JEFF ROWLAND
DESIGN GROUP

AERIS DAC

Owner's Manual

REVA5 2012

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IMPORTANT SAFETY INSTRUCTIONS

The **AERIS DAC** has been designed to operate at the highest level of efficiency and performance in any normal operating situation; however, there are a few important use and care principles that must be kept in mind when operating the **AERIS DAC**:

- Do not expose the **AERIS DAC** to rain, moisture, or excessively damp conditions.
- Due to auto-ranging circuitry and dual-stage voltage regulation, the audio performance will not be affected by any voltage fluctuations within the operating voltage range. The **AERIS DAC** can be operated at any mains voltage over the range of 85 to 265 VAC without any adjustments necessary.
- The **AERIS DAC** must not be modified in any way, other than according to official service bulletins from Jeff Rowland Design Group. Otherwise, the factory warranty will be immediately voided.
- When operating the **AERIS DAC**, a properly grounded AC receptacle should be used. A potential shock hazard may result if the supplied 3-wire, grounded AC cable ground terminal is defeated or lifted or the unit is connected to a 2-wire ungrounded AC outlet.
- Because of the energy efficiency of the **AERIS DAC**, there is no need to unplug the unit when not in use; however, the **AERIS DAC** can be muted, if desired.

The **AERIS DAC** is designed to perform optimally with no adjustments or maintenance for the lifetime of the product. Do not attempt to open the **AERIS DAC** and refer all service issues to qualified personnel. The voltages inside the **AERIS DAC** can be hazardous.

PROTECTIVE SYSTEMS

The **AERIS DAC** is equipped with internal fuses for protection against excessive AC current draw; however, since no protection circuitry or system can completely protect a product from every electrical hazard, certain precautions should be observed. In the event of severe voltage hazards such as lightning or when the preamplifier will not be used for extended periods of time, the preamplifier should be unplugged from the AC mains to avoid potential damage to the internal circuitry. All other audio/video system components should also be disconnected from AC mains power as hazardous voltages can easily travel throughout an interconnected system.

REAR PANEL SYMBOLS

The crossed-out wheeled bin is the European Union symbol for indicating separate collection for electrical and electronic equipment. This product contains electrical and electronic equipment which should be reused, recycled or recovered and should not be disposed of with unsorted regular waste. Please return the unit or contact the authorized dealer from whom you purchased this product for more information.

CE

This product complies with European Low Voltage (2006/95/EC) and Electromagnetic Compatibility (89/336/EEC) Directives when used and installed according to this instruction manual. For continued compliance servicing must be referred to qualified service personnel.

NOTE FROM JEFF ROWLAND DESIGN GROUP

Welcome to the Jeff Rowland Design Group “family” and congratulations on your purchase of what is unquestionably one of the world’s finest DACs. With its combination of features such as precision electronic circuitry, exceptional efficiency, and accurately machined chassis components throughout, your **AERIS DAC** will offer you many years of musically satisfying enjoyment.

Please take a few minutes to read the remainder of this Owner’s Manual before proceeding with the installation of the **AERIS DAC**. A thorough understanding of the operational features will allow you to gain the maximum performance and ease of use for which the **AERIS DAC** was designed.

Please note that your **AERIS DAC** and power supply serial numbers begin with the letters “DS” and “F” respectively. Please include this number with any correspondence regarding your **AERIS DAC**. It has been my joy to create an audio component of enduring value that reflects the highest ideals of musical and artistic expression. It is my hope that these qualities will enrich your experience and pride of ownership.

If you have any additional questions regarding the installation or operation of the **AERIS DAC**, please contact your authorized Jeff Rowland Design Group dealer or check the Jeff Rowland Design Group web site at http://jeffrowland.com.

Enjoy the music!

JEFF ROWLAND
President, Jeff Rowland Design Group

TECHNICAL FEATURES

IsoSyncECS	Isolated Synchronous Error Correction System. Based upon an asynchronous buffer, voltage controlled crystal oscillators, and a 24 bit D/A converter – all under the precise control of an FPGA (Field Programmable Gate Array) running proprietary algorithms.
BIT PERFECT AND VIRTUALLY JITTER FREE	Bit perfect conversion with total jitter output noise of less than 10 picoseconds RMS from any input – USB, TOSLINK, and SPDIF.
MULTI-STAGE ISOLATED POWER SUPPLY	Main power supply is isolated inside an external machined aluminum chassis. Eleven precision high-speed regulators provide low impedance and low noise “point of load” DC current to all analogue and digital circuits.
ISOLATED AUDIO AND DIGITAL CIRCUITRY	Left and right channel audio output circuits, digital processing, and D/A conversion circuits are isolated within individual milled aluminum pockets resulting in exceptional EMI shielding, and thermal stabilization.
VOLUME CONTROL	Wide range level control of outputs permit direct connection to power amplifiers.
DRIVER-FREE OPERATION	The USB interface requires no additional drivers to install or maintain/update.
CROSS-PLATFORM	The USB interface is plug-n-play with all operating systems, including PC, Mac, or Linux.
MACHINED ALUMINUM CHASSIS	Precision-machined chassis milled from a solid block of aircraft grade 6061-T6 aluminum, provides exceptional thermal stability, RFI/EMI shielding, and resonance control.

6-LAYER CIRCUIT BOARDS	Multi-layer circuit boards provide extremely low impedance ground and power distribution for remarkably low digital noise contamination.
HIGH-PRECISION SURFACE MOUNT COMPONENTS	Extensive use of Lead (Pb)-free, low temperature coefficient, active and passive surface-mount components results in significantly smaller loop areas, reduced circuit capacitance and inductance, and introduces less noise than conventional leaded components.
TRANSFORMER COUPLED OUTPUTS	Transformer balanced XLR line outputs provide outstanding output common-mode noise rejection, eliminate potential ground loops, and ensure compatibility with other equipment.
OUTPUT CONNECTORS	Rhodium / Teflon Cardas output connectors for both balanced and unbalanced outputs preserve maximum audio signal integrity.
REMOTE CONTROL	Allows remote control of volume, mute, standby, and input selection.

MAINTENANCE AND CARE

All Jeff Rowland Design Group products are designed to provide a lifetime of enjoyment and listening pleasure.

Chassis is sealed to prevent dust from entering the interior of the chassis and thus should never need interior cleaning during the lifetime of the product. All internal circuitry is maintenance-free such that no adjustments of any kind are necessary over the lifetime of the product. If the **AERIS DAC** is ever in need of service, updating, or upgrading, it should only be returned to an authorized repair facility or technician for servicing.

The front panel of the unit is precision-machined in a unique process that incorporates a diamond tipped cutting tool. This process was refined over many years to produce an attractive and unique appearance. Because the surface is not finished in the typical fashion of most audio and video equipment, there are a few rules that must be kept in mind when cleaning the equipment.

- Please allow the front panel, which is coated with an automotive-grade polyurethane finish, to cure for 6 months before attempting to clean it. This will prevent small scratches from marring the surface before the surface coating has had a chance to harden completely.

- The front panel of the unit should never be cleaned with anything other than a very soft cotton cloth and plain water or fine oil-based furniture polish. Because of the fine finish of the front panel, use of any other cleaning agent may permanently scratch the finish.

The top cover, sides and bottom are protected by a durable black anodized finish and can be cleaned with a soft cotton cloth (such as an optical lens or microfiber cleaning cloth) dampened with plain water. Water should be applied directly to the cloth and not the chassis. A very mild plastic or glass cleaner that does not contain ammonia may also be used. If a mark has been left on the chassis, do not use any type of abrasive or chemical cleaner to remove the mark.

If you have any questions about the care or cleaning of your Corus Preamplifier, please contact your dealer or the Jeff Rowland Design Group factory before attempting to clean the chassis. The use of a cleanser or abrasive to clean the chassis that has not been approved by the factory will almost certainly damage the finish and will not be covered under warranty.

INITIAL INSPECTION

Inspect the shipping container for damage. If any portion of the shipping container, packing material, amplifier, or accessories are damaged or missing, notify your dealer and the shipper (if a claim is to be made) immediately.

NOTE: Many shippers require notification and inspection within 24 hours of delivery to determine the nature of damages incurred.

Your **AERIS DAC** has undergone extensive performance evaluations, listening tests, quality control inspections, and a minimum 72-hour burn-in period prior to shipment and should therefore be in perfect operating condition upon delivery. If the unit does not operate correctly, please notify your dealer immediately.

We strongly suggest that you save all of the packing materials. If the unit is returned to your dealer or Jeff Rowland Design Group, the original packing materials must be used for shipment to avoid possible damage. Neither Jeff Rowland Design Group nor the shipper can be held responsible for damages incurred during transit if the original factory packing is not used. All factory returns require that Jeff Rowland Design Group issue a Return Authorization (RA) number prior to shipment.

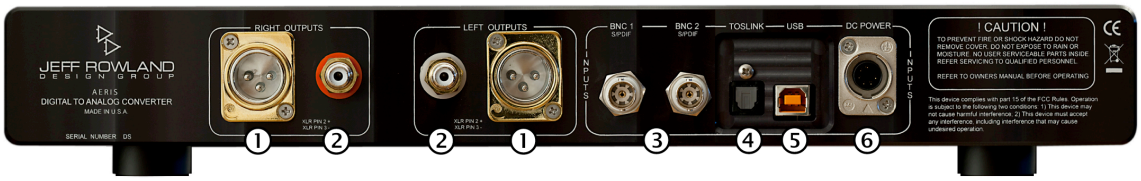
UNPACKING

Carefully remove **AERIS DAC** and power supply from original packing box. Remove all accessory items from the accessory box. Accessories include:

- **(1)** Machined External Power Supply
- **(1)** Detachable DC Power Cable
- **(1)** Detachable IEC AC Power Cord
- **(1)** Operational Manual
- **(1)** Warranty Card

IMPORTANT: Retain all packing materials for future transport. Shipping product in inadequate packing materials may violate the Jeff Rowland Design Group Manufacturer's Warranty.

REAR PANEL CONNECTIONS

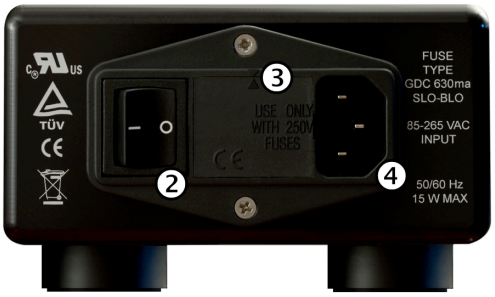


①	**BALANCED AUDIO OUTPUTS**	One (1) Pair XLR balanced line level outputs. For best results, use these outputs to connect your preamplifier or amplifier whenever possible.
②	**UNBALANCED AUDIO OUTPUTS**	One (1) Pair RCA unbalanced line level outputs. Use these outputs if your preamplifier or amplifier does not accept balanced inputs. These outputs can be use to simultaneously feed a second amplifier.
③	**DIGITAL INPUT**	Two (2) BNC/S/PDIF – to obtain best results use a high quality 75 ohm digital BNC interconnect cable.
④	**DIGITAL INPUT**	One (1) TOSLINK – to obtain best results use a high quality fiber-optic interconnect cable designed specifically for audio use.
⑤	**USB IN**	One (1) USB 'Type B' input allowing direct connection to a PC via a Type B to Type A USB lead. The **AERIS DAC** operates independently of your PCs sound card.
⑥	**DC IN POWER INPUT RECEPTACLE**	One (1) DC Power supply cable is utilized to connect the power supply to the **AERIS DAC**.

FRONT PANEL CONTROLS

①	**INPUT**	Press to select between Toslink, USB, BNC1, and BNC2 inputs. The corresponding LED will illuminate to show which input has been selected.
②	**STANBY**	Switches unit between Standby Mode and ON. A corresponding LED will dim slightly when Standby Mode is activated.
③	**SAMPLE RATE**	LED indicates digital sample rate of selected input, including 44.1, 48, 88.2, 96, 76.4, and 192 kHz.
④	**SRC**	Illuminated LED indicates a non-standard sample rate has been detected.
⑤	**LOCK**	Illuminated LED indicates a valid digital lock at the selected digital audio input at the indicated sample rate.
⑥	**IR RECEIVER**	Receives IR transmission from the **AERIS DAC** handheld remote transmitter.
⑦	**MUTE**	Pressing the mute button will mute all outputs and illuminate the corresponding LED. Pressing the mute button again will activate all outputs.
⑧	**VOLUME**	Adjusts the main input volume level. Pressing the left volume control button (**VOL-**) will decrease the volume. Pressing the right volume (**VOL+**) control button will increase the volume.

EXTERNAL POWER SUPPLY



①	**DC POWER SUPPLY**	One (1) 2 meter length DC Power supply cable is utilized to connect the power supply to the **AERIS DC POWER SUPPLY**.
②	**POWER SWITCH**	Toggles operation between ON and OFF. Please ensure that all connections are made between **AERIS DAC**, power supply, and AC Mains wall outlet before turning switch to ON position.
③	**FUSE ACCESS**	Access for power supply fuse. Fuse type GDC 630ma SLO-BLO.
④	**AC INLET**	Receptacle for detachable IEC AC power cord. 85-265 VAC.

HANDHELD REMOTE TRANSMITTER

INPUTS 1 - 4
Selects main inputs in the following order: USB, TOSLINK, BNC1, and BNC2.

MUTE
This button will immediately mute the outputs of the **AERIS DAC**. Pressing the button a second time will reactivate the outputs.

VOL UP / VOL DOWN
Adjusts the main input volume. Press the right button to increase volume. Press the left button to decrease volume.

STANDBY
Switches unit between Standby Mode and ON. The corresponding LED on the **AERIS DAC** will dim slightly when Standby Mode is activated.

ACTIVITY LED
Illuminates during IR transmission. A faint activity light is an indication that the AA alkaline batteries inside the handheld remote are depleted, and need to be replaced.

REMOTE TRANSMITTER BATTERY REPLACEMENT

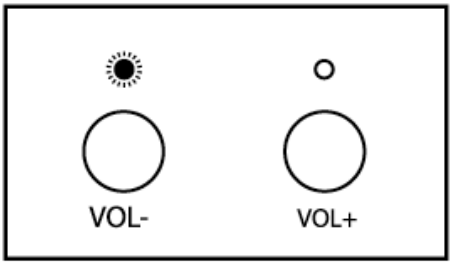
The **AERIS DAC** handheld remote transmitter is powered by 2 standard alkaline AA batteries. When the remote transmission range decreases or no longer operates, the batteries need to be replaced.

- Using a standard flat blade screw driver, unfasten the holding screw located in the bottom end of the transmitter unit.
- Remove the spring-loaded cover.
- Remove both AA batteries.
- Orient the remote transmitter with the keypad facing up, and with the battery compartment towards you.
- Insert a fresh battery into the left barrel with negative pole (flat end) first.
- Insert a fresh battery into the right barrel with positive pole (button end) first.
- Install the spring-loaded cover.
- Gently refasten the holding screw. Do not over-tighten.

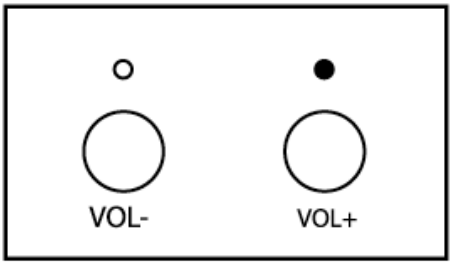
NOTE: When removing the old battery, wait at least 30 minutes before installing a new battery to alloy the new internal circuitry to discharge completely and reset.

USING THE AERIS DAC VOLUME CONTROL

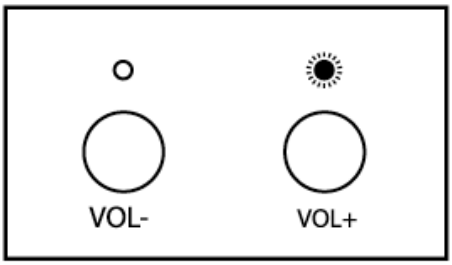
The **AERIS DAC** is designed such that the volume control attenuates the signal up to 32 dB below the point of LED flashing. When the right LED starts flashing, the **AERIS DAC** begins digital multiplication to increase the volume up to 20 dB above full scale. This would be for direct drive applications where the user would like to "rock out" and not be so concerned about potential clipping of the signal in the digital domain.



FLASHING LEFT LED
Indicates unit volume is less than -32 dB.



SOLID RIGHT LED/NO LEFT LED
Indicates maximum volume level with no potential loss of resolution.



FLASHING RIGHT LED
Indicates digital multiplication to increase the volume up to 20 dB above full scale. Can be used for recordings with low digital signal levels.

DIGITAL VERSUS ANALOGUE VOLUME CONTROL

The 32 dB of volume attenuation covers the full range of listening levels for critical listening and does not effect the signal level in any way since the level attenuation is adjusting the reference voltage of the digital to analog converter. *Therefore the volume is neither adjusted in the digital or analog domains.* The **AERIS DAC** does not have a separate analog volume control circuitry which would add circuit complexity and potential signal loss.

USING AERIS DAC WITH A PREAMPLIFIER

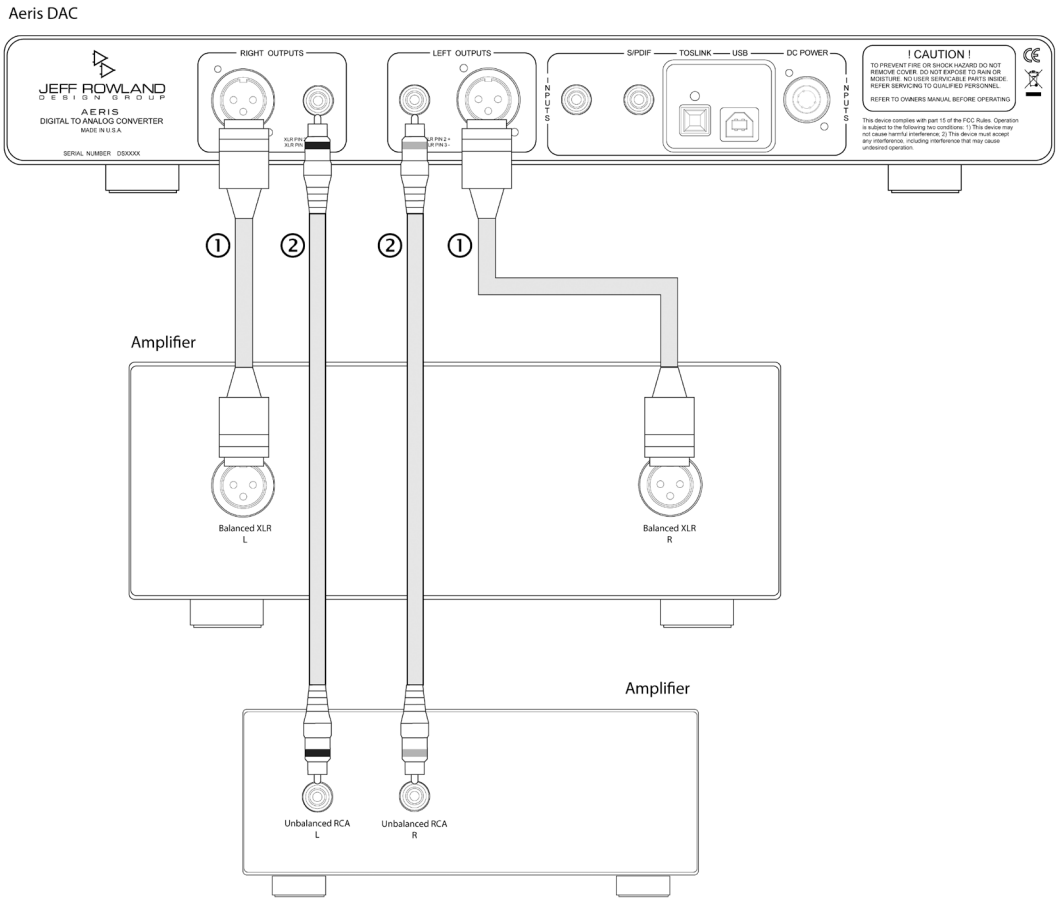
The full scale volume level is is indicated by a solid LED above the right volume button at maximum brightness yet not flashing. This would be the maximum level that could be used when using with a preamplifier, otherwise the **AERIS DAC** could overload the preamplifier. Adjust the **AERIS DAC** volume level such that the preamplifier volume control is in its normal position at a normal listening level.

USING THE AERIS DAC DIRECTLY WITH AN AMPLIFIER

The **AERIS DAC** has a sufficient output level to drive any power amplifier directly. The output driving capability of the **AERIS DAC** is sufficient to drive any type of amplifier regardless of the length or type of interconnect cable with no signal loss or degradation.

AUDIO OUTPUT CONNECTIONS

Note: Do not turn on the unit until all connections have been made.

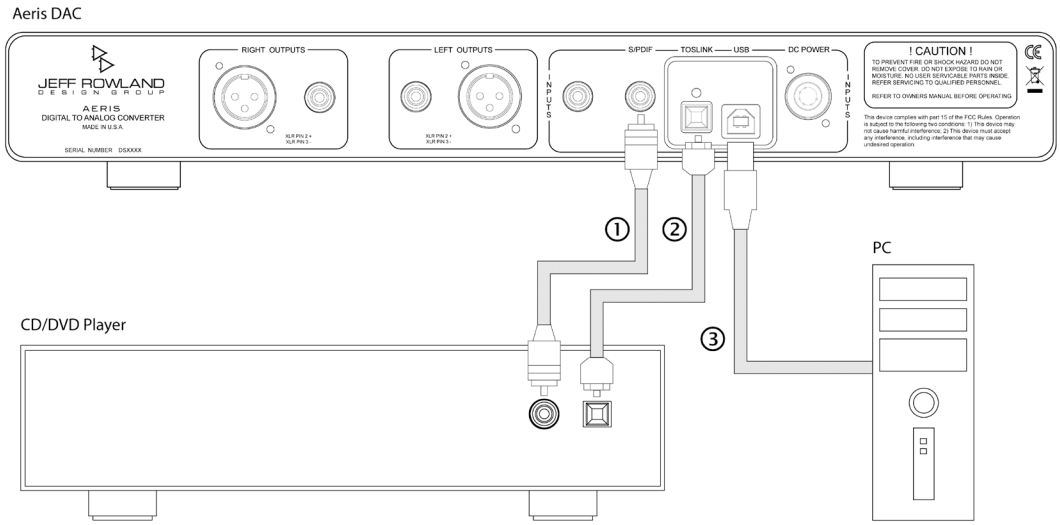


①	**BALANCED XLR**	For best results, use one (1) pair balanced XLR line outputs to connect your preamplifier or amplifier whenever possible.
②	**UNBALANCED RCA**	Use these one (1) pair unbalanced RCA line outputs if your preamplifier or amplifier does not accept balanced inputs. These outputs can be use to simultaneously feed a second amplifier.

NOTE: The output levels of each pair of outputs are equivalent. It is unnecessary to compensate for a 6dB loss when using the RCA outputs.

DIGITAL AUDIO INPUT CONNECTIONS

Note: Do not turn on the unit until all connections have been made.



①	**S/PDIF (BNC)**	Two (2) S/PDIF (BNC) – to obtain best results use a high quality 75 ohm digital BNC interconnect cable.
②	**TOSLINK**	One (1) TOSLINK – to obtain best results use a high quality fiber-optic interconnect cable designed specifically for audio use.
③	**USB**	One (1) USB 'Type B' input allowing direct connection to a PC via a Type B to Type A USB lead. The **AERIS DAC** operates independently of your PCs sound card.

SPECIFICATIONS

INPUTS	1x USB (B-type)	Accepts up to 24 bit PCM at 44.1, 48, 88.2, and 96 kHz sample rates
	1x Toslink (Optical)	Accepts up to 24 bit PCM from 11 - 192 kHz sample rates
	2x SPDIF (RCA)	Accepts up to 24 bit PCM from 11 - 192 kHz sample rates
OUTPUTS	1 pair balanced XLR / 1 pair unbalanced RCA	7 volts RMS max output level
VOLUME CONTROL	Dual-stage attenuation	70 dB range, plus 20 dB overdrive
SOFTWARE/DRIVERS	No special drivers necessary	USB interface is plug-n-play with all operating systems, including PC, Mac, or Linux.
CLOCKS (2X)	20 bit dynamic range	Voltage Controlled Crystal Oscillators (VCXO), 44.1 kHz and 48 kHz < 10 picosecond RMS jitter
D/A CONVERTER	Differential output	352.8 kHz, 24 bit
DIGITAL FILTER	Finite Impulse Response (FIR) symetrical	Flat phase and group delay
THD+N	Analogue outputs	< 0.0006%
OUTPUT IMPEDANCE	RCA / XLR	120 ohms

LIMITED WARRANTY

Jeff Rowland Design Group, Inc. warrants the materials, workmanship, and proper functioning of this product for a period of five years from the date of purchase as long as the product was operated in accordance with its operating manual, the products was not altered or improperly serviced or prepared, or if the product failed to function from the beginning. In the event of such a failure, the product will be repaired or replaced by Jeff Rowland Design Group, Inc. through one of its dealers. This warranty is extended to the original purchaser only and is non-transferable to any secondary or other purchaser.

In order to have this product repaired or replaced, the original purchaser must first obtain the prior authorization of Jeff Rowland Design Group, Inc. or one of its dealers. Purchaser must then return the product, PACKAGED IN ITS ORIGINAL CARTON, FREIGHT PREPAID to: Jeff Rowland Design Group, Inc., 2911 North Prospect Street, Colorado Springs, Colorado, 80907, or to one of its dealers.

Jeff Rowland Design Group, Inc. reserves the right to inspect any product which is subject to any warranty claim prior to repairing or replacing it. Final determination of warranty coverage lies solely with Jeff Rowland Design Group, Inc. Said determination shall be made as soon as possible following receipt of the product. Jeff Rowland Design Group, Inc. may, at its option, require from the purchaser, valid proof of purchase (dated copy or photocopy of dealer's original invoice). Out-of-warranty claims will be billed for labor, materials, return freight, and insurance as required. Any product for which a warranty claim is accepted will be returned to the purchaser and costs of shipping and insurance will be factory prepaid within the boundaries of the USA. Units to be shipped outside of the USA will be shipped freight collect only. This warranty gives the holder specific legal rights. The purchaser also has implied warranty rights, and may also have other rights which may vary from state to state.

Jeff Rowland Design Group, Inc. strives to manufacture the very finest possible equipment and therefore reserves the right to make changes in design and improvements upon its previously manufactured models.

THE ABOVE WARRANTY IS THE SOLE WARRANTY GIVEN BY JEFF ROWLAND DESIGN GROUP, INC. AND IS IN LIEU OF ALL OTHER WARRANTIES; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE SHALL BE STRICTLY LIMITED IN DURATION TO FIVE YEARS FROM THE ORIGINAL DATE OF PURCHASE AND UPON THE EXPIRATION OF THIS FIVE YEAR WARRANTY PERIOD, JEFF ROWLAND DESIGN GROUP, INC. SHALL HAVE NO FURTHER OBLIGATION OF ANY KIND WH ETHER EXPRESSED OR IMPLIED. SOME STATES DO NOT ALLOW EXCLUSIONS OR LIMITATION ON HOW LONG IMPLIED WARRANTIES LAST, IN WHICH CASE THE ABOVE LIMITATIONS SHALL NOT APPLY.

Jeff Rowland Design Group, Inc. does not authorize any third party, including any dealer or representative, to assume any liabilities on its behalf or to make any warranties on its behalf unless authorized to do so.

Warranty registration cards must be completed and mailed to Jeff Rowland Design Group, Inc. within thirty (30) days of the date of purchase. If this product is used in a commercial or industrial application, then special warranty exclusions may apply. Contact your dealer or Jeff Rowland Design Group, Inc. for information regarding our commercial warranty policies.

GUIDE USE AND COPYRIGHT

This guide is designed to make installing and using this product as easy as possible. Information in this document has been carefully checked for accuracy at the time of printing; however, Jeff Rowland Design Group policy is one of continuous improvement, therefore design and specifications are subject to change without prior notice. If you notice any errors please feel free to email us at: support@jeffrowlandgroup.com.