SM124™
HIGH-RESOLUTION MONOCHROME MONITOR

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SERVICE MANUAL

Printed in Korea
P/N 483-303A
SPECIFICATIONS

1. CATHODE RAY TUBE
   Type: Non-giare DARK
   Size & Deflection angle: 12", 90°
   Neck diameter: 20 mm
   Phosphor: Paper White

2. INPUT
   Input signal: TTL Signal
   • Video: 1 Vp-p Positive
   • Audio: 1 Vp-p
   • Vertical Drive: 5 ± 1.5 Vp-p Negative
   • Horizontal Drive: 5 ± 1.5 Vp-p Negative
   Power Input: AC 220V 50Hz, 0.26A
   Input Connector: 13 Pin Din Connector

3. SCANNING
   Horizontal frequency: 35.7 KHz
   Horizontal retrace time: 6.3 µs
   Vertical frequency: 71.2 Hz
   Vertical retrace time: 420 µs

4. VIDEO
   • Display Area (HXV): 210 mm × 130 mm
   • Amplifier Type: Linear
   • Frequency band width: 32 MHz
   • Horizontal resolution: 1100 lines at center
   • Display character: 80 × 50 characters

5. GEOMETRIC DISTORTION: 2.5% max.

6. LINEARITY
   • Horizontal: 10% max.
   • Vertical: 10% max.

7. EXTERNAL CONTROLS: BRIGHTNESS, CONTRAST, ON/VOLUME

ADJUSTMENT AND MAINTENANCE

CIRCUIT PROTECTION
Circuit protection is provided by one Mini fuse, on the power pc board. A 0.5 Ampere fuse (F901) is wired into one side of the AC line and provides primary protection to the entire chassis.

1. CENTERING ADJUSTMENT
   CAUTION: The following adjustment points are close to the high voltage yoke terminal. If the raster is not centered in the raster opening, it may be centered by removing the cabinet back and adjusting the centering tabs on the neck of the tube, located at the rear of the deflection yoke. Turn the whole device clockwise or counterclockwise. To increase the amount of raster shift, move the two tabs which project from the device, farther apart. If the raster is tilted on an angle, it may be straightened by loosening the deflection yoke locking clamp and rotating the deflection yoke.

2. FOCUS
   Adjust the focus control (VR703) for best overall focus of the test pattern (marked with the symbol "%"). Usually the center and corners of the screen do not focus at the same setting and a compromise must be made.

3. BRIGHTNESS
   Adjust subbrightness control (VR301) for visual cut off of the raster when external brightness is turned to maximum.

4. VERTICAL SIZE AND LINEARITY ADJUSTMENT
   The vertical size control (VR602) should be adjusted for the picture to fill the screen vertically, the linearity control (VR603) should be adjusted for best overall vertical linearity. Adjustment of either control will not affect the adjustment of the other.

5. HORIZONTAL SIZE AND LINEARITY ADJUSTMENT
   The horizontal size control (L702) is located on the main PCB, it should be adjusted for the picture to fill the screen horizontally, the linearity control (L703) should be adjusted for the best overall horizontal linearity adjustment so neither control will affect the adjustment of the other.
PINCUSHION AND BARRELLING

TRAPEZOID

PARALLELOGRAM

YORK TILT

Fig. 2, Geometry Measurements
HORIZONTAL TIMING

VIDEO

10.5μS  6μS  40μS  7μS

SYNC.

1μS  4.5μS

15.75KHz (63.5μS)

VERTICAL TIMING

VIDEO

1.396mS  1.184mS  12.7mS  1.41mS

SYNC.

0.19mS  1.016mS

60Hz (16.69mS)

* NOTES
1. SIGNAL INPUT LEVEL: 1VP-p
2. TIME TOLERANCE: ±0.1%
3. THE MONITOR IS ADJUSTED ACCORDING TO THE ABOVE TIMINGS AND FREQUENCY.
COMPONENT OF P.C.B

MAIN P.C.B (COMPONENT SIDE)
Please Check the Monitor and the PC how to Connect exactly.

LED Lights ON?

Yes

Video something wrong?

Yes

Go to VIDEO chart.

No

Sound something wrong?

Yes

Go to SOUND chart.

No

Switch ON monitor, then check it after 15 minutes.

Something wrong?

Yes

Adjustment

No

Good! Please return the set to owner.
Please check the monitor and outlet connections.

LED Lights?

Yes → To the main chart.

No or Weak → Check input of IC901.

+22V DC?

Yes → Check output of IC901 & PIN #2 of connector (P901).

No → Check AC fuse (F901).

Open?

Yes → Replace AC fuse.

No → Fuse Reopen?

Yes → Trouble in D901-D904

No → Replace Power Switch.

17V AC?

Yes → Replace Transformer.

No → +12V DC?

Yes → Replace IC901 or Q901.

No → To the main chart.
Check the connection between Monitor and PC.

- **Power is ON?**
  - Yes: Check connector (P901).
    - Yes: Normal?
      - Yes: Check connector (P402).
        - Yes: Normal?
          - Yes: Check connector (P401).
            - Yes: Normal?
              - Yes: Trouble in IC401 and C403.
              - No: Trouble in connector (P401).
            - No: Trouble in connector (P402).
        - No: Trouble in connector (P901).
    - No: To the Power chart.
  - No: To the Power chart.
VIDEO CIRCUIT

Q301 BASE 3.3V
EMITTER 2.67V
COLLECTOR 11.66V

1. 0.9Vp-p
2. 5Vp-p
3. 3.3Vp-p
4. 3.93V
5. 5.88V
6. 28Vp-p
7. 70.7V
8. -20.8V
9. 600V
# EXPLoded VIEW

## MECHANICAL PARTS

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<tr>
<th>NO</th>
<th>DESCRIPTION</th>
<th>PART NO</th>
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<th>Q'TY</th>
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