



# A-20 Owners Manual

A-20 Left Monitor Serial Number: \_\_\_\_\_  
A-20 Right Monitor Serial Number: \_\_\_\_\_  
A-20 Control Amplifier Serial Number: \_\_\_\_\_

# Safety Instructions -- Please Read First

**CAUTION:** To reduce the risk of electric shock, do not remove the cover (or back). No user serviceable parts are inside; refer servicing to qualified personnel.



**WARNING:** To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



This symbol wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure that may be sufficient to constitute a risk of electric shock.



This symbol, wherever it appears alerts you to important operating and maintenance instructions in the accompanying literature. Read the manual.

## DETAILED SAFETY INSTRUCTIONS:

All the safety and operation instructions should be read before the appliance is operated.

### Retain Instructions:

The safety and operating instructions should be retained for future reference.

### Heed Warnings:

All warnings on the appliance and in the operating instructions should be adhered to.

### Follow Instructions:

All operation and user instructions should be followed.

### Water and Moisture:

The appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool etc.).

### Ventilation:

The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

### Heat:

The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including other amplifiers) that produce heat.

### Power Source:

The appliance should only be connected to a power supply of the type described in the operating instructions or as marked on the appliance.

### Grounding and Polarization:

Precautions should be taken so that the grounding or the polarization means of the appliance is not defeated.

### Power Cord Protection:

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles and the point where they exit from the appliance.

### Cleaning:

The appliance should only be cleaned as recommended by the manufacturer.

### Non-use Periods:

The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

### Object and Liquid Entry:

Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

### Damage Requiring Service:

The appliance should be serviced by qualified service personnel when;

- The power supply cord or the plug has been damaged; or
- Objects have fallen, or liquid has been spilled into the appliance; or
- The appliance has been exposed to rain; or
- The appliance does not appear to operate normally or exhibits a marked change in performance; or
- The appliance has been dropped, or the enclosure damaged.

### Service:

The user should not attempt to service the appliance beyond what is described in the Operating Instructions. All other servicing should be referred to qualified service personnel.

## INTRODUCTION:

Thank you for your selection of the A-20. Your studio monitors are a critical element in the countless decisions made during recording, mixing, mastering and other key aspects of audio production. They must deliver a transparent, neutral and revealing assessment of sound, so that you have the information you need to choose and place microphones, set Eq's, balance mixes... In other words, deliver exceptional product. The A-20 is capable of state of the art sonic resolution and flexibility. Investing time to learn about the A-20's features and operation will reward you with the best possible performance.

If you require assistance at any time during or after the setup process, call our Customer Service Hot Line at (800)-NHT-9993 (648-9993). You can also visit our web site at [www.nhtpro.com](http://www.nhtpro.com) for more in depth technical information. Thanks again for your confidence in our products!

## GETTING STARTED:

The A-20 is unique in that it combines a dedicated control amplifier with loudspeaker monitor cabinets, using controlled impedance cables that actually form part of the crossover network. By designing the system as an integral package in this manner, many of the advantages of self-powered speakers can be realized without attendant performance compromises. However, it must be recognized that the control amp, cables and monitors are an inseparable package.

Note: The A-20 must only be used with the A-20 Control Amp, cables, and vice versa!

The following are included in the Control Amplifier carton:

- |                                    |                                    |
|------------------------------------|------------------------------------|
| 1 ea. - Control Amplifier          | 2 ea. - 20' Monitor Output Cables  |
| 1 ea. - 6' IEC Power Cord          | 4 ea. - 10-32 Rack Mounting Screws |
| 1 ea. - Warranty Registration Card | 8 ea. - Plastic Insulating Washers |

The A-20 Control Amplifier may be used on a shelf, or mounted in a standard 19" equipment rack using the screws and washers supplied. For rack mounting, remove and retain the four feet from the bottom of the amp chassis using a #2 Philips screwdriver. Two vertical rack spaces are required, but we recommend you leave at least one additional open space above and below the A-20 for improved cooling, as you would with any high power amplifier. For table or shelf use, the four feet must remain attached to allow for air circulation. As a starting point for speaker placement, align the back of the enclosures parallel to the rear wall, with the angled fronts facing in towards you. For more detailed speaker placement information see page 7.

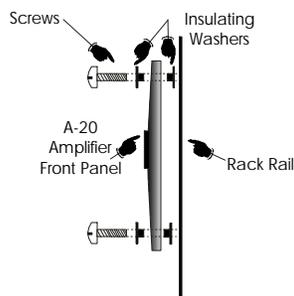


Fig. 1: Rack Mounting Detail

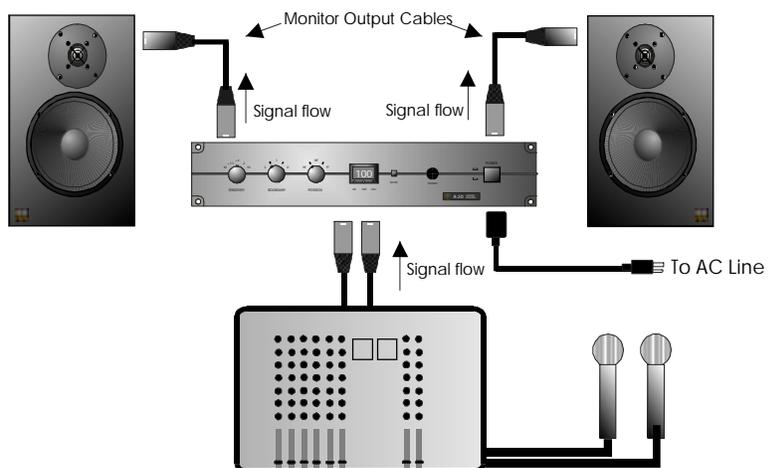


Fig. 2 Typical System Configuration

## SYSTEM CONNECTIONS:



**CAUTION:** MAKE ALL CONNECTIONS WITH THE AC POWER OFF!



**CAUTION:** CONNECTING THE OUTPUT OF THE A-20 CONTROL AMPLIFIER TO ANY EQUIPMENT OTHER THAN THE A-20 OR C-20 MONITOR MAY CAUSE EQUIPMENT DAMAGE.

## CONTROL AMPLIFIER INPUT SECTION:

The A-20 Control Amplifier accepts both balanced and unbalanced inputs on either XLR or 1/4" TRS connectors. These connectors are hardwired in parallel within the A-20 to allow for convenient equipment chaining, but only one signal source should be physically connected to the unit at any time. Figure 3a shows the proper wiring schematic for each type of connector. Since there are so many different connector types and signal levels employed by source equipment, some experimentation may be necessary, keeping in mind that the A-20 can accept a wide range of signals and has an input sensitivity control on the front panel.

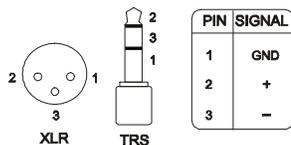


Fig. 3a Balanced Wiring Diagram

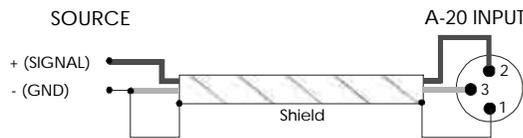


Fig. 3b Unbalanced Wiring Diagram

## SPEAKER CABLE CONNECTIONS:

The A-20 includes two 20' special purpose cables to connect the Control amplifier to the Monitors. While these cables look similar to standard microphone cables, they are constructed with lower and more consistent conductor impedance. Portions of the A-20's crossover circuitry are located in both the amplifier and speaker enclosures, and the cables supplied are an important part of this electrical network. This allows the speaker cables to function as a neutral and transparent component in the system. Replacing or extending the supplied cables with any other type will have a varying, and only partly predictable impact on the sound of the A-20. If your installation requires the use of alternative cables, you may consult the table listing our measurement data on a variety of cable types at [www.nhtpro.com](http://www.nhtpro.com) under the support section. Be sure they are wired as shown in Fig. 3a. These considerations aside, using the supplied cables to connect the control amplifier is quite simple and straight forward. Both the amplifier and the monitors are marked with the appropriate "left" and "right" channels. Fit the XLR connectors into the corresponding connectors on the control amplifier and monitors until the connector locks.



**WARNING:** IF USING CABLES OTHER THAN THOSE SUPPLIED WITH THIS SYSTEM, BE SURE THAT NO CONDUCTOR IS WIRED TO THE XLR CASING. FAILURE TO DO SO MAY CONSTITUTE A RISK OF ELECTRIC SHOCK.

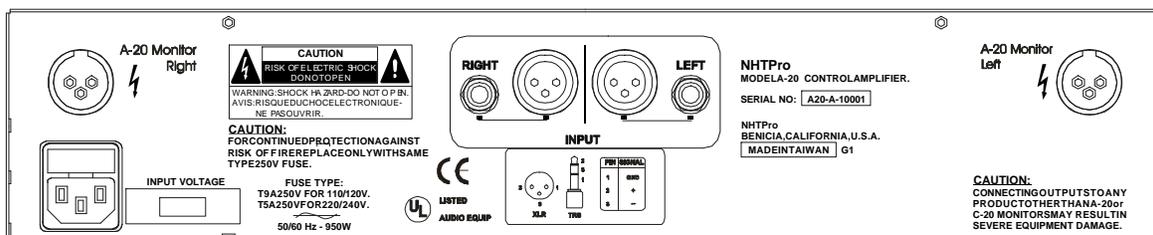


Fig. 4 A-20 Control Amplifier Rear Panel

## USING THE A-20 CONTROL FUNCTIONS:

The A-20 controls are designed for utility and repeatability under varying conditions. You should find the effects of the controls sonically subtle, with little impact on the basic character and accuracy of the speaker. We encourage experimentation to fine tune the system to the requirements of your particular installation.

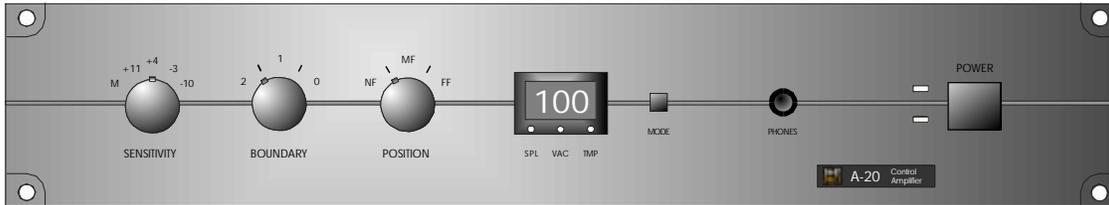


Fig. 5 A-20 Control Amplifier Front Panel

## POWER INDICATORS:

Just to the left of the power switch on the A-20 Control Amplifier are two status LED's. The upper (green) LED lights up indicating there is AC power to the amplifier and the POWER SWITCH is in the "on" position. The lower (red) LED indicates a clipping or overload condition. Occasional flashing of this indicator is a gentle warning you are reaching the system's limits. If the red LED glows continually, severe clipping is occurring. The input signal or system gain should be reduced to avoid the risk of possible system damage.

## SYSTEM STATUS DISPLAY:

A unique feature of the A-20 Control Amplifier is the System Status Display located in the center of the front panel. Small LED's indicate which mode is being displayed; green for average SPL, yellow for AC line voltage, and blue for heat sink temperature. The square "Mode" switch to the right of the System Status Display selects the desired mode.

**SPL:** This is the long term average sound pressure level calibrated at 2 meters from a stereo pair, and derived from the amplifier output voltage. Peak sound levels are ignored. The readout is designed to inform the user of overall listening levels, and to help realize consistent monitoring conditions from hour to hour, session to session and room to room. Levels under 68 dB are shown as "00"; levels over 120 dB are shown as "HI". Since monitoring level has a profound influence on the perception of sonics, periodically checking your listening levels helps to assure consistent results. Making an effort to combat long term ear fatigue can help you avoid the heartbreak of harsh morning after realities.

**VAC:** This is a readout of the AC power line voltage being supplied to the A-20. It is useful for assuring that power conditions are correct and sufficient for all the equipment on the circuit. Sustained readings below 110 V may limit your maximum output levels, and could indicate that the AC circuit is overloaded. Continuous readings above 125 V indicate an AC circuit problem, which could lead to amplifier failure.

**TMP:** This is a reading of the output heat sink temperature in degrees Centigrade. Typically, you should expect this to run between 50°C and 80°C, depending on listening and ambient conditions. If you find that your Control Amplifier unit tends to run hotter than 80°C, it is recommended that you improve the ventilation around it. Note that the A-20 Control Amplifier will automatically shut down if the heat sink temperature reaches 100°C.

## SENSITIVITY:

This control is used to change the input sensitivity with settings at; -10dB, -3dB, +4dB, +11dB and (M)ute providing noise free, consistent gain matching with a wide variety of equipment. The proper setting is the lowest sensitivity possible (highest dB number) which allows the speaker to reach the maximum desired output without source clipping. Professional devices typically spec full output at +4dB, most consumer audio products reach full output at -3dB, and most computer sound cards have a full scale output of -10dB. Consult the owner's manual for the device connected to the Control Amplifier for its output level specifications and set the SENSITIVITY control accordingly.

## BOUNDARY CONTROL:

Reflective boundaries, such as floors, walls, even table tops, reinforce a speaker's low frequency output. Conversely, placing speakers out into a room decreases bass response. The highest low frequency output is with the BOUNDARY control in the "0" position, which assumes no significant boundary reinforcement is present. Each control step attenuates low frequencies by 1.5 dB (at 50 Hz), with rapidly decreasing effect above 300 Hz. Refer to the diagram in Fig. 6 for information on setting the control appropriately.

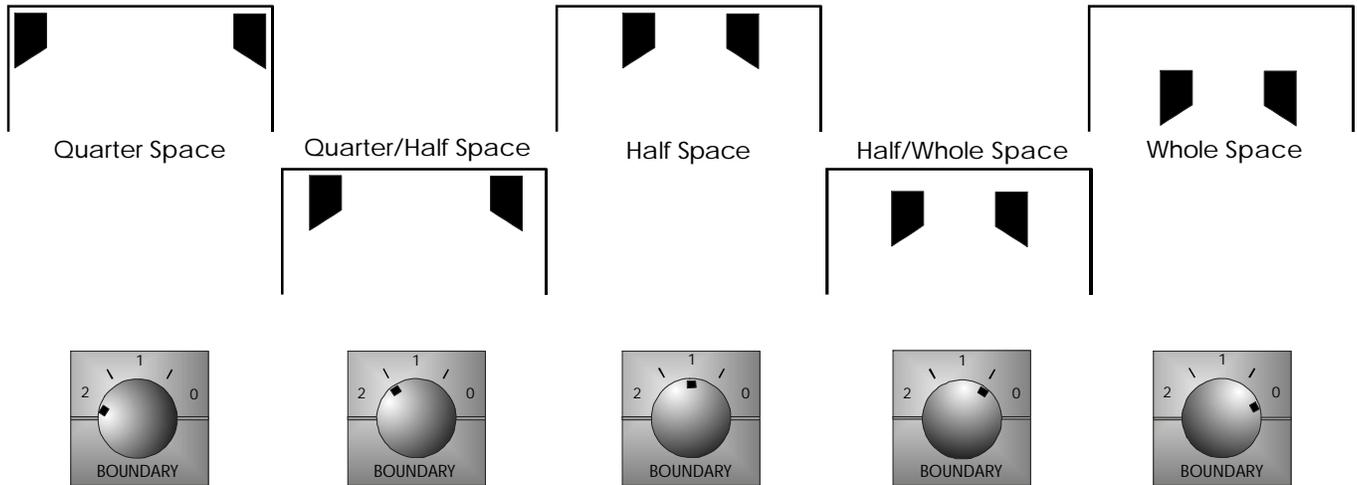


Fig. 6. Boundary Control Settings Diagram

## POSITION CONTROL:

Near-field monitoring reduces the effect of room acoustics on the signal, and provides greater sonic detail. Mid- and far-field listening reveals aspects of recorded ambience and is more representative of end use. However, a speaker's upper frequency power response changes with distance, due to room influences and air absorption. The A-20 may be adjusted for flat response at various listening distances. The maximum high frequency output is obtained with the control in the "FF" (far-field) position. Each control step attenuates 20 kHz by an additional .75 dB (towards the near-field position) with no effect on frequencies below 3 kHz. See Fig. 7 for appropriate POSITION control settings based on listening distances.

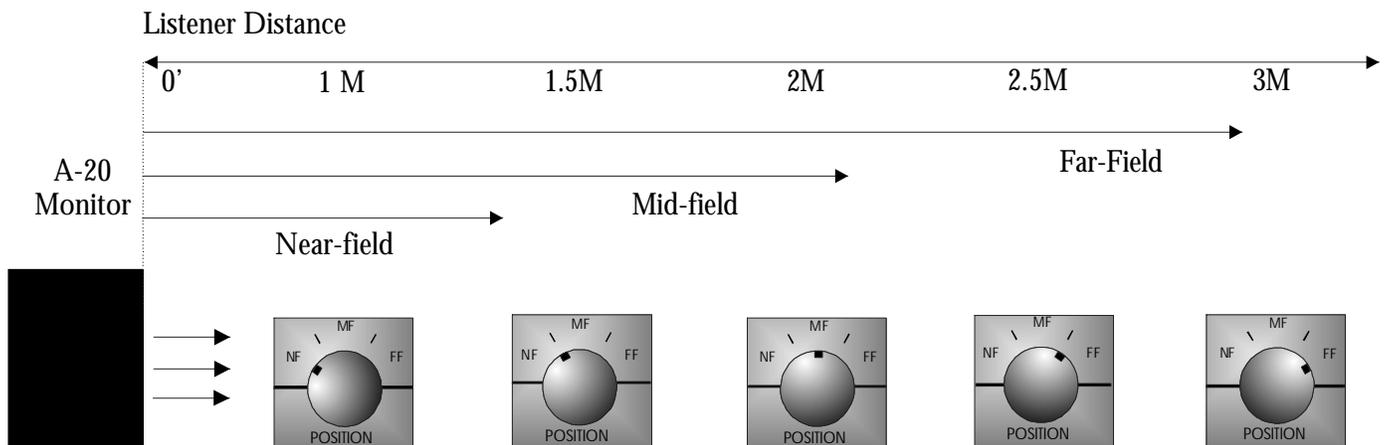


Fig. 7. Position Control Settings Diagram

## SPEAKER PLACEMENT:

The A-20 Monitor System is intended to provide consistent performance over a wide range of placement situations. This is accomplished through the use of electrical controls, wide dispersion drivers, advanced enclosure design and carefully chosen crossover characteristics. Nevertheless, it is always worth investing time and effort experimenting with optimum loudspeaker placement. In all cases, A-20 Monitors should be set up symmetrically equidistant from the listening position; the left speaker and right speaker should be at the same relative positions with respect to the primary listening area. This is important in order to hear a proper stereo sound stage. The speaker baffles angle in towards the listening position with the loudspeaker backs parallel to one another. A good starting point can be found in Figure 8 below. Ideally, the tweeter height should be on axis with your ears, or slightly above. Also, remember that nearby reflective surfaces can alter impulse response, blur imaging and change tonality.

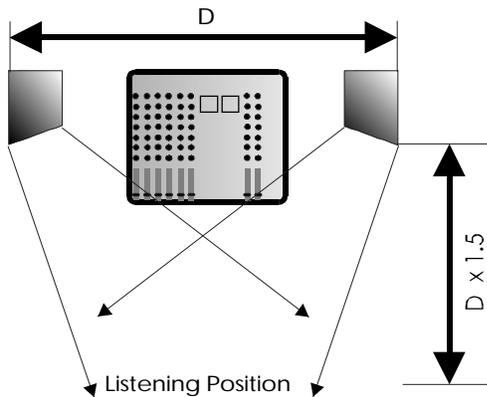


Fig. 8 Ideal Monitor Placement

## SYSTEM OPERATION:

The A-20 is capable of very high output levels, especially when listening in the near-field. Protect your ears and use common sense. Still, every speaker system has its limits. Harsh breakup at extremely high volume, or heat emanating from the drivers is an indication that the system has exceeded its output limits and you should lower the playback level. Watch for excessive lighting of the front panel overload indicator on the Control Amplifier. Speaker damage most often occurs from sustained high volume levels, not from transient sounds or brief musical peaks.

## A-20 MONITOR SYSTEM CARE:

Except for the occasional flattering comment, your A-20 System needs no regular maintenance. Never attempt to clean the A-20 monitor driver units except for very light feather dusting. The A-20 monitor cabinets and the A-20 Control Amplifier front panel can be cleaned using a damp, soft cotton cloth first sprayed with a mild, non-abrasive glass cleaner. Never spray the speaker or amplifier directly! Avoid silicone and oil based cleaners or treatments.

## NEED HELP?

Technical Support can be reached several ways: Telephone us (800)-NHT-9993 (648-9993), E-mail us at: tech@nhtpro.com, Fax us at: (707) 748-5945 or write us at: NHTPro, 527 Stone Rd., Benicia, CA 94510. Or visit our world wide web site at [www.nhtpro.com](http://www.nhtpro.com).

## SYSTEM SPECIFICATIONS:

Type: Modular, two- piece powered near/mid/far field monitor.  
Configuration: 2-way acoustic suspension.  
Woofers: 6.5" curvilinear treated paper. Butyl surround.  
Tweeter: 1" metal dome, textile surround, ferrofluid cooled and damped.  
Magnetic Shielding: Partial, 12-18" working distance from PC monitor recommended.

## PERFORMANCE SPECIFICATIONS:

Amplifier Power: 250W (continuous RMS/ch), 400W (100ms peak).  
Peak Acoustic Output: 117 dB SPL (100ms pink noise @ 1M).  
Residual hum/noise: <10 dB SPL @ 1M.  
System THD @ 90 dB SPL: <0.4% (100Hz ~ 10kHz @ 1M).  
Response +/- 2 dB: 48Hz ~ 20kHz@ 1M, 45Hz ~ 20kHz @ 2M (1/3 oct. swept noise)  
-6dB LF cutoff: 40Hz (in-room response).  
Loudspeaker Dim./Wgt.: 14" h x 7.5" w x 11.9" d, 19 lbs.  
Loudspeaker Materials: 0.75" MDF w/high pressure laminate (internal + external).  
Control Amp. Dim./Wgt.: 3.5" h x 19" w x 13.375" d/37 lbs.

## FEATURES/CONTROLS:

Connectors: Input: XLR, TRS.  
Output to monitor: XLR.

Controls: Sensitivity: 5 position (-10dB, -3dB, +4dB, +11dB, Mute).  
Boundary: 5 position (0.0, 0.5, 1.0, 1.5, 2.0 representing walls).  
Position: 5 position, near(1M), near-mid(1.5M), mid(2M), mid-far(2.5M), far (3M~).

Power: On, off.

Display: Switchable: SPL Output (68dB ~ 120dB), Line Voltage(90 ~ 135VAC), Heat Sink Temp.(20 - 99° C).

LED's: Power, Overload.

Other: Headphone Output (insertion interrupts main output).

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