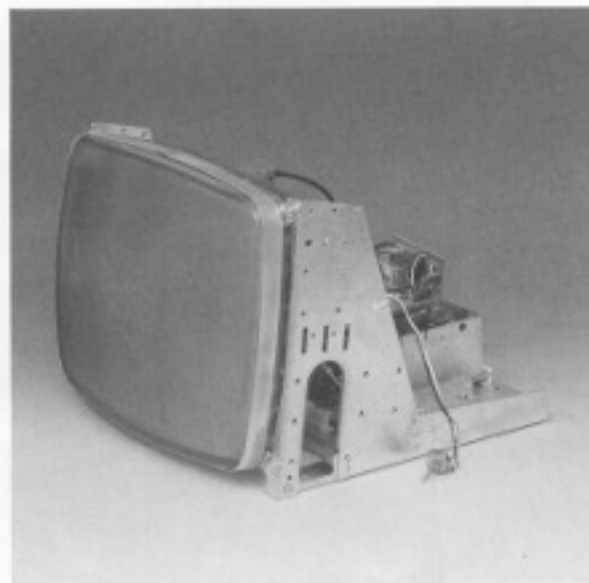
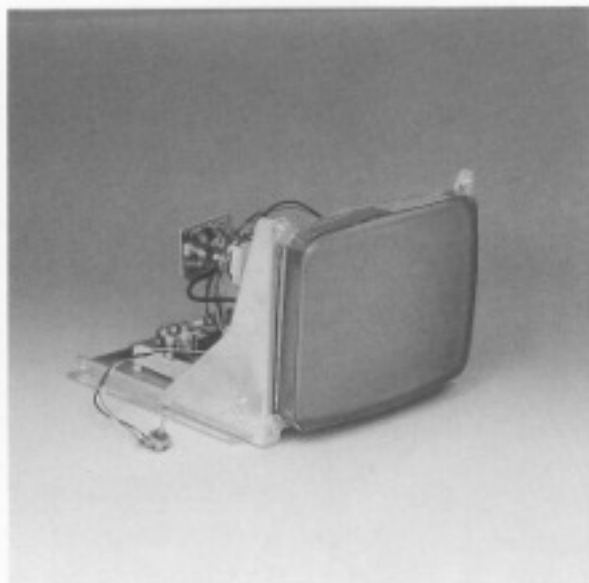


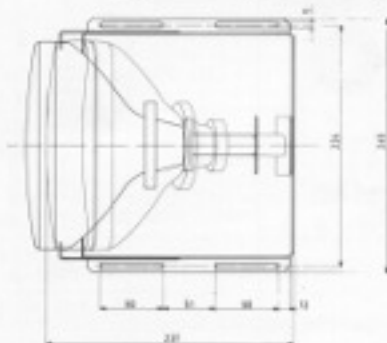
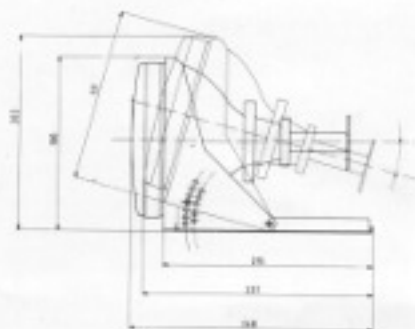
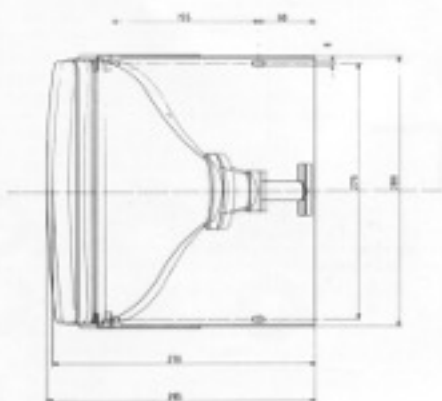
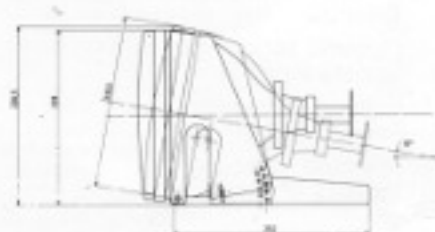
MT 4000 9" - MT 4000 12"

open frame high resolution monochrome monitors

For application with 18.4 KHz HERCULES board



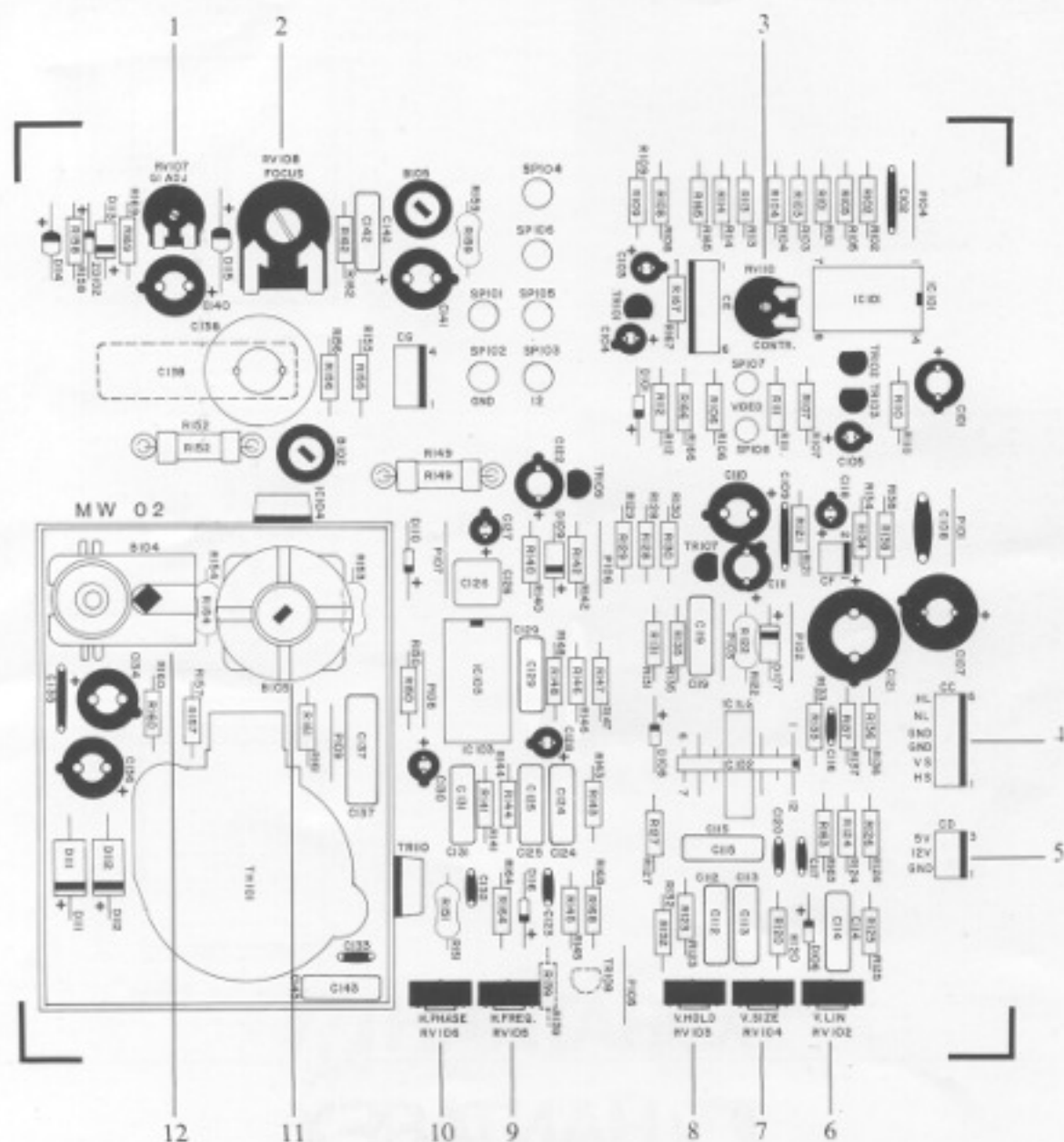
mechanical data



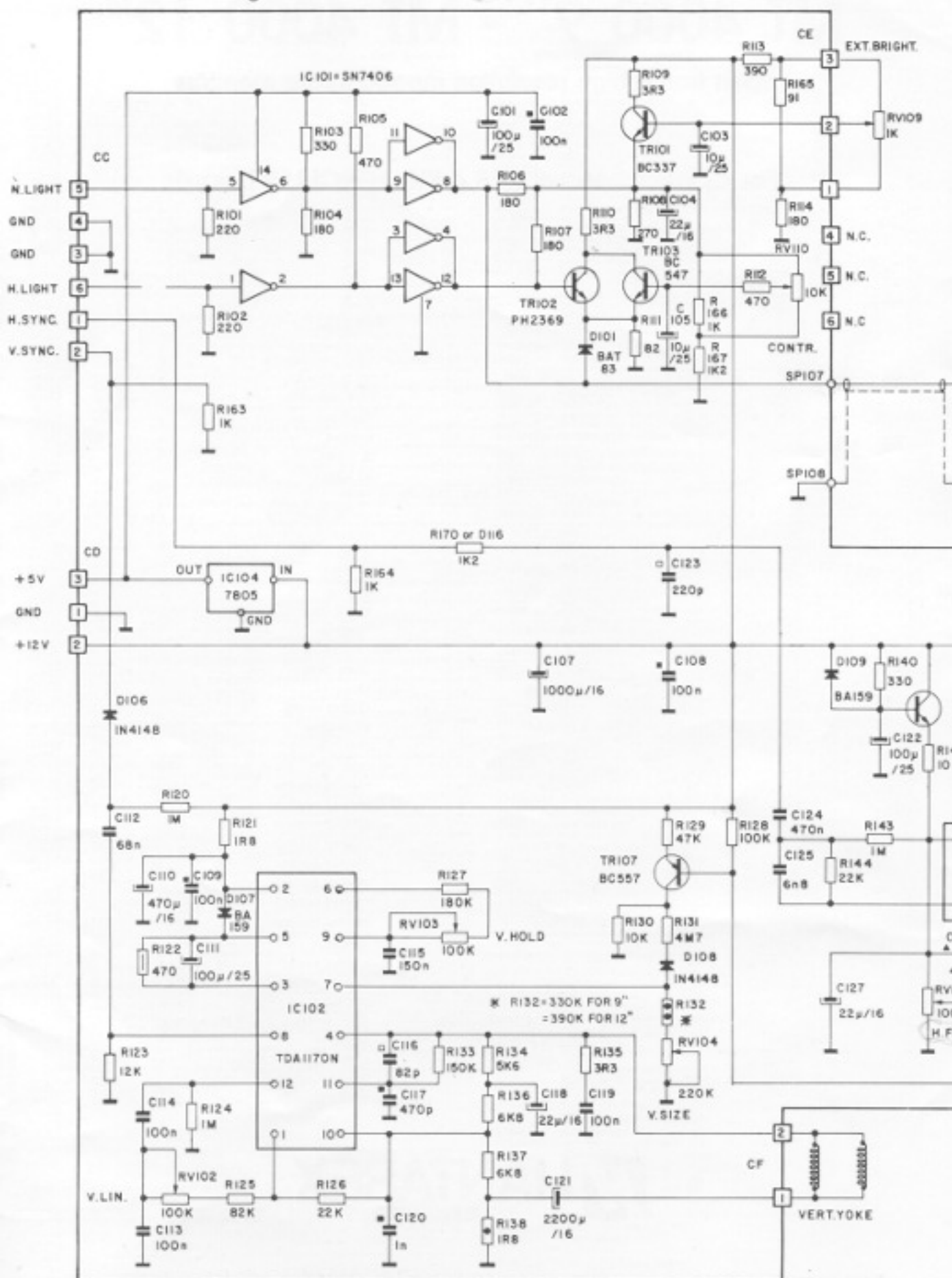
CRT R12DP39-H

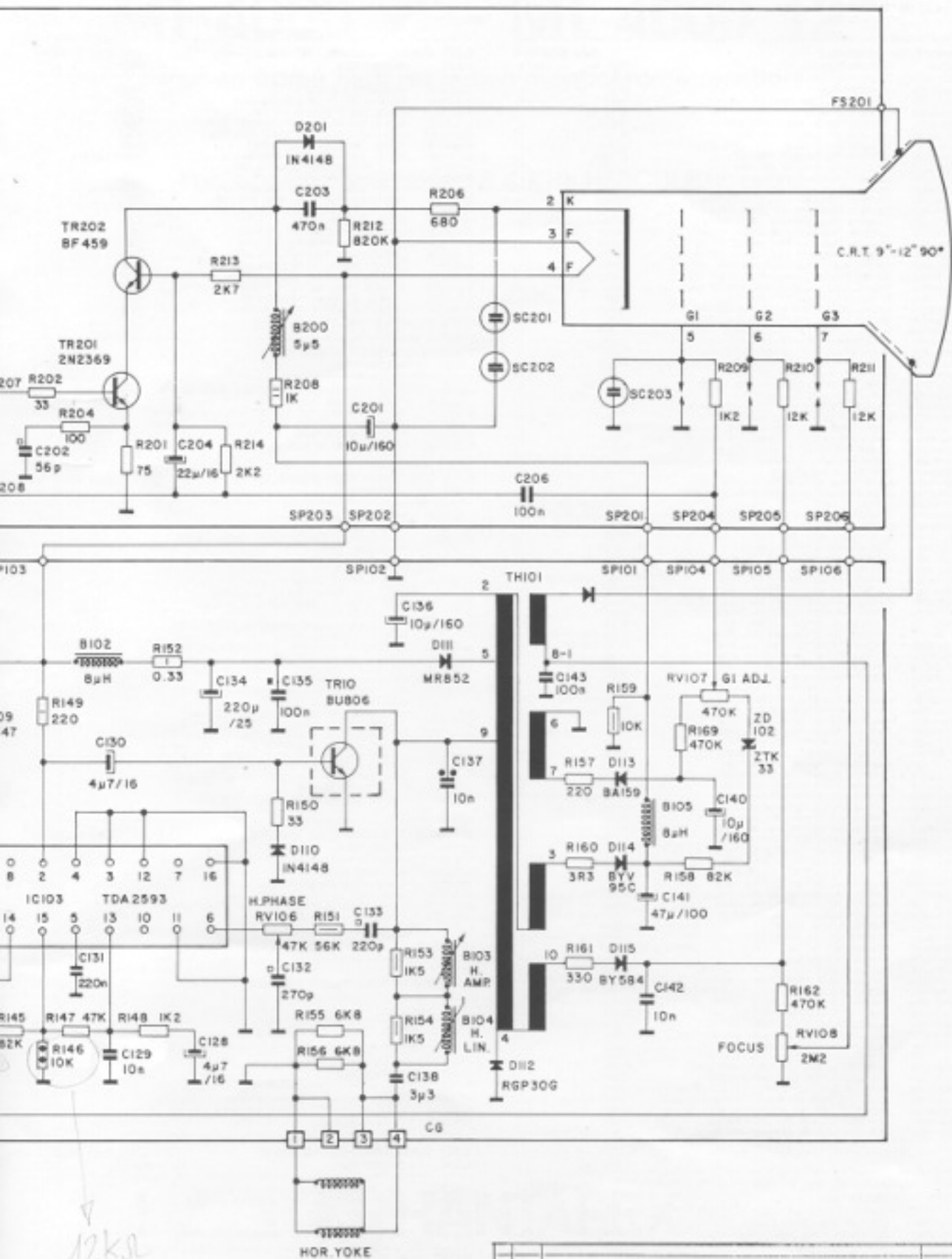
- 1) Preselettore luminosità (G1)
Brightness preset (G1)
- 2) Fuoco
Focus
- 3) Contrasto
Contrast
- 4) Ingresso segnali
Signals input
- 5) Ingresso alimentazione
Power Supply
- 6) Linearità verticale
Vertical linearity

- 7) Ampiezza verticale
Vertical size
- 8) Frequenza verticale
Vertical frequency
- 9) Frequenza orizzontale
Horizontal frequency
- 10) Posizione orizzontale
Horizontal phase
- 11) Ampiezza orizzontale
Horizontal size
- 12) Linearità orizzontale
Horizontal linearity



schematic diagram





12kΩ
 15625 42

| | | | |
|-------|--|-----------------------|--|
| | | Model: MT 4000 9" 12" | |
| Date: | | UTD 67 | |

parts list

| MAIN P.C.B. ASSEMBLY | | code 62007910 | |
|----------------------|--|------------------|------|
| CODE | DESCRIPTION | REF. No | Q.TY |
| 20100250 | DIODE MR 952 | D111 | 1 |
| 20150150 | DIODE BY 5M4 (BY 184) | D115 | 1 |
| 20150280 | DIODE RGP 30 G | D112 | 1 |
| 20430510 | TRANSISTOR BU 906-01 PHILIPS | TR110 | 1 |
| 20520020 | INTEGRATED CIRCUIT MA 7805 | K104 | 1 |
| 20520091 | INTEGRATED CIRCUIT TDA 1176N 90S | K 102 | 1 |
| 20520180 | INTEGRATED CIRCUIT TDA 2585 | K 103 | 1 |
| 20670070 | INTEGRATED CIRCUIT SN 7496 | K 101 | 1 |
| 21403300 | METAL OXIDE RESISTOR 0.33 E 10% 1W | R152 | 1 |
| 21432200 | METAL OXIDE RESISTOR 2.20E 5% 1W | R 149 | 1 |
| 23051001 | CARBON TRIMMER 10K HORIZ. PT10V | RV110 | 1 |
| 23054702 | CARBON TRIMMER 47K VERT. PT10H | RV108 | 1 |
| 23061002 | CARBON TRIMMER 100K VERT. PT10H | RV102-105-106 | 3 |
| 23062202 | CARBON TRIMMER 220K VERT. PT10H | RV104 | 1 |
| 23064704 | CARBON TRIMMER 470K HORIZ. PT10V | RV107 | 1 |
| 23072200 | CARBON TRIMMER 2.2M HORIZ. PT15V | RV108 | 1 |
| 23247000 | RADIAL ELECT. CAPACITOR 470MF 16V | C110 | 1 |
| 23431000 | RADIAL ELECT. CAPACITOR 1000MF 16V | C107 | 1 |
| 23432200 | RADIAL ELECT. CAPACITOR 2200MF 16V | C121 | 1 |
| 24413501 | BI-POLAR CAPACITOR 3.3MF 25V | C136 | 1 |
| 24420218 | RADIAL ELECT. CAPACITOR 200MF 25V | C134 | 1 |
| 24434710 | RADIAL ELECT. CAPACITOR 47MF 100V | C141 | 1 |
| 24431009 | RADIAL ELECT. CAPACITOR 10MF 160V | C138-140 | 2 |
| 25144701 | FILM CAPACITOR 1.42 4.7NF 63V 2.5% | C120 | 1 |
| 25661000 | FILM CAPACITOR 1.80 15NF 630V 10% | C142 | 1 |
| 25701000 | FILM CAPACITOR 1.73 10NF 1000V 10% | C137 | 1 |
| 26320700 | CER. CAP. N150 270PF 50V 10% | C132 | 1 |
| 26320200 | FERRITE-CORED CHOKER 8MH UTF16 | R102-105 | 2 |
| 26320290 | AMPLITUDE COIL RA60 UTF 17 | R103 | 1 |
| 26320451 | TRANSFORMER E.H.T. ELDO 1072.0104 | TH 101 | 1 |
| 28040070 | LINEARITY COIL S.A.R.TA 250012 UTF21 | B 104 | 1 |
| 34074232 | 2 WAY PRESSACCO CONNECTOR, RED M. 253562 | CF | 1 |
| 34074234 | 4 WAY PRESSACCO CONNECTOR, RED M. 253564 | CP | 1 |
| 34074235 | 3 WAY PRESSACCO CONNECTOR M. 203563 | CD | 1 |
| 34074236 | 6 WAY PRESSACCO CONNECTOR, RED M. 253566 | CC-CE | 2 |
| 43000070 | SPRING x TO220 UTH 38 | | 2 |
| 50115361 | E.H.T. CAGE WITH WINDOW UTH 1481 | | 1 |
| 50420186 | MICA INSULATOR TO 220 2000V UTH 907 | | 1 |
| 20100000 | DIODE 1N 4148 | D106-108-110 | 3 |
| 20100070 | DIODE BA 159 | D109-113-107 | 3 |
| 20130080 | DIODE BAT 83 | D101 | 1 |
| 20150170 | DIODE BYV 96C - 650 | D114 | 1 |
| 20670000 | INTEGRATED CIRCUIT ZTK 33 | ZD102 | 1 |
| 21211800 | CARBON RESISTOR 1.8E 5% 14W | R121 | 1 |
| 21211811 | METAL LAYER RES. 1.8E 1% 14W | R 138 | 1 |
| 21212300 | CARBON RESISTOR 3.3E 5% 14W | R135-110-109-160 | 4 |
| 21221000 | CARBON RESISTOR 15E 5% 14W | R142 | 1 |
| 21223300 | CARBON RESISTOR 33E 5% 14W | R150 | 1 |
| 21228200 | CARBON RESISTOR 82E 5% 14W | R111 | 1 |
| 21229130 | CARBON RESISTOR 4E 5% 14W | R 165 | 1 |
| 21231800 | CARBON RESISTOR 180E 5% 14W | R104-106-107-114 | 4 |
| 21232000 | CARBON RESISTOR 220E 5% 14W | R101-102-107 | 3 |
| 21232700 | CARBON RESISTOR 270E 5% 14W | R108 | 1 |
| 21233300 | CARBON RESISTOR 330E 5% 14W | R103-140-161 | 3 |
| 21233900 | CARBON RESISTOR 390E 5% 14W | R113 | 1 |
| 21234700 | CARBON RESISTOR 470E 5% 14W | R105-112 | 1 |
| 21241000 | CARBON RESISTOR 1K 5% 14W | R 166-164-163 | 3 |
| 21241200 | CARBON RESISTOR 1.2K 5% 14W | R148-167-0110 | 3 |
| 21245600 | CARBON RESISTOR 5.6K 5% 14W | R134 | 1 |
| 21246800 | CARBON RESISTOR 6.8K 5% 14W | R136-137-155-156 | 4 |
| 21251000 | CARBON RESISTOR 15K 5% 14W | R130 | 1 |
| 21251001 | METAL LAYER RES. 15K 2% 14W | R146 | 1 |
| 21251200 | CARBON RESISTOR 12K 5% 14W | R123 | 1 |
| 21252200 | CARBON RESISTOR 22K 5% 14W | R126-144 | 2 |
| 21254700 | CARBON RESISTOR 47K 5% 14W | R147-129 | 2 |
| 21256200 | CARBON RESISTOR 62K 5% 14W | R156-125-145 | 3 |
| 21251000 | CARBON RESISTOR 150K 5% 14W | R125 | 1 |
| 21261500 | CARBON RESISTOR 150K 5% 14W | R133 | 1 |
| 21261800 | CARBON RESISTOR 180K 5% 14W | R127 | 1 |
| 21263901 | METAL LAYER RES. 390K 1% 14W | R132 | 1 |
| 21264700 | CARBON RESISTOR 470K 5% 14W | R162-169 | 2 |
| 21271000 | CARBON RESISTOR 1M 5% 14W | R120-124-143 | 3 |
| 21274700 | CARBON RESISTOR 4.7M 5% 14W | R131 | 1 |
| 21304700 | CARBON RESISTOR 470E 5% 12W | R122 | 1 |
| 21341500 | CARBON RESISTOR 1.5K 5% 12W | R153-154 | 2 |
| 21351000 | CARBON RESISTOR 15K 5% 12W | R159 | 1 |
| 21356800 | CARBON RESISTOR 58K 5% 12W | R151 | 1 |
| 20400429 | TRANSISTOR BC 557 B | TR107 | 1 |
| 20400429 | TRANSISTOR BC 547 B | TR103-109 | 2 |
| 20400429 | TRANSISTOR BC 307 | TR101 | 1 |
| 20415459 | TRANSISTOR Ph 2369 | TR102 | 1 |
| 24314709 | RADIAL ELECT. CAPACITOR 4.7MF 16V | C128-130 | 2 |
| 24322209 | RADIAL ELECT. CAPACITOR 22MF 16V | C104-119-127 | 3 |
| 24421009 | RADIAL ELECT. CAPACITOR 10MF 25V | C103-105 | 2 |
| 24421009 | RADIAL ELECT. CAPACITOR 100MF 25V | C101-111-122 | 2 |
| 25156809 | FILM CAPACITOR 1.85 68NF 63V 10% | C112 | 1 |
| 25161009 | FILM CAPACITOR 1.85 100NF 63V 10% | C113-114-119-143 | 4 |
| 25161509 | FILM CAPACITOR 1.85 150NF 63V 10% | C115 | 1 |
| 25162209 | FILM CAPACITOR 1.85 220NF 63V 10% | C131 | 1 |
| 25164709 | FILM CAPACITOR 1.85 470NF 63V 10% | C124 | 1 |
| 25245809 | FILM CAPACITOR 1.85 6.8NF 100V 10% | C125 | 1 |
| 25251019 | FILM CAPACITOR 1.85 10NF 300V 10% | C129 | 1 |
| 26321109 | CER. CAP. N150 50V 200PF RTH60SKYB20C | C116 | 1 |
| 26321109 | CER. CAP. N150 50V 200PF RTH60SKYB21C | C123-133 | 2 |
| 26347109 | CER. CAP. 10% 60V 470PF RTH640SKYB471K | C117 | 1 |
| 26415809 | CER. CAP. -20 +90 50V 1NF RTH40SKYB102Z | C120 | 1 |
| 26610809 | CER. CAP. -20 +90 50V 100N RTH05K15KYF104Z | C182-108-109-135 | 4 |

| C.R.T. ASSEMBLY 12" P31 MT4000 | | code 62508771 | |
|--------------------------------|--------------------------------------|---------------|------|
| CODE | DESCRIPTION | REF. No | Q.TY |
| 20630184 | C.R.T. 12" P31 ORON R5130 HT | | 1 |
| 28332050 | DEFLEXION YOKE TMD 2522-3011.2110 | | 1 |
| 43000140 | SPRING C.R.T. EARTHING UTH 1006 | | 1 |
| 43000180 | C.R.T. BRAIDED FIXING CLIPS UTH 1168 | | 1 |

| C.R.T. SOCKET ASSEMBLY MT4000 | | code 62008245 | | |
|-------------------------------|-------------------------------------|---------------|----------|---|
| CODE | DESCRIPTION | REF. No | Q.TY | |
| 20420110 | TRANSISTOR BF459 | | TR202 | 1 |
| 21242200 | CARBON RESISTOR 2.2K 5% 14W | R214 | 1 | |
| 21541001 | METAL OXIDE RES. 1K 5% 2W | R208 | 1 | |
| 24821009 | RADIAL ELECT. CAPACITOR 10MF 160V | C201 | 1 | |
| 25361000 | FILM CAPACITOR 1.60 100NF 160V 20% | C206 | 1 | |
| 28062170 | FILTER COIL 5.5 MT 200 UTH 22 | S200 | 1 | |
| 29600000 | NEON LAMPE EKULIT BN15615H | SC201-202-203 | 3 | |
| 34820911 | C.R.T. SOCKET 1211" NUVAL 112 | | | |
| 20415459 | TRANSISTOR Ph2369 | | TR201 | 1 |
| 24322209 | RADIAL ELECT. CAPACITOR 22MF 16V | | C204 | 1 |
| 25164709 | FILM CAPACITOR 1.85 470NF 63V 10% | | C203 | 1 |
| 26256109 | CER. CAP. NPD 50V 50PF RTH60SKYB50J | | C202 | 1 |
| 26100000 | DIODE 1N 4148 | | D201 | 1 |
| 21223300 | CARBON RESISTOR 33E 5% 14W | | R202 | 1 |
| 21227500 | CARBON RESISTOR 75E 5% 14W | | R201 | 1 |
| 21237000 | CARBON RESISTOR 100E 5% 14W | | R204 | 1 |
| 21236800 | CARBON RESISTOR 680E 5% 14W | | R205 | 1 |
| 21241200 | CARBON RESISTOR 1.2K 5% 14W | | R209 | 1 |
| 21242700 | CARBON RESISTOR 2.7K 5% 14W | | R213 | 1 |
| 21251200 | CARBON RESISTOR 12K 5% 14W | | R210-211 | 2 |
| 21256200 | CARBON RESISTOR 620K 5% 14W | | R212 | 1 |
| 50144741 | CRT SOCKET P.C.B. ETV Z1 02 | | | 1 |

| PACKING ASSEMBLY MT4000 12" | | | |
|-----------------------------|--|--|------|
| CODE | DESCRIPTION | | Q.TY |
| 34074246 | 6 WAY PRESSACCO CONNECTOR F. (RED) 12R236 | | 1 |
| 34074250 | PRESSACCO LUG 1198986 | | 7 |
| 52422110 | UPPER SIDE POLYUR. BOX MT2000/2002 UTH447A | | 1 |
| 52422120 | LOWER SIDE POLYUR. BOX MT2000/2002 UTH448A | | 1 |
| 52825350 | PACKING BOX MT4000 UTH2141 | | 1 |
| 53875640 | INSTRUCTIONS MT4000 12" | | 1 |

| C.R.T. MAINFRAME ASSY MT4000 12" | | code 62008790 | |
|----------------------------------|---|---------------|------|
| CODE | DESCRIPTION | | Q.TY |
| 13000000 | WIRE (CORPLEX) | | 0.1 |
| 23241008 | POTENTIOMETER 1K P1602C UTH1804 | | 1 |
| 40029095 | SELF-TAPPING SCREW 2.9x9.5 6954-71 B ZN | | 1 |
| | FOR FIXING LEGS | | 8 |
| 40039095 | SELF-TAPPING SCREW 3.9x6.5 6954-71 B ZN | | 1 |
| | FOR FIXING GUIDE SUPPORTS AND POWER UNIT | | 3 |
| 40039119 | SELF-TAPPING SCREW 3.9x19 TCC B ZN | | 1 |
| | FOR C.R.T. FIXING AND P.C.B. GUIDES | | 6 |
| 40039125 | SELF-TAPPING SCREW 3.9x25 TCC B ZN | | 1 |
| | FOR FIXING FVOT | | 2 |
| 42000050 | FLAT ROSE WASHER 6950-69 D4.3 D1251.5 ZN | | 1 |
| | FOR C.R.T. FIXING | | 4 |
| 42000130 | UNI GROVER WASHER 175152A-5.8x3.2x0.8 | | 1 |
| | FOR TILT FIXING SCREWS | | 2 |
| 42000140 | UNI GROVER WASHER 175152A-7.3x4.3x0.9 | | 1 |
| | FOR FIXING BAND | | 2 |
| 42000270 | FLAT ROSE UNI WESHER 6952-69 3.2x6x0.5 | | 1 |
| | FOR TILT FIXING SCREWS | | 2 |
| 50111772 | GALVANIZED METALLIC BASE 12" UTH 322C | | 1 |
| 50111781 | RH GALVANIZED BRACKET FOR 12" FRAMEWORK UTH321C | | 1 |
| 50111791 | LH GALVANIZED BRACKET FOR 12" FRAMEWORK UTH 321D | | 1 |
| 50111802 | RH GALVANIZED MOUNTING FOR 12" FRAMEWORK UTH 323C | | 1 |
| 50111812 | LH GALVANIZED MOUNTING FOR 12" FRAMEWORK UTH 323D | | 1 |
| 50116780 | SUPPORT FOR P.C.B. GUIDE MT4000 UTH 2009 | | 1 |
| 50116790 | SUPPORT FOR POWER UNIT MT4000 UTH 2010 | | 1 |
| 50420690 | P.C.B. GUIDE 282181K | | 1 |
| 50422171 | SPRING LOADED SHORT GUIDE UTH 5855 | | 2 |

| BRIGHTNESS WIRING ASSY - UTC600 | | code 61005730 | |
|---------------------------------|--|---------------|------|
| CODE | DESCRIPTION | | Q.TY |
| 12000042 | RED WIRE 2#AWG UL 1007 | | 0.41 |
| 12000045 | GREEN WIRE 2#AWG UL 1007 | | 0.41 |
| 12000046 | BLUE WIRE 2# AWG UL 1007 | | 0.41 |
| 34074246 | 6 WAY PRESSACCO CONNECTOR F (RED) 12R236 | | 1 |
| 34074250 | PRESSACCO LUG 1198986 | | 3 |

| VERTICAL YOKE WIRING ASSEMBLY-UTC 303 | | code 61002940 | |
|---------------------------------------|--|---------------|--|
|---------------------------------------|--|---------------|--|

| HORIZONTAL YOKE WIRING ASSEMBLY-UTC 304 | | code 61002850 | |
|---|--|---------------|--|
|---|--|---------------|--|

| SOCKET EARTHING CABLE UTC 556 | | code 61005380 | |
|-------------------------------|--|---------------|--|
|-------------------------------|--|---------------|--|

| PACKING ASSEMBLY MT4000 9" | | | |
|----------------------------|---|--|------|
| CODE | DESCRIPTION | | Q.TY |
| 52422130 | FRONT POLYSTYRENE PACKING PIECE UTH 620 | | 1 |
| 52422140 | REAR POLYSTYRENE PACKING PIECE UTH 621 | | 1 |
| 52825660 | PACKING BOX MT4000 9" UTH2231 | | 1 |

| C.R.T. MAINFRAME ASSY MT4000 9" | | code 62009010 | |
|---------------------------------|---|---------------|------|
| CODE | DESCRIPTION | | Q.TY |
| 50112580 | LEFT FIXING BRACKET MT2000/9 UTH 366 | | 1 |
| 50112580 | RIGHT FIXING BRACKET MT2000/9 UTH 365 | | 1 |
| 50112610 | LEFT LEG MT2000/9 UTH 368 | | 1 |
| 50112620 | RIGHT LEG MT2000/9 UTH 367 | | 1 |
| 50116241 | METAL BASE PLATE 9" 3000-4000 UTH 1768A | | 1 |

| C.R.T. ASSEMBLY MT 4000 9" P31 | | code 62009020 | |
|--------------------------------|-----------------------|---------------|------|
| CODE | DESCRIPTION | | Q.TY |
| 20620010 | CRT 9" GH KRON M23-E5 | | 1 |

MT 4000 9" - MT 4000 12"

open frame high resolution monochrome monitors

For application with 18.4 KHz HERCULES board

CHARACTERISTIC

| | | |
|-------------------|----------------------------|--|
| CRT | SIZE | 9"-12" |
| | DEFL. ANGLE | 90 degrees |
| | PHOSPHOR | 12" P 39 Long Persistence (OPTIONAL P 31) 9" P31 Medium short persistence |
| DISPLAY FORMAT | CHARACTERS | 2000 (80x25) |
| VIDEO | INPUT SIGNAL | TTL+Intensifier |
| | H. SYNC. | Positive |
| | V. SYNC. | Positive |
| | RISE/FALL TIME | ≤ 20 ns |
| | BANDWIDTH | 20 MHz |
| | CENTRE RESOLUTION LINES/IN | 1000 |
| | INPUT RESISTANCE | ≤ 200 Ohm |
| BLANKING TIME | HORIZONTAL | ≤ 8 us |
| | VERTICAL | ≤ 150 us |
| HORIZONTAL SYNC. | FREQUENCY (+/-500 Hz) | 18.4 KHz |
| | PULSE WIDTH | 3-10 us |
| | INPUT RESISTANCE | ≤ 1 K Ohm |
| VERTICAL SYNC. | FREQUENCY | 48-60 Hz |
| | PULSE WIDTH | 120-500 us |
| | INPUT RESISTANCE | ≤ 1K Ohm |
| EHV | (O BEAM) | 13 Kv |
| SUPPLY | VOLTAGE | 12 Vdc +/-3% |
| | CURRENT | 1,5 A max. |
| GEOMETRY | RASTER DISTORTION | max. 1% |
| | SCAN LINEARITY | max. 10% |
| | FOCUS | Internal control |
| | V. AMPLITUDE | Internal control |
| | V. FREQUENCY | Internal control |
| | V. LINEARITY | Internal control |
| | H. AMPLITUDE | Internal control |
| | H. FREQUENCY | Internal control |
| | H. LINEARITY | Internal control |
| H. PHASE | Internal control | |
| BRIGHTNESS | | External |
| CONTRAST | | Internal preset |
| ENVIRONMENTAL | AMBIENT TEMPERATURE | 0 centigrade + 55 centigrade |
| | AMBIENT HUMIDITY | 5-90% |
| | STORAGE TEMPERATURE | -40 centigrade + 65 centigrade |
| | STORAGE HUMIDITY | 5-90% |
| WEIGHT | GROSS/NET | 3,2/3,6 Kg. - 5/5,5 Kg. |
| DIMENSION PACKING | | 290x290x295 mm 360x355x290 |

 **HANTAREX**
ELECTRONIC SYSTEMS