

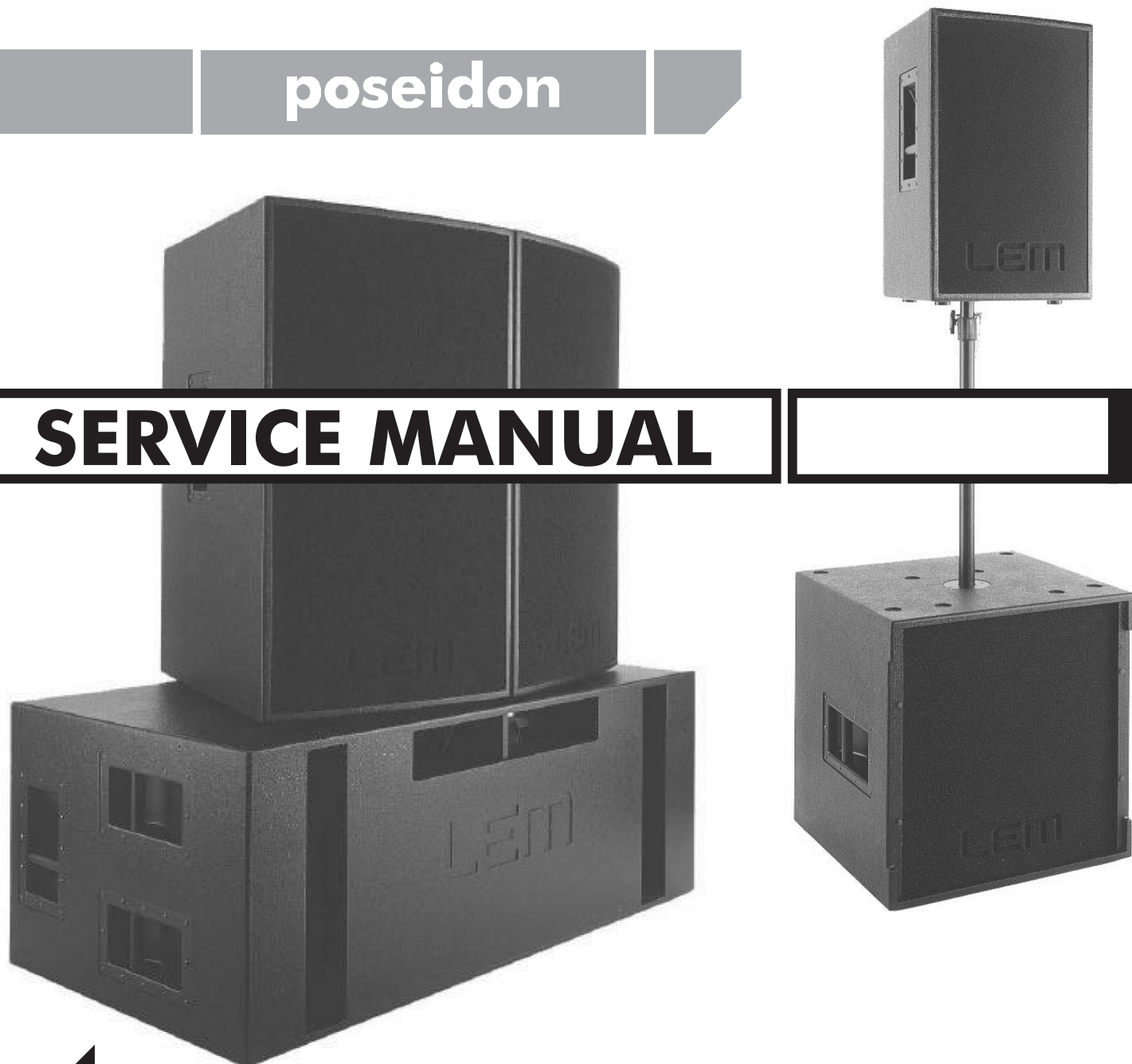


Digital integrated loudspeaker system

pegasus

poseidon

SERVICE MANUAL



code 270282



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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.

↑ Supply voltage.

⬇ Logic supply ground.

• Male connector.

□ Test point.

⬇ Analog supply ground.

⊖ Female connector.

⬅ Flag joined with one or more flags with the same signal name inscribed.

⬇ Chassis ground.

⚡ M/F faston connector.

⬇ Earth ground.



ATTENTION

Observe precautions when handling electrostatic sensitive devices.



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TECHNICAL SPECIFICATIONS			
		PEGASUS 212	PEGASUS 118
LOUDSPEAKER SPECIFICATIONS			
Components	High Low	2" driver horn loaded 12" woofer bass-reflex	18" bass-reflex
Construction	Cabinet Finish Protection	Laminated birch plywood Black scratch-resistant paint Metal grid and foam	
Weight	kg	44	60
Dimensions	mm (WxHxD)	424x638x440	620x620x566
PROCESSOR/AMPLIFIER SPECIFICATIONS			
Inputs / Outputs	sensitivity impedance	+4 dB 20 kOhms (balanced)	
A/D converter	bit	24	
D/A converter	bit Dynamic range Sampling Rate	24 117 dB 48 kHz	
Crossover	Type Frequency Slope	Bessel, Butterworth or Linkwitz-Riley Variable from 15.6 Hz to 16 kHz 6, 12, 18, 24, or 48dB per octave	
EQ	Number Type Gain Bandwidth Freq	5 parametric bands on each input and output Peak, 6dB Lo-Shelf, 12dB Lo-Shelf, 6dB Hi-Shelf, 12dB Lo-Shelf, Notch +/-15dB, variable in 0.5dB steps 0.05 to 3.00 octaves, variable in 0.05 steps 15.6 Hz to 16 kHz	
Delay	max input delay max output delay	600 ms 300 ms	
Limiter		Independent limiter for each output.	
Plugins		Hum Cancel, Noise Gate, Anti-feedback, Multiband compressor	
Output power	EIA (1kHz, THD 1%)	2x400W	800W
Distortion	%	<0.02	
Controls		UP, DOWN, ENTER and SELECT buttons, 2-digit display SIGNAL/LIMITER LED	
Connectors		1 XLR-F +1 XLR-M (input + link) 9-pin RS-232, RS-485 IN & OUT 2 POWERCON (mains input & link)	
Power supply		see label on the apparatus	
SYSTEM SPECIFICATIONS			
Frequency response	Hz	48 - 18000 (-3dB)	32 - 300 (-6dB)
Sensitivity	MAX SPL Continuous MAX SPL Peak	124 dB 135 dB	124 dB 127 dB
Dispersion	°	60x40	-

TECHNICAL SPECIFICATIONS			
		POSEIDON 212	POSEIDON 218
LOUDSPEAKER SPECIFICATIONS			
Components	High	2" driver horn loaded	2 x 18" woofer in push-pull configuration mounted in a bandpass cabinet
	Low	12" woofer horn loaded	
Construction	Cabinet Finish Protection	Laminated birch plywood Black scratch-resistant paint Metal grid and foam	Laminated birch plywood Black scratch-resistant paint
Weight	kg	67	127
Dimensions	mm (WxHxD)	604x973x723	1460x540x735
PROCESSOR/AMPLIFIER SPECIFICATIONS			
Inputs / Outputs	sensitivity impedance	+4 dB 20 kOhms (balanced)	
A/D converter	bit	24	
D/A converter	bit	24	
	Dynamic range Sampling Rate	117 dB 48 kHz	
Crossover	Type Frequency Slope	Bessel, Butterworth or Linkwitz-Riley Variable from 15.6 Hz to 16 kHz 6, 12, 18, 24, or 48dB per octave	
EQ	Number	5 parametric bands on each input and output	
	Type Gain Bandwidth Freq	Peak, 6dB Lo-Shelf, 12dB Lo-Shelf, 6dB Hi-Shelf, 12dB Lo-Shelf, Notch +/-15dB, variable in 0.5dB steps 0.05 to 3.00 octaves, variable in 0.05 steps 15.6 Hz to 16 kHz	
Delay	max input delay max output delay	600 ms 300 ms	
Limiter		Independent limiter for each output.	
Plgins		Hum Cancel, Noise Gate, Anti-feedback, Multiband compressor	
Output power	EIA (1kHz, THD 1%)	2x400W	2x400W
Distortion	%	<0.02	
Controls		UP, DOWN and ENTER selector buttons, 2-digit display SIGNAL/LIMITER LED	
Connectors		1 XLR-F +1 XLR-M (input + link) 9-pin RS-232, RS-485 IN & OUT 2 POWERCON (mains input & link)	
Power supply		see label on the apparatus	
SYSTEM SPECIFICATIONS			
Frequency response	Hz	130 - 18000 (-3dB)	35 - 110 (-6dB)
Sensitivity	MAX SPL Continuous	134 dB	129 dB
	MAX SPL Peak	138 dB	132 dB
Dispersion	°	32x32	-

VERY IMPORTANT! READ THESE NOTES ENTIRELY BEFORE PROCEED TO ANY REPAIRING

PRECAUTION

- To prevent short circuit during any test, **the oscilloscope must be EARTH insulated**, this occurs because some test require to connect its probe to the amplifier output, non-compliance may cause damages to oscilloscope inputs circuitry.
- Before removing or installing any modules and connectors, **disconnect the amplifier from AC MAINS** and measure the DC supply voltages across each of the power supply capacitors. If your measurement on any of the caps is greater than 10Vdc, connect a 100ohm 70W resistor across the applicable caps to discharge them for your safety. Remember to remove the discharge resistor immediately after discharging caps. **Do not power up the amplifier with the discharge resistor connected.**
- Read these notes entirely before proceeding to any operation. These notes are not comprehensive of all damages that possibly occur, but includes some specifically advices, checks and adjustments relative to this amplified speaker.
- **Do not check the amplifier with the speakers connected use the appropriate load resistors only.**
- **BE CAREFUL increasing the Variac you must not exceed the nominal mains voltage plus its tolerance (see specifications) any upper voltage can be cause of damage.**

REMARKS

- All PEGASUS and POSEIDON P.A. systems use the same amplifier module with different configuration, using the OS UPLOAD & COMPLETE TEST PROCEDURE explained further you can change a module setting to use it in another speaker; remember that also the adhesive labels applied to the control panel and to the output connection will change, also note that you have to set some jumpers.
- As well each time you replace a DX BOARD you have to use the OS UPLOAD & COMPLETE TEST PROCEDURE explained further to upload the right speaker OS into the flash memory.
- To make easy a repairing we have decided to divide the test procedure in two chapter, the first chapter "AMPLIFIER TEST & ADJUSTEMENT" is relative to the POWER AMPLIFIER ASSEMBLY alone (SUPPLY and AMPLIFIER BOARD with all other board disconnected or removed), the second chapter "OS UPLOAD & COMPLETE TEST PROCEDURE" is relative to the entire module. This choice is due to the excessive time needed to make a complete test that usually is not necessary when a fault is located on amplifier assembly.
- To avoid R131, R132, R164, R165 burning: **ABSOLUTELY DO NOT CLIP THE AMPLIFIER OUTPUTS, OR ALSO DO NOT EXCEED THE MAXIMUM INPUT SENSITIVITY OF +4dBu.** For this reason any further test is made at max 0dBu, a more secure level.
- The POWER AMPLIFIER ASSEMBLY has two identical amplifiers in MOSFET CLASS AB technology, these are named CH1 an CH2, when are used in the PEGASUS-212 and POSEIDON-212 they work indipendently for HIGH and LOW speakers (remark that the HIGH channel has a lower gain leaving unmounted J3 on INTERFACE BOARD), when are used in the PEGASUS-118 sub they work in bridge configuration (remark that the phase inversion is made by the DX BOARD), when are used in the POSEIDON-218 sub they work indipendently but with phase inverted to drive the push-pull speaker configuration (remark that the phase inversion is made by the DX BOARD).
- During its normal duty each speaker box has a specific LONG TERM PROTECTION LIMITER, this limiter is set up to avoid the voice coil breaking due to excessive and long time power handling of each specific cone or compression driver. Its intervention is un-audible because the DSP sense the power handling and reduce it gradually. As soon as a normal working condition is restored, the power is gradually taken back to the nominal level. During the test procedures all limiters are disabled.

VISUAL CHECK

- Check the speakers for any damaging (cone-breaking, interruption or further).
- Before proceed to supply the amplifier check visually the internal assembly, if appears an evident damage find the most possible reasons that cause it.
- Check the wiring cables for possible interruptions or shorts.
- If the damage has burnt a printed circuit board don't try to repair it, replace with a new one.

MOSFET REPLACEMENT NOTE

All Mosfet rails are made by matched components, the following table summarize the selections:

Id.	V _{TGS} Range	Id.	V _{TGS} Range	Id.	V _{TGS} Range
A	3.450 ÷ 3.499	B	3.500 ÷ 3.549	C	3.550 ÷ 3.599
D	3.600 ÷ 3.649	E	3.650 ÷ 3.699	F	3.700 ÷ 3.749
G	3.750 ÷ 3.799	H	3.800 ÷ 3.849	I	3.850 ÷ 3.899
J	3.900 ÷ 3.949	K	3.950 ÷ 3.999		

As SPARE PART REPLACEMENT GM supply only a selected quartet of specified type P

IRFP9240 (GM code SKK090007) or type N IRFP240 (GM code SKK090006). In other words you always have to replace an entire rail of final transistors, because same V_{TGS} range is important to drive them together, but different rails can have different V_{TGS} ranges.

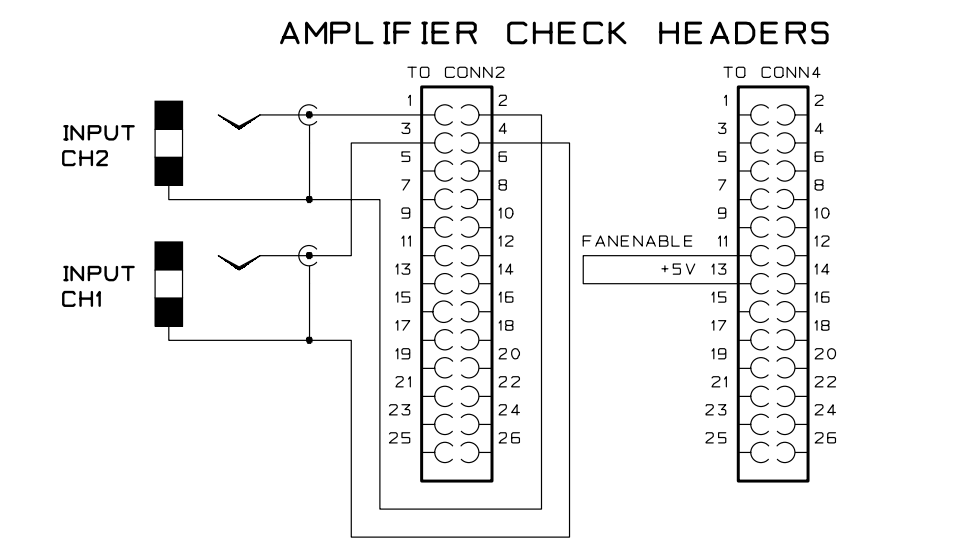
TEST INSTRUMENTS

- Sinusoidal & Pink Noise Audio Generator
- Dual Trace Oscilloscope
- Digital Multimeter
- 2x 8ohm 500W, 100ohm 70W resistors
- Variac (0÷250Vac)

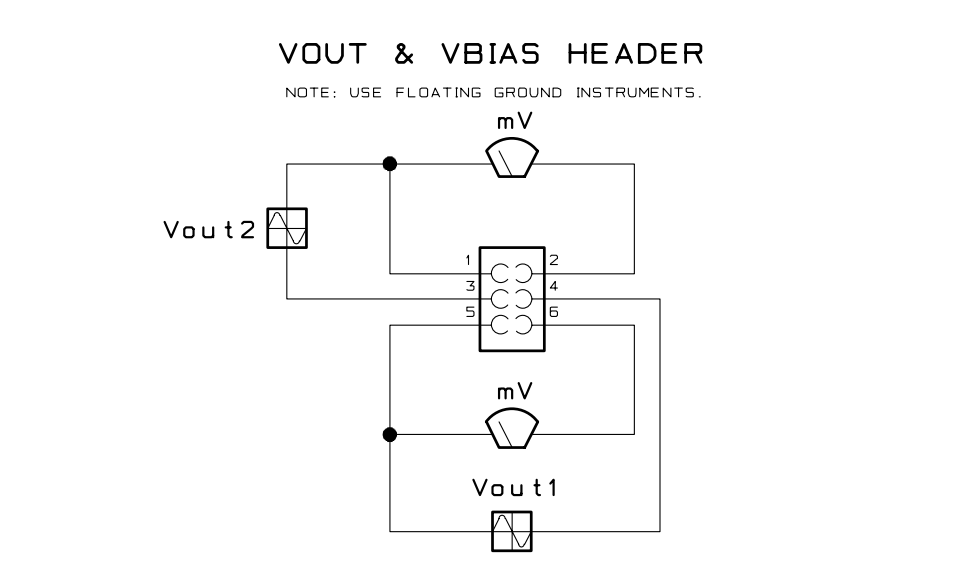
To execute the AMPLIFIER TEST PROCEDURE are also needed the following tools:

- Two 26 poles DIN41651 or equivalent headers
- Two female mono jack
- Two 20cm lenght shielded cables

The two headers must be assembled as follow:



- A 6 poles DIN41651 p=2.54 female header assembled as follow:



To execute the OS UPLOAD & COMPLETE TEST PROCEDURE are also needed the following tools:

- A Windows 98/NT/XP personal computer with a RS232 communication port free.
- O.S. UPGRADE CDROM version 2/2003 or further (GM code 270279)
- A loopback RS232 DB-9 connector (shorts pin 2 and 3)
- A loopback RS485-RS232 Micromatch header (shorts pin 1-6 and pin 2-4), using that you skip the RS485 check
- Or to make a complete check you must have the RSC SERIAL CONVERTER Kit (GM code 951361 for 230Vac or 951362 for 115Vac) and a suitable Y cable.

TECHNICAL SPECIFICATIONS

Power Requirements (EU):	(230Vac+5%/-10% 50Hz)	900VA
Power Requirements (US):	(115Vac+5%/-10% 50/60Hz)	900VA
Max CH1 Out Power*:	(8ohm)	400W
Max CH2 Out Power*:	(8ohm)	400W
Max Bridge Out Power***:	(16ohm)	800W
Frequency Response**:		10Hz ÷ 20KHz
Nominal Input Sensitivity:	(+4dBu)	1.229V _{RMS}
Amplifier Input Sensitivity:	(+4dBu single input)	1.229V _{RMS}
Max signal before digital clip:	(+19dBu)	6.91V _{RMS}
System digital delay:	(approx.)	1.4mS
Input Impedance:	(balanced)	30Kohm
	(unbalanced)	15Kohm

Voltage Gain:		33±1dB
IMD:	(SMPTE 60Hz/7KHz 4:1)	<0.1%
THD:	(THD+N)	<0.1%
S/N Ratio:	(unweighted)	>100dB

* Note: measured with the IHF standard method without limiters. The RMS power is limited by the DX BOARD and it is different for each model, refer to the OS UPLOAD & COMPLETE TEST PROCEDURE explained further.

** Note: the frequency response depends by the model and the selected preset, to view the responses you can install the DX-EDITOR program in a Windows based personal computer.

*** Note: Used on "Pegasus 118 Sub" model only, the phase inversion is achieved by software on DX Board.

AMPLIFIER TEST PROCEDURES & ADJUSTMENTS

All system amplifiers have the same electronics but different configurations, in the COMPLETE TEST PROCEDURE these configurations are explained entirely. The procedures in this chapter are relative only to the Supply and Amplifier Boards, all other boards must be removed before to go over; also only in the PEGASUS-212 model you have to remove temporarily the JMP5 and JMP6 jumpers.

SETUP

- Connect the Variac between the mains and the amplifier and set it at zero voltage.
- Disconnect all the Speakers.
- Insert the CONN2 and CONN4 HEADERS into the respective connectors.
- Insert the VOUT & BIAS HEADER into the respective connector.
- Connect the audio generator to each channel input and set it to 1KHz sinusoidal signal, level set to zero.
- Connect the oscilloscope probe to the OUT1 and OUT2, clip to - and tip to +, before RE100 and RE200, initially set it to 5V/div. 2µS/div. and move the vertical scale from 5 to 20V/div. when required.
- The load resistor is disconnected.
- The procedures that follow must be executed subsequently in the order specified.

SUPPLY CHECK

- Verify with the Multimeter the insulation between the heatsink (fixing screws) and all mosfet drains (pin2) (T110, 111, 112 , 113, 118, 119, 120, 121, 210, 211, 212 , 213, 218, 219, 220, 221,).
- Verify with the Multimeter the NTC resistor value, it must be between 17Kohm and 19Kohm.
- Remove the transformer secondary fuses, set the Variac to the nominal mains voltage, check with the Multimeter the AC supply voltages in the screws headers:

CONN2 BROWN-WHITE	=60±2Vac.
CONN3 RED-YELLOW	=60±2Vac.
CONN4 YELLOW-YELLOW	=18±1Vac.
CONN4 ORANGE-ORANGE	=10±0.5Vac.
CONN4 BLUE-BLUE	=10±0.5Vac.

- Re-set the Variac at zero voltage, turn off the amplifier and put the fuses back on its holders.
- Set the generator level to -20dBu (77.5mV_{RMS}).
- Set up the Variac slowly at about 50Vac (EU) or 25Vac (US) monitoring the oscilloscope screen, it should display the output signals of about 5Vpp without distortion and any DC voltage; increase the Variac, after a range of instable operation, at about 90Vac (EU) or 45Vac (US) starts the fan and output signals are about 10Vpp, increasing further the Variac at about 150Vac (EU) or 75Vac (US) the relais go on, when nominal votage is reached increase the input signal to 0dBu, corresponding the output signal increase to 100Vpp for each channel.

- Verify the DC supplies as follow:

CONN1 pin8-9 (+Vcc)	=+82±2Vdc
CONN1 pin13-14 (-Vcc)	=-82±2Vdc
CONN1 pin7	=+24±1Vdc
CONN1 pin6	=+5±0.5Vdc

- CONN1 pin5 =-5±0.5Vdc
CONN1 pin3 =+5±0.5Vdc
- If one or more voltages don't correspond, check the rectifiers, capacitors and transformers disconnecting them from circuitry, refer to schematics.

BIAS ADJUSTMENT:

- Set the generator level at zero, connect the Multimeter across the OUT1 and TST1 for channel 1 or OUT2 and TST2 for channel 2, then adjust VR100 or VR200 trimmer to read 10±0.5mVdc.
- This check is made with the heatsink at ambient temperature 25°C.

AMPLIFIER CHECK

- Set up the vertical scale of the oscilloscope to 20V./div. then increase the input signal to 0dBu, corresponding the output signal increase to 100Vpp for each channel, the output signal must be symmetrical without visible distortion and oscillation as shown in Fig.1 (note: the figure is representative don't refer to its level). If there is a distortion read the section ADVICES.
- Set up to zero the input signal, turn off the amplifier and connect a 8ohm 500W load on the output finally repeat the previous check for each channel with the load attached.

TO AVOID SOME RESISTOR BURNING ABSOLUTELY DO NOT CLIP THE AMPLIFIER OUTPUTS, OR ALSO DO NOT EXCEED THE MAXIMUM INPUT SENSITIVITY OF +4dBu.

BANDWIDTH CHECK:

- Sweep the generator frequency from 20Hz to 20KHz, the output level have not detectable level changes.

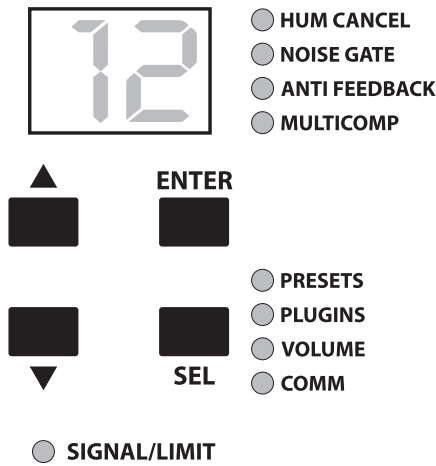
ADVICES

- If the input sinewave appears to be distorted during the negative cycle, you can assume that the problem is located somewhere in the circuitry of the positive rail.
- If the positive cycle appears distorted, you can assume that the problem is in the circuitry of the negative low rail. Refer to the schematics.
- If you have determinate that the problem is a short on a supply rail, you must check the output transistors to determine which transistor devices are bad.
- Use a soldering iron to lift one leg of each emitter pin and measure the emitter-collector resistance on each device.
- Unsolder and lift one leg of each base pin and check the base-collector resistance of each transistor and replace any that measure as a short.
- If all the transistors are OK, unsolder and lift one leg of each diode and check them.
- Check the circuit board for open foil traces.
- Use the Multimeter as Ohm-meter to check the resistors, particularly the base and emitter resistors of damaged transistor.

OS UPLOAD & COMPLETE TEST PROCEDURE

CONTROL PANEL

This figure represent the CONTROL PANEL:



O.S. UPLOAD OR UPGRADE INSTRUCTIONS

- After a replacement of the DX BOARD, before check a specific speaker or when you want to upgrade the amplifier unit Operating System (O.S.), you have to execute the following instructions:
- 1) Run the appropriate O.S. UPGRADE version from the O.S. Upgrade CD.
 - 2) Press and hold all buttons on the amplifier panel then switch on the unit.
 - 3) The display shows: "Fx" where x is normally E or similar.
 - 4) Check if you have set up the proper COMx port of your PC, then click on GO.
 - 5) The display shows:
 - a) FE and HUM CANCEL led lights up.
 - b) MULTICOMP to COMM leds flash sequentially during the file transfer.
 - c) F then E and NOISE GATE led lights up.
 - d) MULTICOMP to COMM leds flash sequentially during the flash memory erase.
 - e) FE and ANTIFEEDBACK led lights up.
 - f) MULTICOMP to COMM leds flash sequentially during the flash memory program.
 - 6) Switch off and then switch on the unit.

RESET MEMORY AND OS MODEL INQUIRY

- After any servicing operation, or to know which OS model version is uploaded in flash memory, or whenever you have doubt about DRAM memory contents or you can reset all memory data restoring the factory default preset and deleting all user preset. Execute the following instructions:
- 1) Press and hold the cursor up and down buttons simultaneously on the amplifier panel while switch on the unit.
 - 2) The display shows a number that identify which OS model is loaded into the flash memory, respecting the following table:

[_0]	PEGASUS 212 SAT
[_1]	PEGASUS 118 SUB
[_2]	POSEIDON 212 SAT
[_3]	POSEIDON 218 SUB

the SIGNAL/LIMIT leds lights up and some PRESET...COMM leds already lights up.
 - 3) When 01 appears again on the display the unit is restored and operative.

TESTING PROCEDURE

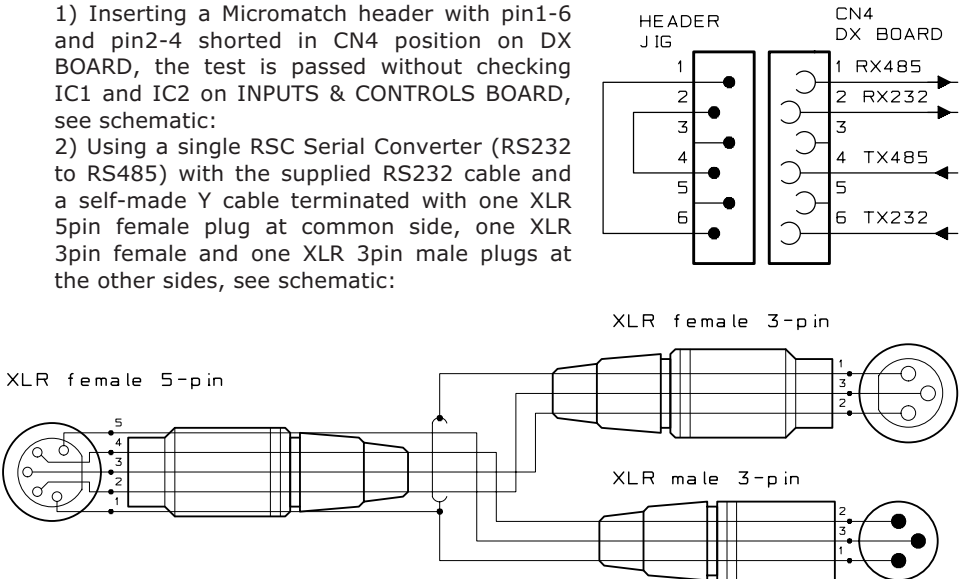
- To start the testing procedure you have to press and hold the ENTER and SEL buttons simultaneously on the amplifier panel while switch on the unit.
- To complete all test please read all the following advertisements:

SETUP

- The unit must be completely assembled.
- Disconnect all the Speakers.
- The load resistor is disconnected.
- The procedures that follow must be executed subsequently in the order specified.

REMARKS

- If a TEST FAILS the DX BOARD module is idle and until the problem is fixed the testing procedure cannot continue.
- To pass the RS232 test you have to create a loopback connection between pin 2 and 3 on RS232 port.
- To pass the RS485 test you have to create a loopback connection between RS232 and RS485 ports, two methods are possible:
 - 1) Inserting a Micromatch header with pin1-6 and pin2-4 shorted in CN4 position on DX BOARD, the test is passed without checking IC1 and IC2 on INPUTS & CONTROLS BOARD, see schematic:
 - 2) Using a single RSC Serial Converter (RS232 to RS485) with the supplied RS232 cable and a self-made Y cable terminated with one XLR 5pin female plug at common side, one XLR 3pin female and one XLR 3pin male plugs at the other sides, see schematic:



PEGASUS & POSEIDON 212 POWER AMPLIFIER MODULE

Initially you have to check the following:

- J3 on INTERFACE BOARD is opened.
- and for PEGASUS-212 only:
- JMP5 and JMP6 on AMPLIFIER BOARD are shorted, all other JMPx are opened.

CONTROL PANEL TEST

- 1) Press and hold the ENTER & SEL buttons simultaneously and switch on the unit, now the unit is start in "Testing Mode". Check the following points:
 - a) All the LEDs must light up in sequence.
 - b) The number "8.8." appears on the display.
- 2) Press again the ENTER & SEL buttons simultaneously:
 - a) HUM CANCEL led must light up.Also check the following points:
 - b) Press the UP button and verify that "1" appears on the display.
 - c) Press the DOWN button and verify that "2" appears on the display.
 - d) Press the ENTER button and verify that "3" appears on the display.
 - e) Press the SEL button and verify that "4" appears on the display.

EEPROM TEST

- 3) Press again the ENTER & SEL buttons simultaneously:
 - a) The NOISE GATE led must light up.After 50 seconds the display shows:
 - b) "01" if the EEPROM test passes.
 - c) "E1" if the EEPROM test fails.

RAM TEST

- 4) Press again the ENTER & SEL buttons simultaneously:
 - a) The ANTI-FEEDBACK led must light up.Wait until display shows:
 - b) "02" if the RAM test passes.
 - c) "E2" if the RAM test fails.

FAN TEST

- 5) Press again the ENTER & SEL buttons simultaneously:
 - a) the MULTICOMP led must light up.Immediately:
 - b) The FAN starts and runs to the maximum speed.

NTC TEST

- 6) Press again the ENTER & SEL buttons simultaneously:
 - a) The PRESET led must light up.
 - b) The FAN stops.The display shows:
 - c) "03" if the NTC test passes.
 - d) "E3" if the NTC test fails.

RS232 SERIAL PORT TEST

- 7) Insert a RS232 loopback plug in the RS232 port of the power amplifier.
- 8) Press again the ENTER & SEL buttons simultaneously:
 - a) The PLUGINS led must be light up.The display shows:
 - b) "04" if the RS232 test passes.
 - c) "E4" if the RS232 test fails.

RS485 IN SERIAL PORT TEST

- 9) Remove the RS232 loopback plug and choose one of the following:
 - a) To pass the test without checking IC1 and IC2 on INPUTS & CONTROLS BOARD extract the flat cable from CN4 on DX BOARD and insert the RS232-485 loopback micromatch header.
 - b) Connect the RSC SERIAL CONVERTER between RS232 port and RS485 IN & OUT ports using the Y cable specified before.
- 10) Press again the ENTER & SEL buttons simultaneously:
 - a) The VOLUME led must be light up.The display shows:
 - b) "05" if the RS485 IN test passes.
 - c) "E5" if the RS485 IN test fails.

RS485 OUT SERIAL PORT TEST

- 11) Press again the ENTER & SEL buttons simultaneously:
 - a) the COMM led must lights up.Wait some seconds and the display shows:
 - b) "06" if the RS485 OUT test passes.
 - c) "E6" if the RS485 OUT test fails.

FUNCTIONAL TEST

- 12) Restore or disconnect the RS485 test circuitry.
- 13) Connect the audio generator set it to 1KHz 0dBu (775mV_{RMS})sinusoidal signal, level set to zero.
- 14) Connect the oscilloscope probe 1 clip to H- and tip to H+, probe 2 clip to L- and tip

to L+, initially set it to 10V/div. 200μS/div. and move the vertical scale from 5 to 20V/div. when required.

13) Press again the ENTER & SEL buttons simultaneously:

- a) the COMM led must switch off and after some seconds the SIGNAL/CLIP RED led must lights up.
- b) The display shows "07".

Verify the POWER OUTPUTS:

- c) the amplifier LOW & HIGH power outputs must be symmetrical referring to GND, without any detectable distortion and oscillation.

CH1 LOW AMPLIFIER TEST

15) Verify that the LOW amplifier output signal has an amplitude of 66Vpp.

16) Turn down the generator, connect the 8ohm load resistor and increase the input signal until the scope screen shows 48Vpp for PEGASUS 212 or 64Vpp for POSEIDON 212 without any detectable distortion.

17) Turn down the generator, then disconnect the 8ohm load resistor and set up the signal to 0dBu.

18) Switch alternatively the generator frequency from 100Hz, 1KHz and to 10KHz: no level changes referring to 1KHz level must be detectable.

CH2 HIGH AMPLIFIER TEST

19) Verify that the HIGH amplifier output signal has an amplitude of 32Vpp.

20) Turn down the generator, connect the 8ohm load resistor and increase the input signal until the scope screen shows the same level without any detectable distortion.

21) Turn down the generator, then disconnect the 8ohm load resistor and set up the signal to 0dBu.

22) Switch alternatively the generator frequency from 100Hz, 1KHz and to 10KHz: no level changes referring to 1KHz level must be detectable.

SIGNAL/NOISE RATIO TEST

23) Disconnect all the cables from the module..

24) Press the ENTER & SEL buttons simultaneously:

- a) SIGNAL/CLIP GREEN led must lights up and the display shows "07".

Check the following points:

- b) Verify that the FAN is idle.

- c) Verify that the S/N ratio from 20Hz to 2KHz is below 100dB.

25) Switching OFF the unit.

BURN-IN TEST

- Connect to the amplifier INPUT a pink noise generator.
- Connect two 8ohm resistive loads to the amplifier outputs.
- Switch ON the module and select PRESET no. 01.
- Increase the pink noise level until the SIGNAL/COMP RED led lights up irregularly.
- Run the burn-in test at least 3 hours verifying now and then the right operation.

ACOUSTIC TEST

- After burn-in test the amplifier module must still work properly, verify with an acoustic test in the speaker box if all works properly and none noise must be still audible.

PEGASUS 118 POWER AMPLIFIER MODULE

Initially you have to check the following:

- J3 on INTERFACE BOARD is shorted.
- All JMPx on AMPLIFIER BOARD are opened.

CONTROL PANEL TEST

1) Press and hold the ENTER & SEL buttons simultaneously and switch on the unit, now the unit is start in "Testing Mode". Check the following points:

- a) All the LEDs must light up in sequence.
- b) The number "8.8." appears on the display.

2) Press again the ENTER & SEL buttons simultaneously:

- a) HUM CANCEL led must light up.

Also check the following points:

- b) Press the UP button and verify that "1" appears on the display.
- c) Press the DOWN button and verify that "2" appears on the display.
- d) Press the ENTER button and verify that "3" appears on the display.
- e) Press the SEL button and verify that "4" appears on the display.

EEPROM TEST

3) Press again the ENTER & SEL buttons simultaneously:

- a) The NOISE GATE led must light up.

After 50 seconds the display shows:

- b) "01" if the EEPROM test passes.

- c) "E1" if the EEPROM test fails.

RAM TEST

4) Press again the ENTER & SEL buttons simultaneously:

- a) The ANTI-FEEDBACK led must light up.

Wait until display shows:

- b) "02" if the RAM test passes.

- c) "E2" if the RAM test fails.

FAN TEST

5) Press again the ENTER & SEL buttons simultaneously:

- a) the MULTICOMP led must light up.

Immediately:

- b) The FAN starts and runs to the maximum speed.

NTC TEST

6) Press again the ENTER & SEL buttons simultaneously:

- a) The PRESET led must light up.

- b) The FAN stops.

The display shows:

- c) "03" if the NTC test passes.

- d) "E3" if the NTC test fails.

RS232 SERIAL PORT TEST

7) Insert a RS232 loopback plug in the RS232 port of the power amplifier.

8) Press again the ENTER & SEL buttons simultaneously:

- a) The PLUGINS led must be light up.

The display shows:

- b) "04" if the RS232 test passes.

- c) "E4" if the RS232 test fails.

RS485 IN SERIAL PORT TEST

9) Remove the RS232 loopback plug and choose one of the following:

- a) To pass the test without checking IC1 and IC2 on INPUTS & CONTROLS BOARD extract the flat cable from CN4 on DX BOARD and insert the RS232-485 loopback micromatch header.
- b) Connect the RSC SERIAL CONVERTER between RS232 port and RS485 IN & OUT ports using the Y cable specified before.

10) Press again the ENTER & SEL buttons simultaneously:

- a) The VOLUME led must be light up.

The display shows:

- b) "05" if the RS485 IN test passes.

- c) "E5" if the RS485 IN test fails.

RS485 OUT SERIAL PORT TEST

11) Press again the ENTER & SEL buttons simultaneously:

- a) the COMM led must lights up.

Wait some seconds and the display shows:

- b) "06" if the RS485 OUT test passes.

- c) "E6" if the RS485 OUT test fails.

FUNCTIONAL TEST

12) Restore or disconnect the RS485 test circuitry.

13) Connect the audio generator set it to 1KHz 0dBu (775mV_{RMS})sinusoidal signal, level set to zero.

14) Connect the oscilloscope probe 1 clip to L- and tip to L+, initially set it to 10V/div. 200μS/div. and move the vertical scale from 5 to 20V/div. when required.

13) Press again the ENTER & SEL buttons simultaneously:

- a) the COMM led must switch off and after some seconds the SIGNAL/CLIP RED led must lights up.

- b) The display shows "07".

Verify the POWER OUTPUTS:

- c) the amplifier LOW power output must be symmetrical, without any detectable distortion and oscillation.

CH1-2 BRIDGE LOW AMPLIFIER TEST

15) Verify that the LOW amplifier output signal has an amplitude of 130Vpp.

16) Turn down the generator, connect the 16ohm load resistor (series of two 8ohm loads) and increase the input signal until the scope screen shows 130Vpp without any detectable distortion.

17) Turn down the generator, then disconnect the 16ohm load resistor and set up the signal to 0dB.

18) Switch alternatively the generator frequency from 1KHz to 100Hz: no level changes referring to 1KHz level must be detectable.

SIGNAL/NOISE RATIO TEST

19) Disconnect all the cables from the module..

20) Press the ENTER & SEL buttons simultaneously:

- a) SIGNAL/CLIP GREEN led must lights up and the display shows "07".

Check the following points:

- b) Verify that the FAN is idle.

- c) Verify that the S/N ratio from 20Hz to 2KHz is below 100dB.

21) Switching OFF the unit.

BURN-IN TEST

- Connect to the amplifier INPUT a pink noise generator.

- Connect two 8ohm resistive loads to the amplifier outputs.

- Switch ON the module and select PRESET no. 01.

- Increase the pink noise level until the SIGNAL/COMP RED led lights up irregularly.

- Run the burn-in test at least 3 hours verifying now and then the right operation.

ACOUSTIC TEST

- After burn-in test the amplifier module must still work properly, verify with an acoustic test in the speaker box if all works properly and none noise must be still audible.

POSEIDON 218 POWER AMPLIFIER MODULE

Initially you have to check the following:

- J3 on INTERFACE BOARD is shorted.

- All JMPx on AMPLIFIER BOARD are opened.

CONTROL PANEL TEST

1) Press and hold the ENTER & SEL buttons simultaneously and switch on the unit, now the unit is start in "Testing Mode". Check the following points:

- a) All the LEDs must light up in sequence.
- b) The number "8.8." appears on the display.

2) Press again the ENTER & SEL buttons simultaneously:

- a) HUM CANCEL led must light up.

Also check the following points:

- b) Press the UP button and verify that "1" appears on the display.
- c) Press the DOWN button and verify that "2" appears on the display.
- d) Press the ENTER button and verify that "3" appears on the display.
- e) Press the SEL button and verify that "4" appears on the display.

EEPROM TEST

3) Press again the ENTER & SEL buttons simultaneously:

- a) The NOISE GATE led must light up.

After 50 seconds the display shows:

- b) "01" if the EEPROM test passes.

- c) "E1" if the EEPROM test fails.

RAM TEST

4) Press again the ENTER & SEL buttons simultaneously:

- a) The ANTI-FEEDBACK led must light up.

Wait until display shows:

- b) "02" if the RAM test passes.

- c) "E2" if the RAM test fails.

FAN TEST

5) Press again the ENTER & SEL buttons simultaneously:

- a) the MULTICOMP led must light up.

Immediately:

- b) The FAN starts and runs to the maximum speed.

NTC TEST

6) Press again the ENTER & SEL buttons simultaneously:

- a) The PRESET led must light up.
- b) The FAN stops.

The display shows:

- c) "03" if the NTC test passes.

- d) "E3" if the NTC test fails.

RS232 SERIAL PORT TEST

7) Insert a RS232 loopback plug in the RS232 port of the power amplifier.

8) Press again the ENTER & SEL buttons simultaneously:

- a) The PLUGINS led must be light up.

The display shows:

- b) "04" if the RS232 test passes.

- c) "E4" if the RS232 test fails.

RS485 IN SERIAL PORT TEST

9) Remove the RS232 loopback plug and choose one of the following:

- a) To pass the test without checking IC1 and IC2 on INPUTS & CONTROLS BOARD extract the flat cable from CN4 on DX BOARD and insert the RS232-485 loopback micromatch header.
- b) Connect the RSC SERIAL CONVERTER between RS232 port and RS485 IN & OUT ports using the Y cable specified before.

10) Press again the ENTER & SEL buttons simultaneously:

- a) The VOLUME led must be light up.

The display shows:

- b) "05" if the RS485 IN test passes.

- c) "E5" if the RS485 IN test fails.

RS485 OUT SERIAL PORT TEST

11) Press again the ENTER & SEL buttons simultaneously:

- a) the COMM led must lights up.

Wait some seconds and the display shows:

- b) "06" if the RS485 OUT test passes.
- c) "E6" if the RS485 OUT test fails.

FUNCTIONAL TEST

- 12) Restore or disconnect the RS485 test circuitry.
- 13) Connect the audio generator set it to 1KHz 0dBu (775mV_{RMS})sinusoidal signal, level set to zero.
- 14) Connect the oscilloscope probe 1 clip to L- and tip to L+, probe 2 clip to L- and tip to L+, initially set it to 10V/div. 200µS/div. and move the vertical scale from 5 to 20V/div. when required.
- 13) Press again the ENTER & SEL buttons simultaneously:
 - a) the COMM led must switch off and after some seconds the SIGNAL/CLIP RED led must lights up.
 - b) The display shows "07".Verify the POWER OUTPUTS:
 - c) the amplifier LOW & HIGH power outputs must be symmetrical referring to GND, without any detectable distortion and oscillation.

CH1 LOW AMPLIFIER TEST

- 15) Verify that the LOW amplifier output signal has an amplitude of 66Vpp.
- 16) Turn down the generator, connect the 8ohm load resistor and increase the input signal until the scope screen shows 66Vpp without any detectable distortion.
- 17) Turn down the generator, then disconnect the 8ohm load resistor and set up the signal to 0dBu.
- 18) Switch alternatively the generator frequency from 1KHz to 100Hz: no level changes referring to 1KHz level must be detectable.

CH2 LOW AMPLIFIER TEST

- 19) Verify that the HIGH amplifier output signal has an amplitude of 66Vpp.
- 20) Turn down the generator, connect the 8ohm load resistor and increase the input signal until the scope screen shows 66Vpp without any detectable distortion.
- 21) Turn down the generator, then disconnect the 8ohm load resistor and set up the signal to 0dBu.
- 22) Switch alternatively the generator frequency from 1KHz to 100Hz: no level changes referring to 1KHz level must be detectable.
- 23) Check if CH1 & CH2 are out of phase.

SIGNAL/NOISE RATIO TEST

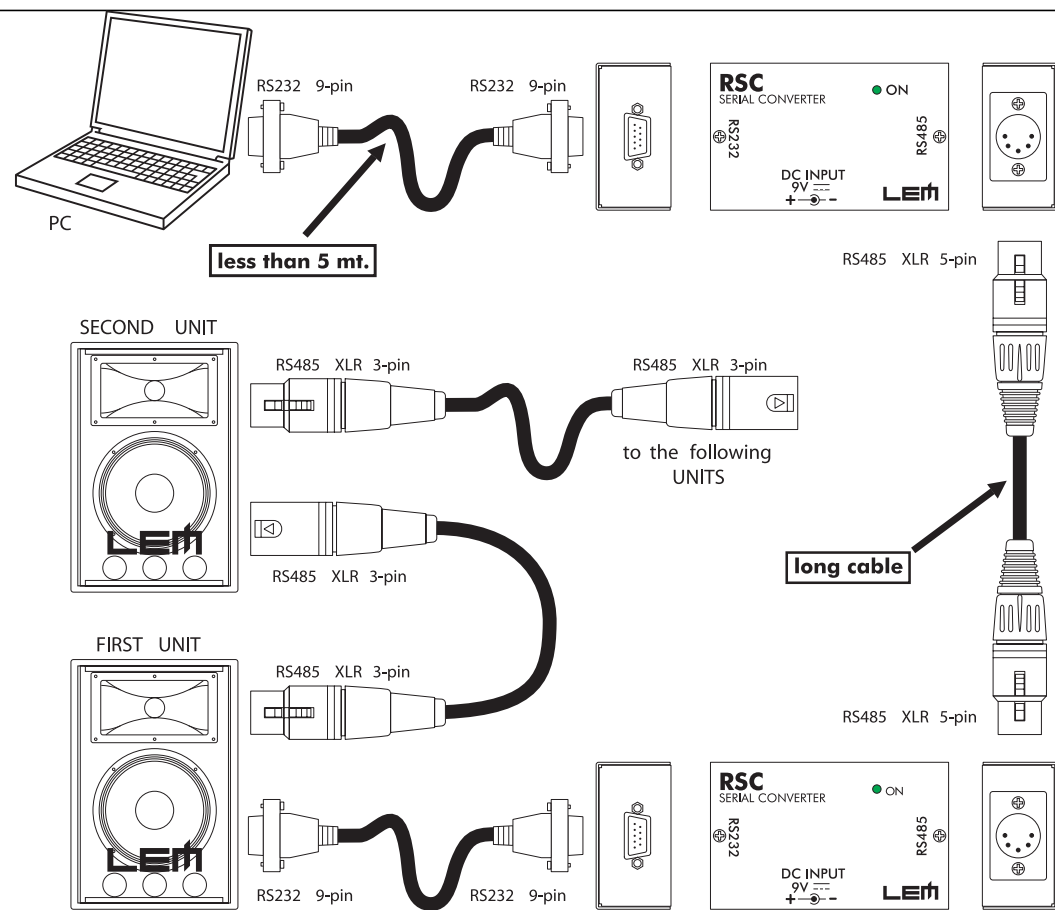
- 24) Disconnect all the cables from the module..
- 25) Press the ENTER & SEL buttons simultaneously:
 - a) SIGNAL/CLIP GREEN led must lights up and the display shows "07".Check the following points:
 - b) Verify that the FAN is idle.
 - c) Verify that the S/N ratio from 20Hz to 2KHz is below 100dB.
- 26) Switching OFF the unit.

BURN-IN TEST

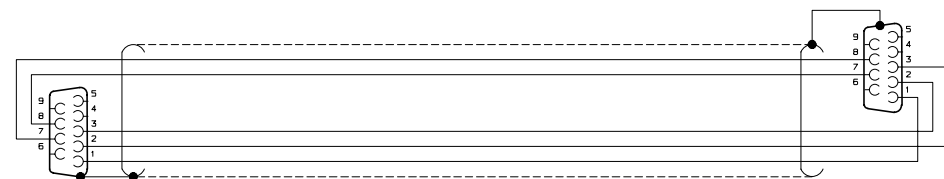
- Connect to the amplifier INPUT a pink noise generator.
- Connect two 8ohm resistive loads to the amplifier outputs.
- Switch ON the module and select PRESET no. 01.
- Increase the pink noise level until the SIGNAL/COMP RED led lights up irregularly.
- Run the burn-in test at least 3 hours verifing now and then the right operation.

ACOUSTIC TEST

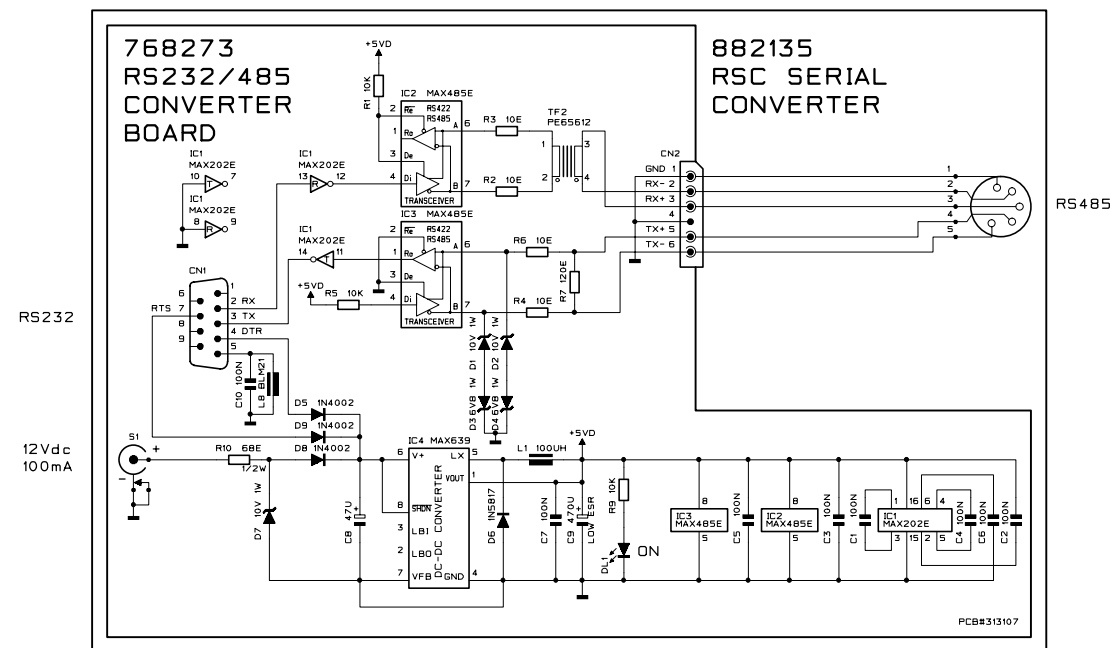
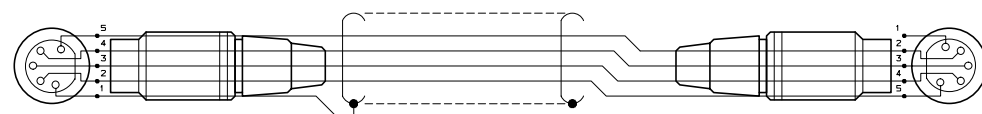
- After burn-in test the amplifier module must still work properly, verify with an acoustic test in the speaker box if all works properly and none noise must be still audible.



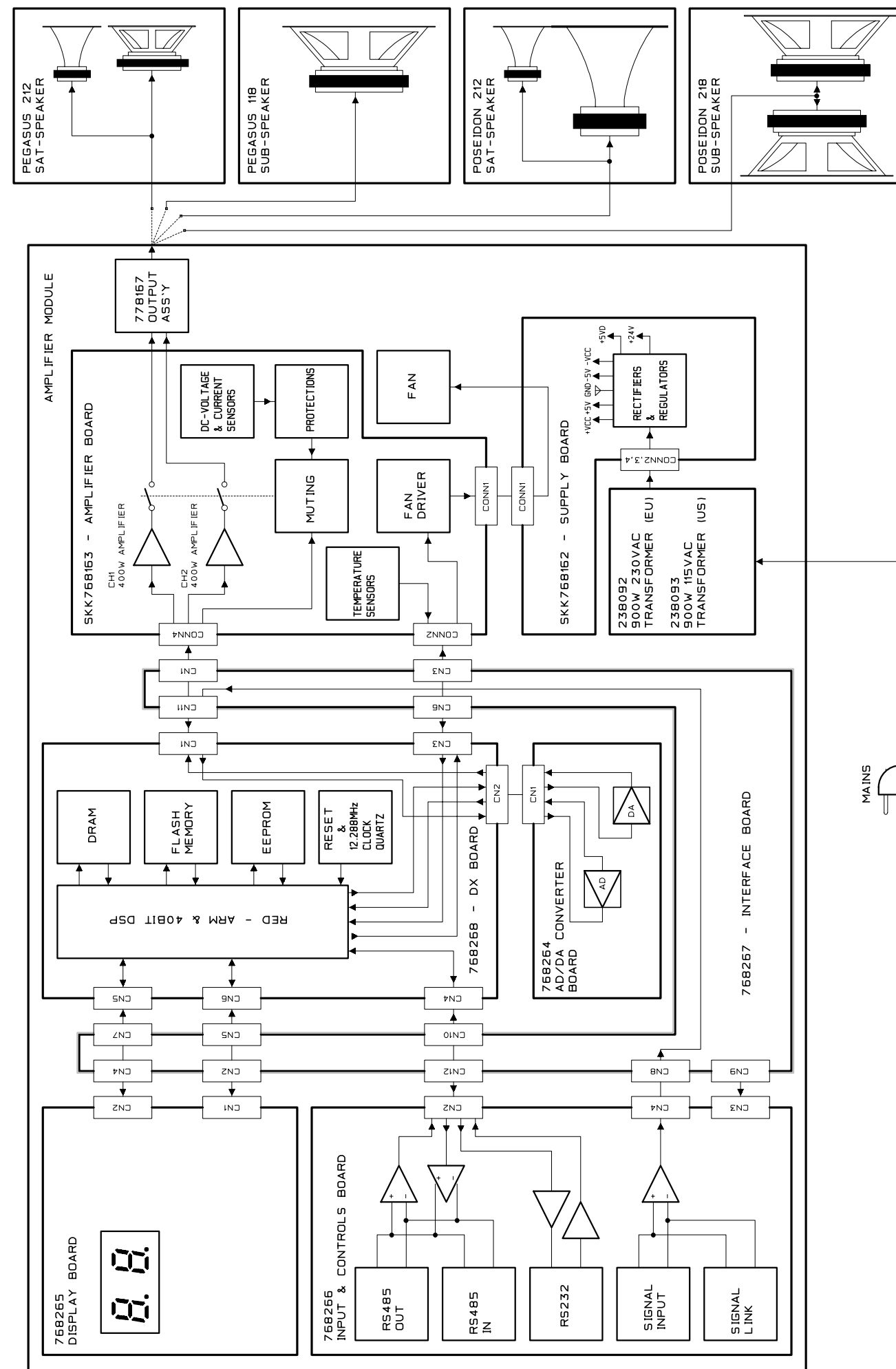
887078 - 1mt RS232 TX-RX Serial Cable



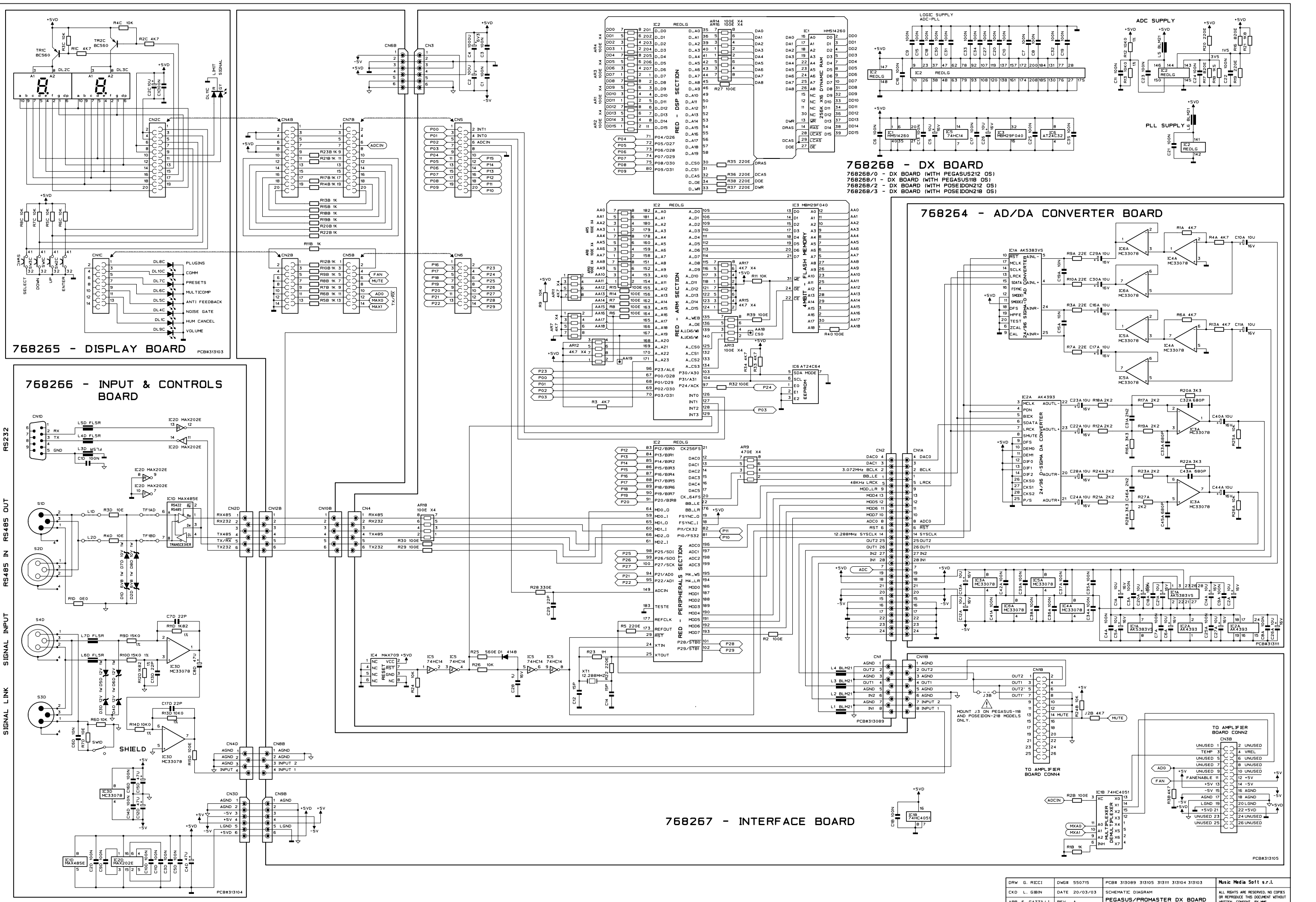
887102 - 33mt RS485 Serial Cable

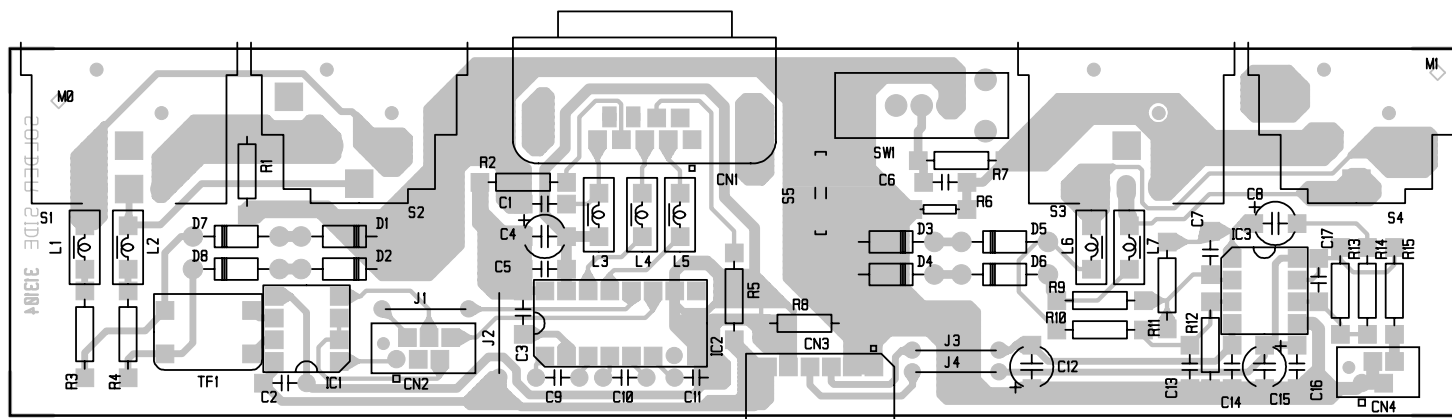


DRW: G. RICCI	DWG#: 550717	PCB#: 313107	GENERALMUSIC S.p.A. ITALY
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APP: T. TOSI	REV: C	RSC SERIAL CONVERTER	

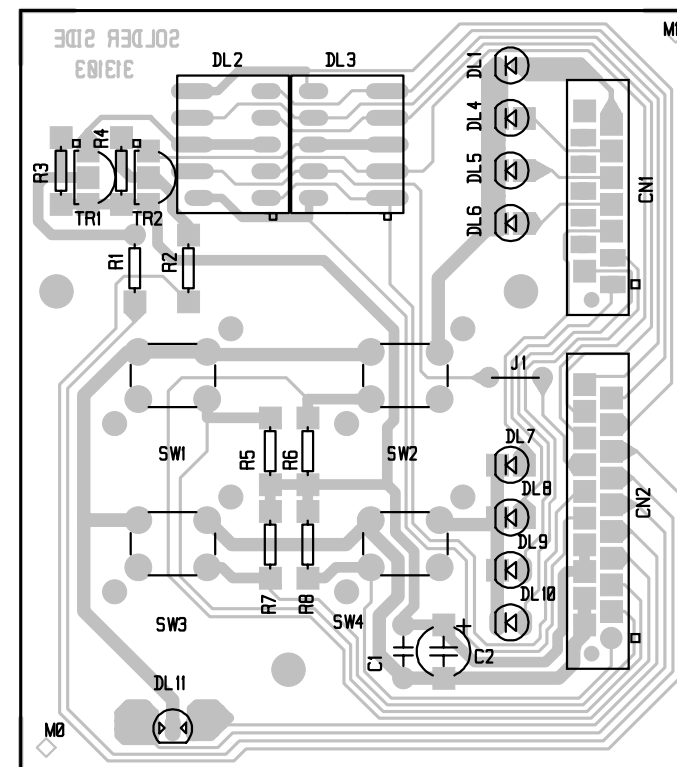


DRW: G. BOCCATO	DWG#: 550718	PCB#: 550718	GENERALMUSIC S.p.A. ITALY
CKD: G. RICCI	DATE: 08-04-2003	SCHEMATIC DIAGRAM	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP: R. FALCONI	REV: A	BLOCK DIAGRAM	

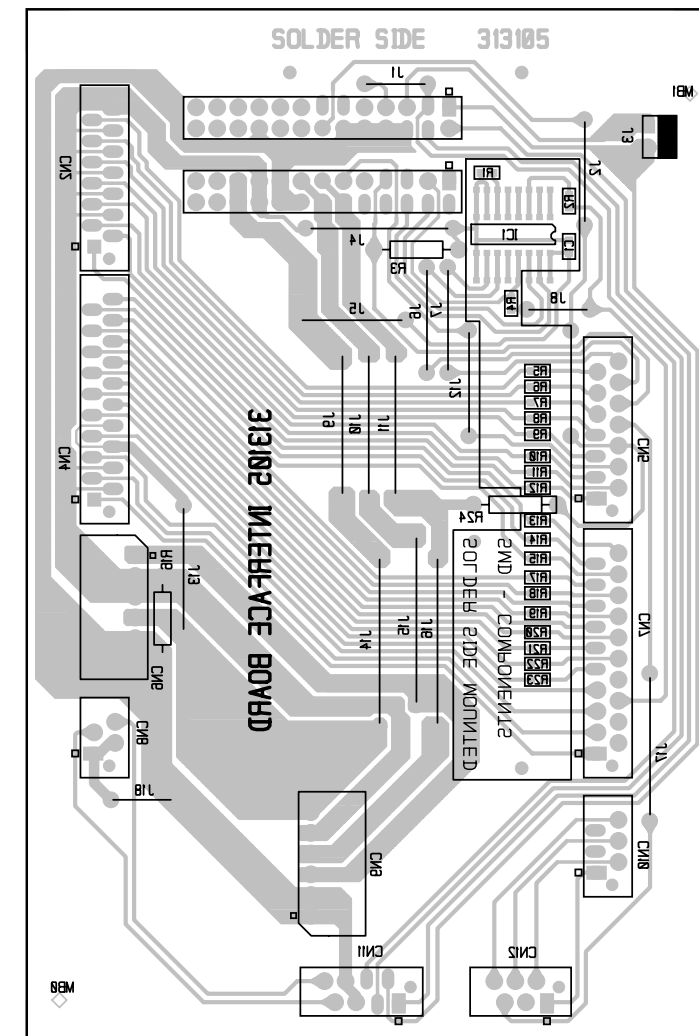




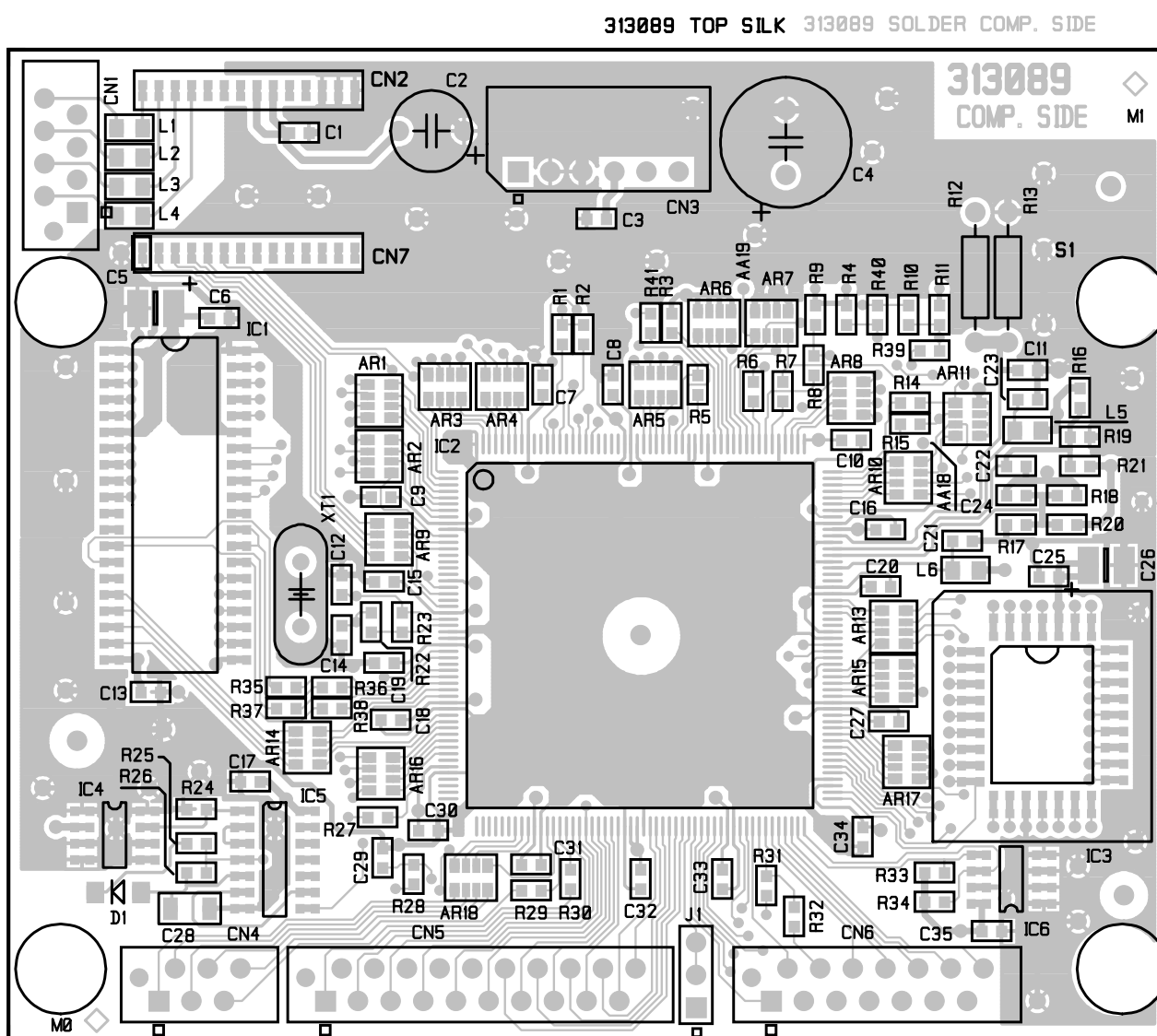
Pcb# 313104



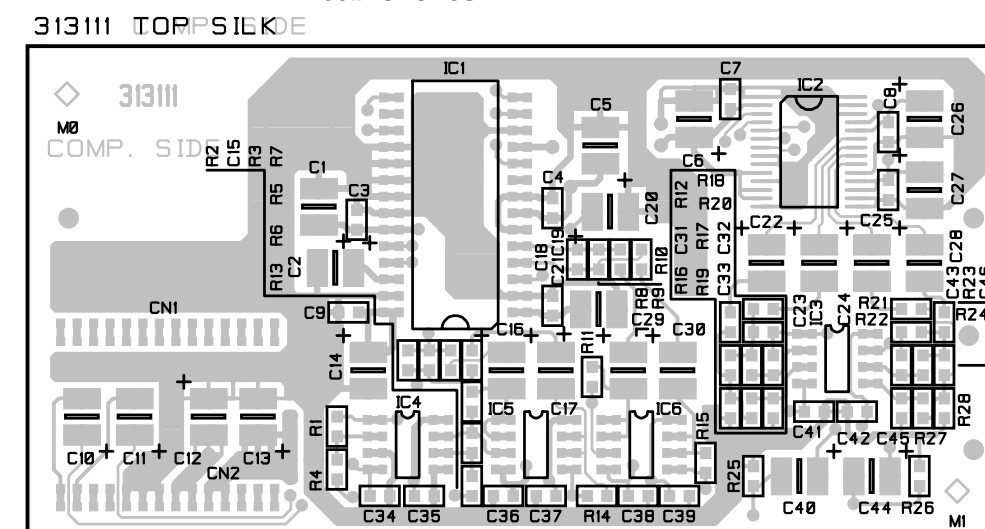
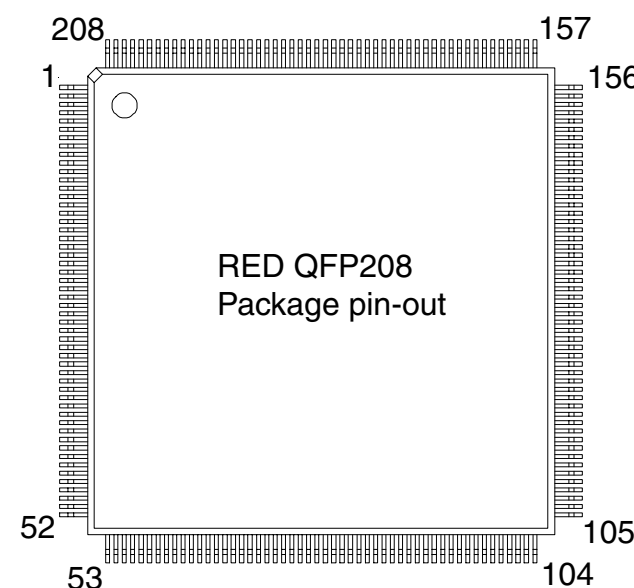
Pcb# 313103



Pcb# 313105



Pcb# 313089



Pcb# 313111

DRW: G.DINI	DWG: 313089...	SCHEMATIC DIAGRAM Pegasus/Poseidon	GENERALMUSIC S.p.A. Italy
CKD: G.RICCI	DATE: 03-04-03	DX Board, Input & Controls, Display, Interface, AD/DA Converter Pcb Layout	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP: D.ROSSETTI	REV: A		

SparePartList	
Legend	
(EU)	= EuropeVersion (230Vac)
(US)	= United StatesVersion (115Vac)
Code	Description
Accessories	
887089	2mtPowercon Mains Cable (EU) max 16A (4 unitsat 230Vac)
887090	2mtPowercon Mains Cable (US) max 16A (2 unitsat 115Vac)
277384	Owner’sManual (Pegasus)
277386	Owner’sManual (Poseidon)

OptionalAccessories	
950978	SC31 Aluminium Telescopic Stand (for Pegasus SUB-SAT)
950860	SC20 MetallicTelescopic Stand (for Pegasus standalone SAT)
950199	SC30 Aluminium Telescopic Stand (for Pegasus standalone SAT)
951136	2mt Power Supply Link Cable, max 16A (4 units at 230Vac or 2 units at 115Vac).
951138	Cargo Restraint Stud & Ring (2 pieces) (type AC57xx Valentini) (Poseidon212Fly)
951361	RSC Serial Converter 230Vac (EU)
951362	RSC Serial Converter 115Vac (US)
SKK888012	* 230Vac/12Vdc 300mA Adapter (EU)
SKK888013	* 115Vac/12Vdc 300mA Adapter (US)
970953	* Carrying Bag
277391	* RS232/485 Instruction Sheet
887102	* 33mt RS485 Male Cable
887078	* 1mt RS232 RX-TX Female-Female Cable
882135	* RSCSerial Converter
778175	** 5polesXLR Cables Assembly
141190	*** Male XLR 5poles Socket
768273	** RS232/485 Converter Board (Pcb #313107)
340856	*** 6,4mm Led Spacer
340771	*** Led Spacer H=16,3mm
231000	*** BLM21A102STP Smd EMI Coil For Signal
230597	*** EL08D101E 100uH 800mA Coil Inductor
160178	*** Copper Jumper
140911	*** 9Contacts Hor Male Connector Din41652
140908	*** 6Contacts Vert Male Small Connector
140211	*** DcHorizontal Male Socket
103065	*** MAX639CSA 5V ADJ DC-DC Converter
103045	*** MAX485E RS485/422 Transceiver
100734	*** MAX202ERS232 Drivers/Receiver
080706	*** 3mm 60deg Diffused Green Led
080272	*** 12V 1W 5% Zener Diode
080261	*** 10V 1W 5% Zener Diode
080243	*** 6V8 1W 5% Zener Diode
080170	*** BYV27 2A 100V Fast Recovery Diode
080156	*** 1N4002 1A 100V Rectifier Diode
055048	*** 10K 1/16w 5% Smd Resistor 0603
055025	*** 120E 1/16w 5% Smd Resistor 0603
055012	*** 10E 1/16w 5% Smd Resistor 0603
040232	*** 68E 1/2W 5% Resistor
030950	*** 470u 25V 20% Low Esr Vert Electrolytic Capacitor
030403	*** 47u 25V 20% Vert Electrolytic Capacitor
011260	*** 100n 16V 10% Cer. Cap. Smd CL2 X7R 0603
667761	** Top Chassis
667760	** Bottom Chassis
340754	** Rubber Foot
120581	** M3Black Self-Locking Nut
120286	** B2.9x4.5tcBlack Screw
120113	** M3x4tcBlack Screw
120025	** M3x10tspBlack Screw

Pegasus212	
	Cabinet Assembly
347411	Pegasus FiberGlass Horn
229046	2" Compression Driver
229050	2" 8ohm Diaphragm for 229046 Driver
227078	12" Woofer
210281	Horn Gasket
210272	Speaker Filler (400gr/m² 30x50x4cm)
210217	Black Sealer (specify mt)
120483	5mm Black Shakeproof Washer
120461	5.3x10x1 Black Washer
120281	WL3x15tt Black Screw
120154	M4x16tt Black Screw
120141	M8x30tsp Black Screw
120124	M5x30tc Black Screw
778169	Speakers Cables Assembly
727640	Speaker Grid
	Wooden Cabinet Assembly
717087	Wooden Cabinet Assembly (Pegasus212)
657287	* D.est=63 L=150 Vent Tube
430093	* Wooden Cabinet (Pegasus212)

340969	*	37x15mm Rubber Foot
210054	*	1x5mm Adhesive Spik (specify mt)
177783	*	Black Metallic Flange
177782	*	Black Metallic Handle
120666	*	M8 4-tips Lock Nut
120664	*	M6 4-tips Lock Nut
120662	*	M5 4-tips Lock Nut
120661	*	M4 4-tips Lock Nut
120417	*	WL4X35tt Black Screw
120341	*	WL4x20tt Black Screw
120111	*	M6x25tsp Black Screw

Pegasus118	
	Cabinet Assembly
227079	18" Sub-Woofer Speaker
210217	Black Sealer (specify mt)
120483	5mm Black Shakeproof Washer
120461	5.3x10x1Black Washer
120281	WL3x15ttBlack Screw
120154	M4x16ttBlack Screw
120124	M5x30tcBlack Screw
778170	SpeakerCablesAssembly
727641	SpeakerGrid
	Wooden Cabinet Assembly
717088	WoodenCabinetAssembly(Pegasus118)
430094	* Wooden Cabinet
340969	* 37x15mm Rubber Foot
340908	* AntiSlideRubber
210282	* D.est=136 Sp=3 L=200 Vent Tube
210054	* 1x5mmAdhesiveSpik (specifymt)
190236	* d=50/60 w=24mm Caster
177783	* BlackMetallicFlange
177782	* BlackMetallicHandle
120664	* M6 4-tipsLockNut
120662	* M5 4-tipsLockNut
120661	* M4 4-tipsLockNut
120483	* 5mm Black Shakeproof Washer
120461	* 5.3x10x1Black Washer
120417	* WL4X35ttBlack Screw
120341	* WL4x20ttBlack Screw
120124	* M5x30tcBlack Screw
120111	* M6x25tspBlack Screw

Poseidon212	
	Cabinet Assembly
727644	MID-Range Horn Assembly
347414	* MID FiberGlass Phase Advancer
347412	* MID FiberGlass Horn
120463	* 4.3x12.5x1 Black Washer
120119	* M4x16tc Black Screw
347413	HIGH-Range FiberGlass Horn
229046	2" Compression Driver
229050	2" 8ohm Diaphragm for 229046 Driver
227080	12" MID-Range Speaker
210284	40x25 h=30mm Polyeth. Adhesive Spacer
210217	Black Sealer (specify mt)
210216	Adhesive Rubber Foam 20x5mm (Specify mt)
180587	Model Data & Code Adhesive Label
120483	5mm Black Shakeproof Washer
120461	5.3x10x1 Black Washer
120281	WL3x15tt Black Screw
120154	M4x16tt Black Screw
120123	M5x25tc Black Screw
778169	Speakers Cables Assembly
727642	Speaker Grid Assembly
667756	* Speaker Grid
210283	* 565x937x15mm Acoustic Foam

	Wooden Cabinet Assembly	
717089	Wooden Cabinet Assembly(Poseidon212)	
430095	*	Wooden Cabinet
340969	*	37x15mm Rubber Foot
177782	*	Black Metallic Handle
120662	*	M5 4-tips Lock Nut
120661	*	M4 4-tips Lock Nut
120417	*	WL4X35tt Black Screw
120341	*	WL4x20tt Black Screw

Poseidon218	
	Cabinet Assembly
227081	18" Woofer Speaker
210217	Black Sealer (specify mt)
210215	Adhesive Rubber Foam 10x1.9mm (Specify mt)

180587	Model Data & Code Adhesive Label
120483	5mm Black Shakeproof Washer
120461	5.3x10x1 Black Washer
120360	WL5x40ts Black Screw
120154	M4x16tt Black Screw
120124	M5x30tc Black Screw
778171	Speakers Cables Assembly
	Wooden Cabinet Assembly

717090	Wooden Cabinet Assembly (Poseidon218)
430096	* Wooden Cabinet
340969	* 37x15mm Rubber Foot
190220	* d=100 w=30mm Caster with Brake
190214	* d=100 w=30mm Caster
177782	* Black Metallic Handle
120974	* 5x674mm Bar with M5 Threaded Terminals
120666	* M8 4-tips Lock Nut
120662	* M5 4-tips Lock Nut
120661	* M4 4-tips Lock Nut
120599	* M5 Self-Locking Nut
120524	* 8mm Black Spring Washer
120471	* 8.4x14x1.6 Washer
120470	* 5.3x20x1.5 Black Washer
120341	* WL4x20tt Black Screw
120155	* M8x25te Black Screw
120124	* M5x30tc Black Screw

Poseidon 212 FLY	
	Cabinet Assembly
727644	MID-Range Horn Assembly
347414	* MID FiberGlass Phase Advancer
347412	* MID FiberGlass Horn
120463	* 4.3x12.5x1 Black Washer
120119	* M4x16tc Black Screw
347413	HIGH-Range FiberGlass Horn
229046	2" Compression Driver
229050	2" 8ohm Diaphragm for 229046 Driver
227080	12" MID-Range Speaker
210284	40x25 h=30mm Polyeth. Adhesive Spacer
210217	Black Sealer (specify mt)
210216	Adhesive Rubber Foam 20x5mm (Specify mt)
180587	Model Data & Code Adhesive Label
177792	Cargo Restraint Track (type AC57xx Valentini)
120483	5mm Black Shakeproof Washer
120461	5.3x10x1 Black Washer
120281	WL3x15tt Black Screw
120154	M4x16tt Black Screw
120153	M6x30tsp Black Screw
120123	M5x25tc Black Screw
727642	Speaker Grid Assembly
667756	* Speaker Grid
210283	* 565x937x15mm Acoustic Foam
778169	Speakers Cables Assembly
	Wooden Cabinet Assembly
717092	Wooden Cabinet Assembly (Poseidon212Fly)
430098	* Wooden Cabinet (Fly)
177794	* Terminal Chassis
177793	* Connecting Rod
177782	* Black Metallic Handle
120662	* M5 4-tips Lock Nut
120661	* M4 4-tips Lock Nut
120341	* WL4x20tt Black Screw
120112	* M6x35tsp Black Screw

Amplifier Module (common to all models)	
737133	Amplifier Module (Pegasus212) (EU)
737134	Amplifier Module (Pegasus212) (US)
737135	Amplifier Module (Pegasus118) (EU)
737136	Amplifier Module (Pegasus118) (US)
737139	Amplifier Module (Poseidon212) (EU)
737140	Amplifier Module (Poseidon212) (US)
737141	Amplifier Module (Poseidon218) (EU)
737142	Amplifier Module (Poseidon218) (US)
778168	* Wiring Connections
841301	** 6 Wires 17.5cm Crimp Terminal Cable
841300	** 6 Wires 7.5cm Crimp Terminal Cable
841206	** 4 Wires 20cm Flat Cable
841164	** 6 Wires 7.5cm Flat Cable
841022	** 8 Wires 7.5cm Flat Cable
840828	** 20 Wires 7.5cm Flat Cable
840803	** 6 Wires 12.5cm Flat Cable
840720	** 14 Wires 7.5cm Flat Cable
778167	* Internal Output Cables Assembly
768267	* Interface Board (Pcb #313105)

