42 Inch(Wide) PDP SVC Training Manual

LG Electronics / DND QA
Contents

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Ⅱ. Module formation & spec

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   3. one or more of Data COF IC have regular vertical lines.
   4. Data COF IC unit error pattern
   5. The screen by Scan COF is not displayed.
   6. Regular- interval vertical line in the whole screen.
   7. Vertical data copy
   8. One or more vertical bars.
   9. One or more horizontal bars.
   10. Input signal pattern is displayed but the whole brightness of screen is dark.
   11. In full white pattern, foreign color is displayed or in full black pattern, mis-discharge is partially occurred.
   12. In full white pattern, the brightness is getting darker toward the center.
   13. A specific brightness of one color is not clear.

Ⅳ. Non-picture defect diagnosis

Ⅴ. One Point Service Guide(42 Inch, 40 Inch)
1. **Usage/Service points to be concerned**

Color PDP is a display device consisting of Panel section & Drive section. Panel section is composed of electrode, fluorescent substances, dielectrics and gases, and drive section is a combination of electrical circuit section and PCB section. We call this concrete as PDP Module Ass’y and the following shows warning.

**SUGGESTIONS**

1. **Static precaution**
   Drive section circuit is C-MOS circuit, so to protect against static electricity, wear static-proof wrist band.

2. **Cleaning**
   When wiping panel, do not use liquid cleaner or other chemicals. Use a damp cloth for cleaning.

3. **Handling**
   Color PDP uses high voltage (Max. 500V). Be aware of electronic shock when handling PDP Unit and don’t touch drive circuit. And even driver circuit’s capacitor is turned off but charge still remains there, so to touch drive circuit, be sure to wait at least 1 minute.

4. **Warning when connecting signal & Power Connector in operation**
   Do not touch connector while Color PDP is operating.

5. **PDP servicing and guarantee**
   Glass Panel and Drive Circuit section are linked and operating together.
   If you disassemble and assemble the product in your own hands, LGE is exempted from the guarantee of function, quality and etc.

6. **Damage in still image**
   Color PDP uses fluorescent material. The quality of PDP fluorescence by nature becomes deteriorated if using it in the same condition of CRT.
   To prevent this symptom, input full-screen regularly or use screensaver software.
   So do not display the still image for a long time.

7. **Temperature & ventilation**
   Color PDP’s Glass Panel section and Drive circuit section emit the heat so the temperature shall be kept under 40.
   The temperature of glass panel section is pretty high because built-in drive circuit emits the heat.
   PDP is operating with high voltage therefore be sure to keep it away from conductive objects.

8. **Warning when handling Module**
   Be aware that PDP shall not be touched by metal or hard objects and shocked by the heat or mechanical force.
   Be careful when disassembling or handling.
   Be sure to wear glove for preventing injury when the glass’s broken.
Service warning

1. When inserting parts or PCB, fasten the lead line to terminal before soldering.
2. When inserting high-voltage resistance (metal oxide film resistance or metal film resistance), keep 10mm away from PCB.
3. High-voltage or high-temperature parts shall be away from the lead line.
4. This chassis is insulation (cold) chassis but for safety, it is better to use insulation trance.
   when servicing power board, be sure to use insulation trance.
5. While PDP Module is in operation, do not connect or remove lines.

※ With COF or panel defect, report it to LGE PDP module service department.

Defect diagnosis tool

1. One DVM (FLUKE 87 or similar type)
2. Digital Oscilloscope (over 200MHz)
MN-42PZ10 Spec & Features

- Power: 220V 60Hz
- Power consumption: 340W

- Aspect ratio: 16:9
- Screen size (H X V): 920.1 X 518.4mm
- Resolution: 852 X 480 (VGA)
- Cell Pitch (H X V): 0.36 X 1.08
- Displayable colors (R,G,B): 1.677K (256 X 256 X 256)
- Brightness: 250 cd/m² (w/o filter: 550 cd/m²)
- Contrast ratio: 250:1 (w/o filter: 700:1)
- Color temperature: over 8500°K
- Viewing angle: over 160°
- Input signal: NTSC, HD, VGA, SVGA
- Twin Picture: PC/AV
- PC input: D-SUB 15
- Control: D-SUB25 / STB connection
- Video input: CVBS
- S-Video input
- DVD input(Y,Cb,Cr)/R,L: Y/Y, Pb/Cb, Pr/Cr+R/L
- Audio input: R/L
- Power Cable: 3pin (Ground terminal)
- Sound Output (Speaker): R,L Out
- AC Input: 220V 60Hz
### MN-42PZ10(42”W PDP MNT)

**Market**: Korea / N_America / S_America  

(Example of Desk Top Type)

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<th>ITEMS</th>
<th>SPECIFICATIONS (Tentative)</th>
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<td>Screen Size:</td>
<td>42 inch/ 106cm diagonal</td>
</tr>
<tr>
<td>Aspect Ratio:</td>
<td>16 :9 (width:height)</td>
</tr>
<tr>
<td>Resolution:</td>
<td>852 x 480 Pixels(SD grade)</td>
</tr>
<tr>
<td>Peak Brightness :</td>
<td>typ.240cd/m² (with filter 60%)</td>
</tr>
<tr>
<td>Contrast Ratio:</td>
<td>700:1(Dark Room &amp; with filter 45%)</td>
</tr>
<tr>
<td>Viewing Angle:</td>
<td>160° horizontally and vertically</td>
</tr>
<tr>
<td>Displayable Colors:</td>
<td>16.7 million</td>
</tr>
<tr>
<td>Weight:</td>
<td>kg (MNT), kg(D/stand), kg(spk.)x2</td>
</tr>
<tr>
<td>Life:</td>
<td>&gt;25,000 hours (elapsed time to 50% of initial brightness)</td>
</tr>
<tr>
<td>Dimensions(MNT)</td>
<td>105.6cm wide, 63.4cm high, 8.2cm deep</td>
</tr>
<tr>
<td>Input Terminals (Set Top Box)</td>
<td>RF terminal(PAL/SECAM/NTSC)</td>
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<td></td>
<td>Composite Video input(RCA) X 2, S-Video</td>
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<td></td>
<td>Audio L&amp;R input(RCA) X 2</td>
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<tr>
<td></td>
<td>Component Video (Y,Pb,Pr)+ R/L for DVD</td>
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<td>Component Video (Y,Pb,Pr)+ R/L for HDTV Stb.</td>
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<td>RGB-SUB 15 pin for HDTV Stb.(480p/720p/1080i)</td>
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<td>Analog RGB-SUB 15pin(PC VGA ~SVGA)</td>
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<td></td>
<td>Stereo Input for PC Audio</td>
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<tr>
<td>Output Terminals (Set Top Box)</td>
<td>Analog RGB-SUB 15pin(PC/DTV input bypass)</td>
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<tr>
<td></td>
<td>Audio L&amp;R(RCA)</td>
</tr>
<tr>
<td></td>
<td>RGB-SUB 25 Pin for MNT(RGB/HV in &amp; Control)</td>
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<tr>
<td></td>
<td>Composite Video output + R/L output</td>
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<tr>
<td>Input Terminals (MNT)</td>
<td>Analog RGB-SUB 15 pin (Compatible with PC</td>
</tr>
<tr>
<td></td>
<td>VGA ~SVGA, Compressed XGA)</td>
</tr>
<tr>
<td></td>
<td>RGB-SUB 25 Pin for STB(RGB/HV in &amp; Control)</td>
</tr>
<tr>
<td></td>
<td>Component Video (Y,Pb,Pr) for DVD &amp; DTV Stb.</td>
</tr>
<tr>
<td></td>
<td>Composite Video input(PAL/SECAM/NTSC)</td>
</tr>
<tr>
<td></td>
<td>Audio L&amp;R input(RCA)X2</td>
</tr>
<tr>
<td>Display Frequency</td>
<td>15.73kHz to 60kHz horizontally, 50Hz to 75Hz(V)</td>
</tr>
<tr>
<td>Picture</td>
<td>PIP(2Tuner:STB), Twin Picture, Digital Comb filter, Digital Video Enhancer(Jagging free)</td>
</tr>
<tr>
<td>Sound</td>
<td>A2 stereo, AVL, Dolby Virtual, 2x10Wrms</td>
</tr>
<tr>
<td>Remote Control</td>
<td>Included(Unified)</td>
</tr>
<tr>
<td>External Control</td>
<td>D-sub 25-pin connector</td>
</tr>
<tr>
<td>Power Source</td>
<td>110-240V, 50/60 Hz</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>300 watts (with Max. Audio : 320W)</td>
</tr>
</tbody>
</table>

**RN-BA11(3 System Multi STB)**  
430(W)X78(H)X280mm(D)
**SET TOP BOX**

**Digital Set Top Box (SK-010T)**

- All Model can be connected but because of noise problem with internal fan, it is terminated. Be sure that MN-40X3M is not compatible with SK-011T
- Separately: dedicated cable (AP-EA10)

**Digital Set Top Box (SK-011T)**

- MN-40PA10, MN-40PA10A, MN-42PZ10, MN-60PZ10
- All but MN-40X3M can be used separately: dedicated cable (AP-EA10)

**Analog Set Top Box (RN-BA10)**

- MN-40PA10, MN-40PA10A only
- Only related model can be used.

**Analog Set Top Box (RN-BA11)**

- MN-42PZ10 only
- Only related model can be used.
Connection diagram (back cover’s open)
Exploded view (Module)

- PANEL
- X-Drive BOARD
- Y-Drive BOARD
- Y-BOARD
- X-BOARD
- CONTROL BOARD
- Z-BOARD
- 201
- 202
- 203
- 204
- 205
- 206
- 207
- 208
- 209
- 211
- 212
Parts (back covers open)

- Y-Drive Board (Top)
- Y-Board
- Control Board (Back)
- Power Board
- Z-Board

- Y-Drive Board
- VSC Board (Front)
- EMI Filter
- Main Power Switch
EMI Filter & VSC Board are separated

Y-Drive Board  Y-Board  Control Board  Z-Board

X-Board (Left)  X-Board (Right)
Power well power Board-Korean market

Murata Power Board
III. Screen defect diagnosis

1. The 4/7 or 3/7 of screen is not displayed.
   1) Check the X B/D power connector.
   2) Check the connector between CTRL B/D and X B/D.
   3) Replace the X B/D.

※ relations between screen and X B/D

<table>
<thead>
<tr>
<th>screen</th>
<th>X B/D</th>
</tr>
</thead>
<tbody>
<tr>
<td>left 4/7 of screen</td>
<td>Right X B/D</td>
</tr>
<tr>
<td>right 3/7 of screen</td>
<td>Left X B/D</td>
</tr>
</tbody>
</table>

※ type

<table>
<thead>
<tr>
<th>i) screen’s left(4/7)</th>
<th>ii) Screen’s right(3/7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displaying part</td>
<td>Non-displaying part</td>
</tr>
</tbody>
</table>
2. No image by Data COF. (the case one Data COF is totally or partially not displayed included)

1) It is mainly caused by related Data COF and X B/D connection error.
2) Check the connector between that Data COF & X B/D.
3) When Data COF has a defect, replace the related X B/D.

※ examples of screen display type
( beside the below, any out of 7 Data COF can be occurred. )

※ Data COF IC test method

Set ① pattern( GND ) to ANODE,
② Pattern (resistance joint part ) to CATHOD,
Test diode forward and backward.
Measure ③ resistance value.(10Ω)
3. **Data COF IC unit error**

1) As pictures below, this is caused by the clock error of Data COF IC
2) With <case 1>, <case 2>, <case 3>, check Data COF connector and replace the X B/D.
3) With <case 4>, <case 5>, check the connector between CTRL B/D & X B/D and replace X B/D or CTRL B/D.

※※※※

**Cases**

- **<case 1>**
  - One IC error in one COF

- **<case 2>**
  - Two every-second IC error in one

- **<case 3>**
  - 4 IC errors in one COF

- **<case 4>**
  - Data COF IC unit error in the whole X B/D

- **<case 5>**
  - Data COF IC unit error in the whole screen.
4. Regular vertical line with one or more Data COF IC

1) Regular vertical line with one Data COF IC is mainly caused by X B/D output terminal buffer’s output error. When two Data COF ICs have regular vertical lines, it means the data transfer from Controller B/D to X B/D has an error.
2) Check the related X B/D connector.
3) Replace that X B/D or CTRL B/D

※ relation between screen & X B/D

<table>
<thead>
<tr>
<th>screen</th>
<th>X B/D</th>
</tr>
</thead>
<tbody>
<tr>
<td>left 4/7 of bottom</td>
<td>Right X B/D</td>
</tr>
<tr>
<td>right 3/7 of bottom</td>
<td>Left X B/D</td>
</tr>
</tbody>
</table>

※ case

Partial error or total error with One or more ICs defect.
5. The screen by Scan FFC is not displayed

1) It is mainly caused by the bad connection between Scan FFC & Y B/D.
2) Check the related connector between Scan COF & Y B/D.
3) When Scan IC has a defect, replace the related Y DRV B/D.

※ case

1/8 of the screen

※ SCAN IC check

Set Vpp Pin to ANODE, GND pin to CATHOD and test diode forward and backward.
6. Regular vertical lines in the whole screen. (mainly in one specific color, regular line is flicking)

1) This problem is related to CONTROL B/D.
2) Replace CONTROL B/D

※※※※

case

Regular vertical lines in the whole screen

7. Vertical Data copy

1) It possibly happens when scan wave does not form properly.
2) Replace Y DRVB/D or Y SUS B/D

※※※※

case

 patter supposued to display>

<case 1 : total copy>

<case2 : partial-top copy> <case 3 : partial-bottom copy> <case 4 : total copy>
8. One or more vertical lines in the screen.

1) Irregular vertical line is not related to Controller B/D or X B/D.
2) It is mainly caused by the followings open(or short).
   - Panel itself defect
   - DATA COF FPC attached to panel is open or short.
   - DATA COF attached to panel itself defect
3) Replace module

There are several types.
Several lines in ¼ area.
It can be seen on the both side, right and left.
The area is sometimes over ¼.

9. One or more horizontal lines in the screen.

1) Irregular horizontal line is not related to Controller B/D or Y B/D.
2) It is mainly caused by the followings open(or short).
   - Panel itself defect
   - SCAN FPC attached to panel is open or short.
   - SCAN IC attached to panel itself defect
3) Replace Y DRV B/D

Not always like this.
There can be several horizontal lines
10. Input signal pattern is displayed but the whole brightness of the screen is dark.
   1) It happens when Z B/D is not operating well.
   2) Check whether Z B/D’s power connector is plugged.
   3) Check whether the connector between Controller B/D & Z B/D is plugged.
   4) Replace Controller B/D or Z B/D.

11. In full white pattern, foreign color is displayed or in full black pattern, mis-discharge is partially occurred.
   1) Check the slope of Y B/D set up, set down waveform.
   2) Check the slope of Z B/D’s ramp waveform.
   3) Measure each B/D’s output waveform by over 200MHz oscilloscope and compare it to the below picture.
      - Y B/D measurement point : TP (Connector P4 36 pin)
      - Z B/D measurement point : panel connection part (SUS_OUT)

\[ Y \text{ output voltage wave} \]

\[ Z \text{ RAMP voltage wave} \]
12. In full white pattern, the brightness is getting darker toward the center.
   1) It happens with Z B/D’s ramp waveform
   2) Check the connection between CTRL B/D and Z B/D’s connection cable.
   3) Replace Z B/D.

※※※※

13. A specific brightness of one color is not clear.

   1) Check CTRL B/D’s input signal connector.
   2) Replace CTRL B/D.
**IV. Non-picture Defect diagnosis.**

Non-image or same symptom when power off or black pattern.

1) Check CTRL B/D’s LED(D1~D4).
2) Check the power or signal cable input into CTRL B/D.
3) Check X B/D, Y B/D and Z B/D’s power connector.
4) Check the connector between CTRL B/D and X B/D, Y B/D, Z B/D respectively.
5) Measure each X, Y, Z B/D’s output waveform with over 200MHz oscilloscope and compare it to the below picture to detect the defect and replace that.
   - Y B/D measurement point : TP (Connector P4 36 pin)
   - Z B/D measurement point : panel connection part (SUS_OUT)
   - X B/D measurement point : L1(RIGHT), L2(LEFT BOTTOM)
6) Test scan(Y) IC.
7) Test data(X) COF IC
8) Replace CTRL B/D.

![Waveform Diagrams]

- A: Y B/D output waveform - 1 FRAME
- B: Y B/D output waveform - 1 SF
- B: Y B/D output waveform - 2 SF(non-Setup SF)
< A: Y B/D output waveform - 1Frame >

< B: Y B/D output waveform - 7~12 SF(SE) >

< A: Z B/D output waveform - 1Frame >

< B: Z B/D output waveform - 1SF >

< X B/D output waveform - 1 FRAME >

< X B/D output waveform - 1 SF >

< X B/D output waveform - amplification >
42” PDP Flicker and **No Raster Troubleshooting Guide**

**cause:** bad connection between Y-Board #1, 2 drive board Connector pin

Rework should be done

**Y-Board**

**Y-Driver Board**
① : outside Leg  
② : inside Leg  

- P 6, P 4 both are the first pin, when wiring, it should be done as picture shown. (bend the wire to Y-Driver B/D not to Y-B/D. If not there can be noise)  
- Don’t be confused with Pin number  
Be sure not to disconnect the line.
See the picture precisely and then connect jump wire at the exact point.
The screen is intermittently disappeared. LED is green

screen is distorted weiderly (happened 2 a day)

cause: bad connection between Y-Board and #1, 2 pin of Y-Drive Board Connector

troubleshooting: connect bad linking between Y-Board & Y-Drive with jump wire (all 4 parts)

see working instruction(revised since Dec,2001. 1)
No Power

( In ST-BY mode, but no LED)

Check the power supply & main power S/W on
Check EMI board fuse (check the rated capacity )

Be sure to use rated fuse.

Fuse 15 A
CHECK: remove STB and operate monitor individually.
(check STB defect or Monitor defect)

When using ANALOG STB, check STB only
MN-42PZ10 only STB: RN-BA11

Remove each Board’s power supply connector and check the power is off.
When the power is not off, replace the related board.
Core checkpoint: remove STB and operate monitor individually.
(check whether STB's a defect or monitor's one)

With monitor defect, check VSC and then Controller Board.

Troubleshooting: replace VSC Board
Address Bar (Horizontal Bar)

Cause: Y-Drive (Bottom) defect

Troubleshooting: Y-Drive (lower part) replacement

This problem is shown in the bottom of screen, So it is caused by Y-Drive

Y-Drive Board (Bottom)
Address Bar (Horizontal Bar)

Cause: Y-Drive Board (upper part) defect

Troubleshooting: Y-Drive Board replacement
cause: PD-501 Connector contact point defect

troubleshooting: PD-501 Connector replacement

(with PD-501 Connector contact point defect,
Various defect symptoms can be seen)
High frequency noise ("Bee" sound)

SMPS is supposed to operate with high frequency so small noise is not considered as a defect.

Power (SMPS) Board

1. C8178 0.22μF/50V add
2. Open C8139 right lead, and then connect it to R8164 right lead.

Improved since Nov, 2001

C8178 0.22μF electrolytic capacitor insertion

Open C8139 right lead and then wire R8164 right lead

#. Slight noise is not a defect and write down explanation
No picture in right- 2/5 area

X-Board (Left) power supply check
X-Board (Left) connector check
X-Board (Left) replacement
Address Bar (Vertical)

stripe in right-2/5 area

normal

X-Board (Left) power supply check

X-Board (Left) Connector check

X-Board (Left) replacement
No picture in left 3/5 of the screen

left 3/5 of screen with vertical stripes

normal

X-Board (Right) power supply check

X-Board (Right) Connector check

X-Board (Right) replacement
X-Board (Right) power supply check

X-Board (Right) Connector check

X-Board (Right) replacement
Test Monitor individually.
If detect a problem with monitor, check VSC Board.

If it has a problem with STB connecting, focus on 25 Pin.

Be sure not to connect 5 Pin (AP–EA10) by force

25 Pin Cable P/No : GVZ AP–EA10
1) X - Board COF Connector separation

**Warning**

When you exchange X-Board, first you should separate COF Connector. Be careful to handle it. COF Connector is attached to Module. When COF Connector is broken, Module ASS’Y must be replaced a new one.

When you handle COF CONNECTOR, don’t pressure. First release LOCK and separate. If COF CONNECTOR is damaged, you should replace MODULE ASS’Y. So, be aware of this!!

Lift up the right and left of X-BOARD CONNECTOR.

Lift up X-BOARD CONNECTOR and separate COP CONNECTOR by pulling up.

**Warning**

When you exchange X-Board, first you should separate COF Connector. Be careful to handle it. COF Connector is attached to Module. When COF Connector is broken, Module ASS’Y must be replaced a new one.

When you handle COF CONNECTOR, don’t pressure. First release LOCK and separate. If COF CONNECTOR is damaged, you should replace MODULE ASS’Y. So, be aware of this!!

**Warning**

When you exchange X-Board, first you should separate COF Connector. Be careful to handle it. COF Connector is attached to Module. When COF Connector is broken, Module ASS’Y must be replaced a new one.
2) X - Board Connector separation

Lift up each edge of left/right.

Lifted condition
Be careful to handle LOCK or it can be broken.
When LOCK is broken, replace a new X-BOARD.

Warning
It's easy to separate it by releasing Connector Lock.

Do not pressure or it can be hurt.
When LOCK is hurt, replace a new X-BOARD.
3) Y - Board COF Connector separation

Pull the white LOCK as shown in arrow.

Pull the white LOCK as shown in arrow.

Separate COF CONNECTOR by pulling in the left.

Warning

Be careful to handle LOCK and COF Connector. When LOCK part is damaged, you should replace a new Y-Board. In case of COF Connector, Module Assembly.
4) Z - Board COF Connector separation

Separate the fixed Screw of Z-Board. Pull out Lock as shown in arrow.

Condition in Lock part is pulled

Pull COF Connector as shown in arrow.

It’s easy to separate COF on condition that Z-Board Screw is separated. In case Z-Board is assembled, it's really hard to separate.

Warning

Be careful not to tear COF Connector. If COF Connector is torn, replace a new Module Assembly.
5) Connector separation Guide

Push LOCK and pull out
6) Control Board & VSC Board Connector
7) Gas injection (Sealing up) condition

Be sealed up after gas injection

Be sealed up after gas injection

Warning: Be careful to handle the sealed-up part after gas injection. If it is broken, the gas escapes. So, replace the Module.
8) Power off in 2 ~ 3 minutes (Protection)

- Power is On and off 2~3 minutes. (Protection)
  - P301 Connector Open Check
  - OK → X - Board Top Right Change.
  - P302 Connector Open Check
  - OK → X - Board Top Left Change.
  - P303 Connector Open Check
  - OK → X - Board Bottom Right Change.
  - P304 Connector Open Check
  - OK → X - Board Bottom Left Change.
  - P102 Connector Open Check
  - OK → Z - Board Change.
  - P3, P2 Connector Open Check
  - OK → Y - Board Change.
  - P005, P003 Connector Open Check
  - OK → VSC- Board Change.
  - P006 Connector Open Check
  - OK → VSC - Board Change. Sound Output IC Short Check
  - Power Board Change

PROTECT operation:
When the load voltage is short.
When each voltage doesn’t work (in general)
9) Power off in 2 ~ 3 minutes (Protection)

Symptom: As soon as the power on, it's off in 2 - 3 minutes. (PROTECT operation)
Cause: No VS voltage
L813 Coil cold soldering.

Open the Connector connecting to each Board to check the power is off. If each Board is same, check the Power Board and voltage.
10) ADD BAR inspection and repair

Press the ADJ KEY and check the position of add bar by changing WHITE or RED or BLUE or GREEN

HEATRUN : WHITE

MP-40PA10 uses 4 board such as left, right, top and bottom. Divide the screen in 4 and once you see ADD BAR check COF CONNECTOR between MODULE and X-BOARD. If there is no defect in COF CONNECTOR replace X-BOARD. But the problem still remains and check the connector between X-BOARD and CONTROL BOARD. And if you can’t find defect, check CONTROL.
Symptom: B color 1 Address line Open
Cause: Dented COF

COF is dented
Symptom: Inferior R Address color
Cause: Inferior DATA output by cold soldering 16 pin of IC14 in X-L-TOP (Normal waveform after tearing off IC Pin)
Countermeasure: Replace X-L-TOP board.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Causes</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>The blue spreads on the screen (Mis-discharge) and power off in 2 ~ 3 seconds. If you turn on again, it will be same problem.</td>
<td>If 15V line voltage reduces below 14V, Mis-discharge occurs and power off because of protection circuit.</td>
<td>Replace PSU (Power Supply Unit) and defective X-Board.</td>
</tr>
<tr>
<td><strong>Check</strong>&lt;br&gt;If when Power on, screen shows like above and turn off in 2 seconds, check if turning off or not by disconnecting all X &amp; Y boards.</td>
<td>Defective X-Board</td>
<td></td>
</tr>
<tr>
<td>Symptom</td>
<td>Cause</td>
<td>Countermeasure</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>--------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>The top left part of screen is broken (Top Right X-BOARD)</td>
<td>No 5V supply to Top right X-Board.</td>
<td>Connect 5V line</td>
</tr>
</tbody>
</table>

**Check**

Check Top right X-BOARD 5V. (If 0V, it happens)
Check 5V line from SMPS to X-BOARD.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinkish screen in the top left. (Top right X-BOARD)</td>
<td>No Va(70V) supply to Top right X-Board.</td>
<td>Connect 70V line</td>
</tr>
</tbody>
</table>

**Check**

- Check Top right X-BOARD Va(70V). (If 0V, it happens)
- Check 70V(Va) line from SMPS to X-BOARD.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
</table>
| The 3/5 top left in the screen is blank (Top Right X-BOARD) | No 12V supply to Top right X-Board.  
No Va(70V) supply to Top right X-Board. | Connect 12V line  
Connect 70V line |

**Check**

- Check Top right X-BOARD 12V. (If 0V, it happens)
- Check Top right X-BOARD Va(70V). (If 0V, it happens)
- Check 12V & 70V(Va) line from SMPS to X-BOARD.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
</table>
| The 3/5 top right of the screen is blank. (Top left X-BOARD) | No 12V supply to Top left X-Board.  
No Va(70V) supply to Top left X-Board. | Connect 12V line  
Connect 70V line |

**Check**

- Check Top left X-BOARD 12V. (If 0V, it happens)
- Check Top left X-BOARD Va(70V). (If 0V, it happens)
- Check 12V & Va(70V) line from SMPS to X-BOARD.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinkish screen in the 1/5 top right (Top left X-BOARD)</td>
<td>P1 COF connector on Top left X-Board is open.</td>
<td>Reassemble it</td>
</tr>
<tr>
<td>Check the contact point and Locking of P1 on Top left X-BOARD.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom</td>
<td>Cause</td>
<td>Countermeasure</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>----------------</td>
</tr>
<tr>
<td>The 3/5 bottom left of screen is broken. (BOTTOM RIGHT X-BOARD)</td>
<td>No 5V supply to bottom right X-Board.</td>
<td>Connect 5V line</td>
</tr>
</tbody>
</table>

Check Bottom right X-BOARD 5V. (If 0V, it happens)
Check 5V line from SMPS to X-BOARD.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>The 3/5 bottom left of the screen is Blank. (Bottom Right X-BOARD)</td>
<td>No 12V supply to bottom right X-Board. No V(70V) supply to bottom right X-Board.</td>
<td>Connect 12V line</td>
</tr>
</tbody>
</table>

**Check**

Check Bottom right X-BOARD 12V. (If 0V, it happens)

Check 12V line from SMPS to X-BOARD.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
</table>
| The 2/5 right of the screen is broken.  
(Bottom left X-BOARD) | No 5V supply to bottom left X-Board. | Connect 5V line |

Check Bottom left X-BOARD 5V. (If 0V, it happens)  
Check 5V line from SMPS to X-BOARD.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>The 2/5 right part of the screen is blank.</td>
<td>No 12V supply to bottom left X-Board.</td>
<td>Connect 12V line</td>
</tr>
</tbody>
</table>

Check Bottom left X-BOARD 12V. (If 0V, it happens)

Check 12V line from SMPS to X-BOARD.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDRESS bar appears in the right bottom of the screen. (X-BOARD BOTTOM LEFT)</td>
<td>The connecting of X-Board bottom left connector is bad.</td>
<td>Reassemble it.</td>
</tr>
</tbody>
</table>

Check

Check connecting of the connector of bottom left X-BOARD.

Reassemble it.
Examples
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen is divided in top and bottom, and vertical bar appears.</td>
<td>Connector(P13) is OPEN or Connecting condition is bad</td>
<td>Reassemble P13.</td>
</tr>
</tbody>
</table>

**Check**

- P13 CONNECTOR contact point inferior CHECK.
- P13 CONNECTOR SIGNAL CHEK.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen is broken and has the vertical/horizontal bar.</td>
<td>VSC Board Connector is Open.</td>
<td>Reassemble VSC Board Connector</td>
</tr>
</tbody>
</table>

Check the connector connecting
Reassemble the Connector
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>The screen is bluish (Mosaic screen)</td>
<td>Loose VSC Board Connector</td>
<td>Reassemble VSC BOARD Connector</td>
</tr>
</tbody>
</table>

**Check**

Check the connection condition of the Connector.
Reassemble the Connector.
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>The mosaic appears in the screen when it connects to VIDEO Input. (The sensibility of Y-signal is low.) When connected to Component Input, it is O.K.</td>
<td>Bad IC203</td>
<td>Replace IC203(VPC3230D)</td>
</tr>
</tbody>
</table>

Check if X201 on VSC board oscillates. Check Video In/Out of IC203 on VSC board.

IC201 (VPC3230D) Decoder IC
IC201 (VPC3230D) Decoder is inferior
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal</td>
<td>Bad Connector connecting Control Board and VSC B/D.</td>
</tr>
<tr>
<td>Noise with division of colors</td>
<td>Change the Connector</td>
</tr>
</tbody>
</table>

**Check**

Contact point and signal condition of Connector Control Board and VSC Board.

Bad Connector
<table>
<thead>
<tr>
<th>Name</th>
<th>No signal Vertical Bar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Symptom**

- **Cause**: Bad IC2 (DA1)
  - IC2 DA1 (Data Arrange) No. 162 pin output is changing depending on the temperature. ⇒ abnormal X-B’d Buffer IC
  - Room temperature: 2.5V Output (Normal Pin = over 2.8V)
  - Heated: 1.5V Output (Normal Pin = 2.7V)
  ⇒ **Bad IC2 (DA1)**

- **Countermeasure**: Replace IC2

**Realization**

When ASIC Chip (IC2 DA1 LGD4001) on Control Board gets high temperature, you can observe it.
(In normal temperature it’s O.K.)

"Buffer (74ACT541) waveform abnormally narrows. ⇒ In this case, it is impossible for Flip Flop (74AC574) on X B/D to read data."
<table>
<thead>
<tr>
<th>Name</th>
<th>Add Open (Green 1 Line)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symptom</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Cause and Countermeasure</strong></td>
<td>1. cause: Add. COF Drive IC inferior</td>
</tr>
</tbody>
</table>

- Normal Line Data waveform
- Open Line Data output waveform

- ▶ the output of inferior line less than that of the normal Line
- Add. COF Drive IC inferior
- ▶ COF inspection 검사기 : 24V Open check (normal 50V)
<table>
<thead>
<tr>
<th>Name</th>
<th>Vertical bar when Power off/on(Mis-discharge)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cause and Countermeasure</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Cause: Control board malfunctions when Power off/on.</td>
</tr>
<tr>
<td></td>
<td>2. Countermeasure: Change some parts on Control board.</td>
</tr>
<tr>
<td></td>
<td>3. Changing parts: A32_CTRL_03 B/D (Marked on PCB)</td>
</tr>
<tr>
<td></td>
<td>- R14,17,18,21: 330 ==&gt; 4.7K (Chip Resistor)</td>
</tr>
<tr>
<td></td>
<td>- R15,16,19,20: 22K ==&gt; 4.7K (Chip Resistor)</td>
</tr>
<tr>
<td></td>
<td>- C504, 505: 0.1uF / 50V add (Chip Capacitor)</td>
</tr>
</tbody>
</table>

**Realization**

1. PDP Power on Mode external input  
   (regardless of wire/wireless signal but it’s easy to reenact in wireless signal)  
2. Remove Power Cord (Power’s off)  
3. after about 20 minutes, insert Power cord  
   (automatically the Power’s on and the vertical bar is shown as above)