

H.A.R.S. Notebook

Journal of the Hereford Amateur Radio Society

Issue No 010. May 2016

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HARS Chairman's Letter

(Or an Old Man's Ramblings)

Nobody told me that when I continued as Chairman this year I would be expected to be a writer which I must admit is not one of my strengths. However I feel that when one is part of a group, team or club one should try ones best to support the aim of the majority. In the case of HARS, it is the enjoyment of radio and its many facets and the friendships that develop through the common interest of sending information wirelessly to others around the world.

The idea of the HARS club "journal" is to be another source of information, be it about activities, reviews, or comments which even you the reader might like to make. Please do not hold back as this letter will only continue if there are articles to publish.

Have you any reviews or comments that you could write about or equipment you have recently purchased or constructed?

What are your most recent activities? At present Dave M0RNI and Stuart G4VMF and I are enjoying the learning process of using digital transmissions. We have sent pictures digitally over the repeater GB3ZA. This may be controversial in the eyes of some, to use the repeaters in this manner. However, my opinion is that the repeaters are so under used that any activity is better than none. You may think otherwise, do say!

There those of us who still live in the dark ages and still use the oldest digital mode of transmitting CW. However are you a true CW operator if you use a p.c. to send and receive Morse code? ...do tell us about it.

My ramblings are coming to an end so until our next qso may your valves stay hot and your transistors stay cool. May your rf travel far and wide.

73 Nigel G4XTF (HARS Chairman)

Moonbounce

By Bob G3IXZ

Hi all, I must tell you that I am still in early days with my planning to get an EME path working. However I have the basic rig which is the FT 991 as it gives an all – mode 50 watts out on 70cm – the band of choice. The only hope for a contact is by using the magic WSJT6 (processing software) from Joe Taylor (K1JT) to enable signals, 25db below the noise, to be copied (electronically). This technology enhances the EME link budget and should just permit

a two way QSO as long as the other end station is a big "gun" – i.e.; with a dish of at least 15-20 ft diameter. I will have to acquire a long 70cm yagi and probably a LNA with a Noise Factor of less than 0.5 db to get anywhere but these are eminently obtainable with a bit of effort. I will keep you posted on progress! Best 73

Bob G3IXZ

(Watch this space!.....Ed)

Low Voltage Power Supplies

(without getting hot under the collar)

Have you ever tried to generate say, 5V at 250mA from a 24V DC supply? You no doubt had to think about heat sinks coupled with a common 5V regulator such as a 7805 (TO220 type case). In this situation you would have to dissipate 19V @ 250mA which is 5W of heat which you have to get rid of. This is all very messy but there is a solution which is cost effective.



The solution is to use Recom 78-05-0.5 drop-in (available from RS 532-8050). This device will handle your requirements admirably with next to no heat generated. In fact it will work with 6.5V to 32V on the input. It is pin compatible and will deliver a maximum of 500mA. There is a 1Amp unit and both can also be supplied in 3.3V, 9V and 12V versions.

Tadpole

Contesting Midst the Mountain Tops.

By Steve G1YBB

What Contests do you like Steve?

I like the 144MHz QRP contests in general. This is mostly because you don't need the massive systems and multiple radios and amps the big groups are using in the open section. Also it's not quite such a free for all with less RF pounding around the place.

My first ever contest was Practical Wireless 144MHz QRP with Kevin G1VDF back in the 80s and that remains one of my favourite events. I would love to achieve another win as I did back in 1993.

With the modern radios (modern to me, like the FT-817) and with the latest Lithium battery power available I am embracing full "backpack" operation more and more.

Recently I came 3rd in the April 144MHz UKAC in the AL (low power) section from one of the local Welsh SOTA summits. Tip of the day: operate from a summit you can pronounce the name of.

<http://g1ybb.uk/rsqb-144mhz-ukac-5th-april-2016/>



Craig Syfyrddin. 423M ASL SOTA GW/SW-020

I don't tend to camp over these days, but I used to do with friends for the 14:00 to 14:00 24 hour contests. Our first overnight camping was in holiday campsite style frame tents.

The first time up on Pen-y-Gadair for the 24 hour March 144/432 contest, it snowed all day Saturday and it was freezing. In one 6m contest up there the wind was so strong it cast Kevin aside when he was bracing the tent corner and needless to say the wind buckled the steel pole. So I took the radio to the car and carried on while the others packed away the tent. (Show must go on!)

We then moved onto an ex army tent. This was cosy and bombproof but filled an entire

6x4 trailer on its own and took two people to carry the tent peg bag! So we decided to use caravans in the future. Warmth and facilities. Ideal.

These days in the summer I either sit out in the sun or if it's parky I take a small beach dome tent. For winter and stronger winds I have an excellent VauDe 4 season dome tent with snow flaps etc.

Bands

Contest-wise I'm sticking to 2m really. However I also do SOTA activating and for that I tend to be on 20m and 40m.

Portable equipment & Power

I use 2x (in turn) 8400mAh LiFePo4 batteries for my portable power. These are about half the weight of SLAB unit for the same capacity and they offer a very good volts curve. So much so that it is wise to monitor how much you have discharged them in Ah and stop using them before passing a certain point to prevent damage.

They are capable of easily powering my FT-857D at 100W for about 2 hours or longer if I turn the power down. The FT-817 will go

all day on one. The batteries need a special charger which also balances the cells. I've set up the system to use Anderson Powerpole connectors which are hermaphroditic and capable of 45A. My portable power setup is shown on this page on my website:

<http://g1ybb.uk/battery-power-for-portable-operation/>

What frequencies you are likely to be heard on Steve?

I'm found on the SSB section of the bands currently. Though I have recently activated one Welsh SOTA summit on 2m FM with a handheld.

/P DX ?

Since rekindling the radio activities I have worked the usual GM, ON and PA on 2m SSB. In earlier days we used to get well into Germany and sometimes beyond. On HF portable I have worked Sateside quite a lot, Europe and Russia, are usual. No down-under though as yet.

73 Steve G1YBB

The Chairman's Meanderings Through The 4m Band

Every Wednesday and Sunday morning a small group of HARS members meet up on the 2 metre band. It was during one such net gathering someone mentioned that they had purchased some Anytone 4m rigs to use as talk back facilities while sending pictures on two metres. Not wanting to be left out of the activity I considered purchasing one of the rigs.

Then, I thought I would try to encourage our club members to attempt the PRACTICAL WIRELESS 4 metre QRP competition and with this in mind I set about reviewing a low-cost equipment option to help to do this.

I immediately ruled out the Anytone AT588 as it was an FM only rig and to be anywhere near competitive, one will need to have an all-mode capability. Considering everything, I was left thinking of a transverter for 4metres. Not many of these around however, and those that are available, are in kit form.

This was fortunate in that I was getting the urge to do some construction anyway, so a SPECTRUM COMMUNICATIONS 4-10m transverter kit was ordered. It was some time later while finishing constructing this kit I found the Ukrainian 4m transverter kit on EBAY and was lucky enough to be given one as a present. It is difficult not to compare them (Fig 1). Hence this article is MY opinion of them and any values quoted are very approximate and not achieved scientifically.



Fig. 1



Fig 2

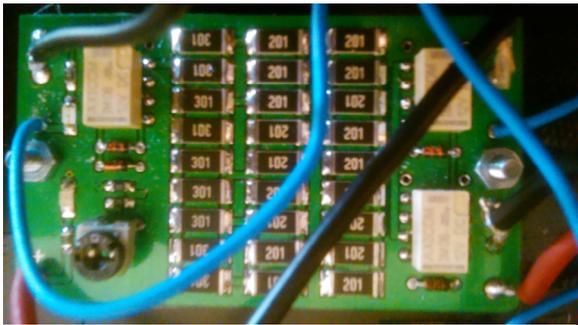


Fig 3



Fig 4 Front View



Fig 5 Rear View

The easiest to construct and cheapest of the of the 4m transverters, is the Ukrainian model and is offered for sale on Ebay. It is possible to purchase number of variations of the unit most of which use 10 metres as the driving frequency. The 4-10 transverter is a PCB already populated with SMD components (Fig 2).

This must be driven by an RF of 100mW or less.

As many of the HF rigs produced today are unable to produce such a low output there is an attenuator board capable of reducing 5 watts (or more) to an acceptable level. This board like the transverter is ready built (Fig 3).

Hence when purchasing this transverter one is left with the choice of buying (a) the transverter, (b) transverter and attenuator or (c) the complete kit which includes the box and hardware. So what needs constructing?

My gift consisted of the full kit which included the two pcbs, box, switch, green and red LEDs, power socket, 3 antenna connectors, and sufficient miniature coaxial cable and various coloured wires to complete the construction. As I wanted the finished unit to blend in with the rest of my equipment I used a matching pre-drilled box which I had purchased from SPECTRUM COMMUNICATIONS many years ago (Fig 4/5). However, there was nothing unpleasant with the supplied box and I am sure it would be more than adequate for the purpose.

The process of construction does not involve any soldering of small SMD components or any adjustments as the boards are complete and set up. The majority of the time spent was on planning the layout of the boards in the box and sorting the connections from the attenuator to the transverter. My box was pre-drilled for SO359 sockets etc; note that the supplied box required this to be done.

Having planned the layout of the boards in the box the next step was to draw a circuit diagram in order to wire them together using the two diagrams supplied. This was helped by the kit having plug in pins in blocks that slid into sockets under the PCBs. However, care was needed when soldering the wires to the pins in their blocks as the plastic they are made of softens very easily.

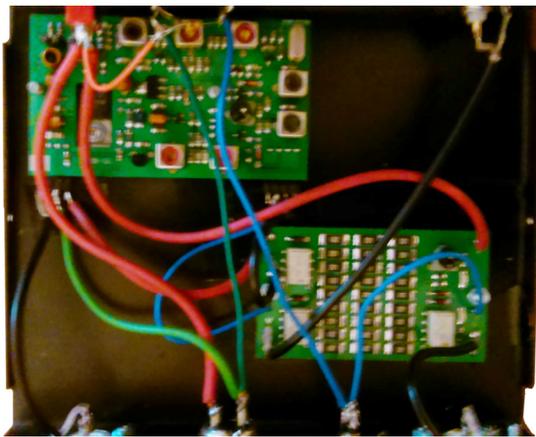


Fig 6 Interconnections

The final part of the construction consisted of wiring up the boards in the box. It is worth noting that there is an HF antenna output that is straight through when the boards are NOT POWERED. This allows the driver transmitter to be used on HF without having to dismantle the set up. I have not used this facility so cannot report on the reliability of its connection. Having completed the wiring up the next thing on the list was a *smoke test!* I did this without the driving rig attached and all went well. The change over from RX to TX is achieved by the PTT being grounded. A lead was therefore made to connect the FT817's acc socket to the PTT which effectively controls the change over RX/TX.

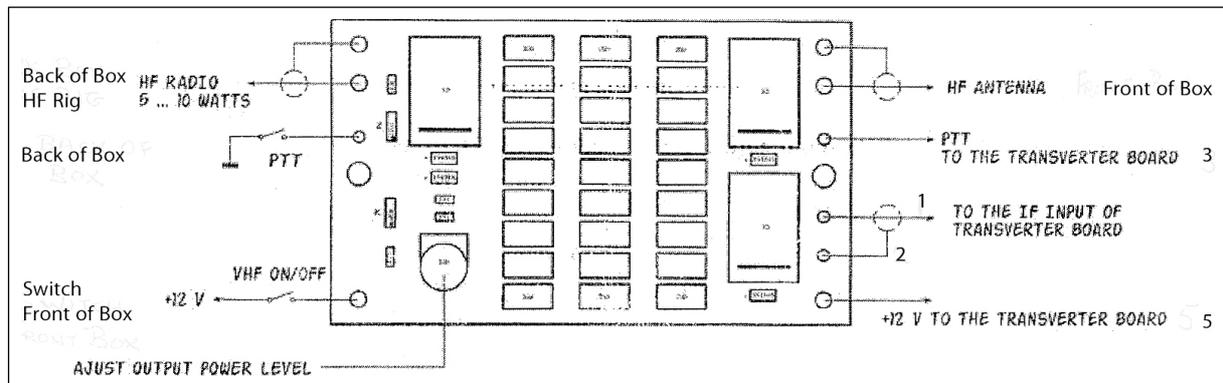


Fig 7 Attenuator Board connections to transverter pin numbers

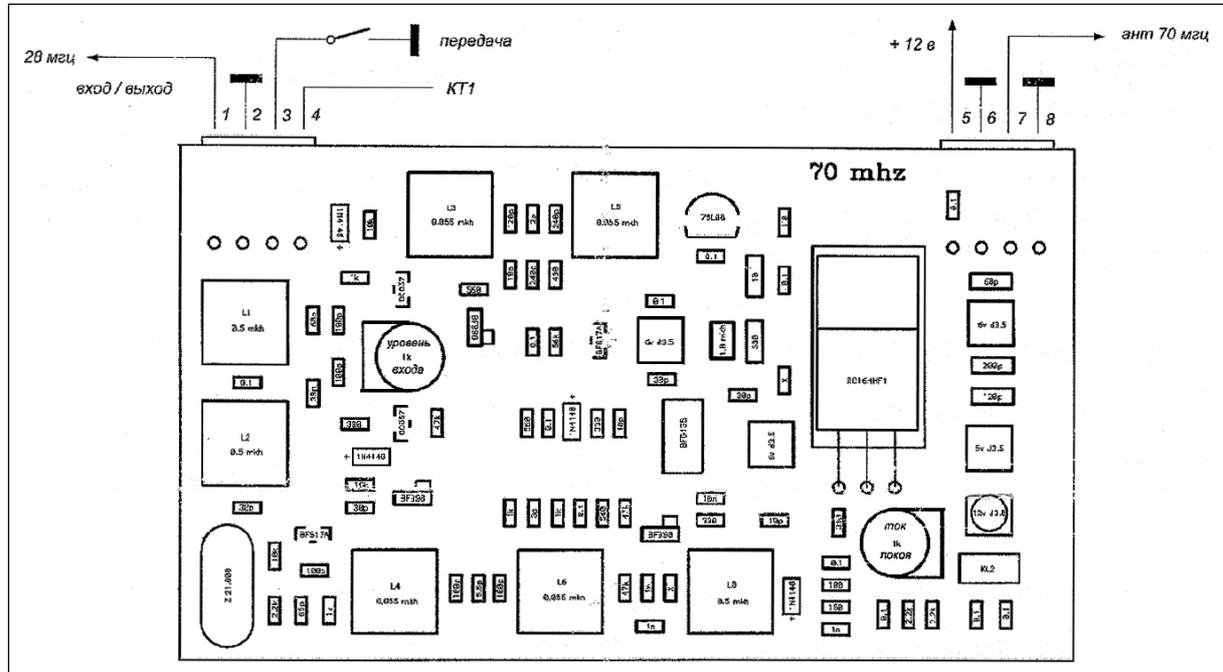


Fig 8 Transverter Board connections to Attenuator Board

The final step was to see if it transmitted. For this I used an ICOM receiver to listen to the FM transmission and to check the frequency output. I soon detected a problem in that the transverter was receiving and transmitting 5KHz down on the frequency indicated by the 817 driving rig .

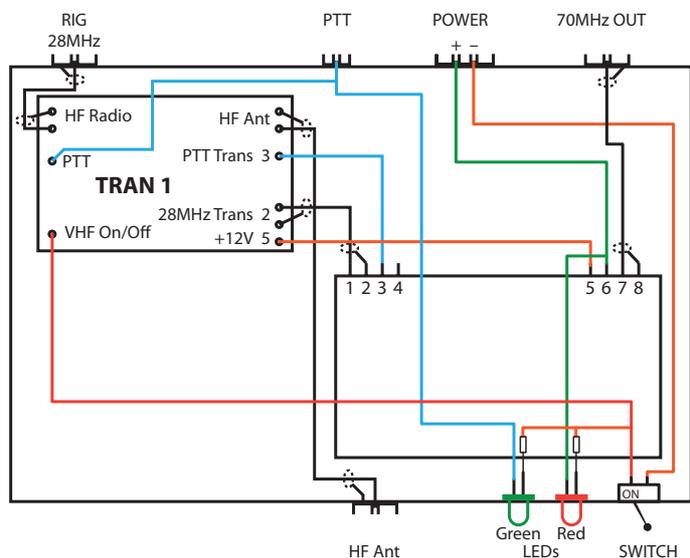


Fig 9 My wiring diagram.
Attenuator top left and Transverter bottom right

Example:
817 driver reading 28.475MHz;
Transverter RX/TX 70.470MHz and not
the expected 70.475MHz.

Further tests were carried out with Stuart G4GMF who confirmed that while he was tuned to 70.475MHz he could only receive a FM signal when I had the driver set to 28.480MHz and that no signal was readable when set at 28.475MHz. This problem would be present in all modes of transmission but can easily be allowed for on modes such as SSB and CW where the driving rig has the ability to be tuned continuously across the bands and not in

steps as in FM mode. However, I cannot confirm this as a solution as all the contacts I have had on 4M have been with FM only stations. I am looking forward to more activity on 70MHz to see how effective the transverter is at these modes. The power out is 10w for 5w of input. The receiver appears to be very sensitive and compares well with my other transverter, a Spectrum Communications kit. I shall be giving my opinions on this in a later publication of this journal.

In conclusion the Ukrainian transverter does everything it says on the tin and appears to be value for money. However, one cannot expect Rolls Royce quality for Lada prices and the frequency discrepancy is something that can be allowed for in use. Overall it is a cheap and simple means to achieve an all-mode transceiver ability on the four metre band.

73 Nigel G4XTF

(Thanks Mr Chairman... we look forward to the S.C. review...Ed)

Dear Member

The Chairman and Committee have decided to introduce this Newsletter/Journal in common with all other clubs. The frequency of publication is likely to be quarterly and it will consist of comfortable home-grown articles by the members/for the members. The contributions index is as follows...

<i>Members projects</i>	<i>Members station</i>	<i>Help</i>	<i>QRP/QRO</i>	<i>Construction</i>
<i>DX</i>	<i>Items wanted</i>	<i>Items for sale</i>	<i>Events</i>	<i>Illustrations</i>
<i>Hints and kinks</i>	<i>Notices</i>	<i>Photographs</i>	<i>Militaria</i>	<i>News</i>
<i>Early radio</i>	<i>Restoration</i>	<i>Training</i>		

The Committee will do everything it can to make the "journal" an enjoyable and useful medium but it would be greatly enriched if the individual members are willing to come forward and share any news or items of their own.

Please submit anything and everything to topix@hars.wagnet.co.uk or talk with Mike at the Club meetings.

73s
G3LZM

Mike Bush (Editor)