

ONKYO A-5/A-7

Solid State Integrated Amplifiers



You can hear the specifications

POWER WHERE IT COUNTS

Amplifier design is generally based on the assumption of zero equivalent series resistance (ESR), while in actual fact, some ESR is always present. In designing the A7 and A5, however, Onkyo has come closest to the theoretical zero ESR point than has ever been reached through application of especially large capacitors, the A-7 with 50,000 μF and A-5 26,000 μF , unusually thick ground wiring and power transformers.

Onkyo's exclusive bus feeder ground, using copper plates in place of wire also functions to bring ESR near the theoretical zero point. If ESR is high when a pulse signal is transmitted, a difference potential occurs in the ground circuit, resulting in a sudden weakening in the pulse signal surge and an increase in crosstalk channels.



Because of its basic, very low distortion design, Onkyo amplifiers require and provide exceptionally muscular and stable power supplies. There's more power than you need for normal operation, but a lot available for when it's needed for optimum performance.

Since low end frequencies require more power than high end, this extra strength provides exceptional capabilities in bass tone reproduction. In addition, Onkyo's approach to the theoretical ESR zero point further enhances bass reproduction.

Reserve power is also an important factor in reducing a form of distortion known as "clipping," by coping with program peaks or surges. Since all sound is a waveform, clipping actually cuts the ends off the waves when there is too little power to meet sudden demands. Your music even

sounds as if it were shattered, harsh and mushy. For this reason, Onkyo has established power ratings at conservative levels under a variety of conditions, all conforming to FTC (Federal Trade Commission) rules and IHF (Institute of High Fidelity) guidelines.

Finally, the massive power supplies provided in Onkyo amplifiers enable the use of "Class A" circuitry, generally acknowledged

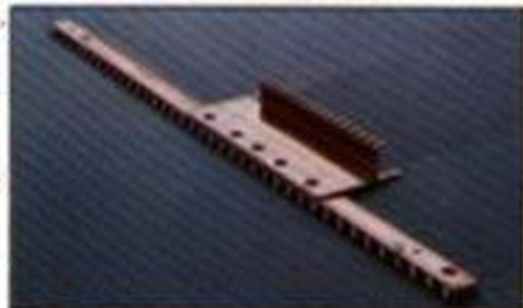
as ideal for solid state components. Class A operation is very linear with low distortion generally, and almost no crossover distortion at all.

To provide the power plus reserve, Onkyo has designed these amplifiers with large transformers which easily radiate heat and with oversize electrolytic capacitors for stability. Specially selected power transistors are mounted in oversized heat sinks for continuous heat dissipation and the entire unit is enclosed in a more ample cabinet which allows a clear flow of cooling air. Because of these considerations, the following ratings are established conservatively:

A-5— 50 watts per channel, minimum RMS into 4 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion. 45 watts per channel, minimum RMS into 8 ohms, both channels driven, from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion.

A-7— 70 watts per channel, minimum RMS into 4 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion. 65 watts per channel, minimum RMS into 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.1% Total Harmonic Distortion.

Overall, both amplifiers have exceptionally wide frequency response, from 2 Hz to 80 kHz ± 1 dB for the A7 and 2 Hz to 70 kHz ± 1 dB for the A5.



SIGNAL TO NOISE RATIO

Of almost equal importance to low distortion for optimum listening is high signal to noise ratios. Basically, signal is what you want to hear, while noise is what you don't want to hear. Noise may be generated by a number of factors and it is the function of good amplifier design to produce an output signal with as little extraneous noise as possible.

Signal to Noise (S/N) ratios are usually described according to accepted levels and referents. The phono equalizer and Driver Stage Class A circuitry used in Onkyo's A5 and A7 amplifiers are inherently low noise circuits. To further reduce

the noise level, Onkyo uses selected transistors.

The S/N ratio is the difference between the power of the amplifier and the noise output without a signal. Such noise is generated by components pointing out the advantages of using specially selected transistors. Other factors include noise in the equipment feeding signals into the amplifier, random electrical signals and a variety of other sources. This ratio is usually expressed in decibels (dB), and the higher the ratio the better, since that demonstrates the power of the signal over the power of the distracting signal or noise.

MAIN AMPLIFIER SECTION

Onkyo avoids the primary distortion found in solid state amplifiers with Class A, push-pull driver stage differential direct coupled, pure complementary circuitry. Crossover distortion usually found at low power levels, is reduced to virtually nothing. Since there is ample power reserve, clipping does not become a problem either, as both amplifiers are capable of handling relatively large power demand surges.

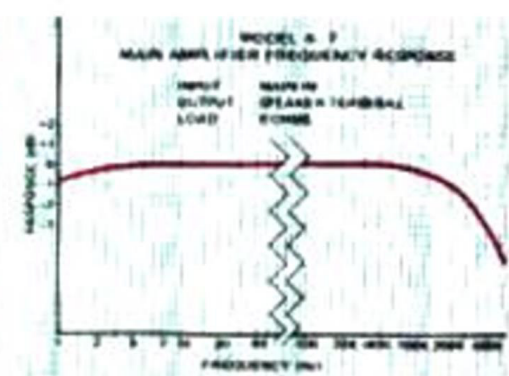
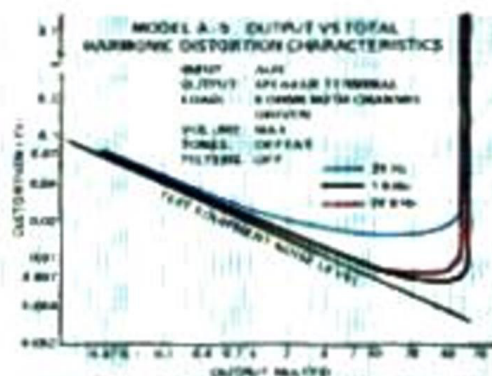
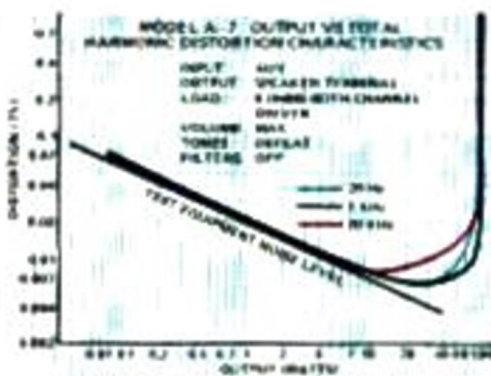
The low distortion of both amplifiers is demonstrated by square wave tests in which a signal is fed through the amplifier into an oscilloscope. The characteristics of the original signal are known, any deviation is readily apparent, and a function of the amplifier itself.

Using a 50 Hz square wave through the A5 and A7, output signals show a deviation of no more than 5% tilt or sag. Conventional amplifiers under

the same conditions may have up to 25-50% sag shown in the pictures below. At no point at rated power does either amplifier exceed 0.1% THD, and at 1 watt output - a normal listening level - THD is as low as 0.005%. S/N ratio for both is an exceptional 110 dB (Hifi A Network).



Nothing is overlooked to make Onkyo's A5 and A7 give full value, including protective circuitry for amplifiers and for speakers. A special voltage detection circuit acts as an electronic watchdog for overloads. In the A7, positive acting relay protection prevents damage to the power transistors and/or speakers.



PRE-AMPLIFIER SECTION

The preamplifier section, which is separable from the main amplifier section, serves as an input and control center as well as amplifying the minute phono cartridge or tuner signal to feed the amplifier. With the exception of delivering large amounts of power, therefore, the preamp must be as capable as the amplifier.

In the amplifier section of Onkyo's A7, phono equalizers are based on Class A, differential push-pull circuitry with exceptionally low noise characteristics. The A7, for example, shows a S/N ratio of 80 dB in phono.

Phono overload specifications are equally impressive for both units, providing 230 mV RMS at 1 kHz, 0.1% THD for the A7 and 170 mV RMS at 1 kHz, at 0.1% THD for the A5. Because of the excellent

RIAA Curve Deviation of ± 0.3 dB, 30 Hz to 15 kHz, sound is superbly and accurately reproduced from your records. The exceptional phono overload characteristics also provide excellent transient response in both input and output as shown in the graph above, particularly in the phono equalizer.

Controls have been designed with human engineering in mind for logical placement and positive action. For example, in the A5, Onkyo devoted extra attention and positive action. And in the A7, Onkyo devoted extra attention and expense in the type of control knobs for more accurate volume and tone control. Rather than sliding or potentiometer type controls, both the A5 and A7 feature detents or "clickstops" for easy return to set positions. The A5 uses a 41-detent volume type control, while the A7 uses a 32-detent trimmed attenuator control.

The A7's tone controls are 11-detent trimmed switch types with a 2 dB per step and changeable turnover frequency.

The A5 uses an

11-detent volume type control and features a Tone Defeat Switch to disable when required.

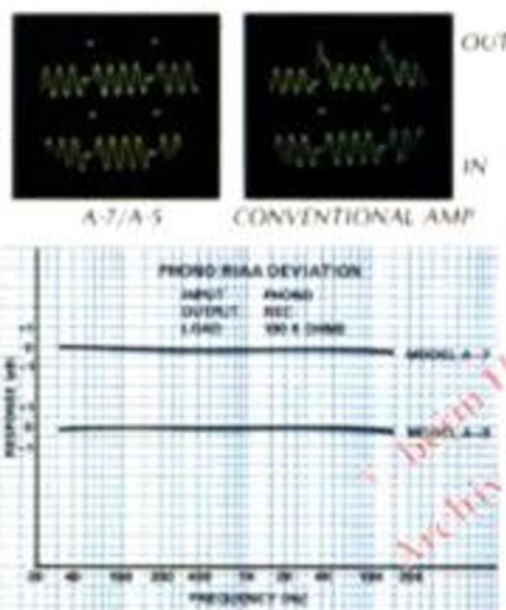
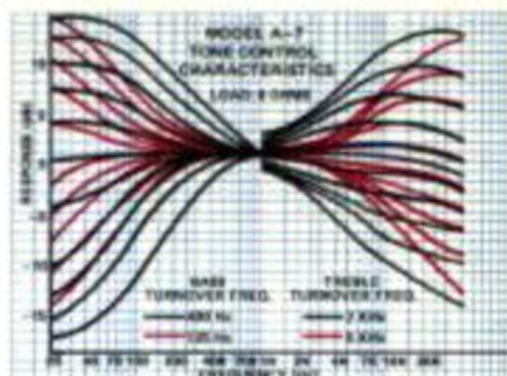
Tape and tape dubbing facilities show the fine Onkyo touch. Both amplifiers can dub from Tape 1 to Tape 2 and the reverse. Onkyo has provided another convenience, however, by adding an OFF switch position so there is no load on the REC terminal, giving better sound.

Both the A5 and A7 feature a subsonic filter which effectively eliminates most all low frequency interference from old records or turntable rumble without affecting the total sound.

Other control features include four-way speaker Selector switch for System A, System B, Off or Systems A+B. A Loudness control provides tonal compensation at every volume level.

A transient killer circuit is also included which eliminates the popping noise when the switch is turned on.

Both design and construction of the preamp sections are in every way comparable to the distinguished performance of the amplifiers for total effect which provides exquisite performance with any type of program material.



ONKYO A-5 ONKYO A-7

A new breed of solid state integrated amplifier featuring reserve power for deep down bass and low distortion. An amplifier's output is the sum of its input plus whatever noise and distortion are added during the amplification process. The best amplifiers are designed and built to add as little as possible to the original signal. Onkyo's A5 and A7 integrated amplifiers add to your listening pleasure and not to the program material.



SPECIFICATIONS

Power output, watts per channel, minimum RMS at 4 ohms, both channels driven, from 20 Hz to 20 kHz with no more than 0.1% THD

A-5 A-7

50 70

Power output, watts per channel, minimum RMS at 8 ohms, both channels driven, from 20 Hz to 20 kHz with no more than 0.1% THD

45 65

Power output, watts per channel, minimum RMS at 4 ohms, both channels driven at 1 kHz, 0.1% THD

60 75

Power output, watts per channel, minimum RMS at 8 ohms, both channels driven at 1 kHz, 0.1% THD

50 68

POWER AMPLIFIER SECTION

TOTAL HARMONIC DISTORTION

At rated power
At 1 watt output

A-5	A-7
0.1% (Tuner) 0.08% (Tuner)	0.1% (Aux) 0.08% (Aux)

IM DISTORTION (70 Hz:7 kHz=4:1)

At rated power
At 1 watt output

A-5	A-7
0.1% (Tuner) 0.08% (Tuner)	0.1% (Aux) 0.08% (Aux)

FREQUENCY RESPONSE (± 1 dB)

SQUARE WAVE RESPONSE

Tilt at 50 Hz

A-5	A-7
better than 5%	better than 5%

S/N RATIO (IHF A NETWORK)

DAMPING FACTOR AT 8 OHMS

INPUT IMPEDANCE

RATED INPUT

LOAD IMPEDANCE

A-5	A-7
25 kohms	100 kohms
1.5 volts	1.5 volts
4-16 ohms	4-16 ohms

PREAMPLIFIER SECTION

Input Sensitivity & Impedance

Phono 1, 2
Tuner
Tape Play 1, 2
Aux

A-5	A-7
2.5 mV, 50 kohms	2.5 mV, 50 kohms
150 mV, 50 kohms	150 mV, 50 kohms
150 mV, 50 kohms	150 mV, 50 kohms
150 mV, 50 kohms	150 mV, 50 kohms

TOTAL HARMONIC DISTORTION (AT RATED OUTPUT)

IM DISTORTION (70 Hz:7 kHz=4:1)

At rated output

A-5	A-7
0.08%	0.05%
0.08%	0.08%

FREQUENCY RESPONSE

Phono

A-5	A-7
± 0.3 dB at 30-15,000 Hz	± 0.2 dB at 30-15,000 Hz
+0, -1 dB at 15-40,000 Hz	+0, -1 dB at 10-50,000 Hz
	+0, -1 dB at 10-50,000 Hz

Tuner

Aux

PHONO OVERLOAD

TONE CONTROLS

Bass

Treble

A-5	A-7
± 10 dB at 100 Hz	± 10 dB at 100 Hz (Turnover at 400 Hz)
± 10 dB at 10 kHz	± 10 dB at 10 kHz (Turnover at 2 kHz)

OUTPUT VOLTAGE

OUTPUT IMPEDANCE

MUTING

LOUDNESS (-40 dB)

At 100 Hz
At 10 kHz

A-5	A-7
+5 dB +5 dB	+5 dB +5 dB

TURNOVER FREQUENCY

Bass

Treble

A-5	A-7
	400 Hz, 125 Hz 2 kHz, 8 kHz

FILTERS

Subsonic
High

A-5	A-7
10 Hz (6 dB/Oct)	10 Hz (6 dB/Oct) 5 kHz (6 dB/Oct)

SIGNAL TO NOISE RATIO (IHF A NETWORK)

Phono
Tuner
Aux

A-5	A-7
75 dB 90 dB	80 dB 90 dB 90 dB

CONTROLS

A-5

Power
Speakers (Off, A, B, A + B)
Selector (Phono 1, Phono 2, Tuner)
Tape Monitor (Tape 1, Source, Tape 2)
Tape Dubbing (Tape 2-1, Off, Tape 1-2)
Volume
Balance
Treble
Bass
Tone Defeat
Muting
Loudness
Mode
Subsonic Filter

A-7

Power
Speakers (Off, A, B, A + B)
Selector (Phono 1, Phono 2, Tuner, Aux)
Tape Monitor (Tape 1, Source, Tape 2)
Tape Dubbing (Tape 2-1, Off, Tape 1-2)
Volume
Balance
Treble
Bass
Turnover Frequencies
(Bass, 125 Hz, Defeat 400 Hz)
(Treble, 2 kHz, Defeat 8 kHz)
Muting
Loudness
Mode
Subsonic Filter
High Filter

OUTPUTS

A-5

Speaker A, B, Headphones
Tape Record Out 1, 2
Preamp Out

A-7

Speaker A, B, Headphones
Tape Record Out 1, 2
Preamp Out

INPUTS

A-5

Phono 1, 2
Tuner
Tape Play 1, 2
Main In

A-7

Phono 1, 2
Tuner
Aux
Tape Play 1, 2
Main In

DIMENSIONS

A-5	A-7
17 1/2" W x 6 1/2" H x 15" D	17 1/2" W x 6 1/2" H x 15" D
444 mm x 159 mm x 380 mm	444 mm x 159 mm x 380 mm

WEIGHT

A-5	A-7
25.8 lbs./11.7 kg	29.7 lbs./13.5 kg

Embossed vinyl over metal cabinet.
Limited three-year parts and limited two-year
labor warranty.

ONKYO® Artistry in Sound

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