ONIX ROCKET

Enjoyment Guide for the RS1000 Loudspeaker with R-DES

Yours exclusively through

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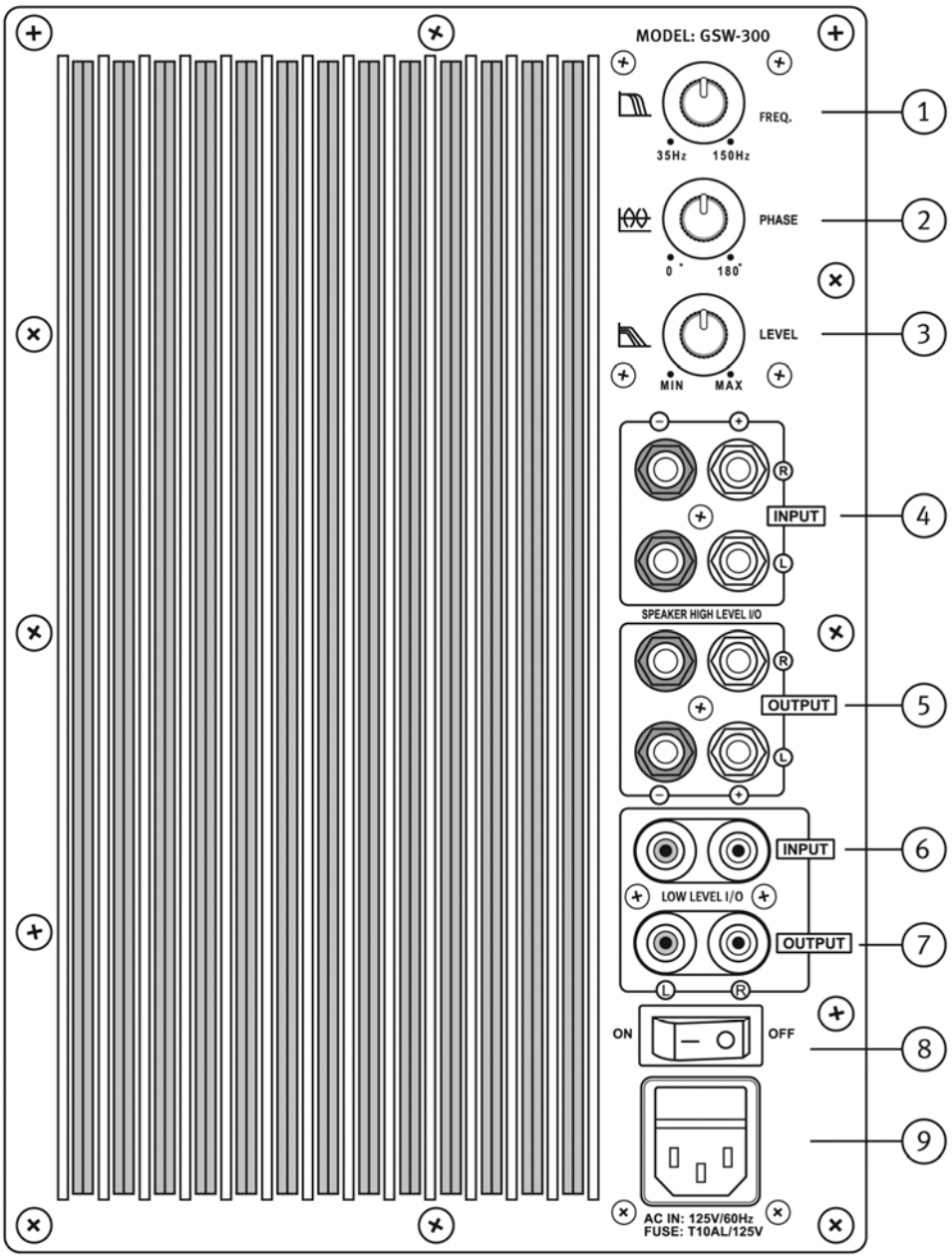


1 - Crossover. Where you set this dial indicates the highest frequency that will be output by the woofer.

2 - Phase. This controls the phase of the woofer.

3 - Level. This controls the gain of the amplifier / the SPL level of the woofer.

4 - High level input. These accept a speaker level signal.

5 - High level output. These output a speaker level signal.

6 - Low level input. These accept a low level or line level signal.

7 - Low level output. These output a low level or line level signal.

8 - Power switch.

9 - IEC power cord inlet. Above contains the fuse for the amplifier.

Depending on when you purchased your RS1000's, your amplifier may not look exactly like the one shown here. The amps are essentially the same but early versions have the high level and low level input and output positions reversed. Additionally, the power cord inlet and fuse are in a different location.

The RS1000 is very versatile and offers many methods of connection. Below we detail how to connect the RS1000 to systems with and without a subwoofer in use. Later in this manual, we integrate R-DES (Rocket Digital Equalization System). You can also design your own connection scheme; you are not limited to those listed

General Receiver / Processor Configuration

Option one:
Set your receiver or pre/pro to MAIN speakers = LARGE. You may need to adjust the SUB setting in your receiver or pre/pro to say ENHANCED or MAINS + SUB or something to that effect. This ensures your subwoofer still receives the information encoded in the LFE channel. If you are not using a sub, set SUB = NO.

Option two:
If your receiver or pre/pro offers very low crossover points to the sub, you can try setting your MAIN speakers as SMALL but with a 30-40Hz crossover. Set your SUB to YES. Do not use this method without a subwoofer. This will give you a lot of low bass in your RS1000s but not the lowest of the low. You may prefer this to option one but it's user dependant.

Either option works, try them both and use what you prefer. If you tend to play your system at reference levels (very loud!), this is probably your best option.

Option three:
Some prefer just to add in mid-bass slam or impact to their system. To do this, set your MAIN speakers to SMALL with an 80Hz crossover. Set SUB = YES. Adjust the crossover dial on the RS1000 amplifier to whatever you like but generally between 120-150Hz. Do not use this method without a subwoofer.

If you have a subwoofer…

Option one:
Take the speaker cable from your amplifier or receiver and plug it into EITHER the left or right input on the back of the RS1000 amplifier (4). Next take the supplied jumper cable and go from the output terminals on the amp (5) to the binding posts above the amp on the back of the speaker. If you used the LEFT inputs, you must use the LEFT output. Same if you used RIGHT.

Option two:
Take the speaker cable from your amplifier or receiver and plug it into the top-most binding posts on the back of the speaker. These are located above the amplifier. Next connect those binding posts to either the left or right input terminals on the RS1000 amplifier (4). Using the supplied jumper cable consisting of banana plugs on one end and spades on the other, insert the banana plug end into the left or right high level input on the RS1000 amplifier. Place the spade end onto the binding post and tighten down. If your speaker cable is terminated with spades as well, it is OK to 'piggyback' the two spades on top of each other. If your speaker cable is terminated with banana plugs, you can simply insert it into the end of the binding post.

If you do not have a subwoofer and are using the speakers for home theater…

If you have only one sub/LFE out, split the signal with a Y-splitter (available from AV123) and run one cable to each RS1000 amplifier. Connect the cable to either the LEFT or RIGHT input (6).

Set your receiver or pre/pro MAIN = LARGE or SMALL, it's your choice. I would try small. Set SUB = YES. If you set your MAIN = LARGE, you may need to adjust the SUB setting to say ENHANCED or MAINS + SUB or something to that effect.

If you do not have a subwoofer and are using the speakers for two channel or multi channel music…

Option one:
Take the speaker cable from your amplifier or receiver and plug it into EITHER the left or right inputs on the back of the RS1000 amplifier (4). Next take the supplied jumper cable and go from the output terminals on the amp (5) to the binding posts above the amp on the back of the speaker. If you used the LEFT inputs, you must use the LEFT output. Same if you used RIGHT.

Option two:
Take the speaker cable from your amplifier or receiver and plug it into the top-most binding posts on the back of the speaker. These are located above the amplifier. Next connect those binding posts to either the left or right input terminals on the RS1000 amplifier (4). Using the supplied jumper cable consisting of banana plugs on one end and spades on the other, insert the banana plug end into the left or right high level input on the RS1000 amplifier. Place the spade end onto the binding post and tighten down. If your speaker cable is terminated with spades as well, it is OK to 'piggyback' the two spades on top of each other. If your speaker cable is terminated with banana plugs, you can simply insert it into the end of the binding post.

Either option works, try them both and use what you prefer.

Set your receiver or pre/pro to MAIN speakers = LARGE. SUB = NO.

Adjust the RS1000 controls the same for any of the connection methods:

Adjust the controls on the back of the RS1000 amp to your liking. The top-most knob is frequency. This controls the highest frequency that the woofer will be playing. Most like it around 120Hz but experiment and see what you like.

The center knob is phase. A basic setting here is 90 degrees (12 o'clock). To properly set this, you need to perform a frequency sweep. If you don't know how to do this, the procedure is detailed later in this manual.

The final knob is gain (volume). Set this so that you get a nice 'foundational' bass lift but not too much that it's over powering. Start around 12 o'clock and adjust from there. Play several *different* CDs and DVDs. You want the system to sound balanced with a seamless blend between the main part of the speaker and the woofer.

Using R-DES

The goal here is to get the line level or pre-out signal to R-DES and then to the RS1000 amplifier.

If you have a pre/pro, on the LEFT MAIN pre-out, install a male to female-female Y-splitter (available from AV123). This will allow you to split the pre-out signal across two cables. Run one cable to your amplifier as you normally would. Run the other cable to the LEFT input on the back of the R-DES device. Run another cable from the LEFT output on the back of the R-DES device to the LEFT low-level input on the RS1000 amplifier (6). Repeat for the RIGHT.

If you have a receiver, you do essentially the same thing but you do not need the Y-splitter. Simply run the cable from your pre-out to R-DES and continue as described above. If you do not have pre-outs available on your receiver or if your receiver shuts down the internal amplifier when a cable is connected to the pre-out, you can not run R-DES in this manner. You can however run a cable from your subwoofer out to an input on the R-DES device. If you are running a subwoofer along with the RS1000's, you will likely need the aforementioned Y-splitter unless you have multiple sub outs.

There are *many* ways to install R-DES into a system with RS1000's with and without subs. See the next pages in this manual for wire layouts of various methods. Remember, you can design your own connection scheme; you are not limited to those shown here!

Performing a Frequency Sweep

Though there are a number of ways to perform an accurate frequency sweep, we've detailed the steps involved in the most basic method below.

a. Sit in your favorite seat and hold your Radio Shack SPL meter at a 45-degree angle half way between horizontal and vertical.
b. The meter should be placed at ear level when seated in the primary listening position, and is best if supported by a stationary object such as an end table or tripod.
c. Set the control on the meter to 'C-weighting' and 'slow'.
d. Assuming you have already calibrated all channels to reference level (see the owner's manual for your main speakers or receiver/processor for how to do this), the RS1000 should be calibrated to 75dB (or 85dB if your receiver/processor uses that standard).
e. Play a 31.5Hz track from the R-DES installer/test tone CD, and record BOTH the frequency, which corresponds to the track on the test disc, and the sound pressure level (volume) as shown on the meter.
f. Next, play the tracks from 31.5 to 120Hz and record the sound pressure level for each frequency played.

Important Note: *The Radio Shack sound meter uses C-weighting which compensates for the lower sensitivity of the human ear at low frequencies. We want to measure the actual SPL. If you use a test disc that does not automatically compensate for this (such as the R-DES disc), a correction key is needed to ensure proper response before your final measurements are plotted. We suggest gathering your data using the readings on the meter and then correcting your results with the compensation coefficients shown at the end of this manual. If you are utilizing the Onix Graph Paper program included with R-DES, it has an option to compensate for C-weighting.*

Phase Adjustment

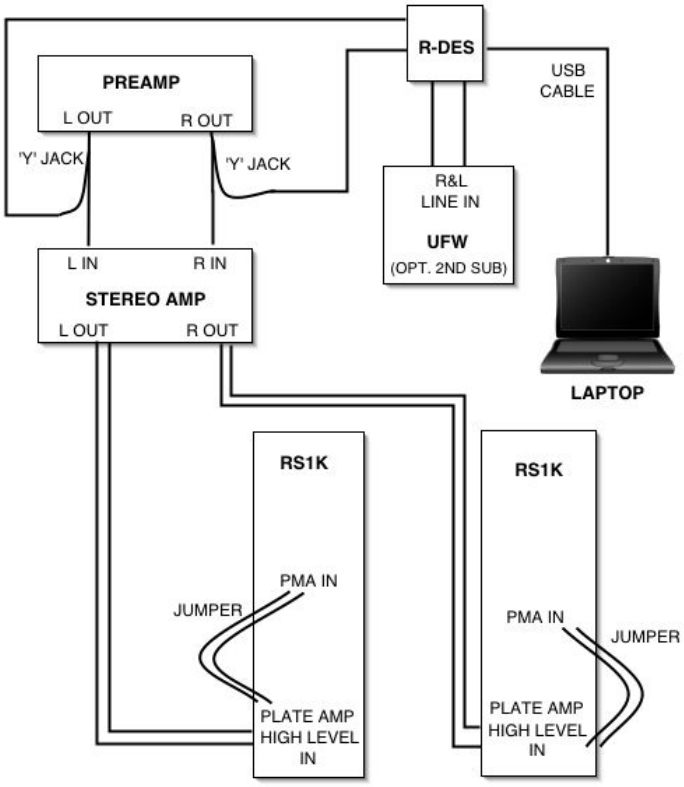
The phase dial controls the *relative* phase of the woofer to best reinforce the rest of the speaker. Adjustments to this control will change the woofer's interaction with the rest of your speaker system, providing the least cancellation, and thus the best response in *any* room. With SPL meter in hand (or, better yet, on a tripod), at the listening position, play an 80Hz tone (for this exercise the receiver or pre-pro's crossover point must be set to 80Hz). Be sure not to play your system too loud. Start with the phase control in the "0" position. Record the reading on your SPL meter. Repeat with the dial in the 9 o'clock position (45 degrees), 12 o'clock (90 degrees), 3 o'clock (135 degrees) and 180 degrees. Select 0, 45, 90, 135 or 180 based on which position results in the biggest peaks in sound pressure levels (i.e. reads highest on the meter). This setting indicates the least amount of bass wave cancellation, and should be held constant until the subwoofer or other speakers in your room are moved, or placement is altered in any way. You may very well find the "90" setting to be optimum. If you want to tweak the system for best performance, instead of only recording the readings at 80Hz, you should play test tones from 31.5Hz through 120Hz with the phase set to 0, 45, 90, 135 and 180. The best setting is the one that results in the biggest peaks in sound pressure levels (i.e. reads highest on the meter) as well as the flattest response across the range of frequencies.

Table of Contents

You may jump ahead to the setup Illustration that best matches your intended configuration.

Here and on the following pages we have illustrated various connection schemes. In the following pages, you will see a reference to the acronym 'PMA'. This refers to 'Progressive Matrix Array'. This is the type of crossover used in the RS1000 loudspeaker. If you are asked to connect your speaker cable to the PMA, this simply means connect to the binding posts on the back of the speaker (above the amplifier). If you are asked to turn on your PMA's amplifier, this means turn on your main amplifier or receiver used to power your RS1000's.

ILLUSTRATION #1



This is a basic, straight forward connection scheme of a stereo RS-1K system with a subwoofer, in which R-DES controls the signal being fed to the subwoofer via a pair of 'Y' jacks. The other side of each 'Y' jack feeds the Left and Right amplifiers which feed a speaker level signal to the RS-1K woofer's speaker level input (4). You then use the jumper cable (supplied with the RS-1K) to connect the RS-1K's plate amplifier speaker level output (5) to the PMA speaker terminals.

An optional version of this connection scheme requires you to connect the Left and Right amplifier speaker wire to the RS-1K's PMA terminals and then use the jumper to connect the PMA terminals to the RS-1K plate amplifier speaker level input (4).

What will happen:

1. The RS-1K's PMA will receive a full range signal.

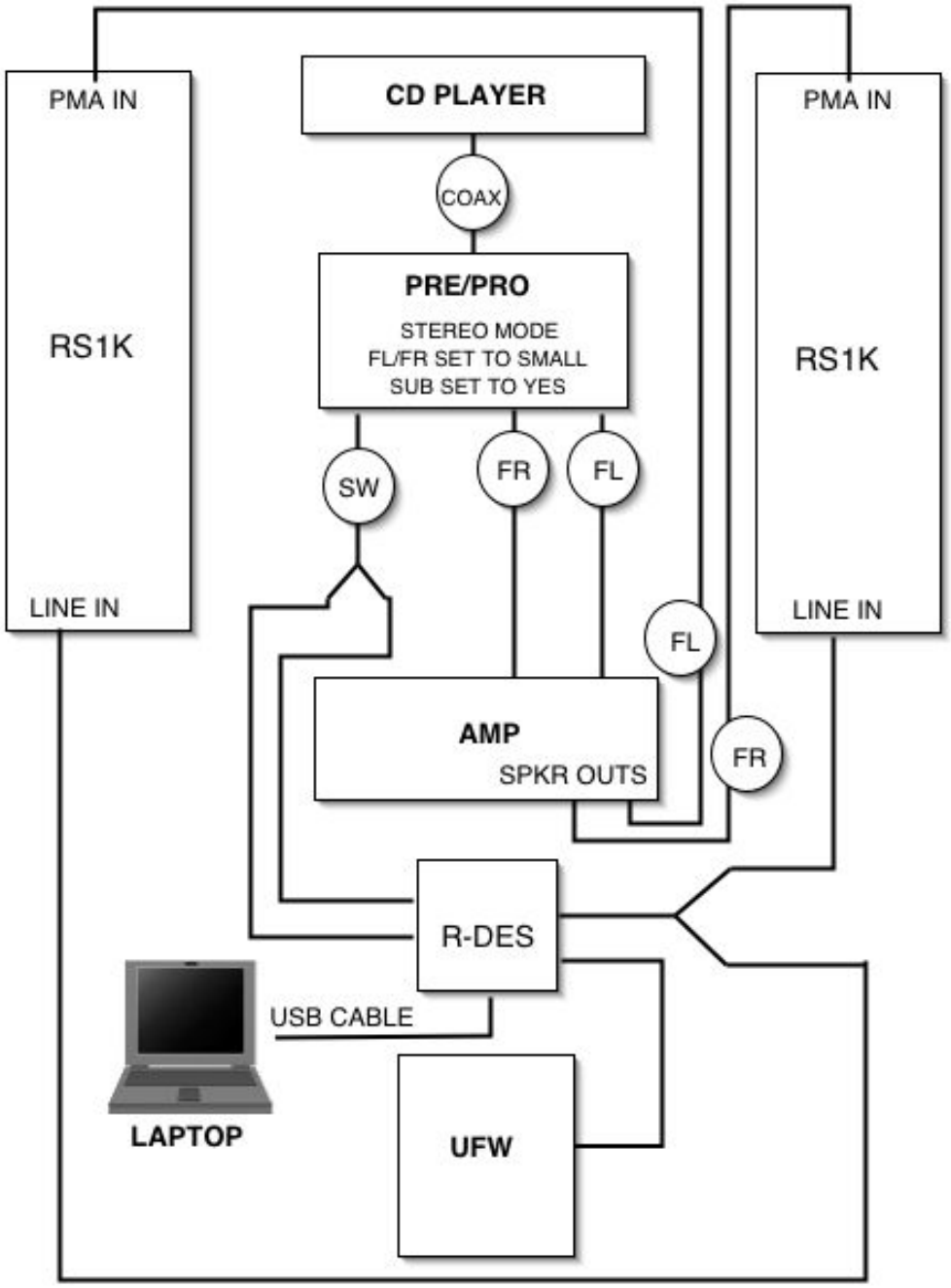
2. The RS-1K's woofer, powered by the on board plate amplifier will receive a full range signal. You will use the plate amplifier's variable crossover (1) to select a roll off point for the woofers, It has been suggested to select a lower crossover point for the woofers (approximately 40-50 Hz) to minimize any overlap of the PMA, woofer and subwoofer. This is a reasonable starting point, but experimentation with the crossover point is the best advice.

3. The subwoofer(s) will receive both Left and Right full range signal, through R-DES, which will give you the ability to design curves with or without a subsonic high pass filter and boost and cut filters to smooth out the low frequency response or to contour a curve that suits your listening pleasure. It is suggested that you should use the low pass filter of your R-DES instead of the crossover on your subwoofer's plate amplifier. In this case, you should disable the subwoofer's crossover or dial it up all the way to it's highest frequency.

4. A final tweak of relative phase reconciliation should always be included with any system that combines 2 or more low frequency producing speakers.

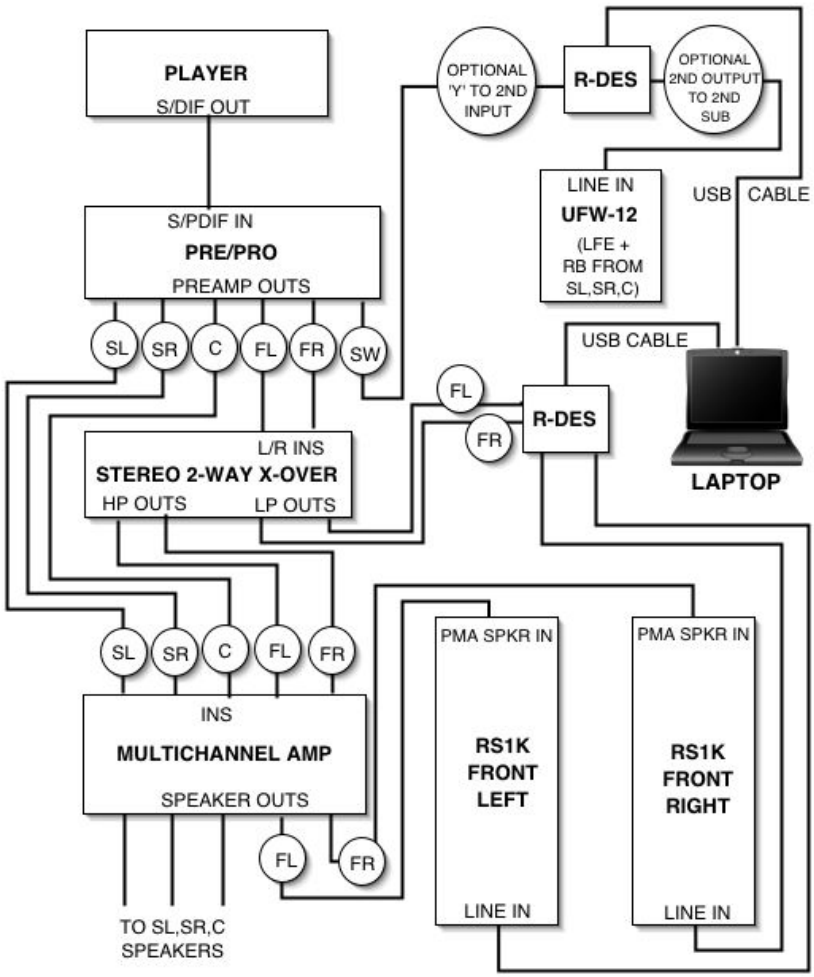
In this scheme, you should have that option on your subwoofer and you have a continuously variable phase control (2) on the RS-1K's plate amplifier. Turn off your subwoofer, play a test tone at 75 dB SPL that matches the crossover point you selected on the RS-1K's plate amplifier (1) and dial in the highest SPL reading of the phase control, then turn on the subwoofer amplifier and repeat the process. This should give you a great place to start creating EQ curves with R-DES.

ILLUSTRATION #2



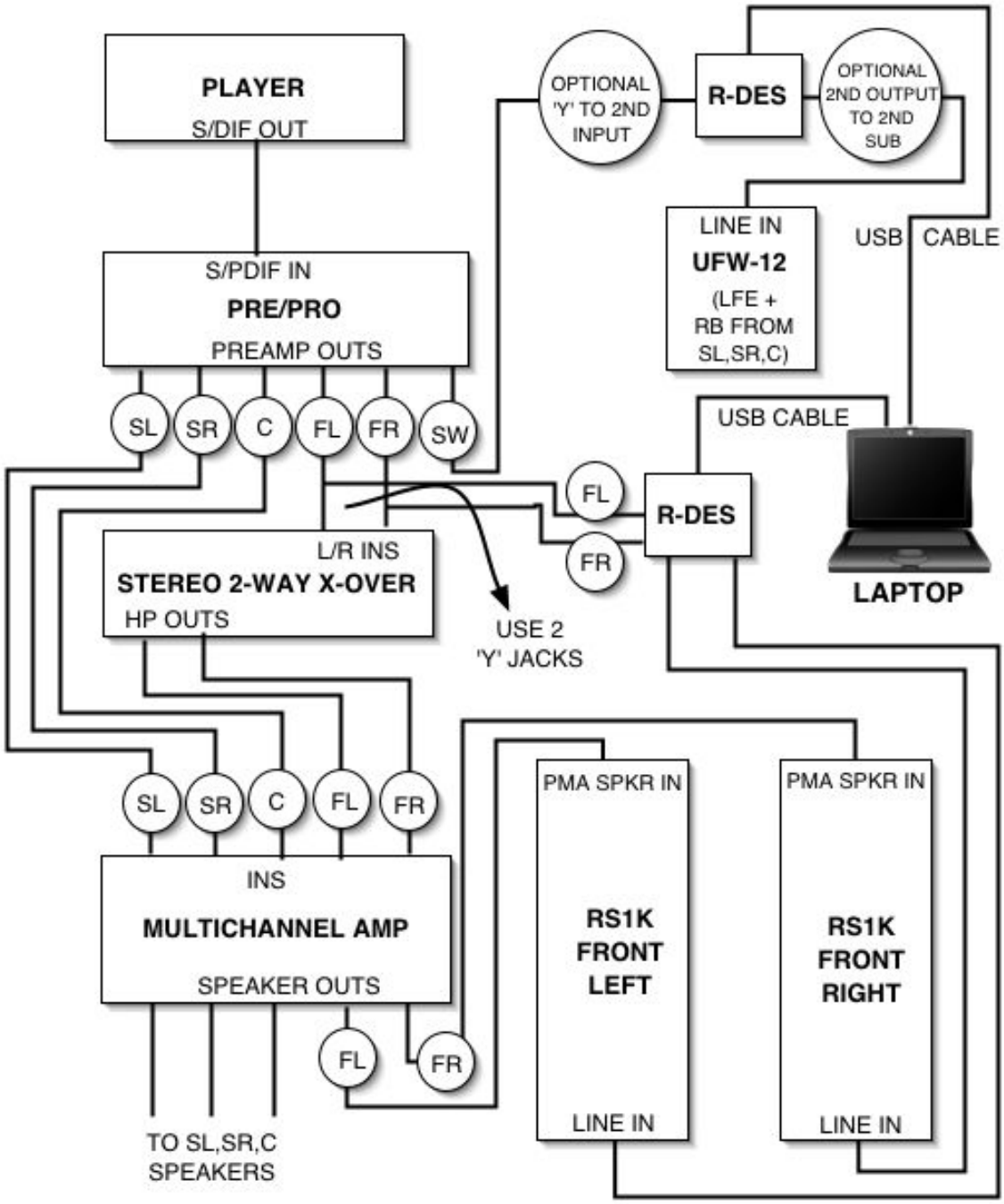
In this connection scheme, we have a stereo setup, with a subwoofer, being fed signal by a preamp/processor whereby the RS-1Ks woofers and the subwoofer are controlled by a single R-DES.
Set the FL/FR speakers to 'SMALL' (the size settings of the other speakers is moot, as this is a stereo system configuration).
Select a crossover point in the preamp's menu.
Connect the FL/FR amplifier's speaker wire connection to the respective RS-1K PMA terminals.
From the preamp's SW output jack, connect a 'Y' jack which will feed both inputs of R-DES which then controls the low frequencies to the RS-1K woofers and the subwoofer.
Follow the same phase tweak procedure as outlined in illustration #1.

ILLUSTRATION #3



This connection scheme utilizes an outboard, stereo 2-way crossover to filter the high frequencies away from the RS1K's built-in plate amplifier/woofer and to filter the low frequencies away from the RS-1K's PMA, at a user-defined crossover point.
This is the setup construction:
Player: All speakers 'LARGE', SW='YES'
Preamp: FL/FR 'LARGE', SL/SR/CC 'SMALL'
What will happen:
The low frequencies that are redirected from the SL/SR/CC (because they are set to 'SMALL') will be sent to the subwoofer.
The full range FL/FR signals will be sent to the outboard crossover where you will choose the crossover point that you prefer, sending the frequencies above the selected crossover point to the RS-1K's PMA (HP OUTS) and sending the frequencies below the selected crossover point to the RS-1K's plate amplifier/ woofer (LP OUTS).
The subwoofer, or subwoofers (dual subs can be connected by inserting a 'Y' jack as shown in the diagram) will receive the LFE signal, if any, along with the redirected bass from the satellites that are set to 'SMALL'.
Adjust the levels and relative phase per steps 1-13 in the Setup For Illustration #6
NOTE: You will now have 2 R-DES equalizers to coordinate, so you might want to name each curve you create with a tag of SW and RS-1K respectively, to avoid confusion down the road. You should also devise a curve with the idea of creating a complimentary curve in the 2nd R-DES and name the 2 curves the same, with the only difference being the tag. This is only a suggestion to help avoid dialing up 2 different EQ curves that may work against each other when utilizing 2 R-DES units in the same system.

ILLUSTRATION #4



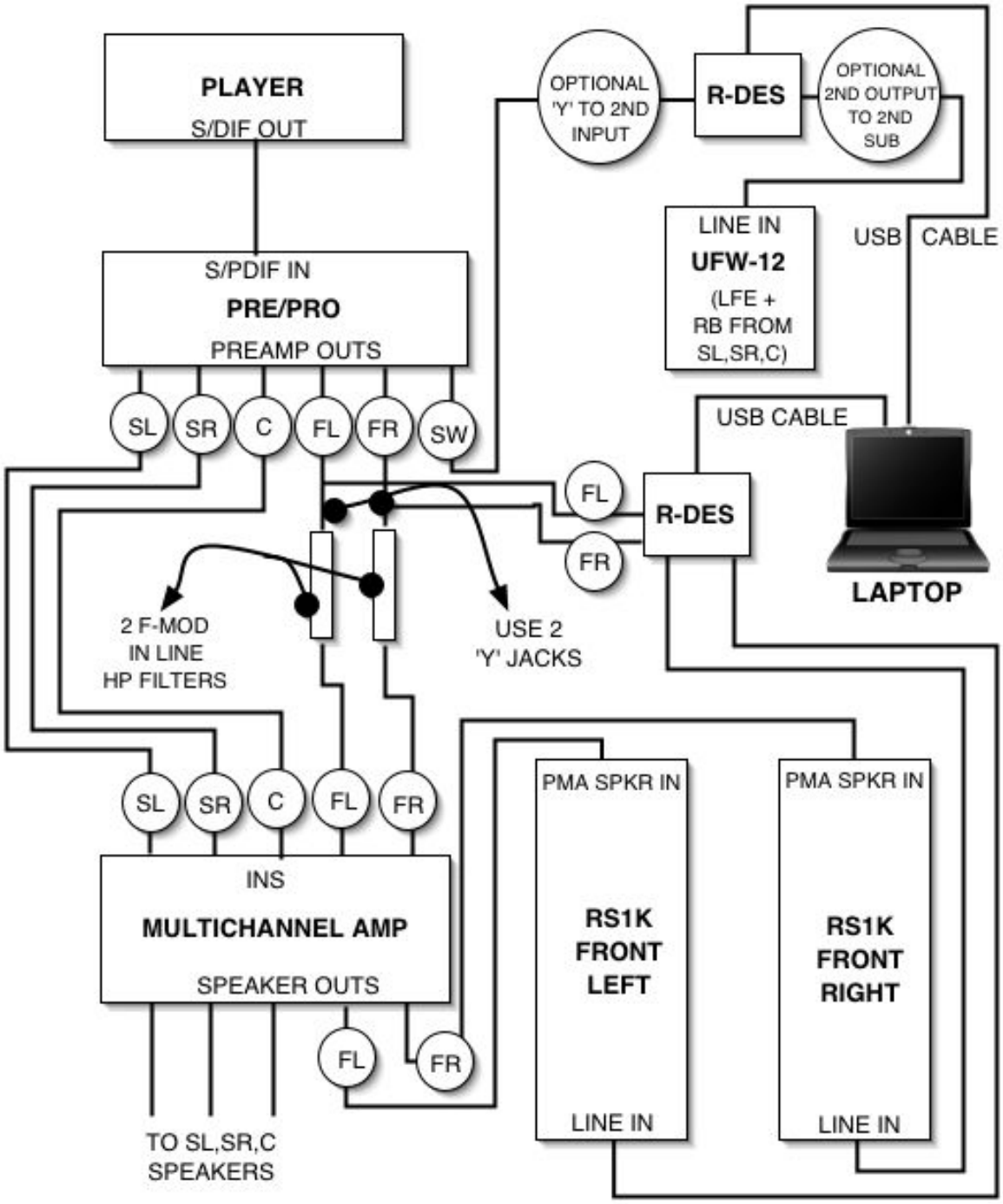
This is also a connection scheme that utilizes an outboard stereo, 2-way crossover. The difference in this scheme is that you are using 'Y' jacks at the FL and FR preamp outputs to send a signal from each channel to both the outboard crossover and R-DES.

This scheme will allow you to set different crossover points for the RS-1K's PMA and it's woofer by selecting the high pass point in the outboard crossover and the low pass point in R-DES.

Everything else about this scheme is the same as Illustration #3, and can be referenced in setup for illustration #3.

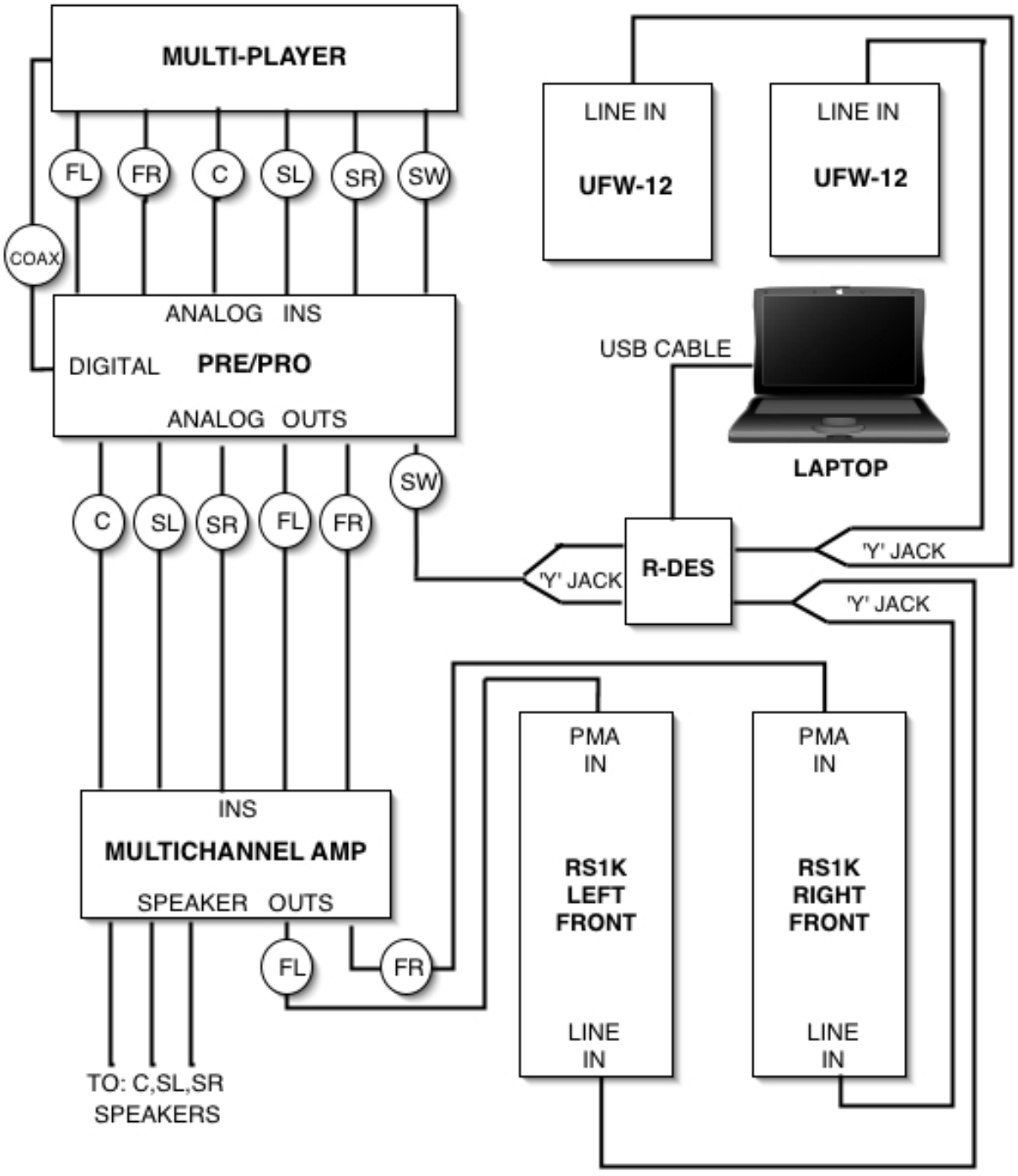
Adjust the levels and relative phase by referring to steps 1-13 of the Setup For Illustration #6.

ILLUSTRATION #5



In this connection scheme, we are exactly duplicating the scheme that utilizes an outboard stereo, 2-way crossover described in Illustration #4. The only difference is that we are using in-line analog high pass filters to send only the signal content which is above the frequency of the analog filters (called F-Mod, a specific brand of in-line analog filters, in the diagram). The setup and results are the same in this and the case of the outboard stereo 2-way crossover shown in Illustration #4 and can be referenced there for all other aspects of this schemes setup. Calibrate levels and relative phase by referring to steps 1-13 of the Setup For Illustration #6.

ILLUSTRATION #6



This is the primary recommended connection scheme when using model RS1000 loudspeakers and 1 or multiple sub-woofers and R-DES, whereby all of the system's low frequencies will be under the user's control.

Receiver / Processor Configuration:
Set all speakers to 'SMALL' and subwoofer to 'YES'. Select the desired crossover point for satellites and subwoofer(s) (in the case of this exercise, set the crossover to 80 Hz.). The 8" powered woofers in the RS-1000's will share the duties of playing back both the redirected bass from all of the satellites summed with the LFE signal with the subwoofer(s).

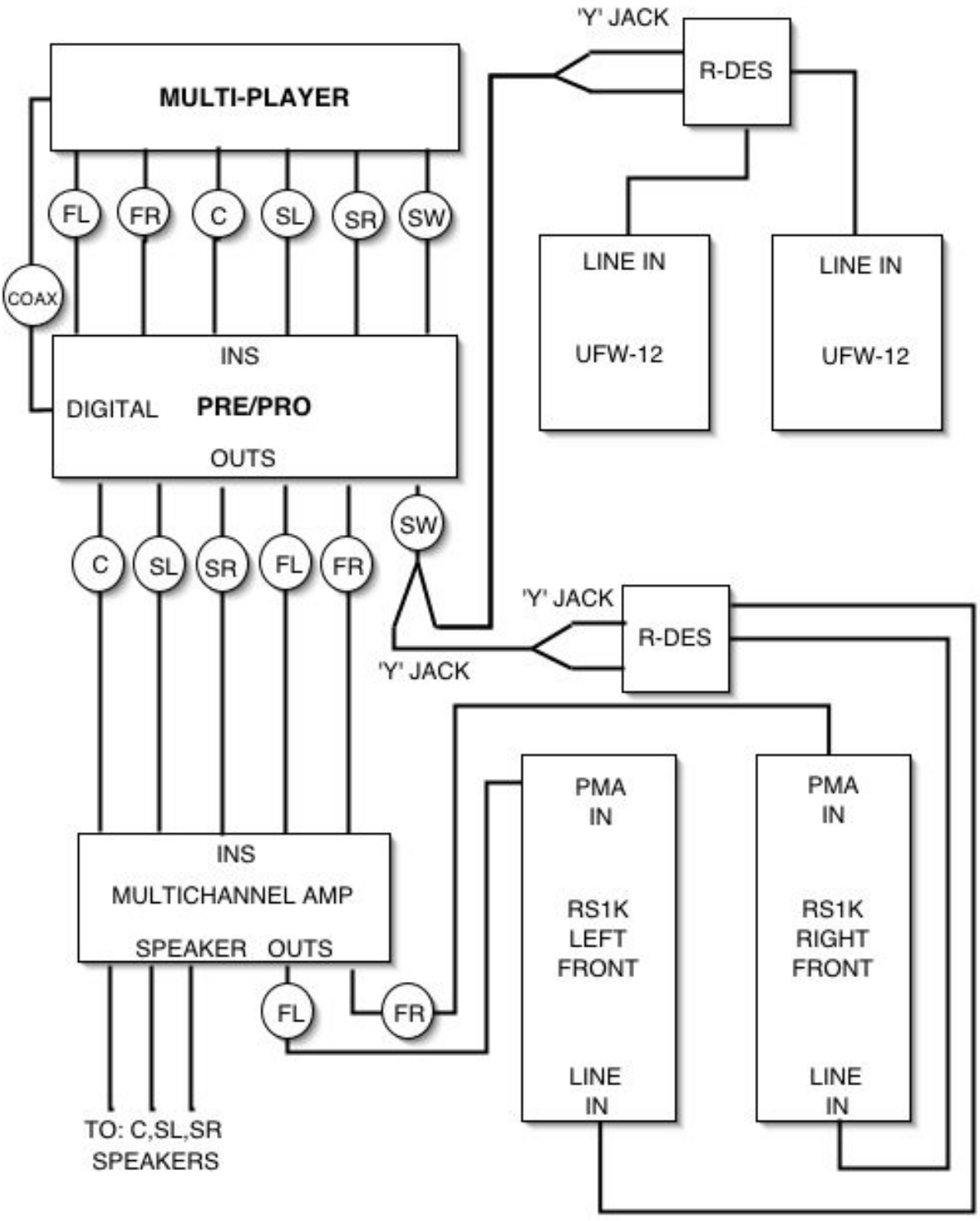
Setup:
(Perform this after all of the connections shown in the diagram have been properly made and R-DES has been successfully installed onto your computer and RS-1K PMA only and center, surround and surround back speakers have been calibrated to some reference level)

1. Turn both of the RS-1K's onboard plate amps 'OFF'. (8)
2. Turn the RS-1K's onboard crossover all the way to the right to 150 Hz. (1)
3. Turn your subwoofer's amplifiers 'OFF' (See owner's manual of your subwoofer).
4. Play an 80 Hz tone through the RS-1K's PMA and record the SPL reading on
your meter (adjust the preamp/processor's master volume until the reading is 75 dB at the listening position, then leave the master volume and meter set at these positions throughout the tutorial).
5. Turn the amplifiers that are supplying power to the RS-1K's PMA's 'OFF'.
6. Turn the RS-1K's on-board amplifiers 'ON'.
7. Play the 80 Hz. tone again and level the volume using the plate amplifier's gain control (3) until it reads 3 dB less than your PMA's reading (in this case, 72 dB on the SPL meter).
8. Turn your PMA's amplifiers 'ON' (leaving the RS1K's plate amplifiers 'ON' also).
9. Play the 80 Hz. tone and slowly adjust the RS-1K's plate amplifier's phase control (2) from the '0' position to the right until the reading on your meter is the highest dB SPL.
10. Turn the amplifiers that are supplying power to the RS-1K's and the RS-1K's plate amplifiers 'OFF'.
11. Turn your subwoofer's amplifiers 'ON'.
12. Play the 80 Hz tone and adjust the level to read the same as the RS-1Ks woofers (72 dB in this case) using the subwoofer(s) amplifier's gain control, NOT the preamplifier's calibration menu's SW volume control.
13. Turn everything 'ON' and adjust the subwoofer(s) phase control as you did the
RS-1K's woofer's phase in step 9. above.

COOL! Now you're ready to run sweeps and adjust your R-DES Equalizer to affect a curve, or curves, that will suit your room and your listening pleasure.

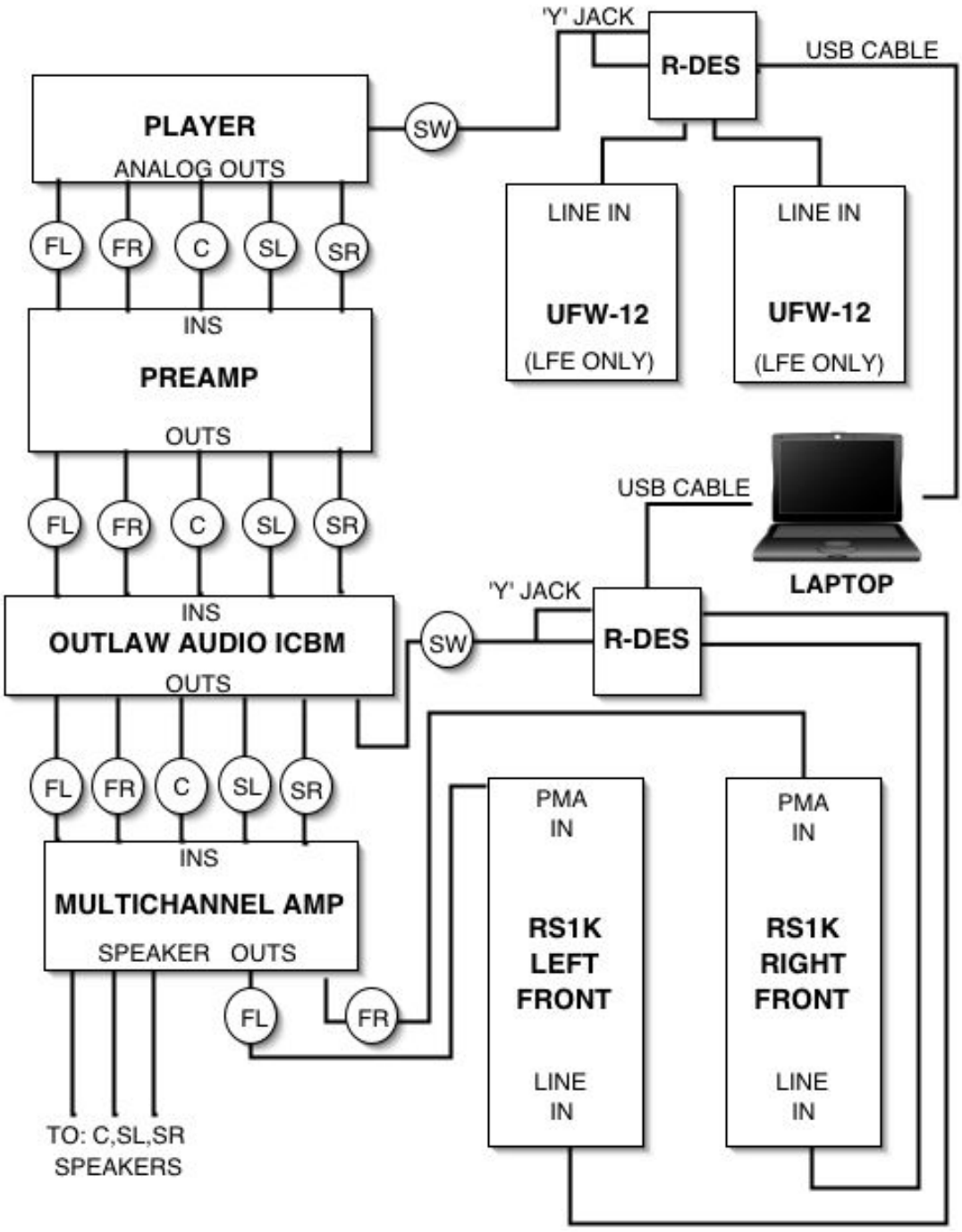
REMEMBER!:
1. Do not change the levels of your woofers or your subwoofers during any room correction exercise with R-DES. After you complete your room correction exercise, you may then feel free to change woofer and/or subwoofer levels to suit your tastes. In that case, remember that you can use R-DES to affect any such boosts or cuts on a frequency specific basis. This way, the settings are saved and named and you may switch to another setting and come back to that exact setting at a future time, which is impossible to do if you are simply changing levels in your preamp/processors trim menu or by using the RS-1K's and/or subwoofer's plate amplifier's gain controls.
2. If you find that your woofers and/or subwoofer(s) are suffering under the strain of playing back any certain source material at the volume you prefer to listen at, R-DES has a high pass/subsonic filter that you can use to protect from that ever happening.
You can even name the particular curve as a reference to the particular source that causes the distress to your system. This way you don't have to remember to turn down the volume, or if you forget to, suffer damage to your system.
3. This is a great place to start and a very general calibration point for launching
into the vast areas an RS1000/UFW/R-DES system affords you to explore. Always remember that the AV123 Forums have great people with great advice and
expertise in these areas and is a great place to bring your questions for thorough answers.

ILLUSTRATION #7



This is the same scheme as Illustration #6 above, except there are 2 R-DES units controlling all of the low frequencies in a multi channel system. You should exactly follow the instructions in Illustration #6 for calibration and phase tweaking.
The option here is that you will have the opportunity and challenge of using 2 curves in the same system. Please read the NOTE: in Illustration #3 concerning use of 2 R-DES units.
Calibrate the levels and relative phase by referring to steps 1-13 of the Setup For Illustration #6.

ILLUSTRATION #8



This scheme is for all of you multi channel lovers who prefer analog connections from the player vs digital for all multi channel 5.1 formats.
This scheme utilizes the Outlaw Audio ICBM Analog Bass Manager with Onix Rocket RS-1000 up front and dual Rocket UFW-12 subwoofers which affords the luxury of 2 included R-DES units, certainly one of the most versatile multi channel audio systems ever devised.

System Setup (after all connections have been made as shown and 2 R-DES units have been successfully installed on your computer): Player: All speakers set to 'LARGE', SW to 'YES'. ICBM: Choose your crossover for all 5 satellites, which include the RS-1K's PMA's. All connections made as shown in the diagram and Both R-DES units successfully installed on your computer.

What will happen:

1. The player will send only the .1 channel to your subwoofer(s) through the R-DES unit that is supplied with your UFW-12. The level isn't controlled by your preamp's master volume so it must be adjusted in the player's calibration menu with the UFW-12's gain control at around 1 O'clock.
2. The ICBM will redirect all the satellite's low frequencies, below the selected crossover point(s) to the RS-1K's woofers, through the 2nd R-DES unit.
3. The ICBM will filter the low frequencies away from the RS-1K's PMAs per the selected crossover point. You also have the option to use only 1 R-DES unit by connecting the player's SW output through the preamp and ICBM, in which case you would use 1 or 2 'Y' jacks out of the 1 R-DES unit's outputs, running 2 cables to the RS-1K's and 1 or 2 cables to the subwoofer or subwoofers, whichever the case may be. This will send an identical, summed redirected bass and LFE signal to both the RS-1K's woofers and your subwoofer(s). If you are using 2 R-DES units, please refer to the NOTE in the Setup For Illustration #3 for suggestions on how to avoid running 2 conflicting curves at once, and adjust the levels and relative phase of the RS-1K's woofers and the subwoofer(s) as instructed in steps 1-13 of the Setup For Illustration #6.

Proper Care and Feeding

Your Rocket RS1000 does not need much exterior maintenance other than an occasional dusting. Please use care with the gloss black finish or real wood veneer and treat it as you would a car or piano finish. The gloss black can be waxed with automotive carnauba wax if desired. For general dust removal, we recommend the 3M Yellow Detail Cloth (part # 39016) or Meguiar's Ultimate Wipe Detailing Cloth (part# 29910) as it will not scratch the black surface or real wood veneer. Additionally, the durable matte finish on the wood veneer requires only some dusting, or can be wiped off with a water dampened soft cloth if needed.

Above all, listen and enjoy!

AV123 Warranty Policy and Registration

All products sold through AV123 carry a limited manufacturer's parts and labor warranty. All Rocket Outdoor Series loudspeakers are guaranteed to be free from manufacturer's defects for a period of one year from the date of purchase.

Get an extra two years of warranty coverage free!

When you go online to www.av123.com and register your product, we will extend the warranty by an additional two years - that's three years total. This extended warranty is free simply for registering within 60 days of your purchase. We urge you to take advantage of this offer. Warranties apply to the original owner only and are non-transferable. AV123 will exchange all defective merchandise, including shipping charges, to the original shipment destination at no charge for up to 60 days after the date of purchase.

After 60 days the product must be returned to AV123 for repair only and return shipping costs are the responsibility of the customer. All questions should be directed to customer service.

Speaker Specifications

System: Multi-way, seven-driver direct-radiating system, vented enclosure with two rear-firing flared ports
Drivers: Vifa Ring Radiator tweeter, four custom 5.25" long-throw aluminum cone woofers, one custom 4" aluminum cone midrange and one custom 8" sealed side-firing woofer with built-in 350 watt amplifier for the 8" woofer only.
Crossover: Tweeter at 6.0KHz, progressive array, variable slope.
Frequency Response: 29Hz—20KHz +/- 3 dB
Impedance: 6 ohms nominal
Sensitivity: 90.5dB (1w/1M)
Size: 51.5" H x 15.6" D (add 1.75" for amp protrusion) x 11.8" W
Other Features:
R-DES digital EQ system
8" woofer is high passed at 28Hz
0-180 phase adjustment, gain, and
crossover adjustments (40Hz-150Hz)
Auto-on / standby mode

Radio Shack Compensation Chart

The below shows the correction values for the SPL meter mentioned earlier in this manual. For any number read (left column) from this meter, it is necessary to add the correction value (right column) before plotting actual results.

Frequency (Hz)	Gain (dB)
20	*+7.5*
25	*+5*
32	*+3*
40	*+2.5*
50	*+1.5*
63	*+1.5*
80	*+1.5*
100	*+2*

Special Thanks for assistance in creating this guide go out to Brad Judy, Walter Norton, Eric Lilleor and Stephen Job.

Extra Special Thanks goes out to Dave 'bossobass' Prunczik for supplying the illustrations and the accompanying text.

Thank you for your support!

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