We make everyday life safer

Hearing Loop

ABT-HL-7

EN

User Manual

CE

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1. Safety Instruction

The amplifiers must be installed indoors, positioned to avoid accidental damage and **MUST NOT** be subjected to excessive dust, conductive or corrosive gases or liquids, nor subject to temperatures, input voltages and electrical loads outside the stated operating range.

DO NOT dismantle or attempt to modify the amplifier, there are no user-serviceable fuses or parts inside the amplifier. For repair, please contact technical department.

⚠ **WARNING:** The surface of this unit may become hot during continued use.

» Read these instructions.
» Keep these instructions.
» Heed all warnings.
» Follow all instructions.

⚠ **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

» Clean only with dry cloth.
» Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
» Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
» Protect the mains lead from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
» Only use attachments/accessories specified by the manufacturer.
» Unplug this apparatus during lightning storms or when unused for long periods of time.
» Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as the mains lead or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

2. Ambient System Presentation

With more than twenty years of experience, Ambient System has quickly established itself as a leading manufacturer of Public Address, Voice Alarm systems and counter intercoms. The constant growth of market share in Europe provides confirmation of the quality of Ambient System commercial and technical approach.

2.1 Products

The company now offers a full range of sound equipment: microphones, preamplifiers, digital processors, digital audio matrixes, loud-speaker monitoring systems, amplifiers, etc. AMBIENT SYSTEM designs and manufactures leading products in the voice alarm systems market which have been certified EN 54-4, EN 54-16, EN 54-24 compliant.

2.2 Development

Thanks to a development team that includes thirty engineers, and to constant investment, we are able to respond rapidly to the demands of our various markets with specific solutions and cutting edge technology. We have distributors in more than fifteen countries in Europe and the Middle East, with whom we have carried out major projects. In choosing Ambient System, you are guaranteed a trustworthy partner that can be counted on for the long term.

2.3 Ambient System Field

Ambient System's audio systems have been installed in the following markets:

» Railways,
» Subways,
» Airports,
» High rise buildings,
» Hotels,
» Restaurants,
» Shopping malls,
» Theme parks,
» Places of worship,
» Stadiums,
» Museums,
» Industrial buildings,
» Industrial plants,
» Commercial buildings.

3. Important Notes

These instructions are general and cannot be considered to cover every aspect of hearing loop system design and installation. We recommend you read BS 7594 - Code of practice for audio-frequency induction-loop systems (AFILS) and BS EN 60118-4 - Induction loop systems for hearing aid purposes. Other national standards of design/installation/commissioning should be referenced where pertinent.

⚠ **IMPORTANT:** DO NOT power up the system before completing all connecting procedure.

⚠ **IMPORTANT:** The amplifier MUST NOT be operated without a loop connected to it.

4. Equipment guarantee

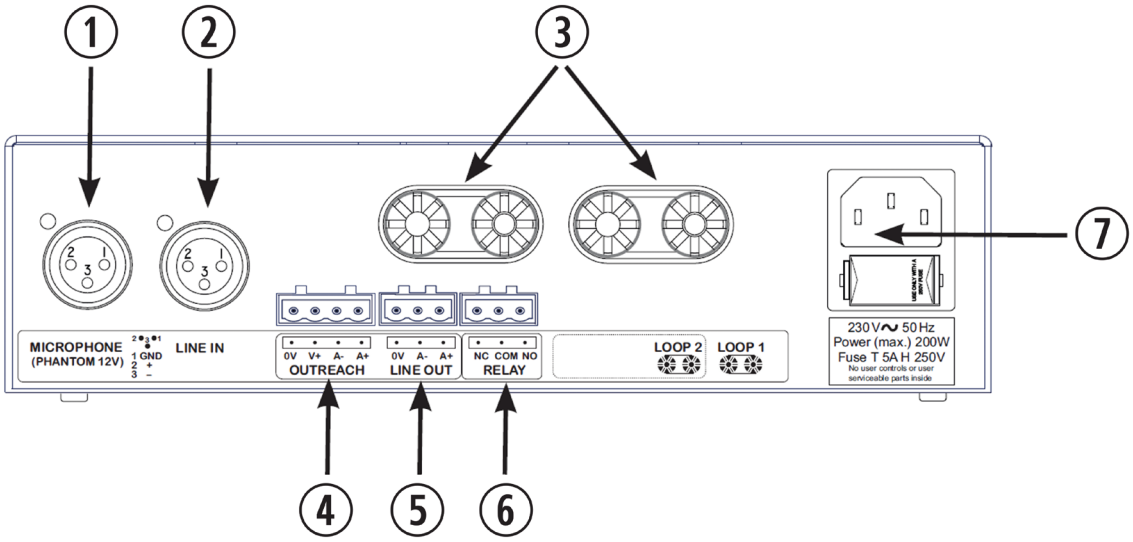
This equipment is not guaranteed unless the system is installed and commissioned in accordance with regional or national standards by an approved and competent person or organisation.

5. General

The amplifier mixes and amplifies the microphone, line in, outreach input signals and feeds them through its sophisticated automatic gain control (AGC) circuitry before outputting them to the hearing loop(s).

6. Sockets description

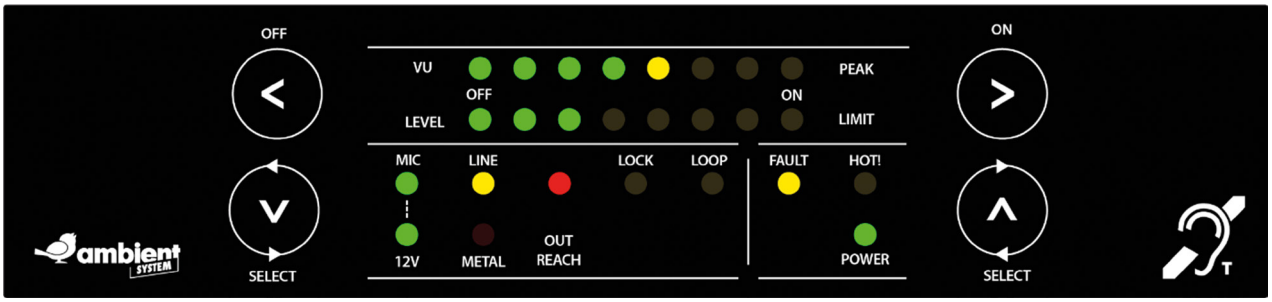
6.1 Desktop model



Drawing 1. Rear panel of desktop version

Index	Interface	Description
①	Microphone	Accepts standard three-pin male XLR type connector. Optional 12V phantom power is available for electret microphones.
②	Line In	Accepts standard three-pin male XLR type connector.
③	Loop 1 & Loop 2 (if fitted)	Induction Loop Connectors 1 & 2. Heavy duty binding posts.
④	Outreach	4-way connector. Input for the outreach plate audio input system (see page 6 for further details).
⑤	Line Out	3-way connector for audio output.
⑥	Relay	Fault relay provides contacts for remote fault monitoring.
⑦	AC Power Input:	230V a.c. mains lead connector.

7. Interface



Drawing 2. Front control panel

» Use **SELECT** ▼ & ▲ buttons to select the function you want to adjust.

» Use ◄ **OFF** ◄ & ► **ON** ► buttons to adjust the setting for the selected function. Current selection is indicated by an LED light at that position:

› With **MIC** selected, ◄ & ► ► adjust the microphone input level.

› With **LINE** selected, ◄ ◄ & ► ► ► adjust the line input level.

› With **LOCK** selected, ◄ ◄ & ► ► ► unlock or lock the amplifier.

⚠ **NOTE:** The unlock code is ► ► ◄ ◄ , i.e. RIGHT-RIGHT-LEFT-LEFT.

› With **LOOP1** selected, ◄ ◄ & ► ► ► adjust the current output for loop 1.

› With **LOOP2** selected, ◄ ◄ & ► ► ► adjust the current output for loop 2 (if fitted).

› With **PHASE** selected, ◄ ◄ & ► ► ► turn off or on the phase shift between loop 1 and loop 2.

› With **OUTREACH** selected, ◄ ◄ & ► ► ► adjust the outreach input level.

› With **METAL** selected, ◄ & ► ► ► aadjust the metal compensation level.

› With **12V** selected, ◄ ◄ & ► ► ► turn off or on the microphone phantom power.

» When a function with a level is being adjusted, the row of LEDs between LEVEL & LIMIT will progressively light up with ► ► or turn off with ◄ ◄ . The number of LEDs lit up indicates the strength of the function, e.g. the mic volume.

» When a function that is either on or off is being adjusted, the LED under OFF indicates that the function is off and the LED under ON indicates that the function is on.

» Indicators

› VU – the row of LEDs to the right of VU are a VU meter showing the instantaneous amplitude of the audio.

- If LOOP1 is selected, the VU meter shows the amplitude of loop 1 current.
- If LOOP2 is selected, the VU meter shows the amplitude of loop 2 current (if fitted).

› For other selections, the VU meter shows the amplitude of the mixed inputs.

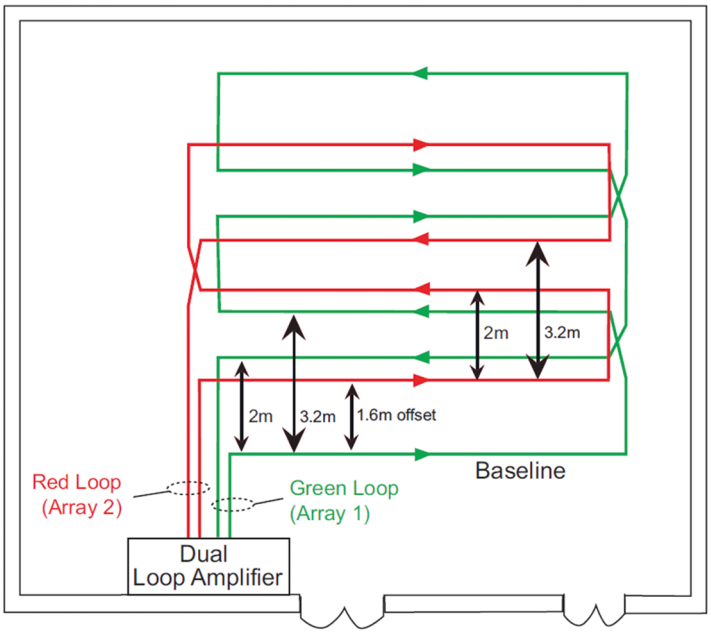
› **HOT!** indicates that the output stage is getting hot. In normal operation this is unlikely to occur but may happen during installation when the loop performance is being adjusted or measured with a sine wave

input. The loop amplifier will continue to function normally while HOT! is lit, but it indicates that output stage may shut down to protect from overheating.

- **FAULT1** indicates that loop 1 has shut down because of either overheating or excessive current.
- **FAULT2** indicates that loop 2 (if fitted) has shut down because of either overheating or excessive current.
- **POWER** indicates that the loop amplifier is receiving mains power.

8. Phased array hearing loop systems (model dependent)

Increasingly to ensure uniformity of the magnetic field, especially in larger installations where large amounts of metal are present and to limit overspill, phased array loop systems are being specified. A phased array system works by producing two AFILS signals 90° out of phase with each other. These signals are connected to two identical hearing loops laid in a special overlapping pattern. The resultant magnetic field is evenly spread within the covered area but falls off quickly outside the loop.

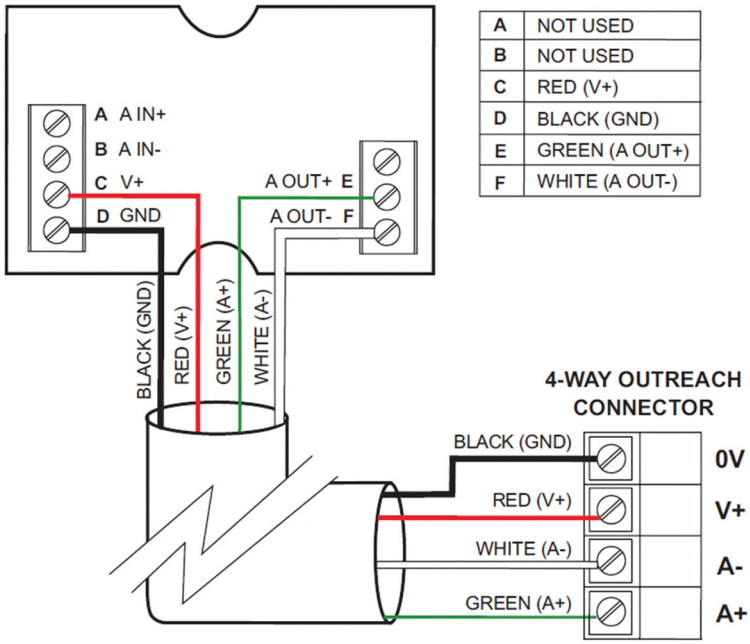


Drawing 3. Diagram for a typical dual loop design.

9. Amplifier connections

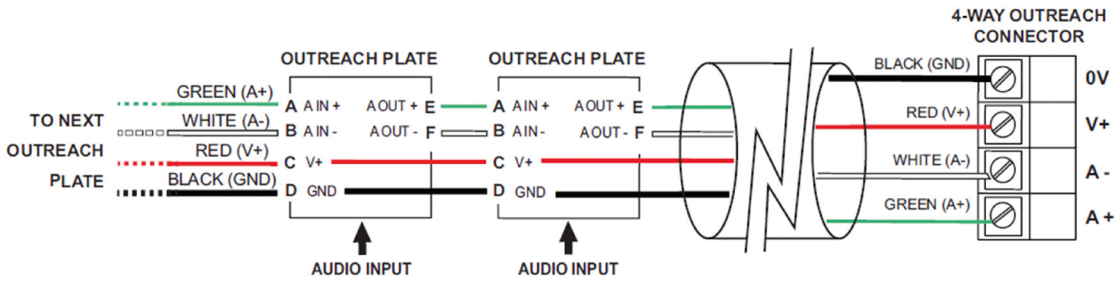
9.1 Outreach Connector

The amplifiers are fully compatible with the outreach plate audio input extension system. This system allows the connection of multiple microphones, or line level inputs via a range of specially designed wall, ceiling or desk-mountable single gang plates.
Up to ten outreach plates (any mix) can be daisychained to the amplifier's 'outreach' connector with cable lengths up to 100m (total network length) easily achievable using standard two pair audio cable such as Belden 8723 - see typical wiring diagrams.



A	NOT USED
B	NOT USED
C	RED (V+)
D	BLACK (GND)
E	GREEN (A OUT+)
F	WHITE (A OUT-)

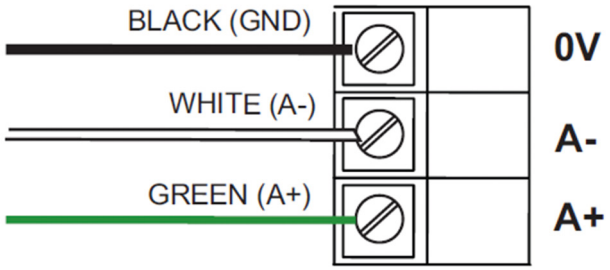
Drawing 4. Single outreach plate wiring connection (e.g. APL / APM Outreach Plate)



Drawing 5. Multiple outreach plate wiring connection

9.2 Line Out Connector

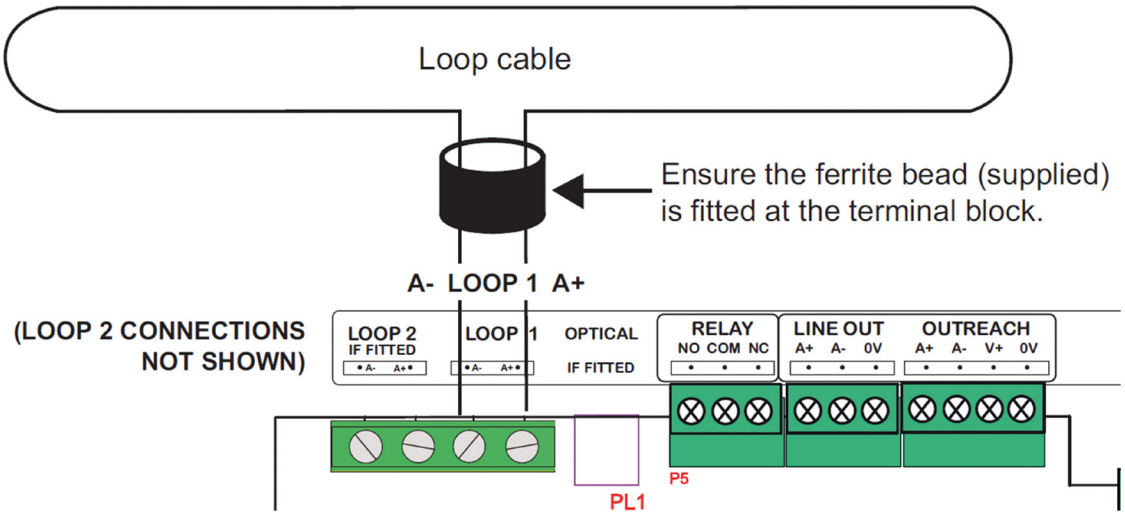
This output may be used to connect multiple hearing loop amplifiers to cover larger areas. The audio line output should be wired with signal +Ve from A+, signal -Ve from A- and screen from 0V, as shown right. The amplifier mixes and amplifies the microphone, line in, outreach input signals and sends this signal through the Line Out connector before feeding them through the AGC circuitry.



Drawing 6. Line Out Connector

9.3 Loop Connectors (Wall-Mount Model Only)

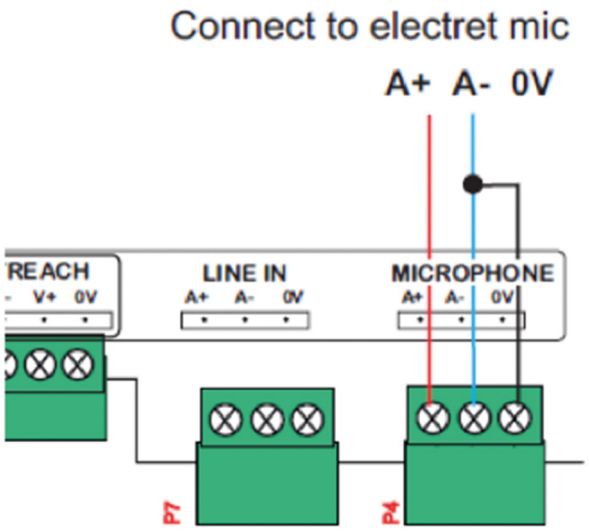
The loop cable should be laid in a single turn (unless otherwise instructed by project designer) and wired into the amplifier's terminal block labelled LOOP1 and LOOP2 (if fitted), as shown below.



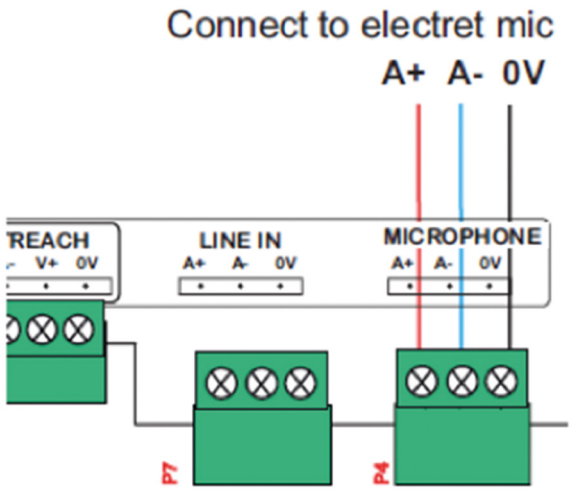
Drawing 7. Loop connection

9.4 Microphone Connector (Wall-Mount Model Only)

A Mic level input should be wired to the amplifier's Microphone input, as shown below. Unbalanced microphones should be wired as signal +Ve to A+, screen to 0V and A- linked to 0V. Balanced microphones should be wired to 0V, A- and A+ (A+ carries the 12 V phantom power).



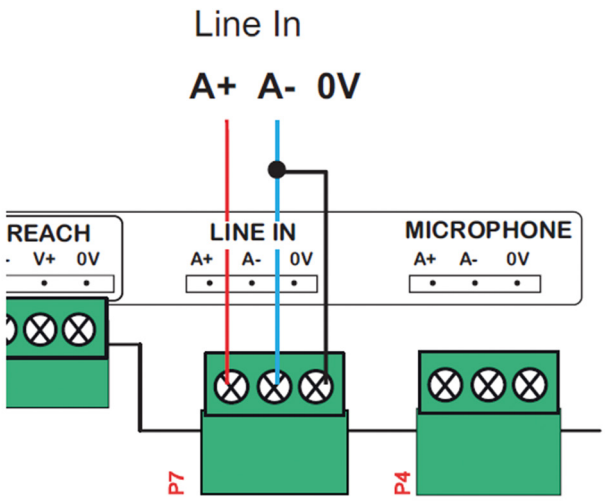
Drawing 8. Unbalanced Mic



Drawing 9. Balanced Mic

9.5 Line In Connector (Wall-Mount Model Only)

Unbalanced line level inputs should be wired as shown below with signal +Ve to A+, screen to 0V and A- linked to 0V. Balanced line level inputs should be wired using outreach plates.



Drawing 10. Unbalanced Line In

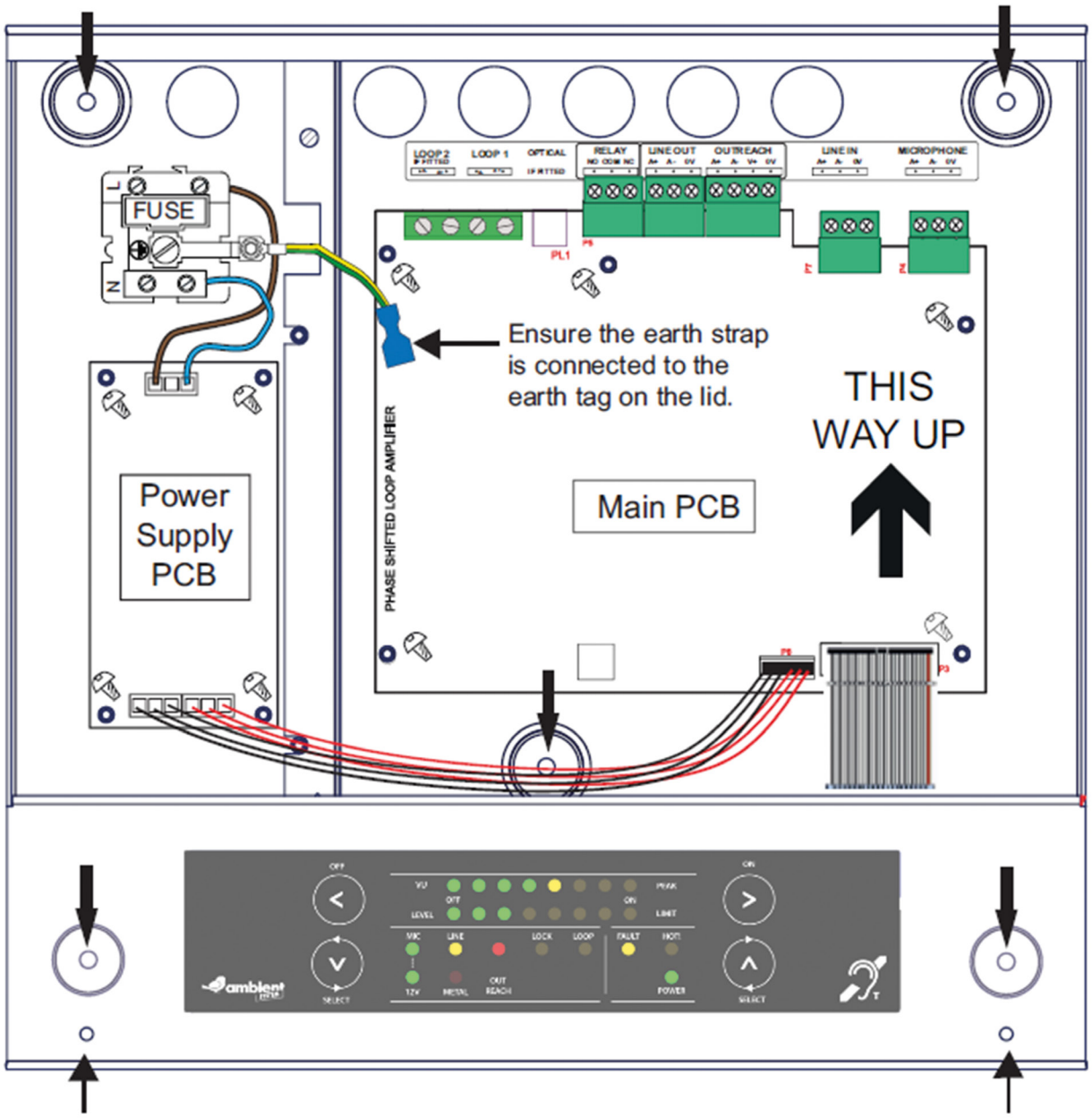
10. Mounting device

10.1 Desktop version

These amplifiers have been designed so they can be left free-standing on a shelf, tabletop or desk. The four rubber feet provided in the amplifier's accessory pack should be stuck to the underside of the amplifier.

10.2 Wall mount versions

Using the five mounting holes provided, mount the metal base securely onto a vertical wall, ≤2m mounting height. Assess the condition and construction of the wall and use suitable screw fixings for the in-service weight of the product. The mounting holes are suitable for use with ø4-5mm countersunk screws. Any dust or swarf created during the mounting process must be kept out of the enclosure and due care must be taken not to damage any wiring or components.



Drawing 11. Wall mount version – holes for mounting

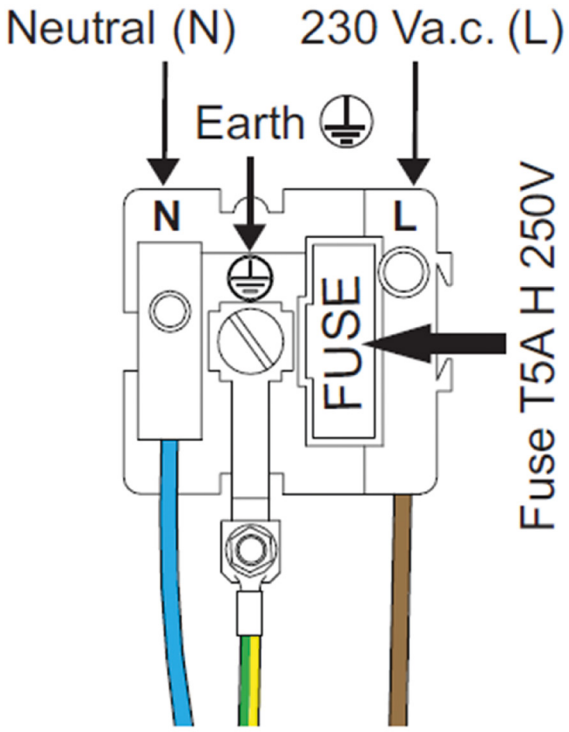
Remove knockouts

Decide how the wiring will be brought into the amplifier and remove the required knockouts for cable entry. A typical system would require knockouts for 230Va.c. mains, loop cable(s), microphone, line in and outreach plates. Knockouts should be removed with a sharp, light tap using a 6mm flatbladed screwdriver. If a knockout is removed fill the hole with a good quality 20mm strain relief, cable gland.

Observe proper segregation of wiring

Mains, loop and low power wiring must not come into contact, i.e. do not feed wiring through the same gland or allow wires of one type of connection to cross those of another.
The amplifier is surface mounted using the five mounting holes in the unit's base (shown above). Mounting holes are designed for ø4-5mm countersunk screws.

The metal lid may be removed for ease of mounting. Undo the two screws at the top of the front panel using a pozidriv screwdriver.



Drawing 12. Mains Wiring

Terminate the mains input cable (Live, Neutral, Earth) to the fixed mains connector in the base of the enclosure (shown left and above).

The 230V A.C. cable MUST enter the enclosure via one of the knockouts at the top left-hand corner of the enclosure. All wiring should be installed in accordance with the local/national standards. This equipment requires fixed wiring using three core cable (≥1.0mm2, <2.5mm2), fed from an isolating switched fused spur at 3A, or a 6A Type B circuit breaker to IEC/EN 60898-1, or suitable fuse.

⚠ **IMPORTANT:** DO NOT power up until the proper induction loop is installed, otherwise, the device WILL be damaged.

11. Power up and testing the system

The amplifier **MUST NOT** be operated without a loop connected to it.

⚠ **IMPORTANT:** DO NOT power up the system before completing connecting procedure.

11.1 Install Loop 1 Cable and Loop 2 Cable (if fitted)

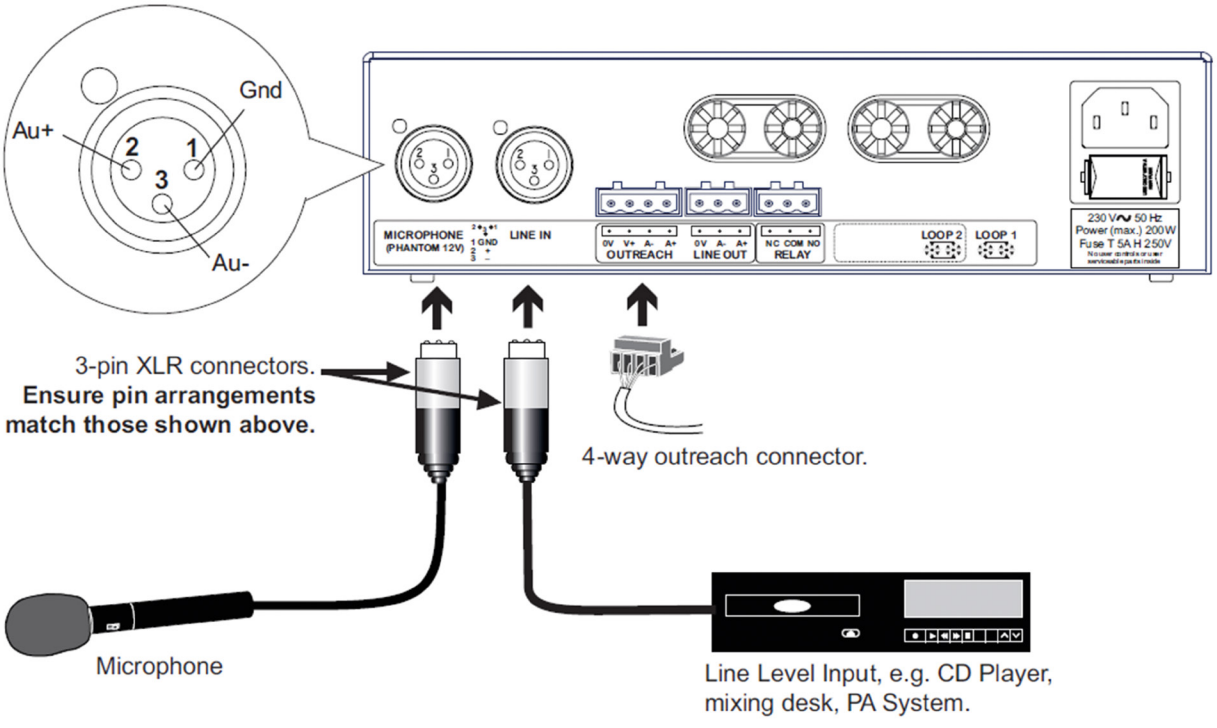
BEFORE connecting the loops to the amplifier, use a multimeter to check the loops are not shorted to ground at any point. It WILL damage the amplifier if a loop is shorted.

11.2 Connect Loop 1 Cable and Loop 2 Cable (if fitted)

Connect the loop(s) to the amplifier's binding posts using bare wire ends, 4mm plugs or spade terminals as appropriate.

11.3 Connect Input Signal Sources (model dependent)

Connect the relevant input signal sources, e.g. microphone, line in, and outreach to the amplifier, as shown below.

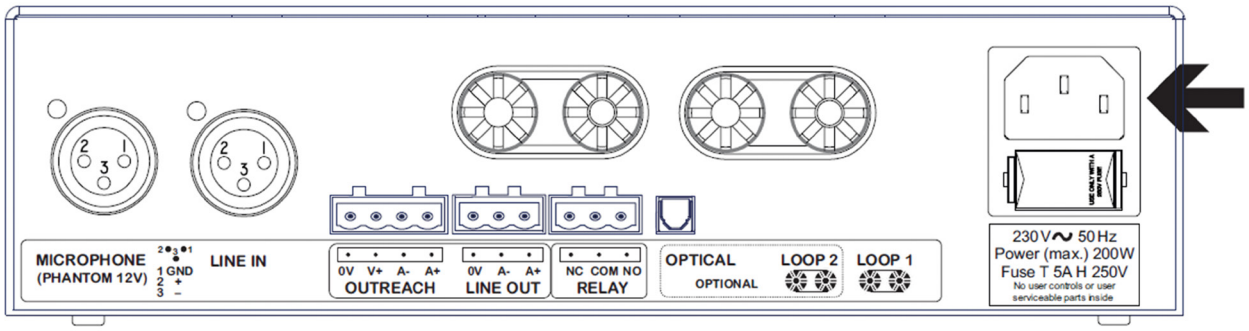


Drawing 13. Input Signal Sources

11.4 Power connection

Connect the mains lead (supplied) to a 230Va.c. wall socket and the amplifier's 230Va.c. connector. Switch on power and the amplifier will be unlocked with functions available to select.

⚠ **NOTE:** The amplifier will remember and retain its last settings if it is powered down.



Drawing 14. Power socket in desktop version

11.5 Set up the Amplifier's Inputs

Activate all relevant audio input source(s), i.e. mic., line in and outreach.
Select the relevant function using SELECT ▼ & ▲ buttons, e.g. LINE, and use the OFF ◄ & ► ON ► buttons to adjust the signal level until the LIMIT indicator flashes occasionally.

Repeat this procedure by selecting the relevant function and adjusting the signal level. If a microphone is used, enable phantom power by selecting 12V on the LED display. Also, enable PHASE (if fitted) on the display for phased array systems.

⚠ **NOTE:** On initial power up, the amplifier's inputs and outputs are factory set to their lowest settings.

11.6 Set up the Loop Drives

Select the LOOP1 function and use the ON ► button to increase the loop field strength, as shown below. For dual loop amplifiers, select the LOOP2 function and repeat this procedure.

⚠ **CAUTION:** Ensure the PEAK indicator is not permanently lit. This may cause the amplifier to shutdown to protect it from overheating.

11.7 Metal Compensation

For applications with high metal content in, or near, the hearing loop, select the amplifier's METAL function. Increase the metal compensation by small increments using the ON ► button until a natural balance is achieved.

⚠ **NOTE:** If high metal content is present, the amplifier's area of coverage will be reduced, and further reduced, as the metal compensation level is increased.

11.8 Test the system

Using a hearing loop test receiver, listen to the loop signal in all areas where coverage is required (use only professional devices with certificates and up-to-date calibration). If the signal level is not acceptable, adjust the LOOP1 and LOOP2 (if fitted) levels in small increments until it is.

Hearing loop systems require careful testing and calibration before operation.BS EN 60118-4 recommends that the achievable magnetic field strength of a hearing loop system over a 'covered area' should be 400mA RMS per meter.

We make everyday life safer

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