Your new Realistic STA-2200 is a high-powered AM/FM Stereo Receiver utilizing the latest in digital computer technology for a product unmatched in quality, versatility and reliability.

The built-in microprocessor-controlled CMOS LSI Frequency Synthesizer eliminates the dial scale and replaces it with an ultra-accurate digital readout. The STA-2200 tunes up or down the dial automatically, stopping at each station that's on the air in your area.

IN ADDITION, THE STA-2200 FEATURES:

- FM front-end uses a dual-gate MOS FET for immunity from problems caused by overloading (local strong signals) and other spurious-response effects. Tuning is with Varicap Diodes, controlled by the Microprocessor (no mechanical tuning problems).
- FM IF section incorporates 3 ICs resulting in very high gain and outstanding limiting characteristics (ultra-low-noise FM reception). Three linear-phase ceramic filters assure superb selectivity with lowest distortion. Quadrature detector and PLL stereo detector gives you the best possible FM and FM Stereo Signal with state-of-the-art separation.
- PLL Frequency-Synthesizing CMOS IC provides no drift, digital tuning.
- 12 Memory Locations Store your favorite stations for easy one-button access (six for AM, six for FM).
- Real-time clock.
- MOS-FETs in the power amplifier for high-power with ultra-low distortion even at high frequencies.
- Automatic Protection Circuitry to protect against voltage surges, overloads, shorts and overheating.
- Switchable DOLBY* FM processor to let you enjoy the low-noise and increased dynamic range of stations broadcasting Dolby encoded music.

The STA-2200 pre-amplifier allows you to tailor the sound to your preference with selectable turnover on the Tone controls and a wide range of inputs.

The Power Amplifier delivers a solid 60 watts RMS per channel. Enough to drive two pairs of even the most inefficient speaker systems.

*Noise reduction system manufactured under licence from Dolby Laboratories.
**“Dolby” and the double-D symbol are trademarks of Dolby Laboratoires.

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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
Minimum Audio Output Power at no more than 0.02% : 60 watts (RMS Power, Both Channel Driven)
Total Harmonic Distortion into 8Ω, over the audio spectrum, 20 to 20,000 Hz : 15 – 25,000 Hz
Frequency Response : 15 – 25,000 Hz
Sensitivity (full output)
PHONO : 2.2 mV
PHONO Input overload for 0.5% THD : 10 mV
AUX : 100 mV
TAPE IN 1/2 : 160 mV
Tone Controls
BASS (50 Hz or 100 Hz) : ±10 dB
TREBLE (10kHz or 20kHz) : ±10 dB
Signal to Noise Ratio
AUX/TAPE IN 1/TAPE IN 2 : ±75 dB
PHONO : ±65 dB
Cross-Talk : ±68 dB
Loudness Compensation (-30 db Volume) : ±6 dB (100 Hz)
 : ±4.5 dB (10 kHz)
TAPE OUT Level : 140 mV
TAPE OUT Level (DIN) : 3.3 mV
FM TUNER
Frequency Range : 88.1 – 107.9 MHz
Sensitivity : 1.8 µV (10.3 dBf)
Signal to Noise Ratio (1mV) : 68 dB
Limiting Sensitivity (-3 dB) : 1.5 dB
Image Rejection : 75 dB
Capture Ratio : 1.5 dB
Harmonic Distortion Mono : 0.2 %
Stereo : 0.3 %
IF Rejection : 96 dB
ACA : 75 dB
AM Suppression : 55 dB
Stereo Separation (1 kHz) : 48 dB
AM TUNER
Frequency Range : 530 – 1610 kHz
Sensitivity Radiated : 250 µVm
for 20 dB S+N/N
Terminal Distortion (6 mV/m) : 10 µV
Image Rejection : 60 dB
IF Rejection : 45 dB
AGC Figure of Merit : 47 dB
AM Fidelity : 40 – 3000 Hz
(±6 dB)
ACA : 35 dB
POWER REQUIREMENTS 120 V AC, 60 Hz (500 watts max.)

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

LABORATORY MEASUREMENTS(TYPICAL)
CONTROLS

Here's a quick overview of the versatile controls of your STA-2200. Complete instructions for installation and operation will follow later in the manual.

**Selector**

Determines the desired program source.

- **AM**: Activates the AM tuner.
- **FM**: Activates the FM tuner.
- **DOLBY FM**: Activates the Dolby FM decoder circuit. It's used when turned to a station broadcasting Dolby encoded FM to give lower noise and better high-frequency response. Leave the button out for non-Dolby FM. (Your local Radio Shack can tell you which stations in your area are equipped to broadcast Dolby-encoded FM.)

**PHONO**: Activates the PHONO jacks on the rear panel. The turntable connected to these inputs must have a magnetic phono cartridge.

**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 phono cartridge, etc.).

**BASS & TREBLE**

These controls let you precisely adjust the frequency response in the low and high-frequency ranges. Each control has a flat position which removes it from the circuit for unaltered sound.
BASS AND TREBLE These push-button switches allow you to select the range of operation of the BASS and TREBLE controls for total control over the desired tonal response.

BASS TURNOVER In the “out” (300 Hz) position, the BASS control will primarily affect frequencies below 300 Hz. In the “in” position (150 Hz) the BASS control will affect a narrower range of frequencies, primarily below 150 Hz.

TREBLE TURNOVER Works the same way. In the “out” (3 kHz) position, frequencies above 3 kHz are affected. In the “in” (6 kHz) position, frequencies above 6 kHz are affected.

POWER METER (Left and Right) Indicates the relative power being delivered to each speaker. The LED readouts are calibrated for 8 ohm speakers.

FM MUTE LOW Press to tune to weaker FM stations.

TONES DEFEAT The same as putting both tone controls in the flat position. Pressing this button removes the BASS and TREBLE controls from the circuit.

PWR METER LOW When the Receiver output is less than about 10-watts, the POWER LEVEL LEDs will not light. Pressing PWR METER LOW expands the scale to show low power levels. Don’t forget to turn it off when listening at normal or high volume levels.

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 button will reduce the noise, but of course the signal will no longer be stereo.

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’ll probably want to leave both buttons out for private listening.

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.

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.

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).

POWER Push to turn the Receiver on. After about 5 seconds, you’ll hear a faint click as the speaker protection relay closes and applies power to the speakers. When the POWER is off, the display will show the time. (When AC Power Cord is plugged in.)

LOUDNESS When listening at low volume settings, press in the LOUDNESS button. This overcomes the human ears reduced sensitivity at low listening levels by boosting low and high frequencies.

REALISTIC
AUTO TUNING DOWN/UP
Press DOWN (or UP) side of key to scan to next higher (or lower) frequency station (AM or FM).

MANUAL TUNING DOWN—UP
Press UP to move up in frequency. Press DOWN to move down in frequency. (This stops at every frequency regardless if there is a station there or not.) Keep pressing to keep tuning.

MEMORY BUTTSTNS (1—6)
Use to set up to 12 of your favorite stations in memory for immediate recall by pushing one button. (You can set 6 for FM and 6 for AM.)

MEMORY SCAN
Press to scan the memorized frequencies. (Stops for 5 seconds at each memorized station; if no signal it continues to scan.)

MEMORY HOLD
Press to stop MEMORY SCAN. Also stops AUTO TUNING.

MEMORY LED
Shows the Receiver is ready to memorize a station frequency after you press MEMORY SET button.

SIGNAL LEVEL
Red LED indicator shows the relative strength of AM or FM signal.

DOLBY FM LED
Lights up when the Selector switch is set to DOLBY FM position.

Digital Display Panel
Indicates receiving frequency, source, or time.

HOUR and MINUTE SET
Are to set the clock. Press momentarily to advance one unit; keep pressing for rapid counting.

MEMORY SET
Press to set the Receiver to accept the displayed frequency into memory.

CLOCK
Press to display time or to set Clock.

DIMMER
Press in to dim the display for night viewing.

METERS OFF
Press in to turn off POWER and SIGNAL meters.

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, 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.
(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 (6A).

(2) AC Cord  Supplies the Receiver’s power. Plug the cord into any 120V AC, 60 Hz outlet.

(3) 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.

(4) 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.

(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) 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
If your Tape Deck has a DIN jack, connect a cable between the DIN jacks. 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 MAG Jacks
Connect Record Changer/Turntable with magnetic cartridge to these Jacks. These Jacks are active when Selector is set to PHONO position.

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

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

(19) 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.

(20) 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.

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

(22) Battery Compartment
Load a 9-volt battery into this compartment to keep the pre-set frequencies in memory and to keep the Clock running (no display tho) when Receiver is unplugged.
A TYPICAL SYSTEM
STA-2200, TURNTABLE, 4 SPEAKERS, TAPE DECKS, FREQUENCY EQUALIZER, and EXTRA TUNER

REALISTIC®
CONNECTIONS

Before making connections, be sure the POWER switch is “OFF” and the AC power 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-2200’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.

**Phonograph(s)** Connect the turntable leads to the PHONO input. 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.

**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.

**Antennas** Your Receiver comes with an FM Dipole Antenna. 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. For the best FM reception, you should use an external antenna (see HINTS FOR BETTER SOUND on Page 15).

**Before plugging in the STA-2200:**
- 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!

**AUXiliary Equipment**
The auxiliary inputs may be used with any high level source — a second tuner, TV audio, ceramic or crystal phono, an additional tape player or recorder, short wave radio, etc.
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-2200, 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, many people prefer a record changer (often called an automatic turntable) to a manual turntable.

A changer will play an entire stack of records and return 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 relatively inexpensive and have good quality 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 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 still a must for those who want to edit their own tapes and have marginally the best performance.

The best cassette decks, equipped with special tape bias settings and noise reduction circuitry, will outperform some 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, but have several advantages. An 8-track recorder plays prerecorded car tapes at home and can save you 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 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 effect exciting.

Your STA-2200'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 many conditions your Receiver's AM built-in antenna and FM Dipole antenna should provide adequate AM and FM reception. However, for optimum reception, an outdoor antenna is still the best bet. See HINTS FOR BETTER SOUND on Page 15.
OPERATING THE STA-2200

POWER ON
Press POWER button to turn the Receiver on.

Note: After about 5 seconds, you'll hear a faint click as the speaker protection relay closes. 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 faint click is your reminder of this vital safety feature.

If at any time during operation the protection relays are activated (by a short across the speaker terminals for example), the Receiver will become silent. If this happens, check for improper connections or overheating.

Note: When POWER is off, the digital display will show the time (as long as the AC power cord is plugged in). When the unit is plugged in for the first time, the clock will read 0:00. (See SETTING THE CLOCK.)

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
Set the Selector to the desired position (AM, FM, DOLBY FM, PHONO or AUX).

AM/FM RECEPTION
Press POWER on. Set the Selector switch to AM, FM, or DOLBY FM. (Make sure the CLOCK switch under the TIME AND MEMORY lid is in the “out” position.)

When POWER is first turned on, the LED Readout will show the lowest frequency in the band (530 kHz for AM, 88.1 MHz for FM).

AUTO TUNING
Press AUTO TUNE — either UP or DOWN. The Receiver will automatically stop at the next station. To continue or make another choice, press AUTO TUNE again.

When you reach the highest frequency (1610 kHz AM, 107.9 MHz FM) in UP AUTO TUNE, it will automatically start over again at the lowest. Likewise in DOWN AUTO TUNE. The Receiver will continue to scan the band over and over again.

When you want to find FM stations that are farther away and have a weaker signal in your area, press FM MUTE LOW switch. When you TUNE with this switch on, the Receiver will be able to tune to weaker stations.

(Note: You may find the weaker stations are noisy. To improve the quality, press HI-MPX FILTER. If the station is still noisy, press MONO button.)

5. Repeat steps 2-4 until six stations are set into the memory.
6. Select the other band (AM or FM), and repeat as above for six more frequencies.

If you wish to change the frequencies entered in the memory at any time, simply enter the new frequencies over the old ones.

Note: You may want to put a small stick-on label above each MEMORY button to show which stations are set in memory.

MEMORY RECEIVE
To tune a frequency programmed into Memory, just press the desired Memory button, 1 through 6. If Selector is set to AM you'll receive the AM frequency; if in the FM or DOLBY FM mode you'll receive the FM frequency.

MEMORY SCAN
To scan the stations in memory, press MEMORY SCAN. The Receiver will scan from memory 1 upward, staying on each frequency for five seconds. To stop the scan, press HOLD.

DOLBY FM Reception
Set the Selector to DOLBY FM when listening to a station broadcasting Dolby encoded music. The DOLBY FM light will illuminate and you'll enjoy a quieter signal, improved dynamic range, and better reception in weak-signal areas.

(If you're not sure which stations in your area are broadcasting Dolby encoded FM, consult your nearest Radio Shack.)

REALISTIC®
LISTENING TO RECORDS
Set the Selector to PHONO and adjust the VOLUME, BALANCE, BASS, and TREBLE controls.
Note: For the best fidelity and longest record life, make sure the cartridge on your turntable is operating within the recommended tracking force. Too light or too heavy tracking forces cause distortion and record wear.

Auxiliary Sources
You can also connect high-level sources to the STA-2200 for even more versatility and enjoyment. Typical auxiliary equipment would be: tape player, ceramic or crystal-cartridge turntable, 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.

Clock Operation
The Clock is displayed during any of the following conditions.
A. AC Power Cord plugged in and the Receiver is off.
B. The Selector switch is in the PHONO or AUX position.
C. CLOCK switch is pressed in.

Note that when the Selector is set to AM, FM, or DOLBY FM and CLOCK is pressed in, you can still listen to any source. However, you cannot tune, either AUTO or MANUAL, or SCAN the memory. But memorized frequencies can be recalled by pressing the appropriate MEMORY key.

Setting The Clock
Open the TIME AND MEMORY Lid. Press in the CLOCK button. Press HOUR to set the hour. Press MINUTE to set the minute. Momentarily pressing the HOUR or MINUTE buttons will advance the display one unit. For a rapid count, keep pressing the button. The Clock can only be set when CLOCK button is pressed in.

Note: To set the Clock exactly, listen to a station broadcasting news on the hour. When the MINUTE button is pressed, the seconds (which are not displayed) are automatically set to zero. Set the minute and release just as the station starts its newscast.

Memory-Hold Battery
Load a 9-Volt Battery (Radio Shack's 23-553) into the battery compartment located in the middle of the rear panel. When the AC cord is unplugged the battery will hold the clock and stations put in memory. (Note: The display will not light when the AC cord is unplugged, even with the battery in.)

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.

Tone Control Settings
The STA-2200 gives you unusually precise control over the frequency response. To increase bass or treble response, rotate the appropriate control clockwise; to decrease, rotate control counterclockwise. In center position (you'll feel a slight catch here), controls are removed from the circuit for a flat, unaltered response.

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. It boosts low and high frequencies to overcome the human ear's lack of sensitivity at low listening levels.

To Disengage Tone Controls
Press TONE DEFEAT. This removes both BASS and TREBLE controls from the circuit. (The same as putting both to “flat” for unaltered frequency response.)

Using The LED Power Meters
You can continuously monitor the relative power being fed to your speakers by watching the LED (Light Emitting Diode) POWER METERS. They'll help you gauge the efficiency of your Receiver and make sure you're not overdriving your speakers (depending on their power ratings). The relative output being fed to each speaker is shown by the LEDs. They're calibrated for 8-ohm speakers.

If you're listening at relatively low volume levels, press PWR METER LOW to expand the scale. (Don't forget to turn off PWR METER LOW when listening at normal or high volume levels.)

REALISTIC®
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 strap. 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 : 1.1 V (maximum for rated Output)

TAPE FUNCTIONS

Your STA-2200 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 to your preference—they won’t 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, DOLBY FM, PHONO 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.

RECORDING DOLBY FM BROADCASTS

Many FM stations are now broadcasting DOLBY encoded music. Dolby FM results in a quieter signal, increased dynamic range, and better reception in weak signal areas. (If you’re not sure which stations in your area are equipped with Dolby FM encoder, consult your nearest Radio Shack.)

Dolby FM broadcasts are recorded just like any other source. Set the Selector to DOLBY FM and record in the usual manner outlined above. If your tape deck has a Dolby system built-in, you can use it in the normal manner.

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, DOLBY FM, PHONO 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 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-2200, 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. The high-power amplifier output stages are kept off for a few seconds after the power is turned on. This gives the power supply circuitry and audio preamp stages a chance to stabilize — then the relay switches in the high-power amp stages. 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 to the above, 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-2200 (we've taken care of that for you, electronically).

A special note about a special noise protection circuit. If you use 4 ohm speakers, FM off-station "white" noise could damage the power amplifier at high power levels. We've built-in a special circuit to counteract this.

If at any time the Receiver goes dead, check the obvious (blown fuse, crossed wires, lack of ventilation). The built-in protection circuitry has probably saved you a trip to the nearest repair station.

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 prefer to 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 boomly 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 - 2.4 m) 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 you for better stereo.

Antennas

Under most conditions your STA-2200'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 specially 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 FM only 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 antenna kit.

Note: To protect your receiver use an antenna discharge unit (15-911) 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. 40-978.

B (Remote) Speaker Outputs

![Diagram of B (Remote) Speaker Outputs](image)
CARING FOR YOUR STA-2200

The STA-2200's real-wood veneer should be polished from time to time with lemon oil. Waxing produces a glossy finish but it tends to build up and produces 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-2200 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 the Receiver 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 have 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 speakers 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.

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 rise abnormally, the Receiver will automatically silence itself. 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 overdriven 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 turn itself off, set POWER off, check ventilation and then check to be sure your speakers are properly connected and that you are not using combination of 4 ohm speakers for both Main and Remote. This protective circuit is activated by temperature, thus it may take 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 (6 Amp); if it is blown, replace only with the same type and rating.

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 LED display and indicator 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 — perhaps the automatic overload protection circuit has activated. In such a case, press off POWER and check your speaker connections.
5. If the LED display and indicator lights don’t come on, the fuse may be blown. Check it; replace only with a 6 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!
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.