MrRCSound ASPIRE Sound Generator

for RC
Aircraft

Thank You!

Thank you for purchasing the MrRCSound ASPIRE electric aircraft sound generator. We have done extensive design work and testing on the ASPIRE to ensure it is the most capable, powerful, RC aircraft sound unit on the market.

Each module is proudly assembled and tested by me and my staff in the United States.

Although I have done extensive testing on these units, they are electronics, and in rare cases even the best electronics may fail. We believe that any failures are extremely rare, and have done everything we can to eliminate that possibility. If you have problems with the components or workmanship within 30 days of purchase, please contact me for repair or replacement.

 MrRCFlying@MrRCSound.com

Warranty:
This product is warranted to the original purchaser to be free from defects in material and workmanship for a period of 30 days from the date of purchase. In the event of defect we will, at our option, repair or replace the defective product with a new or reconditioned product, provided the product is returned beforehand postage prepaid to MrRCSound.

This warranty does not cover damage cause by accident, crashes, dis-assembly, modification, misuse, unapproved speakers, removal of speakers from enclosure, unapproved speaker enclosures, unapproved components, over voltage, adjustments of any presets other than the main volume control, or any other intentional changes to attempt to make the system louder, change sounds, or improve sound from it's stock form. Such changes can and WILL result in damage to speakers or electronic components.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state. Please retain a copy of this warranty, your sales receipt, and date of purchase.

MrRCSound ASPIRE Instructions

We have made every effort to make the MrRCSound ASPIRE RC airplane sound system the most advanced, easiest to use, and most versatile RC sound system on the market. The ASPIRE has the most advanced processor of any RC sound system out there, coupled with a large amount of memory for CD quality 44k 16bit sound. We have endeavored to make the system as easy to use as possible while giving advanced sound options that every RC enthusiast will enjoy.

Your MrRCSound ASPIRE system comes with one TT-25 transducer, and can handle up to 2 on the base unit. 4 TT-25s can be run with addition of a secondary amplifier. The ASPIRE board is actually several components in one. These include voltage regulator, sound module, memory module, and amplifier. The system has been specifically designed to work best with the MrRCSound TT-25 or Bass Transducers only. It is not recommended to use any other make or model of speaker.

The ASPIRE sound card can safely be run from 12v to 42v power source. This is approximately the range of LiPO packs from 3 cell to 10 cell. Below 3 cell is not recommended, and above 10 cell will cause damage to the ASPIRE board.

The sound unit, even with 2 speakers or transducers, has very low draw, especially compared to other sound units. There is no need for high wattage and amp draw, when decent volume levels can be achieved with higher efficiency. With 2 speakers the unit draws approximately 2.5A and 42W. The ASPIRE has also been specifically designed with upgrades in mind. It has a set of raw, unsimplified, sound output ports, to connect a pre-made amplifier/regulator set available through MrRCSound.com. This set will allow for a second set of TT-25 speakers, for a total of 4!

Hooking up your ASPIRE:

Connection of the ASPIRE is strait forward. There are 4 servo style connections on the board. These accept Male to Male servo cables that go to your RX. These are labeled on the board "Servo 1-4" Servo 1 is the the main engine sound connection. Servo 2-3-4 are used for auxiliary sounds such as guns, whistles, and pilot chatter. Servo 1 connection can be made either to your throttle channel with a servo Y cable with the other end going to your ESC, or to a separate channel you have mixed with the throttle.
Connection of Servo 2-3-4 can be made to any empty RX channels that are associated with a switch or knob.

Powering Up:

When powering up the ASPIRE sound unit, **it is recommended that you do not hook it's power up until power to your RX is on**. The ASPIRE sound card detects your throttle position when connected and uses that for it's start position. Since some RXs can take several seconds to initialize, it is important to wait until the RX is ready, otherwise the ASPIRE sound card may not see the proper starting throttle position, and may not respond to throttle inputs.
Once powered up, one to two clicks of the throttle stick/trigger will start the engine start up sequence. To make the throttle timing easier, each start up is 10 seconds in length with the exception of the Jet engine sound witch is longer. During the start up sound sequence, adjust the throttle position one more click up, or a couple clicks up on the throttle trim. When the start up sound is complete, it will enter an idle sound. The RPM now will increase and decrease with throttle movement. Move the stick back to the start position to run the shut down sound.

Sound Configurations:

The default ASPIRE Airplane Sound Unit comes complete with 8 engine sounds. These include Lycoming, Merlin, Continental, Daimler Benz 801, Pratt & Whitney Double Wasp, Wasp Jr., Wright Cyclone, and a Generic Turbine.

Each sound configuration has 3 auxiliary sounds with it to complete the sound set. On the Airplane Sound Unit, Servo 2 is ALWAYS a machine gun sound, and is synced to the 2 LED outputs on the board. The main engine sound used determines the auxiliary sounds on Servo3 and 4. For example, Lycoming, Continental or other civilian engine sounds may have pilot chatter such as "clear", "clear prop" or "contact", while military engines may have a second machine gun, cannon, whistle or other special sounds.
Sound configurations are changed by pressing the button located on the board. At each push of the button the ASPIRE will announce which engine sound it is on. Example: Lycoming...

Volume:

At the edge of the board you will find a small wheel. This is the volume control. Your ASPIRE unit is preset for full volume.

ASPIRE Advanced Features:

The MrRCSound ASPIRE is loaded with many advanced features not found in any other RC sound system. The following section details some of those features, how they function, and how to utilize them best.

Real Sounds: The start up, shut down, idle, and high RPM are all real, high quality sound files from the respective engines/airplanes. The RPM range between the idle and high RPM are created using a complex method of blending and spectral morphing to create the most realistic RPM range possible.

New Sound Rendering: MrRCSound has developed a completely new method for creating the engine RPM range. It is a complex method which involves cross fading, speed and pitch shifting and spectral morphing. Both the engine idle and the high RPM are real recordings of the respective engine. The processing allows for a very realistic ramp up and down through the RPM range.

Random Start Up and Shut Down: Each engine sound will have multiple startups and shutdowns for that respective engine. Real engines always have some differences each time they start and shut down. Sometimes an extra cough, sputter, rev up, etc.. To attempt to recreate this the ASPIRE will randomly choose a startup and shutdown of the respective engine. Thus giving a semi unique experience each time you fly. Engine sounds can have up to 15 different startups and 10 different shutdowns for the ASPIRE to randomly choose from.

Automatic Whistle Trigger: Many aircraft have distinct whistle sounds, such as the P-51 or F4-U. The ASPIRE has a built in gyro, which will detect a pull out of a dive or hard turn, and automatically trigger the proper whistle sound. No need to trigger it manually as on the V4.1.

Random Chatter/Sounds: AUX. Channel 3 (Servo 3) on the ASPIRE will have the ability to randomly select sounds. Depending on the engine being used, these could be aircraft related sounds, ATC chatter, or Pilot chatter, such as "Enemy, 10 o'clock high!" Other Aux. channels will have things such as guns, bombs, etc.

Amplifier: A more powerful amplifier is being used. It is rated at 5X the power of the V4.1 amplifier, but it is being utilized at 2X the power of the V4.1 amplifier. This leaves overhead so the amplifier is not taxed, as well as staying within the safety limit of the TT-25 transducers. Using more of the amplifier ability in the future may be possible if design changes are made to the transducers.
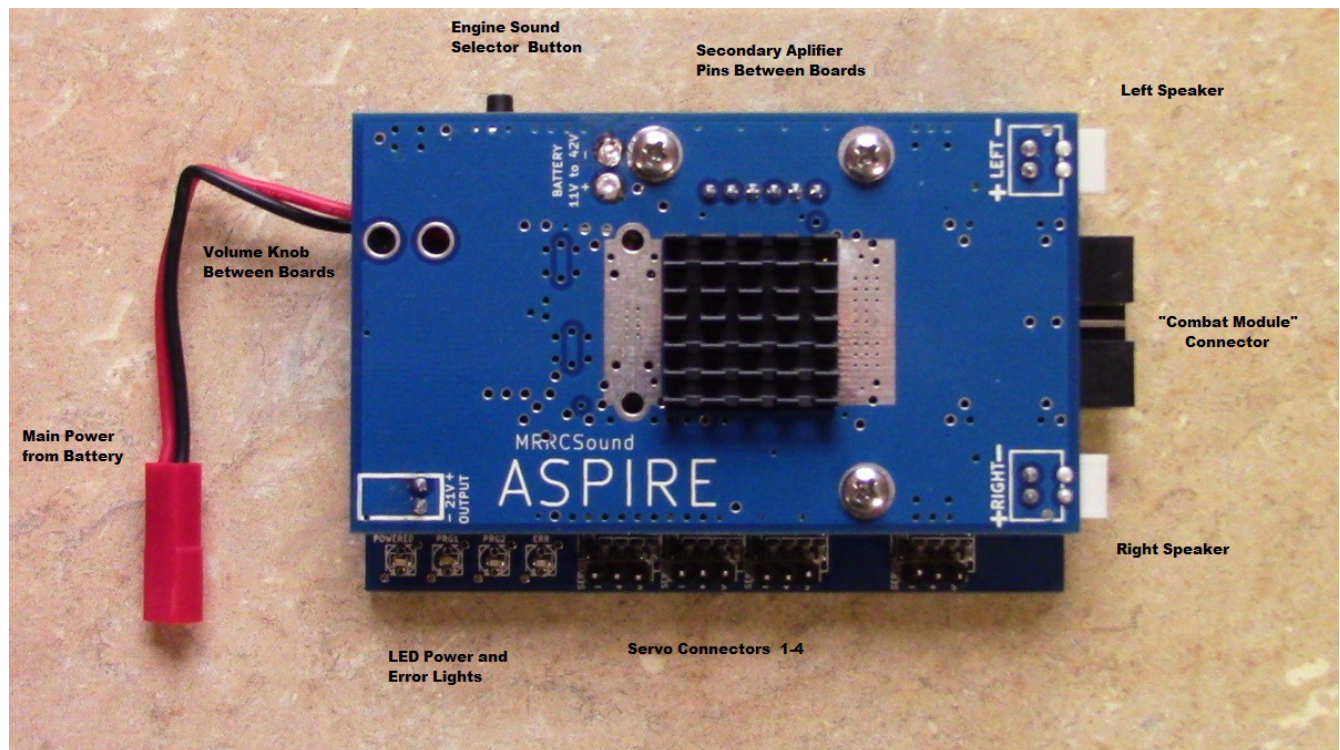
Processor: A much higher end processor is being used. This allows faster computations of the sound, better response time, more features, and future enhancement.

Dual Board Design: The board, is actually 2 boards that connect together, one on top of the other. The bottom board is the processing unit, containing all the components for input, and processing the sound. The upper board is the power and amplifier section. All the components are sandwiched between the boards, with nothing hanging out. This allows for greater protection of the components in the event of a crash, slicker looking design, and easier handling. In the event you need to separate the boards for proper fitment, it is easily done with an optional communications ribbon cable.

Sound Memory: The memory style has changed from a chip style to a Micro SD memory card. This allows for much greater space for larger sound files, and ease of use. The V4.1 memory was 8mb total for all 6 stock sounds. The ASPIRE sounds will be approximately 110mb per engine sound! This allows for much higher quality (16 bit 44K CD quality), longer engine loops, and overall better performance.

Expansion: The ASPIRE has an expansion port for a future "combat module".

ASPIRE Layout Image:
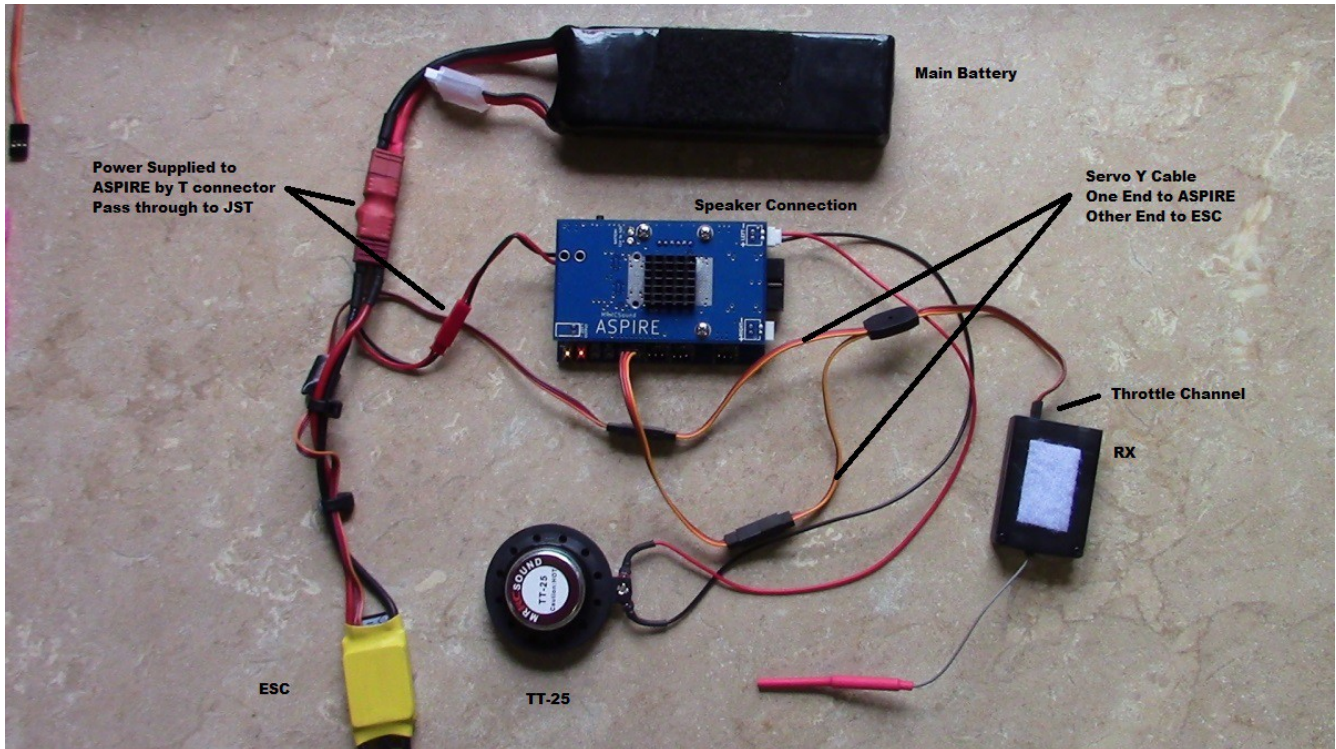
Tips:

The ASPIRE is designed to work with most common radios. However, differences in radio brand, model, and ESC brand and model may affect the start up and shutdown point. Because of these many differences it may be necessary to tweak your start and shutdown points.

The easiest way to tweak these settings is to use the throttle trim for start up and shutdown. By using the throttle trim, you can also eliminate the accidental initiation of the shutdown sound while in flight.

Begin with the motor disconnected if possible, or at least with the prop off for safety reasons. Most likely it will take some messing with the throttle end point settings and sub-trim.

Start with the throttle trim about half way, you may need to go lower depending on settings. Advance the trim until the start up sound begins. This is usually 4-6 clicks of trim from it's start point. By using end points, and sub-trim you should be able to get the motor to start about the same time. Once the start up sequence begins, give the trim 1-2 clicks more and leave it there until the start up sound has finished. For ease of use all start up sounds are 10 seconds in length. Once the start up sound ends, the ASPIRE will go into the idle sound, and if you timed it correctly your motor should be in an idle as well. This prevents the sound card from accidentally running the shut down, when the throttle stick is in the low position. The RPM range should now work with the main throttle stick. If you are hitting high RPM well before the motor is at high RPM, it may be required to change the throttle upper end point.

For shut down, bring the main throttle stick to the low position. Then reduce the throttle trim until the shutdown sound begins and the motor spins down. The shutdown sound sequence is 6.5 seconds in length. This length of time is about the same time it takes most motors to wind down, if the brake is disabled on the ESC.

Volume: The volume knob is located along the back edge of the board, the opposite end of the speaker connection ports. It is slightly recessed so that it does not get turned by accident. You can turn the knob left and right by getting a fingernail or small screw driver on it. The volume has been preset to full. Aux. sounds: The Aux. sounds are associated with the ports on the main board labeled Servo2-4. Each one can be associated with a separate RX channel and switch or knob on your radio. The Aux. sounds only trigger in one direction, so it may be necessary to play with the servo reverse settings on your radio to

enable the sounds properly. Servo2 is always machine gun sound. Servo3 is random radio chatter. The radio chatter is mostly ground chatter, requesting take off, etc. and is made prior to the engine start up sequence. If used after the engine sound start up, the ground chatter may not be able to be heard. Servo4 is a single sound, such as "clear prop", and is dependent on what engine sound is being used. Auto activated sound trigger: The ASPIRE is equipped with a Gyro to detect dives, and pull out of dives. On some engine sounds a whistle is automatically triggered when pulling out of a dive. It is designed to be be subtle, but hear-able, as close to the real whistle created by some planes. There are no settings for this function, it is all automatic. Not all planes have a whistle to them, so not all engine sounds have this feature enabled.

Automatic Whistle: There are two sounds on the stock sound pack that take advantage of the automatic whistle trigger. The system is based on a gyro chip, and will trigger when a certain angle of attack is reached in a short period of time. With the ASPIRE mounted so that the speaker connectors are facing forward, the whistle will trigger when you 'push over' into a dive. If the ASPIRE is mounted with the volume knob facing forward, the whistle sound will trigger during a climb, dive pull out, or sometimes a tight turn with the wings vertical to the ground. It may take a couple of flights to get used to how to trigger the automatic whistle, but you should find that you soon will be able to trigger it when wanted.
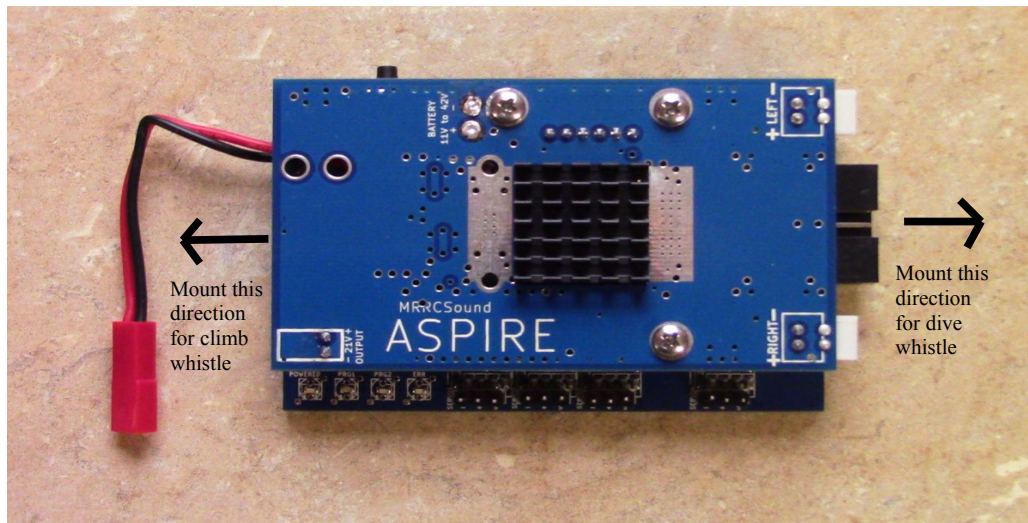
Syncing Tips: Syncing the motor start up with the engine sound can be done in several ways, including some of the more complex features on modern computer radios. The easiest way to accomplish this is with the throttle trim. It may require some adjustments to the throttle trim, sub trim and end point settings.

Start with the throttle trim about half way and move it up, take note of where the motor starts to spin, and where the engine sounds start. Unhook the power to the sound card and adjust the throttle trim to a point where you think the engine start sound will begin when the motor does. This may take several attempts. Once you are close use the throttle trim to start the motor into an idle, and the start up sound begins. During the start up sequence, give 2-4 more clicks of up throttle trim. Allow the start up sound to complete (10 seconds). The ASPIRE should settle into an idle sound, with the motor running at a low RPM. The ASPIRE will now respond to regular throttle input through the throttle range. This will also prevent the ASPIRE from going into the shutdown sound accidentally when the throttle is pulled all the way down.

To shut down, pull the throttle trim down past the position where you started. The ESC should be set with the brake off. The shutdown sound is 6.5 seconds in length, roughly the same amount of time it takes for the prop to spin down, with the ESC brake off.

We hope you enjoy using the ASPIRE as much as we have enjoyed creating it for you.

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