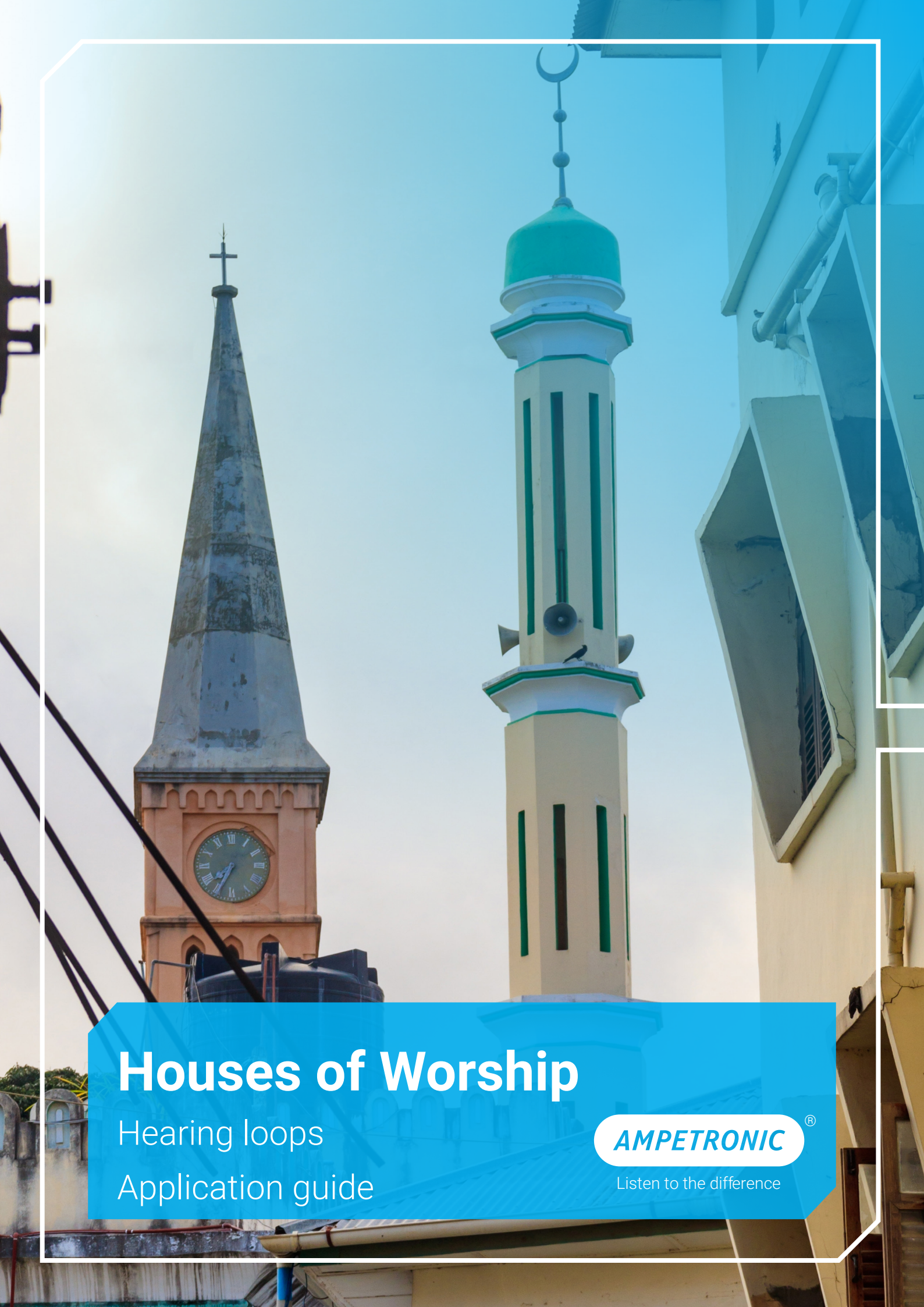


# Houses of Worship

## Hearing loops

## Application guide

AMPETRONIC®

Listen to the difference

Pictures for illustration purposes only.

# Contents



Please note 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.com


AMPETRONIC®
Listen to the difference

Pictures for illustration purposes only.

# Ampetronic™ Hearing Loops

Ampetronic Hearing Loops offer accessibility to all forms of sound

- communicate directly with hearing aid users
- enhance visitor experience
- afford them the freedom to move through areas with a consistent signal

Houses of worship including churches, cathedrals and mosques are used for worship, as tourist destinations and often as venues for events and exhibitions. There are often gift shops, restaurants and cafés on site. Visitors can range from school children to groups of older people, so could include those who suffer hearing loss. A requirement for innovative assistive listening solutions, is further amplified by sheer size of buildings, and often multipurpose nature, of internal spaces.

Ampetronic Hearing Loops are suitable for use in large or small areas depending on need

Most hearing aid users would say that when they use their aids in one-to-one conversations, they work very well. Difficulties arise when a level of ambient noise is too great or distance between speaker and listener is increased as can happen in a place of worship.

Problems are exacerbated if assistive listening system in use has been poorly specified or installed, particularly when:

- there are large and complex room structures
- multipurpose rooms are in use for example partitioned assembly halls
- overspill can cause interference or broadcast of the signal
- metal is present in the building structure or room contents

**Ampetronic™ Hearing Loops:**

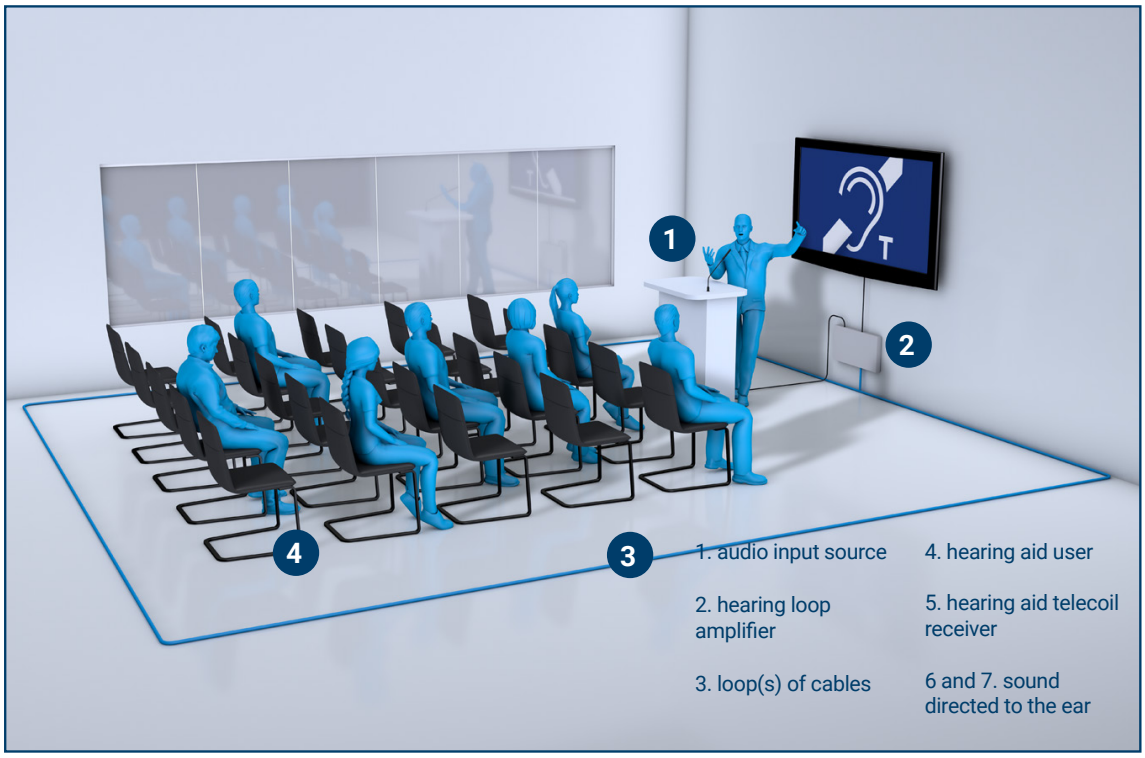
- **offer direct communication to users via their existing hearing aid without a need for any additional receivers**
- **offer a genuine benefit to a hearing aid user, making their experience much more enjoyable**
- **allow freedom of movement by ensuring a consistent signal throughout looped area**
- **reduce overspill and so reduce interference or the possibility of broadcasting of sensitive information**
- **minimise effects of metal from structure**
- **can be integrated into new builds or retro-fit into existing structures**

The requirement to provide a service which delivers a genuine benefit to hearing aid users is common to the various types of houses of worship, that is, the installation must be fit for purpose. Measurable performance of a hearing loop system is defined in international standard IEC 60118-4.

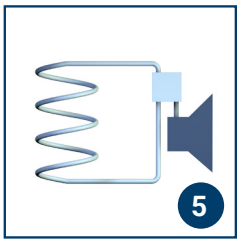
For more information on hearing loops and meeting standards for hearing loop installations, contact our friendly and knowledgeable team on **+44 (0) 1636 610062** or email **sales@ampetronic.com**

Pictures for illustration purposes only.

# Hearing, Induction and T-Loops




1. audio input source
2. hearing loop amplifier
3. loop(s) of cables
4. hearing aid user
5. hearing aid telecoil receiver
6 and 7. sound directed to the ear






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

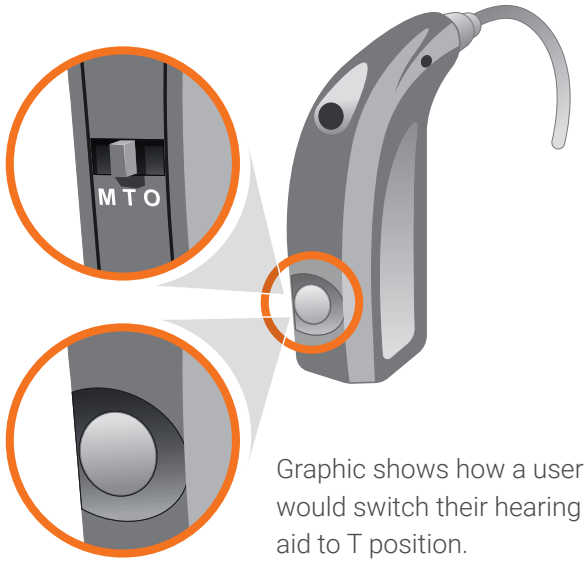
## A hearing loop, also known as an induction loop or T-Loop, is an inherently simple assistive listening system, which provides access to facilities for those with a hearing impairment.

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 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.

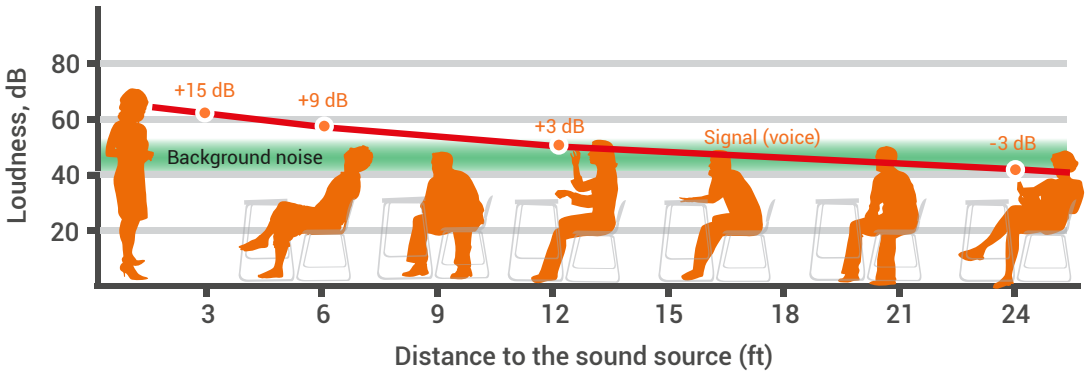
Pictures for illustration purposes only.

# Modern Church Buildings

Many congregation areas in modern churches are regular in shape, making Loop installation relatively simple. However, the best loop location, will depend on exact building design.

Loudness of a preachers voice reduces by 6dB for every doubling of distance. So any member of a congregation past the third row, may find it difficult to differentiate sound from preachers voice, from ambient background noise. An Ampetronic™ hearing loop can help to overcome these limitations for a hearing aid user.

It is preferable to loop entire floor space wherever possible, so as not to discriminate by separating hearing-aid users from the rest of a congregation.

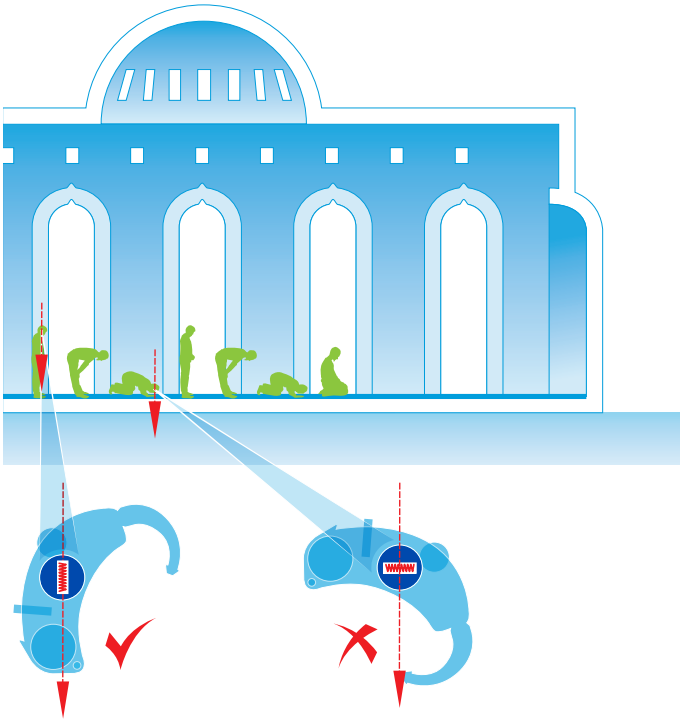



Holy Trinity Church, Southend-on-Sea, UK is fitted with an Ampetronic loop system

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

# Contemporary Mosques

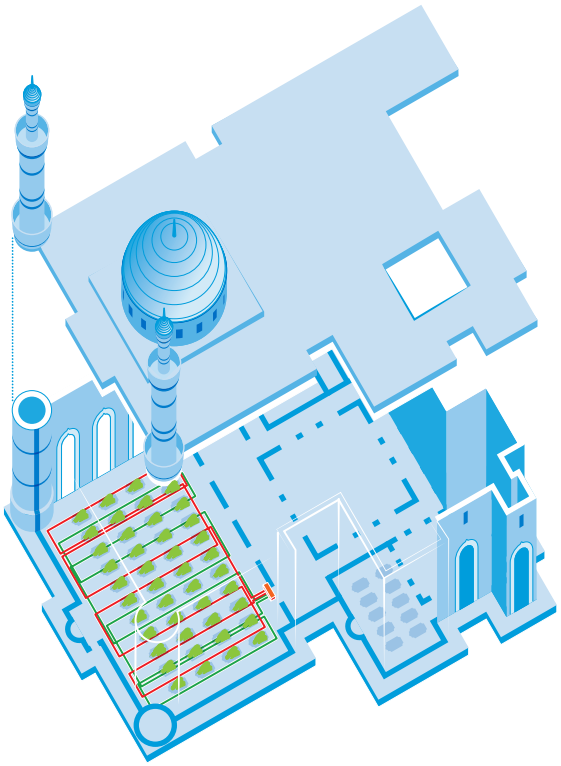
Contemporary mosques are broadly classified by size and location in relation to the community they serve and can include masjids and musallas plus a variety of other spaces in which members of the community can gather to perform worship and social activities.



Worship in a mosque consists of two main modes: prayer mode, with worshippers standing, bowing, prostrating or sitting and preaching mode, where worshippers are directly seated on the floor in rows facing Mecca.

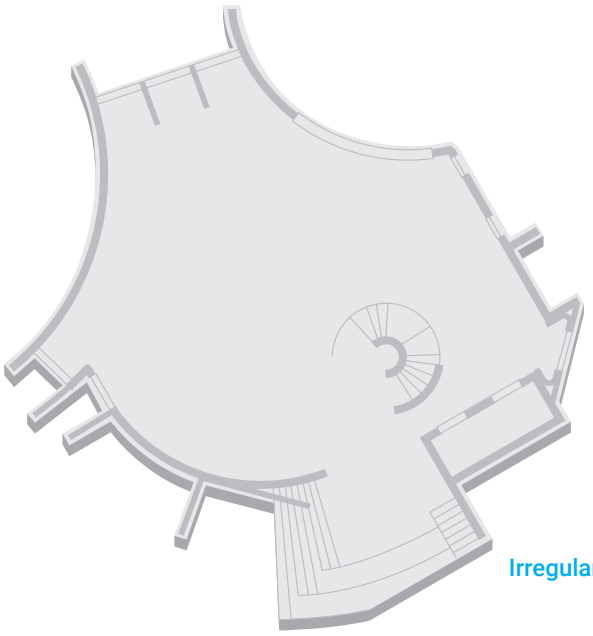
When praying in a mosque, a variety of physical positions are executed, including bowing, where a worshipper bends over until the forehead is touching the floor, making the hearing aid (and t-coil within) nearly horizontal. (See figure 1 illustrating the use of a perimeter loop).

In this position, the electrical current induced within the hearing aid's t-coil will vary and may cause the signal to fade, making a conventional perimeter loop system problematic. In most cases, this signal variation is manageable, with appropriate equipment, design and implementation of a phased array system that can accommodate variations in head position. (See figure 2)

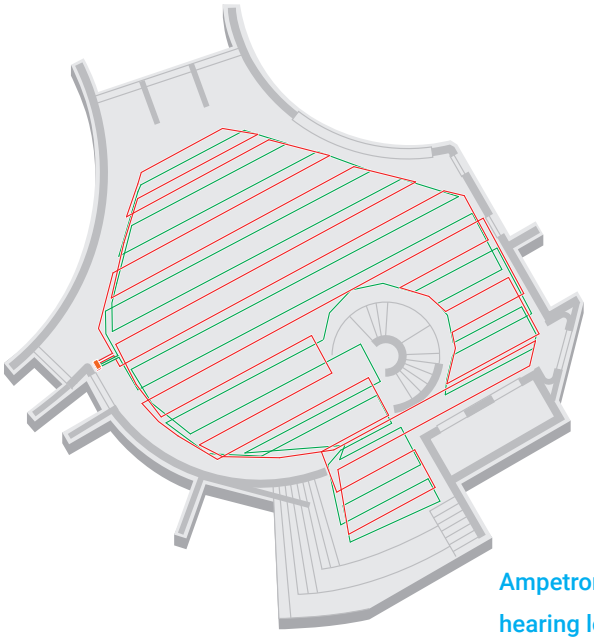


Pictures for illustration purposes only.

# Complex and multipurpose areas



Irregular space



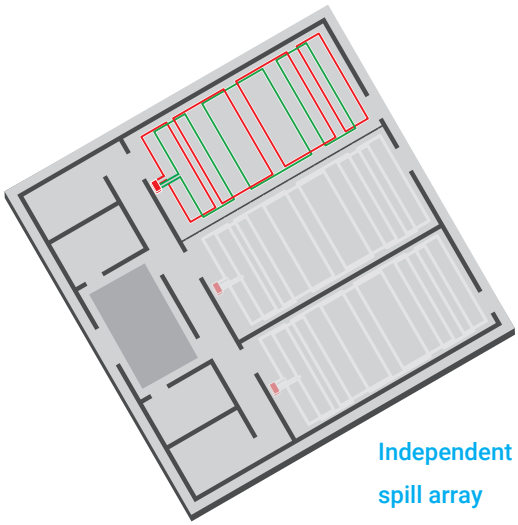
Ampetronic™ hearing loop

In modern worship buildings there a can be a number of areas that do not conform to simple geometry, making hearing loop installations more complex.

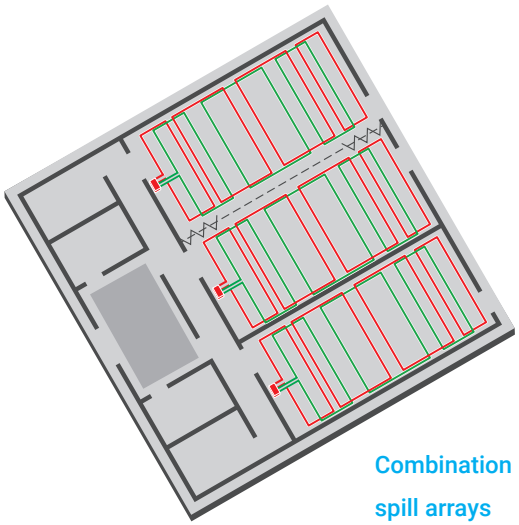
In these circumstances a **MultiLoop™**, with low loss or low spill functions where required, would provide coverage needed.

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

For more information on creating systems for more complex areas please call our engineers for assistance on **+44 (0) 1636 610062**



Independent low spill array



Combination low spill arrays

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

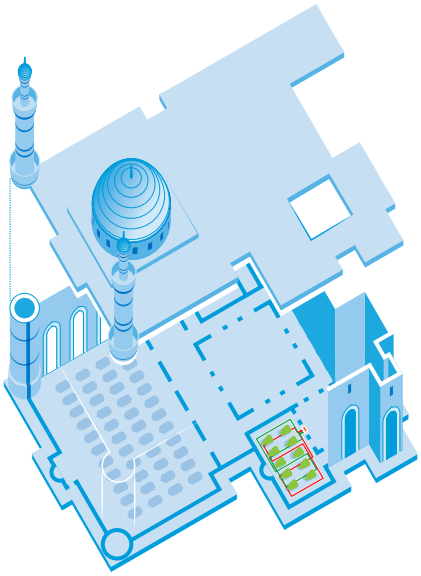
A **low spill, MultiLoop™** system, can be designed to work independently when a room divider is in situ; dividing a room off from an adjacent room. This configuration would suit a space where prevention of overspill is required to minimise any crossed signals for example a multipurpose meeting or training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

**Low spill, MultiLoops** are also used to prevent overspill between rooms, in order to maintain confidentiality.

With space opened up, minus room dividers a **low spill system** works with **low spill, MultiLoop™** systems installed in adjacent rooms to combine as one, **low spill, MultiLoop** system. This configuration could accommodate a variety of meeting scenarios, including training, conferences, and break out activities.

| Low loss and low spill phased array drivers | |
|---|---|
| **C Series** | C5-2 Networkable<br>C7-2 Networkable<br>C10-2 Networkable<br>C14-2 Networkable |

In regard to a mosque where it accommodates male and female worshippers (via a separate annex, area or even mezzanine floor), it may also be important to control overspill to maintain confidentiality and minimise disruption. The image below illustrates a low spill, phased array system in a separate, female worship hall.



## Audio networking

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, or CAT6 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.

Pictures for illustration purposes only.

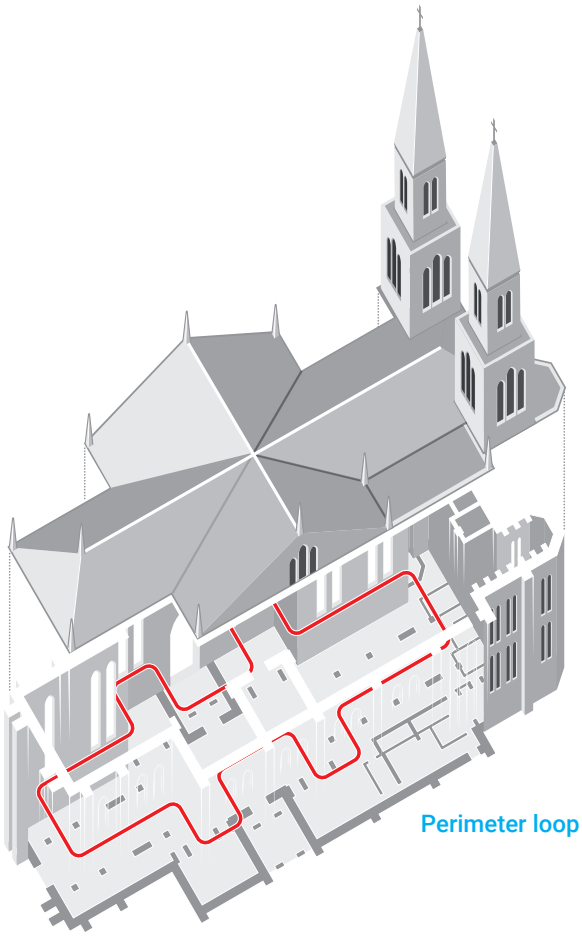
# Cathedrals and traditional church buildings

## Unlike modern church buildings, traditional churches and cathedrals, particularly those built before the 19th Century, have less metal in their construction; reducing potential for signal loss and frequency response issues.

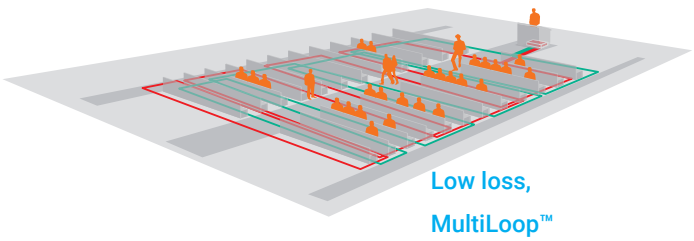
However, it is not always desirable or possible to place a loop under a dressed stone or brick floor. In these instances it is more common to place a **perimeter loop** 2.5m or 8ft above floor level, or in a pre-dug trench around perimeter of a building.

Cathedrals with ceiling heights up to 100m or 325ft, these constructions can allow for some flexibility with loop installation, particularly if a single area or zone within whole building is being looped. It is most common to place a perimeter loop, either around the upper part of a wall, or in the case of large cathedrals, in a service walkway or triforium.

Alternatively, sections of a floor space can be covered, for example pews, with a **Low Loss MultiLoop™**. Again best loop location will depend on exact building layout design, and area which requires coverage.



Perimeter loop



Low loss, MultiLoop™

# Traditional mosques

In general, traditional mosques can be classified according to their architectural type and style. Building composition and scale will vary greatly and geographical location will also play a role in determining the exact requirements for a Hearing Loop system.

To vastly improve the level of service offered to people with hearing loss and in the case of traditional mosques, which must meet the requirements of the Equality Act 2010, it is necessary to carefully consider and plan a quality Hearing Loop solution at re-fitting stage. It is also worth noting that some active mosques have made their homes in listed or heritage buildings, originally built for other purposes.

Building Regulations set standards that apply to many alterations to existing buildings, including listed buildings, for the purposes of securing reasonable standards of health and safety and access.

System specification is important in mosque applications; the building construction, architecture and large, open interior spaces can result in poor or unusual acoustics that make intelligibility for hearing aid users difficult. Ampetronic has established solutions and products designed especially to overcome these issues.

| Perimeter loop drivers | |
|---|---|
| **C Series** | C5-1 Networkable<br>C7-1 Networkable<br>C10-1 Networkable |
| **CLS Wall Mount Loop Drivers** | CLS 1<br>CLS 2 |

| Low loss MultiLoop™ phased array drivers | |
|---|---|
| **C Series** | C5-2 Networkable<br>C7-2 Networkable<br>C10-2 Networkable<br>C14-2 Networkable |

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

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 our 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 Range(s) |
|---|---|---|
| **Modern Church Buildings** | Simple perimeter loop | C Series (single) |
| | Cancellation loop | |
| | Single array | |
| | Low loss MultiLoop™ phased array (for spaces greater than 6m or 19.5ft wide with metal structure) | C Series (dual) |
| | Low spill MultiLoop™ phased array (when there are other loop systems nearby) | |
| **Complex multipurpose rooms** | Low loss MultiLoop™ phased array | C Series (dual) |
| | Low spill MultiLoop™ phased array | |
| **Traditional Churches and Cathedrals** | Simple perimeter loop | C Series (single)<br>CLS Series |
| | Single array | |
| | Low loss MultiLoop™ phased array | C Series (dual) |
| | Low spill MultiLoop™ phased array | |

For more information on hearing loops and meeting standards for hearing loop installations, contact our friendly and knowledgeable team on **+44 (0) 1636 610062**, email **sales@ampetronic.com** or contact your establishments' own AV department.

# 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 system, such as nave, meeting room | A sign or window sticker at average eye height to each entry point to a space, on a door is perfect, and at least one large sign at a visible point on a wall within looped space. Please note if loop does not cover entire area, then a map of coverage should be visible at each entry point. |
| Local area service point system, such as a service point or reception desk. | A sign displayed on a counter, or as close as possible at a level which cannot be obscured by anyone standing at a service point. |
| Intercoms and automated audio assistance message systems such as entry points | A small sign at a level where it is visible to person pressing 'intercom', 'information' or 'help' buttons. |

Pictures for illustration purposes only.

# System design support and training

## System design support

Ampetronic™ can provide installation design drawings by collaboration with our experts, or by utilising our design creation software support. Such designs give you a fully working and regulation compliant solution, for any loop installation you may be involved with.

Complex MultiLoop™ array installation designs, are normally produced within seven working days on 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 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 room showing precise layout of loop wires
- layout drawings for each loop array
- electrical connection drawings
- a set of written installation design notes detailing assumptions, project specification information, expected performance, and equipment list

Installation designs rely heavily upon quality of information supplied. In particular, accurately scaled building drawings are essential, to give detailed information for creation of accurate quotations.

Alternatively, if you would like to design, test, and commission, your own loop projects, then contact us to access Loopworks Design cloud based software, the world's most powerful collaboration, design, and measurement suite of software tools. **Loopworks™**.

For more information on hearing loop design, meeting regulations 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.com**

Loopworks®
LEARN • COLLABORATE • MEASURE • DESIGN

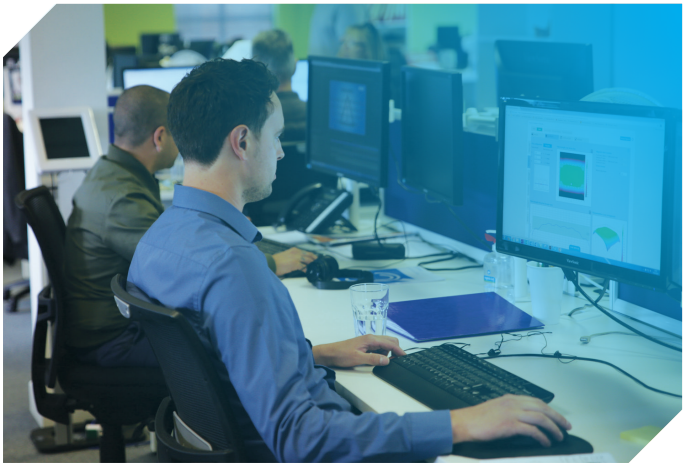
## Training

Ampetronic™ continued professional development (CPD) training services, are designed to provide technical and general awareness for end-users, clients, and consultants. CPD is also available as a foundation course for a professional installer and systems integrator.

We provide full day, in-house, training courses, covering all aspects of hearing loop systems, aimed at audiovisual professionals, specifiers, and contractors. Free educational CPD seminars are also available, for general awareness and sales team training, which can take place at a venue of your choice, or be viewed as a webinar.

For details of our free one 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 our office on:
**+44 (0) 1636 610062**

Training videos and product demonstrations can be viewed online at the **Ampetronic™ YouTube Channel https://www.youtube.com/user/AmpetronicLoops**



## Loopworks™ suite

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,
- a library of the most credible loop information
- reliable, expert support, whenever and wherever you need it.

Loopworks™ productivity suite allows you to:

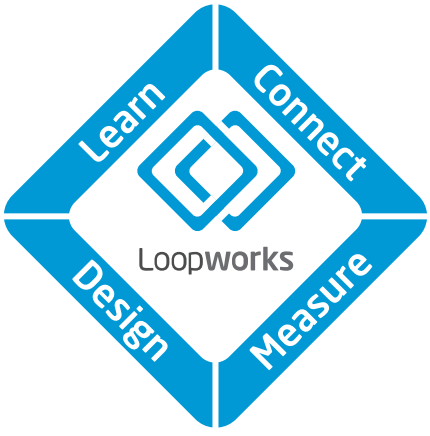
**Learn** from the latest information, developments and support from the worlds' most credible information sources.

**Connect** instantly to detailed project information, in the office or the field, minimising planning and administration delays. You can also connect to our dependable, expert support when and where you need it, reducing expensive interruptions in project development and implementation.

**Measure** app and desktop support enabling 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 online cloud based software tool for expedited, credible and compliant system development.

**Loopworks software suite comprises four modules, with desktop, mobile app and cloud support delivery.**



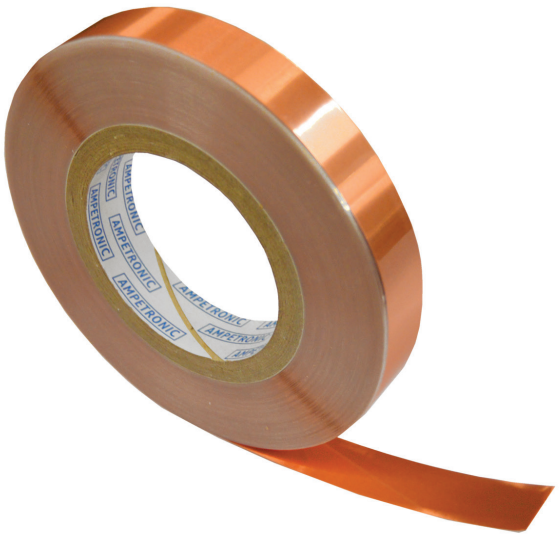
Pictures for illustration purposes only.

# Accessories, receivers and measurement systems

## Installation accessories

In addition to hearing loop drivers, Ampetronic™ can provide you with accessories needed to successfully install and commission a hearing loop system. Our range includes:

- direct burial cable
- flat copper tape
- printed warning tape
- hearing loop signs
- PVC extrusion for copper tape
- crimps and crimp tool for copper tape
- wall mounts
- rack mount equipment
- counter loop accessories




Ampetronic manufactures a range of market leading cables and copper tape for creating loop systems.

# Loop receivers

## ILR3 and ILR3+ Audio hearing loop receiver

Our 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. ILR3+ is designed to make it simpler for anyone to regularly check that a loop system is working, and has a field strength at a correct level to benefit users.


ILR3+ Audio hearing loop receiver

# Testing and measurement systems

## Loopworks™ Measure iOS app

Loopworks™ Measure combines an iOS phone or tablet app which utilises a self-calibrating receiver. When used together, Measure app and the R1, become the most accurate, dedicated field strength meter (FSM) currently available. This combination used to record field strength statistics, can help to ensure requirements of IEC 60118-4 have been met.

Loopworks™ Measure app uploads data collated via sync to Loopworks™ digital suite, allowing all results to be digitally stored in the cloud, online storage simplifies management of rooms across multiple buildings and sites.


Loopworks™ Measure iOS app

## Loopworks™ Measure receiver field strength meter (R1)

By simply plugging into the headphone jack of your mobile device, our R1 Receiver is a high quality field strength meter and audio hearing loop receiver. R1s are designed to be used in conjunction with our Loopworks™ Measure iOS app. Contact us on sales@ampetronic.com or buy one directly from our website at www.ampetronic.com.


Loopworks™ R1 receiver

## Ampetronic's field strength meter (FSM)

Ampetronic's FSM device is a cost effective and simple solution for measuring, setting up, and commissioning hearing loop systems, to meet requirements of IEC60118-4. There are three calibrated operational modes for assessing background noise, field strength, and frequency response. Ampetronic's FSM also doubles as a loop listener.


Field strength meter (FSM)

UP30090

# 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.com



AMPETRONIC®

Listen to the difference
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Newark, NG24 4XB
United Kingdom

**www.ampetronic.com**