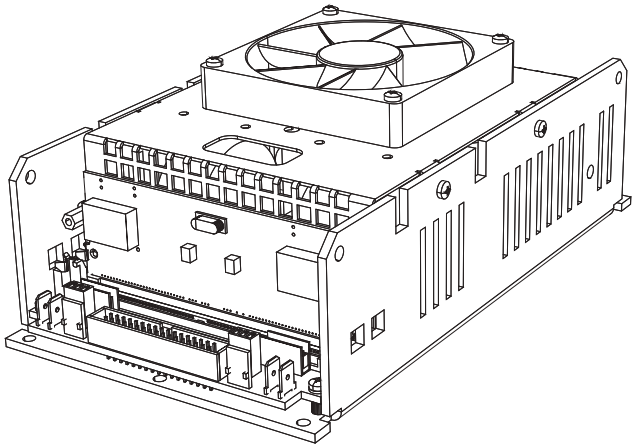
Digimod 3004 PFC2



USER GUIDE

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DO000XYZ.00 Rev. 00

Keep this manual
for future reference

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Data are subject to change without notice.
For latest update please refer to the
online version available on www.powersoft-audio.com.

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Important safety instructions

1

This amplifier module is intended to be installed inside other devices and must be checked in the final product.

THE TRIANGLE WITH THE LIGHTNING BOLT IS USED TO ALERT THE USER TO THE RISK OF ELECTRIC SHOCK.

THE TRIANGLE WITH THE EXCLAMATION POINT IS USED TO ALERT THE USER TO IMPORTANT OPERATING OR MAINTENANCE INSTRUCTIONS.

THE CE-MARK INDICATES THE COMPLIANCE OF THE PRODUCT TO ALL THE APPLICABLE EUROPEAN DIRECTIVES

SYMBOL FOR EARTH/GROUND CONNECTION.

SYMBOL FOR CONFORMITY WITH DIRECTIVE 2012/19/EC OF THE EUROPEAN PARLIAMENT ON WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE).

OPERATING TEMPERATURE 0°C TO +35°C.
DERATING ABOVE 35°C.

10% TO 90% HUMIDITY (NON CONDENSING).

DO NOT USE THE UNIT AT ALTITUDES ABOVE 2000 M.

DO NOT USE THE UNIT IN TROPICAL ENVIRONMENT.

WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT ATTEMPT TO OPEN ANY PART OF THE UNIT. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CONNECTION TO THE MAINS SHALL BE DONE ONLY BY A ELECTROTECHNICAL SKILLED PERSON ACCORDING THE NATIONAL REQUIREMENTS OF THE COUNTRIES WHERE THE UNIT IS SOLD.

VERIFY THAT YOUR MAINS CONNECTION IS CAPABLE OF SATISFYING THE POWER RATINGS OF THE DEVICE.

This unit has been engineered and manufactured to ensure your personal safety. But IMPROPER USE CAN RESULT IN POTENTIAL ELECTRICAL SHOCK OR FIRE HAZARD.

In order not to defeat the safeguards incorporated into this product, observe the following basic rules for its installation, use and service. Please read these "Important Safeguards" carefully before use.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this equipment near water.
6. Do not block any ventilation openings. Install in accordance with Powersoft's instructions.
7. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat.
8. Do not defeat the safety purpose of the polarized or grounding-type plug.
9. Only use attachments/accessories specified by Powersoft.
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
11. The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.

DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE, DRIPPING OR SPLASHING LIQUIDS. OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.

SPEAKER TERMINALS COULD BE HAZARDOUS LIVE IF SPEAKER BRIDGE MODE CONNECTION IS USED.

PROPER CONNECTIONS AND INSULATIONS TECHNIQUES MUST BE ADOPTED WHEN SPEAKER BRIDGE MODE CONNECTION IS USED.

THE MANUFACTURER CANNOT BE HELD RESPONSIBLE FOR DAMAGES CAUSED TO PERSONS, THINGS OR DATA DUE TO AN IMPROPER OR MISSING GROUND CONNECTION.

CONTACT THE AUTHORIZED SERVICE CENTER FOR ORDINARY AND EXTRAORDINARY MAINTENANCE.

IT IS ABSOLUTELY NECESSARY TO VERIFY THESE FUNDAMENTAL REQUIREMENTS OF SAFETY AND, IN CASE OF DOUBT, REQUIRE AN ACCURATE CHECK BY QUALIFIED PERSONNEL.

Importantes instructions de sécurité

Ce module d'amplification est destiné à être installé à l'intérieur d'autres dispositifs et doit donc être contrôlé sur le produit fini.

LE TRIANGLE AVEC LE SYMBOLE D'UN ÉCLAIR EST UTILISÉ POUR ALERTER L'UTILISATEUR DU RISQUE DE CHOC ÉLECTRIQUE.

LE TRIANGLE AVEC LE POINT D'EXCLAMATION EST UTILISÉ POUR ALERTER L'UTILISATEUR SUR DES INSTRUCTIONS DE FONCTIONNEMENT OU D'ENTRETIEN IMPORTANTES.

LE SIGNE CE INDIQUE LA CONFORMITÉ DU PRODUIT À TOUTES LES DIRECTIVES EUROPÉENNES APPLICABLES

SYMBOLE POUR LA CONNEXION TERRE / MASSE.

SYMBOLE INDIQUANT QUE L'ÉQUIPEMENT EST DESTINÉ À UN USAGE INTÉRIEUR UNIQUEMENT.

SYMBOLE DE CONFORMITÉ AVEC LA DIRECTIVE 2012/19/CE DU PARLEMENT EUROPÉEN RELATIVE AUX DÉCHETS D'ÉQUIPEMENTS ÉLECTRIQUES ET ÉLECTRONIQUES (DEEE).

DE 0°C À +35°C

DÉCLASSEMENT AU DESSUS DE 35°C.

DE 10 % À 85 % D'HUMIDITÉ (SANS CONDENSATION).

NE PAS UTILISER PAS L'APPAREIL À DES ALTITUDES AU-DESSUS DE 2000 M.

NE PAS UTILISER L'APPAREIL DANS UN ENVIRONNEMENT TROPICAL.

AVERTISSEMENT : POUR RÉDUIRE LE RISQUE DE CHOC ÉLECTRIQUE, NE PAS ESSAYER D'OUVRIR TOUTE PARTIE DE L'APPAREIL. AUCUNE PIÈCE RÉPARABLE PAR L'UTILISATEUR A L'INTÉRIEUR. RENVOYER L'ENTRETIEN AU PERSONNEL DE SERVICE QUALIFIÉ.

LE BRANCHEMENT AU SECTEUR NE SERA EFFECTUE QUE PAR UNE PERSONNE QUALIFIÉE DANS LE DOMAINE ÉLECTRO-TECHNIQUE SELON LES EXIGENCES NATIONALES DES PAYS OU L'APPAREIL EST VENDU.

VÉRIFIER QUE VOTRE CONNEXION SECTEUR EST CAPABLE DE SATISFAIRE LES VALEURS DE PUISSANCE DE L'APPAREIL.

Cet appareil a été conçu et fabriqué pour assurer votre sécurité personnelle. Mais UNE UTILISATION INCORRECTE PEUT ENTRAÎNER UN RISQUE D'ÉLECTROCUTION OU D'INCENDIE.

Respecter les règles de base suivantes pour son installation, utilisation et entretien, afin de ne pas compromettre les mesures de sécurité incorporées dans ce produit. Veuillez lire attentivement ces «Consignes de sécurité importantes» avant utilisation.

1. Lisez ces instructions.
2. Gardez ces instructions.
3. Tenez compte de toutes les mises en garde.
4. Suivez toutes les instructions.
5. N'utilisez pas cet amplificateur à proximité de l'eau.
6. Assurez-vous d'une bonne ventilation de l'appareil. Installez en accord avec les instructions préconisées par Powersoft.
7. N'installez pas l'appareil à proximité de sources de chaleur ou d'autres appareils produisant de la chaleur.
8. Respectez le dispositif de mise à la terre de la prise secteur.
9. Utilisez uniquement les accroches et accessoires spécifiés par Powersoft.
10. Confiez toute réparation à un technicien qualifié. L'intervention d'un technicien est nécessaire dans les cas suivants : le cordon d'alimentation ou la prise secteur sont endommagés, des corps étrangers ou du liquide se sont introduits dans l'appareil, l'appareil a été exposé à la pluie ou à l'humidité, l'appareil montre des signes de dysfonctionnement ou est tombé.
11. L'appareil doit être connecté à une prise SECTEUR dotée d'une mise à la terre de protection.

NE PAS EXPOSER CET APPAREIL A LA PLUIE OU A L'HUMIDITÉ, AUX GOUTTES OU AUX ÉCLABOUSSURES. LES OBJETS REMPLIS DE LIQUIDE, TELS QUE LES VASES, NE DOIVENT PAS ETRE PLACÉS SUR CET APPAREIL.

LES BORNES D'ENCEINTES POURRAIENT ÊTRE DANGEREUX SI LA CONNEXION DE MODE PONT DU HAUT-PARLEUR EST UTILISÉ.

ADOPTER DES TECHNIQUES CORRECTES DE CONNEXION ET D'ISOLEMENT LORSQUE LA CONNEXION EN MODE BRIDGE HAUT-PARLEUR EST UTILISÉ.

LE FABRICANT NE PEUT ÊTRE TENU RESPONSABLE DES DOMMAGES CAUSÉS AUX PERSONNES, AUX CHOSES OU AUX DONNÉES EN RAISON D'UNE CONNEXION À LA TERRE INCORRECTE OU MANQUANTE.

CONTACTER LE CENTRE DE SERVICE AUTORISE POUR UN ENTRETIEN ORDINAIRE ET EXTRAORDINAIRE.

IL EST ABSOLUMENT NÉCESSAIRE DE VÉRIFIER CES CONDITIONS FONDAMENTALES DE SÉCURITÉ ET, EN CAS DE DOUTE, D'OBTENIR UNE VÉRIFICATION PRÉCISE PAR DU PERSONNEL QUALIFIÉ.

Instrucciones de seguridad importantes

3

Este módulo amplificador está diseñado para ser instalado dentro de otros dispositivos y debe verificarse en el producto final.

EL TRIÁNGULO CON EL RAYO ES USADO PARA ALERTAR AL USUARIO DEL RIESGO DE DESCARGA ELÉCTRICA.

EL TRIÁNGULO CON EL SIGNO DE EXCLAMACIÓN ES USADO PARA ALERTAR AL USUARIO DE INSTRUCCIONES DE OPERACIÓN Y MANTENIMIENTO IMPORTANTES.

EL MARCADO CE INDICA QUE EL PRODUCTO CUMPLE TODAS LAS DIRECTIVAS EUROPEAS VIGENTES

SÍMBOLO PARA TIERRA/CONEXIÓN A TIERRA.

SÍMBOLO INDICANDO QUE EL EQUIPO ES SOLO PARA USO INTERIOR.

SÍMBOLO PARA LA CONFORMIDAD CON LA DIRECTIVA 2012/19/EC DEL PARLAMENTO EUROPEO SOBRE EL DESECHO DE EQUIPOS ELÉCTRICOS Y ELECTRÓNICOS (WEEE por sus siglas en Inglés).

ENTRE 0°C Y +35°C

DEGRADACIÓN POR ENCIMA DE 35°C.

ENTRE 10% Y 90% DE HUMEDAD (SIN CONDENSADO).

NO USE LA UNIDAD EN ALTITUDES SOBRE LOS 2000 METROS.

NO USE LA UNIDAD EN AMBIENTES TROPICALES.

ADVERTENCIA: PARA REDUCIR EL RIESGO DE DESCARGA ELÉCTRICA, NO INTENTE ABRIR NINGUNA PARTE DE LA UNIDAD. NO EXISTEN PARTES INTERNAS REPARABLES PARA EL USUARIO. REFIERA LA REVISIÓN A PERSONAL DE MANTENIMIENTO CALIFICADO.

LA CONEXIÓN A LA RED ELÉCTRICA DEBERÁ SER EFECTUADA SOLAMENTE POR UNA PERSONA QUE ESTÉ CAPACITADA EN EL ÁREA DE ELECTROTÉCNICA DE ACUERDO A LOS REQUERIMIENTOS NACIONALES DE LOS PAÍSES DONDE LA UNIDAD SEA VENDIDA.

VERIFIQUE QUE SU CONEXIÓN A LA RED ELÉCTRICA ES CAPAZ DE SATISFACER LOS ÍNDICES DE ENERGÍA DE ESTE DISPOSITIVO.

Esta unidad ha sido diseñada y fabricada para garantizar su seguridad personal. Pero SU USO INADECUADO PUEDE RESULTAR EN UNA POTENCIAL DESCARGA ELÉCTRICA O RIESGO DE FUEGO.

Con el fin de no anular las garantías incorporadas en este producto, siga las siguientes reglas básicas para su instalación, uso y servicio. Por favor lea cuidadosamente estas “Garantías Importantes” antes de su uso.

1. Lea estas instrucciones.
2. Guarde estas instrucciones.
3. Preste atención a todas las advertencias.
4. Siga todas las instrucciones.
5. No use este aparato cerca del agua.
6. No bloquee las aberturas de ventilación. Realice la instalación de acuerdo con las indicaciones de Powersoft.
7. No instale cerca ninguna fuente de calor como, por ejemplo, radiadores, rejillas de calefacción, hornos u otros aparatos que produzcan calor.
8. No elimine el diseño de seguridad del enchufe, ya sea del tipo polarizado o con conexión a tierra.
9. Use exclusivamente los dispositivos/accesorios indicados por Powersoft.
10. El servicio técnico debe realizarlo siempre personal cualificado. Se requerirá servicio de asistencia técnica cuando el aparato sufra algún tipo de daño como, por ejemplo, que el cable de alimentación o el enchufe estén dañados, que se haya derramado líquido o hayan caído objetos dentro del aparato, que éste se haya expuesto a la lluvia o humedad, que no funcione normalmente o que se haya caído.
11. Este aparato deberá ser conectado a un enchufe de salida de red eléctrica con una protectora conexión a tierra.

NO EXPONGA ESTE UNITAD A LA LLUVIA O LA HUMEDAD, GOTEO O SALPICADURAS. NO COLOQUE OBJETOS LLENOS DE LÍQUIDOS, TALES COMO VASIJAS, SOBRE EL APARATO.

TERMINALES DE LOS ALTAVOCES PODRÍA SER PELIGROSO, SI SU CONEXIÓN SE UTILIZA EL ALTAVOZ MODO PUENTE.

ADOPTAR TÉCNICAS CORRECTAS DE CONEXIÓN Y AISLAMIENTO CUANDO SE USA CONEXIÓN DE ALTAVOZ MODO PUENTE.

EL FABRICANTE NO SE HACE RESPONSABLE POR DAÑOS CAUSADOS A PERSONAS, OBJETOS O DATOS DEBIDO A UNA CONEXIÓN A TIERRA INAPROPIADA O FALTANTE.

CONTACTE AL CENTRO DE SERVICIO AUTORIZADO PARA MANTENIMIENTO DE RUTINA O EXTRAORDINARIO.

ES ABSOLUTAMENTE NECESARIO VERIFICAR ESTOS REQUERIMIENTOS FUNDAMENTALES DE SEGURIDAD Y, EN CASO DE DUDA, EXIJA UN CORRECTO CHEQUEO POR PARTE DE UN PERSONAL CALIFICADO.

Importanti istruzioni di sicurezza

4

Questo modulo amplificatore è destinato ad essere installato dentro altri dispositivi e deve quindi essere controllato nel prodotto finito.

IL TRIANGOLO CON IL SIMBOLO DEL FULMINE VIENE UTILIZZATO PER AVVISARE L'UTENTE SUL RISCHIO DI SCOSSE ELETTRICHE.

IL TRIANGOLO CON IL PUNTO ESCLAMATIVO VIENE UTILIZZATO PER AVVISARE L'UTENTE SU IMPORTANTI ISTRUZIONI DI FUNZIONAMENTO O DI MANUTENZIONE.

LA MARCATURA CE INDICA LA CONFORMITÀ DEL PRODOTTO A TUTTE LE DIRETTIVE EUROPEE IN VIGORE

SIMBOLO PER IL COLLEGAMENTO DELLA MESSA A TERRA.

SIMBOLO CHE INDICA CHE IL DISPOSITIVO PUO' ESSERE UTILIZZATO SOLO ALL'INTERNO.

SIMBOLO INDICANTE LA CONFIORMITA' ALLA DIRETTIVA 2012/19/CE DEL PARLAMENTO EUROPEO SUI RIFIUTI DI APPARECCHIATURE ELETTRICHE ED ELETTRONICHE (RAEE).

DA 0°C A +35°C

DERATING OLTRE I 35°C.

DAL 10% AL 90% DI UMIDITÀ (NON CONDENSANTE).

NON UTILIZZARE IL DISPOSITIVO AD ALTITUDINI SUPERIORI A 2000 M.

NON UTILIZZARE IL DISPOSITIVO IN UN AMBIENTE TROPICALE.

ATTENZIONE: PER RIDURRE IL RISCHIO DI SCOSSE ELETTRICHE NON TENTARE DI APRIRE ALCUNA PARTE DEL DISPOSITIVO. ALL'INTERNO NON E' PRESENTE ALCUN COMPONENTE RIPARABILE DALL'UTENTE. PER L'ASSISTENZA RIVOLGERSI A PERSONALE TECNICO QUALIFICATO.

IL COLLEGAMENTO ALLA RETE ELETTRICA DEVE ESSERE ESEGUITO DA UN ELETTROTECNICO QUALIFICATO ATTENENDOSI AI REQUISITI DEL PAESE IN CUI IL DISPOSITIVO VIENE VENDUTO.

CONTROLLARE CHE LA CONNESSIONE DI RETE SIA IN GRADO DI SODDISFARE LA POTENZA NOMINALE DEL DISPOSITIVO.

Il dispositivo è stato progettato e fabbricato per garantire la vostra sicurezza personale. TUTTAVIA UN UTILIZZO NON CORRETTO PUO' PROVOCARE RISCHI DI SCOSSE ELETTRICHE E DI INCENDI.

Per non compromettere le protezioni incorporate nel prodotto, rispettare le seguenti regole di base relative all'installazione, all'utilizzo e alla manutenzione. Si prega di leggere queste "Istruzioni sulla sicurezza" accuratamente prima dell'utilizzo.

1. Leggere queste istruzioni.
2. Conservare le istruzioni.
3. Tenere conto di tutti gli avvisi.
4. Seguire tutte le istruzioni.
5. Non usare l'apparecchio in prossimità di acqua.
6. Non ostruire le prese di ventilazione. Installare secondo le indicazioni del produttore.
7. Non installare vicino a fonti di calore quali radiatori, bocchette dell'aria calda, stufe o altri apparecchi (compresi gli amplificatori) che producono calore.
8. Non compromettere la sicurezza delle spine polarizzate o con messa a terra.
9. Usare solo accessori specificati dal produttore.
10. Ricorrere a personale qualificato per qualsiasi intervento. Tali interventi sono necessari in caso di guasti dell'apparecchio quali danneggiamento del cavo di alimentazione o della spina, versamento di liquidi o caduta di oggetti nell'apparecchio, esposizione a pioggia o umidità o se l'apparecchio non funziona normalmente o è caduto.
11. Il dispositivo deve essere collegato a una presa di corrente con collegamento protetto da messa a terra.

NON ESPORRE QUESTO APPARECCHIO ALLA PIOGGIA, UMIDITÀ O SOSTANZE LIQUIDE. OGGETTI PIENI DI LIQUIDI, COME VASI, NON DEVONO ESSERE COLLOCATI SU QUESTO APPARATO.

I TERMINALI DEI DIFFUSORI POTREBBERO ESSERE PERICOLOSI, SE VIENE UTILIZZATA LA CONNESSIONE IN MODALITÀ BRIDGE DEGLI ALTOPARLANTI.

ADOTTARE LE CORRETTE TECNICHE DI CONNESSIONE E ISOLAMENTO QUANDO VIENE UTILIZZATA LA CONNESSIONE IN MODALITÀ BRIDGE DEGLI ALTOPARLANTI.

IL PRODUTTORE DECLINA OGNI RESPONSABILITA' PER DANNI PROVOCATI A PERSONE, COSE O DATI A CAUSA DI UN COLLEGAMENTO NON CORRETTO O MANCANTE DELLA MESSA A TERRA.

CONTATTARE IL CENTRO DI ASSISTENZA AUTORIZZATO PER ESEGUIRE LA MANUTENZIONE ORDINARIA E STRAORDINARIA.

E' ASSOLUTAMENTE NECESSARIO CONTROLLARE QUESTI REQUISITI FONDAMENTALI SULLA SICUREZZA E, IN CASO DI DUBBI, RICHIEDERE UN CONTROLLO ACCURATO DA PERSONALE QUALIFICATO.

Regulatory information

5

FCC COMPLIANCE NOTICE

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WEEE DIRECTIVE

If the time arises to throw away your product, please recycle all the possible components.

This symbol indicates that when the end-user wishes to discard this product, it must be sent to separate collection facilities for recovery and recycling. By separating this product from other household-type waste, the volume of waste sent to incinerators or land-fills will be reduced and natural resources will thus be conserved.

The Waste Electrical and Electronic Equipment Directive (WEEE Directive) aims to minimise the impact of electrical and electronic goods on the environment. Powersoft S.p.A. comply with the Directive 2002/96/EC and 2003/108/EC of the European Parliament on waste electrical finance the cost of treatment and recovery of electronic equipment (WEEE) in order to reduce the amount of WEEE that is being disposed of in land-fill site. All of our products are marked with the WEEE symbol; this indicates that this product must NOT be disposed of with other waste. Instead it is the user's responsibility to dispose of their waste electrical and electronic equipment by handing it over to an approved reprocessor, or by returning it to Powesoft S.p.A. for reprocessing. For more information about where you can send your waste equipment for recycling, please contact Powesoft S.p.A. or one of your local distributors.

EC DECLARATION OF CONFORMITY

Manufacturer:
Powersoft S.p.A.
via E. Conti 5
50018 Scandicci (Fi)
Italy

CE

We declare that under our sole responsibility the products:
Model Name: Digimod 3004 PFC2
Intended use: Professional Audio Amplifier Module

Are in conformity with the provisions of the following EC Directives, including all amendments, and with national legislation implementing these directives:

2014/35/EU	Low Voltage Directive
2014/30/EU	Electromagnetic Compatibility Directive
2011/65/EU	RoHs Directive

The following harmonized standards are applied:
EN 55103-1:2009,
EN 55103-1:2009/A1:2012
EN 55103-2:2009
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 61000-3-11:2000
EN 60065:2014
EN 60065:2014/AC:2016

Scandicci,
27 August 2020

Marco Cati
Quality & Process Manager

For compliance questions only: compliance@powersoft.it

Electrostatic Discharge (ESD)

6

Electrostatic discharge (ESD) is one of the most significant factors leading to damage and failure of a wide variety of electronic components.

Poor handling can cause internal damage, which is invisible. This internal damage can then cause electrical failure or reliability problems.

It is recommended that all workstations where Electrostatic Discharge Sensitive devices (ESDS) and assemblies are handled outside of full static protection packaging (i.e. within static control areas) should be provided with some form of ground conductive or dissipative flooring.

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7

7:1.Welcome

Congratulations on your purchase of the Powersoft DigiMod 3004PFC2 module.

We know you are eager to use the DigiMod 3004PFC2 module, but please take a moment to read this user's manual and safety instructions. In case you have any questions, please do not hesitate to contact your dealer or Powersoft.

The DigiMod 3004PFC2 is a four channel amplifier modules specifically designed to drive high power loudspeakers.

The DigiMod 3004PFC2 represents an important evolution in the DigiMod Series family of products: delivering up to 1000 W on 4 Ω per channel (2000 W on 8 Ω in mono-bridged mode), the DigiMod 3004PFC2 reaches a new level of excellence in terms of power consumption and sonic performance.

The fixed frequency switching mode technology design guarantees maximum performances, high efficiency and predictability ensuring total immunity from intermodulation artifacts. The new design of the power supply equipped with PFC and Smart Rails Management reduces power consumption and enhances reliability and consistency in all operating conditions.

The DigiMod 3004PFC2 shares the same compact mechanical layout of the other DigiMod Series models guaranteeing scalability to existing and future implementations and is fully compatible with all existing Powersoft DSP solutions providing a powerful and flexible signal processing tools on board of your loudspeaker.

7:2.Unpacking & checking for shipping damage

Your Powersoft product has been completely tested and inspected before leaving the factory. Carefully inspect the shipping package before opening it, and then immediately inspect your new product. If you find any damage notify the shipping company immediately.

7:3.Disposal of the packing material

The transport and protective packing has been selected from materials which are environmentally friendly for disposal and can normally be recycled.

Rather than just throwing these materials away, please ensure they are offered for recycling.

Thermal constraints

8

This device must be correctly heatsinked for proper and reliable operation: an appropriate external passive heat sink guarantees by design thermal efficiency and reliability.

Proper heatsink planarity is strongly suggested to allow thermal transfer from the module's bottom plate to the heatsink; a thermal compound may be used, but it is not strictly necessary.

In order to ensure proper ventilation of the module, reasonable spacing of at least 100 mm must be left between the frame of the unit and any side component or surface of the enclosure.

The module has been designed to fit into a loudspeaker cabinet: please refer to FIGURE 1 for proper module placing.

IN FIGURE 1 HEATSINK FINS ARE SET HORIZONTALLY (WRONG!) ONLY FOR DESCRIPTIVE PURPOSE.

All configuration showed in FIGURE 1 are viable for proper module placing and cooling. We suggest to position the module vertically with respect the ground in order to take advantage of the chimney effect for ventilation and heat dissipation.

In FIGURE 1.*a* the module and the loudspeakers share the same room into the cabinet. This is the default placement solution: it allows good ventilation because of woofer diaphragm movement and high air volume; be aware of magnetic field interaction: place the module far enough from loudspeakers magnet in order to prevent fans blockage.

FIGURE 1.*b* shows the more efficient cooling configuration, even if it is less effective against dust and moisture that can get into the module. By allowing external air flow, it is possible to reduce the fins width on the heatsink by maintaining good cooling performances.

8:1.Heatsink performance

Here we suggest a rule of thumb to calculate the thermal resistance of the heatsink.

The absolute thermal resistance of the heatsink is the temperature difference (kelvin or celsius) across its structure when a unit of heat energy flows through it in unit time (watt). For seek of simplicity: a heatsink with low thermal resistance offers high heat dissipation, as well as a low electric resistance allows high current flowing through a conductive wire.

In order to define the maximum allowed thermal resistance for the heatsink let assume the following:

- *e* as the amp module efficiency
- *cf* as the crest factor of the audio signal
- W_{max} as the peak power delivered by the module
- T_{amb} as the highest ambient temperature
- T_{mod} as the highest operating temperature

The thermal resistance of the heatsink derives from the following formula:

$$R_{th} = \frac{T_{mod} - T_{amb}}{Dissipated\ power}$$

The maximum dissipated power can be calculated as:

$$Dissipated\ power = \frac{W_{max}\,(1 - e)}{cf}$$

For example, stating an efficiency of 80%, 6 dB crest factor and 3400 W peak power, the dissipated heat is:

$$\frac{3400\,(1 - 0.8)}{4} = 170\ W$$

Supposing that the thermal protection of the module (T_{mod}) is set at 75°C (167°F) on the bottom plate and stating an ambient temperature of 45 °C (113°F), the previous example gives:

$$\frac{75 - 45}{170} = 0.14°C/W$$

meaning that the temperature of the bottom plate is always lower than 75°C if the heatsink has a thermal resistance better than 0.14°C/W (or 0.14 K/W) with ambient temperature up to 45 °C.

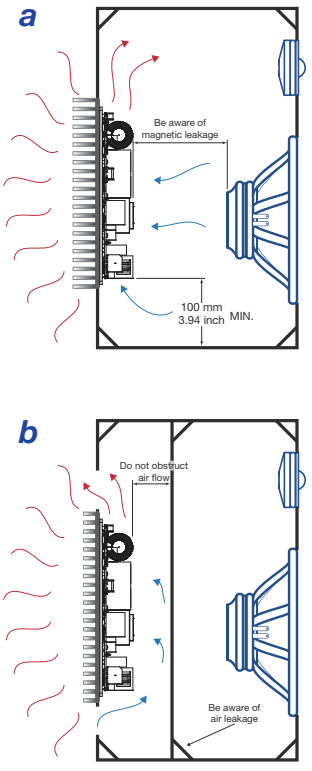


FIGURE 1: Cooling solutions (for descriptive purpose the heatsink fins are set in wrong direction); a) Module and loudspeaker into the same chamber; b) Module in a separate vented chamber.

Electromagnetic Compatibility (EMC) & Safety

9

9:1.AC MAINS filter

This equipment has been tested and found to be compliant with regulations listed in “Reference Standard” section.
This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

⚠ In order to improve the electromagnetic compatibility performance an EMC filter must be inserted before the AC MAINS plugs on the power supply. An example of the suggested filter topology is reported below:

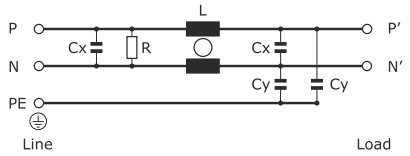


FIGURE 2: Typical electrical schematic of the EMI Filter.

9:2.Cabling

Wiring between the amp module and the load may lead to radio frequency noise. The following guide lines should be observed:

- reduced cabling length is advisable;
- keep cable pairs as close as possible to each other in order to minimize the antenna effect;
- design the cabling path far from RF noise source;
- set the cabling for RF noise rejection: shielded or twisted cables are advisable configuration (ref. FIGURE 4);
- place ferrites as close to the module as possible

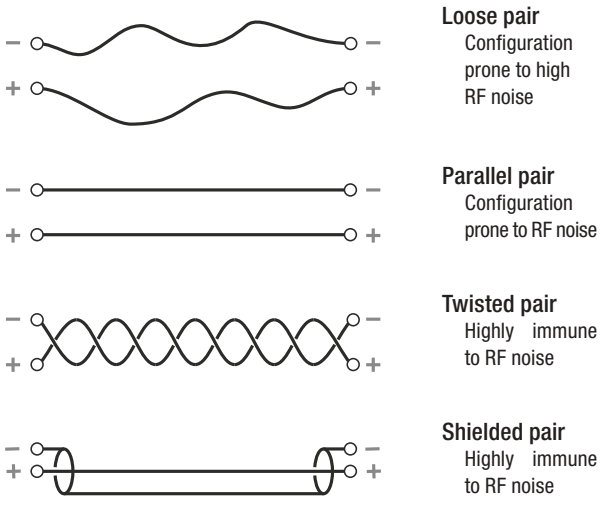


FIGURE 4: Cabling configuration.

9:3.Ferrite cores

Reject RF noise from input and output cabling by installing ferrite shields. Powersoft suggests the FAIR RITE 0431164181, or equivalent.

Wrap both cables around one side of each ferrite so that it pass through each ferrite twice (ref. FIGURE 3). Install the ferrite shield as close as possible to where the cable plugs into the amplifier. Placing the ferrite elsewhere on the cable noticeably reduces its effectiveness.

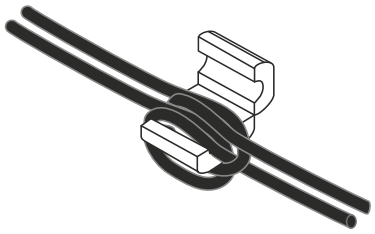


FIGURE 3: Ferrite core installation on I/O wirings.

9:4.Chassis shielding

If not already present on the product, a full body metal chassis or a shielding cage will provide best shielding of RF emission. In order to achieve the highest shielding, minimize the amount and size of holes or opening in the chassis.

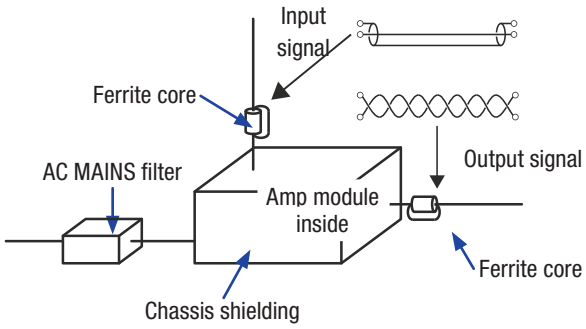


FIGURE 5: Tools and best practice for improving the electromagnetic compatibility.

9:5.Mains Fuse

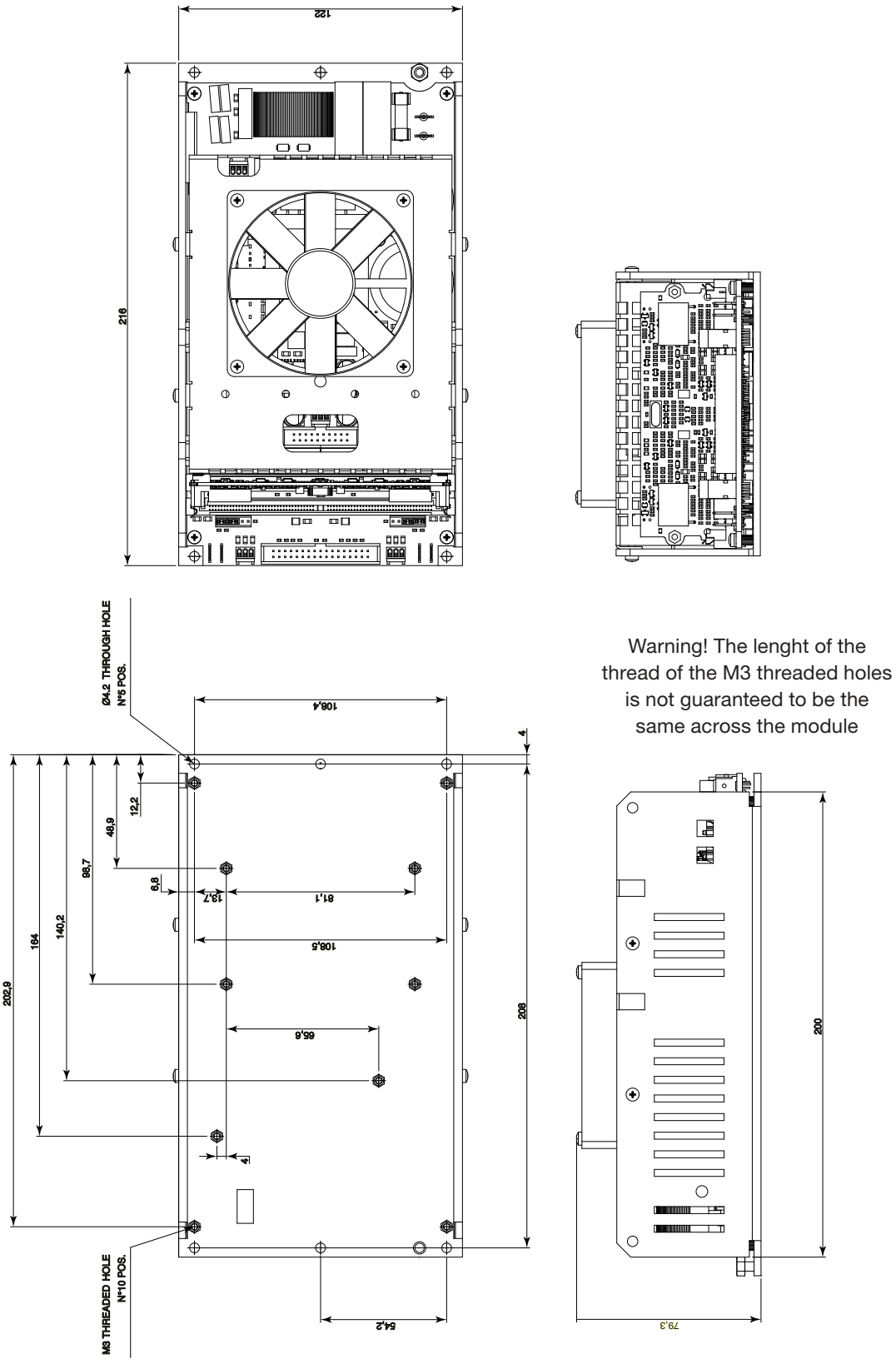
Mains voltage cable must by protected by an external Time delay fuse of 10A rating (time lag, Littlefuse Series 215). Replace the fuse with the same type and rating.

9:6.Earth connection

⚠ 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.
Is absolutely necessary to ground this device using the proper earth connection on the metal frame of the chassis; use M4 nut and bolt with proper split washer – grover washer – to secure the earth terminal lug.

10

Mechanical drawings



Warning! The lenght of the thread of the M3 threaded holes is not guaranteed to be the same across the module

FIGURE 6: Digimod 3004 PFC2 side and back plate (all dimensions in millimeters).

Connections

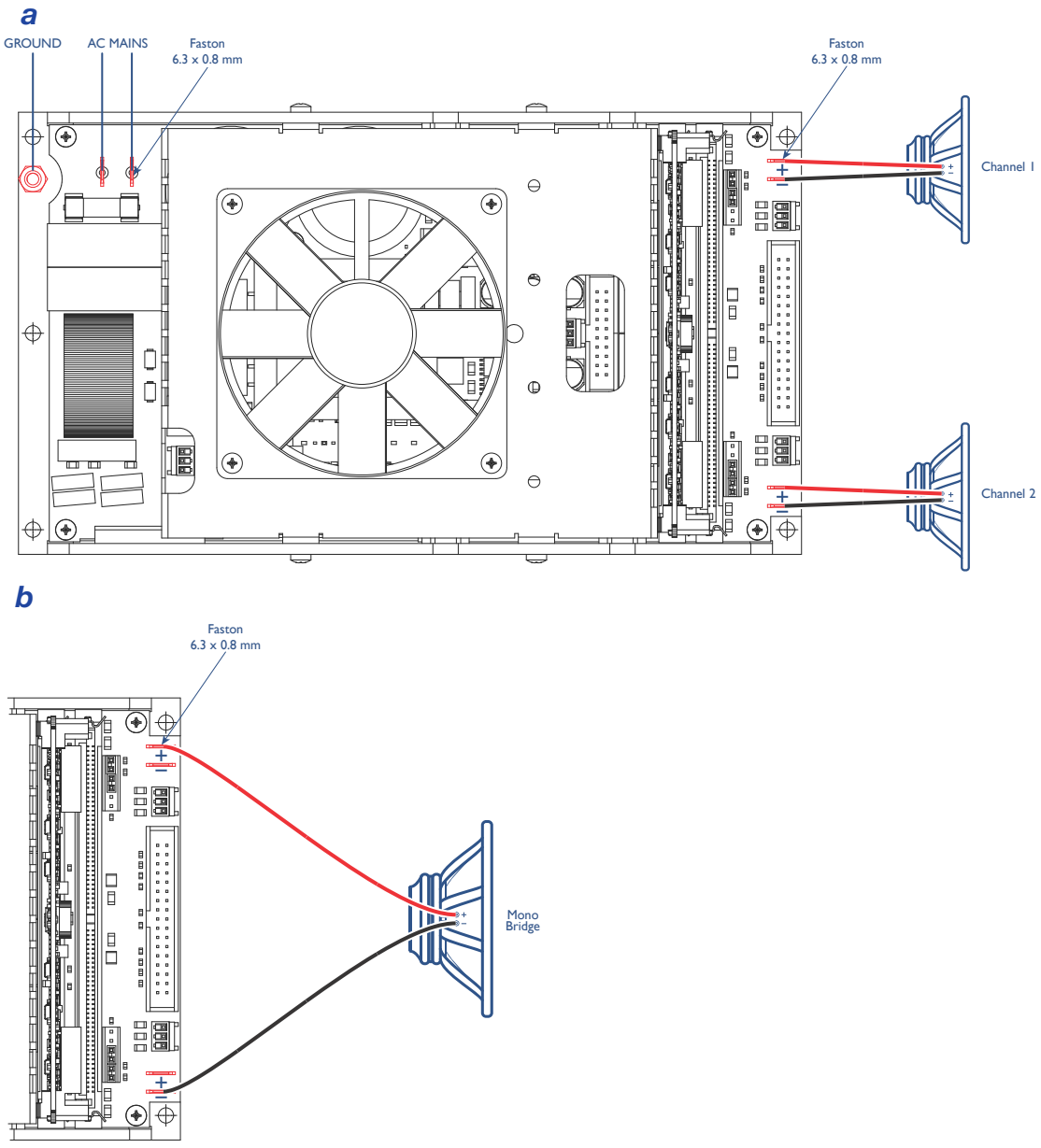


FIGURE 7: DigiMod 3004PFC2 – AC MAINS and audio output wiring:
a. Two ways – two single channels;
b. One way – channels 1-2 in bridge mode.

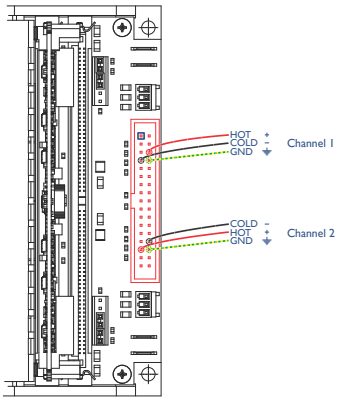


FIGURE 8: DigiMod 3004PFC2 – Two input channels wiring.

10:1.1. Main connectors pinout

The following image and tables show the pinout of main input and output connectors and the SIMM board.

FIGURE 6 shows the default jumpers configuratin for the Bypass connectors. By means of these jumpers it is possible to change the main gain and enable the DSP and external circuits.

Gain at +38dB is intended for low level inputs which need more boost, such as consumer devices; take care on raising the gain since this involves more noise at output stages.

DSP and external circuits – such as filters or volume regulators – can be independently activated by removing related jumpers on PL8 for channel 1, PL13 for channel 2. Both DSP and external circuits can be layed on a 72-pin SIMM board which would be plugged into the SO5 Socket; for more informations about SIMM specifications, please contact Powersoft. SIMM board pinout is shown on FIGURE 8.

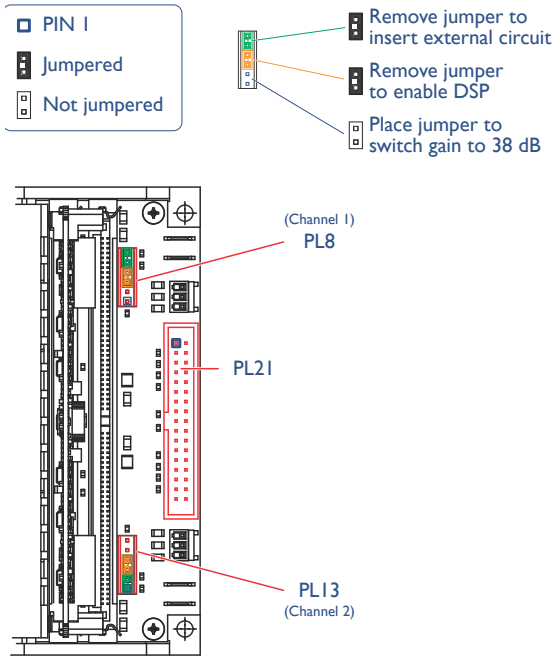


FIGURE 9: DigiMod 3004PFC2 bypass connectors pinout

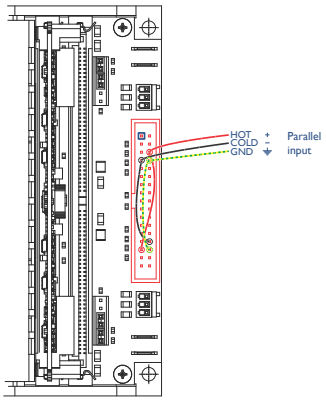


FIGURE 10: DigiMod 3004PFC2 – parallel input wiring.

10:1.2. Bill of connectors

CODE	NAME	TYPE
SO5	DSP/external circuit board socket	72-pin SIMM Socket
PL21	Input connector channels 1 & 2	IDC flat cable 34 ways
PL2	Test Connector (reserved)	IDC flat cable 20 ways
PL17	Signal OUT 1 +	Faston 6.3x0.8 mm Male
PL18	Signal OUT 1 – (GND)	Faston 6.3x0.8 mm Male
PL19	Signal OUT 2 –	Faston 6.3x0.8 mm Male
PL20	Signal OUT 2 + (GND)	Faston 6.3x0.8 mm Male
PL8	Bypass Channel 1	
PL13	Bypass Channel 2	
PL1	reserved	Molex 22-27-2031
PL7	FAN	Molex 22-27-2031
PL22	FAN	Molex 22-27-2031
PL23	FAN	Molex 22-27-2031
PL25	reserved	Molex 22-27-2031

Mating x fan: Molex 22-01-2035
Terminals: KK254 4809 Series

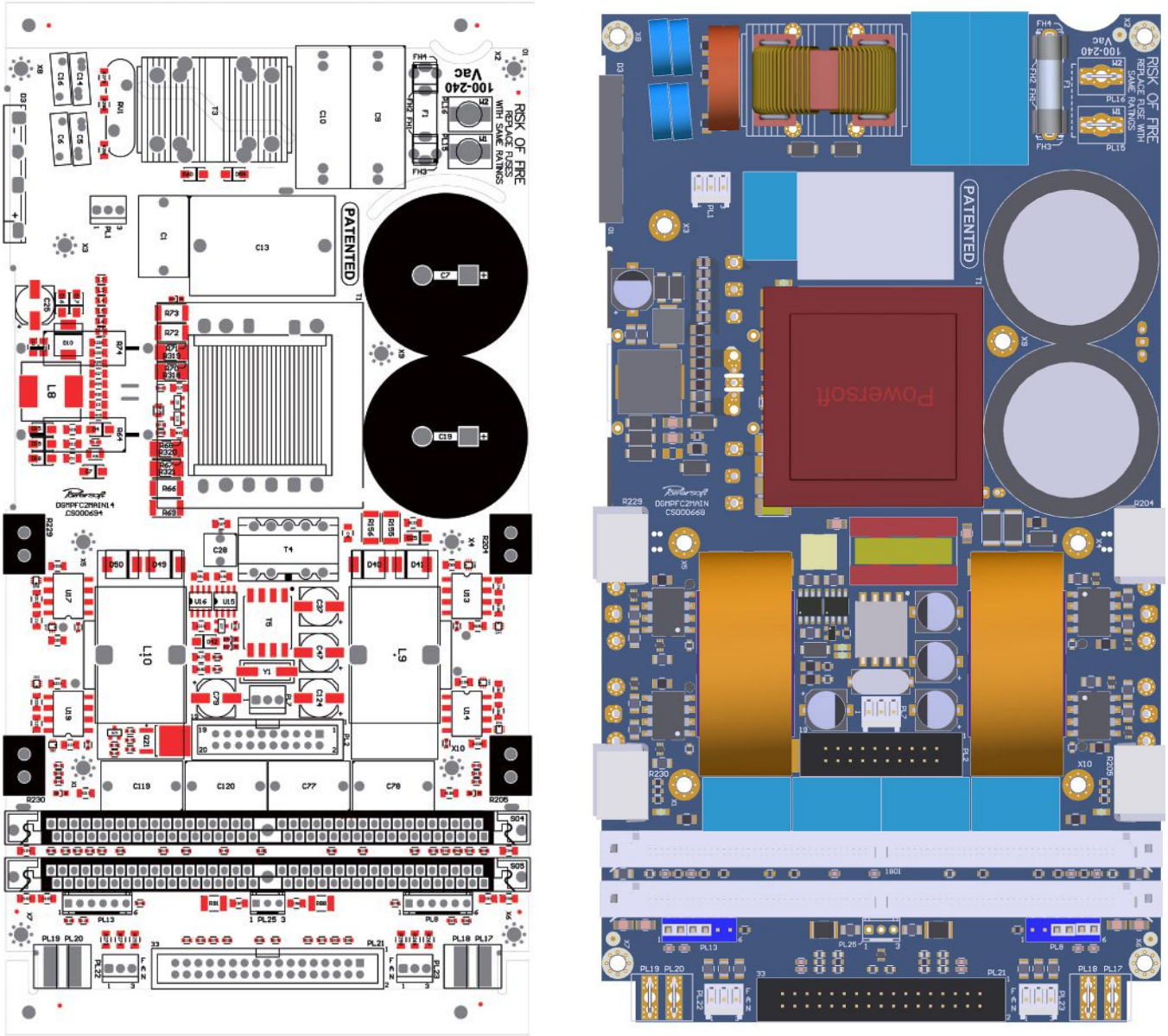


FIGURE 11: DigiMod 3004PFC2 surface components layout.

10:2.PL21 pinout

PIN#	Name	IN	OUT	POWER	Range	Scale factor	Imped-ance	Protected	Tolle-rance	Description
1	SDPWS	•			Active High, Logic input 3.3 to 12 V_{dc} do not use the internal aux power supply, an external power supply is needed.		1 kΩ	Logic input to be fed by “OR” diode		Power Supply Shut Down
2	READY 1		•		Active High 3.3 V - 5 V		47 kΩ			Signal Ready CH 1
3	RESERVED									
4	RESERVED									
5	GND			•						Ground
6	IN 1 +	•			Unbalanced 1.92 V_{rms} for Full Output; 7 V_{rms} Absolute Max Input Balanced 0.96 V_{rms} for Full Output; 3.5 V_{rms} Absolute Max Input		10 kΩ			Channel 1 Positive Balanced Input 32 dB Input To Output Overall Gain
7	IN 1 –	•			Unbalanced 1.92 V_{rms} for Full Output; 7 V_{rms} Absolute Max Input Balanced 0.96 V_{rms} for Full Output; 3.5 V_{rms} Absolute Max Input		10 kΩ			Channel 1 Negative Balanced Input 32 dB Input To Output Overall Gain
8	GND			•						Ground
9	VOUT1MON		•			20 $^{V}/_{V}$	4.5 kΩ			Channel 1 Output Voltage Monitor
10	PROTECT1		•		Level 1 (2 to 10) = not in Protection Level 0 (0 to 1) = Protection		100 kΩ			Channel 1 Output Stage Protection Monitor
11	IOUT1MON		•			7.5 $^{A}/_{V}$	4.5 kΩ			Channel 1 Output Current Monitor
12	TEMPMON12		•		0 – 5 V	See table	7 kΩ			NTC sensor tap output
13	+12VDCOUT			•	+12 V_{dc}; 0.5 A max out-put current available			Polyswitch	±5%	Positive regulated analog section supply (same as pin 22)
14	-12VDCOUT			•	–12 V_{dc}; 0.5 A max out-put current available			Polyswitch	±5%	Negative regulated analog section supply (same as pin 21)
15	MUTE	•			Active Low, To be pulled to GND by current sink of at least 20 mA					CH1 and CH2 Output Stage Mute (disable output stages PWM)

Table continues on the next page...

...continued from previous page.

PIN#	Name	IN	OUT	POWER	Range	Scale factor	Imped-ance	Protected	Tolle-rance	Description
16	+VCCMON		•		+7.5 V_{dc}		4.5 kΩ			Rail Bus Positive Monitor
17	-VCCMON		•		–7.5 V_{dc}		4.5 kΩ			Rail Bus Negative Monitor
18	-VCCMON		•		–7.5 V_{dc}		4.5 kΩ			Rail Bus Positive Monitor
19	+VCCMON		•		+7.5 V_{d}		4.5 kΩ			Rail Bus Negative Monitor
20	MUTE	•			Active Low, To be pulled to GND by current sink of at least 20 mA					CH1 and CH2 Output Stage Mute (disable output stages PWM)
21	-12VDCOUT			•	–12 V_{dc}; 0.5 A max output current available			Polyswitch	±5%	Negative regulated analog section supply (same as pin 21)
22	+12VDCOUT			•	+12 V_{dc}; 0.5 A max output current available			Polyswitch	±5%	Positive regulated analog section supply (same as pin 22)
23	TEMPMON12		•		0 – 5 V	See table	7 kΩ			NTC sensor tap output
24	IOUT2MON		•			7.5 $^{A}/_{V}$	4.5 kΩ			Channel 2 Output Current Monitor
25	PROTECT2		•		Level 1 (2 to 10) = not in Protection Level 0 (0 to 1) = Protection		100 kΩ			Channel 2 Output Stage Protection Monitor
26	VOUT2MON		•			20 $^{V}/_{V}$	4.5 kΩ			Channel 2 Output Voltage Monitor
27	GND			•						Ground
28	IN 2 –	•			Unbalanced 1.92 V_{rms} for Full Output; 7 V_{rms} Absolute Max Input Balanced 0.96 V_{rms} for Full Output; 3.5 V_{rms} Absolute Max Input		10 kΩ			Channel 2 Negative Balanced Input 32 dB Input To Output Overall Gain
29	IN 2 +	•			Unbalanced 1.92 V_{rms} for Full Output; 7 V_{rms} Absolute Max Input Balanced 0.96 V_{rms} for Full Output; 3.5 V_{rms} Absolute Max Input		10 kΩ			Channel 2 Positive Balanced Input 32 dB Input To Output Overall Gain
30	GND			•						Ground
31	RESERVED									
32	RESERVED									
33	READY 2		•		Active High 3.3 V - 5 V		47 kΩ			Signal Ready CH 2
34	SDPWS	•			Active High, Logic input 3.3 to 12 V_{dc} do not use the internal aux power supply, an external power supply is needed.		1 kΩ	Logic input to be fed by “OR” diode		Power Supply Shut Down

10:3.PL8 Pinout

Pin#	Name	IN	OUT	Impedance	Description
1	BY31	ı		2.7 kΩ + 47 Ω	Channle 1 Unbalanced Intput
2-3	BY41		ı	32dB gain 2.7 kΩ + 47Ω 38dB gain 5.4 kΩ + 47 Ω	Channle 1 Unbalanced Output
4-5	BY21	ı			Channle 1 Unbalanced Input
6	BY11		ı	47 Ω	Channle 1 Unbalanced Output

10:4.PL13 Pinout

Pin#	Name	IN	OUT	Impedance	Description
1	BY12		ı	47 Ω	Channle 2 Unbalanced Output
2-3	BY22	ı			Channle 2 Unbalanced Input
4-5	BY42		ı	32dB gain 2.7 kΩ + 47Ω 38dB gain 5.4 kΩ + 47 Ω	Channle 2 Unbalanced Output
6	BY32	ı		2.7 kΩ + 47 Ω	Channle 2 Unbalanced Input

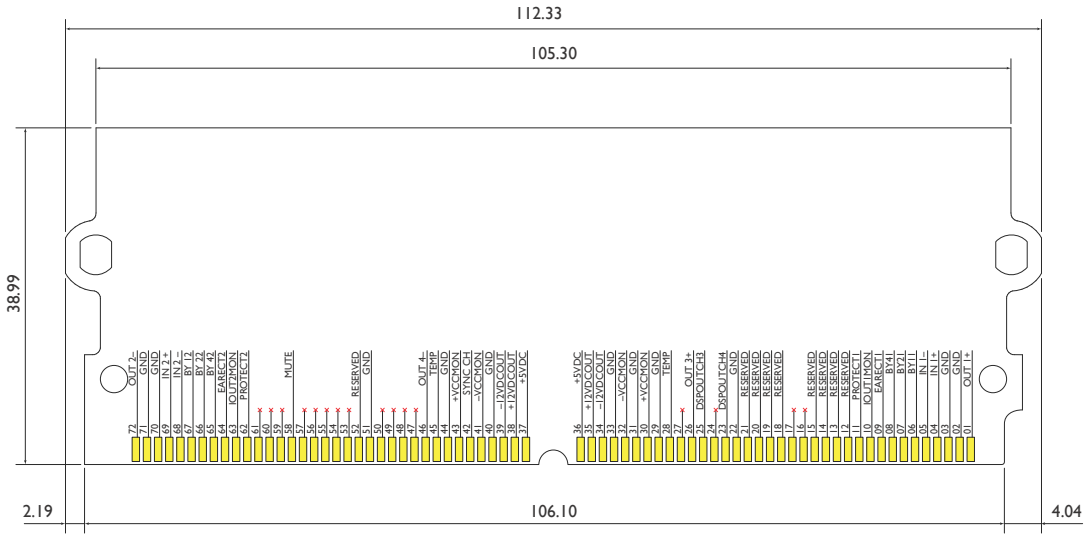


FIGURE 12: 72-pin SIMM board pinout; dimensions in millimiters.

10:5.Audio path block diagram

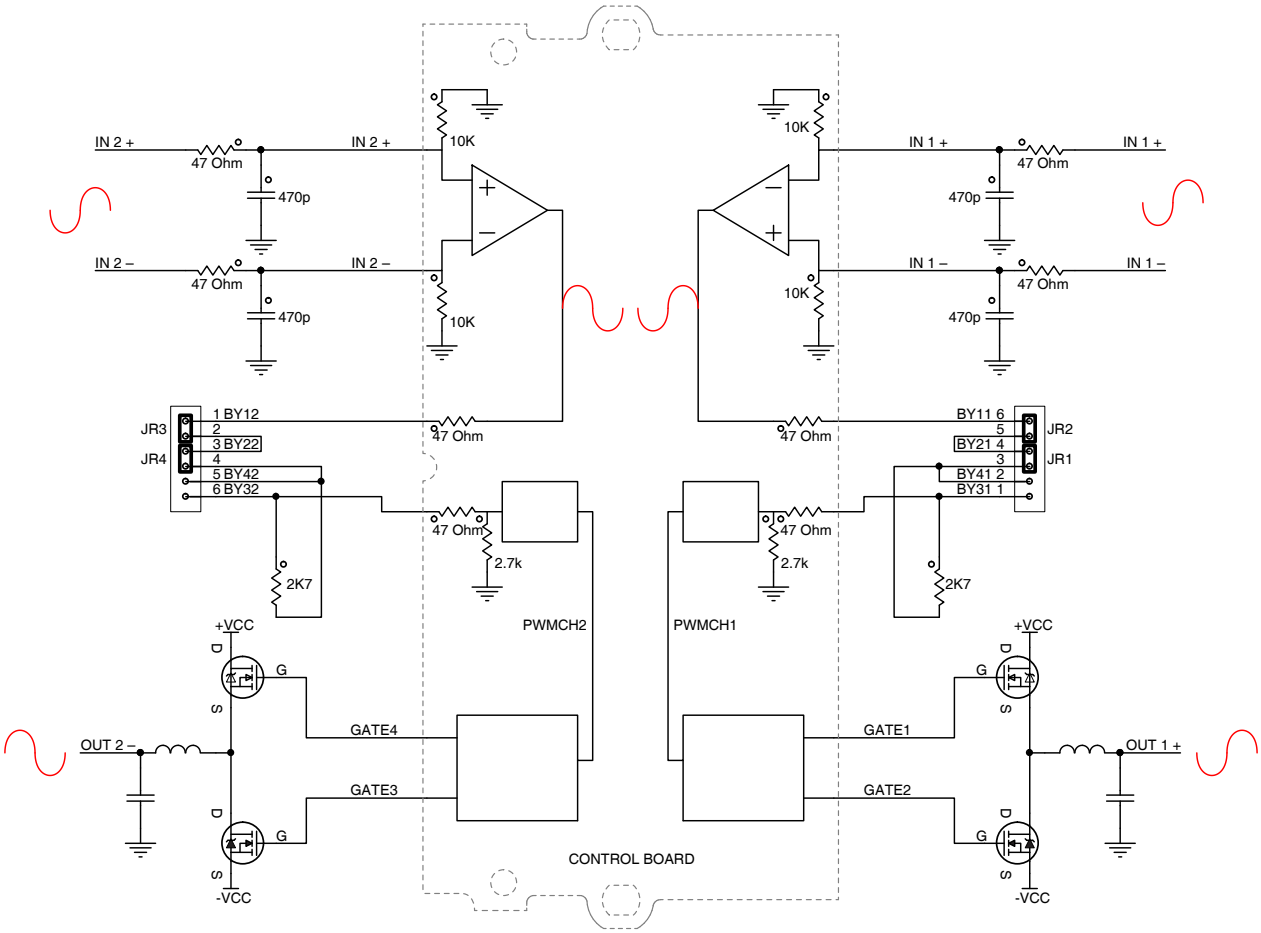


FIGURE 13: Audio path block diagram for channel 1 & 2 on Control Board 1.

10:4.1.Internal Signal Path Polarity

In order to increase the power's supply energy storage efficiency, signals coming from channel pairs 1-2 are polarity reversed, one with respect to the other within the pair, when entering the amplifier. This ensures a symmetrical use of the voltage rails: if, for example, both channels' 1 and 2 input signals are going through a peak at the same time, channel 1's energy will come from the positive voltage rails while channel 2, whose polarity is reversed with respect to channel 1, will be fed energy from the negative voltage rails. In this manner, the power supply will work symmetrically, with one channel catered by the positive rails and the other by the symmetrical negative rails. Channel 2's signal will be polarity reversed once more to ensure that both channels output with the same polarity as their corresponding input signals.

For this reason it is very important not to invert the polarity of either channels before feeding them to the module. A double polarity inversion (the first by the user inserting the input signal and the other by the amplifier's internal circuitry) results in no inversion at all. If this were the case, both channels would be weighing on only one side (positive or negative) of the power supply's voltage rails. This would result in an inefficient use of the power supply's energy.

Please pay special attention in using balanced inputs on all measurement equipment (such as oscilloscope probes) when you are bench testing.

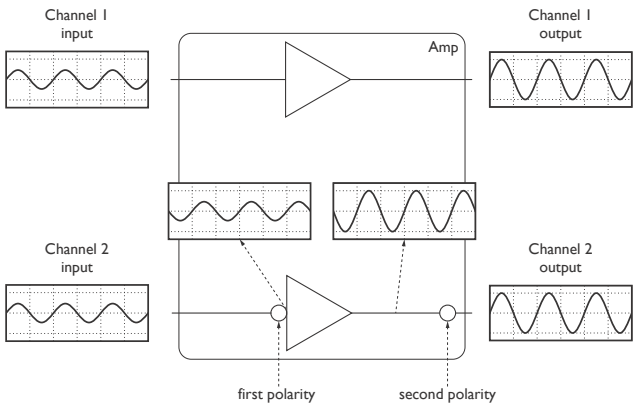


FIGURE 14: Internal signal path polarity with example input signals. Both channels 1 and 2 are fed the same sine signal.

10:6.Protections

Fault protections are systems designed to protect people from severe or fatal electric shocks and avoid severe damages on the amplifier or the loudspeakers in case of electrical parameters out of scaling or critical changes in environmental conditions.

The architecture of Powersoft's amplifiers encompass several protection mechanisms triggered by harmful signal and temperature. Protection systems and triggers are independently implemented in the power supply section (power supply protection) and the amplifier section (amplifier protections) in order to minimize system damages and maximize efficiency.

10:6.1.Power supply protections

Power supply protections aim to isolate a faulty section in electrical power system from the rest of the device in order to prevent the propagation of the fault and limit device damages.

10:6.2.Primary AC mains overcurrent protection

AC main overcurrent are filtered by a 10 A time-lag fuse (also known as time-delay or slow blow-fuse). The purpose of the time lag fuse is to allow the supply in electricity for a short time before the fuse actually blows. If the time-lag fuse blows out the amplifier switch off; replace the fuse with a proper 10 A time-lag fuse in order to restore the full functionality of the amplifier.

10:6.3.Primary AC mains overvoltage protection

AC mains overvoltage threshold is set to 295 V_{rms}. If the AC mains voltage exceeds 295 V_{rms} the power supply stop working; the device does not turn completely off but falls in a "sleeping" mode: the power supply turns on again when the AC mains voltage drops under 290 V_{rms}.

AC mains overvoltage are well tolerated by the power supply: non damages can be caused to the system even in case of severe overvoltage up to 385 V_{rms}.

10:6.4.Primary thermal protection

The temperature is detected at power supply's Q6 and Q7 MOSFETs located on the Main Board bottom surface.

The working temperature of the power supply triggers the heat dissipated by the device: if the temperature rises exceeding components tolerances, the primary hardware thermal protection starts lowering the rails voltage in order to lower the heat wasted and keep the overall efficiency high.

The process is auto-adaptive and aims to maintain the system up even in heavy thermal condition. If the rails voltage drops down to ±33 V the Main Board microcontroller shut down the amplifier section (i.e. shut down the Control Board), the power supply still running. This may happen rarely in harsh conditions: the amplifier does not switch off but neither signal processing nor fan cooling are active. In these conditions, while the temperature slowly decreases, the rails voltage rises: when the rails voltage reaches ±33V, the amplifiers section switch on again. If cooling is not effective, the system may start oscillate.

10:6.5.Amplifier protections

The amplifier section protections are managed by the Control Board and the Main Board in tandem.

Amplifier protections are triggered by audio signal current and voltage – by comparing input and output – and NTC, negative temperature coefficient, thermistors. NTC thermistors provide thermal feedback to the Control Board, to the Main Board and possibly to the DSP Board.

NTC resistance decreases with increasing temperature: the table below displays the relationship between temperature and voltage drop across NTC thermistors. NTC's voltage drop for each channel are routed to the respective TEMPMON contacts on the SO5 socket.

Since the temperature is detected on the PCB surface it does not represent the actual module temperature: be aware that some parts of the amplifier may be at higher temperature.

T (°C)	V	T (°C)	V
-40	4.82	55	1.46
-35	4.76	60	1.3
-30	4.69	65	1.16
-25	4.6	70	1.04
-20	4.5	75	0.93
-15	4.37	80	0.83
-10	4.22	85	0.75
-5	4.05	90	0.67
0	3.86	95	0.61
5	3.66	100	0.55
10	3.43	105	0.5
15	3.2	110	0.46
20	2.96	115	0.42
25	2.71	120	0.38
30	2.47	125	0.35
35	2.24	130	0.33
40	2.02	135	0.31
45	1.82	140	0.29
50	1.63	145	0.27
		150	0.25

10:6.6.Secondary thermal protection

Microcontrollers on the Main Board and on the Control Board manage fans rotation depending on the mean temperature of the module sensed by the NTC thermistors.

The Main Board and the Control Board microcontrollers work in parallel by triggering fan speed rotation and output power modulation at different temperature threshold. The Main Board's circuitry implements a fan speed control that operates at lower temperature with respect to Control Board fan management; Main Board actions have priority on Control Board actions.

In heavy thermal conditions the system reduces the available power drawn by the amplifiers section by means of a reduction of the output current: this lower the heat dissipation and improve cooling, but reduces the signal output level. In parallel to the power drop operated by the Control Board microcontroller, the Main Board microcontroller reduces the rails tension to ±70V.

The table below shows the temperature thresholds that trigger the microcontrollers and the actions operated accordingly.

10:6.7. Harmful signal protections

Bad signals can cause amplifier and loudspeakers damages. In order to limit damages, harmful signal triggers specific protections.

10:6.8. Output short circuit

If the load impedance is too low or the loudspeaker line has a short circuit (because of voice coil damages, wires short circuit, improper wiring, etc), the amplifier output current rises to harmful values.

When the output current reaches 54 A_{peak} (38 A_{rms}) the Control Board microcontroller shut down the amplifier section, the power supply still working. After 2 seconds the Control Board microcontroller switches on the amplifier section: if the short circuit still persists, the current rises and the amplifier is switched off again. The microcontroller toggles the amplifiers on and off every 2 seconds until the short circuit is removed.

10:6.9. High frequency stationary loud signals

High frequency stationary signals, like steady sinusoid signals – improperly referred as continuous signals – with high amplitude tend to stress the amplifier section of the module as well as the loudspeakers voice coils.

When a high frequency stationary loud signals is feed into the amplifier the Control Board limits its mean current depending on its level and frequency. The process is auto adaptive and frequency driven: at higher frequency the limiter acts faster.

The system limits output current of loud signals in the band 10 kHz – 20 kHz with output amplitude higher than 95 V_{rms}; above 20 kHz the protection operates when the output amplitude exceeds 48 V_{rms}.

10:6.10. Auxiliary power protections

Auxiliary plugs are protected against short circuit: a poliswitch opens the auxiliary circuits when the current drawn exceeds 2.2A.

10:6.11. Control Board protection LEDs

The Control Board is equipped with a protection LED per channel (see LED chart). The protection LED lights when one of the following protection systems turns on:

- Output short circuit;
- Thermal protection;
- Rails undervoltage.

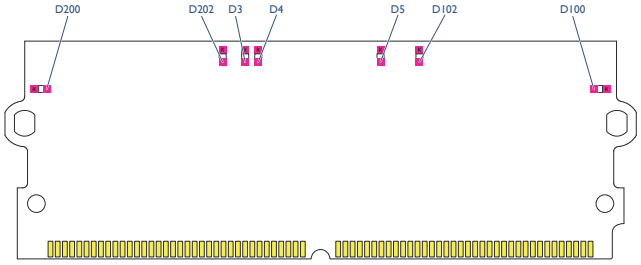


FIGURE 15: Control Board LEDs.

TEMPMON (V)	T (°C)	Main Board Fan	Main Board Power	Control Board Fan	Control Board Power
$V_T > 2.02$	$T_{mean} < 40$	OFF	W_{max}	OFF	W_{max}
$1.63 < V_T < 2.02$	$40 < T_{mean} < 50$	ON SLOW	W_{max}	OFF	W_{max}
$1.30 < V_T < 1.63$	$50 < T_{mean} < 60$	ON FAST	W_{max}	OFF	W_{max}
$1.04 < V_T < 1.30$	$60 < T_{mean} < 70$	ON FAST	W_{max}	ON FAST	W_{max}
$0.9 < V_T < 1.06$	$70 < T_{mean} < 75$	ON FAST	V_{rails} = ±70 V	ON FAST	1/2 W_{max}
$0.69 < V_T < 0.9$	$75 < T_{mean} < 90$	ON FAST	V_{rails} = ±70 V	ON FAST	1/10 W_{max}
$V_T < 0.69$	$T_{mean} > 90$	ON FAST	V_{rails} = ±70 V	Amplifiers shut down	

10:7.LED chart

Both the Main Board and the Control Board are equipped with status LED and protection LED; refer to FIGURE 11 and FIGURE 12 for LED localization and the following table for LED description.

10:7.1.Control Board LED chart

LED ID	Type	Description	Idle mode	Signal mode
D3	status	Auxiliary +12 V active	ON	ON
D4	status	Auxiliary +5 V active	ON	ON
D5	status	Auxiliary –12 V active	ON	ON
D102	protection	Control Board protection engaged on CH 1	NORMALLY OFF	NORMALLY OFF
D202	protection	Control Board protection engaged on CH 2	NORMALLY OFF	NORMALLY OFF
D100	status	Current calibration / current drawn by CH 1	NORMALLY OFF	BLINK
D200	status	Current calibration / current drawn by CH 2	NORMALLY OFF	BLINK

10:7.2.Main Board LED chart

LED ID	Type	Description	Idle mode	Signal mode
D6	status	rails +Vcc	ON	ON
D8	status	rails –Vcc	ON	ON
D37	protection	Main Board secondary protection engaged	NORMALLY OFF	NORMALLY OFF
D39	status	Mute	ON when MUTE ON	ON when MUTE ON
D20	protection	Main Board primary protection engaged	NORMALLY OFF	NORMALLY OFF

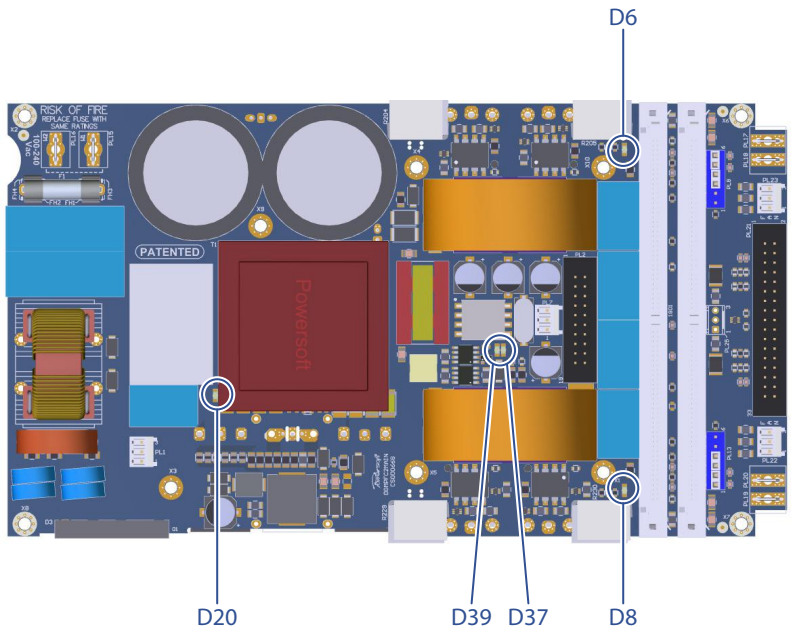


FIGURE 16: Main Board LEDs.

Evaluation Board - KT000291

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11:1.Switch functions

The KT000291 is a basic evaluation board adapting up to 4 XLR inputs into two Powersoft IDC 34 poles connectors. It includes two switches able to parallel inputs into two paralleled couples. Additional test points help the user to monitor some readout signals and provide some signals to the amplifier.

FIGURE 17: KT000291 Evaluation Board

Switch	Description
Switch1/2	Parallel inputs ch1 and ch2
Switch3/4	Parallel inputs ch3 and ch4

XLR Inputs	Description
SO1	Input CH1
SO2	Input CH2
SO3	Input CH3
SO4	Input CH4

Test Point Name	type	PL1/2 IDC 34 poles pin #	Description
GND	PWR	5,8,27,30	Secondary ground
MUTE 1/2	IN	15,20	Mute channels 1 and 2 (active low)
RX232 1/2	-	2	reserved
TX232 1/2	-	3	reserved
+5VDC 1/2	PWR	4	+5V (Max absorption 0,1A)
GND	PWR	5,8,27,30	Secondary ground
IN+1	IN	6	Positive input channel 1
IN-1	IN	7	Negative input channel 1
GND	PWR	5,8,27,30	Secondary ground
SDPWS 1/2	IN	1	Shut Down Power Supply (provide a voltage 3V3<V<12V to shut down the module)
VOUT1MON	OUT	9	Output voltage monitor channel 1 (20V/V)
PROTECT1	OUT	10	Protect status channel 1 (active low)
IOUT1MON	OUT	11	Output current monitor channel 1 (7,5V/V)
TEMPMON 1/2	OUT	12,23	Temperature monitor Channels 1/2
+12VDC 1/2	PWR	13,22	Positive Auxiliary Power Supply
-12VDC 1/2	PWR	14,21	Negative Auxiliary Power Supply
+VCCMON 1/2	OUT	16,19	Positive Rail voltage monitor (20V/V)
-VCCMON 1/2	OUT	17,18	Negative Rail voltage monitor (20V/V)

PL1 Signals on PL1/2 connector (channels 1 and 2)

Test Point Name	type	PL1/2 IDC 34 poles pin #	Description
GND	PWR	5,8,27,30	Secondary ground
MUTE 1/2	IN	15,20	Mute channels 1 and 2 (active low)
RX232 1/2	-	2	reserved
TX232 1/2	-	3	reserved
+5VDC 1/2	PWR	4	+5V (Max absorption 0,1A)
GND	PWR	5,8,27,30	Secondary ground
IN+2	IN	29	Positive input channel 2
IN-2	IN	28	Negative input channel 2
GND	PWR	5,8,27,30	Secondary ground
SDPWS 1/2	IN	1	Shut Down Power Supply (provide a voltage 3V3<V<12V to shut down the module)
VOUT2MON	OUT	26	Output voltage monitor channel 2 (20V/V)
PROTECT2	OUT	25	Protect status channel 2 (active low)
IOUT2MON	OUT	24	Output current monitor channel 2 (7,5V/V)
TEMPMON 1/2	OUT	12,23	Temperature monitor Channels 1/2
+12VDC 1/2	PWR	13,22	Positive Auxiliary Power Supply
-12VDC 1/2	PWR	14,21	Negative Auxiliary Power Supply
+VCCMON 1/2	OUT	16,19	Positive Rail voltage monitor (20V/V)
-VCCMON 1/2	OUT	17,18	Negative Rail voltage monitor (20V/V)

PL2 Signals on PL1/2 connector (channels 1 and 2)

Test Point Name	type	PL3/4 IDC 34 poles pin #	Description
GND	PWR	5,8,27,30	Secondary ground
MUTE 3/4	IN	15,20	Mute channels 3 and 4 (active low)
RX232 3/4	-	2	reserved
TX232 3/4	-	3	reserved
+5VDC 3/4	PWR	4	+5V (Max absorption 0,1A)
GND	PWR	5,8,27,30	Secondary ground
IN+3	IN	6	Positive input channel 3
IN-3	IN	7	Negative input channel 3
GND	PWR	5,8,27,30	Secondary ground
SDPWS 3/4	IN	1	Shut Down Power Supply (provide a voltage 3V3<V<12V to shut down the module)
VOUT3MON	OUT	9	Output voltage monitor channel 1 (20V/V)
PROTECT3	OUT	10	Protect status channel 3 (active low)
IOUT3MON	OUT	11	Output current monitor channel 3 (7,5V/V)
TEMPMON 3/4	OUT	12,23	Temperature monitor Channels 3/4
+12VDC 3/4	PWR	13,22	Positive Auxiliary Power Supply
-12VDC 3/4	PWR	14,21	Negative Auxiliary Power Supply
+VCCMON 3/4	OUT	16,19	Positive Rail voltage monitor (20V/V)
-VCCMON 3/4	OUT	17,18	Negative Rail voltage monitor (20V/V)

PL3 Signals on PL3/4connector (channels 3 and 4)

Test Point Name	type	PL3/4 IDC 34 poles pin #	Description
GND	PWR	5,8,27,30	Secondary ground
MUTE 3/4	IN	15,20	Mute channels 3 and 4 (active low)
RX232 3/4	-	2	reserved
TX232 3/4	-	3	reserved
+5VDC 3/4	PWR	4	+5V (Max absorption 0,1A)
GND	PWR	5,8,27,30	Secondary ground
IN+4	IN	29	Positive input channel 4
IN-4	IN	28	Negative input channel 4
GND	PWR	5,8,27,30	Secondary ground
SDPWS 3/4	IN	1	Shut Down Power Supply (provide a voltage 3V3<V<12V to shut down the module)
VOUT4MON	OUT	26	Output voltage monitor channel 4 (20V/V)
PROTECT4	OUT	25	Protect status channel 4 (active low)
IOUT4MON	OUT	24	Output current monitor channel 4 (7,5V/V)
TEMPMON 3/4	OUT	12,23	Temperature monitor Channels 3/4
+12VDC 3/4	PWR	13,22	Positive Auxiliary Power Supply
-12VDC 3/4	PWR	14,21	Negative Auxiliary Power Supply
+VCCMON 3/4	OUT	16,19	Positive Rail voltage monitor (20V/V)
-VCCMON 3/4	OUT	17,18	Negative Rail voltage monitor (20V/V)

PL4 Signals on PL3/4connector (channels 3 and 4)

12 Support and warranty

This Powersoft product contains no user-serviceable parts. All warranty repairs must be carried by a certified technician operating in a Powersoft Authorized service center.

To learn more about warranty terms and conditions, visit powersoft.com/warranty.

For any service related enquire, please write to service@powersoft.com.

Specifications

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General	
Number of channels	2 in / 2 out
Output power	
Maximum output power per channel @ 4 Ω	1600 W
Maximum output power per channel @ 8 Ω	1100 W
Maximum output power per channel @ 16 Ω	600 W
Maximum output power @ 8 Ω Bridged	3200 W
Maximum output power @ 16 Ω Bridged	1600 W
Max output voltage	150 V_{peak}
Max output current	54 A_{peak}

Audio	
Gain	selectable: 32 dB, 38 dB (x40, x80 voltage gain respectively)
Frequency response	20 Hz - 20 kHz (+0/-1 dB) @ 1 W, 8 Ω
S/N ratio	115 dB (A weighted)
Crosstalk separation	-71 dB @ 1 kHz (4 Ω)
Input sensitivity @ 8Ω	2.7 V / +10.8 dBu @ 32 dB gain
Max input level	8 Vrms / +20 dBu
Input impedance	10 kΩ balanced
THD+N	< 0.09% from 0.1 W to full power (typically <0.05%)
DIM100	< 0.05% from 0.1 W to full power (typically <0.007%)
Slew rate	50 V/µs @ 8 Ω, input filter bypassed
Damping factor	> 500 @ 100 Hz

Construction	
Dimensions (L x W x H)	216 mm x 122 mm x 79 mm 8.5" x 4.8" x 3.1"
Weight	1.55 kg (3.4 lb)

AC Mains Power	
Power supply	Universal, regulated switch mode with PFC (power factor correction)
Nominal power requirement	AC 100 V - 240 V, 50/60 Hz
Operating voltage	AC 90 - 264 V
Power factor	cosφ > 0.90 @ 4 Ω full power
Consumption	
1/8 of max output power @ 8 Ω	600 VA

AUX supplies	
Max aux supply current draw @ ±12 V	500 mA

Thermal & Environment		
Operating temperature & Humidity	0° to 35° C, 0 to 90% Non condensing	
Thermal dissipation	Fan, variable speed, temperature controlled	
	@ 230 V	
I/8 of max power @ 4 Ω	293 BTU/h	74 kcal/h
I/4 of max power @ 4 Ω	556 BTU/h	140 kcal/h
	@ 115 V	
I/8 of max power @ 4 Ω	297 BTU/h	75 kcal/h
I/4 of max power @ 4 Ω	587 BTU/h	148 kcal/h

Reference Standard	
Vibration	EN 60068-2-64: 2008 (Random Test) EN 60068-2-27:2009 (Shock Test)
EMC immunity	EN 55103-2:2009
EMC emissions	EN 55103-1:2009, EN 55103-1:2009/A1:2012
EMC other	EN 61000-3-2:2014 EN 61000-3-3:2013 EN 61000-3-11:2000
Safety standards	EN 60065:2014 EN 60065:2014/AC:2016

Electrical characteristics T_a = 25° C (unless otherwise specified)

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For questions about sales, application and technical support, service, maintanance, and compliance, please refer to the powersoft website

powersoft-audio.com