OLTRONIX

REGULATED

POWER SUPPLY

INSTRUCTION MANUAL

B50-3DR

DUAL RANGE MODEL

M2511-303010

SVENSKA AB OLTRONIX
Jämtlandsgatan 125, Vällingby. Telephone 87 03 30

OLTRONIX - NEDERLAND N.V.
Vredenburgweg 7, Hoogezand. Telephone 05980-2301

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SECTION VII.

PARTS LIST AND CIRCUIT DIAGRAM.

1. GENERAL

Replacement parts are available from the Oltronix factory. All standard parts can also be ordered through most well equipped parts distributors.

Note that most transistors have a letter-number combination e.g. H 75 in the spare parts list in addition to the manufacturers number and the circuit reference designator. This combination indicates the quality of the transistor expressed in current amplification and maximum voltage. This description should always accompany the transistor when a replacement is ordered.

For further information on the classification refer to "Oltronix transistor identification code" which is found after the spare parts list.

When a pair of matched transistors is needed add "Matched" to the description. When ordering parts listed below state the following information for each part:

a. Model and serial number of the instrument.
b. Circuit reference designator
c. Type and value

For parts not listed below state:

a. Model and serial number of the instrument
b. Complete description of the part
c. Function and location of the part

2. ABBREVIATIONS

bri	= bridge rectifier
Car	= carbon
Cer	= ceramic
di	= diode
EMC	= electrolytic, metal case
F	= farad
Ge	= germanium
Int	= Intermetall
k	= kilo or 10^3
lin	= linear taper
M	= mega or 10^6
Mfr	= manufacturer
M & W	= Müller & Weigert
MF	= metal foil
Mo	= Motorola
MP	= metalized paper
Mul	= Mullard
p	= pico or 10^{-12}
poly	= polystyrene
rec	= rectifier
Se	= selenium
Si	= silicon
Sicar	= silicon carbide
SR	= Standard Radio
TI	= Texas Instruments
Tele	= Telefunken
u	= micro or 10^{-6}
V	= volts
W	= watts
WW	= wire wound
Ze	= zener diode

3. SPARE PARTS LIST

The spare parts list is divided into two parts. The first one covers the printed circuit board the second the remaining parts.

The parts list contains: Circuit reference designator
Parts description
Mfr and Mfr´s reference

a. Printed circuit board type C56

Capacitors

C1	250	uF	12 V	EMC	F&T	
C2	250	uF	12 V	EMC	F&T	
C3	0,01	uF	400 V	MP	Rifa	Miniprint
C4	0,022	uF	400 V	MP	Rifa	Miniprint
C30	25	uF	6 V	EMC	F&T	
C31	25	uF	6 V	EMC	F&T	

Diodes

D1	IN4003		Si	di	Mo
D2	IN4003		Si	di	Mo
D3	IN4003		Si	di	Mo
D30	OA81		Ge	di	Mul
D31	OA81		Ge	di	Mul
D50	IN4003		Si	di	Mo
Z1	ZF6,8	6,8 V	Si	Ze	Int
Z2	ZF6,8	6,8 V	Si	Ze	Int
Z3	ZF3,3	3,3 V	Si	Ze	Int
Z4	ZF6,8	6,8 V	Si	Ze	Int
or	ZF6,2	6,2 V	Si	Ze	Int

Potentiometers

P1	5	Kohms	1/4 W	lin	20%	Car	Tele	GSa887
P2	100	ohms	1/4 W	lin	20%	Car	Tele	GSa887
P3	500	ohms	2 W	lin	10%	WW	Clarostat	43
P31	1	Kohms	1/4 W	lin	20%	Car	Tele	GSa887
P32	5	Kohms	1/4 W	lin	20%	Car	Tele	GSa887
P33	1	Kohms	1/4 W	lin	20%	Car	Tele	GSa887

Resistors

All resistors are Beyschlag, 1/3 W, 5%, carbon, unless otherwise noted.

R1	470	ohms
R2	15	Kohms
R3	22	Kohms
R4	6,8	Kohms
R5	100	ohms
R6	100	ohms
R7	680	ohms
R8	22	Kohms
R9	4,7	Kohms
R10	22	Kohms

R11	100	ohms				
R12	100	ohms				
R13	10	Kohms				
R14	1,25	Kohms	4 W	5%	WW	Vitrohm
R15	22	Kohms				
R16	6,8	Kohms	1 W	5%	Car	Beyschlag
R17	1,0	Kohms				
R18	3,3	Kohms				
R19	3,3	Kohms				
R20	150	ohms				
R21	680	ohms				
R22	10	Kohms				
R23	15	Kohms				
R24	10	Kohms				
R25	2,2	Kohms				
R30	4,7	ohms				
R31	1,0	Kohms				
R32	2,7	Kohms				
R33	4,7	ohms				
R34	2,7	Kohms				
R35	K124		GA		Sicar	Evilit
R36	3,3	Kohms				
R37	4,7	Kohms				
R38	K124		GA		Sicar	Evilit
R39	3,3	Kohms				
R40	4,7	Kohms				
R52	100	ohms				
R53	10	Kohms	1 W	5%	Car	Beyschlag
R54	33	Kohms				

Transistors

T1	2N1304	H25	NPN	Ge	Ti
or	2N3710	H25	NPN	Si	Ti
T2	2N1304	H25	NPN	Ge	Ti
or	2N3710	H25	NPN	Si	Ti
T3	ACY17	H25	PNP	Ge	Mul
or	2N3703	H25	PNP	Si	Ti
T4	ACY17	H25	PNP	Ge	Mul
or	2N3703	H25	PNP	Si	Ti
T5	ACY17	H25	PNP	Ge	Mul
or	2N3703	H25	PNP	Si	Ti
T6	2S302	L75	PNP	Si	Ti
or	2N3703	H75	PNP	Si	Ti
T7	2S302	L75	PNP	Si	Ti
or	2N3703	H75	PNP	Si	Ti
T8	2S302	L75	PNP	Si	Ti
or	2N3703	H75	PNP	Si	Ti
T9	2N1304	H25	NPN	Ge	Ti
or	2N3710	H25	NPN	Si	Ti
T10	2N1304	H25	NPN	Ge	Ti
or	2N3710	H25	NPN	Si	Ti
T30	2N1304	H25	NPN	Ge	Ti
T31	2N1304	H25	NPN	Ge	Ti
T32	2N1304	H25	NPN	Ge	Ti
T33	2N1304	H25	NPN	Ge	Ti

Remaining Parts

Capacitors

C50	10	uF	70 V	EMC	F&T	
C80	2200	uF	350 V	Cer	Erie	K7004/831
C82	2x5000	uF	50 V	EMC	Rifa	PEH 1391E/310
C83	2x5000	uF	50 V	EMC	Rifa	PEH 1391E/310
C84	2000	uF	25 V	EMC	Rifa	PEH 1331E/28
C85	1000	uF	25 V	EMC	Rifa	PEH 1331E/29
C90	1	uF	200 V	MP	Rifa	PMD 2002
C91	2500	uF	70 V	EMC	Rifa	PEH 1331E/240
C92	0,1	uF	400 V	MP	Philips	C281 W

Connector

Output rear	6 prong	MS 3102-14S-6S	Amphenol

Fuses

F1	2 A	5 mm	Line	Slo-Blo	

Diodes

D80	BYZ13	Si	rec	Mul
D81	BYZ13	Si	rec	Mul
D82	BYZ13	Si	rec	Mul
D83	BYZ13	Si	rec	Mul
D84	B30 C250	Se	bri	Siemens
D85	B30 C250	Se	bri	Siemens
D86	B30 C1000	Se	bri	Siemens
D87	IN4003	Si	di	Mo
D88	IN4003	Si	di	Mo
D90	BYZ13	Si	rec	Mul
D91	BYZ13	Si	rec	Mul

Meters

A	6 A	PL72	ammeter	M&W
V	60 V	PL72	voltmeter	M&W

Potentiometers

P90	500 ohms	2 W	lin	10%	WW	Clarostat	43
P91	11 Kohms	3 W	lin	10%	WW	Clarostat	58
P92	500 ohms	2 W	lin	10%	WW	Clarostat	43
P93	100 ohms	1/4 W	lin	20%	Car	Tele	GSa 887

Relays

K1	12 V	DC	SR	SU 7095
K2	12 V	DC	SR	SU 7095
K3	12 V	DC	SR	SU 7095

Resistors

R50	10 ohms	60 W	10%	WW	Philips B8 300 46A
R51	3,3 Kohms	1/3 W	5%	Car	Beyschlag
R70	0,18 ohms			WW	Oltronix
R71	0,18 ohms			WW	Oltronix
R74	220 ohms	1/3 W	5%	Car	Beyschlag
R75	220 ohms	1/3 W	5%	Car	Beyschlag
R78	1 Kohms	12 W	5%	WW	Vitrohm H
R79	500 ohms	12 W	5%	WW	Vitrohm H
R80	3,3 Kohms	1/3 W	5%	Car	Beyschlag
R81	K 124	GA	Si	Car	Evilit
R82	6,8 ohms	1/3 W	5%	Car	Beyschlag
R90	1 Kohms	1/3 W	5%	Car	Beyschlag
R91	560 ohms	1/3 W	5%	Car	Beyschlag
R179	500 ohms	12 W	5%	WW	Vitrohm H

Switches

S1	DPST toggle	switch	Marquardt	132NT
S2	SPDT slide	switch	Elfa	AH10
S3	TPDT toggle	switch	Gross	HL233-73

Transformer

Tr1	Power	Elab	18724

Transistors

T50	2N442	L90	PNP	Ge	RCA, Delco
or	2N1100	L90	PNP	Ge	Mul
T51	OC26	L90	PNP	Ge	Mul
or	Ti3029	L90	PNP	Ge	Ti
T70	OC26	H90	PNP	Ge	Mul
or	Ti3029	H90	PNP	Ge	Ti
T71	2N442	H90	PNP	Ge	RCA, Delco
or	2N1100	H90	PNP	Ge	Mul
T72	2N442	H90	PNP	Ge	RCA, Delco
or	2N1100	H90	PNP	Ge	Mul
T80	OC26	L50	PNP	Ge	Mul
or	Ti3029	L50	PNP	Ge	Ti

Oltronix transistor identification code

To assure that the transistors in the Oltronix power supplies have good enough data for their actual application, all transistors are tested in a Tektronix Curve Tracer before they are mounted in any instrument. Certain transistors e.g. power transistors and transistors for high voltage use pass a more complete test after which a classification mark is applied. This mark is a letter-number combination on the power transistors and a colour dot on the smaller transistors.

The letter indicates high "H" or low "L" current amplification. The number shows the maximum working voltage.

The test conditions are:

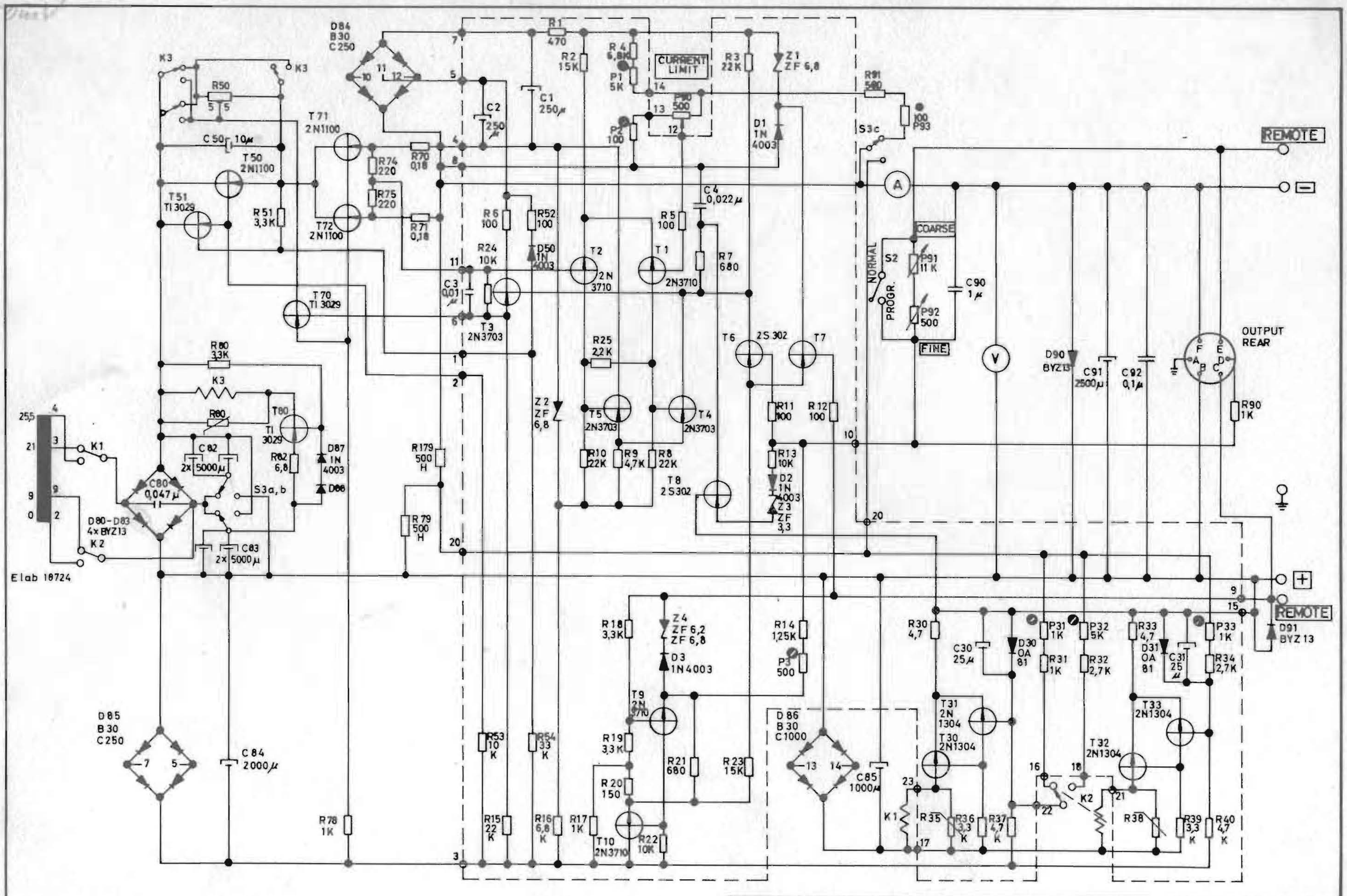
Test	Power transistors TO-3 and TO-36	Other transistors TO-5 and similar
Current amplification	I_c=2A V_{CE}=10V High if $h_{FE} \geq 50$ Low if $h_{EE} < 50$	I_c=1mA V_{CE}=10V High if $h_{FE} \geq 50$ Low if $h_{FE} < 50$
	Transistors with extremely high or extremely low h_{FE} are refused.	
Voltage	I_c=400mA R_{BE}=100ohms	I_c=1mA R_{BE}=1,5k

The colour code is:

Class	Colour
L25	Brown
H25	Red
L50	Yellow
H50	Green
L75	White
H75	Violet
L100	Silver

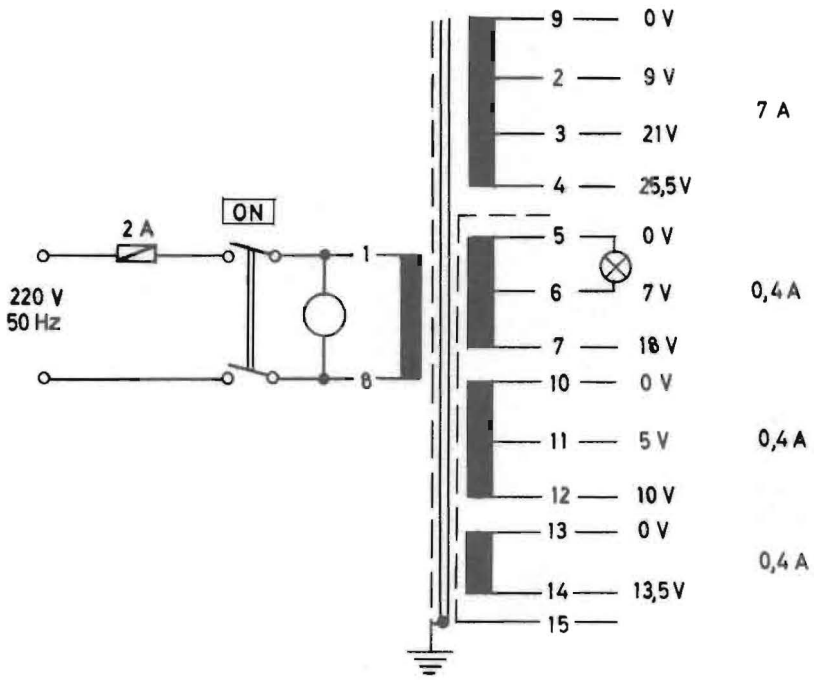
To get TO-36 power transistors distributed in the voltage and amplification classes in a way suiting our program, transistors of the types 2N442, 2N443 2N1099 and 2N1100 are used. These transistors come from the same production line, but are classified by the manufacturer. Because of our special requirements these transistors are reclassified at the Oltronix factory. Transistors of different types and from different manufacturers thus can replace each other if they have identical Oltronix classification.

Nät var ... 24V ...
— " — ... 50V ...
Bel var 5 ...
Brum 0,5



SVENSKA AB. OLTRONIX VÄLLINGBY	REGULATED POWER SUPPLY B50 - 3DR 0-24V 0-6A, 0-50V 0-3A	10. 3. 65	112-73-1

Rev. 18.8.65 Rev. 8.11.65



ELAB 18724

Rev. 18.8.65 JD

SVENSKA AB OLTRONIX VALLINGBY STOCKHOLM	TRANSFORMER CONNECTION TYPE B 50-3 DR 0-50 V 0-3A, 0-24 V 0-6 A	24. 3. 65 JD 112-74-2