

# HITACHI

## Inspire the Next

### SERVICE MANUAL

NTSC  
ATSC

DW3-D/F  
CHASSIS

PA

No. 0226

P50X901 / DW3-D  
P50V701 / DW3-D  
P50S601 / DW3-F

R/C: CLU-4372A    p/n HL02402    P50X901  
R/C: CLU-4374A    p/n HL02404    P50V701  
R/C: CLU-4373A    p/n HL02403    P50S601

### SERVICE MANUAL REVISION HISTORY INFORMATION

| DATE          | REVISION # | REASON                                                           |
|---------------|------------|------------------------------------------------------------------|
| Oct, 08, 2007 | SM00001    | FIRST ISSUE OF MANUAL                                            |
| Nov, 12, 2007 | CH1        | Added Remote Control Info. How to enter Service Menu (Page 31)   |
| Nov, 12, 2007 | CH1        | Added In-Depth 50AF1 Panel Troubleshooting Flowchart (Page 32)   |
| Nov, 27, 2007 | CH2        | Added additional adjustment details about power supply (Page 48) |
| Dec, 05, 2007 | CH3        | Added note about power supply adjustment (Page 4)                |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |
|               |            |                                                                  |

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

## PLASMA DISPLAY PANEL

MAY 2007

HHEA-MANUFACTURING DIVISION

# HITACHI

## Inspire the Next

### SERVICE MANUAL

|                                                                            |                                           |
|----------------------------------------------------------------------------|-------------------------------------------|
| <b>PA</b>                                                                  | <b>No. 0226</b>                           |
| <b>P50X901 / DW3-D</b><br><b>P50V701 / DW3-D</b><br><b>P50S601 / DW3-F</b> |                                           |
| R/C: CLU-4372A<br>R/C: CLU-4374A<br>R/C: CLU-4373A                         | p/n HL02402<br>p/n HL02404<br>p/n HL02403 |
| <b>P50X901</b><br><b>P50V701</b><br><b>P50S601</b>                         |                                           |

|              |                    |
|--------------|--------------------|
| ATSC<br>NTSC | DW3-D/F<br>CHASSIS |
|--------------|--------------------|

This ADDENDUM is made due to the new models P50X901 (DW3D), P50V701 (DW3D) and P50S601 (DW3F). They are different to models P50H401 (DW3A), P50T501 (DW3A) and P50H4011 (DW3A). The Main difference is the panel, the X/V/S models use "AF1" Plasma Panel and the H/T Models use "AE1" Plasma Panel. Software (Digital Main PWB) is also different because of Plasma Panel difference.

Refer to Service Manual PA0224 when servicing X/V/S models in regards to other adjustments not covered in this addendum. This ADDENDUM indicates only the differences and special considerations to be taken when servicing the X/V/S models.

**TO GO TO A CHAPTER, CLICK ON ITS HEADING BELOW**

#### CONTENTS

- SPECIFICATIONS ..... 2
- ADJUSTMENTS (See below for Power Supply Adjustment Info.) ..... 4
- BLOCK DIAGRAMS ..... 5
- CONNECTOR DIAGRAMS ..... 7
- FINAL WIRING DIAGRAM ..... 9
- QUICK DISASSEMBLY GUIDE ..... 11
- CIRCUIT SCHEMATIC DIAGRAMS ..... 13~27
- PARTS LIST ..... 28
- PANEL PARTS ..... 29
- PANEL CONNECTORS ..... 30
- REMOTE CONTROL "HOW TO ENTER SERVICE MENU" DW-1, 2 AND 3 ..... 31
- IN DEPTH 55 INCH PANEL (50AF1) TROUBLESHOOTING FLOW CHARTS ..... 32
- REPLACING THE POWER SUPPLY INFORMATION and ADJUSTMENTS ..... 48

**CAUTION:** These servicing instructions are for use by qualified service personnel only. To reduce the risk of Electric shock do not perform any servicing other than that contained in the operating instructions Unless you are qualified to do so. Before servicing this chassis, it is important that the service Technician read the "IMPORTANT SAFETY INSTRUCTIONS" in this service manual.

#### SAFETY NOTICE

##### USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by a  on the schematics and on the parts list in this Service Data and its supplements and bulletins. Before servicing the chassis, it is important that the service technician Read and follow the "Important Safety Instructions" in this Service Manual.

## SPECIFICATIONS

## APPEARANCE

| Model name | Series Name | Cabinet Design                                                       |
|------------|-------------|----------------------------------------------------------------------|
| P50X901    | Director's  | High Gloss Black/Frame, High Gloss Black/Bezel, High Gloss Hidden/SP |
| P50S601    | UltraVision | High Gloss Black/Frame, Black/Bezel, High Gloss Hidden/SP            |
| P50V701    | UltraVision | High Gloss Black/Frame, Black/Bezel, High Gloss Hidden/SP            |

## SYSTEM

| No. | Model name | Channel coverage band |         |                             | Reception system |             |              |
|-----|------------|-----------------------|---------|-----------------------------|------------------|-------------|--------------|
|     |            | VHF(ch)               | UHF(ch) | CATV(ch)                    | NTSC             | ATSC (8VSB) | 64QAM/256QAM |
| 1   | P50X901    | 2~13                  | 14~69   | A-5~A-1, A~I, J~W, W+1~W+94 | X                | X           | X            |
| 2   | P50S601    |                       |         |                             | X                | X           | X            |
| 3   | P50V701    |                       |         |                             | X                | X           | X            |

## STRUCTURAL DIMENSIONS

| No. | Model name | WIDTH [mm] | HEIGHT [mm] | DEPTH [mm] | WEIGHT [kg] | Note                     |
|-----|------------|------------|-------------|------------|-------------|--------------------------|
| 1   | P50X901    | 1250       | 885(817)    | 423(134)   | 50.9(44.8)  | Without table top stand. |
| 2   | P50S601    | 1241.4     | 884(820.2)  | 422.7(129) | 49.8(43.7)  |                          |
| 3   | P50V701    | 1241.4     | 884(820.2)  | 422.7(129) | 49.9(43.8)  |                          |

## EXTERNAL TERMINALS AND JACKS

| Model name | Rear   |      |          |      |       |       |               |        |         |                 |          |
|------------|--------|------|----------|------|-------|-------|---------------|--------|---------|-----------------|----------|
|            | A/V IN | S IN | COMP. IN | HDMI | M OUT | A OUT | Subwoofer OUT | ANT IN | OPT OUT | DV IN IEEE 1394 | POD CARD |
| P50X901    | 3      | 1    | 2        | 2    | 1     | 1     | —             | 1      | 1       | —               | 1        |
| P50S601    | 3      | 1    | 2        | 2    | 1     | 1     | —             | 1      | 1       | —               | —        |
| P50V701    | 3      | 1    | 2        | 2    | 1     | 1     | —             | 1      | 1       | —               | 1        |

| Model name | Front  |      |          |      |            |         |       | Rear   |                |            |        |
|------------|--------|------|----------|------|------------|---------|-------|--------|----------------|------------|--------|
|            | A/V IN | S IN | COMP. IN | HDMI | Photo (SD) | Upgrade | DV IN | IR OUT | IR OUT /G-LINK | SWIVEL OUT | RS232C |
| P50X901    | 1      | —    | —        | 1    | 1          | ←Common | —     | 1      | 1              | 1          | 1      |
| P50S601    | 1      | —    | —        | 1    | 1          | ←Common | —     | —      | (1: Service)   | 1          | 1      |
| P50V701    | 1      | —    | —        | 1    | 1          | ←Common | —     | 1      | 1              | 1          | 1      |

## MAIN FEATURES

| No. | Feature                                 | P50<br>X901    | P50<br>S601    | P50<br>V701    |
|-----|-----------------------------------------|----------------|----------------|----------------|
| 1   | Panel                                   | AF1            | AF1            | AF1            |
| 2   | Resolution                              | 1920x<br>1080i | 1920x<br>1080i | 1920x<br>1080i |
| 3   | Front Filter with ARF<br>(Transparency) | Mesh<br>(36%)  | Mesh<br>(41%)  | Mesh<br>(36%)  |
| 4   | Seine2                                  | X              | X              | X              |
| 5   | FRC (FC8)                               | X              | —              | X              |
| 6   | One NTSC/ATSC Tuner                     | X              | X              | X              |
| 7   | POD (Point Of Deployment)               | X              | —              | X              |
| 8   | PinP (Digital/External Analog SPLIT)    | X              | —              | X              |
| 9   | 3 Picture Mode                          | X              | X              | X              |
| 10  | Color Temperature Mode                  | 4              | 4              | 4              |
| 11  | Color Decoding Adjustment               | X              | —              | —              |
| 12  | Color Management Adjustment             | X              | —              | —              |
| 13  | 7 Mode Aspect Ratio Interchangeable     | X              | X              | X              |
| 14  | EPG (G-GUIDE) Function                  | X              | —              | X              |
| 15  | SD-card Photo Viewer                    | X              | —              | X              |
| 16  | Audio Output                            | 10W x2         | 10W x2         | 10W x2         |
| 17  | Swivel                                  | Power          | Power          | Power          |
| 18  | AV NET, AV NET Learning                 | X              | —              | X              |
| 19  | IR Pass Through                         | X              | —              | X              |
| 20  | OSD Design                              | Direc.         | B              | C              |
| 21  | Energy Star                             | —              | —              | —              |

## POWER CONSUMPTION

| MODEL<br>NAME | INDICATED VALUE |             |                  | PST [W]     |          | CHASSIS |
|---------------|-----------------|-------------|------------------|-------------|----------|---------|
|               | Max. Rating     | Max. Rating | (Average Rating) | Without POD | With POD |         |
| P50X901       | 605W            | 5.7A        | 364W             | 0.6W        | 14W      | DW3D    |
| P50S601       | 587W            | 5.3A        | 350W             | 0.6W        | -        | DW3F    |
| P50V701       | 605W            | 5.7A        | 364W             | 0.6W        | 14W      | DW3D    |

## SAFETY KEY COMPONENTS

| Symbol.No. / P/N / Spec.       | Model                     |
|--------------------------------|---------------------------|
| F9A1 / P#FN00551 / Fuse<br>10A | P50X901, P50V701, P50S601 |

## ADJUSTMENTS

NOTE: The next adjustment procedure is only for the P50X901, P50V701 and the P50S601, refer to the service manual PA no. 0224 for all the other adjustments.

## POWER SUPPLY Vs, Va VOLTAGE ADJUSTMENT

CH 3

Since Power Supply **P#HA02202** is already adjusted by Manufacturer is not necessary to adjust any voltage.

**Important Note:** *Please don't move any control (potentiometer) on power supply since is already adjusted.*

**See Page 48:** Please see page 48 for additional Power Supply Adjustment Information.

## VIDEO COLOR TEMPERATURE ADJUSTMENT - BLACK AND WHITE MODE.

## -Preparation

- (1) Set the output of signal generator to white raster (Ratio: 100%).
- (2) Component signal (480i)
  - Video level: 0.7Vp-p
  - SYNC: 0.3Vp-p
  - Set-up level: 0V
- (3) Input white raster signal into COMPONENT input terminal.
- (4) Set user control to Day (Dynamic) mode (Picture mode).
- (5) Confirm that the mode is set as 'Factory setting mode'.
- (6) Aspect: 4:3 Expanded.

## -Adjustment

- (1) Perform the following adjustment with the remote control.
- (2) Set the CRT color analyzer (CA-100) at the center of the panel.
- (3) Ensure that the adjustment parameters R/G/B DRIVE(B/W) are all set as FF.
- (4) After receiving the PC signal, reduce the value of two (or only one) of the RGB adjustment parameters step down two (or one) among adjustment R/G/B DRIVE(B/W) and adjust the value shown below.

Specification  
Video Color temperature (B/W)

$$x = 0.335 \pm 0.005$$

$$y = 0.343 \pm 0.005$$

(Color temp 5400K)

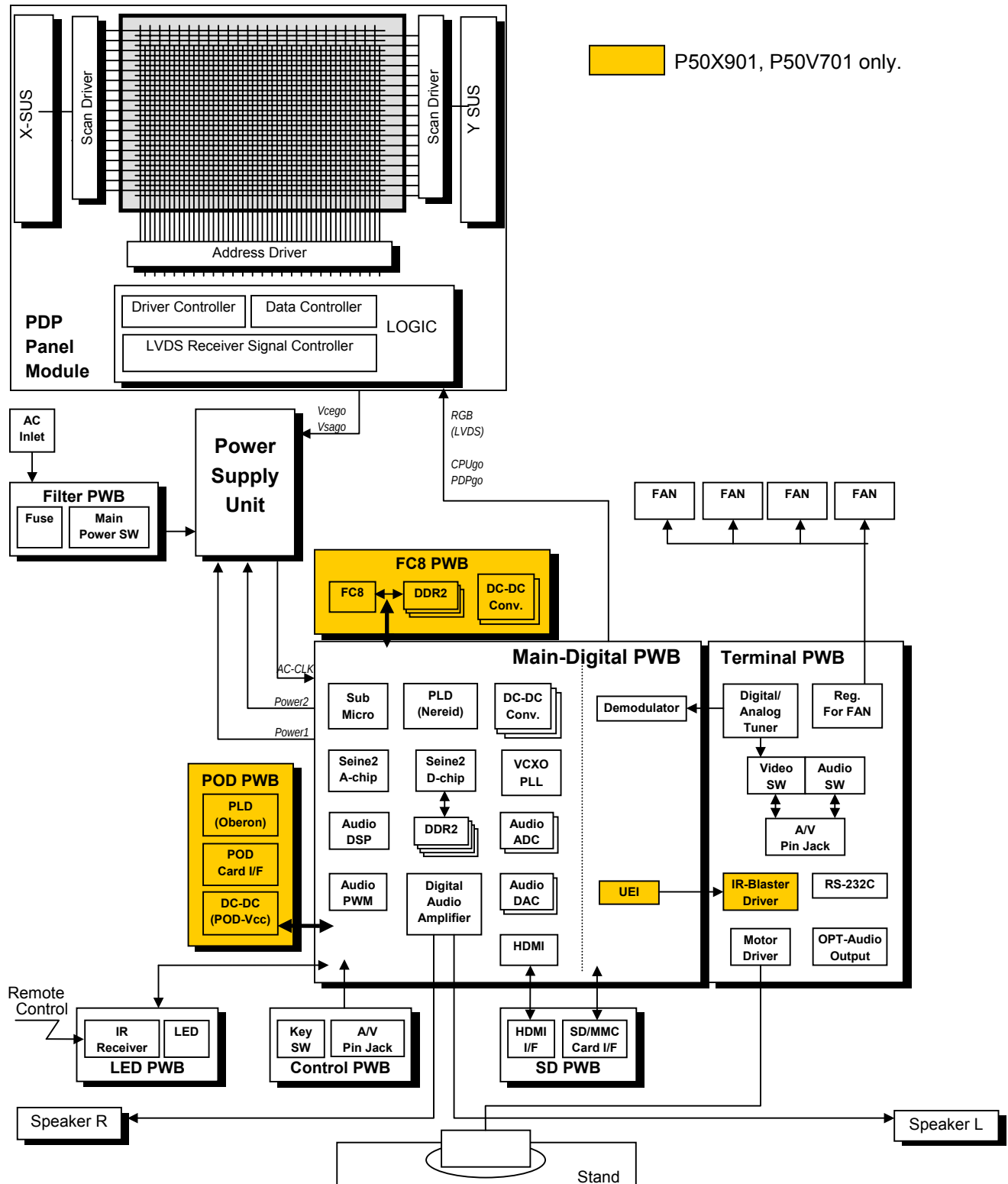
At least one of the data should be FF.

## -Remarks

- (1) Color temperature should be adjusted under the condition in which the screen is the brightest, thus the initial value for adjustment is set at its maximum.
- (2) Adjustment is made by reducing brightness only. Reduce the brightest color for adjustment.
- (3) Video color temperature & Adjustment number are the same, but addresses in the memory are different, thus there's no problem.
- (4) When this adjustment item is done through MMC slot, Sniffer Jig must be inserted after the set is switched to Sniffer Mode. (the PC would have trouble if this sequence is not kept.)

# BLOCK DIAGRAM

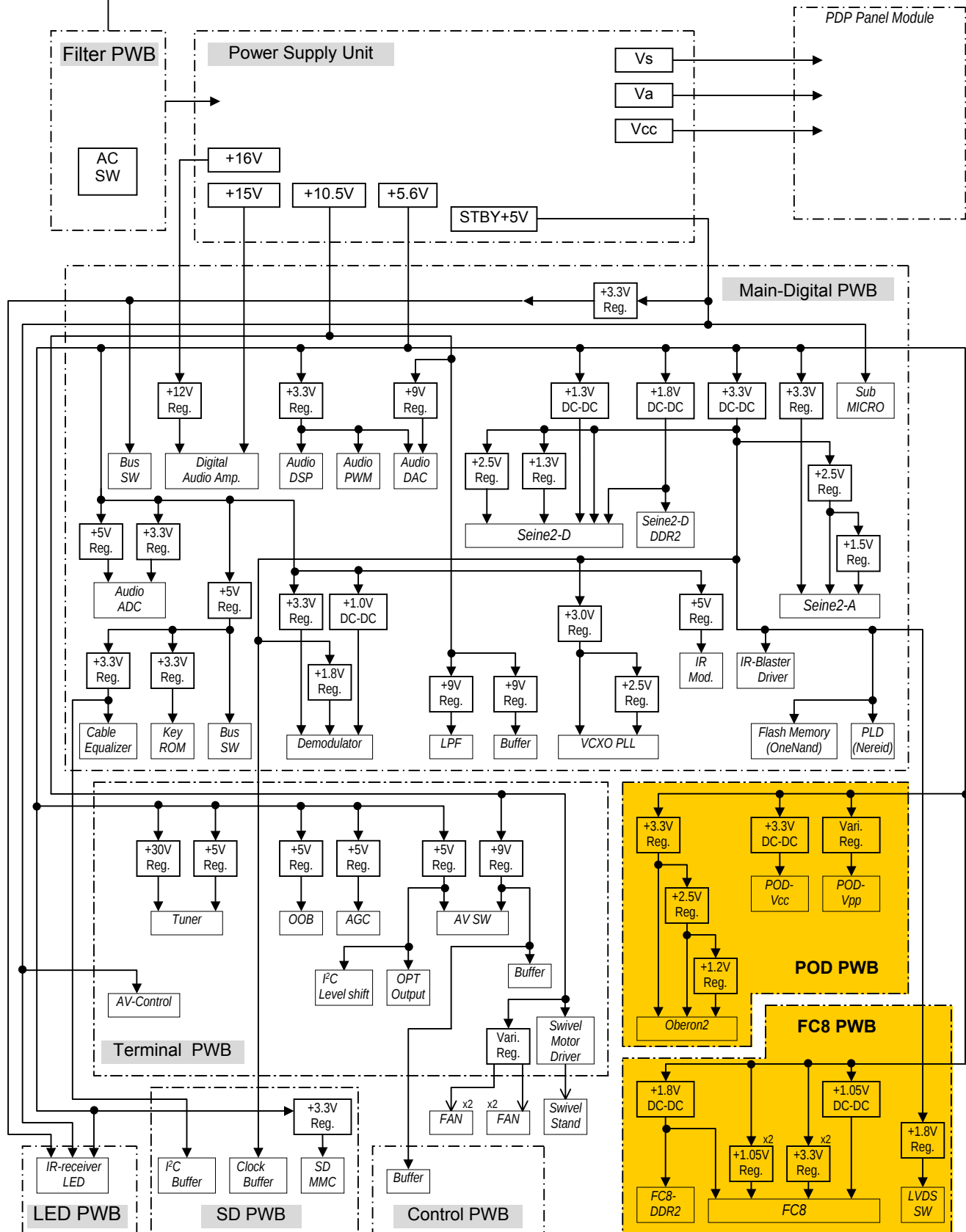
For P50X901, P50V701 and P50S601.

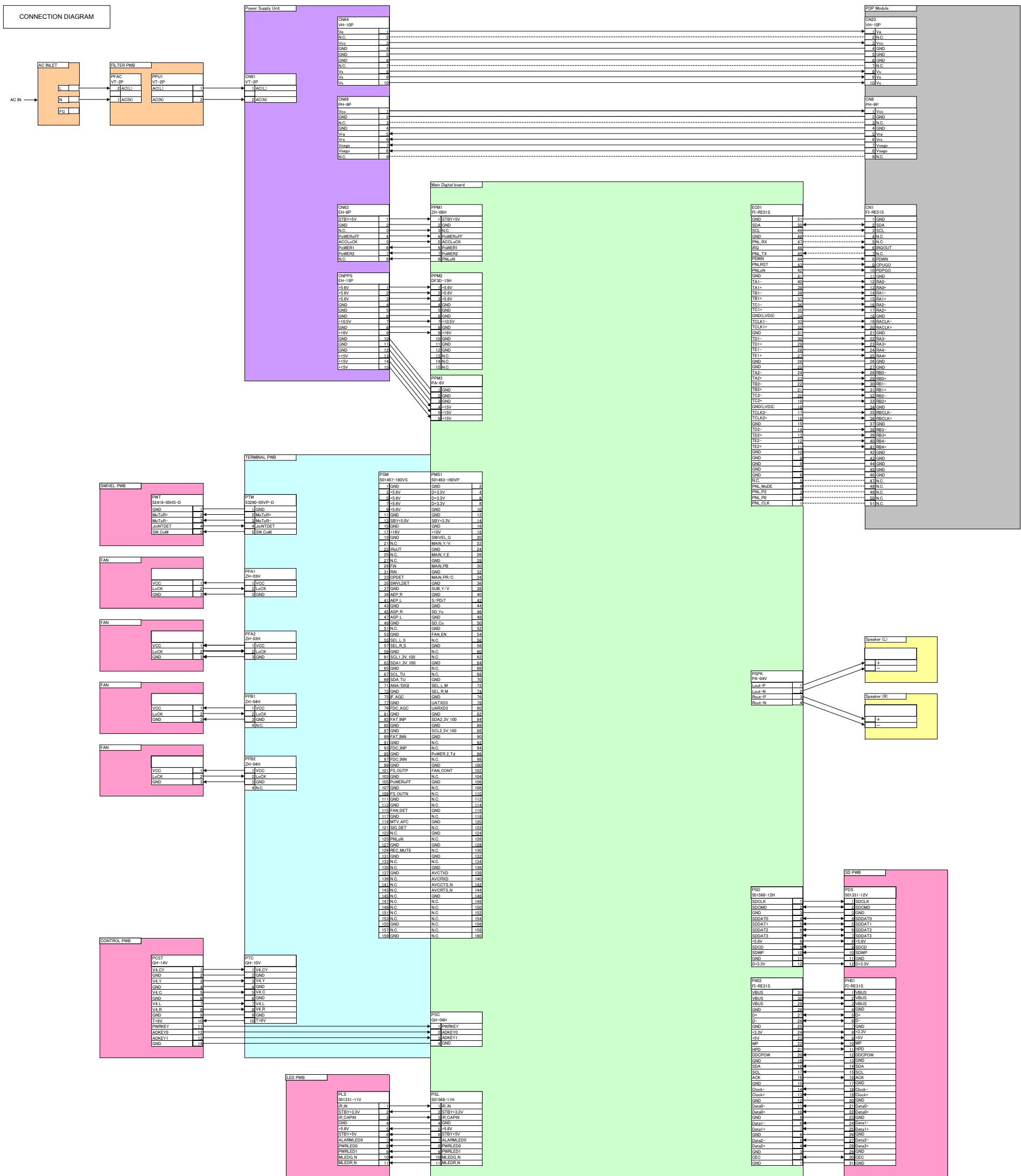


# Power system block diagram

AC120V

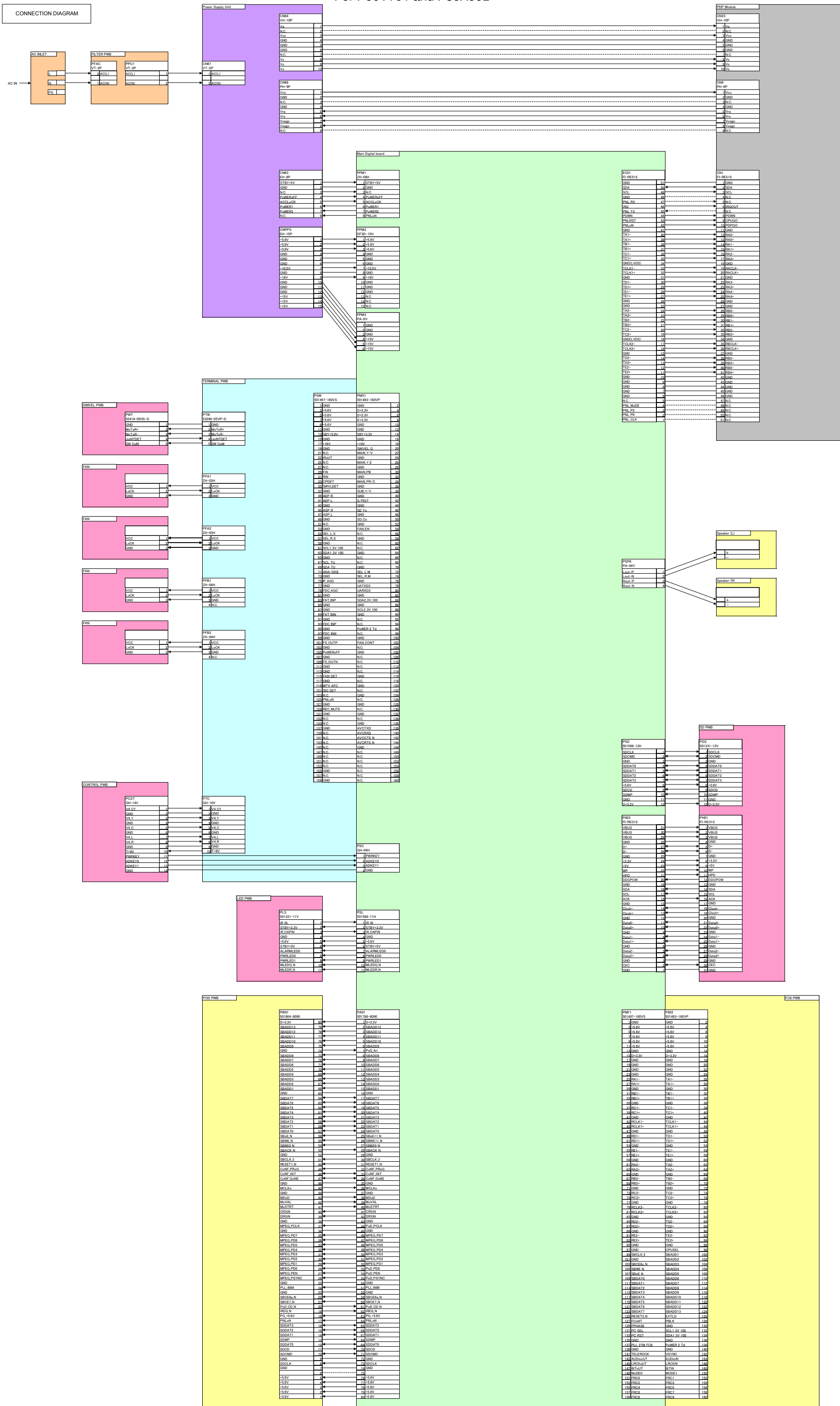
P50X901, P50V701 only.





## CONNECTIONS DIAGRAM

For P50V701 and P50X901

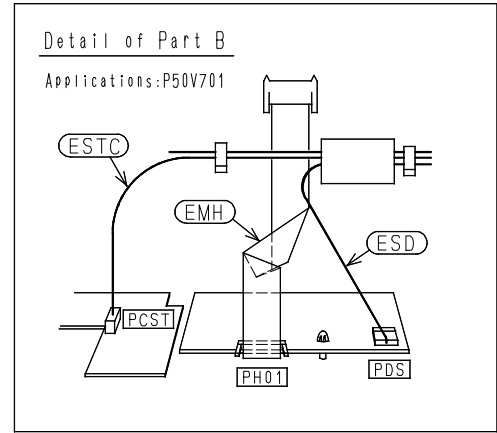
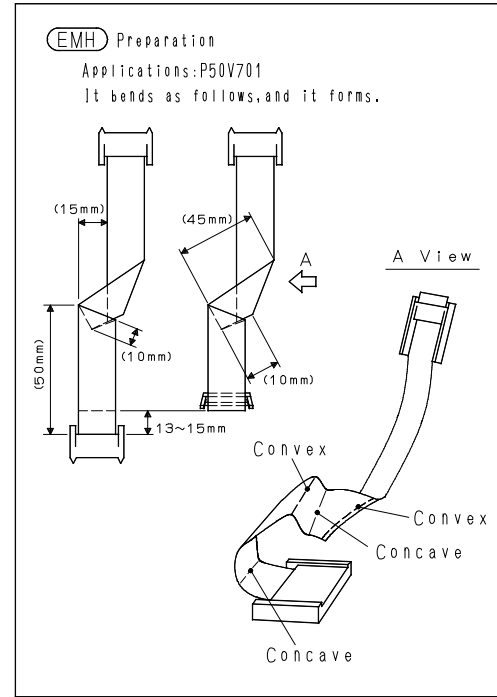


FINAL WIRING DIAGRAM  
FOR P50V701 AND P50S601

Table of Using cable

| Connector wire |            | Plug Pin 1        |      | Plug Pin 2        |      |
|----------------|------------|-------------------|------|-------------------|------|
| Name           | Assy List  | Board or Location | Name | Board or Location | Name |
| ESTC           | Final Assy | CONTROL           | PCST | TERMINAL          | PTC  |
| ESL            | Final Assy | MAIN DIGITAL      | PSL  | LED               | PLS  |
| ESD            | Final Assy | MAIN DIGITAL      | PSD  | SD                | PDS  |
| EMP1           | Final Assy | MAIN DIGITAL      | PA1  | POD               | PW01 |
| EF1            | Final Assy | TERMINAL          | PF1  | MFAN1             | -    |
| EF2            | Final Assy | TERMINAL          | PF2  | MFAN2             | -    |
| EFB1           | Final Assy | TERMINAL          | PFB1 | MFAN3             | -    |
| EFB2           | Final Assy | TERMINAL          | PFB2 | MFAN3             | -    |
| ESP1           | Final Assy | MAIN DIGITAL      | SPK  | SP-L/R            | SP-L |
| ESP2           | Final Assy | MAIN DIGITAL      | SPK  | SP-L/R            | SP-R |
| EPM1           | Final Assy | POWER             | CN63 | MAIN DIGITAL      | PPM1 |
| EPM2           | Final Assy | POWER             | CN65 | MAIN DIGITAL      | PPM2 |
| EPU1           | Final Assy | POWER             | CN68 | MAIN DIGITAL      | PPM3 |
| ECN23          | Final Assy | POWER             | CN64 | PANEL X-SUS       | CN23 |
| ECN6           | Final Assy | POWER             | CN68 | PANEL LOGIC       | CN6  |
| ECN1           | Final Assy | MAIN DIGITAL      | ECN1 | PANEL             | CN1  |
| EFAC           | Final Assy | FILTER            | PFAC | INLET             | -    |
| EGND           | Final Assy | SHASSIS Metal     | GND  | PANEL BASE        | -    |

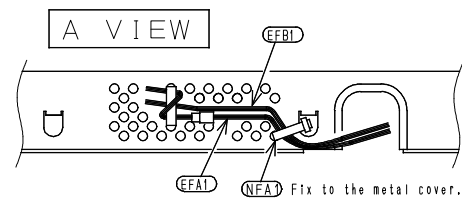
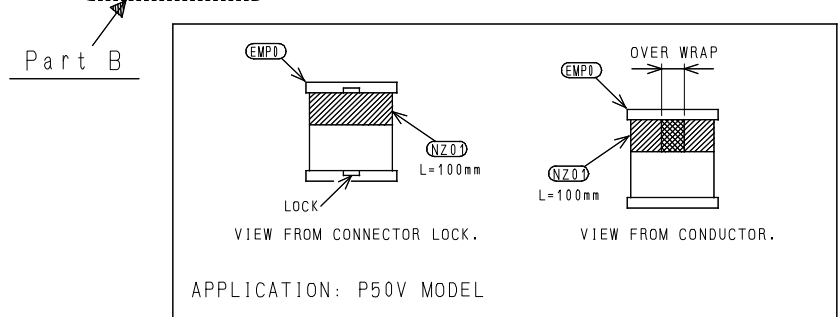
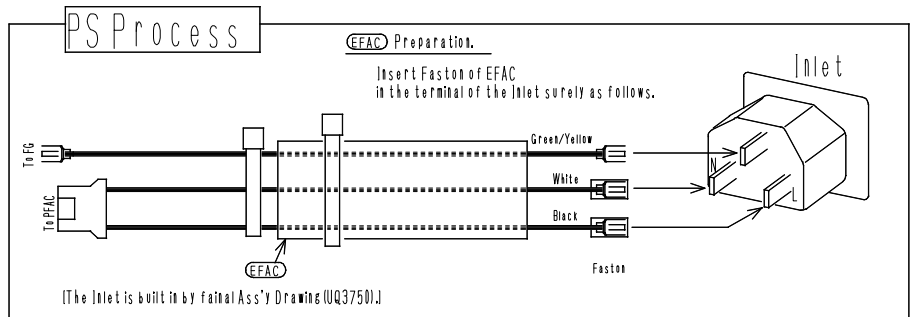
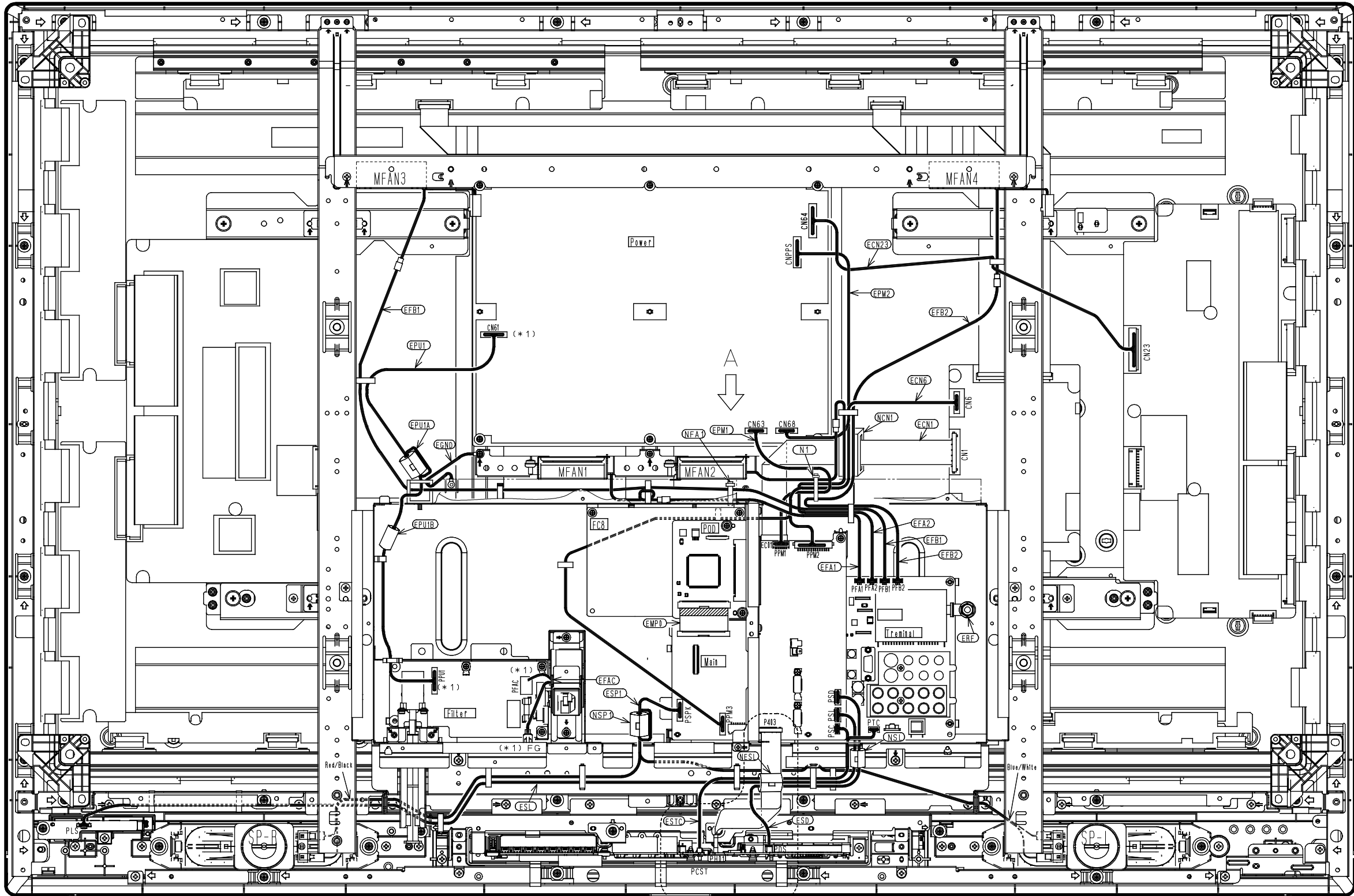
Notice: EMP1 is unnecessary for P50S601.



- Specification
1. This drawing shows the wiring diagram for 50" FHD\_POP Chassis. The connection and wire styling are in the figure.
  2. This drawing shows the rear view of the set.
  3. Lock lead holders surely.
  4. EMP1 is unnecessary for P50S601.

PS Process

(\*) Shown Part, CN61, PPU1, PFAC, and FG, please confirm insertion in the terminal surely.

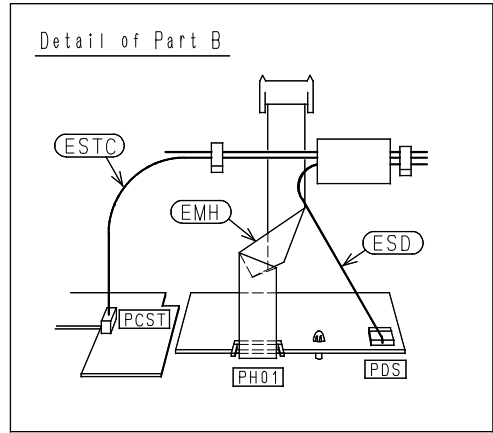
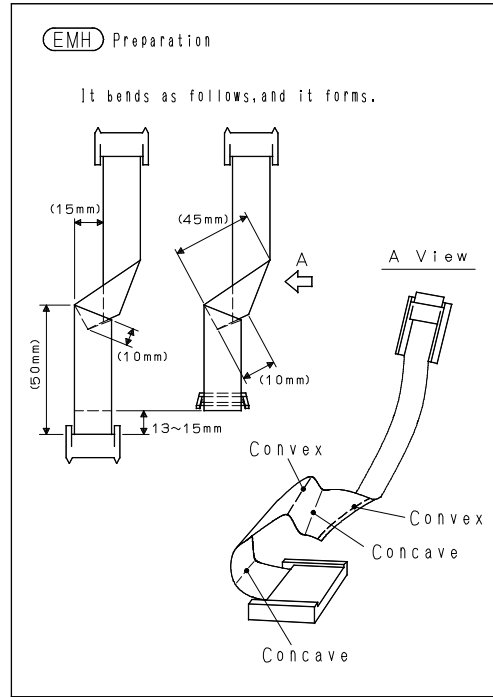


# FINAL WIRING DIAGRAM

## P50X901

Table of Using cable

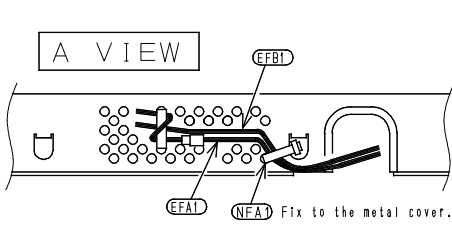
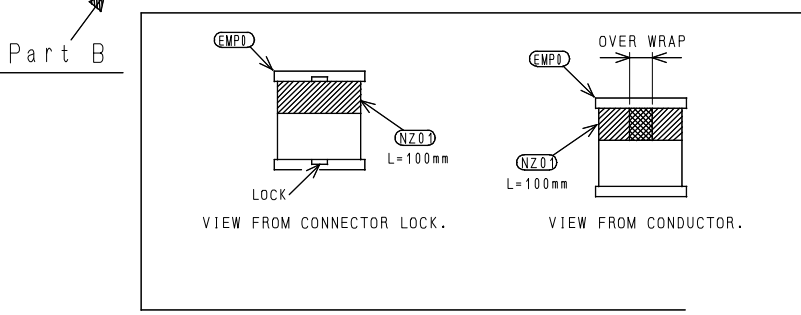
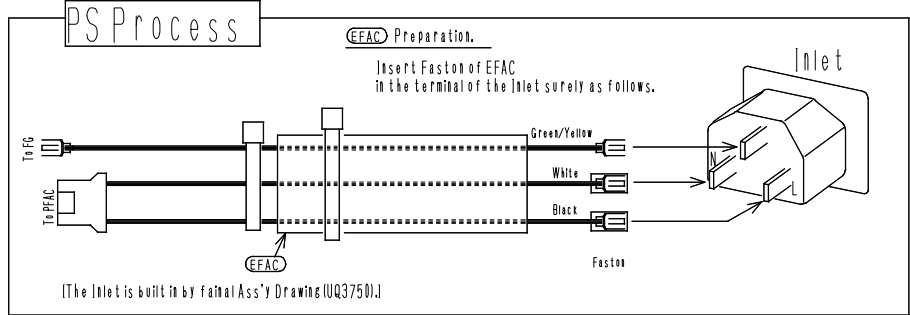
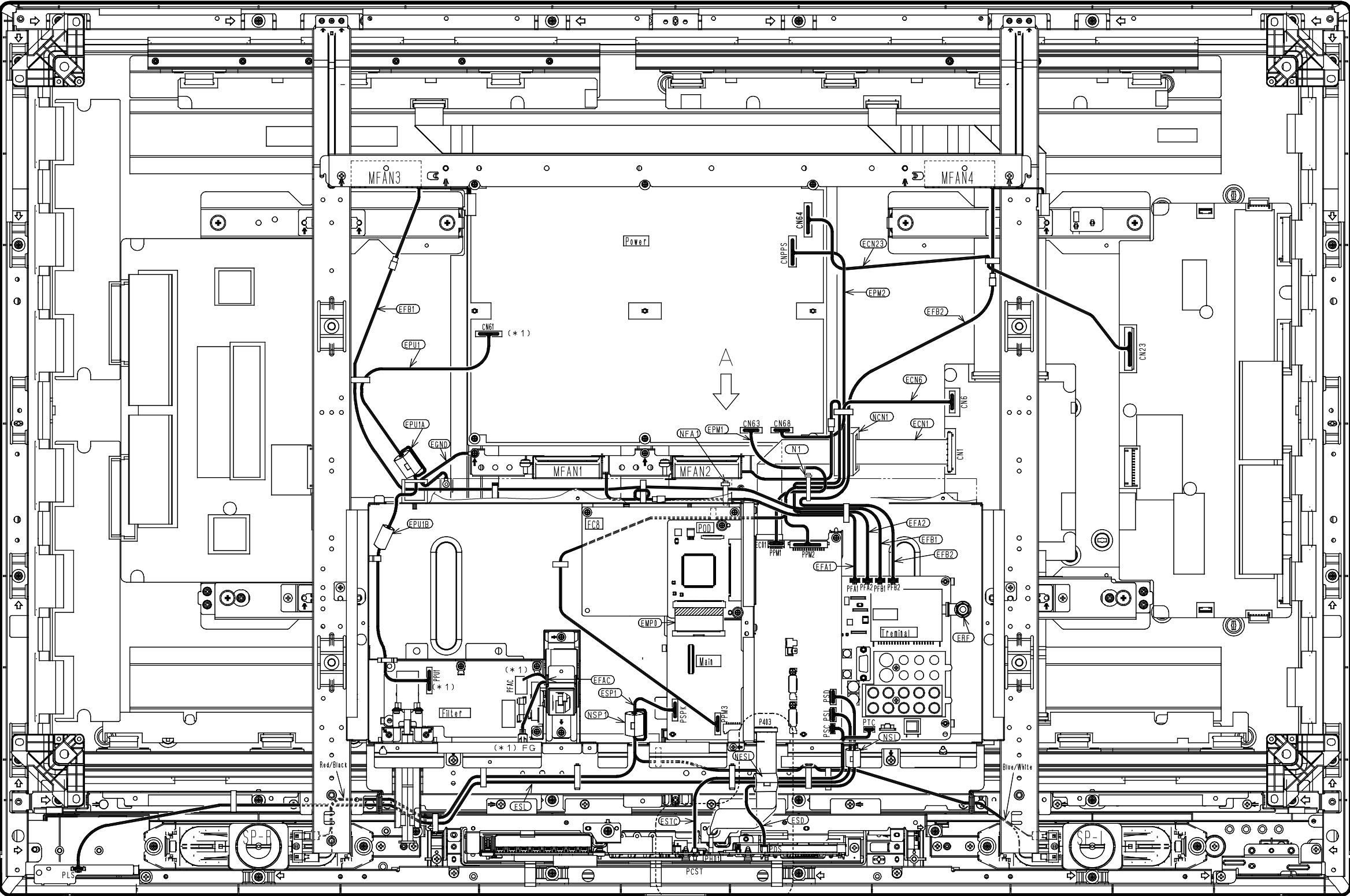
| Connector wire |             | Plug Pin 1        |       | Plug Pin 2        |      |
|----------------|-------------|-------------------|-------|-------------------|------|
| Name           | Assy List   | Board or Location | Name  | Board or Location | Name |
| ESTC           | Final Ass'y | CONTROL           | PCST  | TERMINAL          | PTC  |
| ESL            | Final Ass'y | MAIN DIGITAL      | PSL   | LED               | PLS  |
| ESD            | Final Ass'y | MAIN DIGITAL      | PSD   | SD                | PDS  |
| EMP1           | Final Ass'y | MAIN DIGITAL      | PA1   | POD               | PW01 |
| EF1            | Final Ass'y | TERMINAL          | PF1   | MFAN1             | -    |
| EF2            | Final Ass'y | TERMINAL          | PF2   | MFAN2             | -    |
| EFB1           | Final Ass'y | TERMINAL          | PFB1  | MFAN3             | -    |
| EFB2           | Final Ass'y | TERMINAL          | PFB2  | MFAN3             | -    |
| ESP1           | Final Ass'y | MAIN DIGITAL      | PSPK  | SP-L/R            | SP-L |
| ESP1           | Final Ass'y | MAIN DIGITAL      | PSPK  | SP-L/R            | SP-R |
| EPM1           | Final Ass'y | POWER             | CN63  | MAIN DIGITAL      | PPM1 |
| EPM2           | Final Ass'y | POWER             | CNPPS | MAIN DIGITAL      | PPM2 |
| EPU1           | Final Ass'y | POWER             | CN61  | MAIN DIGITAL      | PPU1 |
| ECN23          | Final Ass'y | POWER             | CN64  | PANEL X-SUS       | CN23 |
| ECN6           | Final Ass'y | POWER             | CN68  | PANEL LOGIC       | CN6  |
| ECN1           | Final Ass'y | MAIN DIGITAL      | ECN1  | PANEL             | CN1  |
| EFAC           | Final Ass'y | FILTER            | PFAC  | INLET             | -    |
| EGND           | Final Ass'y | SHASSIS Metal     | GND   | PANEL BASE        | -    |



- Specification
1. This drawing shows the wiring diagram for 50" FHD\_PDP Chassis. The connection and wire styling are in the figure.
  2. This drawing shows the rear view of the set.
  3. Lock lead holders surely.

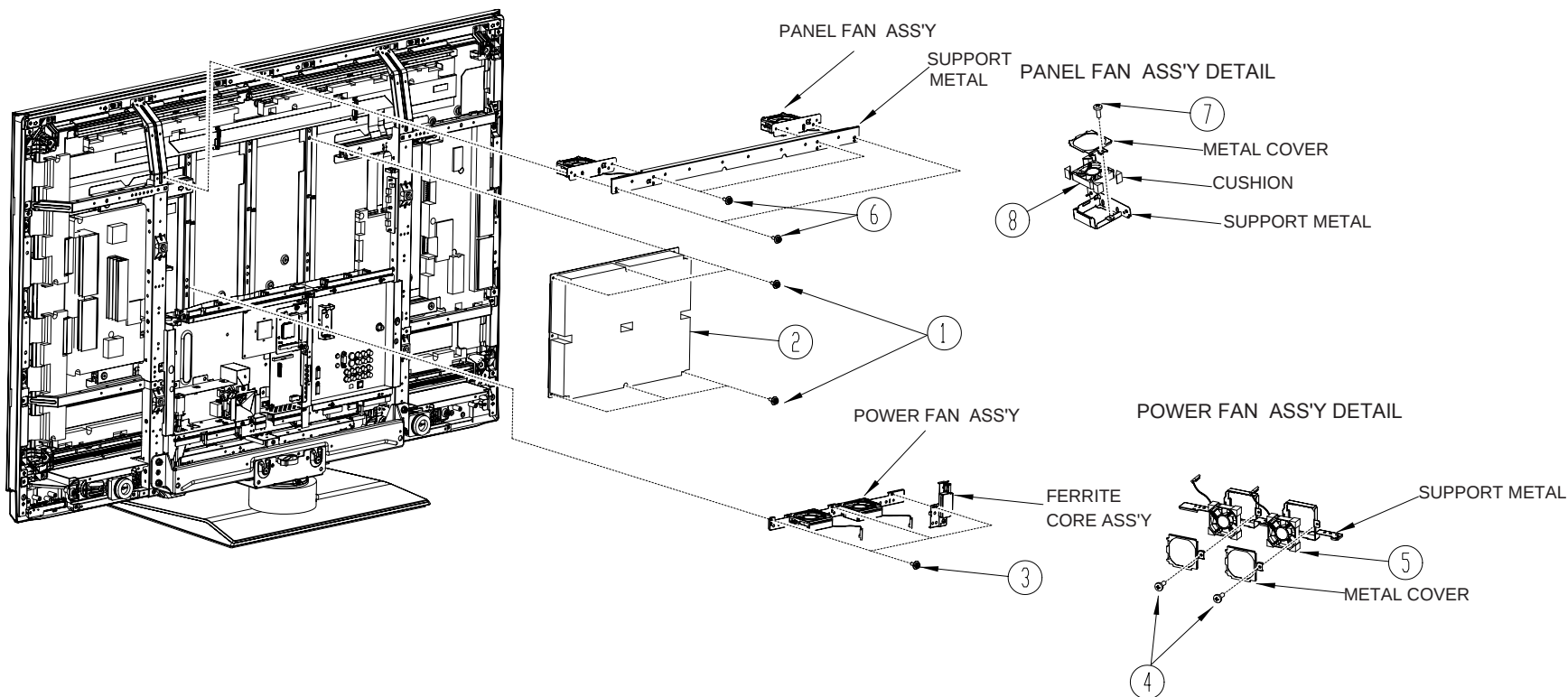
PS Process

(\*) Shown Part, CN61, PPU1, PFAC, and FG. please confirm insertion in the terminal surely.



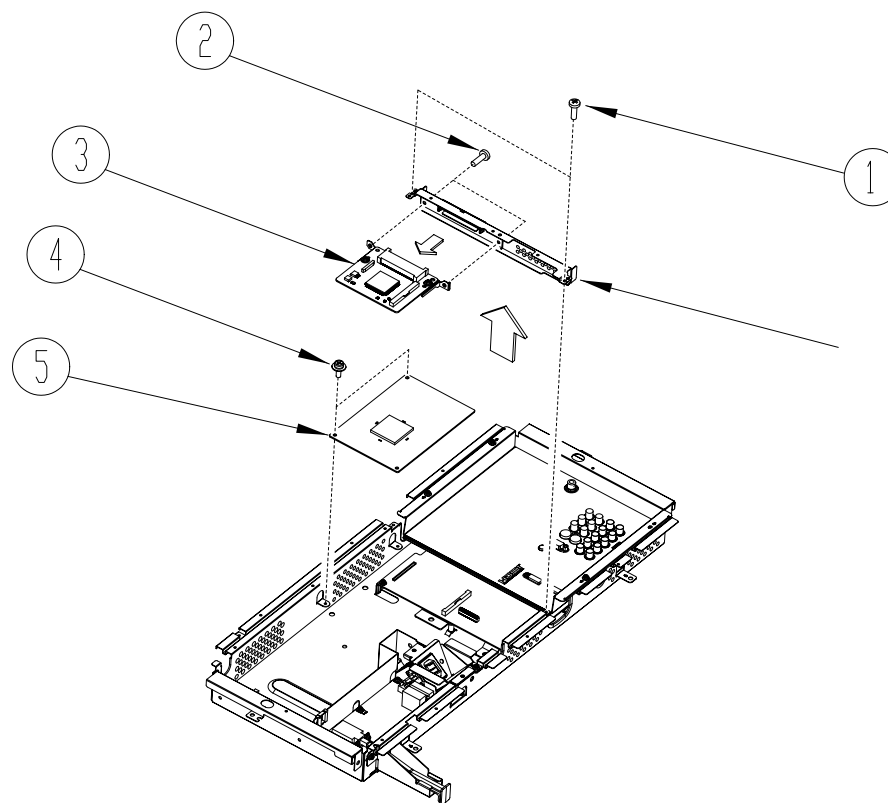
## POWER UNIT, FAN ASSY(P50S601, P50V701, P50X901)

- ① Remove Screw M3M 3\*8 P#MJ03598( 4 pcs.)  
Screw M3E 3\*8 P#MJ03963( 2 pcs.)
- ② Remove Power Unit P#HA02202
- ③ Remove Screw M3M 3\*8 P#MJ03598( 3 pcs.)  
Power Fan Ass'y
- ④ Remove Screw M3D 4\*10 P#MJ03895( 2 pcs.)
- ⑤ Remove Fan P#GS00696( 2 pcs.)
- ⑥ Remove Screw M3D 4\*10 P#MJ03895( 2 pcs.)  
Screw M3D 4\*10 P#MJ04067( 2 pcs.)  
Panel fan Ass'y
- ⑦ Remove Screw M3D 4\*10 P#MJ04067( 2 pcs.)
- ⑧ Remove Fan P#GS00697( 2 pcs.)



## CHASSIS ASS'Y 2(P50V701, P50X901 ONLY)

- ① Remove Screw M3E 3\*8 P#MJ03467( 2 pcs.)
- ② Remove Screw M3E 3\*8 P#MJ03963( 2 pcs.)
- ③ Remove POD PWB ASS'Y P#JP55141
- ④ Remove Screw M3E 3\*8 P#MJ03467( 2 pcs.)
- ⑤ Remove FC8 PWB ASS'Y P#JP56845



|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
|   | 1 | 2 | 3 | 4 | 5 | 6 |
| A |   |   |   |   |   |   |
| B |   |   |   |   |   |   |
| C |   |   |   |   |   |   |
| D |   |   |   |   |   |   |
| E |   |   |   |   |   |   |

NOTES ABOUT THE SCHEMATICS.□

□

The schematic drawings included in this service manual addendum are:□

- 1. Swivel board□
- 2. Filter board□
- 3. Terminal board□
- 4. LED board for P50X901 and for P50V701□
- 5. POD board for P50X901 and for P50V701□

□

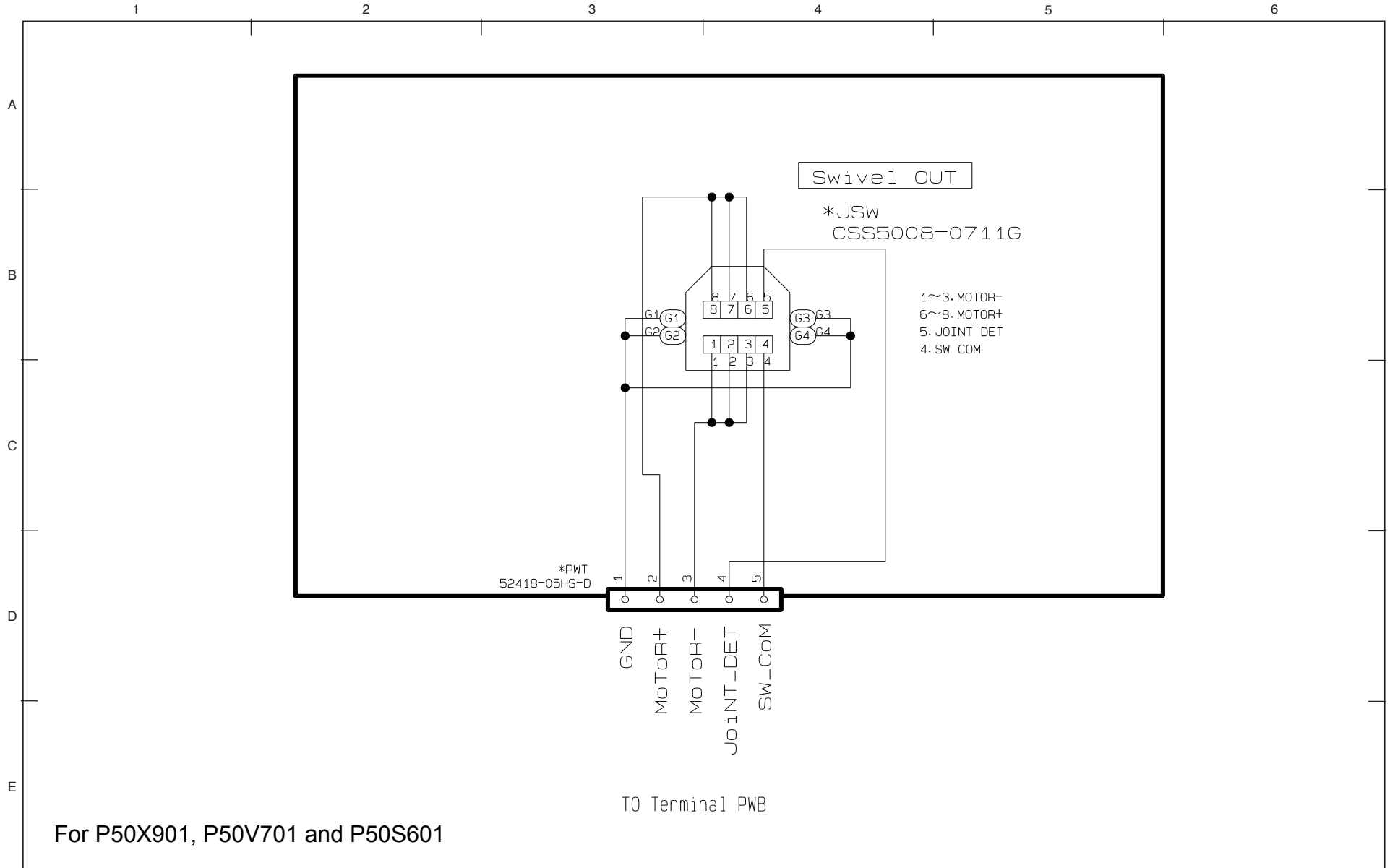
Refer to the service manual PA no. 0224 for the next additional schematic drawings:□

- 1. Control board (for P50X901, P50V701 and P50S601)□
- 2. SD board (for P50X901, P50V701 and P50S601)□
- 4. LED board for P50S601

NOTES

## BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

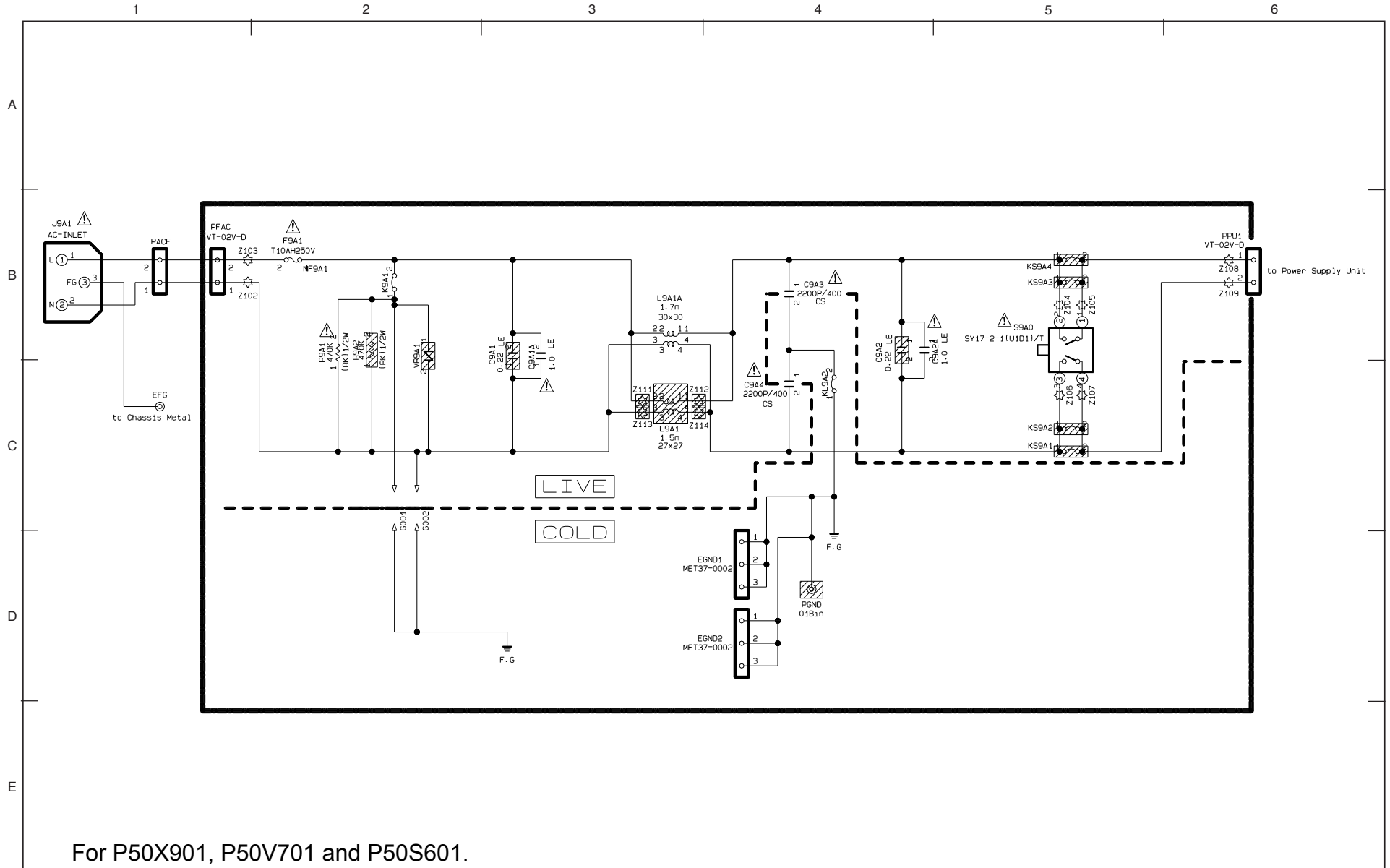


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

SWIVEL

# BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

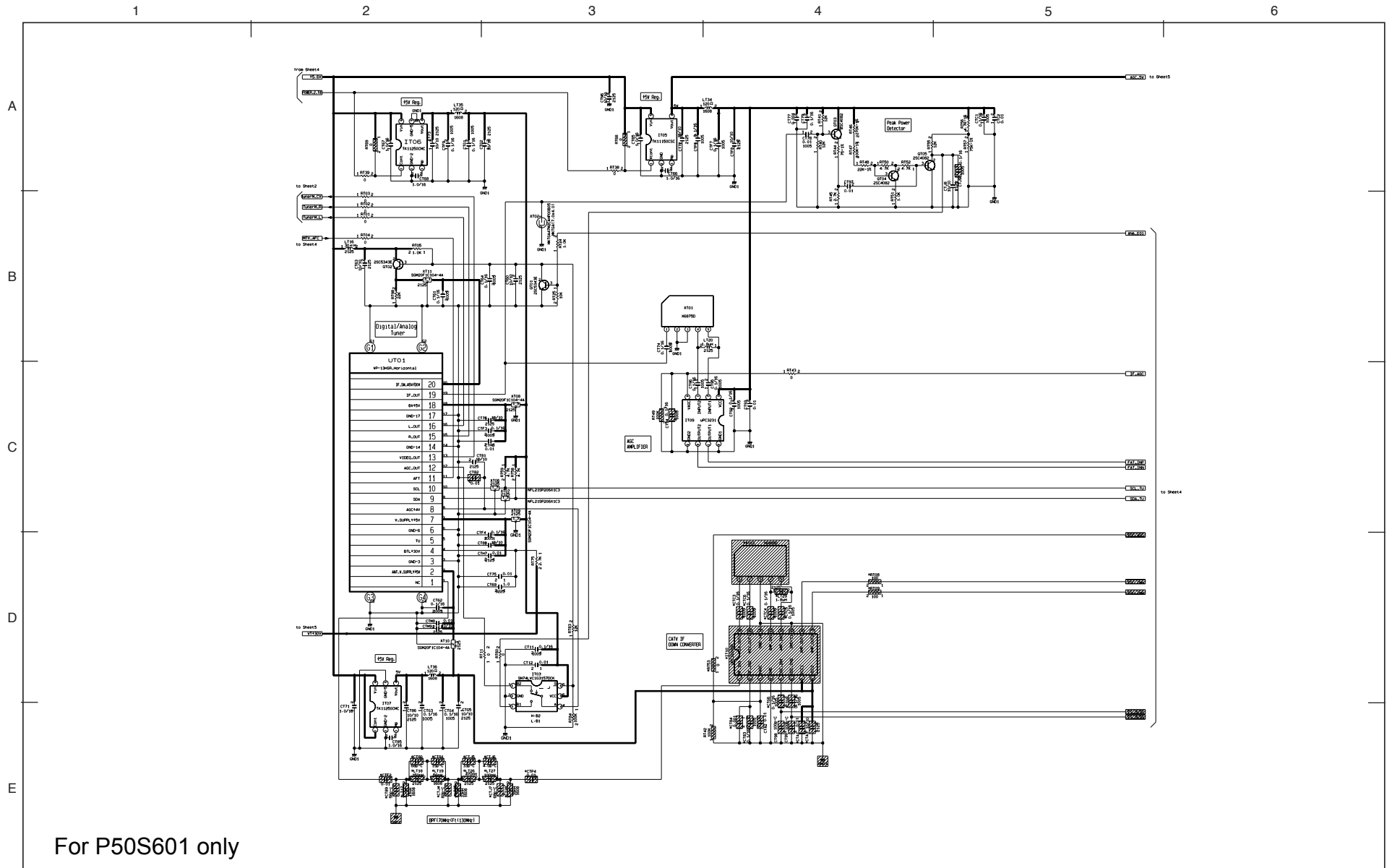


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

FILTER

### BASIC CIRCUIT DIAGRAM

**PRODUCT SAFETY NOTE:** Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

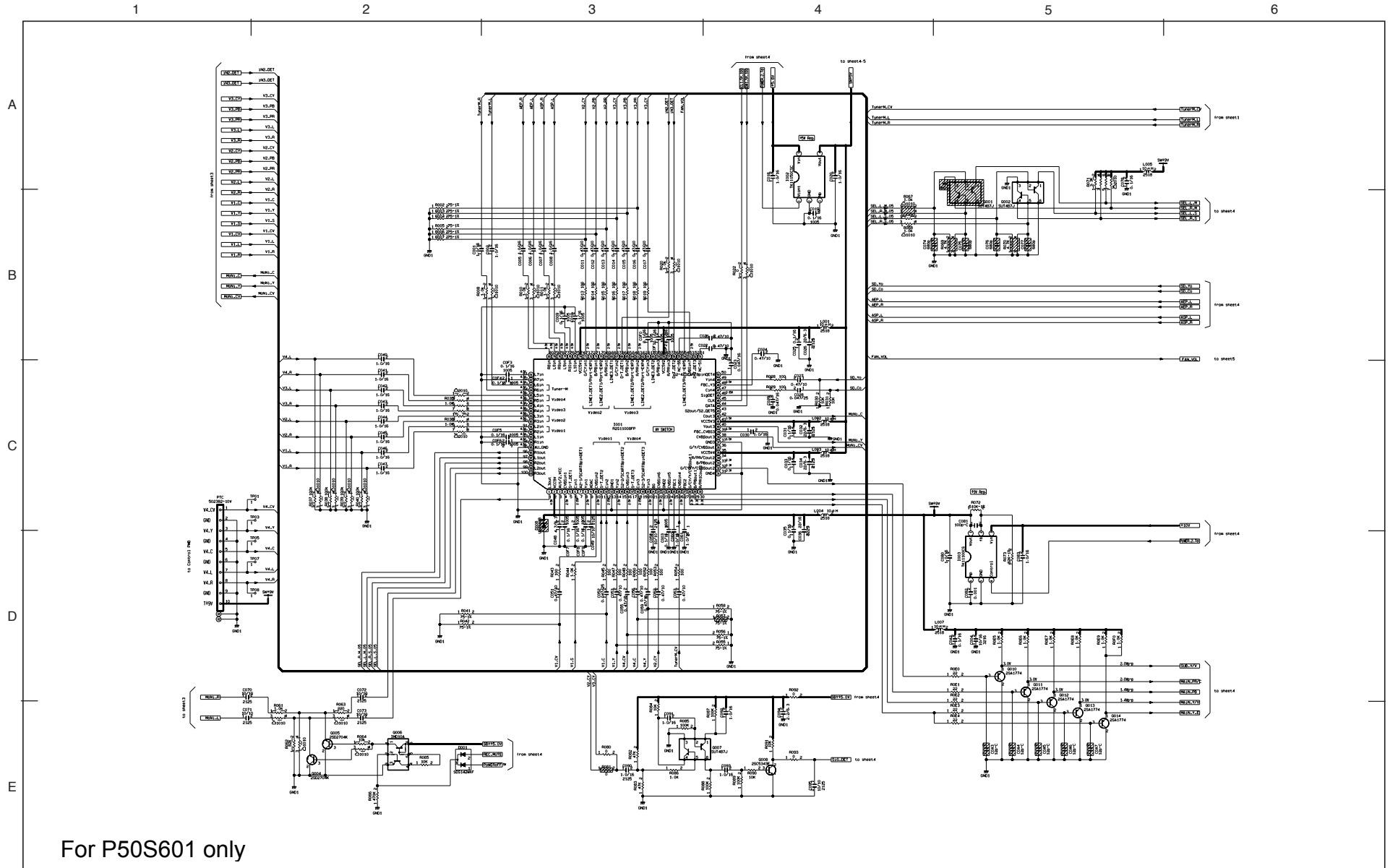


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

# BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



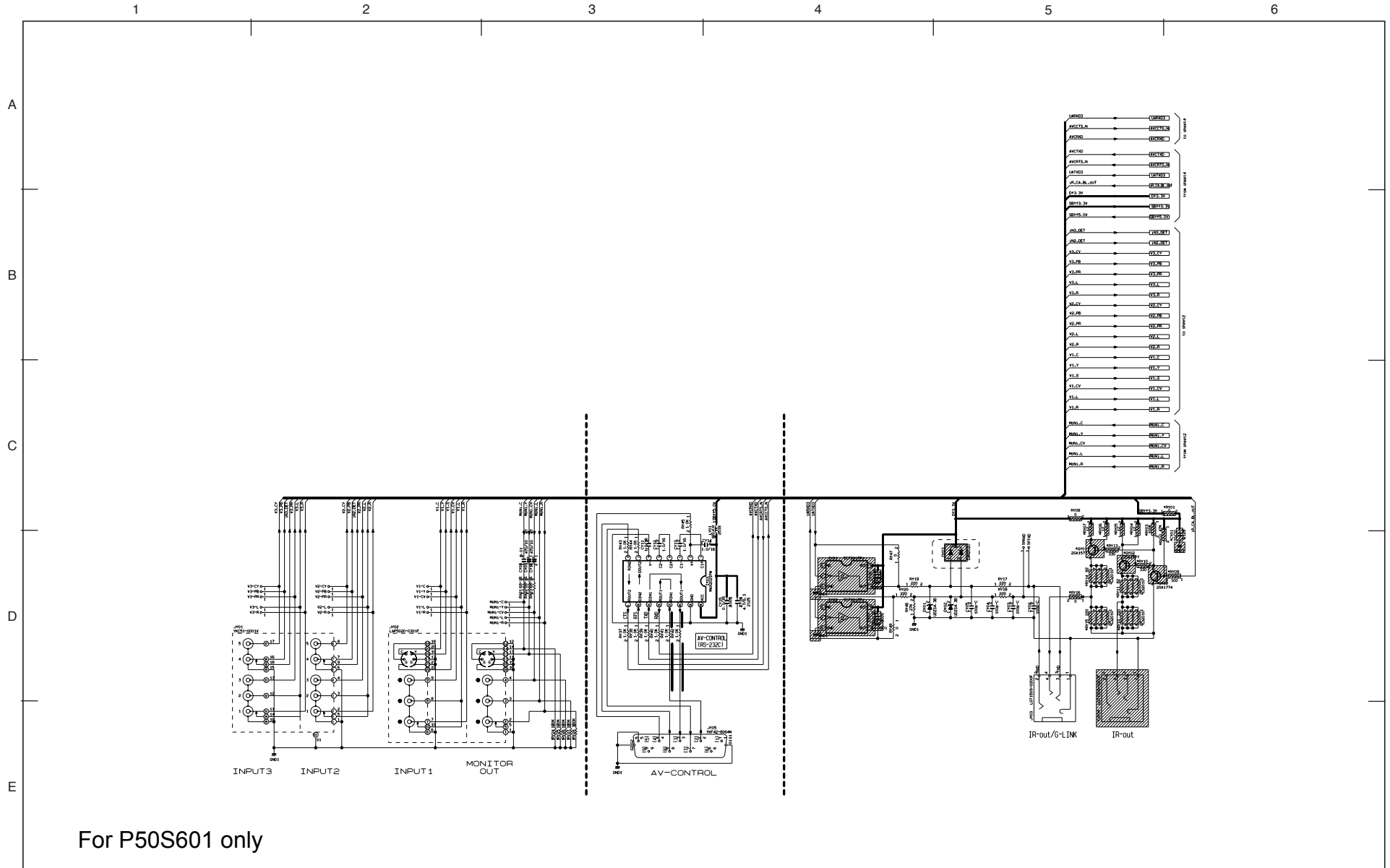
For P50S601 only

- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

# BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

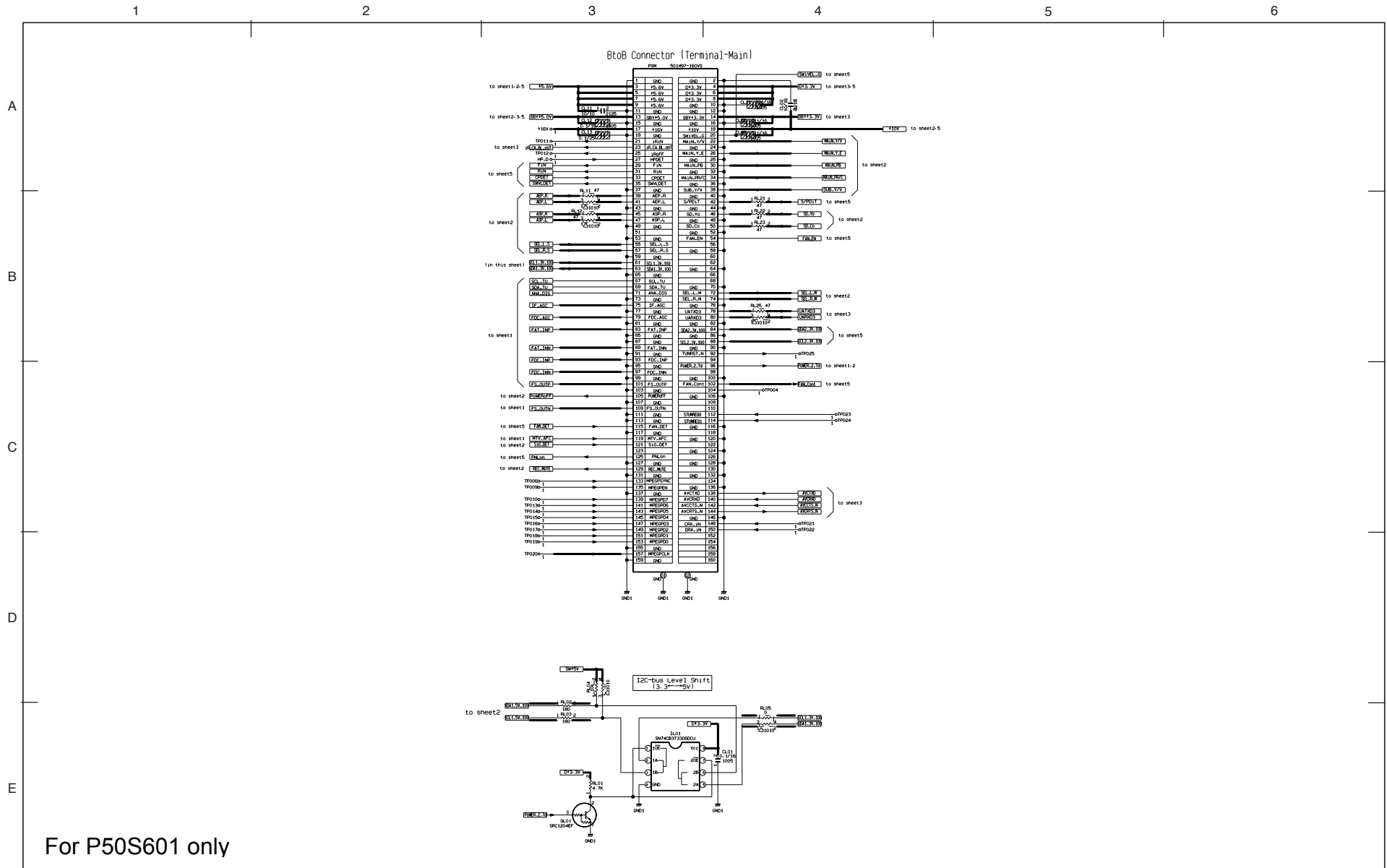


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

### BASIC CIRCUIT DIAGRAM

**PRODUCT SAFETY NOTE:** Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

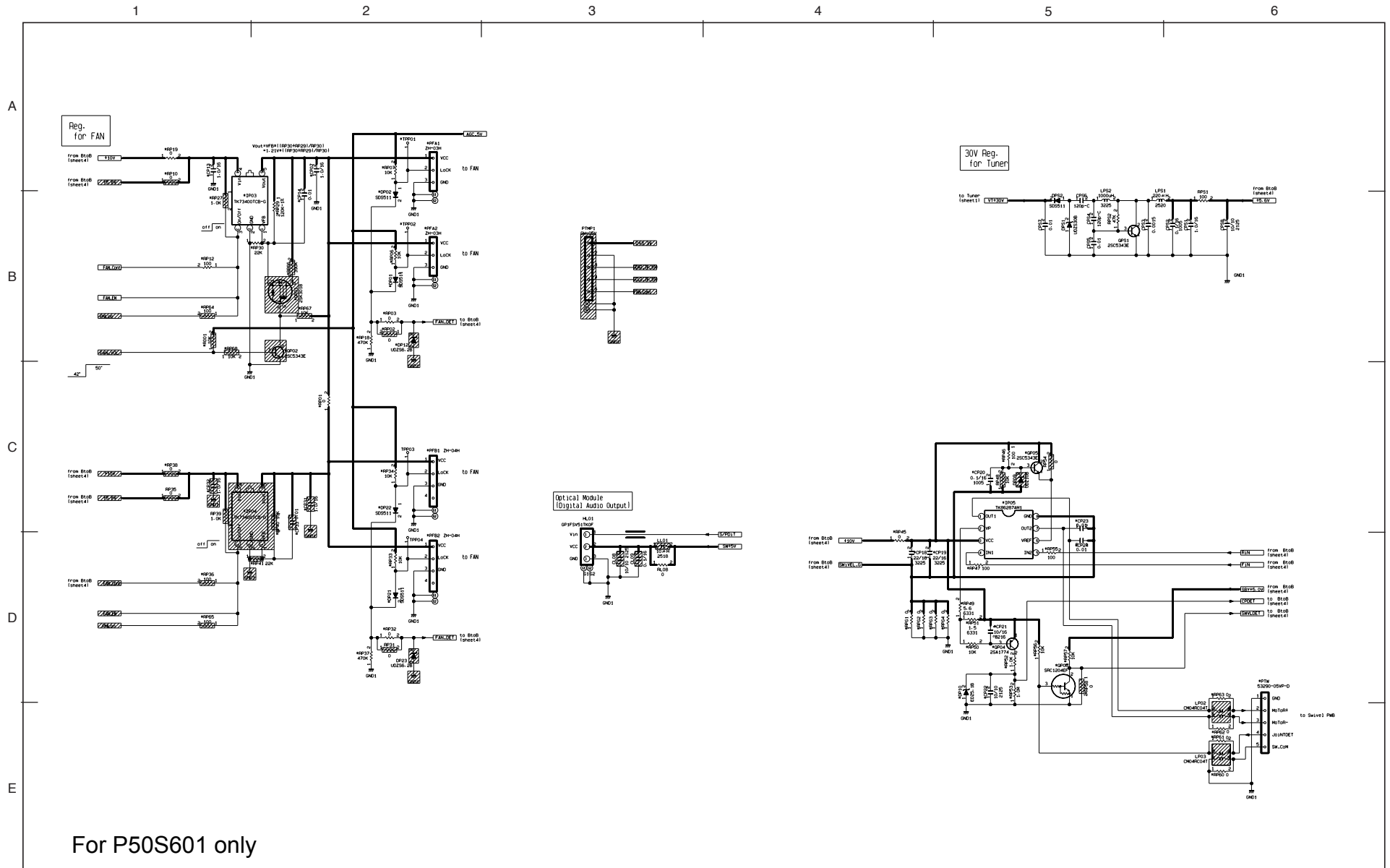


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

# BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

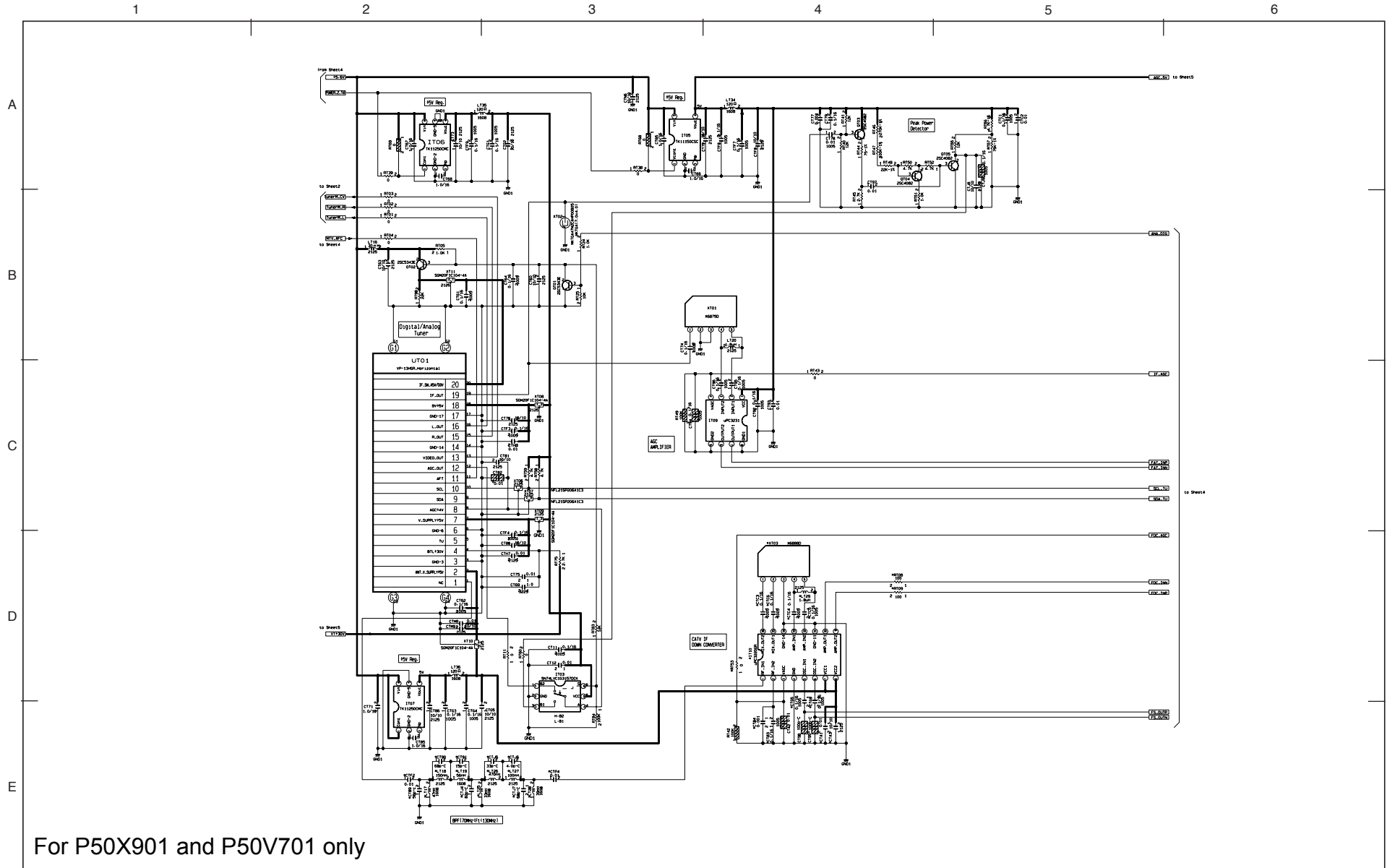


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

## BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

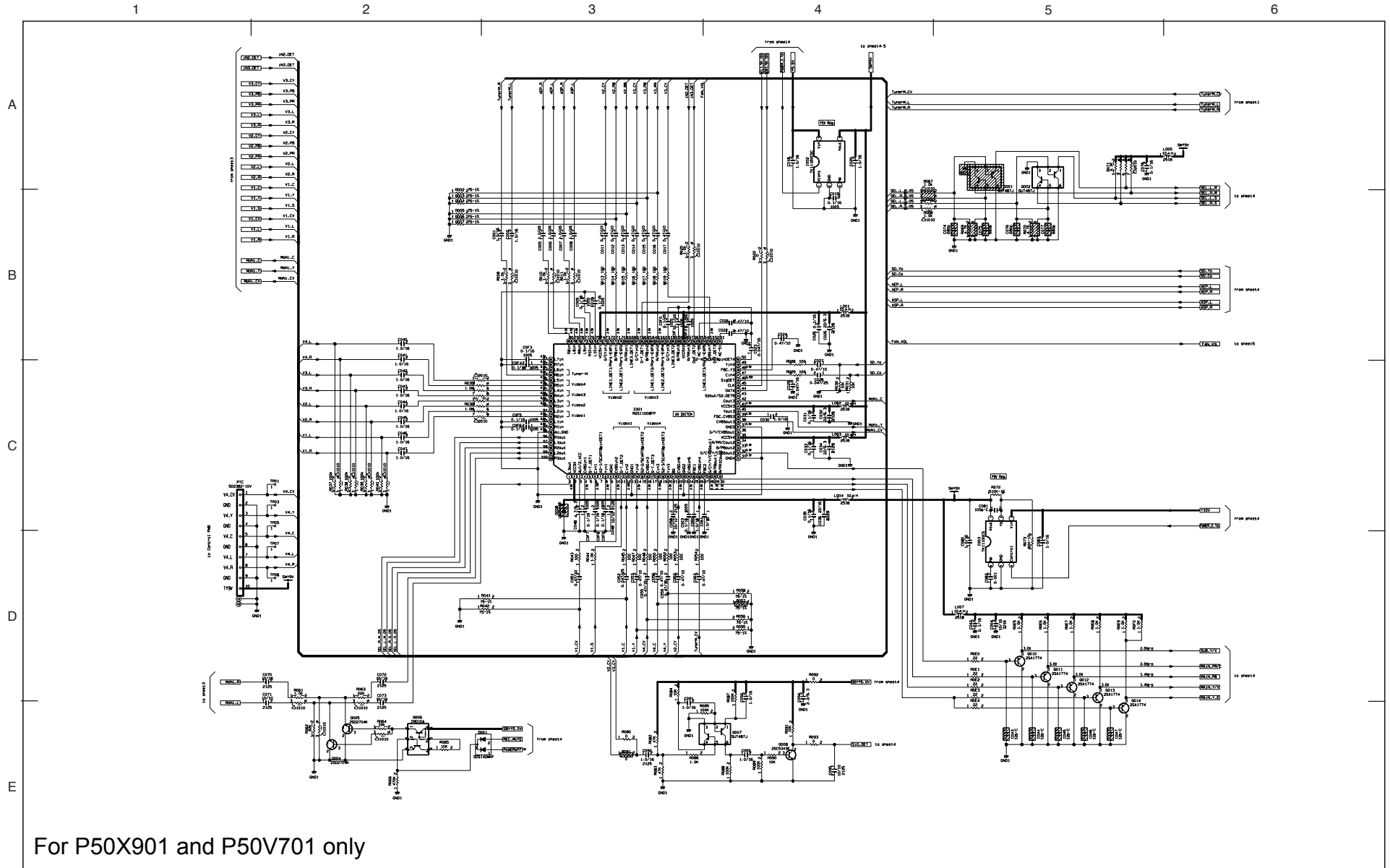


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

## BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

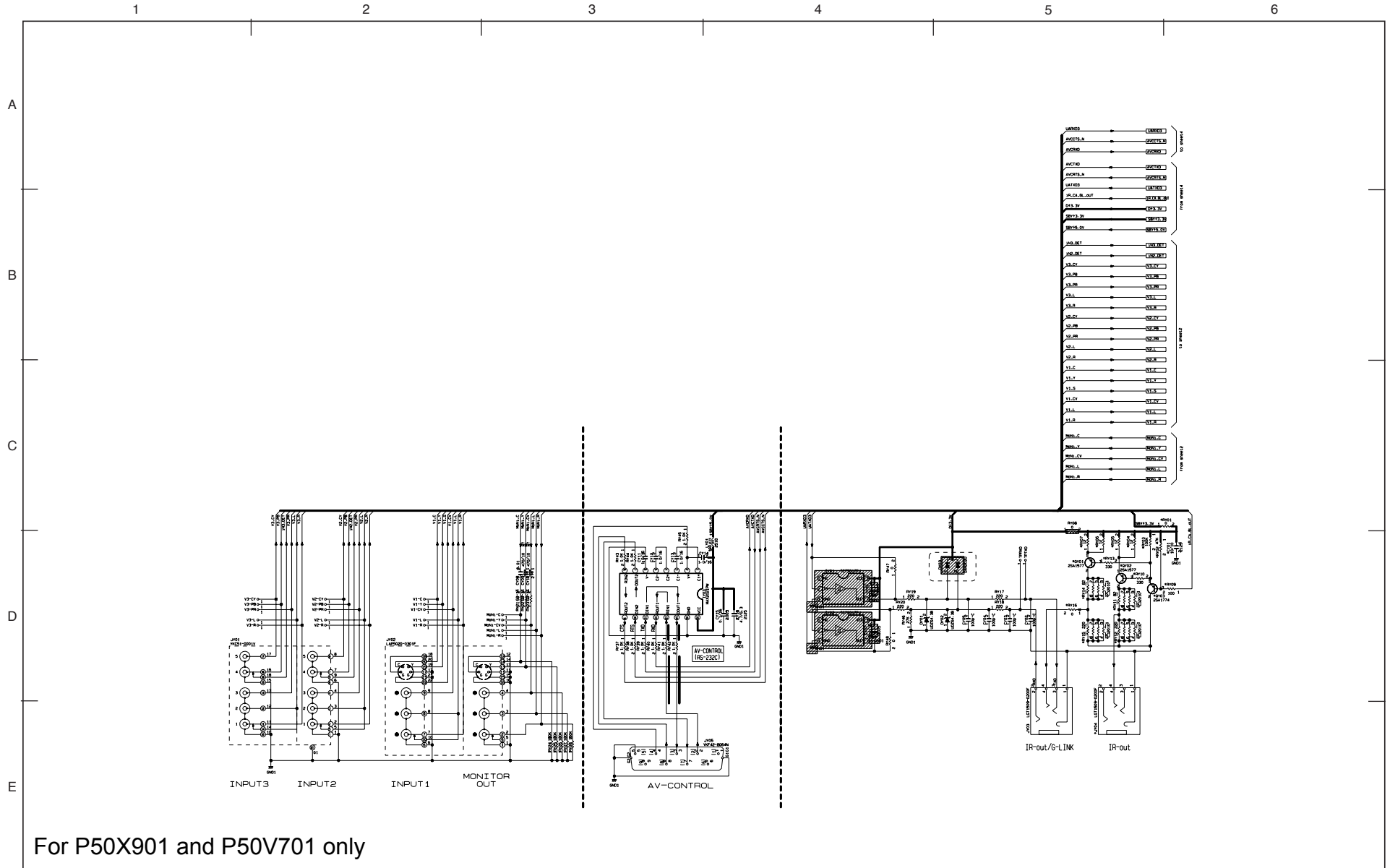


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

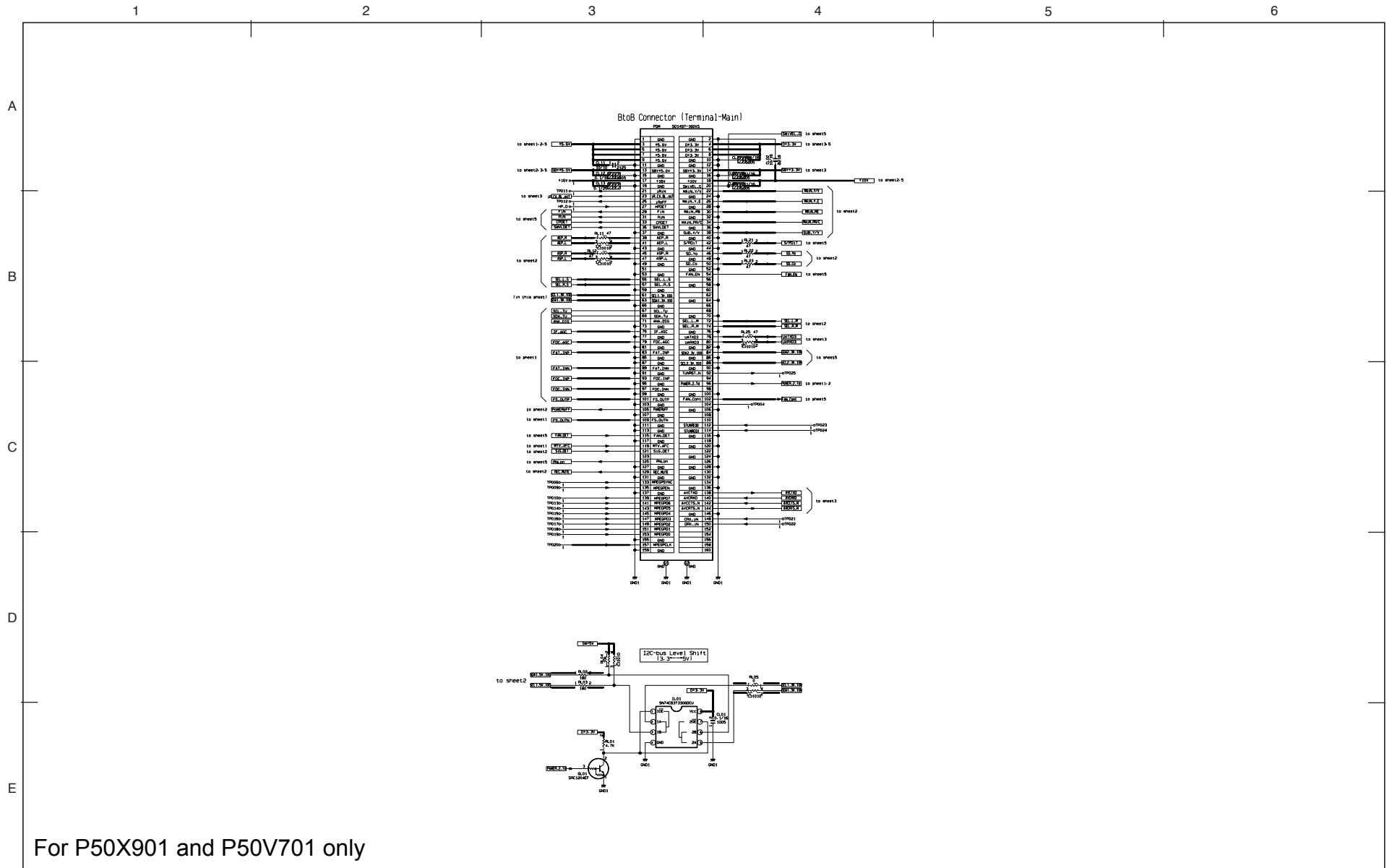
## BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



### BASIC CIRCUIT DIAGRAM

**PRODUCT SAFETY NOTE:** Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTE** of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

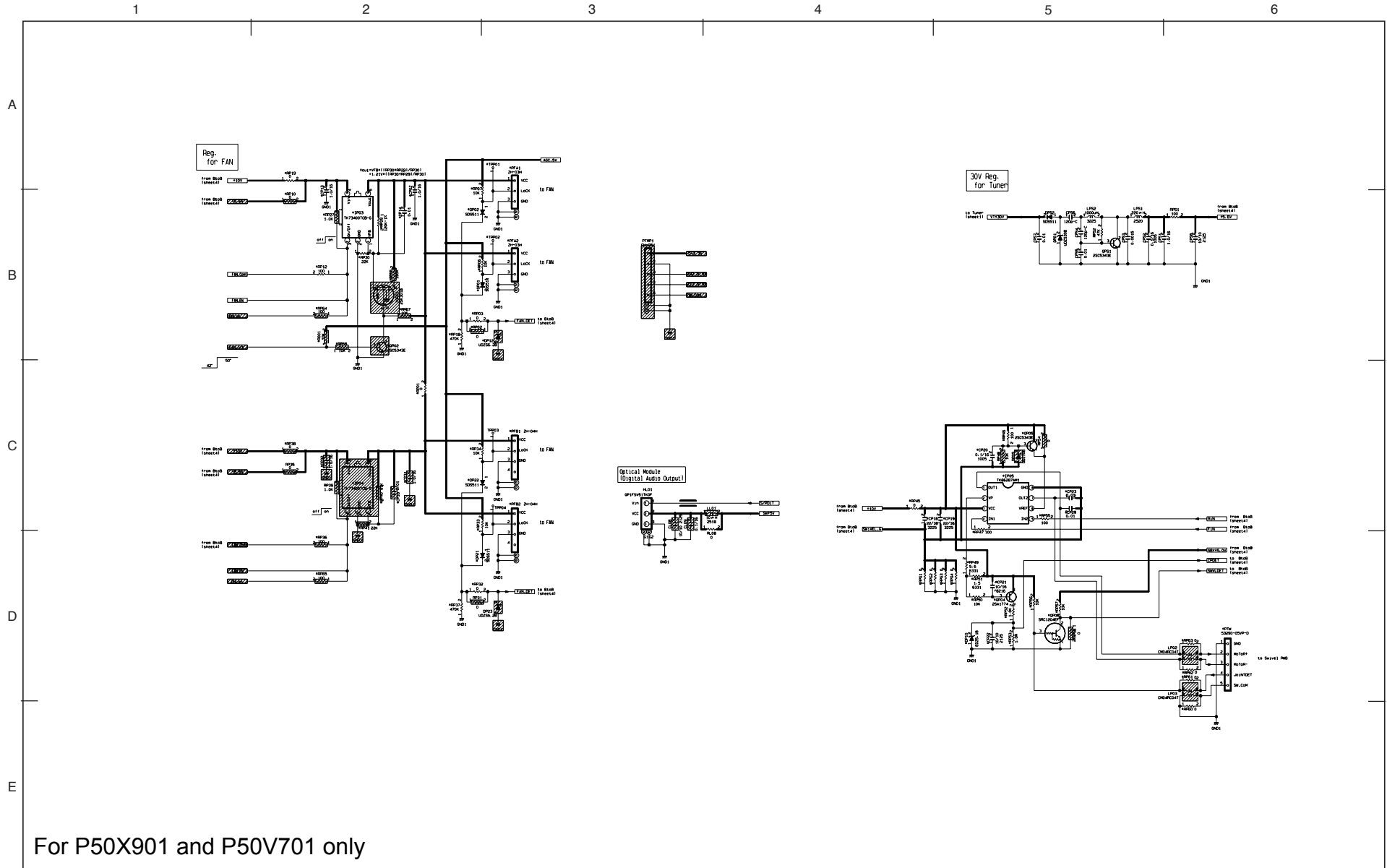


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

## BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

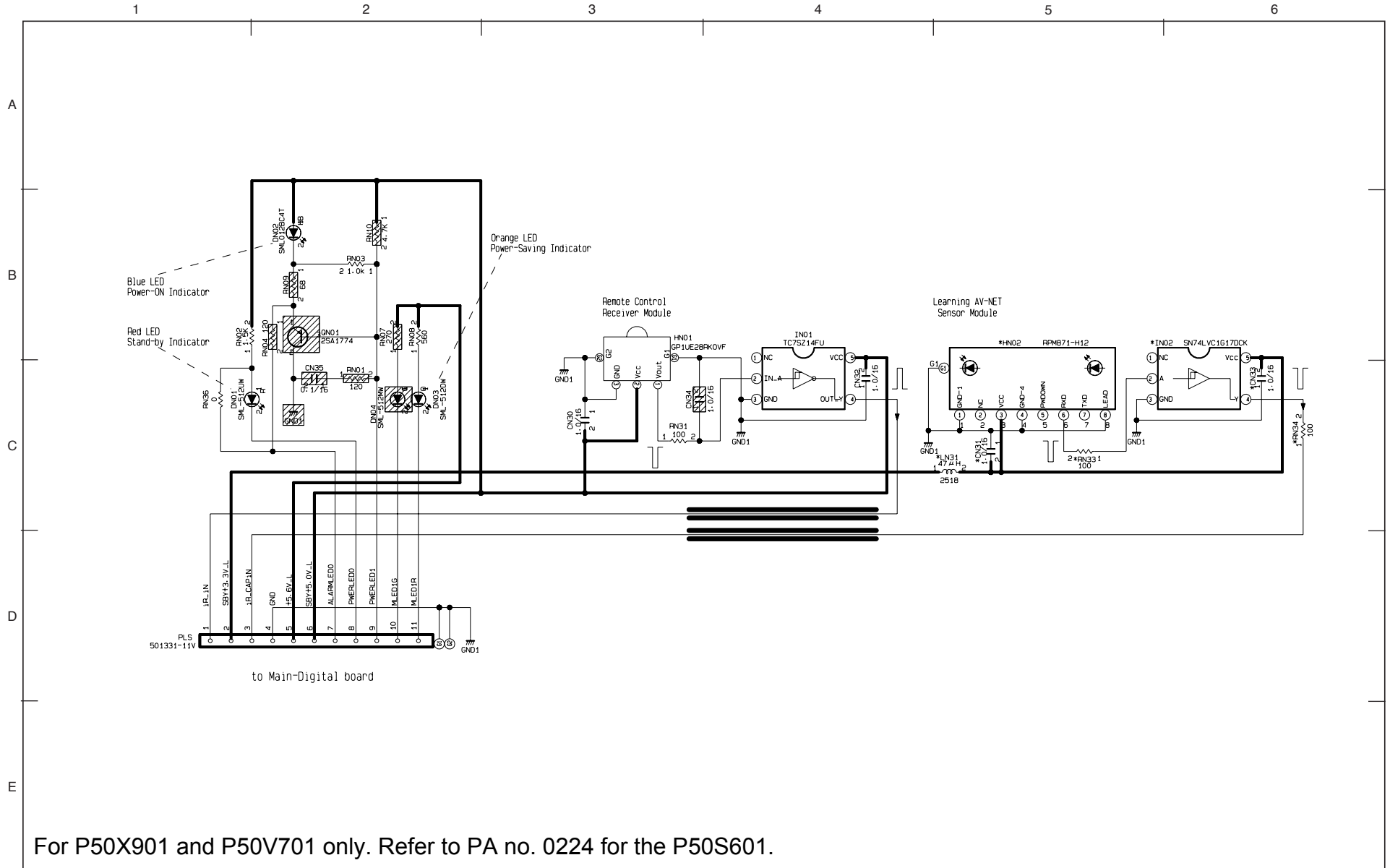


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

TERMINAL

## BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

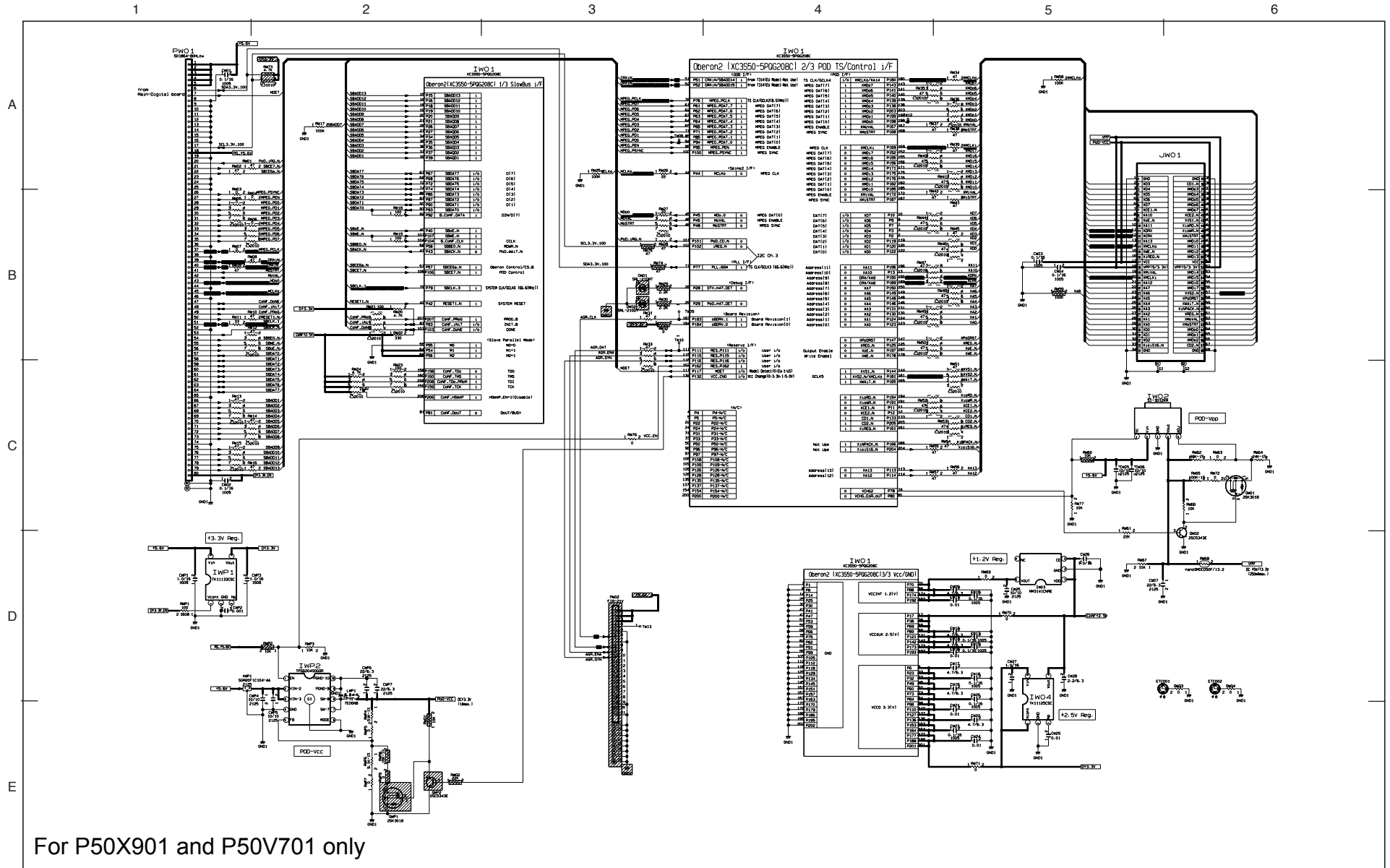


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

LED

# BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.



- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

POD

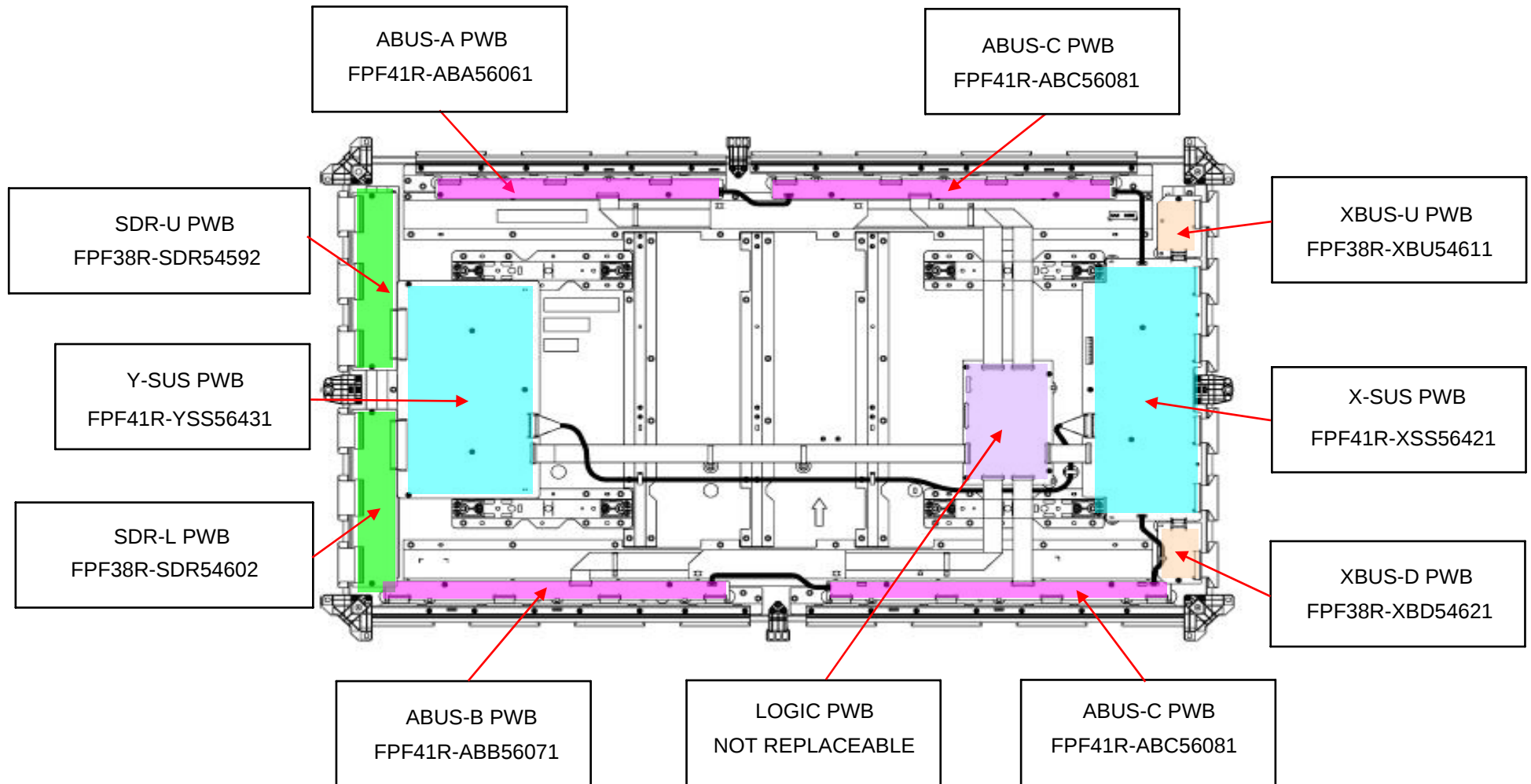
## Parts List

| P50S601         |                                |
|-----------------|--------------------------------|
| DD00941         | PPF50C240135UA-55              |
| EK01933         | WIRE (PROCESSED) JF04R0R021970 |
| EV01841         | POWER CORD 125V10A UL/CSA      |
| EW08433         | 8P PLUG CODE L=350MM           |
| FPF38R-XBD54621 | XBUS (D)                       |
| FPF38R-XBU54611 | XBUS (U)                       |
| FPF38RADM019F03 | ADM                            |
| FPF41R-ABA56061 | ABUS (A)                       |
| FPF41R-ABB56071 | ABUS (B)                       |
| FPF41R-ABC56081 | ABUS                           |
| FPF41R-CBL02381 | SIGNAL CABLE                   |
| FPF41R-CBL02382 | SIGNAL CABLE                   |
| FPF41R-CBL02383 | SIGNAL CABLE                   |
| FPF41R-CBL02384 | SIGNAL CABLE                   |
| FPF41R-CBL02385 | SIGNAL CABLE                   |
| FPF41R-CBL02386 | SIGNAL CABLE                   |
| FPF41R-CBL27301 | POWER CABLE                    |
| FPF41R-CBL27311 | POWER CABLE                    |
| FPF41R-CBL27312 | POWER CABLE                    |
| FPF41R-CBL27313 | POWER CABLE                    |
| Not Replaceable | LOGIC Board                    |
| FPF41R-XSS56421 | XSUS Board                     |
| FPF41R-YSS56431 | YSUS Board                     |
| GK01652         | SPEAKER-04X15D                 |
| GS00696         | DC MOTOR: DC2406KL-04W-B29-T0E |
| GS00697         | DC MOTOR: DC2406KL-04W-B29-T0E |
| HA02202         | POW-MPF7726                    |
| HL02403         | REMOTE CONTROL UNIT CLU-4373A  |
| JP55124         | DW3F TERMINAL PWB (SUB-DIGI)   |
| JP55134         | DW3 FILTER PWB                 |
| UX28027         | PSA DW3-C MAIN-DIG.            |
| KS22255         | 50SC01MRT EM41%VE_F.FILTER     |
| PC07042         | DW2 POWER BUTTON ASS Y         |
| PC07071         | DW3 POW BTN-50 SHAFT           |
| PH40153         | DW2 FR CONT KEY US             |
| PH41211         | DW3 CONT PLT 50U               |
| PH41771         | DW3 P50U SP GRILL R            |
| PH41772         | DW3 P50U SP GRILL L            |
| PH41781         | DW3 P50U CONTROL DOOR          |
| PH43353         | DW3 50TP2 DECO BEZEL           |
| PH43572         | DW3 50US_SV_DOOR_SHEET         |
| PH43771         | DW3 50 SV SP-SHEET L           |
| PH43772         | DW3 50 SV SP-SHEET R           |
| PU00961         | DW2 50 HITACHI BADGE           |
| QA03713         | DW3 50US-X BACK COVER          |
| QD56864         | P50S601 F-COSMETICS            |
| QJ03754         | DW3 50 STAND ASSY U            |
| QR71591         | S601 INST. BOOK                |
| UE27036         | DW3F CHASSIS ASSY              |

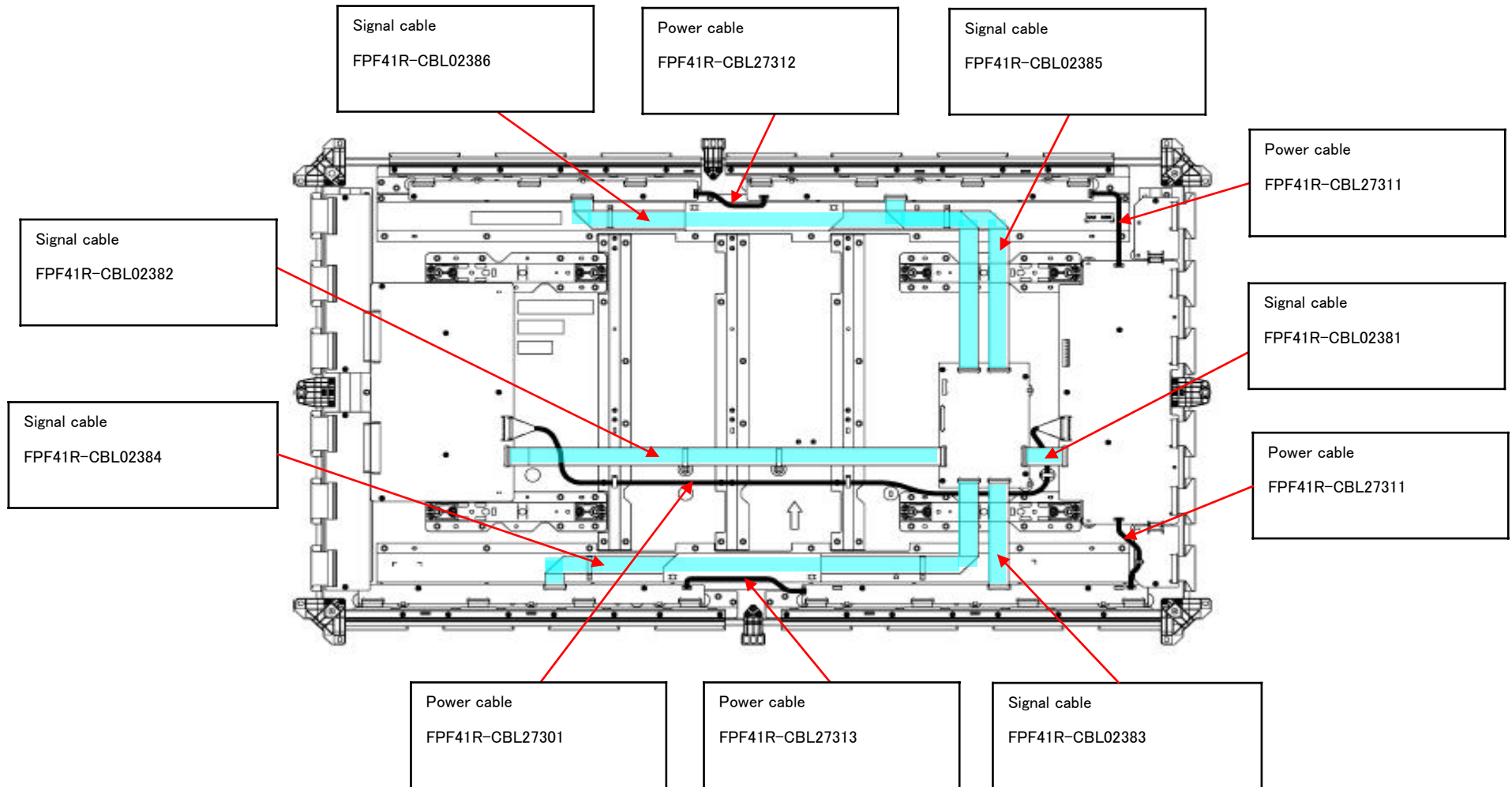
| P50V701         |                                |
|-----------------|--------------------------------|
| DD00941         | PPF50C240135UA-55              |
| EF27632         | CONNECTOR CABLE CO-51C-C0R5S40 |
| EK01901         | 80P FFC CABLE L=***MM UL20861  |
| EK01933         | WIRE (PROCESSED) JF04R0R021970 |
| EP00411         | AC INLET SK-1015(F1-0)         |
| EV01841         | POWER CORD 125V10A UL/CSA      |
| EW08433         | 8P PLUG CODE L=350MM           |
| EY01641         | IR MOUSE CABLE                 |
| FPF38R-XBD54621 | XBUS (D)                       |
| FPF38R-XBU54611 | XBUS (U)                       |
| FPF38RADM019F03 | ADM                            |
| FPF41R-ABA56061 | ABUS (A)                       |
| FPF41R-ABB56071 | ABUS (B)                       |
| FPF41R-ABC56081 | ABUS                           |
| FPF41R-CBL02381 | SIGNAL CABLE                   |
| FPF41R-CBL02382 | SIGNAL CABLE                   |
| FPF41R-CBL02383 | SIGNAL CABLE                   |
| FPF41R-CBL02384 | SIGNAL CABLE                   |
| FPF41R-CBL02385 | SIGNAL CABLE                   |
| FPF41R-CBL02386 | SIGNAL CABLE                   |
| FPF41R-CBL27301 | POWER CABLE                    |
| FPF41R-CBL27311 | POWER CABLE                    |
| FPF41R-CBL27312 | POWER CABLE                    |
| FPF41R-CBL27313 | POWER CABLE                    |
| Not Replaceable | LOGIC Board                    |
| FPF41R-XSS56421 | XSUS Board                     |
| FPF41R-YSS56431 | YSUS Board                     |
| GK01652         | SPEAKER-04X15D                 |
| GS00696         | DC MOTOR: DC2406KL-04W-B29-T0E |
| GS00697         | DC MOTOR: DC2406KL-04W-B29-T0E |
| GX00731         | MAGNET K5CRC12X15X7-MG2        |
| HA02202         | POW-MPF7726                    |
| HL02404         | REMOTE CONTROL UNIT CLU-4374A  |
| JP55141         | DW3 POD PWB                    |
| UX28028         | PSA DW3-D MAIN-DIG.            |
| JP56845         | PSA FC8 (DW3 US)               |
| KS22254         | 50SC01MRT EM36%VE_F.FILTER     |
| PC07042         | DW2 POWER BUTTON ASS Y         |
| PH38111         | DW2 PC CARD HOLDER             |
| PH38121         | DW2 CARD COVER                 |
| PH40153         | DW2 FR CONT KEY US             |
| PH41212         | DW3 CONT PLT 50U 501           |
| PH41771         | DW3 P50U SP GRILL R            |
| PH41772         | DW3 P50U SP GRILL L            |
| PH41781         | DW3 P50U CONTROL DOOR          |
| PH43353         | DW3 50TP2 DECO BEZEL           |
| PU00961         | DW2 50 HITACHI BADGE           |
| QA03713         | DW3 50US-X BACK COVER          |
| QD56865         | P50V701 F-COSMETICS            |
| QJ03754         | DW3 50 STAND ASSY U            |
| QR71601         | V701 INST. BOOK                |
| UE27034         | DW3D CHASSIS ASSY              |

| P50X901         |                                |
|-----------------|--------------------------------|
| DD00941         | PPF50C240135UA-55              |
| EK01901         | 80P FFC CABLE L=***MM UL20861  |
| EP00411         | AC INLET SK-1015(F1-0)         |
| EV01841         | POWER CORD 125V10A UL/CSA      |
| EW08433         | 8P PLUG CODE L=350MM           |
| FPF38R-XBD54621 | XBUS (D)                       |
| FPF38R-XBU54611 | XBUS (U)                       |
| FPF38RADM019F03 | ADM                            |
| FPF41R-ABA56061 | ABUS (A)                       |
| FPF41R-ABB56071 | ABUS (B)                       |
| FPF41R-ABC56081 | ABUS                           |
| FPF41R-CBL02381 | SIGNAL CABLE                   |
| FPF41R-CBL02382 | SIGNAL CABLE                   |
| FPF41R-CBL02383 | SIGNAL CABLE                   |
| FPF41R-CBL02384 | SIGNAL CABLE                   |
| FPF41R-CBL02385 | SIGNAL CABLE                   |
| FPF41R-CBL02386 | SIGNAL CABLE                   |
| FPF41R-CBL27301 | POWER CABLE                    |
| FPF41R-CBL27311 | POWER CABLE                    |
| FPF41R-CBL27312 | POWER CABLE                    |
| FPF41R-CBL27313 | POWER CABLE                    |
| FPF41R-LGC54681 | LOGIC Board                    |
| FPF41R-XSS56421 | XSUS Board                     |
| FPF41R-YSS56431 | YSUS Board                     |
| GK01652         | SPEAKER-04X15D                 |
| GS00696         | DC MOTOR: DC2406KL-04W-B29-T0E |
| GS00697         | DC MOTOR: DC2406KL-04W-B29-T0E |
| HA02202         | POW-MPF7726                    |
| HL01864         | RCT- CLU123S                   |
| HL02402         | REMOTE CONTROL UNIT CLU-4372A  |
| UX28029         | PSA DW3-D MAIN-DIG.            |
| JP56845         | PSA FC8 (DW3 US)               |
| KS22256         | 50SC01MRT EM36%LVE_F.FILTER    |
| MF02414         | GASKET 10-2-40 J1G             |
| NA88102         | DW3 50US BEZEL FRAME BOTTOM    |
| NA90811         | DW3 50US BEZEL FRAME R         |
| NA90812         | DW3 50US BEZEL FRAME L         |
| NA91161         | DW3 50US BEZEL FRAME TOP       |
| NA91491         | DW2 50 FAN COVER               |
| NA91961         | DW2 50 KEY SUPPORT             |
| NA93762         | DW3 50XR MAIN FRAME            |
| NA95813         | DW3 50X-U FAN BS MTL           |
| NA95852         | DW3 50XR FAN BASE A2           |
| PC07042         | DW2 POWER BUTTON ASS Y         |
| PC07071         | DW3 POW BTN-50 SHAFT           |
| PH38111         | DW2 PC CARD HOLDER             |
| PH40153         | DW2 FR CONT KEY US             |
| PH41213         | DW3 CONT PLT 50U 901           |
| PH43521         | DW3 50 SIDE BEZEL R            |
| PH43522         | DW3 50 SIDE BEZEL L            |
| PM32521         | DW3 50 AL DECO T (X)           |
| PM32531         | DW3 50 AL DECO B (X)           |
| QA03713         | DW3 50US-X BACK COVER          |
| QJ03754         | DW3 50 STAND ASSY U            |
| QR71581         | X901 INST. BOOK                |

## PART NUMBERS OF PANEL BOARDS

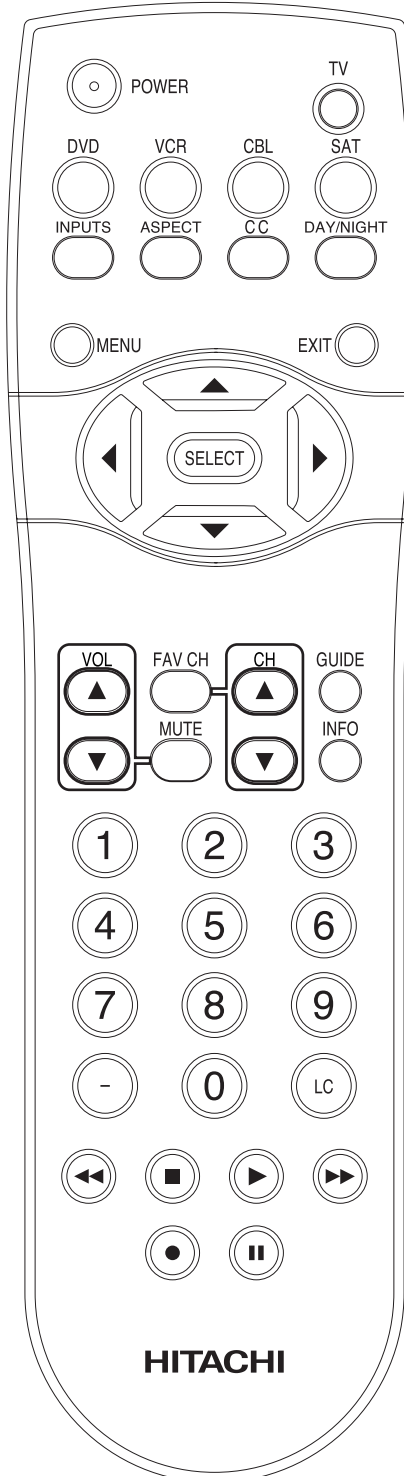
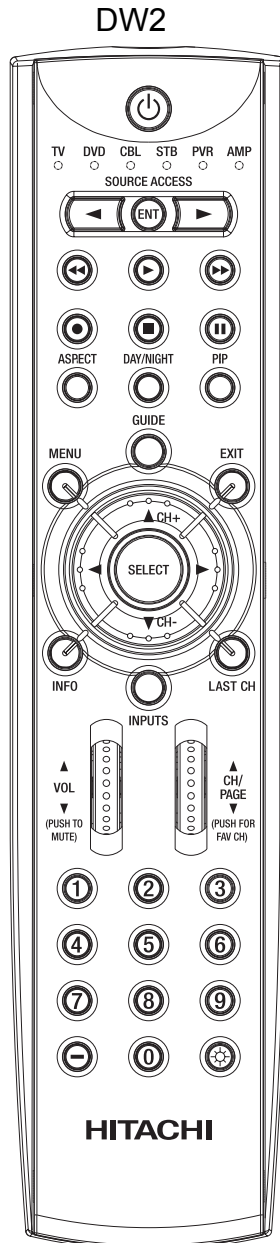
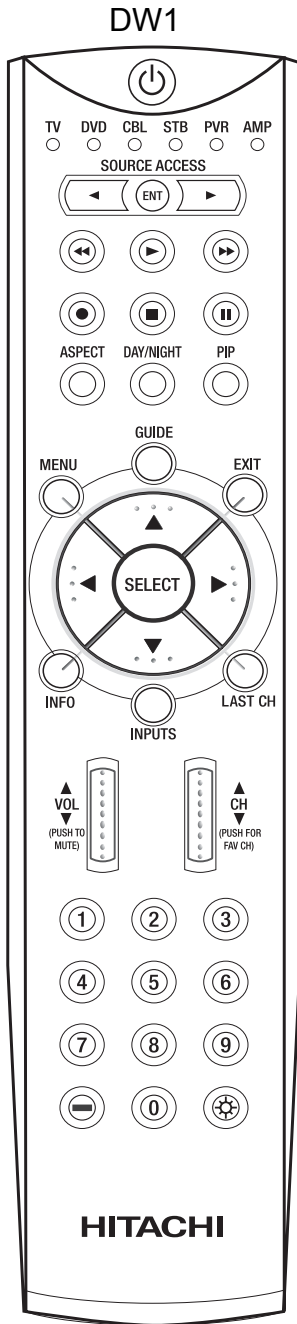


## PART NUMBER OF PANEL CONNECTORS

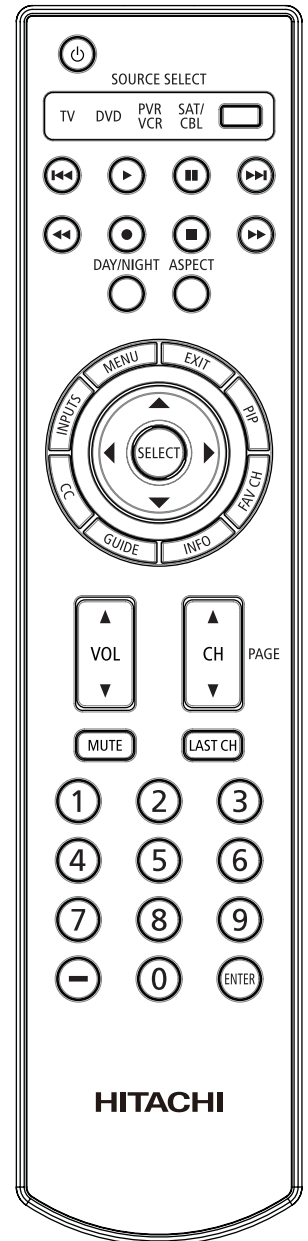


Service Modes available to the technician (via remote only)

### DW3 - H models

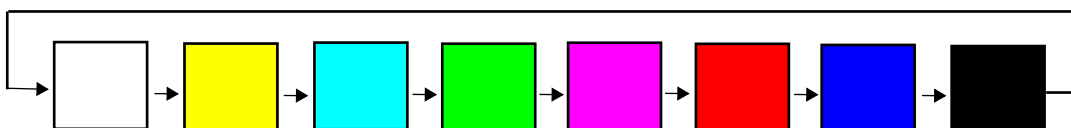


### DW3 - T models



MENU + MENU + MENU + 8 + SELECT = Service Adj Mode (I2C Adjust)

MENU + MENU + MENU + 9 + SELECT = Panel Test Mode (see below)



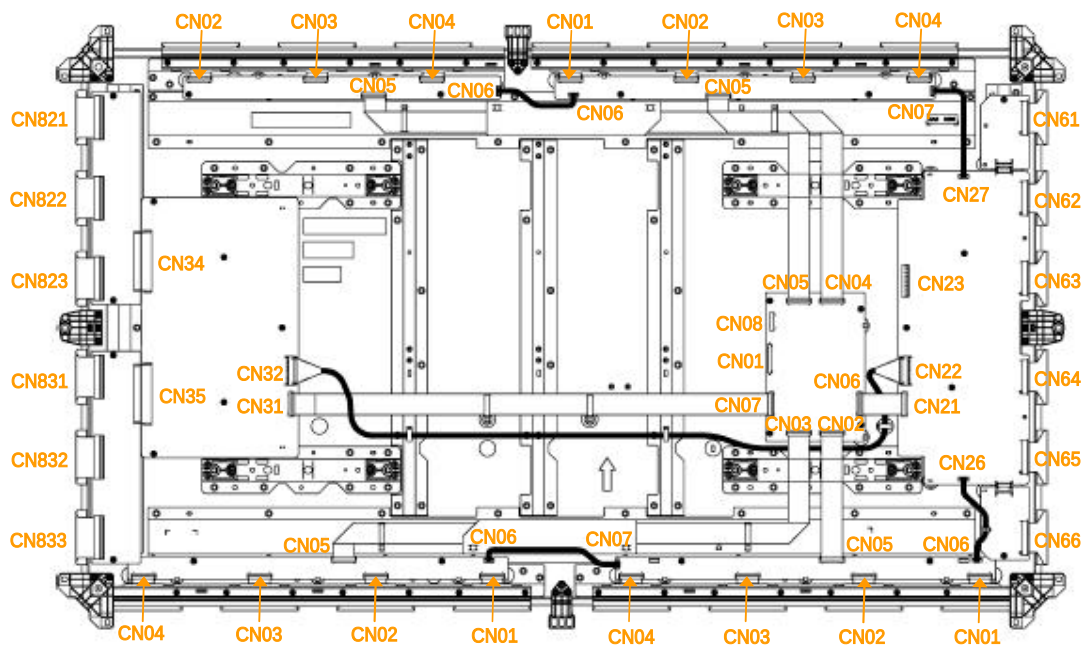
CH 1

← To Index

## CH 1

### 3.1.1 Boards Configuration

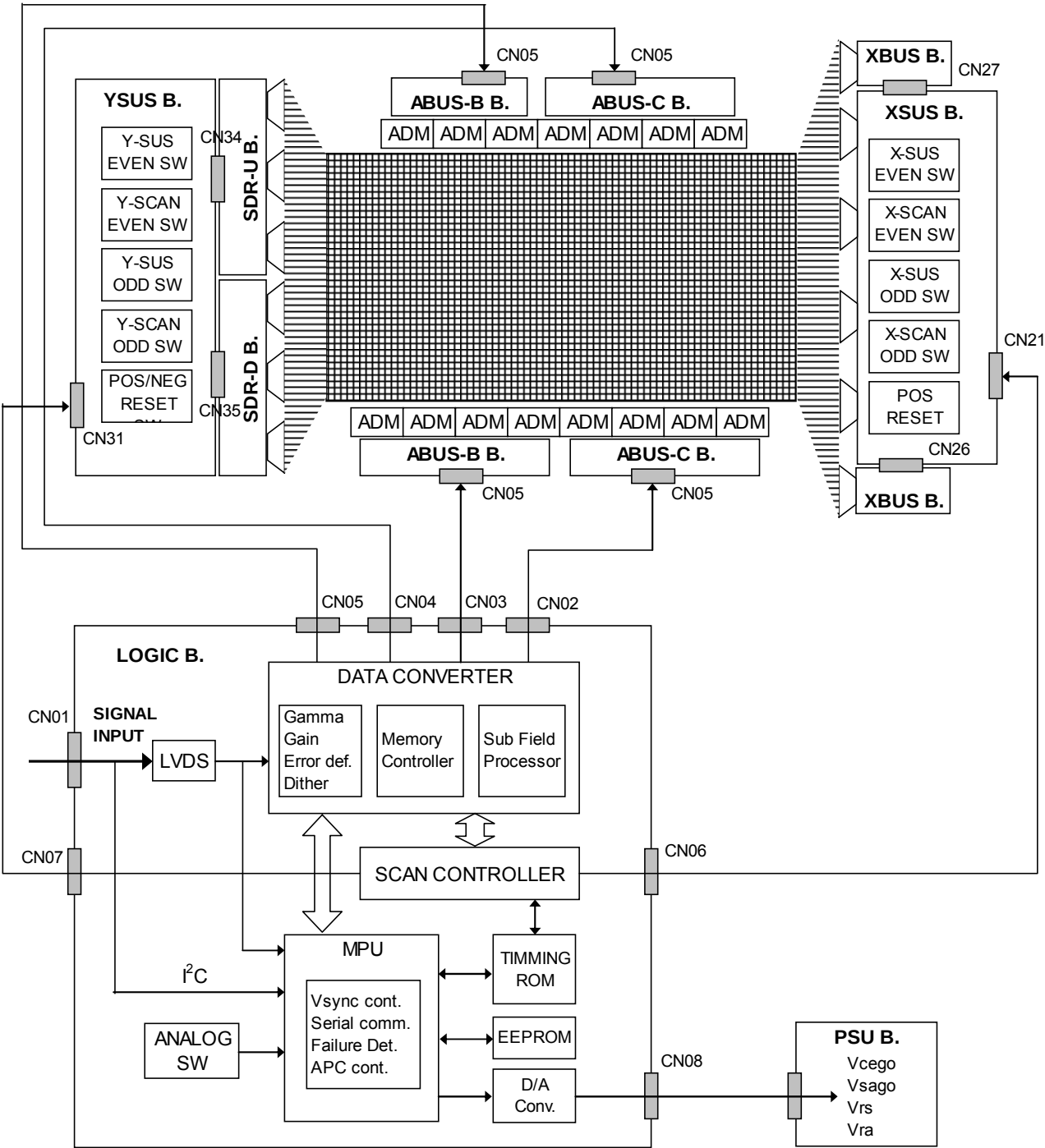
#### FPF50C240135UA-55



TROUBLESHOOTING THE 50AF1 PANEL

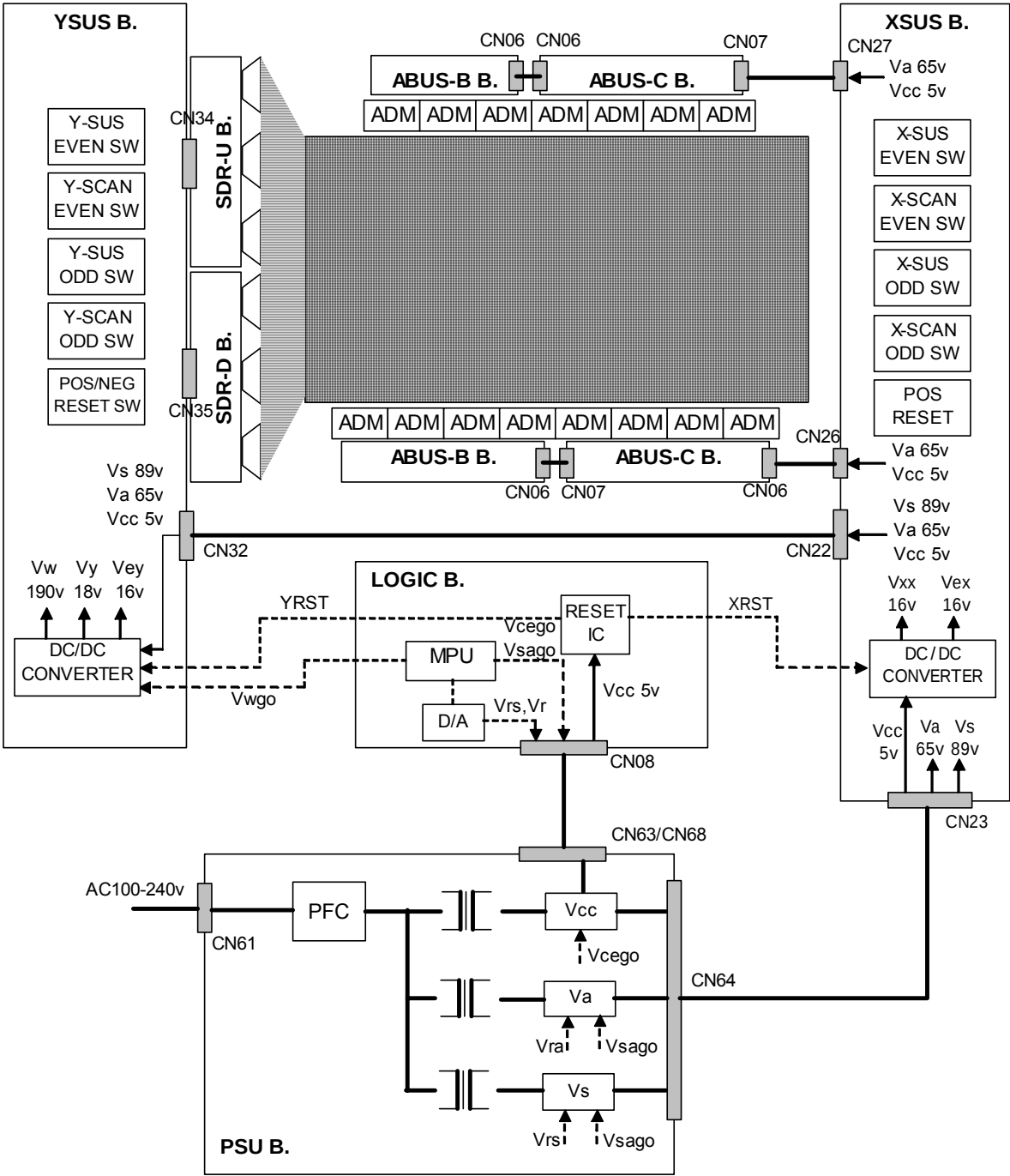
3.2 Block Diagrams

3.2.1 Signal Diagrams



# TROUBLESHOOTING THE 50AF1 PANEL

## 3.2.2 Power Supply Diagram



## TROUBLESHOOTING THE 50AF1 PANEL

### 3.3 Function

#### 3.3.1 Logic board Function

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Data Processor  | <ul style="list-style-type: none"><li>- Y adjustment</li><li>- NTSC/EBU format (Color Matrix) Switch</li><li>- RGB gain Control (White balance adjustment, Amplitude limitation)</li><li>- Error Diffusion Technology (Grayscale adjustment)</li><li>- Dither (Grayscale adjustment)</li><li>- Burn-in Pattern generation</li><li>- Streaking adjustment</li></ul>                                                                                    |
| 2) Data Converter  | <ul style="list-style-type: none"><li>- Quasi out-line adjustment (luminous pattern control)</li></ul>                                                                                                                                                                                                                                                                                                                                                |
| 3) Scan Controller | <ul style="list-style-type: none"><li>- Address driver control signal generator (ADM)</li><li>- scan driver control signal generator (SDM)</li><li>- X / Y sustain control signal generator</li></ul>                                                                                                                                                                                                                                                 |
| 4) Waveform ROM    | <ul style="list-style-type: none"><li>- Waveform Pattern for drive / Timing memory</li></ul>                                                                                                                                                                                                                                                                                                                                                          |
| 5) MPU             | <ul style="list-style-type: none"><li>- Synchronous detection</li><li>- System control</li><li>- Driving voltage(Va, Vs, Vw) minor adjustment</li><li>- Abnormal watch (breakdown detection)/abnormal processing</li><li>- Is(sustain) current control (sustain pulse control)</li><li>- Ia(address) current control (sub-field control / sustain pulse control)</li><li>- External communication control</li><li>- Flash memory (firmware)</li></ul> |
| 6) EEPROM          | <ul style="list-style-type: none"><li>- Control parameter memory</li><li>- The accumulation energizing time (Every hour).</li><li>- Abnormal status memory (16 careers)</li></ul>                                                                                                                                                                                                                                                                     |

#### Function of X-SUS Board

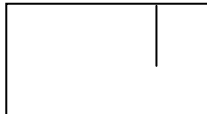
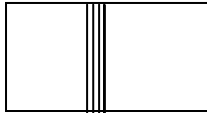
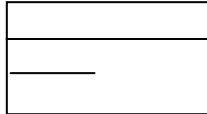
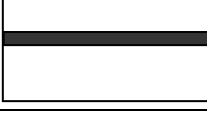
|                             |                                                                                                                                                                           |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) DC/DC power supply block | <ul style="list-style-type: none"><li>- Va (+63V) -&gt; Vx(-30V) / Vq (-55V)</li><li>- Vcc (+5V) -&gt; Ve (+17V) / XFve (+18V, floating)</li></ul>                        |
| 2) X switching block        | <ul style="list-style-type: none"><li>- Switch circuit for sustain period</li><li>- Switch circuit for address period</li><li>- Switch circuit for reset period</li></ul> |
| 3) Current detector block   | <ul style="list-style-type: none"><li>- Isx (sustain) current detection</li><li>- Ia (address) current detection</li></ul>                                                |
| 4) Voltage detector block   | <ul style="list-style-type: none"><li>- Vs (sustain) voltage detection</li><li>- Va (address) voltage detection</li></ul>                                                 |

#### FUNCTION OF Y-SUS BOARD

|                             |                                                                                                                                                            |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) DC/DC power supply block | <ul style="list-style-type: none"><li>- Vcc (+5V) -&gt; Ve (+17V) / YFve (+18V, floating)</li><li>- Vs (+85V) -&gt; Vw (200V)</li></ul>                    |
| 2) Y switching block        | <ul style="list-style-type: none"><li>- Switching for sustain period</li><li>- Switching for address period</li><li>- Switching for reset period</li></ul> |

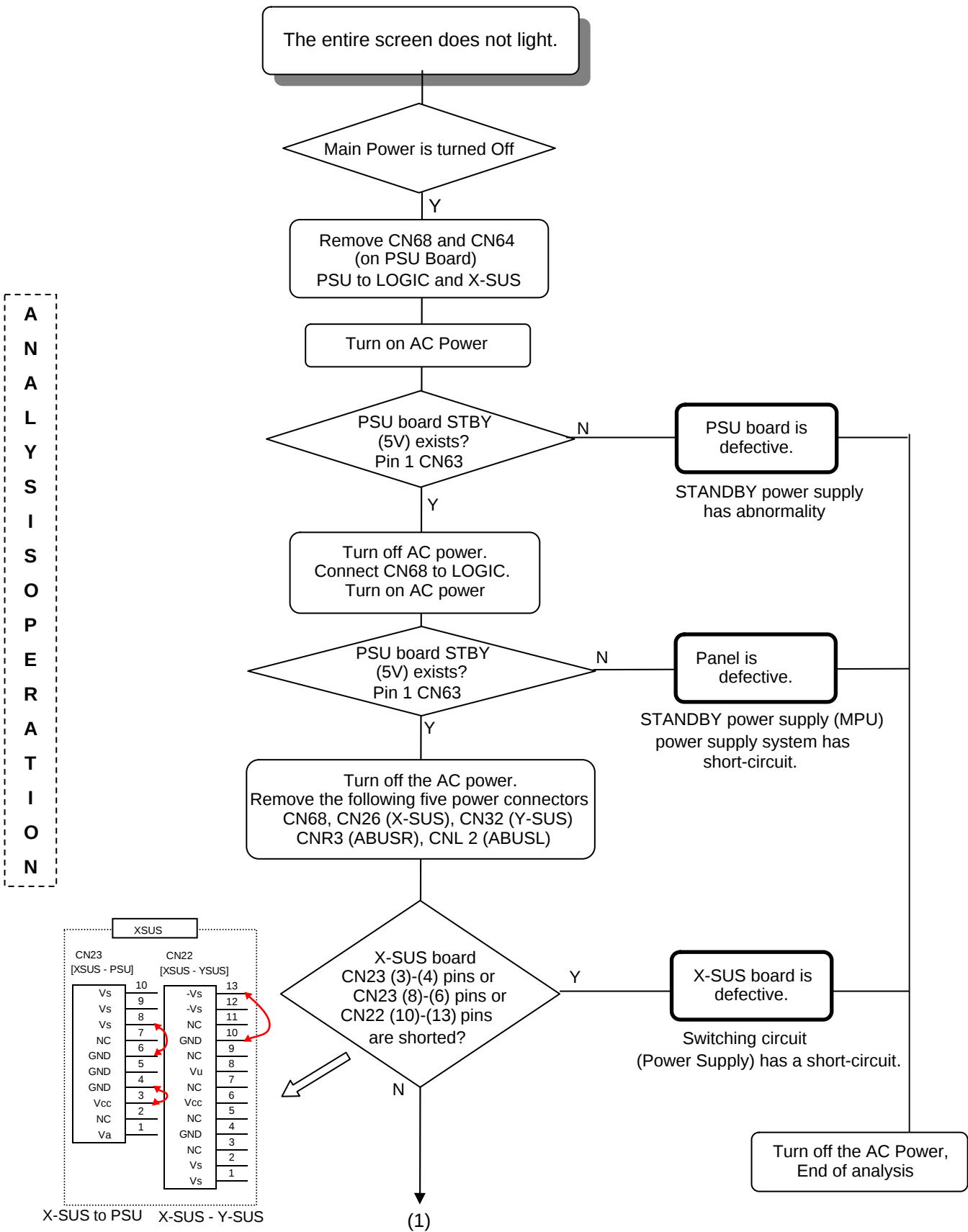
# TROUBLESHOOTING THE 50AF1 PANEL

## 4.5 Fault Symptom (Note the Logic PWB is not replaceable, it is part of the Panel)

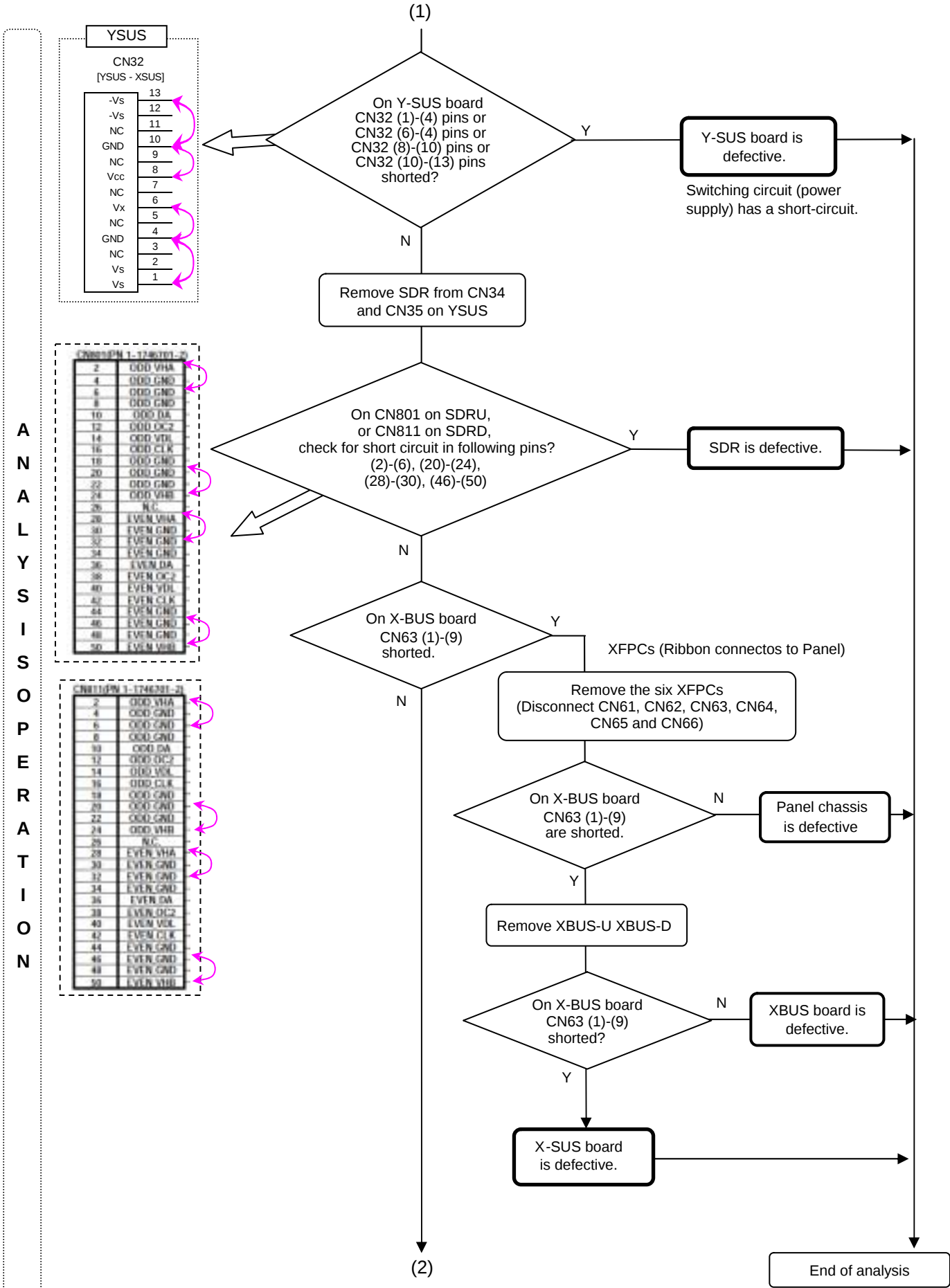
| No | Fault contents                                | Fault status                                                                                                            |                                                                                     | Suspected fault location                                                                | Analysis procedure and measure                                             |
|----|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 1  | Entire screen does not light (No Picture)     | After momentarily lighting, the screen becomes black immediately or after a few seconds.<br>(Main power is turned off.) |    | X-SUS, Y-SUS<br>PSU, Panel, LOGIC<br>ABUS-A, B, C<br>SDRU and SDRD                      | Replace defective PCB<br><br>See "No Picture"<br>Troubleshooting Flowchart |
| 2  |                                               | Screen does not show any picture but lights dimly.                                                                      |    | LOGIC                                                                                   | Panel Failure                                                              |
| 3  | Vertical Line                                 | Single vertical line                                                                                                    |    | PANEL<br>LOGIC                                                                          | See Vertical Line<br>Troubleshooting Flowchart                             |
| 4  |                                               | Vertical line from middle of Screen. Vertical line of Different Color                                                   |    | PANEL                                                                                   | Panel Failure                                                              |
| 5  | Vertical Bar                                  | Vertical bar with 1/15 or its multiplication width of screen.                                                           |    | PANEL<br>ABUS-A, B, C<br>LOGIC<br>And related connection                                | See Vertical Line<br>Troubleshooting Flowchart                             |
| 6  |                                               | Vertical bar with 1/2 width of screen.                                                                                  |   | ABUS-A, B, C<br>LOGIC<br>And related connection                                         | See Vertical Bar<br>Troubleshooting Flowchart                              |
| 7  | Horizontal Line                               | Single Horizontal line (Does not light) or Single Horizontal line does not light in entire screen                       |  | Make sure connector at location from SDR is correctly seated.<br>If connector OK, Panel | Panel Failure                                                              |
| 8  |                                               | Every other lines do not light in entire screen                                                                         |  | X-SUS<br>Y-SUS                                                                          | Exchange X-SUS or Y-SUS                                                    |
| 9  | Horizontal Bar                                | Bar width of 1/8 of vertical size of the screen does not light                                                          |  | Make sure connector at location from SDR is correctly seated.<br>SDR-U or D             | Exchange SDR board                                                         |
| 10 |                                               | Bar width of 1/2 vertical size of the screen does not light.<br>Could be Top or Bottom.                                 | <div>May be Top</div> <div>May be Bottom</div>                                      | Panel, SDRU and D<br>Y or X-SUS<br>And related connections                              | See Horizontal Bar<br>Troubleshooting Flowchart                            |
| 11 | Image sticking<br>(or Image retentions)       | Fixed contents are always visible                                                                                       | <div>Text or Graphics<br/>of any kind.</div>                                        | PANEL                                                                                   | Judge after operation test on full white display,<br>Replace Panel         |
| 12 | Twinkle                                       | The entire screen momentarily becomes brighter or darker.                                                               |                                                                                     | Loose contact on CN01 Connector<br>LOGIC PWB Connector                                  | Re-Connect cables or replace defective cables                              |
| 13 | Flicker                                       | The entire screen flickers continuously                                                                                 |                                                                                     |                                                                                         |                                                                            |
| 14 | Luminance is abnormal                         | Luminance linearity is poor                                                                                             |                                                                                     | LOGIC                                                                                   | Panel Failure                                                              |
| 15 | Crominance is abnormal                        | Colors can not be displayed correctly                                                                                   |                                                                                     | LOGIC                                                                                   | Panel Failure                                                              |
| 16 | Sync is disturbed                             | Synchronization is abnormal                                                                                             |                                                                                     | LOGIC                                                                                   | Panel Failure                                                              |
| 17 | Picture is Distorted                          | There is an image, but it is not normal.                                                                                |                                                                                     | PANEL                                                                                   | Panel Failure                                                              |
| 18 | Some steps of gradation are skipped           | Luminance linearity is poor.                                                                                            |                                                                                     | LOGIC                                                                                   | Panel Failure                                                              |
| 19 | Abnormal Sound                                | Unusual Sound coming from inside the set.                                                                               |                                                                                     | POWER SUPPLY,<br>X or Y-SUS, Cabinet                                                    | Find defective part by watching and hearing, after replace defective part. |
| 20 | Control of external communication is abnormal | It is unable to adjust Contrast, Chrominance and gamma value.                                                           |                                                                                     | LOGIC                                                                                   | Panel Failure                                                              |

4.5 FAILURE ANALYSIS PROCEDURE

4.5.1 "No Picture" failure analysis procedure



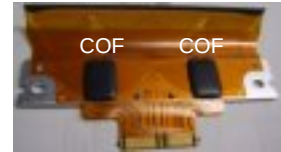
TROUBLESHOOTING THE 50AF1 PANEL



# TROUBLESHOOTING THE 50AF1 PANEL

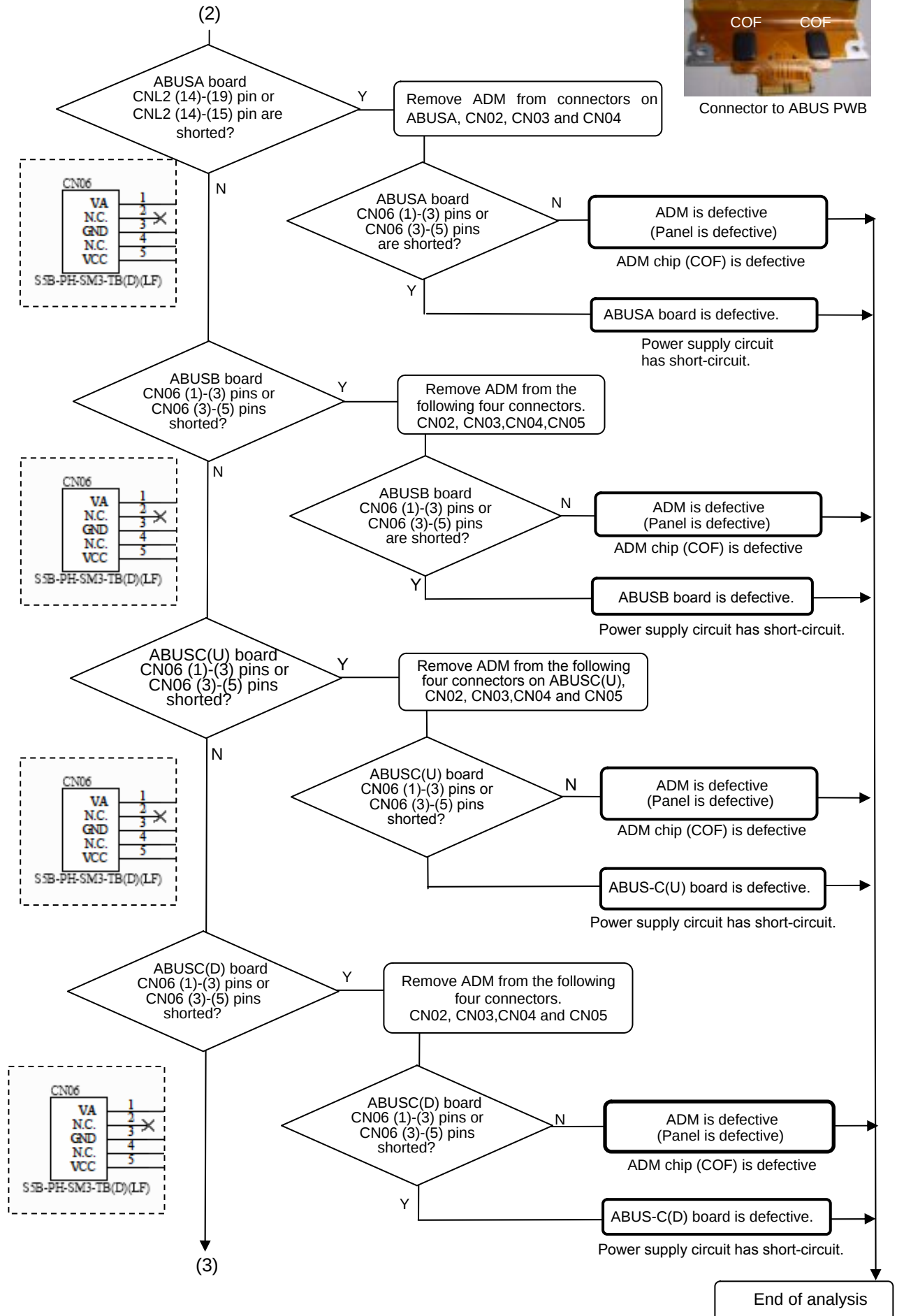
ADM (Connector with COF attached)

COF (Chip on Film)

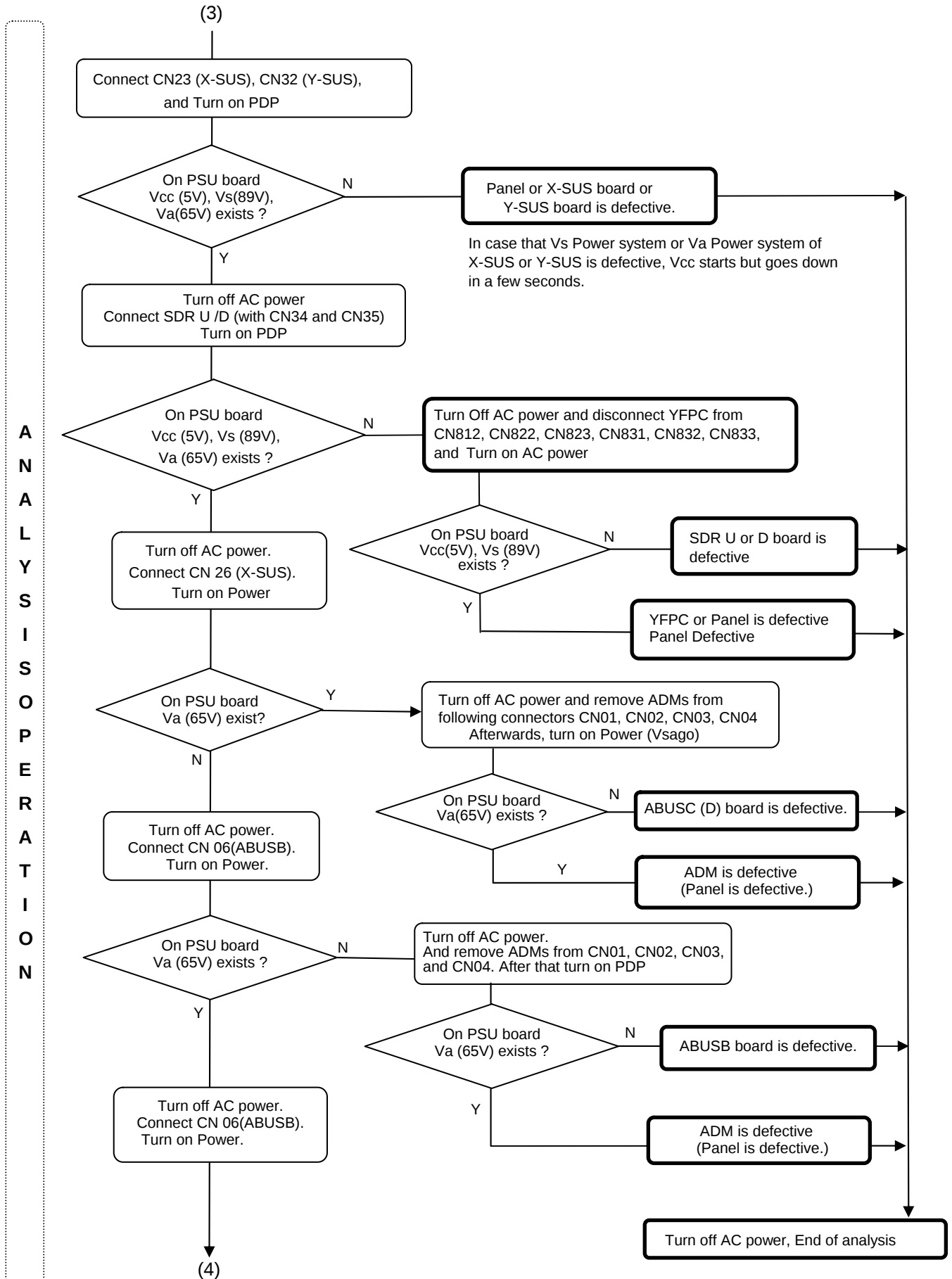


Connector to ABUS PWB

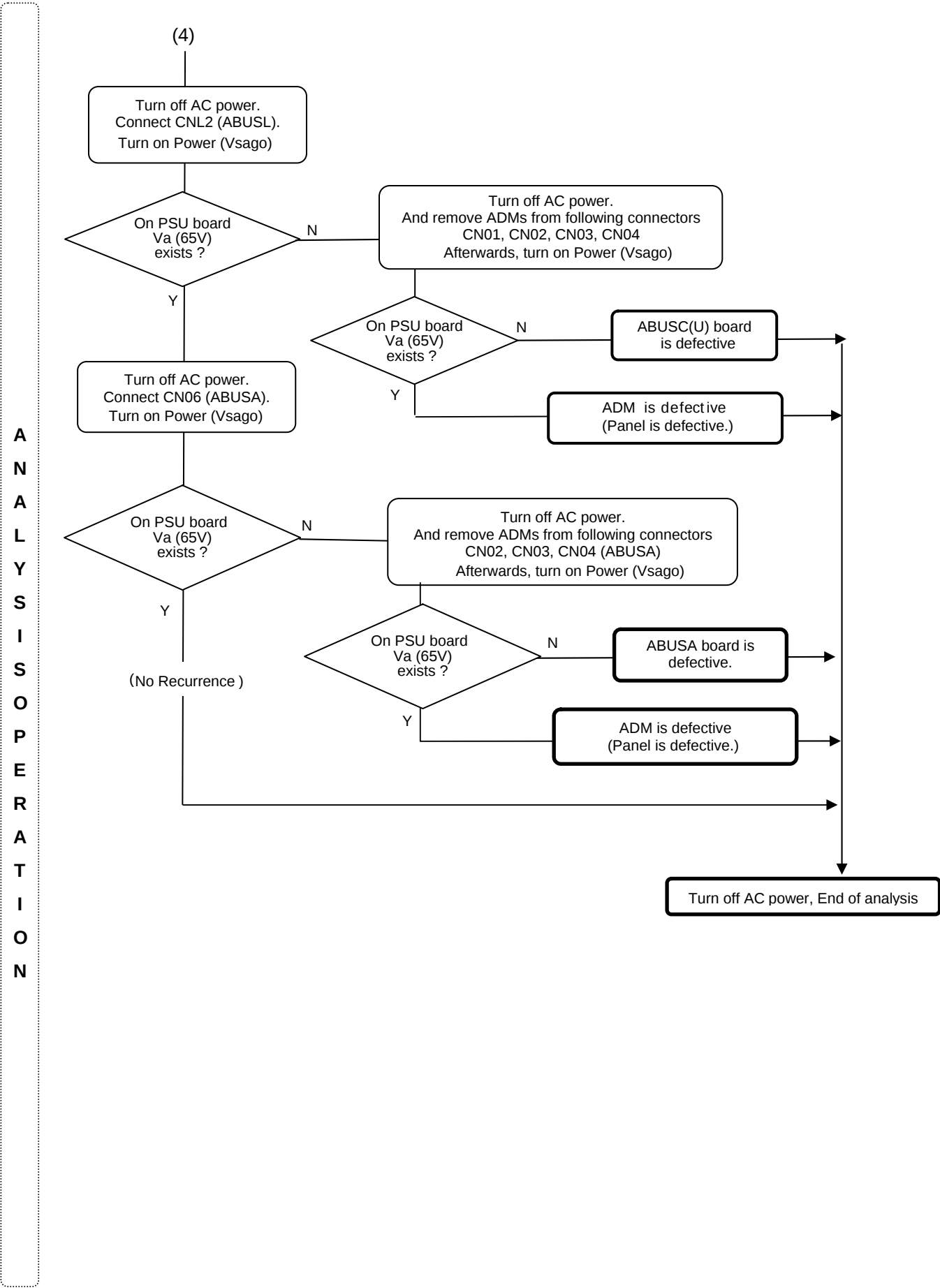
ANALYSIS OPERATION



# TROUBLESHOOTING THE 50AF1 PANEL



TROUBLESHOOTING THE 50AF1 PANEL



# TROUBLESHOOTING THE 50AF1 PANEL

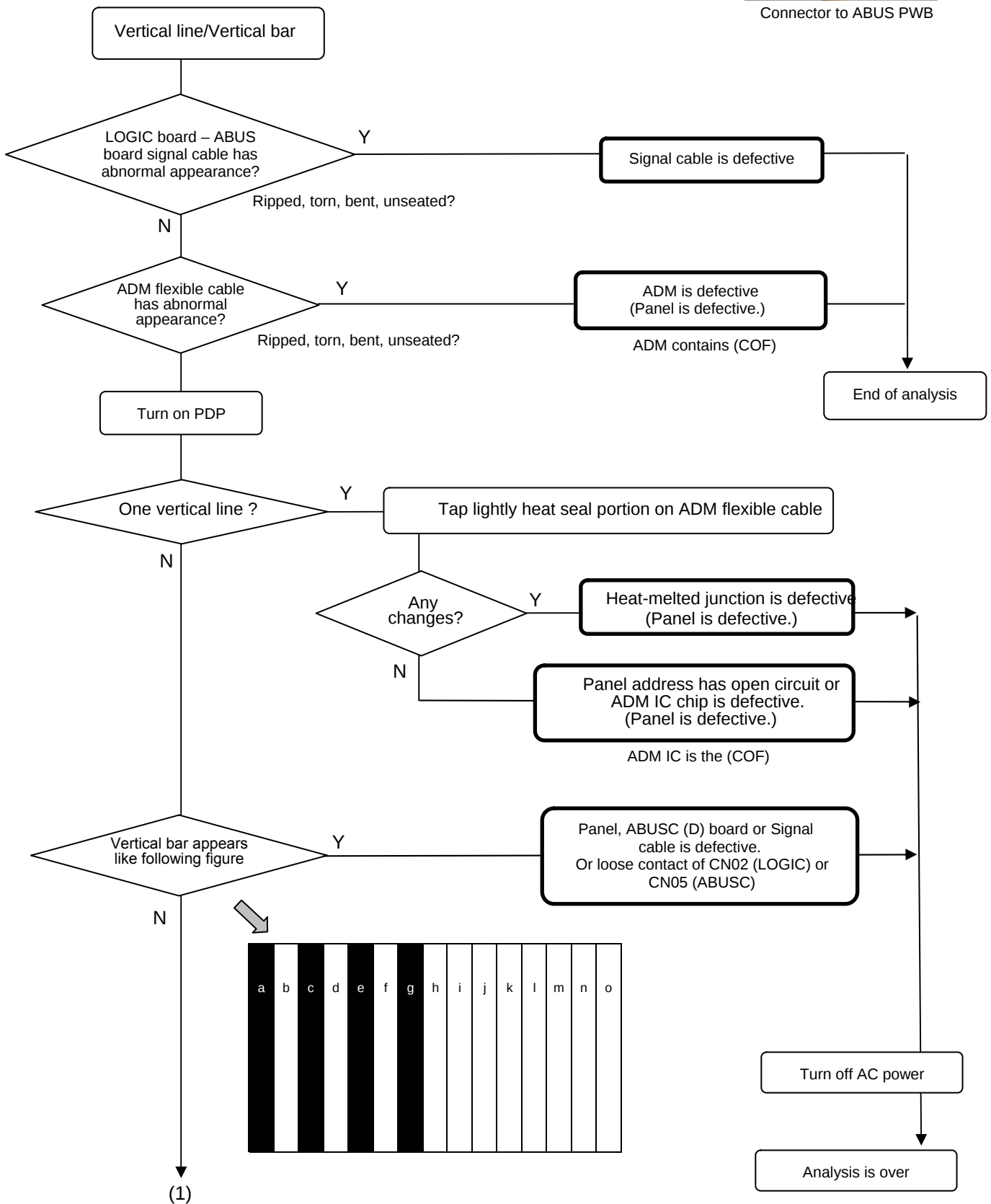
ADM (Connector with COF attached)

COF (Chip on Film)

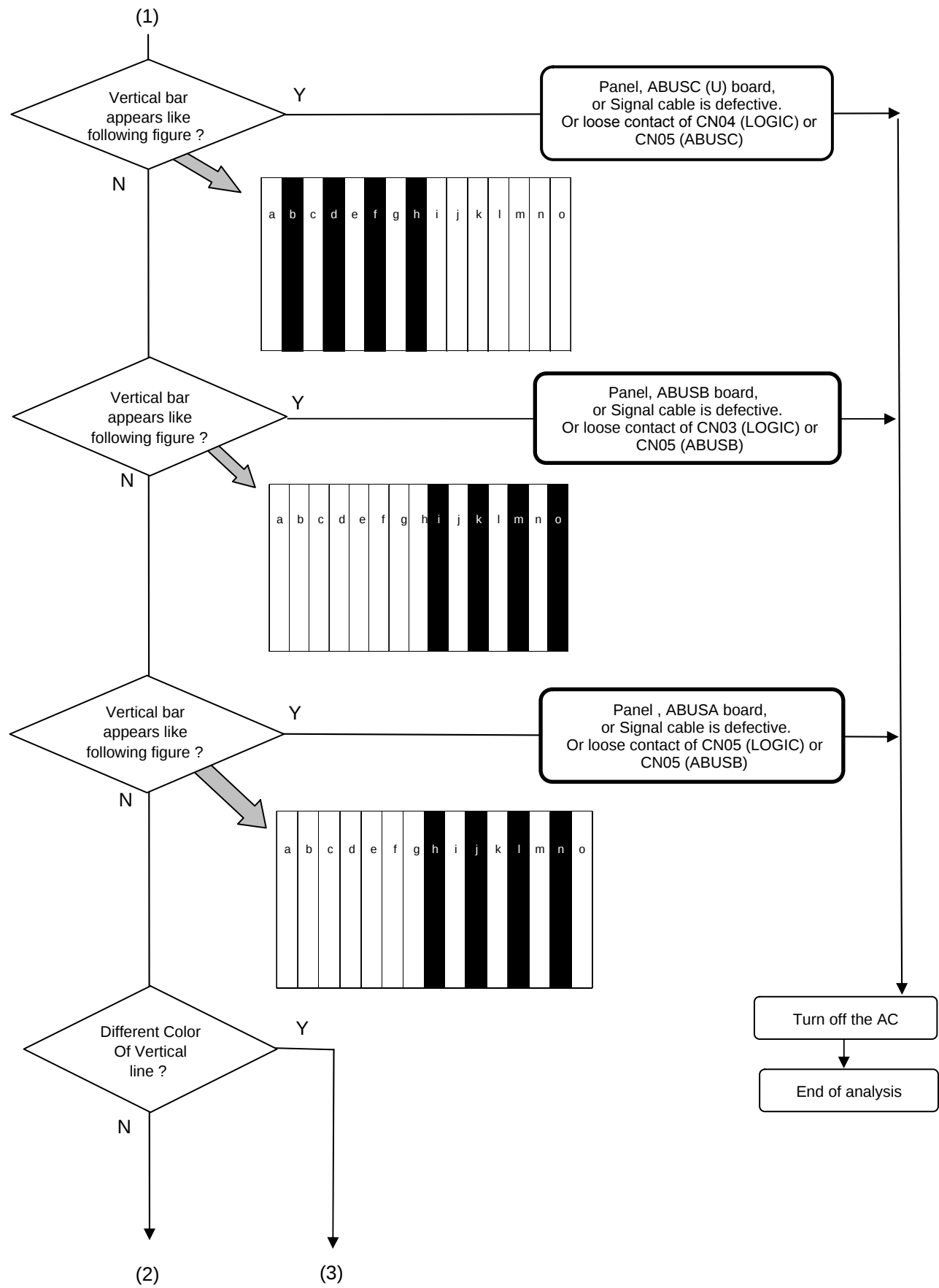


Connector to ABUS PWB

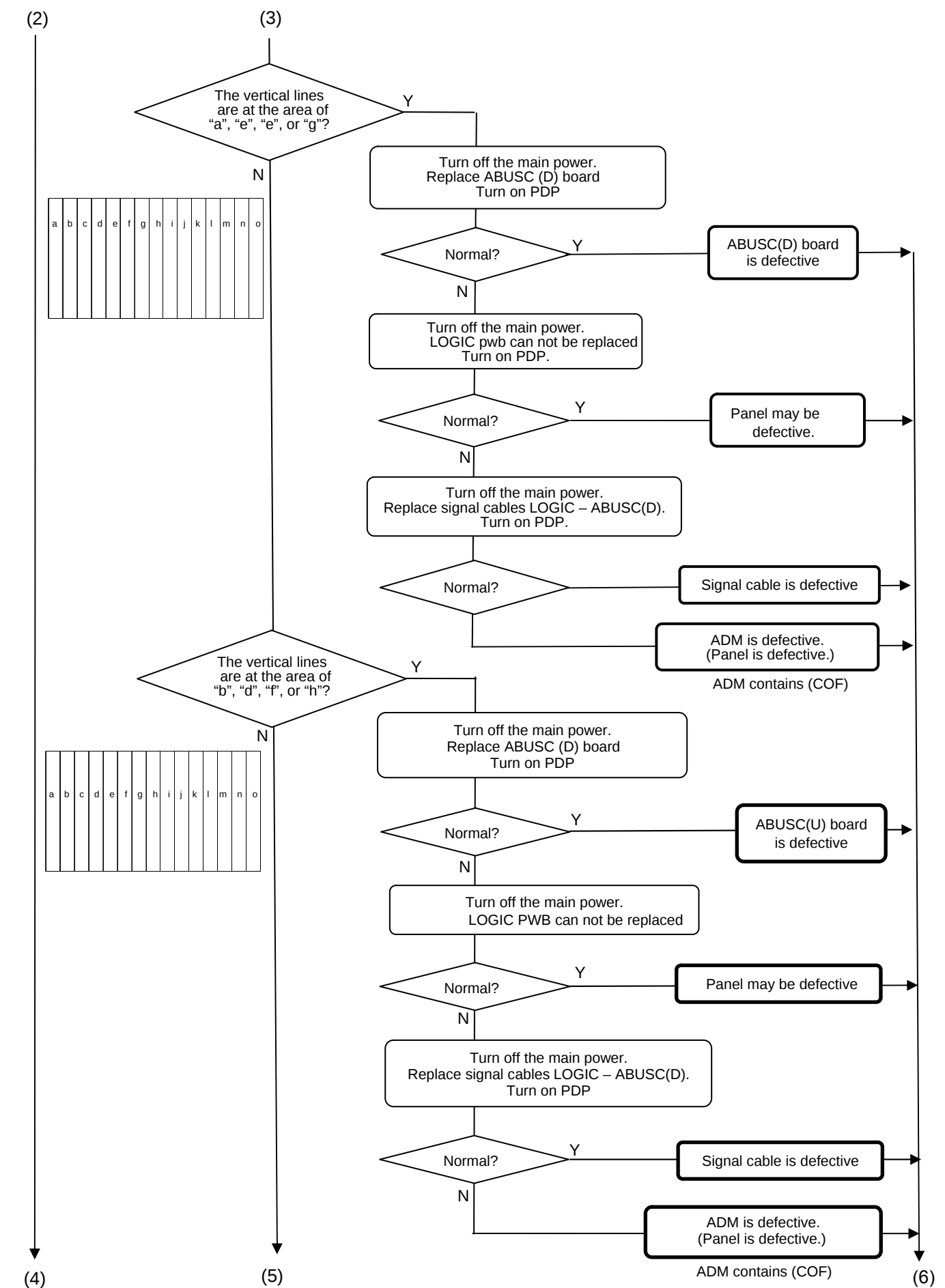
## 4.6.2"Vertical line/Vertical bar" failure analysis procedure



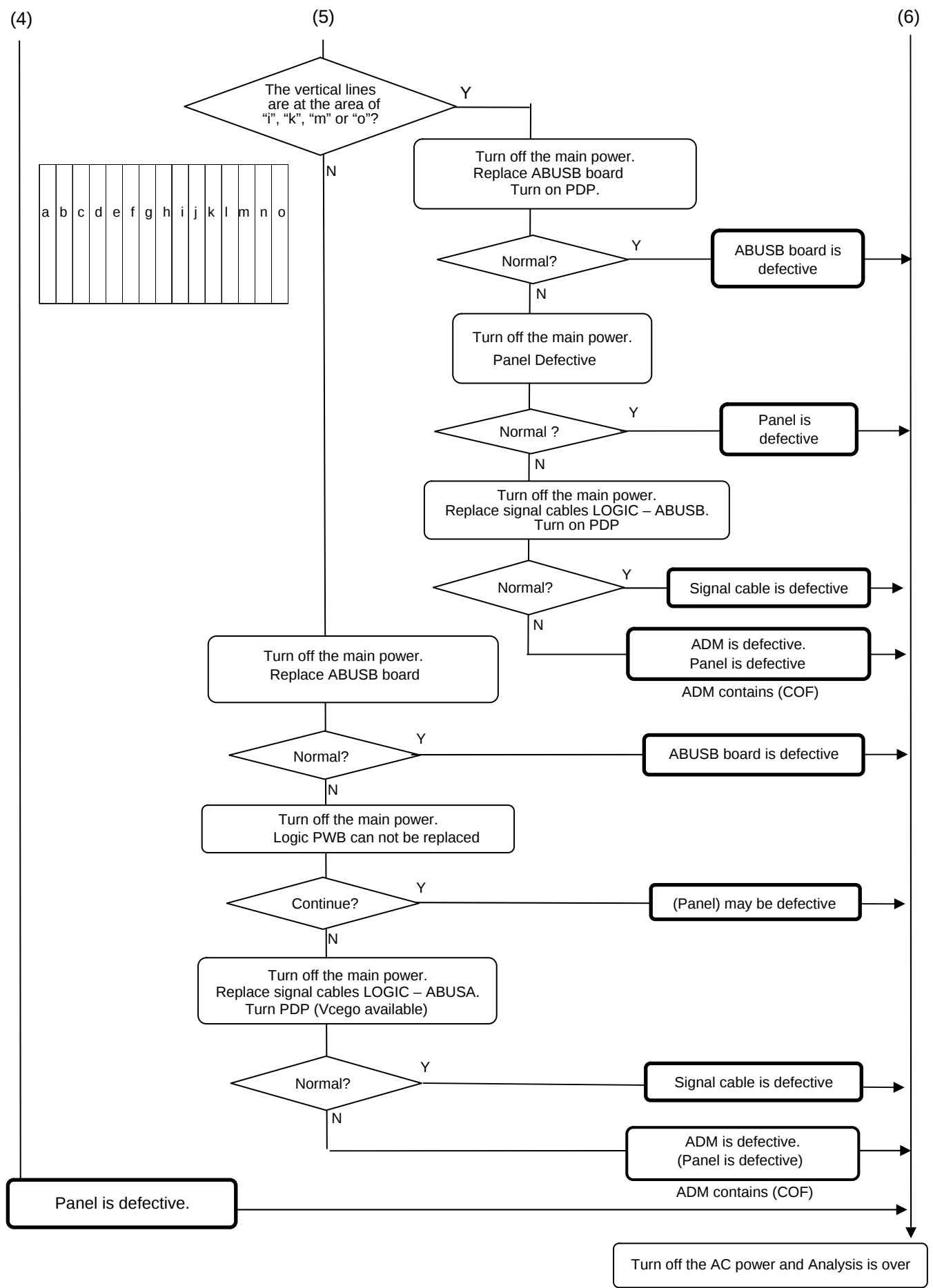
TROUBLESHOOTING THE 50AF1 PANEL



TROUBLESHOOTING THE 50AF1 PANEL

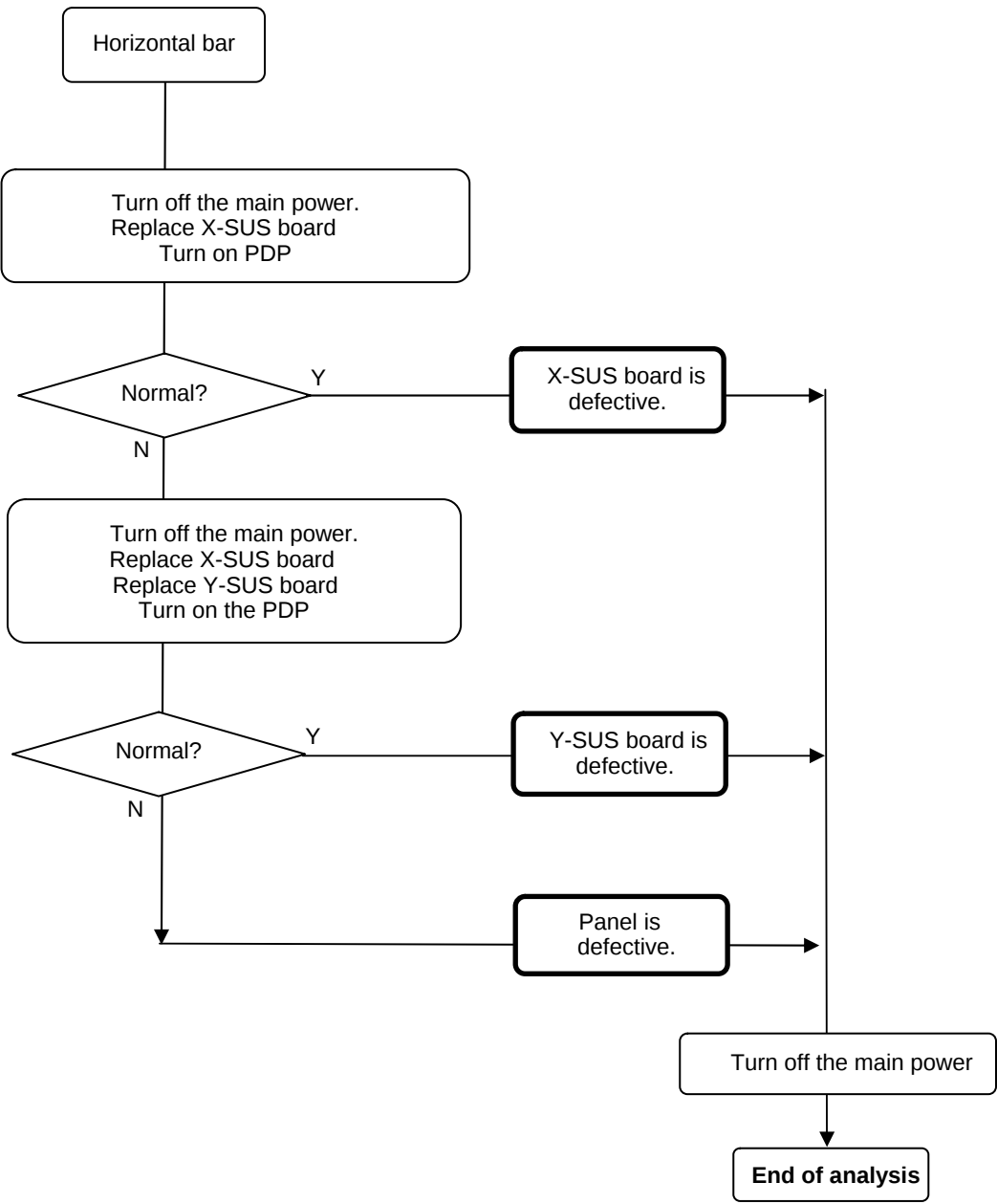


TROUBLESHOOTING THE 50AF1 PANEL

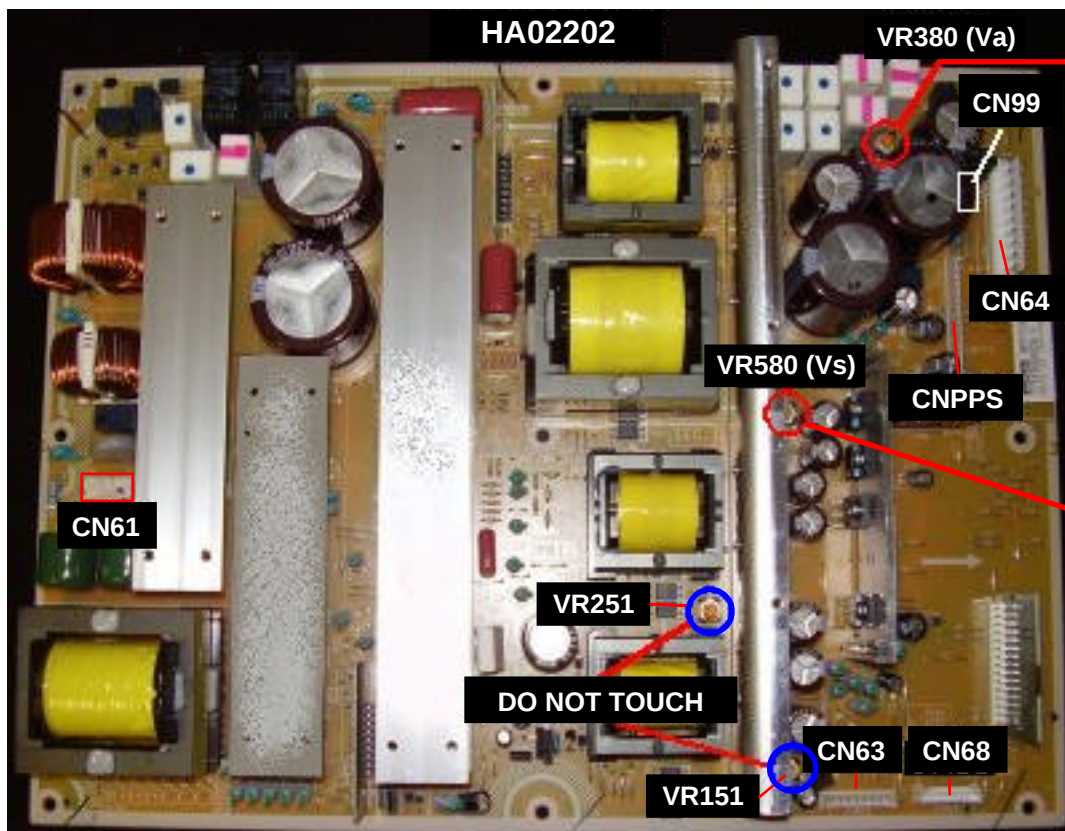


TROUBLESHOOTING THE 50AF1 PANEL

4.6.3 "Horizontal Bar" Problem analysis procedure



If it becomes necessary to replace the Power Supply PWB HA02202, the Vs and Va voltage pots MUST be placed in the CENTER of their rotation. Adjustments will be made Automatically.



**VR380**  
Va Adj Center the Pot

CN99  
Pin 1 Va  
Pin 2 Vs  
Pin 3 Gnd

Heat Run Full White  
1 Minute before Adjustment

**VR580**  
Vs Adj Center the Pot

The Logic PWB will make the appropriate Vs/Va adjustments shortly after power on.

*If the pots VR251 or VR151 are accidentally moved, please read below.*

VR151 should be adjusted to the point when CNPPS connector Pin 1, 2 or 3 voltage is 5.65 V (+/-0.25V).

VR251 should be adjusted at the point when CNPPS connector Pin 13, 14 or 15 voltage is 15 V (+/- 0.5).

CH 2

**HITACHI**