Illawarra Amateur Radio Society

Propagator October 2022

Upcoming Meeting on the 11th October 2022

The next meeting will be at the Blue Scope Steel visitors centre 7.30pm.

Blue Scope Northgate entrance off Springhill road (See website for detailed map)

THE IARS FOLLOWS A COVID19 SAFE PLAN

AMATEUR RADIO IN THE ILLAWARRA SINCE 1948

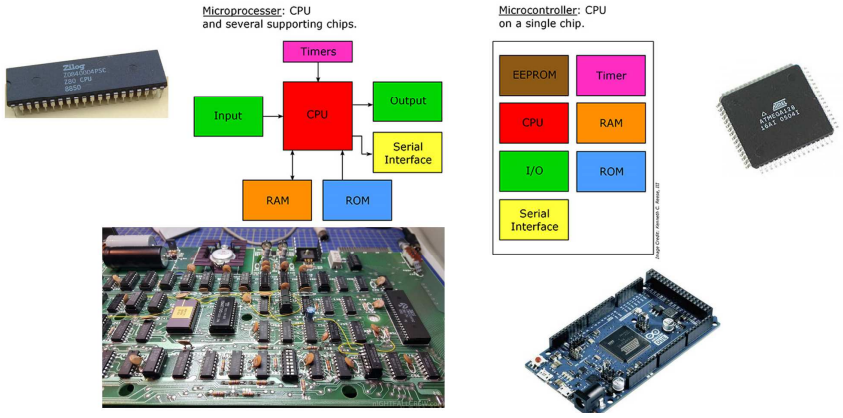
VK2RUW (Knights Hill)
34.6231° S, 150.6942° E
QF55IJ

VK2RMP (Maddens Plains)
34°15'30.6"S 150°56'47.4"E
QF55LR

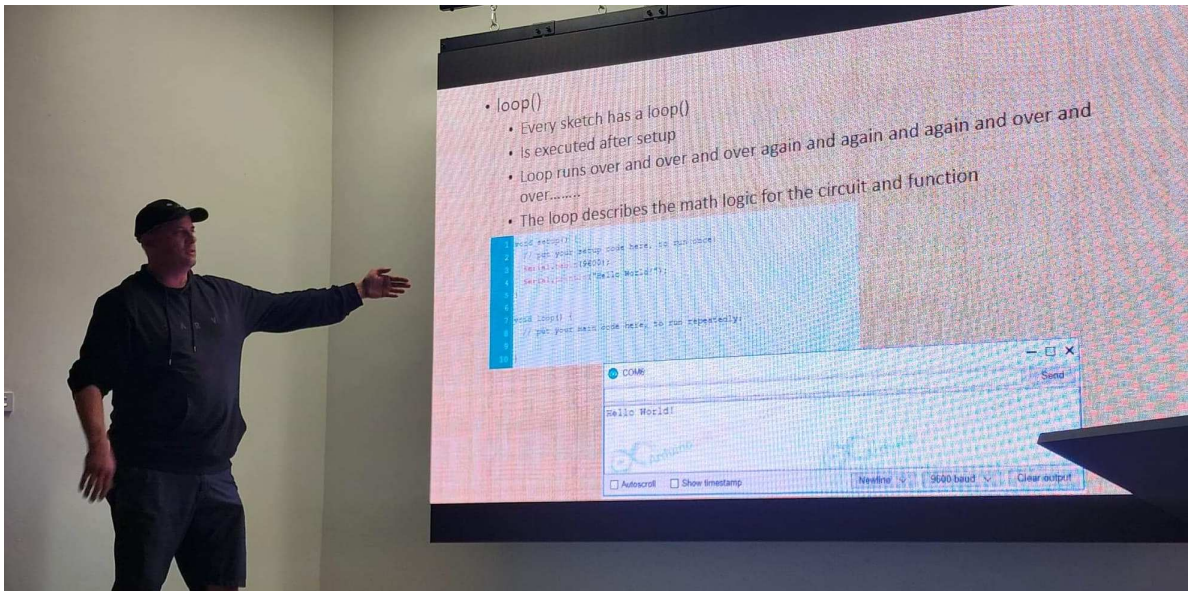
Join us and belong to one of the oldest amateur radio societies in Australia, 75th anniversary in 2023

Our last meeting 13th September 2022

MPU vs MCU



The basics of Microcontrollers for amateur radio projects was presented by Simon VK2KU and Keith VK2KQB.



Simon VK2KU showing the tricks of setting up Arduino loops

Keith VK2KQB trying to convince everyone that nibbles and bytes are cool

SETUP the ACTUAL analogue port Hardware

We set the REF to 2.5Volts , this means if we have 2.5Volts on the input pin we will have 1023 in our 10bit analogue register

2.5Volts in =

Binary/Decimal																
Bit #	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Power	2^{15}	2^{14}	2^{13}	2^{12}	2^{11}	2^{10}	2^{9}	2^{8}	2^{7}	2^{6}	2^{5}	2^{4}	2^{3}	2^{2}	2^{1}	2^{0}
Decimal Bit Value	32678	16384	8192	4096	2048	1024	512	256	128	64	32	16	8	4	2	1

Will be 1024 combinations
If we include 0000000000

1 1 1 1 1 1 1 1 1 1 = 1023

If we wanted to measure 12Volts with 1 decimal place we would need 120, example 12.6 = 126

We have 1023, more than enough bits, we could read up to 102.3Volts if we wanted to (resolution 100mV)

However, 12Volts is way to high for a 2.5Volts reference it will read 102.3 Volts as soon as we get to 2.5Volts

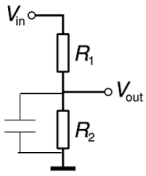
Recall previously *" For a 2.5Volts REF we would have 2.5V / 1023 = 0.0024 Volts PER BIT"*

This means we need to get 120 (bit value) * 0.0024Volts per bit = 0.2928Volts on the INPUT PIN

We need a resistor divider

R1 = 20k , R2 = 510R
Picking common
Values but can be anything

12Volts



0.2928Volts

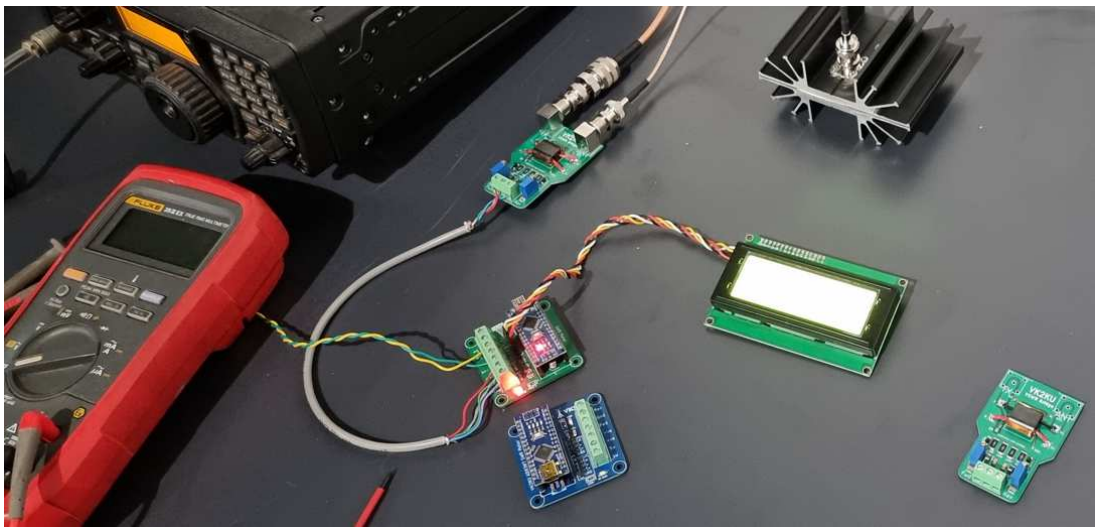
I = V/R
I = 12/20,510
I = 0.000585 A

V= I x R
V = 0.000585 x 510
V = 0.2983V

DONE! ☺

Setting up your analouge systems

Hexadecimal stuff 😊



Simons projects using Arduino

And of course, there was the get together afterwards with everyone over a nice cuppa and cake 😊

If you missed out on the meeting, there is information available including the video (thank you Troy VK2FHTW) and Power point presentations also available on request.

Please contact Keith at iars.keithb@gmail.com and we will see what we can do to get you the information required

Next Meeting

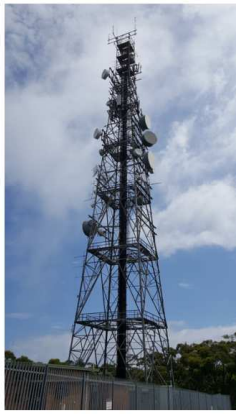
11th October 2022 7.30pm

Illawarra Amateur Radio Society


RUW

IARS TRIVA 2022

JUST 4 FUN


RMP

Yes! its that time of the year again where we sweep out the cobwebs for an evening of Trivia fun.

A great evening with some awesome prizes to be won at the IARS Trivia evening at the Blue Scope Visitors Centre



Digital Multimeter

Features

- Large display with backlight
- Low battery indicator
- Data hold function
- Transistor tester
- Current measurement
- Voltage measurement
- Diode tester
- 1x 9V Battery included
- Cat II

Voltage DC: 200mV, 2V, 20V, 200V, 600V (±0.8%+2d)
Voltage AC: 200V, 600V (±1.2%+10d)
Current DC: 2mA, 20mA, 200mA, 10A (±1.5%+2d)
Resistance: 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ (±1%+8d)
Diode test: Included
Transistor test: Measures hFE, NPN/PNP identification
Display: 3.5 digit LCD, 1999 count
Protection: 500mA M205 fused on all inputs except 10A range

This 3.5 digit digital multimeter features 19 ranges, an in-built hFE transistor and diode test function. Backlit screen and data hold functions are great for measuring in the field. Perfect for Amateur radio Supplied with test leads & rubber holster

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

VOLTS and AMPS PANEL METER for your SHACK , always know where you stand with your POWER!


Working Voltage: 2.8V~100V DC
Test Voltage: 2.8V~100V DC
Rated Power: 10A
Measurement accuracy: 2%

Features

- Electrical parameter measurement (voltage, current, load resistance, dump energy (symbol display))
- Backlight (you can control the backlight on/off through the button)
- LCD display (display voltage, current, resistance, energy at the same time)

This compact flush mount panel display provides an easy way to monitor battery voltage, approximate level, load current and resistance. Measures 2.8-30V. 0.1V resolution with 2% accuracy. 10A max. Cut out dimensions: 22.5 x 49mm. Overall dimensions: 27 x 51 x 16.5mm.

HANDY POCKET MULTI TOOL

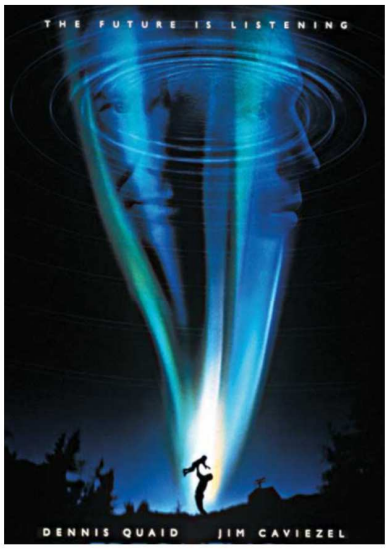
Features

- Aluminium Unibody
- Long nose pliers
- Regular pliers
- Three flat blade screwdrivers
- Philips head screwdriver
- Box opener/Awl
- Bottle opener
- Cutters
- File
- Knife
- Saw

Whether it's a loose screw or an unopened beer, the pocket hero can save the day! The hero helps you fix life's little problems, then folds up to the size of a pack of gum so you can take it anywhere. Take the hero on field days, fox hunts, park activation or even a SOTA outing. You never know when you will need it.

How do I win this stuff? ..... Easy, come along to the meeting on the 11th October, answer some Trivia questions similar to the one below and, HEY PRESTO!

Question 19



What 2000 American science fiction thriller drama film starring Dennis Quaid features a homicide detective in New York City who accidentally discovers a cross-time radio frequency on his late father's **ham radio**, which allows the two to speak to each other across time.

(Recently TV series in 2017)

A : Forbidden **B : Frequency** **C : Waves** **D : Signals from nowhere**

If you knew the answer to this one from last year, then you stand a good chance of walking away with first prize

Looking forward to seeing you all at the next meeting

For $5 you can earn some good cash and all monies go to your society, win-win.

As usual see Simon VK2KU, the fella with the coloured balls and big smile

+

+

=

The snowball money pot has snowballed due to John VK2EJL unfortunately missing out.

Our poor treasurer who always is in the draw was so busy working on the evening that that he forgot to play the game. We feel very bad John, but unfortunately we must stick to the rules, perhaps next time 😊

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IARS

RES
RADIO & ELECTRONICS SCHOOL

Looking to Upgrade to Standard or advanced and even obtaining your Foundation license we have remote assessing available.

The IARS **can help** with obtaining your Foundation, upgrading to Standard or Advanced from *the comfort of your own home.*

We have approved AMC accessors that can offer remote assessments for the AMC.

Please contact Keith VK2KQB at iars.keithb@gamil.com for further information.

Your society supports further learning, please find out more on how we can help you. AMC website is Australian Maritime College - Australian Maritime College | University of Tasmania (amc.edu.au)

Don’t forget the two weekly IARS nets as below

TUNE IN **to the IARS NETS** Echolink

IARS Tuesday evening weekly 80m NET on 3.666MHz at 8.30pm hosted by Mal VK2DXM and Rob VK2MT

Don’t forget to join us every Tuesday evening, *expect the second Tuesday of the month* for a great get together on 80m. Signal reports, news and general discussions are the agenda.
There have been some really good conversations so if you are bored on Tuesday evenings, pop in for a chat.

Saturday Morning EAST COAST NET hosted by Steve VK2BGL

You are invited to join Steve every **Saturday at 9.30am** on our **146.850MHz** repeater (linked to 146.675MHz) or **VK2BGL-R** on Echo-link for a very enjoyable morning of general discussions from amateurs who log in from all over the world.
This NET is linked to multiple repeater systems including VK2RFS south coast. Join Steve and everyone for a very enjoyable 2 hours on Saturday morning.

STEVE HAS BEEN DEPENDABLE AND CONSISTENT RUNNING THE EAST COAST NET FOR OVER 20 YEARS, EVERYONE AT THE IARS WOULD LIKE TO THANK STEVE FOR HIS HARD WORK

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Disposables Donation Table

Each meeting we have the disposables table with items donated to the club.

Please keep the support for this going and bring oddities in and take some home for a small donation to the IARS. With the next meeting please bring along an donate those old items that you no longer use and may even have thought about throwing it in the bin, someone else may be looking for that very part. Wire, pieces of coax, old parts, plug packs, power supplies, capacitors, resistors, coils, tubes, knobs, anything that someone can use.

If you have some trash*, please bring it along to the next meeting and give it new life**

**** Trash , just in case the wrong impression is given, it is not literlley trash 😊 no rubbish please*

REPEATERS

VK2RUW (Knights Hill) **VK2RMP (Maddens Plains)**

146.675 MHZ >>>>> *linked* <<<<< 146.850 MHZ

Current STATUS

- **438.225 with a - 5MHz offset. OK**
- **146.975 with a -600kHz offset NO CTCSS, C4FM enabled OK**
- **146.850 with a – 600kHz offset (linked to 146.675) NO CTCSS OK**
- **146.675 with a – 600kHz offset (linked to 146.850) NO CTCSS OK**
- **53.650Mhz with a – 1Mhz offset *** (see note below)**
- **438.725Mhz with a -5mHZ offset DMR only, RF side OK, current network issues under investigation**
- **1296.850Mhz Beacon with simplex repeater function – OK**

The IARS welcomes any feedback on our repeater systems.

Please send all your feedback to iars.keithb@gmail.com and it will be passed on to our repeater team.

Any donations to help us maintain our great repeater system will be greatly appreciated. Please check our banking details on our website at www.iars.org.au under the Contact details page.

As reference of the donation please add your Call sign and the words “Repeater Donation”

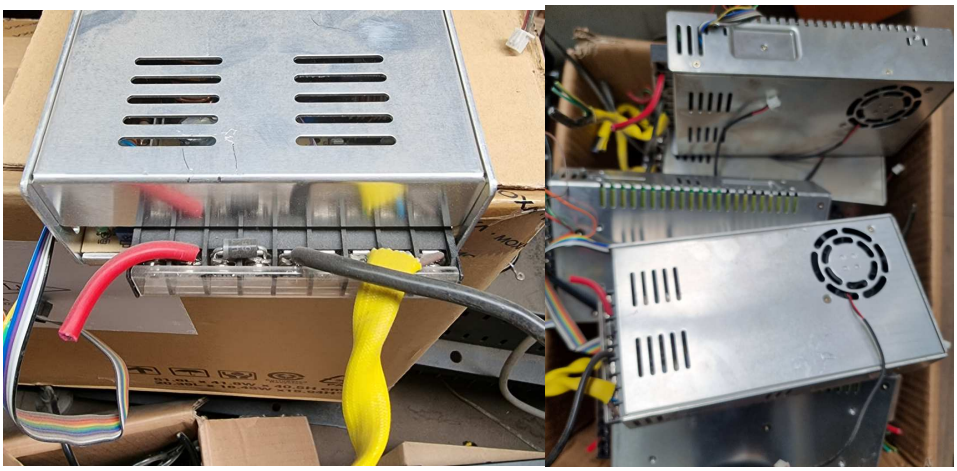
*** We have been experiencing some inter-mod interference on the 6m repeater and it will be taken off air soon to install a CTCSS unit. Until then, we may be remotely turning it off and on intermittently and ask everyone to be understanding until it is sorted.

BUY..SWAP..SELL..GIVEAWAY

LOOKING FOR SOMETHING to SWAP, BUY, SELL, an OLD PART

Parts you may need for repairs or some radio gear you no longer need that could go to a new home…….?

Email iars.keithb@gmail.com



25Amps 13.8Volts power supplies, donate $20.00 to the iARS and one could be yours

Old stock 100% working order, exceess units from a project and never used

RSP-2000-12Volts power supply BRAND NEW IN BOX, $450.00 (value $800)

Adjusts to 14Volts current limit tested 115Amps

Power up your WHOLE shack with this Rugged power supply, HF noise free, unlike cheap EBAY switching power supplies this one is as quite as a OWL.

LOOKING FOR a Sharkrf OPEN SPOT

Brian VK2AH is currently in the hunt for a Sharkrf OPEN SPOT, not fussed about the model or type. In his words," his old one has gone to god and the new ones are an arm and a leg" 😊. If you have one laying around or know of one that is available, please contact iars.keithb@gmail.com or Brian's email at brirar@gmail.com and he will be more than happy to take it off you.

Thank you

got an idea

Tech corner

Share it with us, this could be suggestions, technical ideas, circuit diagrams, IARS community projects, pictures of your latest shack project, in fact ANYTHING of interest

Let us know by return email iars.keithb@gmail.com

Also, if you have some IARS related pictures or information that we can put on the IARS website, please let us know and we can get that happening.

No SMOKING !!! 😶 whilst charging your batteries (not sure if that is really what happened?) , but charging Sealed lead acid batteries does come with some risk. Unlike the perils of Lithium batteries and their issues, lead acids also have a dark side, if not treated with caution.

Rob VK2MT shared these pictures with us of a Lead acid battery that overdosed on Hydrogen gas 😊

A timely reminder to follow some rules when charging lead acid batteries

- Never charge more than 2.4Volts per cell (14.4Volts) when batteries are over 20 ºC, this causes gassing of the cells and a build-up of explosive hydrogen gas.
- Try and use chargers with temperature compensation and ensure the correct battery settings are used if the charger has multiple chemistry settings.
- Always charge in a very well-ventilated area
- NO Smoking or any forms of ignition sources near batteries, even the slightest build-up of gasses inside the battery compartment can become explosive

Thank you Rob VK2MT for sharing your pictures with us

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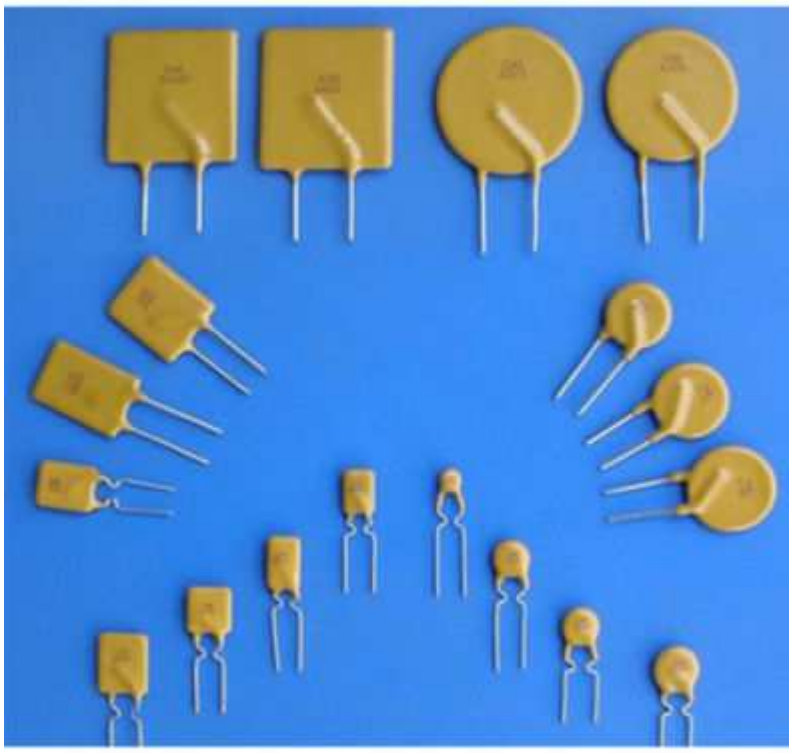
The Humble Polyswitch and other protection devices for Amateur radio use

Not many amateurs are aware of the Polyswitch or some of its other family members like the NTC thermistor which are very simplistic devices that make things a lot easier. The PTC, which is a self-resetting overload device that can be used on any equipment is as straightforward as it gets, selecting the correct current and voltage is important and the same as what you would do for a fuse.

In a nutshell ……

The PolySwitch or POLY-FUSE devices are Polymeric Positive Temperature Coefficient (PPTC) devices which offer a resettable overcurrent protection alternative, thereby reducing warranty, service and repair costs. Ideal for situations where frequent overcurrent conditions occur or constant uptime is required, resettable PPTCs are typically used in consumer electronics, power line, telecom, I/O port, process control and medical equipment protection applications.



How it works

A polymeric PPTC device is made up of a non-conductive crystalline organic polymer matrix that is loaded with carbon black particles to make it conductive.

While cold, the polymer is in a crystalline state, with the carbon forced into the regions between crystals, forming many conductive chains. Since it is conductive (the "initial resistance"), it will pass a current.

If too much current is passed through the device, the device will begin to heat. As the device heats, the polymer will expand, changing from a crystalline into an amorphous state. The expansion separates the carbon particles and breaks the conductive pathways, causing the device to heat faster and expand more, further raising the resistance. This increase in resistance substantially reduces the current in the circuit. A small (leakage) current still flows through the device and is sufficient to maintain the temperature at a level which will keep it in the high resistance state.

Leakage current can range from less than a hundred mA at rated voltage up to a few hundred mA at lower voltages. The device can be said to have latching functionality. The hold current is the maximum current at which the device is guaranteed not to trip. The trip current is the current at which the device is guaranteed to trip.

When power is removed, the heating due to the leakage current will stop and the PPTC device will cool. As the device cools, it regains its original crystalline structure and returns to a low resistance state where it can hold the current as specified for the device.

This cooling usually takes a few seconds, though a tripped device will retain a slightly higher resistance for hours, unless the power in it is weaker, or has been often used, slowly approaching the initial resistance value. The resetting will often not take place even if the fault alone has been removed with the power still flowing as the operating current may be above the holding current of the PPTC. The device may not return to its original resistance value; it will most likely stabilize at a significantly higher resistance (up to 4 times initial value). It could take hours, days, weeks or even years for the device to return to a resistance value similar to its original value, if at all.

A PPTC device has a current rating and a voltage rating.

Costs? Polyswitches are very economical to use and can cost from as little as 10c each.

AND THERE IS MORE ……..

Another device which is the total opposite of the Polyswitch is its cousin, the **NTC inrush current limiting device**.

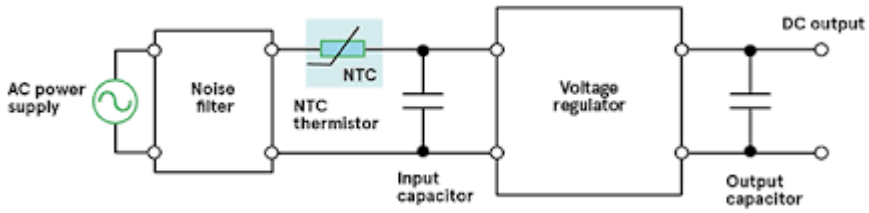
NTC Thermistor based Inrush current limiter is one of the most common design options for protecting circuits is several applications.

NTC THERMISTOR

This magic little device can help you overcome the problems associated with some of the older transformer powered linear power supplies and linear amplifiers. Tired of that fuse popping or circuit breaker tripping every time you turn your BIG linear on. Well, this fella can stop that.

Inrush currents on the transformers and capacitors inside equipment can be huge causing all sorts of problems, not only with fuses but the switches have to deal with these short bursts of current.

Selecting and installing NTC current limiter will make this problem a thing of the past.



How do they work?

When the circuit is closed, the thermistor's resistance limits the initial current. After some time, current flow heats the thermistor, and its resistance changes to a lower value, allowing current to flow uninterrupted.

It is inherently impossible for 100% of supply voltage to appear on the protected circuit, as the thermistor must continue to dissipate power (producing heat) in order to maintain a low resistance. The resulting voltage drop from the operating resistance, and the power consumption of the thermistor must be taken into account, however, this is very small compared to the load current and should not affect the circuit.

Resuming operation after cooling down After a load has been switched off, the NTC thermistor must be allowed to cool down to room temperature if its capacity for inrush current limiting is to be fully used. This can take 30 seconds to two minutes depending on the disc size. In the case of switched mode power supplies, these cooling times are often only minor consideration, because electrolytic capacitors in the circuit usually take longer to discharge fully. Therefore the NTC thermistor will be cool enough to resume operation in case of short term turning on again

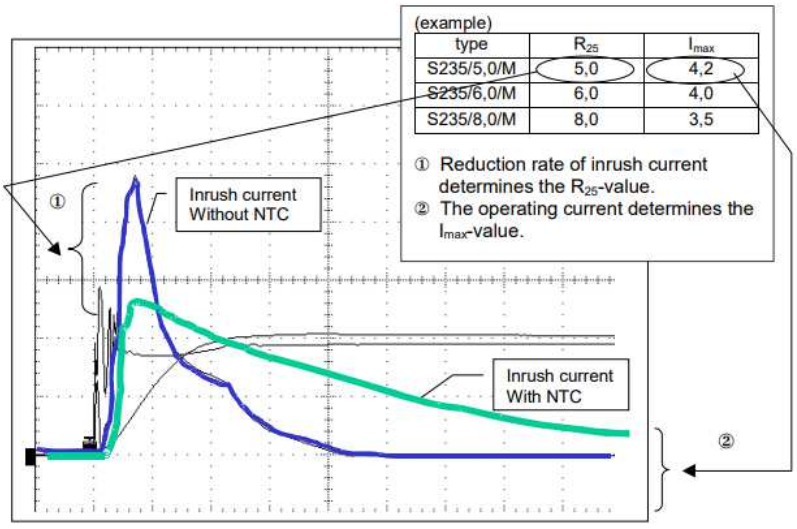
Selection of inrush current limiter NTC

There are three major criteria for selecting the best inrush current limiter for an application:

1. rated resistance (R25)
2. maximum permissible continuous current under rated operating conditions (Imax , DC or rms values AC)
3. maximum capacitance CT to be switched Rated resistance is a measure of the damping of inrush current.

Under rated operating conditions after stabilisation, the maximum continuous current must under no circumstances be exceeded. Otherwise the component can be both, thermally and electrically overloaded, and thus destroyed.

The test method shown in the figure below is used to gain an indication of pulse strength. Here a capacitor CT discharges across a series resistor RS and a NTC thermistor. The charge voltage VC is chosen so that the voltage VNTC applied to the thermistor at the beginning of discharge is 345V, corresponding to (230V + ΔV) x √2 .The capacitance CT indicates the energy absorption capacity and thus the pulse strength of the NTC thermistor.



Please send your ideas and tech stories to iars.keithb@gmail.com so that we can publish them in upcoming editions.

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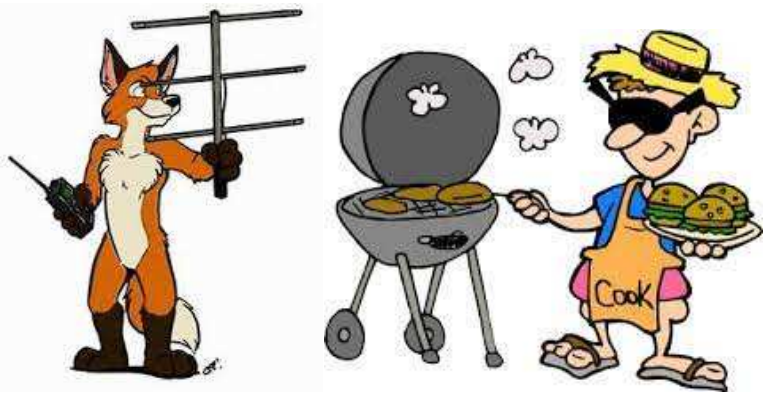

Recent Joint Club Picnic & FOX HUNT

On the 27th August 2022, members of the Mid South Coast Amateur Radio Club (MSCARC) and Illawarra Amateur Radio Society (IARS) spent the day at the Penrose Remote Shack for a great day out.

The weather was perfect with some of the MSCARC members activating parks in the vicinity returning back to base for the BBQ and festivities.

David VK2LDW with Phil VK2CPH , Thumbs UP!!!

Dan giving us a tune up on the FT900

Yaesu FT900 HF was setup, DC battery power system powered up and the station was fully operational using a dipole, ladder line and manual tuner. With noise floor levels below 2 S-points, many stations were contacted.

Alex VK2ABE with Dan VK2FDSD

Mal VK2DXM double checking weather reports, the sunshine was too good to be true

The BBQ was awesome with Simon VK2XQX or VK2FO (HF DX 😊) cooking the selection of “Boerewors” and other sausages. Fireman Wayne making sure we don’t burn the place down.

Even the XYL’s had a great time showing their support 😊

AND NOW ……. FOR THAT HIDDEN FOX

Boys still looking …… Troy VK2FHTW and DAN VK2FDSD going bush while David and John look on

AAAAAHHHH …….. Found it, David VK2LDW showing us how its done!

Dan VK2FDSD hot on his tail, but just missed it, maybe better luck next time around Dan.

(Took only 15 minutes, perhaps we didn't hide it well enough 😊)

Well done to David VK2LDW, the winner of the FOX Hunt

A great day out, if you missed it don't stress, there will be plenty more where that came from. The IARS is planning many more outings at the Penrose site.

WE WILL KEEP YOU POSTED

Upcoming events ……………………………………………………………

Please advise your interest by return email

iars.keithb@gmail.com

As noted in last months Propagator, the awesome Shack Crawl is coming back due to the lifting of Covid restrictions. If you are unaware the shack crawl, it is basically a road trip for the day, visiting everyone's shack along the way ending up with a great BBQ

If you would like to participate, please send me an email.

Dates will be advised once we have enough interested parties

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Contests

Oceania DX Contest

Contest Dates/Times:
PH - The first full weekend in October each year from 0600 UTC Saturday to 0600 UTC Sunday
CW - The second full weekend in October each year from 0600 UTC Saturday to 0600 UTC Sunday
Log deadline for PH and CW logs - 31 October.
More information https://www.wia.org.au/members/contests/oceania/

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VHF UHF Field Days

Spring 2022 - 0100 UTC Saturday 26 through 0059 UTC Sunday 27 November (0400 / 0359 in VK6).

- The Field Days provide VHF-UHF operators with the opportunity to "head for the hills" and see how far distant and how many stations they can work.
- The Field Days have separate sections for single and multiple operator stations. The duration of the Field Day is 24 hours, but there are also 8-hour sections for operators who may not be able to camp overnight.
- Most club stations prefer to operate for the full 24 hours. The Field Days also generate plenty of activity from home stations, so there is also a separate Home Station section.
- All contacts must be simplex: contacts through repeaters or satellites are not allowed. There is plenty of FM activity, but one feature of the Field Days is a high level of SSB activity.

More info https://www.wia.org.au/members/contests/vhfuhf/

YEP, its hard to believe but we are getting to the end of the year IARS Christmas lunch

Due to the December calendar quickly filled up, we decided this year to have Vinnies VK2VIN Christmas lunch at 12.30 on the 3rd of December 2022

NB!!! Booking is essential

$10.00 donation for non-members, IARS members free.

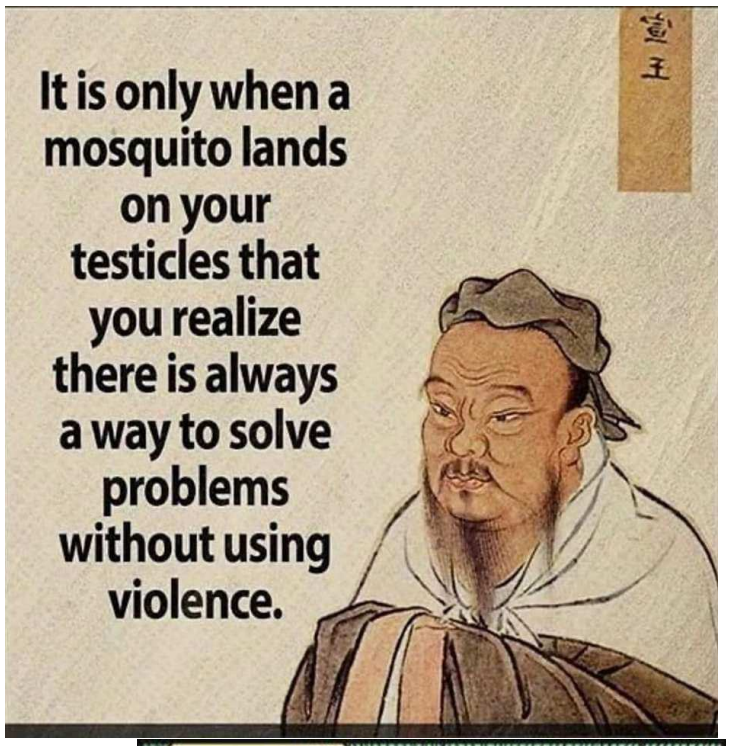
Join now and enjoy all the benefits of being a IARS member (https://www.iars.org.au for details)

Upcoming meeting presentations ……

- October 2022 : Trivia IARS with great prizes, Keith VK2KQB
- November 2022 : IARS annual auction with auctioneer Simon VK2XQX
- December 2022 : Christmas dinner with show and tell (pizza night, $5 donations for non IARS members)

Fun Corner

Please send in your funnies to iars.keithb@gmail.com



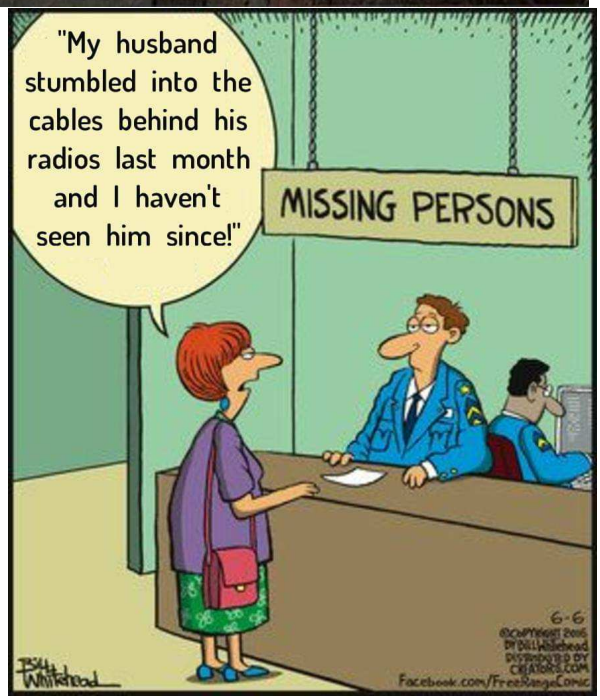
Aussie lingo

(Australian common language)

Arvo - Afternoon	Yakka - Hard work
Cobber - Friend	Egg on - Encourage
Crook - Unwell	Fanny - Vagina
Squiz - Quick look	Cake hole - Mouth
Tucker - Food	Get nicked - Go away
Chock-a-block - Full/Crowded	Rack off - Get nicked
Bonza - (Very) Good	Bugger off - Rack off
Drongo - Idiot	Bugger me - Shocked
In the nuddy - Naked	Dodgy/Iffy - Suspicious
Sheila - Woman	Bull dust - A lie
Bloke - Man	Cark it - Die
Brekkie - Breakfast	Veg out - Relax
Waffle on - Talk too much	Oldies - Parents
Butchers (hook) - Look	Fuck all - not much
Bottle-O - Alcohol retailer	Servo - Gas station
Watering hole - Public bar	Snags - Sausages
Daks - Pants	Rellies - Relatives
Yobbo - Uncouth person	A quid - Money
Daggy - Out of fashion	Knackered - Tired
Durry - Cigarette	Hoo-Roo - Goodbye

www.facebook.com/f.a.r.c.u.e.dotcomau

~Southland~



That's all for now, hopefully catch you all at the **Blue Scope visitors centre on the 11th of October 2022**

Stay Safe

73's

Keith VK2KQB

IARS Secretary

IARS, Amateur Radio in the Illawarra since 1948