

FRG7700

MEMORY EXPANSION



**John Mills describes
a modification to
considerably increase
the RG7700's memory facilities**

Many users of the FRG7700 receiver from Yaesu must have at some time thought of buying the optional memory unit, but may have been dissuaded by the high cost of the Yaesu version. Owners with the unit already fitted will probably have wished for more than the present 12 memory channels. For both of these reasons the author decided to look more closely at the workings of the 'black box' to find a suitable solution.

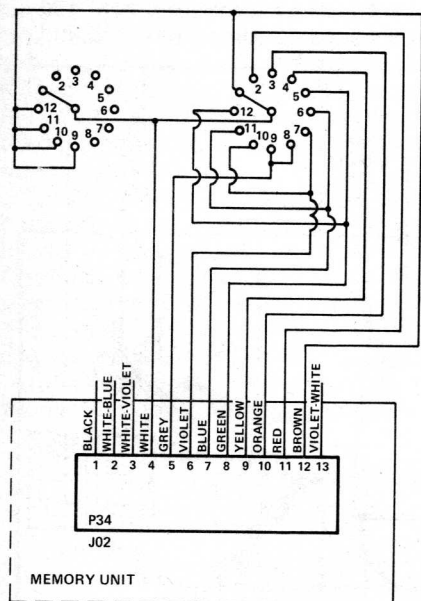


Figure 1: Existing memory switch wiring.

Rx Operations

The FRG7700 is not computer controlled — and this explains the relative complexity of the memory unit. It is not the intention of this article to go into complex electronic descriptions (see the feature published back in December 81/January 82 for more specific details of both the FRG7700 and the Trio R1000), but in essence however operation is as follows:

1. The manually set VFO frequency

and bandswitch positions are 'read' and converted into digital data.

2. When the 'memory write' button is selected this data is stored in ICs Q30-35.

3. When 'memory read' is selected, the unit examines the stored data, and using its own internal PLL VFO, it generates the same VFO and frequency band information as was originally manually selected. At the same time, the settings preset on the main VFO and bandswitch are disabled.

The memory ICs used in the unit are 256 x 4 static random access units. Up to 256 data locations are available via the address inputs A10 to A17 (J02). As will be seen from diagram 2, the memory switch S5A/B selects various address combinations up to a max of only 12.

Herein lies the key to this article, replace S5A/B with a 40 way CB type switch and you have instant access to 40 memory channels. Although this does not change the initial purchase

cost of the unit, it does reduce the cost/memory channel from around £7.50 to £2.25.

At this stage the following points should be considered before proceeding further:

1. Extensive dismantling of the Rx is required and
2. Any warranty claims may be invalidated.

Step By Step

To fit the new switch follow the steps carefully and do not miss out any:

1. Disconnect the Rx totally from the AC mains.
2. If a memory unit is fitted remove from the Rx. Take care when removing the plugs, they are all numbered but pull on the body not the wires to remove them.
3. Remove the top/bottom covers. (Disconnect the plug to the backup battery holder).
4. Disconnect all connections to the main PCB — PB2169. Again take care

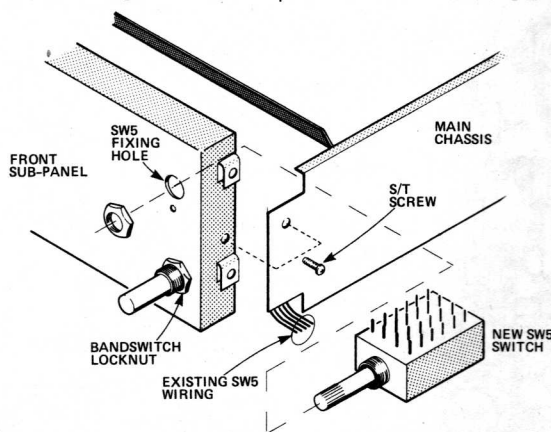
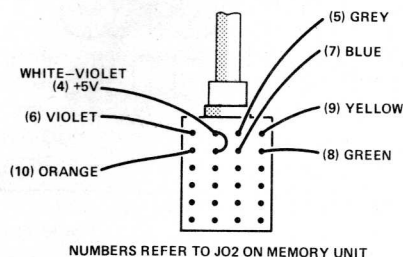
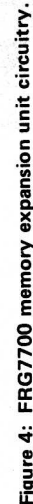


Figure 2: Exploded view of receiver chassis.

Figure 3: Wiring of new memory switch.



NUMBERS REFER TO J02 ON MEMORY UNIT



to pull the plug bodies not the wires. Two wires from the backup battery must be unsoldered from the main PCB — note carefully the polarity and location of these connections.

5. The frequency display is supported by a foam backed metal plate secured by two screws, remove this panel and screws carefully. Remove the small PCB with the AM/PM LEDs held by a S/T screw to the left of the display.

6. Remove all front panel knobs. These simply pull off except for the VFO tuning knob and band select knob which are held by small grub screws. Note the position of the band selector knob as this is not indexed on the shaft. After removing the VFO knob, remove the small X-head screws exposed underneath to remove the plasti-chrome skirt.

7. Remove the main PCB, take extra care not to damage the vacuum fluorescent frequency display, easing the main PCB gently back and upwards.

8. Remove the front panel by removing the two top and two bottom CSK screws.

Now it gets trickier.

9. Refer to **Fig. 2** and remove the locknuts on the band select switch. Remove the S/T screw holding the R/H side of the front sub-panel to the main chassis.

10. Undo the locknut on S5 (diagram 3).

11. Carefully push S5 back out of the front sub panel as far as it will go. S5 will probably be restricted by a cable

harness strap which is fitted to the bush of S5. If S5 cannot be removed easily, carefully unwrap the harness to release the wiring loom. At this point it may help if the front sub panel is carefully separated from the main chassis by one or two inches max. (See **Fig. 2**).

12. As the wiring to S5 runs up from below the chassis, ease the switch and wiring out and through the gap between front and main chassis panels.

13. Refer to **Fig. 1** and check the colours shown against P34 (pins 4 to 12) from the memory unit appear on S5. If your Rx has different coding to that shown then write in your own colours to correspond with **Fig. 1**. Remove all wires to S5. The wires from A16 and A17 are not used and should be stored within the main cable harness.

14. Enlarge the hole previously occupied by S5 to 9MM. Be careful not to allow metal drillings to fall in the Rx.

15. Wire the switch as shown in **Fig. 3**.

16. Carefully fit the switch into S5 position ensuring the pins are upwards and that the lug on the switch locates into the existing location. Fit the washer and locknut provided and tighten carefully.

17. Re-assemble the Rx in reverse order to the previous steps.

18. Check correct operation before fitting any existing memory unit.

19. Refit memory unit and check operation is as before.

The receiver now provides 40 switch selected memory channels. Some of the new switch positions may line up with the existing front panel markings

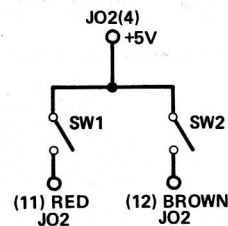


Figure 5: Switch wiring for 120 channel expansion.

but with frequency readout available the lack of 40 marked positions should not prove a problem. For the more adventurous reader, the memory can be expanded by a further 120 (3 x 40) channels if required. Refer to **Fig. 5** for wiring details. In this requirement the two unused address lines A16 and A17 are connected to $\pm 5V$ by switches to select further memory locations. Some mental ability is required, with S1,2 'off' 40 frequencies are selected by S5. Switch on S1 to select a further 40, S2 a further 40 and lastly both S1 and S2 together to provide the last 40. Taking the full 160 channel capability this reduces the cost/chan down to 56P.

The author would like to thank Alec from Amcomm Services, Harrow, for the loan of a memory unit to aid this article. Amcomm also state that they will honour any warranty claims on Rx's bought from them that have the above mods fitted.

Note: The only part required for this conversion is S5, the SRS 303UCB switch.

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