THIEL

SmartSub™

SI 1 Integrator

Owner Information

Thank you for purchasing the THIEL SmartSub Integrator. It has been engineered to provide a very high level of performance and incorporates innovative (patent pending) concepts in its design to solve the integration and balance problems subwoofer systems usually exhibit.

In addition to the hookup and adjustment instructions contained in this booklet, the Setup and Adjustment Flow Chart on page 8 may (but doesn't have to be) used as a reference for all aspects of SmartSub and Integrator system configuration, hookup and adjustment.

You are welcome to contact our Customer Service department with any questions or for help in setting up this system. Our contact information is:

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Introduction

The SI 1 SmartSub Integrator provides unprecedented ability to perfectly match a SmartSub with any main speakers and provide total system performance that is as well integrated and balanced as a full range speaker. This superior performance is achieved by innovative circuitry (patents pending) that automatically calculates the ideal subwoofer response to perfectly match the characteristics of the main speakers. Therefore, instead of the usual crossover controls that tell the subwoofer how to perform, the SmartSub Integrator has settings for the characteristics of the main speakers you are matching, the configuration of your system and the performance you desire. This information is then used to automatically calculate and implement the ideal subwoofer response. In addition, the unit enables the total system to operate in either augment or crossover system mode and can control up to 16 subwoofer units in either mono or stereo configuration.

Connecting the Integrator

The SmartSub Integrator is connected to the subwoofer with an XLR type balanced interconnect cable from the units' Sub Output to the subwoofer's Normal Input. If stereo subwoofer operation is used, one subwoofer from each channel needs to connect to the Integrator

For multiple subwoofers, one subwoofer is connected to the Integrator and the others are daisy-chained, with the second unit connected to the first, etc. Or, if two subwoofers are used in mono operation, they can both be connected to the Integrator using the left and right outputs.

If the system has a surround processor then its LFE or subwoofer output is connected to the Integrator's LFE input.

The Integrator has two modes of operation available, Augment or Crossover, which may use different methods of connection. Augment mode should be used if you wish to use the main speaker normally, receiving the full-spectrum signal, and are therefore using the subwoofer to "fill out" the deep bass response of the main speakers. Crossover mode should be used if you wish to restrict the bass energy that the main speakers will reproduce, transferring this energy to the subwoofer.

If you wish to have the ability to switch between these two modes of operation, then crossover mode connections must be used.

Crossover mode connections

If the main speakers are not able to play loudly enough or you desire to limit their bass extension to achieve better performance, then the Integrator should be connected for use in "Crossover" mode. In this case the preamp/processor left/right outputs are connected to the Integrator inputs and the Integrator outputs are connected to the power amplifier inputs. Either balanced or unbalance connections can be used depending on which type of connections isa vailable from the preamp/processor and to the amplifier. This connection method can be used for operation in both Crossover and Augment mode.

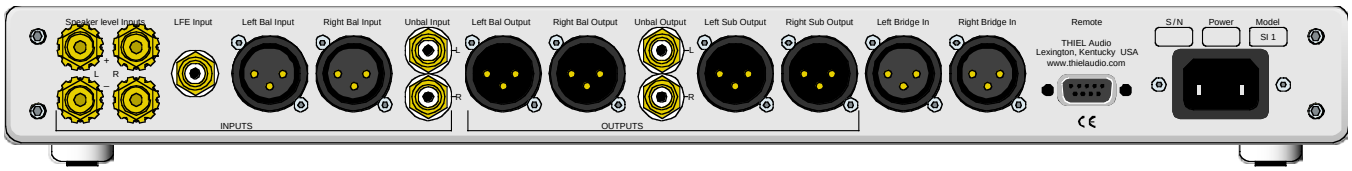
Augment mode connections

If the main speakers are able to play loudly enough and therefore the subwoofer is needed only to extend the bass range of the main speakers (in addition to reproducing the subwoofer channel in video systems), the Integrator can be used in "Augment" mode. In this case the above connection method may be used, or, the main speaker system hookup can be left as-is, with no changes, and the Integrator can receive its input either from the output of the power amplifier (speaker level) or from the output of the preamp/processor (line level).

To implement the first (speaker level) input connection method, connect cables from the power amplifier output terminals to the respective speaker level input terminals on the Integrator. Be careful to connect the positive amplifier outputs to the positive Integrator inputs. The cables used for these connections can be small since no power is being transferred.

The second (line level) method is implemented by connecting the preamp/processor's left and right channel outputs to the respective inputs of the Integrator using either unbalanced (regular) or balanced interconnect cables since the Integrator will accept either. This input connection method can only be implemented if either the preamp/processor has two sets of such outputs (since one set is already used for connection to the main amplifier inputs), or if a "Y" connector is used to split the output into two cables.

SmartSub Integrator rear connections



If the subwoofer is used in Augment mode, these speaker level input connections may be used. Wires to these terminals are connected from the main speaker power amplifier.

This connector is used to supply the LFE signal from the processor.

For Crossover mode either these inputs or the unbalanced inputs must be used to receive input from the processor or preamp. For Augment mode operation, they are an alternative to the speaker level inputs.

These connectors are used as an unbalanced alternative to the balanced inputs.

For crossover mode connection these connectors or the unbalanced outputs are used to supply the crossover's output to the main speaker power amplifier's inputs.

These connectors are used as an unbalanced alternative to the balanced outputs.

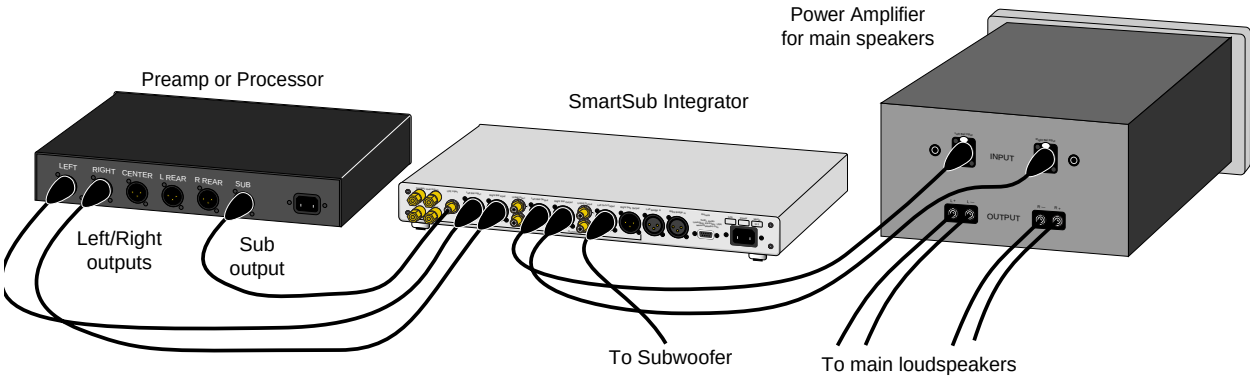
These connectors are used to supply signal to the subwoofer unit(s).

These connectors are used to add the output from another Integrator into the Subwoofer signal.

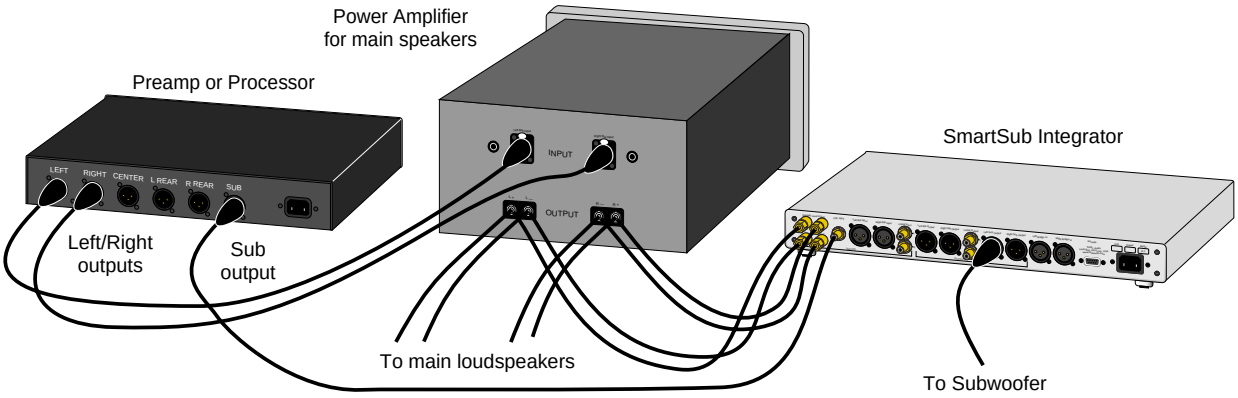
This connector is used to remotely control the unit as an alternative to a hand-held remote control.

The AC power cord connects here.

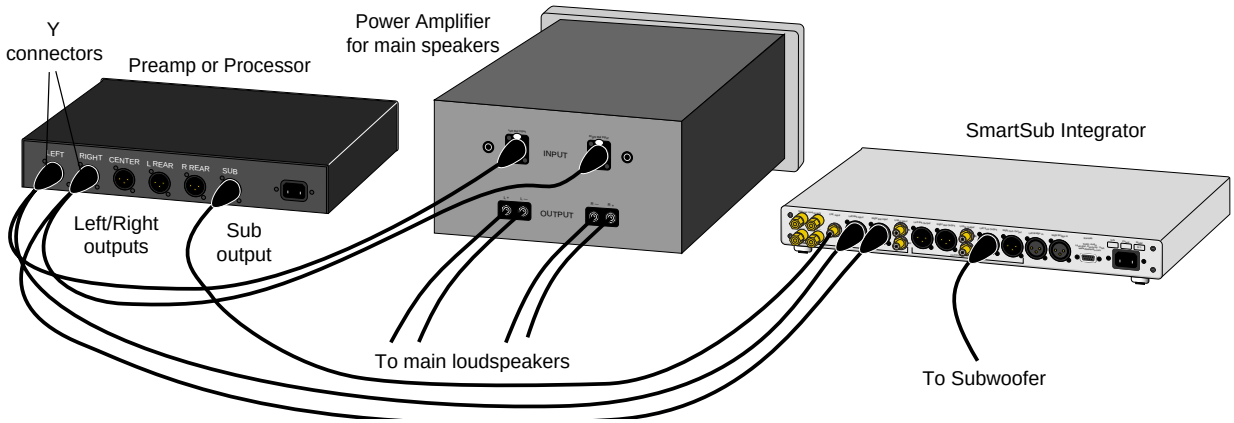
Crossover mode



Augment mode, speaker level input



Augment mode, line level input



Adjusting the Integrator

The SmartSub Integrator is adjusted using the four buttons at the right side of the front panel. All adjustments are made by first selecting which of the 12 parameters is to be adjusted and then by increasing or decreasing the setting of that parameter. A parameter is selected by pressing the *Select Prev* or *Select Next* button until the light for the desired parameter is on. Once the desired parameter is selected, the current setting will be shown in the numerical display and pressing the *Increase* or *Decrease* buttons will change the setting. Three of the parameters (Mode, Channels and Type) do not have associated numerical settings and therefore when these are selected the display will be blank. These parameters instead each have two alternate options that can be selected by the *Increase* or *Decrease* buttons and the current setting is indicated by which option is lighted.

Only the four performance settings (or three if Augment mode is used) should be considered adjustments for taste and requirements. The other parameters should be considered setup adjustments that are not changed unless there are changes to the main speakers or the system configuration.

Presets

There are six presets available, each of which stores the setting of all 12 parameters. The presets can be stored or recalled from the front panel. To create a preset, first set all 12 parameters to the settings you wish to be saved.

Pressing the *Store Preset* button will cause the display to flash "P1". Use the *Increase* and *Decrease* buttons to select which preset, from P1 to P6, in which you wish to store the current settings and then press the *Store Preset* button again to complete the save. The display will stop flashing.

Pressing the *Recall Preset* button will cause the display to flash "P1". Use the *Increase* and *Decrease* buttons to select which preset, from P1 to P6, you wish to recall and then press the *Recall Preset* button again to complete the recall. The display will stop flashing.

If you don't press the store or recall button the second time within 10 seconds, the display will revert to what it was before the button was pressed.

System Parameters

Mode [Augment or Crossover]

Augment mode should be used if the main speakers are able to play loudly enough and the subwoofer is needed only to extend the bass range. With this mode the signal to the main speakers will not be altered by the Integrator.

Crossover mode should be used if the main speakers are not able to play loudly enough or it is desired to limit their bass extension. In this mode the subwoofer will reproduce the bass that would normally go to the main speakers.

Channels [Mono or Stereo]

If only one subwoofer unit is used then Mono must be selected. If more than one subwoofer is used then Stereo may be selected (but does not have to be). Stereo allows the bass range of the left and right channels to remain separate and therefore can provide better left/right "imaging".

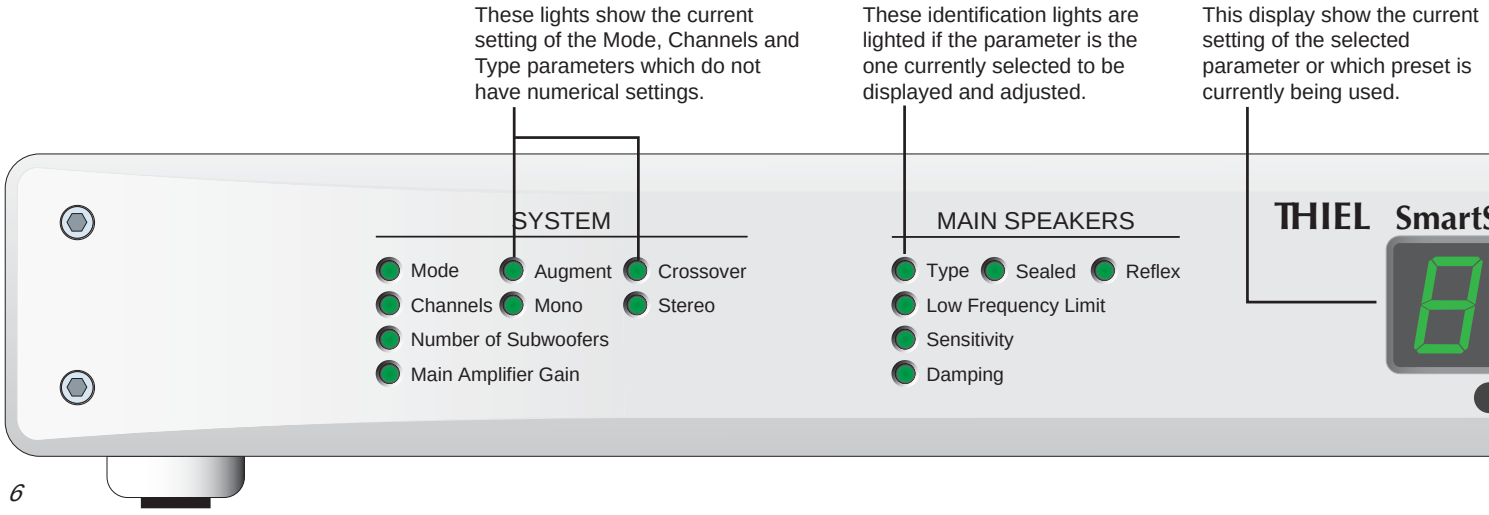
Number of Subwoofers [1 to 16]

This must be set for the total number of subwoofers in the system. If Stereo Channels is selected then only even numbers are available. Stereo configurations must use the same number of subwoofers in each channel.

Main amplifier gain [in dB, 20 to 40]

The setting is the amplification of the main amplifier in dB (decibels). The number can probably be found from the owner information or the manufacturer of the amplifier.

This does not need to be set if the only inputs used are speaker level (when not using the LFE, Bal or Unbal inputs).



Main Speaker Parameters

Type [Sealed or Reflex]

Sealed should be selected if the main speakers are a sealed or "closed" design. Reflex should be selected if the main speakers are a ported or passive radiator design.

Low Frequency Limit [in Hz, from 20 to 90]

This parameter should be set to the main speaker's "minus 3 dB" bass extension specification. This can usually be obtained from the speaker's owner information or from the manufacturer.

Sensitivity [in dB from 83 to 95]

This parameter should be set to the main speaker's sensitivity (or "efficiency") specification (output level in dB with a 2.83 volt input and at a 1 meter distance). This can usually be obtained from the speaker's owner information or from the manufacturer.

Damping [from .5 to .9]

This parameter should be set to the main speaker's "Q" specification. It is not a critical setting and excellent results can be obtained by using a setting of .8 for sealed speakers and .7 for reflex speakers.

Visit us at www.thielaudio.com\subsetup.cfm for information about parameter settings for any speaker, regardless of brand.

Performance Parameters

Low Frequency Extension [-3 dB frequency in Hz, 15 to 40]

In Augment mode only settings at least 5 less than the Low Frequency Limit setting are available.

This setting determines how extended the left and right channel bass reproduction will be. The lower the number the more complete the reproduction will be. However, a very low number will place somewhat more demand on the subwoofer. The louder you play and the larger the room the harder it is for the subwoofer. If the subwoofer cannot play loudly enough you can either increase this number (to 30 or 35) or add more subwoofer units to your system.

Low Frequency Level [boost or cut in dB, -6 to +6]

This setting controls how much extra left and right channel bass will be produced by the main speaker/subwoofer system. Normally it should be set to zero. It provides increased or decreased bass energy, in the range below 80 Hz when in crossover mode, and below the main speaker's low frequency limit when in augment mode.

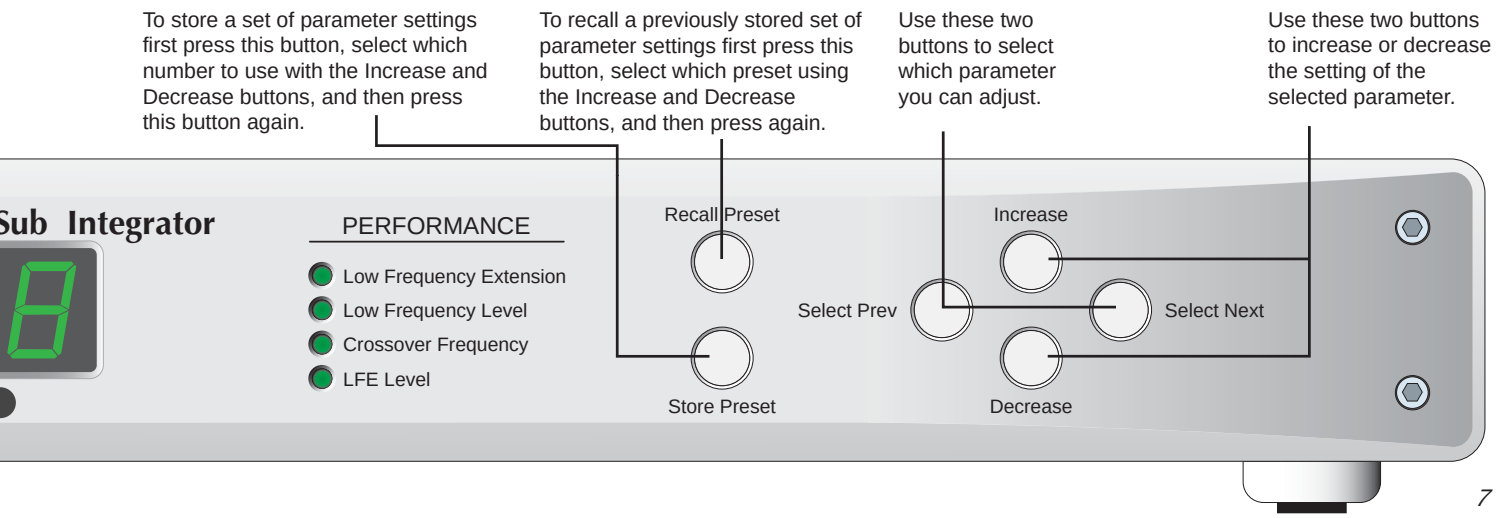
Crossover Frequency [in Hz, 40 to 99]

This parameter is only available if Crossover Mode is selected. Only settings above the Low Frequency Limit setting by 10 to 30Hz, depending on speaker type and damping, are available.

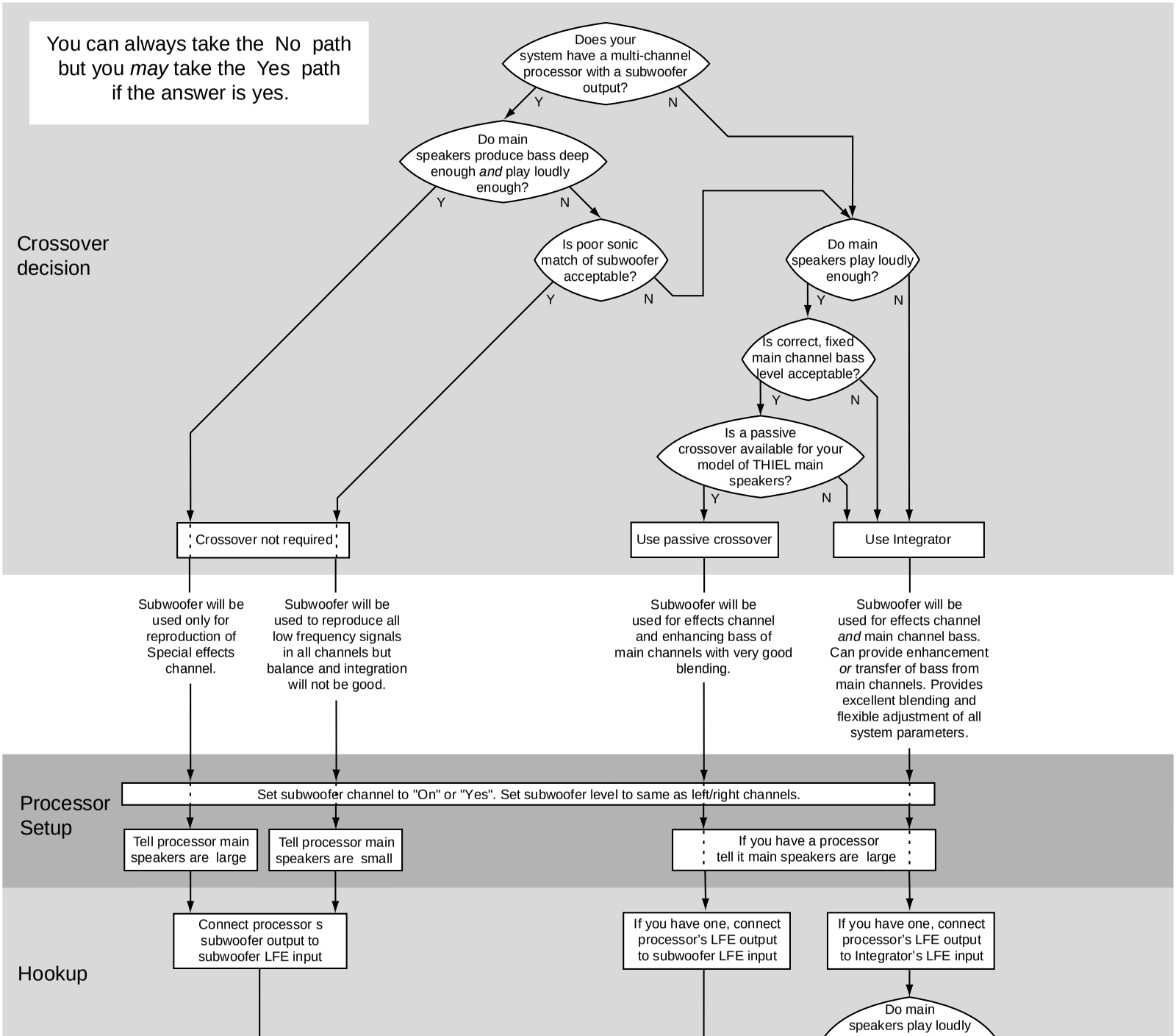
This setting determines the frequency below which energy is directed away from the main speakers and to the subwoofer. Unless the main speakers are very small, it is usually preferable that this setting not be higher than 80. Lower settings will usually provide better sonic results but will also place more demands on the main speaker to reproduce bass.

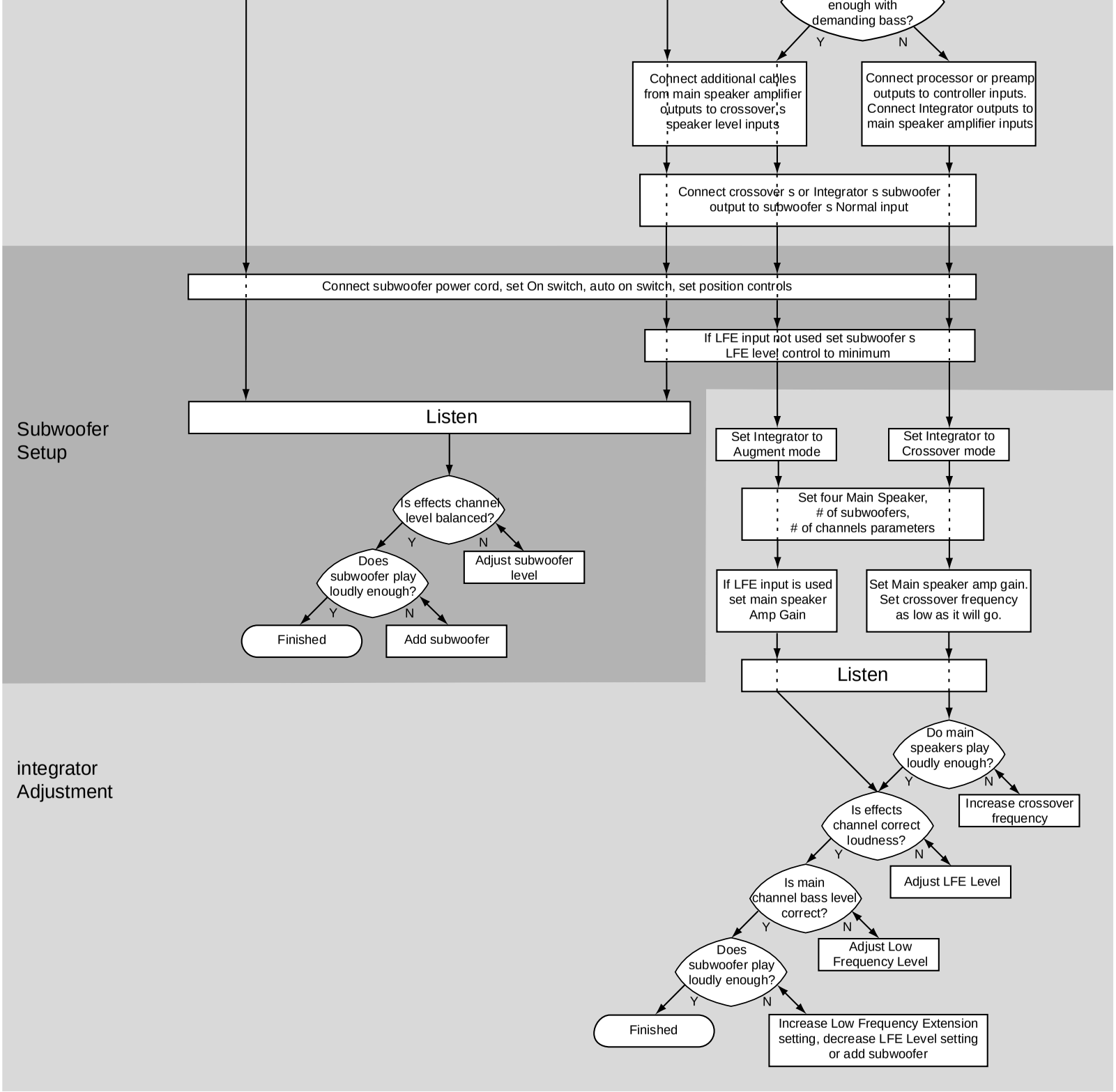
LFE Level [in dB, 0 to 10]

This setting determines the loudness level of the special effects channel information. Zero is normal, higher numbers increase the level.



Setup and Adjustment Flow Chart




enough with demanding bass?
Y
N
Connect additional cables from main speaker amplifier outputs to crossover s speaker level inputs
Connect processor or preamp outputs to controller inputs. Connect Integrator outputs to main speaker amplifier inputs
Connect crossover s or Integrator s subwoofer output to subwoofer s Normal input
Connect subwoofer power cord, set On switch, auto on switch, set position controls
If LFE input not used set subwoofer s LFE level control to minimum
Subwoofer Setup
Listen
Is effects channel level balanced?
Y
N
Adjust subwoofer level
Does subwoofer play loudly enough?
Y
N
Finished
Add subwoofer
Set Integrator to Augment mode
Set Integrator to Crossover mode
Set four Main Speaker, # of subwoofers, # of channels parameters
If LFE input is used set main speaker Amp Gain
Set Main speaker amp gain. Set crossover frequency as low as it will go.
Listen
integrator Adjustment
Do main speakers play loudly enough?
Y
N
Increase crossover frequency
Is effects channel correct loudness?
Y
N
Adjust LFE Level
Is main channel bass level correct?
Y
N
Adjust Low Frequency Level
Does subwoofer play loudly enough?
Y
N
Finished
Increase Low Frequency Extension setting, decrease LFE Level setting or add subwoofer

Integrator Parameters for THIEL Speakers

Visit us at www.thielaudio.com\subsetup.cfm for information about parameter settings for any speaker, regardless of brand.

Model	Type	Low Frequency Limit	Sensitivity	Damping
CS1.6	Reflex	49	90	.7
CS2.4	Reflex	33	87	.7
CS3.6	Reflex	29	86	.7
CS6	Reflex	27	86	.7
CS7.2	Reflex	23	86	.7
MCS1	Reflex	47	90	.7
PCS	Reflex	55	87	.7
SCS3	Reflex	46	87	.7
PowerPoint	Sealed	75	89	.8
PowerPlane	Sealed	75	89	.8

Maintenance

Remote Control Battery Replacement

The green light on the front of the Remote Control should lite when any of the buttons are pushed. If it does not the batteries need to be replaced. Access the batteries by removing the four screws on the front of the unit and lifting off the front cover. Replace the three AAA size batteries, taking care to insert the new batteries in the proper direction as indicated on the battery holder. The center battery should be positioned with its small, positive terminal toward the bottom end of the unit, and the other two batteries in the opposite direction.

Remote Control Interference

It is possible that the Integrator's remote control will also effect other equipment or that the remote control of other equipment will effect the SmartSub Integrator. In case this happens, the Integrator and it's remote are able to operate on any of 16 channels so that a channel can be selected that does not interfere with other equipment. A different channel is selected by changing the settings of 4 miniature switches inside both the Integrator and it's remote. Removing the top cover of each piece allows access to the switches. They can be switched to any of the 16 possible combinations but the settings in the remote must be the same as those in the Integrator. Experiment until a setting is found that is free from interference.

Specifications

Size ..... 17" wide, 1.75" high (2" with feet), 9" deep
Inputs ..... Speaker level, Line level balanced and unbalanced, LFE unbalanced, bridging Sub
Main Speaker Outputs ..... Balanced and unbalanced
Subwoofer Output ..... Balanced
Line Voltage ..... 90-130 or 180-260

Warranty

THIEL warrants every THIEL model SW1 system against defects in materials and workmanship to the original owner for a period of ten years from the date of purchase. THIEL will, at no charge, replace any defective part and make any repairs necessary to ensure its proper performance when the defective unit is returned to us postpaid.

This warranty does not cover damage due to accident or abuse and is void if the unit has been tampered with.

This warranty is automatic and no registration is required. This warranty gives you specific legal rights. You may also have other rights which are particular to your state.

Remote Control Command Codes

This information is provided for developers of automated systems. It is not relevant to most users.

Function	Allowed values	RS-232 code * (## = values)	RC5 code (Dec) Command **
Next		SS00NT	10
Previous		SS00PV	11
Increase		SS00IC	12
Decrease		SS00DC	13
Store#	0-6 ‡	SS##SO	14+#
Recall#	0-6 ‡	SS##RL	21+#
Augment		SS00AG	28
Crossover		SS00XO	29
Mono		SS00MN	30
Stereo		SS00SE	31
#subs	1-16	SS##NU	31+#
Amp gain	20-40	SS##AN	48 §
Sealed		SS00SD	49
Reflex		SS00RX	50
LF limit	20-90	SS##LT	51 §
Sens	83-95	SS##SN	52 §
Damping	5-9 †	SS##DM	48+#
LF ext	15-40	SS##ET	58 §
LF level	0-12 ††	SS##LL	59 §
XO Freq	40-99	SS##XF	60 §
LFE level	0-10	SS##LE	61 §
Digit	0-9		0-9

* RS-232 port protocols are: 9600 Baud, 8 data bits, 1 stop bit, no parity.

‡ Values of 1 to 6 execute a direct store or recall to that memory.
A value of 0 initiates the command. For completion, increase or decrease commands select which memory, and a second store or recall completes the command.

† Multiply desired setting by 10. Example: setting of 0.7 = value of 7.

†† Add 6 to the desired LF setting. Example: setting of zero = value of 6.

§ These commands must be followed by two digit commands or the sequence is aborted.

** RC5 system value depends on DIP switch settings:

Switch settings	System
on-on-on-on	7
on-on-on-off	11
on-on-off-on	14
on-on-off-off	15
on-off-on-on	17
on-off-on-off	18
on-off-off-on	19
on-off-off-off	20
off-on-on-on	21
off-on-on-off	22
off-on-off-on	23
off-on-off-off	24
off-off-on-on	25
off-off-on-off	26
off-off-off-on	27
off-off-off-off	28

DIP switch settings must be the same in the Integrator and the Remote control ur
The DIP switches are accessed by removing the top cover of each unit.

The RC5 code is a 14 bit word that is built with
a start bit of “1”, a second bit of “0”,
a toggle bit that changes with each new key press,
5 “system” bits and then 6 “command” bits.
In decimal notation, this is 16,384, plus 64 times
the system value, plus the command value,
with 4096 added to each alternate key press.

EXAMPLES		RC5 code (Dec)				RC5 word (hex)**		
		System*	Command					
Function	RS-232 code		1st	2nd	3rd	1st	2nd	3rd
Recall preset 4	SS04RL	25	25			4659	–	–
Set XO Freq to 65	SS65XF	25	60	6	5	467C	4646	4645
Set LF Level to +3	SS09LL	25	59	0	9	467B	4640	4649

* If DIP switches set to off-off-on-on. ** Assuming toggle bit = 0.

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