REALISTIC

THE BRAND WITH OVER 1,000,000 CUSTOMS

In choosing this fine Realistic product you have demonstrated a rather acute awareness of the good old American custom called “getting the most for your money”. With Realistic this is not an idle boast.

The “fine” was born in Boston, long famous for Yankee ingenuity — and thrift. Its original intent was to bridge a gap between $100 equipment and $25 equipment where, at the time, there was a real void in hi-fi merchandise.

Early products were a $39.95 FM tuner, a $29.95 preamp/amplifier, a $19.95 speaker. Soon we found ourselves a unique niche as manufacturing retailers.

Capacity and ability grew simultaneously. Soon Realistic hi-fi products—loudspeakers, receivers, tape decks, even table radios — began receiving critical acclaim for faultless performance as well as value. Dealers and franchises from all over the world began requesting a Realistic franchise.

Today you can shop The Nationwide Supermarket of Sound™ with the confidence that you’re getting the widest selection of quality hi-fi equipment available anywhere — whether you’re looking at budget-priced extension speakers or true audiophile receivers.

Your Realistic STA-2100 is a powerful and versatile AM/FM Stereo Receiver. Designed by Radio Shack and made in our own factory, the STA-2100 represents the latest in audio electronics engineering. A receiver this powerful — 120 RMS watts per channel over the entire audio band — might have seemed unthinkable just a few years ago. But as you’ll soon discover, the benefits for you as a hi-fi listener are undeniable!

You can easily power up to two pairs of loudspeakers — even inefficient systems — with your new Receiver. And of course, you can play your music at “live-performance” levels (if the speakers can handle the power).

But more importantly, the STA-2100’s ample power lets you enjoy sound with plenty of “headroom” at all volume levels. This means you’ll hear the subtle, instantaneous sound peaks that give music its “live” quality. On lower-powered receivers, there is often not enough reserve power available to reproduce these peaks.

In addition, the STA-2100 offers a full array of controls and connection jacks, so it’s capable of controlling even the most elaborate stereo system.

Read this manual carefully — it will help you get the most enjoyment from your Receiver, from setting it up in your system to using all its exceptional features. But first, you might like to know a little bit about the innovative internal circuitry that makes it all possible.

- FM front end uses an insulated-gate dual MOSFET amplifier for high sensitivity, low noise and freedom from strong-signal overload.
- FM IF employs a quadrature IC and triple ceramic filtering for superior selectivity and rejection of unwanted signals.
- PLL-Multiplex IC for wide and stable stereo separation.
- The AM section uses a newly developed AM tuner IC plus a three-gang variable capacitor for superior reception of strong and weak signals and freedom from unwanted signals.
- Low-noise, wide dynamic range phono preamp features a built-in subsonic filter to reduce or eliminate turntable rumble.
- Special noise cancelling circuitry eliminates switching pops.
- Elaborate relay protection circuits to handle thermal, overdriving or speaker problems (shorting or otherwise).
- Special protection against power-on current and voltage surges.
- Full toroidal power transformer for efficiency and reduced hum leakage.

RADIO SHACK LIMITED WARRANTY

This equipment is warrantied against defects for 2 years from date of purchase. Within this period, we will repair it without charge for parts and labor. Simply bring your sales slip as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover equipment subjected to misuse or accidental damage.

This Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

We Service What We Sell

For your own protection, we urge you to record the Serial Number of this unit in the space provided. You’ll find the Serial Number on the back panel of the unit.

Serial Number:
### SPECIFICATIONS

#### PRE-AMPLIFIER & AMPLIFIER

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Audio Output Power at no more than 0.1% Total Harmonic Distortion into 8 ohms, over the audio spectrum, 20—20,000 Hz</td>
<td>120 watts (RMS power, both channels driven)</td>
</tr>
<tr>
<td>Distortion at 70 watts RMS per channel, 8 ohms, 20—20,000 Hz</td>
<td>0.04%</td>
</tr>
<tr>
<td>Frequency Response at 10 watts, +/− 2 dB</td>
<td>15—25,000 Hz</td>
</tr>
<tr>
<td>IM Distortion at 3 dB below full output</td>
<td>0.05%</td>
</tr>
<tr>
<td>Sensitivity for full output</td>
<td></td>
</tr>
<tr>
<td>PHONO 1</td>
<td>2/4/8 mV</td>
</tr>
<tr>
<td>PHONO 2</td>
<td>2.2 mV</td>
</tr>
<tr>
<td>PHONO overload for .1% THD</td>
<td>230 mV</td>
</tr>
<tr>
<td>AUX</td>
<td>140 mV</td>
</tr>
<tr>
<td>TAPE IN 1, 2</td>
<td>140 mV</td>
</tr>
<tr>
<td>Tone Controls</td>
<td></td>
</tr>
<tr>
<td>BASS</td>
<td>+/− 10 dB at 50 Hz or 100 Hz (selectable)</td>
</tr>
<tr>
<td>TREBLE</td>
<td>+/− 10 dB at 10,000 Hz or 20,000 Hz (selectable)</td>
</tr>
<tr>
<td>MID</td>
<td>+/− 6 dB at 1500 Hz</td>
</tr>
<tr>
<td>High Filter</td>
<td>−6 dB/octave above 10,000 Hz</td>
</tr>
<tr>
<td>Low Filter</td>
<td>−12 dB/octave below 50 Hz</td>
</tr>
<tr>
<td>Signal-to-Noise Ratio</td>
<td></td>
</tr>
<tr>
<td>PHONO 1, 2</td>
<td>70 dB</td>
</tr>
<tr>
<td>AUX and TAPE IN 1, 2</td>
<td>75 dB</td>
</tr>
<tr>
<td>Crosstalk (AUX)</td>
<td>60 dB</td>
</tr>
<tr>
<td>Loudness Compensation at 30 dB below full output</td>
<td>6 dB at 100 Hz</td>
</tr>
<tr>
<td>TAPE OUT 1, 2 Level</td>
<td>140 mV</td>
</tr>
<tr>
<td>TAPE OUT 1, 2 (DIN) Level</td>
<td>3.3 mV</td>
</tr>
<tr>
<td>SIZE</td>
<td>6-7/8 × 20-1/2 × 16-1/2” Hwd</td>
</tr>
<tr>
<td></td>
<td>(7.5 × 52.0 × 42.0 cm)</td>
</tr>
<tr>
<td>WEIGHT</td>
<td>47 Lbs. 6.4 oz. (21.5 Kg)</td>
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</tbody>
</table>

#### FM TUNER

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity (IHF)</td>
<td>1.6 µV (10.1 dBf)</td>
</tr>
<tr>
<td>Sensitivity for 50 dB Quieting</td>
<td>2.0 µV (12 dBf)</td>
</tr>
<tr>
<td>Limiting Sensitivity (− 3 dB)</td>
<td>1.5 µV</td>
</tr>
<tr>
<td>Signal-to-Noise Ratio (1 mV)</td>
<td>70 dB</td>
</tr>
<tr>
<td>Image Rejection</td>
<td>80 dB</td>
</tr>
<tr>
<td>IF Rejection</td>
<td>95 dB</td>
</tr>
<tr>
<td>Capture Ratio</td>
<td>1.5 dB</td>
</tr>
<tr>
<td>Harmonic Distortion</td>
<td></td>
</tr>
<tr>
<td>Mono</td>
<td>0.05%</td>
</tr>
<tr>
<td>Stereo</td>
<td>0.1%</td>
</tr>
<tr>
<td>Muting Sensitivity</td>
<td></td>
</tr>
<tr>
<td>Terminal</td>
<td></td>
</tr>
<tr>
<td>Distortion (5 mV/m)</td>
<td>10 µV</td>
</tr>
<tr>
<td>Selectivity</td>
<td>1.0%</td>
</tr>
<tr>
<td>Image Rejection</td>
<td>40 dB</td>
</tr>
<tr>
<td>IF Rejection</td>
<td>60 dB</td>
</tr>
<tr>
<td>AGC Figure of Merit</td>
<td>55 dB</td>
</tr>
<tr>
<td>ACA</td>
<td>48 dB</td>
</tr>
</tbody>
</table>

#### AM TUNER

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity Radiated</td>
<td>200 µV/m for 20 dB S + N/N</td>
</tr>
<tr>
<td>Terminal</td>
<td>10 µV</td>
</tr>
<tr>
<td>Distortion (5 mV/m)</td>
<td>10 µV</td>
</tr>
<tr>
<td>Selectivity</td>
<td>1.0%</td>
</tr>
<tr>
<td>Image Rejection</td>
<td>40 dB</td>
</tr>
<tr>
<td>IF Rejection</td>
<td>60 dB</td>
</tr>
<tr>
<td>AGC Figure of Merit</td>
<td>55 dB</td>
</tr>
<tr>
<td>ACA</td>
<td>48 dB</td>
</tr>
</tbody>
</table>

#### ANTENNAS

- AM: Built-in ferrite loopstick
- FM: Dipole antenna provided
- Plus terminals for external antennas.

#### POWER REQUIREMENTS

- 120 V AC, 60 Hz (600 watts max.)
- (220/240 V AC, 50 Hz for European and 240 V AC, 50 Hz for Australian models as indicated on rear of unit)
CONTROL FUNCTIONS

This brief description of controls will give you an idea of the versatility of your STA-2100. Complete installation and operation instructions are contained in later sections of this manual.

**SECTOR** Determines the desired program source.
- AM: Activates the built-in AM tuner.
- FM: Activates the built-in FM tuner.
- PHONO 1: Activates the PHONO 1 jacks on the rear panel. The turntable connected to these inputs must have a magnetic phonograph cartridge.
- PHONO 2: Activates the PHONO 2 jacks on the rear panel. For listening to a second magnetic-cartridge turntable.
- AUX: Activates the AUX jacks on the rear panel. Connect any high-level source (tape deck, TV audio, ham radio, turntable equipped with a ceramic or crystal phonograph cartridge, etc.).

**TAPE MONITOR** Lets you monitor signals connected to TAPE 1, TAPE 2, or the program source determined by the SELECTOR switch. **Switch must be in SOURCE position if you wish to hear your Receiver’s sound (AM, FM, PHONO-1, etc.).**

To monitor signals connected to TAPE 1 IN, use position 1; for monitoring TAPE 2 IN, use position 2. This switch will be of special benefit when used with a three-head tape deck (one with monitoring facilities).

**TAPE DUBBING** Controls the tape dubbing (duplicating) functions. With switch in center (SOURCE) position, both sets of TAPE OUT jacks will carry the same signal as determined by the SELECTOR switch. Use 1-2 position to dub directly from TAPE 1 IN to TAPE 2 OUT, and 2-1 position to dub from TAPE 2 IN to TAPE 1 OUT.

**BASS, MIDrange, TREBLE**
These controls let you precisely adjust the frequency response in three different ranges: low-frequency, midrange (voice range), and high frequency. Each control has a FLAT position which removes it from the circuit so you hear only the pure, unadjusted sound.
BASS and TREBLE TURNOVER

These push-switches let you select the range of operation of the BASS and TREBLE controls. For example, with BASS TURNOVER in “out” (300 Hz) position, BASS control will primarily affect frequencies below 300 Hz; with TURNOVER switch in 150 Hz position, BASS control will affect a much narrower range: frequencies below 150 Hz.

TREBLE TURNOVER operates the same way: you can select either a 3 kHz turnover (affects frequencies above 3000 Hz), or a 6 kHz turnover (frequencies above 6000 Hz).

FM25 μS Converts Dolby FM signals into standard Dolby NR system for decoding by a Dolby tape deck or decoder. When listening to a non-Dolby FM signal (or if you do not have a Dolby decoder), leave FM 25 μS button in out position.

FM MUTE Press this button in to eliminate interstation noise when tuning for FM stations. Receiver will then be silent until you tune a strong (3 μV or better) station.

Leave FM MUTE in out position to receive weak FM stations.

HI MPX FILTER When you listen to weak FM stereo broadcasting, pressing the HI MPX FILTER button will help to reduce any noise and hiss, without totally eliminating the stereo separation.

MONO Pressing the MONO button defeats stereo operation, the resulting signal is a composite (Left + Right). When you listen to weak FM stereo stations, pressing the MONO button will reduce the noise, but of course the signal will no longer be stereo.

LOUDNESS

When listening at low volumes, press the LOUDNESS button. This overcomes the ear’s reduced sensitivity by boosting low frequencies at these low listening levels.

LOW and HIGH FILTER

Help to filter out noise. Press HIGH FILTER to remove hiss and scratch noise. Press LOW FILTER to remove low frequency hum or turntable rumble.

—10 dB ATTENUATOR

This is another push-button switch. When pressed in, the gain of the pre-amp stages is reduced by 10 dB — without adjusting the VOLUME control. This handy switch is great when you want to drop the volume level for a short period of time and then go back to normal. Also, you’ll find it convenient when you want to listen at low volume levels — it gives you another range of VOLUME control.

SPEAKERS

Are push-buttons — press in to connect the desired pair of speakers. A is for the “main” speakers and B is for the “remote” speakers. When using headphones, you may want to leave both switches out.

VOLUME and BALANCE

These two controls are combined on one dual concentric knob. The outer knob (away from panel) controls volume and the inner ring (closer to panel) controls the balance (relative sound level) of the Left and Right channels. At center-detented position, balance from Left and Right channels will be equal.

POWER

Push to turn Receiver on. The pilot LED will glow red, indicating that the inrush protection relay is open. When current levels off (after about 10 seconds), LED will glow with green color and Receiver will be in operating mode.

PHONES Jack Plug in stereo headphones for private listening. Leave SPEAKERS switches in the “out” position so you don’t disturb others (this turns the Speakers off).

Tuning Knob Tunes AM and FM stations.

WATTS Meters (Left and Right)

Indicate the power available at the Left and Right speaker outputs. Meters are calibrated for use with 8-ohm speakers.

Read ATTEN IN scale when operating Receiver with —10dB ATTENUATOR in.

Indicator Lamps As you turn the SELECTOR, an appropriate indicator lamp will light — AM, FM, PHONO 1, PHONO 2, or AUX. When you have tuned to a stereo FM station (with MONO button out), the STEREO light will come on.

SIGNAL Meter Indicates relative strength of AM or FM signal. For AM stations, tune for highest reading.

TUNING Meter Use when tuning FM stations. Tune for a center reading.

**“Dolby” is a registered Trademark of Dolby Laboratories.
(1) **Power Fuse**  This is the power supply fuse. It protects the Amplifier from voltage surges or other abnormal operating conditions. If the Pilot Light does not go on when POWER is pressed, check the Fuse; if it is blown, replace with the same size and value (8A).

(2) **Switched Convenience AC Outlet**  Plug in an audio accessory which you want turned on and off by the front panel POWER switch. For example, connect a Tuner to this receptacle: thus, when you turn the Receiver on and off, the Tuner will automatically be Turned on and off at the same time. Power drawn from this receptacle should not exceed 100 watts.

(3) **Unswitched AC Convenience OUTLETS**  Can be used to power any audio accessory up to 100 watts per outlet. The front panel POWER switch does not affect these receptacles.

(4) **AC Cord**  Supplies the Receiver's power. Plug the cord into any 120 V AC, 60 Hz outlet (220/240 V AC, 50 Hz power for European and 240 V AC, 50 Hz for Australian as marked on the rear panel of the Receiver).

(5) **A/B Speakers Push Terminals**  For use with Speakers which have Push or Screw Terminals. If your speakers have RCA type plugs, use the RCA type jacks provided.

Note: Use either RCA jack or Push Terminals for A or B, NOT BOTH.

(6) **Optional A/B Speakers RCA Type Jacks**  For use with Speakers which have RCA plugs.

Note: Use either RCA jacks or Push Terminals for A or B, NOT BOTH.
(7) (8) MAIN IN/PRE OUT
As supplied, there are jumper wires between these jacks. If you want to operate a multi-channel system you can remove these jumpers and so use only the power amp circuits. Or, install a Frequency Equalizer system between the PRE OUT and MAIN IN jacks.

(9) TAPE 2 IN/OUT DIN Connector
Connect to Tape Deck’s Input/Output if Tape Deck has 5-pin DIN plug.
Use either the 5-pin DIN Connector or TAPE IN/OUT 2 RCA jacks — NOT BOTH.
TAPE MONITOR 2 activates this 5-pin DIN Connector.

(10) TAPE OUT 2 Jacks
Connect to Tape Deck’s Auxiliary Input for recording any one of the Amplifier’s program sources. The output from these and all TAPE jacks is unaffected by VOLUME, BALANCE, LOUDNESS or Tone controls.

(11) TAPE IN 2 Jacks
Connect from Tape Deck’s Output jacks for tape playback.
To activate these jacks, TAPE MONITOR must be set to 2.

(12) TAPE 1 IN/OUT DIN Connector
Use as above (9) for a 2nd Tape Deck.
Use either the 5-pin DIN Connector or TAPE IN/OUT 1 RCA jacks — NOT BOTH.
TAPE MONITOR 1 activates this 5-pin DIN Connector.

(13) TAPE OUT 1 Jacks
Use as above (10) for a 2nd Tape Deck.

(14) TAPE IN 1 Jacks
Use as above (11) for a 2nd Tape Deck. To activate these jacks, TAPE MONITOR must be set to 1.

(15) AUX Jacks
Connect output from any high-level source — a 3rd Tape Deck, Tuner, ceramic or crystal phono cartridge, etc.
These jacks are activated when SELECTOR is set to AUX.

(16) PHONO 2 Jacks
Connect Record Changer/Turntable with magnetic cartridge to these jacks.
These jacks are active when SELECTOR is set to PHONO 2 position.

(17) PHONO 1 Jacks
Same as PHONO 2 for connecting another Record Changer/Turntable with magnetic cartridge. These jacks are active when SELECTOR is set to PHONO 1 position.

(18) PHONO 1 LEVEL Switch
Lets you select one of three input sensitivities, depending on the output level from your Record Player’s magnetic phono cartridge.
Select the level which makes the PHONO volume about the same as that from the other sources (radio, tape, etc.).

(19) Phono GND Screw
Connect the ground lead (typically green or black) from the Record Changer/Turntable to this screw to reduce or eliminate hum.

(20) FM Antenna 300-Ohm Screw Terminals
Connect the Dipole Antenna (provided), or connect external FM antenna here using standard 300-ohm lead in.

(21) FM Antenna 75-Ohm Screw Terminal
Connect external antennas here using 75-ohm coaxial lead-in. Coaxial cable provides extremely high immunity from static and other noise.

(22) AM Antenna Screw Terminal
Connect an external AM antenna here for long distance AM reception. In most areas the built-in antenna will provide excellent reception.

(23) Built-in Ferrite AM Antenna
Is adequate in most areas for AM reception. Move around on its swivel for best reception.

REALISTIC®
A TYPICAL SYSTEM
STA-2100, TURNTABLE, 4 SPEAKERS, TAPE DECKS, FREQUENCY EQUALIZER, DOLBY NR DECODER and EXTRA TUNER

Fig A ANTENNA CONNECTIONS

75 Ω FM

300 Ω FM

MATCHING TRANSFORMER (300Ω - 75 Ω)
LIGHTNING ARRESTER

REALISTIC®
CONNECTIONS

Before making connections, be sure the POWER switch is “OFF” and the AC line cord is not connected.

**Note:** To reduce hum, use shielded audio cable for all connections except speakers. For speaker connections use lamp cord or speaker cable.

**Speakers** The STA-2100’s output is designed for use with 4 – 16 ohm speakers. If you plan to have both A (main) and B (remote) speakers, you should use 8 or 16 ohm speakers to prevent overload. This Receiver has two sets of Speaker terminals choose only one set. If your speakers have RCA plug inputs, use speaker cables with RCA plugs and use the RCA jack speaker outputs.

**Note:** When using the push terminals, be sure to observe proper polarity. Most speaker wire is clearly marked with a raised line along one conductor, or has one wire a different color from the other. Connect the (+) Receiver output to the (+) or “marked” (color dot or other marking) Speaker terminal. Do not allow stray strands of wire to touch adjacent terminals or the metal chassis.

To use the RCA jacks, you should connect 18-gauge wire, such as Radio Shack Catalog Number 42-2478. This cable is designed to handle the output from high-powered equipment like the STA-2100.

**Phonograph(s)** Connect the turntable leads to the PHONO input (PHONO 1 or 2). If the turntable has a ground wire (usually black or green) connect it to the PHONO GND screw. Plug the turntable AC cord into the AC convenience outlet or wall socket.

If you use PHONO 1 inputs, normally the rear panel PHONO 1 LEVEL switch should be set to 2 mV. If your cartridge has an especially high output, slide the switch to 4 or 8 mV. Adjust to match the phone level to the level produced by other signals (AM, FM, etc.), so that there is little change in volume when switching from PHONO 1 to other sources.

**Tape Deck(s)** Connect your Recorder’s inputs (usually labeled AUX or LINE IN) to the Receiver’s TAPE OUT 1 jacks. The Receiver’s TAPE IN 1 jacks should be connected to your Recorder’s PRE AMP OUTPUT or LINE OUTPUT jacks. You can connect a second Recorder’s inputs to the Receiver’s TAPE OUT 2 jacks and the Recorder’s output to the Receiver’s TAPE IN 2 jacks.

**AUXiliary Equipment**

The auxiliary inputs may be used with any high level source — a second tuner, TV audio, ceramic or crystal phone, an additional tape player or recorder, short wave radio, etc.

**Antennas** Your Receiver comes with an FM Dipole Antenna as an accessory. For FM reception, connect it to 300-ohm antenna terminals on the rear. Tack it to the back of a record cabinet or onto a wall — the higher the better.

Before plugging in the STA-2100:

- Double-check all connections — especially the Speaker connections — to assure that they are all secure and that there are no shorts.
- Set the VOLUME control to minimum counterclockwise position.
- All push buttons should be out.

Now, connect the power cord to a source of AC power and you are ready for fantastic sound!
CHOOSING THE REST OF YOUR SYSTEM

SPEAKERS
No stereo system sounds better than its speakers, so choose the best you can afford for your “A” or main speakers. With a high quality receiver like the STA-2100, you should carefully consider Radio Shack’s Mach or Optimus series speakers. To appreciate your receiver’s superior performance, we recommend one of the Nova or Minimus speakers as a minimum investment.

Of course there are a wide variety of speakers intended primarily for remote (B) use. Some are weather-proofed for outdoor installations and others offer the convenience of a built-in volume control. Naturally, if you plan to use your B speakers for critical listening, you should consider using the same quality of speakers for both your A (main) and B (remote) installations.

Your nearest Radio Shack has a complete selection of speakers for every application and budget.

TURNTABLE
For convenience, most people prefer a record changer (often called an automatic turntable) to a manual turntable. A changer will play an entire stack of records and returns the tonearm to its rest at the end of the last record.

For the best sound, your turntable should be equipped with a magnetic cartridge. Cartridges equipped with conical styli (needles) are usually inexpensive and have good sound. But a cartridge with an elliptical stylus follows the record groove more accurately and so, produces better sound. Your Radio Shack store has a selection of changer systems which come with factory mounted bases and cartridges.

TAPE DECKS
Until very recently, reel-to-reel tape decks were the only possible choice for those interested in true high-fidelity. Recent technological advances have made 8-track and cassette recorders approach the sound quality of reel-to-reel machines.

Reel-to-reel decks are a must for those who want to edit their own tapes and they still have marginally the best performance.

The best cassette decks, equipped with special tape bias settings and noise reduction circuitry, will outperform many reel-to-reel decks. They have the additional advantage of compactness and convenient pop-in loading. In addition, cassettes can be used in the car as well as at home.

8-track cartridges provide slightly less fidelity than cassettes or open-reel, but have several advantages. An 8-track recorder plays pre-recorded car tapes at home and can save money by recording new tapes for your auto. In addition, an 8-track cartridge uses a continuous tape loop which can provide hours of uninterrupted music. Many 8-track playback decks are less expensive than record changers and of course will let you use car tapes at home.

HEADPHONES
Any system can benefit from a good pair of stereo headphones. They provide convenient private listening and many people find the heightened stereo very exciting.

Your STA-2100’s front-panel headphone jack will accept any low impedance stereo headphones. When shopping, wear each pair of headphones long enough to be sure they will be comfortable.

ANTENNAS
Under most conditions your Receiver's AM built-in antenna and FM Dipole antenna should provide adequate AM and FM reception. If you have difficulty, see HINTS FOR BETTER SOUND (Page 14).
OPERATING THE STA-2100

Power On  Press POWER button in to turn the Receiver on.

NOTE: When you press POWER to turn the Receiver on, you won't hear any sound for a few seconds — while the pilot LED beside the Power switch is red. Then you'll hear a faint click as the speaker protection relay closes. The LED will turn green and power will be applied to the speakers.

This pause before the output stages are activated protects your speakers and the Receiver's internal circuitry from high-level switching pops and voltage peaks during the power-on cycle. The click is your reminder of this important safety feature.

If at any time during operation the circuit protection relays are activated (by a short across the speaker terminals, for example), the LED will glow red again and Receiver's sound will cease. This tells you that you need to check the installation for an improper connection, overheating, etc.

Speakers/Headphones

Press the A or B (or A and B) SPEAKERS button. For private listening, release the SPEAKERS buttons by pressing again and plug in a pair of low impedance headphones into PHONES.

Select the Source

Rotate SELECTOR knob to the desired position.

For AM reception, use the Tuning Knob to find the desired station. Fine-tune for the highest reading on the SIGNAL meter.

For AM reception, use Tuning Knob to find the desired station. If you're tuned to a stereo FM station (with MONO button out), the STEREO light will come on.

Adjust Tuning for a center reading on the TUNING meter.

To eliminate interstation noise while tuning for FM stations, press MUTE. Receiver will now silent until you tune a relatively strong (3 μV) signal. To tune weak FM stations, leave MUTE button in out position.

If you're listening to a weak stereo FM station, press HI MPX FILTER button to remove some of high frequency noise and hiss.

If signal is still not acceptable, try pressing MONO button in. This will eliminate the stereo effect, but should also reduce the noise level somewhat.

Dolby FM Reception. If you connect a Dolby noise reduction decoder to your STA-2100 (see illustration, page 8), you will be able to get the full benefit from Dolby FM broadcasts. (Check with your local FM stations to see which ones offer Dolby FM broadcasts.)

To listen to an Dolby FM broadcast: Press FM 25μS button in, set TAPE MONITOR switch to appropriate position and turn your Dolby noise reduction accessory on. You will then enjoy improved signal-to-noise-ratio; full dynamic range, even at high frequencies; and improved reception in weak-signal areas.

To listen to non-Dolby FM broadcasts (or if you do not have a Dolby decoder) leave FM 25μS button out; otherwise the FM sound will have an unnatural "brightness".

For recording Dolby FM broadcasts, see RECORDING, page 13.

Listening to Records The STA-2100 has connections on the rear panel for up to two turntables equipped with magnetic phono cartridges. This opens up many possibilities for critical record listening.

For example, you might connect a convenient record changer to PHONO 1, and a high-performance manual turntable to PHONO 2. Then simply by using the SELECTOR switch, you could match the phono source to the occasion!

Auxiliary Sources You can also connect high-level sources to the STA-2100 for even more versatility and enjoyment. Typical auxiliary equipment would be: tape player, ceramic or crystal-cartridge record player, TV audio, a UHF or VHF tuner, ham radio, etc. Connect such sources to the rear panel AUX inputs and set SELECTOR switch to AUX.

VOLUME and BALANCE

Rotate the outer portion of this dual control (away from panel) clockwise to increase volume to the desired level. If necessary, rotate inner ring (closer to panel) to achieve the correct Left-Right balance according to listening position, program materials, etc.

To reduce volume temporarily, for example, to answer a phone, press the — 10 dB ATTENUATOR button in. This instantly reduces the amplifier's gain by 10 dB so the sound is cut to one third the former level without your having to change the VOLUME control setting. To return to the former level, press button again so it returns to "out" position.

Note: Before releasing — 10dB ATTENUATOR Button to out position, be sure VOLUME is not set too high — or else you may startled by the sudden increase in power.

Another use for this attenuator button is to give you finer control over the volume. Press — 10 dB ATTENUATOR in and rotate the VOLUME control to the perfect precise low-level volume you desire.

To check output to speakers when — 10 dB ATTENUATOR is in, read ATTEN IN scale on the WATTS meters.

REALISTIC®
Tone Control Settings

The STA-2100 gives you unusually precise control over the frequency response. You're probably familiar with the use of bass and treble controls, but the MIDRANGE control may seem a little new to you. MIDRANGE (also called "presence") affects frequencies in the human voice range. When you're listening to a vocalist, try varying the MIDRANGE setting. You'll see that an increase in midrange response moves the vocalist "up front", while a decrease moves the singer into the back ground of the ensemble.

To increase bass, midrange or treble response, rotate the appropriate control clockwise; to decrease, rotate control counterclockwise. In FLAT position, controls are removed from the circuit for a flat, unadjusted response.

BASS Controls Capability

To limit the range of the BASS and TREBLE controls, use the TURNOVER switches. When BASS TURNOVER is in "out" position, BASS control affects frequencies below 300 Hz; push TURNOVER to "in" position and BASS control will only affect frequencies below 150 Hz.

TREBLE TURNOVER works similarly; use it to select a TREBLE control turnover of 3 kHz (frequencies above 3000 Hz) or 6 kHz (frequencies above 6000 Hz).

For low listening levels, press LOUDNESS in.
This introduces a special low frequency emphasis at low listening levels. This is done because the human ear is less sensitive to these frequencies at low listening levels. Press again to remove loudness compensation from the circuit. Radio Shack's exclusive Perfect Loudness™ adds just the right amount of compensation for every listening level. Use the position which provides the most pleasing sound reproduction for your taste. Filtering Unwanted Sounds
Often the source material contains undesirable sounds at the frequency extremes. The STA-2100 has two special filters to handle such annoyances.
Press HIGH FILTER in to eliminate the pops and clicks on an old record, hiss from tape or FM — or any high frequency noise.
Press LOW FILTER in to remove low-frequency noise, such as hum or turntable rumble.

Using the WATTS Meters

You can continuously monitor the power available to your speakers by reading these illuminated meters. This will help you gauge speaker efficiency and make sure you don't push too much power through your speakers (depending on their power rating).

Meters show RMS watts per channel with 8-ohm speakers connected. So if you have one pair or two pair of 8-ohm speakers connected, the readings will be accurate.

When you have the — 10 dB ATTENUATOR button pressed in, you must read power output on the special ATTEN IN scale.

PRE OUT — MAIN IN Jacks

These rear panel jacks come with jumper straps between them. These jacks provide a convenient access point to the signal path through the Receiver so you can use the main amplifier circuits independently.

Typical applications will be with Frequency Equalizers and multi-channel amplifier systems. If you use a Frequency Equalizer, it is installed in place of the jumper straps: PRE OUT to the Equalizer's Input Jacks and MAIN IN to the Equalizer's Output Jacks.

Note: The Receiver's VOLUME, BALANCE and Tone controls are all in the circuit in front of the PRE OUT jacks — thus, any external equipment you connect to the MAIN IN jacks should have its own volume control.

Input Level at MAIN IN Jacks: 1.2 V (maximum) (for rated Output)
TAPE FUNCTIONS

Your STA-2100 has two sets of Tape Input and Output jacks on the rear, plus DUBBING and MONITOR switches on the front panel. This makes it easy to copy tapes, make dual recordings or record any program source without changing rear panel connections.

Recording

Set the SELECTOR switch to the desired source — you can record any program source being played through your Receiver. Set TAPE DUBBING to SOURCE position.

Adjust VOLUME, BALANCE and Tone controls for your listening pleasure — they will not affect the output to your Recorder.

If you have a 3-head tape deck, you can set TAPE MONITOR switch to 1 (or 2) to hear the recording immediately after it passes the recording head.

When TAPE DUBBING and MONITOR switches are set to their SOURCE positions, the signal you are listening to (AM, FM, PHONO 1; PHONO 2 or AUX) will appear at both TAPE 1 and TAPE 2 OUT jacks. So, you can record via either or both jacks.

If you set TAPE MONITOR to other than SOURCE, it will interrupt the "source" signal and connect the Receiver's input to the TAPE IN jacks selected by the position on the TAPE MONITOR switch.

To Record Dolby FM Broadcasts

If you have a Dolby-type tape deck, you'll be able to record the specially processed broadcast directly onto tape, and then decode it at playback for a vastly improved signal-to-noise ratio, dynamic range, and high frequency response.

Press FM 25 μS button in and record the Dolby FM broadcast with your tape deck's Dolby system off. (This is because the signal is already Dolby-encoded; you don't want to re-encode it.) To play back the recording, turn your tape deck's Dolby system on. This will cause the Dolbyized recording to be decoded.

To record non-Dolby FM (or if you don't have a Dolby-type tape deck), leave FM 25 μS button out.

To Duplicate (Dub) Tapes:

Let's say you have Tape Deck "A" connected to TAPE 1 IN and OUT jacks. And you have Tape Deck "B" connected to TAPE 2 IN and OUT jacks.

Put Tape Deck "A" into Play function. Set DUBBING to 1–2 and Record with Tape Deck "B". If Tape Deck "B" is a 3-head machine, you can monitor its recording by setting TAPE MONITOR to 2.

You can also record onto Tape Deck "A", when Tape Deck "B" is in the Play mode. Just set DUBBING to 2–1. Then, to monitor the recording made on Tape Deck "A" (assuming "A" is a 3-head machine), set MONITOR to 1.

As you use and experiment with these jacks and front panel switches, you'll soon begin to appreciate the unusual flexibility and versatility of these inputs and outputs.

Dubbing While Listening to Another Source:

It's possible to dub tapes (from Tape 1 to Tape 2 or Tape 2 to Tape 1) while you are listening to another source (AM, FM, PHONO 1, PHONO 2 or AUX). This surprising feature is possible because the TAPE IN/OUT circuits are independent from the rest of the circuitry under the following conditions:

(a) TAPE MONITOR switch must be set to center (off) position.
(b) TAPE DUBBING switch must be set to 1–2 or 2–1 position, depending on which deck is in playback mode and which is in record mode.

So now if you're doing a lot of dubbing and it gets tedious, you're free to listen to whatever source you choose!

Playback

If you have a Tape Deck connected to one of the TAPE IN jacks, you can set TAPE MONITOR to the desired position, and regardless of the position of the SELECTOR switch — you will hear the tape being played.

Note: If you have set TAPE MONITOR to 1 or 2 without a signal source being connected to TAPE IN 1 or TAPE IN 2, the Receiver's sound will cease. TAPE MONITOR (1 or 2) interrupts the signal flow through the Receiver and activates TAPE IN 1 or TAPE IN 2 for the input source.
**BUILT-IN PROTECTION CIRCUITS**

We’ve already noted it, but let’s explain the different types of protection circuits you’ve got in your Receiver.

You may have noticed some stereo systems which produce loud “pops” in the speakers when power is turned “on”, or functions are changed. With high-powered, ultra-clean amplifiers such as the STA-2100 uses, these pops can blow speakers (or at least bother your ears).

But don’t worry — it won’t happen with your Receiver. We’ve built-in special relay protection circuitry to prevent such damage. First of all, there’s a power-on protection relay that protects the power switch and fuse from potentially damaging in-rush current. In addition, the high-power amplifier output stages are kept off for a few seconds while the power is turned on. (During this period, the pilot LED will glow red.) When the power supply circuitry and audio preamp stages have stabilized, another relay switches in the high-power amp stages and the LED indicator turns to green. Of course, this means you don’t hear sound for those few seconds — but you won’t mind that, now that you know your speakers are protected.

We’ve also incorporated circuitry which eliminates electronic switching surges that result from Mute releasing and engaging (preventing loud blasts of audio when the mute circuitry switches).

In addition, there is a provision for eliminating SELECTOR switch clicks and pops. Some high-power amplifiers have to be turned down before changing input selector switching — not the STA-2100 (we’ve taken care of that for you, electronically).

**HINTS FOR BETTER SOUND**

**Positioning Your Speakers**

Placement of speakers is a highly personal matter, depending largely on the arrangement of your listening room and the way you listen to music. Where you put your speakers does make a difference in how your system will sound, so before settling on a final arrangement, try several alternatives.

Bass response is highly dependent on speaker location. For maximum bass, place the speakers in the corners of your room. Putting the speakers directly on the floor will make the bass even stronger. If the bass sounds boomy and exaggerated, move the speakers away from the corners slightly, pull them out from the wall a little or raise them 6 to 8 inches (15 - 20 cm) off the floor.

**Stereo**

Stereo speakers should be 6 to 8 feet (1.8 - 2.4m) apart.

Putting them too close together reduces the stereo effect, while placing them too far apart reduces bass response and creates a “hole in the middle”. Also, most speakers have a tweeter dispersion angle of about 60°. Ideally your listening position should be in the overlap area so you may want to angle the speakers toward your for better stereo.

**Antennas**

Under most conditions your STA-2100’s built-in AM antenna and FM dipole antenna should be adequate for AM and FM reception. If you cannot get adequate reception, try one of the arrangements listed below. Your Radio Shack salesperson knows about reception difficulties in your area.

A set of VHF rabbit ears or those made especially for FM reception work well in suburban areas. Some feature electronic “tuning” and amplification circuits for better reception.

An ordinary rooftop VHF TV antenna provides excellent FM reception. An inexpensive “splitter” permits you to use the TV and FM at the same time with very little signal loss. In extremely weak reception areas, a special outdoor antenna may be the only solution. Such antennas can receive stations up to 175 miles (280 km) away over flat terrain.

Many new homes and apartments have built-in 75-ohm antenna lead-in systems. Your Receiver is designed to be used with either 300-ohm or 75-ohm type antenna systems. As illustrated in the antenna connection drawings at the right of page 8, the shield portion of the 75-ohm cable must be connected to the GND screw.

For AM, a long piece of wire strung outdoors between two insulators can greatly increase AM long-distance reception. Or, use Radio Shack’s 278-758.

**Note:** To protect your receiver use a lightning arrestor on any outdoor antenna.

**Connecting an L-Pad**

In some cases you may want to vary the volume of the remote, or rear, speakers separately. This can be done very simply and inexpensively with a stereo L-pad, such as Radio Shack Catalog No. 40-979.
CARING FOR YOUR STA-2100

The STA-2100’s real-wood veneer should be polished from time to time with lemon oil (available from Radio Shack). Waxing produces a glossy finish but it tends to build up and produces a dull coating.

Treat the front panel with care — so you don’t scratch it. A window cleaning liquid works well (a small amount on a soft cloth).

**Ventilation** — can be important. We merely recommend that you don’t place the STA-2100 on a surface which would block air circulation — air must be able to circulate freely around the back, under and over the top of the case. Avoid placing on a shag rug, etc. which would block such circulation.

**Overload Protection**

In addition to “pop” and “click” elimination (for speaker protection — as well as your ears), we’ve got a few more protection circuits you’ll want to be aware of. If too much current flows in the output circuit (from excessively low impedance combinations of speaker’s that are less than 4 ohms, shorted speaker terminals, etc.) a protection circuit activates immediately.

This overload protection can be one of two types — either to completely silence the Receiver, or to drop output considerably. If either condition occurs, you know these protection circuits have taken over. In such a case, turn power off and check speaker wiring (be sure no short pieces of wire touch between adjacent speaker terminals and that your speaker cables are not shorted). Also, be sure you are not using 4 ohm speakers if you are using more than one pair of speakers.

**Thermal Protection**

Your Receiver has built-in thermal overload protection. This means it can not become abnormally hot and damage some portion of the circuitry. If internal temperatures do rise abnormally, the Receiver will automatically silence itself and Indicator LED will turn red. If this happens, check to be sure you have not placed something over the ventilation holes — if you have, remove it. If you are using speakers with excessively low impedance, the amplifier circuit may be over-driven and thus producing excessive heat. This can be caused by using 4 ohm speakers on both Main (A) and Remote (B) speakers — if you use both pairs of speakers, be sure to use either 8 or 16 ohm types.

In any case, if the Receiver does silence itself, set POWER off, check ventilation and then check to be sure your speakers are properly connected and that you are not using a combination of 4 ohm speakers for both Main and Remote. This protective circuit is activated by temperature, thus it may take a few minutes for everything to cool down adequately. After you’ve checked and are sure everything is OK, turn POWER “ON”. If the Receiver does not come back on, you may have to wait for a few more minutes for everything to cool adequately. Also, you might check the rear panel fuse (8 Amp); if it is blown, replace only with the same type and rating.

**Overdrive Protection**

With a high-power receiver like the STA-2100, an excessive input signal level might damage the internal circuitry. We’ve included built-in protection against this kind of over-driving. When the signal input level is too high, the power output is automatically cut back to a safe level, and the pilot LED will change from green to red. Should this happen, turn VOLUME down and wait for a while. After a few seconds the LED will change back to green and the Receiver will resume normal function.

**If You Have Problems**

We hope you don’t; but if you do, here are some suggestions:

1. Check all your cable connections. Make sure all the leads and plugs are secure at both ends.

2. Try a different AC outlet if you don’t get any indication of power (and be sure you’ve got the line cord plugged in!).

3. Try interchanging cables and connections on the rear panel — sometimes this will give you a hint of where the problem lies — and may solve the problem for you.

4. If the dial scale lights are on and Meter works — but you have no sound — make sure you didn’t leave TAPE MONITOR in 1 or 2 position. If that is not the case — maybe the automatic overload protection circuit has activated. In such a case, press off POWER and check your speaker connections.

   A. Make sure there is no short across the speaker push terminals (stray strand of wire touching between terminals or to the metal chassis).

   B. If you are using more than one pair of speakers, they must be 8 or 16 ohm type (two pair of 4 ohm speakers can overload the amplifier circuit and cause this circuit to activate).

   C. Make sure you’re not overdriving the amplifier with an excessive signal. (This might happen if you mistakenly connected a high-level source to the low-level phono inputs, for example.)

   D. Let the Receiver cool down for a few minutes and then turn POWER back on.

5. If the dial lights don’t come on, the fuse may be blown.

   Check it; replace only with a 8 Amp type.

In any case, if none of the above does the job and you still have a problem — help is as close as your local Radio Shack store. Bring your unit in and be ready to describe the symptoms — we will get you back into good stereo sound ASAP!

*REALISTIC®*
SPEAKERS – FOR THE MUSIC MINDED

For years Radio Shack has been known for its line of speakers. Back in the days when speakers often were priced higher than a good receiver, Radio Shack brought out the Optimus line which proved a speaker didn’t have to be expensive to sound expensive.

And today, we are THE place to go for speakers whether you are looking for a real wood piece of furniture that sounds good or just a small bookshelf type. Everything from our big sound Mach One to our sophisticated Optimus Tower to our handsome Minimus 5.

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MINIMUS® SERIES

MINIMUS-7

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