

PIONEER

SX-650



High-Medium Powered Stereo Receiver with FET FM Front End, PLL MPX, Precision Phono Equalizer and Plus/Minus Split Power Supply for OCL Power Amplifier.

Trust Pioneer to make your shopping for a stereo receiver as easy as one-two-three. One: First, determine the amount of power output you need. Your Pioneer dealer can help with this. If your listening room is of average size, chances are that the Pioneer SX-650 will be just right. It delivers a continuous power output of 35 watts* per channel, min. RMS at 8 ohms, from 20 to 20,000 Hertz, with no more

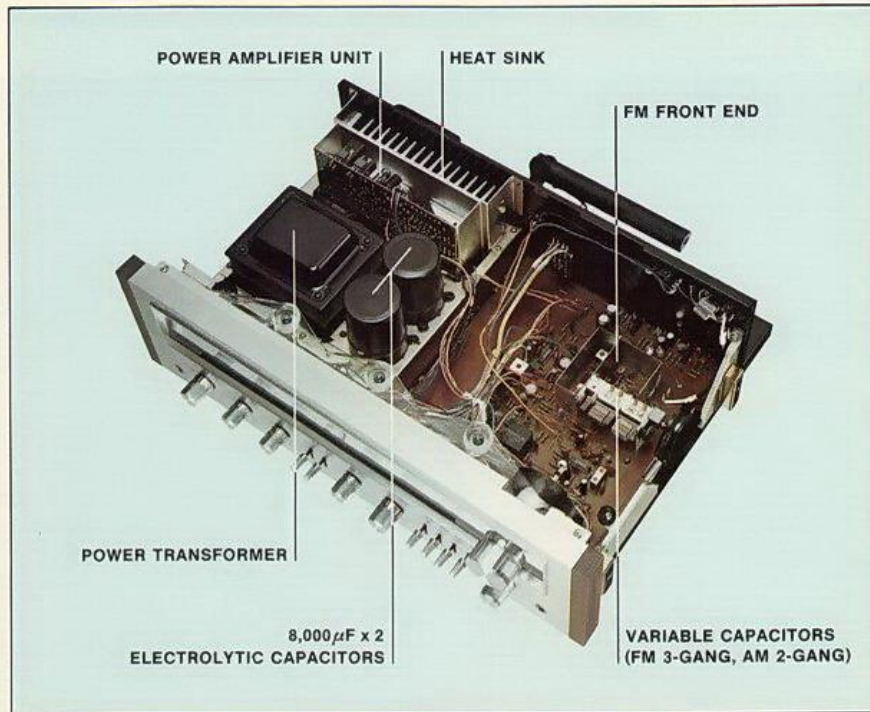
than 0.3% total harmonic distortion. Two: Be honest with yourself about the kind of preamplifier control versatility you really need. The Pioneer SX-650 has click-stop tone controls with center-defeat positions, a high filter, tape-to-tape dubbing and more. But it saves you money by leaving the frills to more expensive units, concentrating instead on real preamp performance—such as including a super-quiet

phono equalizer with $\pm 0.3\text{dB}$ RIAA precision and a big 200mV overload for wide dynamic range. Three: Evaluate your AM/FM needs, then note that the Pioneer SX-650 has high FM sensitivity and selectivity, PLL multiplex for superb stereo separation, and a special IC for AM to more than satisfy your requirements. Trust Pioneer to deliver what you need and then some — one-two-three in the SX-650.

*Walnut grained vinyl top panel and side panels are used in the construction of this cabinet.

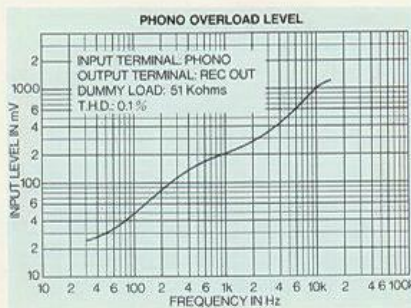
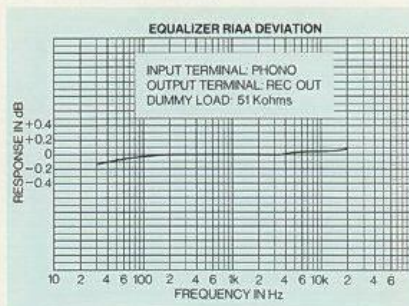
*Measured pursuant to the Federal Trade Commission's Trade Regulation Rule on Power Output Claims for Amplifiers.

SX-650



PHONO EQUALIZER ACHIEVES REMARKABLE CONFORMITY TO RIAA CURVE

The tiny electrical signals received from your phono cartridge are amplified in the phono equalizer of the Pioneer SX-650 without the addition of coloration and without the addition of noise, so that the resulting signals exhibit a remarkable $\pm 0.3\text{dB}$ conformity to the RIAA standard equalization curve, and maintain their wide dynamic range. The equalizer's power supply is the plus/minus type, enabling the circuit to accept a high input voltage (200mV phono overload at 1kHz RMS with 0.1% total harmonic distortion).

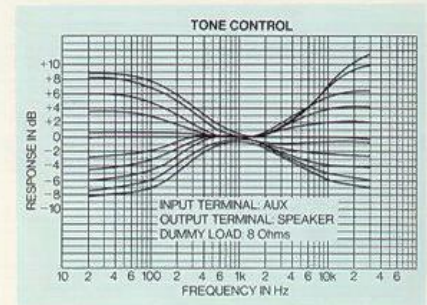


TONE CONTROL CIRCUIT FEATURES CR DESIGN FOR LOW-NOISE, LOW-DISTORTION PERFORMANCE



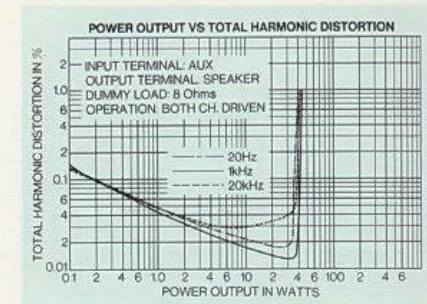
The low-noise, low-distortion operation of the tone control circuit in the SX-650 is made possible by its low noise integrated circuit and CR type tone circuit. Subtle tonal adjustment,

with the aim of "tuning" your listening room to ideal acoustic requirements, is made easier with the addition of 11 click stops for each the BASS and TREBLE controls. The center-defeat (off) position on each puts the circuit off line so that a flat frequency response is obtained.



POWER AMPLIFIER DELIVERS CONTINUOUS 35 WATTS (RMS) PER CHANNEL WITH LOW DISTORTION AND STABLE PERFORMANCE

The first-stage direct-coupled OCL differential amplifier in the power output section is supplied from a plus/minus split power supply to deliver a continuous power output of 35 watts per channel, min. RMS at 8 ohms, from 20 to 20,000 Hertz, with no more than 0.3% total harmonic distortion. Stability is ensured with a dual transistor in the first stage PNP differential to maintain zero potential at output terminals. This minimizes distortion, suppressing the voltage fluctuations from outside temperature changes, etc. Beautiful, musical high fidelity reproduction is yours at any volume setting.



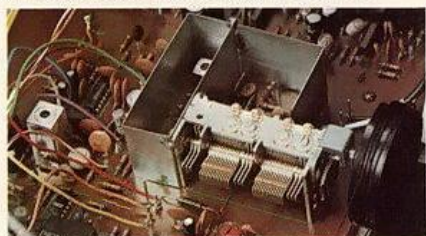
INTEGRATED POWER SUPPLY PROVIDES MORE THAN AMPLE POWER RESERVE

In order to take full advantage of the high-performance qualities of the power amplifier, the transformer is extra big and two large electrolytic capacitors (8,000 μ F x 2) are used. This design makes constantly available a power reserve wide enough to handle sudden surges of low-frequency sounds with ease and stable enough to cover the entire 20 to 20kHz frequency range with musical accuracy.



FM FRONT END EXTENDS SENSITIVITY WITH LINEAR 3-GANG VARIABLE CAPACITOR AND AN FET

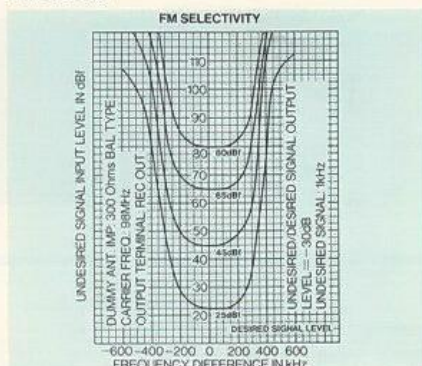
Sensitivity, the ability to capture a desired station while rejecting unnecessary alternate channel interference, is raised significantly in the FM front end of the Pioneer SX-650 with the use of a low-noise FET (Field Effect Transistor) coupled with a frequency-linear 3-gang variable capacitor for precision tuning. The resulting sensitivity is 10.7dBf (1.9 μ V) to deliver the station you want, even in weak-signal areas. Drift is virtually eliminated, temperature and humidity changes no longer threaten stability, and excellent spurious response ratio (75dB), image response ratio (65dB) and other specifications are achieved for precise FM reception.



FM SELECTIVITY INCREASED WITH USE OF LOW-CAPTURE-RATIO IC IN IF SECTION

The integrated circuit (IC) in the FM IF section is the equivalent to more than 200 separate elements, including a pair of double-pole ceramic filters having excellent phase characteristics. This Pioneer-developed IC contributes to an FM selectivity factor of 60dB, capture ratio of 1.0dB, low 0.3% total harmonic distortion in stereo operation (1kHz) and a very good signal-to-noise ratio (65dB). Strong interference is reduced to result in improved tonal quality. Since a 5-stage limiter is employed in the FM IF

section, your FM listening is free of AM noise.



SPECIAL INTEGRATED CIRCUIT FOR AM SECTION

Pioneer has paid particular attention to the construction of the AM section to assure top-quality sound and high sensitivity. Stability is increased by the use of a specially-developed integrated circuit element.

FM STEREO SEPARATION GREATLY IMPROVED WITH PLL MPX

The multiplex (MPX) demodulator in the FM section, responsible for separating the left/right composite FM signal for reproduction, uses a superior PLL (Phase-Locked Loop) circuit to automatically keep the switching signals produced in the tuner in phase with the 19kHz pilot signal transmitted from the stereo FM station. The PLL is impervious to temperature/humidity fluctuations and aging, and results in greatly improved stereo FM reproduction.

LC 5-ELEMENT FILTER IN FM STEREO SECTION

An excellent sub-carrier ratio is assured with the use of an LC filter with 5 elements. It also serves as a low-pass filter,

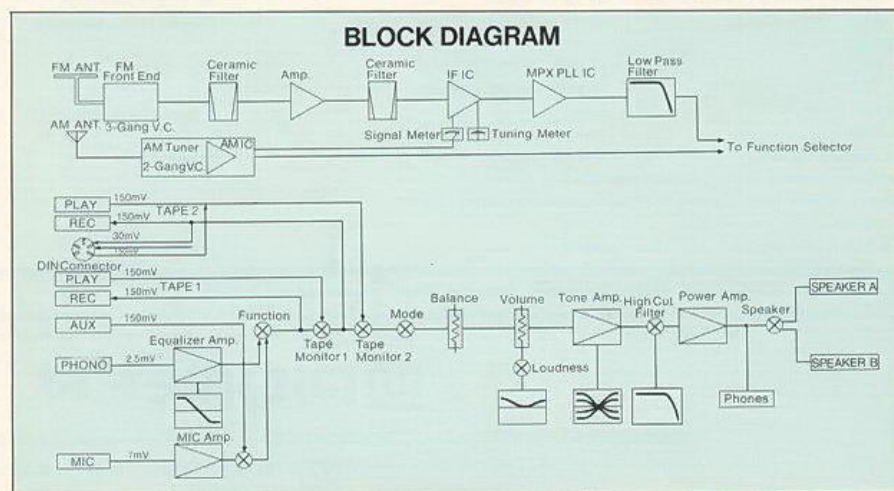
letting you record stereo FM signals directly to a tape deck with no beat or cross modulation interference and Dolby misfunction.

OTHER USEFUL FEATURES

- (1) TAPE-TO-TAPE DUBBING — Connect, monitor and record into two stereo tape decks. Dubbing switch allows copying tape from one deck to the other.
- (2) LOUDNESS — For low listening levels.
- (3) POWER PROTECTION — Protection circuit includes a power relay (self-restoring) coupled with a sensitive electronic circuit to eliminate annoying click noises and prevent power-related damage to power transistors and connected speakers.
- (4) HIGH FILTER — Effectively eliminates unwanted high-frequency noise such as tape "hiss."
- (5) SPEAKERS — Connect and drive up to two sets of stereo speaker systems independently or simultaneously (A, B, A+B).



- (6) TUNING METERS — A signal-strength meter for FM/AM and a center-tune meter for best FM reception are provided.
- (7) FM-LINEAR DIAL — The easy-to-read FM scale is evenly divided into sections of 200Hz each.
- (8) HIGH-INERTIA FLYWHEEL — The tuning mechanism itself offers smooth operation at a touch.
- (9) MICROPHONE — AUX/MIC on source selector gives priority to microphone when a plug is inserted in jack provided.



PIONEER



SX-650 SPECIFICATIONS

AMPLIFIER SECTION

Continuous Power Output is 35 watts* per channel, min. RMS at 8 ohms or 35 watts* per channel at 4 ohms from 20 to 20,000 Hertz with no more than 0.3% total harmonic distortion.

Total Harmonic Distortion:	No more than 0.3% (continuous rated power output)
(20 to 20,000 Hertz, from AUX)	No more than 0.05% (18 watts per channel power output, 8 ohms)
	No more than 0.05% (1 watt per channel power output, 8 ohms)
Intermodulation Distortion:	No more than 0.3% (continuous rated power output)
(50 Hertz: 7,000 Hertz=4:1, from AUX)	No more than 0.05% (18 watts per channel power output, 8 ohms)
	No more than 0.05% (1 watt per channel power output, 8 ohms)
Damping Factor:	30 (20 to 20,000 Hertz, 8 ohms)

Input (Sensitivity/Impedance)

PHONO:	2.5mV/50 Kohms
MIC:	7mV/50 Kohms
AUX:	150mV/50 Kohms
TAPE PLAY 1:	150mV/50 Kohms
TAPE PLAY 2:	150mV/50 Kohms
TAPE PLAY 2 (DIN connector):	150mV/50 Kohms

PHONO Overload Level (T.H.D. 0.1%)

PHONO:	200mV (1kHz)
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Output (Level/Impedance)

TAPE REC 1:	150mV
TAPE REC 2:	150mV
TAPE REC 2 (DIN connector):	30mV/80 Kohms
SPEAKER:	A, B, A+B
HEADPHONES:	Low impedance

Frequency Response

PHONO (RIAA Equalization):	30 to 15,000Hz, ± 0.3 dB
AUX, TAPE PLAY:	10 to 50,000Hz, +0dB, -1dB

Tone Control

BASS:	+8dB, -7dB (100Hz)
TREBLE:	+7dB, -6dB (10kHz)

Filter:

HIGH:	6kHz (6dB/oct.)
Loudness Contour:	+6dB (100Hz), +3dB (10kHz)
(volume control set at -40dB position)	

Hum & Noise (IHF, short-circuited A network, rated power)

PHONO:	70dB
AUX, TAPE PLAY:	90dB

FM TUNER SECTION

Usable Sensitivity:	Mono: 10.7dBf (1.9 μ V), Stereo: 18.2dBf (4.9 μ V)
50dB Quieting Sensitivity:	Mono: 15.0dBf (3.1 μ V), Stereo: 38.0dBf (44 μ V)
Signal-to-Noise Ratio (at 65dBf):	Mono: 70dB, Stereo: 65dB
Distortion (at 65dBf)	
100Hz:	Mono: 0.15%, Stereo: 0.3%
1kHz:	Mono: 0.15%, Stereo: 0.3%
6kHz:	Mono: 0.4%, Stereo: 0.4%
Frequency Response:	30 to 15,000Hz +0.2dB, -2.0dB
Capture Ratio:	1.0dB
Alternate Channel Selectivity:	60dB
Spurious Response Ratio:	75dB
Image Response Ratio:	65dB
IF Response Ratio:	90dB
AM Suppression Ratio:	50dB
Muting Threshold:	14.0dBf (2.8 μ V)
Stereo Separation:	40dB (1kHz), 30dB (30 to 15,000Hz)
Subcarrier Product Ratio:	62dB
SCA Rejection Ratio:	62dB
Antenna Input:	300 ohms balanced, 75 ohms unbalanced

AM TUNER SECTION

Sensitivity:	300 μ V/m (IHF, ferrite antenna), 15 μ V (IHF, ext. antenna)
Selectivity:	35dB
Signal-to-Noise Ratio:	50dB
Image Response Ratio:	40dB
IF Response Ratio:	65dB
Antenna:	Built-in ferrite loopstick antenna

SEMICONDUCTORS

FET:	1
ICs:	7
Transistors:	29
Diodes:	30

MISCELLANEOUS

Power Requirements:	For U.S.A. and Canada: 120V 60Hz only, For other countries: 220/240V (switchable) 50Hz or 110/120/220/240V (switchable) 50-60Hz
Power Consumption:	130 watts (UL), 240 VA (CSA), 350 watts (Max.)
Dimensions:	Without package: 18-29/32(W) x 5-7/8(H) x 14-19/32(D) inches 480(W) x 149(H) x 371(D)mm
Weight:	Without package: 28 lb. 14 oz./13.1kg

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

*Measured pursuant to the Federal Trade Commission's Trade Regulation Rule on Power Output Claims for Amplifiers.



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