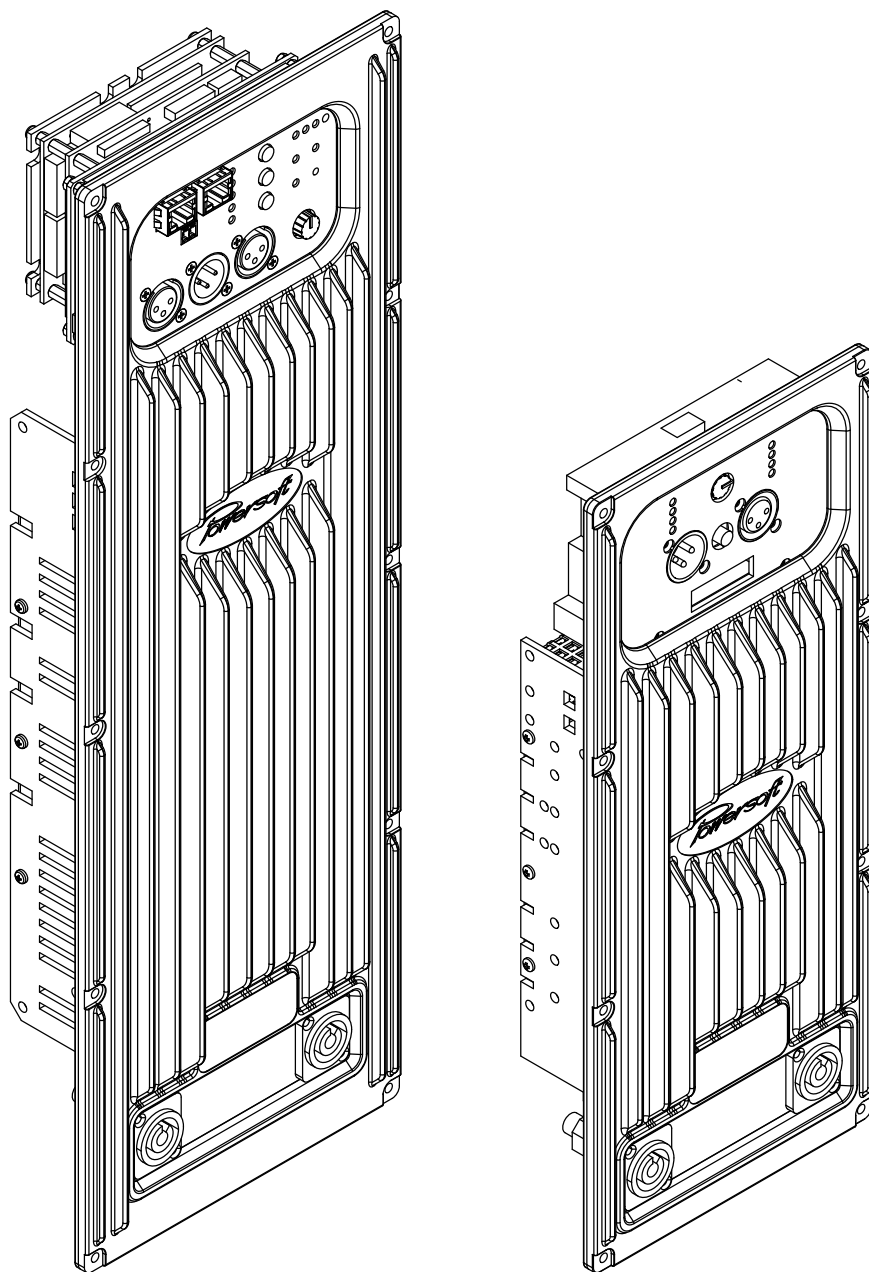


DigiMod Integration Kit



ASSEMBLING GUIDE

powersoft_DigiModIK_uguide_en_v2.3

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

Integration Kit | Assembling Guide

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1:1.Welcome

Congratulations on your purchase of the Powersoft DigiMod Integration Kit.

We know you are eager to assemble and use the Integration Kits, 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.

DigiMod IK is all you need to develop your own line of active loudspeakers saving time and resources needed for amp integration and dramatically reducing your time-to-market.

DigiMod IK represents a true plug'n'play solution providing all the power and the quality of DigiMod amps on an elegant heatsink panel, fully equipped for a complete interface provided with XLR connectors for mono input + link output, volume potentiometers, status and meter LEDs.

DigiMod IK is simply the combination of three parts that just need to be screwed together:

1. Amp module unit
2. Heatsink
3. DSP + Interface Board

1:2.Unpacking & checking for shipping damage

Your Powersoft products were completely tested and inspected before leaving the factory. Carefully inspect the shipping packages before opening them, and then immediately inspect your new products. If you find any damage notify the shipping company immediately.

1:3.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.

1:4.Programming the DSP

Once you have the complete assembly in your hands, you can follow two ways to customize your system: either program the DSP board with SigmaStudio™ or initialize the DSP boards with your custom presets thanks to the Armonía ProManager and Armonía Pro Audio Suite software.

1:4.1.Programming the DSP with SigmaStudio™

If you feel confident with the SigmaStudio™ development tool, you can create and customize the performance for your DigiMod IK based system and load up to 4 different presents into the DSP memory bank.

Powersoft designed the Programming Board PRO and Programming Board LITE for easy communication and configuration of the DigiMod amp module via the SigmaStudio™ v.3.3 IDE.

In order to achieve full compatibility with Armonía Pro Audio Suite DigiMod IK by setting the SigmaStudio™ by means of the Powersoft Programming Board LITE.

The use of the Programming Board PRO for the DigiMod IK initialization makes the system incompatible with Armonía Pro Audio Suite.

If you aim to the full compatibility of your DigiMod IK based solution with Armonía Pro Audio Suite, do not use the Programming Board PRO for the initialization and follow the procedure described in this manual.

1:4.2.Initializing the DSP in Armonía

You will be able to define your system as unique products for the Armonía Pro Audio Suite, and the software will be able to display the name of your Brand, the name and serial number of your system, your custom presets, the family and the series they belong to and a brief descriptions for your products. Armonía is closer now than it has never been before an OEM software and Powersoft hopes that both you and your customers will benefit from such great layer of customization, visibility, flexibility and exclusivity.

You will be guided through the initialization, fine tuning and customization your DigiMod IK based system within the user friendly interface of Armonía ProManager and Armonía Pro Audio Suite software.

Important safety instructions

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

EXPLANATIONS OF GRAPHICAL SYMBOLS



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 with the low voltage and electromagnetic compatibility.



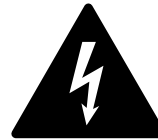
Symbol for earth/ground connection.



Symbol for conformity with Directive 2002/96/EC and Directive 2003/108/EC of the European Parliament on waste electrical and electronic equipment (WEEE).



Symbol for electrostatic discharge sensitive devices.



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



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.



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.



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.

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.

EXPLICATION DES SYMBOLES GRAPHIQUES



La triangle avec le symbol du foudre est employée pour alerter l'utilisateur au risque de décharge électrique.



Le triangle avec un point d'exclamation est employée pour alerter l'utilisateur d'instruction importantes pour lors opérations de maintenance.



Le marquage CE indique la conformité à la directive de basse tension et la compatibilité électromagnétique.



Symbole pour la connexion à la terre.



Symbole pour la conformité al la Directive 2002/96/EC et la Directive 2003/108/EC du Parlement Européen sur les équipements électriques et électroniques (WEEE).



Symbole pour les appareils sensibles aux décharges électrostatiques.



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.



MISE EN GARDE : AFIN DE RÉDUIRE LES RISQUES DE CHOC ÉLECTRIQUE, N'ESSAYEZ PAS D'OUVRIR L'UNITÉ, MEME EN PARTIE. AUCUNE PIÈCE A L'INTERIEUR NE PEUT ETRE CHANGÉE PAR L'UTILISATEUR. LAISSEZ L'ENTRETIEN A UN PERSONNEL QUALIFIÉ.



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.

Instrucciones de seguridad importantes

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

EXPLICACIÓN DE LOS SÍMBOLOS GRÁFICOS



El triángulo con el símbolo de rayo eléctrico es usado para alertar al usuario de el riesgo de un choque eléctrico.



El triángulo con el signo de admiración es usado para alertar al usuario de instrucciones importantes de operación o mantenimiento.



La marca CE indica el cumplimiento de la directiva de bajo voltaje y de compatibilidad electromagnética.



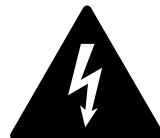
Símbolo de la conexión a tierra.



Símbolo de conformidad con la Directiva 2002/96/EC y Directiva 2003/108/EC del Parlamento Europeo sobre los aparatos eléctricos y electrónicos (WEEE).



Símbolo para los dispositivos sensibles a descargas electrostáticas.



PRECAUCIÓN

RIESGO DE CHOQUE ELÉCTRICO
NO ABRA LA UNIDAD



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.



PRECAUCIÓN: PARA REDUCIR EL RIESGO DE DESCARGA ELÉCTRICA, NO DESMONTE LA TAPA (NI EL PANEL TRASERO). NO HAY PIEZAS REPARABLES POR EL USUARIO EN EL INTERIOR. LLÉVELO A REPARAR A PERSONAL DE SERVICIO CUALIFICADO.



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

Importanti istruzioni di sicurezza

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

SPIEGAZIONE DEI SIMBOLI GRAFICI



Il triangolo con il lampo è utilizzato per avvisare l'utente del rischio di scossa elettrica.



Il triangolo con il punto esclamativo è utilizzato per avvisare l'utente di importanti istruzioni d'uso e manutenzione.



The CE-mark indicates the compliance with the low voltage and electromagnetic compatibility.



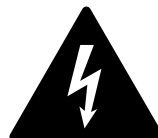
Simbolo della connessine di terra.



Simbolo di conformità alla Direttiva 2002/96/CE e alla Direttiva 2003/108/CE del Parlamento Europeo sulle apparecchiature elettriche ed elettroniche (RAEE).



Simbolo per le apparecchiature sensibili alle scariche elettrostatiche



ATTENZIONE

RISCHIO DI SCOSSE ELETTRICHE, NON APRIRE



L'elettricità viene usata per svolgere molte funzioni utili, ma può anche causare danni personali o agli oggetti se applicata in modo improprio. Questo prodotto è stato progettato e realizzato con la massima attenzione alla sicurezza. Tuttavia, UN USO IMPROPRIO PUÒ PRODURRE SCOSSE ELETTRICHE E/O INCENDI. Per evitare potenziali pericoli, osservare le seguenti istruzioni durante l'installazione, l'utilizzo e la pulizia del prodotto. Per garantire la sicurezza e prolungare la vita utile del monitor LCD, leggere attentamente le seguenti precauzioni prima di usare il prodotto.

Importanti istruzioni di sicurezza

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.



ATTENZIONE: PER RIDURRE IL RISCHIO DI SCOSSE ELETTRICHE, NON TENTARE DI APRIRE ALCUNA PARTE DELL'UNITÀ. NON CI SONO PARTI INTERNE AD USO DELL'UTENTE. RIVOLGERSI A PERSONALE QUALIFICATO PER L'ASSISTENZA.



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

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 B 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 components possible.



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 and 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 Powersoft S.p.A. for reprocessing. For more information about where you can send your waste equipment for recycling, please contact Powersoft 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



We declare that under our sole responsibility the products:

Model Name: DigiMod, IpalMod

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:

- ▶ 2006/95/EC Low Voltage Directive
- ▶ 2004/108/EC Electromagnetic Compatibility Directive
- ▶ 2002/95/CE RoHS Directive

The following armonized standards are applied:

- ▷ EN 55103-1
- ▷ EN 61000-3-2
- ▷ EN 61000-3-3
- ▷ EN 55103-2
- ▷ EN 61000-4-2
- ▷ EN 61000-4-3
- ▷ EN 61000-4-4
- ▷ EN 61000-4-5
- ▷ EN 61000-4-6
- ▷ EN 61000-4-11
- ▷ EN 60065

Scandicci,
March 2002

Luca Lastrucci
Managing Director
Luca Lastrucci

For compliance questions only: compliance@powersoft.it

Electromagnetic Compatibility (EMC)

7

7:1.AC MAIN filter



In order to improve the electromagnetic compatibility an EMC filter must be inserted before the AC MAINS plugs on the power supply.

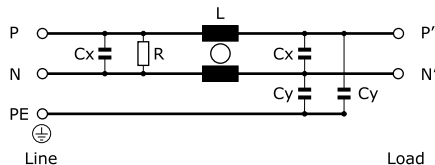


FIGURE 1: Typical electrical schematic of the EMI Filter.

Powersoft suggests:

- ▶ Schaffner FN2030-10-06 model for:
 - ▷ DigiMod 500
 - ▷ DigiMod 1000
 - ▷ DigiMod 1500
 - ▷ DigiMod 2000HV
- ▶ Schaffner FN2020-16-06 model for:
 - ▷ IpalMod
 - ▷ DigiMod 3000 PFC su
 - ▷ DigiMod 3004 PFC4
 - ▷ DigiMod 2004 PFC2

7:2.Earth connection



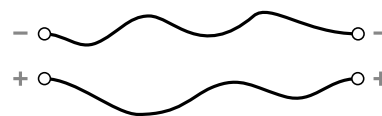
This device must be powered exclusively by earth connected mains sockets in electrical networks compliant to the IEC 364 or similar rules. Is absolutely necessary to verify this fundamental requirement of safety and, in case of doubt, require an accurate check by a qualified personal.

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.

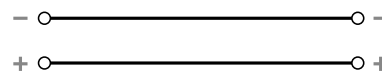
7:3.Cabling

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

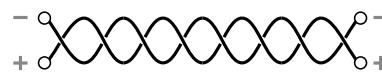
- ▶ reduced cabling length is advisable;
- ▶ keep cable pairs as close as possible to each other in order to minimize the antenna effect;
- ▶ design the cabling path far from RF noise source;
- ▶ set the cabling for RF noise rejection: shielded or twisted cables are advisable configuration (ref. FIGURE 3);
- ▶ use electromagnetic compatible connectors.



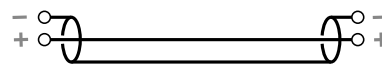
Loose pair
Configuration prone to high RF noise



Parallel pair
Configuration prone to RF noise



Twisted pair
Highly immune to RF noise



Shielded pair
Highly immune to RF noise

FIGURE 3: Cabling configuration.

7:4.Ferrite cores

Reject RF noise from input and output cabling by installing ferrite shields. Powersoft suggests the Kitagawa RFC-H13 ferrite core.

Wrap the cable around one side of each ferrite so that it pass through each ferrite twice (ref. FIGURE 2). Install the ferrite shield as close as possible to where the cable plug into the amplifier. Placing the ferrite elsewhere on the cable noticeably reduces its effectiveness.

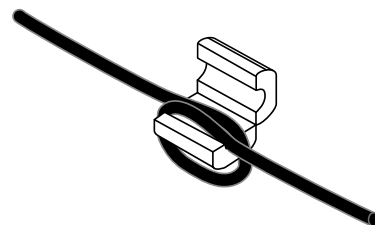


FIGURE 2: Ferrite core installation on I/O wirings.

7:5.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.

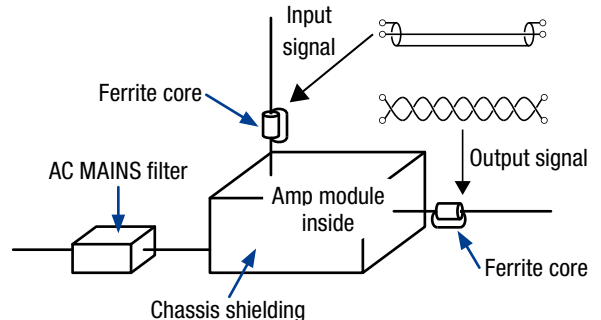



FIGURE 4: Tools and best practice for improving the electromagnetic compatibility.

Electrostatic Discharge (ESD)

8

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.

Thermal constraints

9

The amplifier module must be correctly heatsinked for proper and reliable operation.

The built-in fans and the external passive heat sink guarantee 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 5](#) for proper module placing.

IN [FIGURE 5](#) HEATSINK FINS ARE SET HORIZONTALLY (WRONG!) ONLY FOR DESCRIPTIVE PURPOSE.

All configuration showed in [FIGURE 5](#) 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 5.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 5.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.

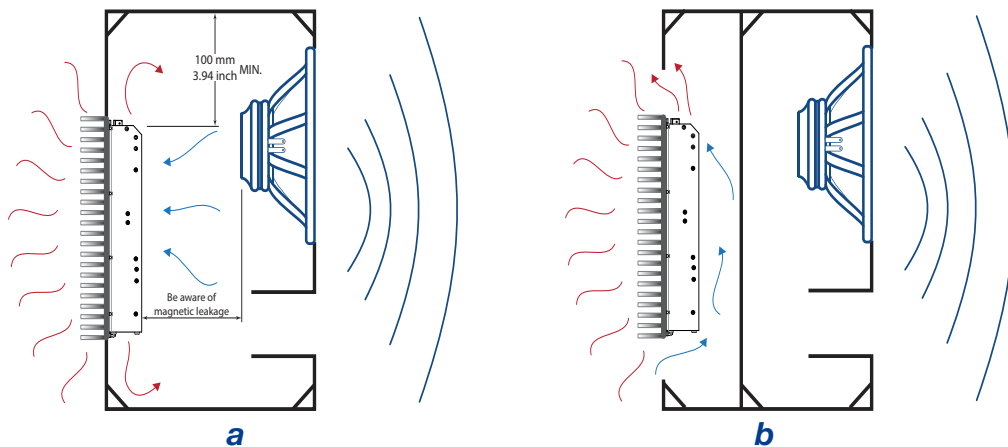
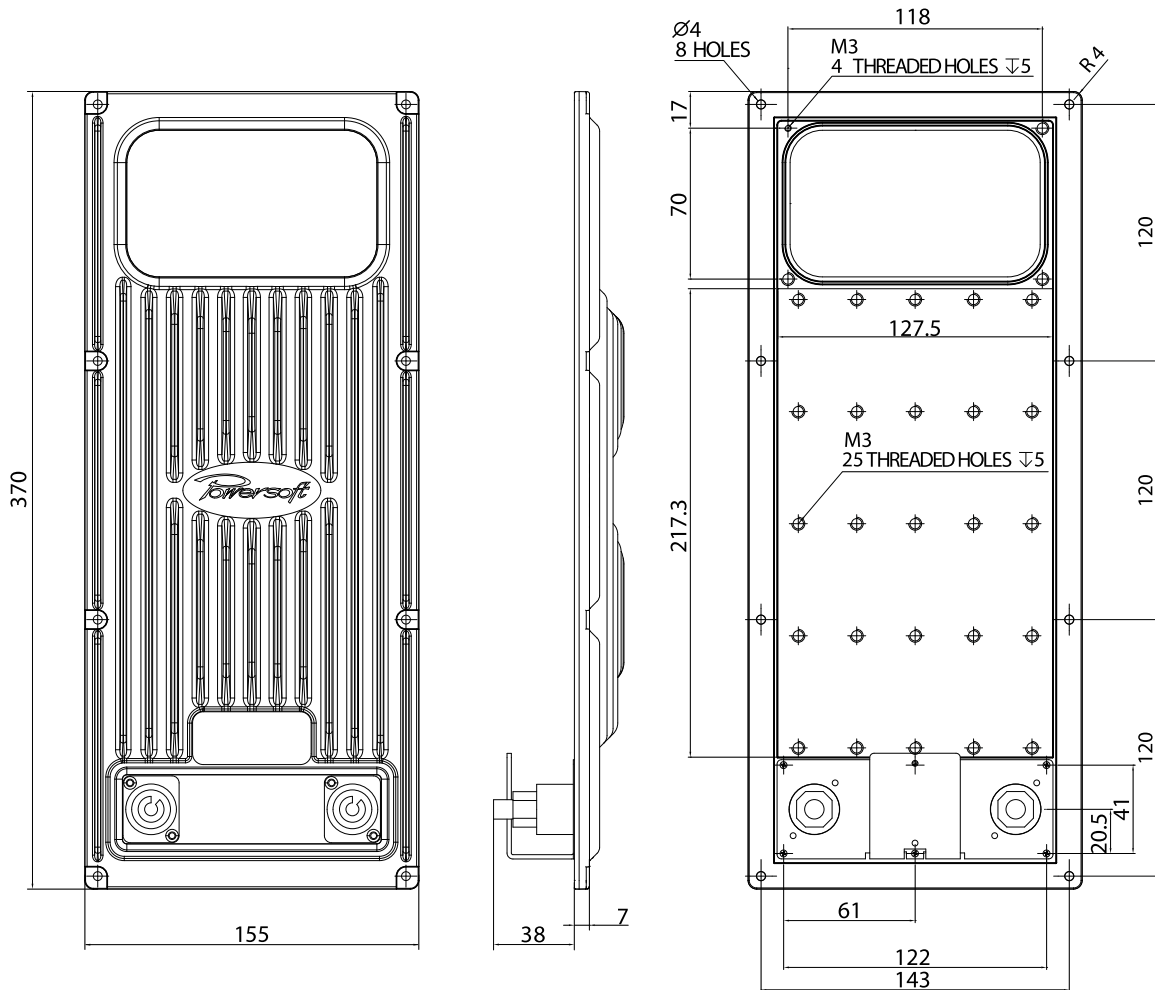


FIGURE 5: Cooling solutions (for descriptive purpose the heatsink fins are set in wrong direction);
a) Module and loudspeaker into the same chamber; b) Module in a separate vented chamber.

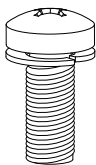
Mechanical drawings

Use these pages as a reference to carefully inspect your shipping packages. If you find any damage or missing part please notify it to Powersoft immediately.

9:1.Heatsink medium – HS000M01

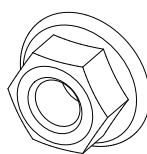


6x



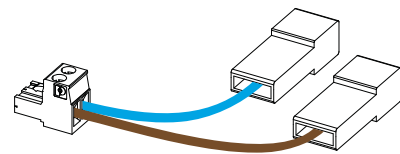
VI000057
M3x6 bossard

1x



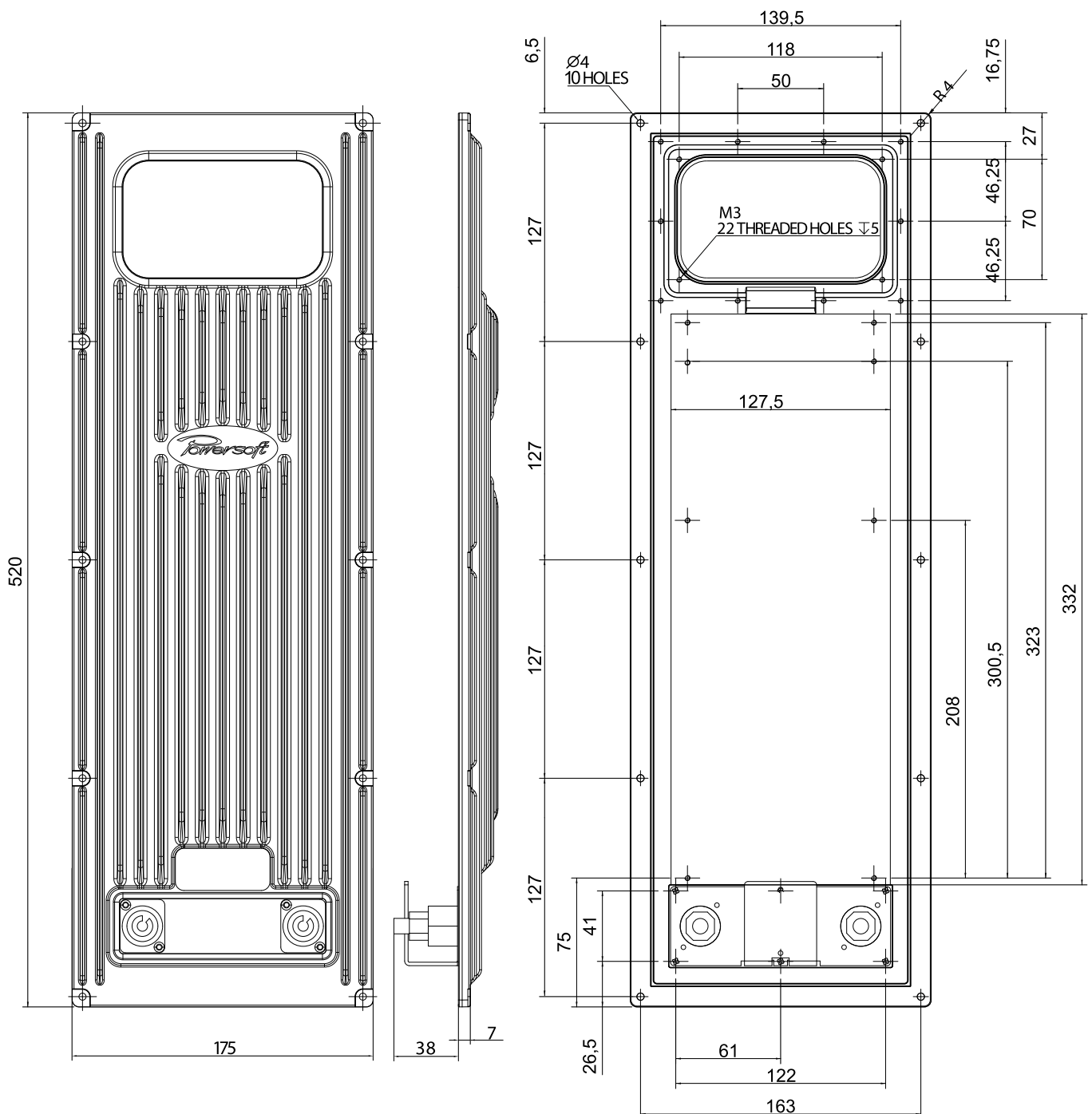
VI000329
M4

1x

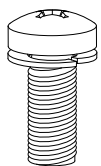


AC MAIN adapter for
DigiMod 1000 and DigiMod 15000

10:1.Heatsink large – HS000L01

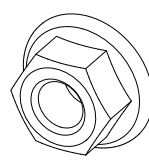


6x

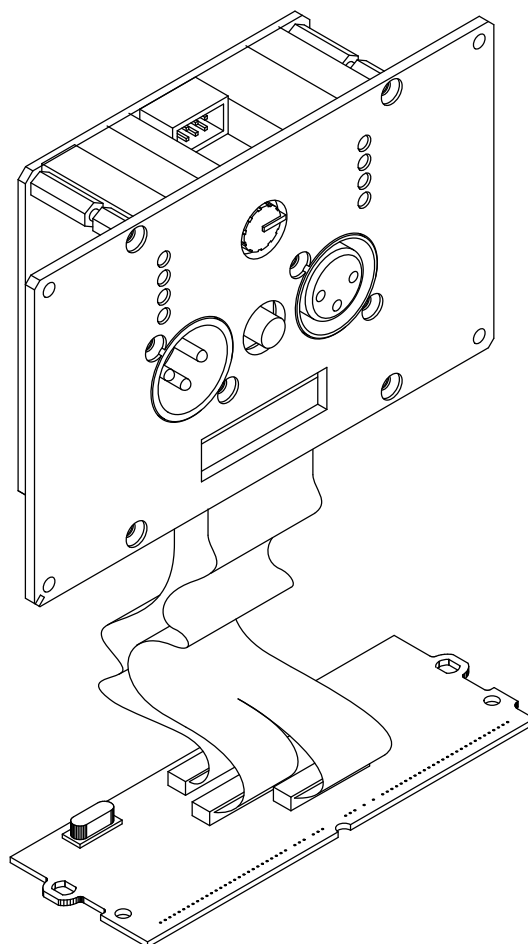


VI000057
M3x6 bossard

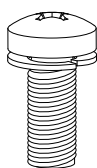
1x



VI000329
M4

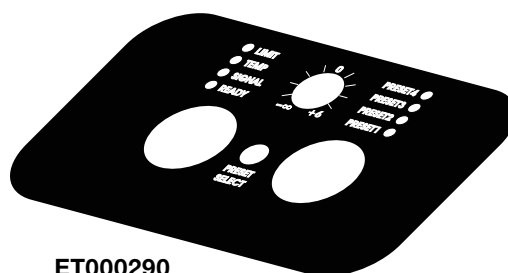


4x



VI000057
M3x6 bossard

1x



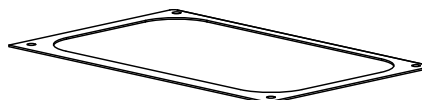
ET000290
label for DSP-D interface

1x

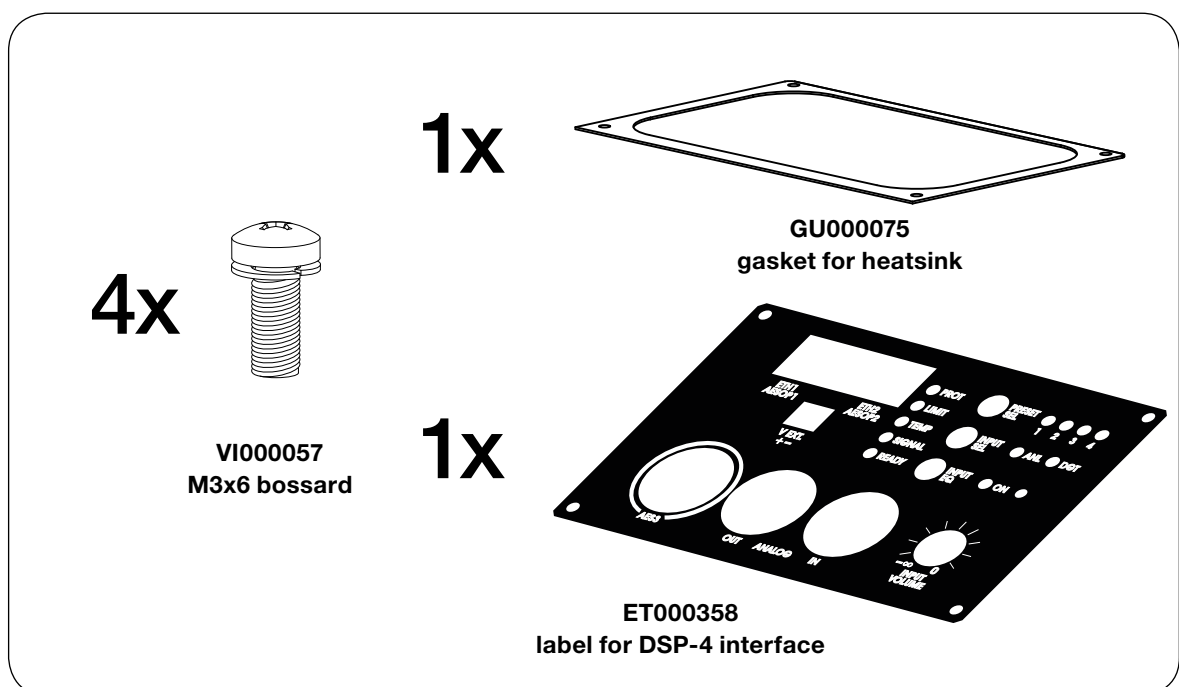
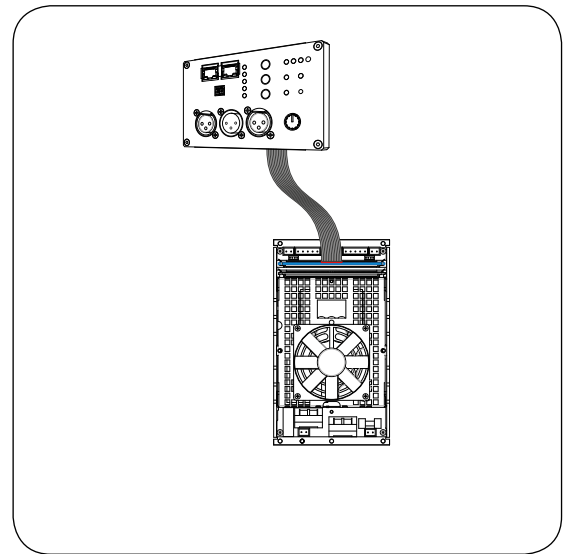
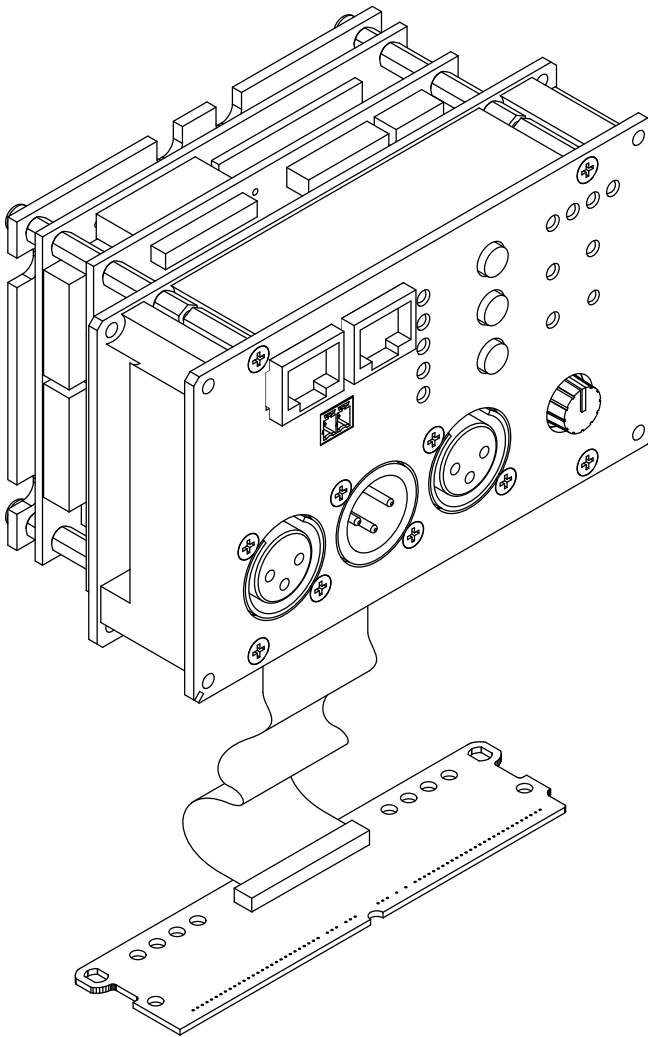


GU000082
gasket for interface

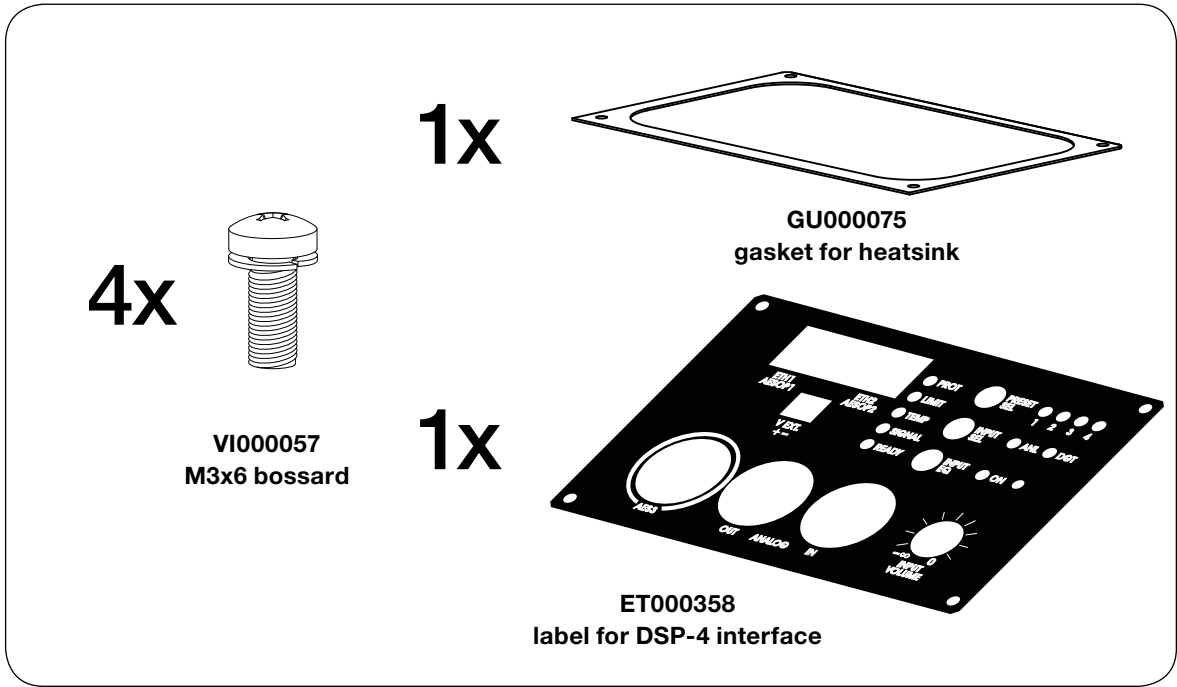
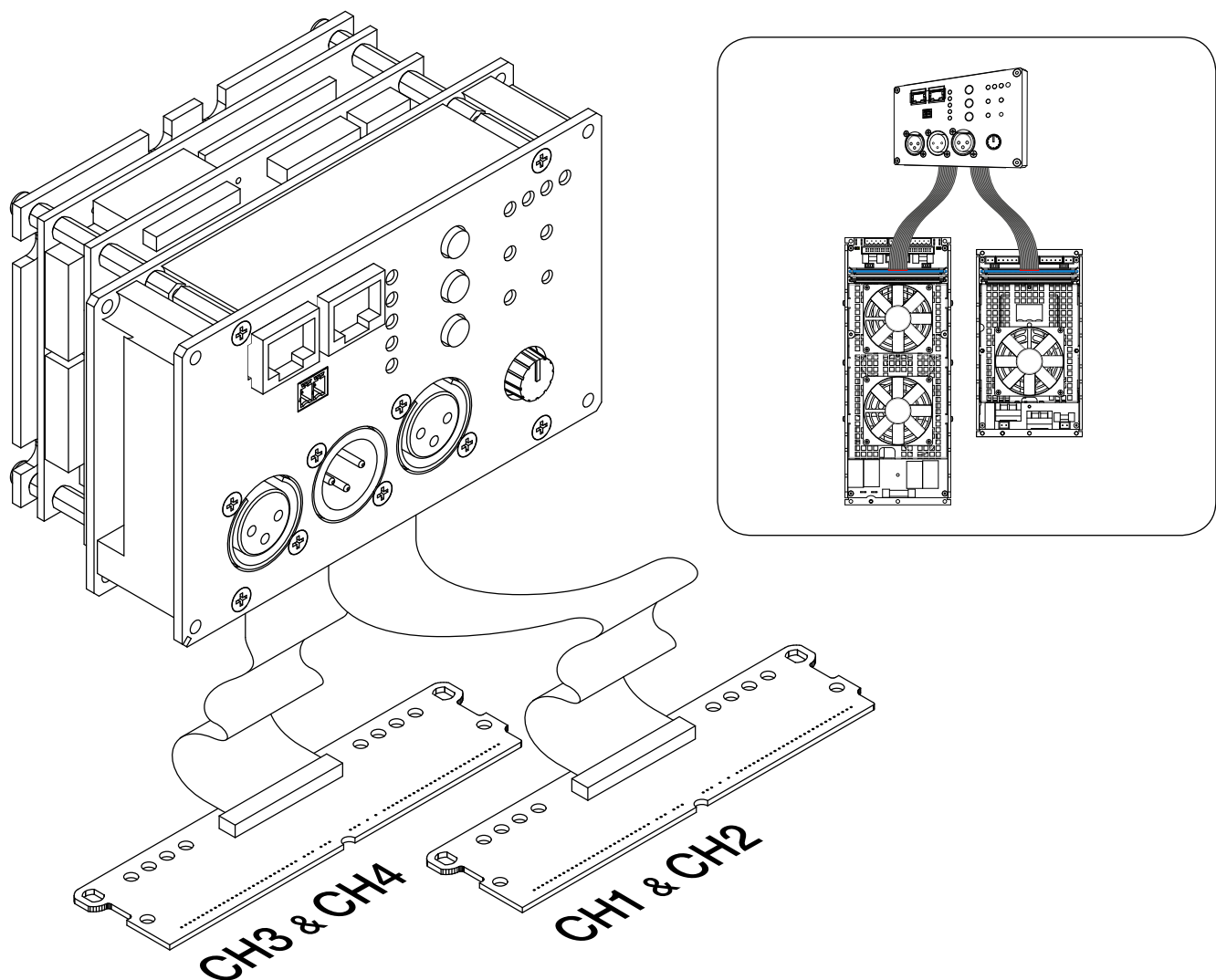
1x

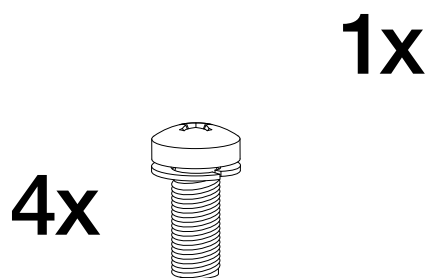
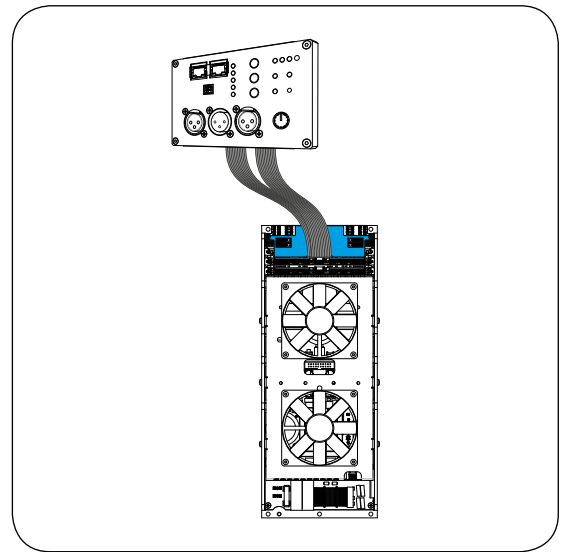
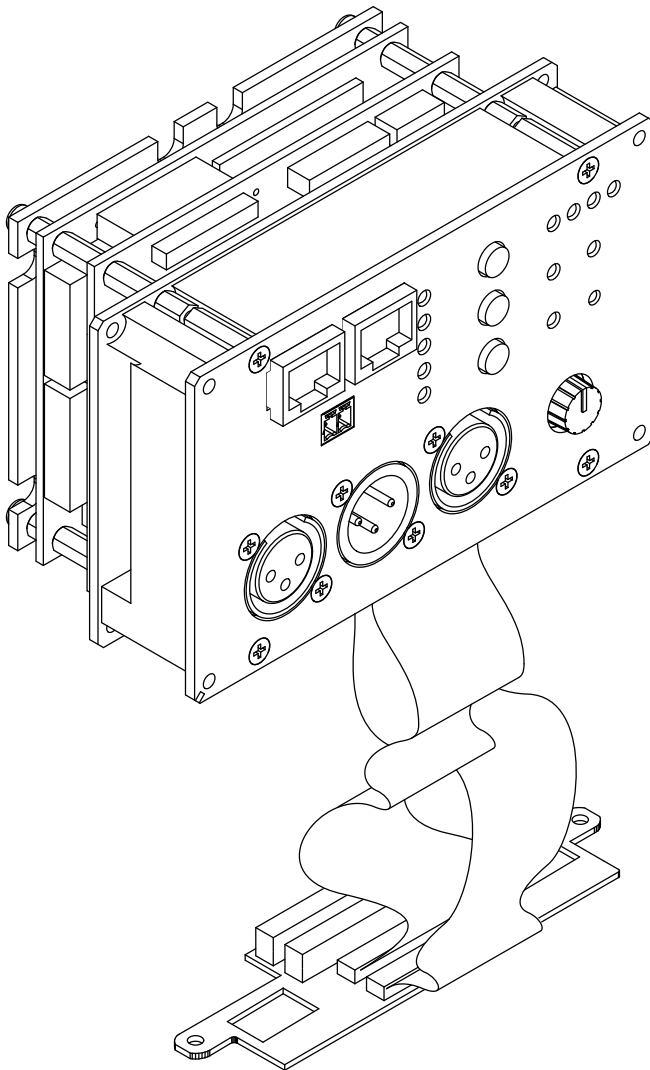


GU000075
gasket for heatsink



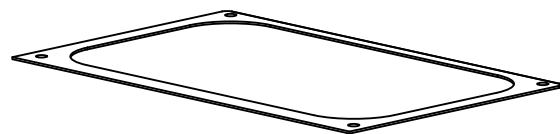
10:4.DSP-4 / 4 channels – DSP40002





VI000057
M3x6 bossard

1x



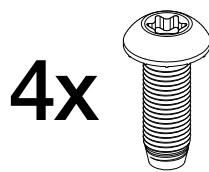
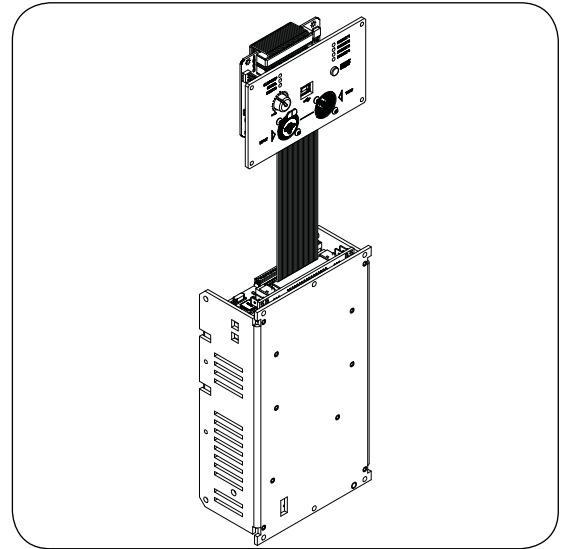
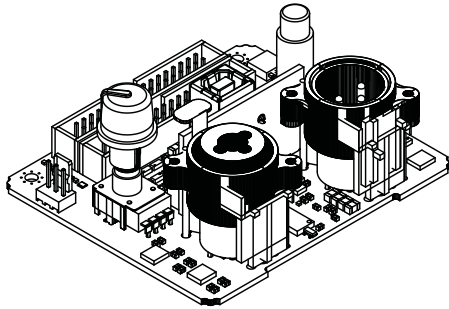
GU000075
gasket for heatsink

1x

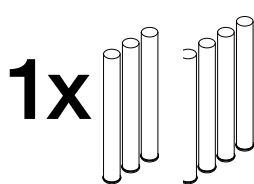


ET000358
label for DSP-4 interface

10:6.DSP-Lite for DigiMod – DSPL0001 + KTDSPLO1

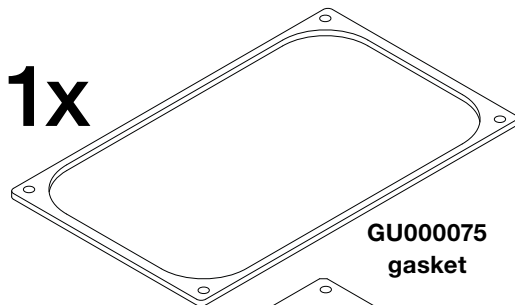


VI000289
Torx screw

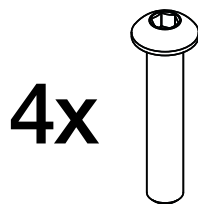


ME001030
light pipes (7 pcs)

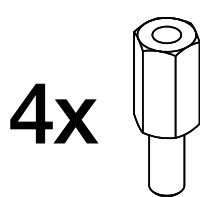
1x



GU000075
gasket

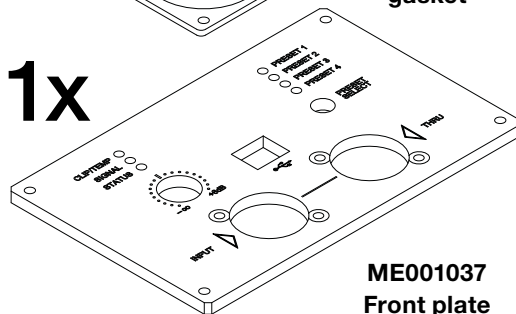


VI000104
M3x16 screw



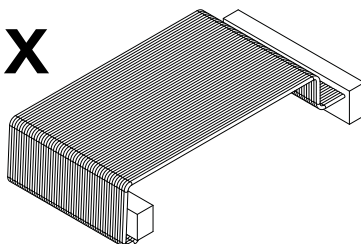
VI000092
H9 M/F SW5 pillar

1x



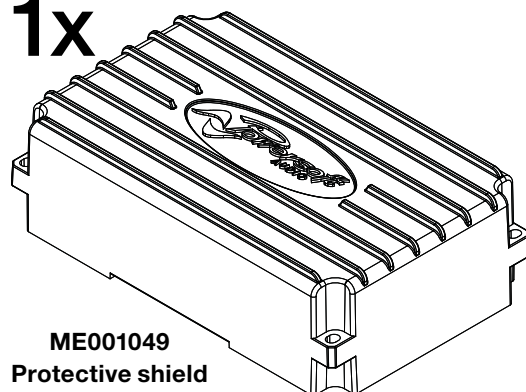
ME001037
Front plate

1x



CB000603
DIL34 flat cable

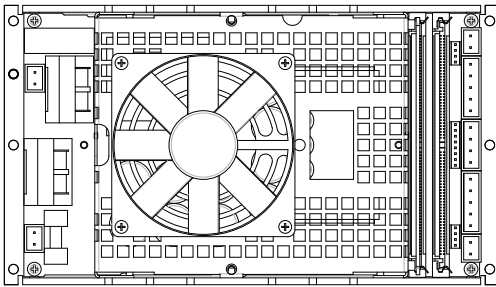
1x



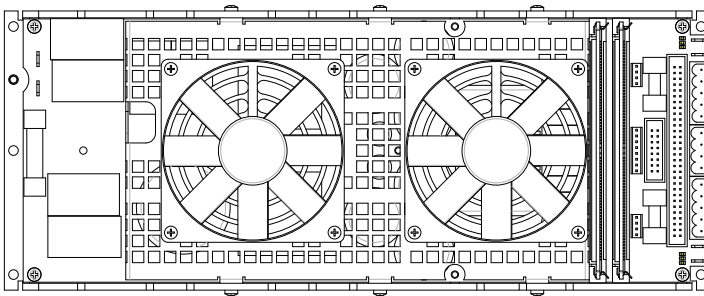
ME001049
Protective shield

10:7.Amp modules

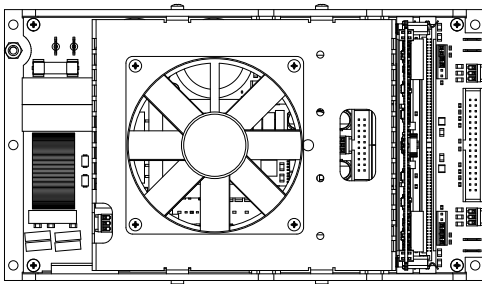
For more detailed information and instructions on the Powersoft amplifier module that you have purchased please refer to its specific user-guide.



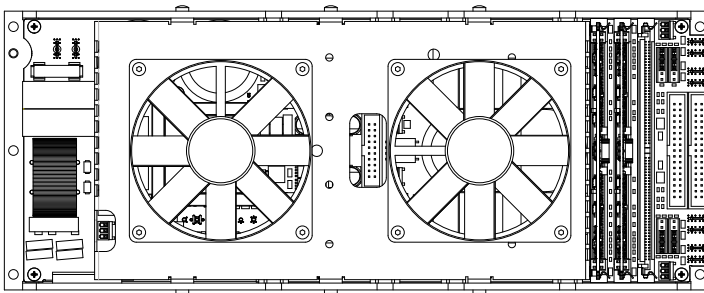
- DigiMod 1000 (PF00P132)
- DigiMod 1500 (PF00A150)
- DigiMod 2000HV (PF00A153)



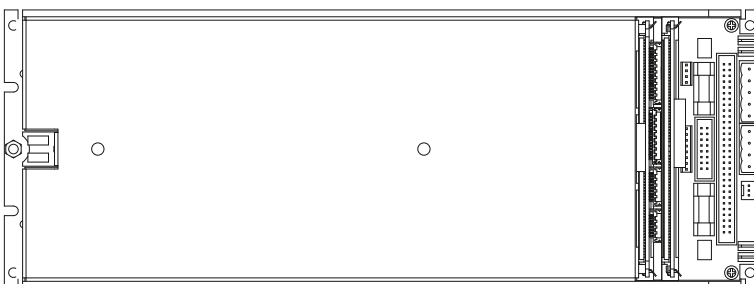
- DigiMod 3000PFC Single Unit (PF00P192)



- DigiMod 2004PFC2 (PF00P291)



- DigiMod 3004PFC4 (PF00P296)



- IpalMod (PF000193)

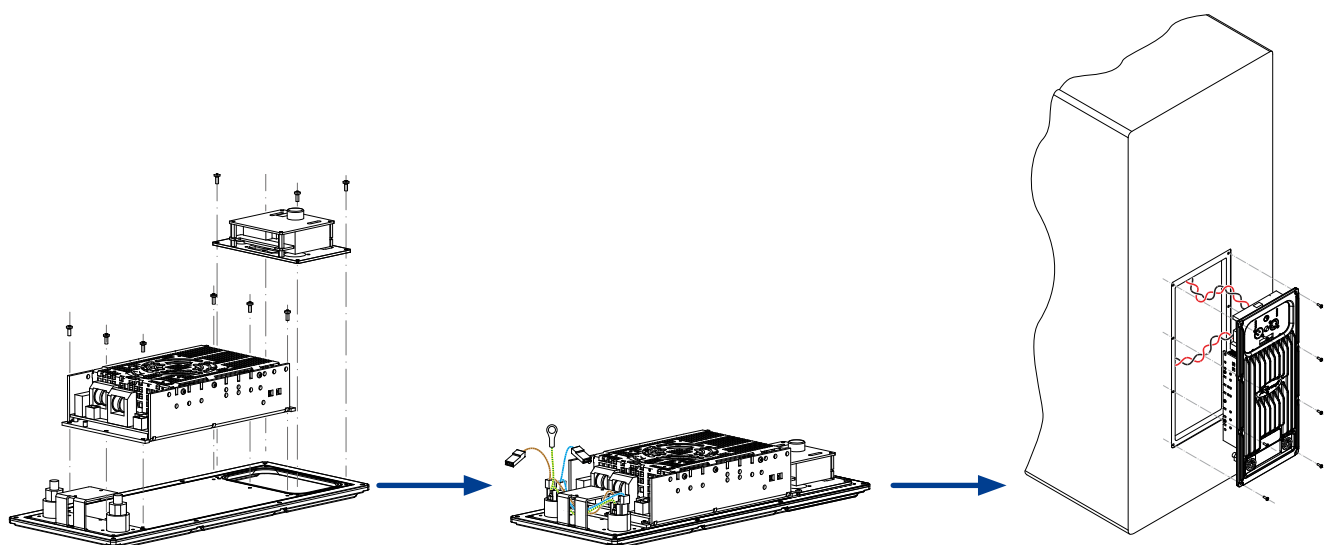
Workflow

Make your own custom DigiMod amp module in two steps:

1. Assembly the kit

[Assembly DigiMod and IpaMod Kits \(page 21\)](#)

[Assembly DigiMod PFC2/PFC4 + DSP-Lite Kit \(page 29\)](#)

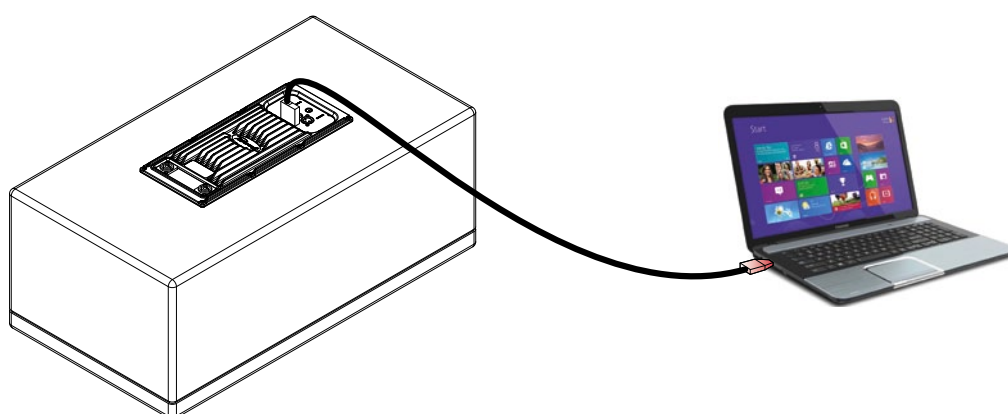


2. Initialize the DSP

[Initialization framework \(page 35\)](#)

[DSP initialization in Armonía \(page 39\)](#)

[DSP-C/DSP-D programming with SigmaStudio™ \(page 53\)](#)



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12:1.Required tools

► Assembly the kit:

- ▷ Phillips PH 0 screwdriver
- ▷ M7 socket wrench/screwdriver

► Initialize the DSP

- ▷ Personal Computer running Windows (any version starting from Windows XP)
- ▷ Armonía Pro Audio Suite
- ▷ Armonía ProManager

► JRSsoftware

- ▷ USB 2.0 to RS-485 converter (PC000096) (SPECTRA product id #112887 – browse the [SPECTRA website www.spectra.ch](http://www.spectra.ch) for further info)
- ▷ Powersoft ProNet485 (CB000214)
- ▷ Ethernet CAT5 to RS485 cable (PF000287)



Phillips PH 0 screwdriver



M7 socket wrench/screwdriver



CB000214



PC000096



PF000287



PC with Windows (XP, Vista, 7 or 8)



Armonía Pro Audio Suite 2.5



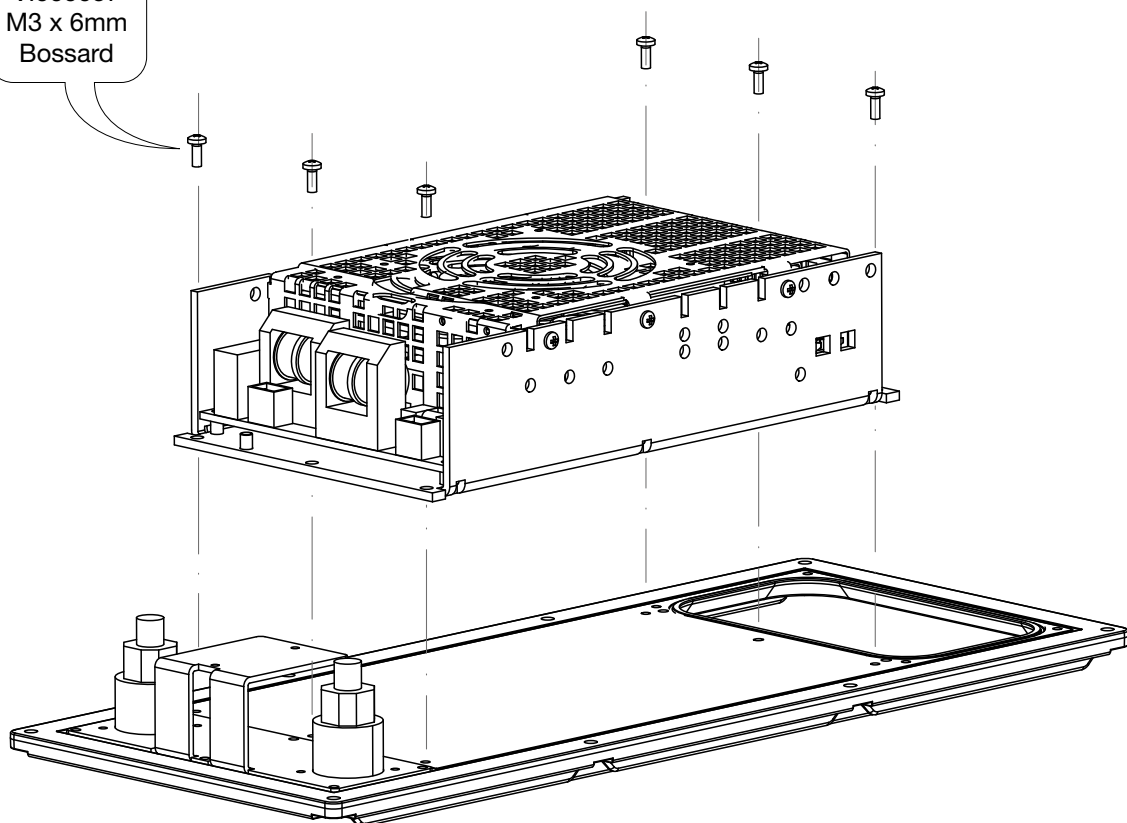
Armonía ProManager



jrsoftware (last release)

1

VI000057
M3 x 6mm
Bossard

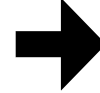
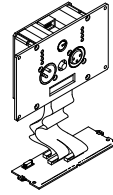
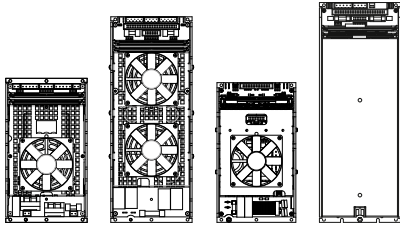


Phillips PH 0 screwdriver

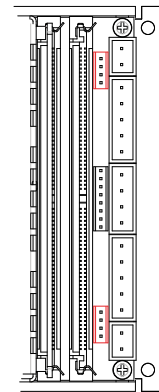


M7 socket wrench/screwdriver

2



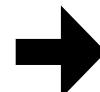
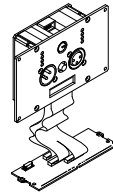
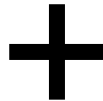
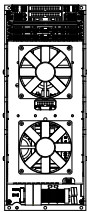
NO JUMPERS



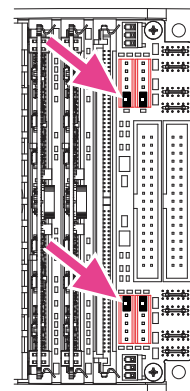
- ▶ DigiMod 1000
- ▶ DigiMod 1500
- ▶ DigiMod 2000HV

- ▶ DigiMod 3000PFC SU
- ▶ DigiMod 2004PFC2
- ▶ IpalMod

- ▶ DSP-D + Interface

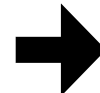
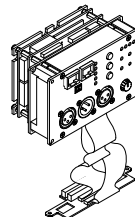
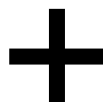
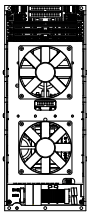


GAIN JUMPERS

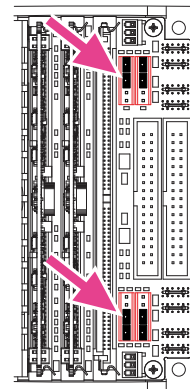


- ▶ DigiMod 3004PFC4

- ▶ DSP-D + Interface

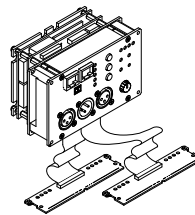
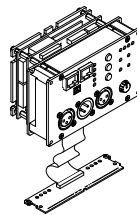
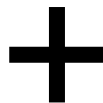
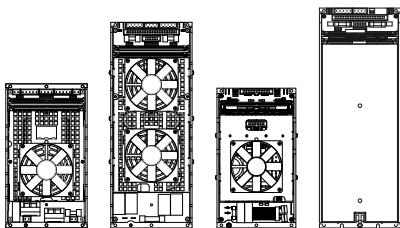


BYPASS JUMPERS

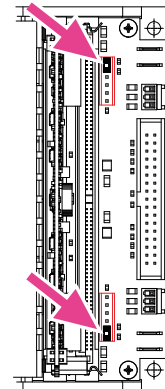


- ▶ DigiMod 3004PFC4

- ▶ DSP-4 + Interface



BYPASS JUMPERS



- ▶ DigiMod 1000
- ▶ DigiMod 1500
- ▶ DigiMod 2000HV

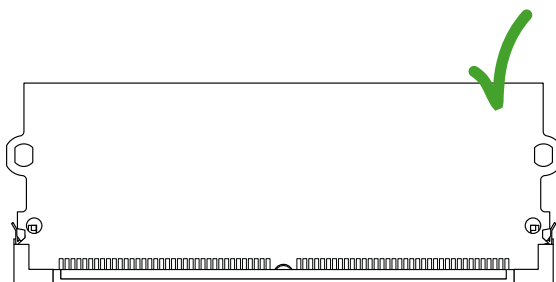
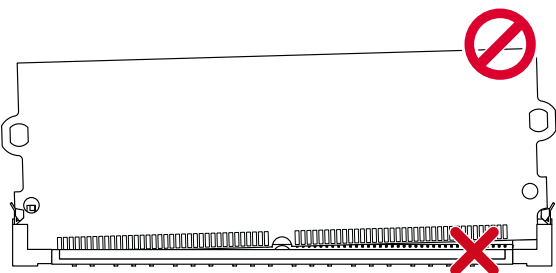
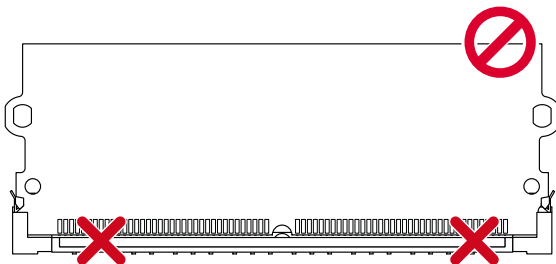
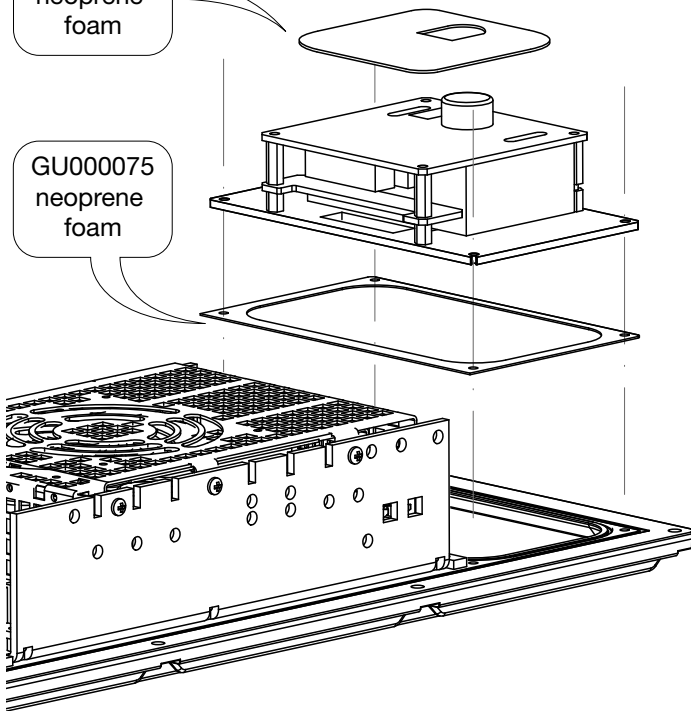
- ▶ DigiMod 3000PFC SU
- ▶ DigiMod 2004PFC2
- ▶ IpalMod

- ▶ DSP-4 + Interface

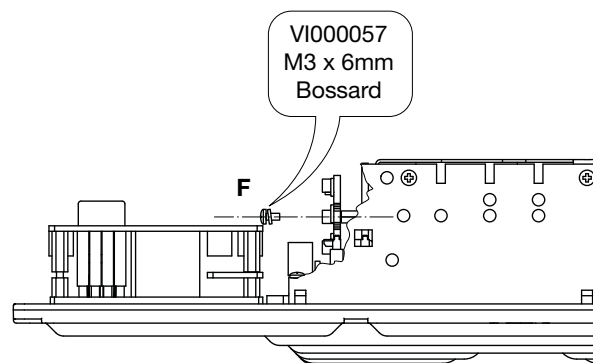
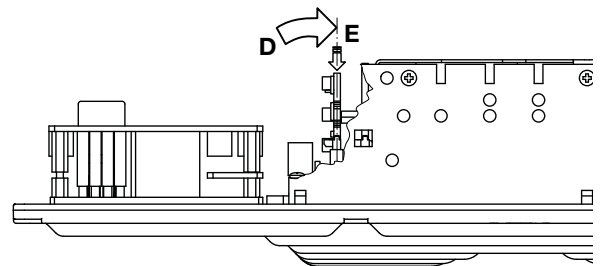
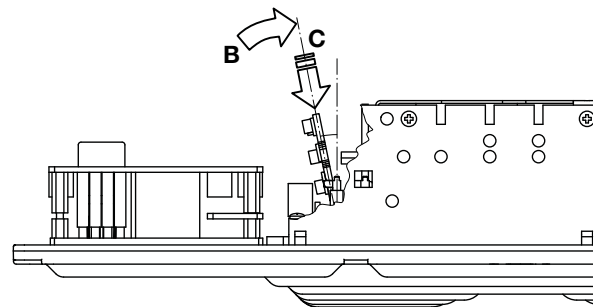
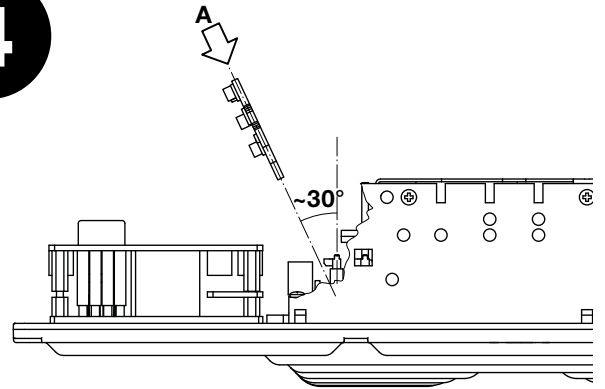
3

GU000082
neoprene
foam

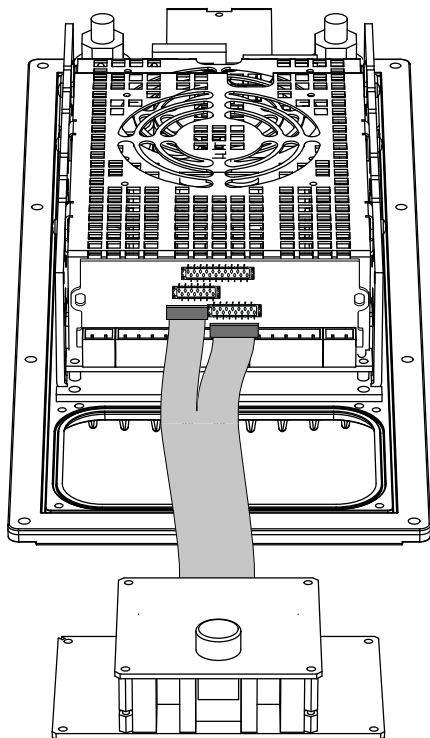
GU000075
neoprene
foam



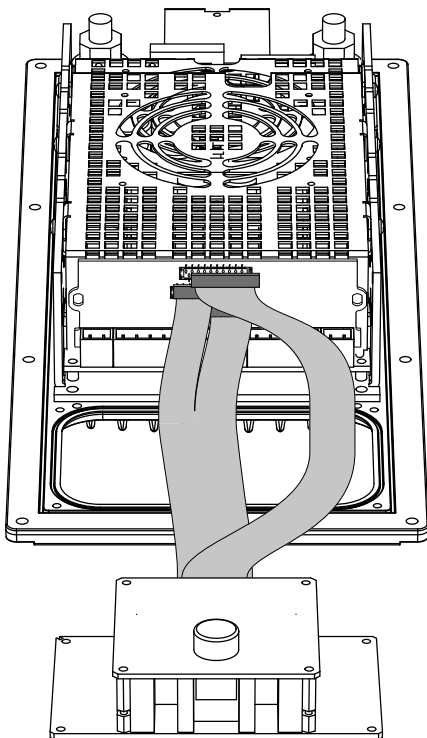
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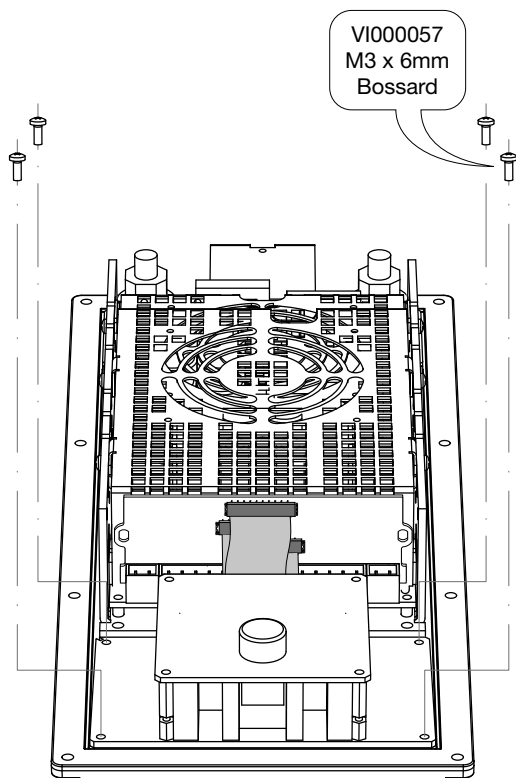
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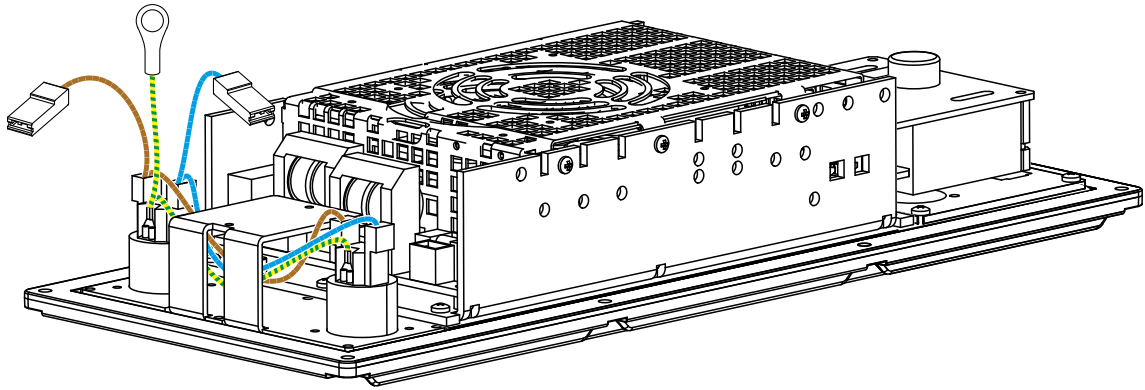


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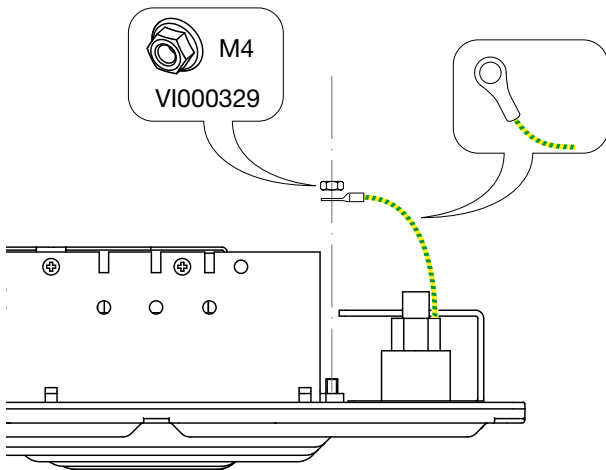


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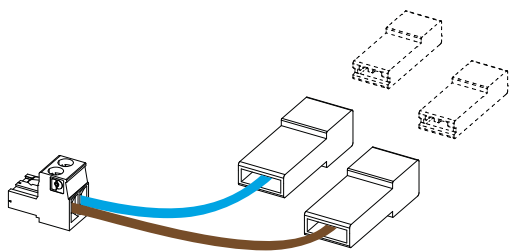
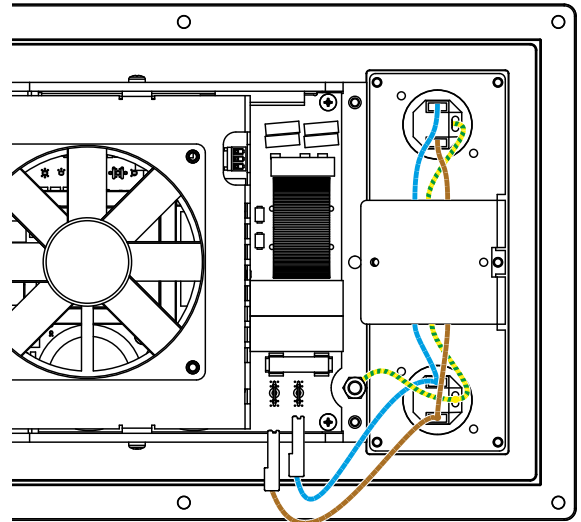




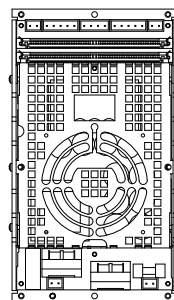
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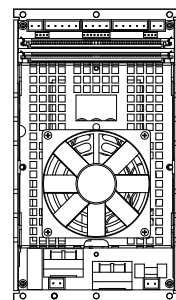
9



AC MAIN adapter only for:

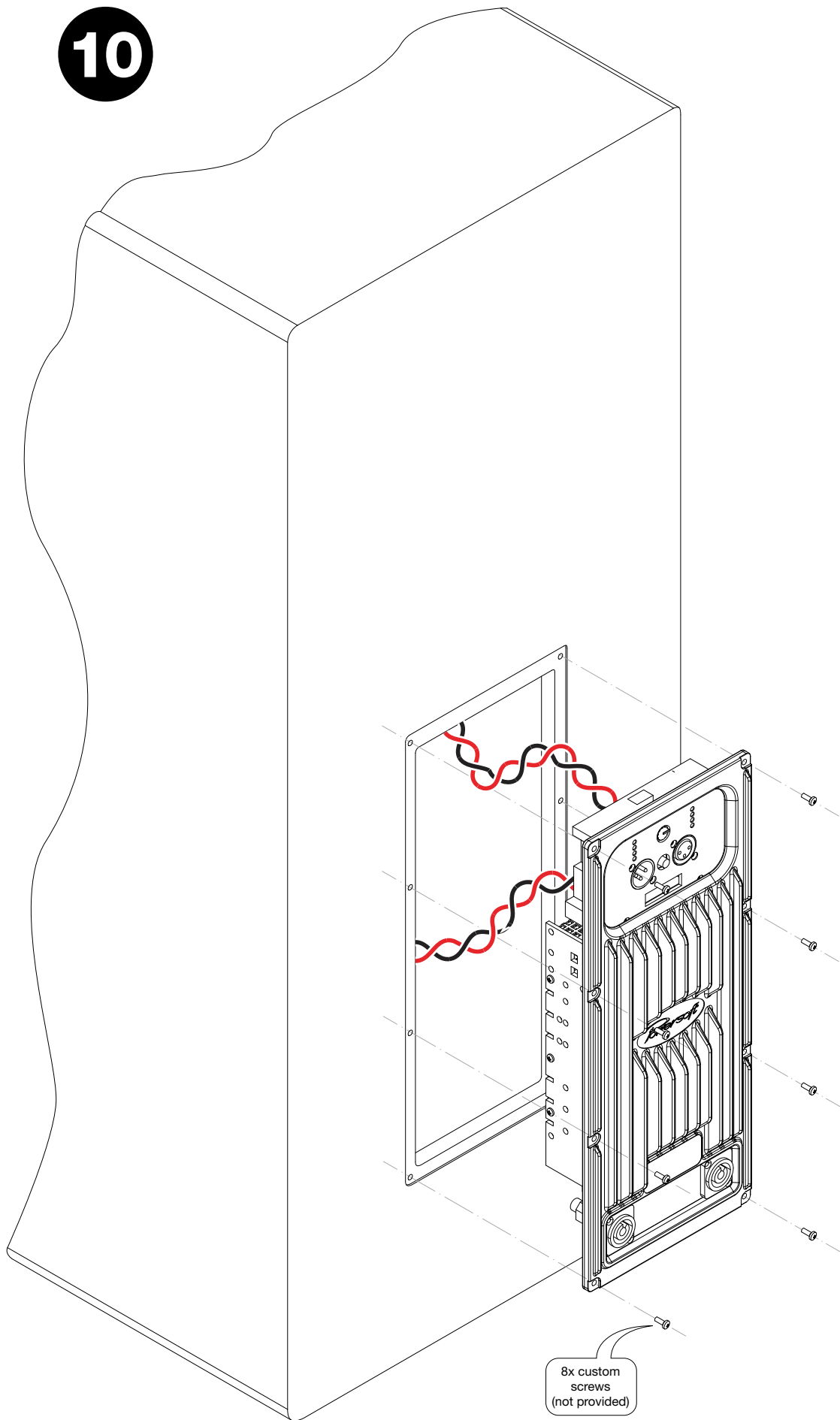


DigiMod 1000



DigiMod 1500

10



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Assembly DigiMod PFC2/PFC4 + DSP-Lite Kit

13

13:1.Required tools

- ▶ Assembly the kit:
 - ▷ Torx T10 screwdriver
 - ▷ Phillips PH 0 screwdriver
 - ▷ M5 socket wrench/screwdriver
 - ▷ M7 socket wrench/screwdriver
- ▶ Initialize the DSP
 - ▷ Personal Computer running Windows (any version starting from Windows XP)
 - ▷ Armonía Pro Audio Suite
 - ▷ Armonía ProManager
 - ▷ JRSoftware
 - ▷ USB cable with A and B terminal plugs



Torx T10 screwdriver



M5 socket wrench/screwdriver
M7 socket wrench/screwdriver



Phillips PH 0 screwdriver



PC with Windows (XP, Vista, 7 or 8)



Armonía Pro Audio Suite 2.5

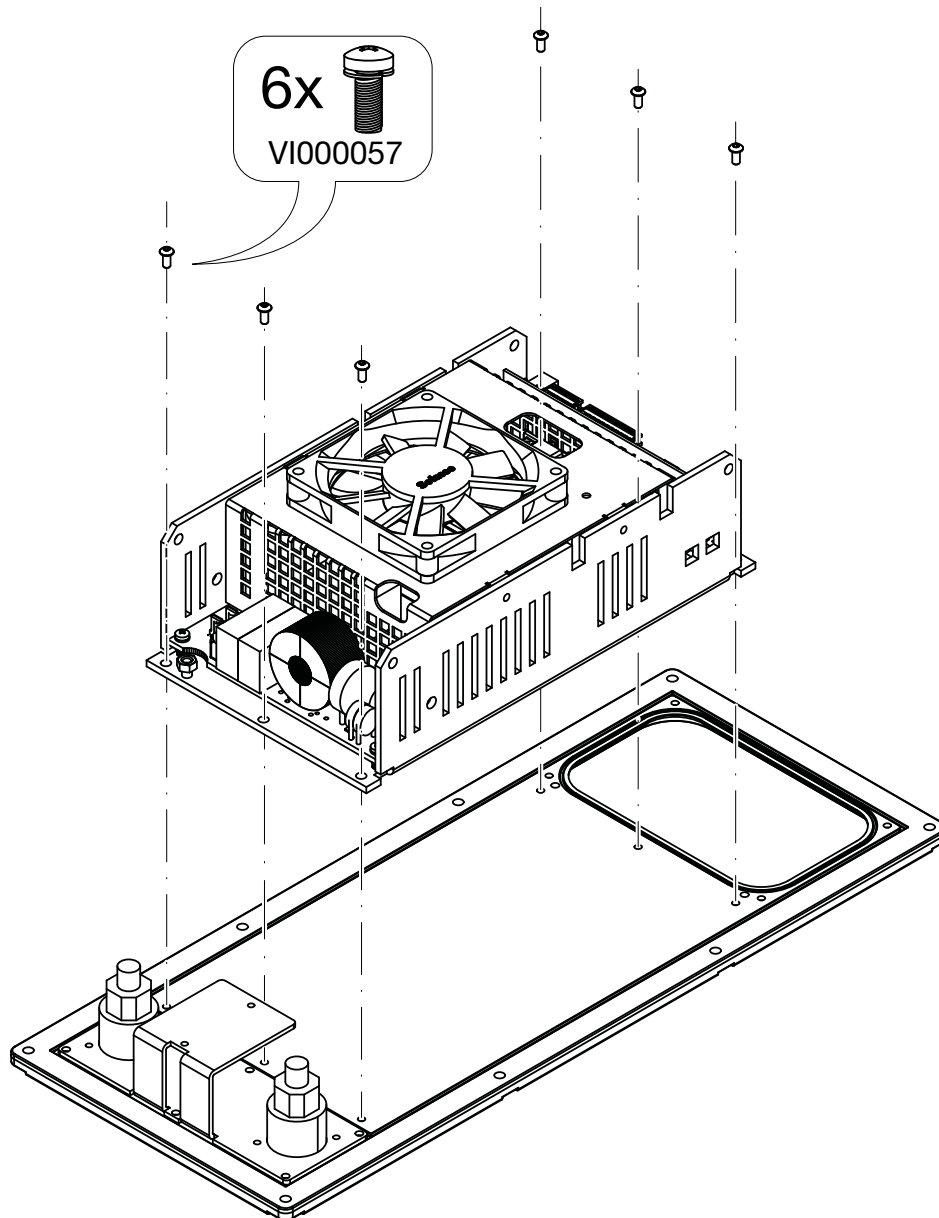


Armonía ProManager



jrsoftware (last release)

1



Phillips PH 0 screwdriver

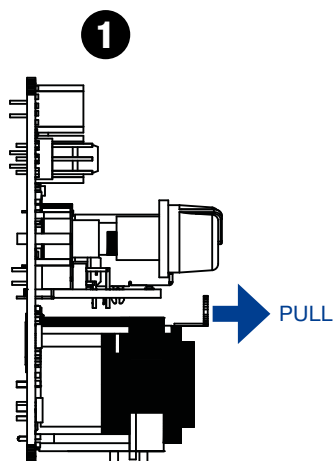


Torx T10 screwdriver

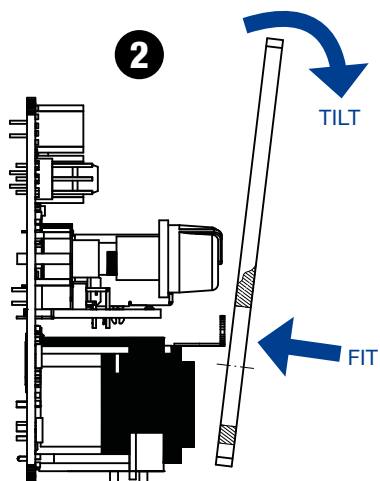


M5 socket wrench/screwdriver
M7 socket wrench/screwdriver

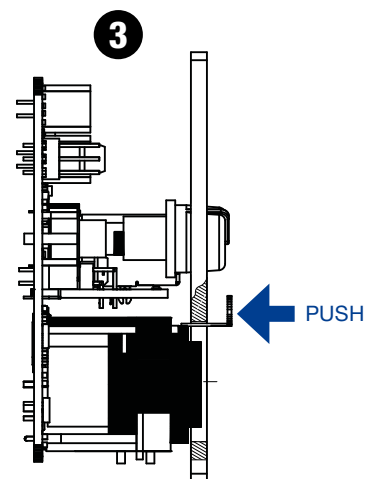
2



Pull out the locking spline.

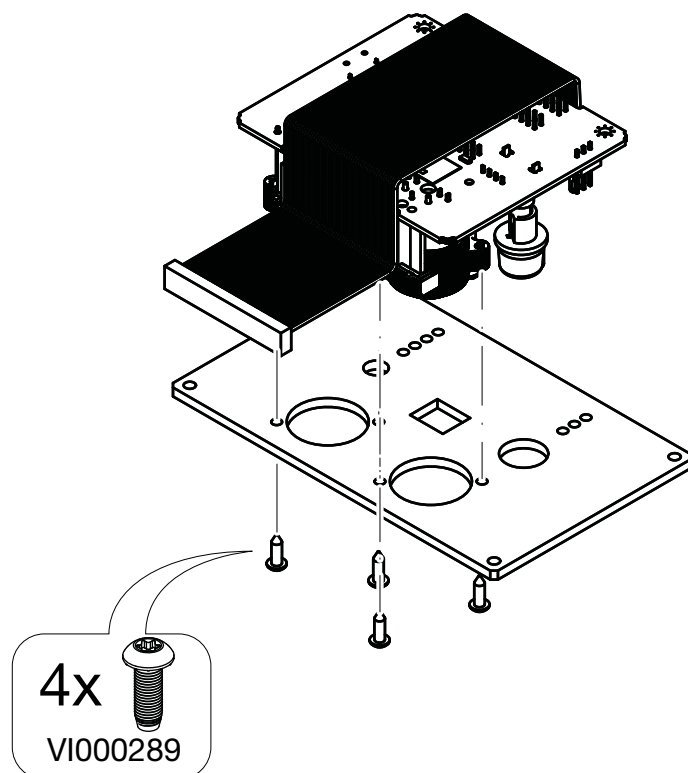


Tilt the mounting plate, pass the locking spline through its hole and fit the plate to the DSP board.

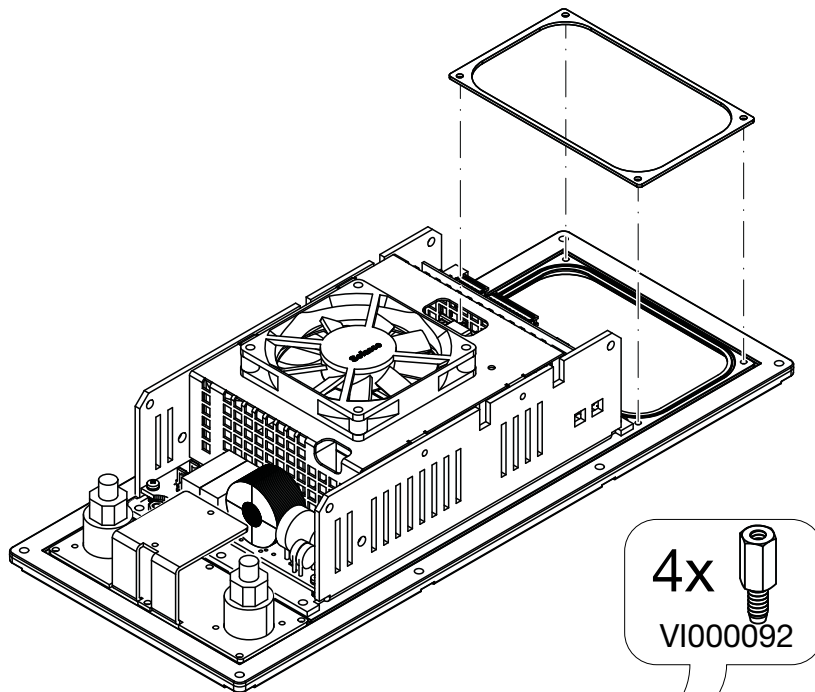


Push the locking spline in its normal position and attach the plate to the DSP board.

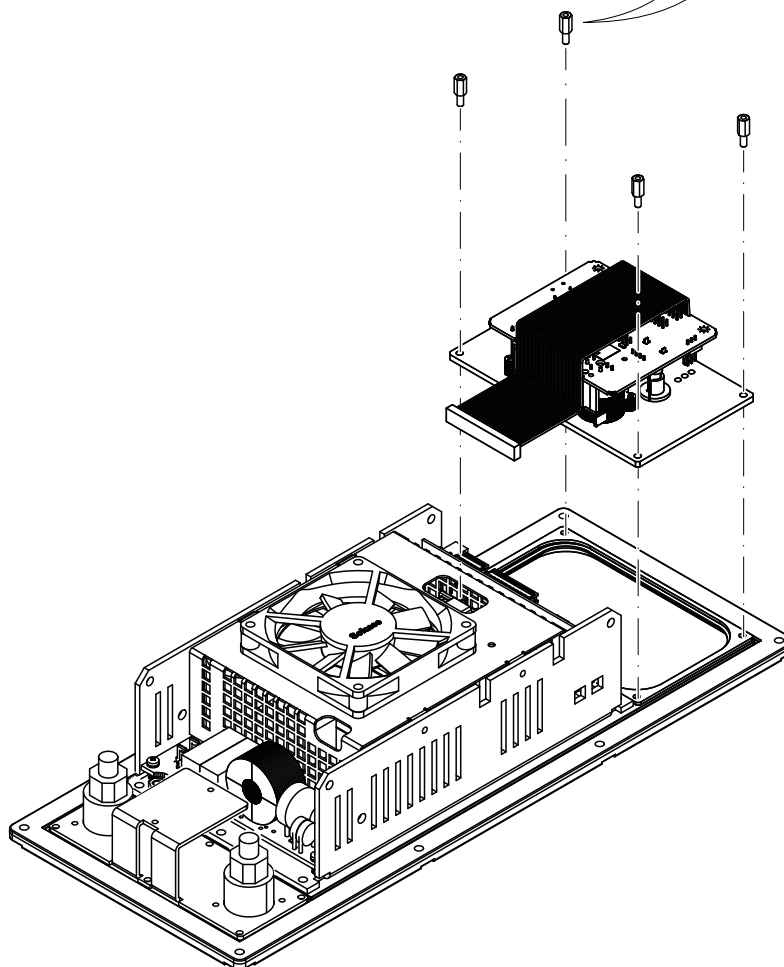
3



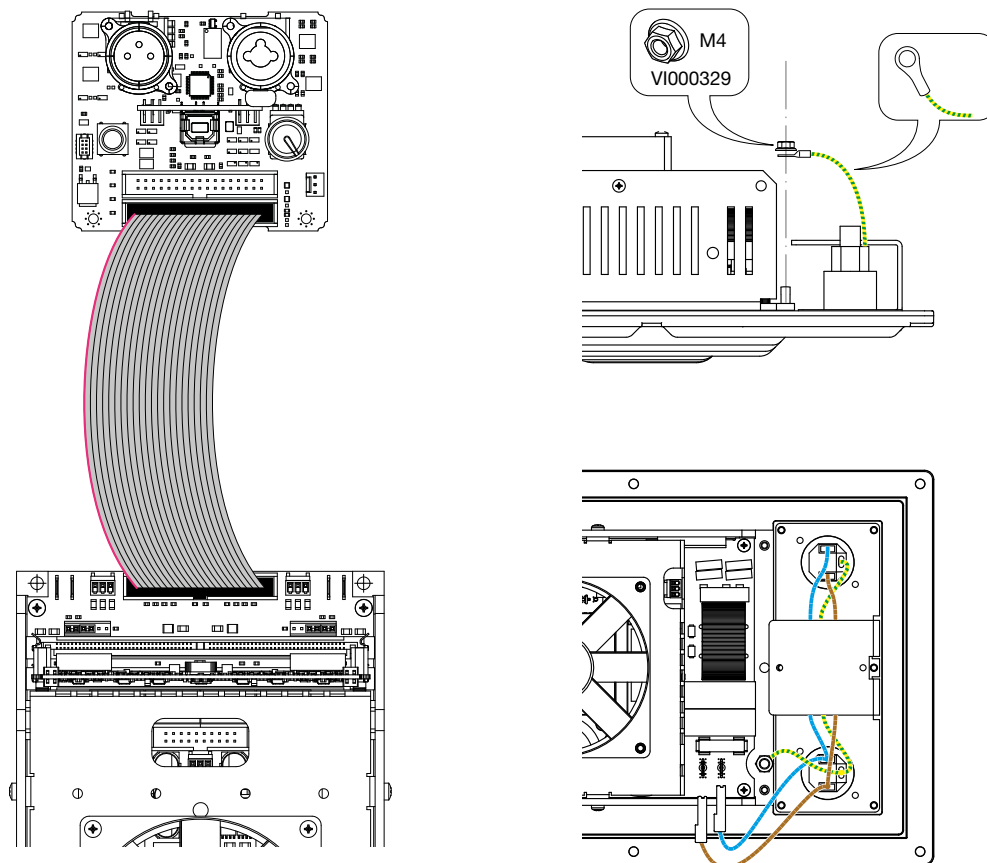
4



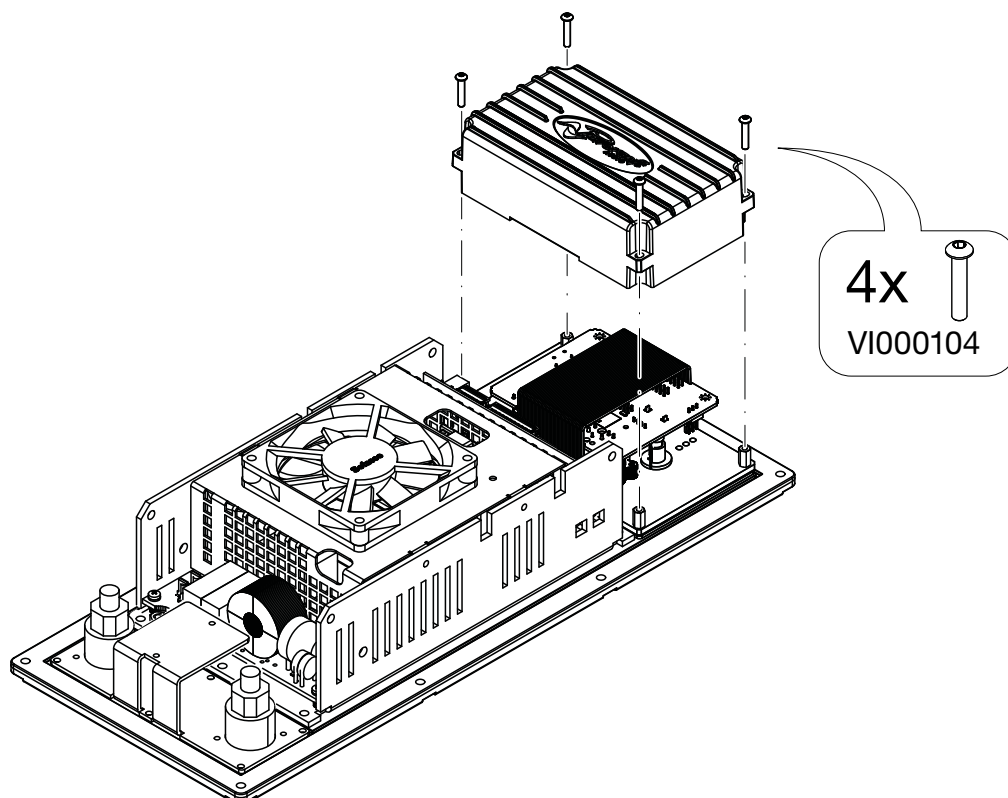
5



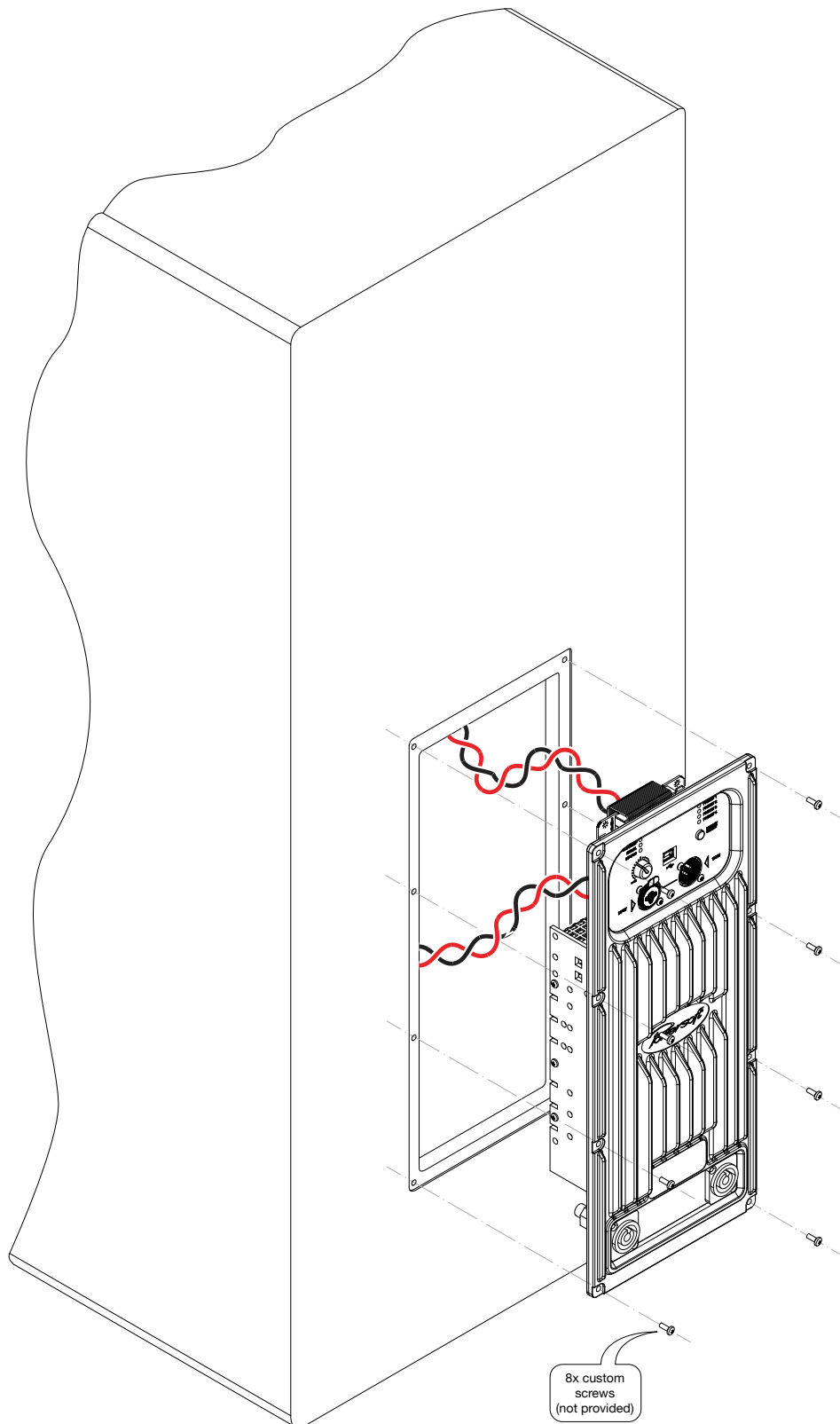
6



7



7



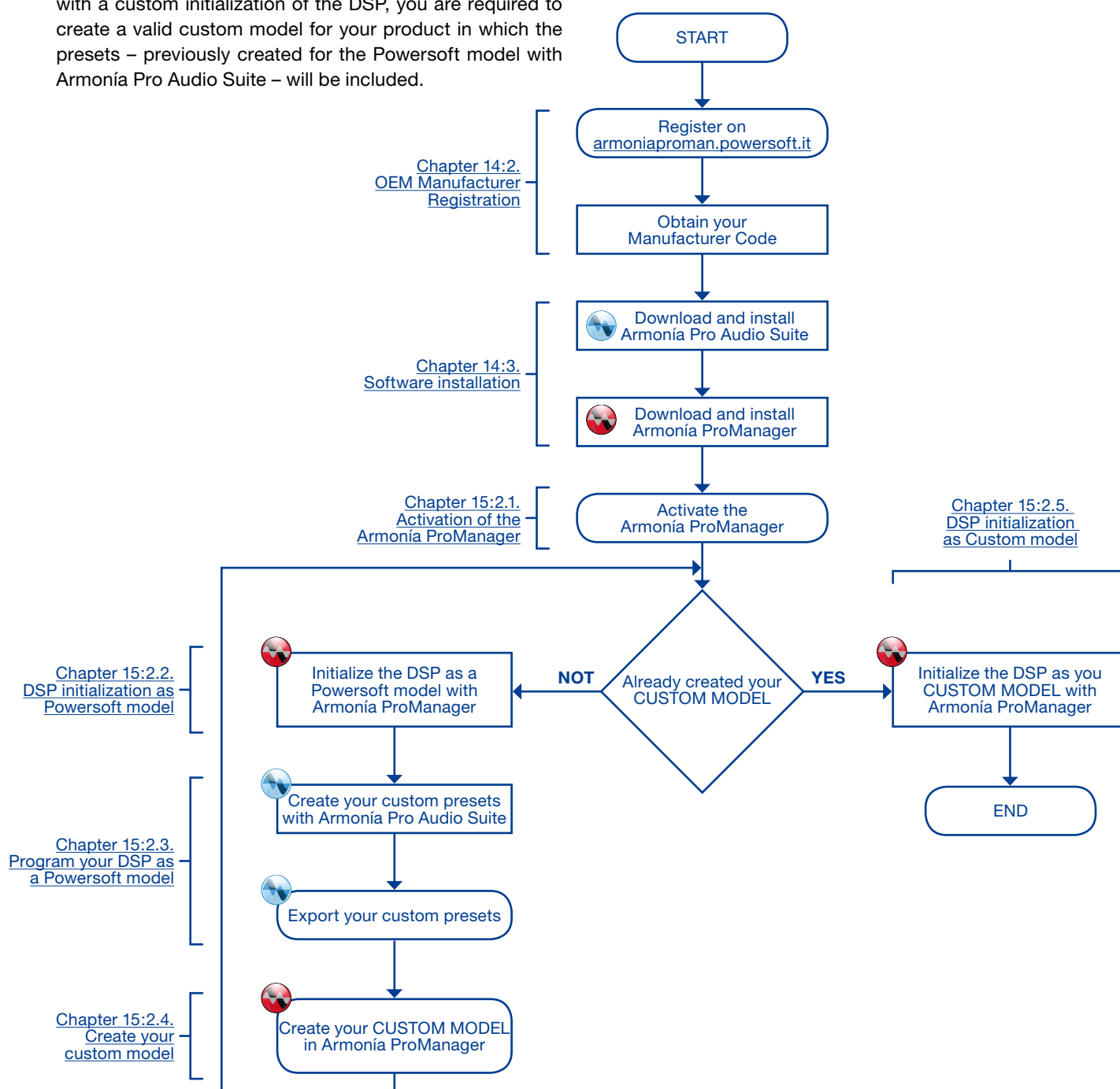
Initialization framework

14:1. Initialization workflow

In order to initialize the DSP, the Armonía ProManager proposes two approaches: **Powersoft init** or **Custom init**.

The former initializes your DSP with default settings, while the latter initializes the DSP with your custom processing and it will allow Armonía to identify your system as proprietary.

As shown on the workflow, before directly proceeding with a custom initialization of the DSP, you are required to create a valid custom model for your product in which the presets – previously created for the Powersoft model with Armonía Pro Audio Suite – will be included.




14:2.OEM Manufacturer Registration

To guarantee exclusivity and private access to your Custom Armonía, Powersoft requires you to be registered on the development scheme. At the end of this step, you will be provided of an unique Vendor Code which will grant confidential access to the Armonía ProManager.

1. Access the the ProManager webpage for registration at:

<http://armoniaproman.powersoft.it>

2. Click on *Register Here*



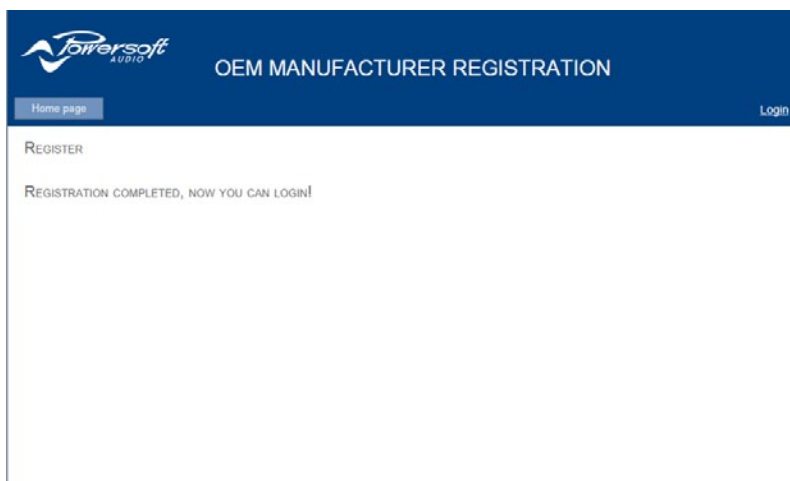
The screenshot shows the Powersoft OEM MANUFACTURER REGISTRATION page. The header includes the Powersoft logo and the title "OEM MANUFACTURER REGISTRATION". Below the header, there is a "Home page" link and a "Login" link. The main content area contains a "Log In" section with fields for "User Name" and "Password", each followed by an asterisk. A "Log In" button is positioned below these fields. A link "register here" is provided for users who do not have a username and password.

3. Fill in all the cells with the required information



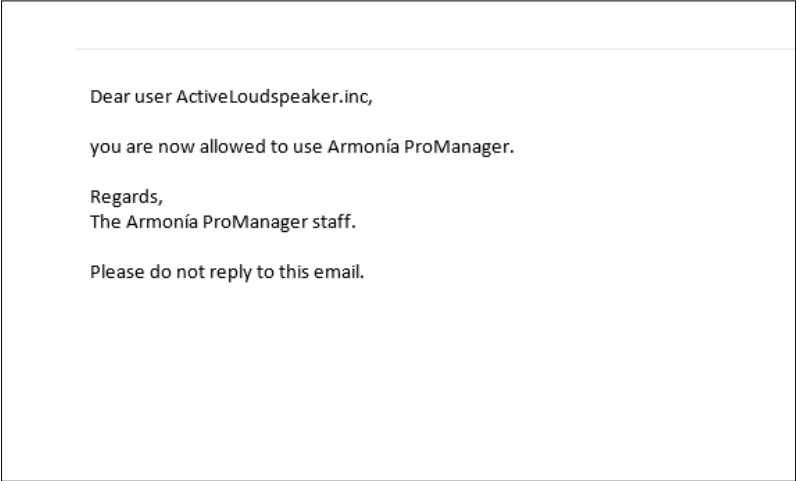
The screenshot shows the Powersoft OEM MANUFACTURER REGISTRATION page with the "REGISTER" section active. The form includes fields for "Username" (filled with "user01"), "Password", and "Password confirmation". Below these, there is a "Manufacturer" section with fields for "Company Name" (filled with "ActiveLoudspeaker Inc"), "email" (filled with "mail@andreaudio.it"), "Address" (filled with "Country Road"), "ZIP Code" (filled with "01-301"), "City" (filled with "Warszawa"), "Country" (filled with "Poland"), and "Country" (filled with "Poland"). At the bottom of the form, there are "Register" and "Cancel" links.

4. Click on *Register*



The screenshot shows the Powersoft OEM MANUFACTURER REGISTRATION page with the "REGISTER" section active. The message "REGISTRATION COMPLETED, NOW YOU CAN LOGIN!" is displayed, indicating that the registration process has been successfully completed.

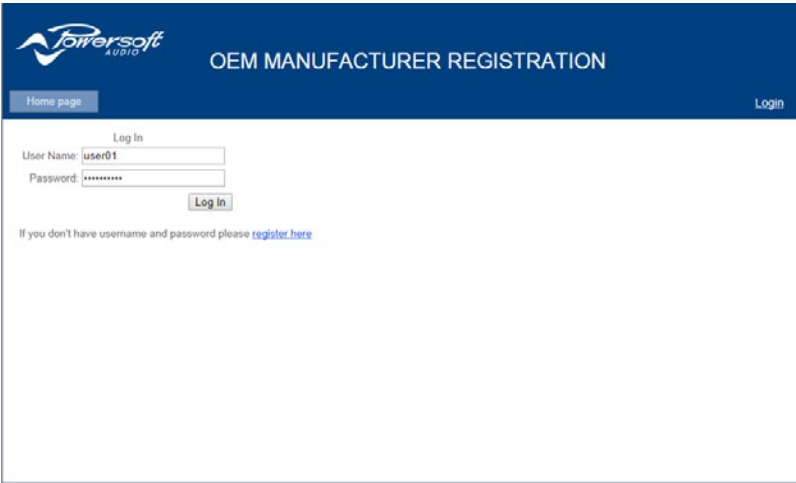
5. Go to your registered e-mail address' account, and check for the ProManager Registration Confirmation.



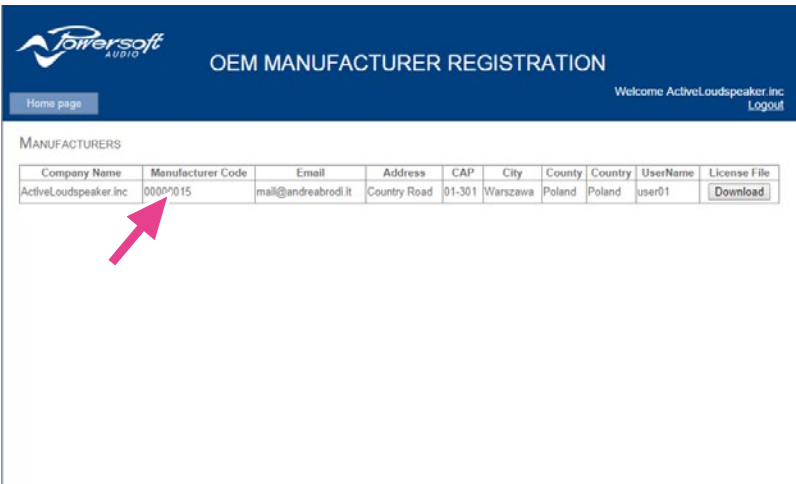
6. Now Go Back to the Armonia ProManager HomePage

<http://armoniaproman.powersoft.it>

7. Insert your confirmed *UserName* and *Password*
8. Click on the *Log In* button



9. You should now be able to see your registration details
10. Copy the assigned Manufacturer Code



14:3. Software installation

1. Install Armonía Pro Audio Suite before the ProManager in order to have complete access to the default presets bank

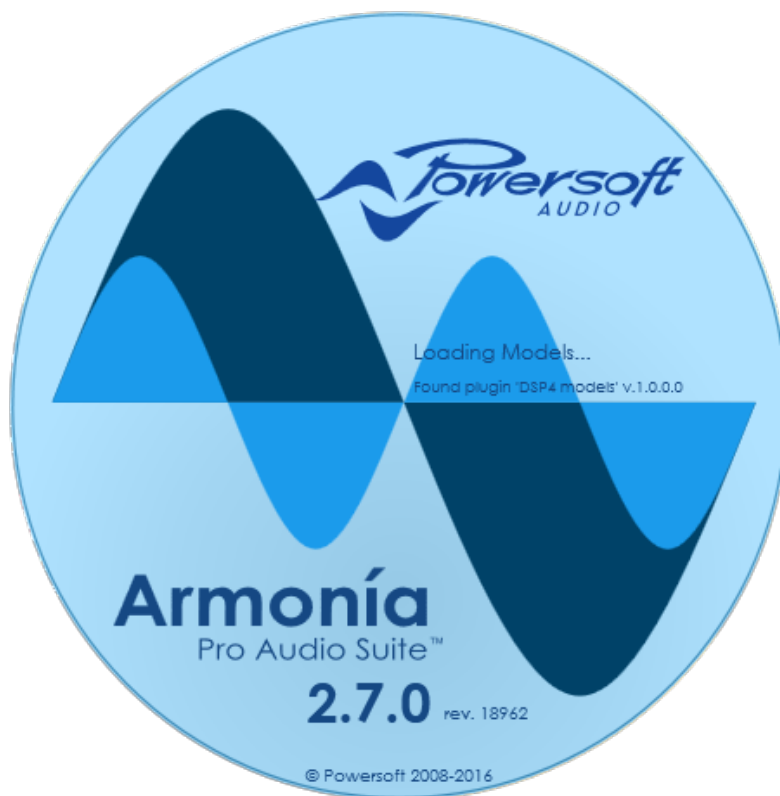
Armonía Pro Audio Suite™ is the software for setting and monitoring your system.

Armonía Pro Audio Suite™ allows you both on-line and off-line system setup, tuning and real-time management and monitoring of all vital functions from a remote PC via a single intuitive graphical user interface.

Download Armonía Pro Audio Suite™ from the Armonía forum:

<http://www.powersoft-audio.com/en/armonia-forum>

Refer to [Appendix C. How to install Armonía Pro Audio Suite](#).



2. Install the Armonía ProManager. Download the Armonía ProManager from:

<http://www.powersoft-audio.com/docman/930-armoniapromanager/file>

Refer to [Appendix D. How to install Armonía ProManager](#).

Armonía ProManager is the dedicated software tool aimed to configure any IK combination as well as to make the final product accessible in Armonía Pro Audio Suite as a custom branded item.

3. Launch Armonía ProManager.

Do not run Armonía ProManager and Armonía Pro Audio Suite at the same time

Take care to switch off Armonía Pro Audio Suite when you want to initialize your DigiMod IK with the ProManager.

Since both softwares try to access the DSP on board of the DigiMod IK, the system will become instable impeding any configuration.



DSP initialization in Armonía

15:1.Required tools



Windows XP / 7 / 8



Armonía Pro Audio Suite 2.5



jrsoftware (latest release)



Armonía ProManager



CB000214



PC000096



PF000287



USB cable

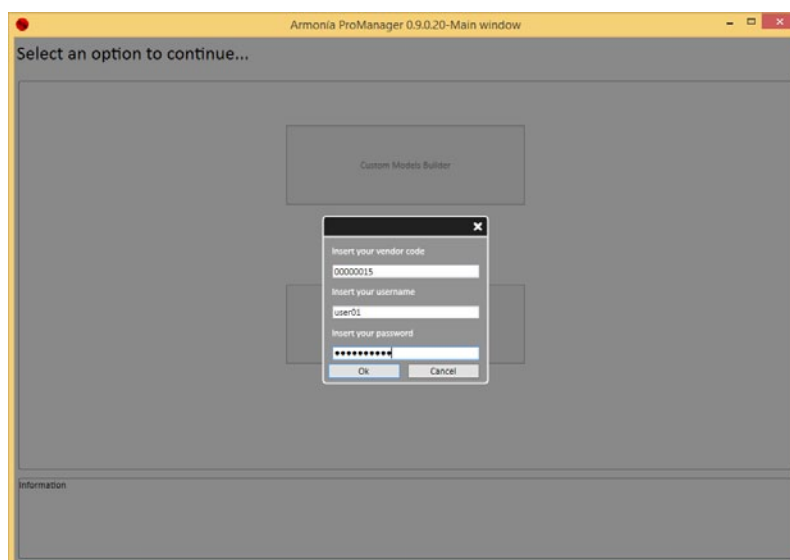
15:2.Customize your DigiMod IK based system

15:2.1.Activation of the Armonía ProManager

This process of initialization will allow the DSP to take care of the processing and the level of the input signal according to the known characteristics of the Powersoft amplifier module to which the DSP is associated to.

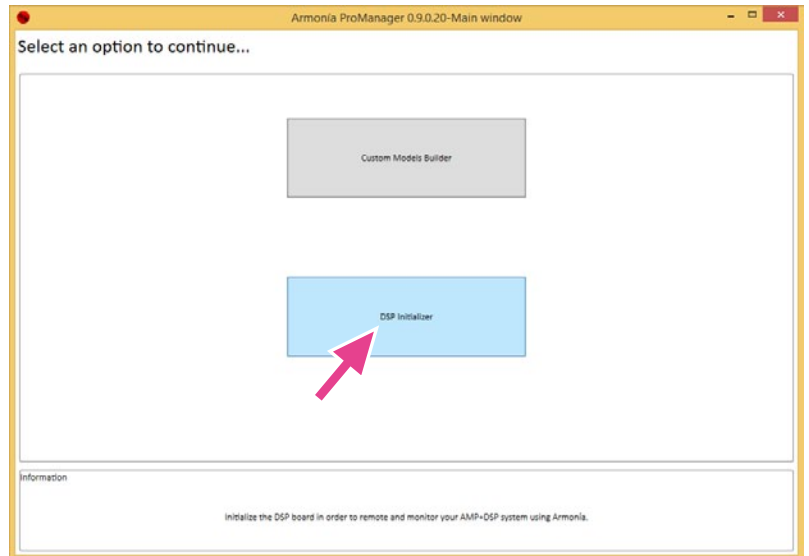
Furthermore this process will also identify your DSP as part of a Powersoft system, which will permit you to discover the device when online in Armonía. The latter is a fundamental requirement in order to create your original processing and your proprietary DSP presets designed for your whole finished system.

1. Open the Armonía ProManager: at the first start up the program will ask you to authenticate your account: in this phase an internet connection is mandatory in order to complete the activation process.
2. Fill in the cell with the information of your account:
 - ▷ Manufacturer Code
 - ▷ UserName
 - ▷ Password
3. You can now start using the Armonía ProManager for DSP initialization and for customizing your system.

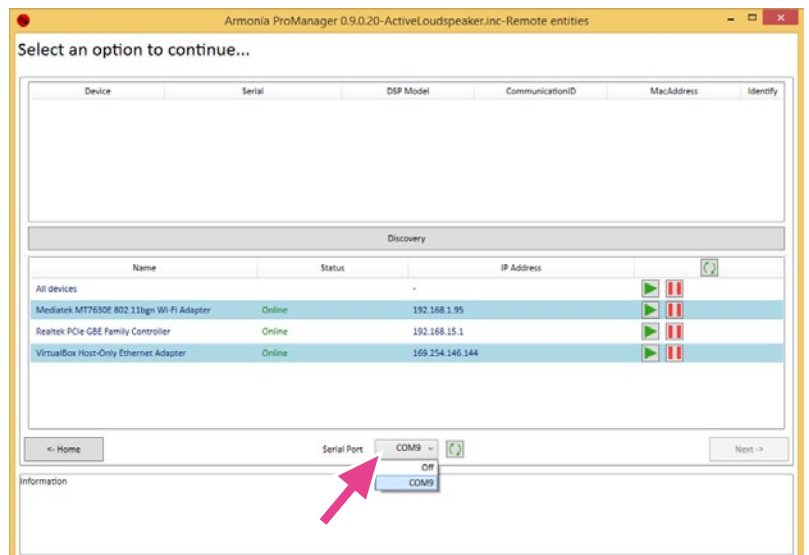


15:2.2.DSP initialization as Powersoft model

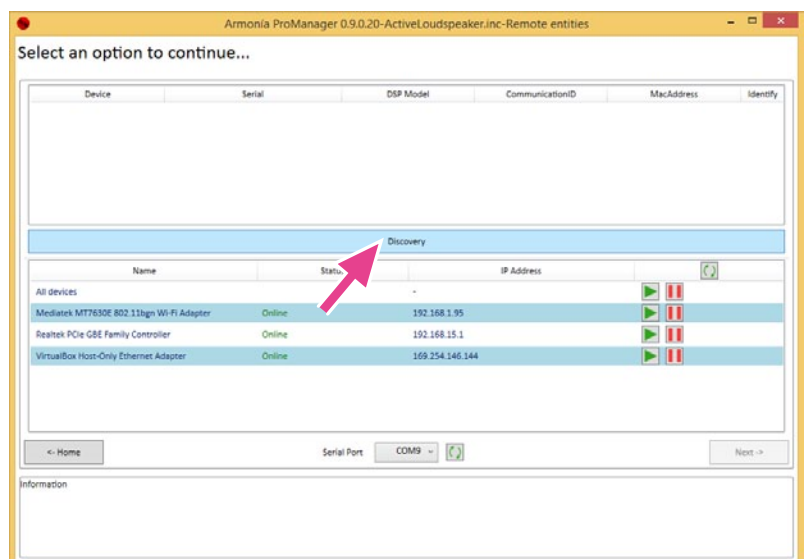
1. Open Armonia ProManager
2. Click on the *DSP Initializer* button



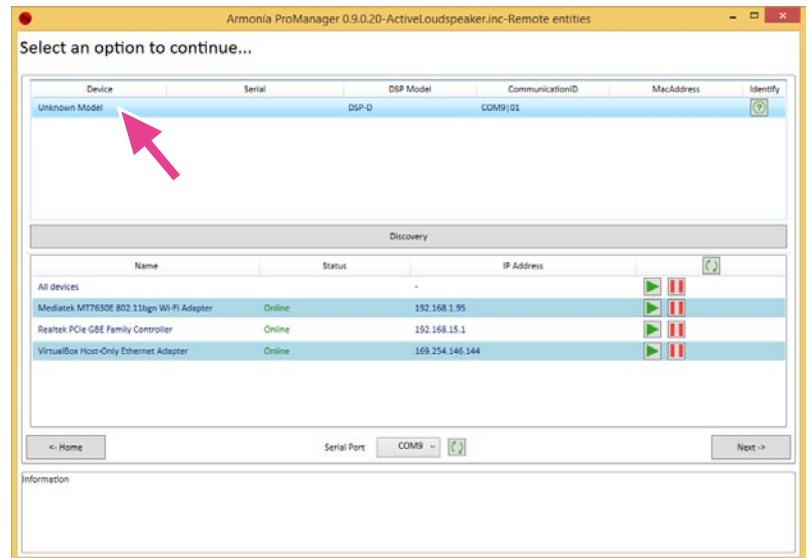
3. Select the correct serial port



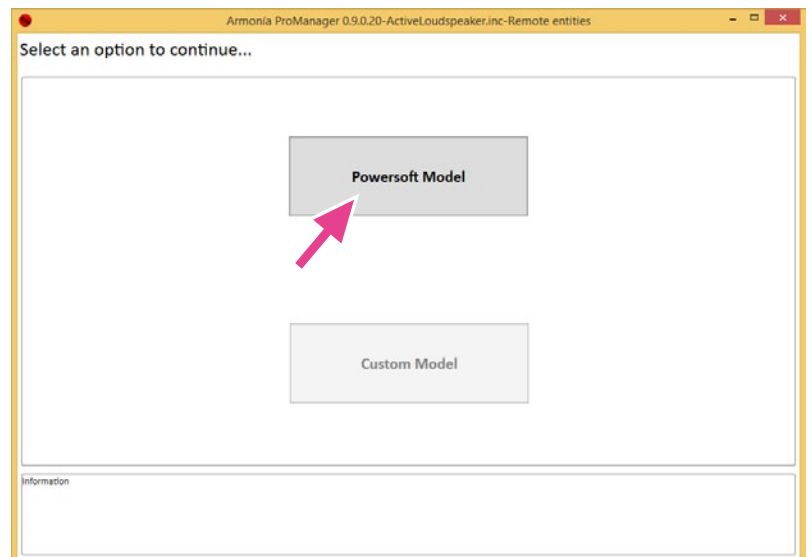
4. Click on the *Discovery* button



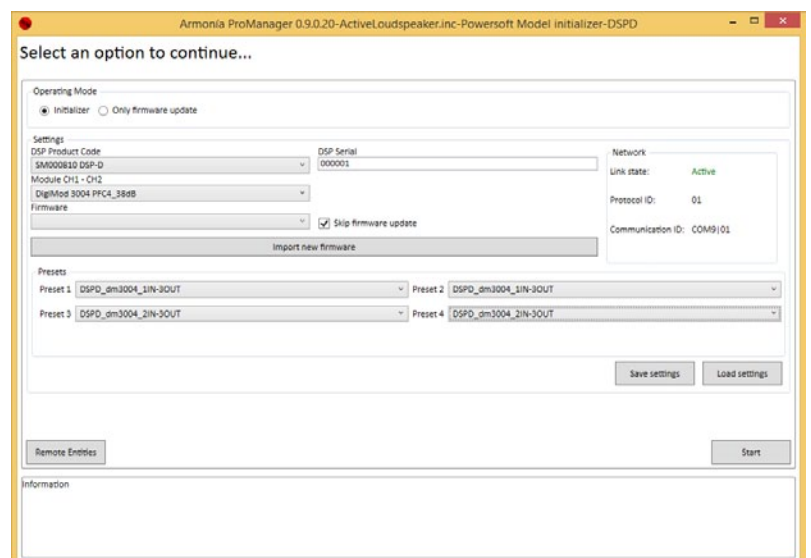
5. Select the on-line system (*Unknown model*) and click on *Next*



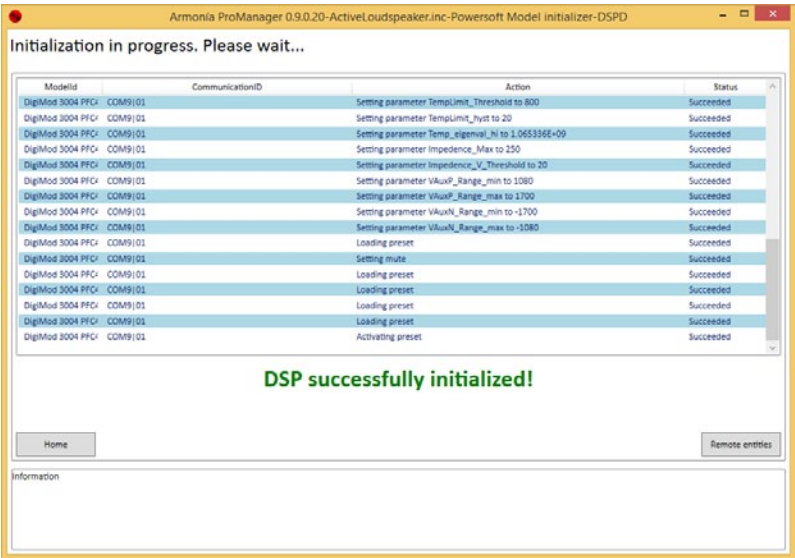
6. Click on *Powersoft model*



7. Fill in the cells with the required info and click on *Next*



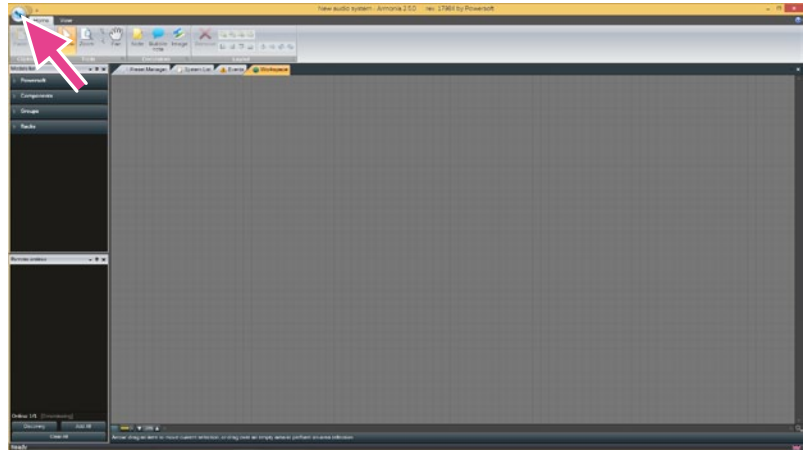
- 8. Wait until DSP is successfully initilized
- 9. Close Armonía ProManager, only when the DSP has been correctly initialized.



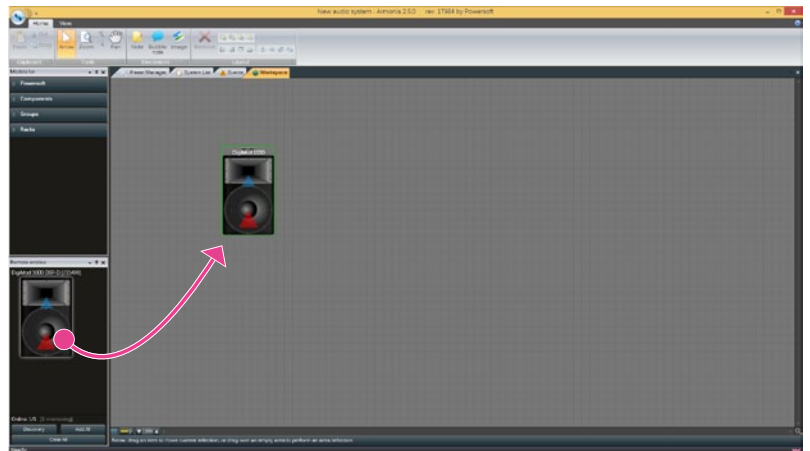
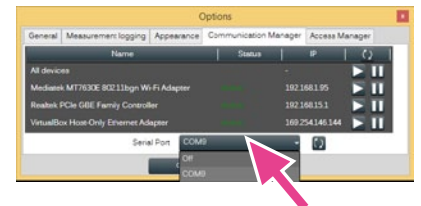
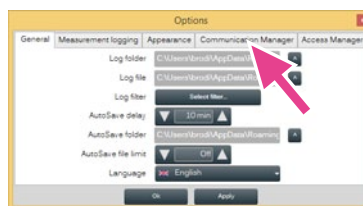
15:2.3. Program your DSP as a Powersoft model

At this stage you should have already initialized your DSP board as a Powersoft model. This includes also some default presets' schemes designed by Powersoft, which are intended to represent a good starting point for your evaluation of the amplifier, for a proper tuning of your speaker and for desired signal processing that you want to apply on your finished product.

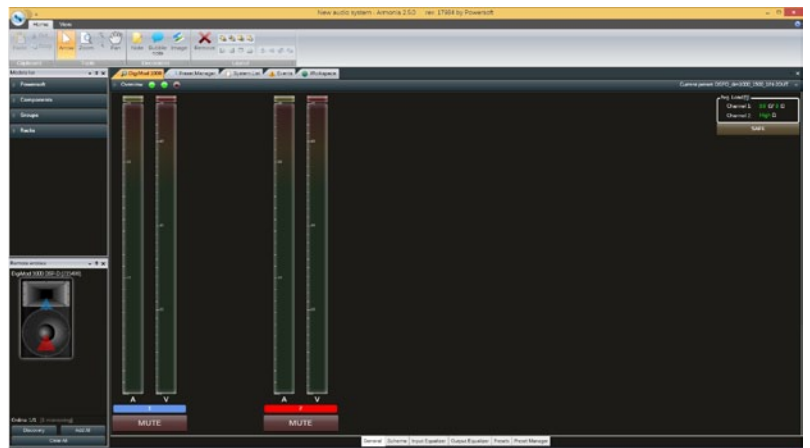
The final steps of this chapter will also guide through the process of exporting the presets that you have designed as .pam files. The exportation of these presets is an essential action if you desire to create a custom model for Armonía. In fact, you will be asked to import them on following steps.



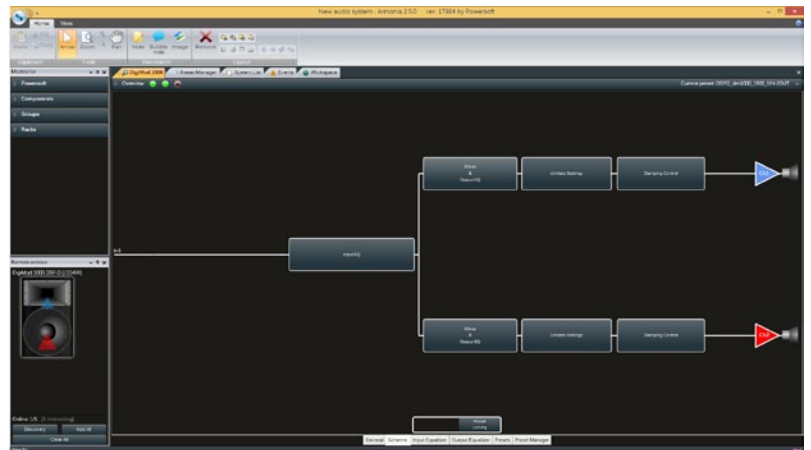
1. Open Armonía Pro Audio Suite and click on the main menu button on the top left corner
2. Click on the *Option* button
3. Click on the *Communication Manager* tab
4. Select the proper serial port and click *OK*
5. Click on the *Discovery* button on the bottom-left corner and wait for the model to appear on the *Remote Entities* window



6. Drag the discovered model onto the work-space and wait for the frame to become green (device is on-line)
7. Double click on the model



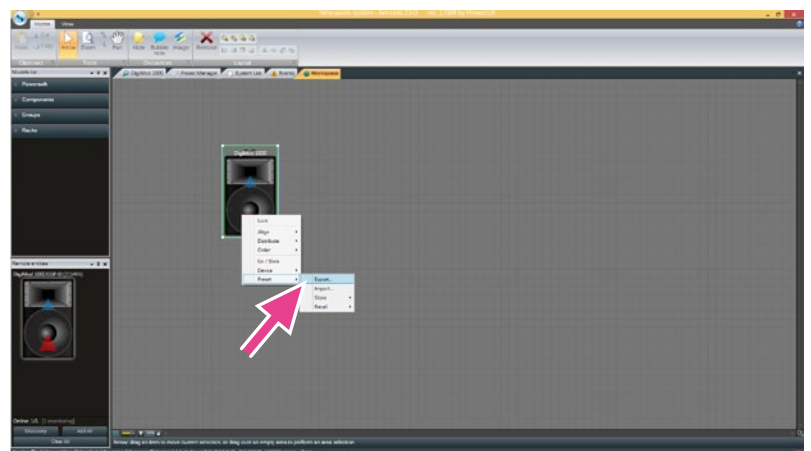
8. You now have a full overview of your Powersoft system: click on the *Scheme* tab
9. Double click on the functional blocks to edit the processing parameters



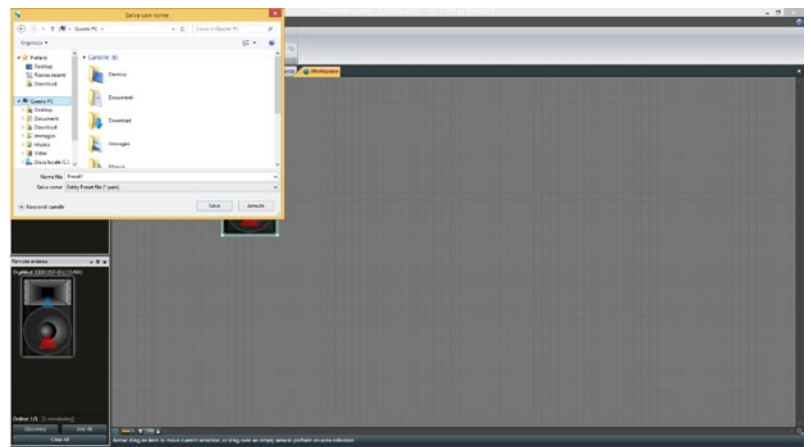
10. In this example the input eq was processed
11. Once you are happy with the processing, you must save it on the preset slot



12. Go to the workspace (click on the *Workspace* tab)
13. Right click on the device
14. Select Preset > Export

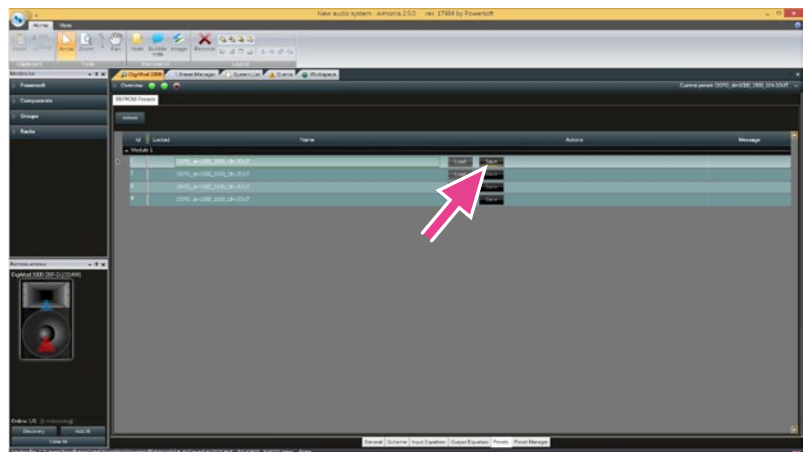


15. Assign a name to your *Preset* and save

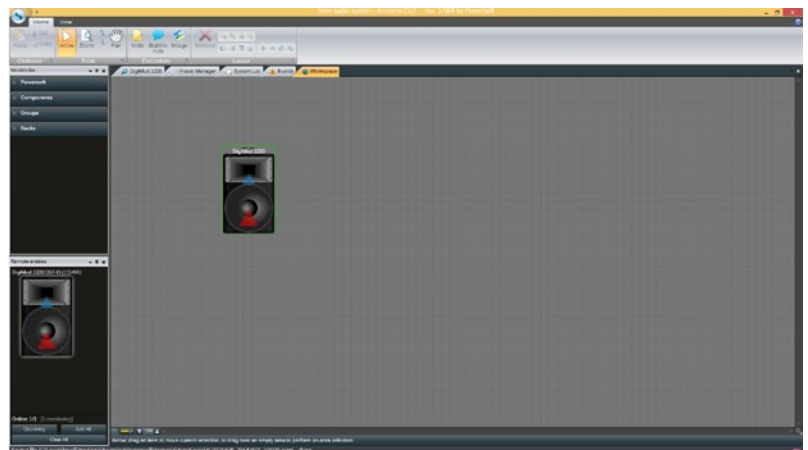


16. If you want to save your present into the device:

- ▷ Click on the bottom *Preset* tab
- ▷ Click on *Save* and confirm overwrite on current settings

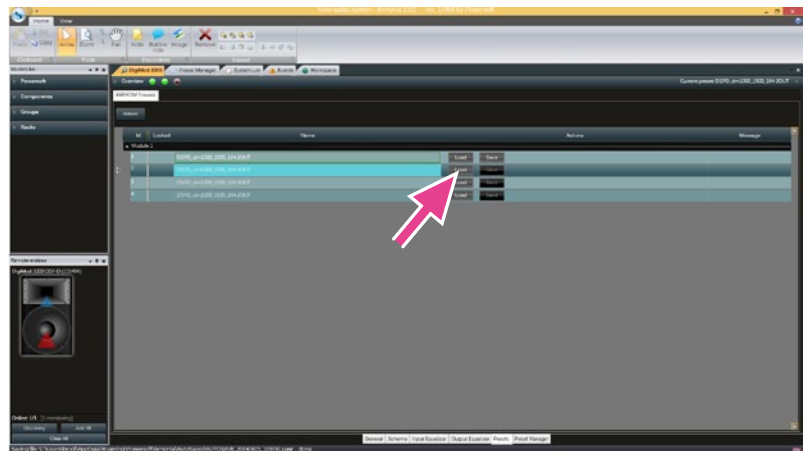


17. In order to create a new preset, double click on the device again



18. Go on the *Preset* tab

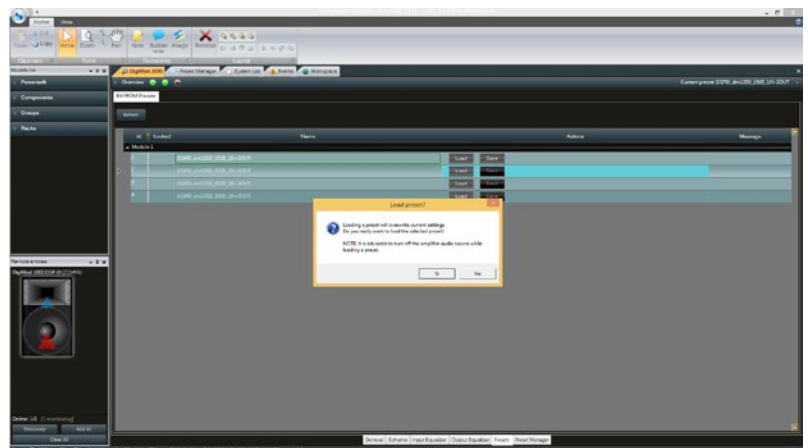
19. Click on the *Load* button of a previously unused preset slot



20. Confirm you want to overwrite settings

21. Proceed as described from step 8

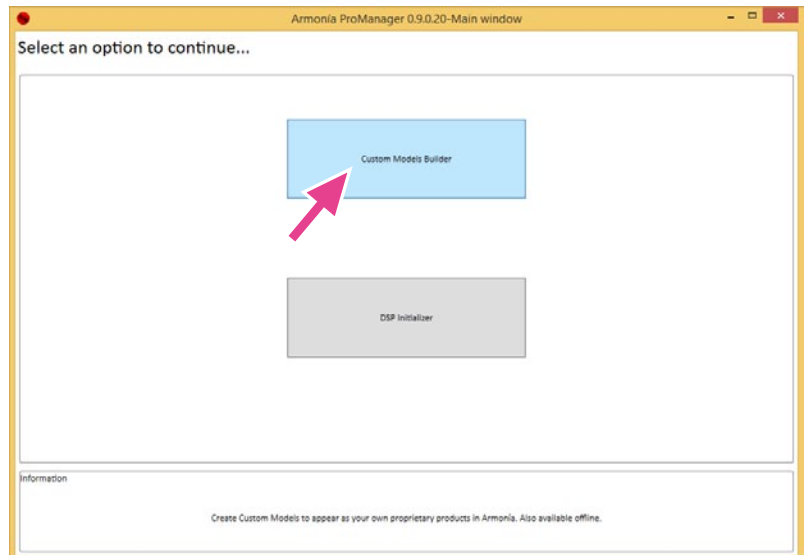
22. Once you are done with your next preset, export it as described on step 16.



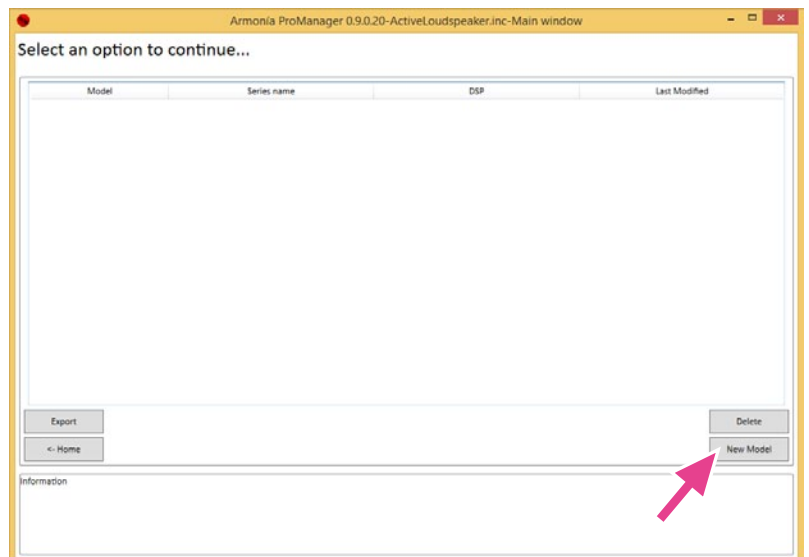
15:2.4.Create your custom model

On this chapter we will give birth to the custom model, which represents your finished product (speaker, rack amp) that you aim to manage using Armonía. In fact we will create a software plug-in so that the Armonía ProAudio Suite is able to accept and to recognise your custom model as it was defined.

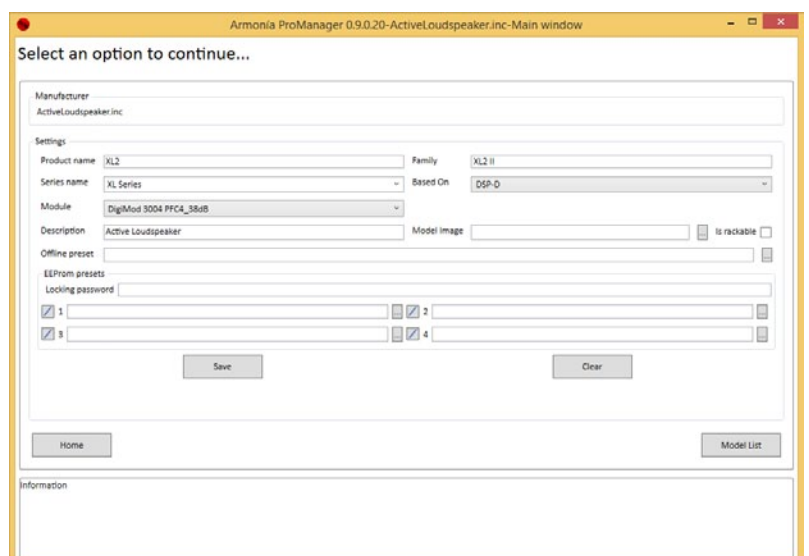
1. Open Armonía ProManager
2. Click on the *Custom Models Builder* button



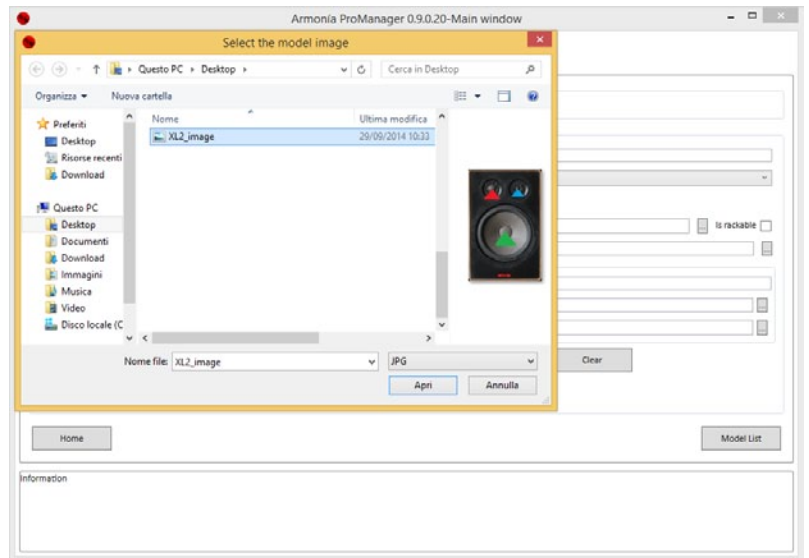
3. Click on *New Model* on the bottom-right corner



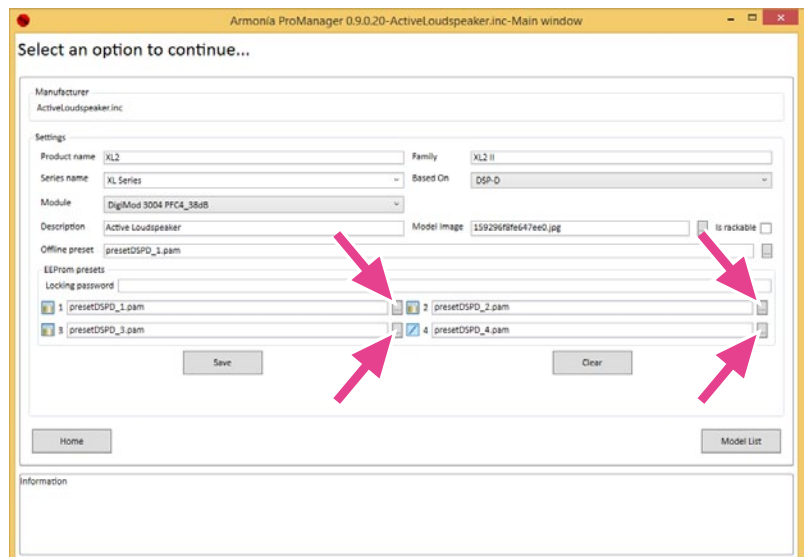
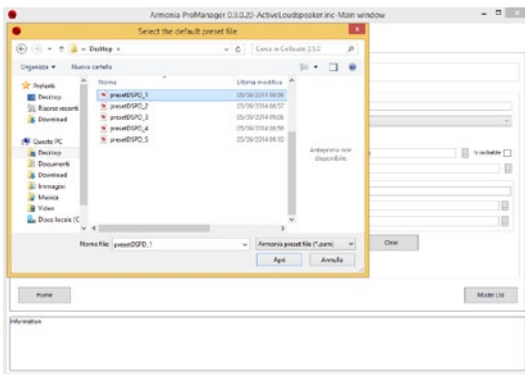
4. Fill in the cells with the required informations:
 - ▷ Product name: your product name
 - ▷ Series Name: your product' serie
 - ▷ Based on: DSP in use
 - ▷ Module: Module in use
 - ▷ Description: the description of your device that will appear in Armonía Pro Audio Suite
 - ▷ Family: your product version



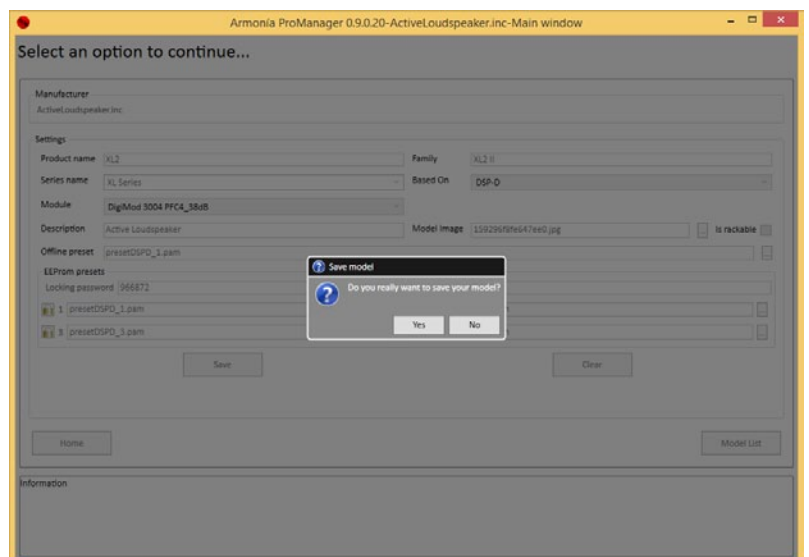
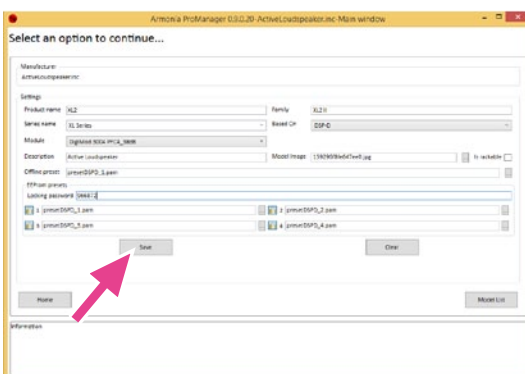
5. Choose a suitable image for your system/
model



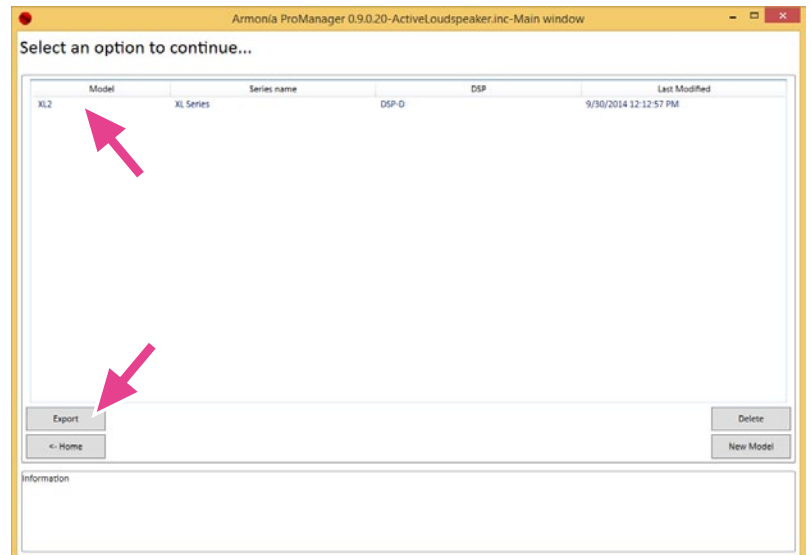
6. Load the presets that you have previously
exported from Armonia Pro Audio Suite



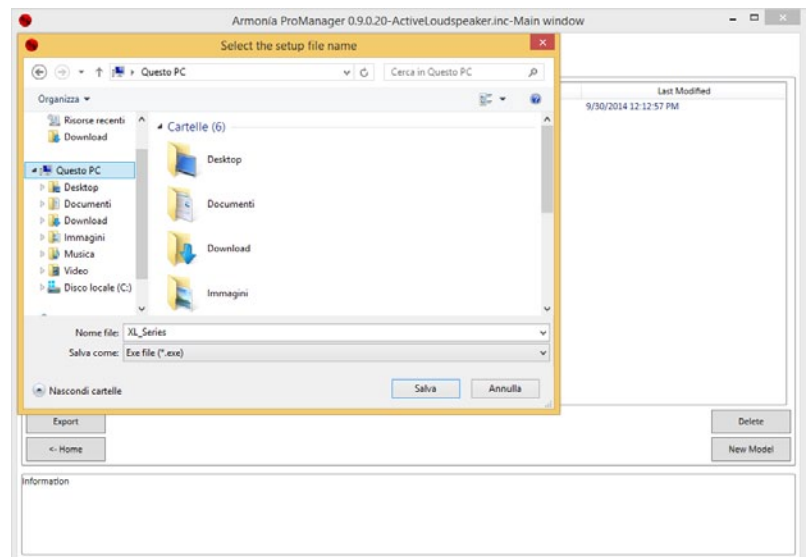
7. Click on Save and confirm



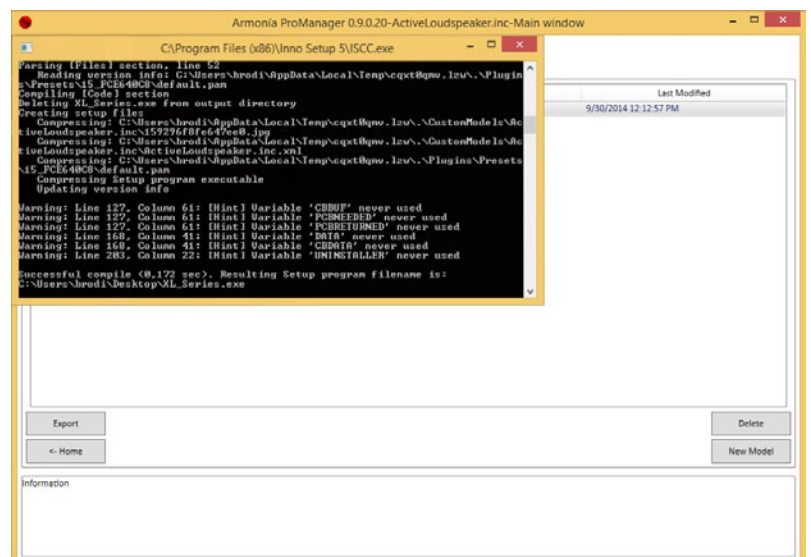
8. Select the model you have just created
9. Click on export



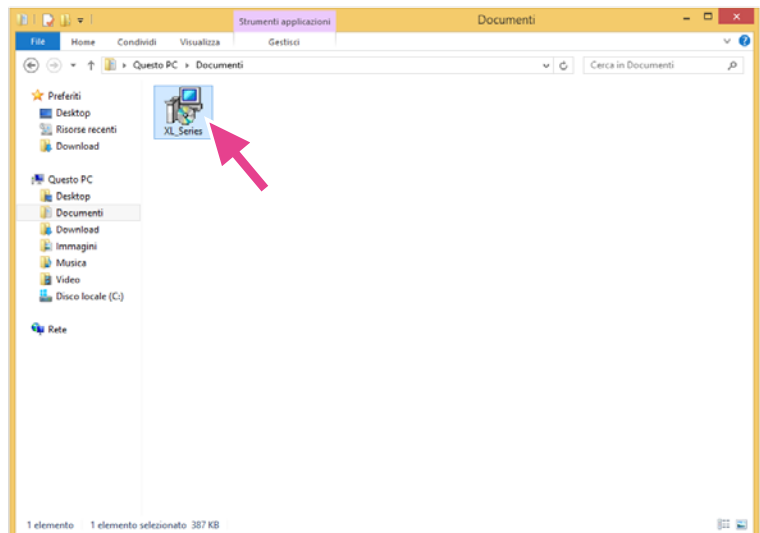
10. Select the path and the file name of the custom model you are generating and click on Save



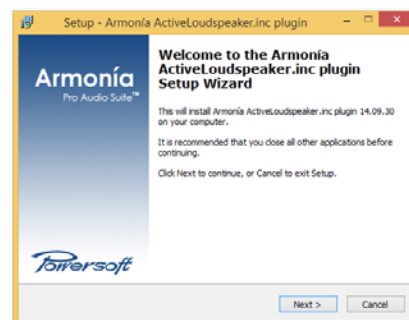
11. Wait for the jrsoftware to generate the executive file



12. Go to the path previously specified and double click on the file (.exe)



13. Follow the installation wizard of your custom model library for Armonía Pro Audio Suite



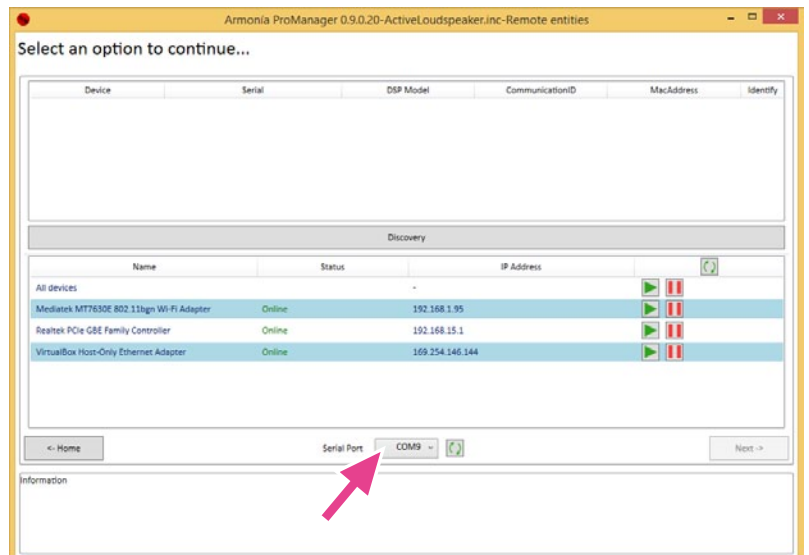
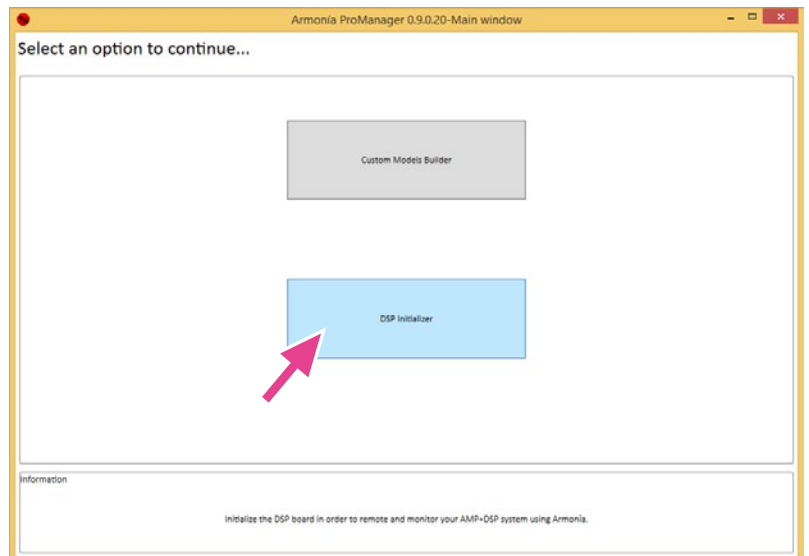
15:2.5.DSP initialization as Custom model

If you have come to this stage it means that you have created a software plug-in for Armonía which contains all the parameters, names, descriptions and presets that characterise your finished product.

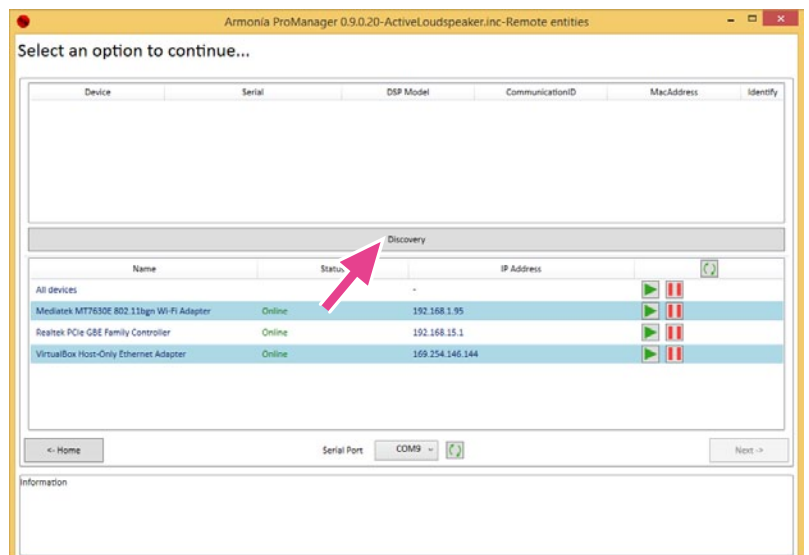
Here we show how to straightforwardly initialise each of your products with custom settings. This may represent a good solution if, in Armonía, you want to immediately identify your proprietary product with the parameters that characterise it.

Please note that the Custom Init button is disabled if no Custom model are yet available on your list.

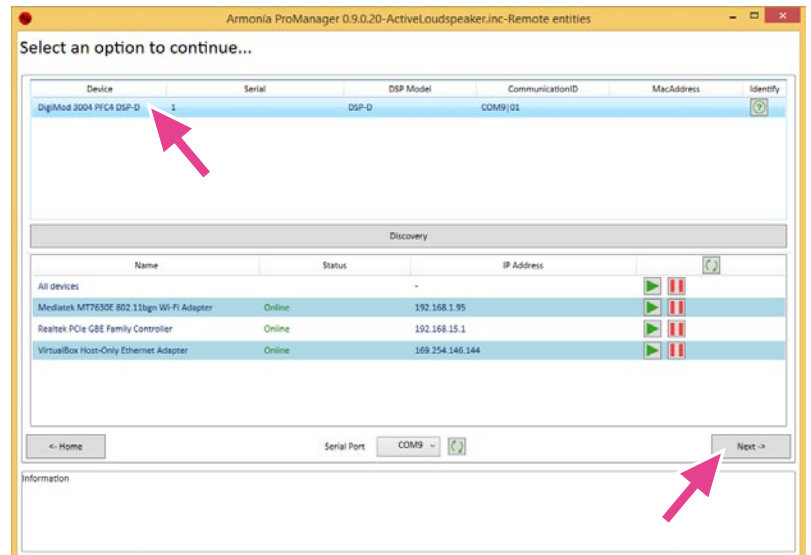
1. Open Armonía ProManager
2. Click on the *DSP Initializer* button
3. Select the correct serial port



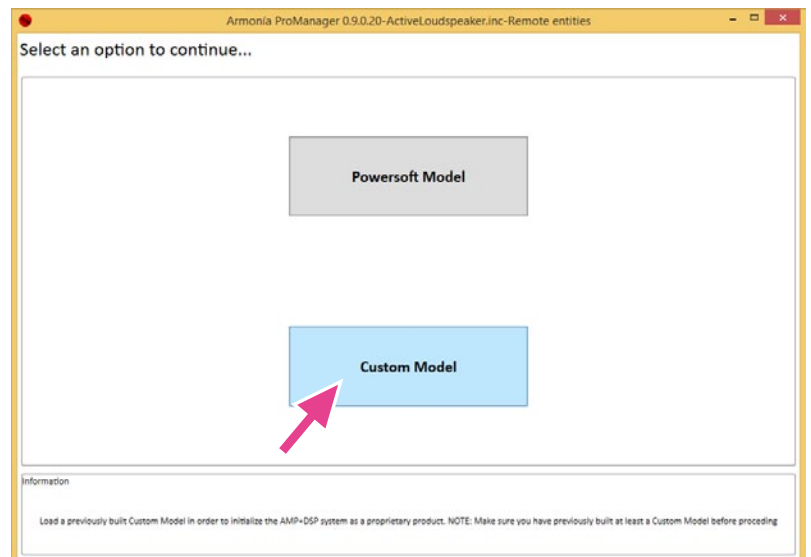
4. Click on the *Discovery* button



5. Select the on-line DSP and click Next



6. Select Custom Model

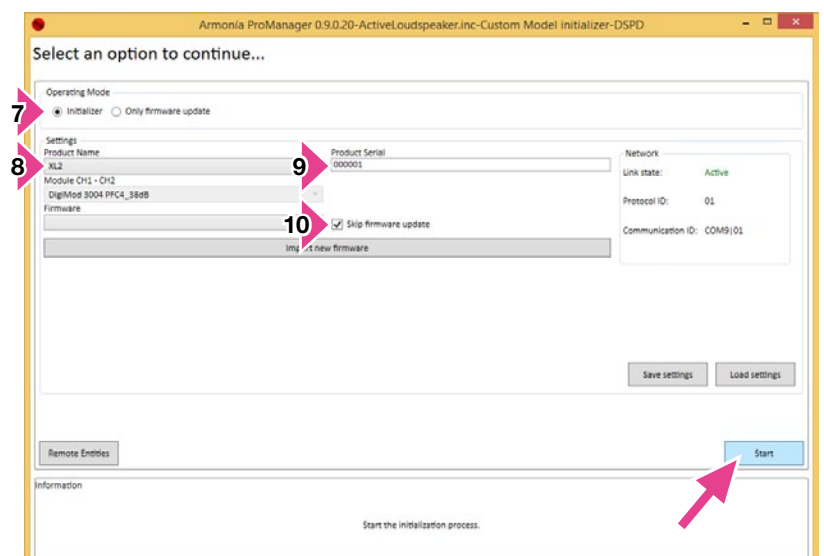


7. Select *Initializer* as the Operating Mode

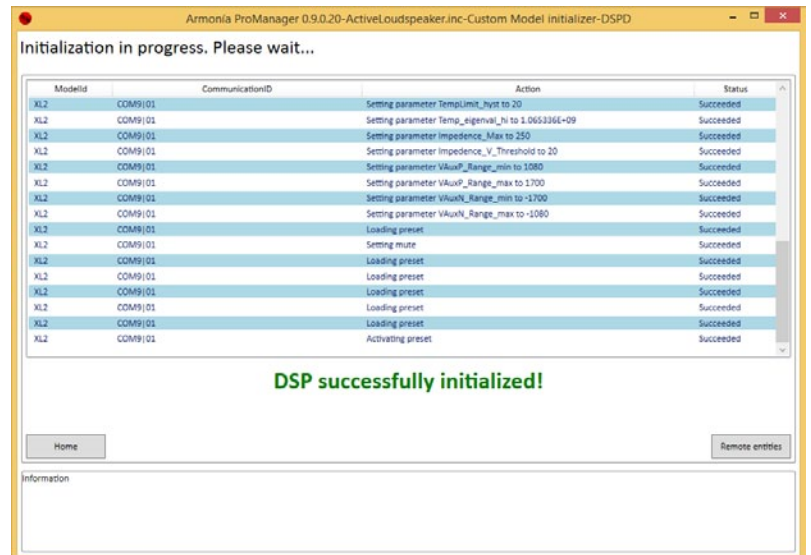
8. Select the model you have created during earlier stages

9. Specify the product serial assigned to your system/model

10. Choose a firmware version to be stored on your DSP or tip the *Skip firmware update* check box



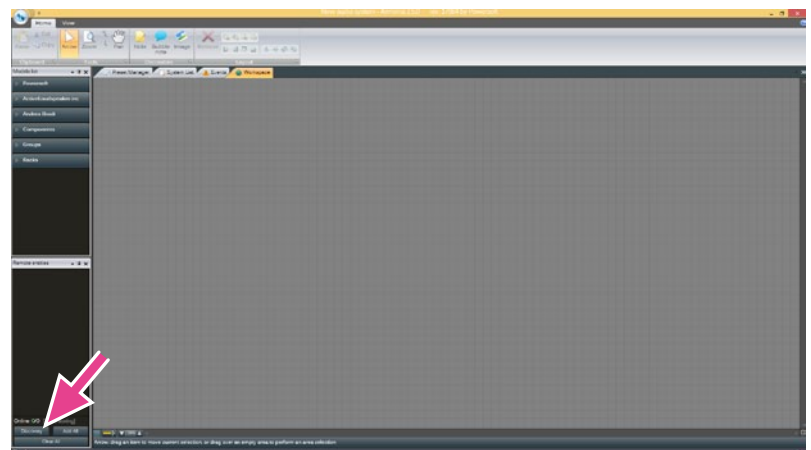
- Press Start and wait until the DSP is successfully initialized.



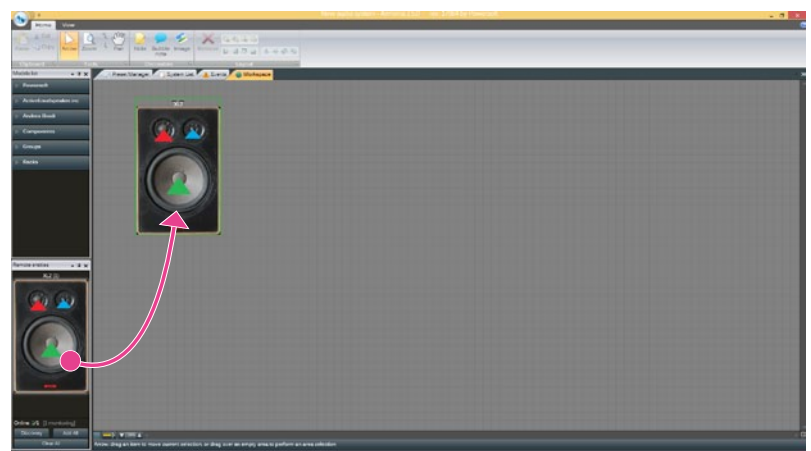
15:2.6.Manage your Custom model

From this step onwards your product will appear and will be recognised in Armonía as custom and the model will include all the proprietary processing and customization that you have applied using the Armonía ProManager.

- Open Armonía Pro Audio Suite
- Click on discovery and see your system branded as proprietary



- Drag your custom model onto the workspace
- You can now manage your system on Armonía



If you feel confident with the SigmaStudio™ development tool you can program your DSP-C and DSP+D based system as usual by means of the Powersoft Programming Board PRO or LITE. The use of the Powersoft Programming Board LITE guarantee full compatibility with Armonía Pro Audio Suite in case you ou want to provide to your customers the Armonía Pro Audio Suite interface for fine tuning and system management.

If you are used to initialize Powersoft DSP with the Programming Board PRO be aware that the Programming Board Pro makes the system incompatible with Armonía Pro Audio Suite.

The use of the Programming Board PRO for the DigiMod IK initialization makes the system incompatible with Armonía Pro Audio Suite.

If you aim to the full compatibility of your DigiMod IK based solution with Armonía Pro Audio Suite switch to the Programming Board LITE.

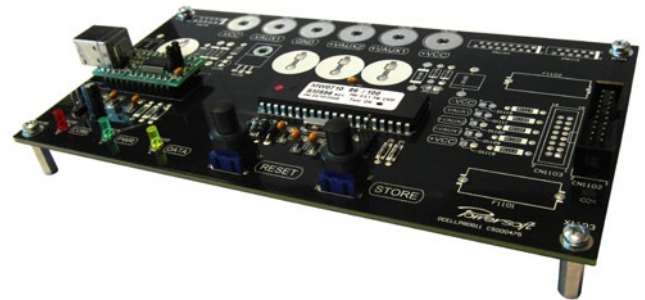
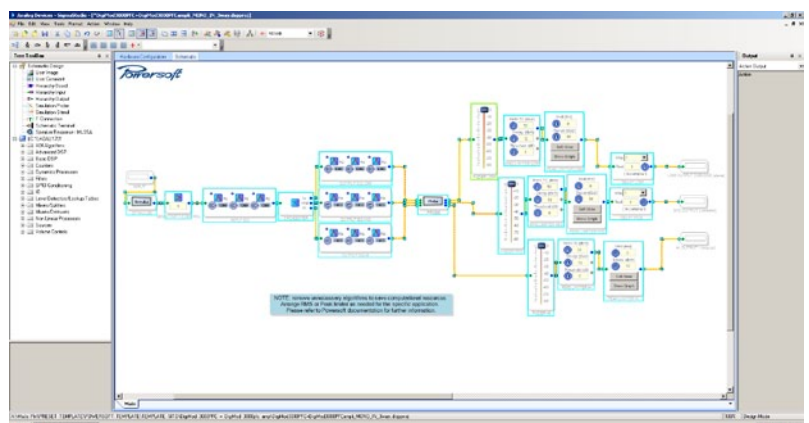
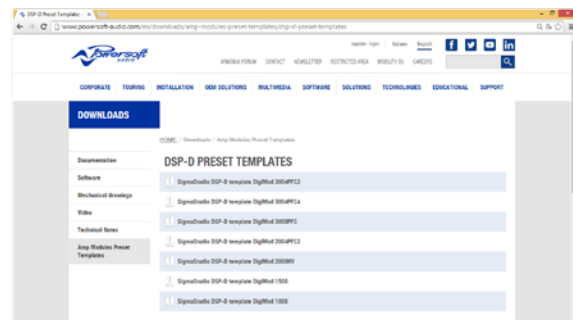


FIGURE 6: Programming Board LITE.

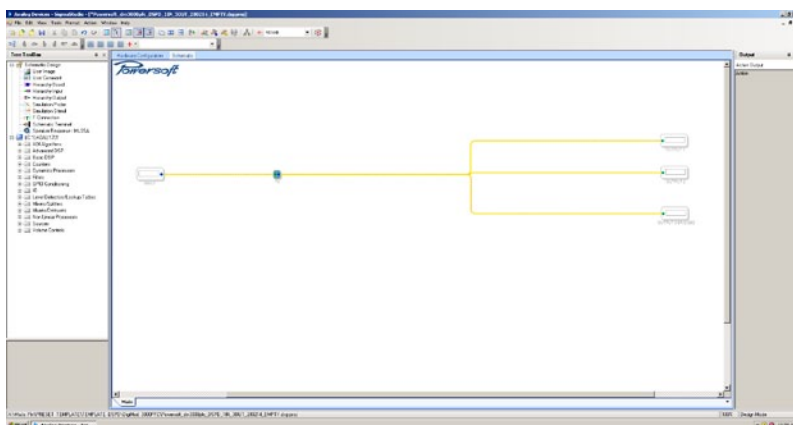
16:2.1.How to import the SigmaStudio™ presets for DSP-C into the DSP-D

The DSP-D board has a signal routing path completely different with respect to the DSP-C board, but similar processing environment so, for some extent, you can import the signal processing schema developed with SigmaStudio™ for the DSP-C into the DSP-D.

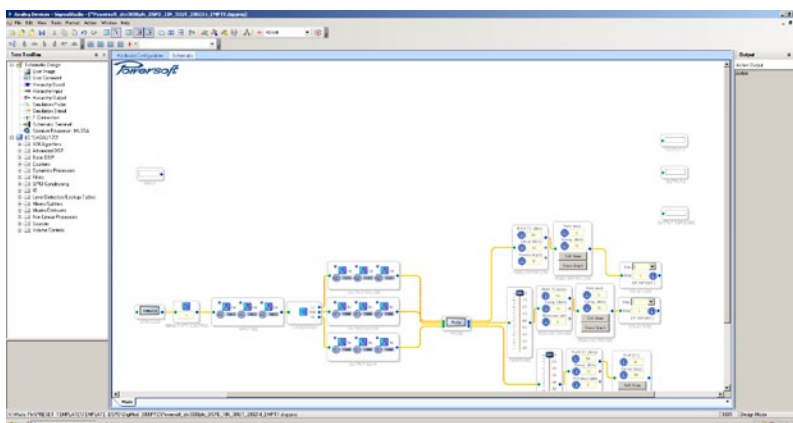
1. Access the Powersoft website and browse the download area: go to Downloads/ Amp Modules Preset Templates/DSP-D preset templates
2. Download the preset template according to your DigiMod model and I/O configuration
3. Open SigmaStudio™ and load your custom preset for DSP-C board
4. Select all the processing algorithms and copy them into the clipboard (CTRL+C)



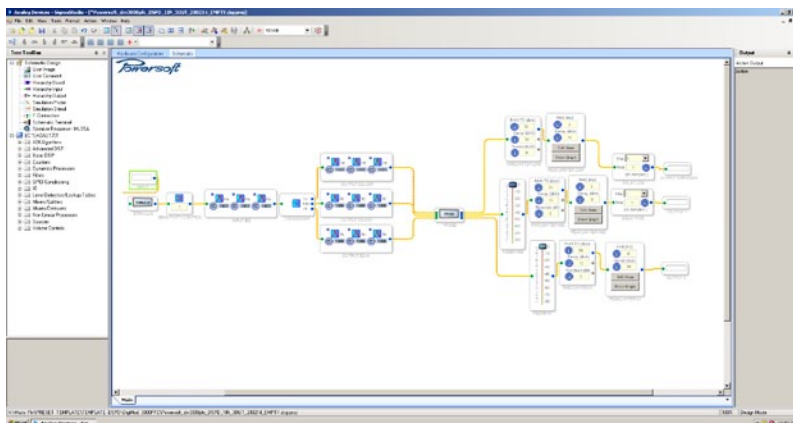
5. Open the DSP-D preset template you have previously downloaded into SigmaStudio™



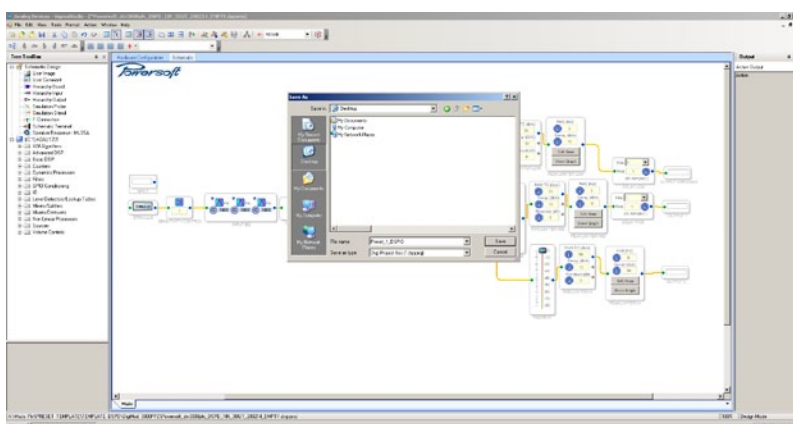
6. Paste from the clipboard (CTRL+V) all the algorithms into the DSP-D preset template



7. Properly connect inputs and outputs



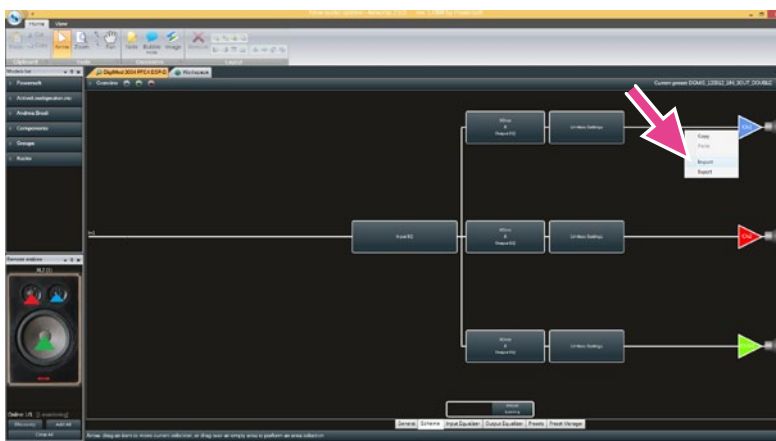
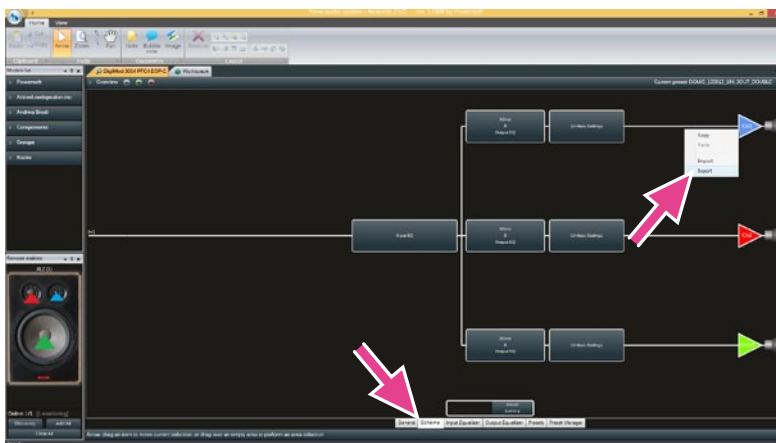
8. Save the new DSP-D preset.



A. How to import the Armonía presets for DSP-C into the DSP-D

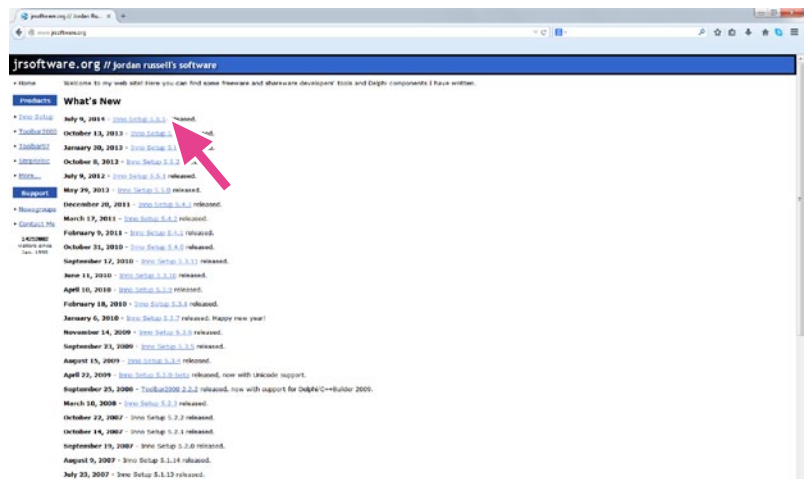
The DSP-D board has a signal routing path completely different with respect to the DSP-C board, but similar processing environment so, for some extent, you can import the signal processing schema developed with Armonía Pro Audio Suite for the DSP-C into the DSP-D.

1. Connect your DSP-C based system to Armonía, make a discovery and import it into the workspace.
2. Open the schema of your system
3. By right-clicking on the output (rightmost triangles) export the channel configuration: you will obtain a .CHP file for each channel.
4. Connect your DSP-D based system to Armonía, make a discovery and import it into the workspace.
5. **Make sure that the I/O configuration in the DSP-D based system is exactly the same of the one in the DSP-C based system**
6. Open the schema of your system
7. By right-clicking on the output (rightmost triangles) import the .CHP channel configuration file for each channel
8. Save the preset.

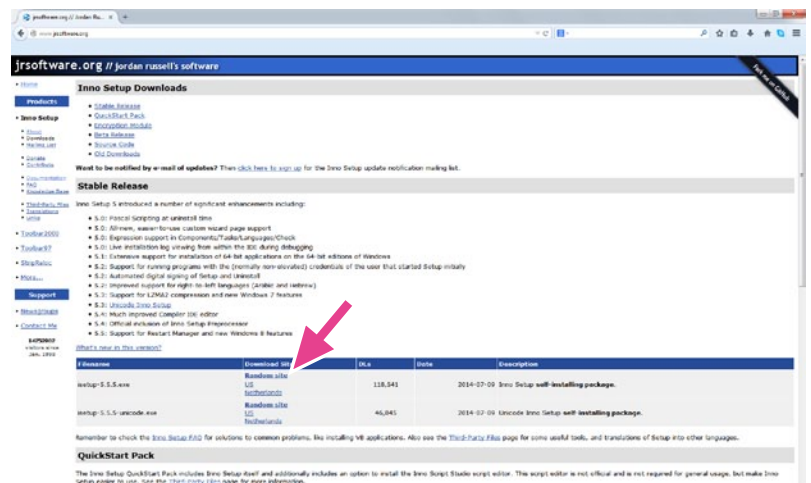


B. How to install jrsoftware

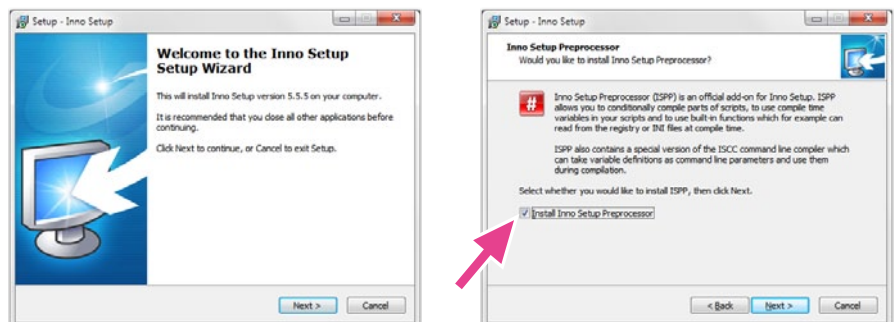
1. Go to: <http://www.jrsoftware.org>
2. Download the latest *Inno Setup* release



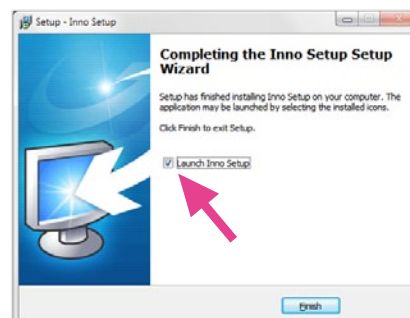
3. Choose to download it from a random site



4. Follow the installation wizard
5. Choose to install the *Inno Setup Preprocessor*

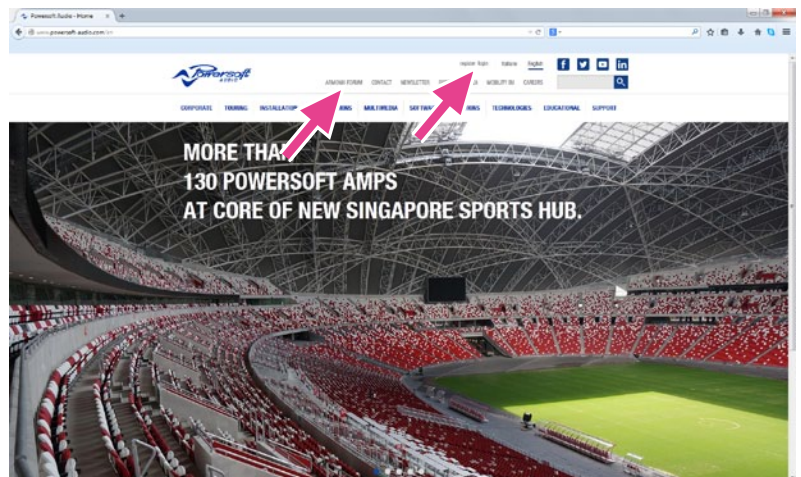


6. Uncheck the *Inno Setup Execution* checkbox

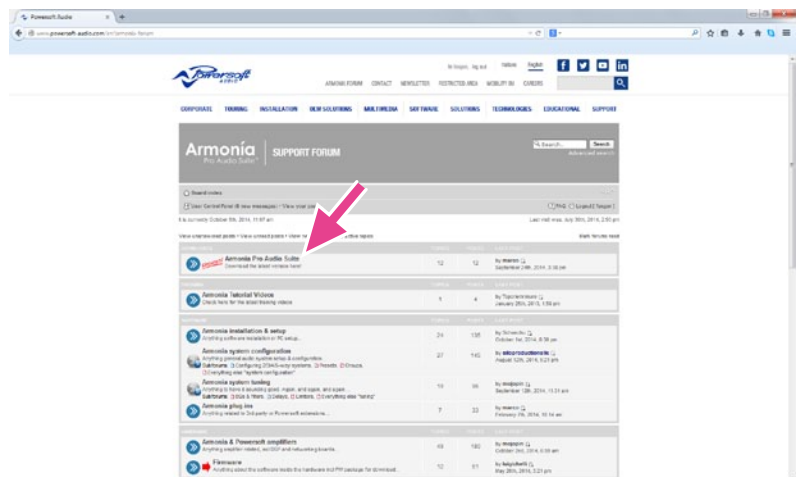


C. How to install Armonía Pro Audio Suite

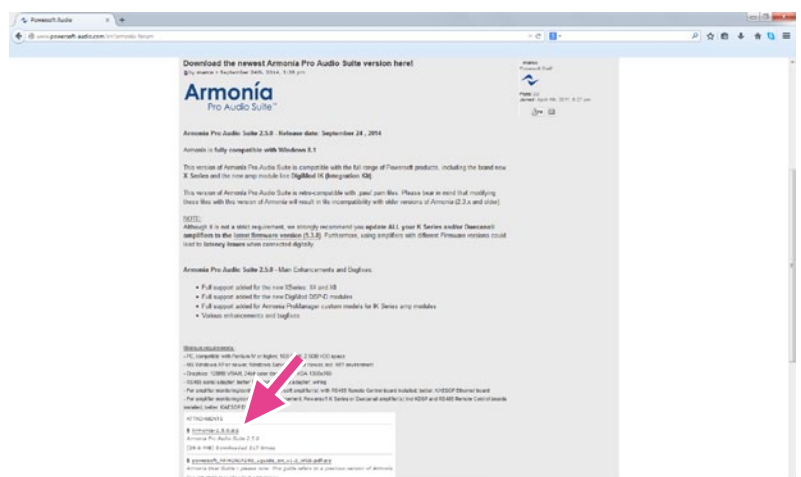
1. Go to the Powersoft website.
2. Sign-in for a new user account or log-in with your username and password.



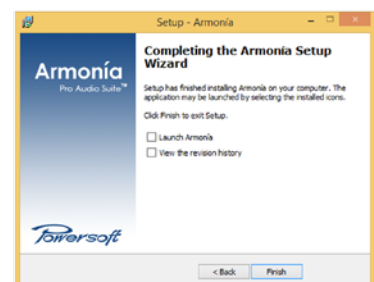
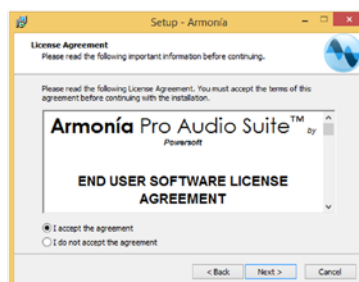
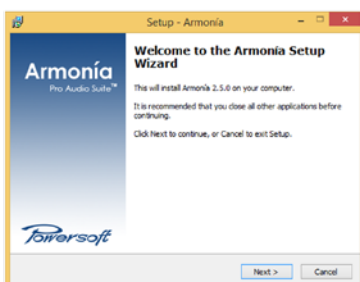
3. Access the Armonía forum
4. Click on Armonía Pro Audio Suite/
Download the newest Armonía Pro Audio Suite version here!



5. Download the latest Armonía Pro Audio Suite release

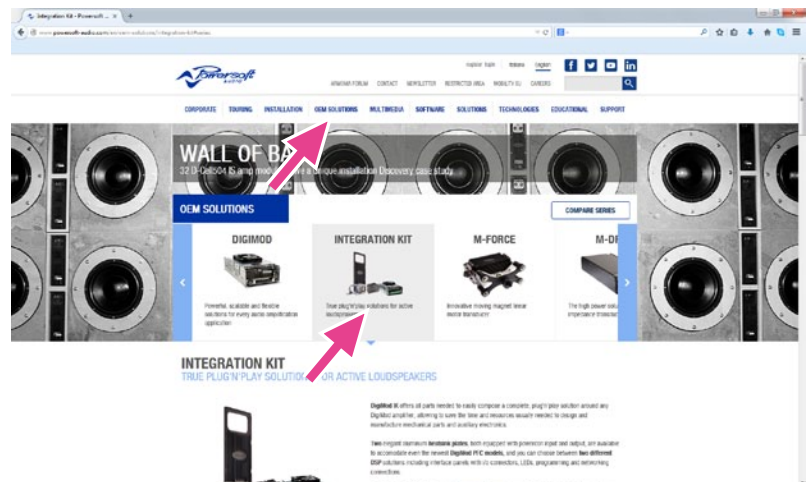


6. Install as usual

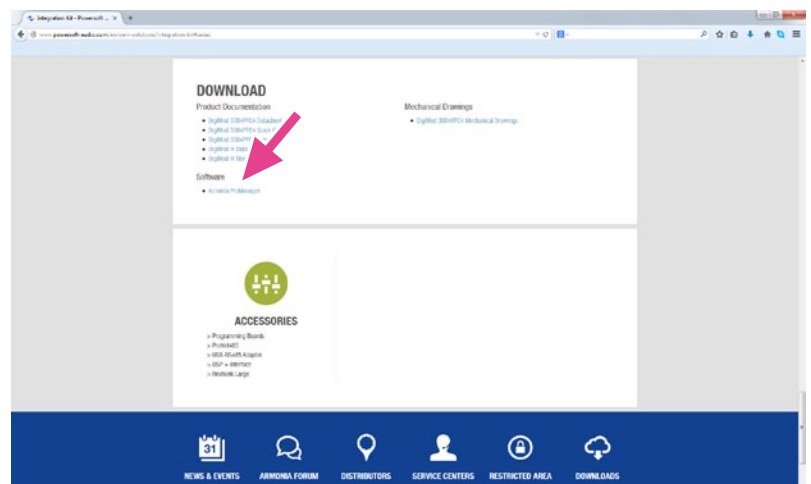


D. How to install Armonía ProManager

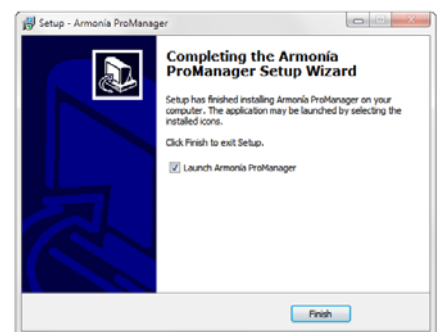
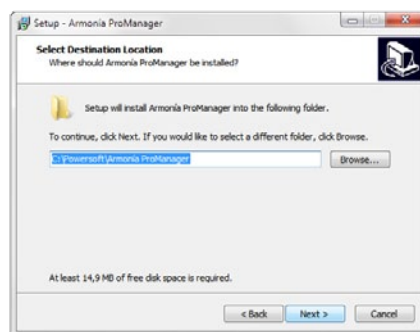
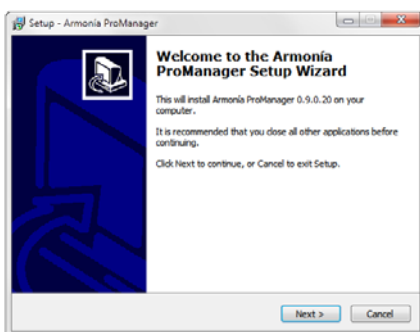
1. Access the Powersoft website
2. Go to OEM Solutions > Integration Kit



3. Scroll down the page and focus on the Download section
4. Download the Armonía ProManager



5. Install the Armonía ProManager as usual





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