



Technical Manual

STEREO INTEGRATED AMPLIFIER RA-1570

Table of Contents

Specification.....	1	Update Procedure.....	8~11
Appearance	2	PCB Assembly.....	12~15
Parts List	3~6	Schematic Diagram	16~18
Ajustment	7		

Specifications

Continuous Power Output

(20-20 kHz, < 0.03%, 8 ohms)

120 watts/channel

Total Harmonic Distortion (20Hz-20kHz)

< 0.03% at rated power, 1/2 power, or 1 watt

Intermodulation Distortion (60 Hz : 7 kHz, 4:1)

< 0.03% at rated power, 1/2 power or 1 watt

Frequency Response:

Phono Input

20Hz-20kHz, ± 0.5 dB

Line Level Inputs

10Hz-100kHz, +1, -3dB

Damping Factor (20Hz-20kHz, 8 ohms)

180

Input Sensitivity / Impedance

Phono Input (MM)

2.25mV / 68k ohms

Line Level Inputs (RCA)

285mV / 100k ohms

Line Level Inputs (Balanced)

570mV / 50k ohms

Input Overload

Phono Input

30mV

Line Level Inputs

4V

Preamplifier Output / Impedance

1.5V / 470 ohms

Signal to Noise Ratio (IHF "A" weighted)

Phono Input

80dB

Line Level Inputs

100dB

Digital Section

Frequency Response

10Hz - 95k Hz (± 3.0 dB, Max)

Signal to Noise Ratio (IHF "A" weighted)

100 dB

Input Sensitivity/Impedance

0 dBfs / 75 ohms

Preout Level/Impedance

1.2 V / 470 ohms (at -20 dB)

USB/iPod Digital Signals

WAV, MP3, WMA (up to 48kHz 16 bit)

Coaxial/Optical Digital Signals

SPDIF LPCM (up to 192kHz 24 bit)

PC-USB

USB Audio Class 1 (up to 24/96)

USB Audio Class 2 (up to 24/192)*

*Driver installation required

Power Requirements:

USA:

120 Volts, 60 Hz

EC:

230 Volts, 50 Hz

Power Consumption

400 watts

Standby Power Consumption

< 0.5 watts

Dimensions (W x H x D)

431 x 144 x 350 mm

(17 x 5 $\frac{7}{8}$ x 13 $\frac{3}{4}$ ins)

Front Panel Height

3U (132.6mm, 5 $\frac{1}{4}$ ins)

Weight (net)

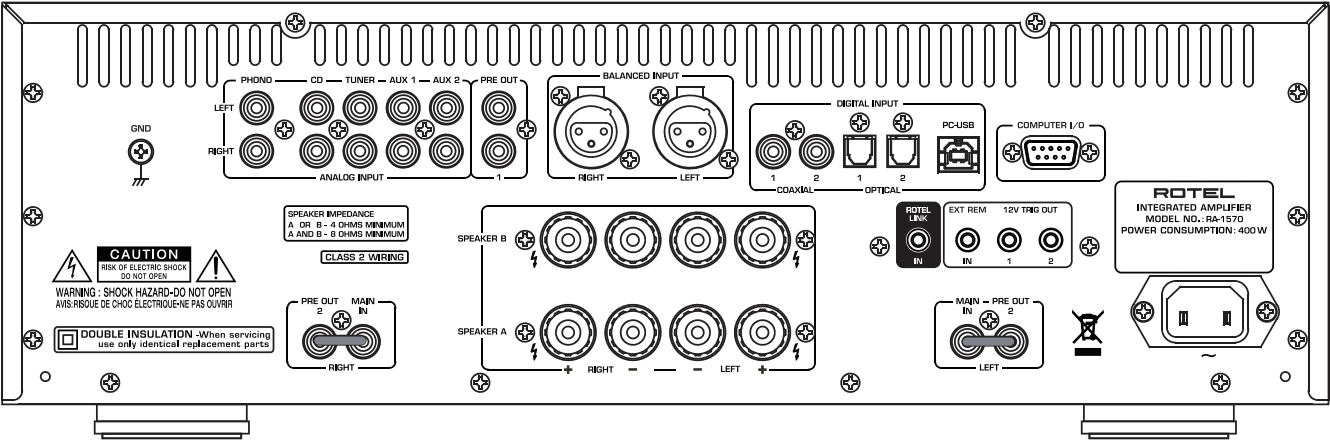
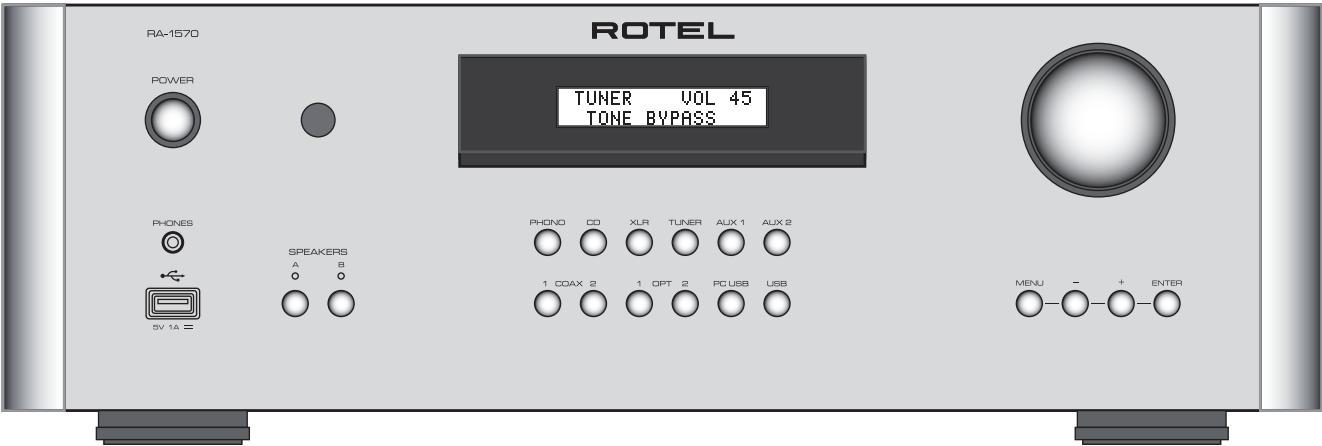
13kg, 28.7 lbs.

THE ROTEL CO., LTD.

2-11-4, NAKANE, MEGURO-KU,
TOKYO 152-0013, JAPAN

Serial. NO.
Beginning

Y-453A-1307/pdf



SYMBOL	PARTS NO.	DESCRIPTION
016 X-1672B01-05 PCB ASSY		
	501X-1672B-1	PCB ASSY (MAIN)
IC601	031IC0008601	IC UPC1237C-A (PROTECTION)
IC301,302	031IC0008802	IC NE5532AP (OPE DUAL)
Q903	032KTC3198Y-AT	TR KTC3198Y-AT/PJ
Q613,614	033A1381-E	TR KSA1381-ESTU (PAIR KSC3503)
Q615,616	033C3503-D	TR KSC3503-DSTU (PAIR KSA1381)
Q902	033KTB631K-Y	TR KTB631K-Y (PAIR KTD600K)
Q901	033KTD600K-Y	TR KTD600K-Y (PAIR KTB631K)
Q621,622	033TA949-Y	TR 2SA949-Y(PAIR 2SC2229)
Q653-656,607-612	033TA992-F	TR KSA992-F-TA(PAIR KSC1845)
Q651,652,657,601-606	033TC1845-F	TR KSC1845-F-TA(PAIR KSA992)
Q619,620	033TC2229-Y	TR 2SC2229-Y(PAIR 2SA949)
D901,902	034DB0000400	POWER DIODE BR84 (8A 400V)
D609-612,903,904	034DD0000200	DIODE 1N4004-F (AMMO) 1A 400V
D601-608	034DD0000300	DIODE 1N4148 (AMMO) WA 150mA 75V
D613-616,619,620	034DD0000301	D/DIODE 1N4148 TAP 5MM PITCH
D617	034DZ0110181	ZENER DIODE 18V 1N5248B
D621	034DZ0115R61	ZENER DIODE 5.6V 1N5232B
TH601,602	034TH0000603	POSISTOR PTFL04BD222Q2N34B0
F901,902	0365T8L-250V	FUSE 250VT8AL
VR601,602	051SFR002-102	S.F.RES VM6CKPV1S-1K
SW801	061C-4176A08-01	POWER SW PS4-A210-60-76 TV-5 PCB
RY601,602	063DH2TU-24	RELAY DH24D2-OT(M)
HJ101	065C-4939B01	3.5F MINI JACK PJ-35047S
JK601,602	066C-4859A01	2P PIN JACK AU (BLK)
SPA,SPB	067C-4761A01	4P SPEAKER TERMINAL
CP601,602	068B2B-PH-KS-01	CONNECTOR WAFER 2P 1W2001WOV0-02KNA
CP802	068B2P3-VH-01	CONNECTOR WAFER 2P 1W3961WOV0-3P2NYA
CP605,606	068B2P-VH-01	CONNECTOR WAFER 2P 1W3961WOV0-02NYA
CP607	068B3B-PH-KS-01	CONNECTOR WAFER 3P 1W2001WOV0-03KNA
CON902	068C-3683#2	PCB TERMINAL 3P P7.5 TP WE-12 I-753NA
K1A	068TD05LG	5P CONNECTOR WAFER
K2A	068TD06LG	6P CONNECTOR WAFER
016 X-1673C01-02 PCB ASSY		
	501X-1673C-1	PCB ASSY (DIGITAL)
XT101	023CY0600100	CRYSTAL ISXO-3E-24.576MHZ
XT103	023CY0600400	CRYSTAL ISXO-3E-49.152MHZ
XT104	023CY0600500	CRYSTAL ISXO-3E-45.1584MHZ
XT201	023CY0700400	CRYSTAL SMD SRXA-S1-18-4MHZ
XT102	023CY0900100	X-TAL 12MHz SRXA-SI-A8 SMD
B01,02,	025BK2125HS101	BEAD COIL BK2125 HS101-T
B104-106,108,114,115	025BK2125HS102	BEAD COIL BK2125HS102-T
B101,103,107,109-113,201,	025BK2125HS601	BEAD COIL BK2125HS601-T
IC101	031IC0001900	IC AK4114VQP SMD (D/A TRANSCEIVER)
IC111	031IC0002703	IC AME1117CCGTZ ABF SMD (REGULATOR)
IC202	031IC0002910	IC EPROM AT24C16AN-10SU-2.7V
IC402	031IC0007700	IC LTV817B (PHOTO COUPLER)
IC501,503	031IC0008802	IC NE5532AP (OPE DUAL)
IC802	031IC0010600	IC NJM7805FA(KIA7805API-U/P) (REG. +5VDC)
IC104-106	031IC0012700	IC OPA2604AP (OPE DUAL)
IC103	031IC0027600	IC SMD WM8740SEDS (DAC)
IC102	031IC0028000	IC DIT 192KHz 24-Bit 3.3V AK4104
IC401	031IC0028600	IC SN65220DBVR USB Suppressor
IC205	031IC0029000	IC SN75C3232PWR RS232 Line driver
IC803	031IC0031400	IC BA33BC0T 3V3 LDO.
IC203,204	031IC0033300	IC SN74LVC1G08DBV SiINGLE 2-INPUT AND GATE
IC504	031IC0037100	IC NJW1194V ELEC 4IN-VOL-TONE SMD

SYMBOL	PARTS NO.	DESCRIPTION
IC502	031IC0037600	IC PGA2311UA ELEC VOLUME SMD
IC110	031IC0038400	IC AT24C02C-SSHM-T 2-Wire Serial EEPROM
IC108	031IC0038501	IC CM6631A USB2.0 Audio Processor LQFP-100
IC109	031IC0038601	IC SST39VF040-70-4C-WHE Flash Memory TSOP
IC107	031IC0039000	IC RCLAMP0522P SMD (DIODE ARRAY)
IC201	531IC0030803	IC CPU STM32F101VC-RA1570 SOFT WRITING
Q202	032KRA107S	TR KRA107S-RTK/P
Q201,203,204,401-408,410,411,Q103	032KRC107S	TR KRC107S-RTK/P
Q914,916	032KTA1266Y	TR KTA1266Y/PF
Q913,915	032KTC3198Y-AT	TR KTC3198Y-AT/PJ
Q412	032KTC3200-GRBL	TR KTC3200-GRBL/P
Q912	033KTB631K-Y	TR KTB631K-Y (PAIR KTD600K)
Q911	033KTD600K-Y	TR KTD600K-Y (PAIR KTB631K)
D201,401-410	034DD0000500	DIODE CHIP KDS184RTK/P
D101	034DD0000800	DIODE SMD 1SR154-400TE25 1A 4.5x2.6
D103,104	034DE0000200	TVS SMD LTBV15C SOD323
D411,412	034DZ0054R30	DOIDE ZENER SMD KDZ4.3V/P
D911,912	034DZ0110181	ZENER DIODE 18V 1N5248B
D915,916	034DZ0115R61	ZENER DIODE 5.6V 1N5232B
D913,914	034DZ0117R51	ZENER DIODE 7.5V 1N5236B
SW001,002	061C-4679A07	TACT SW 5MM GRAY SFKHHAM2520
RY401-410	063EA2-24NU	RELAY
JK401-404	065YKB21-5406N	3.5DIA MINIATURE JACK (ST)
JK201,204	0664TR-2166#4	2P PIN JACK AU (WHT.RED)
JK202,203	0664TR-2408#3	4P PIN JACK AU (WHT.RED)
JK301,302	066C-4575B01	3P CANNON JACK(FEMALE) YKF52-5006V
JK101	066C-4859A01	2P PIN JACK AU (BLK)
P101	066C-5133A20	CNT SOCKET FH 2.0X4.3 20P F6322011242HA
JK104	066C-5205A00-01	JACK USB B TYPE DIP U7020412210DA
JK102,103	066GP1FAV31RK0F	OPTICAL MODULE GP1FAV31RK0F
CP204	068B11B-PH-KS-01	CONNECTOR WAFER 11P 1W2001WOV0-11KNA
CP205	068B12B-PH-KS-01	CONNECTOR WAFER 12P 1W2001WOV0-12KNA
CP608	068B4B-PH-KS-01	CONNECTOR WAFER 4P 1W2001WOV0-04KNA
CP202	068B5B-PH-KS-01	CONNECTOR WAFER 5P 1W2001WOV0-05KNA
CP208,609	068B6B-PH-KS-01	CONNECTOR WAFER 6P 1W2001WOV0-06KNA
CP209	068B8B-PH-KS-01	CONNECTOR WAFER 8P 1W2001WOV0-08KNA
DB9	068DEL09SBNK2ES	D-SUB CONNECTOR WITH JACK SCREW
SKT1	068PS-1101-32	CONNECTOR BASE 16P
016 X-1674B01-03 PCB ASSY		
	501X-1674B-1	PCB ASSY (FRONT)
B204,205	025BK2125HS101	BEAD COIL BK2125 HS101-T
B203	025BK2125HS102	BEAD COIL BK2125HS102-T
IC208	031IC0009900	IC NJM317F (REGULATOR)
IC206	031IC0028600	IC SN65220DBVR USB Suppressor
IC207	031IC0029100	IC TPS2553DBVR current limite S/W
IC209	031IC0030600	REMOCON SENSOR RPM7238-H9 3.3V
Q107,108	032KRA107S	TR KRA107S-RTK/P
Q103,105,106	032KRC107S	TR KRC107S-RTK/P
Q803	032KTC3200-GRBL	TR KTC3200-GRBL/P
D809-812	034DD0000800	DIODE SMD 1SR154-400TE25 1A 4.5x2.6
D814,815	034DZ0110201	ZENER DIODE 20V 1N5250B
D813	034DZ0115R11	ZENER DIODE 5.1V 1N5231B
SPA,SPB	034LE0003100	LED SMD 2012 BLU 0805QBC-E (BL-HB335A-6-TRB)
VFD201	035DN2025E	FL TUBE
ENC201	056C-4678B01	ROTARY ENCODER (WITHOUT DETENT)
SW201-212,214-219	061C-4679A07	TACT SW 5MM GRAY SFKHHAM2520
JK106	066C-5132C00	JACK USB 1P U0010411210DA VERTICAL
CP206	068B2B-PH-KS-01	CONNECTOR WAFER 2P 1W2001WOV0-02KNA
CP203	068B4B-PH-KS-01	CONNECTOR WAFER 4P 1W2001WOV0-04KNA
CP807	068B5B-EH	CONNECTOR WAFER 5P

SYMBOL	PARTS NO.	DESCRIPTION
CP201	068B7B-PH-KS-01	CONNECTOR WAFER 7P 1W2001WOV0-07KNA
CP207	068S4B-PH-KS-01	4P CONNECTOR WAFER 1W2001WOR0-04KNA
CP207	068S4B-PH-KS-01	4P CONNECTOR WAFER 1W2001WOR0-04KNA
016 X-1671B01-02 PCB ASSY		
	501X-1671B-1	PCB ASSY (POWER)
T001	022T-1135N01-V01	STBY TRANS 5.9V-0.1A
IC801	031IC0031400	IC BA33BC0T 3V3 LDO.
Q659,660,	032KRA107	TR KRA107
Q657,658,	032KRC107	TR KRC107
Q801	032KTC3198Y-AT	TR KTC3198Y-AT/PJ
Q802	032KTC3203Y	TR KTC3203Y/P
D801	034DB0000100	POWER DIODE W02M (1.5A 200V)
D805,806,905	034DB0001001	POWER DIODE KBP206G (2A 600V)
D803,807,808	034DD0000200	DIODE 1N4004-F (AMMO) 1A 400V
D802	034DD0000300	DIODE 1N4148 (AMMO) WA 150mA 75V
D804	034DZ0113R31	ZENER DIODE 3.3V 1N5226B
F903,904	0365ST1-R	FUSE 250VT1A
F801	0365ST250-R	FUSE 250VT250mA
F802	0365ST2-R	FUSE 250VT2A
RY801	063DG1U-5-0.5W	RELAY DG5D1-O(M)-II 0.53W TV-8
CP801,803,804	068B2P3-VH-01	CONNECTOR WAFER 2P 1W3961WOV0-3P2NYA
CP805	068B2P-VH-01	CONNECTOR WAFER 2P 1W3961WOV0-02NYA
CP806	068B3P-VH	CONNECTOR WAFER 3P 4438503646
CP604	068B4B-PH-KS-01	CONNECTOR WAFER 4P 1W2001WOV0-04KNA
CP901	068C-3683#3	PCB TERMINAL 4P P7.5 TP WE-13 I-754NA
016 E-1533B00 PCB ASSY		
	501E-1533B-41	PCB ASSY (POWER LED)
D1,D2	034LE0002600	LED L-314UB5W (BLU) 3F
CP1	068S3B-PH-KS-01	3P CONNECTOR WAFER 1W2001WOR0-03KNA
016 E-1642B00 PCB ASSY		
	501E-1642B-3	PCB ASSY (TELECHIPS)
XT302	023CY0900100	X-TAL 12MHz SRXA-SI-A8 SMD
L301-L302	025BK2125HS601	BEAD COIL BK2125HS601-T
L303	025CIL10J2R2K	COIL CHIP 1608 2.2UH-CIL10J2R2K
IC305	031IC0002703	IC AME1117CCGTZ ABF SMD (REGULATOR)
IC304	031IC0002704	IC AME1117ECGTZ AXH SMD (REGULATOR)
IC302	031IC0030500	IC TCC8600 32-bit RISC for Host Player SMD
IC307	031IC0036800	IC MF1337S3959I-POD 2.0C CP Authentication SMD
IC303	031IC0036901	IC EM639165TS-6G SDRAM SMD
IC306	531IC0032616	IC EN29LV160CT-RA1570 SOFT WRITING
J301	068C-5130A20	CNT PIN HEADER PH2.0 20P P6612011140GA
HEAT SINKER ASSY		
	505HSRA-1570	HEAT SINKER ASSY
	0134FD-16	PCB SUPPORT
	017ABF-06A00	HEAT SINKER BOARD
Q627-638	019TO-3P	MICA SHEET TBM-51W-15 #9043
Q617,618	032KTD1411	TR KTD1411
Q629,630,633,634,637,638	033A1492-OPY	TR 2SA1492-OPY (PAIR 2SC3856)
Q625,626	033A1667-OY	TR 2SA1667-OY (PAIR 2SC4381)
Q627,628,631,632,635,636	033C3856-OPY	TR 2SC3856-OPY (PAIR 2SA1492)
Q623,624	033C4381-OY	TR 2SC4381-OY (PAIR 2SA1667)
OTHERS		
	011FP-697-B	FRONT PANEL ASSY (BLK)
	011FP-697-S	FRONT PANEL ASSY (SLV)
	012C-5009B00	TACT BUTTON 8.3F (BLK)
	012C-5009B01	TACT BUTTON 8.3F (SLV)

SYMBOL	PARTS NO.	DESCRIPTION
T002	012C-5018B01	KNOB 43F NO MARK (BLK)
	012C-5018B01S	KNOB 43F NO MARK (SLV)
	012RV4-09A00	PUSH BUTTON 14F (BLK)
	012RV4-09A01	PUSH BUTTON 14F (SLV)
	014C-5005C03	UPPER COVER (BLK)
	014C-5005C03S	UPPER COVER (SLV)
	014YV3-02A00	SIDE CAP 3U H=132.6MM BLK
	014YV3-02A01	SIDE CAP 3U H=132.6MM SLV
	015RP-535	REAR CHASSIS
	0194TR-2823#2	PLASTIC FOOT 24F (ABS) 4TR-2823#2-RO
	0194TSH-19#2	PLASTIC FOOT 50F BLK 4TSH-19#2-RO
	019C-5016A00	KNOB RING 46F (BLU)
	019C-5074B00	DIMMER RING
	022T-1132W01	POWER TRANSFORMER
	069C-4629A01	AC 2P INLET 6102.3100 (WIRING)
	069C-5206B00	PIN PLUG RC04PL003G
	071MFH4X8BK	MACHINE FLAT SCREW (BLK)
	071MFH4X8NI	MACHINE FLAT HEAD SCREW (SLV)
	072C-4621A03	AC CORD SET SJT AWG16 UL 2P for USA
	072C-4622A02	AC CORD SET AUSTRALIA SAA 2P for Australia
	072C-4623A02	AC CORD SET BS H05VV-F 2C for UK
	072C-4624A03	AC CORD SET EUROPE CEE 2P for Europe
	072C-5178A00	USB AM-BM CABLE SMBU03-00BK
	081ABF-10A00	INSIDE CARTON
	081ABF-11A00	SHIPPING CARTON
	081ZE-220 (T/B)	ETHAFOAM MOULDING
	082OMADDPDRV-C	ADD SHEET PC USB DRIVER
	082OMADDPUSB-CA	ADD SHEET PC-USB Driver Instruction
	082OMRA-1570-81	OWNER'S MANUAL
	092I-BTD-18C3-1	USB BLUETOOTH DONGLE
	092PC-USB-DRV-C	PC USB DRIVER CD ROM
	092RR-AX92	REMOTE CONTROL UNIT


Instruments : DC milli-voltmeter

Notes : Prior to Bias Adjustment, run about 5minutes with rated output (8 ohms)
And warm up Power Transistor and Heat Sink.Set input off.

Step	Coupling	Adjust	Adjust for
1	X-1672-01 PCB TP1	X-1672-01 PCB VR601	DC milli-voltmeter Reads 5mV
2	X-1672-01 PCB TP2	X-1672-01 PCB VR602	

Service Note

Cautions during Inspection and Repair

- Keep in mind the safety warnings
The safety instructions are shown as the labels or printings on the exterior, the inside chassis or the parts, etc. Refer to the instructions when proceeding with inspection or repair.
- Use only the specified parts for replacement
The selected parts are used at critical area to reduce fire hazard or electrical shock. So when replacing these parts where designaged with  **marks or**
※ **marks on the schematic diagram or the parts list**, ensure to use only the same parts.
- Ensure to dress back the AC (Mains) cord to the original position
If for some reason, the AC cord is moved or partially disassembled, ensure to re-route or assemble back to the original position. The AC cord area is protected and secured by tubing and insulation materials for the sake of safety, so that no loose wire will touch and cause fire hazard and electrical shock.
- Check for safety aspects after inspection or repair
Ensure all parts, such as screws or wires, removed during inspection or repair are secured back to the original positions, and check visually for any anomaly. Also check for any electrical leakage or resistance to maintain the safety.

1. Main Software Upgrade- 1/2

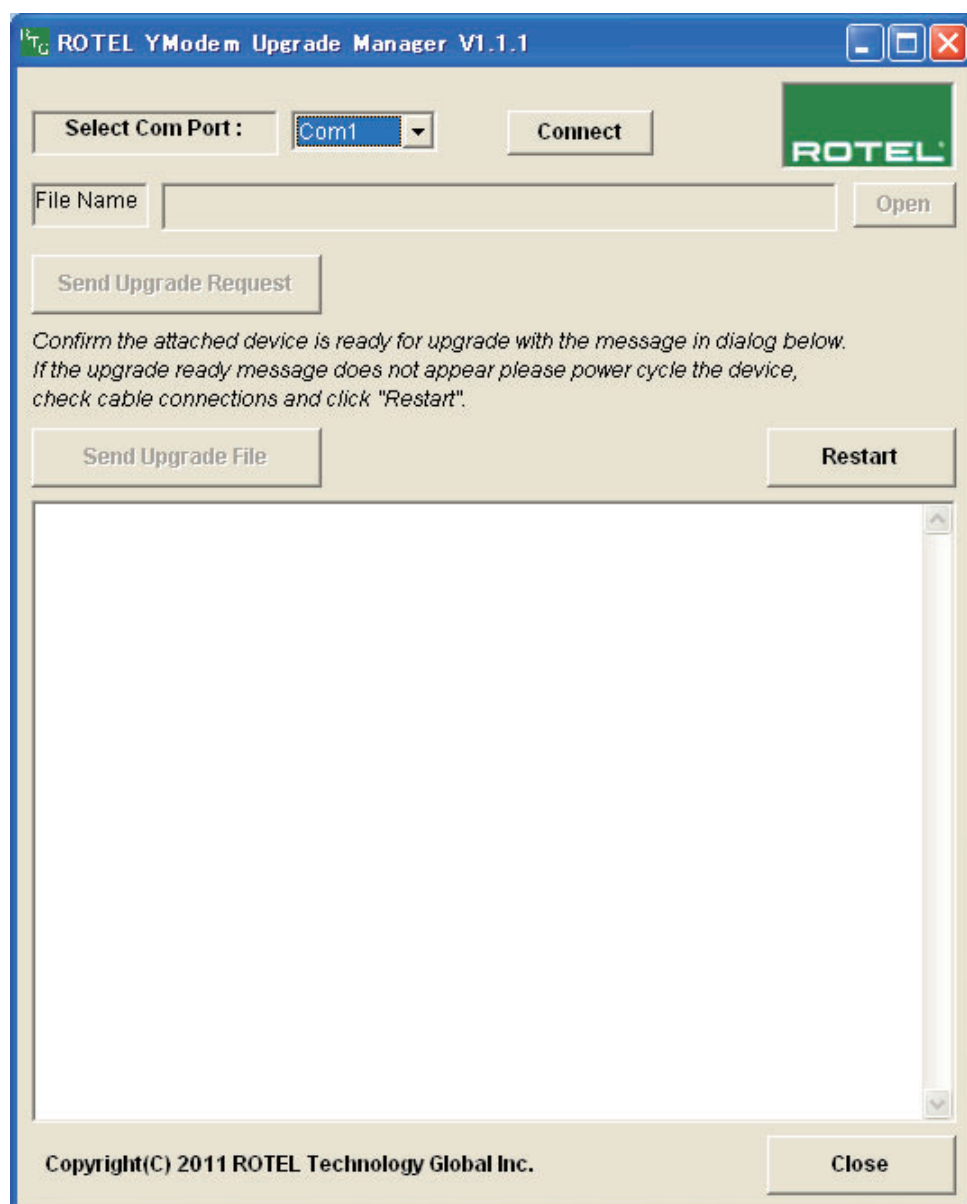
1. Launch application 'ROTEL YModem Upgrade Manager V1.1.1'.

All option except Connect, Restart, Close are gray and not selectable.

2. Select the COM port (1-8). Depend on using USB port.

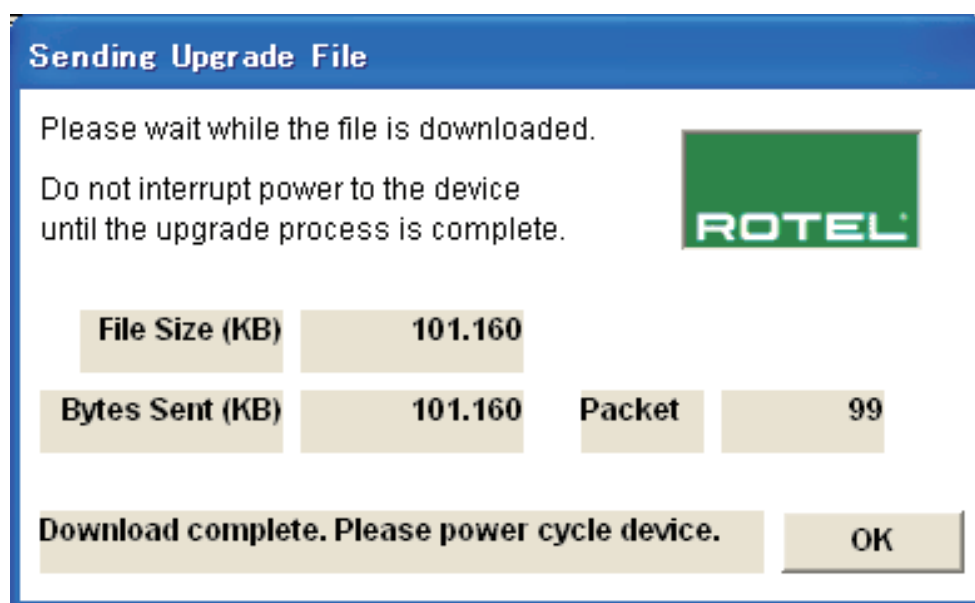
3. Click 'Connect'.

If connection fail a dialog appears, 'Unable to connect. Please verify COM port information'.



1. Main Software Upgrade -2/2

4. 'Open' button is active.
5. Click 'Open' and select the file to upgrade. Only proper file extension are display in list.
6. 'Send Upgrade Request' is now active.
7. Click 'Send Upgrade Request'.
8. Send the 'upgrade' message via RS232 to the attached device.
9. Text box is cleared of all data. Device enters upgrade mode. Upgrade options are displayed in the text box for confirmation of upgrade mode.
10. 'Send Upgrade File' is active.
11. Click 'Send Upgrade File'.
12. The file begins transfer, a user dialog box appears showing the file size and data sent. This dialog should be 'dressed up' a bit if possible for better experience.
13. When download complete pop up text box change to 'Download complete'. Please power cycle device with 'OK' button active.
14. If Restart is selected the '2' command is sent via RS232 to exit any possible upgrade mode. 'Send Upgrade File' is disable until 'Send Upgrade Request' is clicked.



2. Install the PC-USB driver software to a Windows PC

Rotel Product

- Do NOT attach the PC-USB cable to your computer until prompted.
- Press MENU on the front panel until 'PC-USB AUDIO CLASS' appears on the display.
- Select '2.0' using the '-' key then press 'ENTER'.

PC

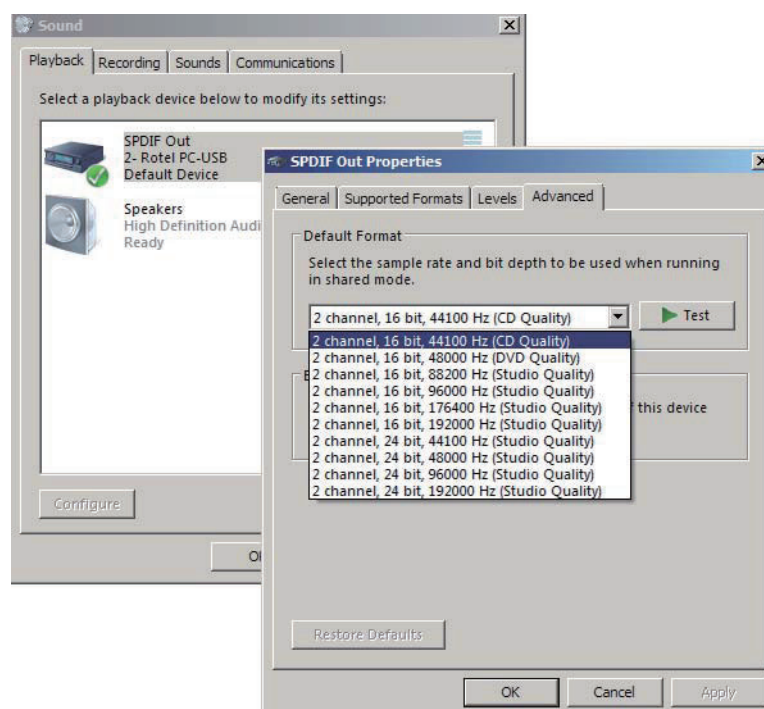
- Insert the supplied Rotel Driver Installation disc into your computer.
- Select 'Set-up' or 'Set-up.exe' as appropriate from the disc menu when it appears.



PC-USB

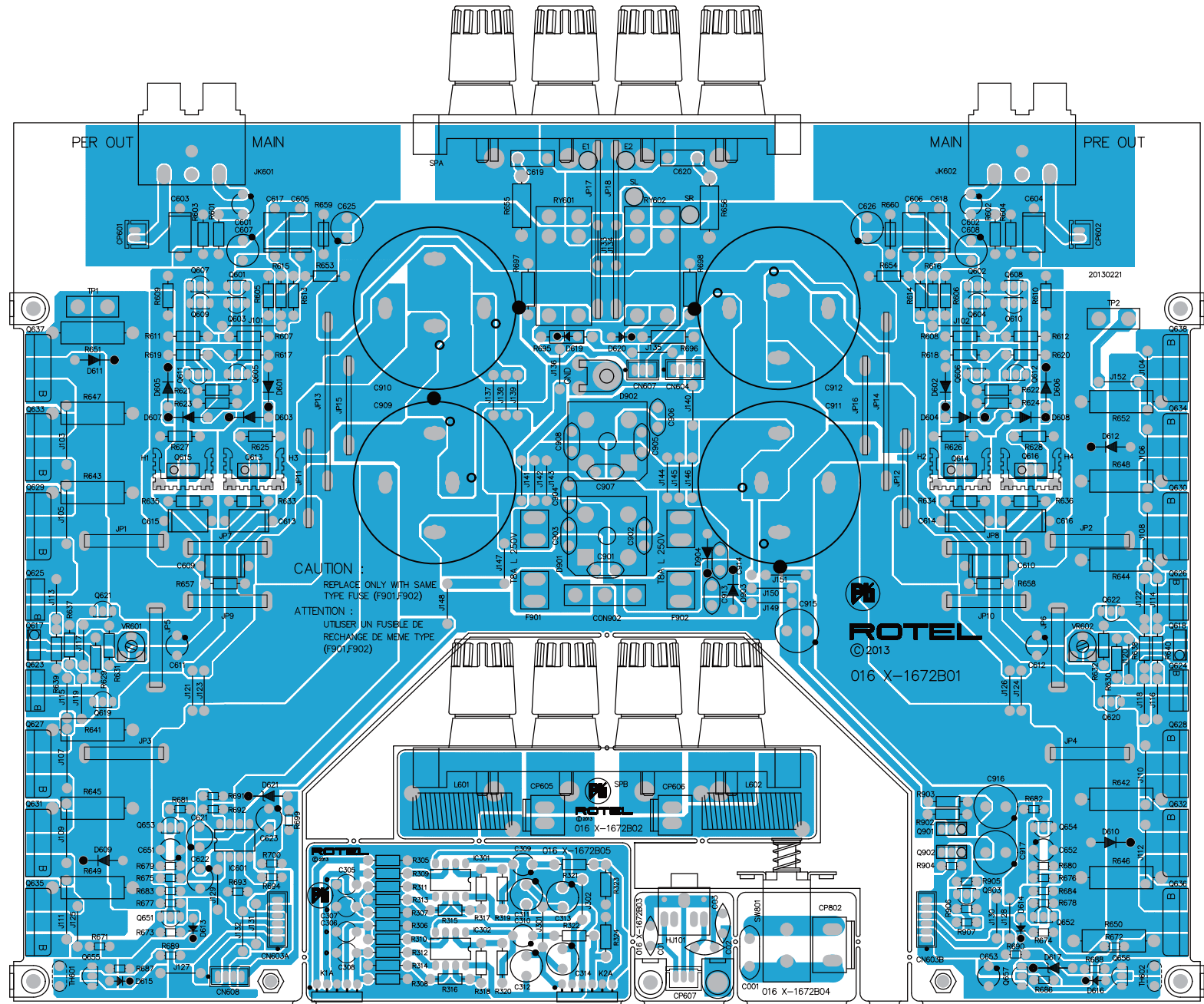
- When prompted, connect your Rotel product to the USB socket on your computer using the supplied cable.
- Follow the on-screen instructions - the PC-USB driver will then be installed.
- Remove the driver disc and re-start your computer.

Once installed you will need to configure the new driver on your computer. Navigate to your Sounds options in the Windows Control Panel to set the Default Sound Output to 'Rotel PC-USB'. Select your preferred sample rate from the Advanced tab. Depending on the version of Windows, you may need to enter the Properties tab to find the Advanced tab.

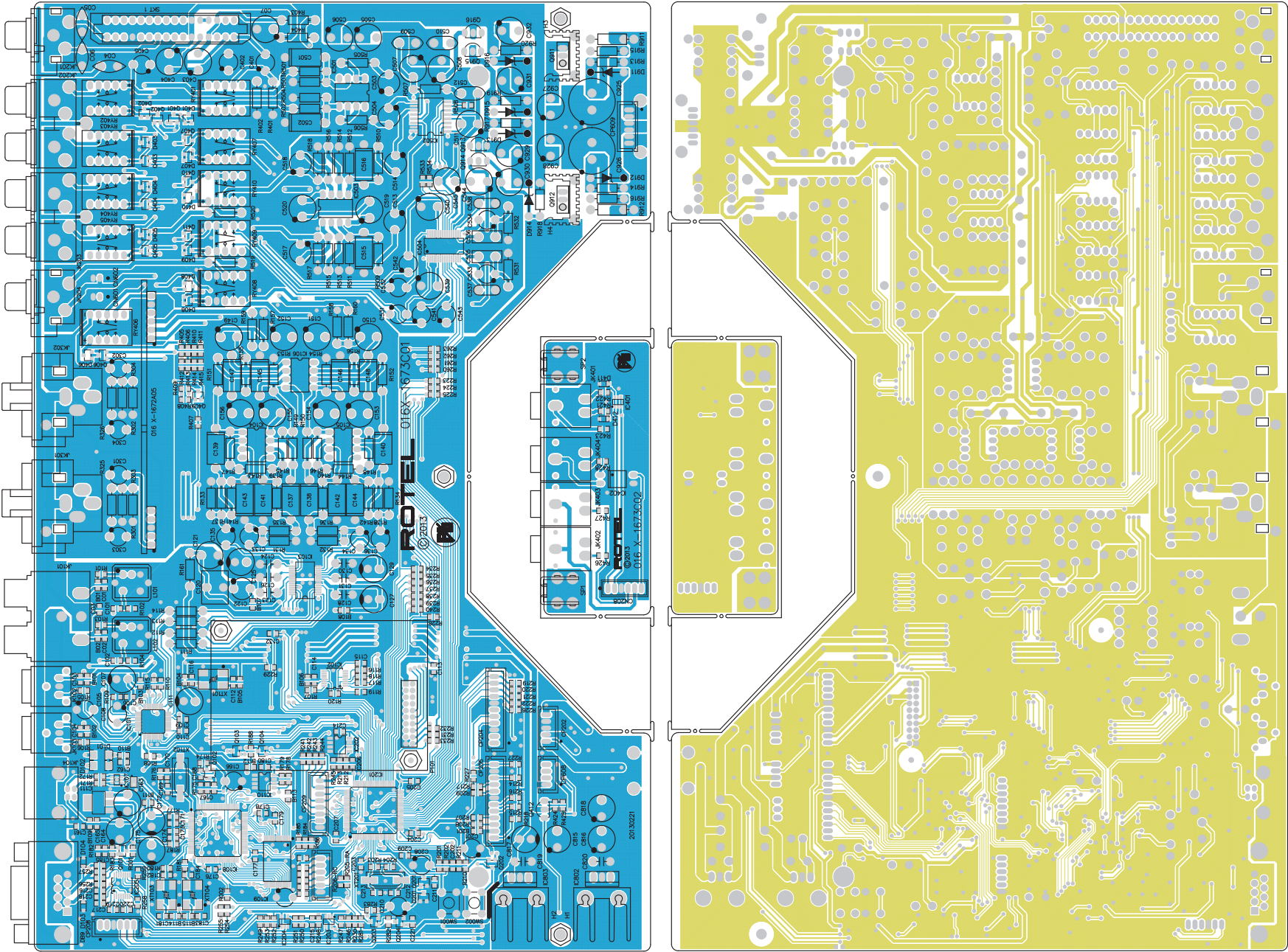


<Memo>

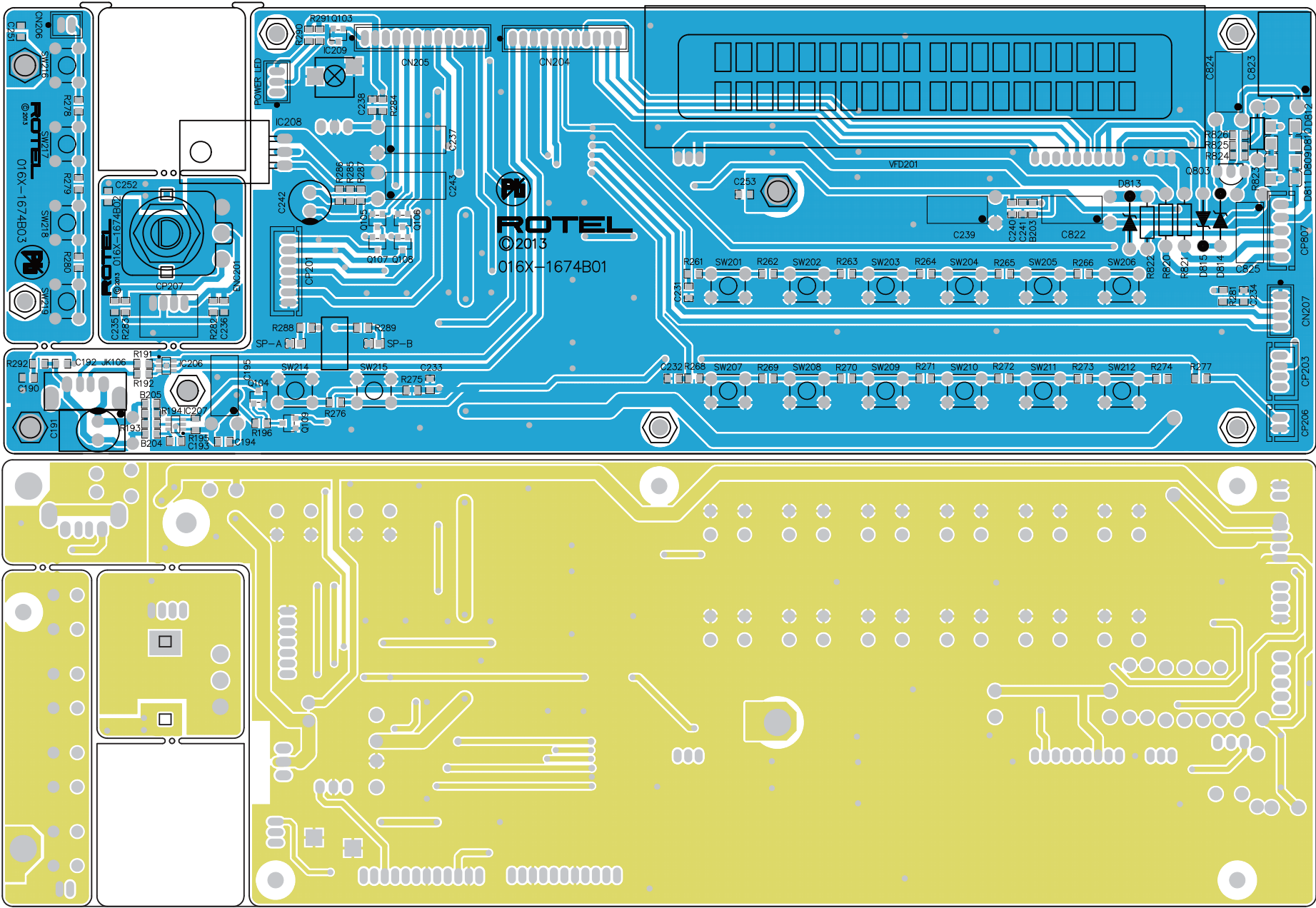
MAIN PCB 016 X-1672B01-05



DIGITAL PCB 016 X-1673C01-02



FRONT PCB 016 X-1674B01-03



TELECHIPS PCB 016 E-1642B00

