Site Links

Home Page

Reviews
Recent Additions
Budget Components
Audacious Audio

Loudspeakers
Floorstanding Loudspeakers
Bookshelf Loudspeakers
Subwoofers

Amplification
Tube Preamps
Tube Power Amps
Solid-State Preamps
Solid-State Power Amps
Integrated Amps/Receivers
Phono Preamps

Digital Sources
CD Players/Transports
Hi-Rez Disc Players/Transports
Digital Processors
Computer Audio
Media Servers/MP3 Players

Analog Sources
Turntables
Tonearms
Phono Cartridges
FM Tuners

Accessories
Cables
Phono Accessories
Powerline Accessories
Room Acoustics Treatments
Stands/Racks
Headphones & Accessories
Miscellaneous

Tube Preamps

# Conrad-Johnson ACT2 line preamplifier

By Wes Phillips • March, 2005

The spirit moved upon the earth.
The rocks cra'ked asunder,
Darkness smote the light,
Seas boiled away with a thought,
And all life was extinguished.

[*Scattered applause, mild mumbling; a disembodied (see below) voice calls out.*]

**Voice:** So what are you going to do for an encore?
Tough crowd—but that's nothing compared to the pickiness of audiophiles. Ask anyone who's ever designed and marketed a preamplifier to end all preamplifiers.

Ask Conrad-Johnson, who designed and delivered the Anniversary Reference Triode (ART) for their 20th anniversary back in 1998. Critics raved (including this one, in the see May 1998 *Stereophile*), well-heeled audiophiles bought out the limited run, and people wondered what C-J would do next.

**Columns**
As We See It
Listening / Art Dudley
The Fifth Element / John Marks
Music in the Round / Kal Rubinson
Fine Tunes / Jonathan Scull

**Features**
Special Features
Reference
Interviews
Think Pieces
Historical

**Music**
Recording of the Month
Records 2 Die 4
Music/Recordings

**Blogs**
Stephen Mejias
Robert Baird
Fred Kaplan
Wes Phillips

**Latest News**
Audio News
Past eNewsletters

**Show Reports**
CES 2009
RMAF 2008
FSI 2008
CES 2008
RMAF 2007
CEDIA 2007
HE 2007
FSI 2007
CES 2007
China 2006
RMAF 2006
HFN 2006
CEDIA 2006
HE 2006
FSI 2006
CES 2006

**Community**
Forums
Galleries
Vote
Previous Votes

**Resources**
AV Links
Audiophile Societies
Contact Us
Customer Service

**Subscriptions**
New Subscription
Digital Subscription
Renew
Give a Gift
Sub Services


They did the ART Series Two (reviewed in the June 2002 *Stereophile* by Jonathan Scull): critical raves, a sold-out edition, and speculation on what would come after the "ultimate preamplifier."

**There are no second acts in American lives**
The ACT2 ($13,500) is, um, literally the second act of Conrad-Johnson's flagship ART preamplifier, which pioneered the composite-triode concept when it was introduced. Briefly, a composite triode is equivalent to a single high-transconductance triode tube because it comprises multiple dual-triode tubes in parallel. In the case of the ART, ten 6922 triode sections (five tubes) per channel were used, which had the added benefit of lowering the preamp's output impedance to just below 500 ohms—sort of at the top end of the output-impedance range of more conventional cathode-follower designs.

You may be asking yourself why C-J felt obliged to come up with the composite-triode concept. The answer is simple. No, really, *that's* the answer: simplicity. A single triode is the simplest gain circuit there is. The composite triode turns multiple triode stages into one big triode—or, at least, that's what it behaves like. And the lack of a cathode follower means that C-J avoids *any* loop negative feedback or additional audio circuitry. One active stage—count 'em, *one*. That's simple.

In the ACT2 it gets even simpler, thanks to the use of a new tube, the Russian 6N30P. ("Actually," said Lew Johnson, "that's a matter of some debate, since the tube is labeled in Cyrillic. It could be called a 6H30p or a 6H30R just as accurately.") The 6N30P is a higher-gain, lower-noise triode design than the 6922, so the ACT2 uses four triode sections per channel, compared to the 10 employed in the ART. That means the ACT2 can fit into a single chassis, compared to the ART's two.

"It sounds funny to say that we were aware of budget issues in designing a $12,000 preamplifier," said Johnson, "but we were intensely aware of the cost of the component parts, and that includes metalwork. We packed the ART and the ACT2 with laser-cut metal-foil resistors and polypropylene, polystyrene, and Teflon capacitors, which are breathtakingly expensive. But our decision to make the ACT2 a single-chassis preamplifier had more to do with keeping circuit paths as short as

possible [than] it did with constraining costs, not that we were unaware of that. After all, the ACT2 offers substantially better performance than the ART for less money."

C-J's attention to detail shows. Before you even insert the tubes, you need to free the audio circuit's sprung subchassis. The microprocessor-controlled relays that select sources and adjust level are located directly at the inputs, which keeps signal paths short. The DC-regulated power supplies use the same Vishay resistors that the audio circuits do. The sealed switching relays sport gold-plated silver contacts (at least, that's what Johnson told me). The gold-plated input and output connectors are machined from OFC.

Even the power cord is special—it's hefty, with hospital connectors. Johnson: "I'd really like to tell you that power cords don't have *any* effect on sound quality when you're dealing with a properly designed power supply, but this one sounded better than any of the other cords we auditioned, so we had to use it."

Power is another area where the ACT2 is special. DC voltage is derived from cascaded discrete voltage regulators that, in Johnson's words, "absolutely isolate the audio circuit from the power line by maintaining virtually zero impedance across the audio frequency band." He added that noise is further minimized by operating the tube filaments (heaters) with DC voltage taken from another discrete, regulated power supply.

Another element of the ACT2 deserves mention: its retro-futuristic look. It shares the black-and-gold livery and low-deck, tubes-on-top look of C-J's power amps, but the tubes are displayed and protected behind three Lucite rings and topped off by a vented circular cap, also of Lucite. This array nests in a semicircular niche cut out of a "command bridge" that rises above the lower deck, which houses the porthole fluorescent display and touch-button source and volume controls. Because it employs a resistor-ladder volume control, the ACT2 is remote-controllable without sacrificing any sonic purity.

I could hear the resistor-ladder relays clacking away as I adjusted volume and balance, a sound I'd found strangely comforting in the ART, and did in the ACT2 as well. However, the ACT2's ladder uses 0.75dB steps over most of its range. As the ACT2 approaches full output, the steps are further apart (or so I'm told; I never got anywhere near that output level). Three-fourths of a dB is a very manageable increment for changes in volume and balance—I rarely found myself wishing for a level between the steps.

**Between the motion and the act falls the shadow**
"I have to warn you," Lew Johnson said: "We have no idea why, but Teflon capacitors take about 100 hours of play before they sound good. That's *play*, as in playing music through them. I think you could leave the ACT2 on forever, and the sound wouldn't change unless you played signal through it. We have no idea why that is."

Yeah, right. Oh, I played music through the ACT2 for days (thank you, XM radio), but heard no difference. In fact, I was working on the wording of a snarky comment about how *I* obviously wasn't suggestible enough to buy into C-J's mumbo-jumbo, when something strange happened: Everything

began to sound a whole lot better. This was [*gulp*] about 100 hours into my audition. Draw your own conclusions about Teflon capacitors and/or my suggestibility.

When I say that everything began to sound "better," I mean that the music suddenly began to exist within its recorded environment with far greater palpability—using smaller audio "pixels," if you will. The men's chorus Cantus stood out more vividly from the wet acoustic of Sauder Concert Hall on *Comfort and Joy: Volume One* (CD, Cantus CTS-1204). This wasn't a case of my merely hearing deeper into the recording; I heard more deeply into the vocal blend, heard more of the "beating" caused by Cantus' free vibrato, and more of that live edginess that separates canned from live music. (Having been present at the sessions for this CD, I *know* what Cantus sounded like in this hall.) Seeing deeper into the musicality, I saw deeper into the music. But I wanted to know: *How come?*

Lew Johnson had an opinion that he hastened to distinguish from an "explanation": "Capacitors are subject to an effect described as *dielectric absorption*, which old-school engineers used to call *soakage* and I just call *memory*. It refers to the propensity of a capacitor to retain some charge after it has supposedly 'cleared' the signal. I wish that real capacitors actually behaved like the theoretical varieties—that would make audio design so much easier—but they don't. And I'll be darned if the expensive ones don't frequently behave more like the theoretical ones, at least in ways that are important sonically.

***Article Continues: Page 2 »***

## Company Info

**Conrad-Johnson**
Web Site

**2733 Merrilee Drive**
**Fairfax, VA 22031**

**(7...**

## Article TOC