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SPECIFICATIONS

1. LCD CHARACTERISTICS

- Type : TFT XGA LCD Module
- Pixel Pitch : 0.297mm x 0.297mm
- Color Depth : 6bits(with FRC)/ 16M colors
- Active Video Area : 15.0inch (304.128 x 228.096)
- Surface Treatment : Anti-Glare, Hard Coating (3H)
- Backlight Unit : Top/Bottom edge side 2CCFL
- Electrical Interface : LVDS interface

2. OPTICAL CHARACTERISTICS

- 2-1. Viewing Angle by Contrast Ratio ≥ 10
 - Left : 55° min. 60°(typ)
 - Right : 55° min. 60°(typ)
 - Top : 40° min. 45°(typ)
 - Bottom : 40° min. 45°(typ)

2-2. Luminance: 180(min.), (9300K)

2-3. Contrast Ratio : 250(min.), 350(typ.)

3. SIGNAL (Refer to the Timing Chart)

- 3-1. Sync Signal
 - 1) Type : Separate Sync. (Horizontal & Vertical)
 - 2) Input Voltage Level : Low=0~0.8V, High=2.1~5.5V
 - 3) Sync Polarity : Positive or Negative

3-2. Video Input Signal

- 1) Type : R, G, B Anabg
- 2) Voltage Level : 0~0.714 V
 - a) Color 0, 0 : 0 Vp-p
 - b) Color 7, 0 : 0.467 Vp-p
 - c) Color 15, 0 : 0.714 Vp-p
- 3) Input Impedance : 75 Ω

3-3. Operating Frequency

- Horizontal : 28 ~ 61kHz
- Vertical : 48 ~ 75Hz

4. POWER SUPPLY

- 4-1. Power
100~240V, 50/60Hz 0.6A

4-2. Power Consumption

MODE	H/V SYNC	VIDEO	POWER CONSUMPTION	LED COLOR
POWER ON (MAX)	ON/ON	ACTIVE	less than 25 W	GREEN
STAND-BY	OFF/ON	OFF	less than 3 W	AMBER
SUSPEND	ON/OFF	OFF	less than 3 W	AMBER
DPMS OFF	-	-	less than 2 W	AMBER

5. ENVIRONMENT

- 5-1. Operating Temperature: 10°C~35°C (50°F~95°F)
(Ambient)
- 5-2. Relative Humidity : 10%~80%
(Non-condensing)
- 5-3. MTBF : 50,000 Hours (Min.)
Lamp Life : 40,000 Hours (Min.)

6. DIMENSIONS (with TILT/SWIVEL)


- Width : 387mm (15.24")
- Depth : 175mm (6.89")
- Height : 330mm (12.99")

7. WEIGHT (with TILT/SWIVEL)

- Net. Weight : 3.6kg (7.94 lbs)
- Gross Weight : 5.2kg (11.46 lbs)

PRECAUTION

WARNING FOR THE SAFETY-RELATED COMPONENT.

- There are some special components used in LCD monitor that are important for safety. **These parts are marked  on the schematic diagram and the replacement parts list.** It is essential that these critical parts should be replaced with the manufacturer's specified parts to prevent electric shock, fire or other hazard.
- Do not modify original design without obtaining written permission from manufacturer or you will void the original parts and labor guarantee.

TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- The module not be exposed to the direct sunlight.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a softmaterial. (Cleaning with a dirty or rough cloth may damage the panel.)

WARNING

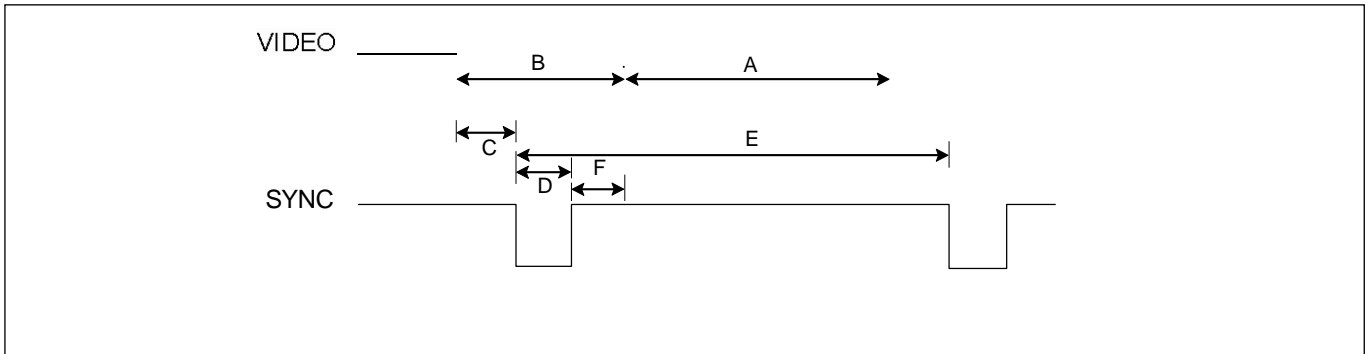
BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight (CCFL) or inverter circuit, must disconnect the AC adapter because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

CAUTION

Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

TIMING CHART



MODE	H / V	Sync Polarity	Dot Clock	Frequency	Total Period (E)	Video Active Time (A)	Blanking Time (B)	Sync Duration (D)	Back Porch (F)	Front Porch (C)	Resolution
1	H (Pixels)	-	28.350	31.50 KHz	900	720	180	108	54	18	720 x 400
	V (Lines)	-		70.156 Hz	449	400	49	3	34	12	
2	H (Pixels)	-	25.175	31.469 KHz	800	640	160	96	48	16	640 x 480
	V (Lines)	-		59.940 Hz	525	480	45	2	33	10	
3	H (Pixels)	-	30.240	35.00 KHz	864	640	224	64	96	64	640 x 480
	V (Lines)	-		66.667 Hz	525	480	45	3	39	3	
4	H (Pixels)	-	31.5	37.50 KHz	840	640	200	64	120	16	640 x 480
	V (Lines)	+		75.0 Hz	500	480	20	3	16	1	
5	H (Pixels)	-	31.505	35.162 KHz	896	720	176	40	102	34	720 x 480
	V (Lines)	-		59.901 Hz	587	480	107	2	93	12	
6	H (Pixels)	-	36.0	35.156 KHz	1024	800	224	72	128	24	800 x 600
	V (Lines)	-		56.25 Hz	625	600	25	2	22	1	
7	H (Pixels)	+	40.0	37.879 KHz	1056	800	256	128	88	40	800 x 600
	V (Lines)	+		60.317 Hz	628	600	28	4	23	1	
8	H (Pixels)	-	50.0	48.077 KHz	1040	800	240	120	64	56	800 x 600
	V (Lines)	-		72.188 Hz	666	600	66	6	23	37	
9	H (Pixels)	+	49.5	46.875 KHz	1056	800	256	80	160	16	800 x 600
	V (Lines)	+		75.0 Hz	625	600	25	3	21	1	
10	H (Pixels)	-	57.285	49.727 KHz	1152	832	320	64	224	32	832 x 624 (MAC 17")
	V (Lines)	-		74.553 Hz	667	624	43	3	37	3	
11	H (Pixels)	-	65	48.363 KHz				136	160	24	1024 x 768
	V (Lines)	-		60.004 Hz	806	768	38	6	29	3	
12	H (Pixels)	-	71.640	53.946 KHz				176	112	16	1024 x 768
	V (Lines)	-		66.110 Hz	816	768	48	4	36	8	
13	H (Pixels)	-	75	56.476 KHz				136	144	24	1024 x 768
	V (Lines)	-		70.069 Hz	806	768	38	6	29	3	
14	H (Pixels)	+	78.75	60.023 KHz				96	176	16	1024 x 768
	V (Lines)	+		75.029 Hz	800	768	32	3	28	1	
15	H (Pixels)	-	80.00	60.241 KHz				96	176	32	1024 x 768 (MAC 19")
	V (Lines)	-		74.928 Hz	804	768	36	3	30	3	

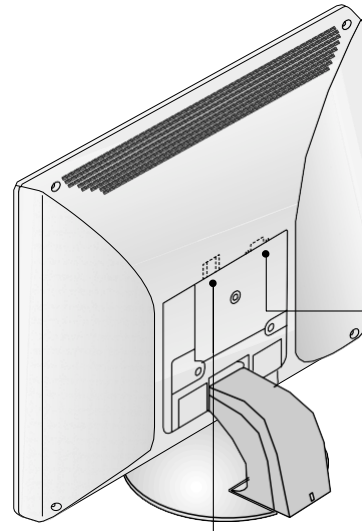
OPERATING INSTRUCTIONS

FRONT VIEW



See front control panel

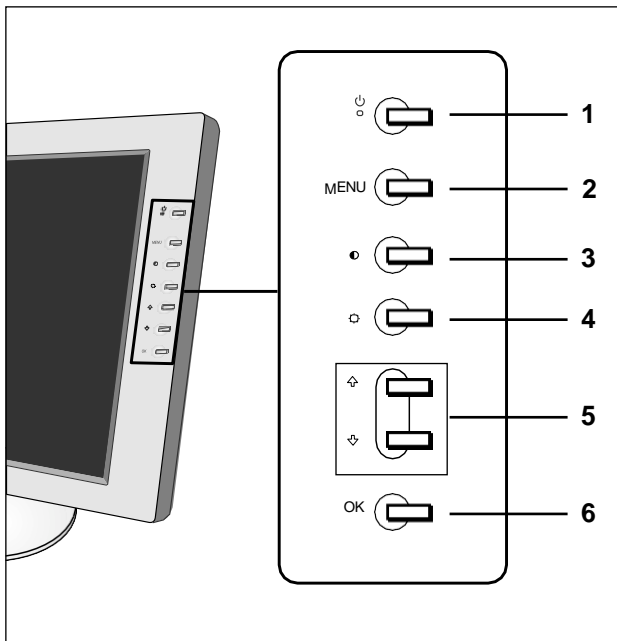
REAR VIEW



D-Sub Signal Connector

Power Connector

Front Control Panel



1. Power switch and indicator

This switch turns the display on and off.

This power indicator lights up in green when the display is turned on, and lights up in orange when the monitor is in power saving mode.

2. MENU Button

This button display or close the main menu.

3. ● (Contrast) Button

This button displays the Contrast menu.

4. ☀ (Brightness) Button

This button displays the Brightness menu.

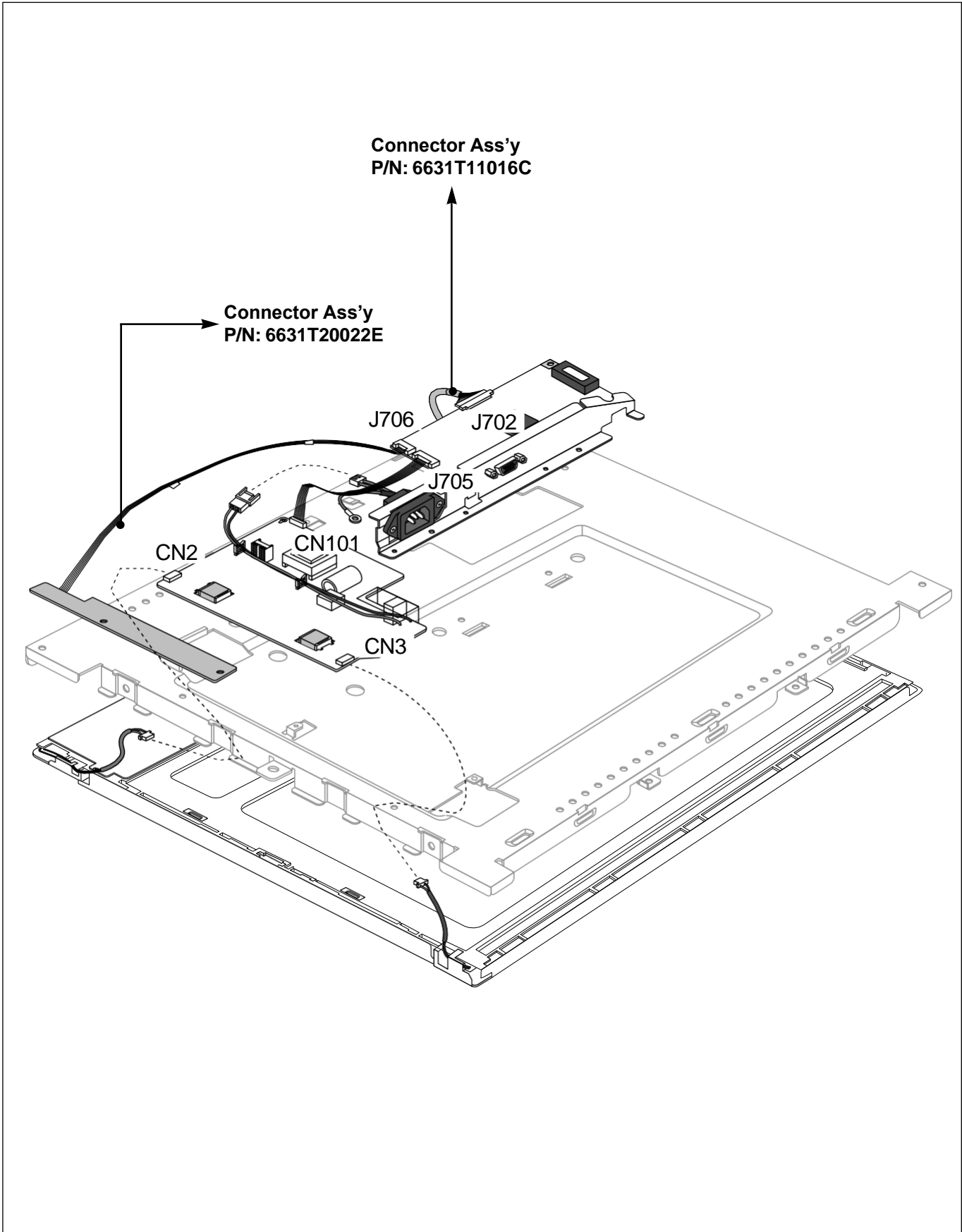
5. ↑/↓ Buttons

These buttons function as the ↑/↓ buttons when selecting the menu items and making adjustments.

6. OK Button

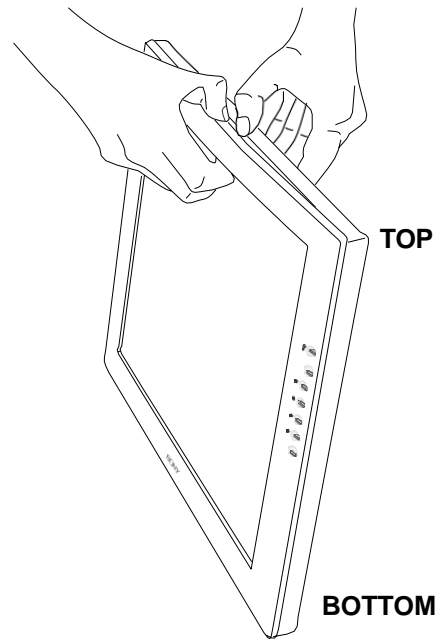
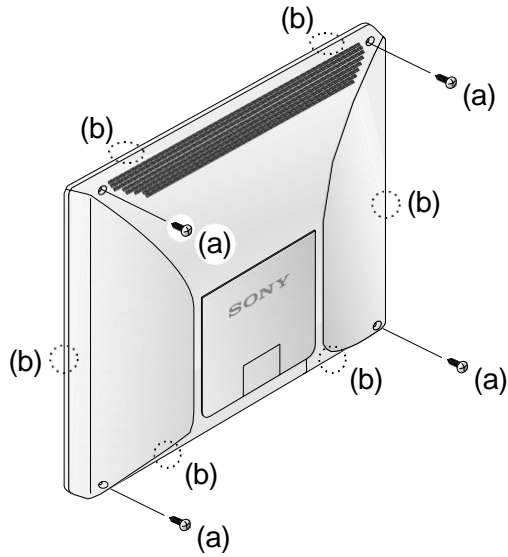
This button select the item or executes the settings in the menu.

WIRING DIAGRAM



DISASSEMBLY

BACK CABINET REMOVAL



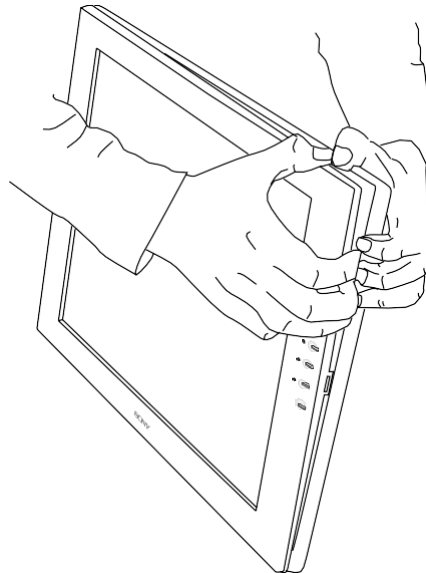
(b) Latch Point

1) Remove four screws (a) from Back cabinet

2) Set the Monitor as picture.

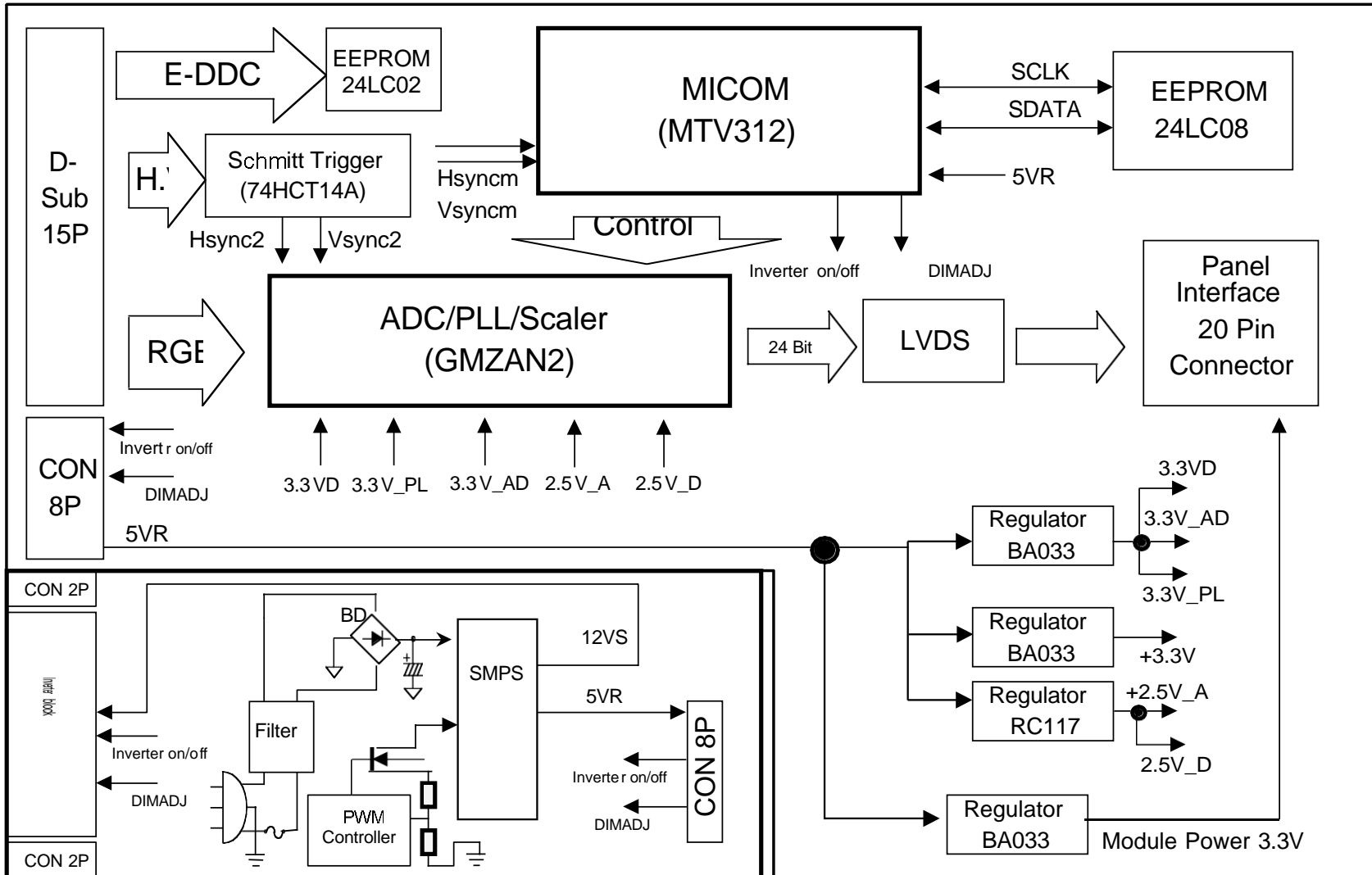
3) Put in the fingers between panel and Front bezel.

4) Pull the Front bezel and Back cabinet.



5) Pull the Side Front bezel.

6) Remove the Back cabinet.



BLOCK DIAGRAM

DESCRIPTION OF BLOCK DIAGRAM

1. Scaler One chip IC(GMZAN2, U201)

GMZAN2 (U201) is one chip IC which it supports four internal function blocks of Video Amp, PLL, A/D converter and Video processor.

Video signal (0.7Vp.p) clamped through C207, 208, 209 with matching IC's proper cut off voltage.

This signal is processed as a proper 8 bit digital signal by U201's amplifying, phase locking, A/D converting, and scaling operations.

U201 outputs 24bit RGB data and control signals(Clock, Horizontal and Vertical sync, and Data Enable) as LVDS IC's input signals.

2. System Controller (Microprocessor) Circuit

- 1) Microprocessor (U501) distinguishes polarity and frequency by calculating horizontal and vertical sync input from signal source.
- 2) Microprocessor (U501) carries out power control by sending power-down trigger signal to each IC.
- 3) Microprocessor (U501) communicates with EEPROM (U502), and GMZAN2 (U201) through IIC(2 lines) or 4 bit bus line. It makes all devices operated properly.
- 4) Microprocessor (U501) let User adjust screen by OSD function.

3. LVDS(Low Voltage Differential Signal, U411)

LVDS transmitter (U411) delivers digital signal to the receiver inside LCD module by method of \pm ion. The \pm ed signals are pairs of RIN0+-, RIN1+-, RIN2+-, RIN3+-, and RCLKIN+- of which voltage swing is 0.5V each.

When SHUTON pin's input is High, transmitter goes to power down mode.

4. DC/DC block

This block is composed of regulators which supplies 2.5V and 3.3V.

Each regulator's source power is 5VR from LIPS(LCD Inverter and Power Supply) block.

U806 supplies 2.5VD and 2.5VA and U802 supplies 3.3VD, 3.3V_AD, and 3.3V_PL powers to GMZAN2's internal PLL, ADC, Pre-amp, and scaler by dropping down 5VR.

U805 supplies MODPWR-3.3V for LCD module's operation by dropping down 5VR.

5. LIPS Block (LCD Inverter and Power Supply)

This block supplies DC voltages of 5VS to interface board and 12V to inverter by converting AC input voltage of 100~240Vac.

Converting method is SMPS(Switching Mode Power Supply).

Inverter on/off signal from microprocessor makes inverter turned on or off .

DIMADJ signal from microprocessor does inverter's current adjustment for Brightness control.

ADJUSTMENT

1. Procedures of how to go to service mode.

- 1) Enter the service mode of this unit by turning on the power while pressing and holding the "↓" key simultaneously.
- 2) Press "MENU" key--- MAINTAIN.
- 3) Press "↑" key to enter the service menu.
- 4) Select the desired function.
- 5) Press the "MENU" key to exit OSD.
- 6) Turn off the power and then turn on it again. The monitor then enters the normal mode.
To enter the service again, repeat the procedure described above.

Note

W/B readjustment is required after the panel, board and microcomputer are replaced. However, be sure to perform aging for more than 30 minutes for RGB reset before W/B adjustment.

2. Setup

- 1) Prepare timing and pattern data for a signal generator according to the Sony timing specifications.
- 2) Connect a monitor video cable to the signal generator.
- 3) Put Color Analyzer(ex. CA-110) 50cm away from the monitor, specify it vertically in the center of the display, and adjust the focus to the optimum level using an eyepiece.
- 4) Put the monitor and Color Analyzer(ex. CA-110) in a light-shielded room.
- 5) Set up [SERVICE MODE] of the monitor.

3. Operation

Data is manually set to improve the productivity. The brightness, contrast, and backlight are set to 50, 70 and 100 respectively. After that, the default data of the color temperature to be adjusted is set.

4. Warm up time

Warm up for 30 minutes before performing any adjustment.

5. Adjustment for White Balance

- a. Display Full white pattern at SXGA/60Hz.
- b. Set up [SERVICE MODE].
- c. Click "INITIAL EEPROM".
- c. Enter the service mode in case of show "color calibration complete" message.

6. 9300K color adjustment

- a. Select "9300K" in "COLOR TEMP" and enter.
- b. Use a 35% IRE white video field in the primary mode.
- c. Adjust "R/G/B Drive " to secure the color temperature from 6500K R/G/B initial drive data.
 - c-1. Down "B-Drive" for color Y.
 - c-2. Down/Up "R-Drive" for color X.
- d. Press "OK" key to exit adjust mode.

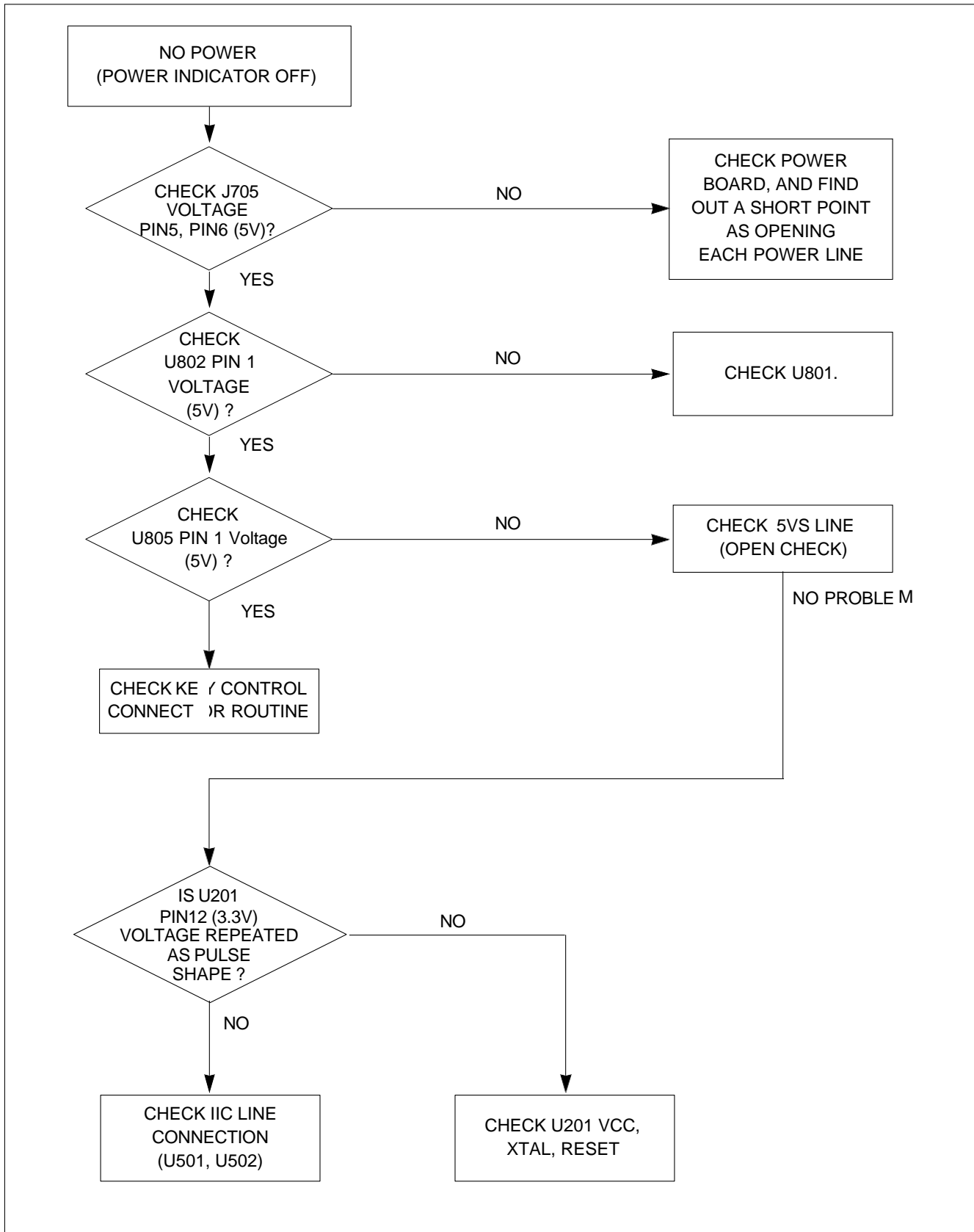
7. 6500K color adjustment

- a. Select "6500K" in "COLOR TEMP" and enter.
- b. Repeat the adjustment procedure as steps b to d at 9300K.

8. MENU → RESET → ALL RESET ←

TROUBLESHOOTING GUIDE

1. NO POWER



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