Comet Computer DAC

User Guide

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Thank You

All of us at EXOGAL would like to say thank you, and congratulations for purchasing the EXOGAL Comet Computer DAC. We sincerely believe that your Comet is an intelligent investment that will bring you many years of musical enjoyment and satisfaction.

While every new owner is anxious to begin listening, we encourage you to take a few minutes to read this manual and familiarize yourself with the full capabilities of the EXOGAL Comet.

Installation and Set-up

Unpacking
Use care in unpacking your EXOGAL Comet. Inspect it for any shipping damage and call your dealer immediately if any is found.

⚠️ Do not plug your EXOGAL Comet into an AC outlet if you find shipping damage!

We advise saving all packing materials so that the unit can be easily and safely shipped if the need arises.

In the Box
Provided with the EXOGAL Comet:

- Comet Computer DAC
- AC power adapter (or Upgrade Power Supply in a Comet Plus)
- Bluetooth Antenna
- BNC to RCA adapter
- Stick-on rubber feet
- EXOGAL SR-07 Remote control

⚠️ Do not tip the unit onto the back panel. This can damage input and/or output connectors.
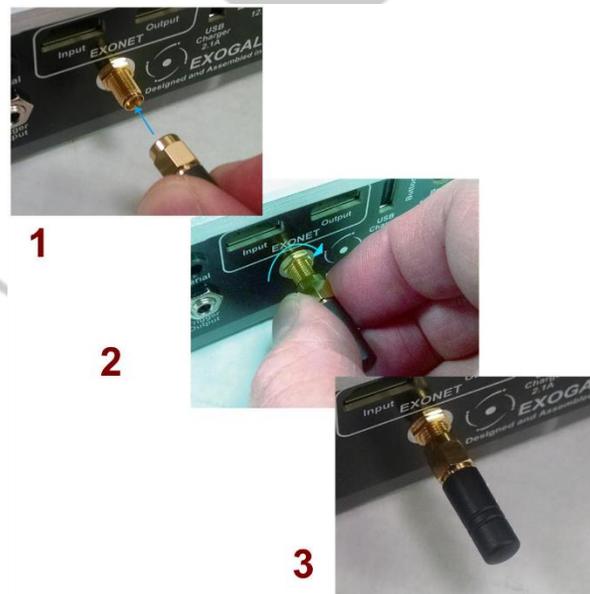
Connecting the Comet

⚠️ *Your EXOGAL Comet Computer DAC uses an external power supply which is designed to work with line voltages from 100VAC to 240VAC, 50/60Hz. The supplied power adapter can accept different sets of prongs to allow it to plug into the wall socket in different countries. Attempting to use a different power supply may damage the unit. Damage caused by improper operation is not covered by warranty. If you would like to use a different power adapter, contact your EXOGAL dealer.*

Connecting the Bluetooth Antenna

All EXOGAL products use a form of Bluetooth called "Bluetooth Low Energy" (BLE) for their remote controls. BLE is a wireless technology that allows you to not only control your Comet but also to see what it is doing in real time, if you use one of our smartphone applications. The included remote does not have a display so while you may control the Comet from a distance, you will still need to see the display to verify the results.

BLE was chosen because it works at a distance of up to 100 meters (30 meters with an Apple device, sorry, that's an Apple limitation not ours!) In order for the remotes to work properly, you MUST attach the included BLE antenna. Please refer to the following diagram:

Simply screw the antenna onto the matching RF connector on the back of the Comet.

Connecting to AC Power

The best performance is obtained when the EXOGAL Comet is plugged directly into the wall with the power adapter provided. The EXOGAL Comet has some power conditioning and surge suppression built in. It should not be necessary to use surge protectors power conditioners or aftermarket power cords, some of which may degrade the sonic performance. If you wish to experiment with any of these devices, work closely with your local dealer – and most of all, trust your own ears.

Avoid allowing static shocks to be applied to the inputs or outputs. To prevent static shocks, touch any grounded surface, such as the EXOGAL Comet chassis, before connecting or removing a cable. It is unlikely that a static shock will damage the unit, but it may cause the EXOGAL Comet circuitry to "lock-up" (see Troubleshooting: Lock-up – page 10).

Inputs and outputs can be safely connected to the EXOGAL Comet:

- Before the unit is powered up
- When the unit is in Full-Mute mode
- When the unit is in Standby Mode

We strongly recommend that you use your EXOGAL Comet connected directly to your power amplifier.

Even if you purchased your EXOGAL Comet with the intention of connecting it to your preamplifier, we suggest that you try direct connection to your amplifier. Many listeners are surprised by the improvement in performance over even the most expensive preamplifiers.

To connect your EXOGAL Comet to a power amplifier, ensure that your power amplifier is turned off then connect your chosen interconnects from the EXOGAL Comet outputs to the amplifier's inputs.

Using with a Preamplifier

While the EXOGAL Comet was designed and is intended to be used without a preamplifier, no compromises were made in its design that will prevent excellent operation in a conventional system with a preamplifier.

When using a preamplifier, set the EXOGAL Comet volume control to between 85 and 100, depending on your system.

The EXOGAL Comet Volume Control is factory set to 65% so that you can hear some music when it first starts up but, depending on the sensitivity of your amplifier you will not "blast" yourself inadvertently.

Connecting to a Transport or Other Digital Source
Avoid allowing static shocks to be applied to the inputs or outputs. To prevent static shocks, touch any grounded surface, such as the EXOGAL Comet chassis, before connecting or removing a cable. It is unlikely that a static shock will damage the unit, but it may cause the EXOGAL Comet circuitry to "lock-up" (see Troubleshooting: Lock-up – page 11).

Inputs and outputs can be safely connected to the EXOGAL Comet:

- Before the unit is powered up
- When the unit is in Full-Mute mode
- When the unit is in Standby Mode

The EXOGAL Comet has five input sources:
> Analog RCA jacks
> AES/EBU with XLR type connector
> Plastic optical TOSLINK
> USB Type B Connector
> Coaxial with BNC connector

To connect a source, install the proper cable between the output of that source and the matching input of the EXOGAL Comet.

The EXOGAL Comet will automatically adjust to the sampling rate of any standard 44.1kHz, 48kHz, 88.2kHz, 96kHz on all digital inputs, 176.4kHz, 192kHz on AES/EBU, SPDIF and USB.

Choosing a Digital Input Cable
While the EXOGAL Comet supports most commonly accepted transmission formats for digital audio, we recommend using a high quality cable. Contact your EXOGAL retail representative for recommendations.

Based on our experience, here is a list of digital interface methods in descending order of performance:
> USB
> AES/EBU using XLR connector
> Coaxial cable using BNC connector
> Coaxial cable using RCA to BNC adapter
> TOSLINK plastic-optical cable

The quality of any of these transmission methods depends on the quality of the cable and the sophistication of the transmitter and receiver. For example, a high quality coaxial cable can outperform a low quality AES/EBU cable.

If you are using a coaxial cable, we recommend that you have the cable terminated with a 75 ohm BNC connector. This will provide higher performance than an RCA connector.

Again, we highly recommend that you take advantage of your dealer's experience and, most importantly, trust your ears.

All XLR-type inputs and outputs on the EXOGAL Comet, both digital and analog, use the standard audio pin configuration:

Pin 1 - Ground
Pin 2 - Positive signal
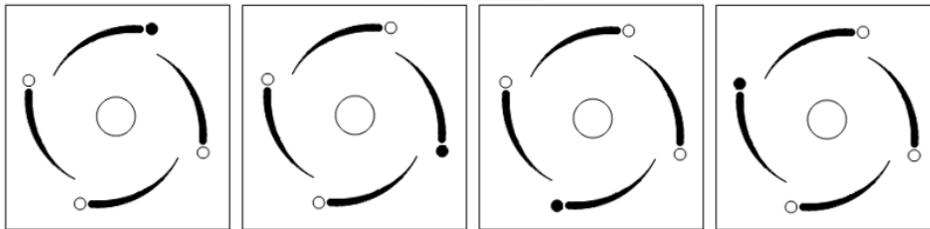Pin 3 - Negative signal

User Interface

Turn-on Screen

When power is turned on, the EXOGAL Comet will show the display screens, as shown below, for several seconds.
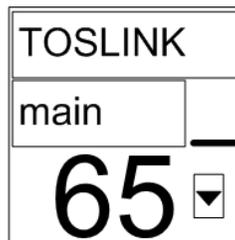
First you will see the product name screen with the software version number:

Then you will see the EXOGAL Logo with the planets of the galaxy "rotating".
This tells you that the unit is going through its startup process:
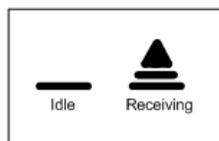

Finally, you will see the main display screen:

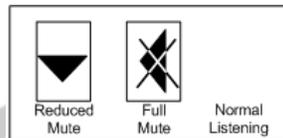To understand the Main Screen, you need to understand two symbol areas.

First, on the right hand edge of the middle of the screen is the indicator
that shows a signal is being received from a remote control:

Also, the Mute State Indicator is in the lower right hand corner of the display. There are three Mute Modes: Normal Listening Level, Reduced Mute (Normal Listening Level - 10dB) and Full Mute (no sound)

The upper box may show "TOSLINK" as the currently selected Input, "main" which means the XLR / RCA outputs (the other choices are "head" for the Headphone Jack and "EXONET" for a device connected to the EXONET bus, such as an Ion Power DAC. EXONET will only appear when a supported EXONET device is connected to the Comet!), 65 is the default volume setting and the downward triangle in the rectangular box shows that the unit is in Reduced Mute mode.

Selecting an Input

Any of the five inputs on the EXOGAL Comet can be selected by pressing the Input Select key on an EXOGAL Remote or on an EXOGAL Smartphone Application.

The inputs are selected on a rotating basis in the following order:

1. TOSLINK
2. Analog
3. USB
4. AES/EBU
5. SPDIF

Each time the Input key is pressed, the next input is selected. For example, if TOSLINK is currently selected, pressing the Input key on the remote control will advance to the Analog and so on. After SPDIF, the list will begin again with TOSLINK. When switching to a different input, the display will briefly show the sampling frequency currently playing on that input. After a moment, the sampling frequency will disappear and the output selection will show once again.

Selecting an Output

Any of the three outputs on the EXOGAL Comet can be selected by pressing the Output Select key on an EXOGAL Remote or on an EXOGAL Smartphone Application.

The outputs are selected on a rotating basis in the following order:

1. Main (default)
2. Head
3. EXONET (Comet firmware 2.20 and later)

Each time the Output key is pressed, the next output is selected. For example, if Main is currently selected, pressing the Output key on the remote control will advance to the Headphone (Head) and if pressed again to the EXONET output (But only if an EXONET device is connected.) EXOGAL devices are intelligent and only present options if they are truly available. If no EXONET device is connected, it will not appear as an available output.

If the Comet is playing on either the Main output or an EXONET output and the user plugs in a set of headphones, the Comet will switch to the Headphone output automatically.

Volume and Mute Modes

Adjusting the Volume

Whenever the Volume Up or Volume Down keys on a remote control or in an EXOGAL Smartphone Application are pressed, the volume on both channels will be increased or decreased by an increment of 1 on the display screen. The range of the volume display is from 0 to 100, with each step representing 0.5dB change in volume. During normal operation, the numbers on the Main Screen will increase or decrease as the volume is raised or lowered.

Mute

The EXOGAL Comet has three Mute Modes that are automatically engaged under different circumstances:

1. Normal Listening Level
2. Reduced Mute (Normal Listening Level - 20dB)
3. Full Mute (no sound)

When the Mute key is pressed on the remote control, the EXOGAL Comet functions as follows –

If the Comet is in Standby Mode:
Pressing the Mute button turns the Comet ON to the Reduced Mute level (the last listening level -10dB). (The first time the unit is powered on; this level is factory set at 50. After the first use, the Comet will return to the last level at which you were listening).

If you are listening to music from the Comet at your chosen listening level:
Pressing and releasing the Mute button one time reduces the listening level by 20dB. If the Mute button is pressed and released a second time within 2 seconds, the Comet is fully muted and the audio level is reduced to 0 (zero).

If you press and hold the Mute button for 2-3 seconds, the Comet fully mutes and goes into Standby mode. This is the Comet's "Off" mode. It can be awakened from Standby by pressing and releasing the Mute button once more.

If the Comet is in either full or reduced Mute:
Pressing and releasing the Mute button returns the Comet to your previously-set listening level.

Pressing and releasing either the Volume Up or Volume Down key returns the Comet to your previously-set listening level.

Pressing and holding either the Volume Up or Volume Down key will quickly raise or lower the volume level after a short delay.

Pressing and holding the Mute button will switch the Comet to Standby mode.
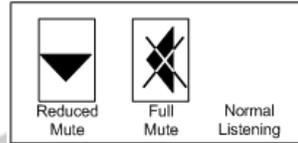
The EXOGAL Comet has mute relay connected on the positive and negative outputs. When this relay is engaged, it connects the positive output to the negative output, reducing the output to zero. This relay, which produces an audible click when it engages or disengages, is not in the music signal path. The mute relay is engaged:

1. When the EXOGAL Comet detects an AC input level below its minimum operating range
2. Each time the EXOGAL Comet is powered-up
3. When the volume control is set to zero AND the Mute key on the remote control is pressed

When the EXOGAL Comet is in either Mute Mode, the Volume Screen will indicate this by displaying the indicators:

Other Back Panel Connectors

Serial
The 3.5mm serial connector can be used to control the Comet with an automation system. It is also used to update the Comet's internal firmware. It uses 5V TTL logic and is compliant with a FTDI TTL-232R-5V-AJ USB to serial converter cable.

Trigger Output
The 3.5mm trigger output can be used to turn ON/OFF external equipment, such as an amplifier. By default, it is configured as a 12VDC output. Optionally it can be configured as a 5VDC, or pulsed output.

The TIP is positive and the SLEEVE in common (GND). The trigger output is ON when the Comet is in an operational state. It is OFF when the Comet is in standby.

EXONET
The EXONET input and output connectors are a proprietary interface that will allow external EXOGAL expansion products to be added to the Comet. They allow for a high speed digital interface, with control. They are not HDMI compliant, but should not cause damage if they are mistakenly attached to a HDMI interface.

USB Charger   The USB charger output is compliant with most common charging standards. The output is current limited and auto senses the charging mode of the attached device. Depending on the specific USB charging mode it is operating in, it can provide up to 2.1A of current.

Button   When powered on with the volume screen displayed, a short press (< 1second) will cause a QR code to be presented on the main display and allow user to directly browse to the EXOGAL support web page by using a mobile device with a QR code scanning application. On this web page the user will be able to access all of the available documentation and support material for the Comet.

WARNING: While the Volume screen is displayed, pressing and holding the button for >2 seconds will reset the unit configuration to factory defaults.

WARNING: **Do not** press the button while the DAC is starting (ie: Before the volume or standby screens are displayed.) This will place the unit into a special mode used in manufacturing and you may cause the unit to become stuck in a mode that cannot be repaired in the field.

Power   The Comet is powered from an external power supply. It uses a 2.1mm x 5.5mm power jack. The center is positive and shell is negative. The Comet requires 6 watts of power for operation, plus 12 watts of power for the USB charger.

Appendices

Troubleshooting: Lock-up
If the EXOGAL Comet experiences a powerful static shock or sudden AC surge, it is possible to "lock-up" the computer circuitry. A locked-up computer may result in erratic display, no output, and no response to remote commands. If your EXOGAL Comet should lock-up, unplug the AC cord. Wait at least 30 seconds before re-plugging in the unit. If the unit still does not operate normally, contact your dealer.

Environmental Care
EXOGAL makes every effort to be an environmentally conservative company. We appreciate it if our customers join our efforts. Please dispose of batteries in a manner that is environmentally responsible.

Frequently Asked Questions

Should I Use a Balanced or Unbalanced Connection?
If your amplifier has a true balanced input, we recommend you use the balanced analog output from your EXOGAL Comet. All things being equal, properly implemented balanced (also called differential) circuitry sounds better than unbalanced circuitry. The EXOGAL Comet is a true balanced design. It generates the inverted signal in the digital domain and all of the analog output stage is a fully balanced design. Your EXOGAL Comet is also designed to maintain many of the advantages of true balanced design when using the unbalanced outputs. In addition, the EXOGAL Comet is capable of driving both types of outputs simultaneously.

Why Should I Bypass the Preamplifier?
A preamplifier is unnecessary when using your EXOGAL Comet. The EXOGAL Comet provides all the necessary control functions of a preamp while the signal is still in the digital domain. This avoids the sonic degradation caused by analog circuitry, switches, and wire. The EXOGAL Comet output stage can drive any power amplifier and any interconnects, even at very long lengths.

Does the Volume Control Compromise Resolution?
The EXOGAL Comet uses our latest generation proprietary digital processing. The volume level can be varied in the digital domain by means of mathematical manipulation of the signal, eliminating the distortion and noise that are inevitable with even the best analog volume controls. While conventional thinking indicates that reducing the volume digitally can sacrifice low level resolution, EXOGAL has created an innovative solution. EXOGAL's digital filtering algorithm produces a higher resolution digital signal than the 16 bits stored on the CD. This high-resolution signal is then used in the computations which in turn reduce the volume level. This new signal is fed directly to the DAC chips. Through this innovative method, the EXOGAL Comet maintains high resolution even at the lowest volume control settings.

Can I Bypass the Volume Control?

Because the Digital Volume control does not include any analog circuitry, there is none to be bypassed. Even the mathematical program step that performs the Digital Volume Control calculation is an integral part of the EXOGAL filter algorithm and therefore cannot be bypassed. If you do not need the Volume Control, set it to its maximum level of 100 on the display.

What About Analog Sources?

You can directly connect an analog source such as a Phono Stage to the analog RCA inputs.

Should I Leave the EXOGAL Comet with the Power On?

The EXOGAL Comet is designed to be left with the power on with no harm or wear to the unit. When the Comet is placed in MUTE it will enter Standby mode after approximately 30 minutes, which reduces power consumption dramatically. Leaving the power on allows the circuitry to remain in thermally stable, which provides better performance and longer life. Careful listeners will notice that the sound of the EXOGAL Comet will improve steadily after the unit is powered-up. A new unit will undergo more dramatic changes when power is applied for the first time. If you turn off your EXOGAL Comet for more than an hour, you will find that the unit will undergo similar, but less dramatic improvement once power is reapplied.

EXOGAL

Technical Specifications

	AES/EBU XLR	SPDIF BNC	Toslink	USB-B
16 bit	X	X	X	X
24 bit	X	X	X	X
32 bit				X
44.1kHz	X	X	X	X
48kHz	X	X	X	X
88.2kHz	X	X	X	X
96kHz	X	X	X	X
176.4kHz	X	X		X
192kHz	X	X		X

Digital Inputs   AES/EBU on XLR, SPDIF on 75Ohm BNC, Toslink, USB-B, Analog on isolated RCA
Analog Input   One Pair Unbalanced RCA
Analog Outputs   One Pair Balanced (XLR), One Pair Unbalanced (RCA)
Weight   8.5 lbs, 3.81 kg
Dimensions   1.875 x 7.45 x 11.5 in., (47.6 x 190 x 292 mm)
Finish   Anodized Aluminum

Note: *USB System Requirements*
   Apple – OS 10.6.4 or higher - No driver needed –
   Linux –No driver needed
   PC – Windows XP SP3, Windows VIsta SP2 or higher, Windows 7, Windows 8

Safety Precautions

! IMPORTANT SAFETY PRECAUTIONS!
To get the best performance from your EXOGAL Comet, and for your own safety, please read and follow these important safety instructions.

1. Before operating the EXOGAL Comet please read all operating and safety instructions.
2. Never place the EXOGAL Comet near heat sources such as radiators, fireplaces, stove, or other appliances that produce heat. Avoid placing the EXOGAL Comet where it will be subject to direct sunlight or low temperatures.
3. AC extension cords are not recommended for use with this product. If an extension cord must be used, be sure it is an approved type and has sufficient current carrying capacity to power this product.
4. Before cleaning the EXOGAL Comet, always disconnect the power supply cord. Use a soft cloth and, if necessary, dampen with plain water. Never apply water, or any other cleaner, directly to the chassis.
5. If you smell smoke, or an abnormal smell, immediately unplug the EXOGAL Comet from the power supply and contact your EXOGAL dealer.
6. Unplug unit if it becomes wet.
7. THERE ARE NO USER SERVICEABLE PARTS INSIDE THE EXOGAL Comet!
   - Do not attempt to repair or modify your EXOGAL Comet
   - All service should be performed by qualified service personnel
   - Do not open the unit while it is attached to the AC outlet