18" LCD Colour Monitor - Maxdata(101830)

EPA POLLUTION PREVENTER

DDC/Power saving/Auto Picture Adjustment

(LG PANEL)

Service Manual

Horizontal frequencies
30 - 82 kHz

TABLE OF CONTENTS

SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

Published by BCU Monitor Printed in Taiwan

Subject to modification Jul . 12 2002 3138 106 10216

Important Safety Notice

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Proper service and repair is important to the safe, reliable operation of all Maxdata Company** Equipment. The service procedures recommended by Maxdata and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Maxdata could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Maxdata has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Maxdata must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

* * Hereafter throughout this manual, Maxdata Company will be referred to as Maxdata.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line*
(where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Maxdada. Maxdata assumes no liability, express or implied, arising out of any unauthorized modification of design.
Servicer assumes all liability.

** Broken Line*

FOR PRODUCTS CONTAINING LASER :

DANGER- Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

CAUTION- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION- The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

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.
- 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 soft material. (Cleaning with a dirty or rough cloth may damage the panel.)

Technical Specifications

1.1 LCD

Type NR.	: LM181E05-C3 (LG-Philips)
Outside dimensions	: 389(w)317.2(h)27(d) (Typ) mm
Pitch (mm)	: 0.2805 (per one triad) x 0.2805mm
Color pixel arrangement	: RGB vertical stripes
Display surface	: low reflection, antiglare with hard coating
Number of color	: 256 gray levels(8 bits)
Backlight	: CCFL edge light system
Active area(WxH)	: 359x287.2mm (18 diagonal)
View angle	: Horizontal & Vertical 160 degree (CR>=10)
Contrast ratio	: 350:1
White luminance	: 250 nits (Typ)

1.2 Scanning frequencies
Hor. : 30 82 K Hz
Ver. : 56 - 76 Hz
1.3 Video dot rate : < 140 MHz
1.4 Power input : 90-264 V AC, 50/60 2 Hz
1.5 Power consumption : < 60 W maximum (exclude USB option)
1.6 Dimensions : 426 * 454 * 180 mm
1.7 Weight : 8.4 KGS

1.8 Functions :
D-shell analog R/G/B separate inputs, H/V sync separated,
Composite (H+V) TTL level,
DVI digital Panel Link TMDS input
1.9 Ambient temperature : 5 C - 35 C

2 Electrical characteristics

2.1 Interface signals
The input signals can be applied in three different modes :
1). D-shell Analog

Input signal : Video, Hsync., Vsync

Video : 0.7 Vp-p, input impedance, 75 ohm @DC

Sync. : Separate sync TTL level , input impedance 2k2 ohm terminate

Hor. sync Positive/Negative

Ver. sync Positive/Negative

Composite sync TTL level, input impedance 2k2 ohm terminate (Positive/Negative)

Sync on green video 0.3 Vp-p Negative (Video 0.7 Vp-p Positive)

2). Intel DVI Digital

Input signal : Single channel TMDS signal

2.1.1 Audio

Input signal level : 500mVrms

Headphone output signal level : 32ohm 0.7+0.7 Vrms

Input signal connector : 3.5 mm mini jack

Loud speaker : 2+2 W stereo firing

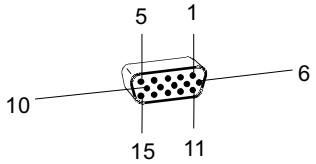
2.1.2 Microphone

Sensitivity: -65 5 dB re 1V/ubar at 1khz

Output impendence : 600 ohm typical

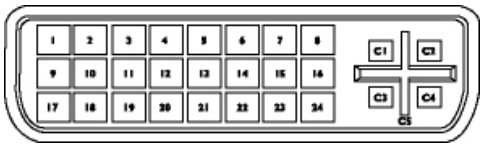
Pin Assignment

D-Sub connector



Pin No.	Assignment
1	Red video input
2	Green video input
3	Blue video input
4	Ground
5	Not connected
6	Red return
7	Green return
8	Blue return
9	+ 5v DDC
10	Ground
11	Ground
12	SDA (DDC data)
13	Hor. Sync
14	Vert. Sync
15	SCL (DDC Clock)

The digital/analog DVI-I onnector contains 29 signal contacts organized in three rows of eight contacts. Signal pin assignments are listed in the following table:



Pin No.	Description
1	TMDS data2-
2	TMDS data2+
3	TMDS data2 shield
4	NC
5	NC
6	DDC clock
7	DDC data
8	Not connected
9	TMDS data1-
10	TMDS data1+
11	TMDS data1 shield
12	NC
13	NC
14	+5V
15	Ground(return for +5V and H/Vsync)
16	Hot plug detect
17	TMDS data0-
18	TMDS data0+
19	TMDS data0 shield
20	NC
21	NC
22	TMDS clock shield
23	TMDS clock+
24	TMDS clock-
C1	Analog R
C2	Analog G
C3	Analog B
C4	Analog H-sync
C5	Analog Vert. Sync.

Technical Data(Continued)

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Input signal mode

Factory preset 16 modes (F)

PRESET VIDEO RESOLUTION

#	Resolution	Frequency	Pixel rate	Sync	Comment
1	640X350	31.5K/70HZ	25.175	(+/-)	IBM VGA 10h
2	720X400	31.5K/70HZ	28.322	(-/+)	IBM VGA 3h
3	640X480	37.5K/75HZ	31.501	(-/-)	
4	640X480	35.0K/67HZ	30.24	(-/-)	
5	640X480	31.5K/60HZ	25.175	(-/-)	
6	800X600	35.2K/56HZ	36	(+/+)	
7	800X600	46.9K/75HZ	49.498	(+/+)	
8	800X600	37.9K/60HZ	40	(+/+)	
9	832X624	49.7K/75HZ	57.28	(+/+)	MAC
10	1024X768	60.0K/75HZ	78.75	(+/+)	
11	1024X768	48.4K/60HZ	65	(-/-)	
12	1152X870	68.7K/75HZ	100	(-/-)	MAC
13	1152X900	71.8K/76HZ	108	(+/+)	SUN Mode II
14	1280X1024	64.0K/60HZ	108	(+/+)	
15	1280X1024	80.0K/75HZ	135	(+/+)	
16	688X556	31.3K/50HZ	27	(-/+)	TV-PAL

Pre-set 32 modes (P)

PRESET VIDEO RESOLUTION

#	Resolution	Frequency	Pixel rate	Sync	Comment
1	640X350	31.5K/70HZ	25.175	(+/-)	IBM VGA 10h
2	720X400	31.5K/70HZ	28.322	(-/+)	IBM VGA 3h
3	640X480	37.5K/75HZ	31.501	(-/-)	
4	640X480	43.3K/85HZ	36	(-/-)	
5	640X480	37.9K/72HZ	31.5	(-/-)	
6	640X480	35.0K/67HZ	30.24	(-/-)	
7	640X480	31.5K/60HZ	25.175	(-/-)	
8	800X600	35.2K/56HZ	36	(+/+)	
9	800X600	46.9K/75HZ	49.498	(+/+)	
10	800X600	37.9K/60HZ	40	(+/+)	
11	800X600	53.7K/85HZ	56.251	(+/+)	
12	832X624	49.7K/75HZ	57.28	(+/+)	MAC
13	800X600	48.1K/72HZ	50	(+/+)	
14	1024X768	60.0K/75HZ	78.75	(+/+)	
15	1024X768	48.4K/60HZ	65	(-/-)	
16	1024X768	56.5K/70HZ	75	(-/-)	
17	1024X768	61.1K/76HZ	83.096	(+/+)	IBM XGA-2
18	1024X768	68.7K/85HZ	94.5	(+/+)	
19	1152X864	67.5K/75HZ	108	(+/+)	
20	1152X864	63.9K/70HZ	94.5	(+/+)	non-VESA
21	1152X864	54.0K/60HZ	79.9	(+/+)	non-VESA
22	1152X870	68.7K/75HZ	100	(-/-)	MAC
23	1152X900	61.8K/66HZ	92.94	serr-	SUN Mode IV
24	1152X900	71.8K/76HZ	108	(+/+)	SUN Mode II
25	1280X960	60.0K/60HZ	108	(+/+)	
26	1280X960	75.0K/75HZ	129.895	(+/+)	non-VESA
27	1280X1024	76.0K/72HZ	130.223	(+/+)	DOS/V
28	1280X1024	64.0K/60HZ	108	(+/+)	
29	1280X1024	80.0K/75HZ	135	(+/+)	
30	1280X1024	81.1K/76HZ	135.008	(-/-)	SUN Mode I
31	1280X1024	71.7K/67HZ	117	(+/+)	SUN Mode V
32	688X556	31.3K/50HZ	27	(-/+)	TV-PAL

Allowed 85 Hz overscan signal mode specified

Once the signal input of PC is 85Hz, this monitor is able to display at least for 10 minutes . An attention signal appears and shows This is 85Hz overscan for 5 seconds, change computer display input to 1024X768 @ 60 Hz

Dot rate (MHz)	H.freq (KHz)	Mode	Resolution	V.freq (Hz)
36.000	43.269	VESA	640 * 480	85.008
56.250	53.674	VESA	800 * 600	85.061
94.500	68.677	VESA	1024 * 768	84.997

Power management

The power consumption and the status indication of the set with power management function are as follows,

Note : Disconnect DVI signal cable and audio module.

STATUS	Horizontal	Vertical	Power Spec	LED
On	Pulse	Pulse	as normal on	Green
Stand-by	No Pulse	Pulse	< 2 W	Amber
Suspend	Pulse	No Pulse	< 2 W	Amber
off	No Pulse	No Pulse	< 2 W	Amber

According to VESA power saving signaling.
TCO99 power saving requirement
EPA energy star requirement

(Power Switch Off)

for Digital input power consumption is less 2W

(In non-DMPM recoverable off mode)

Connection to PC,Front Control

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Connecting cables to the monitor

The monitor ports are protected by a cover.

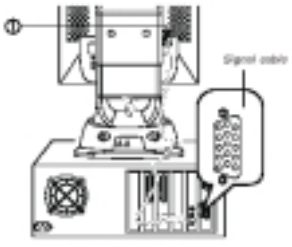


Figure 2a. Connection via the VGA interface

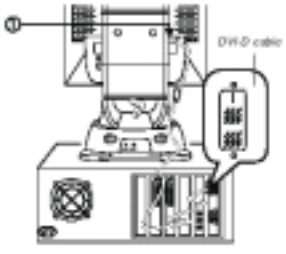
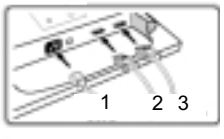


Figure 2b. Connection via the DVI-D interface



1 = Power connector
2 = DVI-I connector
3 = D-SUB connector

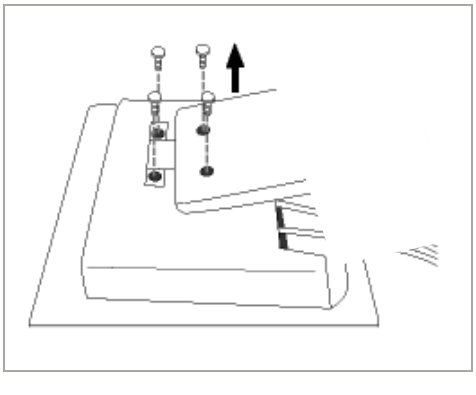
The data cable supplied has two 15-pin D-SUB connectors for the D-SUB connector of the monitor and of the computer.

Connect one of the D-SUB connectors of the data cable to the D-SUB connector on the monitor (3) and secure the plug-in connection by tightening the safety screws.

If instead of the data cable supplied you want to use a data cable with DVI-I connector or if you want to connect the monitor to a second computer, proceed as follows:
Connect the DVI-I connector of the data cable to the DVI-I connector on the monitor (2) and secure the plug-in connection by tightening the safety screws.
Data cables with DVI-I connectors are available from specialised dealers.
After switching on the monitor you must select the desired input with the OSD menu .

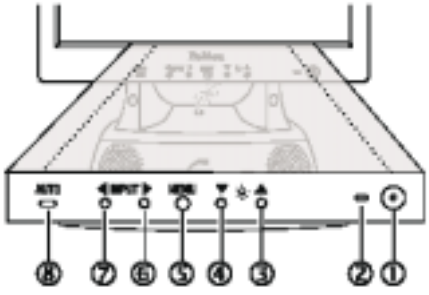
Removing the monitor base

The monitor surface is susceptible to scratching!



- Lay the monitor on its face on a soft surface.
- Remove the four screws on the rear of the monitor.

Switching the monitor on/off



3~8 = Buttons for the OSD menu(On-Screen-Display)
2 = Power indicator
1 = Power button

The ON/OFF switch (1) is used for switching the monitor on and off.
The power indicator (2) glows green when the monitor and computer are switched on. The power indicator glows orange when the monitor does not receive a video signal or is in the energy-saving mode. The power indicator goes off when the monitor is switched off.

Monitor settings with the buttons of the control panel
With the buttons of the control panel, you can make the following settings directly: auto-adjustment of the monitor, adjusting the brightness and adjusting the contrast.

Other settings are carried out via an integrated OSD menu (On-Screen Display).

Performing auto-adjustment of the monitor

- Press the AUTO button.

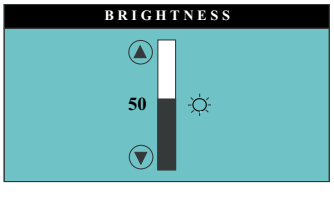
The picture quality (*PHASE*, *CLOCK*) and picture position will be optimally adjusted for your system.

- Press the MENU button to save the settings.

Adjusting the brightness
The brightness of the monitor is adjusted directly with the arrow buttons.

Press the button ▲ or ▼.

The window *BRIGHTNESS* with a setting scale is visualised.



Press the ▲ or ▼ button to adjust the brightness.
The setting window disappears after approximately 60 seconds if no further setting is made.
All changes are stored automatically.

Settings using the OSD menu

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With the buttons on the control panel, call up and use the integrated OSD (On-Screen Display) menu.

The OSD menu is available in different languages. The English menu names are used in the following description (default setting). With the OSD function *LANGUAGE* you can select another language.

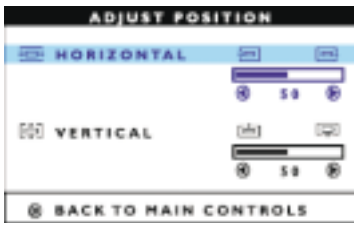
The main menu appears on the screen with icons for the setting functions.

The first symbol (*LANGUAGE*) is highlighted.

If necessary, press the ▲ or ▼ button to mark another icon (e.g. *ADJUST POSITION*).

Press the MENU button to select the highlighted icon.

The corresponding setting window (here: ADJUST POSITION**) is displayed.**



Press the ◄ or ► button to adjust the selected function (here: HORIZONTAL).

Press the key ▲ or ▼ to mark another function or press the MENU key to return to the main menu.

Select the symbol ▼ (EXIT MAIN CONTROLS) in the main menu and press the MENU key to exit the OSD menu.

Setting language for the OSD menu

	Setting language for the OSD menu (*LANGUAGE*) You can choose from English (default setting), German, French, Spanish, Italian, and Japanese.

Adjusting picture position

	Calling the ADJUST POSITION setting window	
		Horizontal picture position (HORIZONTAL): Shifting the picture to the left or to the right
		Vertical picture position (VERTICAL): Shifting the picture down or up

Adjusting the brightness and contrast

	Calling the BRIGHTNESS & CONTRAST setting window	
		Setting the brightness of the display *(BRIGHTNESS)*
		Setting the contrast of the display (*CONTRAST*)

Setting the picture quality

	Eliminating picture interference (*VIDEO NOISE*) ▲ Eliminating picture noise and horizontal interference *(PHASE)* ▼ Eliminate vertical interference with local fuzziness *(CLOCK)*

Setting the colour temperature

The "warmth" of the screen colours is set using the colour temperature. The colour temperature is measured in K (= Kelvin).

	Calling the *ADJUST COLOR* setting window
	ORIGINAL PANEL COLOR = Setting for general applications (default setting)
	9300K FOR CAD/CAM= Setting for CAD/CAM programmes
	6500K FOR IMAGE MANAGEMENT = Setting, for example, for image processing or playing DVDs
	USER PRESET = User - defined setting In the user - defined setting you can change the colour ratios of the basic colours (red, green, blue) as required.

Setting position for the OSD menu

	Calling the *OSD SETTINGS* setting window You can shift the OSD menu up, down, to the left or to the right.

Displaying monitor data

	You will find the serial number and the current resolution of this screen in *PRODUCT INFORMATION*

Activating the factory settings

	Activating the factory settings *(RESET TO FACTORY SETTINGS)* *NO* = retain own settings *YES* = Activating the factory settings With *YES* all monitor settings are reset to the factory settings.

Selecting input signal

The monitor can be operated with analog or digital signals. With this function you can (depending on the graphics card you use) switch over between the analog and the digital mode.

	Calling the *INPUT SELECTION* setting window
	Switch on the analog mode (*ANALOG DSUB*).The monitor processes the signals of the analog port (VGA/DSUB).
	Switch on the digital mode (*DIGITAL DVI*). The monitor processes the signals of the digital port (DVI-I).
	Switch on analog mode via digital port (*ANALOG DVI*). The monitor processes the analog signals of the digital port (DVI-I).

Locking the OSD menu (OSD Lock)

The OSD menu can be locked to prevent accidental or unauthorised changes to the monitor settings.
Press the MENU button and hold it for approx. 10 seconds.
Please proceed in the same manner to release the locked OSD menu again.

Failure Mode of LCD panel

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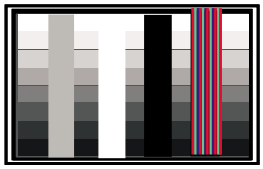
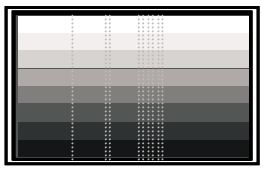
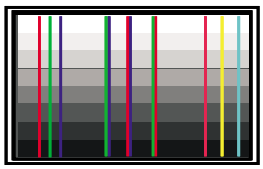
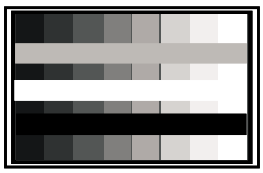
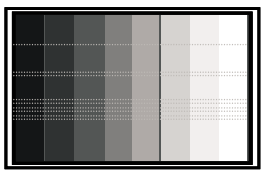
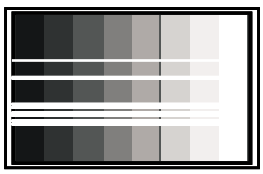
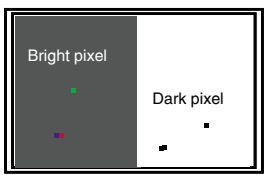
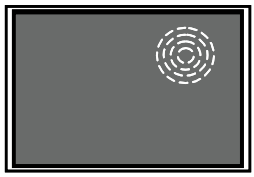
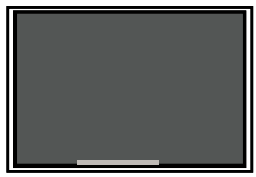
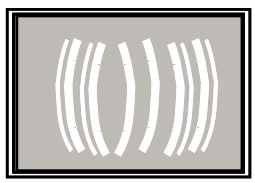
Quick reference for failure mode of LCD panel

This page presents problems that could be made by LCD panel. It is not necessary to repair circuit board. Simply follow the Mechanical instruction o n this manual to eliminate failure by replace LCD panel or backlight tubes.

Failure description	Phenomenon
Vertical block defect	
Vertical dim lines	
Vertical lines defect (Always bright or dark)	
Horizontal block defect	
Horizontal dim lines	
Horizontal lines defect (Always bright or dark)	
Has bright or dark pixel	
Polarizer has bubbles	
Polarizer has bubbles	
Foreign material inside polarizer. It shows linear or dot shape.	
Concentric circle formed	
Bottom back light of LCD is brighter than normal	
Backlight un-uniformity	
Backlight has foreign material. Black or white color, linear or circular type	

Trouble Shooting

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Trouble shooting

Should an error occur, first check the following points. If the distortion is still not eliminated, the monitor should, if possible, be checked on another computer and/or with another data cable.

Having this problem?	Check the following points:
No display (power indicator does not light)	• Check whether the monitor is switched on. • Check whether the power cable on the monitor is connected correctly. • Check whether the computer is switched on.

Having this problem?	Check the following points:
No display (power indicator lights)	• Check whether the computer is switched on. • Check whether the data cable for the monitor is correctly attached to the monitor port on the computer. • Press any key on the computer keyboard the computer may be in energy saving mode. • Alter the brightness and/or contrast until you get a picture.
	• Check whether the data cable for the monitor is correctly attached to the monitor port on the computer. • Check whether the computer is switched on.
	The input signal (horizontal frequency and refresh rate) at the displayed input does not correspond to the technical monitor data. • Adjust the video frequency range using the computer software (safe Mode) or Using another CRT monitor.
Picture position is not correct	The monitor recognises an undefined mode (see Technical data"). • Press the AUTO button to conduct the auto-adjustment of the screen. • Set the picture position with the OSD menu .
Picture is shaking	• Check whether the data cable for the monitor is correctly attached to the monitor port on the computer.

Having this problem?	Check the following points:
Picture disturbances (vertical lines) 	• Press the AUTO button to conduct the auto-adjustment of the screen. • Set the picture quality in VIDEO NOISE (CLOCK).
Picture disturbances (horizontal lines, picture noise) 	• Press the AUTO button to conduct the auto-adjustment of the screen. • Set the picture quality in VIDEO NOISE (PHASE).

The screen becomes darker	The background lighting has a limited lifetime.If your monitor display should become too dark,the background lighting will have to be exchanged.
Image of last screen display still visible	If you switch from a high contrast display (for example black lines/ characters on a white background) to a picture of medium brightness, you may be able to see a faint image of the previous display for a time. This phenomenon is not due to a monitor defect but to the technology used (IPS display with large viewing angle, IPS = In Plane Switching).
Permanently unlit or lit pixels	The standard of production techniques today cannot guarantee an absolutely fault-free screen display. A few isolated constant lit or unlit pixels may be present. The maximum permitted number of pixels faults is stipulated in the stringent international standard ISO 13406 - 2 (Class II). Example: a 17" or 18" flat screen monitor with a resolution of 1280 x 1024 has 1280 x 1024 = 1310720 pixels. Each pixel consists of three subpixels (red, green and blue), so there are almost 4 million dots in total. According to ISO 13406-2 (Class II), a maximum of 6 pixels and 7 subpixels may be defective, i. e. a total of 25 faulted dots. This corresponds to approx. 0,0006 % of the entire screen surface!

CLOCK & PHASE Adjustments

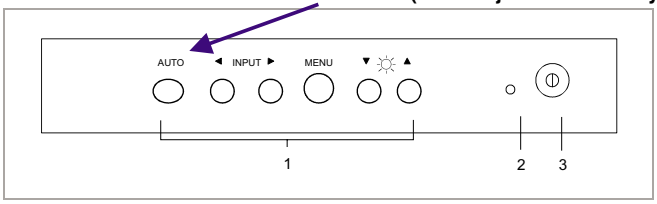
The monitor has build-in a auto adjustment hotkey on the front panel, you may obtained a optimal video display by simply press the **AUTO** button and save the settings. CLOCK, PHASE, Vertical position, and Horizontal position are adjusted automatically.

Due to the different quality of video signal generated from graphics cards. By press AUTO button for CLOCK and PHASE adjustment automatically. Sometimes, the deviation of video signal which generated from graphics cards is out of control, then it is necessary to adjust CLOCK and PHASE functions for the optimal video display of LCD monitor by manual. Following steps will guide you to make correct adjustment of CLOCK and PHASE.

However, CLOCK and PHASE functions are only available while analog video signal is supplied. Operating unit under digital signal state, the video clock information can be obtained from graphics cards directly. Therefor, it is unnecessary to adjust these functions.

Front control panel

AUTO button **(Auto adjustment hotkey)**



1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power indicator
3 = Power button

Fig. 1

Manual adjustment

If the quility of display still poor or flicker, you may also improve it by manual adjust CLOCK and PHASE functions to eliminate the flicker.

Step 1 : Click on the Start button (Win95, Win98 or Win NT) and choose " Shut Down...". as shown in Fig. 2.

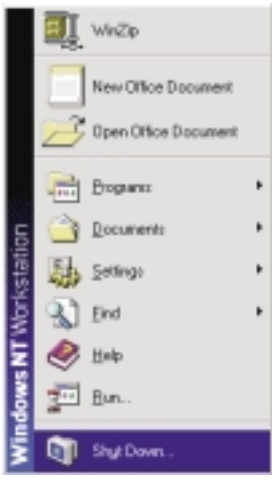


Fig. 2

Step 2 : The menu of " Shut Down Windows " is as shown in Fig. 3

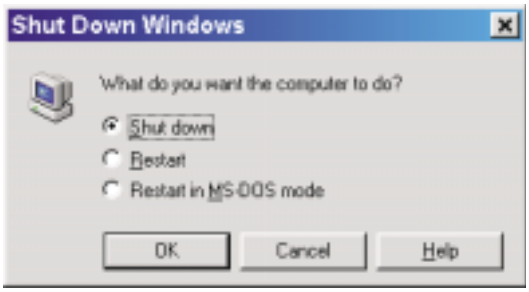


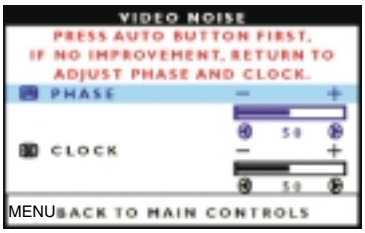
Fig. 3 (Win 98)

Step 3 : Retain Shut Down Window on the screen , follow the CLOCK and PHASE adjustment instructions for the optimal video display.

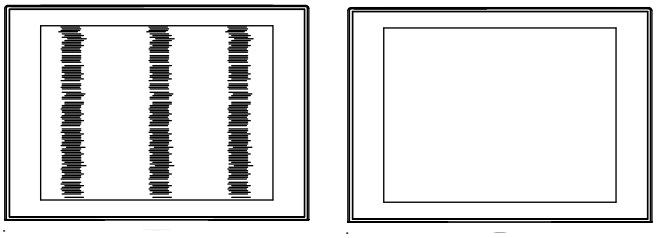
Step 4 : Press the MENU (OSD menu). button to bring up MAIN CONTROLS

Video Noise

Step 5 : Select Video Noise by press button.
Step 6 : Press button to bring up it s submenu.



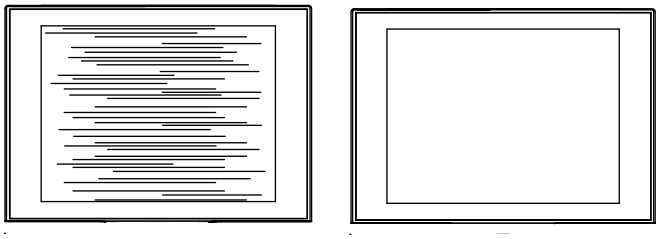
Step 7 : Press or button to adjust CLOCK. The picture will be adjusted as following figure, adjust CLOCK to fine-tune the video until optimal display is obtained.



CLOCK Phenomenon (Before)

(After)

Step 8 : Press or button to adjust PHASE. The picture will be adjusted as following figure, adjust PHASE and check the picture, stop at the point that without any vertical jitter bar remaining on the screen.



PHASE phenomenon (Before)

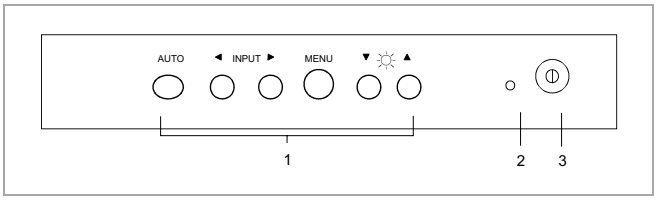
(After)

Step 9 : Quit OSD menu by press button to save the settings.

OSD Lock/Unlock, Attention signal, Service Mode

Go to cover page

Front control panel



1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power indicator
3 = Power button

To Lock/Unlock OSD function (User Mode)

The OSD function can be locked by pressing MENU button for more than 10 seconds, the screen shows following windows for 3 seconds. Everytime when you press AUTO or MENU button, this message appears on the screen automatically. The ▼ & ▲ (brightness) , ◄ INPUT ► (input) hotkey are still functional for brightness and input signal selection while OSD locked.

ATTENTION

OSD MAIN CONTROLS LOCKED

Locked OSD function can be released by pressing MENU button for more than 10 seconds again. While press "MENU" button for OSD unlocked purpose, the screen will keep showing OSD MAIN CONTROLS LOCKED u ntil OSD function unlocked and screen automatically shows following window for 3 seconds.

ATTENTION

OSD MAIN CONTROLS UNLOCKED

Switch ON/OFF attention signals (User Mode)

All attention signals can be **switched off** by keep pressing AUTO button for more than 10 seconds if there is no video signal supplied.
Step 1: Disconnect signal cable (Monitor & PC are still ON.)
Step 2: Press "AUTO" button for more than 10 seconds, bring up message as below.

ATTENTION

ATTENTION SIGNAL OFF

Recover attention signals by pressing AUTO button for more than 10 seconds without video signal input.
Step 1: Disconnect signal cable (Monitor & PC are still ON.)
Step 2: Press "AUTO" button for more than 10 seconds again, bring up message as below.

ATTENTION

ATTENTION SIGNAL ON

Access Service Mode (in USER MODE)
Method 1:

Step 1: Disconnect signal cable on Rear side of monitor.
Don't disconnect signal cable on PC side, because CPU will detect pin-9 of D-SUB (15 pin connector).
(Monitor & PC are still ON.)
Bring up "CHECK CABLE CONNECTION" screen.

ATTENTION

CHECK CABLE CONNECTION

Step 2: Press MENU" MENU " button for more than 15 seconds.
Bring up message as below.

SERVICE MODE

SERIAL NO. : YEKA105542
HOURS OF OPERATION: 000222

Leave service mode by either re-feed video signal or simply turn off and on the power of monitor.

Access Service Mode (in USER MODE)
Method 2:

Step 1:
- Turn off monitor.
- Disconnect signal cable on PC side.
- Turn on monitor.
(After 3 seconds)
Bring up "NO VIDEO INPUT"

ATTENTION

NO VIDEO INPUT

Step 2: Press MENU" MENU " button for more than 15 seconds.
Bring up "SERVICE MODE".

SERVICE MODE

SERIAL NO. : TW211P0022
HOURS OF OPERATION: 000205

Leave service mode by either re-feed video signal or simply turn off

Access Service Mode (in USER MODE)
Method 3:

Step 1:
- PC off.
- Signal cable connect to rear side of Monitor only.
- Turn on monitor.
Bring up "NO VIDEO INPUT"

ATTENTION

NO VIDEO INPUT

Step 2: Press MENU" MENU " button for more than 15 seconds.
Bring up "SERVICE MODE".

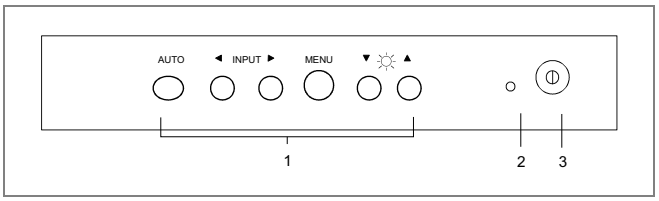
SERVICE MODE

SERIAL NO. : TW211P0022
HOURS OF OPERATION: 000205

Leave service mode :simply turn off and on the power of monitor.

AGING Mode

Front control panel



1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power indicator
3 = Power button

Access Aging.. Mode (Method 1)

(Monitor & PC are ON for Step 1.)
Step 1: Disconnect signal cable on Rear side of monitor.
Bring up "CHECK CABLE CONNECTION" screen.

ATTENTION
CHECK CABLE CONNECTION

or

Disconnect signal cable on PC side.
Bring up "ENTERING SLEEP MODE" about 3 seconds, then disappear.

ATTENTION
ENTERING SLEEP MODE

Step 2:

Turn off LCD monitor.

Push AUTO " " & " " & " " buttons simultaneously ,then release Power buttun only, untill picture comes on the screen.

Bring up "AGING ...".

Bring up :

AGING...

After 15 seconds, bring up :

After 15 seconds, bring up :

AGING...

After 15 seconds, bring up :

---
repeatly

Connect signal cable again => go back to normal display.

Method 2:

Step 1:
- PC off and Monitor off.
- Signal cable connect to rear side of Monitor only.
- Connect Power Cord to rear side of monitor, then insert the plug into a properly grounded electrical outlet.
(Power LED of monitor is off now.)

Step 2:
Push AUTO " " & " " & " " buttons simultaneously ,then release Power buttun only, untill picture comes on the screen.

Bring up "AGING ...".

AGING...

---
repeatly

Leave AGING mode :connect signal cable to PC, then turn on PC.

Factory Mode

Go to cover page

Access Factory Mode

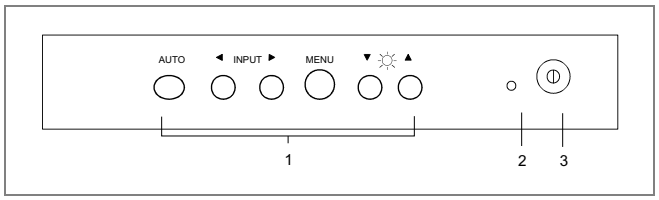


Fig. 1

1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power indicator
3 = Power button

Factory Mode:
How to Get into Factory Mode Menu

Turn off LCD monitor.

Push AUTO " " & " " & " " buttons simultaneously ,then release Power buttun only, untill picture comes on the screen. Press MENU " " button, bring up Factory mode indication as shown in Fig 2.

Factory Mode indication==>

Fig. 2

Use button to select factory adjustment indication (for example: MAXDATA 180P V1.88 02-04-17), which is the entrance of the factory adjustment menu, press MENU " " button to access it. The window shows as below.

MAXDATA	180P	V1.88	02-04-17
SUB — BRI: 00		SUB — CON:	
9300K	R	G	B
6500K	R	G	B
OFFSET	R	G	B
GAIN	R	G	B
AUTO — SUB:		OK	RESERVE1:
RESERVE2:		RESERVE3:	

Fig. 3

All the default values are invisible. Press " " => appear.

Use or buttons to select SUB-CON, 9300K R G B,..etc.

Use or buttons to decrease/increase the value of each item.

Press " " => go back to MAIN CONTROLS.

To press AUTO " " button on this screen, the values of OFFSET and GAIN will be adjusted by CPU automatically.

Default values (example) are as below.

MAXDATA	180P	V1.88	02-04-17
SUB — BRI: 00		SUB — CON: 50	
9300K	R 228	G 251	B 255
6500K	R 252	G 255	B 226
OFFSET	R 86	G 84	B 83
GAIN	R 181	G 188	B 182
AUTO — SUB:		OK	RESERVE1: 205
RESERVE2: 255		RESERVE3: 255	

SUB — BRI:

NO FUNCTIONED, DIGITAL DC-Level RESERVED for LCD MONITOR 150P usage ONLY.

SUB — CON: 255

Contrast adjustment (Sub-Contrast). Use this menu item to adjust the contrast gain of pre-amp ranges from 0 to 255. (For example: 255 of Sub-Contrast in factory mode is preset for 100%(Maximum Value) of Contrast Value in user mode).

9300K R G B
6500K R G B

Color temperature gain adjustment. Use these menu items to adjust the RGB gains of pre-amp for different color temperatures, ranges from 0 to 255.

OFFSET R G B

Sub-Brightness adjustment. Use this menu item to adjust the brightness level (DC-level) of pre-amp range from 0 to 255.(R/G/B ANALOG DC -level).

GAIN R G B

R/G/B GAIN adjustment. Use this menu item to adjust the R/G/B (GAIN) of Amp. range from 0 to 255.(R/G/B ANALOG GAIN Values).

AUTO — SUB: OK

AUTO Colour to Adjust OFFSET R/G/B & GAIN R/G/B automatically by LCD MONITOR CPU.

RESERVE1: NO FUNCTIONED, RESERVED ONLY.
RESERVE2: NO FUNCTIONED, RESERVED ONLY.
RESERVE3: NO FUNCTIONED, RESERVED ONLY.

(PS: The Offset R G B function can be used on reduce or eliminate snowy noise on the background when the resolution of video signal is 1280 X 1024 vertical 60Hz. Slightly increase or decrease the value until snowy noise completely disappear.)

Leave Factory Mode

Turn off monitor, then turn on monitor again => go back to User mode directly.

Warning and Notes

Go to cover page

Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol ⚠ .

2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approximately 30 seconds).

3. **ESD**
   All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the ground of the unit. Keep components and tools also at this same potential.

4. When repairing a unit, always connect it to the AC Power voltage via an isolating transformer.

5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.

6. It is recommended that saferty goggles be worn when replacing the picture tube.

7. When making adjustments,use plastic rather than metal tools. This will prevent any short-circuit or the danger of a circuit becoming unstable.

8. Never replace modules or other components while the unit is switched on.

9. Together with the defleciton unit, the picture tube is used as an integrated unit. Adjustment of this unit during repair is not recommended.

10. After repair, the wiring should be fastened in place with the cable clamps.

11. All units that are returned for service or repair must pass the original manufactures safety tests.

Notes

1. The direct voltages and waveforms are average voltages. They have been measured using the Service test software and under the following conditions :
   - Mode : 640 * 480 (31.5kHz / 60Hz)
   - Signal pattern : grey scale
   - Adjust brightness and contrast control for the mechanical mid-position (click position)

2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

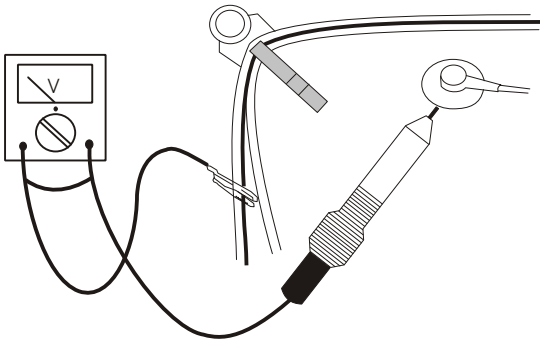


Fig.1 (CRT ONLY)

DDC Instructions

General

DDC Data Re-programming
In case the DDC data memory IC or main EEPROM which storage all factory settings were replaced due to a defect, the serial numbers have to be re-programmed.
It is advised to re-soldered DDC IC and main EEPROM from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

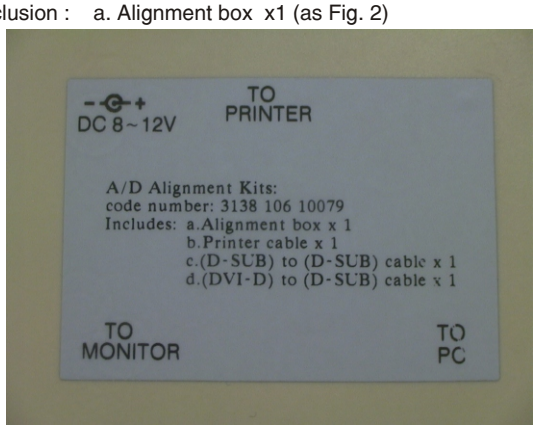
Additional information
Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For Analog interface: Standard Version 3.0
Structure Version 1.2
For Digital inferface: Standard Version 3.0
Structure Version 1.3

System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID301.EXE program (3138 106 10103) as shown in Fig. 1
4. A/D Alignment kits (3138 106 10079):
   inclusion : a. Alignment box x1 (as Fig. 2)

Fig. 2



b. Printer cable x1
c. (D-Sub) to (D-Sub) cable x1
d. (DVI-D) to (D-Sub) cable x1 (as Fig. 3)

Note: The EDID301.EXE (Release Version 1.58 20000818)is a windows-based program, which cannot be run in MS-DOS.

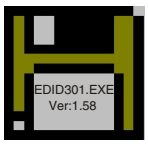
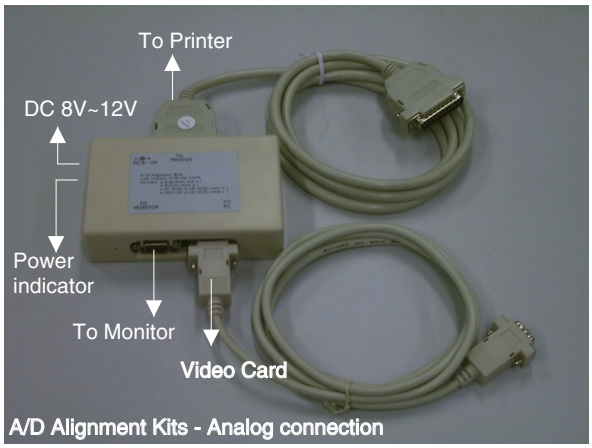


Fig. 1

Diskette with EDID301.EXE

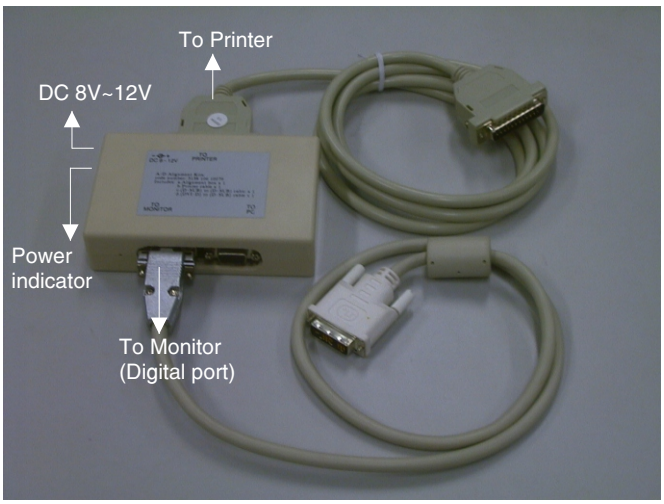
Fig. 3

(DVI-D) to (D-Sub) cable



A/D Alignment Kits - Analog connection

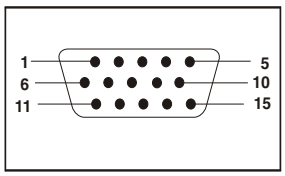
Note: The alignment box has already build-in a batteries socket for using **batteries (9V)** as power source. Pull out the socket by remove four screws at the rear of box. Please do not forget that remove batteries after programming. The energy of batteries can only drive circuits for a short period of time.



A/D Alignment Kits - Digital connection

Pin assignment

A. 15-pin D-Sub Connector



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	+5V
2	Green video input	10	Ground
3	Blue video input	11	Ground
4	Ground	12	Serial data line(SDA)
5	No Connected	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

Configuration and procedure

There are 2 chips contained OSD string, serial number..etc on the circuit board,
main EEPROM which storage all factory settings,OSD string.
DDC IC which storage 128byte EDID data(serial number ..etc.).
Following descirptions are the connection and procedure for Analog and Digital DDC application, the main EEPROM can be re-programmed along with Analog/Digital IC by enable factory memory data write function on the DDC program (EDID301.EXE).

Initialize alignment box

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID301.EXE). Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
Step 2: Connecting printer cable and video cable of monitor as Fig. 3

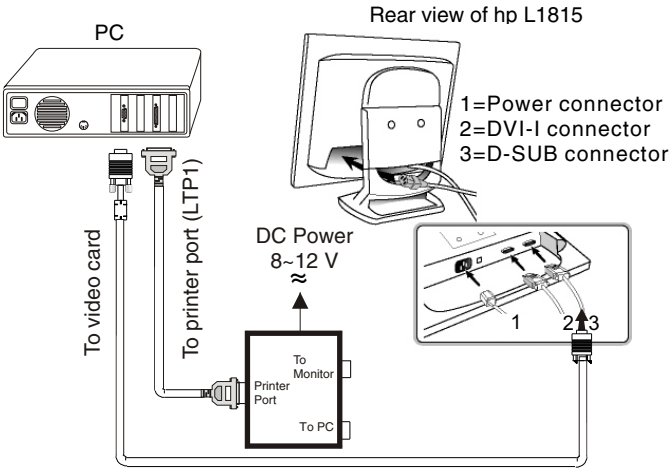


Fig. 3

Step 3: Installation of EDID301.EXE

Method 1: Start on DDC program

Start Microsoft Windows.

1. Insert the disk containing EDID301.EXE program into floppy disk drive.
2. Click Start , choose Run at start menu of Windows 95/98 as shown in Fig. 4.

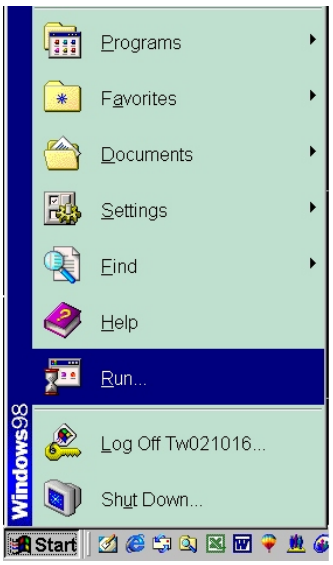


Fig. 4

3. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301, as shown in Fig. 5).

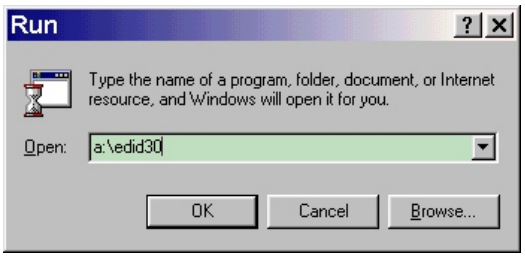


Fig. 5

4. Click **OK** button. The main menu appears (as shown in Fig. 6).
This is for initialize alignment box.

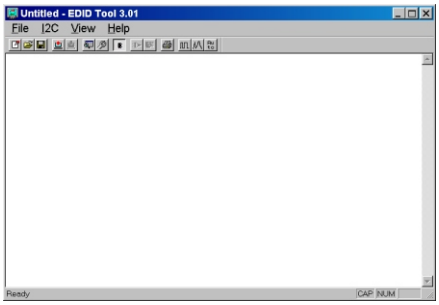


Fig. 6

Note 1: If the connection is improper, you will see the following error message (as shown in Fig. 7) before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.

Fig. 7

Method 2: After create a shortcut of EDID301.EXE

: Double click EDID301 icon (as shown in Fig. 8) which is on the screen of Windows Wallpaper.
Bring up main menu of EDID301 as shown in Fig. 9.
This is for initialize alignment box.

Fig. 8

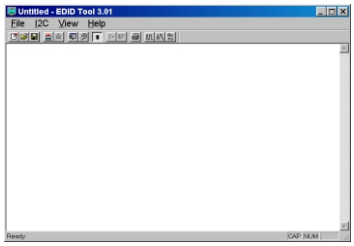


Fig. 9

Note 2: During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen as below. Please confirm following steps to avoid this message.
1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup windows.
4. Cables loosed or poor contact of connection.

DDC Instructions (Continued)

Go to cover page

Re-programming Analog DDC IC

Step 1: After initialize alignment box, connecting all cables and box as shown in Fig. 10

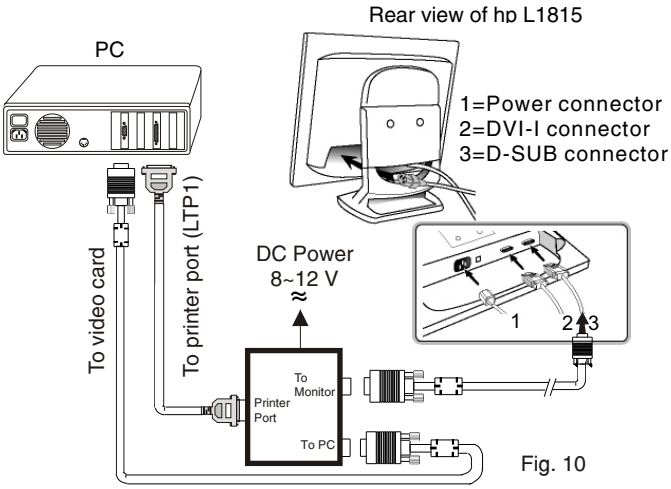


Fig. 10

Step 2: Read DDC data from monitor

1. Click icon as shown in Fig. 11 from the tool bar to bring up the Channels "Configuration Setup" windows as shown in Fig. 12.

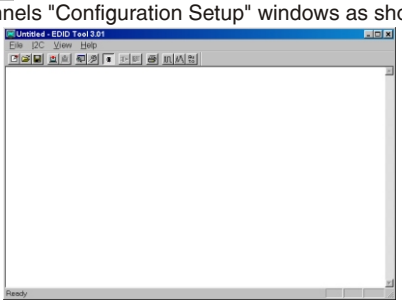


Fig. 11

2. Select the DDC2B as the communication channel. Select "**Enable**" & fill out "**F0**" for Mapped EDID page address as shown in Fig. 12.

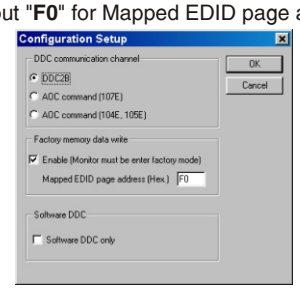
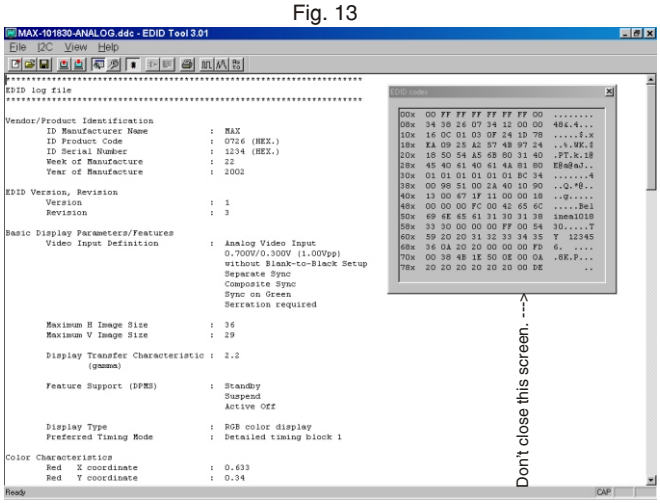


Fig. 12

3. Click OK button to confirm your selection.

4. Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 13.

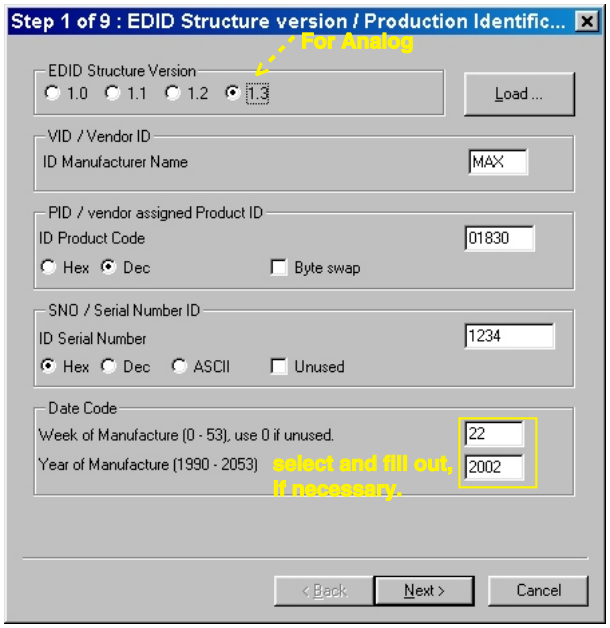
Fig. 13



Step 3: Modify DDC data (verify EDID version, week, year)

1. Click (new function) icon from the tool bar, bring up Step 1 of 9 as shown in Fig. 14 .
EDID301 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

Fig. 14



Step 4: Modify DDC data (Monitor Serial No.)

1. Click **Next** , bring up Fig. 15.

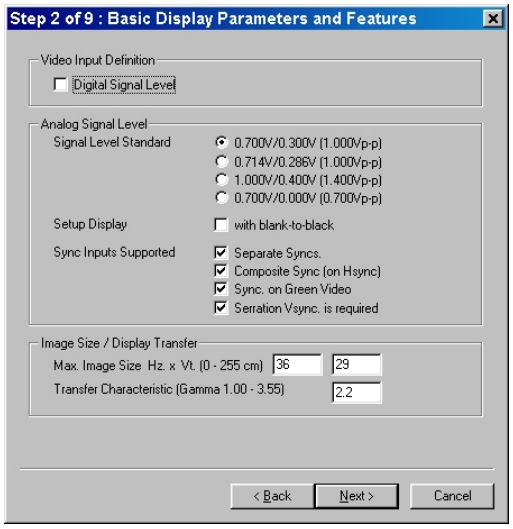


Fig. 15

2. Click **Next** , bring up Fig. 16.

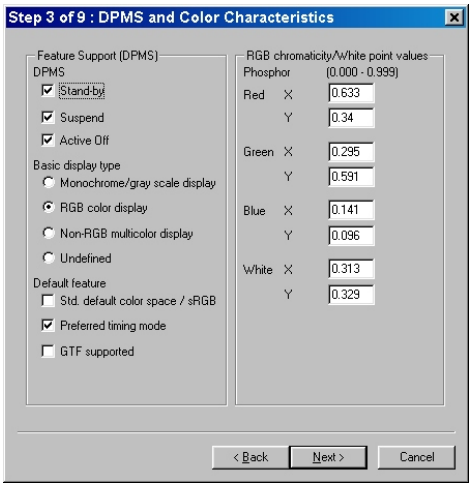


Fig. 16

DDC Instructions (Continued)

Go to cover page

3. Click **Next** , bring up Fig. 17.

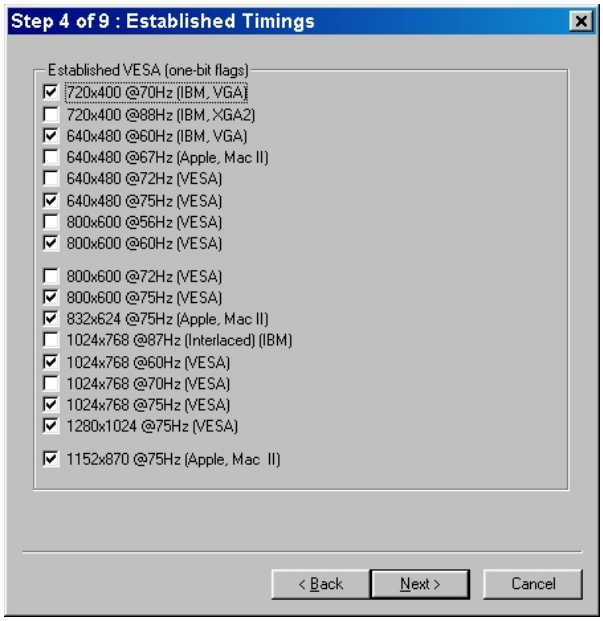


Fig. 17

4. Click **Next** , bring up Fig. 18.

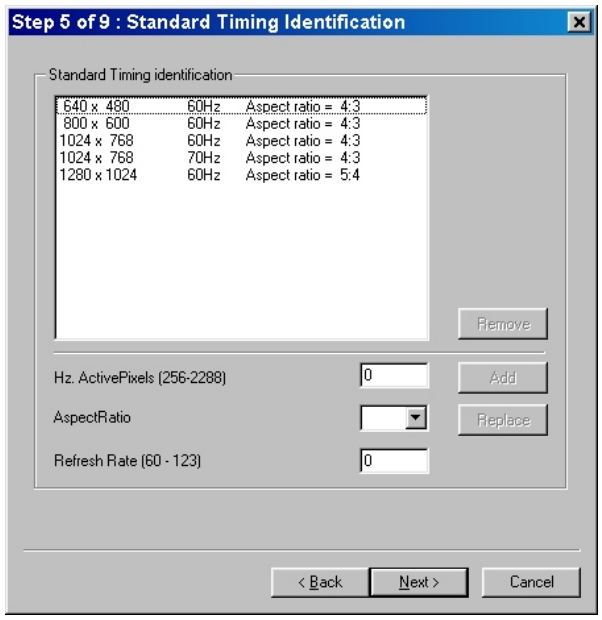


Fig. 18

5. Click **Next** , bring up Fig. 19.

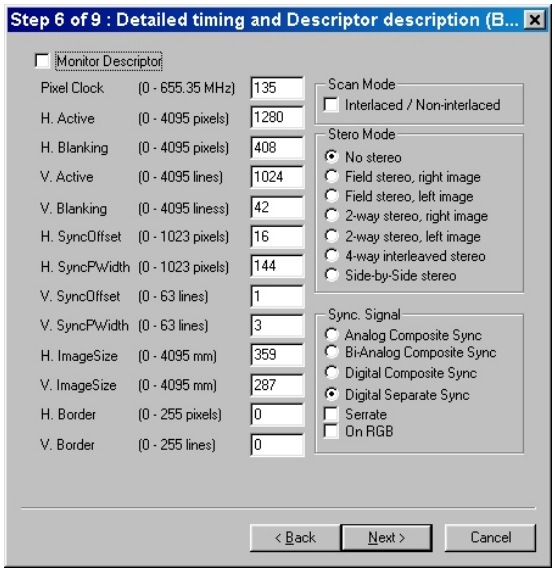


Fig. 19

6. Click **Next** , bring up Fig. 20.

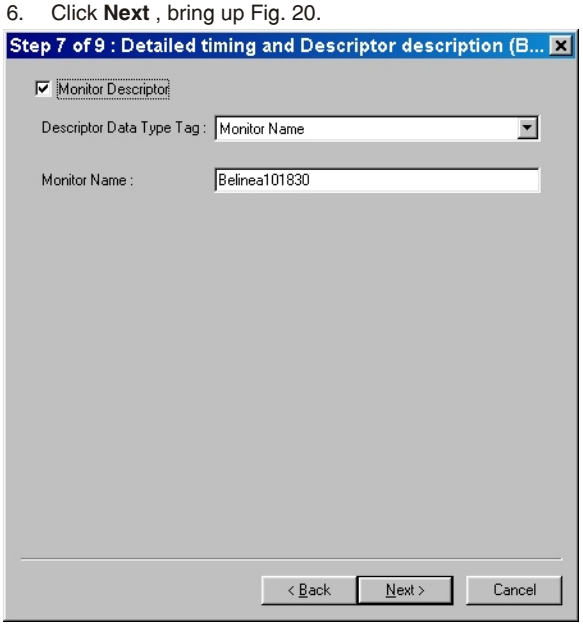


Fig. 20

7. Click **Next** , bring up Fig. 21.
(Serial number can be filled up or be changed at this moment.

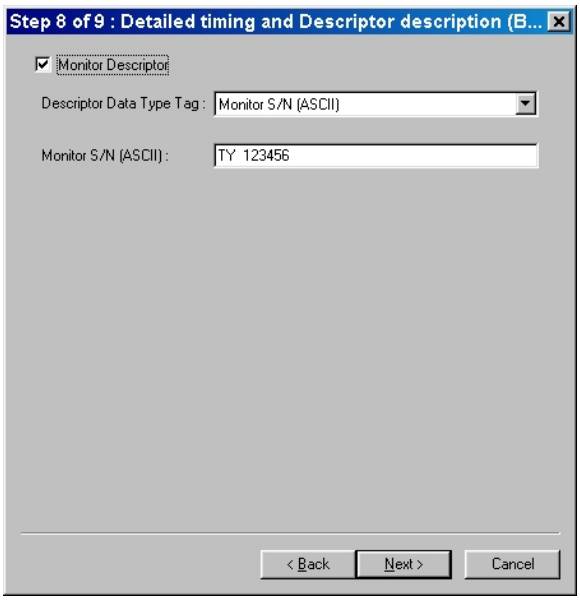


Fig. 21

8. Click **Next** , bring up Fig. 22.
- Click **Finish** to exit the Step window.

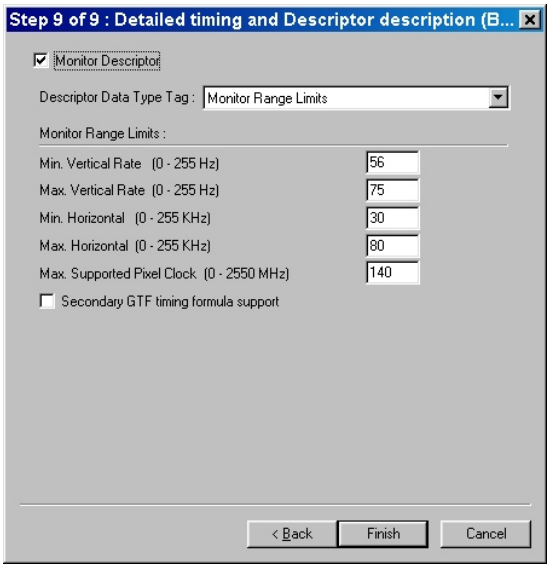


Fig. 22

DDC Instructions (Continued)

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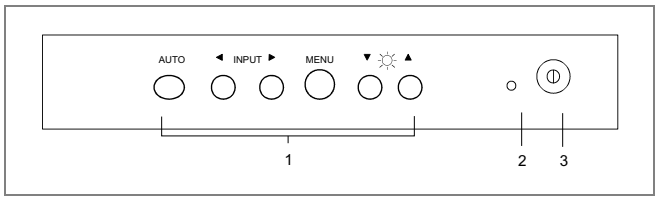
Step 5: Access Factory Mode for DDC data writing



Factory Mode:
How to Get into Factory Mode Menu

Turn off LCD monitor.

Push AUTO " " & " " & " " buttons simultaneously ,then release Power buttun only, untill picture comes on the screen. Press MENU " " button, bring up Factory mode indication as shown in Fig 23.

Factory Mode indication==>

Fig. 23

Step 6: Write DDC data

1. Click (Write EDID) icon from the tool bar to write DDC data. (0% ~ 100%, -> READY)
2. Click (Read EDID) to re-confirm (check contents) it.

Step 7: Reconfirm Monitor Serial Number in User Mode

1. **Turn off monitor**, then turn on monitor again => leave factory mode and return to User Mode directly.
2. Press "MENU" button -> select "PRODUCT INFORMATION" -> press "MENU" button -> bring up Fig. 24.

PRODUCT INFORMATION
SERIAL NO. : TY 123456
RESOLUTION : 1024x768@60HZ
VIDEO INPUT : ANALOG (D-SUB)
MENU BACK TO MAIN CONTROLS

Fig. 24

Step 8: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click (Save) icon (or click "file"-> "save as") from the tool bar and give a file name as shown in Fig. 25.

The file type is EDID301 file (*.ddc) which can be open in WordPad. By using WordPad, the texts of DDC data & table (128 bytes, hex code) can be modified. If DDC TEXTS & HEX Table are completely correct, it can be saved as .ddc flie to re-load it into DDC IC & EEPROM for DDC Data application.

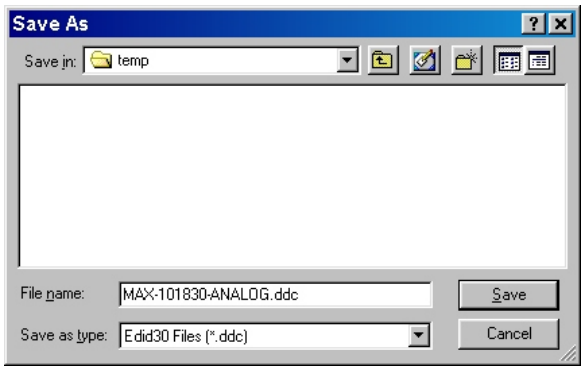


Fig. 25

2. Click **Save**.

Step 9: Load DDC data

1. Click from the tool bar.
2. Select the file you want to open as shown in Fig. 26.
3. Click **Open**.

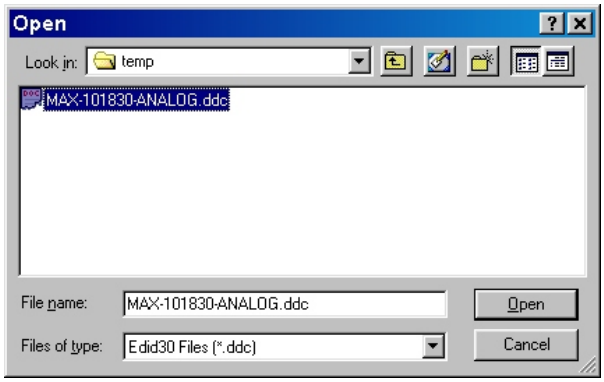


Fig. 26

Step 9: Exit DDC program

Pull down the File menu and select Exit as shown in Fig. 27.

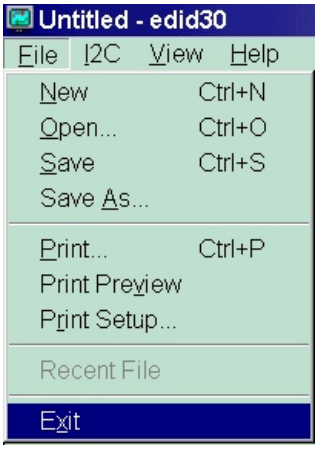


Fig. 27

Re-programming Digital DDC IC (User mode)

Step 1: Connecting all cables and alignment box as shown in Fig. 28.

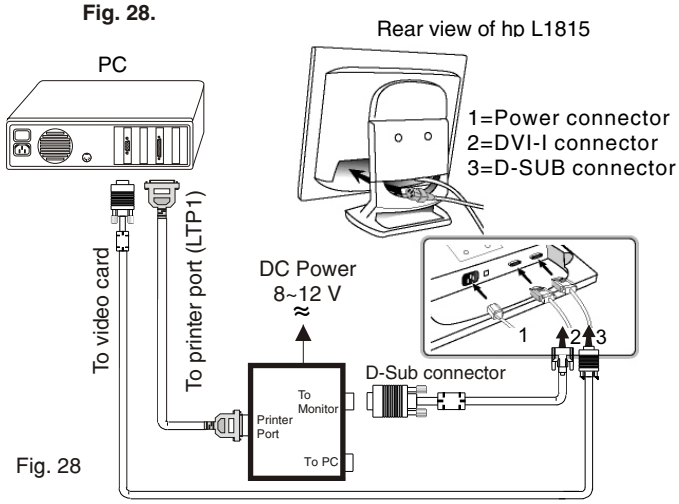


Fig. 28

After connection for Digital DDC application, if it is still in Analog DDC application of EDID301.
Exit EDID301 program before Digital DDC application.

Step 2: Initialize alignment box
(Shortcut of EDID301.EXE on Windows Wallpaper already.)

Double click EDID301 icon (as shown in Fig. 29) which is on the screen of Windows Wallpaper.
Bring up main menu of EDID301 as shown in Fig. 30.

Fig. 29

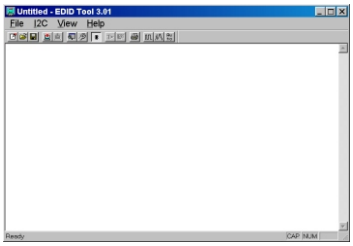
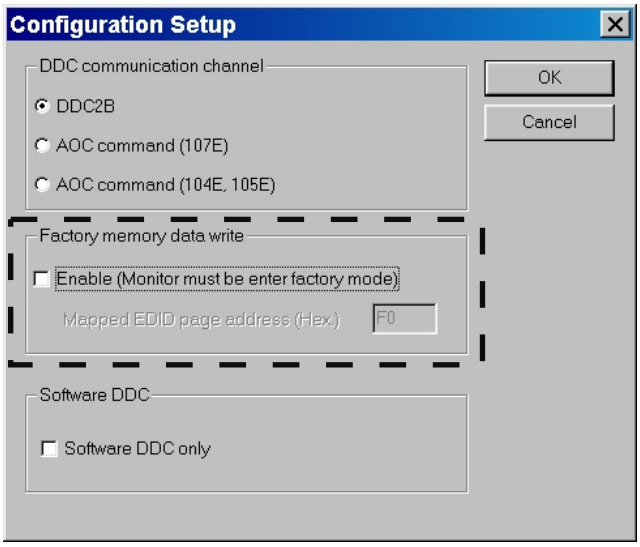


Fig. 30

Step 3: Read DDC data from monitor

1. Click icon from the tool bar to bring up the Channels Configuration Setup windows as shown in Fig. 30.
2. Select the DDC2B as the communication channel. **Disable "Factory memory data write" for Digital DDC application** as shown in Fig. 31.
3. Click OK button to confirm your selection.

Fig. 31



4. Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 32.

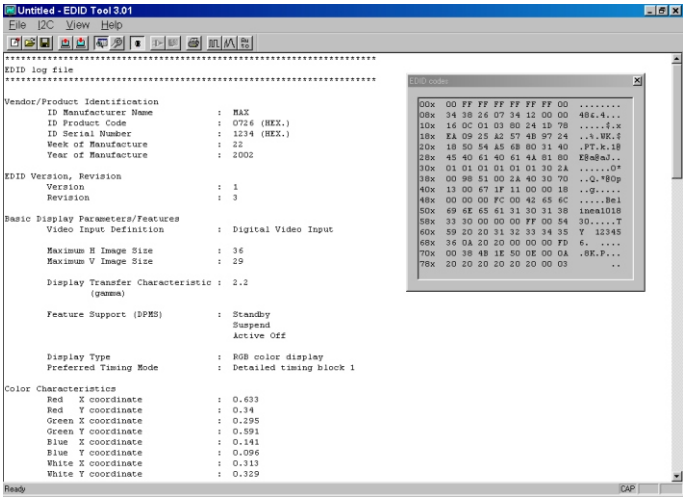
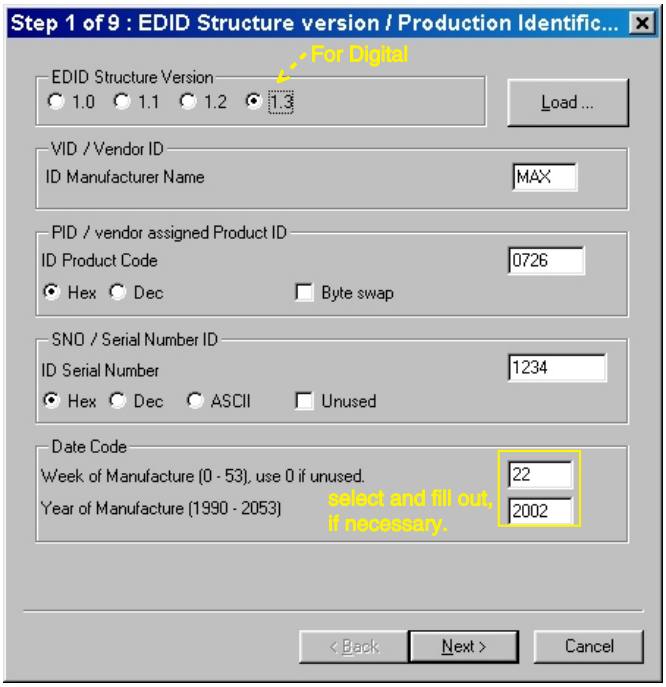


Fig. 32

Step 4: Modify DDC data (verify EDID version, week, year)

1. Click (new function) icon from the tool bar, bring up Step 1 of 9 (Digital) as shown in Fig. 33 .
   EDID30 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

Fig. 33



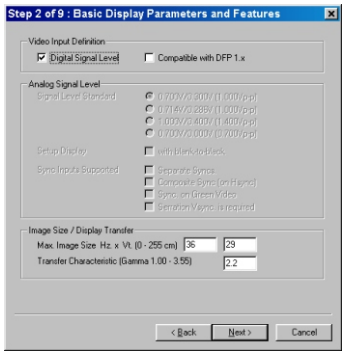


Fig. 34

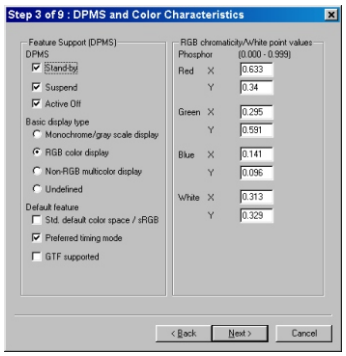


Fig. 35

DDC Instructions (Continued)

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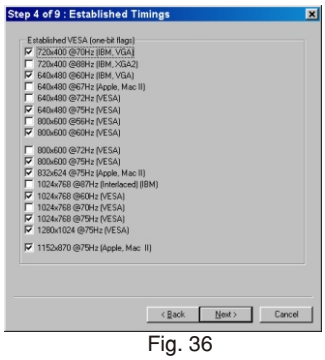


Fig. 36

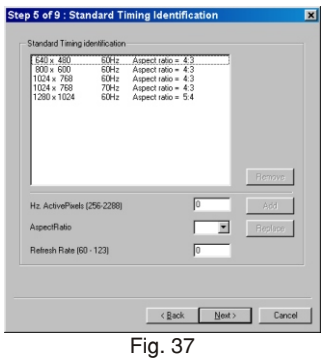


Fig. 37

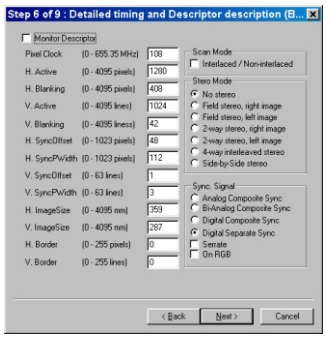


Fig. 38

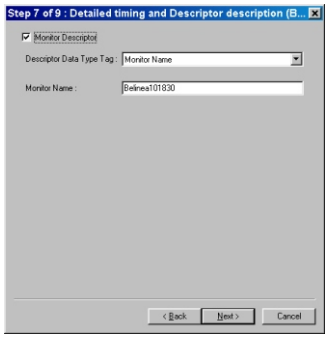
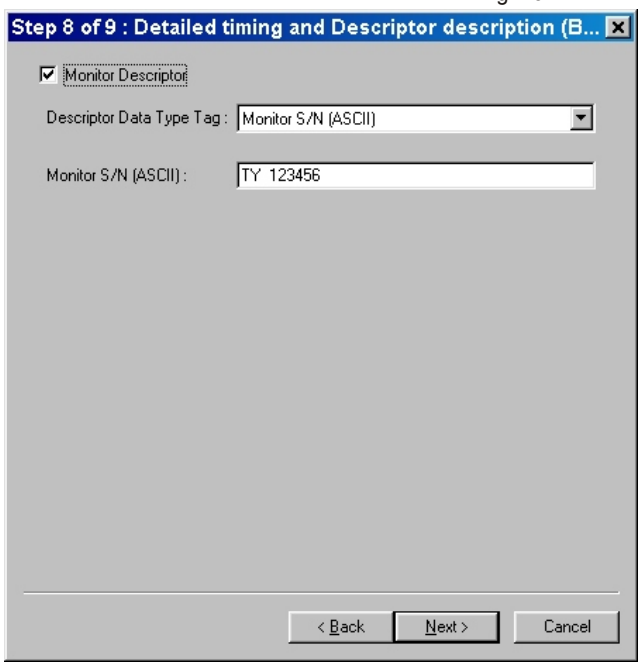


Fig. 39

Step 5: Modify DDC data (Monitor Serial No.)

Monitor Serial No. can be filled up or be changed (for example, TY 123456) as shown in Fig. 40.

Fig. 40



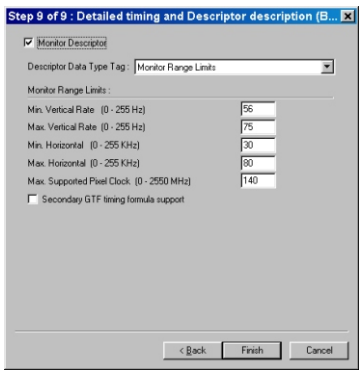


Fig. 41

Click **Finish** to exit the Step window as shown in Fig. 41.

Step 6: Write DDC data

1. Click (Write EDID) icon from the tool bar to write DDC data.
2. Click (Read EDID) to re-confirm (check contents) it.

The 128bytes DDC data which had been written into DDC IC of Digital Mode.

The display of SERIAL NO. by OSD can be change/update by Analog Mode only.

It means "**Analog Mode and Digital Mode are using same EEPROM for display of SERIAL NO. by OSD" as shown in Fig. 42.**

PRODUCT INFORMATION
SERIAL NO. : TY 123456
RESOLUTION : 1024x768@60HZ
VIDEO INPUT : ANALOG (D-SUB)
MENU BACK TO MAIN CONTROLS

Fig. 42

Step 7: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click (Save) icon (or click "file"-> "save as") from the tool bar and give a file name as shown in Fig. 43.
2. Click **Save**.

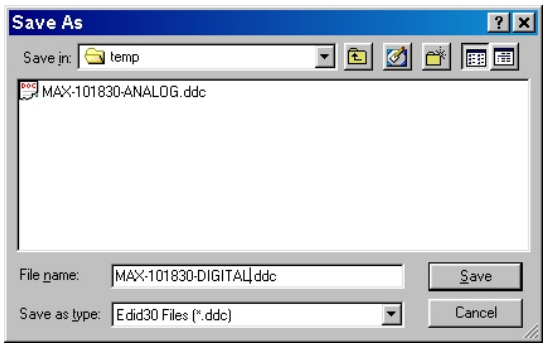


Fig. 43

Step 8: Load DDC data

1. Click from the tool bar.
2. Select the file you want to open as shown in Fig 44.
3. Click **Open**.

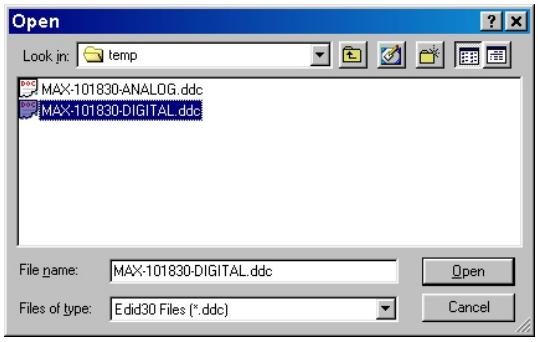


Fig. 44

Step 9: Exit DDC program

Pull down the File menu and select Exit as shown in Fig. 27.

DDC Data of Analog

Go to cover page

****
EDID log file
****

Vendor/Product Identification
- ID Manufacturer Name : MAX
- ID Product Code : 0726 (HEX.)
- ID Serial Number : 1234 (HEX.)
- Week of Manufacture : 22
- Year of Manufacture : 2002

EDID Version, Revision
- Version : 1
- Revision : 3

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.300V (1.00Vpp)
  without Blank_to_Black
  Setup
  Separate Sync
  Composite Sync
  Sync on Green
  Serration required
- Maximum H Image Size : 36
- Maximum V Image Size : 29
- Display Transfer Characteristic (gamma) : 2.2
- Feature Support (DPMS) : Standby
  Suspend
  Active Off
- Display Type : RGB color display
- Preferred Timing Mode : Detailed timing block 1

Color Characteristics
- Red X coordinate : 0.633
- Red Y coordinate : 0.34
- Green X coordinate : 0.295
- Green Y coordinate : 0.591
- Blue X coordinate : 0.141
- Blue Y coordinate : 0.096
- White X coordinate : 0.313
- White Y coordinate : 0.329

Established Timings
- Established Timings I : 720 x 400 @70Hz (IBM,VGA)
  640 x 480 @60Hz (IBM,VGA)
  640 x 480 @75Hz (VESA)
  800 x 600 @60Hz (VESA)
- Established Timings II : 800 x 600 @75Hz (VESA)
  832 x 624 @75Hz (Apple,Mac II)
  1024 x 768 @60Hz (VESA)
  1024 x 768 @75Hz (VESA)
  1280 x 1024 @75Hz (VESA)
- Manufacturer's timings : 1152 x 870 @75Hz (Apple,Mac II)

Standard Timing Identification #1
- Horizontal active pixels : 640
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #2
- Horizontal active pixels : 800
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #3
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #4
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 70

Standard Timing Identification #5
- Horizontal active pixels : 1280
- Aspect Ratio : 5:4
- Refresh Rate : 60

Detailed Timing #1
- Pixel Clock (MHz) : 135
- H Active (pixels) : 1280
- H Blanking (pixels) : 408
- V Active (lines) : 1024
- V Blanking (lines) : 42
- H Sync Offset (F Porch) (pixels) : 16
- H Sync Pulse Width (pixels) : 144
- V Sync Offset (F Porch) (lines) : 1
- V Sync Pulse Width (lines) : 3
- H Image Size (mm) : 359
- V Image Size (mm) : 287
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non_interlaced
  : Normal Display, No stereo
  : Digital Separate sync.
  : Negative Vertical Sync.
  : Negative Horizontal Sync.

Monitor Descriptor #2
- Monitor Name : Belinea101830

Monitor Descriptor #3
- Serial Number : TY 123456

Monitor Descriptor #4
- Monitor Range Limits
- Min. Vt rate Hz : 56
- Max. Vt rate Hz : 75
- Min. Horiz. rate kHz : 30
- Max. Horiz. rate kHz : 80
- Max. Supported Pixel : 140

No secondary GTF timing formula supported.

Extension Flag : 0

Check sum : DE (HEX.)

****
EDID data (128 bytes)
****

```
 0: 00  1: ff  2: ff  3: ff  4: ff  5: ff  6: ff  7: 00
 8: 34  9: 38 10: 26 11: 07 12: 34 13: 12 14: 00 15: 00
16: 16 17: 0c 18: 01 19: 03 20: 0f 21: 24 22: 1d 23: 78
24: ea 25: 09 26: 25 27: a2 28: 57 29: 4b 30: 97 31: 24
32: 18 33: 50 34: 54 35: a5 36: 6b 37: 80 38: 31 39: 40
40: 45 41: 40 42: 61 43: 40 44: 61 45: 4a 46: 81 47: 80
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: bc 55: 34
56: 00 57: 98 58: 51 59: 00 60: 2a 61: 40 62: 10 63: 90
64: 13 65: 00 66: 67 67: 1f 68: 11 69: 00 70: 00 71: 18
72: 00 73: 00 74: 00 75: fc 76: 00 77: 42 78: 65 79: 6c
80: 69 81: 6e 82: 65 83: 61 84: 31 85: 30 86: 31 87: 38
88: 33 89: 30 90: 00 91: 00 92: 00 93: ff 94: 00 95: 54
96: 59 97: 20 98: 20 99: 31 100: 32 101: 33 102: 34 103: 35
104: 36 105: 0a 106: 20 107: 20 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4b 115: 1e 116: 50 117: 0e 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: de
```

DDC Data of Digital

Go to cover page

****
EDID log file
****

Vendor/Product Identification
- ID Manufacturer Name : MAX
- ID Product Code : 0726 (HEX.)
- ID Serial Number : 1234 (HEX.)
- Week of Manufacture : 22
- Year of Manufacture : 2002

EDID Version, Revision
- Version : 1
- Revision : 3

Basic Display Parameters/Features
- Video Input Definition : Digital Video Input
- Maximum H Image Size : 36
- Maximum V Image Size : 29
- Display Transfer Characteristic (gamma) : 2.2
- Feature Support (DPMS) : Standby, Suspend, Active Off
- Display Type : RGB color display
- Preferred Timing Mode : Detailed timing block 1

Color Characteristics
- Red X coordinate : 0.633
- Red Y coordinate : 0.34
- Green X coordinate : 0.295
- Green Y coordinate : 0.591
- Blue X coordinate : 0.141
- Blue Y coordinate : 0.096
- White X coordinate : 0.313
- White Y coordinate : 0.329

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- Established Timings I : 720 x 400 @70Hz (IBM,VGA)
  640 x 480 @60Hz (IBM,VGA)
  640 x 480 @75Hz (VESA)
  800 x 600 @60Hz (VESA)
- Established Timings II : 800 x 600 @75Hz (VESA)
  832 x 624 @75Hz (Apple,Mac II)
  1024 x 768 @60Hz (VESA)
  1024 x 768 @75Hz (VESA)
  1280 x 1024 @75Hz (VESA)
- Manufacturer's timings : 1152 x 870 @75Hz (Apple,Mac II)

Standard Timing Identification #1
- Horizontal active pixels : 640
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #2
- Horizontal active pixels : 800
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #3
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #4
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 70

Standard Timing Identification #5
- Horizontal active pixels : 1280
- Aspect Ratio : 5:4
- Refresh Rate : 60

Detailed Timing #1
- Pixel Clock (MHz) : 108
- H Active (pixels) : 1280
- H Blanking (pixels) : 408
- V Active (lines) : 1024
- V Blanking (lines) : 42
- H Sync Offset (F Porch) (pixels) : 48
- H Sync Pulse Width (pixels) : 112
- V Sync Offset (F Porch) (lines) : 1
- V Sync Pulse Width (lines) : 3
- H Image Size (mm) : 359
- V Image Size (mm) : 287
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non_interlaced
  : Normal Display, No stereo
  : Digital Separate sync.
  : Negative Vertical Sync.
  : Negative Horizontal Sync.

Monitor Descriptor #2
- Monitor Name : Belinea101830

Monitor Descriptor #3
- Serial Number : TY 123456

Monitor Descriptor #4
- Monitor Range Limits
- Min. Vt rate Hz : 56
- Max. Vt rate Hz : 75
- Min. Horiz. rate kHz : 30
- Max. Horiz. rate kHz : 80
- Max. Supported Pixel : 140

No secondary GTF timing formula supported.

Extension Flag : 0

Check sum : 03 (HEX.)

****
EDID data (128 bytes)
****

```
 0: 00  1: ff  2: ff  3: ff  4: ff  5: ff  6: ff  7: 00
 8: 34  9: 38 10: 26 11: 07 12: 34 13: 12 14: 00 15: 00
16: 16 17: 0c 18: 01 19: 03 20: 80 21: 24 22: 1d 23: 78
24: ea 25: 09 26: 25 27: a2 28: 57 29: 4b 30: 97 31: 24
32: 18 33: 50 34: 54 35: a5 36: 6b 37: 80 38: 31 39: 40
40: 45 41: 40 42: 61 43: 40 44: 61 45: 4a 46: 81 47: 80
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 30 55: 2a
56: 00 57: 98 58: 51 59: 00 60: 2a 61: 40 62: 30 63: 70
64: 13 65: 00 66: 67 67: 1f 68: 11 69: 00 70: 00 71: 18
72: 00 73: 00 74: 00 75: fc 76: 00 77: 42 78: 65 79: 6c
80: 69 81: 6e 82: 65 83: 61 84: 31 85: 30 86: 31 87: 38
88: 33 89: 30 90: 00 91: 00 92: 00 93: ff 94: 00 95: 54
96: 59 97: 20 98: 20 99: 31 100: 32 101: 33 102: 34 103: 35
104: 36 105: 0a 106: 20 107: 20 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4b 115: 1e 116: 50 117: 0e 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 03
```

Wiring Diagram

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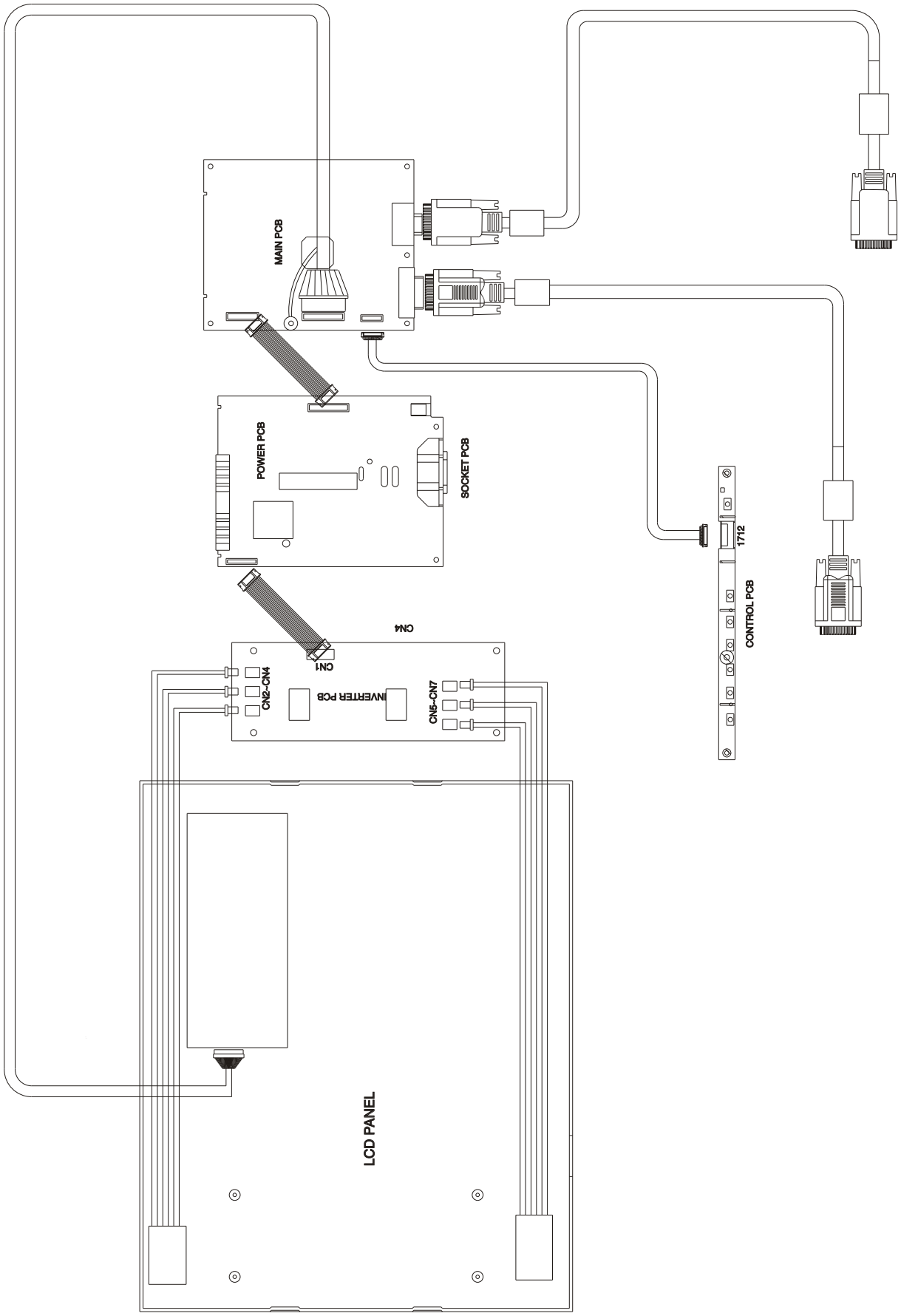
Model : DJ9B3L/00Z



Electrical Instructions

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0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor.

0.1 **AC/DC Measurement:**

The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "16 gray scale".

Power input: 110V AC

General points

1.1 During the test and measuring, supply a distortion free AC mains voltage to the apparatus via an isolated transformer with low internal resistance.

1.2 All measurements mentioned hereafter are carried out at a normal mains voltage (90 - 132 VAC for USA version, 195 -264 VAC for EUROPEAN version, or 90 - 264 VAC for the model with full range power supply, unless otherwise stated.)

1.3 All voltages are to be measured or applied with respect to ground, unless otherwise stated.

Note: don't use heat-sink as ground.

1.4 The test has to be done on a complete set including LCD panel in a room with temperature of 25 +/- 5 degree C.

1.5 All values mentioned in these test instruction are only applicable of a well aligned apparatus, with correct signal.

1.6 The letters symbols (B) and (S) placed behind the test instruction denotes

(B): carried out 100% inspection at assembly line

(S): carried out test by sampling

1.7 The white balance (color temperature), has to be tested in subdued lighted room.

1.8 Repetitive power on/off cycle are allowed.

2. Input signal

2.1 Signal type

Video : 0.7 Vp-p linear, positive polarity

Sync. : TTL level, separate, positive or negative polarity

Signal source: pattern generator format as attachment.

(table 1 to 32) Reference generator : QuantumData 801GD

2.2 Input signal mode

Pre-set 32 modes (P)

PRESET VIDEO RESOLUTION

#	Resolution	Frequency	Pixel rate	Sync	Comment
1	640X350	31.5K/70HZ	25.175	(+/-)	IBM VGA 10h
2	720X400	31.5K/70HZ	28.322	(-/+)	IBM VGA 3h
3	640X480	37.5K/75HZ	31.501	(-/-)	
4	640X480	43.3K/85HZ	36	(-/-)	
5	640X480	37.9K/72HZ	31.5	(-/-)	
6	640X480	35.0K/67HZ	30.24	(-/-)	
7	640X480	31.5K/60HZ	25.175	(-/-)	
8	800X600	35.2K/56HZ	36	(+/+)	
9	800X600	46.9K/75HZ	49.498	(+/+)	
10	800X600	37.9K/60HZ	40	(+/+)	
11	800X600	53.7K/85HZ	56.251	(+/+)	
12	832X624	49.7K/75HZ	57.28	(+/+)	MAC
13	800X600	48.1K/72HZ	50	(+/+)	
14	1024X768	60.0K/75HZ	78.75	(+/+)	
15	1024X768	48.4K/60HZ	65	(-/-)	
16	1024X768	56.5K/70HZ	75	(-/-)	
17	1024X768	61.1K/76HZ	83.096	(+/+)	IBM XGA-2
18	1024X768	68.7K/85HZ	94.5	(+/+)	
19	1152X864	67.5K/75HZ	108	(+/+)	
20	1152X864	63.9K/70HZ	94.5	(+/+)	non-VESA
21	1152X864	54.0K/60HZ	79.9	(+/+)	non-VESA
22	1152X870	68.7K/75HZ	100	(-/-)	MAC
23	1152X900	61.8K/66HZ	92.94	serr-	SUN Mode IV
24	1152X900	71.8K/76HZ	108	(+/+)	SUN Mode II
25	1280X960	60.0K/60HZ	108	(+/+)	
26	1280X960	75.0K/75HZ	129.895	(+/+)	non-VESA
27	1280X1024	76.0K/72HZ	130.223	(+/+)	DOS/V
28	1280X1024	64.0K/60HZ	108	(+/+)	
29	1280X1024	80.0K/75HZ	135	(+/+)	
30	1280X1024	81.1K/76HZ	135.008	(-/-)	SUN Mode I
31	1280X1024	71.7K/67HZ	117	(+/+)	SUN Mode V
32	688X556	31.3K/50HZ	27	(-/+)	TV-PAL

2.3 Allowed 85 Hz overscan signal mode specified

Once the signal input of PC is 85Hz, this monitor is able to display at least for 10 minutes . An attention signal appears and shows This is 85Hz overscan for 5 seconds, change computer display input to 1024X768 @ 60 Hz

Dot rate (MHz)	H.freq (KHz)	Mode	Resolution	V.freq (Hz)
36.000	43.269	VESA	640 * 480	85.008
56.250	53.674	VESA	800 * 600	85.061
94.500	68.677	VESA	1024 * 768	84.997

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3. AC, DC Adaptor
3.1 Setup the AC I/P at 90VAC, and Output DC loading at 5Amp,
The DC output voltage is 12.0 1 V DC, Adjusting is no need.
3.2 DC setting
3.01 Detach 8052 to the scaler board before testing the function.
3.02 Apply 12V DC voltage to 1105. (B)
3.03 Connect inverter board to 8051 (B)
3.04 Check voltage at C2067 should be within the range 5V +/- 0.2V (B)
3.05 Check voltage at C2077 should be within the range 3.3V +/- 0.1V (B)

4. Display Adjustment
4.1Input signals check
In factory mode, use 64 gray level and set the R,G,B gain to 100%.
4.2 Display quality test
Use timing mode as describe in 2.2, and use the pixel on / off pattern to adjust the clock until no stripe and adjust the phase until clear picture.
Check all pre-setting 32 modes.

4.2.1 SOG mode test : Use following timing for SOG test

64 KHz/60Hz, 1280 X 1024, pixel=108 MHz

Horizontal				Vertical			
Frame border	=	0		Frame border	=	0	
Total size	=	15.620	s	Total size	=	16.670	ms
Display size	=	11.852	s	Display size	=	16.000	ms
Rear porch	=	2.000	s	Rear porch	=	0.580	ms
Sync width	=	1.000	s	Sync width	=	0.080	ms
Sync polarity	=	-		Sync polarity	=	-	
				Sync on green			

4.3 Check of WHITE-D (B)

Apply a 1024*768 / 60Hz signal with white pattern, set brightness control at 100%, and contrast control at 70%. Adjust the R,G,B sub_gain, for the screen center,
the 1931 CIE chromaticity (X, Y) co-ordinates shall be;

	9300 K		6500 K	
x (center)	0.281	0.020	0.312	0.020
y (center)	0.311	0.020	0.338	0.020

Use Minolta CA-110 for color coordinates and luminance check.
Luminance : 200 Nits in the center of the screen when brightness at 100% and contrast set to 100%.
4.4 Check the digital interface
Check the 64 gray level color poor & noise condition.

5. PIN ASSIGNMENT OF VARIOUS WAFERS

5.1. PIN ASSIGNMENT OF INVERTER & WAFER 8051

PIN No. SIGNAL (INVERTER BOARD)

1 backlight GND
2 backlight GND
3 backlight GND
4 backlight brightness; 3.3 V : 6.2 mA 0.3 mA
0 V : 2.05 mA 0.2 mA
5 backlight ; ON/OFF control : ON > 2V, OFF < 1V
6 backlight power (12V)
7 backlight power (12V)
8 backlight power (12V)

PIN No. SIGNAL (WAFER 8051)
1 backlight power (12V)
2 backlight power (12V)
3 backlight power (12V)
4 backlight brightness; 3.3 V : 6.2 mA 0.3 mA
0 V : 2.0 mA 0.2 mA
5 backlight ; ON/OFF control : ON > 2V, OFF < 1V
6 backlight GND
7 backlight GND
8 backlight GND

5.2 PIN ASSIGNMENT OF WAFER 8052

PIN No. SIGNAL (WAFER 8052)

1	LIGHT_BRI_CTL
2	LIGHT_PWR_CTL
3	GND
4	GND
5	+3.3V
6	GND
7	+5V
8	+5V
9	GND
10	GND
11	+12V
12	+12V
13	GND
14	GND

5.3 PIN ASSIGNMENT OF WAFER 1406

PIN No.	SIGNAL (WAFER 1406)
1	DC_SW
2	+3.3V
3	KEY1
4	GND
5	KEY2
6	LEDR
7	LEDG

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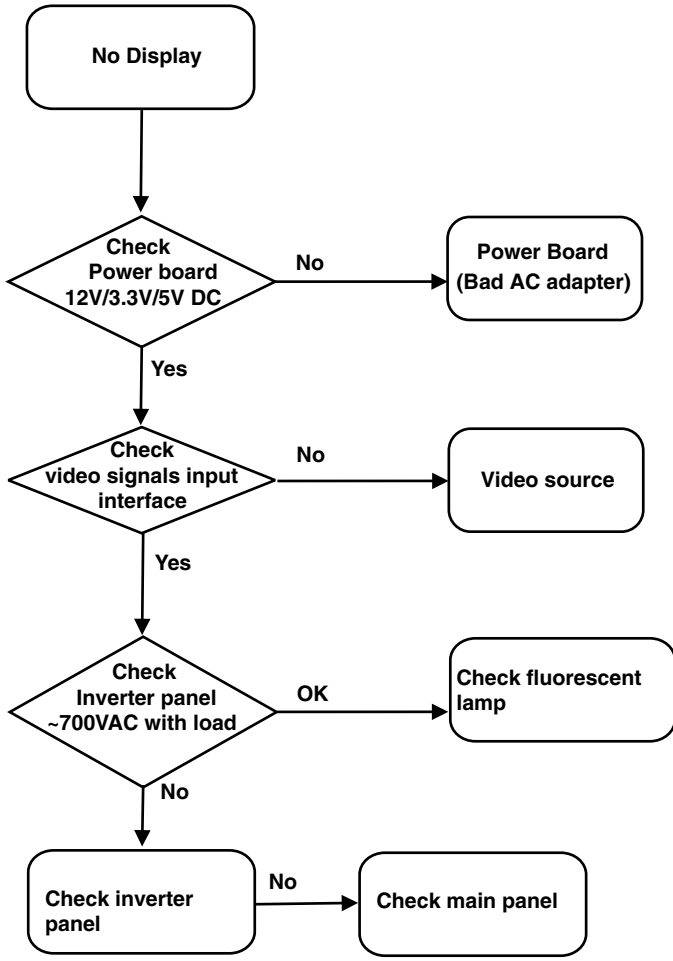
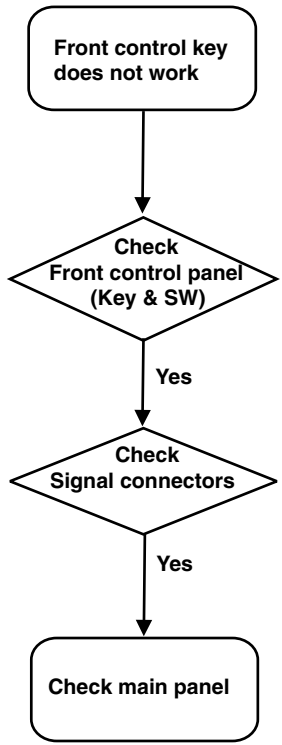
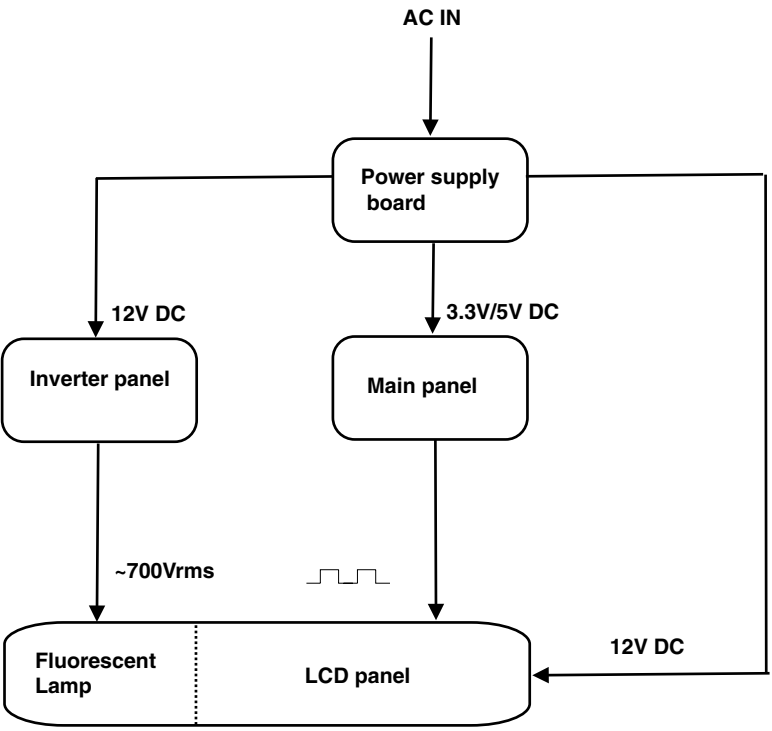
Repair Flow Chart

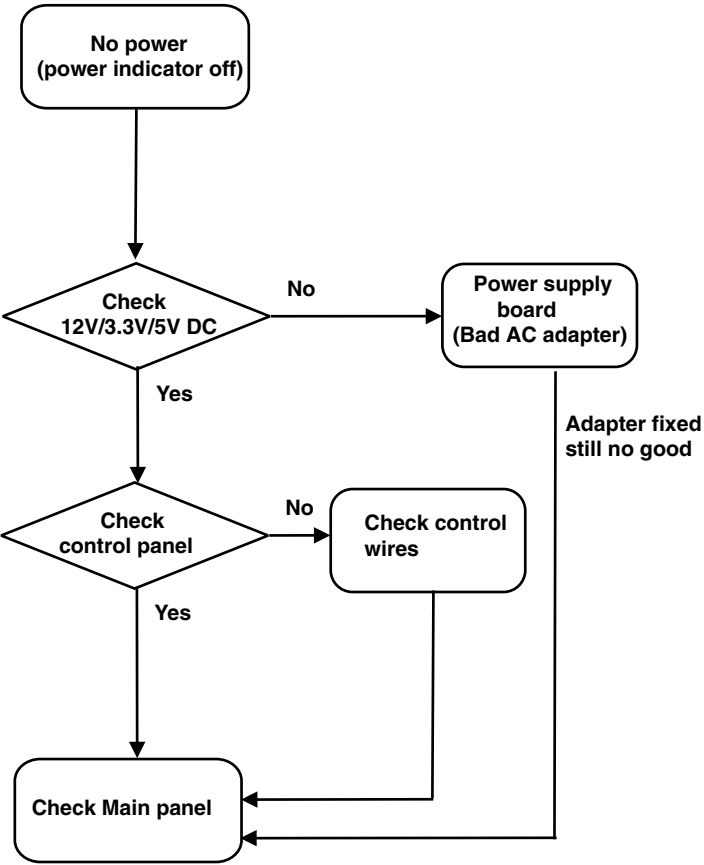




Repair Flow Chart

Go to cover page





Repair Flow Chart

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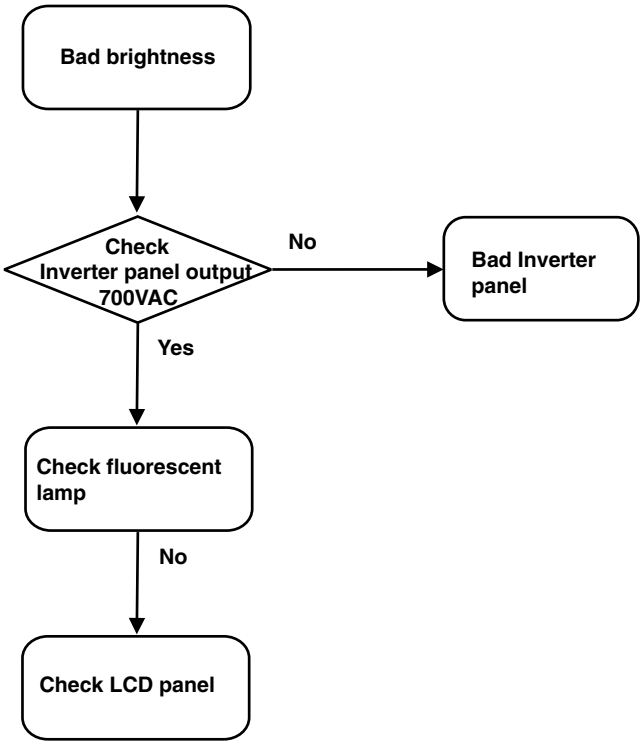
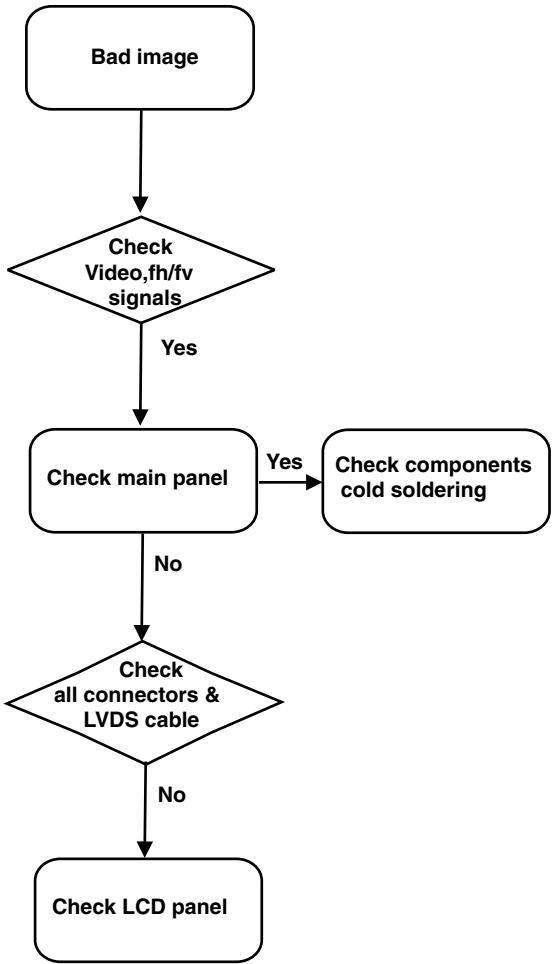
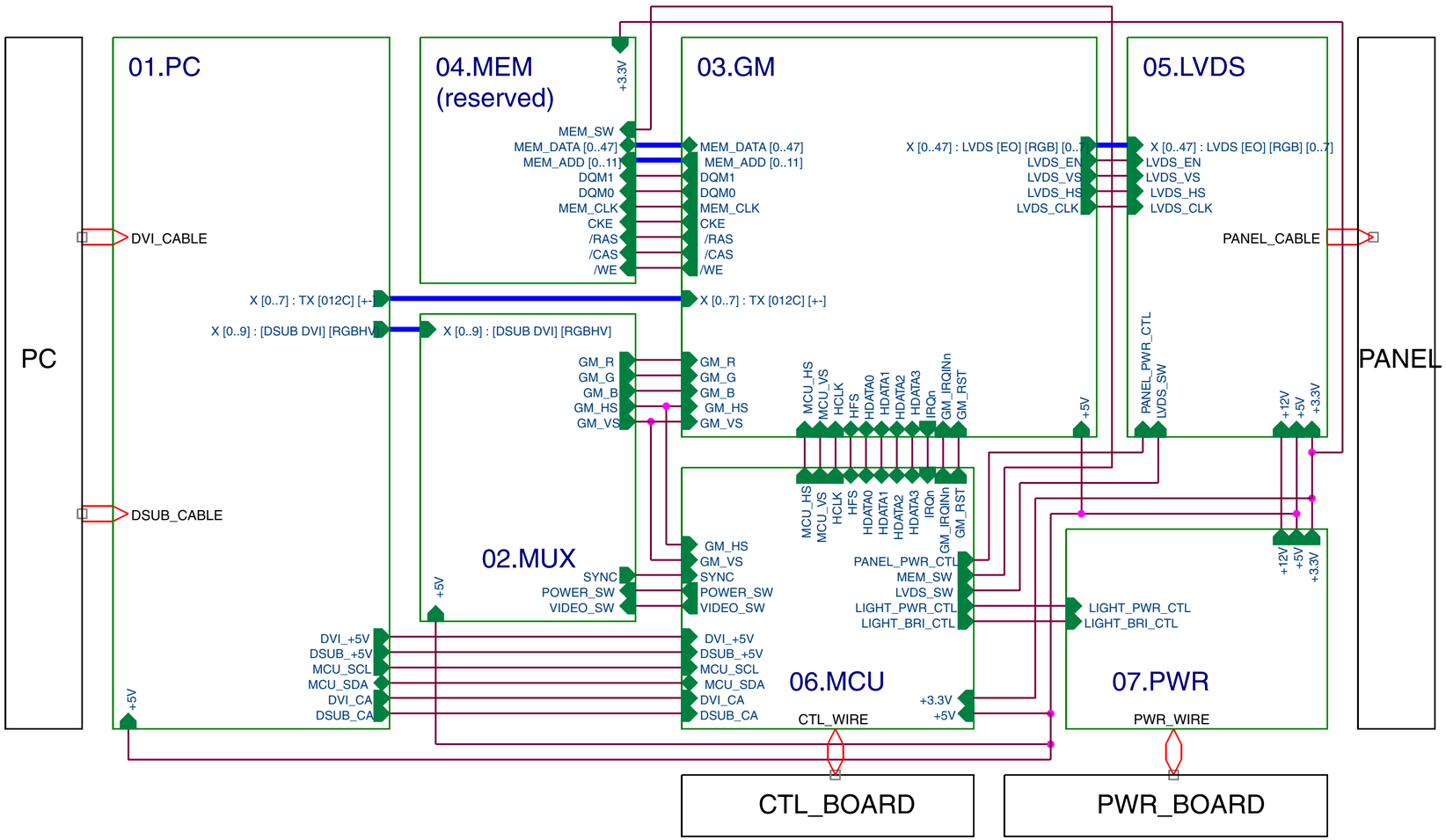




Block Diagram



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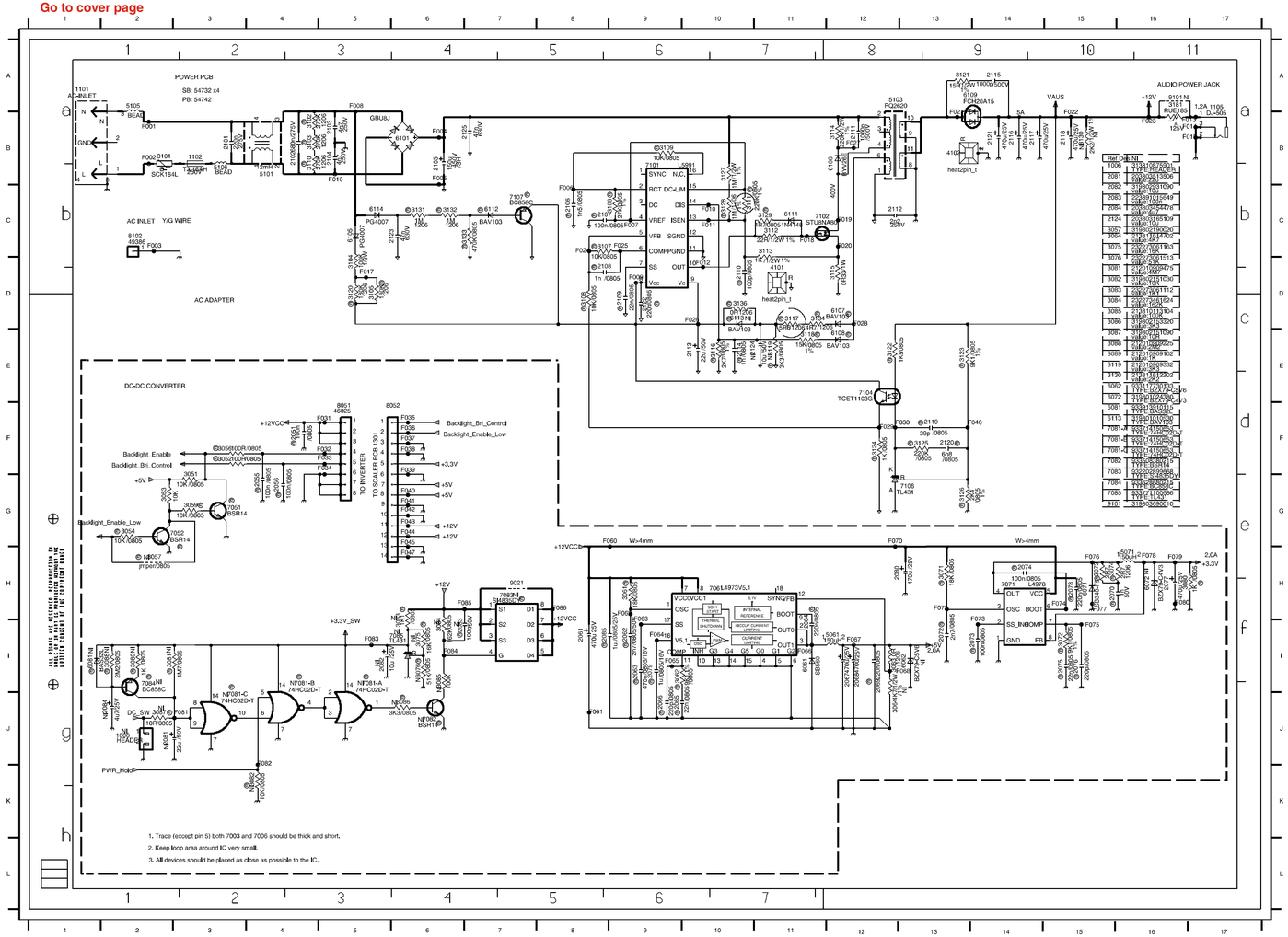
Schematic diagram(Power)



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2085	310p0351356
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2084	310p0271549
2084	310p0274476
2124	310p0315109
3010	310p0215000
3004	310p0214770
3004	310p0214770
3075	310p0400118
3076	310p0400118
3076	310p0212513
3081	310p0209945
3082	310p0209945
3085	310p0210104
3085	310p0210104
3084	310p0211024
3084	310p0211024
3085	310p0210104
3085	310p0210104
3085	310p0213330
3085	310p0213330
3087	310p0210104
3088	310p0209945
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3119	310p0209933
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6062	310p0277013
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6072	310p0277013
6081	TYPE:BZX84C4V3
6081	310p0277013
6110	TYPE:BAV103
6110	310p0277013
7081-N	TYPE:1SS355
7081-N	310p0411000
7081-L	TYPE:1SS355
7081-L	310p0411000
7081-L	TYPE:1SS355
7081-L	310p0411000
7082	TYPE:BSR17
7082	310p0409000
7083	TYPE:2SB695
7083	310p0409000
7084	TYPE:BC858C
7084	310p0409000
7085	TYPE:2SB695
7085	310p0409000
8101	310p0302000

1006 J2	7071 H14
1101 A1	7081-A I5
1102 B3	7081-B I4
1105 A17	7081-C J3
2051 F4	7082 J6
2055 G4	7083 H7
2056 G4	7084 I2
2061 I9	7101 B9
2062 I9	7101 B9
2063 B9	7102 C11
2064 I11	7104 E12
2065 J9	7106 G13
2066 J9	7107 C7
2067 F12	8051 F5
2068 I12	8052 F5
2069 I12	8102 C2
2070 H15	9021 H7
2072 I13	9101 A16
2073 I14	F001 B2
2074 H14	F002 B2
2075 I15	F003 C2
2076 I15	F004 B6
2077 H16	F005 B6
2078 H15	F006 C8
2079 B1	F007 C9
2080 H12	F008 A5
2081 J2	F009 D9
2082 I5	F010 C10
2083 I6	F011 C10
2084 J2	F012 D10
2085 I8	F013 B16
2101 B3	F014 B16
2102 B4	F015 B16
2103 B5	F016 B5
2104 B5	F017 D5
2105 B6	F018 C11
2106 C8	F019 C12
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2109 D9	F022 B15
2110 D10	F023 B16
2111 B12	F024 C8
2112 C12	F025 C9
2113 E10	F026 D10
2114 E10	F027 B12
2115 A14	F028 D12
2116 B14	F029 F12
2117 B14	F030 F13
2118 B15	F031 F3
2119 F13	F032 F5
2120 F13	F033 F5
2121 B14	F034 F5
2122 D9	F035 F6
2123 C6	F036 F6
2124 E11	F037 F6
2125 B7	F038 F6
3051 G3	F039 F6
3052 F3	F040 G6
3053 G2	F041 G6
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3061 I9	F046 F14
3062 I9	F047 G6
3063 I12	F060 G9
3064 J12	F061 J8
3071 H13	F062 H9
3072 I15	F063 I9
3073 H15	F064 I9
3074 H15	F065 B9
3075 I6	F066 I11
3076 I6	F067 F12
3080 H16	F068 I13
3081 I2	F070 G12
3082 K4	F072 H13
3083 I6	F073 I14
3084 I6	F074 H15
3085 I6	F075 I15
3086 J6	F076 H15
3087 J2	F077 H15
3088 I2	F078 H16
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3101 B2	F080 H16
3102 B4	F081 J3
3103 B4	F082 K4
3104 D5	F083 I5
3105 D5	F084 I6
3106 C9	F085 H7
3107 C8	F086 H8
3108 D8	
3109 B9	
3110 B9	
3111 C10	
3112 C11	
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3114 B12	
3115 D12	
3116 E10	
3117 D11	
3118 E11	
3119 E11	
3120 D5	
3121 A13	
3122 E12	
3123 E13	
3124 F12	
3125 F13	
3126 G13	
3127 B10	
3128 C10	
3129 C11	
3130 B15	
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3132 C6	
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3181 A16	
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4102 B13	
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5171 B4	
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5195 A2	
5196 B3	
6061 I11	
6062 I13	
6071 H15	
6072 H16	
6081 I6	
6101 B6	
6105 C5	
6106 B12	
6107 D12	
6108 E12	
6109 A13	
6111 C11	
6112 C7	
6113 D10	
6114 C5	
7051 G3	
7052 G2	
7061 H10	

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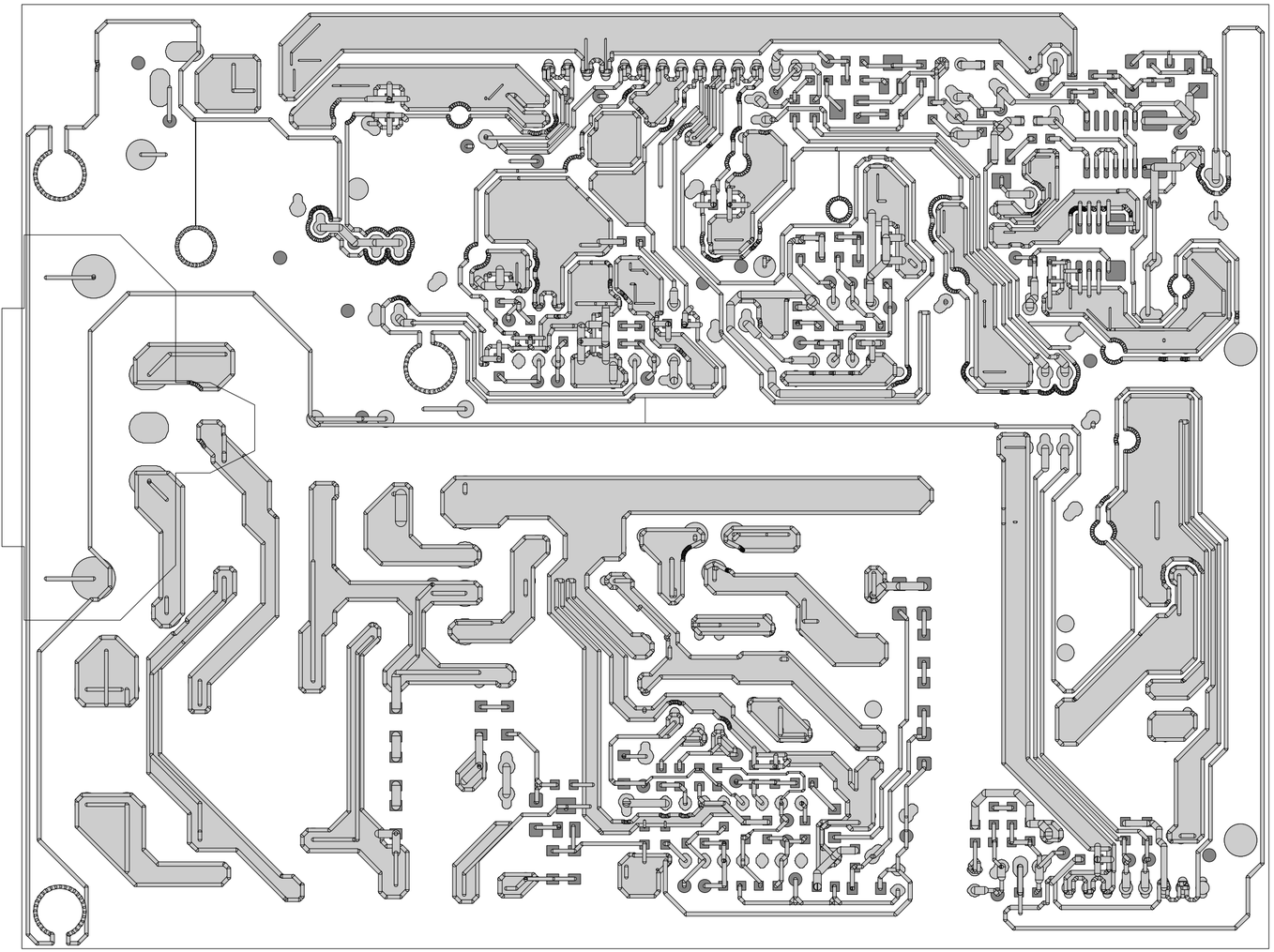
Power Board C.B.A.(copper track & smc side view)



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1102	B1	7085	A3	2056	B3	3116	B2
1105	A1	7101	B2	2062	A1	3117	B2
2061	A1	7102	A2	2063	A1	3118	B2
2067	A1	7104	B3	2064	A2	3119	B2
2068	A1	7106	B3	2065	A2	3120	B1
2077	A2	8051	B3	2066	A2	3122	B3
2080	A3	8052	A2	2069	A1	3123	B3
2081	A3	8102	A1	2070	A2	3124	B2
2082	A3	9005	A1	2072	A2	3125	B3
2084	A3	9007	B2	2073	A2	3126	B3
2101	A1	9008	A2	2074	A2	3128	B2
2102	B1	9012	B3	2075	A2	3129	B2
2103	A1	9013	A3	2076	A2	3131	B1
2104	A1	9014	A3	2078	A2	3132	B1
2105	A1	9015	A3	2079	A1	3133	B1
2111	B2	9016	A3	2083	A3	3134	B2
2112	A1	9017	A3	2085	A2	3136	B2
2113	B3	9018	A3	2106	B2	3191	B2
2115	B3	9019	A3	2107	B2	3192	B2
2116	A3	9021	A3	2108	B2	6081	A3
2117	A3	9022	A2	2109	B2	6107	A3
2118	A3	9023	A1	2110	B2	6108	A2
2121	A3	9024	A2	2114	B2	6112	B1
2123	B1	9025	A2	2119	B3	6113	B3
2124	B2	9026	A1	2120	B3	7051	A2
3051	A2	9027	A2	2122	B2	7052	A2
3053	A2	9028	A1	3052	A2	7081	A3
3063	A1	9030	A3	3054	A2	7082	A3
3064	A1	9031	A3	3056	A2	7083	A3
3085	A3	9033	A3	3057	A2	7084	A3
3101	B1	9034	A3	3059	A2	7107	B1
3104	B1	9035	A1	3061	A1		
3112	B2	9036	A1	3062	A2		
3113	B2	9101	A1	3071	A2		
3114	B2	9111	A1	3072	A2		
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3127	B2			3075	A3		
3130	A3			3076	A3		
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4101	A2			3081	A3		
4102	A3			3082	A3		
5061	A2			3083	A3		
5071	A2			3084	A3		
5101	B1			3086	A3		
5103	B3			3087	A3		
5105	A1			3088	A3		
5106	B1			3089	A3		
6061	A1			3091	A3		
6062	A1			3092	A2		
6071	A2			3093	A2		
6072	A2			3102	B1		
6101	A1			3103	B1		
6105	B1			3105	B1		
6106	B2			3106	B2		
6109	A3			3107	B2		
6111	B2			3108	B2		
6114	B1			3109	B2		

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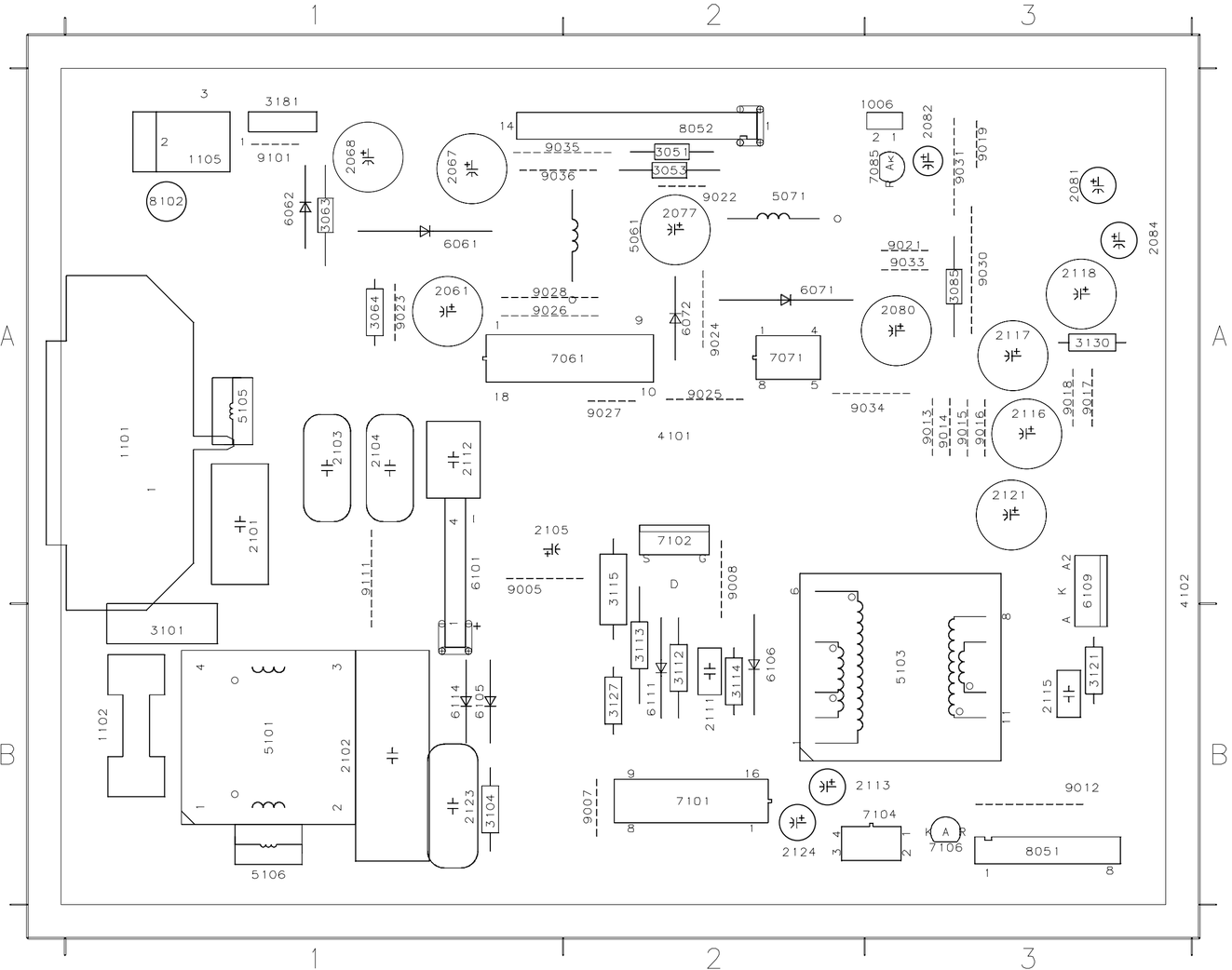
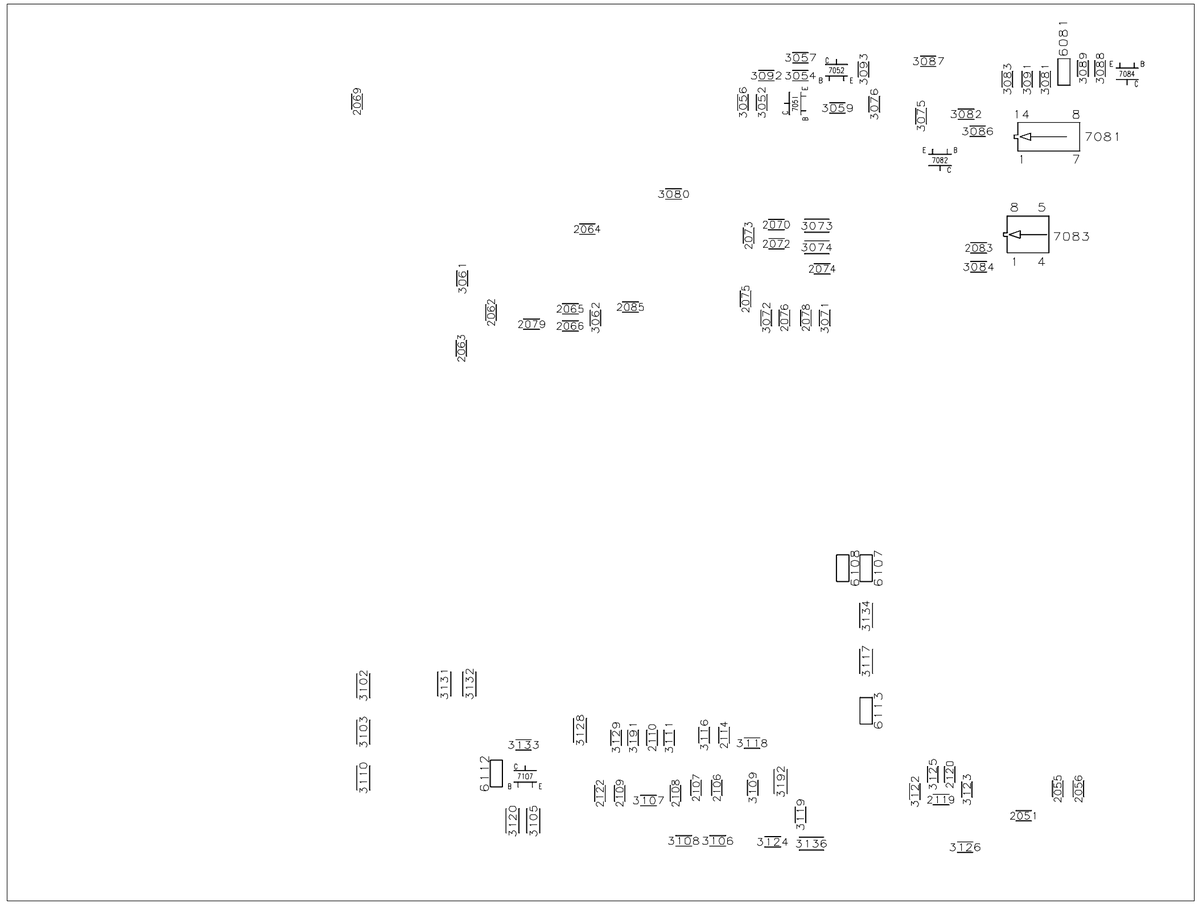
Power Board C.B.A.





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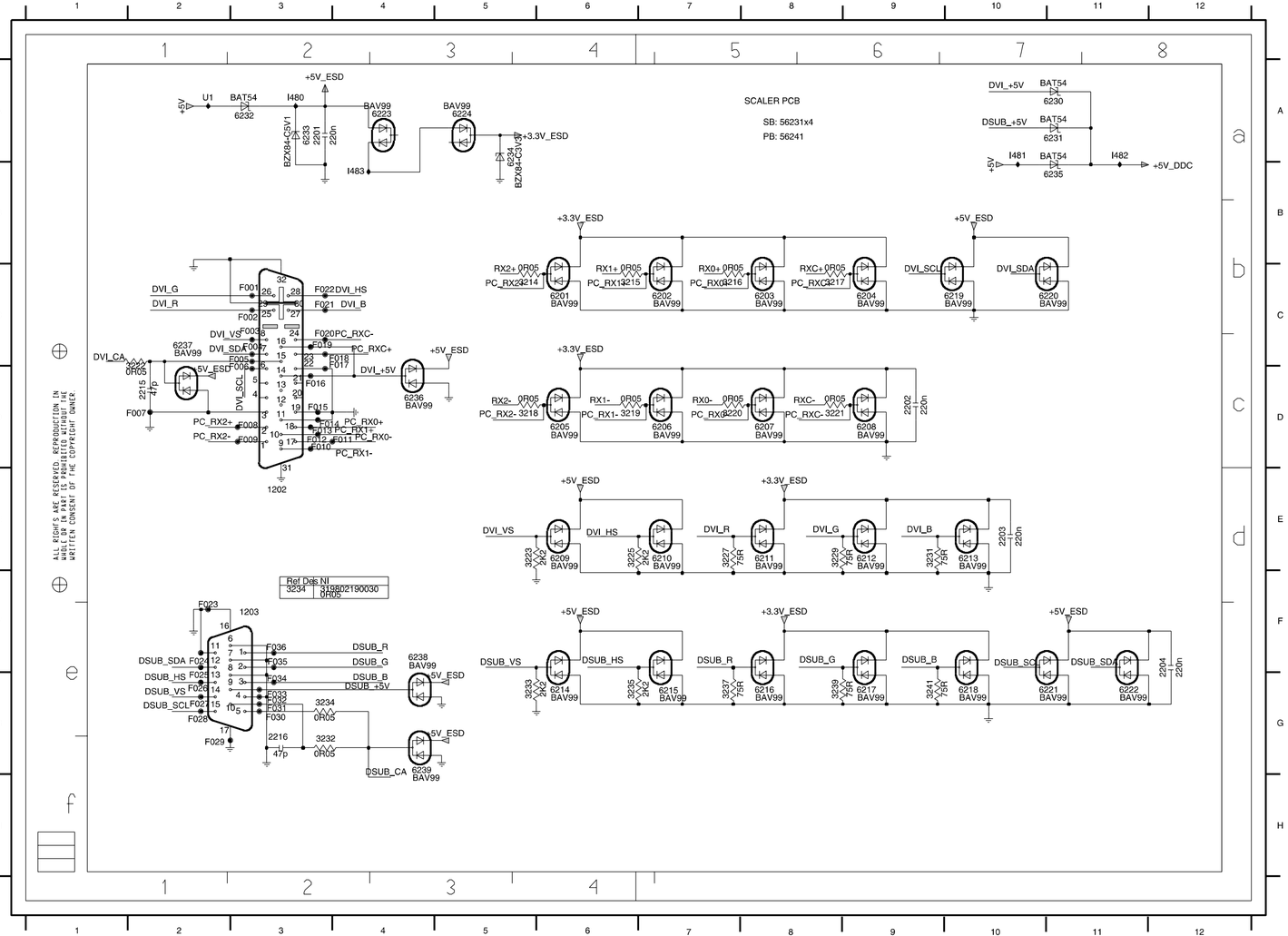
Schematic diagram(Video - Input)



Ref Des	NI
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U1 A2
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1203 F3
2201 A3
2202 D9
2203 E1
2204 F1
2215 D2
2216 G3
3214 C5
3215 C6
3216 C7
3217 C8
3218 D5
3219 D6
3220 D7
3221 D8
3222 D2
3223 E5
3225 E6
3227 E7
3229 E8
3231 E9
3232 G3
3233 G5
3234 G3
3235 G6
3237 G7
3239 G8
3241 G8
6201 C6
6202 C7
6203 C8
6204 C9
6205 D6
6206 D7
6207 D8
6208 D9
6209 E6
6210 E7
6211 E8
6212 E9
6213 E1
6214 G6
6215 G7
6216 G8
6217 G8
6218 G1
6219 C9
6220 C1
6221 G1
6222 G1
6223 A4
6224 A5
6230 A1
6231 A1
6232 A3
6233 A3
6234 A5
6235 B1
6236 D4
6237 D2
6238 F4
6239 G4
F001 C3
F002 C3
F003 C3
F004 C3
F005 C3
F006 C3
F007 D2
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F009 D3
F010 D3
F011 D4
F012 D3
F013 D3
F014 D3
F015 D3
F016 D3
F017 C4
F018 C4
F019 C3
F020 C3
F021 C3
F022 C3
F023 F2
F024 F2
F025 F2
F026 G2
F027 G2
F028 G2
F029 G2
F030 G3
F031 G3
F032 G3
F033 G3
F034 G3
F035 F3
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I482 A1
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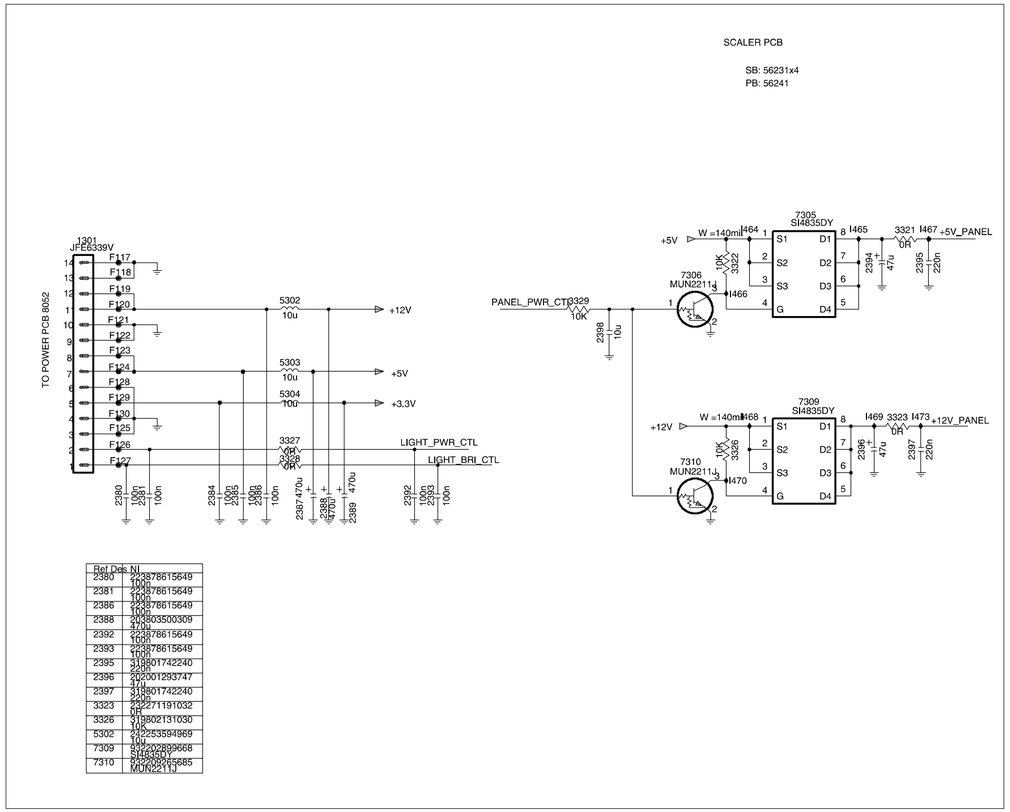
Schematic diagram(DC_Powers)



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2392	223878615649 100n
2393	223878615649 100n
2395	319801742240 220n
2396	202001293747 47u
2397	319801742240 220n
3323	252271191032 0R
3326	319802131030 0R
5302	222253594969 10u
7309	512202889668 SI4835DY
7310	512202895685 MUN2211J

1301 C2
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2381 E2
2384 E3
2385 E3
2386 E4
2387 F4
2388 F4
2389 F4
2392 E5
2393 E5
2394 C9
2395 C10
2396 E9
2397 E10
2398 D7
3321 C9
3322 C8
3323 E9
3326 E8
3327 E4
3328 E4
3329 D7
5302 D4
5303 D4
5304 E4
7305 C8
7306 C7
7309 E9
7310 E7
F117 C2
F118 C2
F119 D2
F120 D2
F121 D2
F122 D2
F123 D2
F124 D2
F125 E2
F126 E2
F127 E2
F128 D2
F129 E2
F130 E2
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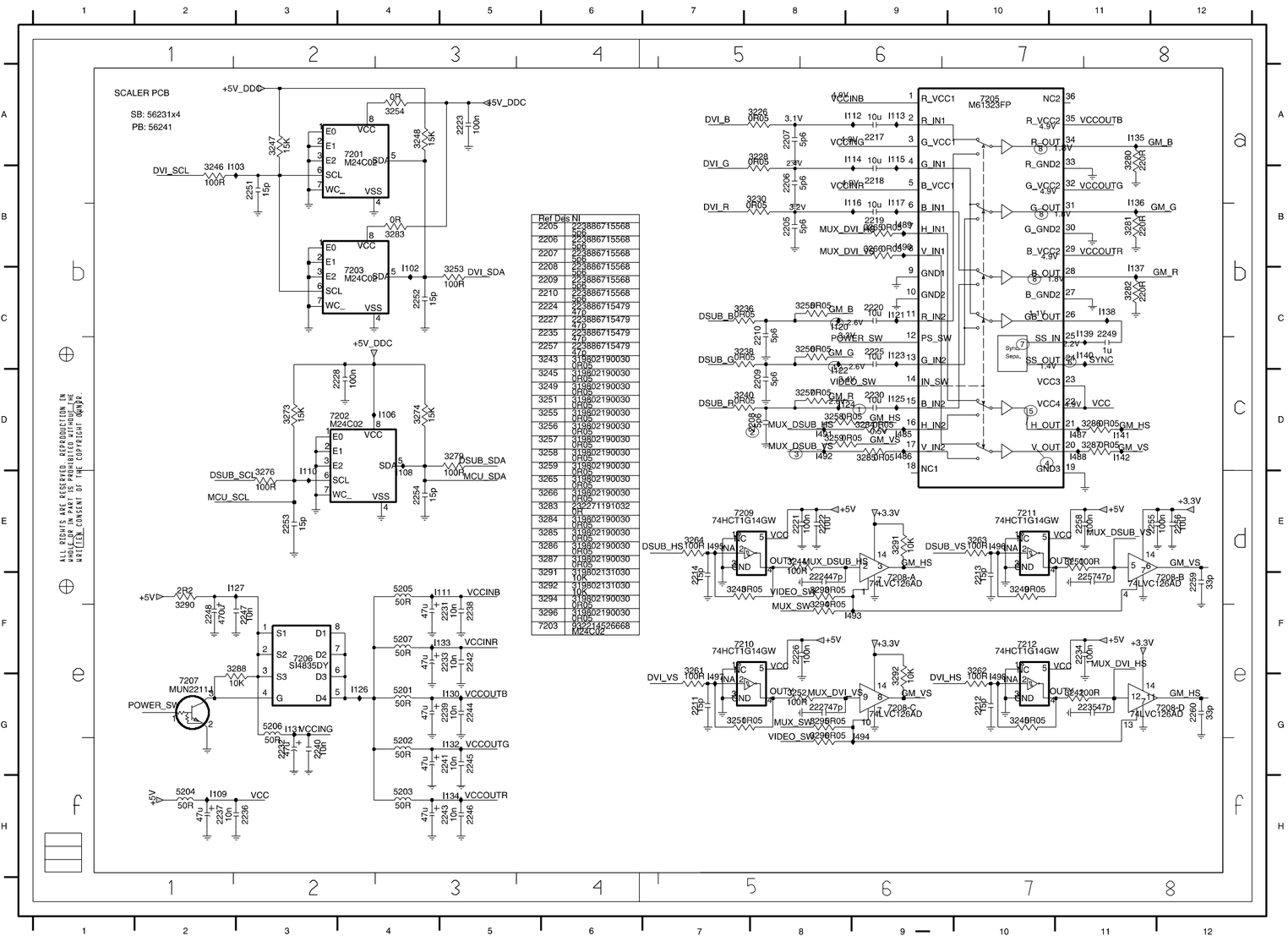
Schematic diagram(Video &SW - DDC)



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2218 B9
2219 B9
2220 C9
2221 E8
2222 E8
2223 A5
2224 F8
2225 C9
2226 F8
2227 G8
2228 D4
2230 D9
2231 F5
2232 G3
2233 F5
2234 F11
2235 G11
2236 H3
2237 H2
2238 F5
2239 G5
2240 G3
2241 G5
2242 F5
2243 H5
2244 G5
2245 G5
2246 H5
2247 F3
2248 F2
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2251 B3
2252 C4
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2254 E4
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2256 E12
2257 F11
2258 E11
2259 F12
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3238 C7
3240 D7
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3247 A3
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3285 D9
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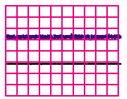
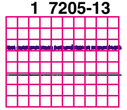
1 7205-11



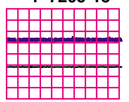
1 V/div AC
5 mS/div

1 7205-13



1 V/div AC
5 mS/div

1 7205-15



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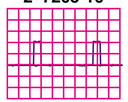
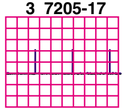
5 mS/div

2 7205-16



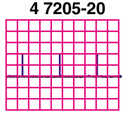
2 V/div AC
5 uS/div

3 7205-17



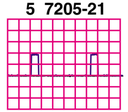
2 V/div AC
5 mS/div

4 7205-20



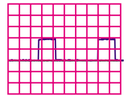
2 V/div AC
5 mS/div

5 7205-21



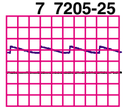
2 V/div AC
5 uS/div

6 7205-24



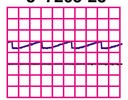
2 V/div AC
5 uS/div

7 7205-25



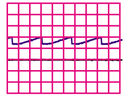
1 V/div AC
10 uS/div

8 7205-28



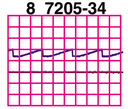
1 V/div AC
10 uS/div

8 7205-31



1 V/div AC
10 uS/div

8 7205-34



1 V/div AC
10 uS/div

Schematic diagram(Scaler)

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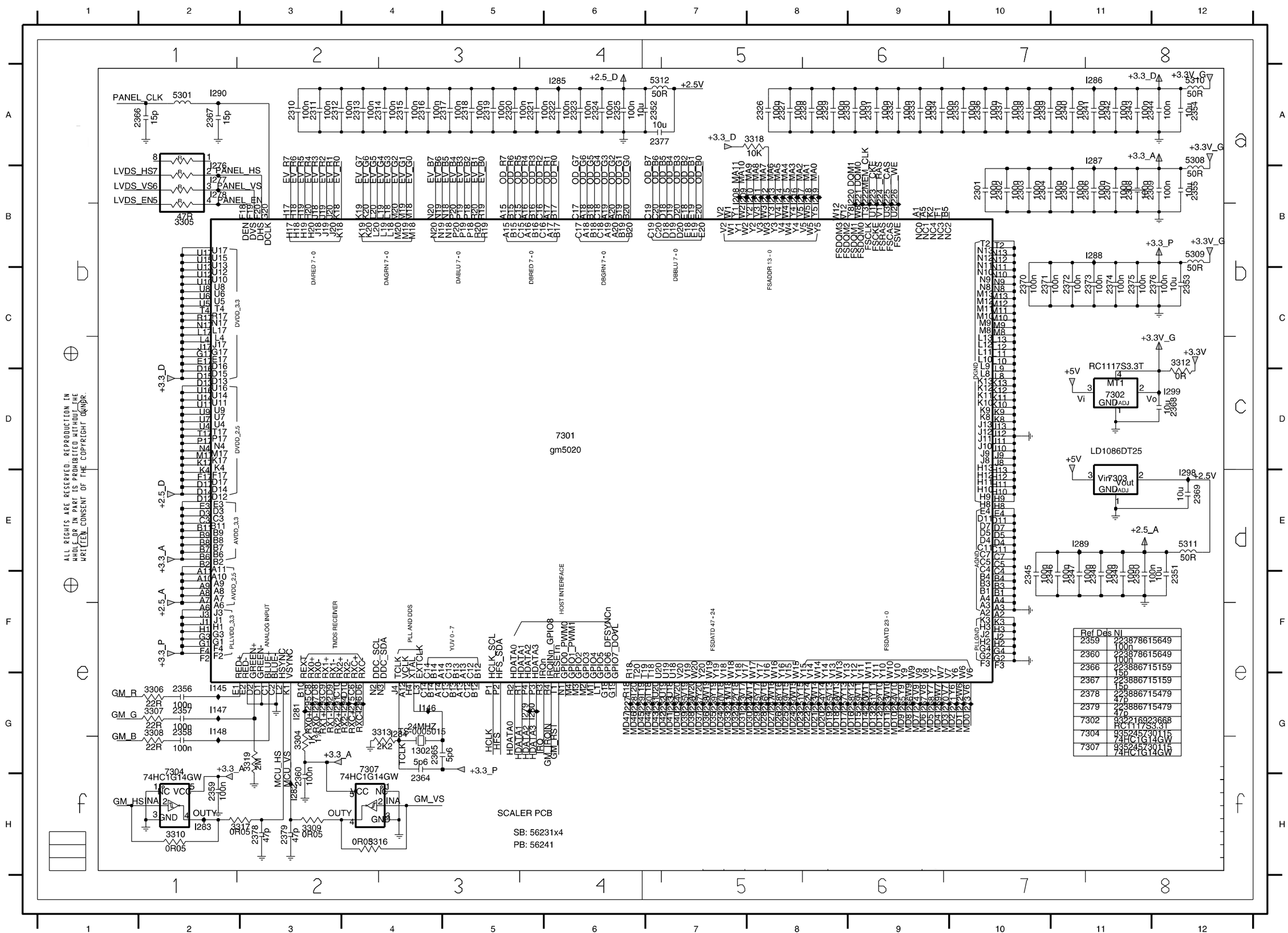

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2367	223886715159 15p
2378	223886715479 47p
2379	223886715479 47p
7302	932216923668 RC1117S3.3T
7304	935245730115 74HC1G14GW
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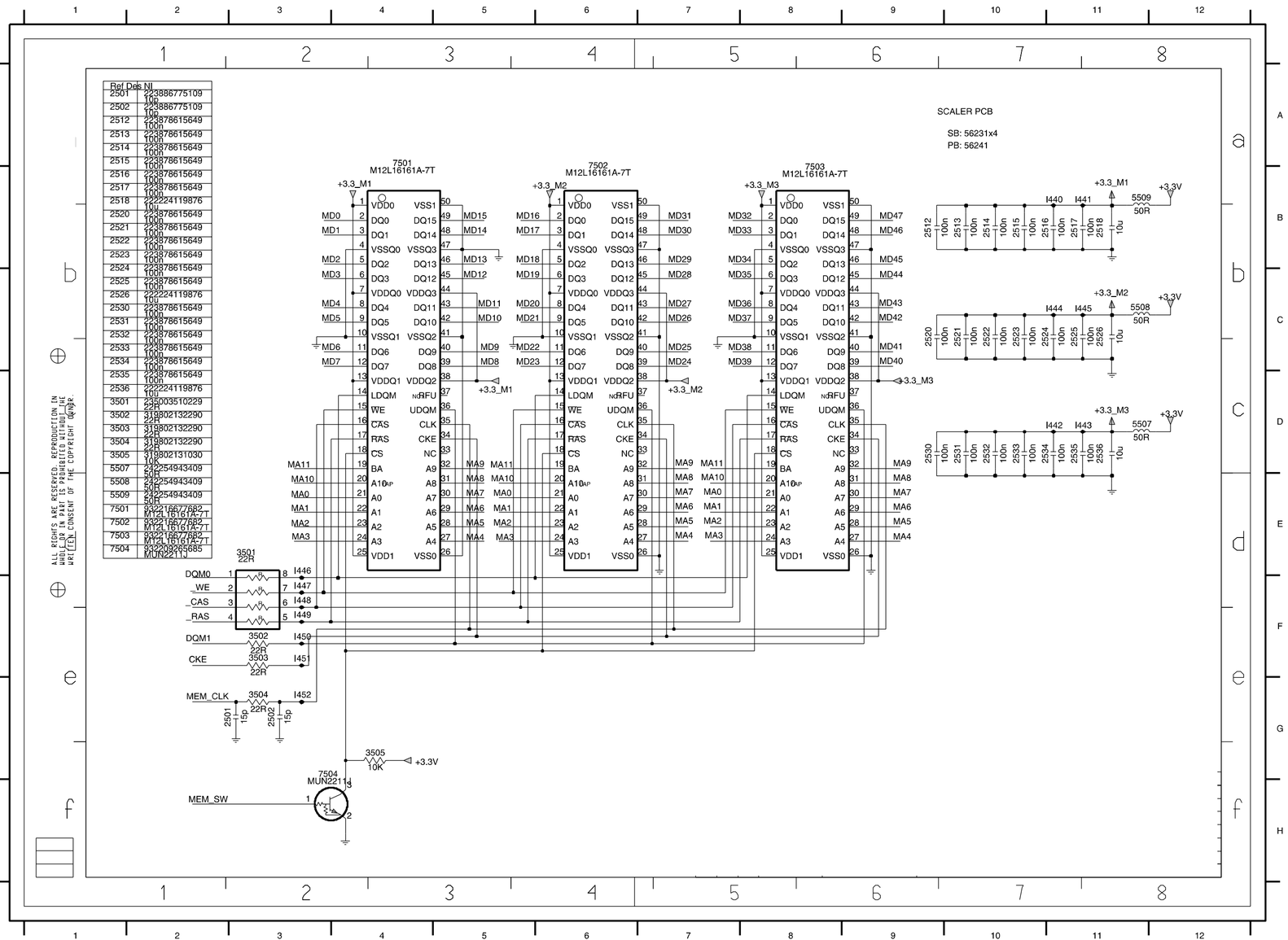
Schematic diagram(Frame_Beffer)



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2514	223878615649 100n
2515	223878615649 100n
2516	223878615649 100n
2517	223878615649 100n
2518	222224119876 10u
2520	223878615649 100n
2521	223878615649 100n
2522	223878615649 100n
2523	223878615649 100n
2524	223878615649 100n
2525	223878615649 100n
2526	222224119876 10u
2530	223878615649 100n
2531	223878615649 100n
2532	223878615649 100n
2533	223878615649 100n
2534	223878615649 100n
2535	223878615649 100n
2536	222224119876 10u
3501	235003510229 22R
3502	319802132290 22R
3503	319802132290 22R
3504	319802132290 22R
3505	319802131030 10K
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5508	232254943409 50R
5509	232254943409 50R
7501	932216677682 M12L16161A-7T
7502	932216677682 M12L16161A-7T
7503	932216677682 M12L16161A-7T
7504	932209269685 MUN2211J

2501 G2
2502 G3
2512 B9
2513 B10
2514 B10
2515 B10
2516 B10
2517 B11
2518 B11
2520 C9
2521 C10
2522 C10
2523 C10
2524 C10
2525 C11
2526 C11
2530 D9
2531 D10
2532 D10
2533 D10
2534 D10
2535 D11
2536 D11
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3504 G3
3505 G4
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5509 B11
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7503 B8
7504 G3
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I441 B11
I442 D10
I443 D11
I444 C10
I445 C11
I446 E3
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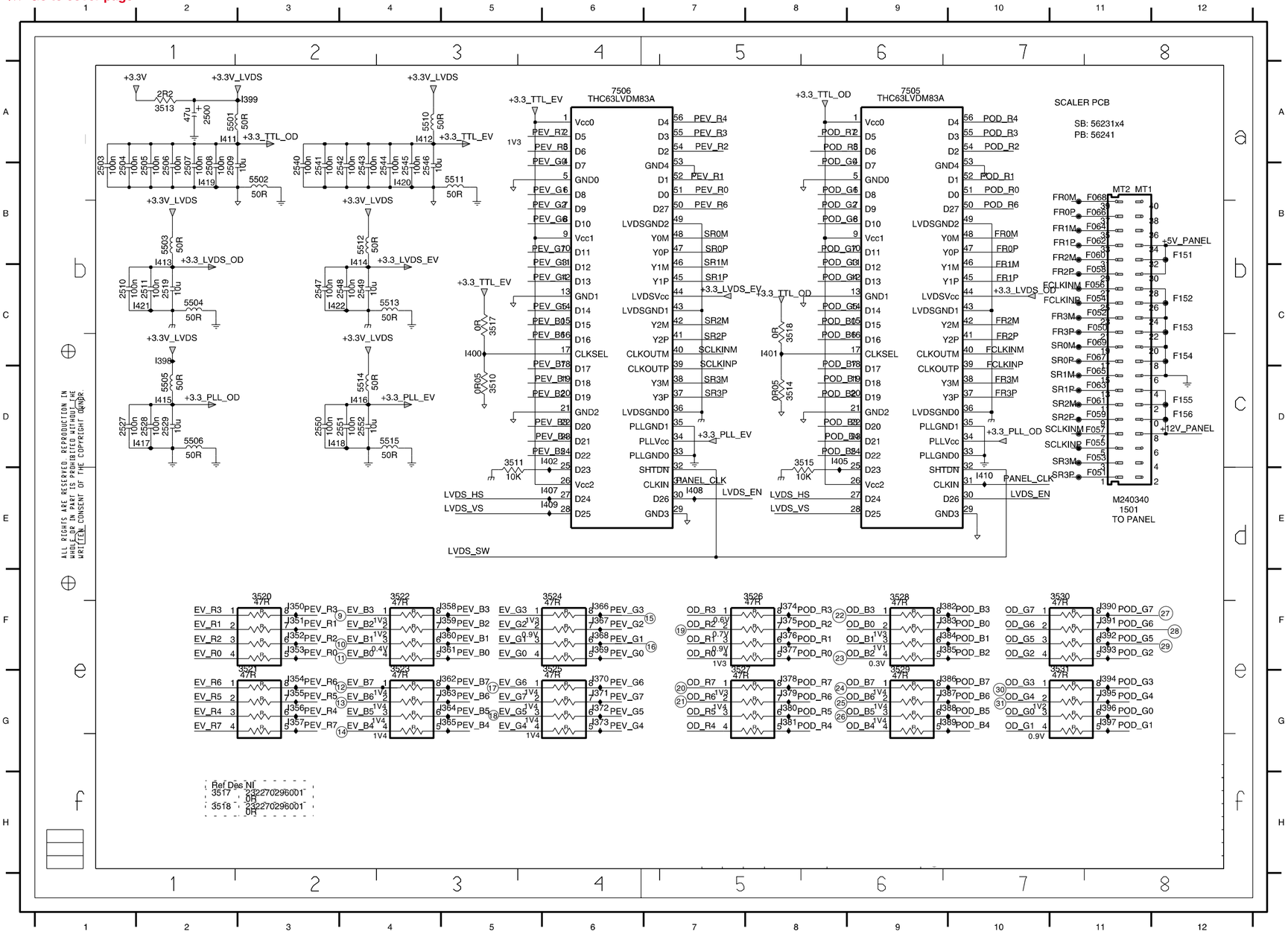
I451 F3
I452 G3

Schematic diagram(LVDS)

Go to cover page



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2504 B1 I370 G6
2505 B2 I371 G6
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2507 B2 I373 G6
2508 B2 I374 F8
2509 B2 I375 F8
2510 C1 I376 F8
2511 C2 I377 F8
2519 C2 I378 G8
2527 D1 I379 G8
2528 D2 I380 G8
2529 D2 I381 G8
2540 B3 I382 F9
2541 B3 I383 F9
2542 B4 I384 F9
2543 B4 I385 F9
2544 B4 I386 G9
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2547 C3 I389 G9
2548 C4 I390 F11
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2550 D3 I392 F11
2551 D4 I393 F11
2552 D4 I394 G11
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3511 D5 I396 G11
3513 A2 I397 G11
3514 D8 I398 C2
3515 D8 I399 A3
3517 C5 I400 C5
3518 C8 I401 C8
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3524 F6 I409 E6
3525 G6 I410 E10
3526 F8 I411 A2
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3529 G9 I414 B4
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F057 D11
F058 C11
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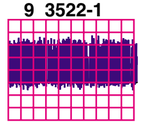
9 3522-1

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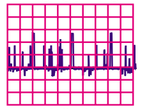
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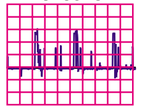
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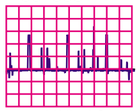
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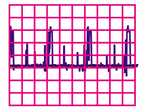
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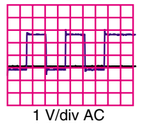
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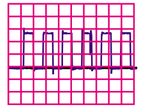
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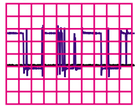
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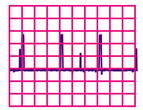
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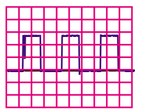
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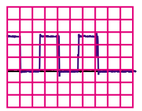
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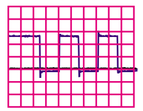
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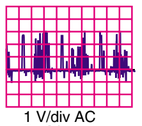
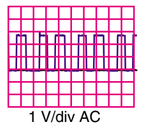
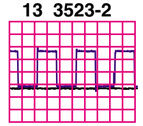
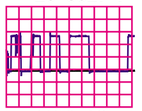
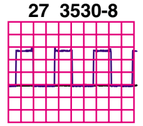

1 V/div AC
5 uS/div

26 3529-3

1 V/div AC
5 uS/div

13 3523-2

1 V/div AC
1 uS/div

20 3527-1

1 V/div AC
1 uS/div

27 3530-8

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5 uS/div

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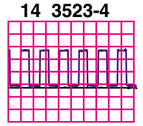
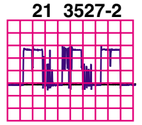
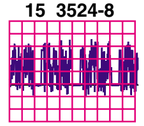

1 V/div AC
10 uS/div

21 3527-2

1 V/div AC
1 uS/div

28 3530-7

1 V/div AC
5 uS/div

15 3524-8

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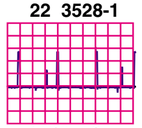
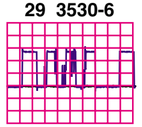
5 uS/div

22 3528-1

1 V/div AC
5 uS/div

29 3530-6

1 V/div AC
2 uS/div

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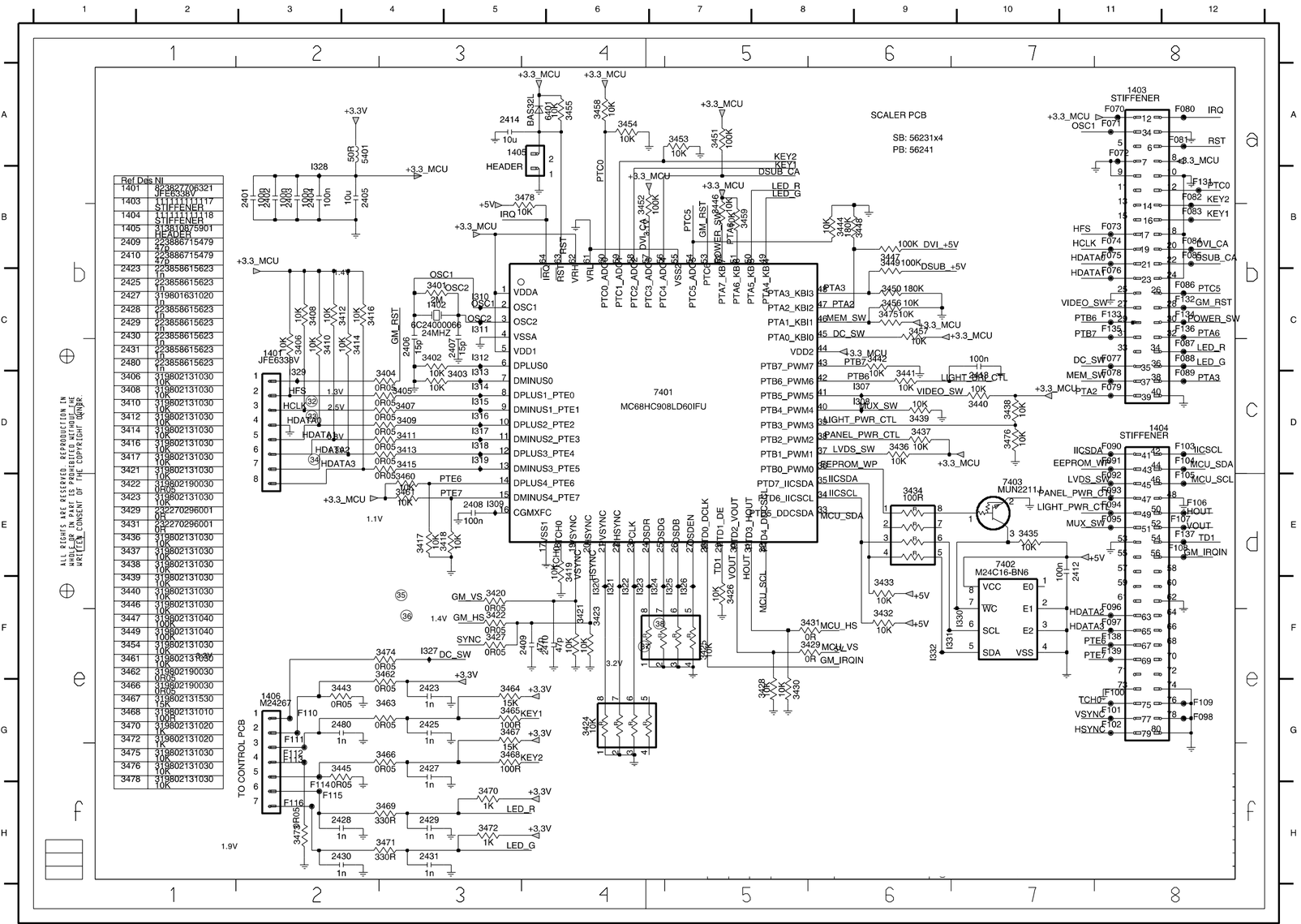
Schematic diagram(MCU)



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1405	319810875901 HEADER
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2410	223886715479 47p
2423	223858615623 1n
2425	223858615623 1n
2427	319801631020 1n
2428	223858615623 1n
2429	223858615623 1n
2430	223858615623 1n
2431	223858615623 1n
2480	223858615623 1n
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3412	319802131030 10K
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3421	319802131030 10K
3422	319802190030 0R05
3423	319802131030 10K
3429	232270296001 0R
3431	232270296001 0R
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3454	319802131030 10K
3461	319802131530 15K
3462	319802190030 0R05
3466	319802190030 0R05
3467	319802131530 15K
3468	319802131010 100R
3470	319802131020 1K
3472	319802131020 1K
3475	319802131030 10K
3476	319802131030 10K
3478	319802131030 10K

1401 C3	5401 A4
1402 C4	6401 A5
1403 A11	7401 D7
1404 D12	7402 E10
1405 A5	7403 E10
1406 G3	F070 A11
2401 B3	F071 A11
2402 B3	F072 A11
2403 B3	F073 B11
2404 B3	F074 B11
2405 B4	F075 B11
2406 C4	F076 C11
2407 C5	F077 C11
2408 E5	F078 D11
2409 F5	F079 D11
2410 F6	F080 A12
2412 E11	F081 A12
2413 D10	F082 B12
2414 A5	F083 B12
2423 G4	F084 B12
2425 G4	F085 B12
2427 G4	F086 C12
2428 H3	F087 C12
2429 H4	F088 C12
2430 H3	F089 D12
2431 H4	F090 D11
2480 G3	F091 D11
3401 C4	F092 E11
3402 C4	F093 E11
3403 D5	F094 E11
3404 D4	F095 E11
3405 D4	F096 F11
3406 C3	F097 F11
3407 D4	F098 G12
3408 C3	F100 G11
3409 D4	F101 G11
3410 C3	F102 G11
3411 D4	F103 D12
3412 C3	F104 D12
3413 D4	F105 E12
3414 C4	F106 E12
3415 D4	F107 E12
3416 C4	F108 E12
3417 E4	F109 G12
3418 E5	F110 G3
3419 E6	F111 G3
3420 F5	F112 G3
3421 F6	F113 G3
3422 F5	F114 G3
3423 F6	F115 H3
3424 G6	F116 H3
3425 F7	F131 B12
3426 F7	F132 C12
3427 F5	F133 C11
3428 G8	F134 C12
3429 F8	F135 C11
3430 G8	F136 C12
3431 F8	F137 E12
3432 F9	F138 F11
3433 F9	F139 F11
3434 E9	I307 D9
3435 E10	I308 D9
3436 D9	I309 E5
3437 D9	I310 C5
3438 D10	I311 C5
3439 D9	I312 C5
3440 D10	I313 D5
3441 D9	I314 D5
3442 C9	I315 D5
3443 G3	I316 D5
3444 B8	I317 D5
3445 G3	I318 D5
3446 B7	I319 D5
3447 B9	I320 F6
3448 B9	I321 F6
3449 B9	I322 F6
3450 C9	I323 F6
3451 A7	I324 F7
3452 B6	I325 F7
3453 A7	I326 F7
3454 A6	I327 F4
3455 A6	I328 B3
3456 C9	I329 D3
3457 C9	I330 F10
3458 A6	I331 F9
3459 B7	I332 F9
3460 E4	
3461 E4	
3462 F4	
3463 G4	
3464 G5	
3465 G5	
3466 G4	
3467 G5	
3468 G5	
3469 H4	
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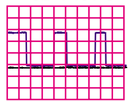
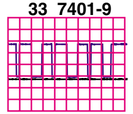
3476 D10	
3478 B5	

32 7401-8



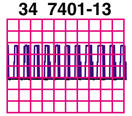
1 V/div AC
20 uS/div

33 7401-9



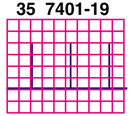
1 V/div AC
5 uS/div

34 7401-13



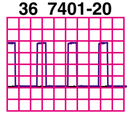
1 V/div AC
0.5 mS/div

35 7401-19



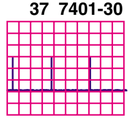
1 V/div AC
5 mS/div

36 7401-20



1 V/div AC
10 uS/div

37 7401-30



1 V/div AC
5 mS/div

38 7401-31

1 V/div AC
10 uS/div

Schematic PWB(Copper track side view)

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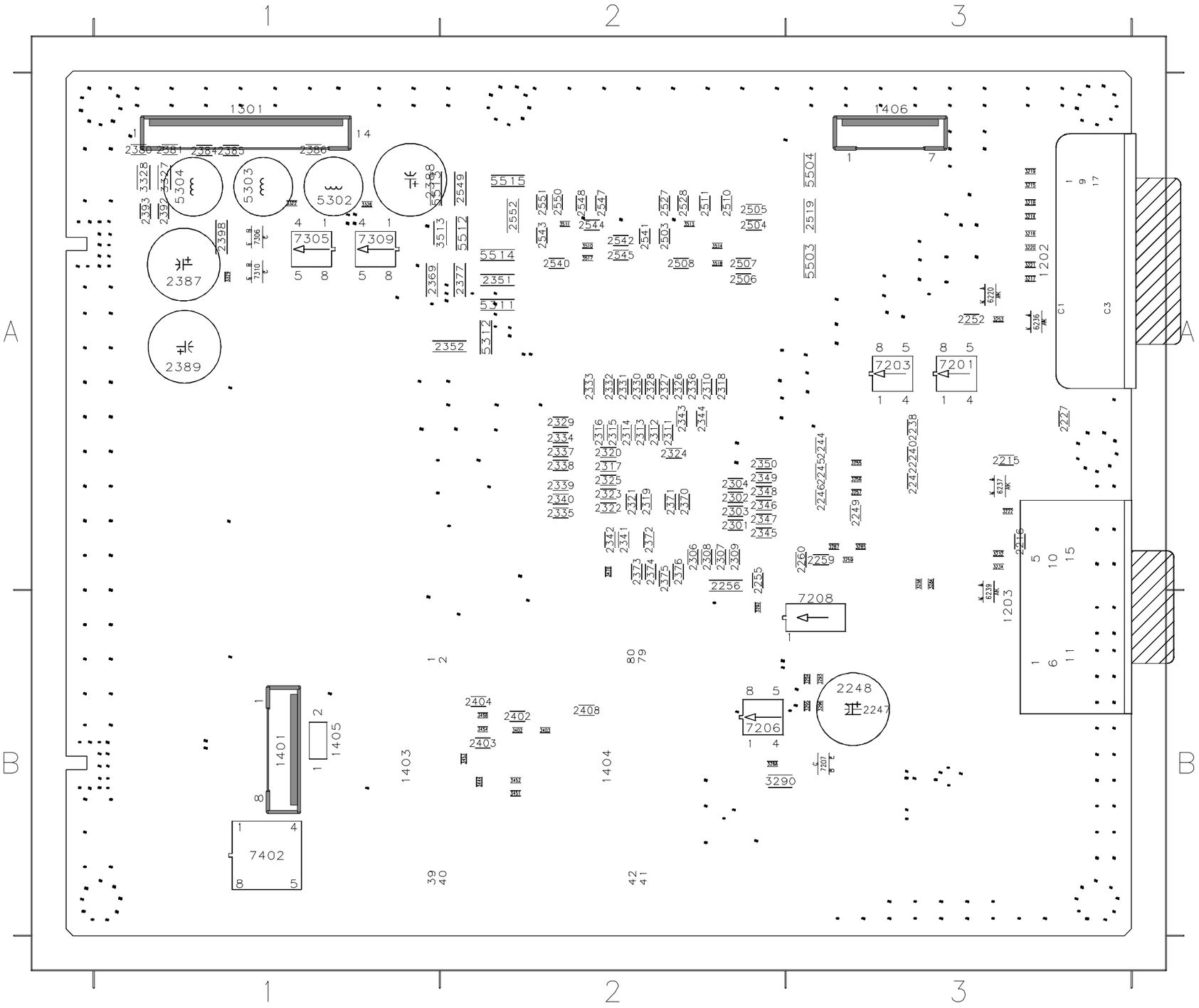

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1202	A3		B
1203	B3		B
1301	A1		B
1401	B1		B
1403	B1		B
1404	B2		B
1405	B1		B
1406	A3		B
2248	B3		B
2387	A1		B
2388	A1		B
2389	A1		B
5302	A1		B
5303	A1		B
5304	A1		B
7402	B1		B

# REF	GRID	BOARD LABEL	SIDE
2215	A3		A
2216	A3		A
2227	A3		A
2238	A3		A
2240	A3		A
2242	A3		A
2244	A3		A
2245	A3		A
2246	A3		A
2247	B3		A
2249	A3		A
2252	A3		A
2255	A2		A
2256	A2		A
2259	A3		A
2260	A3		A
2301	A2		A
2302	A2		A
2303	A2		A
2304	A2		A
2306	A2		A
2307	A2		A
2308	A2		A
2309	A2		A
2310	A2		A
2311	A2		A
2312	A2		A
2313	A2		A
2314	A2		A
2315	A2		A
2316	A2		A
2317	A2		A
2318	A2		A
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2320	A2		A
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2322	A2		A
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2325	A2		A
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2371	A2		A
2372	A2		A
2373	A2		A

# REF	GRID	BOARD LABEL	SIDE
2374	A2		A
2375	A2		A
2376	A2		A
2377	A2		A
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2381	A1		A
2384	A1		A
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3328	A1		A
3329	A1		A
3402	B2		A
3403	B2		A
3444	B2		A
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3452	B2		A

# REF	GRID	BOARD LABEL	SIDE
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3454	B2		A
3458	B2		A
3478	A2		A
3510	A2		A
3511	A2		A
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3514	A2		A
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7203	A3		A
7206	B2		A
7207	B3		A
7208	B3		A
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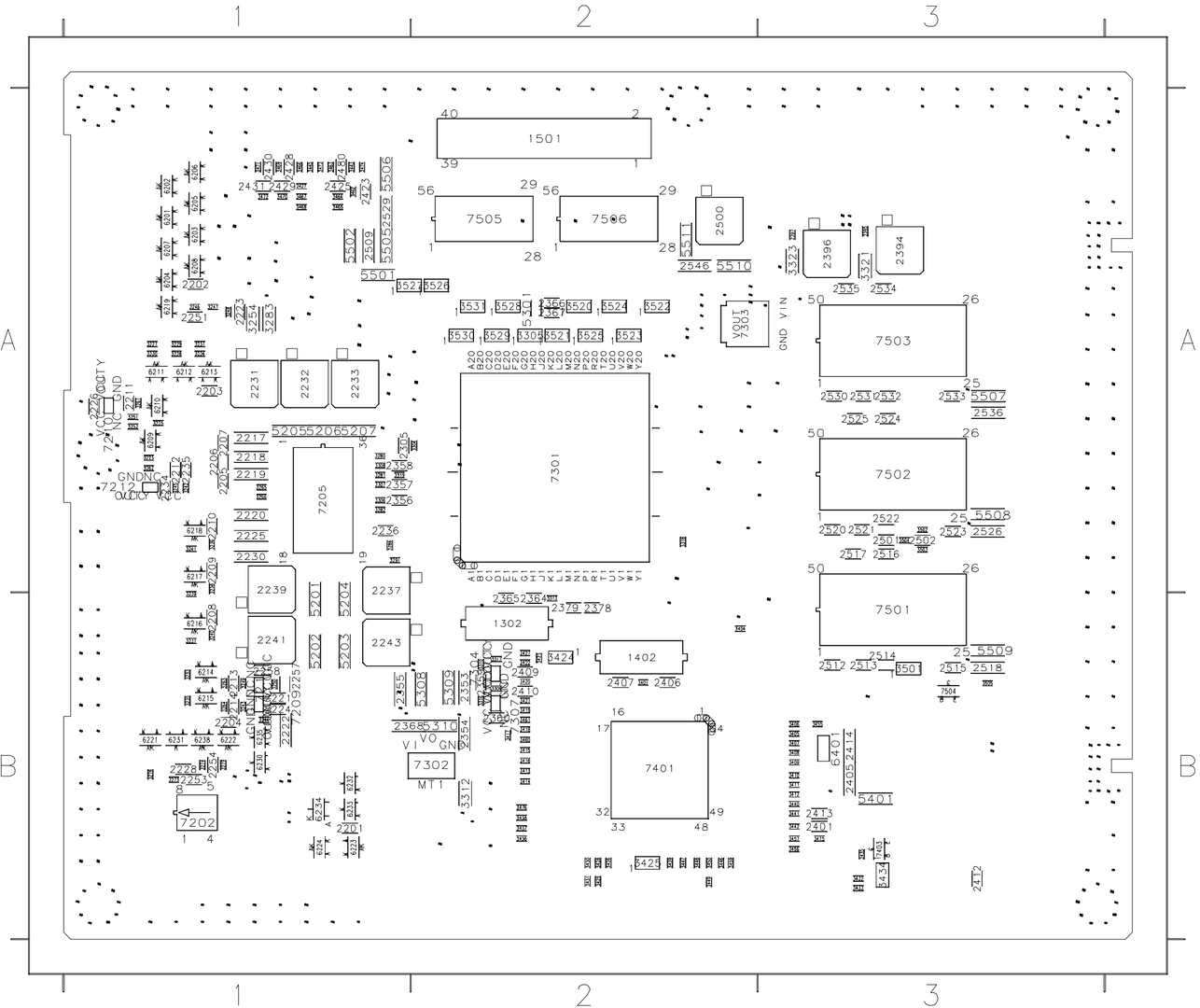
7310	A1		A

Schematic PWB(Components side view)




```
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1402 B2  B
1501 A2  B
2201 B1  B
2202 A1  B
2203 A1  B
2204 B1  B
2205 A1  B
2206 A1  B
2207 A1  B
2208 B1  B
2209 A1  B
2210 A1  B
2211 A1  B
2212 A1  B
2213 B1  B
2214 B1  B
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2218 A1  B
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2220 A1  B
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2222 B1  B
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3466 A1  B
3467 A1  B
3468 A1  B
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3527 A1  B
3528 A2  B
3529 A2  B
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7304 B2  B
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7506 A2  B
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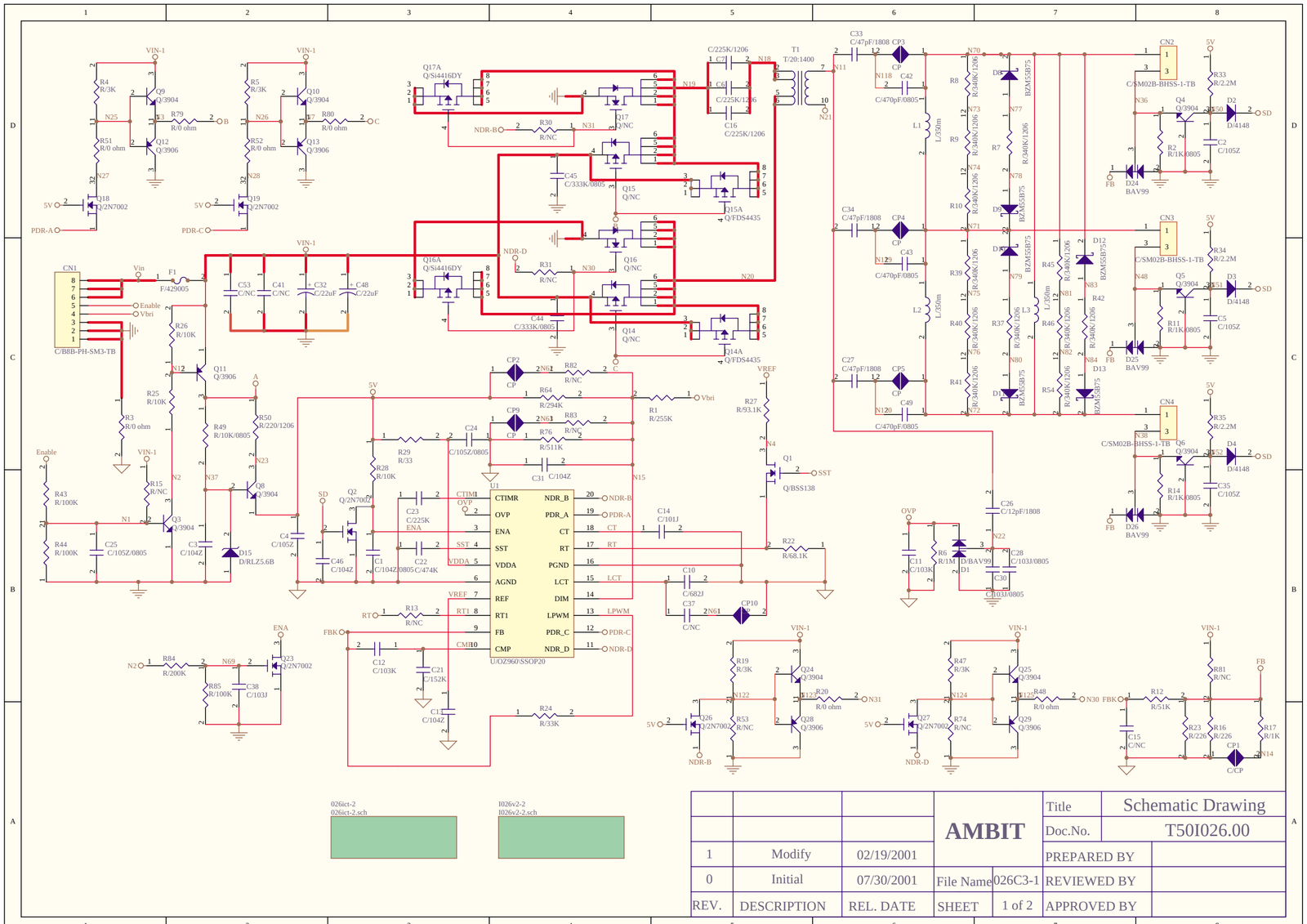
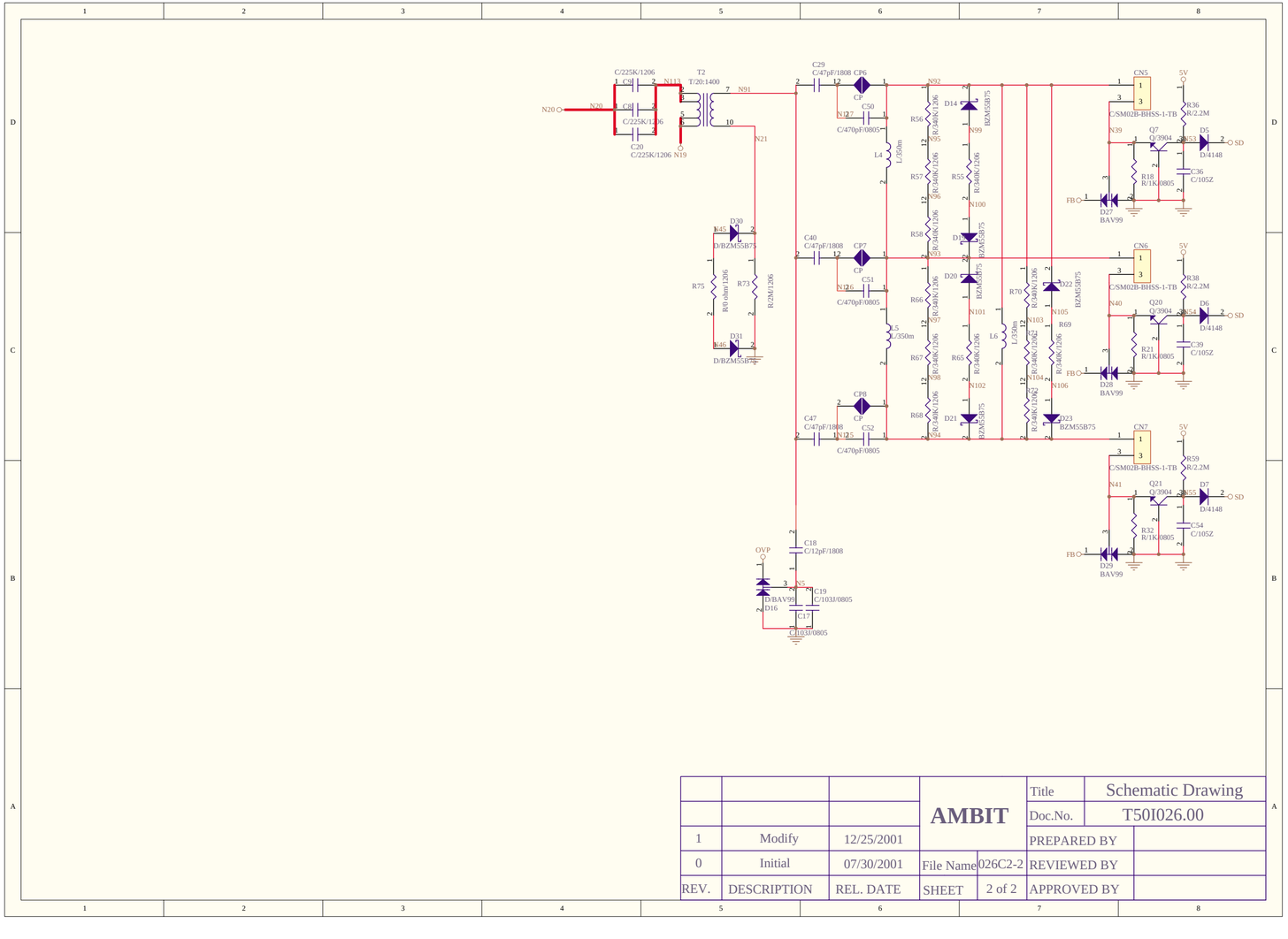
Inverter Diagram(AMBIT)



T50I0I026.00 BOM LIST

	Ambit's P/N	Description
1. 1	90.0007.01	CARTON 560*460*216 mm
2. 1	91.0229.03	TRAY-229b T50I026.00
3. 1	T50I026D00	INVERTER LCD 18" FOR POGOII LG@
4. .2	09.0142.01	CAP OS 20SP22M (SANYO)
5. .2	11.2041.14	CAP DISC CC45SL3FD470JYPN(TDK)@
6. .2	11.2029.14	CAP DISC CC45SL3FD120JYPN(TDK)@
7. .2	T50I026S00	INVERTER LCD 18" FOR POGOII LG@
8. ..3	08.0000.04	CAP C 101J/50V/NPO/0603 @
9. ..3	08.0003.03	CAP C 103J/50V/X7R/0603 @
10.	..308.0003.01	CAP C 103J/50V/X7R/0805
11.	..308.0100.01	CAP C 103K/50V/X7R/0603 @
12.	..308.0022.02	CAP C 104Z/25V/Y5V/0603 @
13.	..308.0032.01	CAP C 104Z/25V/Y5V/0805
14.	..308.0183.01	CAP C 105Z/10V/Y5V/0603 @
15.	..308.0020.04	CAP C 105Z/16V/Y5V/0805 @
16.	..308.0355.01	CAP C 152K/50V/X7R/0603 @
17.	..308.0557.14	CAP C 225K/25V/X7R/1206(TDK) @
18.	..308.0027.01	CAP C 333K/50V/X7R/0805 @
19.	..308.0674.21	CAP C 471K/250V/X7R/0805 (HEC)@
20.	..308.0778.01	CAP C 105K/6.3V/X5R/0603 @
21.	..326.0534.01	CONN B8B-PH-SM3-TB (JST)
22.	..326.0246.01	CONN SM02B-BHSS-1 (JST)
23.	..306.1007.01	DIO SW LS4148 LL-34(TELEFUNKEN
24.	..306.1003.01	DIO SW BAV99 SOT23 A7,A7P,JE @
25.	..306.1003.02	DIO SW DAN217 SOT23 (ROHM)
26.	..306.1752.29	DIO ZEN BZM55B75-TR(TELEFUNKEN@
27.	..306.1528.02	DIO ZEN RLZ5.6B/TE-11 (ROHM)
28.	..326.7021.01	FUSE 429005 5A (LITTEL) @
29.	..316.0490.01	IND SPC-1005P-354 SMD (TMP)
30.	..306.0602.01	NFET 2N7002(E)(LT1) SOT23 @
31.	..306.0038.01	TR NPN MMBT3904LT1 SOT23(MOTO)
32.	..306.0015.01	TR NPN PMBS3904 SOT23(PHILIPS)
33.	..306.0631.01	NFET BSS138 SOT23 (ZETEX) @
34.	..306.0039.01	TR PNP MMBT3906LT1 SOT23(MOTO)
35.	..306.0016.01	TR PNP PMBS3906 SOT23(PHILIPS)
36.	..306.6003.06	NFET Si4416DY SO8 (SILICONIX) @
37.	..306.2015.17	PFET FDS4435 SO8 (FAIRCHILD)
38.	..306.2131.17	PFET Si4435DY SO8 FAIRCHILD @
39.	..306.2015.01	PFET Si4435DYA SO8 (SILICONIX)@
40.	..313.0005.03	RES C 0 ohm/0603/5%
41.	..313.0005.02	RES C 0 ohm /1206/5%
42.	..314.0011.03	RES C 100K ohm/0603/1%
43.	..313.0032.02	RES C 10K ohm/0603/5%
44.	..313.0032.01	RES C 10K ohm/0805/5%
45.	..313.0271.01	RES C 2M ohm/1206/5%
46.	..314.0365.01	RES C 1K ohm/0805/1%
47.	..314.0012.03	RES C 1M ohm/0603/1%
48.	..314.0125.02	RES C 93.1K ohm/0603/1%
49.	..313.0088.02	RES C 2.2M ohm/0603/5%
50.	..314.1022.01	RES C 226 ohm/0603/1%
51.	..313.0092.01	RES C 200K ohm/0603/5%
52.	..313.0299.01	RES C 220 ohm/1206/5%
53.	..314.0751.01	RES C 255K ohm/0603/1%
54.	..314.0223.01	RES C 3K ohm/0603/1%
55.	..314.0403.01	RES C 33 ohm/0603/1%
56.	..314.1105.01	RES C 33K ohm/0603/1% @
57.	..314.0557.01	RES C 340K ohm/1206/1%
58.	..314.0824.01	RES C 511K ohm/0603/1%
59.	..314.0852.01	RES C 51K ohm/0603/1%
60.	..314.1024.01	RES C 294K ohm/0603/1% @
61.	..314.0283.01	RES C 68.1K ohm/0603/1%
62.	..304.3040.02	IC OZ960DS-1.0 +-4% SSOP20(O2)
63.	..308.0506.01	CAP C 682J/50V/X7R/0603 @
64.	..313.0199.01	RES C 2K ohm/0603/5%
65.	..308.0365.01	CAP C 474K/10V/X7R/0603 @
66.	..322.0528.39	XFMR*XT-1955-12508 A(XTREME)
67.	..364.0004.02	SOLDER PASTE SE48-M954-2(KOKI)
68.	..319.0949.01	PCB T50I026.00 REV:2 2L
69.	..392.0045.01	LABEL 20*10mm U13.010.C

Inverter Diagram(AMBIT)



	Description	Vendor	Part name	Parts	Pcs/Card
IC	IC OZ960DS 1.0 +-4% SSOP20	O2	OZ960DS	U1	1
Transistor	2N7002(E) 60V 115mA 7.5OHM	MOTO	2N7002(E)	Q18 Q19 Q2 Q23 Q26Q27	6
	MMBT3904LT1 SOT23 40V 200mA	MOTO	MMBT3904	Q10 Q20 Q21 Q24 Q25 Q3 Q4 Q5 Q6 Q7 Q8 Q9	12
	PMBS3904 SOT23 40V 200mA	PHILIPS	PMBS3904		
	MMBT3906LT1 SOT23 40V 200mA	MOTO	MMBT3906	Q11 Q12 Q13 Q28 Q29	5
	PMBS3906 SOT23 40V 200mA	PHILIPS	PMBS3906		
	BSS138 SOT23 50V 200mA 3.5ohm	ZETEX	BSS138	Q1	1
	Si4416DY SO8 30V/9A/0.018ohm	SILICONIX	Si4416DY	Q16A Q17A	2
	4435 SO8 30V	FAIRCHILD	4435	Q14A Q15A	2
		SILICONIX			
Fuse	FUSE 429005 5A 5A/24V/1206/FAST	LITTLE	429005	F1	1
Inductor	SPC-1005P-354 350mH K/1.4 Kohm	TMP	SPC-1005P-354	L1 L2 L3 L4 L5 L6	6
Capacitor	CAP OS 20SP22M 22uF/20V/6.3*5.0/105C	SANYO		C32 C48	2
	CAP CC45SL3FD470JYPN 47PF/3KV	TDK		C27 C29 C33 C34 C40 C47	6
	CAP CC45SL3FD120JYPN 12PF/3KV	TDK		C18 C26	2
	CAP C 101J/50V/NPO/0603	Murata		C14	1
		Phycomp			
		TDK			
		AVX			
		TaiYuden			
	CAP C 103J/50V/X7R/0603	Murata		C38	1
		Phycomp			
		TDK			
		AVX			
		TaiYuden			
	CAP C 103J/50V/X7R/0805	Murata		C17 C19 C28 C30	4
		Phycomp			
		TDK			
		AVX			
		TaiYuden			
	CAP C 103K/50V/X7R/0603	Murata		C11 C12	2
		Phycomp			
		TDK			
		AVX			
		TaiYuden			

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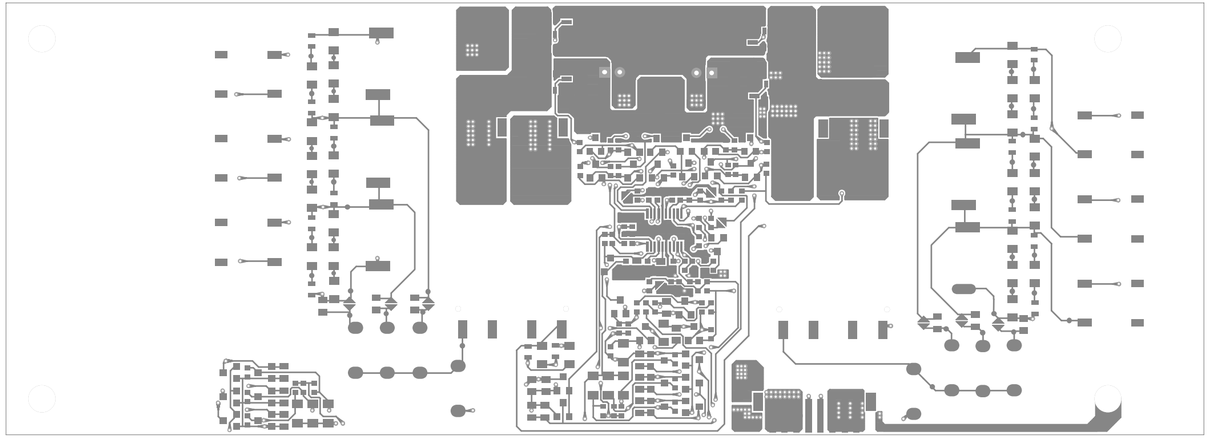
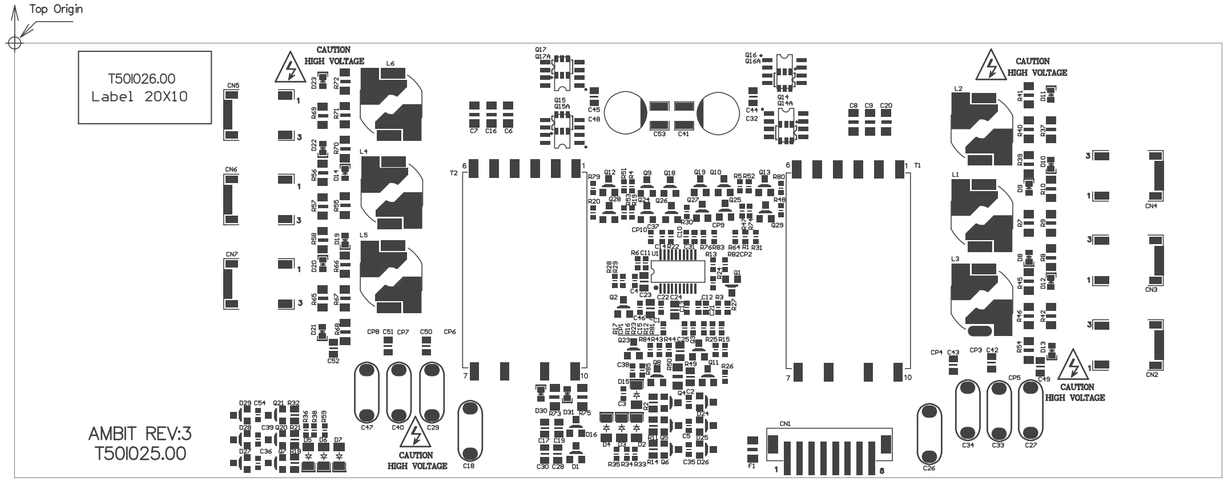
Inverter Diagram PWB(AMBIT)



AMBIT	FILM NUMBER	T50I025–00–2C1 –02	
SCALE 10MM	Mechanical Layer 1		
	P/N	19.XXXX.XX	
	Rev.	2	20–Dec–2001



AMBIT	FILM NUMBER	T50I025–00–23F –03	
SCALE 10MM	Mechanical Layer 1		
	P/N	19.0949.02	
	Rev.	3	19–Feb–2002

Inverter Diagram PWB(AMBIT)

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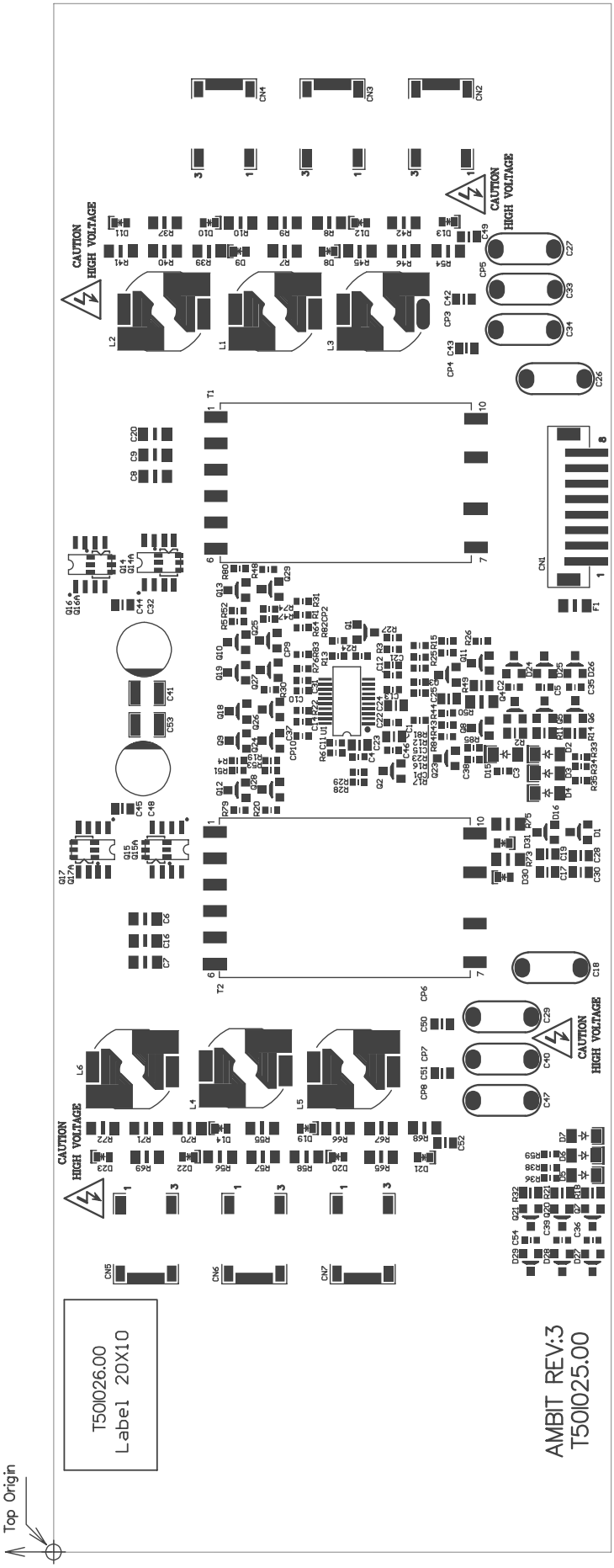

AMBIT	FILM NUMBER	T50I025-00-2SF -03
SCALE 10MM	Mechanical Layer 1	
	P/N	19.0949.02
	Rev.	3 19-Feb-2002

Schematic diagram(Control)

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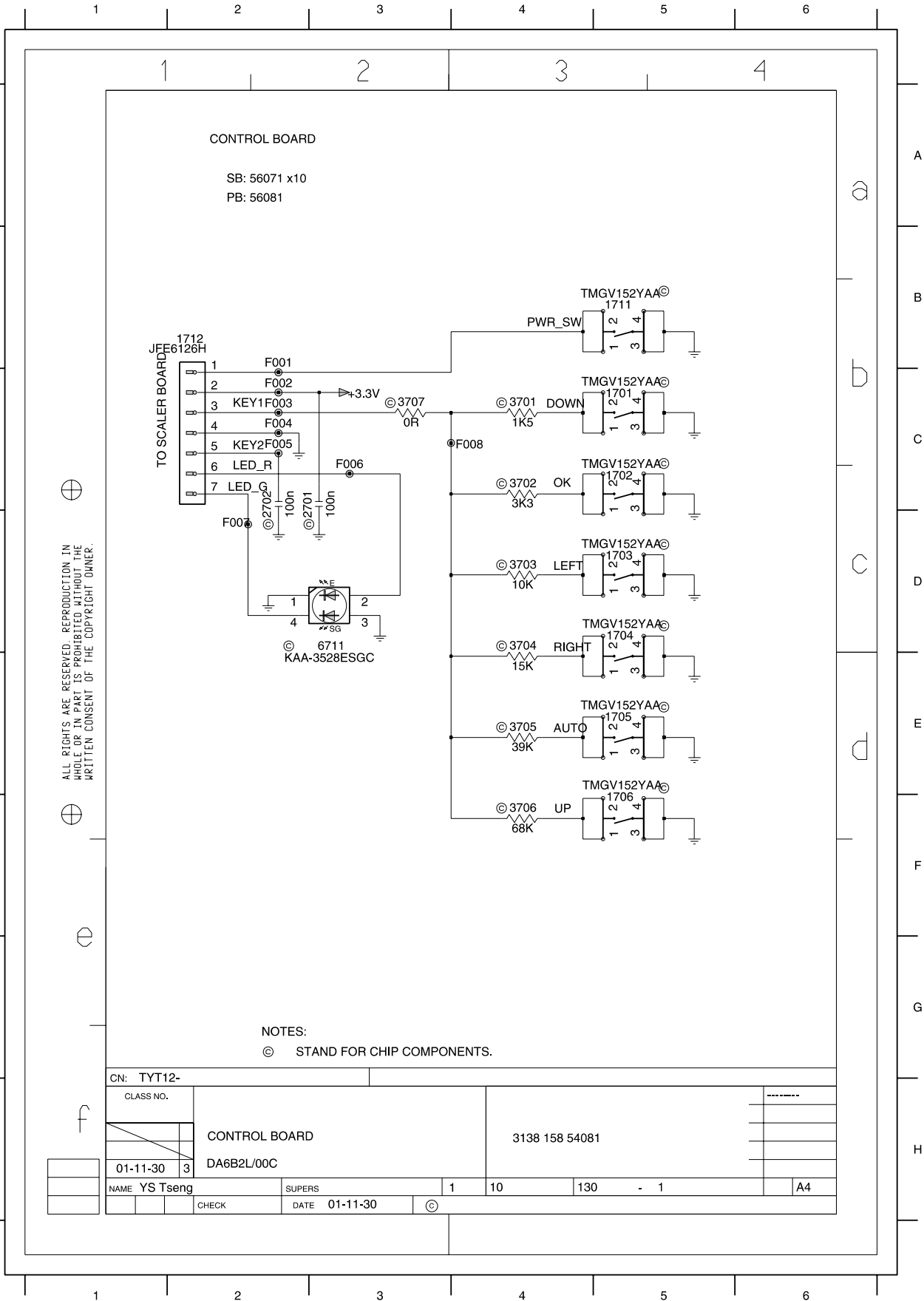

1701 C
1702 C
1703 D
1704 D
1705 E
1706 E
1711 B
1712 B
2701 C
2702 C
3701 C
3702 C
3703 D
3704 D
3705 E
3706 F
3707 C
6711 D
F001 B
F002 C
F003 C
F004 C
F005 C
F006 C
F007 D
F008 C

Control PWB (Copper side view)

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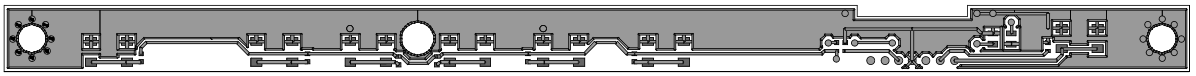
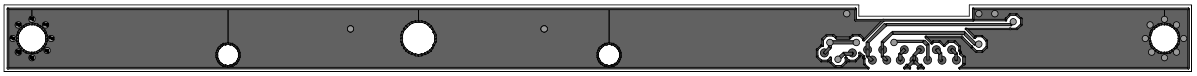
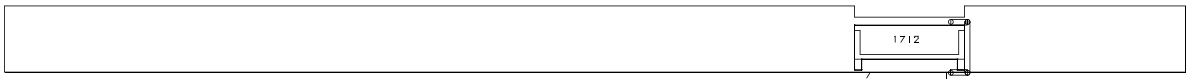
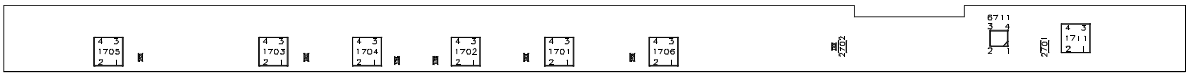




# REF	GRID LABEL	BOARD SIDE
1712	A4	B
1701	A3	B
1702	A3	B
1703	A2	B
1704	A2	B
1705	A1	B
1706	A3	B
1711	A5	B
2701	A5	B
2702	A4	B
3701	A3	B
3702	A2	B
3703	A2	B
3704	A2	B
3705	A1	B
3706	A3	B
3707	A4	B
6711	A4	B





Exploded View

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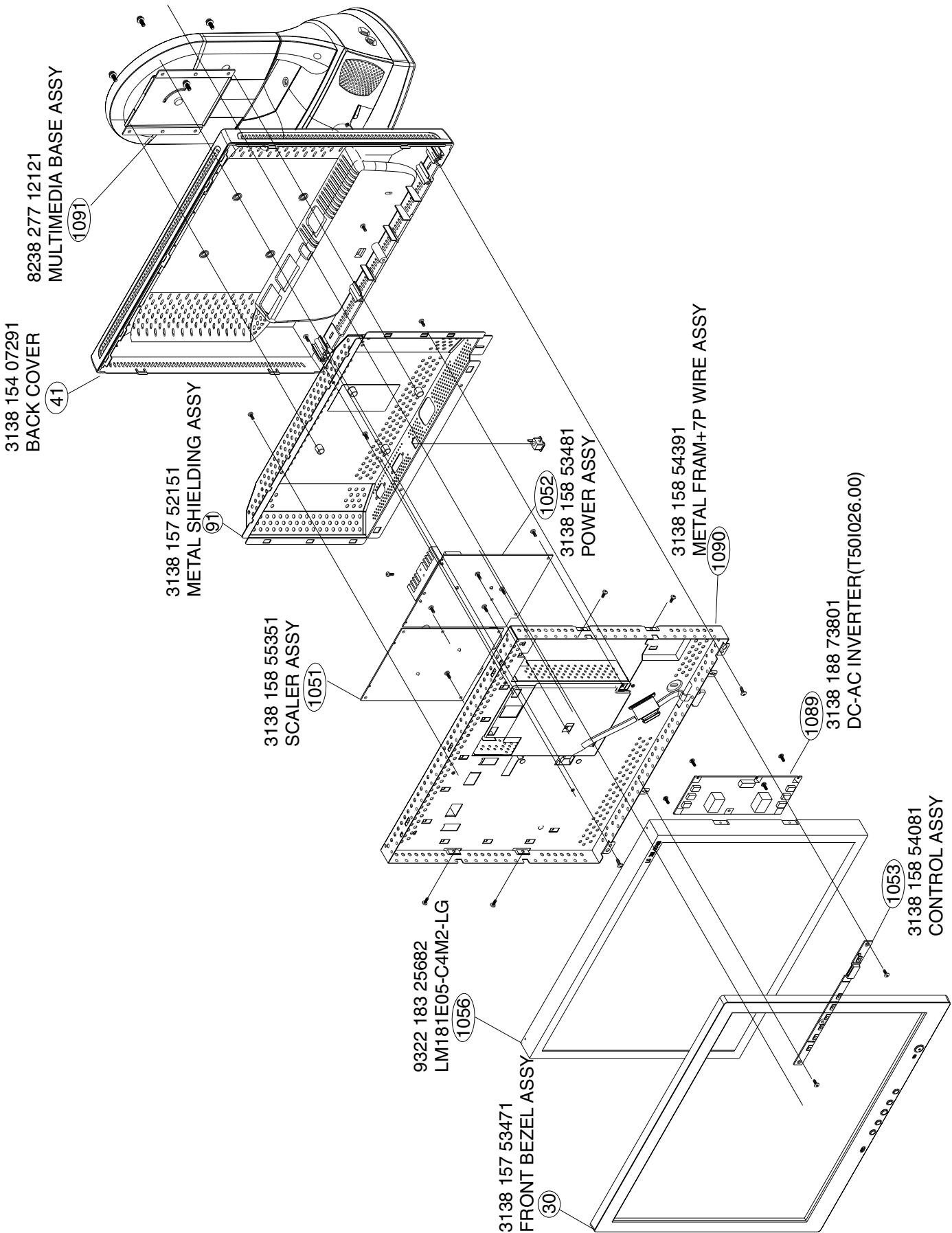

Recommended Parts List

Go to cover page

Model: DJ9B3L/00Z

Item	Code number	Description
30	313815753471	FRONT BEZEL ASSY
31	313815407231	BEZEL
32	313815407241	POWER KNOB
33	313815407251	CONTROL KNOB
34	313815405181	LENS
41	313815407291	BACK COVER
1090	313815854391	METAL FRAME+7P WIRE ASSY
1091	823827712121	MULTIMEDIA BASE ASSY(RAY 7035)
125	313815521291	D.F.U.
450	313815633611	CARTON
451	313815633621	CUSHION-R
452	313815633631	CUSHION-L
1087	313817878741	MAIN CORD ASSY
1088	313818872051	CORD SUB-D 15/2M0/SUB-D 15GRAY
1089	313818873801	DC-AC INVERTER (T50I026.)
1102 ▲	242208610239	FUSE 5X20 HT 3A15 250V IEC B
1402 ▲	243854300085	RES XTL SM 24M 0 7P SMD49 R
7061	932217683682	IC L4973V5.1 (ST) L
7071	932216562682	IC L4978 (ST) L
7101	932213028682	IC L5991 (ST) L
7102	932217477687	FET POW STU10NB80 (ST) L
7104	932214014667	OPT CP TCET1103(G) (VISH) L
7106	933771100686	IC TL431CLP S (MOTA) R
7202	932214526668	IC SM M24C02-WMN6 (ST) R
7205	932217546668	IC M61323FP (MITJ) R
7206	932202899668	FET POW SM SI4835DY (VISH) R
7208	935241100118	IC SM 74LVC126AD (PHSE) R
7212	935245720115	IC SM 74HCT1G14GW (PHSE) R
7301	932216881671	IC SM GM5020 (GEMI) Y
7303	932217704668	IC SM LD1086DT25 (ST) R
7401	932216723671	IC SM MC68HC908LD60 (MOTA) Y
7402	932212662682	IC M24C16-BN6 (ST) L
7503	932216677682	IC SM M12L16161A-7T (ESMT) L
7505	932217686668	IC SM THC63LVDM83A (THIN) R

Recommended parts list of Inverter board :(T501026.00, Ambit)

Pos.	Service code	Description	supplier code
1075	8238 277 11561	DC-AC INVERTER (T501026.00, Ambit)	
L1,L2	9965 000 12391	IND SPC-10055P-354-SMD(TMP)	16.0490.01
F1	9965 000 12955	FUSE 4290005 5A(LITTLE)	26.7021.01
Q18	4822 130 11057	2N7002	06.0602.01
Q3	9965 000 05478	TR NPN PMBS3904 SOT23(PHILIPS)	06.0015.01
Q1	9965 000 12956	NFET BSS138 SOT23(ZETEX)	06.0631.01
Q15A	9965 000 12959	PFET SI4435DY SO8(FAIRCHILD)	06.2131.17
Q11	9965 000 12957	TR PNP PMBS3906 SOT23(PHILIPS)	06.0016.01
Q17A	9965 000 12958	NFET SI4416DY SO8(LILICONIX)	06.6003.01
U1	9965 000 12960	IC OZ960DS-0.1+/-4% SSOP20(02)	04.3040.02
T1	9965 000 12961	XFMR XT-1955-12508 A(XTREME)	22.0528.39

Spare Parts List(Continued)

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Parts indicated on exploded view : CTVs : DJ9B3L/00Z

30	313815753471	FRONT BEZEL ASSY
31	313815407231	BEZEL
32	313815407241	POWER KNOB
33	313815407251	CONTROL KNOB
34	313815405181	LENS
41	313815407291	BACK COVER
91	313815752151	METAL SHIELDING ASSY
98	313810440571	HOUSING COVER
99	313815551621	PLASTIC COVER-SNI
1088	313818872051	CORD SUB-D 15/2M0/SUB-D 15GRAY
1085	932218325682	TFT-LCD LM181E05-C4M2 (LGPH) B
1086	313818873181	CBLE 334034 40/220/30 321163
1089	313818873801	DC-AC INVERTER (T50I026.)
1090	313815854391	METAL FRAME+7P WIRE ASSY
1091	823827712121	MULTIMEDIA BASE ASSY(RAY 7035)
1093	313818872241	DSUB CALE

Various

450	313815633611	CARTON
451	313815633621	CUSHION-R
452	313815633631	CUSHION-L
453	313815633641	P.E. BAG-ANTI-STAT.

Accessories

125	313815521291	D.F.U.
145	313810656141	E-D.U.F. BAG
1087 ▲	313817878741	MAIN CORD ASSY

Main Panel

1051	313815855351	SCALER PCB ASSY
1052	313815853481	POWER ASSY
1053	313815854081	CONTROL ASSY

Scaler Panel

1051	313815855351	SCALER PCB ASSY
⊣⊢		
2201	223824615654	CER2 0603 X7R 10V 220N PM10 R
2202	223824615654	CER2 0603 X7R 10V 220N PM10 R
2203	223824615654	CER2 0603 X7R 10V 220N PM10 R
2204	223824615654	CER2 0603 X7R 10V 220N PM10 R
2211	223886715331	CER1 0603 NP0 50V 330P PM5 R
2212	223886715159	CER1 0603 NP0 50V 15P PM5 R
2213	223886715331	CER1 0603 NP0 50V 330P PM5 R
2214	223886715159	CER1 0603 NP0 50V 15P PM5 R
2215	223886715479	CER1 0603 NP0 50V 47P PM5 R
2216	223886715479	CER1 0603 NP0 50V 47P PM5 R
2217	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2218	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2219	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2220	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2221	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2222	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2223	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2225	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2226	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2228	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2230	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2231	202001293747	ELCAP SM RV2 25V 47U PM20 R
2232	202001293747	ELCAP SM RV2 25V 47U PM20 R
2233	202001293747	ELCAP SM RV2 25V 47U PM20 R
2234	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2236	223858615636	CER2 0603 X7R 50V 10N PM10 R
2237	202001293747	ELCAP SM RV2 25V 47U PM20 R
2238	223858615636	CER2 0603 X7R 50V 10N PM10 R
2239	202001293747	ELCAP SM RV2 25V 47U PM20 R
2240	223858615636	CER2 0603 X7R 50V 10N PM10 R
2241	202001293747	ELCAP SM RV2 25V 47U PM20 R
2242	223858615636	CER2 0603 X7R 50V 10N PM10 R
2243	202001293747	ELCAP SM RV2 25V 47U PM20 R
2244	223858615636	CER2 0603 X7R 50V 10N PM10 R
2245	223858615636	CER2 0603 X7R 50V 10N PM10 R
2246	223858615636	CER2 0603 X7R 50V 10N PM10 R
2247	223858615636	CER2 0603 X7R 50V 10N PM10 R
2248	203803516304	ELCAP RXJ 25V S 470U PM20 B
2249	223824619863	CER2 0603 Y5V 10V 1U P8020 R
2251	223886715159	CER1 0603 NP0 50V 15P PM5 R
2252	223886715159	CER1 0603 NP0 50V 15P PM5 R
2253	223886715159	CER1 0603 NP0 50V 15P PM5 R
2254	223886715159	CER1 0603 NP0 50V 15P PM5 R
2255	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2256	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2258	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2259	223886715339	CER1 0603 NP0 50V 33P PM5 R
2260	223886715339	CER1 0603 NP0 50V 33P PM5 R
2301	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2302	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2303	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2304	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2305	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2306	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2307	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2308	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2309	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2310	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2311	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2312	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2313	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2314	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2315	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2316	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2317	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2318	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2319	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2320	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2321	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2322	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2323	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2324	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2325	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2326	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2327	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2328	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2329	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2330	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2331	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2332	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2333	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2334	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2335	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2336	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2337	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2338	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2339	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2340	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2341	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2342	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2343	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2344	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2345	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2346	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2347	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2348	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2349	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2350	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2351	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2352	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2353	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2354	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2355	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2356	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2357	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2358	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2364	223886715568	CER1 0603 NP0 50V 5P6 PM0P5 R
2365	223886715568	CER1 0603 NP0 50V 5P6 PM0P5 R
2368	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2369	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2370	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2371	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2372	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2373	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2374	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2375	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2376	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2377	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2379	223886715331	CER1 0603 NP0 50V 330P PM5 R
2384	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2385	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2386	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2387	203803516304	ELCAP RXJ 25V S 470U PM20 B
2388	203803516304	ELCAP RXJ 25V S 470U PM20 B
2389	203803516304	ELCAP RXJ 25V S 470U PM20 B
2396	202001293747	ELCAP SM RV2 25V 47U PM20 R
2398	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2401	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2402	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2403	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2404	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2405	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2406	223886715159	CER1 0603 NP0 50V 15P PM5 R
2407	223886715159	CER1 0603 NP0 50V 15P PM5 R
2408	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2412	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2413	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2414	223858115649	CER2 1206 X7R 50V 1 N PM10 R
2500	202001293747	ELCAP SM RV2 25V 47U PM20 R
2503	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2504	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2505	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2506	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2507	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2508	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2509	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2510	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2511	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2512	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2513	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2514	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2515	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2516	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2517	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2518	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2519	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2520	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2521	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2522	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2523	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2524	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2525	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2526	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2527	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2528	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2529	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2530	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2531	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2532	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2533	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2534	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2535	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2536	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2540	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2541	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2542	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2543	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2544	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2545	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2546	222224119876	CER2 1206 Y5V 10V 10U P8020 R
2547	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2548	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2549	222224119876	CER2 1206 Y5V 10V 10U P8020 R

2550	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2551	223878615649	CER2 0603 X7R 16V 1 N PM10 R
2552	222224119876	CER2 1206 Y5V 10V 10U P8020 R

3214	319802190030	RST SM 0603 JUMP. 0R05 COL
3215	319802190030	RST SM 0603 JUMP. 0R05 COL
3216	319802190030	RST SM 0603 JUMP. 0R05 COL
3217	319802190030	RST SM 0603 JUMP. 0R05 COL
3218	319802190030	RST SM 0603 JUMP. 0R05 COL
3219	319802190030	RST SM 0603 JUMP. 0R05 COL
3220	319802190030	RST SM 0603 JUMP. 0R05 COL
3221	319802190030	RST SM 0603 JUMP. 0R05 COL
3222	319802190030	RST SM 0603 JUMP. 0R05 COL
3223	319802132220	RST SM 0603 2K2 PM5 COL
3225	319802132220	RST SM 0603 2K2 PM5 COL
3226	319802190030	RST SM 0603 JUMP. 0R05 COL
3227	319802137590	RST SM 0603 75R PM5 COL
3228	319802190030	RST SM 0603 JUMP. 0R05 COL
3229	319802137590	RST SM 0603 75R PM5 COL
3230	319802190030	RST SM 0603 JUMP. 0R05 COL
3231	319802137590	RST SM 0603 75R PM5 COL
3232	319802190030	RST SM 0603 JUMP. 0R05 COL
3233	319802132220	RST SM 0603 2K2 PM5 COL
3235	319802132220	RST SM 0603 2K2 PM5 COL
3236	319802190030	RST SM 0603 JUMP. 0R05 COL
3237	319802137590	RST SM 0603 75R PM5 COL
3238	319802190030	RST SM 0603 JUMP. 0R05 COL
3239	319802137590	RST SM 0603 75R PM5 COL
3240	319802190030	RST SM 0603 JUMP. 0R05 COL
3241	319802137590	RST SM 0603 75R PM5 COL
3242	319802131010	RST SM 0603 1 R PM5 COL
3244	319802131010	RST SM 0603 1 R PM5 COL
3246	319802131010	RST SM 0603 1 R PM5 COL
3247	319802131530	RST SM 0603 15K PM5 COL
3248	319802131530	RST SM 0603 15K PM5 COL
3250	319802131010	RST SM 0603 1 R PM5 COL
3252	319802131010	RST SM 0603 1 R PM5 COL
3253	319802131010	RST SM 0603 1 R PM5 COL
3254	232271191032	RST SM 1206 JUMP. MAX 0R05 R
3261	319802131010	RST SM 0603 1 R PM5 COL
3262	319802131010	RST SM 0603 1 R PM5 COL
3263	319802131010	RST SM 0603 1 R PM5 COL
3264	319802131010	RST SM 0603 1 R PM5 COL
3273	319802131530	RST SM 0603 15K PM5 COL
3274	319802131530	RST SM 0603 15K PM5 COL
3276	319802131010	RST SM 0603 1 R PM5 COL
3279	319802131010	RST SM 0603 1 R PM5 COL
3280	319802132210	RST SM 0603 220R PM5 COL
3281	319802132210	RST SM 0603 220R PM5 COL
3282	319802132210	RST SM 0603 220R PM5 COL
3288	319802131030	RST SM 0603 10K PM5 COL
3290	232271161228	RST SM 1206 RC01 2R2 PM5 R
3293	319802190030	RST SM 0603 JUMP. 0R05 COL
3295	319802190030	RST SM 0603 JUMP. 0R05 COL
3304	319802131020	RST SM 0603 1K PM5 COL
3305	235003510121	RST NETW SM ARV24 4X120R PM5 R
3306	319802132290	RST SM 0603 22R PM5 COL
3307	319802132290	RST SM 0603 22R PM5 COL
3308	319802132290	RST SM 0603 22R PM5 COL
3309	319802190030	RST SM 0603 JUMP. 0R05 COL
3310	319802190030	RST SM 0603 JUMP. 0R05 COL
3312	232271191032	RST SM 1206 JUMP. MAX 0R05 R
3313	319802132220	RST SM 0603 2K2 PM5 COL
3316	319802190030	RST SM 0603 JUMP. 0R05 COL
3317	319802190030	RST SM 0603 JUMP. 0R05 COL
3318	319802131030	RST SM 0603 10K PM5 COL
3319	232270260205	RST SM 0603 RC21 2M PM5 R
3323	232271191032	RST SM 1206 JUMP. MAX 0R05 R
3326	319802131030	RST SM 0603 10K PM5 COL
3327	232271191032	RST SM 1206 JUMP. MAX 0R05 R
3328	232271191032	RST SM 1206 JUMP. MAX 0R05 R
3329	319802131030	RST SM 0603 10K PM5 COL
3401	232270260205	RST SM 0603 RC21 2M PM5 R
3402	319802131030	RST SM 0603 10K PM5 COL
3403	319802131030	RST SM 0603 10K PM5 COL
3404	319802190030	RST SM 0603 JUMP. 0R05 COL
3405	319802190030	RST SM 0603 JUMP. 0R05 COL
3407	319802190030	RST SM 0603 JUMP. 0R05 COL
3409	319802190030	RST SM 0603 JUMP. 0R05 COL
3411	319802190030	RST SM 0603 JUMP. 0R05 COL
3413	319802190030	RST SM 0603 JUMP. 0R05 COL
3415	319802190030	RST SM 0603 JUMP. 0R05 COL
3417	319802131030	RST SM 0603 10K PM5 COL
3419	319802131030	RST SM 0603 10K PM5 COL
3420	319802190030	RST SM 0603 JUMP. 0R05 COL
3424	235003510103	RST NETW SM ARV24 4X 10K PM5 R
3425	235003510103	RST NETW SM ARV24 4X 10K PM5 R
3426	319802131030	RST SM 0603 10K PM5 COL
3427	319802190030	RST SM 0603 JUMP. 0R05 COL
3428	319802131030	RST SM 0603 10K PM5 COL
3430	319802131030	RST SM 0603 10K PM5 COL
3432	319802131030	RST SM 0603 10K PM5 COL
3433	319802131030	RST SM 0603 10K PM5 COL
3434	235003510101	RST NETW SM ARV24 4X1 R PM5 R
3435	319802131030	RST SM 0603 10K PM5 COL
3441	319802131030	RST SM 0603 10K PM5 COL
3442	319802131030	RST SM 0603 10K PM5 COL
3443	319802190030	RST SM 0603 JUMP. 0R05 COL
3444	319802131030	RST SM 0603 10K PM5 COL
3445	319802190030	RST SM 0603 JUMP. 0R05 COL
3448	232270260184	RST SM 0603 RC21 180K PM5 R
3450	232270260184	RST SM 0603 RC21 180K PM5 R
3451	319802131040	RST SM 0603 1 K PM5 COL
3452	319802131040	RST SM 0603 1 K PM5 COL
3453	319802131030	RST SM 0603 10K PM5 COL
3455	319802131030	RST SM 0603 10K PM5 COL
3456	319802131030	RST SM 0603 10K PM5 COL
3457	319802131030	RST SM 0603 10K PM5 COL
3458	319802131030	RST SM 0603 10K PM5 COL
3459	319802131030	RST SM 0603 10K PM5 COL
3461	319802131030	RST SM 0603 10K PM5 COL
3463	319802190030	RST SM 0603 JUMP. 0R05 COL
3464	319802131530	RST SM 0603 15K PM5 COL
3465	319802131010	RST SM 0603 1 R PM5 COL
3469	319802133310	RST SM 0603 330R PM5 COL
3471	319802133310	RST SM 0603 330R PM5 COL
3473	319802190030	RST SM 0603 JUMP. 0R05 COL
3474	319802190030	RST SM 0603 JUMP. 0R05 COL
3501	235003510229	RST NETW SM ARV24 4X 22R PM5 R
3502	319802132290	RST SM 0603 22R PM5 COL
3503	319802132290	RST SM 0603 22R PM5 COL
3504	319802190030	RST SM 0603 JUMP. 0R05 COL
3505	319802131030	RST SM 0603 10K PM5 COL
3510	319802190030	RST SM 0603 JUMP. 0R05 COL
3511	319802131030	RST SM 0603 10K PM5 COL
3513	232271161228	RST SM 1206 RC01 2R2 PM5 R
3514	319802190030	RST SM 0603 JUMP. 0R05 COL
3515	319802131030	RST SM 0603 10K PM5 COL
3520	235003510121	RST NETW SM ARV24 4X120R PM5 R
3521	235003510121	RST NETW SM ARV24 4X120R PM5 R
3522	235003510121	RST NETW SM ARV24 4X120R PM5 R
3523	235003510121	RST NETW SM ARV24 4X120R PM5 R
3524	235003510121	RST NETW SM ARV24 4X120R PM5 R
3525	235003510121	RST NETW SM ARV24 4X120R PM5 R
3526	235003510121	RST NETW SM ARV24 4X120R PM5 R
3527	235003510121	RST NETW SM ARV24 4X120R PM5 R
3528	235003510121	RST NETW SM ARV24 4X120R PM5 R
3529	235003510121	RST NETW SM ARV24 4X120R PM5 R
3530	235003510121	RST NETW SM ARV24 4X120R PM5 R
3531	235003510121	RST NETW SM ARV24 4X120R PM5 R

5201	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5202	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5203	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5204	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5205	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5206	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5207	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5301	242254944195	IND FXD 0805 EMI 1 MHZ 220R R
5302	242253600035	IND FXD TSL0808 S 10U PM10 A
5303	242253600035	IND FXD TSL0808 S 10U PM10 A
5304	242253600035	IND FXD TSL0808 S 10U PM10 A
5308	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5309	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5310	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5311	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5312	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5401	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5501	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5502	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5503	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5504	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5505	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5506	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5507	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5508	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5509	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5510	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5511	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5512	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5513	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5514	242254943409	IND FXD 1206 EMI 1 MHZ 50R R
5515	242254943409	IND FXD 1206 EMI 1 MHZ 50R R

6201	319801010620	DIO SIG SM BAV99 (COL) R
6202	319801010620	DIO SIG SM BAV99 (COL) R
6203	319801010620	DIO SIG SM BAV99 (COL) R
6204	319801010620	DIO SIG SM BAV99 (COL) R
6205	319801010620	DIO SIG SM BAV99 (COL) R
6206	319801010620	DIO SIG SM BAV99 (COL) R
6207	319801010620	DIO SIG SM BAV99 (COL) R
6208	319801010620	DIO SIG SM BAV99 (COL) R
6209	319801010620	DIO SIG SM BAV99 (COL) R
6210	319801010620	DIO SIG SM BAV99 (COL) R
6211	319801010620	DIO SIG SM BAV99 (COL) R
6212	319801010620	DIO SIG SM BAV99 (COL) R
6213	319801010620	DIO SIG SM BAV99 (COL) R
6214	319801010620	DIO SIG SM BAV99 (COL) R
6215	319801010620	DIO SIG SM BAV99 (COL) R
6216	319801010620	DIO SIG SM BAV99 (COL) R
6217	319801010620	DIO SIG SM BAV99 (COL) R
6218	319801010620	DIO SIG SM BAV99 (COL) R
6219	319801010620	DIO SIG SM BAV99 (COL) R
6220	319801010620	DIO SIG SM BAV99 (COL) R
6221	319801010620	DIO SIG SM BAV99 (COL) R
6222	319801010620	DIO SIG SM BAV99 (COL) R
6223	319801010620	DIO SIG SM BAV99 (COL) R
6224	319801010620	DIO SIG SM BAV99 (COL) R
6230	933742280215	DIO SIG SM BAT54 (PHSE) R
6231	933742280215	DIO SIG SM BAT54 (PHSE) R
6232	933742280215	DIO SIG SM BAT54 (PHSE) R
6233	933137390215	DIO REG SM BZX84-C5V1 (PHSE) R
6234	933516950215	DIO REG SM BZX84-C3V3 (PHSE) R
6235	933742280215	DIO SIG SM BAT54 (PHSE) R
6236	319801010620	DIO SIG SM BAV99 (COL) R
6237	319801010620	DIO SIG SM BAV99 (COL) R
6238	319801010620	DIO SIG SM BAV99 (COL) R
6239	319801010620	DIO SIG SM BAV99 (COL) R
6401	933913910115	DIO SIG SM BAS32L (PHSE) R

7201	932214526668	IC SM M24C02-WMN6 (ST) R
7202	932214526668	IC SM M24C02-WMN6 (ST) R
7205	932217546668	IC M61323FP (MITJ) R
7206	932202899668	FET POW SM SI4835DY (VISH) R
7207	932209265685	TRA SIG SM MUN2211J (ONSE) R
7208	935241100118	IC SM 74LVC126AD (PHSE) R
7209	935245720115	IC SM 74HCT1G14GW (PHSE) R
7210	935245720115	IC SM 74HCT1G14GW (PHSE) R
7211	935245720115	IC SM 74HCT1G14GW (PHSE) R

Spare Parts List(Continued)

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7212	935245720115	IC SM 74HCT1G14GW (PHSE) R
7301	932216881671	IC SM GM5020 (GEMI) Y
7303	932217704668	IC SM LD1086DT25 (ST) R
7309	932202899668	FET POW SM SI4835DY (VISH) R
7310	932209265685	TRA SIG SM MUN2211J (ONSE) R
7401	932216723671	IC SM MC68HC908LD60 (MOTA) Y
7402	932212662682	IC M24C16-BN6 (ST) L
7403	932209265685	TRA SIG SM MUN2211J (ONSE) R
7501	932216677682	IC SM M12L16161A-7T (ESMT) L
7502	932216677682	IC SM M12L16161A-7T (ESMT) L
7503	932216677682	IC SM M12L16161A-7T (ESMT) L
7504	932209265685	TRA SIG SM MUN2211J (ONSE) R
7505	932217686668	IC SM THC63LVDM83A (THIN) R
7506	932217686668	IC SM THC63LVDM83A (THIN) R

Power Panel

1052	313815853481	POWER ASSY
1101	313818871461	AC INLET ASSY(2013 9)
1102 ▲	242208610239	FUSE 5X20 HT 3A15 250V IEC B

2051	223891015649	CER2 0805 X7R 25V 100N PM10 R
2055	223891015649	CER2 0805 X7R 25V 100N PM10 R
2056	223891015649	CER2 0805 X7R 25V 100N PM10 R
2061	202203100053	ELCAP GL 25V S 470U PM20 A
2062	222286115272	CER1 0805 NP0 50V 2N7 PM5 R
2063	223878019858	CER2 0805 Y5V 16V 470N P8020 R
2064	223891019854	CER2 0805 Y5V 25V 220N P8020 R
2065	223858015641	CER2 0805 X7R 50V 22N PM10 R
2066	223886115221	CER1 0805 NP0 50V 220P PM5 R
2067	202203100053	ELCAP GL 25V S 470U PM20 A
2068	202203100053	ELCAP GL 25V S 470U PM20 A
2069	223891019854	CER2 0805 Y5V 25V 220N P8020 R
2070	223886115102	CER1 0805 NP0 50V 1N PM5 R
2072	222286115272	CER1 0805 NP0 50V 2N7 PM5 R
2073	223891015649	CER2 0805 X7R 25V 100N PM10 R
2074	223891015649	CER2 0805 X7R 25V 100N PM10 R
2075	223858015641	CER2 0805 X7R 50V 22N PM10 R
2076	223886115221	CER1 0805 NP0 50V 220P PM5 R
2077	202203100053	ELCAP GL 25V S 470U PM20 A
2078	223891019854	CER2 0805 Y5V 25V 220N P8020 R
2079	222278019763	CER2 0805 Y5V 16V 1U PM20 R
2080	202203100053	ELCAP GL 25V S 470U PM20 A
2085	222278019763	CER2 0805 Y5V 16V 1U PM20 R
2101	203831000015	CAP MPP 275V S 220N PM10 B
2102	203831000014	CAP MPP 275V S 680N PM10 B
2103	202055490139	CERSAF NSB 250V S4N7 PM20 B
2104	202055490139	CERSAF NSB 250V S4N7 PM20 B
2105	202203100059	ELCAP KM 450V S 150U PM20 B
2106	223886115152	CER1 0805 NP0 50V 1N5 PM5 R
2107	223891015649	CER2 0805 X7R 25V 100N PM10 R
2108	223886115102	CER1 0805 NP0 50V 1N PM5 R
2109	223858015641	CER2 0805 X7R 50V 22N PM10 R
2110	223886115101	CER1 0805 NP0 50V 100P PM5 R
2111	225260108026	CER2 DC X7R 1KV S 1N PM10 A
2112	202055490158	CERSAF CD 250V S 2N2 PM20 B
2113	203803513506	ELCAP RGA 50V S 22U PM20 A
2114	223886115102	CER1 0805 NP0 50V 1N PM5 R
2115	225260108026	CER2 DC X7R 1KV S 1N PM10 A
2116	202203100053	ELCAP GL 25V S 470U PM20 A
2117	202203100053	ELCAP GL 25V S 470U PM20 A
2118	202203100053	ELCAP GL 25V S 470U PM20 A
2119	223886115399	CER1 0805 NP0 50V 39P PM5 R
2120	223858016525	CER2 0805 X7R 50V 6N8 PM5 R
2121	202203100053	ELCAP GL 25V S 470U PM20 A
2122	223891019854	CER2 0805 Y5V 25V 220N P8020 R
2123	203830200203	CAP MPOL 630V S 47N PM10 B
2125	203830200203	CAP MPOL 630V S 47N PM10 B

3051	213810113103	RST CRB CFR-12 A 10K PM5 A
3052	319802151010	RST SM 0805 1 R PM5 COL R
3053	213810113103	RST CRB CFR-12 A 10K PM5 A
3054	319802151030	RST SM 0805 10 K PM5 COL R
3056	319802151010	RST SM 0805 1 R PM5 COL R
3059	319802151030	RST SM 0805 10 K PM5 COL R
3061	319802151830	RST SM 0805 18 K PM5 COL R
3062	232273469102	RST SM 0805 RC12H 9K1 PM1 R
3063	213810100369	RST JUMP CR-12 A MAX 0R01 A
3071	319802151830	RST SM 0805 18 K PM5 COL R
3072	232273469102	RST SM 0805 RC12H 9K1 PM1 R
3073	232271161278	RST SM 1206 RC01 2R7 PM5 R
3074	232271161278	RST SM 1206 RC01 2R7 PM5 R
3080	319802151020	RST SM 0805 1 K PM5 COL R
3091	319802190020	RST SM 0805 JUMP. 0R05 COL R
3092	319802190020	RST SM 0805 JUMP. 0R05 COL R
3093	319802190020	RST SM 0805 JUMP. 0R05 COL R
3101	212261200061	NTC DC SCK-164 S 16R PM15 B
3102	232271161274	RST SM 1206 RC01 270K PM5 R
3103	232271161274	RST SM 1206 RC01 270K PM5 R
3104	213811611004	RST MFLM MFR-5S A100K PM1 A
3105	232271161184	RST SM 1206 RC01 180K PM5 R
3106	232273462703	RST SM 0805 RC12H 27K PM1 R
3107	319802151030	RST SM 0805 10 K PM5 COL R
3108	319802151030	RST SM 0805 10 K PM5 COL R
3109	319802151030	RST SM 0805 10 K PM5 COL R
3110	232271161274	RST SM 1206 RC01 270K PM5 R
3111	319802152240	RST SM 0805 220 K PM5 COL R
3112	213811612209	RST MFLM MFR-5S A22R PM1 A
3113	213811611002	RST MFLM MFR-5S A1K PM1 A
3114	213811612204	RST MFLM MFR-5S A220K PM1 A
3115	212010590708	RST MOX 1W RSS A0R33 PM5 B
3116	232273462702	RST SM 0805 RC12H 2K7 PM1 R
3117	232271161568	RST SM 1206 RC01 5R6 PM5 R
3118	232273461503	RST SM 0805 RC12H 15K PM1 R
3120	232271161184	RST SM 1206 RC01 180K PM5 R
3121	213811611509	RST MFLM MFR-5S A15R PM1 A
3122	319802151520	RST SM 0805 1K 5 PM5 COL R
3123	232273469102	RST SM 0805 RC12H 9K1 PM1 R
3124	319802151020	RST SM 0805 1 K PM5 COL R
3125	319802152240	RST SM 0805 220 K PM5 COL R
3126	232273462402	RST SM 0805 RC12H 2K4 PM1 R
3127	213811611205	RST MFLM MFR-5S A1M2 PM1 A
3128	232272461005	RST SM 1206 RC02H 1M PM1 R
3129	319802151090	RST SM 0805 10 R PM5 COL R
3131	232272461005	RST SM 1206 RC02H 1M PM1 R
3132	232272461005	RST SM 1206 RC02H 1M PM1 R
3133	319802154740	RST SM 0805 470 K PM5 COL R
3134	232271161478	RST SM 1206 RC01 4R7 PM5 R
3136	232271191032	RST SM 1206 JUMP. MAX 0R05 R
3181	212266200101	PTC DC 1A85 30V S 0R045 PM30 A
3191	319802190020	RST SM 0805 JUMP. 0R05 COL R
3192	232271191032	RST SM 1206 JUMP. MAX 0R05 R

5061	313816875391	CHOKE COIL 150UH P M10UH K9257
5071	313816875391	CHOKE COIL 150UH P M10UH K9257
5101 ▲	313818872091	FIL MAINS 12MH 1A5 902Y1R3
5103 ▲	313818872181	TFM SMT LAYER PQ2620 WIRE
5105	313816874511	FERRITE BEAD
5106	313816874511	FERRITE BEAD

6061	932217529682	DIO REC SB560-F5 (PAJI) B
6071	932216647682	DIO REC SB340-F5 (PAJI) B
6101	932213176671	BRIDGE GBU8J (GI00) Y
6105	932216287683	DIO REC PG4 7 A (PAJI) R
6106	933703700133	DIO REC BYV26E A (PHSE) A
6107	933952580685	DIO SIG SM BAV103 (TEG0) R
6108	933952580685	DIO SIG SM BAV103 (TEG0) R
6109	932214337687	DIO REC FCH20A15 (NIEC) L
6111	319801010070	DIO SIG BAV21 (COL) A
6112	933952580685	DIO SIG SM BAV103 (TEG0) R
6114	932216287683	DIO REC PG4 7 A (PAJI) R

7051	933508380215	TRA SIG SM BSR14 (PHSE) R
7052	933508380215	TRA SIG SM BSR14 (PHSE) R
7061	932217683682	IC L4973V5.1 (ST00) L
7071	932216562682	IC L4978 (ST00) L
7101	932213028682	IC L5991 (ST00) L
7102	932216376687	FET POW STU9NC80Z (ST00) L
7102	932217477687	FET POW STU10NB80 (ST00) L
7104	932214014667	OPT CP TCET1103(G) (VISH) L
7106	933771100686	IC TL431CLP S (MOTA) R
7107	933967380685	TRA SIG SM BC858C (ONSE) R

Control Panel

1053	313815854081	CONTROL ASSY
1701	242212803035	SWI TACT SM 1P 1P OS SKQGAB R
1702	242212803035	SWI TACT SM 1P 1P OS SKQGAB R
1703	242212803035	SWI TACT SM 1P 1P OS SKQGAB R
1704	242212803035	SWI TACT SM 1P 1P OS SKQGAB R
1705	242212803035	SWI TACT SM 1P 1P OS SKQGAB R
1706	242212803035	SWI TACT SM 1P 1P OS SKQGAB R
1711	242212803035	SWI TACT SM 1P 1P OS SKQGAB R

2701	223878615649	CER2 0603 X7R 16V 100N PM10 R
2702	223878615649	CER2 0603 X7R 16V 100N PM10 R

3701	319802131520	RST SM 0603 1K 5 PM5 COL
3702	319802133320	RST SM 0603 3K 3 PM5 COL
3703	319802131030	RST SM 0603 10 K PM5 COL
3704	319802131530	RST SM 0603 15 K PM5 COL
3705	319802133930	RST SM 0603 39 K PM5 COL
3706	319802136830	RST SM 0603 68 K PM5 COL
3707	319802190030	RST SM 0603 JUMP. 0R05 COL

6711	932218082685	LED VS SM KAA-3528 YSGC (KIEL)R

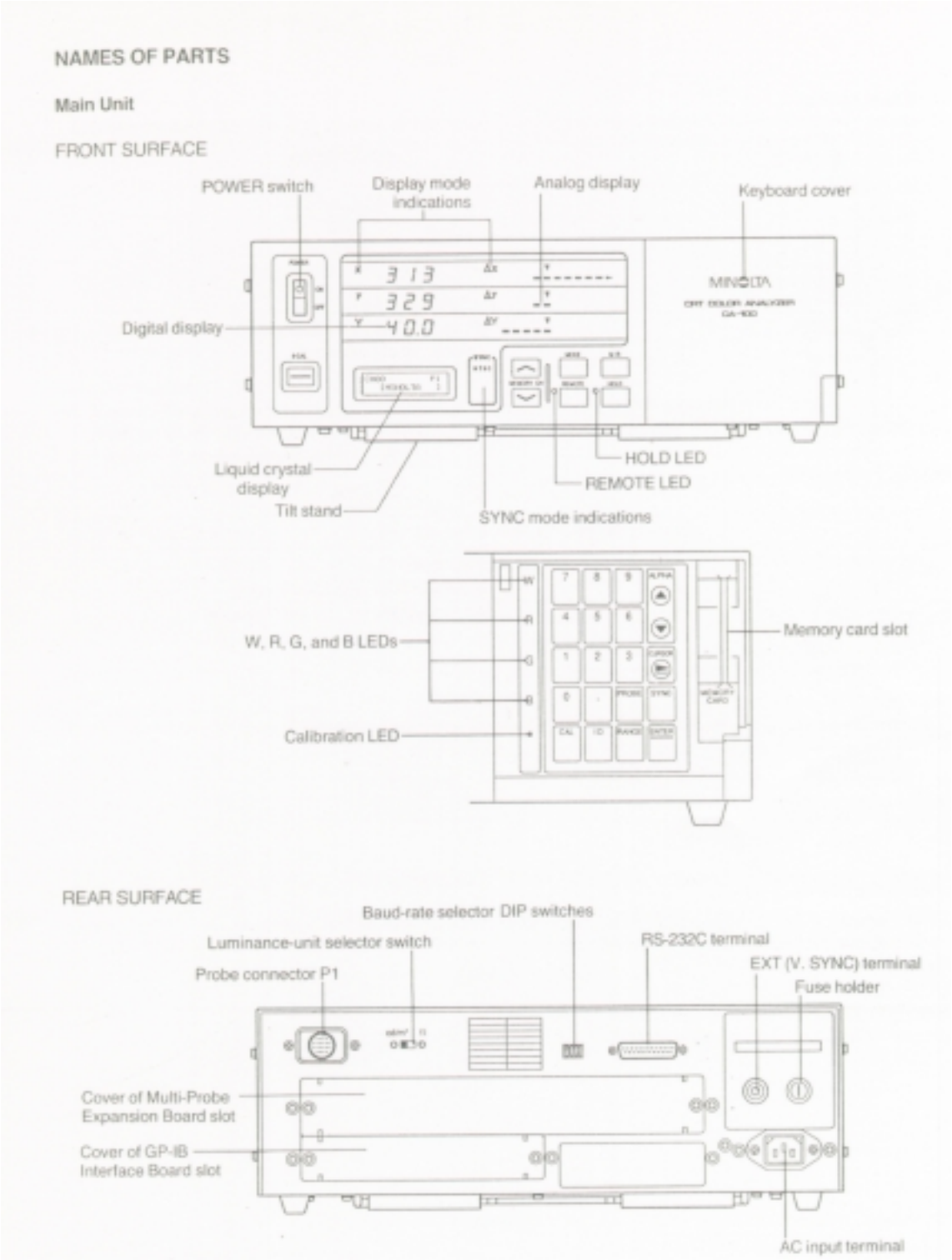
LCD COLOUR ANALYZER - CA110

1. SUMMARY

The LCD Colour Analyzer CA-110 was designed to upgrade the white-balanceprocess on production lines for colour LCD televisions and computer colour LCD panels in the colour LCD industry. The CA-110 consists of a main unit and a measuring probe.
The measuring probe utilizes an optical system suitable for measurement of colour LCDs and is equipped with a viewfinder to verify the area to be measured.

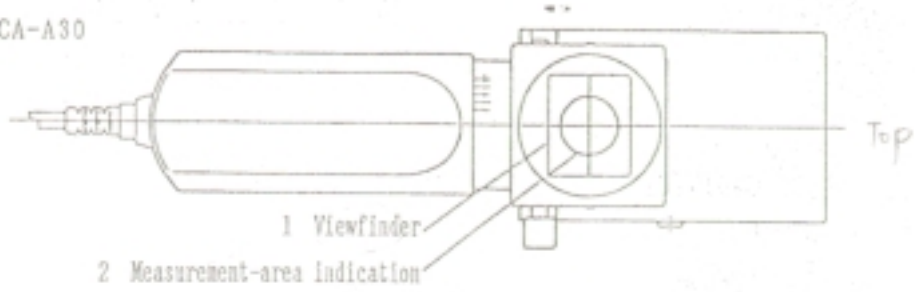
2. APPLICATIONS

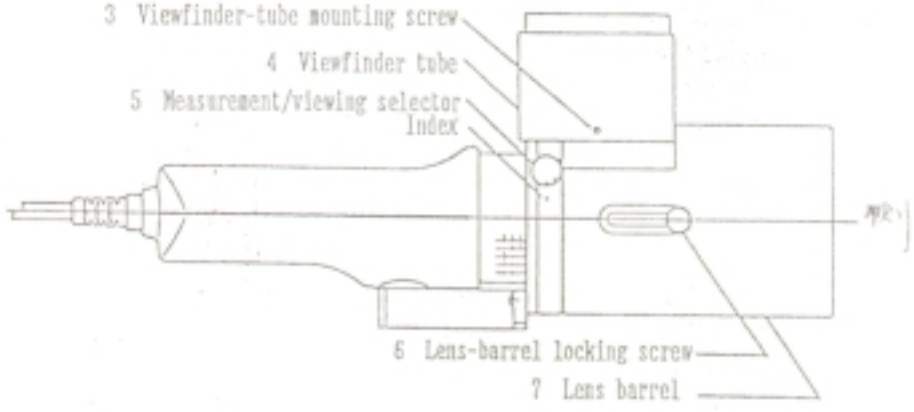
* White-balance adjustment and inspection on LCD production lines.
* Quality control and shipping inspection by LCD manufacturers.
* Inspection of LCDs upon receipt by computer manufacturers.

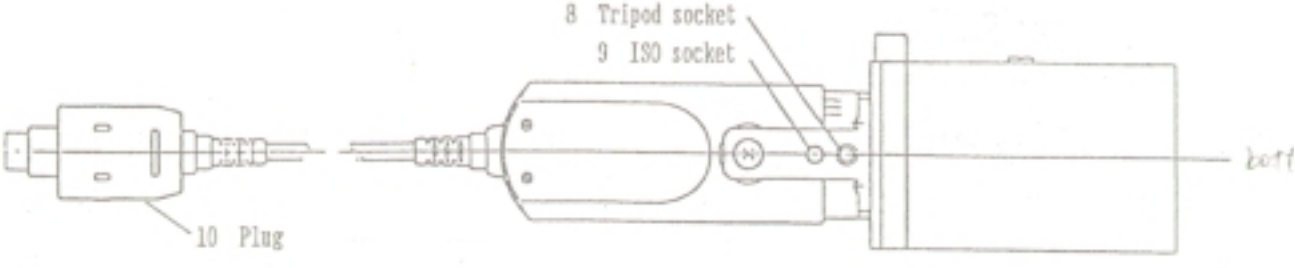


CA110 Application (Continued)

Probe CA-A30







1.	Viewfinder	Shows image seen by measuring probe.
2.	Measurement-area indication	Indicates area to be measured.
3.	Viewfinder-tube mounting screw	Removing these two screws (one on each side) allows the viewfinder tube to be removed to clean viewfinder, etc.
4.	Viewfinder tube	Can be moved to minimize the effects of surrounding light and provide the best view of the viewfinder image.
5.	Measurement/viewing selector	Moves internal mirror; set to ○ for measurement and to ● for viewing or for zero calibration.
6.	Lens-barrel locking screw	Locks lens barrel at a fixed position.
7.	Lens barrel	Can be moved back and forth to set measurement angle.
8.	Tripod socket	Can be used to mount measurement probe on a tripod. Depth: 6mm.
9.	ISO socket	Can be used to mount measurement probe. ISO ø5mm, depth: 6mm
10.	Plug	Used to connect measuring probe to main unit or optional Multi-Probe Expansion Board.

ZERO CALIBRATION

Zero calibration is performed to determine the output of the measuring probe when no light reaches the sensor and to set this as the zero point to which all other measurements are referenced. Zero calibration must be performed after the POWER switch has been set ON brfore taking any measurements.

To perform zero calibration :

* Before performing zero calibration, check that the measuring probe has been connected to probe connector P1.

1. Check that the POWER switch is set to ON.

2. Set the measuring/viewing selector to the (viewing) position. (An image can be seen in the viewfinder, but no light will reach the sensor.)

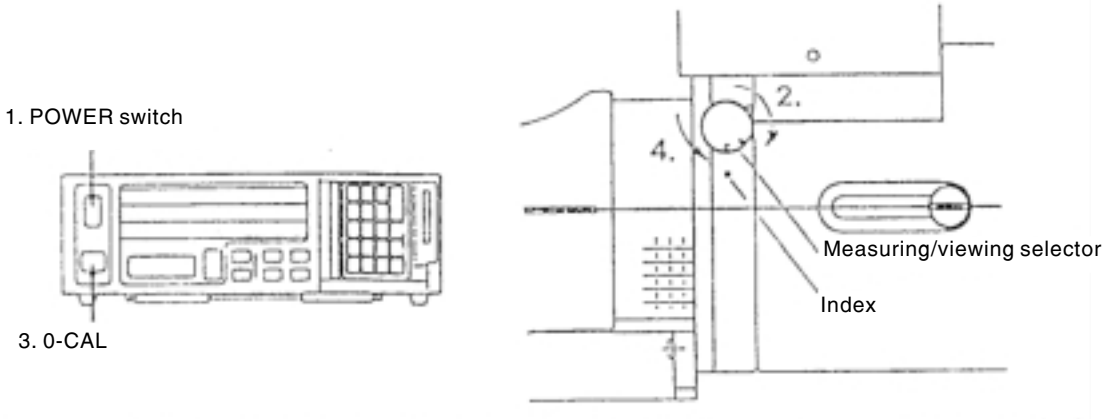
3. Press 0-CAL.

   * If zero calibration is being performed immediately after the POWER switch has been set to ON, press 0-CAL after "PUSH 0-CAL KEY" appears in the liquid crystal display.

4. Set the measuring/viewing selector to the position. Measurements will be started immediately.

DARKEN PROBE	Display after POWER switch is set to ON
↓ Approximately 5 seconds	
DARKEN PROBE PUSH 0-CAL KEY	
↓	
ZERO CALIBRATION	Press 0-CAL, Performing zero calibration
↓	
CH00 P1 E1 [ ]	Zero calibration completed

"E1" will appear in the liquid crystal display the first time the CA-110 is used after shipment because no standard color has been set.



- "E1" will appear in the liquid crystal display the first time the CA-110 is used after shipment because no standard color has been set.
- Zero calibration can be performed at any time, even if "PUSH 0-CAL KEY" is not shown in the liquid crystal display.

Note:

- If the luminance of the LCD to be measured is 5.00cd/m² (1.46 fL) or less, wait at least five minutes after setting POWER switch to ON before performing zero calibration. Also, when measuring LCDs of low luminance, zero calibration should be performed approximately once an hour to ensure accuracy.
- If the ambient temperature changes after zero calibration has been performed, perform zero calibration again.
- Do not press any key while zero calibration is being performed. If a key is pressed, the time required for zero calibration will become longer.

To check if zero calibration was performed correctly, place the receptor area of the probe face down on a flat surface so that no light reaches the receptor area.

If the display shown at right appears in the liquid crystal display, perform zero calibration again.

OFFSET ERROR PUSH 0-CAL KEY

- Even when "OFFSET ERROR" appears in the liquid crystal display, if light reaches the receptor area of the measuring probe, measured values will appear in the digital and analog displays. However, these values will not be accurate.

If any other display is shown, zero calibration was performed correctly.

CA110 Application (Continued)

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SETTING MEASUREMENT AREA

Measurement areas of Ø25mm and Ø50mm can be selected by extending or retracting the lens barrel. The Ø25mm measurement area can be used for measuring LCDs with 2 - inch or greater diagonals: the Ø50mm measurement area can be used for measuring LCDs with 4 - inch or greater diagonals.

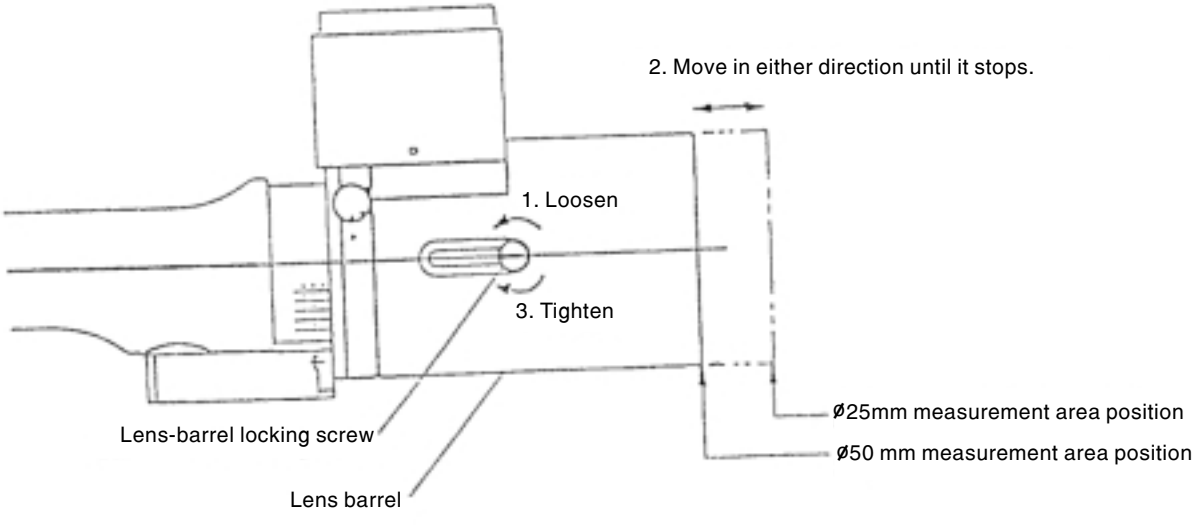
Set the measurement area :

Using a slotted screwdriver, loosen the lens - barrel locking screw.

Slide the lens barrel to the position corresponding to the desired measurement area. The lens barrel should be slid in the desired direction until it stops.
Extending the lens barrel fully sets the Ø25mm measurement area: retracting the lens barrel fully sets the Ø50mm measurement area.

Use the screwdriver to tighten the lens - barrel locking screw and lock the lens barrel in position.

Changing the measurement area also changes the measurement angle. this may result in differences between values measured with the Ø25mm measurement area and those measured with the Ø50mm measurement area to the viewing - angle characteristics of the LCD. For this reason. it is recommended that the measement area be constant for all measements.



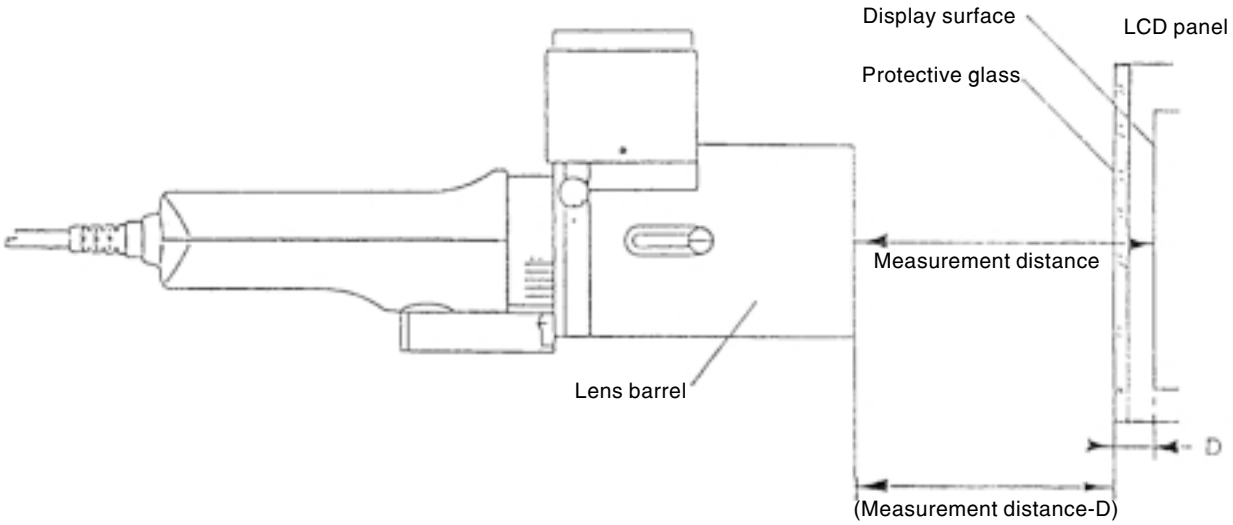
SETTING MEASUREMENT DISTANCE

The measurement distance (the distance from the front of the measuring probe's lens barrel to the display surface of the LCD) should be set using a ruler according to the procedure below.

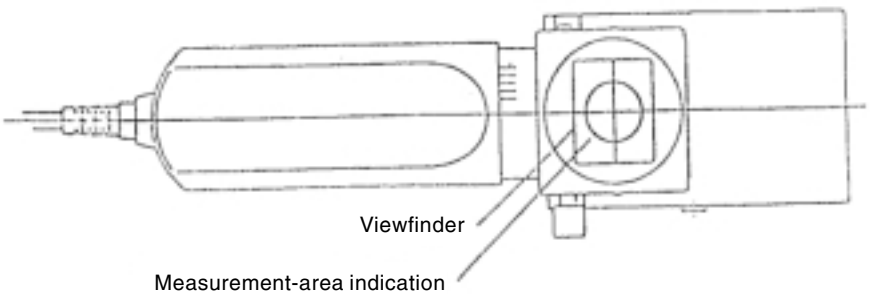
1. Mount the measuring probe on a tripod or other stand and mount the LCD on a suitable stand.
2. While using a ruler to measure the distance from the front of the measuring probe's lens barrel to the LCD's display surface, move the measuring probe or the LCD until the distance is the correct distance for the measurement area in use.

measurement area	ø 25mm	ø 50mm
measurement distance*	135mm+/-5mm	210mm+/-10mm

* Distance from the tip of the measuring probe's lens barrel to the LCD's display surface.



3. While looking through the viewfinder, move the measuring probe or LCD until the LCD section to be measured is inside the measurement-area indication in the viewfinder.



CA110 Application (Continued)

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After installation of Chroma 2250, CA110 and LCD monitor.

LCD monitor & Chroma 2250 :

- Turn on LCD monitor.
- Turn on Chroma 2250 as shown in Fig. 7.
- Provide CROSS-Hatch pattern at timing H=60.023KHz/1024 pixels
  V=75.029Hz/768 lines
  by Chroma 2250 (as shown in Fig.3 & Fig. 8.).

LCD Colour Analyzer CA-110 :

- Put on the cover (black) of Probe CA-A30 as shown in Fig.9.
- Set "Measurement/viewing selector" to ● for zero calibration of CA-110.
- Turn on CA-110 as shown in Fig. 10.
- Press "0-CAL" button as shown in Fig. 11.

Step A: Access Factory Mode

Access Factory Mode

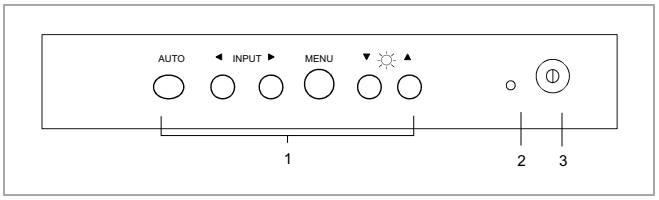


Fig. 1

1 = Buttons for the OSD menu (On-Screen-Display)
2 = Power indicator
3 = Power button

Factory Mode:

How to Get into Factory Mode Menu

Turn off LCD monitor.

Push AUTO " ◯ " & " ▲ ◯ " & " ⏻ " buttons simultaneously ,then release Power buttun only, untill picture comes on the screen. Press MENU " ◯ " button, bring up Factory mode indication as shown in Fig 2.

Factory Mode indication==>

Fig. 2

Use ▲ ◯ button to select factory adjustment indication (for example: MAXDATA 180P V1.88 02-04-07), which is the entrance of the factory adjustment menu, press MENU " ◯ " button to access it. The window shows as below.

Fig. 7

Fig.8

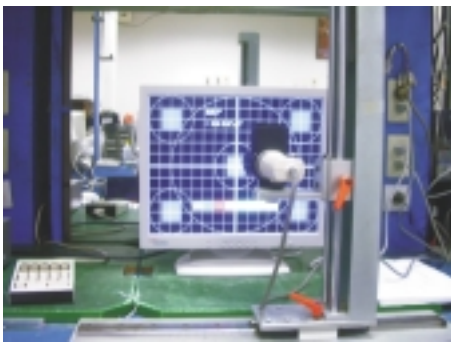


Fig. 9

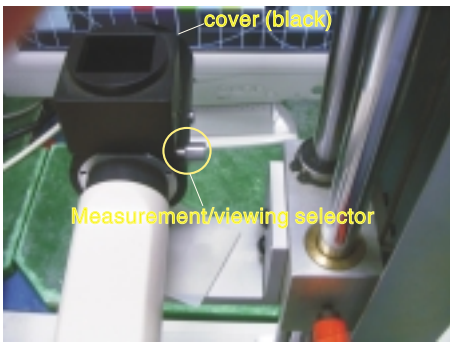


Fig. 10

(TURN ON)

Fig. 11

(Press 0-CAL)

Step B: Brightness & Contrast setting (pre-setting)

Brightness : at 100%
Contrast : at 70%

Fig. 12

Probe CA-A30 :

- Remove the cover (black) of CA-A30 as shown in Fig.13.
- Move the "Lens barrel" back and forth to get the optimal image as shown in Fig. 14 & Fig. 15.
- Then, turn the "Measurement/viewing selector" counterclockwise as shown in Fig. 13.
- At this moment the indicator on CA-110 as shown in Fig. 16. (example only)

Fig. 13

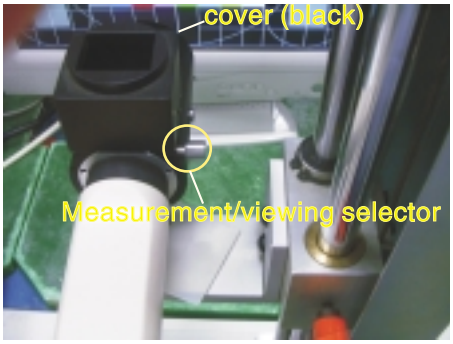


Fig. 14

unclear image

Fig. 15

clear image

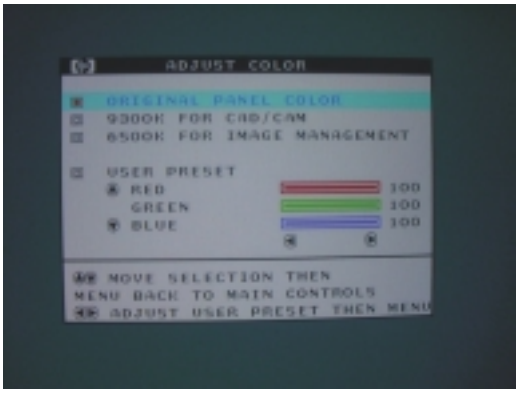


Fig. 16

Step C: Colour Temperature : Original Panel & 9300K & 6500K

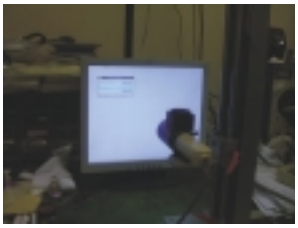
White pattern & OSD position :

- Provide the "Full White" pattern by Chroma 2250 as shown in Fig. 17.

Fig. 17

OSD position : Move to optimal position as shown in Fig. 18.

Fig. 18



CA110 Application (Continued)

Fig. 19

Luminance (Y) :
Above 200 NIT in the center of the screen as shown in Fig. 19.

FACTORY :
- Select "MAXDATA..." as shown in Fig. 20.
- Press Menu button, bring up Fig. 22.

Fig. 20

Factory Mode==>

ORIGINAL PANEL COLOR **:**

- Select "ORIGINAL PANEL COLOR" by OSD as shown in Fig. 21.
- Measure Luminance (Y) as shown in Fig. 23.

If the Luminance (Y) is below 200 Nit in the center of the screen, then adjust R,G,B Gain till the Luminance (Y) over 200Nit.

Panel color==>

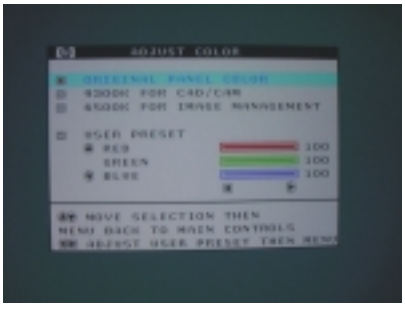


Fig. 21

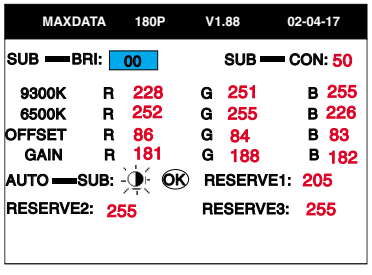
After that, check the 32 Gray Scale pattern, all the black and white scale should be visible on the screen as shown in Fig. 26.

9300K : As shown in Fig. 22 & 23.
- select 9300K R G B.

Value of 9300K R G B.
- select value of R or G or B
- decrease or increase the value of 9300K R G B.
- confirm/save the value change.
- Adjust the colour temperature of 9300K of R,G,B to x,y value as below.

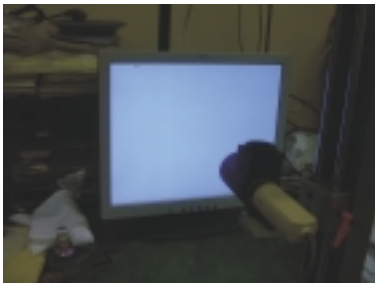
R (as shown in Fig. 22), (for example, production value of R is 220)
G (as shown in Fig. 22), (for example, production value of G is 250)
B (as shown in Fig. 22), (for example, production value of B is 255)

Fig. 22



x (center) = 0.281+/- 0.005
y (center) = 0.311 +/- 0.005

Fig. 23



Luminance (Y) : above 200 Nit in the center of the screen.
(experience: the value of "Y" too low, increase the value of "y" firstly.)

(experience: the value of "y" too high, decrease the value of "G".
the value of "x" too low, decrease the value of "R".)

6500K : As shown in Fig. 22 & 24.
- select 6500K R G B.

Value of 6500K R G B.
- select value of R or G or B
- decrease or increase the value of 6500K R G B.
- confirm/save the value change.
- Adjust the colour temperature of 6500K of R,G,B to x,y value as below.

R (as shown in Fig. 22), (for example, production value of R is 241)
G (as shown in Fig. 22), (for example, production value of G is 255)
B (as shown in Fig. 22), (for example, production value of B is 226

x (center) = 0.312+/- 0.005
y (center) = 0.338 +/- 0.005

Luminance (Y) : above 200 Nit in the center of the screen.
(experience: the value of "Y" too low, increase the value of "y" firstly.)

(experience: the value of "y" too high, decrease the value of "G".
the value of "x" too low, decrease the value of "R".)

Full white, Geometry, 32 Gray scale & Pixel on/off pattern check

Full White pattern check by eye :
- Provides the full white pattern by Chroma 2250.
- Check the image of each timing (total: 14 timings) to see if there is any colour's difference on the screen.

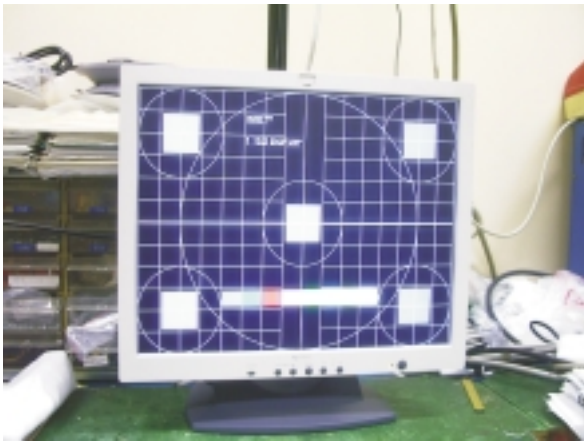
For instance :
at timing 60K/75Hz 1024x768 --> as shown in Fig. 24.

Fig. 24

Geometry check and setting by eye :
- Provides the cross-hatch pattern by Chroma 2250.
- Check the geometry of each timing (total: 14 timings) to adjust the geometry of image to optimal position.

For instance :
at timing 31.5K/70Hz 720x400 --> as shown in Fig. 25.

Fig. 25



32 Gray Scale pattern check by eye :
- Provides the 32 gray scale pattern by Chroma 2250.
- Check the image of each timing (total: 14 timings) to see if all the black and white scale are visible on the screen or not.

For instance :
at timing 60K/75Hz 1024x768 --> as shown in Fig. 26.

Fig. 26

Pixel on/off pattern check by eye :
- Provides the cross talk pattern by Chroma 2250.
- Check the image of each timing (total: 14 timings) to see if there is any Clock or/and Phase phenomenon on the screen.

For instance :
at timing 60K/75Hz 1024x768 --> as shown in Fig. 27.

Fig. 27

Repair Tips

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0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

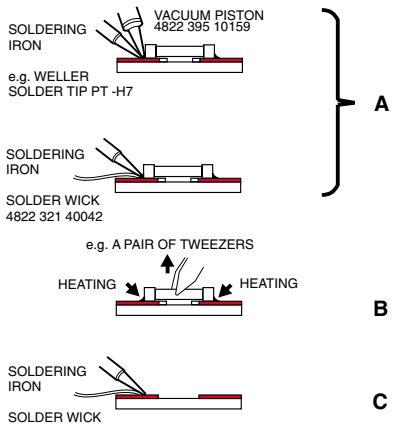
1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

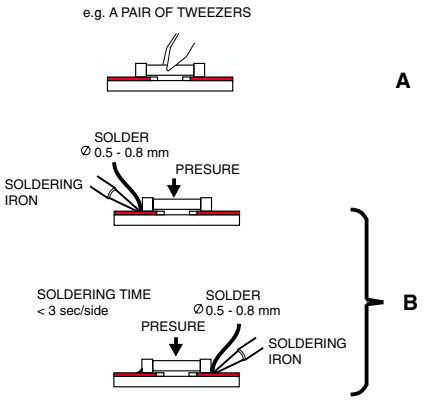
1.3 Caution on removal

- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fiq. 2B).

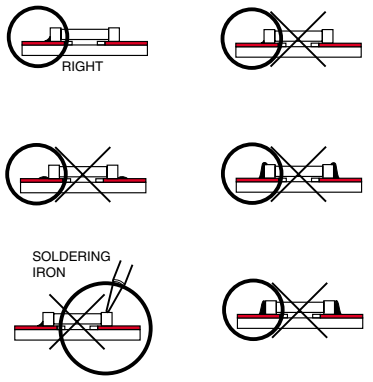
Fig. 2 MOUNTING



2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



GENERAL PRODUCT SPECIFICATION

. ANALOG AND DIGITAL DUAL INPUT

. AUTO PICTURE ADJUSTMENT

. 16 FACTORY PRESET MODES AND 32 PRESET MODES WHICH CAN BE RECOVERED TO PRESET MODES

. USER FRIENDLY OSD DISPLAY FOR MODE IDENTIFICATION /ADJUSTMENT

. DDC 2B COMMUNICATION CAPABILITY

. MAX. RESOLUTION 1280*1024 NON-INTERLACED AT 75 HZ

. 18 COLOR TFT LCD FLAT PANEL

. EASY TILT & SWIVEL BASE

. FULL RANGE POWER SUPPLY 90 264 VAC

. CE ENVIRONMENTAL POLICY

. ANTI-GLARE TO REDUCE LIGHT REFLECTION

. POWER MANAGEMENT CAPABILITY

. SOG SUPPORT

. TCO 99

. AUDIO SUPPORT

. PROVIDE USB HUB (OPTION)

. WALL MOUNT KIT (OPTION)

. PROTECTIVE COVER (OPTION)

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CONTENTS

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1.0 FOREWORD

This specification describes a 18" SXGA multi-scan color TFT LCD monitor with max. resolution up to 1280*1024 /76 Hz non-interlaced.

2.0 PRODUCT PROFILE

This display monitor unit is a color display monitor enclosed in global styling cabinet which has an integrated tilt and swivel base.

2.1 LCD

Type NR.	: LM181E05-C3 (LG-Philips)
Outside dimensions	: 389(w)317.2(h)27(d) (Typ) mm
Pitch (mm)	: 0.2805 (per one triad) x 0.2805mm
Color pixel arrangement	: RGB vertical stripes
Display surface	: low reflection, antiglare with hard coating
Number of color	: 256 gray levels(8 bits)
Backlight	: CCFL edge light system
Active area(WxH)	: 359x287.2mm (18 diagonal)
View angle	: Horizontal & Vertical 160 degree (CR>=10)
Contrast ratio	: 350:1
White luminance	: 250 nits (Typ)

2.2 Scanning frequencies

Hor.	: 30 82 K Hz
Ver.	: 56 - 76 Hz
2.3 Video dot rate	: < 140 MHz
2.4 Power input	: 90-264 VAC, 50/60 2 Hz
2.5 Power consumption	: < 60W maximum (exclude USB option)
2.6 Dimensions	: 426 * 454 * 180 mm
2.7 Weight	: 8.4 KGS

2.8 Functions :

(1) D-shell analog R/G/B separate inputs, H/V sync separated, Composite (H+V) TTL level, SOG sync

(2) DVI digital Panel Link TMDS input

2.9 Ambient temperature : 5°C - 35°C

2.10 Regulatory compliance :

(1) Safety : UL,CSA, B-mark, SISIR, SEMKO, EN60950/IEC950, CB, RFS(NZ)

(2) EMI : FCC, VCCI, CE, C-Tick, MPRIII, BCIQ

(3) Environmental Issue: TCO99

(4) Ergonomic Requirements : TUV/GS, TUV/ISO9241-3/-8

3.0 Electrical characteristics

3.1 Interface signals
The input signals can be applied in three different modes :
1). D-shell Analog

Input signal : Video, Hsync., Vsync

Video : 0.7 Vp-p, input impedance, 75 ohm @DC

Sync. : Separate sync TTL level, input impedance 2k2 ohm terminate
Hor. sync Positive/Negative
Ver. sync Positive/Negative
Composite sync TTL level, input impedance 2k2 ohm terminate
(Positive/Negative)
Sync on green video 0.3 Vp-p Negative (Video 0.7 Vp-p Positive)

2). Intel DVI Digital

Input signal : Single channel TMDS signal

3.1.1 Audio

Input signal level : 500mVrms
Headphone output signal level : 32ohm 0.7+0.7 Vrms
Input signal connector : 3.5mm mini jack
Loud speaker : 2+2 W stereo firing

3.1.2 Microphone
Sensitivity: -65+/- 5 dB re 1V/ubar at 1khz
Output impendence : 600 ohm typical

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3.2 Interface

3.2.1 D-Sub Cable

Length : 1.8 M +/- 50 mm (fixed)
Connector type : D-sub male with DDC2B pin assignments.
Blue connector thumb-operated jack screws

pin assignment :

PIN No.	SIGNAL
1	Red
2	Green/SOG
3	Blue
4	Sense (GND)
5	Not connected
6	Red GND
7	Green GND
8	Blue GND
9	+5V
10	Sync GND
11	Sense (GND)
12	Bi-directional data
13	H/H+V sync
14	V-sync
15	Data clock

3.2.2 DVI Cable

The input signals are applied to the display through DVI-I cable.
Length : 1.8 M +/- 50 mm (fixed)
Connector type : DVI-I male with DDC2B pin assignments
White connector thumb-operated jack screws

pin assignment :

Pin No.	Description
1	TMDS data2-
2	TMDS data2+
3	TMDS data2 shield
4	NC
5	NC
6	DDC clock
7	DDC data
8	Analog V-sync
9	TMDS data1-
10	TMDS data1+
11	TMDS data1 shield
12	NC

13	NC
14	+5V
15	Ground(return for +5V and H/Vsync)
16	Hot plug detect
17	TMDS data0-
18	TMDS data0+
19	TMDS data0 shield
20	NC
21	NC
22	TMDS clock shield
23	TMDS clock+
24	TMDS clock-
C1	Analog R
C2	Analog G
C3	Analog B
C4	Analog H-sync
C5	Analog GND (Analog R, G, B return)

3.2.3 Software control functions via OSD/control

OSD (On Screen Display) function
(1) Analog interface OSD :
Adjustable functions:

MAIN CONTROLS
LANGUAGE
ADJUST POSITION
BRIGHTNESS & CONTRAST
VIDEO NOISE
ADJUST COLOR
OSD SETTINGS
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN ok

GENERAL PRODUCT SPECIFICATION(Continued)

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LANGUAGE	: ENGLISH , ESPANOL , FRANCAIS , DEUTSCH , ITALIANO JAPANESE
ADJUST POSITION	: HORIZONTAL VERTICAL
BRIGHTNESS & CONTRAST	: brightness and contrast adjustment.
VIDEO NOISE	: Phase adjustment, Clock adjustment
ADJUST COLOR	: Original panel color , 9300K for CAD/CAM , 6500K for image management, User preset red green blue adjust.
OSD POSITION	: OSD H-position, OSD V-position
PRODUCT INFORMATION	: Show Serial No./ Resolution / Video input.
RESET TO FACTORY SETTING	: recall to Factory preset settings.
INPUT SELECTION	: select Analog D-sub, Digital DVI-D or Analog DVI-A.

(2) Digital interface OSD :
Adjustable functions:

MAIN CONTROLS
LANGUAGE
ADJUST POSITION
BRIGHTNESS & CONTRAST
OSD SETTINGS
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN ok

LANGUAGE : ENGLISH , ESPANOL , FRANCAIS , DEUTSCH , ITALIANO, JAPANESE

ADJUST POSITION : HORIZONTAL
VERTICAL

BRIGHTNESS & CONTRAST : brightness and contrast adjustment.

OSD POSITION : OSD H-position, OSD V-position

PRODUCT INFORMATION : Show Serial No./ Resolution / Video input.

RESET TO FACTORY SETTING: return to Factory preset timings and settings.

INPUT SELECTION : select Analog D-sub, Digital DVI-D or Analog DVI-A.

3.3 Timing requirement
3.3.1 Mode storing capacity
(1) Factory preset modes : 16
(2) Preset modes : 32

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3.3.2 Factory preset timings

The factory settings of size and centering are according to the reference timing charts (see fig-4, fig-5)

MODE NO.	1	2	3	4
RESOLUTION	640 x350	720 x400	640 x480	640x480
Dot clock(MHz)	25.175	28.321	31.501	36
f h	31.469kHz	31.468kHz	37.5kHz	36kHz
A (us)	31.778(800 dots)	31.78(900dots)	26.667 (840 dots)	23.111 (832 dots)
B (us)	3.813(96 dots)	3.813(108dots)	2.032 (54 dots)	1.556 (56 dots)
C (us)	1.907(48 dots)	1.907(54dots)	3.81 (120 dots)	2.222 (80 dots)
D (us)	25.422(640 dots)	25.42(720dots)	20.317 (640 dots)	17.778 (640 dots)
E (us)	0.636(16 dots)	0.636(18dots)	0.508 (26 dots)	1.555 (56 dots)
f v	70Hz(70.09)	70Hz(70.085)	75Hz	85Hz
O (ms)	14.27(449 lines)	14.27(449 lines)	13.333 (500 lines)	11.763 (509 lines)
P (ms)	0.064(2 lines)	0.064(2 lines)	0.08 (3 lines)	0.069 (3 lines)
Q (ms)	1.907(60 lines)	1.112(34 lines)	0.427 (16 lines)	0.578 (25 lines)
R (ms)	11.12(350 lines)	12.71(400 lines)	12.8 (480 lines)	11.093 (480 lines)
S (ms)	1.175(37 lines)	0.381(13 lines)	0.026 (1 lines)	0.023 (1 lines)
SYNC. H/V POLARITY	+/-	-/+	- / -	-/-
SEP . SYNC	Y	Y	Y	Y

MODE NO.	5	6	7	8
RESOLUTION	640 x 480	640 x 480	640 x 480	800 x 600
Dot clock(MHz)	31.500	30.24	25.175	36
f h	37.861kHz	35 kHz	31.5kHz	35.2kHz
A (us)	26.413(832 dots)	28.571 (864 dots)	31.778(800 dots)	28.444(1024 dots)
B (us)	1.270(40 dots)	2.116 (64 dots)	3.813(96 dots)	2.000 (72 dots)
C (us)	3.810(120 dots)	3.175(96 dots)	1.907(48 dots)	3.556 (128 dots)
D (us)	20.317(640 dots)	21.164(640 dots)	25.422(640 dots)	22.222(800 dots)
E (us)	1.016(32 dots)	2.116(64 dots)	0.636(16 dots)	0.666 (24 dots)
f v	72.809Hz	67Hz	60Hz	56Hz
O (ms)	13.735(520 lines)	15 (525 lines)	16.683 (525 lines)	17.778 (625 lines)
P (ms)	0.079(3 lines)	0.086(3 lines)	0.064 (2 lines)	0.057 (2 lines)
Q (ms)	0.528(20 lines)	1.114(39 lines)	1.049 (33 lines)	0.626 (22 lines)
R (ms)	12.678(480 lines)	13.714(480 lines)	15.253 (480 lines)	17.066 (600 lines)
S (ms)	0.45(17 lines)	0.086(3 line)	0.317 (10 line)	0.029 (1 line)
SYNC. H/V POLARITY	-/-	- / -	- / -	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	9	10	11	12
RESOLUTION	800 x 600	800 x 600	800 x 600	832 x 624
Dot clock(MHz)	49.498	40	56.251	57.28
f h	46.9kHz	37.9kHz	53.7kHz	49.7kHz
A (us)	21.333 (1056 dots)	26.4 (1056 dots)	18.631 (1048 dots)	20.11(1152 dots)
B (us)	1.616 (80 dots)	3.2 (128 dots)	1.138 (64 dots)	1.117(64 dots)
C (us)	3.232 (160 dots)	2.2 (88 dots)	2.702 (152 dots)	3.91(224 dots)
D (us)	16.162 (800 dots)	20 (800 dots)	14.222 (800 dots)	14.52(832 dots)
E (us)	0.323 (16 dots)	1 (40 dots)	0.569 (32 dots)	0.563(32 dots)
f v	75Hz	60Hz	85Hz	75Hz
O (ms)	13.333 (625 lines)	16.579 (628 lines)	11.756(631 lines)	13.41(667 lines)
P (ms)	0.064 (3 lines)	0.106 (4 lines)	0.056 (3 lines)	0.06(3 lines)
Q (ms)	0.448 (21 lines)	0.607 (23 lines)	0.503 (27 lines)	0.784(39 lines)
R (ms)	12.8 (600 lines)	15.84 (600lines)	11.179 (600 lines)	12.55(624 lines)
S (ms)	0.021 (1 line)	0.026 (1 line)	0.018 (1 lines)	0.016(1 lines)
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+/+
SEP . SYNC	Y	Y	Y	Y

MODE NO.	13	14	15	16
RESOLUTION	800 x 600	1024 x 768	1024 x 768	1024 x 768
Dot clock(MHz)	50	78.75	65	75
f h	48.077kHz	60kHz	48.363kHz	56.5kHz
A (us)	20.80 (1040dots)	16.66 (1312dots)	20.677(1344 dots)	17.707(1328 dots)
B (us)	2.400 (120 dots)	1.219 (96 dots)	2.092(136 dots)	1.813(136 dots)
C (us)	1.280 (64 dots)	2.235 (176 dots)	2.462(160 dots)	1.920(144 dots)
D (us)	16.00 (800 dots)	13.003 (1024 dots)	15.754(1024 dots)	13.653(1024 dots)
E (us)	1.120 (56 dots)	0.203 (16 dots)	0.369(24 dots)	0.321 (24 dots)
f v	72Hz (72.188)	75Hz (75.000)	60.004Hz	70.004Hz
O (ms)	13.85 (666 lines)	13.328 (800 lines)	16.666(806 lines)	14.272(806 lines)
P (ms)	0.125 (6 lines)	0.05(3 lines)	0.124(6 lines)	0.106(6 lines)
Q (ms)	0.478 (23 lines)	0.446 (28 lines)	0.600(29 lines)	0.514(29 lines)
R (ms)	12.48 (600 lines)	12.80 (768 lines)	15.880(768 lines)	13.599(768 lines)
S (ms)	0.770 (37 line)	0.017 (1 line)	0.062(3 lines)	0.053(3 lines)
SYNC. H/V POLARITY	+ / +	+ / +	- / -	-/-
SEP . SYNC	Y	Y	Y	Y

GENERAL PRODUCT SPECIFICATION(Continued)

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MODE NO.	17	18	19	20
RESOLUTION	1024 x 768	1024 x 768	1152 x 8 64	1152 x 864
Dot clock(MHz)	83.096	94.5	108	94.5
f h	61.1kHz	68.7kHz	67.5kHz	63.9kHz
A (us)	16.367 (1360dots)	14.561 (1376 dots)	14.815 (1600 dots)	15.661(1480 dots)
B (us)	1.348 (112 dots)	1.016 (96 dots)	1.185 (128 dots)	1.016(96 dots)
C (us)	2.022 (168 dots)	2.201 (208 dots)	2.37 (256 dots)	1.116(105 dots)
D (us)	12.323 (1024 dots)	10.836 (1024 dots)	10.667 (1152 dots)	12.19(1152 dots)
E (us)	0.674 (56 dots)	0.508 (48 dots)	0.593 (64 dots)	1.339(127 dots)
f v	76Hz	85Hz	75Hz	70Hz
O (ms)	13.142 (803 lines)	11.765 (808 lines)	13.333 (900 lines)	14.283(912lines)
P (ms)	0.049 (3 lines)	0.044 (3 lines)	0.044 (3 lines)	0.047(3lines)
Q (ms)	0.507 (31 li nes)	0.524 (36 lines)	0.474 (32 lines)	0.689(44 lines)
R (ms)	12.57 (768 lines)	11.183 (768lines)	12.8 (864 lines)	13.531(864 lines)
S (ms)	0.016 (1 line)	0.014 (1 line)	0.015 (1 lines)	0.016(1 lines)
SYNC. H/V POLARITY	+ / +	+ / +	- / -	+/+
SEP . SYNC	Y	Y	Y	Y

MODE NO.	21	22	23	24
RESOLUTION	1152 x 864	1152 x 870	1152 x 900	1152 x 900
Dot clock(MHz)	79.9	100	94.5	108
f h	54.0kHz	68.7kHz	61.8kHz	71.8kHz
A (us)	18.523(1480 dots)	14.56 (1456 dots)	16.169 (1528 dots)	13.926 (1054dots)
B (us)	1.952(156 dots)	1.28 (128 dots)	1.354 (128 dots)	1.185 (128 dots)
C (us)	1.352(108 dots)	1.44(144 dots)	2.201 (208 dots)	1.778 (192 dots)
D (us)	14.418(1152 dots)	11.52 (1152 dots)	12.19 (1152 dots)	10.667 (1152 dots)
E (us)	0.801(64 dots)	0.32 (32 dots)	0.424 (40 dots)	0.296 (32 dots)
f v	60Hz	75Hz	66Hz	76Hz
O (ms)	16.671(900lines)	13.333 (916 lines)	15.151 (937lines)	13.132 (943 lines)
P (ms)	0.148(8 lines)	0.044 (3 lines)	0.065 (4 lines)	0.111 (8 lines)
Q (ms)	0.445(24 lines)	0.568(39 lines)	0.501 (31 lines)	0.46 (33 lines)
R (ms)	16.004(864 lines)	12.678 (870 lines)	14.552 (900lines)	12.533 (900 lines)
S (ms)	0.074(4 lines)	0.043 (4 line)	0.033 (2 line)	0.028 (2 lines)
SYNC. H/V POLARITY	+/+	- / -	Serr-	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	25	26	27	28
RESOLUTION	1280 x 960	1280 x 960	1280 x 1024	1280 x 1024
Dot clock(MHz)	108	129.895	130.223	108
f h	60kHz	75kHz	76kHz	64kHz
A (us)	16.667(1800 dots)	13.307 (1728 dots)	13.158 (1712 dots)	15.63 (1688 dots)
B (us)	1.037(112 dots)	1.047 (136 dots)	1.024 (133 dots)	1.037 (112 dots)
C (us)	2.889(312 dots)	1.725 (224 dots)	1.905 (248 dots)	2.296 (248 dots)
D (us)	11.852(1280 dots)	9.857 (1280 dots)	9.83 (1280 dots)	11.852 (1280 dots)
E (us)	0.889(96 dots)	0.678 (88 dots)	0.399(51 dots)	0.445 (48 dots)
f v	60Hz	75Hz	72Hz	60Hz
O (ms)	16.667(1000 lines)	13.333 (1002 lines)	14 (1064 lines)	16.661 (1066 lines)
P (ms)	0.05(3 lines)	0.039 (3 lines)	0.02 (2 lines)	0.047 (3 lines)
Q (ms)	0.600(36 lines)	0.48 (36 lines)	0.5 (38 lines)	0.594 (38 lines)
R (ms)	16(960 lines)	12.774 (960 lines)	13.468 (1024 lines)	16.005 (1024lines)
S (ms)	0.017(1 lines)	0.04 (3 lines)	0.012 (0 line)	0.015 (1 line)
SYNC. H/V POLARITY	+/+	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	29	30	31	32
RESOLUTION	1280 x 1024	1280 x 1024	1280 x 1024	688 x 556
Dot clock(MHz)	135	138.008	117	27
f h	80kHz	81.1kHz	71.7kHz	31.25kHz
A (us)	12.504(1688 dots)	12.326 (1664 dots)	13.949 (1632 dots)	32 (864 dots)
B (us)	1.067(144 dots)	0.474 (64 dots)	0.957 (112 dots)	3.852 (104 dots)
C (us)	1.837(248 dots)	2.133 (288 dots)	1.915 (224 dots)	1.778 (48 dots)
D (us)	9.481(1280 dots)	9.481 (1280 dots)	10.94 (1280 dots)	25.481 (688 dots)
E (us)	0.119(16 dots)	0.238 (32 dots)	0.137 (16 dots)	0.889 (24 dots)
f v	75Hz	76Hz	67Hz	50Hz
O (ms)	13.329(1066 lines)	13.139 (1066 lines)	14.883 (1067lines)	20 (625 lines)
P (ms)	0.038(3 lines)	0.099 (8 lines)	0.112 (8 lines)	0.128 (4 lines)
Q (ms)	0.475(38 lines)	0.394 (32 lines)	0.46 (33 lines)	1.408 (44 lines)
R (ms)	12.804(1024 lines)	12.622 (1024 lines)	14.283 (1024 lines)	17.972 (556 lines)
S (ms)	0.012 (1 line)	0.024(2 lines)	0.028 (2 lines)	0.672 (21 lines)
SYNC. H/V POLARITY	+/+	- / -	+ / +	-/ +
SEP . SYNC	Y	Y	Y	Y

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3.3.3 Horizontal scanning

Sync polarity : Positive or Negative
Scanning frequency : 30 - 82 KHz

3.3.4 Vertical scanning

Sync polarity : Positive or Negative
Scanning frequency : 56 - 76 Hz

3.4 Power input connection

Power cord length : 1.8 M
Power cord type : 3 leads power cord with protective earth plug.

3.5 Power management

The power consumption and the status indication of the set with power management function are as follows,
Note : Disconnect DVI signal cable and audio module

STATUS	Horizontal	Vertical	Power Spec	LED
On	Pulse	Pulse	as normal on	Green
Stand-by	No Pulse	Pulse	< 2 W	Amber
Suspend	Pulse	No Pulse	< 2 W	Amber
off	No Pulse	No Pulse	< 2 W	Amber

According to VESA power saving signalling.
TCO99 power saving requirement
EPA energy star requirement

(Power Switch Off)
for Digital input power consumption is less 2W
(In non-DMPM recoverable off mode)

3.6 Display identification

3.6.1 In accordance with VESA Display Channel Standard V1.0 and having DDC 2B capability

3.6.2 In accordance with DVI requirement (DDWG digital Visual Interface revision 1.0) use DDC 2B and EDID 3.0 structure 2.0

4.0 Visual characteristics

4.1 Test conditions

Unless otherwise specified, this specification is defined under the following conditions.

(1) Input signal : As defined in 3.3, 1280 x 1024 non-interlaced mode (80K/75Hz), signal sources must have 75 ohm output impedance.

(2) Luminance setting: controls to be set to 200 nits with full screen 70 % duty cycle white signal

(3) Warm up: more than 30 minutes after power on with signal supplied.

(4) Ambient light: 400 -- 600 lux.

(5) Ambient temperature: 20+/- 5 °C

4.2 Resolution

Factory preset modes (16 modes)

#	Resolution	Frequency	Pixel rate	Sync	Comment
1	640X350	31.5K/70HZ	25.175	(+/-)	IBM VGA 10h
2	720X400	31.5K/70HZ	28.322	(-/+)	IBM VGA 3h
3	640X480	37.5K/75HZ	31.501	(-/-)	
4	640X480	31.5K/60HZ	25.175	(-/-)	
5	800X600	35.2K/56HZ	36	(+/+)	
6	800X600	46.9K/75HZ	49.498	(+/+)	
7	800X600	37.9K/60HZ	40	(+/+)	
8	832X624	49.7K/75HZ	57.28	(+/+)	MAC
9	1024X768	48.4K/60HZ	65	(-/-)	
10	1024X768	56.5K/70HZ	75	(-/-)	
11	1152X870	68.7K/75HZ	100	(-/-)	MAC
12	1152X900	71.8K/76HZ	108	(+/+)	SUN Mode II
13	1280X1024	64.0K/60HZ	108	(+/+)	
14	1280X1024	80.0K/75HZ	135	(+/+)	
15	1280X1024	81.1K/76HZ	135.008	(-/-)	SUN Mode I
16	688X556	31.25K/50HZ	27	(-/+)	TV-PAL

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Note : 1. Screen displays perfect picture at 16 factory preset modes
2. Screen displays visible picture with OSD warning when input modes are other then 32 preset modes

4.3 Brightness : 200 nits (at panel color temperature, 9 points averaged, Fig. 1)

4.4 Image size

4.4.1 Actual display size

359x287mm

4.5 Brightness uniformity

Set contrast at 70% and turn the brightness to get average above 200 nits at center of the screen.
Apply the Fig 1, it should comply with the following formula:

$$\frac{B\_max}{B\_min} \times 100\% < 1.3$$

Where B_max = Average of 5 points maximum brightness
B_min = Average of 5 points minimum brightness

4.6 Check Cross talk (S)

Apply Pattern 2. Set contrast and brightness at 100 %.
Measure YA. Then output Pattern 3 and measure YB.
the cross talk value :

$$\frac{ABS(YA - YB)}{YA} \times 100\% < 1.2\ \%$$

4.7 White color adjustment

There are two factory preset white color 9300K, 6500K.

Apply full white pattern, with brightness in 100 % position and the contrast control at 70 % position.
The 1931 CIE Chromaticity (color triangle) diagram (x,y) coordinate for the screen center should be:

9300K	CIE coordinates	X = 0.281+/- 0.020 Y = 0.311+/- 0.020
6500K	CIE coordinates	X = 0.312+/- 0.020 Y = 0.338 +/- 0.020

5.0 Mechanical characteristics

5.1 Controls

Front side:
- DC power switch
- OSD function key
- Auto key
- Volume & off control
- Bass on/off
- Mute on/off

Rear :
- Video signal cable
- DVI connector.
- Power cord socket
- DC 12V fly-in
- Audio in jack
- Microphone out jack

Side :
- Earphone jack
- External Mic. in jack

5.2 Unit dimension / Weight

Set dimension (incl. pedestal): 414(W) * 406(H) * 180(D) mm

Net weight : : 7.2 KGS

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5.3 Tilt and swivel base

tilt angle : -5 to +35
swivel rotation : 175

5.4 Transportation packages

5.4.1 Shipping dimension/Weight
Carton dimension : 510(W) X 570(H) X 244(D) mm
Gross weight : 8.5 KGS

5.4.2 Block unit / Palletization

layers/block	sets/layer	sets/block unit
8	4	32

blocks/container	
20 feet	40 feet
10	21

6.0 Environmental characteristics

The following sections define the interference and susceptibility condition limits that might occur between external environment and the display device.

6.1 Susceptibility of display to external environment

Operating
- Temperature : 5 to 35 degree C
- Humidity : 80% max
- Altitude : 0-3658m
- Air pressure : 600-1100 mBAR

Storage
- Temperature : -20 to 60 degree C
- Humidity : 85% max (<40)
- Altitude : 0-12192m
- Air pressure : 300-1100 mBAR

Note: recommend at 5 to 35℃, Humidity less than 60%

6.2 Transportation tests
6.3

Standard		Philips UAN-D1400	NSTA
Drop Test	Height	70 cm	61 cm
	Sequence	1 corner 3 faces	1 corner 3 edge 6 face
	Test Result	electrical function ok mechanical function ok no serious damage on set appearance (room temp./-10 c, humidity 70 %)	
Vibration Test	Sequence	5-200 Hz 0.73 G 30 min. for each axis	10-50-10 Hz 0.35 mm 30 min. for each axis
	Test Result	electrical function ok mechanical function ok no serious damage on set appearance	
Bump Test	For design evaluation only operating 10 G, 11 msec, 1000 cycles temperature : 23 C humidity : 60 % air pressure : 100 kpa (according to DSD draft standard UAN -D636)		

6.3 Display disturbances from external environment
According to IEC801-2 for ESD disturbances

6.4 Display disturbances to external environment

6.4.1 EMI
EMI : FCC,VCCI,CE,C-Tick, MPRIII, BCIQ

7.0 Reliability

7.1 Mean Time Between Failures
System MTBF (Excluding the LCD panel and CCFL) : 50,000 hrs
CCFL MTBF : 50,000 hrs

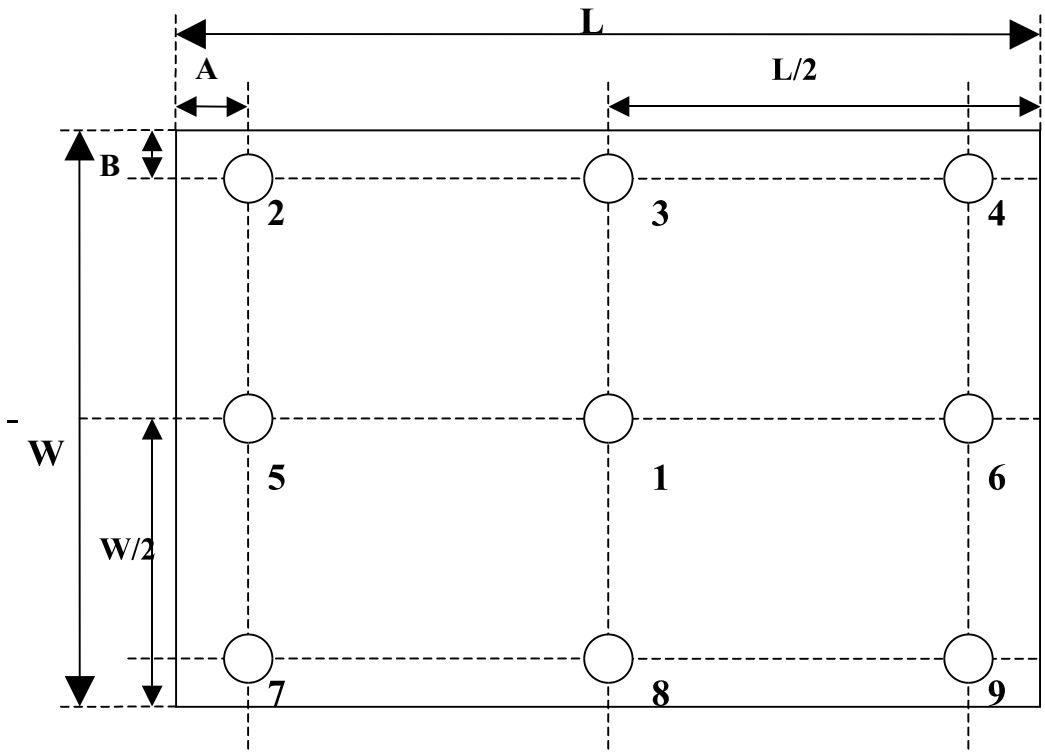
8.0 Quality assurance requirements

8.1 Acceptance test
according to MIL-STD-105D Control II level

AQL : 0.65 (major)
2.50 (minor)
(please also refer to annual quality agreement)
Customer acceptance criteria : UAW0377/00

9.0 Serviceability
The serviceability of this monitor should fulfill the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT-0361.

Fig 1: Brightness and Uniformity



A: L/10 mm
B: W/10 mm
L: 359.040 mm
W: 287.232 mm

Average= 9 points average

Fig 2:

Cross talk pattern

Gray level 46 (64 Gray level)

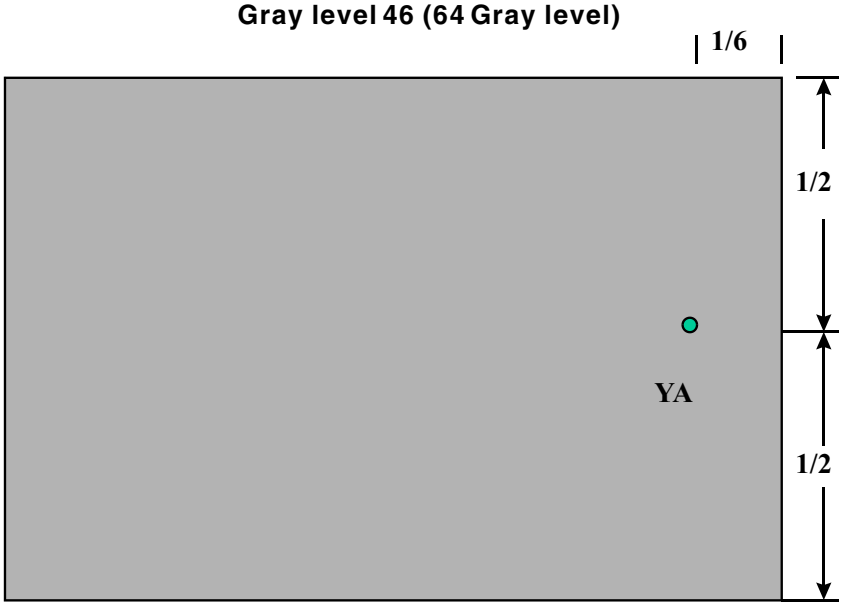
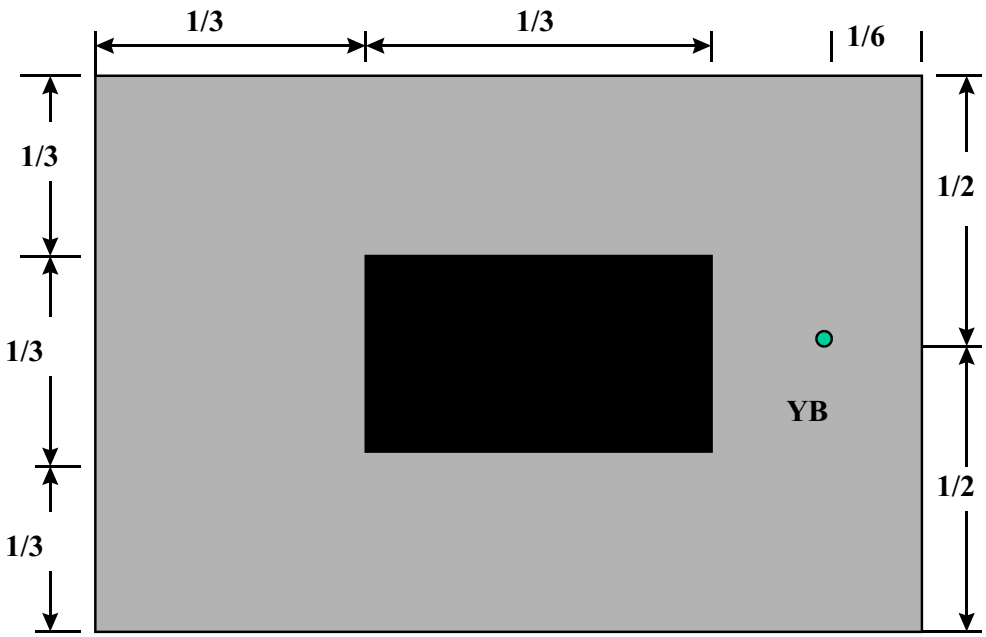


Fig 3:
Cross talk Pattern
Center at Gray level 0 (Black)



CLASS NO.	18"TFT SXGA LCD CMTR-HP						
01-11-09							
NAME EDWARD CHANG	SUPERS.	23	590 — 21	10		A4	
TY	CHECK	DATE 01-11-09	Property of				

2838 100 05424

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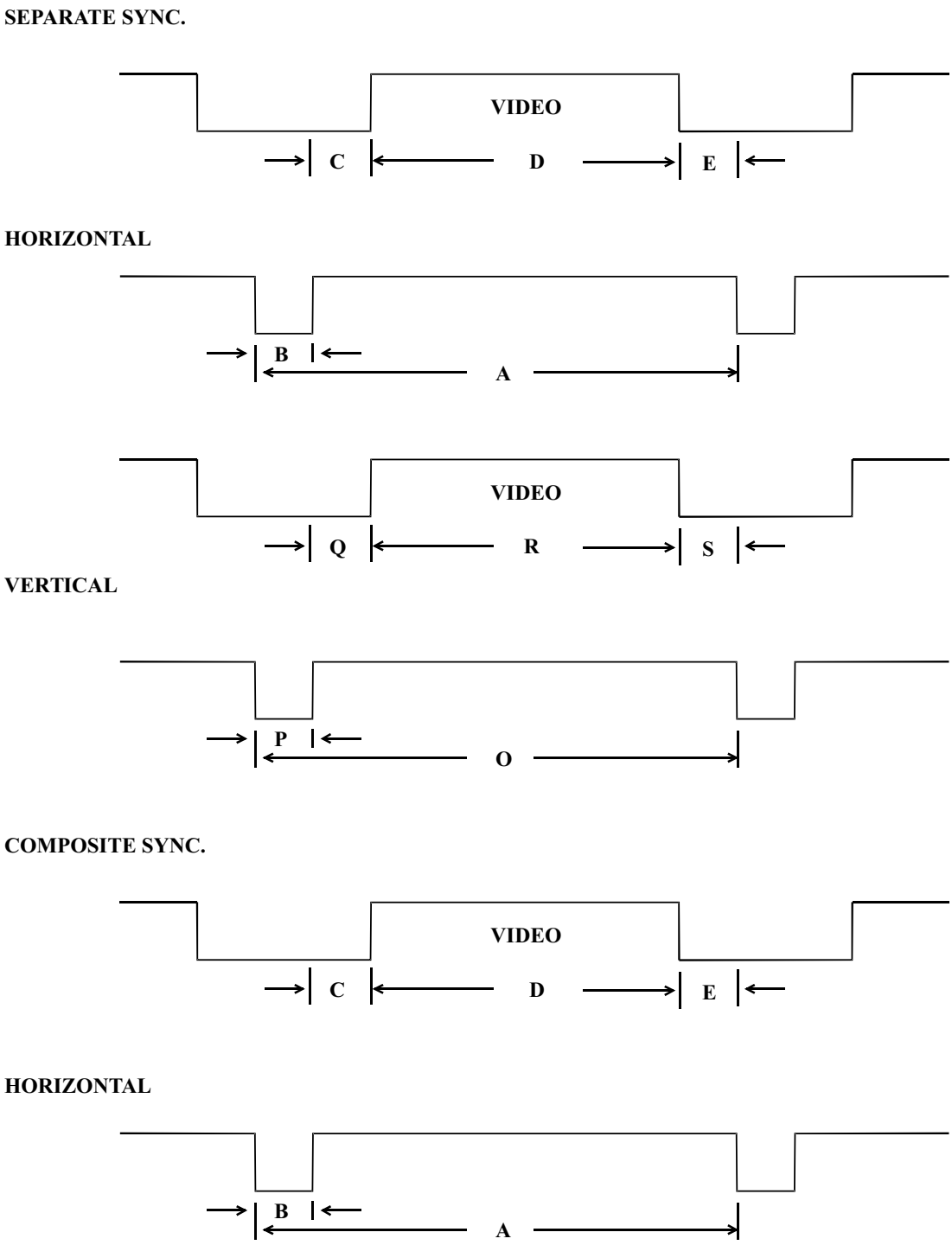

FIG-4 TIMING CHART -1

CLASS NO.	18"TFT SXGA LCD CMTR-HP						
01-11-09							
NAME EDWARD CHANG	SUPERS.	23	590 — 22	10		A4	
TY	CHECK	DATE 01-11-09	Property of				

2838 100 05424

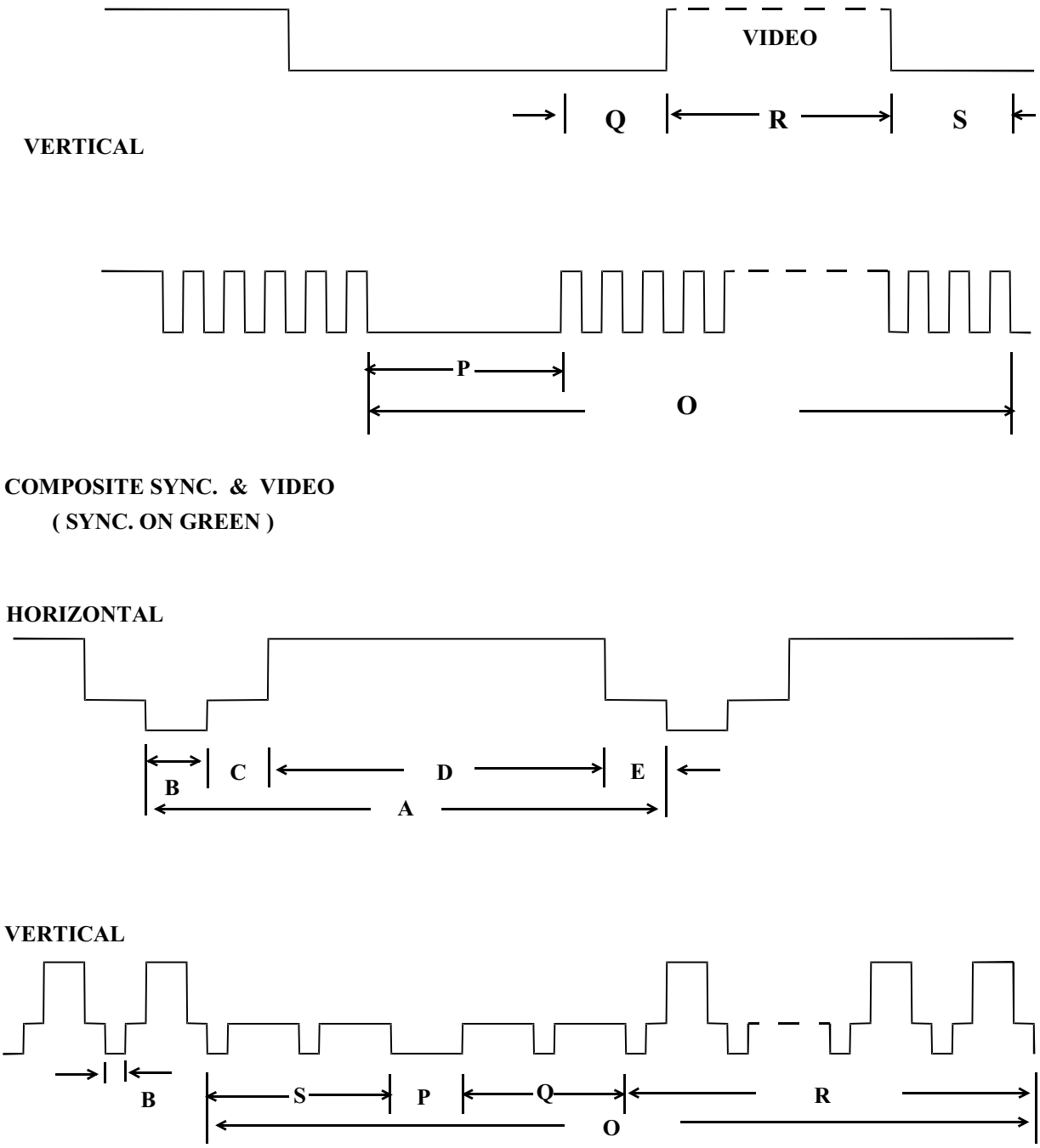

FIG-5 TIMING CHART -2

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Safety Test Requirements

All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both *Hipot* and *Ground Continuity* testing.

HI-POT TEST INSTRUCTION

1. Application requirements

1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.

1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.

2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.

2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

2.2.1 The test with AC voltage is only for production purpose, **Service center shall use DC voltage.**

2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.

2.2.3 The test voltage must be maintained within the specified voltage + 5%.

2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

3. Equipments and Connection

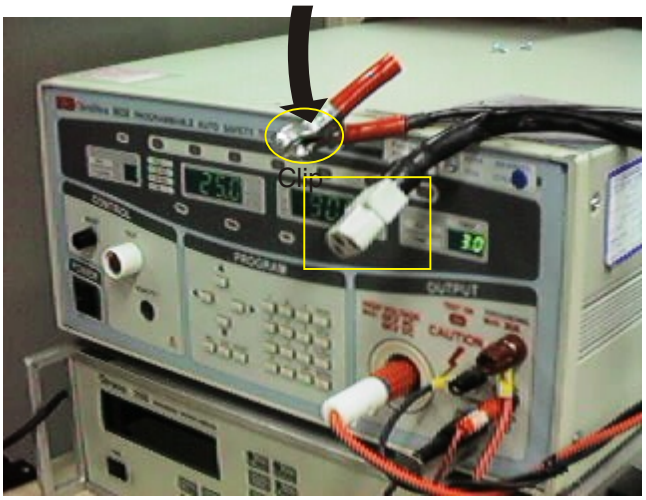
3.1. Equipments

For example :

- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection

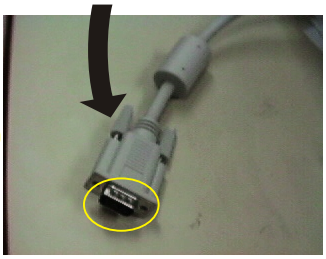
* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



(ChenHwa 9032 tester)

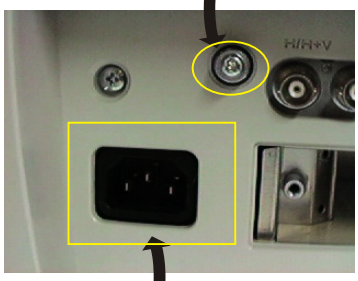
Video cable

Connect the "video cable" or "grounding screw" to the CLIP on your tester.



Grounding screw

Connect the power cord to the monitor.



Power outlet

(Rear view of monitor)

4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.