

Accuphase

PRECISION STEREO CONTROL CENTER

C-2420

- AAVA volume control for high performance and outstanding sound
- Separate power transformers for left and right channels
- Selectable preamp gain
- Fully modular construction with separate left/right units for each amplifier stage
- Logic-controlled relays for shortest signal paths
- Independent phase selection for each input position
- Optional phono equalizer unit allows playback of analog records
- Side panels with elegant natural wood finish





Further advanced AAVA volume control elevates performance to a new realm — A preamplifier for the next generation, featuring AAVA technology developed for the C-2800 and C-2820. Modular design of AAVA and other amplifier sections realized in a dual-mono construction with separate power supplies. Preamplifier overall gain selection setting and phase selection settings for each input position stored in memory. Numeric indication of volume level. Optional phono equalizer unit allows playback of analog records with ultimate fidelity.

The Precision Stereo Control Center C-2420 reflects the refined sonic sensibility of Accuphase while incorporating advanced technology features developed for the C-2800 and C-2820. A full model change has further elevated performance and sound quality to new heights.

Ever since being first introduced in the C-2800 preamplifier in 2002, AAVA technology has been continually refined and improved, while of course retaining the underlying principle. The AAVA volume control operates fully in the analog domain, but it eliminates all potentiometers from the signal path. The advantages of this approach are many: outstanding S/N ratio, extremely low distortion, no change in frequency response and sound quality at any listening level, no left/right level differences or crosstalk, and no other performance related degradations. The conventional concept of volume control in analog preamplifiers is now well and truly a thing of the past. Like the C-2820, the new C-2420 features a high-rigidity, high-precision volume sensor extruded from a solid aluminum block and linked directly to the massive volume knob. Both operation feel and accuracy of operation are significantly improved by this design.

The C-2420 features separate power supplies for left and right channel, each with a dedicated power transformer, filtering capacitors and peripheral circuitry. Modular units for the line input, balanced input, AAVA, and other circuit stages are arranged separately for left and right channels, to eliminate any risk of unwanted electrical or mechanical interaction between the two stereo channels. A wide variety of versatile functions make the C-2420 a true control center. There are tone controls designed for optimum sonic performance, a loudness compensator, subsonic filter, recorder related functions, overall preamp gain selection, EXT PRE provision for use of another preamplifier, individual phase selection for each input position, and more.

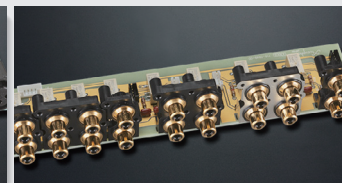
The separately available Phono Equalizer Unit AD-2820 supports both MC and MM cartridges and allows the reproduction of analog records with utmost fidelity. Advanced technology enables performance and sound quality on a level that approaches the realm of top-of-the-line products. The C-2420 ushers in a new era of preamplifier excellence.

■ Short and straight signal paths, along with logic-controlled relays for signal switching assure high sound quality and long-term reliability.



Balanced input and output connectors

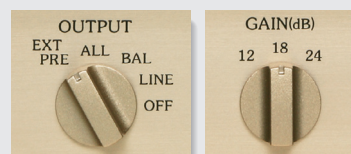
■ Versatile arrangement of line and balanced input and output connectors.



Line input and output connectors

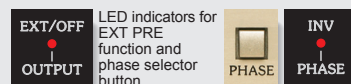
■ EXT PRE function allows use of external preamplifier.

■ Selectable preamplifier gain with three settings (12 dB, 18 dB, 24 dB).



Gain selector

■ Output phase selectable individually for each input, with visual indication. When INV LED is lit, output phase is inverted. When LED is out, phase is normal.

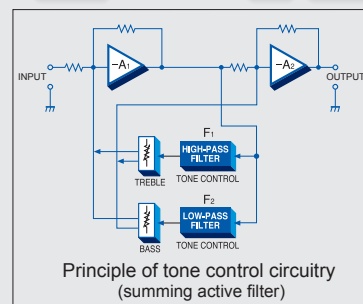


■ Dedicated headphone amplifier ensures great sound and features two selectable gain settings (standard, +10 dB) for optimum matching to headphone efficiency.

■ Fully balanced input circuit shuts out external noise.

■ Side panels with beautiful natural wood finish.

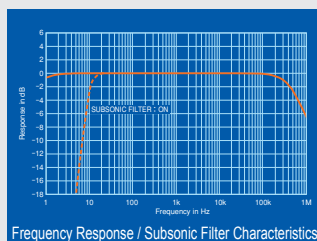
■ Tone controls using summing active filters for optimum sound quality.



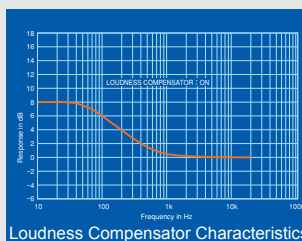
Principle of tone control circuitry (summing active filter)

■ More versatile features:

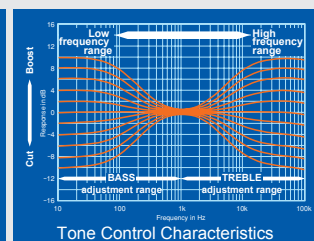
- Provisions for recording and playback with a recorder
- Loudness compensator enhances low end presence
- Attenuator (-20 dB)
- Subsonic filter for removing ultra-low-frequency noise
- Numeric indication of preamplifier overall gain and volume level



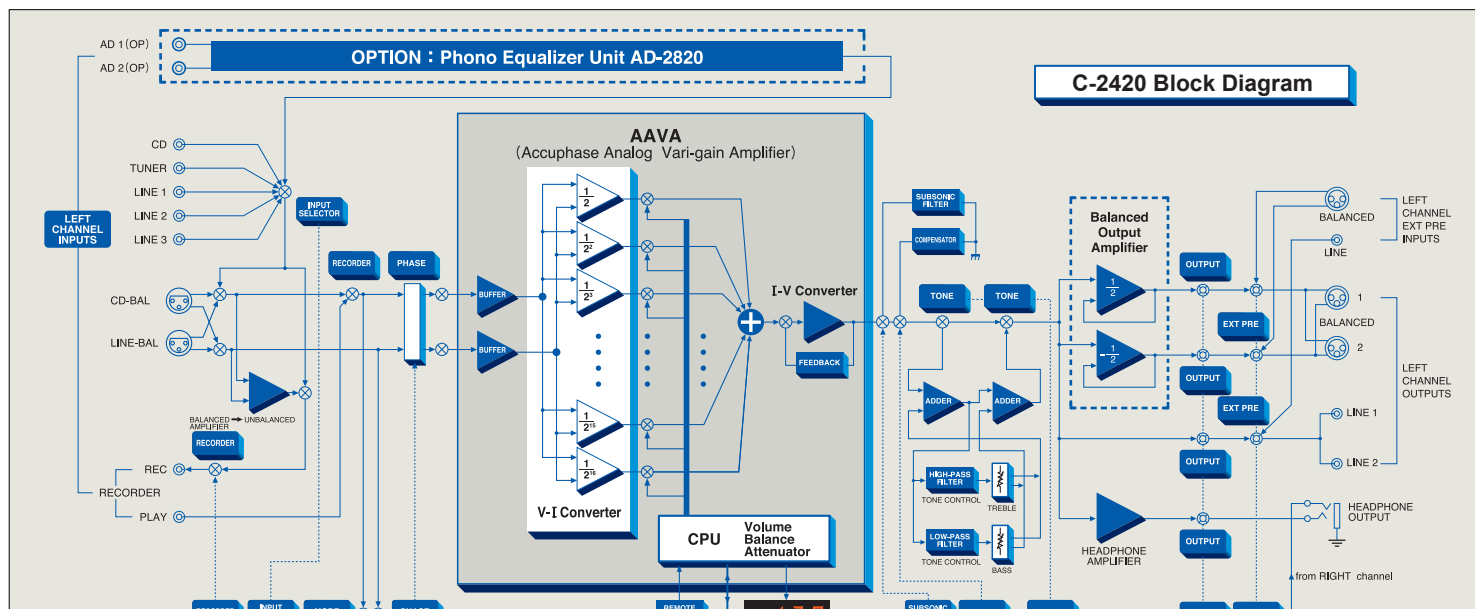
Frequency Response / Subsonic Filter Characteristics



Loudness Compensator Characteristics



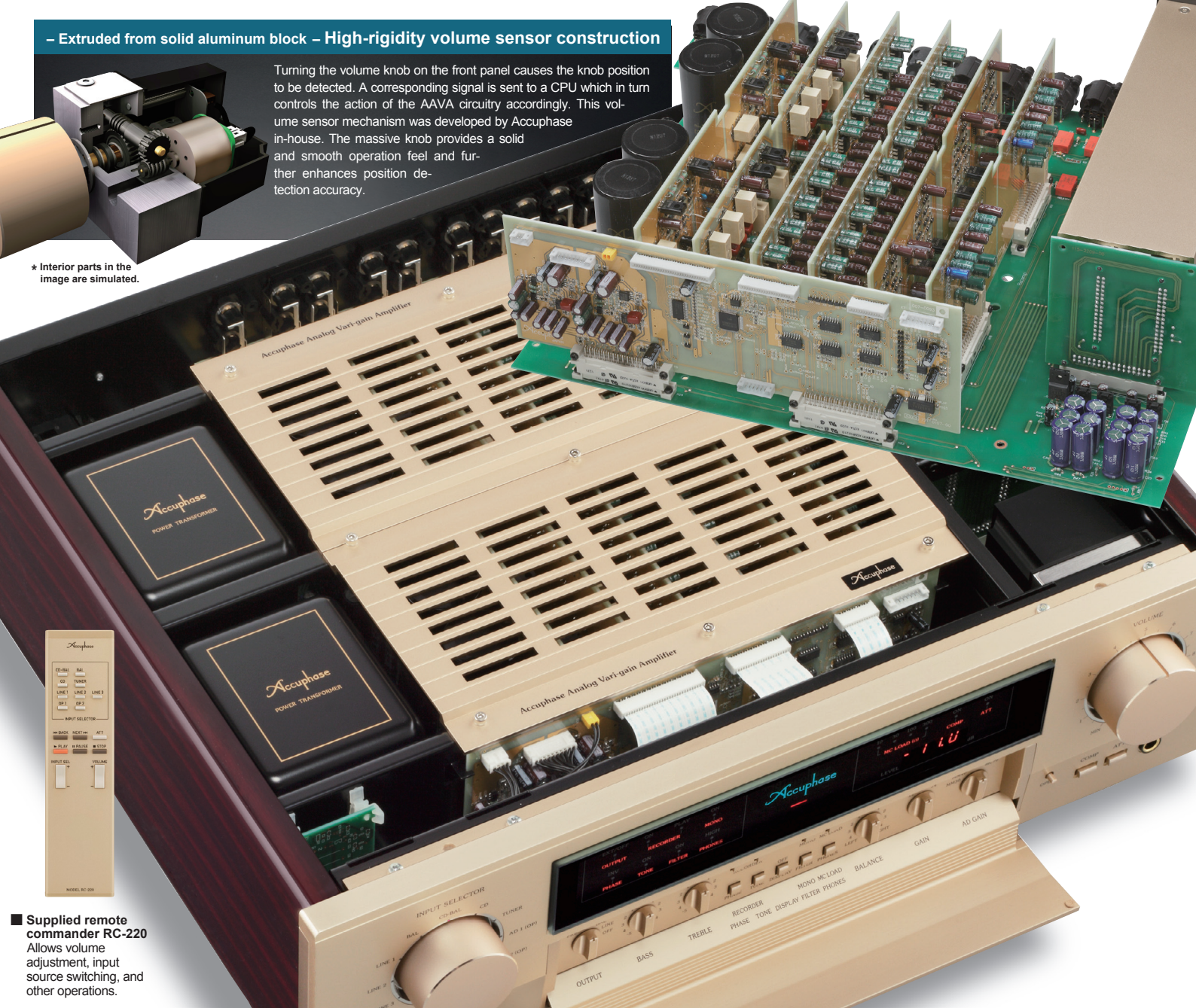
Tone Control Characteristics



– Extruded from solid aluminum block – High-rigidity volume sensor construction

Turning the volume knob on the front panel causes the knob position to be detected. A corresponding signal is sent to a CPU which in turn controls the action of the AAVA circuitry accordingly. This volume sensor mechanism was developed by Accuphase in-house. The massive knob provides a solid and smooth operation feel and further enhances position detection accuracy.

* Interior parts in the image are simulated.



■ **Supplied remote commander RC-220**
Allows volume adjustment, input source switching, and other operations.

AAVA (Accuphase Analog Vari-gain Amplifier) Volume Control

■ Total of 18 V-I converter amplifiers, with dual buffer amplifiers in input stage for powerful drive capability

The AAVA input stage uses separate buffers for the inverted and non-inverted side of the balanced input, and features 18 V-I amplifiers, with the amplifiers for the upper two bits being paralleled for further improved S/N ratio.

■ No more left/right tracking differences or crosstalk

Because the channels can be kept separate, there is virtually no left/right tracking error also at very low volume levels, and crosstalk does not present a problem.

■ Amplifier display shows accurate gain

When the volume knob is turned, the selected volume level is clearly indicated by the numeric display on the front panel.

■ AAVA ensures high S/N ratio, low distortion, as well as uniform frequency response and sound quality at any volume

Because AAVA does not introduce a change in impedance, there is no deterioration of S/N ratio at any volume setting, and frequency response remains totally uniform. Therefore the tonal quality is practically not altered.

■ Volume control resolution

AAVA adjusts the listening volume by means of 16 weighted V-I converter amplifiers which are controlled by current switches. The number of possible volume steps set by the combination of these converter amplifiers is 2 to the power of 16 = 65,536.

■ Attenuator and left/right balance control also implemented by AAVA

Keeping the circuit configuration simple helps to maintain high performance and sonic purity.

■ High performance and sound quality to last

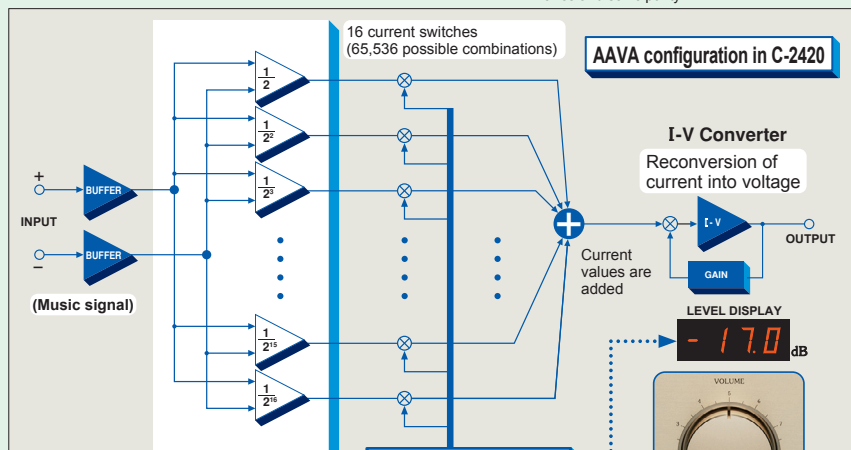
AAVA unifies the amplifier and volume control functions, resulting in a circuit that is electrically very simple. Long-term reliability is excellent, with performance and sound quality that will remain unchanged also after prolonged use.

■ AAVA means analog processing

The AAVA circuit converts the music signal from a voltage into a current, alters gain by means of current switches, and then reconverts the current into a voltage. The entire process is carried out in the analog domain.

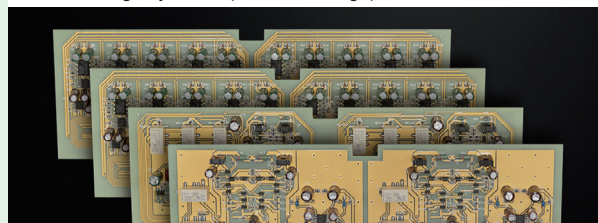
■ Same operation feel as a conventional high-quality volume control

Operating the volume knob feels exactly the same as with a conventional control, and operation via the remote commander is also possible.

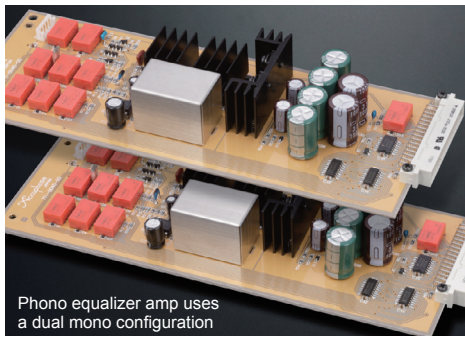


AAVA operation principle

The music signal is converted into 16 types of weighted current by V-I (voltage - current) converting amplifiers [$1/2$, $1/2^2$, ..., $1/2^{15}$, $1/2^{16}$]. The 16 currents are turned on or off by 16 current switches, and the combination of switch settings determines the overall volume. The switching operation is controlled by a CPU to match the position of the volume control knob. The combined current forms a variable gain circuit that adjusts the volume of the music signal. The respective currents are combined and converted back into a voltage by an I-V (current - voltage) converter.



Dedicated Phono Equalizer Unit AD-2820

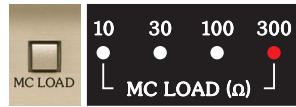


Phono equalizer amp uses a dual mono configuration



AD GAIN selector

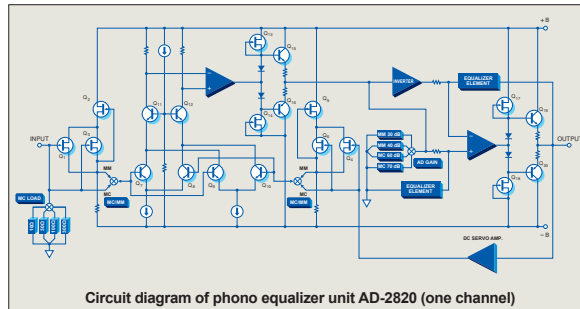
Function setting controls on C-2420 front panel



MC LOAD selector buttons and LED indicators

Analog records can be reproduced by installing the dedicated phono equalizer unit AD-2820 in a special slot on the rear panel. The AD-2820 features separate input circuitry for MC and MM cartridges to ensure optimum matching for each cartridge type. The balanced output stage configuration minimizes noise and ensures highly pure playback. The printed circuit boards are made from glass cloth fluorocarbon resin and housed in a sturdy aluminum case for complete protection against any external interference. Shortest possible connection between inputs and amplifier circuitry assures outstanding S/N ratio.

- MC [Gain: 60/70 dB, switchable
Input impedance: 10/30/100/300 ohms, switchable
- MM [Gain: 30/40 dB, switchable
Input impedance: 47 kilohms



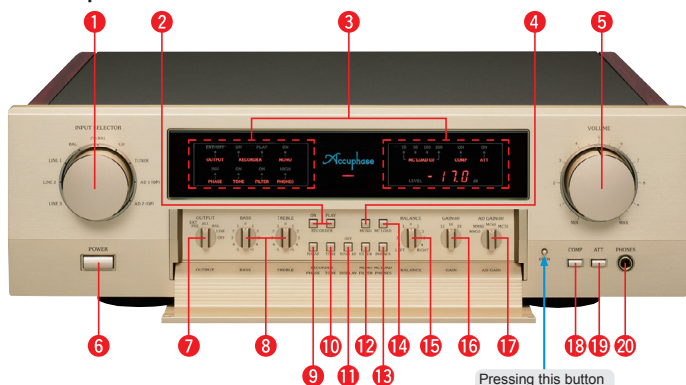
Circuit diagram of phono equalizer unit AD-2820 (one channel)

* For information regarding use in other preamplifier models (C-2810, C-2410 etc.), or regarding compatibility with previous phono equalizer units (AD-2810 etc.), please contact the Quality Assurance Department of Accuphase.



AD-2820 installed

Front panel



Rear panel



- 1 Input selector
- 2 Recorder buttons ON / PLAY
- 3 LED function indicators
- 4 Stereo/mono selector button
- 5 Volume control knob
- 6 Power switch
- 7 Output selector
- 8 Bass/treble controls
- 9 Phase selector button
- 10 Tone control on/off button
- 11 Display on/off button
- 12 Subsonic filter
- 13 Headphone level selector
- 14 MC load impedance selector button
- 15 Balance control
- 16 Gain selector 12 dB / 18 dB / 24 dB
- 17 AD gain selector
- 18 Loudness compensator button
- 19 Attenuator button
- 20 Headphone jack
- 21 Line input connectors TUNER / CD / LINE 1, 2, 3
- 22 Recorder playback/recording connectors
- 23 Line output connectors (2 sets)
- 24 EXT PRE input connectors
- 25 Balanced input connectors (2 sets)
- 26 Balanced output connectors (2 sets)
- 27 EXT PRE input connectors (balanced)
- 28 AC power supply connector (for supplied power cord)*

Supplied accessories

- Power cord
- Audio cables with plugs (1 m)
- Remote commander RC-220
- Cleaning cloth

Remarks

- ★ This product is available in versions for 120/220/230 V AC. Make sure that the voltage shown on the rear panel matches the AC line voltage in your area.
- ★ 230 V version has an Eco Mode that switches power off after 120 minutes of inactivity.
- ★ The shape of the AC inlet and plug of the supplied power cord depends on the voltage rating and destination country.

C-2420 Guaranteed Specifications

- * Guaranteed specifications are measured according to EIA standard RS-490. AD stands for "Analog Disc".
- * Specifications are shown for phono equalizer unit AD-2820 installed.
- * Gain selector set to 18 dB position.

- Frequency Response BALANCED/LINE INPUT: 3 - 200,000 Hz +0, -3.0 dB
20 - 20,000 Hz +0, -0.2 dB
AD INPUT (MM/40 dB, MC): 20 - 20,000 Hz ±0.2 dB
AD INPUT (MC/30 dB): 20 - 20,000 Hz ±0.3 dB

- Total Harmonic Distortion (for all inputs) 0.005%

- Input Sensitivity, Input Impedance

Input	Input Sensitivity For rated output	Input Sensitivity For 0.5 V output impedance	Input impedance
AD-MM/30 dB INPUT	8.0 mV	2.0 mV	47 kilohms
AD-MM/40 dB INPUT	2.5 mV	0.63 mV	47 kilohms
AD-MC/60 dB INPUT	0.25 mV	0.063 mV	10/30/100/300 ohms, switchable
AD-MC/70 dB INPUT	0.08 mV	0.02 mV	10/30/100/300 ohms, switchable
BALANCED/LINE	252 mV	63 mV	40/20 kilohms

- Rated Output Voltage, Output Impedance BALANCED/LINE OUTPUT: 2 V 50 ohms
REC (with AD input): 252 mV 200 ohms

- Signal-to-Noise Ratio, Input-converted noise

Input	Input shorted (A weighting) S/N ratio at rated output	EIA S/N
AD-MM/30 dB INPUT	94 dB	85 dB
AD-MM/40 dB INPUT	84 dB	85 dB
AD-MC/60 dB INPUT	80 dB	85 dB
AD-MC/70 dB INPUT	72 dB	85 dB
BALANCED/LINE	109 dB	107 dB

- Maximum Output Level BALANCED/LINE OUTPUT: 7.0 V
(0.005% THD, 20 - 20,000 Hz) RECORDER REC (with AD input): 6.0 V
- Maximum LINE Input Level BALANCED/LINE INPUT: 6.0 V
- Maximum AD Input Level MM [30/40 dB] INPUT: 310/96.5 mV
(1 kHz, 0.005% THD) MC [60/70 dB] INPUT: 9.5/3.2 mV
- Minimum Load Impedance BALANCED/LINE OUTPUT: 600 ohms
RECORDER REC: 10 kilohms
- Gain (Gain selector: 18 dB) BALANCED/LINE INPUT → BALANCED/LINE OUTPUT: 18 dB
LINE INPUT → BALANCED/LINE OUTPUT: 18 dB
AD [MM: 30/40 dB] INPUT → BALANCED/LINE OUTPUT: 48/58 dB
AD [MM: 30/40 dB] INPUT → REC OUTPUT: 30/40 dB
AD [MC: 60/70 dB] INPUT → BALANCED/LINE OUTPUT: 78/88 dB
AD [MC: 60/70 dB] INPUT → REC OUTPUT: 60/70 dB

* Gain selector can be set to 12/18/24 dB

- Tone Controls Turnover frequency and adjustment range
BASS: 300 Hz ±10 dB (50 Hz)
TREBLE: 3 kHz ±10 dB (20 kHz)
- Loudness Compensation +6 dB (100 Hz)
- Subsonic Filter 10 Hz: -18 dB/octave
- Attenuator -20 dB
- Headphone Jack Suitable impedance: 8 ohms or higher
Output Level: 2 V (40 ohms)
- Power Requirements AC 120 V/220 V/230 V 50/60 Hz (Voltage as indicated on rear panel)
- Power Consumption 34 watts
- Maximum Dimensions Width 465 mm (18-5/16")
Height 150 mm (5-7/8")
Depth 409 mm (16-1/8")
(Depth 414 mm with AD-2820 installed)
- Mass 19.2 kg (42.3 lbs), 20.1 kg (44.3 lbs) with AD-2820 installed
25.0 kg (55.1 lbs) in shipping carton

