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Event Queue

June:

3rd	Prac night
5th	Club Net 8.00 pm - on VK3RLP
12th	Club Net 8.00 pm - on VK3RLP
17th	June General Meeting
18th	Mid Year Lunch, Saturday at the Lady Lavender Tea Rooms, Bunyip.
19th	Club Net 8.00 pm - on VK3RLP
26th	Club Net 8.00 pm - on VK3RLP

July:

1st	Prac night
3rd	Club Net 8.00 pm - on VK3RLP
9$^{th\ \&}$ 10th	VK3 GippsTech 2016 Churchill
10th	Club Net 8.00 pm - on VK3RLP
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

June 2016 From The President

I was reminded of the Bill Murray movie a few days ago called *Lost in Translation* where he was acting in a Whiskey commercial for a Japanese television station, but was having a lot of trouble getting his requirements through some difficult language barriers. In my situation I wanted to order more 3mm rivet-nuts from China where they manufacture them for me from brass on a regular basis. I asked the question if we could have them made from copper instead of brass, because they would be softer and may crimp better, but this is where life became difficult. I was told repeatedly that brass and copper were the same thing, so they didn't understand the question. Indeed when I look up the two words, brass and copper in my Chinese dictionary, they use the same word for both. So lots of messages went back and forth, with me saying things like brass is yellow and used for telescopes, trumpets and Morse keys, while copper is used for wire, circuit boards and plumbing. (What's a Morse key? – hmm… bad example.)

Meanwhile, research was being done at the far end which added to the confusion. They'd looked up 'copper' and found that it actually meant policeman. Doh!   It seemed that progress had stalled. I was tempted to draw circles around symbols on a copy of the Periodic Table, but instead I gathered a bunch of small brass artefacts, plus bits of copper pipe and stripped speaker wire, divided them into two heaps, took a picture and emailed it.

With the arrival of this image there was a light-bulb moment at the far end and I received the message: "*Oh, you want to use Red-Metal. Why didn't you say so?*"   This was progress and I was learning new stuff. In China, copper seems to be universally regarded as 'red metal'.

So, 'what is the point of this riveting story?' you may well ask. I think it highlights the complacency we all have for or own language and its complexity in the eyes of others. As radio amateurs we must show patience with overseas operators who may not have much opportunity to practise English at home. It's really hard for foreign nationals to become proficient at English and it is common for words to not line up properly with direct translation.   In China they have single words for 'the day before yesterday' and 'the day after tomorrow'. (whereas all we have is a moderately bad sci-fi movie with Dennis Quaid in it.)   We need to be careful what we say and speak plainly if language appears to be a barrier. For example 'right' can mean both correct *and* a direction of travel.   Like it says in *Stairway to Heaven*, lots of our words have two meanings. When talking on the radio, try to use good radio words, like '*Roger'* and '*Over'*, which of course, only have one meaning…

In other news:

A few members may have seen the construction kit that has recently been made available for mobile rigs..   It seemed to me that there is not a lot of motivation to creating complex amateur radio equipment where commercially available gear is inevitably cheaper and (lets face it) nicer than what we can make at home. In thinking about this I figured that we are better off targeting small radio accessories that are inexpensive and not commonly available. To that end, I developed the *Rig Switch* a few weeks ago to automatically turn your rig on when vehicle vibration is detected and to turn it off again some minutes after the car has been parked. At $20 per kit to GGREC members it is not intended to be a fund-raiser, it is an at-cost kit that I hope will get more people turning on their soldering irons. At the last prac night, considerable interest was shown already and about ten kits have already been purchased.

Our Hamfest Sale is upon us next month. Don't forget to put a big red circle around July 16 and tuck your piggy bank under your arm on the day.

Lastly, we look forward to seeing all of you at the Lady Lavenders Tea Rooms this coming Saturday at midday.


Cheers, Ian VK3BUF

From The Editor

Wow,

What a month, Normally I would put an article in here, but they all seemed to demand their own space this month.

As for next month, well, I have a few ideas basically around the Arduino nano processor modules that can be picked up quite cheaply on the internet

I'm not sure why they seem to be so popular, someone definitely has gotten the formula right with these. The other great little box these days has to be the Raspberry pi, they originally projected selling several thousand to the education market, however they have ended up moving 5 million! While they have upgraded it a few times, with the latest pi3's performance many times the original, I'm kind of more interested in the pi Zero, a really stripped down version that almost looks like a minor sub board, rather than the main show.

Over in England where it was designed they were even giving them away attached to the front of a magazine – they are that cheap. (Sorry Australia)
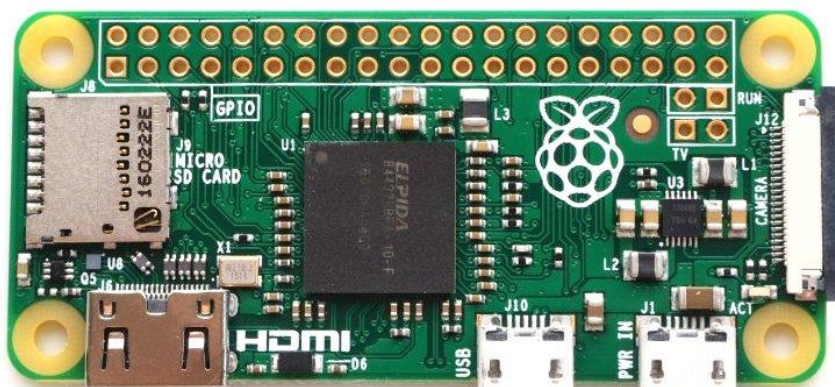
The first challenge to us is buying them at a reasonable price – the same problem experienced with Arduino boards and their many accessories (Shields in Arduino speak)

So what to build next? As I said earlier I've thought up a few – But I won't mention them at this stage, that is till I've done some preliminary work to find out if it's at all practical etc..

The other problem this end is, Yes I can try for the XYZ gadget, make it work and put it in here, but if all it ever does is use up a few pages in the magazine and is never seen again, what a waste. I'm starting to think the MDT radio frequency counter is going to end up that way.

Last prac night Ian VK3BUF seems to have won the day with a kit he dreamed up. An auto power down box for the radio's in your car.

And as a bonus, A club member only discount price of $20 ($37 for non-members)

So if you like to leave your radio's on in the car then have a look at one of these http://www.alianelectronics.com.au/sm361-rig-switch-kit.html And save your battery from destruction.
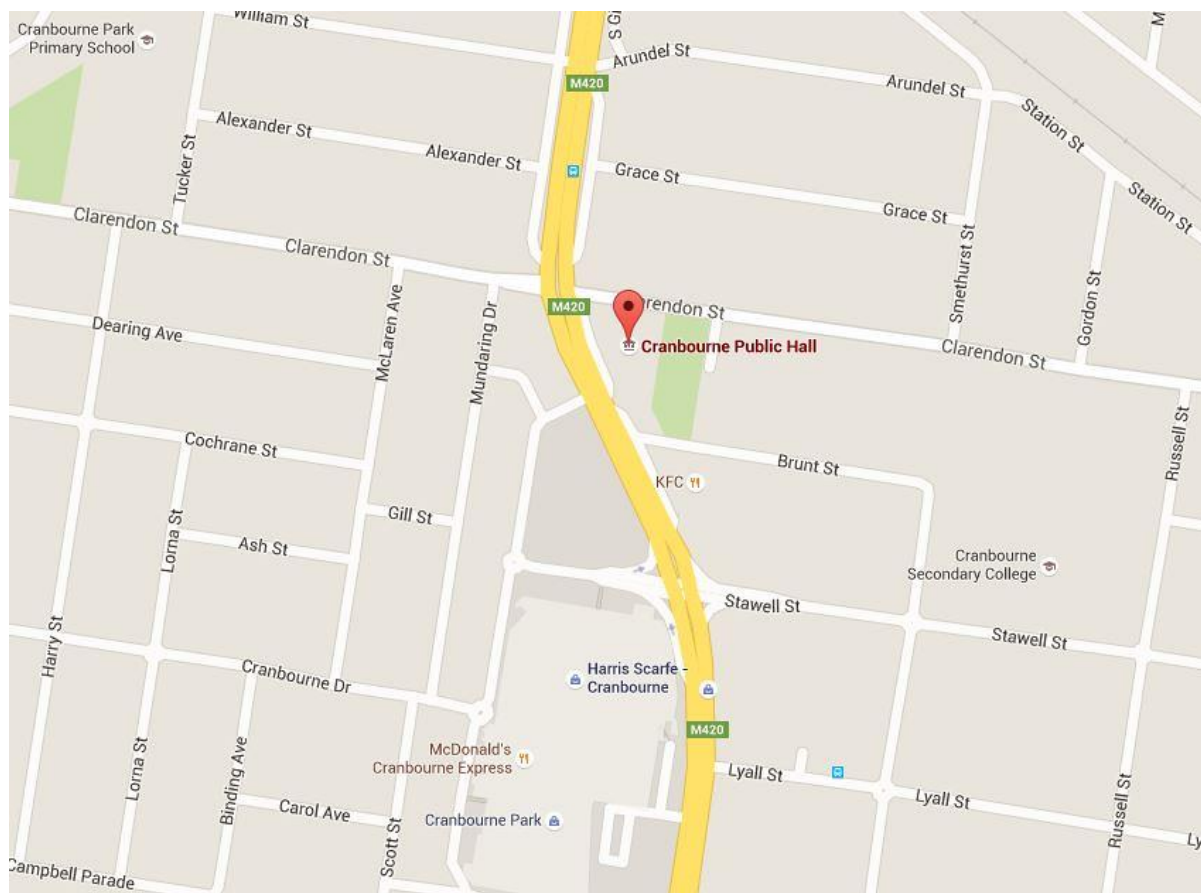
Paul VK3TGX

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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**

Frequency Counters etc.

To some club members it would seem I have a fascination with frequency counters of late, well I'm between jobs at the moment, and there is the club magazine in need of content & this month the pickings from members is rather scarce.

In my digging's through the internet for counter related info, I ended up at the BangGood website with a kit for the counter I put into my MDT radio kit. While there I had a browse around and found they sold Arduino Nano processor modules for about $4, whereas Jaycar want $29.95, Sure Jaycar's are probably built better, but at $4 I was willing to take the chance. I have thought up several projects and these boards look just like the vehicle I need. Cheap, plenty of I/O, easy to power & easy to talk too. To program one of these all you need is a Mini USB cable and some free software – you don't even need a power supply. The default code is a 'modified' C language which is reasonably friendly, however if you prefer real C, or assembly language, they can be also used.

When you first start you are encouraged to try the demo 'sketch' (for some reason 'sketch' is Arduino talk for program) called 'Blink', as you can guess it's whole purpose in life is to flash a LED. You don't even need to connect a LED to use the blink program, it comes fitted to the Nano board – not bad for $4.

While on the Banggood website, I also ordered an 8 digit LED display module, these come for $4.58, which includes an on-board driver IC, all you need to get this one going is serial data & 5V power. If you wanted to play around without building a power supply, the USB ports on your computer are designed to deliver half an amp, failing that, you can use an old phone charger etc. (The nano has its own on-board regulator)
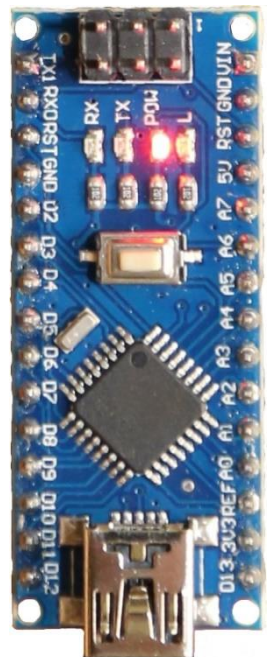
```cpp
#include <LedControl.h>
#include <FreqCounter.h>

LedControl lc1=LedControl(12,11,10,1);

long int frq;

void setup() {
  Serial.begin(9600);            // connect to the serial port
  Serial.println("Frequency Counter");


/*
 * Now we create a new LedControl.
 * We use pins 12,11 and 10 on the Arduino for the SPI interface
 * Pin 12 is connected to the DATA IN-pin of the first MAX7221
 * Pin 11 is connected to the CLK-pin of the first MAX7221
 * Pin 10 is connected to the LOAD(/CS)-pin of the first MAX7221
 * There will only be a single MAX7219 with 8 disgits attached to the arduino
 */

  //LedControl lc1=LedControl(12,11,10,1);
  //wake up the MAX72XX from power-saving mode
  lc1.shutdown(0,false);
  //set a medium brightness for the Leds
  lc1.setIntensity(0,8);
  lc1.clearDisplay(0);

}

void printNumber(long int v) {
    int ones;
    int tens;
    int hundreds;
    int thousands;
    int tenthou;
    int hunthou;
    int millions;


    ones=v%10;
    v=v/10;
    tens=v%10;
    v=v/10;
    hundreds=v%10;
    v=v/10;
    thousands=v%10;
    v=v/10;
    tenthou=v%10;
    v=v/10;
    hunthou=v%10;
    v=v/10;
    millions=v;

    //Now print the number digit by digit
    lc1.setDigit(0,6,(byte)millions,false);
    lc1.setDigit(0,5,(byte)hunthou,false);
    lc1.setDigit(0,4,(byte)tenthou,false);
    lc1.setDigit(0,3,(byte)thousands,false);
    lc1.setDigit(0,2,(byte)hundreds,false);
    lc1.setDigit(0,1,(byte)tens,false);
    lc1.setDigit(0,0,(byte)ones,false);
}


void loop() {

  FreqCounter::f_comp= 8;        // Set compensation to 12
  FreqCounter::start(1000);      // Start counting with gatetime of 100ms
  while (FreqCounter::f_ready == 0)  // wait until counter ready

  frq=FreqCounter::f_freq;       // read result
  Serial.print(frq);             // send frequency to PC via USB
  Serial.println("Hz");
  printNumber(frq);              // send frequency reading to LED display panel.
  delay(20);
}
```

Here is the code or 'sketch' as they like to call it. This is my first attempt at Arduino coding, however it is mostly derived from the internet. I Googled Arduino frequency meter which lead me to a university site in Cologne. His code sends the reading's back to your PC via the USB port, However I wanted a local display, so I just added the sample code for the MAX7219 (IC on the LED display board) that can be found via the Arduino website.

My biggest problem was getting used to the modified 'C' language and its many tricks. Apart from that the code worked first time. – Amazing!

You have probably noticed that the two frequency reading's in the first picture are not the same. My shack's frequency counter reads between the two.

In this code there is a compensation factor, I am hoping this will let me trim the reading back to where it is supposed to be. Normally one would adjust the crystal time base, however there is no trimmer provided on the nano board for this purpose.

As I am trying to keep this all quite simple for club members I will try and avoid modifying the nano board.

So I will pursue the software approach to solving this problem.

This has to be the 'new order' solution; you plug a laptop into the counter and adjust it, rather than take the lid off and use a screw driver!
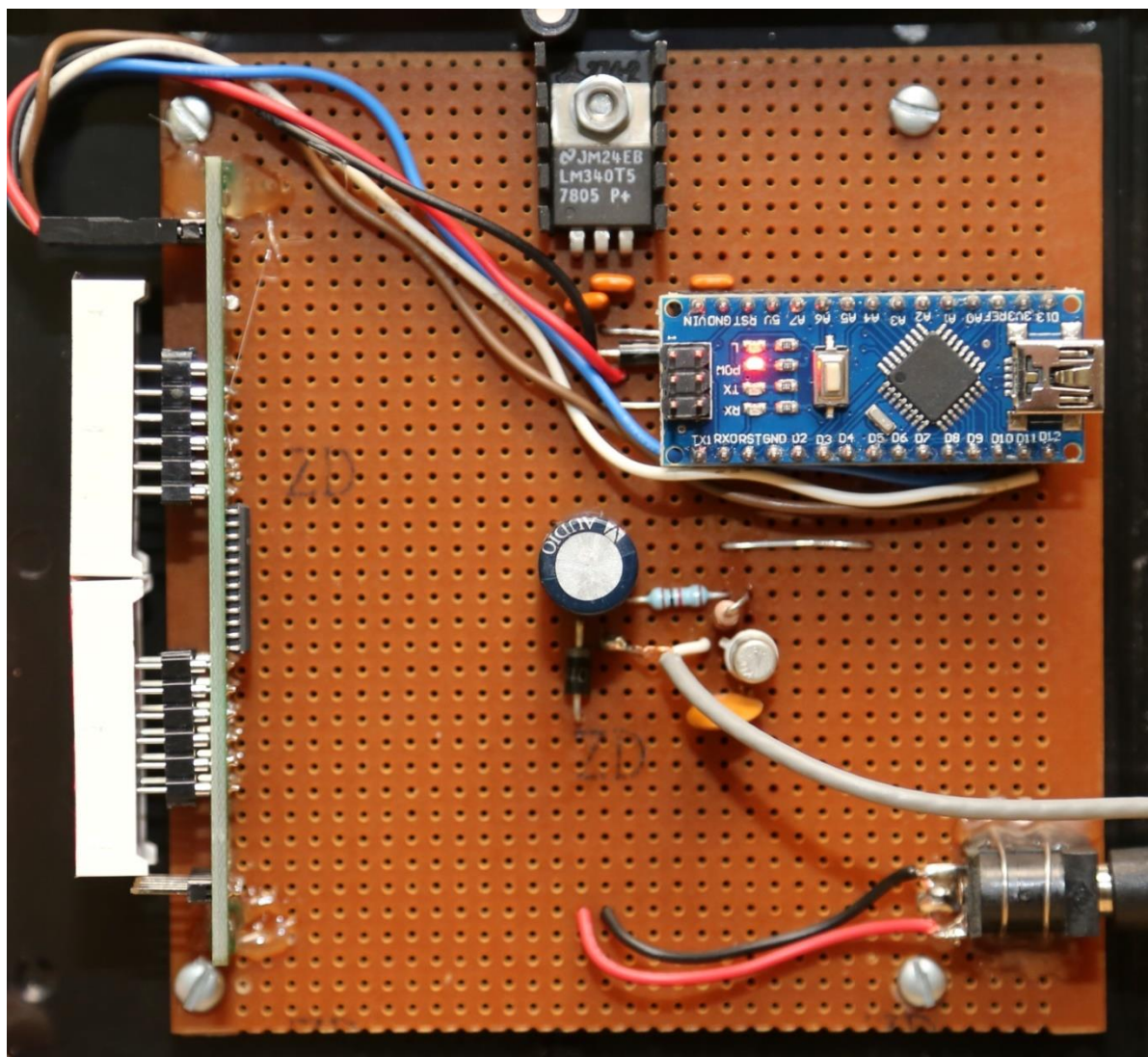
This is the insides. As you can see there is not much in there. I could have put it into a smaller box; however I elected to use what I had at hand.

The main board is a piece of Vero board, that size so I could use the box's screw mounting points, and also place the nano's USB port at the back panel so it could be accessed without removing the lid. Apart from that, there is a 5V regulator to power the display, a one transistor pre-amp for the counter function, and lastly a 2.5/5.5 mm barrel connector for 12V power. The cable from the display's 5 pin header is courtesy of an old PC.

The next thing I'll probably add is a pre-scaler as the micro can only read frequency's up to almost 8MHz, fine for the MDT however I have other plans for this counter.

My current idea is to connect it to my Yaesu FT101 transceiver as it only has an analogue display, that usually has me reaching for something else to verify where I am tuned.

If I used this radio a lot, this problem would go away; however with S9 noise at my QTH I don't play HF all that often. I have heard Helmut and others say that station xxxx from Germany is coming in really strong. I tune there and hear nothing, so I just give up and walk away.

The biggest challenge in the FT101 is connecting the band switch to the counter so the real frequency can be derived from what the counter sees coming out of the radio's VFO.

When I get to pulling off the FT101's lid I'll figure out the best approach.

Either add another wafer to the switch, or sniff off an existing wafer.

Before this thou, I'll have to get a decent RF transistor for the pre-amp, all I had was a 2N2222a – what Jaycar's catalogue refer to as an 'RF' transistor, it dies well short of 8MHz

Paul VK3TGX
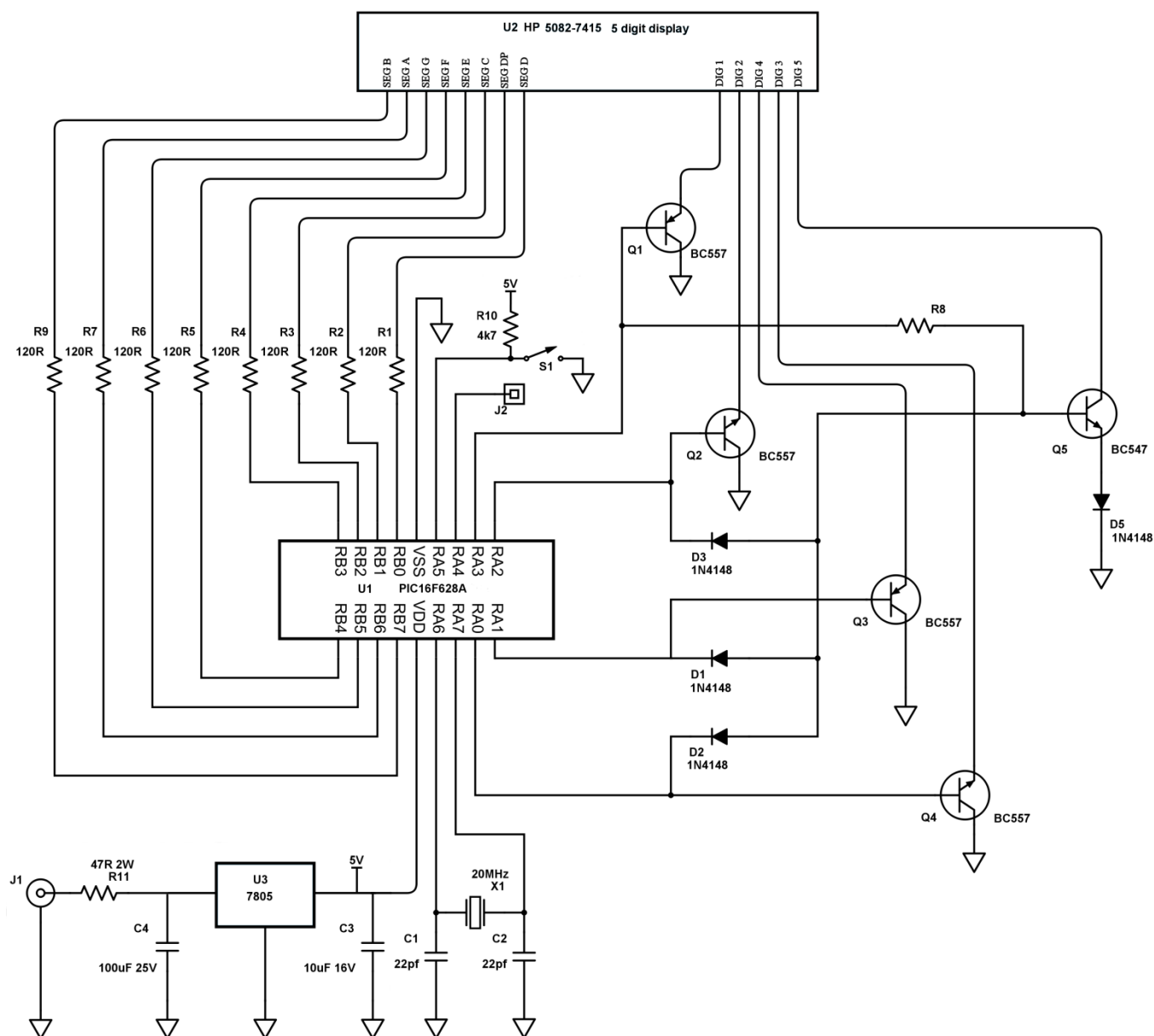
And finally the circuit diagram. I didn't actually have any software to do this, so I did a Google search and ended up using Digi-Key's free online software. It does a fair job, including old school resistors which I prefer over the new style oblong boxes. Where it did let me down was on creating new components, as in the display & regulator. You get to draw a rectangular shape, but you cannot give it pins and pin labels. I ended up exporting it to a graphics editor where I inserted them manually.

I used a coupling capacitor between the counter and the radio proper (and then found I needed a pullup resistor) However I think a 10k resistor might be a better idea. Also, note the 47 ohm resistor at the power supply entry point. I was getting a lot of hash from the counter back into my radio, it turned out this was mostly coming in via the positive supply lead. I tried a few inductors I had in my junk box, no luck, so I gave the resistor a go, %95 success. Maybe you can find a better coil in your junk box.

For the real purists, a switch could also be added to turn off the counter when chasing week signals – to be sure that extra peep you heard was not a counter artefact.

And now a <mark>WARNING</mark>, If you build the Banggood kit version, be aware that the input on the board is directly connected to the micro, there is <mark>NO PROTECTION</mark> whatsoever.
No problem if you intend using it as part of, or built into your MDT radio, but a real problem if you plan on using it as a general bench frequency meter. Banggood are really poor with the documentation supplied. Probably part of buying their ultra-cheap products.

I never saw a circuit, and assumed (oops) one of the transistors near the input was a pre-amp, WRONG, they are both used in the crystal test oscillator. – Darn

And now some instructions on how to use that mysterious push button on the counter, not that it's needed for the MDT radio.

The push button (pin 4 of the PIC 16F628) is used to switch from normal counter mode into programming mode. Usually the level on RA5 is high because it is connected to the supply voltage via pullup resistor (10k to 22k). If you will never need to add or subtract a frequency offset, connect it permanently with the supply voltage (i.e. no switch) -there must be a defined level on RA5, unfortunately it has no internal pullup resistor. By pulling RA5 low by pressing the button (or connecting pin 4 and pin 5 of the PIC with a small screwdriver), the firmware will be instructed to use the currently measured frequency as the new offset value. In other words, you must *apply the offset frequency to the counter's input*, wait until the value is displayed correctly, and then enter the programming mode as explained below.
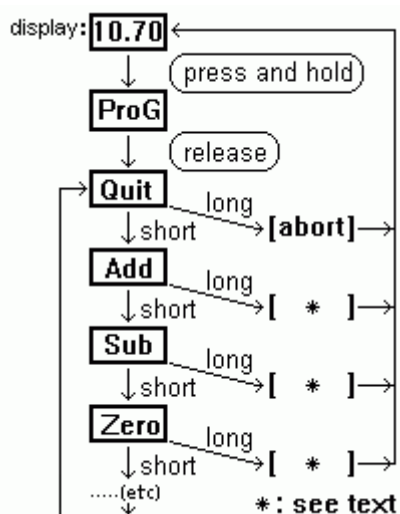
The program flow chart on the left shows how to enter programming mode, how to select a menu, and how to execute the associated function. To enter programming mode, press and hold the programming key (or connect pin 4 and 5 of the PIC with a small screwdriver), until the PIC shows "ProG" on the LED display. Then release the "key". You are now in the first menu of the programming mode.
To select the next menu, press the key for a *short* time (less than a second). To execute the selected function, press the key for a longer time (more than a second). The menu functions are :

- "Quit" : Aborts programming mode without changing anything.
- "Add" : Saves the previously measured frequency permanently, so it will be added in future.
- "Sub" : Saves the previously measured frequency permanently, so it will be subtracted in future.
- "Zero" : Sets the frequency offset to zero, so the display will show the measured frequency without offset. The previously programmed offset will be lost.
- "Table": Allows you to select a predefined offset value from a table. The table itself is also located in the PIC's data EEPROM, so you may find different values in it. When skipping through the table, the frequencies are shown in numeric form, like 455.0 (kHz), 4.1943 (MHz), 4.4336 (MHz), 10.700 (MHz). After selecting an entry (long keypress), you will be taken back to the main menu to select "Add" or "Subtract".
- "PSave" / "NoPSV": turns the power-saving on/off. In power-saving mode, the display is turned off after 15 seconds of no "significant" change in frequency, and on again as soon as the frequency changes by more than a few dozen Hertz (in the 3..4 MHz measuring range). Added in May 2006 for battery-powered equipment like QRP transceivers

Recycling used equipment.

For quite a while I have been eyeing all the 'junk' that gets thrown out by modern society.

- They say 'reduce reuse recycle' – Is anyone listening?

I have a collection of parts looking for a use. One of these was an all but new 10A 12V switch mode power supply module that was being thrown out by my previous employer, because someone had dropped it and its frame was now dinted & bent,

These supplies are intended to be built into something, as they don't have a complete case etc. So I looked at it, then my eye wandered to the pile of disused digital TV set-top boxes I had acquired from various sources. They are either not worth repairing, or have been made redundant, as some bright spark has decided to introduce a new 'mode' (MPEG4) onto the supposed standard digital TV system, that requires everyone to throw out their 'new' TV and buy a new(er) one. When they turned off the analogue TV system, we could in theory have being using a B/W TV bought for the Melbourne Olympics in 1956!, 56 year run, not bad. Now we get to chuck out our new TV's in only 3 years, because they've revised the standard!

Enough bitching. One of the problems of DIY electronics is making it look presentable. Dick-smith style 'zippy' boxes, or Horwood instrument cases (Now where did they disappear too) might look great in the shack, but on a desk in the study etc., maybe not so

So how about building your next project into an old …. Case – i.e. recycle something.

- So my Bush DVB set top box is now a power supply.

Originally I was going to re-use the front display panel by hooking up a micro of some sorts and getting the old clock/channel display to show volts & amps etc., However when I was looking at a website I found these 3 digit LED volt meter modules for about $2.50 each, so I removed the old display (don't chuck 'em, put them into the treasure chest for another day) and fitted one of these. On the front panel was what looked like a card slot – mmmm I thought, almost USB size, a bit of filling and it definitely was USB sized. Then Into the junk box I dove, and out came an old circuit board with a 12V to 5V 8A switcher. Also on the front panel was an IR receiver and associated LED. MMM, 5V from the USB supply & a 1k resistor from the IR receiver to the LED, and we now also have a remote control tester.

Paul VK3TGX

A DIAMOND IN THE ROUGH – THE GGREC RHOMBIC AT ANTENNAPALOOZA
By Ian Jackson VK3BUF

Back in March we had our antenna field weekend where we put up the experimental Rhombic antenna for 40 metres. It was a team effort that was not without adversity, as the storm preceding the event demolished a few of the temporary 12 metre high poles before it could be completed. But as a prominent VK4 amateur once told me, nothing succeeds like a bird with no beak and we persisted until the antenna was in the air and fully operational.

The motivation for this effort was multifold. Rhombic antennas have been around a long time, but they are really big and nobody I knew had worked with one before. I was keen to see one up close. To build this antenna as a temporary construction for the field weekend also meant there would be sufficient manpower at hand to put it all together. Then there was the hardware factor, where it was going to be interesting to see how 90mm plastic water pipe would perform as a temporary mast, with tough MIG welding wire as a temporary radiating element.

As it turned out, the plastic masts were fine to winds of 70kph, but not so good at 90kph. Horizontal wind pressure was so great that the centre of the 6 metre sections bowed horribly until the downwind face of the pipe literally shattered into lots of tiny bits. After the event one of the resident alpacas tried to bring the antenna down by eating two of the nylon guy ropes from the star pickets, but fortunately they ate the *inside* guy ropes and the antenna wire 12 metres up acted as top guys and stopped the poles from coming down.


Preparing one of the four poles

A Google Earth view of the antenna site.

Back to the science of the antenna. The common inverted-V antenna is like half of a rhombic where the other half has been buried in the ground. By digging up the other half and putting it up into the air as far as possible from ground reflections, it becomes a large diamond where each leg exhibits its own set of radiating lobes. When the diamond is in the correct aspect ratio, many of these lobes coincide to a common direction away from the feedpoint. The wire length can be in multiples of 2, 3 or 4 wavelengths to increase this lobe alignment and thus increasing forward gain. Our antenna had about 3 acres of available space and we could only squeeze a baby 2 wavelengths on 40 metres into it. It should be noted that a proper Rhombic antenna needs to be higher, to minumise ground effects and to lower the radiation angle. (the lower the radiation angle, the fewer the number of ground-sky hops required for long range communications.) A good Rhombic should be 20 metres up, but ours was only a humble 12.

Google Earth proved to be very useful to plan the pole placement. Using the measuring tool, I was able to plan where the wires had to be to dodge trees and still fit within the available space. Using

a wheel counter at ground level I proved that these measurements from the internet were good to within half a metre in the real world. The antenna wire was a little over 300 metres of 0.9mm copper-coated MIG welding wire. It is both tough and cheap. A single strand of this wire had a breaking strain of around 70kg. A 3km roll of the stuff was about $35 from a welding supplies shop. It is hooked up in two sections. One end had a 4:1 impedance matching balun and the far end had an 800 ohm terminating resistor. The wires were insulated using cheap electric fence ceramic insulators (about $3.50 each) and a jury-rigged aluminium strap assembly to keep the wires apart.
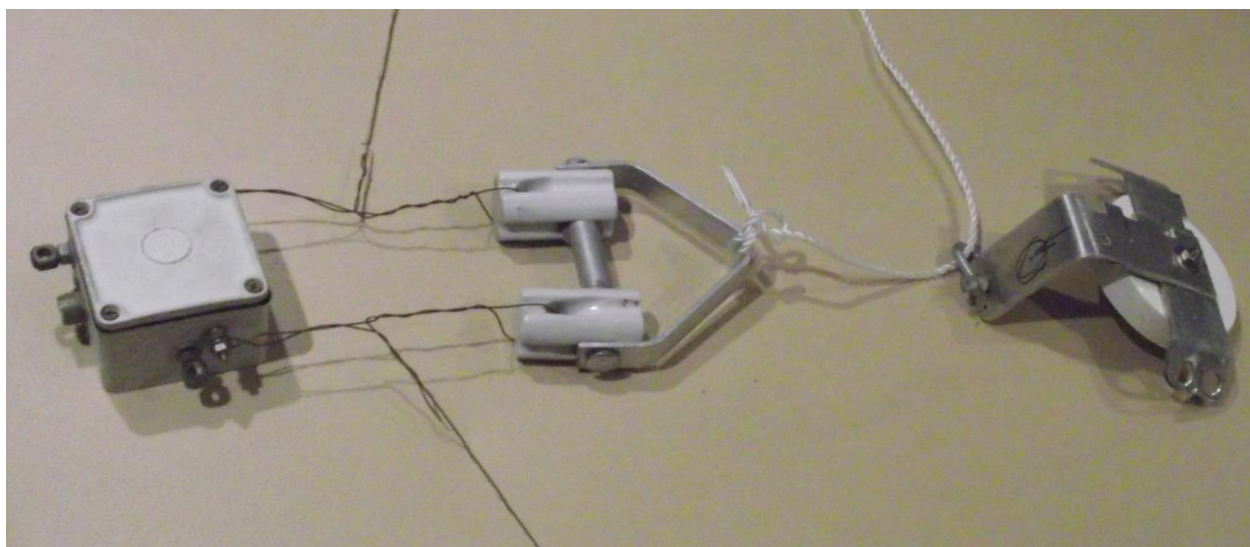
The image here shows the relationship of the coax balun, the insulators and the rope to hoist the assembly into the air. This rope passed through a small D-shackle on another bracket that was a 90mm rope-guying cap located at the

Having hoisted this lot into the air, the performance of the antenna was the next consideration. Would it actually work? The answer was a strong 'yes', but this is difficult to quantify with just a few contacts. It certainly was directional. I had some big signals on 40 into NSW and QLD. Quite a few contacts were made. Some comparisons were made between this antenna and a simple of-centre-fed dipole erected in the bottom paddock by Chris VK3QB. Into South Australia his antenna outperformed the rhombic, which being difficult to rotate, was beaming North. Having said that the OCF dipole still performed well to the North with a few contacts from up that way. Still, this was an anecdotal comparison as it did not take into consideration where our respective angles of radiation were landing.

VSWR on 40M was around 1.5:1, which was fine. What surprised us was that it was also fine on other HF bands. We connected the Sark antenna analyser to it and did some sweeps, then compared the results with a sweep of the GGREC field kit Off-centre-fed dipole, which is also a multi band antenna.

Left – the flat HF response of the Rhombic. *Right – the multi-band Off-centre-fed dipole*

In the two plots, the horizontal scale is the radio spectrum up to 32MHz. The Red lines show feedpoint impedance, while the green line shows VSWR on greatly different scales of magnitude. It can be seen that the multi-band dipole is cut so that it resonates exactly on four different bands and badly in between those points. The Rhombic on the other hand had a surprisingly flat response from 3 to 30 MHz, with the highest VSWR barely 2.5:1. It shows how the Rhombic would make a terrific general purpose receive antenna.

I tried to take a picture of this antenna from ground level and it made little sense. The wire, if it could be seen at all, just disappeared at a skewed angle. I decided that to get a proper image I had to get both behind and above the end termination point. The next day I shifted the boom lift to a new position and took it up about 14 metres for some wide-angle views.

The Rhombic viewed from behind the terminating resistor. The position of the radiating wire has been digitally enhanced, as it would otherwise be invisible

Time to sum it all up. The Rhombic experiment was successful and we learned much about their good and bad points. In its northerly direction, it exhibited a gain of around 7 to 9 db over a half-wave dipole, which is a lot. Without being able to take precise -3db beamwidth angle measurements of the main lobe, it is hard to get a better reading and I needed more space in order to do that. Probably, if you were in the mood for building a monster antenna, it would produce a better outcome if a 3-element beam on 40 metres was erected. At least then you could point it at different places. After two weeks we took the assembly down and wound up the wire, which was already showing some signs of corrosion. I didn't notice any more than the normal number of decapitated birds and light aircraft on the ground afterwards, so I suppose it wasn't as much of an avian hazard as some had suggested it would be.

The final problem was what to do with the storm damaged sections of 90mm pipe that were scattered around the paddock like sun-bleached whale bones.

Dianne VK3JDI came up with an idea. After several weeks of slicing and cable-tying came up with an innovative solution. I wanted to call him 'Rhombie' after his chequered ancestry, but the name was disallowed.

If it doesn't scare the foxes away, at least it will give the delivery guys a fright.

Home Brew Competition

Audio Amp

Graeme VK3BXG

A two channel valve amplifier, may be used in stereo or two single amplifiers, Two separate volume controls but a single tone control

Construction time : 40 Hours

Does it work: Yes

1/SWR bridge   2/150W attenuator

Ron VK3BRS

I got sick and tired of getting different readings …..

Does it work: 1/ Unfortunately not
                2/ Yes

Audio Test Amp

Paul VK3TGX

50W amp for bench testing, originally for music distribution, now for the test bench
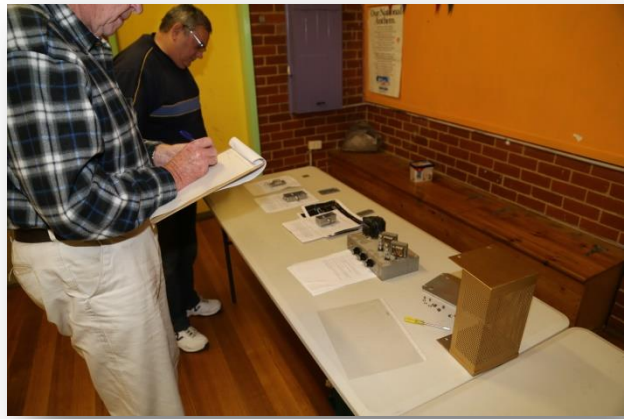
Does it work: Yes

Power Supply

Paul VK3TGX

A power supply made from an old set top box, So I had something for the competition & the magazine.

Does it work: Yes

And the winner is :-

Well you better attend the next meeting and hopefully all will be revealed.

Did you enter – if not then hopefully you will be inspired for next year.

You don't have to be a rocket scientist, Browse the web, there are plenty of ideas floating around out there – even complete designs, just put them together.

Icom IC-701 HF Radio Repairs

Recently I was asked to have a look at an IC-701 transceiver, the fault being that the band change function was … very slow. As in if you left it for a while it would eventually come good and change bands. Also included for my perusal was the matching power supply and of all things, an IC-730 – missing it's power lead assembly.

Luckily in the bag of bits were the service manuals & circuit diagrams. I poured over them for quite a while trying to find out how the band change circuit functioned, I wasn't having much luck, so I Googled it and the penny dropped. So off with the lids, and there it is, on the bottom all but buried in the band pass filter assembly, a device they call a Ledex switch, I cannot say I've heard of that name before, however its 'action' was very familiar to me. I started my working life with Telstra, in the early telephone exchanges they used a device called a uniselector.
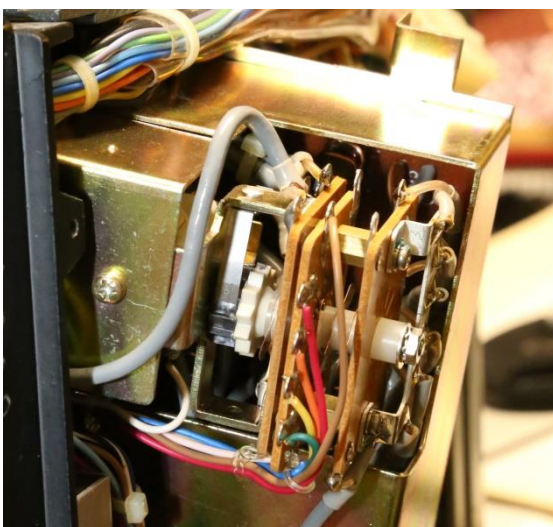
These are whopping great rotary switches, driven by a solenoid. The ones I remember were 25 way by 8 poles?, however bigger ones could be had. At one stage I scored one from an army disposals store along with a relay base, and promptly turned it into an electro mechanical 1 digit counter. The 7 segment display was made from lightbulbs, 4 per segment. With all segments illuminated (a figure '8') it was throwing off 40W of light – not bad illumination, I could easily read a book by it etc.

Anyway back to the IC-701, I eventually pulled it part way out in order to track down it's wiring, Unfortunately the Icom circuits don't list the wire colours in the circuit so the only was it to have a look.

I hooked my scope up to one side of the switch and turned the band knob, a good set of pulses were seen there, so onto the other side, let's see what is on the white wire. A rather weird half rail slow rise & fall waveform was had – hang on, the circuit says one side should be 13.8V

So do we have a power supply fault. Well that was the end of the testing, the radio had 'warmed up' and was not working properly. I now know where to probe to see the coil supply, so there was nothing for it but to put it all back together and give it a run later on, when hopefully the fault will be back, However I'm not so sure that it will, I kind of think it could have been a connector fault, and I had definitely disturbed them all as I had to pull them to access the Ledex switch.
 - Only time will tell.

Turning the band switch one step clockwise results in a 'clack' from the radio's belly, however one step anti-clockwise and I thought I was back in an old telephone exchange as it rapidly pulsed its was right around the clock back to the required spot – this is because the Ledex switch (and the uniselector) cannot go backwards, they have to do an almost complete lap to get to the previous contact.

Why Icom used this setup I have no idea, I would have preferred the 'normal' old radio method of a long switch shaft from the front panel knob, all the way to the switch wafers at the back.

The only hint is that the band selector has an external setting, I assume so that an external antenna controller could set the radio onto the correct band for the selected antenna.

This is backwards to the way modern sets work, they tell the external box what band they are on and let the external unit (Antenna tuner etc) arrange/ configure antenna's etc. to suit.

There is one Gotcha with these radio's, and that is the IC-701PS power supply, it is rated at 13.8V 20A – fairly normal I hear you say, but you have to read it carefully 13,8V @ 20A - only.

They are not regulated, with a light load that output rises to 19 odd volts. This is normal for the IC-701. If you have one of these setups, set the meter switch to Vc (collector volts), mode

switch to SSB, then hit the mic button, with no audio in (i.e. shut up), no power out, the meter will pop up to 18 odd volts! Have a look at the Vc scale. It extends all the way to 25V! Not that Icom say you can run one from 24V, However if you live in a place where the mains voltage it not well regulated, it could push the meter a fair way up the scale, I figure with the mains at 270V (rural SWER system), the meter may hit 20V+

So the upshot of all this is DON'T try and use the supply to run any radio other than an IC-701! My Yaesu FRG-897 would definitely be fried by one of these.

I had been asked by the owner to add a socket for his IC-730, I had said yes, however I will have to go back on that one and say Sorry, NO WAY!.

Another weird one is the power supply's mains relay. It has two coils, the first one is supplied with 240V mains, the second (isolated) coil outputs 6V AC, if you put a short on this coil, as does the IC-701's power switch, the relay pulls in and brings up the power supply.

That's why the power socket/lead on the IC-701 is 3 pin. Earth, 13.8V, and relay.

Paul VK3TGX.

Notices

**This Friday Night
Chris ChapmanVK3QB
will be our speaker.**

Earlier this year Chris paid us a visit with an excellent talk about the Wireless Institute of Australia and how it represents us.
Chris continues to support the institution of the WIA with enthusiasm and has asked to speak with our group again.

On this occasion Chris still has the WIA in his sights and wants to talk about contemporary issues within the institute and improvements that he believes are necessary for its long term survival as our representative body.

(Note: the gun is not real, it's a movie prop)

Chris was on-hand at Norfolk Island a scant two weeks ago and attended the WIA Annual General Meeting in person. He was joined there
by a couple of other Club members, Lee VK3GK and Brenton VK3CBV as a part of a DXpedition to this remote part of our country.
Undoubtedly, we shall learn more about this event as well.

As a WIA Affiliated Club, this will be of interest to all of our members.

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.

At Lady Lavender's Tea Rooms 3085 Princes Hwy, Bunyip VIC 3815

www.**ladylavenderstearoom**.com.au

This years' Mid Year dinner is at Lady Lavender Tea Rooms which is located just off the Princes Highway at Bunyip.   The entrance is between the turn off to Garfield road and the turn off to the Old Princes Highway.

You can view the menu on line and purchase alcoholic drinks by the glass at the bar. So come along and get together with friends to celebrate the start of a new Club year.

To secure your spot at the table, please pay a $5.00 deposit to the treasurer at the May general meeting.   If you pay your deposit directly into the Club account, please follow up you payment with an email to the Treasurer with your details.
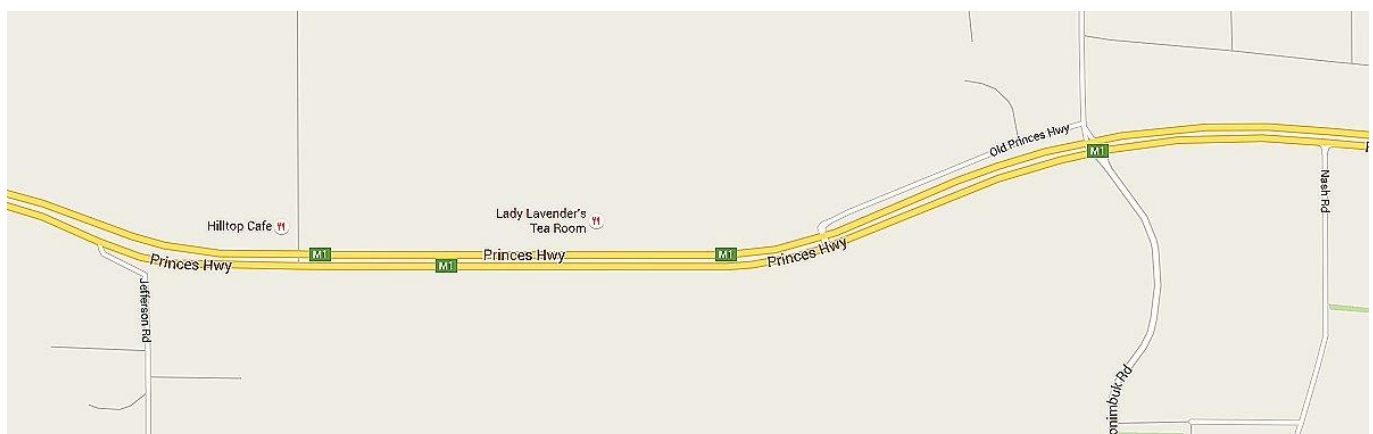
The view heading East down Princess Hwy
(Google street view – hopefully current enough)

And Map – a bit sparse, sorry

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GGREC HAMFEST
Saturday 16th July 2016

Gippsland Gate Radio & Electronics Club invites you to our annual Hamfest

CRANBOURNE PUBLIC HALL - 10.00am

Located on the corner of Clarendon and High St. Melway reference - Map 133 K4.

See our web page at www.ggrec.org.au

41 tables of new and used Electrical, Electronic and Amateur Radio equipment.

Everything is under cover.
Tea and Coffee available during the event.
Sausage Sizzle.
The Door Prizes will be drawn at around 12.45pm
Doors open to the public at 10am. Sellers can start setting up after 8.30am.
Entry cost is $6.00 per person which includes a free show bag and a ticket in the door prize.
* Sellers will pay $22.00 per table, which includes entry.

All tables are currently sold however if anyone wants to be put on a reserve table list you may be offered a table if we have any cancellations. Please contact our Booking Coordinator via our Hamfest Email:
hamfest@ggrec.org.au

General Meeting Minutes 20/05/2016

General Meeting Minutes

Date : 20th May 2016
Start time : 20:07
Location : Club rooms.
Chairperson : Ian Jackson
Minute Taker : Michael Van den Acker

Present : As per attendance sheet

Visitors: Ray VK3FOAD

Apologies : As per attendance sheet.

Correspondence received : listed and tabled

Correspondence sent : listed and tabled

Treasurer's report : As read and tabled
Read : Y   **Moved :** VK3BXG **Seconded :** VK3XMF **Carried :** Yes

New Callsigns :

Previous Minutes :
Read : Gateway mag.   **Moved :** VK3BQO **Seconded:** VK3ACB **Carried :** Yes

Business arising from the previous minutes : Mid year dinner reminder $5 deposit required.
Two tables still available for the Hamfest.
The annual return has been submitted to Consumer Affairs Vic. By VK3BUF.
Home brew competition to be judged this evening. In future we may have a different category about equipment modification.

New business : From the c'tee meeting a suggestion of a pub dinner in August.
Gateway magazine – please see if you can give Paul an article. Congratulations to Paul for the work that he has done in the magazine.
Idea for a club kit from VK3BUF an automatic rig timer for the car. Ian has designed it and will produce a kit for it.
A few people have expressed an interest.
Possible weekend camp on Melbourne cup weekend November.
Any suggestions for events or any other ideas please email the committee.

Discussion about possible donation to Guides considering the amount of time we have been using their facilities.
That we make a $50 goodwill donation to the guides
Moved: Ian Jackson **Seconded:** Leigh **Carried:** Yes

VK3BGX has one person for license assessment

Meeting closed : 20:40 pm

Next Committee Meeting : to be determined
Next Prac Night : 3rd June
Next General Meeting : 17th June

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