i·V Ultra 1-4, Series Amplifiers

Owners Manual

Congratulations, you are now the proud owner of an i·V Series Amplifier from Legacy Audio!
Legacy has built on its 37-year heritage and experience building top performing audio systems for both the audiophile and professional audio worlds, to develop this groundbreaking amplifier.

The i·V high performance amplifier series provides unprecedented power underneath its sleek chassis and front panel meter.
Available in Monobloc, dual mono, 3, 4, 5, 6, 7, and 8 channels, these amplifiers are great for both stereo and multichannel duties, including emerging Atmos® systems.

The perfect match for Legacy Audio speakers as well as getting the most out of any speaker- the i·V series is built to last a lifetime, thanks to their cool running conditions.

Thank you for choosing Legacy Audio. May the i·V amplifier bring you many years of enjoyable listening!

Owners Record

The serial number is located on the rear of the unit. Record this number in the space provided below. Refer to this when calling your dealer regarding this product.

Register your product at www.legacyaudio.com/register

Model: i·V Series Amplifier
Serial No: _____
Date of purchase:_____

Thank you for listening with Legacy Audio. These hand-crafted instruments will provide you with many years of listening enjoyment.

Share your Legacy Audio system with the Legacy community. Post your Legacy experience and system photos at www.facebook.com/legacyaudio . Like the page to receive the latest Legacy announcements.

Connections

All Legacy Audio i·V series amplifiers feature both balanced XLR and unbalanced RCA input jacks. They can be used in any combination, to allow for full compatibility with all preamplifiers and receivers.

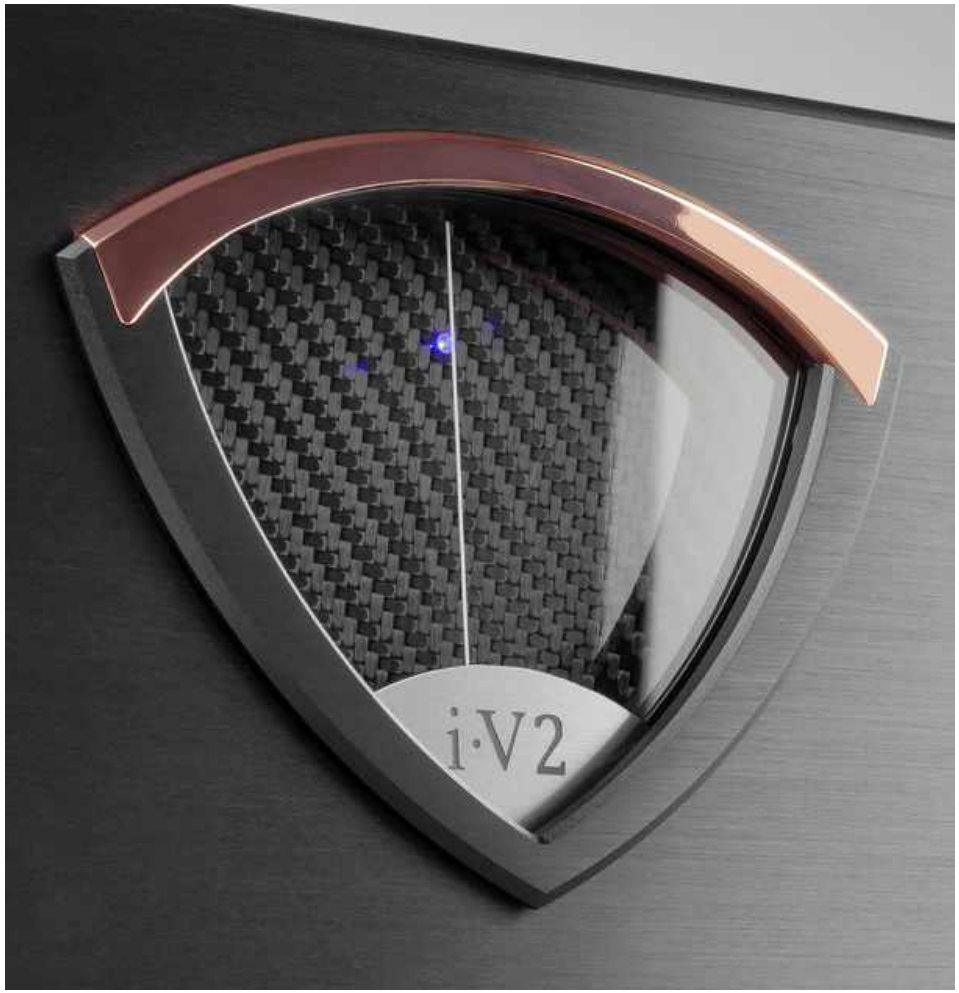
Be certain all associated equipment is turned off before making any connections. Position your amplifier as near the final location as possible while leaving sufficient access to its rear panel connectors. To provide for adequate ventilation you should allow at least several inches above the amplifier as cooler air will enter through the ventilated bottom. Check that the amplifier is turned off. Insert the power cord into the AC POWER RECEPTACLE INPUT on the back panel and then connect it to an appropriate power source.

Powering Up

Your i·V Series amplifiers feature gold plated, safety approved five-way speaker output binding posts, that accommodate banana and spade terminations, as well as bare wire. After connecting your input cables, and speaker cables, make sure the master power switch at the back of the unit is on by pressing down on the (I). When the (0) is pressed down, the master power switch is off.

The standby rocker switch, conveniently located on the underside of the unit on the front right side, allows you to put the amplifier in and out of standby mode. Recommended power up sequence is source followed by preamp/processor, then your amplifier. Powering down should be done in reverse order.

Each module utilized in the iV series of amplifiers has an auto-sensing universal power supply. An IEC power cable is included.



The meter located on the front panel indicates the voltage status available to the modules for any input voltage (100-200VAC to 240VAC). The meter calibration knob, located on the rear of the unit, allows the user to adjust the front panel needle to a center (12 o'clock) position.

When the amplifier is switched on, the needle should deflect to align with the blue LED. When switched off, the LED will turn to amber in standby mode an after around 30 seconds, the needle will swing to the left (0 position).

The 12V trigger on the rear panel allows your iV amplifier to interface with the rest of your system. The trigger can receive signals from your receiver, preamplifier or other gear, to toggle the iV power off and on with the rest of your system.

Specifications

Legacy's i·V Series amplifiers are the most powerful home theater amplifiers to date. Featuring state of the art ICEedge® technology, the powerhouse delivers up to 1kW into 4 ohms at less than 0.005% distortion to each of its channels. The elegant amplifier operates at nearly 80% efficiency at rated output and delivers more than 600 watts into 8 ohms all channels driven while remaining stable into impedances as low as 2.7 ohms. The amplifier supports 12VDC triggered on/off and is available in a rack mount 8 channel version for Atmos® installations. Crystal clear sound is virtually noise free, without transformer hum.

Power rating:
1,000 watts continuous per channel @ 4 ohms, all channels driven
610 watts continuous per channel @ 8 ohms, all channels driven

Each channel meets the following specifications:
1.2kW @ 4 Ohm /1kHz with less than 1% distortion
Dynamic Range 127 dB, A-weighted
Voltage gain 25.8 dB
Inputs Fully balanced XLR ,single-ended gold RCA
Input Sensitivity 5.0 Vp @ 1200W/4 Ohm
Input impedance 38 kOhm for both pin 2+ and pin3-
Max peak output: 1250 Watts
Voltage/Current: 98 Vp/ 38Ap
Damping factor: 750 from 20 Hz to 1kHz
Channel separation: 120 dB at 1kHz
Weight: i·V1 22 lbs, i·V2 25 lbs, i·V3 26 lbs, i·V4 26.5 lbs

Features

- Short circuit protection
- Thermal protection
- Triggered on/off
- Standby switch
- Front panel status indicator
- Maximum sustained power consumption:
    - 2100 Watts @ 120VAC into 20 amp circuit
    - 4200 Watts @ 120VAC into 40 amp circuit
- The rear panel reset switch is optimized to defend against accidents and misuse

Designer Notes

Maximizing Amplifier Performance

Removing dynamic limitations while preserving detail is paramount to the listening experience of both music and home theater, which require both high current and high voltage output.

You'll note the amp is heavier than most Class D amps. The iV7 amplifier features four independent power supplies. Each board employs large storage capacitors which allow sustained power, not just peak headroom like most Class D amps. Each of these dual channel boards can deliver more than 1,200 watts total; shared between two channels or dedicated to a single channel.

This fact allows the user to distribute the amp's power in the most effective manner staggering the odd and even channels.

Example: Connect the front mains and center to the even numbered channels, leaving the odd for surrounds which typically require less power. Here's at template for 7.1 connections

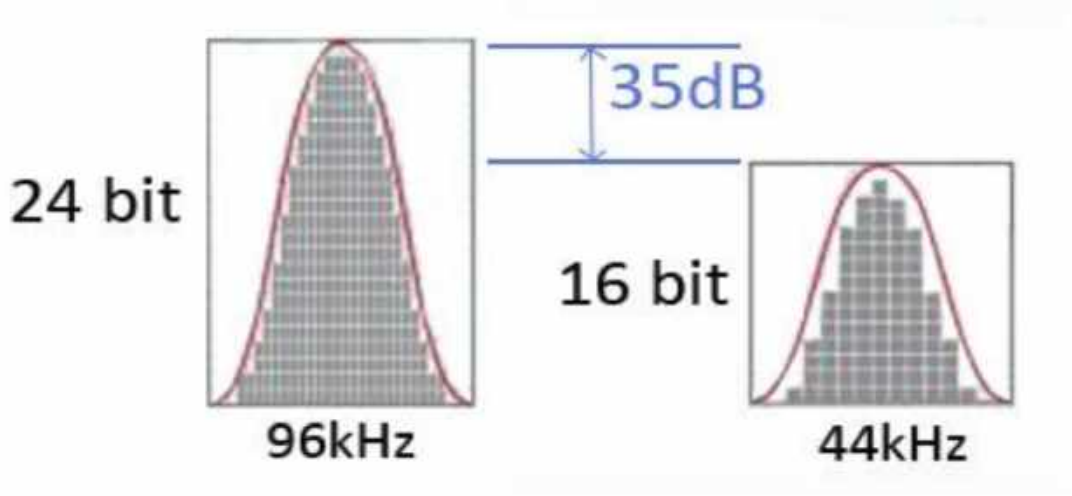
1 Connect to Left Side Surround
2 Connect to Front Left Main
3 Connect to Left Rear
4 Connect to Front Center
5 Connect to Right Rear
6 Connect to Front Right Main
7 Connect to Right Side Surround

If you thought loud car crashes, rocket launches and dinosaur footsteps are all high power is good for, you might consider the benefits of lower noise floor and increased dynamic resolution.

Dynamic Contrast

When Sony and Philips introduced the Compact Disc format in 1982 consumers were greeted with an 16 bit audio format that achieved a 90 dB S/N ratio (96.33 theoretical). Today's recordings are mastered at a bit depth of 24 bits while quality DACs achieve a 125 dB S/N ratio (144.49 dB theoretical).

Nearly four decades have passed since the CD's debut and consumers can now stream high resolution recordings with 35 dB greater dynamic capability.



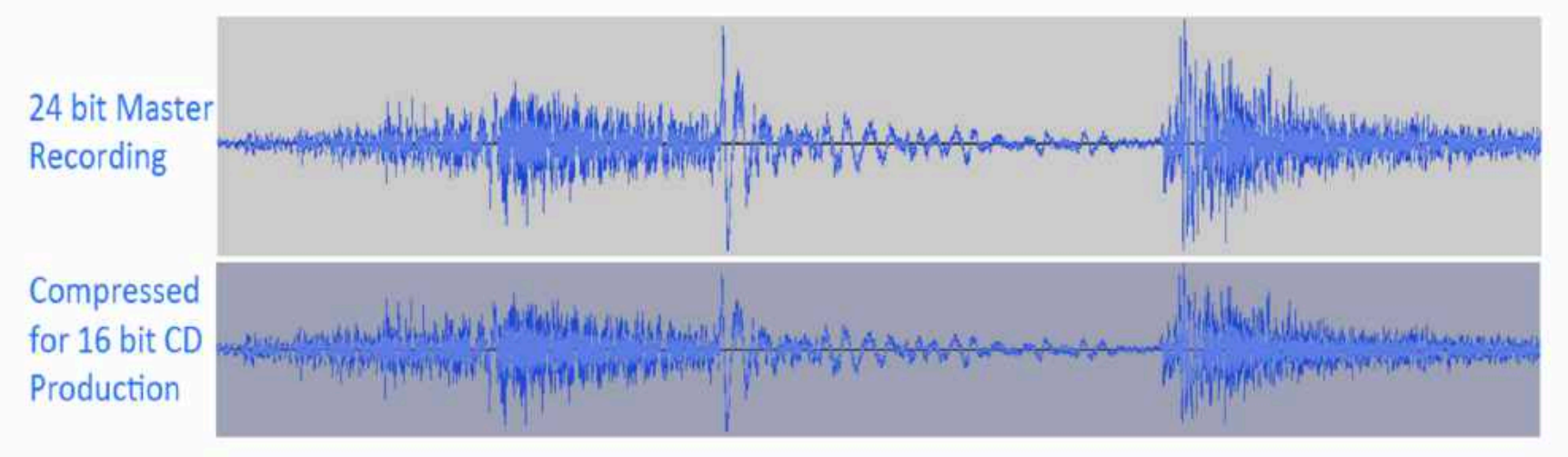
Does more amplifier power translate to louder listening levels?

You will enjoy a lower noise floor in your recordings and stronger crests. While that might not make your speakers play louder, the real difference is not in averaged RMS level- it is heard in *increased resolution*.

What exactly is audio resolution?

My former colleague Dr. Bela Julesz, while teaching at Rutgers, explained that our perception/ cerebral processing of audio and video share many similarities. Let's recall analog VHS tape rendering a mere 260 lines on a 480 scan-line analog monitor. Now recall the increased definition afforded by 720p video and the excitement that followed with the first look at a crisper 1080p image at 2.1 megapixels. Today we can stream 4K at 8.3 megapixels into our homes and the images have taken on a new dimension in depth. This is largely due to our ability to resolve subtle shadowing in all this information. This is not a matter of just brightness or gain, but dynamic contrast.

Today's higher resolution recordings benefit from amplifiers offering increased voltage capability and significantly lower noise floor. Speakers with large motors can generate higher back-EMF on these recordings and will benefit from amplifiers with high damping characteristics. Additionally, many full range speakers now employ two or more woofers and can demand higher current than single woofer configurations of the past.



Note the 24 bit Master Recording exhibits both higher crests and lower troughs.

Power = i · V

Power is the product of current (i) and voltage (V). Higher amplifier power assures the proper snap in transients and prevents clipping that can damage high frequency drivers. Higher power means dense musical arrangements will avoid the smearing, strain and the inevitable distortion as complex passages reach higher levels.

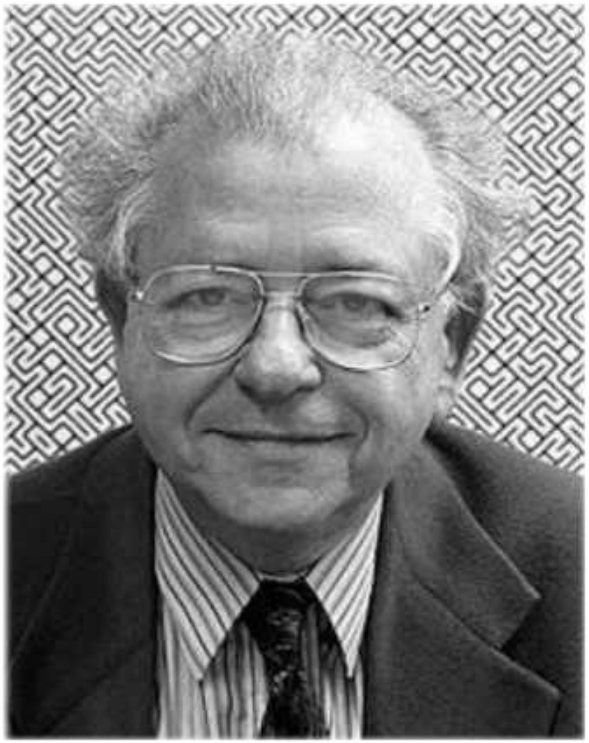
What increase in amplifier voltage is required to maximize performance potential of 24 bit over 16 bit?

Let's first recall that the 35dB realizable increase in total dynamic range difference benefits the noise floor greatly in 24 bit recordings.

For calculation purposes let's assume that fully half of the 24 bit overall level advantage is allocated to reduction of lower noise floor. Therefore only 17.5 dB of this increase of 35dB in dynamic range is allocated to potential upward dynamics.

$17.5\ dB = 20 \log V_{24} / V_{16}$ Solving this equation $\mathbf{V_{24} = 7.5\ V_{16}}$

If a 16 bit recording is maximized on a four ohm pair of speakers driven by 80 watts, you would need 750 watts to realize the potential increase in dynamic articulation afforded by 24 bit while enjoying a much lower noise floor.



Dr. Bela Julesz

Audio engineers Al Schmitt and Bill Dudleston chatting at Capitol Studios.

Béla Julesz *was a neuroscientist and experimental psychologist in the fields of visual and auditory perception. Besides many other technical and scientific contributions during his time at Bell Laboratories, Murray Hill, NJ, he was the originator of the computer generated Random-Dot Stereograms, an imaging technique, and of the method of studying texture discrimination by constraining second-order statistics.*

Al Schmitt *is the only audio engineer presented a star on the Hollywood Walk of Fame. Recordings of Frank Sinatra, Barbara Streisand, Ray Charles, Paul McCartney, Bob Dylan are but a few of his historic achievements. Racking up 150 gold and platinum albums, 89 year old ' the kid from Brooklyn' emphasized microphone selection*

and placement over soundboard manipulation to achieve an open, natural sound. His new book On the Record: The Magic Behind the Music details sessions with Duke Ellington to Neil Young.

***Bill Dudleston** is the founder of Legacy Audio and Legacy Pro. He has engineered playback and mastering monitors for renown producers Rick Rubin, L.A. Reid and mastering legend Herb Powers Jr. (Alicia Keys, Justin Timberlake, Mariah Carey, Michael Jackson). He recently completed sound design for the Michael Jackson conference room at Epic/Sony. He has designed systems for commercial Giant Screen theaters.*

His innovative speaker designs are recognized for precise, dynamic sound while portraying a transparent window to the recorded event. He received a degree in Chemical Engineering from the University of Illinois and has supervised a laboratory specializing in the calibration of digital analyzers.

*RESOLUTION is also related to the sampling frequency of a digital recording. The Nyquist theorem that requires a sampling rate of double the highest audible frequency. Redbook standard for 16 bit CDs is 44.1kHz which meets the Nyquist requirement. 24 bit recordings are usually sampled at multiples of 48kHz such as 96kHz, 192kHz, 384kHz). These sampling rates proportionally increase required file sizes. Compression algorithms are usually employed.

FAQ

Symptom	Probable Cause	Solution
No power **Front panel not illuminated**	Power cord disconnected Rear panel power switch set to off ‘0’ position Front panel switch toggled to left position, no 12VDC input AC fuse is blown	Connect power cord, verify at power strip Set rear panel switch to on 'I' position Connect 12 VDC input from source If not using trigger, toggle front panel switch to right ON position Replace rear panel fuse with same rating.
Amplifier won’t trigger on or off	Standby switch toggled to right position DC trigger sourced wired in reverse or voltage too low	Toggle to left for triggered control Test with 8 Volt battery
Power on, but no sound	Bad connection from preamp or receiver Over-current protection circuitry has been activated No signal present	Check input connection or try a different cable or different speaker Check speaker load impedance, wires and connections. Unplug amplifier for 30 seconds to reset Play CD or other source verifying input selector on preamp. Streaming is less reliable for this test.
No sound from one or two channels **Distorted sound**	Internal fuse blown on channels’ supply Internal fuse is degraded Sorting of output Rubbing speaker voice-coil Intermittent contact	Contact Legacy Audio at 800-283-4644 Check speaker cable connections Verify by driving speaker with different channel
Hum heard from speakers	Problem with preamp or source component Ground loop Ground loop from cable TV	Disconnect inputs to amp with power off, then power on to verify Be sure amp is on the same power circuit. Isolate with Ebtech HumX or other ground lifter Install cable isolation device such as the Xantech 634 Ground Breaker
Top cover feels unusually warm	Inadequate ventilation	Allow 2” of open space above amplifier. Do not stack without forced air circulation

Warranty

Legacy Audio supports its customers and products with pride. We cheerfully warrant our amplifiers from defects in materials and workmanship for a period of three (3) years. Please register your product with Legacy Audio. Should you require service Legacy will require a proof of purchase in order to honor the warranty - so please keep your receipt.

The warranty applies to the original owner and is not transferable.

- The warranty applies to products purchased from an “Authorized Legacy Dealer”.
- The warranty on active components such as digital processors or internal amplifiers is limited to three (3) years of coverage.
- The warranty on dealer stock will extend for a maximum of two years from invoice.

The warranty does not cover transportation costs of product to or from the customer, distributor or dealer, or related shipping damage.

The following situations or conditions are not covered by the Legacy Audio warranty:

- Accidental damage, electrical abuse or associated equipment failure
- Use inconsistent with recommended operating instructions and specifications
- Damage caused by modification or unauthorized service
- Costs associated with the removal and reinstallation of defective products. Consequential damage to other products.
- Normal wear such as fading of finishes due to sunlight

Care

If you wish to clean your amplifier, use a diluted ammonia based window cleaner. Do not use any abrasive cleaners or chemical solvents. Take care not to damage the aluminum body, since aluminum is a medium hardness metal and can be scratched by the careless use of tools during installation. We recommend saving your box and packing material for moving the unit.

Safety

Safety and EMC Standards
Legacy Audio's ICEpower1200AS family products have been verified to conform to the following standards.
Safety Following standards incl. compliance with the National requirements of AR, AT, AU, BE, CA, CN, CH, CZ, DE, DK, ES, FI, FR, GB, HU, IE, IL, IT, JP, KR, MY, NL, NO, PL, SE, SG, SK, SI and US.
IEC 60065:2014(8thedition)
IEC 60065 7th edition Amd1 + Amd2
EN60065:2014
EN 60065: 2002/A1:2006; EN 60065:2002/A11:2008;
EN 60065:2002/A2:2010; EN 60065:2002/A12:2011

EMC
EN 55032: 2015 (CISPR 32: 2015) Electromagnetic compatibility of multimedia equipment – Emission requirements – Class B
EN 61000-3-2: 2014 (IEC 61000-3-2: 2014) Harmonic current emission
EN 61000-3-3: 2013 (IEC 61000-3-3: 2013) Voltage changes, voltage fluctuations and flicker
CFR 47 Part 15 Subpart B (FCC): 2016 Telecommunication – Radio Frequency Devices – Unintentional Radiation – Class B
EN55020: 2007 + A11: 2011 (CISPR 20: 2006) Sound and television broadcast receivers and associated equipment – Immunity characteristics – Limits and methods of measurement
EN 61000-4-2: 2009 (IEC 61000-4-2:2008) Electrostatic discharge immunity test
EN 61000-4-3: 2006 + A1: 2008 + A2: 2010 (IEC 61000-4-3: 2006 + A1: 2007 + A2: 2010) Radiated, radio frequency, electromagnetic field immunity test
EN 61000-4-4: 2004 + A1: 2010 (IEC 61000-4-4: 2004 + C1: 2006 + C2: 2007 + A1: 2010) Electrical fast transient / burst immunity test
ESD Warning
ICEpower products are manufactured according to the following ESD precautions:
ANSI/ESD-S20.20-2014: Protection of Electrical and Electronic Parts, Assemblies and Equipment.
Mechanical and Environmental Tests
ICEpower1200AS has undergone extensive environmental testing including Highly Accelerated Life Test (HALT).

Test	Acceleration	Amount
Random vibration	2.1 g_{rms}, random profile composed of 5 frequencies in the range 5 Hz to 275 Hz	3 perpendicular directions 3 x 20 min. + 3 x 10 min. + 3 x 10 min.
Shock	40 g / 26 ms to 70 g / 12 ms in steps of 10 g	6 directions, 3 shocks per direction


WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT USE THE AMPLIFIER NEAR WATER OR IN WET LOCATIONS, DO NOT EXPOSE IT TO RAIN OR MOISTURE, DO NOT EXPOSE IT TO DRIPPING OR SPLASHING FROM OTHER SOURCES, AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS (SUCH AS VASES) ARE PLACED ON IT. DOING SO MAY RESULT IN DAMAGE TO THE UNIT AND THE RISK OF ELECTRIC SHOCK, WHICH MAY RESULT IN BODILY INJURY OR DEATH. WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE.

Do not block any ventilation openings. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat. The power cable should be unplugged from the outlet during severe electrical storms, or when unused for a long period of time. Grounding: Adequate precautions should be taken so that the grounding provisions built into an electrical product are never defeated.

All information contained in this manual is accurate to the best of our knowledge at the time of publication. In keeping with our policy of ongoing product improvement, we reserve the right to make changes to the design and features of our products without prior notice.

A listing of Legacy Audio Dealers and Distributors can be found on the Legacy Audio website www.legacyaudio.com or by contacting Legacy Audio at: 3023 E. Sangamon Ave., Springfield, IL 62702, USA— Phone: +1 217 544-3178.


SoundStage!
network
BEST OF
FLORIDA
AUDIO EXPO
2020
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i·V7 AMPLIFIER

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