

Domestic Loop System (DLS)



Induction loop system for office and home Manual and instructions for use

This manual is intended to accompany the Ampetronic DLS (Domestic Loop System). The manual is a detailed guide to making the most of the DLS system, how to install it and how to use it. Installing, setting up and using the DLS induction loop system is very simple and requires no special skills or experience, however the manual will guide you through the whole process in detail.

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IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions for future reference.
3. Heed all warnings.
4. It is important to follow all instructions.
5. Do not use this equipment near to water.
6. Clean only with a dry cloth.
7. Do not place objects filled with water such as a vase near or on the equipment.
8. Do not install the DLS amplifier near to sources of heat such as radiators, stoves or other equipment producing heat.
9. Do not place the DLS amplifier in a fully enclosed space; ensure that the amplifier has ventilation when in use.
10. This equipment is designed only for servicing by qualified personnel. Servicing is required when the apparatus has been damaged or exposed to rain or moisture or has been dropped.

WARRANTY

This product carries a two year parts and labour guarantee which may be invalidated if instructions are not followed correctly or if the unit is misused or used for an unintended purpose.

Refer all enquiries relating to the product guarantees to your reseller or distributor.

DECLARATION OF CONFORMITY

Manufacturer: Ampetronic Ltd.

Unit 2, Trentside Business Village, Farndon Road, Newark, NG24 4XB.

Declares that: Ampetronic Domestic Loop Amplifier, type name 'DLS'

Conforms to the following directives and norms:

Directive 2004/108/EC

EMC: EN61000-6-3:2007 Emission

EN61000-6-1:2007 Immunity

Directive 2006/95/EC

Safety: EN60065: 2002

February 2014

J.R. Pieters, Managing Director

Ampetronic Ltd.

1 YOUR AMPETRONIC DLS

Your Ampetronic DLS will deliver excellent sound quality directly to hearing aids or special receivers, allowing users to hear direct high quality sound from any source, for example televisions, telephones, computers and doorbells. If you or people you know have a hearing impairment, the Ampetronic DLS can be very valuable and can dramatically improve quality of life within your own home or office.

How will the Ampetronic DLS help you?

BE INDEPENDENT

You will be in complete control of the volume that you hear without affecting others – no more arguments over the TV volume!

BE IN CONTROL

You can combine sounds from many sources, for example television, computer, telephone and a microphone so they are all at the ideal volume with no adjustment of hearing aids or sound sources.

HEAR CLEARLY

You can turn off all interfering background noise and hear only the sounds that you want to hear, improving concentration and reducing tiredness, and making listening to any sounds much more enjoyable.

BE SAFE

You can make sure that any alert or warning such as a fire alarm or doorbells can override whatever you are listening to, ensuring you never miss a phone call, a visitor, or an emergency.

Key features of the Ampetronic DLS

Excellent sound quality World leading technology used in professional audio systems around the world - no compromise in sound quality.

Multiple inputs Up to 4 different sound sources can be used simultaneously

Automatic volume control Volume automatically adjusts, however loud or quiet the TV programme or phone call – you do not need to adjust anything.

Design and safety standards Designed to the highest safety standards for your piece of mind.

Automatic priority switching for ‘alerts’ An alert input sound will stay off until an alarm rings or similar sound is heard, then it will override any other sound to ensure that you hear the warning sounds.

Discrete Designed to be elegant and discrete for either home or office environments

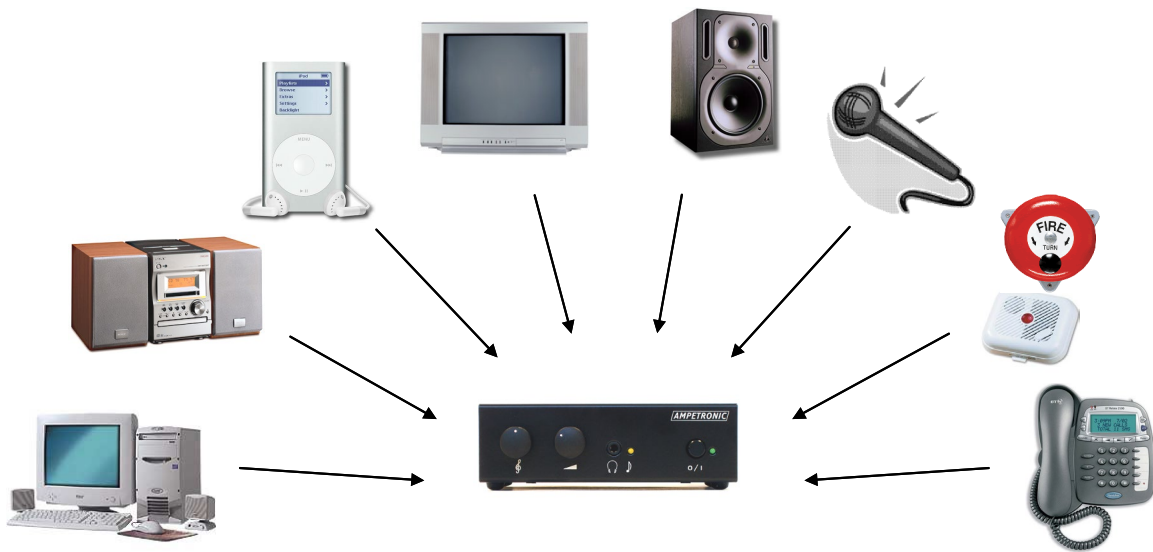
Simple installation Suitable for installation by anyone – no experience or knowledge required.

1.1 How and where can you use the DLS?

The Ampetronic DLS is suitable for use in the home or office, wherever you might need to hear entertainment, communications or alarms. The amplifier can be installed in any indoor environment and used wherever you want to be.

The Ampetronic DLS transmits sound directly to a hearing aid or receiver as safe and invisible magnetic waves. The sound can be received when the user is within a loop, which can be very small – as small as a single chair or sofa – or which can be around a room or area up to 5 x 6m or 30m² (a larger room or area can be used if a lower signal strength is acceptable which will depend greatly on your hearing aids or receiver).

The amplifier can take up to 4 different sound sources simultaneously, from a very wide range of possible sources, allowing you to fit the DLS system to match your lifestyle...



1.2 Induction loop systems in public places

Your DLS amplifier is only one form of induction loop system – you can benefit from this technology outside of your home or office too! You may want to know where you can get this benefit in public. Typically where an induction loop system is installed for your use you will see a sign like this...

Where you see the sign you should be able to switch your hearing aids to the 'T' setting (unless they switch automatically) or use an induction loop receiver. Where you don't see the sign, don't forget to ask why there is no induction loop!

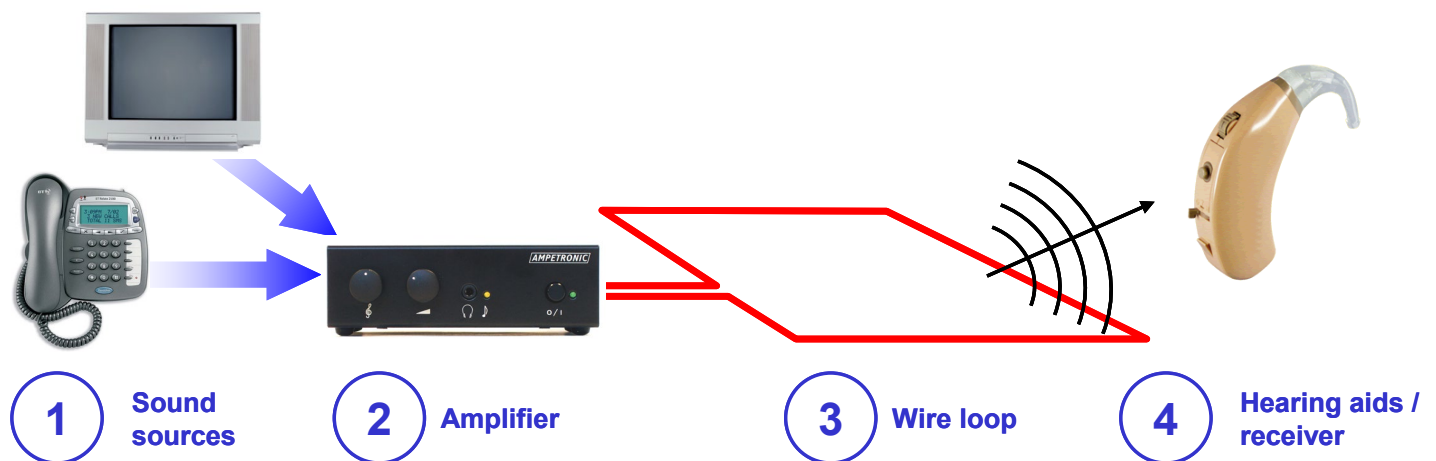


The variation in use of induction loop systems is significant from country to country so you will get the best information on where and how they are used by contacting the hard-of-hearing organisation in your country, by asking your hearing specialist or through an Ampetronic sales agent in your country.

2 INDUCTION LOOP SYSTEMS – THE BASICS

The Ampetronic DLS is an *Induction Loop System*. Induction loops are an excellent way to help anyone with a hearing impairment hear an audio communication or broadcast, both in public and in the home or office. Induction loop systems are often used in public environments from ticket counters and intercoms through to theatres and cinemas. In many countries induction loops are already the standard solution for helping the hard-of-hearing to gain fair access and can be found installed in most public environments in the UK and parts of Scandinavia.

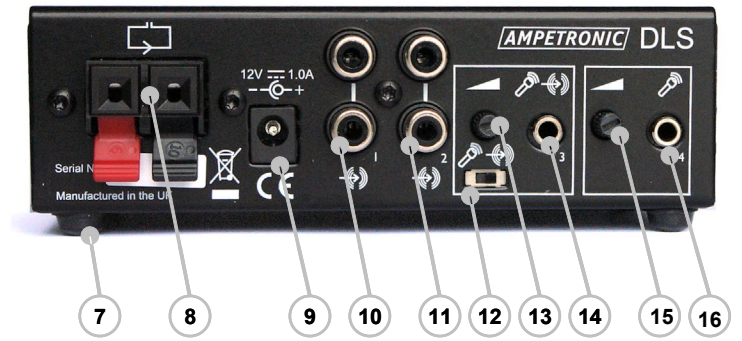
An induction loop system consists of four parts:



1. **One or more sound sources** – the sounds that you want to listen to directly, for example your television, hi-fi system, computer, telephone, a microphone, or alerts such as a doorbell or fire alarm
2. **An induction loop amplifier** – a special amplifier that is connected to the various sound sources and amplifies the sound as an electrical signal into a loop
3. **A wire loop** – a loop connected to the induction loop amplifier which goes around the area in which you would like to use the system, for example around the outside edge of your room, or around a small area such as a chair or sofa. The loop transmits the sound as a completely safe and invisible magnetic field in the area above the loop.
4. **Receivers, usually hearing aids** – a small coil picks up the sounds broadcast through the loop. Coils – sometimes known as ‘T-coils’ or ‘telecoils’ – are often found within hearing aids, either with a small switch marked ‘T’ or automatically switching.

Once an induction loop system has been installed and set-up it should require no attention, adjustment or maintenance. At any time a user can switch their hearing aids or use their receivers to hear the sounds being broadcast into the loop system.

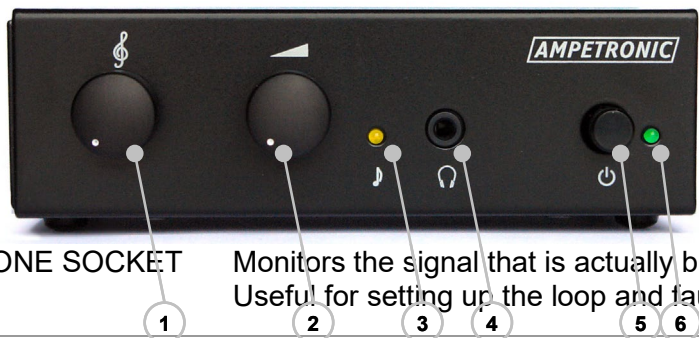
3 THE AMPETRONIC DLS AMPLIFIER



FEATURE

DESCRIPTION

| FEATURE | DESCRIPTION |
|------------------------------------|--|
| 1. TONE CONTROL | Tone control – adjust bass and treble with knob at centre and marker for preferred sound. |
| 2. VOLUME | Volume control – adjust volume for loop. |
| 3. SIGNAL II | Signal II – adjust level to ensure that the loop sound is present. |
| 4. HEADPHONE SOCKET | Monitors the signal that is actually broadcast into the loop. Useful for setting up the loop and fault finding. |
| 5. POWER SWITCH | To turn power on and off. The Ampetronic DLS can be left on at all times or turned off when not used as preferred. |
| 6. POWER INDICATOR | Green light, on when the unit has power and is turned on. |
| 7. RUBBER FEET | To isolate the unit from vibration and heat and provide a secure and stable base in any installation. |
| 8. LOOP CONNECTOR | Speaker style connector for the two cable ends of the loop. |
| 9. POWER CONNECTOR | Power connector for the 12V DC power supply provided. |
| 10. INPUT 1 | Audio input with twin RCA connectors (see section 8) |
| 11. INPUT 2 | Audio input with twin RCA connectors (see section 8) |
| 12. INPUT 3 (ALERT) SWITCH | Selects line level (right) or microphone (left) for input 3 |
| 13. INPUT 3 (ALERT) LEVEL ADJUSTER | Adjusts sensitivity of input 3, setting the level at which a noise will trigger the alert (priority) input |
| 14. INPUT 3 (ALERT) | Alert input – sounds at this input will override other inputs, and be turned off when not in use |
| 15. INPUT 4 LEVEL ADJUSTER | Adjusts sensitivity of microphone input 4 as required |
| 16. INPUT 4 (MICROPHONE) | Microphone input for electret style microphone (provided) with minijack input |



4 DLS COMPONENTS

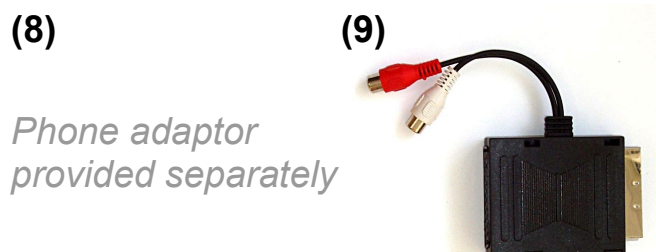
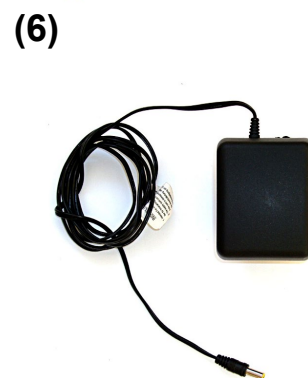
The DLS kit contents:

- DLS amplifier and instructions (1)
- 30m loop cable and cable clips (2)
- 1 x Clip microphone and cable (3)
- 1 x Mini-jack cable (4)
- 1 x RCA cables (5)
- 1 x power supply (6)

Additional accessories

Available through your local dealer.

- Chair pad (7)
A 40cm square pad to place under or in a cushion on a chair or sofa, to create a local field for one person, often instead of using the room loop cable.
- Telephone adaptor (8)
To connect a phone line or phone network to the DLS unit
- SCART adaptor (9)
To connect a television to the amplifier using a 'through-SCART' connection that does not affect your existing SCART connections.
- Additional cables and microphones



5 BEFORE INSTALLING

Before the DLS system is installed please check that your environment is suitable and that you have appropriate receivers or hearing aids as follows.

What receivers or hearing aids will you use?

To hear the output from the Ampetronic DLS you must use a receiver. For most people this will be hearing aids, which typically contain a telecoil or 'T' function. Hearing aids must be switched to the 'T' setting – some hearing aids *automatically* switch to the 'T' setting, others have a manual switch. Check with your hearing advisors or hearing aid suppliers if you are unsure of how to use your hearing aids with an induction loop system.

Without hearing aids the user needs to use a receiver and headphones to hear the output from the Ampetronic DLS. The supplier of your Ampetronic DLS can help you to find a suitable receiver.

Other loop systems

The DLS loop system will create a strong signal that you can hear within the area of the loop. There is also a much weaker signal that carries up to 10m away from a room loop. This can occasionally cause a problem if:

- there is another 'room loop' induction loop system in use within 10m of your room – you may pick up interference from this loop system which you can hear in your room, or you might create interference in someone else's loop.
- you use the system for confidential or private conversations with

microphones or the telephone that you do not want others to be able to hear.

Both of these problems can be avoided by using a chair pad accessory instead of a room loop.

Background noise

Occasionally poor quality electrical systems can create interference that you will hear if you try to use an induction loop system. Before installing the DLS, turn on your receiver or turn your hearing aids to the 'T' setting – if you hear a lot of background noise or hum then your room may not be appropriate for an induction loop system. Ask your supplier for advice if this happens.

6 INSTALLING THE AMPLIFIER

Where will you put the DLS amplifier?

The DLS amplifier should be placed somewhere where:

- cables for each sound source can reach the amplifier
- cable for the loop (chair or room loop) can reach the amplifier
- volume and tone controls can be adjusted by the user

The DLS amplifier can stand horizontally or be mounted on a panel (for example underneath a desk) or on a wall as shown on the next page.

Installing the amplifier

Find a suitable location for the amplifier at which there is access to power, to cables from the sound sources and for the loop cable.

The amplifier can either be freestanding or wall / panel mounted – see below for wall / panel mounting instructions.

The location for the DLS amplifier must be indoors and dry. The DLS amplifier must not be covered by material of any kind, and must have some air movement around the case to prevent heat build up.

Place the amplifier in its required location but *do not connect the power lead* until installation is complete.

Wall / panel mounting

Included in the DLS amplifier box is a template for marking out the two screw holes.

Decide on the location for the DLS amplifier and use the template to mark out two screw holes. Put two screws in place (screw heads should be 6-8mm diameter). Leave the screw heads protruding by 8-10mm from the wall. Hang the DLS amplifier on the screw heads using the holes on the bottom of the case.

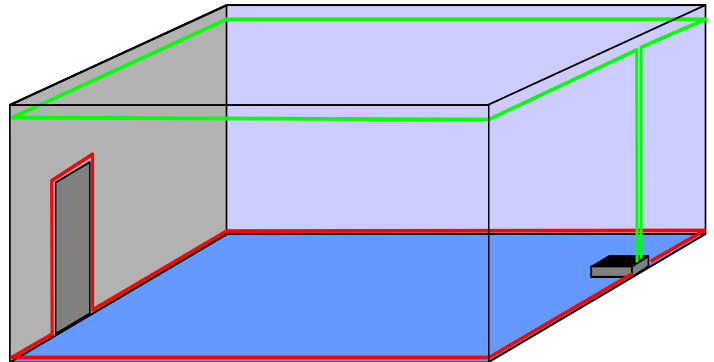


7 INSTALLING THE LOOP

Room loop installation

For moving, standing up or in different locations within a room.

A room loop is a loop of wire usually placed around the wall or skirting board around the edge of the room.



A wire can also be used around a smaller area underneath carpet or a rug. The loop must cover the whole area in which the user needs to hear the sound from the DLS induction loop.

A room loop is simple to install but does require you to be able to run a cable around your room and fix it safely using the cable clips provided, or another fixing method.

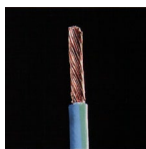
- Decide what the area is that needs to be covered by the cable.
- Start with one end of the cable at the DLS amplifier.
- Run the cable from the cable reel provided around the edge of the area that is required to be used. Typically this will be the edge of a room.
- Use cable clips (provided) to secure the loop cable, or place the loop cable underneath a rug or carpet.

- The cable should ideally be fitted at floor or ceiling level, never at head height. The diagram shows both options as a green and a red loop.
- Cable can run over doorways to prevent trip hazards, see the red loop in the diagram.
- Run the free end of the cable back to the DLS amplifier.
- Connect the cable ends to the amplifier – see the end of this section.
- The room loop is now installed.

Dealing with excess cable

If there is a large amount of excess cable (more than half of the reel) then it needs to be wound carefully or removed. *Please note that the minimum cable length for the system is 8m.*

The excess wire can be cut away with scissors or wire cutters. The end of the cable needs to have the plastic sheath removed to expose the metal ends as shown:



If you can not or do not want to remove the excess wire, coil the remaining wire as follows:

- Both ends should be connected to the amplifier as instructed above.
- Identify the point of the free cable that is the end of the useful loop – fix or hold this temporarily to the amplifier.
- Pull out the remaining cable into a loop and pull it away from the amplifier so it forms two parallel

cables with a sharp bend in the end.

- Coil the two parallel cables together, tie, tape or otherwise fix the coil in place.

Chair loop installation

The Chair Loop pad is an optional accessory. The pad comes with 5m of cable attached to allow you to sit anywhere within the room, and a connector for easy removal or connection. Make sure that the pad can be placed under or behind the chair that needs to be used and the cable can be run safely from the chair to the DLS amplifier.



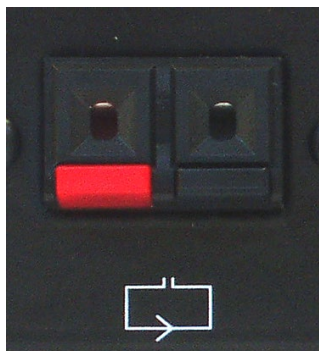
- Place the pad in one of three places: under the seat cushion; behind the seat back; or inside a seat cushion (seat or backrest)
- Run the connecting cables to the DLS amplifier.
- Cover the cable with a rug or other protection to prevent tripping or catching the cable.
- Connect both ends of the loop cable to the DLS amplifier, see the end of this section
- The chair loop is now installed.

Connecting the loop to the amplifier

Once the loop has been installed the two cable ends must be connected to the loop connector on the DLS amplifier (shown below).

First, terminate the cable ends if required so both cable ends have 5-15mm of exposed cable:

The connector has two holes above a red and a black switch. When the switches are pushed down the hole is open, when the switch is pushed up the hole is closed and the loop cable will be clamped in place.



Connect one end of the cable to the black terminal of the DLS amplifier:

- Push the black terminal of the loop connector down
- Put the cable end into the hole above the black switch
- Lift up the black switch to capture the cable in place

Connect the free end of the cable to the red terminal of the DLS amplifier in the same way.

Check that both loop wires are securely held by the connector on the DLS amplifier

8 CONNECTING SOUND SOURCES

The Ampetronic DLS can accept up to 4 different inputs simultaneously. What do you want to hear?

The possible sound sources are as follows for each of the 4 inputs on the DLS amplifier – work out what you want to connect before starting the installation.

Inputs 1 and 2 (line inputs)

Up to two of the following items can be connected:

- Television
- HiFi
- Radio
- Computer audio
- iPOD / MP3 player
- Telephone via adaptor (not provided)
- Select the appropriate cable for your equipment, minijack, RCA or SCART (optional accessory).
- Connect the two RCA jacks to the connectors of input 1 or input 2 and the other end to your equipment.

Input 3 (alert input)

This input can take any input, but is reserved for *warning* sounds, sounds that will not normally be heard, but when they occur it is important that they are heard.

Typically connected to one of:

- Microphone directed at an alert sound (e.g. telephone, fire alarm)
- Alert system (e.g. Bellman Visit Pager systems)

- Locate the switch on input 3 on the rear of the DLS amplifier and make sure that it is moved to the left for a microphone, to the right for a line input.
- If using a microphone, place it as close as possible to the source of the alert or warning sound, and connect the microphone jack to input 3 of the DLS amplifier.
- If using a line input, set up the sound source according to manufacturer's instructions, and connect using a minijack cable to input 3 of the DLS amplifier.
- Check that the alert input sounds when other inputs are also being used. Adjust the input level if required using the rear mounted level control. Make sure the input comes on when (and only when) an alert sound occurs.

Input 4 (microphone input)

This input will accept one microphone input. This might be used for:

- Room sounds, e.g. speech
- Television or other loudspeaker
- Mount the microphone so that it can pick up the sounds that you want to hear.
- Use the adhesive pad to attach to loudspeakers or any surface:
- Connect the microphone jack to input 4 of the DLS amplifier.

9 SETTING UP FOR FIRST USE

Plug the unit into power using the power cord, and turn the unit on at the front panel switch. The green light should come on when there is power.

- **SET UP INPUTS 1 & 2**

If you are using either of inputs 1 or 2, turn on one of the connected sound sources and make sure that it is producing sound. If there are adjustments on the sound source (e.g. on a PC) turn the output levels to maximum.

The yellow light should come on permanently or intermittently. If not then the input is too quiet. Change the programme material or turn up the input level until the yellow light is comes on.

- **LISTEN AND SET VOLUME & TONE**

Set up your receivers or hearing aids to receive the loop signal, switching hearing aids to the 'T' setting.

Sit in the position / positions that you will use the system in. Set the volume and tone on the amplifier to give you comfortable and clear sound.

- **SET UP ALERT INPUT 3 IF REQUIRED**

With input (1 or 2) connected and running with a continuous sound, test the level of the alert input (input 3) if used. In the unlikely event that the alert input does not cut in over the other sounds when a noise is produced, increase the level of this input sound, by moving the microphone closer to the sound source, or by adjusting the level

control on the rear of the amplifier next to input 3.

- **SET UP INPUT 4**

With a line input (1 or 2) connected and running with a continuous sound, test the level of the microphone input (input 4) if used. Adjust the microphone level on the back panel if required so the microphone volume is balanced with the other sound sources.

- **ADJUSTMENTS IN NORMAL DAY TO DAY USE**

The amplifier should now be set correctly. Gain is automatically controlled so you should hear the right volume level whatever you are listening to, so you should not need to make any adjustments at all.

10 TROUBLESHOOTING

The Ampetronic DLS should not require any maintenance or support. In the event that you have problems, please consult list of possible problems below before contacting your supplier.

1. No sound / low volume

- Check that the power light (green) is on to confirm that the unit has power.
- Check that there is a sound being produced by the input source
- With input source making a sound, the front panel yellow light should come on permanently or intermittently. If not your input level is too low.
- Check that there is a signal in the loop using headphones in the headphone jack on the front panel – if not then there is a problem with the loop or no input signal.
- Check loop connections – are both loop ends connected firmly and are the cable ends properly terminated with exposed wire in the contacts?

2. Interference / hum / background noise in the loop

- Check hearing aids / receivers set correctly
- Turn the loop system off and check to see if background noise remains. If it does then the noise may be created by other electrical systems. Try turning off nearby appliances to find the source of interference. Noise may also come from another nearby loop system – are there any other loop systems within 10m of your system?
- If a microphone is connected to input 4, turn the level control down or disconnect the microphone – does the background noise remain? If not, reduce the noise being picked up by the microphone or reduce the gain control on input 4.


3. Alert input not working


- Make sure that volume of alert signal is high – move microphone as close as possible to the alert sound source.
- Increase output level as far as possible from any third party alerting device.


11 SYSTEM SPECIFICATION

Controls and features:

Inputs:


 1 & 2. Four input Line level phono connector, fixed gain, allowing two stereo inputs.


 3. One independent mic/line input; Priority Microphone/Line control which is switchable between Mic or Line level. VOX switching is permanently enabled on this channel.

 4. One independent Mic input, gain control – rear panel, allowing adjustment to the correct level.

DC Power input, 2.1mm, centre positive.

Controls:

 Tone control: Independent front panel control allowing frequency response adjustment for differing installation variations.

 Loop volume: Independent front panel control allowing Loop output current (volume) adjustment.

Microphone input 4 gain control – rear panel.

Input specifications:

Microphone input 4:

Connector: 3.5mm mono jack socket.
One independent microphone input suitable for use with an unbalanced electret microphone.
Input impedance: 8k Ω .
Phantom voltage: 6V via 10k Ω source.
Input sensitivity: -60dBu for maximum output

Switchable Line / Mic input 3:

Line input selected:

Connector: 3.5mm mono jack socket.
Slide switch selection.
Input impedance: 820k Ω .
Input sensitivity: Line input selected: -20dBu for maximum output after VOX enabled at -12dBu

Microphone input selected:

Levels as per microphone input 4.

Line level inputs 1 and 2:

4-way phono input connector. Fixed gain.
Input sensitivity: -10dBu for maximum output.
Overload: >30dBu

Compression:

Compression Dynamic range: >36dB before overload. (Typically 40dB).
Compression indication via amber signal LED.
Efficiency: ± 1 dB across 40dB dynamic range.
Attack and decay times optimised for speech.
Attack time: Less than 5ms; Decay time: Less than 2 seconds.

Frequency response:

80 Hz to 6.3 kHz ± 1.5 dB into 1 Ω load at low level, measured as loop current with no Metal Loss correction.

Tone control:

A modified tone control allowing a flat response or bass boost / HF cut or HF boost / bass cut, with additional HF boost to allow compensation for distortion due to metal structures in surrounding buildings.

Outputs:

Headphone monitoring output via front panel with stereo 3.5mm jack.

Output connection: Loop, finger operated quick connect output connector.

Current: >2.4A_{RMS} into 1 Ω .

Voltage: >3.2V_{RMS}.

Loop resistance: 0.3 Ω to 1.0 Ω resistive or 1.5 Ω maximum reactive impedance at 1.6 kHz.

Connection: Finger operated speaker type connector.

Area coverage:

>30m² coverage to requirements of IEC60118-4, or use with supplied special loop pad.

Note that the amplifier can drive loops far in excess of this size if the full performance of IEC60118-4 is not required by the end user.

Environmental:

Ambient temperature: -10°C to 45°C.

Relative humidity: 20% to 90%

IP rating: IP20

Ventilation: Ensure adequate ventilation is provided for the Domestic unit as the unit becomes warm during operation.

Mounting: Unit may be mounted horizontally or vertically.

Rubber 'bump on' feet are fitted allowing free standing.

Two screw slot fittings allowing wall mounting of the unit are incorporated.

Physical:

Weight: 305g. Length: 133mm. Width: 72mm. Height: 40mm

Power requirements:

12V DC @ 1.0A max.

Fuse fitted to PCB, type T 1.6A L

Green LED Power indicator.

AC Power adaptor (Powerpax 85-2943):

Input: 100Vac – 240Vav 47 - 63Hz.

Power consumption: Standard load = 10W (1.0A_{RMS} pink noise output, as per IEC60065).

Power consumption: Quiescent = 3.0W.

Output: 12Vdc at 1.25A max.

AC Power adaptor UK (Powerpax 85-2915):

Input 230Vac, 45 – 65 Hz.

Power consumption: standard load = 10W (1.0A_{RMS} pink noise output, as per IEC60065).

Power consumption: Quiescent = 2.0W.

Output: 12Vdc at 1.0A max.

Directives and Norms:

Directive 2004/108/EC

EMC: EN61000-6-3:2007 Emission
EN61000-6-1:2007 Immunity

Directive 2006/95/EC

Safety: EN60065: 2002

AMPETRONIC

Listen to the difference

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