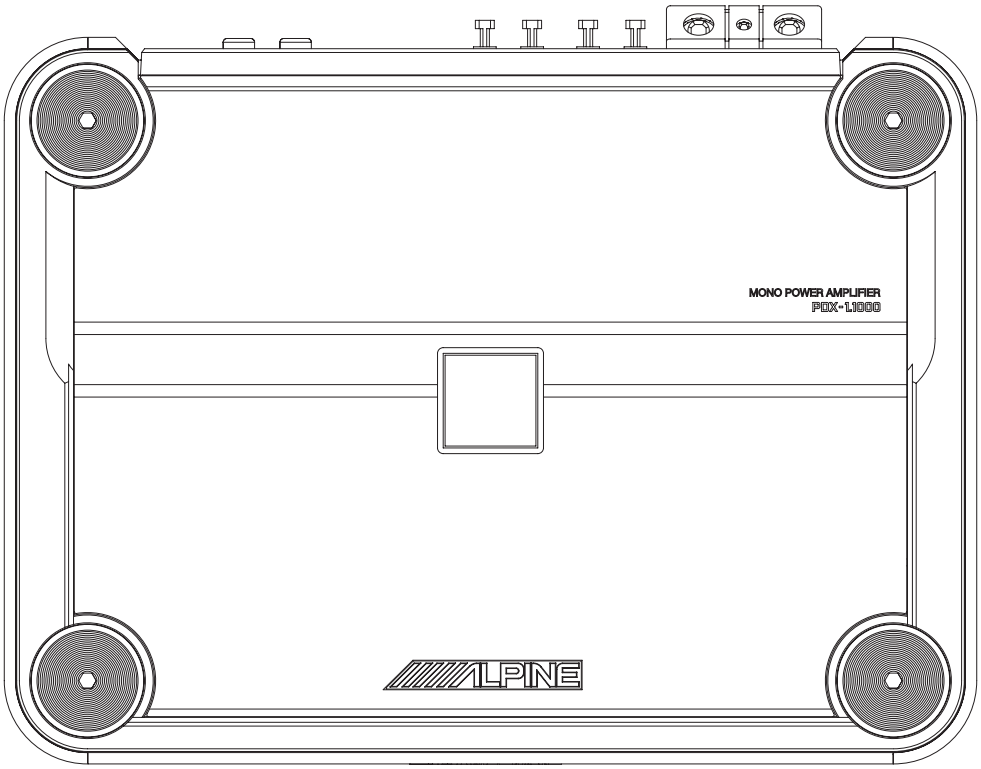
ALPINE

SERVICE MANUAL

MONO POWER AMPLIFIER

Caution : The part marked with ⚠ is generating a high voltage, so care will be necessary when working.



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A06008

PDX-1.1000

<Cautions for Safe Repair Work>

The following cautions will prevent accidents in the workplace and will ensure safe products.
*The symbols indicate caution is needed to prevent injuries and damage to property.
The symbols and their meanings follow.

Warning	If you ignore this symbol and handle the product incorrectly or unsafely, serious injury or death may result.
Caution	If you ignore this symbol and handle the product incorrectly or unsafely, injury or only material damage may result.

*The following symbols indicate two levels of cautions.

	When you see this symbol, you have to be very careful.
	When you see this symbol, you have to follow the instructions there.

Warning

Do not look squarely into the laser light coming from the pickup. You may loose you sight.	**Fuse Caution** Always use a designated fuse. Use of an incorrect fuse may result in a fire.

Caution

Do not allow wiring to be caught in the screw/chassis. If wiring is caught in the screw/chassis, it may cause a short circuit, resulting in a fire.	**Battery Caution** Use the designated battery. Confirm the correct polarity and seat of the battery. An incorrect battery or an improperly connected or seated battery may result in a fire.
High Temperature Caution Touching the heat sink may cause severe burns.	**Designated Parts Caution** Look up the part list and ensure that only designated parts are used to prevent problems or accidents.
Reverse Power Supply Connections or Misconnections Caution Reverse power supply connections or misconnections may cause ignition problems and smoke may result.	**Wiring Caution** Ensure that the wiring is correct when rewiring to prevent problems with ignition/breakdown.
Soldering Caution Hot solder from solder splash may cause severe burns.	**Wear Gloves** Wear gloves to prevent electrical shocks or injury from the end face of the metal.

Contents

NOTE : Due to continuing product improvement, specifications and designs are subject to change without notice.

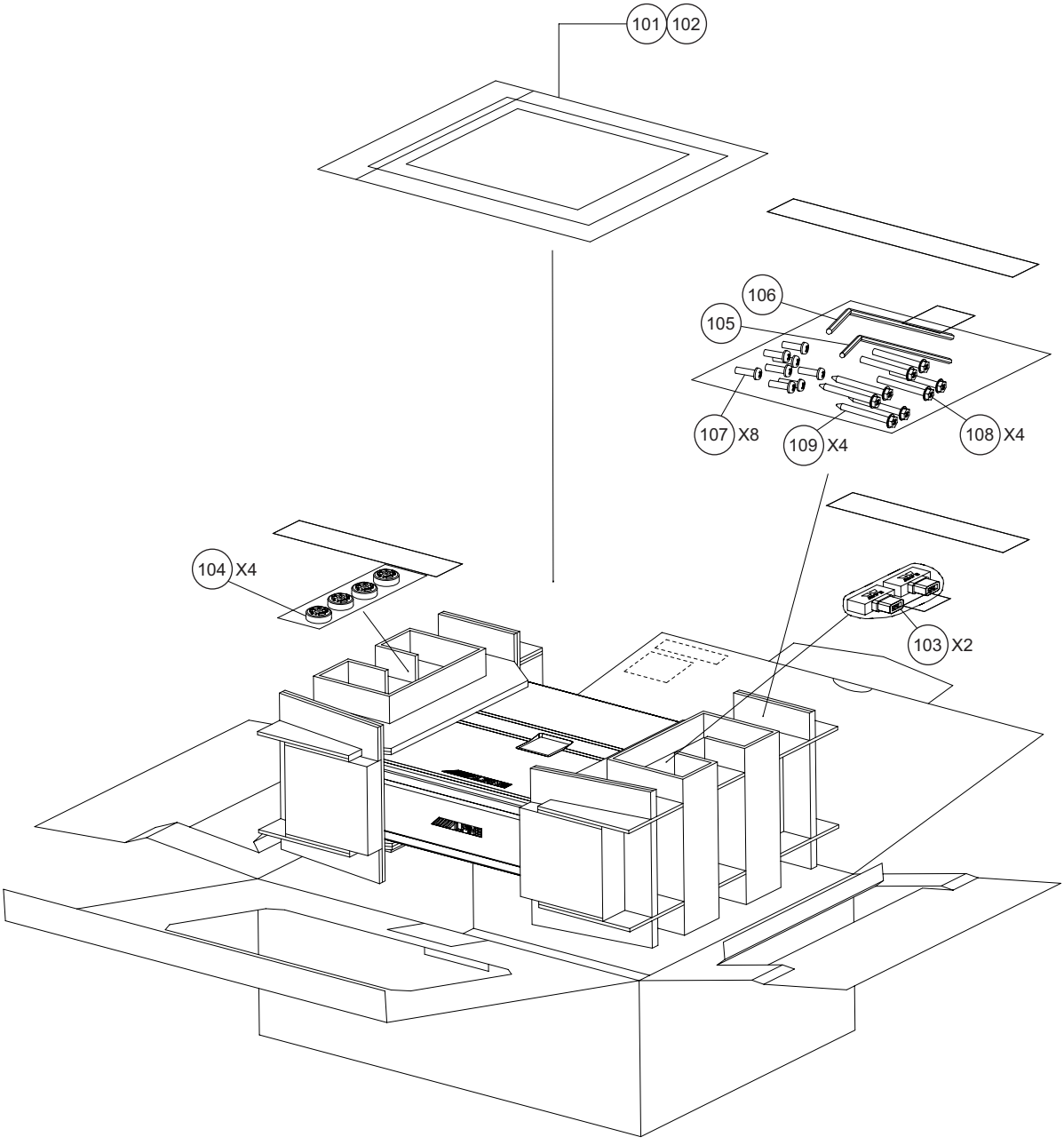
Packing Assembly Parts List

Symbol No.	Part No.	Description
#1 101	68-05946Z01	MANUAL,OWNER'S(AO)
$1 101	68-05946Z02	MANUAL,OWNER'S-GO
%1 101	68-05946Z02	MANUAL,OWNER'S-GO
&1 101	68-05946Z66	O/M AOCH
$1 102	68-05946Z03	MANUAL,OWNER'S-IGS
103	09E39816S01	CONN,PLUG 2P
104	42E39219S01	JOINT,TOP

Symbol No.	Part No.	Description
105	03E36691S01	WRENCH,2X2.3
106	03E36692S01	WRENCH,4X4.6
107	03E39493S01	SCR,M2.6X14(P)(WHT)
108	03E39500S01	SCR,M4X36(WSP)(BLK)
109	03E39508S01	SCR,M4X40(WP)(BLK)

NOTE : #1 : For North American Model Only, $1 : For European Model Only, %1 : For General Foreign Model Only,
&1 : For Chinese Model Only, Others : Common.

Packing Method View



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Specifications

Power Output	(1) 20Hz, 4ohm, 1.0% T.H.D. (14.4V)	1000W
	100Hz, 4ohm, 1.0% T.H.D. (14.4V)	1000W
	(2) 20Hz, 2ohm, 1.0% T.H.D. (14.4V)	1000W
	100Hz, 2ohm, 1.0% T.H.D. (14.4V)	1000W
T.H.D. (100Hz, 400W/ 4ohm (14.4V))		1.0%
Residual Noise (Input Short)		20mV
S/N Ratio (Ref.Output 1000W/ 4ohm, Input Short)		80dB
Frequency Response (Ref.Output 1W/ 4ohm, Ref.Frequency 100Hz)		20Hz : -0.5±2dB 200Hz : -3.5±2dB
Output Offset Voltage (No Signal)		±150mV
Remote On Voltage (1W Output)		6.4±1V
Current Drain	(1) No Signal	3.0A
	(2) 10% T.H.D., 2ohm Load	150A
	(3) Remote Current Drain	0.27±0.2mA
	(4) Back Up Current Drain	1.2mA
Input Sensitivity (Ref.Output 1000W/ 4ohm, 100Hz) (Input sensitive volume position : MAX)		
	Input level switch position : 0.1Vrms~1.0Vrms	125mV±3dB
	Input level switch position : 1.0Vrms~8.0Vrms	1000mV±3dB
SUB-SONIC Filter (Input 100Hz, Ref.Output 1W/ 4ohm)		
	SUB-SONIC Filter switch position : 15Hz	-4.0dB±2dB
	SUB-SONIC Filter switch position : 30Hz	-3.4dB±2dB
Pre-Out Level at 1.0V Input		1.0V±3dB
Input Impedance (Reference)		29.2kohm±10%
Fuse Requirement		20A(Peak) x 4 (For Battery Line)
Power Source		DC14.4V (11 to 16V)
Dimensions (W x H x D)		257 x 62 x 192mm
Weight		3.41kg

NOTE : Due to Continuing product improvement, specifications and designs are subject to change without notice.

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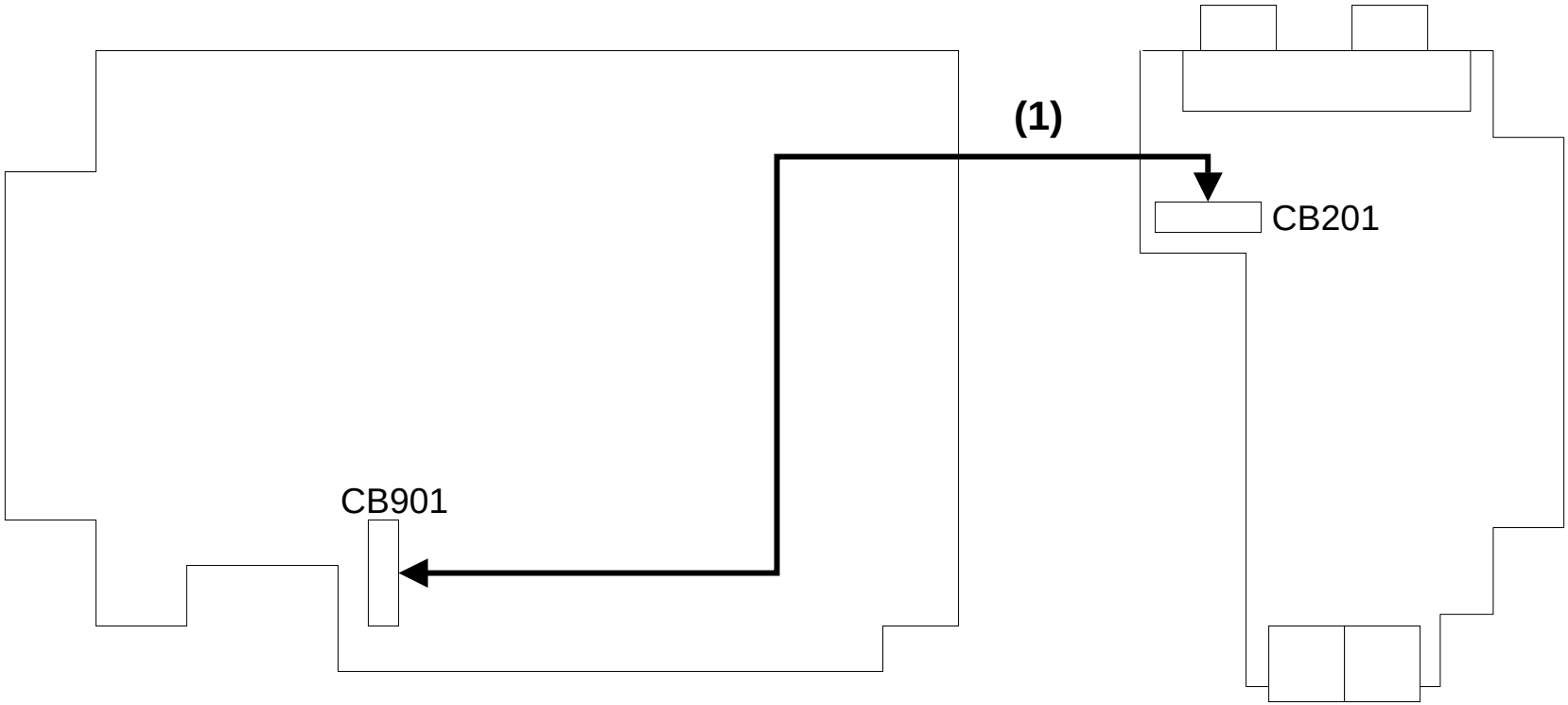
Extension Cable

*Always connect the Extension Cable when making checks of voltage and repair.



(1) 01E35763S01

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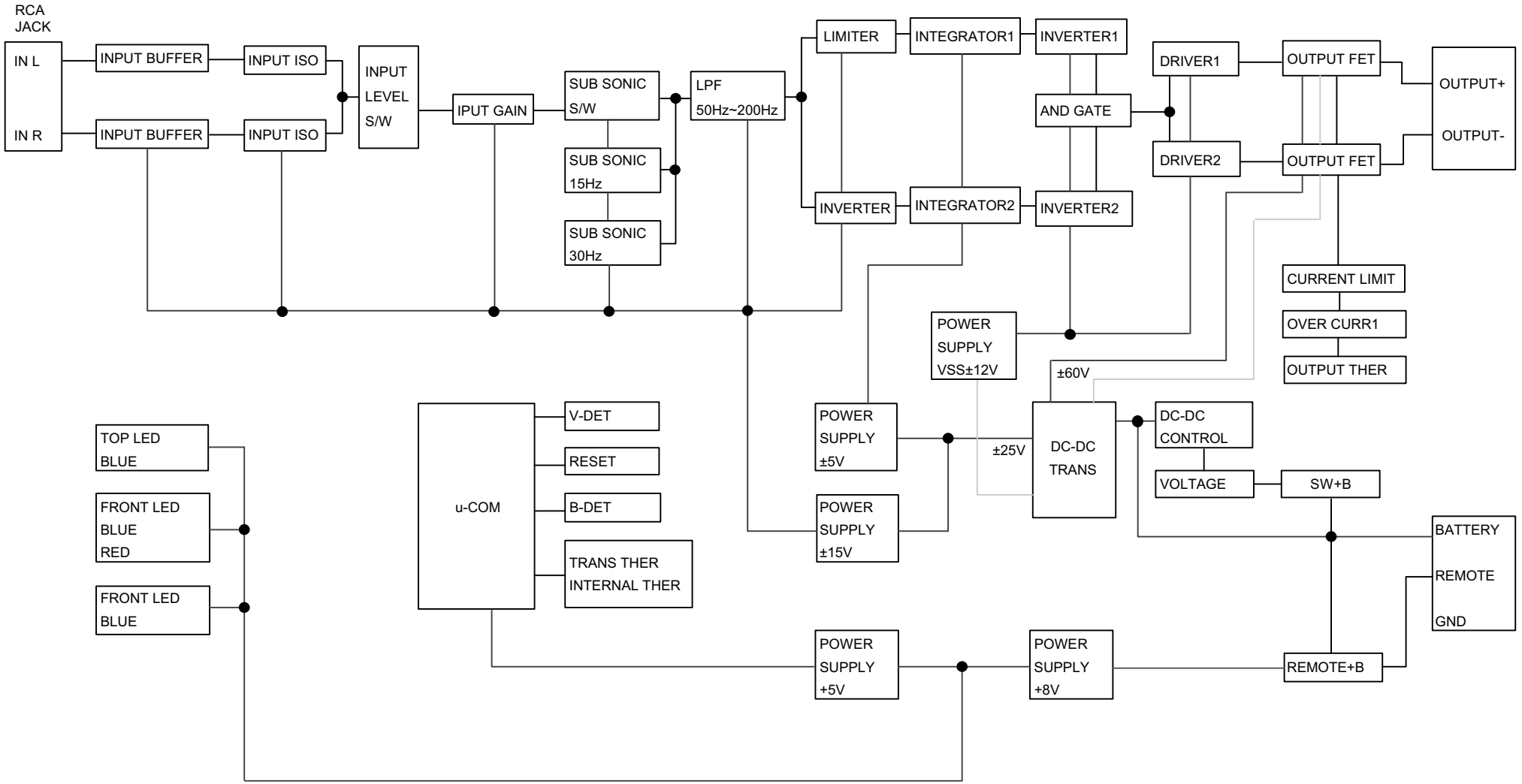
Block Diagram



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Parts Layout on P.W.Boards and Wiring Diagram (1/3)

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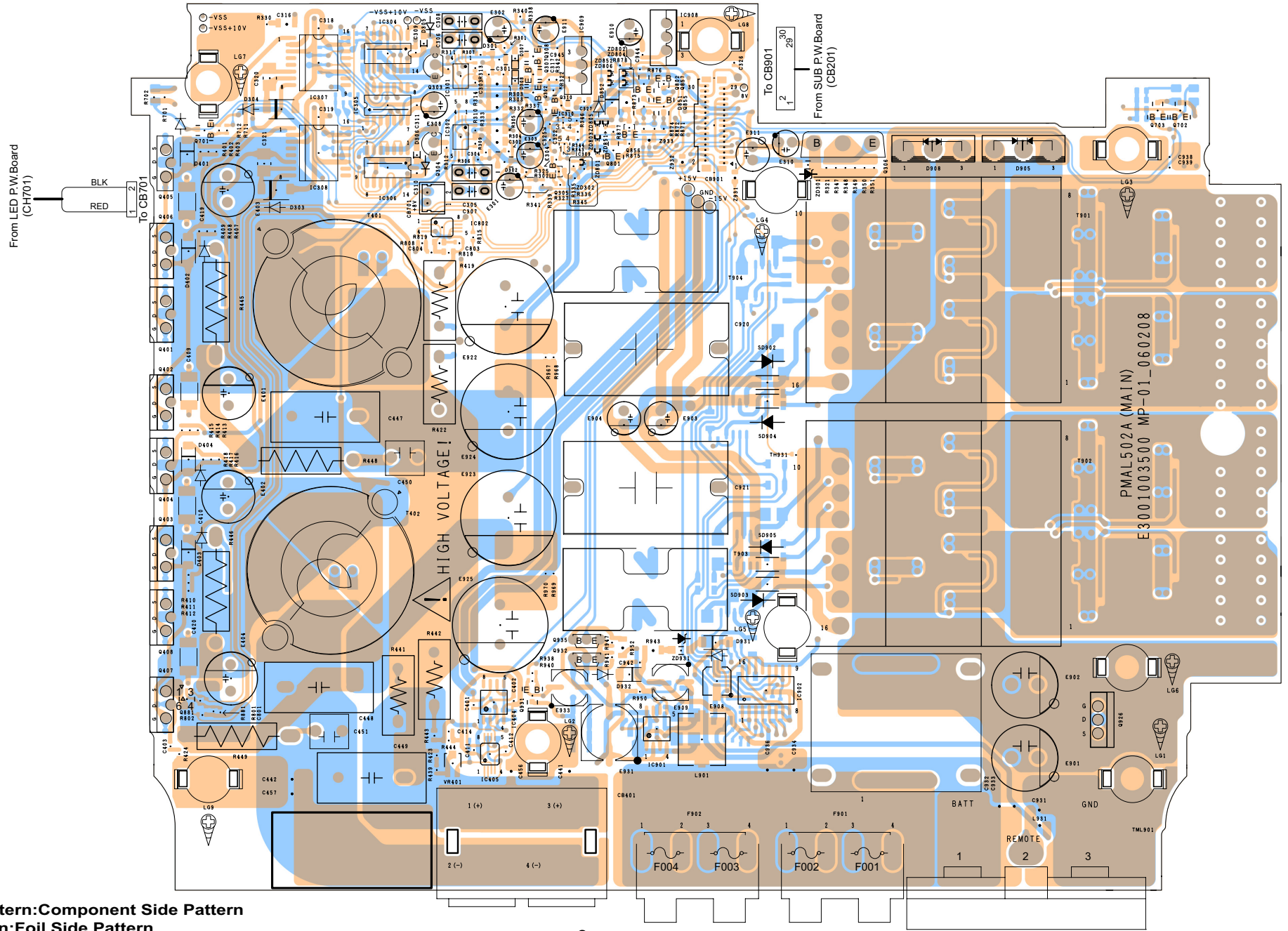
MAIN P.W.Board (Component Side View)

Caution:The part marked with ⚠ is generating a high voltage, so care will be necessary when working.



Orange Color Pattern:Component Side Pattern
Blue Color Pattern:Foil Side Pattern

Parts Layout on P.W.Boards and Wiring Diagram (2/3)

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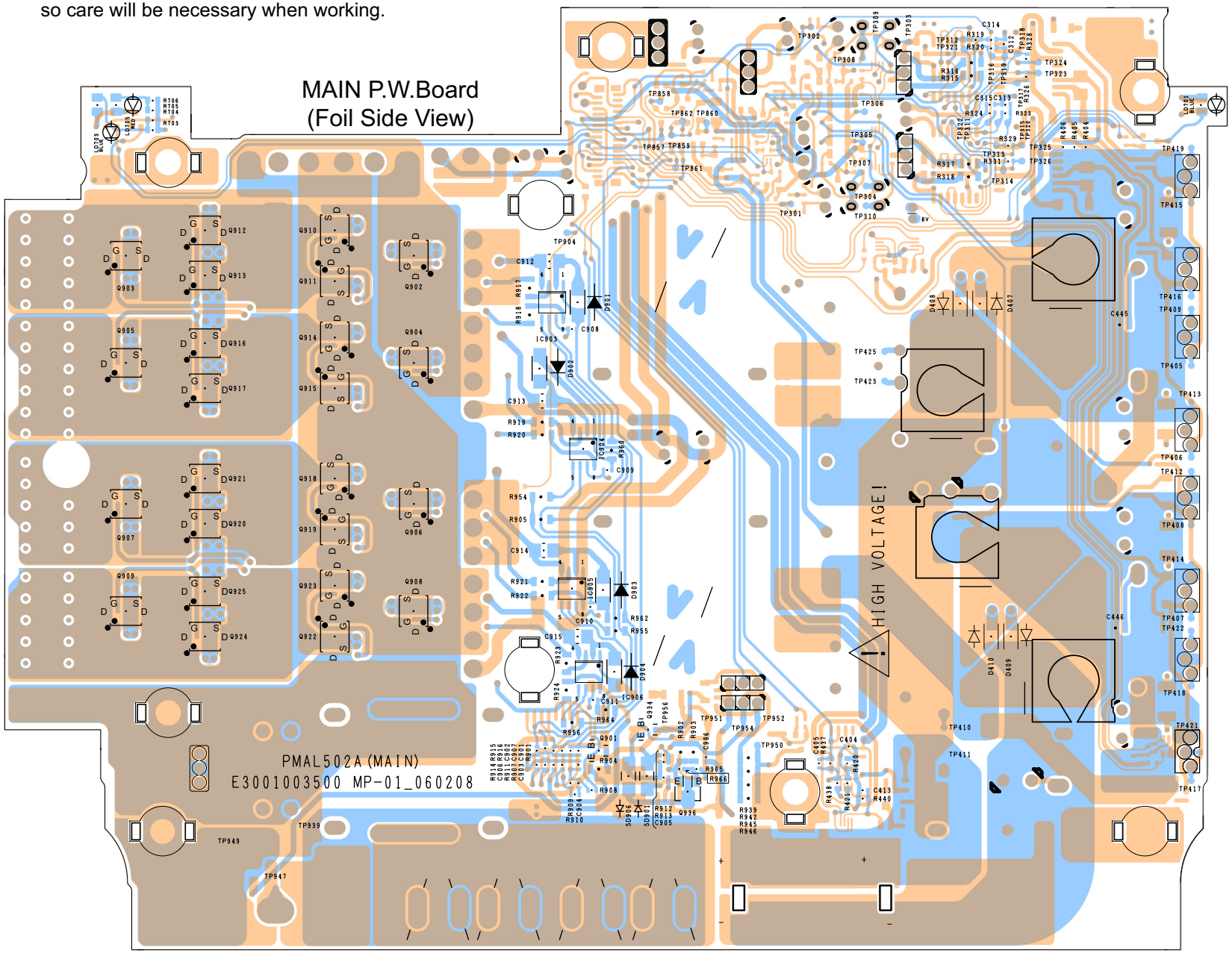
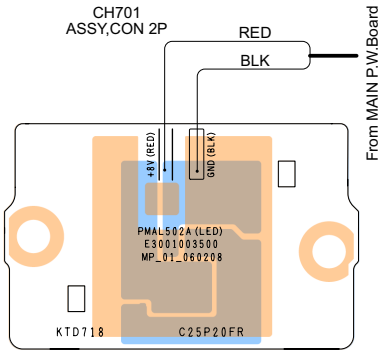
Caution:The part marked with ⚠ is generating a high voltage, so care will be necessary when working.

MAIN P.W.Board
(Foil Side View)

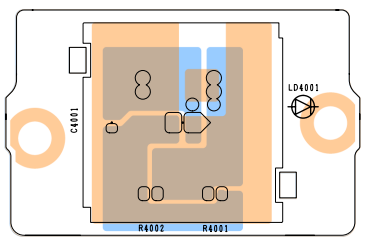


Orange Color Pattern:Component Side Pattern
Blue Color Pattern:Foil Side Pattern

Parts Layout on P.W.Boards and Wiring Diagram (3/3)

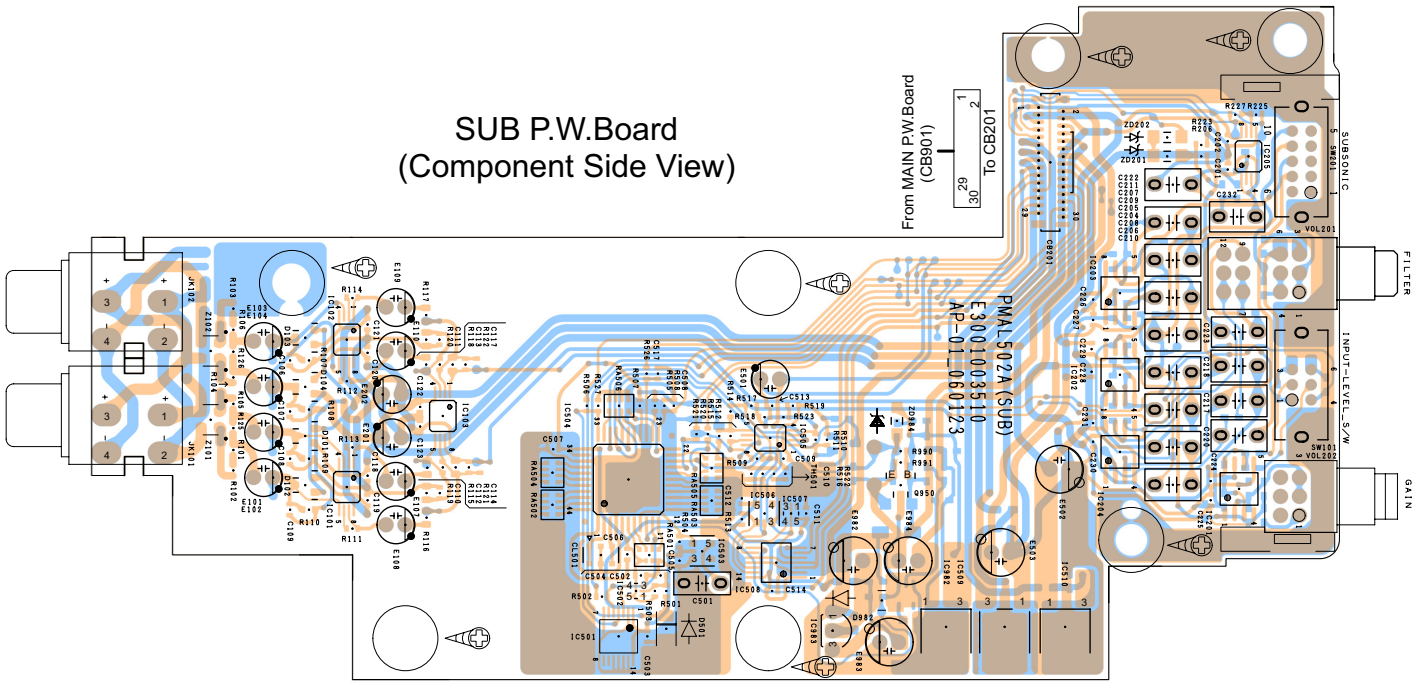


LED P.W.Board
(Component Side View)

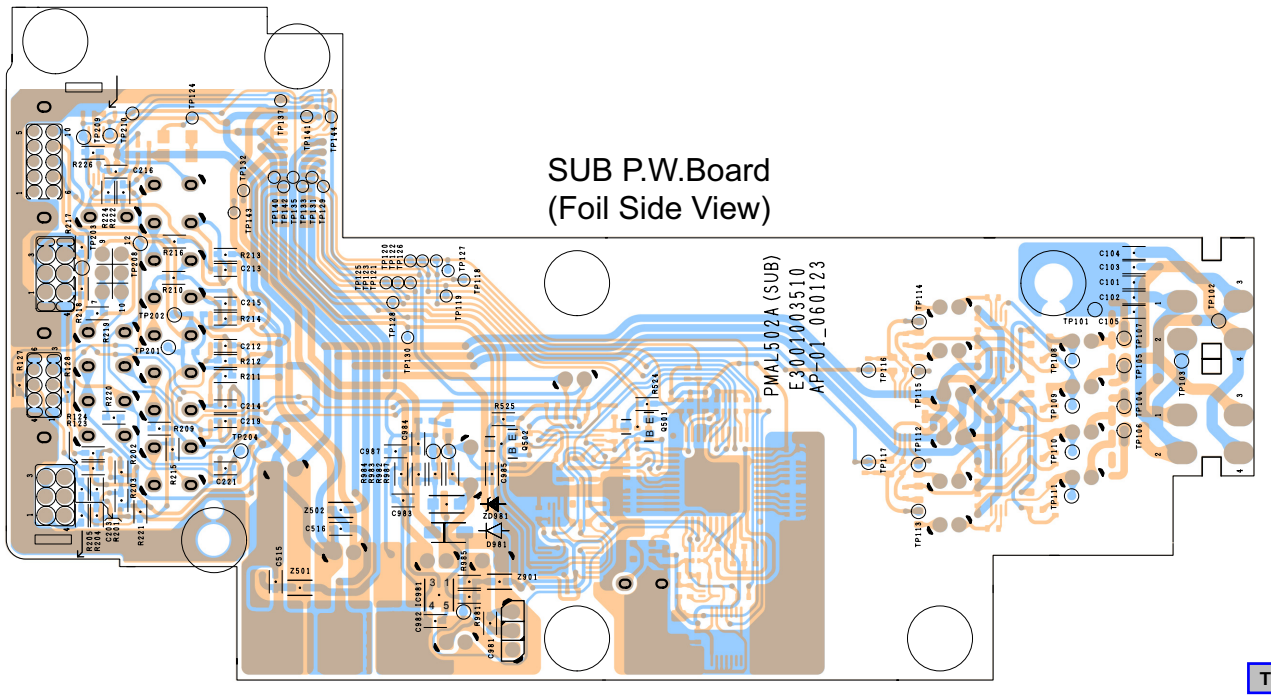


LED P.W.Board
(Foil Side View)

SUB P.W.Board
(Component Side View)



SUB P.W.Board
(Foil Side View)



Orange Color Pattern:Component Side Pattern
Blue Color Pattern:Foil Side Pattern

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Schematic Diagram(1/3)

Caution:The part marked with ⚠ is generating a high voltage, so care will be necessary when working.

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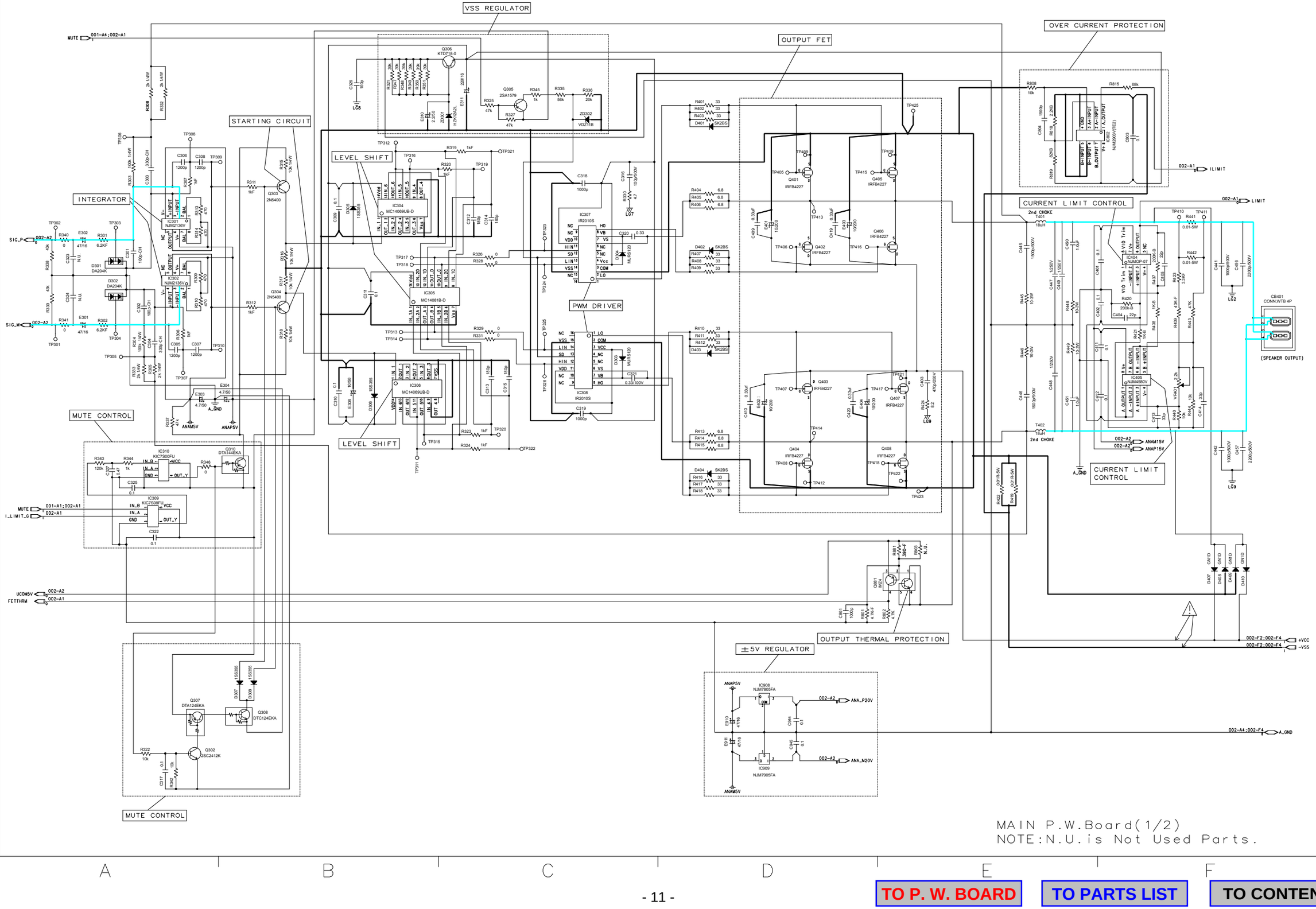

TO P. W. BOARD
TO PARTS LIST
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Schematic Diagram(2/3)

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VOLTAGE DETECT

LED CONTROL

REMOTE CONTROL

SW +B CONTROL

SURGE PREVENTION

DC/DC CONVERTER CONTROL

POWER SUPPLY FET

HIGH DC/DC CONVERTER DRIVER

SWITCHING CONTROL IC(OSC)

Caution:The part marked with ⚠ is generating a high voltage, so care will be necessary when working.

MAIN P.W.Board(2/2)
NOTE:N.U.is Not Used Parts.

TO P. W. BOARD
TO PARTS LIST
TO CONTENTS

Schematic Diagram(3/3)

PDX-1.1000

INPUT BUFFER

INPUT BUFFER

1.INPUT L+
2.INPUT L-
3.INPUT R+
4.INPUT R-

IC101,102,103
1.A OUTPUT
2.A -INPUT
3.A +INPUT
4.V-
5.B +INPUT
6.B -INPUT
7.B OUTPUT
8.V+

GAIN CONTROL

SUBSONIC FILTER 15Hz/30Hz

SW201 SSAF023NB
Off 15Hz 30Hz
(SUBSONIC)

30Hz

15Hz

GAIN

(INPUT-LEVEL-S/W)

ISOLATOR

LPF 50～200Hz

(FILTER)

LPF/CURRENT LIMIT CONTROL

B-DETECT CONTROL

u-COM REGULATOR

OVER CURRENT PROTECTION CONTROL

TRANS/u-COM THERMAL CONTROL

OVER-CURRENT PROTECTION CONTROL

OP AMP REGULATOR

IC505
1.A OUTPUT 8.V+
2.A -INPUT 7.B OUTPUT
3.A +INPUT 6.B -INPUT
4.GND 5.B +INPUT

SUB P.W.Board
NOTE:N.U.is Not Used Parts.

TO P. W. BOARD | TO PARTS LIST | TO CONTENTS

Terminal Voltage of IC/TR

REF NO.	1	2	3	4	5	6	7	8
IC101	3.3mV	3.8mV	3.8mV	-15.5V	3.7mV	2.9mV	3.3mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC102	4.2mV	2.4mV	0.8mV	-15.4V	8.5mV	5.1mV	3.3mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC103	0.6mV	2.1mV	2.3mV	-15.3V	2.3mV	3.9mV	0.7mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC201	0.1mV	0.6mV	1.5mV	-15.3V	0.8mV	1.4mV	1.4mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC202	5.2mV	5.0mV	1.4mV	-15.3V	1.7mV	2.6mV	2.6mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC203	4.3mV	4.4mV	2.0mV	-15.3V	2.4mV	1.9mV	1.9mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC204	1.9mV	1.9mV	1.2mV	-15.3V	2.8mV	3.4mV	3.4mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC205	3.9mV	2.5mV	1.5mV	-15.3V	1.5mV	3.0mV	3.0mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC301	5.0V	17.7mV	1.6mV	-5.1V	NC	-4.3V	5.0V	5.0V

REF NO.	1	2	3	4	5	6	7	8
IC302	5.0V	22.5mV	1.6mV	-5.1V	NC	-4.3V	5.0V	5.0V

REF NO.	1	2	3	4	5	6	7
IC304	-54.6V	-54.7V	-54.7V	-54.4V	-54.4V	-54.6V	-60.4V
	8	9	10	11	12	13	14
	-48.7V	-60.4V	-54.7V	-54.5V	-54.5V	-54.6V	-48.7V

REF NO.	1	2	3	4	5	6	7
IC305	-54.8V	-54.7V	-55V	-54.8V	-54.5V	-54.5V	-54.8V
	8	9	10	11	12	13	14
	-54.6V	-55.1V	-55.1V	-54.8V	-54.8V	-54.7V	-55.1V

TO SCHEMATIC TO CONTENTS

REF NO.	1	2	3	4	5	6	7
IC306	-54.6V	-54.7V	-54.7V	-54.4V	-54.4V	-54.6V	-60.4V
	8	9	10	11	12	13	14
	-48.7V	-60.4V	-54.7V	-54.5V	-54.5V	-54.6V	-48.7V

REF NO.	1	2	3	4	5	6	7	8
IC307	-55.6V	-60.4V	-48.7V	NC	NC	5.9V	16.56V	12.69V
	9	10	11	12	13	14	15	16
	NC	NC	-48.7V	-55V	-60.2V	-54.8V	-60.4V	NC

REF NO.	1	2	3	4	5	6	7	8
IC308	-55.6V	-60.4V	-48.7V	NC	NC	5.9V	16.56V	12.69V
	9	10	11	12	13	14	15	16
	NC	NC	-48.6V	-55.1V	-60.3V	-54.8V	-60.3V	NC

REF NO.	1	2	3	4	5
IC309	4.92V	5.01V	2.6mV	5.08V	5.08V

REF NO.	1	2	3	4	5
IC310	5.03V	5.07V	2.5mV	9.5mV	5.08V

REF NO.	1	2	3	4	5	6	7	8
IC404	NC	1.9mV	1.9mV	-15.2V	NC	5.5mV	14.9V	NC

REF NO.	1	2	3	4	5	6	7	8
IC405	1.9mV	1.10mV	2.0mV	-15.2V	1.9mV	1.9mV	1.9mV	14.9V

REF NO.	1	2	3	4	5	6	7
IC501	5.03V	4.8mV	4.7mV	5.4V	5.01V	4.8mV	4.7mV
	8	9	10	11	12	13	14
	5.03V	5.03V	4.7mV	4.7mV	4.8mV	4.7mV	5.03V

REF NO.	1	2	3	4	5
IC502	1.1V	75mV	5.4mV	5.03V	5.03V

REF NO.	1	2	3	4	5
IC503	5.02V	5.03V	5.4mV	80mV	2.7V

TO SCHEMATIC TO CONTENTS

REF NO.	1	2	3	4	5	6	7	8	9
IC504	6.0mV	2.1V	2.23V	6.0mV	5.03V	5.03V	5.03V	5.03V	5.03V
	10	11	12	13	14	15	16	17	18
	5.01V	6.6mV	6.6mV	NC	6.6mV	6.0mV	6.1mV	NC	4.98V
	19	20	21	22	23	24	25	26	27
	4.98V	4.97V	6.0mV	6.1mV	4.58V	5.03V	8.2mV	5.03V	6.1mV
	28	29	30	31	32	33	34	35	36
	6.0mV	6.7mV	5.03V	5.03V	4.97V	4.92V	5.03V	5.03V	6.1mV
	37	38	39	40	41	42	43	44	
	6.6mV	6.6mV	6.6mV	6.6mV	0.23V	0.1V	78mV	4.98V	

REF NO.	1	2	3	4	5	6	7	8
IC505	102mV	4.6V	2.3V	5.3mV	2.3V	4.11V	98.4mV	5.0V

REF NO.	1	2	3	4	5
IC506	5.02V	4.97V	5.4mV	1.2V	2.6V

REF NO.	1	2	3	4	5
IC507	1.33V	4.92V	5.4mV	5.4mV	5.03V

REF NO.	1	2	3	4	5	6	7
IC508	5.03V	5.0V	4.97V	4.4V	21.1mV	4.7mV	4.7mV
	8	9	10	11	12	13	14
	5.0V	5.03V	4.97V	5.03V	4.98V	5.03V	5.03V

REF NO.	1	2	3
IC509	0.8mV	-24.53V	-15.26V

REF NO.	1	2	3
IC510	14.89V	0.8mV	24.58V

REF NO.	1	2	3	4	5	6	7	8
IC802	-60.1V	-60.8V	-55.6V	-60.8V	1.1mV	1.1mV	NC	-55.1V

REF NO.	1	2	3	4	5	6	7	8
IC901	3.3mV	3.8mV	3.8mV	-15.5V	3.7mV	2.9mV	3.3mV	14.9V

REF NO.	1	2	3	4	5	6	7	8
IC902	0.4mV	5.04V	93.3mV	1.8mV	1.71V	3.17V	0.3mV	15.04V
	9	10	11	12	13	14	15	16
	6.5V	6.5V	15.04V	15.04V	5.06V	5.06V	5.06V	0.2mV

REF NO.	1	2	3	4	5	6	7	8
IC903	14.97V	14.52V	6.65V	7.19V	6.48V	6.48V	1.2mV	6.65V

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REF NO.	1	2	3	4	5	6	7	8
IC904	14.97V	14.52V	6.65V	7.19V	6.48V	6.48V	1.2mV	6.65V

REF NO.	1	2	3	4	5	6	7	8
IC905	14.97V	14.52V	6.65V	7.19V	6.48V	6.48V	1.2mV	6.65V

REF NO.	1	2	3	4	5	6	7	8
IC906	14.97V	14.52V	6.65V	7.19V	6.48V	6.48V	1.2mV	6.65V

REF NO.	1	2	3
IC908	5.08V	0.8mV	24.59V

REF NO.	1	2	3
IC909	1.6mV	-24.55V	-5.13V

REF NO.	1	2	3	4	5
IC981	5.03V	7.95V	5.3mV	1.0V	3.8V

REF NO.	1	2	3
IC982	7.9V	5.3mV	14.25V

REF NO.	1	2	3
IC983	5.3mV	7.21V	5.03V

TO SCHEMATIC TO CONTENTS

REF NO.	E	B	C
Q302	2.2mV	6.8mV	5.06V
Q303	-1.36V	-1.98V	-54V
Q304	-1.36V	-1.98V	-54.2V
Q305	5.08V	4.99V	-59.9V
Q306	-48.7V	-60.2V	2.3mV
Q307	5.08V	5.06V	-5.09V
Q308	-5.11V	-5.09V	-0.65V
Q310	5.08V	11.3mV	5.01V
Q501	6.02mV	99.3mV	5.03V
Q502	6.2mV	103mV	5.03V
Q701	5.5mV	0.768V	82.6mV
Q702	4.8mV	0.948V	43.5mV
Q703	4.8mV	6.1mV	6.49V
Q801	-60.4V	-59.9V	-59.7V
Q802	2.3mV	0.384V	0.647V
Q855	2.3mV	2.6mV	4.58V
Q856	-60.4V	-59.4V	-60.4V
Q857	2.3mV	0.651V	16.3mV
Q901	5.05V	4.82V	1.8mV
Q931	1.1mV	0.74V	127mV
Q932	14.37V	13.63V	14.22V
Q934	0.2mV	0.77V	250mV
Q935	14.37V	13.69V	14.22V
Q936	14.32V	10.55V	7.7V
Q950	6.1mV	6.1mV	5.03V

REF NO.	G	D	S
Q401	-55.8V	5.85V	-60.4V
Q402	12.98V	60.4V	5.77V
Q403	13.3V	60.4V	5.97V
Q404	-55.8V	5.9V	-60.4V
Q405	-55.8V	5.85V	-60.4V
Q406	12.98V	60.4V	5.77V
Q407	13.3V	60.4V	5.97V
Q408	-55.8V	5.9V	-60.4V
Q902	6.65V	14.39V	7.19V
Q903	6.65V	7.19V	0.2mV
Q904	6.65V	14.39V	7.19V
Q905	6.65V	7.19V	0.2mV
Q906	6.65V	14.39V	7.19V
Q907	6.65V	7.19V	0.2mV
Q908	6.65V	14.39V	7.19V
Q909	6.65V	7.19V	0.2mV
Q910	6.65V	14.39V	7.19V
Q911	6.65V	14.39V	7.19V
Q912	6.65V	7.19V	0.2mV
Q913	6.65V	7.19V	0.2mV
Q914	6.65V	14.39V	7.19V
Q915	6.65V	14.39V	7.19V
Q916	6.65V	7.19V	0.2mV
Q917	6.65V	7.19V	0.2mV
Q918	6.65V	14.39V	7.19V
Q919	6.65V	14.39V	7.19V
Q920	6.65V	7.19V	0.2mV
Q921	6.65V	7.19V	0.2mV
Q922	6.65V	14.39V	7.19V
Q923	6.65V	14.39V	7.19V
Q924	6.65V	7.19V	0.2mV
Q925	6.65V	7.19V	0.2mV
Q926	0.2mV	14.4V	0.2mV

REF NO.	1	2	3	4	5	6
Q881	22.2mV	4.64V	5.03V	4.45V	22.2mV	22.2mV

[Measuring Conditions]

1. Power Supply Voltage : DC 14.4V
2. Measuring Meter : Digital Multi Voltmeter
3. Measuring Point Reference : Between GND
4. Measuring Condition : No Signal Input

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Description of IC Terminal

TMP86M4AUG : IC504

No.	Symbol	I/O	Terminal Description
1	VSS	-	GND connect terminal.
2	XIN	I	Crystal OSC connect terminal.
3	XOUT	O	
4	TEST(GND)	-	GND connect terminal.
5	VDD	-	Power supply terminal. (4.5~5.5V)
6	I2C_SDA(PULL-UP)	-	Pull-up connect terminal.
7	I2C_SCL(PULL-UP)		
8	RESET	I	RESET terminal.
9	BAT_DET	I	BAT-DET terminal.
10	I_LIMIT	I	I_LIMIT input terminal.
11	FAN1(PULL-DOWN)	-	Pull-down connect terminal.
12	FAN2(PULL-DOWN)		
13	NC(PULL-DOWN)		
14	CMD_DOUT (PULL-DOWN)		
15	CMD_DIN(PULL-DOWN)		
16	CMD_CLK (PULL-DOWN)		
17	NC(PULL-DOWN)		
18	POWER_P1	O	Power supply circuit control signal output terminal -1.
19	POWER_P2	O	Power supply circuit control signal output terminal -2.
20	POWER_P3	O	Power supply circuit control signal output terminal -3.
21	FREQ1(PULL-DOWN)	-	Pull-down connect terminal.
22	FREQ2(PULL-DOWN)		
23	VOL_DET	I	VOLT-DET terminal.
24	6dB_DOWN(PULL-UP)	-	Pull-up connect terminal.
25	OUT_THRM	I	Output Thermal detect terminal.
26	AD_KEY(PULL-UP)	-	Pull-up connect terminal.
27	AD_FREQ1 (PULL-DOWN)	-	Pull-down connect terminal.
28	AD_VOLT	I	Voltage signal input terminal.
29	AD_FREQ2 (PULL-DOWN)	-	Pull-down connect terminal.
30	AD_THRM	I	Temperature signal input terminal.
31	AD_THRM_DET	I	Temperature detection input terminal.
32	LED(PULL-DOWN)	-	Pull-down connect terminal.
33	MUTE	O	MUTE output terminal.
34	VAREF	-	Analog reference power supply terminal for A/D converter.
35	AVDD	-	Power supply terminal for A/D converter.
36	AVSS	-	Analog reference GND terminal for A/D converter.
37	VOL_CE(PULL-DOWN)	-	Pull-down connect terminal.
38	NC(PULL-DOWN)		
39	VOL_CL(PULL-DOWN)		
40	VOL_DI(PULL-DOWN)		
41	LCD_CE(PULL-DOWN)		
42	LCD_DI(PULL-DOWN)		
43	LCD_CLK(PULL-DOWN)		
44	LCD_INH(PULL-DOWN)		

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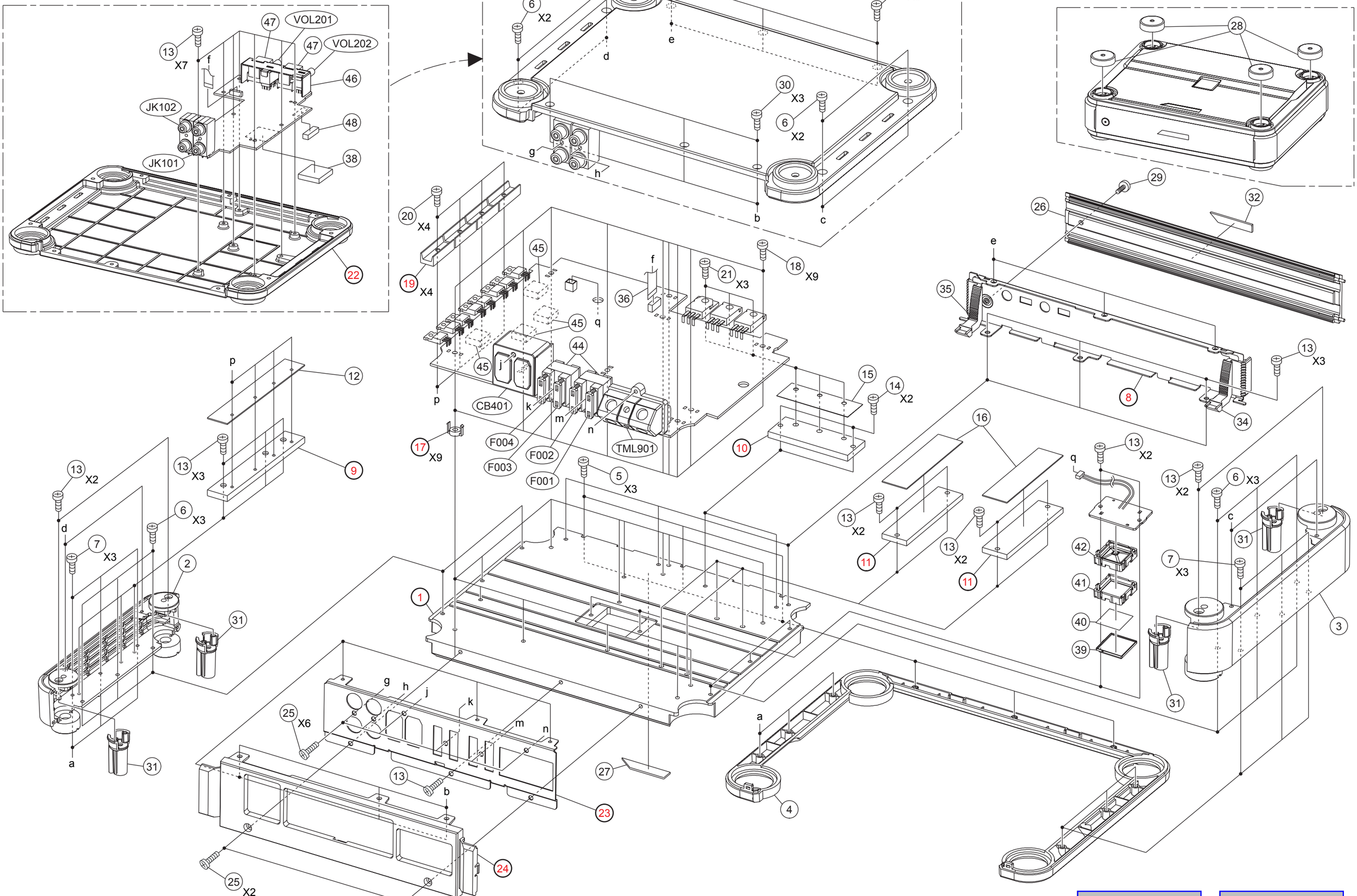
Exploded View (Cabinet)



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About Semi-fixed VR (VR401) of MAIN P.W.Board

1. Semi-fixed VR (VR401) of PDX-1.1000

This VR requires no adjustment at repair. However, follow the procedure below.

1) Check and record the resistance before repair.

2) Measure the resistance again after repairer.

* This is for confirmation when VR is operated erroneously.

If it is operated erroneously, recover the previous resistance.

*Because of Sub PWB's GAIN there are different value of VR401 resistance depend on each product.

2. Checking operation with single PWB

When checking the operation and voltage of single PWB, use a jig (aluminum plate or the like) for heat radiation of components such as “Direct-FET“ that generates high heat.

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