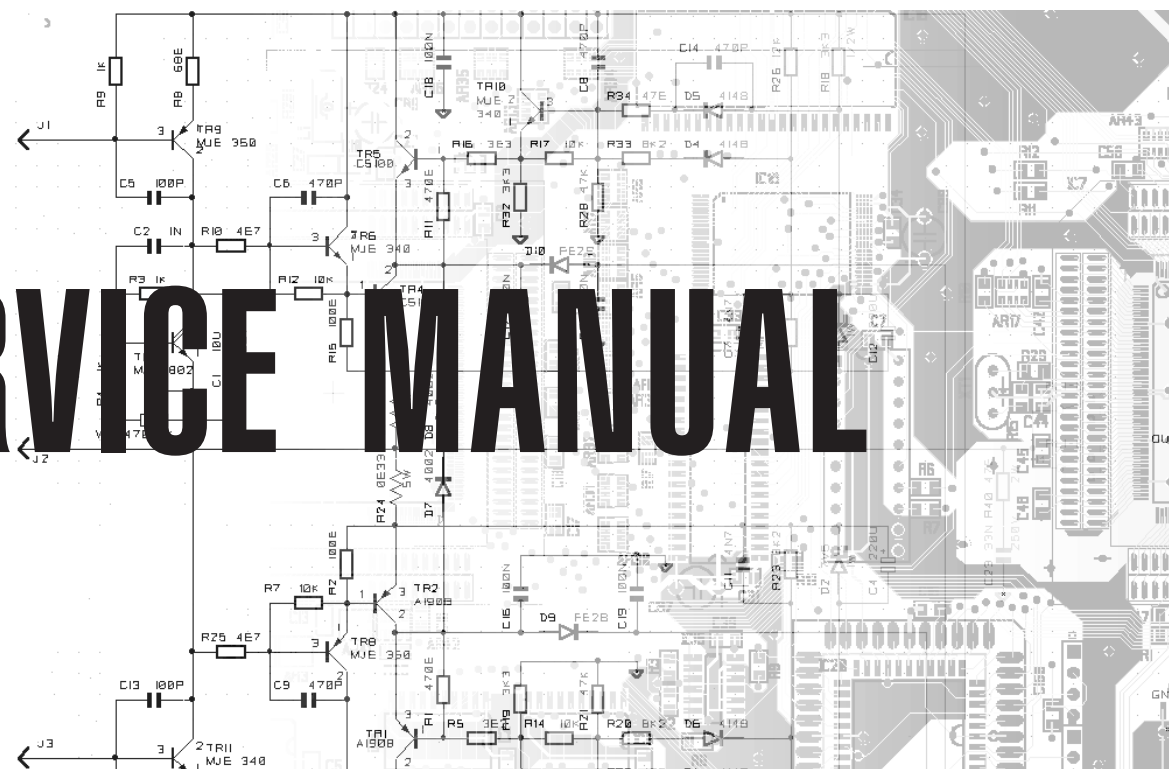




FALCON

DIGITAL MIXING CONSOLE

SERVICE MANUAL



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Warnings



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 1/8 Ω unless otherwise specified.

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

← Soldering point.

↑ Supply voltage.

⊥ Logic supply ground.

• Male connector.

□ Test point.

⊥ Analog supply ground.

○ Female connector.

◊ Flag joined with one or more flags

⊥ Chassis ground.

⊔ M/F faston connector.

with the same signal name inscribed.

⊕ Earth ground.



ATTENTION

Observe precautions when handling electrostatic sensitive devices.

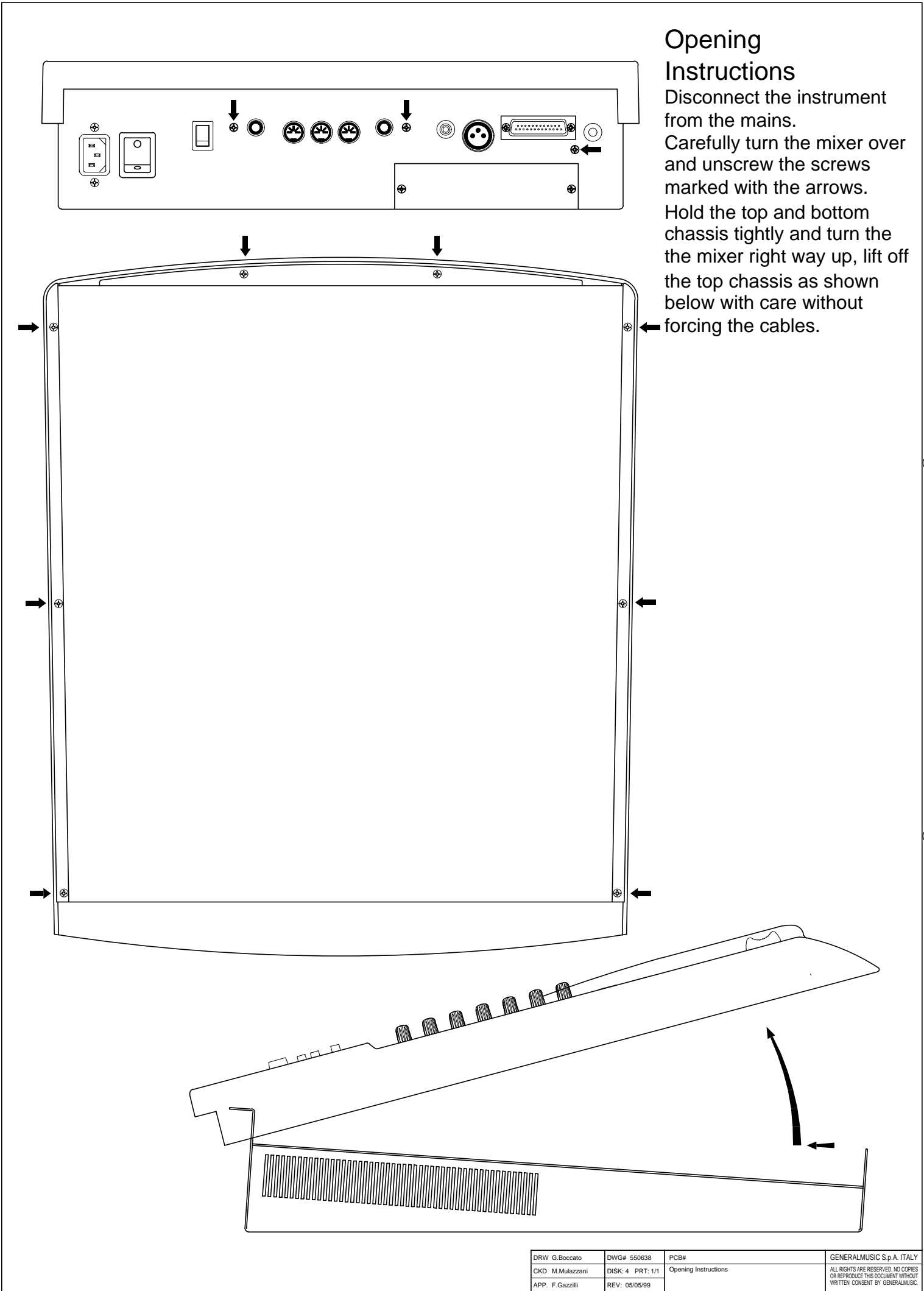
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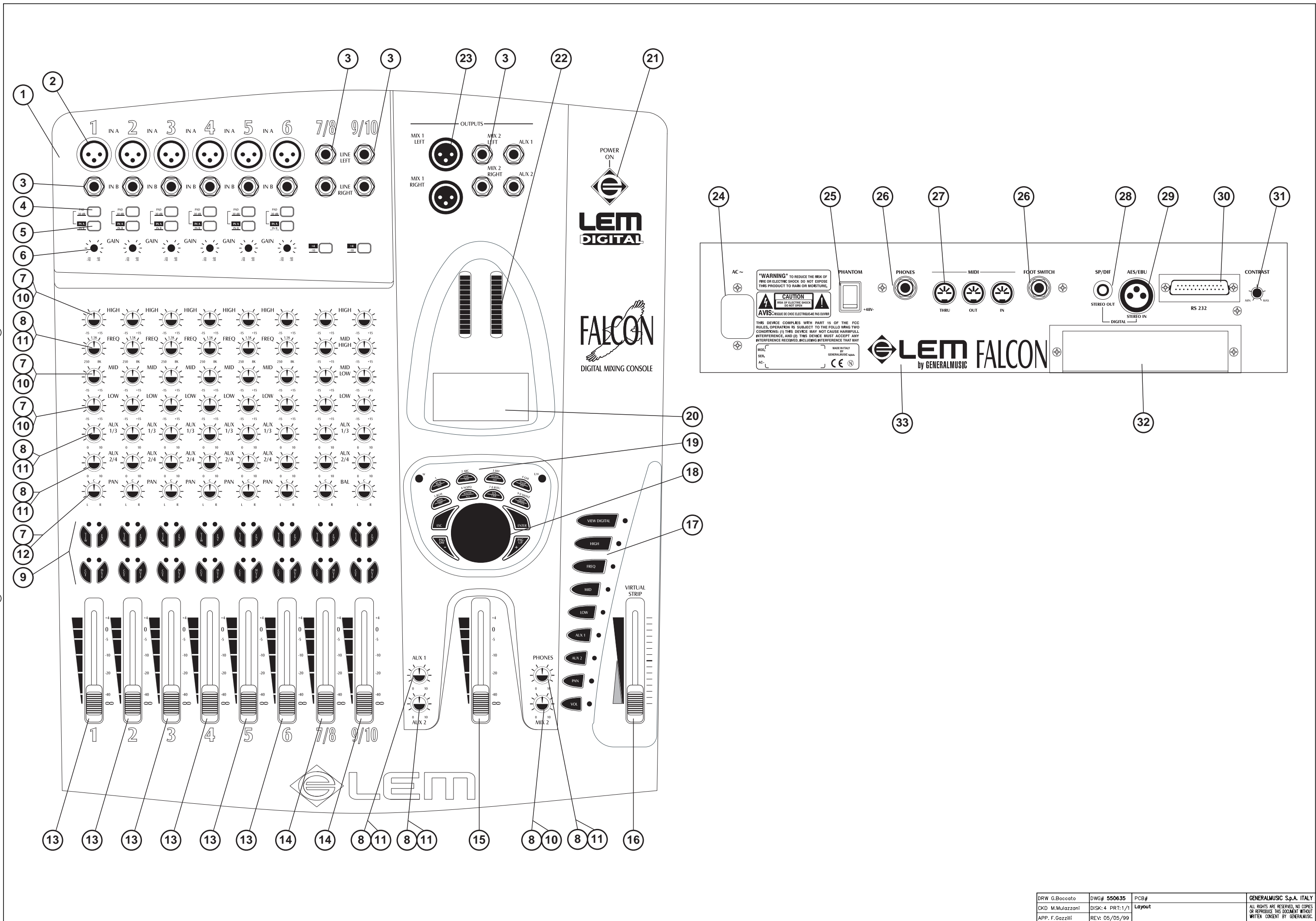
GENERALMUSIC S.p.A. Sales Division: 47842 S.Giovanni in Marignano (RN) ITALY - Via delle Rose, 12 - tel. 0541/959511 - fax 0541/957404
GENERALMUSIC on the NET: <http://www.generalmusic.com>

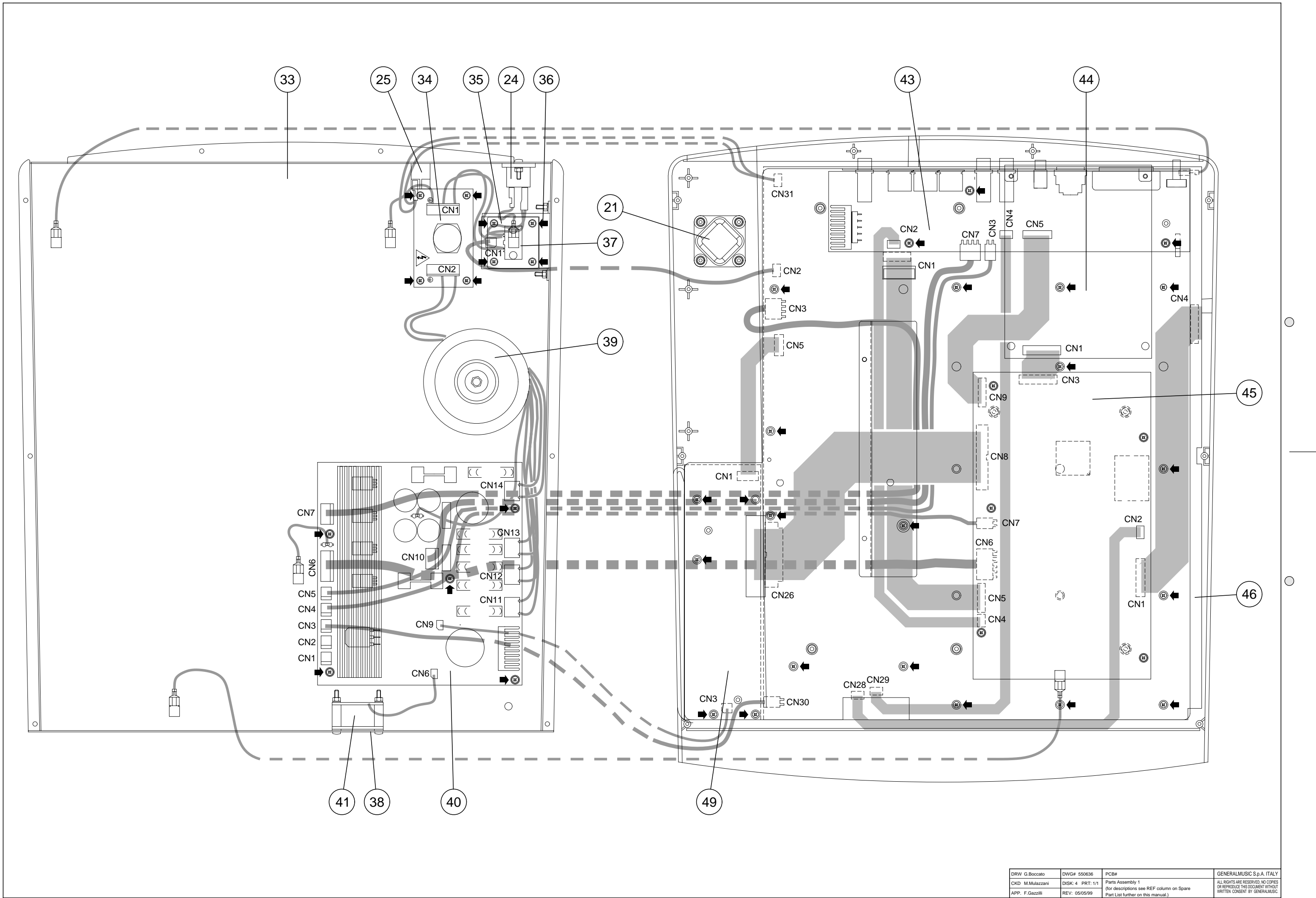


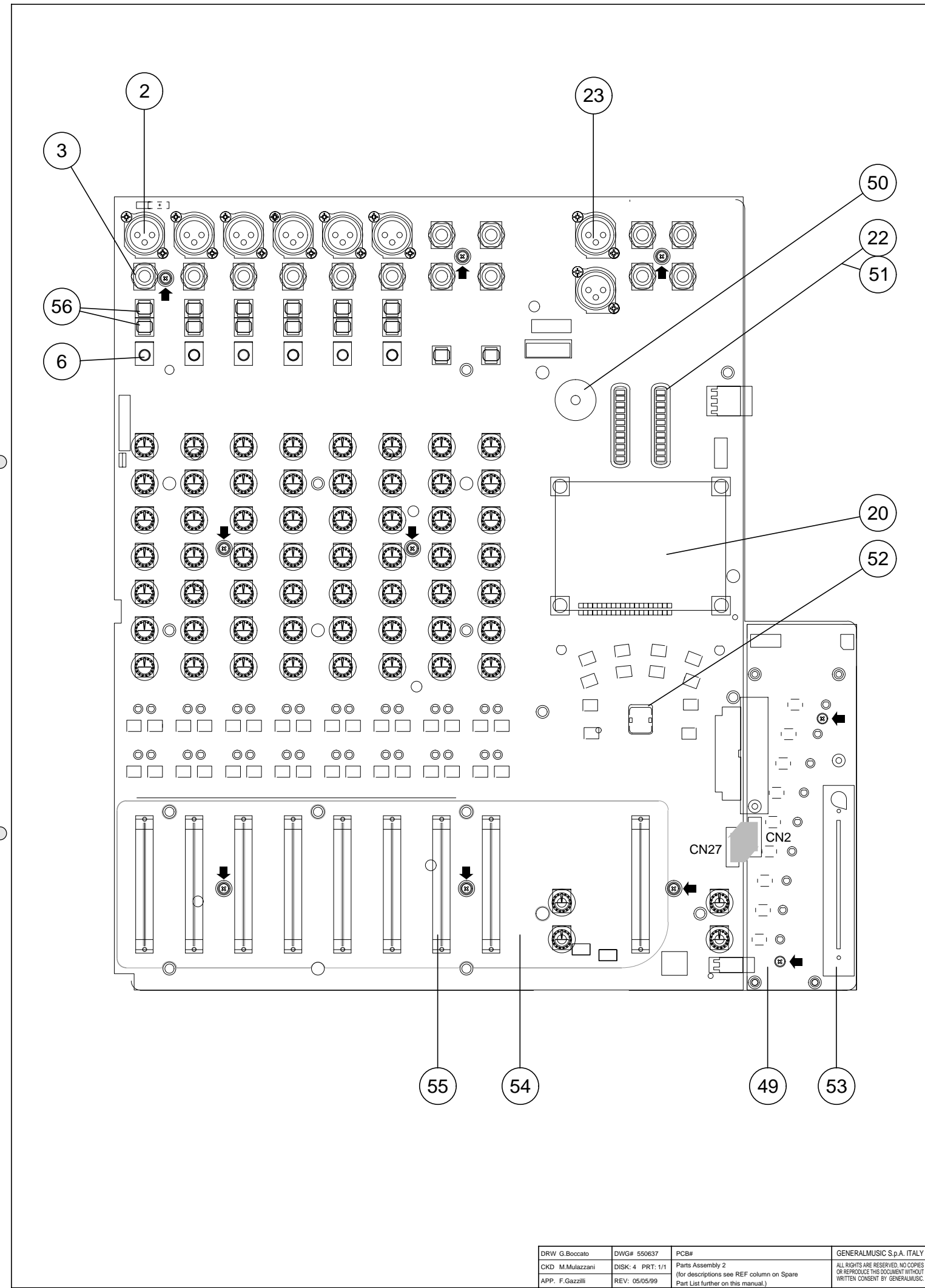
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FALCON • TECHNICAL SPECIFICATIONS			
SECTION		LEVELS & DATA	CONNECTORS
MONO INPUT CHANNEL			
MIC/LINE A input	<i>sensitivity</i> <i>PAD</i> <i>impedance</i>	from -20 to -60dB 30dB 2kOhms / 10kOhms	Balanced XLR-F
LINE B input	<i>sensitivity</i> <i>impedance</i>	from +10 to -30dB 10kOhms	Balanced JACK
A/D converter		20 bit linear, oversampling 64 times	
EQ	<i>HIGH</i>	±15dB, from 40Hz to 16kHz, from SHELIVING to Q=10	
	<i>MID</i>	±15dB, from 250Hz to 16kHz, from Q=0.7 to Q=10	
	<i>LOW</i>	±15dB, from 40Hz to 16kHz, from SHELIVING to Q=10	
STEREO INPUT CHANNEL			
LINE input	<i>sensitivity</i> <i>impedance</i>	from +4 to -10dB 10kOhms	Balanced JACK
A/D converter		18 bit linear, oversampling 64 times	
EQ	<i>HIGH</i>	±15dB, from 40Hz to 16kHz, from SHELIVING to Q=10	
	<i>HI-MID</i>	±15dB, from 40Hz to 16kHz, from SHELIVING to Q=10	
	<i>LO-MID</i>	±15dB, from 40Hz to 16kHz, from SHELIVING to Q=10	
	<i>LOW</i>	±15dB, from 40Hz to 16kHz, from SHELIVING to Q=10	
STEREO DIGITAL INPUT			
Format		IEC958 Professional (AES/EBU)	XLR-F
Level		RS422	
MASTER SECTION			
MIX 1 ouputs	<i>D/A converter</i> <i>output level</i> <i>impedance</i>	20 bit linear +4dB 600 Ohms	Balanced XLR-M
MIX 2 ouputs	<i>D/A converter</i> <i>output level</i> <i>impedance</i>	18 bit linear +4dB 600 Ohms	Impedance Balanced JACK
AUX 1&2 outputs	<i>D/A converter</i> <i>output level</i> <i>impedance</i>	20 bit linear +4dB 600 Ohms	Impedance Balanced JACK
DIGITAL output	<i>format</i> <i>output level</i>	IEC958 Consumer (S/PDIF) 0.5Vpp/75Ohms	Phono RCA
HEADPHONES output	<i>minimum impedance</i> <i>output level</i>	32 Ohms 2W	Stereo JACK
GENERAL SPECIFICATIONS			
Sampling frequency		48kHz	
Dynamic range		117dB	
Crosstalk	<i>adjacent input CH</i>	-90dB @ 1kHz	
	<i>input to output</i>	-100dB @ 1kHz	
	<i>PAN</i>	-85dB @ 1kHz	
Noise	<i>all faders closed</i>	-110dB	
	<i>MIX fader nominal</i>	-105dB	
	<i>MIX fader nominal + 1 CH</i>	-95dB	
Total harmonic distortson (THD + Noise)		<0.03%, 20Hz - 20kHz <0.02%, 20Hz - 20kHz	
Weight	<i>kg</i>	5.7	
Dimensions	<i>mm (WxHxD)</i>	440x110x500	

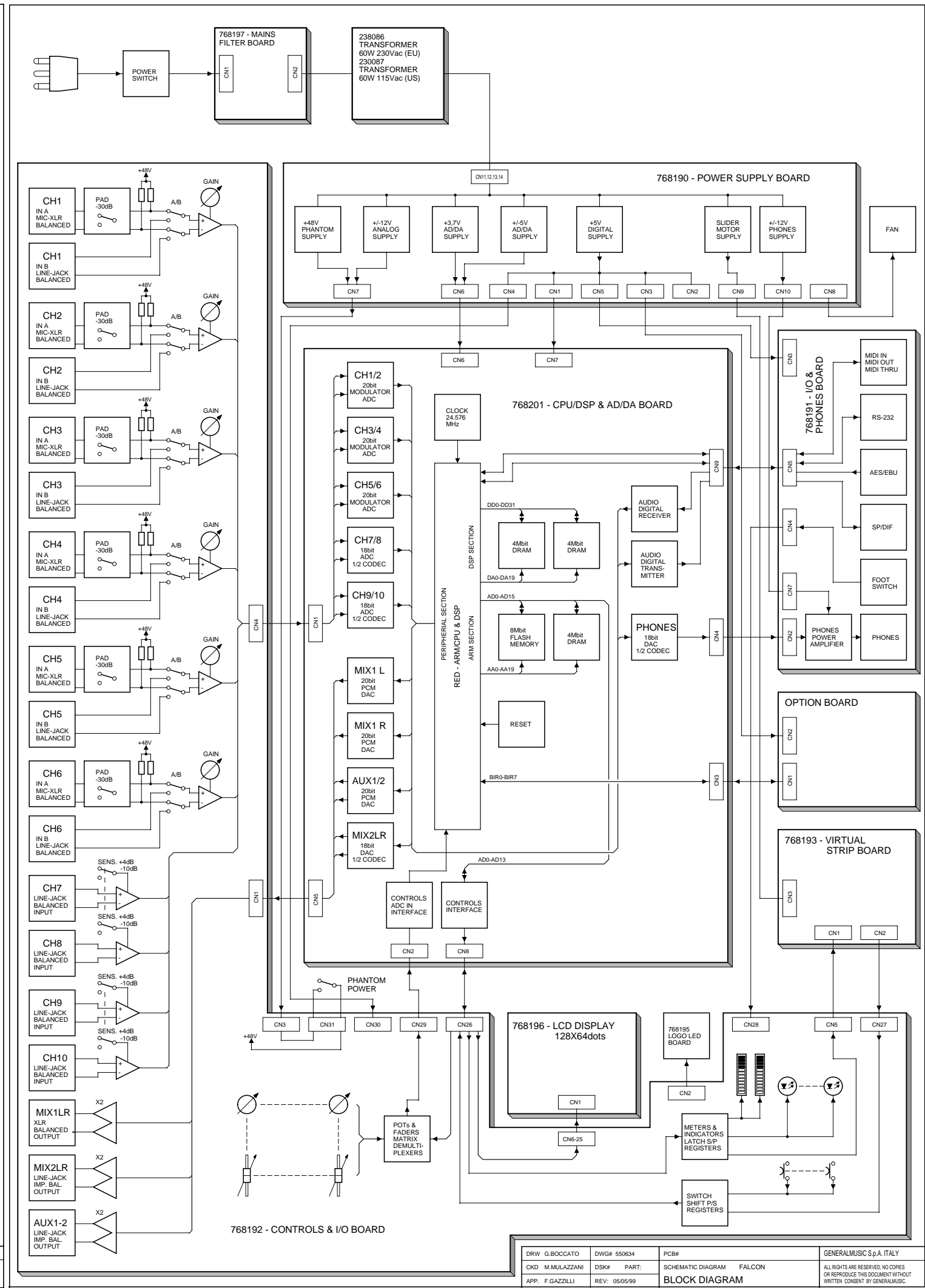




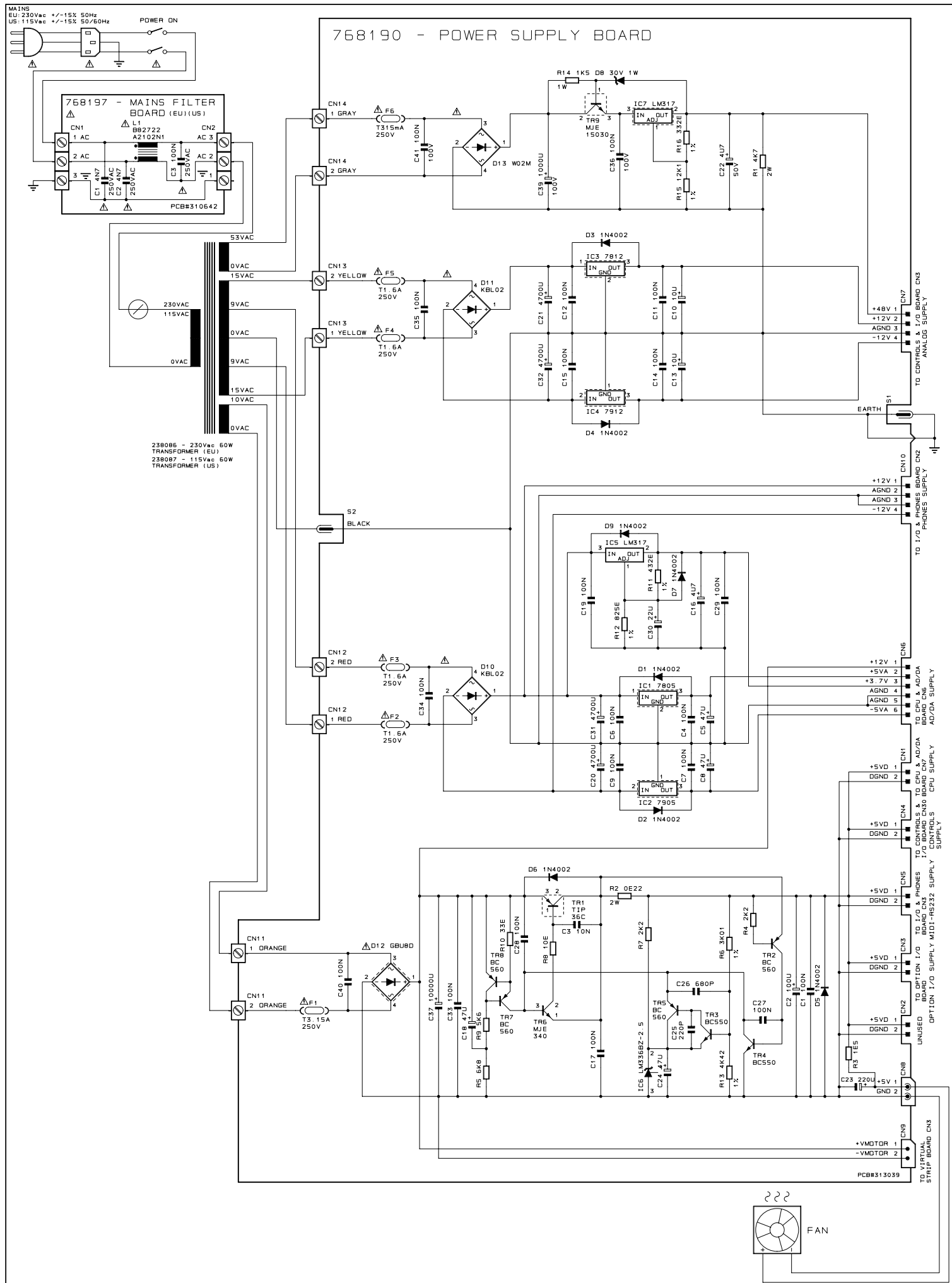




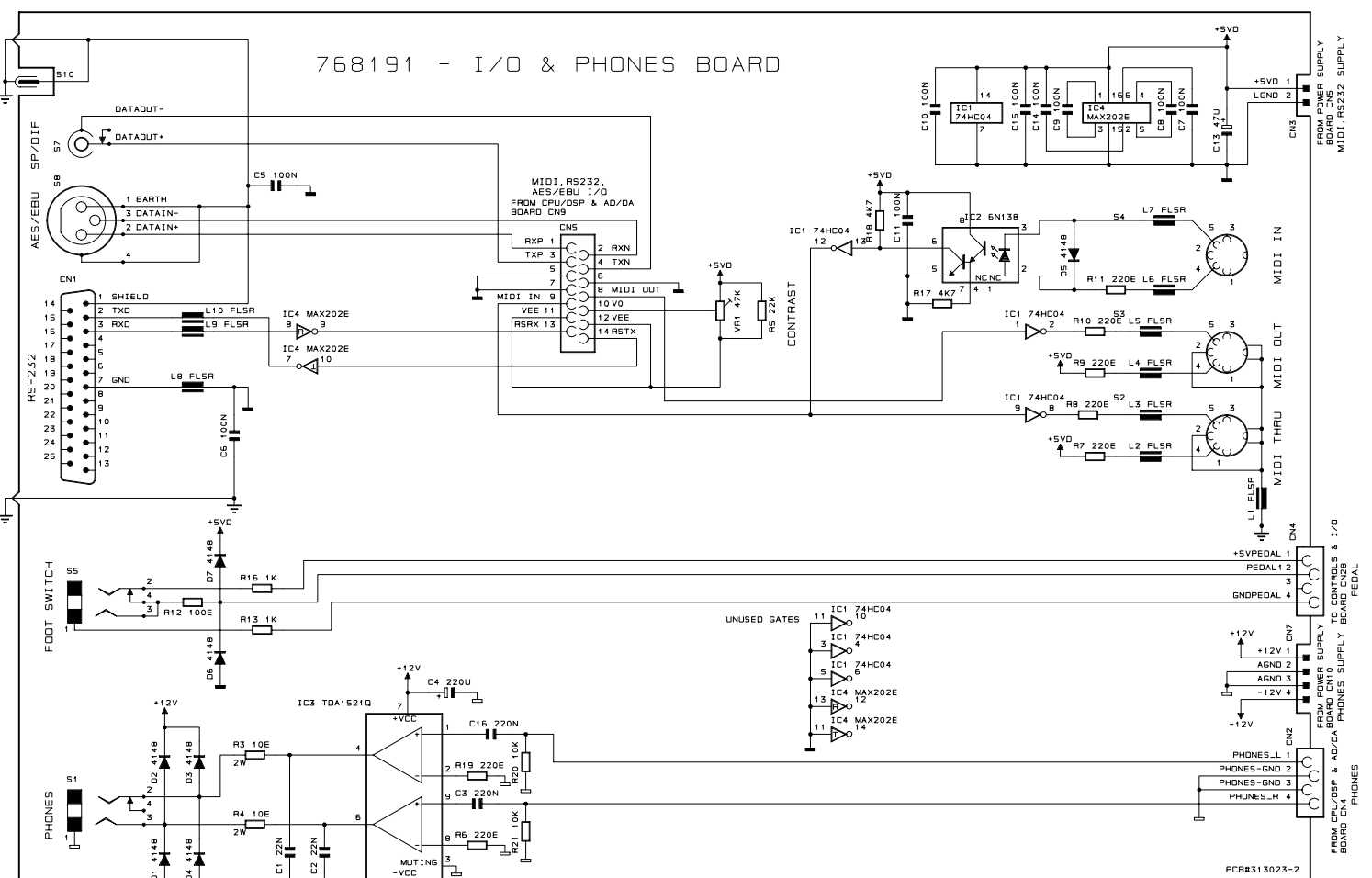
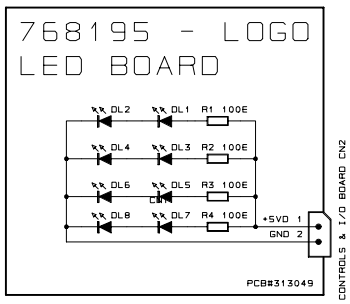
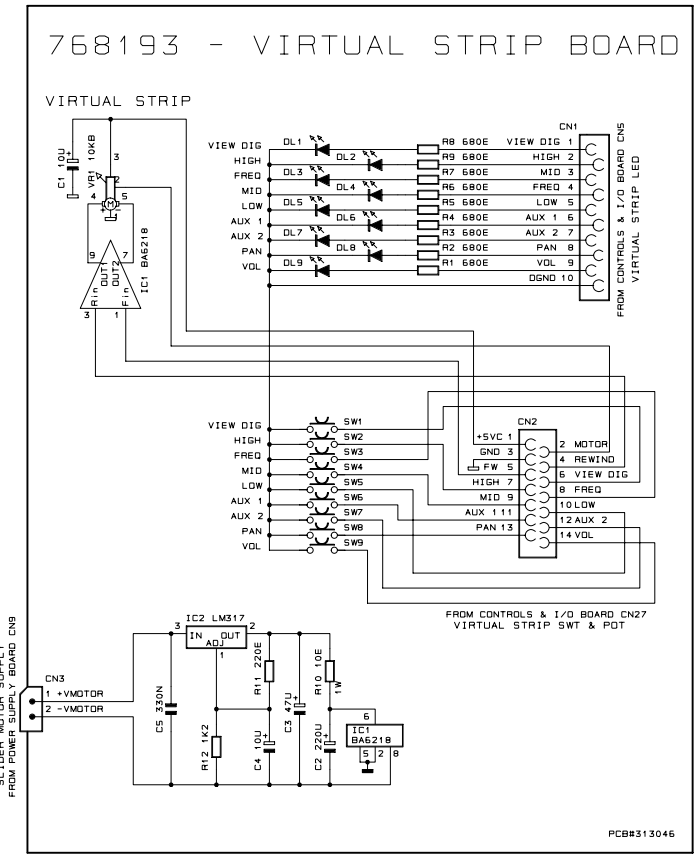
DRW: G. Boccato	DWG#: 550637	PCB#	GENERALMUSIC S.p.A. ITALY
CKD: M. Mulazzani	DISK: 4 PRT: 1/1	Parts Assembly 2	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP: F. Gazzilli	REV: 05/05/99	Part List further on this manual.)	



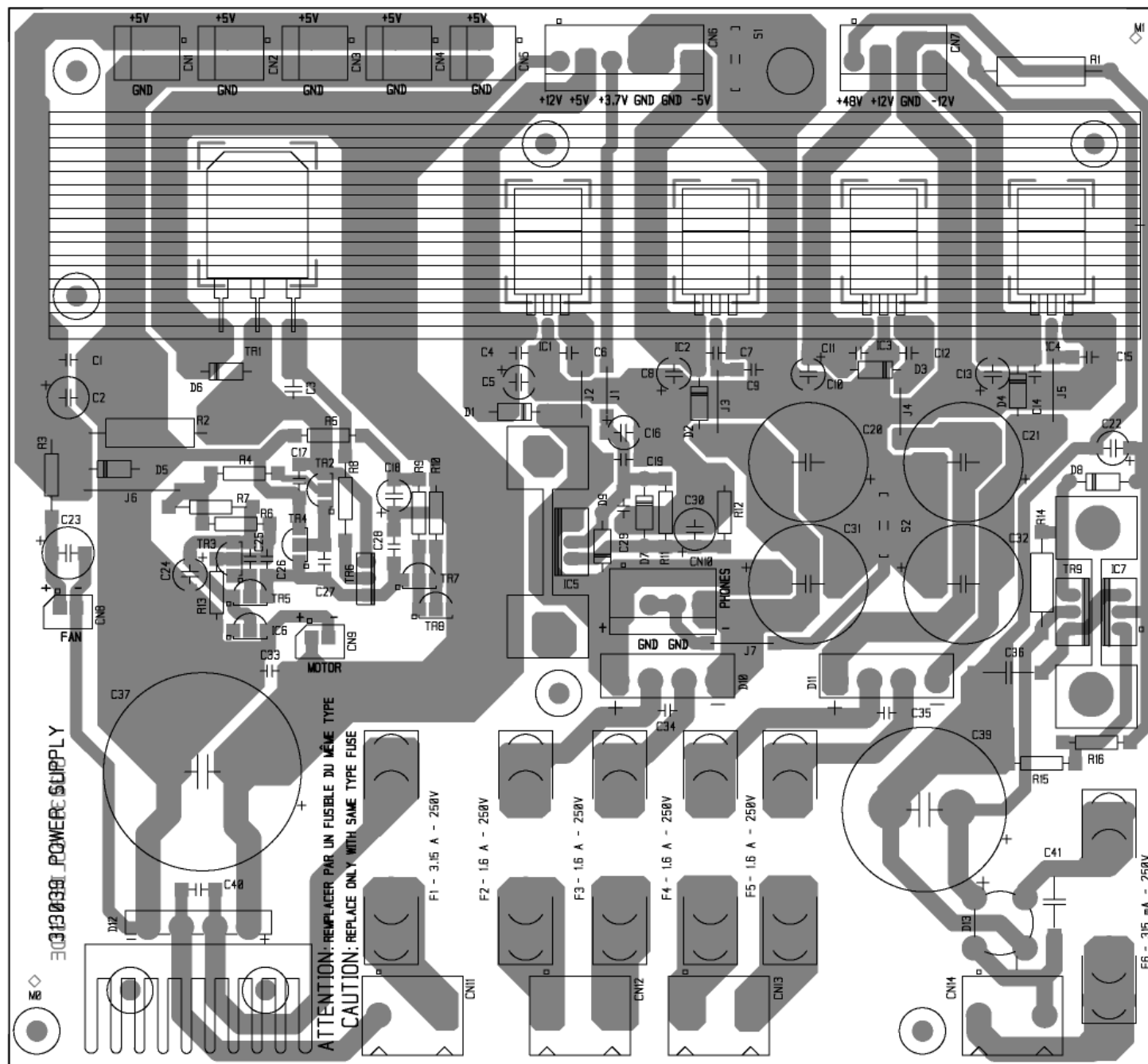
DRW: G. Boccato	DWG#: 550634	PCB#	GENERALMUSIC S.p.A. ITALY
CKD: M. Mulazzani	DSK#: PART:	SCHEMATIC DIAGRAM	FALCON
APP: F. Gazzilli	REV: 05/05/99	BLOCK DIAGRAM	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.



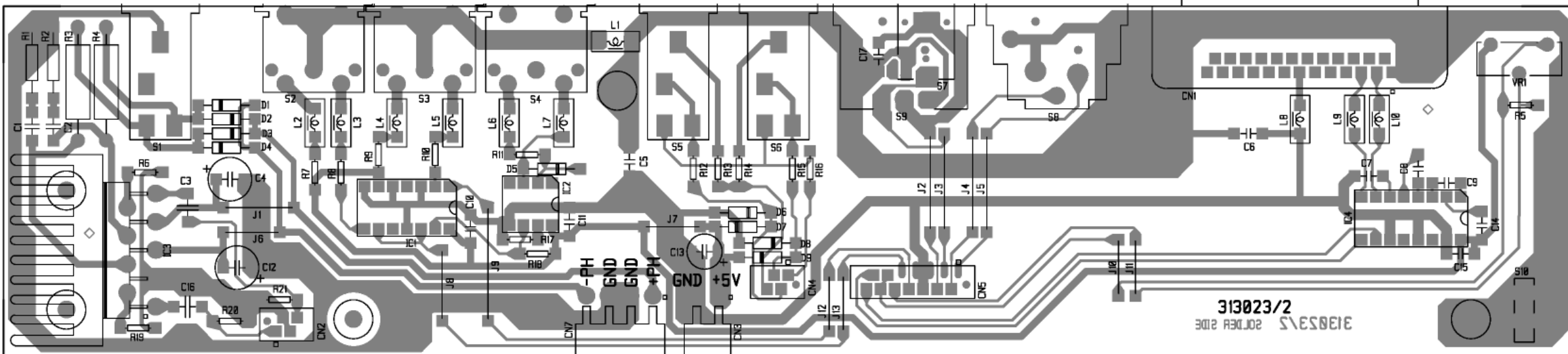
DRWM. MULAZZANI	DWG# 550627	PCBR 313039/310642	GENERALMUSIC S.p.A.
DEPT. AUDIO	DATE 05/05/99	DESCRIPTION FALCON	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC
PARTS 1 OF 1	REV# A	POWER SUPPLY BOARD	



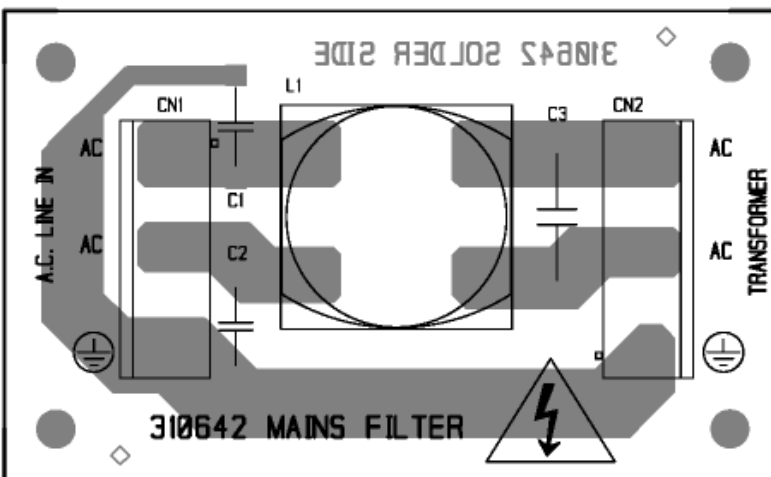
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DEPT. AUDIO	DATE 05-05-99	DESCRIPTION FALCON	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC
PARTS 1 OF 1	REV# A	I/O & PHONES, LOGO LED, VIRTUAL STRIP BOARDS	



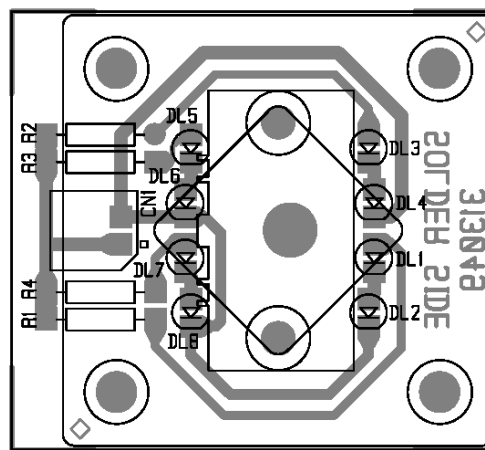
POWER SUPPLY BOARD (PCB#313039)



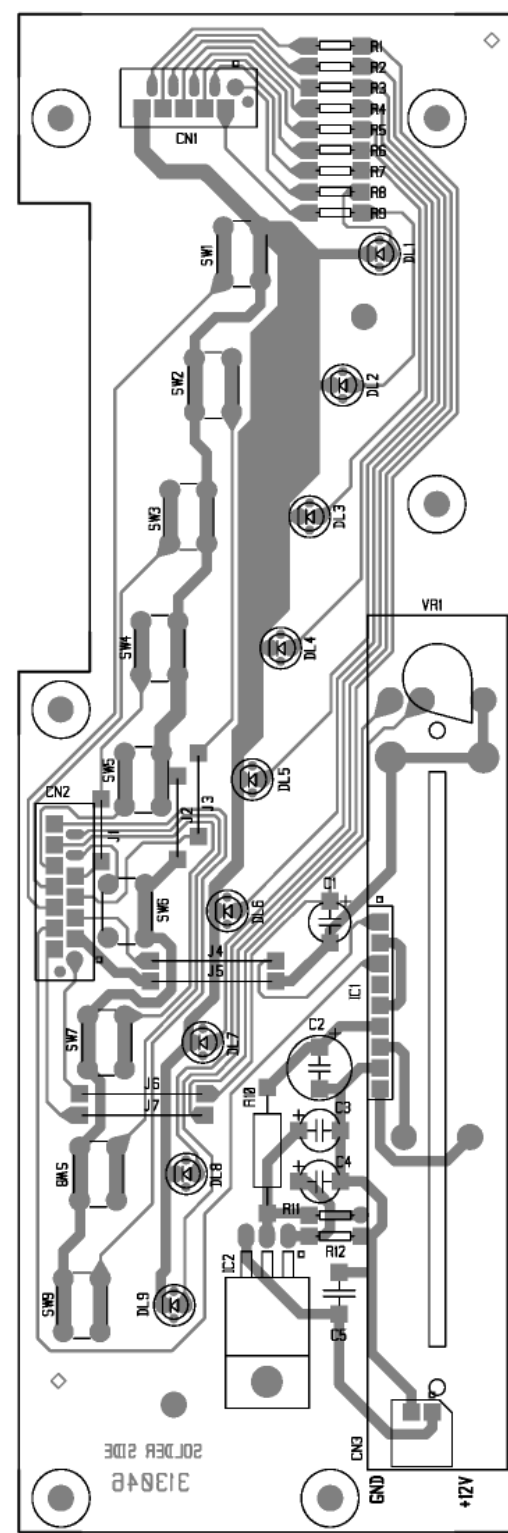
I/O & PHONES BOARD (PCB#313023)



MAINS FILTER BOARD (PCB#310642)

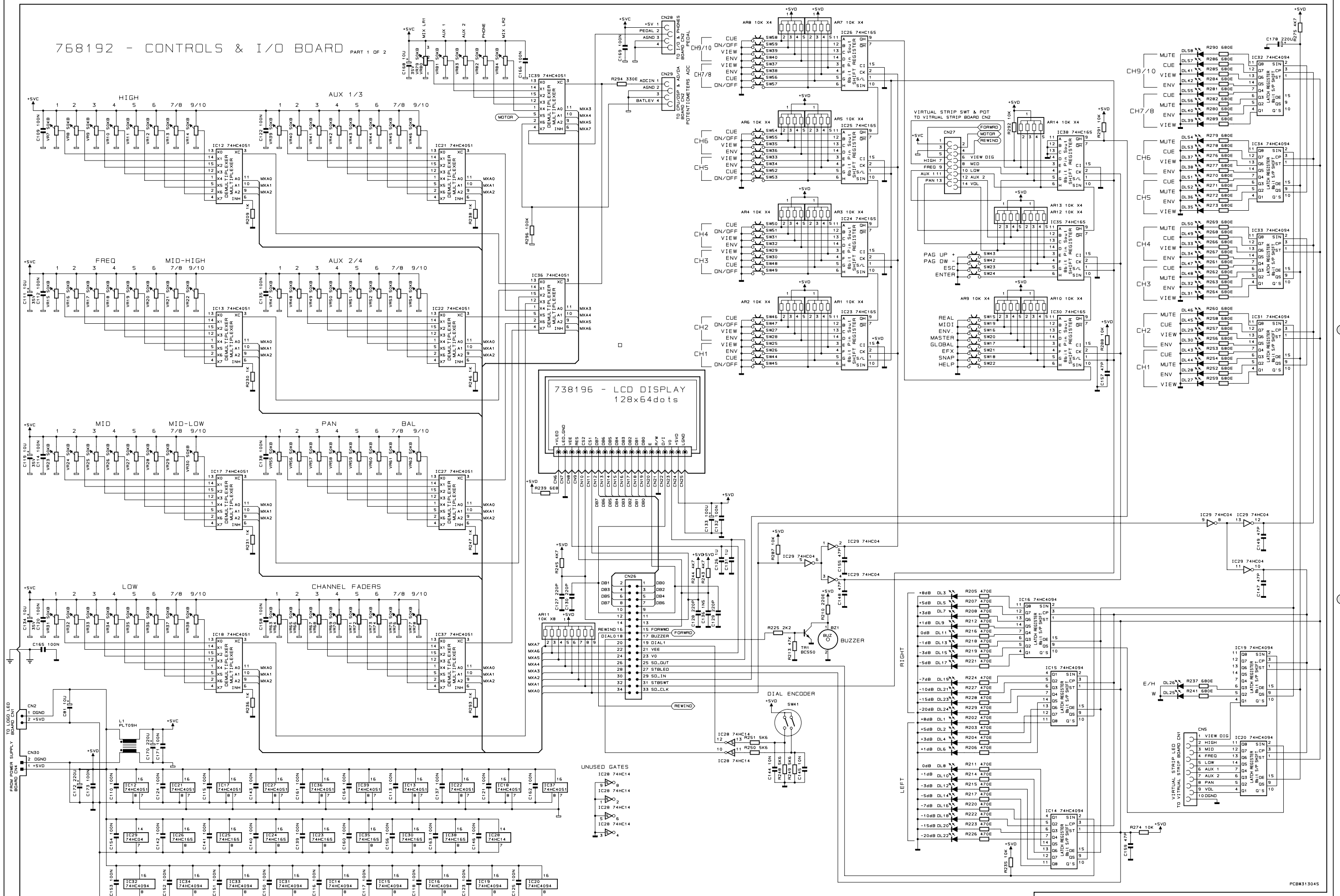


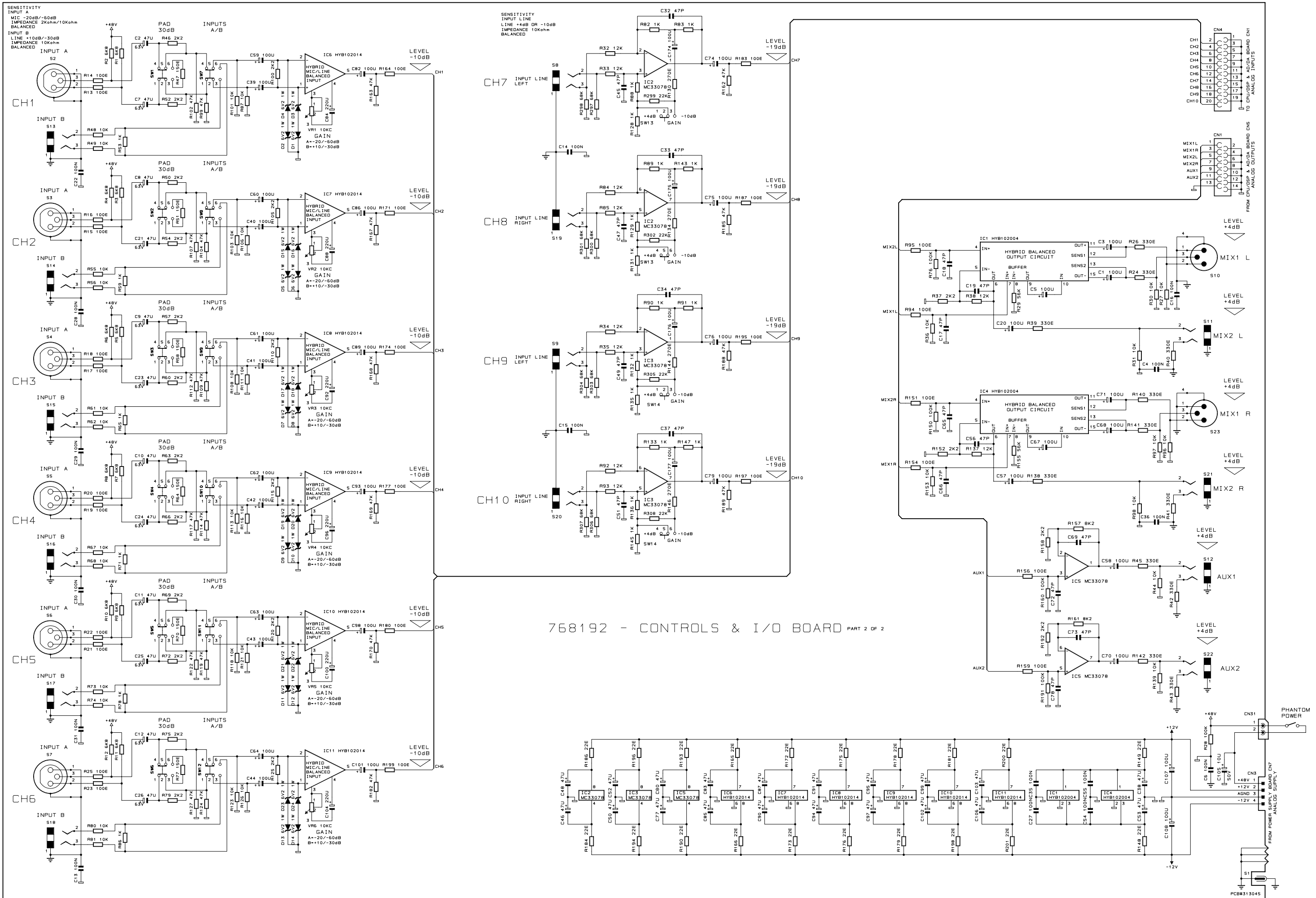
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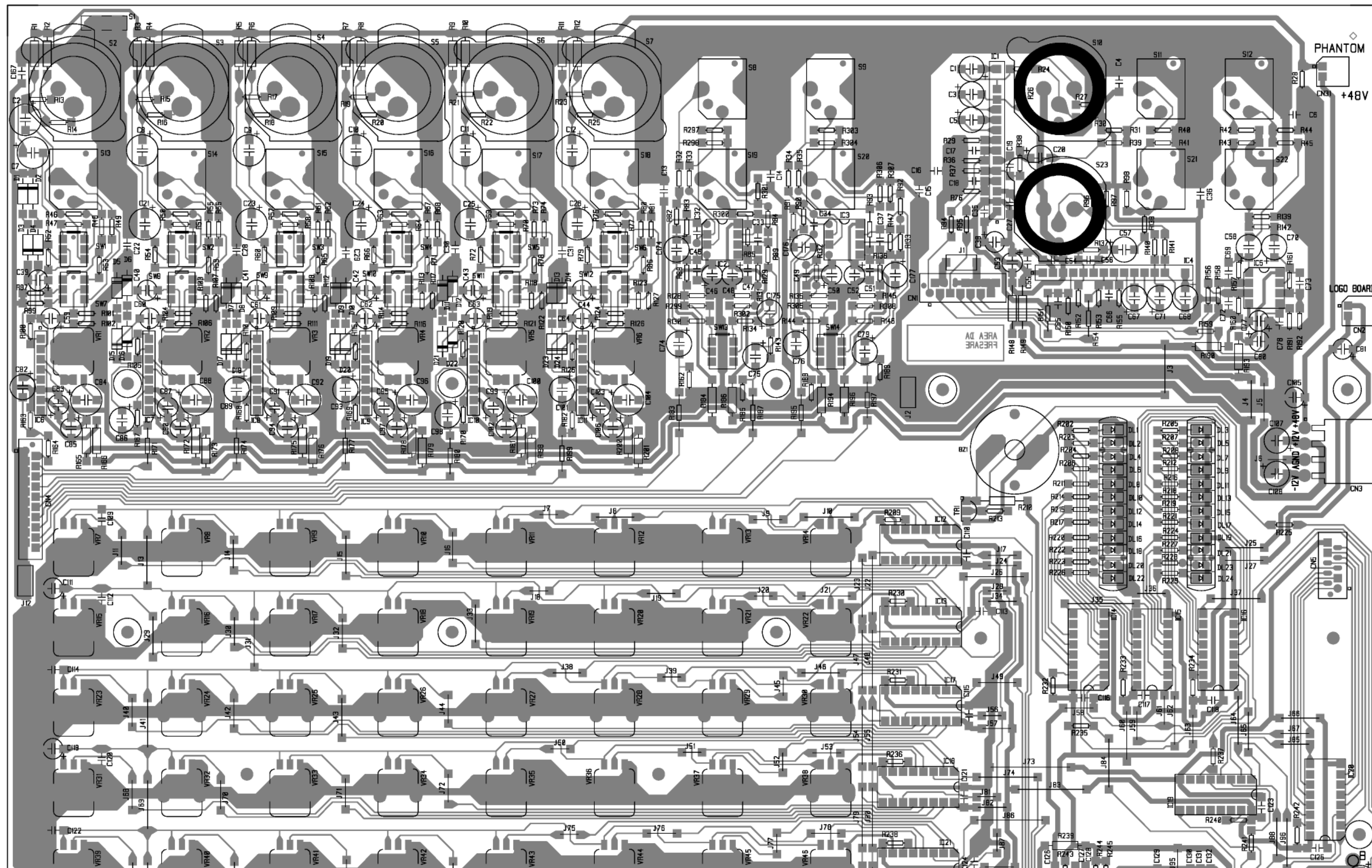


VIRTUAL STRIP BOARD (PCB#313046)

768192 - CONTROLS & I/O BOARD PART 1 OF 2

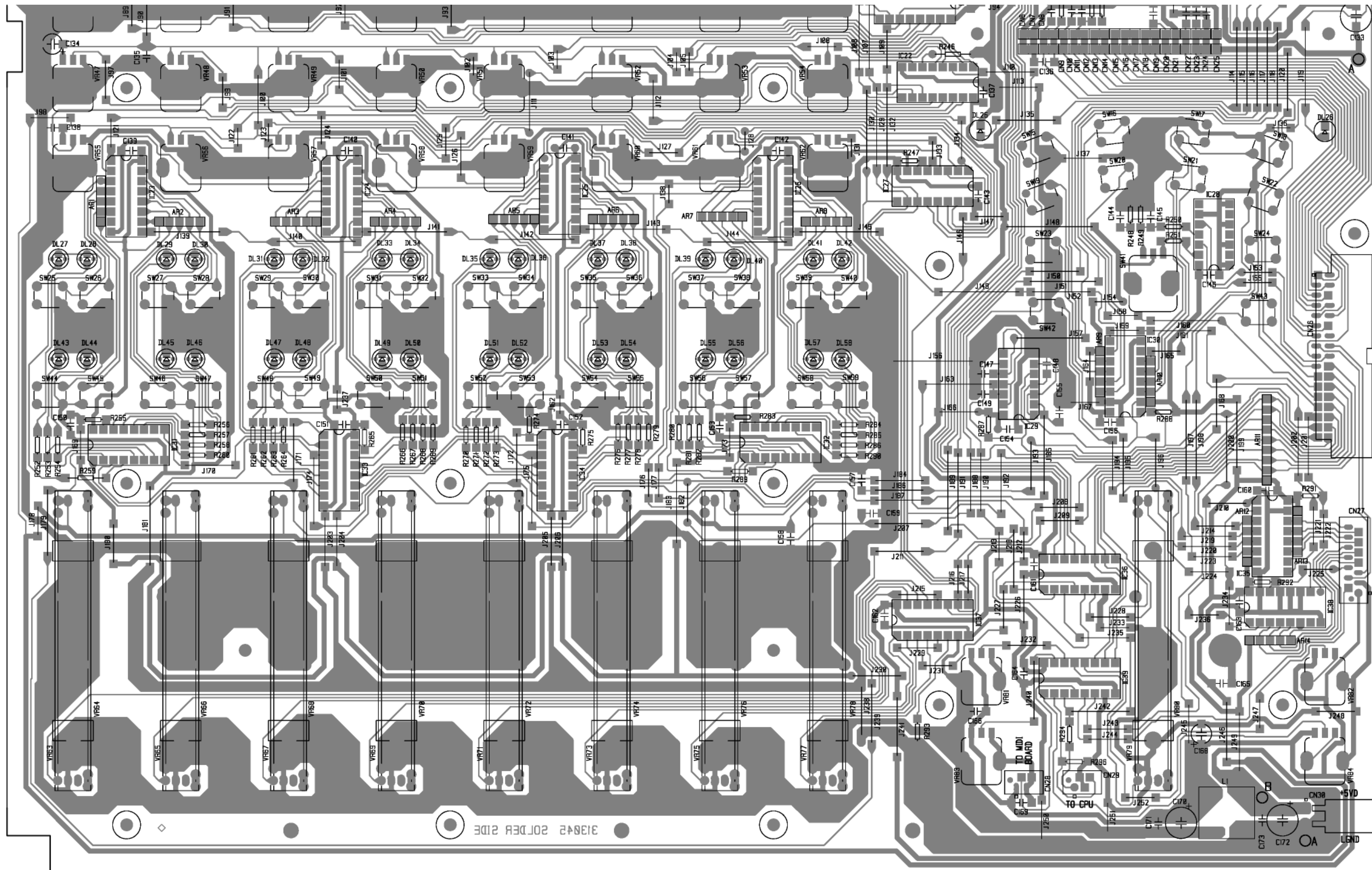






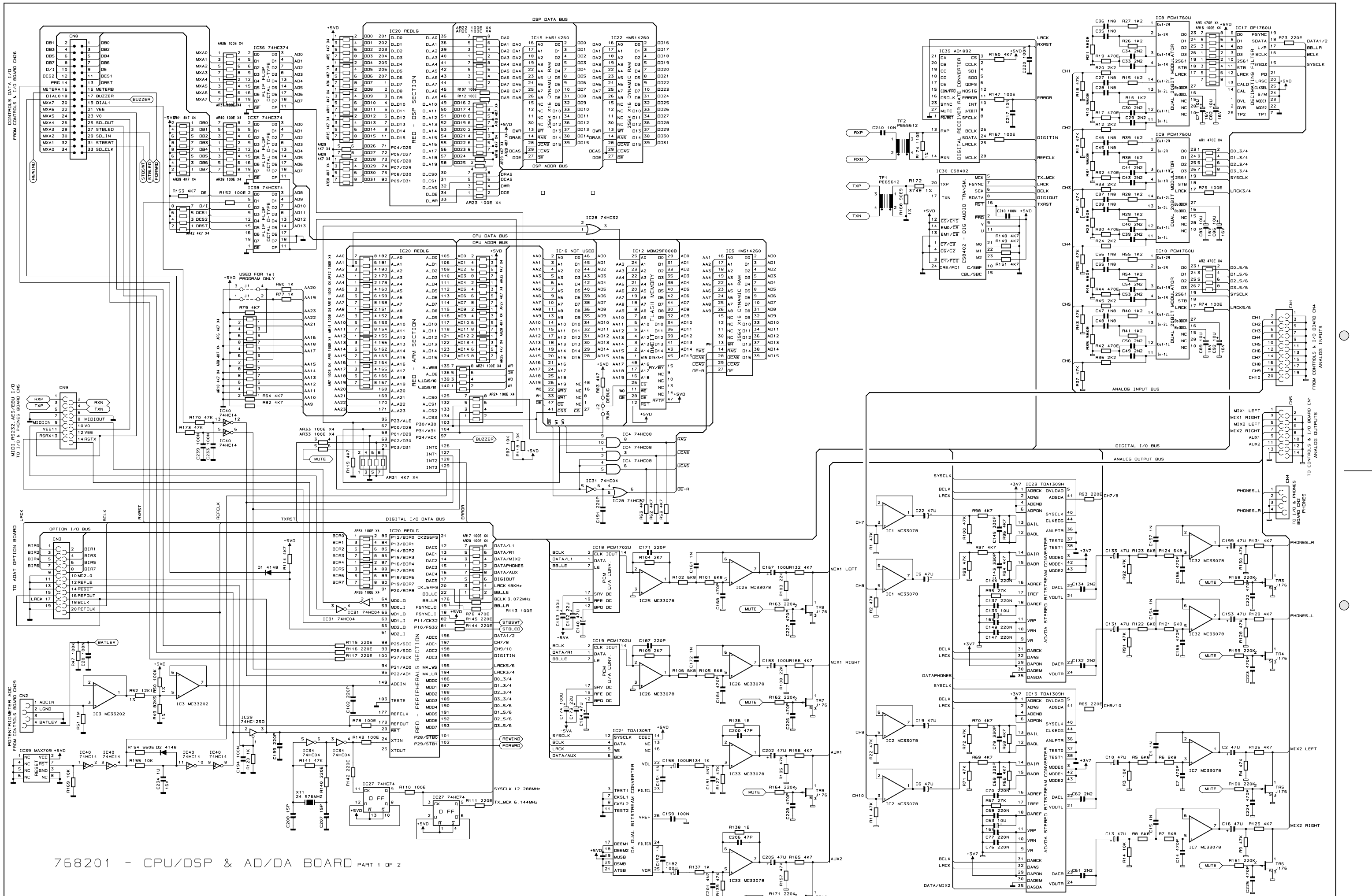
CONTROLS & I/O BOARD (PCB#313045) PART 1 OF 2

DRW: BOCCATO	DWG: 313045	SCHEMATIC DIAGRAM: FALCON	GENERALMUSIC S.p.A. Italy
CKD: MULAZZANI	DISK: 4 PART: 1/2	Controls & I/O Board Pcb Layout	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP: GAZZILLI	REV: 05-05-99		



CONTROLS & I/O BOARD (PCB#313045) PART 2 OF 2

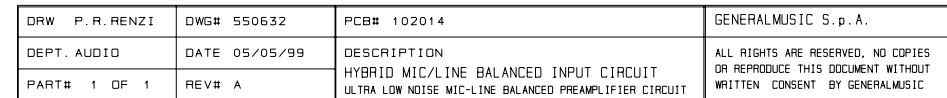
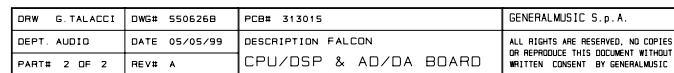
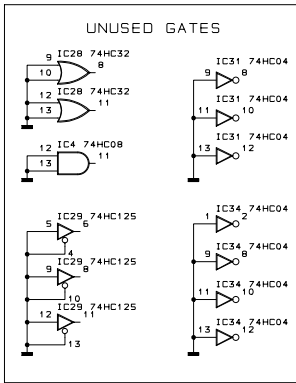
DRW: BOCCATO	DWG: 313045	SCHEMATIC DIAGRAM: FALCON	GENERALMUSIC S.p.A. Italy
CKD: MULAZZANI	DISK: 4 PART: 1/1	Controls & I/O Board Pcb Layout	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCTIONS OF THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
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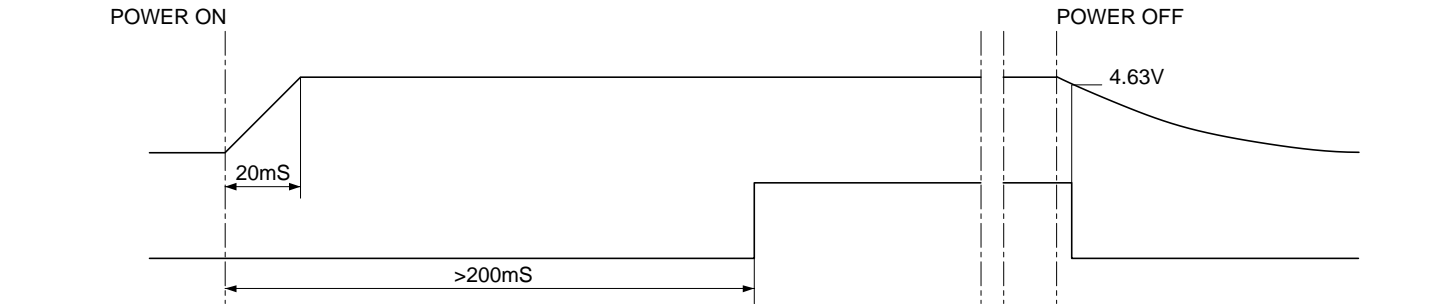
768201 - CPU/DSP & AD/DA BOARD PART 1 OF 2

DRW G. TALACCI	DWG# 550626	PCB# 313057	GENERAL MUSIC S.p.A.
DEPT. AUDIO	DATE 05-05-99	DESCRIPTION: FALCON	ALL RIGHTS ARE RESERVED. NO COPIES
PART# 1 OF 2	REV# A	CPU & AD/DA BOARD	OR REPRODUCE THIS DOCUMENT WITHOUT
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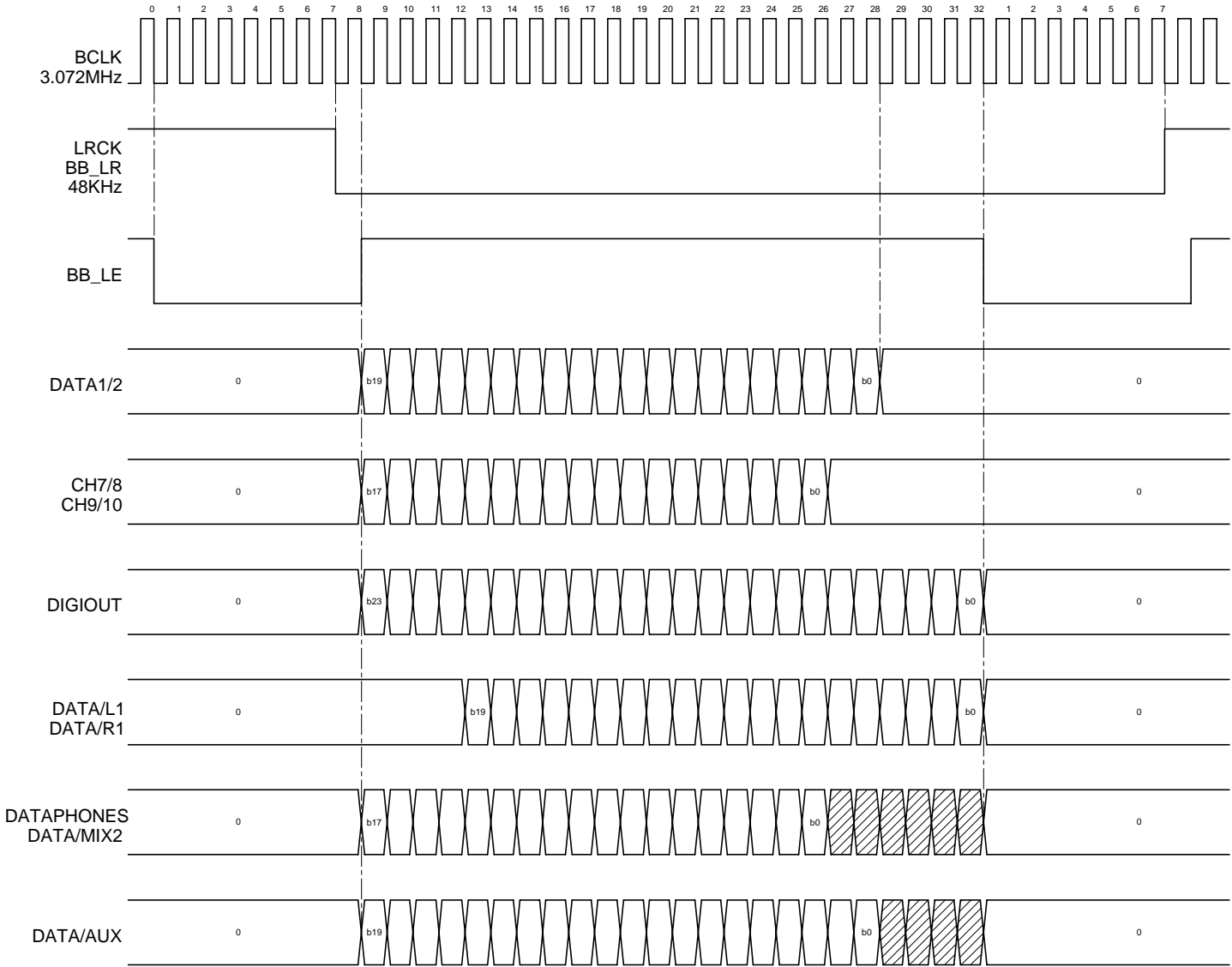
PART 2 OF 2



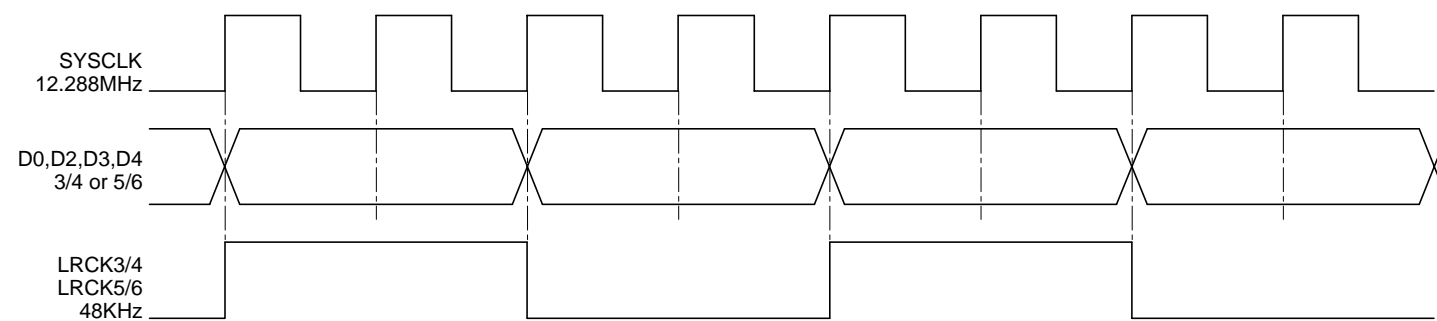
POWER & RESET TIMING



AD/DA TIMING



ADC TIMING (CH3-6)



DRW BOCCATO	DWG# 550639	PCB#	GENERALMUSIC S.p.A. ITALY
CKD CARBONI	DISK: 4 PRT: 1/1	TIMING TABLE	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
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Operating System Update Procedure

Tools required

- ✓ A 486/33 or superior computer with Windows 95 or 98 or NT installed on it, provided with a RS232 compatible serial port.
- ✓ The RS232 cable (code 130436) supplied with the mixer.
- ✓ The last version of *FLASH BLASTER II Disk* (code 955914), or the last version of the Operating System that can be downloaded from the Lem internet web site:
<http://www.lemaudio.com>

Setup

- ✓ Connect the Computer and the Mixer with the appropriate cable.
- ✓ Install the *Flash Update Utility* program onto your computer. To do this insert the disk named *FLASH BLASTER II* in your 3.5" drive, or unpack the Operating System file downloaded, open the drive or the folder and double click on *Setup.exe* icon, follow the instructions that appears on your computer screen.

Procedure

- ✓ Turn on the mixer, press and hold the HELP/OPTION button until the display shows "OSCILLATOR", press PAGE UP(+) button to jump to the next screen that says: PRESS ENTER TO UPDATE THE SOFTWARE (note: you can exit from this procedure by pressing any other button, or switching off the mixer at this time)
- ✓ Press ENTER, the display screen disappear and the W led lights to confirm that the mixer is waiting to receive the new operating system from RS232 port.
- ✓ Start the *Flash Update Utility* program and check the connection between mixer and computer correspond to the port setting on *Option/Setting* menu.
- ✓ Click on *Go!* button, the display will show the status of the upgrade and the mixer E/H led lights on, during the uploading the meter leds light sequentially, while the Flash memory is cancelled all the meter leds light and when the memory is re-programmed all meter leds flash, the total time to perform all operations take aprox. 3min.
- ✓ At the end of re-programming all meter and E/H leds turn off.
- ✓ Switch off the mixer.
VERY IMPORTANT: to ensure the correct operation of all mixer functions you must execute a MEMORY RESET procedure before using the Falcon.

Troubleshooting

- ✓ If, for any reason, the system is not updated or the mixer do not operate correctly, you can restart it with the *Low Level* loading procedure, see below.
- ✓ Any other malfunction is described in the *Flash update utility disk* in a folder named *Docs*.

Low Level Loading Procedure

With this procedure you can load the Operating System in the mixer from beginning as if it is never been loaded previously.

- ✓ Turn on the mixer holding down the VIEW and ENV buttons of Channel 1 and VIEW DIGITAL and VOL buttons of Virtual Channel, the led W must light to confirm that the mixer is waiting to receive the operating system from RS232 port (see Operating System Update procedure).
- ✓ If the led W does not light the *Low Level* programming of the CPU/DSP & AD/DA Board does not operate properly: it must be returned to the manufacturer to be re-programmed.

Memory Reset Procedure

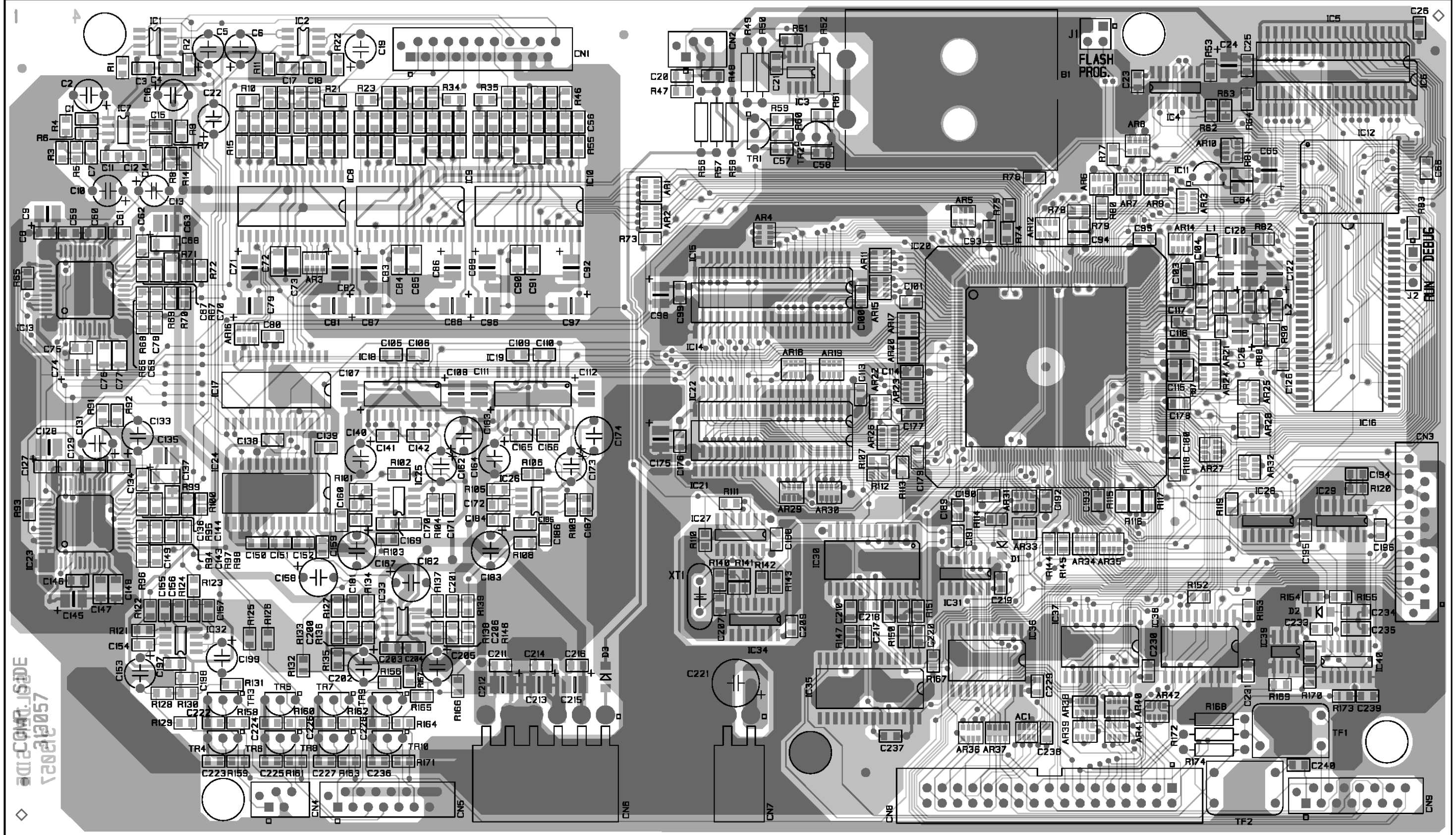
When you update the Operating System, or when you replace or repair the CPU/DSP & AD/DA Board you must execute the Memory Reset procedure to clean all memory data.

- ✓ Switch on the mixer holding down the VIEW and ENV buttons of 7/8 and 9/10 channels, the display shows a warning message and execute the RAM memory reset.

Potentiometers Calibration Procedure

When you replace or repair a CPU/DSP & AD/DA Board you must execute the potentiometers calibration procedure to align the sliders and rotating potentiometers with their AD converter, to do this perform the following procedure:

- ✓ Press GLOBAL and then press PAGE UP twice, the display shows **PASSWORD: - +++++++**.
- ✓ Press ENTER, the display shows **PASSWORD: - M**.
- ✓ Write **FALKNET** instead M using the Dial and the ENTER button.
- ✓ Press rapidly ENTER twice: the display shows **POT CALIBRATION**, press ENTER.
- ✓ Set the controls as follow:
HIGH, MID, LOW (and also MID-HIGH, MID-LOW for CH7/8 and CH9/10) and PAN potentiometers of all channells at the centre of their strokes,
CH1 up to CH4 faders at MIN,
CH5 up to CH9/10 faders at MAX,
(the other potentiometers are irrelevant).
- ✓ Press ENTER to view the current reading values of the potentiometers.
- ✓ Press and hold the ENTER button to start the calibration, when the display shows **CALIBRATION DONE** you may press and hold ENTER to view the new reading values.
- ✓ Press ESC to stop reading, press rapidly ESC twice to escape from calibration and GLOBAL to return at the main screen.



CPU/DSP & AD/DA BOARD (PCB#313057)

DRW: BOCCATO	DWG: 313057	SCHEMATIC DIAGRAM: FALCON	GENERALMUSIC S.p.A. Italy
CKD: MULAZZANI	DISK: 4 PART: 1/1	Cpu/Dsp & AD/DA Board Pcb Layout	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
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