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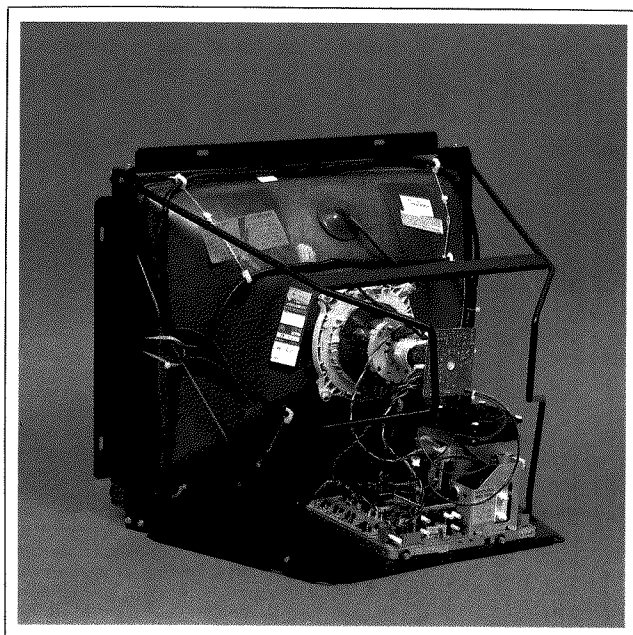


HANTAREX

ELECTRONIC SYSTEMS

MONITORS MTC 9110 25'' 28''

- **MANUALE DI SERVIZIO**
- **SERVICE MANUAL**
- **HANDBUCH**
- **MANUAL DE SERVICIO**
- **MODE D'EMPLOI**



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ENGLISH

DETAILS AND INOVATIONS OF THE MTC 9110 - 25''-28''

- 1) The MTC 9110 monitor has been designed for maximum versatility, so allowing it to be used with almost any logic board.
- 2) The 'monolithic' construction, using a single printed circuit board, makes maximum use of the automatic insertion of components, which, being free of human error, guarantees a high level of production uniformity coupled with a high level of reliability.
- 3) Completely new mechanical design with the specific object of making the unit extremely resistant to impact and vibration during transportation.
- 4) Use of two connectors (CL and CM on the printed circuit board) for the deflexion unit with cross-over wiring which permits easy inversion and reversal of the image — often an indispensable feature.
- 5) The electronics for the 25''-28''/110° incorporates a thermostat mounted on the heat sink (on the side of TR BU 508) which guarantees an exceptionally high degree of product safety and reliability. The thermostat comes into operation if its temperature reaches 75-80°, interrupting the 130 V d.c. supply so bringing the fault to the attention of the operator. This could happen if, for example, the ventilator failed, or the monitor were used in conditions of extreme ambient temperature.
- 6) All the controls which affect the display (horizontal and vertical frequency, horizontal and vertical amplitude, horizontal phase and vertical shift) are mounted on a small separate p.c.b. which is normally plugged into a connector on the main board, but may be used in conjunction with a 1.5 metre long extension cable that is available on request. This allows the control card to be mounted in a specially moulded mounting bracket in a position where the operator can easily adjust the monitor while directly viewing the image.
- 7) The video input is fed via a precision three-gang potentiometer permitting acceptance of input signals in the range 1 to 5 V p.p. without creating changes in colour balance.
- 8) Utilization of a new integrated circuit for vertical deflexion (TDA 1670A) resulting in the short vertical fly-back time of 0.7 ms, so extending the range of logic board usage.
- 9) Incorporation of a new integrated circuit in the horizontal sync. circuitry. This I.C. guarantees a positive protection against x-ray radiation and conforms with the principal international public health regulations, such as F.D.A. Federal Drug Administration.

WARNING

1) SUPPLY

The input supply of the monitor (128 V a.c.) must be fed via a mains isolating transformer.

2) EARTHING

The chassis and the heat sinks are connected to earth. To measure voltages and to inspect waveforms, connect the negative terminals of instruments to the chassis.

3) X-RAYS

The monitor has been designed to minimize x-ray radiation. Furthermore, a special safety circuit comes into operation in the event of failure to limit radiation to below 0.5 mR/h.

4) E.H.T.

Dangerously high voltages are present inside the monitor, and for safe operation it is imperative to follow all safety instructions and warnings.

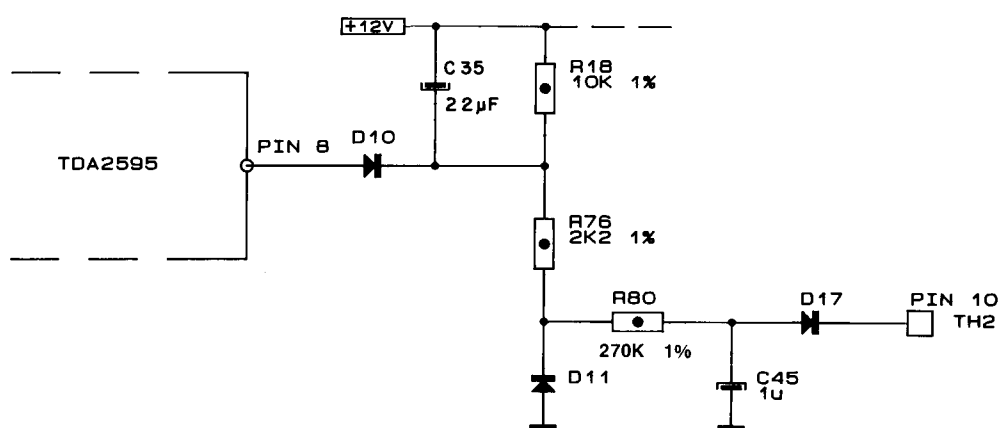
5) C.R.T.

The cathode-ray tube is a high vacuum device and its surfaces are subject to high external pressure. It is therefore necessary to handle the tube with care and to avoid impact which could cause implosion. It follows that personnel handling cathode-ray tubes during installation or during replacement, should wear thick gloves and protective clothing to protect against possible flying glass splinters.

6) WEATHER PROTECTION

To avoid the possibility of electric discharge, do not expose the monitor to rain or excessive humidity.

PROTECTION AGAINST X-RAY RADIATION



(D.H.H.S. accession n. 8720899-05)

The MTC 9110 monitor contains an x-ray protection circuit. A reference voltage is generated from the E.H.T. transformer and is fed via a resistive divider to pin 8 of I.C. TDA 2595.

The voltage appearing at pin 8 is compared with an accurate reference voltage within the I.C., and if the E.H.T. exceeds 30 kV the voltage at pin 8 operates a trigger circuit which inhibits the oscillator and hence the generation of the E.H.T.

The circuit continues to block the oscillator until the cause of the failure has been repaired, and can only be reset by completely switching-off the monitor and switching-on again.

TECHNICAL CHARACTERISTICS

1) SUPPLY

128 V a.c. $\pm 10\%$, 50/60 Hz

The supply to the monitor must be via an isolating transformer with the following characteristics:
primary 120 V a.c. (USA) 220/240 V a.c., secondary 128 V a.c. 150 W.

2) POWER CONSUMPTION

100 W max.

3) DEGAUSSING

100 $\div$ 264 V a.c. automatic.

To change to manually controlled degaussing, remove bridge P34 and insert a twin cable of the desired length into connector CD terminated in a push-button switch, enabling degaussing to be effected at any time.

4) VIDEO INPUT SIGNALS

RGB positive-going with an input impedance of 2.2 k Ω m. Input sensitivity from 1 to 5 V p.p. Input connexions as shown on page 37.

For negative-going input signals refer to the description of the «Video Invertor» on page 39.

5) VIDEO PASS BAND

-3 dB at 12 MHz

6) HORIZONTAL BLANKING

12 μ s

7) VERTICAL BLANKING

1 ms

8) SYNC. SIGNALS

Horizontal and vertical, positive or negative, composite or separate. Input impedance 2.2 k Ω m. Input level between 1.5 and 5 V p.p. Input connexions as shown on page 37.

Selection of positive or negative input is made by switch SW4 (see page 37).

9) SCANNING FREQUENCIES

Horizontal 15.625 $\pm$ 0.5 kHz: adjustable.

Vertical 45-65 Hz: adjustable.

10) CONTROLS

Contrast, brightness, focus, horizontal frequency, horizontal phase, horizontal amplitude, horizontal linearity, vertical frequency, vertical shift and vertical amplitude. For further details see page 37.

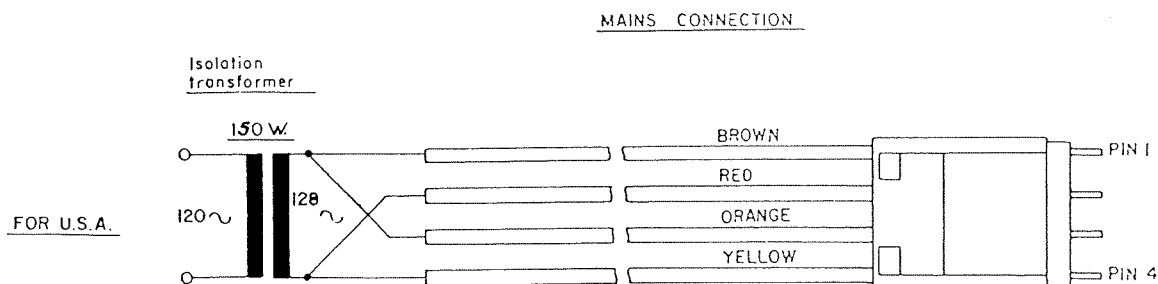
INSTALLATION AND SETTING-UP INSTRUCTIONS

- 1) SUPPLY
Check that the h.t. line voltage of the monitor at test point TP10 is 130 V d.c. $\pm$ 3%.
- 2) HORIZONTAL OSCILLATOR
Remove the incoming sync. signal (for which one may use SW4) and turn RV5 to obtain a stationary image. Reconnect the sync. input signal.
- 3) VERTICAL OSCILLATOR
Adjust RV1 to obtain a slow roll-over of the image in a downward direction. Turn back until the image locks.
- 4) FEED VOLTAGE TO VERTICAL DEFLEXION CIRCUIT
Check that the voltage at TP13 is 26 V d.c. $\pm$ 5%. See page 35.
- 5) FEED VOLTAGE TO VIDEO AMPLIFIER
Check that the voltage at TP1 is 24 V d.c. $\pm$ 5%. See page 35.
- 6) FEED VOLTAGE TO VIDEO OUTPUT AMPLIFIER
Check that the voltage at TP14 is 200 V d.c. $\pm$ 5%. See page 35.
- 7) ADJUSTMENT OF BRIDGE COIL
Bridge Coil B3 is adjusted on the production line, but should it become necessary to re-adjust, the following procedure should be adopted:
 - a) Adjust RV4 on board CG for minimum horizontal amplitude.
 - b) Adjust the ferrite core of B3 for minimum horizontal amplitude.
 - c) Re-adjust RV4 to obtain the desired amplitude.
- 8) ADJUSTMENT OF EAST/WEST CIRCUIT
Adjust pre-set resistor RV401 on module KK (see page 37) to obtain the best vertical geometry.
- 9) ADJUSTMENT OF GAIN OF RGB VIDEO OUTPUT STAGES
Having inserted RGB signals of equal amplitude to the inputs, turn the blue gain control RV206, located on the c.r.t. neck board ZG, to its mid-position and adjust the Contrast Control P1 so that the video signal measured with an oscilloscope at the blue cathode is 100 V p.p. Adjust the signals at the cathodes of the red and green guns to the same value by adjustment of RV202 and RV201. See page 37.
- 10) ADJUSTMENT OF «WHITE»
 - a) Remove the video input signal.
 - b) Turn RV7 on the c.r.t. grid 1, to maximum brightness.
 - c) Turn the black level controls situated on the c.r.t. neck board, RV203 red, RV204 green and RV205 blue, to minimum (clockwise).
 - d) Reduce the brightness by adjusting the voltage on grid 2 by means of the control situated on the line output transformer TH2 so that the dominant colour is only just visible, and then adjust the black level controls to obtain the best white possible.
 - e) The G2 «Screen» potentiometer functions as the brightness control.
- 11) FOCUS
Adjust the focus control (FOCUS situated on the line output transformer TH2) using a dot pattern signal, with medium brightness, to give the best focus obtainable.
- 12) HORIZONTAL LINEARITY
Using a grid pattern signal, adjust for the last square on the right to be equal in size to the first square on the left.

OPERATING INSTRUCTIONS

- 1) Insert the supply cable to the power input connector CC. See page 37.
 - 2) Insert the signal and sync. cable to the input connector CA. See page 37.
 - 3) Set sync. selector switch SW4 to positive or negative according to the type of input signal, so as to obtain a locked image horizontally and vertically. See page 37.
 - 4) Next adjust vertical amplitude, vertical frequency, horizontal amplitude, horizontal phase, vertical shift, horizontal frequency, East-West, brightness and contrast to match the applied signal. See page 37.
- Finally it may be necessary to trim to the colour and white adjustments. See para. 9 and 10 page 10.

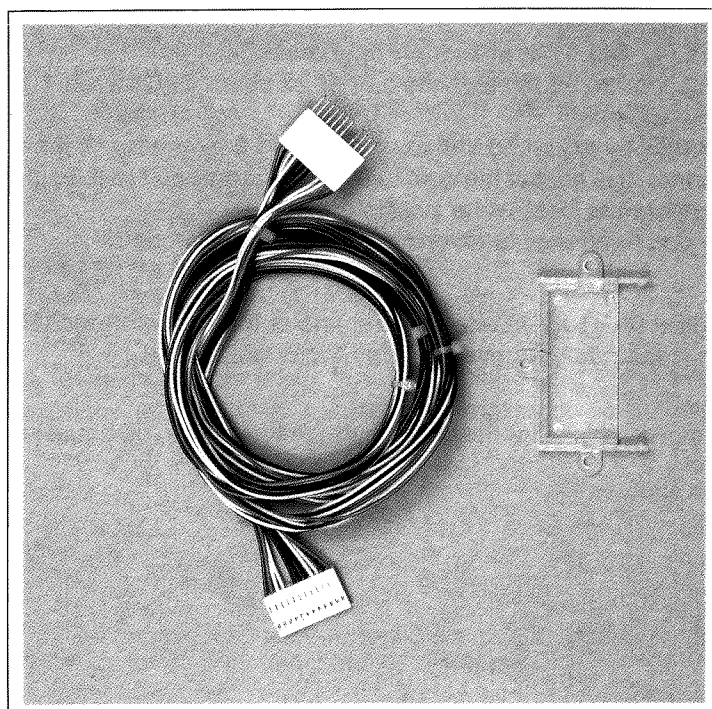
MONITOR POWER INPUT CONNEXION SCHEMATIC (U.S.A. ONLY)



REMOTE CONTROL

The following controls are all mounted on a small printed circuit board CG: vertical frequency, vertical amplitude, vertical shift, horizontal frequency, horizontal phase, horizontal amplitude. The board is fitted with a socket connector which is plugged into a mating plug connector CF on the main board, and may be removed and re-connected via a 1.5 metre cable (available on request) enabling the operator to adjust all those controls from the front of the monitor.

The cable and the special plastic support frame for remotely mounting the control board can be ordered by quoting part no. 62008440 Remote Control Assembly.



PARTS LIST

MAIN P.C.B. ASSEMBLY 25"-28"/110°			
CODE	DESCRIPTION	REF.NO.	Q.TY
20110300	ZENER DIODE 1.3 W ZY 100	ZD2	1
20150150	DIODE BY 584 (BY 184)	D27	1
20150170	DIODE BYV 95/C - 600	D13	1
20150210	DIODE BY 228	D12	1
20410100	TRANSISTOR BDX 53 A	TR17	1
20430320	TRANSISTOR BU 508 A	TR15	1
20430470	TRANSISTOR TIPL 762	TR20	1
20430570	TRANSISTOR BU 801	TR19	1
20670270	INTEGRATED CIRCUIT TDA 2595	IC2	1
20670950	INTEGRATED CIRCUIT TDA 1670A	IC1	1
21000160	PHILIPS PTC 2322.662.96011 110/220V	PTC1	1
21351601	METAL FILM RES. 16K 1% 1/2W	R113-114	2
21416800	METAL OXIDE RESISTOR 6.8E 5% 1W	R120	1
21452200	METAL OXIDE RESISTOR 22K 5% 1W	R107	1
21453300	METAL OXIDE RESISTOR 33K 5% 1W	R110	1
21454700	METAL OXIDE RESISTOR 47K 5% 1W	R119-72	2
21541001	METAL OXIDE RESISTOR 1K 5% 2W	R73-82	2
21621000	METAL OXIDE RESISTOR 10E 5% 3W	R111-112	2
21651200	METAL OXIDE RESISTOR 12K 5% 3W	R101	1
21744700	METAL OXIDE RESISTOR 4.7K 10% 4W	R95	1
22142200	METAL OXIDE RESISTOR 2.2K 5% 5W	R74	1
22414700	WIREWOUND RESISTOR VERT. 4.7E 5% 9W	R81	1
22451000	WIREWOUND RESISTOR 10K 10% 9W	R97	1
22712200	WIREWOUND RESISTOR 2.2E 10% 17W	R99	1
22933300	AXIAL WIREWOUND RES. 330E 10% 30W	R105	1
23062203	CARBON TRIMMER 220K HORIZ. PT10V	RV7	1
23241009	POTENTIOMETER 1K 232250590002	P1	1
24341000	RADIAL ELECT. CAPACITOR 1000MF 16V	C15-16	2
24514702	RADIAL ELECT. CAPACITOR 4.7MF 50V	C42	1
24541000	RADIAL ELECT. CAPACITOR 1000MF 35V	C57	1
24822201	RADIAL ELECT. CAPACITOR 22MF 160V	C34	1
24922200	RADIAL ELECT. CAPACITOR 22MF 200V	C54	1
24934710	RADIAL ELECT. CAPACITOR 470MF 200V	C53	1
25144703	FILM CAPACITOR 4.7NF 63V 5%	C28	1
25362200	FILM CAPACITOR 1.60 220NF 160V 10%	C47	1
25461010	FILM CAPACITOR 1.60 100NF 250V 10%	C43	1
25464710	FILM CAPACITOR 1.76 470NF 250V 10%	C37	1
25551000	FILM CAPACITOR 1.60 10NF 400V 10%	C46	1
25651200	FILM CAPACITOR 1.73 12NF 630V 10%	C41	1
25746802	FILM CAPACITOR 1.73 6.8NF 1500V 5%	C40	1
25751002	FILM CAPACITOR 1.58X10NF 250VCA 20%	C52	1
25761002	FILM CAPACITOR 1.58X100NF 250VCA 20%	C48	1
25943302	FILM CAPACITOR 1.73 3.9NF 1500V 5%	C36	1
26422608	CERAMIC CAPACITOR —20 + 50 2.2NF 500V	C50-51-55-49	4
28010590	DRIVER TRANSFORMER AT4043/01	TH1	1
28021210	BRIDGE COIL UTF49	B3	1
28025170	LINEARITY COIL UTF67	B1	1
28026030	TRANSFORMER E.H.T., 1105-E048	TH2	1
29100000	TIME-DELAY FUSE 2 A	F1	1
29100009	TIME-DELAY FUSE 3.15 A	F2	1
29100150	FUSE HOLDER C10 6A 250V		2
30000450	SWITCH. CHANG. SWITCHCRAFT KSA2251	SW4	1
34010061	FASTON LUG.M. TE115 2.8×0.8	SF1	1
34023352	AMP CONNECTOR MOD. 1-2 D280609/1	CD-CE	2
34023354	AMP CONNECTOR MOD. 1-4 D280610/1	CC	1
34023356	AMP CONNECTOR MOD. 1-6 D280611/1	CL-CM-CA	3
34075080	5WAY MALE CONN. PRESSAC UTH1859	CH	1
34075090	11WAY MALE CONN. PRESSAC UTH1861	CF	1
43000011	SPRING x TO220 UTH38		4
43000100	SPRING x RESISTOR 30W UTH635		2
50110140	RESISTOR BRACKET UTH601		4
50116101	HEATSINK UTH1569		1
50116111	MAINFRAME UTH1129		1
50420225	SPINDLE, CONTRAST CONTROL KL1-7503		1
50424220	TO3 INSULATOR UTH1986		2
50424230	TO220 ISULATOR UTH1987		1
50424310	INTEGRATED CIRCUIT INSUL. UTH2047		1
50424640	MAIN PROTECTION UTH2044		1
20400469	TRANSISTOR BC639	TR14-18-22	3
20401029	TRANSISTOR BC548 B	TR2-3-5-6-8-9-10-13	8
20401039	TRANSISTOR BC 558 B	TR1-4-7-11-12-16	6
20420119	TRANSISTOR BF 422	TR21	1
24324709	RADIAL ELECT. CAP. 47MF 16V SM	C6-14	2
24421009	RADIAL ELECT. CAP. 10MF 25V SM	C20-18-17-19-58	5
24422209	RADIAL ELECT. CAP. 22MF 25V SM	C35	2
24531009	RADIAL ELECT. CAP. 100MF 35V SM	C9-59	1
24611009	RADIAL ELECT. CAP. 1MF 63V SM	C23-38-22	3
24811009	RADIAL ELECT. CAP. 1MF 160V SM	C56	1
24911009	RADIAL ELECT. CAP. 1MF 200V	C45	1
25161019	FILM CAPACITOR 1.85 100NF 63V 5%	C12-13	2
25163319	FILM CAPACITOR 1.85 330NF 63V 5%	C10	1
25244719	MYLARD CAP. 4.7NF 100V 10%	C32	1
25251029	MYLARD CAP. 10NF 100V 10%	C24-25	2
25252209	FILM CAPACITOR 1.85 22NF 100V 10%	C30	1
25261009	MYLARD CAP. 100NF 100V 10%	C31-26	2
25262219	FILM CAP. 22.365 220NF 100V 10%	C27-33-11	3
26215109	CER.CAP.NP0 50V 15PF RTHE40SKCH150J	C1-3-5	3
26310109	CER.CAP.NP0 50V 100PF RTHE80SKCH101J	C2-4-7	3
26347109	CER.CAP.10% 50V470PF RTHE40SKYB471K	C8	1
26610609	CER.CAP.-20 + 80 50V 100NF		1
20100000	RTDSK11SKYF104Z	C29	1
20101010	DIODE 1N 4148	D4-2-1-8-10-6-25-26-11	9
20110600	ZENER DIODE 1.3 W ZPY 12 2%	ZD1	1
20130060	ZENER DIODE 2% BZX 79 B5V6	ZD3	1
20150004	DIODE BAV 20	D16-28	2
20150040	DIODE 1N 4004	D3-5-24	3
20150460	DIODE BYD 33G	D23-17-15-18-14	5
20150480	DIODE GP 15 G	D21-22-19-20	4
21211801	METAL LAYER RES. 1.8E 1% 1/4W	R46	1
21212200	CARBON RESISTOR 2.2E 5% 1/4W	R36	1
21224700	CARBON RESISTOR 47E 5% 1/4W	R8-18-28-79	4
21225600	CARBON RESISTOR 56E 5% 1/4W	R11-21-33	3
21228200	CARBON RESISTOR 82E 5% 1/4W	R3-13-20	3
21231200	CARBON RESISTOR 120E 5% 1/4W	R44-22-34-12	4
21232700	CARBON RESISTOR 270E 5% 1/4W		1
21233300	CARBON RESISTOR 330E 5% 1/4W		1
21234700	CARBON RESISTOR 470E 5% 1/4W		3
21241000	CARBON RESISTOR 1K 5% 1/4W		8
21241000	CARBON RESISTOR 1K 5% 1/4W		3
21241200	CARBON RESISTOR 1.2K 5% 1/4W		1
21241500	CARBON RESISTOR 1.5K 5% 1/4W		1
21241601	METAL LAYER RES. 1.6K 1% 1/4W		1
21241800	CARBON RESISTOR 1.8K 5% 1/4W		1
21242200	CARBON RESISTOR 2.2K 5% 1/4W		1
21242200	CARBON RESISTOR 2.2K 5% 1/4W		7
21242202	METAL LAYER RES. 2.2K 1% 1/4W		4
21242700	CARBON RESISTOR 2.7K 5% 1/4W		1
21243300	CARBON RESISTOR 3.3K 5% 1/4W		1
21244700	CARBON RESISTOR 4.7K 5% 1/4W		1
21245600	CARBON RESISTOR 5.6K 5% 1/4W		6
21246800	CARBON RESISTOR 6.8K 5% 1/4W		1
21248200	CARBON RESISTOR 8.2K 5% 1/4W		2
21251000	CARBON RESISTOR 10K 5% 1/4W		1
21251002	METAL LAYER RES. 10K 1% 1/4W		6
21251200	CARBON RESISTOR 12K 5% 1/4W		1
21251202	METAL FILM RES. 12K 1% 1/4W		1
21252200	CARBON RESISTOR 22K 5% 1/4W		1
21253300	CARBON RESISTOR 33K 5% 1/4W		1
21253900	CARBON RESISTOR 39K 5% 1/4W		1
21254700	CARBON RESISTOR 47K 5% 1/4W		3
21258201	METAL LAYER R. 82K 1% 1/4W		1
21261000	CARBON RESISTOR 100K 5% 1/4W		1
21261200	CARBON RESISTOR 120K 5% 1/4W		2
21261500	CARBON RESISTOR 150K 5% 1/4W		3
21261800	CARBON RESISTOR 180K 5% 1/4W		1
21264700	CARBON RESISTOR 470K 5% 1/4W		3
21266800	CARBON RESISTOR 680K 5% 1/4W		1
21313901	RESISTOR, NON-FLAMMABLE, 3.9E 5% 1/2W		1
21323300	CARBON RESISTOR 33E 5% 1/2W		1
21324700	CARBON RESISTOR 47E 5% 1/2W		1
21334700	CARBON RESISTOR 470E 5% 1/2W		1
21341000	CARBON RESISTOR 1K 5% 1/2W		1
21342200	CARBON RESISTOR 2.2K 5% 1/2W		1
21362700	CARBON RESISTOR 270K 5% 1/2W		1
21371004	METAL FILM RESISTOR 1M 5% 1/2W VR 37		1
50146210	MAIN P.C.B. BZ01		1
CRT SOCKET ASSEMBLY 25"-28" code 62010190			
CODE	DESCRIPTION	REF.NO.	Q.TY
20420110	TRANSISTOR BF 459	TR201-202-203	3
21411000	METAL OXIDE RES. 1E 5% 1W WK4	R216	1
21551000	METAL OXIDE RES. 10K 5% 2W	R205-206-210	3
23034706	TRIMMER VERT. REG. 470E PT10NH	RV201-202-206	3
23044700	CARBON TRIMMER HOR. REG. 4.7K PT10V		3
24921000	RADIAL ELECT. CAPACITOR 10 MF 250V	RV203-204-205	3
26422640	CER. CAP. 2.2NF 400VCA 4KUP	C205	1
29300010	SOAPSTONE INSULATORS 8 M.M.	C206	1
34010061	FASTON LUG M.FACO TE115 2.8×0.8	FS201	6
34020590	SOCKET, HOSIDEN HPS0199-020		1
50423440	HEXAGONAL SHAFT PHILIPS 822241771060		3
53840180	SOC. SHIELDING UTH1852		1
61002270	SOC WIRING ASS. UTC241		1
61005060	SOC. SIGNALS WIRING MTC9000 UTC527		1
24522209	RADIAL ELECT. CAPACITOR 22uF 35V SM	C201	1
26322709	CER.CAP.10% 50V 270PF		1
21212200	CARBON RESISTOR 2.2E 5% 1/4W	C202-203-204	3
21238200	CARBON RESISTOR 820E 5% 1/4W	R201	1
21244700	CARBON RESISTOR 4.7K 5% 1/4W	R203-207-209	3
21341000	CARBON RESISTOR 1K 5% 1/2W	R204-208-211	3
21342200	CARBON RESISTOR 2.2K 5% 1/2W	R213-214-215	3
21351000	CARBON RESISTOR 10K 5% 1/2W	R217	1
50144841	CRT SOCKET P.C.B. ZG 06	R218	1
CONTROLS P.C.B. ASSEMBLY 25"-28" code 62010210			
CODE	DESCRIPTION	REF.NO.	Q.TY
21332700	CARBON RESISTOR 270E 5% 1/2W	R116	1
21331800	CARBON RESISTOR 180E 5% 1/2W	R117	1
23041009	SEALED TRIMMER 1K HORIZ. REG. PT15NV	RV3	1
23044710	SEALED TRIMMER 4.7K HORIZ.REG.PT10NV	RV1	1
23051013	SEALED TRIMMER 10K HORIZ.REG.PT10NV	RV4-5-6	3
23062207	SEALED TRIMMER 220K HORIZ.REG.PT10NV	RV2	1
34075095	11 WAYFEMALE CONN. PRESSAC UTH1862	CG	1
34075290	POLARIZATION KEY 12/3768		1
50144830	CONTROLS P.C.B. CG		1
50423430	SHAFT PT15		1
50423440	HEXAGONAL SHAFT PHILIPS 822241771060		5
POWER IN WIRING ASSEMBLY 25"-28" code 61000120			
CODE	DESCRIPTION		Q.TY
34020002	AMP FEMALE LUGS 280702/1		4
34023404	AMP CONNECTOR 4 F 280591		1
SIGNALS INPUT WIRING ASSY 25"-28" code 61000140			
CODE	DESCRIPTION		Q.TY
34020002	AMP FEMALE LUGS 280702/1		6
34023406	AMP CONNECTOR 6 F 280592		1

C.R.T. ASSEMBLY 25" 110°		
CODE	DESCRIPTION	Q.TY
20830310	C.R.T. 25" VIDEOCOLOR A59EAS00X01	1
43000030	SPRING, C.R.T. EARTHING UTH 634	2
50420070	COIL MOUNTING 20-0539-1150	2
61007470	GROUNDING BRAIDED WIRE ASSY 25" UTC 794	1
50420080	COIL SUPPORT 20-0791-1150	4

C.R.T. ASSEMBLY 28" 110°		
CODE	DESCRIPTION	Q.TY
20830300	C.R.T. 28" S.R. VIDEOCOLOR A66EAS00X01	1
43000030	SPRING, C.R.T. EARTHING UTH 634	2
50420070	COIL MOUNTING 20-0539-1150	2
61007570	C.R.T. EARTHING CABLE 28" UTC 800	1
50420080	COIL SUPPORT 20-0791-1150	4

YOKE WIRING ASSEMBLY 25" 28" code 61001070		
CODE	DESCRIPTION	Q.TY
34020002	AMP. FEMALE LUGS 280702/1	6
34023406	AMP. CONNECTOR 6 FEM. 280592	1

DEGAUSSING COIL ASSY 25" code 61007430		
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DEGAUSSING COIL ASSY 28" code 61007560		
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C.R.T. MAINFRAME ASSY 25" 110°		
CODE	DESCRIPTION	Q.TY
40213507	SCREW M 4 x 7 036192	6
40942095	SELF TAPPING-SCREW 4.2 x 9.5	8
40963120	SELF TAPPING-SCREW 6.3 x 20 AB ZN	4
42000010	WASHER UNI 6593-69 D18 d6.6 SP2	4
50118790	LEFT LEG 25" UTH 2885	1
50118800	RIGHT LEG 25" UTH 2886	1
50118810	BASE PLATE 25" UTH 2887	1
50118820	UPPER CROSS MEMBER 25" UTH 2888	1
50118830	C.R.T. NECK REINFORCING FRAME 25" UTH 2889	1

C.R.T. MAINFRAME ASSY 28" 110°		
CODE	DESCRIPTION	Q.TY
40213507	SCREW M 4 x 7 036192	6
40942095	SELF TAPPING-SCREW 4.2 x 9.5	8
40963120	SELF TAPPING-SCREW 6.3 x 20 AB ZN	4
42000010	WASHER UNI 6593-69 D18 d.6.6 SP2	4
50118740	LEFT LEG 28" UTH 2880	1
50118750	RIGHT LEG 28" UTH 2881	1
50118760	BASE PLATE 28" UTH 2882	1
50118770	C.R.T. NECK REINFORCING FRAME 28" UTH 2883	1
50118780	UPPER CROSS MEMBER 28" UTH 2884	1

PACKING ASSEMBLY 25" 110°		
CODE	DESCRIPTION	Q.TY
52826440	SIDE PACKING BOARD 25" UTH 2903	2
52826450	BASE PLATE 25" UTH 2904	2
52826460	PACKING BOX 25" UTH 2905	1

PACKING ASSEMBLY 28" 110°		
CODE	DESCRIPTION	Q.TY
52826470	SIDE PACKING BOARD 28" UTH 2906	2
52826480	BASE PLATE 28" UTH 2907	2
52826490	PACKING BOX 28" UTH 2908	1

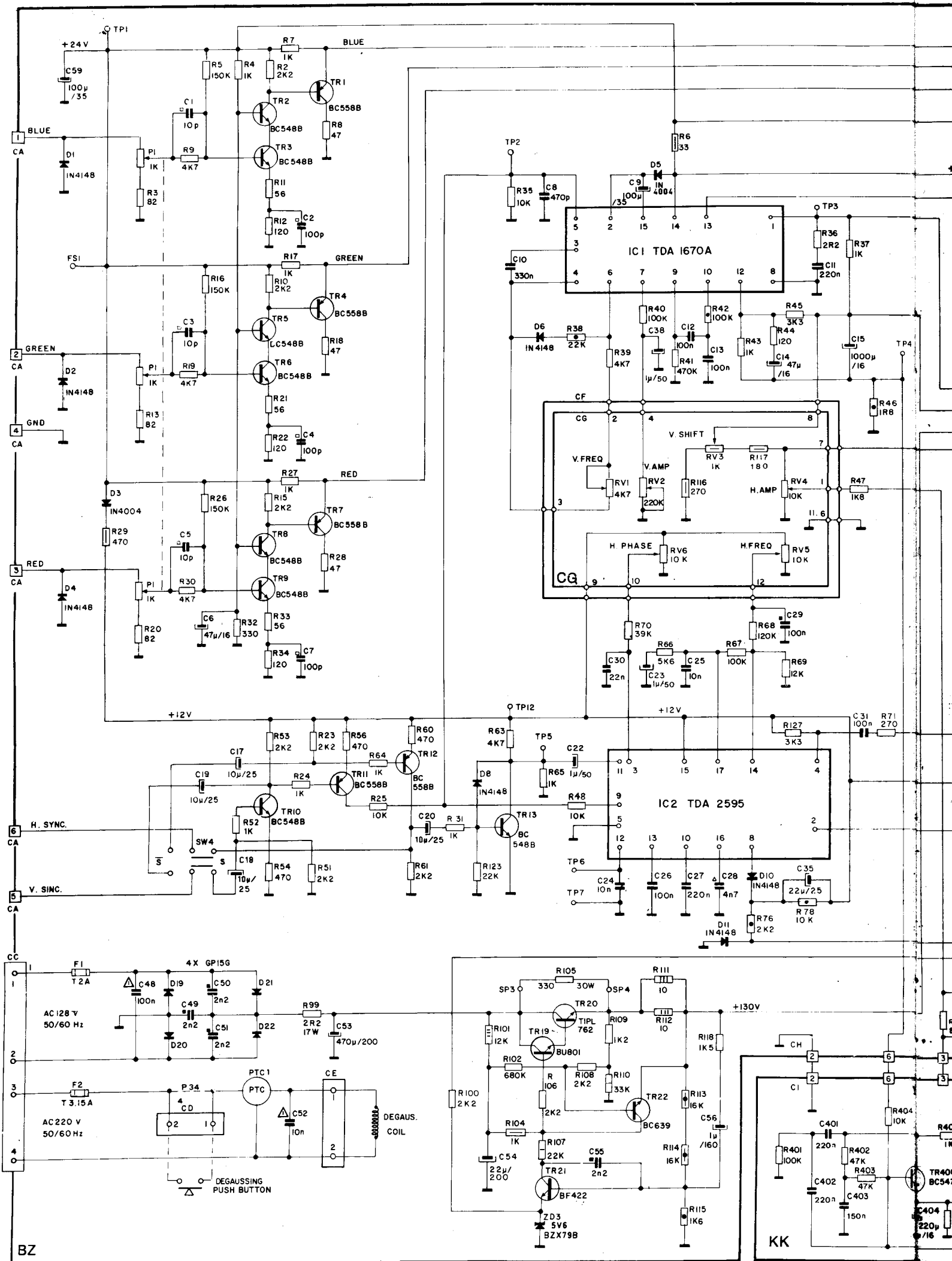
EAST-WEST P.C.B. ASSEMBLY 25" 28" code 62010220		
CODE	DESCRIPTION	REF. No. Q.TY
23044710	SEALED TRIMMER 4.7K HORIZ.REG.PT10NV	RV 401 1
34075085	5 WAY FEMALE CONN.PRESSAC.UTH 1860	C1 1
50423440	HEXAGONAL SHAFT PHILIPS 822241771060	1
21234700	CARBON RESISTOR 470E 5% 1/4 W	R 408 1
21241000	CARBON RESISTOR 1K 5% 1/4 W	R 407-406 2
21251000	CARBON RESISTOR 10K 5% 1/4 W	R 404 1
21254700	CARBON RESISTOR 47K 5% 1/4 W	R 402-403 2
21261000	CARBON RESISTOR 100K 5% 1/4 W	R 401 1
21261500	CARBON RESISTOR 150K 5% 1/4 W	R 409 1
50144820	EAST-WEST P.C.B. KK02	1
20400429	TRANSISTOR BC 547 B	TR 401 1
24332209	RADIAL ELECT. CAP. 220MF 16V	C 404 1
24422209	RADIAL ELECT. CAP. 22MF 25V	C 406 1
24522209	RADIAL ELECT. CAP. 22MF 35V	C 405 1
25161509	FILM CAPACITOR 1.85 150NF 63V 10%	C 403 1
25262209	FILM CAPACITOR 1.85 220NF 100V 10%	C 401-402 2

VENTILATOR ASSEMBLY ALI 1338 UTS 75 code 62010080		
CODE	DESCRIPTION	Q.TY
29030630	VENTILATOR TD80A4H SINWAN	1
34074242	PRESSACO CONN. FEMALE (RED) 12/6232	1
34074250	PRESSACO LUG 11/6666	2

IMPEDANCE ADAPTOR P.C.B. ASSEMBLY 25" 28" 110° code 62010200		
CODE	DESCRIPTION	REF. No. Q.TY
21631000	METAL LAYER RES. 100E 3W	R 301 1
28027120	DEFL. YOKE MATCHING TRANSFORMER	1
	UTF 113	TH 301 1
29300010	SOAPSTONE INSULATORS 8 M.M.	2
34010061	FASTON LUG M. FACO TE 115 2.8 x 0.8	FS 301 1
34023356	AMP. CONN. M1 6 D 280611/1	CO 1
34074232	2 WAY CONN. PRESSACO (RED) M. 253562	CP 1
50146470	IMPEDANCE ADAPTOR P.C.B. 25" EG 03	1
61007380	INPUT P.C.B. CABLE 25" UTC 784	1
61007390	THERMOSTAT CABLE 25" UTC 785	1
61007400	VENTILATOR POWER CABLE 25" UTC 786	1

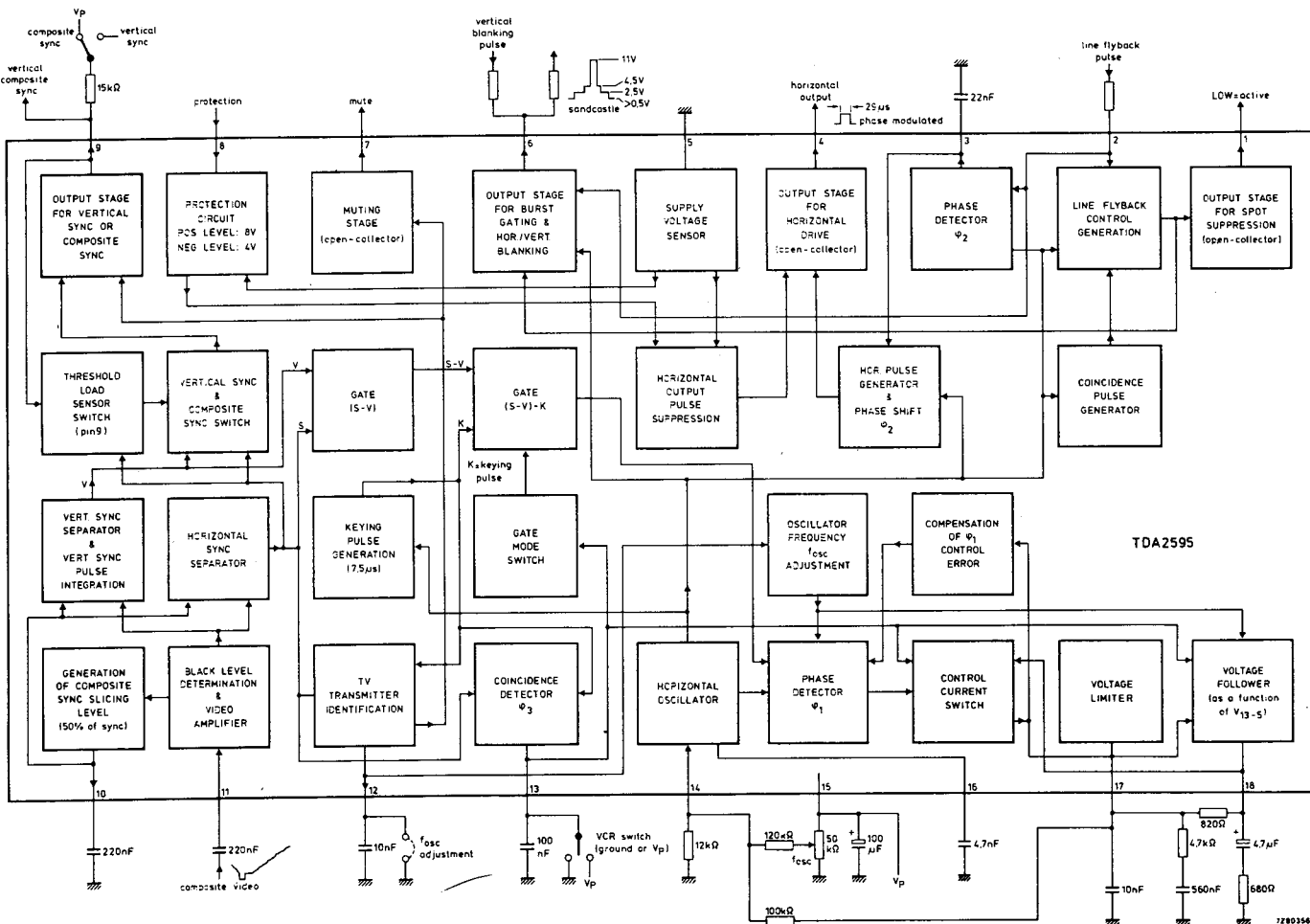
LEGEND

FILM CAPACITOR	= CAPACITOR, POLYSTYRENE
FILM CAPACITOR 1.60	= CAPACITOR, METALLIZED POLYESTER
FILM CAPACITOR 1.76	= CAPACITOR, DOUBLE-METALLIZED POLYPROPYLENE
FILM CAPACITOR 1.73	= CAPACITOR, METALLIZED POLYPROPYLENE
FILM CAPACITOR 1.58X	= CAPACITOR, POLYESTER
FILM CAPACITOR 1.85	= CAPACITOR, METALLIZED POLYESTER
FILM CAPACITOR 22.365	= CAPACITOR, POLYESTER
RADIAL ELECT. CAPACITOR	= CAPACITOR, RADIAL ELECTROLYTIC
CER.CAP.	= CAPACITOR, CERAMIC

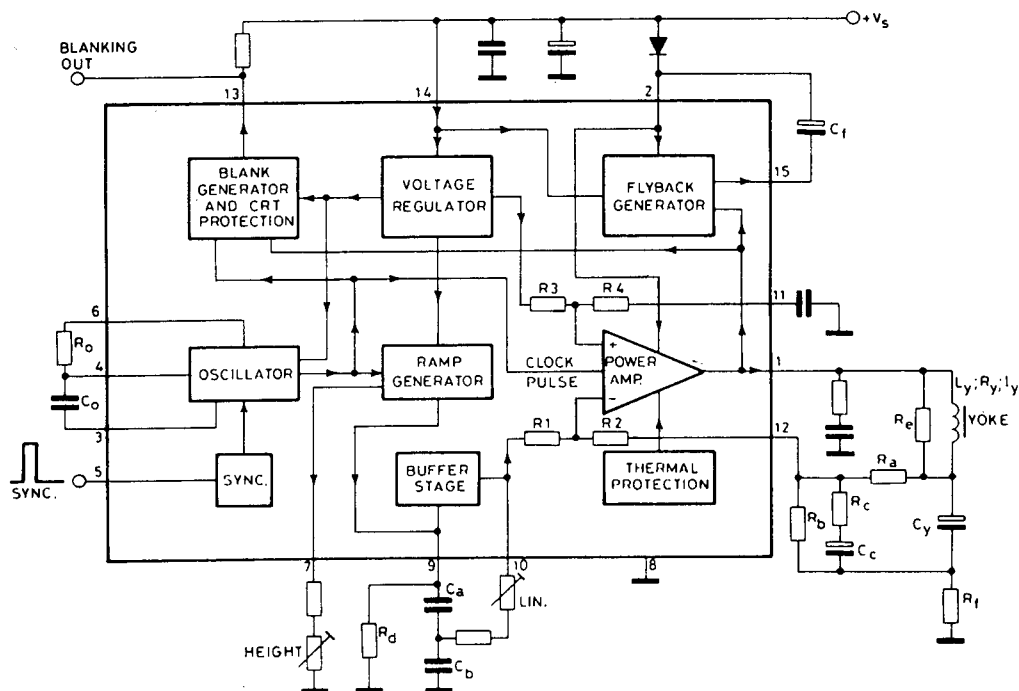


- DIAGRAMMA A BLOCCHI PER CIRCUITO INTEGRATO TDA 2595 E TDA 1670A
- BLOCK DIAGRAM FOR INTEGRATED CIRCUITS TDA 2595 AND TDA 1670A
- BLOCKSCHALTBIOD FÜR TDA 2595 UND TDA 1670A
- DIAGRAMA DE BLOQUES DEL CIRCUITO INTEGRADO TDA 2595 E TDA 1670A
- DIAGRAMME FONCTIONNEL POUR CIRCUITS IMPRIMES TDA 2595 ET TDA 1670A

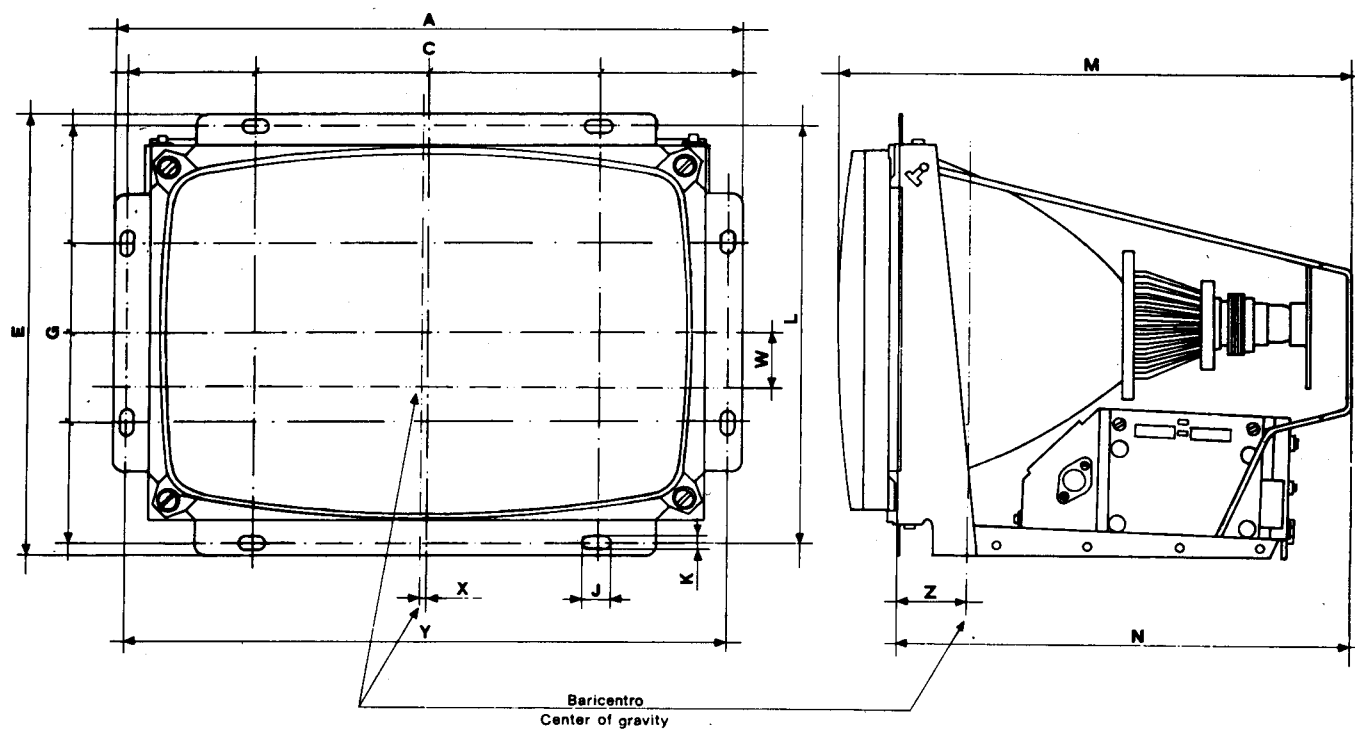
TDA 2595



TDA 1670A



- DATI MECCANICI
- MECHANICAL DATA
- MECHANISCHE ANGABEN
- DATOS MECANICOS
- DONNEES MECANQUES

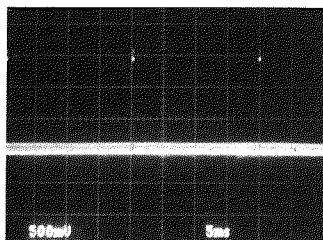


DIM.	A	E	G	M	Y
25'' mm	592	480	460	500	572
28'' mm	654	528	508	535	634
25'' IN.	23.307	18.898	18.110	19.685	22.520
28'' IN.	25.748	20.787	20.000	21.063	24.961

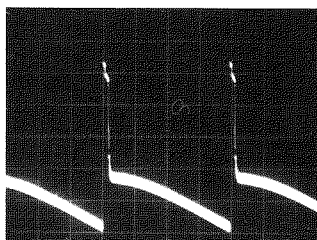
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- T.P. DI CONTROLLO E FORME D'ONDA
- CONTROL TEST POINTS AND WAVEFORMS
- TEST-PUNKTE UND OSZILLATORDIAGRAMME
- PUNTO DE PRUEBA PARA CONTROL Y FORMA DE ONDA
- POINTS DE TEST DE CONTROLE ET FORME D'ONDE

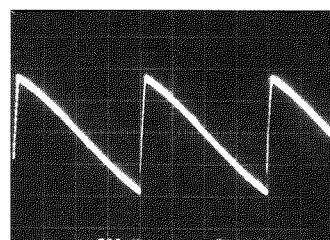
TP2



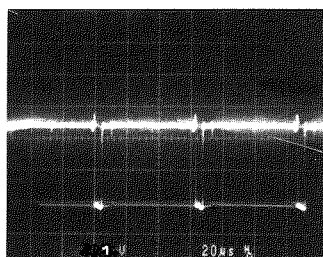
TP3



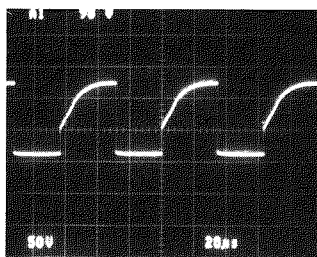
TP4



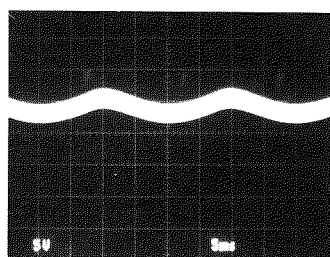
TP5



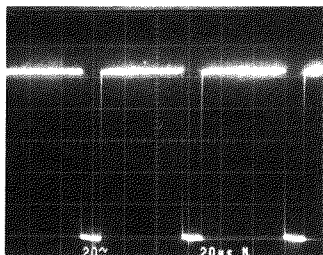
TP8



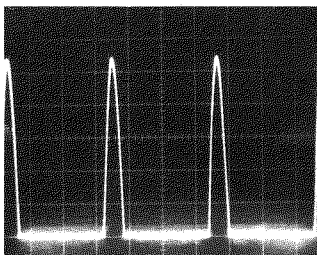
TP9



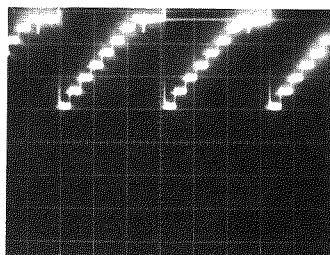
TP11



1



2



FORME D'ONDA WAVEFORMS

- T.P.2 Sincronismo verticale
Vertical sync.
- T.P.3 Pilotaggio deflessione verticale
Vertical drive
- T.P.4 Segnale di reazione deflessione verticale
Vertical feedback
- T.P.5 Sincronismo composito
Composite sync.
- T.P.8 Pilotaggio per transistori finale di riga
Horizontal drive
- T.P.9 Correzione est/ovest con modulo KK inserito
East/west correction with module KK inserted
- T.P.11 Spegnimento orizzontale e verticale
Horizontal and vertical blanking
1. Impulso del collettore BU 508
Pulse at collector of BU 508
2. Segnale sui catodi finale video RVB
Signal at cathodes of RGB video output

TENSIONI SUPPLIES

- T.P.1 24/25 V.d.c. Alimentazione amplificatore video
24/25 V.d.c. Video amplifier supply
- T.P.10 130 V.d.c. $\pm$ 2% Alimentazione stabilizzata
130 V.d.c. $\pm$ 2% Stabilized supply
- T.P.12 12 V.d.c. Alimentazione sincronismo e oscillatore orizzontale (TDA 2595)
12 V.d.c. Horizontal sync. and oscillator supply (TDA 2595)
- T.P.13 25/26 V.d.c. Alimentazione verticale
25/26 V.d.c. Vertical supply
- T.P.14 200/210 V.d.c. Alimentazione finale video
200/210 V.d.c. Video output supply

- **DIAGRAMMA DELLE CONNESSIONI E REGOLAZIONI DEI TRIMMER**
- **CONNEXIONS DIAGRAM AND PRE-SET ADJUSTMENTS**
- **ANSCHLUßPLAN UND JUSTAGE - ELEMENTE**
- **ESQUEMA DEL CONEXIONADO Y REGULACION DE LOS POTENCIOMETROS**
- **SCHEMA DE CONNEXION ET REGULATION DES TRIMMERS**

- | | |
|--|--|
| 1) FASCIA DI SMAGNETIZZAZIONE
— DEGAUSSING COIL
— BOBINA DESMAGNETIZADORA
— ENTMAGNETISIERUNGSSPULE
— BOBINE DE DEMAGNETISATION | 16) BOBINA PONTE
— BRIDGE COIL
— BOBINA PUENTE
— BRÜCKE
— BOBINE PONT |
| 2) GIOGO ORIZZONTALE
— HORIZONTAL YOKE
— BOBINA DEFLECTORA HORIZONTAL
— HORIZONTALE ABLENKSPULE
— BOBINE DE DEFLEXIÓN HORIZONTAL | 17) MODULO CG COMANDI E REGOLAZ.
— ADJUSTING MODULE
— MODULO CG REGULACION
— EINSTELL-EINHEIT
— MODULE DE REGLAGE |
| 3) GIOGO VERTICALE
— VERTICAL YOKE
— BOBINA DEFLECTORA VERTICAL
— VERTIKALE ABLENKSPULE
— BOBINE DE DEFLEXION VERTICALE | 18) FREQUENZA VERTICALE
— VERTICAL HOLD
— FRECUENCIA VERTICAL
— VERTIKALE FREQUENZ
— FREQUENCE VERTICALE |
| 4) GUADAGNO ROSSO
— RED GAIN
— GANANCIA ROJO
— ROT-VERSTÄRKUNGS-REGLER
— GAIN ROUGE | 19) AMPIEZZA ORIZZONTALE
— HORIZONTAL WIDTH
— AMPLITUD HORIZONTAL
— HORIZONTALE AMPLITUDE
— AMPLITUDE HORIZONTAL |
| 5) INTERDIZIONE VERDE
— GREEN CUT-OFF
— VERDE CUT-OFF
— SCHWARZWERT FÜR GRÜN
— SUPPRESSION VERT | 20) AMPIEZZA VERTICALE
— VERTICAL HEIGHT
— AMPLITUD VERTICAL
— VERTIKALE HÖHE
— AMPLITUDE VERTICALE |
| 6) INTERDIZIONE ROSSO
— RED CUT-OFF
— ROJO CUT-OFF
— SCHWARZWERT FÜR ROT
— SUPPRESSION ROUGE | 21) FASE VERTICALE
— VERTICAL SHIFT
— FASE VERTICAL
— VERTIKALE VERSCHIEBUNG
— PHASE VERTICALE |
| 7) INTERDIZIONE BLU
— BLUE CUT-OFF
— AZUL CUT-OFF
— SCHWARZWERT FÜR BLAU
— SUPPRESSION BLEU | 22) FASE ORIZZONTALE
— HORIZONTAL SHIFT
— FASE HORIZONTAL
— HORIZONTALE VERSCHIEBUNG
— PHASE HORIZONTAL |
| 8) GUADAGNO BLU
— BLUE GAIN
— GANANCIA AZUL
— BLAU-VERSTÄRKUNGS- REGLER
— GAIN BLEU | 23) FREQUENZA ORIZZONTALE
— HORIZONTAL HOLD
— FRECUENCIA HORIZONTAL
— HORIZONTALE FREQUENZ
— FREQUENCE HORIZONTAL |
| 9) G2
— SCREEN
— PANTALLA
— SCHIRMGITTER-REGLER
— ECRAN | 24) INGRESSO VIDEO/SINCRONISMI
— VIDEO/SYNC. INPUT
— ENTRADA VIDEO/SINC.
— VIDEO - UND SYNCHRONISATIONS EINGANG
— ENTREE SYNCHRO. VIDEO |
| 10) FUOCO
— FOCUS
— FOCO
— FOCUS
— FOCALISATION | 25) CONTRASTO
— CONTRAST
— CONTRASTE
— KONTRAST
— CONTRASTE |
| 11) MASSA CINESCOPIO
— GND PICTURE TUBE
— MASA DEL TUBO
— BILDROHRENMASSE
— MASSE DU TUBE | 26) COMMUTATORE PER SINC. POS/NEG.
— SYNC. POLARITY SWITCH
— CONMUTADOR SINCRONISMOS/NEG.
— SYNCHRONISATIONS - UMSCHALTER POS./NEG
— COMMUTATEUR POUR SYNCHRO. POS/NEG |
| 12) GUADAGNO VERDE
— GREEN GAIN
— GANANCIA VERDE
— GRÜN-VERSTÄRKUNGS-REGLER
— GAIN VERT | 27) REGOLAZIONE EST/OVEST
— PINCUSCHION ADJUSTMENT
— REGULACION ESTE/OESTE
— OST/WEST-REGLER
— REGLAGE DROITE/GAUCHE |

13)INGRESSO ALIMENTAZIONE

- POWER SUPPLY
- FUENTE ALIMENTACION
- NETZTEIL
- ENTREE ALIMENTATION

14)REGOLAZIONE FUOCO

- FOCUS ADJUSTMENT
- AJUSTE FOCO
- FOCUS-REGLER
- REGLAGE FOCALISATION

15)REGOLAZIONE LUMINOSITÀ

- BRIGHTNESS ADJUSTMENT
- REGULACION BRILLO
- HELLIGKEITS-REGLER
- REGLAGE LUMINOSITE

28)MODULO KK CORREZIONE EST/OVEST

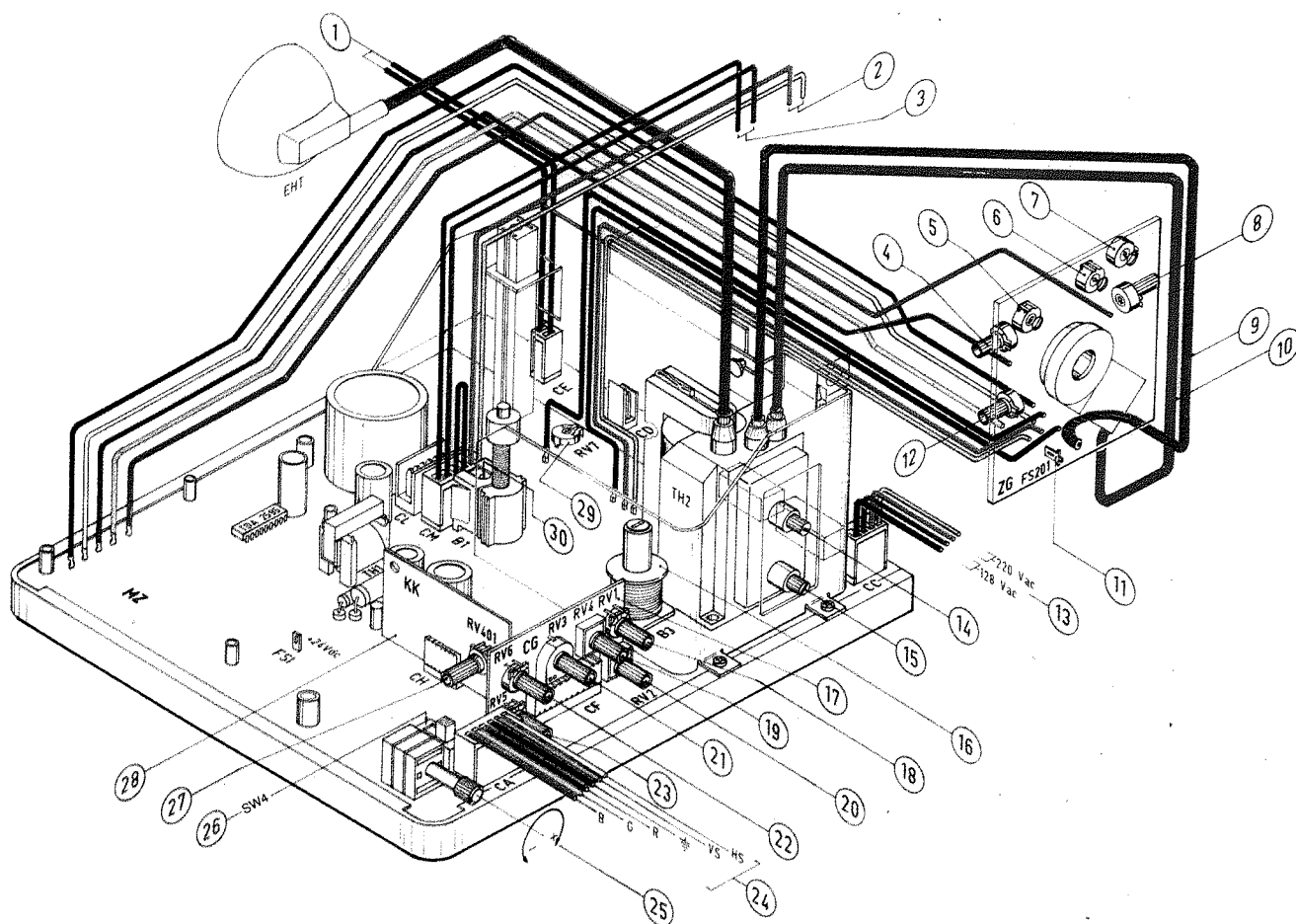
- KK PINCUSCHION MODULE
- MODULO KK CORRECCION ESTE/OESTE
- OST/WEST - MODUL
- MODULE KK DE CORRECTION DROITE/GAUCHE

29)PRESELETTORE LUMINOSITÀ

- BRIGHTNESS PRESET
- PREREGULACION BRILLO
- HELLIGKEITSREGLER
- PRE-SELECTION LUMINOSITE

30)LINEARITÀ ORIZZONTALE

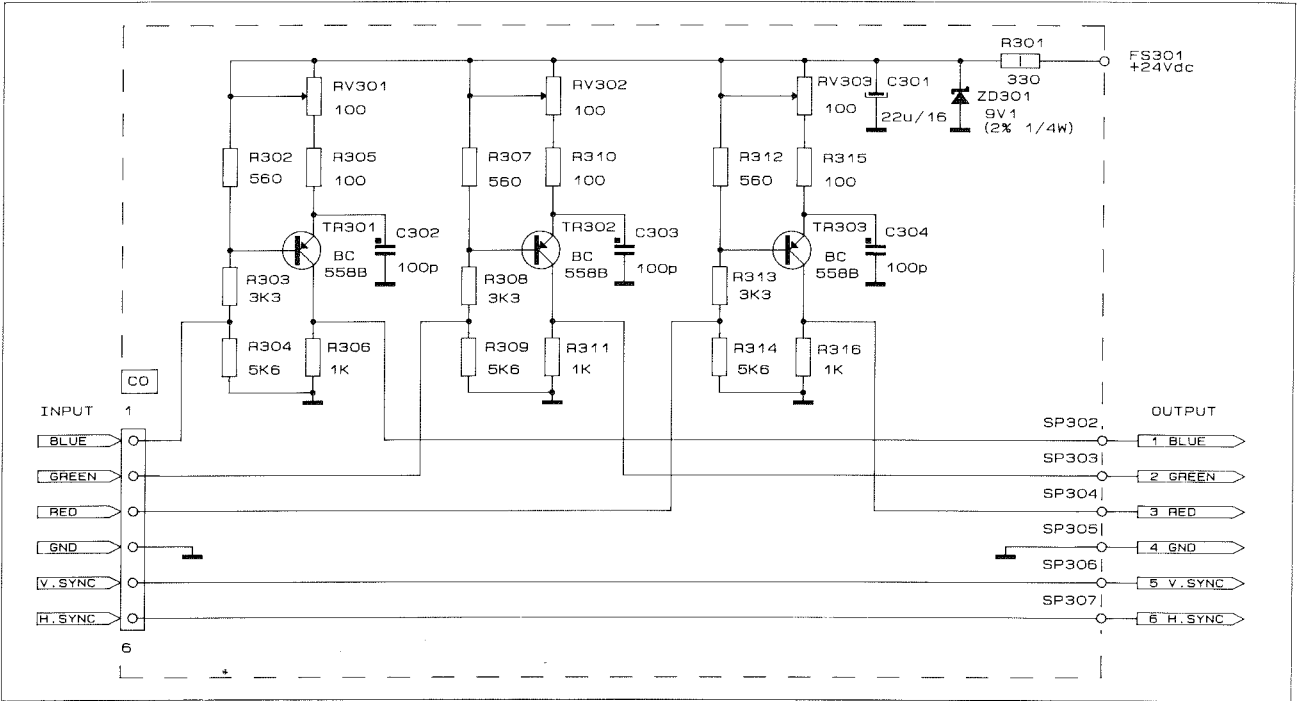
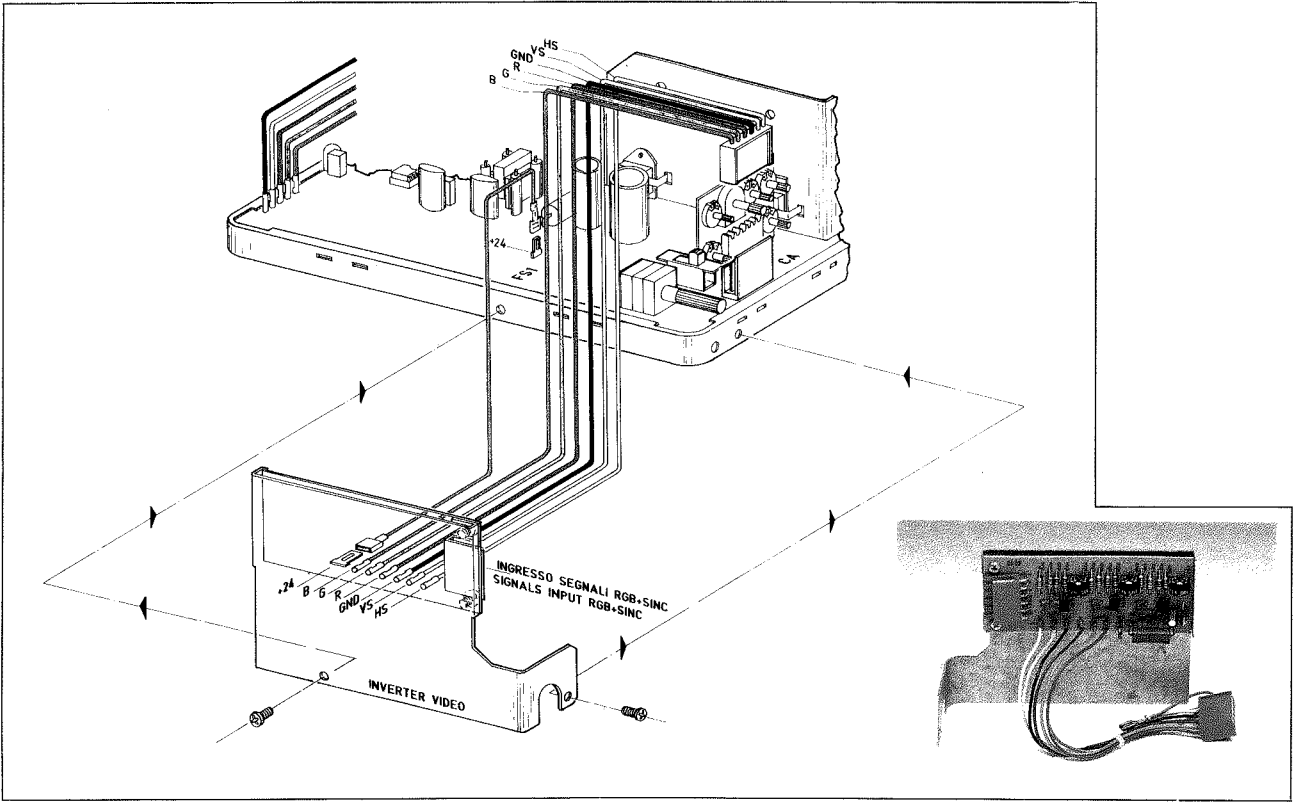
- HORIZONTAL LINEAR.
- LINEALIDAD HORIZONTAL
- HORIZONTALE LINEARITÄTSEINSTELLUNG
- LINEARITE HORIZONTALE

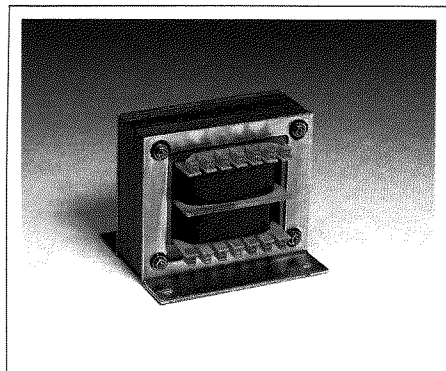


INVERTER VIDEO

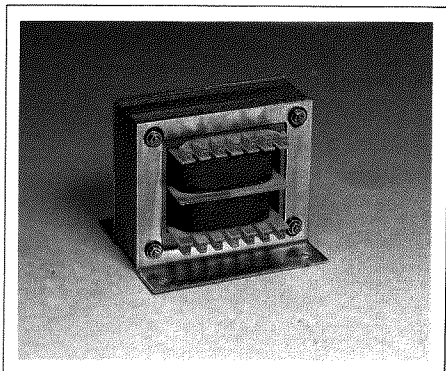
Per permettere l'adattamento di logiche con segnale video negato al monitor MTC9110, l'HANTAREX ha studiato una scheda d'interfaccia applicabile direttamente sulla centina metallica dell'elettronica. La scheda è fornita delle istruzioni di montaggio, delle connessioni elettriche e dello schema. Per la richiesta fare riferimento al cod. 63000160 scheda «INVERTER-VIDEO».

To enable the MTC 9110 to be used with negative going input signals, HANTAREX has designed an interface board which mounts directly into the framework of the monitor. The board is supplied complete with circuit diagram, mounting instructions and connexions to the monitor. To order, quote part no. 63000160 Inverter Video.

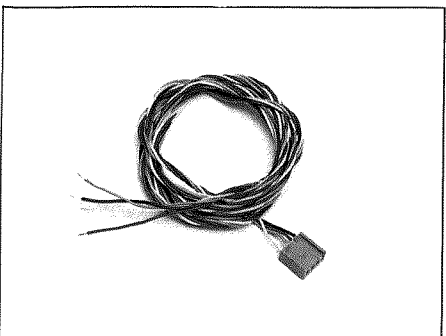




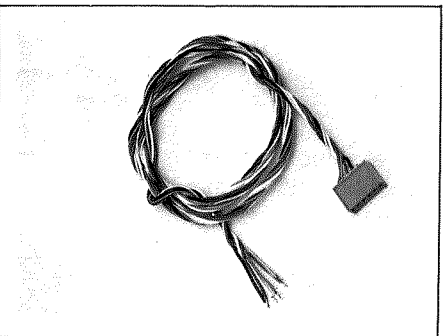
- Trasformatore di alimentazione monitor MTC9110 220/240 Vac / 128 Vac 150 W. (Per richiesta cod. 28070460).
- Isolating transformer for supplying monitor MTC9110 220/240 V a.c. / 128 V a.c. 150 W. To order, quote: cod. 28070460.
- Trenntransformator für die Stromversorgung des Monitors MTC9110 mit 220/240 V Eingang, 128 V / 150 W Ausgang. Bestell-Nr. 28070460.
- Transformador de alimentación monitor MTC9110 220/240 Vac / 128 Vac 150 W. (Para solicitud cod. 28070460).
- Transformateur d'alimentation pour moniteur MTC9110 220/240 V c.a. / 128 V c.a. 150 W. (Code 28070460).



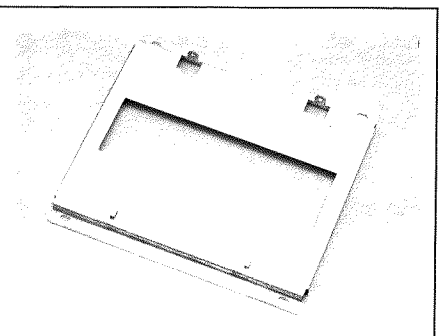
- Trasformatore di alimentazione monitor MTC9110 120/128 Vac 150 W. (Per richiesta cod. 28070440).
- Isolating transformer for supplying monitor MTC9110 120/128 V a.c. / 150 W. To order, quote: cod. 28070440.
- Trenntransformator für die Stromversorgung des Monitors MTC9110 mit 120/128 V Eingang, 128 V / 150 W Ausgang. Bestell-Nr. 28070440.
- Transformador de alimentación monitor MTC9110 120/128 Vac 150 W. (Para solicitud cod. 28070440).
- Transformateur d'alimentation pour moniteur MTC9110 120/128 V c.a. 150 W. (Code 28070440).



- Cablaggio ingresso alimentazione. Viene fornito unitamente al monitor. (Per ricambistica cod. 61000120).
- Input Power Lead. Supplied with each monitor. Spare part no. cod. 61000120.
- Verbindungskabel für Stromversorgung mit Anschlußstecker für Monitor MTC9110. Bestell-Nr. 61000120.
- Cable de entrada de alimentación. Viene incluido con el monitor. (Para recambio cod. 61000120).
- Câblage d'entrée d'alimentation. Il est fourni avec le moniteur. (Pour pièces de rechange code 61000120).

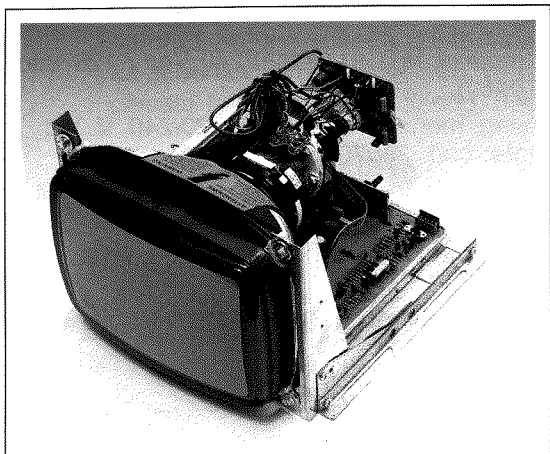


- Cablaggio ingresso segnali. Viene fornito unitamente al monitor. (Per ricambistica cod. 61000140).
- Input Signal Lead. Supplied with each monitor. Spare part no. cod. 61000140.
- Verbindungskabel RGB - Signal mit Anschlußstecker für Monitor MTC9110. Bestell-Nr. 61000140.
- Cable de entrada de senales. Viene incluido con el monitor. (Para recambio cod. 61000140).
- Câblage d'entrée des signaux. Il est fourni avec le moniteur. (Pour pièces de rechange code 61000140).



- Supporto metallico per MTC9110 per fissare l'elettronica al mobile nel caso debba essere disassemblata dal cinescopio. (Per richiesta cod. 50113370).
- Metal support for fixing electronic chassis to a case when the chassis is to be separated from the c.r.t. To order, quote cod. 50113370.
- Metallrahmen für MTC9110 zur Aufnahme von Chassis und der Bildröhre. Bestell-Nr. 50113370.
- Soporte metalico para el MTC9110 para fijar el circuito impreso al mueble, en el caso en que deba ser descollado del TRC. (Para solicitud cod. 50113370).
- Support metallique pour MTC9110 pour fixer l'electronique sur le meuble dans cas où elle devrait être disassemblée du tube image. (Code 50113370).

PRODOTTI COMPLEMENTARI - COMPLEMENTARY PRODUCTS



Monitor MTC9000 10'' COD. 02191552

Video R.V.B. positivo analogico, sincronismi composti, separati, negati o positivi.

Alimentazione: 128 Vac - 70 W.

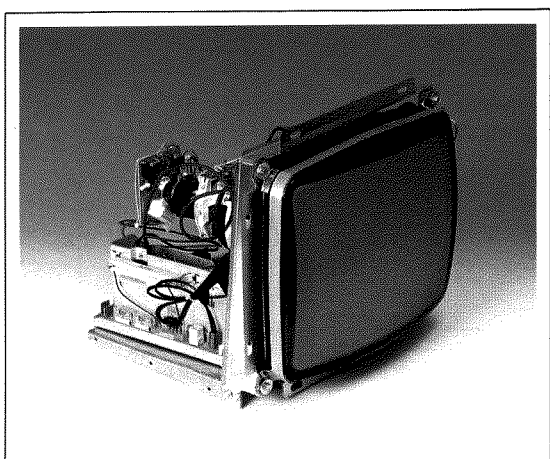
Dimensioni: L x H x P mm 297 x 250 x 307.

Monitor MTC9000 10'' COD. 02191552

Video RGB, positive analogue, composite or separate sync., negative or positive.

Power: 128 V a.c., 70 W.

Dimensions: L x W x D: 297 x 250 x 307 mm.



Monitor MTC9000 14'' 90° COD. 02191535

Video R.V.B. positivo analogico, sincronismi composti, separati negati o positivi.

Alimentazione 128 Vac - 100 W.

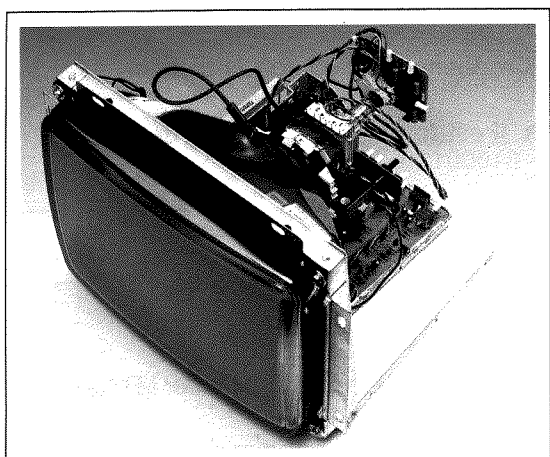
Dimensioni: L x H x P mm 372 x 312 x 352.

Monitor MTC9000 14'' 90° COD. 02191535

Video RGB, positive analogue, composite or separate sync., negative or positive.

Power 128 V a.c., 100 W.

Dimensions: L x W x D: 372 x 312 x 352 mm.



Monitor MTC9000 15'' F.S. COD. 02191870

Video R.V.B. positivo analogico, sincronismi composti, separati, negati o positivi.

Alimentazione: 128 Vac - 100 W.

Cinescopio: Flat Full Square MR.

Spazio fra le triadi 0,51 mm.

Dimensioni: L x H x P mm 400 x 330 x 360.

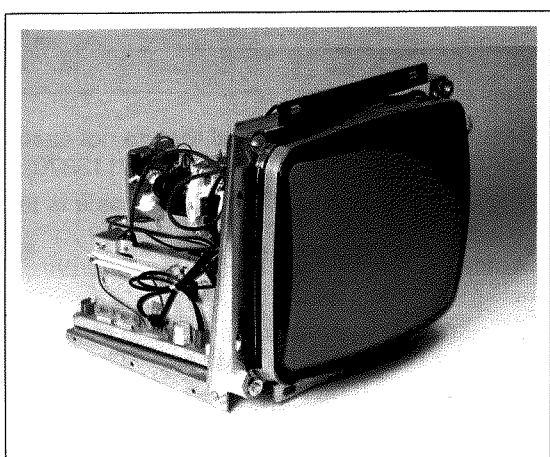
Monitor MTC9000 15'' F.S. COD. 02191870

Video RGB, positive analogue, composite or separate sync., negative or positive.

Power: 128 V a.c., 100 W.

C.r.t. flat full square MR. Pixel spacing 0.51 mm.

Dimensions: L x W x D: 400 x 330 x 360 mm.



Monitor MTC9000 16'' 90° COD. 02191522

Video R.V.B. positivo analogico, sincronismi composti, separati negati o positivi.

Alimentazione 128 Vac - 100 W.

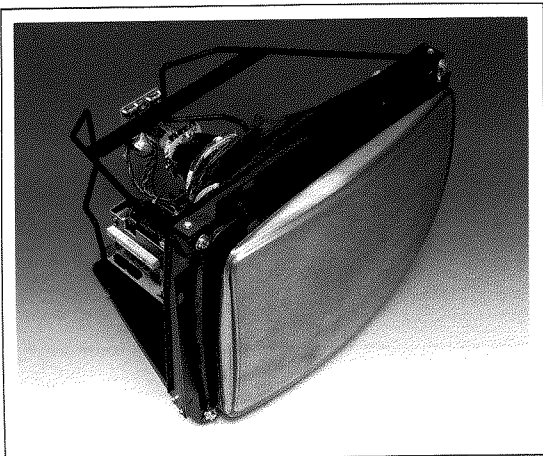
Dimensioni: L x H x P mm 424 x 340 x 380.

Monitor MTC9000 16'' 90° COD. 02191522

Video RGB, positive analogue, composite or separate sync., negative or positive.

Power 128 V a.c., 100 W.

Dimensions: L x W x D: 424 x 340 x 380 mm.



Monitor MTC9000 20" 90° COD. 02191278

Video R.V.B. positivo analogico, sincronismi composti, separati, negati o positivi.

Alimentazione: 128 Vac - 100 W.

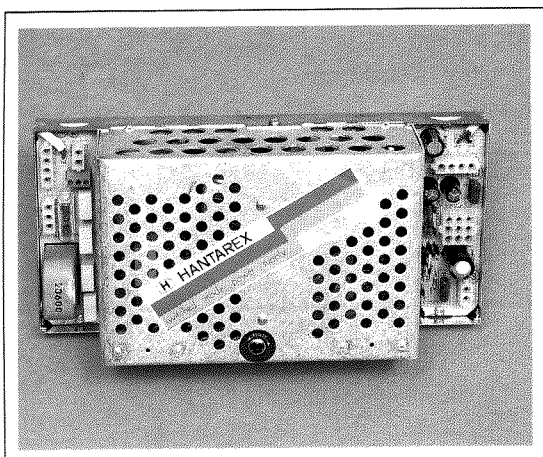
Dimensioni: L x H x P mm 512 x 406 x 442.

Monitor MTC9000 20" 90° COD. 02191278

Video RGB, positive analogue, composite or separate sync., negative or positive.

Power: 128 V a.c., 100 W.

Dimensions: L x W x D: 512 x 406 x 442 mm.



Alimentatore a commutazione US 250 COD. 63000131

Ingresso rete: 187 ÷ 264 Vac. Alimentazione monitor in d.c. senza trasformatore di alimentazione.

Basse tensioni: 5 Vdc 10A / 12 Vdc 2A /

—5 Vdc 1A / —12 Vdc 1A.

Dimensioni: L x H x P mm 288 x 156 x 124.

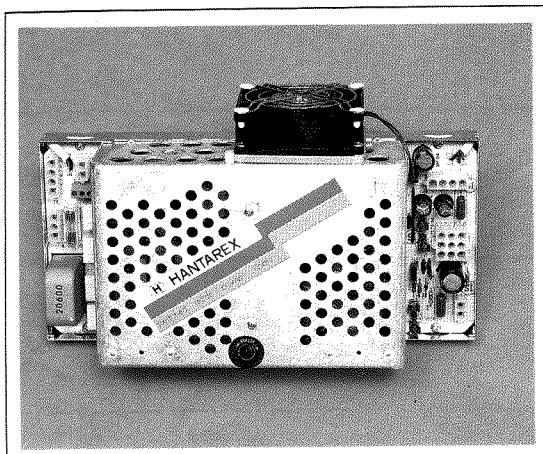
Switched Mode Power Supply US 250 COD. 63000131

Mains input: 187 ÷ 264 V a.c. Monitor d.c. supply without mains transformer.

Low tensions: 5 V d.c. 10A. 12 V d.c. 2A.

—5 V d.c. 1A. —12 V d.c. 1A.

Dimensions: L x W x D: 288 x 156 x 124 mm.



Alimentatore a commutazione US 300 Ventilato COD. 63000081

Ingresso rete: 187 ÷ 264 Vac. Alimentazione monitor in d.c. senza trasformatore di alimentazione.

Basse tensioni: 5 Vdc 15A / 12 Vdc 2A /

—5 Vdc 1A / —12 Vdc 1A.

Dimensioni: L x H x P mm 288 x 188 x 124.

Switched Mode Power Supply US 300 ventilated COD. 63000081

Mains input: 187 ÷ 264 V a.c. supply without mains transformer.

Low tensions: 5 V d.c. 15A. 12 V d.c. 2A.

—5 V d.c. 1 A. —12 V d.c. 1A.

Dimensions: L x W x D: 288 x 188 x 124 mm.



Generatore di segnali R.V.B. e sincronismi MOD. K 190 G COD. 02190280

Utile per la messa a punto di monitors aventi un ingresso segnali R.V.B.

Commutatori frontali per la selezione delle varie immagini.

RGB Signal Generator with sync. MOD. K 190 G COD. 02190280

Invaluable for setting-up colour monitors with RGB input.

Front panel switching for selecting a variety of images.



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