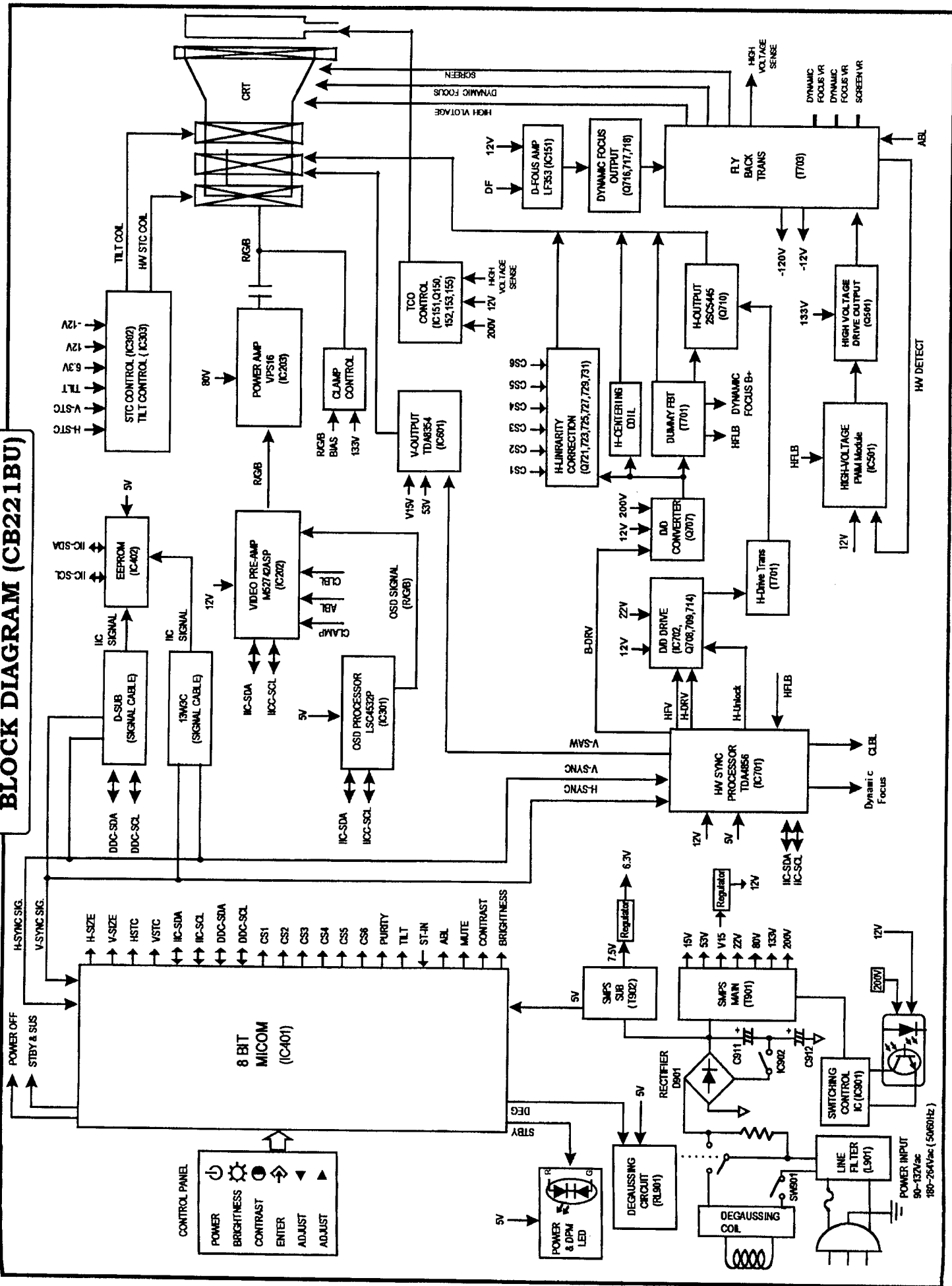


BLOCK DIAGRAM (CB221BU)



DESCRIPTION OF BLOCK DIAGRAM FOR CB221BU

1. Line Filter & Associated Circuit

This is used for suppressing noise of power input line flowing into the monitor and/or some noise generated in this monitor flowing out through the power input line.

That is to say, this circuit prevents interference from between the monitor and other electric appliances.

2. Degauss Circuit & Coil

The Degauss circuit consists of the degaussing coil, the PTC (Positive Temperature Coefficient) thermistor (TH901), and the relay(RL901). This circuit eliminates abnormal color of the screen automatically by degaussing the slot mask in the CRT when turn on the power switch. When you need to degauss while using the monitor select  (DEGAUSS) on the OSD menu.

3. SMPS(Switching Mode Power Supply).

This circuit works with power of 90~132Vac/180~264Vac(50/60Hz).

The operation procedure is as follows:

- 1)AC input voltage is rectified and smoothed by the bridge diode (D901) and the capacitor (C911,912).
- 2)The rectified voltage (DC voltage) is applied to the primary coil of the transformer (T901,T902)
- 3)The control IC (IC901) generates switching pulse to turn on and off the primary coil of the transformer (T901) repeatedly.
- 4)Depending on the turn ration of the transformer , the secondary voltages appear at the secondary coil of the transformer (T901).
- 5)The main transformer's(T901) secondary voltages are rectified by each diode (D924,926,928,929,930,931,932) and operate the other circuits. (Deflection , Video Amplifier ,..... etc.)
- 6)The switching control IC (IC901) is synchronized by H-Drive pulse through the pulse transformer(T903).
- 7)We achieved the very low power consumption(<3W) by means of using the sub-transformer(T902) ,that is to say when the main transformer stops it's switching and transferring energy to secondary parts, it remains the least power consumption which supplies the MICOM power and the CRT heater power.

8)The sub-transformer's(T902) secondary voltages are rectified by each diodes(D925,927) and operate MICOM, HEATER, USB.

4. Display Power Management Circuit.

This circuit control power consumption of the monitor by detecting H and V sync signal. There are Stand-by ,Suspend and Off mode.

When no horizontal or vertical sync signal input, the circuit consist of IC903,T902 remain Stand-by or Ssuspend or Off mode.

It's power consumption is below 15W at Stand-by/Suspend mode and below 3W at Off. Mode(Except USB).

5. X-ray Protection.

This circuit detects the rectified DC voltage comes from the FBT pin 11(GR 2). If the high voltage of the FBT reaches up to about 31kV (abnormal state) , high voltage control PWM module(IC501) detects it. And PWM module (IC501) prevent output signal from the gate of high-voltage-D/D-convert-FET(Q501) . It stops generating the high voltage. (In the normal state, the high voltage is about 27.5kV.)

6. Micom (Microprocessor) Circuit.

The operating procedure of Micom (Microprocessor) and its associated circuit is as follows:

- 1)H and V Sync signal is supplied from the Signal-cable to the Micom (IC401).
- 2)The Micom distinguishes polarity and frequency of H / V sync.
- 3)The Micom controls each OSD function signals.(H-size, H-position, V-size, etc.)
- 4)The controlled data of each mode is stored in itself. User can adjust screen condition by each OSD function. The data of the adjust screen condition is stored automatically.

7. Horizontal and Vertical Synchronous Processor

This circuit generates the horizontal drive pulse and the vertical drive pulse by taking sync-signal form the Signal-cable. This circuit consists of the TDA4856(IC701) and the associated circuit. TDA4856 basically adoptes the I2C control process.

8. Oscillating Circuit for D/D Converter.

This circuit generates the square waveform which has the horizontal period by taking the output of the TDA4856(IC701) .

9. D/D (DC to DC) Converter.

This circuit supplies DC voltage to the horizontal deflection output circuit by decreasing DC 200V which is the secondary voltage of the SMPS in accordance with the input horizontal frequency.

10. Side-Pincushion Correcting Circuit.

This circuit improves the side-pincushion of the screen by mixing east-west wave to the output of the horizontal deflection D/D converter which is used for the supply voltage source (B+) of the deflection circuit.

11. Horizontal Drive Circuit.

This circuit is used for supplying Base current to horizontal deflection output transistor(Q710). This circuit consists of IC702,Q708,Q709,Q714,T702.

12. Horizontal Deflection Output Circuit.

This circuit makes the horizontal deflection yoke by supplying the saw-tooth current drive the horizontal deflection output transistor(Q710).

13. High Voltage Output & FBT (Flyback Transformer).

The high voltage output circuit is used for generating pulse wave to the primary coil of the FBT (T501). The boosted voltage (about 27.5kV) appears at the secondary of the FBT and it is supplied to the anode of the CRT. And there are another output voltages such as the dynamic focus voltage ,the screen voltage and Grid 1 control voltage.

14. H-Linearity Correction Circuit.

This circuit corrects the horizontal linearity for each horizontal sync frequency. We use the six stages switching points for the resonant capacitance with the horizontal deflection yoke which are changed depending on the horizontal sync frequency. These are consist of the capacitor (C748~C755)and MOSFET(Q721~Q731).

15. H-Raster Centering Circuit.

This circuit makes the back raster stay in the center of the screen by selecting the switch(SW701)

16. Vertical Output Circuit.

This circuit takes the vertical ramp wave form the TDA4856(IC701) and performs the vertical deflection by supplying the saw-tooth wave current form the TDA8354 (IC601) to the vertical deflection yoke.

17. Dynamic Focus Output circuit.

This circuit takes H and V parabola wave from the TDA4856(IC701) and it's amplified the output stage(Q716,Q171) and then mixed the parabola wave form with DC(about 10kV) which is generated to the FBT(T501).

18. H & V Blanking and Brightness Control.

This circuit eliminates the retrace line by supplying a negative pulse to the G1 of the CRT. The brightness control circuit is used to control of the screen brightness by changing the DC level of G1.

19. Image Rotation (Tilt) Circuit.

This circuit corrects the tilt of the screen by supplying the image rotation signal to the tilt coil which is attached to the CRT Deflection Yoke assembly
It consists of Op-amp(IC303) and transistor amplifier(Q320,Q321) which take the tilt control signal of MICOM(IC401).

20. H/V Static Convergence Control Circuit.

This circuit minimizes the misconvergence by moving the red beam and the blue beam position with the positive or negative current applied to H/V convergence coil on the deflection yoke. It's controlled by IC302.

21. MOIRE Reduction Function.

This function reduce interference between the periodical display pattern and the CRT's grill. The positions of every other one dot video signal beams (red, green and blue beam) are shifted finely, thus reducing interference.

This function is included in the TDA4856 internal functions.

22. OSD Circuit.

This circuit is used for performing the OSD (On Screen Display) function. When a user selects the OSD Select/ Adjustment control, the adjustment status displays on the screen.

23. Video Pre-Amp Circuit.

This circuit amplifies the analog video signal from 0-0.7V to 0-4V. This circuit is operated by taking the clamp, R, G, B drives, and contrast signals from the Micom (IC401).

25. Video Output Amp Circuit.

This circuit amplifies the video signal which comes from the video pre-amp circuit and amplified video signal is applied to the CRT cathode. It consists of the output amplifier(IC203) and associated circuits.

26. Auto Color temperature/ Brightness Control Module(Digital Eye).

It makes the display condition change the color temperature, the brightness and the contrast in accordance with the peripheral environment, that is the lighting condition, a kind of light, etc.