HSS® DIRECTED AUDIO SOUND SYSTEM

OWNER'S MANUAL & INSTALLATION GUIDE

SYSTEM MODEL No. | **S220A**

HyperSonicSound®

99-10054-2500 Rev. F

NEWLY ENHANCED DESIGN
- New emitter design for better performance
- Smoother and extended frequency response
- Improved Electronics

American Technology Corporation™

Shaping the future of sound™

CONTENTS/

IMPORTANT SAFETY INSTRUCTIONS

IMPROPER USE WILL VOID THE WARRANTY

READ THESE INSTRUCTIONS
KEEP THESE INSTRUCTIONS
HEED ALL WARNINGS
FOLLOW ALL INSTRUCTIONS

1) To avoid the possibility of electrical shock, DO NOT use this apparatus near water.
   WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or direct moisture.
2) Clean only with dry cloth.
3) DO NOT block any ventilation openings. Install in accordance with the manufacturer's instructions.
4) DO NOT allow foreign objects to pass through the grill face or touch the emitter
5) DO NOT install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
6) DO NOT defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
7) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
8) Only use attachments/accessories specified by the manufacturer.
9) Unplug this apparatus during lightning storms or when unused for long periods of time.
10) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
11) Use 3-inch minimum spacing distances around the apparatus for sufficient ventilation.
12) The ventilation should not be impeded by covering the ventilation openings with items such as newspapers, table-cloths, curtains, etc.
13) No naked flame sources, such as lighted candles, should be placed on or near the apparatus.
14) Due to the potential of extreme temperatures, do not place this unit in direct sunlight for extended periods of time.
15) While medical research indicates that the levels of ultrasound used in this HSS device do not cause any harm to human hearing, tissue, or body parts, common sense would dictate and ATC recommends that you follow prudent safety procedures as you would with any loudspeaker device operating over 80-90 dB SPL.
16) It is recommended that when operating the HSS emitter in "direct" mode (pointed directly towards the intended listener), that you maintain a > 1m (3 ft) distance between the emitter surface and the listener.
17) This product is approved for Indoor use only.
18) It is recommended that you at no time aim the emitter directly into the ear canal at less than 1m (3ft) distance.
19) DO NOT store, ship or use where temperature may go below 14ºF or exceed 104ºF

c UL us LISTED

For future use, please insert the following information before setting your manual aside.

Serial No. Model No. Purchase Date:

HSS Provided By: HSS Provider Phone No.:

INTRODUCTION/

HyperSonic™ Sound is a completely new approach to sound generating technology. It is a paradigm shift in sound production based on solid principles of physics. There are no enclosures, crossovers, woofers, midrange or tweeter elements. The sound we hear is actually generated in the air indirectly, as a conversion byproduct of the interaction of ultrasonic sound waves and the air itself.

First, consider the fundamental operating principals of conventional loudspeakers. About a half-dozen commonly used conventional speaker types are in use today. Whether they be dynamic, electrostatic, ribbon, or some other transducer-based design, all traditional loudspeakers today have one thing in common: they are direct radiating—they are fundamentally a piston-like device designed to directly pump air molecules into motion to create the audible sound waves we hear. As an example, a typical cone loudspeaker moves the paper cone back and forth in the air, which directly creates the sound we hear.

In contrast to conventional loudspeakers, *HSS* technology produces sound in the air indirectly as a byproduct of a completely different process. *HyperSonic Sound Technology* starts by projecting a directional beam (column) of modulated ultrasonic audio frequencies into the air. However, we cannot hear these ultrasonic frequencies. The interaction of the air and the modulated ultrasonic frequencies creates the audible sound we hear within the column of ultrasonic frequencies. The sound is actually created as a byproduct of the interaction of the air molecules and the modulated ultrasonic frequencies. The audible acoustical sound wave is caused by the air down-converting the ultrasonic frequencies to the lower frequency spectrum we can hear. Since the audible sound is produced inside the column of ultrasonic frequencies (which is highly directional), an important byproduct of this process is that the audible sound can be tightly focused in any direction within the listening environment. Unlike a conventional loudspeaker, no sound is projected to the sides or rear of the *HSS* unit. This provides outstanding flexibility and allows an unprecedented manipulation of the sound's direction.

How is HSS different from traditional loudspeakers?

1. *HSS* projects sound in a tightly focused column without spreading sound in all directions.

2. *HSS* does not follow the traditional loudspeaker Inverse Square Law (6dB decrease in level for every doubling of the distance from the source). This means *HSS* sound can travel much greater distances than the sound from conventional loudspeakers while maintaining complete intelligibility.

NOTE: This Owner's Manual refers to HSS in general, however, it is detailed specifically for unit model number S220A. This model is fully self-contained and contains audio input processing, power amplification, and an output emitter device. It only requires a source of audio and AC power to be fully functional.

UNPACKING & INSPECTION/

Unpacking the Carton

Carefully remove the *HSS* device from the packing carton and gently remove any protective wrapping from around the unit. Be particularly careful not to damage the front emitter surface or allow any foreign objects to come into contact with the emitter surface (the silver, dimpled surface behind the protective screen).

NOTE: ***DO NOT remove the protective film covering the front surface of the unit until after final installation, but before AC power is applied.***

Items Included:

(1) *HSS* Directed Audio Sound System unit (model # is indicated on the rear panel)
(1) Owner's Manual
(1) Warranty Card
(1) AC Power Cord

Inspection

Carefully inspect the device for any obvious physical damage. If there is evidence of any damage, DO NOT plug the device into AC power and DO NOT attempt to operate the unit. Immediately file a damage claim with the delivery carrier and contact ATC for repair or replacement instructions.

INSTALLATION & SET-UP/

Cautions on Handling

Use caution when handling the device. Be sure that no foreign objects are allowed to come into contact with the surface of the front *HSS* emitter devices (the silver, dimpled surface behind the protective screen.) If the face of the emitter is scratched, punctured, or otherwise damaged, the *HSS Sound System* will not function properly and should be returned to ATC for repair.

Selecting Location for Installation

The mounting method and installation of this *HSS* device has most likely already been determined by your *HSS* provider. However, some background information may be useful.

The most important thing to remember is that *HSS* produces a beam (column) of audible sound. It does not create a point of sound in space. If the *HSS* unit is pointed directly toward the listener, he or she will hear the maximum audio volume possible. This is similar to shining a flashlight toward someone. If they stand in the beam and look at the flashlight, they easily see the light coming from the end of the flashlight. *HSS* performs in a similar fashion. If you aim the audible sound column directly toward the listener, we refer to this as using the *HSS* device in the Direct Mode. However, if the listener is not in the beam and the sound column strikes a surface, the sound will be reflected back into the environment. What the listener will hear, is the reflected sound from the surface. The listener will perceive the sound as originating on the reflective surface because that is, in fact, the direction of the sound is coming from when he or she hears it. The reflective surface becomes what is called a Virtual Sound Source. Using *HSS* in this mode is known as Virtual Mode.

Environmental

Thermal: The proprietary emitter device used inside the *HSS* unit can be damaged by excessive heat. The only recovery from this is to replace the emitter device. Therefore, care should be taken to avoid exposure of the emitter surface to direct sunlight for extended periods of time or installation of the unit in other applications where the ambient temperature could potentially cause damage.

NOTE: This device is sensitive to temperature extremes, and may be permanently damaged by temperatures that exceed those listed in the General Specifications

Humidity: While the *HSS* unit is not subject to permanent damage by high humidity, it should be protected from direct rain or water—the same as you would protect any electronics device. If the unit is moved from a cool to a warm environment quickly and moisture condenses on the emitter units, it is recommended to wait until the emitter surface has dried before applying power. The moisture on the emitter surface adds extra mass to the sensitive film and will detrimentally affect the performance.

Vibration: Your *HSS* unit is not particularly sensitive to vibration. Use common sense regarding installation as you would with any electronics device.

Dust and Dirt: The sensitive piezoelectric film used in the emitter production is sensitive to added mass (weight) of any kind.

Mounting

(optional accessories)

Multiple mounting bracket options are available for HSS devices. The various bracket assemblies allow maximum flexibility when mounting the unit horizontally, vertically, or at an angle. Download the Mounting Bracket Accessory document from: **http://www.atcsd.com/pdf/OMNIMNTB.PDF**

NOTE: The bracket mounting bolts on the rear of the HSS unit require USA 10-32 Nuts (metric M5 (5mm - 8)).

Adjusting HSS

Adjust the mounting angle to ensure that the directed audio is focused at the correct area of interest.

DIRECT MODE:
As explained earlier in this manual, Direct Mode assumes that the listener will be in a direct path in front of the *HSS* device. He or she will hear the audible sound as the sound column passes by their head. The sound will continue to travel past them until it either strikes a surface or is absorbed by the air (over a long distance). What happens to the sound after it strikes a surface? (Sorry, some basic acoustical education is coming up…)

A number of things can happen when a sound wave strikes a surface depending on the surface itself. If the surface is flat and hard (e.g. a mirror or plaster board), the sound will reflect from the surface. Some energy will be lost, but some of the sound will be reflected back into the environment. The angle at which the sound strikes the surface will equal the angle at which it will reflect (assuming a perfect reflector). Of course, there is no perfect reflector so some amount of the sound will scatter back into the entire area, while the loudest portion will follow the refection path.

If the surface is absorptive at the proper frequencies, the surface will contain the sound within the surface and little sound will be directed back into the environment. The last alternative is to make the surface diffusive. If you diffuse the reflection you essentially reflect it back into the room in all directions. Therefore, no single reflection is louder than all the rest.

One of the great benefits of *HSS* is the fact that we can now predict where the sound will strike a surface (first reflection) and treat that surface accordingly. Since traditional loudspeakers emit sound in all directions, the audio always sounds like it is coming from the speaker device because no matter where you are in the room, the first sound you hear is actually coming directly at you from the speaker. Now, with *HSS*, we only have one column of sound to deal with.

When you consider the "First Reflection" of the HSS sound column, remember, you can:

1) REFLECT IT! Angle the *HSS* device correctly so that the first reflection is directed where you want it to go. For example, if you don't want to hear the first reflection, direct it up into the ceiling, or direct it into an absorptive surface someplace else in the room, etc. Also remember that sound does dissipate over distance. Therefore, the farther you can make the reflection travel, the lower it will be in volume when you hear it again. A good example would be an overhead *HSS* unit directed down towards the floor with the first reflection going back up into the ceiling. If the ceiling was 50 ft. away, the reflected sound would have to travel 50 ft. up and 50 ft. back down before you would hear it again. It may be completely inaudible by that time depending on how loud it was when it started, the composition of the ceiling, and ambient sound level.

2) ABSORB IT! Make the surface struck by the first sound reflection highly absorptive. The better the absorber, the lower the reflected energy. Carpet, for example, is a very poor absorber. It will absorb some of the highest sound frequencies, but will reflect the remainder. Some office wall panels are somewhat better, but still they will reflect the majority of the energy. A local acoustical technician can provide you with the most appropriate absorption material for the individual installation.

3) DIFFUSE IT! Make the surface multi-layered and multi-dimensional. The more irregular the surface, the better the diffusion.

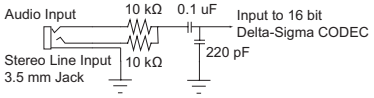
NOTE: You can obtain more information about Reflectors, Absorbers, and Diffusors from RPG Diffusor Systems, Inc.
http://www.rpginc.com/

Ventilation Requirements

You must insure that the *HSS* unit receives appropriate ventilation. Do not mount near curtains or other surfaces that might cover or partially block the ventilation of the unit. If the HSS unit is ceiling or plenum mounted, ensure that proper ventilation requirements are observed. Be sure that insulation or other materials do not interfere with the unit ventilation.

Electrical Power Requirements

Refer to the Specifications section at the end of the manual to determine the specific amount of AC power required for this device. This *HSS* unit contains highly sophisticated digital circuitry which can be damaged by noisy AC power or extreme degrees of voltage fluctuation. Use care to provide properly filtered and controlled AC power to the *HSS* unit. Use care to provide the same type of power you would use for a computer or TV.



Audio Connection

AUDIO INPUT: The analog audio input connector is a 3.5mm female STEREO (tip, ring, sleeve) mini-jack, containing two input channels. In the normal configuration, the input jack accepts a stereo signal and sums the two channels together. (For example, the Left and Right outputs of a standard portable CD player will be summed together at the input to the HSS unit).

With the volume control setting on the HSS unit set to FULL volume, a 0.5V p-p input signal per channel is the threshold of clipping. You may input a signal up to 2.0V p-p into each channel without clipping if the volume control is turned down by -12dB or more. An input signal higher than 2.0V p-p into either channel will clip the A/D converter and turning down the volume control will not eliminate the resulting distortion. The nominal input level is approximately 1.0V p-p per channel. This level provides the user the ability to maintain a reasonable level control over the incoming audio material.

NOTE: This HSS unit is equipped with a safety feature that minimizes the risk of overdriving the unit. Should the input signal be too high, or the volume set too high and the unit senses that it may start to clip, it will automatically temporarily reduce the volume setting to a safe level. Once clipping is no longer occurring, the original volume setting is gradually restored. This volume restoration is intentionally slow in order to offer maximum protection and to prevent the "pumping" that sometimes occurs with other automatic level controls. Depending on conditions, this gradual recovery may take up to a minute. The unit will indicate that it is reducing volume to prevent clipping by flashing the green LED red approximately once every 5 seconds.

ALTERNATE ANALOG AUDIO INPUT CONFIGURATIONS

Two alternate input configurations are supported without any modifications to the *HSS* unit:

1) A mono signal may be input into either channel leaving the other channel open or unconnected. As in the typical stereo case, a 0.5V p-p input yields full output at the maximum volume setting.
2) A mono signal may be input into the *HSS* unit using a 3.5mm mono male plug. In this case the input levels are doubled: in other words, a 1.0V p-p input is required to achieve a full output and 4.0 Vp-p is the maximum input before clipping.

TERMINOLOGY/

HSS®: Acronym for *HyperSonic® Sound*, American Technology Corporation's proprietary trademark for its directional audio sound system technology.

Emitter: The silver, dimpled surface behind the front protective screen is the face surface of the HSS emitter. This component is what emits the ultrasonic sound waves into the air.

SPL: Sound Pressure Level, a term indicating the volume (loudness) of the audio program material in the air.

Beam Width: The effective width (size) of the audio sound beam as it is projected into the air.

Direct Mode: When the listener is in the direct audio beam of sound.

Virtual Mode: When the listener is intended to hear the sound reflected from a surface.

REVIEW OF CONTROLS/

1) VOLUME UP: Pressing the Volume UP button raises the overall volume of the HSS unit in 1.5 dB steps, from off - -45 dB – 0 dB (full on).

2) VOLUME DOWN: Pressing the Volume DOWN button lowers the overall volume of the HSS unit in 1.5 dB steps from 0dB to -45dB. Step # 32 "mutes" the output (off).

3) ACTIVE/STANDBY SWITCH: Active/Standby is a toggle function activated by the momentary push-button switch. Pressing the button one time will place the HSS unit into Standby mode which will mute the audio output, pressing the button again will return the unit to active operational mode.

4) ANALOG AUDIO INPUT: This analog, line level, audio input connector will accept a stereo or mono 3.5mm mini-jack. (See Audio Connection section)

5) INDICATOR LED: The indicator LED indicates operational modes of the HSS unit:

- SOLID GREEN: The unit is on, functional, and active
- FLASHING GREEN: The unit is on and currently in standby mode (audio is muted)
- RED: The audio signal is clipping (distorting). Reduce the level of the incoming audio signal or lower the HSS volume control.

6) CONTROL INTERFACE: (See Connections Section) Volume Up/Down and Active/Standby can be controlled through this remote connection

OPERATING INSTRUCTIONS/

This HSS sound system is fully self-contained and requires very little in the way of operational information.

1) Connect the *HSS* unit to the proper voltage AC power source.
2) Press the power switch to the ON position. (The unit will self initialize).
3) If an incoming audio signal is present, the audio may immediately be heard from the HSS unit depending on what has been selected from the remote control or the last volume control setting before the unit was last turned off.
4) Volume Adjustments: (NOTE: It is always best to begin with a low volume setting).
   a) If your audio source has NO volume control (line output), adjust the volume of the HSS unit using the Up/Down volume buttons (or remote control).
   b) If your audio source has a volume control
      1. Stop playback of the external audio source.
      2. Adjust the HSS unit volume control to full On (maximum).
      3. Then, reduce the HSS volume by approximately 8 steps (8 presses of the Down Volume button)
      4. Begin playing the audio source. Adjust the external volume control to the desired level from the HSS unit. If distortion occurs before reaching the desired volume, reduce the external volume control and increase the HSS unit volume control.

NOTE: 5 seconds following any change, the unit will maintain that change of volume setting and play/standby status, even if the unit is turned off or disconnected from AC power. For example, if you want the unit to remember your last setting, wait at least 5 seconds after the change before turning the unit off.

REMOTE CONTROL/

External, Wired Remote Control

This connection is via a 6-pin, RJ-11 phone style connector.
Refer to figure below for proper connection information.

The RJ-11 interface connections require a momentary switch closure to GND for:

1) ACTIVE/STANDBY: toggles between active and standby mode

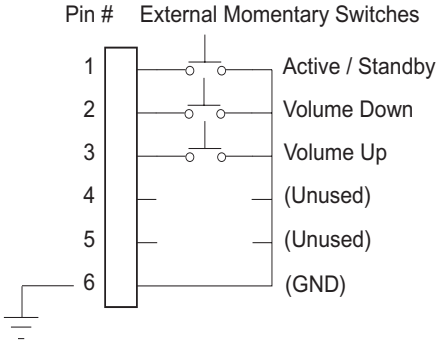
2) Volume DOWN: Lowers the volume in thirty-one, 1.5 dB steps from 0 dB to –45 dB. Step # 32 “mutes” the output.

3) Volume UP: Raises the volume in thirty-one, 1.5 dB steps from off to –45 dB, to 0 dB.

4) (Unused)

5) (Unused)

6) GROUND (GND)



APPLICATION NOTES/

As new types of HSS applications are studied and measured in the field, ATC will publish application notes with more specific details regarding each installation type, best practices, suggestions, cautions, and answers to many of your questions. They will be available on our website in the future. www.atcsd.com

MAINTENANCE/

Cleaning

Dust: It is recommended that the HSS unit be kept free from excessive dust. A small computer style vacuum or compressed air may be used to remove excessive dust from the surface of the emitter and around the controls. Routinely remove dust from the rear fan cover and air vents surrounding the unit.

Emitter Surface: DO NOT ATTEMPT to clean the surface of the emitter with any device other than compressed air at less than 10 PSI. (Use only low PSI compressed air available in small spray cans from all electronics stores).

TROUBLESHOOTING/

- **Check to be sure that the green status LED is on.**

NO AUDIO OUTPUT FROM HSS DEVICE: (real-time unit)

- Turn off AC power. Reapply power to the unit.
- Be sure the volume setting has not been turned down or off.
- Be sure that the audio input connector is properly inserted into the connector.
- Ensure that an appropriate audio signal is being fed to the input connector.

GENERAL SPECIFICATIONS / SYSTEM MODEL No. S220A

ULTRASONIC & DSP PROCESSING	
Carrier Frequency:	approx. 48 kHz
Modulation Method:	Proprietary Dynamic Carrier
HSSound™:	Version 1.0
ULTRASONIC EMITTER	
Type:	ATC proprietary PVDF Piezo Film device
AUDIO	
Analog Input Section:	
Input Impedance: (real time unit)	10 ΩΩ
A/D Converter:	16 bit
Input Connector:	3.5mm female STEREO (tip, ring, sleeve) mini jack
Input Channels:	Two # 1(Tip + Sleeve) # 2 (Ring + Sleeve)
System Configuration:	Monaural (Two input channels summed together at input stage)
Nominal Input Level:	1.0 V p-p, each channel.
Max Input Level Before Clipping:	2.0 V p-p, each channel
System:	
Bandpass Filtering:	400 Hz – 16 kHz
Max Audio SPL Output:	See Measurement Section
Compression Ratio:	2:1
POWER AMPLIFICATION (ALL UNITS)	
Amplifier Type:	Proprietary Class D – ATC ModAmp™
Amplifier Power Output Potential:	200 watts
Amplifier Efficiency:	>90%
ELECTRICAL	
AC Power Cord Length:	1.83 m (6 ft.)
POWER REQUIREMENTS	
NOTE: Units are prewired for correct input voltage. Check rear panel for specific unit operating voltage	
Wattage:	120 watts
MECHANICAL	
Physical Dimensions: Depth (Front to Back) Height (Top-Bottom) Width (Left-Right)	
	88 mm (3.5 ") 280 mm (11.0 ") 280 mm (11.0 ")

SHIPPING WEIGHT

USA 6.52 kg (9.62 lb), **Europe** 13.68 kg (14.37 lb)

UNIT WEIGHT:

USA 3.54 kg (7.82 lb), **Europe** 5.7 kg (12.57 lb)

ENVIRONMENTAL

Operating Temperature:	-10º C to 40º C (14ºF to 104ºF)
Storage Temperature:	-40º C to 50º C (-40ºF to 122ºF)
Operating Elevation:	Sea level to 6000 ft. (0 m to 1900 m)
Operating Humidity Range:	0 to 95% (non-condensing)
Storage Humidity Range:	0 to 95% (non-condensing)

OPTIONAL ACCESSORIES

Mounting Bracket Hardware	Contact ATC for specifications and availability

SAFETY REGULATIONS

This HSS device will meet or exceed the following safety requirements and regulations.

UL UL Standard 6500

CE

OSHA (USA) OSHA Technical Manual, Section III, Chapter 5, Section V, Table III:5-4 *"TLV's For Ultrasound"*

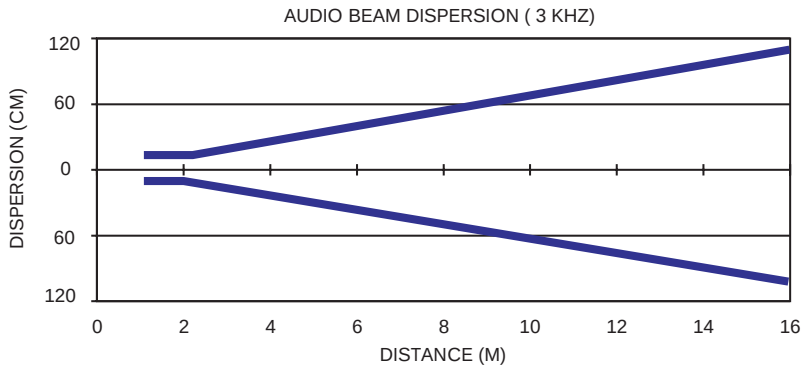
FDA (USA) American Technology Corporation (ATC) has submitted the applicable reports to the FDA pursuant to Title 21, CFR, sub-chapter J as it pertains to ultrasonic devices for other than medical device applications. The abbreviated report is pursuant to Section 1002.12 of the regulations. According to this report, the FDA has assigned the following Accession Numbers to HSS products: 0181485 and 0191486.

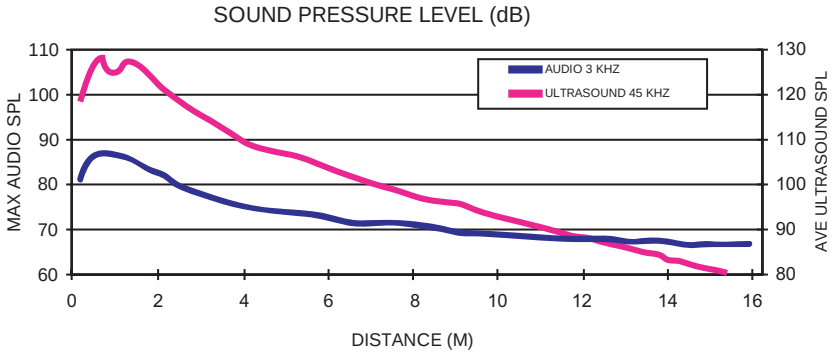
FCC (USA) This device complies with Part 15 of the FCC Rules. This Class A digital apparatus complies with Canadian ICES-003.

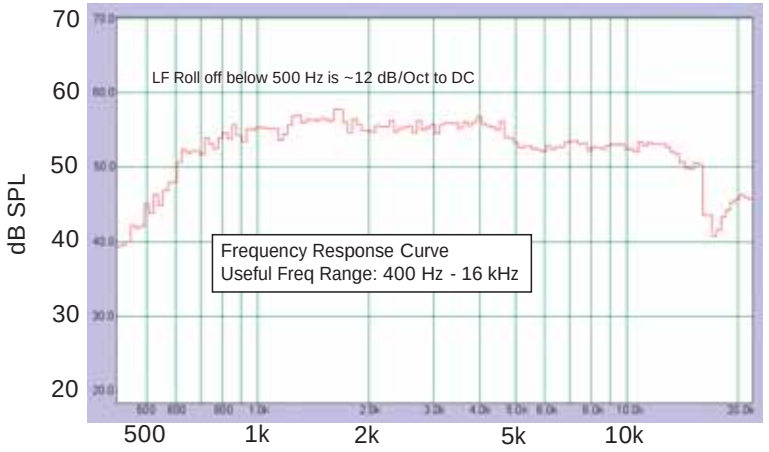
Packaging Specifications (USA) The packaging for HSS is suitable for common parcel shipment. It meets the International Safe Transit Association Procedure 1A pre-shipment test specifications.

Structures and methods utilized in this system are patented under one or more US patents.
Additional US and International patents pending.

MEASUREMENTS (S220 Series)







MOUNTING BRACKETS

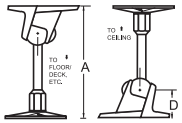
Mounting Brackets for HSS by OmniMount

The Model S220A units are supplied with two mounting studs (bolts) protruding from the center rear of the device.The following OmniMount devices will bolt directly to the rear of the HSS unit. (Note: All Series 20.5 OmniMount devices will attach to the S220A units.)

For HSS units model # S220A

OmniMount Model # 20.5 STX-MP BLACK

STX-MP
ST WITH MOUNTING PLATE



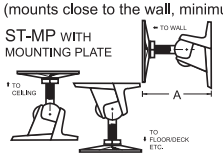
(most common usage)

	20.5 SERIES
A	6 5/8" 168.3 mm
B	6 1/2" 165.1 mm
C	7 1/2" 190.5 mm
D	1 3/4" 44.5 mm

OmniMount Model # 20.5 ST-MP BLACK

(mounts close to the wall, minimum ability to tilt HSS)

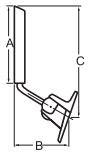
ST-MP WITH MOUNTING PLATE



	20.5 SERIES
A	3 7/8" 98.4 mm
B	3 7/8" 98.4 mm
C	4 3/4" 120.7 mm
D	1/2" 12.7 mm

OmniMount Model # 20.5 WA BLACK

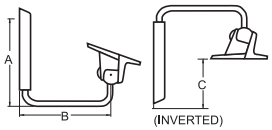
WA WALL (VERTICAL SURFACE) TO BACK OR SIDE OF SPEAKER (VERTICAL SURFACE)



	20.0 SERIES
A	6 1/4" 158.8 mm
B	4 5/8" 117.5 mm
C	9 1/2" 241.3 mm
D	9" 228.6 mm
E	10" 254.0 mm

OmniMount Model # 20.5 WB BLACK

WB WALL (VERTICAL SURFACE) TO BOTTOM OR TOP OF SPEAKER (HORIZONTAL SURFACE) MAY BE USED INVERTED



(INVERTED)

	20.0 SERIES
A	7 3/8" 187.3 mm
B	7" 177.8 mm
C	3 1/8" 79.4 mm

OmniMount Model # 20.5 C-CLAMP

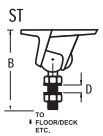
OmniMount Ball Shaft attaches here.

WALL (VERTICAL SURFACE) TO BACK OR SIDE OF SPEAKER (VERTICAL SURFACE) OR CEILING/ FLOOR (HORIZONTAL SURFACE) TO TOP OR BOTTOM OF SPEAKER (HORIZONTAL SURFACE)

STX
ST EXTENDED LENGTH

	20.5 SERIES
A	6 5/8" 168.3 mm
B	6 1/2" 165.1 mm
C	7 1/2" 190.5 mm
D	1 3/4" 44.5 mm

ST



	20.5 SERIES
A	3 7/8" 98.4 mm
B	3 7/8" 98.4 mm
C	4 3/4" 120.7 mm
D	1/2" 12.7 mm

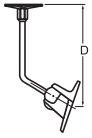
C-Clamps Require # 20.5 ST Ball Shaft Mount or # 20.5 STX Ball Shaft Mount

Alternative OmniMount Model

Model #VM-1
Pan and Tilt Mount

OmniMount Model # 20.5 CA BLACK

CA CEILING (HORIZONTAL SURFACE) TO BACK OR SIDE OF SPEAKER (VERTICAL SURFACE)



	20.0 SERIES
A	6 1/4" 158.8 mm
B	4 5/8" 117.5 mm
C	9 1/2" 241.3 mm
D	9" 228.6 mm
E	10" 254.0 mm

ORDERING OMNIMOUNT BRACKETS

Download the Mounting Bracket Accessory Document for further details:
http://www.atcsd.com/pdf/OMNIMNTB.PDF

Orders can be placed directly with American Technology Corporation:
E-MAIL: HSSsales@atcsd.com
PHONE: (858) 679-2114 **FAX:** (858) 679-0545

You can "Download Detailed Specifications" for additional models and options by visiting:
http://www.omnimount.com/product.asp?p=54

Service Procedures

There are no user serviceable parts within the HSS sound system unit. Should the unit cease to function, it must be returned to your HSS provider or to ATC for repair or replacement.

Warranty Statement

Refer to separate warranty card provided with this manual.

Contact ATC

Before contacting ATC directly, please contact your HSS provider. They should understand more about your particular installation and may be in a position to provide faster service.

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