Blue Sky International
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Farmingdale, NY 11735
www.abluesky.com

Big Blue | SAT 12

Owner's Manual

Version 2.6R | 05.10.2006

Contents

Safety Instructions

AVIS: RISQUE DE CHOC ELECTRIQUE
NE PAS OUVIR

WARNING: **To reduce the risk of fire or electrical shock, do not expose this equipment to rain or moisture. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified personnel.**

1 **READ INSTRUCTIONS** - Read all safety and operating instructions before operating this product.

2. **RETAIN INSTRUCTIONS** - Retain these safety and operating instructions for future reference.

3. **HEED WARNINGS** - Follow all warnings on this product and in the operating instructions.

4. **FOLLOW INSTRUCTIONS** - Follow all operating and use instructions.

5. **ATTACHMENTS** - Do not use attachments not recommended by the product manufacturer as they may cause hazards.

6. **WATER AND MOISTURE** - Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.

7. **ACCESSORIES** - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with accessories recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer.

8. **POWER SOURCE** - This product should be operated only from the type of power source indicated on the marking label on the back of the product. It is **IMPORTANT** to confirm that the voltage selector switch on the back of the SAT 12 is set to the proper voltage setting. If you are unsure of the type of power that is supplied to your home, consult your product dealer or local power company.

9. **LIGHTNING**- For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.

10. **OVERLOADING** - Do not overload wall outlets or extension cords as this can result in a risk of fire or electric shock.

11. **LIQUID ENTRY** - Never spill any liquid of any kind on the product.

12. **SERVICING** - Do not attempt to service this product yourself. Opening or removing covers, including any over bottom or side speaker drivers, may expose you to dangerous voltage or other hazards. Refer all service to qualified service personnel.

13. **DAMAGE REQUIRING SERVICE** - Unplug this product from the wall outlet and refer servicing to qualified personnel under the following conditions:

    a. When the power-supply cord or plug is damaged.
    b. If liquid has been spilled, or objects have fallen into this product.
    c. If the product does not operate normally by following the operating instructions. Adjust only controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
    d. If the product has been dropped or damaged in any way.
    e. When the product exhibits a distinct change in performance - this indicates a need for service.

14. **REPLACEMENT PARTS** - When replacement parts are required be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in risk of fire, electric shock, or other hazard.

15. **SAFETY CHECK** - Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

16. **HEAT** - This product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat.

17. **MOUNTING:** Unsafe mounting or overhead suspension of any heavy load can result in serious injury and equipment damage. Mounting a speaker should be done by qualified persons in accordance with all applicable local safety and construction standards. Be certain to follow the instructions provided by the manufacture the mounting bracket, be certain that is capable supporting the weight of the speakers to be mounted.

1. Big Blue | SAT 12 Introduction

Blue Sky is a philosophy. We design each product to represent the highest ratio possible of performance to cost, providing the highest value added to our customers.

We will continually seek out opportunities to utilize the talent of the Blue Sky team to realize this philosophy. Our customer's value requirements will always be our prime focus, and only those products that achieve our performance value ratio will earn the right to carry the Blue Sky logo.

To that end we are proud to introduce the Big Blue | SAT 12. Blue Sky's SAT 12 is a three way, tri-amplified, 500-Watt, mid-field monitor featuring a 12" high excursion hemispherical woofer, an ultra low distortion 4" hemispherical midrange driver, and a 1" dual concentric diaphragm tweeter with integral wave guide, for superior off-axis response. To reduce destructive cabinet diffraction reflections, Blue Sky has developed and incorporated into the baffle, the proprietary "Multi-Aperture Acoustic Diffraction Absorber", which helps to maintain smooth on and off axis frequency response throughout the critical MF and HF frequency range, without the need for a large wave guide or horn.

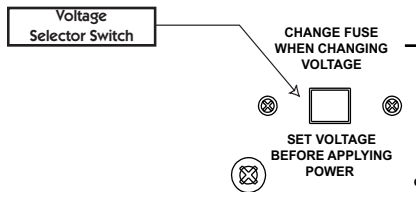
The SAT 12 is powered by a dedicated low distortion 200-Watt amplifier for the 12" woofer, a low distortion 200-Watt amplifier for the midrange, and a low distortion 100-Watt amplifier for the tweeter. Big Blue effortlessly delivers clean and accurate sound with a frequency response of 45Hz to 30kHz +/- 3.0dB (200Hz to 15kHz +/-1.5dB). For full compatibility with Blue Sky's new SUB 15, SUB 12 and BMC (Bass Management Controller), an 80Hz high-pass network, with phase correction filter is also included. For the ultimate in monitoring flexibility, the rear panel of Big Blue incorporates two completely independent balanced input stages with XLR connectors. The main input is for standard 80Hz bass-managed operation and the second input is for traditional monitoring, without the use of a sub. The rear panel also has controls for "full space" (placement in a room) or "half space" (mounted in a baffle wall) operation, along with individual HF, MF and LF level trims, as well as controls for variable gain settings. Big Blue is designed to operate both vertically or horizontally, thanks to the rotatable MF/HF plate.

The SAT 12 has been designed to integrate perfectly with Blue Sky's new SUB 15, 1000-Watt subwoofer. The SUB 15 is a sealed box subwoofer, designed around a 15" forward-firing driver with a massive cast aluminum frame, dual 2.5" voice coils - which has almost 2.36" of excursion (peak to peak) and features an enormous 20+ Lbs. motor structure (total driver weight 36 Lbs.). One of the SUB 15's unique features is a switchable low frequency response characteristic, of either 30Hz to 200Hz +/-3dB or, in "extended LF mode", 20Hz to 200Hz +/-3dB (anechoic). The extended mode is ideal for large rooms that don't exhibit the room gain phenomenon of smaller sealed spaces. In addition, the SUB 15 also has built-in 2.1 bass management electronics with both a 4th order 80Hz Linkwitz-Riley low-pass filter and a 2nd order 80Hz high-pass filter that is compatible with Big Blue's bass-managed input (the SUB 15 is also compatible with the SAT 6.5 and SAT 5).

Thank you for choosing Blue Sky!

2. Important notes about the SAT 12 and this Owner's Manual

Voltage Selector Switch:
Prior to powering this unit, please confirm that the voltage selector switch, located on the back of the SAT 12, has been set to the correct voltage setting. If you are unsure of the type of power that is supplied to your home, consult your product dealer or local power company.



Subwoofer Requirements:
For true full-range monitoring, down to 20Hz or better, Blue Sky strongly recommends using a subwoofer with the SAT 12. Because of the prodigious output capabilities of SAT 12, as compared to the SAT 6.5 for example, Big Blue System requires a minimum of two to four SUB 12s for a 2.1 operation and minimum of four to eight SUB 12s for 5.1 operation. The SUB 15 has the equivalent output of four SUB 12s and therefore only one SUB 15 is required for 2.1 operation and two are recommended for 5.1 operation. Please note, that these recommendations are not set in stone and will be dependent on room size, room acoustics and will also be influenced by the specific application / output requirements of the user.

Please note: For 5.1 applications, it is highly recommended that you only use bass-management (along with a subwoofer) and the 80Hz input on Big blue.

This Owner's Manual:
This manual addresses Big Blue | SAT 12 stereo / 2.1 applications. For information about 5.1 (or beyond) setup please consult the manual that comes with the BMC or visit the Blue Sky website (address listed below).

Please read this owner's manual carefully and contact Blue Sky International if you have any comments or questions. Contact information can be found on page 19 or you can visit www.abluesky.com.

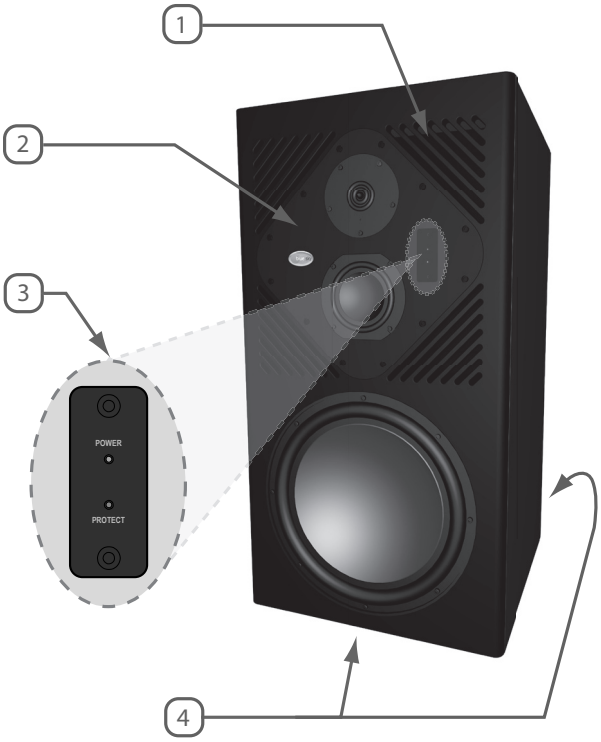
3. SAT 12, what is included?

Each SAT 12 includes the items listed below. Please carefully unpack each item and inspect the components for damage. If any part of the system has been damaged, please contact the dealer that supplied the product or Blue Sky directly.

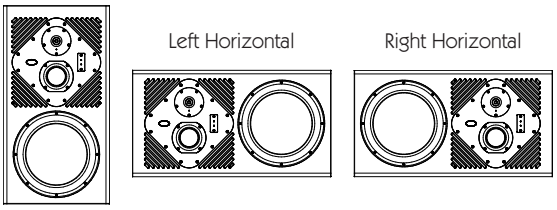
SAT 12 Inventory:

1	SAT 12
1	Power Cable
1	Owner's Manual
1	Warranty Card

4. SAT 12 Feature Overview



1. **Multi-Aperture Acoustic Diffraction Absorber -** To reduce destructive cabinet diffraction reflections, Blue Sky has developed and incorporated into the baffle, the proprietary "Multi-Aperture Acoustic Diffraction Absorber", which helps to maintain smooth on and off axis frequency response throughout the critical MF and HF frequency range, without the need for a large wave guide or horn.
2. **Rotatable MF/HF plate -** The mid frequency and high frequency mounting plate can be rotated, so that the SAT 12 can operate in both vertical and horizontal modes. To rotate the plate, the twelve 4 mm hex head mounting screws around the plate need to be removed. Please support the plate with your hand while you do this. Once the screws are removed, the plate can easily be removed by tilting the cabinet forward. After this has been done, you can rotate the plate into the vertical or horizontal position. Please ensure that the wires leading to the LED plate, MF and HF drivers are not being pinched, or interfered with in anyway, then re-instal the plate, making sure to properly install and tighten all of the screws. Below are three illustrations showing vertical, left horizontal and right horizontal configurations.

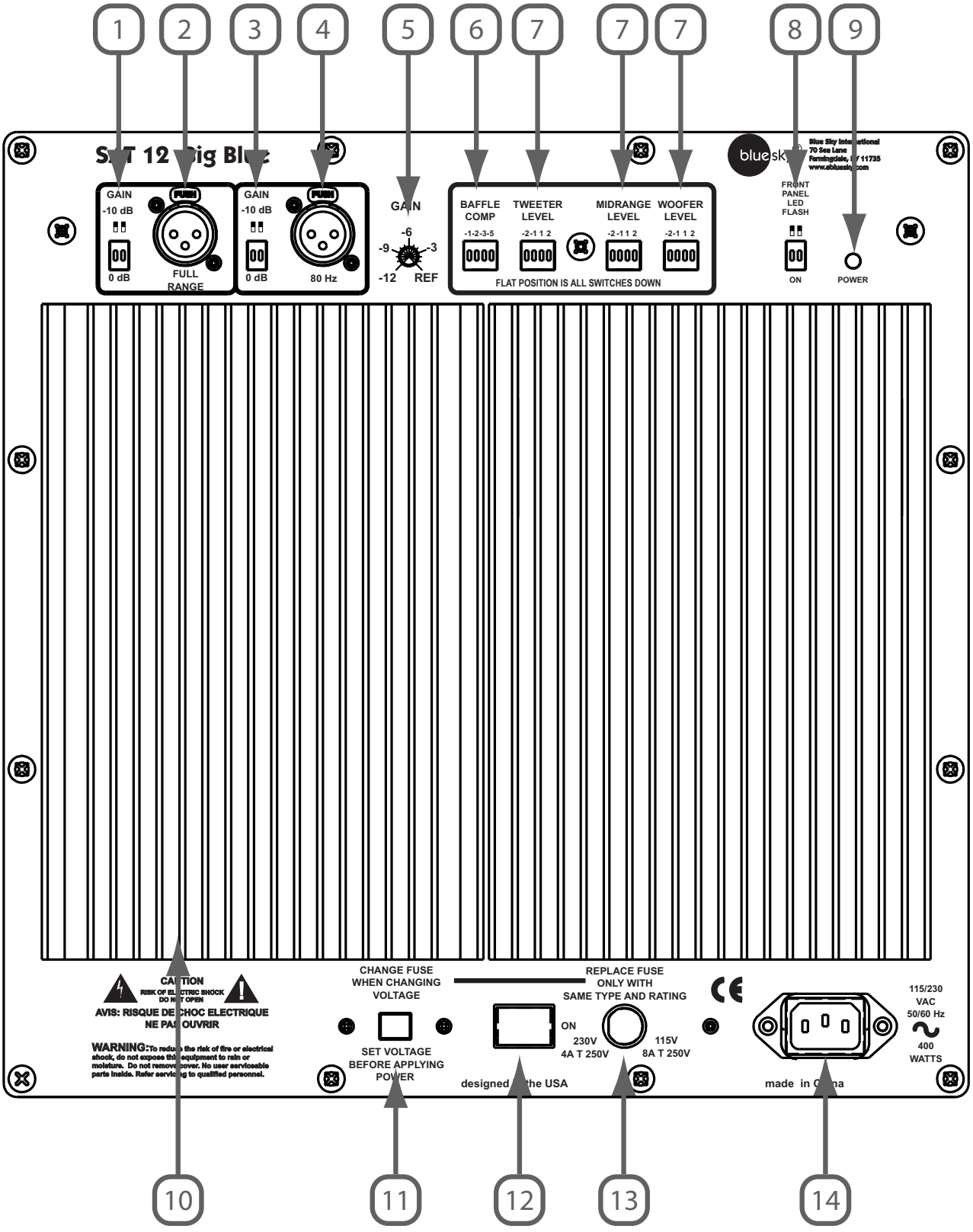


3. **Power and Protect (internal limiters) LED Indicator Panel -** The front LED panel features two indicator LEDs. The top BLUE "POWER" LED will be lit when the unit is powered ON. This LED can be set to only temporarily flash at power on, by setting the back panel dip switches, marked "Front Panel LED Flash" / "ON" to the UP position. Please see page 6 & 7 [A Tour of the SAT 12 Amplifier & Electronics] for more information.

   The RED "PROTECT" LED, when lit or flashing, indicates that one of the three internal limiters is being activated. The limiters are designed to stay completely out of circuit, unless certain short term or long term levels are exceeded. Limiting should only occur under the most extreme conditions and has been included in the SAT 12 to ensure long term, problem free operation.
4. **1/4 x 20 Mounting Inserts (located on the back and bottom of the SAT 12) -** Inserts / hole patterns, compatible with OmniMount® Type 120 brackets are located on the back and on the bottom of the SAT 12. These brackets are designed to support up to 120 pounds of weight when properly installed. Please visit www.omnimount.com for more information, including detailed mounting instructions. Please see page 18 [Cabinet Dimension] for more information on insert locations. Also see page 3 [Safety Instructions] item 17 "MOUNTING".
5. **Dual independent input stages, via XLR connectors -** The rear panel of Big Blue incorporates two completely independent balanced input stages with XLR connectors. The main input is for standard 80Hz bass-managed operation and the second input is for traditional monitoring, without the use of a SUB (-3dB @ 45Hz, with a roll off of 12 per octave). For more information please see page 6 & 7 [A Tour of the SAT 12 Amplifier & Electronics] and page 9 [System Signal Flow & Connections].

   For true full-range monitoring we strongly recommend using either the SUB 15 or multiple SUB 12s with Big Blue. For more information please see page 4 [Important notes about the SAT 12 and this owners manual].
6. **Baffle Compensation -** The SAT 12 includes four primary baffle compensation settings, each of which reduces the MF to LF "bump" that typically results from mounting a speaker in a baffle wall. The amount of compensation needed is dependent on room acoustics, along with the size and type of baffle wall. The only way to accurately determine the amount of compensation needed is to use a high resolution acoustic analyzer, such as MLSSA, TEF, etc. For more information please see page 6 & 7 [A Tour of the SAT 12 Amplifier & Electronics] and page 15 [Measurement Data].
7. **Individual Driver Level Controls -** The SAT 12 includes +/- 3dB of individual driver level adjustments, in 1dB increments. The switches are additive, so in order to increase the level of a driver by 3dB set both the 2 and 1dB switches to the UP position. We highly recommend that you only change these settings, from the "flat" position, as a last resort and only after doing proper acoustics treatment of the room and ensuring proper placement of the SAT 12. For more information please see page 6 & 7 [A Tour of the SAT 12 Amplifier & Electronics] and page 15 & 16 [Measurement Data].
8. **Input gain and level controls -** The SAT 12 includes both a continuously variable input gain control and individual 10dB input pads. This allows the user to adjust the gain from REF (200mv of 500 to 2kHz pink noise = 90dB SPL @ 1M) to -22dB. For more information please see page 6 & 7 [A Tour of the SAT 12 Amplifier & Electronics].

5. A Tour of SAT 12 Amplifier & Electronics



5. A Tour of SAT 12 Amplifier & Electronics

1. **FULL-RANGE INPUT 0dB / -10dB Dip-Switches** - These dip-switches control the 10dB input "pad" on the Full-Range Input. With both dip-switches in the UP position, the -10dB pad is in circuit. With both switches in the down position, it is out of circuit. Max input in the 0dB position is +12 dBu, in the -10dB position it is +24 dBu. Refer to page 5 for more information [SAT 12 Feature Overview].
2. **Full-Range XLR INPUT** - This XLR input should be connected to a full-range source. This input is electronically balanced. Do not connect more than one source to this input. Refer to page 5 [SAT 12 Feature Overview] and page 9 [System Signal Flow & Connections] for more information.
3. **80Hz INPUT 0dB / -10dB Dip-Switches** - These dip-switches control the 10dB input "pad" on the 80Hz Input. With both dip-switches in the UP position, the -10dB pad is in circuit. With both switches in the down position, it is out of circuit. Max input in the 0dB position is +12 dBu, in the -10dB position it is +24 dBu. Refer to page 5 for more information [SAT 12 Feature Overview].
4. **80Hz XLR INPUT** - This XLR input should be connected to a bass-managed output with a 12 per octave 80Hz high-pass filter, such as the bass-managed outputs on the SUB 15, SUB 12, or BMC. This input is electronically balanced. Do not connect more than one source to this input. Refer to page 5 [SAT 12 Feature Overview] and page 9 [System Signal Flow & Connections] for more information.
5. **GAIN -** This trim pot is a continuously variable gain control, with a range of -12 to REF (200mV of 500 to 2kHz pink noise = 90dB SPL @ 1M). In combination with the -10dB input pad, this allows for a range of -22dB to REF. Please refer to page 5 for more information [SAT 12 Feature Overview].
6. **Baffle Compensation Dip Switches -** The SAT 12 includes four primary baffle compensation settings, each of which reduces the MF to LF "bump" that typically results from mounting a speaker in a baffle wall. To select a specific setting, put the individual dip switch into the "UP" position. For additional flexibility, baffle compensation switches can be used in combination.

   The amount of compensation needed is dependent on room acoustics, along with the size and type of baffle wall. The only way to accurately determine the amount of compensation needed is to use a high resolution acoustic analyzer, such as MLSSA, TEF, etc. For more information see page 5 [SAT 12 Feature Overview] and page 15 [Measurement Data].
7. **Individual Driver Level Controls -** The SAT 12 includes +/- 3dB of individual driver level adjustments, in 1dB increments. The switches are additive, so in order to increase the level of a driver by 3dB set both the 2 and 1dB switches to the UP position. We highly recommend that you only change these settings, from the "flat" position, as a last resort and only after doing proper acoustics treatment of the room and ensuring proper placement of the SAT 12. For more information please see page 5 [SAT 12 Feature Overview] and pages 14 to 16 [Measurement Data].
8. **Power LED Indicator Control Dip Switches -** The front panel blue power LED can be set to temporarily flash at power on or be on permanently. With both switches in the down position, the LED will remain ON all the time. With both switches in the UP position, the LED will flash at power up and then turn off, which may be useful if the SAT 12 is mounted behind a screen. For more information please see page 5 [SAT 12 Feature Overview] .
9. **Rear Power LED -** This power LED indicates the SAT 12 is powered ON. This LED is not affected by the "Power LED Indicator Control Dip Switches", detailed in Item 8 on this page.
10. **Amplifier Heatsink -** The heatsink provides essential cooling to the amplifiers inside the SAT 12. This heatsink is oversized and designed to be effective in both vertical and horizontal orientation, as long as proper air circulation is provided. Please ensure that proper air circulation is available for cooling. This is especially important when baffle mounting the SAT 12.
11. **Voltage Selector Switch -** This switch can be set to either 115 Volts or 230 volts. Prior to powering this unit, please confirm that the Voltage selector switch has been set to the correct voltage setting. If you are unsure of the type of power that is supplied to your studio, consult your product dealer or local power company. If your changing the Voltage, please also confirm the proper fuse is installed [see number 11].
12. **Power Switch -** Controls the power to all the three amplifiers and all internal electronics.
13. **FUSE -** Replace with same rating and type for your local voltage rating. For 115V applications use a 8 Amp T 250V and for 230 Volt applications use a 4 Amp T 250V fuse ("T" = Time Delay or SloBlo type fuse).
14. **IEC RECEPTACLE** - Check voltage selector switch before connecting power. Connect to 115 Volt AC / 60Hz power source, rated for 360 WATTS or 230 Volt / 50Hz rated for 360 WATTS.

6. SAT 12 Mounting & Placement

Monitor mounting and placement is often an afterthought, but in order to get the best imaging and overall performance from the SAT 12, it is important to place the speakers correctly.

Monitoring Height:

Figure 1 shows the ideal monitoring height, with the SAT 12 located perfectly at seated ear height. If this is not possible, tilting the cabinet at the listening area can improve high-frequency coverage.

Monitoring Angle:

The recommended position for the monitors is based on an ITU standard and sets the speakers at 60 degrees from the listener, forming an equilateral triangle (a triangle with equal sides) - **See Figure 2**. Fortunately, this setup eliminates most of the math and is easily simplified to the following guidelines: If you want to sit 2 meters from the speakers, place the speakers 2 meters apart. If you want to sit 9 ft. from the speakers, place the speakers 9 ft. apart Etc.

Wall Mount Options:

The SAT 12 is compatible with OmiMount® 120 Series brackets, via the 1/4 X 20 inserts located in the bottom and the back of the cabinet. The OmniMount® 120 brackets are designed to support up to 120 pounds of weight when properly installed. Please visit www.omnimount.com for more information, including detailed mounting instructions. Please see page 18 [Cabinet Dimensions] for more information on insert locations. Also see page 3 [Safety Instructions] item 17 "MOUNTING".

Mounting the SAT 12 in a baffle wall / soffit:

IMPORTANT: It is highly recommended that you check all of your local electrical and safety codes, to make sure that all regulations are going to be met before mounting the SAT 12 in a baffle wall.

Requirements and recommendations:

1) **Important Requirement**: Proper cooling and airflow shall be provided to the back of the SAT 12 / Heatsink.

2) Recommendation: In order to build an affective baffle wall, it is best to use a design with considerable mass, that doesn't produce sympathetic resonances. Using three layers of 5/8" (50 mm) Gypsum, with overlapped joints, and the appropriate wood framing has been found to be affective (again, consult local building codes and an engineer or architect for specific design guidelines).

3) Recommendation: To avoid sympathetic vibrations, it is best to physically decouple the SAT 12 from the baffle wall structure. An effective way to do this is to use Mason Super W neoprene or natural rubber pads (durometer 40). One Super W pad should be placed under each corner of the speaker.

4) Recommendation: Mount the SAT 12 flush with the front of the baffle wall and seal all gaps around the SAT 12 and the baffle wall using a rubber, foam or neoprene gasket material. This will improve the HF frequency response, by reducing any cabinet or edge diffraction related problems (again, check local building codes).

5) Recommendation: The SAT 12 includes four primary baffle compensation settings, each of which reduces the MF to LF "bump" that typically results from mounting a speaker in a baffle wall. The amount of compensation needed is dependent on room acoustics and the size and type of baffle wall. The only way to accurately determine the amount of compensation needed is to use a high resolution acoustic analyzer, such as MLSSA, TEF, etc. For more information please see page 6 & 7 [A Tour of the SAT 12 Amplifier & Electronics] and page 15 [Measurement Data].

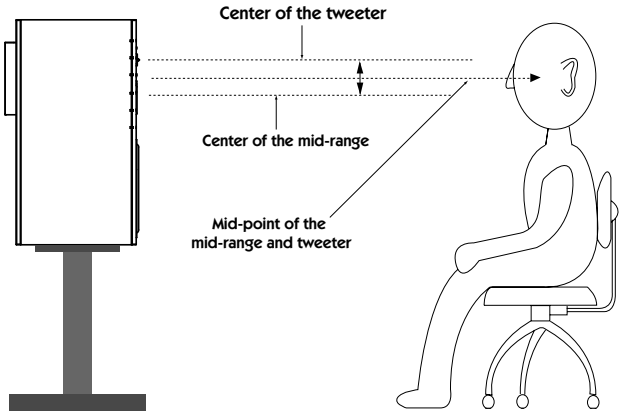


Figure 1

MONITORING HEIGHT RECOMMENDATIONS

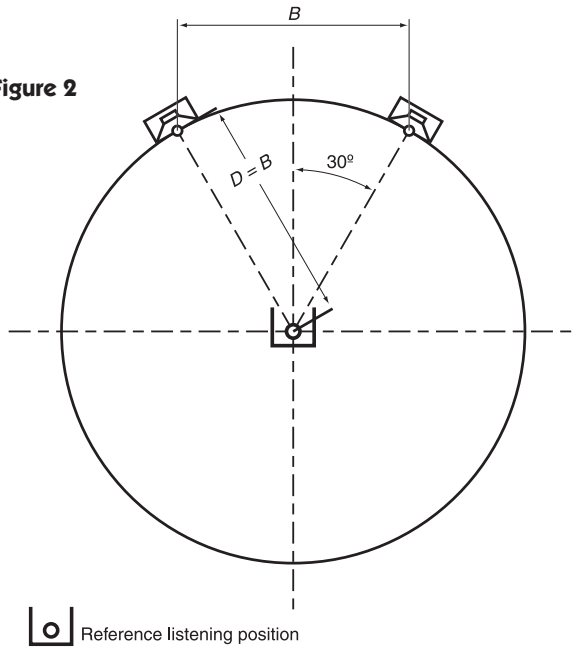
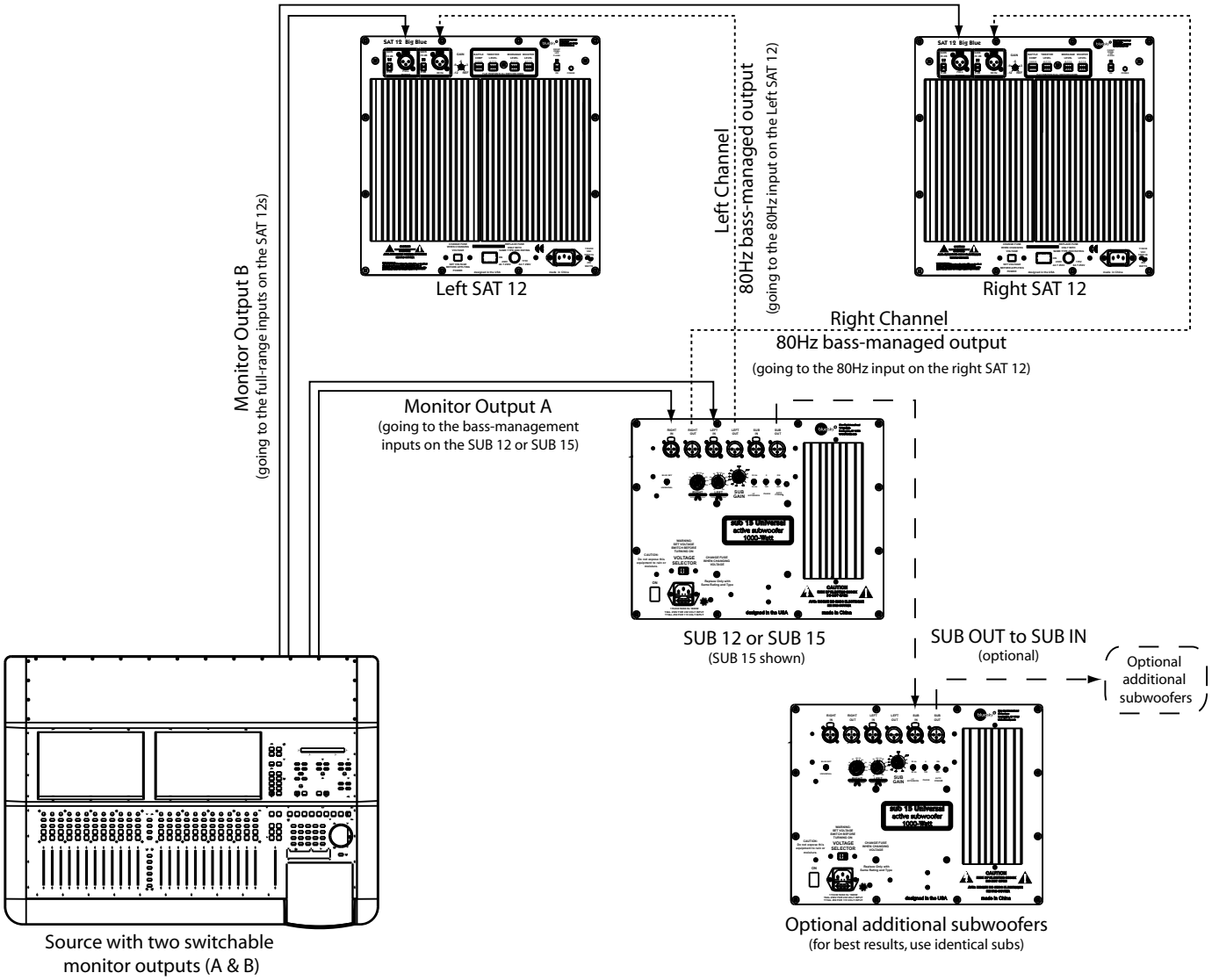


Figure 2

Mounting the SAT 12 behind an acoustical transparent screen:

If you intend to place the SAT 12 behind an acoustically transparent screen, it is recommend that you use a screen that provides the minimum amount of acoustic loss at high frequencies, such as the Microperf screens offered by Stewart Filmscreen (www.stewartfilmscreen.com). Additionally, it is also recommended that you add some acoustically absorptive material to the wall behind the screen, to help absorb HF reflection from the screen. Typically 2" of black duct liner, or other fiberglass acoustical blanket can work well (check local building and safety codes for possible restrictions and guidelines).

7. System Signal Flow & Connections



2.1 & 2.0 SYSTEM SIGNAL FLOW & CONNECTIONS

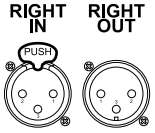
Above is a simple diagram showing how a Big Blue system may be wired for a stereo applications. The system show a full-range source (the console), which has two monitoring outputs (A & B). Monitoring output A, is the main bass-managed output and goes from the console, to the subwoofer and from there to the 80Hz bass-managed input on the SAT 12. The system also shows monitoring output B from the console being used as a full-range source for the direct / "full-range" input on the SAT 12 (-3dB at 45Hz).

When a Big Blue system is configured as above, with two switchable monitoring sources, the user can easily A/B between both a true full-range system (20Hz LF response or better), using bass-managed and a subwoofer(s), or the direct / full-range input (45Hz).

Multiple Subs:
The diagram above also shows the optional use of multiple subwoofers. Multiple subwoofers can be used to increase SPL and improve the LF response of the system, by placing the subwoofers, so as to smooth out the LF response at the mix / monitoring position. Please note that we recommend that you run the subs in MONO, by using the subwoofer out on the main sub and then feeding the next sub in the chain.

We do not recommend running stereo subwoofers, because the LF response in the room will not be as consistent using this method. This is because electrical summation of the LF signals (as is done with bass-management using a mono subwoofer / LF signal), is a very predictable and repeatable way to get consistent LF response. LF phase issues between channels are resolved in the most absolute and accurate way - electrically.

Cable and connector wiring
Use high-quality, shielded cables to connect your console, workstation or other sources to your Big Blue system. Foil-shielded cables, such as Belden 8451, 8761, or 9501 should do quite well. Other high quality cables are available and those that incorporate better shielding will yield an overall higher noise rejection, lowering your systems susceptibility to external interference. Another important tip to keep in mind when wiring your system is to route all line level cables away from the AC and other power sources, this will reduce the probability of having AC hum emanating from your monitoring system.



	XLR	TRS	RCA
HOT (+)	Pin 2	Tip	Tip
COLD (–)	Pin 3	Ring	
SHIELD (GROUND)	Pin 1	Shield	Shield

8. Quick 2.1 System Setup Instructions

1. Blue Sky monitoring systems leave the factory fully calibrated. With the gain control on the SAT 12 set to the reference mark, a 200mV (-11.7dBu) pink noise signal, with a bandwidth of 500 to 2kHz, will yield 90dB SPL at 1 meter. With the gain on the SUB 12 set to the reference mark, or -9dB on the SUB 15, 100mV (-13.7dBu) pink noise signal, with a bandwidth of 40Hz to 80Hz, on one of the inputs, will yield 90dB of output at 1 meter. Because most control rooms have some gain at low frequencies a good starting point for the subwoofer level is -3dB from the reference position. If you are using multiple subs, the gain may need to be even lower than this (depends on the acoustics of the studio and the placement of the subs). For more information with regard to the controls, please see the manual that came with the SUB 12 or SUB 15, and page 6 & 7 of this manual [A Tour of the SAT 12 Amplifier & Electronics].

2. The SAT 12, SUB 12 and SUB 15 are compatible with balanced XLR connectors / cables. The total number of XLR cables needed will depend on the system configuration. However for a basic 2.1 system, with one sub, you need a minimum of four XLR Cables.. For more information on connecting your system, please see page 9 [System Signal Flow & Connections].

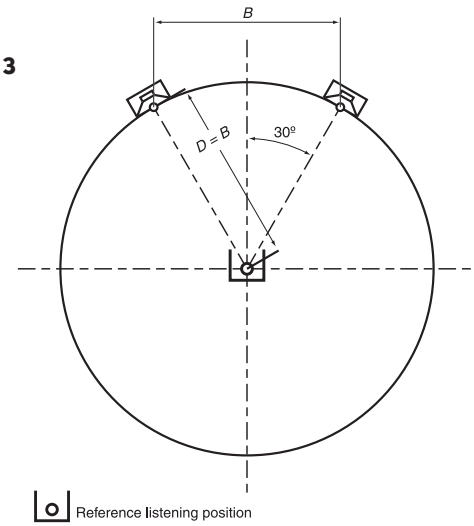
3. The first step in the installation process is to position the active subwoofer. Although you have great flexibility with regard to where an active subwoofer can be placed, a good starting point is centered between the left and right satellite speakers. This could be under a console / desk, behind the console / desk, etc. If you are using multiple subwoofers, you have even more flexibility. For an expanded subwoofer placement guide, please see page 12 [Subwoofer Placement Guide].

4. Once the subwoofer is in position, connect the two input cables from the left and right analog outputs from the mixing console, digital workstation or other source, to the left and right inputs on the subwoofer. For more information on connecting your system, please see page 9 [System Signal Flow & Connections].

5. Next, place the SAT 12s into position. The recommended position for the monitors is based on an ITU standard and sets the speakers at 60 degrees from the listener, forming an equilateral triangle (a triangle with equal sides) - **See Figure 3**. Fortunately, this setup eliminates most of the math and is easily simplified to the following guidelines: If you want to sit 2 meters from the speakers, place the speakers 2 meters apart. If you want to sit 9 ft. from the speakers, place the speakers 9 ft. apart Etc. Ideally the SAT 12 should be at seated ear height. If this is not possible, tilting the cabinet at the listening area can improve high-frequency coverage. For more information about placement see page 8 [SAT 12 mounting and placement].

6. Once all the SATs are properly placed, connect the XLR cables from the left output on the back of the sub, to the 80Hz input on the left SAT 12. Now do the same for the right channel, connecting the right output to the right SAT 12. Lastly, please plug the power cords into the IEC connectors on the SAT 12s and the subwoofer(s). Prior to proceeding confirm that the system is wired correctly, as shown on page 9 [System Signal Flow & Connections].

Figure 3



8. At this point the Blue Sky monitoring system is correctly configured, and ready for the final step in the installation. Prior to plugging the system into the wall outlet, and powering up the system, do a final quick check of all connections and level settings.

9. If everything is correct, plug the power cords into an appropriate outlet / circuit. **Do not turn on the power switches, yet!** Some mixers and out-board equipment such as D-to-A converters and equalizers generate loud rail-to-rail pops when they initially turn-on. Depending on the level and the gain setting of the monitoring system, these pops could damage the monitors. To avoid this, always turn on equipment in the following sequence: All sources and mixer first, and then the monitoring system. Reverse this procedure when shutting down your equipment.

10. At this point the Blue Sky monitoring system is fully operational, and ready for use. Begin by playing familiar pieces of music (preferably reference quality recordings, with dynamic and full-range sound) which can assist you in the fine-tuning and exact positioning of both the SATs and the active subwoofer. It is important to remember that the positioning of the subwoofer in the room will impact the subwoofer level. You may find it necessary to increase or decrease the level from the reference position. This is OK, and is anticipated.

11. If a more exacting setup is required, using test signals and a SPL meter, please see Page 11 [Expanded Calibration Guide].

12. Just remember - Use your ears, they are the best audio tool you have and you will be amazed how accurate the setup can be if you use familiar, high quality audio material during the setup of the system.

13. Congratulations! You have now completed the setup of one of the world's finest monitoring systems. If you have any questions, please do not hesitate to contact us directly with your questions: Call (516) 249-1399 (9:00am to 5:30pm EST), e-mail at support@abluesky.com or visit the Blue Sky Forum at www.abluesky.com/forum.

9. Expanded Calibration Guide

Instructions for electroacoustic calibration of a 2.1 audio system using a SPL meter and Blue Sky's test files.

Before starting this procedure you will need to download BlueSkyTestFiles.zip (an 18 MB zip file) by going to www.abluesky.com/calibration. To download the test file, "Right Click" and select "Save Target As". The file will begin downloading once a location has been selected.

Once downloaded, either burn the test files to a CD or import them into your DAW and follow the instructions below.

ADDITIONAL REQUIRED ITEMS

1. 2.1 Monitoring System
2. SPL Meter - such as the SPL meter sold by RadioShack in the U.S.

BlueSkyTestFiles.zip Includes 4 files:

- 1000Hz SINEWAVE -20dBFS.wav – a 1kHz file recorded at -20dBFS for electrical calibration
- 40-80Hz PINK NOISE -20dBFS.wav – a 40Hz to 80Hz bandwidth limited pink-noise file recorded at -20dBFS
- 500-2.5kHz PINK NOISE -20dBFS.wav – a 500Hz to 2.5Hz bandwidth limited pink-noise file recorded at 20dBFS
- Pink Noise full bw -20dBFS.wav – a full-bandwidth pink-noise file recorded at - 20dBFS

These test files are all mono files. Please make sure you hard assign them to the left and then the right, not both channels at the same time. If you are using a CD player use only one channel of the CD player.

THEORY

The purpose of calibration is to adjust the overall electroacoustic system gain so that 0dBVU of electrical signal level equals a certain acoustic level at the listening position. Since most recording media is now digital, the reference electrical signal level is usually –20dBFS with 20dB of headroom. The reference SPL level however can vary based on the delivery media and speaker type.

Please note that the bandwidth limited signals that have been provided, limit many of the room interaction affects often associated with measuring SPL and broadband pink noise.

All test signals are recorded at –20dBFS including the 1 kHz sine wave tone. The sine wave tone is used to set the electrical output level throughout the signal path, right up to the point you get to the speakers, while the various pink noise signals are used for acoustic measurements and calibration.

The following procedure assumes you are calibrating the system to 85dBc SPL.

Step 1 **TURN OFF THE MONITORING SYSTEM (until step 4)**

Step 2 Remove all eq and dynamics from the signal path and set all controls to zero / unity gain. Play the 1kHz Sine Wave, hard assign it to the left channel only, and adjust the output fader so the output meter reads -20dBFS. If you are using an analog console, set the output level to 0 VU. Then hard pan the signal to the right channel output and repeat for the right channel. **Once calibrated do not move the output faders.**

Step 3 Mute everything and make sure the 1kHz tone is OFF .

Step 4 Now that the system has been electrically calibrated turn **ON** the Big Blue 2.1 System.

Step 5 Assign the 500-2.5kHz pink noise signal to the left channel only. Make sure there is nothing coming from the right channel (or any other channels). Because this signal is bandwidth limited, you don't have to worry about turning the sub off.

There are two methods of setting the levels:

A. If you have a master monitor level control (console etc), you can set the SAT 12 gain control at reference and then adjust the monitor gain control for 85 dBc. Then mark the monitor level as your reference position.

B. The other method is to set master monitor level (console etc.) to the position you want reference level to be (such as unity gain as determined by the electrical calibration process in beginning of these instructions) and then use the volume control on the SAT 12 to set 85 dBc. If you use this method you should make a note of the positing, so you can always go back to the new "reference level" if the pot gets moved.

For either method:
SPL should be measured at the mix position, with the SPL meter at arms length, with the microphone at seated ear height, angled at approximately 45 degrees, and pointed at the center point between the left and right speakers.

Once the left channel is set to 85dBc, repeat this step for the right channel

Step 6 Feed 40-80Hz pink noise signal to the left channel only. Adjust the subwoofer level control until the subwoofer reads 85dBc (slow) at the mix position. The meter will bounce around a little, so you will need to do a mental average (*I tend to filter out the peaks in my mind, so I don't set the sub too hot*). The right channel should measure about the same and no additional adjustments need to be made.

Step 7 You can play the full-bandwidth pink noise, assigning it to the left and then the right channel (not at the same time). You should measure about 85dBc. It may be a little higher, because below 30Hz the room may have a little extra gain. No adjustments should be made with Full Bandwidth pink noise, unless you have an RTA (real time analyzer) or other spectrum analyzer.

Step 8 The calibration process has now been completed. Congratulations! If you have any questions, please do not hesitate to contact us directly with your questions. (516) 249-1399 (9:00am to 5:30pm EST) or visit our website / forum @ www.abluesky.com.

10. Subwoofer Placement Guide

So now that my system uses an integral subwoofer, how do I place it in my studio for the best possible low frequency performance?

The low frequency response and efficiency of a subwoofer are heavily influenced by the acoustics of the playback environment. More specifically, the response is influenced by the room's dimensional ratios, types of construction and location of the subwoofer within that environment. You can significantly improve the subwoofer's in-room response and efficiency by experimenting with various room placements until you find an optimum location.

When placing the subwoofer there are several general guidelines that should be kept in mind. These include:

- Every acoustic space is unique and experimentation is an important key in finding the best possible location in your particular environment.
- A subwoofer becomes more acoustically efficient (has greater output) as you move it closer to a room surface (e.g. wall or floor).
- A subwoofer will give maximum output and maximum acoustic excitement when it is located in a corner.
- Under certain acoustic conditions corner locations are optimum; in others they can excite multiple "room modes", producing "muddy" or "boomy" sound.

The following methods have been found to work successfully under most conditions:

The first method described below doesn't require any special test equipment. It does require a pair of good ears and familiar broad-spectrum music material – recordings with lots of energy across a wide frequency range (from low to high). The recordings should be highly dynamic and be of relatively high quality.

The second subwoofer placement method requires using a real time analyzer – such as those made by Gold Line™ or The Audio Toolbox(TM) by TerraSonde(TM). Although many home audio enthusiasts may not have access to this equipment, if you are having a sound system or home theatre system professionally installed, this information may be useful to the installer.

Method 1

Place the subwoofer at the main listening position and connect and make sure it is properly connected to your receiver. Turn on the CD or music source and make sure that the level of the subwoofer has been raised high enough so that low frequencies are not masked by the background noise in the room. Once you have roughly balanced the level, between the sub and main speakers, move around the room and pay careful attention to where the spectral response is smoothest and has the greatest low frequency extension, pay special attention to the corners and along the walls. Also, make sure to pay attention to where the system has its' greatest impact and definition. You are not just listening for the most boom, but rather where the bass is most accurate and natural sounding. Remember, because the subwoofer is basically omni-directional, the best spot for the subwoofer can be next to, or even behind, the main monitoring area.

After finding the spot where the subwoofer has the best response in the room, place the subwoofer in that location. Now, listen from the main position and confirm that the subwoofers response is similar to when the positions were reversed. If it is, then leave the subwoofer in that location. If not, continue to experiment with the subwoofer location until the most accurate and best response has been achieved.

Method 2

Subwoofer placement using a real time analyzer – Such as those made by Gold Line™ or The Audio Toolbox™ by TerraSonde™ etc.

Place the subwoofer at the main listening position and connect the subwoofer to your pink noise generator. Turn on your pink noise generator and make sure that the level of the subwoofer has been raised high enough so that low frequencies are not masked by the background noise in the room. Now set the analyzer to 1/12 octave resolution (or whichever setting provides the highest resolution on your particular analyzer), real time mode and begin to take measurements around the room. If the analyzer you are using has the ability to do real time averaging, then use this function to better analyze the spectral response. Please note that as you are doing measurements, it is best to keep the microphone at about 8 to 12 inches off of the ground, which is about the height of the center of the subwoofer driver.

As you walk around the room, be sure to pay careful attention to where the spectral response is smoothest and has the greatest low frequency extension, pay special attention to the corners and along the walls. Remember, because the subwoofer is basically omni-directional, the best spot for the subwoofer can be next to, or even behind, the main monitoring area.

After analyzing the data and finding the spot where the subwoofer has the best response in the room, place the subwoofer in that location. Now, take some additional measurements from the listening position and confirm that the subwoofers response is similar to when the positions were reversed. If it is, then leave the subwoofer in that location. If not, continue to experiment with the subwoofer location until the smoothest and best response has been achieved.

Additional Notes:

It has been found that a subwoofers' in-room response can sometimes be improved by facing the drivers toward a wall. Again, experimentation is the key to finding the best possible location.

Properly designed subwoofers generate tremendous energy, so they may vibrate objects close to them. If you hear buzzing or vibrating objects, make sure to try and dampen those objects. Rattling, buzzing and other sympathetic resonances can make the subwoofer localizable and therefore should be avoided. Using a sine wave generator can be helpful in locating these acoustic anomalies.

11. Technical Information

SAT 12 Specifications

Enclosure
.75" MDF with 1" front / rear baffle and internal bracing
.25" x 20 inserts for attachment of Omnimount type 120 brackets
Multi-Aperture Acoustic Diffraction Absorbers
Dimensions (H x W x L):
28" (711 mm) x 15" (381 mm) x 17" (432 mm)*
*For complete dimensions see page 18 [SAT 12 Cabinet Dimensions].
Weight: 92 lbs. (41.73 kg)

1" Tweeter
Dual concentric diaphragm with integral wave-guide
High-power ferrite motor structure
Full video shielded

4" Hemispherical Midrange
2" voice coil
Cast aluminum frame
Neodymium vented motor structure
Copper shorting ring
Aluminum alloy cone
Fully video shielded

12" Hemispherical Woofer
12-inch high excursion woofer with vented motor
Cast aluminum frame
2" voice coil
Mica filled polypropylene cone w/ Rubber surround
Fully video shielded

Amplifiers & Electronics
Dual 200-Watts into 4-Ohm (woofer and mid-range)
.01% THD + noise at rated power @ 1 kHz
100-Watts into 4-Ohm (Tweeter)
.01% THD + noise at rated power @ 1 kHz

Dual XLR balanced input (full-range / 80Hz)
Fixed and Adjustable gain controls
B00® optimized crossover
"full space" & "half space" compensation controls
Individual HF, MF and LF level trims

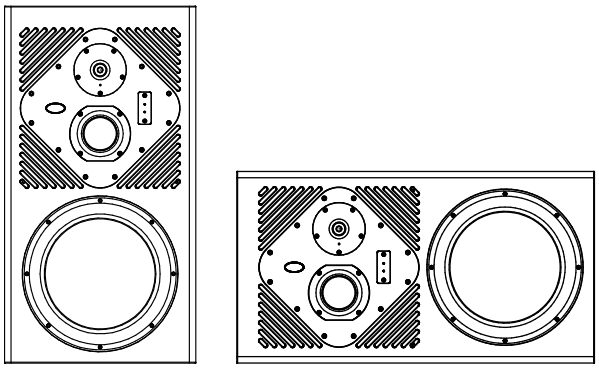
Input impedance:	10K balanced
Common Mode Rejection	40dB typical @ 60Hz
Voltage Sensitivity (high gain)	200mv=90dB SPL @ 1 meter
Maximum Input Level:	+24dBu balanced
Frequency Response:	+/- 3dB 45Hz to 30kHz
	+/-1.5dB 200Hz to 15kHz
Low Frequency Cutoff (full-range input)	-3dB @ 45Hz
Internal High Pass Filter	80Hz / 2nd order
Internal Crossover Points	300Hz and 3kHz

12. Measurement Data

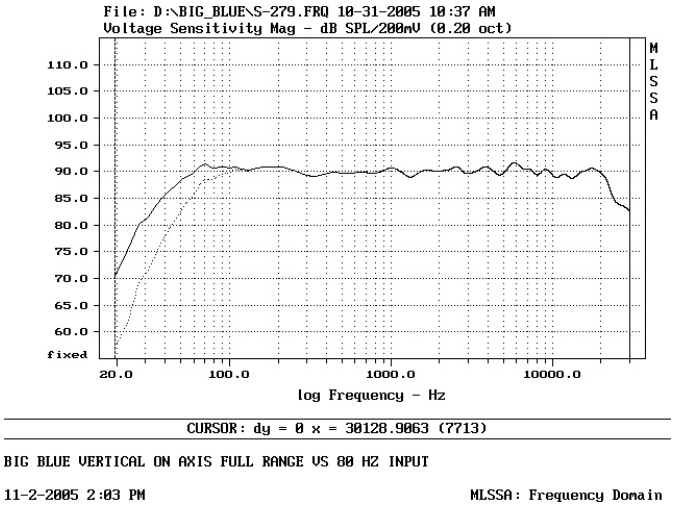
Conditions:
All SAT 12 measurements were made outdoors on a 58 inch stand at a distance of 1 meter. Since a 58 inch stand is not tall enough for accurate low-frequency measurements, a 1 meter ground plane measurement was also made and spliced in at 125 Hz on all measurements, to generate full frequency response. The first group of measurements were done with the speaker set in the normal vertical configuration. The second set were done with the speaker in the horizontal position, the tweeter and midrange located on the left side and the plate rotated so the tweeter and midrange were vertical (as shown in figure 4).

A Note about the off axis measurements:
When looking at a couple of the off axis measurements, such as "**SAT 12 Vertical | On Axis +/- 15 Degrees Vertical**" on page 15 and "**SAT 12 Horizontal | On Axis, +/-15, +/-30 Horizontal**" on page 17, you will notice the low end varying by a couple of dB. Because the woofer is an omnidirectional radiator in its operating frequency range, these level changes are not due to directivity, but are due to the woofer in the SAT 12 moving closer to, and further away, from the measurement microphone as the SAT 12 rotates through the various angles. At a normal listening distance of 2 meters or more, this effect is negligible, especially when the SAT 12 is positioned as recommend on page 8 [SAT 12 Mounting & Placement].

Figure 4

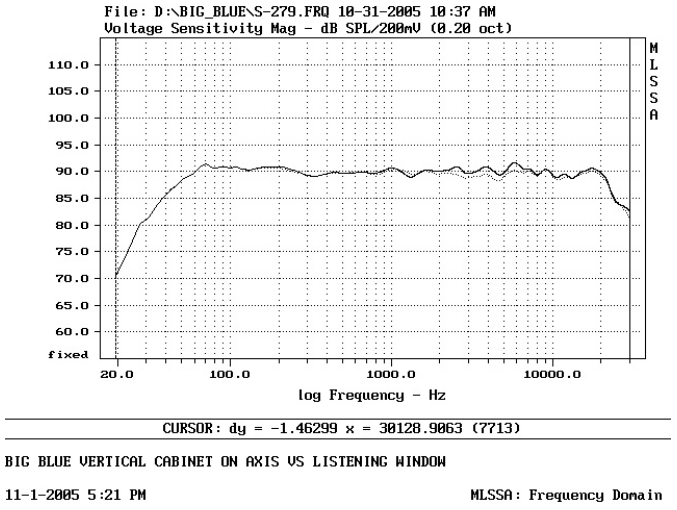


Vertical LEFT Horizontal



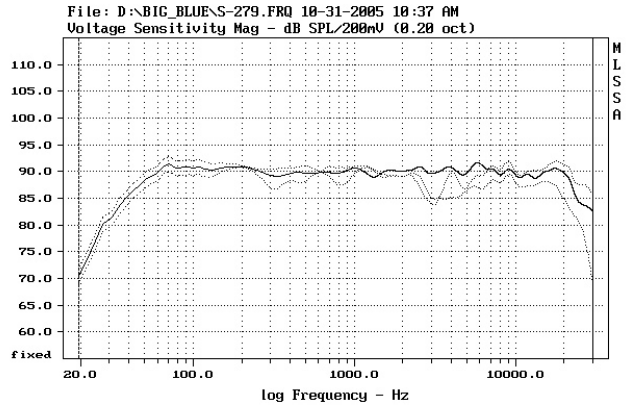
SAT 12 Vertical | On Axis, Full Range / 45Hz Vs. 80Hz Input

This is a standard on-axis measurement, with the SAT 12 in the vertical configuration, comparing the full-range / 45Hz input to the 80Hz input. As you can see from the measurements, Big Blue has flat frequency response with no spectral tilt.



SAT 12 Vertical | On Axis Vs. Listening Window

The listening window is a power average of on axis, +/-15 degrees vertical and +/-15 degrees horizontal and gives an indication of how a speaker performs when you are not directly on axis. Ideally the average should be very close to the on axis response



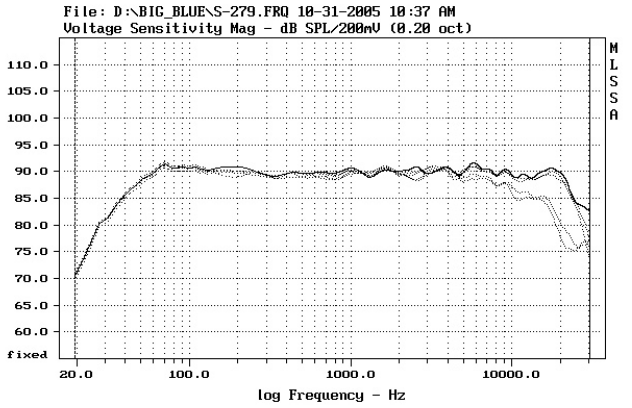
CURSOR: dy = -13.1667 x = 30128.9063 (7713)

BIG BLUE VERTICAL ON AXIS +/-15 VERTICAL

11-1-2005 5:29 PM MLSSA: Frequency Domain

SAT 12 Vertical | On Axis +/- 15 Degrees Vertical

The vertical off axis curves indicate a dip around the midrange to tweeter crossover frequency and a slight asymmetry in off axis vertical response. The dip at the 3 kHz crossover frequency is typical for this type of design. Also, the asymmetry is typical for a three way speaker. The low frequency variation is due to the relative distance of the woofer and the microphone changing as the cabinet is rotated, as was noted on page 14.



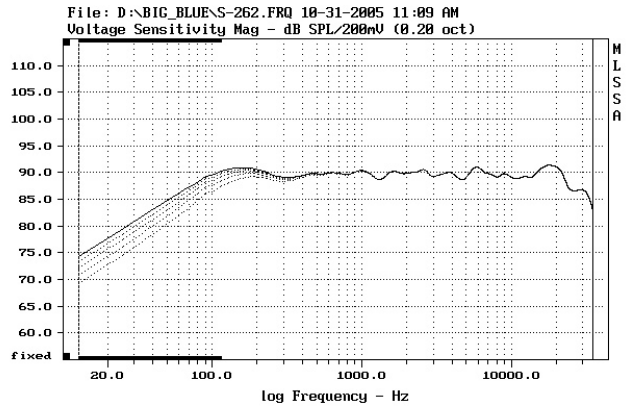
CURSOR: dy = -6.64992 x = 30363.2813 (7773)

BIG BLUE VERTICAL VS +/-15, 30 DEGREES HORIZONTAL

11-1-2005 5:40 PM MLSSA: Frequency Domain

SAT 12 Vertical | On Axis, +/-15, +/-30 Horizontal

These curves show that the SAT 12 has very good and symmetrical horizontal dispersion, with a smooth roll-off at high frequencies when off axis, +/-30 degrees.



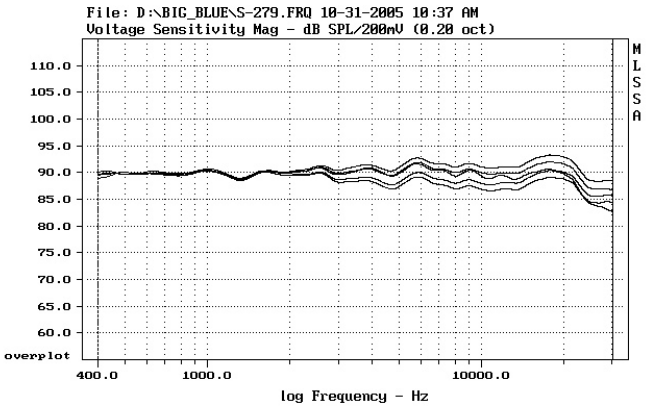
CURSOR: dy = 0.00062561 x = 35002.0569 (2724)

BIG BLUE VERTICAL ON AXIS WITH BAFFLE COMPENSATION

11-21-2005 10:52 PM MLSSA: Frequency Domain

SAT 12 Vertical | Baffle Compensation Measurements

These curves show the effects of the various settings of the dip switches for baffle compensation.



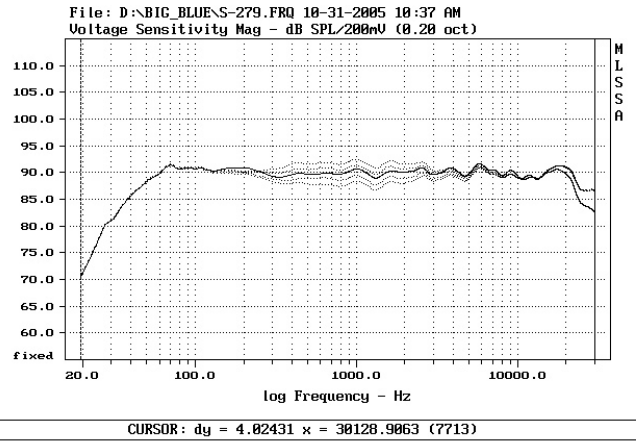
Comment: BIG BLUE ON AXIS FULL RANGE INPUT

BIG BLUE VERTICAL TWEETER ADJUSTMENT

11-2-2005 10:32 AM MLSSA: Frequency Domain

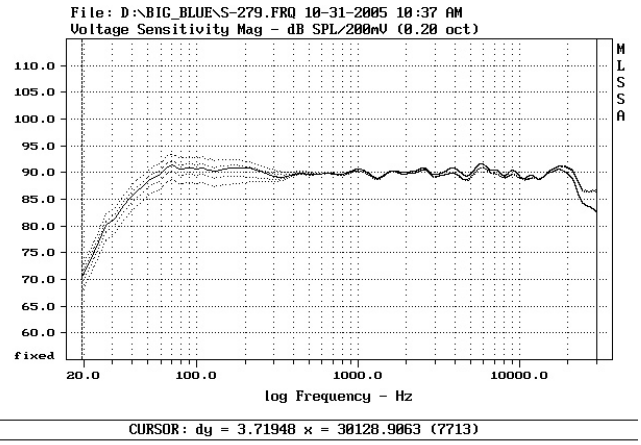
SAT 12 Vertical | Tweeter Adjustment Measurements

These curves show the effects of the various settings of the dip switches for tweeter level adjustment. The scale has been expanded to better detail these changes in tweeter level.



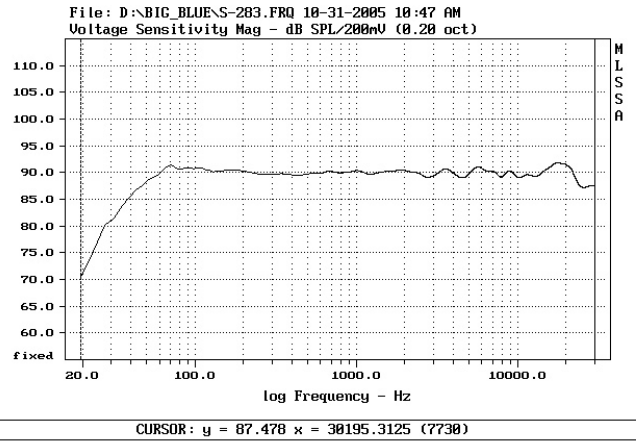
SAT 12 Vertical | Midrange Adjustment Measurements

These curves show the effects of the various settings of the dip switches for midrange level adjustment.



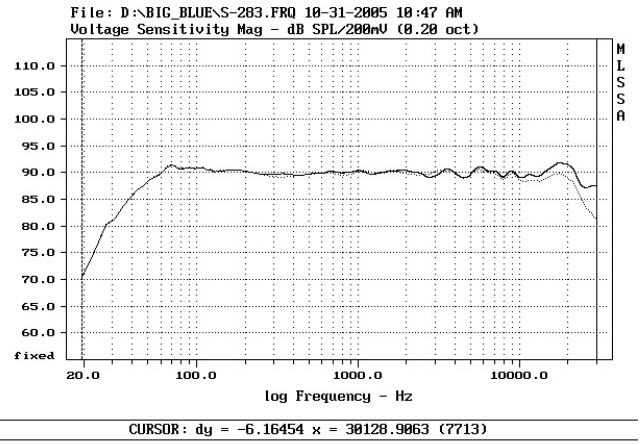
SAT 12 Vertical | Woofer Adjustment Measurements

These curves show the effects of the various settings of the dip switches for woofer level adjustment.



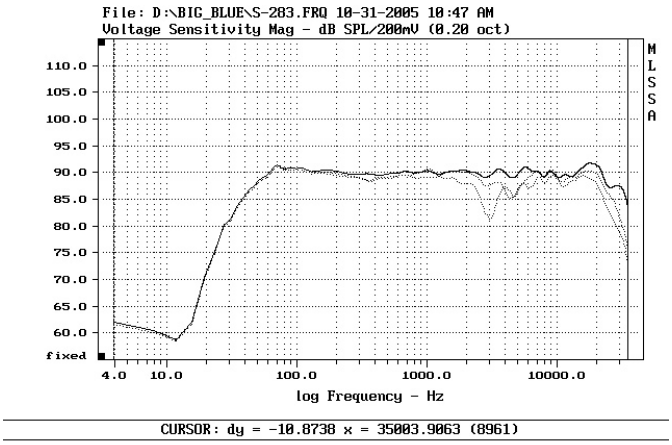
SAT 12 Horizontal | On Axis Response

If you compare this measurement to the on axis response in the vertical configuration (page 14), you will note that they are nearly identical.



SAT 12 Horizontal | On Axis Vs. Listening Window

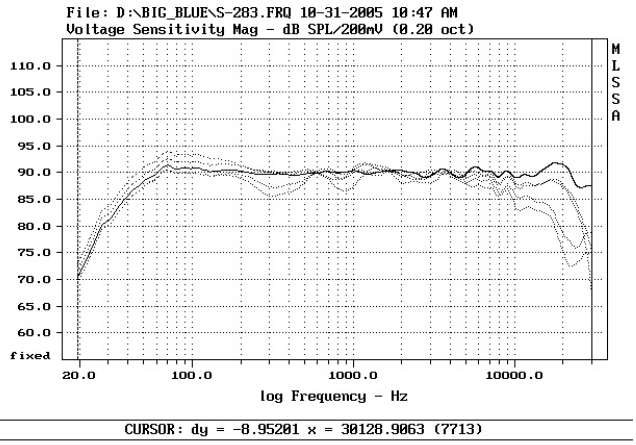
The listening window is a power average of on axis, +/-15 degrees horizontal and +/-15 degrees vertical and gives an indication of how a speaker performs when you are not directly on axis. Ideally the average should be very close to the on axis response



SAT 12 Horizontal | On Axis +/- 15 Degrees Vertical

The vertical curves indicate a dip around the midrange to tweeter crossover frequency and a slight asymmetry in off axis vertical response. The dip at the 3 kHz crossover frequency is typical for this type of design. Also, the asymmetry is typical for a three way speaker.

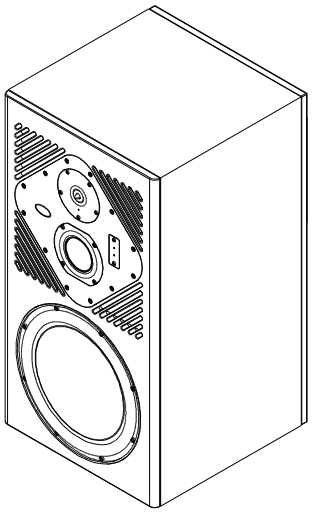
Please note that when the cabinet is in the horizontal position, with the tweeter and midrange oriented vertically, the 12" woofer is on the axis of rotation and you don't see the change in low frequency level, as you did with the in the same measurements of the cabinet in the vertical configuration.

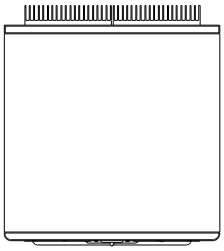


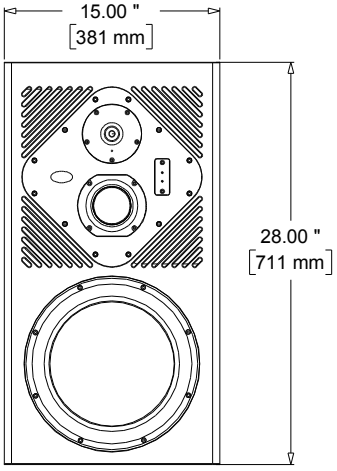
SAT 12 Horizontal | On Axis, +/-15, +/-30 Horizontal

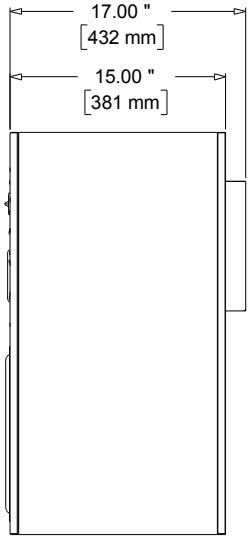
When this set of curves is compared against the same set of curves on page 15 (SAT 12 Vertical | On Axis, +/-15, +/-30 Horizontal), where the SAT 12 was measured in the vertical configuration, you will see the horizontal configuration shows a small amount of horizontal asymmetry. The low frequency variation is due to the relative distance of the woofer and the microphone changing as the cabinet is rotated, as was noted on page 14.

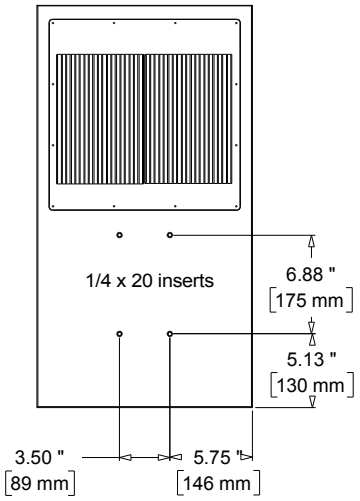
13. SAT 12 Cabinet Dimensions

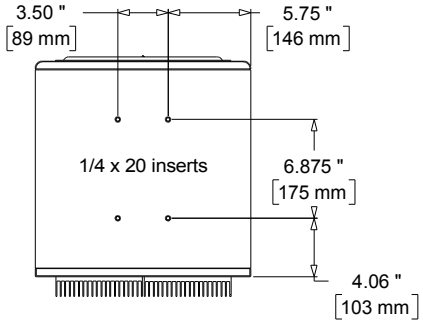












14. Factory Service Instructions

Service for the U.S. versions of Blue Sky products is available only from our authorized distributor, Group One Ltd., located in Farmingdale, New York. (Service for Blue Sky products outside the United States can be obtained through local dealers or distributors.) If your monitor needs service, follow these instructions:

1. Review the manual and ensure that you have followed all setup and operating instructions.

2. Call (516) 249-1399 9:00am to 5:30pm EST and ask for Customer Service. Explain the problem and request an RA (Return Authorization) number. It is important to have your product serial number available when you call. You must have an RA number before you can obtain service.

3. Pack the product in its original packing material and box (do not return the power cord or the manual). If you don't have the original packing material and/or box, please let Customer Service know when you call for the RA number. Blue Sky is not responsible for any damage that occurs due to non-factory packaging.

4. Include a legible note stating your name, shipping address (no P.O. boxes), daytime phone number, RA number, and a detailed description of the problem, including how it can be duplicated

5. Write the RA number on the top of the carton.

6. Ship the product to the address below. We recommend United Parcel Service (UPS). Please insure the product regardless of shipping method.

Blue Sky International
ATTN: SERVICE DEPT / RA#
70 Sea Lane
Farmingdale, NY 11735
USA

7. Turnaround time is three to five business days depending on the problem. When calling for RA numbers, please ask Customer Service what the turnaround time is. The serviced product will be sent back to you via the same shipping method as received (i.e. if you ship your monitor UPS Ground it will be returned UPS Ground, UPS Red will be returned UPS Red etc...). This only applies to products serviced under the warranty.

15. General Contact Details

For sales and other enquiries, please contact Blue Sky at:

Blue Sky International
70 Sea Lane
Farmingdale, NY 11735
USA

tel: 516 249 1399
fax: 516 249 8870
email info@abluesky.com

To discover the very latest information check out our website at:

www.abluesky.com

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70 Sea Lane
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