



PowerModII

User Manual



COD: MAN-PW2-USER_MAN_-_12-EN-11
May 2002

Caution

PowerModII



CAUTION: To reduce the risk of electric shock, do not remove the cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

WARNING: To prevent fire or electric shock, do not expose this equipment to rain or moisture.

SAFEGUARDS: Electrical energy can perform many useful functions. This unit has been engineered and manufactured to assure your personal safety. Improper use can result in potential electrical shock or fire hazards. In order not to defeat the safeguards, observe the following instructions for its installation, use and servicing.

NOTES: This equipment has been tested and found to comply by Competent Body (Directive 89/336/EEC-EMC) pursuant to the product family standard for audio professional use:

EN 55103-1 and EN 55103-2 standard (with the limits for E1 and E2 electromagnetic environment); EN61000-3-2, EN 61000-3-3

This is a Class A product. In a domestic environment this product may cause radio interferences in which case the user may be required to take adequate measures.

This equipment has been tested and found to comply by Notified Body (Directive 73/23/EEC L.V) pursuant to the audio apparatus safety requirements: Standard EN 60065.

Warning Notices

Location

Install the amplifier in a ventilated enclosure (IP20 at least), where it will not be directly exposed to high temperature or humidity.

Do not install the amplifier in a location that is exposed to direct rays of the sun, or near to hot appliances or radiators. Excessive heat can adversely affect the operation and internal components. Installation of the module in a damp or dusty environment may result in malfunction or accident.

Precautions regarding installation

Placing and using the amplifier for long periods on heat-generation sources will affect performances. Avoid placing the amplifier on heat-generating sources. Install this amplifier as far as possible from tuners and TV sets. An amplifier installed in close proximity to such equipment may cause noise or degradation of the picture.

Safety rules

PowerModII



This device must be powered exclusively by earth connected mains sockets in electrical networks compliant to the IEC 364 or similar rules.

Is absolutely necessary to verify this fundamental requirement of safety and, in case of doubt, require an accurate check by a qualified personal.

The constructor cannot be considered responsible for eventual damages caused to persons, things or data for the missing of accurate earth link.

Provide the installed unit with bipolar switch to disconnect both mains connection with at least 3mm of distance of the switch contacts.

Before powering this device verify that the module is supplied with the correct voltage rating.

Verify that your mains connection is capable to satisfy the power ratings of the device.

Do not spill water or other liquids into or on the unit.

Do not use this unit if the electrical power cord is frayed or broken.

Do not remove the cover. Removing the cover will expose you to potentially dangerous voltage.

No naked flame sources such like lighted candles should be placed on the module.

Contact the authorized center for ordinary and extraordinary maintenance.

Input mains and output power connection wirings must not to be accessible to the user.

Specifications

PowerModII

GENERAL

Type 1or 2 channels linear amplifier for professional applications

POWER REQUIREMENTS

European, UK, Australian models AC 195V \pm 250V, 50/60 Hz.....1.5 A
 Other models..... AC 97V \pm 125V, 50/60 Hz.....2.7 A
 Weight 1.1 Kg
 External dimensions 220mm(W), 125mm(D), 50mm(H)
 Enviromental temperature..... 40°C

AUDIO SECTION

Slew Rate (8 Ω) 50V/ μ S
 S/N ratio >110 dB/A
 Distortion <0.05% (THD, DIM, SMPTE)
 Inputs Balanced to ground, three poles in line
 Impedance 10 K
 Gain 32 dB
 Output Unbalanced to ground
 Bandwidth 10 Hz - 50 KHz
 Damping factor 8 Ω : 100 Hz > 500
 1 KHz > 500
 10 KHz > 200

POWER SPECIFICATIONS section A (measured at 230V AC)

Power continuous (1KHz, 0.5% THD)	8 Ω = 220 W 4 Ω = 300 W
Power EIAJ (1KHz, 1% THD)	8 Ω = 250 W 4 Ω = 350 W

POWER SPECIFICATIONS section B (measured at 230V AC)

[Valid only for Bi-Amp Series]

Power continuous (1KHz, 0.1% THD)	8 Ω = 30 W 4 Ω = 55 W
Power EIAJ (1KHz, 1% THD)	8 Ω = 40 W 4 Ω = 65 W

FUNCTIONS

- Thermal protection (over-temperature power limiting, thermal shutdown)
- Short-circuit / overload output protection
- Soft Clip limiter (Ch1)
- Auxiliary output voltage (\pm 15V unregulated)
- Bypass outputs for external active/passive filters
- Temperature controlled 24 V Dc fan output
- DSP based / Analog processing plugin optional boards
- Bridgeable with other units

Connection description

PowerModII

- CN3: PIN1, POWER OUTPUT CHANNEL 1 POSITIVE
PIN2, POWER OUTPUT CHANNEL 1 NEGATIVE
- CN11: PIN1, SIGNAL GROUND CHANNEL1
PIN2, BALANCED INPUT + CHANNEL1 ($A_v = 32\text{dB}$)
PIN3, BALANCED INPUT – CHANNEL1 ($A_v = 32\text{dB}$)
PIN4, OUTPUT TO EXTERNAL VOLUME CONTROL CHANNEL1,
R Potentiometer = 1KOhm to 2.7Kohm (remove J1 to insert external potentiometer)
PIN5, INPUT FROM EXTERNAL VOLUME CONTROL CHANNEL1,
- CN14: PIN1, AUXILIARY SUPPLY OUTPUT GROUND
PIN2, MUTE CONTROL PIN, PULL DOWN TO GROUND TO MUTE BOTH
OUTPUTS
PIN3, +15VOLTS DC UNREGULATED AUXILIARY OUTPUT,
CURRENT SHALL NOT EXCEED 200 mA.
PIN4, -15VOLTS DC UNREGULATED AUXILIARY OUTPUT,
CURRENT SHALL NOT EXCEED -200 mA.
- CN12: PIN1, SIGNAL GROUND CHANNEL 2
PIN2, BALANCED INPUT + CHANNEL2 ($A_v = 32\text{dB}$)
PIN3, BALANCED INPUT – CHANNEL2 ($A_v = 32\text{dB}$)
PIN4, OUTPUT TO EXTERNAL VOLUME CONTROL CHANNEL2,
R Potentiometer = 1KOhm to 2.7Kohm (remove J2 to insert external potentiometer)
PIN5, INPUT FROM EXTERNAL VOLUME CONTROL CHANNEL2,
- CN7: PIN1, POWER OUTPUT CHANNEL 2 POSITIVE
PIN2, POWER OUTPUT CHANNEL 2 NEGATIVE
- CN1: PIN1, PIN2, MAINS INPUT FOR BOTH 115V AND 230 OPERATION,
SEE CN2 FOR VOLTAGE SELECTION.
- CN2: PIN1, PIN2 OPEN FOR 230 VAC OPERATION,
CONNECT PIN1 TO PIN2 FOR 115 VAC OPERATION.
DEFAULT SELECTION 230 VAC.

!WARNING!

**CHECK PROPER VOLTAGE SELECTION BEFORE OPERATE
CHECK PROPER CHASSIS EARTH CONNECTION BEFORE OPERATE**

Mating connectors

PowerModII

CN1,(2POLES 7.5mm):	Phoenix Contact	GMSTB 2,5/2-ST (Cod. Ph.C. 1766880) (Cod. Powersoft CN000153)
CN2,(2POLES 7.5mm):	Phoenix Contact	GMSTB 2,5/2-ST (Cod. Ph.C. 1766880) (Cod. Powersoft CN000153)
CN3,(2POLES 5.08mm):	Phoenix Contact	MSTB 2,5/2-ST-5,08 (Cod. Ph.C. 1757019) (Cod. Powersoft CN000149)
CN7,(2POLES 5.08mm):	Phoenix Contact	MSTB 2,5/2-ST-5,08 (Cod. Ph.C. 1757019) (Cod. Powersoft CN000149)
CN14,(4POLES 5.08mm):	Phoenix Contact	MSTB 2,5/4-ST-5,08 (Cod. Ph.C. 1757035) (Cod. Powersoft CN000151)
CN11,(5POLES 5.08mm):	Phoenix Contact	MSTB 2,5/5-ST-5,08 (Cod. Ph.C. 1757048) (Cod. Powersoft CN000152)
CN12,(5POLES 5.08mm):	Phoenix Contact	MSTB 2,5/5-ST-5,08 (Cod. Ph.C. 1757048) (Cod. Powersoft CN000152)

Thermal constrains

PowerModII



This device must be correctly heatsinked for correct and reliable operation:

Two operating modes are feasible,

- 1) fan cooled operation
- 2) external heatsink operation

- 1) Thermal behaviour with provided fan cooler is warranted by design up to 45°C environmental temperature with 6 dB power crest factor program operation, both channels driven on 4 ohms load.
- 2) Thermal behaviour with external heatsink is related to power operation level and load impedance.

For the above conditions (1), 150W of dissipated power is expected.

Considering that thermal protection is setted at 85°C on bottom aluminium plate, thermal resistance of the heatsink is derived from the following formula:

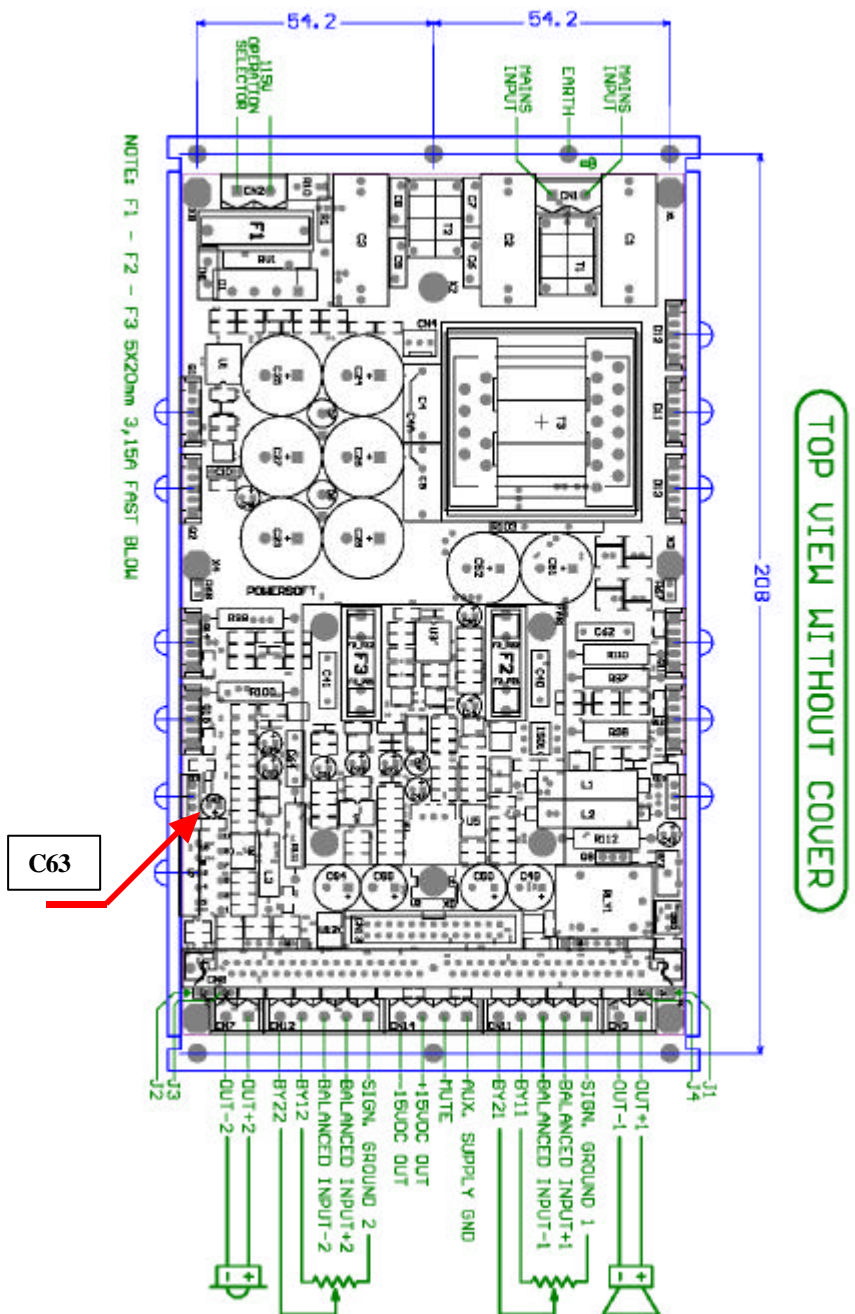
$$R_{th}(\text{heatsink}) = \frac{\text{Maximum operating temperature} - \text{Maximum ambient temperature}}{\text{Maximum dissipated power}}$$

For example, for a maximum ambient temperature of 45°C and a maximum operating temperature of the module of 80°C, for the 150W expected dissipated power is necessary an heatsink of 0.23°C/W

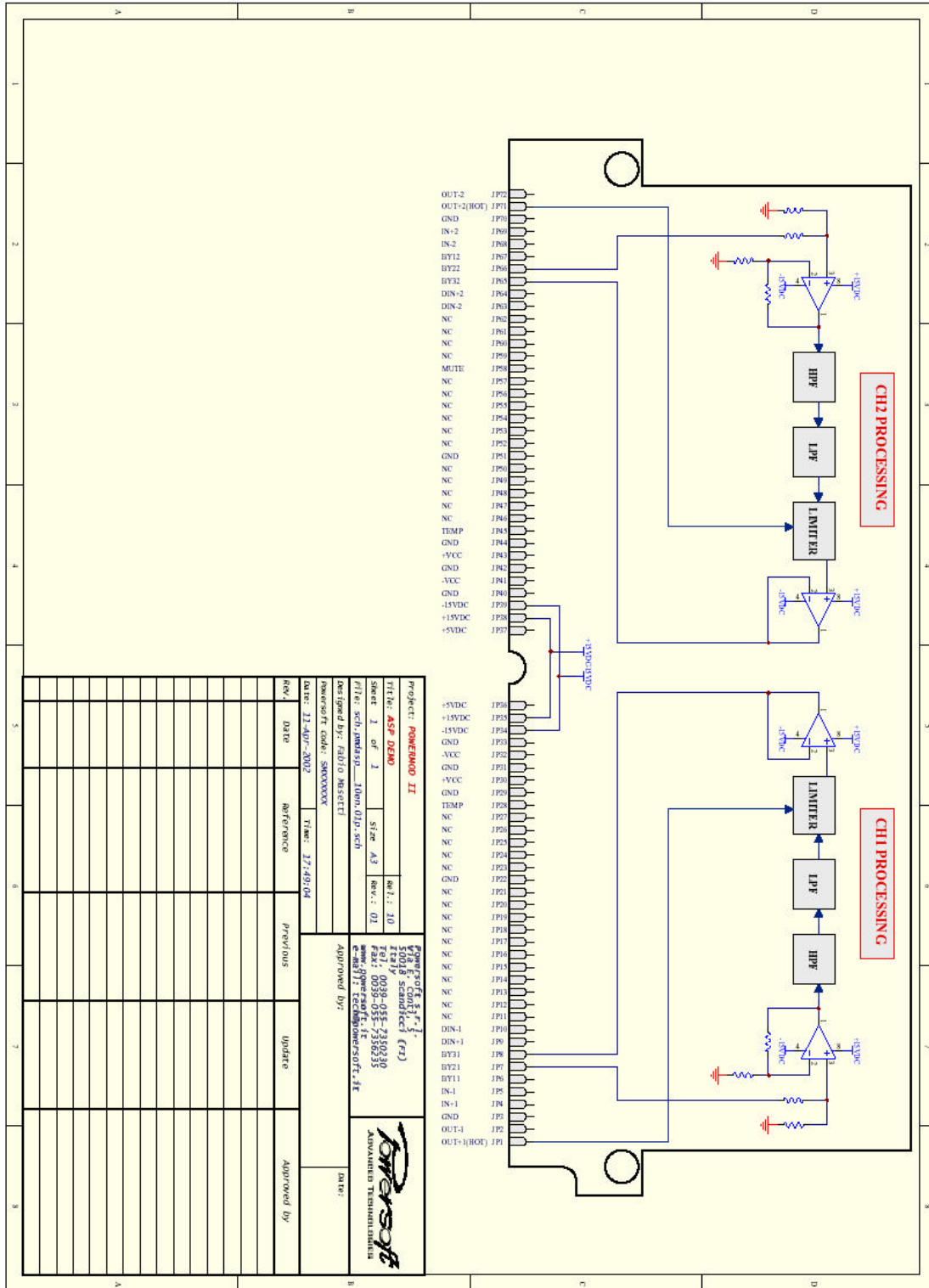
$$R_{th}(\text{heatsink}) = \frac{80^{\circ}\text{C} - 45^{\circ}\text{C}}{150\text{W}} = 0.23^{\circ}\text{C}/\text{W}$$

Proper heatsink planarity is strongly suggested to allow thermal transfer from the bottom plate to the heatsink, thermal compound is recommended also if not strongly necessary.

Connecting Layout PowerModII



Siml Board Analog Processing Diagram Example PowerModII



DGMDSPA installation PowerModII

DGMDSPA installation consist in removing J3 and J4 to allow signal path to flow to DGMDSPA board.
Insert the DGMDSPA board on the only one spare simm socket on the main board of PowerMod module.
Take care that side holders are correctly closed and the polarization is respected.
The module is ready to work.

Note:

PowerModII up to Serial Number 717 need to be modified adding an electrolytic capacitor of 47uF/25 Vdc in position C63 see figure CONNECTING LAYOUT.

Without modification CH2 will suffer a turn off transient on loudspeaker output.

This is not dangerous but is noisy.

From Serial Number 718 the problem is production updated.

