

PIONEER[®]

QX-747

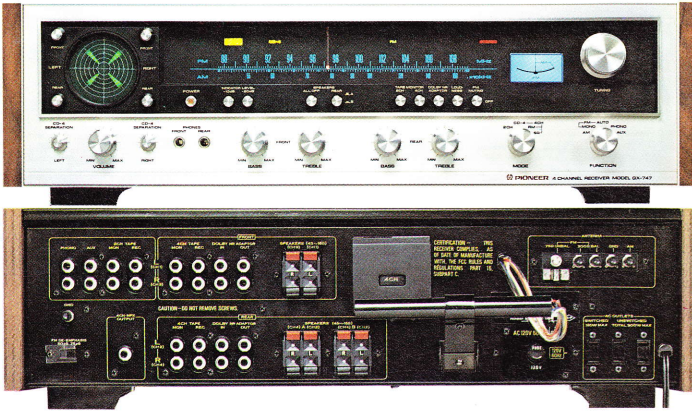
A full-capability four-channel stereo receiver, complete with built-in CD-4 demodulator and matrix decoding circuitry for regular matrix and SQ encoded sources.



Today's variety of four-channel program sources has created a need for a multi-purpose, total capability four-channel receiver that can decode and reproduce all sources without the addition of extra demodulators or other accessories. The QX-747 receiver from Pioneer fills that need — and then some. For the first time there is now a practically-priced, big power receiver that decodes all the four-channel sources — regular matrix, SQ matrix and CD-4 discrete discs; plays all four-channel tapes; plays all conventional two-channel discs and tapes. It is not necessary any more to add a CD-4 demodulator or SQ decoder to new four-channel equipment to "bring it up-to-date." Pioneer's QX-747 is the complete receiver. It's about time. From its four-gang variable capacitor and dual-gate MOS type FET in the front end to the

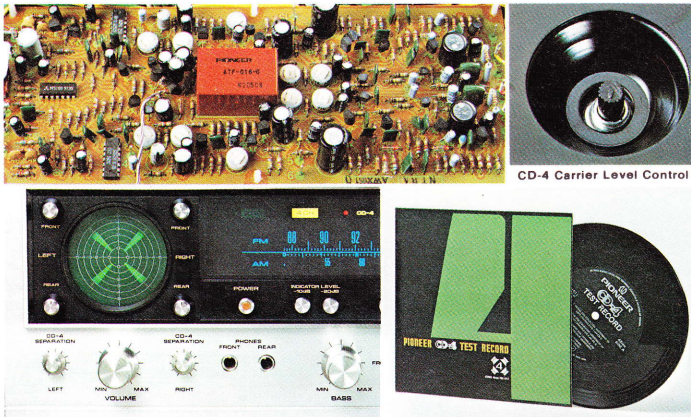
five-stage limiter and high-performance IC in the IF and multiplex section, the QX-747's AM/FM tuner section is loaded with the very latest solid state circuitry. There is complementary direct-coupled OCL circuitry in the power amplifier section that produces 20W x 4 of continuous RMS power, guaranteed over the critical 20 to 20,000Hz sound range. And by the use of a new "Power Boosting Circuit", the QX-747 converts this large four-channel power output to 40W x 2 when used as a two-channel receiver. Other features include an automatic protection circuit to prevent DC shock to speakers or power transistors, as well as a striking four-channel indicator on the front panel that lets you view all four-channel level adjustments. The QX-747 from Pioneer. The last world in four-channel sound.

QX-747



BUILT-IN CD-4 DEMODULATOR

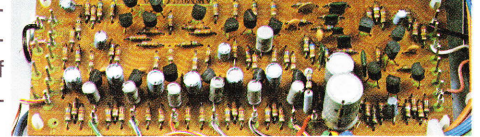
Because the discrete four-channel disc (CD-4), unlike other matrix four-channel discs, employs a special modulation technique for engraving four-channel signal information onto one disc groove, a special demodulator is necessary to achieve perfect four-channel performance from these discs. The QX-747 has this special demodulator built-in. This demodulator section employs an advanced circuit technology for stability and reliability, including PLL IC and FETs. It is not an "extra" piece of equipment adding to the cost of your four-channel investment. Playing CD-4 records with the QX-747 is accomplished with ease. Clear sound localization, one of the major virtues of CD-4, is achieved by simple manipulation of the separation controls and carrier level control by the use of the CD-4 test record that is included without cost with each receiver. These adjustments may be observed on the striking four-channel level indicator, another feature that is new and exclusive with the QX-747.



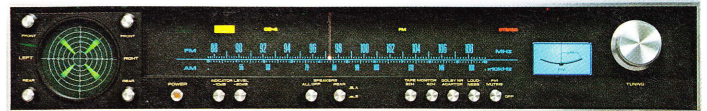
REGULAR MATRIX AND SQ MATRIX DECODERS BUILT-IN

The two other prominent four-channel systems for matrix decoding are also built-in to the QX-747 — regular matrix and SQ matrix. This means that this new Pioneer receiver gives you a choice of all the important four-channel program

sources, and has all the important four-channel circuitry built-in. The regular matrix position can be used to reproduce the majority of four-channel discs now available, and is equally effective in achieving excellent four-channel sound effects from your conventional two-channel discs or tapes. The SQ matrix position is used for exclusive playback of all SQ encoded program sources.



AM/FM STEREO TUNER SECTION



(1) SOPHISTICATED FM FRONT END

The important FM front end of the QX-747 contains a dual-gate MOS type FET (Field Effect Transistor) and a frequency linear four-gang variable capacitor. These solid state devices contribute immensely to the unit's high sensitivity of $1.9\mu\text{V}$ (IHF), its more than 80dB image rejection, and more than 100dB spurious rejection. FM reception at all times is both stable and sensitive, attesting to the precision manufacture of the QX-747.

(2) FIVE-STAGE LIMITER IN THE FM IF SECTION

The IC used in the QX-747's FM IF section is exclusive, designed to improve the IF performance characteristics. The limiter stage gives a capture ratio of 1dB (IHF), signal-to-noise ratio of 70dB and AM suppression of 55dB. The linearity of the detector circuit is most important for sound quality. In the QX-747 a quadrature detector circuit is employed for excellent linearity and low-distortion characteristics.

(3) EXCELLENT PHASE LINEARITY AND HIGH SELECTIVITY

So that inferior phase characteristics will not adversely influence sound quality, Pioneer has used "phase-linear" ceramic filters in the FM IF section. Two ceramic filters, each with two elements, are employed to improve the unit's selectivity characteristics more than 60dB (IHF) while suppressing distortion.

(4) HIGH-PERFORMANCE MPX IC

The double-balanced differential demodulator circuit used by Pioneer in the QX-747 remarkably improves MPX performance. Separation is wide, more than 40dB at 1KHz, and more than 30dB within 50 to 10,000Hz. Additionally, this type of MPX circuit is not influenced by SCA beat interruption. The sharp low-pass filter employed in this section suppresses carrier leakage to a minimum.

(5) EFFECTIVE FM MUTING SWITCH

The QX-747 is equipped with an FM muting switch without

noise and also suppresses undesirable inter-station noise when stations are tuned. This device also eliminates the annoying pop noise that often occurs when stations are tuned on or off.

(6) LINEAR FM DIAL SCALE AND TUNING METER

The FM dial scale of the QX-747 is the extra-wide linear type that facilitates easy and precise tuning of your favorite FM stations. The unit also features a dual-purpose tuning meter that acts as the center-tuning meter for FM as well as the signal strength meter for AM reception.

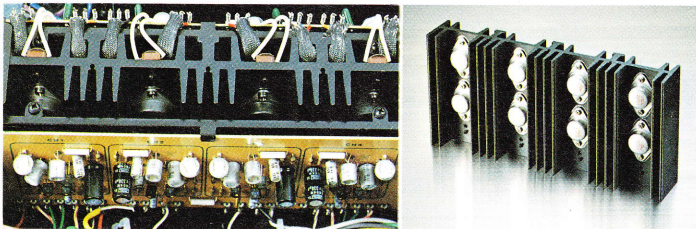
(7) OUTSTANDING AM SECTION

AM tuner reception is nearly the equal of FM reception in terms of tonal quality. An AM IC combined with ceramic filters ensures fine AM sound.

AMPLIFIER SECTION

(1) DIRECT-COUPLED OCL POWER AMPLIFIER

The power amplifier stage of the QX-747 is equipped with two separate DC power supplies and also features an all-stage direct-coupled OCL circuit. The use of the direct-coupling design means that coupling capacitors are eliminated between individual stages; it also results in a super wide frequency response curve ranging from near DC to well beyond the audible sound range. The entire power bandwidth from 7 to 40,000Hz (8 ohms, four-channels driven), is characterized by harmonic distortion of 0.5%. And in terms of power, the QX-747 produces 20W x 4 of continuous RMS power (8 ohms, four-channels driven, H.D. 0.5%), the minimum guaranteed figure within the 20 to 20,000Hz range. The 20 to 20,000Hz sound range, of course, is the most critical of all the specifications, since it is only within this range that the human ears are capable of hearing. It is by far the best evaluation of a receiver or amplifier's true performance.



(2) UNIQUE POWER BOOSTING CIRCUIT

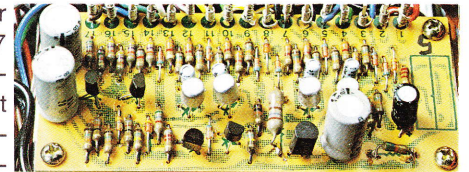
When used in the four-channel mode, the QX-747 delivers 20W x 4 of continuous RMS power. But when you choose to use it to play conventional two-channel sources, the unit's special "Power Boosting Circuit" converts this four-channel power into even greater two-channel



power—up to 40W x 2 of continuous RMS power. This power conversion can be done by changing the 2-CH/4-CH selector plug on the rear panel. This circuit device employs a micro power switch so that conversion can be accomplished even when the amplifier's power is turned on. Moreover, since this "Power Boosting Circuit" is not a BTL type, it is thus free from the BTL circuit's drawbacks, as the PBC does not employ the complicated circuitry of the BTL amplifiers. The QX-747 assures stable performance in both the two-channel or four-channel mode.

(3) ADVANCED PROTECTION CIRCUIT

The power amplifier section of the QX-747 includes an automatic protection circuit to protect your speakers and valuable power transistors from potential DC shock. This protection circuit also acts as a muting circuit to eliminate the irritating pop-noise that often occurs when you turn the power switch on.



(4) TOTAL 30,000 μ F ELECTROLYTIC CAPACITORS

The power supply section of the QX-747 employs large electrolytic capacitors to reproduce the extremely low-sound range with stability at high output power levels. These capacitors are the 15,000 μ F x 2 (total 30,000 μ F) types chosen for their extra power margin and for dynamic sound reproduction over the entire sound range.

(5) NFB (NEGATIVE FEEDBACK) TYPE TONE CONTROLS WITH CLICK-STOPS

Bass and Treble tonal adjustment in the QX-747 may be independently applied to both front and rear channels. These NFB (Negative Feedback) type controls operate with measured click-stops to offer accurate tonal adjustment.

OTHER QX-747 FEATURES

(1) FOUR-CHANNEL LEVEL INDICATOR

A unique four-channel level indicator is employed on the front panel of the QX-747 to permit you to observe the output level of each of the four-channels appearing on the viewing screen. The level of each channel may be adjusted by using the level controls provided near the indicator. You will find the indicator to be valuable for all channel level adjustments. CD-4 separation adjustment, for example, is easily achieved by viewing the screen, which is also a beautiful display device. Indication level (sensitivity) of the indicator can be set to 0dB (normal), -10dB, -20dB, -30dB, according to the volume level and the balance of each of the four-channels.

(2) REAR SPEAKER SELECTION

You can connect up to three pairs of speaker systems with the QX-747, one for the front channels and two for the rear channels. This versatility gives you the choice of either A

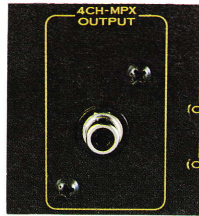
or B rear speakers simply by pushing a speaker selector button situated on the front panel. The speaker connecting terminals are the "one-touch" adjustment type for installation convenience.

(3) TWO PAIRS OF TAPE TERMINALS

The QX-747 handles two tape decks, one for two-channel, the other for four-channel usage. This means that tape-to-tape duplication or dual recording is easily accomplished. Additionally, you may connect a noise reduction unit, such as the latest* Dolby, to the QX-747 and assure noise-free tape recording and playback. For this function, a NR (Noise Reduction) Adaptor switch is provided on the front panel. If the noise reduction unit is not used, the NR switch may be used to connect a third tape deck to the receiver.

(4) 4-CH. MPX OUT TERMINAL

A 4-CH. MPX OUT terminal is located on the back panel, enabling you to hook up an FM four-channel adaptor to receive FM discrete four-channel broadcasts when they become available in the future.



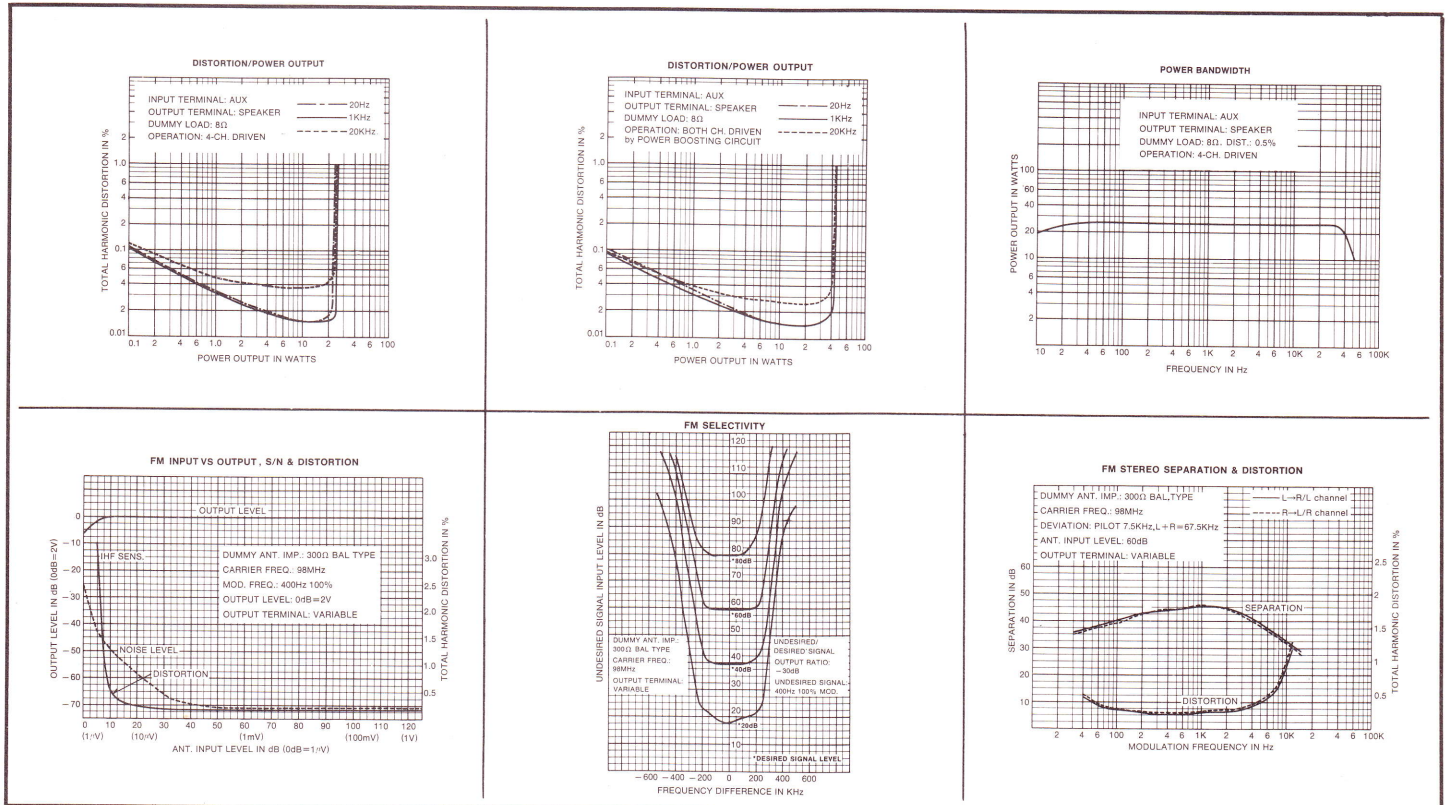
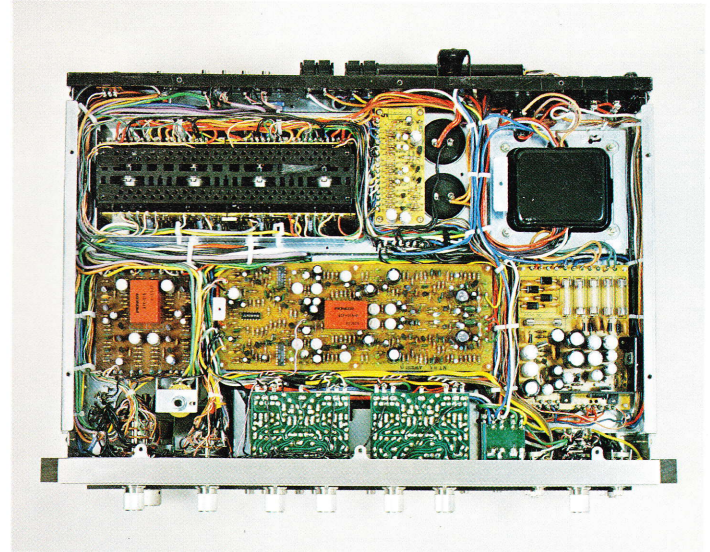
(5) LOUDNESS CONTOUR SWITCH

The QX-747 is equipped with a loudness contour switch to offer a natural sound contour at low volume levels and to

enhance the overall tonal quality of the receiver.

(6) OTHER FACILITIES

AUX terminals are provided so that you may add other sound sources, such as a cassette tape deck, to your system of stereo components.



* The word "Dolby" is a trademark of Dolby Laboratories, Inc.

15,000 μ F x 2 ELECTROLYTIC CAPACITORS

RELAY SWITCH FOR PROTECTION CIRCUIT

MATRIX CIRCUIT FOR CD-4 DEMODULATOR

AM/FM TUNER SECTION

RM/SQ DECODER SECTION

POWER TRANSFORMER

HEAT SINK

VARIABLE CAPACITOR
(FM 4-gang, AM 2-gang)

POWER AMPLIFIER SECTION

4-CH. MPX OUT TERMINAL

SPEAKER TERMINALS

2-CH. POWER BOOSTING SWITCH

ANTENNA TERMINALS

SENSITIVITY SELECTORS
FOR 4-CH. LEVEL INDICATOR

POWER SWITCH

4-CH. LEVEL INDICATOR

4-CH. LEVEL CONTROLS

SPEAKER SELECTORS

2-CH. TAPE MONITOR SWITCH

4-CH. TAPE MONITOR SWITCH

DOLBY NR ADAPTOR SWITCH

LOUDNESS CONTOUR SWITCH

FM MUTING SWITCH

CD-4 SEPARATION CONTROL

VOLUME CONTROL

CD-4 SEPARATION CONTROL

HEADPHONE JACKS

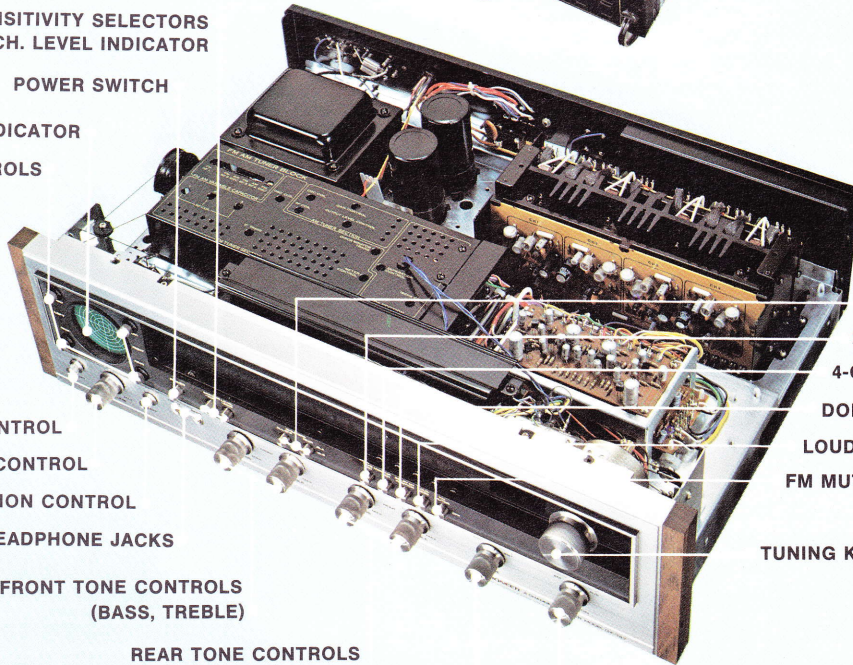
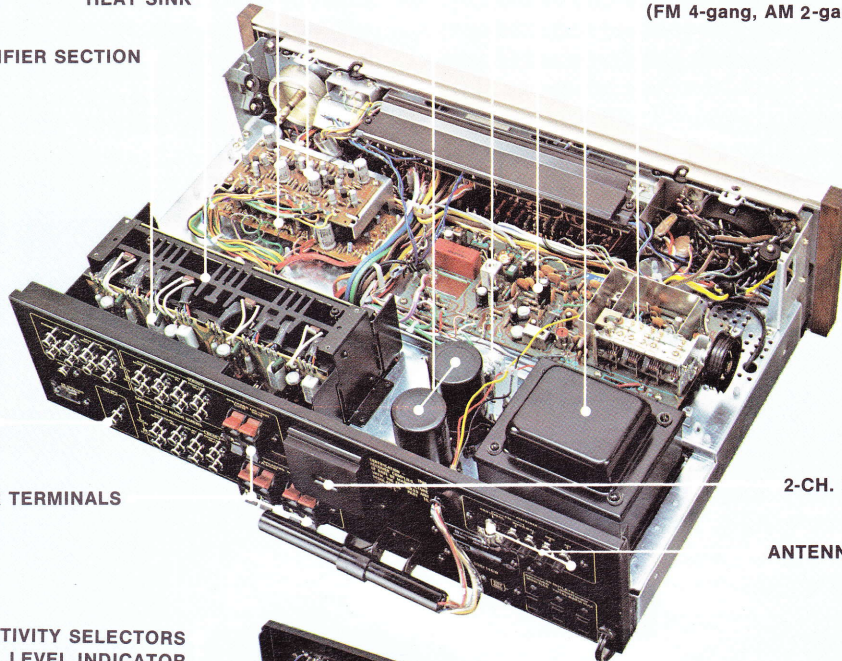
FRONT TONE CONTROLS
(BASS, TREBLE)

REAR TONE CONTROLS
(BASS, TREBLE)

TUNING KNOB

MODE SWITCH

FUNCTION SWITCH



**SPECIFICATIONS
SEMICONDUCTORS**

FETs: 9
ICs: 6
Transistors: 123
Diodes: 66

FM TUNER SECTION

Circuitry: 1 MOS FET, 1-stage RF amplifier,
4-gang variable capacitor,
5-stage limiter

Usable Sensitivity (IHF): 1.9 μ V
Capture Ratio (IHF): 1dB
Selectivity (IHF): 60dB
Signal-to-Noise Ratio: 70dB
Image Rejection: More than 80dB (98MHz)
IF Rejection: More than 100dB (98MHz)
Spurious Rejection: More than 100dB
AM Suppression: 55dB
Harmonic Distortion: Mono; less than 0.2%
Stereo; less than 0.4%

Frequency Response: 20Hz to 15KHz +0.2dB, -2.0dB
50Hz to 10KHz +0.2dB, -0.5dB

Stereo Separation: More than 40dB (1KHz)
More than 30dB (50Hz to 10KHz)

Sub Carrier Suppression: 65dB
Antenna Input: 300 ohms balanced and 75 ohms
unbalanced
ON-OFF

**Muting:
AM TUNER SECTION**

Circuitry: 1-stage RF amplifier,
2-gang variable capacitor
Sensitivity: 300 μ V/m (IHF, ferrite antenna)
15 μ V (IHF, ext. antenna)
Selectivity: 35dB
Signal-to-Noise Ratio: 50dB
Image Rejection: More than 45dB
IF Rejection: More than 55dB
Antenna: Built-in ferrite loopstick antenna

AMPLIFIER SECTION

Circuitry: Direct coupled complementary, OCL

Continuous Power Output:
20Hz to 20KHz 20 watts x 4 (8 ohms)
(4-channels driven): 25 watts x 4 (4 ohms)
1KHz (4-channels driven): 25 watts x 4 (8 ohms)
30 watts x 4 (4 ohms)
1KHz (Each channel driven): 33 watts/ch. (8 ohms)
45 watts/ch. (4 ohms)

Continuous Power Output (by 2-ch. power boosting circuit)
20Hz to 20KHz 40 watts + 40 watts (8 ohms)
(2-channels driven): 50 watts + 50 watts (4 ohms)
1KHz (2-channels driven): 45 watts + 45 watts (8 ohms)
55 watts + 55 watts (4 ohms)
1KHz (Each channel driven): 50 watts/ch. (8 ohms)
65 watts/ch. (4 ohms)

Harmonic Distortion: Less than 0.5%
(continuous power output)
Less than 0.05%
(1 watt x 4 power output)

Intermodulation Distortion: Less than 0.5%
(continuous power output)
Less than 0.05%
(1 watt x 4 power output)

Power Bandwidth: 7Hz to 40KHz (IHF, 4-channels driven)

Output Speaker: Front; A, (4 to 16 ohms)
Rear; A, B (4 to 16 ohms)
Headphone: Front & Rear

Damping Factor: More than 35 (1KHz, 8 ohms)

Residual Hum & Noise: Less than 1mV
(8 ohms, pre & power amp.)

Input Sensitivity/Impedance:
PHONO 1: 2.2mV/50 Kohms
PHONO Overload Level (rms/p-p): 100mV/280mV
AUX: 140mV/100 Kohms
TAPE MONITOR (2-ch., 4-ch.): 140mV/100 Kohms

Output Level/Impedance:
TAPE REC (2-ch., 4-ch.): 140mV

Frequency Response
PHONO (RIAA equalization): 30Hz to 15KHz \pm 1dB
AUX, TAPE MON: 10Hz to 25KHz +0.5dB, -1dB

Tone Control
BASS: \pm 10dB (100Hz)
TREBLE: \pm 10dB (10KHz)

Loudness Contour (volume control
set at -40dB position): +6dB (100Hz)
+3dB (10KHz)

Hum & Noise (IHF, short-circuited A network)
PHONO: More than 70dB
AUX, TAPE MON: More than 90dB

CD-4 DEMODULATOR SECTION

Input Sensitivity: 2.5mV (1 to 5mV adjustable)
Input Impedance: 100 Kohms
Distortion: 0.07%
Signal-to-Noise Ratio: More than 70dB (IHF, A network)
Separation: Left to Right; 50dB
(STD test signal at 1KHz): Front to Rear; 30dB
Frequency Response: 20Hz to 15KHz

MISCELLANEOUS

Built-in CD-4 Demodulator,
Regular Matrix Decoder,
SQ Matrix Decoder

Power Requirements: U.S.A. and Canada model; 120V 60Hz
only or 110, 120, 130, 220, 240V
(switchable) 50-60Hz

Power Consumption: UL model; 140 watts,
other model; 340 watts

AC Outlets: Switched; 1, Unswitched; 2

Dimensions: Without package:
550(W) x 160(H) x 420(D) mm
21-21/32(W) x 6-5/16(H) x 16-17/32(D)
inches
With package:
662(W) x 271(H) x 525(D) mm
26-1/16(W) x 10-21/32(H) x
20-21/32(D) inches

Weight: Without package: 19.1kg/42 lb. 2 oz.
With package: 23.6kg/52 lb.

NOTE: Specifications and design subject to possible modification without notice.



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