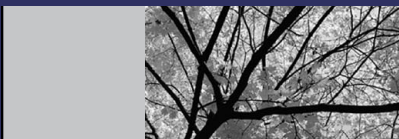


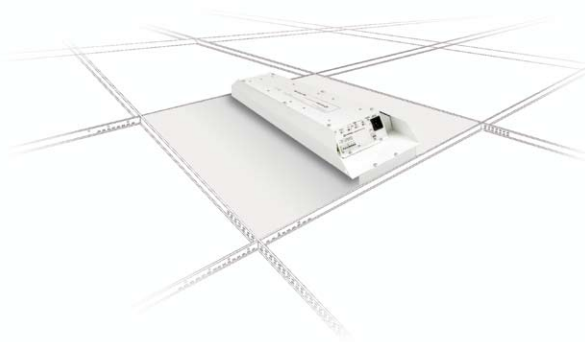


CEILING



SYSTEMS

[ Between us, ideas become reality.™ ]



**i ceilings**  
SOUND SYSTEMS



Ceiling speakers without **seeing** speakers

**Armstrong**

- ASDA Basildon features specially-developed metal plank i-ceilings Sound Panels throughout the store



## Armstrong World Industries

As one of the world's leading manufacturers of mineral ceilings, the Armstrong name is synonymous with quality - from our outstanding range of products through to our customer service, support and continued commitment to the environment.

Armstrong is providing clients with more choice than ever before. We have introduced a range of audio products that are developed and marketed throughout the world providing today's specifier with choice and greater design flexibility.

Using innovative technologies we have created practical and aesthetic acoustical solutions which enhance the values Armstrong has built up over the past 150 years serving the construction industry.

## CIE-Group

CIE-Group has over 45 years experience and product knowledge of communications technology and AV equipment, leading the UK in the professional installer supply market.

We are the number one independent supplier of architectural audio equipment in the UK, providing a complete portfolio of amplification systems, loudspeakers and microphones from many leading brands to markets as diverse as stadiums, airports, education, factories, leisure centres, retail, offices, churches, bars and nightclubs.

## Working in partnership

Having a combined expertise in the suspended ceilings industry and NXT technology within the audio industry, Armstrong and CIE-Group have forged a strong and unique relationship since the introduction of i-ceilings Sound Systems.

Building on our success, i-ceilings continues to demonstrate significant value for clients, architects and designers who are keen to adopt the current building trends of minimal, clean crisp environments. Benefiting from Armstrong's wealth of knowledge in the ceiling industry and CIE-Group's expertise with NXT technology, we now offer the most effective solution for every commercial audio and AV installation.

Together we are committed to developing new and exciting products to enhance our existing innovative portfolio.

Armstrong i-ceilings are now exclusively designed and manufactured in the UK.

  
cie-group  
integrated system solutions

 **Armstrong**

# ceilings

## SOUND SYSTEMS

ceiling speakers without **seeing** speakers

i-ceilings 'invisible' integrated Sound Panel loudspeakers from the world leaders in ceiling development.

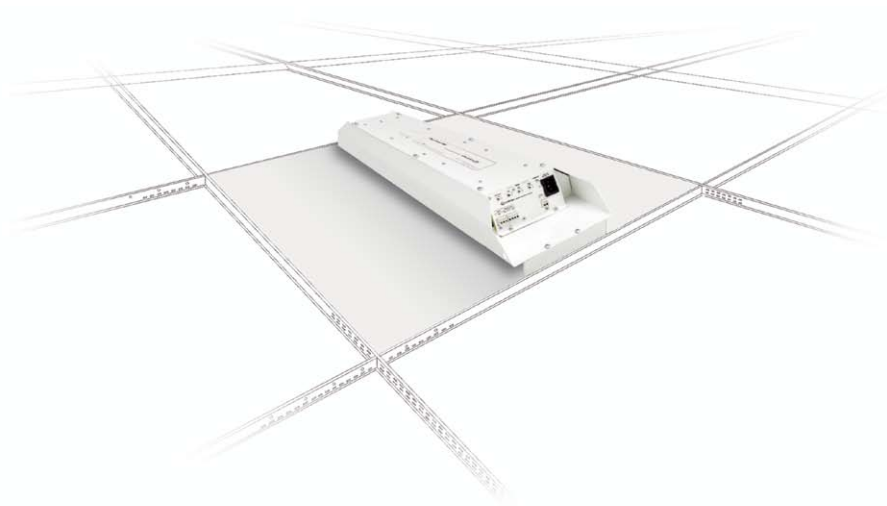
### Introduction

In providing the ideal environment, the consideration of both acoustics and aesthetics is essential.

i-ceilings, the latest generation of integrated sound panels, uses state-of-the-art NXT technology to provide exceptional sound qualities without spoiling the aesthetic consistency of the ceiling plane.

Combining the innovation of the world's leading designers and suppliers of ceiling systems with the unique sound qualities of NXT technology, Armstrong have produced a unique concept in acoustic ceilings to provide an unparalleled sound system for foreground and background music, voice reinforcement, public address and active acoustics such as sound masking.

- New generation product design
- Completely 'unidentifiable' loudspeaker solution
- Matches over 90% of Armstrong suspended ceiling systems
- Installed up to 75% faster than standard ceiling speakers
- Unparalleled levels of intelligibility and dispersion of sound
- New 'Powered' & 'Surface-mount' versions now also available





### The concept of i-ceilings

A unique concept in integrated acoustic ceiling systems, i-ceilings utilises NXT flat panel audio technology to provide a loudspeaker system designed to match Armstrong's market-leading range of ceilings.

The i-ceilings concept allows for 'invisible' loudspeaker solutions which benefit from greatly increased sound dispersion, providing incredibly even levels of sound reproduction compared with the 'hot and cold spots' associated with traditional 'cone' loudspeaker technology.

Due to their aesthetic and acoustic qualities, i-ceilings Sound Panels are ideal in education, retail, boardrooms, offices, call centres, healthcare, hospitality and leisure, ensuring even coverage of high quality music and voice reproduction without compromise to the architectural environment.



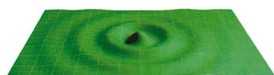
- Rear view of the i-ceilings Powered CS-4000

### The technology

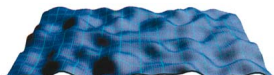
The Armstrong i-ceilings range of Sound Panels utilises the unique loudspeaker technology 'NXT™'. Unlike conventional cone speakers which operate with a piston-like action, NXT technology introduces resonant vibrations to the entire surface of a lightweight flat panel via an electronic transducer system.

In effect, the panel within the ceiling tile is vibrating in much the same way as a piano or acoustic guitar. Like these musical instruments, i-ceilings panels generate highly diffuse and disperse sound energy (similar in nature to the light emitted from a fluorescent lamp).

Sound, therefore, is radiated in all directions to ensure highly intelligible voice and music reproduction and even sound coverage. This is different to the results of a conventional piston-like cone speaker which can cause highly directional and often unintelligible speech in large open spaces.



Uniform sound vibration pattern of a conventional cone speaker.



Uncorrelated sound vibration pattern of an NXT Panel.



retail



education



corporate



leisure



## i-ceilings in the commercial sector



**Client:** Shrewsbury Council Chambers  
**Product:** i-ceilings Pro-Panel,  
Ultima Microlook

### Application:



As part of the newly-built 'Guildhall' complex, Shrewsbury Council Chambers services a 40-strong committee of councillors.

Featuring a wireless conference system, the Chambers are fitted with i-ceilings Pro Panels whose wide acoustic dispersion characteristics vastly reduce the feedback issues commonly encountered in an environment where 40 microphones are in such close proximity to the loudspeakers.

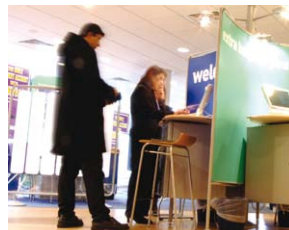
**Client:** ASDA Stores  
**Product:** i-ceilings CS-1000,  
Dune Microlook



### Application:

i-ceilings CS-1000 Sound Panels have been specified across the ASDA range of supermarkets, Living and George stores to provide PA and marketing messaging with the highest levels of intelligibility, whilst maintaining the clean lines of the relatively low ceilings.

**Client:** HBOS  
**Product:** i-ceilings CS-1000,  
Dune Microlook



### Application:

HBOS (Halifax and Bank of Scotland) took a retail-style approach to banking and overcame the issues of customer confidentiality by introducing in-branch i-ceilings based 'music-masking'. By installing evenly dispersed, low level music and marketing messages, conversations between customer and advisor were 'masked'.

**Client:** Great Ormond Street Hospital  
**Product:** i-ceilings CS-1000,  
Metal Tile Solution



### Application:

Part of the internationally renowned Great Ormond Street Children's Hospital; The Institute of Child Healthcare's in-house lecture theatres have been upgraded with a new sound reinforcement system. Using i-ceilings Metal Sound Panels, previous issues of obtrusive AV equipment and microphone feedback have simply and effectively been overcome.

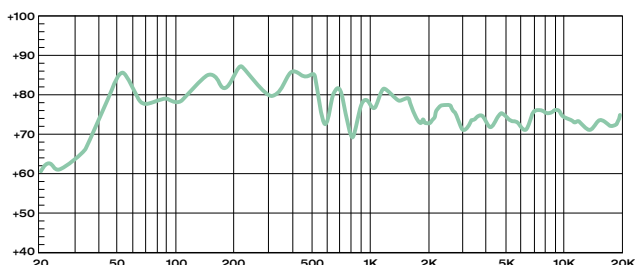


### material:

Steel frame, specially designed tubular membrane, painted scrim facing

### frequency response:

Frequency range - nominal  
Armstrong CS-1000 Ultima  
Built in a ceiling, independently tested in an anechoic chamber  
Power: 1W  
Distance: 1 metre



Model:	CS-1000:
Dimensions:	600 x 600 x 115 mm
Panel weight:	4.4kg
Warranty:	3 year limited warranty on materials & workmanship from date of manufacture. Sales of the product and liability are in accordance with the terms and conditions of sale
Sensitivity:	86.9dB @ 1W, 1m / Max 95.9dB
Impedance:	100v: 8, 4, 2 & 1W / 8Ω
Transducers:	Quantity: 1
Power Capacity:	8W

### finishes:

i-ceilings CS-1000 Panels are currently available in Armstrong's most popular ceiling tile finishes: Ultima, Optima, Dune, Fine Fissured, Orcal, Neeva and Reno.

For details of non-standard, bespoke units, please call the CIE-Group sales office on +44 (0)115 9770075.



### CS-1000 Sound Panel

CS-1000 Sound Panel with superior combined performance for music, public address and active acoustics to enhance privacy, comfort and workspace effectiveness. New development and remodelling ensures even greater performance and ease of installation from the complete i-ceilings range. Available to co-ordinate with Armstrong's most popular ceiling patterns, for new-build and retrofit installations.

### superior aesthetics:

- Provides improved aesthetics over conventional visible speakers
- Seamlessly blends with the rest of the ceiling

### flexibility & value:

- Quick, easy and less expensive to install and/or relocate
- Lays into standard 600 x 600 mm ceiling tile grid\*
- Low profile and location in the ceiling plane reduces plenum conflicts

### acoustic features:

- Compatible with 100v line and low impedance systems (8Ω Selector Terminal)
- Omni-directional speaker design delivers more uniform sound for broader coverage
- High speech intelligibility over large areas
- Delivers music, public address and active acoustics through the same speaker eliminating redundant systems
- Low transducer self-noise
- Variable wattage tap for localised volume control (New external screw terminals for faster, easier installation)

### applications:

- Office
- Education
- Healthcare
- Retail
- Leisure

Product:	Finish:	Dimensions:	Part Number:
CS-1000	Ultima / Optima MicroLook	600 x 600 mm	BP6017ME
CS-1000	Ultima / Optima Tegular	600 x 600 mm	BP6018ME
CS-1000	Dune Plus MicroLook	600 x 600 mm	BP6019ME
CS-1000	Dune Plus Tegular	600 x 600 mm	BP6020ME
CS-1000	Fine Fissured MicroLook	600 x 600 mm	BP6021ME
CS-1000	Fine Fissured Tegular	600 x 600 mm	BP6022ME
CS-1000	Neeva/Reno MicroLook	600 x 600 mm	BP6029ME
CS-1000	Neeva/Reno Tegular	600 x 600 mm	BP6028ME

\*Also available in all standard European ceiling module sizes.

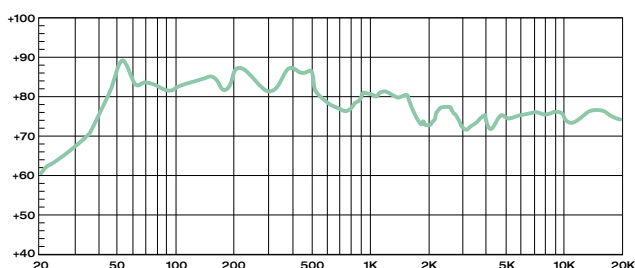


### material:

Steel frame, specially designed tubular membrane, painted scrim facing

### frequency response:

Frequency range - nominal  
Armstrong CS-4000 Ultima  
Built in a ceiling, independently tested in an anechoic chamber  
Power: 1W  
Distance: 1 metre



Model:	CS-4000:
Dimensions:	600 x 600 x 115 mm
Panel weight:	4.6kg
Warranty:	3 year limited warranty on materials & workmanship from date of manufacture. Sales of the product and liability are in accordance with the terms and conditions of sale
Sensitivity:	88.9dB @ 1W, 1m / Max 97.4dB
Impedance:	100v: 8, 4, 2 & 1W / 8Ω
Transducers:	Quantity: 4
Power Capacity:	8W

### finishes:

i-ceilings CS-4000 Panels are currently available in Armstrong's most popular ceiling tile finishes: Ultima, Optima, Dune, Fine Fissured, Orcal, Neeva and Reno.

For details of non-standard, bespoke units, please call the CIE-Group sales office on +44 (0)115 9770075.



## CS-4000 Sound Panel

The new 4 Transducer CS-4000 Sound Panel provides enhanced output and frequency range performance for AV, public address and active acoustics to enhance privacy, comfort and workspace effectiveness. New development and remodelling ensures even greater performance and ease of installation from the complete i-ceilings range. Available to co-ordinate with Armstrong's most popular ceiling patterns, for new-build and retrofit installations.

### superior aesthetics:

- Provides improved aesthetics over conventional visible speakers
- Seamlessly blends with the rest of the ceiling

### flexibility & value:

- Quick, easy and less expensive to install and/or relocate
- Lays into standard 600 x 600 mm ceiling tile grid\*
- Low profile and location in the ceiling plane reduces plenum conflicts

### acoustic features:

- 4 Transducer version for higher output levels and wider frequency range
- Compatible with 100v line and low impedance systems (8Ω Selector Terminal)
- Omni-directional speaker design delivers more uniform sound for broader coverage
- High speech intelligibility
- Delivers music, public address and active acoustics through the same speaker eliminating redundant systems
- Low transducer self-noise
- Variable wattage tap for localised volume control (New external screw terminals for faster, easier installation)

### applications:

- Office
- Education
- Healthcare
- Retail
- Leisure

Product:	Finish:	Dimensions:	Part Number:
CS-4000	Ultima / Optima MicroLook	600 x 600 mm	BP4017ME
CS-4000	Ultima / Optima Tegular	600 x 600 mm	BP4018ME
CS-4000	Dune Plus MicroLook	600 x 600 mm	BP4019ME
CS-4000	Dune Plus Tegular	600 x 600 mm	BP4020ME
CS-4000	Fine Fissured MicroLook	600 x 600 mm	BP4021ME
CS-4000	Fine Fissured Tegular	600 x 600 mm	BP4022ME
CS-4000	Neeva/Reno MicroLook	600 x 600 mm	BP4029ME
CS-4000	Neeva/Reno Tegular	600 x 600 mm	BP4028ME

\*Also available in all standard European ceiling module sizes.





### material:

Steel frame, special honeycomb membrane, painted scrim facing

### frequency response:

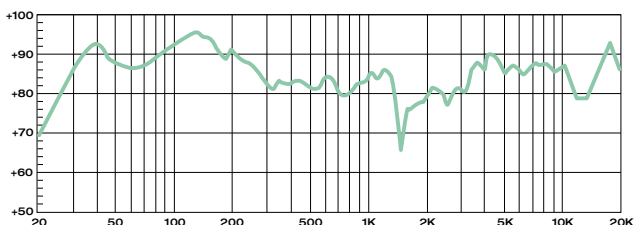
Frequency response - nominal

Armstrong Pro Panel Ultima

Built in a ceiling, independently tested in an anechoic chamber

Power: 1W

Distance: 1 metre



Model:	PRO Panel:
Dimensions:	600 x 600 x 120 mm
Panel weight:	5.5kg
Warranty:	3 year limited warranty on materials & workmanship from date of manufacture. Sales of the product and liability are in accordance with the terms and conditions of sale
Sensitivity:	93dB @ 1W, 1m
Impedance:	100v: 7.5, 15, 30W / 8Ω
Transducers:	Quantity: 4
Power Capacity:	30W

### finishes:

i-ceilings Pro-Series Panels are currently available in Armstrong's most popular ceiling tile finishes: Ultima, Optima, Dune, Fine Fissured, Orcal, Neeva and Reno.

For details of non-standard, bespoke units, please call the CIE-Group sales office on +44 (0)115 9770075.



### Pro-Series Sound Panel

Pro Series Sound Panel with superior combined performance for music and audio visual applications. New development and remodelling ensures even greater performance and ease of installation from the complete i-ceilings range. Available to co-ordinate with Armstrong's most popular ceiling patterns, for new-build and retrofit installations.

### superior aesthetics:

- Provides improved aesthetics over conventional visible speakers
- Seamlessly blends with the rest of the ceiling

### flexibility & value:

- Quick, easy and less expensive to install and/or relocate
- Lays into standard 600 x 600 mm ceiling tile grid\*
- Low profile and location in the ceiling plane reduces plenum conflicts

### acoustic features:

- Superior dispersion of sound over the full audible range
- Advanced membrane design produces high fidelity music for foreground and background applications
- Superior audio capabilities provide high quality active acoustics
- High power capacity generates high performance sound
- 'In' & 'out' terminals for both 100v and 8Ω
- Compatible with 100v line systems and low impedance systems (8Ω Selector Terminal)
- Omni-directional speaker design delivers more uniform sound for broader coverage
- High speech intelligibility over large areas
- Delivers music and public address through the same speaker eliminating the need for multiple systems
- Variable wattage tap for localised volume control (New external screw terminals for faster, easier installation)

### applications:

- Office
- Education
- Healthcare
- Retail
- Leisure

Product:	Finish:	Dimensions:	Part Number:
Pro Series	Ultima / Optima MicroLook	600 x 600 mm	BP6013ME
Pro Series	Ultima / Optima Tegular	600 x 600 mm	BP6014ME
Pro Series	Dune Plus MicroLook	600 x 600 mm	BP6015ME
Pro Series	Dune Plus Tegular	600 x 600 mm	BP6016ME
Pro Series	Fine Fissured Microlook	600 x 600 mm	BP6030ME
Pro Series	Fine Fissured Tegular	600 x 600 mm	BP6031ME
Pro Series	Neeva/Reno MicroLook	600 x 600 mm	BP6006ME
Pro Series	Neeva/Reno Tegular	600 x 600 mm	BP6007ME

\*Also available in all standard European ceiling module sizes.





### i-ceilings Powered Panels (featuring 'Pwrd' Integrated Amplifier)

i-ceilings CS-4000 and Pro Panels are now also available as powered versions, featuring our exclusively developed Integrated Panel Amplifier.

The 20W Panel Amplifier is factory-fitted and features line level volume control, tone controls and external speaker output.

All connections to the amplifier are externally accessible using removable screw terminals for fast and easy connection.

### acoustic features:

- 20W Integrated Amplifier (30W Peak)
- Line Level Volume Control
- Low, Mid and High Tone Controls
- Available in self-powered CS-4000 and Pro Panel versions
- Powered Panel versions will power an additional passive CS4000 Sound Panel slave
- Fast and easy to install

### applications:

- AV Presentation Systems
- Education
- Healthcare
- Leisure
- Corporate

### ordering:

Simply by adding the suffix 'Pwrd' to a standard 'BP' i-ceilings part number will ensure your Sound Panel is supplied as a self-powered version.

(eg. Powered version of the CS-4000 Ultima Microlook would be BP4017ME/Pwrd).

### remote volume control:

Wall-mounting remote volume control (Part No RVC1) is available as an additional option.



### material:

Steel frame and bridge

Model:	CS4000/Pwrd	PRO/Pwrd
Dimensions:	600 x 600 x 120 mm	600 x 600 x 120 mm
Panel Weight:	6.2kg per panel	7.1kg per panel
Frequency Range:	80Hz ~ 18KHz	40Hz ~ 20KHz
Output Impedance:	8Ω	8Ω
Output Power:	8W RMS (max)	20W RMS (max)
Operating Voltage:	230v AC	230v AC
Sensitivity:	88.9dB @ 1W, 1m / 97.4dB Max	93dB @ 1W, 1m
Extension Speaker Output:	8W	8W

### finishes:

i-ceilings Powered Panels are currently available in Armstrong's most popular ceiling tile finishes: Ultima, Optima, Dune, Fine Fissured, Orcal, Neeva and Reno.

For details of non-standard, bespoke units, please call the CIE-Group sales office on +44 (0)115 9770075.





## CS4500 Ceiling Surface-mount Sound Panel specifications



- Back-box rear elevation

### material:

White, steel enclosure, specially designed membrane, white scrim facing

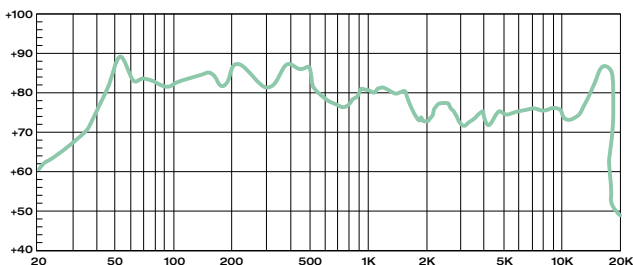
### frequency response:

Frequency range - nominal

Armstrong CS4500

Power: 1W

Distance: 1m



Model:	CS4500:
Dimensions:	500 x 500 x 70 mm
Panel weight:	4.3kg
Warranty:	3 year limited warranty on materials & workmanship from date of manufacture. Sales of the product and liability are in accordance with the terms and conditions of sale
Sensitivity:	86.9dB @ 1W, 1m / Max 95.9dB
Frequency Range:	50Hz ~ 18KHz
Impedance:	100v: 8, 4, 2 & 1W, 8Ω
Transducers:	Quantity: 2
Power Capacity:	8W

### CS4500 Sound Panel

The new CS4500 Sound Panel has been developed to provide all the acoustic benefits of an i-ceilings NXT loudspeaker, in environments featuring solid/plasterboard ceilings (ie. no suspended ceiling system available for installing standard i-ceilings Sound Panels).

This surface-mount solution features an i-ceilings CS Sound Panel fitted within a low-profile, steel 'back box' for direct mounting to a solid ceiling.

### acoustic features:

- Compatible with 100v line and low impedance systems (8Ω Selector Terminal)
- Omni-directional speaker design delivers more uniform sound for broader coverage
- High speech intelligibility over large areas
- Delivers music, public address and active acoustics through the same speaker
- Variable wattage tap for localised volume control (internal screw terminals)

### applications:

- Office
- Education
- Healthcare
- Retail
- Leisure

Product:	Finish:	Dimensions:	Part Number:
CS4500	Neeva/Reno	500 x 500 mm	BP4500ME

**Please Note:** The CS4500 Sound Panel is not appropriate for wallmount applications.



'Sound Field' or a 'Sound Field Voice Reinforcement System' is essentially the integration of a mini-PA system in the classroom:

Under quiet classroom conditions, most teachers have enough natural volume in their voice to communicate effectively with a standard sized class. However, a number of acoustic factors (lively/noisy classes, reverberant room conditions, ambient noise from equipment and outside, hearing difficulties, etc.) can have a significant effect on clear, effective teacher/pupil communication.

The inclusion of a Sound Field System in the classroom will raise the teacher's voice above this ambient noise level, to give even voice coverage throughout the room and without the need to shout or raise one's voice. This will provide significant benefits for teacher/pupil communication and understanding.

All children benefit from the improved speech clarity provided by a Sound Field Voice Reinforcement System:

Academic improvements are noted in:

- Task behaviour
- Attentiveness
- Understanding of instructions
- Less repetition required
- Better attendance
- Improved measures of verbal recognition
- Reduced voice strain/damage

### Description:

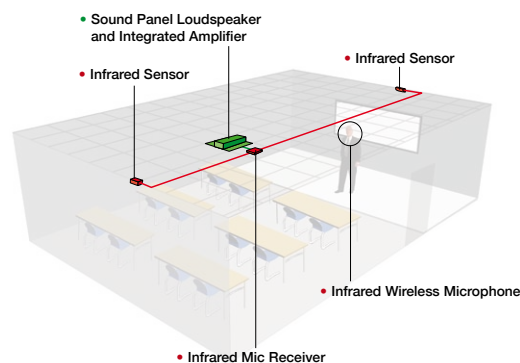
i-ceilings Sound Field Voice Reinforcement Systems provide flexibility for all types and sizes of classroom and learning environment, to enhance both the teacher's voice and other audio signals.

Simple control via an Input Control Plate allows adjustment of main volume control and the ability to plug in external audio sources such as CD, DVD, MP3 or PC for playback of music, presentations, movies, etc.

i-ceilings Sound Field Systems also feature infrared wireless microphones, allowing the teacher to roam freely around the classroom without the obstacle of trailing wires or cables. Unlike similar radio-based systems, our infrared system does not require a license and will not radiate the signal to adjoining classroom areas (allowing for simple, cost effective multi-room systems and ensuring secure voice signals where required).



### Typical Classroom System Layout:



[www.soundfield.uk.com](http://www.soundfield.uk.com)

With a range of highly effective, low cost solutions we have already supplied many successful i-ceilings Sound Field systems throughout the country, whilst our specially-developed website - [www.soundfield.uk.com](http://www.soundfield.uk.com) - has become the industry recognised site for information and advice on classroom voice reinforcement and the recommendations of Building Bulletin '93.





In providing the ideal workspace environment, the consideration of both acoustics and aesthetics is essential.

This new improved generation of ceiling 'Sound Panel' loudspeakers uses state-of-the-art technology to provide exceptional sound qualities without spoiling the aesthetic consistency of the ceiling plane.

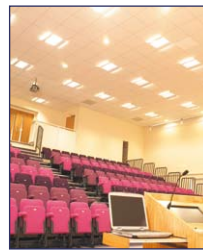
Combining the innovation of the world's leading designers and suppliers of ceiling systems with the revolutionary sound qualities of NXT™ technology, Armstrong have produced a new concept in acoustic ceilings to provide an unparalleled sound system for background music, public address and active acoustics such as sound masking.



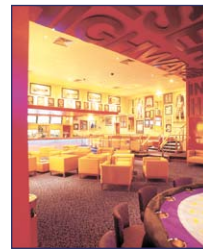
retail



education



corporate



leisure

Approved Supplier:

An exclusive partnership between Armstrong World Industries and CIE-Group Ltd.