Internal Use Only

LG

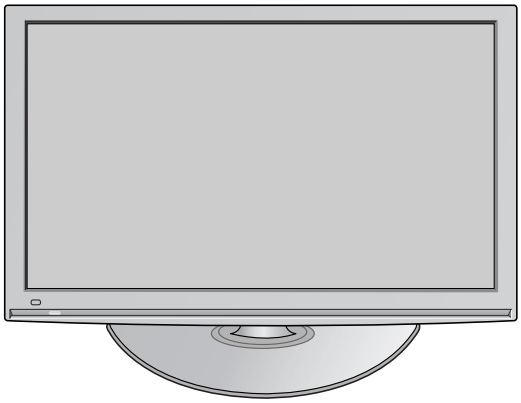
North/Latin America http://aic.lgservice.com
Europe/Africa http://eic.lgservice.com
Asia/Oceania http://biz.lgservice.com

PLASMA TV
SERVICE MANUAL

CHASSIS : PP91C

MODEL : 42PQ10R 42PQ10R-MB

CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL62181703 (0909-REV00)

Printed in Korea

CONTENTS

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Exploded View.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this monitor is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

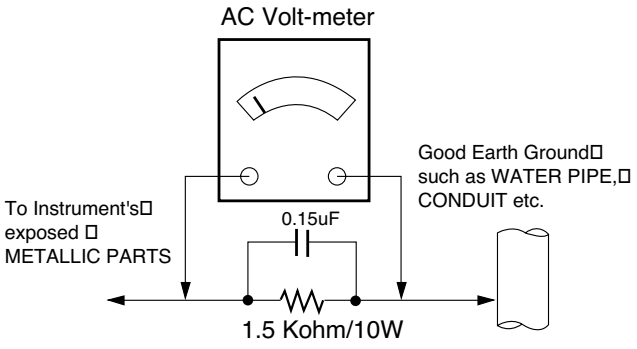
Keep wires away from high voltage or high temperature parts.

Due to high vacuum and large surface area of picture tube, extreme care should be used in **handling the Picture Tube.**
Do not lift the Picture tube by it's Neck.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.
Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SPECIFICATIONS

NOTE : Specifications and others are subject to change without notice for improvement.

■ Application Range

This spec is applied to PDP TV used PP91C Chassis.

Chassis	Model Name	Market	Brand
PP91C	42PQ10R-MB	Central and South America	LG

■ Specification

Each part is tested as below without special appointment.

1) Temperature : 25±5°C (77±9°F), CST : 40±5
2) Relative Humidity: 65±10%
3) Power Voltage: Standard Input voltage (100-240V~, 50/60Hz)
   * Standard Voltage of each product is marked by models.
4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with SBOM.
5) The receiver must be operated for about 20 minutes prior to the adjustment.

■ Test Method

1) Performance : LGE TV test method followed.
2) Demanded other specification
   Safety : CE, IEC specification
   EMC : CE, IEC

Model Name	Market	Remark	Appliance
42PQ10R-MB	Central and South America	Safety : IEC/ EN60065, EMI : CISPR13	TEST

■ Module Specification

(1) 42” XGA

No	Item	Specification	Remark
1	Display Screen Device	42 inch 16: 9 Color Plasma Display Module	PDP
2	Aspect Ratio	16:9	
3	PDP Module	PDP42G2###, RGB Closed Type	Glass Filter
4	Operating Environment	1) Temp. : 0 ~ 60deg 2) Humidity : 20 ~ 80%	LGE SPEC.
5	Storage Environment	3) Temp. : -20 ~ 60deg 4) Humidity : 10 ~ 90%	
6	Input Voltage	AC100-240V~, 50/60Hz	Maker : LGIT

■ Model General Specification

(1) Central and South America

No	Item		Specification		Remark
1.	Market		Central and South America		
2.	Broadcasting system		NTSC, PAL-M, PAL-N		
3.	Available Channel		BAND	NTSC	
			VHF	2 ~ 13	
			UHF	14 ~ 69	
			CATV	1 ~ 125	
4.	Receiving system		Upper Heterodyne		
5.	Video Input (2EA)		NTSC, PAL-M/N		Rear 1EA, Side 1EA
	Video Input (1EA)				PQ10R rear 1EA
6.	AV Output (1EA)		NTSC, PAL-M/N		Rear 1EA (You can select Variable OUT or MNT OUT) PQ10R Not support
7.	Component Input (2EA)		Y/Cb/Cr, Y/ Pb/Pr		
	Component Input (1EA)				PQ10R rear 1EA
8.	RGB Input (1EA)		RGB-PC ,		PQ10R Not support
9.	HDMI Input (2EA)	1ea	HDMI-DTV, Only PCM MODE		Rear HDMI(1) : Only for PQ10R
		2ea			Rear HDMI(2) : Only for PQ30R
		3ea			Side HDMI(1), Rear HDMI(2)
10.	Audio Input (2EA)		AV (1EA), Component (1EA)		PQ10R (Rear AV 1ea, Rear Component 1EA)
	Audio Input (5EA)		PC Audio, Component (2EA), AV (2EA)		L/R Input(PC 1EA, Component 2EA, Rear 1EA, Side 1EA)
11.	RS-232C (1EA)		Remote control		
12.	USB Input (1EA)		DivX, MP3, JPEG,		SIDE USB 1EA, Rear USB 1EA(10R Models)

■ Chroma & Brightness (Optical)

(1) (With 38% Filter) 42'' G2A module

No	Item			Min	Typ	Max	Unit	Remark
1	White peak Brightness			60Hz : 315 50Hz : 315	60Hz : 378 50Hz :362	-	cd/ m^2	(*) Special Peak Brightness Mode - 1/ 100 ~ 3/ 100 white window Pattern (typically 1% window size) - Picture Mode : Vivid - Mode : HDMI - Resolution : 1920 x 1080 60H
				60Hz : 173 50Hz : 161	60Hz : 195 50Hz : 183	-	cd/ m^2	(*) Normal Mode - 25/ 100 white window pattern - Picture Mode : Vivid
2	White average brightness			60Hz : 50 50Hz : 47	60Hz : 57 50Hz : 54		cd/ m^2	- Full White Pattern - Picture Mode : Vivid
3	Brightness uniformity			-10	0	+10		- 85IRE Full White Pattern - Picture Mode: Vivid
4	Color coordinate	White	X	0.270	0.285	0.300		White 216 level pattern Red/ Green/ Blue : 255 level pattern
			Y	0.278	0.293	0.308		
		Red	X	0.635	0.640	-		
			Y	0.318	0.330	0.340		
		Green	X	0.242	0.300	0.305		
			Y	0.595	0.600	-		
		Blue	X	-	0.150	0.158		
			Y	-	0.060	0.070		
5	Contrast ratio at dark room			100,000: 1	1,000,000 :1			- White : 1/ 100 White Window Pattern (Peak Mode) - Black : Full Black - Picture Mode : Vivid
6	Color coordinate uniformity			-0.01	Average	+0.01		- 85IRE Full White Pattern - Picture Mode : Vivid
7	Colour Temperature	Cool	X	0.261	0.276	0.291		- 85IRE Full White Pattern - Picture Mode : Vivid
			Y	0.268	0.283	0.298		
		Medium	X	0.270	0.285	0.300		
			Y	0.278	0.293	0.308		
		Warm	X	0.298	0.313	0.328		
			Y	0.314	0.329	0.344		
8	Colorpull in Range		PAL	-450		+450	Hz	
			NTSC	-450		+450	Hz	
9	Color killer Sensitivity			-80			dBm	

ADJUSTMENT INSTRUCTION

1. Application Range

This spec sheet is applied to all of the PP91C chassis.

2. Specification

(1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
(2) Adjustment must be done in the correct order.
(3) The adjustment must be performed in the circumstance of 25±5°C of temperature and 65±10% of relative humidity if there is no specific designation.
(4) The input voltage of the receiver must keep 100~240V, 50/60Hz.
(5) The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15°
- In case of keeping module is in the circumstance of 0°C, it should be placed in the circumstance of above 15°C for 2 hours
- In case of keeping module is in the circumstance of below -20°C, it should be placed in the circumstance of above 15°C for 3 hours,.

3. S/W Program Download

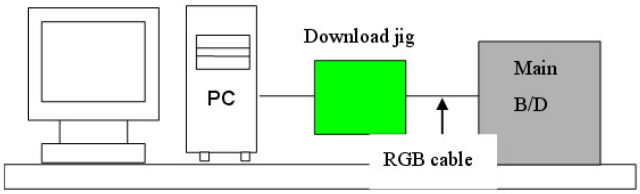
3-1. Profile

This is for downloading the s/w to the flash memory of the IC603

3-2. Equipment

(1) PC
(2) ISP_tool program
(3) Download jig

3-3. Connection Structure



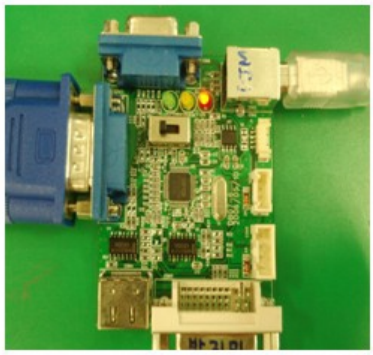
3-4. Connection Condition

(1) IC name and circuit number : Flash Memory and IC603
(2) Use voltage : 3.3V (5 pin)
(3) SCL : 15 pin
(4) SDA : 12 pin
(5) Tact time : about 2min and 30seconds

3-5. Download Method (By using MSTAR JIG)

(1) Preliminary Steps

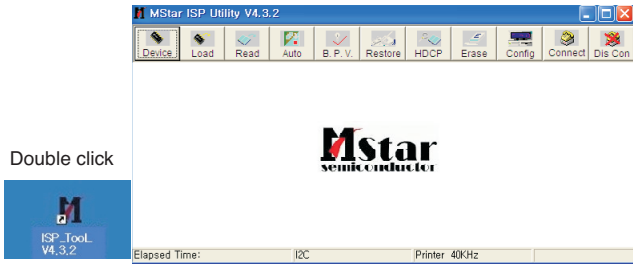
1) Connect the download jig to D-sub jack



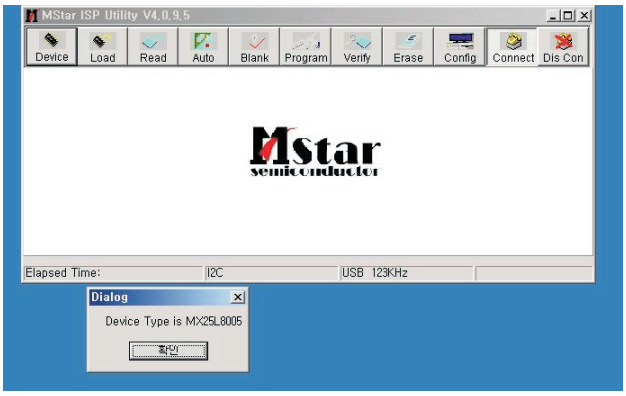
2) Connect the PC to USB jack

(2) Download Steps

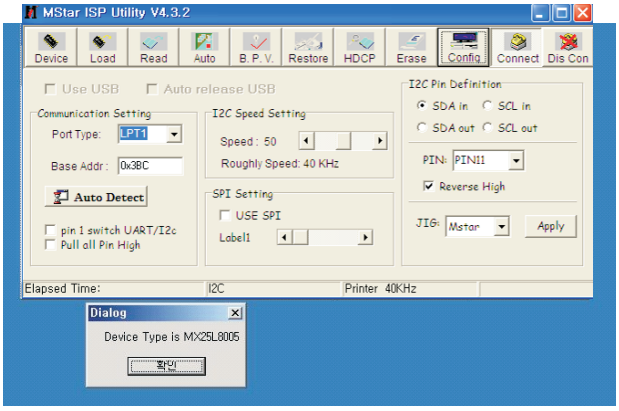
1) Execute 'ISP Tool' program in PC, then a main window will be opened



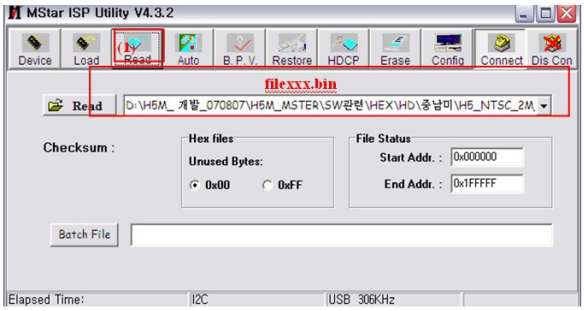
2) Click the connect button and confirm “Dialog Box”.



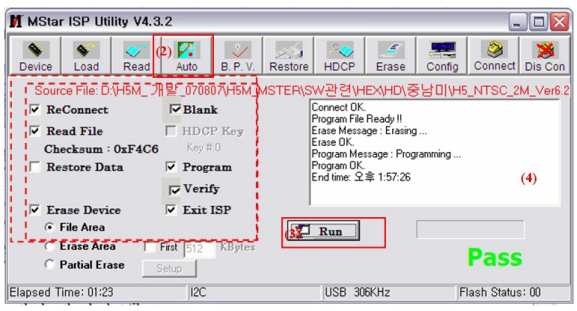
3) Click the Config button and Change speed
E2PROM Device setting : over the 350Khz



4) Read and write bin file
Click “(1)Read” tab, and then load download file(XXXX.bin) by clicking “Read”.



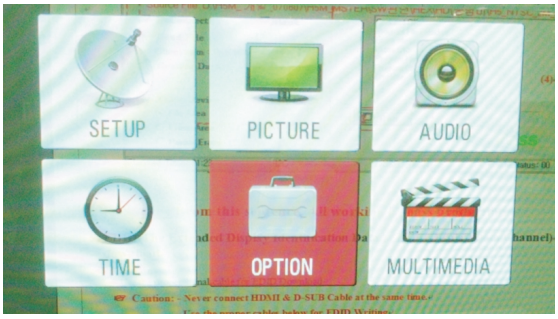
5) Click “Auto(2)” tab and set as below
6) Click “Run(3)”.
7) After downloading, check “OK(4)” message.



3-6. Download Method (By using USB Memory Stick)

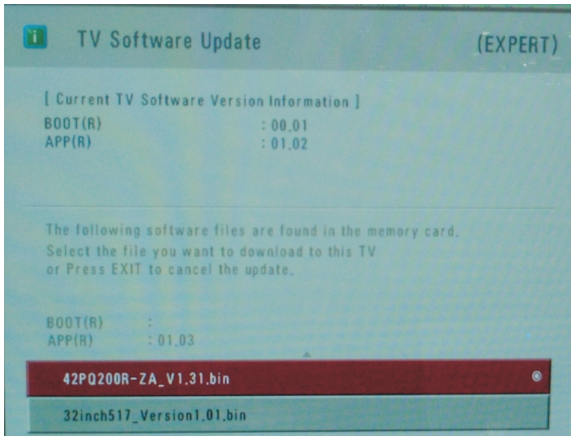
[Caution]
- Using ‘power on’ button of the control R/C, power on TV.
- USB file (EPK) version must be bigger than downloaded version of main B/D.

(1) Using ‘Power ON’ button of the control R/C, Power on TV.
(2) Insert the USB memory stick to the SET.
(3) Display USB loding message then, push the ‘Exit’ Key of control R/C
(4) Push the ‘MENU’ Key and move the cusor ‘OPTION’ of OSD (Fig. 1)
* Caution: Don’t push the ‘OK’ key.Just cusor is on the ‘OPTION’ menu.



(Fig. 1)

(5) Push the “7” key of control R/C continuously.
Then, Display “TV Software Update” Pop-up menu. (Fig. 2)



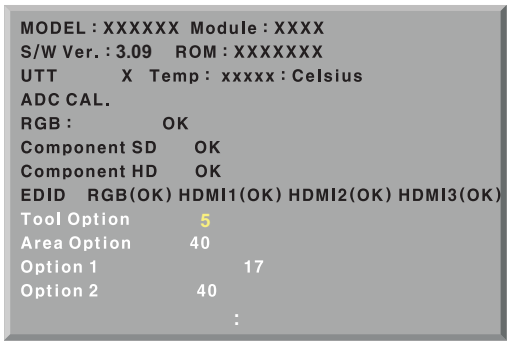
(Fig. 2)

(6) Select SW file (XXXX.bin) you want, push the “OK” Key.
(7) S/W download process is excuted automatically.

4. PCB Assembly Adjustment Method

4-1. Option Adjustment Following BOM

Tool Option
Area Option
Option 1
Option 2
Option 3(Available for EU & Non EU model)



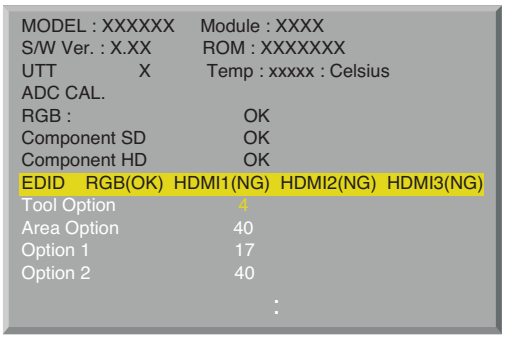
* Profile: Must be changed the option value because being different with some setting value depend on module, inch and market
* Equipment : Adjustment Remote Controller

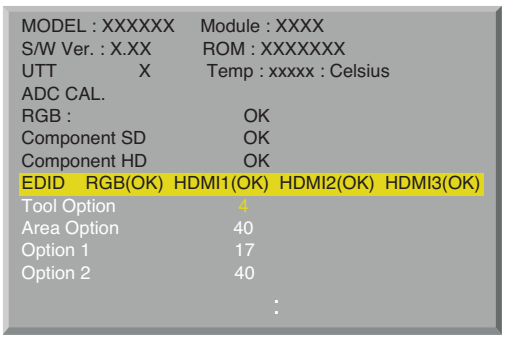
(1) Push the IN-START key in the Adjust R/C.
(2) Enter Password number. The value of Password is “0 0 0 0”.

(3) Input the Option Number that was specified in the BOM, into the Shipping area.
(4) Select “Tool Option/ Area Option” by using D/E(CH+/-) key, and press the number key(0~9) consecutively
ex) If the value of Tool Option1 is 4, input the data using number key “4” (Fig. 3)

Caution: Don’t Push “IN-STOP” key after PCB assembly adjustment.

(5) EDID D/L Method
After software D/L or PCBA manufacturing, you can download EDID Data.
When you adjust Tool Option, H6 Model EDID download process is executed automatically





(Fig. 3)

* If the model don’t have HDMI 3, HDMI 3 will be disappeared at OSD Window.

Caution: When you adjust tool option, don’t connect HDMI or D-sub cable.
If you connect some cable, EDID D/L process will be failed.

(6) Adjustment method
Before PCBA check, have to change the Tool option and Area option

* About PDP
After done all adjustments, Press IN-START button and compare Tool option and Area option value with its BOM, if it is correctly same then Change “RF mode” and then unplug the AC cable.
If it is not same, then correct it same with BOM and unplug AC cable.
For correct it to the model’s module from factory JIG model.

* Don’t push The IN-STOP KEY after completing the function inspection.

5. EDID(The Extended Display Identification Data)

Originally H6(PP91A/B) Model EDID download process is executed when you adjust Tool Option.

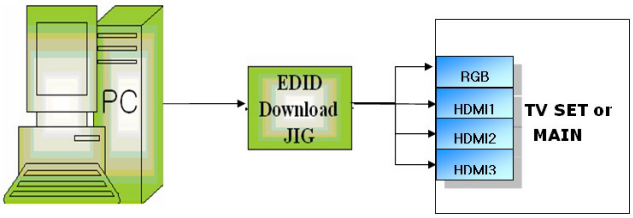
* Caution
  - Use the proper signal cable for EDID Download
  - Never connect HDMI & D-SUB Cable at the same time.
  - Use the proper cables below for EDID Writing

5-1. Profile: To be possible for plug and play

5-2. Equipment

(1) Adjusting PC with S/W for writing EDID Data.(S/W: EDID TESTER Ver.2.5)
(2) A Jig for EDID Download
(3) Cable : Serial(9Pin or USB) to D-sub 15Pin cable, D-sub 15Pin cable, DVI to HDMI cable.

5-3. Connection Structure



Connection Diagram of EDID

Caution: Never connect HDMI & D-SUB Cable at the same time.

5-4. EDID Data

NO	Item	Condition	16 진 Data
1	Manufacturer ID	GSM	1E6D
2	Version	Digital : 1	01
3	Revision	Digital : 3	03

o XGA EDID DATA (42 inch)
<Analog(RGB) : 128bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	02	13	01	03	08	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	21	08	00	31	40	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01	64	19	00	30	41	00	1E	30	30	68
0040	34	00	BC	86	21	00	00	1C	A0	0F	20	00	31	58	1C	20
0050	28	80	11	00	BC	39	20	00	00	18	00	00	00	FD	00	3A
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	8F

<HDMI 1 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	02	13	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	20	00	00	01	01	01	01	01	01	01	01	01	01
0030	01	01	01	01	01	01	01	1D	00	80	51	D0	1C	20	40	80
0040	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	FD	00	3A
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	53
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	10	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	51

<HDMI 2 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	02	13	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	20	00	00	01	01	01	01	01	01	01	01	01	01
0030	01	01	01	01	01	01	01	1D	00	80	51	D0	1C	20	40	80
0040	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	FD	00	3A
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	53
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	20	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	41

<HDMI 3 : 256bytes> SIDE HDMI(HDMI 3)

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	FF	FF	01	01	01	01
0010	02	13	01	03	80	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	20	00	00	01	01	01	01	01	01	01	01	01	01
0030	01	01	01	01	01	01	01	1D	00	80	51	D0	1C	20	40	80
0040	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
0050	10	3E	96	00	13	8E	21	00	00	18	00	00	00	FD	00	3A
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20	00	00	00	FC
0070	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	53
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	30	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	31

6. HDCP(High-Bandwidth Digital Contents Protection) Download

HDCP download process is deleted in H6 models
In H6 models, it is usimg the EEPROM masking HDCP Key

7. Manual ADC Adjustment (Component 1, RGB)

[Caution]

- Do not connect external input cable
- Adjustment result is applied to SET On/Off later.

RF input	AV / Component / RGB input
NO SIGNAL or White noise	NO SIGNAL

* Adjustment is done using internal ADC, so input signal is not necessary.

7-1. COMPONENT ADC (SD / HD)

(1) Convert to Component1 input source.
(2) Press ADJ key on R/C for adjustment.
(3) Enter Password number. The value of Password is “0 0 0 0”.
(4) Select “0. ADC calibration” by using D/E(CH +/-) and press ENTER(V).
(5) Start ADC adjustment by using F/G(VOL +/-) or press ENTER(V).
(6) ADC adjustment is executed automatically .

When ADC adjustment is finished, this OSD appear.

7-2. RGB input ADC

Auto RGB Gain/Offset Adjustment

(1) Convert to PC in Input-source
(2) Press ADJ key on R/C for adjustment.
(3) Enter Password number. The value of Password is “0 0 0 0”.
(4) Select “0. ADC calibration” by using D/E(CH +/-) and press ENTER(V).
(5) Start ADC adjustment by using F/G(VOL +/-) or press ENTER(V).
(6) ADC adjustment is executed automatically .

When ADC adjustment is finished, this OSD appear.

Notice : After All mode check, set the Speaker Volume “0”.

Caution : Don’t Press the Power Key on Remote Controller. Just AC Power Off. (Not DC off)

Notice : From this sentence, All working is mass production.

8. POWER PCB Assy Voltage Adjustment(Vs voltage Adjustment)

8-1. Test Equipment: D.M.M 1EA

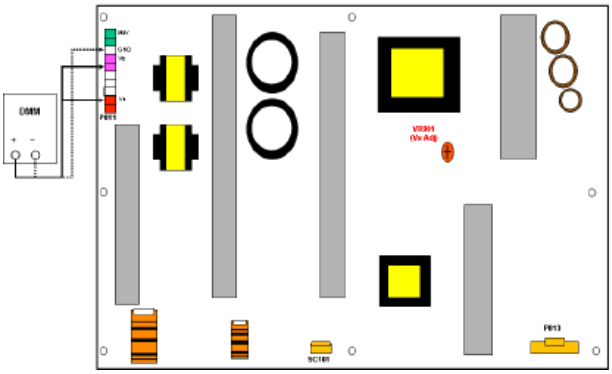
8-2. Connection Diagram for Measuring

Refer to (Fig. 4)

8-3. Adjustment Method

(1) Vs Adjustment

1) Connect + terminal of D. M..M. to Vs pin of P702, connect -terminal to GND pin of P702.
2) After turning VR901, voltage of D.M.M adjustment as same as Vs voltage which on label of panel right/top (deviation ; ±0.5V)

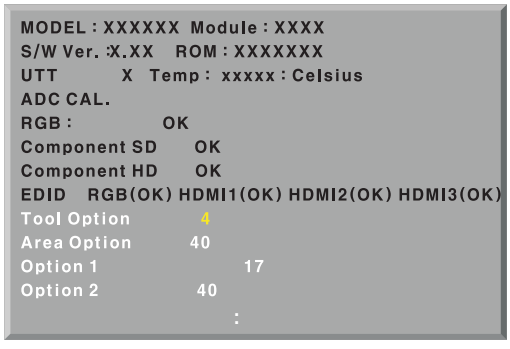


(Fig. 4)

8-4. Adjustment of Area option.

(1) Area Option Adjustment following BOM (Including SKD models)

Tool Option
Area Option
Option 1
Option 2
Option 3 (Available for EU & Non EU model)



* Profile : Must be changed the option value because being different with some setting value depend on module, inch and market

* Equipment : Adjustment Remote Controller
(1) Push the IN-START key in the Adjust R/C.
(2) Enter Password number. The value of Password is “0 0 0 0”.

(3) Input the Option Number that was specified in the BOM, into the Shipping area.
(4) Select “Tool Option/ Area Option” by using D/E(CH+/-) key, and press the number key(0~9) consecutively
ex) If the value of Tool Option1 is 4, input the data using number key “4” (Fig. 3)

Caution: Don’t Push “IN-STOP” key after PCB assembly adjustment.

9. Adjustment of White Balance

9-1. Purpose and Principle for Adjustment of the Color Temperature

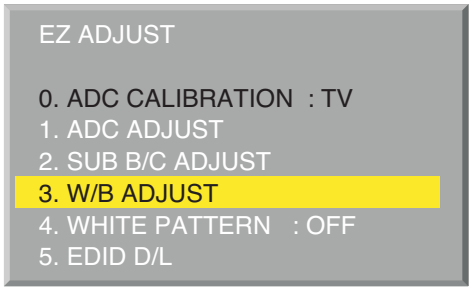
(1) Purpose: Adjust the color temperature to reduce the deviation of the module color temperature.
(2) Principle : To adjust the white balance without the saturation, Fix the one of R/G/B gain to C0 and decrease the others.
(3) Adjustment mode: Two modes of Cool, Warm and Medium

9-2. Required Equipment

(1) Remote controller for adjustment
(2) Color Analyzer : CA-100+ or CA-210 or same product
- PLASMA TV(ch : 10)
(3) Auto W/B adjustment instrument(only for Auto adjustment)
- Do the white balance adjustment under the 10LUX

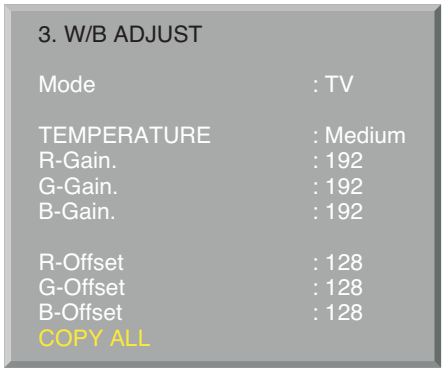
* Notice: When using the Color Analyzer with PDP, recommend the CA-100 more than CA-210.
If CA-100 can not available, it is also good to use the CA-210.

(4) PC (for communication through RGB)
(5) Pattern Generator (MSPG-925FA etc.)
-Before white balance, press the ADJ key and select third row like (Fig. 5)
-To enter White-balance mode, Enter Password Number “0 0 0 0” and select third row.
* Caution: System control Host should be “DDC” for adjustment.



(Fig. 5)

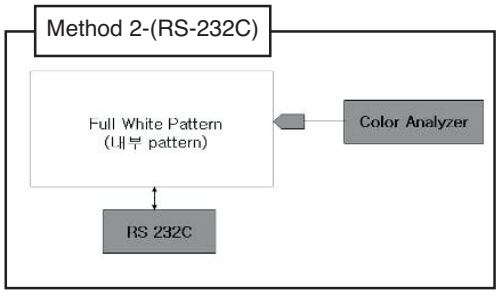
(6) Adjust W/B DATA, for all CSM, choose ‘COPY ALL’



(Fig. 6)

9-3. Connecting Diagram of Equipment for Measuring (For Automatic Adjustment)

(Method 2, using RS-232C, You connect RS-232C Cable)



(1) Enter the adjustment mode of the white balance
- Enter the white balance adjustment mode at the same time heat-run mode when pushing the power on by power only key
- Maintain the white balance adjustment mode with same condition of Heat-run
- Maintain after AC off/on in status of Heat-run pattern display

(2) Release the white balance adjustment mode
- Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
- Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment)

(3) Enter the adjust mode of white balance
- Enter the white balance adjustment mode with aging command(F3, 00, FF)

9-4. Adjustment of White Balance for Manual Adjustment(method 3)

Adjustment mode: Three modes of Cool, Medium(Vivid) and Warm

- Equipment
  1) Color analyzer(CA100+, CA210) should be used in the calibrated ch by CS-1000(PDP : CH10)
  2) Adjustment remocon

- For manual adjustment, it is also possible by the following sequence.
  Operate the zero-calibration of the CA-100+ or CA-210, then stick sensor to the module when adjusting.

(1) Select white pattern of heat-run by pressing “POWER ON” key on remote control for adjustment then operate heat run longer than 5 minutes. (recommend)
(If not executed this step, the condition for W/B will be different)
(2) Changing to the AV mode by remote control.(Push front-AV)
(3) Input external pattern(85% white pattern).
(4) Stick sensor to center of the screen and select each items (Red/Green/Blue Gain and Offset) using D/E(CH +/-) key on R/C..
(5) Adjust R/ G/ B Gain using F/G(VOL +/-) key on R/C.
(6) Adjust three modes of Cool, Medium(Vivid) and Warm as below figure.
(Fix the one of R/G/B and change the others)
- Push the “VOL + “ key : Cool, Medium, Warm

Mode	Color coordinate		Temp	△uv
	X	Y		
Cool	0.276±0.002	0.283±0.002	11,000K	+0.000
Medium	0.285±0.002	0.293±0.002	9,300K	+0.000
Warm	0.313±0.002	0.329±0.002	6,500K	+0.003

* Refer to the below case to know what value is fixed.

[CASE]
First adjust the coordinate much away from the target value(x, y).
1. x, y > target
   1) Decrease the R, G.

2. x, y < target
   1) First decrease the B gain,
   2) Decrease the one of the others.
      - In case of decreasing the x, decreasing the R : fix G
      - In case of decreasing the y , decreasing the G : fix R

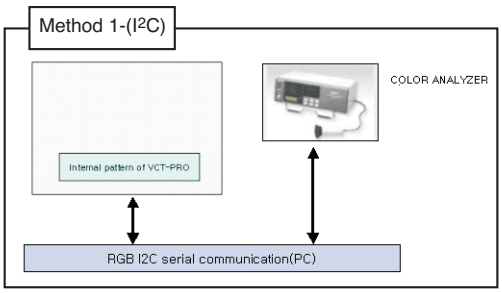
3. x > target , y < target
   1) First decrease B, so make y a little more than the target.
   2) Adjust x value by decreasing the R

4. x < target , y > target
   1) First decrease B, so make x a little more than the target.
   2) Adjust x value by decreasing the G

(7) When adjustment is completed, Exit adjustment mode using EXIT key on R/C.

9-5. Connecting diagram of Equipment for Measuring (For Automatic Adjustment)

(method 1, using IIC, You connect RGB Cable)



(1) Enter the adjustment mode of the white balance
- Enter the white balance adjustment mode at the same time heat-run mode when pushing the power on by power only key
- Maintain the white balance adjustment mode with same condition of Heat-run
- Maintain after AC off/on in status of Heat-run pattern display

(2) Release the white balance adjustment mode
- Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
- push the “power on” key(IIC Mode) on Adjust remote-controller.
- Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment)

(3) Enter the adjust mode of white balance
- Enter the white balance adjustment mode with aging command(F3, 00, FF)

o Color Temperature & Color Coordinates Setting
- When adjusting the Color Temperature, Color Analyzer CA-210(Matrix should be corrected through CH10 of CS-1000) should be used. When CA-210 have used, it don’t need to fit the CH10.
- Adjust the Color Temperature based below adjustment color coordinates.

o Target Value CA-210(LCD : CH 9, PDP : CH10), CA-100(PDP)

(Standard color coordinate and temperature when using the CA-100+ or CA210 equipment)

Mode	Color coordinate		Temp	△uv
	X	Y		
Cool	0.276±0.002	0.283±0.002	11,000K	+0.000
Medium	0.285±0.002	0.293±0.002	9,300K	+0.000
Warm	0.313±0.002	0.329±0.002	6,500K	+0.003

o Above optical characteristics are should be measured by following condition

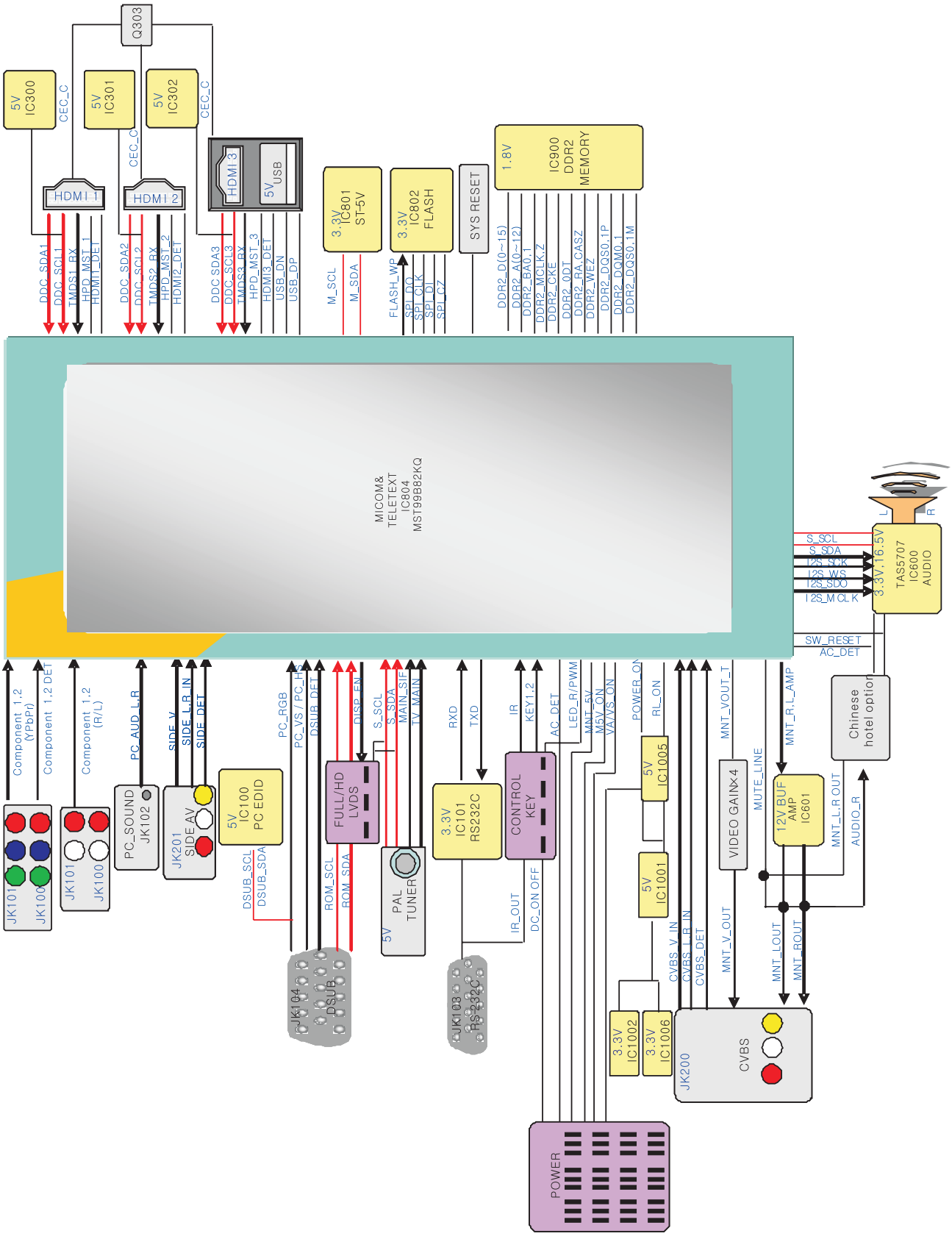
	Measured Mode
Picture Mode	Vivid
Fresh Contrast	Off
Fresh Color	Off
Smart Power Saving	Intelligent Sensor Level 0

o DDC Adjustment Command Set

No.	Adjustment content	CMD(HEX)	ADR	VALUE	detail
1	Aging On/Off	F3	00	FF/00	OO : OFF 01 : ON FF : WB Ready
2	Input select	F4	00		0x10 : TV 0x20 : AV1 0x21 : AV2 0x23 : AV3 0x40 : Component1 0x41 : Component2 0x60 : RGB PC 0x90 : HDMI1 0x91 : HDMI2 0x92 : HDMI3
3	**R GAIN**	**16**	00	00 - FE	Gain Adjustment CSM COOL
4	**G GAIN**	**18**		00 - FE	
5	**B GAIN**	**1A**		00 -FE	
6	**R GAIN**	**16**	01	00 - FE	Gain Adjustment CSM MEDIUM
	G GAIN	**18**		00 - FE	
	B GAIN	**1A**		00 -FE	
	R GAIN	**16**	02	00 - FE	Gain Adjustment CSM WARM
	G GAIN	**18**		00 - FE	
	B GAIN	**1A**		00 -FE	
	CSM mode	**F2**	00	00	COOL
				01	MEDIUM
				02	WARM
	EEPROM Read	**E7**	00	00	EEPROM read
	EEPROM Write	**E8**	00	data	EEPROM write

[R/G/B GAIN max value : C0

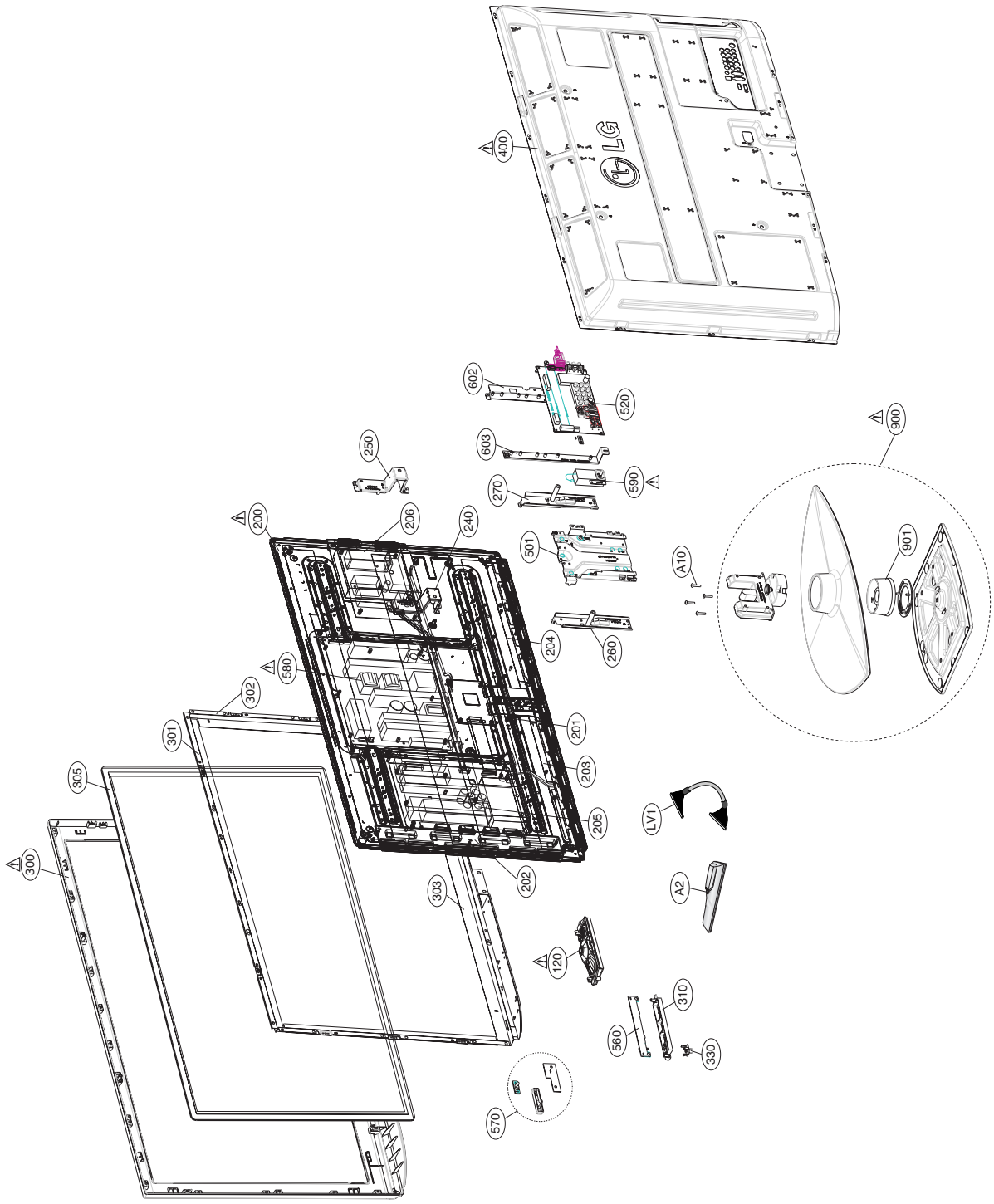
BLOCK DIAGRAM



EXPLODED VIEW

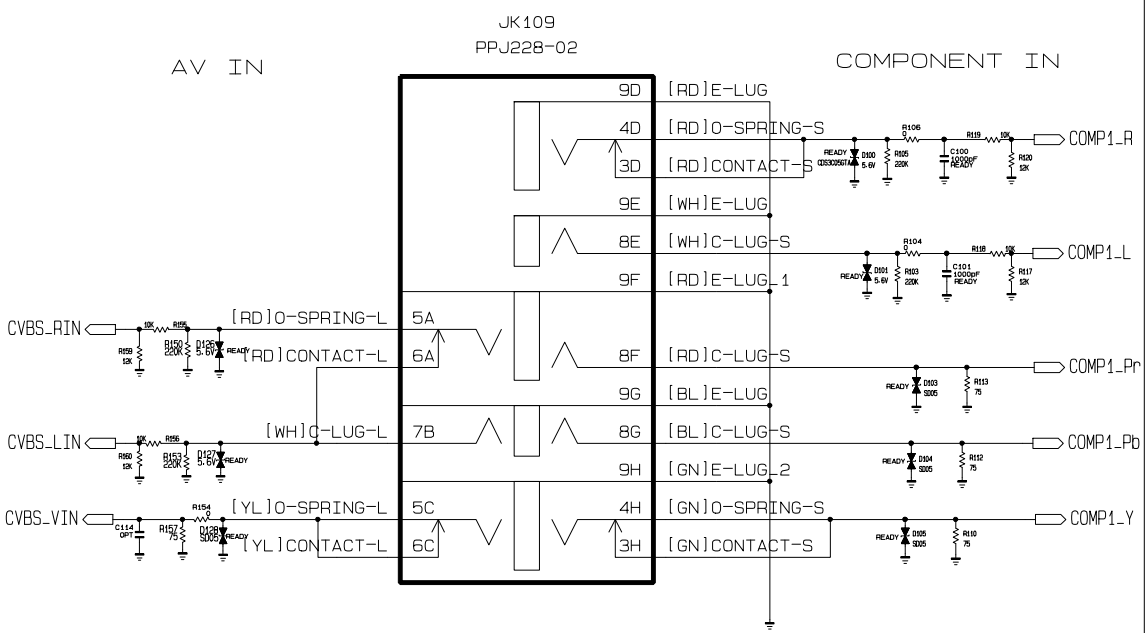
IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

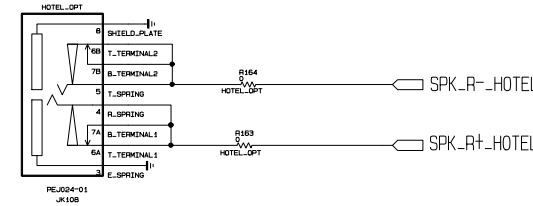


EAX60875701[PIP]
MSTAR PDP NONEU

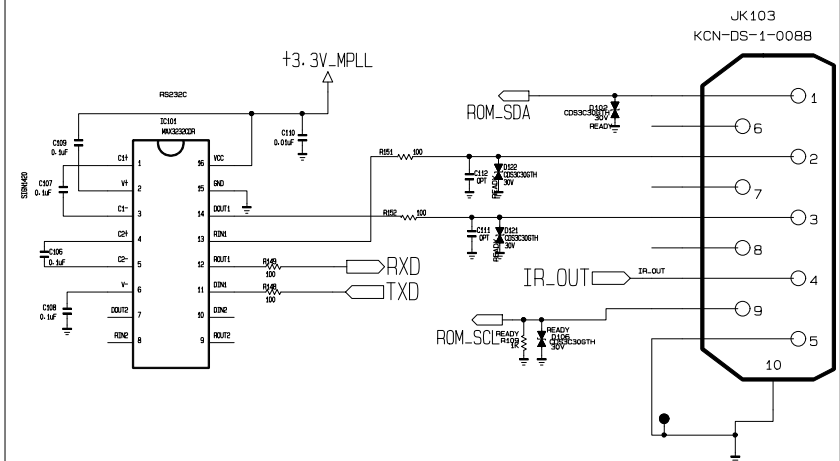
JACK(AV/Component)



Phone JACK(FOR CHINA HOTEL)



RS-232C



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

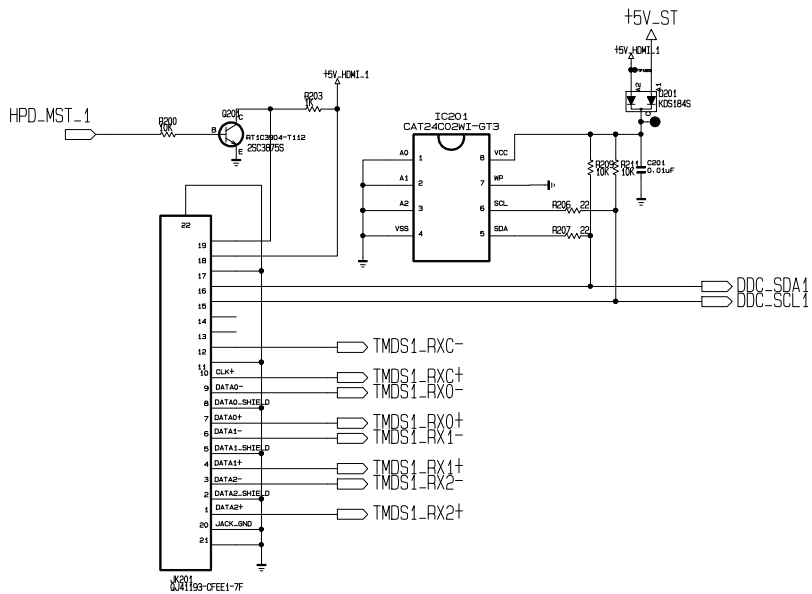
LG ELECTRONICS

MODEL	MSTAR N-EU	DATE	2009/01/21
BLOCK	INPUT1	SHEET	1/ 8

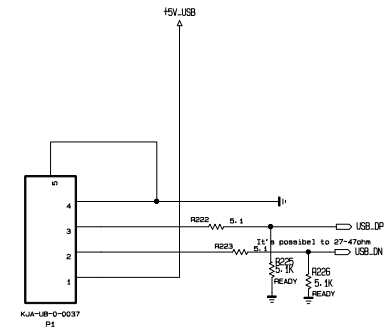
OPTION

SW_HPD : USE SW HPD (Default)

HDMI IN

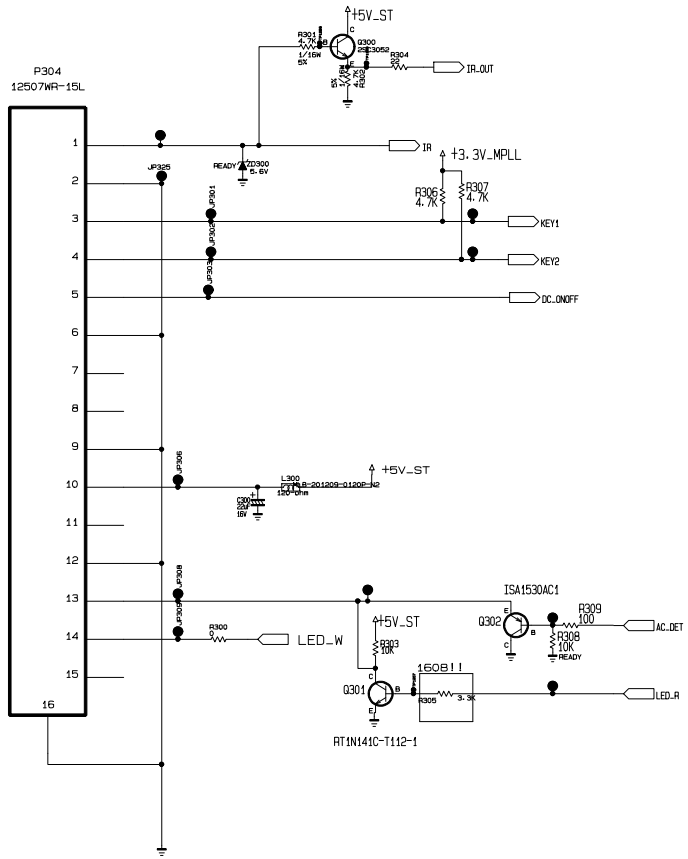


USB For Service

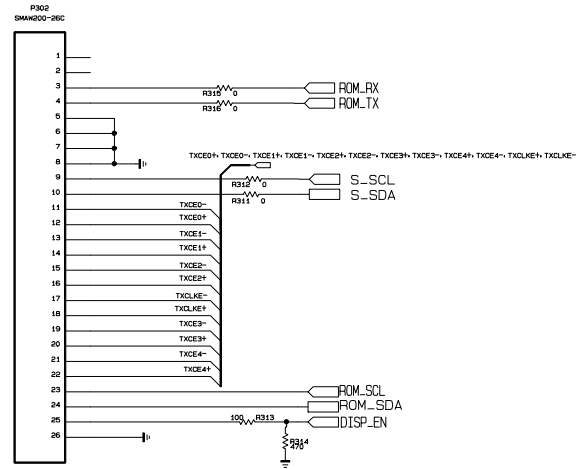


MODEL	MSTAR N-EU	DATE	2009/01/21
BLOCK	HDMI/USB	SHEET	2/8

IR & KEY for 517



LVDS

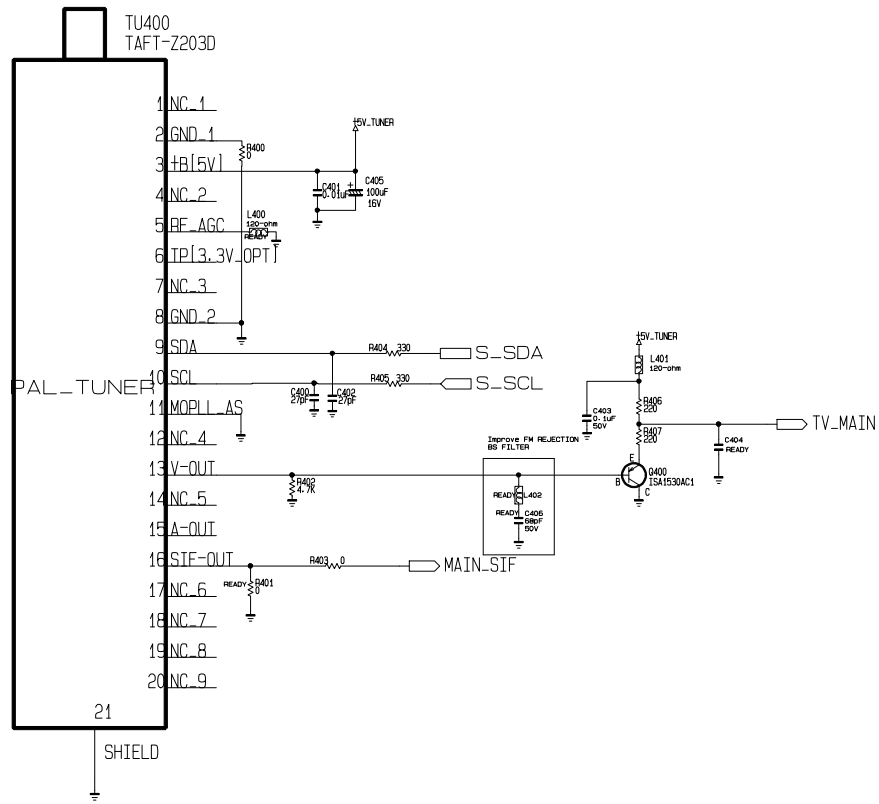


SECRET
LGElectronics

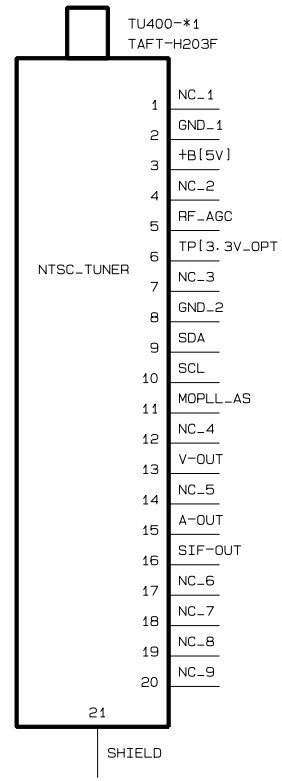
LG ELECTRONICS

MODEL	MSTAR	DATE	2009/01/21
BLOCK	LVDS, CTR KEY	SHEET	3 / 8

Tuner Block



Multi opt_ NTSC



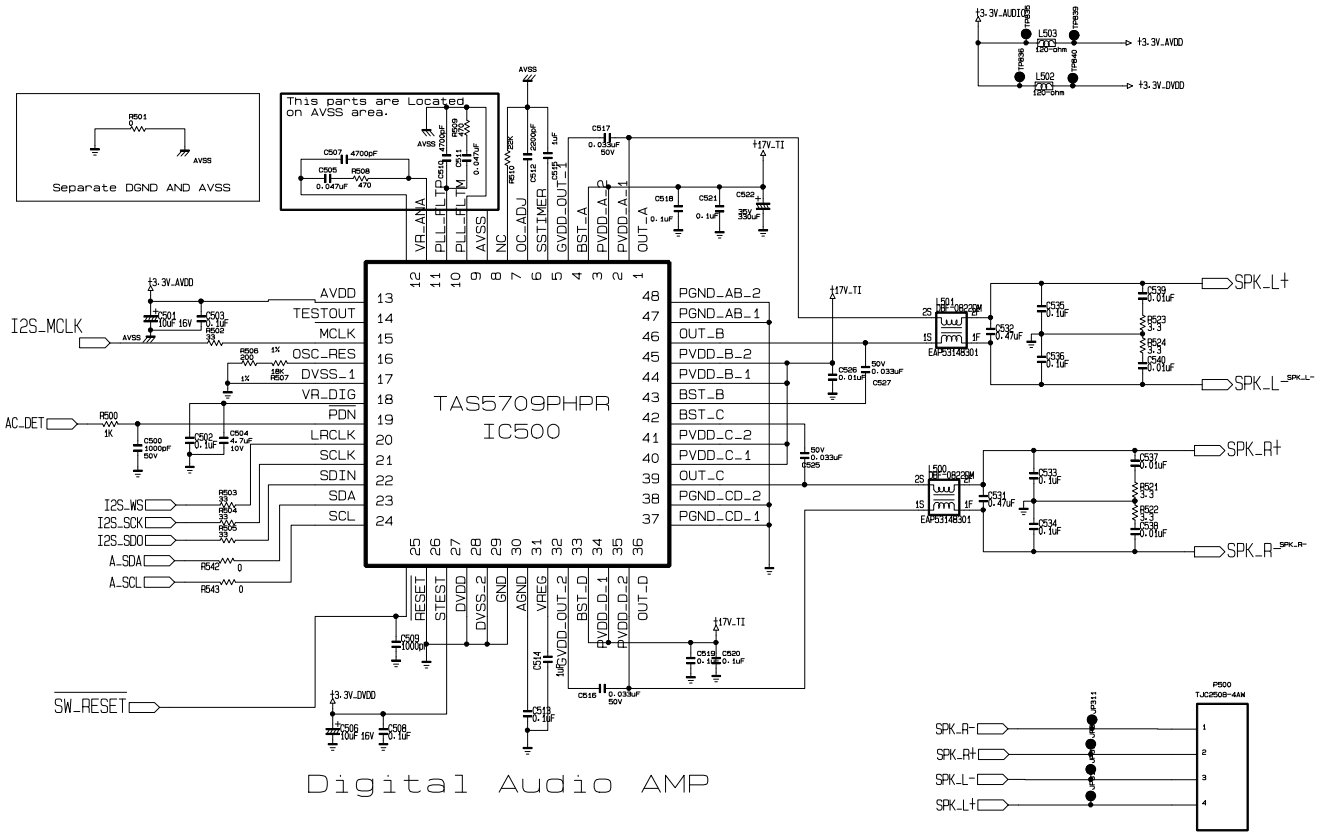
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

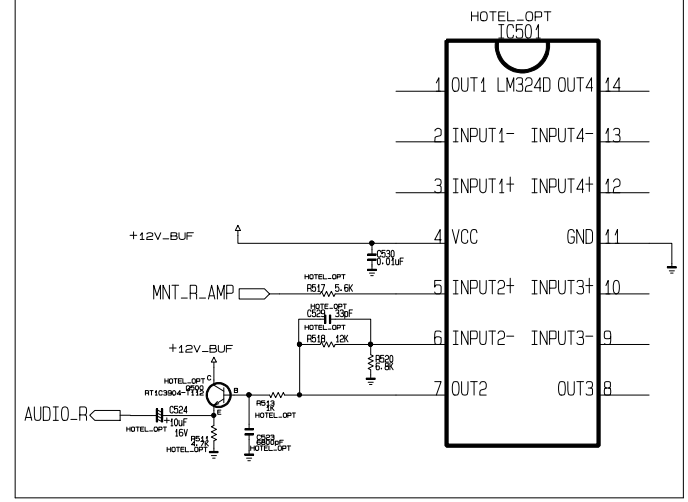
MODEL	MSTAR	DATE	2009/01/21
BLOCK	TUNER	SHEET	4/8

Audio AMP

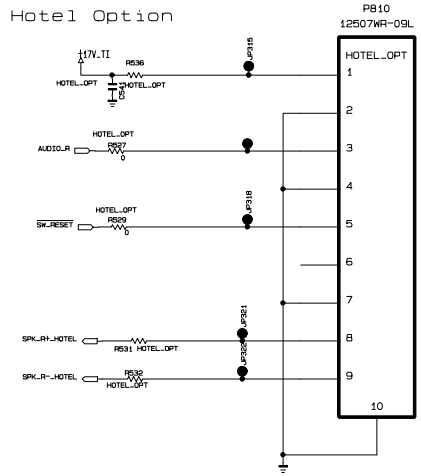


Digital Audio AMP

AMP : GAIN X 4(HOTEL_OPT)



Chinese Hotel Option



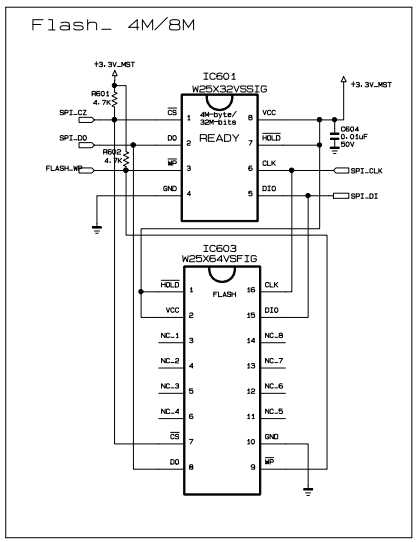
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

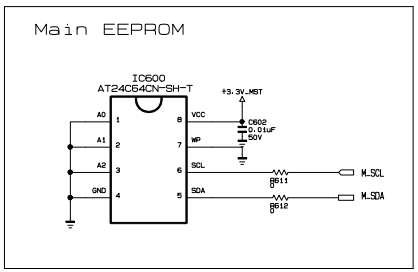
SECRET
LGElectronics

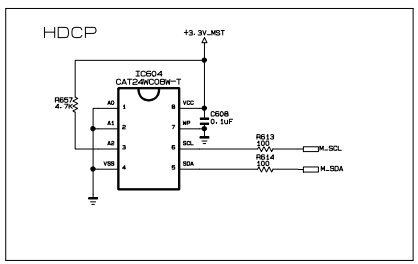
LG ELECTRONICS

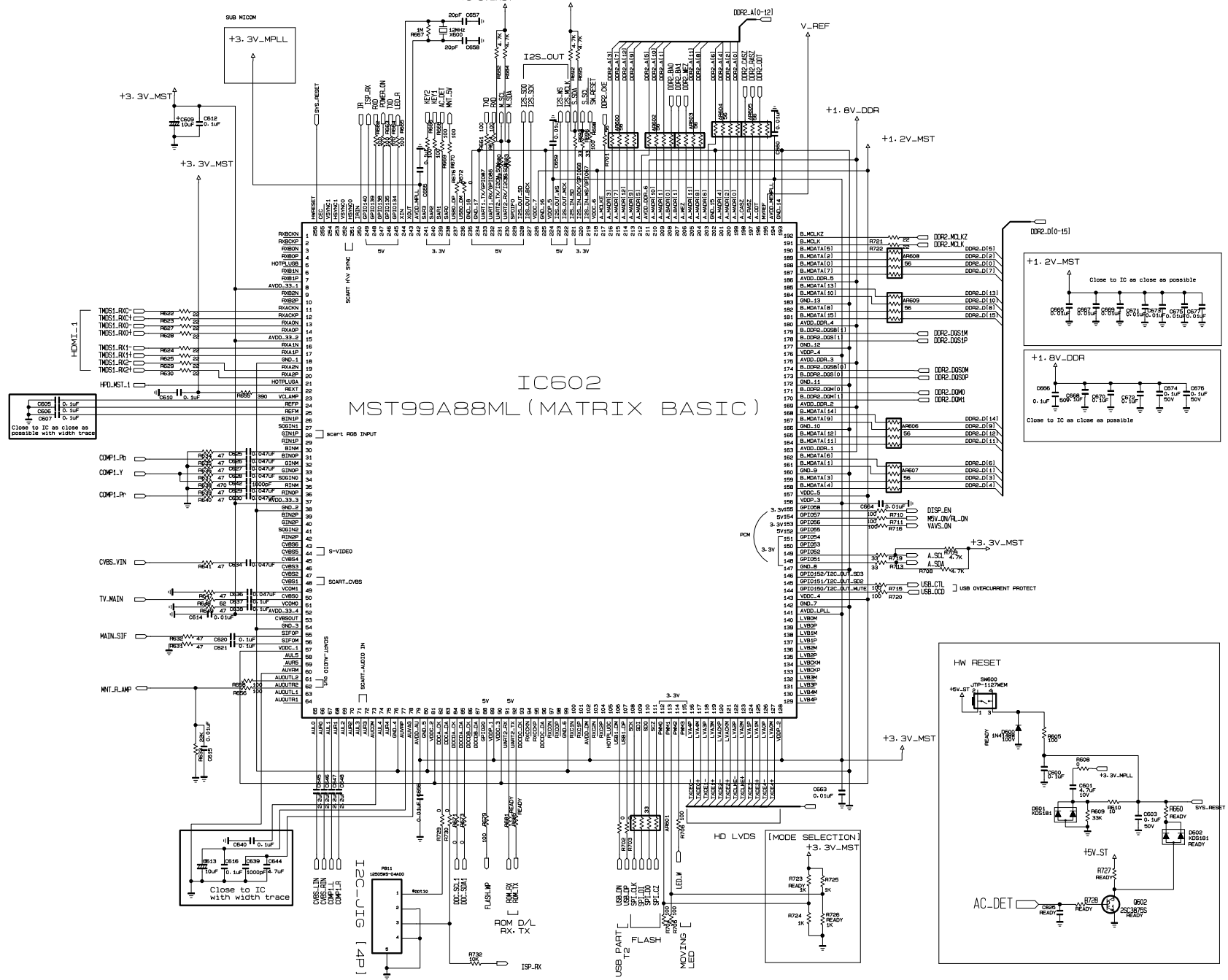
MODEL	MSTAR N-EU	DATE	2009/01/21
BLOCK	AUDIO	SHEET	5/8

EAX60875701[PIP]
MSTAR PDP NONEU









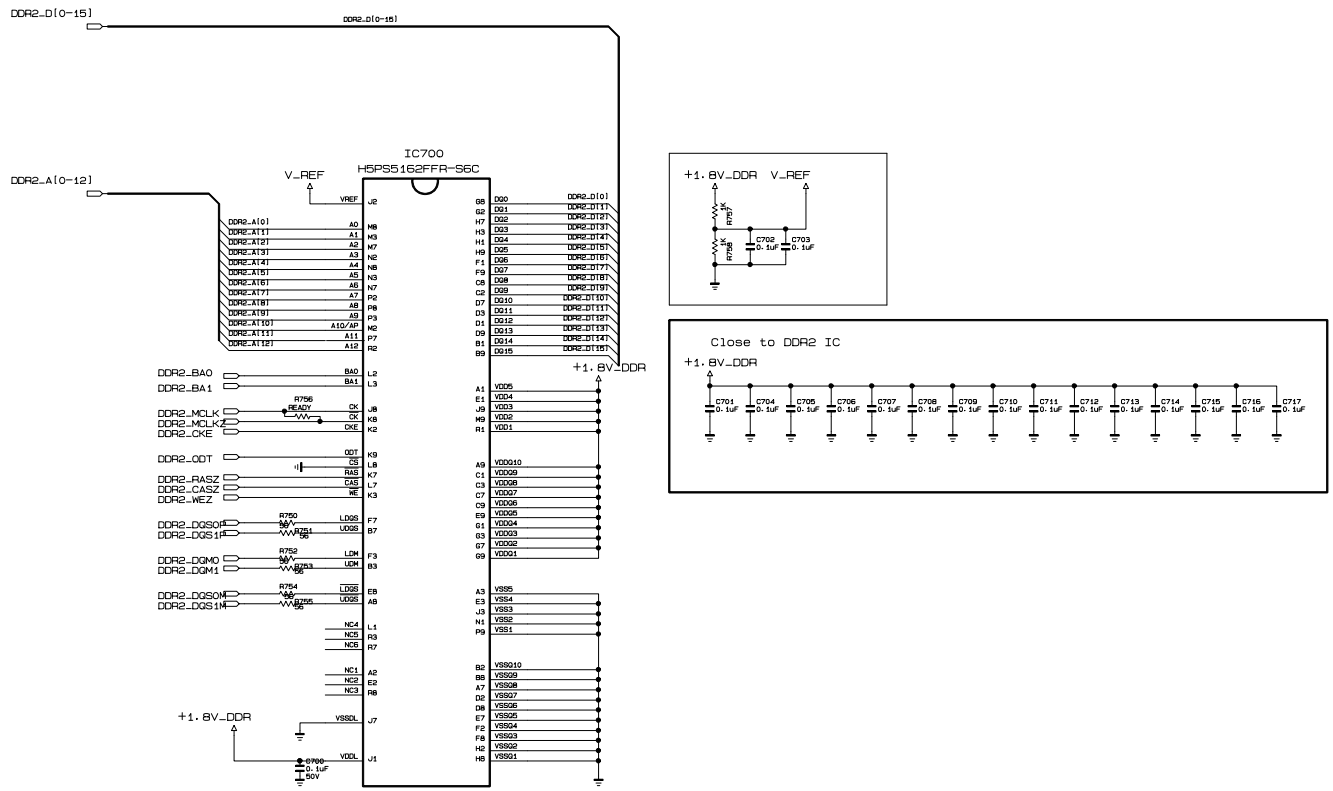
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	MSTAR N-EU	DATE	2009/01/21
BLOCK	MSTAR	SHEET	6/8

#9. DDR2



DDR2 MEMORY

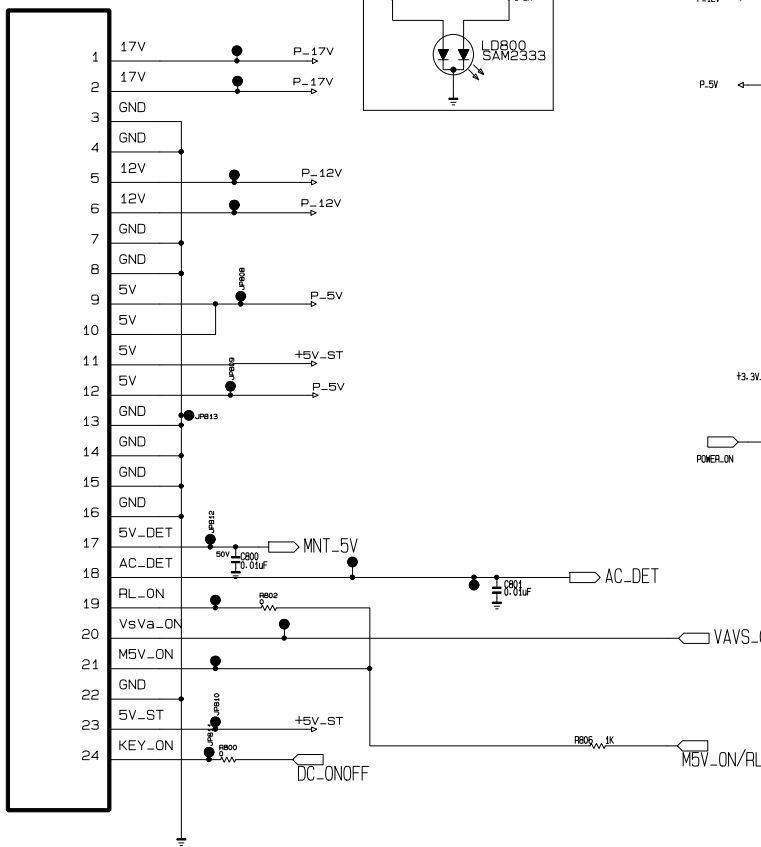
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

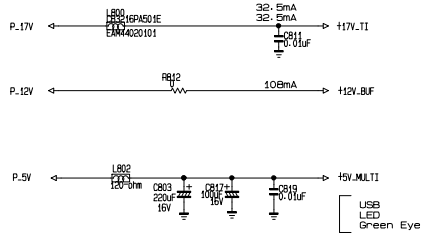
SECRET
LGElectronics

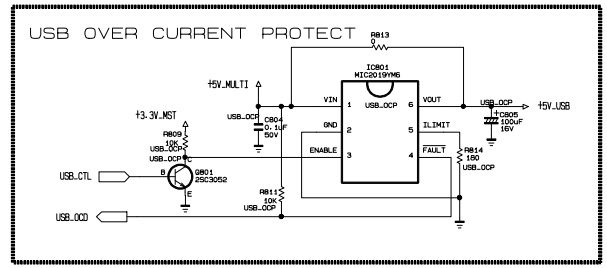
LG ELECTRONICS

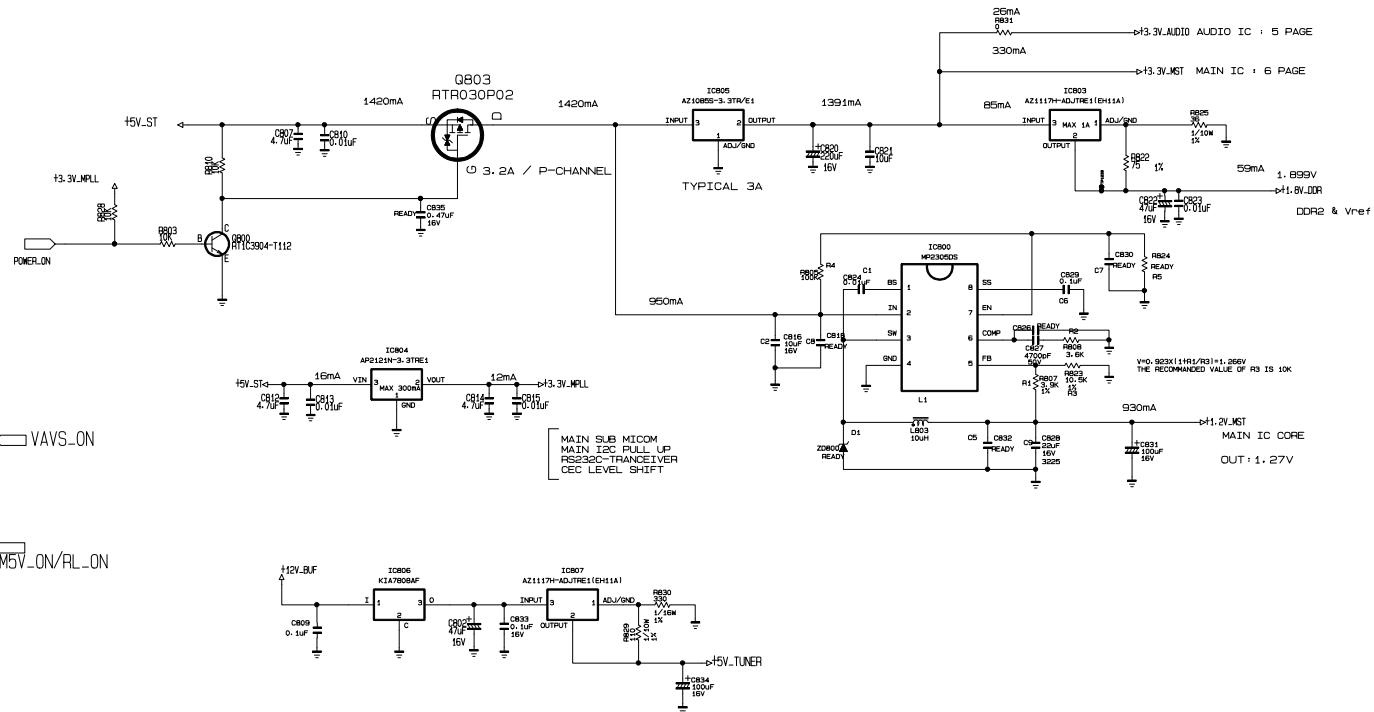
MODEL	MSTAR	DATE	2009/01/21
BLOCK	DDR2	SHEET	7/8

EAX60875701[PIP] MSTAR PDP NONEU









XPOWER3 Current SPEC

18V : 0~2A
12V : 0~2A
5Vsc : 0~6A
5Vst : off:0.0A ST_BY:0.01A

After RL_ON. 5Vst Max 2A using is possible.
And a Max current of 5Vsc is 5A in 5Vst Max 2A case.

DC_ON Current State(BY MSTAR_08/08/19]

Voltage	+3.3V(mA)	+1.8V(mA)	+1.26V(mA)	mW
Result	438.81	48.6	744	2507.013

Wire Name	AVDD_ADC+AVDD_33(mA)	LPLL(mA)	MPLL(mA)	AU(mA)	MEMPLL(mA)	VDDP(mA)	AVDD_USB	AVDD_DM(mA)	(mA)
Result(mA)	244	2.86	9.54	37.5	25	103.9	13.39	2.62	438.81

Wire Name	AVDD_DDR	(mA)
Result	48.6	48.6

Wire Name	VDDC(mA)	(mA)
Result	744	744

ST_BY Mode support HDMI

Wire Name	MPLL(mA)	(mA)	mW
Result	3.42	3.42	11.286

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	MSTAR	DATE	2009/01/21
BLOCK	POWER	SHEET	8/8


LG Electronics Inc.