31 Series
BX2231/BX2331/BX2431
Training Manual

TSDR R&D Group

MONITOR Lab

Contents

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1. Product Overview (Specifications of Options)

Product	Description	Code. No	Remark
	Quick Setup Guide	BN68-02964A	Samsung Electronics Service center
	Warranty Card (Not available in all locations)	BH68-00334C	
	User's Guide, Monitor Driver, Natural Color Pro Software	BN59-01093A	
	D-Sub(15Pin)Cable	BN39-00244H	
	Power Cord	3903-000192	
	Adator	BN44-00139C BN44-00394B	
	Cleaning Cloth	BN63-02368B	
	DVI to HDMI Cable	BN39-01353A	Samsung Electronics Service center

1. Product Overview (Product Features)

*. Feature

-. Panel : 250cd/m2, 2ms, DCR MEGA, 170/160(CR>10)

-. DPMS : Typical 0.3W

-. HDMI 1 with HDCP ¤ HDMI 2 with HDCP

-. Windows Vista/Windows 7 authentication

-. Picture ¤ a screen size desire

-. Off-Timer function for reducing standby power usages

-. Supported Color Effect: Off/Grayscale/Green/Aqua/Sepia

-. Supported Magic Bright3/ Picture Mode/Magic Eco/Magic Angle/Magic Return off timer/Image Size/Color Effect

1. Product Overview (Product Specification)

Key Specification			
Model	BX2231	BX2331	BX2431
Size	21.5”	23”	24”
Resolution	1920*1080@ 60Hz	1920*1080@ 60Hz	1920*1080@ 60Hz
Brightness	250cd/m²	250cd/m²	250cd/m²
Contrast Ratio	1000:1	1000:1	1000:1
Dynamic Contrast	MEGA(Typ.)	MEGA(Typ.)	MEGA(Typ.)
Supported Resolution	VGA ~ WSXGA+	VGA ~ WSXGA+	VGA ~ WSXGA+
Horizontal Frequency	30~81kHz	30~81kHz	30~81kHz
Vertical Frequency	56~75Hz	56~75Hz	56~75Hz
Sync Type	Sep./Comp./SOG	Sep./Comp./SOG	Sep./Comp./SOG
Response Time (GTG)	2ms □ 5ms □	2ms	2ms □ 5ms □
Viewing Angle (CR>10)	170°/160°	170°/160°	170°/160°
Signal Input	Analog/2*HDMIwith HDCP (Analog □	Analog/2*HDMI with HDCP	Analog/2*HDMI with HDCP (Analog)
Power Consumption (ON)	22W □ DV SET)	30W □ DV SET)	27W □ DV SET)
Power Consumption (DPMS)	Typical 0.3 Watt	Typical 0.3 Watt	Typical 0.3 Watt

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1. Product Overview (Connecting External Devices)

1. Connect the power cord for your monitor to the power port on the back of the monitor. Plug the power cord for the monitor into a nearby outlet.

2-1. Using the D-sub (Analog) connector on the video card.
Connect the signal cable to the 15-pin, D-sub connector on the back of your monitor.

2-2. Using HDMI connector on the video card.
Connect the HDMI Cable to the HDMI 1 Port on the back of your Monitor

2-3. Using HDMI connector on the video card.
Connect the HDMI Cable to the HDMI 2 Port on the back of your Monitor.

1. Product Overview BX2231/BX2331/BX2431

(Supported Display Modes)

DISPLAY MODE	HORIZONTAL FREQUENCY (KHZ)	VERTICAL FREQUENCY (HZ)	PIXEL CLOCK (MHZ)	SYNC POLARITY (H/V)
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	31.469	59.94	25.175	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 800 x 600	35.156	56.250	36.000	+/+
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1152 x 864	67.500	75.000	108.000	+/+
VESA, 1280 x 800	49.702	59.810	83.500	-/+
VESA, 1280 x 800	62.795	74.934	106.500	-/+
VESA, 1280 x 960	60.000	60.000	108.000	+/+
VESA, 1280 x 1024	63.981	60.020	108.000	+/+
VESA, 1280 x 1024	79.976	75.025	135.000	+/+
VESA, 1440 x 900	55.935	59.887	106.500	-/+
VESA, 1440 x 900	70.635	74.984	136.750	-/+
VESA, 1600 X 1200	75.000	60.000	162.000	+/+
VESA, 1680 X 1050	65.290	59.954	146.250	-/+
VESA, 1920 X 1080	67.500	60.000	148.500	+/+

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1. Product Overview (OSD Functions)

1. MENU
2. Customized Key / Down Button
3. Up Button / Brightness
4. Source Button / Enter
5. Auto
6. Power Button

1. Product Overview (OSD Functions)

(1) MENU Button : Open the OSD menu. Use this button to exit the OSD or go to the upper OSD menu.

(2) Customized Button : Press this button to adjust MagicBright™. (Factory Mode)
MagicBright™ is a monitor that fits to various user environments such as editing documents and playing games, etc. It has more than double the brightness and screen quality of five different sets of brightness and clearness settings that fit the environment existing monitors. The dedicated buttons on the front of the monitor allow users to easily implement five different sets of brightness and clearness settings that fit the environment

-. Custom :The Custom mode provides refined brightness and clearness levels.
However, it may not be comfortable on the eyes depending on the user's preferences.
In this case, adjust the brightness and clearness using the menu.

-. Standard :Standard mode provides the same brightness level of general monitors appropriate for text editing and text readability appropriate to the Internet environment.

-. Game :Game mode provides a brightness level appropriate for playing games where there are a lot of graphics and fast screen switching.

-. Cinema :Cinema mode provides excellent brightness and cleanness levels for the entertainment

(movies, DVD, TV, etc.) environment, at the same level as a TV.

-. Dynamic Contrast : Dynamic Contrast is to automatically detect distribution of inputted visual signal and adjust to create optimum contrast

Note: Users can set the Customized Key (in SETUP&RESET) to one of the following functions: MagicBright/MagicAngle/MagicEco/Image Size. If the user presses the Customized Key after setting it, the configured function will be performed .For the others introduction ,please refer to the following contents

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1. Product Overview (OSD Functions)

(2) Customized Button : Press this button to adjust Picture Mode when select AV Mode by HDMI Input.

Picture Mode is a monitor that fits to various user environments such as editing documents and playing games, etc. It has more than double the brightness and screen quality of existing monitors. The dedicated buttons on the front of the monitor allow users to easily implement five different sets of brightness and clearness settings that fit the environment.

-. Dynamic : Select this mode to view a sharper image than in Standard mode.

-. Standard : Select this mode when the surroundings are bright. This also provides a sharp image.

-. Movie : Select this mode when the surroundings are dark. This will save power and reduce eye. fatigue.

-. Custom : Select this mode when you want to adjust the image according to your preferences.

Note: Users can set the Customized Key(in SETUP&RESET) to one of the following functions:MagicBright/MagicAngle/MagicEco/Imagie Size □ PC Mode □ □ PictureMode/MagicAngle/MagicEco/Imagie Size □ AV Mode □ .
If the user presses the Customized Key after setting it, the configured function will be performed .For the others introduction ,please refer to the following contents.

1. Product Overview (OSD Hidden Key)

1) Customized Key / Down Button : Use this button to move around the OSD menu or change the value.

2) Up Button / Brightness : Use this button to adjust the brightness of the screen when Analog/DVI input.
Use this button to adjust the volume of the HDMI sound when HDMI input.

3) Source Button / Enter : Press this button to select a function and video source.

4) Auto Button : If Button is pressed. Auto adjustment function operates automatically.
(Only in analog mode)

5) Power Button : Press this button to turn the monitor on or off.

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2. OSD Adjustment (Picture)

Menu	
Brightness	Controls the screen brightness. This menu is unavailable when <MagicBright> is set to <Dynamic Contrast> mode. This menu is unavailable when <MagicEco> is set.
Contrast	trols the contrast of the pictures displayed on the screen This menu is unavailable when <MagicBright> is set to ynamic Contrast> or <Cinema> mode. This menu is unavailable when <MagicColor> is set to ll> mode or <Intelligent> mode. This menu is unavailable when <Color Effect> is set.
Sharpness	Controls the clarity of details of pictures displayed on the een This menu is unavailable when <MagicBright> is set to ynamic Contrast>&<Cinema> mode. This menu is unavailable when <MagicColor> is set to ll> mode or <Intelligent> mode. This menu is unavailable when <Color Effect> is set.

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2. OSD Adjustment (Picture)

Menu	Description
MagicBright	Provides preset picture settings optimized for various user environments such as editing a document, surfing the Internet, playing games,or movies and so on. • <Custom> If the preset picture modes are not sufficient, users can configure the <brightness> and <Contrast> directly using this mode. • <Standard> This mode provides the picture setting appropriate for editing a document and surfing the Internet (text + picture). • <Game> This mode provides the picture setting appropriate for playing games that include lots of graphics and that require a fast screen refresh rate. • <Cinema> This mode provides brightness and sharpness settings similar to those of a TV for the best entertainment environment (movie, DVD, etc.). • <Dynamic Contrast> Controls the picture contrast automatically so that bright and dark pictures are balanced overall. This menu is unavailable when <MagicAngle> or <MagicEco> is set.

2. OSD Adjustment (Picture)

Menu	Description
Picture Mode	The Monitor has four automatic picture settings (<Custom>, <Dynamic>, <Standard> and <Movie>) that are preset at the factory. You can activate either Custom, Dynamic, Standard or Movie. You can select Custom which automatically recalls your personalized picture settings. • <Dynamic> Select this mode to view a sharper image than in Standard mode. • <Standard> Select this mode when the surroundings are bright. This also provides a sharp image. • <Movie> Select this mode when the surroundings are dark. This will save power and reduce eye fatigue. • <Custom> Select this mode when you want to adjust the image according to your preferences This menu is unavailable when < MagicAngle> or < MagicEco> is set. This can only be set when the external input is connected through HDMI and <PC/AV Mode> is set to <AV>.
Response Time	Accelerates the response time of the LCD panel faster than the original response time so that moving pictures appear sharper and more natural. • <Normal> • <Faster> • <Fastest> It is recommended setting the <Normal> or <Faster> when not viewing a movie.

2. OSD Adjustment (Picture)

MagicAngle	This feature allows you to see optimal screen quality according to your viewing position • <Off> ①:Select when viewing from the front position. • <Lean Back Mode 1>② :Select when viewing from a slightly lower position • <Lean Back Mode 2>③ :Select when viewing from the lower position • <Standing Mode>④:Select when viewing from the upper position • <Side Mode>⑤:Select when viewing from the left or right position • <Custom> : When this function is selected ,setting for <Lean Back Mode 1> is applied by default .Users can set suitable picture quality as needed • <Group View Mode> :Select when two or more person view among ①, ④, ⑤ position at the same time. This menu is unavailable when <MagicBright> is set to <Dynamic Contrast> or <Cinema> mode. This menu is unavailable when <MagicColor> or <Color Effect>is set.
Coarse	Removes vertical noise lines (line pattern) from the screen. The location of the screen may be changed after the adjustment. In this case, move the screen so that the screen is displayed at the center of the display panel using the <H-Position> menu. This function is only available in analog mode.
Fine	Removes horizontal noise lines (line pattern) from the screen. If you cannot remove the noise completely with the <Fine> function, adjust the <Coarse> and then use the <Fine> function again. This function is only available in analog mode.
HDMI Black Level	When watching with a DVD or set-top box connecting to the product via HDMI, image quality deterioration (black level, lower-quality contrast, lighter color tone, etc.) may occur depending on the connected external device. • <Normal> • <Low> This function is active only when the external device is connected via <HDMI>. The <HDMI Black Level> function may not be compatible with all external devices.

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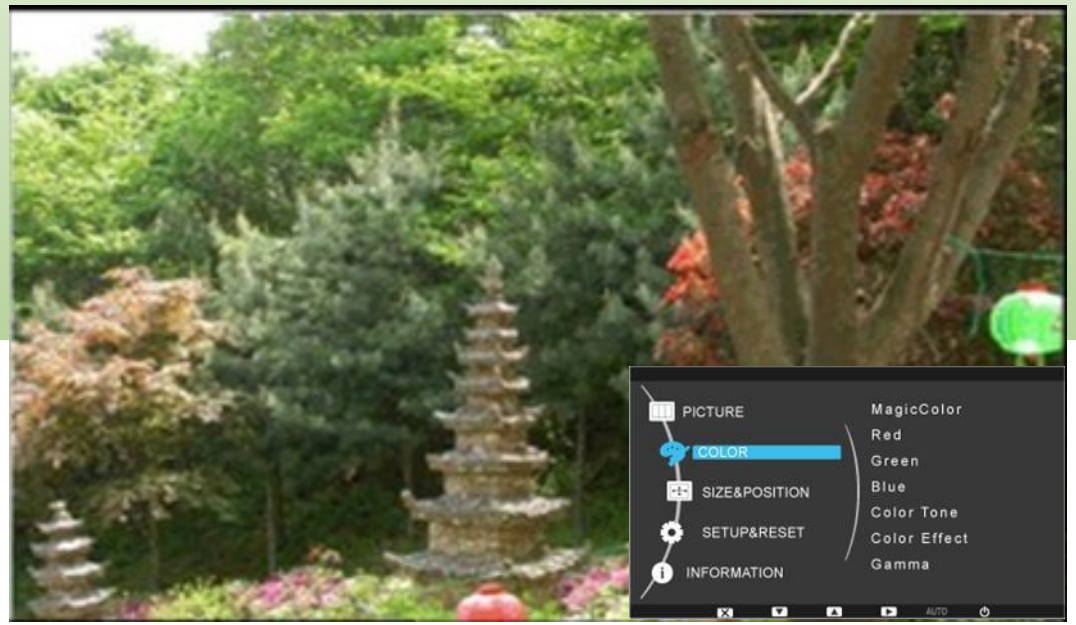
2. OSD Adjustment (Color)



2. OSD Adjustment (Color)

Menu	Description
MagicColor	Expresses natural colors more clearly without changing the picture quality using proprietary digital picture quality improvement technology developed by Samsung Electronics. • <Off> - Turns the MagicColor function off. • <Demo> - You can compare the pictures processed by MagicColor with the original pictures. • <Full> - Provides a clearer picture including areas corresponding to skin color. • <Intelligent> - Improves the chroma of pictures except for areas corresponding to skin color. This menu is unavailable when <MagicAngle> is set. This menu is unavailable when <Color Effect> is set.
Red	You can adjust the red color value of pictures according to your preference. This menu is unavailable when <MagicColor> is set to <Full> mode or <Intelligent> mode. This menu is unavailable when <Color Effect> is set.
Green	You can adjust the green color value of pictures according to your preference. This menu is unavailable when <MagicColor> is set to <Full> mode or <Intelligent> mode. This menu is unavailable when <Color Effect> is set.
Blue	You can adjust the blue color value of pictures according to your preference. This menu is unavailable when <MagicColor> is set to <Full> mode or <Intelligent> mode. This menu is unavailable when <Color Effect> is set.
Color Tone	You can set the color temperature according to your preference. • <Cool> - Sets the color temperature of the screen to a cooler color. • <Normal> - Sets the color temperature of the screen to the standard color temperature. • <Warm> - Sets the color temperature of the screen to a warmer color. • <Custom> - Select this menu to set the color temperature manually. If you do not like the preset color temperatures, you can manually adjust the colors of <Color Effect>. This menu is unavailable when <MagicColor> is set to <Full> mode or <Intelligent> mode. This menu is unavailable when <MagicAngle> is set. This menu is unavailable when <Color Effect> is set.

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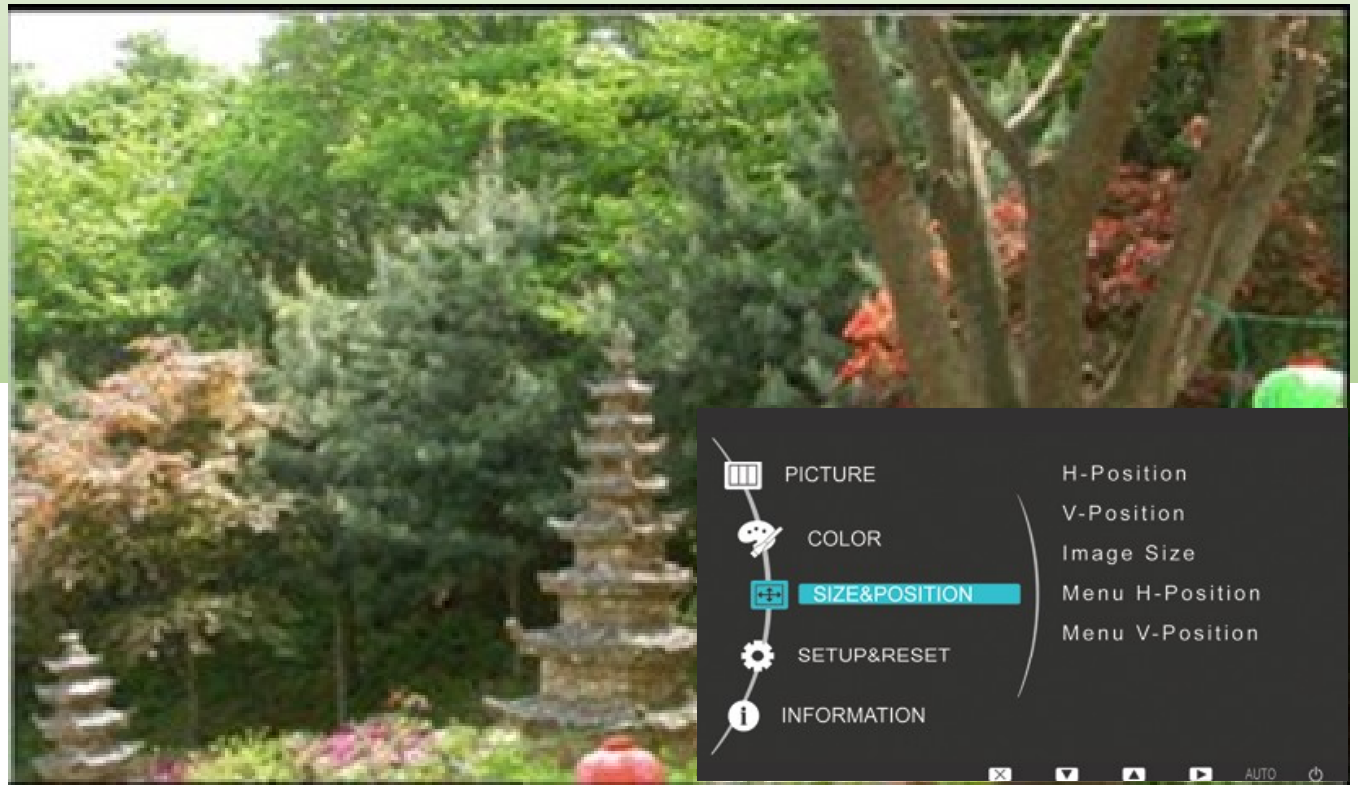
2. OSD Adjustment (Color)

Color Effect	You can change the overall atmosphere by changing the color of pictures. • <Off> - Turns the color effect function off. • <Grayscale> -Displays pictures in black and white. • <Green> - Displays pictures in green mono color. • <Aqua> - Displays pictures in aqua mono color. • <Sepia> - Displays pictures in sepia mono color. This menu is unavailable when <MagicAngle> is set. This menu is unavailable when <MagicColor> is set.
Gamma	Using this menu, you can change the intensity of the colors of medium brightness. • <Model>-<Mode2>-<Mode3> This menu is unavailable when <MagicAngle> is set.

2.OSD Adjustment (SIZE&POSITION)



2. OSD Adjustment (SIZE & POSITION)

Menu	Description
H-Position	Moves the position of the display area on the screen horizontally. • This function is only available in analog mode. • When a 720P, 1080i or 1080P signal is input in AV mode ,select <Screen Fit> to adjust horizontal position in 0-6 levels.
V-Position	Moves the position of the display area on the screen vertically. • This function is only available in analog mode. • When a 720P, 1080i or 1080P signal is input in AV mode ,select <Screen Fit> to adjust horizontal position in 0-6 levels.
Image Size	**PC signals** • <Auto> - The picture is displayed at the aspect ratio of the input signal. • <Wide> - The picture is displayed in full screen regardless of the aspect ratio of the input signal. • A signal not in the standard mode table is not supported. • If the resolution is set to the optimal resolution, the aspect ratio does not change whether the <Image Size> is set to <Auto> or <Wide>. **AV signals** • <4 : 3> - Displays pictures at the 4 : 3 aspect ratio. • <16 : 9> - Displays pictures at the 16 : 9 aspect ratio. • <Screen Fit> - If a 720P, 1080i or 1080P signal is input in HDMI/DVI input mode, the picture is displayed as is whithout truncation. • <4 : 3> - Displays pictures at the 4:3 aspect ratio. • <wide> - Displays pictures at the 16:10 aspect ratio. • <Screen Fit> - If a 720P, 1080i or 1080P signal is input in HDMI/DVI input mode, the picture is displayed as is without truncation. • It can only be selected if an external input is connected to the HDMI/DVI terminal and the <PC/AV Mode> is set to <AV>. • When the panel is of 16:10,the screen size options include <4:3>,<wide>,<Screen fit>.
Menu H-Position	You can adjust the horizontal position of the OSD.
Menu V-Position	You can adjust the vertical position of the OSD.

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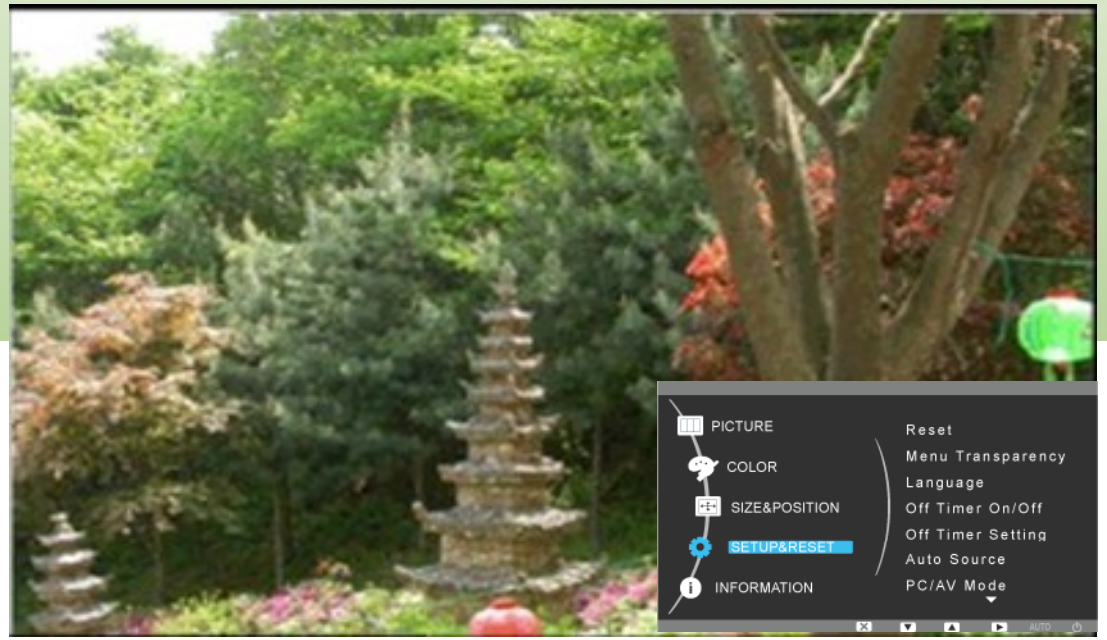
2. OSD Adjustment (SETUP&RESET)



2. OSD Adjustment (SETUP& RESET)

Menu	Description
Reset	Use this function to restore the visual quality and color settings to the factory defaults. • <No> - <Yes>
Language	Select a language for the OSD. English/Deutsch/Español/Français/Italiano/Svenska/Русский/Português/Türkçe The selected language is only applied to the product OSD. This setting does not affect the other functions of the
MagicReturn	The function is available in Windows7 system.The monitor can not be recognized when it si turned off.To recognize it,you must turn it on. • <Off> - MagicReturn function is turned off. • <On> - When <On >is selected,the<MagicReturn>function is turned on ¤ 1¤ This function is not available for Windows7 only.when use other OS ,it is recommended to set this function to <Off>. ¤ 2) This function is not available for analog signal input. ¤ 3¤ This function is not available for the graphics cards ATI X600. It is recommended to set this function to <Off>. (4) Press and hold down the ▼ key for 5 seconds while the Check Signal Cable OSD is displayed, <MagicReturn> will be automatically set to <Off>. (5) This function is not available when <PC/AV Mode> is set to <AV>.
MagicEco	This function provides user a low power mode which is realized by lowering the controlling current of the display panel. • <100%> - When<100%>is selected, the power consumption is 100% of default setting¤ 10%¤ . • <75%> - When<75%>is selected, the power consumption is 75% of default setting¤ 10%¤ . • <50%> - When<50%>is selected, the power consumption is 50% of default setting¤ 10%¤ . • <Power Saving Off> - When <Power Saving Off>is selected, the function is turned Off¤ 10%¤ .

2. OSD Adjustment (SETUP&RESET)

Menu	Description
Off Timer On/Off	You can turn the Off Timer on or off. • <Off> - <On>
Off Timer Setting	Turns the power off automatically when the configured time is reached.
Customized Key	You can set the function of the Customized Key to one of the following. • PC signals <MagicBright> - <MagicAngle> - <MagicEco> - <Image Size> • AV signals : <Picture Mode> - <MagicAngle> - <MagicEco> - <Image Size> You can set the function of the Customized Key by selecting <SETUP&RESET> -<Customized Key> in the OSD.
Auto Source	• <Auto> - The monitor automatically selects an input signal. • <Manual> - Users have to manually select an input signal.
PC/AV Mode	Set to PC when connected to a PC. Set to AV when connected to an AV device. This function does not support analog mode.
Display Time	The OSD automatically disappears if no action is taken by the user. You can determine the time to wait before the OSD is hidden. • <5 sec> - <10 sec> - <20 sec> - <200 sec>
Menu Transparency	You can select the transparency of the OSD. • <Off> - <On>

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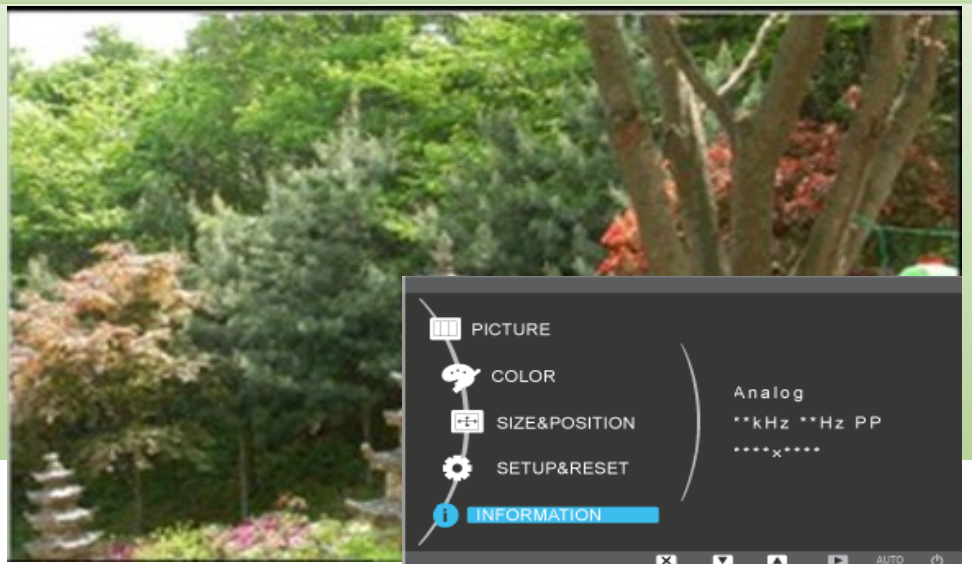
2. OSD Adjustment (INFORMATION)



Menu	Description
INFORMATION	Shows the frequency and resolution set on the PC.

OSD Lock

Menu	Description
OSD Lock & UnLock	After pushing the "MENU" button more than 5 seconds, OSD function is locked (unlocked). ▫ You can also adjust the brightness and contrast of the monitor with the OSD adjustment locking feature

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2. OSD Adjustment (Factory Mode)

Menu	Description
Factory Mode	To enter the Service Function, set the Brightness /Contrast to 0 and press and hold the ENTER /SOURCE key for 5 seconds.

3. Circuit Description (Product Structure)

1. Panel Part

- See Product Specifications.

2. Main Board Part

- Receives external PC analog signals, and then outputs the video signals to the panel using a Scaler and also outputs the same signals as external input.

3. LED DRIVER

- LED DRIVER

4. Function Button

Transfers the input signals where the Function button is used to the main board and displays the LED.

3. Circuit Description (New Part)

***. Scaler(MSTR)**

SE979LMRD-LF

Use a type of scaler with an embedded MCU core.

-. Detailed Specifications

- On-Chip Microcontroller
- On-Chip OSD Controller
- LVDS/RSDS Transmitters
- 128-QFP Package / 3.3V/1.8V suppliers

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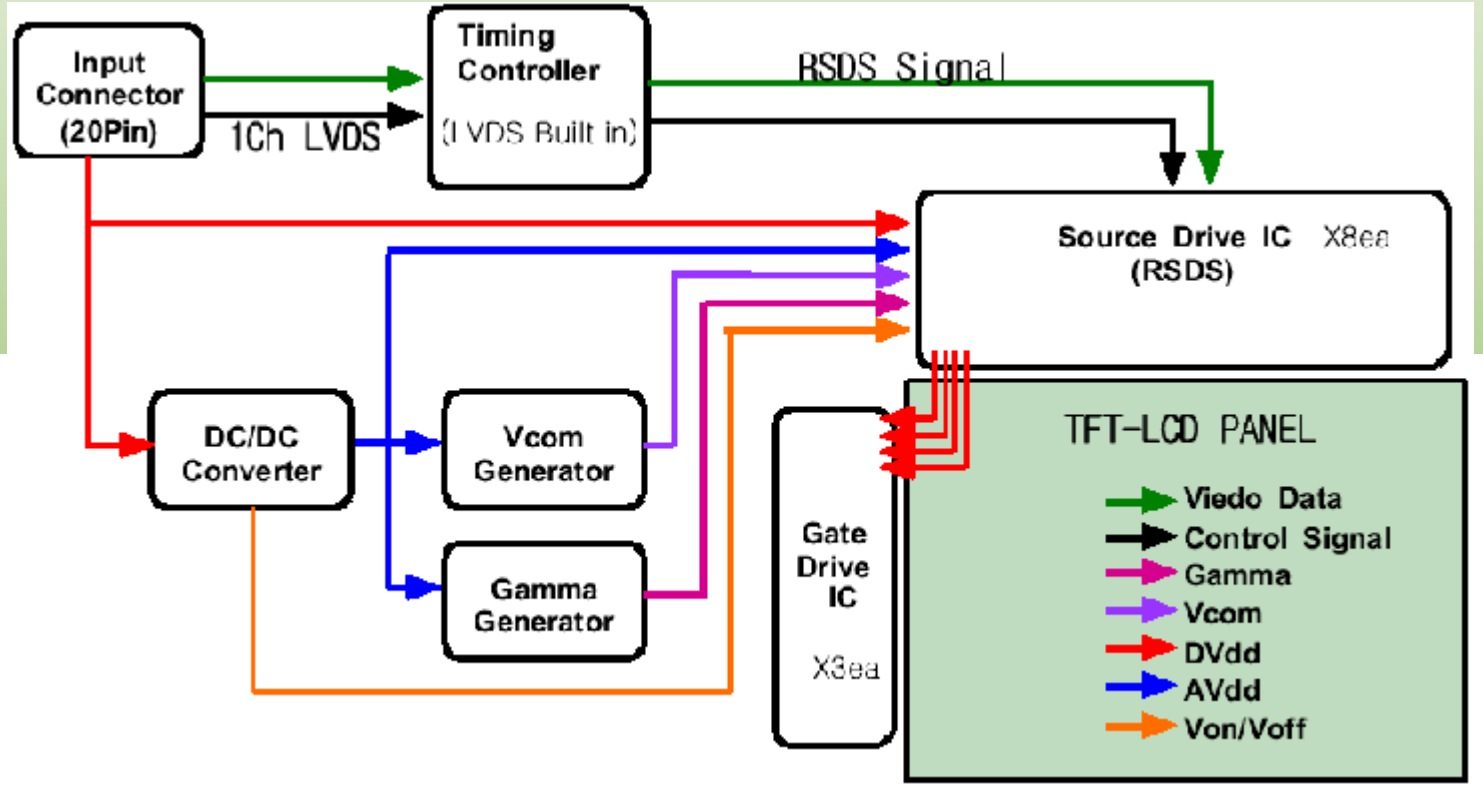
3. Circuit Description (Panel Part)



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3. Circuit Description (Panel Part)

* PROTECTION*

- LAMP(Inverter) PROTECION

=> The protection is activated if there is no feedback because the lamp connector is disconnected or the lamp is cracked.

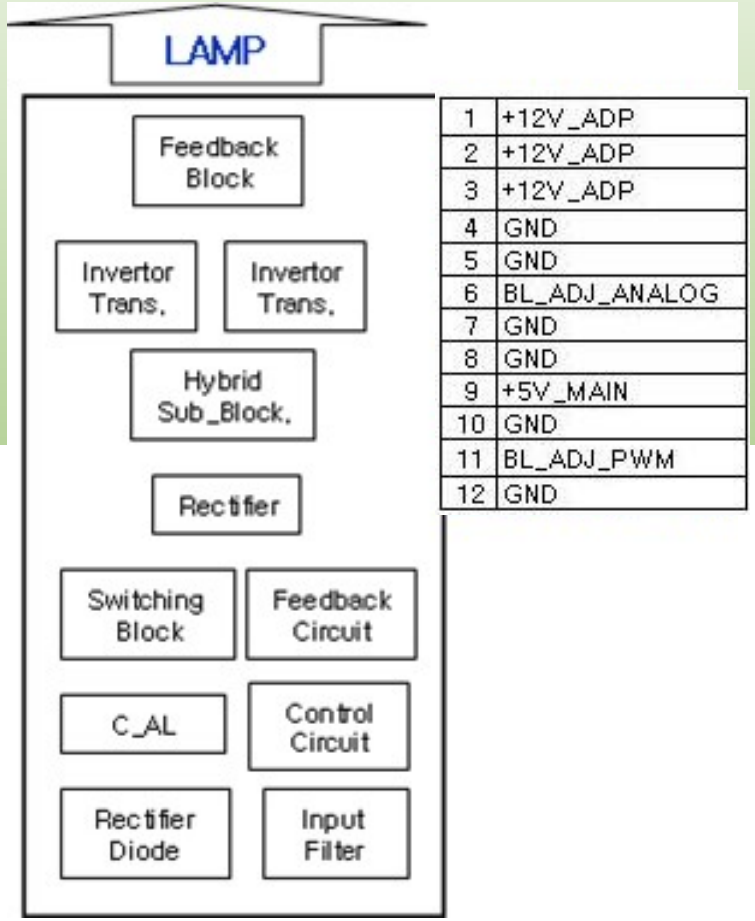
=> The over voltage protection starts as a lamp protection if the output voltage of the inverter transformer is high.

- Power Protection

=> All panel protection (OVP/OCP) operates in Auto Recovery mode. When the panel is stopped temporarily due to a protection issue, it powers the panel on again to resume the operation after the problem is cleared.

However, as an exception, in the case of a thermal protection issue, the panel can only operate normally if the power is turned off and is fully discharged and turned on again. This is controlled by a function designed in the power IC.

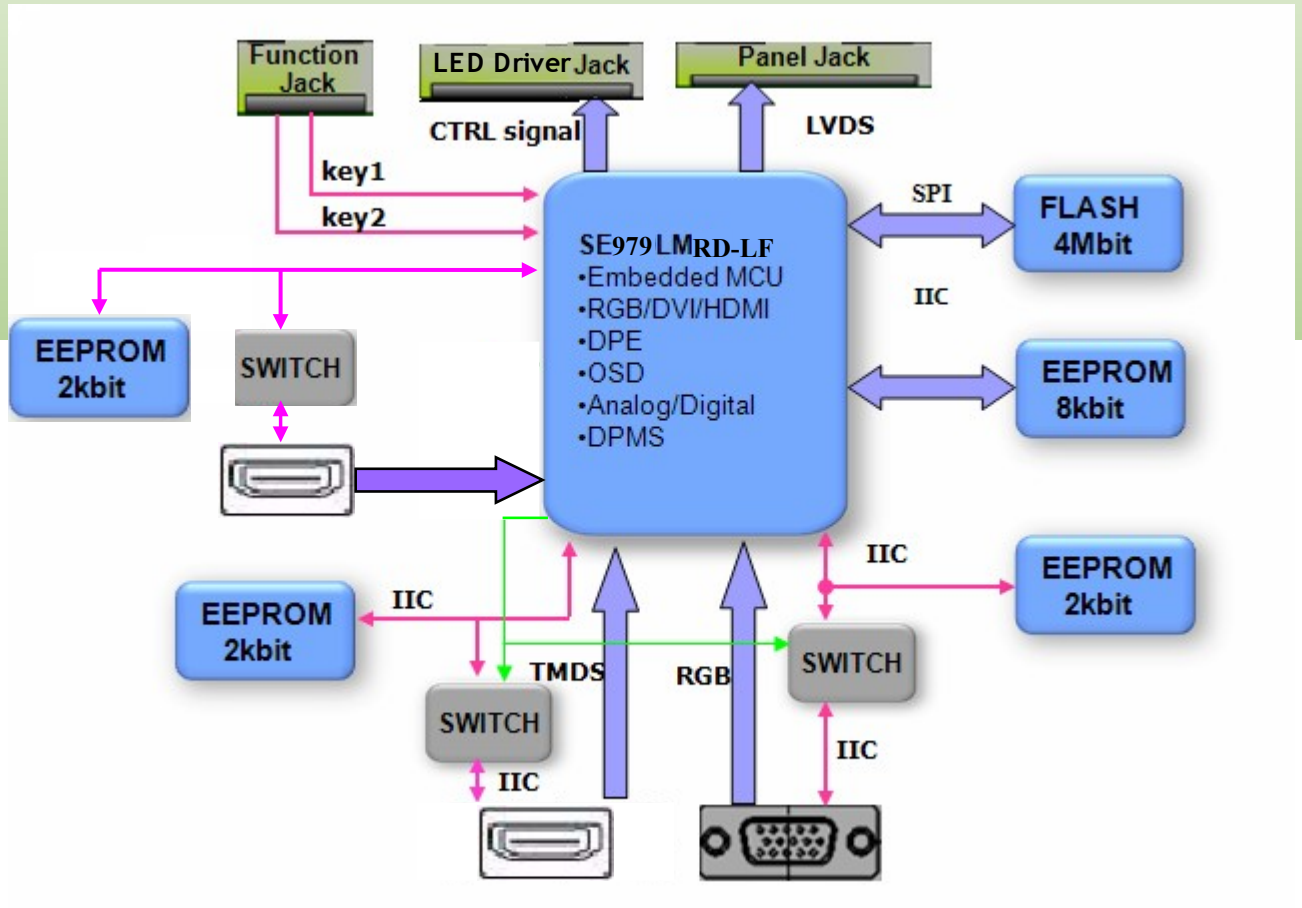
3. Circuit Description (Block Diagram)



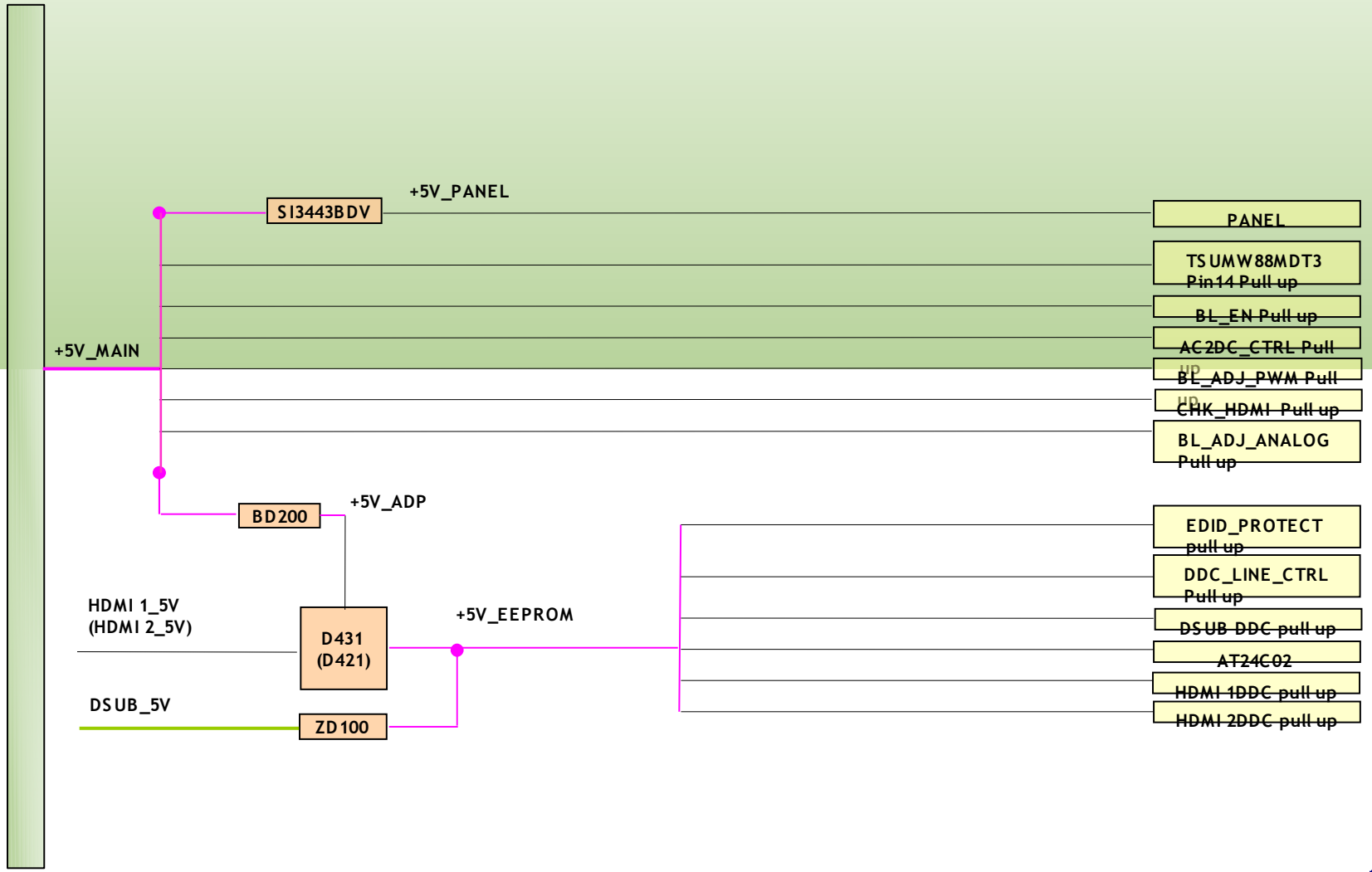
1	+12V_ADP
2	+12V_ADP
3	+12V_ADP
4	GND
5	GND
6	BL_ADJ_ANALOG
7	GND
8	GND
9	+5V_MAIN
10	GND
11	BL_ADJ_PWM
12	GND

3. Circuit Description (Scaler Part)

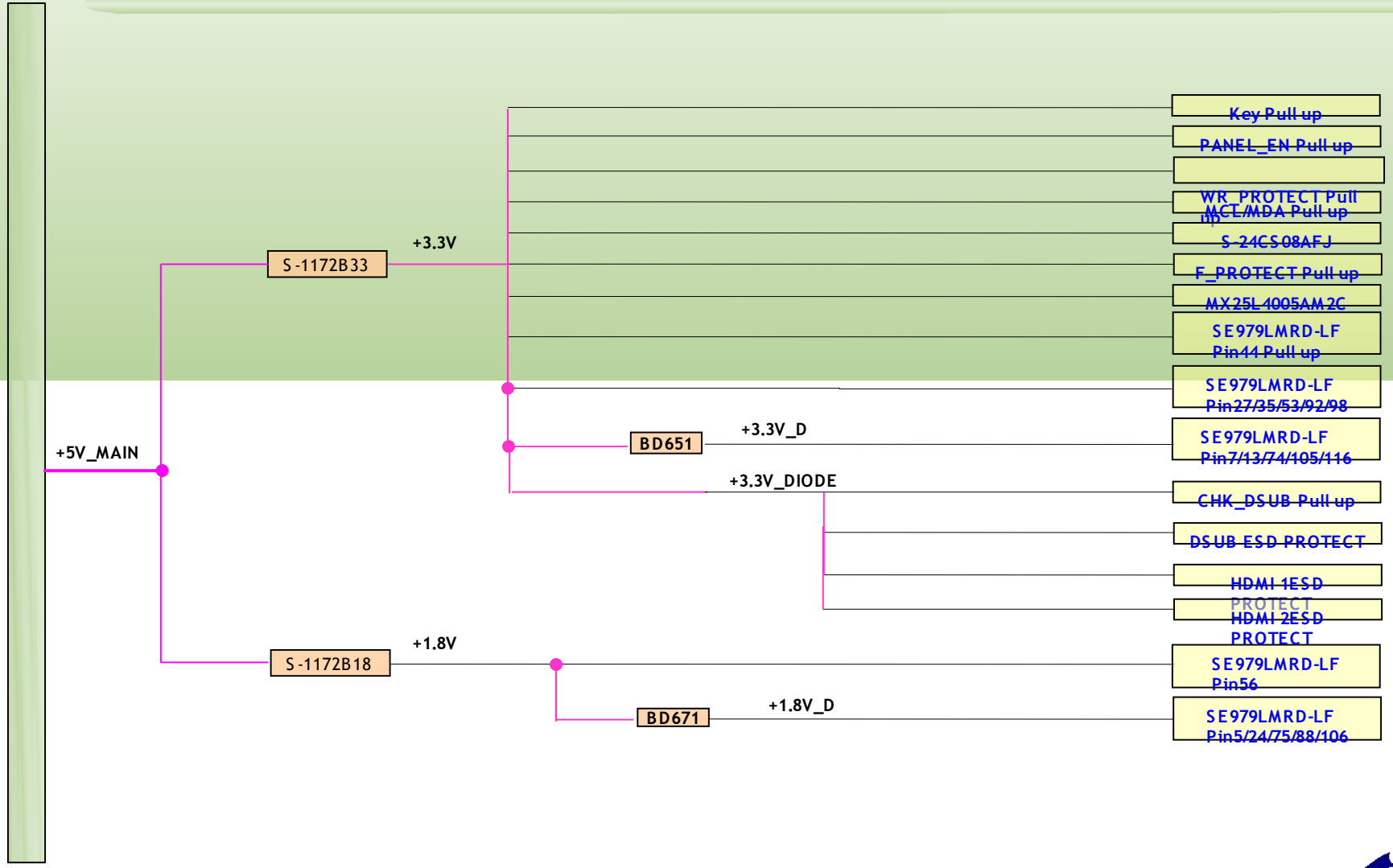
BX2231/BX24331/BX2431



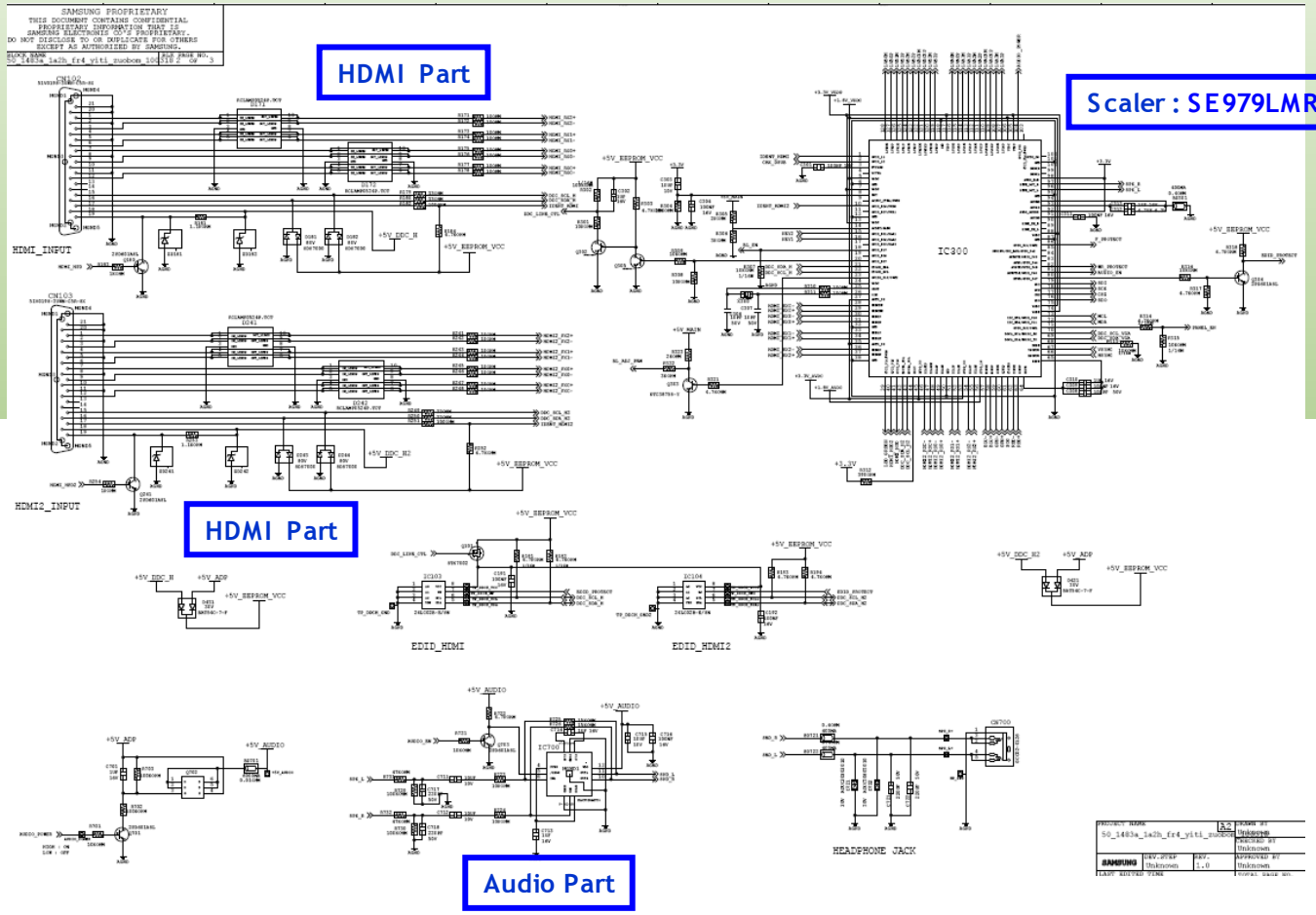
3. Circuit Description (Power Flow Chart)



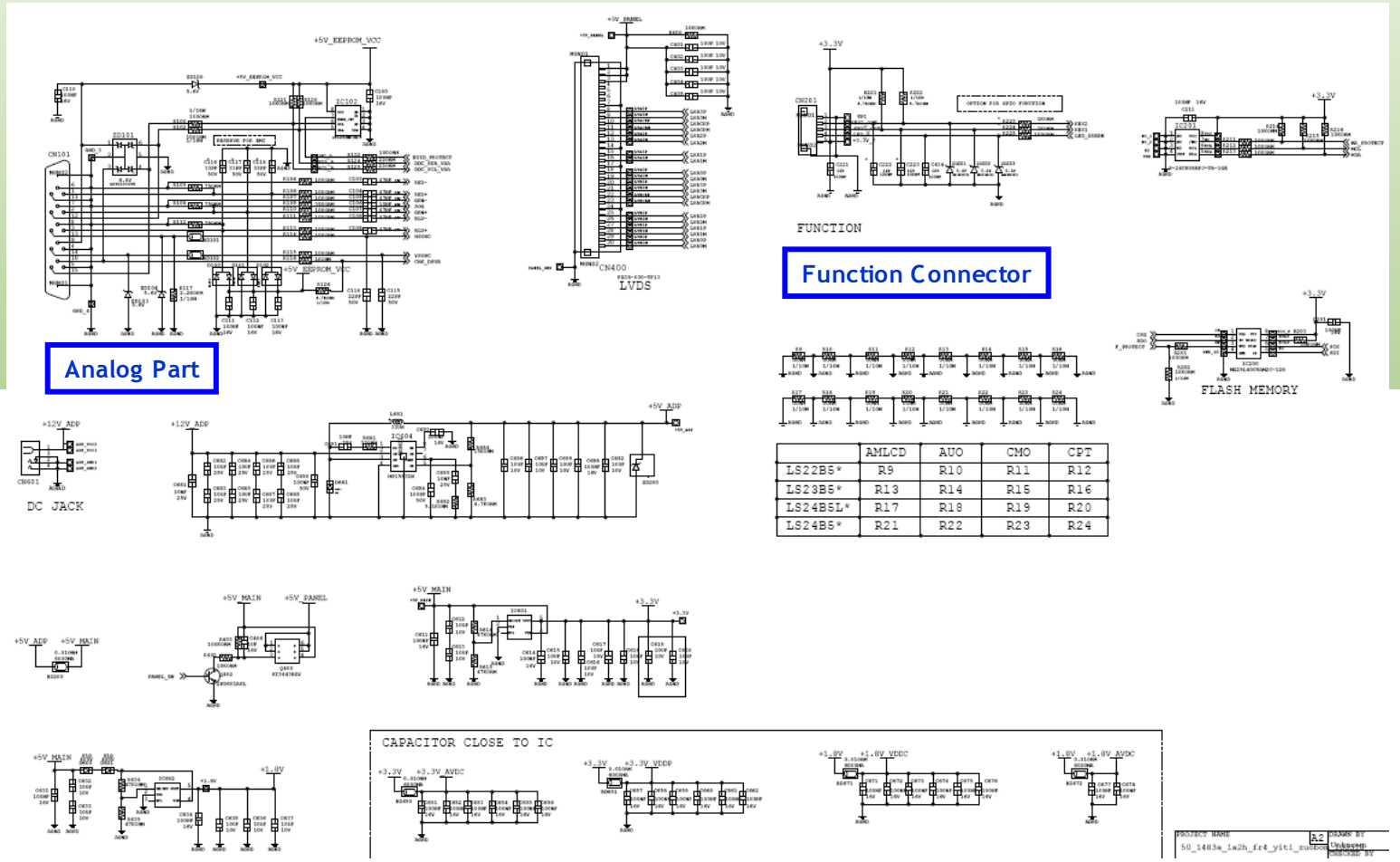
3. Circuit Description (Power Flow Chart)



3. Circuit Description (Circuit Diagram)

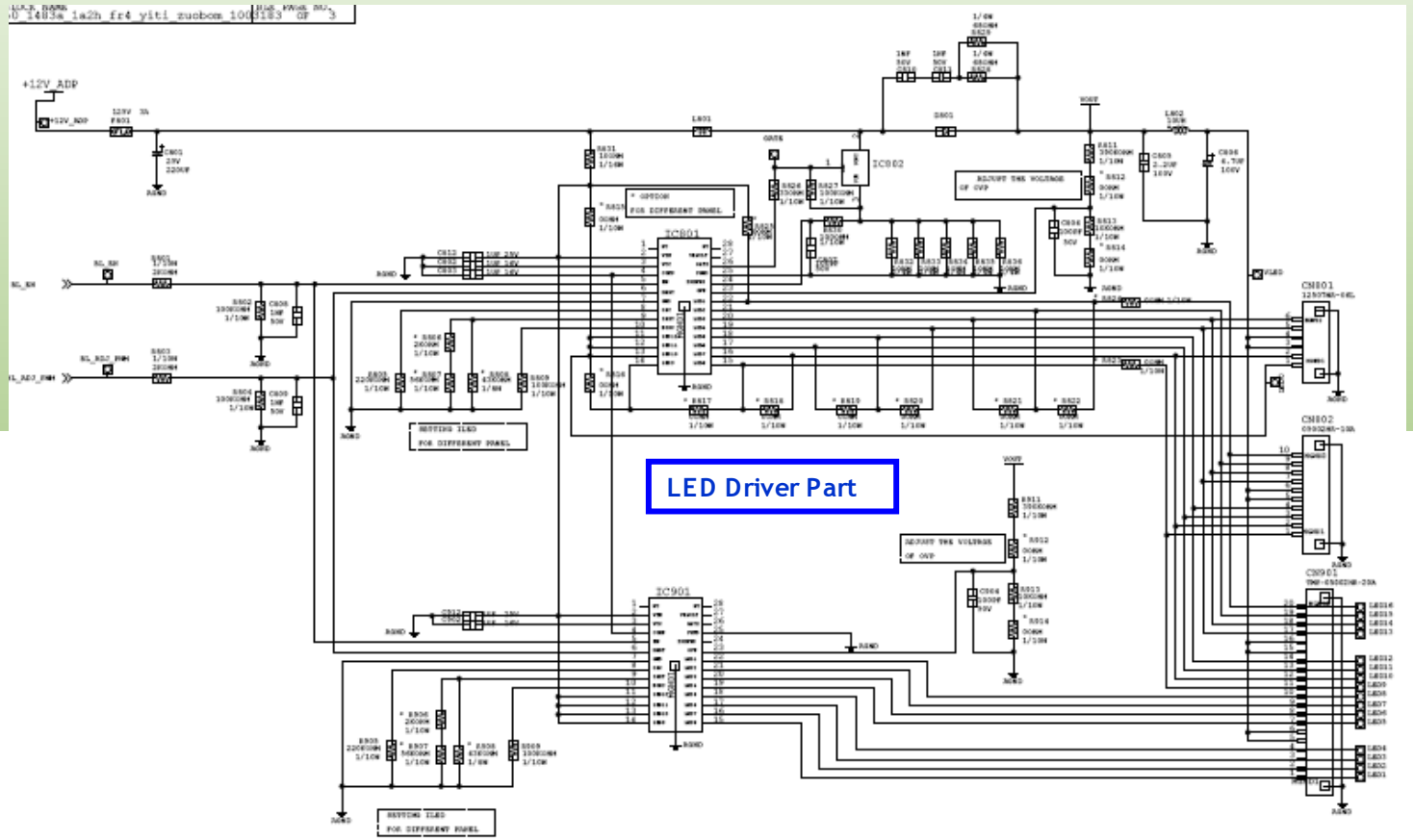


3. Circuit Description (Circuit Diagram)

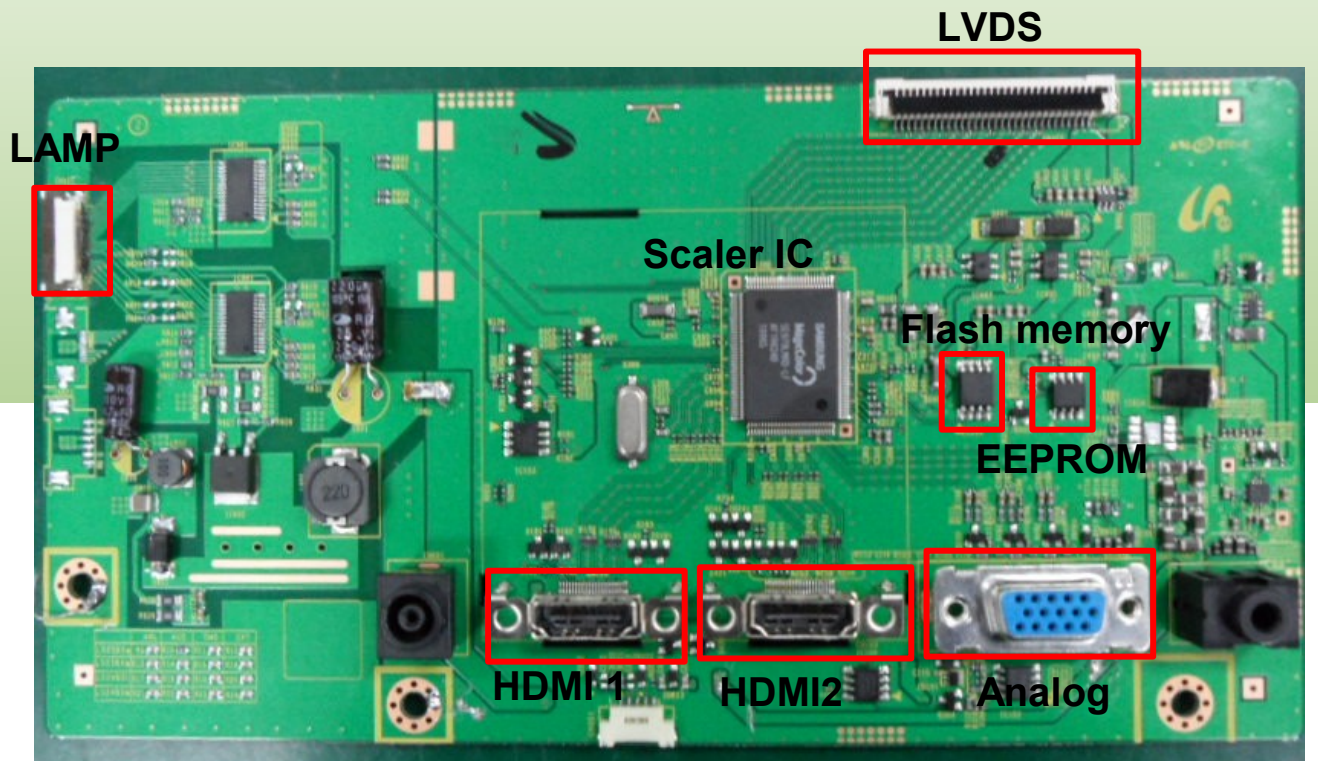


	AMLCD	AUO	CMO	CPT
LS22B5*	R9	R10	R11	R12
LS23B5*	R13	R14	R15	R16
LS24B5L*	R17	R18	R19	R20
LS24B5*	R21	R22	R23	R24

3. Circuit Description (Circuit Diagram)



3. Circuit Description (Main PBA)



3. Circuit Description (Main PBA)

No	Block	Description	□□
1	Scaler IC300	Besides the ADC,LVDS,and scaling part,an MCU is embedded as well . All of them are integrated into one chip.	SE979LMRD-LF(BX2431)
2	Flash Memory IC200	Stores the MCU program embedded in the scaler. It is of a flash type and rewritable.	F25L04PA
3	IC402	Stores the OSD and various timing values.	24CS08
4	IC102	The memory to which analog DDC data is input	24C02
5	IC103	The memory to which HDMI 1 DDC data is input	24C02
6	IC104	The memory to which HDMI 2 DDC data is input	24C02
5	Regulator IC601/IC602	An IC that receives DC voltage inputs. It is used in circuits that stabilize the DC voltage .	S-1172B18-U5T1G S-1172B33-U5T1G

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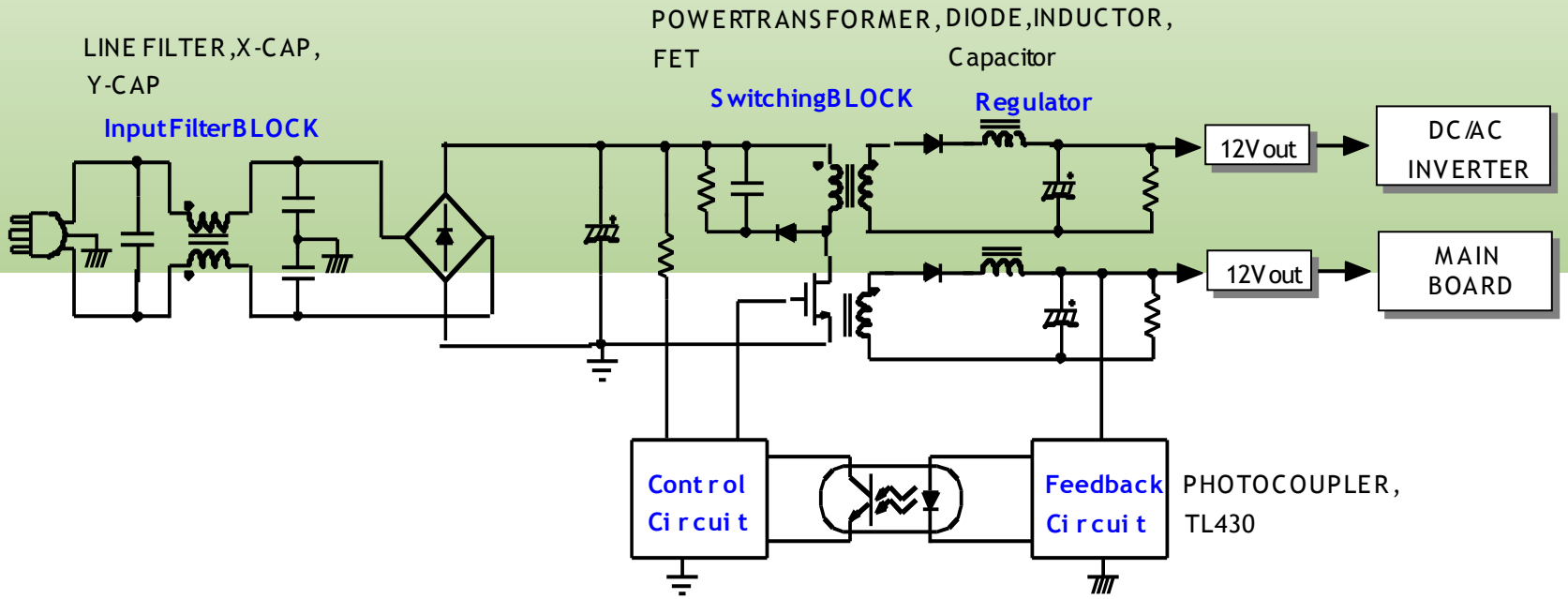
3. Circuit Description (Adapter)

SMPS Part



4. Assembly and Disassembly

Caution : 1. Make sure to turn off the monitor before starting the disassembly.

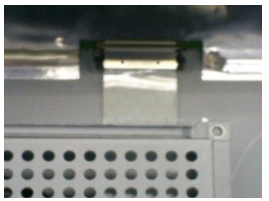
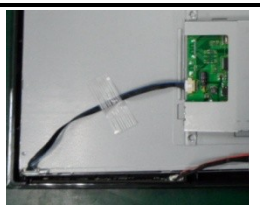
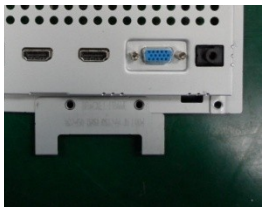
2. Never use metal tools other than the jig provided when disassembling the product.

3. For the disassembly, carefully follow the steps given below.

4. The jig for opening the back cover: BH81-00001A

Description	Picture Description
1 ▫ Remove the stand body	
2. ① Turn the monitor over and insert your hands into the top of the monitor at the center and separate the front cover in the direction of the arrow as shown in the figure. ② Separate the sides of the front cover up to the directed line as shown in the figure.	

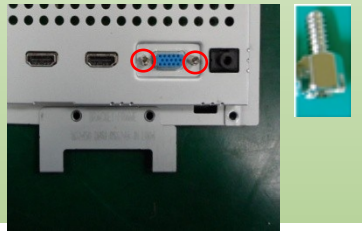
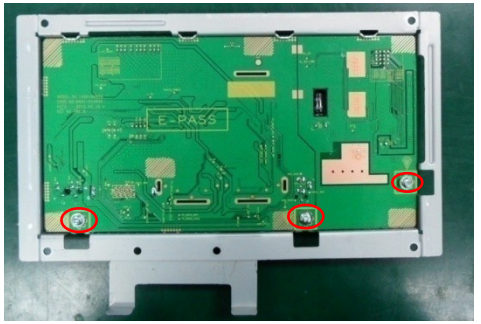
4. Assembly and Disassembly

Description	Picture Description
3. Turn the monitor over again to remove the back cover.	
4. Disconnect LVDS, INVERTOR and FUNCTION cable. And then Remove SHIELD_COVER.	  

4. Assembly and Disassembly

Description	Picture Description
5. Remove LCD Panel.	

4. Assembly and Disassembly

Description	Picture Description
6. Remove 2 screws.	
7. Remove 3 screws and remove Bracket Support.	

4. Assembly and Disassembly

Description	Picture Description
8. RemoveMain PCB from SHIELD-COVER.	

5. Troubleshooting

Notes:

1. Before troubleshooting, setup the PC's display as below.
   - Resolution: 1920*1080
   - H-frequency: 67.5 kHz
   - V-frequency: 60 Hz
2. If no picture appears, make sure the power cord is correctly connected.
3. Check the following circuits.
   - No raster appears: Function PBA, Main PBA
   - 5V develop but no screen: Main PBA
   - 5V does not develop:IC604
4. If you push and hold the "(Enter/Source)" button for more than 5 seconds, the monitor automatically returns to the factory preset.

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5. Troubleshooting

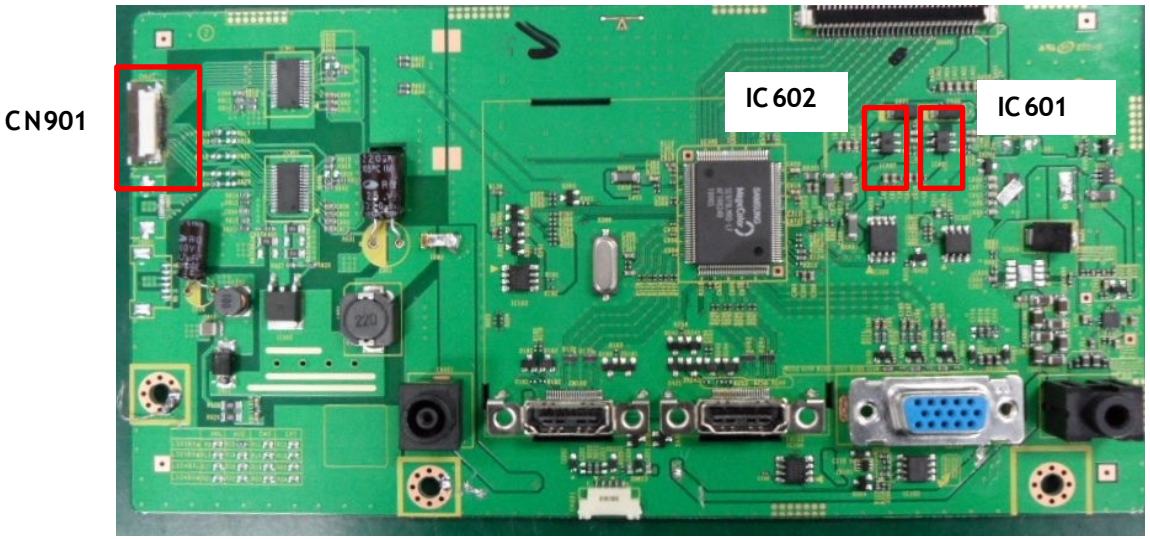
No power

Symptom : -. When turning on the Power button after connecting the power, the LED at the front of the monitor does not operate.

Major Checkpoints: -. Check the IC604 power fuse and IC604 output power.

-. Check the connections for the CN601 and the Main board.

-. Check the main board LED Driver part and check also whether there is any abnormal output at other output terminals.



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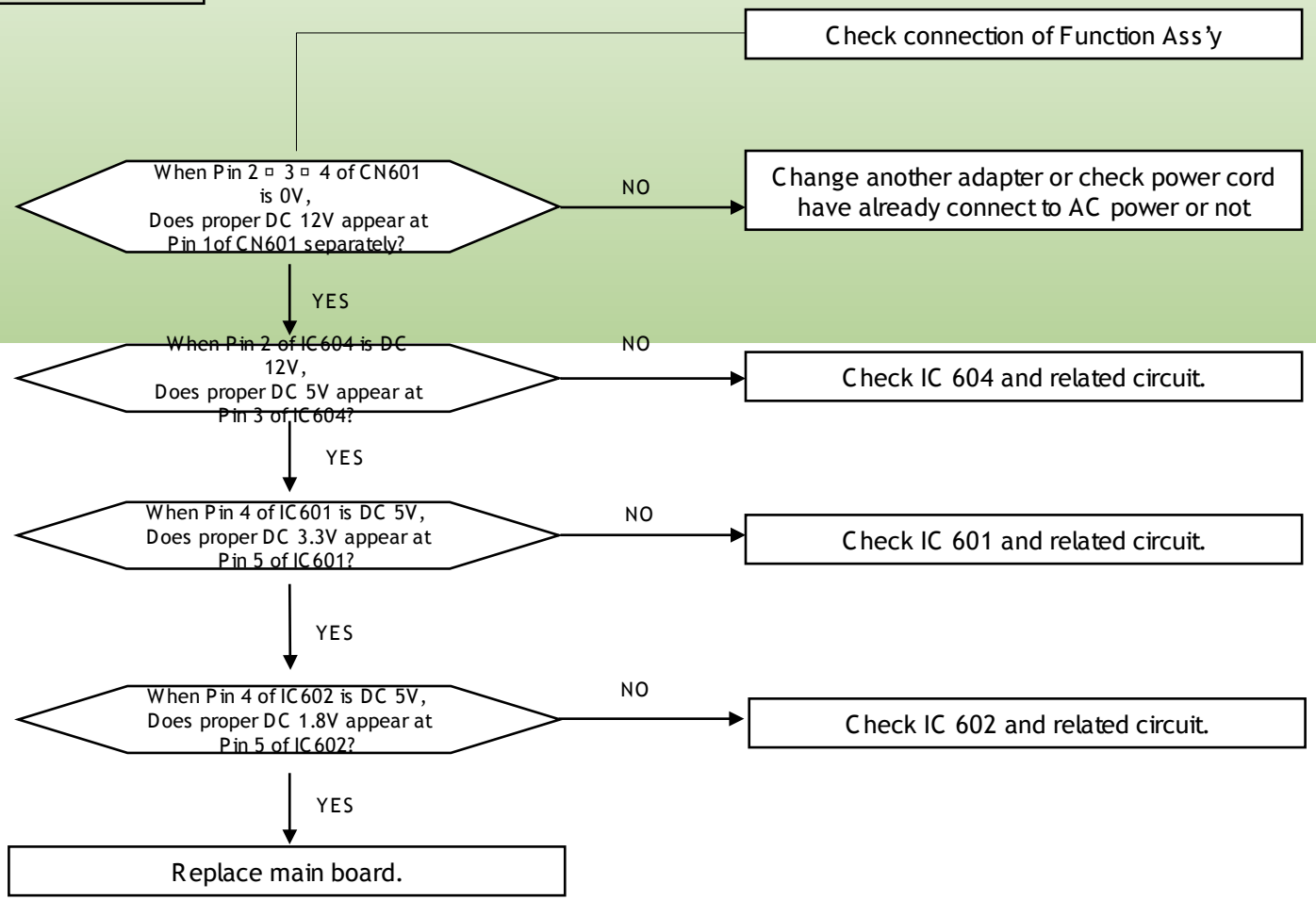
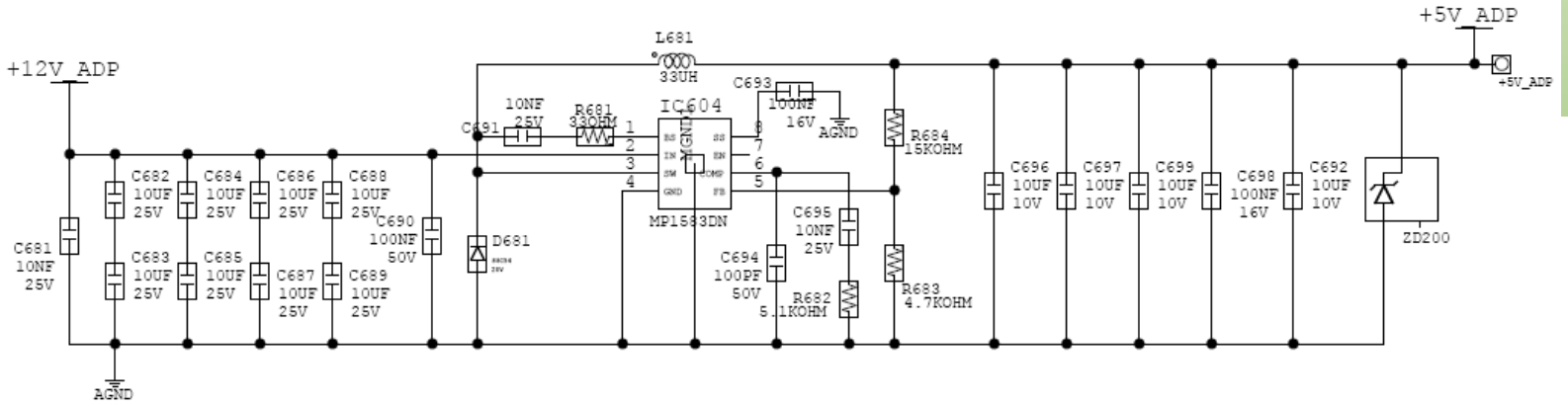
5. Troubleshooting

No power



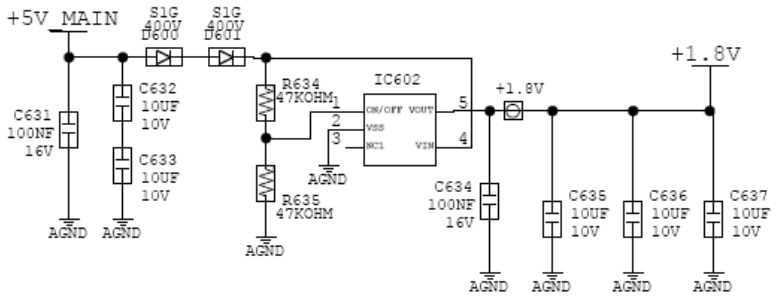
5. Troubleshooting

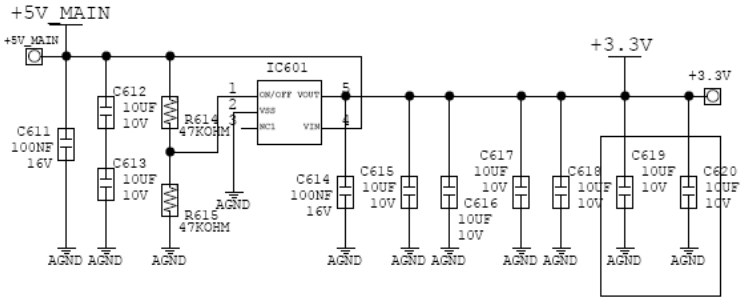
The Circuit diagram when the power not turn on



5. Troubleshooting

The Circuit diagram when the power not turn on

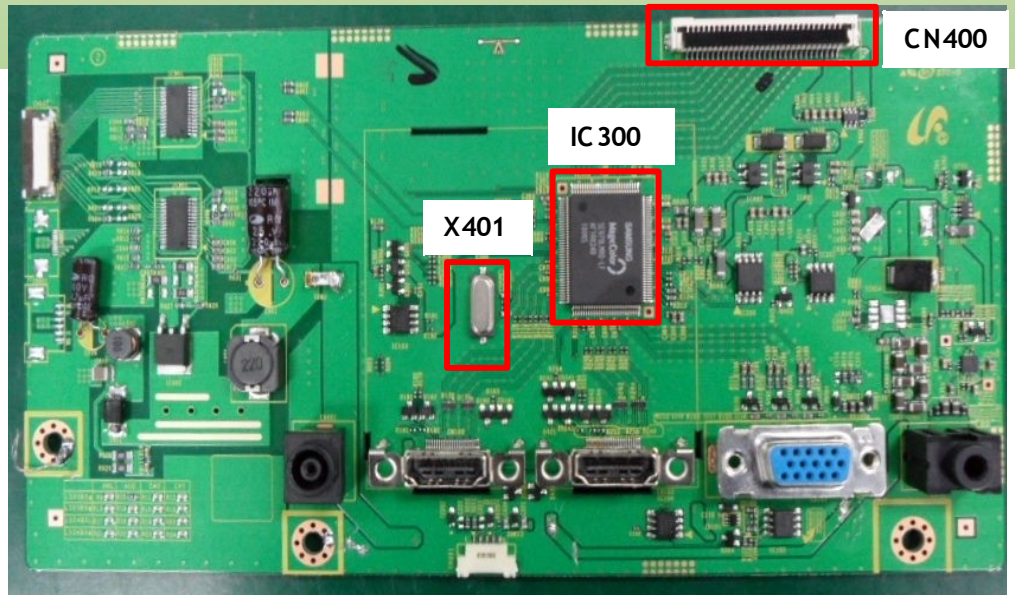




5. Troubleshooting

No video (Analog)

Symptom : -. Though the LED power turns on, the screen is blank when connecting the VGA cable.
Major Checkpoints: -. Check the D-SUB connection.
-. Check whether the LVDS cable is connected correctly to the Panel.
-. Check whether the lamp connector of the Panel is connected correctly to the Mainboard.



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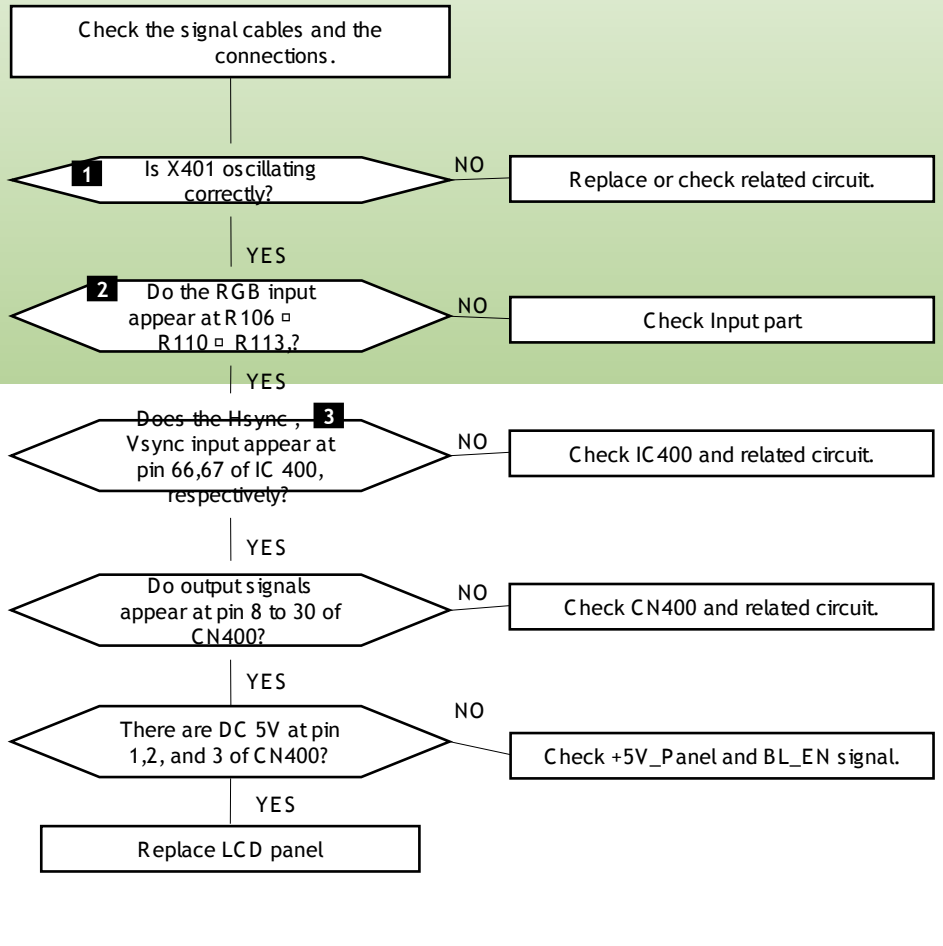
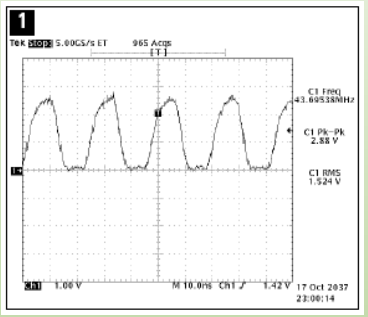
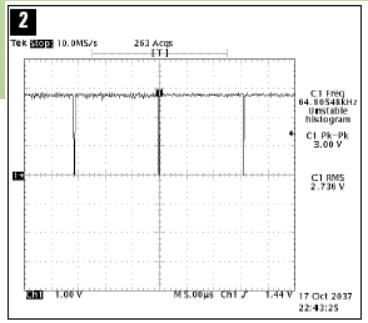
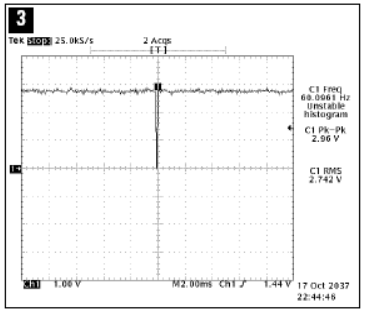
5. Troubleshooting

No video (Analog)



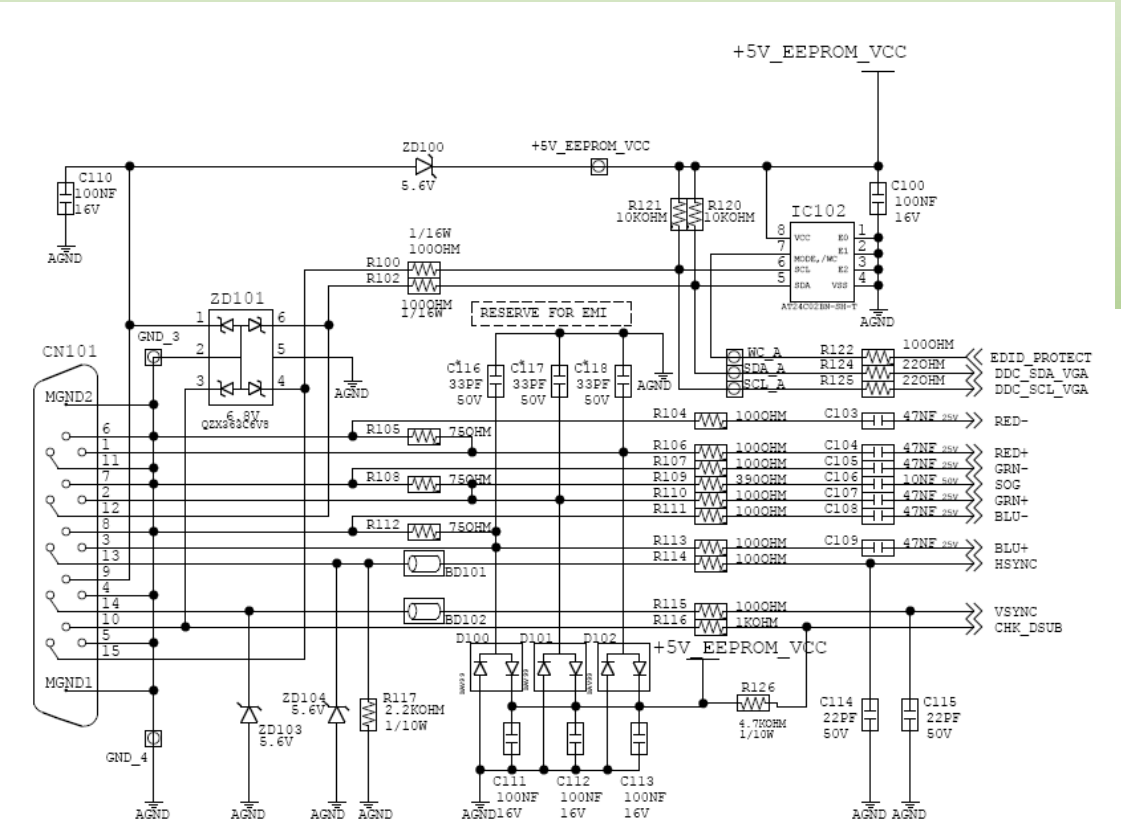






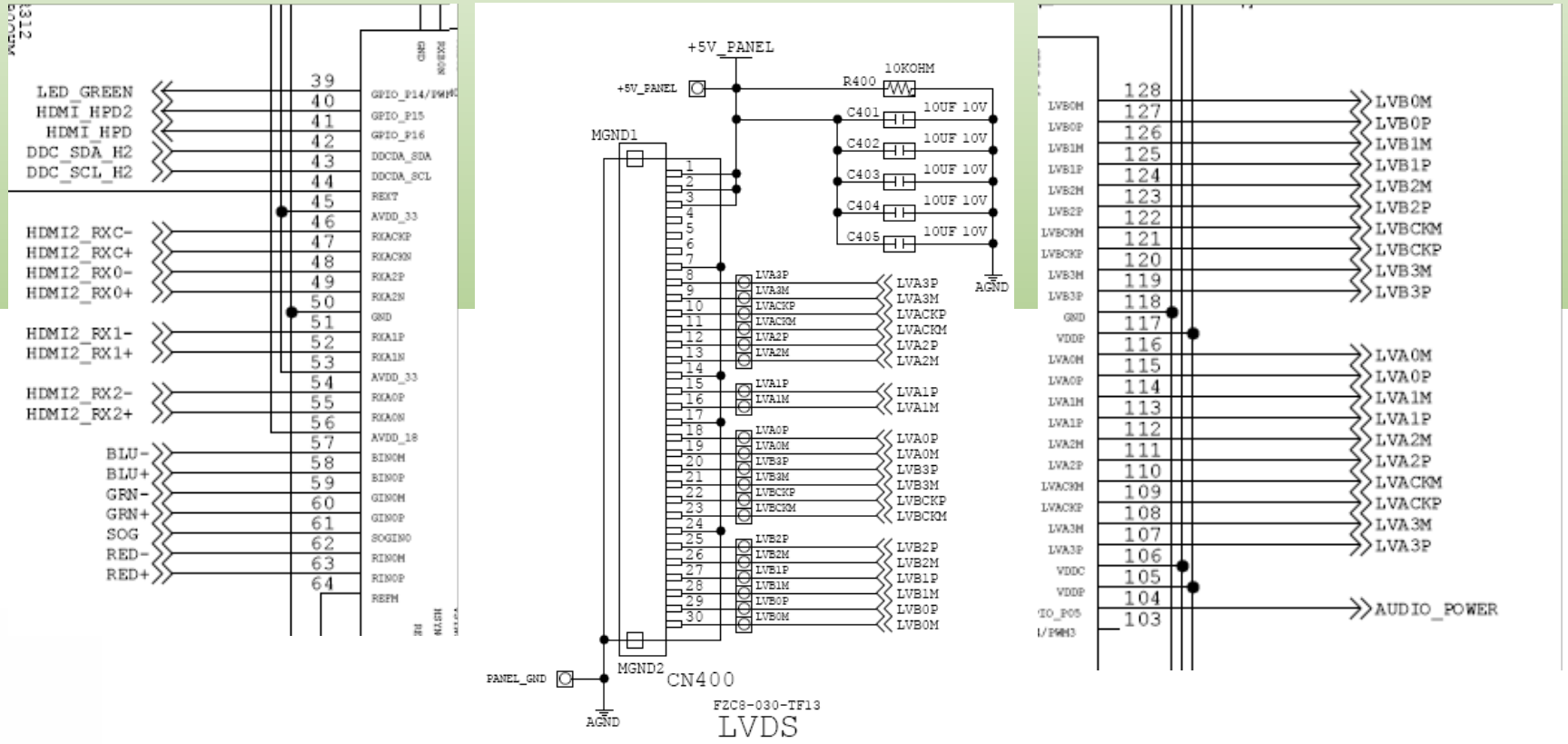
5. Troubleshooting

The Circuit diagram when no video (Analog)



5. Troubleshooting

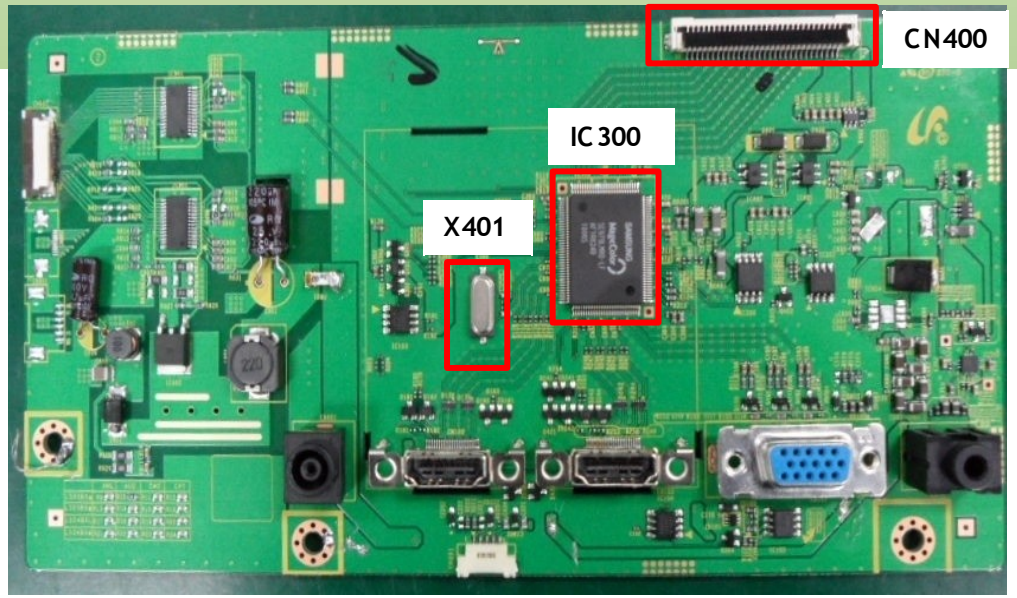
The Circuit diagram when no video (Analog)



5. Troubleshooting

No video (HDMI)

Symptom : -. Though the LED power turns on, the screen is blank when connecting the HDMI cable.
Major Checkpoints: -. Check the HDMI connection.
-. Check whether the LVDS cable is connected correctly to the Panel.
-. Check whether the lamp connector of the Panel is connected correctly to the LED Driver.



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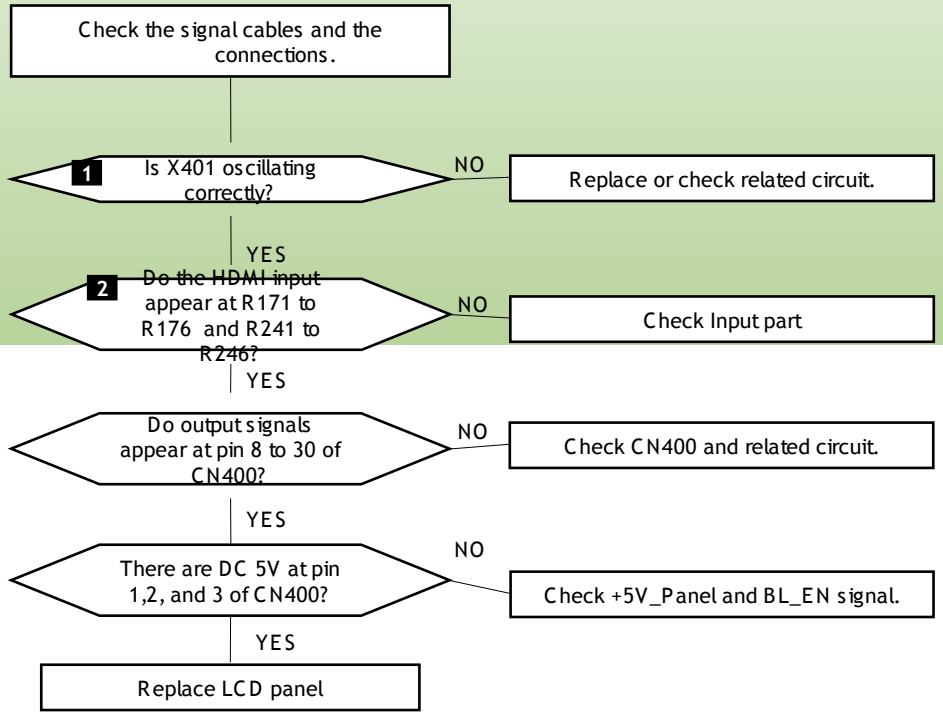
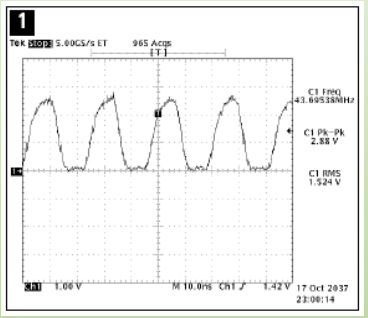
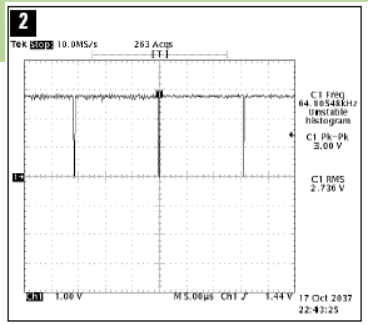
5. Troubleshooting

No video (HDMI)



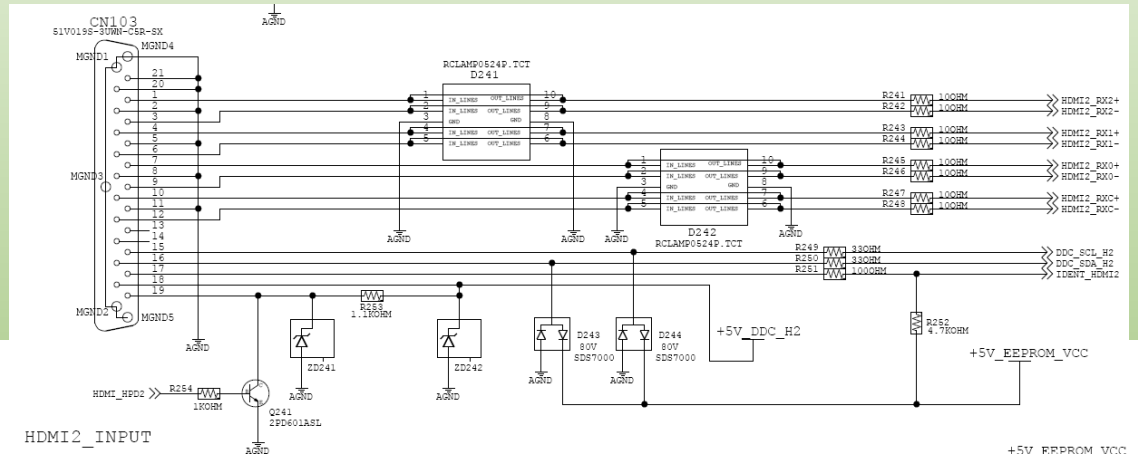


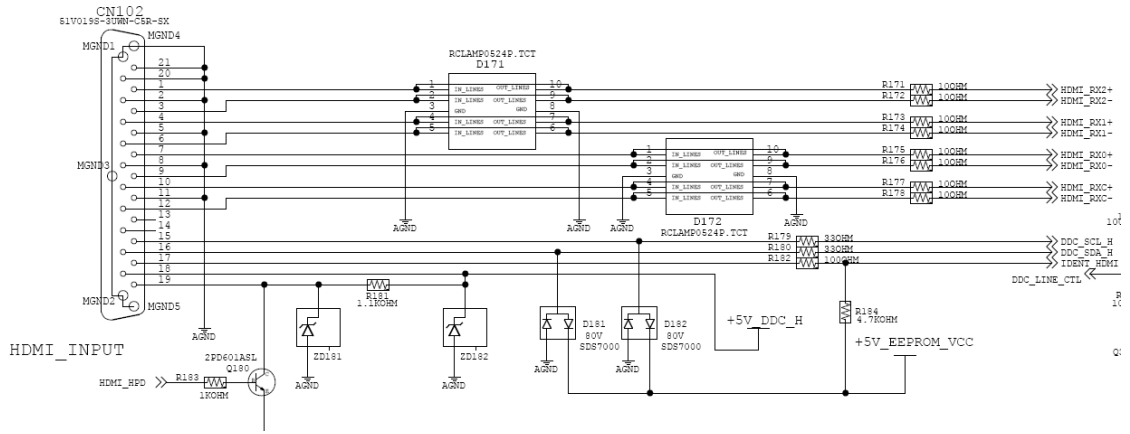


Caution : Make sure to disconnect the power before working on the Main board.

5. Troubleshooting

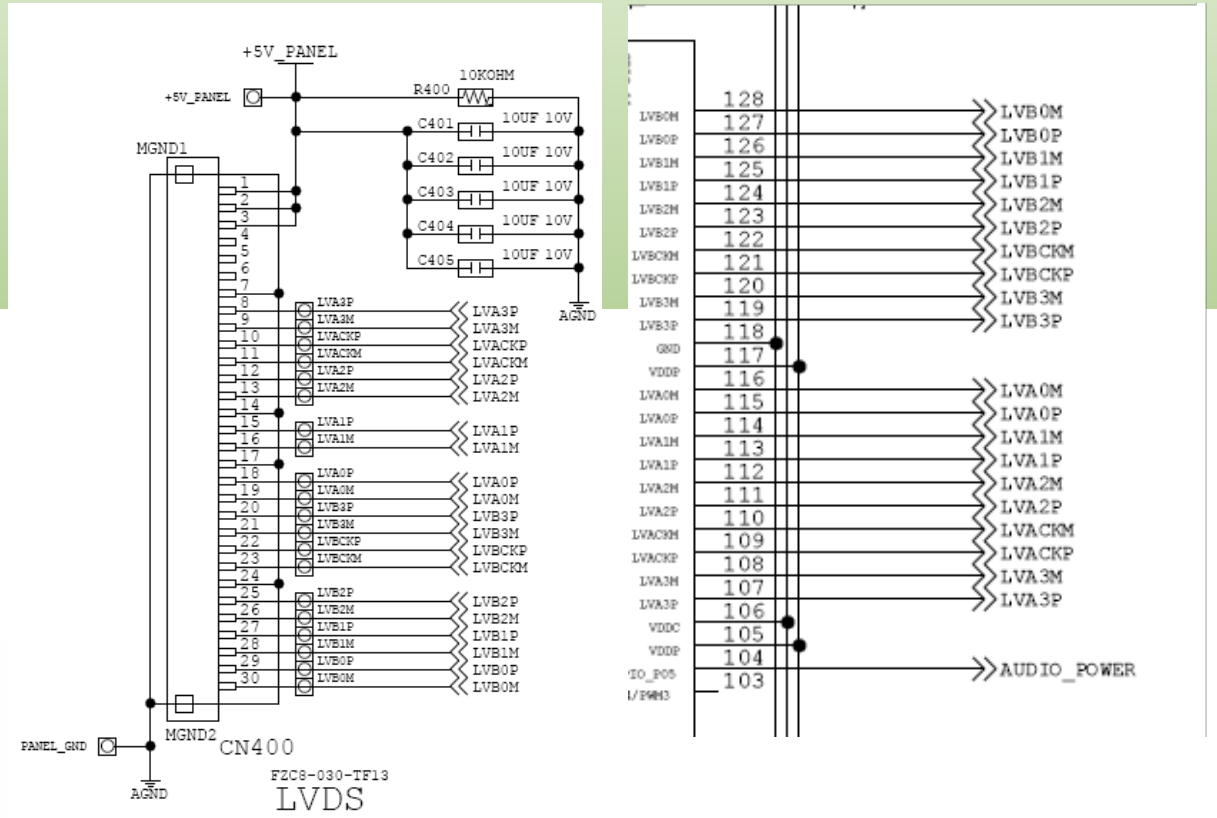
The Circuit diagram when no video (HDMI)





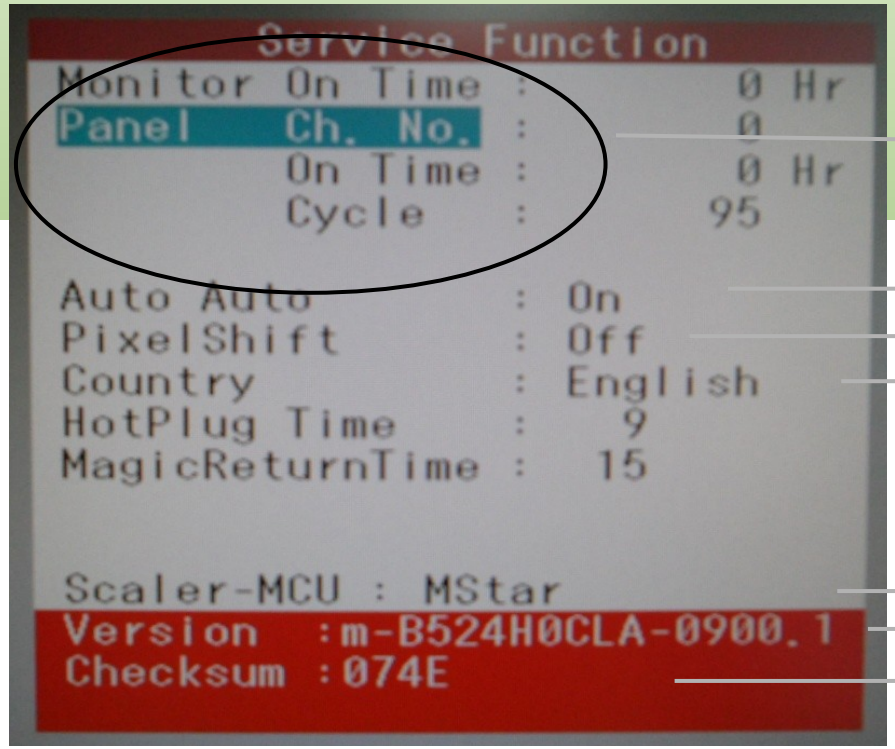
5. Troubleshooting

The Circuit diagram when no video (Analog)



5. Troubleshooting

*. Service Function OSD



Panel Information

Select Auto

Select Pixel Shift

Country

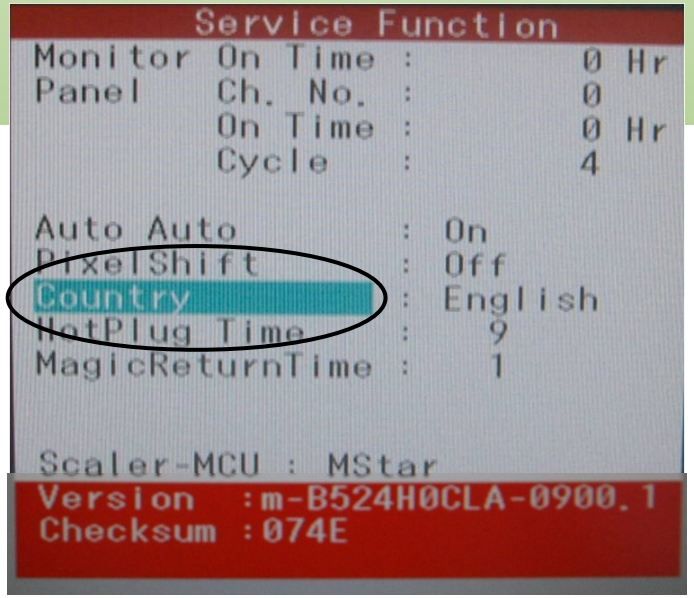
Scaler Vender

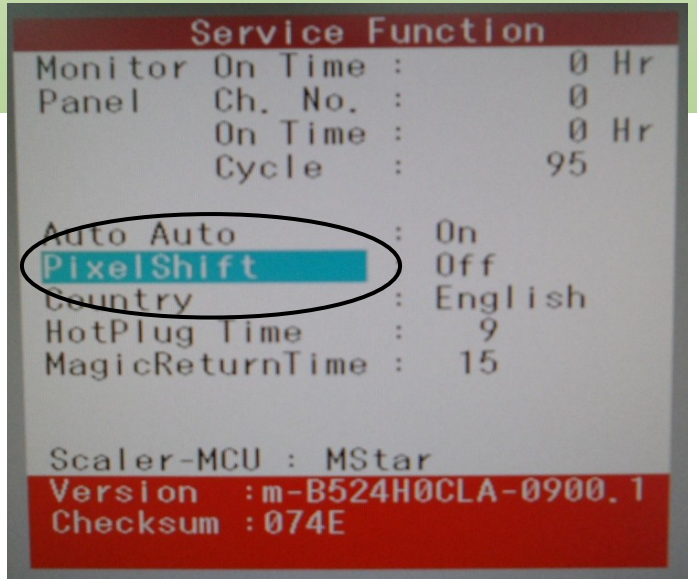
Micom version

Micom checksum

5. Troubleshooting

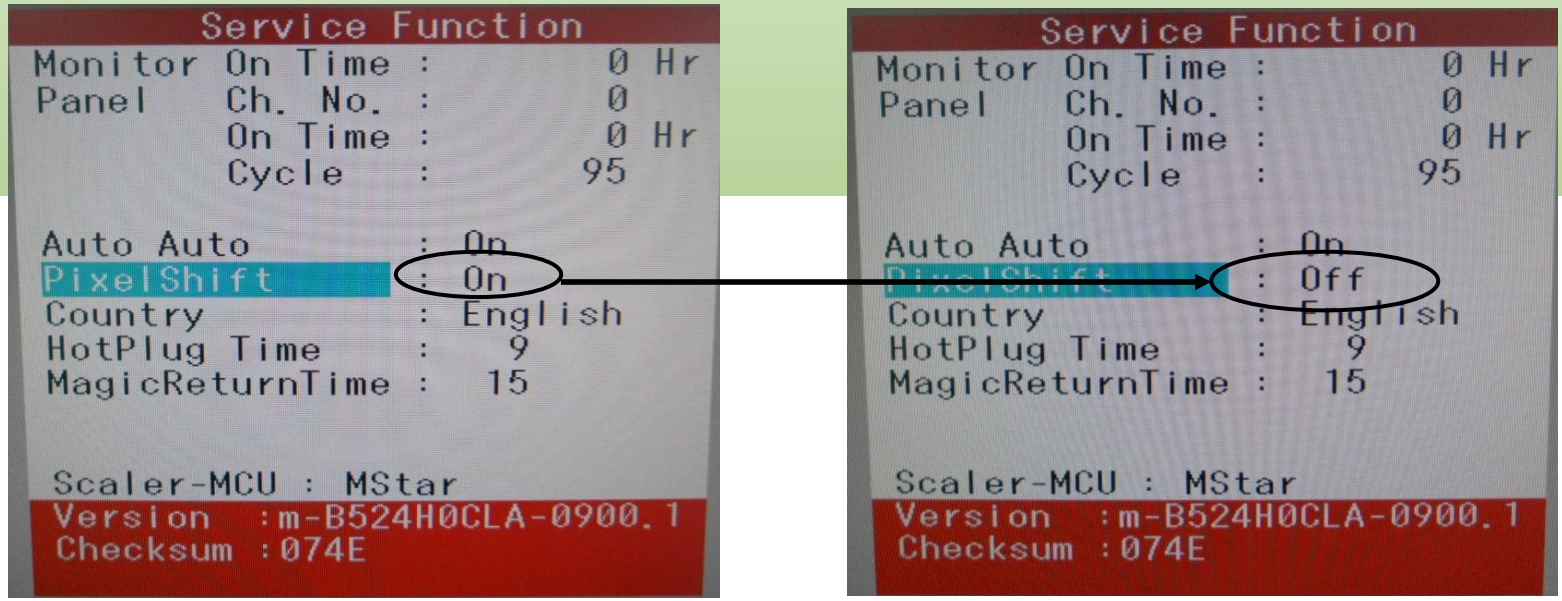
***. To move next step. Press (+) key.**





5. Troubleshooting

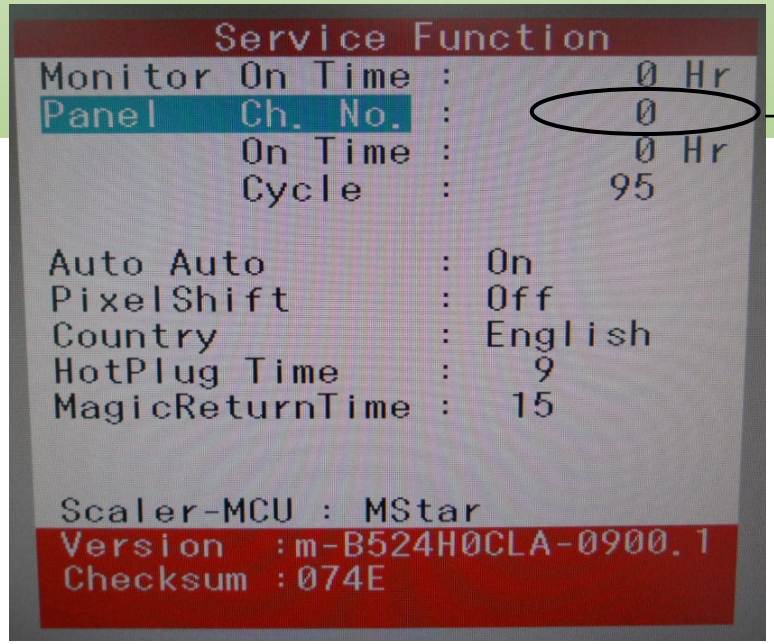
***. To select off/on. Press (-) key.**



5. Troubleshooting

***. Replace Panel**

After replacing the panel, select the Panel item and then hold down the Menu button for five (5) seconds.
The Ch. No. of the panel will increase. Then, on time and cycle number will be set to 0.

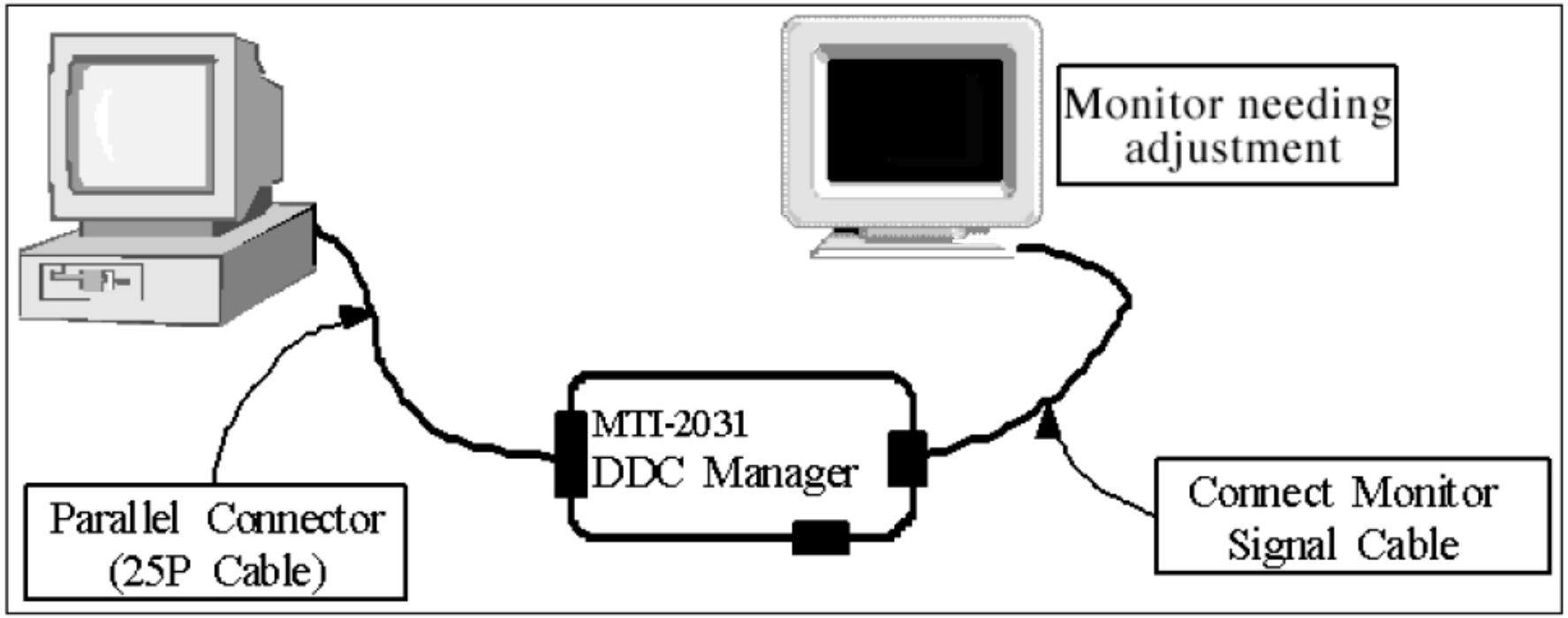


This number will be changed.

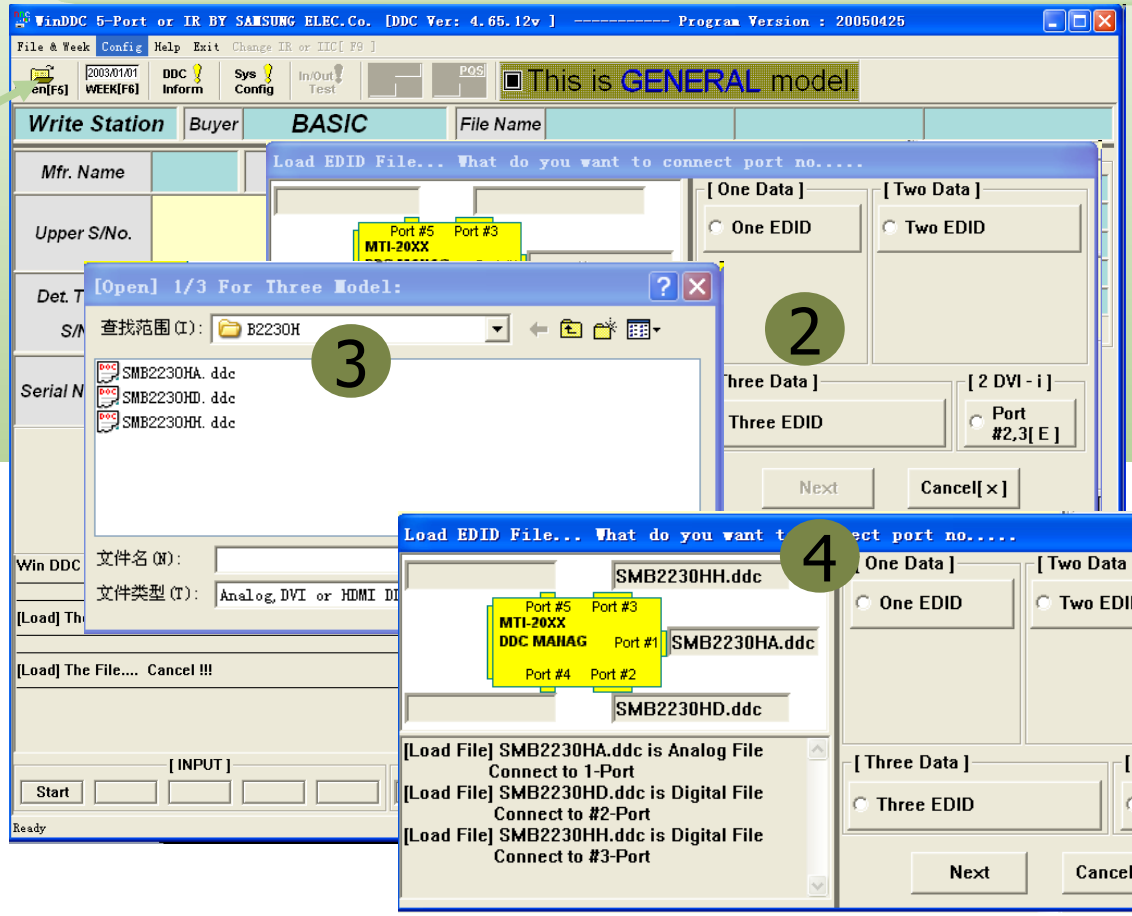
6. How to execute code

1. Enter the DDC EDID data when the AD board is replaced.

2. Download the DDC input program and the DDC file that corresponds to the model from the Quality Department of Samsung and install it using a jig as shown in the figure below, and then enter the data.

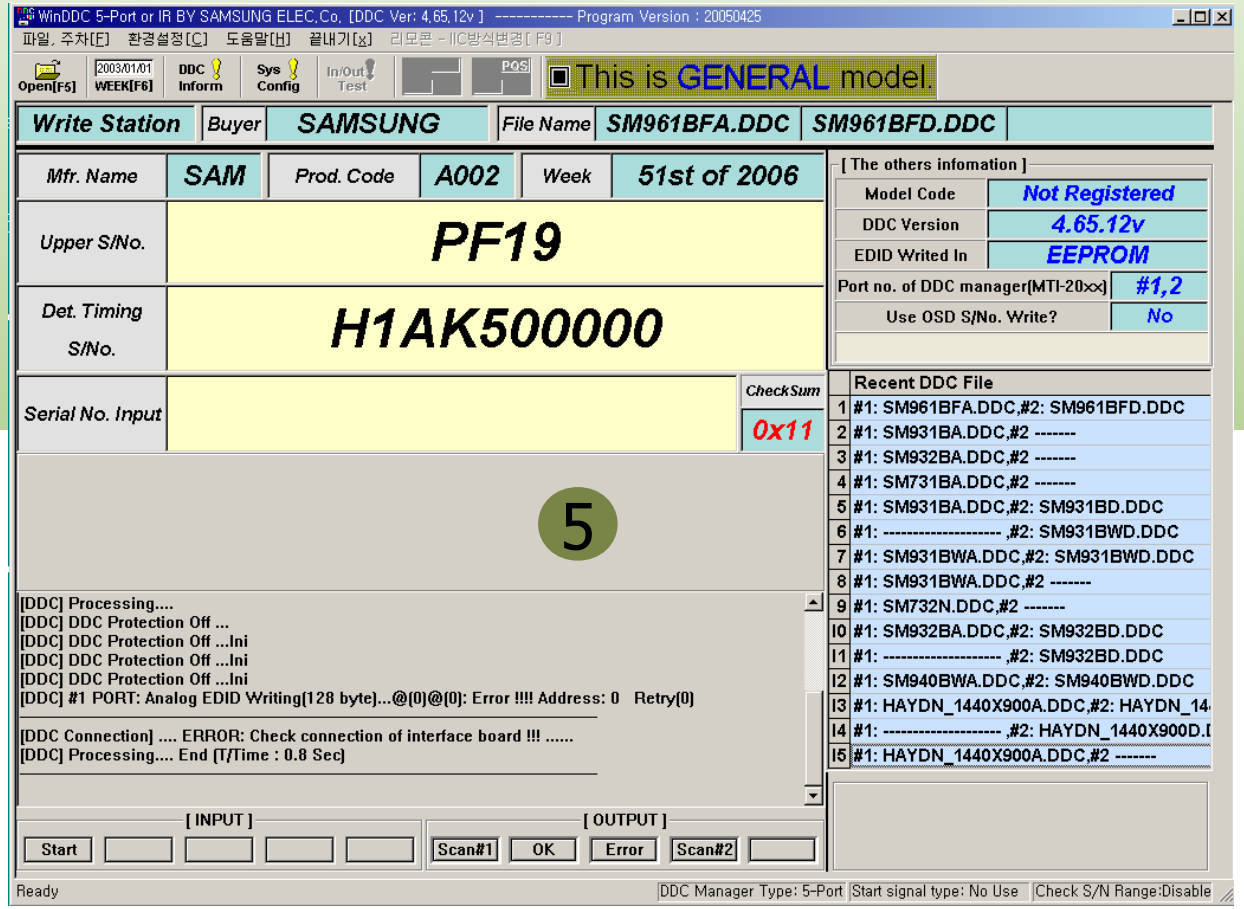


6. How to execute code (DDC)



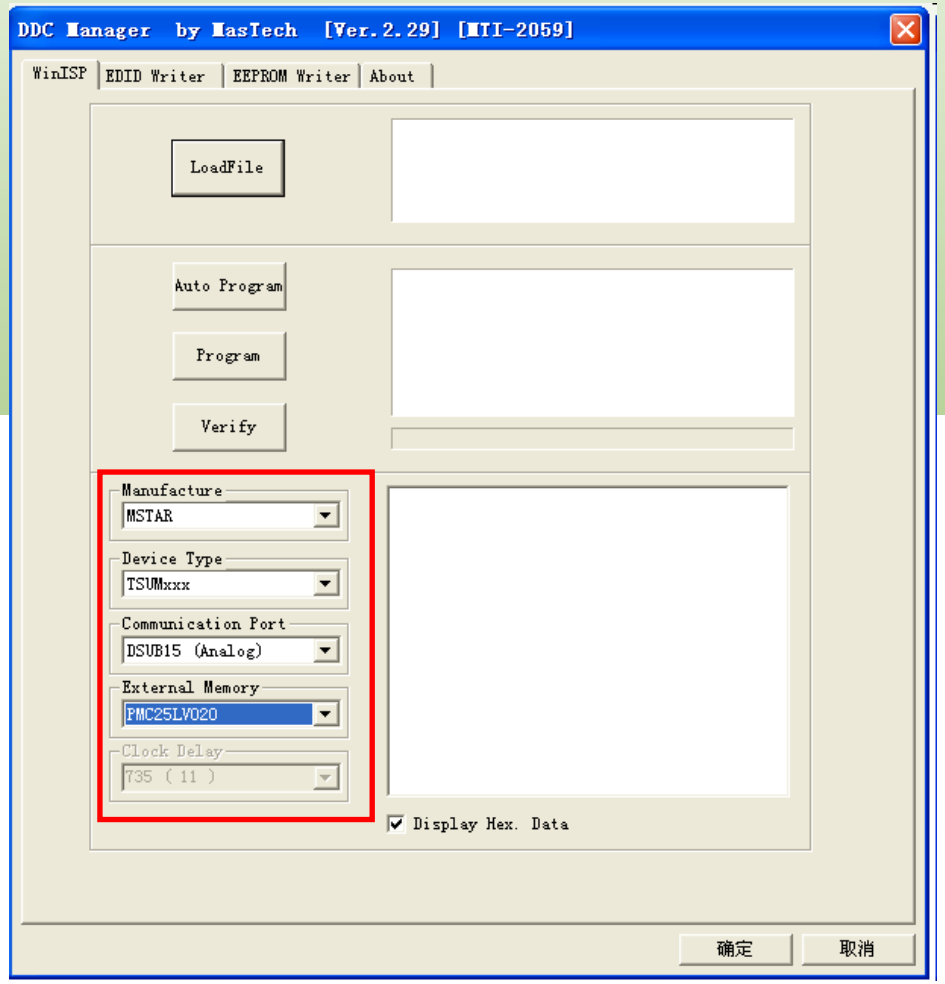
1. Click the **Open** icon
2. Select **Three EDID**
3. Select one **DDC** file ▫ do it three times.
4. Click **Next**

6. How to execute code (DDC)



5: Enter the serial number and press the Enter key.

6. How to execute code (MCU code)



1. Options Checking.
   -. Manufacture : MSTAR
   -. Device Type :TSUM16xxx
   -. Communication Port : DSUB15 (Analog)
   -. External Memory : PMC25LV020

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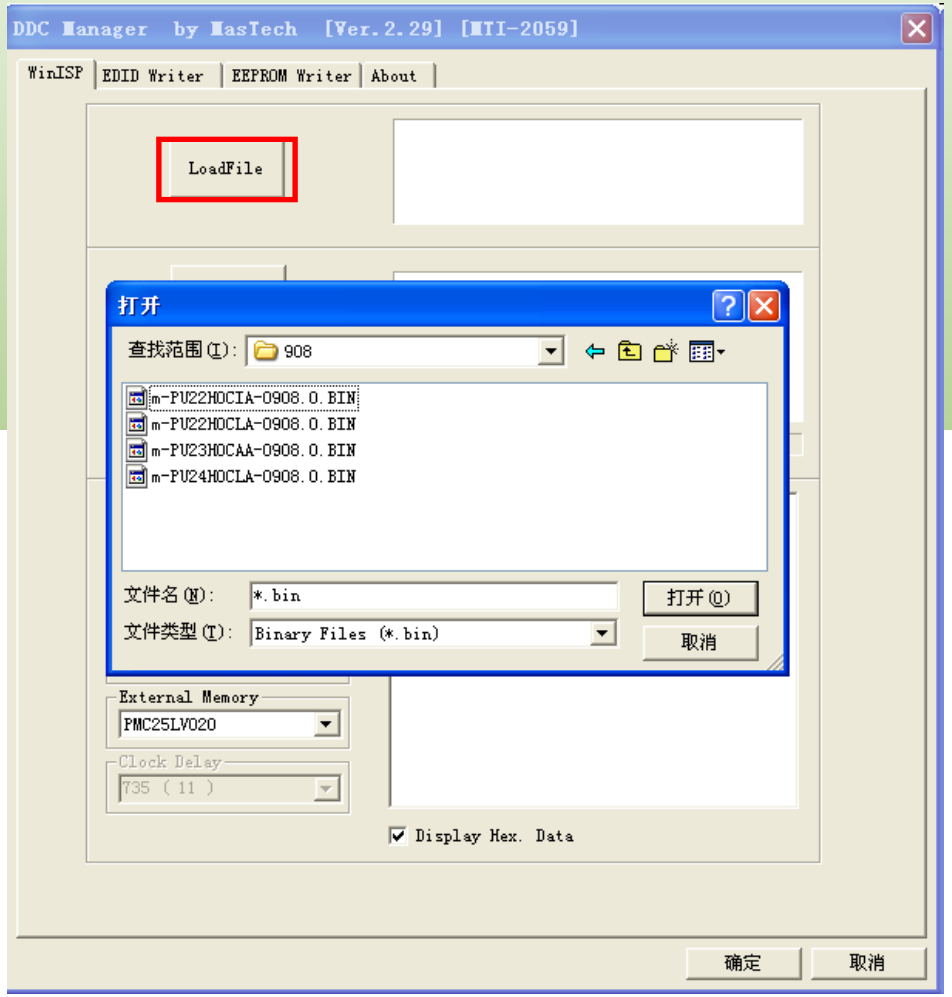
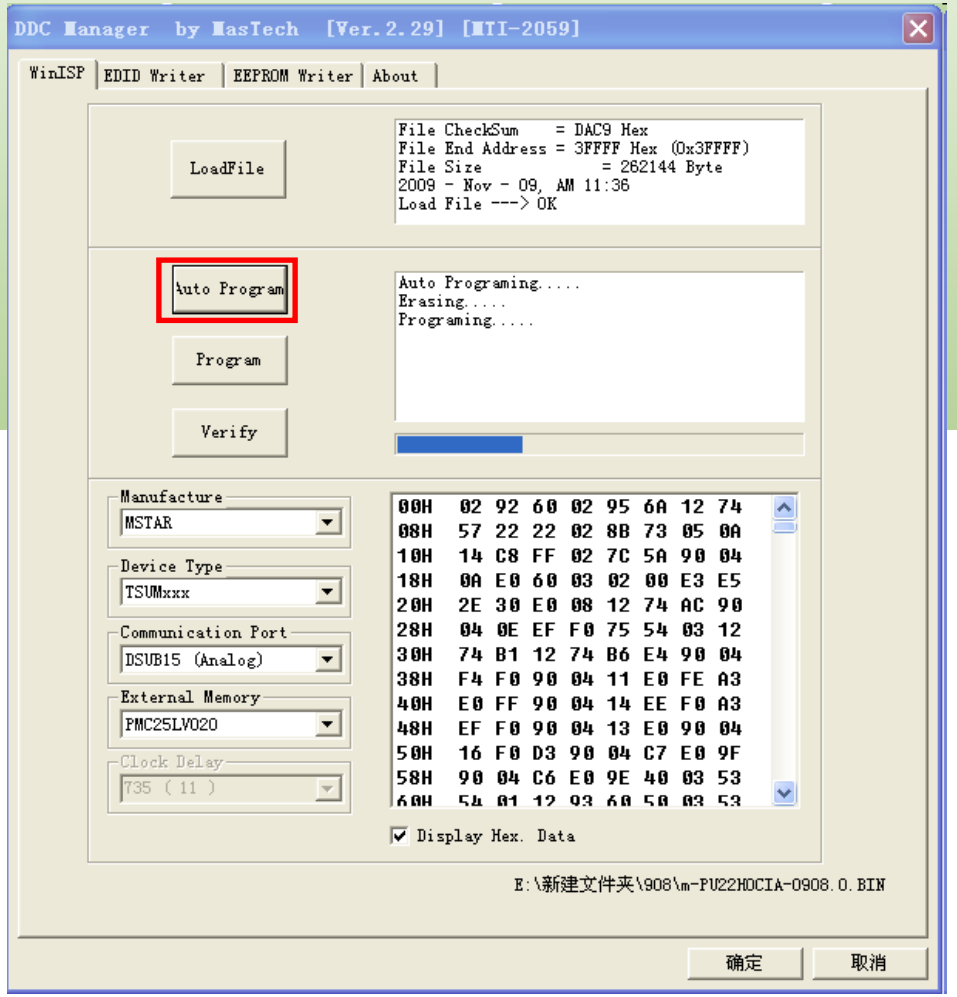
6. How to execute code (MCU code)



2. After click the 'LoadFile' button , choose MCU code.

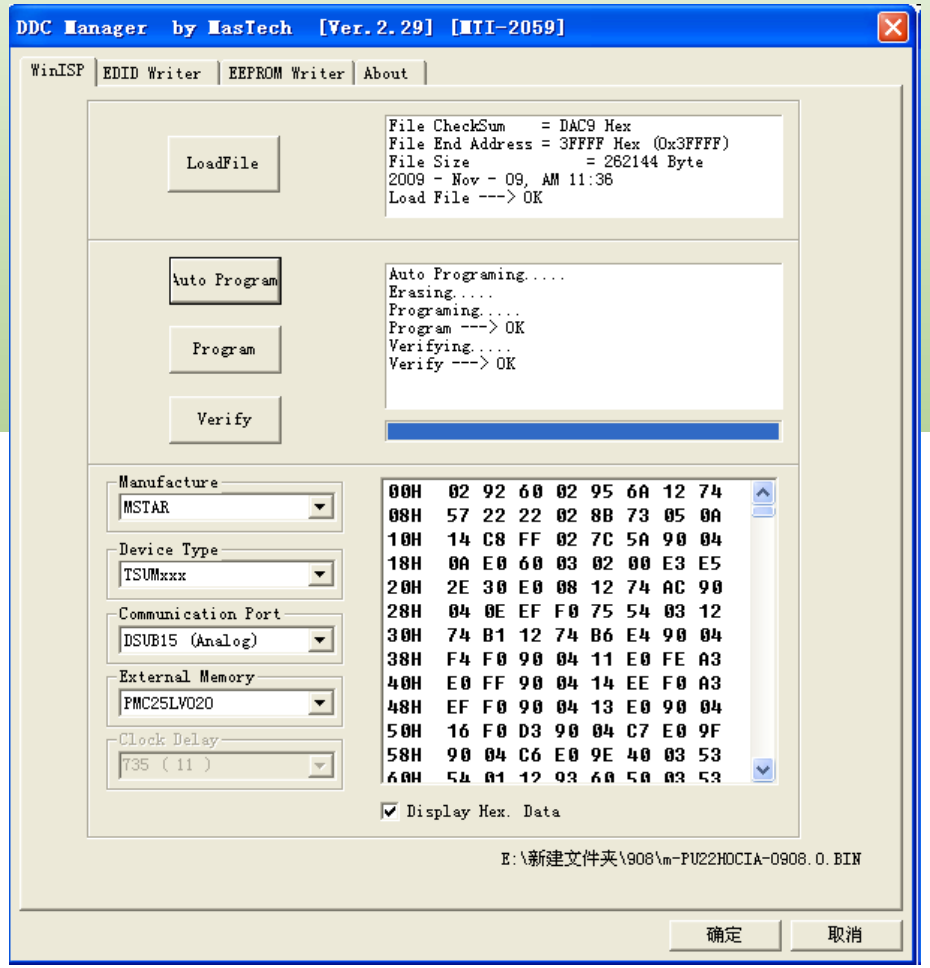
3. Select the true S/W .

6. How to execute code (MCU code)



4. 'Auto Program' button choice.

6. How to execute code (MCU code)



5. After the Program and Verify completed, execute hard power off/on.

7. etc. (After replacing Main PBA)

You have to

- EDID input (Analog and HDMI)
- Firmware install - MICOM S/W input(use DDC manager)
- PC Auto Color Adjust

  -.select language "English" in OSD, then hold down Enter key for 5 seconds
- Factory Reset

  -.setting to Contrast and Brightness '0'.

  -.Push the Enter more than 5 seconds

  -.select Reset.