GEM

DIGITAL KEYBOARDS

SOLTON SG-1

SERVICE MANUAL | genesys

GENERALMUSIC

code 270281

Index

Notice

Service must be carried out by qualified personnel only. Any tampering carried out by unqualified personnel during the guarantee period will forfeit the right to guarantee.

For a correct operation of the instrument, after having switched off, be careful to wait at least 3 seconds before switching on again.

To improve the device's specifications, the schematic diagrams may be subject to change without prior notice.

All components marked by this symbol have special safety characteristics, when replacing any of these components use only manufacturer's specified parts.

The (μ) micro symbol of capacitance value is substituted by U.

The (Ω) omega symbol of resistance value is substituted by E.

The electrolytic capacitors are 25Vdc rated voltage unless otherwise specified.

All resistors are 1/8W unless otherwise specified.

All switches shown in the "OFF" position. All DC voltages measured to ground with a voltmeter 20KOhm/V.

- Soldering point.
- Male connector.
- Female connector.
- M/F faston connector.
- Supply voltage.
- Test point.
- Flag joined with one or more flags with the same signal name inscribed.
- Logic supply ground.
- Analog supply ground.
- Chassis ground.
- Earth ground.

ATTENTION Observe precautions when handling electrostatic sensitive devices.

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INTRODUCTION

The Genesys is a complex instrument and to be repaired requires a detailed knowledge especially on digital boards as CPU BOARD and A/V & SOUND PROCESSOR BOARD.
If you need to repair these parts by yourself we suggest to replace them entirely, otherwise the following information can be useful to locate a specific problem.

POWER ON/OFF AND STAND-BY FUNCTIONAL DESCRIPTION

In the Genesys keyboard all sounds and operating system are stored inside the internal HARD DISK, they are decompressed and transferred in the SDRAM memories to allow fast elaboration.
This task requires about 1 minute, to avoid this time the SDRAMs have been endowed of a battery supply circuit (+VBAT) mounted on DIGITAL I/O BOARD; under normal conditions, after 16 working or stand-by hours, the battery is completely re-charged and allow a data retention for about 2 days.
The power on/off feature consist of a standard mains on/off switch before transformer and a STAND-BY circuit, mounted on POWER AMP. & SUPPLY BOARD, that allow the re-charging of the battery also.
The stand-by circuit is controlled by its frontal button, it must be pressed for more than 2 seconds to enter in stand-by mode preventing an accidentally operation of it.
Each time the keyboard is powered on the CPU checks the battery status and verify the memory contents, if any of these is not valid a complete system reloading from HARD DISK is forced.

MAIN RESET

Starting from the switch ON event the keyboard remains in reset condition: /XRST signal low; when the 5V supply rail reaches about 4.75V the MAX709 (IC55) set /XRST high after 200mS, /XRST enters in the OR gate (IC60 pin 5) resetting the CPU (pin 226) through a three stete buffer (IC61).
At the switch OFF event the all SDRAM must be in self-refresh mode to retain the data before the CPU goes in reset state. This is achieved as follow: /XRST goes down when the 5V supply rail is lower than 4.75V (some time after switch-off event), it is sent to each SDRAM controller (IC7 and IC36) and when the self-refresh is done the reset is sent to CPU by mens of two OR gates (IC60).
/XRST is also sent to LCD controller (IC46) to avoid erroneous display during switch on/off.

I/O DEVICE & DSP RESET

After the /XRST is received during power on, the CPU send the /RST and also /RST1 signals to DISP3 and other peripherials (HD, SCSI, DACs, A/V etc.), see the timing table further on this manual for more detailed information.

CLOCK

More than one clock oscillator is present on CPU BOARD:
The CPU clock is produced by the oscillator of 4.194304MHz (XT2) and internally increased by a PLL to 25MHz, this clock is sent through pin 90 CLK01 to FPGA-LCD Controller (IC46), a doubled frequency of 50MHz is sent through pin 87 CLK02 to CPU SDRAM Controller (IC36) and SDRAMs (IC28, IC29).
The LCD controller have also a 20MHz (XT4) oscillator that serves the communication to the LCD Display.
32768Hz (XT3) is the oscillator for Clock Calendar (IC41) only.
16MHz (XT5) is the oscillator for Floppy Disk Controller (IC53) only.
The DISP3 clock is generated by the 45.1584MHz oscillator (XT1) and buffered by an inverter (IC5) it is sent to DISP3 SDRAM-Controller (IC7) and SDRAMs (IC38, IC34, IC23 and CN12). The same clock, divided by 4 (11.2896MHz) , is sent to DACs (IC19, IC27) and to A/V & VOCAL PROCESSOR BOARD (CN4).

OPERATING SYSTEM RELEASE

To check which operating system release is loaded into memory you have to press SYSTEM and F7 [Battery & Release], the display shows the release date in the format day/month/year and also the battery charging status. How to reloading the original O.S. or upgrade it is explained further.

SYSTEM INFO

To check which are the devices installed and operative in the keyboard you have to press SYSTEM and H [System Info], the display shows the devices currently operative. The GENESYS basic model is equipped by: Samples RAM, Hard Disk, ATAPI-CD and Video. Note that a more in-depth check is explained further.

RESET THE USER MEMORY OR PART OF IT

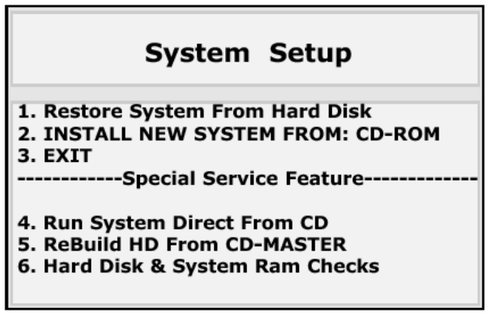
To reset the user memory on SDRAM you have to press SYSTEM and F8 (Reset User Resources), now you can choose how to reset between: Reset All, Reset Memories, Reset Style Presets, Reset Styles, Reset Songs, Reset Sounds. Note that this kind of reset delete from memory (SDRAM) the user data but hasn't effect on the HD contents and hasn't effect if the O.S. memory data is corrupted for any reason, to restore the O.S. you must execute the instructions explained further.

SYSTEM SETUP

HOW TO RESTORE OR UPGRADE THE OPERATING SYSTEM

The O.S. is normally retained in the instrument's SDRAM memory by a rechargeable battery, (as discussed in the POWER ON/OFF AND STAND-BY FUNCTIONAL DESCRIPTION chapter), which charges all the time the instrument is on or in Stand-by with the Power switch engaged (on position). If you use the STANDBY button to switch the instrument on and off, the O.S. always remains in memory. Each time you switch on a test is made to verify that the O.S. is intact. If any error is found in the O.S. retained in memory, or if it is missing because the battery is completely discharged, the instrument will re-load the O.S. from the SYSTEM folder on the hard disk. Although you can see this folder from the DISK menu, you must never move or delete any of its contents or attempt to copy any other files into it. From time to time, GEM may release updates to the O.S. which add new features or resolve little bugs to the instrument. These updates will usually be provided in the form of a CD which contains a replacement set of O.S. files. Also, because these system files are stored on a hard disk, there is always the remote possibility, just like with any computer, that these files may become corrupted or damaged. If this happens, the instrument should display an error message when you try to switch it on. In both of the above cases, you will need to know how to replace or upgrade the system files. The Genesys features a utility which automatically removes the old O.S. files, takes a new set of system files from the CD, loads them into memory and copy them on the hard disk.
Don't ever attempt to manually copy O.S. files into the SYSTEM folder. This is not the way to upgrade or replace the system files, you should also have the O.S. CD_MASTER that was provided with the instrument or a new upgraded version supplied from GM. For any replacement or upgrade operations, always follow the procedure below:

A. Insert the O.S. CD_MASTER into CDRW unit.
B. Switch off the instrument from power switch or stand-by button.
C. Switch the instrument on while still rotating the dial. You should see the following display:



D. Select one of the followings using the cursor buttons:

1. **Restore System From From Hard Disk**
   This operation restore the O.S. into SDRAM from Hard Disk, it is normally executed automatically from Genesys each time the SDRAM contents is corrupted but in this case you force it. *Note this operation doesn't upgrade the O.S. and doesn't restore the original O.S. into Hard Disk from O.S. CD_MASTER.*
2. **INSTALL NEW SYSTEM FROM:.....**
   This operation upgrade a new O.S. or restore the original O.S. into Hard disk and after you have restarted the Genesys into SDRAM also.
   To execute this operation select the source between FLOPPY DISK, CDROM, SCSI-ZIP, SCSI-JAZ, SCSI-CDROM; rotating the dial choose CDROM then press ENTER twice.
   Note this is the operation normally executed to upgrade the keyboard O.S. because it doesn't change the user data stored into Hard Disk.
3. **EXIT**
   Exit from this screen and restart the keyboard.
4. **Run System Direct From CD**
   This is an useful operation to check an O.S. upgrade or the original O.S. before reloading it into Hard disk. *Note after you restart the keyboard the new O.S. remains into SDRAM, if you want to return to the old O.S. you must force the reloading from Hard Disk as specified in option 1, or if you want to upgrade definitively the O.S. you must execute the instructions as in option 2.*
5. **ReBuild HD from CD-MASTER**
   This is a destructive operation to rebuild all factory preset into Hard Disk erasing all user data. This operation is normally done when a new Hard Disk is installed. *Note this operation make a re-initialization (FAT16 - Format) of the Hard Disk and reload all system and default factory CD_MASTER contents into it. You may use it also if the Hard Disk has a serious problem and you try to recover it before replacing with a new one.*
6. **Hard Disk & System Ram Check**
   This is an useful operation to check the Hard Disk and CPU system SDRAM validity before install the O.S. This operation, during the Hard Disk check, try to repair the FAT (File Allocation Table) if it has some file corrupted or incomplete (usually leaved after an unattempted supply interruption). *Note usually this utility is used at the first time the O.S. is loaded into Genesys from factory, but it can be useful to try to repair an Hard Disk corruption saving the user data before Rebuild it as specified in the option 5, also note that after you use this utility and you restart the keyboard an O.S. reloading from Hard Disk is forced.*

HARDWARE TEST (keyboard self test procedures)

PREPARE THE KEYBOARD

The Genesys self check procedure requires to run some test a special diskette available from GM ITALY factory service center.
Insert the diskette in the drive and load the presets pressing: DISK, A [F.D.], using ▼ choose [TEST] folder, F1 [LOAD], ENTER, ESCAPE, then press 1 from MEMORIES section.

HOW TO RUN HARDWARE TEST

Press SYSTEM and then press F1 and F4 simultaneously.

PANEL TEST

Note: to execute this test the diskette is not required.
Choose A [PANEL TEST].
Press all buttons starting from left to right, at each pressure the corresponding button position on display is highlighted, also the corresponding led, if exist, is highlighted; at each pressure the display shows the corresponding button hex code. Note: when you press the ENDING button all leds at its left goes out.
Finally move all faders, wheels and pedals, attach them to the relative rear inputs, the display has shown its corresponding variation from 0 to 127, note that for all faders the display shows the same hex code except for wheels, also note the PITCH wheel has to be stable to 64 in its center position.
Exit from PANEL TEST pressing ◄ and ► simultaneously.

COMPUTER & MIDI TEST

Note: to execute this test the diskette is required.
Connect a MIDI cable between MIDI OUT A and MIDI IN A sockets. Alternatively pressing the C [MIDI ch A] button on the left of display and playing repeatedly a note you will heard the note and its corresponding 3 semi tones above.
Repeat the same check for the MIDI OUT B and MIDI IN B sockets then pressing D [MIDI Ch.B].
Finally repeat the same check for COMPUTER socket (short pin 1-2 and 3-5 to create the loopback), then pressing G [Computer], also check with an oscilloscope if exist a 1MHz (5Vpp, GND centered) signal at pin 1.
Note: when you check the COMPUTER socket you have to disconnect the MIDI A loop because for Genesys O.S. they run toghether, also note that after playing some notes during the COMPUTER check the Genesys stops sound, it is a normal end check.

PC-KEYBOARD TEST

Note: to execute this test the diskette is not required.
Connect a PC keyboard PS2 type to appropriate socket on rear panel.
Choose H [PC - KEYBOARD], press some letters on pc-keyboard they must appear on display, press ESCAPE to exit.

SAMPLE SDRAM TEST

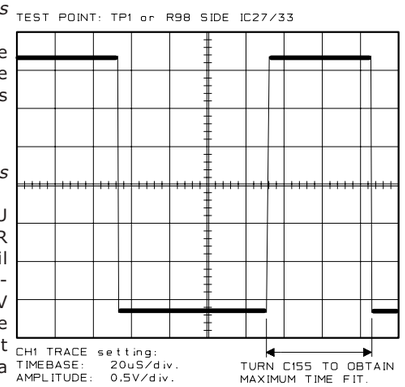
Note: to execute this test the diskette is not required.
Choose F2 [SAMPLE DRAM] to execute the sample SDRAM check and wait until display shows PASS, note that this test checks only the SDRAM used by DISP3, the system SDRAM used by CPU are checked in the option 6 described above.

FLOPPY DISK TEST

Note: to execute this test either diskette is required.
Insert the diskette into F.D. drive, choose F5 [FLOPPY DISK], a write/read/compare test is executed, wait until display shows PASS.

VIDEO TEST *(and Adjustment)*

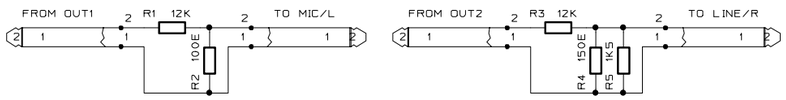
Note: to execute this test the diskette is not required.
Check the communication between CPU BOARD and A/V & VOCAL PROCESSOR BOARD choosing F6 [VIDEO], wait until display shows PASS. Connect a TV to S-VHS socket and repeat the test: the TV screen must display the same image of the LCD; also connecting the TV to RCA socket you have to see the same image but with a



worse quality. *Note: during the test the screen vary the frame colour.* Press FUNCTIONS, choose [Video Setup][Echo LCD] then turn it on using the DIAL. The TV screen shows the LCD image, if you note some flickering you can improve the image quality re-adjusting the C155 trimmer capacitor on A/V & VOCAL PROCESSOR BOARD.
Connect the scope CH1 probe to TIP1 (R98) and set it to 20µS/div. 0.5VDC/div., set the trigger properly, you have to see a stable square wave with a fixed or variable duty cycle. Turn C155 to obtain a fixed duty cycle near as possible to 50%, see also the figure above: the flickering must disappear.
Note: See also the more detailed timings further on this manual.

HARDWARE SET *(Audio I/O Test)*

Note: to execute this test the diskette is required and you have to realize the connection below.



Connect a STEREO JACK plug into PHONES 1 out (left socket), put at max position all the GAIN MIC potentiometer on back panel, put at max also all volume/faders on controls panel.
Choose H [HARDWARE SET] and check with the oscilloscope the following if a sinusoidal signal levels appear on screen:
RIGHT/M = 5.2Vpp LEFT/M = 5.2Vpp PHONES 1 tip = 8Vpp PHONES 1 ring = 8Vpp PHONES 2 tip = 8Vpp PHONES 2 ring = 8Vpp. Then press again the H button to turn off the signal generator and ESCAPE two times to return to main screen.

SPEAKERS TEST

Note: to execute this test the diskette is required.
To check the speakers execute the instructions as follow:
Put all volumes/faders on controls panel to half position, now check the speakers selecting preset 2 on MEMORIES section, press MIXER and then F2, if FX is set to off turn it on, play some notes and rotating the dial check if the sound is heard from left to right speaker.

MP3 TEST

Note: to execute this test the diskette is not required.
To check the MP3 decoder circuitry execute the instructions as follow:
Press SELECT on SONG PLAYER/REC STUDIO section, B [H.D.] and then cursor ▼ to choose MP3 folder, press ▶ two times to select the first song and then START/STOP to listen the MP3 song, after some seconds press again START/STOP to stop playback.

CDRW DRIVE TEST

Note: to execute this test the diskette is not required, but you need an AUDIO CD.
Insert the AUDIO CD into CDRW unit, press SELECT on SONG PLAYER/REC STUDIO section, C [CD] and then cursor ▶ two times to choose an audio cd track, press two times and then START/STOP to listen it, after some seconds press again START/STOP to stop playback.

H.D. WAVE RECORDING TEST

Note: to execute this test the diskette is not required.
Press ● on SONG PLAYER/REC STUDIO section, and then choose D [New Stereo WAVE], press F1 [REC] to start recording and then play something with the keyboard, press again F1 to stop recording then type a name for the recording session, press ENTER. Now pressing SELECT the display cursor is already on the last recorded file, press START/STOP to listen the recording.

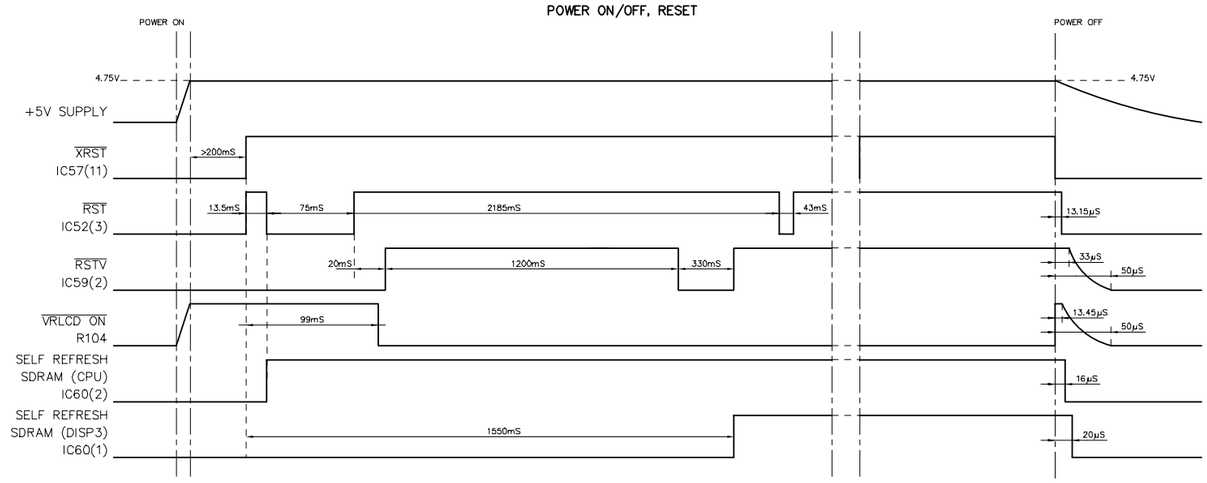
AFTERTOUCH *(adjustment)*

Connect the scope probe tip to VR1 cursor, then apply 700grams weight to a note key front end, adjust the trimmer to have about 2Vdc. Verify the excursion from 0 to 5Vdc pressing a single note key and a chord also. You can also check the audible effect using a SAX voice.

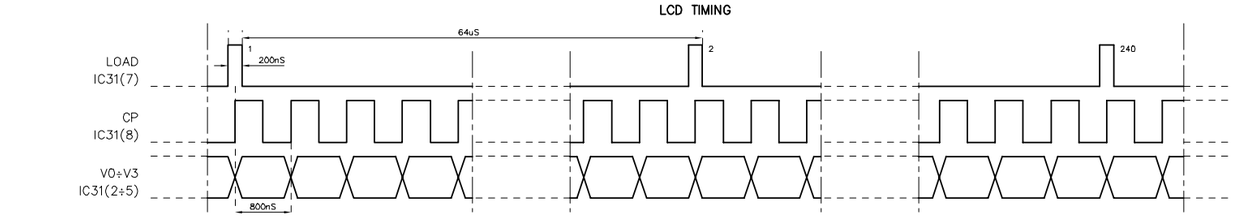
Some Tips to repair a Genesys keyboard

1) If the keyboard starts correctly displaying its initial screen but neither keyboard nor control panel works, the most probably reason is an interruption in the closed-loop communication between CPU - KEYBOARD - CONTROLS, due to a malfuction localized somewhere on "Keyboard Interface" or "Panel Controller" boards, or in their connections to Cpu board.
2) If the keyboard doesn't start, check first all the voltages after regulators and on all boards, secondly check all oscillators on "Cpu" and "A/V & Vocal P." boards, then check if all reset circuits operate correctly following schematics and timing table.
3) Some internal parts, as 3.5" Disk Drive, CD-RW Recorder unit, LCD Display and so on, doesn't have single spare parts but are replaceable entirely only. This is due to those parts are assembled by other manufacturers.
4) If the display remains dark, a possible reason is an interruption on contrast regulator and compensation circuitry, check it entirely along all boards starting from Power Supply board.
5) Not original GM pedals could not operate correctly if you doesn't set them properly in the keyboard SYSTEM options.
6) The MIC input circuitry is not a state of art preamplifier and with some economic mic it could be a cause of excessive noise.
7) The CD-RW Recorder unit is the most weak part in the keyboard, this is due to its optical and electro-mechanical constructions, an excessive and intense use of it could be cause its premature end. Often it is preceded by a lot of disks, from different brands, that are not finalized correctly.
8) Not all CDR or CDRW disks are supported by the CD-RW Recorder unit, often economic unknow brands have poor quality and they are not finalized correctly.
9) To assure the CDRW unit functionality the keyboard must be placed horizzontally only. Be careful to the location where the keyboard is placed, some keyboards supports are slightly tilted toward the player causing the CDRW unit malfunction.
10) Check always if the last O.S. version is loaded in the keyboard H.D. and memory.

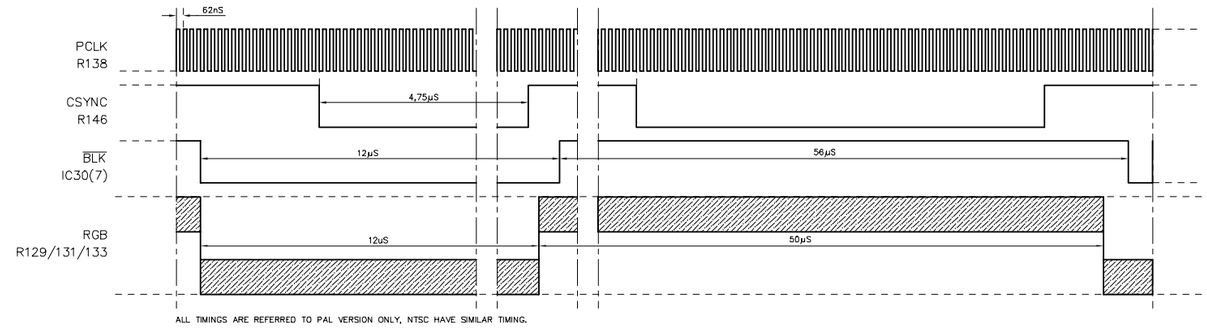
POWER ON/OFF, RESET



LCD TIMING

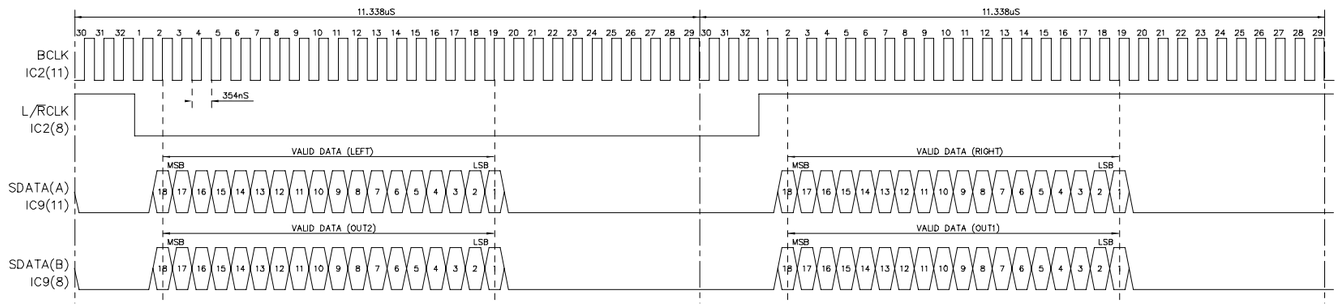


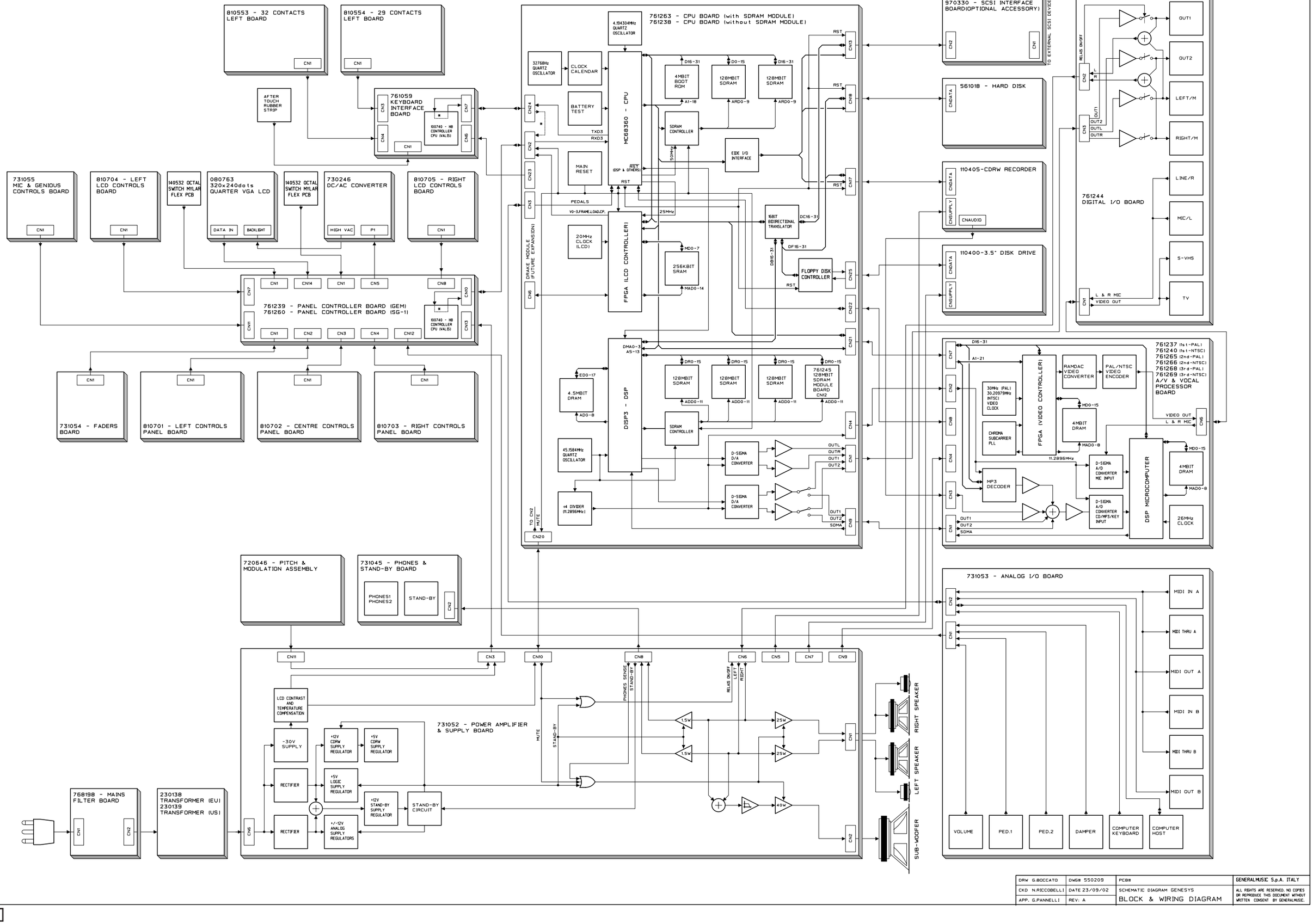
VIDEO TIMING



ALL TIMINGS ARE REFERRED TO PAL VERSION ONLY, NTSC HAVE SIMILAR TIMING.

I2S SERIAL DATA BUS





DRW G.BOCCATO	DWG# 550209	PCB#	GENERALMUSIC S.p.A. ITALY
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APP. G.PANNELLI	REV: A	BLOCK & WIRING DIAGRAM	

25W L.HF POWER AMPLIFIER

25W R.HF POWER AMPLIFIER

40W LF POWER AMPLIFIER

LR SUM & LF FILTER

STAND-BY CIRCUIT

LCD CONTRAST & TEMP.COMPENSATION

UNUSED GATES

MUTING

+12V STAND-BY SUPPLY

+5V LOGIC SUPPLY REGULATOR

+/-12V ANALOG SUPPLY REGULATOR

+12V CDR/CDRW DRIVE SUPPLY REGULATOR

+5V CDR/CDRW DRIVE SUPPLY REGULATOR

HEADPHONES AMPLIFIER

731052 - POWER AMPLIFIER & SUPPLY BOARD

PCB# 310700

768198 MAINS FILTER BOARD

PCB#310643

731053 - ANALOG I/O BOARD

PCB# 310701

731045-PHONES/STAND-BY BOARD

PCB#310702

DRW BOCCATO	DWG# 550205	PCB# 310643, 310700, 310701, 310702.	GENERALMUSIC S.p.A. ITALY
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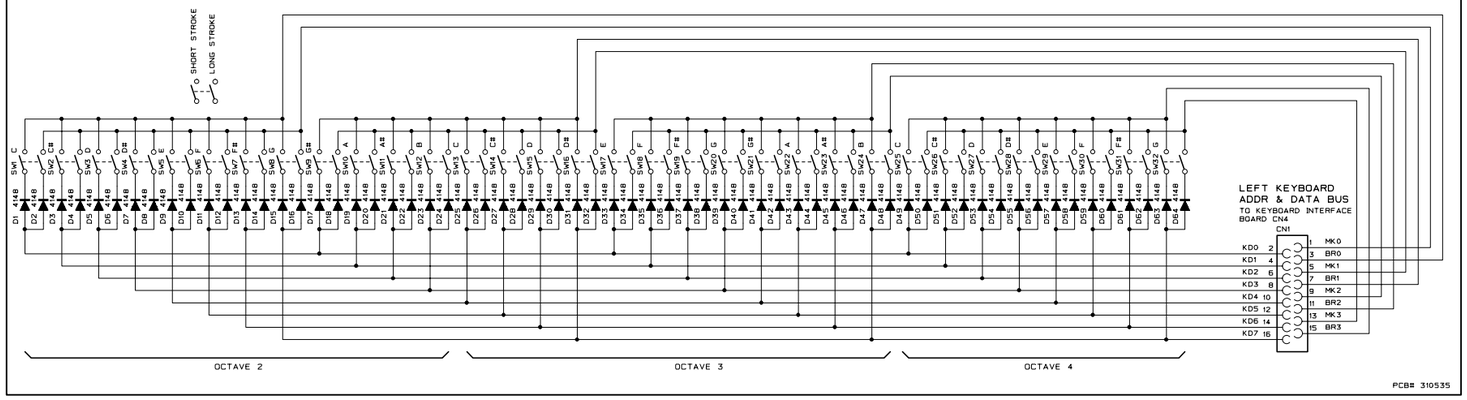
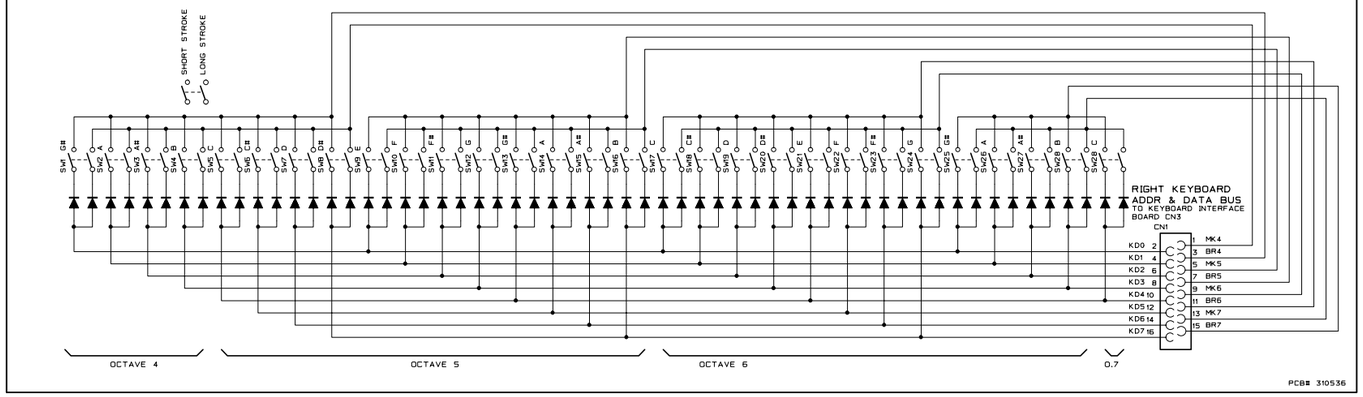
APP. PANNELLI	REV: A		

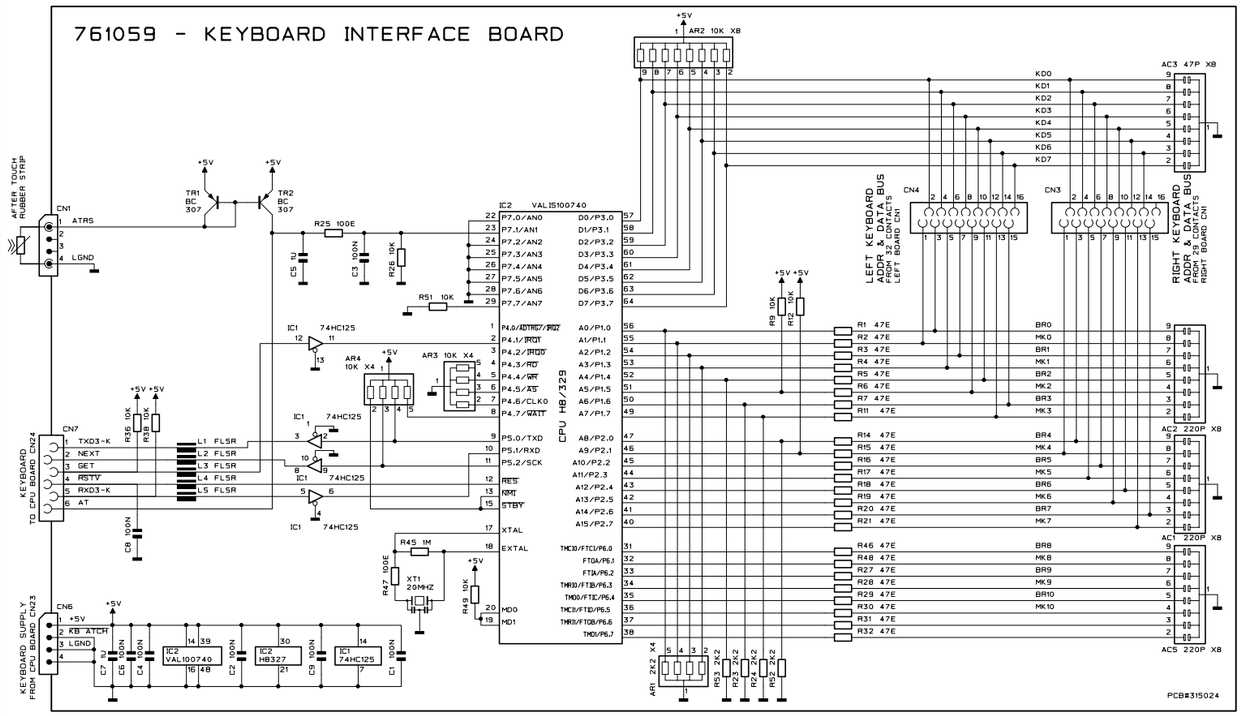
810553 - 32 CONTACTS LEFT BOARD (61 NOTES DYNAMIC KEYBOARD)



810554 - 29 CONTACTS RIGHT BOARD (61 NOTES DYNAMIC KEYBOARD)

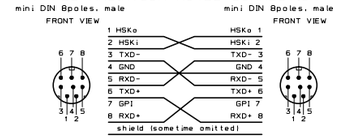


761059 - KEYBOARD INTERFACE BOARD

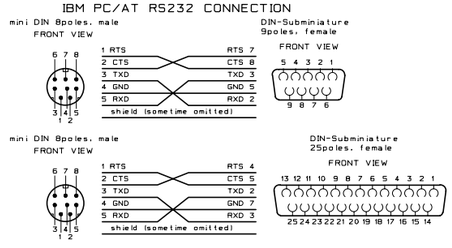


KEYBOARD - COMPUTER CONNECTIONS

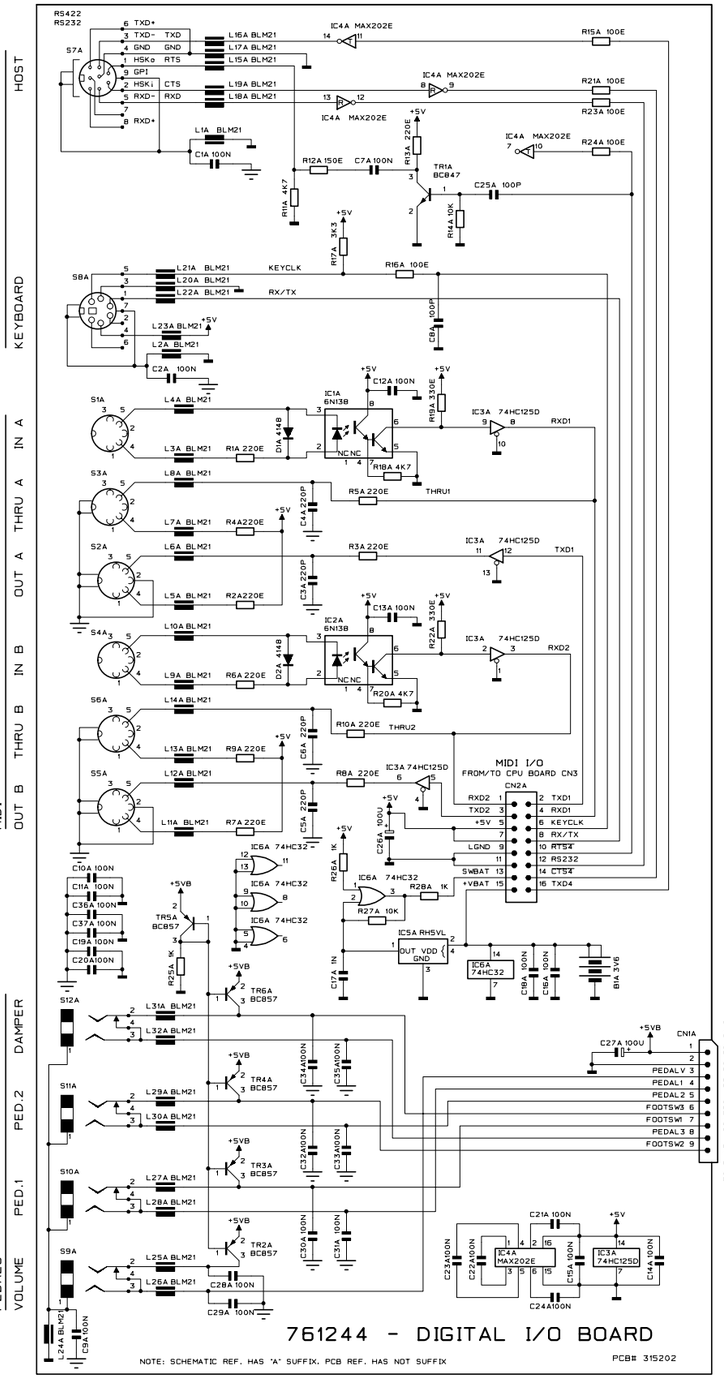
APPLE MACINTOSH RS422 CONNECTION



IBM PC/AT RS232 CONNECTION



761244 - DIGITAL I/O BOARD



DRW BOCCATO	DWG# 550204	PCB# 315202, 315024, 310536, 310535	GENERALMUSIC S.p.A. ITALY
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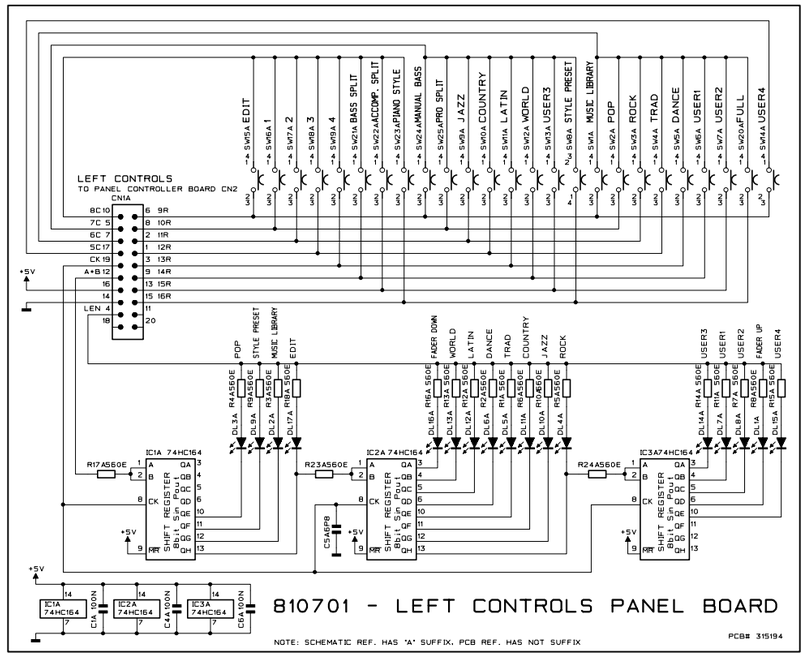
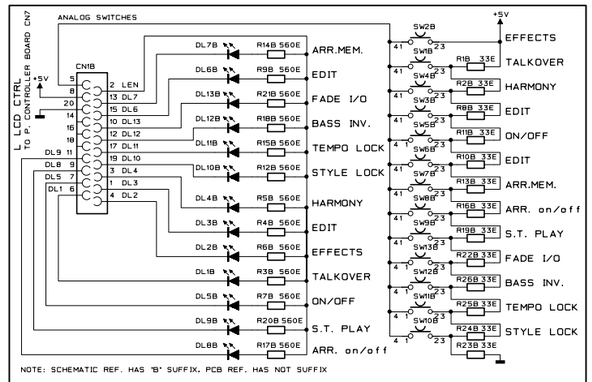


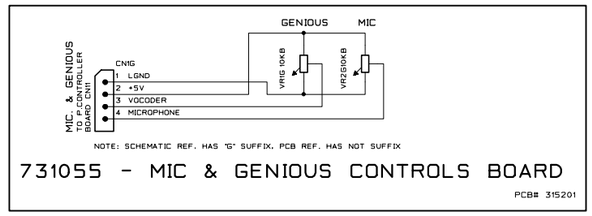
810701 - LEFT CONTROLS PANEL BOARD

PCB# 315194



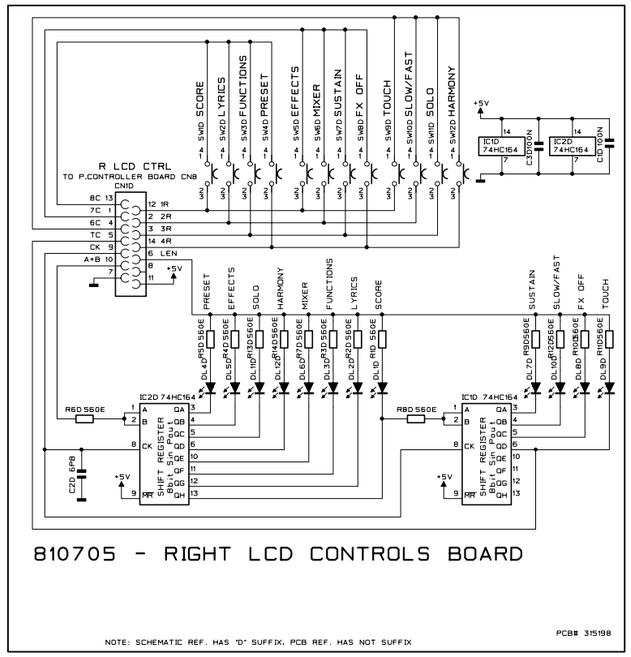
810704 - LEFT LCD CONTROLS BOARD

PCB# 315197



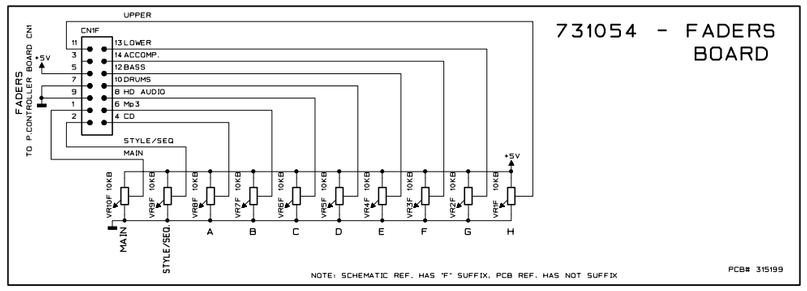
731055 - MIC & GENIOUS CONTROLS BOARD

PCB# 315201



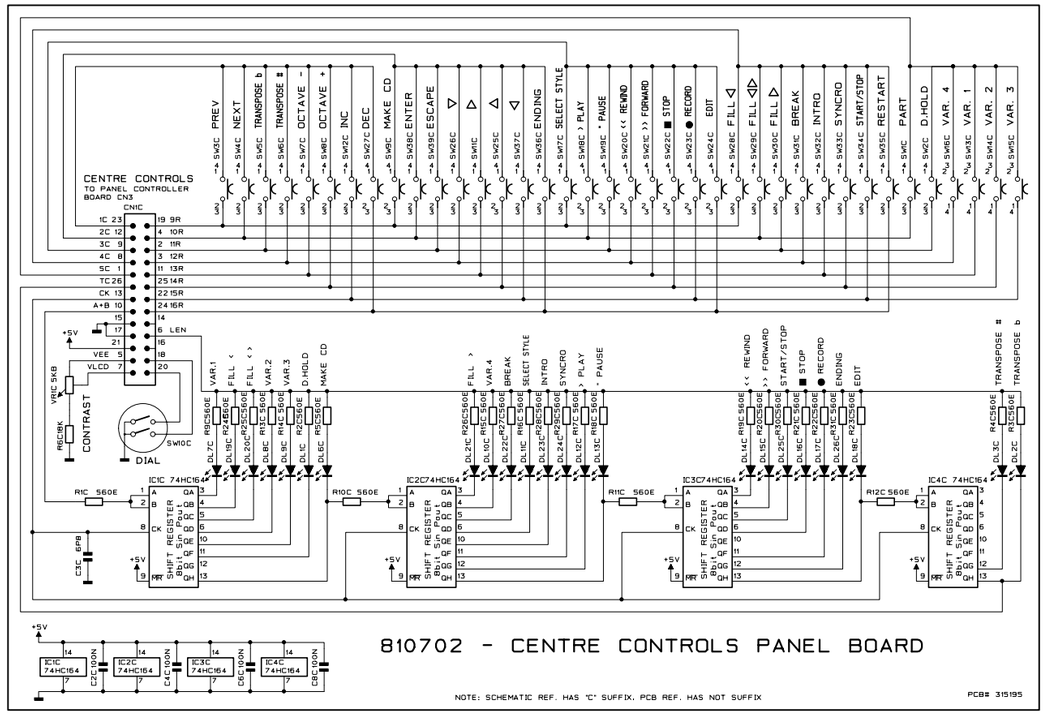
810705 - RIGHT LCD CONTROLS BOARD

PCB# 315198



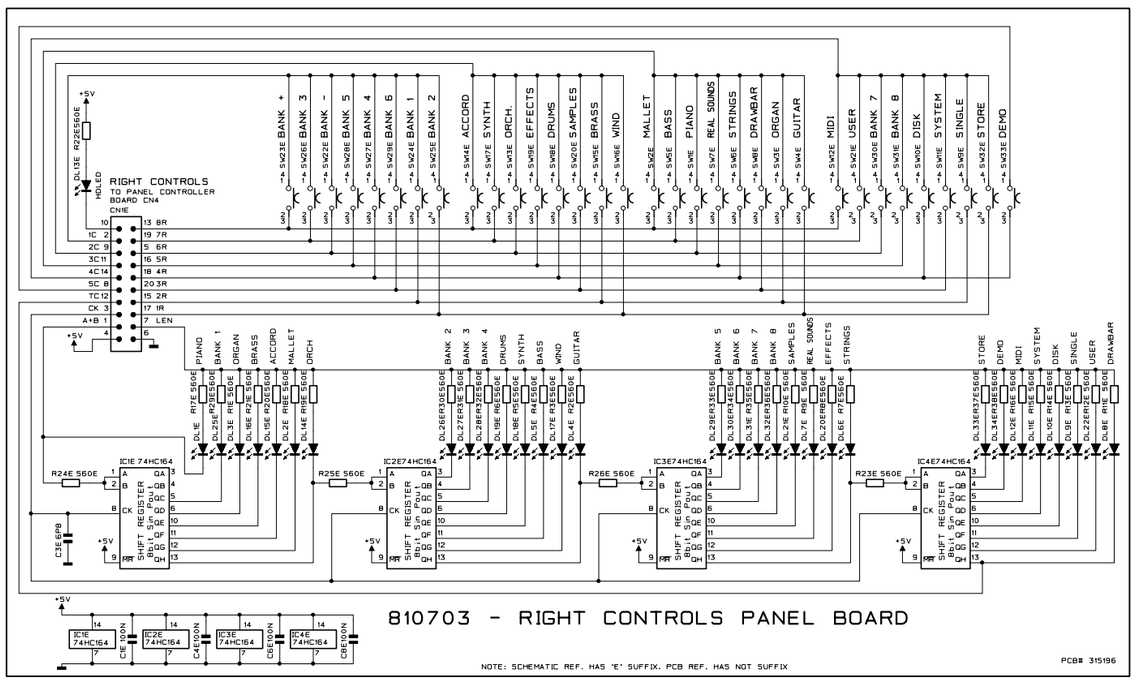
731054 - FADERS BOARD

PCB# 315199



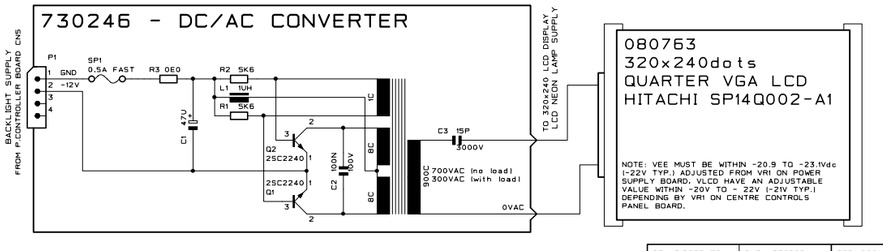
810702 - CENTRE CONTROLS PANEL BOARD

PCB# 315195



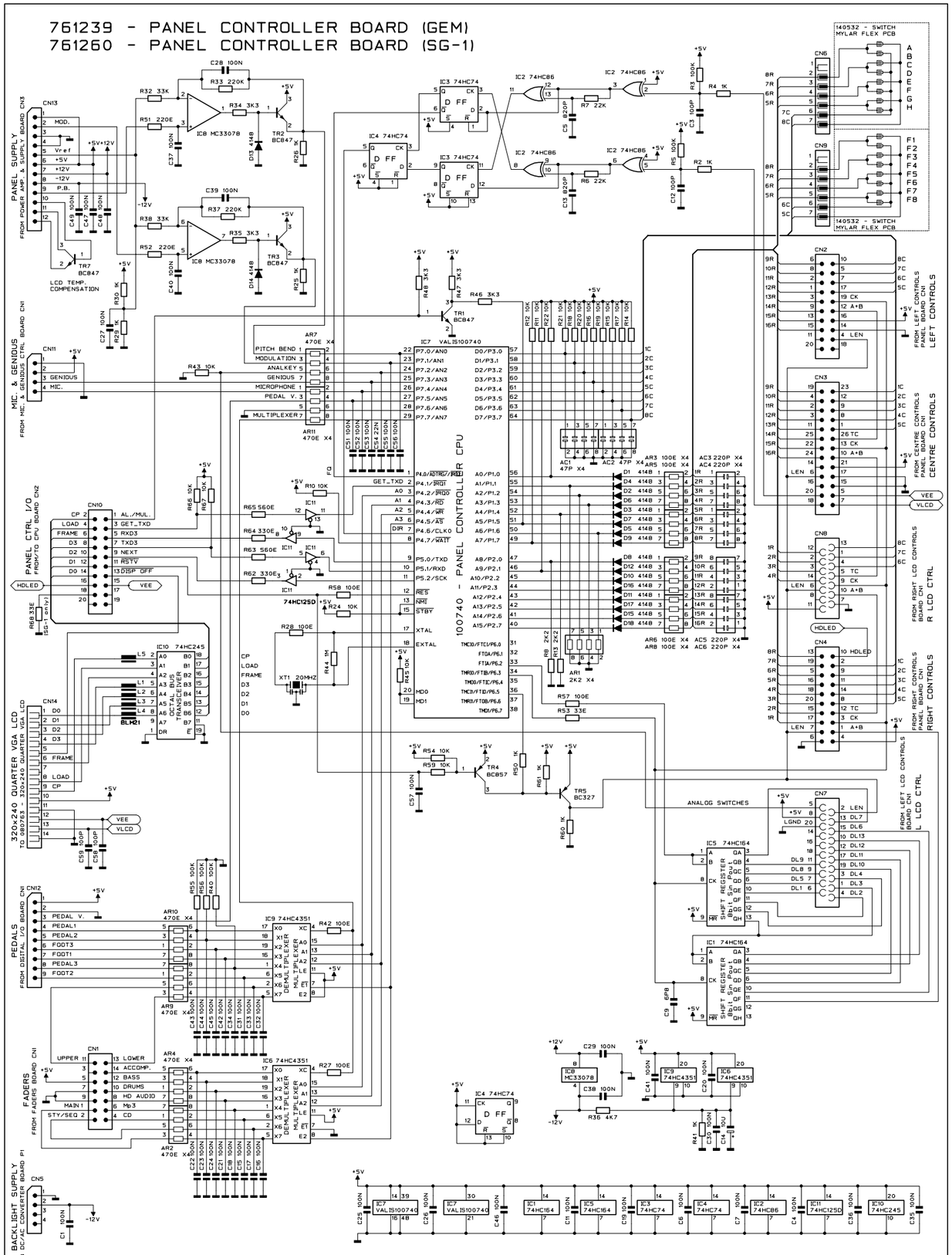
810703 - RIGHT CONTROLS PANEL BOARD

PCB# 315196



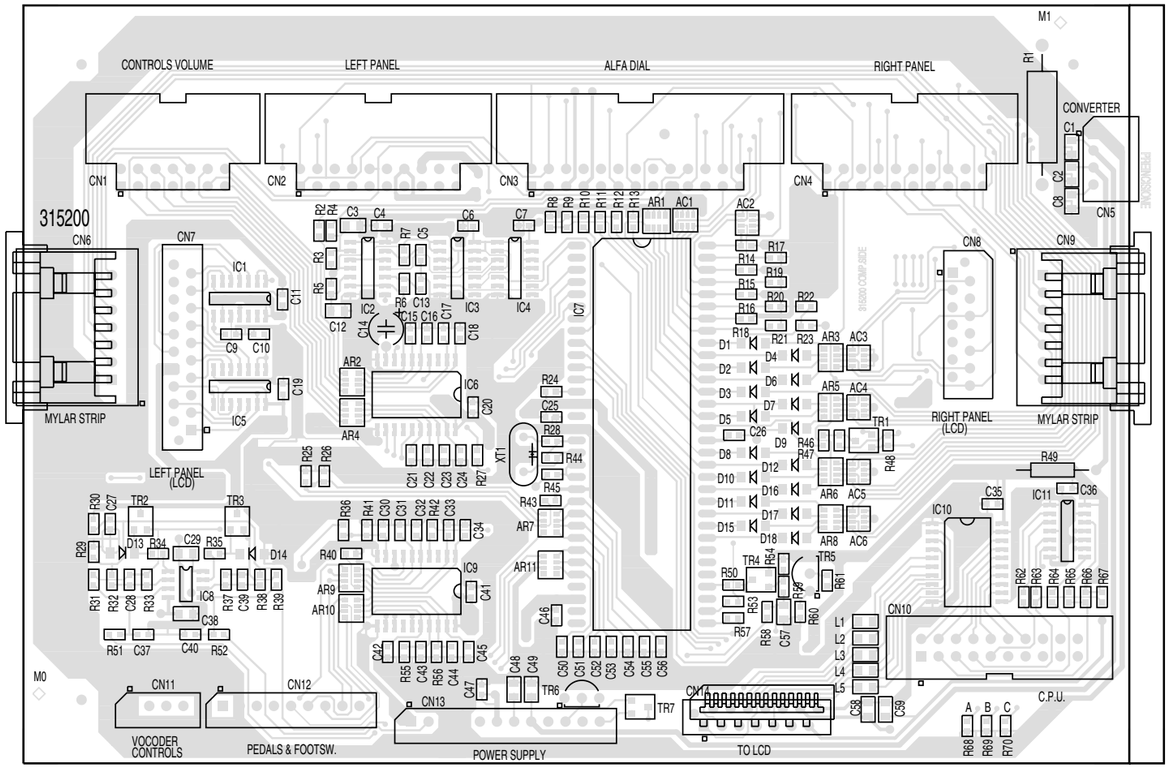
DRW G.BOCCATO	DWG# 550202	PCB# 31594,31595,31596,31597,31598,31599,31201	GENERALMUSIC S.p.A. ITALY
CKD N.RICCOBELLI	DATE 25-07-2002	SCHEMATIC DIAGRAM GENESYS	
APP. G.PANNELLI	REV: A	CONTROLS PANEL ASSEMBLY	

761239 - PANEL CONTROLLER BOARD (GEM)
761260 - PANEL CONTROLLER BOARD (SG-1)

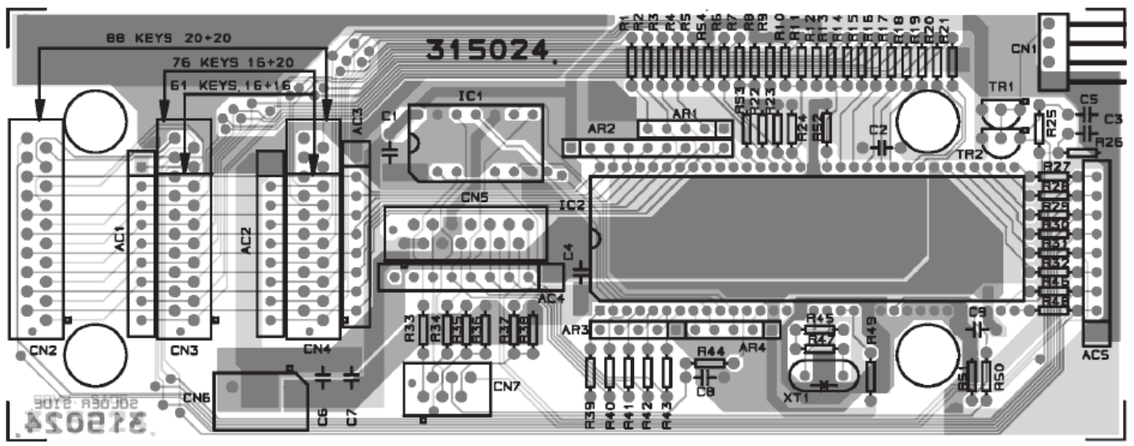


DRW RICCOBELLI	DWG# 761239	PCB# 315200	GENERALMUSIC S.p.A. ITALY
CKD PANNELLI	DATE 05-02-2002	SCHEMATIC DIAGRAM GENESYS	ALL RIGHTS ARE RESERVED, NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP. GALANTI	REV: A	PANEL CONTROLLER BOARD	

761239/761260 - Panel Controller Board



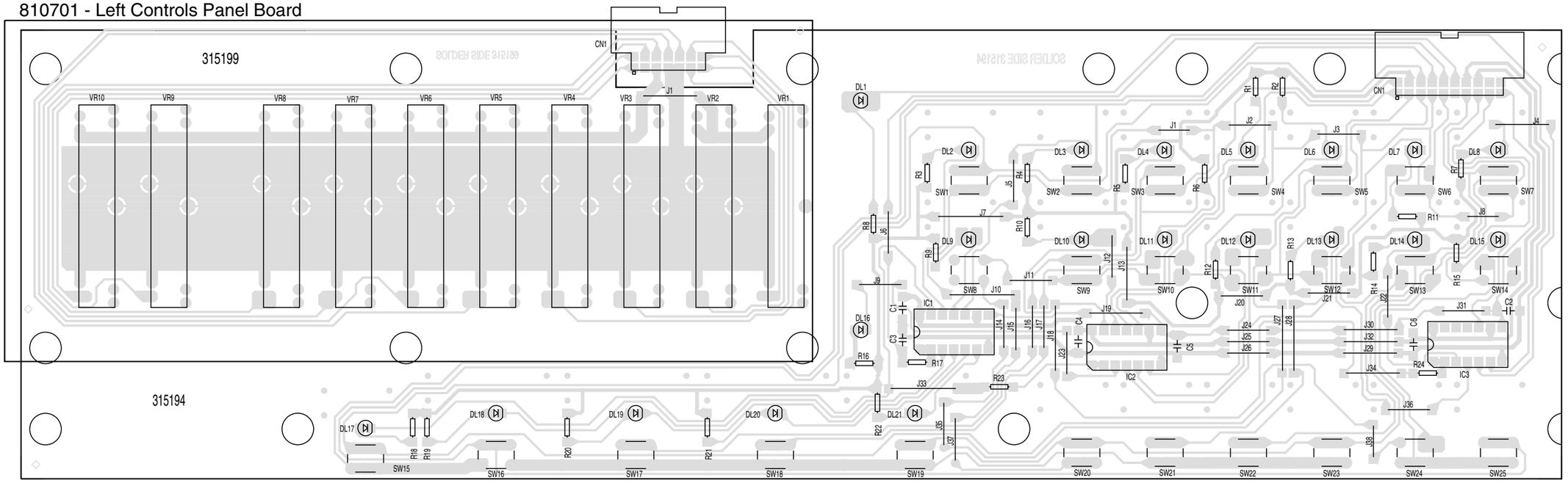
761059 - Keyboard Interface Board



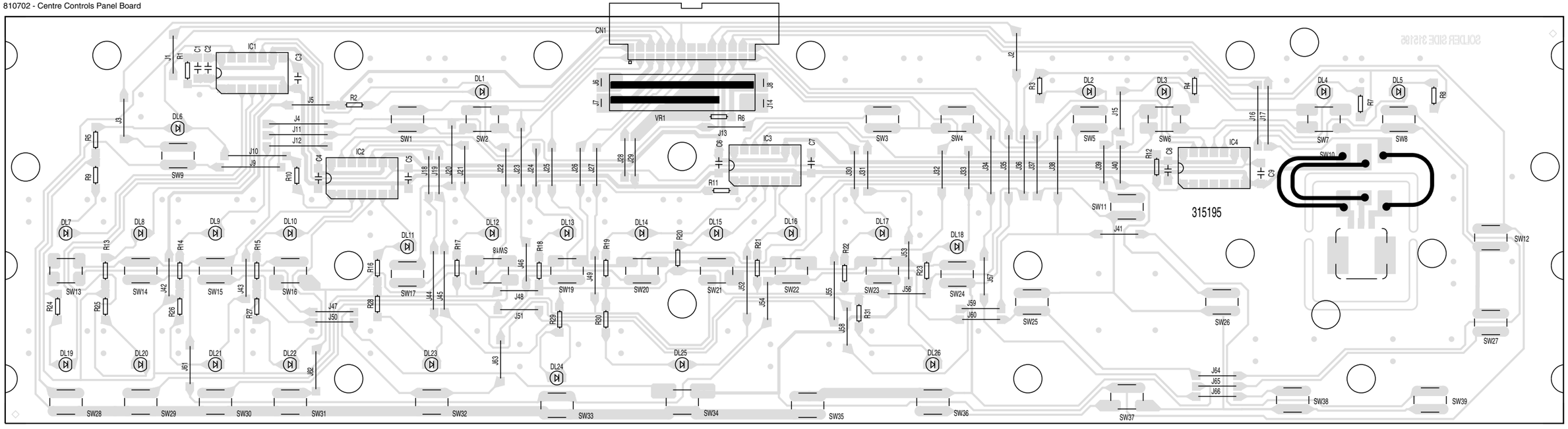
DRW: BOCCATO	DWG: 761260/315024	SCHEMATIC DIAGRAM Genesys	GENERALMUSIC S.p.A. Italy
CKD: RICCOBELLI	DATE: 24/10/2002	Panel Controller and Keyboard Interface Board Pcb Layouts	ALL RIGHTS ARE RESERVED, NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP: PANNELLI	REV: A		

731054 - Faders Board

810701 - Left Controls Panel Board

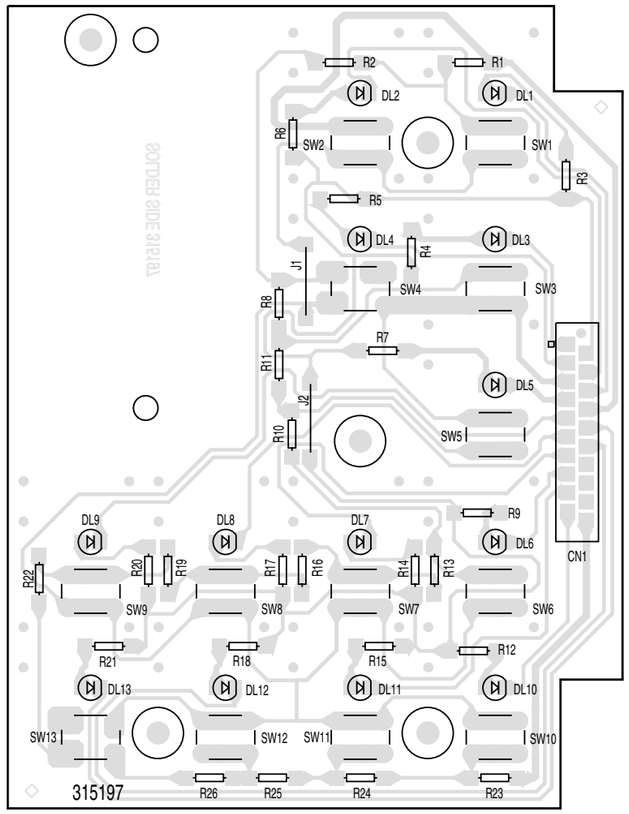


810702 - Centre Controls Panel Board

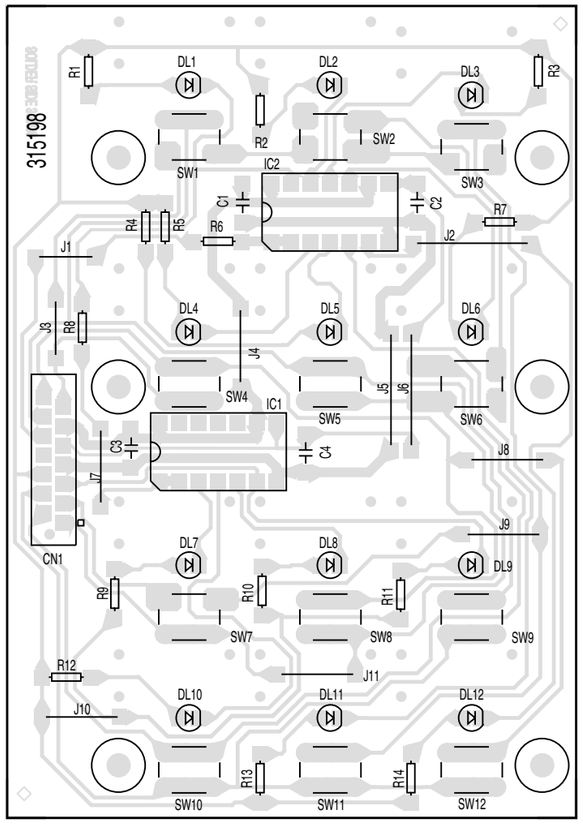


DRW: BOCCATO	DWG: 810701/2/3	SCHEMATIC DIAGRAM Genesys	GENERALMUSIC S.p.A. Italy
CKD: RICCOBELLI	DATE: 24/10/2002	Left & Centre Controls Panel and Faders Board Pcb Layouts	
APP: PANNELLI	REV: A		

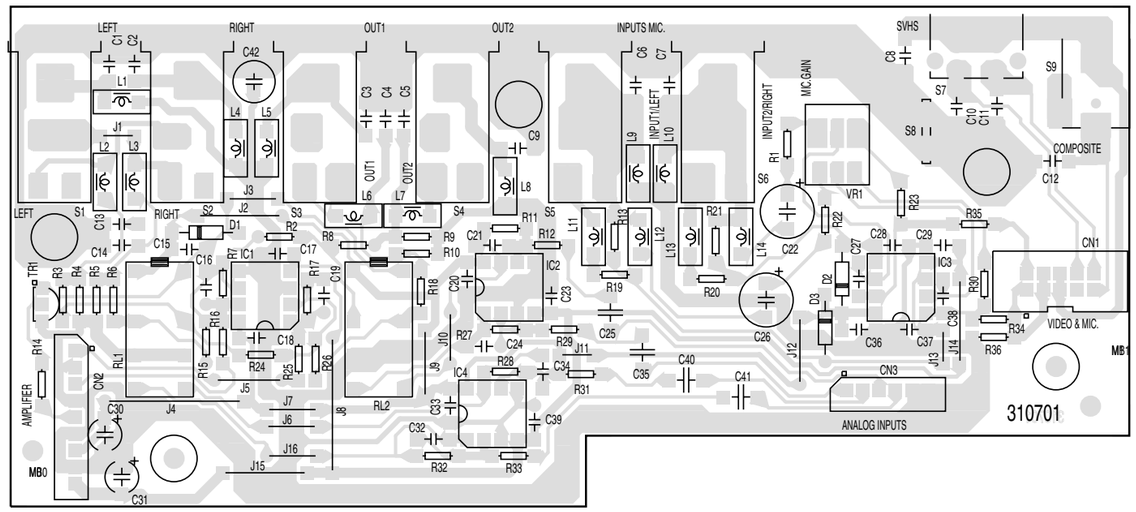
810704 - Left LCD Controls Board



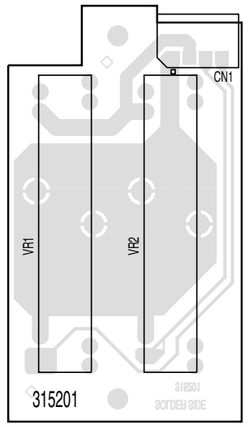
810705 - Right LCD Controls Board



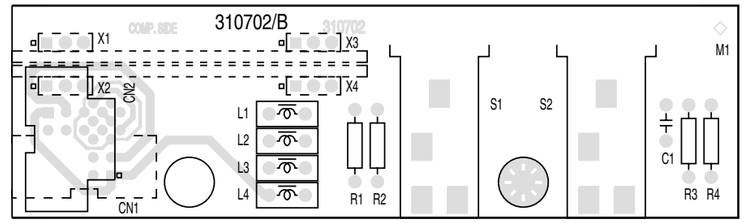
731053 - Analog I/O Board

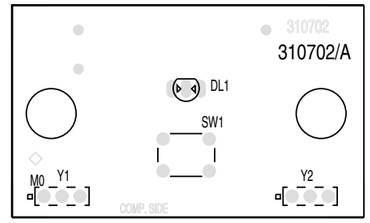


731055 - MIC & Genious Controls Board

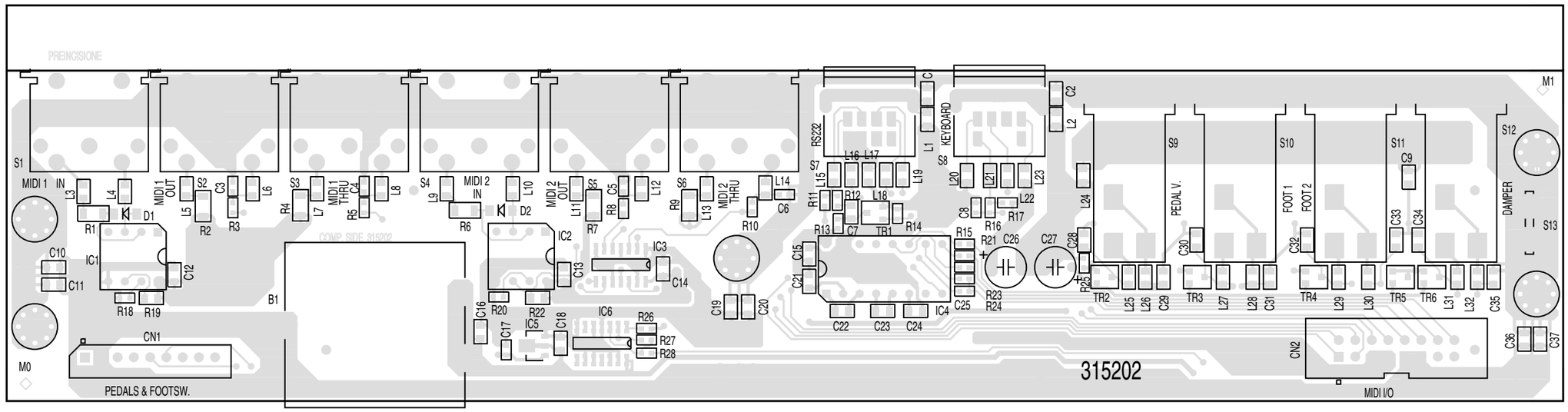


731045 - Phones & Stand-by Board

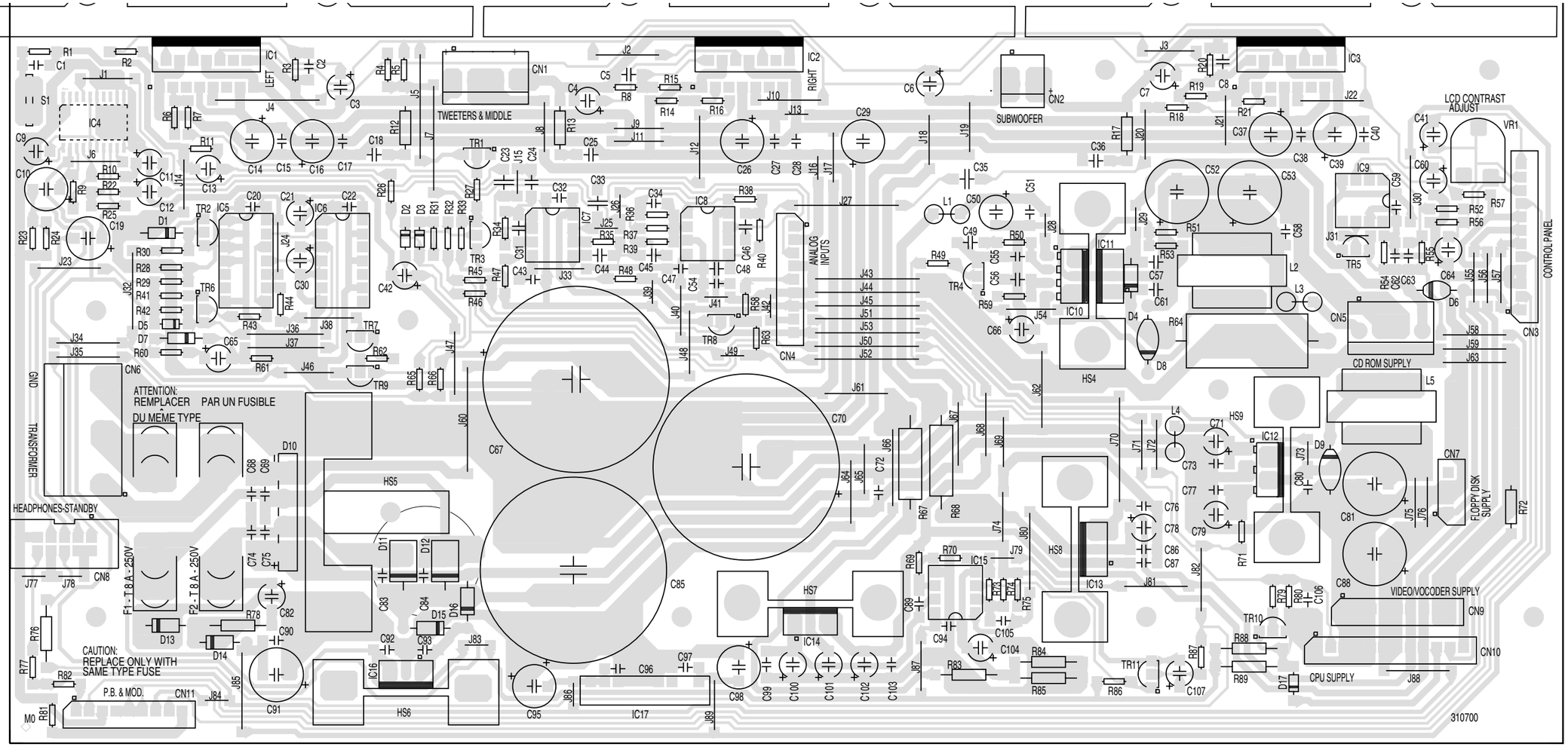




761244 - Digital I/O Board

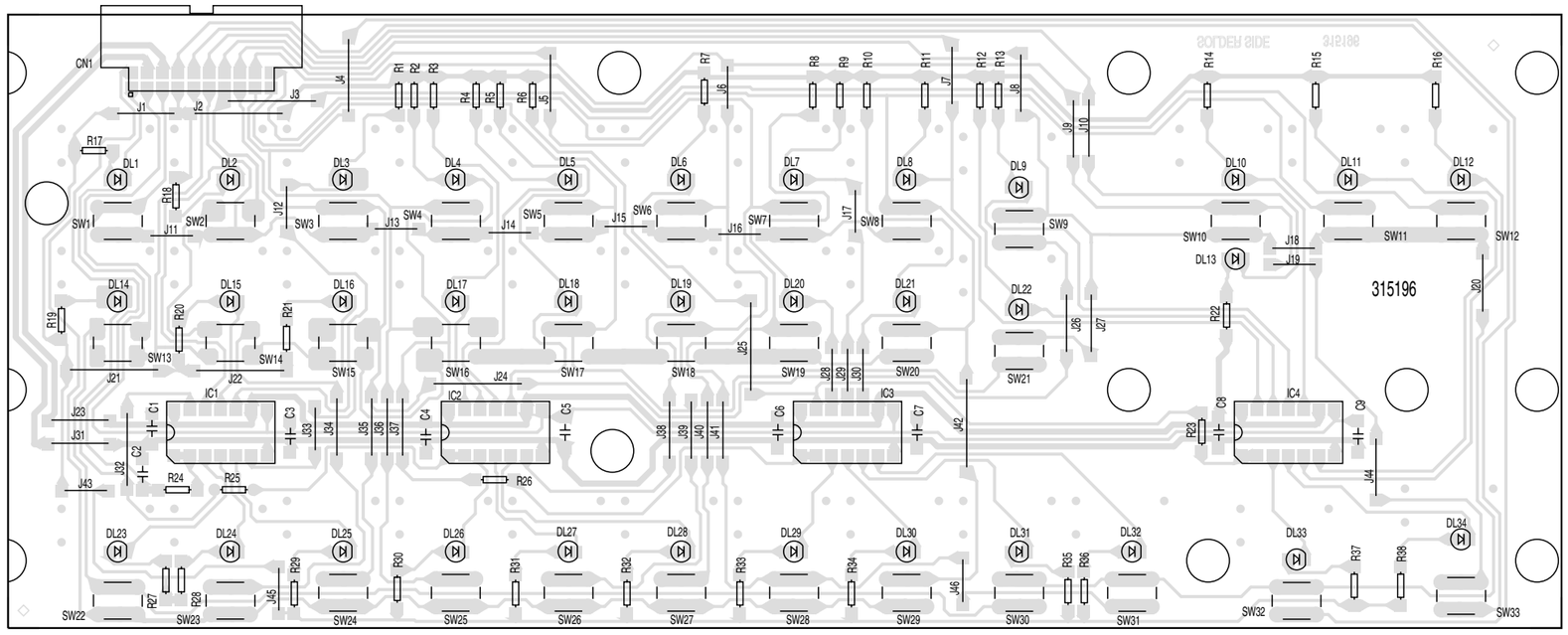


DRW: BOCCATO	DWG: Various	SCHEMATIC DIAGRAM Genesys	GENERALMUSIC S.p.A. Italy
CKD: RICCOBELLI	DATE: 24/10/2002	Controls Panels, Analog I/O, Digital I/O, Phones & Stand-by Board Pcb Layouts	
APP: PANNELLI	REV: A		



731052 - Power Amplifier & Supply Board

810703 - Right Controls Panel Board



DRW: BOCCATO	DWG: 731052	SCHEMATIC DIAGRAM Genesys	GENERALMUSIC S.p.A. Italy
CKD: RICCOBELLI	DATE: 24/10/2002	Power Amplfier & Supply Board Pcb Layout	
APP: PANNELLI	REV: A		

761263 - CPU BOARD (with SDRAM module)
761238 - CPU BOARD (without SDRAM module)

MAIN RESET

+3.3V LOGIC SUPPLY REGULATOR

MC68EN360 - CPU

FPGA44 PRG

EPM3064A (SDRAM) SDRAM CONTROLLER

EPM3256A (LCD) PERIPHERAL & LCD CONTROLLER

FPGA 144pins

FPGA 44 PINS

128M SYNCHRONOUS DYNAMIC RAM

STATIC RAM 256KBIT - 25KBIT

DIGITAL I/O

KEYBOARD

KEYBOARD SUPPLY

PANEL CTRL I/O

LCD ENABLE

BATTERY TEST

AFTER TOUCH ADJUSTMENT

761245 - 128Mb DRAM MODULE BOARD

NOTE: SCHEMATIC REF. HAS "A" SUFFIX, PCB REF. HAS NOT SUFFIX

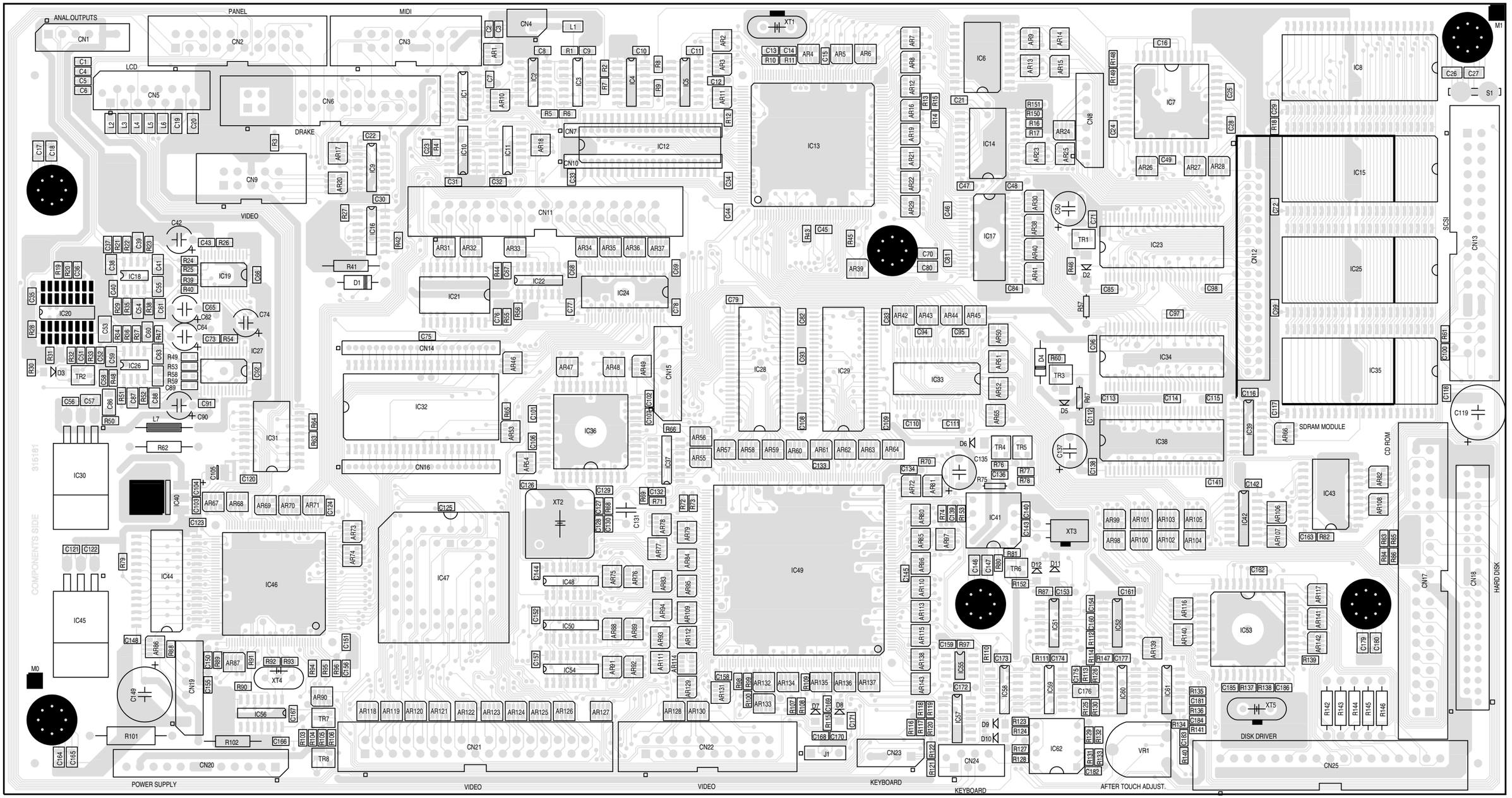
PCB# 315203

DRW RICCOBELLI	DWG# 550206	PCB# 315181	GENERALMUSIC S.p.A. ITALY
CKD PANNELLI	DATE 20-02-2002	SCHEMATIC DIAGRAM GENESYS	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP. PANNELLI	REV: A	CPU BOARD (PART 1/2)	

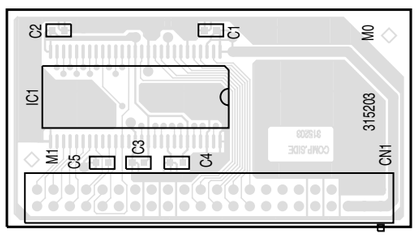
761263 - CPU BOARD (with SDRAM module)
761238 - CPU BOARD (without SDRAM module)

DRW RICCOBELLI	DWG# 550206	PCB# 315181	GENERALMUSIC S.p.A. ITALY
CKD PANNELLI	DATE 20-02-2002	SCHEMATIC DIAGRAM GENESYS	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP. PANNELLI	REV: A	CPU BOARD (PART 2/2)	

761238 - Cpu & Sound Generator Board



761245 - 128Mbit SDRam Module Board



DRW: BOCCATO	DWG: 761238/263	SCHEMATIC DIAGRAM Genesys	GENERALMUSIC S.p.A. Italy
CKD: RICCOBELLI	DATE: 24/10/2002	CPU Board Pcb Layout	
APP: PANNELLI	REV: A		

761237 - A/V PAL & VOCAL PROCESSOR BOARD
761240 - A/V NTSC & VOCAL PROCESSOR BOARD
(1st Version with FPGA 128pin)

NOTE:
A SMALL LOT OF BOARDS IS MANUFACTURED USING 105021 ATMEL FPGA INSTEAD 105005 ST FPGA, THIS VARIATION REQUIRE OTHER THREE MODIFIES ON THE BOARD. PIN 99 AND 100 INVERSION. 15P CAPACITOR MOUNTED IN R108 POSITION. 3K9 RESISTOR MOUNTED IN R112 POSITION.

A/V ADDR & DATA BUS
FROM/TO CPU BOARD CN21

CHROMA SUBCARRIER PLL

XT2 = PAL = 8.867238 MHz
NTSC = 7.15909 MHz

COMP DUTY CICLE ADJ.

IC27 GATEVIDEO

VLCIA GM105005 - FPGA VIDEO 128p.in

IC20 HM514260
1M X 16 DYNAMIC RAM

IC30 ADV476KP35
RAM DAC

IC28 TDA8501
PAL/NTSC ENCODER

DELAY LINE

MIC & VIDEO
FROM/TO ANALOG I/O BOARD CN1

CN6
R MIC 2
AGND 4
LGND 6
LUM 8
CHR 10
1 L MIC
3 AGND
5 LGND
7 NC
9 CVBS

UNUSED GATES

IC10 ADSP2183
DSP Microcomputer

IC15 A57C34098
4MB HIGH SPEED SRAM

IC29 EPM3064A 560026 (DECOMP)

IC24 STA013
MPEG2 L3 AUDIO DECODER

IC23 74LVC125D
IC6 74AC04
IC8 74AC74
D FF

OUT1-2 & DMA
FROM/TO CPU BOARD CN9
A/V CTRL & ADDR BUS

MP3 DECODER

IC3 AD1854
D/A CONVERTER

MP3

MIXER

IC5 AD1870
IC18 AD1870
SIGMA DELTA A/D CONVERTER

MIC

CD

CD AUDIO OUT
FROM CDRW RECORDER

FPGA44 PRG

XT3 = PAL = 30 MHz
NTSC = 30.20979 MHz

A/V & VOCAL PROC. SUPPLY
FROM PWR AMP & SUPPLY BOARD CN9

IC17 7805
IC25 LM1117

DRW RICCOBELLI	DWG# 550207	PCB# 315180	GENERALMUSIC S.p.A. ITALY
CKD PANNELLI	DATE 05-02-02	SCHEMATIC DIAGRAM GENESYS A/V & VOCAL PROCESSOR BOARD 1st VERSION with GATEVIDEO FPGA 128p in	
APP. PANNELLI	REV: A		

761265 - A/V PAL & VOCAL PROCESSOR BOARD
761266 - A/V NTSC & VOCAL PROCESSOR BOARD
(2nd Version with FPGA 144pin)

DRW RICCOBELLI	DWG# 550208	PCB# 3152041	GENERALMUSIC S.p.A. ITALY
CKD PANNELLI	DATE 16-05-02	SCHEMATIC DIAGRAM GENESYS A/V & VOCAL PROCESSOR BOARD 2nd VERSION with FPGA (144pin)	
APP.PANNELLI	REV: A		

761268 - A/V PAL & VOCAL PROCESSOR BOARD
761269 - A/V NTSC & VOCAL PROCESSOR BOARD
(3rd Ver. with ATMEL FPGA 128pin)

A/V ADDR & DATA BUS
FROM/TO CPU BOARD CN21

CHROMA SUBCARRIER PLL

ATMEL GM105021 - FPGA VIDEO 128pin

MIC & VIDEO
FROM/TO ANALOG I/O BOARD CN1

UNUSED GATES

FPGA PRG

FPGA 44 PINS

MP3 DECODER

MP3

CD

CD AUDIO OUT
FROM CDRW RECORDER

DSP Microcomputer

4MB HIGH SPEED SRAM

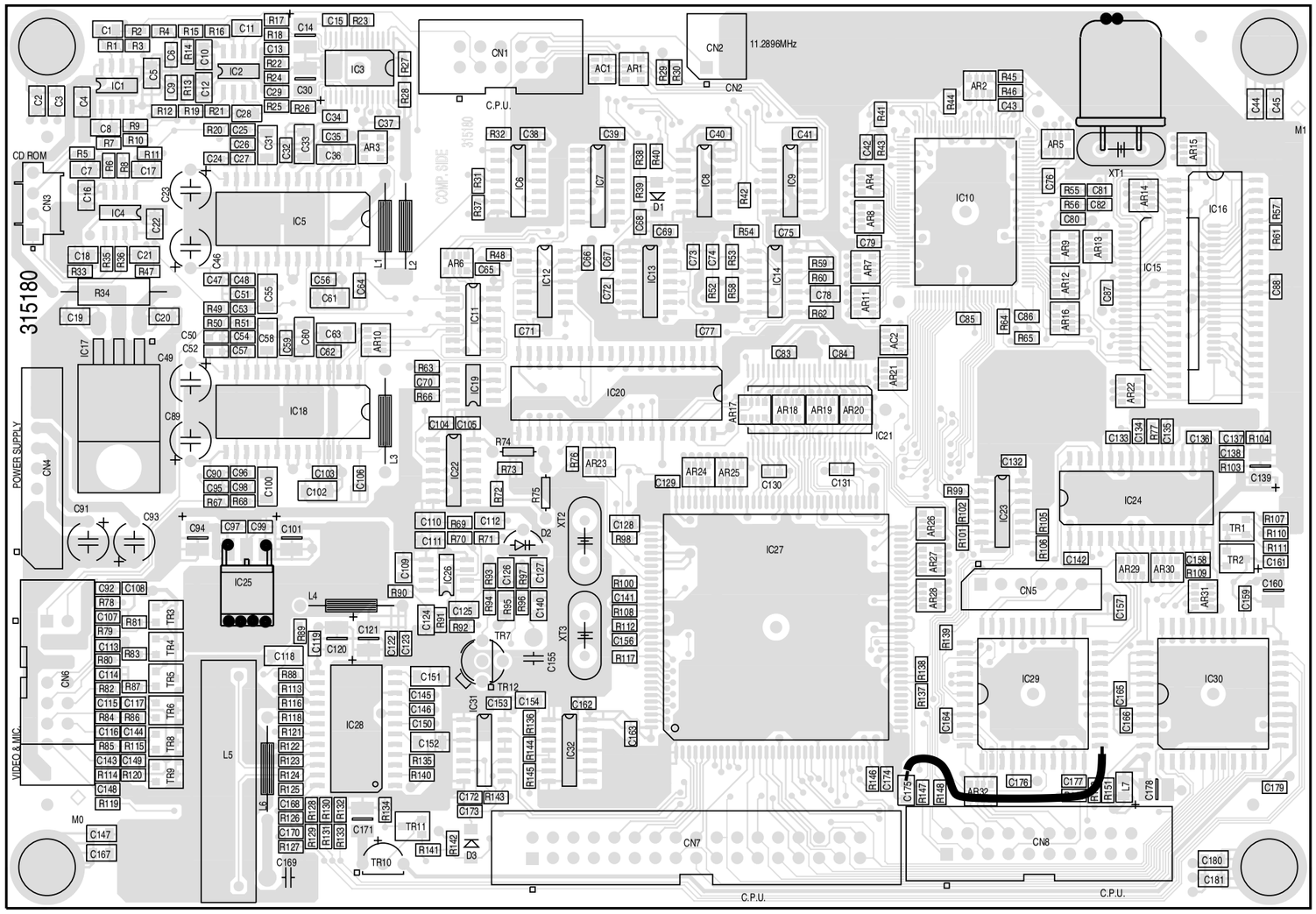
OUT1-2 & DMA
FROM/TO CPU BOARD CN9

CLOCK
FROM CPU BOARD CN4

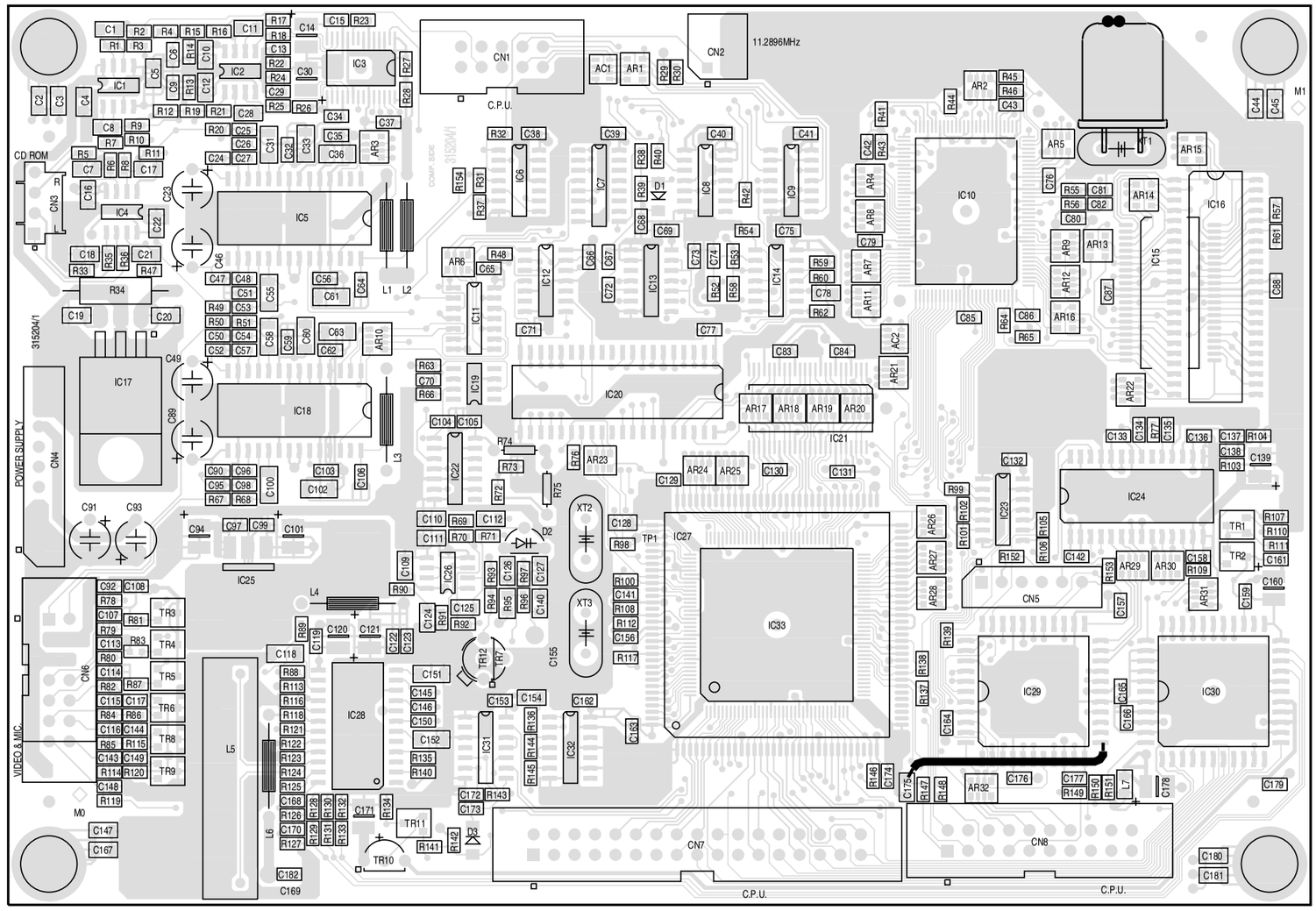
A/V & VOCAL PROC. SUPPLY
FROM PWR AMP & SUPPLY BOARD CN9

DRW RICCOBELLI	DWG# 550210	PCB# 315204/1	GENERALMUSIC S.p.A. ITALY
CKD PANNELLI	DATE 07-10-02	SCHEMATIC DIAGRAM GENESYS A/V & VOCAL PROCESSOR BOARD 3rd VERSION with ATMEL FPGA (128pin)	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP. PANNELLI	REV: A		

731237 or 731240 - A/V & Vocal Processor Board



761265/761266/761268/761269 - A/V & Vocal Processor Board



DRW: BOCCIATO	DWG: 731092	SCHEMATIC DIAGRAM: Genesys	GENERALMUSIC S.p.A. Italy
CKD: RICCOBELLI	DATE: 24/10/2002	Power Amplifier & Supply Board Pcb Layout	
APP: PANNELLI	REV: A		

Spare Part List

Legend

EU = Europe Version
US = U.S. Version
SG-1= Solton Version (German only)
Pal = Pal Version
Ntsc = Ntsc Version

code Description

Optional Accessories

970330 SCSI Kit
970110 X-Metal Stand
970116 Single Foot Switch
970080 Triple Foot Switch
970134 Piano Single Foot Switch
970013 Volume Pedal
970107 PRO Volume Pedal
130301 2mt Midi Cable
130429 3mt RS232 Cable (MiniDin 8 To D-Sub 9)
990927 AS-1 Arabic Scale Converter

Accessories

271344 Owner's Manual (Italian Version)
271345 Owner's Manual (English Version)
271346 Owner's Manual (Spanish Version)
271347 Owner's Manual (German Version)
271348 Owner's Manual (French Version)
271349 Owner's Manual (Dutch Version)
271350 Owner's Manual (German Version)(SG-1)
959000 Genesys CD1 Operating System & Demo
959001 Genesys CD2 Music (Italian Contents)
959002 Genesys CD2 Music (International Contents)
959007 Solton SG-1 CD1 Operating System & Demo (SG-1)
959008 Solton SG-1 CD2 Music (SG-1)
951283 LM 20 Dynamic Mic with XLR Cable
660753 Music Stand
130318 RCA/RCA Video Cable
130274 Mains Cable (EU)
130283 Mains Cable (US)

Assembly

262339 Left Wodden Flank
262338 Right Wooden Flank
120151 M6x30tspe Screw
120147 M4x10tt Black Screw

Wiring Connections

841322 26Wires 5cm Latch Flat Cable
841308 10 Wires 35cm Latch Flat Cable
841307 17.5cm Eye/Eye Plaited Wire with Insulated Sheath
841306 6 Wires 30cm Crimp Terminal Cable
841305 4 Wires 50cm Shielded Crimp Terminal Cable
841303 12 Wires 40cm Crimp Terminal Cable
841302 9 Wires 40cm Crimp Terminal Cable
841297 12 Wires 35cm Crimp Terminal Cable
841296 20 Wires 5cm Latch Flat Cable with Ferrite
841295 10 Wires 7.5cm Latch Flat Cable
841294 44 Wires 15cm P=1 Latch Flat Cable with Ferrite
841324 40 Wires 18.5cm Latch Flat Cable (EIDE)
841251 9 Wires 20cm Crimp Terminal Cable
841244 20 Wires 30cm Latch Flat Cable with Ferrite
841152 34 Wires 5cm Flat Cable with Ferrite
841135 4 Wires 20cm Crimp Terminal Cable
841121 20cm Yel/Grn Faston/Faston Wire
841025 1 Shielded Wire 10cm Crimp Terminal Cable
840832 14 Wires35cm Flat Cable
840628 34 Wires 35cm Latch Flat Cable
840616 20 Wires 25cm Latch Flat Cable
840595 16 Wires 12cm Latch Flat Cable
840587 3 (of 4) Wires 40cm Crimp Terminal Cable
840571 20 Wires 20cm Latch Flat Cable
841080 4 Wires 12.5cm Crimp Terminal Cable
840722 20 Wires 10cm Flat Cable
840721 14 Wires 10cm Flat Cable
770926 Supply Cable Assembly
770930 Speakers Cables Assembly

Bottom Assembly

660756 SCSI Slot Cover
660749 CD-Recorder Support
660748 Rear Chassis
660747 Front Crossbar
653603 Sub-Woofer Box (Assembled & Painted)
340997 * Sub-Woofer Box
340996 * Sub-Woofer Cap
120322 * WL4x15tc Black Screw
653514 Stand-By Actuator
561018 Hard Disk with Genesys Content
561019 Hard Disk with SG-1 Content
341019 HG-6 Cord Lock
341018 HD Support
341003 Gasket for Sub-Woofer Box
340986 D=3.3mm H=9mm Spacer for Metal Panel
340905 Suspension Rubber for HD
340435 Adhesive Foot
340186 Adhesive Cable Fixing
220122 6" 4ohm Sub-Woofer Speaker
210093 610x15x1mm Adhesive Black Felt Strip
171885 A/V Board Support
171884 Din Sockets Reinforcement
171881 3.5" Disk Drive Support
171879 I/O Boards Support
171877 Right Side Chassis
171875 Left Side Chassis
171039 Ground Leaf
150298 100x2.5mm Nylon Cable Tie
120831 17.6mm Threaded Spacer
120752 5.2mm Brassed Gnd Straw
120682 M3 Socket
120581 M3 Black Self-Locking Nut
120521 3mm Black Spring Washer
120453 4.2x9x0.8 Black Washer
120405 B3.5x9.5tc Black Screw
120386 WL4x10tt Black Screw
120336 WL4x25tt Black Screw
120322 WL4x15tc Black Screw
120272 WL3x10tc Black Screw
120147 M4x10tt Black Screw
120119 M4x16tc Black Screw
120065 M3x16tsp Screw
120029 M3x6tc Black Screw
120028 M3x6tc Black Screw
120022 M3x6tsp Black Screw
110405 CDRW Recorder Unit EIDE Interface
110400 3,5 Floppy Disk Drive
010595 100n 50V -20+80% Ceramic Cap. Multilayer

Transformer Assembly

731057 230Vac Transformer Assembly (EU)
731058 115Vac Transformer Assembly (US)
770928 * Mains Cables Assembly
768198 * Mains Filter Board (Pcb#310643)
230565 ** 2.5mH 250V 3A AC Line Filter
140010 ** 3 Contacts P=10 Vert Terminal Block
020493 ** 100n 250Vac MKP EMI Capacitor "Siemens"
010545 ** 4n7 250V Ceramic Capacitor (Iec-Ul-Csa)
347047 * 15.9mm Board Spacer
340359 * Power Switch Frame
230138 * 230Vac 180W Transformer (EU)
230139 * 115Vac 180W Transformer (US)
180707 * GND Symbol Adhesive Label
171883 * Board Chassis
150298 * 100x2.5mm Nylon Cable Tie
120587 * M6 Black Nut
120582 * M3 Black Nut
120523 * 6mm Black Spring Washer
120481 * 3mm Black Shakeproof Washer
120086 * M6x60tspe Burnished Screw
120025 * M3x10tsp Black Screw
110614 * Mains Socket
110285 * 4A 250Vac Bipolar Power Switch

Power Amplifier & Supply Board

110023 T8A Fuse 5x20mm (EU)
110022 T8A Fuse 6.3x32mm (US)
731052 Power Amplifier & Supply Board (Pcb#310700)
230527 * BL02RN2-R62 EMI Coil For Signal
230524 * 100uH Switching Coil
210016 * 1x10mm Adhesive Black Felt (specify mt)
177346 * Pcb Reinforcement
177173 * TO220 h=31mm Horizontal Heatsink
171889 * Multiwatt15 h=37mm Heatsink
170960 * TO220 h=25mm Heatsink
170716 * TO220 h=38mm Heatsink
141101 * 4 Contacts Vert Male Connector
141100 * 2 Contacts Vert Male Connector
140944 * 10 Contacts Vert Male Connector Din41651
140932 * 12 Contacts Vert Male Connector
140929 * 9 Contacts Vert Male Connector
140873 * 4 Contacts Vert Male Connector
140010 * 3 Contacts P=10 Vert Terminal Block
130036 * AWG26 Green Cable
120857 * 6.3mm Vertical Male Faston for Pcb
120582 * M3 Black Nut
120521 * 3mm Black Spring Washer
120313 * B3.9x13tc Black Screw
120114 * M3x12tc Black Screw
120003 * M3x8tc Black Screw
110119 * Fuse Clip 10A max (EU) (US)
106007 * TDA8542AT SOIC 2X1.5W BTL Audio Amplifier
100969 * TDA7296 60W Power Amplifier
100955 * LM2576 5V 3A Switching Regulator
100931 * MC34081 Single J-Fet Operational Amplifier
100900 * L4960 5-40V 2.5A Switching Regulator
100618 * 74HC14 Hex Inverter Schmitt Trigger
100614 * 74HC74 Dual Flip-Flop
100061 * TL072 Dual J-Fet Operational Amplifier
100059 * 7805 +5V 1A Voltage Regulator
100058 * 7905 -5V 1A Voltage Regulator
100045 * 7812 +12V 1A Voltage Regulator
090183 * BC550C TO92 LN Npn Transistor
090153 * BC327 TO92 Pnp Transistor
090152 * BC337 TO92 Npn Transistor
080606 * GBU8D 8A Rectifier Diodes Bridge
080342 * 30V 1W 5% Zener Diode
080216 * 4V7 0.5W 5% Zener Diode
080173 * 1N5817 1A 20V Schottky Rectifer Diode
080171 * FE6B 6A 100V Fast Recovery Diode
080167 * 1N5403 3A 300V Rectifier Diode
080156 * 1N4002 1A 100V Rectifier Diode
080103 * 1N4148 100mA 75V Signal Diode
070061 * 100E 20% Horizontal Linear Trimmer
060230 * 8E2 2W 10% Wire Resistor
060221 * 6E8 5W 10% Wire Resistor
052066 * 330K 1/8w 5% Resistor
052065 * 270K 1/8w 5% Resistor
052060 * 100K 1/8w 5% Resistor
052056 * 47K 1/8w 5% Resistor
052053 * 27K 1/8w 5% Resistor
052052 * 22K 1/8w 5% Resistor
052050 * 15K 1/8w 5% Resistor
052049 * 12K 1/8w 5% Resistor
052048 * 10K 1/8w 5% Resistor
052046 * 6K8 1/8w 5% Resistor
052044 * 4K7 1/8w 5% Resistor
052043 * 3K9 1/8w 5% Resistor
052042 * 3K3 1/8w 5% Resistor
052040 * 2K2 1/8w 5% Resistor
052038 * 1K5 1/8w 5% Resistor
052037 * 1K2 1/8w 5% Resistor
052036 * 1K 1/8w 5% Resistor
052035 * 820E 1/8w 5% Resistor
052030 * 330E 1/8w 5% Resistor
052028 * 220E 1/8w 5% Resistor
052026 * 150E 1/8w 5% Resistor
050131 * 10E 1/4W 5% Resistor
040392 * 1K5 1/2W 5% Resistor
040373 * 1K 1/2W 5% Resistor
040323 * 390E 1/2W 5% Resistor
040312 * 330E 1/2W 5% Resistor
040252 * 100E 1/2W 5% Resistor
040064 * 2E7 1/2W 5% Resistor
030950 * 470u 16V 20% Low Esr Vert Electrolytic Capacitor
030929 * 4u7 35V 20% Electrolytic Tantalium Capacitor
030881 * 10000uf 50V Snap-In Electrolytic Capacitor
030565 * 220u 25V 20% Vert Electrolytic Capacitor
030564 * 220u 50V 20% Vert Electrolytic Capacitor
030403 * 47u 25V 20% Vert Electrolytic Capacitor
030324 * 22u 50V 20% Vert Electrolytic Capacitor
030245 * 10u 50V 20% Vert Electrolytic Capacitor
030170 * 4u7 50V 20% Vert Electrolytic Capacitor
030005 * 1u 50V 20% Vert Electrolytic Capacitor
021032 * 470n 63V 10% MKT Polyester Capacitor
021024 * 100n 63V 10% MKT Polyester Capacitor
021020 * 47n 63V 10% MKT Polyester Capacitor
021018 * 33n 63V 10% MKT Polyester Capacitor
021004 * 2n2 63V 10% MKT Polyester Capacitor
010599 * 1u 50V -20+80% Ceramic Cap. Multilayer
010595 * 100n 50V -20+80% Ceramic Cap. Multilayer
010592 * 1n 50V -20+80% Ceramic Cap. Multilayer
010547 * 10n 50V 10% CL2 Ceramic Capacitor
010402 * 330p 50V 10% CL2 Ceramic Capacitor
010345 * 100p 50V 10% CL2 Ceramic Capacitor

Phones/Stand-by Board

731045 Phones/Stand-by Board (Pcb#310702)
340091 * 4mm Led Spacer
230569 * FL5R200PNT EMI Coil For Signal
140954 * 10 Contacts Hor Male Connector Din41651
140890 * 4 Contacts Hor Male Single-Strip
140529 * Microswitch 12V 50mA 0.25mm
140217 * Jack Stereo Slim Horizontal Socket
080742 * 3mm Wide Diffused Red-Grn Led
050191 * 33E 1/4W 5% Resistor
010595 * 100n 50V -20+80% Ceramic Cap. Multilayer

Keyboard Assembly

720661 Keyboard Assembly (Solton SG-1)
720645 Keyboard Assembly
841232 * 10cm AWG18 Yel/Grn Eye/Eye Wire
841135 * 4 Wires 20cm Crimp Terminal Cable
840808 * 16 Wires 30cm Flat Cable
840807 * 16 Wires 20cm Flat Cable
840775 * 6 Wires 20cm Flat Cable
761059 * Keyboard Interface Board (Pcb# 315024)
230569 ** FL5R200PNT EMI Coil For Signal
141016 ** 16 Contacts Vert Female Connector
141011 ** 6 Contacts Vert Female Connector
140890 ** 4 Contacts Hor Male Single-Strip
140872 ** 4 Contatcs Hor Male Connector
100740 ** HD6433278 Cpu F=20MHz
100605 ** 74HC125 Quad 3-State Buffer
090192 ** BC307 TO92 Pnp Transistor
010725 ** 20MHz Ceramic Resonator With Capacitors
720646 * Pitch & Modulation Assembly
770927 ** Pitch & Mod. Cables Assembly
340568 ** Wheel
340331 ** Sheath For Spring
210286 ** 22X9X2mm Adhesive Black Felt Strip
171460 ** Wheel Support
160166 ** Return Spring
150298 ** 100x2.5mm Nylon Cable Tie
120554 ** Lock Washer
074700 ** 10KB Rotative Pot with pin at 1/3 stroke
720418 * TP9 Keyboard Mech. & Elect. Assembly
810554 ** 29N Right Contacts Board (Pcb#310536)
340212 *** 13 Dual Contact Rubber Strip
340211 *** 12 Dual Contact Rubber Strip
141016 *** 16 Contacts Vert Female Connector
080103 *** 1N4148 100mA 75V Signal Diode
810553 ** 32N Left Contacts Board (Pcb# 310535)
340211 *** 12 Dual Contact Rubber Strip
141016 *** 16 Contacts Vert Female Connector
080103 *** 1N4148 100mA 75V Signal Diode
500059 ** TP9 Keyboard Mechanical Assembly
160200 *** Key Return Spring (TP9 20g)
151118 *** Last C Key (TP9 20g)
151117 *** B Key (TP9 20g)
151116 *** A Key (TP9 20g)
151115 *** G Key (TP9 20g)
151114 *** F Key (TP9 20g)
151113 *** E Key (TP9 20g)
151112 *** D Key (TP9 20g)
151111 *** C Key (TP9 20g)
151001 *** Sharp Key (TP9 10g)
120272 ** WL3x10tc Black Screw
653584 * Left Side Keyboard Chassis and Wheel Support
653583 * Right Side Keyboard Chassis (Gem)
653610 * Right Side Keyboard Chassis (Solton SG-1)
340115 * Adhesive Flat Cable Fixing
340092 * 5mm Board Spacer
210093 * 610x15x1mm Adhesive Black Felt Strip
171876 * Support for Bars
171874 * Bar Support for Keyboard
120319 * B3.5x19tc Black Screw
120288 * WL3x20tc Black Screw
120276 * B2.9x6.5mm Screw
120272 * WL3x10tc Black Screw

Cpu Board

761263 Cpu Board with SDRam Module
761245 * 128Mbit Dram Module Board (Pcb#315203)
140945 ** 44 Contacts P=2mm Vert Female Strip
104066 ** K4S281632C-TC1L 128Mbitx16 Sync Dram 100MHz
011260 ** 100n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011218 ** 33p 16V 10% Cer. Cap. Smd CL2 X7R 0603
761238 * Cpu Board (Pcb#315181)
560025 ** EPM3256ATC-10 Fpga Programmed LCD

560024	**	EPM3064ALC-4 Fpga Programmed SDRAM
550696	**	AT27BV4096-12JC 4Mbit OTPRom Prog. BOOT
231000	**	BLM21A102STP Smd EMI Coil For Signal
230561	**	47uH 10% 100mA RF-Coil
141011	**	6 Contacts Vert Female Connector
140951	**	40 Contacts Vert Male Connector Din41651
140944	**	10 Contacts Vert Male Connector Din41651
140932	**	12 Contacts Vert Male Connector
140917	**	2 Contacts Vert Male Connector
140915	**	44 Contacts P=2mm Vert Male Strip
140908	**	6 Contacts Vert Male Small Connector
140882	**	26 Contacts Vert Male Connector Din41651
140874	**	Single In Line Vert Male Strip (specify contacts)
140873	**	4 Contacts Vert Male Connector
140866	**	34 Contacts Vert Male Connector Din41651
140854	**	16 Contacts Vert Male Connector Din41651
140851	**	20 Contacts Vert Male Connector Din41651
140605	**	PLCC44 Socket
120857	**	6.3mm Vertical Male Faston for Pcb
120582	**	M3 Black Nut
120521	**	3mm Black Spring Washer
120003	**	M3x8tc Black Screw
106003	**	MAX709 Power Monitor With Reset
106001	**	MC33078P SOIC Dual Low Noise Op. Amp.
105018	**	MC68EN360EM25V Cpu 3v3 25MHz QFP 240
105009	**	DISP3 QFP Digital Sound Processor (Hitachi)
104069	**	KM62V256CLG-7L 3v3 SOP 256Kbit SRam Ta=70nS
104066	**	K4S281632C-TC1L 128Mbitx16 Sync Dram 100MHz
104010	**	HM514280AJ 4M5bit Dram Ta=70nS
103057	**	74LVC08AD SOIC Quad 2-input And Gate
103056	**	74LVC245DW SOIC Octal Bus Transceiver
103052	**	AD1854 Stereo 24bit Dac
103048	**	74LVC32D SOIC Quad 2-input Or Gate
103047	**	74LVC04 SOIC Hex Inverter
103046	**	74LVC125AD SOIC Quad Buffer/line Driver
103037	**	74FCT164245T 5V-3V 16bit Bidirectional Converter
103010	**	74HC04D SOIC Hex Inverter
103006	**	74HC4053DW SOIC 3x2ch Analog Multiplexer
101510	**	74AC245 SOIC Octal Bus Transceiver
101508	**	74AC32 SOIC Quad 2-input Or Gate
101505	**	74AC08 SOIC Quad 2-input And Gate
101504	**	74AC257 SOIC Quad 2-input Multiplexer
101503	**	74AC74 SOIC Dual Flip-Flop
101502	**	74AC125D SOIC Quad Tri-State Buffer
101500	**	74AC138D SOIC 1 Of 8 Decoder
100968	**	MIC29150-3.3BT TO220 3.3V 1.5A Low Drop Regulator
100970	**	LMC6772BIN Dual Rail-To-Rail Open-Drain Comparator
100731	**	DS1202 Clock Calendar
100591	**	GM82C765B Floppy Disk Controller
100059	**	7805 +5V 1A Voltage Regulator
091004	**	BC807-25L TO236 Smd Pnp Transistor (9FB/G5B)
091003	**	BC817-25L TO236 Smd Npn Transistor (8FB/G6B)
091001	**	BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	**	BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
081100	**	PRLL5817 SOD87 1A 20V Schottky Rect. Diode
081000	**	PMLL4148 Smd 100mA 75V Signal Diode
080216	**	4V7 0.5W 5% Zener Diode
080156	**	1N4002 1A 100V Rectifier Diode
070160	**	2K2 20% Horizontal Linear Trimmer
060154	**	1E2 1W 5% Resistor
055103	**	470E X4 1/16w 5% Smd Resistor Array
055102	**	33E X4 1/16w 5% Smd Resistor Array
055101	**	4K7 X4 1/16w 5% Smd Resistor Array
055100	**	100E X4 1/16w 5% Smd Resistor Array
055072	**	1M 1/16w 5% Smd Resistor 0603
055056	**	47K 1/16w 5% Smd Resistor 0603
055052	**	22K 1/16w 5% Smd Resistor 0603
055049	**	12K 1/16w 5% Smd Resistor 0603
055048	**	10K 1/16w 5% Smd Resistor 0603
055047	**	8K2 1/16w 5% Smd Resistor 0603
055044	**	4K7 1/16w 5% Smd Resistor 0603
055041	**	2K7 1/16w 5% Smd Resistor 0603
055040	**	2K2 1/16w 5% Smd Resistor 0603
055038	**	1K5 1/16w 5% Smd Resistor 0603
055036	**	1K 1/16w 5% Smd Resistor 0603
055035	**	820E 1/16w 5% Smd Resistor 0603
055034	**	680E 1/16w 5% Smd Resistor 0603
055033	**	560E 1/16w 5% Smd Resistor 0603
055031	**	390E 1/16w 5% Smd Resistor 0603
055030	**	330E 1/16w 5% Smd Resistor 0603
055028	**	220E 1/16w 5% Smd Resistor 0603
055027	**	180E 1/16w 5% Smd Resistor 0603
055024	**	100E 1/16w 5% Smd Resistor 0603
055020	**	47E 1/16w 5% Smd Resistor 0603
055018	**	33E 1/16w 5% Smd Resistor 0603
055012	**	10E 1/16w 5% Smd Resistor 0603
052024	**	100E 1/8w 5% Resistor
050271	**	150E 1/4W 5% Resistor
040252	**	100E 1/2W 5% Resistor
040136	**	12E 1/2W 5% Resistor
031007	**	10u 16V 20% Smd Electrolytic Tantalium Capacitor
030650	**	470u 25V 20% Vert Electrolytic Capacitor
030485	**	100u 25V 20% Vert Electrolytic Capacitor
030245	**	10u 50V 20% Vert Electrolytic Capacitor
030170	**	4u7 50V 20% Vert Electrolytic Capacitor
021031	**	390n 63V 10% MKT Polyester Capacitor
011260	**	100n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011248	**	10n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011244	**	4n7 16V 10% Cer. Cap. Smd CL2 X7R 0603
011236	**	1n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011228	**	220p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011224	**	100p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011220	**	47p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011218	**	33p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011216	**	22p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011214	**	15p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011212	**	10p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011210	**	6p8 16V 10% Cer. Cap. Smd CL2 X7R 0603
011103	**	1u 16V 10% Cer. Cap. Smd CL2 XTR 1206
011060	**	100n 50V 10% Cer. Cap. Smd CL2 Y5V 0805
011032	**	470p 50V 10% Cer. Cap. Smd CL2 X7R 0805
010732	**	4.194304MHz Quartz Oscillator
010727	**	45.1584MHz Quartz Resonator
010725	**	20MHz Ceramic Resonator With Capacitors
010710	**	32768Hz Quartz Resonator
010704	**	16MHz Quartz Resonator

A/V & Vocal Processor Board

761237		**A/V Pal & Vocal Processor Board (Pcb# 315180) (1st)**
761240		**A/V Ntsc & Vocal Processor Board (Pcb# 315180) (1st)**
761265		**A/V Pal & Vocal Processor Board (Pcb# 315204/1) (2nd)**
761266		**A/V Ntsc & Vocal Processor Board (Pcb# 315204/1) (2nd)**
761268		**A/V Pal & Vocal Processor Board (Pcb# 315204/1) (3rd)**
761269		**A/V Ntsc & Vocal Processor Board (Pcb# 315204/1) (3rd)**
105005	*	ST FPGA 128pin - Video/Lcd Controller (1st)
560027	*	EPM3256ATC-10 144pin Fpga Programmed A/V (2nd)
105021	*	ATMEL FPGA 128pin - Video/Lcd Controller (3rd)
560026	*	EPM3064ALC-4 Fpga Programmed DMP MP3
231000	*	BLM21A102STP Smd EMI Coil For Signal
230582	*	LC Delay Line 400ns 0.5MHz
230561	*	47uH 10% 100mA RF-Coil
140944	*	10 Contacts Vert Male Connector Din41651
140929	*	9 Contacts Vert Male Connector
140918	*	2 Contacts Hor Male Connector
140908	*	6 Contacts Vert Male Small Connector
140874	*	Single In Line Vert Male Strip (specify contacts)
140866	*	34 Contacts Vert Male Connector Din41651
140851	*	20 Contacts Vert Male Connector Din41651
120582	*	M3 Black Nut
120521	*	3mm Black Spring Washer
120003	*	M3x8tc Black Screw
106008	*	LM1117 Voltage Reg. 3,3V 0,8A TO252
106003	*	MAX709 Power Monitor With Reset
106001	*	MC33078P SOIC Dual Low Noise Op. Amp.
106000	*	TDA8501 PAL/NTSC Encoder
105016	*	ADSP2183 Dsp Microcomputer
104068	*	AS7C34098-20TC 3v3 TSOP 4Mbit SRam Ta=20nS
104003	*	HM514260JP SOJ 4Mbit Dynamic Ram Ta=70ns
103059	*	STA013 SOP 3v3 Mpeg2 Layer3 Decoder
103053	*	AD1870 Single-supply 16bit Stereo Adc
103052	*	AD1854 Stereo 24bit Dac
103046	*	74LVC125AD SOIC Quad Buffer/line Driver
101508	*	74AC32 SOIC Quad 2-input Or Gate
101506	*	74AC04D SOIC Hex Inverter Gate
101503	*	74AC74 SOIC Dual Flip-Flop
101502	*	74AC125D SOIC Quad Tri-State Buffer
101500	*	74AC138D SOIC 1 Of 8 Decoder
100739	*	ADV476 Color Palette Ram Dac
100059	*	7805 +5V 1A Voltage Regulator
091000	*	BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090102	*	2N918 VHF Npn Transistor
081000	*	PMLL4148 Smd 100mA 75V Signal Diode
080500	*	BB204G Dual Varicap Diode
060270	*	15E 1W 5% Resistor
055102	*	33E X4 1/16w 5% Smd Resistor Array
055101	*	4K7 X4 1/16w 5% Smd Resistor Array
055084	*	10M 1/16w 5% Smd Resistor 0603
055064	*	220K 1/16w 5% Smd Resistor 0603
055062	*	150K 1/16w 5% Smd Resistor 0603
055060	*	100K 1/16w 5% Smd Resistor 0603
055048	*	10K 1/16w 5% Smd Resistor 0603
055044	*	4K7 1/16w 5% Smd Resistor 0603
055043	*	3K9 1/16w 5% Smd Resistor 0603
055040	*	2K2 1/16w 5% Smd Resistor 0603
055039	*	1K8 1/16w 5% Smd Resistor 0603
055037	*	1K2 1/16w 5% Smd Resistor 0603
055036	*	1K 1/16w 5% Smd Resistor 0603
055034	*	680E 1/16w 5% Smd Resistor 0603
055032	*	470E 1/16w 5% Smd Resistor 0603
055031	*	390E 1/16w 5% Smd Resistor 0603
055030	*	330E 1/16w 5% Smd Resistor 0603
055029	*	270E 1/16w 5% Smd Resistor 0603
055028	*	220E 1/16w 5% Smd Resistor 0603
055027	*	180E 1/16w 5% Smd Resistor 0603
055024	*	100E 1/16w 5% Smd Resistor 0603
055023	*	82E 1/16w 5% Smd Resistor 0603
055018	*	33E 1/16w 5% Smd Resistor 0603
055012	*	10E 1/16w 5% Smd Resistor 0603
055008	*	4E7 1/16w 5% Smd Resistor 0603
054034	*	680E 1/10w 5% Smd Resistor 0805
052000	*	1E 1/8w 5% Resistor
031007	*	10u 16V 20% Smd Electrolytic Tantalium Capacitor
030245	*	10u 50V 20% Vert Electrolytic Capacitor
030170	*	4u7 50V 20% Vert Electrolytic Capacitor
011500	*	47pFx4 10% 100V Cer. Array Cap. NP0 Smd
011260	*	100n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011252	*	22n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011248	*	10n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011244	*	4n7 16V 10% Cer. Cap. Smd CL2 X7R 0603
011236	*	1n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011232	*	470p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011220	*	47p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011216	*	22p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011212	*	10p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011103	*	1u 16V 10% Cer. Cap. Smd CL2 XTR 1206
011064	*	220n 50V 10% Cer. Cap. Smd CL2 X7R 1206
011060	*	100n 50V 10% Cer. Cap. Smd CL2 Y5V 0805
011032	*	470p 50V 10% Cer. Cap. Smd CL2 X7R 0805
011024	*	100p 50V 10% Cer. Cap. Smd CL2 X7R 0805
011021	*	56p 50V 10% Cer. Cap. Smd CL2 X7R 0805
011016	*	22p 50V 10% Cer. Cap. Smd CL2 X7R 0805
011015	*	18p 50V 10% Cer. Cap. Smd CL2 X7R 0805
010739	*	26MHz Quartz
010715	*	8.867238MHz Quartz Resonator (Pal)
010714	*	30MHz Quartz Resonator (Pal)
010717	*	30.20979MHz Quartz Resonator (Ntsc)
010716	*	7.15909MHz Quartz Resonator (Ntsc)
010602	*	5p2-30pF N750 Ceramic Capacitor Trimmer

Digital I/O Board

761244		**Digital I/O Board (Pcb#315202) with Battery**
751244	*	**Digital I/O Board (Pcb#315202)**
231000	**	BLM21A102STP Smd EMI Coil For Signal
140929	**	9 Contacts Vert Male Connector
140854	**	16 Contacts Vert Male Connector Din41651
140252	**	6 Poles Mini Din Female Socket
140247	**	8 Poles Mini Din Female Socket
140217	**	Jack Stereo Slim Horizontal Socket
140212	**	5 Poles Din Horizontal Female Socket
106013	**	RH5VL33AA-T1 SOT89 Voltage Detector
103030	**	74HC32D SOIC Quad 2-In Or Gate
103012	**	74HC125D SOIC Quad Tri-State Buffer
100734	**	MAX202E RS232 Drivers/Receiver
100035	**	6N138 Optocoupler
091001	**	BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	**	BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
081000	**	PMLL4148 Smd 100mA 75V Signal Diode
055048	**	10K 1/16w 5% Smd Resistor 0603
055044	**	4K7 1/16w 5% Smd Resistor 0603
055042	**	3K3 1/16w 5% Smd Resistor 0603
055036	**	1K 1/16w 5% Smd Resistor 0603
055028	**	220E 1/16w 5% Smd Resistor 0603
055026	**	150E 1/16w 5% Smd Resistor 0603
055024	**	100E 1/16w 5% Smd Resistor 0603
054030	**	330E 1/10w 5% Smd Resistor 0805
053028	**	220E 1/8w 5% Smd Resistor 1206
030485	**	100u 25V 20% Vert Electrolytic Capacitor
011236	**	1n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011228	**	220p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011224	**	100p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011060	**	100n 50V 10% Cer. Cap. Smd CL2 Y5V 0805
210078	*	2x10mm Adhesive Black Felt (Specify mt)
150249	*	140x3.2mm Nylon Cable Tie
110281	*	**3.6V 280mA NI-CD Rechargeable Battery**

Analog I/O Board

731053		**Analog I/O Board (Pcb#310701)**
230569	*	FL5R200PNT EMI Coil For Signal
160178	*	Copper Jumper
140944	*	10 Contacts Vert Male Connector Din41651
140929	*	9 Contacts Vert Male Connector
140908	*	6 Contacts Vert Male Small Connector
140251	*	Rca Horizontal Female Socket
140248	*	4 Poles Mini Din Female Socket
140217	*	Jack Stereo Slim Horizontal Socket
110305	*	Relay 12V / 2 Switch 1A 250Vac
100919	*	MC33078 Dual LN Operational Amplifier
100061	*	TL072 Dual J-Fet Operational Amplifier
090183	*	BC550C TO92 LN Npn Transistor
080103	*	1N4148 100mA 75V Signal Diode
071011	*	2x10KC RK097 Hor Rotary Potentiometer DUAL SHAFT
052059	*	82K 1/8w 5% Resistor
052056	*	47K 1/8w 5% Resistor
052052	*	22K 1/8w 5% Resistor
052050	*	15K 1/8w 5% Resistor
052048	*	10K 1/8w 5% Resistor
052045	*	5K6 1/8w 5% Resistor
052044	*	4K7 1/8w 5% Resistor
052036	*	1K 1/8w 5% Resistor
052030	*	330E 1/8w 5% Resistor
052024	*	100E 1/8w 5% Resistor
052016	*	22E 1/8w 5% Resistor
030565	*	220u 25V 20% Vert Electrolytic Capacitor
030360	*	47u 16v 10% Vert Electrolytic Bipolar Capacitor
030245	*	10u 50V 20% Vert Electrolytic Capacitor
021032	*	470n 63V 10% MKT Polyester Capacitor
010595	*	100n 50V -20+80% Ceramic Cap. Multilayer
010547	*	10n 50V 10% CL2 Ceramic Capacitor
010453	*	820p 50V 10% CL2 Ceramic Capacitor
010402	*	330p 50V 10% CL2 Ceramic Capacitor
010345	*	100p 50V 10% CL2 Ceramic Capacitor
010271	*	22p 50V 10% CL2 Ceramic Capacitor

Top Assembly

730246		**DC-AC Converter Board (Pcb# Cs032001)**
660750		Speaker Grid
660746		Control Panel (Gem)
660755		Control Panel (Solton SG-1)
653609		"4" Single Actuator
653608		"3" Single Actuator
653607		"2" Single Actuator
653606		"1" Single Actuator
653585		Speaker Grid Support
653582		Display Control Panel
653573		"EFFECTS...-SINGLE" Quad Actuator
653572		"1-2-3-4" Quad Actuator
653571		"S.T.PLAY...-ON/OFF" Quad Actuator
653570		"FADE I/O...-STYLE LOCK" Quad Actuator
653569		"MUSIC LIBRARY...-STYLE PRESET" Quad Actuator
653568		"STORE...-STORE" Quad Actuator
653567		"START/STOP" Single Actuator
653566		"SYNTH...-SAMPLES" Quad Actuator
653565		"USER 1...-USER 4" Quad Actuator
653564		"JAZZ...-WORLD" Quad Actuator
653563		"POP...-DANCE" Quad Actuator
653562		"BASS...-DRAWBAR" Quad Actuator
653561		"ORCH....-WIND" Quad Actuator
653560		"PIANO...-GUITAR" Quad Actuator
653559		"SUSTAIN...-FUNCTIONS" Quad Actuator
653558		"SLOW/FAST...-USER" Quad Actuator
653557		"EDIT...-EDIT" Quad Actuator
653556		"PRESET...-EDIT" Quad Actuator
653555		"SCORE...-LYRICS" Quad Actuator
653554		"REC...-REC" Quad Actuator
653553		"STOP...-STOP" Quad Actuator
653552		">...->>" Quad Actuator
653551		"PART...-RESTART" Quad Actuator
653550		"5-6-7-8" Quad Actuator
653549		"1-2-3-4" Quad Actuator
653548		"MAKE CD...-MIDI" Quad Actuator
653547		"D.HOLD...-SYNCRO" Quad Actuator
653546		"MANUAL BASS...-PRO SPLIT" Quad Actuator
653545		"FULL...-PIANO STYLE" Quad Actuator
653544		"INTRO" Single Actuator
653543		"FILL...-BREAK" Quad Actuator
653542		"ENTER...-ESCAPE" Quad Actuator
653541		"INC...-DEC" Quad Actuator
653540		"ENDING" Single Actuator
653539		"BANK-...-BANK+" Quad Actuator

653537		"- +" Dual Actuator
653536		"b-#" Dual Actuator
347062		6.4mm Latch Spacer
340523		6.5mm Spacer
341021		13.4x13.4 Single Actuator with Lens
341002		Genesys Display Screen
140532		**Octal Switch Mylar Flexible Pcb**
340999		**LCD Octal Rubber Pad**
340998		2 Faders Anti-Dust
340995		10 Faders Anti-Dust
340986		D=3.3mm H=9mm Spacer for Metal Panel
340980		Quad Cursor Actuator
340936		Tweeter Support Ring
340556		Polycarbonate Washer for Dial
340521		Dial Support
340512		Slider Potentiometer Guide
340494		Slider Potentiometer Knob
340493		Dial Knob
340466		Spacer H=8mm
340360		Spacer For Mains Socket Support
340186		Adhesive Cable Fixing
262341		Left Speaker Box
262340		Right Speaker Box
220123		**4" 8ohm Mid-Woofer Speaker**
220109		**1/2" 4ohm Dome Tweeter Speaker**
210217		Black Sealer (specify mt)
171880		Panels & Speaker Fixing Plate
171870		Speaker Box Fixing Plate
171869		Panels Fixing Plate
171868		Nut for Music Stand Ferrule
171862		Music Stand Ferrule
150298		100x2.5mm Nylon Cable Tie
130061		AWG24 Black Cable
120973		5mm Spacer with Ferrule
120960		Dial Steel Sphere
120581		M3 Black Self-Locking Nut
120386		WL4x10tt Black Screw
120294		WL3x6.5tc Screw
120272		WL3x10tc Black Screw
120113		M3x4tc Black Screw
120065		M3x16tsp Screw
110263		**Dial Encoder with 24 Snap H=20mm Panasonic**
080763		**320X240dots Quarter VGA LCD (Black Background)**

Left LCD Controls Assembly

810706		Left LCD Controls Assembly
810704	*****	**Left LCD Controls Board (Pcb#315197)**
340091	**	4mm Led Spacer
141018	**	20 Contacts Vert Female Connector
140529	**	Microswitch 12V 50mA 0.25mm
080711	**	3mm High Efficiency Red Led
052033	**	560E 1/8w 5% Resistor
052018	**	33E 1/8w 5% Resistor
731055	*****	**Mic & Genious Controls Board (Pcb#315201)**
140872	**	4 Contatcs Hor Male Connector
070551	**	10K Linear 30mm Slider Potentiometer
340360	*	Spacer For Mains Socket Support
120581	*	M3 Black Self-Locking Nut
120006	*	M3x14tc Black Screw

Right LCD Controls Board

810705		**Right LCD Controls Board (Pcb#315198)**
340091	*	4mm Led Spacer
141015	*	14 Contacts Vert Female Connector
140529	*	Microswitch 12V 50mA 0.25mm
100607	*	74HC164 8bit S To P Shift Register
080711	*	3mm High Efficiency Red Led
052033	*	560E 1/8w 5% Resistor
010595	*	100n 50V -20+80% Ceramic Cap. Multilayer
010200	*	6p8 50V 10% CL2 Ceramic Capacitor

Right Controls Panel Board

810703		**Right Controls Panel Board (Pcb#315196)**
340856	*	6,4mm Led Spacer
340091	*	4mm Led Spacer
140852	*	20 Contacts Hor Male Connector Din41651
140529	*	Microswitch 12V 50mA 0.25mm
100607	*	74HC164 8bit S To P Shift Register
080711	*	3mm High Efficiency Red Led
052033	*	560E 1/8w 5% Resistor
010595	*	100n 50V -20+80% Ceramic Cap. Multilayer
010200	*	6p8 50V 10% CL2 Ceramic Capacitor

Centre Controls Panel Board

810702		**Centre Controls Panel Board (Pcb#315195)**
340091	*	4mm Led Spacer
140883	*	26 Contacts Hor Male Connector Din41651
140529	*	Microswitch 12V 50mA 0.25mm
110263	*	Dial Encoder with 24 Snap H=20mm Panasonic
100607	*	74HC164 8bit S To P Shift Register
080711	*	3mm High Efficiency Red Led
070616	*	5K Linear 20mm Slider Potentiometer
052051	*	18K 1/8w 5% Resistor
052033	*	560E 1/8w 5% Resistor
010595	*	100n 50V -20+80% Ceramic Cap. Multilayer
010200	*	6p8 50V 10% CL2 Ceramic Capacitor

Left Controls Panel Board

810701		**Left Controls Panel Board (Pcb#315194)**
340856	*	6,4mm Led Spacer
340091	*	4mm Led Spacer
140852	*	20 Contacts Hor Male Connector Din41651
140529	*	Microswitch 12V 50mA 0.25mm
100607	*	74HC164 8bit S To P Shift Register
080711	*	3mm High Efficiency Red Led
052033	*	560E 1/8w 5% Resistor
010595	*	100n 50V -20+80% Ceramic Cap. Multilayer
010200	*	6p8 50V 10% CL2 Ceramic Capacitor

Panel Controller Board

761239		**Panel Controller Board (Pcb#315200) (Gem)**
761260		**Panel Controller Board (Pcb#315200) (SG-1)**
231000	*	BLM21A102STP Smd EMI Coil For Signal
141018	*	20 Contacts Vert Female Connector
141015	*	14 Contacts Vert Female Connector
140932	*	12 Contacts Vert Male Connector
140929	*	9 Contacts Vert Male Connector
140914	*	7 Contacts Hor Female Zif Mylar Connector
140883	*	26 Contacts Hor Male Connector Din41651
140881	*	14 Contacts Vert Female Con. For Mylar Cable
140873	*	4 Contacts Vert Male Connector
140872	*	4 Contatcs Hor Male Connector
140858	*	14 Contacts Hor Male Connector Din41651
140852	*	20 Contacts Hor Male Connector Din41651
140851	*	20 Contacts Vert Male Connector Din41651
106001	*	MC33078P SOIC Dual Low Noise Op. Amp.
103058	*	74HC4351 SOIC 8ch Analog Multiplexer
103041	*	74HC86 SOIC Quad 2-Input Ex-Or Gate
103015	*	74HC164D SOIC 8bit S To P Shift Register
103012	*	74HC125D SOIC Quad Tri-State Buffer
103007	*	74HC74D SOIC Dual Flip-Flop
103002	*	74HC245DW SOIC Octal Bus Transceiver
100740	*	HD6433278 Cpu F=20MHz
091001	*	BC857B/C TO236 Smd Pnp Transistor (9BB/C-3F/G)
091000	*	BC847B/C TO236 Smd Npn Transistor (8BB/C-1F/G)
090153	*	BC327 TO92 Pnp Transistor
081000	*	PMLL4148 Smd 100mA 75V Signal Diode
055104	*	2K2 X4 1/16w 5% Smd Resistor Array
055103	*	470E X4 1/16w 5% Smd Resistor Array
055100	*	100E X4 1/16w 5% Smd Resistor Array
055072	*	1M 1/16w 5% Smd Resistor 0603
055064	*	220K 1/16w 5% Smd Resistor 0603
055060	*	100K 1/16w 5% Smd Resistor 0603
055056	*	47K 1/16w 5% Smd Resistor 0603
055052	*	22K 1/16w 5% Smd Resistor 0603
055048	*	10K 1/16w 5% Smd Resistor 0603
055044	*	4K7 1/16w 5% Smd Resistor 0603
055042	*	3K3 1/16w 5% Smd Resistor 0603
055040	*	2K2 1/16w 5% Smd Resistor 0603
055036	*	1K 1/16w 5% Smd Resistor 0603
055033	*	560E 1/16w 5% Smd Resistor 0603
055030	*	330E 1/16w 5% Smd Resistor 0603
055028	*	220E 1/16w 5% Smd Resistor 0603
055024	*	100E 1/16w 5% Smd Resistor 0603
055018	*	33E 1/16w 5% Smd Resistor 0603
030245	*	10u 50V 20% Vert Electrolytic Capacitor
011501	*	220pFx4 10% 100V Cer. Array Cap. NP0 Smd
011500	*	47pFx4 10% 100V Cer. Array Cap. NP0 Smd
011260	*	100n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011252	*	22n 16V 10% Cer. Cap. Smd CL2 X7R 0603
011235	*	820p 16V 10% Cer. Cap. Smd CL2 X7R 0603
011210	*	6p8 16V 10% Cer. Cap. Smd CL2 X7R 0603
011060	*	100n 50V 10% Cer. Cap. Smd CL2 Y5V 0805
011024	*	100p 50V 10% Cer. Cap. Smd CL2 X7R 0805
010725	*	20MHz Ceramic Resonator With Capacitors

Faders Board

731054		**Faders Board (Pcb#315199)**
140858	*	14 Contacts Hor Male Connector Din41651
070551	*	10K Linear 30mm Slider Potentiometer

Note:

- All dimensions are in mm unless otherwise specified.
- The screw description is defined as follows:
  type of screw + diameter + X + length + type of head
  where type of screw is one of these:
  M = Metric thread
  B = Self-tapping screw for metal
  WL = Self-tapping screw for wood
  and type of head is one of these:
  tc = cylinder Phillips head
  ts = flared Phillips head
  tt = rounded Phillips head
  te = hexagonal nut head
  tsp = flat flared Phillips head
  tce = cylinder Allen hexagonal head
  tspe = flat flared Allen hexagonal head
- The washer description is defined as follow:
  hole diameter + X + external diameter + X + thick
- Each spare part is single quantity unless otherwise specified.
- Asterisk prefix explanation:
  Omitted = First level spare part.
  One asterisk = Second level, part of previous listed first level part.
  Two asterisk = Third level, part of previous listed second level part.
  Three asterisk = ...
- Any request for not above mentioned part must encompass specific description including:
  1) Model name,
  2) Section name,
  3) Module code,
  4) Reference name,
  5) Quantity number.

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