GATEWAY

The Official Magazine of the Gippsland Gate Radio & Electronics Club Inc A0016893M

October 2026

LED's and 12V – or what is 12V?

Integrated Dev Boards

Recycle It – washing day

And More

WIA Affiliated Club

Cover photo, Another award winner, or DXpedition to a UNESCO registered Island.
(If you have any good photos, please send them in)

Contents.

3 – President's Report & Status update
6 – From the Editor
7 – Recycle It
9 – Integrated Development Boards
11 – LED's and 12V – or what is 12V?
15 – Photo's.
16 – Interesting YouTube Video's
18 – Club Information

Event Queue

October:

2nd	7:30	Prac night
16th	8:00	General Meeting
24th – 25th		CQ World Wide DX SSB

November:

6th	7:30	Prac night
7th – 9th		ARRL Sweepstakes (CW)
14th –15th		Worked All Europe (WAE) RTTY
20th	8:00	General Meeting
28th – 29th		CQ World Wide DX CW

December:

4th	7:30	Prac night
18th	~~8:00~~	Usually no general meeting in December

Club run events are only possible with the involvement of ALL members.
Without volunteers to coordinate and participate in club events the club will fail to prosper

President's Report - October 2026

Another month has flown by, and there is certainly no shortage of things happening around the club!

A big thank you to everyone who helped at our recent working bee. A lot of work was completed, and the much-needed clean-up inside the clubrooms has made a real difference. It is great to see our facilities getting the attention they deserve. However, we are not quite finished yet! We still need a second working bee to tackle the outside areas, including cleaning the roof and underneath the shack. I will advise everyone of the date once it has been arranged. Hopefully, we can get a good turnout and finish the job together.

Our Remote HF Station – A Major Milestone

The most exciting news is the opening of our new remote HF station. In my view, this is the most significant infrastructure project our club has undertaken since the construction of our clubrooms. It opens up new opportunities for members and demonstrates what we can achieve when we invest time, effort and knowledge into our hobby.

We will be celebrating this milestone at our **General Meeting this Friday, 16 October**, with a live demonstration of the remote station, club-sponsored pizza and soft drinks. It will be a great opportunity to get together, see the new station in action and celebrate this achievement as a club.

Of course, getting the station operational is only the beginning. There is always room for improvement, and our next phase will focus on upgrading the club's IT infrastructure to provide a more reliable and capable foundation for our growing range of activities.

A small request to members: We are looking for a 42RU server rack, with a maximum depth of 800 mm. Finding one that meets these dimensions has proven surprisingly difficult. If you have a suitable rack sitting idle in your garage, workshop or storeroom, please get in touch with me. Your unwanted equipment could be just what the club needs!

Looking Ahead – GGREC Turns 50!

Looking a little further ahead, 2027 will be a very special year for GGREC as we celebrate our **50th anniversary**. Reaching this milestone is something we should all be proud of. Fifty years of amateur radio, electronics, friendship and community involvement is certainly worth celebrating!

We are planning a range of special events and activities to mark the occasion. There is plenty to organise, and we will need members to get involved to make these celebrations a success. If you have ideas, would like to help with planning, or can spare some time to assist with an event, please let us know.

Anniversaries like this are not just about looking back at what previous generations of members have achieved. They are also an opportunity to show what our club can offer today and to build a strong foundation for the next 50 years.

As always, thank you to everyone who contributes to GGREC, whether by helping at working bees, maintaining our equipment, supporting club activities or simply turning up and enjoying the company of fellow members.

Make Our General Meetings More Interesting!

We are always looking for interesting subjects and presenters to make our General Meetings more informative, entertaining and enjoyable.

Do you have an interesting job in radio, telecommunications, electronics or a related field? Are you working on an exciting project, experimenting with something new, or have experience or knowledge that other members might find interesting?

Perhaps you have a friend or colleague with an interesting story to share who would be willing to give us a presentation.

Presentations don't have to be highly technical or formal. Sometimes the most interesting talks come from simply sharing what you do, what you have built, or what you have discovered along the way.

If you have an idea or know someone who might make a great presenter, please contact me. We can discuss the subject and arrange a suitable date for a presentation at one of our future General Meetings.

Let's share our knowledge, learn something new and make our meetings even more enjoyable!

The Committee can organise activities, meetings, nets and events, but we cannot make a club active on our own.

The club is all of us.

So, get on the radio, come along to a meeting, introduce yourself to someone new, join a net, share something you know, volunteer for an activity — or simply have a coffee with us.

Don't be the unknown member. Become part of the club.

73,

Klaus Illhardt VK3IU
President
Gippsland Gate Radio & Electronics Club

Status update on current and upcoming projects of events

Coming GM

The next meeting on October 16th at 20:00H will be a short formal meeting informing you about the club's finances, projects, etc.; we will keep it short. This will be followed by a very exciting event: we can finally open our Remote HF Station to eligible members. We will be celebrating this major infrastructure project with some pizzas and soft drinks; BYO your own alcohol if you like.

If you like to address any matter of concern, you may raise it at this opportunity or send us an email to committee@ggrec.org.au at any time.

50 Years of GGREC 2027

We had our first 50th Anniversary Sub-Committee meeting with a promising start. Ideas were exchanged to make next year a memorable event for all members.

If you have your own suggestions or ideas, just send them to the committee@ggrec.org.au .

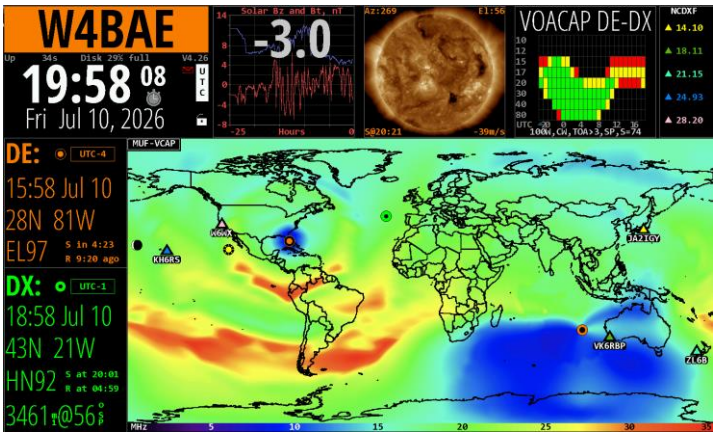
50th anniversary subcommittee members are:

- Bruno VK3BFT
- Ian VK3BUF
- Chris VK3QB
- Fred VK3FWR
- Klaus VK3IU

73,

Klaus Illhardt VK3IU
President
Gippsland Gate Radio & Electronics Club

From The Editor



Well the last prac/natter night was interesting, We've come to the end of one build it project, an 'Auto Probe', as in a probe for a Car's 12V electrical systems, one that can easily fool many if you go poking about with a standard digital multimeter.

So the question posed that night was "What's next?" I had found a video on the web and had sent it in, but it seems to have gotten lost, it showed another club with a pile of members eagerly building this combined GMT & Local time clock. It kind of had me puzzled as I have put the odd article in the mag about clocks and it never garnered much attention – as in no one asked me for the processor code I had created etc., so kind of a dead duck I thought – yet here in this other club they are kind of 'stuck in' for wants of better words (I'll put the vid the 'interesting vids' section). Actually the video was aimed at generally getting a club's members active with the soldering iron, for fear if they don't do it, of the club stagnating, and just fading away. They had just built a radio of some sorts and were now onto this clock.

So I stuck my hand up to say "what about this", well it didn't overly fly at all. Another member had seen an article in the WIA magazine about it??, however as the WIA made it awkward for me to renew, I had dropped off their list and no longer receive the mag, however the club does so I should find where they store them.

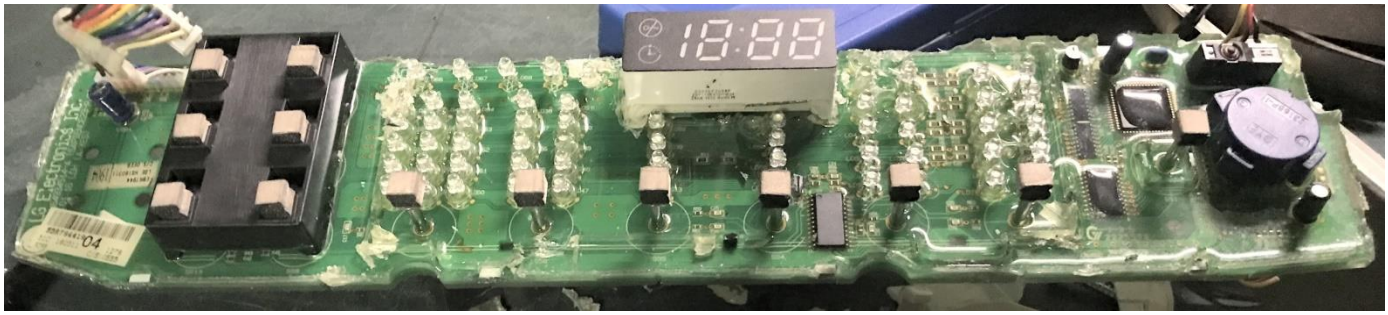
Another member mentioned 'HAM Clock', as shown above – We've already been there a while back – maybe before his time? Anyway I don't remember many building them at the time. I managed to get it running on my shack PC, however the Linux requirements proved a sticking point at the time that seems to have stopped many. Personally I thought it was an extremely over cooked can of worms just waiting to burn your time keeping it up and running. Even the idea of dedicating a large high-res monitor to it seems way over the top to me. Anyway my fears kind of came true, as in the man who created it and its website/server passed away, so the 'Clear shy institute' site he had shut down, trouble was that's where all the jazzy extras ('complications' wristwatch aficionado's call them) kind of come from – however it's now been fixed, with a companion Android etc app available for $5 a month to fund the whole thing.

"No thanks" being my first thoughts, a subscription plan so I can burn power running a full HD screen for the time? Actually it's about the only way to keep such a project up and going, however kind of completely the opposite to my ideals of clocks not being tied to anything that can disrupt them (Yes I published many that run off a central source – but it's MY source).

So being there kind of like a fly on the wall – as no one was listening to me, was kind of interesting, what a divide between the two clubs. Another member had his mobile phone out and alluding to having it all on there – also surprising, as to me mobiles are kind of the opposite to amateur radio, a device where most know little and care little about how it works and are happy to endlessly shell out money to keep the providers fed. If it stops all you can do is throw your hands in the air, unlike amateur radio where you go fix your antenna etc.

Paul VK3TGX

Recycle It

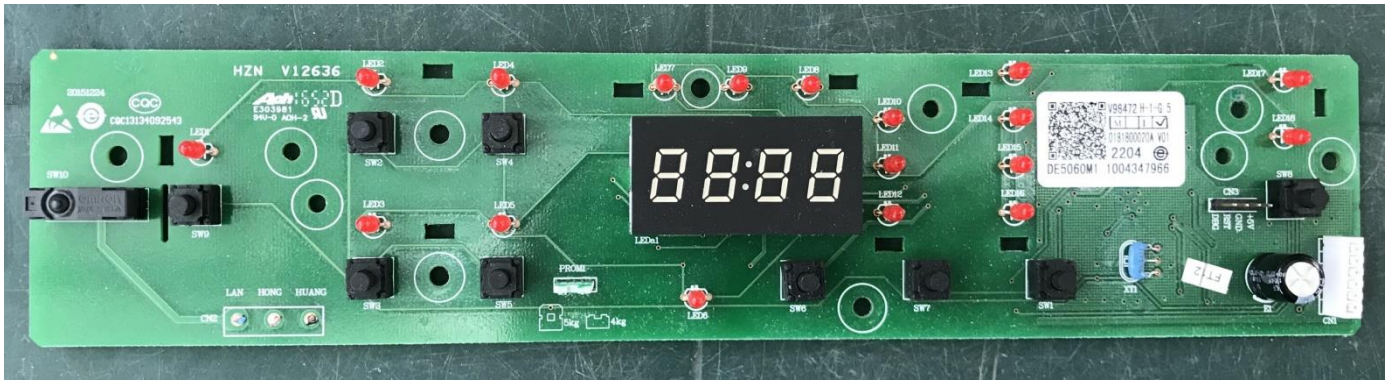


Our across the road ‘neighbours’ were having a clean-out, so I could not help myself, although I did miss next door’s, however that was more to placate Marianna.

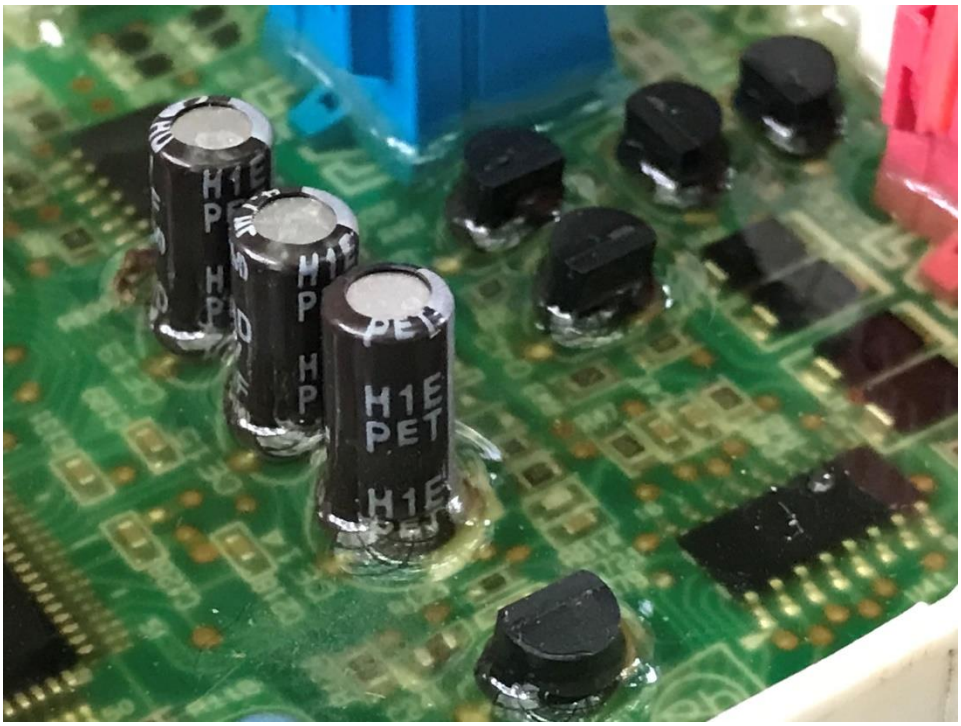
The electronics construction is a touch unique, both boards were sat in these white plastic trays, then something akin to silicon was poured around them and left to set, I say ‘Silicon’, well it feels like it but must have been way more liquid as it was just poured in and it flowed under and above the boards getting into almost everywhere, unlike your regular silicon sealant that would never flow like this.

Luckily however it did not stick anywhere like silicon sealant and could be peeled away with not much effort, just needing WAY too much time to make any repair work on these all but impractical. So you are at the mercy of the manufacturer for spare modules.

These two boards, clipped together were then screwed up under the front panel, however not in a separate comportment to the actual washing tub, so if one tried hard enough you could splash water up onto these boards – so hence the heavy duty very thick coatings.



Here is another controller that did have its own compartment, and as such has no coating at all, so way more repairable and hackable.



As you can see the liquid silicon had quite a surface tension and liked climbing the sides of components.

Digging it out was not that hard especially on the boards back where you can almost do it with your bare hands.

Unfortunately whilst the grab/adhesion properties were not the great, they are way too strong to allow one to easily remove the board from its plastic tray

The only way is to get some decent side cutters and plyers then slowly destroy the tray then peel the remnants free from the potting compound.

This kind of leaves you in no doubts about the un-repairable nature of it all, sure you could get the electronics to function, however restoring the boards into their plastic trays is all but impossible, short of using a 3D printer.

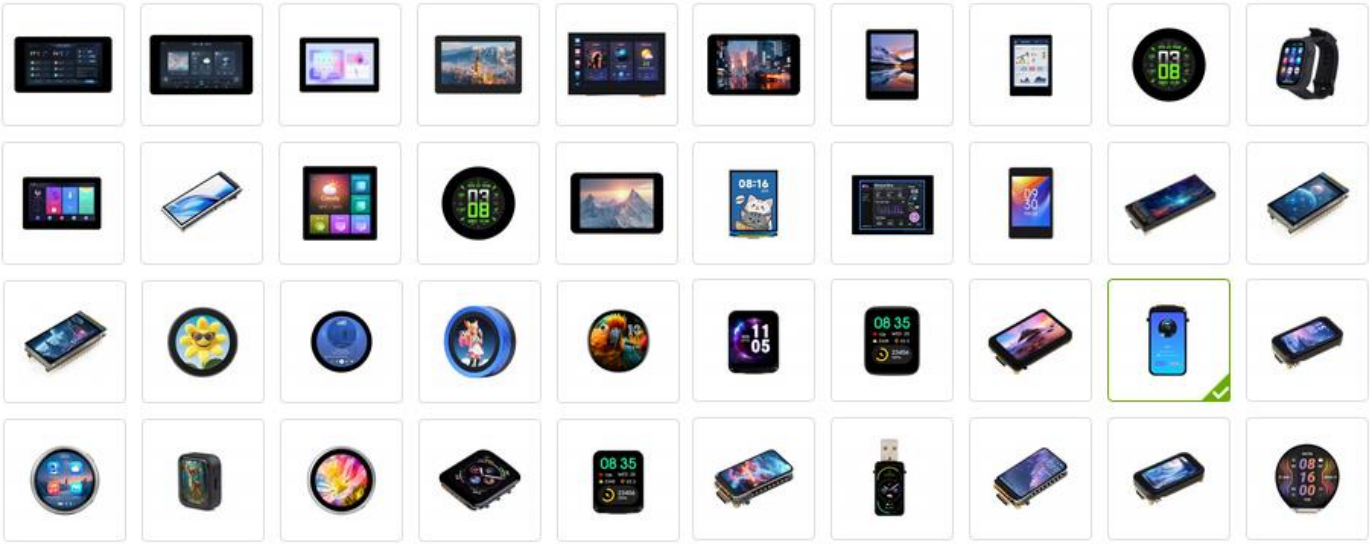
So what's to be gained from these boards, a three and a half digit display and a pile if white LED's seems to be it, although sitting out in the back yard soaking up some fresh air etc. whilst taking my own sweet time to slowly process these was WAY better than parked in front of the TV. Kind of like the old boys sitting there with a pocket knife whittling away at some wood.

As for the non-potted board, the interface to the main controller is way simpler than the bigger one, four pins, 5V, Ground, Rx, & Tx, so I'm inclined to see if I can talk to it. If nothing else turn it into a blinky light panel without having to cut a single track etc.

So get some fresh air in your lungs spending way too much time to recycle something.

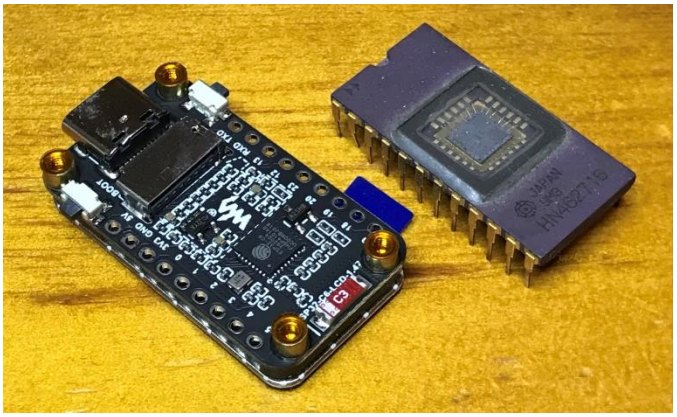
Paul VK3TGX

Integrated Development Boards



A while ago I saw an advert for a Waveshare 'Integrated Dev Board', it was fairly cheap, so I bought one. So what are they, well basically they are the likes of an Arduino Nano board I've shown many times before, but with a display panel mounted on them

It was relatively cheap, and I had yet to play with an ESP32 board (I have 'used one' but not written any code – just used someone else's), so it looked like a good opportunity to get my feet wet in another platform (I also have some Raspberry pi Nano's to get to as well)



It's about the same size as the Nano's I use – or a good old 24pin Eprom, so a familiar pinout and spacing.

It comes with header pins, I've just got to solder them in. otherwise those brass mounting posts are a nice feature.

However as a display, boy is it tiny, 1.47 inch takes it into the wristwatch arena.

However on the other hand you cannot argue with the price.

It has edge RGB illumination, that's why my hand is glowing.

One use I've seen these small displays for is status displays etc., how often have you seen a project that needs WiFi access etc., displaying that on say Nixie tubes in a retro clock project is kind of messy to say the least.

So not something you spend much time looking at, maybe setup only then basically not really used again.

Or a screen on a DMR hotspot etc.

So what has renewed my interest? Well at the last prac night when I suggested a GPS clock as a suitable project I got to thinking about running that code on my Waveshare board, yes the screen is probably too small, but it would get me on the path – and if I delete all the other clutter, maybe even useable.

However seeing the total disinterest at the prac night I'm now thinking or making an audio level meter out of it, I'm in the process of making a preamp for a 'new' amp in the shack, that amp only has a power switch, so I need at least a volume control. Yes I could drill a hole and fit one, however the amp's layout is not too conducive, so an external box seems a better fit, however some metering would be nice – so how about a Stereo bargraph on the Waveshare?

Paul VK3TGX

LED's and 12V – or what is 12V

A bit back I was having (still are) issues with possums, I just wanted to discourage them from a few places, like jumping on the tin roof of my study and scaring the living crap out of me!

So I tried some illumination and that seemed to make things much better, however lately they seemed to be coming back, luckily nothing like they used to be, so just getting used to my fix?

The other night I noticed a flickering on a tree, so went looking – oh that's not good, there is supposed to be 11 LED's up there, we're now down to just three – and intermittent at that.

I had three of these 11 LED panels, two blue and one red. I'm not a great fan of the blue ones, so a less than perfect unit ended up in this electrical box up on top of the roof. I had only temporarily run the wiring, just over the edge and through a window, so easy to bring it down for inspection. It looked like it had been baked, the hot melt glue I'd used to attach the modules back panel in place – as the previous owner had stripped and broken the internal plastic threads, had run down the back (the stripped holes being why I chose this module)

I ended up desoldering all the LED's so I could get it apart, about half of them were completely dead, with a few others being quite dim.

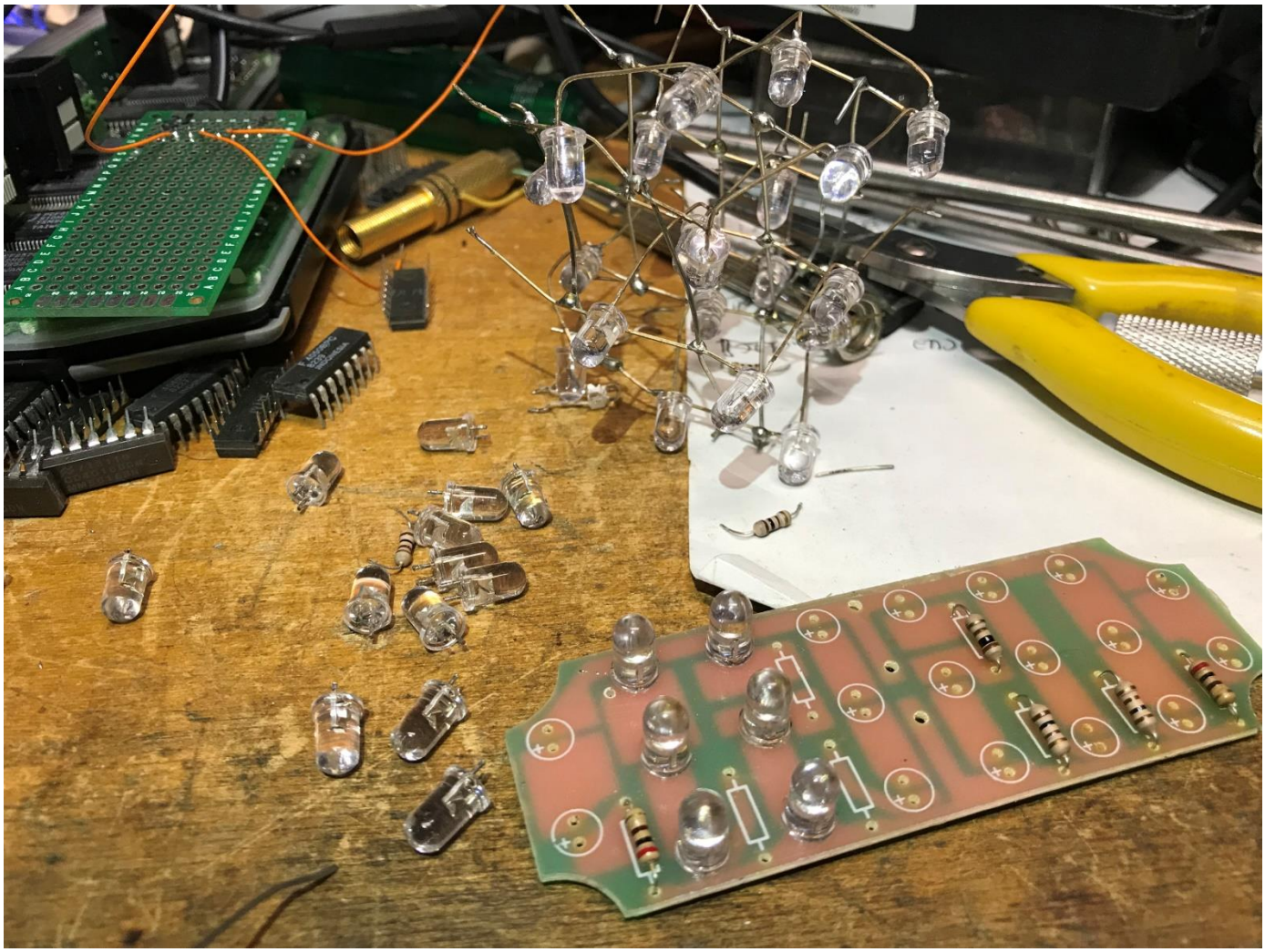
So what happened? I have a battery backed up 12V system used to run a pile of network gear, so an obvious and easy source of 12V, and this seems to be part of the trouble. What exactly is 12V, is it 12.00V, or the battery/Amateur radio 13.8V, or more generally in automotive lingo anything between 11.5V up to 14.1V or maybe a touch more.

Inside a computer is often a pile of 12V, and in this case it's 11.92V to 12.2V in my book, if I want to run this gear off my house 12V setup, I'll add a regulator of some sorts to tame things down so the smoke does not get out. In the case of these LED modules, I tended to think more in automotive terms and just hard wired it to my DC buss via a timer.

Normally to run a LED off 12V you add a resistor to drop the 12V down to say 3.2V for a blue LED. Trouble is most of the volts, and subsequent power is in/on the resistor. Now if you want two LED's, then wire them in series with just the one resistor, so twice the light for exactly the same power input, with less loss in the resistor. In this modules case they had taken that a step further with three LED's in series on one resistor. (Actually 6 strings of three LED's, and two strings of 2 either end) About as good as you can get it without resorting to a switch mode LED driver module – these are not 100% efficient either, so a dubious idea in this 3 LED ,12V case.

The trouble is the more LED's you have in series, the lesser volts across the resistor, so a win?, well not really, as the actual supply voltage starts getting more and more critical.

In this case we have three in series via a 100 ohm resistor, so 23mA, pushing the friendship with modern high efficiency LED's, no derating here, push 'em to the max. However if the supply were to wander up to 13.8V, that's now 41mA through those poor LED's. I'd hate to see how they fair at 14.2V when boost charging a lead acid battery. My 12V setup normally run's at 13.1V, about as high as the current power supply wants to go, so they were getting baked alive, not to mention the sun blasting through that transparent lid.



Back a bit someone brought in a pile of school electronics lab leftovers to the club, in there were two 4x4x4 LED cubes, so I slowly dismantled one and repopulated that board with fresh LED's, some of the old ones still worked, but I didn't really trust them, LED's of last resort basically, and I wasn't going to visit the local shops as 11 retail LED's would cost more than getting onto AleExpress etc. and just buying a new module. Yes I probably should just have thrown it out, but I was too far into this one to step back. As for the voltage issue, I replaced the 100 ohm resistors with 220 ohm ones. On the 2 LED ends, I cut the track and added two more LED's, so all the strings are now three LED. The two new are white LED's from an old washing machine controller, face out the back, so the wrong way, but in that electrical box with a 360 degree view, no probs. And as for the modules black back, sun heat absorber, that's in the bin. So with an aluminium lid to fend off some of the sun, let's see how long this build lasts.

Mostly I have been referring to the LED's voltage, and while they do have a voltage drop across them, they mostly work based on the current passed through them.

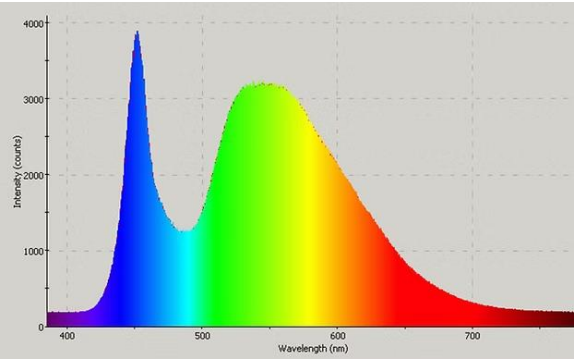
If all you want is a simple 'on' indicator, then the simple dropper resistor is your answer, these days 10mA should be heaps. Take the LED's forward voltage drop, 3.2 for Blue and White, 2.2 for Red, away from your supply voltage then use ohms law to calculate the resistor value needed. Don't do what one nong-head sales man said to a customer at DSE (that I overheard), he said if you pop a LED across a 9V battery they seem fine, 12V is not much more so skip the resistor, you'll be right. That almost had me running out of the shop to save my sanity. I once applied there for a job there, got rejected, obviously I didn't talk enough shit.

Now the real fun comes when driving a pile of LED's at higher powers for general illumination rather than a simple panel light. Most higher power lamps use an array of LED's, simple 240V lamps generally use one long string, usually of LED chips that internally have three or so individual LED chips, as rectified 240V come in a bit over 300V, that's a heck of a lot of LED's in series, just needing one current source. These days often met by a specialist current source IC. For greater light often they run banks of LED's, kind of like my blue LED module. Now to do it right you'd use one current source per string, but often they don't, many a 100W panel has all the series strings wired in parallel, all run from a single switching converter power supply. All's well until you lose one LED. Often that is barely noticeable, however the current source has no idea and just pumps out its 1A, or whatever it's set to be, so now the remaining LED's have to absorb the current of the dead string. They were being pushed hard, now it's even harder, so another sting gives up – you can see where this is going, basically an avalanche of destruction.

Another concept in electronics is derating, a component will often be specified as being able to handle a given load at say 20 degrees C, and that you need to back it off at temperatures etc. rise (they give a formula for this). Now when have you seen any info like this for LED's? Mostly little regard is given to this, the products are just consumables, the quicker you kill one, the quicker you'll return for a new one. Except for expensive projectors etc. It would be nice if the auto industry took more care, when's the last time you came up behind a car with a few LED's out in their high mount stop light? Admittedly they seem a lot better of late, however given the crazy prices they charge for new car light assemblies (you cannot generally change the LED's) this is kind of good news. So if you're building something to stay, and not a short lived Christmas decoration, back off the power, keep them cool and you should new thousands of hours of service rather than a regular reason to get the ladder out.

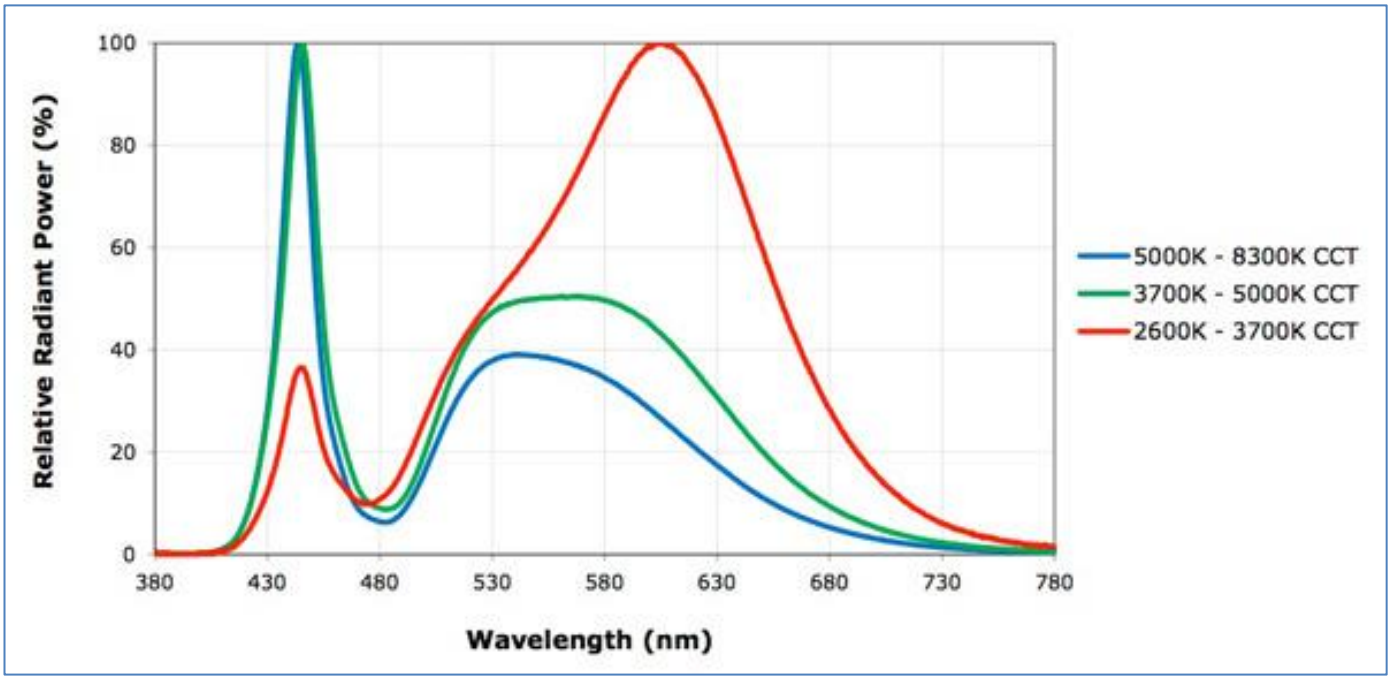
Now for some generic White LED info

Over the years LED's have been steadily improved in both efficiency and light output, to the point that they are now the default light source in everyday life, about the only other option is laser diodes, as used in some car headlights and video projectors.



For general illumination, blue LED's are usually the primary light source, then they add a Yttrium Aluminium Garnet (YAG) phosphor coating atop that LED die that takes that blue and turns it into an green/amber colour. Our eyes see only three primary colours, Red, Green, & Blue, so with the LED producing the blue, the phosphor generates a colour right in the mid Red – Green spectrum.

Balance the mix right and our eyes three receptors see equal levels of light, so it must be white. Add a bit more phosphor and we see less blues and more amber – and we perceived a warmer light, less phosphor leads to the blue being stronger – a 'cool white light'



Courtesy of digikey, Cree LED's Warm Mid and Cool light spectrums – or CCT's

Now you can buy actual amber LED's – as in no blue shenanigans, and also there are RGB light bulbs – usually the smart type that actually have separate Red, Green, & Blue LED's so you can basically dial up any colour you like. Hate excessive blue light at night time, well just use one of these lamps and dial back the blue to your liking. The only downside is they generally use a mobile phone app to control them, so if you update your phone, and your smart lights are a bit older, you may have issues getting the app on your new phone, basically you lose control….

I have a Tapo brand bulb in my lounge room, set to come on at dusk and turn off a little before midnight – so my house has that lived in look when we are not there. Trouble is it needs a WiFi connection to some server for all that to work, and every now and then it 'forgets' so I have to power cycle it and all is well for another month of more.

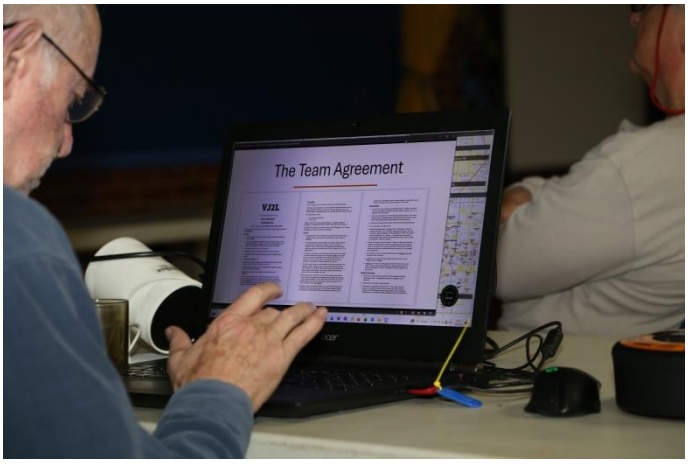
Its nuts, my lightbulb has more processing grunt than my first computer!

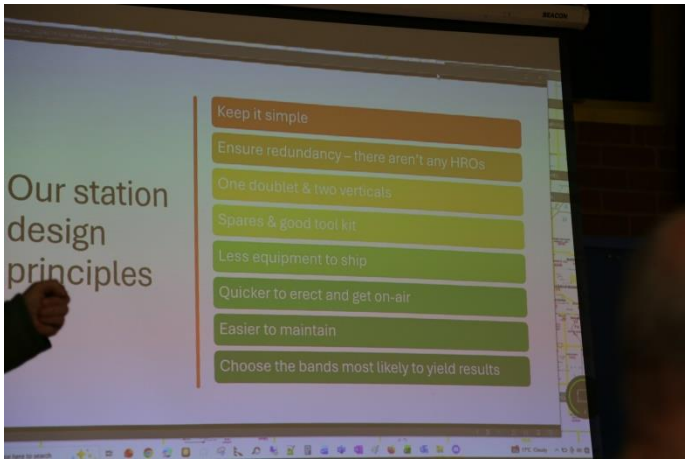
In my bedroom I have a soft night light made out of one of those 'silly?' salt lamps. The incandescent bulb it came with kept failing, even when I dialled the power back greatly, so I threw that bulb assembly into the bin and bought three amber LED's from Jaycar, problem solved, no blue light in our bedroom.

A quick iPhone pic of it on my study roof, unfortunatly most camera's can't handle high dynamic range imaging, so it's either backgroud and blown out light, or better light and no background.

Paul VK3TGX

Random club pictures





Interesting YouTube Videos

This Is What Ham Radio Clubs Should Be Doing.
https://youtu.be/Vb3kA2q5ZRY

Precision Engineering & Dumpster Diving at World's Largest Particle Physics Lab
https://youtu.be/Yibef6nLCv8

EST. 1990 03 5996 3298 or 0417 050 879

G & C Communications Pty Ltd

Po Box 53,
Leongatha VIC 3953

Commercial, UHF CB, Amateur & Marine
Two-way Radio Communications Sales & Service
Antennas, Cables & Accessories.

ICOM GME Uniden RFI

Shop Online: www.gccomm.com.au

WIA Affiliated Club

The GGREC is an affiliated club of the WIA
https://www.wia.org.au/

We also give Thanks to

Jaycar Electronics

https://www.jaycar.com.au/

ALTRONICS
Build It Yourself Electronics Centre®

https://www.altronics.com.au/

For their generous support over the years

Club Information

Meetings 20:00hrs on third Friday of the month at the
Cranbourne Guide hall, Grant Street Cranbourne
Prac/Natter nights first Friday in the Peter Pavey Clubrooms Cranbourne 19:30hrs
Visitors are always welcome.

Office bearers

President	Klaus Illlhart	VK3IU	General 3	Leigh Findlay	VK3BOW
Admin Sec	Bruce Williams	VK3BRW	Web Master	Dennis Hancock	VK3SPI
Treasurer	Phil Pavey	VK3VB	Magazine Editor	Paul Stubbs	VK3TGX
General 1	Fred Reid	VK3FWR	Property Officer	'committee'	--
General 2	Tristan Latham	VK3AUN	Assoc. Secretary	Bruno Tonizzo	VK3BFT

Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.
6m Repeater Cranbourne VK3RDD, In 52.575 Out 53.575 CTCSS none
70cm Repeater Cranbourne VK3RGW, In 431.425MHz Out 438.425MHz CTCSS 91.5Hz
VK3RGW Repeater supports Remote Internet access (IRLP), Node 6794.
70cm Repeater Seaview VK3RWD, In 431.575MHz Out 438.575MHz CTCSS 91.5Hz
Simplex VHF - 145.450MHz FM, Simplex UHF - TBA
VK3RLP Beacons 1296.532MHz & 2403.532MHz (currently offline)

Membership Fee Schedule

Pensioner member rate $40.00, Extra family member $20.00
Standard member rate $50.00, Junior member rate $25.00
Fees can be paid by EFT to BSB 633000 - Account 146016746
• Always identify your EFT payments
• Membership fees are due by each April Annual General Meeting (AGM)

Magazine Articles to editor@ggrec.org.au Cut off, 10th of the month
All other Club correspondence to: secretary@ggrec.org.au
or via post : GGREC, 408 Old Sale Rd, Drouin West 3818
GGREC Web Site & Archive may be viewed at: www.ggrec.org.au
Website errors, contact web master: webmaster@ggrec.org.au
Facebook Page www.facebook.com/GippslandGate