

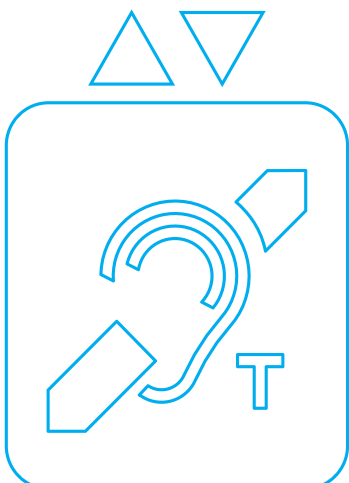
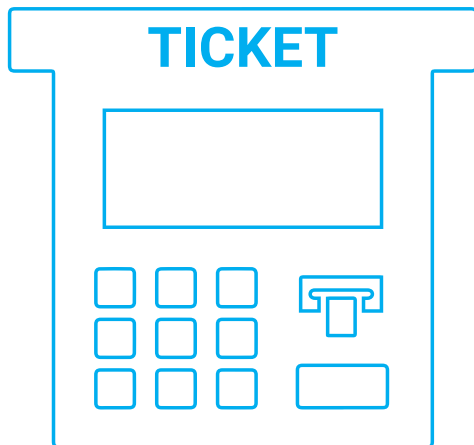
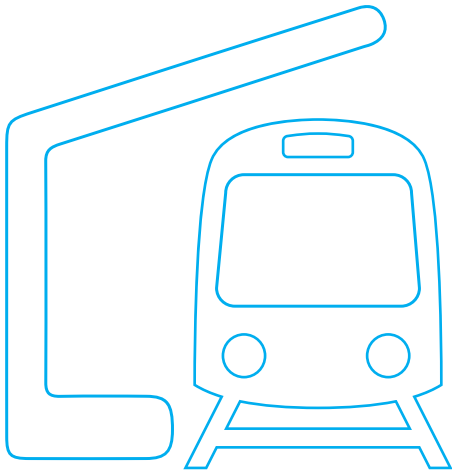
# Transport Concourse & Infrastructure

Hearing Loop solutions

**AMPETRONIC**®

Listen to the difference





**With decades of experience delivering first-class results in some of the world's most famous rail, subway, tram and taxi networks, Ampetronic is the recognised world leader in Hearing Loop technology designed to allow people with hearing loss to make use of on-board audio services.**

Ampetronic has a long-standing history of partnering with the world's leading rolling stock, taxi and bus manufacturers.

We provide our partners with the assurance that not only will their Hearing Loop solution function as intended, but also that all procedures, detailed documentation processes and stringent safety and compatibility standards as required by major development projects, are completed diligently and punctually.

Ampetronic on-board transport Hearing Loop systems will not only perform to the internationally recognised IEC 60118-4 Standard, but also be durable enough to continue operating for years to come, providing a genuine benefit to the hearing aid user.

With dedicated design and product solutions for almost any application, we also regularly undertake projects to design and develop custom systems for novel applications.

If you have an interest in an application beyond our standard range of products and services, please contact us – we will be pleased to discuss your requirements!

For more information on hearing loops and assistive listening call  
**+44 (0)1636 610062** or visit  
**[www.ampetronic.com](http://www.ampetronic.com)**

## Why hearing loops?

**Every day, millions of people with hearing loss utilise public transport and they require assistance to make use of on-board public announcements and emergency broadcasts.**

Whether they are travelling for work or leisure purposes, if they are a hearing aid user, they will need support to make use of on-board audio services and can legally expect to have equality of access to them.

Despite digital advancements, modern hearing aids are still primarily designed for 1 to 1 communications over short distances. This makes separation of environmental background noise and the sound the user wishes to hear, difficult or impossible when relying on the hearing aid microphones alone. With the addition of distance to the sound source the problem can be further exacerbated.

To enable people with hearing loss to make use of voice communication systems when they are out and about, it is essential that they are provided with equal access to the same public address services, intercoms and emergency announcements, that any other service user would expect. Without this many choose not to travel at all as the experience can be too difficult.

Statistics from around the world reveal that currently more than 1.5 billion people (nearly 20% of the global

population) experiences some form of hearing loss, this number could rise to over 2.5 billion by 2030. Around 1 in 4 of those people will be using hearing aids. This significant section of our society is protected by antidiscrimination legislation (varies dependent on each country) which requires service operators to make reasonable adjustments to their services to cater for them using "Assistive Listening" technology.

In transport environments, where the users are transient and there is no practical capacity to hand out receivers. Hearing loops which work directly with a hearing aid user's telecoil become the only practical assistive listening technology for this application.

Having considered the moral and antidiscriminatory rationale for installing a high-quality Hearing Loop, it's also important to consider Standards compliance. Facility operators can find themselves in an actionable position if there is no service provision that is of a genuine benefit to users. In other words, the installation must be fit for purpose. The measurable performance of a Hearing Loop system is defined in the international IEC 60118-4 Standard, so it is imperative that a well-designed and fully functional system is installed.

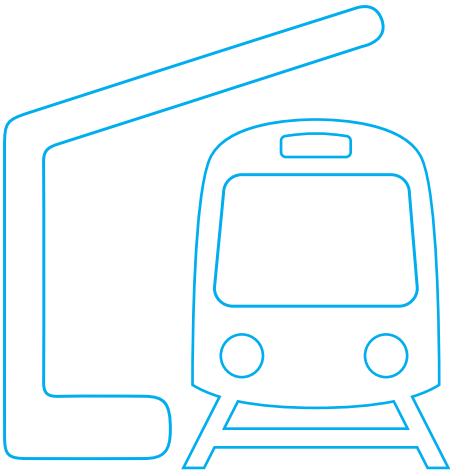
## UK Population of travellers with hearing loss

UK rail travel demographics			2021			2031		
Age group	Rail Passenger Demographics <sup>1</sup>	% with hearing loss <sup>2</sup>	Population <sup>3</sup> (UK)	Travellers	Travellers with hearing loss	Population <sup>3</sup> (UK)	Travellers	Travellers with hearing loss
15-24	30%	3.6%	7,802,791	2,340,837	<b>84,270</b>	8,754,753	2,626,426	94,551
25-39	14%	3.6%	13,451,723	1,883,241	<b>67,797</b>	12,851,055	1,799,148	64,769
40-54	12%	6.5%	12,975,941	1,557,113	<b>101,212</b>	13,188,271	1,582,593	102,869
55+	8%	40%	21,299,967	1,703,997	<b>681,599</b>	23,999,626	1,919,970	767,988
Total				7,485,189	<b>934,878</b>		7,928,136	1,030,177
% Pop. of travellers with hearing loss					<b>12%</b>			<b>13%</b>

1. <https://start.askwonder.com/insights/train-traveler-research-rwczeubmx#~:text=Individuals%20over%2070%20make%20an,%25%20of%20those%20aged%2055%2B>

2. [http://www.thebsa.org.uk/wp-content/uploads/2015/09/Hearing\\_screening\\_in\\_adults\\_review-NSC.pdf](http://www.thebsa.org.uk/wp-content/uploads/2015/09/Hearing_screening_in_adults_review-NSC.pdf)

3. 2018-based National Population Projections (ONS)



# Concourse platforms & waiting areas

Transport hubs and concourse facilities generally cover very large areas with high amounts of foot traffic and background noise, especially at peak times.

This, together with high ceiling structures and the inevitable distance to installed sound reinforcement speakers results in exceptionally poor acoustics and means that hearing aid users find themselves unable to understand the vital public address messages containing important information about their journey, and may be forced to continually monitor information screens, which may not be located in a convenient location - or risk missing messages entirely.

Hearing loops are the perfect solution to this issue, allowing the individual to connect their hearing aid directly to the public address system, eliminating distance and background noise problems.

A detailed Hearing Loop system design and appropriately robust components are essential to provide a good audio service and to minimise issues relating to area coverage and existing cabling. Ampetronic's solutions also cover application specific safety Standards such as EN5012-4 for trackside equipment.

## Products

### C Series hearing loop drivers



### T14-1 Transport hearing loop driver



### CLS2-R1 Rail platform amplifier





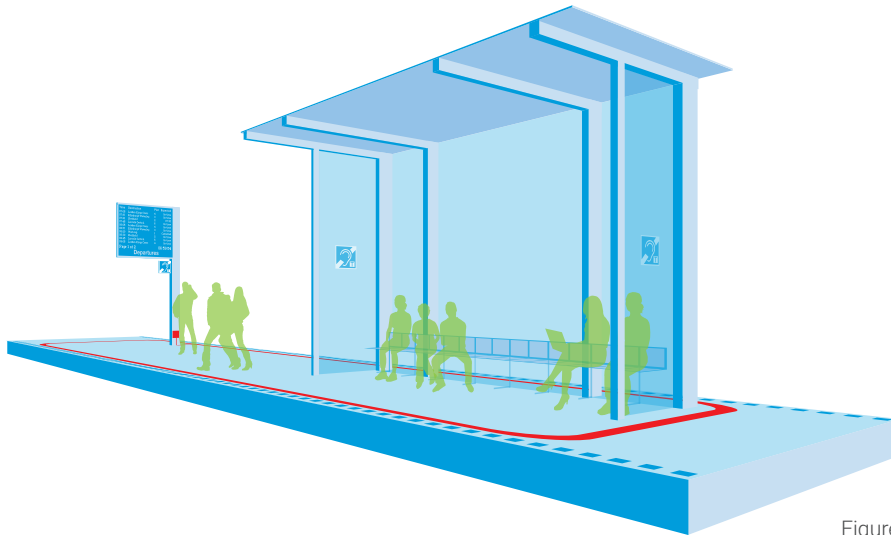


Figure 1

## Applications

Transport hubs such as airports, train/tram stations and bus terminals are highly varied and are vital wherever PA/VA announcements are used to relay travel information (FIDS/PIDS), additional announcements in times of disruption, and any possible emergency alarms.

- Arrival areas with information screens
- Departure lounges, restaurants, bars and gates
- Baggage reclaim and waiting areas

## Application notes:

Area coverage systems for concourse or platform areas will typically be installed at floor level, under the floor finish, or buried in the screed. They consist of an audio source (typically the PA system), a Hearing Loop amplifier and the loop (or loops) cable. There are two typical scenarios for area coverage Hearing loops which are dictated by area size, area use and building/screed construction.

Perimeter loops are the simplest form of Hearing Loop and simply require the intended area of use to be surrounded by a copper cable, which is connected to a single output phase amplifier. Perimeter loops can be buried in screed in areas with no structural metal, or in metal-reinforced narrow spaces (up to approx 4m wide) such as some railway platforms. (See Figure 1). Contact Ampetronic for advice.

MultiLoop phased array systems are suitable for large areas and areas in modern buildings with metal construction, for areas where steel reinforcement has been used in the screed and where multiple systems are to be installed in close proximity.

MultiLoop systems employ an array or two loop cables with the signal phase shifted by 90°. The cables are typically laid out in a carefully designed overlapping pattern that optimises area coverage and performance. If the screed depth or floor finish does not allow for individual segments of the loop system to overlap, the system can be designed without overlaps, at a small but generally acceptable compromise to coverage. (See Figure 2) Contact Ampetronic for advice.

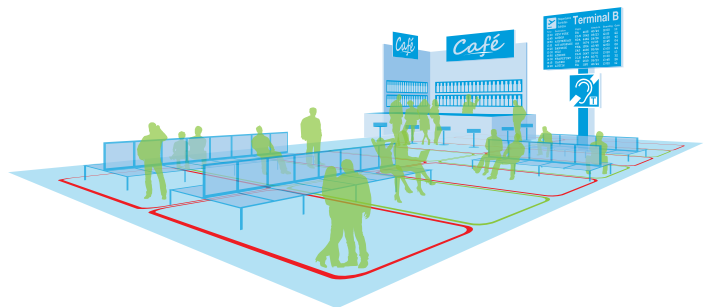
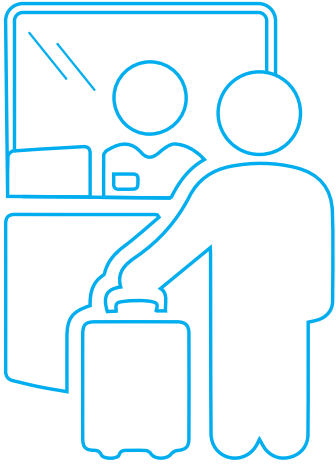


Figure 2

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# Point of Sale & Service Counters

Transport hub ticketing and check-in areas are high foot-traffic, transient, one-to-one applications and in today's security conscious world more and more of these kind of interactions are over wide counters, or through security screens.

Although hearing aids are designed to accommodate for one-to-one communication over short distances, the unusually high levels of ambient noise poses a problem as the hearing aid microphone struggles to separate it from the required sound, reducing intelligibility. This is often compounded by the unusually long distance from the staff member speaking to them making the in-built microphone impractical.

Although speech transfer systems can be used to compensate for the acoustic issues brought about by security screens for people without hearing loss, intelligibility can still be problematic for hearing-aid users as sound reproduced through small speakers has limitations in terms of fidelity and gain before feedback, an issue that also affects sound produced by automatic check-in machines.

The integration of a Hearing Loop system vastly improves the customer experience by effectively linking the staff-side microphone, or audio signal, directly to the Hearing aid via it's magnetic pick-up.

## Products

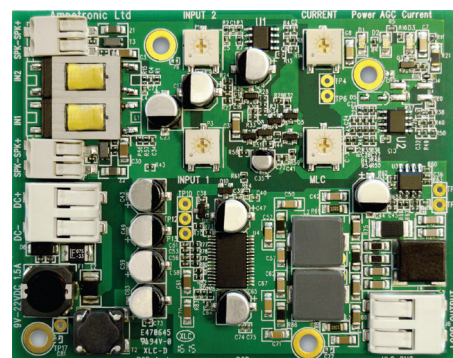
### TalkPerfect speech transfer system



### CLD1 small area loop driver



### HLS Series





## Applications

Hearing Loops should be used at any P.O.S. or desk facility where customers communicate with staff in a noisy environment. The nature of the system required is dependent on the exact application, however the following should be considered by default.

- Check-In, Ticket Sales and Customer Information Desks
- Bureau de Change, Bank and Passport Control Desks
- Automatic Check-In Desks with Audio Services

Open desks, particularly ones with a wide aspect ratio that creates considerable distance between staff and client should utilise a standard fixed counter induction loop system comprising of a microphone located next to (or pointing at) the mouth of the member of staff, a loop amplifier and a small preformed loop situated at around 0.5 meters from the expected hearing aid position (See figure 3).

Applications that make use of security screens create a communication barrier for everyone. A full duplex intercom system that has a line out feature for connection to an induction loop amplifier is required (see figure 4).

Many airports and railway stations now make use of automatic check-in desks to minimise queuing times and build-up. If the system makes use of audio reinforcement messages then a hearing loop amplifier and preformed loop should be integrated into the system (see figures 5 & 6).

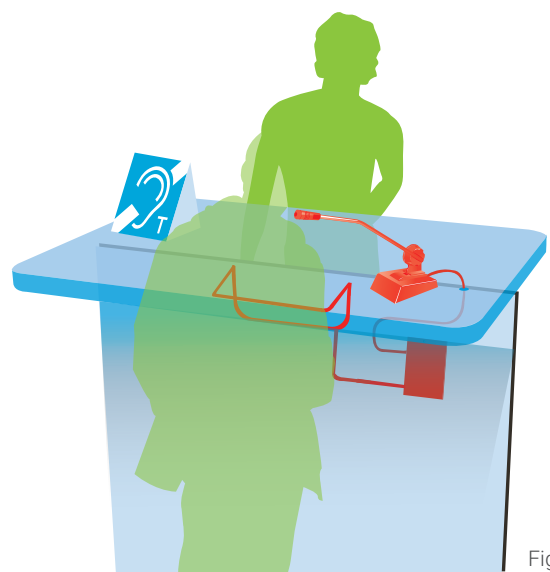


Figure 3

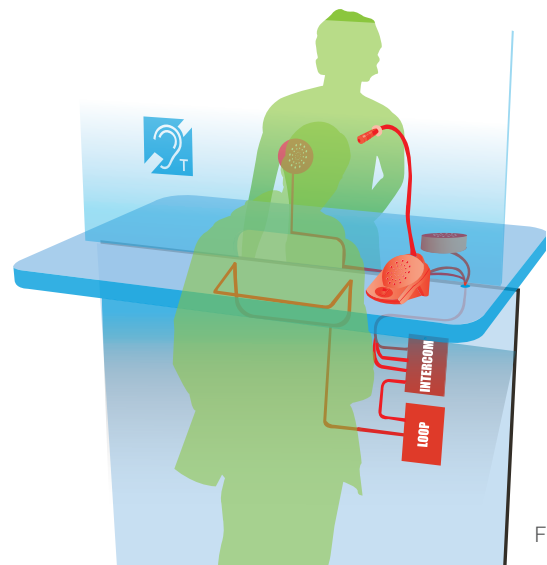
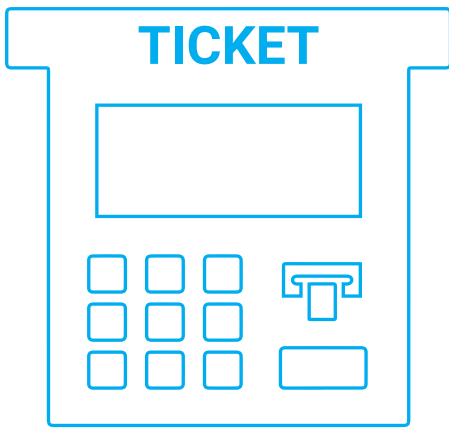


Figure 4

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# Help point, parking barrier & ticket machines

Intercom systems and recorded audio reinforcement messages are now commonplace in car parks barriers, help points, ticket vending machines and ATMs around the world.

As with speech transfer systems, which are used to compensate for the acoustic issues brought about by security screens for people without hearing loss, intelligibility of the sound produced by these systems can still be problematic for hearing-aid users as sound reproduced through small speakers has limitations in terms of fidelity and output level.

To vastly improve the level of service offered to people with hearing loss, and in the case of help points in particular which are used in emergency situations, to comply with equality of access to services legislation, it is necessary to integrate a Hearing Loop amplifier and loop in order to couple the audio directly with the hearing aid.

Ampetronic's range of solutions that can suit almost all applications and size of enclosure. All 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.

## Products

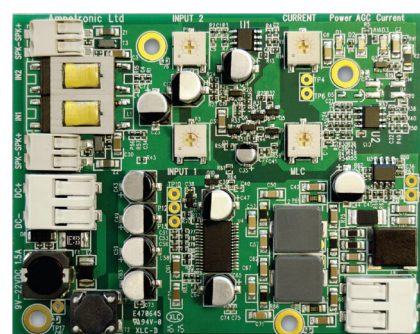
### HLS-2C Active Loop Panel



### TalkPerfect speech transfer system



### HLS Series





# Applications

Hearing loop amplifiers and preformed loops can be integrated into almost any modern application that includes an audio output and is used in a public environment.

- Metro systems and railway platform help points
- Car park barriers and ticket vending machines
- Drive through intercoms
- Interactive advertising boards with audio content

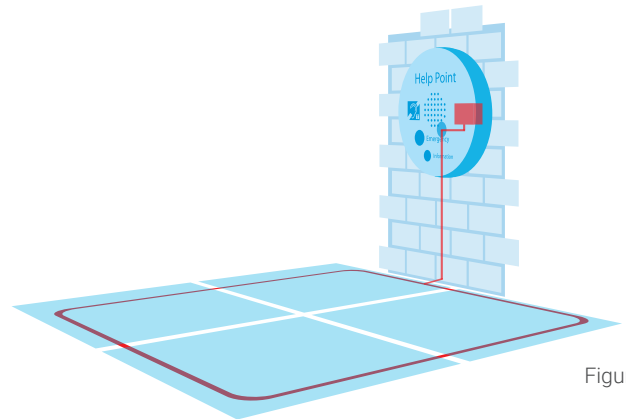


Figure 5

## Application notes:

### Recommended installation - Maximised coverage

Ampetronic OEM intercom and recorded audio message 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 (See figure 5).

The use of metal floor tiles will limit the size of the looped area. This solution is not recommended for car park barriers where the user is located in a vehicle.

### Localised area coverage installation

Where an area coverage loop cannot be installed, the amplifier can be used to drive a smaller loop located inside or near to the enclosure (See Figure 6 & 7).

This style of installation restricts the useful magnetic field to an area no more than 1m from the loop coil, and the selection of amplifier and loop are highly dependent on the size and construction of the enclosure. It is particularly suited to car park barrier and drive-through applications. If the enclosure is not suitable then it is possible to install the loop in a secondary non-metallic housing.

For drive through and car park barrier intercoms it may be possible to create a stronger signal to increase the effective range by housing a larger loop coil in a separate enclosure to accommodate for the hearing aid user being located in a vehicle.

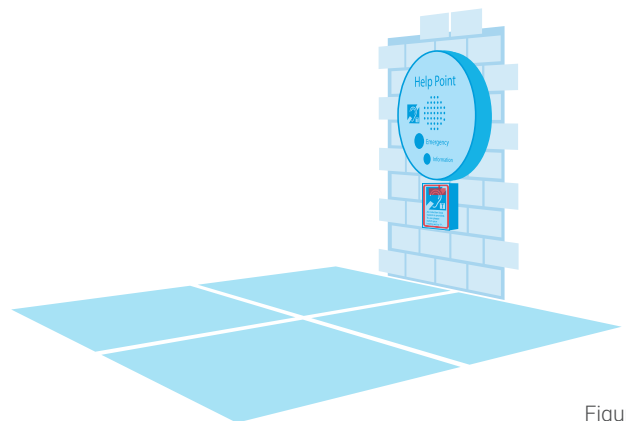


Figure 6

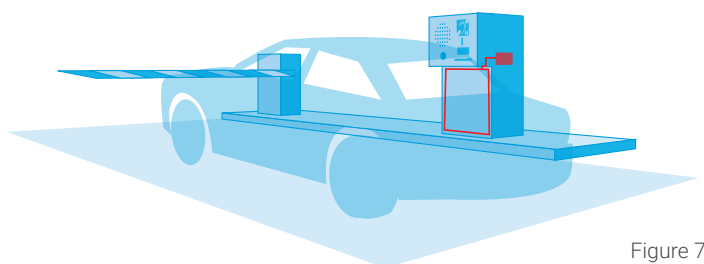


Figure 7

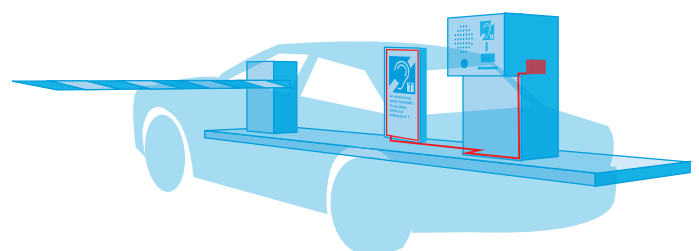
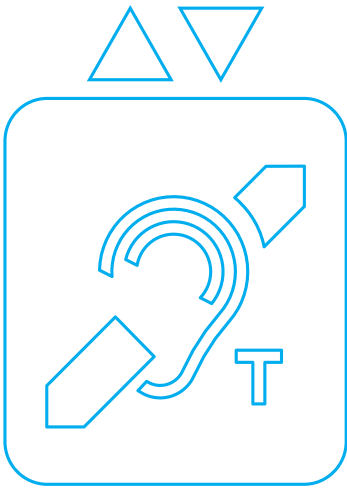


Figure 8



# Elevator Intercoms

Hearing Loop integration in elevators is now commonplace and has been adopted in most countries in recognition of the need for emergency access to the intercom audio by hearing aid wearers who would otherwise struggle to use the system.

As with other systems that utilise small speakers, intelligibility of the sound produced by intercoms can be problematic for hearing-aid users as the reproduced sound has limitations in terms of fidelity and gain.

Hearing aid users can also take advantage of the floor and safety announcements without requiring line of sight to the information display, which is not always possible in a crowded elevator.

Ampetronic integrated elevator hearing loop solutions are popular with many of the World's leading manufacturers and re-fitters. Correctly installed they will provide full area coverage in most lifts with performance in accordance with the IEC 60118-4 Standard.

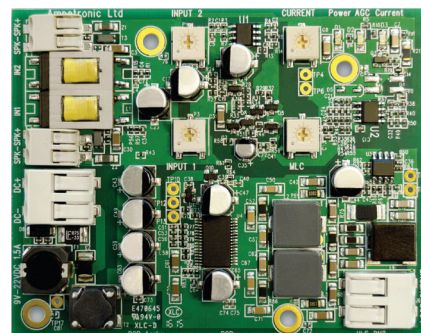
All units are designed for excellent intelligibility and include metal loss frequency compensation to correct for the effects caused by metal structure of the lift car. Battery backup is available as an integral option if required.

## Products

### HLS-2C Active Loop Panel



### HLS Series





# Applications

Ampetronic elevator intercoms are designed to accommodate any application with an emergency intercom and/or passenger announcement service.

- Elevators / Lifts
- Funiculars, Cable-Cars, Gondolas

## Application notes:

### Recommended installation - Full area coverage

All Ampetronic elevator systems are designed to provide full area coverage of the lift car by driving a loop around the perimeter of the lift car preferably positioned at ceiling height. The loop must be placed inside the lift car behind non-metallic trim. The loop must not be behind metal panels or inside a metal enclosure in the roof space as this normally causes unacceptable reduction and distortion of the magnetic field. The amplifier can be housed within the roof in integrated into the control panel (See figures 10 & 11).

There are a few typical options for the loop itself:

**Loop Bars** - The most robust solution is to attach custom built stainless steel loop bars to the ceiling or upper walls inside the lift. Loop bars can be custom designed and supplied by Ampetronic to fit your specific requirements. Loop bars provide a robust and aesthetically pleasing solution with excellent performance.

**Wire Perimeter Loop** - In some lifts it is possible to fit a coil of loop cable inside the lift behind non-metallic trim, or in rare cases inside the roof space if non-metallic or if tested to be suitable prior to final installation.

**Localised area coverage installation** - Where an area coverage loop can not be installed, the amplifier can be used to drive a smaller loop placed on or inside non-metallic wall panels or trim.

This style of installation restricts the useful magnetic field to an area no more than 1m from the loop coil, making such a small loop ineffective for large lifts and for use with a Public Address system or for safety communications such as a Voice Evacuation System (See figure 12).

Installation behind a metal panel or metal trim will rarely produce an effective magnetic field with any amplification method. Please contact Ampetronic for detailed guidance on the best installation method for your lift car or industrial environment.

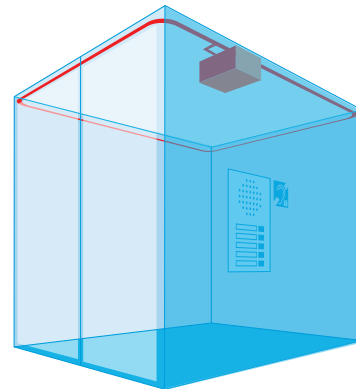


Figure 10

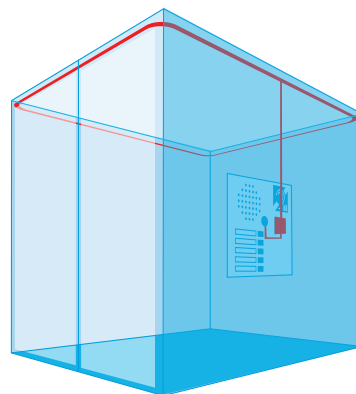


Figure 11

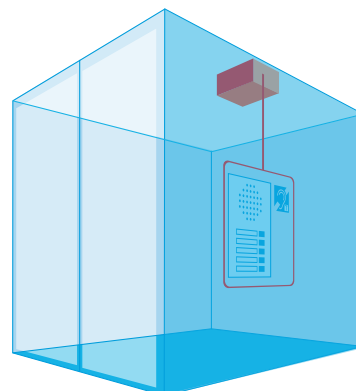


Figure 12



## Providing a genuine benefit.

To find out what we can bring to your assistive listening project, talk it through with our expert team on:

**+44 (0) 1636 610062**

**or email us at [sales@ampetronic.com](mailto:sales@ampetronic.com)**

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**AMPETRONIC<sup>®</sup>**

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