GESHELLI® LABS LLC

# TORC

## DIGITAL TO ANALOG CONVERTER

## OWNERS MANUAL

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# PRODUCT OVERVIEW

## OVERVIEW

The TORC is Geshelli's newest Digital to Analog Converter (DAC). It has an ultra-clean integrated AC internal power supply with independent digital and analog internal power rails, and an upgraded microprocessor. The modular DAC port allows the user to change out Geshelli designed DAC boards and opamps without having to buy an entirely new product or send the unit in. The Torc also provides a GIO expansion port, and a easy remote firmware update port. The TORC can expand and grow with your future audio needs.

## FEATURES

- Changeable DAC boards
- Four MONO opamp sockets
- Relay switched digital inputs
- Seven independent from panel switches
- Dimmable illuminated LED ring lights
- Momentary push button switches
- Interchangeable GIO boards
- Precision Engineered full metal case with easy slide open access
- Designed, produced and assembled in the USA

# CONSUMER WARNINGS/PRECAUTIONS

## CE COMPLIANCE CERTIFICATION INFORMATION

This device has been tested and verified and certified compliant under title 47 part 15 of FCC rules and is certified under EU CE compliance EN 55032:2015, BS EN55032, CISPR 22 Ed 6.0 IEC:2008.

## CALIFORNIA P65 WARNING

WARNING: This product can expose you to chemicals including Rosin which is [are] known to the State of California to cause cancer, and Ethyl acrylate which is [are] known to the State of California to cause birth defects or other reproductive harm. For more information, go to: http://www.P65Warnings.ca.gov

## IMPORTANT NOTICE

DO NOT MODIFY THE POWER SUPPLY ON THIS UNIT. This product has been certified to meet European Union and Federal Communication Commission testing requirements with the provided power supply. Modifications of the power supply will void the warranty and the certifications for this product. Modifications of this device could cause injury including explosion, fire, serious bodily injury or death, damage to the device or damage to property.

## ELECTRIC SHOCK HAZARD

***TO AVOID RISK OF ELECTRIC SHOCK OR DAMAGE TO THE UNIT:***

**TURN UNIT OFF AND UNPLUG POWER SUPPLY AND ALL CABLES BEFORE OPENING UNIT.**

**DO NOT REMOVE MAIN CIRCUIT BOARD FROM UNIT.**

**DO NOT USE ANY TOOLS, FINGERS OR ITEMS TO ATTEMPT TO ACCESS UNDERSIDE OF MAIN CIRCUIT BOARD. PLEASE REFER TO OUR WARRANTY SECTION IF UNIT IS IN NEED OF REPAIR.**

## IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Heed all warnings.
- Do not use this device near sources that produce heat.
- Use only on secure flat surface.
- This device is not sealed and is not waterproof. To reduce the risk of electrical shock or unit damage, do not allow liquid to spill on the product or submerge this product in liquid.
- Always unplug the unit during power storms. It is recommended to connect to a power surge protector.
- Circuit board parts can get hot to the touch. Let unit cool before handling.
- Do not change power supply or power cord.
- Do not use this device near water or heavy moisture.
- Do not block ventilation openings.
- Do not use this device near sources that produce heat.

# CONSUMER WARNINGS/PRECAUTIONS CONT.

## READ CAREFULLY BEFORE PROCEEDING

**WARNING**

ALWAYS FOLLOW THE BASIC PRECAUTIONS LISTED BELOW TO AVOID THE POSSIBILITY OF SERIOUS INJURY OR DEATH FROM ELECTRICAL SHOCK, SHORT-CIRCUITING, DAMAGES, FIRE OR OTHER HAZARDS. THESE PRECAUTION INCLUDE BUT ARE NOT LIMITED TO:

### TORC CASE/DEVICE

- Use only indoors. Do not expose device to rain, use near water or in damp/wet areas. When plugging power cord in, make sure hands are dry.
- If using in an area prone to static, after walking on carpet or other static inducing situations, discharge static before handling unit by touching a grounded object or using antistatic sprays or wipes.
- Do not use in a small or confined, poorly ventilated area. There must be adequate space between the unit and the surrounding wall, back, or other devices. This device emits low level heat. Using near inadequate ventilation can result in overheating, potentially causing damage or fire to the unit, the surface, or other devices. Do not cover device with fabric material.
- Place unit on a stable table or surface.
- Surface must be able to accommodate over 10 lbs.
- Do not place unit sideways or upside down. Always place unit face forward.

### CASE DRAWER REMOVAL

**To avoid ELECTRICAL SHOCK ALWAYS TURN OFF AND UNPLUG UNIT BEFORE OPENING CASE.** The TORC has an internal LED light that illuminates if the unit is still plugged in and powered on when the drawer is opened. If you see this light while opening the case, immediately close the drawer, shut the unit off and remove the power plug from the back of the unit. Failure to do this important step could result in critical failure and electrical shock.

### MAIN CIRCUIT BOARD

DO NOT make any attempt to remove the main circuit board from the metal case. **DO NOT place any object or fingers under the circuit board in any attempt to remove the main circuit board from the metal housing. Touching the underside of the circuit board could result in electric shock.**

### POWER SUPPLY/POWER CORD

- Only use the voltage specified as correct for this device.
- Only use the supplied power cord.
- Do not place the power cord near other heat sources.
- When plugging/unplugging, always grasp power cord by the plug. Do not pull by the cord to remove from unit.

# UNPACKING UNIT/SETUP

## BOX CONTENTS

- TORC DAC Unit.
- US Style IEC Power Cable.
- USB Cable if Applicable.
- 2.5mm Allen Wrench.
- Optional GIO, Opamps or DAC Modules if Applicable.

## SETUP (UNPACKING UNIT)

Open shipping box and remove product box.

Carefully open product box and remove the top surface foam.

Remove plastic bag containing IEC cable, 2.5mm Allen wrench, GIO, Opamps, DAC modules and USB cable (if applicable).

Remove small box with extra modules if applicable.

Remove foam packaging.

Place unit on a clean, dry, stable surface that can accommodate ten pounds.

Remove protective fabric from unit. Place unit top side up.

The unit is now ready to connect to your external components.

## SETUP DIGITAL INPUTS/ANALOG OUTPUTS

See **Rear Panel Diagram (FIGURE 1)** for a detailed drawing and quick description of the rear inputs and outputs of the DAC.

Connect any of the digital inputs **(2) USB, (4) Toslink/Optical, (5) Coax** to your external components (IE: CD player, Computer, Tablet, Streamer, etc). These components will feed a digital signal into the DAC. All of the input ports *can* be connected at the same time and will be switched using the front panel **Front Panel Diagram (FIGURE 2)**.

Connect either of the analog outputs **(6) RCA, (7) XLR** to your Preamp, or Analog input plugs (IE: Preamp, Powered speakers, etc).

**Warning: We discourage connecting the Analog Ouputs directly to power amplifiers with no volume control. We highly recommend having a Volume Controlled device such as a preamp which can manage the output volume feeding the any external power amps. This will add a safety mechanism between the DAC and your Amplifier/Speakers in case the DAC's output is at full volume.**

## TURN OFF EXTERNAL COMPONENTS/POWER UP DAC

Once everything is connected, turn off your Preamp, or devices that are connected to the Analog side of the DAC this will prevent any POP or CLICK that can occur when power on the DAC.

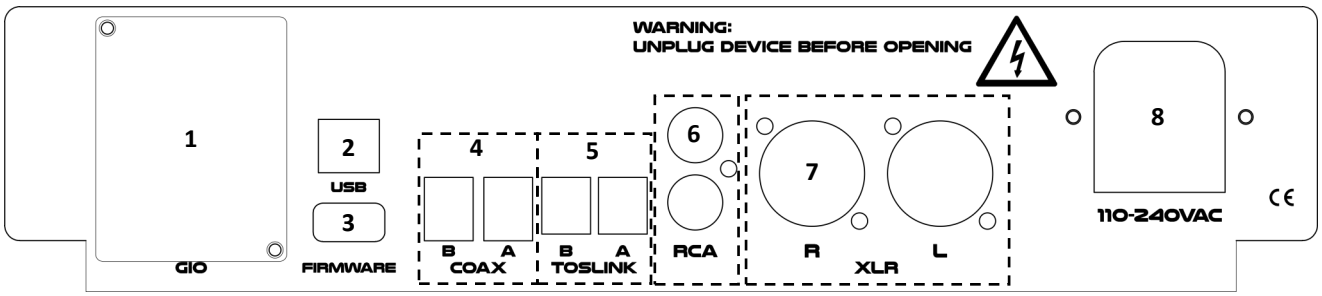
Now plug in the DAC. It will automatically power on and start the light sequence on the front panel.

The DAC is now ready to go.

See the Troubleshooting Section of the Manual for possible power up issues.

# REAR PANEL DESCRIPTION

## REAR PANEL DIAGRAM (FIGURE 1)




| | | |
|---|---|---|
| 1 | GIO Port | Optional Geshelli Input/Output Expansion Cards |
| 2 | USB Audio Input | USB 2.0 Digital Audio Input |
| 3 | Firmware Update Port | Firmware Update Port (NOT USED FOR AUDIO) |
| 4 | SPDIF Coax B/A Inputs | SPDIF Digital Coaxial Input |
| 5 | SPDIF Toslink B/A Inputs | SPDIF Digital Optical Input |
| 6 | RCA Analog Ouput | RCA Analog Output (Unbalanced) |
| 7 | XLR Analog Output | XLR Analog Output (Balanced) |
| 8 | IEC Power Input | IEC Standard Input (110V to 240V AC ONLY) |

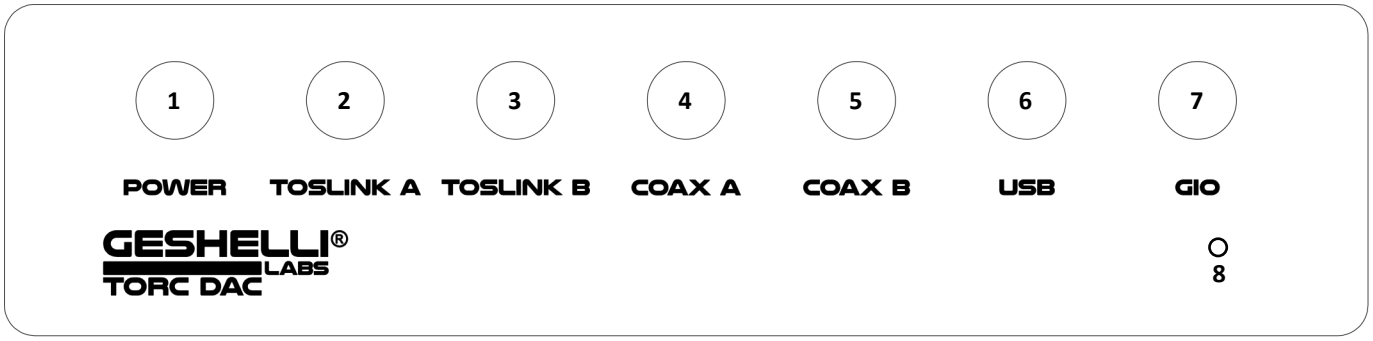
## DETAILED DESCRIPTIONS

The **Rear Panel Diagram (FIGURE 1)** shows the rear of the device and all of the Input and Outputs.

- [1] The GIO port is an optional Input/Output interface which will allow future expansion capabilities.
- [2] The USB Port is a (USB 2.0) Type B interface which can connect to a device which will support the UAC2 protocol. It can support a Maximum Sample/Bit Rate of 768khz/32bit PCM, and DSD512.
- [3] The Firmware Port is used for Firmware Updates only, it will not support USB Audio.
- [4] The Coax ports are SPDIF compatible with a Maximum Sample/Bit Rate of 192khz/24bit. It uses a standard RCA style Coaxial cable.
- [5] The Toslink ports are SPDIF compatible with a Maximum Sample/Bit Rate of 192khz/24bit. It uses a standard Toslink/ Optical cable.
- [6] The RCA connectors will provide an Unbalanced Analog Output which is used to connect to your external components.
- [7] The XLR connectors will provide a Balanced Analog Output which is used to connect to your external components.
- [8] The IEC Power Input is an AC input which can accept 110V to 240V power.

# FRONT PANEL DESCRIPTION

## FRONT PANEL DIAGRAM (FIGURE 2)




| | | |
|---|---|---|
| 1 | Power Switch | Power On/Off (HOLD for POWER OFF Operation) |
| 2 | Toslink A Selector | SPDIF Digital Optical Input A Selector |
| 3 | Toslink B Selector | SPDIF Digital Optical Input B Selector |
| 4 | Coax A Selector | SPDIF Digital Coaxial Input A Selector |
| 5 | Coax B Selector | SPDIF Digital Coaxial Input B Selector |
| 6 | USB Selector | USB 2.0 Audio Output Input Selector |
| 7 | GIO Selector | Optional Geshelli Input/Ouput Expansion Selector (Disabled if not Installed) |
| 8 | Boot Mode Selector | Reset, Set Device to Boot Mode for Firmware Update |

## FUNCTIONAL DESCRIPTION

During Power Up, the front panel will turn on and perform a light sequence. Once the Power Light is idle, the DAC will be ready to use. Each button will switch the input to its respective mode.

If the USB Plug is not connected to the rear, the USB light will blink when pressed signifying USB is not attached to a source.

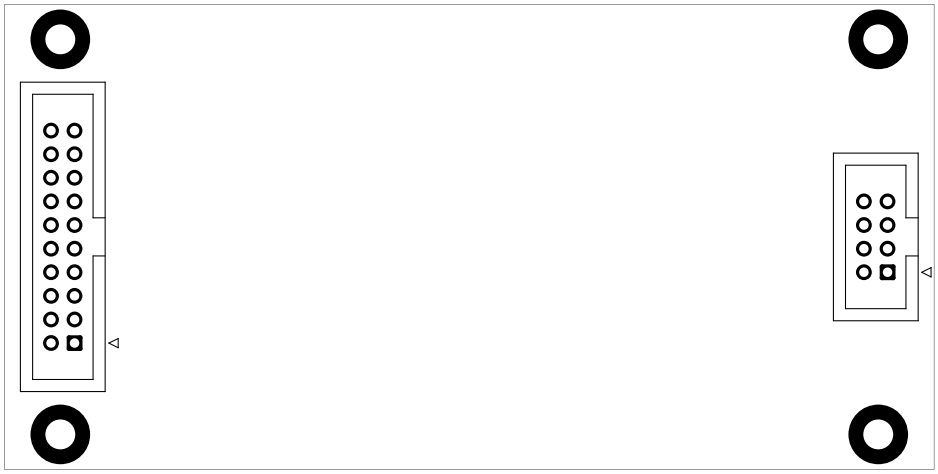
The GIO will only function if a GIO board is installed.

# MODULAR DAC BOARDS

## BRIEF OVERVIEW

The modular DAC boards come in different shapes and sizes depending on the DAC Chip design requirements. The fit into a standard Geshelli DAC board socket.

The DAC board has a keyed/offset hole design so it can only plug in one way, in one direction. There are four screws which are used to secure the DAC board to the base board.



## DAC CAPABILITIES

Each DAC board is different. The website will show the capabilities of each DAC board available for the TORC.

# ADDITIONAL INFORMATION

Please see attachments for instructions on opening the unit and closing the unit, adding GIO boards, DAC boards and opamps.

Please view our YouTube instruction video rachel@geshelli for step by step instructions.

Warranty and support information can be found at http://www.geshelli.com/warranty

# TROUBLESHOOTING

| | |
|---|---|
| Power Light is blinking. | Check DAC Module is plugged in correctly. |
| All lights are blinking together. | Critical Error, please contact Tech Support. |
| No Audio on SPDIF (COAX/TOSLINK). | Double check cable connections, make sure input is selected. |
| USB Light is blinking when pressed. | Make sure USB cable is plugged into an audio source. |
| No Audio on USB. | Make sure USB cable is good. Double check audio source. |
| Unit not turning on. | Make sure unit is plugged in. Double check fuse next to IEC plug port. |
| Selected sample rate sounds like static. | Double check sample rate is compatible with DAC module.<br>See: **https://geshelli.com/torc-dac-info/** |
| DSD sounds like static. | Double check the installed DAC module supports DSD.<br>See: **https://geshelli.com/torc-dac-info/** |

# SPECIFICATIONS

### Power Input
- 110VAC to 240VAC
- Standard IEC Plug Compatible

### Digital Audio Input
- 2x TOSLINK (Optical)
- 2x Coax
- 1x Optional USB Module

### Analog Audio Output
- 1x RCA (Unbalanced)
- 1x XLR (Balanced)

### GIO Module
- 1x Additional GIO Module (Input/Output)

### *Frequency Response
- 2-22,000hz Flat @ 1Vrms Input

### *Signal to Noise Ratio
- -120db @ 1Vrms Input

### *Total Harmonic Distortion + Noise
- < .001% @ 0dbfs 1khz Sine Wave

### Output Impedance
- < 10 ohms

### Dimensions
- Width - 11 1/2”
- Depth - 8 1/4”
- Height - 2 3/4”

### Weight
- 5 lbs
- 2.27 kg

### Notes
This device has been tested and verified and certified compliant under title 47 part 15 of FCC rules and is certified under EU CE compliance.

Measurements and testing are completed using the APX555 testing platform. APX555 is the standard for audio analyzers and is used world wide.

Please be aware of variances in cables, power input, speaker impedances, and other external factors that can change our measured results.

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**https://www.geshelli.com**

*Signal to Noise, THD+N, Frequency Response, and other measurements are subject to change depending on the installed DAC Module. The values listed are the maximum accumulated values based on several DAC boards measured at Geshelli Labs LLC. using a fully calibrated Audio Precision APX555 testing device.