

OCTAVE

HP 700 SE

Owner's Manual

English

INTRODUCTION

Congratulations and thank you for choosing the OCTAVE tube preamplifier

HP 700 SE

You are about to enjoy the benefits of one of the world's most innovative and reliable preamplifiers, the HP 700 SE. Take care of it, and your preamplifier will provide you with many years of listening pleasure.

You often hear people claim that there has been no real progress in tube amplifier design for years. The operating principles of tubes have been documented extensively and are well known to amplifier designers. The same can, of course, be said for transistor amplifiers. Nevertheless, there is still room for further development with both of these technologies. This is both necessary and desirable. With tube amplifiers in particular, a general reluctance to depart from the classic circuit designs has not done the technology any favors. Today's loudspeakers and source equipment provide better performance than ever before, but also make greater demands on amplifiers. Modern sound reproduction equipment delivers a level of performance at a price that simply would not have been possible 20 or even 10 years ago. These advances have been achieved through the application of cutting-edge technology as it becomes available and affordable.

Integrating these technologies into amplifier design demands a detailed knowledge of the inner workings of amplifiers and an appreciation of the sonic ramifications of each modification.

We have specialized in tube amplification for the past 30 years, during which time we have developed a number of innovative technologies that have earned us a reputation as one of the leaders in the field.

We hope you will enjoy many hours of wonderful music with your OCTAVE preamplifier.



Andreas Hofmann

CONTENTS

	Introduction	3
1.	OCTAVE technology	
1.1.	OCTAVE amps in contrast to other tube amplifiers	7
1.2.	Description HP 700 SE	8
2.	Safety instructions	
2.1.	Before you begin	10
2.2.	Placement	11
2.3.	Warranty	11
3.	Setting up	
3.1.	Checking the delivery contents	12
3.2.	Connecting the amplifier	12
3.3.	Running in	12
4.	Operation	
4.1.	HP 700 SE front panel	13
5.	Connections	
5.1.	HP 700 SE rear panel	14
6.	External power supply	
6.1.	Front of power supply	16
6.2.	Rear of power supply	16
7.	Multi-channel mode	
7.1.	The HP 700 SE in multi-channel mode	17
8.	Remote control for volume	
8.1.	Remote control operating elements	19
8.2.	Battery replacement	19
9.	Tubes	
9.1.	Line tube layout	20
9.2.	Phono tube layout	21
9.3.	Control unit tube layout	22
9.4.	Replacing tubes	23
9.5.	Tube service life	23
10.	Options	
10.1.	Option: Additional line level input modules	24
10.1.1.	Assembling the additional line-level input modules	24
10.1.2.	Available line-level input modules	25
10.2.	Option HP 700 SE with phono	26
10.2.1.	HP 700 SE with Phono RIAA	26
10.2.2.	Subsonic filter	27
10.2.3.	Assembling the phono input modules	28
10.2.4.	Available phono input modules	28
10.3.	Option: HP 700 SE with control unit	29
10.4.	Option: HP 700 SE with stepped attenuator	31

CONTENTS

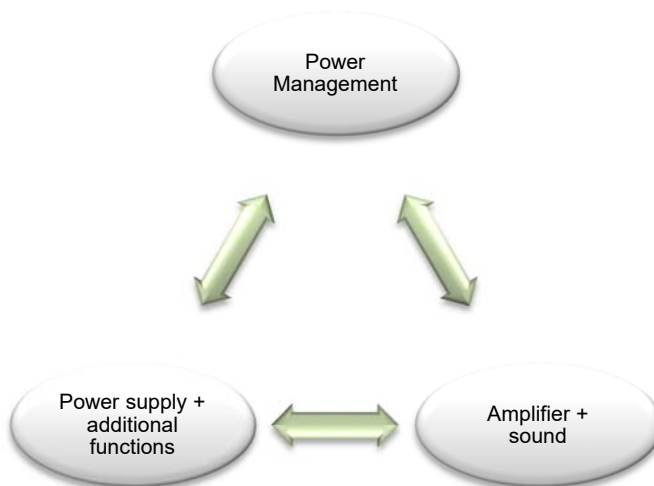
11.	Troubleshooting	
11.1.	Troubleshooting	32
12.	Technical data	
12.1.	In- and outputs	33
12.2.	Dimensions	35
12.2.1.	HP 700 SE preamplifier (dimensions in mm).....	35
12.2.2.	External power supply (dimensions in mm).....	35
12.3.	Diagrams	36
12.3.1.	HP 700 SE line frequency response	36
12.3.2.	FFT interference spectrum.....	36
12.3.3.	Control range and balance control frequency response	37
12.3.4.	Line stage hum and noise level	37

1. OCTAVE TECHNOLOGY

1.1. OCTAVE amps in contrast to other tube amplifiers

- Sound** The design goal of OCTAVE amplifiers is honest, natural sound reproduction. The sound characteristics of an amplifier are derived from the sum of all its parts. Tubes themselves do not guarantee high quality sound.
- Amplifier design** The frequency range and output resistant limitations of classic tube designs are evident as soon as you connect the amplifiers. These designs often only perform to their full potential when they are used with special cables and power amplifiers. OCTAVE amplification and power supply technology has largely overcome these well-known problems. Thanks to their unique output stage design, they will maintain their optimum sound quality with virtually any power amplifier, irrespective of the cables.
- Control + monitoring** OCTAVE employs the latest electronic circuit designs to create the best possible operating conditions for the tubes, and thus for the amplifier itself.

OCTAVE tube technology



OCTAVE amplifiers are equipped with a proprietary control and monitoring system we call **Power Management**. This is an “electronic brain” within the amp that regulates and controls all of the amplifier's functions. It includes the **Soft Start Electronics** that gently ramp up the heating and supply voltages to minimize wear and tear on the components. In the event of a problem, the Power Management’s **protection system** disconnects the unit from the power supply. Power Management helps us to achieve a completely consistent sound while at the same time ensuring the total reliability of our products.

- Hand built** OCTAVE amplifiers are hand built and individually tested. They are designed and developed by Andreas Hofmann. The company has its own winding department, in which all transformers are especially custom-wound for each amplifier.
- Made in Germany** OCTAVE amplifiers are 100% built in Germany. Our employees are highly qualified and committed. We collaborate closely with local specialist subcontracting companies. The hardware components are all manufactured on modern CNC machines.

1. OCTAVE TECHNOLOGY

1.2. Description HP 700 SE

The preamplifier HP 700 looks back to a long and successful history, because the basic circuit can already be found in the classic HP 500 presented in 1986. This concept has been consistently developed over 30 years and caused furore worldwide.

Refined tube technology and intelligent module technology have made the HP 700 future-proof right from the start - an innovation in the market. Now it was time to push the innovative HP 700 even further in terms of sound and technology.

The new HP 700 SE is a tube preamplifier that features both new precision technology and tonal refinements of the output stage. Like its predecessor, its modular freedom meets the listener's individual wishes for its high-end setup.

Instead of being bound by the fixed audio and technical parameters of the equipment, listeners can adapt the technology of the HP 700 SE to their own requirements and preferences.

In the new SE version, there are now two parallel XLR sockets next to the two RCA outputs on the back, allowing all types of Bi-Amping. But the modifications of the actual Class-A-output stage are even more important. The search for the even finer sound took place with the help of extremely time-consuming and complex measurements, as of course also accompanying listening sessions. These difficult adjustments are responsible for the tonal improvements, especially the mid-tone of the pre-amplifier. The tube configuration remains unchanged compared to the predecessor HP 700, as do all the other tried-and-tested technical refinements of the top preamp:

■ **PRECISION TECHNOLOGY IN THE LINE STAGE**

The term "precision technology" stands for a circuit in tube technology that has an extreme bandwidth up to 1 MHz, an impressively low output resistance of 130 ohms and sensationally low distortion of 0.001 %. Three amplification settings enable perfect fine-tuning of the HP 700 SE to the characteristics of the sound reproduction chain. The three-stage amplification settings allow optimal matching of the volume control to the efficiency of the speaker.

■ **PSU TECHNOLOGY**

In combination with the newly developed, high-precision, low-noise supply-voltage stabilizing circuitry, the separate magnetically shielded power supply unit for the HP 700 SE (essential for the low-noise and low-hum function of the MC-input) ensures constancy of the audio output even when the mains voltage is subject to wide fluctuations and high interference levels. Added to this, the integrated control logic system guarantees maximum operational reliability and, backed by our exclusive soft-start technologies, ensures the valves and the unit have a life of up to twenty years.

BYPASS

The multi-channel bypass function allows the HP 700 SE to be integrated into an existing home-theater combination. The logic-controlled input selector circuitry allows selection of the bypass function for an XLR or RCA input on the rear panel. The Home Cinema signal is present at all outputs.

ADDITIONAL INDIVIDUALIZATION OPTIONS:

■ **MODULAR INPUTS**

The connection possibilities of the generously configured standard model are rounded off by two user-selectable optional input modules. An optimized input module can be used for unusual applications, for anything from an MC step-up transformer to a transformer-based XLR input module. The plug and play modules can be readily installed or upgraded at any time.

1. OCTAVE TECHNOLOGY

■ PHONO

Innovative technology has also been applied in the redesign of the Phono RIAA amplifier. The further development of the RIAA stage has improved the signal/noise ratio, while simultaneously reducing system-related distortion. The widening of the bandwidth enables accurate RIAA equalization and exploits the full potential of analog reproduction. The wide variety of optional input modules ensures that the optimal input can be installed for every pickup.

■ TONE CONTROL PRECISION TONE CONTROL

The innovative optional tone control rounds off the HP 700 SE equipment. The precision valve-based tone control unit guarantees consistency of the sound, even at low volume. Precision adjustment of bass and treble, with a 0.3 dB channel separation, allows the tone to be adjusted without impairing the spatial reproduction.

■ BALANCE CONTROL

The frequency-compensated balance control allows channel-separated volume adjustment in 1 dB steps. This technology eliminates any controller-related sound shifts. Using 12-position stepped switches, the setting is long-time stable, with 100 % repeatability.

■ OUTPUT SELECTOR SWITCH

The outputs can be switched to several zones by manual activation of the outputs. Whether the output is through XLR, RCA or all three outputs simultaneously, a total of three output stages can be utilized for separate rooms, different speakers or Bi and Tri-Amping.

■ STEPPED ATTENUATOR VOLUME CONTROL

The optional, frequency-compensated 47-position stepped switch ends the debate about the influence of the controller on the quality of the music signal. At 0.1 dB, the channel deviation is supreme. An in house development, the volume control design maintains the frequency bandwidth constant throughout the entire control range, reducing controller-related distortion to a scarcely measurable level.

However, as a result of the mechanical design of the stepped attenuator, the switch positions cannot be controlled using the remote control.

2. SAFETY INSTRUCTIONS

2.1. Before you begin

In case of damage: disconnect the plug from the mains supply

Never use an amplifier that is damaged or faulty. Make sure it has been labeled as defective and that it cannot be used until it has been repaired by a qualified service engineer. Make sure that there is easy access to the IEC socket and power cable.



Do not open the case

There are dangerously high voltages and hot tubes inside this equipment. To avoid a burn or the risk of electric shock, never allow anyone except qualified personnel to open the case or remove the grill.

Service and maintenance

For reasons of safety, please ensure that servicing, repairs and other modifications to OCTAVE equipment are carried out only by a qualified technician. Defective fuses should also only be replaced by a qualified technician. Always replace fuses with ones of the same type and rating. If your amplifier requires servicing, please ship or take your equipment directly to OCTAVE or to one of our authorized service centers.

Symbols and terms used in this instructions

	<p>Caution! Text passages marked with this symbol contain important information which must be observed if the amplifier is to operate safely and without problems.</p>
	<p>This information symbol marks text passages which provide supplementary notes and background information; they are intended to help the user understand how to get the best out of the amplifier.</p>

Before connecting

Make sure that the voltage of your amplifier matches your local supply voltage.

Grounding

This amplifier is a protection class 2 device (without an earth conductor), while the power supply is class 1. As a result, a three-pin power cable with a protective ground contact must be used (included in the scope of delivery).

2. SAFETY INSTRUCTIONS

2.2. Placement

Location

- OCTAVE equipment is designed strictly for use in a dry domestic environment. Do not use it in open air or in damp environments!
- Never place plants or liquid-filled containers on your amplifier. Take care that objects do not fall or liquids are not spilled into the enclosure. Should this happen, disconnect the mains plug immediately and have your amplifier checked by a qualified service technician.
- Condensation may form if the amplifier is taken from a cold environment into a warm one. In this case, wait until the amplifier has reached room temperature and is dry before switching it on.
- Avoid installing the amplifier close to sources of heat, such as heaters, or anywhere that it may be in direct sunlight.
- Do not operate your OCTAVE amplifier near flammable materials, gases, or vapors. Avoid areas where there may be heavy accumulations of dust or where the amplifier may be subject to mechanical vibration.
- Place your OCTAVE amplifier on a stable, even surface.

Cover

Never operate the amplifier without the cover.

Ventilation

- Ensure sufficient air circulation around your amplifier. If you intend to install your equipment in a cupboard or a shelf unit, ensure that there is at least a 10 centimeter gap between the ventilation slots and the walls all around the amplifier.
- To prevent heat accumulation, the back of the cupboard should have ventilation holes.
- Do not rest the equipment on a soft surface such as carpet or foam sheeting.

2.3. Warranty

OCTAVE can only guarantee the safety, reliability and performance of this unit if modifications and repairs are carried out by specialized personnel and if the amplifier is operated in accordance with the instructions contained in this manual.

3. SETTING UP

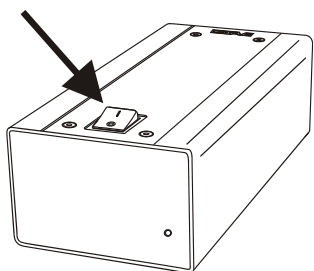
3.1. Checking the delivery contents

Scope of delivery	
<input type="checkbox"/>	HP 700 SE
<input type="checkbox"/>	External power supply
<input type="checkbox"/>	Power cable
<input type="checkbox"/>	Remote control
<input type="checkbox"/>	Allen screwdriver size 2 for opening the cover
<input type="checkbox"/>	Manual with declaration of origin and quality

3.2. Connecting the amplifier

1. In your own interest, please observe the safety instructions and positioning information (see chapter 2).
2. Before connecting your OCTAVE amplifier, switch off all other equipment that you intend to connect to it. This will avoid a source of possible malfunctions when you plug these components in.
3. Connect the inputs from your power amplifier to the appropriate outputs on the HP 700 SE.
4. Check that the amplifier is switched off before connecting the power cable to the wall socket.
5. Check that the volume control is not set at maximum before playing music through the preamplifier and that the function switch (1) is set to the setting Gain Med.
6. Switch on the HP 700 SE using the power witch on the power supply (see chapter 6).

Power switch



Note The preamplifier requires approximately **3 minutes to warm up**. During this warm-up period, the outputs are shorted to ground to avoid disturbances.

Do not switch the function switch during the warm-up phase, as this unnecessarily extends the start-up procedure.

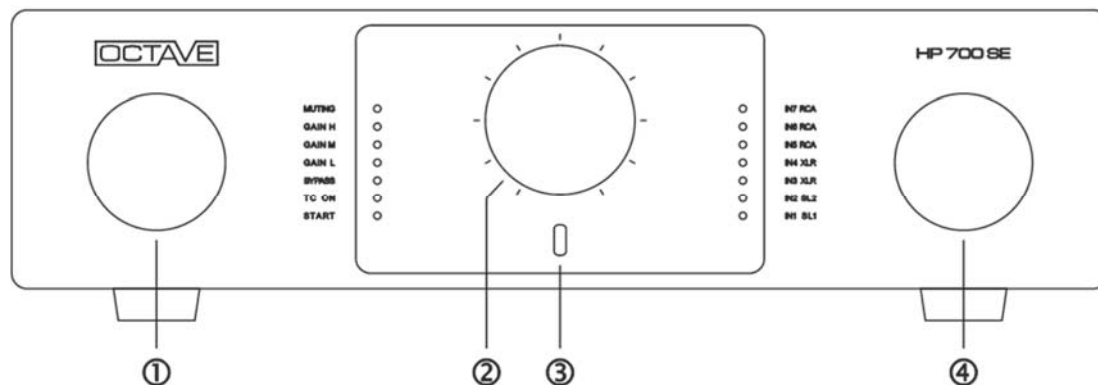
7. Switch on the other components in any order.

3.3. Running in

All OCTAVE equipment is subject to a 48-hour endurance run to burn in the tubes. The tubes are preselected for use in each particular model. **The sound quality of tube equipment improves throughout the initial running-in period of up to three months.**

4. OPERATION

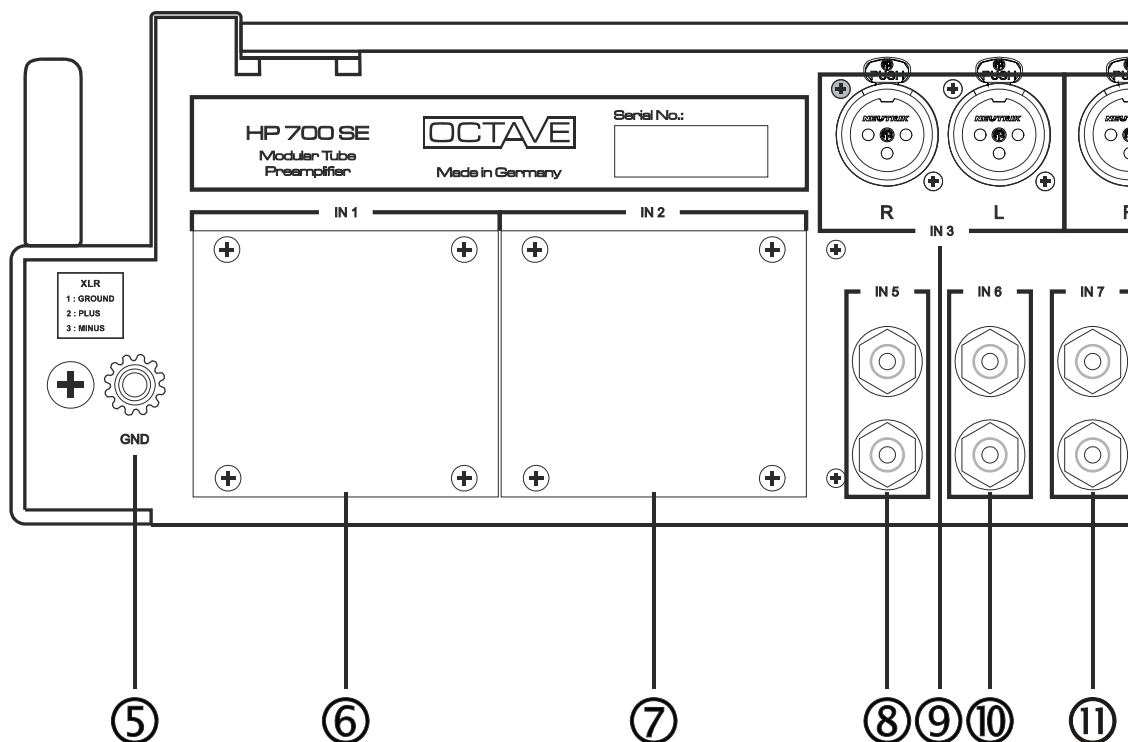
4.1. HP 700 SE front panel



Legend		
(1)	Mode switch (function switch)	The muting, line stage gain and home theater bypass are activated here.
	Muting	The muting LED illuminates when muting is on during the start-up phase. In this setting, the preamplifier outputs are short-circuited and music cannot be played. This switch position should be activated while connecting source devices to the HP 700 SE.
	Gain Low, Med, and High	The gain setting can be selected according to the efficiency of the other components. When you change the position of the switch, the muting function is activated for 20 seconds to prevent switching malfunctions. Normal position: MED
	Bypass HT	In this setting, the gain of the line stage is 1 and the volume control is bypassed. This setting is intended for multi-channel applications with volume control on the multi-channel receiver. The bypass HT RCA input is separate; the bypass function can be switched to an XLR input.
	TC On	This LED illuminates if the tone control is on (only available for control unit option, see section 10.3.).
	Start	This LED only illuminates during the two-minute start-up phase. During this period, the muting LED also illuminates.
(2)	Volume control	(Also optionally available as a step switch, see section 10.4.).
(3)	IR sensor	To ensure the correct function of the remote control, make sure that the infrared sensor is not covered.
(4)	Input selector switch	For input selection. The selected input is indicated with an LED.
	IN1-SL1, IN2-SL2	Input module 1 Input module 2
	IN3-XLR, IN4-XLR	XLR input for line-level sources
	IN5-RCA, IN6-RCA, IN7-RCA	RCA input for line-level sources

5. CONNECTIONS

5.1. HP 700 SE rear panel

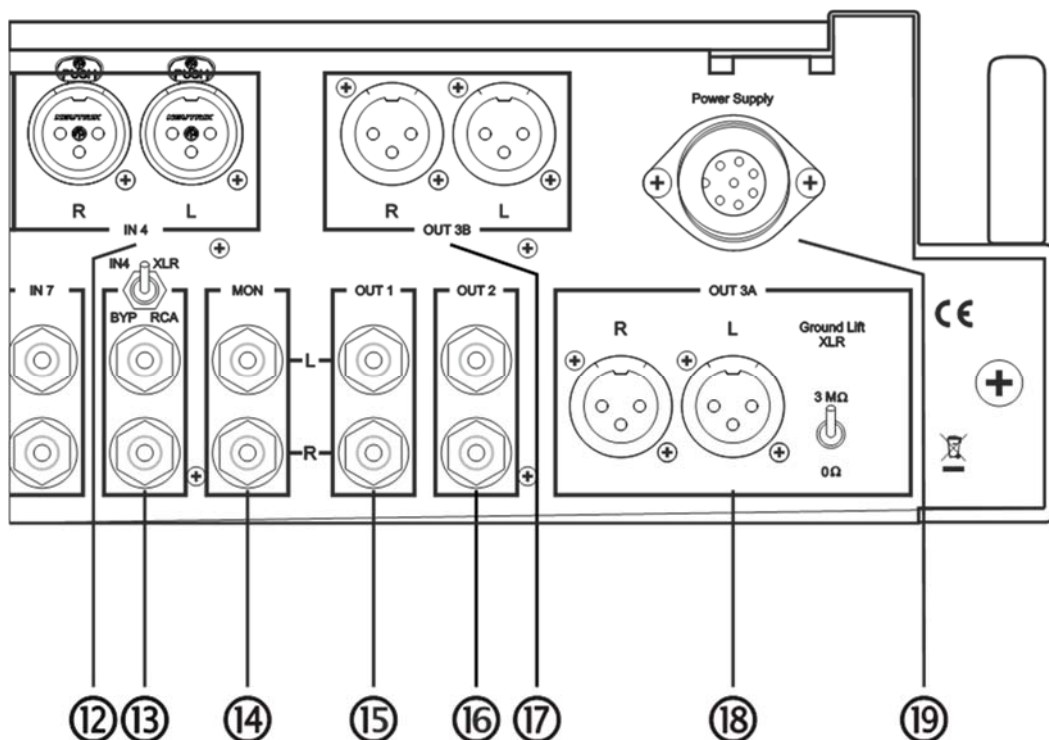


Legend		
(5)	GND connection	Ground connection for phono
(6)	IN 1 SL1	Slot for a phono or line input module
(7)	IN 2 SL2	Slot for a phono or line input module
(8)	IN 5 RCA input	Line-level input for CD, tuner, etc.
(9)	IN 3 XLR input	Balanced line-level input for CD, DAC, etc.
(10)	IN 6 RCA input	Line-level input for CD, tuner, etc.
(11)	IN 7 RCA input	Line-level input for CD, tuner, etc.

Note On the connector panel, the bottom row of sockets (red) is the right channel, while the top row of sockets (white) is the left channel.

5. CONNECTIONS

5.1. HP 700 SE rear panel

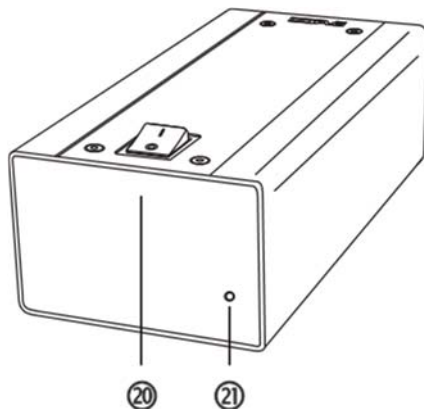


Legend		
(12)	IN 4 XLR input	Balanced line-level input for CD, DAC, in bypass setting IN 4 can be used as alternative home theater input.
(13)	RCA bypass Inputs	Home theater input for multi-channel receiver.
(14)	Monitor outputs	Unregulated outputs for recording equipment, computers, etc.
(15)	OUT 1	RCA outputs for power amplifiers.
(16)	OUT 2	RCA outputs for power amplifiers.
(17) + (18)	OUT 3A, OUT 3B	Two pairs of XLR outputs for balanced output stages XLR output for balanced power amplifiers. 1 = ground, 2 = positive, 3 = negative ground lift XLR. With the ground lift, the XLR outputs can be isolated from the signal ground for the preamplifier. Setting O corresponds to the ground isolation. In setting I, the ground of the XLR outputs over 3.3 ohms is connected to the preamplifier ground. Isolating the ground is useful when multiple devices in the system have a power supply with a three-pin grounding plug to prevent ground loops.
(19)	Power Supply	Connection for the external power supply.

6. EXTERNAL POWER SUPPLY

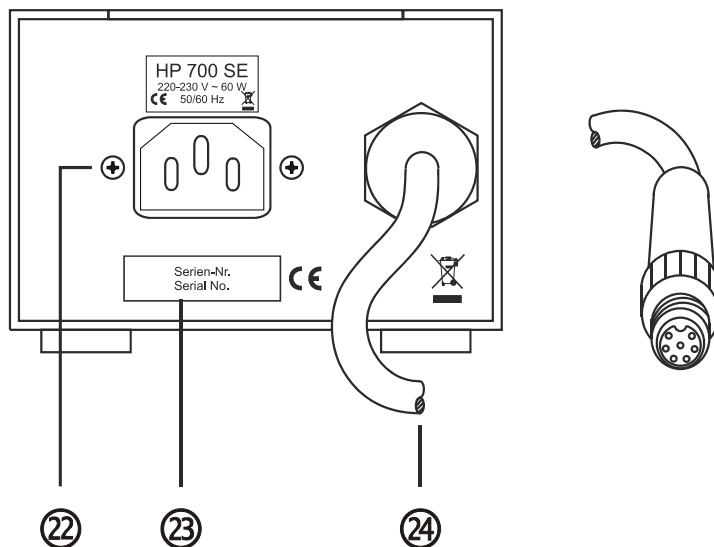
6.1. Front of power supply

The HP 700 SE is switched on and off using a switch on the power supply.



Legend		
(20)	Power (switch) power supply	The LED on the power supply illuminates when the power supply is on. During the start-up phase, the start and muting LEDs illuminate on the preamplifier. After the start-up phase, the start and muting LEDs go out; if the mode switch is not set to the muting setting, the device is ready to play music.
(21)	Control light	Power on/off

6.2. Rear of power supply



Legend	
(22)	Power input, IEC socket
(23)	Serial no. and supply voltage
(24)	HP 700 SE connecting cable

7. MULTI-CHANNEL MODE

7.1. The HP 700 SE in multi-channel mode

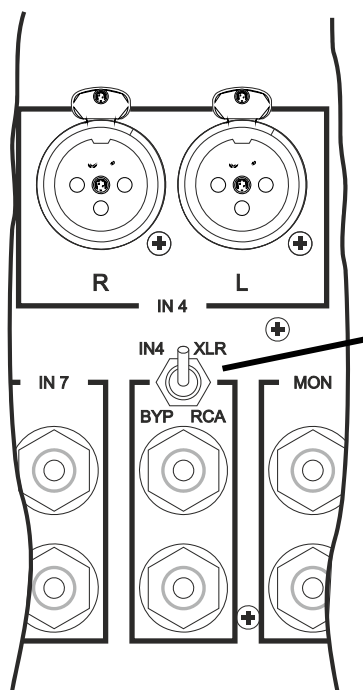
Many customers want to use their multi-channel system for a TV, DVD recorder, etc. without giving up the sound of a high-end stereo system to listen to their music. In such cases, these customers either set up two separate systems (e.g. doubled power amplifiers, doubled speakers, etc.) or have to fiddle with plugs every time they want to hear multi-channel and classic stereo.

The HP 700 SE is the solution to this problem.

With the HP 700 SE, it is possible to use the two-channel amplifier/speaker combination as part of the multi-channel system. This eliminates any double volume control issues. Normally, the two-channel combination for front right and left is used since these are the main channels in the multi-channel system (5 + 1, 3 + 1 systems).

For this reason, both the front channels (right and left) on the multi-channel source are connected to the bypass input (13) on the HP 700 SE if the multi-channel device only has RCA outputs. If the multi-channel receiver also has balanced outputs for the two main channels, the bypass multi-channel input on the HP 700 SE can be switched to the balanced input IN 4 (12).

The signals “front left” and “front right” on the multi-channel source device are “connected through” with the function switch on the front (1) (Bypass HT setting) and are available directly for the two-channel power amplifier at the RCA outputs or (balanced) XLR outputs. In the “Bypass” setting, the “Bypass” LED illuminates; the Gain Med” LED, and the “IN 4” illuminate if the bypass input selector switch is set to “IN 4 XLR”. In this mode, the volume for these outputs must be set on the multi-channel source device.



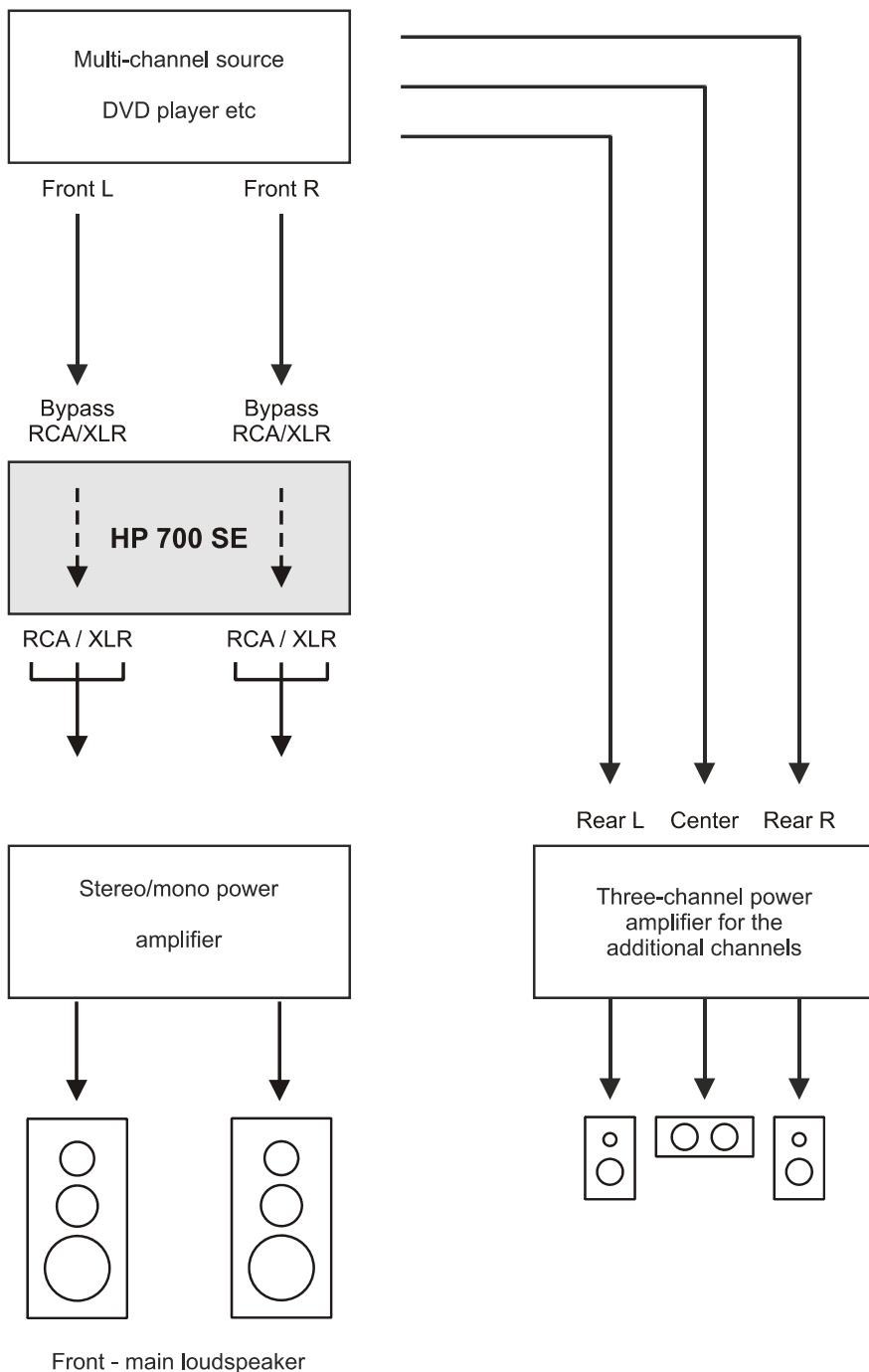
Selector switch for multi-channel input/RCA-XLR

This switch determines the input for the multi-channel/home theater function.

Toggle switch up: *IN 4 XLR is the multi-channel input.*

Toggle switch down: *Bypass RCA is the multi-channel input.*

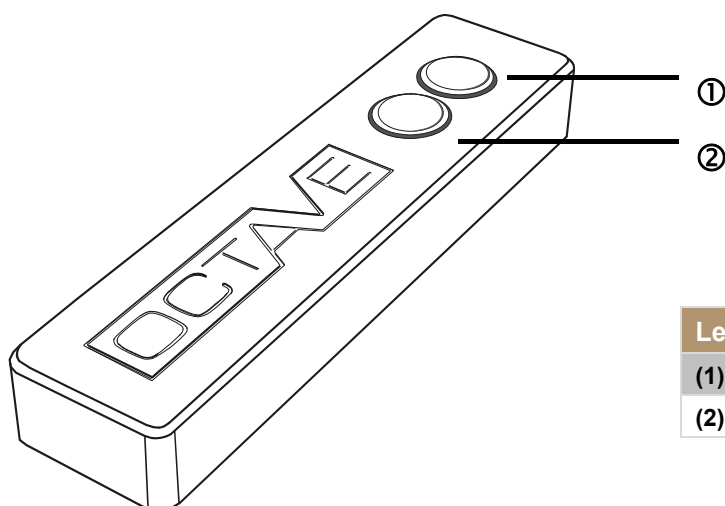
7. MULTI-CHANNEL MODE



In multi-channel mode, i.e. in the “bypass” setting, the common volume of the multi-channel system has to be set on the multi-channel source. For the RCA outputs and the balanced XLR output, the volume control for the HP 700 SE is then disabled.
 In this mode, the amplification factor of the HP 700 SE is 0 dB for RCA and XLR.

8. REMOTE CONTROL FOR VOLUME

8.1. Remote control operating elements



Legend	
(1)	Volume up
(2)	Volume down

8.2. Battery replacement

1. Remove the bottom plate (three screws size 3 x 8 Phillips countersunk head screw) with screwdriver Phillips 1
2. Change the batteries (2 x type AAA 1.5 V alkali-manganese / alkaline)

Tip **Make sure not to press the buttons while inserting the batteries!**

If the remote control does not work after the batteries are replaced, remove the new batteries and wait at least **30 minutes**.

You can then re-insert the batteries and the remote control should work.

3. Replace the base plate taking care not to tighten the screws too much.

Note After use, the batteries we have supplied for the remote control can be returned to the point of sale free of charge. Please do not throw them in the garbage.



You cannot control the volume with the remote control in case of the option stepped attenuator.

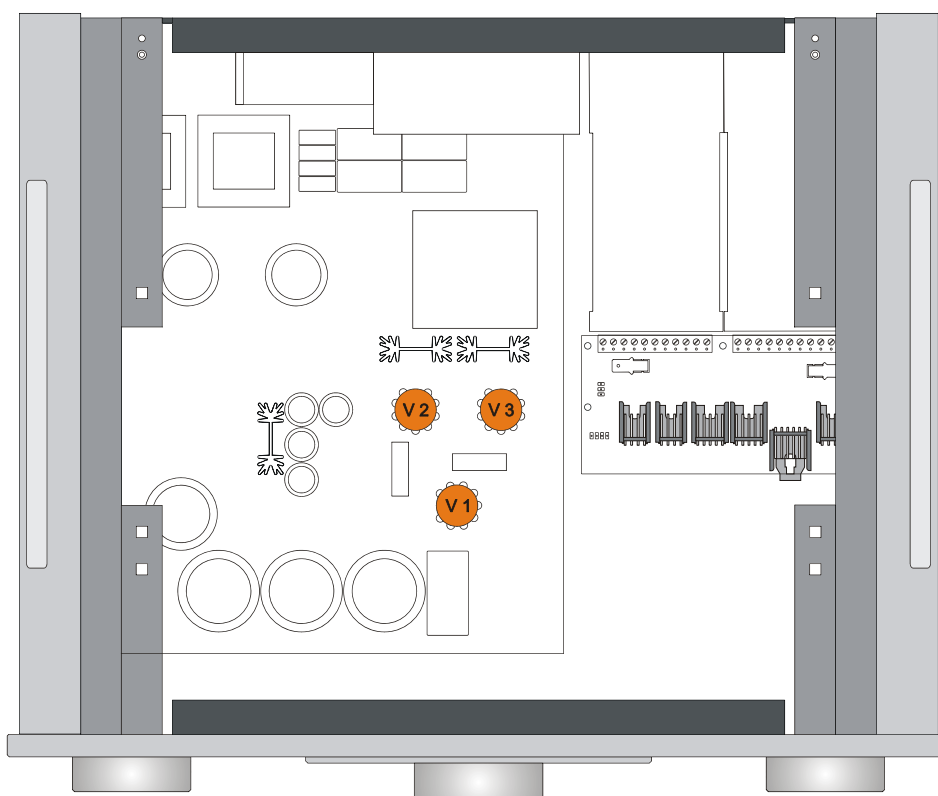
9. TUBES

9.1. Line tube layout

WARNING

Electric shock! Parts carrying dangerous voltages may be exposed when opening the cover and injury through electric shock.

Before opening the cover, switch the device off and unplug the power cord.



Tube layout line board

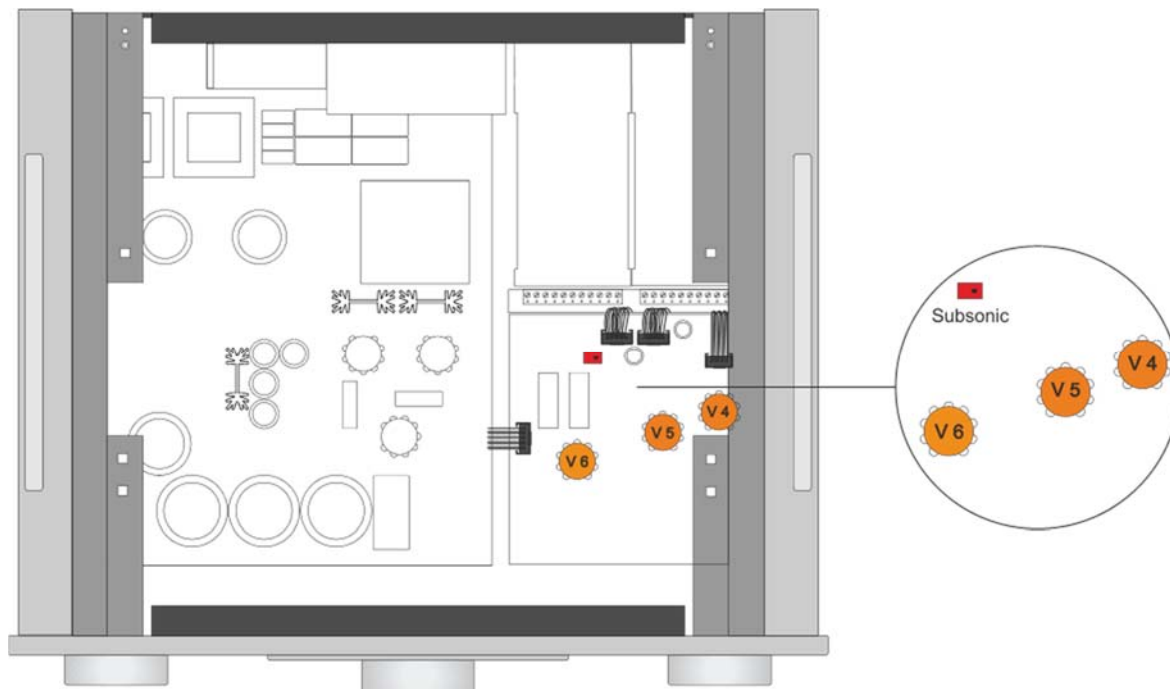
Tube layout: line board	
V 1	ECC82 (12 AU 7)
V 2, 3	2 x EF 800 (alternative 2 x EF 184)

Factory settings:

V1 12 AU 7 Tung Sol
 V2 + V3: 2 x EF 800 Telefunken

9. TUBES

9.2. Phono-tube-layout

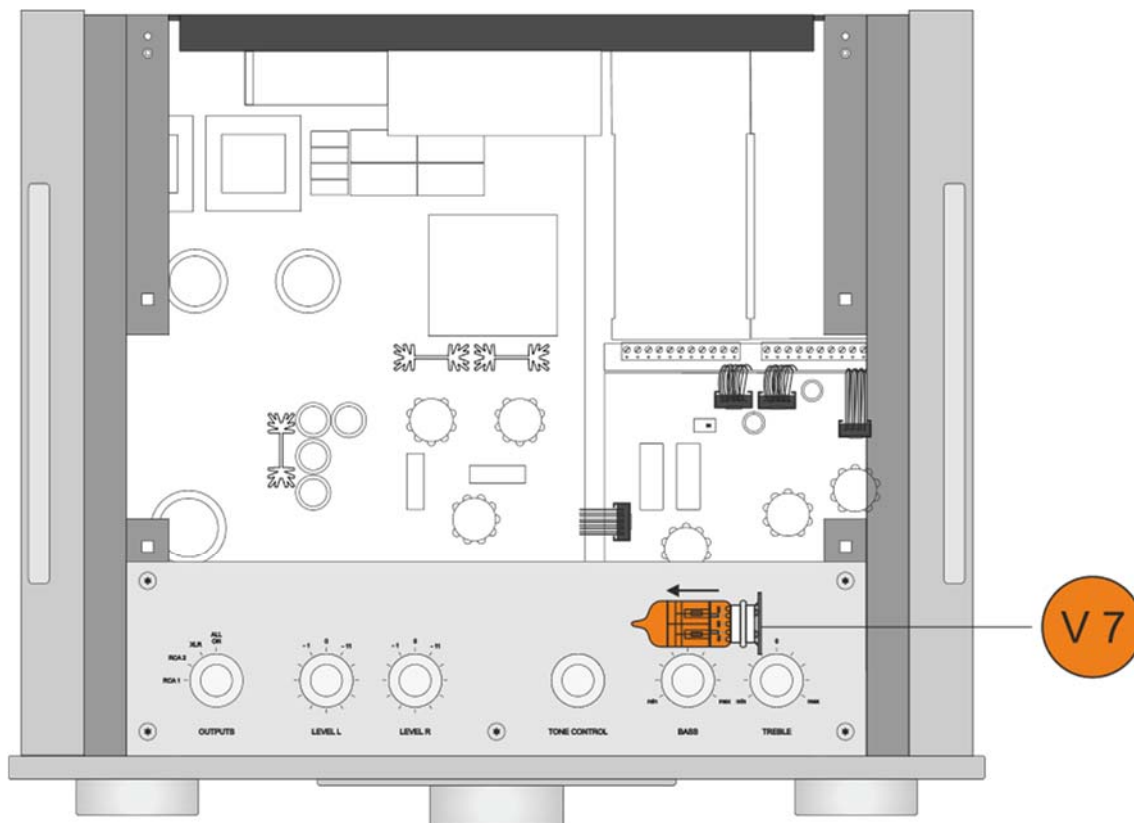


Tube layout: phono board

	German designation	International designation
V 4	ECC 83	12 AX 7
V 5	ECC 81	12 AT 7
V 6	ECC 88	6922 SV (= 6N23P SV) alternatively: 6 DJ 8

9. TUBES

9.3. Control unit tube layout



Tube layout: control unit

	German designation	International designation
V 7	ECC 88	6922, 6 DJ 8

Replacing the V 7 tube

Note The control unit cannot be disassembled during tube replacement, as it is physically connected to the front.

1. Disassemble the shortened cover.
2. If your device is equipped with the phono RIAA board, first remove the V 6 tube of the phono RIAA board.
3. Below the control unit, carefully remove the V 7 tube in the direction of the arrow.

9. TUBES

9.4. Replacing tubes

Attention

Improper disassembly

Damage to the tubes due to improper disassembly or assembly.

Changing tubes is a job for qualified technicians!



1. Switch off the preamplifier, unplug the power cord from the wall socket, and allow the unit 10 minutes to cool down.
2. Remove the cover by loosening the M4 screws (a total of 10 for the cover without control unit and 7 for the shortened cover with control unit). Do not remove the control unit from the device.
3. Carefully remove the tubes from their sockets, taking care not to exert sideward pressure on the sockets.
4. Fit new tubes. Please ensure that the tube pins are all perfectly straight before inserting your new tubes. Straighten any bent pins very carefully by hand if necessary.

Cleaning tips

Cleaning agents and contact cleaners are **not recommended** for tube sockets.

- ▶ Clean dirty sockets with compressed air and carefully clean tarnished tube pins using a wire brush or toothbrush.

Please note:

No adjustments are necessary to your amplifier after fitting new tubes.

It may take new tubes some time (up to 300 hours) to achieve their optimum sound quality.

Manufacturing faults in tubes may only become evident after about 100 hours of use. You should therefore be careful when installing untested tubes.

9.5. Tube service life

- Thanks to the protection circuits and soft start electronics, the tubes used in your amplifier should achieve an **average service life of 5 to 10 years**.
- Because the tubes have different service lives, it should never be necessary to renew **the entire tube complement at the same time**.

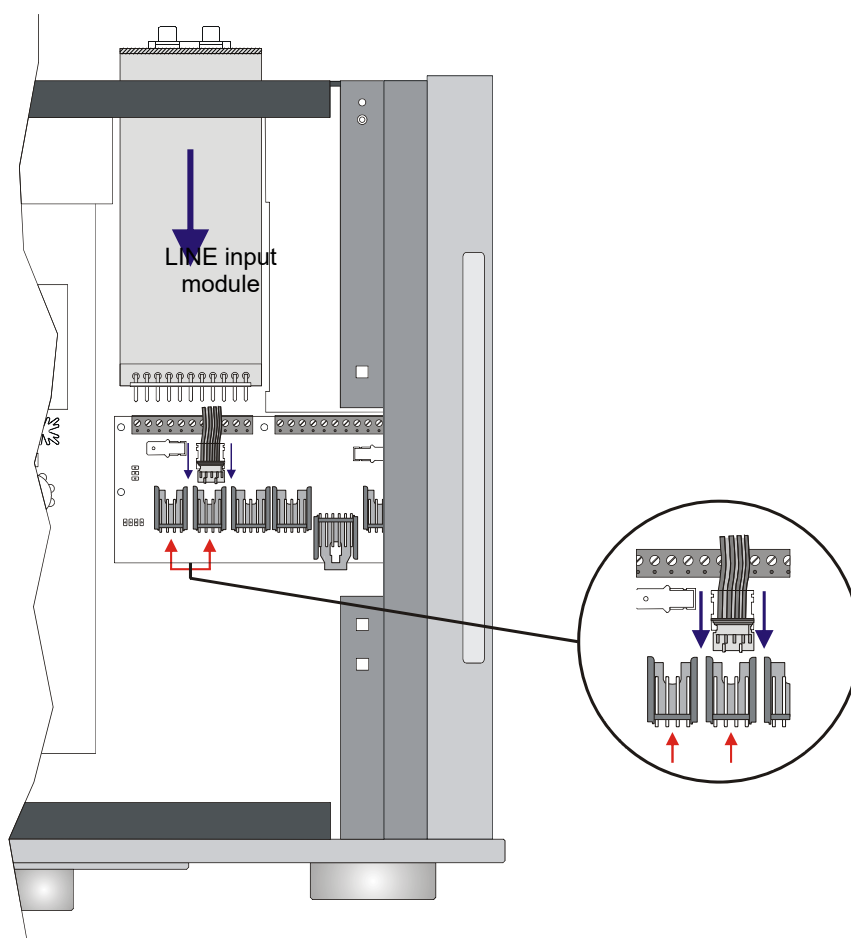
10. OPTIONS

10.1. Option: Additional line level input module

The modular design of the HP 700 SE offers the option to mount one or two additional line-level inputs beyond the existing line-level inputs (if the phono option is not installed, which requires at least one slot).

This can be advantageous if the existing number of inputs is insufficient or the inputs IN4, IN8 (transformer-coupled) or IN9 (transformer-coupled) is to be used for sound or technical reasons.

10.1.1. Assembling the additional line-level input module

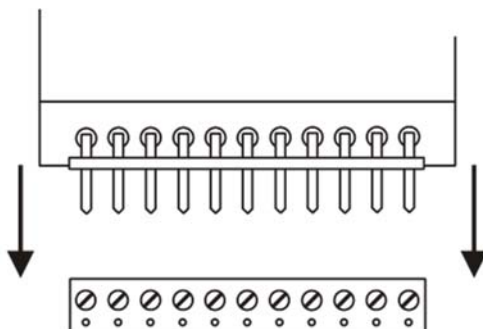


1. Remove the cover of the HP 700 SE by loosening the screws using the supplied screw driver and pulling off the cover upwards.
2. Remove the front panel on slot 1 or 2 on the rear front of the HP 700 SE (4 pc M3 screws).
3. Make sure that the screws on the connector are all loose. Do not unscrew them completely.

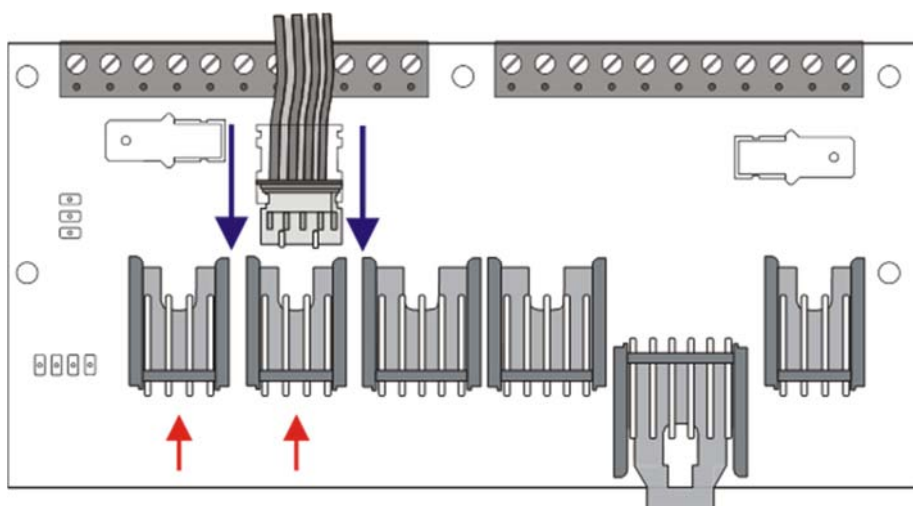
10. OPTIONS



4. Guide the line-level input module through the opening at slot 1 or 2 so to insert the pins on the pin strip into the terminal screw strip.



5. Secure the module **to the rear front side** of the **HP 700 SE first** using screws from the empty front panel.
6. Carefully screw in all the screws to the terminal screw strip. Do not tighten them too much.
7. Insert the flat connectors of the supplied ribbon cable in the designated slot on the adapter board on the HP 700 SE (slots 1 and 2 are equivalent). The blade terminal cannot be twisted, since it can only be inserted in one position.
The input module ribbon cable plugs only fit in the two outer slots with 4 pins. (The other slots are reserved for connecting the phono board.)



8. Close the cover on the HP 700 SE and tighten the screws.

10.1.2. Available line-level input modules

See inlay manual "In- and Output Modules"

Effective 07/23: IN4: RCA and XLR switchable
 IN8: XLR with transformer
 IN9: RCA with transformer

10. OPTIONS

10.2. Option: HP 700 SE with phono

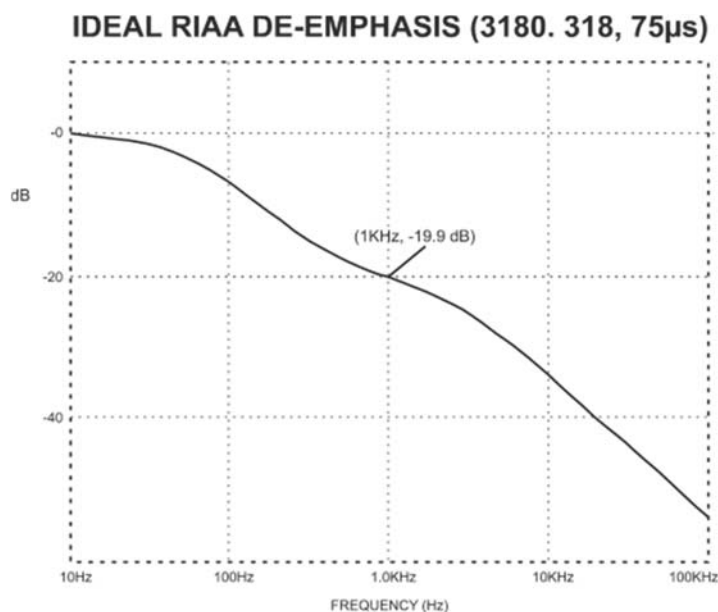
10.2.1. HP 700 SE with phono RIAA

A record player is an electro-mechanical device. Music signals are “pressed” into the grooves in the record, and these are physically tracked and read by the pickup cartridge. In order to get the entire 20 Hz - 20 KHz frequency range into the grooves, the frequency response has to be shaped by lowering the level of the low-frequency information and raising the level of the high-frequency information. This predefined equalization curve is known as RIAA equalization.

A phono amplifier must be able to reproduce the RIAA equalization to avoid coloring the sound. Equalization accuracy must be within 0.7 dB over the entire frequency range, with channel matching of at least 0.3 dB.

The phono RIAA amplifier of the HP 700 SE must always be supplemented with an input module. A maximum of two phono input modules can be installed. The input modules function in the same way as an input amplifier that raises the different signals of the pickup cartridge to a constant, high level, which the RIAA amplifier can optimally process.

Phono is then selected via IN 1 to IN 2.



Possible input module variants with the phono option:

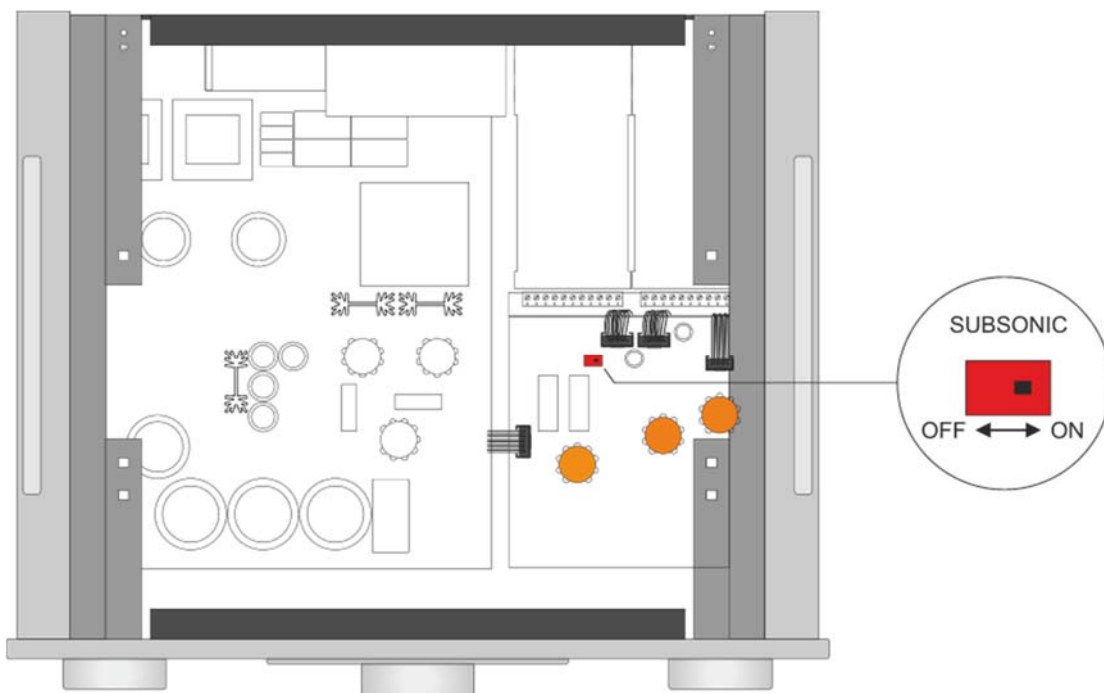
Phono RIAA must be installed	Slot 1	Slot 2
At least 1 phono input module	Phono input	Nothing
At least 1 phono input module	Nothing	Phono input
2 identical or 2 different phono inputs	Phono input	Phono input
1 phono input and 1 line input	Phono input	Line input
1 phono input and 1 line input*	Line input	Phono input

*This variant is not recommended because the line signal routing is crossed.

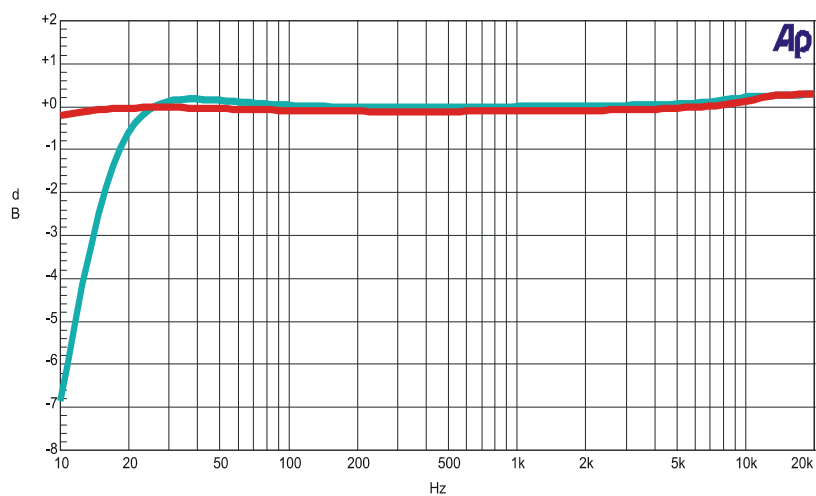
10. OPTIONS

10.2.2. Subsonic filter

Warped records and unfavorable cartridge/pickup arm combinations can cause low-frequency interference that impairs bass reproduction. These low-frequency levels can be attenuated with the switchable subsonic filter. The roll cutoff frequency is outside of the audible range at 15 Hz. Condition on delivery: Subsonic filter on.



Phono-frequency response with and without subsonic filter



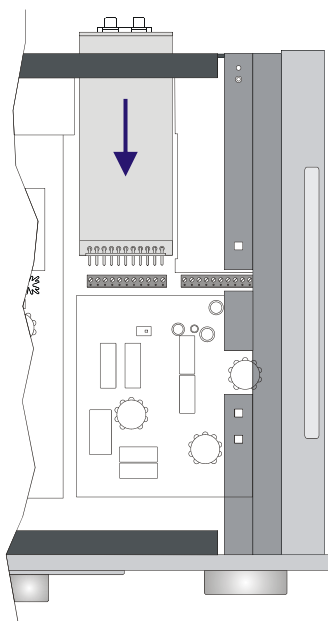
The frequency range without subsonic filter is very linear and extremely low (red graph). With the subsonic filter (cyan graph), bass reproduction is not limited by the low cutoff frequency (-3 dB at 15 Hz).

10. OPTIONS

10.2.3. Assembling the phono input modules

The phono input modules are assembled in the same way as the line input modules, though their assembly is simpler due to an absence of cables to be connected.

Note: If your system is not equipped with a phono main circuit board (phono RIAA), you can theoretically also insert the phono inputs, but no sound can be produced! The RIAA board is the basis and prerequisite for listening with phono.



Module assembly

! WARNING !

Electric shock: Parts carrying dangerous voltages may be exposed when opening the cover.
Before opening the cover, switch off the device and unplug the power cord.

1. Loosen the M4 screws on the cover and pull off the cover plate upwards.
2. Loosen the 4 Phillips-head screws on the corresponding rear cover panel and remove the cover panel.
3. Loosen the screws on the corresponding terminal screw strip.
4. Insert the module into the slot so to insert the module pins into the screw-connector on the main circuit board.
5. Then, screw the rear panel back on.
6. Re-tighten the screws on the terminal screw strip. Do not tighten them too much!
7. Screw the cover back on.

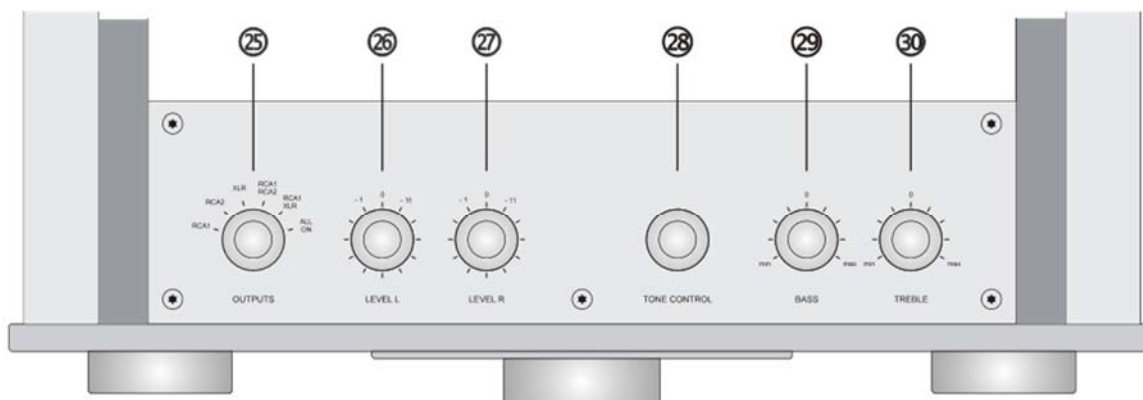
10.2.4. Available phono input modules

See inlay manual "In- and Output Modules"

Effective 11/23: IN1: MM RCA
 IN2: MC RCA
 IN3: MC XLR
 IN6: MC RCA Step-Up-Transformer switchable
 IN7: MC XLR Step-Up-Transformer switchable

10. OPTIONS

10.3. Option: HP 700 SE with control unit



Legend		
(25)	Output selector switch	Here, the three outputs RCA 1, RCA 2, and XLR can be activated separately and in groups. In the ALL ON setting, all three Outputs are active and can be used simultaneously. The settings RCA 1 and RCA 2, or RCA 1 and XLR are intended for Bi-Amping configurations, each with a separate power amplifier (e.g. a headphone amplifier). The separate power amplifier can then be operated on XLR or RCA 2.
(26) + (27)	Pre-level control – left and right channel	The Level L and R controls are used to precisely reduce the channels in 1 dB increments separately for each channel. This allows for the accurate adjustment of the reproduction balance. The controls are step switches, ensuring exact accuracy and absolute long-term stability. The controls are bypassed in the 0 dB setting. Control is frequency-compensated and thus does not negatively affect the quality of the music signal. Frequency-compensated attenuators originate from high-frequency technology. Compared to more simple, non-compensated variants, their advantage is that the frequency bandwidth and phase shift are not affected.
(28)	Rotary knob for activating the tone control	When the tone control is on, the TC LED on the front illuminates. When the tone control is off, the electronic control system is bypassed completely.
(29) + (30)	Bass and treble controls	These controls allow for precise raising and lowering of the bass and treble. One scale mark corresponds to +/- 3 dB.

The control unit is a special feature of the HP 700 SE. The combination of **level adjustment** and the **tone control** allows for a more precise correction of reproduction under unfavorable conditions, be it due to the room acoustics or the sound carrier.

The **level adjustment** (individual volume control per channel) is virtually indispensable if the loudspeakers are placed at different distances to the listener (e.g. due to spatial reasons). The level control can be used to adjust the channels to the listener **without losing audio quality** (see (26) + (27)).

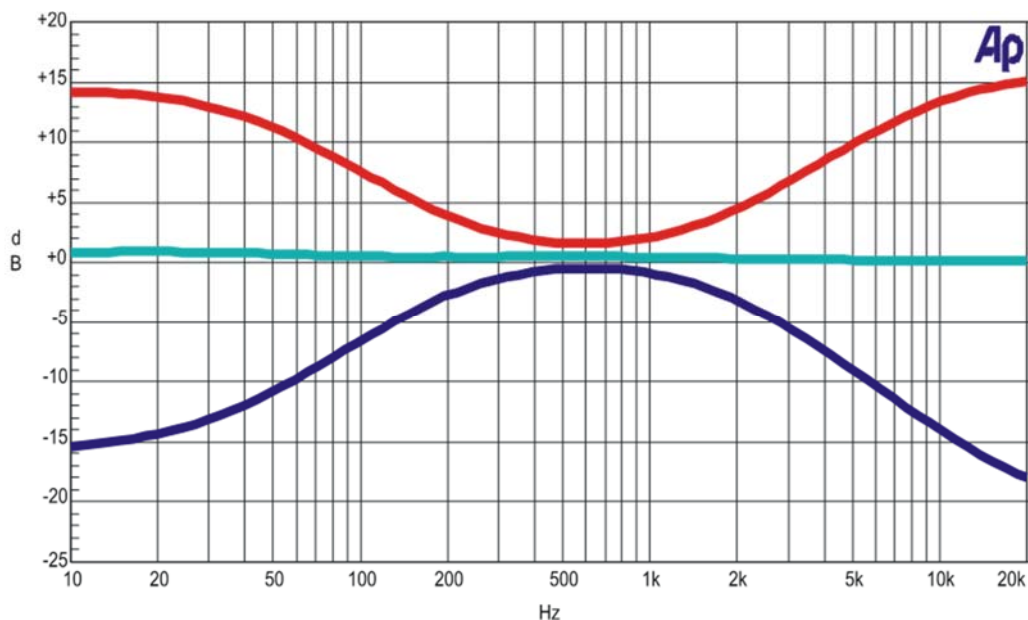
The **tone control** is achieved through tube technology and ensures a homogeneous sound pattern.

10. OPTIONS

The components used, low-noise conductive plastic controls with minimal channel tolerance, and low-tolerance polypropylene capacitors, in conjunction with the latest optimized tube stage advance the sound properties of the classic tone control to an unprecedented level. Precise adjustment allows for tonal corrections in the bass or treble ranges. Corrections are equally helpful in old muffled and bass-weak analog recordings and in new digital productions, which sometimes feature a distinct high frequency tending towards sharpness. Here, corrections of 3 dB truly work wonders.

Technical data	
Frequency response 0 dB	10 Hz – 140 kHz
Total harmonic distortion + noise	< 0.1 %
Noise voltage	5 μ V
Setting range	+/- 15 dB

Control characteristics of the tone control



The control range encompasses the area between the red and blue graphs. The precisely adjustable controls allow for settings in the 1 dB range based on the scale. One scale mark corresponds to +/- 3 dB.

10. OPTIONS

10.4. Option: HP 700 SE with stepped attenuator

The volume control is an important component of a preamplifier. The demands placed on the controls are very high. The control range must encompass at least the range of 1:3000 (or 1:0.00033) to ensure fine adjustment appropriate for human hearing.

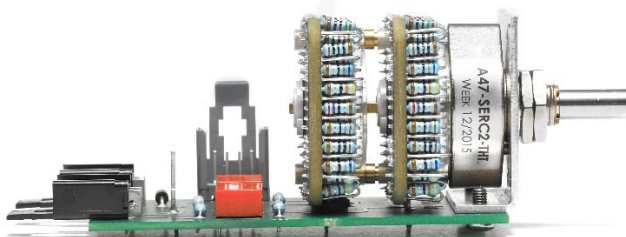
At the same time, the channel deviation within this range must not exceed 1 dB. The transfer resistance should remain constant during and after adjustment to prevent control noises. Rotary controls with a resistance track sensed by a slide meet these requirements to a large extent with our strict selection, but spring-guided sensing of the resistance track can result in undesired resonance effects that negatively affect the transfer resistance and impair the signal in the micro range. As a result of this design, the frequency bandwidth, i.e. the speed, may also be limited, depending on the control setting.

The control concept can only be improved with a stepped attenuator. In this complex process, the resistance track is reproduced by a series circuit consisting of individual resistors. The stepped attenuator now senses the connecting points of the resistor ladder. The advantages of this solution are obvious: thanks to the low-tolerance fixed resistors, the channel tolerance across the entire control range remains under 0.1 dB. The hard gold plated contacts on the switch have an extremely low transfer resistance and thus do not generate micro-fluctuations in the signal level caused by mechanical resonances.

The switch has 47 settings. This uncommonly high number of settings allows for finely incremented, reproducible volume adjustment.

To eliminate the effect of the control, or the control setting, on the bandwidth, the stepped attenuator – as in the balance controls – is frequency-compensated. Equipped with this unique switching layout, the OCTAVE stepped attenuator functions as an ideal control. The sound characteristics are constant across the entire control range, while the center position also remains stable across the entire range thanks to the negligible channel tolerance. The sound pattern gains depth and the finest subtleties are audible in the layers of sound.

However, as a result of the mechanical design of the stepped attenuator, the switch positions cannot be controlled using the remote control.



11. TROUBLESHOOTING

11.1. Troubleshooting

Hum and crackling

Hum in an audio system is often caused by several system components being grounded individually. It is particularly common with tuners, VCRs, or satellite receivers, where the grounded aerial cables cause a ground loop via the aerial input. Power amplifiers are normally also grounded. Removing the ground wire on your safety plugs is not a solution. You can isolate the aerial earth connection with a special signal isolator. This device has no adverse effect on the sound or picture quality of tuners or TVs.

The HP 700 SE is not grounded and therefore cannot cause ground loops.

Solution	The XLR output on the HP 700 SE can be connected without ground connection to interrupt a ground loop in the power amplifier with a grounded source device. Alternatively, the IN 8 line input module can be used. This transformer-coupled XLR input module also allows for ground separation.
-----------------	---

Clicks and pops

Older refrigerators and 12 V halogen lamps can generate strong radio interference, and when they are switched on and off, audible clicks and pops in the system's loudspeakers may occur.

Solution	The only solution is to use a single-power socket board for your entire system and to use a different power outlet in your listening room.
-----------------	--

Channels are not balanced

Check that the RCA plugs are plugged in properly. Bend the outer ground contacts inward if necessary. Sometimes the internal pin in an RCA plug may not be a tight enough fit, in which case you should either replace the cable or the socket.

1) Damaged cables and poorly fitting RCA plugs can create resistance in the signal path, enough to reduce the output level of one channel.

Solution	Try new cables or clean plugs and sockets with isopropyl alcohol. You could also try cleaning or contact fluid.
-----------------	---

2) A faulty tube can cause a drop in output in one channel and generate distortion. This is a rare occurrence, the heater inside the particular tube may also be the cause of the problem.

Solution	Replace the tube.
-----------------	-------------------

Increased Noise on one channel

Noise that varies in level is a sign of a faulty or worn driver tube.

Solution	Replace the worn tube. Tubes with this type of error can generally still be used in power amplifiers. The increased noise here is rarely a issue.
-----------------	--

12. TECHNICAL DATA

12.1. In- and outputs

In- and outputs	
Inputs	3 x RCA, 2 x XLR, 2 x additional Input Modules 1 x RCA bypass (can be switched to IN4-XLR)
Outputs	2 x RCA, 2 x XLR, 1 x Monitor/Tape Record (RCA)
XLR ratio	0 dB
XLR pin assignment	1 = ground, 2 = positive, 3 = negative
Line stage	
Output resistance	130 ohms RCA; 150 ohms XLR
Monitor Out output resistance	240 ohms
Maximum output voltage	12 V
Gain factor – Gain High	25 dB = 18.5
Gain factor – Gain Med	18 dB = 7.8
Gain factor – Gain Low	12 dB = 4
Signal-to-noise ratio – Gain High	-98 dB / 38 μ V *
Signal-to-noise ratio – Gain Med	-104 dB / 18 μ V *
Signal-to-noise ratio – Gain Low	-110 dB / 8 μ V *
Equivalent noise level	14 nV \sqrt Hz
Frequency range – Gain High, RCA	10 Hz – 200 kHz -0.7 dB / 0.7 MHz -6 dB
Frequency range – Gain Med, RCA	10 Hz – 200 kHz -0.3 dB / 1.3 MHz -6 dB
Frequency range – Gain Low, RCA	10 Hz – 200 kHz -0.2 dB / 2.1 MHz -6 dB
Frequency range – XLR	10 Hz – 200 kHz -1.5 dB
Rise time – Gain Low	350 ns
Slew rate – Gain Low	60 V/ μ s
Total harmonic distortion – Gain Low, Med, High	0.01 % at 3 V / 10 kohms Load
Channel separation	-90 dB / 1 kHz, input short-circuited
Crosstalk between inputs	-80 dB / RCA, -95 dB XLR / 1 kHz
Input resistance	50 kohms
Channel matching via volume control	0.5 dB – 70 dB

* referring to 3 V output voltage

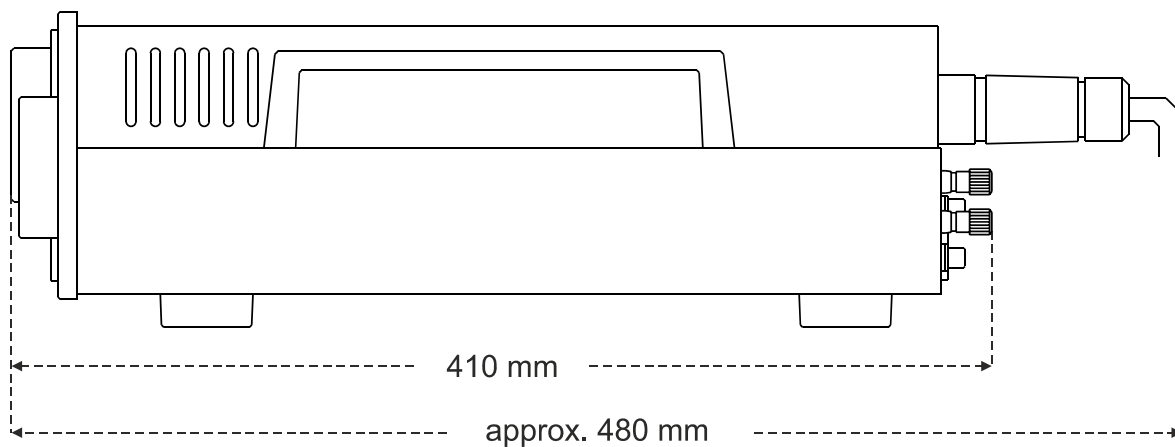
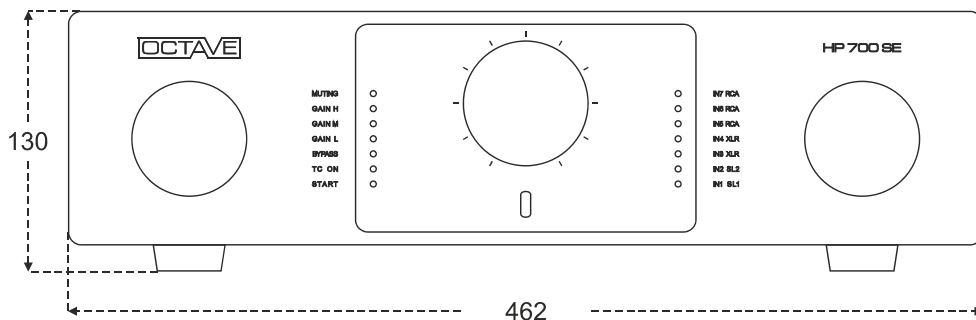
12. TECHNICAL DATA

Phono	
RIAA equalization tolerance	0.3 dB / 15 Hz – 20 kHz
Cutoff frequency – subsonic filter	15 Hz / -3 dB
Signal-to-noise ratio	-75 / -84 dB/with IN 2 MC input
Input sensitivity	250 μ V / 600 μ V / with IN 2 MC input
Input sensitivity, gain and input resistance depend on input module	
Overall Gain:	
MC Gain Low - Pre Out RCA/XLR	Gain Low: 70 dB, Med: 77 dB, High: 83 dB
MC Gain High - Pre Out RCA/XLR	Gain Low: 79 dB, Med: 86 dB, High: 92 dB
General data	
Power consumption	35 – 60 W
Weight, preamplifier/power supply	10.0 kg / 3.8 kg
Supplied accessories	Power cable, remote control, screw driver
Dimensions of preamplifier (overall)	Width x height x depth = 462 x 130 x 480 mm
Dimensions of power supply (overall)	Width x height x depth = 110 x 90 x 277 mm

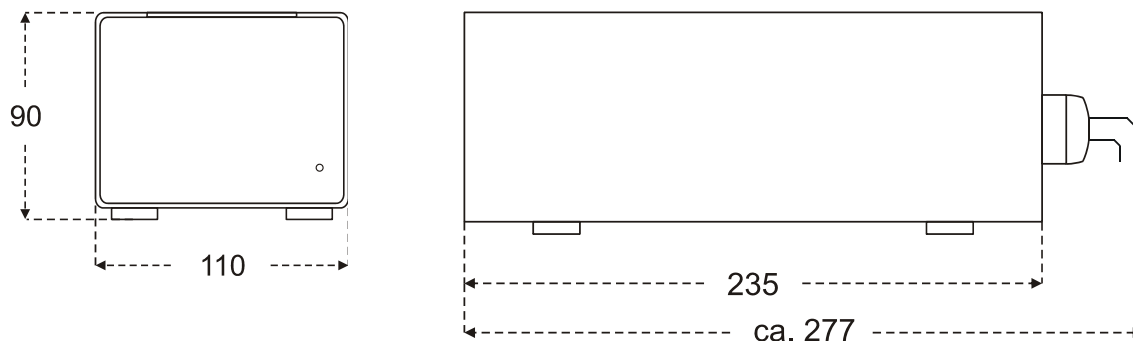
12. TECHNICAL DATA

12.2. Dimensions

12.2.1. HP 700 SE preamplifier (dimensions in mm)



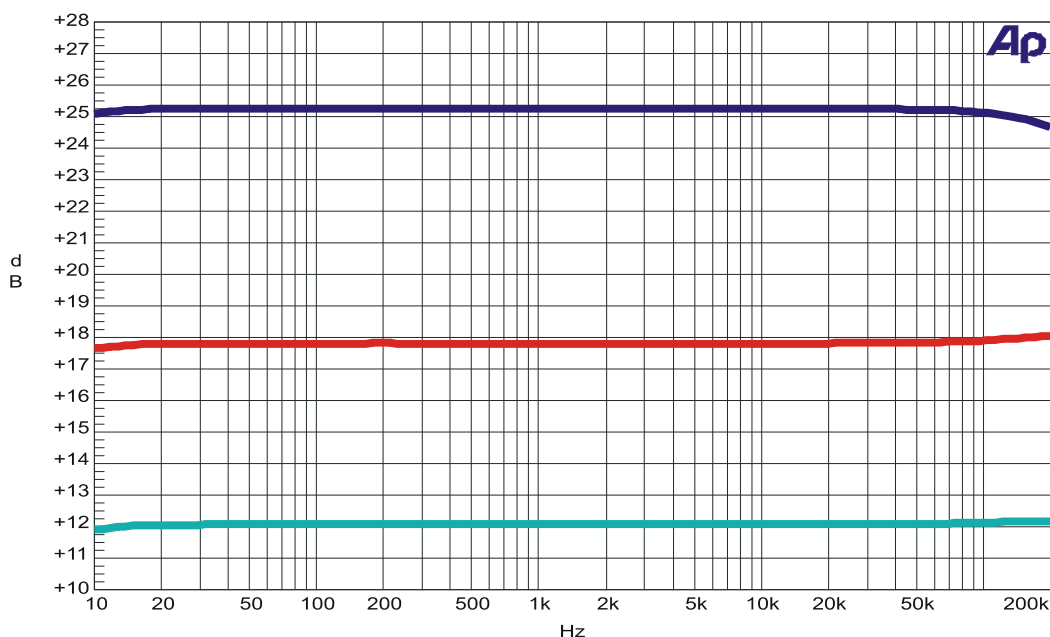
12.2.2. External power supply (dimensions in mm)



12. TECHNICAL DATA

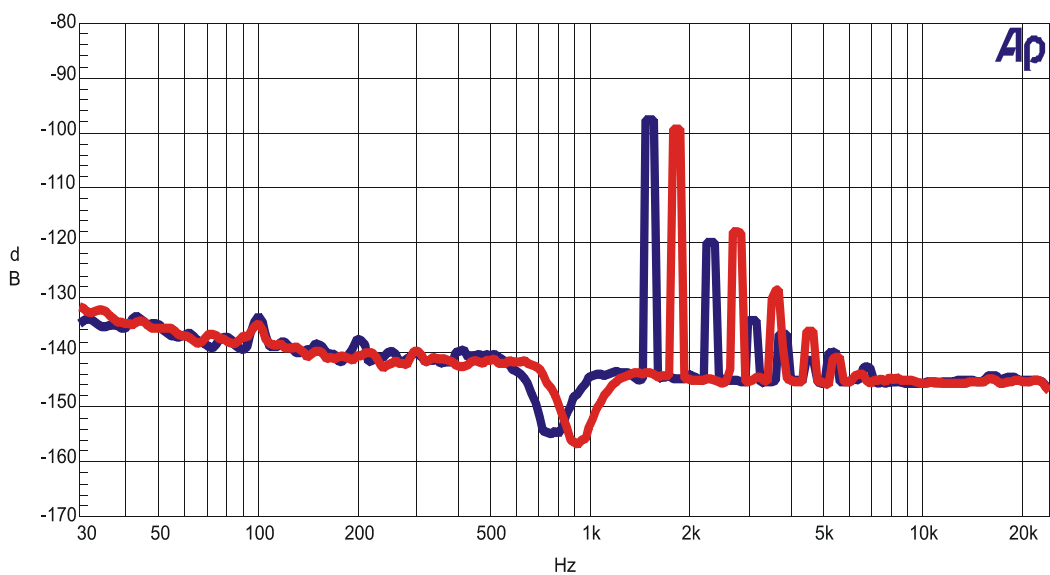
12.3. Diagrams

12.3.1. HP 700 SE line frequency response



Frequency response and gain of line stage in Gain Low (12 dB), Med (18 dB), and High (25.5 dB) settings.

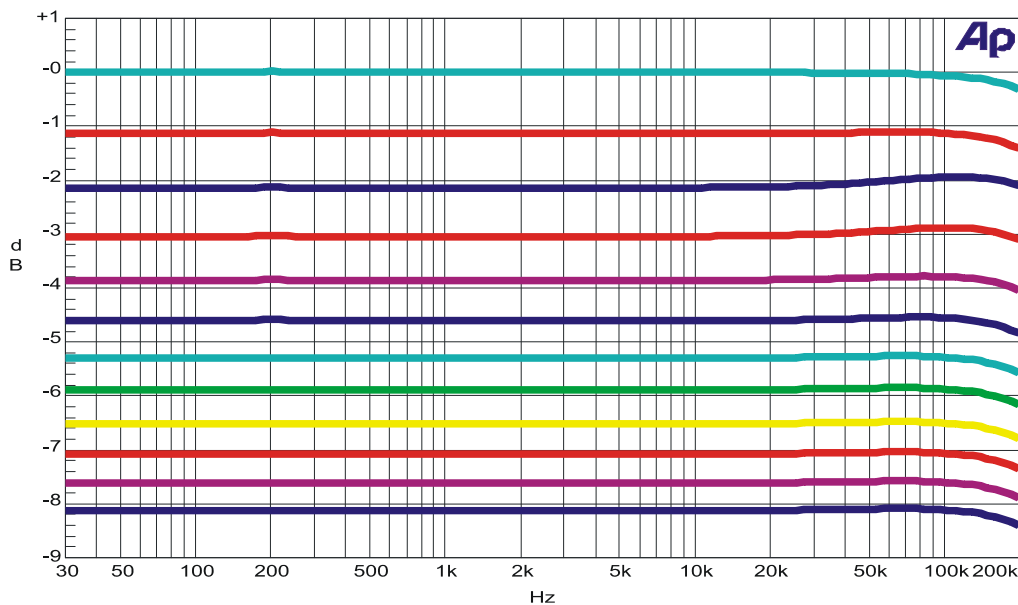
12.3.2. FFT interference spectrum



Comparison of the RCA and XLR interference spectrum. No mains interference on either of the inputs; the spectrum of the harmonics K2, K3, K4, K5, K6 decreases consistently linearly for both outputs.

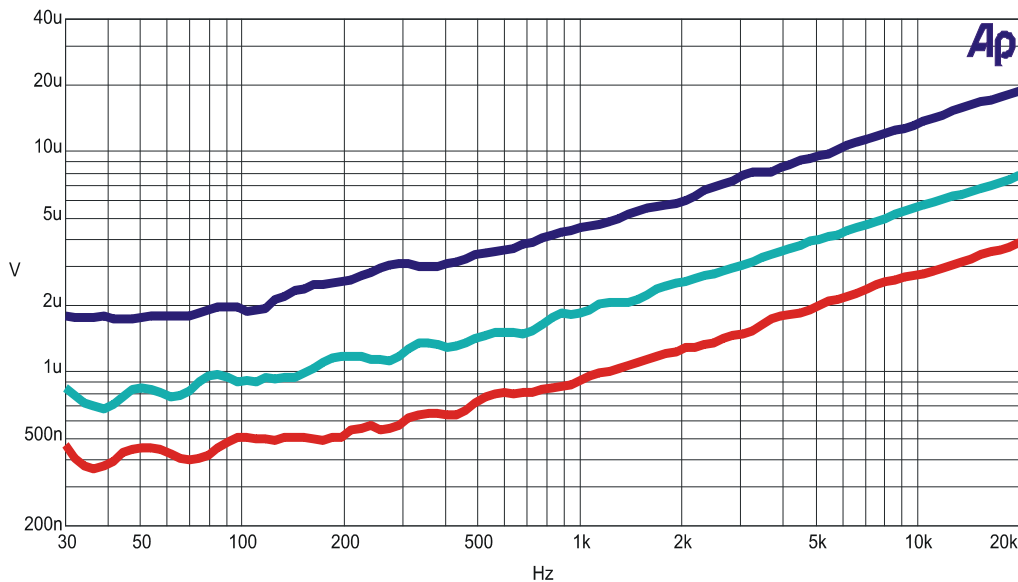
12. TECHNICAL DATA

12.3.3. Control range and balance control frequency response



The compensated balance pre-control exhibits virtually the same frequency response with all settings.

12.3.4. Line stage hum and noise level



No mains interference can be detected during noise level measurement either; the noise level decreases linearly by 6 dB for each gain setting.

Status: 07/2023



We reserve the right to alter and improve the specifications in pursuit of better. OCTAVE logo is a registered trade mark of Andreas Hofmann. Copyright by Andreas Hofmann

OCTAVEAUDIO T. +49 (0) 7248 3278
ANDREAS HOFMANN F. +49 (0) 7248 3279
REUTAECCKERSTR. 5 INFO@OCTAVE.DE
DE-76307 KARLSBAD WWW.OCTAVE.DE