



DATONG ELECTRONICS LIMITED

Spence Mills, Mill Lane, Bramley,
Leeds LS13 3HE, England.
Telephone: 0532 552461

MODEL FL2/A AUTO-NOTCH FILTER MODULE

DESCRIPTION

Model FL2/A is a fully assembled and tested printed circuit module which is intended for installation inside other equipment. It is especially suitable for installation inside the Datong Model FL2 Multimode Audio Filter to convert the FL2 to Model FL3.

The PCB carries two light emitting diodes and a push-button switch. One LED indicates that power is applied and the other (nearest to the edge of the board) illuminates when the filter has successfully locked onto an interference source.

The switch connects the filter in or out of circuit. When the switch is "in" the notch filter is connected in circuit, when the switch is "out" the filter is bypassed. The switch has no effect on the locking process and the complete filter is always connected to the input signal; the switch merely connects the output terminal to either the filtered or unfiltered signals.

INSTRUCTIONS FOR INSTALLING MODEL FL2/A INTO MODEL FL2

CAUTION

The following procedure involves dismantling the metal work of Model FL2 and making several soldered joints. It should only be attempted by a person with previous experience of such work.

No responsibility can be accepted by the Company for any damage caused to either the original FL2 or the FL2/A module.

If in doubt obtain specialist advice before proceeding with the conversion.

PROCEDURE FOR INSTALLATION

To instal the auto-notch PCB module into an existing Model FL2 filter proceed as follows.

1. Remove the four feet fixing screws on Model FL2 and slide out the chassis from the wrap-around anodised case.
2. Remove the plastic nut from the 'phones' jack and then remove the three collett-fixing knobs.

Note: to remove the knobs first prise off the knob caps and then unscrew the exposed fixing nuts.

3. Now invert the filter chassis and remove the four cross-headed screws which secure the front and back panels to the base plate. The front panel can then be lifted off; the back panel will remain fixed to the PCB.
4. Unsolder and remove the original "power-on" lamp and resistor which are soldered to the terminals on top of the "OFF" switch.
5. Access is now required to the underside of the main printed circuit board. Remove the metal baseplate by first removing the four 6 BA nuts (on the component side of the board) which hold the board onto its mounting screws.
6. Referring to Figure 1, remove the 4K7 resistor and 1 μ F* capacitor as indicated; discard the capacitor and fit the 4K7 resistor in its place.
7. Now prepare the supplied piece of 4-way strip cable. Separate the four wires for a length of about 8 cms at one end only and remove about 2 mm of insulation from each of the separated wires. Tin the exposed ends. These wire ends must then be carefully soldered to the main FL2 PCB as shown in Figure 2. Take care to get the colour coding correct. * In later units this capacitor is 0.047 μ F

CAUTION

non-electrolytic.

The PCB tracks are small and fragile. Use a small electronic-type soldering iron and take care not to overheat the tracks otherwise they may lift from the board.

8. Recheck carefully that the wiring has been carried out exactly as per the drawing and that no track shorts have been caused by excess solder for example.
9. Replace the PCB/rear panel combination onto the baseplate and also fit the new front panel into position, but leave the panel fixing screws quite slack initially.

Use the same fixing methods as in the original FL2. However, instead of using the original nuts on the two PCB fixing bolts behind the "PHONES" jack, first put a washer over each bolt (on the component side of the PCB) and then screw on the brass pillars supplied. These pillars will then support the FL2/A board.

10. Solder the other end of the strip cable to the pads on the FL2/A board as shown in Figure 3. Take great care to use exactly the same colour coding as in the diagram.
11. Fit the FL2/A board upside down over the two pillars so that the two LEDs and the switch protrude through the holes in the front panel and secure loosely with two 6 BA screws. Allow the strip cable to fold neatly under the FL2/A board without damaging other components. Then tighten up all the fixing screws while making sure that all the controls fit reasonably centrally in their panel apertures.

NOTE: In some FL2 specimens washers may have been fitted beneath the PCB to adjust for vertical tolerances in the hole positions in the front panel. When the new panel is fitted these washers may or may not be required.

12. Check that none of the components on the FL2/A board foul the tags on the FL2 switches. If necessary carefully bend the offending components to one side as required and refit the FL2/A board.
13. Recheck the connections to the FL2/A solder pads and then replace the outer case, making sure that it clears the wiring to the module.

14. If a current limited power supply is available it is wise to test the system with this first since any wiring error is then not likely to cause damage. Connect up to the receiver and loudspeaker as normal, connect to the power supply and switch on. The total current drain should be about 85 mA at minimum volume level. With the 'AUTO NOTCH' button 'OUT' check that all the FL2 functions work as normal. Then with the 'AUTO-NOTCH' button pressed in tune to a heterodyne and check that after about one second the heterodyne is notched out and that the left hand LED illuminates to indicate that "LOCK" has been achieved.

INSTALLATION IN OTHER EQUIPMENT

When Model FL2/A is used with other equipment the filter module has to connect in series with the audio frequency signal path at a point where the signal level is between approximately 50 and 600 mV p - pk. If the total input signal amplitude drops below about 20 mV p - pk the automatic sweep circuitry stops sweeping to avoid an audible "swishing" sound in the absence of signals.

The input of Model FL2/A is a 10 k resistor into a virtual earth, therefore the source impedance should be small compared to 10 k to avoid a reduction of gain. The output loading applied to Model FL2/A should be greater than 2 k.

If used near transmitting equipment it is recommended that the unit be installed inside a shielded metal case, with r.f. filtering components applied to the connections into and out of the module. This is shown in Figure 4.

Although there is no likelihood of damage without shielding, it is possible that the circuitry will pick up the transmitted signal and distorted noises will be fed to the loudspeaker.

INSTRUCTIONS FOR USE

When the FL2/A is used with radio receivers it is recommended that it be permanently left in circuit (button pressed "in"). This will give the fastest protection against incoming heterodynes. In some cases the filter will remove a whistle so quickly that the operator may not even realise that one has appeared. However the "LOCK" LED will always illuminate whenever the filter is tracking a whistle. The bypass switch can then be operated, if desired, to check on the effectiveness of the filter.

The majority of annoying heterodynes will be strong enough for the filter to remain locked even despite the presence of speech. With very weak heterodynes the filter may lose lock when loud speech is present at the same time. This can be beneficial as the filter will then sweep its full range and will lock onto any other heterodyne which may be present and which may be louder and more annoying.

Remember that the 'LOCK' lamp will still indicate when the filter is locked onto a signal no matter whether the switch is "in" or "out".

Remember also to bypass the notch filter (button "out") when receiving morse code or RTTY. Otherwise the FL2/A will tend to lock onto the desired signal and remove it. This applies when it is installed inside Model FL2; the auto-notch filter acts on the normal output from the FL2 and if using "CW" or "RTTY" modes the FL2/A will act so as to remove the desired signal. Therefore always ensure that the "AUTO-NOTCH" button is "OUT" whenever these modes are selected.

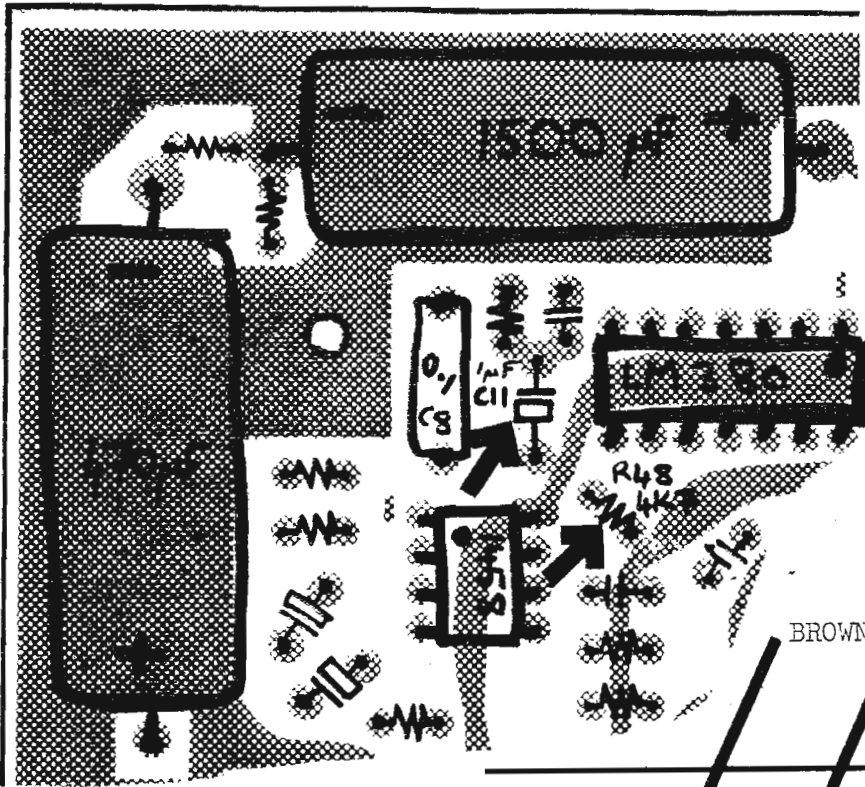


Figure 1. Showing the rear left-hand corner of the FL2 PCB as seen from the component side. Remove C11 & R48. Discard C11 and rewire R48 into the holes previously occupied by C11. (In some recent FL2s C11 and R48 may already be exchanged in position - in this case simply remove and discard C11).

NB In later FL2s C11 is a 0.047uF non-electrolytic type.

Figure 2. Showing the same section of PCB but viewed from underneath the PCB. Solder the strip cable to the points arrowed.

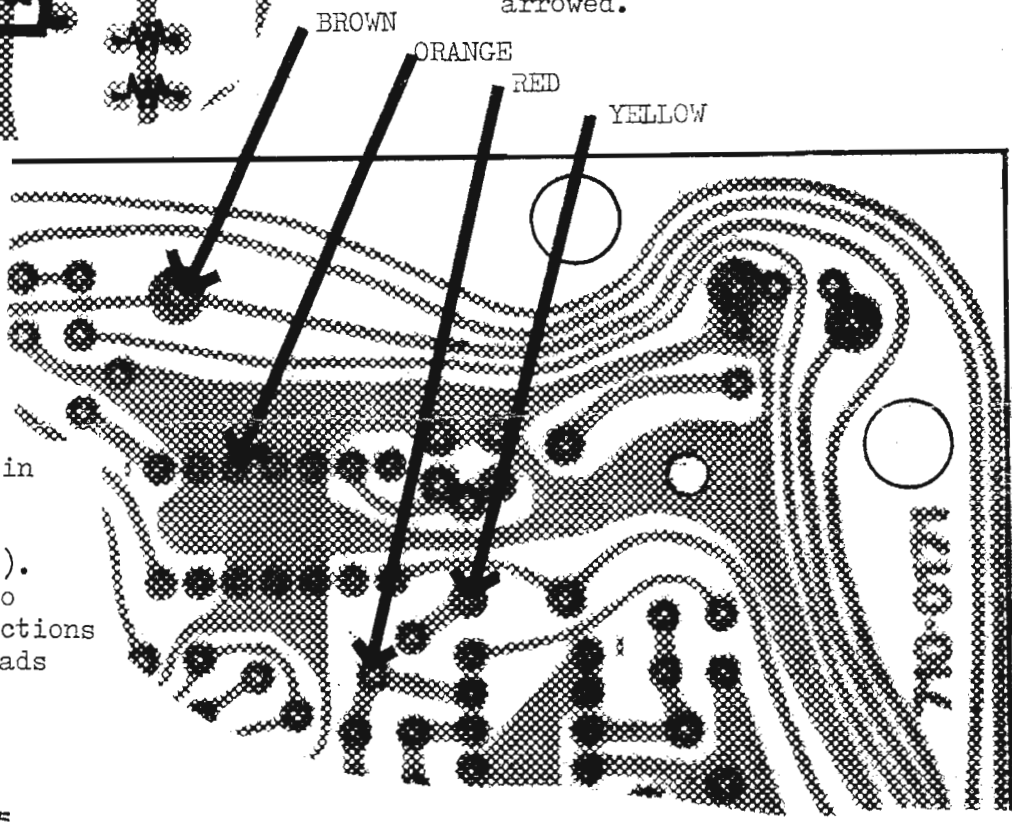
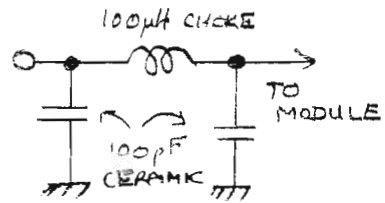


Figure 4. R.F. filter to fit in series with the input, output and supply connections to the module (in non-FL2 applications). Fit the components very close to the point of entry of the connections into the box, and keep their leads very short.



- BROWN (supply +)
- RED (input)
- ORANGE (common)
- YELLOW (output)

Figure 3. Non-component side of the FL2/A PCB showing the connecting pads.

