DELTA ELEKTRONIKA BV

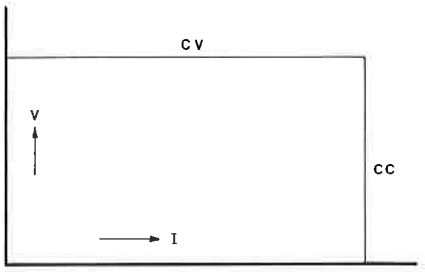
P.O. BOX 27
4300 AA ZIERIKZEE
NETHERLANDS
TEL. (01110) 3656 TLX 55349

REGULATED POWER SUPPLIES

E 015–2	0– 15 V	0–2 A
E 030–1	0– 30 V	0–1 A
E 030–3	0– 30 V	0–3 A
E 060–0.6	0– 60 V	0–0.6 A
E 0300–0.1	0–300 V	0–0.1 A
E 018–0.6 D	±0– 18 V	0.6 A

DESCRIPTION

E 015-2, E 030-1 and E 060-0.6



These power supplies are of the linear transistor series regulator type. They can be used as a constant voltage source with a sharply limited current, or as a constant current source with a sharply limited open voltage. Both limits are continuously variable from zero to full range. The change of mode occurs at the crossing of the voltage and current settings.
A ten-turn potentiometer is used to provide a high resolution voltage control. For current control a single turn potentiometer (resolution 0,1 %) is used to enable an approximate indication of the current setting.

E 030-3 and E 0300-0.1

These models also have a linear transistor series regulator which however is preceeded by an SCR pre-regulator for better efficiency.
This pre-regulator keeps the rectified voltage in accordance with the output voltage to keep dissipation in the power transistors low.

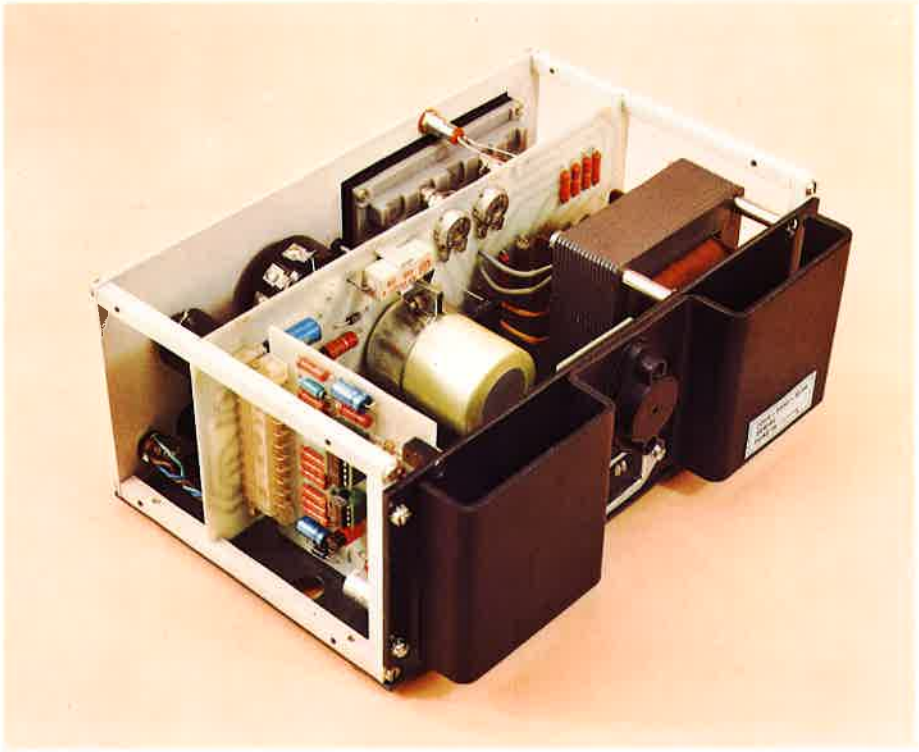
E 018-0.6 D

This model was designed to supply plus and minus 15 volts for design work with operational amplifiers. It provides a plus 0—18 V and a minus 0—18 V which are tracking and can be varied with one ten-turn potentiometer. With the second potentiometer the ratio of the positive and negative voltage can be varied between 1/2 and 2. The positive and negative outputs have coupled overload protection circuits. This means that both output voltages will decrease proportionally if one is overloaded. Also if one output is short circuited, both outputs will drop to zero. The E 018-0.6 D has a fixed constant current overload characteristic. Indepedent of the ratio setting, the positive and negative output can ever exeed a limit of about 18,5 V.

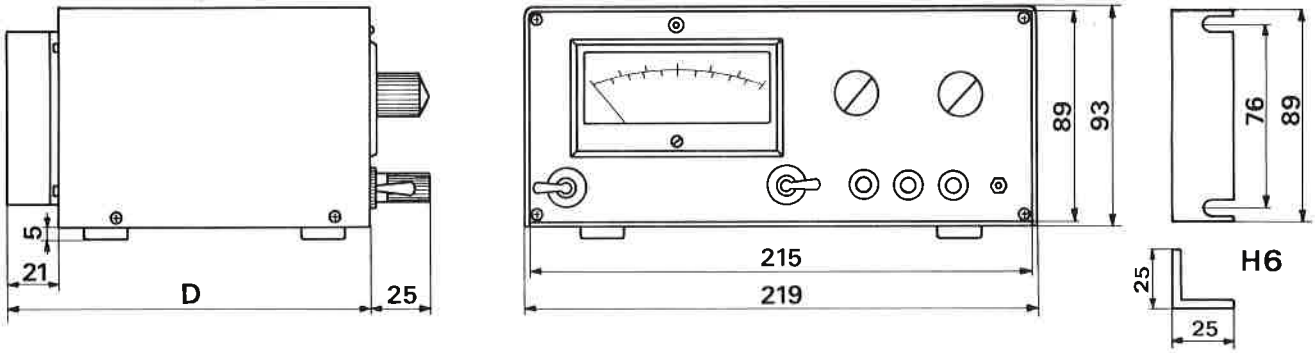
SPECIFICATIONS

Input voltage	220 V 50 Hz standard. Other input voltages at special order.
Input-output isolation	1500 V AC rms 1 minute (VDE 0550).
Max. voltage between output and case	500 V DC.
Max. ambient temperature	45°C.
Meter	Accuracy 1.5 % of fsd, selector switch for voltage and current measurement.
Parallel and series connection	Units can be connected parallel and in series. Series connection up to 300 V.
Weight and size	2.8 kg 219 x 93 x 154 mm 30 Watts type. 5.7 kg 219 x 93 x 222 mm E 030-3

SPECIFICATIONS	E 015-2	E 030-1	E 030-3	E 060-0.6	E 0300-0.1	E 018-0.6 D
CONSTANT VOLTAGE MODE						
Line regulation for 198–242 V variation	1 mV	2 mV	2 mV	4 mV	10 mV	5 mV
Load regulation for 0–100 % variation.	2 mV	4 mV	4 mV	8 mV	20 mV	5 mV
Temp. coefficient per °C (% of V max)	0.01 %	0.01 %	0.01 %	0.01 %	0.01 %	0.01 %
Drift per 8 hours under constant conditions after 15 minutes warm up	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Riple voltage, rms	0.1 mV	0.1 mV	0.1 mV	0.1 mV	0.5 mV	0.1 mV
Output impedance at 100 kHz load frequency	100 mΩ	100 mΩ	100 mΩ	100 mΩ	10 Ω	100 mΩ
Recovery time to within 30 mV after a step load change from 10 to 100 %	15 µS	15 µS	15 µS	15 µS	30 µS	15 µS
Remote programming of output voltage by resistance	0–5 kΩ	0–5 kΩ	0–5 kΩ	0–10 kΩ	–	–
CONSTANT CURRENT MODE						
Line regulation for 198–242 V variation	0.3 mA	0.3 mA	0.4 mA	0.3 mA	0.03 mA	–
Load regulation for zero to max. load	2 mA	2 mA	4 mA	2 mA	0.5 mA	–
Temp. coefficient per °C (% of I max.)	0.05 %	0.05 %	0.05 %	0.05 %	0.05 %	–
Ripple current rms	0.1 mA	0.1 mA	0.1 mA	0.1 mA	0.1 mA	–



Simple construction and use of high quality components forms unique reliable unit.



For E 030-3 D = 222 mm, for all other models D = 154 mm.

Two uncased units can be mounted side by side and with the addition of two H6 brackets can be inserted in a 19'' rack.

R = Ohm

1	=	560	1W
2	=	270	
3	=	CR	
4	=	470	
5	=	3,9 k	
6	=	6,8 k	
7	=	1,8 k	
8	=	1 M	
9	=	470	
10	=	100	
11	=	18 k	
12	=	CR	
13	=	1 k	
14	=	47	
15	=	470	
16	=	1 k	
17	=	150 k	
18	=	CR	
19	=	560	
20	=	CR	
21	=	CR	
22	=	560 k	
23	=	2,2 k	
24	=	270 k	
25	=	150 k	
26	=	1,2 M	
27	=	15 k	
28	=	100	
29	=	15 k	
30	=	1 k	
31	=	820	
32	=	68 k	
33	=	3,3 k	
34	=	3,3 k	
35	=	1,2 M	
36	=	10 k	
37	=	120	
38	=	3,9 M	
39	=	10 k	
40	=	22	5W WW
41	=	1 k	trim.
42	=	1,5 k	
43	=	10 k	trim.
44	=	330 k	
45	=	CR	
46	=	15 M	
47	=	5 k	potm.
48	=	1 k	10 trn.potm.
49	=	5,6 k	
50	=	100 k	
51	=	100 k	
52	=	100 k	

T

1	=	BC 182	TI
2	=	BC 212	TI
3	=	2N3439	RCA
4	=	2N3439	RCA
5	=	BU 132	Philips
6	=	2N3439	RCA
7	=	BC 182	TI

C = microfarad

1	=	47	63 V
2	=	22	25 V
3	=	0,047	250 V
4	=	2,2	35 V tt
5	=	CC	
6	=	22	25 V
7	=	CC	
8	=	0,01	1000 V
9	=	100	450 V
10	=	220	40 V
11	=	220	40 V
12	=	0,047	250 V
13	=	10	40 V
14	=	0,22	630 V
15	=	0,001	750 V
16	=	0,001	750 V
17	=	0,22	630 V
18	=	4,7	350 V
19	=	0,01	500 V
20	=	0,01	500 V
21	=	0,07+2x2500	250 V
22	=	0,0001	250 V
23	=	0,0001	250 V
24	=	0,0001	250 V

D

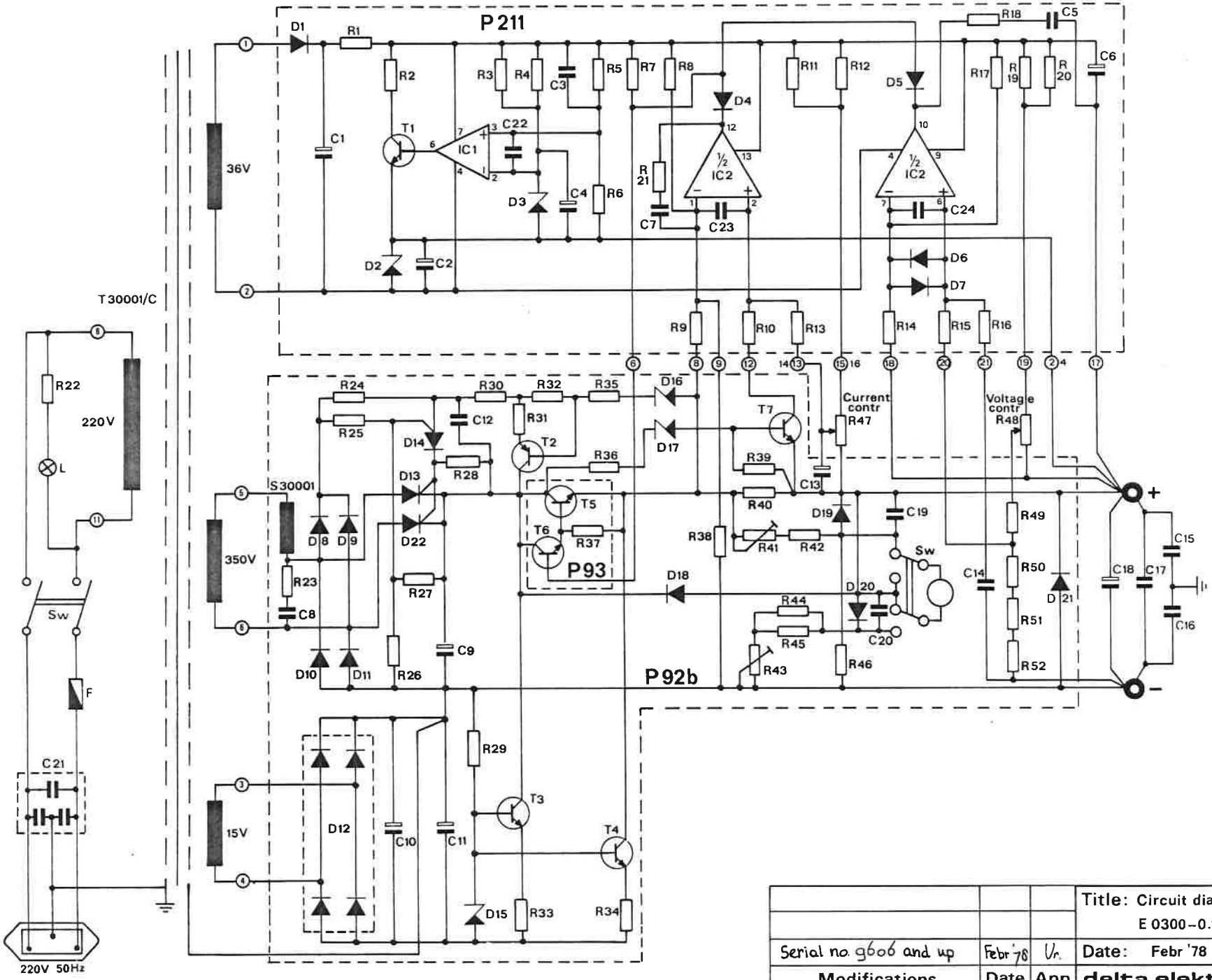
1	=	1N4003	TI
2	=	ZY 6,2	ITT
3	=	1N 825	ITT
4	=	1N4148	ITT
5	=	1N4148	ITT
6	=	1N4148	ITT
7	=	1N4148	ITT
8	=	1N4007	TI
9	=	1N4007	TI
10	=	1N4007	TI
11	=	1N4007	TI
12	=	KB10-B80C1000	Hermann
13	=	HS 64 S	Hutson
14	=	2N6027	RCA
15	=	ZP 6,2	ITT
16	=	ZY 12	ITT
17	=	ZY 82	ITT
18	=	1N4007	TI
19	=	1N4148	ITT
20	=	1N4148	ITT
21	=	1N4007	TI
22	=	HS 64 S	Hutson

IC

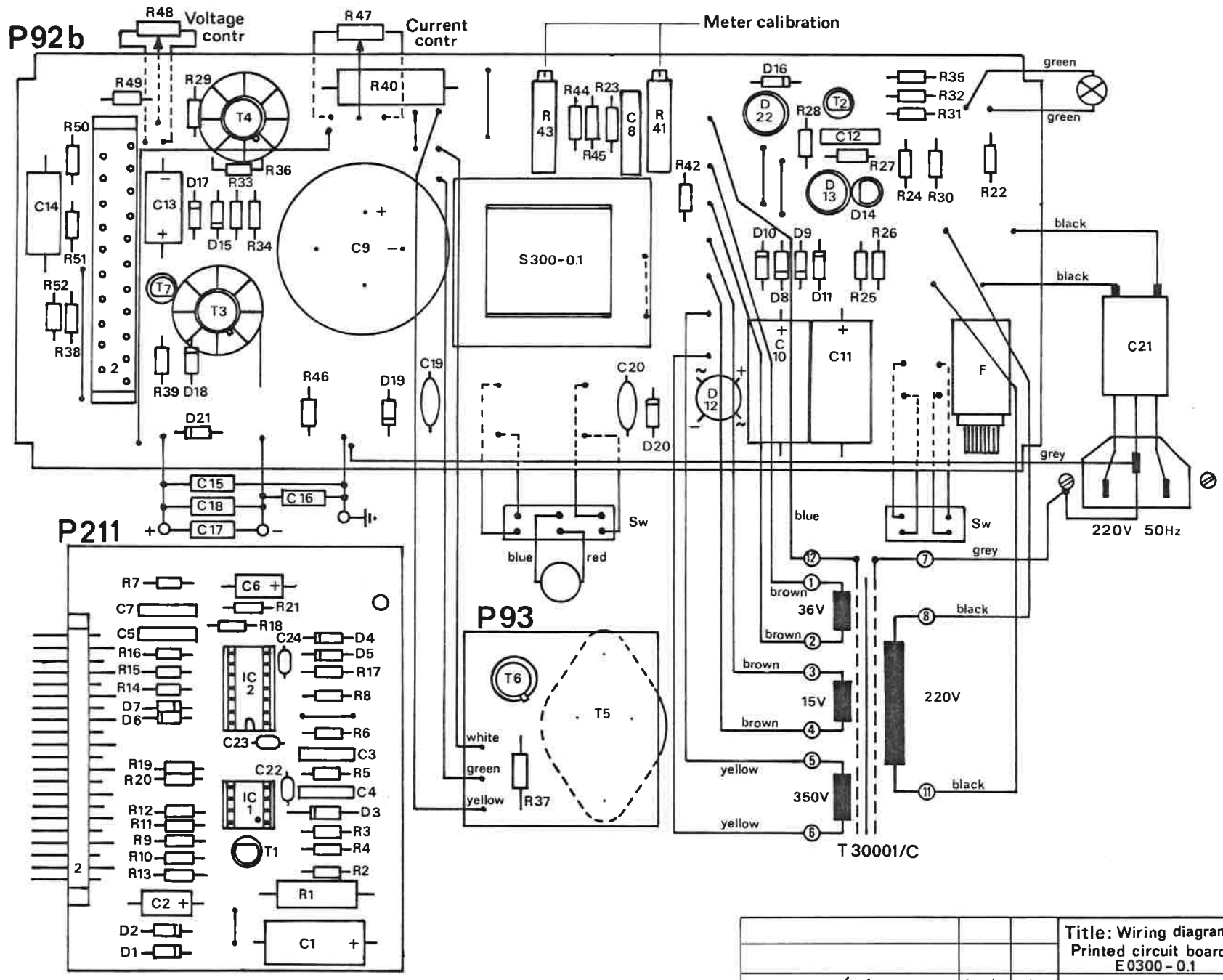
1	=	SN 72741 P	TI
2	=	SN 72747	TI

CR = Calibration resistor.
CC = Calibration capacitor.
WW = Wire wound resistor.
All other resistors 0,4 W 2% metal-film.
tt = tantalum.
F = Fuse 1 A 5 x 20 mm.

			Title: Part list E 0300-0.1
R14 . R16	Aug'79	Ur	
Serial no. 9606 and up	Febr'78	Ur	Date: Febr '78
Modifications	Date	App.	delta elektronika bv



			Title: Circuit diagram E 0300-0.1
Serial no 9606 and up	Febr 78	Vr.	Date: Febr '78
Modifications	Date	App	delta elektronika bv



			Title: Wiring diagram Printed circuit boards E 0300 - 0.1
Serial no. 9606 and up	Febr '78	Vr	Date: Febr '78
Modifications	Date	App	delta elektronika bv

DELTA ELEKTRONIKA BV

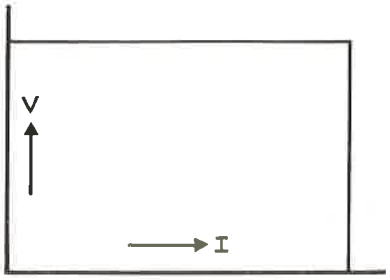
P.O. BOX 27
ZIERIKZEE
NETHERLANDS
TELEPHONE (01110) 3656

REGULATED POWER SUPPLY E 0300-0.1

0-300 V, 0-100 mA

DESCRIPTION

The power supply E 0300-0.1 can be used as a constant voltage source with a limited current or as a constant current source with a limited open voltage. The change of mode occurs sharply at the crossing of the voltage and current settings.



CONSTANT VOLTAGE OPERATION

Voltage control	10-turn potentiometer, range 0-300 V.
Voltage regulation	10 mV for a + or − 10 % AC input voltage variation. 60 mV for a 0-100 % load variation.

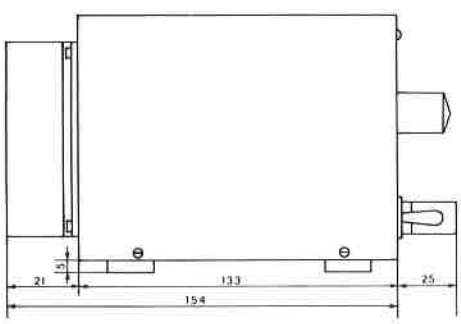
Temp. coeff.	2.10^{-4} per °C from maximum output voltage.
Ripple voltage	0.5 mV r.m.s.
Output impedance	Maximum 10 Ohm up to 100 kHz.
Recovery time	30 micro seconds for recovery to within the load regulation specifications after a step load change from 10 % to 100 %.

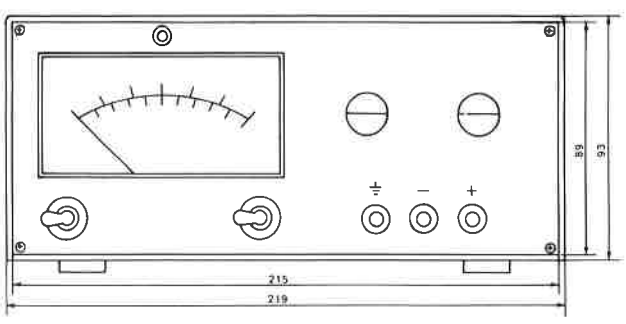
CONSTANT CURRENT OPERATION

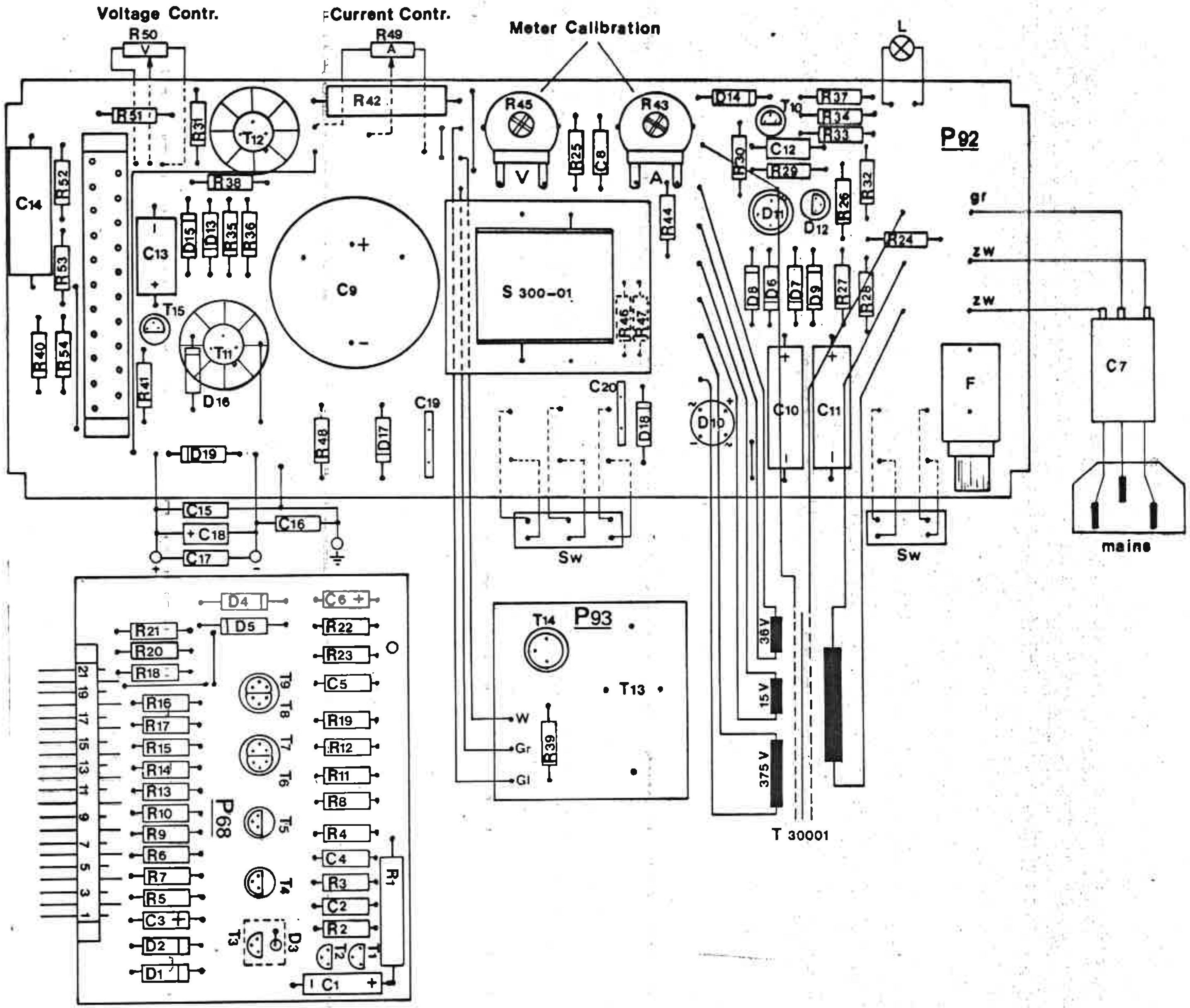
Current control	Single turn potentiometer, range 0-100 mA.
Current regulation	0.05 mA for a + or − 10 % AC input voltage variation. 0.5 mA for a maximum output voltage swing.
Temp. coeff.	5.10^{-4} per °C from maximum output current.
Ripple current	0.2 mA r.m.s.

REMAINING SPECIFICATIONS

Input voltage	220 V, 50 Hz. Other input voltages at special order.
Parallel and series connection	Special design enables parallel and series operation. For safety reasons not more than two units should be series connected.
Ambient temp.	− 20 to + 50 °C.
Meter	Meter with selector switch for voltage and current, accuracy 1.5 % f.s.
Finish	Light grey front panel with dark grey case.
Weight and size	2.8 kg 219 x 93 x 154 mm.







Voltage Contr.
R50
V
Current Contr.
R49
A
Meter Calibration
R45
R43
R42
P92
L
gr
zw
zw
C7
maine
F
Sw
Sw
S 300-01
C9
C14
C13
T12
T11
T15
D16
D19
C15
C18
C16
C17
C19
C20
D18
D10
C10
C11
36 V
15 V
375 V
T 30001
P93
T14
T13
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R39
P68
D4
D5
C6
R22
R23
C5
R19
R12
R11
R8
R4
C4
R3
C2
R2
R1
C1
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D3
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T5
T6
T7
T8
T9
R21
R20
R18
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C3
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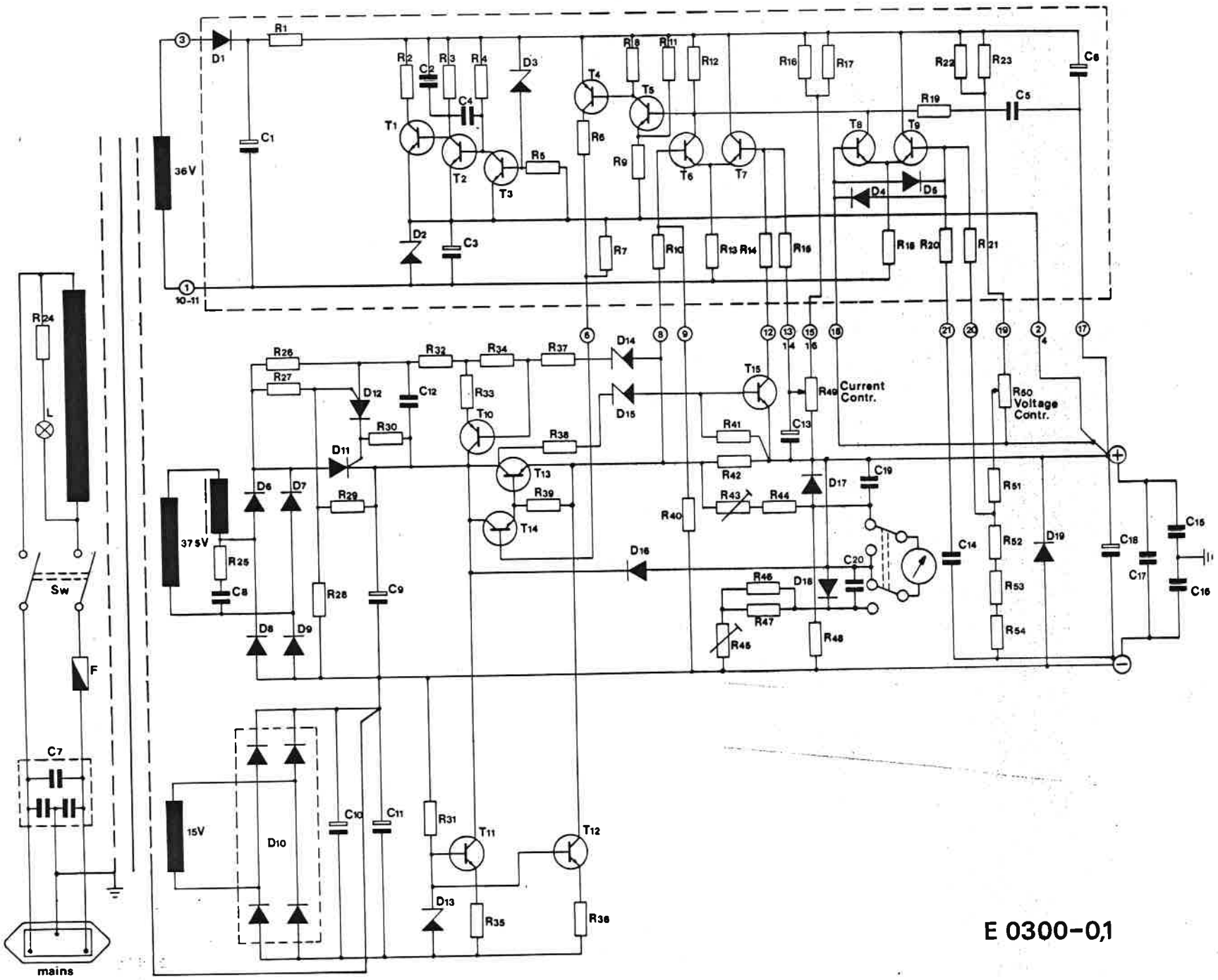
E 0300-0,1


36V
37.5V
15V
mains
Sw
L
F
Current Contr.
Voltage Contr.
D1
D2
D3
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D5
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C17
C18
C19
C20

E 0300-0,1

PART LIST

R (Ohm)

1 =	680	1 W
2 =	150	
3 =	10	k
4 =	10	k
5 =	150	
6 =	33	
7 =	1	k
8 =	2, 2	k
9 =	2, 2	k
10 =	470	
11 =	2, 7	k
12 =	22	k
13 =	6, 8	k
14 =	100	
15 =	1	k
16 =	27	k
17 =	12	k
18 =	6, 8	k
19 =	150	
20 =	470	
21 =	470	
22 =	CR	
23 =	100	
24 =	560	k
25 =	2, 2	k
26 =	270	k
27 =	270	k
28 =	2,2	M
29 =	27	k
30 =	100	
31 =	15	k
32 =	1	k
33 =	470	
34 =	68	k
35 =	3, 3	k
36 =	3, 3	k
37 =	1, 2	M
38 =	10	k
39 =	120	
40 =	3, 9	M
41 =	10	k
42 =	22	5 W WW
43 =	1	k var.
44 =	1, 5	k
45 =	10	k var.
46 =	330	k
47 =	2, 7	M
48 =	15	M
49 =	5	k potm.
50 =	1	k 10 turn potm.
51 =	5, 6	k
52 =	100	k
53 =	100	k
54 =	100	k

D

1 =	1N 4003	TI
2 =	ZY 6, 2	ITT
3 =	ZP 6, 3	ITT
4 =	1N 4148	ITT
5 =	1N 4148	ITT
6 =	1N 4007	TI
7 =	1N 4007	TI
8 =	1N 4007	TI
9 =	1N 4007	TI
10 =	W 005	GI
11 =	106 M1	RCA
12 =	D 13 T 1	G.E.
13 =	ZP 6, 2	ITT
14 =	ZY 12	ITT
15 =	ZY 82	ITT
16 =	1N 4007	TI
17 =	1N 4148	ITT
18 =	1N 4148	ITT
19 =	1N 4007	TI

T

1 =	BC 182	TI
2 =	BC 182	TI
3 =	BC 182	TI
4 =	BC 212	TI
5 =	BC 182	TI
6 =	BC 182	TI
7 =	BC 182	TI
8 =	BC 182	TI
9 =	BC 182	TI
10 =	BC 212	TI
11 =	2N 3439	RCA
12 =	2N 3439	RCA
13 =	BU 132	Philips
14 =	2N 3439	RCA
15 =	BC 182	TI

C (microfarads)

1 =	47	63 V
2 =	0, 01	250 V
3 =	22	15 V
4 =	0, 01	250 V
5 =	0, 047	250 V
6 =	22	15 V
7 =	0, 07 uF + 2 x 2500 pF - 250 V ERO	
8 =	0, 01	250 V
9 =	100	450 V
10 =	220	35 V
11 =	220	35 V
12 =	0, 047	250 V
13 =	10	35 V
14 =	0, 22	630 V
15 =	0, 0033	500 V
16 =	0, 0033	500 V
17 =	0, 22	630 V
18 =	4, 7	350 V
19 =	0, 01	500 V
20 =	0, 01	500 V

WW = Wire wound resistor

CR = Calibration resistor

All other resistors $\frac{1}{2}$ W 2% metal film

F = Fuse 1 A 5 x 20 mm
2 A for 117 V