

# LAB 12

## Owner's Manual

gordian

Multifunctional Power Distributor / Conditioner

[www.lab12.gr](http://www.lab12.gr)

v1.9

# LAB 12

K. Varnali 57A, Metamorfofi,

14452, Athens, Greece

Tel: +30 210 2845173

Email: [contact@lab12.gr](mailto:contact@lab12.gr)

Web: [www.lab12.gr](http://www.lab12.gr)

# Table of Contents

<b>It is yours.....</b>	<b>4</b>
<b>Unpacking and warnings.....</b>	<b>4</b>
<b>Installation &amp; placement.....</b>	<b>4</b>
<b>Quick Start.....</b>	<b>5</b>
<b>Front panel.....</b>	<b>6</b>
<b>Rear panel connections.....</b>	<b>6</b>
<b>Menu structure.....</b>	<b>7</b>
<b>Power factor correction configuration.....</b>	<b>9</b>
<b>EMI noise filter configuration.....</b>	<b>9</b>
<b>Operation modes.....</b>	<b>10</b>
<b>Connections.....</b>	<b>11</b>
<b>For the safety of your equipment.....</b>	<b>11</b>
<b>Features &amp; Specifications.....</b>	<b>12</b>
<b>Warranty.....</b>	<b>13</b>

## **IT IS YOURS!**

Thank you for purchasing Lab12 gordian. Gordian is an advanced power analyzer, conditioner and distributor dedicated for high-end audio systems.

Keep in mind that gordian is totally handcrafted with perfectly matched parts of the finest selections. OFC Conductors of large cross section, star ground design, high quality tight sockets and industrial grade bindings constitute the unshakable electrical network that delivers power to your system. In order to reach the optimal performance your gordian needs at least 150 hours of listening. In this time all components go from “burn in” period to stable.

Before setting up your new gordian, we encourage you to read this manual thoroughly to properly acquaint yourself with its features.

The information contained in this manual is subject to change without notice. The most current version of this manual is available on our official website at <http://www.lab12.gr>

## **Unpacking**

Lab12 gordian removal from its box should be handled with care. You should first remove all the foam protective pieces of the box and then unpack gordian. Unpack gordian placing your hands on both sides of the device.

## **Warnings**

No user serviceable parts are included inside. Do not unscrew the cover; high voltages remain after disconnecting from mains. In case your device requires any kind of service, please ship or take your equipment directly to Lab12 or to one of our authorized dealers or other qualified personnel.

## **Installation & Placement**

Gordian should be placed on a solid flat surface. You should avoid placing it near a heat source as this could compromise the performance and reliability. You should never place another component directly on top of this device. Make sure that your gordian has an adequate flow of air around it. Gordian could be warm in some points; this is normal and within parts specifications. Take care of the front panel's glass blasting anodized finishing using a soft dry cloth.

## Quick Start

The minimum list of the actions that the owners of Gordian should make after switching on Gordian are summarized in the next bullets. This is a “quick start”. Please also read the entire owner manual.

### **1) Check the ground connection and the polarity of their line:**

The user should navigate to the “Ground and Polarity check” menu and see if the ground is ok and the polarity is correct.

In case of reversed polarity, the user should unplug the socket and re-plug it the correct way (turn it around). Although Gordian will work great even if the polarity is not correct, by fixing the polarity we can increase the performance and the safety of operation of our audio system. This is a very simple check that may affect our system performance, and the majority of line conditioners do not give this simple but valuable information to the user. The phase (hot) line is also marked in the output sockets for the correct connection of our devices.

**In case of reported ground problem (Ground weak or Ground broken) the user should check the wall socket connection or get a technician to inspect the house’s electrical network. The wall socket ground quality is crucial not only for the performance of the system but most importantly for the SAFETY of the users. The wall socket should not be used if Gordian detects a Ground problem. This is one more very important check that is not provided by the majority of line conditioners.**

### **2) Configure the standby current of the system:**

After connecting all the system’s devices to Gordian, the user should turn them off, navigate to the “standby current” menu and press and hold the navigation knob. This will read the standby current of the system and let Gordian know when the system is active. This way Gordian will automatically turn on and off the OLED screen when it is on “AUTO display mode” (the right rotary knob).

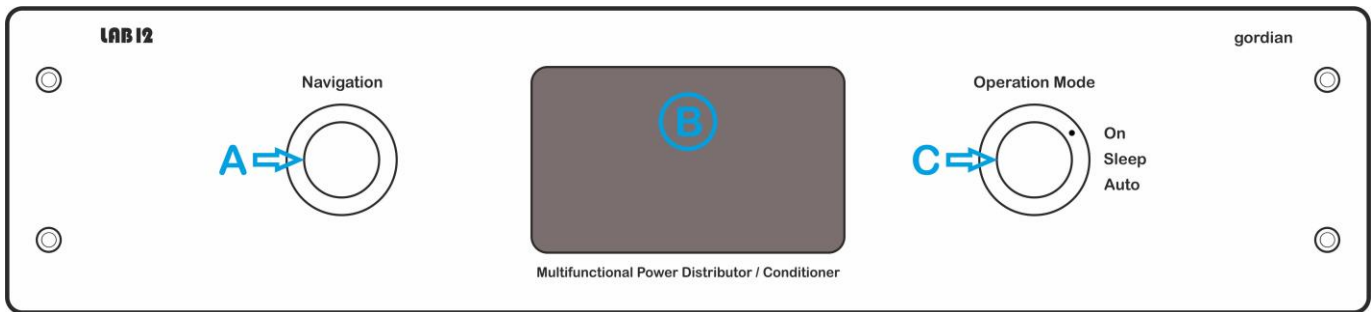
### **3) Configure the Power Factor correction:**

If the user does not want to bother a lot with the power factor correction the rule of thumb is: If the load of the system is usually larger than 100Watts, set the PF Correction to “AUTO”. Elsewhere, the Power Factor correction may be turned off since it will have no significant effect for such a low power consumption. It should be noted that manual configuration of PF correction may have negative results to the power factor if it is not done correctly. Selecting AUTO is the safest choice.

### **4) Configure the EMI filtering:**

Both Filter Effectiveness and Filter Topology can be set to AUTO and then forget about these settings. However, the user may freely experiment with this configuration and stick to the best results according to his taste. The higher frequencies of the Current Frequency spectrum and the EMI level could be useful information for someone who wants to set up the filter configuration manually. Large EMI and large content in the higher frequencies in the current spectrum may be an indication that more drastic filtering is needed.

## Front Panel



Gordian front panel

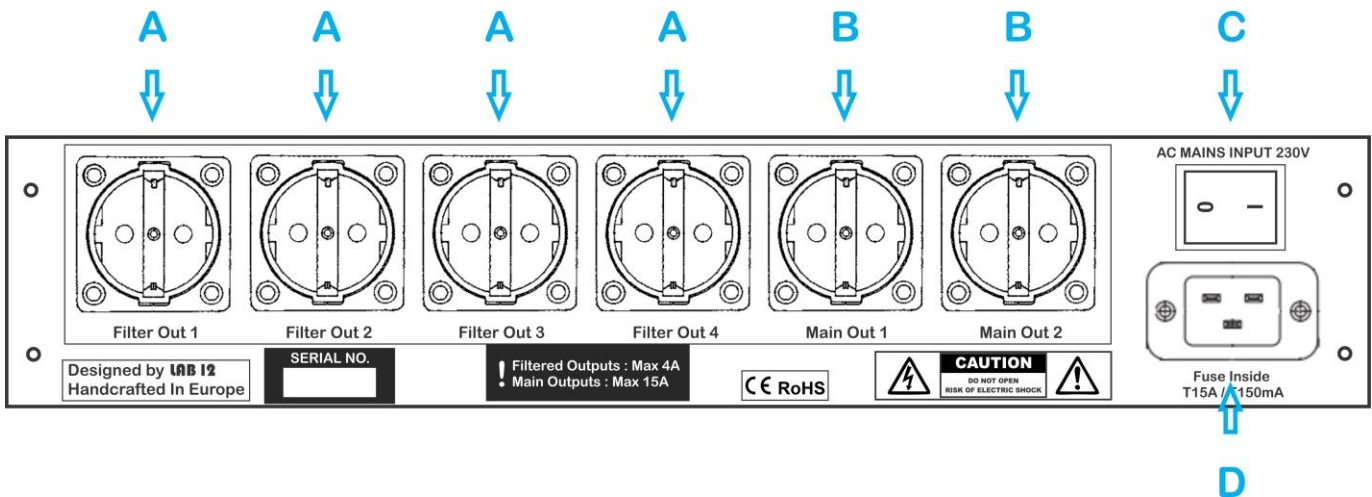
In the front panel you will see the OLED display, the Navigation rotary knob and the Operation Mode rotary knob.

The left rotary/push knob **(A)** is there for navigation into device's menu structure.

The OLED display **(B)** is located in the middle of front panel. There, you can see all the interface menu details.

The right rotary knob **(C)** selects the processor operation mode (On, Sleep, Auto).

## Rear Panel Connections



Gordian rear panel

On the rear panel you will find the output sockets, the main inlet and the main power switch.

From left to right there are four high filtered, low current outlets **(A)** and two low filtered, high current outlets **(B)**. **When polarity is 'ok', the phase is always in the right-side pin of output sockets.**

On the right side of the rear panel, the main power switch **(C)** and the power inlet **(D)** are located.

## Menu structure

All the information for your power line and the configuration of gordian's filter is accessible and updatable through the device's OLED display. You can switch among 11 different menu screens using the "Navigation" rotary/push knob on the left of the face plate. Rotate the knob to navigate through the menu and push it to perform any extra action. See below a brief description of the available menu items.

	Menu item	Description	Available Actions
1	Main AC information	Provides information about the most important characteristics of your power line. That is RMS voltage, frequency, RMS current and power consumption.	-
2	THD Analysis	Provides information about the Total Harmonic Distortion of your system's voltage and current signal.	-
3	DC Voltage and Power Factor Analysis	DC voltage and Power Factor measurement.	-
4	Ground and polarity check	Checks your socket's ground and polarity.	Switch off gordian and invert the direction of your wall socket plug if you see a "Polarity: REV!" message. This is the best for the performance and safe operation of your devices.  If you see a "Ground: Broken!" or "Ground: Weak" message this means that gordian has detected a problematic ground connection. Check that your socket plug is firmly connected. If the message remains, then you may need to refer to qualified personnel to have your house's electrical network inspected.
5	EMI noise	Measurement of the EMI noise of your line (frequencies > 10.000 kHz). Output measurement	-

6	Voltage FFT	Frequency analysis of your line's voltage. Inspect here the frequency content of your AC voltage signal (frequency range 50Hz-7kHz).	<p>Push the rotary knob to inspect the frequency content of your voltage signal. You can see the gain of each frequency band by rotating the knob.</p> <p>Push again to go back to the main menu navigation.</p>
7	Current FFT	Frequency analysis of your system's current. Inspect here the frequency content of your AC current signal (frequency range 50Hz-7kHz).	<p>Push the rotary knob to inspect the current content of your current signal. You can see the gain of each frequency band by rotating the knob.</p> <p>Push again to go back to the main menu navigation.</p>
8	Power factor correction configuration	Configures the power factor correction that your filter performs.	<p>Push the rotary knob to select among the available power factor configurations. See paragraph '<b>Power factor correction configuration</b>' below for more detailed information.</p> <p>Push the button again to lock your selection.</p>
9	EMI filter effectiveness configuration	Configures the EMI filter effectiveness.	<p>Push the rotary knob to select among the available effectiveness levels. Read paragraph '<b>Emi filter configuration</b>' below for more detailed information.</p> <p>Push the button again to lock your selection.</p>
10	EMI filter topology configuration	Configures the EMI filter topology.	<p>Push the rotary knob to select among the available filter topologies. Read paragraph '<b>EMI filter configuration</b>' below for more detailed information.</p> <p>Push the button again to lock your selection.</p>
11	Standby current setup	Configures the standby current of your system.	<p>Press and hold the rotary knob to update the standby current of your system. See paragraph '<b>Operation modes</b>' below for more detailed information.</p>



## Power factor correction configuration

The power factor of your audio system indicates how effectively your system absorbs power from your main AC line. The higher the power factor, the higher the effectiveness of your system's power consumption. You can inspect the power factor of your system at the menu item 8.

**WARNING!** The power factor of your system may be improved by selecting the proper power factor correction configuration in gordian. However, if the configuration is not the proper one, this may have negative results in your system's power factor. If you are not sure about what is the best option for your system, set the PF correction mode to 'AUTO' and let gordian adapt the PF correction to the needs of your system and the variations of your system's load. Note that PF correction is usually profitable for power loads greater than 250W.

## EMI noise filter configuration

EMI noise is a high frequency electrical noise that affects the power line of all houses' electrical networks. You can see the level of the EMI noise in the input of gordian at the menu item 5.

Gordian, by default, filters a very large percentage of the EMI noise of your line. This noise reduction is occurred in both the input and the output of your gordian power filter. That means that the noise indication you see in the OLED display is the result of the filter existence in your house's electrical network. However, the noise level in gordian's output is always lower than the input's level. EMI indication is factory set to output measurement.

You can fine-tune the EMI filter by configuring the "Filter Effectiveness" (menu item 9) and "Filter Topology" (menu item 10) parameters. Feel free to experiment with these options and stuck to the one that gives you the best sounding result.

In general, "HIGH" Filter effectiveness and "CMF + DMF" filter topology are the more drastic ones. You can take into account the measured EMI level (menu item 5) and the higher band levels of your system's current frequency analysis (menu item 7) to decide on the best filtering configuration.

If you are not sure on what configuration to select, choose "AUTO" and let gordian automatically adapt the filter configuration by mathematically analyzing the frequency content of the signal and the levels of the EMI noise.

## Operation modes

**On:** Gordian's processor is always active, and you can see the measurements, settings and automatic adjustments on the OLED display.

**Sleep:** Gordian's processor and OLED display are inactive. Power output sockets are active, but no changes are occurred on filters and other settings.

**Auto:** Gordian processor goes to active state only when the standby current exceeds the set value.

You can configure the operation of gordian's processor with the rotary switch on the right side of the face plate. If you want the processor to be always active, switch the knob to the "On" position. If you want the processor to be in sleep mode (output sockets will stay alive), switch the knob to the "Sleep" position. If you want the gordian processor to become active only when your audio system is active and automatically go to sleep when you switch off your system, then you have to configure the "stand by" current of your system and switch the knob to the "Auto" position.

To configure the "stand by" current, shut down all your system's devices and navigate to the standby current setup (menu item 11). Press and hold the navigation button and gordian will store the current consumption of your inactive system. Rotate the operation mode switch to the "AUTO" position and the OLED display will now become active only when your system's current consumption is great enough to indicate that your system is active.

## Connections

### Main connections

Connect a high grade 20A power cable to the IEC input and to your wall socket. Make sure that your wall socket provides a good ground before connecting the power cable. You can supply 230 to 240 Volt AC/ 50Hz (115 to 120 AC Volts / 60Hz). Check the polarity immediately after the first time of usage and correct the wall plug if needed.

Gordian is tuned and calibrated using the **Lab12 Knack mk2 Power Cable**. We strongly suggest using this cable.

### Connect devices

You can connect any kind of audio-video devices on the total six power outlets on the back panel of gordian to exploit the conditioned power. Use low filtered outputs **(B)** to connect high current devices (power amplifiers, plasma tv etc.) and high filtered outlets **(A)** for low consumption devices (preamplifiers, cd players, DACs etc.). Live (phase) connection is always in the right pin of each outlet. Never exceed the maximum limits of current for low and high filtered outlets **(low filtered outlets max 15A, high filtered outlets max 4A)**.

## For the safety of your equipment

**! Make sure that all your equipment is turned off before any connection.**

**! Never exceed the maximum limits of current for low and high filtered outlets (low filtered outlets max 15A, high filtered outlets max 4A).**

## Features:

- EU, US, UK, Swiss outlets version
- 230V/50Hz, 115V/60Hz version
- OLED display
- Adaptive EMI RFI filtering
- Adaptive Common and differential filters
- Adaptive Power Factor correction
- Overvoltage protection
- FFT analysis
- DC voltage analysis
- THD analysis
- Power consumption analysis
- AC voltage, current analysis
- Sleep mode system
- 5mm Aluminum face panel
- Five Years Guarantee

## Specifications

- Number of outlets: 6
- High filtered outlets power (1-4) : 1000W
- Low filtered outlets power (1-2) : 3500W
- Mains inlet: 20A IEC C20
- Mains voltage: 230V / 50Hz (115V / 60Hz)
- Available Colours: Matt Black, Frozen Silver
- Dimension (WxHxD): 43x11x29 cm
- Weight: 8 Kg

## Warranty

Lab12 products are designed and manufactured to the highest standards and deliver high- quality performance, ease of use and ease of installation. We are confident that you will enjoy many years of good service from your product.

In the unlikely event of a failure of the product, we will arrange for your product to be serviced, free of charge, provided that the product was used in accordance with the instructions in the owner's manual.

Lab12 could modify the design or specifications of any product without obligation to purchasers of previously manufactured products.

**This Warranty is provided for the benefit of the first and original purchaser of the covered product and is not transferable to a subsequent purchaser.**

**Vacuum tubes are warranted for the original 90-day period only.**

**This warranty does not affect your statutory rights. EU rules 1999/44/EK.**

**This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.**

\*Το ακόλουθο κείμενο Εγγύησης περιέχει τις Συνθήκες της Πανευρωπαϊκής Εγγύησης και τις οποίες ο κατασκευαστής LAB12 SMPC εγγυάται προς τον τελικό καταναλωτή. Οι όροι της παρούσας εγγύησης είναι πλήρως εναρμονισμένοι με τις διατάξεις της Οδηγίας 1999/44/EK, έτσι όπως αυτή ενσωματώθηκε στην ελληνική έννομη τάξη και δε θίγουν σε καμία περίπτωση τα δικαιώματα που παρέχονται στον καταναλωτή βάσει του εφαρμοστέου δικαίου.

**Lab12 reserves the right to change or modify any of the terms and conditions contained in this Warranty Statement, at any time and in our sole discretion. Any changes or modification will be effective immediately upon posting of the revisions on the Lab12 website, and you waive any right you may have to receive specific notice of such changes or modifications. In the event that there is a difference between this warranty and the provisions in any owner's manuals, warranty leaflets, or packaging cartons, the terms of this warranty, as published on the official Lab12 website, will prevail to the fullest extent allowed by law.**

**For the warranty to be valid:**

1. The Warranty card, which is placed outside the box of the unit, must be filled out by the authorized seller with the Model of the device, Serial Number, Color, Date of Purchase, Customer's Name and Customer's Address, as well as the authorized seller's point sign.
2. A copy of the purchase receipt must also be attached to this card.
3. A photo of the completed Warranty card, along with the purchase receipt, must be sent to [contact@lab12.gr](mailto:contact@lab12.gr) by the end consumer within one month from the date of purchase.

**What is Covered and how long this coverage lasts?**

Only **new** products purchased through an authorized Lab12 dealer, importer or distributor are entitled for warranty coverage. The Warranty is limited to the first original purchaser and is inapplicable for secondhand products. This warranty covers defects in materials and workmanship in this product for 5 years (or a 90-Days Limited Warranty for vacuum tubes) after the date of purchase or no later than 6 years of the date of shipment to the authorized Lab12 dealer or distributor, whichever comes first.

**What is Not Covered**

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing, and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature.

This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any **Tubes Swaps, Repairs or Modifications** attempted by anyone unauthorized by Lab12, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover vacuum tubes (after the 90-Day Limited Warranty), cartons, scratches on equipment enclosures, cables or accessories used in conjunction with this product.

**What we will do to correct problem**

During the Warranty Period, we will repair or replace, at no charge, products or parts of a product that proves defective due to defects in materials or workmanship, under normal use and maintenance.

**How To Obtain Service Under This Warranty:**

You are responsible for transporting your product to (as well as from, in the event that Lab12 finds no defect covered by this warranty) either Lab12 or an authorized point and for payment of all shipping charges. Lab12 will pay the return shipping charges (in the event you return the product to Lab12) if the repairs are covered by warranty, provided that, Lab12 reserves the right to choose the mode, the carrier and the timing of such return shipping (if Lab12 finds that there are no defects covered by this warranty, then you shall be responsible for all shipping charges).

Lab12 has authorized distribution in many countries of the world. In each country, the authorized importing retailer or distributor has accepted the responsibility for warranty of products sold by that retailer or distributor. Warranty service should normally be obtained from the importing retailer or distributor from whom you purchased your product. In the unlikely event that the technical service required is not possible to be fulfilled through the importer/distributor, this product must be returned to Lab12 main factory in Greece to fulfill the terms of this Limited Warranty at the purchaser's expense (except purchasers that purchase their product directly from our main facilities in Greece), along with the Warranty card and a copy of the proof of purchase for the product. As mentioned above, the Warranty card must list the date of purchase, the model, color and serial number of the product, the name and address of the purchaser and the authorized dealer/importer/retailer detailed sign. Additionally, you must provide detailed information on the symptoms or difficulties you have observed with the product's performance by completing a technical support form that will be provided to you by the authorized importing retailer, distributor or LAB12.

To obtain warranty service, you can also contact directly Lab12 at [contact@lab12.gr](mailto:contact@lab12.gr) or +30-2102845173, to determine the most appropriate solution for you. All warranty claims must be made in writing accompanied by the Warranty card and a copy of the proof of purchase.

Lab12 Single Member Private Company

[Contact@lab12.gr](mailto:Contact@lab12.gr)

[www.lab12.gr](http://www.lab12.gr)

We wish you to enjoy your new device exactly as we enjoyed it when we built it for you!

# LAB 12

K. Varnali 57A, Metamorfosi,

14452, Athens, Greece

Tel: +30 210 2845173

Email: [contact@lab12.gr](mailto:contact@lab12.gr)

Web: [www.lab12.gr](http://www.lab12.gr)