Volume 2
July
1990

FT 102
User Group
UK & DX

Issue 4
Bristol

G4VBU 10 Brinmead Walk, Withywood, Bristol BS13 8SF England

~~~~~~

IN THIS ISSUE: PAGE:

Hello from Editor 1.

User Group Nets 1.

Help Line 1.

Remote Antenna Unit (DIY) 2.

Strategy 2.

Wiring 3.

Hints and Tips 4.

Free Adverts 8.

~~~~~~

*** HELLO FROM G4VBU ***

I am very sorry that there has been a very long gap between our Issue 3 and this Issue 4. My work situation at the Hospital went from bad to worse with having to work very long hours. Also with what little time I had to spare things here were getting bogged down.

When we get new people wishing to join the User Group because I do not now have a stock of back Issues at hand, I have to print out each one on the Daisy Printer from my WP files. Each News Letter will take about 30 minutes to print this way. Again if any of you know of any one who has not had all their Issues (1,2,3 and 4) then please let me know and if possible, by telephone. Some people when asking to join our group are not giving me all of their details or their address is scrawled and not easy to read on their letter.

I am please to say that I have now changed my job and so now have more time to spare. Sean and I been discussing how to continue the User Group. We will not for the time being produce any more News Letters, but instead we will concentrate on the Sunday Nets and I will be available here to answer any technical queries that you have. So please for the time being do not send in any funds. If you have any problems then do telephone me. I will be very happy to send info to you all if required, but please send a S.A.E.

There are some of you that sent in more than the £3-50 U.K or £4-50 D.X. The cost of the News Letters (Issue 1,2,3 and 4) of volume 2 worked out with post and package at £3-56 U.K. and £4-42 D.X.

If there is any one that has over subscribed then please send me a S.A.E. and I will make a refund.

*** USER GROUP NETS ***

On Sundays at 1000 Gmt (1100 U.K. time) on 7.082 ± QRM.
Weekdays at 1930 Gmt on 21.383 ± QRM. (for DX Members)

*** HELP LINE ***

For technical information you can telephone Jim at Bristol (0272) 781265. The best time to phone will be between 1630 - 1930 (Week-Days) or 1230 - 1430 (Saturdays and Sundays).

(Next Page O.M.) >>>

*** REMOTE ANTENNA UNIT ***

The FC102 Antenna Tuner Unit was built with an option of fitting the remote antenna switching unit (FAS-1-4R). This unit can be installed at the back of the FTC102 or as a remote unit installed at the antenna to enable you to select up to 5 separate antennas from the A.T.U. switchbank (Push Buttons 1,2,3,4 and ANT A).

The FAS-1-4R is not now readily obtainable and if you are lucky to find one advertised you can expect to part with about £70 - £100 for it.

You can with very little effort make this unit at a cost of about £10 - £15. Looking at the back of the A.T.U., you will see that there is a steel plate fitted by 2 screws.

*** STRATEGY ***

1. Refering to the FC102 Instruction Man'whell (Manual) page 12 and 13 remove the subpanel on the rear of the FC102 as shown in Figure 1. Read page 12 and page 13 to get a good understanding of this unit.

2. Use this steel subpanel as a template and mark out and cut a new plate of 12 S.W.G aluminium (alloominem U.S.A.) to size.
Unless you have lots of drills and lots of time don't try to drill the steel subpanel !

3. On your new subpanel mark out a line about 1.25 inch down from the top and make 4 equal marks across that line for the fitting of 4 off SO259 antenna chassis sockets (Maplins part FE98G) in a straight line across the panel. Drill out the 4 holes to size.

4. On your new subpanel mark out a line about 1.25 inch up from the bottom across the panel and at the centre of that line drill a hole for 1 off SO259 chassis Input socket to size.

5. Fit all 5 SO259 sockets onto the new subpanel making sure that each earth tag is fitted and that each socket is tight. Run a line of tinned copper wire through each of the 4 earth tags to form a buss bar and solder each tag.

6. Taking each of the 4 12V Relays (Maplins part JM67X) apply an epoxy adhesive (Araldite Rapid) to the top of the Relay cases and glue each Relay to the inside of the new subpanel so that pin 1 (centre pin common) points towards the centre pin of its SO259 socket.

(Next Page O.M.) >>>

7. After the epoxy adhesive has set hard, run a short thick wire from each pin 1 (centre pin common) of each Relay to its appropriate SO259 socket centre pin. Refering to the circuit diagram on page 13 of the FC102 Manual (RL Unit PB-2415A) apart from plug J01 (not now used) the subpanel should be wired as is shown. (Not Yet!)

8. Looking at the back of your FC102 A.T.U. you will see a tag strip that is marked "A B C GND" we will be using the tags to feed a +12V that is switched by the 4 Push Buttons (1,2,3 and 4) at the front of your FC102. When Push Button 1 is selected there is no +12V on tags A,B and C. When Push Button 2 is selected there is a +12V on tag A only. When Push Button 3 is selected there is a +12V on tag B only and when Push Button 4 is selected there is a +12V on tag C.

*** WIRING ***

1. Take off the top cover of your FC102 and fit on the new subpanel, top right (looking from inside A.T.U.) will be ANT 1 . ANT 4 will be top left. Refering to the circuit diagram (page 13 Manual) the black contact of the Relay is the N.C. (normaly closed when no voltage is fed to the Relay coil) and the white contact of the Relay is the N.O. (normaly open) this will close to make with the common when the +12V is fed to the Relay coil.

2. Run a thick wire from the Input SO259 sockit centre pin to the N.C. contact of Relay 1 and solder. Continue that wire from the N.C. contact (Relay 1) to the N.O. contacts of Relays 2,3 and 4 and solder as shown in the diagram page 13 (Manual). Next solder a wire from the N.O. contact of Relay 1 to the earth buss bar, solder a wire from the N.C. contacts of Relays 2,3 and 4.

3. Run a wire from each Relays L.H. coil contact to the buss bar, solder a diode (1N4148) and a .1uF 35V cap. from the L.H coil contact to the R.H. coil contact of each Relay. (note as in the diagram the diode must have its band + wired to the Right Hand contact of the Relays coil)

4. Run a wire from the tag strip "A B C GND" Terminal C to the R.H. coil contact of Relay 4 and solder. Run a wire from Terminal B to the R.H. coil contact of Relay 3 and solder. Run a wire from Terminal A to the R.H. coil contact of Relay 2 and solder. Solder 3 diodes (1N4002) + bands to Relay 1 R.H. coil contact and solder a wire from each diode 1 to Terminal A, 2 to Terminal B and 3 to Terminal C.

5. Use Input B of A.T.U. for FT102, make a short Patch Cable to go from ANT B of A.T.U. to Input SO259 sockit of subpanel. On A.T.U. ANT A can be used as Antenna 5 or to select your Dummy Load.

(Next Page O.M.) >>>

Parts required

5 off SO259 sockits eg. Maplins part No. FE98G 38p each

2 off PL259 Plugs (for Patch Cable)

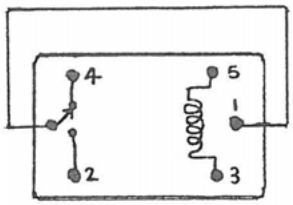
4 off 1N4148 or 1S44 Diodes

3 off 1N4002 or any 1 Amp 200V Diodes

4 off .1uF Capacitors 35V or over

4 off 12 Volt (10 Amp contact) Relays Maplins JM67X £1-48 each

1 Tube of Elbow Grease



Relay view from below

*** HINTS AND TIPS ***

A common fault on FT102s is that the bridge Rectifier D1 (S4V10) on the main chassis that delivers 15 Volts to Rectifier B Unit has a very nasty habbit of going short circuit. Not so very long ago I had it blow on my rig. I found that the 12V power lead from the FT102 to the FC102 had pulled out very slightly at the A.T.U. end. So take care and check the state of that power lead and never unplug it with the rig switched on.

On the Issue 1 and some of Issue 2 FT102s they never seem to get problems with thermal runaway. I know of many Users with Issue 1 and 2 that have the Sylvania 6146Bs in the P.A. and don't get any problems. On the R.F. board circuit diagram, I have found that the diagram is only correct as far as Issue 1 and some of Issue 2.

I have found that from some of Issue 2 onwards Yaesu made some very major changes to the ALC circuits, just try and trace out the caps that are switched at the last wafer, Relay 02 and the 12BY7A Neutralization circuit. These changes would appear to be undocumented. I will be writing to Yaesu for more information.

(Next Page O.M.) >>>

For a long time I had been having some problems with my FT102 an Issue 4. The problem started one day when I switched on the rig, turned on the heater switch and after about 3 minutes started to tune up on 21 Mhz. As I turned up the drive to dip the plate I found that the IC meter stuck on 75 mA and would not move. Looking at the power meter it was clear that there was no sign of any R.F. I did all the usual things like swear at it, kick it, I jumped up an down and took two Anadins but no luck ! After several cups of tea later I tried again and yes all worked fine. Many moons later the same thing happend again and again and .... It seemed to be a thermal fault, fort I, (Pun !) as I had found with the passing of time, or wind, (can't recall which), after the rig had been on for about 10 minutes it would work fine. I got me a can of freezer spray and soon had all the rigs ICs, Transistors, Voltage Regulators, FETs and diodes white with snow, but no luck. I prayed to my Fairy Liquid God Mother and ... "POKE THE RELAYS" said a far away voice, so I pressed the Mox switch and prodded away .... and as I tapped Relay 02 ... the IC and the Power meter moved ! The very next day I changed all the Relays on the R.F. board and that was that!

A similar fault to the one that happend to me above, is that after some time, say during a QSO mostly on CW, you will lose all output with the IC meter at 5 mA (75 mA SSB) and after about 10 to 15 minutes all will again be O.K. This is caused by an intermittent crystal (8.2159 Mhz) on the AF Board.

This next tip will I hope help you to find the reason why, if your FT102 stops transmitting R.F.

1. Always check IC meter 1 , select USB and press 'MOX' do you have any Bias current (75 mA) YES/NO ?

2. Switch Meter Select to HV and press 'MOX', meter 1 should read HT Voltage (800V to 900V) YES/NO ?

3. Take off bottom cover and Check at Pins of each 6146B that you have Screen Voltage (between 160V and 220V) YES/NO ?

4. Check on pins of 12BY7A for Screen Voltage and Anode Voltage Screen (180V to 220V), Anode (200V to 320V) YES/NO ?

5. Take off top cover and look to see if each 6146B and 12BY7As heaters are O.K. (Red Glow !) YES/NO ?

(Next Page O.M.) >>>

After making all of the above checks and all answers are YES, then the problem is no R.F. drive. The 12BY7A is not likely to be at fault, so first of all take a good look a REC B Board and look for any signs of burn up around Q03 and Q04. (This is a very common fault !)

NO SCREEN VOLTS (6146B)

The 6146Bs get their Screen Voltage from REC A Board, so check R04 (470R) for open circuit. (Again this is a very common fault !)

On the P.A. Board, there is a 12V Relay that is used to switch 2 levels of Screen Volts to the 6146Bs and this Relay can pack up and yes can give no Screen Volts.

NO SCREEN VOLTS (12BY7A)

The 12BY7A gets its Screen Voltage from REC A Board (180V) from R05 (3K3), check for open circuit and if then, it is probably C78 on the R.F. Board, short circuit or the 12BY7A is faulty.

NO ANODE VOLTS (12BY7A)

Check that you have 300V on REC A Board and if not then check R01 for open circuit and if so then check C05 and C04 for short circuit.

If 300V on REC A Board O.K. then check L13 (470uH) and L15 (1mH) for open circuit and if so replace and change 12BY7A.

NO BIAS CURRENT

On REC A Board check R21 (10K) and R12 (10K) for open circuit and if so replace. You have a Grid short in one of the 6146Bs. Take out all 6146Bs and plug one in at a time, switch on rig and heater switch, select SSB and press 'MOX' if Bias now over 250mA thats the faulty valve.

You can run the FT102 on two 6146Bs providing that you reset Bias current for 50mA and tune up for 220mA Max. (just like a 101). You can use the rig until the new bottles arrive.

FUSE BLOWING

There are 3 things to look for (1) Bridge Rectifier (S4V10) short circuit. (2) HT Rectifiers D01, D02, D03 and D04 on REC B Board short circuit. (3) 6146B has screen grid short or thermal runaway.

(Next Page O.M.) >>>

I have tryed to give you the most common list of faults that I have found on FT102s. It would take a long time to list more but if at the end of the day you still have a problem, then try our Help Line !

I have had a look to see if there is any way that we can use that last digit on the frequency counter board and at the present time it looks like it can be made to work. I hope to make a small subpanel to fit onto that board soon.

I recently telephoned S.M.C. and enquired about the price of 6146Bs for the FT102, S.M.C. stock GEs & *Sylvania Tubes and for the GEs they quoted me just under £20 each for them !

Is there any-one out there that can let the User Group know if they Know of any other supply of GEs or NECs or RCAs at a Realistic price ?

* The Sylvania 6146Bs are only O.K. if used in the FT101s or FT102 MK 1 (Issue 1). We do not recommend them in FT102 MK 2s (Issue 2s and above)

Well I must say that I have enjoyed producing this news letter and I hope that I can produce some more soon. Over the next few months I will be taking a break. You will find me on Sundays on the Net and on 21Mhz having a natter on this trusty old FT102. All are very welcome !

I will soon be sending out the volume 2 masters to G4TMK Peter who will provide back issues for any new members.

(Last Page O.M.) >>>

73's Jim G4VBU

*** ADVERTS ***

FV102		Excellent Condition	Bristol
SP102		Good Condition	
Telephone	G0CEM	Trevor (0272) 642867	QTHR

*****

FT102 + MH1		Good Condition	Bristol
Telephone	G0EOU	Brian (0272) 325324	QTHR

*****

FT102 + SSB/CW Filters		Good Condition	Tipperary
FV102		:	
FC102 + FAS-1-4 Remote		:	
SP102		:	
MD1B8 Desk Microphone		:	
Telephone	EI7FE	Leam 010 (U.K) 353 5222493	

*****

FT102		Good Condition	Glasgow
FC102		:	
SP102		:	
Contact	GM3ZTA	(QTHR) or Arrow Electronics (Glasgow)	

*****

FT102 + Mic		Good Condition	Belfast
SP102		:	
ATU (Amcomm)		:	
Telephone	Gerard Devenney	(0232) 240908	

*****