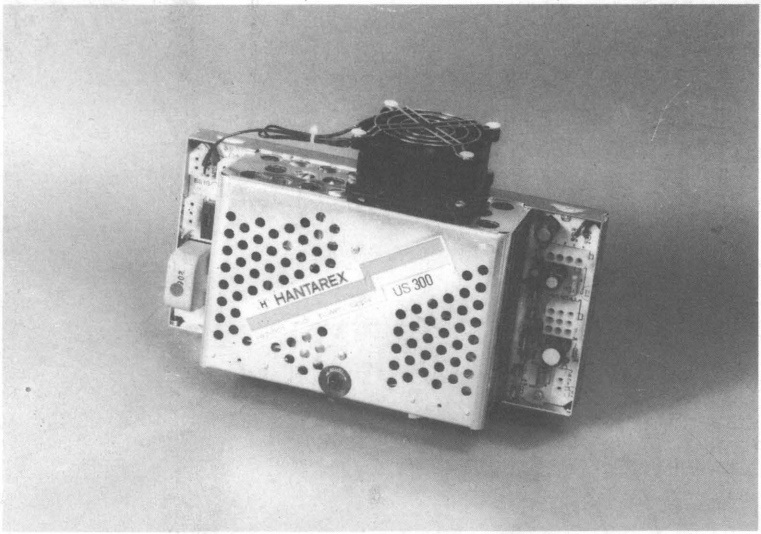
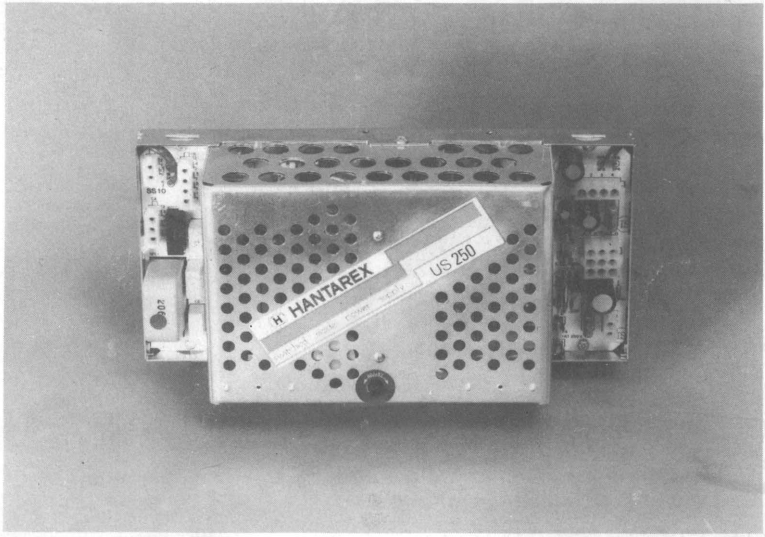


HANTAREX®

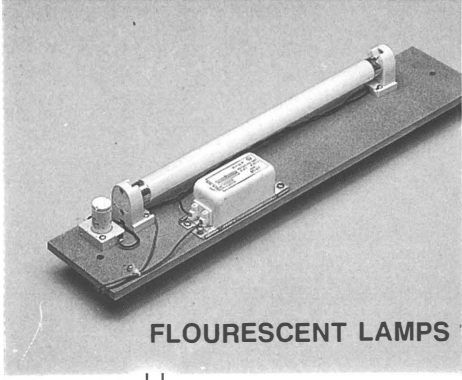
Electronic
Equipment
Manufacturer

US 250
US 300

universal switched-mode power supply

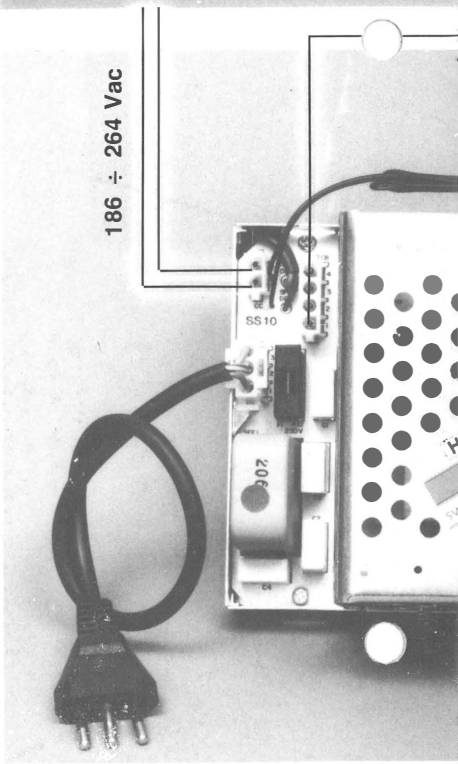


US 250/10A
US 300/15A
VENTILATO
VENTILATED



alimentatore a commutazione per basse e alte tensioni

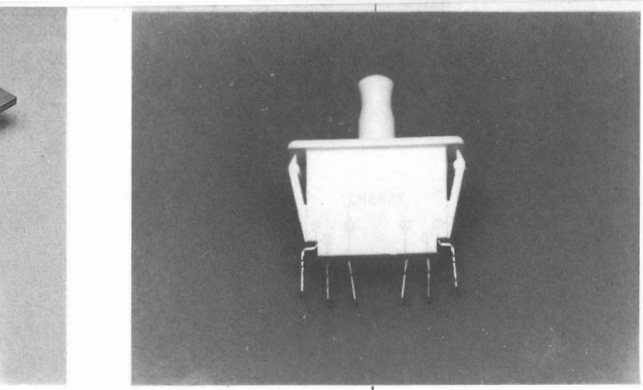
universal switched-mode power supply



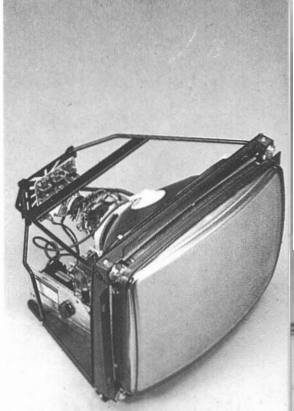
MAINS 186 ÷ 264 Vac

La prerogativa più importante di questi alimentatori è la possibilità di **alimentare totalmente e direttamente una macchina per Video-Games** senza alcun tipo di trasformatore (né tradizionale a lamierini, né toroidale, o nucleo C + C). Gli alimentatori sono in grado di alimentare contemporaneamente:
— il monitor a colori,
— la piastra logica,
— la lampada neon,
— le eventuali lampadine delle plancia
— le lampadine delle gettoniera.

The most important feature is the ability to ***provide a Video Games machine totally and directly*** *without a laminated core or toroidally wound mains transformer.*
They simultaneously provide the following supplies:
— *the colour monitor,*
— *the logic board,*
— *all the illumination lamps comprising the fluorescent lamp behind the silk-screened panel, controls panel and the coin mechanism door.*



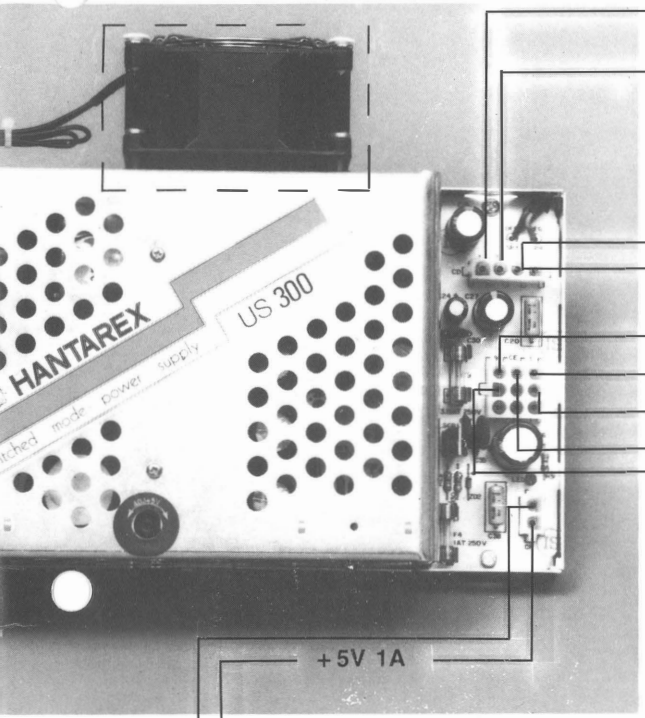
MAINS INTERLOCK SWITCH



COLOUR MONITOR

135 Vdc

DEGAUSS



+5V 1A

+12V 2A

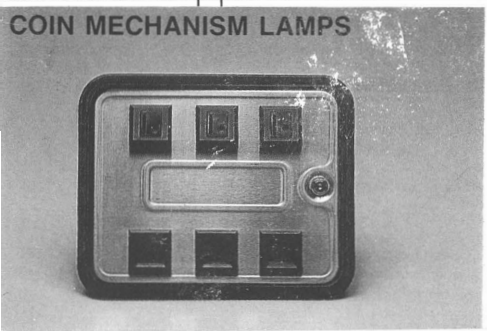
GND

+5V 10A or 15A

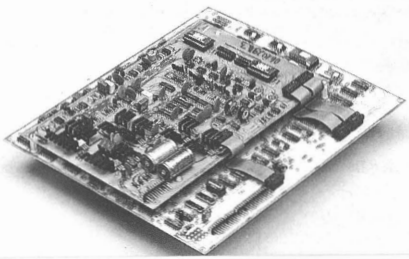
—12V 0.5A

—5V 1A

COIN MECHANISM LAMPS



LOGIC BOARD



CARATTERISTICHE TECNICHE
TECHNICAL CHARACTERISTICS

US 250

CARATTERISTICHE D'INGRESSO / *INPUT CHARACTERISTICS*	
tensione di rete / *Vac voltage*	186 ÷ 264 Vac
frequenza / *frequency*	50 ÷ 60 Hz
Corrente di spunto / *switch-on inrush current*	<30 A PEAK
CARATTERISTICHE DI USCITA / *OUTPUT CHARACTERISTICS*	
alimentazione monitor *monitor supply*	135 ± 10% Vdc 0.6 A max protetto elettronicamente dal cortocircuito *electronically protected from short-circuit*
alimentazione logica *logic circuit supply*	5 ± 2% Vdc - *3A min. - 10A max* aggiustabile tra 4.5 *e* 5.5 V *adjustable between 4.5 and 5.5 V* protetto elettronicamente da sovraccarico *e* cortocircuito *electronically protected from short-circuit*
	12 ± 6% Vdc da 0.2 a 2A protetto da fusibile *protected by fuse*
	—12 ± 6% Vdc da 0.2 a 0.5A protetto elettronicamente *protected from overload*
	—5 ± 6% Vdc da 0 a 1A protetto elettronicamente *protected from overload*

NOTA - la tensione di uscita del 5 Vdc non può superare, anche in caso di guasto, 6 Vdc grazie alla presenza di un circuito tipo CROW-BAR.

NOTE *- the 5 Vdc output can never exceed 6 Vdc in the event of breakdown as it is protected by a CROW-BAR circuit.*

USCITE AUSILIARI / *AUXILIARY OUTPUT*	
lampade sportello / *door lamps*	+ 5% Vdc 1A Max protetto da fusibile / *protected by fuse*
degaussing monitor / *degaussing monitor*	186 ÷ 264 Vac protetto da fusibile /*protected by fuse*
neon / *neon lamps*	186 ÷ 264 Vac protetto da fusibile / *protected by fuse*
ONDULAZIONE RESIDUA SU USCITE BASSA TENSIONE AI MAX CARICHI ***RESIDUAL A.C. VOLTAGE ON LOW VOLTAGE OUTPUTS AT MAXIMUM LOADS***	<20 mVpp
ONDULAZIONE RESIDUA SU USCITA ALIMENTAZIONE MONITOR ***RESIDUAL A.C. VOLTAGES ON MONITOR FEED OUTPUT***	<200 mVpp
TEMPO DI MANTENIMENTO DELLE TENSIONI DI USCITA AL CADERE DELLA RETE ***TIME OUTPUT VOLTAGE ARE MAINTAINED AFTER REMOVAL OF MAINS INPUT VOLTAGE***	>20 ms
ISOLAMENTO (fra rete e uscite) ***INSULATION (mains input to D.C. outputs)***	1500 Vac (classe 1 - IEC65)
TEMPERATURA AMBIENTE DI LAVORO ***AMBIENT WORKING TEMPERATURE***	—5°C + 50°C alimentatore montato verticalmente *power supply mounted vertically*
TEMPERATURA DI IMMAGAZZINAMENTO ***AMBIENT STORAGE TEMPERATURE***	—20°C to + 85°C
PESO NETTO/*NET WEIGHT*	Kg. 1.750

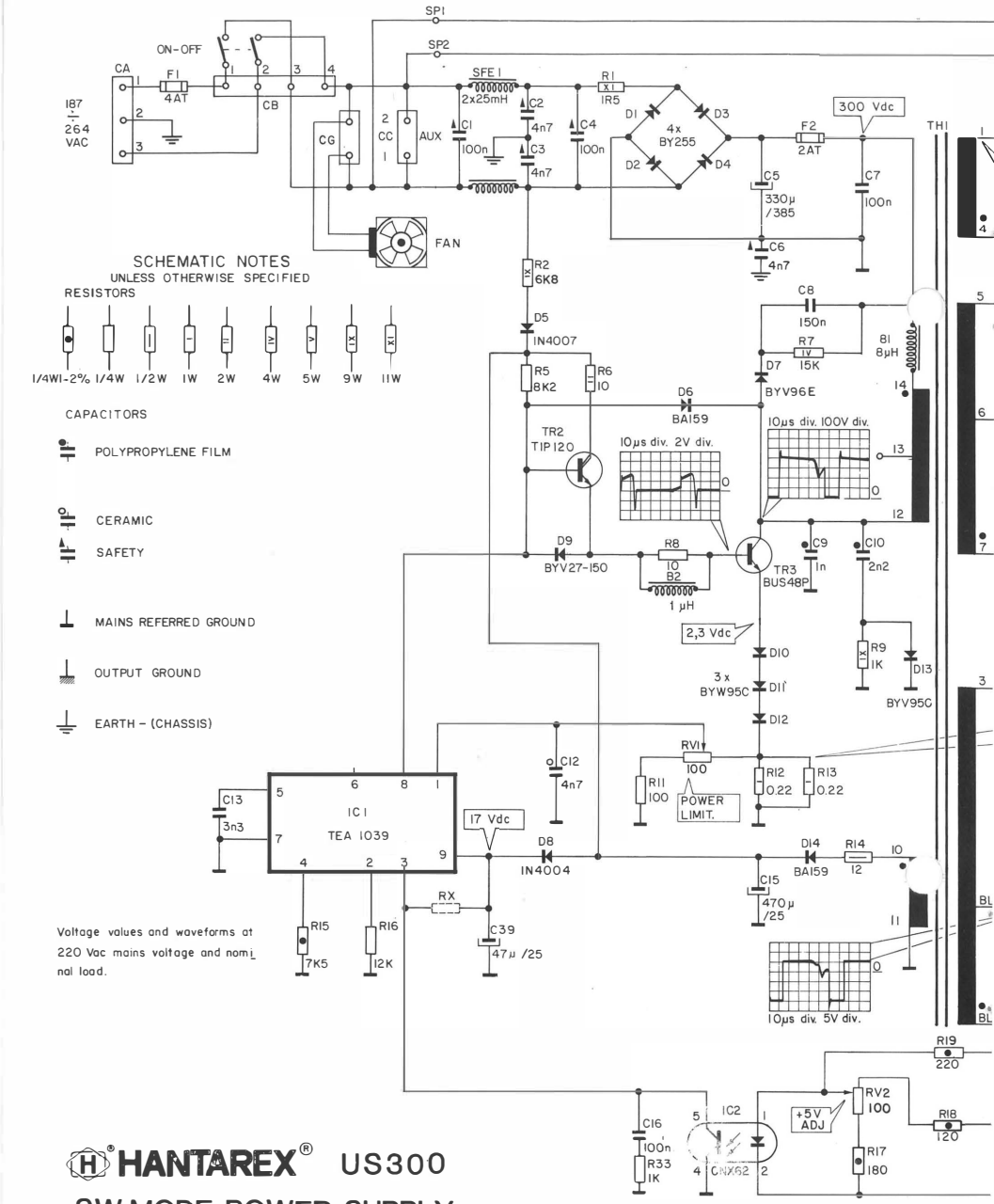
US 300

CARATTERISTICHE D'INGRESSO / *INPUT CHARACTERISTICS*	
Tensione di rete / *Vac voltage*	186 ÷ 264 Vac
frequenza / *frequency*	50 ÷ 60 Hz
Corrente di spunto / *switch-on inrush current*	< 30 A PEAK
CARATTERISTICHE DI USCITA / *OUTPUT CHARACTERISTICS*	
alimentazione monitor *monitor supply*	135 ± 10% Vdc 0.6 A max protetto elettronicamente dal cortocircuito *electronically protected from short-circuit*
alimentazione logica *logic circuit supply*	5 ± 2% Vdc - *3A min.* - 15 *A max* aggiustabile tra 4.5 *e* 5.5 V *adjustable between 4.5 and 5.5 V* protetto elettronicamente da sovraccarico e cortocircuito *electronically protected from short-circuit*
	12 ± 6% Vdc da 0.2 a 2A protetto da fusibile *protected by fuse*
	—12 ± 6% Vdc da 0.2 a 0.5A protetto elettronicamente *protected from overload*
	—5 ± 6% Vdc da 0 a 1A protetto elettronicamente *protected from overload*

NOTA - la tensione di uscita del 5 Vdc non può superare, anche in caso di guasto, 6 Vdc grazie alla presenza di un circuito tipo CROW-BAR.

***NOTE** - the 5 Vdc output can never exceed 6 Vdc in the event of breakdown as it is protected by a CROW-BAR circuit.*

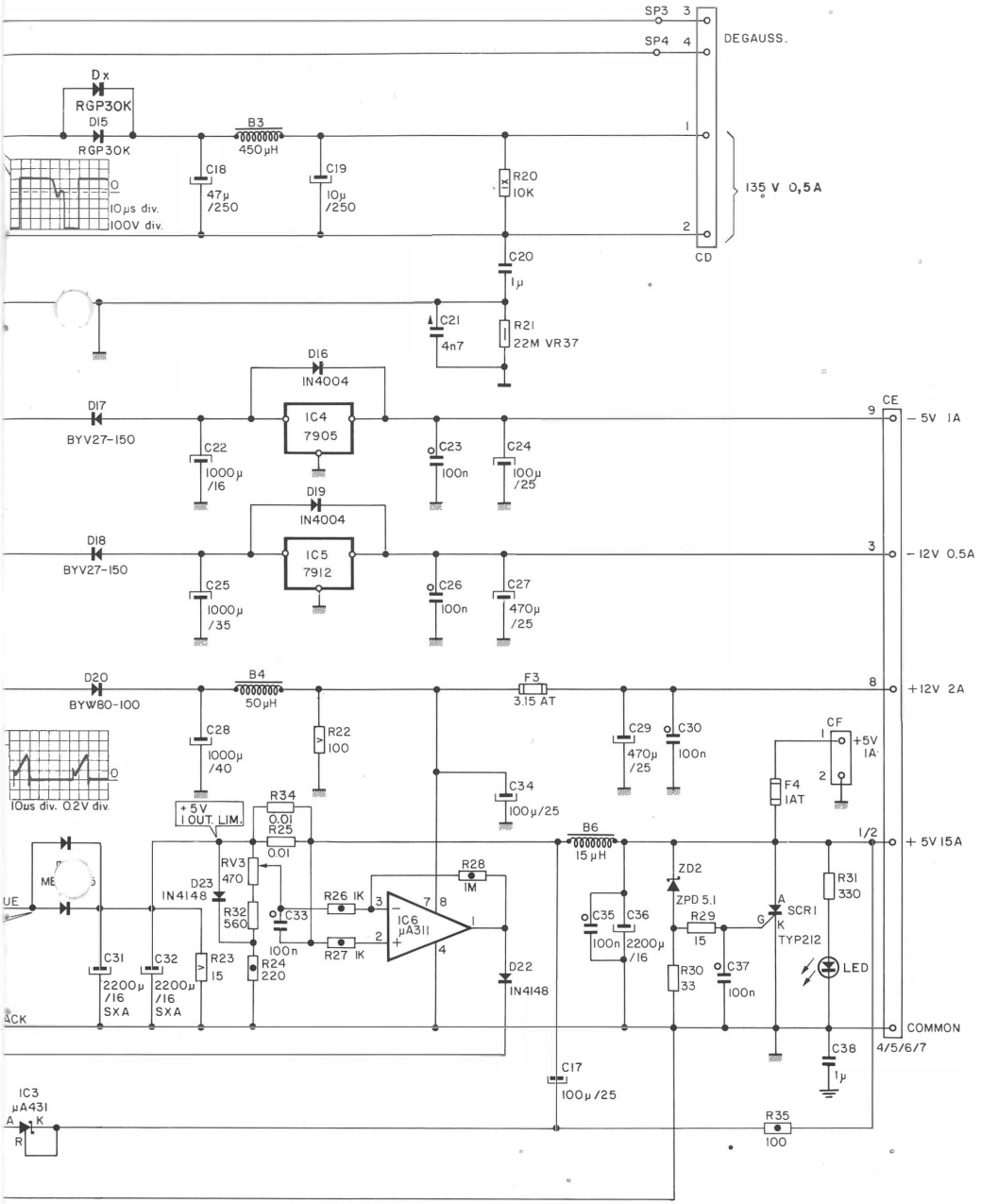
USCITE AUSILIARI / *AUXILIARY OUTPUT*	
lampade sportello / *door lamps*	+ 5% Vdc 1A Max protetto da fusibile / *protected by fuse*
degaussing monitor / *degaussing monitor*	186 ÷ 264 Vac protetto da fusibile /*protected by fuse*
neon / *neon lamps*	186 ÷ 264 Vac protetto da fusibile / *protected by fuse*
ventilatore / *fan*	186 ÷ 264 Vac protetto da fusibile / *protected by fuse*
ONDULAZIONE RESIDUA SU USCITE BASSA TENSIONE AI MAX CARICHI ***RESIDUAL A.C. VOLTAGE ON LOW VOLTAGE OUTPUTS AT MAXIMUM LOADS***	< 20 mVpp
ONDULAZIONE RESIDUA SU USCITA ALIMENTAZIONE MONITOR ***RESIDUAL A.C. VOLTAGES ON MONITOR FEED OUTPUT***	< 200 mVpp
TEMPO DI MANTENIMENTO DELLE TENSIONI DI USCITA AL CADERE DELLA RETE ***TIME OUTPUT VOLTAGE ARE MAINTAINED AFTER REMOVAL OF MAINS INPUT VOLTAGE***	> 20 ms
ISOLAMENTO (fra rete e uscite) ***INSULATION (mains input to D.C. outputs)***	1500 Vac (classe 1 - IEC65)
TEMPERATURA AMBIENTE DI LAVORO ***AMBIENT WORKING TEMPERATURE***	—5°C + 50°C alimentatore montato verticalmente *power supply mounted vertically*
TEMPERATURA DI IMMAGAZZINAMENTO ***AMBIENT STORAGE TEMPERATURE***	—20°C to + 85°C
PESO NETTO/*NET WEIGHT*	Kg. 2.100

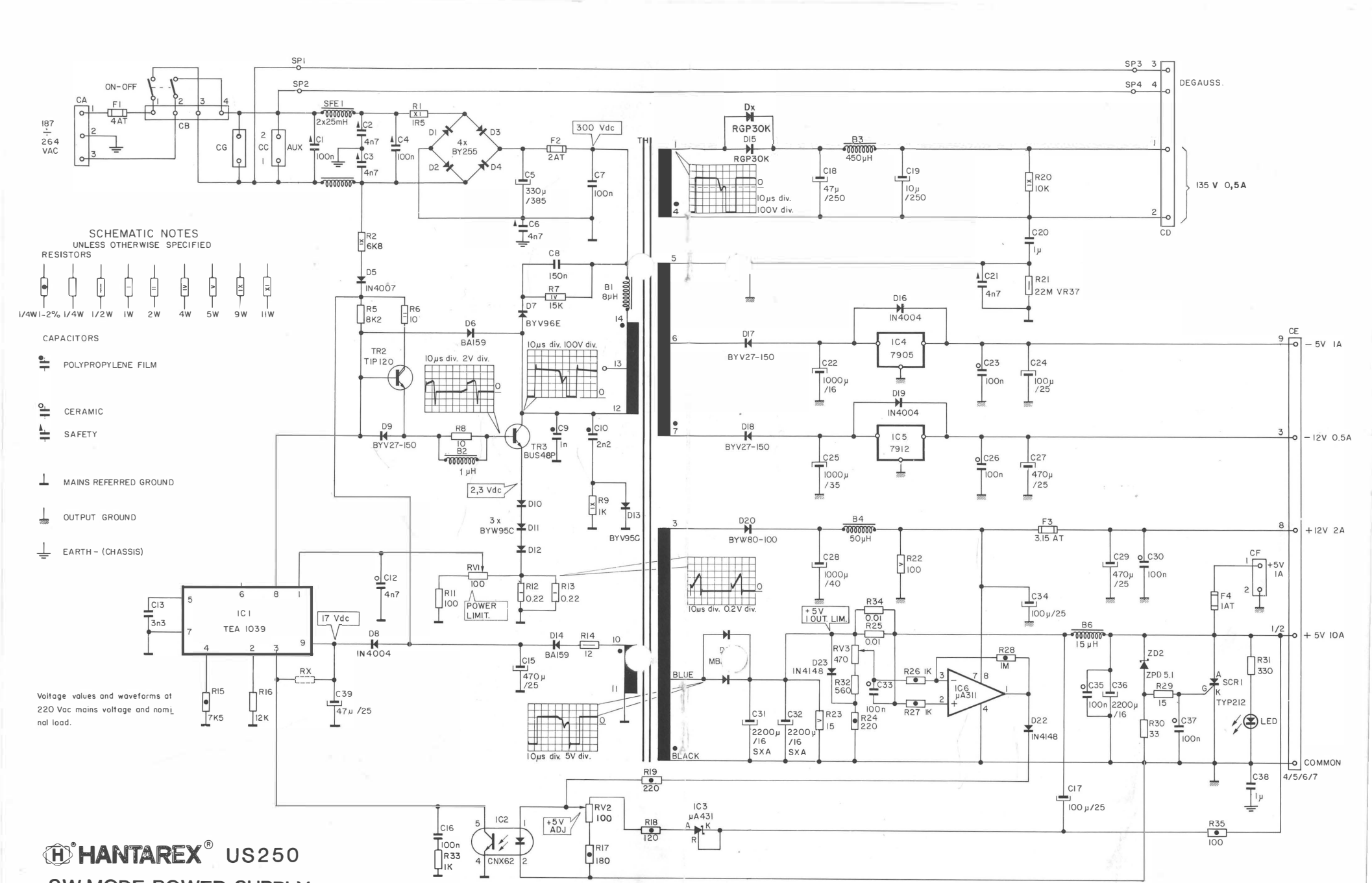


HANTAREX® US300

SW.MODE POWER SUPPLY

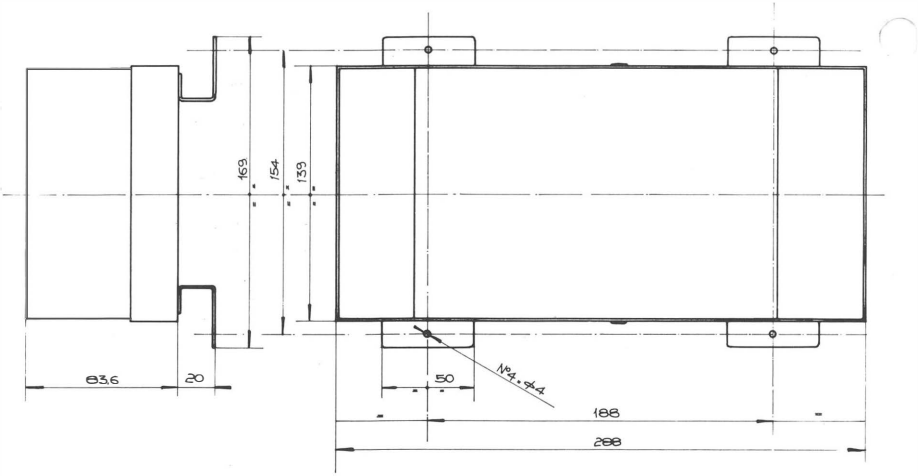
SCHEMATIC DIAGRAM 28/10/86

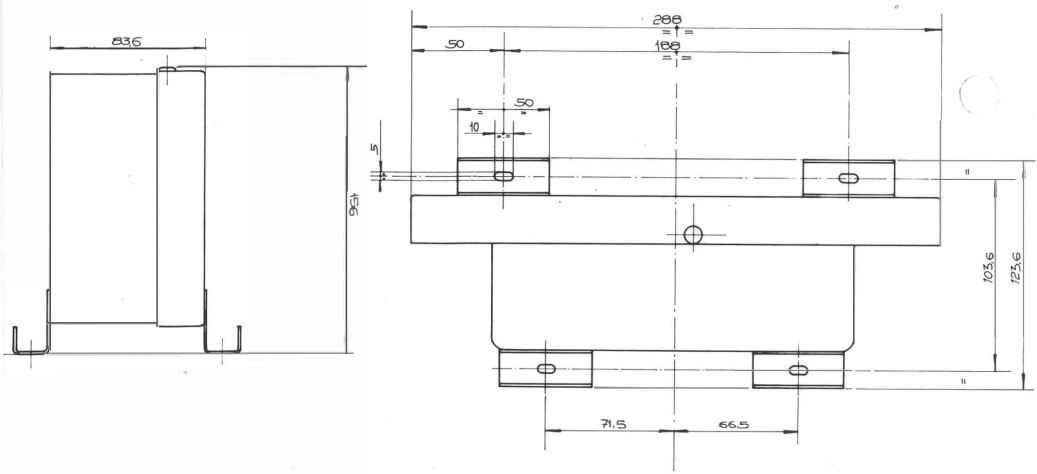

SP3 3
SP4 4
DEGAUSS.
Dx
RGP30K
DI5
RGP30K
B3
450µH
C18
47µ
/250
C19
10µ
/250
R20
10K
135 V 0,5A
1
2
CD
10µs div.
100V div.
C20
1µ
C21
4n7
R21
22M VR37
DI6
IN4004
DI7
BYV27-150
IC4
7905
C22
1000µ
/16
C23
100n
C24
100µ
/25
CE
9
- 5V 1A
DI9
IN4004
DI8
BYV27-150
IC5
7912
C25
1000µ
/35
C26
100n
C27
470µ
/25
3
- 12V 0.5A
D20
BYW80-100
B4
50µH
F3
3.15 AT
8
+12V 2A
C28
1000µ
/40
R22
100
C29
470µ
/25
C30
100n
CF
+5V
1A
10µs div. 0.2V div.
+5V
I OUT LIM.
R34
0.01
R25
0.01
C34
100µ/25
F4
1AT
B6
15µH
1/2
+ 5V 15A
RV3
470
D23
IN4148
R32
560
C33
100n
R26 1K
R27 1K
IC6
µA311
R28
1M
ZD2
ZPD 5.1
C35
100n
C36
2200µ
/16
R29
15
SCR1
TYP212
R31
330
R30
33
C37
100n
LED
C31
2200µ
/16
SXA
C32
2200µ
/16
SXA
R23
15
R24
220
D22
IN4148
COMMON
4/5/6/7
C38
1µ
C17
100µ/25
IC3
µA431
R35
100


SCHEMATIC NOTES
UNLESS OTHERWISE SPECIFIED
RESISTORS
1/4W 1-2% 1/4W 1/2W 1W 2W 4W 5W 9W 11W
CAPACITORS
POLYPROPYLENE FILM
CERAMIC
SAFETY
MAINS REFERRED GROUND
OUTPUT GROUND
EARTH - (CHASSIS)
Voltage values and waveforms at 220 Vac mains voltage and nominal load.
187 ÷ 264 VAC
ON-OFF
F1 4AT
SP1
SP2
SP3
SP4
DEGAUSS.
SFE1 2x25mH
BY255
300 Vdc
F2 2AT
RGP30K
135 V 0,5A
IN4007
BYV96E
BA159
TIP120
BUS48P
BYV27-150
IN4004
BYW80-100
7905
7912
3.15 AT
TEA 1039
17 Vdc
POWER LIMIT.
+5V 1 OUT LIM.
μA311
μA431
CNX62
+5V ADJ
SCR1 TYP212
ZPD 5.1
LED
BLUE
BLACK
COMMON 4/5/6/7
+5V 1A
-5V 1A
-12V 0.5A
+12V 2A
+5V 10A
HANTAREX® US250
SW.MODE POWER SUPPLY
SCHEMATIC DIAGRAM 28/10/86

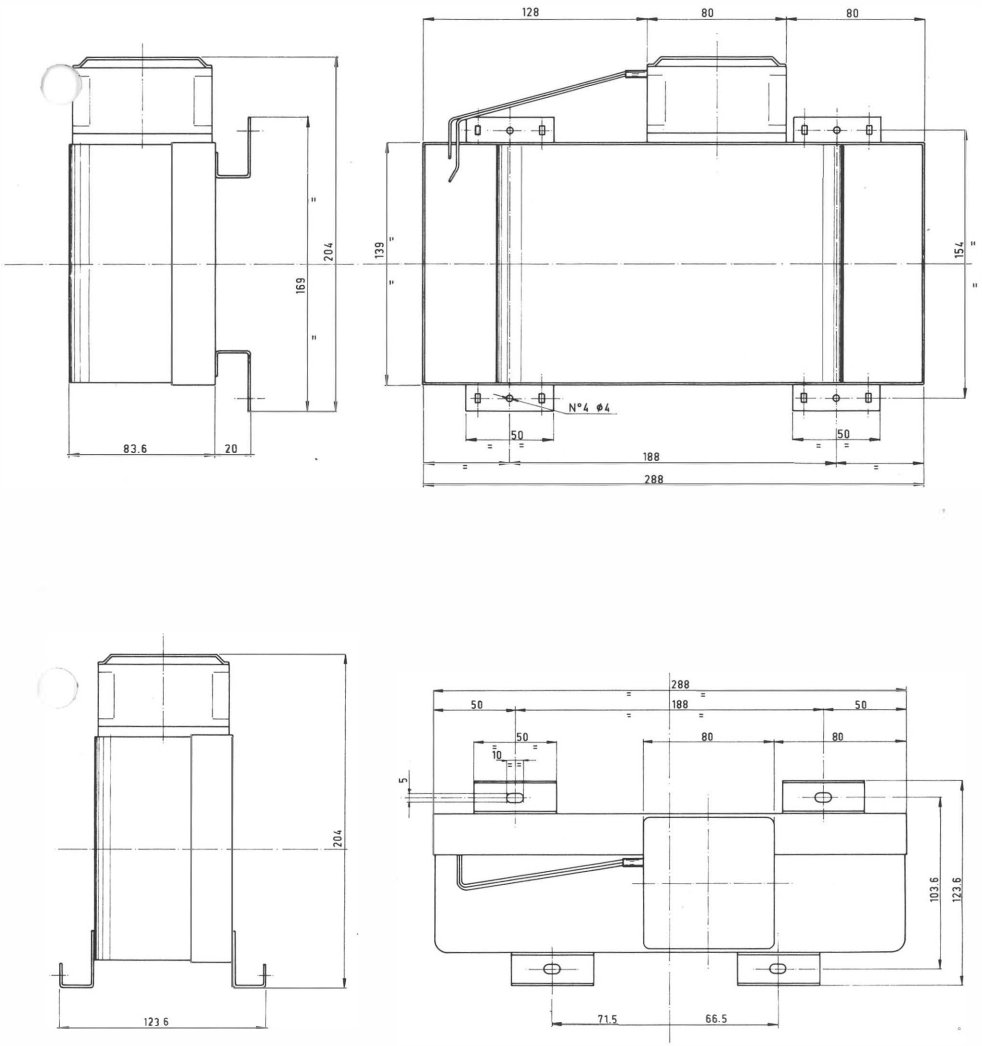
CARATTERISTICHE MECCANICHE
MECHANICAL DATA

US 250





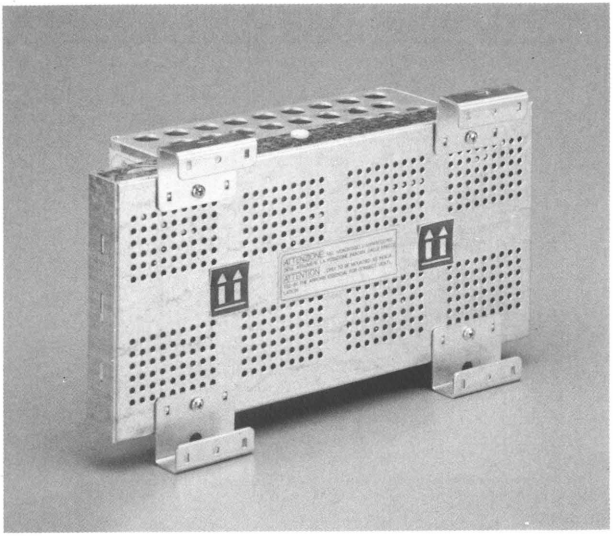
US 300

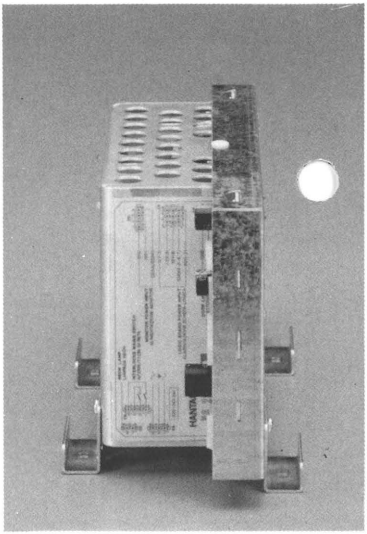

128
80
80
204
169
139
154
83.6
20
N°4 ⌀4
50
50
188
288
204
123.6
288
188
50
50
50
80
80
10
5
103.6
123.6
71.5
66.5

MONTAGGIO PIEDINI E CONSIGLI PER L'INSTALLAZIONE
FIXING MOUNTING BRACKETS AND INSTALLATION INSTRUCTIONS

Estrema facilità di montaggio/smontaggio con due posizioni realizzabili tramite opportuni piedini, facenti funzione di staffe o guide, forniti con l'alimentatore stesso.

Extreme ease of mounting and unmounting with two-position feet, serving the dual purpose of bracket and guide. These are provided with each power unit.



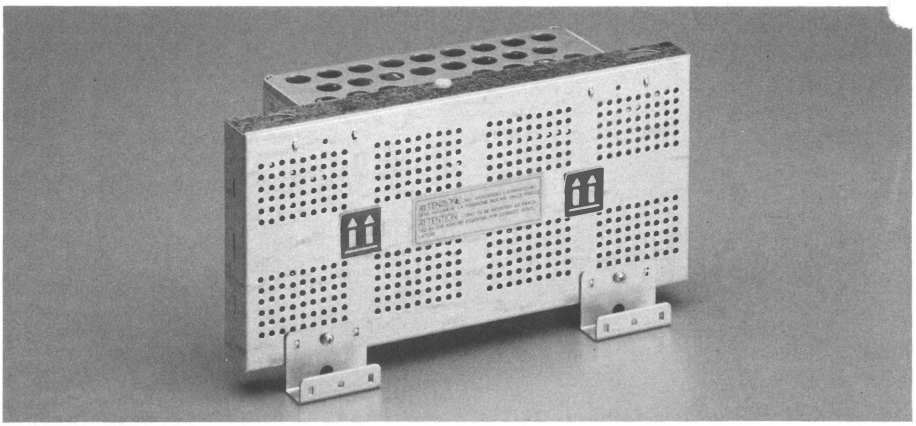


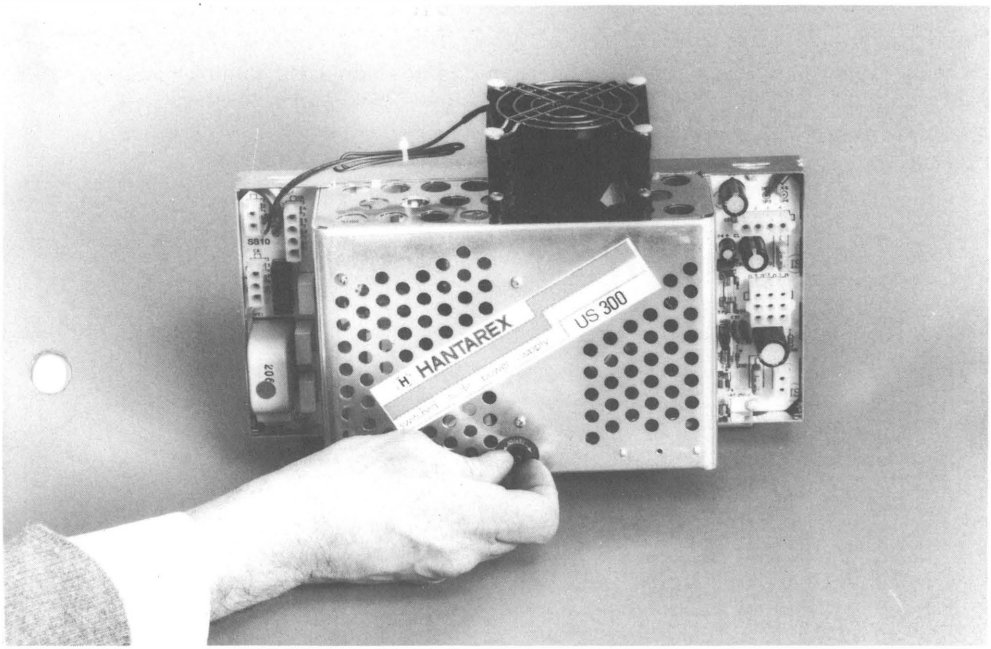
IMPORTANTE

Montare l'alimentatore verticalmente come indicato dalle frecce, per una corretta ventilazione (vedi foto).

IMPORTANT

For a good ventilation, assemble the power supply vertically as in the photo.





Per aggiustare la tensione di uscita fra 4.5 e 5.5 V, agire sul trimmer dall'esterno, come indicato nella fotografia.

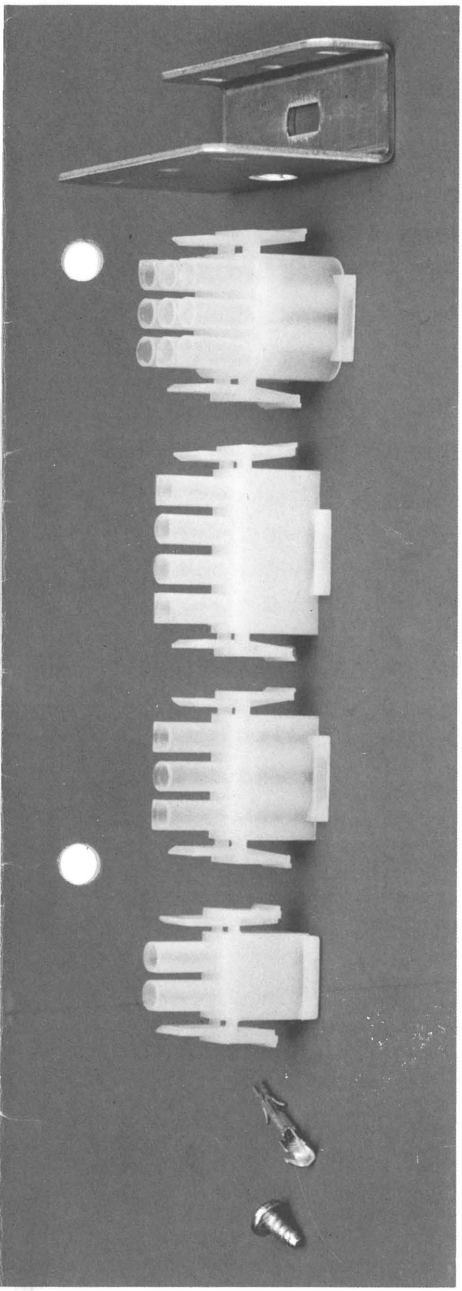
The output voltage can be set between + 4.5 and +5.5 V by means of RV2.

PARTS LIST — US 250 / US 300

CODE	DESCRIPTION	REF. N°	QTY.
20100000	DIODE 1N 4148 B	D 22-23	2
20100010	DIODE BA 159	D 6-14	2
20110060	ZENER DIODE 1/2 W ZPD 5,1 V	ZD 2	1
20140010	OPTOCOUPLER CNX 62	IC 2	1
20150004	DIODE 1N 4004	D 8-16-19	3
20150007	DIODE 1N 4007	D 5	1
20150130	DIODE BY 255	D 1-2-3-4	4
20150170	DIODE BYV 95/C	D 13	1
20150220	DIODE BYW 80-100	D 20	1
20150230	DIODE BYW 95/C - 600	D 10-11-12	3
20150410	DIODE BYV 96/E	D 7	1
20150430	DIODE BYV 27/150	D 9-17-18	3
20150290	DIODE RGP 30K	D 15-DX	2
20150530	SCHOCTKY DIODE MBR 3045	D 21	1
20180003	RED LED DIODE 3 mm	—	1
20410500	TRANSISTOR TIP 120	TR 2	1
20430030	TRANSISTOR BUS 48 P	TR 3	1
20440030	THYRISTOR TYP 212	SCR 1	1
20620071	INTEGRATED CIRCUIT uA 7905	IC 4	1
20620065	INTEGRATED CIRCUIT uA 7912	IC 5	1
20620400	INTEGRATED CIRCUIT TEA 1039	IC 1	1

20620610	INTEGRATED CIRCUIT LM 311	IC 6	1
20620620	INTEGRATED CIRCUIT TL 431 CLP	IC 3	1
21000000	WIREWOUND RESISTOR 0,01 E	R 25 - R 34	1
21221000	RESISTOR 1/4 W 5% 10 E	R 8	1
21221500	RESISTOR 1/4 W 5% 15 E	R 29	1
21223300	RESISTOR 1/4 W 5% 33 E	R 30	1
21230000	RESISTOR 1/4 W 5% 100 E	R 11	1
21231801	RESISTOR 1/4 W 1% 180 E	R 17	1
21222202	RESISTOR 1/4 W 1% 220 E	R 19-24	2
21233300	RESISTOR 1/4 W 5% 330 E	R 31	1
21235600	RESISTOR 1/4 W 5% 560 E	R 32	1
21241002	RESISTOR 1/4 W 1% 1 K	R 26-27	2
21247501	RESISTOR 1/4 W 2% 7,5 K	R 15	1
21248200	RESISTOR 1/4 W 5% 8,2 K	R 5	1
21251200	RESISTOR 1/4 W 5% 12 K	R 16	1
21271001	RESISTOR 1/4 W 1% 1 M	R 28	1
21231200	RESISTOR 1/2 W 5% 12 E	R 14	1
21382201	RESISTOR 1/2 W 5% 22 M 232224213226	R 21	1
21402200	RESISTOR 1 W 10% 0,22 E VTM 200-0	R 12-13	
21521000	RESISTOR 10 E 10% 2 W	R 6	
21751500	METAL OXIDE RESISTOR A W 15 K	R 7	1
22121501	VERTICAL WIREWOUND RESISTOR 5 W 10% 15 E	R 23	1
22131000	VERTICAL WIREWOUND RESISTOR 5 W 100% 15 E	R 22	1
22441000	VERTICAL WIREWOUND RESISTOR 1 K 9 W 10%	R 9	1
22446800	VERTICAL WIREWOUND RESISTOR 6,8 K 9 W 10%	R 2	1
22451000	VERTICAL WIREWOUND RESISTOR 10 K 9 W 10%	R 20	1
22511500	VERTICAL WIREWOUND RESISTOR 1,5 E 11 W 10%	R 1	1
23031001	HORIZONTAL TRIMMER PT 10 V 100 E	RV 1-2	2
23034703	VERTICAL TRIMMER PT 10 H 470 E	RV 3	1
24341002	ELECTROLYTIC CAPACITOR EN 12.35 1000 uF 16 V-40 + 105°C	C 22	1
24342200	ELECTROLYTIC CAPACITOR EN 12.35 2200 uF 16 V	C 36	1
24424700	ELECTROLYTIC CAPACITOR EN 12.35 47 uf 25 V	C 39	1
24431000	ELECTROLYTIC CAPACITOR EN 12.35 100 uF 25 V	C 17-24-34	3
24434700	ELECTROLYTIC CAPACITOR EN 12.35 470 uF 25 V	C 27-29	2
24532210	ELECTROLYTIC CAPACITOR EN 12.35 220 uF 35 V-40 + 105°C	C 11	1
24541002	ELECTROLYTIC CAPACITOR EN 12.35 1000 uF 35 V-40 + 105°C	C 25	1
24541001	ELECTROLYTIC CAPACITOR EN 12.35 1000 uF 40 V D 18 H 35	C 28	1
24921000	ELECTROLYTIC CAPACITOR EN 12.35 10 uF 250 V	C 19	1
24924705	ELECTROLYTIC CAPACITOR EN 12.35 47 uF 250 V-40 + 105°C	C 18	1
24534710	ELECTROLYTIC CAPACITOR EN 12.35 470 uF 35 V-40 + 105°C	C 15	1
24933303	ELECTROLYTIC CAPACITOR DIN 41238 330 uF 385 V	C 5	1
25271000	POLYESTER CAPACITOR 1 uF 100 V 1.60 P 15	C 20-38	2
25461010	POLYESTER CAPACITOR 100 NF 10% 250 V 1.60 P 10	C 16	1
25661010	POLYESTER CAPACITOR 100 NF 10% 630 V 1.60 P 22,5	C 7	1
25661500	POLYESTER CAPACITOR 150 NF 10% 630 V 1.60 P 22,5	C 8	1
25743303	POLYESTER CAPACITOR 3,3 NF 5% 1000 V 1.60 P 10	C 13	1
25744702	POLYPROPILENE CAPACITOR 4700 PF 20% 250 VCA 1,72 Y	C 6-21	2
25744707	POLYPROPILENE CAPACITOR 100 PF 20% 250 VCA 1,73 Y P 15	C 2-3	2
25761002	POLYPROPILENE CAPACITOR 100 NF 20% 250 VCA 1,58 P 15	C 1-4	2
25941001	POLYPROPILENE CAPACITOR 1 NF 10% 2000 V 1,73 P 15	C 9	1
25942200	POLYPROPILENE CAPACITOR 2,2 NF 5% 1750 V 1,73 P 15	C 10	1
26447600	CERAMIC CAPACITOR 4700 PF - 20 + 80 50 V	C 23-26-30-33-35-37	6
28020100	TOROID (FERRITE B 30)	B 1	1
28020300	CHOKE 450 uH	B 3	
28020505	SWITCH TRANSFORMER 1503 FERR. E 55	TH 1	
28020600	MAINS FILTER 2 x 25 mH 1.6 A	SFE 1	1
28020610	CHOKE 50 uH 2 A	B 4	1
28021250	CHOKE 15 uH 15A	B 6	1
28020685	CHOKE 1 uH	B 2	1
29100000	SLOW-BLOING-FUSE 2 A	F 2	1
29100001	SLOW-BLOING-FUSE 1 A	F 4	1
29100004	SLOW-BLOING-FUSE 4 A	F 1	1
29100009	SLOW-BLOING-FUSE 3,15 A	F 3	1
29100080	FUSE CLIP	—	6
29100150	FUSE CARRIER STEAB	—	1
34074610	BURNDY CONNECTOR UHR 950 T 9 WAYS	CE	1
34074620	BURNDY CONNECTOR UHR 450 T 4 WAYS	CB-CD	2
34074630	BURNDY CONNECTOR UHR 350 T 3 WAYS	CA	1
34074640	BURNDY CONNECTOR UHR 250 T 2 WAYS	CC-CF	2
50420185	MICA INCULATOR X TO 220 500 V	—	4
50421130	MICA INSULATOR SOT 93 A 2000 V	—	1
50420188	MICA INSULATOR SOT 93 A 500 V	—	1
21231201	RESISTOR 1/4 W 1% 120E	R 18	1
21231001	RESISTOR 1/4 W 1% 100E	R 35	1
21241000	RESISTOR 1/4 W 5% 1 K	R 33	1
24342202	EL. CAP. 2200 NF 16 V SXA 105°C	C 31-32	2
34075030	NUVAL CONNECTOR 2 WAYS	CG	1
29030610	FAN (US 300 ONLY)	—	1
50423360	SPACER 1809 FOR FAN (US 300 ONLY)	—	4

ACCESSORI
ACCESSORIES



n° 4 Piedino supporto
Mounting bracket
(cod. Hantarex 50114410)

n° 1 Conn. Burndy UHP 901T or
Conn. Amp. Universal Mate-N-Lok -
cod. 1-480706
(cod. Hantarex 34074650)

n° 2 Conn. Burndy UHP 401T or
Conn. Amp. Universal Mate-N-Lok -
cod. 1-480702
(cod. Hantarex 34074660)

n° 1 Conn. Burndy UHP 301T or
Conn. Amp. Universal Mate-N-Lok -
cod. 1-480700
(cod. Hantarex 34074670)

n° 2 Conn. Burndy UHP 201T or
Conn. Amp. Universal Mate-N-Lok -
cod. 1-480698
(cod. Hantarex 34074680)

n° 25 Cont. Split Pin - Burndy UHM 2201G
or Cont. Split Pin - Amp.
cod. 350705-1
(cod. Hantarex 34074690)

n° 4 Vite per piedino supporto
Mounting bracket screws
B 3,9 x 6,5 UNI 659-71 ZN
(cod. Hantarex 40035066)

GARANZIA TOTALE COMPRESO MATERIALI E MANO D'OPERA MESI 6 TRASPORTI ESCLUSI

COMPLETE WARRANTY INCLUDED MATERIALS AND LABOUR MONTHS 6 TRASPORT NOT INCLUDED

DATA/DATE 17 NOV. 1988

SERIAL N.№ 94157

HANTAREX®

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