

Service Service Service

FHP PDP Repair Manual

FPF42C128135UA-52 (42" A4)

Service Manual

Contents	Page
1. Technical Specifications	2
2. Safety Instructions, Warnings, and Notes	5
3. Directions for Use	6
4. Mechanical Instructions	6
5. Service Modes, Error Codes, and Fault Finding	10
6. Block Diagrams, Test point Overview, and Wave Forms	27
7. Circuit Diagrams and PWB Layouts	29
8. Alignments	29
9. Circuit Descriptions and Abbreviation List	30
10. Spare Parts List	33
11. Revision List	34

©Copyright 2006 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

Published by MW 0667 BG CD Customer Service Printed in The Netherlands

Subject to modification

EN 3122 785 16400



PHILIPS

1. Technical Specifications

Index of this chapter:

- 1.1 Specifications
- 1.2 Serial Numbers
- 1.3 Chassis overview

1.1 Specifications

1.1.1 42" A4

No	Item	Spec. FPF42C128135UA-52
1	Resolution	1024 (H) x 1080 (V) pixels (1 pixel = 1 R,G,B cells)
2	Number of Cells	3072 (H) x 1080 (V)
3	Pixel Pitch	0.90 mm (H) x 0.485 mm (V)
4	Cell Pitch	0.30 mm (H) x 0.485 mm (V)
5	Display size	921.60 (H) x 523.8 mm (V)
6	Screen size	Diagonal 42"
7	Screen aspect	16:9
8	Dimensions	994 (W) x 587 (H) x 66 (D) mm
9	Weight	About 16 kg
10	H sync, V sync, data	50 kHz (H), 50/60/70 Hz (V), LVDS

1.2 Serial Numbers

Check the serial ID number of the product requested for repair, before starting the problem analysis and repair.

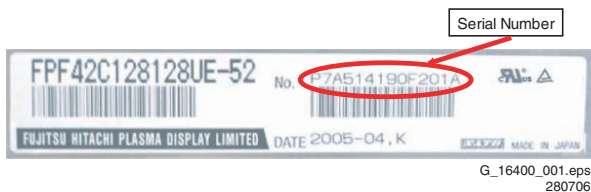


Figure 1-1 PDP Serial number

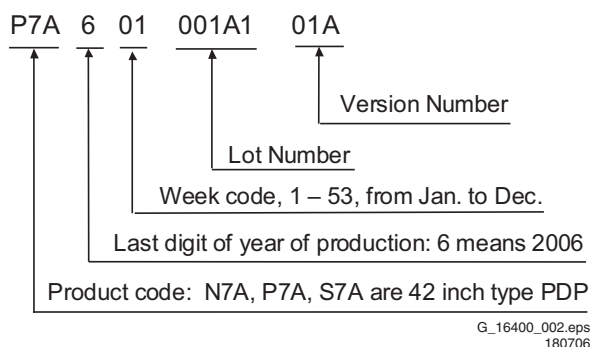


Figure 1-2 PDP Serial number explanation

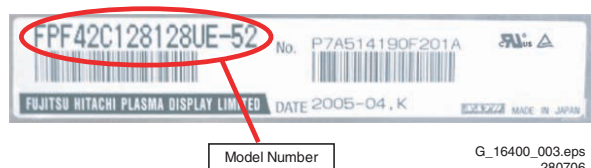


Figure 1-3 PDP Model number

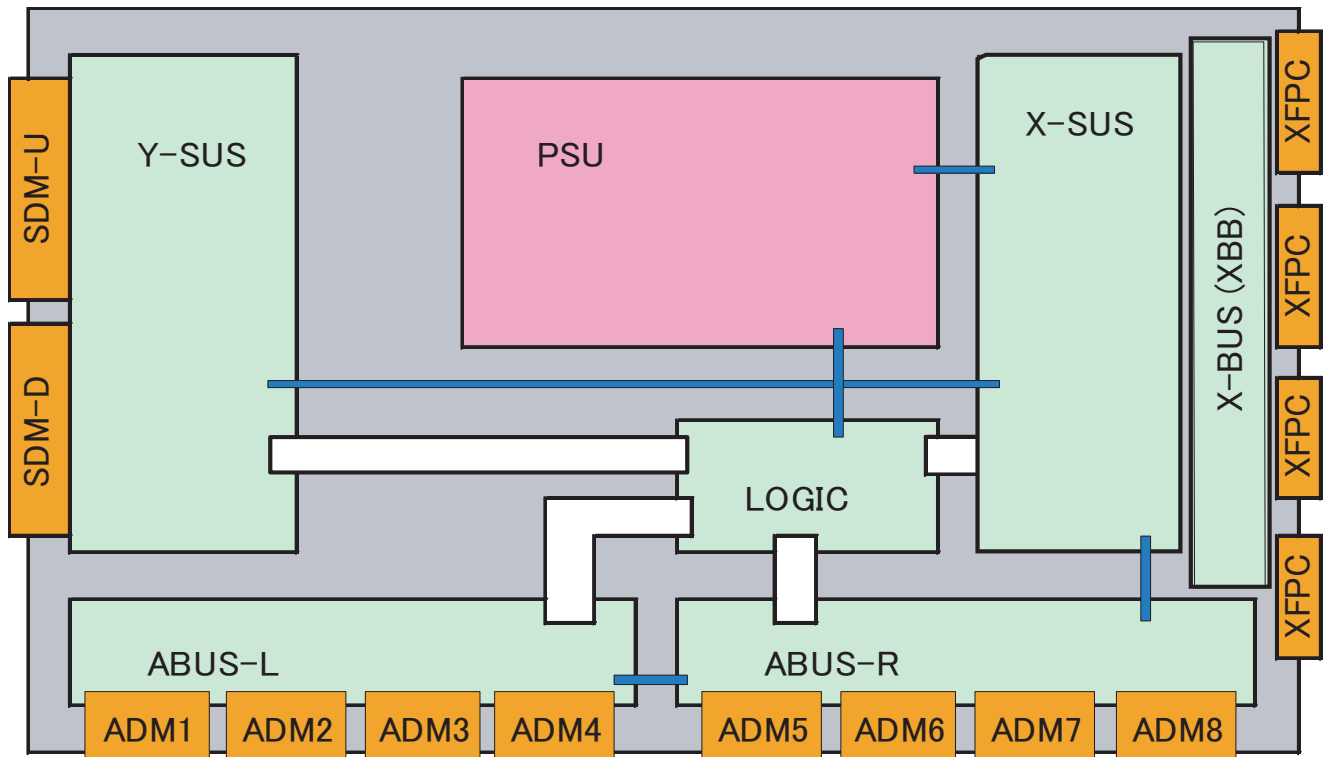
FPF42C128128UC -52	42A1 (covered)
FPF42C128128UD -52	42A2 (by manual)
FPF42C128128UE -52	42A3 (3122 785 14580)
FPF42C128135UA -52	42A4 (in this manual)

G_16400_004.eps
270706

Figure 1-4 List of model numbers

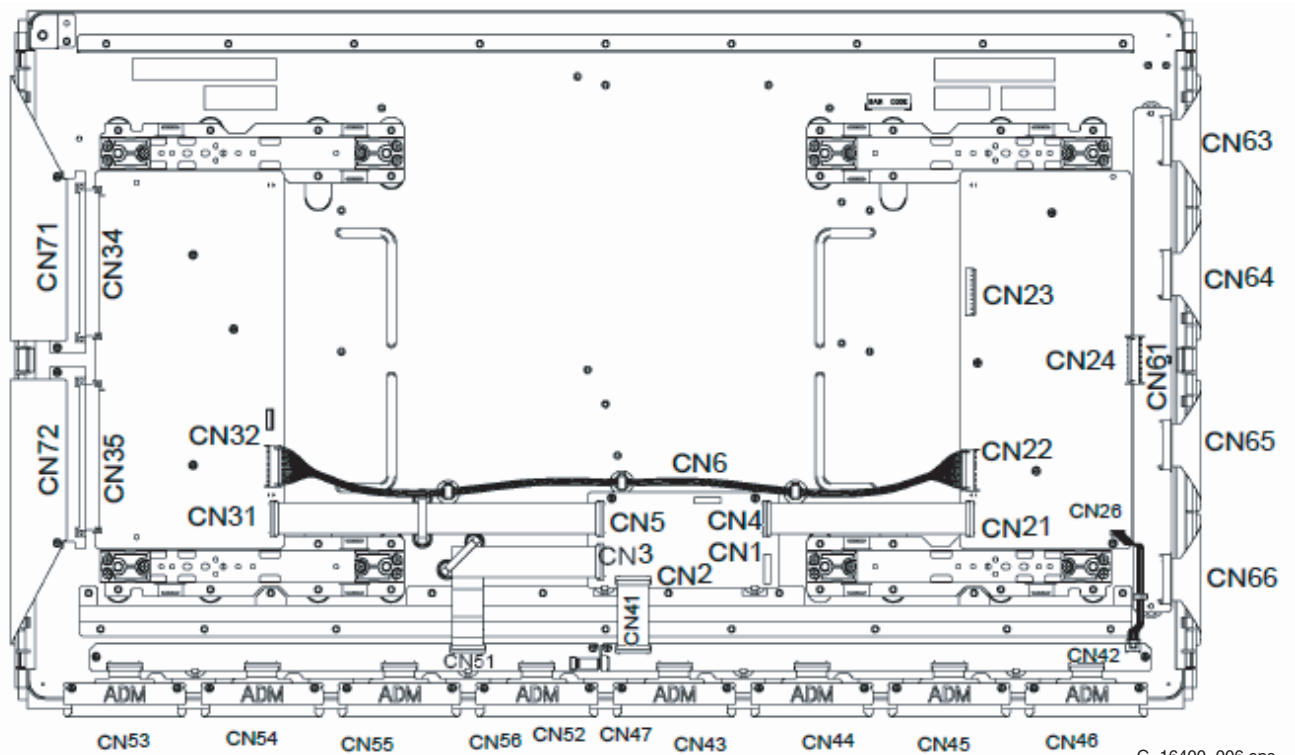
Note: The PDP serial number and the serial number of the completed chassis (product requested for repair) are usually the same when the product is brought in for repair the first time.

1.3 Chassis overview



G_16400_005.eps
180706

Figure 1-5 PWB locations



G_16400_006.eps
270706

Figure 1-6 Connector positions

1.4 Some connector layouts

Pin No.	Signal name	Pin No.	Signal name
1	RA-	2	GND (LVDS)
3	RA+	4	SCL
5	RB-	6	GND
7	RB+	8	SDA
9	RC-	10	GND (LVDS)
11	RC+	12	CPUGO
13	RXCLKIN-	14	PDPGO
15	RXCLKIN+	16	IRQ
17	RD-	18	PDWN
19	RD+	20	GND (LVDS)
21	RE-	22	GND
23	RE+	24	GND
25	GND	26	GND
27	GND	28	GND
29	GND	30	GND

G_16400_035.eps
280706

Figure 1-7 LVDS connector CN1 Logic Board

Pin No.	Symbol
1	Vcc
2	GND
3	Vpr2
4	GND
5	Vra
6	Vrs
7	VCEGO
8	VSAGO
9	PFCGO

G_16400_036.eps
270706

Figure 1-8 Power supply connector CN6 Logic Board

Pin No.	Symbol
1	Va
2	N.C.
3	Vcc
4	GND
5	GND
6	GND
7	N.C.
8	Vs
9	Vs
10	Vs


G_16400_037.eps
270706

Figure 1-9 Power supply connector CN23 X-SUS Board

2. Safety Instructions, Warnings, and Notes

2.1 Safety Instructions

It is not allowed to operate the FTV-set without glass plate. One function of this glass plate is to absorb Infrared Radiation. Without this glass plate the level of Infrared Radiation produced by the plasma display could damage your eyes.

1. Safety regulations require that during a repair:
 - the set should be connected to the mains via an isolating transformer (in this particular case a transformer of ≥ 800 VA).
 - safety components, indicated by the symbol , should be replaced by components identical to the original ones.
2. Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points.
 - Note: The wire trees should be routed correctly and fixed with the mounted cable clamps.
 - The insulation of the mains lead should be checked for external damage.
 - The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets that have a mains isolated power supply). This check can be done as follows:
 - unplug the mains cord and connect a wire between the two pins of the mains plug;
 - set the mains switch to the on position (keep the mains cord unplugged!);
 - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 M Ω and 12 M Ω ;
 - switch off the TV and remove the wire between the two pins of the mains plug.
 - The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

LED is positioned at the right side of IR-receiver eye of the E-box. Take into account that receiver-LED on DST is positioned not in the middle but at the left side. Point corresponding LEDs to each other. In case the amount of Infrared produced by the screen pollutes the communication, the set can be set in Stand-by-mode. Then still the error-messages can be retrieved.


2.3.1 Notes on Safe Handling of the Plasma Display

Notes to Follow During Service

- The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these instructions.
- Before starting the work, secure a sufficient working space.
- At all times other than when adjusting and checking the product, be sure to turn OFF the main POWER switch and disconnect the power cable from the power supply of the display during servicing.
- To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power supply PC board and the SUS PC board in which high voltages are applied, start servicing at least 2 minutes after the main power has been turned off.
- While the main power is on, do not touch any parts or circuits other than the ones specified. The high voltage power supply block within the PDP module has a floating ground. If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or activation of the leakage-detection circuit breaker.
- When installing the PDP module in, and removing it from the packing carton, be sure to have at least two persons perform the work while being careful to ensure that the flexible printed-circuit cable of the PDP module does not get caught by the packing carton.
- When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials. Failure to observe this precaution may result in, the surface of the panel being scratched by foreign matter.
- When handling the circuit PC board, be sure to remove static electricity from your body before handling the circuit PC board.
- Be sure to handle the circuit PC board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.
- Do not touch the circuit PC boards. Failure to observe this precaution may result in problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.
- Routing of the wires and fixing them in position must be done in accordance with the original routing and fixing configuration when servicing is completed. All the wires are routed far away from the areas that become hot (such as the heat sink). These wires are fixed in position with the wire clamps so that the wires do not move, thereby ensuring that they are not damaged and their materials do not deteriorate over long periods of time. Therefore, route the cables and fix the cables to the original position and states using the wire clamps.
- Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup

2.2 Warnings

ESD

All ICs and many other semiconductors 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 set by a wristband with resistance. Keep components and tools also at this same potential.

1. Available ESD protection equipment:
 - complete kit ESD3 (combining all 6 prior products - small table mat) 4822 310 10671
 - wristband tester 4822 344 13999
2. Never replace modules or other components while the unit is switched on.
3. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

1. A glass plate is positioned before the plasma display. This glass plate can be cleaned with a slightly humid cloth. If due to circumstances there is some dirt between the glass plate and the plasma display panel it is recommended to do some maintenance by a qualified service employee only.
2. Never disconnect the power display cable when the set is operating
3. With DST no failures (error-codes) can be read, when the set is in Service-mode.
4. If DST reacts with "error 2", there is no communication between the TV and the DST. Note that the IR-transmitter

3. Directions for Use

Not applicable.

4. Mechanical Instructions

Notes:

- Figures below can deviate from the actual situation, due to different set executions.
- For more detailed instructions regarding the (dis)assembly of the TV chassis that hold these PDPs, read the corresponding TV Service Manual.

4.1 Board Swap Instructions

4.1.1 General

Before dismounting panels read notes below!

Caution when removing circuit board!

When removing the circuit board after the main power is turned on/off, wait for at least one minute before starting to remove the circuit board.

If the circuit board removal is started immediately after turning off the main power, it can result in electric shock or damage to the circuit due to residual electric charge.

Caution on handling the FPC connector!

To release the black lock lever of the connector, flip it up gently in the middle with the nail of the thumb or forefinger, from the side with the cable.

Never pinch the lock lever with fingers or tools. Doing so might damage the lock lever.

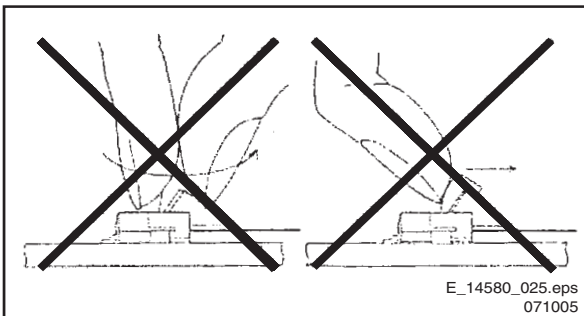


Figure 4-1 Handling the FPC connector

4.1.2 X-SUS and X-BUS Circuit Boards

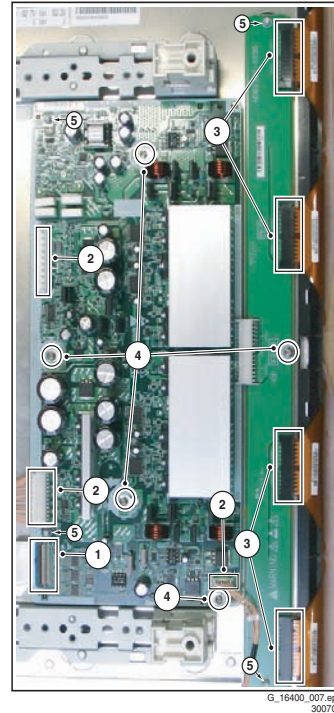


Figure 4-2 X-BUS and X-SUS board removal (1/2)

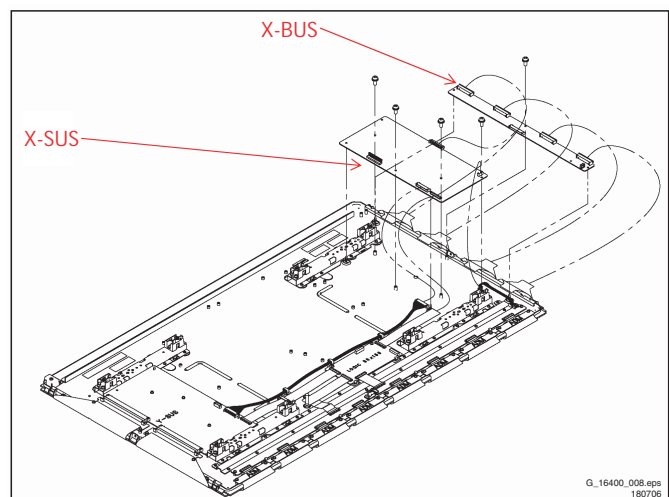


Figure 4-3 X-BUS and X-SUS board removal (2/2)

Remove the circuit boards by following the steps below. To install the circuit boards, reverse the removal procedure.

- Release the lock of the FPC connector [1] and unplug the signal cable.
- Unplug the connectors [2].
- Unplug the 4 XFPC's [3] on the X-BUS board.
- Remove the fixing screws [4].
and from the top and bottom of the X-BUS board.

- Release the white stand-offs [5] from the X-SUS board,

6. Remove the X-BUS board and the X-SUS board together.

Make sure that you do not touch the heat sink when removing the Y-SUS board.

4.1.3 Y-SUS Circuit Board

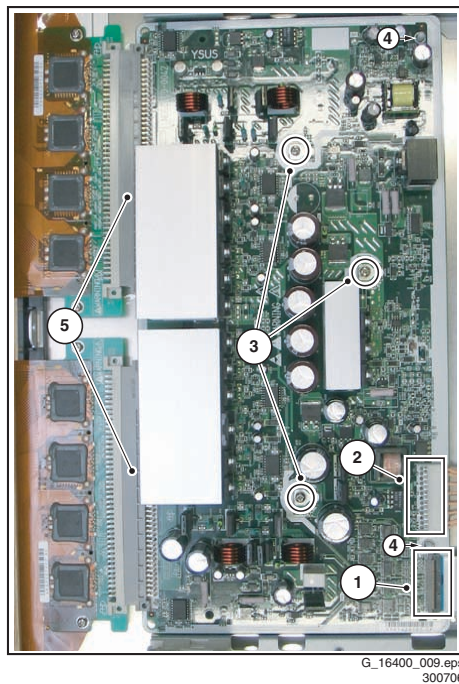


Figure 4-4 Y-SUS board removal (1/2)

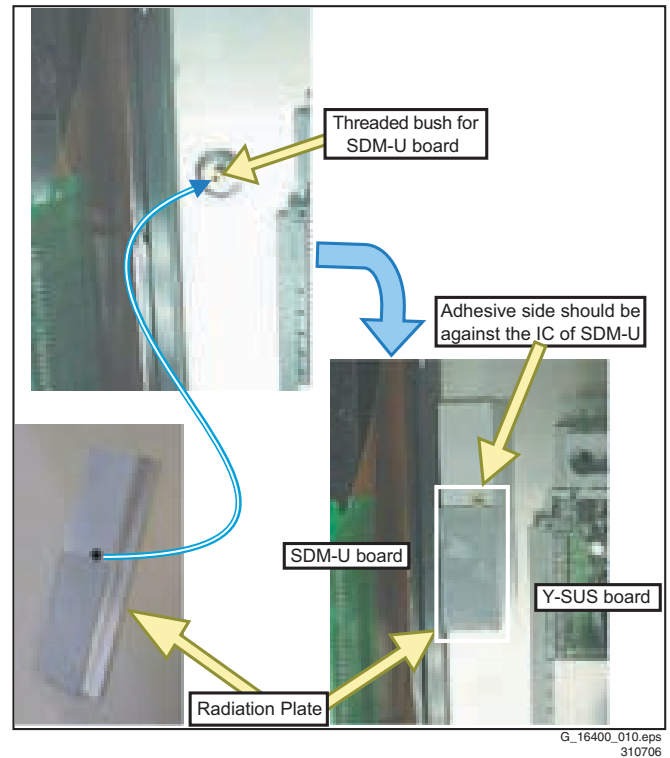


Figure 4-6 Radiation plate position

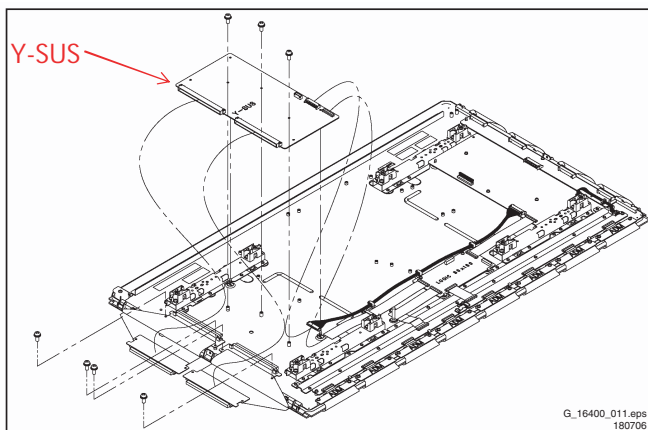


Figure 4-5 Y-SUS board removal (2/2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Release the lock of the FPC connector [1] and unplug the signal cable.
2. Unplug the connector [2].
3. Remove the fixing screws [3].
4. Release the white stand-offs [4] from the Y-SUS board.
5. Pull out the Y-SUS board horizontally, in this way unplugging the connectors [5].
6. Remove the Y-SUS board.

Make sure that you do not touch the heat sink when removing the Y-SUS board.

Note: Make sure the radiation plate is positioned correctly. It is located underneath the upper SDM, and the threaded bush should sit in the hole of the radiation plate.

4.1.4 ABUS-L Circuit Board

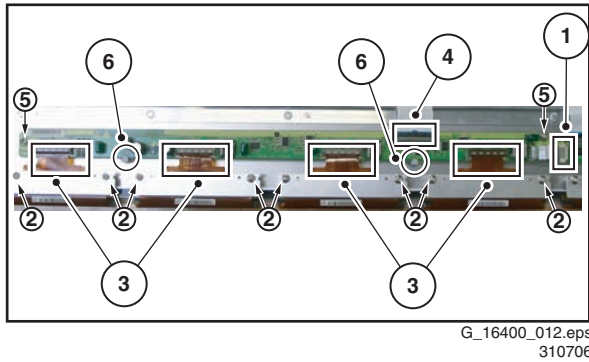


Figure 4-7 ABUS-L board removal (1/2)

4.1.5 ABUS-R Circuit Board

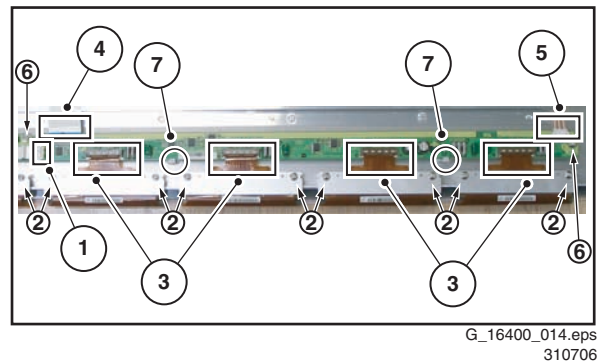


Figure 4-9 ABUS-R board removal (1/2)

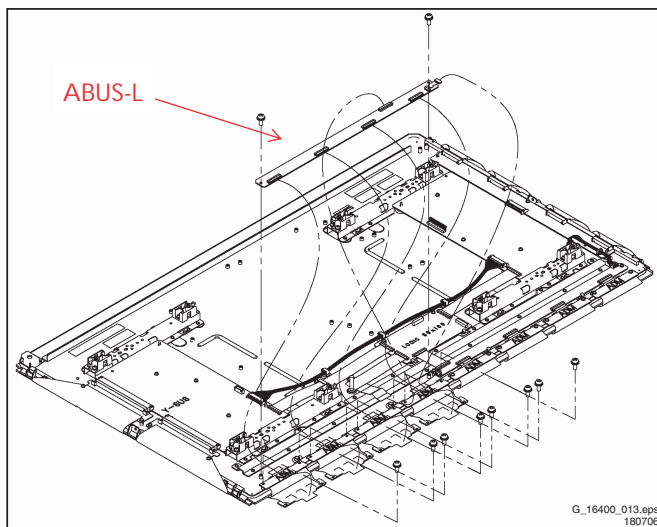


Figure 4-8 ABUS-L board removal (2/2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Unplug the connector [1].
2. Remove the screws [2] fixing the ADMs.
3. Release the lock of the FPC connectors [3], and remove the ADM flexible board.
4. Release the lock of the FPC connector [4] and unplug the signal cable.
5. Remove the screws [5] fixing the ABUS-L board.
6. Remove the ABUS-L board.
7. When installing the ABUS-L board, put the board in such a position that it is locked by the tabs [6] before fixing it with the screws.

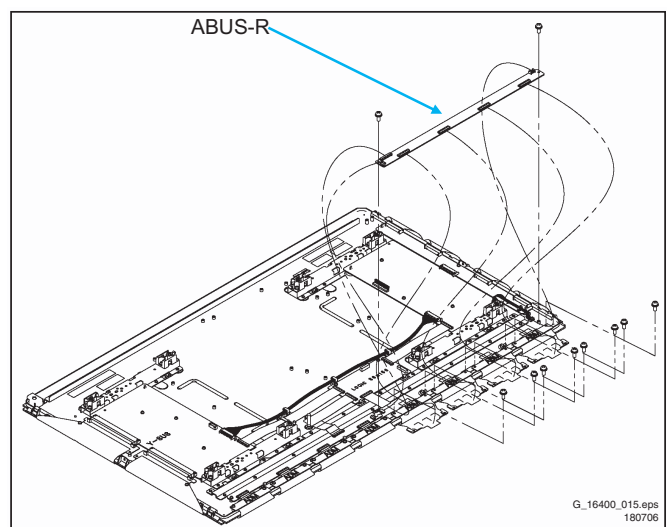


Figure 4-10 ABUS-R board removal (2/2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Unplug the connector [1].
2. Remove the screws [2] fixing the ADMs.
3. Release the lock of the FPC connectors [3], and remove the ADM flexible board.
4. Release the lock of the FPC connector [4] and unplug the signal cable.
5. Unplug the connector [5].
6. Remove the screws [6] fixing the ABUS-R board.
7. Remove the ABUS-R board.
8. When installing the ABUS-R board, put the board in such a position that it is locked by the tabs [7] before fixing it with the screws.

4.1.6 LOGIC Board

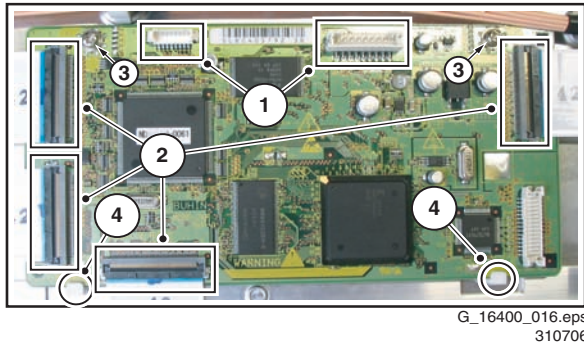


Figure 4-11 LOGIC board removal (1/2)

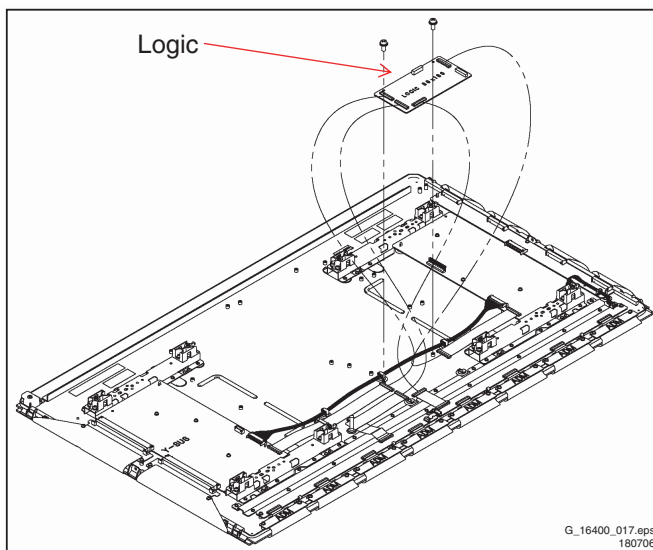


Figure 4-12 LOGIC board removal (2/2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Unplug connectors [1].
2. Release the lock of the FPC connectors [2] and unplug the signal cables.
3. Remove the screws [3] fixing the LOGIC board.
4. Remove the LOGIC board.
5. When installing the LOGIC board, put the board in such a position that it is locked by the tabs [4] before fixing it with the screws.

4.1.7 PSU Board



Figure 4-13 PSU board removal

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Unplug connectors [1].
2. Remove screws [2].
3. Remove the PSU.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- 5.1 Repair Tools
- 5.3 Process Flow
- 5.4 Repair Instructions
- 5.5 Defect Description Form

5.1 Repair Tools

To be able to repair the Plasma Display Panels on board level, the following repair tools are available:

- Special LVDS cable: T.B.D.
- Foam buffers: 3122 785 90581.

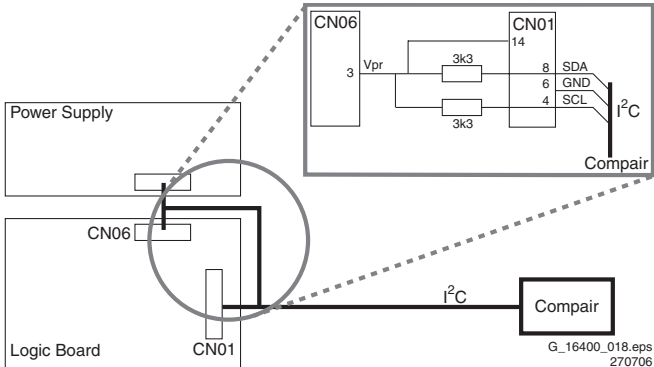


Figure 5-1 Extension cable kit ALiS PDP



Figure 5-2 Foam buffers for FTV

5.2 Error codes

When an error causes the PDP to switch “OFF”, an error code is put into an EEPROM on the Logic Board. You can read out the contents of the error code memory with the ComPair tool.

5.2.1 How to Connect the ComPair Tool

- Carefully disconnect the LVDS cable from CN01 on the Logic Board.
- If necessary connect a PSU with a voltage of 3.3V to drive the LOGIC board.
- Connect the cable from the ComPair tool to connector CN01 of the LOGIC board.
- Turn on the ComPair tool.
- Launch the ComPair software.
- Read out the error buffer.

5.2.2 Error Code Overview

Table 5-1 Error code table

Error code	Detected by board	Error description	Suspected board(s)			
21	X-SUS	Vxx power voltage is too high	X-SUS	LOGIC		
24		Vxx power voltage is too low	X-SUS	LOGIC		
25		Vex power voltage is too high	X-SUS			
26		Vex power startup is faulty	X-SUS	LOGIC		
44	Y-SUS	Vey power voltage is too low	Y-SUS	LOGIC		
45		Vey power voltage is too high	Y-SUS			
46		Vey power startup is faulty	Y-SUS	LOGIC		
4C		Temperature too high	Y-SUS	LOGIC		
61	X-SUS	Vs power voltage is too high	Y-SUS	X-SUS	LOGIC	PSU
62	Y-SUS	Vs power startup is faulty	X-SUS	Y-SUS	PSU	LOGIC
64		Ve power voltage is too low	LOGIC	X-SUS	Y-SUS	
65		Ve power voltage is too high	Y-SUS	Y-SUS		
66		Ve power startup is faulty	LOGIC	X-SUS	Y-SUS	
68		Vw power voltage is too low	Y-SUS	LOGIC		
69		Vw power voltage is too high	LOGIC	Y-SUS		
6A		Vw power startup is faulty	Y-SUS	LOGIC		
79		Vw power current is too high (during operation)	Y-SUS	X-SUS	LOGIC	
7B		Vs power voltage is too high (during startup)	Y-SUS	X-SUS	LOGIC	

5.3 Process Flow

The selected workshop receives the defect TV set and investigates the PDP. Two possible solutions follow:

5.3.1 Advanced PDP Exchange (Actual Way-of-Working)

In case of:

- Glass broken,
- Flex foil damaged,
- Y-COM IC on flex foil is damaged, or
- NVM on logic board defect: no communication with ComPair

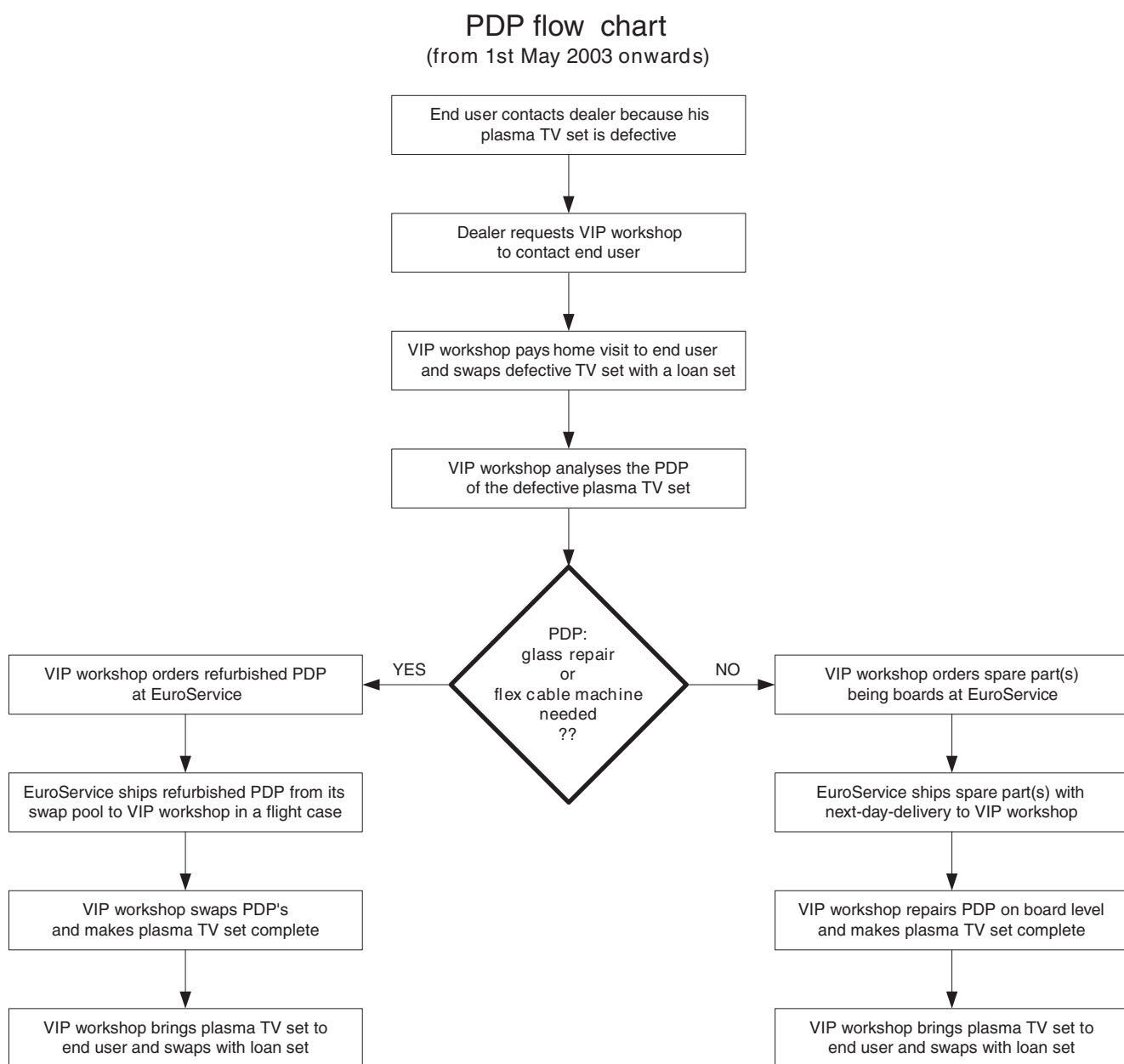
the procedure for repair is as follows:

A new PDP will be ordered at EuroService. They issue an RMA number and ship a refurbished PDP from its swap pool in a flight case to the workshop. After receipt, the workshop sends

the defective PDP, accompanied by a completely filled in Defect Description Form (see figure "Defect Description Form (DDF)"), in this flight case to EuroService. EuroService makes sure the defect PDP is repaired and afterwards added to its swap pool. The workshop makes the TV set complete by building in the refurbished PDP. Afterwards the TV set is returned to the customer.

5.3.2 Customized Repair

If the defect is not mentioned in 5.2.1, the workshop orders the necessary spare parts, being boards, at EuroService. After receipt the workshop swaps the concerning board and makes the TV set complete by building in the PDP. Afterwards the TV set is returned to the customer.



E_14580_027.eps
280706

Figure 5-3 PDP flow chart

5.4 Repair Instructions

5.4.1 General

In case of:

- a broken glass panel,
- a defective flex foil, or
- a defective Y-COM IC on the flex foil

the PDPs need to be send back via the central repair procedure of EuroService.

In other cases the Plasma Display Panels must be repaired on board level.

5.4.2 42" A4 ALiS Plasma Display Panel

The involved Plasma Display Panel is:

Display type	Service code number
FPF42C128135UA-52	9322 235 43682

The available modules for these Plasma Display Panels are:

Module description	FHP code number	Service code number
X-SUS board	FPF33R-XSS0041	9965 000 35647
Y-SUS board	FPF33R-YSS0042	9965 000 35648
Logic board	FPF33R-LGC0061	9965 000 35646
A-BUS Left	FPF33R-ABL0038	9965 000 35649
A-BUS Right	FPF33R-ABR0039	9965 000 35650
X-BUS board	FPF33R-XBU0035	9965 000 35651
Signal Cable LOGIC-X-SUS	FPF29R-CBL001411	9965 000 32669
Signal Cable LOGIC-Y-SUS	FPF29R-CBL001412	9965 000 32670
Signal Cable LOGIC-ABUS-L	FPF29R-CBL001401	9965 000 32668
Signal Cable LOGIC-ABUS-R	FPF29R-CBL001421	9965 000 32671
Power Cable X-SUS-Y-SUS	FPF29R-CBL003601	9965 000 32672
Power Cable X-SUS-ABUS-R	FPF29R-CBL003701	9965 000 32673

Remark:

1. If the LOGIC board is defective, the procedure mentioned in figures "Logic Board Exchange (1 and 2)" must be used.

5.4.3 Fault Finding Flowcharts

Problem analysis procedure: PDP repair / board swap

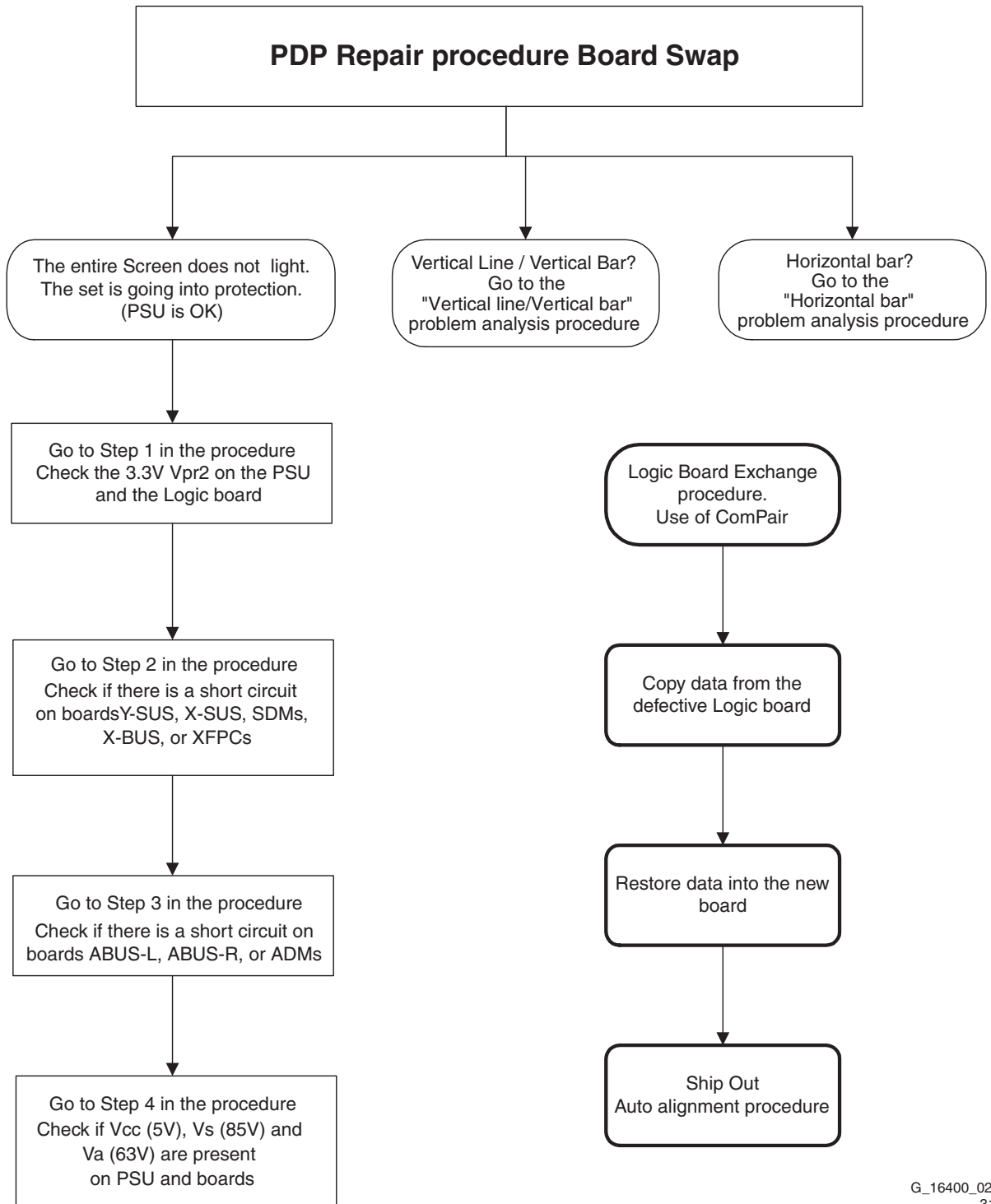
G_16400_025.eps
310706

Figure 5-4 Problem analysis procedure: PDP repair / board swap

Problem Analysis Procedure: The entire screen does not light

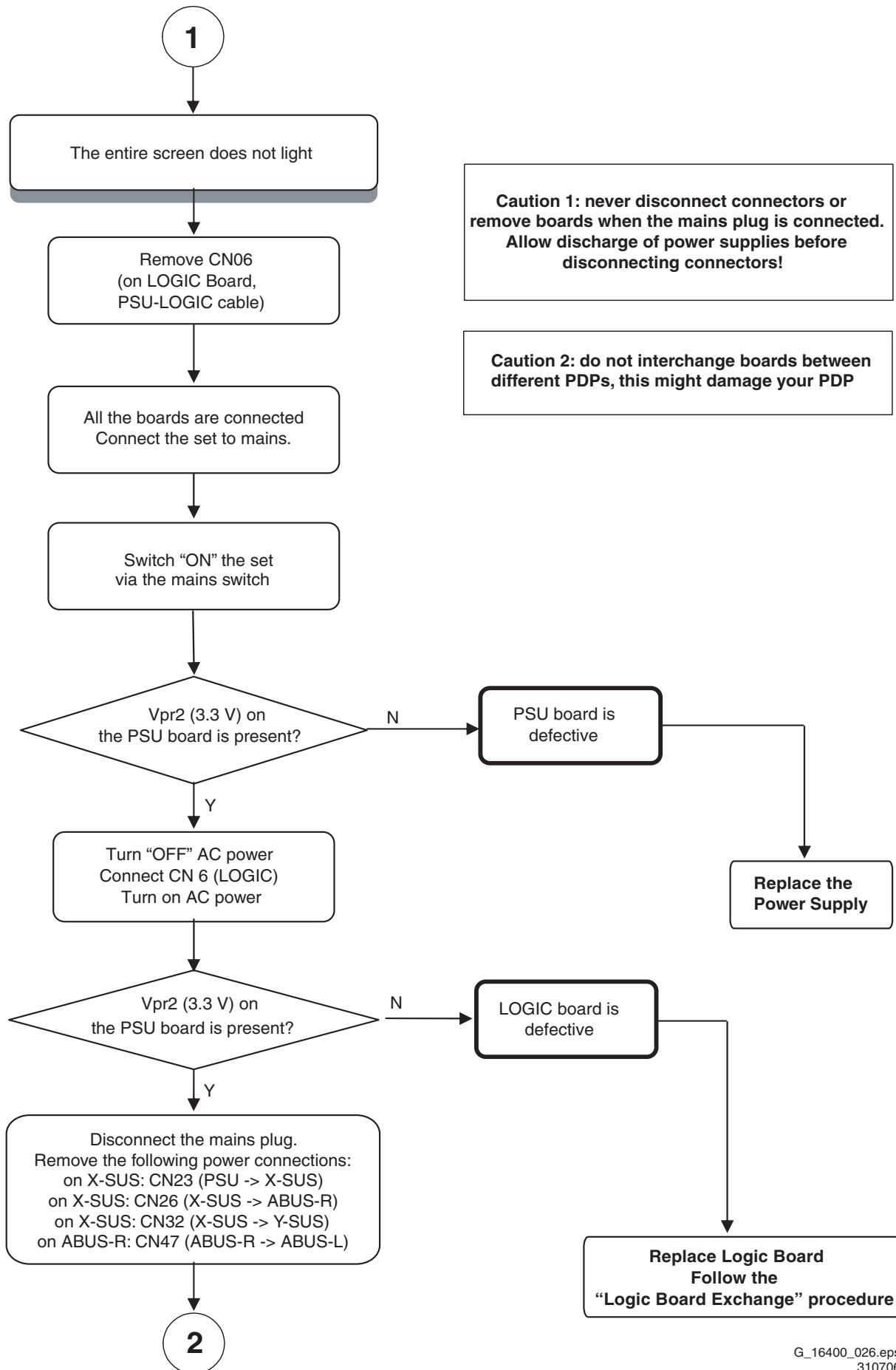


Figure 5-5 Problem analysis procedure: the entire screen does not light

Short-circuit check on Boards and Power Supply Lines

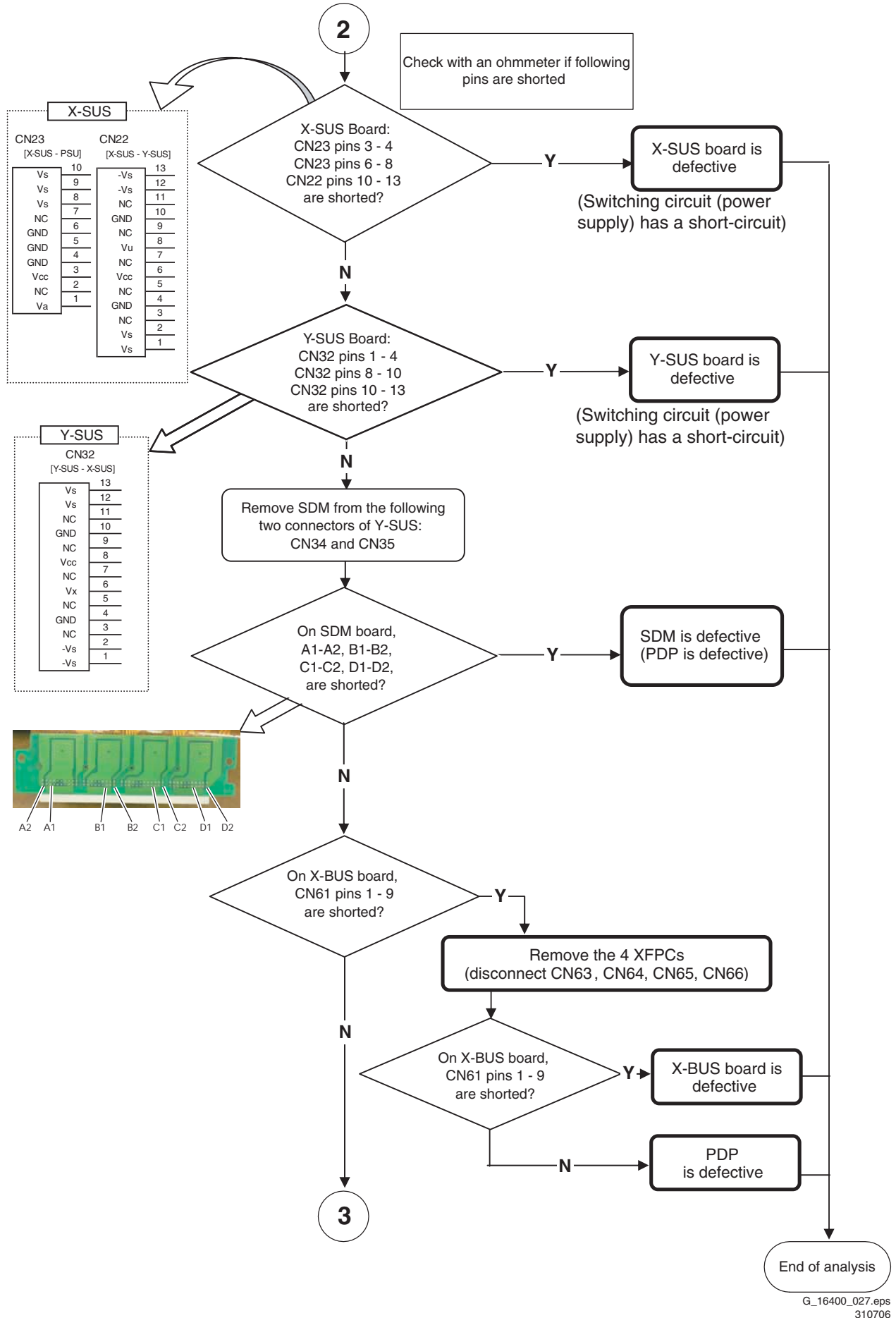


Figure 5-6 Short circuit check on boards and power supply lines (1/3)

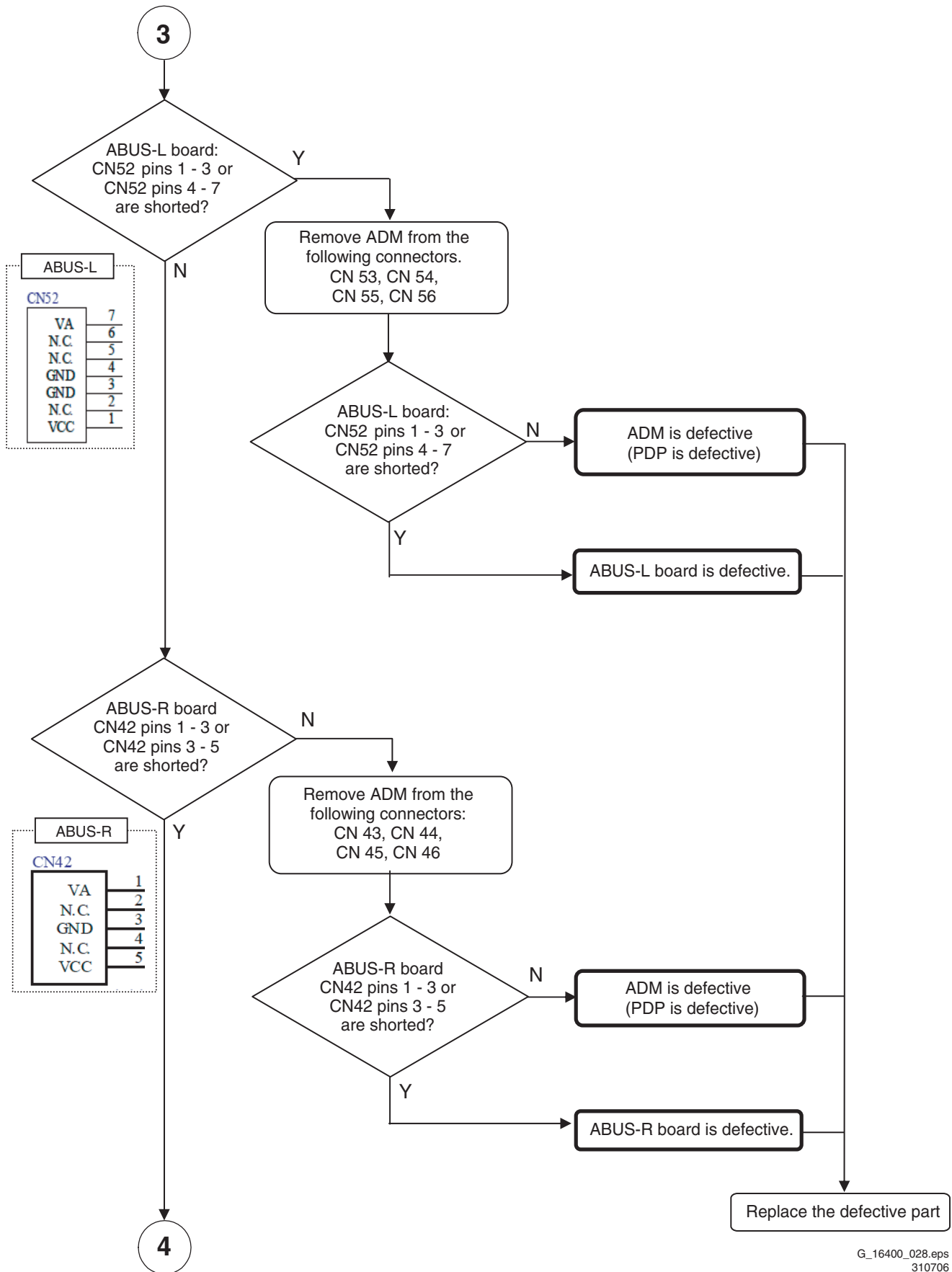


Figure 5-7 Short circuit check on boards and power supply lines (2/3)

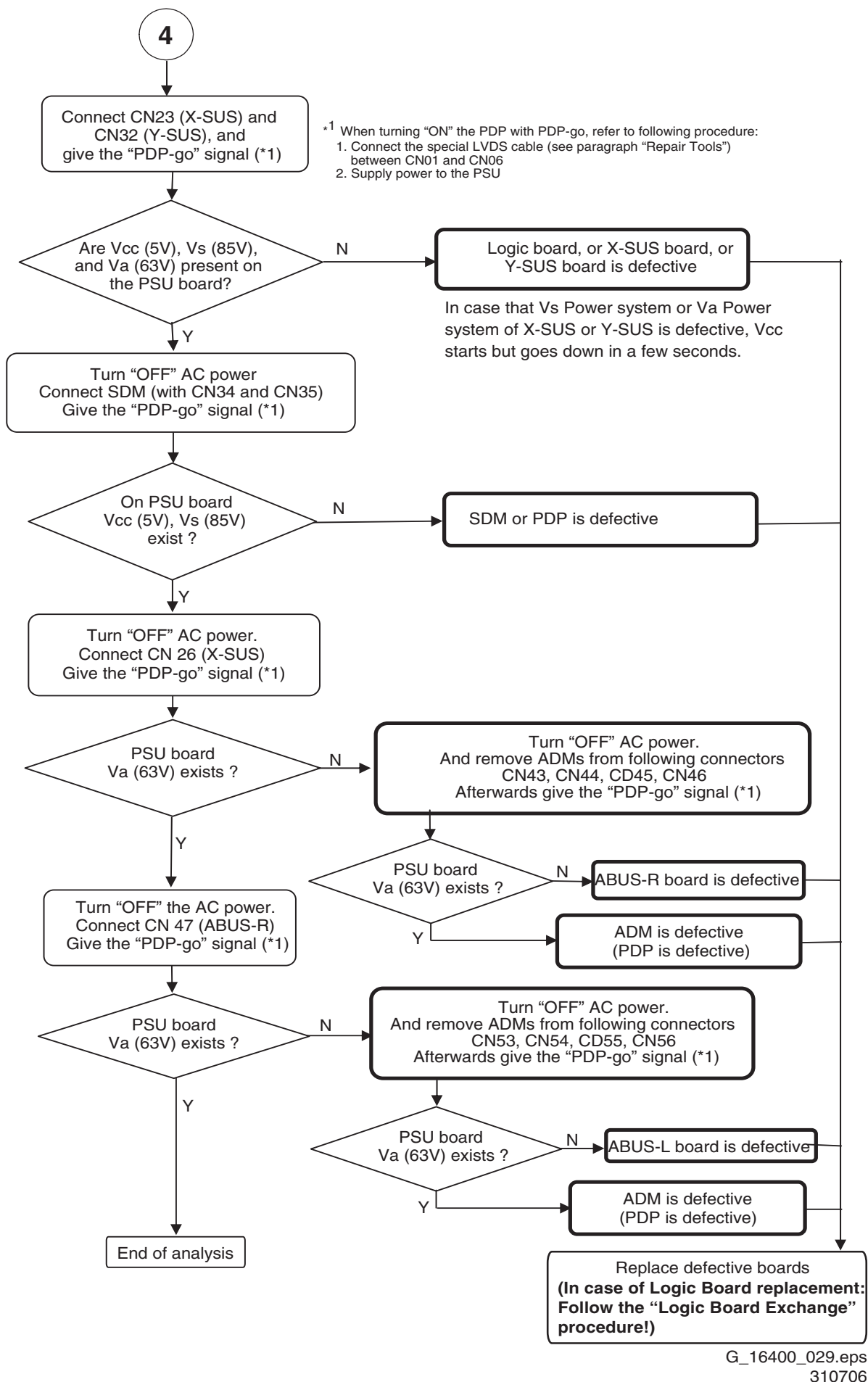
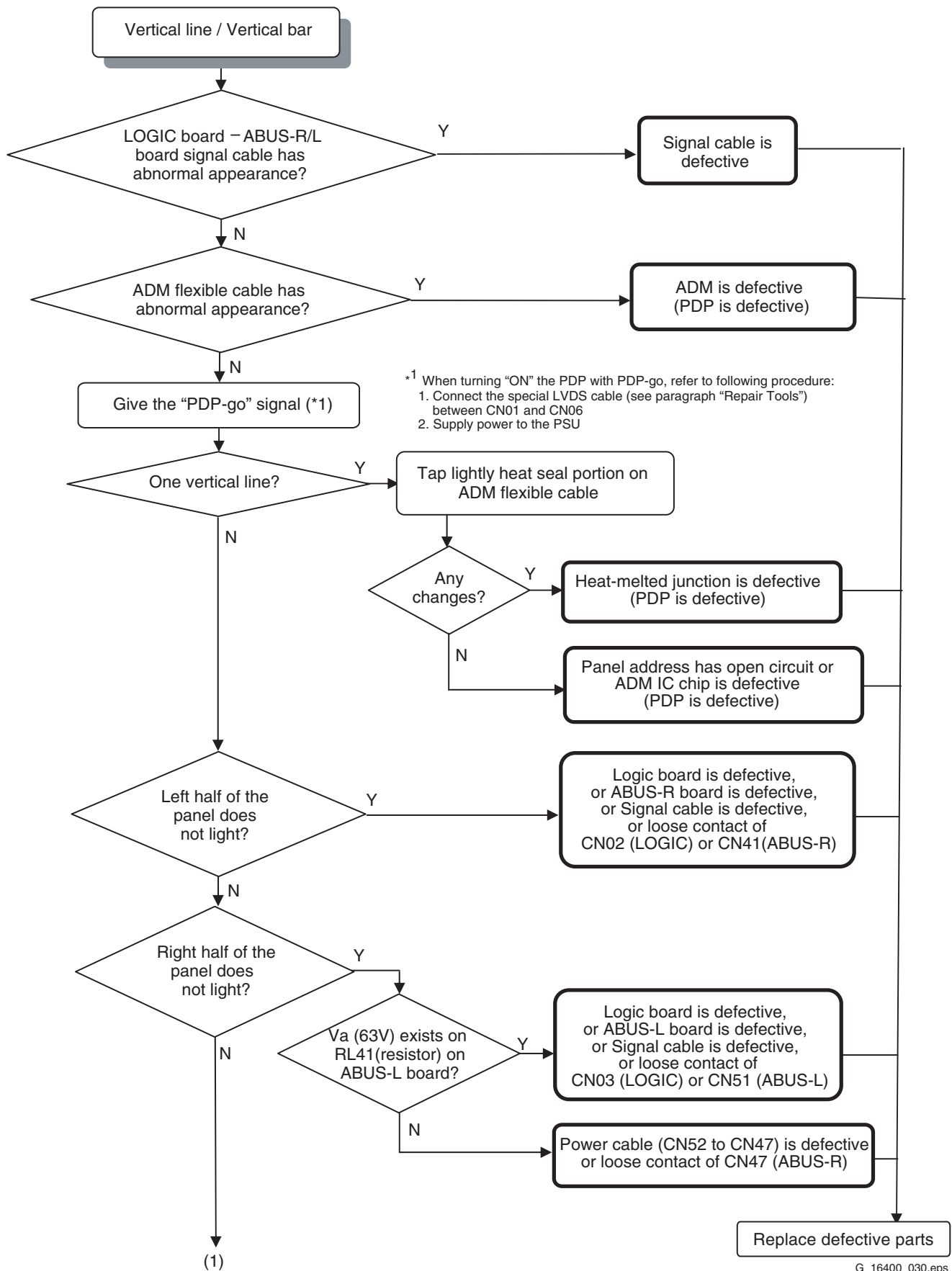


Figure 5-8 Short circuit check on boards and power supply lines (3/3)

"Vertical line/Vertical bar" problem analysis procedure



G_16400_030.eps
310706

Figure 5-9 Vertical line / vertical bar problem analysis procedure (1/3)

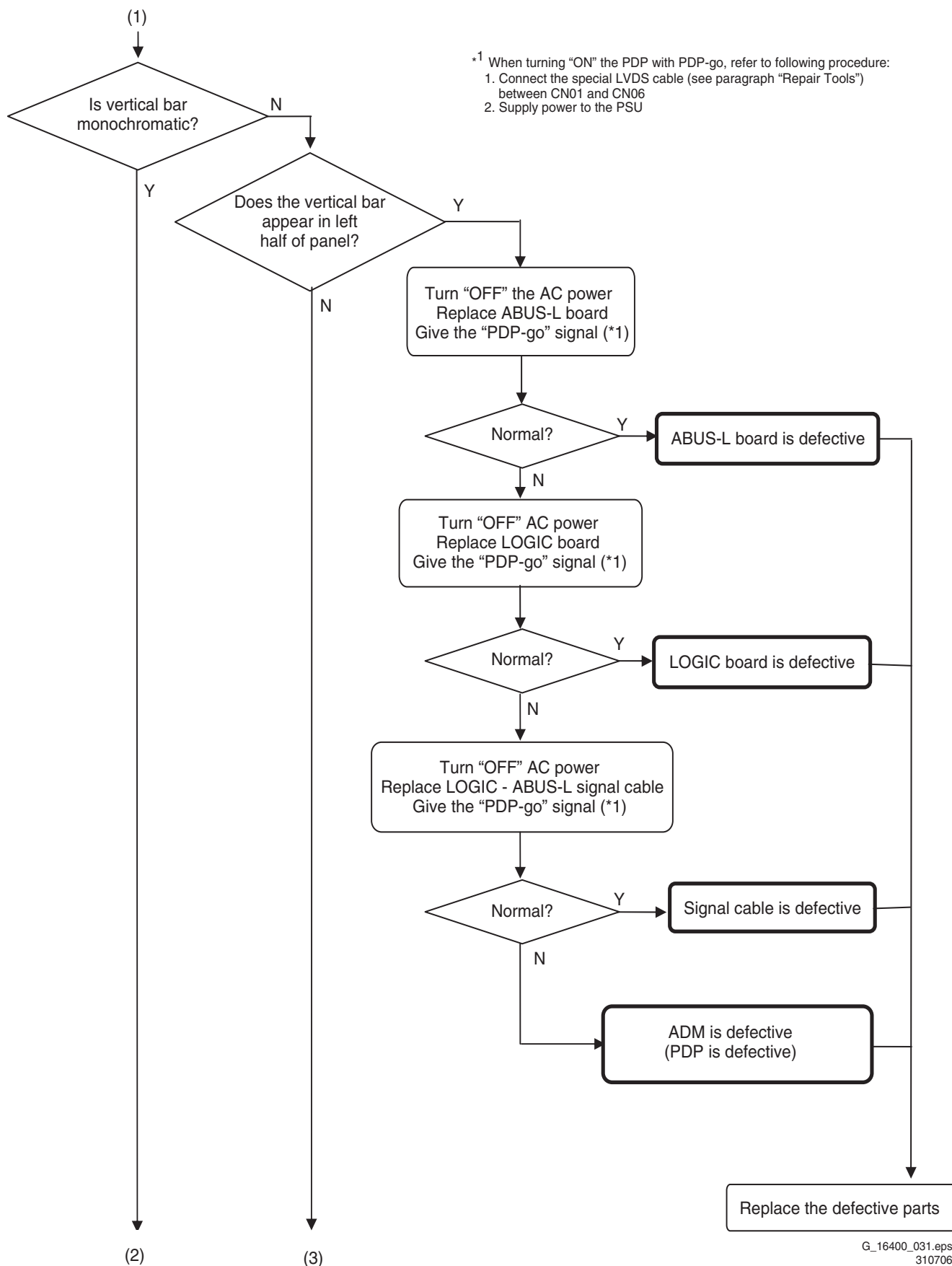


Figure 5-10 Vertical line / vertical bar problem analysis procedure (2/3)

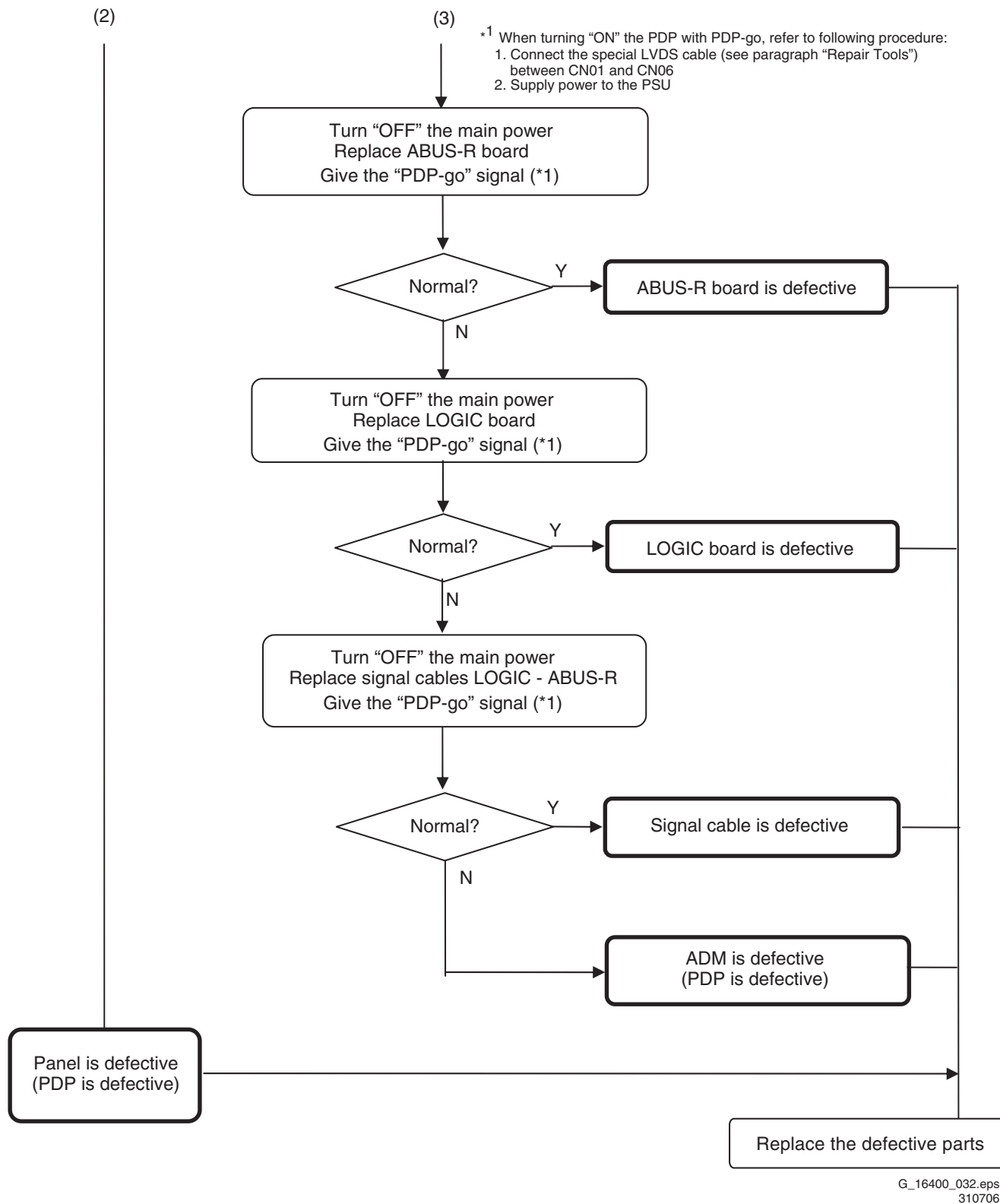


Figure 5-11 Vertical line / vertical bar problem analysis procedure (3/3)

"Horizontal bar" problem analysis procedure

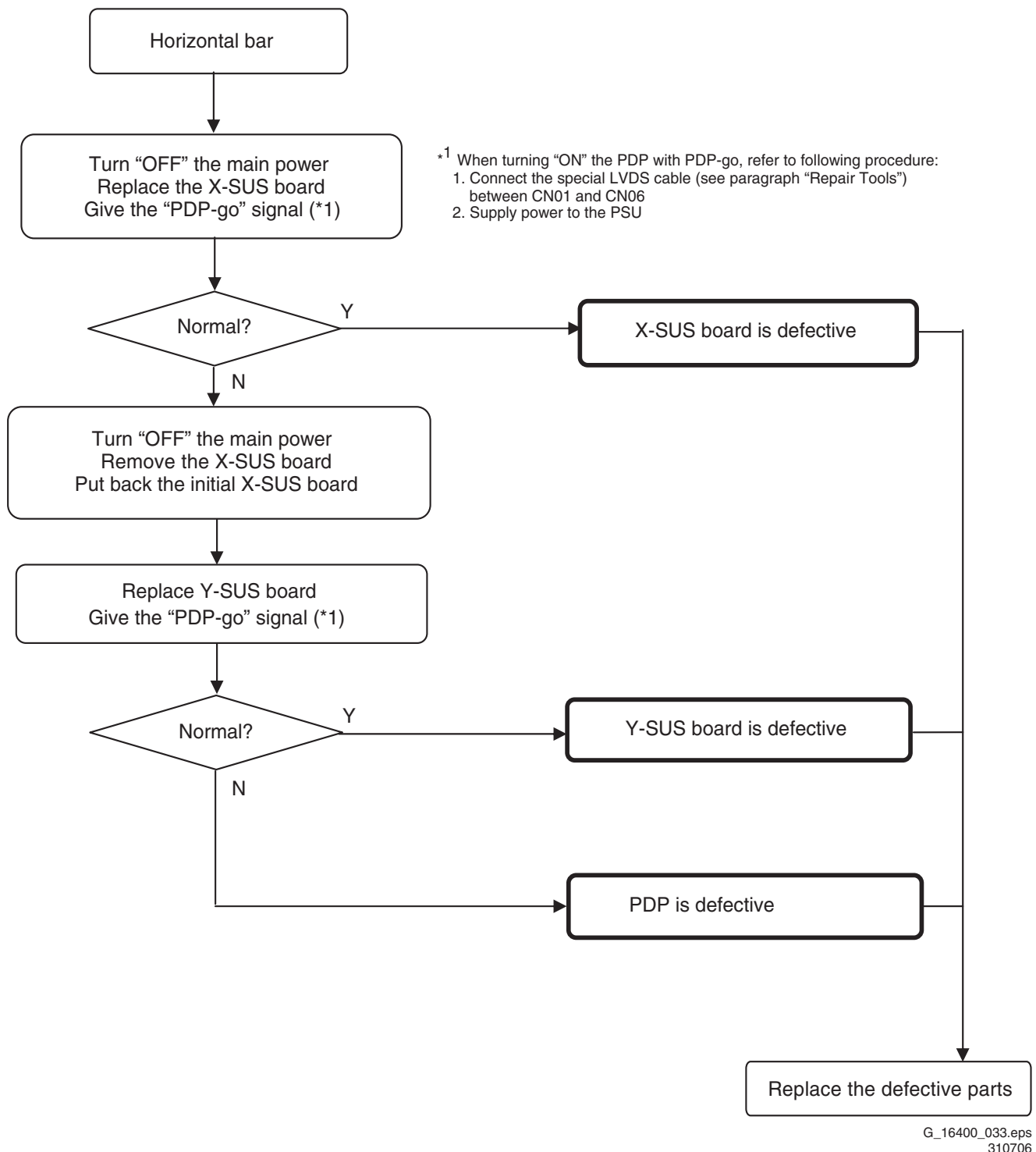
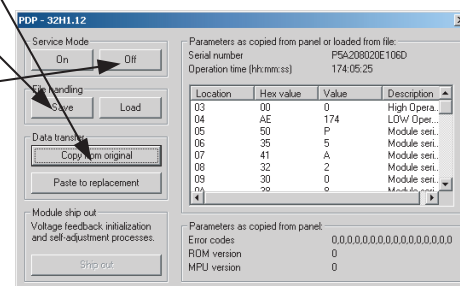
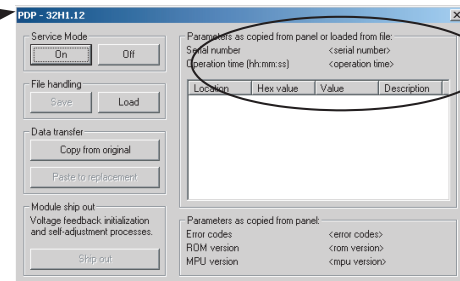
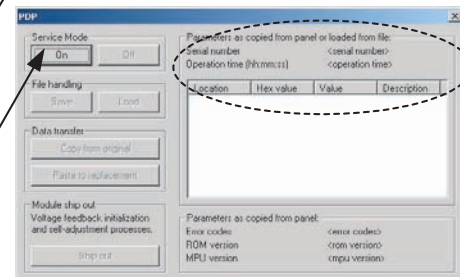
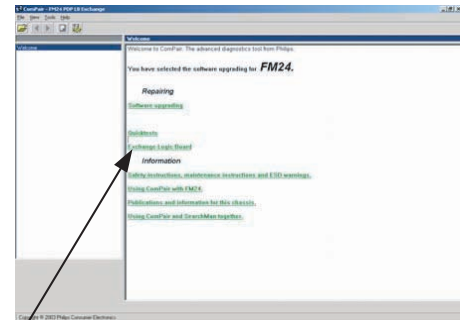
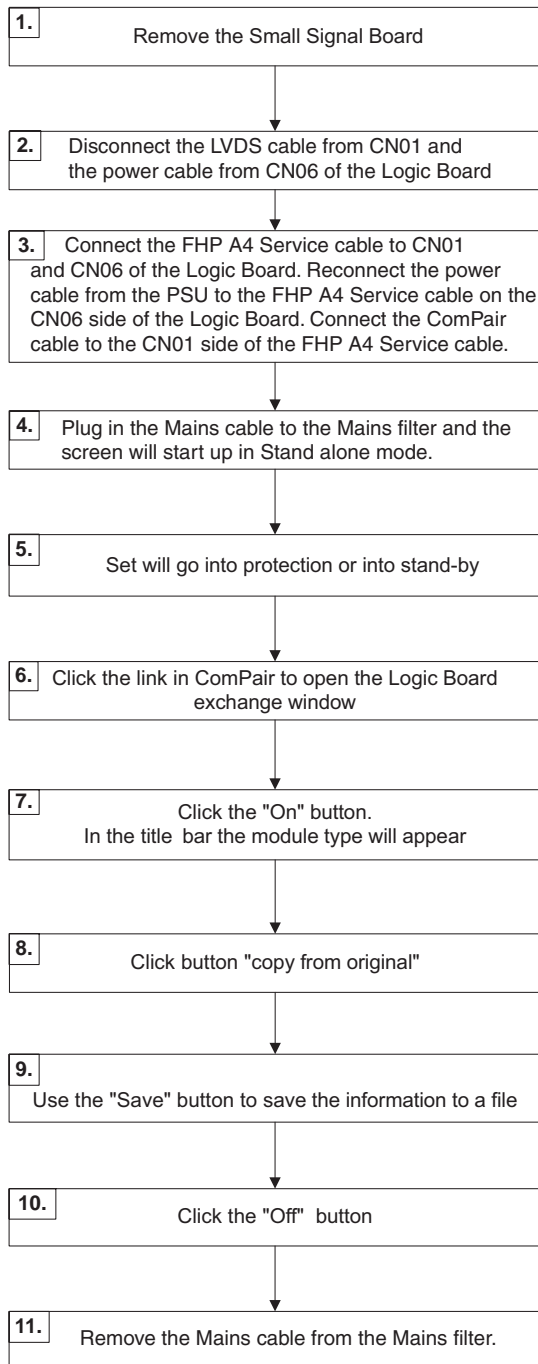


Figure 5-12 Horizontal line problem analysis procedure

Remark: Do not interchange boards between different PDPs, this might damage your PDP

Logic Board Exchange (1)

1. Copy NVM Data from defective Logic Board



G_16400_019.eps
010806

Figure 5-13 Logic Board Exchange (1/2)

1. Remove the SSB. Now you can reach the cable going to connector CN01 on the Logic Board.
2. Unplug the LVDS cable from the SSB at connector CN01. Also unplug the power cable at CN06.
3. Connect the FHP A4 service cable to CN01 and CN06. Connect the ComPair I2C cable to the CN01 side of the service cable, and the power cable to the CN06 side of it.
4. Plug in the mains cable. The display starts up in stand-alone mode.
5. Click the link in ComPair to open the Logic Board exchange window.
6. Click the 'On' button. In the title bar the module type will appear: 42A4, or something similar.
7. Click button 'Copy from original'
8. The data is read from the EEPROM on the logic board and displayed in the list.
9. Use the 'Save' button to save the information to a file. This is optional, but better safe than sorry!
Note: If you close the window without saving, all settings

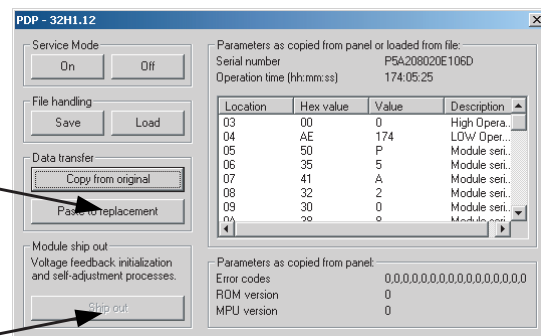
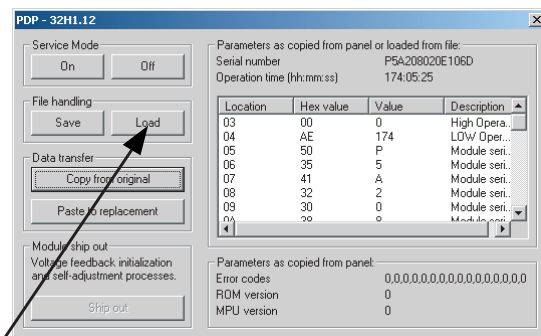
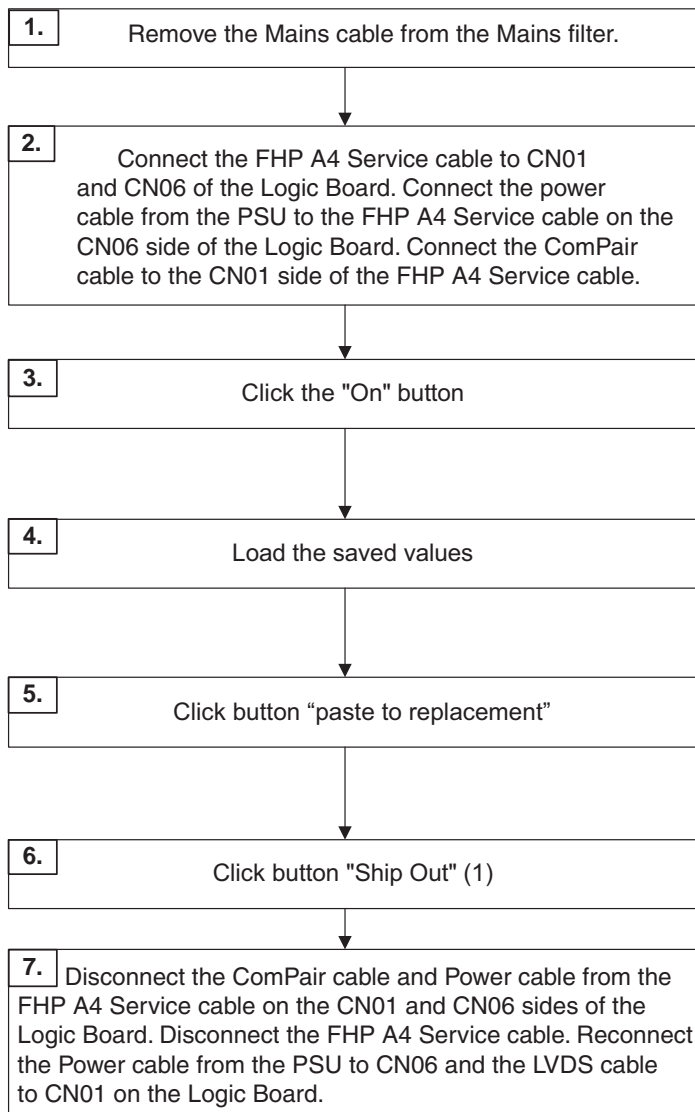
will be lost. If you intend to close this window before replacing the board, you should save the settings so you can load them later.

10. Click the 'Off' button.

11. Switch off the set and replace the Logic Board with another one.

Logic Board Exchange (2)

2. Write NVM Data to the new Logic Board


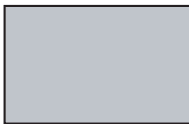

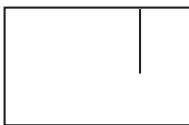
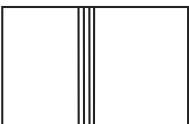

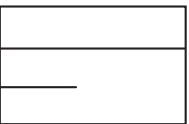
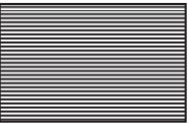


(1) The PDP screen will be blanked for about 15s, then 15s later, the 'Ship out' process will end

G_16400_020.eps
010806

Figure 5-14 Logic Board Exchange (2/2)

1. Switch off the set and replace the Logic Board by another one. Now connect the service cable to connectors CN01 and CN06. Connect the power cable to the CN06 side of the service cable, and the ComPair cable to the CN01 side.
2. Restart the display with the new board.
3. Click the 'On' button.
4. The module type will again appear in the title bar. This may be different now from step 6 on the previous page, because now another Logic Board is used. If you closed the window after step 9 and did save the settings you should load them now. Use the 'Load' button to do so.
5. Click button 'Paste to replacement'. The settings previously copied from the old board are now written to the new board. If successful the button 'Ship out' will be enabled.
6. Click button 'Ship out'.
7. Now a process of voltage feedback initialization and self-adjustment starts. This will take a few seconds. When ready you can switch off the display.
8. Disconnect ComPair and remove the service cable, plug in the power cable at CN06 and the original LVDS cable at CN01.

NO	Fault contents	Fault status		Suspected fault location	Analysis procedure and measure
1	Entire screen does not light.	After momentarily going on, the screen becomes black immediately or after a few seconds (main power is turned off.)		X-SUS Y-SUS PSU Panel chassis LOGIC ABUSL ABUSR	Refer to "Entire screen does not light"
2		Screen lights dimly even on the back screen.		LOGIC	Replace the LOGIC board, following the "Logic Board Exchange" procedure
3	Vertical line	Single vertical line (of different color)		Panel chassis LOGIC	Refer to "Vertical line/bar"
4		Vertical line from the middle of effective scan area (vertical line of different color)		Panel chassis	Replace panel chassis
5	Vertical bar	Bar width of 1/7 of horizontal size or in multiples of 1/7, is displayed. Abnormal display		Panel chassis ABUS-L ABUS-R LOGIC Above boards are connected.	Refer to "Vertical line/bar"
6		Bar width of 3/7 or 4/7 of the screen width, is displayed. Abnormal display (vertical line of different color)		ABUS-L ABUS-R LOGIC Above boards are connected.	
7	Horizontal line	Single horizontal line (no light) or single horizontal line does not light among the effective scanning area. Single horizontal line does not light.		Panel chassis X-SUS Y-SUS ABUS-L ABUS-R	Replace panel chassis
8		Every other line (no light) in entire screen		X-SUS Y-SUS ABUS-L ABUS-R	Replace X-SUS, Y-SUS

G_16400_023.eps
280706

Figure 5-15 Fault symptom overview (1/2)




NO	Fault contents	Fault status		Suspected fault location	Analysis procedure and measure
9	Horizontal bar	Bar width of 1/8 or multiples of 1/8 of the screen height, is displayed. Abnormal (screen does not light)		Panel chassis	Replace panel chassis
10		Bar width of 1/2 of the screen height. Abnormal display (screen does not light)		Panel chassis Y-SUS X-SUS Above boards are connected.	Refer to "Horizontal bar"
11	Image sticking (Image retention)	Fixed display contents are always displayed.		Panel chassis	Perform all white heat run. After judgement, replace panel chassis
12	Twinkle	The entire screen momentarily becomes brighter or darker.		Poor connector contact	
13	Flicker	The entire screen flickers continuously.		Poor connector contact (CN2,3,21,31)	Connector / cable re-connection or cable exchange
14	Luminance is abnormal	Screen is too dark or too bright. (Out of specifications)			
15	Chrominance is abnormal	Colors cannot be displayed correctly.		LOGIC board	Replace Logic board, following the "Logic Board Exchange" procedure
16	Sync is disturbed				
17	Picture distorted				
18	Steps of gradation are skipped	Luminance linearity is poor.			
19	Abnormal sound			PSU X-SUS Y-SUS (Core is broken, or transformer is abnormal.)	Locate cause of abnormality from listening and viewing. Replace the cause of problem.
20	Control on external communication is abnormal	Contrast, color temperature adjustment and γ cannot be changed.		LOGIC board	Replace Logic board, following the "Logic Board Exchange" procedure

Figure 5-16 Fault symptom overview (2/2)

5.5 Defect Description Form

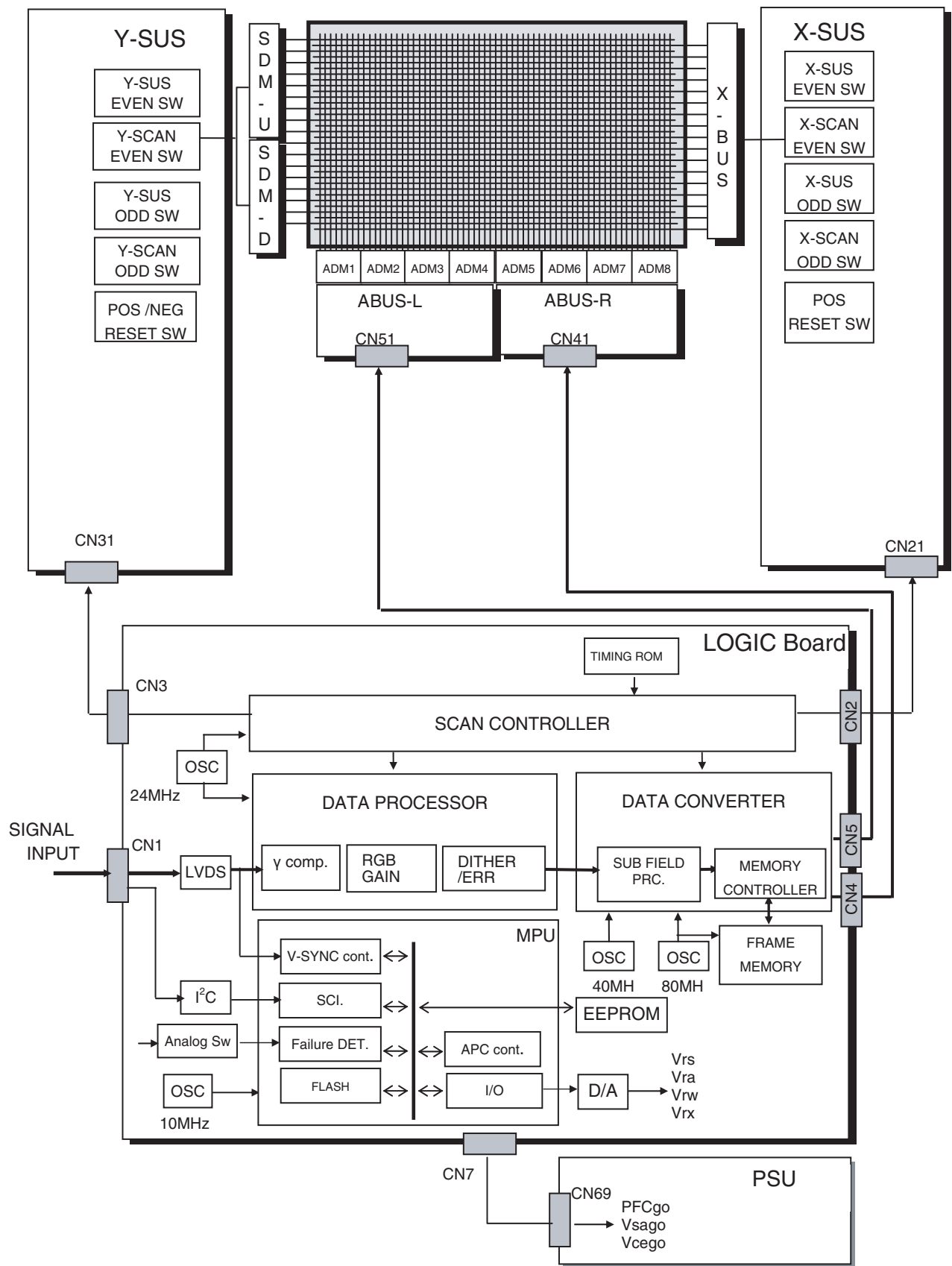
This form must be used by the workshops for warranty claims:

DDF FLAT TV (panels & boards) version 1.1				Date last modified: 08/03/2005		
To be filled in by <u>WORKSHOP / WORK CENTER</u>						
Country:		<div style="font-size: 24px; font-weight: bold; margin-bottom: 10px;">Philips</div> <div style="font-size: 18px; font-weight: bold; margin-bottom: 10px;">LCD & Plasma</div> <div style="font-size: 16px; font-weight: bold; border-bottom: 1px solid black; margin-bottom: 5px;">DEFECT DESCRIPTION</div> <div style="font-size: 16px; font-weight: bold; border-bottom: 1px solid black; margin-bottom: 5px;">FORM</div>		Type nr./Model nr. set		
Customer Account nr.:				Serial nr. set		
				Type nr. display		
Job sheet nr.:				Serial nr. display		
		Part nr display (12nc)				
		Return number		0170 _ _ _ _ _		
GENERAL REPAIR DATA	Condition	<input type="checkbox"/> Constantly <input type="checkbox"/> Intermittently <input type="checkbox"/> After a while <input type="checkbox"/> In a hot environment <input type="checkbox"/> In a cold environment <input type="checkbox"/> Other :				
	Symptom(s)	<input type="checkbox"/> No backlight <input type="checkbox"/> No picture <input type="checkbox"/> Picture too bright <input type="checkbox"/> Shading / smearing on picture <input type="checkbox"/> Only partial picture <input type="checkbox"/> Unstabel picture <input type="checkbox"/> Flickering / flashing picture <input type="checkbox"/> Lines across/down image <input type="checkbox"/> Inactive row(s) <input type="checkbox"/> Inactive column(s) <input type="checkbox"/> Missing colour(s) <input type="checkbox"/> Other:				
PANEL REPAIR	Pixel Defect(s):	<input type="checkbox"/> Dark dots <input type="checkbox"/> Bright dots	<u>Qty of dots :</u>	Mark Defect(s)	<div style="color: red; font-weight: bold; font-size: 1.2em; margin-bottom: 5px;">----- Picture -----</div> Insert picture or mark defect !	
	Symptoms	Following defect symptoms are out of warranty: <div style="display: flex; justify-content: space-between;"> <div> <ul style="list-style-type: none"> Broken glass Scratch(es) on display </div> <div> <ul style="list-style-type: none"> Number of dark/bright pixels within spec. Burn in (only for Plasma TV) </div> </div>			These symptoms are not claimable.	
BOARD REPAIR	<u>For Plasma TV repair only</u>		Spare Part Nr. New Board	Barcode Nr. Defect Board	Barcode Nr. Replaced Board	
		1.				
		2.				
		3.				
		4.				
To be filled in by <u>EUROSERVICE</u>		RMA number:		Date of receipt:		
Note 1: The defective LCD-panel / PDP needs to be returned in the same packaging as the new part was send. If not the warranty claim will be rejected. Note 2: Please fill out this form <u>completely</u> and correctly, otherwise Euroservice is unable to fulfil the repair request!						
Owner: PHILIPS CE EUROSERVICE				DE10WEG		

Figure 5-17 Defect Description Form (DDF)

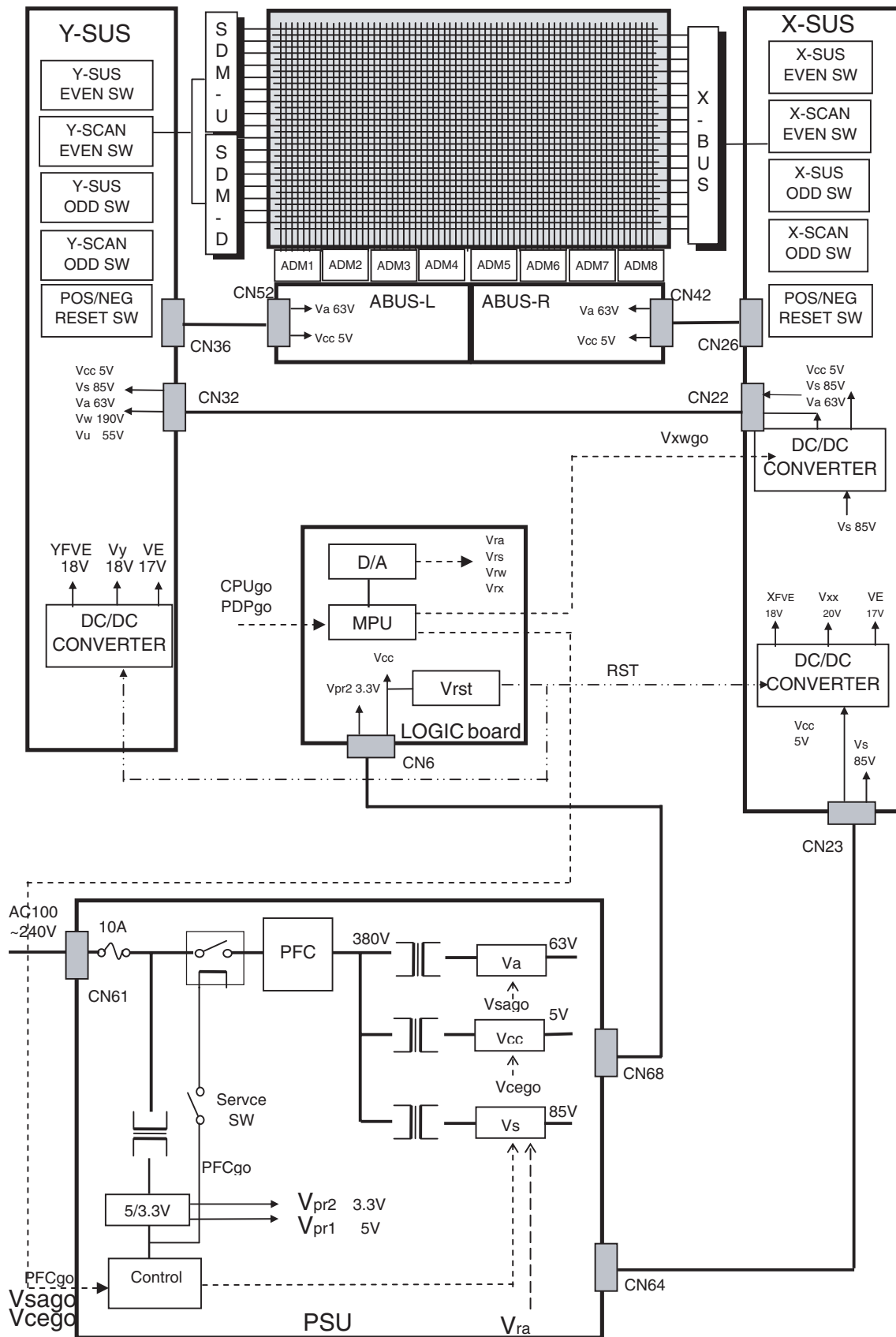
6. Block Diagrams, Test point Overview, and Wave Forms

6.1 Block Diagrams



G_16400_021.eps
190706

Figure 6-1 Signal block diagram



G_16400_022.eps
190706

Figure 6-2 Power block diagram

6.2 Test Points

Not available.

6.3 Wave Forms

Not available.

7. Circuit Diagrams and PWB Layouts

Not applicable.

8. Alignments

8.1 Voltage Setting Procedure

On the back of the PDP, in the top right hand corner, you find the Voltage Setting label:

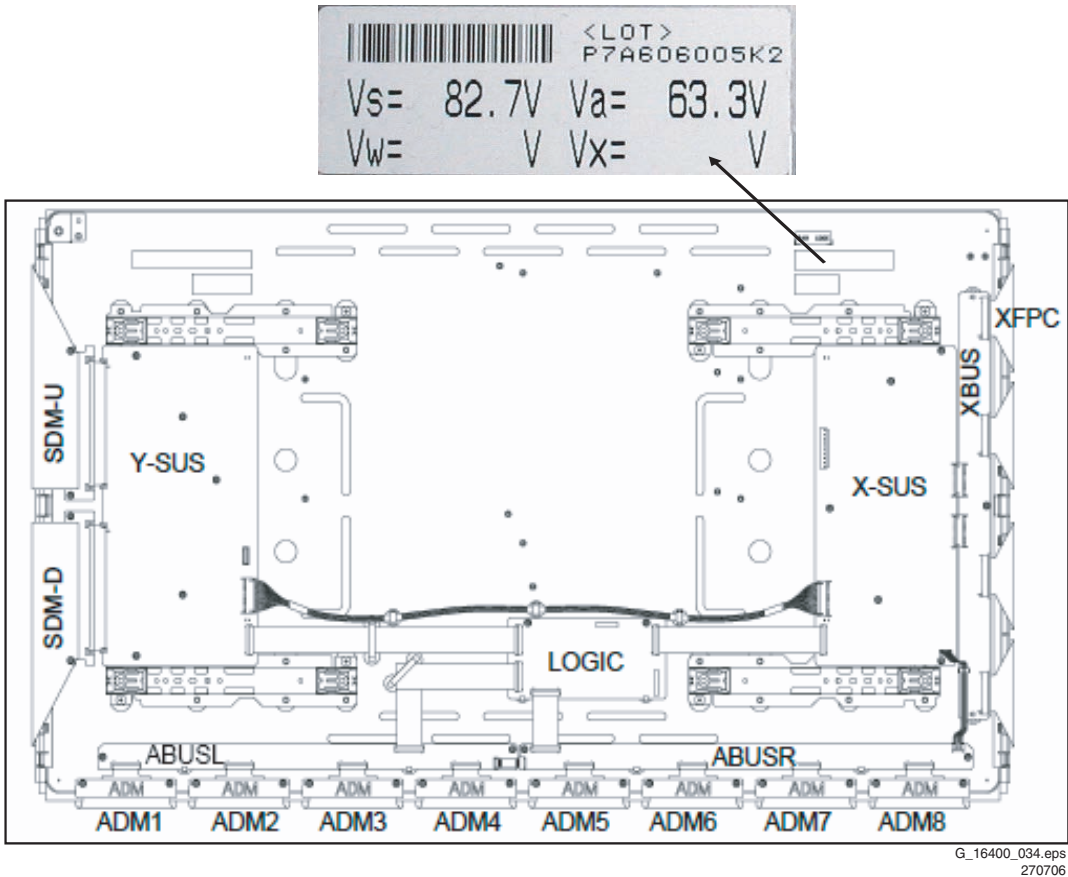


Figure 8-1 Voltage setting label

This Voltage Setting label shows the following messages:

Table 8-1

Item	Adjustment items	Measurement point	Adjustment value (conditions)
1	Vs voltage adjustment	Pins 8-9-10 of CN23 on the X-SUS board	Voltage setting label indication value* \pm 1%
2	Va voltage adjustment	Pin 1 of CN23 on the X-SUS board	Voltage setting label indication value* \pm 1%

If the voltage adjustments Vs and Va on the Power Supply Unit must be performed, depends on the version of the Power Supply Unit.

9. Circuit Descriptions and Abbreviation List

9.1 Board Function Description

9.1.1 Logic Board Function

Data Processor

- Gamma adjustment (1 / 2.2 / 2.4 / 2.6 / 2.8).
- NTSC/EBU format (Colour matrix) Switch.
- RGB gain Control (White balance adjustment, amplitude limitation).
- Error diffusion technology (grey scale adjustment).
- Dither (grey scale adjustment).
- Burn-in pattern generation.

Data Converter

- Quasi out-line adjustment (luminous pattern control).

Scan Controller

- Address driver control signal generator (ADM).
- Scan driver control signal generator (SDM).
- X/Y sustain control signal generator.

Waveform ROM

- Waveform pattern for drive / timing memory.

MPU

- Synchronous detection.
- System control.
- Driving voltage (Va, Vs, Vr, Vw) adjustment.
- Abnormal watch (breakdown detection) / abnormal processing.
- I_s (sustain) current control (sustain pulse control).
- I_a (address) current control (sub-field control).
- External communication control.
- Flash memory (firmware).

EEPROM

- Control parameter memory.
- Counts operating time (number of hours).
- Abnormal status memory (16 places).

9.1.2 Function of X-SUS Board

DC/DC power supply block

- Vcc (+5V) -> Ve (+17V) / XFve (+18V, floating).

X Switching Block

- Switching during address period.
- Switching during sustain period.
- Switching during reset period.

Current Detector Block

- I_{sx} (sustain) current detection.
- I_{ax} (address) current detection.

9.1.3 Function of Y-SUS Board

DC/DC Power Supply Block

- Vcc (+5V) -> Ve (+17V) / YFve (+ 18V, floating)
- Vs (+85V) -> Vw (+185V)

Switching Block

- Switching during address period.
- Switching during sustain period.
- Switching during reset period.

Current Detector Block

- I_{sy} (sustain) current detection.
- I_{sp} (SDM) current detection.

9.1.4 Function of ADM Board

Address Driver Module

- Supplies voltage Va to the glass plate.

9.1.5 Function of SDM Board

Scan Driver Module

- Supplies voltage Vs to the glass plate.

9.1.6 Function of PSU Board

Stand-by Power Supply Block

- AC100-240: +5V & +3V3 Stand-by.

PFC Block (AD/DC Power Supply Block)

- AC100-240: +390V.

AD/DC Power Supply Block

- +380V, Vcc (+5V), Vs (+80V), Va (+60V).

Current Detection Block

- I_a (address) current detection.

Abnormal Voltage Monitoring

- Vs excess voltage monitoring.
- Va excess voltage monitoring.

9.2 Differences between the Versions A1, A2, A3, and A4

9.2.1 Specifications

Table 9-1 Specifications

Item	42A1	42A2	42A3	42A4
Dimensions (mm)	994 x 585 x 66	994 x 585 x 66	994 x 587 x 66	994 x 587 x 66
Weight (kg)	16	16	16	16
Resolution (h x v)	1024 x 1024	1024 x 1024	1024 x 1024	1024 x 1080
Brightness (cd/m ²) (display load 1%, standard)	1,100	1,200	1,400	1,400
Contrast (dark room)	1000 : 1	1000 : 1	3000 : 1	3000 : 1

9.2.2 Layouts

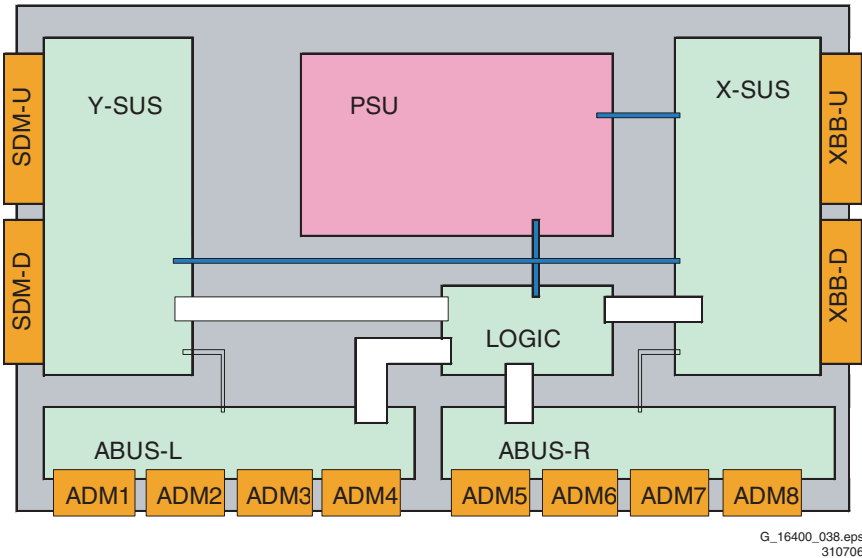


Figure 9-1 Layout 42A1

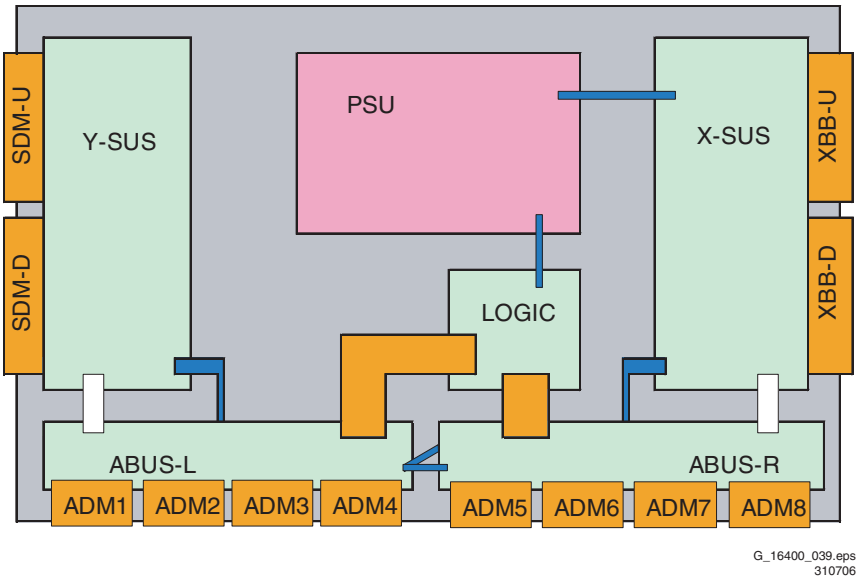


Figure 9-2 Layout 42A2

Differences with respect to 42A1:

- The signal cable arrangement has changed.
- The power cable arrangement has changed.
- An 80-pin FPC cable is used between Logic Board and ABUS-L and ABUS-R.
- The signal cable from the PSU to the Logic Board is standardised.
- The power cable from the PSU to the Logic Board is standardised.

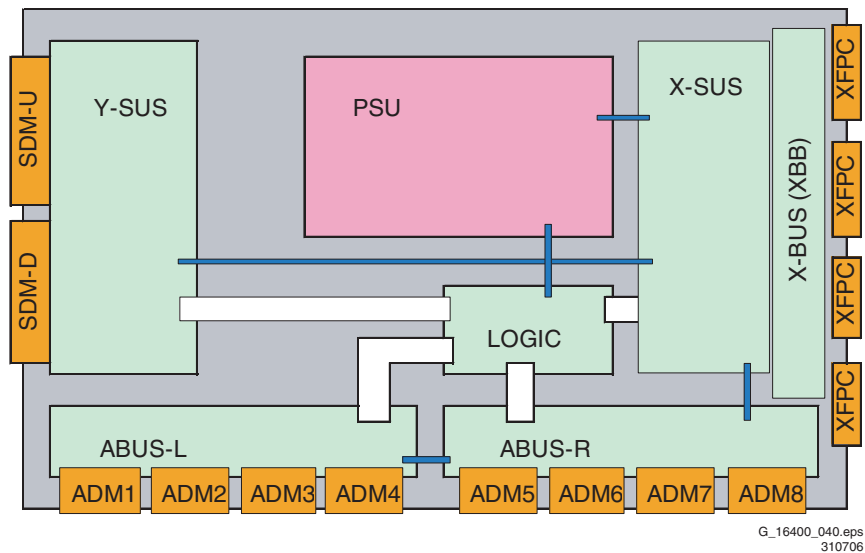


Figure 9-3 Layout 42A3

Differences with respect to 42A2:

- The signal cable arrangement has changed (now similar to 42A1).
- The power cable arrangement has changed (now similar to 42A1).
- The XBB has been replaced by XFPC and X-BUS.
- A new connector type is used on ABUS-L, ABUS-R, and X-BUS.

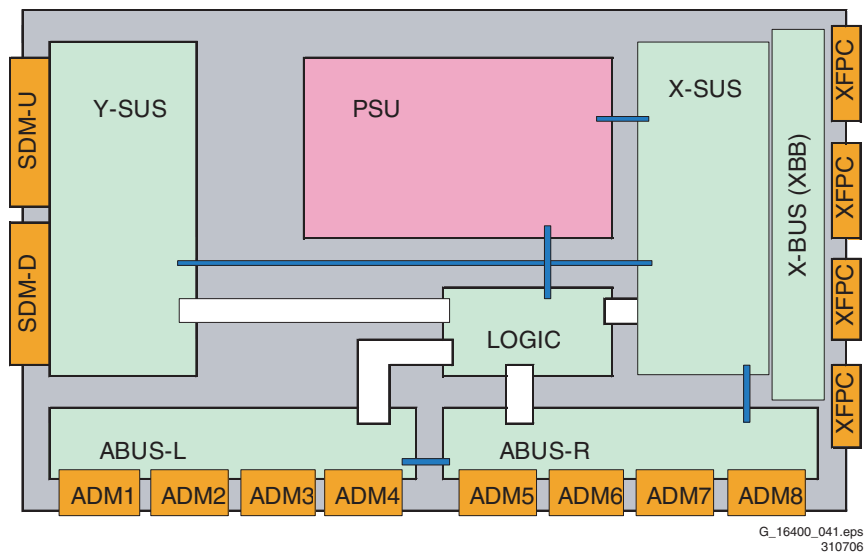


Figure 9-4 Layout 42A4

Differences with respect to 42A3:

- There are no differences in cable arrangements with respect to 42A3.

9.3 List of abbreviations

ADM	Address driver module
Burn-in rack	Test equipment of the shelf test in which the PDP unit is left to stand in drive condition
CPU	The unit for controlling the circuit operation
DOXE	The control voltage for even-numbered lines in the X direction
DOXO	The control voltage for odd-numbered lines in the X direction
DOYSD	Used in the drive voltage in the Y direction (down)
DOYSU	Used in the drive voltage in the Y direction (up)
External power ON	Running the external powers (Vcc, Va, Vs) on the designated voltage. Unless otherwise specified
External power OFF	Making the external powers (Vcc, Va, Vs) to stop their operation completely. Unless otherwise specified
Flexible cable	The cable to connect the electric circuit to the panel
Flicker	Continuous switching between bright and dark views by the PDP itself
Gradation	Shading of the display colour
OPUMP	The name of a circuit where the current from X/Y-SUS is returned
Oscilloscope	A device that allows the flow and strength of the running current to be visually checked and measured
Panel	The indication part of the plasma display panel (PDP)
Panel voltage	The voltage required operating the PDP normally
Parts	Each PC board and parts mounted in the PC boards
PDP	Plasma display panel abbreviated

Probe	A cable with contact finger that can transfer the status of the electric circuit to be measured to an oscilloscope
Protection cover	A cover made of aluminium to protect the PDP entirely during test
ROM	Memory that stores the drive sequence and other data
SCAVIO	Scaler Control Audio Video Output & Input
SDM	Scan driver module
SUS	X-SUS or Y-SUS
Tapping	Light impact
Unit of COM	The unit of circuits connected to the panel with flexible cable (YCOM UP/DOWN, X-BUS UP/DOWN, address sections, the unit of PC boards in ACOM 1 to 5).
Va	The power supply at 60 V, which is used to write data on the panel
Vcc	The power supply at 5 V, which is used to operate the logic section mainly
Vs	The power supply ranging from 127 V to 180 V, which is used to maintain display data. In addition, this can serve as the primary side for the secondary voltage (Vw, -Vy, Vsc)
Solid white	A condition when the screen display is entirely white
X-SUS	The name of the circuit that controls the panel operation in the X direction
YCOM	The circuit used to output a panel Y line selection signal and the voltage of a display data keep signal
YCOMDV	The name of the panel drives voltage signal output from YCOM UP/DOWN section
Y-SUS	The name of the circuit that controls the panel operation in the Y direction

10. Spare Parts List

For spare parts list see chapter 5

11. Revision List

This manual is a supplement to the following service manuals:

Table 11-1 Overview of chassis and manuals, covered by this manual

Display type	Model CTN	Chassis	12NC Manual
42" A4	42PF5331/10	LC4.41E AA	3122 785 16240
	42PF5411/10	LC4.41E AA	3122 785 16240
	42PF9531/79	BJ3.0A PA	3122 785 15980
	42PF9531/93	BJ3.0A PA	3122 785 15980
	42PF9531/98	BJ3.0A PA	3122 785 15980
	42PF9631D/10	BJ3.0E PA	3122 785 15960

11.1 Service Manual xxxx xxx xxxx.0

First release.