SOUND DEVICES

HX-3

Headphone Distribution Amplifier
User Guide and Technical Information

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General Description

The HX-3 from Sound Devices is a portable, stereo headphone amplifier designed for critical audio monitoring. The audiophile-quality headphone amp is ideal for adding headphone feeds for portable and studio applications.

The HX-3 provides three independent headphone feeds from balanced or unbalanced, line sources. Each headphone output has its own level control, peak LED, and ¼-inch output connector. With its extended bandwidth and high drive capability the HX-3 can drive headphones of various impedances to high levels with very low distortion, important for monitoring in high SPL environments. It is powered from two-AA batteries or external DC.

The HX-3 will provide years of superb audio performance under the most punishing field conditions.

Features

High Performance Headphone Amplifier

- Three independent headphone outputs with individual volume controls.
- Dynamic range exceeding 120dB.
- 10 Hz to 50 kHz audio bandwidth.
- Capable of driving headphones to high levels with very low distortion.
- Peak indicators show overload of each headphone feed.
- Stereo / Mono switch.

Flexible Inputs / Outputs

- Two balanced XLR line level inputs or unbalanced ¼-inch and 1/8-inch stereo inputs.
- Loop output to connect additional HX-3's in series for extra headphone outputs.

Flexible Powering

- Internal battery power (two AA) for convenient, low cost power.
- Excellent battery life - greater than 10 hours (nominal drive level with alkaline batteries).
- External 5-17 VDC powering.

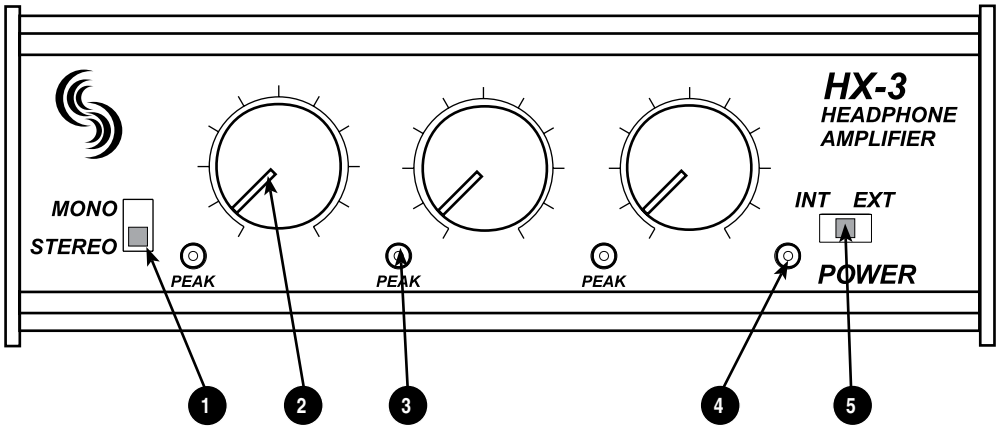
Durable Mechanical Construction

- High strength aluminum chassis withstands punishing field conditions.
- Strap loops on each side for easy mounting or wearing.
- Panel-mounted connectors for strength and reliability.
- Easy access battery compartment for quick battery changes.

Specifications

Frequency Response:	10 Hz – 50 kHz, +/-1.0 dB, any input to any output, gain control set to 50%
Voltage Gain:	<table><tr><th>Gain</th><th>Loop Out</th><th>Headphone Output (1,2,3)</th></tr><tr><td>Bal. Line</td><td>–3 dB</td><td>34 dB</td></tr><tr><td>HP Input</td><td>–1 dB</td><td>35 dB</td></tr></table>
Output Clipping Level:	+18 dBu minimum with 600 ohm load +16 dBu minimum with 300 ohm load
Headphone Output Impedance:	200 ohms
Input Clipping Level:	XLR: +24 dBu minimum
Dynamic Range: **(Balanced line inputs)**	120 dB minimum
THD + Noise:	0.03% maximum (from 10 Hz – 22 kHz @ +10 dBu input and output level, 300 ohm load, 10 Hz – 22 kHz filter bandwidth)
Inputs:	XLR: electronically balanced, 22k ohm input impedance 1/4-inch unbalanced: 9.1k ohm impedance 1/8-inch unbalanced: 9.1k ohm impedance **Note:** only one set of inputs (balanced or unbalanced) should be connected at a time.
Loop Output:	Unbalanced, 200 ohm output impedance
Internal Voltage Rails:	±15 V and –15V, regulated
Power:	**Internal**: 2 AA alkaline batteries, 12 hours life typical driving one 75 ohm headset. **External**: 5–17 VDC via threaded coaxial connector, (5.5 mm outer diameter, 2.1 mm inner diameter), pin positive, sleeve negative. Voltages above 17 VDC cause no damage to unit, but will open an internal poly fuse. Poly fuse will reset when voltage is removed.
Power LED:	Green indicates power and good battery. Red indicates power with low batteries. LED turns red when approximately 4 hours of battery life remain.
Operating Temperature Range:	0 to 70° C 32 to 160° F
Dimensions:	43 mm x 94 mm x 140 mm (h x w x d) (1.7" x 3.7" x 5.55")
Weight: (unit only)	0.56 kg, 1.24 lbs.
Included Accessories:	1/4-inch to 1/8-inch Tip-Ring-Sleeve interconnect cable rubber feet (4)

Front Panel Controls



1. **Stereo/Mono Switch**
   Sums stereo and two-channel audio program to mono for mono headphone monitoring.

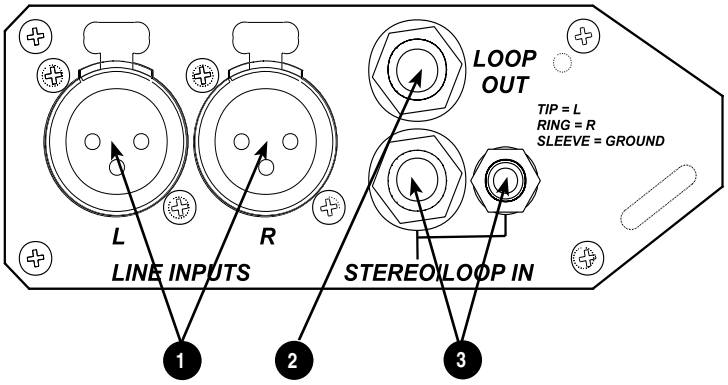
2. **Headphone Gain**
   Controls Volume of each headphone output.

3. **Headphone Peak LED**
   Illuminates 3 dB before clipping to indicate onset of headphone distortion.

4. **POWER LED**
   Bi-color LED illuminates green when the unit is powered and changes to red when approximately four hours of battery life remain.

5. **POWER Switch**
   Powers the unit from either Internal batteries, or External DC. Seamless switchover from each power source.

Input Panel Connectors

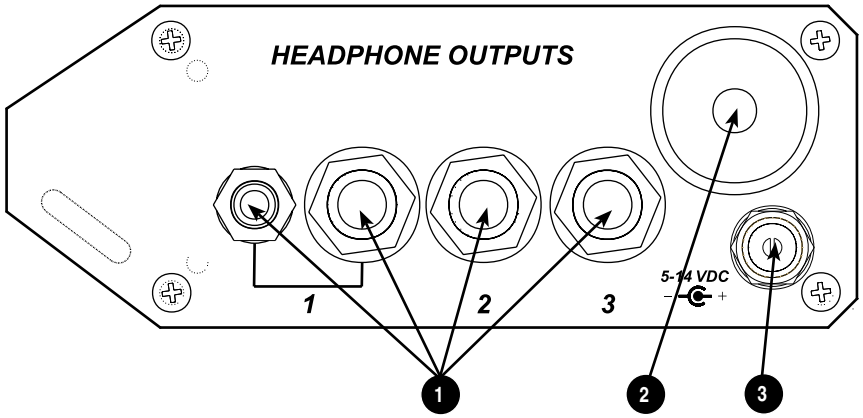


1. **XLR Line Inputs**
   Line level, balanced inputs.

2. **¼-Inch and 1/8-inch Tape Level Inputs**
   Unbalanced, stereo, Tip-Ring-Sleeve inputs.

3. **Loop Output**
   Output connection enabling interconnection of multiple HX-3's. Loop Out is T-R-S, unbalanced stereo connection.

Output Panel Connectors



1. **HEADPHONE OUTPUTS**
   Panel mounted headphone jack for each output. Output 1 has 1/8-inch jack in parallel with ¼-inch jack.

2. **BATTERY Compartment**
   Requires two AA batteries for operation. Insert positive (+) end of battery first.

3. **DC Input**
   Locking coaxial DC input accepts voltages from 5 to 14 VDC.

Operational Notes

Headphone Outputs

The HX-3 uses independent drive circuits for each of its three isolated headphone circuits. Because of the bi-polar power supply, the HX-3 can provide high levels of power to each headphone feed.

The HX-3 is capable of driving headphones to dangerous levels. Take precautions to prevent hearing damage.

Powering the HX-3

The HX-3 is designed to operate on two AA alkaline cells for approximately 15 hours into 75 ohm headphones (at nominal levels). The audio performance of the HX-3 does not vary throughout the life of the batteries.

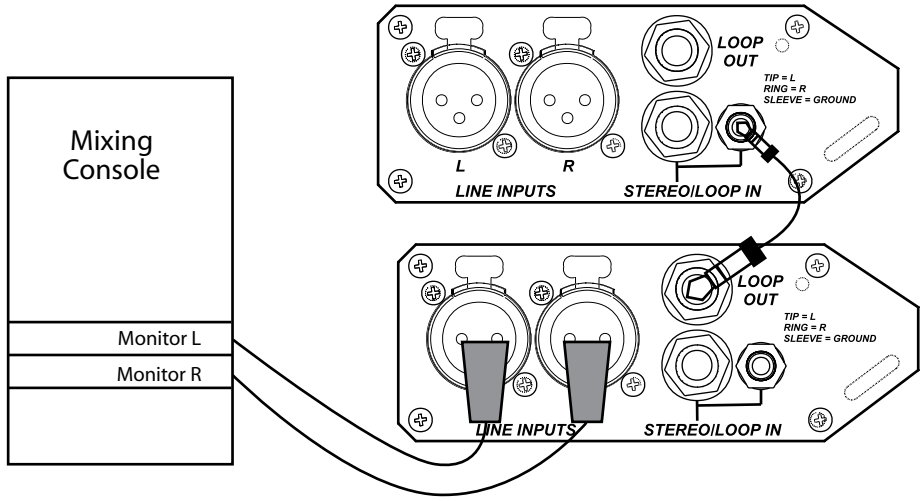
Several factors affect battery life including: battery chemistry, ambient temperature of operation, headphone impedances, headphone drive levels, and the number of headphones in use. The chart below can be used as a starting point to estimate battery life. Experimentation is recommended to determine battery life for each individual setup. Note: Nickel-Cadmium batteries are not recommended in the HX-3 since these batteries have lower energy per cell than other types and will result in very short service.

Battery Type	Operational Characteristics	Battery Life
Duracell AA MN 1500	powered, idle	15 hrs.
Duracell AA MN 1500	driving single, 75 ohm headphones at nominal level	9 hrs.
Duracell AA MN 1500	driving three, 75 ohm headphones at high levels	8 hrs.

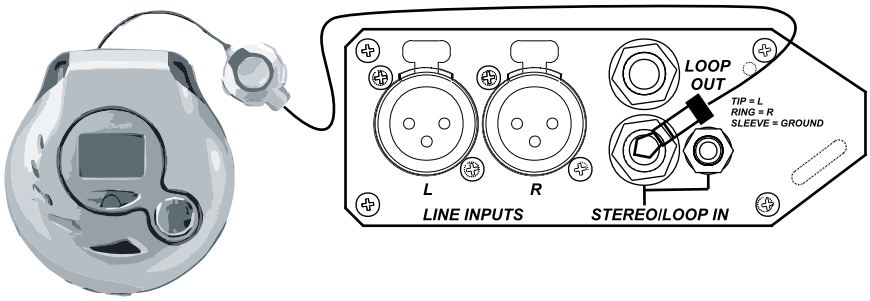
(Test conditions: 70° F)

Connection Diagrams

The HX-3 can be used in a variety of headphone applications. Below are a few examples of interconnection setups using the HX-3.



One or more units can be added and "daisy-chained" for additional headphone feeds from a mixing console. Loop additional HX-3 amplifiers with the included Link cable.



The headphone outputs of portable audio electronics can be connnected to the HX-3 for additional headphone feeds. The included 1/4-inch to 1/8-inch can be used to connect the line-out or headphone output to the HX-3.

CE Declaration of Conformity

According to ISO/IEC Guide 22

Sound Devices, LLC
300 Wengel Drive
Reedsburg, WI 53959 USA

declares that the product, HX-3 is in conformity with and passes:

EN55103-1, (1997)	Emissions standard for product family audio devices for professional use
EN55103-2, (1997)	Immunity standard for product family audio devices for professional use
EN55022 (1995)/ CISPR22 (1997)	Radiated and Conducted emissions, Class B
EN61000-4-2 (1997)/ IEC1000-4-2 1995	ESD - 6kV contact, 8kV air-discharge
EN61000-4-3 (2001)/ IEC1000-4-3 (2001)	Radiated RF immunity, 10 V/m, 80% 1 kHz amplitude modulation
EN61000-4-4 (1995)/ IEC1000-4-4 (1995)	EFT Burst, I/O lines, ±0.25 kV to ±1.0 kV,
EN61000-4-6 (1996)/ IEC61000-4-6 (1996)	Conducted RF immunity, 10 V, 80% @1 kHz amplitude modulation

Tested by L. S. Compliance, Inc. Cedarburg, Wisconsin
February 15, 2003

Matthew Anderson
Director of Engineering
Sound Devices, LLC

FCC Statement

This device has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

Limitation of Liability

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Warranty and Technical Support

Warranty & Service

Sound Devices, LLC strongly encourages you to register your product.

Registering can extend your warranty and ensures you will receive timely updates.

www.sounddevices.com/support/registration

Read your warranty here:

www.sounddevices.com/support/warranty

For all service, including warranty repair, please contact Sound Devices for an RMA (return merchandise authorization) before sending your unit in for repair. Product returned without an RMA number may experience delays in repair. When sending a unit for repair, please do not include accessories, including SSD drives, CF cards, batteries, power supplies, carry cases, cables, or adapters unless instructed by Sound Devices.

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Technical Support / Bug Reports

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Sound Devices cannot guarantee that a given computer, software, or operating system configuration can be used satisfactorily with the HX-3 based exclusively on the fact that it meets our minimum system requirements.

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