

# Service Service

# Service Manual

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## SPECIFICATIONS

### General

Power supply	12V DC(11V-16V) Test voltage 14.4V, negative ground
Maximum power output	50Wx4 channels
Continuous power output	25Wx4 channels (4Ω10% T.H.D.)
Suitable speaker impedance	4-8 ohm
Pre-Amp output voltage	4.0V(CD play mode: 1KHz, 0 dB, 10 KΩ load)
Fuse	15A
ESP(optional)	30s(CD-DA)/120s (MP3)
Weight	2.38kg
Dimensions(WxHxD)	188x100x168mm
Aux-in	≥300mv

### FM Stereo Radio

Frequency range	87.5 - 108.0 Mhz (Europe mode) 87.5 - 107.9 Mhz (USA mode)
Usable sensitivity	8 dBμ
Frequency response	30 Hz-15kHz
Stereo separation	30dB(1 kHz)
Image response ratio	50dB
IF response ratio	70dB
Signal/noise ratio	55dB

### AM(MW) Radio

Frequency range	522-1620 khz (Europe mode) 530-1710 khz (USA mode)
Usable sensitivity(S/N=20dB)	30 dBμ

### Disc Player

System	Disc digital audio system
Frequency response	20 Hz - 20 kHz
Signal/noise ratio	>86 dB
Total harmonic distortion	Less than 0.20%(1 kHz)
Wow and flutter	Below measurable limits
Channel separation	>60 dB

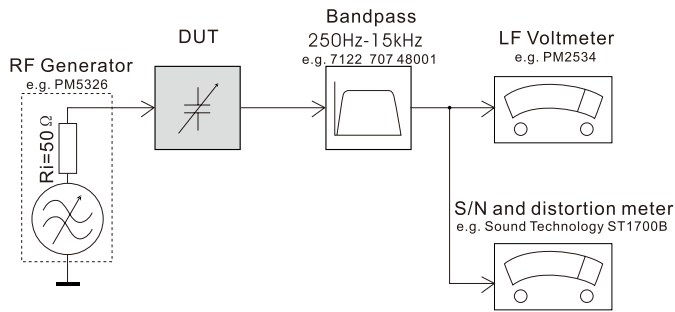
### Components

Mounting collar	1
Wire connector	1
Operating instructions	1
Rubber cushion	1

Note: Specifications and the design are subject to change without notice due to improvements in technology.

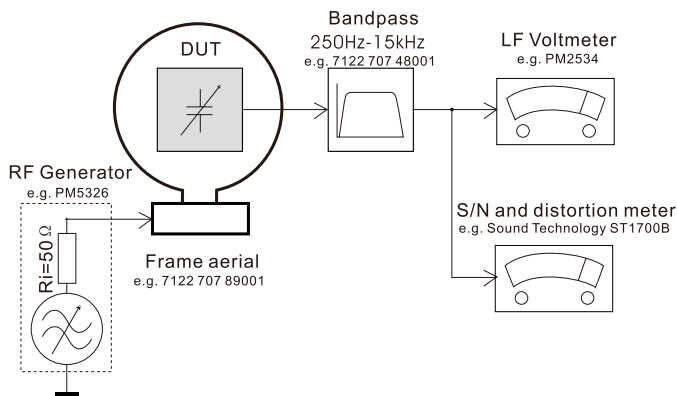
# MEASUREMENT SETUP

## Tuner FM



Use a bandpass filter to eliminate hum(50Hz,100Hz) and disturbance from the pilotone(19kHz,38kHz).

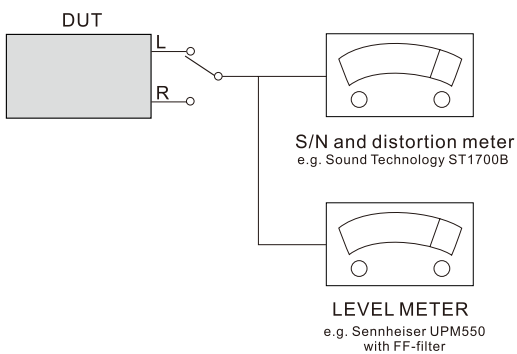
## Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage. Use a bandpass filter ( or at least a high pass filter with 250Hz) to eliminate hum ( 50Hz,100Hz ).

## CD

Use Audio Signal Disc SBC429 4822 397 30184 (replaces test disc 3)



# HANDLING CHIP COMPONENTS

**GENERAL**

SOLDER  
CHIP COMPONENT  
SOLDER  
COPPER TRACK  
P.C.B  
GLUE

SERVICE PACKAGE

**DISMOUNTING**

VACUUM PISTON  
4822 395 10082

SOLDERING IRON  
e.g. WELER  
Solder tip PT-H7

SOLDER WICK  
4822 321 40042

e.g. A PAIR OF TWEEZERS

HEATING HEATING

SOLDERING IRON  
SOLDER WICK  
CLEANING

A

B

C

**PRECAUTIONS**

SOLDERING IRON  
CORRECT  
COPPER TRACK

SOLDERING IRON  
CHIP COMPONENT

**MOUNTING**

e.g. A PAIR OF TWEEZERS

SOLDER  
 $\phi 0.5-0.8\text{mm}$

SOLDERING IRON  
PRESSURE

SOLDERING TIME  
< 3 seconds / side

SOLDER  
 $\phi 0.5-0.8\text{mm}$

PRESSURE  
SOLDERING IRON

A

B

**EXAMPLES**

CORRECT

SOLDERING IRON  
NO

**GB WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

**ESD****NL WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op hetzelfde potentiaal.

**F ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques(ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**D WARNING**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen(ESD). Unvorsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes. Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**I AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche(ESD). La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**GB ATTENTION**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne."

**NL**

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

**F**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

**D**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

**I**

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

**GB Warning!**

Invisible laser radiation when open. Avoid direct exposure to beam.

**S Varning!**

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

**SF Varoitus!**

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

**DK Advarsel!**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

## TROUBLESHOOTING

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If you suspect something is wrong, immediately switch power off. Do not use the unit in abnormal condition, for example without sound, or with smoke or foul smell, can cause fire or electric shock. Immediately stop using it and call the store where you purchased it. Never try to repair the unit yourself because it is dangerous to do so.

### General

**No power or no sound**

Car's engine switch is not on: **Turn your car's key to ACC or ON.**  
 Cable is not correctly connected: **Check connection.**  
 Fuse is burnt. Replace fuse: **Check volume or mute on / off.**  
 If the above solutions cannot help: **Press the RESET button.**

### Disc

**Disc is inside but no sound.**

Disc is upside down: **Place disc in the correct direction, and the label side up.**  
 Disc is dirty or damaged: **Clean disc or change another disc.**

**Disc sound skips, tone quality is low.**

Disc is dirty or damaged: **Clean CD or change another CD.**

**Sound skips due to vibration.**

Mounting angle is over 30°: **Adjust mounting angle to less than 30°.**  
 Unstable mounting: **Mount the unit securely with the mounting parts.**

### Radio

**Much noise in broadcasts**




Station is too far, or signals are too weak: **Select other stations of higher signal level.**

**Preset station lost**

Battery cable is not correctly connected: **Connect the battery cable to the terminal that is always live.**

### Error Display Messages

**ERR-1**

**Disc mechanism error:** Press  button more than 2 seconds to eject the disc. In case that the disc cannot be ejected by pressing  button, press the RESET switch and press the  button 2 seconds to eject the disc. If still not ejecting, consult your dealer.

**ERR-2**

**ERR-3**

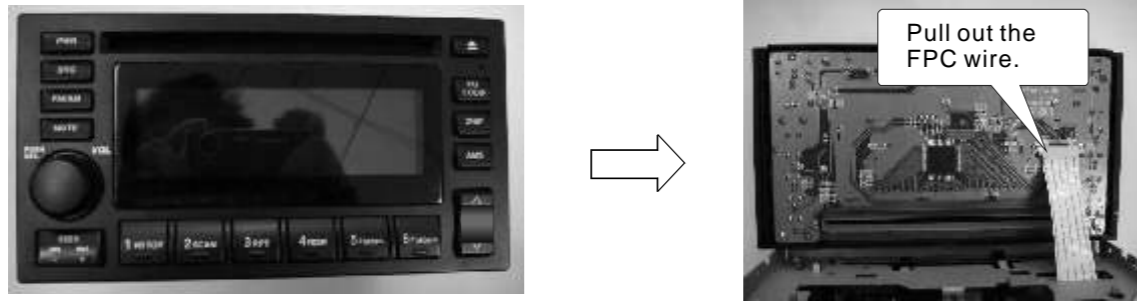
Disc upside down.

**ERR-4**

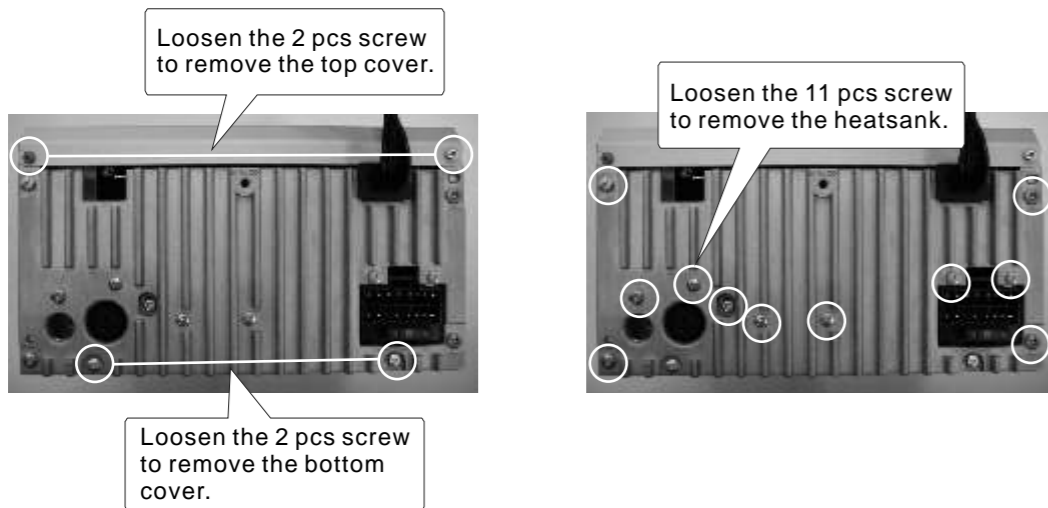
Disc format is not support or file date is wrong, check the disc.

# DISMANTLING INSTRUCTIONS

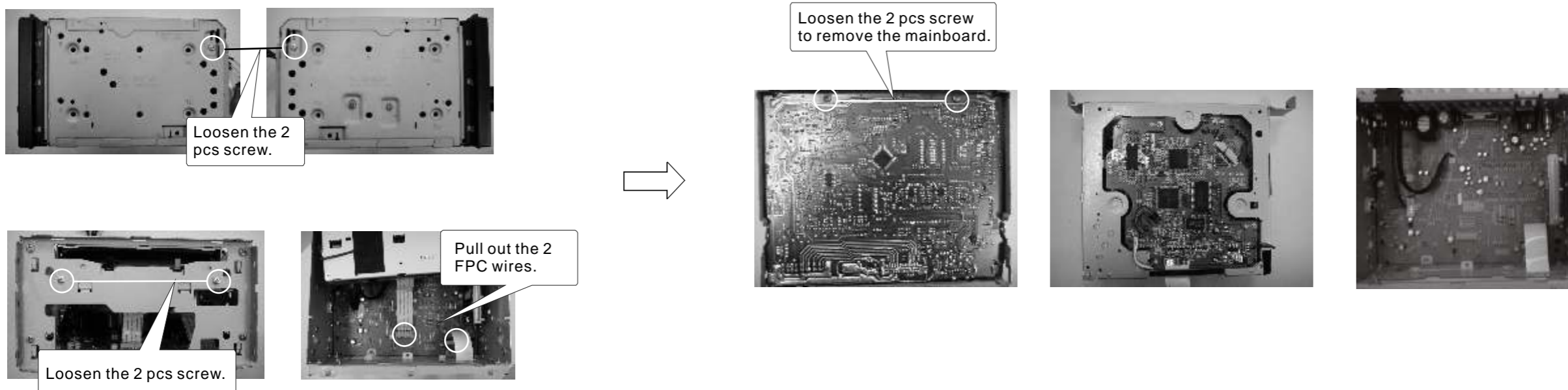
1. Remove the front panel.



2. Remove the top, bottom cover and heatsink.



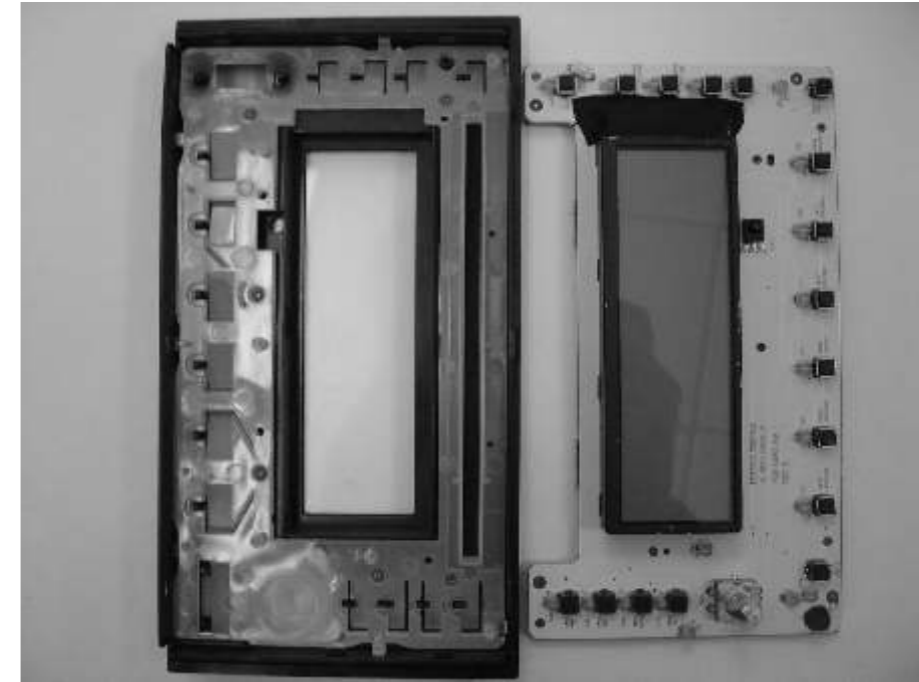
4. Loosen 4 pcs screw to remove the deck and mainboard.



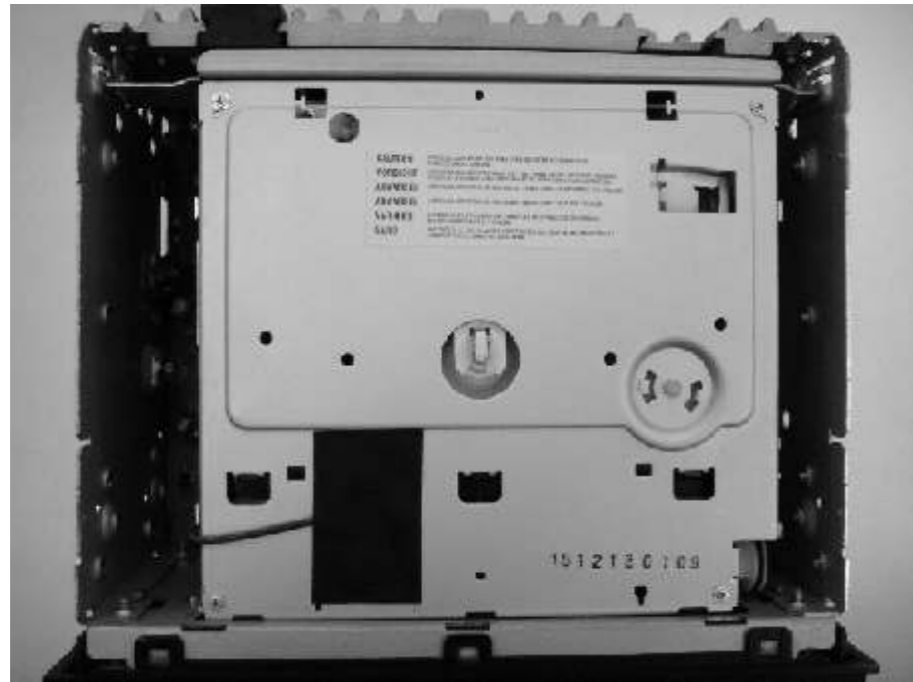
DISMANTLING INSTRUCTIONS



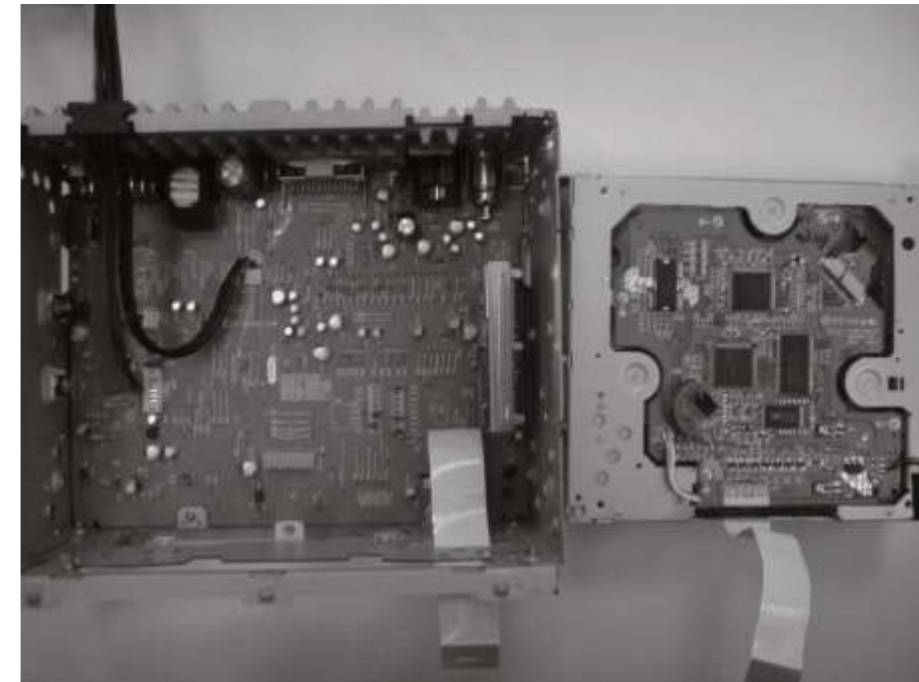
Service Position A



Service Position C



Service Position B



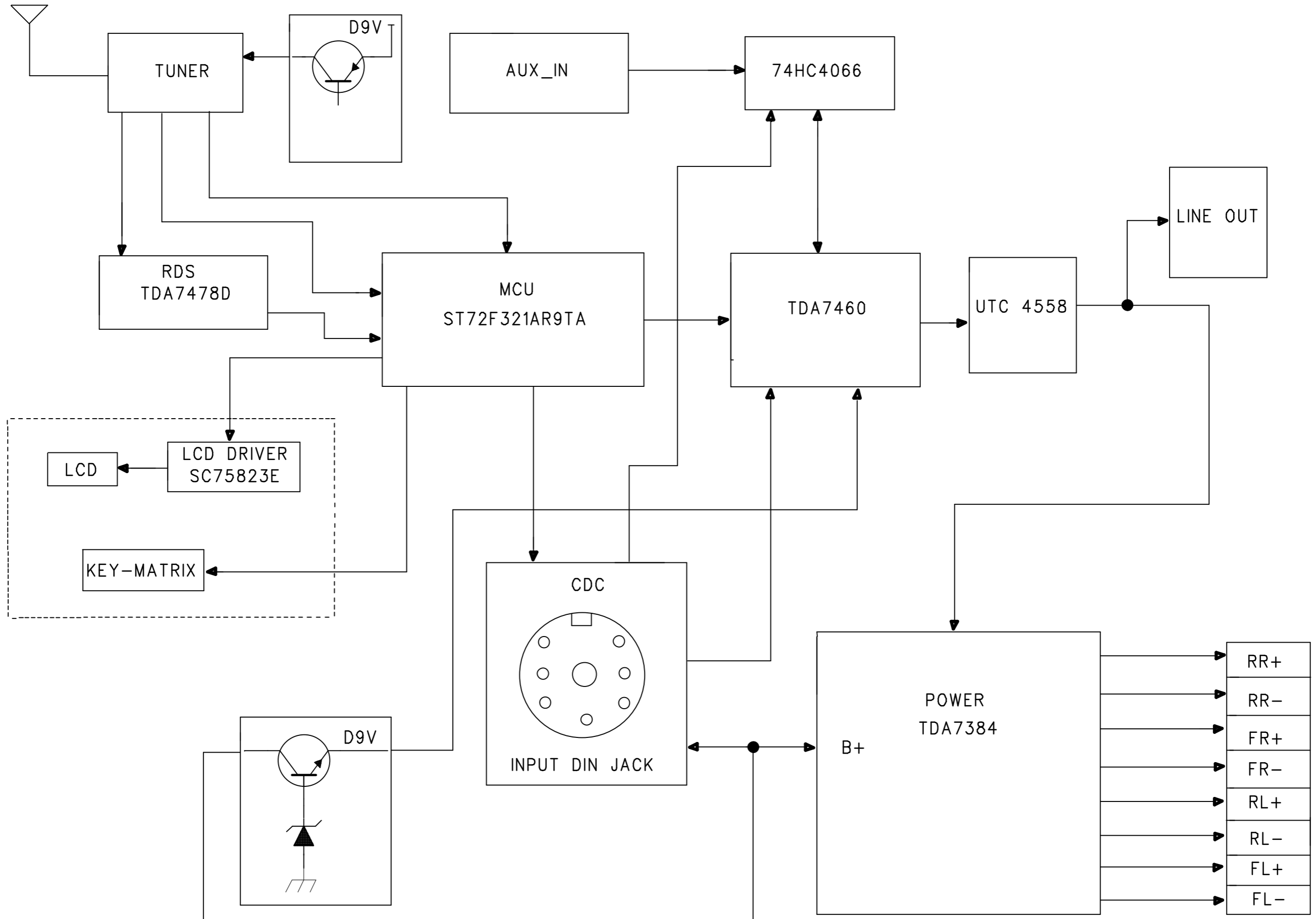
Service Position D



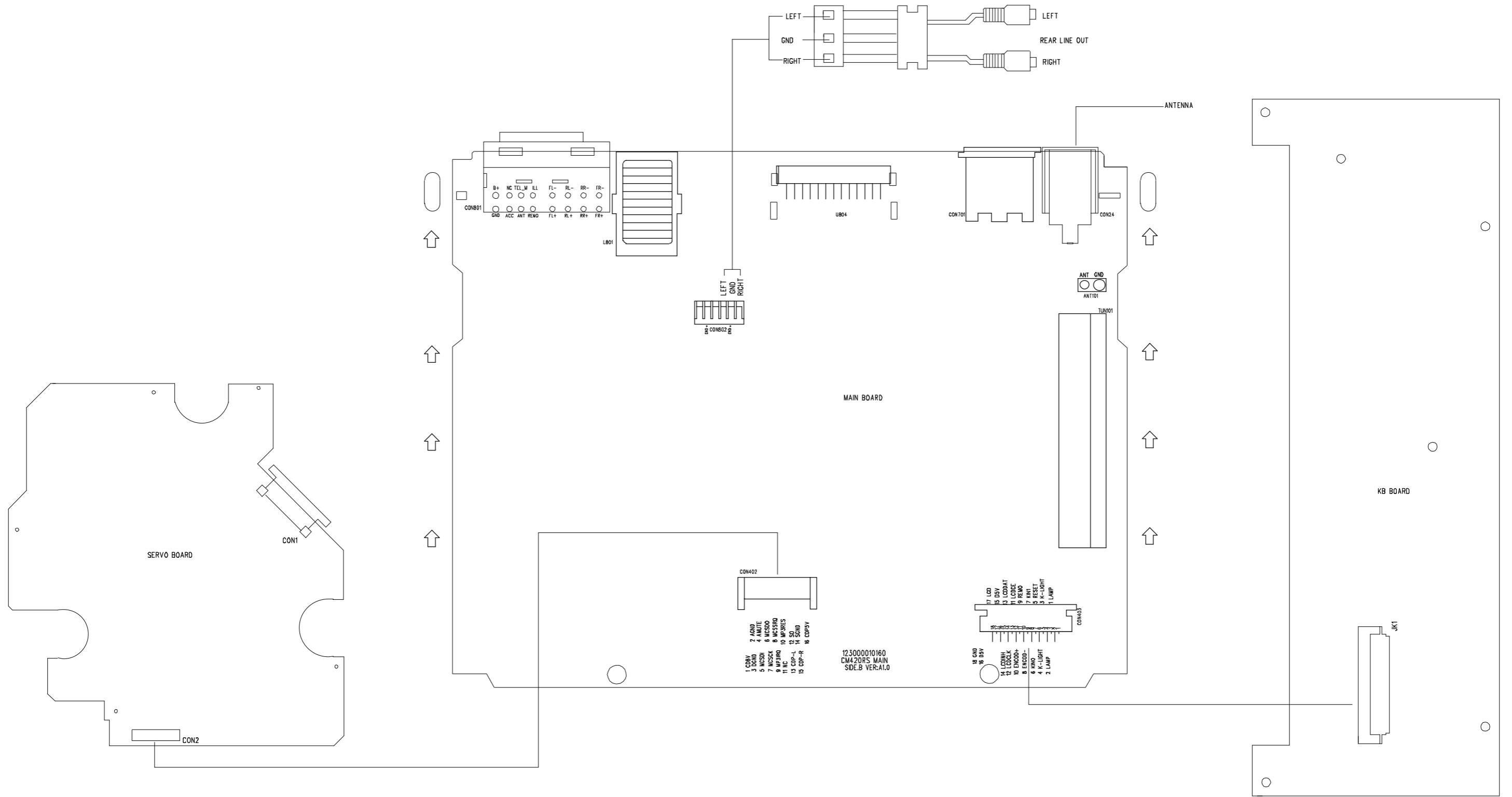
SET BLOCK DIAGRAM

3

3



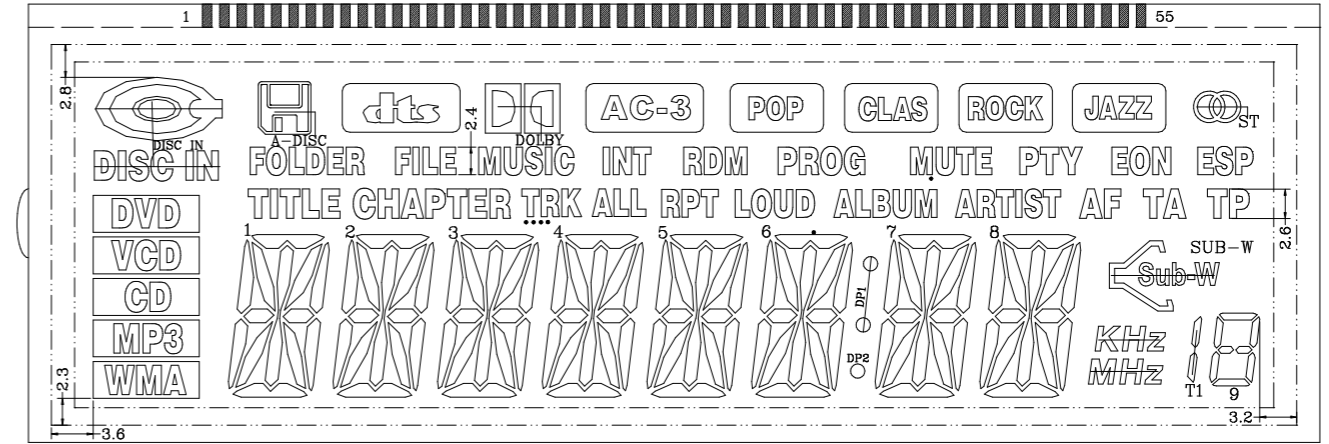
# SET WIRING DIAGRAM



# KEY BOARD

## LCD PIN CONNECTION

[●] IS CROSSING POINT(SIZE=0.05MMX0.05MM)  
TOTAL ABOUT 6 POINTS IN V.A



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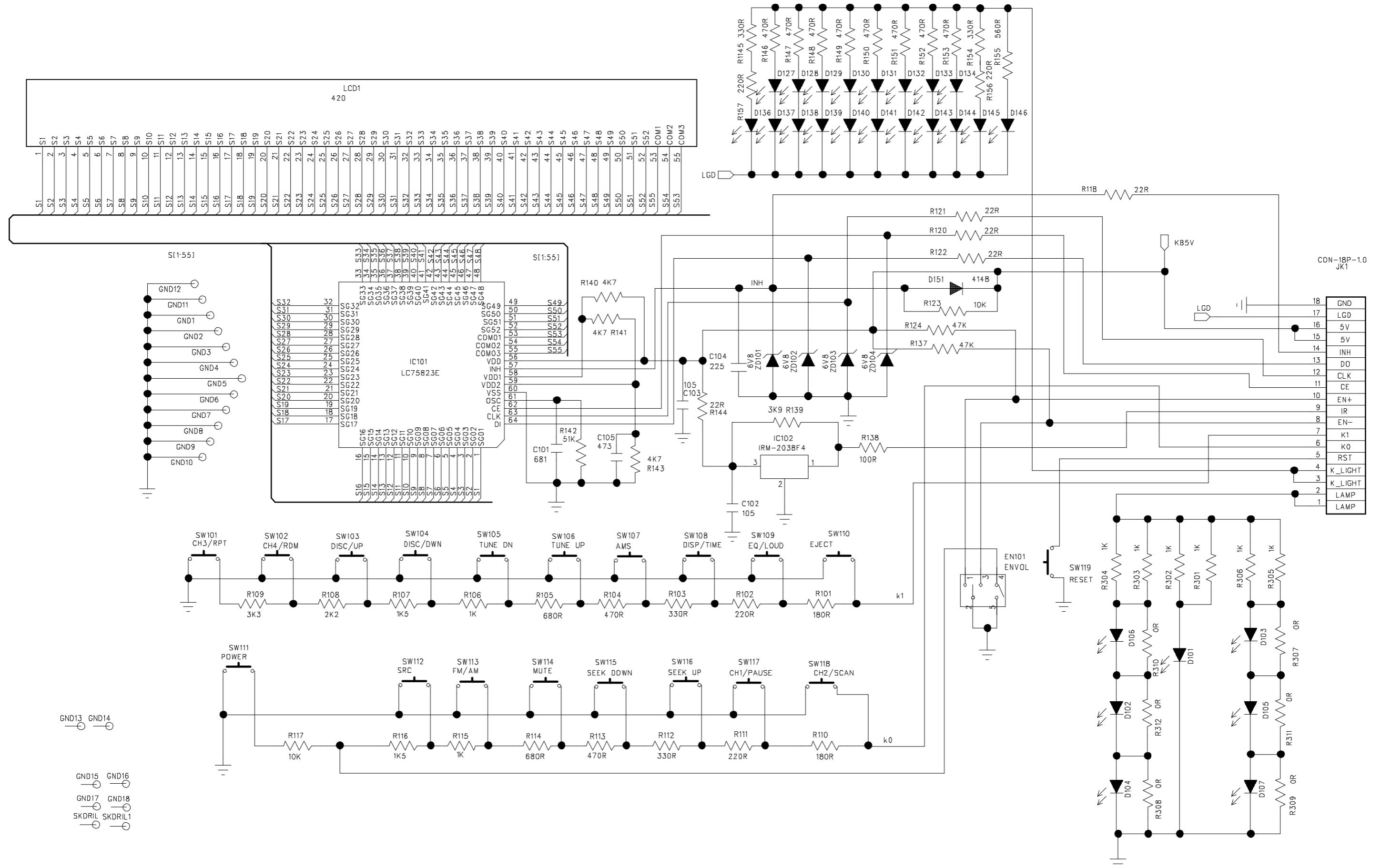
LCD Display ..... 5-1  
 Circuit Diagram ..... 5-2  
 Layout Diagram ..... 5-3  
 Electrical Parts List ..... 5-4

## PIN SEGMENT DISPLAY

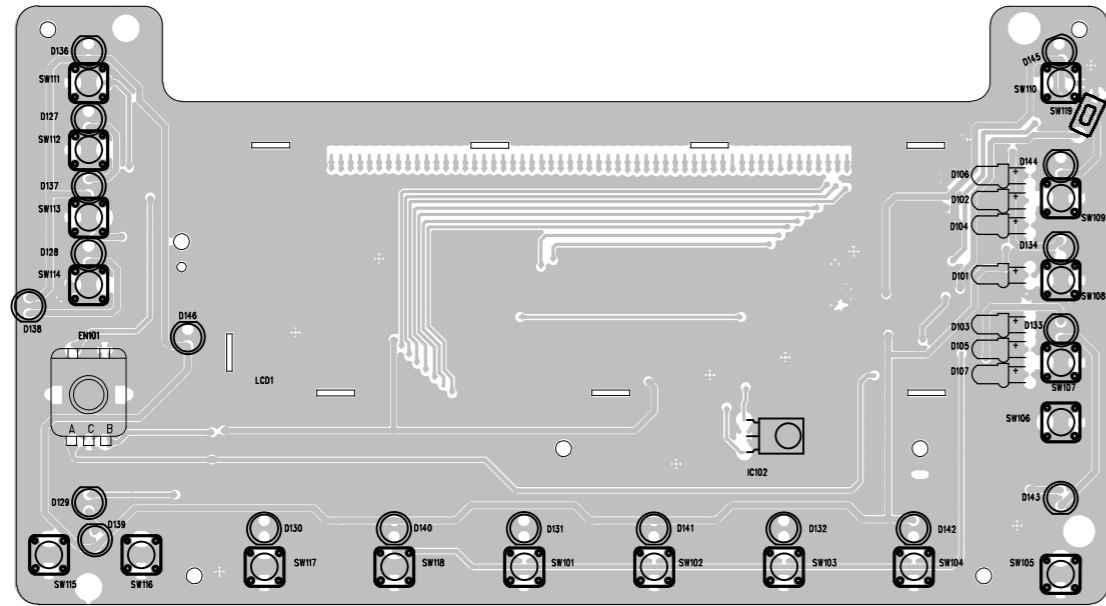
PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
COM1	DISC IN	CD	1E	1M	1D	1L	WMA	2E	2M	2D	2L	FOLDER	3E	3M	3D	3L	dts	4E	4M	4D	4L	CHAPTER	5E	5M	5D	5L	MUSIC	6E
COM2	DVD	MP3	1G	1I	1K	1C	A-DISC	2G	2I	2K	2C	TITLE	3G	3I	3K	3C	FILE	4G	4I	4K	4C	dolby	5G	5I	5K	5C	TRK	6G
COM3	VCD	1F	1H	1A	1J	1B	2F	2H	2A	2J	2B	3F	3H	3A	3J	3B	4F	4H	4A	4J	4B	5F	5H	5A	5J	5B	6F	6H

PIN	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
COM1	6M	6D	6L	DP1	7E	7M	7D	7L	AC-3	8E	8M	8D	8L	ALL	RPT	ALBUM	ROCK	JAZZ	TA	9A	9B	TP	ST	/	COM1	/	/
COM2	6I	6K	6C	DP2	7G	7I	7K	7C	INT	8G	8I	8K	8C	POP	LOUD	CLAS	ARTIST	EON	9F	9G	9C	SUB-W	KHz	/	/	COM2	/
COM3	6A	6J	6B	7F	7H	7A	7J	7B	8F	8H	8A	8J	8B	RDM	PROG	MUTE	PTY	AF	9E	9D	ESP	T1	MHz	/	/	/	COM3

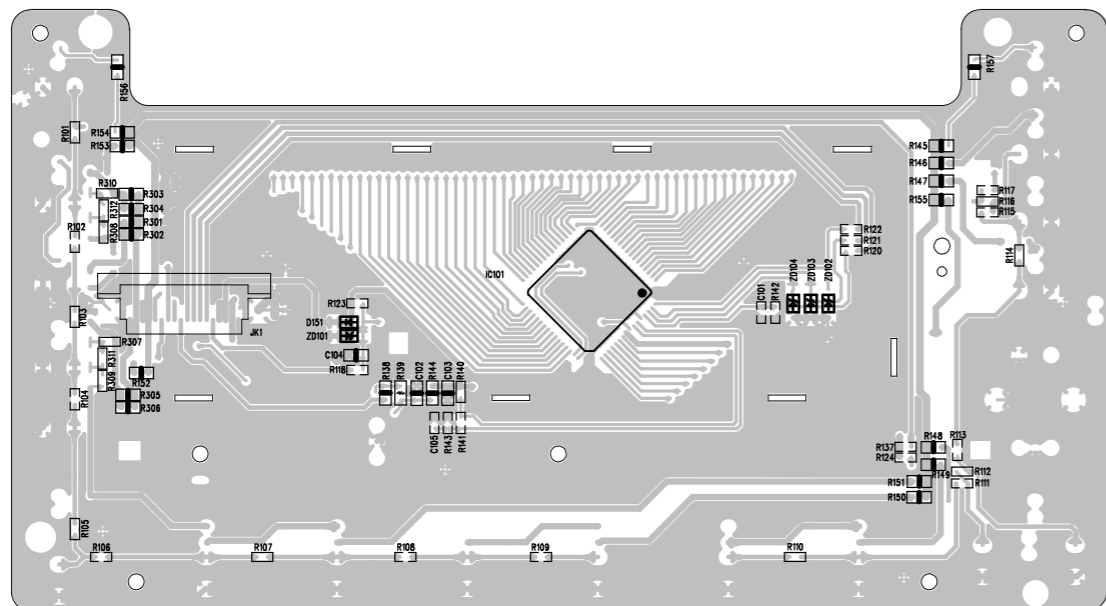
# CIRCUIT DIAGRAM - KEY BOARD



LAYOUT DIAGRAM - KEY BOARD  
TOP VIEW



LAYOUT DIAGRAM - KEY BOARD  
BOTTOM VIEW



## ELECTRICAL PARTS LIST - KEY BOARD

Part No.	Description	QTY	Location
121604000102	RES,1K? ,±5%,1/16W,0603	2	R106 R115
121604000103	RES,10K? ,±5%,1/16W,0603	1	R117
121604000152	RES,1K5? ,±5%,1/16W,0603	2	R107 R116
121604000181	RES,180? ,±5%,1/16W,0603	2	R101 R110
121604000220	RES,22? ,±5%,1/16W,0603	5	R118 R120 R121 R122 R144
121604000221	RES,220? ,±5%,1/16W,0603	2	R102 R111
121604000222	RES,2K2? ,±5%,1/16W,0603	1	R108
121604000331	RES,330? ,±5%,1/16W,0603	2	R103 R112
121604000332	RES,3K3? ,±5%,1/16W,0603	1	R109
121604000471	RES,470? ,±5%,1/16W,0603	2	R104 R113
121604000472	RES,4K7? ,±5%,1/16W,0603	3	R140 R141 R143
121604000473	RES,47K? ,±5%,1/16W,0603	2	R124 R137
121604000513	RES,51K? ,±5%,1/16W,0603	1	R142
121604000681	RES,680? ,±5%,1/16W,0603	2	R105 R114
121803010105	CAP,1μF,+80%,-20%,16V,Y5V,0603	1	C103
121806000225	CAP,2.2μF,+80%,-20%,16V,Y5V,0805	1	C104
121803000473	CAP,0.047μF,±10%,50V,X7R,0603	1	C105
121803000681	CAP,680pF,±10%,16V,X7R,0603	1	C101
142400000338	IC,SC75823E,QFP-64-14X14-0.8,SL	1	IC101
143010040449	PCB,KB,CM420,FR4,1.6mm,171.0X188.2mm,GILDING	1	
121606000102	RES,1K? ,±5%,1/10W,0805	22	R301~R302 R303~R306 R146~ R153 R160~R167
121606000471	RES,470? ,±5%,1/10W,0805	2	D126,D135
121606000561	RES,560? ,±5% ,1/10W,0805	12	R155 R156~R157 R145 R154 R158 R159 R168 R169 R170 R172
121604000000	RES,0? ,±5%,1/16W,0603	4	R307~R310
121604000101	RES,100? ,±5%,1/16W,0603	1	R138
121604000392	RES,3K9? ,±5%,1/16W,0603	1	R139
121803000105	CAP,1μF,+80%,-20%,10V,Y5V,0603	1	C102
121658000111	ENCODER,EC11020M2D-HA1-013	1	EN101
143405000070	LED,GREEN,GM-45GBOW4S, 3,LXS	19	D127-D134 D136-D146
143210000055	TACTSW,11-0606-904P,220 ±70GF,6X6X5mm	18	SW101-SW118
143210000012	TACT SW,4.3mm,TS-03-AH,250gf	1	SW119
143405000067	WHITE,SBL-3LWRWA0-F1,20mA,3.2V( 3X4.1),SBO	3	D101 D102 D105
142212010002	PHOTO DIODE,IRM2,638AF4,5V/1.1	1	IC102
121490010119	CD420,ZEBRA STRIP	1	
143400010093	LCD,DVD420,MASK TN NEG TATI	1	LCD1
143820000117	FFC,18PIN,1.0mm,100mm,B TYPE	1	
123800010012	18PIN,1.0mm,FPC SOCKET SMT TYPE, TOP CONNECT TYPE	1	JK1

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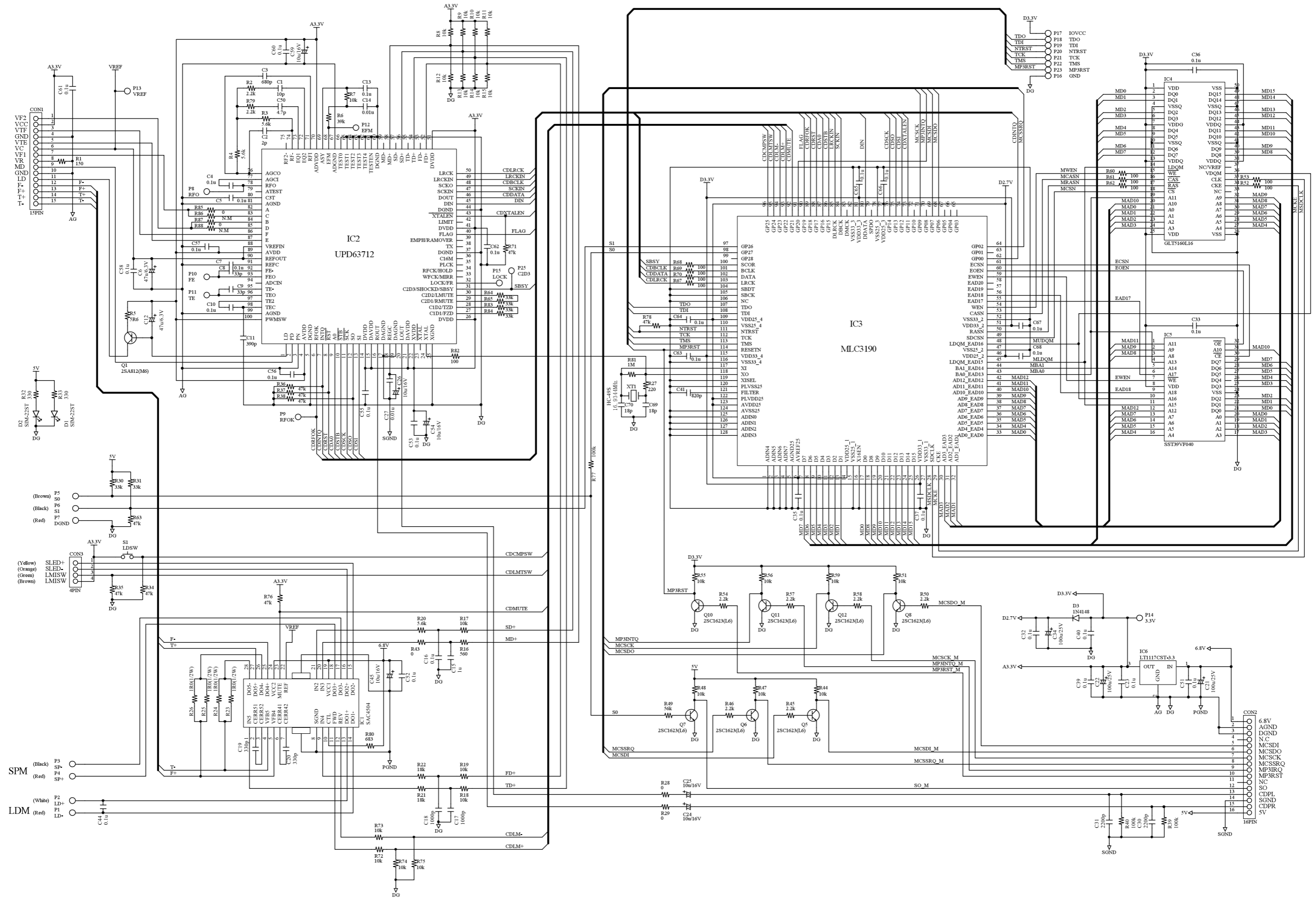
# SERVO BOARD

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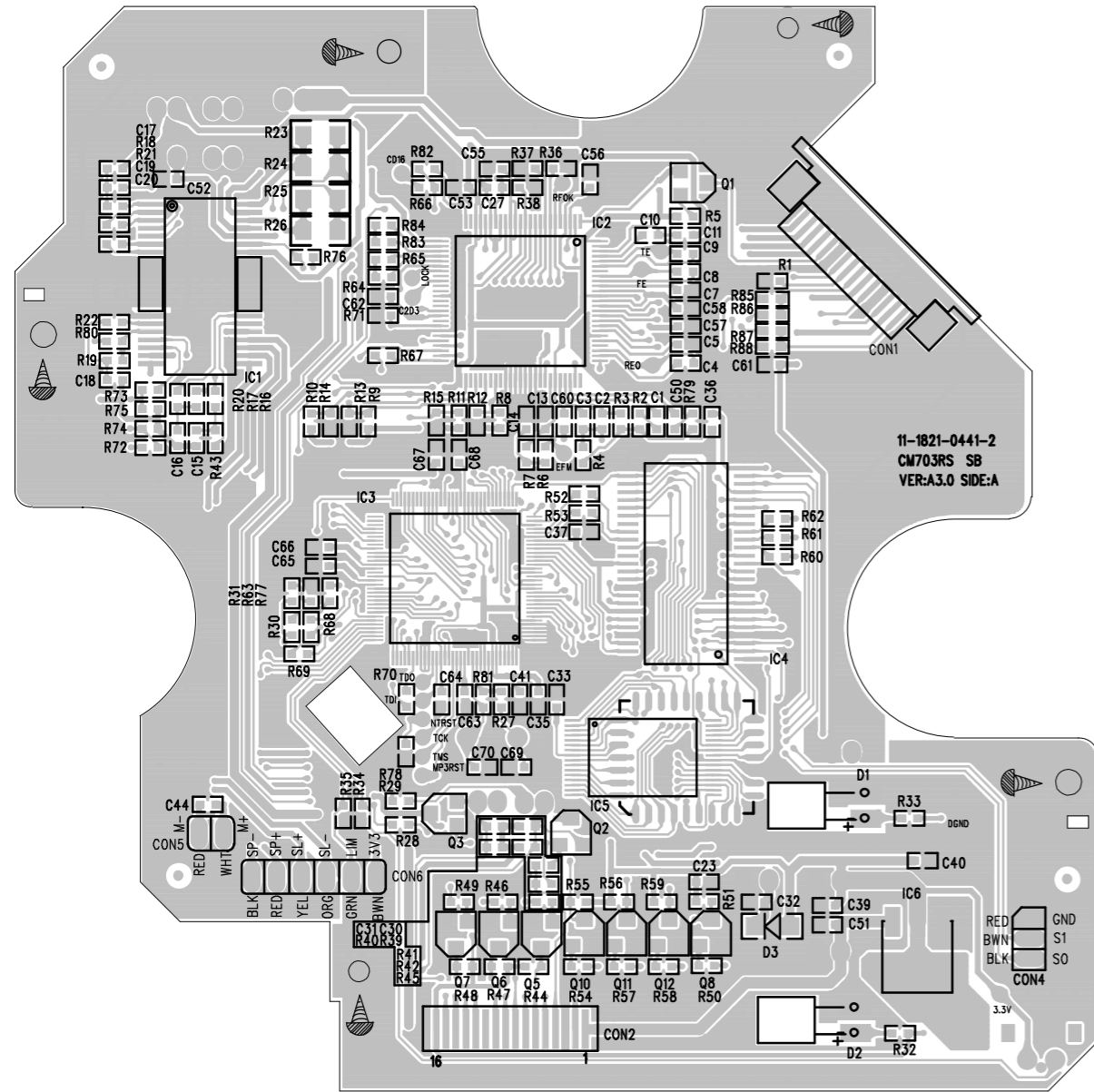
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Layout Diagram ..... 6-3  
Electrical Parts List ..... 6-4

# CIRCUIT DIAGRAM - SERVO BOARD

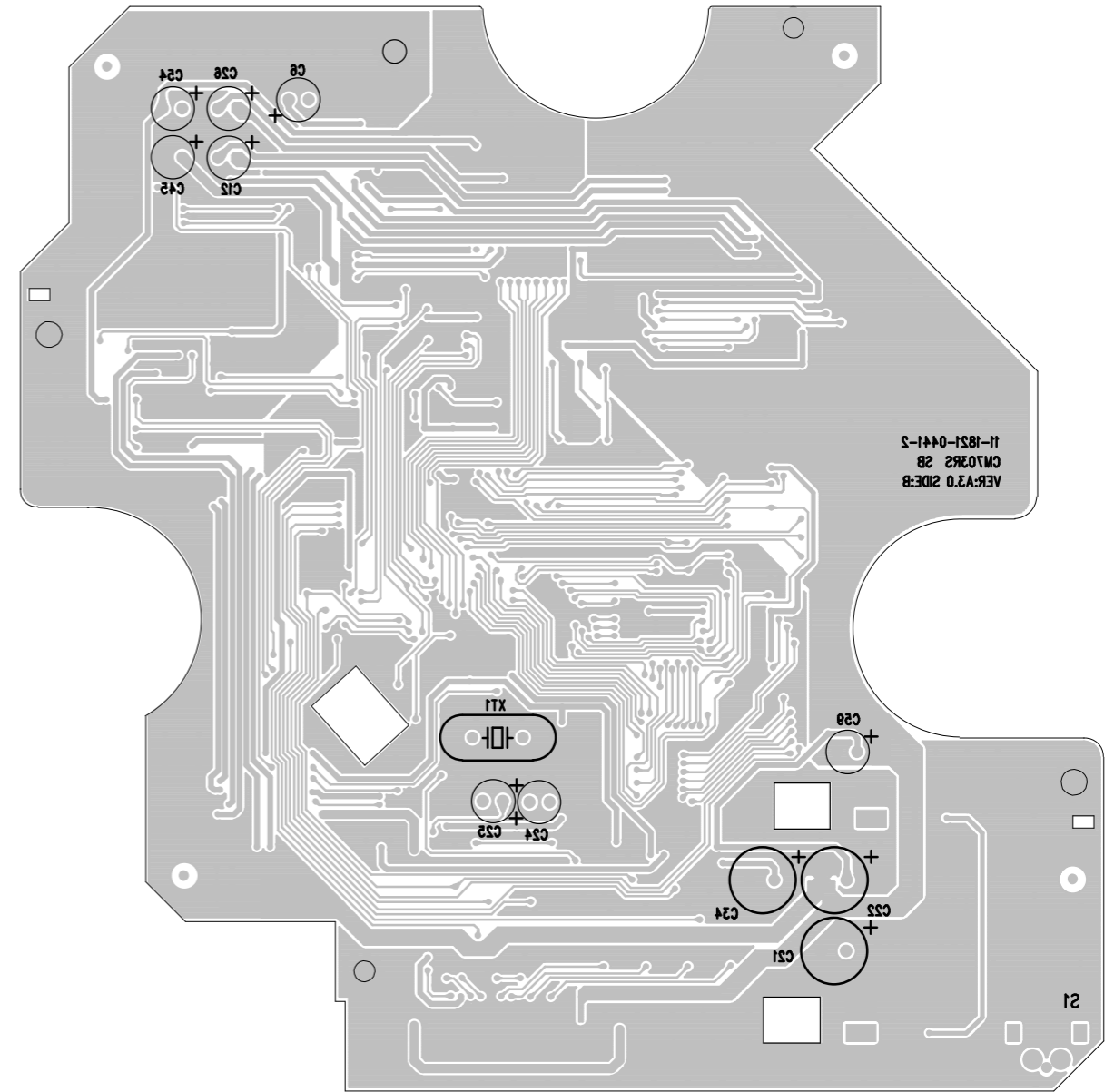




LAYOUT DIAGRAM - SERVO BOARD  
TOP VIEW



LAYOUT DIAGRAM - SERVO BOARD  
BOTTOM VIEW



## ELECTRICAL PARTS LIST - SERVO BOARD

Part No.	Description	QTY	Location
133010020342	PCB,SB,CM703RS,FR4,109.8X109X1.2mm	1	
121604000000	RES,0? ,±5%,1/16W,0603	4	R43 R85 R87 R27
121604000101	RES,100? ,±5%,1/16W,0603	10	R52 R53 R60 R61 R62 R67 R68 R69 R70 R82
121604000103	RES,10K? ,±5%,1/16W,0603	23	R10-R15 R17-R19 R44 R47 R48 R51 R55 R56 R59 R7 R72 R73 R74 R75 R8 R9
121604000104	RES,100K? ,±5%,1/16W,0603	3	R39 R40 R77
121604010105	RES,1M? ,±1%,1/16W,0603	1	R81
121604000151	RES,150? ,±5%,1/16W,0603	1	R1
121604000183	RES,18K? ,±5%,1/16W,0603(Temp Stability±100%PPM/°C	2	R21 R22
121803000180	CAP,18pF,±5%,50V,NPO,0603	2	C69,C70
121604000222	RES,2K2? ,±5%,1/16W,0603	8	R2 R45 R46 R50 R54 R57 R58 R79
121604000331	RES,330? ,±5%,1/16W,0603	2	R32 R33
121604000333	RES,33K? ,±5%,1/16W,0603	6	R30 R31 R64 R65 R83 R84
121604000393	RES,39K? ,±5%,1/16W,0603	1	R6
121604000470	RES,47? ,±5%,1/16W,0603	2	R28 R29
121604000473	RES,47K? ,±5%,1/16W,0603	9	R34-R38 R63 R71 R76 R78
121604000561	RES,560? ,±5%,1/16W,0603	1	R16
121604000562	RES,5K6? ,±5%,1/16W,0603	3	R20 R3 R4
121604000563	RES,56K? ,±5%,1/16W,0603	1	R49
121604000056	RES,5? 6,±5%,1/16W,0603	1	R5
121608000010	RES,1? ,±5%,1/8W,1206	4	R23-R26
121803000100	CAP,10pF,±1%,50V,NPO,0603	1	C1
121803000102	CAP,1nF,±10%,16V,X7R,0603	2	C17 C18
121803000103	CAP,0.01µF,±10%,50V,X7R,0603	2	C14 C27
121803000104	CAP,0.1µF,+80%-20%,16V,Y5V,0603	31	C10 C13 C16 C23 C32 C33 C35 C36 C37 C39 C4 C40 C44 C5 C51 C52 C53 C55 C56 C57 C58 C60 C61 C62 C63 C64 C65 C66 C67 C68 C7
121803000105	CAP,1µF,+80%,-20%,10V,Y5V,0603	1	C15
121803000222	CAP,2200pF,±10%,50V,X7R,0603	2	C30 C31
121803000022	CAP,2p2F,±5%,50V,NPO,0603	1	C2
121803000330	CAP,33pF,±5%,50V,NPO,0603	2	C8 C9
121803010331	CAP,0603,330p,16V,±5%,NPO	2	C19 C20
121803000391	CAP,390pF,±10%,50V,X7R,0603	1	C11
121803000047	CAP,4.7pF,±0.5P,50V,NPO,0603	1	C50
121803000821	CAP,0603,820pf,±10%,16V,X7R	2	C3 C41
142206000020	SW DIODE,1N4148,25mA.0.9V,100V,MINI-MELF	1	D3
142251000001	TR,2N3904(NPN).SOT-23	7	Q10 Q11 Q12 Q5 Q6 Q7 Q8
142245000048	TR,MMBT3906LT1,SOT-23,PNP	1	Q1
142400000332	IC,SAC4504,28-SSOPH-375B,COSMD	1	IC1
142400000504	IC,UTC1117-3.3V,SOT-23,UTC	1	IC6
142400000440	IC,µPD63712,100-LQFP,NEC	1	IC2
142400000339	IC,SDRAM1MX16 HY57V161610E,TSOP11-50,HYNIX	1	IC4
142400000442	IC,MLC3190,128-LQFP,MCS LOGIC	1	IC3
143800000006	15PIN,1.0mm,FPC SOCKET SMT TYPE TOP CONNECT TYPE	1	CON1
121604000683	RES,68K? ,±5%,1/16W,0603	1	R80
144840030017	DECK,CL-C01FY7(SHINWA)	1	
121830020106	E.CAP,10µF,±20%,4X5.5,16V,85°C	6	C24 C25 C26 C45 C54 C59

Part No.	Description	QTY	Location
121830020107	E.CAP,100µF,±20%,6.3X5,16V,105°C	3	C21 C22 C34
121830040476	E.CAP,47µF,±20%,5X5,16V,105°C	2	C12 C6
143405000004	INFRARED RECEIVER,IR928-6C	2	D1 D2
142820000008	CRYSTAL,16.9344MHZ,±30ppm,-20°C~+70°C,CL=18pF,HC-49/US	1	XT1
143210000004	DETECT SW,SW111	1	S1
123820000214	FFC,16PIN,1.0mm,150mm,TYPE"E/A"	1	CON2
123825000388	WIRE,2PIN,26#,300mm,RED/WHITE,LINE OUT	1	CON802
121298000020	CM420,PVC	1	
142254000018	TR,BD435,TO-126C(CJ)	1	Q803
142400000228	IC,LM7808,REGULATOR,KEC	1	U402
123830000031	CD101,16PIN,PWR/SPK(ISO SOCKET)	1	
83826CM420IC000	CM420 OTP IC Assm	1	U401
142400000355	IC,ST72F321AR9TA,TQFP64,10X10,ST	1	U401
83826CM703RIC010	CM703R FLASH V1.0 IC Assm	1	IC5
142400000005	IC,39VF040,32-TSOP-WH-7,SST	1	IC5

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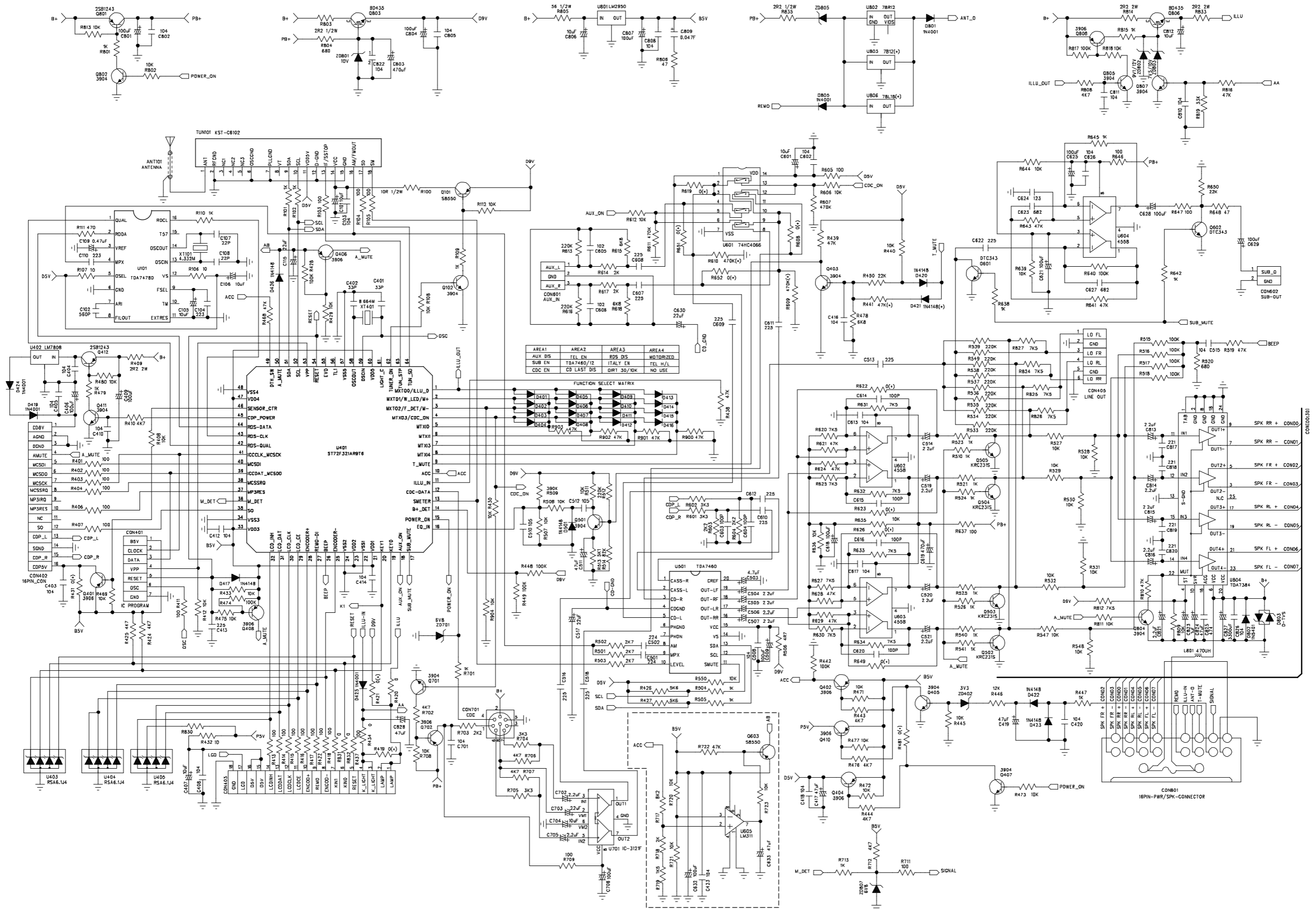
# MAIN BOARD

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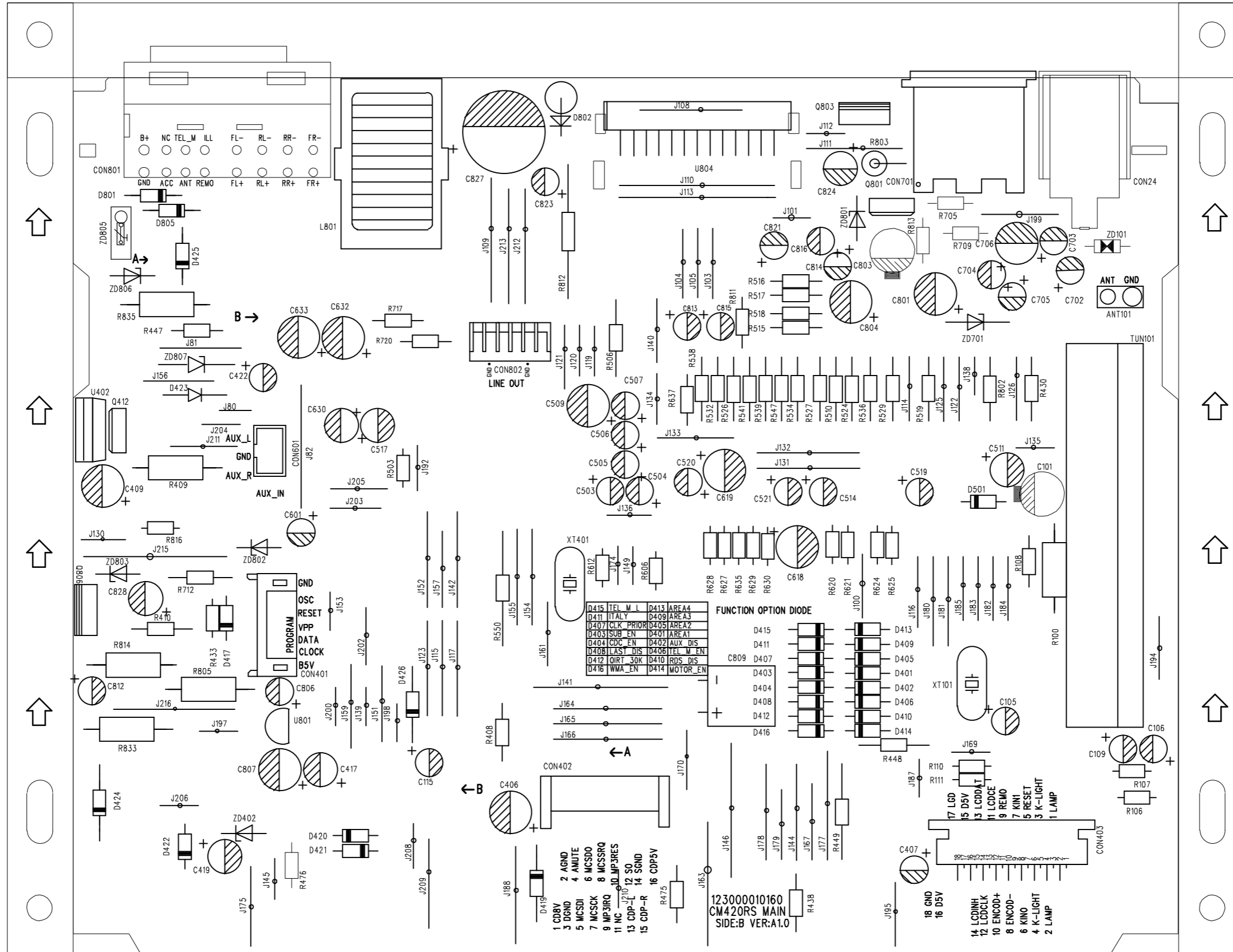
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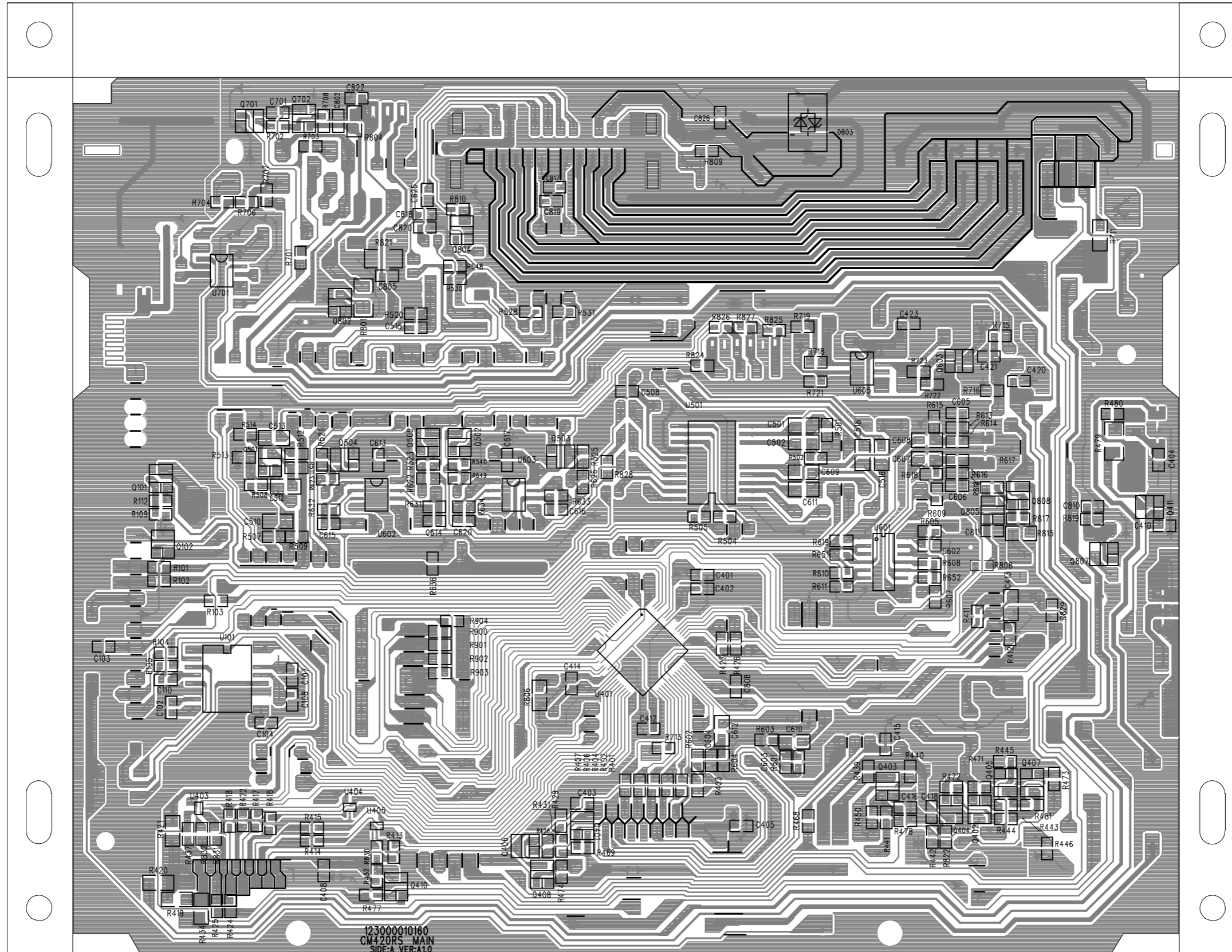
# CIRCUIT DIAGRAM - MAIN BOARD



LAYOUT DIAGRAM - MAIN BOARD  
TOP VIEW



LAYOUT DIAGRAM - MAIN BOARD  
BOTTOM VIEW



## ELECTRICAL PARTS LIST - MAIN BOARD

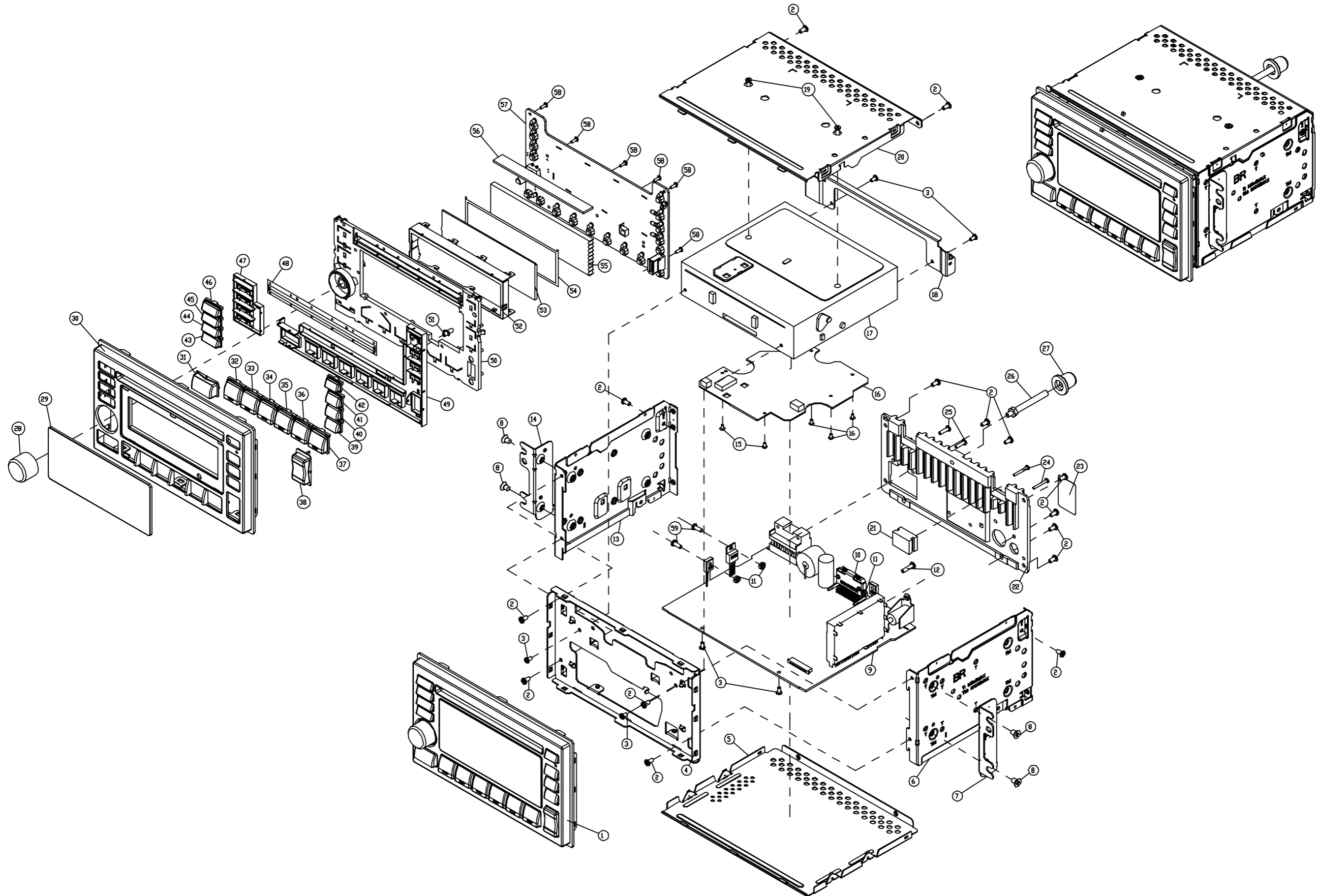
Part No.	Description	QTY	Location	Part No.	Description	QTY	Location
121640000101	RCF,100? ,±? ,±5%,1/8W	1	R637	121604000104	RES,100K? ,±5%,1/16W,0603	3	R428 R442 R474
121640000102	RCF,1K? ,±5%,1/8W	5	R526 R541 R447 R510 R524	121604000123	RES,12K? ,±5%,1/16W,0603	1	R446
121640000103	RCF,10K? ,±5%,1/8W	14	R108 R408 R433 R475 R527 R529 R532 R547 R550 R635 R802 R811 R430 R813	121604000222	RES,2K2? ,±5%,1/16W,0603	2	R603 R604
121640000104	RCF,100K? ,±5%,1/8W	6	R448-449 R517 R518 R515 R516	121604000223	RES,22K? ,±5%,1/16W,0603	1	R450
121640000272	RCF,2K7? ,±5%,1/8W	1	R503	121604000272	RES,2K7? ,±5%,1/16W,0603	2	R501-502
121640000472	RCF,4K7? ,±5%,1/8W	2	R410 R476	121604000332	RES,3K3? ,±5%,1/16W,0603	2	R601 R602
121640000473	RCF,47K? ,±5%,1/8W	6	R628-629 R519 R621 R624 R438	121604000472	RES,4K7? ,±5%,1/16W,0603	4	R444 R443 R424 R425
121640000047	RCF,4? 7,±5%,1/8W	1	R506	121604000473	RES,47K? ,±5%,1/16W,0603	7	R468 R810 R441 R900 R901 R902 R903
121640000752	RCF,7.5K? ,±5%,1/8W	5	R620 R625 R627 R630 R812	121604000562	RES,5K6? ,±5%,1/16W,0603	3	R426-427 R445
121646000022	RCF,2? 2,±5%,1/2W	1	R835	121604000681	RES,680? ,±5%,1/16W,0603	2	R804 R520
121646000560	RCF,56? ,±5%,1/2W	1	R805	121604000682	RES,6.8K? ,±5%,1/16W,0603	1	R478
142203000003	SW DIODE,1N4148,DO-35	8	D417,D422-D423,D410 D402 D426 D416 D405	121604000752	RES,7K5? ,±5%,1/16W,0603	6	R632-634 R631 R824 R826
142206000004	REC DIODE,1N4001,1A,1V,50V,DO-41	4	D801 D805 D419 D424	121606000000	RES,0? ,±5%,1/10W,0805	3	R419 R421 R821
142224000009	ZENER DIODE,3V3,1/2W,DO-35	1	ZD402	121604000000	RES,0? ,±5%,1/16W,0603	5	R822 R828 R829 R831 R832
142224000001	ZENER DIODE,10V,1/2W,DO-35	1	ZD801	121608000102	RES,1K? ,±5%,1/4W,1206	2	R479 R801
133000010160	PCB,MB,CM420RS,94V0,1.6mm,173.1x137.5mm,colophony	1		121803000101	CAP,100pF,±5%,50V,NPO,0603	6	C603-604 C614-616 C620
113850000039	f 0.5mm,6mm	15	J197 J206 J204 J112 J169 J135 J210 J187 J138 J149 J174 J198 J139 J200 J153	121803000102	CAP,1nF,±10%,16V,X7R,0603	4	C817 C818 C819 C820
113850000041	f 0.5mm,7mm	6	J145 J130 J136 J208 J192 J101	121803000104	CAP,0.1µF,+80%-20%,16V,Y5V,0603	20	C103 C403 C405 C408 C410 C412 C414 C418 C420 C508 C515 C613 C822 C617 C404 C802 C805 C808 C826,C825
113850000043	f 0.5mm,8mm	4	J203 J134 J119 J120	121803000330	CAP,33pF,±5%,50V,NPO,0603	2	C401-402
113850000045	f 0.5mm,9mm	2	J205 J202	121806000224	CAP,0.22µF,+80%,-20%,16v,Y5V,0805	2	C501-502
113850000002	f 0.5mm,10mm	12	J195 J194 J182 J183 J184 J185 J126 J122 J114 J140 J121 J161	121806000225	CAP,2.2µF,+80%,-20%,16V,Y5V,0805	3	C413 C610 C612
113850000004	f 0.5mm,11mm	5	J179 J116 J103 J104 J105	142245000021	TR,KRC231S(NPN),SOT-23	4	Q502-505
113850000006	f 0.5mm,12mm	6	J133 J170 J167 J151 J157 J100	142251000001	TR,2N3904(NPN),SOT-23	6	Q102 Q405 Q407 Q411 Q802 Q804
113850000008	f 0.5mm,13mm	2	J175 J159	142245000048	TR,MMBT3906LT1,SOT-23,PNP	7	Q401-402 Q404 Q406 Q408 Q410 Q808
113850000010	f 0.5mm,14mm	3	J209 J180 J181	142245000024	TR,KTC8550S(PNP),SOT-23	1	Q101
113850000012	f 0.5mm,15mm	10	J111 J178 J144 J154 J155 J117 J115 J123 J152 J142	142400000386	IC,TDA7460N,SO 20,ST	1	U501
113850000014	f 0.5mm,16mm	4	J132 J131 J108 J188	142400000416	IC,UTC4558,SOP-8,UTC	2	U602 U603
113850000016	f 0.5mm,17mm	4	J164 J165 J166 J177	121830000105	E.CAP,1µF,±20%,4X5,50V,105°C	1	C823
113850000022	f 0.5mm,20mm	2	J163 J109	121830020106	E.CAP,10µF,±20%,4X5.5,16V,85°C	2	C407 C806
113850000023	f 0.5mm,21mm	4	J146 J141 J110 J113	121830020107	E.CAP,100µF,±20%,6.3X5,16V,105°C	8	C101 C406 C509 C618 C801 C804 C807 C409
121646000100	RCF,10? ,±5%,1/2W	1	R100	121830000225	E.CAP,2.2µF,±20%,4X5,50V,105°C	13	C504-507 C514 C519-521 C813- 816 C821
121650000022	RCF,2? 2,±5%,2W	1	R409	121830000475	E.CAP,4.7uF,±20%,4X5,16V,105°C	1	C503
113850000020	f 0.5mm,19mm	1	J216	121830040476	E.CAP,47µF,±20%,5X5,16V,105°C	3	C417 C419 C824
113850000026	f 0.5mm,23mm	1	J215	121842030338	E.CAP,3300µF,±20%,13X26,16V,105°C	1	C827
142224000028	ZENER DIODE,9V1,1/2W,DO-35	1	ZD802	121836000477	E.CAP,470uF,±20%,8X11,16V,105°C	1	C803
142224000026	ZENER DIODE,7V5,1/2W,DO-35	1	ZD803	142015000016	CHOKE COIL,470UH,1A,±30%,28mm(D)X29mm(H)X12.5mm(L) (CM203)	1	L801
121604000100	RES,10? ,±5%,1/16W,0603	1	R432	142257000001	TR,2SB1243TV2Q(PNP),ATV	2	Q412 Q801
121604000101	RES,100? ,±5%,1/16W,0603	18	R103-105 R401-404 R406-407 R411 R413-418 R422 R437	142400000218	IC,LM2950-5V,TO-92,HTC	1	U801
121604000102	RES,1K? ,±5%,1/16W,0603	10	R109 R101 R102 R701 R504 R505 R521 R523 R525 R540	142400000378	IC,TDA7384,FLEXIWATT25,ST	1	U804
121604000103	RES,10K? ,±5%,1/16W,0603	16	R412 R469 R429 R471-473 R112 R636 R477 R480 R809 R528 R904 R530 R531 R548	142820000026	CRYSTAL,8.664MHz,±30ppm,-20°C~+70°C,CL=30pF,HC-49/US	1	XT401
				144815000022	TUNER,KST-C6102LVD-100,FM/OIRT/AM	1	TUN101
				143830000091	CMV100,16PIN,FEMALE P/S SOCKET	1	CON801
				143800000011	18PIN,1.0mm,FPC SOCKET DIP TYPE (90°) BOTTOM CONNECT TYPE	1	CON403

## ELECTRICAL PARTS LIST - MAIN BOARD

Part No.	Description	QTY	Location
123830000003	16PIN,1.0mm FFC SOCKET	1	CON402
142206000006	REC DIODE,1N5401,3A,1V,100V,DO-27,HY	1	D802
124800000025	FUSE,ZH270,15A,SLOW FUSE TYPE	1	
123805000102	7PIN,CONNECT,2.0mm,90°	1	CON401
141670000109	GBX050,PTC(RILAIDA)	1	ZD805
141090000043	ANTTENA JACK	1	CON24
121842010477	E.CAP,470 $\mu$ F, $\pm$ 20%,8X12,16V,105°C	1	C619
121830000226	E.CAP,22 $\mu$ F, $\pm$ 20%,4X5,16V,105°C	1	C115
121646000022	RCF,2? 2, $\pm$ 5%,1/2W	1	R803



EXPLODED VIEW - MAIN UNIT



## MECHANICAL PARTS LIST(CMD-220)

Item	Assembly Part NO	Description	QTY
1	83823CM420KB060	ASS'Y PANEL FOR CM420	1
2	121040000087	SCREW,BTS,White Ni,M3.0X6	15
3	121040000083	SCREW,BTS,White Ni,M2.6X5	6
4	141000020865	FRONT BTACKET FOR CM420	1
5	141000000126	BOTTOM COVER FOR CD420	1
6	141000010894	R BRACKET FOR CM420	1
7	141000000132	R FIX BRACKET FOR CD420	1
8	121040000116	SCREW,FM,White Znic,M4X6	4
9	83823CM420MB011	ASS'Y MIAN PCB FOR CD420	1
10	141000000319	BRACKET IC7386 FOR 206	1
11	121050000005	NUT M3	3
12	121040000245	SCREW,White Ni ,PM,M3X12	1
13	141000010893	L BRACKET FOR CM420	1
14	121000000884	L FIX BRACKET FOR CD420	1
15	121040000186	SCREW,PTS,Color Znic,M2.0X4	5
16	83823CM703RSB002	ASS'Y SEVRO PCB	1
17	144840030017	DECK,CL-C01FY7(SHINWA)	1
18	141000000892	DECK BRACKET FOR CM420	1
19	121040000101	SCREW,CM,M2.6x19,(SHINWA CL-C01)	2
20	141000000133	TOP COVER FOR CD420	1
21	121298000020	LINE BLOCK PVC	1
22	141010000078	HEATSINK	1
23	127070000725	LABLE FOR CDC	1
24	121040000056	SCREW,BTB,White Znic,M2.6X16	2
25	121040000075	SCREW,BTS,White Ni,M2.6X10	2
26	121050000003	POLE FOR CMV100	1
27	121410000026	RUBBER FOR CMV100	1
28	141238000057	KNOB ENCODER FOR CD420	1
29	141220000209038	LENS FOR CM420	1
30	121210300555018	FRONT PANEL FOR CM420	1
31	141238000071	KNOB SEEK FOR CD420	1
32	141238000404	KNOB NUM1 FOR CM420	1
33	141238000062	KNOB NUM2 FOR CD420	1
34	141238000063	KNOB NUM3 FOR CD420	1
35	141238000064	KNOB NUM4 FOR CD420	1
36	141230000671008	KNOB NUM5 FOR CD420	1
37	141230000672008	KNOB NUM6 FOR CD420	1
38	141238000405	KNOB TUNE FOR CD420	1
39	141238000055	KNOB AMS FOR CD420	1
40	141238000056	KNOB DISP FOR CD420	1
41	141238000058	KNOB EQ/LOUD FOR CD420	1
42	141238000067	KNOB OPEN FOR CD420	1
43	141238000060	KNOB MUTE FOR CD420	1
44	141238000059	KNOB FM/AM FOR CD420	1
45	141238000072	KNOB SRC FOR CD420	1
46	141238000068	KNOB PRW FOR CD420	1
47	141240010031	KNOB BRACKET2 FOR CD420	1
48	121450000023	DUST PROOF FOR CD420	1
49	141240010030	KNOB BRACKET1 FOR CD420	1
50	141290010070	LIGHT GUIDE SLICE FOR CD420	1
51	141238000069	KNOB RESET FOR CD420	1

Item	Assembly Part NO	Description	QTY
52	141002010007	LCD COVER FOR CD420	1
53	143400000093	LCD	1
54	121290010068	FILTER SHEET FOR CD420	1
55	121290000415	LCD REFECTOR FOR CD420	1
56	121490010119	ZEBRA STRIP FOR CD420	1
57	83822CM420KB022	ASS'Y KB FOR CD420	1
58	121040000065	SCREW,BTP,Color Znic,M2.0X6	7
59	121040000177	SCREW,PM, White Ni,M3X8	2

## MECHANICAL PARTS LIST(CMD-220R)

Item	Assembly Part NO	Description	QTY
1	83823CM420KB070	ASS'Y PANEL FOR CM420	1
2	121040000087	SCREW,BTS,White Ni,M3.0X6	15
3	121040000083	SCREW,BTS,White Ni,M2.6X5	6
4	141000020865	FRONT BTACKET FOR CM420	1
5	141000000126	BOTTOM COVER FOR CD420	1
6	141000010894	R BRACKET FOR CM420	1
7	141000000132	R FIX BRACKET FOR CD420	1
8	121040000116	SCREW,FM,White Znic,M4X6	4
9	83823CM420MB051	ASS'Y MIAN PCB FOR CD420	1
10	141000000319	BRACKET IC7386 FOR 206	1
11	121050000005	NUT M3	3
12	121040000245	SCREW,White Ni ,PM,M3X12	1
13	141000010893	L BRACKET FOR CM420	1
14	121000000884	L FIX BRACKET FOR CD420	1
15	121040000186	SCREW,PTS,Color Znic,M2.0X4	5
16	83823CM703RSB002	ASS'Y SEVRO PCB	1
17	144840030017	DECK,CL-C01FY7(SHINWA)	1
18	141000000892	DECK BRACKET FOR CM420	1
19	121040000101	SCREW,CM,M2.6x19,(SHINWA CL-C01)	2
20	141000000133	TOP COVER FOR CD420	1
21	121298000020	LINE BLOCK PVC	1
22	141010000078	HEATSINK	1
23	127070000725	LABLE FOR CDC	1
24	121040000056	SCREW,BTB,White Znic,M2.6X16	2
25	121040000075	SCREW,BTS,White Ni,M2.6X10	2
26	121050000003	POLE FOR CMV100	1
27	121410000026	RUBBER FOR CMV100	1
28	141238000057	KNOB ENCODER FOR CD420	1
29	141220000209048	LENS FOR CM420	1
30	121210300555028	FRONT PANEL FOR CM420	1
31	141238000071	KNOB SEEK FOR CD420	1
32	141238000404	KNOB NUM1 FOR CM420	1
33	141238000062	KNOB NUM2 FOR CD420	1
34	141238000063	KNOB NUM3 FOR CD420	1
35	141238000064	KNOB NUM4 FOR CD420	1
36	141230000671008	KNOB NUM5 FOR CD420	1
37	141230000672008	KNOB NUM6 FOR CD420	1
38	141238000403	KNOB-AF/PTY/TA FOR CM420 BLACK	1
39	141238000055	KNOB AMS FOR CD420	1
40	141238000056	KNOB DISP FOR CD420	1
41	141238000058	KNOB EQ/LOUD FOR CD420	1
42	141238000067	KNOB OPEN FOR CD420	1
43	141238000060	KNOB MUTE FOR CD420	1
44	141238000059	KNOB FM/AM FOR CD420	1
45	141238000072	KNOB SRC FOR CD420	1
46	141238000068	KNOB PRW FOR CD420	1
47	141240010031	KNOB BRACKET2 FOR CD420	1
48	121450000023	DUST PROOF FOR CD420	1
49	141240010030	KNOB BRACKET1 FOR CD420	1
50	141290010070	LIGHT GUIDE SLICE FOR CD420	1
51	141238000069	KNOB RESET FOR CD420	1

Item	Assembly Part NO	Description	QTY
52	141002010007	LCD COVER FOR CD420	1
53	143400000093	LCD	1
54	121290010068	FILTER SHEET FOR CD420	1
55	121290000415	LCD REFECTOR FOR CD420	1
56	121490010119	ZEBRA STRIP FOR CD420	1
57	83822CM420KB022	ASS'Y KB FOR CD420	1
58	121040000065	SCREW,BTP,Color Znic,M2.0X6	7
59	121040000177	SCREW,PM, White Ni,M3X8	2