

Acoustics | Clocks | Evacuation



# Heavenly

Optimal acoustics in churches



What language, what words,  
Open the portal to the heart  
As do the tones of harmony?  
Deeply penetrating the feelings,  
It bears us, in union with gods,  
Into the realms of fantasy.

Heinrich Martin (1818–1872)

# A listening experience

Whether sermon, reading, church choir or concert. Whether chapel or cathedral, mosque or synagogue – visitors deserve a unique sound experience. This means that every single word has to be clear and perfectly understandable – even on the rearmost row of seats. That every sound, every syllable has to resonate throughout the church with authenticity. Evenly, at a comfortable volume and with no disturbing echo. Unfortunately, this is rarely the case. To optimise the sound for your events in the given acoustic environment, coordinated, corrective measures are therefore essential. We show you the possibilities.

Discover our complete range and take advantage of our in-depth expertise as the market leader.





# Resounding customer benefits

With our individualised loudspeaker models you take systematic action against poor voice intelligibility in church buildings. The sound quality increases significantly and you get the benefit of multiple added value.

## **Optimal acoustics**

Many buildings that are used as churches are listed. The acoustics, therefore, are predetermined. Hence the installation of a high quality sound system is very challenging and complex. Our specialists, therefore, systematically measure the acoustics in the space before submitting a comprehensive assessment. Based on this, the correct loudspeaker models and their corresponding locations are defined.

## **DSP technology**

Innovative DSP (Digital Signal Processing) technology stands for premium, crystal-clear audio quality that makes you believe the speaker, musician or equally the entire choir is sitting right in front of you. Thanks to advanced technology the electronics are small and efficient, which is why they can be installed in the audio control panel or directly in the sound column. Every single loudspeaker in the sound system is individually adjustable and can also be programmed to a desired sound direction – without having to tilt the sound column.

## **Easy to operate**

Even the most complex technology is only convincing if it is easy to operate. Our remote controls are intentionally simple and clearly laid out. At the touch of a button you turn on the whole system including microphones and musical instruments. By pressing other buttons you can activate sections of the space such as choir or altar, or select various equaliser presets for several speakers. If there is a large congregation in the church, the overall volume can be increased slightly by means of a variable controller. The audio system works in the background to continuously ensure optimally tuned sound.

## **Aesthetic aspects**

Every church space has its own unique ambience that should be preserved. Our timelessly elegant sound system can be customised in colour or fitted discreetly into the space. Create design highlights – with our wide selection of different sound column models it is easy to do.





Discover the  
perfect sound  
experience

# SOUND COLUMNS WITH NATURAL SOUND REPRODUCTION

**With high quality, acoustically perfectly synchronised, active sound columns, the sound is perfectly attuned to the audience.** Sound is delivered precisely and evenly to all pews, which manifests in exceptional intelligibility of transmitted speech and outstanding music reproduction. Directional sound produces superb results.

Innovative DSP technology by g+m elektronik ag is built into the active sound columns and expands the acoustic and architectural range of applications, bringing a wealth of audio functions. This technology makes the previously required connection of external devices obsolete.

While the sleek aluminium cabinet with filigree front grille protects the high quality speakers and electronics from mechanical damage, the elegant form allows excellent integration into the surroundings. The colour of the cabinet can be customised at any time.

In terms of its cabinet, the passive sound column is visually no different from the active unit. The same cannot be said of the application. Passive sound columns are used either in addition to active sound distribution – particularly in areas such as choir or gallery – or in conjunction with special DSP technology as a high quality passive sound system. The DSP technology required for this purpose is built into the audio control panel and synchronised with the sound column. Here too, as for the active sound columns, a comprehensive range of different models is available – depending on the conditions in the space.



Subwoofer SUB80



CHORUS GM-6820



CHORUS GM-6840



CHORUS GM-6960-A





# INTELLIGENT SYSTEM

As a multifunctional audio system, the APS-APROSYS® is at the heart of any system. Despite the increasing complexity of audio systems, operation remains straightforward and easy to understand. The APS-APROSYS® system is a Swiss product developed, produced and continuously optimised by g+m elektronik ag.

The APS-APROSYS® system optimally enhances the quality of room acoustics by reducing echo with the aid of the delay function. Using the APS-46 «4-Channel Audio Processing Device», distances to each speaker can be individually set – hence reducing echo effects. Feedback is tuned out using special narrow band filters.

The white lines in the picture on the right show the delays resulting from the propagation velocity of sound. The delay function passes the audio signal to the sound columns with the corresponding time delays. Depending on the distance between the orator and the sound column, APS-46 calculates the corresponding delay – short delay for the front sound column, longer delay for the rear sound column.

Volume, tone settings, delay and dynamic control are individually set on the 4 channels of the APS-46. Dynamic control is used to regulate varying distances and thus ensure consistent volume.

Even the most complex technology is only convincing if it is easy to operate. Our remote controls are intentionally simple and clearly laid out. Our straightforward, individually designed, wired remote controls are used to set volume, treble and bass, while the bass can be boosted through an adjustable subwoofer.

The APS-APROSYS® system solution allows the operation of multiple microphones – thus choral singing and speech can be simultaneously transmitted to the audience using different types of microphone. Our experts will be pleased to advise you on the choice of the right microphone.



Head-worn microphone UHF-300-KM-D







# AUDIO INDUCTION LOOP SYSTEMS FOR THE HEARING IMPAIRED



Churches are among the public buildings for which the federal government specifies audio induction loop systems according to the SIA 500 standard. Acoustic devices receive the audio signal directly through induction loops installed in the floor. The required signal strength and frequency range are specified in EN 60118 Part 2006.

Induction loop amplifier type BO-CD-155 produces an electromagnetic audio signal for the acoustic devices via induction loops installed in the floor. Through the automatic measurement of the induction loop and processor-controlled automatic gain control (AGC), consistently high audio quality of the acoustic devices can be guaranteed. Careful planning by a graduate measurement technician using multiple measuring procedures is required to achieve this.

# VISUAL SUPPORT



Carefully selected Bible verses, images to accompany the sermon, lyrics and individual photos are increasingly finding their way onto the church scene. They are now part of the modern church service, including weddings, baptisms and communion.

Words, song or music are supported by a wealth of images displayed on the screen using a video projector. In addition to image quality, the resolution, contrast, colour reproduction and light output of the projector are critical to achieving high quality projection.

The various image formats are automatically scaled to the appropriate projector resolution. At the touch of a button, the projector is turned on and the screen is extended. External devices such as a notebook or DVD are easy to connect to the sockets provided.





## References

Catholic Church, CH-Oberbüren  
 Holy Cathedral, MA-Tanger  
 Mosque, NL-Amsterdam  
 Catholic Church, Villmergen  
 Hill of Angels Cathedral, ES-Madrid  
 St. Jost Church, CH-Blatten  
 Hofkirche, CH-Lucerne  
 Royal Monastery of Santa María de Guadalupe, ES-Caceres  
 Nuestra Señora, ES-Madrid  
 The Church of the Sacred Heart, CH-Sion



# Swiss Made

g+m elektronik ag, based in Oberbüren, has been developing and producing equipment, components and technology for complex acoustic, clock and evacuation systems for over 40 years.

As a modern, independent company, we develop needs-based, future-oriented engineering solutions for our customers, thereby setting standards in electro-acoustics. Sustainable quality, innovative ideas and continuous advancement are fundamental values that govern our actions.

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