ALLEGRO
audio designs, inc.
The delicacy of tubes. The power of transistors.

Cantata™ Stereo Amplifier:
Design Features & Technical Issues

•No Negative Feedback:

Negative feedback, a traditional engineering practice in commercial products, reduces measured distortion when repetitive "test" signals are used as a reference. It is well documented however, that the delays inherent in feedback loops can cause stability problems with any non-repetitive (music, for instance) signal. *None of the audio circuitry in Allegro's Cantata™ amplifier, Duette™ Balancing Module, or Concerto™ preamplifier utilizes negative feedback*. Among those credited with the study of feedback-induced instability is Prof. Jay Forrester of M.I.T., father of the digital computer.

Allegro's inherently stable circuits insure a pure re-creation of your favorite music through conservative design, careful subjective and objective research, and superb execution.

•High Current Output:

The relationship between power (watts), current (amperes) and voltage (volts) are often confused. Much of this confusion can be traced to a standard FTC rating system for amplifiers, which rates power (in watts/channel) into a simple 8Ω resistance. For a simple and imaginary load, these measurements are reasonable. For real speaker systems, which vary in resistance, capacitance, and inductance, such a measurement invites misinterpretation.

Simply, the Allegro Cantata will deliver 28 volts per channel into virtually any load, limited only by its 700 watt power supply capability. This translates into 14 amperes continuously (though this may be limited by the AC line fuse). Such a claim can only be made for an amplifier which delivers tremendous quantities of current to a demanding speaker. Inability to deliver this current results in clipping and audible distortion.

•Modular Construction:

Unlike most other amplifiers, *Allegro's* critical amplification circuity is contained on removable cards which plug in via gas-tight, gold plated blade connectors. *These connectors meet or exceed independent Military Specifications for reliability*. Plug-in construction guarantees you easy service and upgrades in the future. *Most importantly, your investment in fine equipment will remain state of the art in the future.*

•Always Warmed Up / Standby Mode:

The sound quality of fine solid-state equipment benefits from a warm-up period. Much of the improvement is realized within 30 minutes, yet gradual improvements can continue over a period of days.

Allegro's Cantata provides you with the best of both worlds by leaving the amplification circuitry in "standby mode" even when the amplifier is turned "off". As a result, warmup time is greatly reduced, and the overall enjoyment of your amplifier is enhanced.

•Premium Components:

A classic recipe can only be as good as its ingredients. The *Allegro* Cantata is crafted with only the finest ingredients: polypropolene capacitors, gold input jacks, mil-spec gas tight connectors, 1% metal film resistors, shielded mil-spec printed circuit boards, and select discrete transistors. *Not only do such components contribute to sonic integrity, but to ultimate durability and reliability as well.*

Purists should note that the binding posts utilized are solid brass, "6-way" bindings posts which accept ring terminals for the finest, most secure speaker connection possible.

•High Bias Output Stage:

Both gain stage boards operate in *pure class-A,* to insure optimum sonic performance. The very high current output stage operates class-A up to a point, and then switches to class-AB until maximum power. *This allows the Cantata to run cooler and draw far less power than would be possible with a pure class-A design*.

Note that some competitors claim class-A performance from comparably sized amplifiers. In reality, any 100 watt/ch class-A stereo amplifier must dissipate in excess of 400 watts continuously. So much heat would result in a *very* hot amplifier, and correspondingly short life. By contrast, the Cantata dissipates between 75-100 watts when idling.

•Research and Testing:

Allegro products adhere not only to the important subjectively established criteria of music and audio, but to *solid engineering criteria* as well. *Allegro* products must first provide a new level of sonic purity in their class. Yet we owe you much more. *The Cantata, like all our products, is carefully designed to provide trouble free operation, dependable enjoyment, and proper interaction with other components.*

•Balanced (Mono) Operation:

A single Cantata amplifier can become part of a balanced monoblock system. Used with our Concerto preamp or Duette Balancing Module, two Cantata amplifiers create a system capable of 300W per channel (8Ω) or more than 500 watts into (4Ω)!

Balanced operation offers you more than tremendous power. The dynamics, clarity, soundstaging, and overall realism is dramatically enhanced by the effortless capability of a balanced pair of amplifiers.

Unlike some competing systems, neither the Cantata amplifiers nor the Concerto preamplifier require additional (and potentially degrading) circuitry to achieve fully balanced operation.

•What's a Watt? What's a dB? and why should you care?

In the confusing world of amplifier power ratings, a 100 watt per channel (w/ch) amplifier plays only twice as loud as a 10 w/ch amplifier. A 200 w/ch amplifier plays only 3 dB louder than that same 100 w/ch amp. Why, and what's a dB?

The dB, or deciBel, is both the culprit and the answer. The *Bel* and *deciBel* began as measures for telephone work. Unlike watts, the deciBel scale is logarithmic, as is human hearing. The simple fact is, a 10X increase in power (watts) results in a 2X increase in perceived volume.

As a result, most perceptions of what constitutes "enough power" is greatly distorted. To make a perceptible difference, amplifier power must at least double. To be truly significant, it should grow by even more.

The Cantata in its stereo mode offers real world power, able to play louder than amplifiers of higher "rated" power (see also "high current output", above). In balanced mono mode, its 300/500 watt rating provides the magnitude of power increase to be truly meaningful.

Specifications

Voltage Output:	28V r.m.s. (stereo) 56V r.m.s. (balanced)
Stereo Power:	100 w/ch (8Ω) 200 w/ch (4Ω)
Balanced Power:	300 watts (8Ω) >500 watts (4Ω)
Negative Feedback:	0 dB
Input Impedance:	100K-Ω/custom
Gain:	26 dB (20x)
SMPTE I.M.:	<.05%
Slew Rate:	>100V/uS
AC Coupled:	Yes
Class of Operation:	High Bias AB
Sensitivity:	1.4 V for full output
Transistor Type:	Selected Bipolar
Current Delivery:	30A peak (<100mSec)