

Active Studio Monitor

O 200

Installation and Operation

058-E0011
Version 01/2003



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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 1992 (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.

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KLEIN + HUMMEL O 200

Installation - Operation



Figure 1: Front view of the O 200



Figure 2: Rear panel of the O 200

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1. Installation and Operation

It is absolutely essential that you read and observe the Safety Instructions on page 2 before connecting or using this device.

1.1 Operating conditions

The K+H model O 200 active studio 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 Speaker placement

The loudspeaker chassis used in the O 200 are magnetically shielded, so you are free to set the speakers right next to a video monitor without needing to worry about adversely affecting the screen. Furthermore, the baffle of the O 200 is designed in such a way as to disperse the sound very evenly not just on axis but over quite a wide listening area. Any engineer who has sat at a console for any length of time will appreciate the considerable freedom of movement afforded by the O 200. The cabinet is normally designed to be used in the vertical position, not only for acoustic reasons but also for best cooling. On the left and right sides of the cabinet you will find threaded bushings of 8 mm diameter to which the K+H - bracket LH 26 can be attached. As an alternative, you can use the LH 28 stand-mount adapter in combination with LH 26 to set the speaker on a standard 35-mm (1-3/8") tripod or the LH 29 (+ LH 26) TV spigot.

Please make certain that the two threaded openings are always sealed, either with the plastic plugs that come standard with the cabinets or with the screws holding the mounting adapter in place. Otherwise you may experience some air noise and possibly some degradation in low-frequency response. The same happens if the plastic plugs on the rear side, covering the openings for service, are removed.

1.3 Mains Connection

The amplifier electronics of the standard European model are set up for an AC line voltage of 230 volts, 50 or 60 Hz. Export versions with other voltages are also available. If the power plug of the mains cable should ever need to be replaced, ensure that the connection to the protective earth is maintained.

1.4 Mains Switch (POWER)

When you switch on power to the unit, there is a three-second delay before the amplified signal is sent to the drivers. This delay avoids the loud popping sounds that otherwise may be generated by devices earlier in the signal chain as power reaches them. You will find this arrangement particularly useful if your studio uses

a master switch to power up all the equipment at once. When power on the O 200 is turned off, on the other hand, or if there is a general power failure, the signal flow to the speaker is immediately cut off, preventing any loud pops.

1.5 Mains FUSE

When replacing the fuse, **first disconnect the mains cable** and ensure that the new fuse is of the following type only:

for 230 V AC 1 A Slo-Blo (5 x 20 mm)
for 117 V AC 2 A Slo-Blo (5 x 20 mm)
for 100 V AC 2.5 A Slo-Blo (5 x 20 mm)

1.6 INPUT, EQUALIZATION, GROUND LIFT

The sensitivity of the transformer balanced and floating input is rated at +6 dBu (1.55 volts). The three - pole female XLR jack is wired in the standard manner (pin 1 = ground, pin 2 = +, pin 3 = negative). If you are connecting unbalanced sources, you will need to solder a bridge between pins 1 and 3:

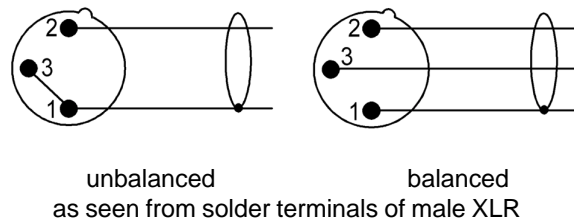


Figure 3: Pin layout of input connector

Next to the input connector the level controls, the location equalizer and the ground - lift switch are to be found. For avoiding unwanted setting, a cover has to be removed first.

1.6.1 Input SENSIVITY, ATTENUATOR

Near the AF - input - socket there are a continuously variable attenuator 0...-24 db and a switch for selecting 0 dBu (0.775 V) or +6 dBu (1.55 V) sensitivity.

1.6.2 Location EQUALIZATION

A four position recessed rotary switch (adjustable with a screwdriver) is available for frequency compensation due to speaker placement. For equalizing anomalies in the lower frequencies due to proximity to room boundaries:

Position 0 = free space
Position -2.5 = 1 boundary (wall)
Position -5 = 2 boundaries (corner)
Position -7.5 = 3 boundaries (corner + ceiling)

1.6.3 GROUND LIFT

Since the input is balanced, you should rarely experience any hum. In unusual cases, or if the source is unbalanced, it may be necessary to separate the connection between signal ground and chassis ground, in which case you will find this little switch convenient. The chassis ground remains always connected to the protective earth conductor of the mains cable.

Warning!
 **The protective earth conductor must never be interrupted even for test purposes! This may be dangerous to Life!**

Please make certain that the cover is reinstalled after finishing the adjustments otherwise you may experience some air noise and possibly some degradation in low-frequency response.

1.7 Front grille

To protect the drivers from physical harm, the O 200 comes with a sturdy plastic - coated metall grille mounted on the front baffle. The grille can be removed easily without tools. The acoustically effect on the speakers is minimal and can only be detected at all with test equipment.

1.8 Display functions

Two LEDs on the front next to the HF - Driver are indicating the following states:

If the **green** LED (ON) is lighting, internal power supply is correct, normal operation.

The **red** LED (OVL) indicates that the overload-protection circuitry has been triggered, as may happen while cuing up a tape deck or while running sine wave signals through the speakers for measurement purposes. Output power is reduced to a level that takes the speakers out of danger. If this happens, you must search for the cause and possibly reduce the monitoring level.

1.9 Care of the cabinet

The cabinet housing of the K+H O 200 active studio monitor comes standard with a charcoal - grey (RAL color 7021) colored enamel 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. Under no circumstances should you use alcohol - based or chemical agents, nor any cleaners with abrasive action.

2. Diagrams

The outstanding acoustic impression made by the O 200 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.

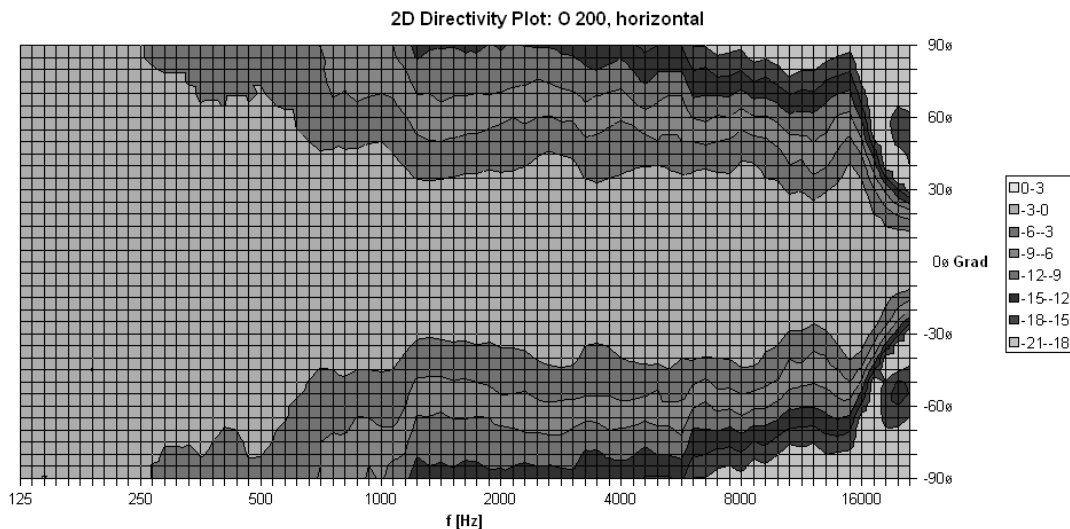


Figure 4: Horizontal Directivity

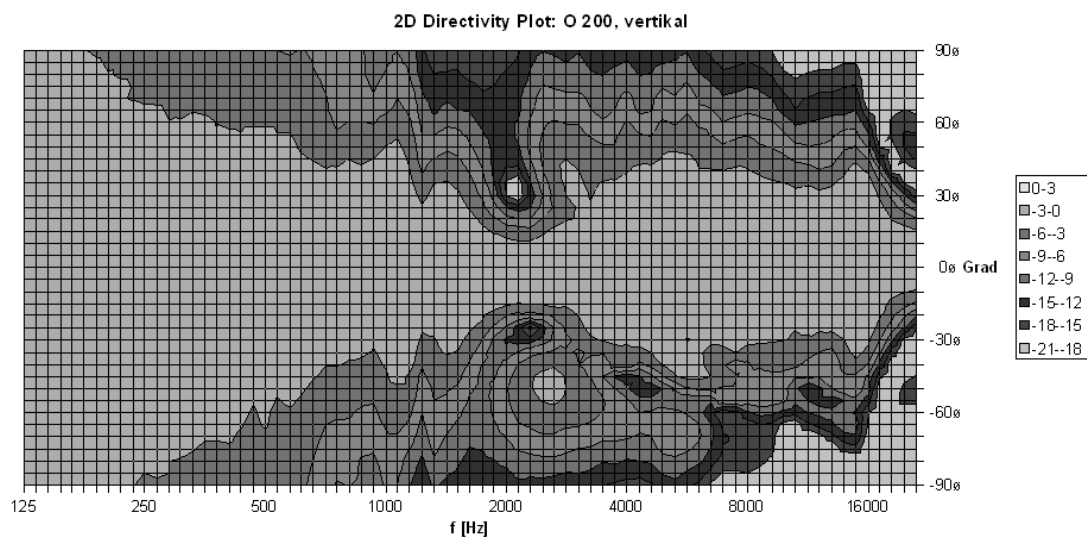


Figure 5: Vertical Directivity

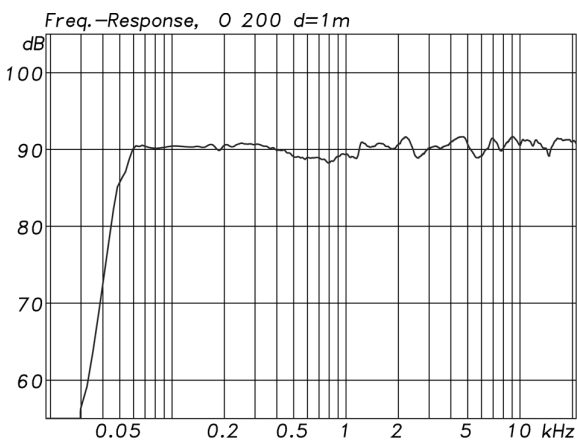


Figure 6: Frequency Response (free field)

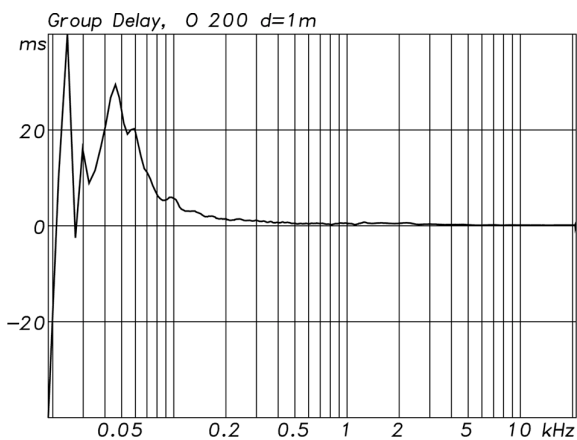
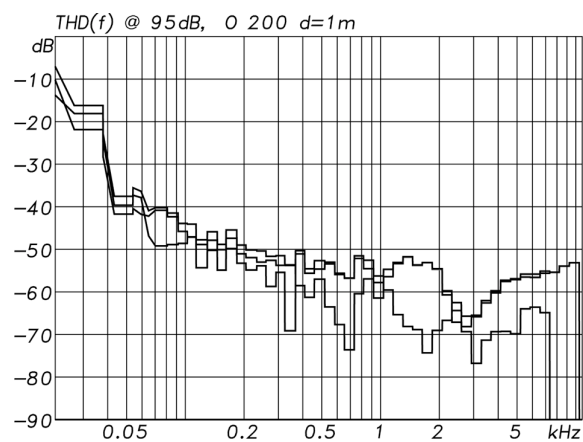


Figure 8: Group Delay



**Figure 7: THD, 2nd and 3rd order distortion
@ 95 dB/SPL and 1 m distance**

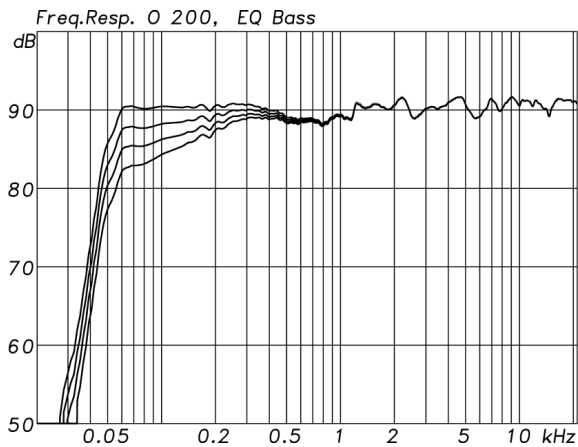


Figure 9: Location equalization

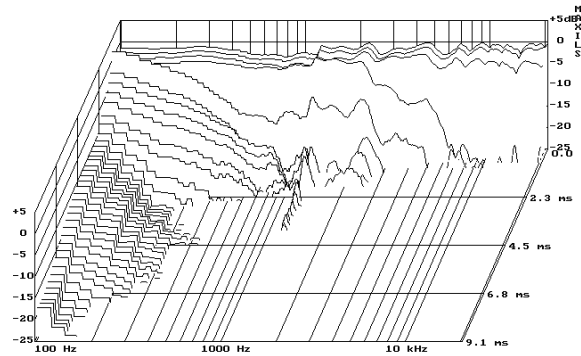


Figure 10: Cumulative Spectral Decay Plot

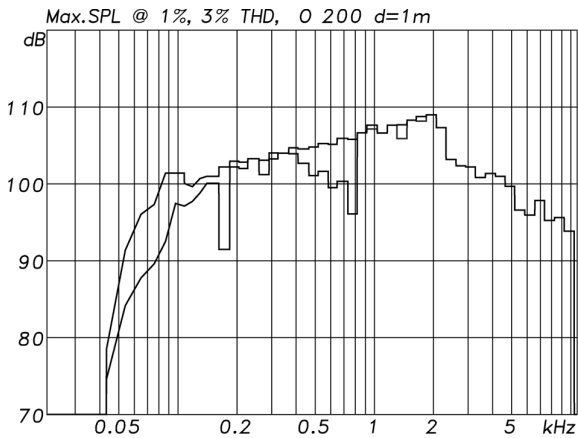


Figure 11: Max. SPL @ 1m

The monitors 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:

KLEIN + HUMMEL GmbH
Customer service
Zeppelinstrasse 12
73760 Ostfildern / Germany

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. It's 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. Technical Specifications

O 200

Free field frequency response	60 Hz - 20 kHz \pm 2 dB 50 Hz - 24 kHz \pm 3 dB
Self generated noise level at 10 cm	\leq 20 dB(A)
Total Harmonic Distortion 125 Hz and above @ 1 m	< 0.5 % @ 95 dB/SPL
Maximum SPL in half space, 3% THD at 1 m distance averaged between	110 dB/SPL 100 Hz and 6 kHz
Electronics	
Power amplifiers	
Bass amplifier	50 W at 8 Ohm (THD \leq 0.1 %)
Treble amplifier	50 W at 6 Ohm (THD \leq 0.1 %)
Crossover section	
Crossover frequency	2.5 kHz
Crossover slopes	24 dB / octave
Subsonic filter	40 Hz, 18 dB/octave
Protection circuit	against overload of both drivers
Input	
Impedance	14 kOhm (transformer balanced floating)
Sensitivity	+ 6 dBu, switchable to 0 dBu
Volume control	continuously variable from 0...-24 dB
Common mode rejection ratio	\geq 60 dB @ 15 kHz
Equalization	
4 position switch positioning on rear/side walls	0; -2.5; -5; -7.5 dB
Drivers	magneticallay shielded
Bass	6.5" (170 mm) Ø, Polypropylene Diaphragm
Treble	1" (25 mm) Ø, Titanium Fabric Dome Tweeter
Connectors	
Mains	3 - terminal Euro connector
Signal input	XLR connector 3-pin female
Power consumption	
Idle	15 VA
Full power	120 VA
Mains	230 V AC, 50/60 Hz, other voltages on request
Dimensions (W x H x D)	207 x 325 x 250 mm
Volume	11.4 liters
Weight	10 kg
Cabinet finish	enamel charcoal - grey RAL 7021
Accessories	LH 26 mounting bracket LH 28 tripod bushing (LH 26 mounting bracket required) LH 29 TV - spigot (LH 26 mounting bracket required) LH 27 ball clamp mount (LH 26 mounting bracket required) C 15 eyebolt