

SLIMO

Owners

DELILAH II

Manual

SLIMO

DELILAH II

POWER

6/12 DB

SUB ON

DIRECT

LOWPASS FREQUENCY

HIGHPASS FREQUENCY

IF LEVEL


MIN MAX

50 HZ
63 HZ
80 HZ
100 HZ
125 HZ

50 HZ
63 HZ
80 HZ
100 HZ
125 HZ


50 HZ
63 HZ
80 HZ
100 HZ
125 HZ

FINAL TEST CERTIFICATION

MAX POWER 	THD .008
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VOLTAGE
126

MODEL DELILAH II

SOUND TEST


SERIAL NO. 1200314

FIRST CONSIDERATIONS

The Delilah II is Sumo's next-generation active subwoofer crossover. This component will allow easy integration of the Sumo Samson II subwoofer (or virtually any other subwoofer) into any high-quality music reproduction system. The Delilah II is quite versatile, with separate high-pass and low-pass selectable crossover frequencies and slopes, normal and inverted outputs, and fully discrete, fully complementary high-pass stages. The Delilah II is a truly versatile component, tailored to serving a subwoofer's unique needs.

UNPACKING

The first thing that we recommend that you do is take a good look at the Delilah II. Did any damage occur during shipping? Are there any cosmetic flaws? In the unlikely event that either of these conditions exist, you should call your dealer immediately. It's better to remedy any problems like this early on.

LOCATION

The Delilah II, like most other line-level components (such as preamplifiers, tuners, etc) can be induced to hum due to the stray field from a large power transformer. The Delilah II, therefore, should never be stacked on top of a power amplifier. If at all possible, the crossover should be kept at least 6" away from the power amplifier (or amplifiers).

If you are using the Delilah II in a standard 19" rack, then the chassis and metalwork should be isolated electrically from the rack. If they are not, then a ground loop could also cause hum in the system.

SYSTEM REQUIREMENTS

To set up a working system using the Delilah II, you will need the following components:

- 1 Preamplifier or passive line controller
- 1 High-pass amplifier (1 stereo or two mono units)
- 1 or 2 Low-pass amplifier or amplifiers
- 1 or 2 Subwoofer or subwoofers

Note: the term "satellite speaker" is usually used to refer to the system's main speakers. These are driven by an amplifier that is connected to the Delilah II's high-pass (HF) outputs. The term

"subwoofer", of course, refers to the subwoofer that you are adding to the system. The subwoofer is driven by an amplifier connected to the Delilah II's low-pass (LF) outputs.

INPUT AND HIGH-PASS CONNECTIONS

To connect the Delilah II into your system, you should first connect the input and high-pass outputs. This involves three steps.

1. Connect the left OUTPUT of your preamplifier to the left INPUT on the back of the Delilah II, and connect the preamplifier's right OUTPUT to the Delilah II's right INPUT.
2. Connect the Delilah II's left (top) HF OUT jack to the amplifier's left INPUT jack and connect the Delilah II's right (bottom) HF OUT jack to the amplifier's right INPUT.
3. Connect the output of the amplifier to the satellite speakers in the usual manner.

OUTPUT AND LOW-PASS CONNECTIONS

Since the Delilah II is such a versatile component, a number of different low-pass configurations are possible. To set up the system, simply follow the set-up instructions under the heading that best describes your system.

Single subwoofer, single stereo amp. By far the most popular combination. The Delilah II is used to bridge the stereo amplifier, which is used then as a mono amplifier to drive the single subwoofer. There are several steps to setting up this system, all outlined below:

1. Connect the Delilah II's MONO OUT (+) jack to the subwoofer amplifier's RIGHT channel INPUT.
2. Connect the Delilah II's MONO OUT (-) jack to the subwoofer amplifier's LEFT channel input.
3. Connect the subwoofer amplifier's RIGHT OUTPUT (+) terminal to the subwoofer's (+) input terminal.
4. Connect the subwoofer amplifier's LEFT OUTPUT (+) terminal to the subwoofer's (-) input terminal.

Note: Yes, that's right. You use the two POSITIVE (+) outputs of the subwoofer amplifier to drive the subwoofer. Never let either of them come in contact with ground, or it may be time for a new amplifier.

Dual subwoofers, single stereo amp. In this case, the Delilah II is not used to bridge the amplifier. Instead, the Delilah II's non-inverting outputs are used, and the output of the amplifier is taken to the subwoofers in the usual fashion. The connections for

this setup are outlined below.

1. Connect the Delilah II's two left-most LF OUT jacks (the ones with the + next to them) to the left and right INPUTS of the subwoofer amplifier.
2. Connect the two subwoofers to the left and right OUTPUTS of the stereo amplifier in the usual manner.

Dual subwoofers, dual stereo amps. The Delilah II's inverting and non-inverting outputs are both used in this case. The stereo amplifiers are operated in bridge mode and the output is taken from both positive terminals. The connections for this setup are outlined below:

1. Connect the top left-hand LF OUT jack (the LEFT + output) to the RIGHT input of the left-hand subwoofer amplifier.
2. Connect the right top LF OUT output (the LEFT - one) to the LEFT input of the left-hand subwoofer amplifier.
3. Connect the left bottom LF OUT jack (the RIGHT + output) to the RIGHT channel of the right-hand subwoofer amplifier.
4. Connect the right bottom LF OUT jack (the RIGHT - output) to the LEFT channel of the right-hand subwoofer amplifier.
5. Connect the RIGHT (+) output of the left-hand subwoofer amplifier to the left subwoofer's (+) input and the LEFT (+) output of the left-hand subwoofer amplifier to the left subwoofer's (-) input.
6. Connect the RIGHT (+) output of the right-hand amplifier to the right subwoofer's (+) input and the LEFT (+) output of the right-hand subwoofer amplifier to the right subwoofer's (-) input.

Note: Yes, that's right. You use the two POSITIVE (+) outputs of the subwoofer amplifier to drive the subwoofer. Never let either of them come in contact with ground, or it may be time for a new amplifier.

Single subwoofer, single mono amplifier. In this case, the connections are quite simple. The Delilah II is not used to bridge the mono amplifier, and the connections to the subwoofer are done in the usual manner. There are two steps to this setup:

1. Connect the Delilah II's top MONO OUT (+) jack to the amplifier's single INPUT.
2. Connect the amplifier's + output to the subwoofer's + input and the - output to the subwoofer's - input.

Dual subwoofers, dual mono amplifiers. This case is very similar to the dual sub, single stereo amplifier case. The steps are listed below:

1. Connect the Delilah II's left top LF OUT jack (the LEFT + one) to the INPUT of the

left-hand mono amplifier.

2. Connect the Delilah II's left bottom LF OUT jack (the RIGHT + one) to the input of the right-hand mono amplifier.

3. Connect the left subwoofer amplifier's + output to the left subwoofer's + input and the - output to the left subwoofer's - input.

4. Connect the right subwoofer amplifier's + output to the right subwoofer's + input and the - output to the right subwoofer's - input.

GENERAL RECOMMENDATIONS

The Delilah II, like most high-quality components, sounds best after it has warmed up. In fact, after the unit is first turned on, it may take as much as a week to reach its full sonic potential. We recommend, therefore, that you leave the unit on at all times. This will not in any way harm the crossover or shorten its lifespan.

The Delilah II has a rather low characteristic output impedance of 100 ohms, so it can drive a typical coaxial cable up to 75 feet in length. We recommend, however, that you keep the cable length to a minimum.

FEATURES

The Delilah II's features can best be summarized by reviewing the front-panel controls. These controls, from left to right, are:

Power on. This switch does exactly what you'd think--it turns the unit on and off.

LF Level. This knob allows the adjustment of the level of the low-frequency output. This allows the user to level-match the subwoofer's output to the satellite speakers that he or she is using. A considerable amount of low-frequency gain is available using the Delilah II, so care should be taken in adjusting the knob.

Lowpass Frequency. This knob allows you to set the low-pass crossover frequency. This frequency is adjustable from 50 to 125 Hz.

Highpass Frequency. This knob allows the user to set the high-pass crossover frequency. This frequency is adjustable from 50 to 125 Hz. It is usually set the same as the LOWPASS FREQUENCY knob, unless there is a room resonance problem that requires a notch in the LF band.

12 dB. This button changes the crossover slope from 6dB/octave (out) to 12dB/octave (in). The 12dB/octave slope is indicated by the red LED near this switch. This switch can be set in or out, depending on the subwoofer/satellite combination and room acoustics.

Sub. This switch enables/disables the subwoofer. With the switch in, the subwoofer is active. With the switch out, the subwoofer is off. This switch is used mainly for system integration. For normal listening, this switch is normally left IN.

Direct. This switch bypasses all high-pass crossover circuitry, and passes the input signal directly to the high-pass output jacks. This function is normally used for system integration only, but it can be engaged if the satellites are capable of handling the full-range input signal. For normal listening, this button is usually OUT.

BASIC OPERATIONS

After you have set up the Delilah II in your system, you will need to adjust it correctly. A good basic starting-point for setting up a system is outlined below:

POWER	On
LF LEVEL	Turned Up 50%
LOWPASS FREQ	Set to 80 Hz
HIGHPASS FREQ	Set to 80 Hz
12DB	Out
SUB	In
DIRECT	Out

After the Delilah has been adjusted to these settings, it is important to determine proper phasing. To determine proper phasing, you will need to play something with repetitive, percussive bass in the 70-100 Hz region.

Play the program material that you have selected through your main speakers with the Delilah II set as described above. Then alternate the SUB and DIRECT switches and adjust the LF LEVEL control until the difference between the Sub In/Direct Out and Sub Out/Direct In modes is only in the very low bass.

Next, turn everything off, reverse the polarity of the system by exchanging the positive and negative subwoofer leads, and play the same material again. Switch between the normal and "SUB/DIRECT" modes once again. If the system has reduced bass in the normal mode, then return the subwoofer leads to their former positions. Otherwise, the new phasing is correct.

With the system in the normal mode (SUB IN and DIRECT OUT), adjust the LF level control to the point where the subwoofer integrates seamlessly with the main speakers. If there is a bass heaviness or boominess in the room, then you may have to adjust the LOWPASS FREQUENCY and HIGHPASS FREQUENCY knobs in order to remove it. This is done by setting the crossover frequency higher on the high-pass side than on the low-pass side. For instance, if the lowpass frequency was set at 80 Hz, then you might try 100 or 125 Hz for the highpass frequency. If a mid-bass deficiency is noticed (the system sounds "thin"), then you may have to use the 6db/octave slope on the crossover. This is done by setting the 12dB button OUT.

CIRCUIT DESCRIPTION

The Delilah II is unique among electronic crossovers in its price range. Unlike the others, Delilah II uses a completely discrete, fully complementary high-pass crossover with no overall loop feedback, 1% metal-film resistors, 2% metallized polypropylene capacitors, and a mil-spec glass-epoxy PC board. The high-pass circuitry is heavily biased into class-A and has a very low output impedance of 100 ohms, almost purely resistive. This low output impedance allows the Delilah II to drive very long cable runs with ease.

The DIRECT function allows the complete bypassing of the high-pass circuitry, allowing the ultimate in signal transparency when using satellites that can withstand the full bandwidth input signal.

The Delilah II low-pass section was designed with versatility in mind. It offers both summed mono and stereo bass outputs, as well as normal and inverted output signals. All crossover slopes are Bessel in their filter characteristics to preserve phase and image coherence.

The Delilah II power supply deserves mention. Four separate regulated supplies are used, two for the high-pass section and two for the low-pass section. The high-pass section runs on +/- 35V rails, allowing dynamic peaks to pass through unscathed. The low-pass section runs on its own separate +/- 15V rails.

Other features of the Delilah II: gold-plated input and output RCA jacks, SUB ENABLE function which enables or

disables the subwoofer, allowing easy system integration.

SPECIFICATIONS

High-Pass Freqs	50, 63, 80, 100, 125 Hz
Low-pass Freqs	50, 63, 80, 100, 125 Hz
High-pass Slope	12 dB/octave
Low-pass Slope	6 dB/octave 12dB/octave
Signal to Noise Ratio mum	95 dB mini-
THD	less than 0.008%, 20-20 kHz
IMD (SMPTE)	less than 0.008%, 20-20 kHz
Dimensions	19"W x 8.75"D x 1.75"H
Weight	12 lbs

SUMO LIMITED WARRANTY

This product is warranted under the following conditions:

1. This product is purchased from an authorized Sumo dealer.
2. This warranty covers normal operating conditions of home use.
3. Warranty period begins as of date of sale, provided that it is registered by the authorized Sumo dealer where the product was purchased. The registry period is 20 days.
4. Deliberate misuse, mishandling, failure to report receiving damaged merchandise, or unauthorized tampering with or modifying of this merchandise automatically voids all warranties.
5. The warranty for all Sumo factory-wired products is three (3) years. This covers both parts and labor, excluding fuses and transportation costs to the factory.
6. Warranty of all Sumo products used in any other fashion will reduce the warranty time period and other conditions to negotiations between Sumo and the prospective user.
7. This warranty shall extend to each successive owner, provided that Sumo is notified by registered mail within 20 days of resale by the initial or present owner. This notification shall consist of date of sale, and the name and address of the new owner.
8. Sumo guarantees that its products are free from defects in materials and workmanship for the required warranty period.
9. This warranty is not valid unless accompanied by a sales slip validation or properly stated copy of this invoice.
10. This warranty is valid only in the United States. Service in other countries will be provided by the exclusive Sumo representative or his agents. Because of varying governmental regulations, the service period may differ from country to country. The service agreement can be honored only in the country in which the unit was purchased. This warranty is valid from the date of purchase for the required warranty period for purchases made by returning overseas US service personnel.

Except as specifically provided for in this limited warranty, there are no other warranties, express or implied, including any implied warranty of merchantability or any implied warranty of fitness for a particular purpose.

IN CASE OF TROUBLE

MAINTENANCE

The Delilah II requires very little in the way of maintenance. If you need to clean it periodically, the is best done with a mild cleaning solution such as glass cleaner. A solvent-based solution may remove the silk-screened lettering. A lye or abrasive cleaner should never be used.

TROUBLESHOOTING

Here's a short list of some of the problems which may be encountered with an improperly-set-up Delilah II.

Crossover hums. The crossover is most likely too close to a power amplifier or other component with large amounts of stray magnetic field. Move the crossover and listen for a reduction of hum. If this does not work, then you may be experiencing a ground loop between the Delilah II and another piece of equipment. If you are using a metal equipment rack, you may have to isolate the Delilah II from the

rack using rubber busings or other electrical insulators. If you are using amplifiers with three-wire AC cords, you may have to use a three-prong to two-prong cord adapter on the amplifier or amplifiers in the system.

Crossover does not work. Check to see that the line fuse is intact. If it is not, replace it with a fuse of like value. If the new fuse blows immediately, contact Sumo customer service or your dealer.

Bass is heavy or boomy. Try separating the high-pass and low-pass crossover frequencies. For instance, if the low-pass frequency is set to 63 Hz, then try setting the high-pass frequency at 80 or 100 Hz.

Bass is light or thin. Try using the 6dB/octave crossover slope. This is accomplished by setting the 12DB switch to the OUT position.

Bass distorts. Make sure you have not over-set the LF LEVEL control. This knob usually ends up being set between 12:00

and 2:00 with most average (87-88 dB) efficiency speakers. Also, you should take care to ensure that your bass amplifier is not clipping. It may be reaching its full output and limiting itself. A larger amplifier may be necessary.

Mid/Highs Distort. You should check to make sure that the DIRECT switch is not engaged. If the switch is pushed in, then a full-range signal is being sent to your satellite speakers. They may not be able to handle this at high output levels.

SERVICE

If your Delilah II ever needs to be returned to Sumo for Service, you should call the customer service number listed below and obtain a return authorization (RA) number. No unit will be accepted if shipped back to the factory without an RA number.

When shipping the unit, be sure to pack it securely in the original cartons or in other suitable packing. Sumo will not be responsible for damage due to improper packing.