

Horndean & District Amateur Radio Club Journal

Volume 5

Number 4

October & November 2020



GB4MHR

26th - 27th September.



Stations on the air

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Founded in 1975

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Articles, letters of interest, photographs are always needed and should be sent to the Editor :-

I use Microsoft Publisher to produce the journal so am happy to accept articles/photographs via email. A Word document or Picture attachment. Just use Journal article or Journal picture as the subject matter.

Opinions expressed in the journal are not necessarily those of the HDARC. The editor has the right to reproduce the articles for our affiliated club journals/newsletters. The Editor decision is always final.

Closing date for next journal is : November 6th

Editorial



Hi everyone

Well as we slowly raise our heads above the parapet that was lockdown and self isolation, I for one feel it will be a long time before we get back into some sort of normality, and I know some of you are still isolating. I'm sure we all understand that, I for one, are looking forward to railways on the air weekend 26th and 27th September, Friday 25th is the setup day and Chris M0KTT will need as much help as possible all weekend and anytime you can manage his details can found on page 1.

Well, I wrote this before the latest lockdown terms and what a shame we won't be able to attend the event at the end of September, still onwards and upwards let's look to the future and do what we can to enjoy life as best we can. My thanks to everyone who has contributed to this copy of the journal, you are all stars.

Ralph 2E0HES

Club Clothing

Sweatshirts Polo-Shirts T-Shirts Fleece

Sizes: Small = 36 - 38" - Medium = 38 - 40" - Large = 40 - 42" - XL = 42 - 44"

Available with club logo only or logo, name & callsign

Cap - One Size only: with adjustable strap - Stitching in Yellow

Available with callsign only or callsign and/or name

Some items available in various colours, see **Stuart G0FYX** for details



Any articles you think you have that will entertain your co- members then please send them in to Ralph at landscape@sky.com

Nuggets from the net



Is this your shack? Let's all have a look good or bad, or your antenna installations



SORRY I'LL SEND THAT AGAIN!

Listening to the club top band net the other Sunday took me right back to my first time trying CW. You hear your call sign then the 'K' and your blood pressure goes through the roof, you start sweating, your hand shakes and your mind goes blank. I'm certainly no expert at CW, but this was my approach to getting on the club's CW net as a very amateur CW operator.

Write a script of a piece of paper/card:

2E0ABC DE GOFYX (break) GM TO ALL ON NET ES SWLS (break) ALL SIG
GUD (break) BTU K

For the second go on the net (if you dare):

TNX FER NET (break) BTU K

The break character can be '=' (-...-) or 'full stop' (.-.-.-), or either but make your choice before you send. Stick to the script for the first few weeks and practice it before you go on. Concentrate on accuracy/clarity NOT SPEED.

Timing: A dash (dah) is 3 times longer than a dot (dit). The gap between elements (dots & dashes) is 3 dots long. The gap between words needs to be long enough so we know you've finished that word. So if you end up with a gap in the word make the inter-word gap longer, long gaps between words is fine! Remember we are all rooting for you so we are happy to wait between words for you to take a breath and regroup but WE DO want to know what the words are.

You don't necessarily need any equipment to practice CW, just sing it in your mind. So your call sign might be:

1 and 2 (pause) dit dit dah dah (pause) dit (pause) dah dah dah dah dah
(pause) dit dah (pause) dah dit dit dit (pause) dah di dah di, etc

Take a piece of card 2 inches square, fold it in half, write your callsign on it and put on the toilet cistern. Every time you go in and see it, sing your call in your head so it's a nicely spaced tune. I have trouble with H and 5, don't count the dots, try to remember the characters as whole sounds. When you've got your callsign off to a tee, try "THINK 5 FISH". Don't tap CW with your fingers on the table during breakfast, others in the household may stab you with the bread knife!

Errors: Tricky/controversial one this. You are supposed to send 8 dots and repeat the word. My technique is to leave a pause, take a breath, then send the word I messed up again. I only do 8 dots if the whole sentence has gone horribly wrong, otherwise there's a danger the whole message will just be dots! Remember you can always send 'SRI TU K' (sorry to you) if it's all too much and you need to escape.

Listen and learn how the good operators KOJ, HTE, etc do it (not me!). Hope this gives you some ideas and gets you on the net.

73 Mike & Sue M0CAA/M0BOZ

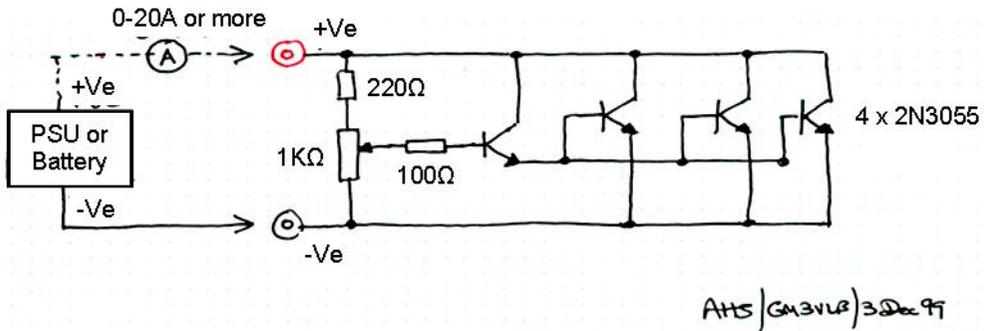
“20A TRANSISTANCE”

This simple device simulates a resistive load using transistors. The variable resistor allows currents between 0A (VR anticlockwise) and 20A (or more) with (VR clockwise).

The heat-sink is only adequate for short periods of time say up to 5 seconds, as after a while it gets **very hot** - best to use a cool air fan on it.

Always use an Ammeter in series with the Voltage source.

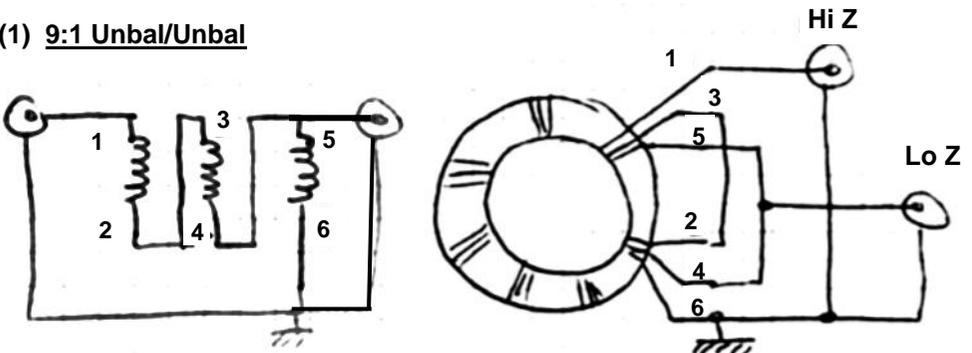
A simple modification to this is to fit front panel meters for both Volts & Amps and fit suitable rated bridge rectifier to the input. This saves the embarrassment of accidentally connecting the source the wrong way round. It also allows the connection of a computer style fan to cool the transistors/heat-sink.



Alex Baluns

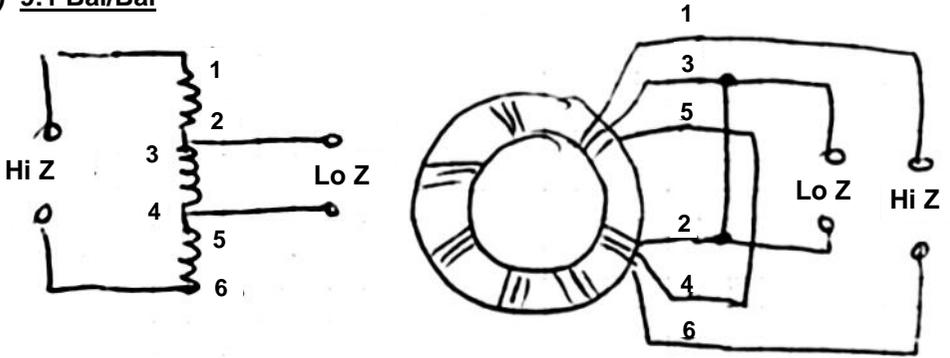
By GØDHZ

(1) 9:1 Unbal/Unbal



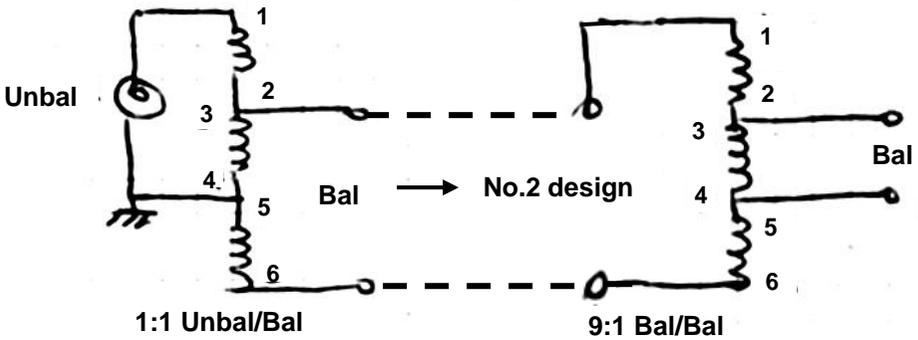
Use 12 turns on T130-6 Core

(2) 9:1 Bal/Bal



(3) 9:1 Unbal/Bal

Use 1:1 Unbal/Bal followed by 9:1 Bal/Bal



1:1 Unbal/Bal

9:1 Bal/Bal



Cure for a 160 metre problem

Since I started in amateur radio I've dipped in and out of nets, I had a break whilst I dealt with a personal problem for a while but the whole time from then until now I've had an issue with 160 metre band, or as we all know it top band net, Sunday morning and Monday night where out of reach to me as I have a small garden with the only option is a vertical antenna system.

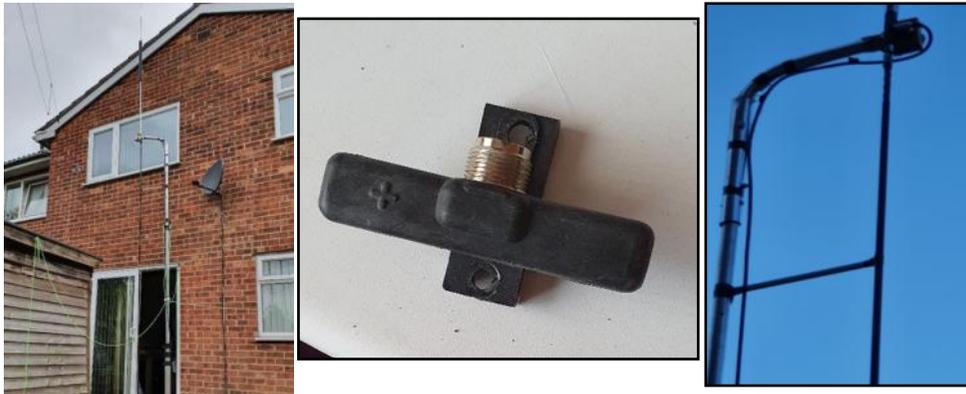
My first antenna was the Prowhip, basically an end fed vertical but at the time was a simple antenna to erect, a fibreglass pole extending 6 metres into the sky, and use with a 9-1 un-un giving access to all bands from 160 to 6 metres, and that coupled up to a FT897 and an ATU was all I needed. Well, I was able to get well into Europe and east coast of the states but the top band remained a mystery, was able to hear everyone except Stuart the net controller, as I'm sure you agree is not an ideal situation.

I had as I said a reasonable time with this set up and took it mobile and managed to get onto the net as I was returning from a mobile trip to Hayling beach with a 20 metre set up and using the salt water was a god send to Australia. I setup the Prowhip and got into the net which was easy as I set up at Broadmarsh. I think if Stuart had shouted out the shack door I would have heard him. To avoid pulling the antenna down to go mobile I bought another Prowhip, the 10 metre version this time, but was still unable to hear Stuart at home QTH which is just 8.5 miles apart so annoying. I started to gather further mobile equipment and using a Nevada dipole adapter and a pair of Ampro 20s with a 10 metre aluminium mast I was getting good results mobile and at home, but I still preferred the multiband Prowhip,

My next try at home was a Diamond 330s multiband folded dipole 1.8 to 50 megs. Still unable to get Stuart, so had to rethink the top band issue. Chris M0KTT was a regular visitor for a cuppa and could see I had a problem, and suggested I get the collinear higher for vhf and uhf and try a long wire for top band. Well the extra 8 foot on the collinear was a success giving nearly all signals 5-9 so just the top band to cure,

I did some research and opted for a quarter wave 160 which worked out at 36.5 metre and fitted it to an MFJ manual tuner zig zaged around the garden at 20 feet with the ATU grounded just outside the door; receive was good, SWR was good, but transmit was not happening.

I digress a little. Now some weeks ago while I was waiting for our Sunday morning car park meet, I was sorting the new car out for mobile work and set up an Ampro 160 on a mag mount on the car. Calling in was a success and given 5 7-8 by Stuart, and receive was good despite signal noise level of 9 plus. This was to get me thinking quite a lot on how to get this into a home QTH and have come up with something which not perfect gives acceptable results compared to before,



I know a lot of articles in the journal follow the feeling that we are all G0's etc; I'm writing this as a 2E0 and in simplistic terms forgive me for the easy reading of the explanation.

Basically it's an Ampro 160 connected to the positive end of the dipole adaptor with 2 Ampro 80s connected in series to the negative end of the adapter. If you get this round the wrong way it will not work. Treating this as a vertical I assumed the negative was a counterpoise to the positive and found that a single Ampro 80 works just as well; using an analyser I got the SWR down to 1:1 but a very narrow bandwidth, and anything other than 1.950 MHz needs a tuner, which I have used, a MFJ 941E. The bar across the mast to the 80 is nothing more than a plastic brace to stop it swinging all over the place. Keep the coax away from the Ampro 80s; I connected mine to the mast with no noise increase.

This set up was a success of sorts getting reports of 5-9 and 15 over at Waterlooville. These reports were on a windless day at 25 feet. Every other time, the wind played havoc even at 3 mph. Stuart G0FYX and Rob M0RZF put me right on the effect of wind on a 160 metre set up on a mobile system with a very narrow bandwidth, I decided then that this was not a viable setup and went back to Google.

I came across an article about the long wire which I missed first time around; all about a long wire at half wave 160 spaced around the garden limits. Upon reading more, I found this was double the size of my garden, but a quarter wave would fit just, and I do mean just. Only 4 rules to follow, as high as possible, keep the end of the wire as far away from the rig as possible and earth the tuner and rig as close as possible, wire at least a quarter wave long

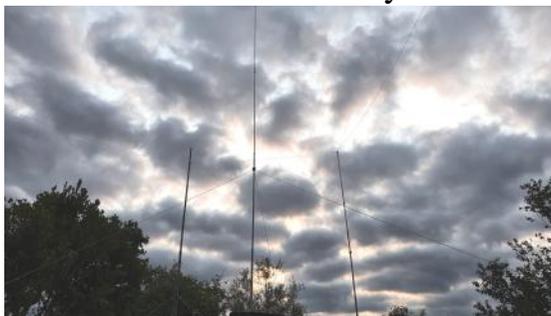
The first was going to be the hardest part as my vertigo made the ladder a very dangerous tool indeed, but hay ho nothing ventured nothing gained, I managed the height in open garden ok by using masts to get the wire up to 25 feet and around the house, fixed the wire under the top floor windows to 15 feet.

So Sunday was going to be my make or break on top band; so receiving a 5-8 from Stuart was music to my ears. Transmit was sorted, so just receive to beat now; the noise was s8-s9+, I'm not the only one. General consensus is this was a normal level to contend with; we have the genius which is Rob M0RZF and the use of use of his SDR set-up but I wanted to receive without it, I managed this, but I could do this much better on a Monday night than Sunday morning but I am working on it.

I would not like to count the hours put to this task and I don't really care; I'll keep on until I'm happy.

Last Thursday was a disaster; the Prowhip broke in 2, taking down the long wire and bending the collinear mast as well. This was a blessing in disguise; the new Comet 80 -10 was receiving on 160 at s5, transmit on the long wire was a success.

Garden as it is today





The story behind the callsign - GB1ØØRSM

by Stuart GØFYX with thanks to Geoff G3WZP in Bournemouth for all info
The Special Event Callsign GB1ØØRSM has two purposes - to publicise 100 years since WW1 finished and to take note of the 100 year anniversary of the formation of the Corps of Signals in 1920 based then in Maresfield Camp, West Sussex. A Royal Warrant for the creation of a Corps of Signals from the Royal Engineers Signal Service was signed by the Secretary of State for War, Winston Churchill, on 28 June 1920. Six weeks later, King George V conferred the title Royal Corps of Signals.

The RE Signal Service were in Maresfield Camp and became Royal Signals in 1920, moving to Catterick in 1924, expanding and with various outstations (Ripon, Bishop Auckland, Scarborough & Brighton) and finally moved to Blandford where all trade training and RHQ are now based, in 1994. A new book "Roger so far" is now available giving an insight into the Corps History .

The Royal Signals Museum is closed due to the Covid-19 pandemic regulations but GB100RSM is active from the home QTH of G3WZP. Operation is mainly CW on 40/20/17 metres, but SSB may be used if band conditions are favourable. You can email Geoff for a sked, at geoffg3wzp@gmail.com .

There are records of a small museum existing at the Signal Training Centre (STC) at Maresfield, Sussex in 1922, but all trace of the collection vanished when the STC moved to Catterick Camp in 1925. Historic artefacts continued to accumulate in the STC Headquarters Mess at Catterick and subsequently, were to form an important element in the Corps' Museum collection.

The setting up of the current Museum can be traced back to a suggestion by Colonel G E Sampson, DSO, the Chief Signal Officer, Aldershot Command. He persuaded the Corps Committee in 1934 to look into the possibility of formally establishing a museum at the STC to record the history of the Corps and to assist in training. A start was made at setting up a museum collection, but no suitable accommodation could be found in Catterick Camp at that time. The outbreak of war in September 1939 put the whole scheme into abeyance. After the war the collection remained locked in two huts until May 1950 when the Royal Signals Institution was established and made responsible for the Museum. A Museum display was finally set up in one of the huts and a part-time Curator was employed. The next fifteen years were difficult ones for the Museum as an extensive programme of rebuilding work at Catterick meant that the Museum had to inhabit a number of temporary premises, never staying more than a few years in any one site.

In 1967 the Museum finally found a permanent home when it accompanied the School of Signals to Blandford Camp and was set up in the Entrance Hall to the School. During the next decade the collection continued to grow and small extensions had to be added to the original building in 1977 and 1981. By the mid-1980's the Museum building was no longer large enough for its collection, nor could it display the Corps' recent history. The Corps Committee ordered a review of the Museum's situation and in 1988 decided that the way forward was to launch a New Museum Project to raise the funds needed to build a larger, purpose built museum at Blandford but outside the perimeter fence of the Camp. Fund raising began in 1989, but, for various reasons, it was very difficult to raise funds from the defence Industry or from other outside bodies. Undeterred by this situation, fund raising continued. In 1992 it was evident that the original target would not be met within a reasonable time-frame. The Corps Committee decided to limit the scope of the Project and to extend the existing Museum premises rather than attempt to construct the stand-alone building. Three years later sufficient funds had been raised to provide the new purpose-built extension to the Museum. It was officially opened by HRH, The Princess Royal, on 9th July 1995. Fund-raising continued and, aided by generous support from industry, the retired and serving Corps and a grant of £200,000 from the National Lottery, there were sufficient funds by 1996 to refurbish all the Museum exhibits. This final element of the project was carried out during the Winter of 1996-97 and on 28th May 1997 the Adjutant General, General Sir Michael Rose KCB CBE DSO QGM ADC Gen, re-opened the Museum in all its glory.

The Royal Signals Museum, is a walk through history, featuring a diverse range of interactive displays illustrating the science and technology of communications. At the same time the Museum depicts the role of the Royal Corps of Signals. To fight effectively and to win battles, commanders have to keep in touch with their men and each other; at all times, and in ways the enemy cannot “overhear”. The Royal Corps of Signals provide and maintain that “Vital Link”. The Museum is located in Blandford Camp, Dorset alongside the Headquarters of The Royal Corps of Signals and also takes part in an extensive outreach programme taking the museum to venues throughout the country including schools, STEM projects and county shows. The outreach team has structured the events so that attendees can actively participate and experience different forms of communication - Semaphore, Codes and Cyphers.

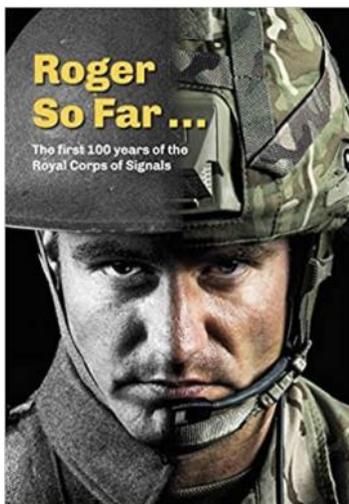
The Special Event Station callsign GB1ØØRSM was originally allocated to The Royal Signals Museum for the Museum Outreach team’s 2 day visit to Hillview School , Bournemouth in November 2018 to commemorate the centenary of the ending of World War 1, where children aged 5 to 11 years old were able to talk to stations in the UK and Europe This was so popular that the station operators G3YUZ and G3WZP had to operate through the lunch hour to accommodate all the youngsters !

The callsign was reallocated to the Museum as a Permanent Special Event Station for the whole of 2020 as The Royal Corps of Signals celebrates its own centenary in June 2020. www.royalsignalsmuseum.co.uk

DESIGN OF THE NEW CAP BADGE IN 1946 SHOWING THE TUDOR CROWN



The book mentioned in the text



Lexophilia

"Lexophile" is a word used describe those that have a love for words, such as "you can tune a piano, but you can't tuna fish", or "to write with a broken pencil is pointless." A competition to see who can come up with the best lexophiles is held every year in an undisclosed location.

This year's winning submission is posted at the very end.

.. When fish are in schools, they sometimes take debate.

.. A thief who stole a calendar got twelve months.

.. When the smog lifts in Los Angeles U.C.L.A.

.. The batteries were given out free of charge.

.. A dentist and a manicurist married. They fought tooth and nail.

.. A will is a dead giveaway.

.. With her marriage, she got a new name and a dress.

.. A boiled egg is hard to beat.

.. Police were summoned to a daycare centre where a three-year-old was resisting a rest.

.. A bicycle can't stand alone; it's just two tired.

.. When a clock is hungry it goes back four seconds.

.. The guy who fell onto an upholstery machine is now fully recovered.

.. He had a photographic memory which was never developed.

.. When she saw her first strands of grey hair she thought she'd dye.

.. Acupuncture is a jab well done. That's the point of it.

And the cream of the twisted crop:

.. Those who get too big for their pants will be totally exposed in the end.

ALWAYS LAUGH WHEN YOU CAN ... IT'S CHEAP MEDICINE.

Smoke Signals from BOZCAAm Down

Magic? What made the voices come out of that Ultra brown Bakelite radio with the homely orange glow, illuminating its tuning scale? I was keen to know, but I wasn't tall enough and my parents were just as keen that I shouldn't get the back off! I tried to construct my own, with a cardboard box and Meccano, but no voices. What was the missing magic ingredient? Years passed, dyslexia fought and books discovered. 'How It Works' and 'The Boy Electrician' started to give some answers. Jumble sales provided some high impedance 'type F' headphones and junk radios for parts. 'The Boy Electrician' eagerly consulted as inexperienced hand twisted wires together. 40 turns of wire wound on an old toilet roll, a length of wire strung up as an aerial, the gas pipe as an earth. The OA81 germanium diode and YES, voices and music filled the headphones. Magic!

More time passed, lots of experiments with static electricity, dangerous chemicals and other scary stuff. The household was getting used to bangs, flashes and small fires, as my brother and I 'played' electronics in a fog of burning resistor smoke. A jumble sale valve radio was adjusted off the end of the medium wave band tuning range and there between the noisy 'Loran' signals were different voices, with talk of 'top band'. Ham radio had been discovered! After some fun and games with pirate radio transmitters, in the 1970's, a group of my mad friends and I started to look at ham radio. The 'Handbook' was studied and the City & Guilds RA exam taken, but with college work, jobs and cars to fix, the Morse code was too hard a nut to crack.



Ultra T401



1155 Receiver

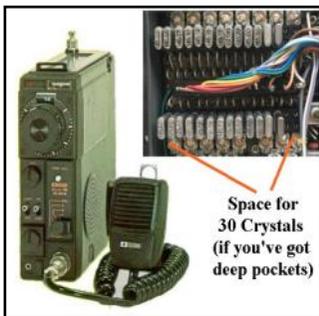


CR100 Receiver

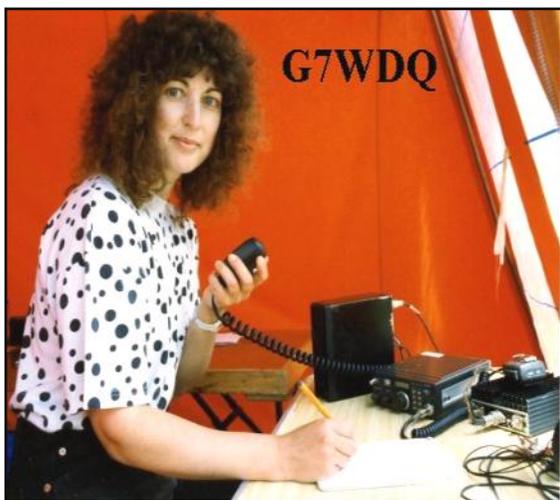


MM 2M Converter

So the communications receivers, Marconi CR100 and then R1155 were pressed into service with a Microwave Modules, 2 metre converter, home brewed from a kit. The FM had to be slope detected on narrow band AM. A number of frightening transmitters were built with whatever came to hand (PL509 TV line output valves were good). With lots of lethal volts and yet more smoke, they would struggle into life, driving my home made copper tube 'Slim-Jim' aerial hung out the window. G8VIU was on the air.



A group of friends formed the Bookham Boozers Club (BBC). On a Friday night, a QSO was set up, a pub selected and we'd all go mobile with an ever increasing pack of mobile stations all on route to the pub. Sometimes I was 'pushbike mobile' (talk about heavy breathing!). Houses, children and the rest pushed 'playing radio' aside for many years, until in the late 1990's sorting through some junk, I found the old IC215. Applied power, and there were voices from the Horndean Club. Even better I had a partner in crime now. Well how could I resist, any excuse to get the home-brew fires are burning.



Text by Milke M0CAA.

Sue M0BOZ (ex-G7WDG) on the mic at one of HDARC Special Event Stations.

Awards

During the last few months when the Gods of Propagation have either been asleep or indifferent to our needs, I've been looking around for other radio-related things to amuse me. Over the years, I've built up quite a large collection of QSL cards, some received via the Buro, and some delivered using the new-fangled eQSL service. I have also found quite a few which have been delivered directly to me by post from exotic locations. Purely out of curiosity, I had a look to see whether my collection entitled me to claim any "operating certificates", or "awards", sometimes known as "wallpaper". To my surprise, a quick search revealed that I already qualify for 20 or 30 of these using the QSL cards that I already have. Some of them are free to the applicant because the certificate/award is simply emailed to you. You need to submit your claim via email and, if approved, you can just print the award out and admire it! Others are only issued against a small payment to cover printing costs and postage of the award etc. Being a tight-fisted so and so, I had a look at the free ones first! A good place to start is the series of awards/certificates issued by Paolo IK3GER who comes from Venice. All of his are absolutely free and the series can be found at <https://www.ik3ger.it/> The PDF sheet for each one clearly explains what needs to be done and an image of the finished certificate is also shown. Paolo has very good English and is always willing to offer help and advice if you need it! All of his are issued via the above email process.

There are literally hundreds of different certificates/awards out there to collect. Most of them are quite attractive designs and can even be of interest to non-radio people, such as the XYL! If you are at all interested in this part of the hobby then you can further your education at https://www.qsl.net/va3rj/awards_dx.html or <https://www.dxawards.com/> . Other websites are available! Some require you to post the original QSL cards with your application, or email scanned images of the cards. Others will accept a written list of your qualifying cards (called a GCR list) and this often has to be witnessed by two other amateurs. If you need any advice or further information then do come and have a word with me at any club night. I'm always pleased to share any information which may be useful. To my mind, the most important thing is to not get carried away by applying for everything in sight. I treat it just like an exercise or a bit of fun. Why not have a go and see just how many bits of paper you can end up with! Be warned, it can prove to be quite an addictive exercise!

73 Rod G0ERS



W-IARU-C

Region 1 – Europe and Africa

WORKED IARU COUNTRIES AWARD



GOERS

Has presented evidence of confirmed OSOs with the required number of DXCC countries belonging to the IARU Region 1.



Venezia, 25 April 2020

COUNTRIES WKD : 63

#206 * HF SSB * Class 2



JN67	JN67
JN45	JN65
JN84	JN84
JN53	JN63
JN52	JN72
JN40	JN01
JN49	JN70
JM68	JM68
JM77	JM77



Venezia, 8 April 2020



DIPLOMA

WORKED ITALIAN GRID SQUARES

Issued to

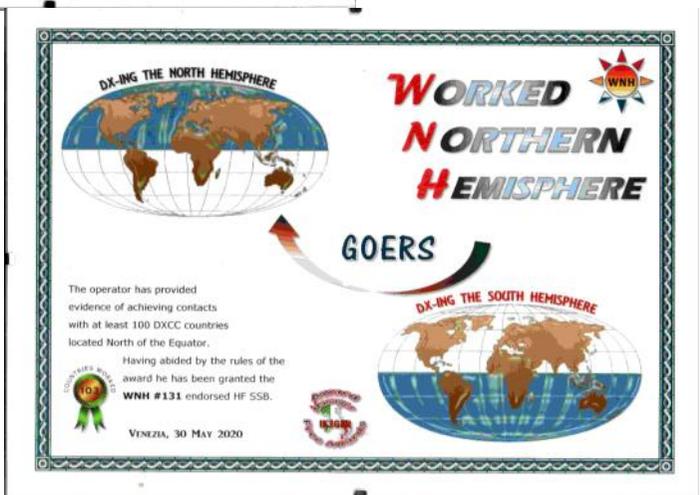
GOERS

Has worked 21 grid squares of the Italian territory, and thus receiving the award endorsed

* First Class *
* HF SSB *



Diploma #204

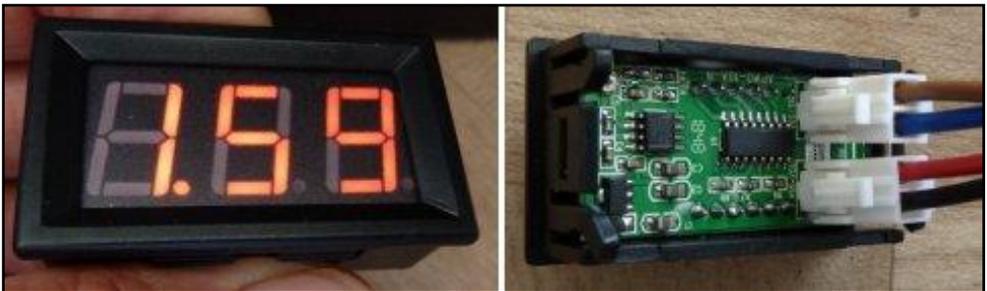


CAAn We Measure Solar Panel Current?

A friend asked me to sort out a problem which sounded simple but was a bit more challenging than I expected, and might prove interesting for those who use solar charged batteries to run equipment.

He has just taken delivery of a shiny, new(ish) caravan which had a solar panel fitted on the roof, as they do these days. Not the best place really, as you can't turn the panel to face as the sun and it's not often directly overhead. Also it's hard to keep it clean on top of a caravan (especially when the pigeons land on it) and if you camp under trees, which you probably would want to do in the summer, you don't get much charge. However I digress.

He wanted to be able to measure the current flowing into the caravan battery from the solar panel and had purchased on Ebay (other sites are available) something described as a "0.56in 10A Ammeter 2 Wire LED Panel Meter" for a couple of quid. He then got confused and came to me. I was intrigued as to how you could measure current and get power to the LED meter with only 2 wires, must use magic! Well you can't, it actually had a pair of 2 pin plug/sockets. The first coloured black & red with labels: 'Vss & Vcc and the second coloured blue & brown and labelled: 'Vcc & Sig'. No wonder he was confused.

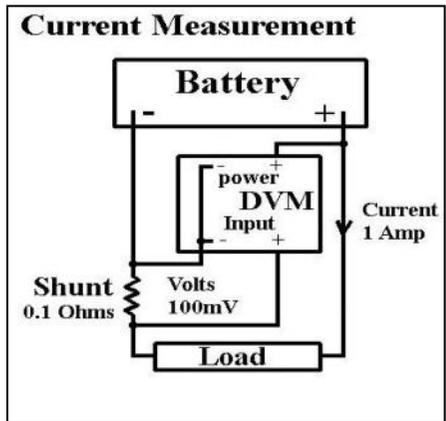


But first a quick explanation on digital panel meters. In the old days meters were analogue and used coils and magnets to deflect a sprung pointer across a scale - hence the name 'moving coil meter'. The deflection of the pointer was proportional to the current flowing through the coil. To measure voltage, a resistor was put in series with the meter movement and if the meter was sufficiently sensitive the reading was then proportional to the applied voltage. However the meter was actually measuring current so could significantly affect (load) the circuit it was measuring and the accuracy was dependent on the person reading the scale.

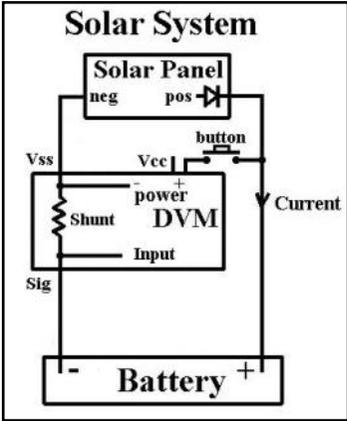
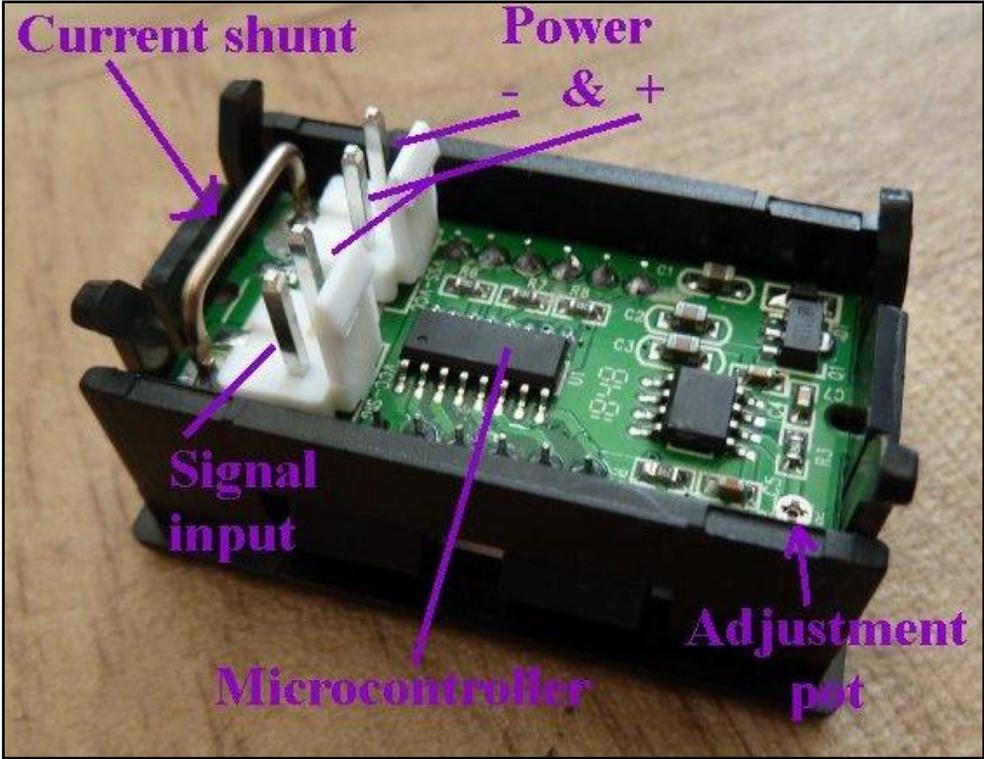
In order to reduce the loading and give a clearer readout, electronics was used to convert the analogue input into a digital readout. Various methods were used for this analogue to digital conversion (ADC). One method was to ramp a voltage up in set steps from zero and measure the number of steps it takes to reach the same level as the input voltage. The number of steps would give you a digital representation of the input voltage. Another method was to feed a capacitor with a constant current to produce a linear ramping voltage and measure the time it takes to reach the same voltage as the input by counting the cycles from an accurate oscillator. The input impedance is very high as the input voltage is only used as a comparison. Commonly the input voltage range is 200mV giving a digital reading of 0 to 199. For a useful meter the input voltage often needs to be reduced to this range using resistors which reduces the meter's input impedance but the loading on the circuit under test is still much less than a moving coil meter.

In 1977 Intersil launched the 7106 & 7107 integrated circuits that provided all the functions of a digital voltmeter (DVM) on one chip and only required a few external components and some 7 segment LCD/LED displays to make a complete DVM. This formed the basis of millions of digital test meters sold over several decades. I believe the cheap multimeters on sale everywhere now with 830 in the name actually use a clone of this chip, so you probably have one. These days single chip microcontrollers with built-in 10-bit ADCs are so cheap that they can be used instead of a DVM chip. I suspect that's what this panel meter uses, so probably gives a reading of 0 to 999mV.

So how can we measure current? Well if you put a very low value resistor in series with the supply, then as you take current a small voltage will appear across this resistor (called a shunt), proportional to the current ($V = \text{Amps} \times \text{resistance}$). If the DVM is used to measure this voltage the appropriate decimal point can be illuminated to give a reading that is the current in Amps. So with a 0.1 Ohm shunt and 1.59A, the volt drop will be 159mV, giving a reading of 159. The decimal point is switched on to give 1.59 which is the value in Amps.



Looking at the meter PCB there is a thick loop of wire which is obviously the current shunt and there was a track between the 2 pins marked 'Vcc'. I therefore assumed that the current sensing would take place in the positive lead. Weirdly the shunt is taken to ground, so why there are 2 Vcc pins is a mystery. DO NOT connect this pin to ground or you will short out the supply.



This meter cannot measure a negative current so it's important to think about how to power it. The task is to measure current from the solar panel, so the 'sig' terminal must be higher than the minus supply. The power for the meter must be taken from the solar side with the negative battery connection to the sig input.

The meter takes 30mA so with no solar input the meter will be powered via the shunt from the battery. To avoid flattening it, a button is used to disconnect it when not in use.

Solar panels are conductive so a diode is usually fitted to the panel to prevent reverse current flow. If the diode was moved to the battery side then the meter would only read when the sun was shining and the button could be omitted. The meter is rated at a maximum of 30 volts so it will cope if the battery is disconnected and the solar panel output rises to 21 volts.

Larger panels often use a regulator to prevent over-charging the battery. Simple systems limit the maximum current and terminal voltage by dropping any excess across a transistor (as heat).

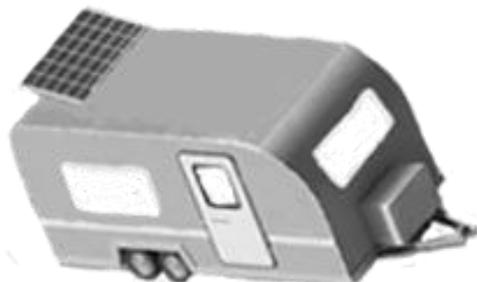
Most solar panels for 12 volt applications actually produce 21 volts in full sun but the panels have a high internal impedance so if connected directly to the battery some 7 volts will be dropped across the panel, heating it up.

More advanced controllers use a switching power supply to keep the panel voltage at 17 volts to minimise the energy wasted as heat in the panel. These systems, often called MPPT (maximum power point transfer) controllers, sometimes use a micro-controller to apply some intelligence to the process.

I've found that there is limited value in this for panels below 100 watts that only have occasional use and the positioning of the panel is far more important. However for a permanent installation where the solar energy is constantly used it could make a significant difference over a year (maybe 20%).

Hope this has been informative/helpfully to someone.

73/88, Mike & Sue MOCAA/MOBOZ



Horndean & District A.R.C Information.



Club Call signs ***G4FBS (Held by MØKTT); G6RST (Held by G4WQZ)***

Club Website **<http://www.hdarc.co.uk>**
(Maintained by Neil 2E0LNX)

Club Groups.io site *Administrator is Stuart GØFYX*

Club Facebook Page **<https://www.facebook.com/hdarc1975/>**

Club Twitter Account **@HorndeanARC**

Club Meetings *Held at Deverell Hall, 84 London Rd, Purbrook,
Waterlooville, Hants. PO7 5JU, on the 1st and
3rd Friday of each month. Commencing at 1900.*

Club Nets ***All times are local and frequencies plus/minus QRM.***

Sunday *0900 CW until about 0930 then SSB on 1950 kHz.
Net controller:- Stuart GØFYX*

*2000 FM 433.450 MHz
Net controller:- John G4WQZ*

Monday *1930 SSB 1950kHz
Net controller:- Stuart GØFYX*

Wednesday & Friday
*1930 FM 145.375 MHz
Net controller:- John G4WQZ*

Club Membership

Joining fee £2 . Annual fee £26. Those aged 10-18 pay half this rate, and under 10's have free junior membership. For Europe and rest of the World fees please contact the Membership Secretary. All annual fees payable on November 1st. If fees not paid by the following January 31st, membership is ended.

News of club members

Another reminder about the HDARC 2m nets, now Wednesday and Friday on 145.375 MHz at 1930 local time. An ideal chance to keep in touch with other club members. Please give it a go, and all are welcome.

Diary

At the time of writing this (mid-September), we have suspended meetings at Deverell Hall due to the 'Rule of 6' and the difficulty in operating this for us. When this restriction is lifted we can resume meetings. I will keep you informed via the weekly emails.

We are not now able to run our Special Event Station GB4MHR from Ropley Station.

This 'n' that

The RSGB Autumn Series of Club Championship contests continues in October and November. October dates are: CW on the 5th, Data on the 14th, FT4 on the 19th, and SSB on the 29th. November dates: Data on the 2nd, SSB on the 11th, FT4 on the 16th, and CW on the 26th. Please have a go in some of these for the club. Full details at: <https://www.rsgbcc.org/hf/rules/2020/rautumn.shtml> and for FT4 (worth a look for hints and tips) https://www.rsgbcc.org/hf/rules/2020/r80m_ft4.shtml

Need CW practice? - contact John MØHTE via john.taylor177@ntlworld.com, or check out the many free CW training programs available on the internet. At present, the Fareham club (with Neil G4EMM overseeing) are running a Saturday morning CW training session starting around 0930, on 28.350 MHz with talkback on 145.475 MHz. All are welcome to take part.

The date for the AGM is undecided at present. Please have a look at the weekly emails for an update. A ZOOM meeting for the committee and ex-officios is due to take place soon.

For club clothing enquiries and RSGB book orders, please contact me (Stuart GØFYX).

As you may have heard, Rob MØRZF, who runs the SDR used by club members (and many others worldwide) is planning a project to add 2m capability.

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- BNC type connector, twinpack (7720).....£6.45

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- N type connector (7392).....£9.99
- BNC type connector (7391).....£9.99

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