

**AUTOMATIC SWR METER DESIGN
PRINCIPLE SCHEMATIC WITH "ATU"**

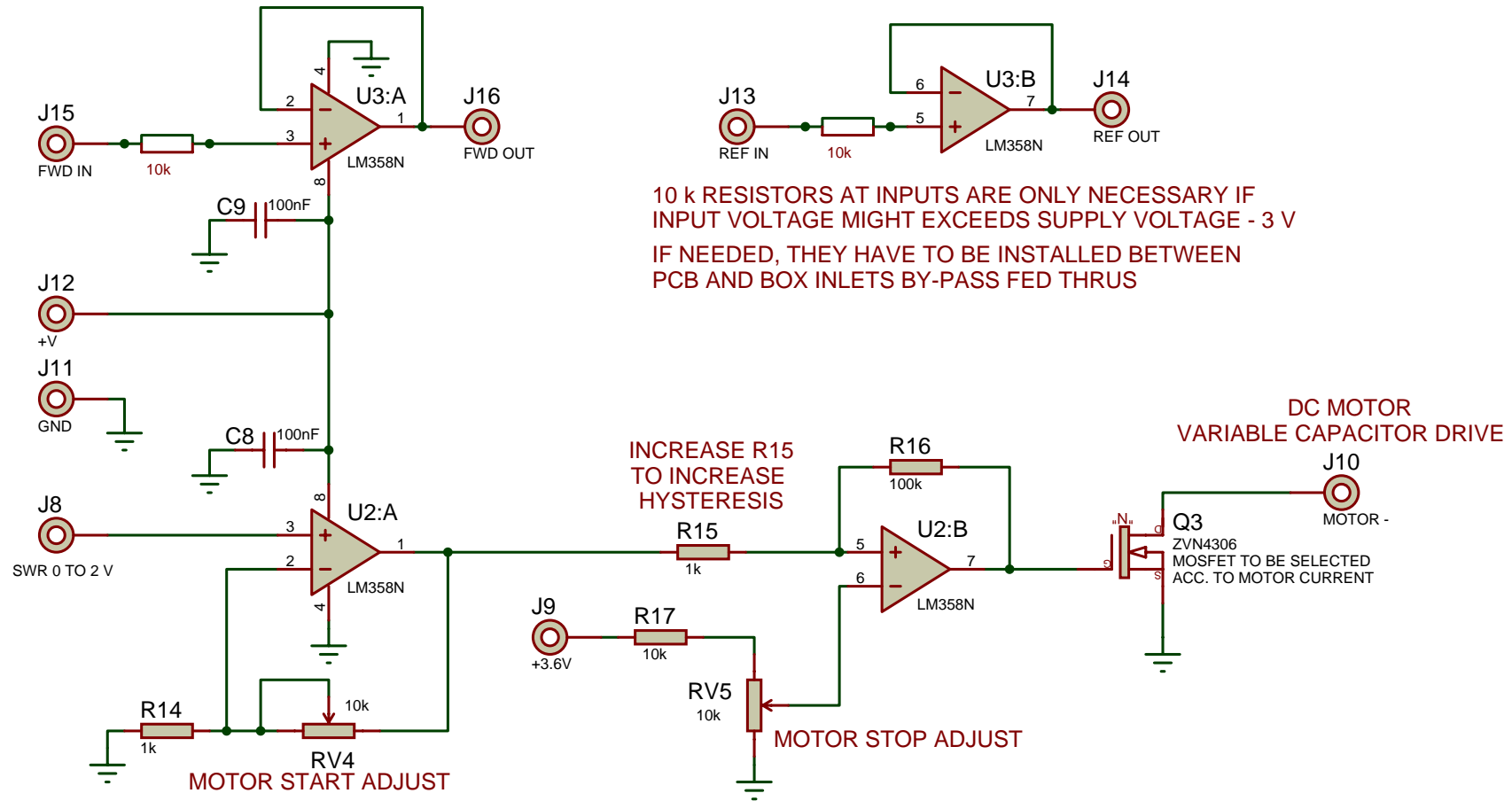
SWR METER FULL SCALE FINE ADJUST



MAIN BOARD AUTOMATIC SWR METER DESIGN

DOC N°: AMATEUR RADIO
BY: f1frv@sfr.fr
DATE:08/12/10 REV: 4 PAGE:2/3

U3 CAN BE USED TO BUFFER FWD AND REF VOLTAGES INPUTS TO
DECREASE LOAD ON DETECTORS (MAX INPUT DC VOLTAGE = V SUPPLY - 3 V)
IF U3 IS USED, CONNECT J16 TO J6 AND J14 TO J5



NOTA: U2 & U3 SHALL BE LM358N OR ANY RAIL TO RAIL
EXPANSIVE DUAL OP-AMP LIKE LMC6482, LMC662, AD822

OPTIONAL AUTOMATIC TUNING UNIT
AUTOMATIC SWR METER DESIGN

DOC N°: AMATEUR RADIO
BY: f1frv@free.fr
DATE: 25/11/10 REV: 4 PAGE: 3/3

AUTOMATIC SWR METER & SEMI AUTOMATIC TUNING UNIT (OPTIONAL)

DATE: 06/2006 REV: 3
BY: F1FRV@SFR.FR
DOC Nr: AMATEUR RADIO

AUTOMATIC SWR METER ADJUSTEMENT PROCEDURE

CONNECT CIRCUIT TO DC SUPPLY (13 TO 28 V)
CONNECT TOGETHER J5 AND J6 TO AN OTHER TEST
SUPPLY, MAX VOLTAGE = DC SUPPLY - 3 VOLTS
ADJUST RV1 & RV3 FOR SWR METER FULL SCALE

DISCONNECT J5 AND J6 FROM TEST SUPPLY

WITH THE SAME TEST DC SUPPLY, APPLY ANY DC VOLTAGE
(MAXI = DC SUPPLY - 3 V) ON J6 AND HIS EXACT HALF ON J5
METER SHALL INDICATE PRECISELY MID SCALE (SWR = 3)

METER INDICATES RATIO OF FWD/REF VOLTAGES
TO HAVE SWR INDICATION, USE LOGARITHMIC METER SCALE

YOU CAN NOW CONNECT TO YOUR SWR BRIDGE AND ENJOY

ADJUST RV2 FOR POWER METER SCALE, BY COMPARISON WITH
AN ACURATE POWER METER ON 50 OHMS DUMMY LOAD
TO HAVE PWR INDICATION, USE SQUARE ROOT METER SCALE
WITH 25% AT MID SCALE AND 100% FULL SCALE

TO DRAW YOUR OWN METER SCALE, YOU CAN USE F5BU's
FREEWARE "GALVA" AT: <http://f1frv.free.fr> PAGE "LINKS"

SEMI AUTOMATIC TUNING UNIT ADJUSTEMENT PROCEDURE

CONNECT +V & +3.6V TO SWR METER CIRCUIT

CONNECT SWR INPUT J8 TO SWR METER OUTPUT J1

ADJUST RV4 FOR MOTOR START OVER PRESET SWR

ADJUST RV5 FOR MOTOR STOP ON PRESET LOW SWR

MOTOR DRIVES VARIABLE CAPACITOR IN TUNING UNIT
AND WILL STOP WHEN LOW SWR IS REACHED

THAT'S ALL FOX !!!!!!!!!!!!!

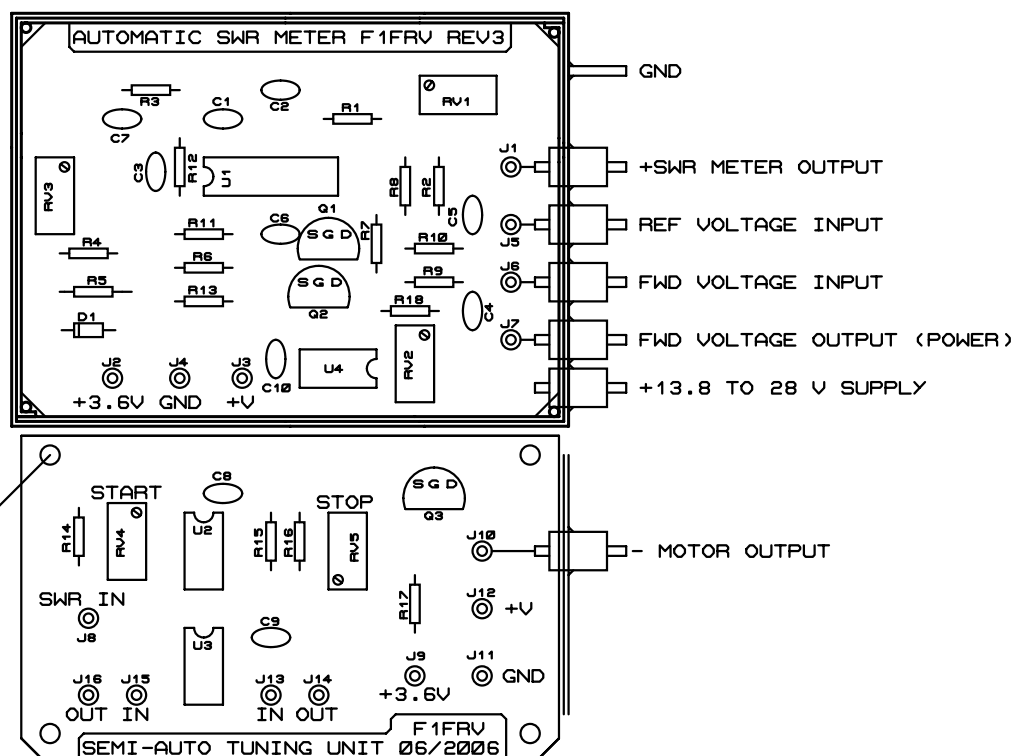
GLOBAL PCB: HALF OF 100x160 MM CARD

TINY BOX SCHUBERT
74 x 55 x 50 MM
OR 74 x 111 x 30 MM

AUTOMATIC SWR
PCB: 71 x 52 MM
102 HOLES

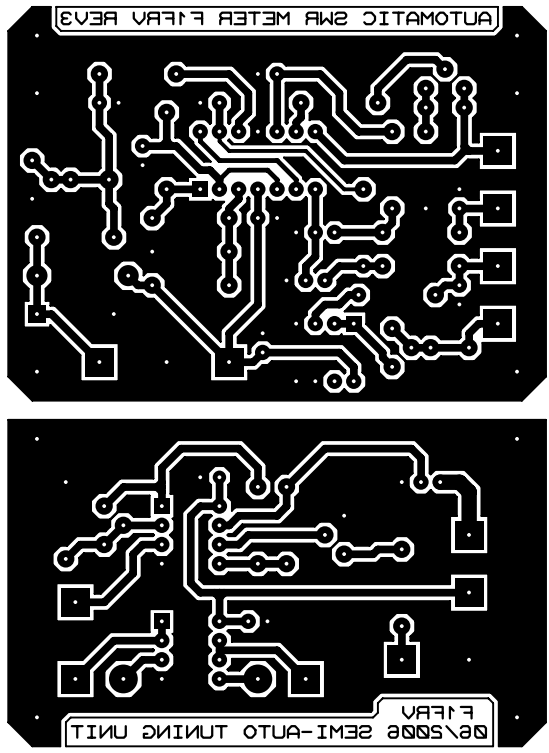
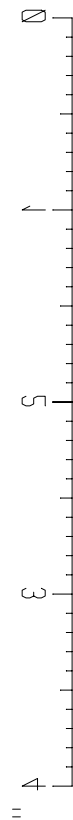
STACKING HOLES 3 MM

SEMI AUTO ATU
PCB 71 x 44 MM
50 HOLES



FED THRU CAPACITORS 1 nF FOR BOX INLETS/OUTLETS

POWER SUPPLY: 13.8 TO 28 V DC NEGATIVE TO GROUND



BILL OF MATERIALS

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Design: AUTOMATIC SWR METER DESIGN

Doc. no.: AMATEUR RADIO

Revision: 4

Author: flfrv@sfr.fr

Created: 23/01/04

Modified: 25/11/10

QTY	PART-REFS	VALUE	PACKAGE
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Resistors

4	R1,R3,R7,R8	1M	RES40
2	R2,R17	10k	RES40
1	R4	22k	RES40
5	R5,R11,R12,R14,R15	1k	RES40
6	R6,R9,R10,R13,R16,R18	100k	RES40

Capacitors

2	C1,C2	22nF	CAP10
6	C3,C6,C7,C8,C9,C10	100nF	CAP10
2	C4,C5	2.2nF	CAP10

Integrated Circuits

1	U1	LM324	DIL14
3	U2,U3,U4	LM358N	DIL08

Transistors

2	Q1,Q2	2N7000	TO92d
1	Q3	ZVN4306	TO92d

Diodes

1	D1	ZENER 3.6V/0.5W	DO35
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Miscellaneous

4	RV1,RV3,RV4,RV5	10k	CERMET3266W
1	RV2	10k to be adapted	CERMET3266W