

**GOLDMUND MILLENNIUM
POWER AMPLIFIER**

GOLDMUND MILLENNIUM POWER AMPLIFIER

USER MANUAL

CONGRATULATIONS

Thank you for purchasing the Goldmund Millennium Reference amplifier. You have acquired the best Analogue Power Amplifier ever made for professional and domestic uses. This revolutionary amplifier is 100% driven by a powerful built-in computer. With the additional functionality of Internet linkage, this amplifier allows numerous brand new features never included before.

Please take some time to read this manual. It will provide you with useful information on how to make your pleasure of using and listening to your Millenniums even greater.

ATTENTION:

No connection or handling should be done before reading those instructions. Damage of the amplifier may result if the following instructions are not dutifully understood and applied.

UNPACKING

You will find in the GOLDMUND MILLENNIUM box:

- The amplifier
- The power cord
- This manual
- Spare fuses.

Please keep the packaging in case you need to transport the amplifier at a later date or if you have to send it for maintenance.

CHOICE OF AMPLIFIER LOCATION AND COOLING

The GOLDMUND MILLENNIUM amplifier, as all high quality amplifiers generates a large amount of heat.

It is mandatory to allow proper cooling of the heat sinks. Avoid any location which is not properly ventilated and avoid putting on top of it equipment sensitive to temperature.

Due to its extreme weight, and in order to maximize the effect of the built-in "Mechanical Grounding™" construction, the MILLENNIUM is better located on the floor. But other very strong supports can also be used, if they offer a very rigid transmission with the floor.

The MILLENNIUM is built on four very hard conical feets to ensure proper vibration transmission to the amplifier support, and to evacuate all detrimental vibrations inside the amplifier. All following the famous GOLDMUND "Mechanical Grounding™" principle.

Depending on the flatness of the surface where the amplifier will be located, you will need to screw in the four round flat feets of the amplifier to allow full contact of the points with the support.

LINE VOLTAGE ADJUSTMENT

A voltage selection is provided inside the amplifier by rewiring.

If your line voltage is not adapted to the voltage indicated on the serial plate of the amplifier, please consult your local GOLDMUND dealer for internal adjustment.

ATTENTION: On the 220V position, the GOLDMUND MILLENNIUM amplifier will function properly for main line voltage in between 200V and 240V. On the 110V position, the main line must deliver between 105 and 125V. If your main line is usually out of these tolerances, please consult your GOLDMUND dealer.

Please check the value of the main line fuse. This fuse is located on the back panel of the amplifier, above the power cord receptacle.

Use a 8A delayed fuse for 220V operation or a 16A delayed fuse for 110V operation.

POWER CONNECTION

The built-in PC computer will start immediately when the power cord is connected and will remain so until the cord is disconnected.

The MILLENNIUM has been designed so that the computer is never disconnected. Its very low consumption and long booting procedure makes this arrangement much more comfortable for the user. When put in Power Off mode, the MILLENNIUM turns off the power supply of the amplifier circuits, so only the computer remains powered.

Connect the power cord to the back of the amplifier and plug it in the nearest wall plug. For safety reasons use only a 3 lugs grounded plug. To get the best sound of the amplifier, avoid any multiple plug or extension cord.

The computer boot procedure will start and be displayed on the screen, until the starting screen is displayed. Please do not touch the screen until the process is finished.

INPUT & SPEAKERS CONNECTIONS

Connect the interconnect cables between the preamp and each power amp. You may either use the RCA female socket or the XLR. The XLR socket, especially used for symmetrical connection in professional installations, is wired as follows:

- 1 - Grounding, Shielding.
- 2 - Hot.
- 3 - Cold.

Attention: if you want to use a symmetrical 4 wire cable, always maintain the ground/earth switch to "Link" otherwise you may destroy your amplifier.

Connect the speaker cable to one of the red and black terminals on the back panel of the amplifier, or, if you use a Goldmund High Definition speaker cable, you can connect directly the speaker cable to one of the coaxial plugs on the back panel, bypassing the amplifier adapter module of the speaker cable.

The 3 separate outputs (both 5 way post and coaxial) are connected internally in parallel. They are provided to facilitate the connection in bi-wiring or tri-wiring systems.

You may notice that the ground of the input plug and the black speaker terminal are the same polarity. The amplifier is non-inverting in phase.

COMPUTER CONTROL ON FRONT PANEL

The Millennium amplifier is controlled by a computer unit that is a standard Pentium PC computer

except that it does not have any hard disk nor the usual noisy fan that cause unacceptable noise. The embedded technology allows for a minimal NT operating platform on which the software runs smoothly.

A TFT touch-screen is located on the front panel of the GOLDMUND MILLENNIUM amplifier. It provides you with the interface of all possible adjustments of the power amplifier. The following paragraphs describe how to use the Millennium embedded software.

System start sequence:

When the system is first powered up the normal booting sequence of the computer happens. The usual automatic memory, processor checks are displayed and the loading of the NT platform and various drivers starts.

Once all these steps are finished, a blue screen will be displayed. If you have a direct link to a network and have already connected the Millennium to the network, the introduction will start automatically in a short while. If you have connected to a phone line, the introduction will start in about 35 seconds. Please do not be alarmed about the empty blue screen in the meanwhile, the system is simply timing out on the check for a network connection.

After the software starts, a little welcome message is displayed and the Millennium goes automatically into power-off mode. Touch the display twice to go to the main screen (monitoring screen). This is the main screen of the amplifier, in which the most important real-time events are monitored.

Operate	When pressing this button, the bargraph, temperature displays, input and outputs become active. A blue Led glows to show the amplifier is operating. When pressed again, the led goes off and the amplifier goes to Standby. Input and outputs are disconnected.
Power off	When pressing this button, the main amplification stage is powered off. For sound quality reasons, power off mode should only be activated when the amplifier will not be used for a long time.
Menu	This button opens another screen where the parameters of the amplifier may be adjusted (see below)

Temperatures Display

TEMP 1, TEMP2, TEMP 3 indicate the temperatures of the three sensors located inside the unit. TEMP1 shows the temperature inside the embedded computer, TEMP2 shows the audio circuit's temperature and TEMP3 shows the general output devices'

temperature.

MENU SCREEN ADJUSTMENTS

This section allows the user to modify the settings of the amplifier.

SETUP BUTTON

This button opens the Setup Screen (see below). You need to set the parameters in the Setup screen first when your amp is new.

CALIBRATION SOUND FILES

This page will be available in future software versions and will give the amplifier the capability to play computer sound files to calibrate your sound installation.

STATISTICS

This page will be available in future software versions and will show you the statistics of the measurements taken for temperature and sound level by your Millennium.

SOFTWARE UPGRADE

This page allows you to automatically request a software Upgrade.

Before proceeding with the upgrade, an intermediary page shows you the current software configuration of your amplifier and asks you whether you want to check for available upgrade.

If you choose "Yes", your Millennium will use your network settings to connect to the Goldmund FTP server through your provider in order to verify whether your configuration is the most recent one. If so, a message will indicate that you don't need an upgrade. If not, your Millennium will ask you to begin with the download process. This may require some time depending on the size of the new files and the speed of your internet connection.

USER MANUAL

A copy of this manual is provided in computer text mode for direct consultation (upgraded when future versions of the software are provided).

You may also notice that a help function is provided on the screen for each of the buttons in the setup and Menu screens.

MILLENNIUM PRESENTATION

This button runs a Millennium amplifier presentation.

SETUP SCREEN ADJUSTMENTS

AUTO-POWER

- | | |
|----------|--|
| Auto on | If this function is active (led on), the amplifier automatically goes out of standby mode when a signal is present on input. |
| Auto off | If this function is active (led on), the amplifier automatically goes to standby mode when no signal is present on input after the specified and adjustable timeout. |

SCREEN SAVER

- | | |
|-----------------|--|
| On/Off function | You may choose not to run the screen saver at all. In this case you should turn on the first led by pressing once. Choose the second led if you want the screen saver to run from all levels of the software or only from the monitoring screen. The third possibility is to completely deactivate the display; in this case the screen saver will not run but the display will be powered off. Use this possibility, for example, when you want to listen to music in darkness. For each of these functions, you can specify a timeout. |
|-----------------|--|

INPUT SIGNAL

- | | |
|-----------------|--|
| Input selection | Choose whether your input is analog or digital (only if the optional digital module is installed). When selecting digital input, the right button becomes active and let you choose between left or right channel analog signal coming from the Digital to Analog Converter (DAC). |
| Gain Attenuator | Using the gain attenuator you can adjust the input sensitivity of the amplifier from -21 dB to 0 dB. |

PROTECTION

The Millennium built-in protection circuit is designed to protect your speakers from excessive power. The provided adjustment adjust the percentage of power the amplifier will accept to deliver before going

to Protection mode. For example, if you choose 50 %, the threshold will be half the maximum admissible power. If more power is generated by the amplifier, the protection will be activated and the power will be turned off. Adjust this parameter according to the gain of your input signal.

If you do not know the power your speaker may accept, you should proceed experimentally to optimize this parameter.

It should be noted that the bargraph will adjust itself automatically to fit the whole scale.

NETWORK SETTINGS

Thanks to the built-in Internet connection, your Millennium software may automatically be upgraded to a new version when requested. To be able to use the Internet link, you must first get an Internet access with a local provider.

If your house is already getting such an access, the MILLENNIUM may be linked to your network by its LAN RJ45 back panel connector or to a telephone line by the back panel phone connector, using its built-in modem. If you are not familiar with such a connection, have your installer/dealer help you setting up the parameters of this connection.

This section of the Setup controls the Internet connection settings specific to your installation. You need to enter these parameters only once for the connection of your Millennium to an outside network. To adjust one parameter simply press on the field that you wish to modify. An alphanumeric keyboard will appear.

FTP or URL addresses

This field controls the address of the Goldmund FTP server that manages the automatic software upgrade. This address should never be modified, without indications from the factory. (This may be changed in the future for various reasons).

FTP upgrade directory path

This is the name of the folders in which your Millennium will find the future upgrades of the software. Do not modify this field without indications from the factory.

Username & password

The Goldmund FTP server has a username and a password for security reasons. Don't modify them without any indication from the factory.

Username: millennium
Password: m1llenn1um

Provider | The provider's led should be on if you're using the Millennium's modem to connect to

the Internet. However, this not necessary if the Millennium is connected to a network (provider led off).

Phonenumber | This is your Internet provider's phone number.

Username & password

| Your provider has probably provided you a specific Username and a Password. Please specify them here.

MISCELLANEOUS

Temperature unit

| This option allows you to display the three sensors' temperatures either in degrees Celsius or Fahrenheit in the monitoring screen.

Cooler fan mode

| Choose auto, if you want your cooler to automatically adjust its speed to internal temperature. If not, you may always let it run at its maximum speed.

Phase

| This is the main AC polarity. You may choose to invert it for sound quality reasons (please refer to the Installation chapter)

Time & Date

| Use "Set Time" to validate your date and time settings. These data will be requested for giving the statistics time information.

SOUND QUALITY OPTIMIZATION

Your MILLENNIUM amplifier is so accurate that any of the small adjustments described below can have a serious effect on its optimum sounding quality. Take your time to experiment with those if you really want to reach the top sonic level that this amplifier can deliver.

- Warm-up sonic effect

If the power amplifier has been powered off for some time, the optimum sound quality is only reached

after several minutes. The critical internal circuits have to warm up to around +60 - 65 degrees Celsius (+140 - 150 degrees Fahrenheit). When the amplifier has been used recently, the optimum is reached after 5 to 10 minutes.

- Speaker polarity

Even if you have a phase inverter on your preamplifier (as on the GOLDMUND MIMESIS 22), and even if you have carefully selected the proper AC line polarity (see in next paragraph), there is a possibility to again increase the sonic quality of your speakers by reverting the polarity of the speaker cable amp termination if you are not using Goldmund speakers. But since the line phase and the speaker polarity interfere with each other, you have to experiment carefully all the combinations before picking the right one.

If your preamp has an absolute phase inverter, this will interfere too. If it has not, do not forget the result will depend of the source, most of the record and CD being recorded without care for the absolute phase. Be patient...

- Main line phase inversion

To select the proper AC line polarity, you have to select through trial and error one of the two-polarity positions that can be activated by the computer.

The AC line polarity may be inverted on the setup menu, please refer to following chapters.

We recommend that you proceed carefully to try this. You must do it in combination with the speaker polarity and/or with absolute phase switching to be sure of the result.

- The GOLDMUND exclusive "Mechanical grounding".

In the GOLDMUND MILLENNIUM amplifier, GOLDMUND has, more than in any other of its components, fully implemented an optimized vibration evacuation path. This is called by GOLDMUND : "Mechanical Grounding". The perfect adjustment of this evacuation provides the MILLENNIUM with an extraordinary dynamic capability and transparency, especially on low efficiency speakers.

To get all the benefits of this design, the MILLENNIUM must be located on a very rigid support, or better yet, directly on the floor in order to couple with the building's rigid construction. Try various locations until you find the most rigid one. Avoid any decoupling material, carpet especially, even between the furniture and the floor. Use the four pin-point feet to couple the amplifier to the supporting furniture or to the floor.

With a very top system, the sonic improvement is obvious when the proper grounding is found is and this is definitely worth the try.

SAFETY FEATURES

The GOLDMUND MILLENNIUM amplifier provides sophisticated features to protect the amplifier and the speakers against all mishandling or component failure.

However some precautions must be taken to avoid problems with a very high power amplifier.

- Protection against DC.

The MILLENNIUM is a DC-coupled amplifier. If the associated preamplifier is badly designed or defective (often true for the tube preamps), the speakers or even the amplifier circuits may be damaged.

In such a case, the DC protection circuit of the MILLENNIUM will automatically turn off the amplifier. This detection circuit is totally immune to any sonic effect.

To indicate that the amplifier has been turned off by the protection circuit, a message will be displayed on the front panel.

When the source of DC offset is suppressed, turn ON the amplifier again.

- Protection against HF oscillations.

In the same way, the speaker must be protected against a large amount of high frequency oscillation if present to avoid any danger for the tweeters, even if these frequencies remain unnoticed.

The amplifier is by itself extremely stable. However some mishandling must be avoided in order to avoid any oscillation :

- Never plug an input cable on a power amp when it is turned on.
- Be careful to use only very high quality interconnects. If the ground connection become loose, there is a big danger of oscillation. Warranty is voided if this occurs.
- Never run the input (interconnect) and output (speaker) cables parallel.

If an oscillation of too high level is detected, the amplifier will be turned off automatically by the computer. A warning message will be displayed on the front panel.

You will have to suppress the source of oscillation and turn it ON again if the protection is activated.

- Overheating protection

If for any reason (malfunction, too high level, too low load impedance) the temperature of the amplifier circuits reach a dangerous level, the MILLENNIUM could be damaged.

To avoid this type of damage, if the temperature rises too high, a protection circuit switches the amp off automatically. A front panel message indicates that the overheating protection circuit has turned off the amplifier.

If such a protection occurs, let the amplifier cool for some time. It is strongly recommended to try to detect why the temperature has reached such a level before operating the amplifier again.

- Overload protection

The MILLENNIUM has a computer controlled overload protection circuit which will shut down the amplifier if a too-high level is reached for too long and may endanger the amplifier circuits or your speakers.

The overload level is adjustable by the user if the speakers have to be more protected and cannot support the very high power generated by the amplifier.
See the computer control section for the protection adjustment

- Protection against short-circuits

If one output is short-circuited by accident and the current becomes too high, the AC fuse may blow if the overload protection has not been activated fast enough.

To replace the defective fuse, switch the amplifier off first. Then open the small drawer located on the AC cord receptacle. The fuses are located inside. Change the defective fuse.

Then switch the power on if the short-circuit has been detected and removed.

To avoid the fuses to blow, avoid to short-circuit the output terminals accidentally. Always switch OFF the amp before trying any manipulation of the speaker cables.

There is no risk to leave the speaker terminals unconnected when the amp is on.

MAINTENANCE & SOFTWARE UPDATE

The GOLDMUND MILLENNIUM amplifier usually requires no hardware maintenance.

However, since the MILLENNIUM uses a full-featured computer, most of its features may be updated by software. From time to time, Goldmund may publish a software update that provides new features or better control of your MILLENNIUM. The built-in Software Update feature allows the software to be very easily updated. Refer to the above "SOFTWARE UPDATE" paragraph for explanation.

To clean your MILLENNIUM use only a soft cloth slightly wet. Always turn the power off before cleaning your amplifier.

TECHNICAL DATA :

POWER

- Maximum power before clipping : 600 W RMS (8 Ohms).
- Nominal continuous power : 350 W RMS (2 - 8 Ohms).
175 W RMS (1 - 16 Ohms).
- Maximum voltage swing : 84 V peak.
- Maximum current swing : 28 A peak.

FREQUENCY RESPONSE

These figures are valid for the circuit alone, at any level between 0 and nominal power.

- +/- 0.1 dB, 0 - 300 kHz, +/- 1 dB, 0 - 800 kHz.
- +/- 3 dB, 0 - 2.5 MHz.

INPUT SENSITIVITY

- Nominal level : 1.45 V RMS.
- Voltage Gain : 29, adjustable input sensitivity
- Input impedance : 10-52 kOhms.

GROUP DELAY

- Propagation delay < 100 ns stable with frequency from DC to 200 kHz.

DISTORTION

Figures valid for all levels from 0 to 40 V / 8 Ohms :

- Dynamic : TID < 0.01 % (- 80 dB).
- Static : THD < 0.01 % (- 80 dB).

CIRCUIT SPEED

- Slew rate : > 300 V/us
- Rise time : < 200 ns.

NOISE

- Signal-to noise ratio : > 115 dB (0.01 Hz - 1 Mhz).
- Weighted ASA A : > 130 dB.

OPERATING TEMPERATURE

- Room temperature : -30 to +40 degrees Celsius
(-22 to +104 degrees Fahrenheit).
- Internal temperature : +45 to +65 degrees Celsius
(+113 to +149 degrees Fahrenheit).

POWER SUPPLY

- Nominal line voltage : 117, 234 V (internal wiring).
- Input voltage range : +/- 10 %.
- Maximum power consumption : 2000 W.
- Power used in standby : 140 W.

- Power used when powered off : 30 W
- 12 toroidal transformers, 8 separated power supply.

GROUNDING

- Separated ground and earth.
- Floating chassis connected to mains earth.
- Switchable link for optionally connecting both.

SAFETY FEATURES

- AC voltage fuse : min 10 A slow-blow for 220 V / 16 A slow-blow for 110 V.

FRONT PANEL CONTROLS

- Computer controlled 10.4" Touch-Screen panel

REAR PANEL CONNECTORS AND CONTROLS

- Power cord: universal socket 3 lugs.
- Main fuse (10A slow-blow 110V / 16 A slow-blow 220 V).
- Green-yellow AC earth binding post.
- Black signal ground binding post.
- Ground-Earth link switch
- Output speaker : 3 X 5 ways post in parallel.
- Output speaker : 3 x Coaxial connectors in parallel.
- Analogue Input connector RCA.
- Analogue Input connector XLR for balanced input.
- Keyboard input Jack
- RJ45 Ethernet connector
- RJ11 Telephone line connector

SIZE AND WEIGHT

- 46 cm (18") W x 51 cm (20") D x 32.5 cm (12.75") H.
- Weight : 75 kg net.

WARRANTY

- 5 years parts and labor.