Healthcare

Hearing loops application guide

AMPETRONIC®

Listen to the difference

Contents

NB: Loops shown in this document are are indicative only and not to scale. They are not for use in system design. For detailed designs please contact our friendly and knowledgeable team on +44 (0) 1636 610062 or email sales@Ampetronic.co


AMPETRONIC®
Listen to the difference

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Ampetronic™ Hearing Loops

- Communicate directly with hearing aid users
- Support inclusion and enable participation
- Minimise uncontrolled information sharing

A significant number of patients, medical students, nurses, managers, doctors and technical and ancillary support workers use assistive listening technology to help them minimise the effects of hearing loss. They need discreet access to suitable facilities, particularly in education, training, conferencing and confidential meeting areas.

Most hearing aid users would say that when they use their aids in one to one conversations they work very well. Difficulties arise when the level of ambient noise is too great or the distance between the talker and listener is increased as in a busy reception area, lecture hall or conference space.

The problems are exacerbated if the assistive listening system in use has been poorly specified or installed, particularly...

- when there are large and complex room structures
- when multipurpose rooms are in use e.g. partitioned meeting rooms
- where overspill can cause interference or broadcast of the signal
- when metal is present in the building structure or room contents

Ampetronic™ Hearing Loops:

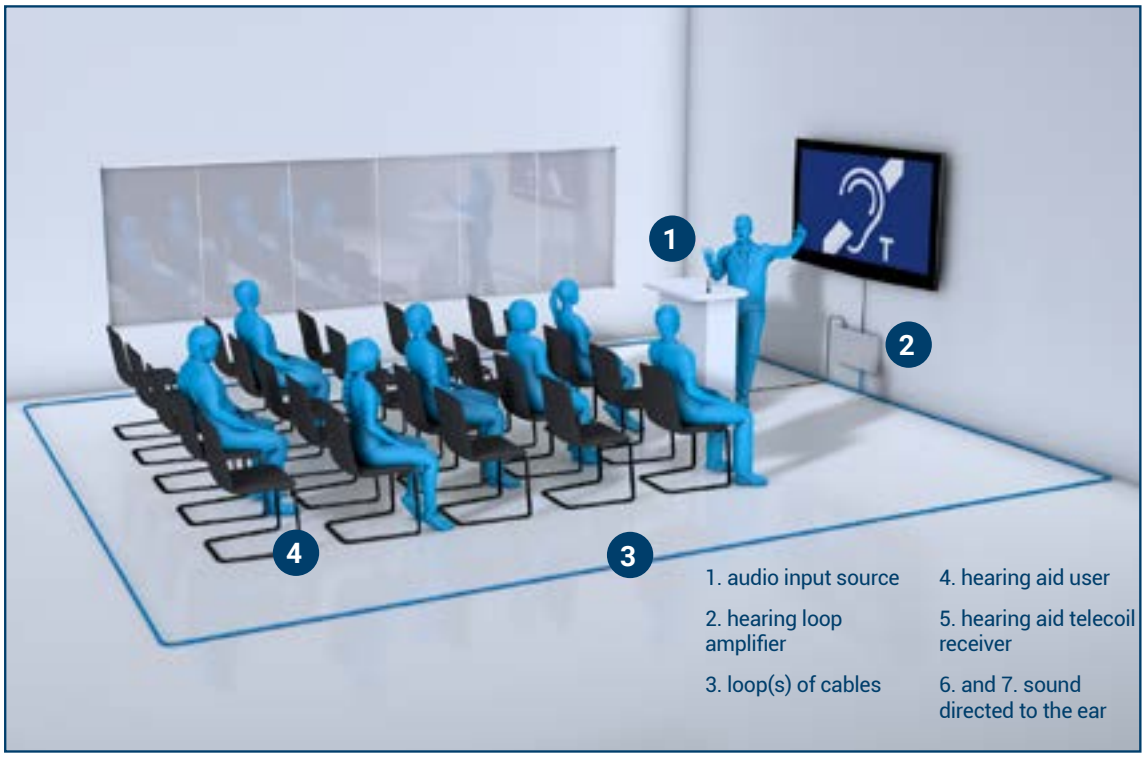
- **offer direct communication to users via their t-coil enabled hearing aid without the need for additional receivers**
- **match the commitment of the user and offer a genuine benefit making their access more inclusive and effective**
- **reduce overspill and so reduce interference or the possibility of broadcasting sensitive information**
- allow freedom of movement by ensuring a consistent signal throughout the looped area
- minimise the effects of metal in the structure
- can be integrated into new builds or retro-fit into existing structures

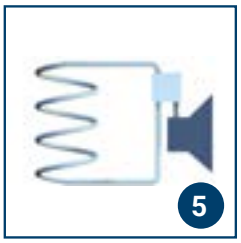
Facility operators can find themselves in an actionable position if there is no service provision that is of a genuine benefit to users i.e. the installation must be fit for purpose. The measurable performance of a Hearing Loop system is defined in the international IEC 60118-4 standard. In many countries there are also regulations that define the healthcare environment e.g. in the UK the Health technical memoranda HTM 00 references both the Equality Act 2010 and BS EN 60118-4 when defining the level of accesibility.

For more information on hearing loops and meeting the standards for hearing loop installations contact our friendly and knowledgeable team on **+44 (0) 1636 610062** or email **sales@ampetronic.co**

Pictures for illustration purposes only.

Hearing, induction and T-Loops





For more information on developing hearing loop systems please call our experts for assistance on **+44 (0) 1636 610062**

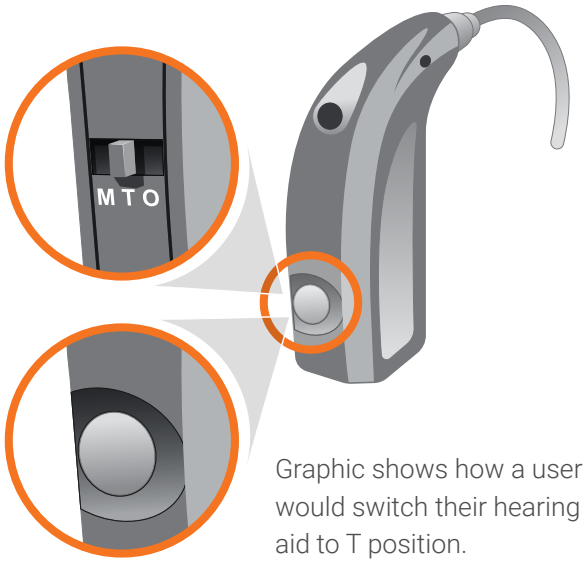
A hearing loop, also known as an induction loop or T-Loop, is an inherently simple assistive listening system, which provides access to facilities for those with a hearing impairment.

This technology takes a sound source, and transfers it directly to a hearing aid, without background noise. A hearing loop works by:

1. Capturing a sound source, such as a voice, TV, cinema sound system or other audio system using a microphone or a line out connection.
2. Sound signal is then connected to an audio hearing loop amplifier (also called a loop driver). This connection enables a current to pass through a hearing loop, typically made of copper tape or wire.
3. The copper wire hearing loop (usually) surrounds areas where listening audiences are located, and produces a magnetic field.
4. 5. Magnetic field is picked up by a Telecoil, or T-coil, inside a hearing aid worn by hearing impaired members of the audience.
6. 7. Hearing aids tailor sound to specific needs of an individual. Sound is delivered directly into the ear canal, without background noise, and with the spectrum of sound frequencies required for intelligibility.

The number of users who can benefit from a loop system at one time, is only limited by the number of people that can fit in a 'looped' area. Expensive receivers are not required, and users don't suffer an inconvenience of asking for and wearing a headset, which could potentially be uncomfortably visible.

To take full advantage of Ampetronic™ Loop system solutions, a person with hearing loss needs only to switch their hearing aid to the T Position.



Graphic shows how a user would switch their hearing aid to T position.

Plugging your AV system into the loop, as well as a good quality dedicated directional microphone, close to orator's position, will provide much better results.

Pictures for illustration purposes only.

Lecture halls

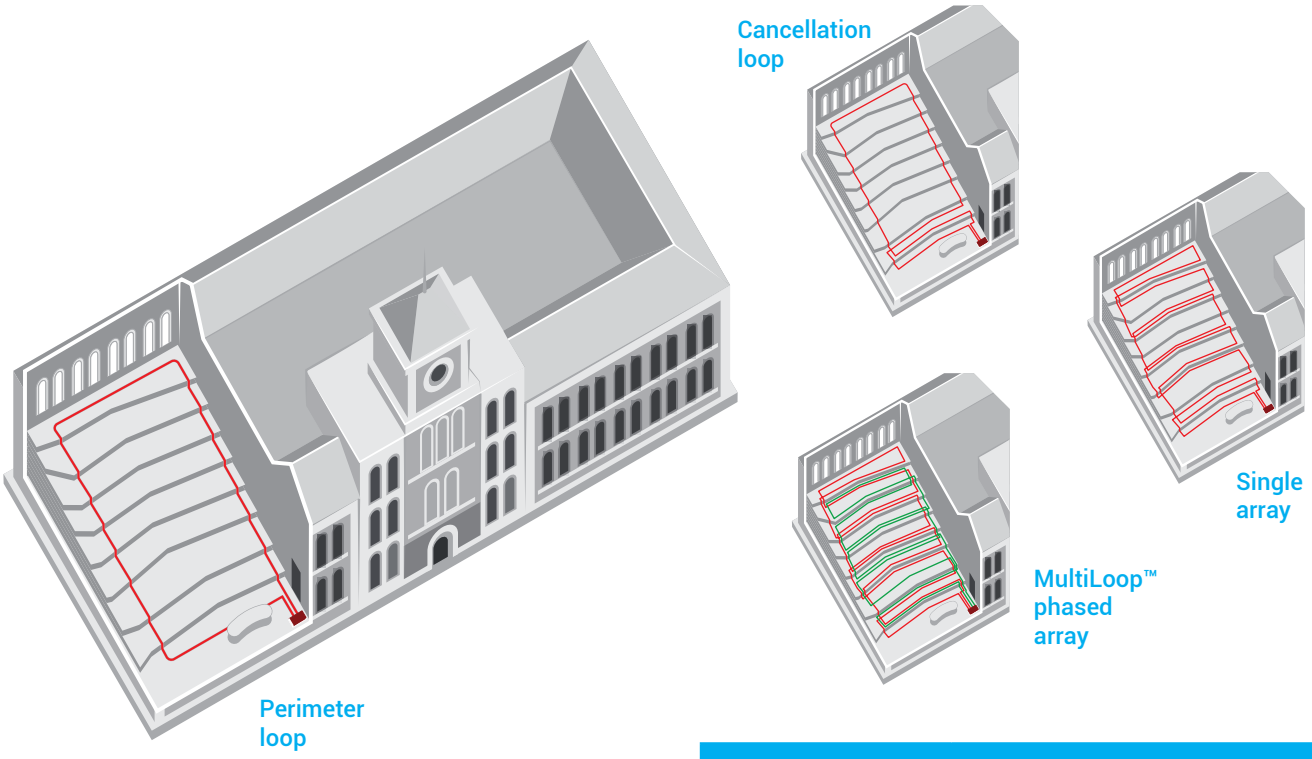
Lecture halls almost always have a pitched (sloped) floor and very often fixed seating as well; both of which can pose challenges for Hearing Loop layout design.

To ensure that all students and delegates have the same level of access to the presentation when in a lecture hall, it is essential that the appropriate Loop layout is selected for the building's construction and architectural style.

A **perimeter loop** layout is a simple, easy to install, option for small, medium or large spaces where there is no metal in the building structure, no concerns about signal overspill and where there may be restrictions around the removal of flooring for installation, e.g. in a rented, serviced, listed or heritage building.

Evelina Children's Hospital, Lambeth, London, UK

Katholieke University, Leuven, Belgium



Where interference / overspill is an issue at the stage / presentation area of the lecture theatre e.g. due to electronic equipment or instruments then a **cancellation loop** maybe a suitable option.

A **single array** can be useful in rooms with fixed seating and metal, although a **MultiLoop™ phased array system** provides more consistent coverage. Single and phased arrays are also a good choice where signal overspill between rooms is an issue.

Audio networking Dante™

Dante™ is an uncompressed, multi-channel digital media networking technology which integrates media and control for your entire system over a single, standard IP network. One low-cost, easily-available CAT5e, CAT6, or fibre optic cable does it all. Simple and scalable, from a simple pairing to large capacity networks, even the most complex networks can be integrated quickly and easily. Dante™ is a trademark of Audinate Pty Ltd.

Perimeter loop and single array Drivers	
C Series	C7-1 Networkable C5-1 Networkable
D Series	D10-1 Networkable D10-1 Networkable and Dante™
ILD Perimeter Loop Drivers	ILD1000G ILD500 ILD300 ILD122

Low loss and low spill MultiLoop™ Drivers	
C Series	C7-2 Networkable C5-2 Networkable
D Series	D14-2 Networkable D14-2 Networkable and Dante™ D10-2 Networkable D10-2 Networkable and Dante™ D7-2 Networkable D7-2 Networkable and Dante™
MLD MultiLoop™ Drivers	MLD9 MLD7 MLD5

Pictures for illustration purposes only.

Stand-alone meeting rooms and teaching labs

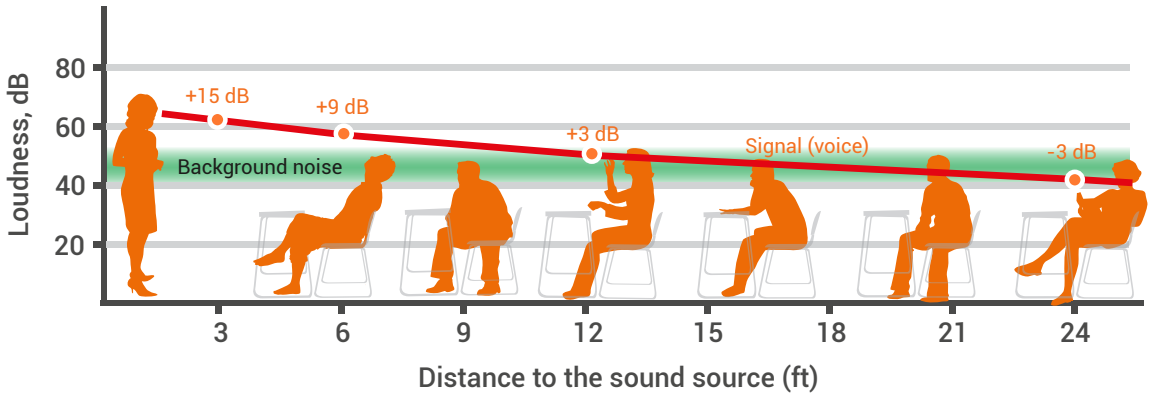
Many meeting rooms are stand-alone areas that are regular in shape. Whatever the room configuration it is important to bear in mind the issues faced by those with hearing difficulties.

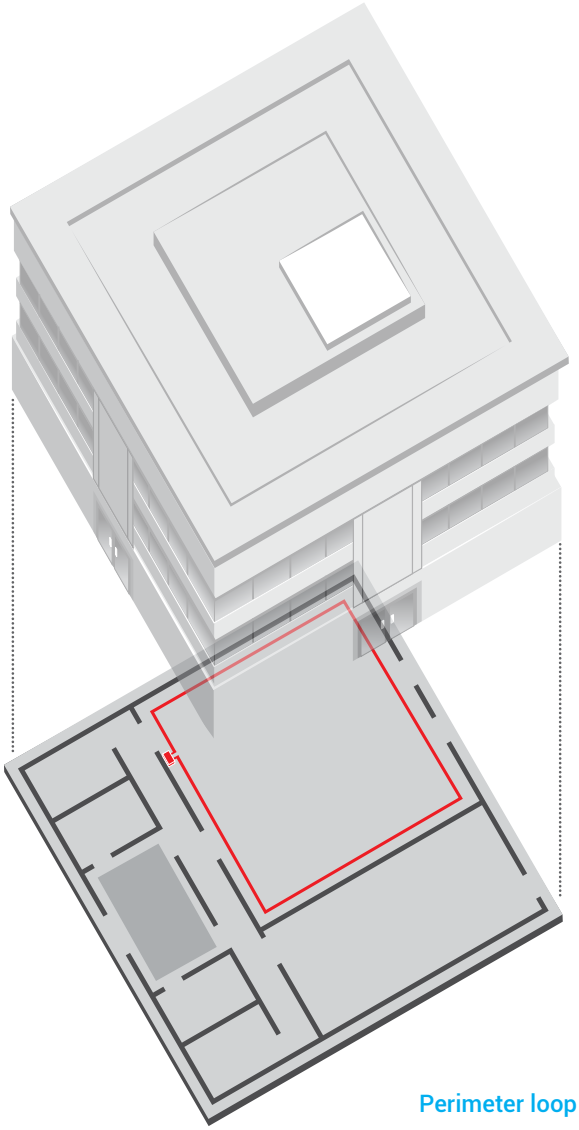
The loudness of an orator drops off by 6 dB for every doubling of distance meaning that any audience member remote from the source may find it difficult to differentiate the desired voice from the ambient background noise. An Ampetronic™ **hearing loop** can help to overcome these limitations for a hearing aid user.

A **perimeter loop** layout is a simple, easy to install, option for small, medium or large spaces where there is no metal in the building structure, no concerns about signal overspill and where there may be restrictions around the removal of flooring for installation, e.g. in a serviced, listed or heritage building.

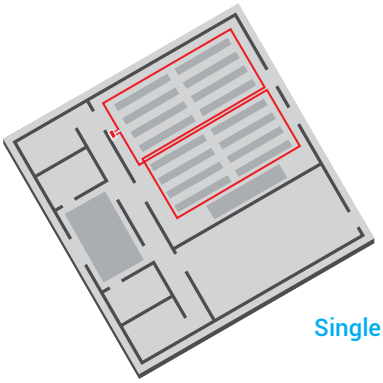
A **single array** can be useful in rooms with fixed seating and metal, although a **MultiLoop™ phased array system** provides more consistent coverage. Single and phased arrays are also a good choice where signal overspill between rooms is an issue.

Where signal overspill outside of the looped area may be an issue e.g. adjacent interview rooms a **low spill MultiLoop™ phased array** would be a more appropriate option.

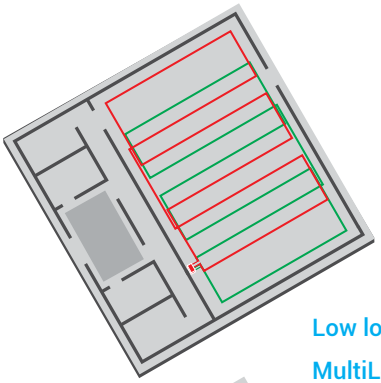




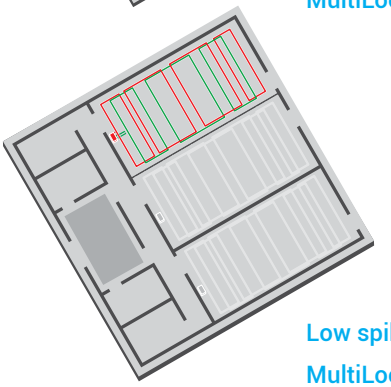
Perimeter loop



Single array



Low loss MultiLoop™



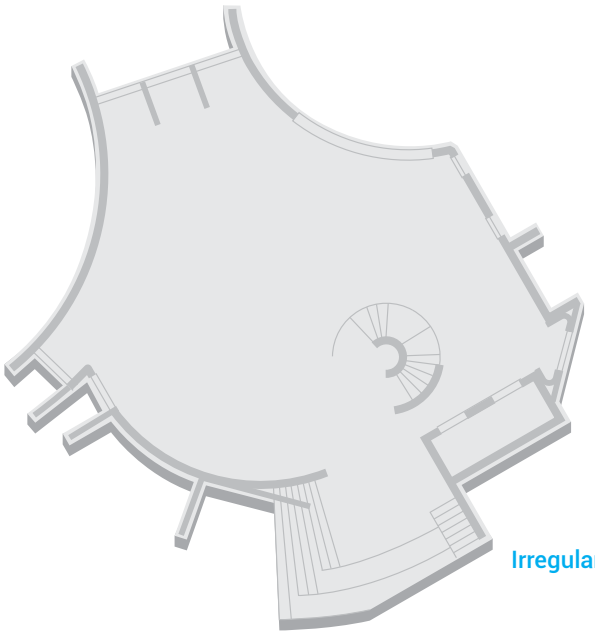
Low spill MultiLoop™

Perimeter Loop and single array drivers	
C Series	C7-1 Networkable C5-1 Networkable
D Series	D10-1 Networkable D10-1 Networkable and Dante™
ILD Perimeter Loop Drivers	ILD1000G ILD500 ILD300 ILD122
CLS Wall Mount Loop Drivers	CLS1 CLS2

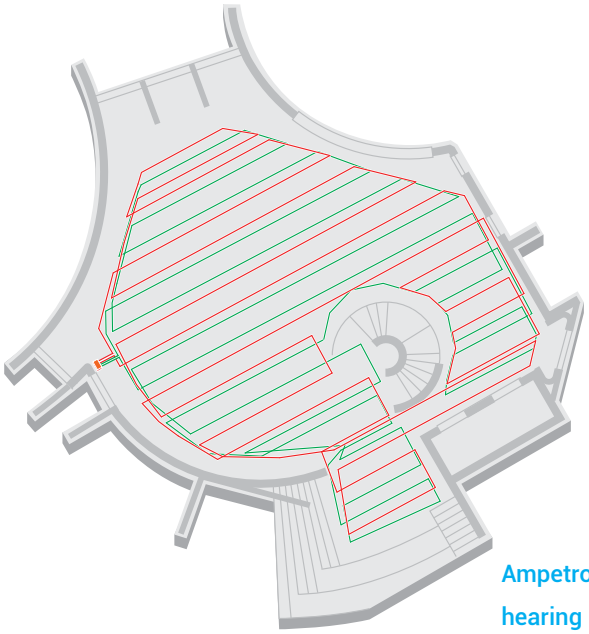
Low loss and low spill MultiLoop™ drivers	
C Series	C7-2 Networkable C5-2 Networkable
D Series	D14-2 Networkable D14-2 Networkable and Dante™ D10-2 Networkable D10-2 Networkable and Dante™ D7-2 Networkable D7-2 Networkable and Dante™
MLD MultiLoop™ Drivers	MLD9 MLD7 MLD5

Pictures for illustration purposes only.

Complex and multipurpose rooms



Irregular space



Ampetronic™ hearing Loop solution

In addition to straightforward meeting rooms and teaching laboratories there are very often a number of areas that do not conform to simple geometry.

In these circumstances a **MultiLoop™ phased array**, with low loss and/or low spill functions where required, would provide the coverage needed.

Areas that can be divided or expanded dynamically as the need dictates may also require more complex solutions for assistive listening.

For more information on creating systems for multi-storey buildings please call our engineers for assistance on **+44 (0) 1636 610062**

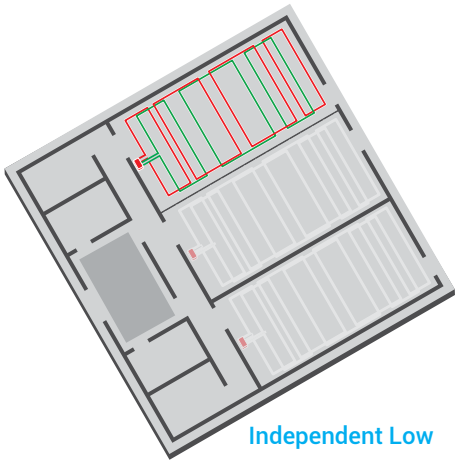
Most diverse entertainment, meeting, or learning environments will need to be multipurpose. Such spaces will often have several unique installed systems, all designed to work independently, in closed mode, and in synchronisation with each other, in open mode, as one large system.

A **low spill, MultiLoop™** system can be designed to work independently, when a room divider is in situ; dividing the room off from adjacent rooms. Such a configuration would suit a space where prevention of overspill is required, to minimise any crossed signals for example, a multipurpose meeting or training room.

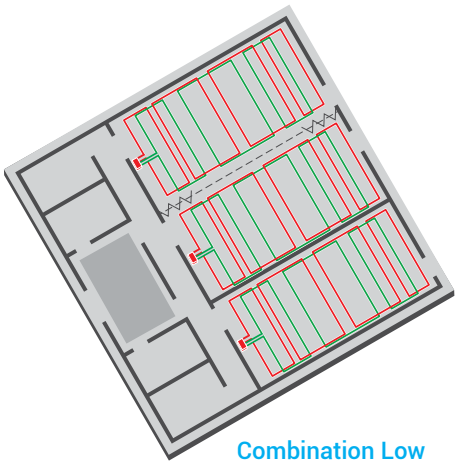
Low spill, MultiLoop™s are also used to prevent overspill between rooms in order to maintain confidentiality.

With space opened up, minus room divider, the **low spill system** works with **low spill, MultiLoop™** systems installed in adjacent rooms, to combine as one, **low spill, MultiLoop™** system. Illustrations below seek to show how such a loop system supports multiple room configuration options. This configuration could accommodate a variety of meeting scenarios including training, conferences and break out activities.

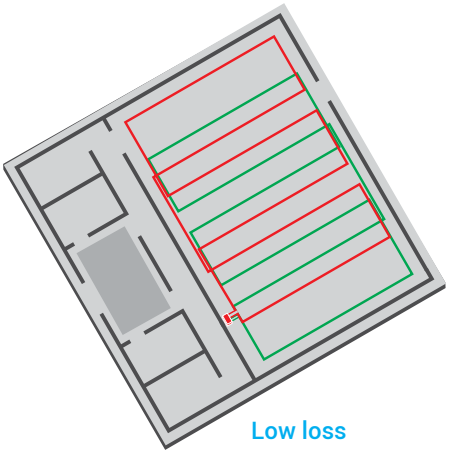
Rooms and large areas in excess of 6m wide with metal in the structure can also be a challenge for loop installations. Ampetronic™ **low loss MultiLoop™ phased array** layouts are ideal for large areas with metal loss, ensuring that an even signal is achieved and that all parts of a larger room can be used at all times.



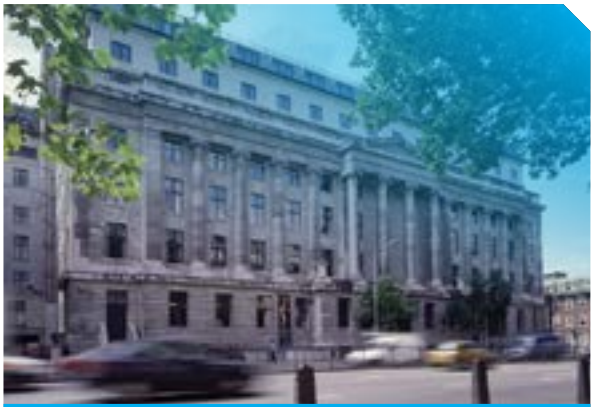
Independent Low spill array



Combination Low spill arrays



Low loss MultiLoop™ phased array



Wellcome Collection Gallery, London, UK
Seminar room perimeter loop

Low spill MultiLoop™ Drivers	
C Series	C7-2 Networkable C5-2 Networkable
D Series	D14-2 Networkable D14-2 Networkable and Dante™ D10-2 Networkable D10-2 Networkable and Dante™ D7-2 Networkable D7-2 Networkable and Dante™
MLD MultiLoop™ Drivers	MLD9 MLD7 MLD5

Pictures for illustration purposes only.

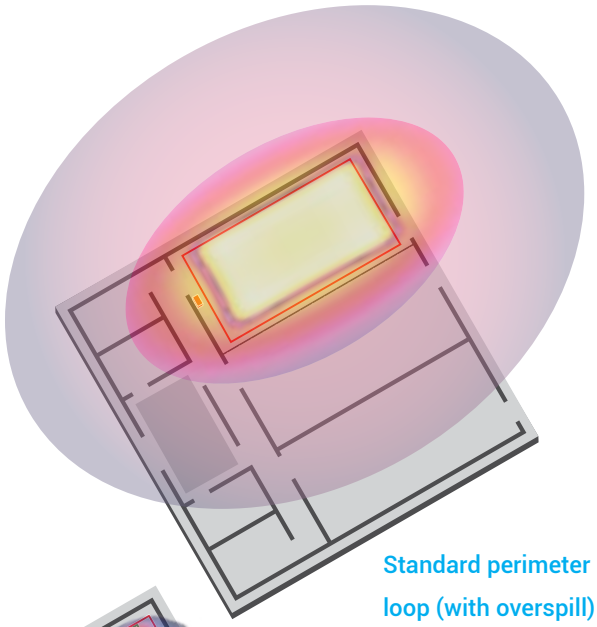
Secure areas

Low spill MultiLoop™ phased arrays are useful when trying to maximise confidentiality by ensuring the signal is restricted to the chosen area and preventing overspill.

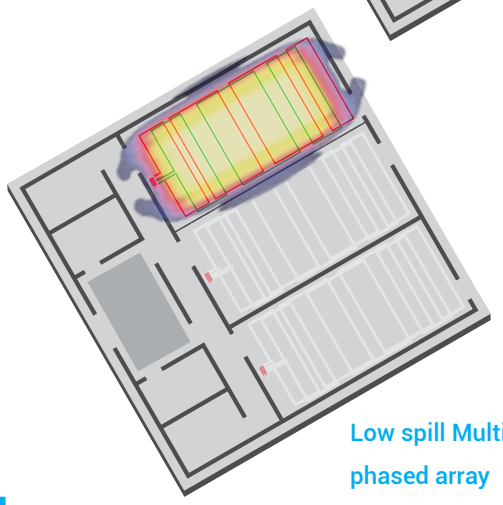
To ensure adequate coverage when using a standard Loop, particularly around the edges of a room, the power used to drive the loop can cause a significant amount of the signal to be broadcast beyond the physical boundary of the area.

An Ampetronic™ a **low spill MultiLoop™ phased array** is designed such that the signal is prevented from overspilling into adjacent areas or rooms without losing coverage or quality at the edges of the looped area.

For more information on minimising overspill for areas requiring confidentiality please call our engineers for assistance on **+44 (0) 1636 610062.**



Standard perimeter loop (with overspill)



Low spill MultiLoop™ phased array (minimises overspill)

Low spill MultiLoop™ Drivers	
C Series	C7-2 Networkable C5-2 Networkable
D Series	D14-2 Networkable D14-2 Networkable and Dante™ D10-2 Networkable D10-2 Networkable and Dante™ D7-2 Networkable D7-2 Networkable and Dante™
MLD MultiLoop™ Drivers	MLD9 MLD7 MLD5

QIMR Berghofer Medical Research Centre, Brisbane, Australia

Reception areas and service points

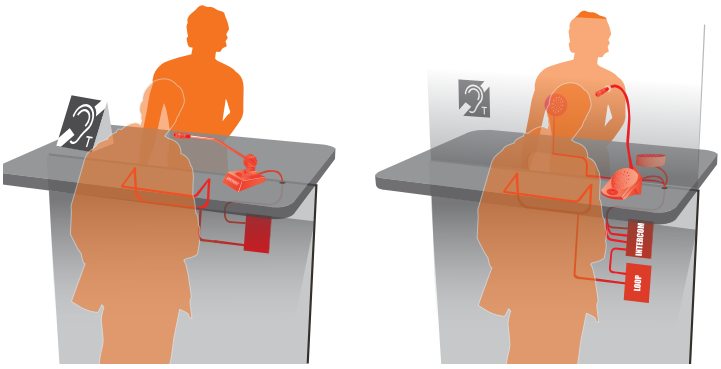
Dealing with background noise when faced with a busy reception desk can be a challenge for a person with hearing loss. Distance from the receptionist can also cause frustration.

When combined with a preformed loop and microphone **Ampetronic™ CLD1 service point** amplifiers provide the person with hearing loss with clear, intelligible sound direct to their hearing aid.

A security screen may also be present, which itself can interfere with communications. Intercoms, also known as speech transfer systems (microphone/speaker at each side of the screen connected to a duplex amplifier), can resolve issues of background noise and those caused by a security screen.

Care should be taken to assess the construction of the bulkhead or dividing barrier when selecting a suitable Hearing Loop amplifier and loop type. Metal bulkheads absorb the magnetic field produced by the system, and whilst this can normally be addressed by selecting a more powerful amplifier, in extreme cases a multi-turn loop in an enclosure fitted to the client side of the dividing barrier may be required.

The **Ampetronic™ TalkPerfect** offers effective communication through physical barriers supporting privacy and security in a robust and easy to use system.



University of Aberdeen,
Reception desks and service points

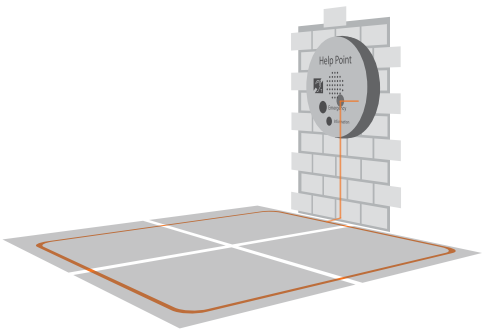
Service point and speech transfer	
CLD1 Service Point Hearing Loop Amplifier	CLD1 CLD1-AC
Speech Transfer System	TalkPerfect
CLS Wall Mount Loop Drivers	CLS1 CLS2

Pictures for illustration purposes only.

Intercoms

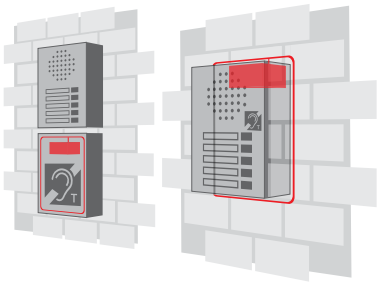
Intercom systems are now commonplace in a wide variety of information and service points, including automated service points and car park barrier systems. Intelligibility of the sound produced by these systems can be problematic for hearing-aid users as sound reproduced through small speakers has limitations and competes with other environmental sounds.

Ampetronic™ OEM intercom solutions are designed to provide full area coverage by driving a single or multi-turn loop around the perimeter of the standing area at the point of location. The amplifier is normally housed within the enclosure, and the loop itself is generally installed by cutting a channel into the floor or within concrete screed.

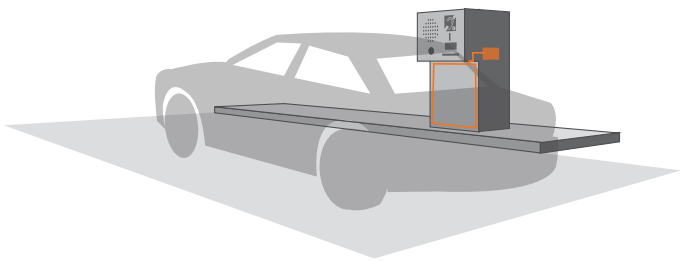


Ampetronic™ amplifiers can also be used to drive **small, vertically mounted, integrated and external panel loops**. These offer limited area coverage, up to approximately 1m distance from the loop. However, they are often a simple solution for installation and can be located around the edge of the enclosure recessed into brickwork.

A common and effective solution is to house the loop and amplifier in a separate enclosure at a convenient location above or below the intercom panel.



All driver units feature an audio system that is designed for excellent intelligibility and include metal loss frequency compensation to correct for the metal structure of the enclosure.



Intercoms	
HLS Series	HLS-DM2

Lifts and elevators

Ampetronic™ elevator solutions are designed to provide full area coverage by driving a loop around the perimeter of the car, preferably positioned at ceiling height.

For best performance a loop should be placed inside the elevator and must not be behind metal panels, or inside a metal enclosure in the roof space. Such installations can cause unacceptable reduction and distortion of magnetic field. Driver unit can be housed within elevator car roof, or integrated into control panel.

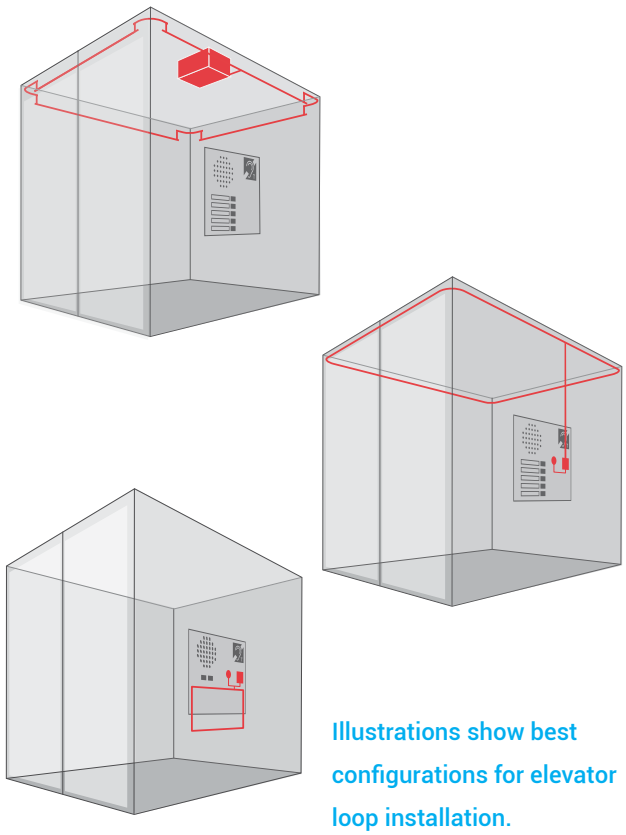
There are two standard options for the loop itself:

Loop bars - Perhaps the most robust solution is to attach custom built stainless steel loop bars to the ceiling inside. Loop bars can be custom designed and supplied by Ampetronic™ to fit your specific requirements. Such loop bars provide a resilient and aesthetically pleasing solution, with excellent performance.

Loop cable - In some lifts it is possible to fit a coil of loop cable inside an elevator behind non-metallic trim, or in rare cases inside roof space, if non-metallic.

Where an area coverage loop cannot be installed, an amplifier can be used to drive a smaller loop placed on or inside non-metallic wall panels or trim. This style of installation restricts useful magnetic field, to an area no more than 1m from loop coil. Such short distances makes such a small loop ineffective for large elevators, for use with a public address (PA) system, or for safety communications such as a voice evacuation system.

Elevator intercoms or help points	
HLS Series	HLS-DM2



Illustrations show best configurations for elevator loop installation.

It's important to note that the magnetic field will often be disrupted when an installation is behind a metal panel or metal trim. This will be the case with any amplification method. Metal can erode signal strength known as metal loss. It is important to factor metal loss into design, amplification or both.

Pictures for illustration purposes only.

Summary table

Useful quotation information

When requesting a quote our experienced and friendly staff will be able to guide you through the process however if you do have the following information about your project it can help us to prepare an accurate quotation or design as quickly as possible.

Q. What are your site details?

Q. What type of system is needed?

Q. Are there any other loop systems nearby?

Q. Are there any issues of confidentiality between areas?

Q. Do you have scaled plans of the rooms and area to be covered?

Q. Is there any metalwork contained within or close to the loop area?

Q. What type of installation would you prefer for example a flat copper tape suitable for installation under carpets and flooring, or a copper wire for fixing to walls or ceilings?

Area Type	Loop Type(s)	Product Ranges
Lecture Halls	Simple perimeter loop	C Series (single) D Series (single) ILD Series
	Single array	
	Low loss MultiLoop™ phased array (for 6m wide spaces with metal structure)	C Series (dual) D Series (dual) MLD Series
	Low spill MultiLoop™ phased array (when there are other loop systems nearby)	
Stand-alone meeting rooms and teaching labs	Simple perimeter loop	C Series (single) D Series (single) ILD Series CLS
	Single array	
	Low loss MultiLoop™ phased array	C Series (dual) D Series (dual) MLD Series
Complex multipurpose rooms	Low loss MultiLoop™ phased array	C Series (dual) D Series (dual) MLD Series
	Low spill MultiLoop™ phased array	
Secure Areas	Low spill MultiLoop™ phased array	C Series (dual) D Series (dual) MLD Series
Reception areas and service points	Open service point	CLD1 CLS
	Security window service point	CLD1 CLS TalkPerfect
Door entry, access and help points, entry barriers	Intercoms	HLS Series
Lifts and elevators	Lift and elevator intercoms / help points	HLS Series

If you have any questions please contact us directly on **+44 (0) 1636 610062** or email: **sales@ampetronic.co**

Signage

Hearing loops provide an important service for hearing aid users and others with challenging levels of hearing loss in many environments and applications. However, loops are ineffective if hearing aid users are unaware such a facility is available for them to tune into.

Loop systems are, in effect, invisible and inaudible to potential users. Therefore, it is important that necessary signage is displayed, so users know to switch their hearing aid devices to the correct setting to utilise them, or to ask for a receiver.

There is an internationally recognised Hearing Loop sign consisting of an ear graphic with a 'T' and some brief instructions for those unfamiliar with such technology.

Signage requirements vary, dependent on application, but there is a good guide to what is both suitable and necessary:

Signage recommendations	
Application	**Recommended signage requirement**
Room area coverage systems including theatres, concert halls, cinemas	A sign or window sticker at average eye height to each entry point to the space, on a door is perfect. At least one large sign at a visible point on a wall within looped space. If loop does not cover entire area, then a map of coverage area should also be at each entry point.
Local area service point system such as service point, reception desk	A sign displayed on counter or as close as possible at a level that cannot be obscured by anyone standing at service points.
Intercoms and automated audio assistance message systems or entry points	A small sign at a level where it is visible to person pressing 'intercom', 'information' or 'help' button.

Pictures for illustration purposes only.

System design support and training

System design support

Ampetronic™ can provide a installation design drawings to give you a fully working and Standard compliant solution to any loop installation you may be involved with.

Complex MultiLoop™ array installation designs are normally produced within 7 working days (average) and are charged at published rates on a per room or per-independent area basis.

For each project, an installation design charge will apply to every different room design. Identical room drawings within the same project will attract only one charge. Simple perimeter loop installation designs will not be charged for.

Each full installation design gives you:

- Scale drawings of the room showing the precise layout of loop wires
- Layout drawings for each loop array
- Electrical connection drawings
- A set of written installation design notes detailing assumptions, project specific information, expected performance, and equipment list.

Installation designs rely heavily upon the quality of information supplied to us. In particular, accurate scaled building drawings are essential together with all the same detailed information as for quotations.

Alternatively If you would like to design, test and commission your own Loop projects then contact us to be approved for access to the worlds most powerful collaboration, design and measurement tools... **Loopworks™.**

For more information on hearing loop design, meeting the Standards for hearing loop installations or if you would simply like to register for Loopworks™ access, contact our friendly and knowledgeable team on **+44 (0) 1636 610062**
or email **sales@ampetronic.co**

Training

Ampetronic™ CPD (Continued Professional Development) training services are designed to provide technical and general awareness for end-users clients and consultants, as well as a foundation for the professional installer and systems integrator.

We provide full day in-house training courses covering all aspects of Hearing Loop Systems aimed at audio-visual professionals, specifiers and contractors, and also free educational CPD seminars for general awareness and sales team training which can take place at a venue of your choice, or viewed as a webinar.

For details of our FREE 1 hour 'Equality of Access to Audio for People with Hearing Loss' Seminar and Webinars or of our full day classroom based course 'Practical Installer Training Day', please contact the office on **+44 (0) 1636 610062.**

Training videos and product demonstrations can be viewed online at the **Ampetronic™ YouTube Channel.**

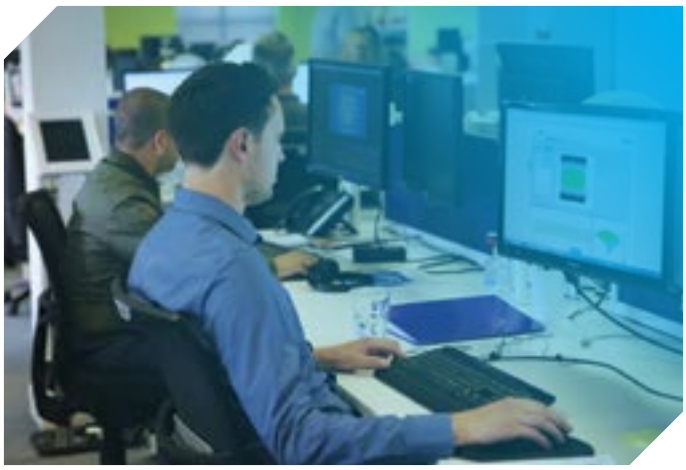
Loopworks™

Ampetronic™ Loopworks™ complete productivity suite enables cost effective, dependable and compliant system development, testing, and expedited issue resolution.

Loopworks™ offers instant access to your project information, the worlds' most credible Loop information and reliable, expert support when and wherever you need it. Loopworks™ productivity suite allows you to:

- Learn from the latest information, developments and support from the worlds' most credible sources
- Connect instantly to detailed project information, in the office or the field, minimising planning and administration delays or

  connect to our dependable, expert support when and where you need it, reducing expensive interruptions in project development and implementation
- Measure for easy on-site information retrieval, system testing and issue resolution for ad-hoc commissioning and scheduled maintenance checks
- Design loops using our powerful design and support tool for expedited, credible and compliant system development



Loopworks®

LEARN • COLLABORATE • MEASURE • DESIGN

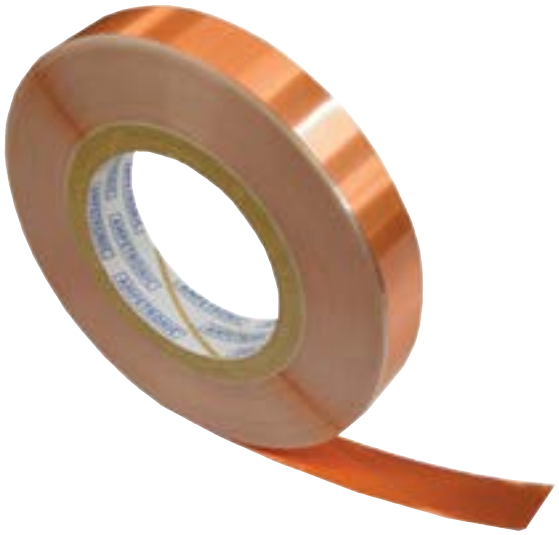
Pictures for illustration purposes only.

Accessories, receivers and measurement systems

Installation accessories

In addition to hearing loop drivers Ampetronic™ can provide you with the accessories needed to successfully install and commission a hearing loop system including...

- Flat copper tape
- Printed warning tape
- Direct burial cable
- Hearing loop signs
- PVC Extrusion for Copper Tape
- Crimps and Crimp Tool for Copper Tape
- Wall mounts
- Rack mount equipment
- Counter Loop accessories



Loop receivers

ILR3 and ILR3+ Audio hearing loop receiver

The ILR3 is a high quality audio hearing loop receiver which allows the user to listen to an audio frequency hearing loop system using a standard pair of stereo headphones. The ILR3+ is designed to make it simple for anyone to regularly check that a loop system is working and has a field strength that is at the correct level to provide benefit.

Testing and measurement systems

Loopworks™ Measure iOS app

Loopworks™ Measure combines an iOS phone or tablet App that utilises a self-calibrating Receiver that when used together, become the most accurate, dedicated field strength meter (FSM) currently available. This can help to ensure the requirements of IEC 60118-4 have been met.

Loopworks™ allows all results to be stored in the Cloud simplifying the management of rooms across multiple buildings and sites.

Loopworks™ Measure receiver field strength meter (R1)

The R1 Receiver is a high quality field strength meter and audio hearing loop receiver designed to be used in conjunction with the Loopworks™ Measure iOS App.

FSM Field Strength Meter

The FSM is a cost effective and simple solution for measuring, setting up and commissioning a hearing loop system to the requirements of IEC 60118-4. There are three calibrated operational modes for the assessment of Background Noise, Field Strength and Frequency Response. The meter also doubles as a loop listener.

UP30086

Providing a genuine benefit.

To find out what we can bring to your project talk it through with our expert team on +44 (0) 1636 610062 or email us at sales@ampetronic.co

AMPETRONIC®

Listen to the difference
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United Kingdom

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