

# **Service** *Manual*

**MODEL:PS 4HA**

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## **1. Function introduction**

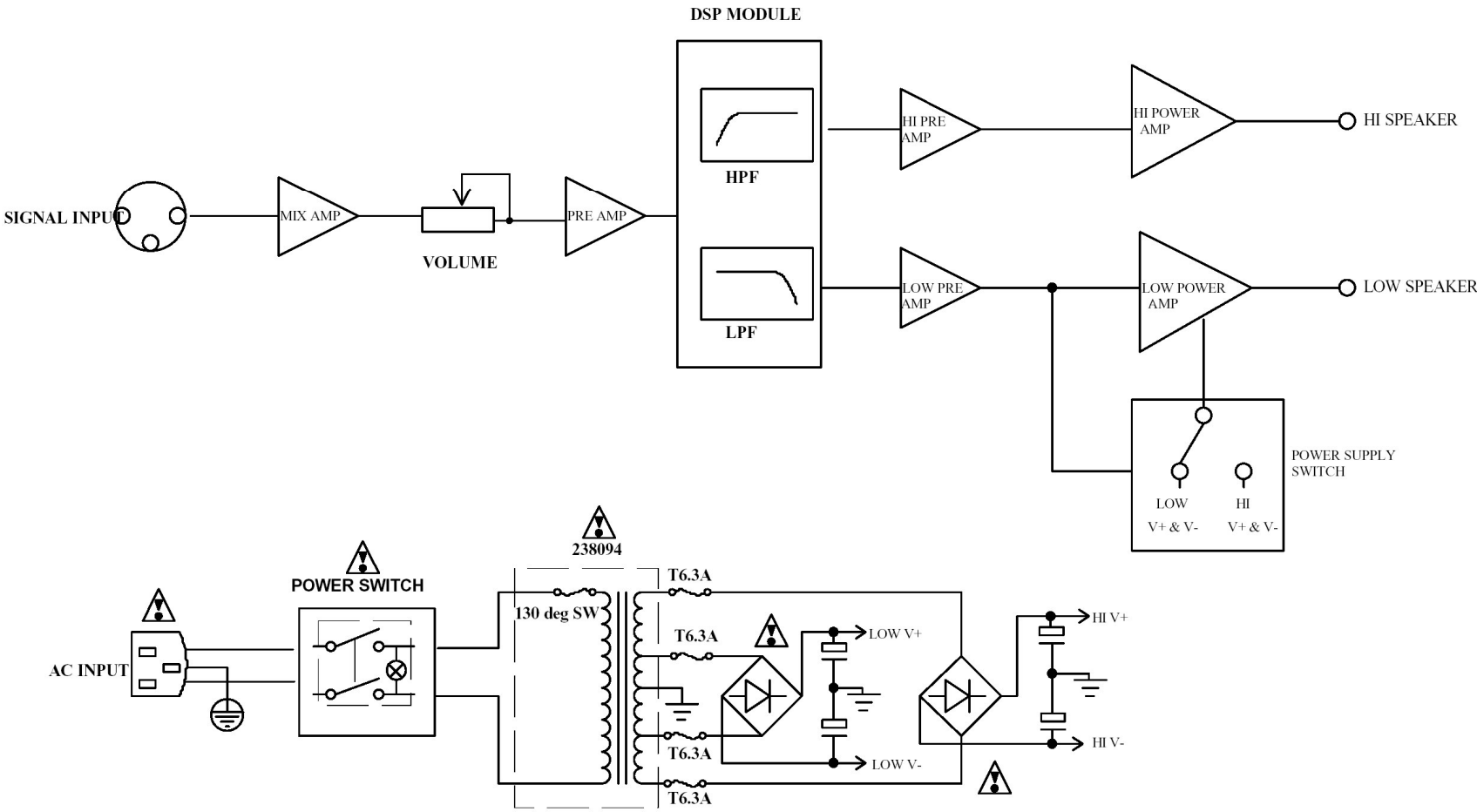
This plastic box speaker is specially designed for performance on stage. The box is made from both PP and 30% plastic material. The special design of handle shows unique Italian style. It contains a bass of 12" 4Ω 1150-300W and a tweeter of 20-30W 8Ω. Its tone quality is articulate.

The PH4HA is suitable all kinds of professional and amateur applications, and it brings you fantastic and unique sound enjoyment!

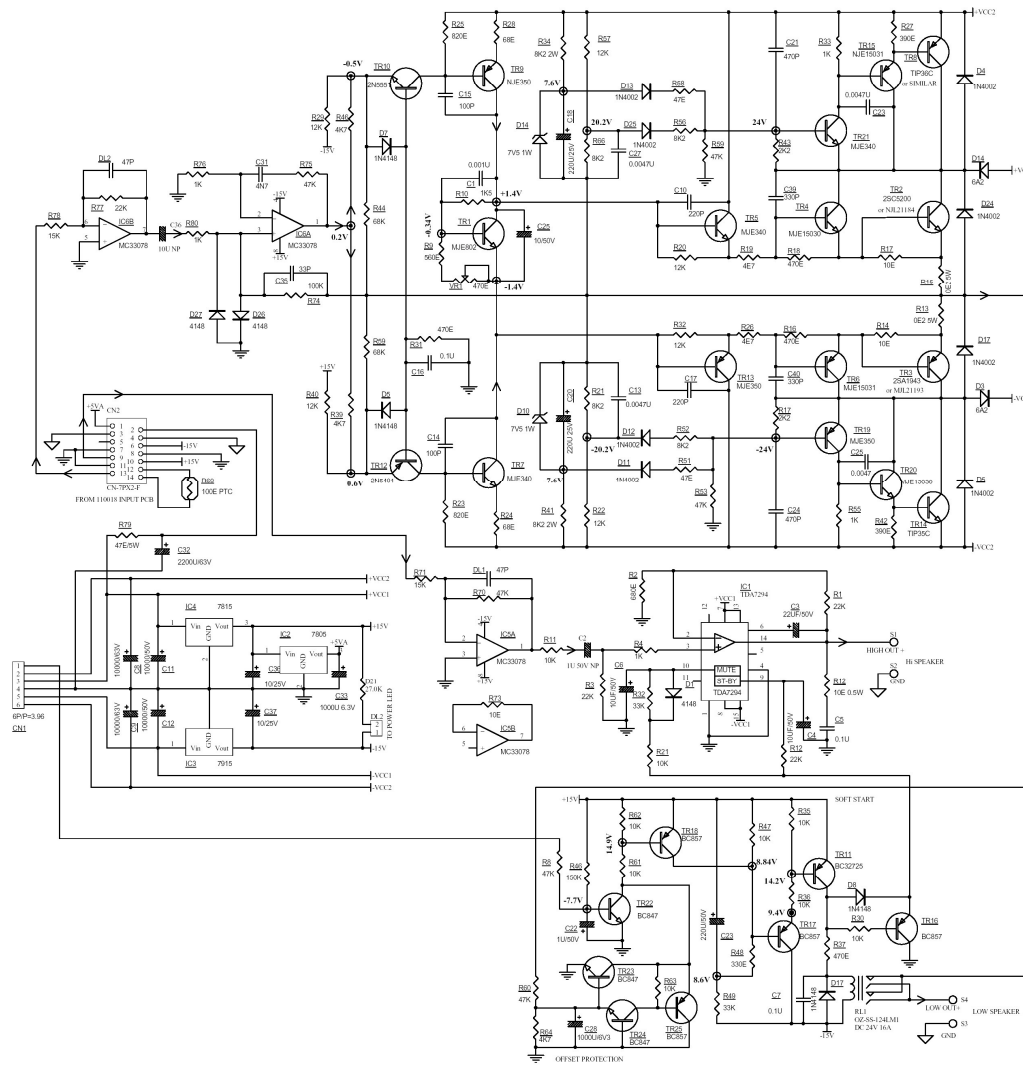
## 2. Specification

Descriptions	PS 4HA
Powered System Type	Bi-Amp with DSP Processor
Low RMS Output	250Watt Class H
High RMS Output	50Watt Class AB
Max SPL at 1W,1m	121dB SPL Calculated
Frequency Response	50Hz/20Hz+/-10dB
Inside speaker Impedance Low-High	Low 40hm –High 80hm
Crossover Frequency	2000Hz-DSP Processor
Protection Low-High	DSP Limit /Compressor
Horn Coverage H°-V°	90°H-45°V
Input Sensitivity	Line +4dB/1.23V
Input Impedance	30k0hms Balanced –15k0hms Unbalanced
Connectors	MIC-Line Input on Combo/Line Output on XLR
Plastic Reinforced Cabinet	Trapezoidal &Monitor Shape
Hardware Suspension	6Suspension Point
Amplifier Protections	Soft Start –DC Voltage Protect
External Control	Main Volume –Ground Switch
Power Supply	230Volt/115Volt 50/60Hz
Dimensions H×W×D	H660mm26" W396mm15.6" D384mm15.1"
Net Weight lbs /kg	51.54lbs/23.38kg
Gross Weight lbs /kg	60.63lbs /26.6kg
Shipping Volume	6.34CFT

### 3. Block diagram

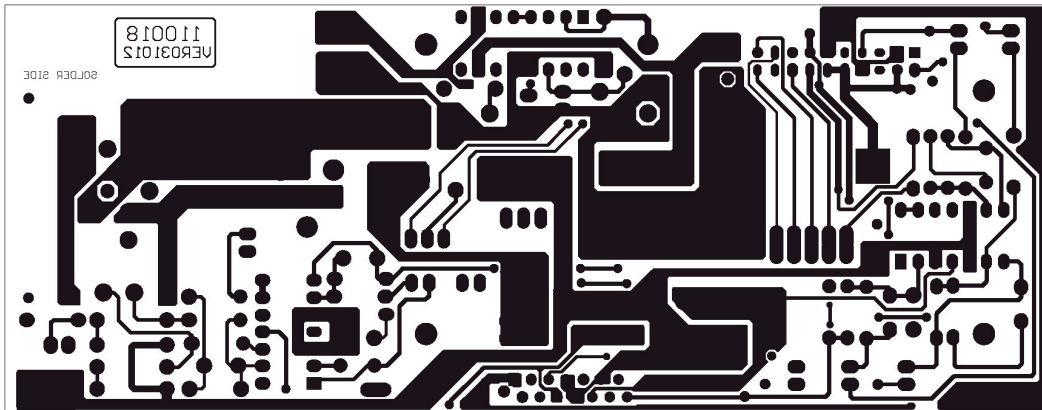


# 4. Schematic diagram

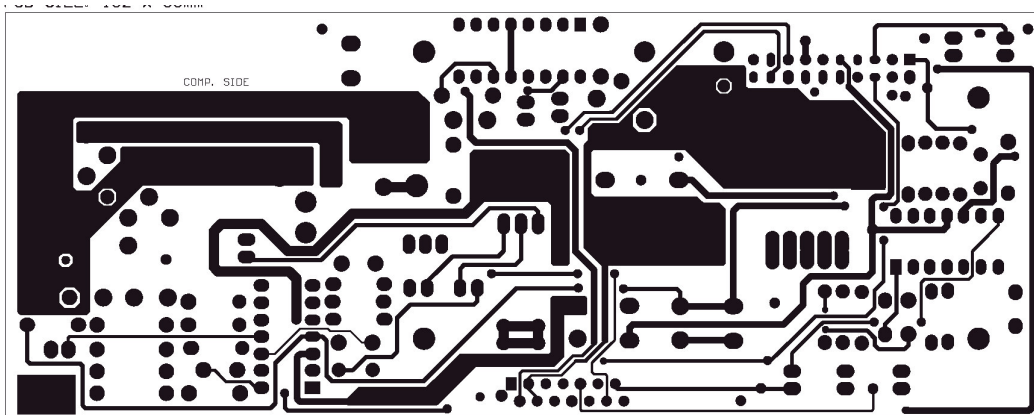


# 5. PCB layout

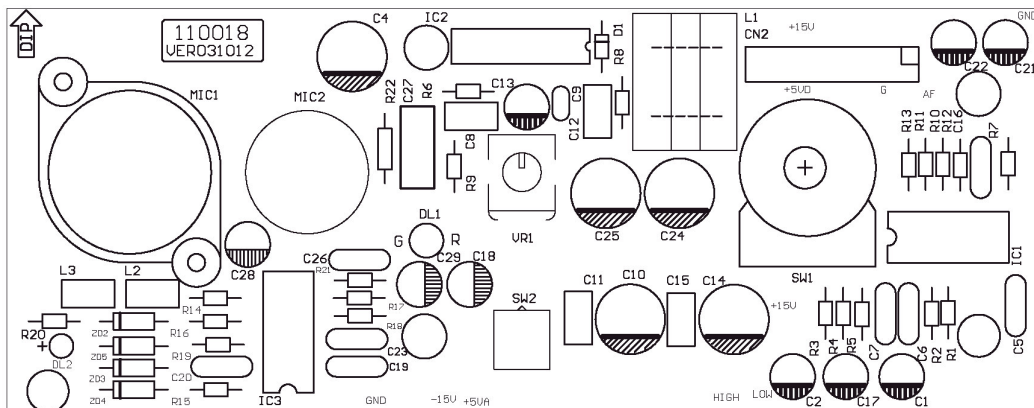
P-110018



Bottom



Bottom

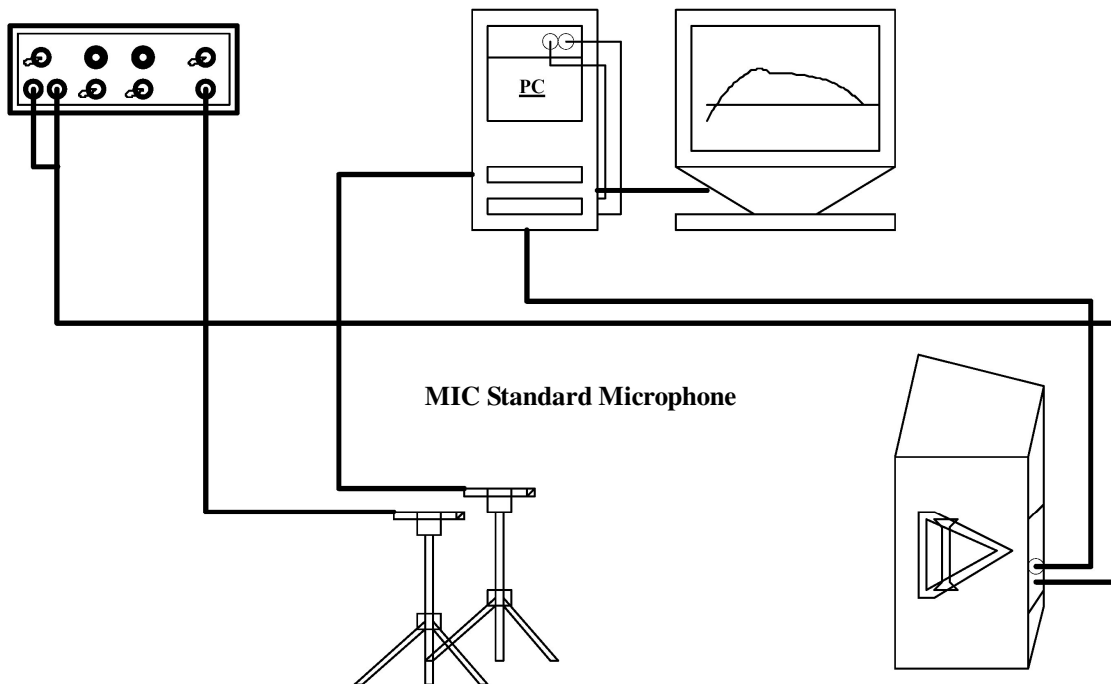


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## 6. Test procedure and test result

### DAAS SYS Computer Test System

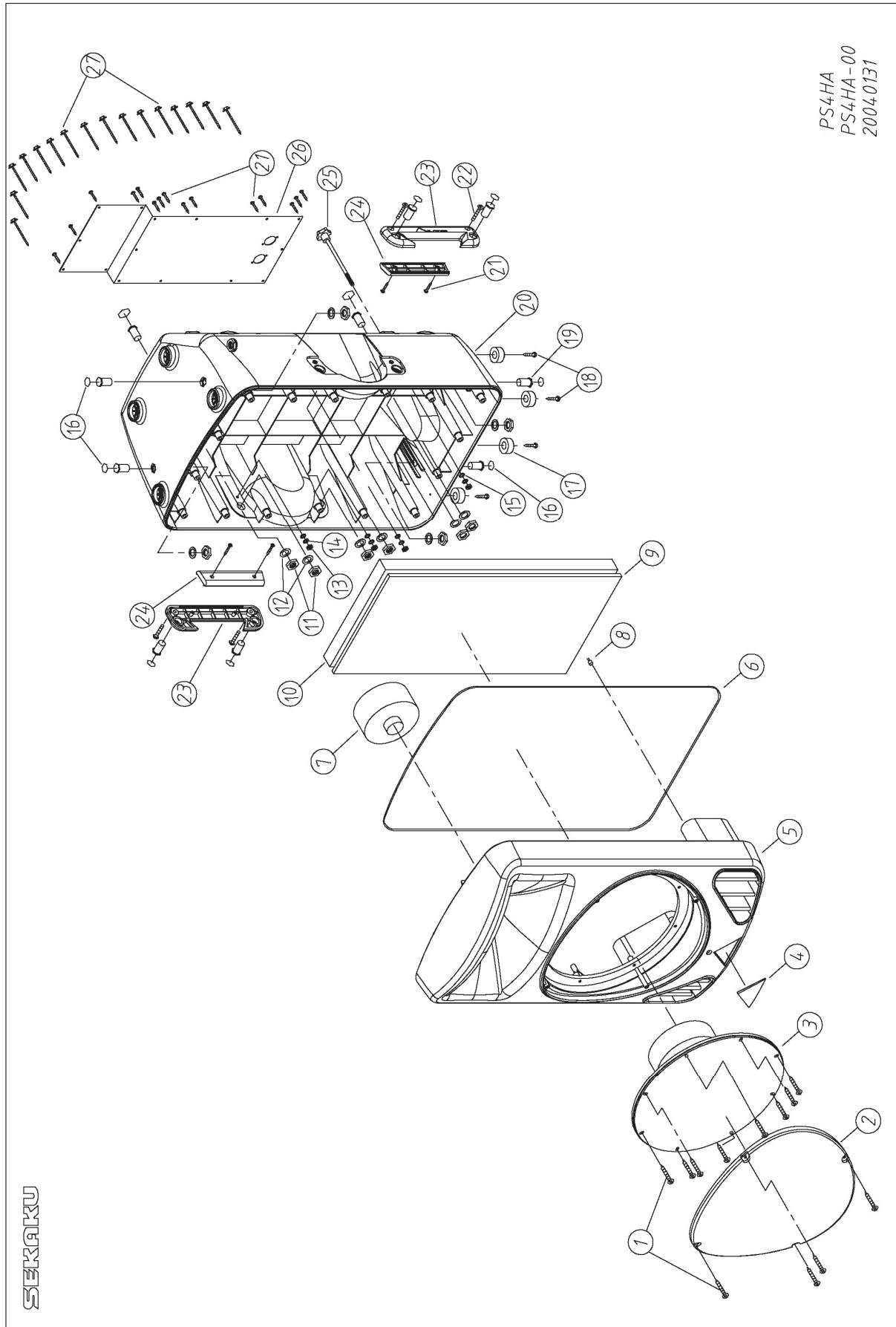
#### Polarity Detectve Machine



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Powered System Type	Bi-Amp with DSP Processor
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Input Impedance	30k0hms Balanced –15k0hms Unbalanced
Connectors	MIC-Line Input on Combo/Line Output on XLR
Plastic Reinforced Cabinet	Trapezoidal &Monitor Shape
Hardware Suspension	6Suspension Point
Amplifier Protections	Soft Start –DC Voltage Protect
External Control	Main Volume –Ground Switch
Power Supply	230Volt/115Volt 50/60Hz
Dimensions H×W×D	H660mm26" W396mm15.6" D384mm15.1"



## 7. Exploded views & mechanical parts list



S/N	Part No.	Description	Specification	Qty
1	MG00454	screw	M4*20	12
2	MD00441	iron net	PS 4L;PS 4H;PS 4LA;PS 4HA	1
3	HK01410	speaker	12" 110W 6Ω ELVIS 12;M(Z00773_LP318.50)	1
4	NI02729	Acrylic-ABS	78.5*47mm	1
5	NI02930	panel	PS 4HA black PP	1
6	NI02840	loop	φ 2*1950	1
7	HG00118	Horn	PA-D599 P-AUDIO 8Ω	1
8	SA00155	LED	3.9V/20mA round blue 3mm	1
9	ND00303	Dustproof cloth	700*430*2mm black	1
10	ND00270	suck radio sponge	700*430*50	1
11	ME00116	nut	M14*5*1.0PH_V1.3	10
12	MF00070	washer	φ 28* φ 15*2t_V1.2	10
13	ME00014	nut	6*1.0	4
14	MF00035	washer	φ 6.5* φ 11*0.5t	4
15	MF00032	washer	φ 6.3* φ 13*1t	4
16	NE12058	label	0.3tPC	10
17	NI02728	rubber foot	φ 29.5*14 black	4
18	MG00031	screw	M4*12	4
19	MG00411	screw	M14*26*1.0PH	10
20	NI02931	speaker cover	PS 4HA black PP	1
21	MG00063	screw	M3*12	19
22	MG00456	screw	M6*22*1.0PH	4
23	NI02732	handle	13*56.94*218.23 PS 4HA black	2
24	NI02733	handle cover	10.8*34*147 PS 4HA black	2
25	MG00414	screw	M6*18*1.0PH	1
26	HK01700	faceplate	PS 4LA_ALTO_230V	1
27	MG00467	screw	M4*50	16

## 8. BOM

No.	Parts No.	Descriptions	Specification	Remark
1	MG00454	screw	M4*20	
2	MD00441	iron net	PS 4L;PS 4H;PS 4LA;PS 4HA	
3	MD00442	iron net	PS 4HA 1.2t* $\phi$ 4*5.6PH*60°	
4	MD00481	iron net	1.2t*390*370mm_V1.1	
5	HK01410	speaker	12" 150W 4 $\Omega$ PS 4HA(#2289_LP318.65)	
6	HG00117	voice coil	A0844A_ BK 65-40-335/16-3	
7	NH00294	cone	U-SONICS NO:CP240/17-SC277A/6-F	
8	NH00243	washer	C0810A_GR 318/6+2	
9	ND00310	spider	D0839A_CT 65-145/17C3 CNX	
10	NH00233	cover	E0649A_CP 108/C	
11	MH01649	T shape	H0811A_PN 65/1450.10 D30	
12	MH01825	washer	I0812A_PS 65/1450.8 W J_V1.1	
13	MH01647	magnet	G0450A_D154*73*19mm	
14	MI01957	holder	L0712B_CR 318/J N	
15	HC00426	terminal	M0021B_PT2.1	
16	HC00496	terminal	0.8*13*16.3mm	
17	HC00495	terminal	0.8*13*16.3mm	
18	NI02583	terminal block	3.5*24.5*3t	
19	MH01110	rivet	M0500A_OU-30	
20	HA02493	strand	TA4X4YKA42W*110mm	
21	HA02079	LEAD WIRE	TA4X4YKA42W*1M	
22	ND00228	sponge	S0720B_NYLON NET D45	
23	NE11169	label	HK 12 ALTO	
24	NH00012	bond paper	0.04*1M	
25	NI00014	membrane	0.035*1M	
26	HG00144	speaker	PA-DE34S Zn P-AUDIO 8 $\Omega$	
27	HA02814	wire	2P 900mm UL1007 28AWG red black	
28	NI00246	sleeve	$\phi$ 3*20mm	
29	NI00243	sleeve	$\phi$ 3*1000mm	
30	NI03127	drop glue nameplate	PS4 ALTO_V1.0	
31	NI02930	panel	PS 4HA black PP	
32	NI02730	panel	PS 4HA PP 3.938+0/0.1Kg_V1.2	
33	ME00157	screw	$\phi$ 38*48_V1.0	
34	NI02931	speaker cover	PS 4HA black PP	
35	NI02731	speaker cover	PS 4HA PP 6.288Kg+0/0.1kg_V1.3	
36	ME00114	nut	$\phi$ 12*19	
37	NI02840	loop	$\phi$ 2*1950	
38	ND00387	Non woven	700*430*0.35mm black	
39	ND00270	suck radio sponge	700*430*50	
40	HA02520	wire	750mm UL1015 18AWG	
41	HA02815	wire	800mm UL1015 18AWG	
42	ME00116	nut	M14*5*1.0PH_V1.3	
43	MF00089	washer	PS 4HA_V1.2	

No.	Parts No.	Descriptions	Specification	Remark
44	MF00070	washer	φ 28* φ 15*2t_V1.2	
45	MJ01154	iron board	2.0t*1850*950mm 27.6kg	
46	MG00411	screw	M14*26*1.0PH	
47	NE12058	label	0.3tPC	
48	NI02728	rubber foot	φ 29.5*14 black	
49	MG00031	screw	M4*12	
50	MG00063	screw	M3*12	
51	MG00414	screw	M6*18*1.0PH	
52	NI02970	plastics head	φ 30.5* φ 14*31.5mm black	
53	MG00412	screw	M6*134*1.0PH	
54	HK01700	faceplate	PS 4HA_ALTO_230V	
55	MA04234	panel	PS 4HA 220~240V ALTO_V1.2	
56	MA04235	panel	PS 4HA	
57	MA04236	panel	PS 4HA_V1.4	
58	MJ00088	iron board	1.5*2135*1220 30.67kg	
59	ME00106	iron pillar	M3*24*0.5PH_V1.1	
60	MI00316	connect terminal	PFM-15SA	
61	MJ00747	iron board	0.8t*21.6mm*100M 22.5kg	
62	MI02625	heat-sink	PS4HA 4.5*162*40*285.5_V1.1	
63	MI01951	heat sink	4.5*40*285.5*162mm PS 4HA_V1.1	
64	MI02358	heat sink	4.5t*40*285.5*4350±5 25.5780KG_V1.0	
65	TD00343	transformer	PT-4HA_230V	
66	HI00022	power switch	4p black frame red key	
67	HC00005	AC socket	AC-008	
68	NI01862	key	5.5*5.5*14.5	
69	NI01863	key	φ 5.5*W10*7.5	
70	NI02386	knob	φ 14*13mm	
71	NI00437	rubber coil	φ 20* φ 120*2tB	
72	MG00405	screw	M6*60*1.0PH	
73	ME00014	nut	6*1.0	
74	MF00051	washer	φ 6.3* φ 19*1t	
75	MF00040	washer	φ 6* φ 10*1.5t	
76	MI01720	fixed bracket	T4A 1.5*52*33	
77	MJ00088	iron board	1.5*2135*1220 30.67kg	
78	MI00237	heat-sink	FX22 4*34.5*16.5*34.5mm	
79	NI02245	heat conduction rubber	25*25*0.25 white (3M #9890)	
80	SA00012	bridge rectifier	25A/200V BP25-06PWS	
81	RH00007	transistor	330Ω (PTH9L04BD222TS2F330)	
82	SD00074	integrated circuit	L7805CV(TO-220)(ST)	
83	SD00077	integrated circuit	L7815CV(TO-220)(ST)	
84	SD00079	integrated circuit	L7915CV(TO-220)(ST)	
85	SB00057	transistor	TIP35C	
86	SB00058	transistor	TIP36C	
87	SB00040	transistor	MJE15030	
88	SB00041	transistor	MJE15031	

No.	Parts No.	Descriptions	Specification	Remark
89	SB00086	transistor	MJE802P	
90	SB00021	power transistor	2SC5200	
91	SB00023	power transistor	2SA1943-O	
92	HA01253	quick terminal wiring	150 white (PC250 .PC187)	
93	HA01252	wire	80 green/yellow	
94	HA02831	wire	14P-14P 100mm UL2651 28AWG Grey	
95	MG00284	copper pillar	M3*8*0.5PH	
96	MG00304	copper pillar	M3*14*0.5PH	
97	MG00363	copper pillar	M3*14*0.5PH	
98	MG00024	screw	M3*7 0.5PH	
99	MG00027	screw	M3*12	
100	MG00042	screw	M3*10	
101	MG00327	screw	M3*10*0.5PH	
102	MG00069	screw	M4*16	
103	MF00014	washer	$\varnothing 3^* \varnothing 6.5^* 0.5t$	
104	MF00034	washer	$\varnothing 3^* \varnothing 6^* 0.5t$	
105	MF00037	washer	$\varnothing 3^* \varnothing 5^* 1t$	
106	MF00038	washer	$\varnothing 4^* \varnothing 7^* 1t$	
107	NC00128	washer	1.6* $\varnothing$ 6.8* $\varnothing$ 3.5 red	
108	NC00041	red foil white board	1.6t*0.65M*70M	
109	NC00005	silicone insulator	TO-220 square type	
110	NC00127	mica sheet	22*28	
111	NI00863	insulate bean	TO220B	
112	NI00218	cable tie-black	ALT-102SB	
113	HK01405	PC board	P-313120-1-DIP-PS 4HA	
114	HK01401	PC board	P-313120-1-SMD-PS 4HA	
115	HB00851	PCB	313120-1_VER031014	
116	RD00061	SMD fixed resistor 1/10W	10 $\Omega$ $\pm$ 5% 0603	R73
117	RD00076	SMD fixed resistor 1/10W	330 $\Omega$ $\pm$ 5% 0603	R48
118	RD00080	SMD fixed resistor 1/10W	680 $\Omega$ $\pm$ 5% 0603	R2
119	RD00083	SMD fixed resistor 1/10W	1.0K $\Omega$ $\pm$ 5% 0603	R4,R76,R80
120	RD00093	SMD fixed resistor 1/10W	4.7K $\Omega$ $\pm$ 5% 0603	R64
121	RD00101	SMD fixed resistor 1/10W	10K $\Omega$ $\pm$ 5% 0603	R6,R11,R30,R35,R36,R47,R61,R62,R63
122	RD00103	SMD fixed resistor 1/10W	15K $\Omega$ $\pm$ 5% 0603	R71,R78
123	RD00105	SMD fixed resistor 1/10W	22K $\Omega$ $\pm$ 5% 0603	R1,R3,R5,R77
124	RD00109	SMD fixed resistor 1/10W	39K $\Omega$ $\pm$ 5% 0603	R7
125	RD00114	SMD fixed resistor 1/10W	68K $\Omega$ $\pm$ 5% 0603	R49
126	RD00111	SMD fixed resistor 1/10W	47K $\Omega$ $\pm$ 5% 0603	R60,R70,R75
127	RD00116	SMD fixed resistor 1/10W	100K $\Omega$ $\pm$ 5% 0603	R74
128	RD00118	SMD fixed resistor 1/10W	150K $\Omega$ $\pm$ 5% 0603	R46
129	RD00417	SMD precise resistor 1/4W	27.0K $\Omega$ $\pm$ 1% 1206	D21
130	C100053	SMD ceramic capacitor 0603	33PF/50V NPO $\pm$ 5%	C35
131	C100090	SMD ceramic capacitor 0603	0.0047uF/50V X7R $\pm$ 10%	C31
132	SE00011	SMD rectifier diode	RLS4148 0.5A (LL-34)	D1,D8,D9,D26,D27
133	SF00031	SMD transistor	BC847B(SOT-23)/(PHI)	TR22,TR23,TR24

No.	Parts No.	Descriptions	Specification	Remark
134	SF00032	SMD transistor	BC857B(SOT-23)/(PHI)	TR16,TR17,TR18,TR25
135	SG00040	SMD integrated circuit	MC33078DT(ST)MC33078D(ON)	IC5,IC6
136	RA00668	fixed resistor 1/8W	47Ω M type	R51,R58
137	RA00670	fixed resistor 1/8W	68Ω M type	R24,R28
138	RA00677	fixed resistor 1/8W	390Ω M type	R27,R42
139	RA00635	fixed resistor 1/8W	470Ω M type	R16,R18,R31
140	RA00636	fixed resistor 1/8W	560Ω M type	R9
141	RA00638	fixed resistor 1/8W	820Ω M type	R23,R25
142	RA00639	fixed resistor 1/8W	1.0KΩ M type	R33,R55
143	RA00641	fixed resistor 1/8W	1.5KΩ M type	R10
144	RA00643	fixed resistor 1/8W	2.2KΩ M type	R43,R54
145	RA00647	fixed resistor 1/8W	4.7KΩ M type	R39,R45
146	RA00650	fixed resistor 1/8W	8.2KΩ M type	R21,R52,R56,R66
147	RA00652	fixed resistor 1/8W	12KΩ M type	R20,R22,R29,R32,R40,R57
148	RA00659	fixed resistor 1/8W	47KΩ M type	R8,R53,R59
149	RA00661	fixed resistor 1/8W	68KΩ M type	R38,R44
150	RA00322	fixed resistor 1/4W	4.7Ω M type	R19,R26
151	RA00159	fixed resistor 1/4W	10Ω M type	R14,R17
152	RA00204	fixed resistor 1/4W	470Ω M type	R37
153	RA00099	fixed resistor 1/2W	10Ω M type	R12
154	RA00047	metal-oxide-film resistor 2W	8.2KΩ P type	R34,R41
155	RA00091	cement resistor 5W	0.2Ω (P)	R13,R15
156	RA00852	resistor	47Ω SQP	R79
157	RC00164	resistor	500Ω φ 8 RB	VR1
158	CA00016	ceramic capacitor	47PF NPO	DL1,DL2
159	CA00024	ceramic capacitor	100PF SL	C14,C15
160	CA00029	ceramic capacitor	220PF Y5E	C10,C17
161	CA00034	ceramic capacitor	470PF Y5E	C21,C24
162	CA00040	ceramic capacitor	0.001uF Z5V	C1
163	CA00069	ceramic capacitor	390PF Y5E	TR4,TR6
164	CH00017	Multi-layer ceramic capacitor	0.1uF/50V Y5V PH5	C16,C19
165	CC00012	mylar capacitor	0.0047uF/100V 10%	C13,C25,C26,C27
166	CC00040	mylar capacitor	0.1uF/100V	C5
167	CB00010	electrolytic capacitor	1uF/50V φ 4*7mm	C22
168	CB00005	electrolytic capacitor	1uF/50V NP φ 5*11mm	C2
169	CB00026	electrolytic capacitor	10uF/50V φ 6*7mm	C4,C6,C7,C37,C38
170	CB00020	electrolytic capacitor	10uF/50V NP φ 5*11mm	C36
171	CB00032	electrolytic capacitor	22uF/50V φ 6*5mm	C3
172	CB00057	electrolytic capacitor	220uF/25V φ 8*11mm	C18,C20,C23
173	CB00069	electrolytic capacitor	1000uF/6.3V φ 8*11mm	C28,C33
174	CB00168	electrolytic capacitor	2200uF/63V φ 22*30mm	C32
175	CB00098	electrolytic capacitor	10000uF/50V φ 30*45mm	C11,C12
176	CB00099	electrolytic capacitor	10000uF/63V φ 35*40mm	C8,C9
177	HC00324	terminal	6.5m/m (PC250)	S1,S2,S3,S4

No.	Parts No	Descriptions	Specification	Remark
178	HC00076	row-wire header(male)	2P 2.5mm 180°	DL2
179	HC00179	row-wire header(male)	6P 3.96mm 180°	CN1
180	HC00050	row-wire header(female)	14PIN A28b-14B.T.6	CN2
181	SA00093	rectifier diode	1N4148 0.5A	D5,D7
182	SA00094	rectifier diode	1N4002/100V	D4,D6,D11,D12,D13,D17,D24,D25
183	SA00097	rectifier diode	6A2 6A	D2,D3
184	SA00102	zener diode	1W 7.5V 1N4737	D10,D14
185	SD00084	integrated circuit	TDA7294(S&T)	IC1
186	SB00059	transistor	BC327-25	TR11
187	SB00073	transistor	2N5550/2N5551	TR10
188	SB00074	transistor	2N5401	TR12
189	SB00060	transistor	MJE340 (ST)	TR5,TR7,TR21
190	SB00061	transistor	MJE350 (ST)	TR9,TR13,TR19
191	HI00009	relay	OZ-SS-124LM1 24V/16A	
192	NI02516	space	φ 4*8mm PW-2	
193	HA02532	wire	6P(male)-6P(male) 50mm UL2468 22AWG	
194	HA00088	wire	60mm green L3R3	
195	HK01406	PC board	P-110018-PS 4HA	
196	HB00876	PCB	110018_VER040312	
197	RA00339	fixed resistor 1/8W	330Ω M type	R13
198	RA00340	fixed resistor 1/8W	390Ω M type	R14
199	RA00350	fixed resistor 1/8W	820Ω M type	R21
200	RA00356	fixed resistor 1/8W	1.2KΩ M type	R9
201	RA00373	fixed resistor 1/8W	3.9KΩ M type	R8
202	RA00375	fixed resistor 1/8W	4.7KΩ M type	R17
203	RA00382	fixed resistor 1/8W	6.8KΩ M type	R1,R3,R11
204	RA00386	fixed resistor 1/8W	10KΩ M type	R2,R4,R5,R7,R10,R12
205	RA00390	fixed resistor 1/8W	15KΩ M type	R6,R15,R16,R18,R19
206	RA00158	fixed resistor 1/4W	0.0Ω M type	
207	RA00159	fixed resistor 1/4W	10Ω M type	R22
208	RC00375	potentiometer	B50KΩ R0911NOB-V1B503FN01-01	VR1
209	CA00009	ceramic capacitor	22PF/50V NPO	C7,C19,C20,C23,C26
210	CA00032	ceramic capacitor	330PF Y5E	C9
211	CF00005	metal-film capacitor MSC	0.0022uF/63V 5% CASE01	C12
212	CF00052	metal-film capacitor	0.0033uF/63V 5% CASE01	C5,C6,C16
213	CF00014	metal-film capacitor MEC	0.01uF/400V 10%	C27
214	CF00023	metal-film capacitor MSC	0.033uF/63V 5% CASE01	C8
215	CH00017	Multilayer ceramic capacitor	0.1uF/50V Y5V PH5	C11,C15
216	CB00137	electrolytic capacitor	2.2uF/100V φ 5*11mm	C13
217	CB00185	electrolytic capacitor	10uF/63V φ 5*11mm	C28,C29
218	CB00127	electrolytic capacitor	47uF/63V φ 6*11mm	C1,C2,C17,C21,C22
219	CB00151	electrolytic capacitor	220uF/63V φ 10*16mm	C4
220	CB00066	electrolytic capacitor	470uF/25V 105°C φ 10*16mm	C10,C14,C25
221	CB00069	electrolytic capacitor	1000uF/6.3V φ 8*11mm	C24

No.	Parts No.	Descriptions	Specification	Remark
222	SA00004	high speed diode	2A/100V BYV27-200,113	D1
223	SA00105	zener diode	1W 12V 1N4742	D2,D3,D4,D5
224	SA00051	L.E.D	3 $\varphi$ orange, green BOG303b	DL1
225	SD00135	integrated circuit	MC33079N	IC1,IC3
226	SD00047	integrated circuit	L4962/A	IC2
227	HC00154	row pin (single)#2200	2.54 180° 2*10P(gold-plated) 6/11.6mm	CN2
228	HC00050	row-wire header(female)	14PIN A28b-14B.T.6	CN1
229	HI00162	push-button switch	2 paragraphs 6p PS-22E8552L	SW2
230	HC00392	XLR MIC jack	JY-5030-030G 180°	MIC2
231	HC00391	XLR MIC jack	CXLF-07 (PUSH)	MIC1
232	TC00004	transformer	SEV1924-03(EE-19)	
233	CG00018	filter-EMI FILTER	LF-22UH(WAH TAYI)	L2,L3
234	NI02532	led	LEDS-22 22mm	DL1
235	HA01934	jumper wire	2mm	C18
236	HK01408	PC board	P-313115-1-DIP-PS 4HA	
237	HK02057	PC board	P-313115-1-SMD-PS 4HA	
238	HB00852	PCB	313115-1_VER021211	
239	RD00063	SMD fixed resistor 1/10W 22 $\Omega$ $\pm$ 5% 0603		R34,R35
240	RD00068	SMD fixed resistor 1/10W 100 $\Omega$ $\pm$ 5% 0603		R1,R29,R30,R39
241	RD00073	SMD fixed resistor 1/10W 220 $\Omega$ $\pm$ 5% 0603		R7,R12,R13,R15,R17,R21,R27,R33,R46,R50
242	RD00076	SMD fixed resistor 1/10W 330 $\Omega$ $\pm$ 5% 0603		R49
243	RD00082	SMD fixed resistor 1/10W 820 $\Omega$ $\pm$ 5% 0603		R20,R32
244	RD00085	SMD fixed resistor 1/10W 1.5K $\Omega$ $\pm$ 5% 0603		R31
245	RD00086	SMD fixed resistor 1/10W 1.8K $\Omega$ $\pm$ 5% 0603		R22
246	RD00093	SMD fixed resistor 1/10W 4.7K $\Omega$ $\pm$ 5% 0603		R8,R10,R11,R14,R16,R23,R24,R25,R26,R40,R41,R42,R43,R44,R45
247	RD00101	SMD fixed resistor 1/10W 10K $\Omega$ $\pm$ 5% 0603		R9,R18,R19,R36
248	RD00125	SMD fixed resistor 1/10W 1.0M $\Omega$ $\pm$ 5% 0603		R28
249	RE00006	SMD row resistor1/16W 100 $\Omega$ *4 $\pm$ 5% 8P 0603		AR4
250	RE00008	SMD row resistor1/16W 4.7K $\Omega$ *4 $\pm$ 5% 8P 0603		AR1,AR2,AR3,AR5
251	CI00049	SMD ceramic capacitor 0603 15PF/50V NPO $\pm$ 5%		C14,C27
252	CI00051	SMD ceramic capacitor 0603 22PF/50V NPO $\pm$ 5%		C43,C46,C50
253	CI00063	SMD ceramic capacitor 0603 470PF/50V NPO $\pm$ 5%		C8,C10,C11,C13
254	CI00129	SMD ceramic capacitor 0603 0.0015uF/-50V X7R $\pm$ 10%		C34,C36
255	CI00069	SMD ceramic capacitor 0603 0.0033uF/50V X7R $\pm$ 10%		C9,C12
256	CI00075	SMD ceramic capacitor 0603 0.1uF/50V Y5V +80,-20%		C3,C4,C5,C6,C7,C15,C16,C17,C18,C19,C20,C21,C22,C28,C29,C30,C33,C35,C40,C41,C44,C45,C47,C48,C49,C51,C53
257	CL00006	SMD tantalum capacitor 10uF/16V case B2		C31,C32,C37,C54
258	HC00611	IC socket (SMD)	PLCC32 (AMP S/N:822498)	IC2
259	SG00128	SMD integrated circuit	RED 208(LEM NO#105008)	IC4
260	SG00040	SMD integrated circuit	MC33078DT(ST)MC33078D(ON)	IC3,IC8
261	SG00069	SMD integrated circuit	MAX709L-CSA	IC5
262	CO00006	SMD chip inductance	BLM21A102SPT/(MURATA)	L1,L2,L3,L4
263	SG00050	SMD integrated circuit	AK4528VF AKM	IC7
264	CB00026	electrolytic capacitor	10uF/50V $\varphi$ 6*7mm	C55,C56
265	CB00201	electrolytic capacitor	47uF/25V $\varphi$ 6*7mm	C23,C24,C25,C26,C38,C39,C57,C58



No.	Parts No.	Descriptions	Specification	Remark
266	CB00069	electrolytic capacitor	1000uF/6.3V $\phi$ 8*11mm	
267	SC00319	quartz crystalloid	12.288MHZ	XT1
268	MG00455	screw	M4*21	
269	MD00441	iron net	PS 4L;PS 4H;PS 4LA;PS 5HA	
270	MD00442	iron net	PS 4HA 1.2t* $\phi$ 4*5.6PH*61°	
271	MD00481	iron net	1.2t*390*370mm_V1.2	
272	HK01411	speaker	12" 150W 4 $\Omega$ PS 4HA(#2289_LP318.66)	
273	HG00118	voice coil	A0844A_BK 65-40-335/16-4	
274	NH00192	cone	U-SONICS NO:CP240/17-SC277A/7-F	
275	NH00141	washer	C0810A_GR 318/6+3	
276	ND00311	spider	D0839A_CT 65-145/17C4 CNX	
277	NH00234	cover	E0649A_CP 109/C	
278	MH01649	T shape	H0811A_PN 65/1450.10 D31	
279	MH01825	washer	I0812A_PS 65/1450.8 W J_V1.2	
280	MH01647	magnet	G0450A_D154*73*20mm	
281	MI01958	holder	L0712B_CR 319/J N	
282	HC00426	terminal	M0021B_PT2.2	
283	HC00496	terminal	0.8*13*16.3mm	
284	HC00495	terminal	0.8*13*16.3mm	
285	NI02584	terminal block	3.5*24.5*4t	
286	MH01111	rivet	M0500A_OU-31	
287	HA01665	strand	TA4X4YKA42W*111mm	
288	HA01251	LEAD WIRE	TA4X4YKA42W*2M	
289	ND00229	sponge	S0720B_NYLON NET D46	
290	NE11170	label	HK 13 ALTO	
291	NH00013	bond paper	0.04*2M	
292	NI00015	membrane	0.035*2M	
293	HG00145	speaker	PA-DE34S Zn P-AUDIO 9 $\Omega$	
294	HA02815	wire	2P 900mm UL1007 29AWG red black	
295	NI00246	sleeve	$\phi$ 3*1980mm	
296	NI00243	sleeve	$\phi$ 3*2960mm	
297	NI03127	drop glue nameplate	PS4 ALTO_V1.1	
298	NI02930	panel	PS 5HA black PP	
299	NI02730	panel	PS 4HA PP 3.938+0/0.1Kg_V1.3	
300	ME00158	screw	$\phi$ 38*48_V1.1	
301	NI02531	speaker cover	PS 5HA black PP	
302	NI02331	speaker cover	PS 4HA PP 6.288Kg+0/0.1kg_V.1.4	
303	ME00115	nut	$\phi$ 12*20	
304	NI02841	loop	$\phi$ 2*1951	
305	ND00153	non woven	700*430*0.36mm black	
306	ND00036	suck radio sponge	700*430*51	
307	HA03110	wire	750mm UL1015 19AWG	
308	HA03405	wire	800mm UL1015 19AWG	
309	ME00117	nut	M14*5*1.0PH_V1.4	
310	MF00051	washer	PS 4HA_V1.3	
311	MF00032	washer	$\phi$ 28* $\phi$ 15*2t_V1.3	
312	MJ01155	iron board	2.0t*1850*950mm 27.7kg	
313	MG00412	screw	M14*26*1.1PH	
314	NE12059	label	0.4tPC	
315	NI02729	rubber foot	$\phi$ 29.5*15 black	