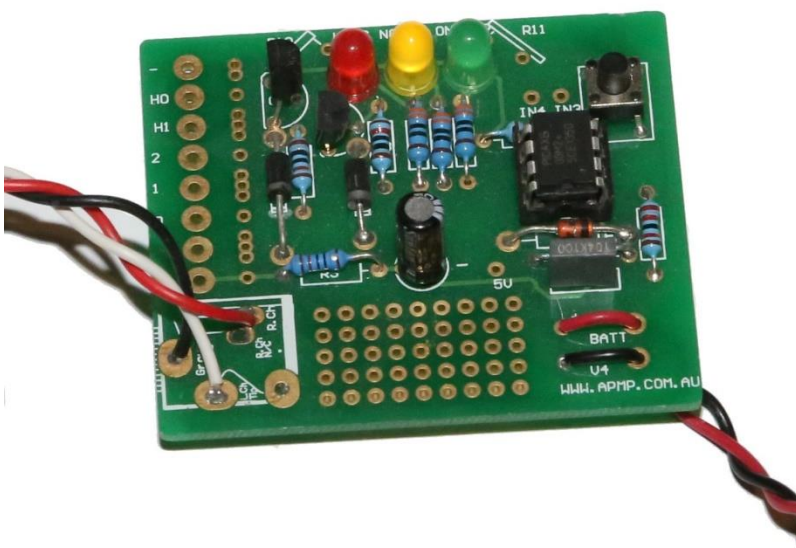
Traffic Lights, PicAxe style

Or if Arduino is not for you, then there are plenty of other options out there

This is a small demo board carrying a 'PicAxe' processor.

These are programmed in a form of Basic.

Unfortunately unlike the Arduino, which is 'open source' these are propriety of 'Revolution Education' http://www.rev-ed.co.uk/ and you have to buy the chips from them, so it can be a little more expensive.
The IC alone is $4.50, from Altronics

```
' Traffic Lights Demo, For the GGREC
main:
high 0      ' Red LED on
low 1
low 2
pause 5000
low 0
high 2      ' Green LED on
pause 5000
low 2
high 1      ' Amber LED on
pause 500
goto main 'back around again
```
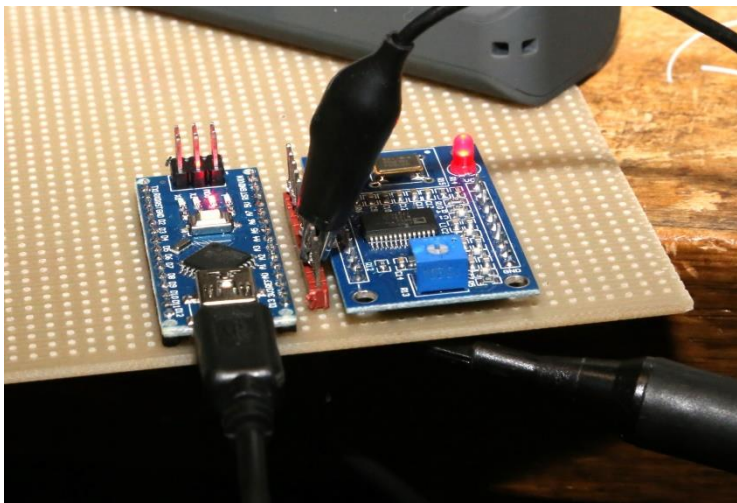
And here is the PicAxe code, again very simple – because the code does not doo much.

One could do this with some 555 timers, but whatever you do, its going to use more parts than this

Note: Half the parts on the demo board are not needed or used.

## So where now – Here is a few photos of my current work

For now I'm sticking with the Arduno, they have a lot more possibilities, especially if you go looking on the internet.

You can almost build anything by just looking – someone has probably done it, or something very similar.

The Arduino boards I bought came with their pin headers not fitted, this gives you some options.

I elected to solder the main strips facing out of the bottom, if you have them sticking up, then how do you mount the board?
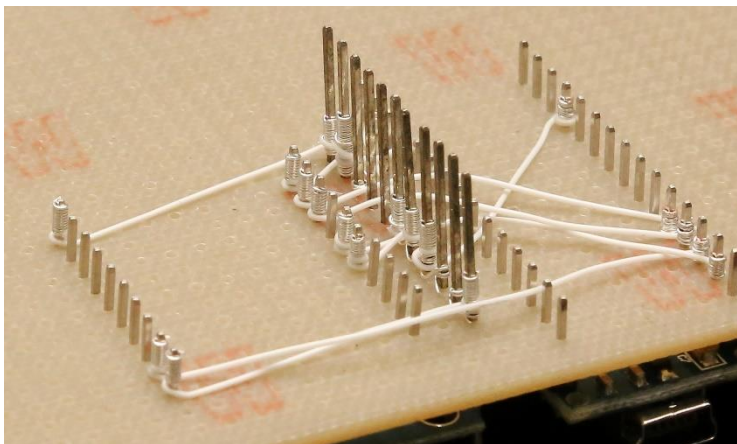
In these pictures I 'tried' just pushing them through some perforated board and join the pins with wire wrap wire.

I quickly found the downside to this when I needed to swap the Arduino module!
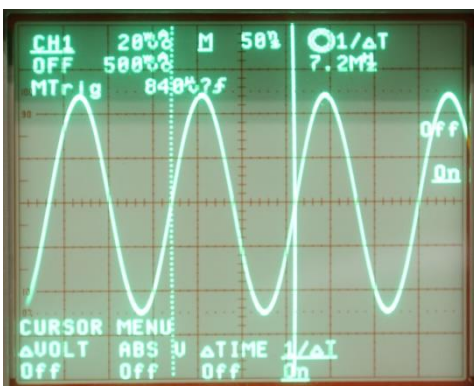
I need to take a trip to Altronics to buy some pin header socket strips – I just was avoiding an hour round trip until my shopping list was a little fuller.

So what am I building – a DDS (Direct Digital Synthesis) board to fit into old radio's in place of multiple crystals. These are now worth far more than the radio's that use them – CRAZY.

Paul VK3TGX

An AVR application. Ian VK3BUF

Recently I had the pleasure of assisting with a small project for the Longwarry Football Club. They were keen to set up an electronic scoreboard on the top of their timekeepers building. For several reasons, they could no longer use the traditional method of just hanging painted numbers on hooks during games.

This was an ideal situation to use an Atmel AVR microcontroller to manage some high intensity LEDs on a pcb panel with a black solder mask.   Each 330mm high digit was given a separate address code 01-99 with its own AVR micro and connected into a daisy chain that ended at an old notebook PC running a Visual Basic 6 program prepared for the job.

Even though this was not using Arduino software, it is an example of what could have been achieved with that technology.   The principles are all the same. The scoreboard gets updated serially at 9600 baud, twice per second.   1,568 high-intensity red 10mm LEDs is all it took, with only 3 wires connecting to the scoreboard. Each LED was oriented the same way, to make the soldering easier. Average current drain for the whole panel is under 5 amps at 12 volts.
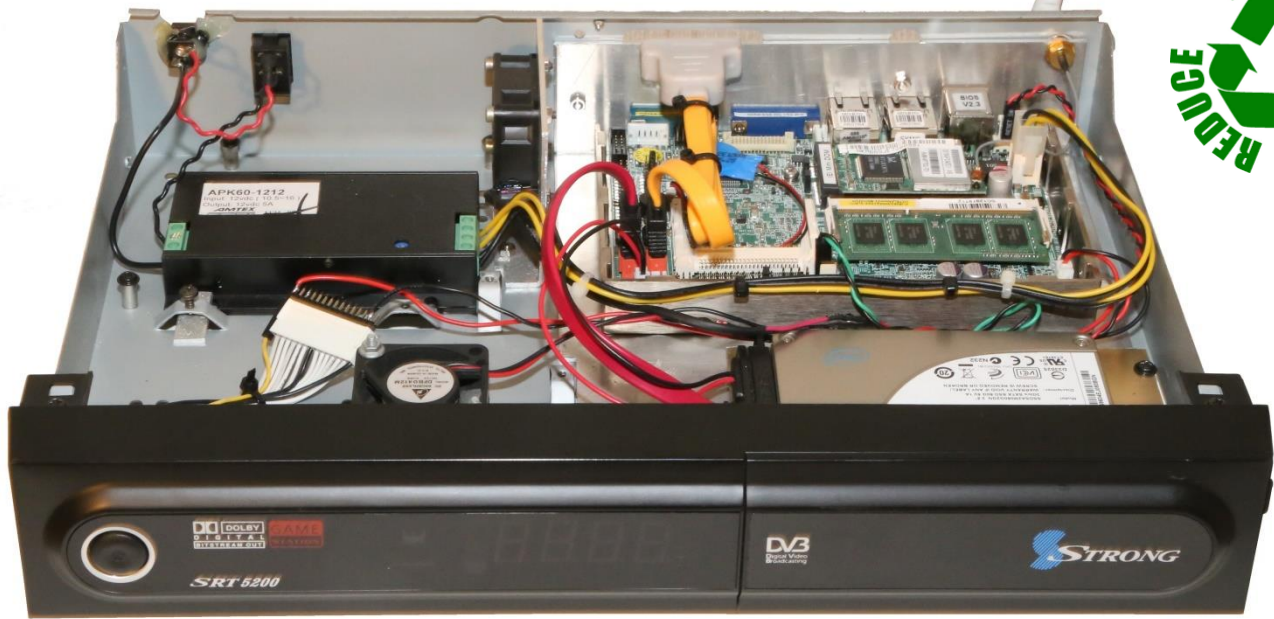
Funding was tight and there was no way of the Club affording one of the large video screen scoreboards that start at $40,000. This project got them going for a tiny fraction of that price. Volunteers welded up the framework for the acrylic covered screen. The entire assembly was about 150kg.

Recycling used equipment.

A Set Top PC

Last month I made a power supply out of an old set top box, well this month I thought I'd continue the idea and put a computer into an old set top box.

This set top box, another digital TV receiver, was somewhat larger than the one I used last month. However, more importantly the computer I was going to install into it is a lot smaller than your average computer; it is actually intended as an industrial controller. It is an Intel Atom based board with 2 gig ram, 2 sata disk drive ports, VGA video, 2 Ethernet ports & six RS232 serial ports (I did say industrial controller), CF card slot, plus the customary USB ports.

Luckily for this project the board only needs 12V to run (12.0V, not 13.8V). Not much cooling is required, However I elected to use a fan – to be sure. So the parts list was :-

1, power supply.
2, Hard disk drive.
3, Fan. (currently 2 fitted, however 1 is sufficient)

Later on I added a Wi-Fi card & antenna. (The case had an 'antenna' hole, so I used it)

I also had an eSata external hard drive connector assembly handy, so I added it also.

The power supply I used was actually a 5A DC to DC converter, so it can be run from 10 to 16V DC, (i.e. radio shack 13.8V, or battery power) however there was enough room for a 240V supply, I just liked the DC idea.

The hardest part of the whole build was the aluminium mounting bracket, but that was only hard because I was being fussy.

I also had thoughts of connecting the front panel display so I could display info without having a video monitor connected, However as it is only a 4 digit 7 segment display, that would probably be of limited use. - for now the display will stay as a future option.

Downsides - it won't run the new Windows 10, due to the embedded graphics card being unsupported, however some would say that's an advantage. (Sticking to win7)

Paul VK3TGX.

Crystal UHF CB

For quite a while I have been looking out for a UHF CB radio to install in my car. The sticking point being that I didn't really have anywhere around the dash to mount one. There is one spot – the front of the disused cigarette tray – but that is reserved for my Yaesu 2m & 70cm radio.

This led me to the conclusion that I needed a radio with all the controls on the microphone.

The first radio I found that fitted the bill was an Icom, however at $500 of their about, I just could not justify it. Uniden then released a set for about $320, a bit better, but still for my intended use a bit of a stretch. Then after signing up with WES components, I received a flyer via email that had this Crystal brand radio for $154 – Quick where's my credit card.

Now you may remember my article last year about the Aldi UHF CB and it's absolutely terrible image rejection performance, it had a 21.7 MHz i/f, with low side injection, meaning the main image was right in the middle of the Amateur 70cm band. Meaning the radio was almost useless for use in my car alongside a 70cm radio! (plus its controls were on the front panel, a no-no for me). So how did this one perform, excellent so far, 5.5W Tx, about .6µV receive sensitivity – a tad lower than the Aldi. Receive audio out the microphone speaker is not good, but I had no intention of using it that way, so no probs. It does come with an extension lead for the microphone, pity it's too short for me, but that can't be that hard to extend.

It does have one nice feature (come on Yaesu, Icom) a mute lead that hopefully I can connect to my car's stereo, so it will auto mute my music when someone calls me.

And one weird point, the button press beep, its After you release the button - a tad late!

Paul VK3TGX

Home Brew Competition

And the winner was ….. me!, for my MDT radio frequency display.

And here it is again – looks familiar?

Icom IC-701 HF Radio Repairs, pt 2

Last month I covered the 'repair' of this IC701, well probably the word 'inspection' might be more appropriate as I didn't end up actually replacing anything, it would appear oxidized connectors were its primary problem, and the act of stripping it down and putting it all back together sorted out its woes. I remember a story from my time at Telstra of a tech who went out to a computer centre to fix a large and expensive modem. This modem was a large beast; it would just fit into a 19 inch rack, and was about 8 inches high. It was absolutely packed with wire wrapped circuit boards. It took the customers data and sent it to line as a QAM (Quadrature Amplitude Modulated) signal, and of course did the reverse for the receiving function.

This involves first scrambling the TX data, then grey coding the data before being sent to line, then on the receive side, clock recovery and descrambling (the scrambling it NOT for security). This was all done by hundreds or 'discreet' 7400 series login IC's – no microprocessors, gate arrays, or custom chips. Anyway it was playing up, so the tech took it out of the rack then promptly dropped it about 6 inches onto the floor – the customer was horrified. However the horror soon turned to amazement when the tech picked the modem up and just put it back into the rack, where it started working perfectly.

I worked in the Telecom repair centre, and the amount of equipment that was brought in without any apparent fault was almost crazy – so much of it was fixed by the fact it had been taken for a drive back to the workshop. Remember, Power supply, capacitors, connectors/contacts – after going over these, you've probably found a fault or two – maybe even fixed the main complaint.

Anyway, getting back to the '701, I left the radio alone for a week, then powered it up – all ok.

At that point the owner gave me a visit, bringing alone some more goodies, including the answer to the 'EXT' position on the band switch, and the almost crazy 'rotary relay'. Yes, you could arrange a setup like I imagined, however Icom had another idea, an IC-RM3 'Computerised remote controller'. With this you can directly enter a frequency, or use one of several memories making it a lot quicker to get to where you wanted.

The only downside was if you want to then want to use the radio's dial, (which it now 'locked') you have to turn off the IC-RM3, which of course means you then cannot then save your new frequency.

Later on the owner the rang me, to see how I was going with his radio, I said "I'm looking out the lounge room window, and the shack has not burned down, so it would appear you radio has not had a catastrophic failure - yet"

So I thought I'd give it some more testing –
Then BOOM, the high winds we have had for the last two days almost terminated my shack.
I think it must have landed soft end first on the roof, the bounced/rolled off, landing alongside the back fence. If I had to move it somewhere, I couldn't have done a better job – Thanks God.

Paul VK3TGX.

Notices

GGREC Sunday night Net

Want to know the latest GGREC Club news and details of upcoming events?   If you want to be kept up to date then you need to call into the **GGREC Sunday Night NET**.   The NET is held every **Sunday** at **8:00 PM** sharp on **VK3RLP 439.475 MHz, 91.5Hz** tone access.   Don't miss out!

Mid-Year Lunch Saturday 18th June 2016.

Lady Lavender's Tea Rooms 3085 Princes Hwy, Bunyip

General Meeting Minutes

Date : 17th June 2016
Start time : 20:12
Location : Club rooms.
Chairperson : Ian Jackson
Minute Taker : Michael Van den Acker

Present : Attendance sheet

Visitors: Robbie Xin

Apologies :

Correspondence received : listed and tabled
Power bill
Hamfest cheques

Correspondence sent : Gateway magazine x3
  Email to guides requesting bank details

Treasurer's report : as per prior General Meeeting
Read : as distributed   **Moved :** GK   **Seconded :** QB   **Approved :** yes

Previous Minutes :
Read : as distributed   **Moved :** BQO   **Seconded :** FACB   **Approved :** yes

Business arising from the previous minutes :

Tomorrow mid year lunch at Lady Lavender Tea Rooms.

Hamfest. 4 sellers haven't paid. Coordination meeting required for who does and brings what. Contact will be made by email initially.

New business :

Night out on 23rd July Thai in Beaconsfield.

Left over 9 x 6m lengths of 90mm PVC pipe from the Antennapalooza weekend. Pipe $10 Mig wire $15

Moved: BUF Seconded: BFT Carried. Please see Ian if interested.

Next week members should receive a copy of the current member list.

Home brew competition – Mike and Nils judged this competition. Judging was split into various categories incl. documentation. Winner was a kit by Paul VK3TGX QRP TX as he had included a frequency readout. Thanks to the other members that submitted constructions for judging. Thanks to the judges.

Outing for the Melbourne Cup camping weekend to have a look at the Avon river prior to the event. Saturday 25th June.

Hamfest. We have a Radio theory handbook and Li jump start battery as first prize. PK loops as second prize with a log book. Dual band antenna for third prize.

Helpers for the day at the hamfest. Please see Brian.

Meeting closed : 20:53

Next Committee Meeting : to be determined.
Next Prac Night : 1st July 2016
Next General Meeting : 15th July 2016

Club Information

Meetings 2000hrs on third Friday of the month at the
Cranbourne Guide Grant Street Cranbourne
Prac nights first Friday in the Peter Pavey Clubrooms Cranbourne 1930hrs
Visitors are always welcome to attend

Office bearers

President	Ian Jackson	VK3BUF	Repeater Officer	Albert Hubbard	VK3BQO
Admin Sec	Michael Van DenAcker	VK3GHM	Web Master	Mark Clohesy	VK3PKT
Treasurer	Graeme Brown	VK3BXG	Magazine Editor	Paul Stubbs	VK3TGX
General 1	Rob Streater	VK3BRS	Property Officer	Bruno Tonizzo	VK3BFT
General 2	Max Hil		Secretary	Ian Jackson	VK3BUF

Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.
6m Repeater VK3RDD – Currently de-commissioned until further notice - *sorry*
70cm Repeater Cranbourne VK3RLP In 434.475MHz Out 439.475MHz CTCSS 91.5Hz
VK3RLP Repeater supports Remote Internet access (IRLP), Node 6794.
70cm Repeater Drouin VK3RWD In 433.575MHz Out 438.575Mhz CTCSS 91.5Hz
Simplex VHF - 145.450MHz FM • Simplex UHF - 438.850MHz FM
VK3RLP Beacons 1296.532MHz & 2403.532MHz

Membership Fee Schedule

Pension Member rate $25.00 Extra Family Member $20.00
Standard Member rate $40.00 Junior Member rate$25.00
Fees can be paid by EFT to BSB 633000 - Account 146016746.
• Always identify your EFT payments.
• Membership Fee's Are Due at each April Annual General Meeting.

Magazine Articles to editor@ggrec.org.au or vk3tgx@gmail.com
All other Club correspondence to: secretary@ggrec.org.au
or via Snail Mail : GGREC, C/O Ian Jackson, 408 Old Sale Rd, Drouin West 3818
GGREC Web Site & Archive may be viewed at: www.ggrec.org.au
Website errors, contact web master via email webmaster@ggrec.org.au
Facebook Page www.facebook.com/GippslandGate