

AUXILLARY RFI (HASH) FILTERING ADDED TO THE SAMLEX SEC-1223 12VDC 23A SWITCHING P/S BY NIGEL HAYTON, ZL2DF

Document preparation by: Tom Hammond, NØSS 12/16/2004

I needed to suppress the S9 80m birdies generated every 20kHz or so up the band by my Samlex SEC-1223 switching power supply.

The attached documentation and photos are the end result which has removed all the 80m birdies, leaving only faint (S1-2) birdies on 160m.

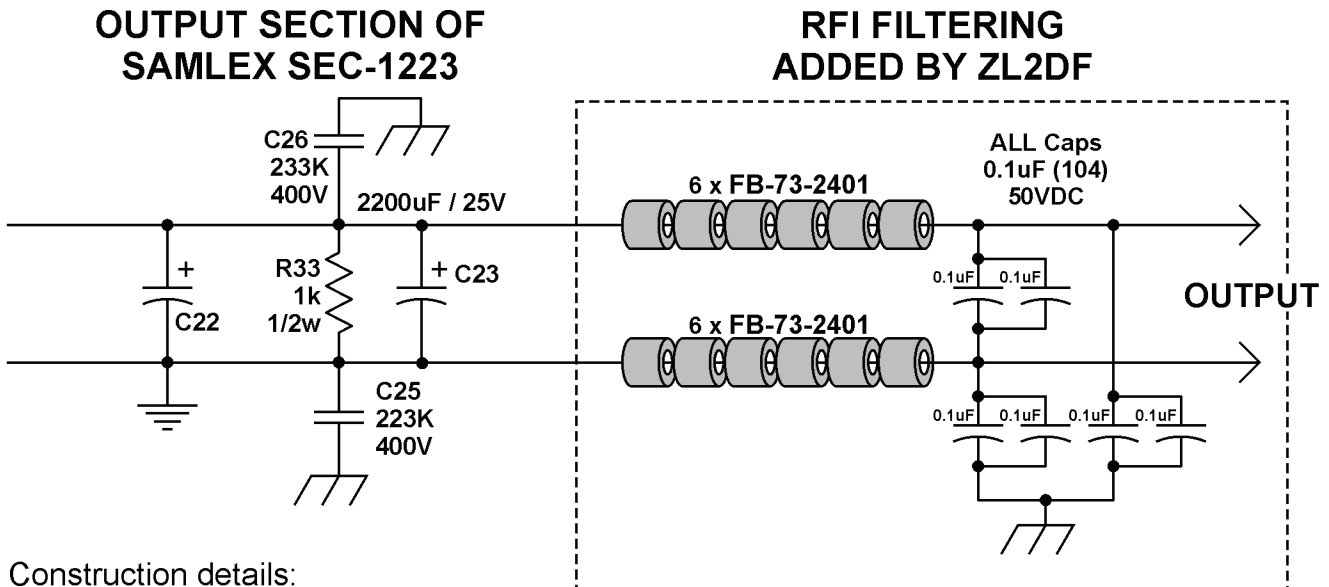
After research on the web, I located XQ2FOD's article on a 13.8V 40A switching supply and duplicated the output filtering he used. Here are some links to Manfred's excellent article:

<http://www.qsl.net/xq2fod/Electron/PS40/PS40.html>

and

<http://ludens.cl/Electron/PS40/PS40.html>

There are six (6) FB-73-2401 ferrite beads on each DC output lead, and each lead is also decoupled to circuit ground (and case) with 2x 0.1uf (104) 50VDC ceramics plus a further 2x 0.1uf 50VDC ceramic across the output.



Construction details:

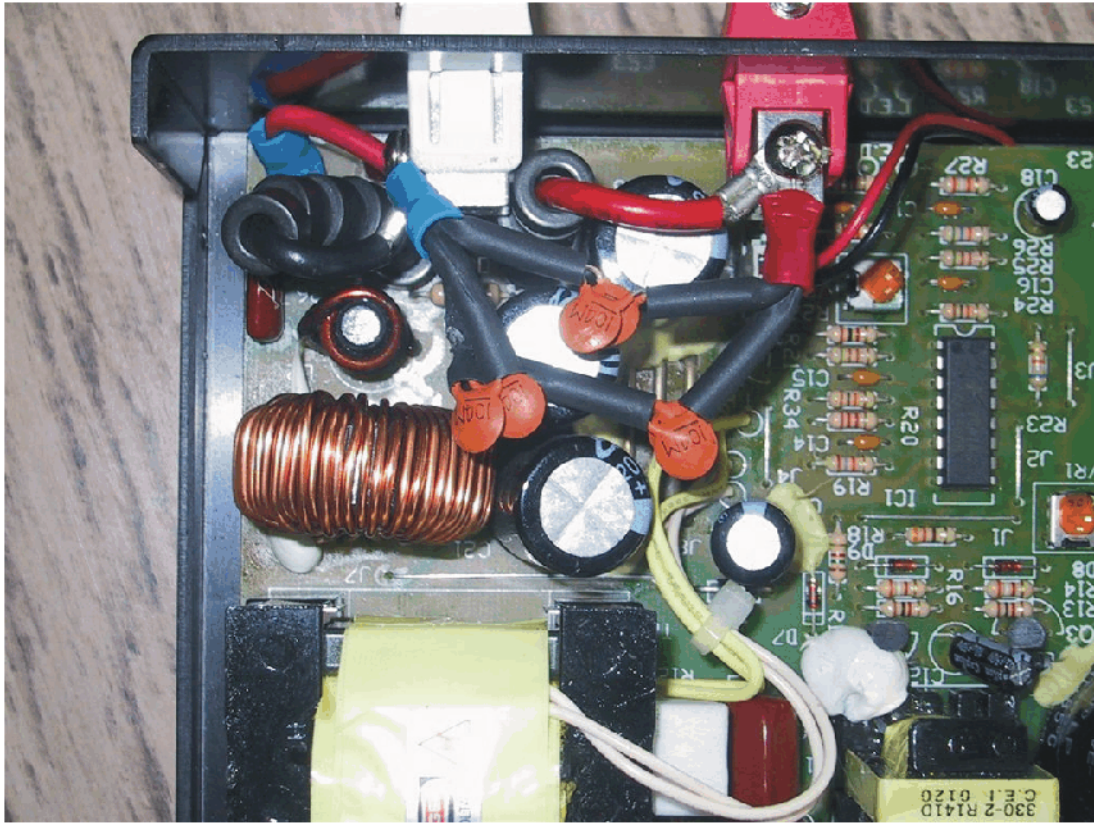
First UNPLUG the power supply from the mains!

I found it easiest to lift the whole heatsink assembly from the bottom case (2 screws on case bottom), leaving the devices attached and being careful not to get all the thermal grease over oneself. I then unsoldered the output leads, slipped on the beads and resoldered them. The earth of the circuit diagram is connected to the four screws holding down the PCB as they clamp the PCB copper track to the case mounting studs at each of the screw holes. Hence terminating the capacitors at the corner screw.

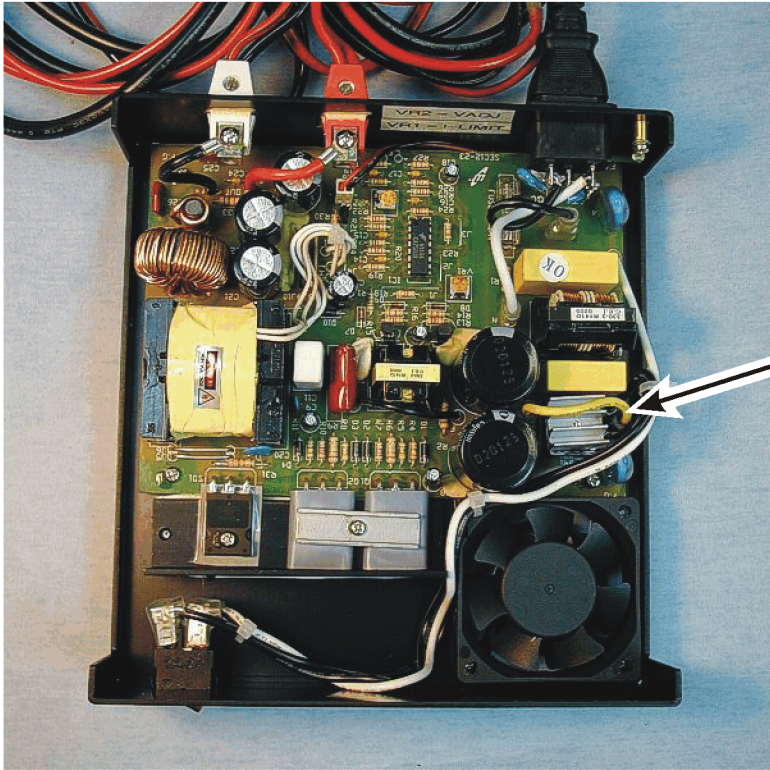
It turned out easier than I first anticipated.

(Photos of Nigel's efforts are shown on the next page.)

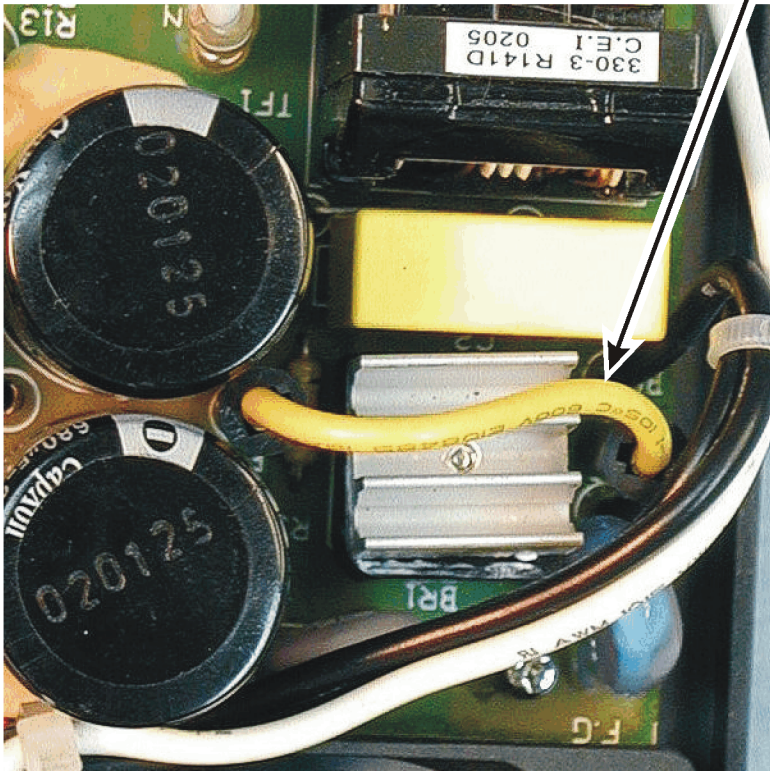
**AUXILLARY RFI (HASH) FILTERING ADDED TO THE
SAMLEX SEC-1223 12VDC 23A SWITCHING P/S
BY NIGEL HAYTON, ZL2DF
(PICTURES OF THE COMPLETED MOD)**

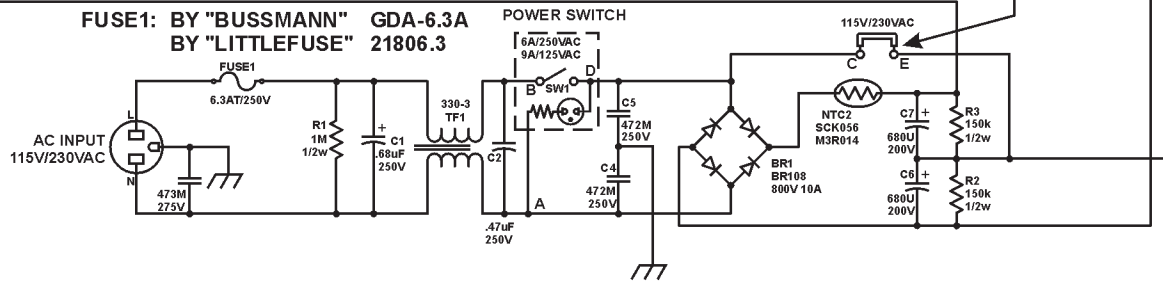
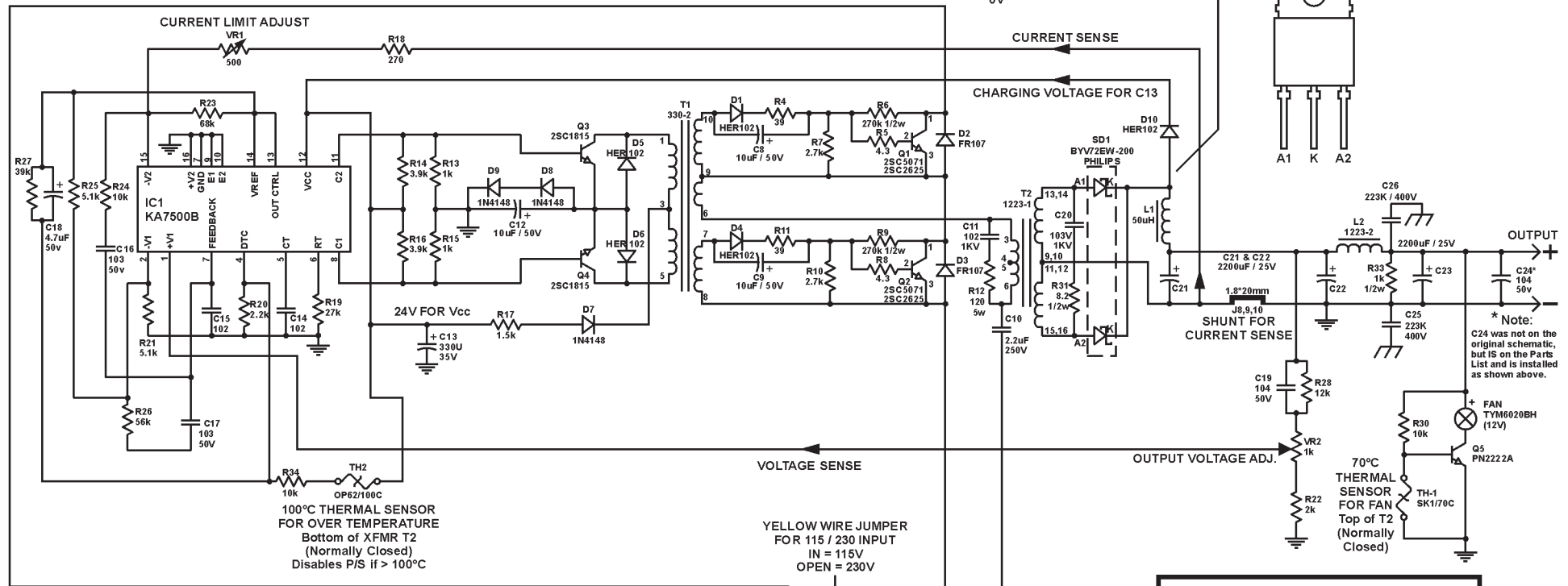
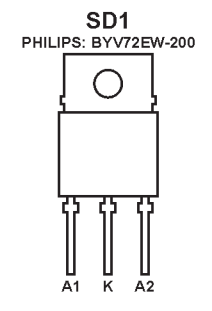
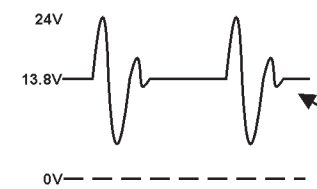
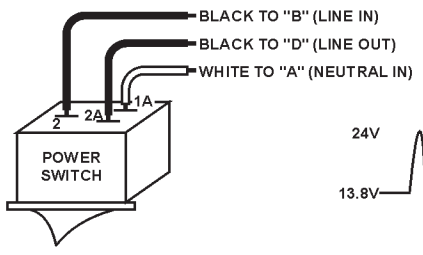
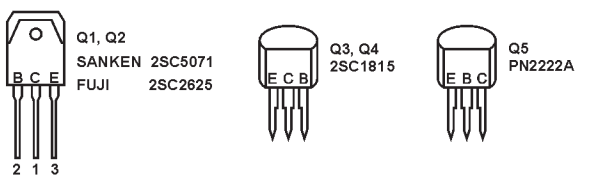


SAMLEX SEC-1223 12VDC 23A SWITCHING P/S 120VAC TO 220VAC CONVERSION



FOR 220VAC OPERATION,
LIFT ONE END OF THE
YELLOW JUMPER RUNNING
BETWEEN PINS C & E ON
THE PC BOARD.





SAMLEX AMERICA, INC.
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SCHEMATIC: SEC-1223

Redrawn by: Tom Hammond, NØSS v1.0 25 Nov 2004
Rev. 1.1, 17 Jan 2008, to incl. C24 across output.

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BILL OF MATERIALS - SEC-1223

Parts Name	Specification	Q'ty	Location
PCB	SEC-1223	1	
	SQM 5% 5W 120R	1	R12
Resistor	CR 5% 1/2W 1K	1	R33
Resistor	CR 5% 1/2W 8.2	1	R31
Resistor	CR 5% 1/2W 150K	2	R2, R3
Resistor	CR 5% 1.2W 270K	2	R6, R9
Resistor	CR 5% 1.2W 1M	1	R1
Resistor	CR 5% 1/4W 4.3	2	R5, R8
Resistor	CR 5% 1/4W 270	1	R18
Resistor		2	R4, R11
Resistor		2	R13, R15
Resistor		2	R17, R29
Resistor		1	R22
Resistor		1	R20
Resistor		2	R7, R10
Resistor		2	R14, R16
Resistor		2	R21, R25
Resistor		3	R24, R30, R34
Resistor		1	R28
Resistor		1	R19
Resistor		1	R27
Resistor		1	R26
Resistor		1	R23
Jumper Wire	0.8M/M	4 (5)	J1,2,3,4,7
Jumper Wire	1.0M/M	1	J8
Jumper Wire	1.2M/M	2	J5, J6
Metallized Cap.	(X Cap.) .68uF/250V	1	C1
Metallized Cap.	(X Cap.) .47uF/250V	1	C2
Metallized Cap.	225K/250V	1	C10
Metallized Cap.	223K/400V	2	C25, C26
Multilayer Cap.	102/50V (NP0)	2	C14, C15
Multilayer Cap.	103/50V (X7R)	2	C16, C17
Multilayer Cap.	104/50V (Z5U)	2	C19, C24
Ceramic Cap.	102M/1KV	1	C11
Ceramic Cap.	103Z/1KV	1	C20
Ceramic Cap.	(Y Cap.) 222M/400V(AC)	2	AC Socket
Ceramic Cap.	(Y Cap.) 472M/250V(AC)	1	C4, C5
Electrolytic Cap.	2200uF/25V (16*25)	3	C21, C22, C23
Electrolytic Cap.	330uF/35V (10*18)	1	C13
Electrolytic Cap.	4.7uF/50V (5*11)	1	C18
Electrolytic Cap.	10uF/50V (5*11)	3	C8, C9, C12

Electrolytic Cap.	600uF/200V (25*35)	2	C6, C7
N.T.C	SCK056 / M3R014	1	NTC 2
Diode	HER102	5	D1, 4, 5, 6, 10
Diode	FR107	2	D2, D3
Diode	1N4148	3	D7, D8, D9
Diode	BYV72E-200 ^(Philips)	1	SD1
Transistor	2SC2625 ^(Fuji) / 2SC5071 ^(Sanken)	2	Q1, Q2
Transistor	2SC1815	2	Q3, Q4
Transistor	PN2222A	1	Q5
IC	KA7500B ^(Samsung) or TL494IN ^(Motorola)	1	IC1
Variable Resistor	500 Ohm (501)	1	VR1
Variable Resistor	1K (102)	1	VR2
Transformer	1223-1 (ETD-39)	1	T2
Transformer	330-2 (EE-19L)	1	T1
Transformer	330-3 (ET28)	1	TF1
Transformer	23uH	1	L1
Transformer	1223-3 (R6*20)	1	L2
Bridge Diode	BR108 800V / 10A	1	BR1
Fuse	(UL App.) 6.3AT/250V (5*20)	1	FUSE1
Fuse Holder	5*20 (7mm)	2	FUSE1
Fan	TYM6020BH (12V)	1	Bottom Case
Spade Terminal (M)	P850	4	L N + -
Dual Binding Post	WTN-1047	1	Bottom Case
Housing	Upper Cover	1	
Housing	Bottom Cover	1	
Temperature Switch	OP62/100C/080m/m	1	TH-2
Temperature Switch	SK1/070/05/100	1	TH-1
Power Switch	R992KDET2F	1	Bottom Case
Power Switch	R-301 / SS-7B	1	Bottom Case
Power Cord	America 2 sides/0.75/2M	1	Accessory
Wire	1.8*20M/M	3	J8, J9, J10
Rubber Foot	T211308	4	Bottom Case
Rubber Foot	HU-12	2	C4, C5
Heat Sink	P001 (18M/M)		Lock BR1
Heat Sink	L Type 25*96*8 4 Holes	1	Bottom Case
Fixing Metal	73009-A	1	Heat Sink
Rubber Tube	14*25M/M	2	Back of Q1, Q2
Rubber Tube	TO-3P	1	Back of SD1
Cable Tie	YJ-98	2	A.B.D.