



P110

Passive
Studio Monitor

Installation and Operation



Safety Instructions

It is absolutely essential that you read these safety instructions carefully before connecting and using this K+H product. Your safety depends on it. Furthermore, failure to follow these instructions voids the warranty. To ensure safe operation for years to come, keep these instructions in a safe place for future reference. K+H has manufactured this product in accordance with IEC 92 (SEC) 39 standards, then tested and delivered it in safe operating condition. To maintain it in this condition, you must:

- observe all safety instructions,
- use the product only as described herein,
- have any maintenance, repairs, or modifications performed only by K+H or other authorized personnel, and
- ensure that the room in which you use this product is wired in accordance with the local electrical code.

Warning!

- When the interior of the cabinet is exposed, touching some parts can lead to an electric shock.
- If you need to gain access to the interior electronics of the unit, always disconnect the unit from any and all power sources first.
- Any repairs, maintenance, or other service of the unit when its interior compartment is exposed may only be performed safely (in accordance with VBG 4) by authorized technicians familiar with all the risks involved. Even in an unplugged state, a fully charged capacitor in the unit can zap the unsuspecting.
- Loudspeaker output jacks labeled with the IEC 417/5036 emblem (Fig. A, right) may be carrying dangerously high voltages. If your unit has this emblem, ensure that any connections to be made between these jacks and the speakers themselves are made before powering up the unit, and are done so only with manufacturer-approved interconnecting cables.
- If you need to replace any fuses, ensure that the replacements are of exactly the same type, value and voltage as the originals, as spelled out in the technical specifications at the rear of this manual.
- Do not use "repaired" fuses.
- If you do not have any fuses on hand of the specified size, type, and value, do not hot-wire the contacts in the holder by short-circuiting them.
- Certain areas of the cabinet, cover, and rear panel can achieve extreme temperatures and are therefore marked with a "HOT" label (Fig. B). Refrain from touching any heat sink or ventilation grille.
- High volume levels are known to cause permanent - i.e. irreversible - hearing damage, especially when listened to without sufficient breaks. The higher the levels, the more frequent and extended must be the breaks. Avoid standing too close to loudspeakers that are being driven at high levels. If you must be exposed to high sound pressure levels over an extended period of time, use hearing protection.



Fig. A



Fig. B

Mains Connection:

- This unit is designed for continuous operation.
- Ensure that the operating voltage of the unit matches that of the local mains current (AC line voltage).
- Always check before connecting the power cable to the mains socket that the power switch on the unit itself is set to off ("O").
- Use the power cable or power supply that came with the unit to connect to the mains socket (wall outlet).
- Power supply: a damaged power cable may not be repaired. Use a new cable.
- Avoid plugging the mains cable into a power strip that already has several other power-consuming devices connected to it.
- Avoid using extension cables. The unit must be connected to a mains socket close to it, and that socket should be freely accessible.

Installation:

- This product may only be placed on a stable, clean, horizontal surface.
- Do not expose this product to vibration.
- Do not operate this product anywhere near water or other liquids. Do not use it near a sink, swimming pool, bathtub, or in any damp room or area. Electrical shocks carried through water can kill. Do not place any beverages whatsoever on or near this product, as liquids can kill electronic components.
- Ensure sufficient ventilation around the product to allow for adequate heat dissipation, especially near the rear panel and the sides of the cabinet (minimum of 8 inches from the nearest wall). The unit may only be installed in a rack if measures are taken to ensure sufficient ventilation and if the mounting instructions of the manufacturer are followed. Do not block or cover any heat sink, fan, or vent.
- Do not place the product where it will be in the path of direct sunlight, and keep it a safe distance away from radiators and other heaters of any kind.
- If you bring this product from a cold environment into a warm one (such as from a vehicle into a studio), it is quite possible that condensation will form inside the cabinet. Please allow the unit sufficient time for acclimatisation to room temperature (minimum thirty minutes) before connecting and powering up.
- To avoid accidents, do not use any accessory equipment with this product which is not approved by the manufacturer, particularly mounting accessories. Do not place this unit on any unstable platform, cart, stand or table. Should the unit fall, it can cause bodily injury to persons, or can be damaged itself.
- To protect this product from lightning damage during a thunderstorm or from power surges during an extended absence, disconnect the power cable from the wall outlet.

Passive Studio Monitor Klein + Hummel P 110

Installation - Operation



Figure 1: Front view of P 110

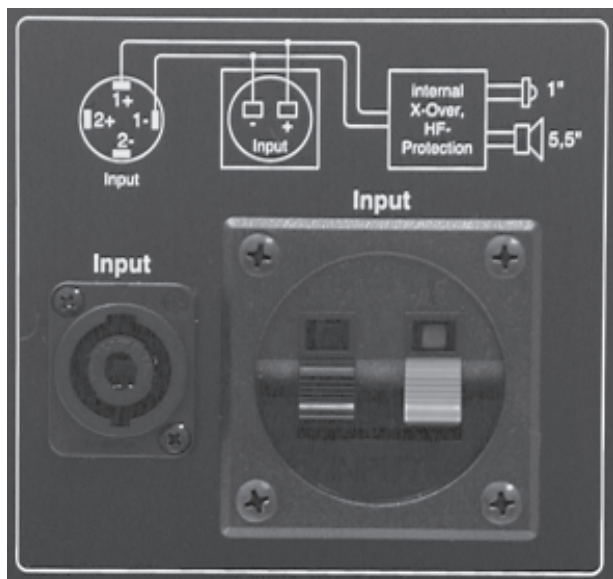


Figure 2: Input, P 110

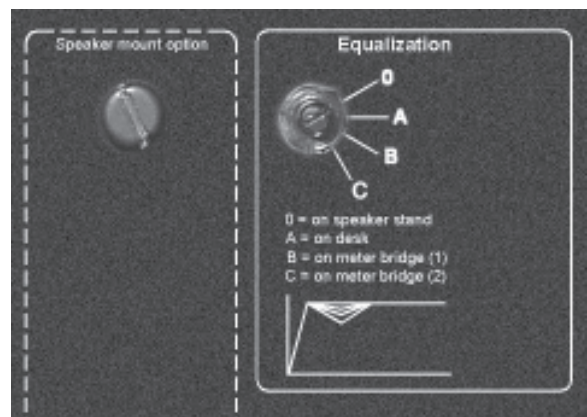


Figure 3: Room EQ, P 110

Introduction

The passive studio monitor P 110 has been derived from our active studio monitor O 110 and offers many of the advantages of the O 110. The P 110 is offered in a low impedance 8 Ohm version (P 110/N) and with a 100 Volt/ 166 Ohm transformer connection (P 110/H). When only a "P 110" designation is quoted in the description below, it is for both models.



Please read the safety instruction on page 2 before connecting the monitor.

1. Installation and Operation

1.1 Operating Conditions

The K + H model P 110 passive nearfield monitor is intended for use over a range of ambient temperatures from +10° C to +40° C (+50° F to +104° F). During transport or storage, temperatures from -25° C to +70° C (-13° F to 158° F) are permissible.

1.2 Installation

The loudspeaker chassis used in the P 110 are magnetically shielded, allowing these loudspeakers to be mounted side by side with a video or computer monitor without adversely affecting the screen. One of the finer features of the P 110 monitor is its unusually uniform off - axis directivity, which results in a very wide "sweet spot". Preferred placement of the cabinet is in the upright position, for the dispersion in the vertical plane was intentionally kept narrower than in the horizontal.

In certain cases, for example if there are hard, reflective surfaces both to the left and right of the loudspeakers, it would make sense to operate the loudspeakers on their side. The reduced horizontal directivity in this position would then be helpful in minimizing any phase cancellation caused by comb - filter effects.

When considering placement, please take into consideration the possibilities offered by both of the room compensation switches described in section 1.4.

On the back of the unit you will find two M8-size threaded bushings for use with various mounting options. These holes are labeled "Speaker mount option." The bushings will accommodate either the LH 32 wall bracket adapter or the LH 31 mounting bracket for use with additional mounting accessories.



The plastic screws that occupy these threaded holes from the factory may not be used for the actual mounting of a loudspeaker under any circumstances.

Please ensure that these threaded holes are always plugged so that the volume of air sealed within the cabinet may only pass through the precisely calculated bass - reflex openings.

1.3 Connections

For both the 100 V and 8 Ohms models there are two possible connections on the rear panel:

- SPEAKON
- Speaker terminals

For the SPEAKON connector the contacts 1+ and 1- are provided for the input signal, as seen on rear panel. For the speaker terminals the red contact is provided for the „plus“ wire, the black contact for the „minus“ wire. Both connectors are wired parallel for looping (plus=red/ minus=black).

1.4 Equalization (P 110/N only)

The four position rotary switch (Fig.3 in square "Equalization") serves to adjust the frequency response line in order to compensate for varying positions in the room.

- Position 0 = "free field" position
- Position A = position on table surface
- Position B = position on meterbridge
- Position C = position in between other equipment or flush mounted in wall

Important note: Because the studio acoustic will influence the listening impression at the listening point we recommend to try all four switch positions after installation.

The frequency response curves at each switch position are shown in fig. 11.

1.5 Care of the Cabinet

The cabinet housing of the K+H O 110 active studio monitor has a painted finish. Handle the cabinet with care to avoid damaging the finish. To clean the cabinet, use a soft cloth with a mild cleaning agent only. To clean the cabinet, use a soft cloth with a mild cleaning agent only. Under no circumstances should you use chemical agents or any cleaners with abrasive action.

2. Diagrams

The outstanding acoustic impression made by the P 110 is confirmed by measurements using today's most critical test methods. The test plots shown here

and on the next several pages are but a small sampling of these measurements.

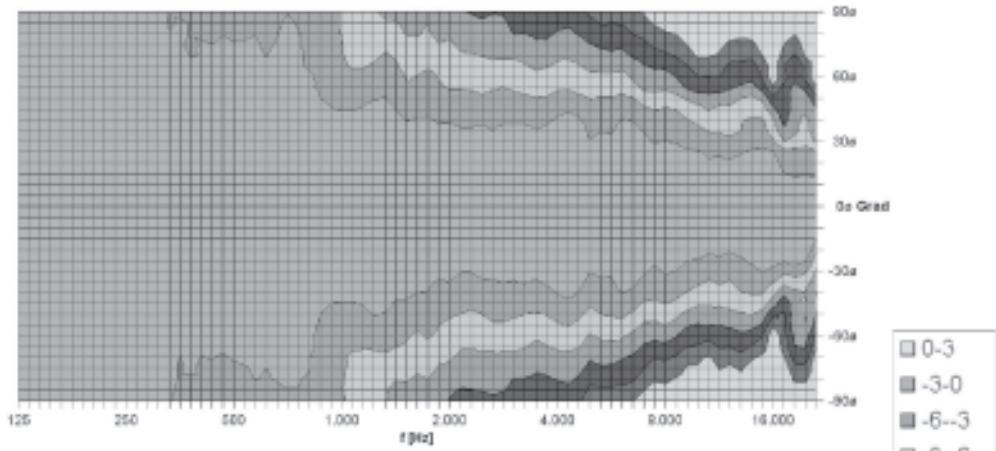


Figure 6: Horizontal Directivity

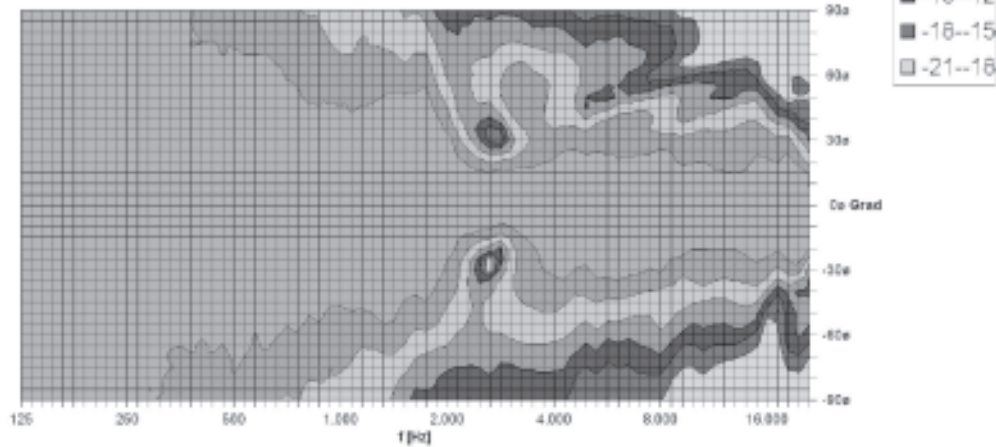


Figure 7: Vertical Directivity

Using the new material LRIM (Low Resonance Integral Molding) allowed us to seamlessly integrate a waveguide into the baffle that is ideal for optimal dispersion. So an elliptical horn for the tweeter was added. Thus came

to be the dispersion pattern we mentioned earlier which is narrower vertically and broader horizontally, as is clearly evident in the test plots presented in Figure 6 and 7.

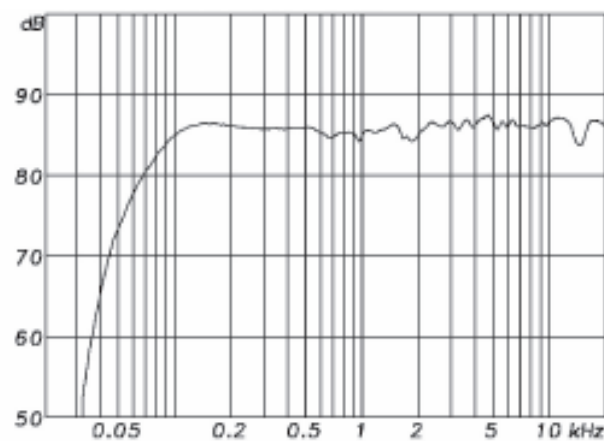


Figure 8: Frequency response, ("freefield")

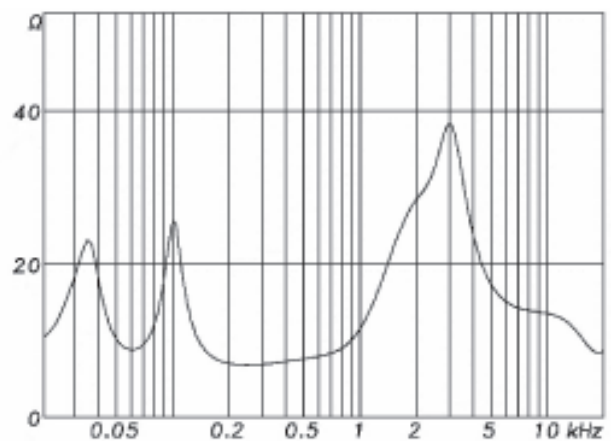


Figure 9: Impedance of P 110/N

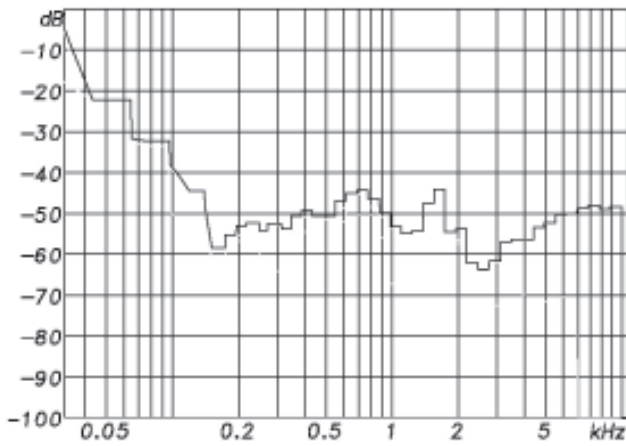


Figure 10: THD at 95 dB/SPL

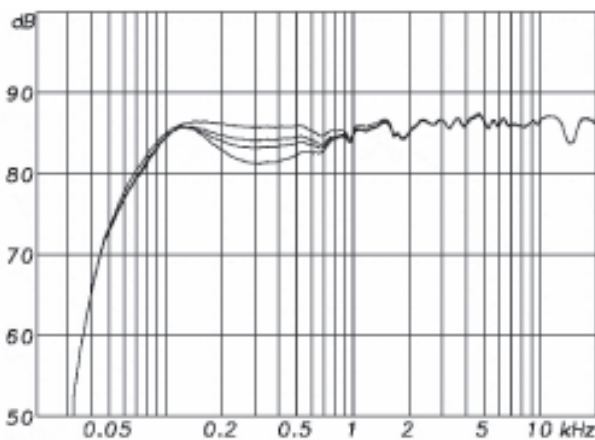


Figure 11: Cumulative Spectral Decay Plot

The loudspeaker's cumulative spectral decay plot indicates a very clean decay without any major resonances or standing waves being evident.

3. Warranty Information

All K+H products undergo an extensive procedure of quality control testing before leaving the factory. Before semiconductors are mounted on the circuit board, they are subject to rigorous tests. Every single unit is guaranteed to match its technical specifications within strict predetermined tolerances.

Please store the original carton in a safe, dry place. If you should ever need warranty service, put the unit in its original packing material and carton together with a detailed description of the problem, and ship it (freight prepaid) to our distributor or directly to:

Sennheiser Vertrieb und Service GmbH & CO.KG
 Ebendorfer Chaussee 1
 D-39179 Barleben

K+H warrants, that the product is free from any defects in both material and manufacturing and that it meets the specifications. A warranty case can only be acknowledged under condition that the complaint is filed to our distributor or to us in writing **within 8 days** after delivery or detection of the fault. Not covered under this warranty are damages due to inexpert packing and shipment, wear and tear, improper handling, installation, operation and maintenance.

The limitation period for warranty claims is described in the terms and conditions of K+H GmbH. Its our choice to repair, to supply a new product or to withdraw from the contract.

In the event warranty service is required, presentation of a warranty card will not be necessary. Proof of purchase date can be made by filing copies of appropriate documents (invoice, delivery note).

4. EC Declaration of Conformity

This equipment is in compliance with the essential requirements and other relevant provisions of Directives 89/336/EC and 73/23/EC. The declaration is available on the internet site at www.klein-hummel.com. Before putting the device into operation, please observe any respective country-specific regulations.

5. Technical Specifications

P 110

Maximum SPL in half space, 3% THD at 1 m distance averaged between	111,5 dB/SPL 100 Hz and 6 kHz
Impedance	8 Ohms
Free field frequency response	85 Hz - 20 kHz \pm 2 dB 72 Hz -24 kHz \pm 3 dB
Total Harmonic Distortion 150 Hz and above @ 1 m	< 0.5 % @ 90 dB/SPL
Directivity Horizontal Vertical	\pm 40° (-6 dB) \pm 30° (-6 dB)
Crossover Frequency Slopes woofer Slopes tweeter	3 kHz 12 dB / octave 18 dB / octave
Protection circuitry	HF driver protection against overload automatic reset
Equalization 4 position switch positioning on mixing console	0; -1.5; -3; -5 dB
Drivers Bass Treble	magneticallay shielded 5.5" \varnothing , Composite - Sandwich - Diaphragm 1" \varnothing , Titanium Fabric Dome Tweeter
Connectors	1 x Speakon 2 x speaker terminals
Dimensions (W x H x D)	170 x 267 x 190 mm (6.7" x 10.5" x 7.5")
Volume	6.5 liters (0.30 cubic feet)
Weight	5.0 kg (11 pounds)
Cabinet finish	enamel anthracite RAL 7021 or silver RAL 9006
Accessories	LH 31 mounting bracket LH 28 tripod bushing (LH 31 mounting bracket required) LH 29 TV - spigot (LH 31 mounting bracket required) LH 27 ball clamp mount (LH 31 mounting bracket required) LH 7 or LH 8 adaptor (LH 31 mounting bracket required) LH 32 wall bracket LH 33 tilt connector LH 37 adaptor (LH 31 mounting bracket required) LH 38 mounting bracket C 15 eyebolt KG 30 ball clamp mount

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