

Technics SA-505

FM/AM Stereo Receiver



63watts per channel

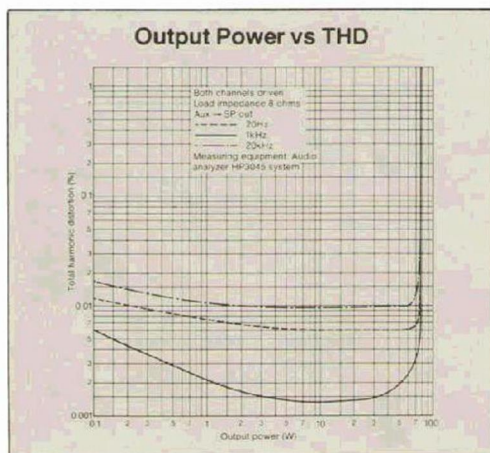
minimum continuous "RMS" into 8 ohms,
both channels driven, from 20~20,000 Hz,
with no more than **0.04%** total harmonic distortion.

SA-505 FM/AM Stereo Receiver

The SA-505 combines a substantial amount of very clean power, outstanding preamp and tuner performance, and a generous complement of features such as our well-received "Acoustic Control", LED peak-power indicators, two-way tape dubbing and new "LED Active Sensor". And thanks to Technics' exhaustive engineering, backed up by some of the world's most sophisticated research and manufacturing facilities, we can offer the SA-505 at a surprisingly low price. Listen and compare—we think you'll find the SA-505 a very difficult package to beat!

63 watts per Channel

Measured in compliance with FTC standards, the SA-505 delivers 63 watts per channel, continuous "RMS" power into 8 ohms, from 20~20,000 Hz, with no more than 0.04% total harmonic distortion. In most home installations, that's enough power to maintain high volume levels, and still have enough left over to deliver unclipped musical peaks. At half power, distortion is a scant 0.009%, measured at 1 kHz.



0.04%

Total Harmonic Distortion

Whatever the power rating of a receiver may be, its THD figure should be low. The lower that figure is, the more cleanly all of that power is going to be delivered. And the SA-505 not only measures clean, but *sounds* clean, thanks to careful design in all stages.

Rugged power supply

The SA-505's power supply enables it to sustain full power output on a continuous basis, without voltage drops. A large transformer fully satisfies the current requirements of the amplifier, and a bridged rectifier is used for DC rectification. Two 8,200µF electrolytic capacitors help keep hum and noise low, while providing reserve power for handling high-amplitude, deep-bass signals and musical peaks.

Current-mirror loaded differential stage

A well-designed differential stage plays a key role in getting low distortion. In this stage, the SA-505 employs current-mirror loading, a circuit technique that doubles signal gain without increasing noise and distortion. Use of an original Technics-developed IC (AN 7060) in this stage helps maintain precise thermal tracking for low distortion despite changing ambient temperature conditions.

Pure-complementary OCL output stage

In the output stage, a pure-complementary Darlington configuration is used rather than semi-complementary because of its slightly better distortion characteristics. OCL (output capacitor-less) design gives tight, solid, low-distortion bass response with high damping.

Quality control and circuit techniques

The sophisticated design of the SA-505 is backed up by careful attention to "nuts and bolts" detail. Our manufacturing and inspection phases of production are very much a part of the Technics exacting design-standards framework. We also conduct ongoing analysis to discover the best and most efficient circuit configurations. This kind of attention to detail contributes significantly to the cleanness of the SA-505's amplifier section.

Phono Section:

73 dB S/N Ratio

120 mV Input Tolerance

RIAA Equalization within ± 0.3 dB

The above specifications give you an idea of the wide dynamic range and high degree of accuracy that the SA-505 provides for records.

Phono signal-to-noise ratio is an excellent 73 dB from phono inputs of 5 mV to speaker outputs at 1 W power output. Measured by the old IHF '66 method (2.5 mV vs. full power output), the phono S/N ratio is 80 dB, again an excellent figure.

These figures mean that circuit noise will not spoil your enjoyment of records, even during soft musical passages. And when very loud musical passages come along, the SA-505's phono section can handle them with ease. With the 120 mV "overload" specification (30 Hz ~ 15 kHz), it's unlikely that you'll ever hear distortion due to phono overload. Finally, the phono equalization adheres to the RIAA standard equalization curve within ± 0.3 dB. This very "tight" equalization curve is achieved by using precision metal-film resistors (1% tolerance) and polypropylene capacitors (2% tolerance).

Acoustic Control Provides Extended Sound-Tailoring Possibilities

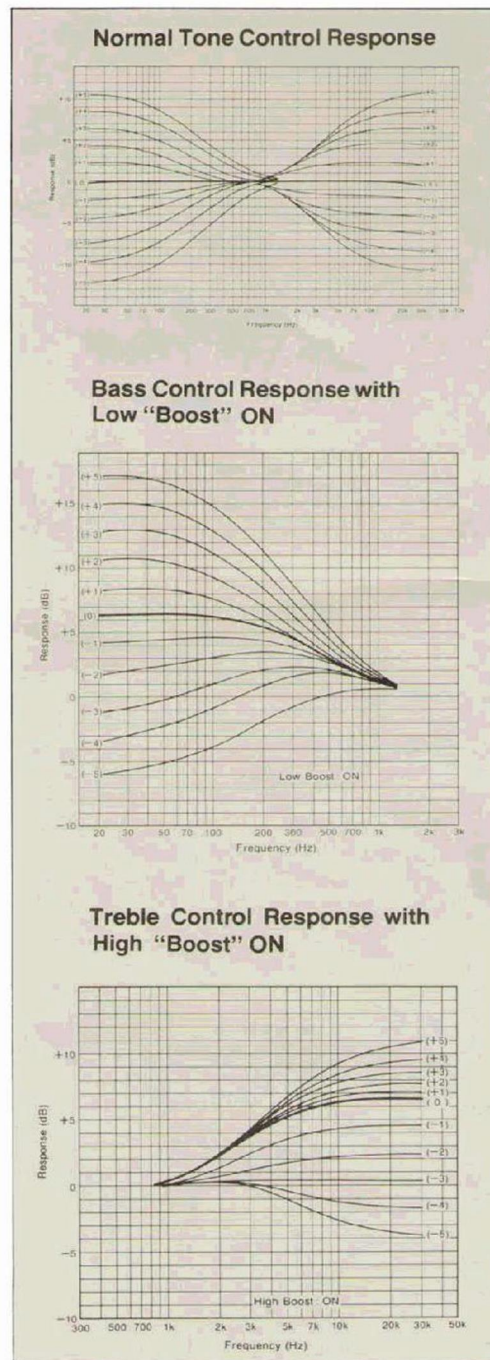
The SA-505's Acoustic Control provides you with an exciting creative tool, opening up many possibilities for changing the sound balance of the music. It combines regular bass and treble controls with two "boost/filter" switches that enable you to change the shape of the tone controls' response.

The low "boost" switch doubles the amplitude of low frequencies, adding extra "boost" to the regular bass control. It thus permits you to accentuate drums and bass instruments.

Note the difference in the shape of response with boost-off and boost-on settings, which corresponds to different bass tonalities. The high "boost" creates a 6 dB rise at 10 kHz in a shelved response, when the regular treble control is left centered. Then, adjustment of the regular treble control will further change the amplitude of response in the upper midrange and high frequencies. It can be used to give brilliance

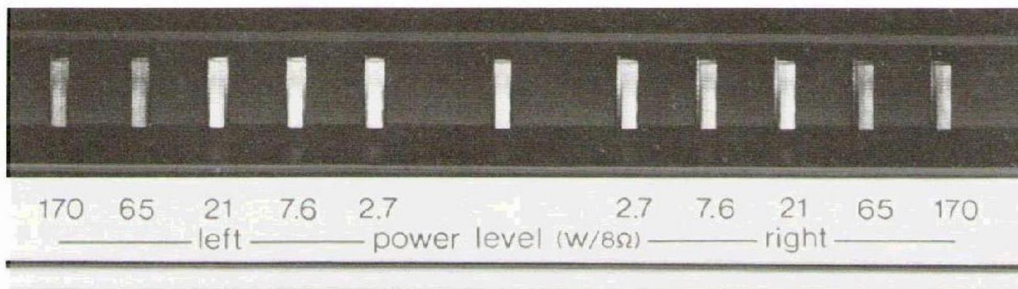
and immediacy to the overtones of instruments and voices. Again, the shape of the response curve is changed by combining high "boost" with different treble control settings. In the "filter" position, low and high filter responses are created.

Of course, the Acoustic Control can be used to make dramatic changes in the sound. But with some experimentation, you'll find that combined settings often give subtle, yet subjectively more pleasing sound balances than would be possible with conventional tone controls.



LED Peak-Power Indicators

These LED's flash to give dynamic peak readings of power being generated by the receiver. Because they are faster-acting than mechanical power meters, they provide a very accurate indication of power peaks. They can



thus help you to avoid clipping, and also let you check channel balance. By switching to the "×0.1" range, you can cause the LED's to read ten times the power actually being generated.

Amp/Preamplifier Convenience and Operating Features

- Two tape monitors with two-way dubbing. You can connect two tape decks to the SA-505, or add external processors such as an equalizer. When two decks are connected, you can record from either deck to the other. And you can listen to another sound source (such as a record or the tuner) while dubbing is in progress.
- Connections for "main" and "remote" speaker pairs. Easy-operation, front-panel selection of either or both pairs.
- Loudness switch.
- Click-stop volume, balance and center defeat type tone controls.
- LED program indicators for FM, AM, Phono, Aux.
- Circuit-protection relay switch. Pop-noise muting eliminates pop or thump noises in speakers when the receiver is turned on or off. When the SA-505 is turned on, a red LED protection indicator is lit for several seconds. Once the protection relays are activated, it goes out and a green LED safety indicator is lit.

Tuner Section

Because an FM broadcast signal is the most "processed" of any program source, it is extremely important to design a tuner section that will maintain signal integrity as the signal passes through various stages of modification. In the SA-505, Technics engineers were naturally interested in achieving high sensitivity and selectivity, but not at the expense of audio quality. This careful engineering approach doesn't really show up in tuner specifications, except perhaps in distortion and frequency response measurements. It does, however, show up in the sound you hear. And when you listen, we think you'll be very impressed.

FM Circuit Configurations

MOS FET FM "front end"

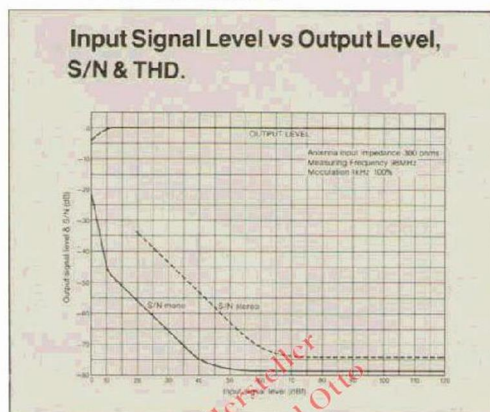
A high-quality 4-pole, dual-gate MOS FET is used for its excellent gain properties, low noise, and high tolerance to strong signals.

A 3-ganged, linearly variable tuning capacitor aids selectivity, while providing ample rejection ratios of various kinds of interference. Point-to-point wiring is used in the local oscillator to minimize chances of drift.

IF stage employing "flat group delay" ceramic filters

It is in this stage that selectivity and limiting are achieved, along with most of the tuner's gain. For

selectivity, three 4-resonator "flat group delay" ceramic filters are used because they can provide sharp selectivity without introducing significant phase shifts into the signal. For gain, five differential amplifiers are used, incorporated into high-linearity IC's. The 55 dB AM suppression figure indicates excellent rejection of AM-related interference.

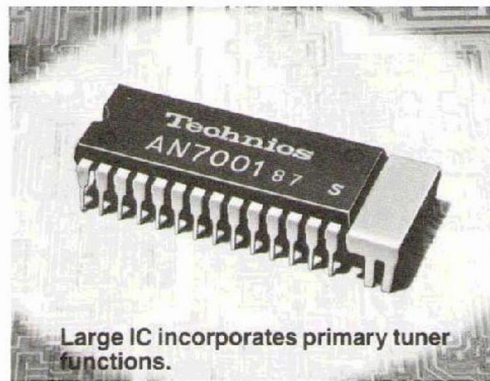


High-linearity quadrature detector

The purpose of this stage is to extract audio signals from the IF signal. Here, the SA-505 employs a high-linearity quadrature detector with broad peak-to-peak range. This well-designed detector plays a key role in achieving wideband, linear frequency response and low distortion. The detector can easily handle grossly overmodulated FM broadcast signals as much as 3 times the modulation levels allowed by the FCC. This wide tolerance assures linear operation with virtually any signal you're likely to receive.

Phase-locked-loop (PLL) multiplex stage

A PLL IC circuit keeps the switching signals generated by the tuner in precise phase with the pilot and subcarrier signals generated by the broadcast station. The result is very stable FM stereo performance, with wide separation maintained well into the high audio frequencies for a very striking stereo image. The PLL IC helps maintain low distortion as well, and its performance will not deteriorate with changing ambient temperature and humidity conditions.



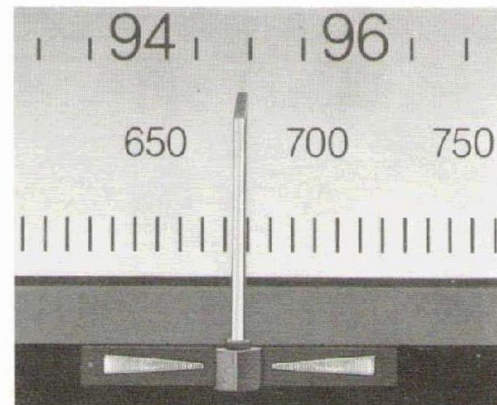
Large IC incorporates primary tuner functions.

Quality AM Section with IC

Although you will undoubtedly prefer FM for serious listening, you can also expect good AM performance from the SA-505. Most of the important circuitry is incorporated into a reliable IC.

LED Active Sensor Helps FM Center-of-Channel Tuning

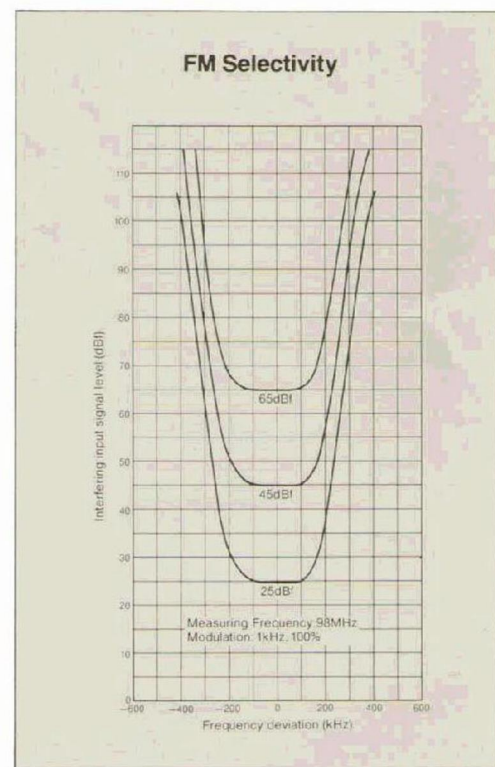
Three LED's, two arrow-shaped, and one center point, indicate which direction you should turn to best tune in the station.

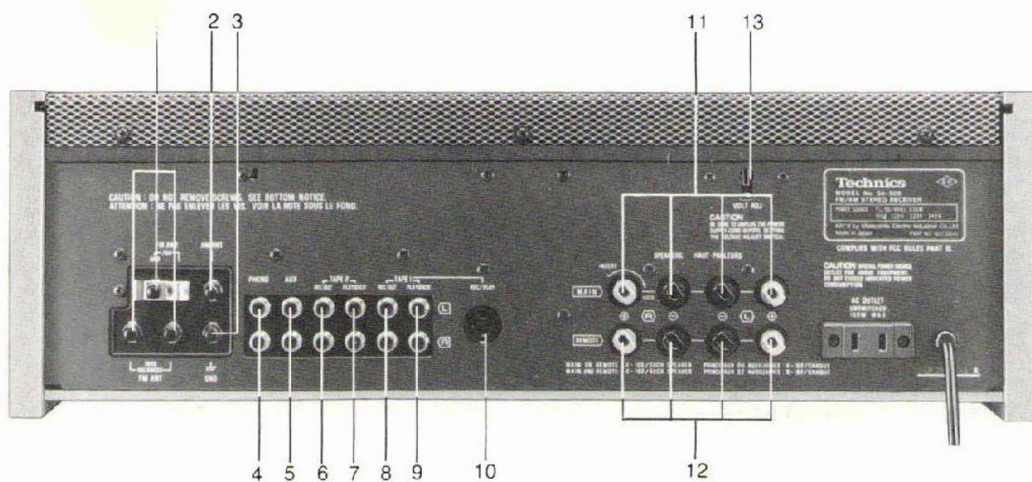


LED Active Sensor

Tuner Convenience and Operating Features

- 2-colored 5-point LED's FM/AM signal strength indicator
- FM muting/mode selector
- Terminals for 75 and 300 ohm FM antennas, and AM antenna.





1. FM antenna terminals (75 Ω , 300 Ω)
2. AM antenna terminals
3. Ground terminal
4. Phono inputs
5. AUX inputs
6. Tape deck 2 REC outputs
7. Tape deck 2 PLAY inputs
8. Tape deck 1 REC outputs
9. Tape deck 1 PLAY inputs
10. Tape deck REC/PLAY terminal
11. Speaker terminals (main)
12. Speaker terminals (remote)
13. Voltage adjuster

Technical Specifications

AMPLIFIER SECTION (IHF '78)

Rated minimum sine wave	
RMS power output	
20 Hz~20 kHz both channels	
driven	
0.04% total harmonic distortion	
63 W per channel (8 ohms)	
1 kHz continuous power output	
both channels driven	
0.04% total harmonic distortion	
70 W per channel (8 ohms)	
80 W per channel (4 ohms)	
Dynamic headroom	1.4 dB (8 ohms)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.04% (8 ohms)
half power at 20 Hz~20 kHz	0.02% (8 ohms)
half power at 1 kHz	0.009% (8 ohms)
SMPTE intermodulation distortion	0.04% (8 ohms)
Frequency response	
PHONO	RIAA standard curve ± 0.3 dB
TUNER, AUX, TAPE	
	7 Hz~50 kHz, -1 dB, 20 Hz~20 kHz, +0.2 dB, -0.2 dB
Input sensitivity	
PHONO	0.3 mV (2.5 mV, IHF '66)
TAPE 1, REC/PLAY	20 mV (180 mV, IHF '66)
TAPE 2	17 mV (150 mV, IHF '66)
S/N (IHF, A)	
PHONO	73 dB (80 dB, IHF '66)
TAPE, AUX, TAPE	77 dB (95 dB, IHF '66)

Maximum input voltage	
PHONO	120 mV (150 mV, 1 kHz)
Input impedance	
PHONO	47 kilohms
TAPE 1, 2	27 kilohms
Tone controls	
BASS	50 Hz, +10 dB~-10 dB
TREBLE	20 kHz, +10 dB~-10 dB
Acoustic controls (at tone "0" position)	
LOW BOOST	100 Hz, +6 dB
HIGH BOOST	10 kHz, +6 dB
Low filter	100 Hz, -6 dB/oct.
High filter	7 kHz, -6 dB/oct.
Loudness control (volume at -30 dB)	50 Hz, +9 dB
Output voltage	
REC OUT	150 mV
REC/PLAY	30 mV/82k Ω
Low frequency damping factor	
	34 (8 ohms) 17 (4 ohms)
Load impedance	
MAIN or REMOTE	4~16 ohms
MAIN and REMOTE	8~16 ohms

FM TUNER SECTION

Frequency range	88~108 MHz
Sensitivity	10.8 dBf (1.9 μ V, IHF '58)
50 dB quieting sensitivity	
MONO	13.7 dBf (2.7 μ V, IHF '58)
STEREO	37.2 dBf (39.7 μ V, IHF '58)
Total harmonic distortion	
100 Hz	0.15% (MONO), 0.3% (STEREO)
1 kHz	0.15% (MONO), 0.3% (STEREO)
6 kHz	0.3% (MONO), 0.4% (STEREO)

S/N	
MONO	75 dB
STEREO	70 dB
Frequency response	
	20 Hz~15 kHz, +1 dB, -2 dB
Alternate channel selectivity	70 dB
Capture ratio	1.2 dB
Image rejection at 98 MHz	60 dB
IF rejection at 98 MHz	75 dB
Spurious response rejection at 98 MHz	82 dB
AM suppression	55 dB
Stereo separation	
1 kHz	45 dB
10 kHz	35 dB
Carrier leak	
19 kHz	-40 dB
38 kHz	-50 dB
Antenna terminals	
	300 ohms (balanced) 75 ohms (unbalanced)

AM TUNER SECTION

Frequency range	525~1605 kHz
Sensitivity	30 μ V, 300 μ V/m
Selectivity	30 dB
Image rejection at 1000 kHz	50 dB
IF rejection at 1000 kHz	40 dB

GENERAL

Power consumption	630 W
Power supply	
	AC 110/120/220/240 V, 50/60 Hz
Dimensions (W×H×D)	480×160×293 mm (18-29/32"×6-5/16"×11-17/32")
Weight	9.5 kg (20.9 lb)

Technics
Matsushita Electric